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Micro Photo Inc.

# OFFICIAL GAZETTE

# UNITED STATES PATENT OFFICE

## VOL. 69

## OCT. - DEC.

## 1894

MICRO PHOTO INC.
CLEVELAND, OHIO

# OFFICIAL GAZETTE

OF THE

# UNITED STATES PATENT OFFICE.

VOLUME LXIX.

OCTOBER 2 TO DECEMBER 25, INCLUSIVE,

1894.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1895.

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# ERRATA.

**526,925,** page 81, fifteenth claim, line 4, for "cam heads" read *can heads.*

**527,073,** page 137, in heading, residence of assignee, for "Boston, Mass.," read *Maine.*

**527,457,** page 270, third claim, line 2, strike out the word "in" preceding the word "derivative."

**527,526,** page 289, in heading, name of inventor, for "Herman E. Franz" read *Herman E. Frauz.*

**527,761,** page 377, in heading, name of inventor, for "Frank Muhlenbech" read *Frank Muhlenbeck.*

**527,790,** page 386, in heading, name of assignee, for "the Russell & Company" read *the Russell & Co.*

**527,889,** page 416, in drawings, strike out reference-letter "I" in left-hand margin of the figure.

**528,040,** page 468, sixth claim, line 6, for "connectors" read *conductors;* same claim and line, for "conductor" read *connector.*

**528,071,** page 479, after residence of inventor, insert *assignor of one-half to Walter M. Harris, same place.*

**528,114,** page 492, line 4 of claim, for "constructed" read *obstructed.*

**528,515,** page 632, in heading, name of inventor, for "Alexander Hensley" read *Alexander Hemsley.*

**528,552,** page 655, strike out all after number—title, drawing, and claim—and insert WITHDRAWN.

**528,812,** page 740, in heading, name of assignee, for "The Arlington Manufacturing Company, of New York, N. Y.," read *The Arlington Manufacturing Company, a corporation organized under the laws of the State of New Jersey, and doing business at New York, N. Y.*

**528,965,** page 816, in heading, residence of inventor, for "Pele Tyrolka" read *Pelc Tyrolka,* and the name of assignees, for "Kinzleberger & Co." read *Kinzlberger & Co.*

**529,128,** page 864, strike out all after number—title, drawing, and claim—and insert WITHDRAWN.

**529,176,** page 880, in heading, name of assignee, for "I. B. Kleinert Company" read *I. B. Kleinert Rubber Company.*

**529,237,** page 898, in heading, residence of assignee, for "same place" read *Washington, D. C.*

**529,673,** page 1060, in heading, assignment, for "assignors, by direct and mesne assignments, of one-half to William S. Schroll" read *said Able assignor, by mesne assignments, to William S. Schroll.*

**529,921,** page 1145, in heading, name of inventor, for "George J. Kranshaar" read *George J. Kraushaar.*

**530,063,** page 1199, in heading, after name of assignee, insert a comma and the word *Virginia.*

**530,103,** page 1223, second claim, line 8, and third claim, line 13, for "continuous" read *contiguous.*

**530,126,** page 1231, in heading, after residence of inventor, insert *assignor to Samuel Montgomery Roosevelt, same place.*

**530,500,** page 1370, third claim, line 8, strike out the word "and" preceding the word "opposed" and insert *an.*

**530,536,** page 1383, in heading, title, after the word "Siphon" insert the character &c.

**530,687,** page 1429, in heading, residence, for "Urskong" read *Urskoug.*

**530,893,** page 1488, in heading, name of assignee, for "the Pittsburg Chemical Company" read *the Pittsburgh Chemical Company.*

**530,902,** page 1491, in heading, date of filing, for "Jan. 3, 1894," read *Jan.* 30, 1894.

**530,907,** page 1492, in heading, date of filing, for "July 20, 1892," read *July* 23, 1892.

**531,142,** page 1585, strike out all after number—title, drawing, and claim—and insert WITHDRAWN.

**531,501,** page 1722, in heading, after residence of assignee, insert the words *a corporation of New Jersey.*

**531,540,** page 1735, strike out all after number—title, drawing, and claim—and insert WITHDRAWN.



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# OFFICIAL GAZETTE

OF THE

# UNITED STATES PATENT OFFICE.

OCTOBER–DECEMBER, 1894.

# THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 69.—No. 1. TUESDAY, OCTOBER 2, 1894. PRICE—$5 per year.


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## Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., September 24, 1894.*

SIR: The Secretary of the Interior has ordered that Samuel J. Brown, of Philadelphia, Pa., be not recognized after this date as attorney or agent in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,

JOSEPHUS DANIELS,
*Chief Clerk.*

The Commissioner of Patents.

## Order in Relation to Drawings.

NOTICE.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January 25, 1894.*

Order No. 980, respecting the alteration of drawings, was published in the OFFICIAL GAZETTE of December 19, 1893, (65 O. G., 1771,) by mistake, and was never in force. The following is the only order in force upon that subject:

(ORDER No. 986.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January 25, 1894.*

Erasures or other alterations of drawings will not be made or permitted, except in compliance with this order.

Applicants are requested to furnish, with their originals, a blue print or other photographic copy of all drawings forming part of an application, and where this is done, the original drawings may be taken to the Attorneys' room, but not otherwise.

Before making a requirement to alter an original drawing the Examiner will formally make the blue print or other copy a part of the files, and in case no such copy has been furnished by the applicant, the Office will make such copy without charge, and thereupon the required alteration may be made by the applicant, under the direction of the Examiner and subject to his approval, or, upon request, it will be made by the Office at the expense of the applicant.

The requirement to make alterations in original drawings will be made in writing, and the applicant's response must also be in writing, and in such case the copy of the drawing, the requirement to alter, and the applicant's response will form part of the record.

Action by the Office on the merits will not be suspended pending the change of a drawing, if the invention claimed may be understood by the Examiner.

For the purposes of this order the Office, upon the request of applicants, will make blue prints at the charge of five cents a sheet.

In appeal cases and upon the declaration of an interference a blue print or other copy will be sent forward with the files, the Examiner retaining the original drawings in his room until the hearing.

Except as herein required such blue print or other copy will not be made a part of the file, and may not be preserved after an application passes into a patent.

JOHN S. SEYMOUR,
*Commissioner.*

PHOTOGRAPHIC COPIES OF DRAWINGS.

A photographic outfit has been added to the equipment of the Patent Office, and positive photographic copies of any drawing, foreign or domestic, in the possession of the Office, will be furnished upon application to parties entitled thereto, at the following rates:

Size 10x15 inches ..... 25 cents per sheet.
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Size 5x8 inches ..... 5 cents per sheet.

If a copy of the drawings in a pending application of the size 5x8 inches be ordered sent to any address, two copies must be ordered, as one copy is always retained by the Office and placed in the file for the purposes specified in the above Order No. 986, of January 25, 1894.

In ordering copies of foreign drawings, the examining division, the class, and sub-class where such drawings may be found, must be given.

Coupons will be received in payment of the above fees.

## Privileges of the Scientific Library.

Persons who are not employés of the Office may, under the supervision and direction of the Librarian, make extracts, in pencil, from descriptions and drawings contained in the Scientific Library, such extracts, when in the nature of copies, not to exceed one-third of the descriptions or drawings from which the copies are made. Violation of this order will subject all persons and parties concerned in the violation to exclusion from thereafter making any such extracts or copies whatever.

## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $10; single copies, 10 cents, if mailed to foreign countries 10 cents additional for postage; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

## Issue of October 2, 1894.

| | |
|---|---|
| Patents | 368—No. 526,671 to No. 527,038 inclusive. |
| Designs | 19—No 23,662 to No. 23,680 inclusive. |
| Trade-Marks | 27—No. 25,279 to No. 25,305 inclusive. |
| Labels | None. |
| Prints | None. |
| Reissues | 1—No. 11,444. |
| Total issue | 415 |

TO CITIZENS OF THE UNITED STATES.

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|---|---|---|---|---|---|
| Alabama | 2 | ..... | Nevada | ..... | ..... |
| Arizona Territory | ..... | ..... | New Hampshire | 7 | ..... |
| Arkansas | ..... | ..... | New Jersey | 21 | ..... |
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| Connecticut | 14 | 2 | North Carolina | ..... | ..... |
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| Idaho | 1 | ..... | Rhode Island | 7 | ..... |
| Illinois | 27 | 1 | South Carolina | ..... | ..... |
| Indiana | 10 | 1 | South Dakota | ..... | ..... |
| Indian Territory | ..... | ..... | Tennessee | 1 | 1 |
| Iowa | 2 | ..... | Texas | 7 | ..... |
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| Louisiana | 4 | ..... | Virginia | 2 | ..... |
| Maine | 2 | 1 | Washington | 1 | ..... |
| Maryland | 6 | ..... | West Virginia | 1 | ..... |
| Massachusetts | 35 | 2 | Wisconsin | 7 | ..... |
| Michigan | 18 | 3 | Wyoming | ..... | ..... |
| Minnesota | 3 | 1 | U. S. Army | 1 | ..... |
| Mississippi | ..... | ..... | U. S. Navy | ..... | ..... |
| Missouri | 16 | ..... | | | |
| Montana | 1 | ..... | Total to citizens of the United States | 340 | 25 |
| Nebraska | 3 | ..... | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
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| Argentine Republic | ..... | ..... | Italy | 1 | ..... |
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| Belgium | ..... | ..... | Netherlands | ..... | ..... |
| Bermuda | ..... | ..... | New South Wales | ..... | ..... |
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| Canada | 7 | ..... | Norway | ..... | ..... |
| Chile, Republic of | ..... | ..... | Queensland | 1 | ..... |
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| Ireland | 1 | ..... | Total to citizens of foreign countries | 57 | 2 |

# APPLICATIONS UNDER EXAMINATION.

*Condition at Close of Business September 25, 1894.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting, and Leather Working Machinery. | Aug. 27 | Sept. 22 | 130 |
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# PATENTS

## GRANTED OCTOBER 2, 1894.

**526,671. ELASTIC-TREAD HORSESHOE.** LAWRENCE A. ANDERSON, Cincinnati, Ohio. Filed July 27, 1893. Serial No. 481,589. (No model.)



*Claim.*—1. In an elastic horseshoe, a metal frame for the reception and support of the elastic padding, consisting essentially of an upper plate B having an opening H therein, and lower plate D united to the plate B by the outer neck or union C and the inner neck or union $C^3$, the lower plate D having opening K therein and extending inwardly from neck C and beyond the same in the form of a flange $D^3$, and extending over and beyond the union or neck $C^3$ in the form of a flange $D^4$, the opening K being between the flanges $D^3$ and $D^4$, the rubber tread extending across the shoe under the plate D, and extending down on either side flush with the outer walls of the shoe substantially as and for the purposes specified.

2. In an elastic horseshoe, the framework consisting of the upper plate B and lower plate D, the outer portion of the plate B being connected to the outer portion of the plate D by a neck C, and the inner portion $B^3$ of the plate B being connected to the inner portion of the plate D by a neck $C^3$, the outer portion of the plate B projecting inwardly beyond the neck C in the form of a horizontal flange, and the inner portion of the plate B projecting toward the flange P in the form of a flange $P^3$, the outer and inner portions of the plate D projecting toward each other in the form of flanges beyond their respective necks C and $C^3$, the plates being provided with openings H, H, said openings being limited by the connecting neck or union pieces $B^4$, $B^4$, and T, said union pieces not interfering with the opening of the interspaces H and K, which are continued to the ends of the shoe, in combination with one continuous elastic tread of a circular form, and having the upper enlarged portion R and lower enlarged portion S, the grooves between said portions receiving the flanges $D^3$ and $D^4$, substantially as and for the purposes specified.

3. In an elastic horseshoe, the framework consisting of the upper plate B and lower plate D, the outer portion of the plate B being connected to the outer portion of the plate D by a neck C, and the inner portion $B^3$ of the plate B being connected to the inner portion of the plate D by a neck $C^3$, the outer portion of the plate B projecting inwardly beyond the neck C in the form of a horizontal flange, and the inner portion of the plate B projecting toward the flange P in the form of a flange $P^3$, the outer and inner portions of the plate D projecting toward each other in the form of flanges beyond their respective necks C and $C^3$, the plates being provided with openings H, H, said openings being limited by the connecting neck or union pieces $B^4$, $B^4$, in combination with the elastic padding consisting of the upper portion R provided at each side with the flange $M^3$ and a lower portion provided at each side with a flange $M^3$, the said portions being connected by the neck $M^4$, the said neck fitting in the opening K of the iron frame, while the upper ring R fills the opening H in said frame above the plate D, and ring S lies below the said plate D, substantially as and for the purposes specified.

4. In a horseshoe, a metallic frame having upper plate B and lower plate D, respectively provided with openings H and K, and united by walls C and $C^3$, and the padding or block, having rings or flanges $M^3$ and $M^3$ and neck $M^4$ between, the outer and inner portions of the lower plate entering between the said upper and lower rings or flanges, inner portions or flanges P and $P^3$ of plate B being present, substantially as and for the purposes specified.

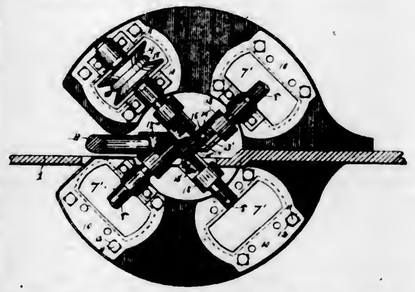
5. In a horse shoe, the flanges $D^3$, $D^3$, and the interspace, open at the ends and receiving the continuous flanged flexible rubber, capable of being drawn at the end, substantially as and for the purposes specified.

6. In a horseshoe, a metallic frame, outer wall C and inner wall $C^3$ of the frame, bounding a continuous interspace or opening or groove H, flange $D^3$ extending inwardly from the lower portion of wall C, and flange $D^3$ extending from the lower portion of wall $C^3$ toward flange $D^3$, a continuous rubber padding elastic tread piece consisting of an enlarged upper portion and an enlarged lower portion connected by the neck $M^4$, the said flanges $D^3$ and $D^3$ entering between said upper and lower portions of the tread piece, the metallic frame being open at the rear ends of the shoe, so that the continuous interspace or groove H is open there, and freely admits therein the introduction of the continuous strip of elastic tread formed as described, and its withdrawal therefrom when worn out, by sliding the said tread horizontally through the interspace or groove H, substantially as and for the purposes specified.

7. In a horseshoe, a metallic frame having upper plate B and lower plate D, respectively provided with openings H and K, and united by walls C and $C^3$, and the padding or block, having rings or flanges $M^3$ and $M^3$ and neck $M^4$ between, the outer and inner portions of the lower plate entering between the said upper and lower rings or flanges, inner portions or flanges P, $P^3$ of plate B being present, the ends of the shoe being open, and a continuous rubber padding or elastic tread piece having enlarged upper portion and enlarged lower portion connected by neck $M^4$, the flanges $D^3$ and $D^3$ entering between the upper and lower portions of the elastic tread piece, substantially as and for the purposes specified.

8. In an elastic horseshoe, a metal frame for the reception and support of the elastic padding, consisting essentially of an upper plate B having an opening H therein, and lower plate D united to the plate B by the outer neck or union C and the inner neck or union $C^3$, the lower plate D having opening K therein and extending inwardly from neck C and beyond the same in the form of a flange $D^3$, and extending over and beyond the union or neck $C^3$ in the form of a flange $D^4$, the opening K being between the flanges $D^3$ and $D^4$, the rear ends of the shoe being open at the spaces H, K, in combination with a rubber tread having upper enlarged portion R and lower enlarged portion S and neck $M^4$ receiving the flanges $D^3$ and $D^4$, substantially as and for the purposes specified.

**526,672. MACHINE FOR MAKING HANDLES FOR SAD-IRONS.** JAMES BARWELL, Cleveland, Ohio, assignor to the Cleveland Wood Turning Company and J. Ashton Saunders, same place. Filed Jan. 15, 1892. Serial No. 418,335. (No model.)



*Claim.*—1. The combination, in a machine for turning semi-circular handles, of a curved way through which a semi-circular handle may pass, a series of rotating spindles placed approximately tangential to a cross-section of the work, cutter-heads carried at the inner ends of said spindles, cutters attached to the cutter-heads, so that the end-faces of said cutters engage the work, and a feed, substantially as described.

2. The combination, in a machine for turning semi-circular handles, of a curved way through which a semi-circular handle may pass, a series of rotating spindles arranged approximately tangential to a cross-section of the work, the spindles being adjustable to and from the curved way, cutter-heads carried by the rotatable spindles, driving connection with the spindles, a feed and cutters, the end faces of which are adapted to engage the work, substantially as described.

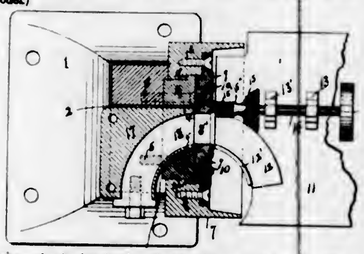
3. The combination, in a machine for turning semi-circular handles, of a bed-plate, a vertical frame extending above and below the bed-plate, a curved-way through the vertical frame, a series of spindles arranged approximately tangential to a cross-section of the work journals for the spindles, the journals being adjustable upon the vertical frame and the spindles being adjustable to and from the curved way, driving connection for the spindles, a feed, and cutters, the end faces of which are adapted to engage the work, substantially as described.

4. The combination, in a wood turning machine, of a bed-plate a vertical frame extending above and below the bed-plate, a way through the vertical frame through which stock is adapted to pass journals carried by the vertical frame, spindles carried in said journals and arranged approximately tangential to a cross section of the work, cutter-heads upon the inner ends of said spindles, driving connection for the spindles, a feed, and cutters, the end faces of which are adapted to engage the work substantially as described.

5. The combination, in a wood turning machine, of a bed-plate, a vertical frame connected with the bed-plate, a way through the vertical frame through which stock is adapted to pass, journals adjustably fixed to the vertical frame, a spindle carried in said journals, the spindle being placed approximately tangential to a cross-section of the work, a cutter-head upon the inner end of the spindle, driving connection for the spindle, a feed, and cutters, the end faces of which are adapted to engage the work substantially as described.

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**526,673. UNIVERSAL ROD AND RING MACHINE.** JAMES BARWELL, Cleveland, Ohio, assignor to the Cleveland Wood Turning Company, same place. Filed Dec. 7, 1892. Serial No. 454,402. (No model.)



*Claim.*—1. A circular bearing having an opening through it; an adjustable stock support to enter the opening through the circular bearing; a cutter-head having an axial opening and being adapted to rotate upon the circular bearing, and having driving connections; suitable cutters secured to the cutter-head, and a screw-feed consisting of the threaded parts 15 and 15' and the groove 15", substantially as illustrated and described.

2. A circular bearing having an opening through it, an adjustable stock support adapted to enter the opening of the circular bearing, a cutter-head adapted to rotate upon said circular bearing, said cutter-head having an axial opening and being provided with driving connection, cutters adjustably secured to the cutter-head, and a screw feed consisting of the threaded parts 15 and 15' and having the groove 15", substantially as illustrated and described.

3. A circular bearing having an opening through it, an adjustable stock support to enter the opening through the circular bearing, a cutter-head adapted to rotate upon the circular bearing, the cutter-head having an axial opening and having suitable cutters secured thereto, and being provided with driving connection, and an adjustable screw feed, substantially as illustrated and described.

4. The combination of a machine frame, a detachable stationary bearing having an opening through it and having an annular flange, and a cutter head consisting of a wheel (which wheel is held upon the circular bearing by means of the annular flange) and a face plate provided with an axial opening secured to said wheel, substantially as illustrated and described.

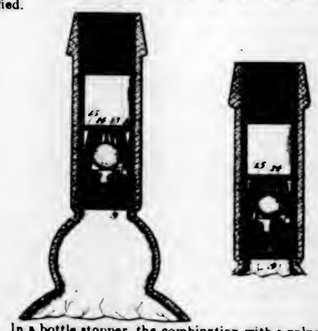
5. A circular bearing having a curved opening through it, a revolving cutter-head adapted to turn upon said circular bearing and having an axial opening and being provided with driving connection, an angular guide at the front of the cutter-head, and a feed consisting of the threaded parts 15 and 15' and the groove 15", substantially as illustrated and described.

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**526,674. BOTTLE AND STOPPER THEREFOR.** GEORGE B. BARBER, Bellaire, Ohio. Filed Dec. 19, 1893. Serial No. 494,043. (No model.)

*Claim.*—1. In a bottle stopper, the combination with a valve case having apertured converging sides, an annular flange thereabove and a depending retaining tube provided with corrugations, of a compressible disk adapted to be retained upon said tube and a valve within the valve case, substantially as specified.

2. In a bottle stopper, the combination with a valve case having apertured converging sides, an annular flange there-above, and a depending retaining tube provided with corrugations, of a compressible disk adapted to be retained upon said tube, a valve within the valve case, and auxiliary means for reseating the valve, substantially as specified.



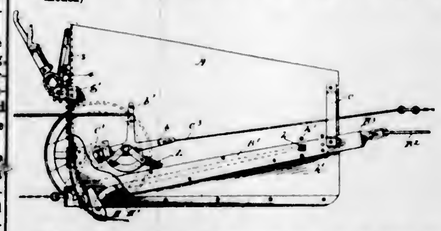
3. In a bottle stopper, the combination with a valve case having apertured converging sides, internal corrugations between the apertures, a superimposed annular flange, and a depending retaining tube, of a valve and compressible ball within the case, substantially as set forth.

4. The combination with a bottle provided with an internal annular flange below the neck, and corrugations thereabove, of a compressible disk provided with a central aperture, and adapted to be retained by said flange and corrugations, a valve case provided with a corrugated tube adapted to enter the aperture and be retained by the disk and a valve within the valve case, substantially as specified.

5. The combination with a bottle provided with an internal annular flange below the neck and corrugations thereabove, of a valve case having apertured converging sides, an annular flange thereabove, a depending corrugated tube and internal corrugations between the apertures, of a compressible disk secured to the retaining tube and adapted to be retained by the flange and corrugations within the bottle, and a valve and compressible ball within the valve case, substantially as specified.

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**526,675. EARTH-SCRAPING MACHINE.** ALFRED F. BERNARD, San Luis Obispo, Cal. Filed Oct. 11, 1893. Serial No. 487,797. (No model.)



*Claim.*—1. In a scraper, the combination with the body, the crank lever secured to the sides thereof, the supporting wheels connected to and carried by the swinging levers, the forwardly extending rods secured to the forward arms of the crank lever, the bail connected to the rear arms of the crank levers, and the cables for throwing the crank lever in order to raise and lower the supporting wheels with the forward and backward travel of the scraper.

2. The combination with the body, composed of side and end walls or plates, the side walls diverging, the cutting blade connected to the bottom of the rear wall, the runners secured to the bottom edge of the side walls, the cables for moving the scraper forward and backward, and the wheels secured to the body so as to have a vertical movement in order to raise or lower the body, said wheels connected to the draft cables so as to be automatically raised or lowered with the forward or backward movement of the scraper.

3. In a scraper, the combination with the body thereof, the movable cutting blade, mechanism for imparting vertical movement thereto, the yoke projecting upwardly from the cutting blade, and the rollers upon which said yokes bear as the cutting blade is raised or lowered in order to reduce the friction of its movement.

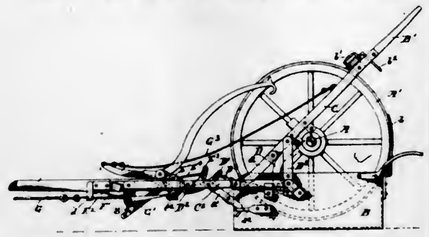


4. In a scraper, the combination with the body thereof, the movable cutting blade, the guides in which it works secured to the back plate, the plate connected to the cutting blade, guides in which said plate works, rack bar secured to the plate and cutting blade, cog wheels for engaging with the rack plate mounted upon a cross shaft working in bearing attached to the back plate, the lever for imparting motion to the cog wheel in order to raise or lower the cutting blade, and the pawls for engaging with the cog wheel.

5. The combination, in a scraper, of the body, the swinging crank levers secured to the sides thereof, the supporting wheels connected to said crank levers, mechanism for automatically raising and lowering said wheels with forward and backward travel of the scraper, a device for locking the crank levers when the same have been thrown backward in order to lower the supporting wheels, the cutting blade secured to the body, mechanism for raising and lowering said blade, and the rods for holding the blade and regulating the movement thereof.

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**526,676. WHEELED SCRAPER.** ALFRED F. BERNARD, San Luis Obispo, Cal. Filed Feb. 16, 1894. Serial No. 500,414. (No model.)



*Claim.*—1. The combination with the body and the body-raising lever, of a slide connected with the lever so as to actuate the same when drawn forward by the snatch team, and means for automatically releasing the said slide when the body has been raised.

2. In a wheeled scraper, the combination with the body thereof, of the body raising lever, the serrated lock plate, the pawl carried by the lever, for automatically engaging with the serrated face of the lock plate when the lever is lowered, and mechanism connecting the lever with the body of the scraper in order to raise or lower the same with the downward or upward movement of the lever.

3. In a wheeled scraper, the combination with the scraper body, the lever for raising the same, the slide or trigger plate for lowering the lever with the outward movement thereof in order to elevate the body, the snatch block connected to the slide rod, the cam for holding the slide rod in locked position, and devices for operating the cam for releasing the slide rod so as to permit the power of the snatch team to be automatically transmitted in order to lower the body raising lever.

4. In a wheeled scraper, the combination with the body thereof, the lever for raising and lowering the same, the oscillating rod to which said lever is connected, the slide or trigger rod, levers forming connection between the oscillating rod and slide or trigger rod, cam roll over which the slide or trigger rod works, lever for releasing the slide rod from engagement with the cam roll, the snatch block and connection between the snatch block and slide rod whereby the same is moved outward, when released, by the power of the snatch team in order to lower the body raising lever.

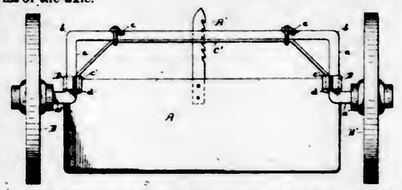
5. In a wheeled scraper, the combination with devices for automatically transmitting the power of the snatch team so as to lower the body raising lever in order to elevate the body of the scraper, of a cam roll, the slide or trigger rod working thereover, and the spring for asserting a downward pressure upon the slide or trigger rod for the purpose of assuring the slide rod moving into locked engagement with the cam roll when moved its full distance backward.

6. In a wheeled scraper, the combination with mechanism for transmitting the power of the snatch team to the body raising lever, of a device for automatically releasing the snatch team after the body has been raised, said device consisting of two jaws pivoted together, a clevis secured to the lower jaw and through which the upper one works, and a chain connecting the clevis to the tongue of the scraper.

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**526,677. ATTACHMENT FOR WHEELED SCRAPERS.** ALFRED F. BERNARD, San Luis Obispo, Cal. Filed Apr. 24, 1894. Serial No. 508,827. (No model.)

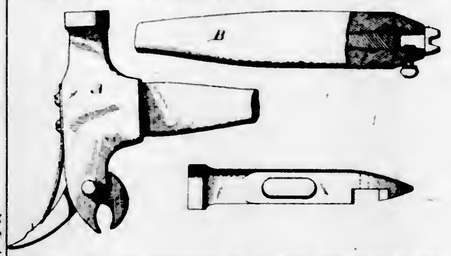
*Claim.*—1. In a wheeled scraper, the combination with the arched axle made in one integral structure, of the strengthening beam or plate removably secured to the under side of the shoulder or body portion of the axle and having its ends turned downward; and fastening plates passed around the ends of the strengthening plate and the arms of the axle.



2. The combination with the arched axle, of a strengthening plate or beam having its central portion removably secured to the shoulder of the axle and its ends bent downward and provided with inwardly projecting lugs, and fastening plates resting on said lugs and passing around the ends of the plate and the arms of the axle.

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**526,678. NAIL-EXTRACTOR.** ROBIE BLAKE, Cornish, Me. Filed May 16, 1894. Serial No. 511,440. (No model.)



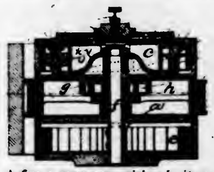
*Claim.*—1. The combination of a tool head provided with an operating handle, and with an integral jaw having a transverse depression in one side whose walls are curved, and a jaw having a semi-circular portion which is seated and fulcrumed in the depression in the integral jaw, and having an arm projecting at approximately right angles from the tool head in an opposite direction to the operating handle, substantially as described.

2. The combination with a tool apertured to receive a handle and having nail gripping jaws, and a handle inserted in the aperture in the tool head, and a spring plate attached to the handle and overlapping the sides of the aperture to retain the tool head on the handle and constructed to actuate the movable nail gripping jaw and maintain the same in a normal position, substantially as described.

3. The combination of a tool head provided with an operating handle and an integral jaw, and a movable jaw fulcrumed on the integral jaw, to co-operate therewith to extract nails, and having an arm projected substantially at right angles from the head in opposite direction to the operating handle and terminating in a claw, the parts being so disposed that the said jaws form a fulcrum for the claw, and the claw a fulcrum for the jaws, substantially as set forth.

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**526,679. FIRE-ESCAPE.** EUGENE I. BLOUNT, Gardner, Mass. Filed Mar. 30, 1894. Serial No. 505,690. (No model.)



*Claim.*—1. A fire escape comprising in its construction a reel, a line connected therewith, a plurality of cylinders, a centrally-located inclosed fluid-chamber having free communication with all the cylinders at one end thereof, restricted passages connecting said chamber with the cylinders, at the other end pistons in the cylinders, and means operated by the reel for moving the pistons longitudinally of the cylinders

2. A fire escape comprising in its construction a reel, a line attached thereto, a fluid chamber, a cylinder and piston, said cylinder having restricted communication with the fluid-chamber on one side of the piston and free communication on the other side of the piston,

and the piston having a valved port extending through it, and means for reciprocating the piston under rotation of the reel.

3. A fire escape comprising in its construction a reel, a line attached thereto, a cylinder and piston with restrictive means of escape for the fluid on one side of the piston, a rotary cam engaging the piston and adapted to move the same endwise of the cylinder, means for rotatively connecting the reel and cam, and a spring acting against the piston.

4. A fire escape comprising in its construction a shaft journaled in suitable bearings and carrying affixed to it an internal ratchet wheel, a reel loosely mounted on said shaft and carrying pivotal gravity pawls engaging said ratchet wheel, a cylinder and piston with restrictive means of escape for fluid on one side of the piston, means for reciprocating the piston under rotation of the reel in one direction, and a rewinding spring connected with the reel.

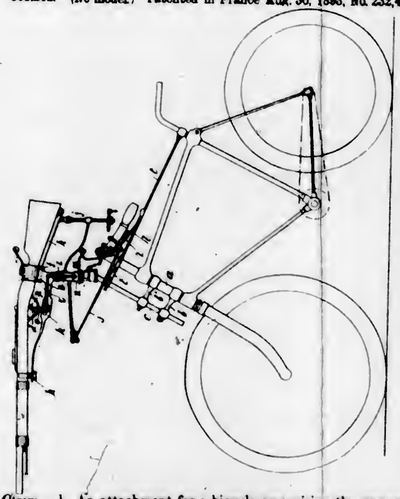
5. A fire-escape comprising in its construction a liquid chamber, a series of circularly arranged cylinders and pistons adapted to operate upon liquid from the chamber, a rotary device for acting successively upon the said pistons, a shaft to which the said rotary device is secured, a reel connected to the said shaft, and a tape on the reel to rotate the same and the shaft.

6. A fire escape comprising in its construction a circular series of cylinders and pistons with restrictive means of escape for fluid on one side of the pistons, a reel, a line attached thereto, a rotary cam having sections for engagement with the pistons, respectively, to move the same endwise of the cylinders, and means for rotatively connecting the said cam and the reel.

7. A fire escape comprising in its construction a circular series of cylinders and pistons, a fluid chamber common to all the said cylinders, restricting passages connecting the chamber with the cylinders respectively, a reel, a line attached thereto, a rotary cam for acting on the pistons, and means for rotatively connecting the said cam and the reel.

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**526,680. ARMING BICYCLES FOR MILITARY PURPOSES.** ACHILLE BRIÈRE, Rouen, France. Filed Mar. 12, 1894. Serial No. 503,292. (No model.) Patented in France Aug. 30, 1893, No. 232,443.



*Claim.*—1. An attachment for a bicycle comprising the support adapted to be fastened at the front thereof, the bracket pivotally connected with the support and adapted to hold the gun, the means for tilting said bracket on its pivot in taking aim, the means for swinging the bracket horizonally and the connections for firing the arm all of said operating connections extending into proximity to the handle bar, substantially as described.

2. In combination, the rod *c* the supports *b b'* therefor, the bracket pivotally connected with the support and adapted to receive and support the gun, the sliding collar *n*, the connections therefrom to the handle bar for moving the same and the connections from said sliding collar to the trigger of the gun, substantially as described.

3. In combination, the support adapted to be attached to a bicycle, the bracket pivotally connected with said support, said bracket being adapted to hold the gun longitudinally of the bicycle the screw *j* for tilting the bracket, and the supporting means for said screw said screw extending down adjacent to the handle bar, substantially as described.

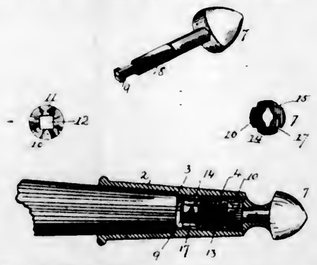
4. In combination with a bicycle the support *c*, the bracket pivotally connected therewith and having a clamp *e*, and a forwardly extending portion with a holder *h* at the end thereof, said bracket and holder being adapted to support the gun in horizontal position and the means for adjusting the bracket, substantially as described.

5. In combination, with a bicycle, the support *c* the gun carried thereby means for controlling and operating the gun and the rod *t* extending from this support *r* to the saddle post to sustain the recoil, substantially as described.

6. In combination with a bicycle, the bracket pivotally connected thereto and adapted to hold the gun in substantially a horizontal position, the connections extending from the gun trigger adjacent to the handle bars and the means for adjusting the bracket and the gun also extending adjacent to said bars, substantially as described.

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**526,681. TRACE-FASTENING.** PERRY BROWN, Sharonville, Ohio. Filed Oct. 20, 1891. Serial No. 409,260. (No model.)



*Claim.*—1. The combination of a thimble, having projections in its interior surface, a washer coacting with said projections, a turning button passing through said washer and the end of the thimble and having teats on its ends, a washer having a hole to allow the teats of the button shank to pass through and recesses to hold said teats, and a spring around the shank of the button, substantially as described.

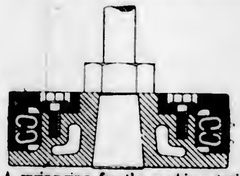
2. The combination of a thimble 2, having projections in its interior, a button having a polygonal shank, a clutch-washer 10 fitting said polygonal shank, a fastening washer 14, and a spring 13 set between the washers, substantially as described.

3. The whiffletree-hook herein described comprising the thimble 2, having clutch projections in its interior, the turning-button having a polygonal shank and teats 9, the clutch washer 10, having a polygonal hole through it, the spring 13, and the fastening washer 14 having a hole to allow the teats 9 to pass through and recesses 16 to hold said teats, all substantially as shown and described.

4. The whiffletree hook herein described comprising the thimble 2, having clutch projections in its interior, and a hook on its exterior, the turning-button having a projection 19 co-acting with the hook and a polygonal shank 8 with teats 9, the clutch washer 10 provided with a polygonal hole, the spring 13, and the fastening washer 14 having a hole to allow the teats 9 to pass through and recesses 16 to hold said teats, all substantially as shown and described.

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**526,682. PACKING FOR PISTONS.** WILLIAM BUCKLEY, Sheffield, England. Filed Aug. 1, 1893. Serial No. 482,116. (No model.) Patented in England July 14, 1892, No. 12,904, and in France Sept. 19, 1892, No. 224,490.



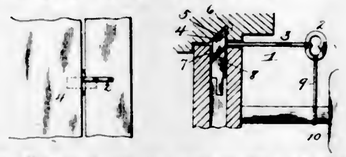
*Claim.*—1. A spring-ring for the packing devices of pistons, piston-rod glands and analogous apparatus, constructed of a helically coiled formation with reference to its annular axis, with the coils in close adjacency, and with two opposite sides thereof flattened in parallel relation to each other, and of a dished or truncated conical formation in relation to the axis of the piston, as set forth.

2. In packing devices of pistons, piston-rod glands and analogous apparatus, in combination, spring-rings each constructed of a helically coiled formation with reference to its annular axis, with the coils in close adjacency, and with two opposite sides thereof flattened in parallel relation to each other, and of a dished or truncated conical formation in relation to the axis of the piston, and rectangularly flanged packing-rings against which the spring-rings exert their axial and diametrical actions independently of each other when the packing rings are clamped together, as set forth.



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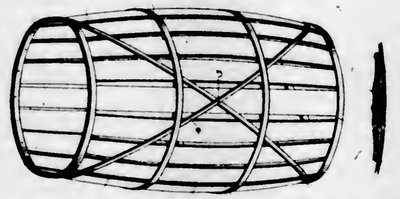
**526,683. DOOR-SECURER.** AMOS R. BUCKLAND, Rochester, N. Y. Filed May 24, 1894. Serial No. 512,323. (No model.)



*Claim.*—The combination with a door provided with a latch-bolt opening, and a latch-bolt adapted to operate therein and having an inclined face 8, and a door-jamb provided with a triangular shaped recess at a point to adapt said recess to lie opposite the opening in the door when the latter is closed, of the lock or key 1, comprising the shank 3, bent laterally at a point beyond the face of the door as described, and the diamond or lozenge shaped head or bit 4, the face 5 whereof is adapted to lie against the face 6 of the notch in the door-jamb and the face 7 against the inclined face 8 of the latch-bolt, said head or bit of the device 1, being arranged to one side of the line of the shank for the purpose specified.

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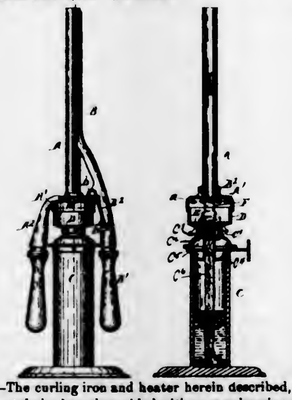
**526,684. BARREL.** ALBERT C. CALHOUN, Harrington, Del. Filed May 5, 1894. Serial No. 510,188. (No model.)



*Claim.*—A barrel, provided with exterior inclined braces which intersect at their centers and are arranged between the exterior hoops and the staves of the barrel, substantially as specified.

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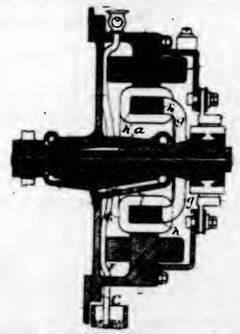
**526,685. CURLING-IRON AND HEATER.** JOSEPHUS C. CHAMBERS, Detroit, Mich., assignor to Robert H. Brown, same place. Filed July 2, 1894. Serial No. 516,264. (No model.)



*Claim.*—The curling iron and heater herein described, having in combination a tubular barrel provided with an open housing at its base, an operating handle permanently attached to said housing, a spring clamp connected with said housing provided with an operating handle, a heater provided with a removable supporting collar D to engage said housing at the base of the barrel, said housing having a removable engagement with said collar whereby the barrel and clamp and their operating handles may be removed from the heater for use when the barrel is heated, substantially as set forth.

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**526,686. ELECTRIC MOTOR.** JOHN H. CLARK, Boston, Mass., assignor to the General Electric Company, of New York. Filed Apr. 16, 1894. Serial No. 507,693. (No model.)



*Claim.*—1. In an electric motor, a casting for the motor frame formed with a back or wall having a hub projecting on each side of the back and L-shaped projections forming the poles of the field magnets as set forth.

2. The combination with a blower of an electric motor and its frame formed with a back or wall secured to the blower casing, a hub projecting from the back of the frame on each side thereof, and serving as a continuous bearing for the shaft of the motor and fan, and L-shaped projections extending parallel with the back of the frame and forming the poles of the field magnets, as set forth.

3. In an electric motor, a casting forming the back of the frame and provided with a securing flange, and L-shaped projections extending parallel with said backs forming the poles of the field magnets.

4. The combination with a blower, of an electric motor having a frame, consisting of a casting formed with a back having a flange by which the motor is secured to the blower casing, a hub projecting on either side of the frame back, L-shaped projections extending parallel with the frame back, and forming the poles of the field magnets, a shaft extending through the hub, a fan mounted on a sleeve secured to the shaft, curved at their outer ends, projecting through the coils of the ring armature and secured to one of the clamping ring plates of the armature, a commutator mounted on said sleeve, and commutator brushes mounted on brackets secured to the field magnets, as set forth.

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**526,687. BARREL-COVER.** JAMES O. COOPER and ALBERT S. JACOBY, Guthrie, Okla. Filed Mar. 27, 1894. Serial No. 505,301. (No model.)



*Claim.*—1. A barrel cover comprising a stationary section 2, a sliding section 1 located in a different horizontal plane than the stationary section and arranged to move inward across the same, a stationary transverse rod 5 providing an intervening space for the passage of the movable section of the cover, and a rod rigidly mounted on the movable section and receiving and confining the transverse rod, whereby the movable section of the cover is permitted a straight forward and rearward movement, substantially as described.

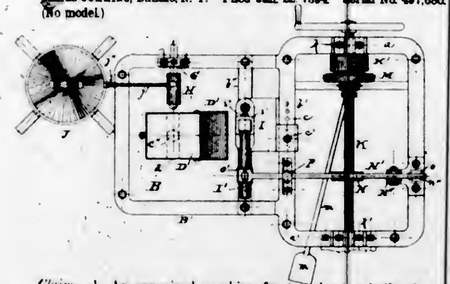
2. A barrel cover comprising the stationary and movable sections, the rigid transverse rod mounted on the stationary section and arranged above the same and providing a space to permit the passage of the movable section, the integral divergent rods mounted on the movable section and provided at their apex with an eye arranged at the front of the movable section, said divergent rods being arranged above the movable section and confining the transverse rod, a handle having a shank passed through said eye and secured to the movable

section, and a spacing block arranged on the shank and interposed between the eye and the movable section, substantially as described.

3. A barrel cover comprising the segmental movable and stationary sections located in different horizontal planes, the movable section being located above and adapted to move rearward over the stationary section, the stationary transverse rod rigidly connected at its ends with the stationary section and located above the same and forming an intervening space for the passage of the movable section, the divergent rods rigidly connected at their front terminals to the front of the movable section and having their rear ends bent downward and secured to the rear edge of the movable section, said divergent rods being located above the movable section and forming an intervening space and receiving and confining the transverse rod, and a depending rim receiving the stationary section and arranged flush with the upper face thereof and having its front portion located beneath the movable section, substantially as described.

## 526,688. MACHINE FOR LENGTHENING BOILER-FLUES.

JAMES CUMMING, Buffalo, N. Y. Filed Jan. 22, 1894. Serial No. 497,680. (No model.)



*Claim.*—1. An organized machine for lengthening boiler flues, consisting, essentially, of a top plate having a depressed portion, a furnace located upon this depressed portion, a horizontal passage in said furnace to receive the flue and end piece to be welded together, an adjustable holder and abutment in the rear of said furnace and having its center line coinciding with that of the horizontal passage described, an adjustable horn secured to a stake holder fastened to a cross-bar of the depressed portion of the top plate, a swage operated by suitable mechanism, and a squeezer secured to the top plate, the said furnace, horn and squeezer being radially arranged and having their common center in the tripod located a suitable distance from the machine, as and for the object set forth and described.

2. In a machine for lengthening boiler flues, the combination, with the furnace, of a hollow holder having a protuberance as described, the reservoir and pipes connecting the reservoir with the holder, as stated.

3. In a machine for lengthening tubes, the combination, with the top plate, of a furnace having a horizontal passage as described, of the abutment consisting of a holder adjustably secured to a standard fastened upon a portion of the top plate and adapted to enter the rear end of the said horizontal passage in said furnace, as and for the object set forth.

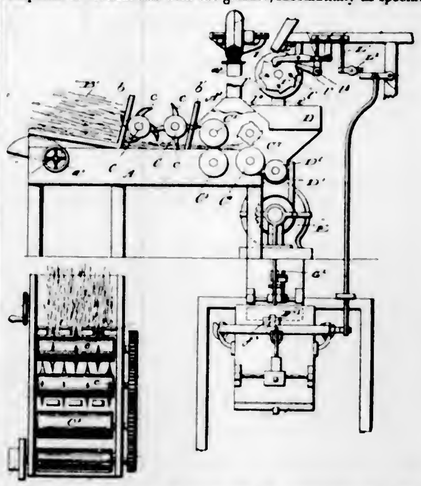
4. In a machine for lengthening tubes, the combination, with the top plate having the depressed portion, of a furnace located thereon, an adjustable horn secured to a stake holder fastened to the cross bar as described, the bearings in the front and rear members of said top plate, a shaft rotating in said bearings, clutch mechanism upon said shaft and a treadle device for starting and stopping said clutch mechanism, an arm pivoted in an upright fastened to the top plate and carrying on one end a swage and acting with its other end upon a coil spring, said arm being actuated by a star wheel upon said shaft, as and for the object stated.

5. In a machine for lengthening tubes, the combination, with the top plate, of the furnace, the horn and swage, and a mechanically-operated squeezer for contracting the end of said tube immediately after having been lengthened, said squeezer having a fixed plate provided with a passage fitting the tube to be contracted and movable jaws provided with semi-circular recesses having a tapering portion, as and for the object set forth.

## 526,689. FODDER-PREPARING APPARATUS. ALBERT F. DAVIS, Rutland, Vt. Filed Oct. 7, 1893. Serial No. 487,479. (No model.)

*Claim.*—1. In a fodder preparing apparatus, the combination of a disintegrating apparatus, a grain supplying mechanism, a grinder arranged to receive material from the disintegrator and from the grain supplying mechanism simultaneously and a weighing receptacle in vertical line with the grinder, substantially as specified.

2. In a fodder preparing apparatus, the combination of a disintegrating mechanism, grain-feeding devices located upon a higher plane, a grinder arranged to receive simultaneously the material from the disintegrator and from the grain feeding devices and a weighing receptacle in vertical line with the grinder, substantially as specified.



3. In a fodder preparing apparatus, the combination of a disintegrating mechanism, grain-supplying devices upon a higher plane, a grinder located and arranged to receive simultaneously the material from the disintegrator and from the grain feeding devices, a weighing receptacle in vertical line with the grinder and operative connections, substantially as specified whereby the same are rendered automatic in their action, as set forth.

4. In a fodder preparing apparatus, the combination of a disintegrating mechanism, grain feeding devices, a grinder arranged to receive simultaneously material from the disintegrator and grain feeding devices, a conveyer interposed between the grinder and the disintegrator and feeding devices, and a suspended weighing receptacle operatively connected for automatic action and located and arranged to receive the material from the grinder, substantially as specified.

5. In a fodder-preparing apparatus, the combination of grain-supplying devices, an interposed grinder, a suspended weight receptacle in substantially vertical line with said grinder and an interposed chute with valves, all connected for con-joint automatic actuation, as set forth.

6. The combination with a disintegrating mechanism, of a grain supplying device a suspended weight box or receptacle and an interposed conveyer, grinding device, and chute with hinged valve, substantially as specified.

7. The combination with a disintegrating mechanism, of a grain-supplying device, a suspended weight box or receptacle and an interposed conveyer, a grinding device, and chute with hinged valve and operative connections between the same for rendering them automatic in their action, substantially as specified.

8. The combination with a grain-supplying drum, of a hopper beneath the same, disintegrating mechanism, a grinding mill and a conveyer for conveying the disintegrated material to be mixed with the grain before entering the mill, substantially as specified.

9. The combination with the grain measuring device of a hopper beneath the same, a mill beneath the hopper, a chute beneath the mill, a suspended receptacle below the chute and operative connections between the support of the receptacle and the measuring device, substantially as specified.

10. The combination with a grinding mill the counter-balance lever and the receptacle supported therefrom, of the measuring drum, its actuating devices and an interposed rod having limited loose connection with the counter-balance lever, substantially as specified.

11. The combination with a grinding mill the counter-balance lever and the receptacle supported therefrom, of the measuring drum, its actuating devices, an interposed rod having limited loose connection with the counter-balance lever and a shifting weight adapted to travel upon said lever, substantially as specified.

12. The combination with the counter-balance lever and the receptacle supported therefrom, of the chute above the receptacle, pivoted valves for said chute and valve-operating devices normally supported upon said receptacle, substantially as specified.



13. The combination with a grinding mill the counter-balance lever and the receptacle supported therefrom, of the chute above the receptacle, pivoted valves for said chute, counter-balance levers for said valves and valve-operating devices cooperating with said levers and normally supported by the receptacle, substantially as specified.

14. The combination with a grinding mill the counterbalance lever and the receptacle supported therefrom, of the hinged bottom to said receptacle, the pivoted latch for holding said bottom in its closed position, and the pivoted pawl arranged in the path of said latch, as set forth.

15. The combination with a grinding mill the counterbalance lever and the receptacle supported therefrom and having brackets on its sides, of the chute, its hinged valves and weighted levers, the pivoted latches cooperating with said levers, and the weights connected with the latches and normally supported by the brackets on the receptacle, as set forth.

16. The combination with a grinding mill the counter-balance lever and the receptacle, of the chute, its hinged valves and weighted levers, the pivoted latches cooperating with said levers and the rods carrying weights and having limited loose pivotal engagement with the latches, substantially as specified.

17. The combination with a grinding mill the chute and its pivoted valve with weighted levers having pins, of the pivoted latches having notches or projections to engage said pin and the rods carrying weights and having a limited loose connection with the latches substantially as specified.

18. The combination with a grinding mill the chute and its pivoted valve with weighted levers having pins, of the pivoted latches having notches or projections to engage said pins and the rods carrying weights and having limited loose connection with the latches and a suspended receptacle having brackets to normally support said weights, substantially as specified.

19. The combination with a grinding mill a counter-balance lever and a receptacle supported thereon, of a measuring drum mounted for rotation, a rod connected with the lever and with a pivoted arm, a pawl mounted for engagement with said arm and intermediate pivotal connections between said pawl and drum, substantially as specified.

20. The combination with a grinding mill a counter-balance lever and a receptacle supported thereon, of a measuring drum having radial compartments and mounted for rotation, a rod connected with the lever and a pivoted arm, a pawl mounted for engagement with said arm and intermediate pivotal connections between said pawl and drum, substantially as specified.

21. The combination with a grinding mill the measuring drum mounted for rotation and provided with a ratchet and laterally-projecting pin, of a pawl mounted for engagement with said ratchet, an independent pawl for engagement with said pin, a movable receptacle, a rod mounted for actuation by the movement of the receptacle and intermediate-operative connections whereby the movement of said rod actuates the pawls, substantially as specified.

22. The combination with a grinding mill the measuring drum having radial compartments and mounted for rotation and provided with a ratchet and pins at one end, of independent pawls for engaging said pins and ratchet, a pivoted lever connected with said pawl, a pawl pendent from one end of said lever and a rod actuated by the movement of the receptacle and connected with a pivoted arm mounted for engagement with the pendent pawl, substantially as specified.

23. The combination with a grinding mill the measuring drum having ratchet and pins, of the counter-balance lever, the receptacle supported therefrom, the rod connected with said lever, the pivoted arm to which the other end of said rod is attached, the lever pivoted above the measuring drum, the pawl pendent from one end thereof in the path of the pivoted arm, the independent pawls for engagement with said ratchet and pins and the arm pendent from the other end of the lever and connected with and adapted to operate said pawls, substantially as specified.

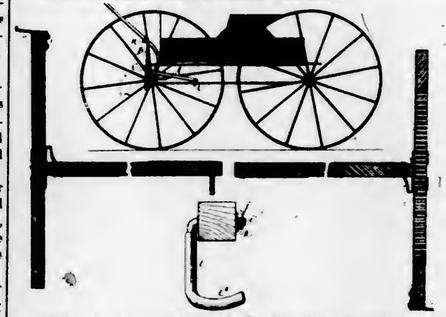
## 526,690. SHELL-EJECTOR FOR BREAKDOWN GUNS. WALTON C. DAVENPORT, Norwich, Conn., assignor to William H. Davenport, same place. Filed May 12, 1894. Serial No. 510,968. (No model.)



*Claim.*—1. In a breech-loading fire-arm of the breakdown type, the shell-ejecting device substantially as hereinbefore described, the same consisting of the spring-resisted notched ejector rod adapted to engage the shell, the movable restraining member *d* in normal engagement with the notched portion of said rod, a tripping-lever jointed to said member *d* having its opposite or free end extending forward of the main joint-pin *p* and arranged to contact with the breech-frame to release said member *d* from the ejector-rod upon tilting the barrel, and a spring for insuring the engagement of the member *d* with the ejector-rod.

2. In combination, with the gun-frame, the barrel pivotally secured thereto and the usual adjunctive devices for operating the gun, the spring-resisted ejector-rod *a* provided with a notch *n* on its under side, the vertically movable catch member in normal engagement with said notch, the tripping-lever $d^1$ jointed to the lower end of said catch having its forward end extending beyond the barrel pivot, a spring for depressing said end portion of the tripping-lever, and having the latter member adapted to contact with the gun-frame upon tilting the barrel, substantially as hereinbefore described and for the purpose set forth.

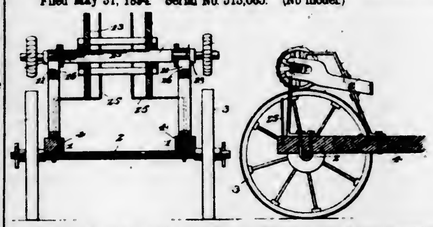
## 526,691. THILL-SUPPORT. JOHN E. DOLBER, Manchester, N. H. Filed Dec. 29, 1893. Serial No. 496,033. (No model.)



*Claim.*—1. A support for the shafts of vehicles comprising a base bar having at one end a pivoted hook, a standard, a sleeve movable on said standard, pivotal connection between the sleeve and base bar, and means for locking the sleeve on the standard substantially as set forth.

2. A support for the shafts of vehicles comprising a base bar having at one end a pivotally secured hook, a standard having a plurality of holes, and at its upper end a step, a sleeve movable on the standard and having ears pivotally connected with the end of the base bar, and a pivoted latch on the sleeve for engagement with any one of the holes, substantially as described.

## 526,692. REEL-CARRIER. EZRA N. DUNWIDDIE, Brodhead, Wis. Filed May 31, 1894. Serial No. 513,065. (No model.)



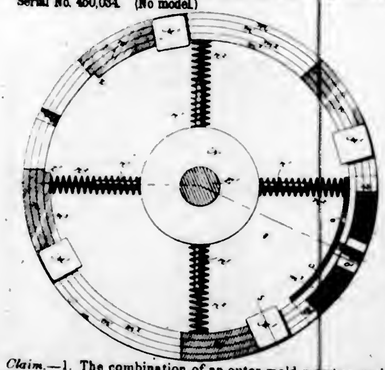
*Claim.*—1. In a reel carrier, the combination of a frame provided with carrying wheels, bearing frames mounted on the said frame at the sides thereof and provided at their tops with depending bends forming bearings, a spool shaft arranged in said bends and provided with wheels located above and adapted to engage frictionally with the carrying wheels, and a forked operating lever fulcrumed on the bearing frame and provided at its rear end with openings receiving the shaft, whereby the lever is adapted to raise and lower the shaft to carry the wheels thereof into and out of engagement with the carrying wheels, substantially as described.

2. In a reel carrier, the combination of a supporting frame provided with carrying wheels, bearing frames mounted on the supporting frame at opposite sides thereof and provided at their tops with depending bends, a shaft located in the bends and provided with wheels located above and arranged to engage frictionally the carrying wheels, a forked lever fulcrumed intermediate of its ends and having its rear

terminals bifurcated and receiving the shaft, and a standard mounted on the supporting frame and provided with notches arranged to be engaged by the front portion of the lever, substantially as and for the purpose described.

3. In a reel carrier, the combination of a supporting frame provided with carrying wheels the bearing frames mounted on the supporting frame at opposite sides thereof and provided at their tops with bearings, a shaft arranged in the bearings and provided with wheels located above and adapted to engage frictionally the carrying wheels, a forked lever fulcrumed on the bearing frames and connected at its rear terminals with the shaft, means for securing the lever at the desired adjustment, and the guide rods mounted on the frame in rear of the shaft and extending upward and having their upper portions inwardly offset and arranged to guide wire on a spool substantially as described.

**526,693. MACHINE FOR MAKING HOLLOW WARE.** HARRY DYER and WILLIAM H. BINGHAM, St. Cloud, Minn., assignors to the St. Cloud Vulcanized Fibreware Company, same place. Filed Oct. 26, 1892. Serial No. 450,034. (No model.)



*Claim.*—1. The combination of an outer mold member, an inner mold member, a normally expanded split spring ring forming a contractible gate to close the space between the inner mold member and the outer mold member at the open end of the mold, and means for operating the mold members.

2. The combination of an outer mold member, an inner mold member, a spring metal, annular, automatically expansible and contractible gate adapted to close the opening between the male and female members at the open end of the female member, and means for operating the mold members.

3. The combination of the outer mold member, the inner mold member, a combined gate and rim former, comprising a series of spring hoops connected together and adapted to expand and contract; means for holding the gate in proper position, and means for operating the mold members.

4. The combination of the mold members, and a combined gate and rim former comprising a series of divided spring hoops, devices for holding them together, and means for holding them in proper position.

5. The combination of the mold members, a gate or rim former comprising a series of spring hoops, devices for holding them together, and the centering springs for holding the gate in proper position.

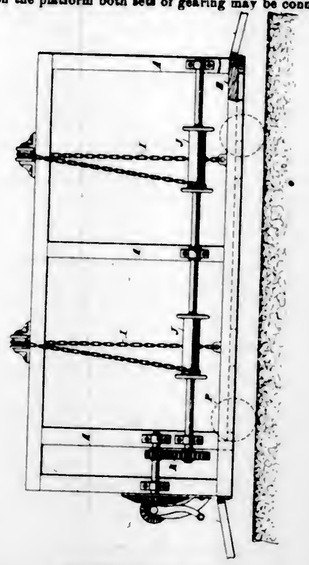
6. The combination of the two mold members, and the combined gate and rim former comprising a series of expansible and contractible divided hoops, and a supplemental plate or segment between the ends of the hoops, for the purpose specified.

7. The combination of the two mold members, and a combined gate and rim former comprising a series of spring metal divided hoops, clips for securing them together, which are secured to one of the hoops, and which enter recesses in the other hoops, and a supplemental plate or segment between the ends of the hoops.

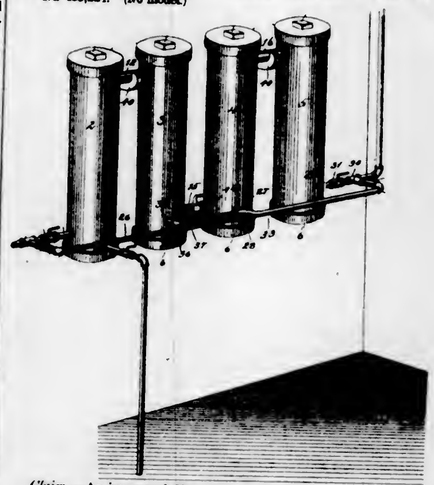
**526,694. APPARATUS FOR RAISING OR LOWERING HEAVY LOADS.** HENRY A. BOSLEY, Bromyard, England. Filed Aug. 23, 1893. Serial No. 483,526. (No model.)

*Claim.*—1. In a hoisting or elevating apparatus, the combination of the portable frame A A open at its ends; ways hinged to the frame at the open ends and adapted to be folded up against said frame when not in use; a platform mounted within said frame; the ways and the platform forming an unobstructed roadway when the platform is in its lowest position; and means for raising and lowering said platform substantially as described.

2. In a hoisting or elevating apparatus, the combination of the portable frame A A open at its ends; a movable platform mounted within said frame; suitable gearing located upon both sides of the frame for elevating said platform; and a removable shaft extending across the frame to connect both sets of gearing whereby after the load is on the platform both sets of gearing may be connected.



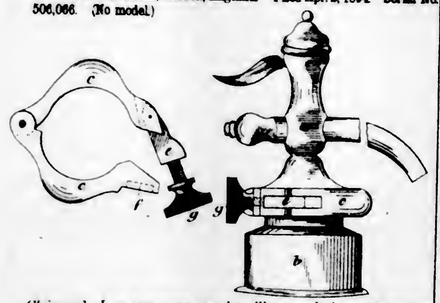
**526,695. FILTER.** AVERY L. EMERY, St. Louis, Mo., assignor to the Granite Filter Company, same place. Filed Sept. 11, 1893. Serial No. 485,221. (No model.)



*Claim.*—An improved filter, comprising four separate pipes 2, 3, 4 and 5, filtering-material in said pipes, a short pipe 12 connecting two of said pipes 2 and 3 at the upper ends thereof to form one pair, a short pipe 16 connecting the remaining two of said pipes 4 and 5 to form another pair, short pipes 13, 14 connecting continuous pipes 3 and 4 of different pairs at a point adjacent their lower ends, a stop-cock 15 connected to said short pipes 13, 14 between said pairs, so that communication between them may be cut off or established at will, pipes connected to the lower portions of all four of said pipes 2, 3, 4, and 5 to supply and discharge liquid to and from the lower portions only of either pair separately, and proper connections, substantially as herein specified.



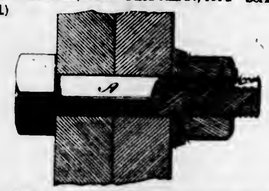
**526,696. MEANS FOR HERMETICALLY CLOSING GAZOGENES, &c.** JOSEPH BUCKTER, London, England. Filed Apr. 2, 1894. Serial No. 506,066. (No model.)



*Claim.*—1. In a gazogene or other like vessel the combination of the tap *a* provided with the bevel *a'*, the mount *b* provided with the bevel *b'*, and the clamp provided with pivoted jaws *c* and beveled channels *d* adapted to fit over and bind the said bevels *a'*, *b'*, and the thumb-screw *g* adapted to secure the parts together substantially as described.

2. As a means for closing vessels and the like the combination the closure proper provided with the bevel *a'* and mouth provided with the bevel *b'* and the clamp provided with pivoted jaws *c* and beveled channels *d*, adapted to fit over and bind the said bevels *a'*, *b'*, and the thumbscrew *g* adapted to secure the parts together all substantially as described.

**526,697. NUT AND BOLT LOCK.** ALVIN FRANKLIN and ALBERT FRANKLIN, Westerville, Ohio. Filed Jan. 27, 1894. Serial No. 498,224. (No model.)

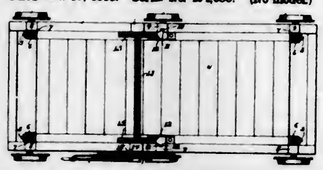


*Claim.*—1. In a nut and bolt lock, the combination with a bolt having a longitudinal groove, and provided with notches upon the inner face of said groove, of a nut, and a key located in the groove, said key having positive engagement with the nut at each end whereby said key moves in unison with the nut, said key being provided with a portion to automatically engage the notched face of the groove, substantially as described.

2. In a nut and bolt lock the combination of a bolt having a longitudinal key seat extending across the threaded portion and provided with notches at its inner wall, and a nut, of a key having portions which are adapted to spring apart and be moved inward in the said key seat by positive engagement with the nut, one of the said portions automatically engaging with one of the said notches in the key seat and the other portion adapted to be bent over the outer face of the said nut, substantially as and for the purpose set forth.

3. In a nut lock the combination with a bolt having a longitudinal groove provided with notches in its inner wall, a washer having a recess in its outer face, a nut and a key having one of its ends bent beneath the nut, the opposite end being divided, one member being adapted to engage the notched face of the bolt while the other member is adapted to be bent over upon the outer face of the nut, substantially as shown and described.

**526,698. BAGGAGE-TRUCK.** JAMES M. FRYSINGER, Ohio City, Ohio. Filed Dec. 19, 1893. Serial No. 494,053. (No model.)

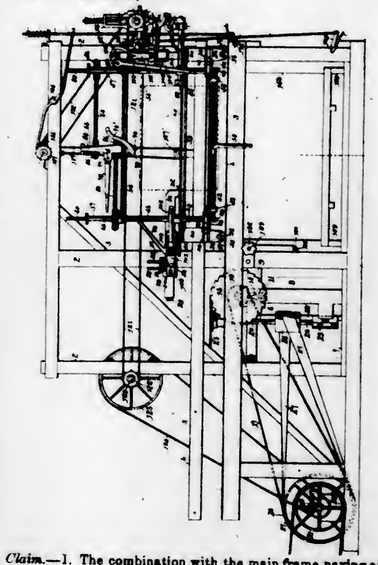


*Claim.*—1. The combination with a truck provided with racks at its corners, and central posts provided with grooves, of a movable platform provided with pinions and guide ribs engaging the racks and grooves of the truck, and means for raising and lowering the platform, substantially as specified.

2. The combination with a truck provided with racks, pinions, and guide grooves, of a movable platform provided with pinions, and racks provided with guide ribs, said pinions, racks and ribs engaging the racks, pinions and grooves of the truck, and a lever adapted to actuate the pinions carried upon the truck to raise the platform, substantially as specified.

3. The combination with a truck provided with corner posts and racks, central posts provided with grooves, and upright bearings, a shaft thereon provided with pinions and a ratchet wheel, a ratchet lever loosely mounted upon the shaft adapted to actuate the ratchet wheel and pinions, and a dog or pawl engaging the ratchet wheel, of a movable platform provided with pinions at its corners, and racks provided with guide ribs, said pinions, racks and ribs engaging, respectively, the racks, pinions and grooves of the truck, substantially as specified.

**526,699. SPOKE-SAWING MACHINE.** GEORGE S. FRY and SAMUEL L. WALKER, Loogootee, Ind. Filed Mar. 15, 1894. Serial No. 503,755. (No model.)



*Claim.*—1. The combination with the main frame having an elevated track, and the adjacent vertical and horizontally disposed circular saws located between the track rails; of the log carriage running on said track, and an independent mechanically operated log elevator arranged to work below and up to the track and log carriage, substantially as set forth.

2. In a sawing machine of the class described, the combination with the elevated track and the saws between the rails; of the wheeled log carriage arranged to travel on the track and having a truck frame, a transversely adjustable supporting frame mounted to slide on the truck frame and carrying log supporting and centering devices, means for adjusting said supporting frame and the separate log elevator working under the track independently of the carriage, substantially as set forth.

3. In a sawing machine, the combination with the track and the saws between the rails; of the wheeled carriage truck frame arranged on the track and provided at the front side thereof with oppositely arranged guide plates and rollers in the space inclosed by said plates, a transversely adjustable supporting frame carrying the centering devices and mounted to slide on the truck frame with the end bars thereof moving under said guide plates at one side of the rollers, adjusting arms pivotally connected at their inner ends to the opposite ends of said supporting frame and provided with outer slotted ends, an adjusting rock shaft journaled at the front of the truck frame and provided at its extremities with crank arms engaging the slotted outer ends of said adjusting arms, and set screws working through the outer slotted ends of said adjusting arms into the slots thereof, said rock shaft having an operating lever or handle, substantially as set forth

4. A log carriage for sawing machines consisting of a wheeled truck frame, a supporting frame mounted for transverse adjustment on the truck frame, vertically adjustable cross heads supported over said supporting frame, a log turning and centering shaft mounted on one of said cross-heads, an offstanding supporting bracket projected from one side of the other cross-head, a longitudinally adjustable thrust bar supported to work in said bracket and having a centering pin in its inner end, an adjusting device connected with said thrust bar, means for adjustably locking the connection of said adjusting device with the thrust bar at different points on the bar, and means for simultaneously adjusting both cross-heads vertically, and for separately adjusting one of the cross-heads, substantially as set forth.

5. In a machine of the class described, the combination with the saws and the track; of the log carriage having a transversely adjustable supporting frame, opposite pairs of vertical supporting rods arising from opposite ends of said adjustable supporting frame, longitudinally arranged connecting bars connecting the upper ends of said supporting rods, transverse guide frames connecting the upper ends of each pair of rods and having vertically aligned guide openings, vertically adjustable cross heads having collars sliding on each pair of supporting rods and having respectively an offstanding bracket and frame for carrying the log centering and supporting devices and also having threaded adjusting rods or shanks working through the guide openings of said guide frames, sprocket nuts mounted in the guide frames and working on the threaded rods or shanks, an intermediate bearing frame mounted on said longitudinal connecting bars and provided with vertically aligned bearing openings, a vertical adjusting shaft journaled in said bearing frame and having a gear wheel at its lower end, a fast and loose chain wheel mounted on said vertical shaft and having normally engaged clutch hubs or faces, a spring arranged over the upper loose wheel, sprocket chains passing from said chain wheels to the sprocket nuts, a short operating shaft carrying a gear wheel meshing with that of the vertical shaft and a gear lever mounted at one side of the intermediate bearing frame and having a lifting yoke adapted to engage under the upper loose chain wheel, substantially as set forth.

6. The combination with the saws and the track; of the log carriage having an adjustable supporting frame, vertically adjustable cross heads arranged on said supporting frame and one of which carries a fixed centering pin and log turner combined, a supporting bracket extended from one side of the opposite cross head and having a guide opening aligned with a similar opening in the adjacent cross head, a longitudinally movable thrust bar working through said guide openings and having a centering pin at its inner end, an adjustable sleeve mounted loosely on said thrust bar, means for locking said sleeve at any point on the thrust bar, and lever devices connected with the sleeve to move the thrust bar longitudinally, substantially as set forth.

7. In a sawing machine, the combination with the saws and the track; of the log carriage having a supporting frame, vertically adjustable supports at each end of the supporting frame and one of which carries a combined fixed centering pin and log turner, a longitudinally movable thrust bar arranged on the opposite support and provided in its upper edge with a series of locking notches, a longitudinally movable latch sleeve embracing said thrust bar and provided in its top with latch openings, lock latches pivotally mounted in said latch openings of the latch sleeve and provided with outer extended handles and inner locking ends adapted to be moved into engagement with the notches of the thrust bar, adjusting links pivotally connected with said latch sleeve, and a bell crank adjusting lever pivotally connected to said adjusting links and to the support carrying the thrust bar, substantially as set forth.

8. In a sawing machine of the class described, the combination with the main frame having an elevated track, and the horizontal and vertical saws between the track rails; of an endless feed chain arranged horizontally above the inner track rail, the log carriage, a feed clutch mounted on the log carriage and having upper and lower chain wheels normally loosely rotated by the feed chain, means for locking either of said chain wheels to that portion of the feed chain in engagement therewith, the log elevator, and operating devices for said elevator geared with said endless feed chain, substantially as set forth.

9. In a sawing machine of the class described, the combination with the track and the saws; of an endless horizontally arranged feed chain located above one of the track rails, a feed clutch arranged on the log carriage and having upper and lower chain wheels normally loosely rotated by the upper and lower portions of the feed chain, and spacing rollers between the separate portions of the feed chain, and means for locking either of said chain wheels to that portion of the feed chain in engagement therewith, substantially as set forth.

10. The combination with a track and an endless feed chain arranged above one of the track rails and constantly moving in the same direction; of a log carriage traveling on the track, a bearing bracket secured to the log carriage, upper and lower feed shafts journaled in said bearing bracket and carrying at their outer ends chain wheels normally loosely rotated by the upper and lower portions of the feed chains, spacing rollers journaled at opposite sides of said brackets and taking between the separate portions of the feed chain, friction disks or rollers mounted on said feed shafts, a friction block mounted to move in said bracket and having notched clutch ends adapted to embrace one of said friction disks or rollers at a time, a vertically adjustable sleeve embracing one side of the bracket and secured to said friction block, an adjusting link pivotally connected at its lower end to said sleeve, and a lever-operated adjusting shaft supported in suitable bearings and provided at its inner end with a crank loosely connected to the upper end of said adjusting link, substantially as set forth.

11. In a sawing machine of the class described, the combination with the track and the elevator frame at one side of the track; of the log carriage adapted to move over the track, the log elevator arranged to move within the elevator frame and under the track, a chain drive-shaft journaled at one end of the elevator frame and having a sprocket wheel at one end, bracket arms extended from the opposite end of the elevator frame, bearing blocks adjustably mounted on said bracket arms, a short drive shaft journaled in said adjustable bearing blocks and carrying a chain or sprocket wheel at one end, an endless feed chain passing over the oppositely arranged chain wheels and adapted to be suitably connected with the log carriage for moving the same, and normally disengaged gearing devices adapted to be connected with said short drive shaft and the log elevator, substantially as set forth.

12. In a sawing machine, of the class described, the combination with the main frame having an elevated track and an elevator frame at one side of the track, of the log carriage moving on the track, a log elevator arranged to work below and up to the track, a feed chain for the log carriage, a lifting device for the log elevator, gearing connected with said lifting device and the feed chain, and an automatic trip for said gearing, substantially as set forth.

13. In a sawing machine of the class described, the combination with the main frame having an elevated track, and an elevator frame at one side of the track; of the log carriage moving on the track a feed chain for the log carriage, a log elevator sliding in the elevator frame and working up to the track, lifting device for the log elevator normally disengaged gearing connected with the lifting device and the feed chain, means for throwing said gearing into gear, an automatic trip for the gearing operated by the log elevator, and means permitting the log elevator to automatically lower, substantially as set forth.

14. In a sawing machine of the class described, the combination with the main frame having a track and an elevator frame at one side of the track; of the log carriage moving on the track, a feed chain for the log carriage, a log elevator sliding in the elevator frame and working up to the track, a lifting device for the elevator, adjustable bearing blocks supported beyond one end of the elevator frame, a short drive shaft journaled in said bearing blocks and having at one end a chain wheel driven by said feed chain, and carrying at an intermediate point a small cog wheel or pinion, a counter-drive shaft normally elevated above the short drive shaft and carrying a small cog wheel or pinion adapted to mesh with that of the short drive shaft, said counter drive shaft being geared with the elevator lifting device, a device for lowering the counter drive shaft into gear with the short drive shaft, said lowering device having a trip arm, and a trip plate attached to the log elevator and adapted to engage said trip arm to lift the counter drive shaft out of gear, substantially as set forth.

15. In a sawing machine of the class described, the combination with the main frame having a track, an elevator frame at one side of the track, and the saws; of the log carriage, a feed chain for the log carriage, a log elevator sliding in the elevator frame and working up to the track, a lifting device for the elevator, adjustable bearing blocks supported beyond one end of the elevator frame and having slotted upper ends, a short drive shaft journaled in said bearing blocks and geared with the feed chain, said drive shaft having a centrally arranged cog wheel or pinion, spring-supported bearing pins working in the upper slotted ends of the bearing blocks and having bearing collars at their lower ends, a counter drive shaft journaled in said bearing collars and geared with the elevator lifting device, said counter drive shaft having a cog wheel or pinion adapted to engage with that of the short drive shaft, a swinging adjusting yoke loosely connected with the short drive shaft and having an off-standing trip arm, adjusting links pivotally connected to said yoke and the upper counter drive shaft, lever connections with said trip arm to lower the same, and an adjustable trip plate connected to the elevator and adapted to engage said trip arm to disengage the gearing, substantially as set forth.

16. In a sawing machine of the class described, the combination with a main frame having a track, the elevator frame at one side of the track, and the saws; of the log carriage, a log elevator sliding in the elevator frame and working up to the track, said elevator having a pulley at the top, a feed chain for the carriage, automatically tripped gearing driven by said feed chain and having a counter shaft provided with a chain wheel at one end, a winding shaft journaled on top of the elevator frame and having a chain wheel at one end and a ratchet disk or wheel at its opposite end, a chain connection between said chain wheels, an elevating rope winding and unwinding on said winding shaft and passing under the elevator pulley, a check-pawl pivoted at one side of the elevator frame and normally engaged with said ratchet disk or wheel, and a lever actuated spring supported rod loosely connected to one end of said pawl to normally engage the same with said ratchet disk or wheel and to provide for the disengagement thereof, substantially as set forth.

17. In a sawing machine of the class described, the combination with the track, the saws between the track rails and the log carriage having a turning device; of a gage frame supported for transverse adjustment below the tracks at one side of the saws, and a vertically and laterally movable gage arm supported in said frame, substantially as set forth.

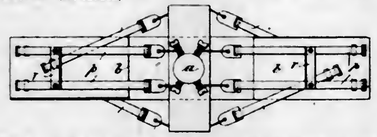
18. In a sawing machine of the class described, the combination with the track, the saws and the log carriage; of a gage frame arranged for transverse adjustment below the track and provided with a depending bracket and vertically aligned bearing openings, one of which is formed in the bracket, and a stop flange at one upper side thereof, a turning gage rod mounted for vertical movement and adjustment in said bearing openings and provided at its upper end with an off standing gage arm carrying at its extremity a gage roller, and a spring arranged on said gage rod above said depending bracket to normally hold the gage arm against said stop flange, substantially as set forth.

19. In a sawing machine of the class described, the combination with the frame; of the adjustable gage frame provided at one side with upper and lower supporting rods arranged to work through suitable guide openings in the frame and at its opposite side with a threaded adjusting arm, a suitably arranged bearing collar, an interiorly threaded adjusting sleeve turning in said bearing collar and working on said threaded adjusting arm, and a vertically and laterally movable gage arm supported in said gage frame, substantially as set forth.

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## 526,700. PROPELLER FOR AERIAL VEHICLES. HERMANN GANSWINDT, Schoeneberg, Germany. Filed Feb. 8, 1894. Serial No. 499,478. (No model.)

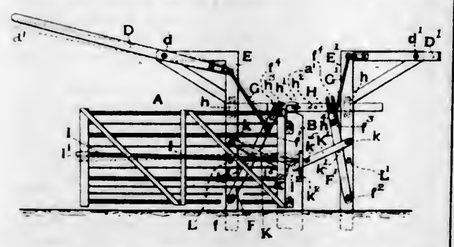


*Claim.*—1. In combination with the axle *a* and wings *b b*, the flat metal braces *p* connecting said wings and axle, the transverse strips *r* connecting the braces *p*, and the diagonally arranged bracing strips *q* also of flat metal, substantially as described.

2. In combination with the axle *a*, and wings *b*, the parallel flat metal strips passing through the extremities of the wings and having their ends secured to the axle above and below the wings, and cross connecting pieces connecting said strips, substantially as described

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## 526,701. GATE. WILLIAM F. GATEWOOD, Alton, Ill. Filed Jan. 24, 1894. Serial No. 497,906. (No model.)

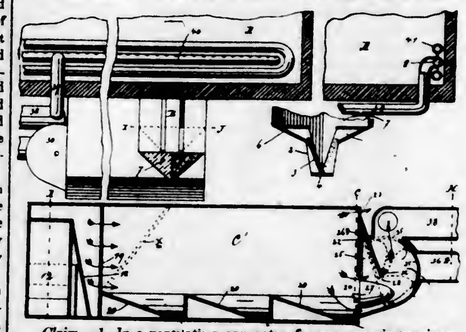


*Claim.*—1. The combination of the gate, having the pivoted latch-bar, and the pivoted levers K, K', substantially as described.

2. The combination of the gate, the pivoted latch bar having the lateral projections, the pivoted slotted levers K, K', the pivoted levers F, F', the rods G, G', and the levers D, D', substantially as described.

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## 526,702. APPARATUS FOR VENTILATING CARS. GILES A. GERE, Utica, N. Y. Filed Dec. 1, 1893. Serial No. 492,516. (No model.)



*Claim.*—1. In a ventilating apparatus for cars, an air receiver secured on the car with inlet openings on either side to the atmosphere, a swinging door or valve located between the openings and mounted at its outer edge on pivots in a vertical line to be swung by atmospheric pressure to either side to close one of the inlet openings and deflect the current of air, and an air passage connecting the receiver with the interior of the car, combined substantially as set forth.

2. In a ventilating apparatus for cars, an air receiver suspended from the lower edge of the car having openings toward the ends of the car on either side of the receiver to the atmosphere, a swinging door or valve pivoted to swing about a vertical pivotal line at its edge between the openings and adapted to be swung by atmospheric pressure to either side to close one or the other of the openings and deflect the current of air, and an air passage connecting the receiver with the interior of the car, combined substantially as set forth.

3. In an apparatus for ventilating cars, two automatic adjusting receivers for catching the air, located on opposite sides of the car and communicating by suitable passageways with a common chamber between the receivers, and a suspended automatic valve operating in the common delivery opening from the two receivers and adapted to be operated by atmospheric pressure for the purpose of adjusting the common delivery opening to adapt it to receive an unequal amount of air from the two receivers or to close the passageway from one entirely, substantially as set forth.

4. In an apparatus for ventilating cars, receivers, a settling chamber having inclined bottoms centering at escape openings in the bottom of the chamber, an inlet opening at one end of the chamber, a passageway between the receivers, and inlet opening, a vertical perforated partition between the inlet opening and portion of chamber having the inclined bottoms, a discharge opening at the opposite end of the chamber and a passageway connecting the discharge openings with the interior of the car, combined, substantially as set forth.

5. In an apparatus for ventilating cars, an air passage, a valve chamber having vertical and inclined walls with coinciding openings in each, an automatic conoidal-shaped valve suspended in the valve chamber between the openings with its base toward the current of air and adapted to automatically regulate the amount of air passing through the apparatus, substantially as set forth.

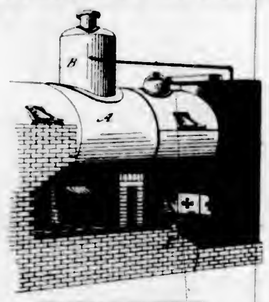
6. In an apparatus for ventilating cars, the combination of receivers B having openings on either side to the atmosphere, a swinging valve operated by atmospheric pressure to close one or the other of the openings forming a pocket for receiving the air, a conductor into which the receiver delivers the air, a settling chamber having a suspended swinging valve in the common air passage or opening from receivers, a deflecting partition in the settling chamber extending from the bottom nearly to the top, a perforated distributing and commingling partition, an enlarged interior opening or chamber having inclined bottoms centering at common escape openings, a discharge opening from the body portion of the chamber, an automatic valve controlling the discharge opening, and conductors for conveying the air into the interior of the car and distributing the same, substantially as set forth.

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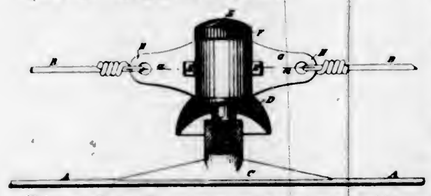
## 526,703. STEAM BLOWER OR INJECTOR FOR BOILER-FURNACES. DAVID D. GILBERT, New York, N. Y. Filed Sept. 2, 1893. Serial No. 484,646. (No model.)

*Claim.*—1. In a steam blower or injector for boiler furnaces the combination with an ash-pit door provided with a flaring steam-chamber having outlets delivering into the ash-pit and a steam supply pipe leading to the steam chamber, of a flexible hose-pipe connecting the said supply pipe with the door, whereby the said door may be opened and closed, substantially as shown and described.

2. In a steam blower or injector for boiler furnaces, the combination with an ash-pit door having an opening provided with a flaring mouth and a steam chamber at said opening, provided with a series of outlets and a steam supply pipe connecting with the steam-chamber by means of a flexible hose pipe, of an adjustable deflecting plate disposed in the direction of the grate and adapted to direct thereto the steam escaping from the outlets, substantially as shown and described.



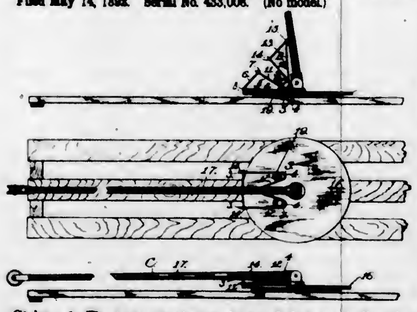
526,704. TROLLEY-WIRE HANGER. JOHN J. GREEN, Boonton, N. J., assignor to the Loando Hard Rubber Company, same place. Filed June 4, 1894. Serial No. 513,347. (No model.)



*Claim.*—1. In a trolley wire supporting mechanism and in combination with insulating parts extending from the wire, supporting devices consisting of parts struck from sheet metal and formed so as to be adapted to conjointly engage the trolley wire supports, as and for the purpose set forth.

2. A trolley wire support, consisting of an insulating device attached to the wire, and two-part engaging devices clasping said insulating support and being struck up or formed from sheet metal and adapted to conjointly engage each other and the said insulating support, as and for the purpose set forth.

526,705. TROLLEY-SPRING. JULIUS L. HARRON, U. S. Army. Filed May 14, 1893. Serial No. 473,008. (No model.)



*Claim.*—1. The trolley spring made up of the two similar clasp springs having their spiral bends interlocked, and the ends of their members oppositely connected.

2. The combination with the trolley pole, of the similar bent springs, means for loosely connecting their bends together, and means for attaching the ends of the members of one to the opposite members respectively of the other, substantially as described.

3. The combination with the trolley pole, of the pair of similar clasp springs having their bends or eyes adapted to be loosely interlocked, one member of each being provided with a hook, the straight member of one interlocking or engaging the hook member of the other.

4. The combination with the car and trolley pole, of the pair of clasp springs, one member of each having an inturned end provided with a hook and an outer point or projection, the bends of the springs being adapted to be loosely interlocked and the straight member of one engaged by the hook of the other, substantially as described.

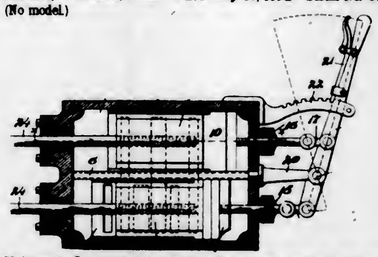
5. The combination with the car and trolley pole, of the pair of similar clasp springs each having a spiral spring bend forming an eye, one member of each spring having its end inturned in the direction of the end of the straight member and provided with a hook, an oppositely projecting point carried by the hook member, said spiral bend being adapted to be loosely interlocked and the straight member of the one spring engaged by the hook member of the other spring, and the outwardly projecting points serving as means for engaging the car and pole, substantially as described.

526,706. BROW-BAND FOR BRIDLES. CHARLES H. HARTWIG, New Kensington, Pa. Filed June 2, 1894. Serial No. 513,272. (No model.)



*Claim.*—A brow-band for bridles, consisting of a leather strap folded upon itself to form the end loops, the lining and the outer portion, said layers being stitched together through their longitudinal center, and a sheet metal covering having flanges which overlap the edges of said outer portion to form an ornamental front to the band and a means for strengthening it, substantially as and for the purpose set forth.

526,707. REVERSING-VALVE FOR ENGINES. THOMAS B. HEADEN, Lawrence, Kans. Filed May 18, 1894. Serial No. 511,717. (No model.)



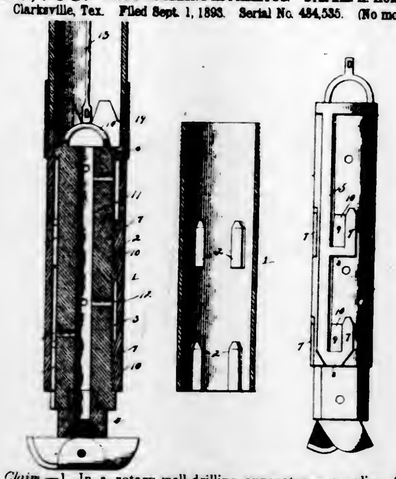
*Claim.*—1. In a reversing device for steam engines, the combination of the cylinder having a double-width face provided with opposite sets of ports, the steam chest, a pair of separate and independent valve seats mounted to slide side by side on the cylinder face over the ports and each provided at its opposite side edges with side flanges, the outermost of which flanges are adapted to have a sliding contact with the inner sides of the steam chest, means for simultaneously adjusting the separate valve seats in opposite directions, and separate slide valves mounted to slide on the valve seats and registering in the space between the flanges thereof, substantially as set forth.

2. The combination of a cylinder having a double width face pierced by the ordinary ports, a bridge-tree plate extending longitudinally of the cylinder face and projecting beyond the same, sliding valve seats provided with a single set of ports and side flanges and mounted to slide on the cylinder face at both sides of said bridge-tree plate, means for adjusting said valve seats, and slide valves mounted to slide on each of said valve seats, substantially as set forth.

3. The combination of a cylinder having a double width face pierced by the ordinary ports, the steam chest provided at directly opposite sides with bevel-grooves located at opposite side edges of the cylinder face, a bridge tree plate extending longitudinally of the cylinder face, to separate the ports thereof into opposite sets and projecting beyond the cylinder face, said bridge tree plate being provided on both sides with bevel-grooves reversely disposed to the directly opposite grooves of the steam chest to form dovetailed-ways, sliding valve seats having a single set of ports and provided with side flanges, outwardly convergent to register in said dovetailed-ways, means for simultaneously and oppositely adjusting said valve seats, and the slide valves arranged to slide on the valve seats between the flanges thereof, substantially as set forth.



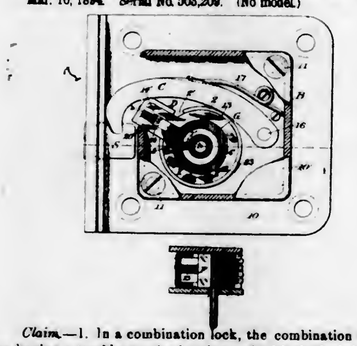
526,708. WELL-DRILLING APPARATUS. STEPHEN A. HORTON, Clarksville, Tex. Filed Sept. 1, 1893. Serial No. 484,535. (No model.)



*Claim.*—1. In a rotary well-drilling apparatus, a coupling for connecting a drill bit to the drill tube, comprising detachable telescoping members, the exterior member or shell being provided with interior spaced ribs, and the interior member or core being provided with exterior longitudinal ribs 5, short parallel ribs 7, ledges 8 connecting the lower ends of the short ribs 7 to the continuous ribs 5, and a stop-shoulder 6 connecting the upper ends of the ribs 5, substantially as specified.

2. In a rotary well-drilling apparatus, a coupling for connecting the drill bit to the drill tube, comprising detachable telescoping members, the exterior member or shell being provided with interior spaced tapered ribs 2, and the interior member or core being provided with pockets 9 having closed lower ends and beveled surfaces 10, whereby as the ribs 2 are fitted into said pockets by the descent of the exterior member or shell the beveled surfaces of the said ribs engage the beveled surfaces of the pockets and bind the parts against independent vibration, substantially as specified.

526,709. COMBINATION-LOCK. WALTER B. HUMPHREY, Windsor, Conn., assignor of three-tenths to James Bevan, same place. Filed Mar. 10, 1894. Serial No. 503,209. (No model.)



*Claim.*—1. In a combination lock, the combination with a casing having a tumbler-carrier bearing and with the lock-bolt located at one side of said bearing, of a tumbler-carrying bolt-actuator journaled in said bearing, a series of peripherally notched concentric tumblers carried in said carrier, a spring-actuated tumbler-engaging bolt normally bearing against the peripheries of said tumblers and in position for engagement with the lock-notches thereof, and an adjustable spindle in engagement with and adapted for actuating said tumblers, substantially as described.

2. In a combination-lock, the combination with a casing having a tumbler-carrier bearing and with the lock-bolt located at one side of said bearing, of a tumbler-carrying bolt-actuator journaled in said bearing, a series of concentric tumblers carried in said actuator and having peripheral lock-notches, a composite-spindle comprising two members adjustably connected together by means of a screw-bolt, substantially as described, and engaging said tumblers, and a spring-actuated tumbler-engaging bolt normally bearing against the peripheries of said tumblers and in position for engagement with the lock-notches thereof, substantially as described and for the purpose set forth.

3. In a combination-lock, a casing having a tumbler-carrier bearing open at one side thereof, and a lock-bolt located at one side of said bearing, in combination with a tumbler-carrying bolt-actuator having an annular body-portion journaled in said bearing and having a lateral extension extended through said bearing, a series of tumblers carried by said actuator, and means for engaging and rotating said tumblers, substantially as described.

4. In a combination-lock, a casing having a tumbler-carrier bearing substantially as described, in combination with a lock-bolt located at one side of said bearing, a combined bolt-actuator and tumbler-carrier journaled in said bearing and carrying a series of discous tumblers having peripheral lock-notches and internal abutment-faces, a spring-actuator tumbler-engaging bolt carried by the bolt-actuator in position for engagement with the lock-notches of said tumblers, and means for rotating said tumblers, substantially as described and for the purpose set forth.

5. In a combination-lock, the combination with a casing having a tumbler-carrier bearing and the lock-bolt located at one side of said bearing, of a tumbler-carrying bolt-actuator journaled in said bearing, a series of tumblers carried thereby, a bolt in connection with said actuator and adapted for engagement with said tumblers, a dial-plate, and a composite spindle comprising two members adjustably secured together and adapted for carrying the dial and for rotating the tumblers, substantially as described and for the purpose set forth.

6. In a combination-lock, the combination with the casing having a tumbler-carrying bearing, and with the lock-bolt located at one side of said bearing, of a tumbler-carrying bolt-actuator journaled in said bearing and comprising two resilient rings adapted for impinging a series of disks carried between said rings and having a lateral extension in position and adapted for engagement with the lock-bolt, discous tumblers carried between the rings of said actuator, and means for rotating said tumblers, substantially as described.

7. In a combination-lock, the combination with the casing having a tumbler-carrying bearing, and with a lock-bolt located at one side of said bearing, of a tumbler-carrying bolt-actuator journaled in said bearing and comprising two resilient rings adapted for impinging a series of disks carried between said rings and having a lateral extension in position and adapted for engagement with the lock-bolt, a series of centrally-recessed discous tumblers carried between said rings and having peripheral lock-notches and internal radial abutments, a spring-actuated tumbler-engaging bolt carried by said actuator in position for engaging the lock-notches of the tumblers, and a spindle for rotating said tumblers, substantially as described and for the purpose set forth.

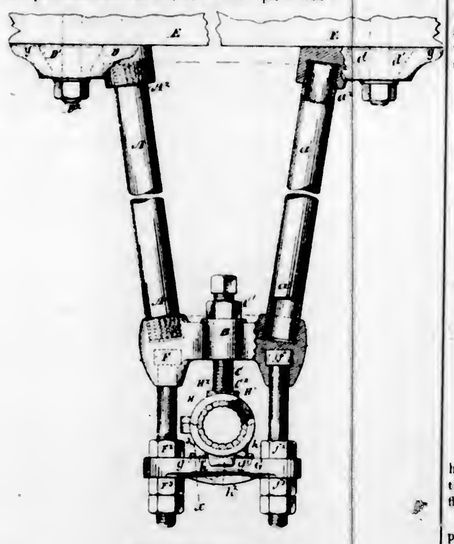
8. In a combination-lock, the combination with the casing having a tumbler-carrying bearing and with the lock-bolt located at one side of said bearing, of a tumbler-carrying bolt-actuator journaled in said bearing, a series of centrally-recessed tumblers carried by said actuator and having peripheral lock-notches and internal abutments, a sleeve or tumbler-actuator extended through the recesses of said tumblers and having a lateral projection adapted for engaging the abutments of the tumblers, a tumbler-engaging bolt carried by the actuator in position for engaging the peripheral notches of the tumblers, a recessed dial-plate, a knob engaging said dial-plate and having a stem adjustably engaging the sleeve, and a screw adjustably connecting said sleeve and knob-stem, substantially as described and for the purpose set forth.

526,710. HANGER FOR SHAFTING. JOHN W. HYATT, Newark, N. J. Filed May 24, 1894. Serial No. 512,279. (No model.)

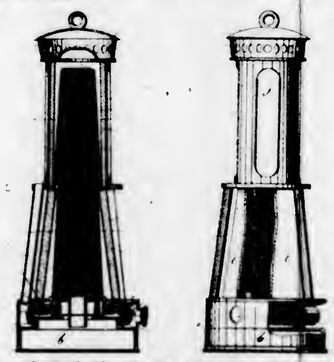
*Claim.*—1. The herein described shaft hanger consisting of the combination of brackets adapted for attachment to suitable supports, a journal box chamber substantially as described and pendent legs located between and separably uniting the brackets and the journal box chamber as set forth.

2. In a shaft-hanger, the combination, as herein described, of the convergent tubular legs, A *a*, the yoke, B, provided with the journal box stay-bolt, C; the brackets, D *d*, the parallel screw-bolts F′ *f*′, provided with the pairs of nuts F² F⁶ and *f*³ *f*⁵; the bridge, G, and a journal-box confined between the yoke, B, and the bridge, G, and between the adjacent portions of the screw-bolts F′ *f*′, as and for the purpose set forth.

3. The combination, as herein described, of the bridge, G, provided with the lugs, g and g', and the adjacent part, h, of the journal-box provided with the rib, h', and the lips, $h^2$ and $h^3$



526,711. MINER'S SAFETY-LAMP. LEWIS JENKINS, Handsworth, England. Filed July 11, 1893. Serial No. 480,116. (No model.) Patented in England July 24, 1889, No. 11,757, and in Belgium Dec. 24, 1890, No. 93,214.



*Claim.*—1. A miner's safety lamp consisting of a tubular lower part $a^2$, a glass tube supported thereby, an oil reservoir removably secured to said part $a^2$ and a gauze barrel secured to said oil reservoir and removable therewith, substantially as described.

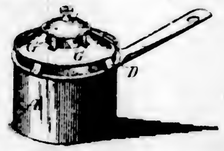
2. A miner's safety lamp, consisting of an oil reservoir and burner, a glass tube i, a second glass tube above the first, a wire gauze barrel within the same and a frame encircling said upper glass having openings to show the light, substantially as described.

3. In a miner's safety lamp and in combination with the frame thereof, the glass tube *i* the transparent bonnet *j* the wire gauze barrel *k* and perforations *c'* in the lamp frame at the base of the gauze barrel *k* substantially as set forth and illustrated by the accompanying drawings.

526,712. COVER FOR COOKING UTENSILS. JOHN JOHNSTON, Philadelphia, Pa. Filed July 18, 1894. Serial No. 517,356. (No model.)

*Claim.*—1. A cover for a cooking vessel consisting of a plate adapted to be supported upon the vessel with more or less extended openings between its edge and the rim of the vessel for the admission of air and provided with an aperture in its face for the escape of said air and the gaseous vapors generated by the cooking of the food in the vessel.

2. A cover for a cooking vessel consisting of a plate adapted to be supported upon the vessel with more or less extended openings between its edge and the rim of the vessel for the admission of air currents and provided with an aperture in its face for the escape of said air currents and the gases and vapors generated by the cooking of the food in the vessel, and an elevated hood or cover over the aperture in the face of the plate.



526,713. SUSPENSION-RIM FOR VEHICLE-WHEELS. EDWARD R. KILLEN, Belfast, Ireland. Filed Apr. 24, 1894. Serial No. 508,351. (No model.) Patented in England Apr. 26, 1893, No. 8,390.



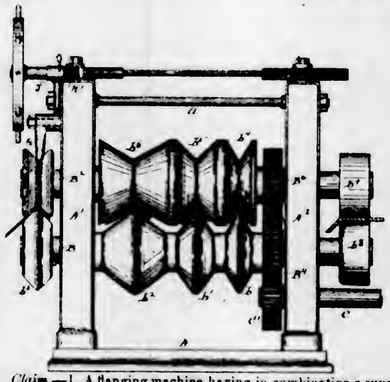
*Claim.*—1. A rim for cycles and the like consisting of the two hoops, the pair of inflated tubes between the hoops and the connections from inner to the outer hoops passing between the pair of inflated tubes, substantially as described.

2. A rim for cycles and the like consisting of the two hoops, the pair of inflated tubes between the hoops and the covering *c* for said tubes connected together, substantially as described.

3. A rim for cycles and the like consisting of the two hoops, the pair of inflated tubes between the hoops, the coverings for the tubes connected together and the chain passing between the tubes and through their connected coverings, substantially as described.

4. A rim for cycles and other vehicles consisting of two or more hoops between which two or more inflated tubes or their equivalents are secured, said hoops being connected to each other by means of chains or their equivalent, said chains serving to hold the inflated tubes in place substantially as hereinbefore set forth.

526,714. FLANGING-MACHINE. FITZ A. KIRBY and JAMES HENNING, Wyandotte, Mich. Filed Oct. 2, 1893. Serial No. 486,940. (No model.)



*Claim.*—1. A flanging machine having in combination a supporting frame, and a set of rotatable shafts provided at one of their extremities with corresponding flanging rolls $b^2$ and $b'$, one of said shafts made adjustable, and said flanging rolls having a longitudinally reciprocatory movement upon said shafts, substantially as set forth.

2. A flanging machine having in combination a supporting frame, a series of rotatable shafts provided at one of their extremities with flanging rolls $b^2$ and $b^3$ thereupon, and an additional series of rotatable shafts having corresponding flanging rolls thereupon, one series of said shafts made adjustable, and one set of flanging rolls having a longitudinally reciprocatory movement upon their corresponding shafts, substantially as set forth.



3. A flanging machine having in combination a supporting frame provided with housings, a lower set of rotatable shafts provided with flanging rolls at their extremities outside their housings, and an upper set of rotatable shafts provided with flanging rolls outside their housings and made adjustable, one set of flanging rolls having a longitudinally reciprocatory movement upon their corresponding shafts, substantially as set forth.

4. In a flanging machine, the combination of the supporting frame, the lower set of rotatable shafts provided with flanging rolls, and an upper set of rotatable shafts provided with flanging rolls and made vertically adjustable, one set of said flanging rolls being longitudinally movable on their corresponding shafts said shafts at one of their extremities provided with straightening rolls,—substantially as set forth.

5. In a flanging machine the combination of the supporting frame constructed with elongated orifices *a'*, a lower set of rotatable shafts provided with flanging rolls, an upper set of rotatable shafts provided with flanging rolls bearings for one set of shafts vertically adjustable in said elongated orifices in the frame, vertical threaded shafts connected with said bearings, means to prevent said vertical threaded shafts from turning, adjusting nuts engaging said threaded shafts, adjusting gears for adjusting said nuts, and an operating shaft geared with the adjusting gears, substantially as set forth.

6. In a flanging machine, the combination of the supporting frame, the lower set of rotatable shafts provided with flanging rolls, an upper set of rotatable shafts provided with flanging rolls, bearings in which the upper set of shafts are journaled, having a vertical movement in said frame, threaded shafts connected with said bearings, nuts engaging said threaded shafts, adjusting gears for adjusting said threaded shafts and an operating gear geared to the adjusting gears and means for throwing said operating shaft out of engagement with the adjusting gears, substantially as set forth.

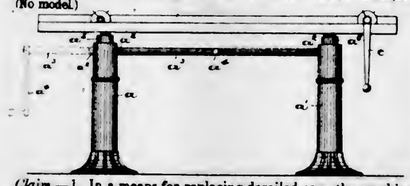
7. A flanging machine for cold plate flanging having in combination two sets of rotatable V-shaped rolls mounted upon their respective shafts and meshing with correspondingly grooved rotatable rolls, said rolls being adjustable vertically the one relative to the other, one of the said V-shaped rolls and its corresponding grooved roll having a longitudinally reciprocatory movement upon their respective shafts, substantially as set forth.

8. A flanging machine having in combination a supporting frame, a lower set of rotatable shafts provided with flanging rolls, an upper set of rotatable shafts provided with flanging rolls, bearings for one set of said shafts vertically adjustable in said frame, vertical threaded shafts having a jointed connection with said bearings, means to prevent the turning of said vertical threaded shafts, adjusting nuts engaging said threaded shafts, adjusting gear for adjusting said nuts, the shaft of the adjusting gear provided with a bearing J', and a bushing J eccentrically connected to the shaft of the adjusting gear within said bearing, substantially as set forth.

9. A flanging machine having in combination a supporting frame, a series of rotatable shafts provided with flanging rolls, and additional series of rotatable shafts provided with flanging rolls, one series of said shafts made adjustable, and wrenches to hold the said shafts in adjusted position, substantially as set forth.

10. In a flanging machine the combination of a supporting frame provided with housings A', $A^3$, a lower set of rotatable shafts, each provided with flanging rolls located between said housings, and with a flanging roll at one extremity outside of said housings, an upper set of rotatable shafts each provided with flanging rolls located between said housings, and a flanging roll at one extremity outside the housings, and means for adjusting one set of said shafts, one of the upper and one of the lower flanging rolls upon the outer extremities of their respective shafts having a longitudinally reciprocatory movement thereupon, substantially as set forth.

526,715. MEANS FOR REPLACING DERAILED CARS. WALTER J. KNIGHT, Newark, N. J. Filed May 24, 1894. Serial No. 512,269. (No model.)

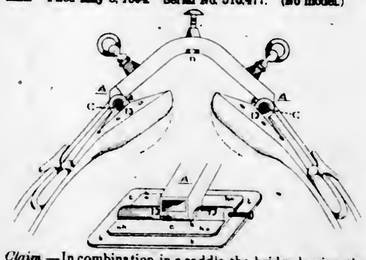


*Claim.*—1. In a means for replacing derailed cars, the combination, of a lifting jack, with a rack on said jack adapted to be raised by said jack, said rack having a groove $c'$ and teeth $c^2$ and $c^3$ on opposite sides of said groove, a roller *d* provided with toothed portions $d^2$ and $d^3$ on said rack, and a winch for operating said roller, whereby the car can be moved laterally, substantially as and for the purposes set forth.

2. In a means for replacing derailed cars, in combination, a pair of lifting jacks, means for raising the cylinders of said jacks simultaneously, consisting essentially of a connecting rod or bar $a^3$ and an operating lever $a^4$ connected therewith, a rack on said cylinder adapted to be raised thereby, and means on said rack adapted to be moved laterally on said rack and thereby move the car in the same direction, substantially as and for the purposes set forth.

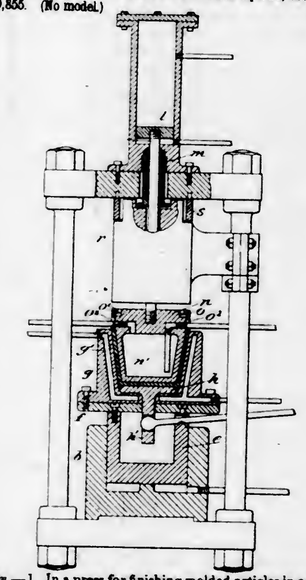
3. In a means for replacing derailed cars, in combination, a pair of lifting jacks, means for raising the cylinders of said jacks simultaneously, consisting essentially of a connecting rod or bar $a^3$ and an operating lever $a^4$ connected therewith, a rack on said cylinders adapted to be raised thereby, said rack having a groove *c'* and teeth $c^2$ and $c^3$ on the opposite sides of said groove, a roller *d*, provided with toothed portions $d^2$ and $d^3$ on said rack, and a winch for operating said roller, whereby the car can be moved laterally, substantially as and for the purposes set forth.

526,716. HARNESS-SADDLE. HENRY LANE, Brisbane, Queensland. Filed May 8, 1894. Serial No. 510,477. (No model.)



*Claim.*—In combination in a saddle the bridge having the downwardly projecting eyes *a a*, the flap board made up of the wooden and metallic plates, said metallic plate having the upwardly projecting lugs D D with a groove between them adapted to receive the perforated lugs on the bridge and the pin passing through the lugs D D and *a a*, substantially as described.

526,717. PRESS FOR FINISHING MOLDED ARTICLES. GEORGE W. LARAWAY, Hartford, Conn., and JOSIAH E. WEST, St. Cloud, Minn.; said Laraway assignor to said West. Filed Apr. 20, 1892. Serial No. 429,855. (No model.)



*Claim.*—1. In a press for finishing molded articles in combination a central mold part suspended from a lifting device, the mold lifting device, the flanged sliding ring arranged on the top of the mold part, the stripping blocks *s* secured in the path of movement of the ring *o* and the outer mold part, all substantially as described.

2. In a press for finishing molded articles in combination the outer and chambered mold part supported on the plunger of the press, the inlet pipe entering the top of the chamber and the outlet pipe connected to the lower part of the chamber, a movable disk forming the bottom part of the socket within the said mold part, a chambered central part suspended from a lifting device, the lifting device, the flanged sliding ring supported on the top of the central mold part, and the stripping device arranged in the path of movement of the ring, all substantially as described.

3. In combination in a press the sectional mold, the central mold part suspended from a lifting device, the lifting device, and a swinging block arranged to be interposed between the central mold part and the cross head of the press, all substantially as described.

4. In combination with a press, a sectional mold having a central section supported by a lifting device, the chamber within the central mold section, a fluid supply pipe with a branch extending to the bottom of the chamber, the flanged sliding ring supported on the top of the central mold part, the stripping block secured to the cross head of the press in the line of the path of movement of the sliding ring, and the lifting device, all substantially as described.

5. In a press in combination with the platen supported on the plunger, the sectional mold the outer section of which is adapted to be supported on the platen, the cross head supported on the press posts and a swinging block adapted to be interposed between the cross head and the sectional mold, all substantially as described.

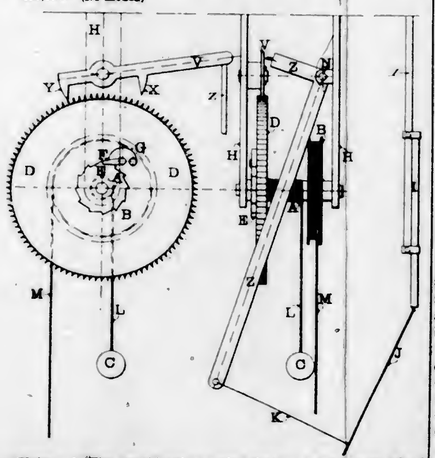
## 526,718. WIRE-FENCE TIGHTENER. PETER A. LEYNER, Canfield, Colo. Filed May 14, 1894. Serial No. 511,114. (No model.)



*Claim.*—1. A device for tightening barb wire fences comprising a manually operated rod having a tapering curved hook on one end adapted to loosen the wire holding staples in the posts and an opposite tapering end curved and angularly disposed to rest on said wires and to pass spirally over and under and upward by the said wires, whereby the wires may be overlapped and a loop formed therein, thereby tightening the said fence wire, substantially as herein set forth.

2. A device for tightening wire fences comprising a rod having a spirally curved end adapted to spirally surround the wire longitudinally for a short distance, and tapering from back of the spiral portion through the spiral to a point, and a curved, tapering hook bent at right angles to the plane of the spiral, as specified.

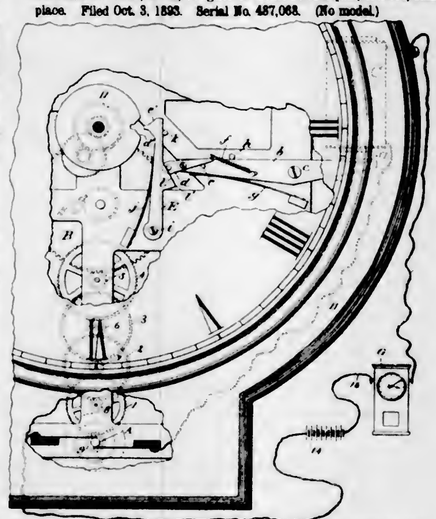
## 526,719. FLY-FAN MECHANISM. FRANCIS LENOIR and EDWARD A. SEWARD, Columbus, Ga. Filed Sept. 23, 1893. Serial No. 486,334. (No model.)




*Claim.*—1. The combination embracing an escapement wheel turning freely around a shaft concentric therewith, a pawl secured to the side of said wheel and pressed toward said shaft by a spring, a ratchet wheel rigidly secured upon and concentric with said shaft while adapted to the engagement or locking of its teeth against the end of the pawl, a pulley wheel likewise rigidly secured on said shaft and concentric therewith, a cord secured to said shaft and adapted to be wound around it; a weight attached to and hanging from said cord, the weight and its cord being so placed as to turn the shaft and bring the teeth of the ratchet wheel against the end of the pawl; another cord secured to and wound in the opposite direction around the pulley wheel, a lever with two fingers so placed as to bring these fingers alternately into engagement between the teeth of the escapement wheel, and another lever, having one of its ends connected with one end of the first lever; so that the first lever, being caused to oscillate by the escapement wheel, works or oscillates the second lever, substantially as described.

2. The whole combination, embracing an escapement wheel turning freely around a shaft concentric therewith, a pawl secured to the side of said wheel and pressed toward said shaft by a spring; a ratchet wheel rigidly secured upon and concentric with said shaft while adapted to the engagement or locking of its teeth against the end of the pawl, a pulley wheel likewise rigidly secured on said shaft and concentric therewith, a cord secured to said shaft and adapted to be wound around it; a weight attached to and hanging from said cord, the weight and its cord being placed so as to turn the shaft and bring the teeth of the ratchet wheel against the end of the pawl; another cord secured to and wound in the opposite direction around the pulley wheel; a lever with two fingers so placed as to bring these fingers alternately into engagement between the teeth of the escapement wheel, another lever having one of its arms connected with one end of the first lever, a bar connected with the other end of this second lever, a flat fan connected with said bar and one or more supports, adjustable in height and holding up said fan, whereby said fan is caused to oscillate by the second lever which is itself oscillated by the first lever driven by the escapement wheel; the fan and its supports also being raised or lowered at pleasure without disturbing any other part of the apparatus; all substantially as described.

## 526,720. ELECTRIC WINDING AND SETTING CLOCK. HENRY LORIOT, New York, N. Y., assignor to Henri F. Mouquin, trustee, same place. Filed Oct. 3, 1893. Serial No. 487,068. (No model.)



*Claim.*—1. The combination in a clock, of a synchronizing lever, a synchronizing magnet for actuating the same, an electric winding mechanism and circuit connections for the magnet and winding mechanism, all arranged so that the clock may be wound and synchronized by the same electric impulse, substantially as described.

2. The combination in a clock, of a synchronizing lever, a synchronizing magnet for actuating the same, an electric winding mechanism, and a main circuit in which both the synchronizing magnet and the winding mechanism are included, all arranged so that the clock may be wound and synchronized by the same electric impulse, substantially as described.

3. In a clock, an electric winding mechanism, a synchronizing electro-magnet in circuit therewith, a synchronizing lever, and intermediate mechanism between the magnet and synchronizing lever adapted to actuate and release the said lever by one movement, substantially as described.



4. The combination with the magnet C, a synchronizing wheel D, of the pivoted armature lever *b*, the pivoted levers *d* and E, and means for restoring the several levers to their initial positions, substantially as described.

5. A clock having an electric winding mechanism and a synchronizing electro-magnet arranged to be actuated by the same electric impulse, with a synchronizing lever and intermediate mechanism between the magnet and synchronizing lever, adapted to actuate and release the said lever by one movement, substantially as described.

6. A clock having an electric winding mechanism and a synchronizing electro-magnet included in the same electric circuit, with a synchronizing lever and intermediate mechanism between the magnet and synchronizing lever adapted to actuate and release the said lever by one movement, substantially as described.

## 526,721. COMPOSITION OF MATTER FOR ELECTRIC CONDUCTORS. DUNCAN MACFARLAN, Philadelphia, Pa. Filed May 16, 1894. Serial No. 511,477. (No specimens.)

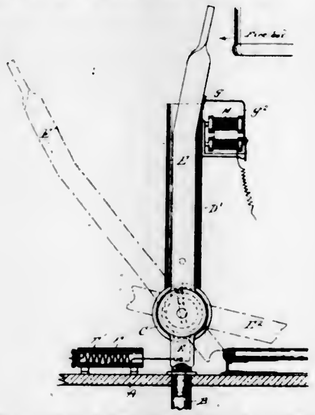
*Claim.*—1. A conducting and resisting compound structure for an electric current, composed of asbestos or mineral wool, graphite and a binder, substantially as described.

2. A baked conducting and resisting compound structure, composed of filamentous strands of asbestos, graphite and a binder, substantially as described.

## 526,722. COMPOSITION OF MATTER FOR ELECTRIC CONDUCTORS. DUNCAN MACFARLAN, Philadelphia, Pa. Filed May 19, 1894. Serial No. 511,854. (No specimens.)

*Claim.*—A baked compound structure, consisting of graphite, clay, asphalt or coal tar, chloride of aluminum and a binder, substantially as described.

## 526,723. ELECTRIC-IGNITING APPARATUS FOR FIRE-ENGINES. WILLIAM C. MATTHIAS and WILMER HARTMAN, Reading, Pa. Filed Oct. 2, 1893. Serial No. 487,003. (No model.)



*Claim.*—1. In an electric igniting device the combination with the gas burner and electric attachment thereto, of a gas cock spigot provided with a stop $c^3$ and vibrating arm $C^3$, a spring F connected to said arm and an operating lever E arranged to turn the spigot against the tension of the spring F in moving forward from its vertical position and to move rearward from said position independently of the spigot, substantially as and for the purpose set forth.

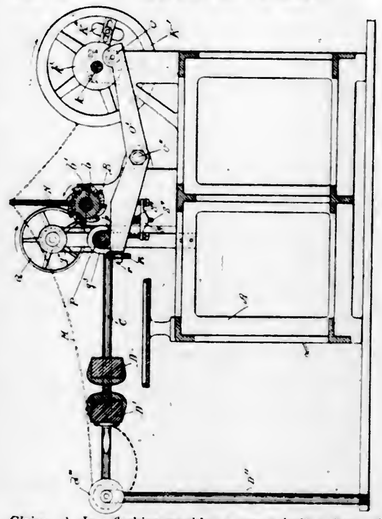
2. In an electric igniting device the combination with the gas burner and the electric igniting attachment thereto, of a gas cock having a stop $c^3$, a vibrating arm $C^3$ and connected spring F, an operating lever E having a limited independent movement and a separate spring to normally hold said lever in operative position, substantially as set forth.

3. In an electric igniting device the combination with the gas burner and electric igniting attachment thereto, of a gas cock having a stop $c^3$, a vibrating arm $C^3$ and connected spring F, an operating lever E having an independent limited movement and a magnet and contact spring G operated by said vibrating arm, substantially as set forth.

4. An apparatus for automatically lighting the fire of a fire engine comprising a gas burner and cock, an electric igniting attachment thereto, placed in the path of the engine, and mechanism substantially as described for automatically operating the cock and electric mechanism by the passage of the engine over the same, substantially as set forth.

5. In an electric igniting device the combination with the gas burner and electric igniting attachment thereto, of a gas cock having a stop $c^3$, a vibrating arm $C^3$ and connected spring F; an operating lever E formed with a shoulder *e'* and slide way *e* and a radial spring stop *c'* arranged to engage said shoulder, substantially as set forth.

## 526,724. FLESHING-MACHINE. CARL J. MAYER, Lynn, Mass. Filed July 10, 1894. Serial No. 517,051. (No model.)



*Claim.*—1. In a fleshing machine a rotary knife roller and longitudinally movable clamps adapted to slide to and from the knife roller in combination with a feed roller journaled on pivoted levers and cams *k' k'* for automatically actuating said levers to hold the skin against the knife roller during the fleshing operation substantially as and for the purpose set forth.

2. In a fleshing machine a rotary knife roller and longitudinally movable clamping bars in combination with pivoted levers *O' O'* a feed roller P journaled in their forward ends a rotary pulley *h* having a slack belt I leading to a pulley K on the shaft *k*, cams *k' k'* on said shaft and a belt tightener L' for operating said cams and causing the feed roller to automatically hold the skin in contact with the rotary knife roller during the fleshing operation substantially as and for the purpose set forth.

3. In a fleshing machine a rotary knife roller and longitudinally movable clamps combined by a cam shaft *k* having cams *k' k'* pivoted levers *O' O'* actuated by said cams a starting device for operating said cams and a feed roller journaled in longitudinally adjustable and vertically yielding bearings at the forward ends of said pivoted levers substantially as and for the purpose set forth.

4. In a fleshing machine a rotary knife roller and longitudinally movable clamps and connecting chains from the latter to chain wheels K' K' on a cam shaft *k* having cams *k' k'* and balance weight K" combined with pivoted levers *O' O'* a feed roller P journaled at their forward ends and means for actuating said cam shaft substantially as and for the purpose set forth.

## 526,725. ELECTRIC SNAP-SWITCH. ARMIDUS METTLER, Schenectady, N. Y., assignor to the General Electric Company, of New York. Filed May 11, 1894. Serial No. 510,895. (No model.)



*Claim.*—1. In an electric snap switch, the combination with a handle and pivoted shaft, and a stop for the plug, secured to and vertically movable on the shaft, of a ratchet plug, loosely mounted to turn

on the shaft, and spring contacts, said stop engaging the plug to operate the switch when the shaft is turned in one direction and permitting the shaft to be turned freely in the opposite direction without engaging the plug and not operating the switch.

2. An electric snap switch comprising a handle and shaft pivoted to the base, spring contacts, a plug having ratchet sides with alternate metallic plates and insulating faces with which the brushes engage, the plug being loosely mounted to turn on the shaft, and a spring mounted on and secured to the shaft and engaging the plug to rotate it in one direction and to move out of engagement therewith in the opposite rotation of the shaft.

3. An electric snap switch consisting of a handle and its shaft pivoted to the base, a ratchet loosely mounted to turn on the shaft, spring contacts in engagement with the ratchet, and a coiled spring mounted on the shaft and secured thereto with a free end engaging the ratchet to operate it in one direction of rotation of the shaft and out of eogagement therewith in the opposite direction of rotation of the shaft, whereby the handle and shaft may be turned backward without affecting the switch.

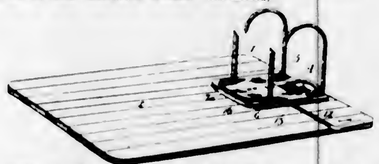
4. As a new article of manufacture, a ratchet plug for electric snap switches, formed of a cylinder of porcelain or other insulating material molded in one piece with a longitudinal ratchet face on its side, ratchet faces at one end, and a central longitudinal passageway for the handle shaft, with a recess at one end of the passageway and in the end of the plug surrounding said passageway.

5. An electric snap switch, consisting of a handle and pivoted shaft, a spring stop made in one piece and secured to the shaft, a ratchet plug loosely mounted to turn on the shaft, and spring contacts, said spring stop engaging the plug to operate the switch when the shaft is turned in one direction and permitting the shaft to be turned freely in the opposite direction without engaging the plug or operating the switch.

6. An electric snap switch consisting of a handle and pivoted shaft, a ratchet plug loosely mounted to turn on the shaft, spring contacts; and a spring stop secured to the shaft, movable endwise thereof, and engaging the plug to operate the switch when the shaft is turned in one direction and permitting the shaft to be turned freely in the opposite direction without engaging the plug or operating the switch.

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526,726. FILE. WALTER H. MORDEN, Toronto, Canada. Filed Jan. 19, 1894. Serial No. 497,456. (No model.)



*Claim.*—1. In a temporary letter file the combination of a stationary plate 1, the arched receiving wires secured to the stationary plate at or near one end thereof, a sliding plate mounted upon the stationary plate and moving thereon, the standard receiving wires secured to the sliding plate and moving therewith, a rock shaft secured to the temporary letter file, a crank on the rock shaft means for securing the rock shaft to the sliding plate, and means for holding the sliding plate to the stationary plate substantially as described.

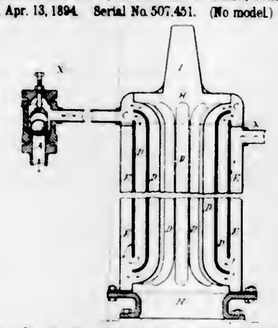
2. In a temporary letter file the combination of a stationary plate 1, arched receiving wires 3 secured to the one end of the plate 1, each of said arched receiving wires having an L shaped base secured in a groove formed in the under side of the plate 1, a sliding plate 6 mounted on the plate 1, standard receiving wires 7 secured to the plate 6 and moving therewith, the standard 7 formed of one continuous piece of tubing and secured in a groove in the under side of the plate 6 and passing through a longitudinal slot 4 in the plate 1, an enlarged head $14^a$ and $14^b$ respectively for each of the lugs $9^a$ and $9^b$ overlapping the edges of the said slot and securing the plate 6 to the plate 1, lugs $10^a$ and $10^b$ secured to the under side of the plate 6 and passing through the slot 4, a rock shaft 12 having a cranked portion 11 engaging with the lugs $10^a$ and $10^b$ and adapted to move the said plate in either direction when engaging with the said lugs, the said rock shaft extended to the edge of the board having a handle formed at the said end and longitudinal ribs 5 formed on the plate and located one at either side of the said plate to prevent lateral displacement of the said end of the plate 6 when moved to close the standard receiving wires substantially as described.

3. In a temporary letter file the combination of the stationary plate 1, arched receiving wires 3, secured to the one end of the plate 1, a sliding plate 6, mounted on plate 1, standard receiving wires 7 secured to the plate 6 and moving therewith, the lugs $9^a$ and $9^b$ secured to the under side of the plate 6, and passing through the longitudinal slot 4 in the plate 1, an enlarged head for each of the lugs $9^a$ and $9^b$ overlapping the edges of the said slot and movably securing the plate 6 to the plate 1, lugs $10^a$ and $10^b$ secured to the under side of the plate 6 and passing through the slot 4, a rock shaft 12 having a cranked portion 11 engaging with the lugs $10^a$ and $10^b$ and adapted to move the plate 6 longitudinally the rock shaft extended to the edge of the board 2, substantially as described.

4. In a temporary letter file the combination of the stationary plate 1, arched receiving wires 3, secured to the one end of the plate 1, a sliding plate 6 mounted on the plate 1, standard receiving wires 7 secured to the plate 6, and moving therewith, the lugs $9^a$ and $9^b$ secured to the under side of the plate 6, and passing through the longitudinal slot in plate 1, an enlarged head for each of the lugs $9^a$ and $9^b$ overlapping the edges of the said slot and movably securing the plate 6 to the plate 1, lugs $10^a$ and $10^b$ secured to the under side of the plate 6 and passing through the slot 4, a rock shaft 12 having a cranked portion 11 engaging with the lugs $10^a$ and $10^b$ and adapted to move the plate 6 longitudinally, the rock shaft extended to the edge of the board 2, longitudinal ribs 5 formed on the plate 1, and located at either side of the said plate to prevent lateral displacement of the top end of the plate 6 when moved to close the standard receiving wires substantially as specified.

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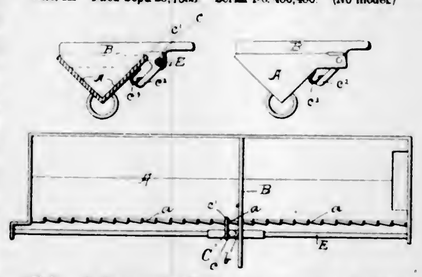
526,727. FEED-WATER HEATER AND FUEL-SAVER. WM. N. MORRISS, Moonee Ponds, and RICHARD H. SMITH, South Yarra, Victoria. Filed Apr. 13, 1894. Serial No. 507,451. (No model.)



*Claim.*—In a feed water heater an outer and an inner shell forming a space between them, a horizontal division therein forming two chambers, an inlet pipe to the upper chamber, an outlet from the lower chamber and a series of tubes extending between the two chambers within the space inclosed by the inner shell, substantially as described.

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526,728. POWDER-DIVIDER. ROBERT E. MCCLELLAND, Williamsville, Ill. Filed Sept. 25, 1893. Serial No. 486,480. (No model.)

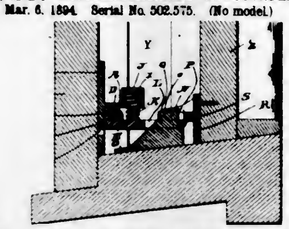


*Claim.*—1. In a powder divider the combination of the body A in which powders are placed and which has one side notched as at *a a a*, with the rod E fixed parallel to the sides of A, and the divider B moving on the rod E both as an axis and laterally, and the stop C having the arm *c* and spring $c^3$, the arm *c* acting in notches *a a a* said stop moving on the rod E the same as divider B and being controlled in its movements on rod E by the movement of divider B and the action of the spring $c^3$, substantially as and for the purposes set forth.

2. In a powder divider, the leveler D D' in which the parts D and D' have their sides angular-shaped so that the angular surfaces will fit against the sides of the body A when placed in A; and by the movement of D and D' on each other the side in A will pass to just such depth in A as is desired by the operator, substantially as shown and set forth.



526,729. SHUTTER-FASTENER. ROBERT MCNAB, Paterson, N. J. Filed Mar. 6, 1894. Serial No. 502,575. (No model.)



*Claim.*—1. In a shutter fastener, the combination of a stationary hook, a lock casing, a normally depressed catch plate pivotally mounted within said casing and adapted to automatically ride into engagement with said stationary hook, and a sash plate adapted to engage over said catch plate when engaged with said hook, substantially as set forth.

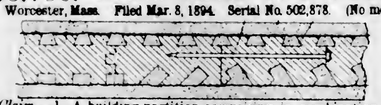
2. In a shutter fastener, the sill plate having an inclined hook flange, a lock casing adapted to be attached to a shutter, a normally depressed catch plate pivoted within said lock casing and provided with an elongated catch opening adapted to automatically engage over said hook flange, and a sash plate provided with a bifurcated lock flange adapted to embrace said hook flange above the catch plate when the latter is in engagement therewith, substantially as set forth.

3. In a shutter fastener, the sill plate having an inclined hook flange provided with an inner shouldered edge, a lock casing adapted to be attached to a shutter, a spring depressed catch plate pivotally mounted within the lock casing and provided with an elongated catch opening and a beveled outer edge, and a sash plate having a locking flange adapted to work over said hook flange, substantially as set forth.

4. In a shutter fastener, the combination with a sill hook: of a lock casing provided with a spring socket projected from its top side and with an attachment plate or flange at its inner end having a stop opening therein, a catch plate pivotally supported within said casing and having a stop flange at its inner end adapted to work in said stop opening and an outer locking end provided with a catch opening, and a spring arranged within the said spring socket at one end and bearing at its other end on the top side of said catch plate, substantially as set forth.

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526,730. FIREPROOF PARTITION. ORLANDO W. NORCROSS, Worcester, Mass. Filed Mar. 8, 1894. Serial No. 502,878. (No model.)

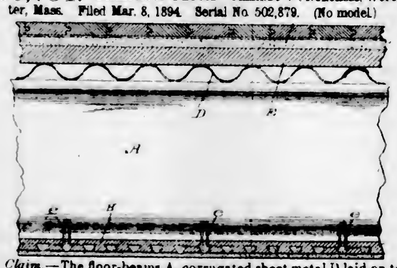


*Claim.*—1. A building partition comprising in combination the following three elements, to wit; a central wooden support consisting of planking grooved upon both sides to receive the plastering; an open or perforated metal covering applied and secured to said grooved surfaces prior to plastering, and said plastering, substantially as and for the purpose set forth.

2. The combination of the central planking support A grooved upon both sides to receive the plastering and means for securing the top and bottom edges thereof, with an open or perforated metal covering B applied and secured to said grooved surfaces prior to plastering, and said plastering, substantially as and for the purpose set forth.

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526,731. FIREPROOF FLOOR. ORLANDO W. NORCROSS, Worcester, Mass. Filed Mar. 8, 1894. Serial No. 502,879. (No model.)



*Claim.*—The floor-beams A, corrugated sheet metal D laid on top thereof, and the wood-lathing H, in combination with the planking E laid over said corrugated sheet metal and provided with suitable grooves *c* in its top surface; the plaster *c'* placed in said grooves; the usual top flooring F preferably having paper or other thin material under the same; the wire netting I fastened to the under side of the wood-lathing, and plaster H', spread thereon, substantially as and for the purpose set forth.

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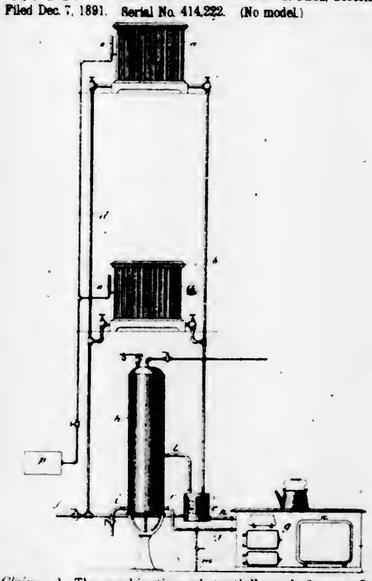
526,732. FIREPROOF DOOR. ORLANDO W. NORCROSS, Worcester, Mass. Filed Mar. 8, 1894. Serial No. 502,880. (No model.)



*Claim.*—A fire-proof door, comprising in combination the following elements, viz:—the central, supporting planking, grooved on both sides; the iron frame inclosing said planking; the open, metal covering applied and secured to the grooved surfaces of the planking, and the fire-proof material applied over said grooved surfaces and metal covering, substantially a and for the purpose set forth

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526,733. HEATING SYSTEM. ANDREW G. PAUL, Boston, Mass. Filed Dec. 7, 1891. Serial No. 414,222. (No model.)



*Claim.*—1. The combination substantially as before set forth of a source of heat, a steam circulatory system including radiators and the necessary connections, an intervening heating medium between the source of heat and the system, substantially as described, and a positive air exhauster connected with the system

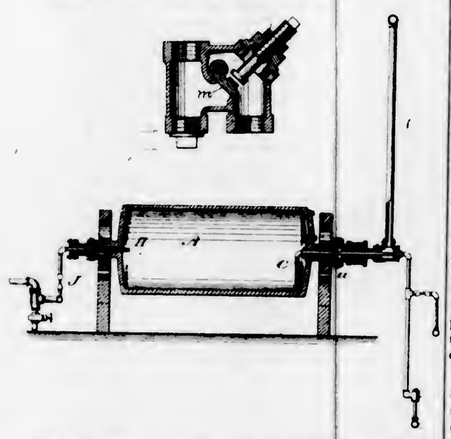
2. The combination substantially as before set forth, of a source of heat, a circulatory system including radiators and the necessary connections, and containing a limited quantity of the heating vehicle, an intervening heating medium between the source of heat and the system, substantially as described, and a positive air exhauster connected with the system.

3. The combination, substantially as before set forth, of the heaters, and supply and return pipe of a heating system, a boiler or generating coil, an intervening heating medium for conveying heat to the boiler or coil, substantially as described, a tank or suitable device to support said heating medium in contact with the boiler or coil, an air pipe, and an exhauster for exhausting air through said air pipe.

4. The combination with the heaters and supply and return pipe of a heating system, of a boiler or generating coil and an intervening heating medium for conveying heat to the boiler or coil, adapted to absorb and convey only a limited amount of heat, and a tank or suitable device to support said heating medium in contact with the boiler or coil, and an air pipe and exhauster for exhausting air through said air pipe and a valve to control the passage of air through the air pipe, substantially as set forth.

5. The combination with the heaters and supply and return pipe of a heating system of the coil *c*, the tank *e* the boiler *h*, the range *g*, and the connecting pipes *j*, *k* and *l*, and the air pipe *n* provided with suitable valves and the exhauster *p* substantially as set forth.

526,734. **DRYING-CYLINDER.** ANDREW G. PAUL, Boston, Mass. Filed Jan. 22, 1894. Serial No. 497,601. (No model.)



*Claim.*—1. The combination of a drying or heating cylinder with a discharge pipe connected with one of the journals thereof, and a trap consisting of a valve device at the lower end of the said discharge pipe, substantially as before set forth.

2. The combination of two or more drying or heating cylinders, separate discharge pipes, one connected with each cylinder, a trap consisting of a valve device at the outer end of each discharge pipe, and a common drain pipe into which the discharge pipes empty, substantially as before set forth.

3. The combination of two or more drying or heating cylinders, separate discharge pipes, one connected with each cylinder, a trap consisting of a valve device at the outer end of each discharge pipe, a regulating device to regulate the amount of water that can be discharged from each discharge pipe, and a common drain pipe into which the discharge pipes empty, substantially as before set forth.

4. The combination of a drying or heating cylinder, a discharge pipe connected with one of the journals thereof, a trap at the outer end of the said discharge pipe and an escape pipe connected with the said discharge pipe above the outer end thereof, substantially as before set forth.

5. The combination of a drying or heating cylinder, a discharge pipe connected with one of the journals thereof, a trap at the outer end of the said discharge pipe, an escape pipe connected with the said discharge pipe above the outer end thereof, and an exhausting device with which said escape pipe is connected, substantially as before set forth.

6. The combination substantially as before set forth, of a drying or heating cylinder, a discharge pipe connected with one of the journals thereof, a trap at the outer end of the said discharge pipe, an escape pipe connected with the said discharge pipe above the outer end thereof, the said escape pipe being provided with a restricted passage.

7. The combination substantially as before set forth, of a drying or heating cylinder, a discharge pipe connected with one of the journals thereof, a trap at the outer end of the said discharge pipe, an escape pipe connected with the said discharge pipe above the outer end thereof, the said escape pipe being provided with a restricted passage, and an exhausting device with which said escape pipe is connected.

8. The combination of a drying or heating cylinder, a discharge pipe connected with one of the journals thereof, a trap consisting of a valve device at the outer end of the said discharge pipe, an escape pipe connected with the said discharge pipe above the outer end thereof, and an exhausting device with which said escape pipe is connected, substantially as before set forth.

9. The combination substantially as before set forth of a drying or heating cylinder, a discharge pipe connected with one of the journals thereof, a trap consisting of a valve device at the outer end of the said discharge pipe, an escape pipe connected with the said discharge pipe above the outer end thereof, the said escape pipe being provided with a restricted passage, and an exhausting device with which said escape pipe is connected.

10. The combination substantially as before set forth, of a drying or heating cylinder, a discharge pipe connected with one of the journals thereof, a trap at the outer end of the said discharge pipe, an escape pipe connected with the said discharge pipe above the outer end thereof, and a regulating device to regulate the amount of water discharged from the said discharge pipe.

11. The combination substantially as before set forth of a drying or heating cylinder, a discharge pipe connected with one of the journals thereof, a trap at the outer end of the said discharge pipe, an escape pipe connected with the said discharge pipe above the outer end thereof, an exhausting device with which said escape pipe is connected, and a regulating device to regulate the amount of water discharged from the said discharge pipe.

12. The combination substantially as before set forth of a drying or heating cylinder, a discharge pipe connected with one of the journals thereof, a trap at the outer end of the said discharge pipe, an escape pipe connected with the said discharge pipe above the outer end thereof, the said escape pipe being provided with a restricted passage, and a regulating device to regulate the amount of water discharged from the said discharge pipe.

13. The combination substantially as before set forth of a drying or heating cylinder, a discharge pipe connected with one of the journals thereof, a trap at the outer end of the said discharge pipe, an escape pipe connected with the said discharge pipe above the outer end thereof, the said escape pipe being provided with a restricted passage, an exhausting device with which said escape pipe is connected, and a regulating device to regulate the amount of water discharged from said discharge pipe.

14. The combination of a heating or drying cylinder with a steam supply pipe, an air discharge pipe, and a water discharge pipe, the said three pipes being connected with the journals of the said cylinder, substantially as before set forth.

15. The combination of a heating or drying cylinder with a steam supply pipe, an air pipe, an exhausting device with which the said air pipe is connected, and a water discharge pipe, the said three pipes being connected with the journals of the said cylinder, substantially as before set forth.

16. The combination substantially as before set forth, of a heating or drying cylinder with a steam supply pipe, an air pipe, an exhausting device with which the said air pipe is connected, a water discharge pipe, the said three pipes being connected with the journals of the said cylinder and a trap at the outer end of the water discharge pipe.

17. The combination substantially as before set forth, of a heating or drying cylinder with a steam supply pipe, an air pipe, an exhausting device with which the said air pipe is connected, a water discharge pipe, the said three pipes being connected with the journals of the said cylinder, a trap at the outer end of the water discharge pipe, and an escape pipe connected with the water discharge pipe above the outer end thereof.

18. The combination substantially as before set forth, of a heating or drying cylinder with a steam supply pipe, an air pipe, an exhausting device with which the said air pipe is connected, a water discharge pipe, the said three pipes being connected with the journals of the said cylinder, a trap at the outer end of the water discharge pipe, an escape pipe connected with the water discharge pipe above the outer end thereof, and an exhausting device with which the said escape pipe is connected.

19. The combination of a heating or drying cylinder with a steam supply pipe, an air pipe, a water discharge pipe, a trap at the outer end of said water discharge pipe, an escape pipe connected with the water discharge pipe above the discharge end thereof, and provided with a restricted passage, substantially as before set forth.

20. The combination substantially as before set forth of a heating or drying cylinder with a steam supply pipe, an air pipe, a water discharge pipe, a trap at the outer end of said water discharge pipe, an escape pipe connected with the water discharge pipe above the discharge end thereof, and provided with a restricted passage, and an exhausting device with which the said escape pipe is connected.

21. The combination of two or more drying or heating cylinders, separate discharge pipes, one connected with each cylinder, a trap at the outer end of each discharge pipe, separate escape pipes connected with the said discharge pipes above the outer end thereof and severally provided with restricted passages, and a common exhausting device with which all the said escape pipes are connected, substantially as before set forth.

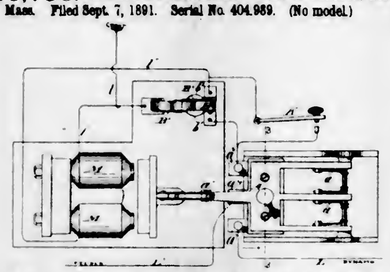
22. The combination of two or more drying or heating cylinders, separate steam supply pipes therefor connected with the journals of the said cylinders, separate air pipes also connected with the journals of the said cylinders and severally provided with restricted passages, and a common exhausting device with which all of the said air pipes are connected, substantially as before set forth.



526,735. **PROCESS OF PRESERVING FOOD.** HEINRICH PAULSEN, Hamburg, Germany. Filed May 8, 1894. Serial No. 510,440. (No specimens.)

*Claim.*—A process of preservation of food and similar articles consisting in first submitting plants such as *Gelidium*, *Glocopeltis* or *Chondrus* to an extracting process by the use of boiling water, the decoction being further boiled together with glycerin and with the addition of antiseptic agents; the substances to be preserved being then enveloped in the mass thus prepared, which is either poured over them or made into receptacles or cases adapted to receive the food to be preserved; whereby the food is effectively protected from contact with the air, and caused to retain its natural properties, taste, flavor and appearance unaltered, substantially as described.

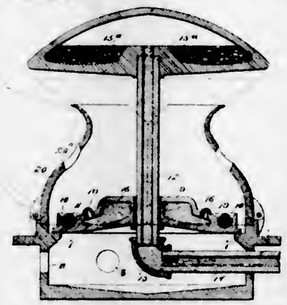
526,736. **LIGHTNING-ARRESTER.** FRED S. PEARSON, Boston, Mass. Filed Sept. 7, 1891. Serial No. 404,989. (No model.)



*Claim.*—1. In combination, a lightning arrester; a switch; its detent; an electro-magnet; a main circuit; and a branch circuit which contains the arrester and the electro-magnet, and which is connected by the switch with the main circuit; all operating to break the main circuit and the branch circuit when current flows through the arrester, substantially as described.

2. In combination a lightning arrester; a switch; its detent; an electro-magnet; a fuse; a main circuit; and a branch circuit with two branches, one branch containing the arrester, and the electro magnet in series, and the other the fuse, all substantially as described.

526,737. **APPARATUS FOR BURNING LIQUID HYDROCARBONS.** WILLIAM R. PEARSON, St. Louis, Mo. Filed July 31, 1893. Serial No. 481,930. (No model.)

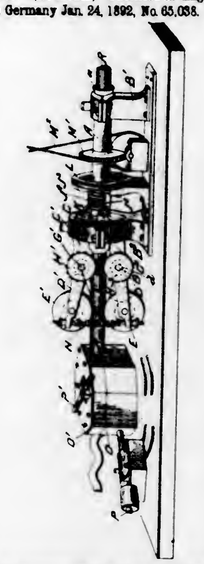


*Claim.*—1. In a hydro-carbon burner, the combination of a retort connected with an oil supply, a hollow burner below such retort with a surrounding firing basin, such burner connected with the retort by a gas or vapor pipe, a jacket surrounding such burner adapted to concentrate the flame from the firing basin, and apertures in the walls of such jacket through which flame jets from the burner are directed, to strike the retort, substantially as shown and described.

2. In a hydro-carbon burner, the combination of a hollow burner, a firing basin surrounding the same, a retort above such burner connected to the same by a gas or vapor pipe, a separable or divisible jacket surrounding the sides of the burner for concentrating the flame from the firing basin, such jacket pivoted or hinged so as to open or close, and apertures in the walls of the jacket through which flame jets from the burner are directed when such jacket is closed.

3. In a hydro-carbon burner, the combination of a retort, a burner below connected to such retort by a gas or vapor pipe, a firing basin surrounding such burner, said burner provided with a cavity having depressions of limited capacity therein, nozzles inserted in apertures formed in such burner, a divided jacket surrounding such burner and firing basin, such jacket having an open top and apertures in its walls, whereby when the jacket is closed, the flame jets from the burner will pass through such apertures, and the flame from the firing basin will be concentrated within such jacket, substantially as shown and described.

526,738. **MACHINE FOR CUTTING SPIRAL OR TURNED MOLDINGS AND AUTOMATICALLY TURNING ARTICLES FROM RODS.** ALGERNON C. PEMBERTON, London, England. Filed Jan. 20, 1894. Serial No. 497,563. (No model.) Patented in England Apr. 10, 1891, No. 6,163, and in Germany Jan. 24, 1892, No. 65,038.



*Claim.*—1. In combination, the rotary mandrel the feed rollers E E' rotating therewith, the pivoted arms carrying the feed rollers, the gears at the pivots of the arms, the driving connections to said gears and the intermediate gearing between the pivot gears and the rollers for revolving them on their axes for feeding the blanks.

2. In a machine for turning blanks of wood or other suitable material, the arrangement of a pair of roller feed brackets, such as D D' which revolve with the mandrel A, said arms or brackets being pivotally supported and extending lengthwise of the mandrel substantially as and for the purposes herein set forth and as illustrated in the accompanying drawings.

3. In combination, the rotary mandrel, the feed rollers carried thereby to revolve therewith, the gearing for rotating the said rollers on their axes, the gear about the mandrel for transmitting movement to the roller gearing and the means for throwing the said mandrel gear into and out of action to produce an intermittent feed, substantially as described.

4. In combination, the rotary mandrel, the feed rollers carried thereby to revolve therewith, the gearing for rotating the said rollers on their axes, the gear about the mandrel for transmitting movement to the roller gearing and the means for throwing the said mandrel gear into and out of action, comprising the pawl, the cam, the cam shaft and the mechanism for driving the cam shaft, substantially as described.

5. In combination, the cutter, the rotary mandrel, the feed rollers carried thereby to revolve therewith, and the driving means for the said rollers operated from a gear on the mandrel and the means for throwing the roller driving mechanism into and out of action, substantially as described.

526,739. **BUTTON.** ROBERT PÖSCHEL, Goessnitz, Germany. Filed Mar. 24, 1894. Serial No. 504,939. (No model.)



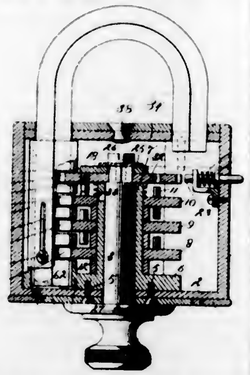
*Claim.*—1. A button having a tuft B of soft material secured to its under side and having also a vertical opening through its body portion whereby the said button may be secured by horizontal stitches

passing through the soft tuft, by vertical threads passing through the opening and the tuft or by both horizontal and vertical threads, substantially as described.

2. A button having a conical opening in its under side the tuft material B and the cup *b* pressed in the conical opening to hold the tuft, said button having a central opening extending through it from top to bottom, substantially as described.

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526,740. **PERMUTATION-PADLOCK.** ISADOR B. RAFAPORT, Chicago, Ill., assignor of one-half to Nathan Cohn, same place. Filed Jan. 4, 1894. Serial No. 495,668. (No model.)



*Claim.*—1. A combination lock having in combination the tumblers and the part which said tumblers are designed to secure, a tumbler-actuating stem having an angular portion, a notched disk or member having a toothed or serrated aperture through which said angular portion passes, a lug projecting from one side of said disk and adapted to impart movement to the tumblers, and a dog arranged to engage the notches of said disk, substantially as set forth.

2. A combination lock having in combination the tumblers and the part which said tumblers are designed to secure having recesses or notches in which said tumblers engage, a sleeve for the reception of said part also having recesses for admitting the tumblers, substantially as set forth.

3. A combination lock having in combination the tumblers and the part which said tumblers are designed to secure having notches or recesses in which said tumblers engage, a slotted sleeve for the reception of said part, also having recesses for admitting the tumblers, and a stud on said part for limiting its movement in the sleeve, substantially as set forth.

4. A lock having in combination a shell or casing, the plate 6 arranged in said shell, devices for securing said shell and plate together, the tumbler-actuating knob covering said devices, the tumblers carried by said plate, a sleeve carried by said plate and having recesses for admitting the edges of the tumblers and for receiving the movable part of the lock, substantially as set forth.

5. A lock having in combination the tumblers and the part to be secured thereby, a shell or casing provided with a removable head having an opening therein for the insertion of the part to be secured by the tumblers, devices for holding said head in place, a shield for covering said devices having an elongated slot coinciding with said opening, and means for holding said shield against movement while the lock is locked, substantially as set forth.

6. The combination of a knob spindle, tumblers for engaging with said spindle, a shell having a socket for said spindle and adapted to move lengthwise thereon and to rotate the same, and means for preventing the rotation of said shell when the latter is forced inward on said spindle, substantially as set forth.

7. The combination of an angular knob spindle having recesses or notches, tumblers for engaging with said spindle, a shell having an angular socket for said spindle and adapted to rotate the same, and means for locking said shell against rotation, substantially as set forth.

8. The combination with a knob latch spindle and the door or other surface in which it is journaled, of a stud projecting from said door or surface, a lock-shell having sockets for said spindle and stud respectively, and means for removably securing said shell over said spindle and stud, substantially as set forth.

9. The combination with a knob-latch spindle and the door or other surface in which it is journaled, of a stud secured to said door or surface, a lock shell having sockets for said spindle and stud respectively, said stud being movable to and from said shell, and means for removably securing said shell over said stud and spindle, substantially as set forth.

10. The combination with a knob-latch spindle and the door or other surface in which it is journaled, of a stud secured to said door or surface, a lock-shell having sockets for said spindle and stud respectively, said stud being movable to and from said shell, a spring for automatically shifting said stud away from said shell, and means for removably securing said shell over said stud and spindle, substantially as set forth.

11. The combination with a knob latch spindle and the door or other surface in which it is journaled, of a stud secured to said door or surface, a lock shell secured on said spindle with capability of moving endwise thereof but incapable of independent rotation, means for limiting the said endwise movement of said shell, said shell having a socket or recess for the reception of said stud, and means for removably securing said shell over said stud and spindle, substantially as set forth.

12. The combination of a lock-shell, a rotary dial or indicator secured to said shell and having indentations or sockets, a dog arranged in said shell for engaging in said sockets, and a removable part of the lock adapted to press said dog into engagement with said sockets when the lock is locked, substantially as set forth.

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526,741. **ATOMIZER.** H. CLAY REES, Waco, Tex. Filed Dec. 15, 1893. Serial No. 493,725. (No model.)



*Claim.*—1. In combination with the body or box having a valved inlet for the admission of air, a cap at its upper end, a plate resting upon the upper edge of the box, and having openings communicating with the interior of the box, a flange *g* on the cap engaging said plate, and a second flange *g'* thereon, substantially as specified.

2. In combination with the body or box, having an upwardly extending valved air tube, the U-shaped air tube whose legs extend into the box on either side of the latter, a plate to which the U-shaped tube is attached resting on the upper edge of the box, and the threaded flanged cap engaging said plate, substantially as shown.

3. In combination, the body or box, the tube rising from the bottom thereof, the partitioned tube secured to the lower end of the latter, and having a slot extending above and below the partition the shell inclosing the slotted portion, and the ball in the tube below the partition, substantially as specified.

4. In combination the partitioned tube having a slot extending above and below the partition, the ball below the latter, and the shell inclosing the slotted portion of the tube, substantially as specified.

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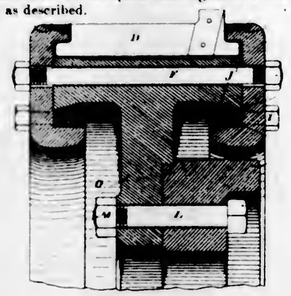
526,742. **COMMUTATOR.** HENRY G. REIST, Schenectady, N. Y., assignor to the General Electric Company, of New York. Filed June 28, 1894. Serial No. 515,960. (No model.)

*Claim.*—1. In a commutator for a dynamo-electric machine, a supporting spider having inner beveled faces, a clamping ring and a beveled nut adapted to fit the space between the clamping ring and the inner beveled face of the spider, in combination with a commutator segment adapted to fit the opposite surface of the clamping ring, substantially as described.

2. In a commutator for a dynamo-electric machine, commutator segments having rectangular shouldered portions, end-rings having a rectangular groove in their inner surface, a spider having a beveled inner surface, and a bolt provided with a nut adapted to engage with the beveled inner surface of the spider and a rectangular groove in the end-ring, substantially as described.

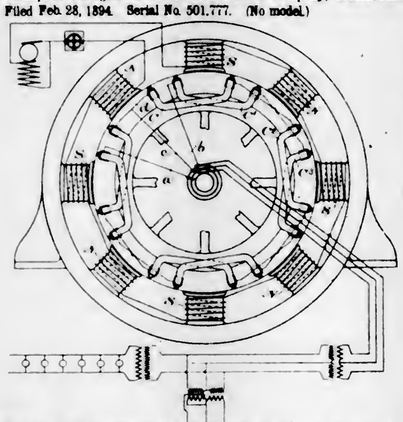


3. In a commutator for a dynamo-electric machine, commutator segments having rectangular shouldered portions, a spider having an inner beveled face, end-rings having a rectangular groove, bolts adapted to hold the spider and the end-rings together, and clamping means consisting of a bolt and a wedging nut arranged to engage the inner beveled surface of the spider and a groove in the end-rings, substantially as described.



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526,743. **DYNAMO-ELECTRIC MACHINE.** EDWIN W. RICE, Jr., Swampscott, assignor to the General Electric Company, Boston, Mass. Filed Feb. 28, 1894. Serial No. 501,777. (No model.)



*Claim.*—1. The method of eliminating the back or counter-electro-motive force of a part of a number of coils connected in series and revolving in a magnetic field, which consists in causing the entire magnetic flux to pass coincidently through the axes of the coils during part of their revolution.

2. The method of eliminating the differential action of a part of a number of coils connected in series and revolving in a magnetic field, said coils being angularly displaced with reference to one another, which consists in causing the entire magnetic flux to pass coincidently through the axes of the coils during part of their revolution.

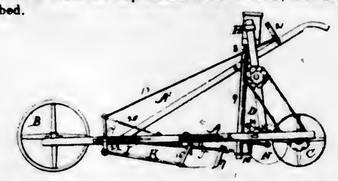
3. In an alternating current dynamo-electric machine, an armature carrying coils angularly displaced with reference to each other, each coil divided into different portions connected in series, and field magnet poles embracing an arc substantially equal to or less than the greatest angular displacement between the coils; whereby the entire magnetic flux may pass coincidently through the axes of the coils, substantially as set out herein.

4. An alternating current dynamo electric machine comprising an armature carrying coils connected in series, and angularly displaced with reference to one another, connections to external circuits from the ends and an intermediate portion of said coil and field magnetic poles embracing an arc substantially equal to, or less than the greatest angular displacement between the coils, whereby the entire magnetic flux may pass coincidently through the axes of the coils.

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526,744. **SEED-PLANTER.** VIRGIL G. RICHEY, Dayton, Ohio, assignor of one-half to George W. Pottle, same place. Filed June 9, 1894. Serial No. 514,064. (No model.)

*Claim.*—1. In a seed-planter the combination of the frame mounted on ground wheels, the shaft P, having bearings in said frame, the draft rods J J, the supporting rod I provided with adjusting sleeve and connecting bar, rod K with its leveling plate L, the hoe attached to said draft rods, the arm 19 spiral spring 20, rod 18 and lever 21 to raise the implements from the soil, substantially as described.



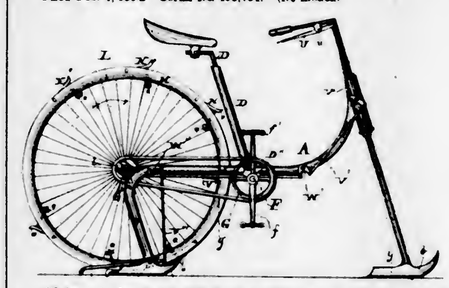
2. In a seed-planter the combination of the driving ground wheel C, the sprocket wheel F attached to the shaft of the same, the sprocket-chain G, the loose sprocket-wheel E with pawl 2 attached, the ratchet-wheel 1 fixidly attached to the shaft, the miter wheels 3 and 4, the shaft 5, the seed box H and the seed spouts 8 and 9, substantially as described.

3. As a vibrator for the distribution of seed, the combination of the driving wheel C, the rack wheel 14, the pinion 13, the crank 12, connecting rod 11, bell crank 10 provided with an eye on its inner arm, and the flexible spout 9 held in the eye of the bell-crank, substantially as described.

4. As a marker for a seed-planter the combination of the frame A, the rod O having a bend at a right angle and held in bearings of the frame, the circular disk N pivoted to the transverse end, the arm 24 attached to said rod and the spiral spring 25 connecting said arm to said frame, substantially as described.

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526,745. **ICE-VELOCIPEDE.** GEORGE RIEKINGER, Buffalo, N. Y. Filed Feb. 1, 1894. Serial No. 498,751. (No model.)



*Claim.*—1. In an ice velocipede, a driving wheel having a U-shaped rim provided with a series of apertures *p*, of a series of dogs N, pivoted within said rim at *n*, and provided with curved points *o*, said dogs having the studs R provided with lock-nuts Q Q' and surrounded by spiral springs P bearing with one end upon the dogs and with the other ends against the rim, as and for the object stated.

2. An ice velocipede consisting, essentially, of a frame having its rear portion bifurcated and the forks terminating in runners, and its forward end provided with a tubular head, a steering bar passing through said head and terminating in a runner as described, a driving wheel journaled in the bifurcated portion of said frame and having a U-shaped rim provided with a series of apertures, a series of dogs pivoted within said rim and provided with curved points, said dogs having studs provided with lock nuts and being surrounded by spiral springs bearing with one end upon the dogs and with the other end against the rim as described, the sprocket wheels, the driving belt and suitable pedal mechanism, as and for the purpose specified.

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526,746. **RETAINER FOR SCARF-PINS.** JONAS F. RUPPNER, Raton, N. Mex., assignor of one-fourth to Peter P. Fanning, same place. Filed Nov. 14, 1893. Serial No. 490,888. (No model.)



*Claim.*—In a pin retaining device, the combination with a pin, of a block of elastic material having a passage in which the pin fits tightly, a metallic sleeve or band fitting tightly around and carried by the elastic block and provided with an eye, and a chain attached to said eye, substantially as set forth.

526,747. BAKE-PAN. CHARLES J. RUNDBERG, Centropolis, Mo. Filed May 14, 1894. Serial No. 511,156. (No model.)



*Claim.*—1. A bake-pan, comprising two sections which slide one upon the other in putting them together and taking them apart, one of said sections consisting of two sides and an end connecting the same, and the other consisting of a bottom which is externally embraced by the said sides and end, a front side which rises from the fourth side or margin of the bottom, and extensions of said front side which externally embrace the sides of the first-mentioned section.

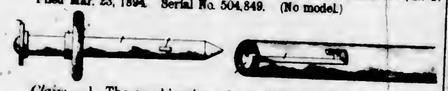
2. A bake-pan, comprising a section having side-walls, and an end-wall connecting said side-walls, flanges projecting inwardly from said side-walls and end-walls, in combination with a horizontal portion fitting snugly between said end and side walls and resting upon said flanges, and a front wall rising vertically from the front margin of the horizontal portion and connecting the front ends of the side-walls, and extensions projecting from the ends of the said front wall and embracing the outer sides of the side-walls, substantially as set forth.

3. A bake-pan comprising a section having parallel side walls flanged outwardly at their upper margins, and an end-wall connecting said side-walls, and flanges projecting inwardly from the lower margins of the said side and end walls, in combination with a horizontal portion fitting snugly between the side and end walls and resting upon the inwardly projecting flanges thereof, a front wall rising from the front margin of the horizontal portion and connecting the front ends of the side-walls, and extensions projecting rearwardly from the opposite ends of the front wall and embracing the outer sides of the side-walls, and fitting against the lower side of the outwardly projecting flanges of said side walls, substantially as set forth.

4. A bake-pan, comprising a section having parallel side-walls, an end-wall connecting said side-walls, and spring-catches carried externally by the side-walls, in combination with a second section consisting of a horizontal portion fitting between and supported by the said side and end walls, and a front wall rising from the horizontal portion and connecting the front ends of the side-walls, and extensions projecting rearwardly from the opposite ends of the front wall and embracing externally the side-walls, and having loops which are engaged by said spring-catches, substantially as set forth.

5. A bake-pan, comprising parallel side-walls, an end-wall connecting said side-walls, and spring-catches carried externally by said side-walls and provided with downwardly converging surfaces at their free ends, in combination with a second section consisting of a horizontal portion fitting between and supported by said side and end walls, a front wall rising from the horizontal portion and connecting the front ends of the side-walls, extensions projecting rearwardly from said front walls and embracing externally the side-walls, and having loops engaged by said spring-catches, and a pivoted bail carried by said extensions and having curved portions adapted to engage said downwardly converging surfaces of said spring-catches, substantially as set forth.

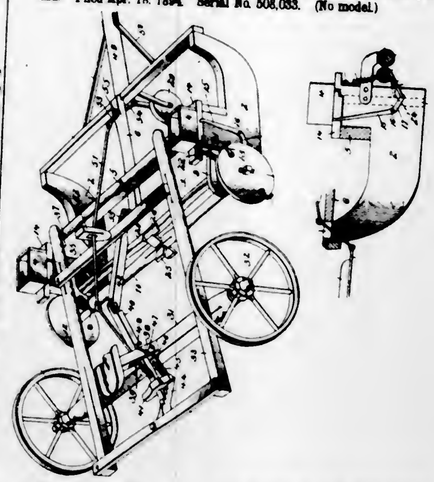
526,748. LOOM-SHUTTLE. ISAAC RUSHWORTH, Jamestown, N. Y. Filed Mar. 23, 1894. Serial No. 504,849. (No model.)



*Claim.*—1. The combination of a straight spindle adapted to be pivotally mounted at one end within a shuttle body and provided with an opposite hollow end having a locking notch or recess, a removable spindle locking pin adapted to register in the hollow end of the spindle and having a stud adapted to removably engage said notch or recess, and a flange or collar at one end, a circularly recessed retaining collar mounted to slide on said spindle locking pin and adapted to have its recess receive one end of the spindle, and a spring arranged between the sliding collar and the flange or collar at one end of the spindle locking pin, substantially as set forth.

2. The combination of a straight spindle adapted to be pivoted at one end within a shuttle body and provided at its other end with a longitudinal recess or bore $5^a$, a longitudinally disposed guide slot communicating with said recess, a short end slot at the inner end of the guide slot, and an off-standing lock notch or recess communicating with said end slot, a removable spindle locking pin adapted to register in said longitudinal recess of the spindle and provided with a lock stud adapted to pass through said slots into and out of engagement with said lock notch or recess, a fixed flange or collar arranged on one end of said spindle locking pin, a movable recess retaining collar mounted to slide on said pin, and a spring interposed between said collars, substantially as set forth.

526,749. CORN-PLANTER. ELIAS E. SCHLOSSER, Williamsport, Ind. Filed Apr. 18, 1894. Serial No. 508,033. (No model.)



*Claim.*—1. In a corn planter, the combination with furrow-opening shoes provided with seed-chutes and hoppers, and longitudinally movable seed-slides, of a transverse operating-shaft, a rimless operating-wheel carried by said shaft, means for rotating the operating-shaft, a transverse pressure-bar arranged in the path of the spokes or arms of the operating-wheel, and bell-crank levers connecting the extremities of the pressure-bar with the seed-slides, substantially as specified.

2. In a corn planter, the combination with furrow-opening shoes having seed-chutes, hoppers and seed-slides, of an operating-shaft, a rimless operating-wheel carried by said shaft, means for rotating the shaft, a pressure-bar arranged in the path of the spokes or arms of the operating-wheel and provided with terminal return-springs, and bell-crank levers fulcrumed upon the furrow-opening shoes, connected at their rear ends to the extremities of the pressure-bar and having looped upper arms engaged with and fitting in transverse grooves in the seed-slides, substantially as specified.

3. In a corn planter, the combination with furrow-opening shoes having seed-chutes, hoppers and seed-slides, of an operating-shaft, provided at an intermediate point with a rimless operating-wheel, a pressure-bar arranged in the path of the spokes or arms of said wheel, operating connections between the pressure-bar and the seed-slides, ground-wheels fixed to the terminals of the operating-shaft, markers carried by one of said ground-wheels, and an adjusting spring connected to one of the ground-wheels and adapted to return the operating-shaft to its initial position when the ground-wheels are removed from contact with the ground, substantially as specified.

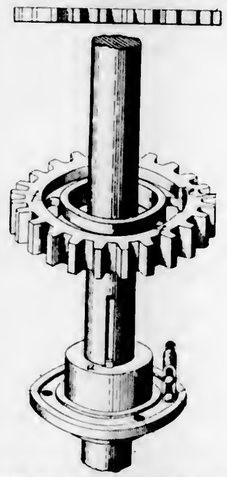
4. In a planter, the combination of a planter-frame carrying planting mechanism and provided with a longitudinally-disposed draft-bar, a tongue loosely connected at a point adjacent to its rear end to the planter-frame, a sulky-frame loosely connected to the planter-frame in advance of the rear end of the draft-bar, a foot-lever fulcrumed upon the sulky-frame and connected at its front end to the rear end of said draft-bar, means for locking the foot-lever, and connections between the foot-lever and the rear end of the tongue, whereby when the rear end of the draft-bar is elevated by the depression of the foot-lever, the tongue is locked against vibration, substantially as specified.

5. In a planter, the combination of a planter-frame carrying planting mechanism and provided with a central draft-bar, a tongue loosely fulcrumed to the planter-frame and having a free rear end, a sulky-frame loosely connected to the planter-frame in advance of the rear end of the draft-bar, a foot-lever fulcrumed upon the sulky-frame and connected at its front end to the rear end of the draft-bar, means for locking the foot-lever, a draft-rod connected at its rear end to the foot-lever and extending through a guide on the sulky-frame, and a link arranged in a guide adjacent to the front end of the draft-bar and connecting the front end of said draft-rod with a plate or extension on the rear end of the tongue, substantially as specified.

6. In a planter, the combination of a planter-frame carrying planting mechanism and provided with a front cross-bar, a transverse beam in rear of said bar, and a draft-bar supported by said transverse beam and bar and extending in rear of the beam, a tongue loosely fulcrumed to a yoke carried by the front cross-bar and having a free rear end, a sulky-frame having side-bars which are loosely connected at their front ends to the said transverse beam of the planter-frame, a foot-lever fulcrumed upon the sulky-frame, means for locking said foot lever in its depressed position, a connecting-bar between the front end of the foot-lever and the rear end of said draft-bar, the connection being by means of a swiveled bracket, and a draft-rod connecting the foot-lever with the rear end of the tongue, substantially as specified.

7. In a planter, the combination with a planter-frame carrying planting mechanism and having a draft-bar arranged upon its longitudinal center, and a sulky-frame having its side-bars loosely connected with the planter-frame in advance of the rear end of the draft-bar, of a foot-lever fulcrumed upon the sulky-frame and loosely connected at its front end with the rear end of the draft-bar by an intermediate connecting-bar, a pivotal notched locking-bar 44 depending from the rear cross-bar of the sulky-frame in the path of the rear end of the foot-lever, a spring to retain said locking-bar in position to engage the foot-lever, and a push-bar 46 connected to the free end of the locking-bar and having a tread arranged within reach of the operator, substantially as specified.

526,750. ADJUSTABLE GEARING. WILLIAM SCHNURR, Brooklyn, N. Y., assignor to the United States Printing Company, of Ohio. Filed May 21, 1894. Serial No. 511,892. (No model.)



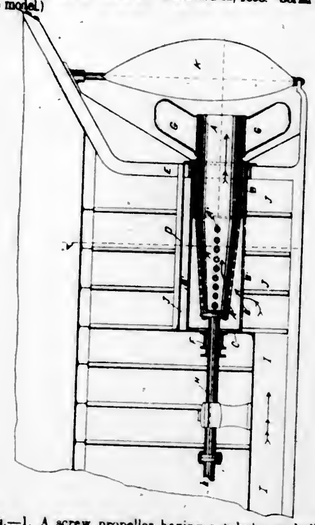
*Claim.*—1. In a power transmitting device in combination, a hub provided with a flange and with an adjusting pillar carrying adjusting devices, together with a main gear and a supplemental gear, with both of which the adjusting devices on the pillar co-operate to adjust the same relatively to the hub and to each other, substantially as described.

2. In a power transmitting device in combination, a hub provided with a flange and adjusting devices, carried by said flange, a main gear-wheel, a supplemental gear wheel against both of which the adjusting devices bear to adjust the same with relation to each other and to the hub, together with means for holding the gears in their adjusted positions independently of the adjusting devices, substantially as described.

3. In a power transmitting device the combination of a hub provided with a flange, a pillar projecting therefrom, main and supplemental gear wheels on said hub, adjusting means extending from the pillar on the flange to said gear wheels, whereby they can be adjusted with relation to each other and to the hub, and bolts connected with the flange of the hub and adapted to secure the gear wheels in their adjusted positions and take the strain thereon, substantially as and for the purposes specified.



526,751. OUTBOARD PROPELLER-SHAFT FOR VESSELS. CARL H. SCHULTZ, Jr., Murray Hill, N. J.; Carl H. Schultz administrator of Carl H. Schultz, Jr., deceased. Filed Oct. 12, 1893. Serial No. 487,943. (No model.)



*Claim.*—1. A screw propeller having a tubular or hollow outboard shaft, provided with perforations through the shell or walls thereof, to permit a current of water to flow through it outboard aft, so as to prevent a suction or drag when the vessel is in motion, substantially as shown and described and as herein set forth.

2. A screw propeller having a tubular or hollow outboard shaft provided with perforations through the shell or walls thereof, in combination with a perforated outboard bearing pipe, substantially as shown and described and as herein set forth.

3. A screw propeller having a tubular or hollow outboard shaft, provided with perforations through the shell or walls thereof, in connection with a perforated outboard bearing pipe, in combination with a surrounding chamber or jacket having a pipe or channel connected forward from the chamber through the bull of the vessel to supply the chamber with water from the sea, substantially as shown and described and for the purpose as herein set forth.

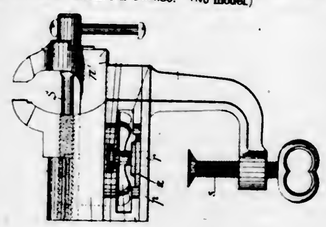
4. A screw propeller having a tubular or hollow outboard shaft provided with perforations through the shell or walls thereof, in combination with a chamber or jacket surrounding the same and having a pipe or channel connected forward of the chamber with the sea, substantially as shown and described and for the purpose as herein set forth.

526,752. PROCESS OF NITRATING CELLULOSE. ROBERT C. SCHÜPPHAUS, Brooklyn, assignor to Hudson Maxim, New York, N. Y. Filed Nov. 10, 1893. Serial No. 490,520. (No specimens.)

*Claim.*—1. In the art of nitrating cellulose, the herein described method of restoring the weakened acids bath, which consists in adding thereto sulfuric anhydrid and nitric acid.

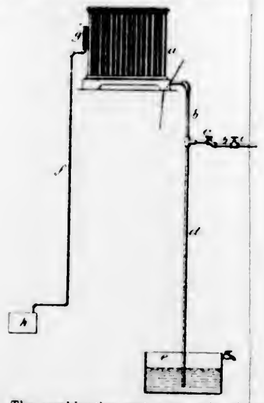
2. In the art of nitrating cellulose the herein described method of restoring the weakened acids bath, which consists in adding thereto a solution of sulfuric anhydrid and oil of vitriol and nitric acid.

526,753. VISE. GOTTLOB SILLER, Esslingen, Germany. Filed Jan. 11, 1894. Serial No. 496,555. (No model.)



*Claim.*—In combination, the base plate *p* having the circular boss *x*, the upper portion O having the base part *a* formed with the socket *c'*, the grooves *c* and the semi-circular edges to bear on the boss *x*, the screw passing through the boss and having a head *k* engaging the socket *c'*, the wheel on the screw and arranged in the grooves *c* for turning the screw and the movable part O with means for adjusting the same, substantially as described.

526,754. **HEATING SYSTEM.** WILLIAM P. SKIFFINGTON, New York, N. Y., assignor of three-fourths to Andrew G. Paul, Boston, Mass. Filed Aug. 11, 1891. Serial No. 402,384. (No model.)



*Claim.*—1. The combination with a steam heating system which is provided with an air exhauster and with the usual supply pipe for steam, of a measuring device situated in the said supply pipe, substantially as before set forth.

2. The combination with a steam heating system which is provided with an air pipe in addition to the supply and return pipe or pipes and with an exhauster for drawing air from the system through the said air pipe and with the usual supply pipe, of a measuring device situated in the said supply pipe, substantially as before set forth.

3. The combination with a steam heating system, which is provided with an air pipe in addition to the supply and return pipes, and with an exhauster for drawing air from the system through the said air pipe, and with the usual supply pipe, of a measuring device situated in the said supply pipe, and a sealed escape pipe for the water of condensation, substantially as before set forth.

4. In combination with a heating system, a supply pipe provided with a reducing valve, an air pipe in addition to the supply and return pipe connecting in said system, an exhauster for drawing the air from the system through the said air pipe, and a sealed escape pipe for the water of condensation, substantially as shown and described.

5. In combination with a heating system containing a number of radiators or heaters, a main supply pipe, branch pipes connecting the main supply pipe with the several radiators or heaters, a reducing valve in each branch pipe for separately controlling each radiator or heater, an air pipe in addition to the supply and return pipes connecting with each of the said radiators or heaters, an exhauster for drawing the air from the said radiators or heaters through the said air pipe, and sealed escape pipes for the water of condensation, substantially as before set forth.

6. In combination with a heating system containing a number of radiators or heaters, a main supply pipe provided with a reducing valve and branch pipes connecting the main supply pipe with the several radiators or heaters, a reducing valve in each branch pipe for separately controlliug each radiator or heater, an air pipe in addition to the supply and return pipes connecting with each of the said radiators or heaters, an exhauster for drawing the air from the said radiators or heaters through the said air pipe, and sealed escape pipes for the water of condensation, substantially as shown and described.

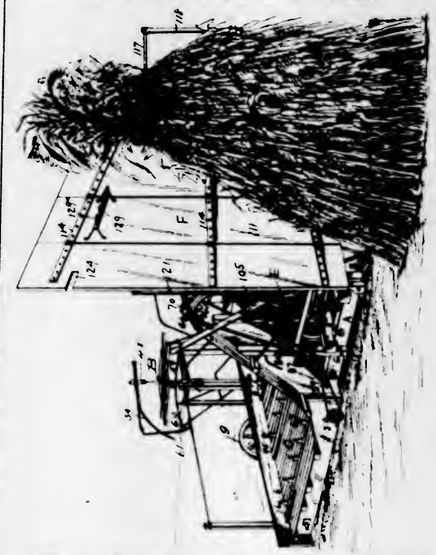
7. In combination with a heating system containing a number of radiators or heaters, a supply pipe provided with a reducing valve, the supply pipe being connected by branches with each of the radiators or heaters, an air pipe in addition to the supply and return pipes connected by suitable branches with each of the said radiators or heaters and provided at each radiator or heater with an automatic valve for preventing the escape of the heating agent, an exhauster for drawing air from the system through the said air pipe, and sealed escape pipes for the water of condensation, substantially as shown and described.

8. In combination with a heating system containing a number of radiators or heaters, a supply pipe provided with a reducing valve and connected with the said radiators or heaters, an air pipe in addition to the supply and return pipes connected by suitable branches with each of the radiators or heaters and also connected with the tank for collecting the water of condensation, each of the branches of the air pipe being provided with an automatic valve near each radiator or heater and near the said tank, an exhauster for drawing air from said radiators or heaters and the said tank through the said air pipe, sealed escape pipes for permitting the passage of the water of condensation to the said tank, a check valve in each of the said escape or return pipes, substantially as shown and described.

9. In combination with a heating system, a supply pipe provided with a reducing valve, an air pipe in addition to the supply and return pipes connected with the heater or radiator at a suitable place above the point where the water of condensation collects, an exhauster for drawing air from the system through the said air pipe, and a sealed escape pipe for the water of condensation, substantially as shown and described.

10. In combination with a heating system, a supply pipe provided with a reducing valve, a sealed tank for the water of condensation, an air pipe connected with said tank, an exhauster for drawing air from the system through the said air pipe, and a sealed escape pipe for the water of condensation, substantially as shown and described.

526,755. **CORN-HARVESTER.** WILLIAM R. STEINER, Frederick, Md. Filed May 2, 1893. Serial No. 472,678. (No model.)



*Claim.*—1. The combination with the reels at the front of the machine, of the socket pieces on the top of the reel-shafts, having lugs projecting therefrom, arms secured to the socket pieces, and projected over the reels, and resilient bars connected to the lugs of the socket-pieces whereby the said arms are given a yielding function.

2. The combination with the reels at the front of the machine, of the socket-pieces on the ends of the reel-shafts, having lugs projecting therefrom guards arranged to project in advance of each reel, an arm over each reel projecting from the socket-piece, and a spring controlled bar secured to the lugs of the socket pieces to control the movement of said arms.

3. The combination of the shock-box, a crane having its horizontal arm journaled in keepers on the bottom of the box, and means to lift the crane vertically.

4. The shock-box composed of two sides and a bottom hinged together, a hook fixed to the inner side of the box, and the outer side having a vertical slot opposite to the hook of the other side, in combination with a lever 126, adapted to engage the hook and enter the said slot, and a latch to engage and hold the lever.

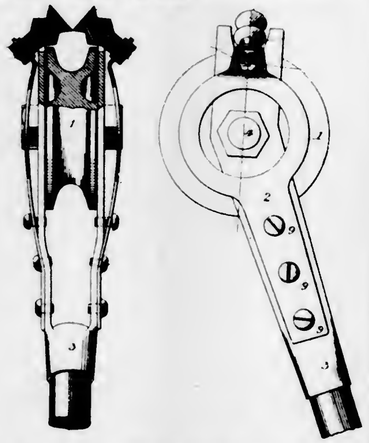
5. The combination with the shock-box provided with an outer hinged side, and the box support having its end extended beyond the outer side of the box, of a rod 117 journaled above the box and provided with a depending bar 118 on its outer end, formed with a hooked end to engage the end of the box support and lie against the outer side of the box, substantially as and for the purpose specified.

6. The combination of the shock-box, the crane supporting the same, the vertically movable bracket supporting the crane, a drum journaled in the machine, a lever to turn the drum, and a rope connected to the drum and to the bracket, as described.

7. The combination with the hinged shock-box provided with hooks on its inner side and an open-end slot in its outer side, of a stalk support in the bottom of the box, a lever adapted to engage the hooks and enter the open-end slot, and a latch to hold the lever down, as described.



526,756. **TROLLEY-GUARD.** HENRY J. TANNER, Lynn, assignor of one-half to Harry Fairfield Hamilton, Boston, Mass. Filed Apr. 2, 1894. Serial No. 506,052. (No model.)



*Claim.*—1. In a trolley head the combination with a trolley wheel, of a yoke extended beyond the axle of the trolley wheel at an angle of about twenty degrees with the line of the trolley arm and having a notch formed in each of its upper extremities, a spring on each side of and secured to the yoke, an arbor fastened to, each spring and passing through the notches formed in the extremities of the yoke at an angle with the plane of the trolley wheel, and a ball or wheel on each arbor adapted to rotate thereon, the balls or wheels meeting above and in the center plane of the trolley wheel, substantially as described and shown.

2. In a trolley head the combination with a trolley wheel, of a yoke extended beyond the axle of the trolley wheel at an angle of about twenty degrees with the line of the trolley arm and having a notch formed in each of its upper extremities, a spring on each side of and secured to the yoke, an arbor fastened to each spring and passing through the notches formed in the extremities of the yoke, and a ball on each arbor adapted to rotate thereon, the balls meeting above and in the center plane of the trolley wheel, substantially as described.

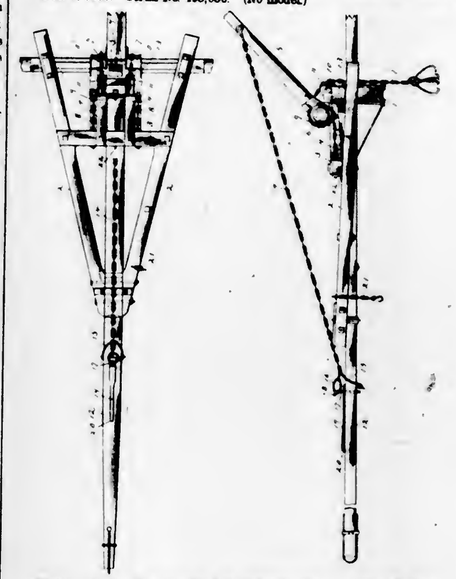
3. In a trolley head, the combination with a trolley wheel and yoke of balls or wheels which meet above the trolley wire for the purpose of retaining the trolley wheel on the trolley wire, and which are separated by the pressure of the trolley wire upon them when the said wire enters and when it leaves the space inclosed by the retaining devices and the trolley wheel.

526,757. **BELT HOOK OR CLAMP.** JOHN W. TAYLOR, Cape Girardeau, Mo. Filed June 26, 1894. Serial No. 515,776. (No model.)



*Claim.*—A belt fastener comprising the member A having the series of clinchable prongs *a*, *b*, at the sides thereof and the spurs or teeth *c*, *d*, between the lines of prongs, and the member B provided with groups of slots *e*, *f*, *g*, and the teeth or spurs which are out of line with the corresponding spurs on the member A, each group of slots having the narrow side slots *f*, *g*, separated by the bars or bridges from the middle slot *e*, substantially as and for the purposes described.

526,758. **LOG-CARRIER.** ROBERT E. TERRY, Mobile, Ala. Filed Dec. 7, 1893. Serial No. 493,036. (No model.)



*Claim.*—1. In a log carrier, the combination with an axle, of a frame supported by the same, a lever mounted on the frame and having a rounded lower end forming a rolling or shifting fulcrum, limiting devices for the movement of the same, and a log chain connected with the lever, substantially as and for the purpose described.

2. In a log carrier, the combination with an axle, of a frame mounted thereon, a lever having a rounded lower end forming a rolling or shifting fulcrum, chains having their adjacent ends attached to and oppositely disposed on the rounded end of the lever and extending therefrom in opposite directions and connected with the frame for guiding the lever, and a log chain connected with the lever, substantially as and for the purpose described.

3. In a log carrier, the combination with an axle, of a frame supported thereon and provided with parallel track bars, a lever having an enlarged rounded lower end arranged on the track bars and forming a rolling or shifting fulcrum and provided at opposite sides with grooves, the chains 8 and 9 having their adjacent ends secured to and arranged on the rounded end of the lever and extending therefrom in opposite directions and connected with the frame, a pair of sheaves arranged at the rear end of the frame, and log chains passing over the sheaves and secured to the lever and arranged in the grooves of the enlarged end thereof, substantially as described.

4. In a log carrier, the combination with an axle, of a frame mounted thereon, a tongue slidingly arranged in the frame, a lever mounted on the frame and carrying a log chain, a draft chain 14 having its rear end connected with the lever, and a rotatable pin mounted on the tongue and adapted to receive a link of the chain and provided at its upper end with a head, substantially as and for the purpose described.

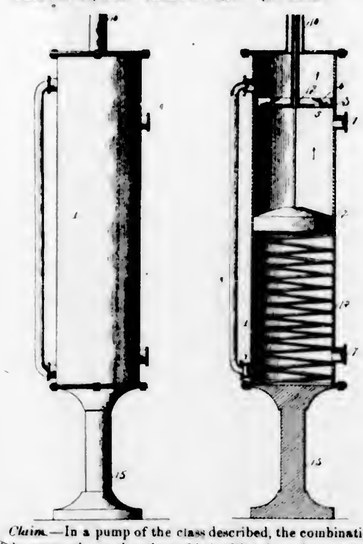
5. In a log carrier, the combination with an axle, of a frame, mounted thereon, a tongue slidingly arranged in the frame, a lever mounted on the frame and carrying a log chain, a rotatable pin mounted on the tongue and provided at its upper end with a head and having fixed to it a resilient bar extending along the tongue and having a projection engaging the same, and a draft chain having its rear end secured to the lever and provided at its front end with a link engaging said pin, substantially as described.

6. In a log carrier, the combination with an axle, of a frame, a lever mounted on the frame, a draft chain having its rear end attached to the lever and provided at its front end with a loop 15 and having a link 16 adjacent to the loop 15, a tongue slidingly mounted on the frame and having the loop 15 arranged on it, a vertical pin rotatively mounted on the tongue and having its upper end bent at an angle and engaging the link 16, and a resilient bar fixed to the pin and

serving as a handle for turning the same and provided with a projection engaging the tongue, substantially as described.

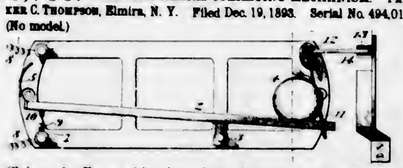
7. In a log carrier, the combination with wheels, axle and frame, of a rolling lever adapted to roll on said frame and having an upright handle, guide chains secured to the frame in front and rear of the roller and secured to the roller and winding on the same in reverse directions, a log chain secured to the roller, a sliding tongue, and a flexible connection between the tongue and the upright handle, substantially as described.

526,759. **FORCE-PUMP.** JOHN W. THOMPSON, Alvord, Tex., assignor, by mesne assignments, of one-third to J. W. Branch, same place. Filed June 27, 1893. Serial No. 478,967. (No model.)



*Claim.*—In a pump of the class described, the combination of an upright supporting pedestal provided with enlarged upper and lower ends, the upright valved cylinder provided with a lower open end secured onto the upper enlarged end of the pedestal which forms a bottom cap therefor, a valved partition arranged within the cylinder, a valved exterior conductor pipe connected with the cylinder above and below said partition, a solid plunger head working within the cylinder below the valved partition, and a resistance spring arranged within the cylinder under said plunger head and resting at its lower end on the enlarged upper end of said supporting pedestal, substantially as set forth.

526,760. **ELECTRIC-ALARM OPERATING MECHANISM.** PARKER C. THOMPSON, Elmira, N. Y. Filed Dec. 19, 1893. Serial No. 494,019. (No model.)



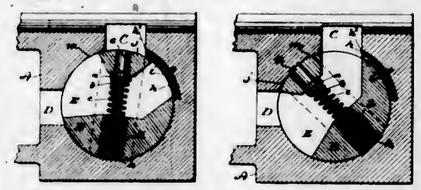
*Claim.*—1. The combination with a frame adapted to be placed in communication with an electric bell, of a track pivoted thereto, contact pieces on the frame and track, a ball weight movable on the track, mechanism independent of the track for driving a ball, and means for actuating the ball driving mechanism, substantially as specified.

2. The combination with a frame adapted to be placed in communication with an electric bell, and a track pivoted at one side of its center thereto incapable of other than an inclined position, and adapted to make and break the electric circuit, of a weight movable upon the track and adapted when actuated to traverse the track in both the directions, and mechanism for actuating the weight, substantially as specified.

3. The combination with a frame adapted to be placed in communication with an electric bell, and a track pivoted at one side of its center thereto incapable of other than an inclined position, and adapted to make and break the electric circuit, of a weight movable upon the track and adapted when actuated to traverse the track in both the directions, and mechanism independent of the track for actuating the weight, and means for actuating said mechanism, substantially as specified.

4. The combination with a frame adapted to be placed in circuit with an electric bell, of a track pivoted at one side of its center thereto, contact pieces upon said track and frame, a movable weight upon the track, an arm 11 pivoted to the plate, a trip latch 14 operatively connected therewith and a movable part, as a door, operatively connected with the trip latch, substantially as specified.

526,761. **EXHAUST-VALVE FOR ENGINES.** LUTHER H. WATTLES, Providence, R. I. Filed June 14, 1894. Serial No. 514,596. (No model.)



*Claim.*—1. An exhaust-valve of the "Corliss" type having a series of spring-resisted relief valves mounted therein adapted in use to discharge water from the cylinder into the exhaust chest, substantially as described.

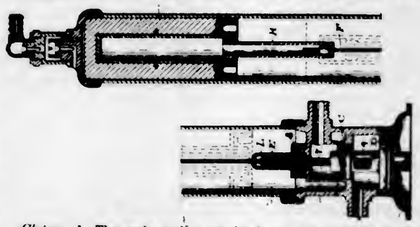
2. The combination, in a steam engine cylinder, with a mechanically actuated exhaust-valve having a discharge port therethrough, of a series of adjustable self-closing yielding relief valves mounted therein, constructed and arranged whereby an abnormal pressure in the cylinder automatically operates said relief-valves and forms an open passage from the cylinder into the said discharge port of the exhaust-valve, substantially as described.

3. The combination, in a steam engine cylinder, with a mechanically actuated exhaust-valve having a discharge port therethrough adapted to be alternately opened and closed with respect to the exhaust passage from the cylinder, of a series of yielding relief-valves seated in the walls of the valve and opening inwardly into said discharge port, substantially as described.

4. In a steam engine cylinder having an exhaust-chest and exhaust and discharge ports C, D, respectively, communicating with said exhaust chest, the combination therewith of a mechanically actuated cylindrical exhaust valve seated in said chest having a port E therethrough adapted to intermittingly communicate with the exhaust port C, and continuously communicating with the discharge port D, and a series of yielding relief-valves mounted in the exhaust valve and arranged to communicate with the said ports C and E, substantially as described and for the purpose set forth.

5. In a steam engine cylinder provided with an exhaust-chest having exhaust and discharge ports C, D, respectively, the combination therewith of a mechanically actuated exhaust-valve seated therein and arranged to communicate with said ports and a steam actuated packing-plate interposed between the adjacent surfaces of the said chest and valve, said valve working to and fro beneath and in frictional contact with the packing plate, substantially as described and for the purpose set forth.

526,762. **HYDRAULIC AIR-PUMP.** EDWARD H. WEATHERHEAD, Cleveland, Ohio. Filed Mar. 9, 1894. Serial No. 502,955. (No model.)



*Claim.*—1. The main casing provided with ports and ducts and the main valve and piston therein, in combination with the valve tube through said valve and piston and a fixed stop to limit the upward movement of the valve tube, substantially as set forth.

2. The casing having an internal chamber for the main valve and the main valve and piston in said casing, in combination with the valve tube through said main valve and piston, and a stop fixed to and extending above the main valve chamber to limit the upward movement of the valve tube, substantially as set forth.

3. In an hydraulic air pump as described, the main casing provided with ports and ducts and the main valve and piston therein the valve tube and the cylinder supported on said casing, in combination with the sliding valve tube, the plunger piston, the telescope tube therein and the rod connecting said tube and the valve tube, substantially as set forth.

4. The main casing and the main valve and piston therein, and the cylinder supported on said casing, in combination with a packed and weighted plunger in said cylinder, the sliding valve tube in the main valve and piston, the rod affixed thereto and the part connecting said valve rod with the plunger, substantially as set forth.



526,763. **BLACK AZO DYE.** ARTHUR WEINBERG, Frankfort-on-the-Main, Germany, assignor to Leopold Cassella & Co., same place. Filed May 5, 1894. Serial No. 510,141. (Specimens.)

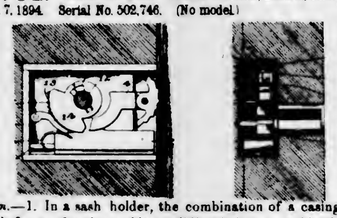
*Claim.*—1. The process for producing new black azo-dyes from a new tetrazo-azo-compound, possessing the composition

$$-N=N-C_6H_4-N=N-C_{10}H_4\begin{cases}OH\\SO_3H\end{cases}N=N-$$

by combining this compound with aromatic metadiamins such as metaphenylenediamin, substantially as herein described.

2. The new coloring matter, which is a black powder, soluble in water with a bluish black color, insoluble in alcohol, ether or benzene, soluble in concentrated sulfuric acid with bluish black color, which changes into blue-violet on addition of a small quantity of water, separating a black precipitate on addition of an excess of water; dyeing unmordanted cotton in an alkaline bath a deep black and having the qualities substantially as specified.

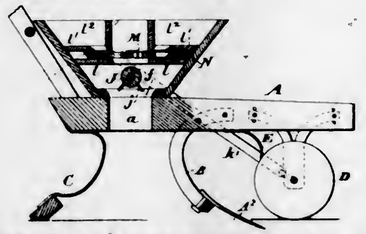
526,764. **SASH-HOLDER.** JOSIAH WELDON, Elmore, Ohio. Filed Mar. 7, 1894. Serial No. 502,746. (No model.)



*Claim.*—1. In a sash holder, the combination of a casing provided with flanges forming guides, a sliding bolt mounted in the casing and having a flange and a groove to fit said flanges, and provided with an outward extending arm offset from the body of the bolt, said bolt being provided with a rack, a cam pivoted to the outer end of said arm and adapted to engage a sash, and a gear wheel meshing with the rack of the bolt for actuating the latter, substantially as described.

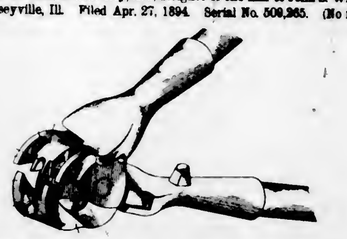
2. In a sash holder, the combination of a casing, a sliding bolt mounted therein and provided with a rack, a gear wheel meshing with the rack and provided with a toothed segment, a pawl arranged to engage the teeth of the segment, and a plate carried by the gear wheel, but having a limited movement independent thereof, and being of such a size and shape as to project beyond the teeth of the segment and engage the pawl, substantially as and for the purpose described.

526,765. **COMBINED PLOW AND PLANTER.** JAMES F. WILLIAMS and ELI J. WILLIAMS, Kennedy, Ala., assignors to Blannerhassett H. Smothers and Robert M. Shepherd, same place. Filed Dec. 28, 1893. Serial No. 494,983. (No model.)



*Claim.*—The planter attachment consisting of the frame L with two platforms $l^1 l^2$, the intermediate lever M and the fertilizer and seed slides pivotally connected with said lever and working under the bottom outlets of the seed and fertilizer chambers, in combination with the hopper of a cotton planter and fertilizer distributer as and for the purpose set forth.

526,766. **WIRE CRIMPING AND FASTENING PLIERS.** EUGENE L. WILLIAMS, Kansas City, Mo., assignor of one-half to John S. Williams, Jerseyville, Ill. Filed Apr. 27, 1894. Serial No. 509,265. (No model.)



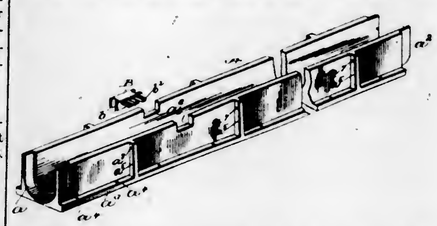
*Claim.*—1. The combination of interlocking pivotally connected jaws provided at their extremities with aligned guides, and one of the jaws being cut away to form a transverse opening for the reception of a wire arranged at right angles to a wire lying in said guides, said transverse opening being out of line with the guides, whereby when the jaws are closed the wires engaged respectively in the guides and the transverse openings are thrown out of the same plane and are thereby crimped, said jaws being further provided, respectively, with a seat and channel dies, substantially as described.

2. The combination of co-operating jaws provided respectively with recesses and arms to fit in said recesses, said arms being tapered toward their terminals to provide a transverse space for the reception of a wire, and the jaws being provided with central registering guides for the reception of a wire which is located perpendicularly to the transverse wire, substantially as specified.

3. The combination of a jaw 1 provided with a central die having an arc-shaped seat for the reception of the looped end of a staple and having twin recesses arranged upon opposite sides of said die, and a co-operating jaw 2 bifurcated to form arms to fit in said recesses, the bases of said arms being undercut to provide channel dies in different planes for the reception of the terminals of said staple, substantially as specified.

4. The combination of pivotally connected jaws 1 and 2, the jaw 1 being provided with a central die having lateral shoulders 8 and a terminal guide 11 and parallel side ears 4, and jaw 2 being provided with parallel arms 7 which are spaced apart to form an intermediate notch for the reception of the die of the other jaw, said arms being provided with overhanging lips adapted to bear against the shoulders 8 on said die, and being further provided with a guide 10 in alignment with the guide 11, substantially as described.

526,767. **ELECTRIC-RAILWAY CONDUIT.** ROBERT B. WILSON, Cincinnati, Ohio, assignor of one-half to Jeremiah M. Wilson, Washington, D. C. Filed Jan. 2, 1894. Serial No. 495,419. (No model.)



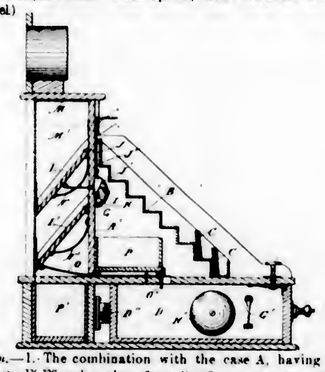
*Claim.*—1. A sectional conduit having a projecting or flanged base, continuous and integral therewith each section having an incut or a socket at one end and a reduced portion at the other, substantially as and for the purpose described.

2. A conduit-section incut at one end and reduced at the other, and provided with a projecting or flanged base and with upright ribs, substantially as and for the purpose set forth.

3. The combination with a conduit, notched in the upper edge of its wall, of a bracket and a hanger-block, substantially as described.

4. The combination with a notched conduit and a bracket and hanger-block, of a cover-plate having a depending flange, substantially as and for the purpose described.

**526,768. CASH-REGISTERING APPARATUS.** MAX BLANK, Grand Rapids, Mich. Filed Apr. 19, 1894. Serial No. 508,189. (No model.)



*Claim.*—1. The combination with the case A, having back A' having slots E' E" and a glass front Q, of one or more retractible spouts L, having longitudinal partitions dividing the said spouts into two or more separate sections or divisions, communicating with the slots respectively, spring W, bar I, and the slide E, engaging the bar substantially as and for the purposes set forth.

2. In combination with the case A, having back A', having slots E' E" and a glass front Q, one or more retractible spouts L, communicating with the slots, and having their lower ends adjusted to abut against the glass front Q, when at rest as shown, spring W, bar I, and slide E, engaging the bar, and the spouts L' arranged below the spouts L, and communicating therewith, and having their lower ends also adjusted to rest against the glass front, the spring W', and the draw bar O, connected to the cash drawer, substantially as described and for the purposes set forth.

3. The combination of an L-shaped case, consisting of an upright portion, having a glass front Q, and a back portion A', having slots E' E", and a horizontal portion containing a cash drawer, an inclined ticket rack, supported on the horizontal portion and resting against the upright portion, having a series of compartments for containing tickets carrying numerals, and vertically inclined retractible spout L, arranged in the upright portion, having its lower end resting against the glass front Q, communicating with slots E' E" and the vertically inclined retractible spout L', arranged below the spout L, communicating therewith and having its lower end resting against the glass front Q, and connected to the cash drawer substantially as described and for the purposes set forth.

4. In a cash registering apparatus the combination with a case A having a back A' having slots E' E" and a glass front Q, one or more retractible spouts L communicating with the slots, spring W bar I and the slide E engaging the bar I substantially as described and for the purposes herein set forth.

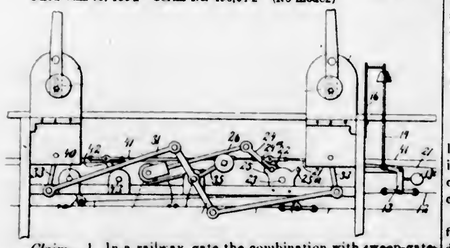
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**526,769. DRESSING COMPOUND FOR LEATHER.** JULES E. M. BOURGEOIS, Paris, France, assignor to Thomas Walter Lawrence Emden, London, England. Filed June 12, 1894. Serial No. 514,344. (No specimens.) Patented in France Oct. 20, 1893, No. 233,539.

*Claim.*—A dubbing for leather goods, consisting of mineral oil, vegetable oil, fish oil, water, and monohydrated oxide of calcium, combined and mixed together substantially as and in the proportions hereinbefore set forth.

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**526,770. RAILWAY-GATE.** FREDRIK CARLSON, Chicago, Ill. Filed Jan. 15, 1894. Serial No. 496,914. (No model.)



*Claim.*—1. In a railway gate the combination with sweep-gates weighted so as to be out of balance, of crank arm, 28, adapted to move the gates, a weight 27, movable upon the crank arm, a trip for shifting the weight so arranged as to be thrown by a railway train, and means of connection between the trip and the weight, substantially as described and for the purpose specified.

2. In a railway gate the combination with sweep gates, trips for controlling said gates so arranged as to be thrown by a railway train, and means for connecting the trip with the gates, of a lock for holding the gates open, a trip for releasing the lock located for contact by the railway train before its contact with the gate closing trip, and means of connection between such trip and the lock, substantially as described and for the purpose specified.

3. In a railway gate the combination with sweep gates, trips for controlling the closure of such gates, trips for controlling the opening of the gates and means of connection between the trips and the gates, of a trip for throwing the gate opening trip out of service if struck between the movement of the gate closing and that of the gate opening trips, all of said trips being so arranged as to be thrown by passing trains, substantially as described and for the purpose specified.

4. In a railway gate the combination with sweep gates of trips, 6, for controlling the closure of the gates, trips 7, for controlling the opening of the gates, trips, 5, for throwing the trips 7 out of service if acted upon between action upon the trips 6 and 7, trips, 7ª, for bringing the trips 7 again into service, and means of connection between the several trips and the gates whereby the trips 5 and 7 are raised as the gates are closed and the trips 5 lowered and the trips 6 raised as the gates are opened, all of said trips being so arranged as to be thrown by passing railway trains, substantially as described and for the purpose specified.

5. The combination with sweep gates, weighted to be normally closed, of a rocking shaft, 29, crank arms and connecting rods for connecting the shaft with the gates, a crank arm 28, fixed to the shaft 29, a weight 27, adjustable upon the crank arm whereby the gates may be raised by shifting the weights to the outer end of the crank arm and allowed to fall by shifting it to its inner end, and means for shifting the weight 27, substantially as described and for the purpose specified.

6. The combination with sweep gates, weighted to be normally closed, of a rocking shaft, 29, crank arms and connecting rods for connecting the shaft with the gates, a crank arm 28 fixed to the shaft 29, a weight 27, adjustable upon the crank arm whereby the gates may be raised by shifting the weight to the outer end of the crank arm and allowed to fall by shifting it to its inner end, oppositely acting trip levers 6, 7, located near a railway track and adapted to be thrown down by a passing train, and cables connecting said trip levers with the weight 27, the trip levers being so disposed that as the one is thrown down the other is raised, substantially as described and for the purpose specified.

7. The combination with sweep gates, weighted to be normally closed, of a rocking shaft, 29, crank arms and connecting rods for connecting the shaft with the gates, a crank arm 28, fixed to the shaft 29, a weight 27, adjustable upon the crank arm whereby the gates may be raised by shifting the weight to the outer end of the crank arm and allowed to fall by shifting it to its inner end, oppositely acting trip levers 6, 7, located near a railway track and adapted to be thrown down by a passing train, and cables connecting said trip levers with the weight 27, the trip levers being so disposed that as the one is thrown down the other is raised, a trip lever, 5, adapted to be raised by the depression of the lever 6, a cable connecting the levers 5 and 7, and a second arm, 7ᵇ, to the trip lever 7, substantially as described and for the purpose specified.

8. The combination with sweep gates, weighted for self closure, of a counter weight for opening the gates, a crank arm for carrying the counter weight, cables for oppositely shifting the counter weight, trip levers 6, and 7, so arranged as to be thrown by a railway train, a lock latch for normally holding the trip levers, an alarm bell, a trip 8 adapted to be depressed by the train, cable connection between the trip 8 the bell and the lock latch whereby the depression of said trip sounds the alarm bell and releases the lock, substantially as described and for the purpose specified.

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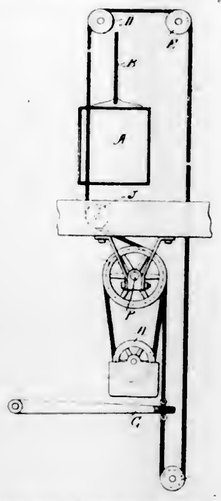
**526,771. ELEVATOR-OPERATING MECHANISM.** MARTIN H. CHRISTOPHERSON, Chicago, Ill. Filed Mar. 23, 1894. Serial No. 504,816. (No model.)

*Claim.*—1. In an elevator control mechanism a cable, guide pulleys therefor, means for applying tension to said cable, and a winding drum arranged between said means and the operating part of said cable and means operated by said drum for operating the elevator control valve; as and for the purpose set forth

2. In an elevator apparatus of the class described, a cable, means for imparting tension thereto, and a winding drum for said cable, said drum arranged intermediate said tension means and the operating part of said cable and connections between said drum and the control valve for operating the latter from the former: as and for the purpose set forth

3. In an apparatus of the class described, a hand cable for operating a control valve, an operating drum around which said cable is adapted to be wound and devices for applying tension to an intermediate wrapping of said cable around said drum, said drum arranged between said tension devices and the operating part of said cable; as and for the purpose set forth.





4. In an apparatus of the class described, a cable having a run thereof arranged in position to operate the elevator control valve from the car, a drum for operating said control valve around which said cable is adapted to be wound, and means for applying a tension to said cable, said means being supported upon an intermediate wrapping of the cable around said drum, said intermediate wrapping being in a run of the cable different from said operating run; as and for the purpose set forth.

5. In an apparatus of the class described, a cable, a drum for operating the control valve around which said cable is adapted to be wound, one of the intermediate turns of said cable forming a bight, said bight being formed in a run of said cable different from the operating run thereof, and a movable sheave carried in said bight and a tension device attached to said sheave, as and for the purpose set forth.

6. In an apparatus of the class described, a hand cable, suitable guide sheaves therefor, an operating drum for operating the control valve around which the cable is adapted to be wound, a bight being formed in said cable intermediate its windings on said drum, a tension device carried by said bight and a guide for said tension device; as and for the purpose set forth.

7 In an elevator control mechanism, a car, a stationary hand operated valve controlling cable, a valve operating drum around which said cable is adapted to be wound and means for applying tension to that portion of said cable on the opposite side of said drum from the car; as and for the purpose set forth

8. In an elevator control mechanism, a car, a stationary hand operated cable passing therethrough, a counter shaft from which the control valve is operated, a drum mounted thereon around which said cable is adapted to be wound, a bight being formed in said cable intermediate its windings on said drum on the opposite side of the drum from that portion of the cable passing through the car, and a tension device carried in said bight; as and for the purpose set forth.

9. In an elevator control mechanism, a car, a stationary cable passing therethrough, a counter shaft from which the control valve is operated, a drum mounted thereon adapted to receive windings of said cable, a bight being formed in said cable intermediate its windings on said drum and on the opposite side of said drum from that portion of said cable passing through the car, and means for applying tension to said bight; as and for the purpose set forth.

10. In an elevator control mechanism a drum, a cable leading to said drum on one side thereof and wound thereabout and means for applying tension to said cable on the opposite side of said drum and means for operating the control valve from said drum; as and for the purpose set forth.

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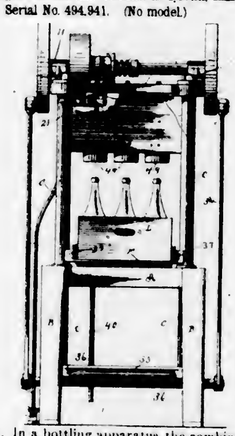
**526,772. PRESCRIPTION-BOTTLE.** CHILION D. DICKERSON, Marquette, Mich. Filed Oct. 31, 1893. Serial No. 489,625. (No model.)



*Claim.*—The described medicine bottle consisting of the body A with the breast A', the supplementary neck having reversely inclined ribs *a a* to fit corresponding grooves in a medicine tumbler, and an annular seat under the ribs for a rubber ring; whereby it may be used with a medicine tumbler grooved on the inside as set forth.

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**526,773. BOTTLING APPARATUS.** DENNIS DOYLE, Worcester, Mass., assignor of one-half to John H. Devlin, same place. Filed Dec. 28, 1893. Serial No. 494,941. (No model.)



*Claim.*—1. In a bottling apparatus, the combination of pieces or castings having supply channels, siphons of equal length each having one leg extending into a supply channel and the other leg extending between said pieces or castings, means for rendering the siphons inoperative when in their lowest position, and means for starting said siphons when raised from their lowest position, substantially as described

2. In a bottling apparatus, the combination of pieces or castings having supply channels, guide pieces adapted to fit between said castings and to be guided by the same as they are moved up and down, a series of similar siphons each having one leg extending into a supply channel, and the other leg passing through an aperture in one of the guide pieces, substantially as described.

3. In a bottling apparatus, the combination of a supply tank, channels connected with said tank, a series of similar siphons having vertically extending guide pins for guiding the siphons as they are moved up and down, means for rendering the siphons inoperative when in their lowest position, and means for starting the siphons when raised from their lowest position, substantially as described.

4 In a bottling apparatus, the combination of a top plate, a supply tank secured to said top plate, a series of siphons connected to said supply tank, guide pins carried by said siphons and extending through the top plate, substantially as described.

5. In a bottling apparatus, the combination of pieces or castings having supply channels, siphons of equal length, each having one leg extending into a supply channel, and the other leg extending between said pieces or castings, and adapted to be rendered inoperative when in their lowest position by means of valve-seats located at the bottom of the supply channels, substantially as described.

6. In a bottling apparatus, the combination of pieces or castings having supply channels and cells, siphons of equal length, each hav-

ing one leg extending into a supply cell, and the other leg extending between said pieces or castings, and valve seats consisting of rubber disks with arc shaped guides located at the bottom of the supply cells for rendering the siphons inoperative when in their lowest position, substantially as described.

7. In a bottling machine, the combination of a vertically movable table adapted to receive a case of bottles, means for filling the bottles when in their raised position, a shaft, a constantly running source of power, means for connecting the shaft with said constantly running source of power, and for allowing the shaft to make one-half of a complete revolution, substantially as described.

8. In a bottling machine, the combination of a horizontal shaft, a constantly running source of power, means for intermittently connecting said shaft with said constantly running source of power, cranks and pitmen connecting said shaft with a vertically movable table, and means for filling a case of bottles, when the table is in its raised position, substantially as described.

9. In a bottling machine, the combination of a vertically movable table, means for filling a case of bottles when the table is in its raised position, a shaft connected to said table, a constantly running pulley, a clutch adapted to connect said pulley and shaft, and means for disengaging the pulley and shaft when the shaft has made one-half of a complete revolution, substantially as described.

10. The combination of a vertically movable table, means for filling a case of bottles when in its raised position, a horizontal shaft, a crank disk carried by said shaft suitably cored out to form counter weights, and connected to said table by means of crank pins and pitmen, substantially as described.

11. The combination in a bottling machine of four vertical columns or guides, a lower platform engaging said vertical guides, a horizontal shaft connected to said lower platform by means of cranks and pitmen, an upper vertically movable table or platform also engaging said guides, vertical rods and set-screws for adjustably connecting the upper and lower platforms, and means for filling a case of bottles when the platforms are raised, substantially as described.

12. In a bottling machine, the combination of a constantly running source of power, a vertically movable platform or table adapted to receive an ordinary commercial case of bottles, means for filling the bottles when in their raised position, and means for intermittently connecting said vertically movable platform or table with said constantly running source of power, substantially as described.

13. In a bottling machine, the combination of a vertically movable table, means for filling a case of bottles carried by said table, a horizontal shaft connected to operate said table, a constantly rotating pulley mounted on said shaft, and a clutch for intermittently connecting said pulley and shaft, substantially as described.

14. The combination of a vertically movable platform or table, means for filling a case of bottles carried by said table, a shaft connected to actuate said table, a constantly running pulley mounted on said shaft, a clutch for connecting said shaft to the pulley, a spring normally tending to move the clutch into engagement, and a vertically movable pin adapted to engage cams carried by the clutch to disengage the same, substantially as described.

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526,774. TYPE-WRITING MACHINE. JACOB FELBEL, New York, N. Y. Filed Aug. 23, 1890. Serial No. 362,879. (No model.)



*Claim.*—1. In a typewriting machine, the combination with the paper-carriage, its platen, and its paper-table, of an adjustable margin-regulator operating as a gage for the paper supported on the said paper-table, substantially as set forth.

2. In a type-writing machine, the combination with a paper-carriage having a cylindrical platen and the usual paper-table, of an adjustable margin-regulator connected directly to said table at one end for the purpose of securing an equal amount of margin at the left hand side of the successive sheets of a given piece of work; as set forth.

3. In a type-writing machine, the combination with a paper-carriage having a cylindrical platen and the usual paper-table, of an adjustable margin-regulator connected directly at one end of said paper-table and consisting of a bar or shank portion and a lip or projection arranged at an angle thereto; as set forth.

4. In a type-writing machine, the combination with a paper-carriage having a cylindrical platen and the usual paper-table, of an adjustable margin-regulator connected directly to said paper-table and having a forwardly extending lip or flange arranged to be moved toward and away from the end of said paper-table; as set forth.

5. In a type-writing machine, the combination with a paper-carriage having a cylindrical platen and the usual paper-table, of an adjustable margin regulator connected directly to one end of said table, and a spring tongue for holding the same in any position to which it may be adjusted; as set forth.

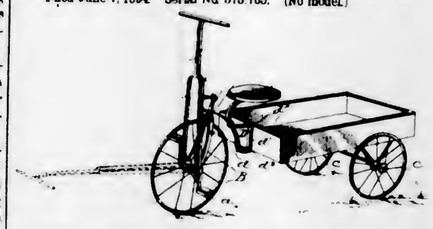
6. In a type-writing machine, the combination with a platen and a paper-table, of an adjustable marginal paper-guide, and a supporting-plate having guiding lugs or ears, and a spring tongue; substantially as set forth.

7. In a type-writing machine, the combination with a paper-carriage having a cylindrical platen and the usual paper-table, of an adjustable marginal regulator having a stop or enlargement at one end, and a supporting plate attached to said paper-table at one end and having projecting guides for said marginal regulator; as set forth.

8. In a type writing machine, the combination with a paper table, of a frictionally-held adjustable margin-guide thereon.

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526,775. VELOCIPEDE. WILLIAM C. FOSTER, La Crosse, WIS. Filed June 7, 1894. Serial No. 513,765. (No model.)

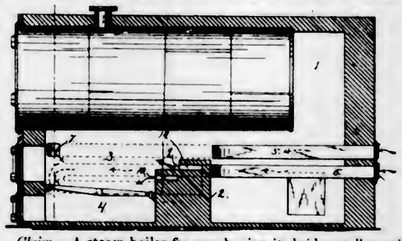


*Claim.*—1. The combination with a steering wheel and fork of the spring bar frame composed of the bars $d$ and $d'$ shaped and connected as described, the seat supported by the bar $d'$ and the wagon body connected to the rear ends of the said bar, substantially as shown and described.

2. The combination with the steering wheel and fork of the independent handle bar or tongue, the wagon body and the connecting frame comprising the bars $d$ and $d'$, the bar $d'$ being bent at $d^3$ and $d^4$ and the seat carried upon the upper end of the bar $d'$, substantially as shown and described.

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526,776. FURNACE. GEORGE F. GALLAGHER and THOMAS R. MOORE, Rochester, N. Y., assignors of one-third to Henry Gallagher, same place. Filed Apr. 11, 1891. Serial No. 388,464. (No model.)



*Claim.*—A steam boiler furnace having its bridge wall provided in its front side with transverse openings, and its side walls provided with horizontal passages leading from the rear end of the furnace, and independent from each other throughout their entire lengths the upper passages leading straight to the front end of the fire box and opening thereinto, and the lower passages leading straight from said rear end, then making a reverse turn, then leading straight rearward, and then communicating with the openings in the bridge wall, and dampers at the rear ends of said passages for controlling them independently, all as and for the purpose set forth.

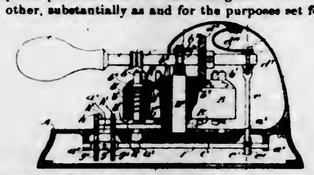
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526,777. PERFORATING DEVICE. JOSEPH G. GOFF, Philadelphia, Pa. Filed Dec. 8, 1893. Serial No. 493,188. (No model.)

*Claim.*—1. The combination, in a perforating device, of a recessed bed plate with a rotatable die-plate, a vertical shaft secured into said bed plate, a holder mounted on said shaft and provided with a series of spring controlled plunger dies and a miter-gear, a feeding or spacing device, an operating lever provided with a miter-gear adapted to mesh with the complemental gear of said holder, a pawl-lever and a ratchet-wheel mounted on a horizontal shaft, substantially as and for the purposes set forth.



2. The combination, in a perforating device, of a bed plate provided with a vertical shaft, a holder provided with spring controlled plunger dies, and a die plate with perforations therein and mounted on said shaft, a gear applied to the top of said holder, an operating lever and a gear wheel mounted on said lever and adapted to mesh with the gear of said holder and a spring adapted to maintain said lever in required position so as to cause said gears to normally mesh with each other, substantially as and for the purposes set forth.



3. The combination, in a perforating device, of a recessed bed provided with an aperture and with depending lugs, a vertical shaft provided with a bearing post having an adjusting screw connected therewith, a rotatable holder having plunger dies and a perforated die-plate connected with the hub of said holder, said holder having a peripheral gear, an operating lever engaging the bearing post of said shaft and provided with a detachable gear adapted to mesh with the gear of said holder, a bent leaf spring connected with the housing of the device and with a collar mounted on said operating lever, a pivotal pawl lever connected with said collar and held by means of a spring in engagement with the ratchet-wheel mounted on a horizontal shaft supported in the lugs of said bed plate, a feeding or spacing mechanism with a controlled releasing lever and said mechanism operated by said horizontal shaft in the actuation of said operating lever, substantially as and for the purposes set forth.

4. The combination, in a perforating device, of a rotatable holder provided with a spring controlled feathered plunger dies and with a perforated die-plate, a gear-wheel connected with said holder, an operated lever journaled to a bearing post integral with the shaft supporting said holder and die-plate and engaging the bed-plate of the device, a gear-wheel mounted on said lever and adapted to mesh with the gear of said holder, and a tapering apertured collar connected with said lever and adapted to engage the upper ends of said disk, substantially as and for the purposes set forth.

5. The combination, in a perforating device, of a bed plate having apertures therein and with lugs projecting therefrom, a detachable bottom, a cap with an opening therein, a holder provided with plunger dies and with a perforated die-plate, a gear connected with said holder and meshing with the complemental gear of an operating lever supported under a spring tension to position in a bearing therefor, a pawl and ratchet connection, a horizontal shaft, and a spacing or feeding mechanism controlled by said operating lever through the intervention of said pawl and ratchet connection and shaft, substantially as and for the purposes set forth.

6. The combination, in a perforating device, of a vertical shaft connected with a bed plate, a rotatable holder provided with plunger dies and with a detachable die-plate, a gear connected with said holder and adapted to mesh with the gear mounted on a supported operating lever, a feeding and spacing mechanism with a releasing lever, a horizontal shaft supported in lugs depending from the bed-plate of the device, and a pawl and ratchet connection between said operating lever and said horizontal shaft, substantially as and for the purposes set forth.

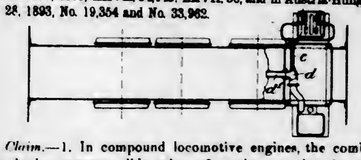
7. The combination, in a perforating device, of a rotatable holder provided with spring controlled plunger dies, a perforated die-plate detachably connected with the hub of said holder and engaging in a recessed bed, a miter gear wheel connected with said holder and adapted to mesh with a complemental gear detachably mounted on an operating lever supported in an arched bearing by means of an adjusting screw engaging with a recessed portion of said lever, a spring for maintaining said lever in required position so as to cause said gear wheels to mesh with one another, a spacing or feeding mechanism, a horizontal shaft and pawl and ratchet connections between said operating lever and shaft, substantially as and for the purposes set forth.

8. The combination, in a perforating device, of a recessed bed, a rotatable holder having spring controlled plunger dies, a gear-wheel connected with the top thereof and with the hub portion of said holder provided with a die plate engaging in the recessed portion of said bed, an operating lever provided with a gear adapted to mesh with the gear of said holder, said operating lever being supported to position in a bearing post having an adjusting screw, a spring connected with the housing and engaging a sleeve mounted on said lever for maintaining said gear wheels in engagement with each other, a pivotal pawl lever, a horizontal shaft carrying a ratchet-wheel said pawl-lever held in contact with said ratchet-wheels by means of a spring, a feeding or spacing mechanism provided with a releasing-lever, and said feeding or spacing mechanism comprising two members, whereof one is mounted on said shaft and frictionally contacts with the other, substantially as and for the purposes set forth.

9 The combination in a perforating device, of a recessed bed provided with a shaft engaging therewith and having an arched bearing post with a tightening screw, a holder provided with spring controlled feathered plunger dies, a gear wheel and a detachable die plate, an operating lever provided with a gear adapted to mesh with the gear of said holder, a collar with a tightening device, a spring engaging the housing of said device and said collar, a pivotal lever suspended from said collar with a spring controlled pawl, a shaft mounted in the base-plate of said housing and provided with a ratchet-wheel and with wheels extending through the base of the device and engaging complemental wheels journaled to a spring controlled lever having a thumb-piece and pivotally supported from the bed-plate, substantially as and for the purposes set forth.

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526,778. COMPOUND LOCOMOTIVE-ENGINE. KARL GOLADOFF, Vienna, Austria-Hungary. Filed June 7, 1893. Serial No. 476,808. (No model.) Patented in Belgium Apr. 8, 1893, No. 104,218; in Germany Apr. 8, 1893, No. 75,023; in Switzerland Apr. 8, 1893, No. 6,855; in France Apr. 8, 1893, No. 229,232; in England Apr. 8, 1893, No. 7,279; in Italy June 30, 1893, XXVII, 34,143, LXVII, 38, and in Austria-Hungary July 28, 1893, No. 19,354 and No. 33,962.



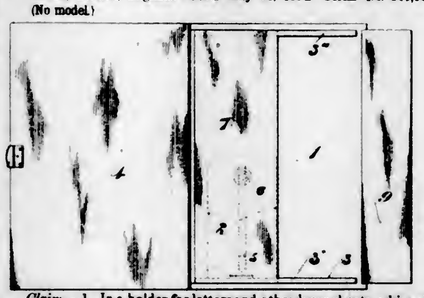
*Claim.*—1. In compound locomotive engines, the combination with the low pressure slide valve, of a valve seat therefor provided with the usual steam ports and with two auxiliary steam ports in perpetual communication with the source of live steam, adapted to be covered and uncovered by the said valve under certain conditions of cut-off, for the purpose set forth.

2. In compound locomotives, the combination with the low pressure slide valve, of a seat therefor provided with the usual steam ports and with two auxiliary steam ports in perpetual communication with the live steam supply and arranged relatively to the slide valve so as to be normally covered thereby and uncovered to admit live steam to one or the other side of the low pressure piston according to the direction in which the engine is to move whenever the normal cut-off point is exceeded for the purpose set forth.

3. The herein described means for starting compound locomotives, which consists in the combination with the low pressure slide valve, of a valve seat therefor provided with the usual steam ports and with two auxiliary steam ports $a$, $a$, in perpetual communication with the live steam supply, said ports arranged relatively to the valve so as to be closed steam tight thereby during the normal operation of the engine, and to be uncovered by said valve when the cut off point exceeds the normal whereby live steam may be admitted to the side of the low pressure piston corresponding with the direction in which the locomotive is to move to start the same through the medium of said piston only, and whereby after closure of said ports and the consequent cessation of counter pressure on the high pressure piston, the locomotive can be set in motion through the medium of the latter piston, substantially as set forth.

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526,779. CASE OR HOLDER FOR LETTERS, &c. ISAAC C. GOULD, London, England. Filed May 21, 1894. Serial No. 511,961 (No model.)



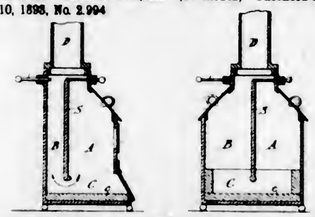
*Claim.*—1. In a holder for letters and other loose sheets, a hinged or pivoted flap adapted to bear against the letters or other loose sheets, and a sliding piece adapted to act by gravity against said flap, substantially as herein described for the purpose specified.

2. In a holder for letters and other loose sheets, the combination of a normally fixed part, a hinged flap adapted to bear against the loose sheets, and a sliding piece adapted when the holder is turned on end, to act by gravity against said fixed part and flap and hold the latter in its operative position substantially as herein described.

3. In a holder for loose papers, the combination of a part cover, a hinged flap, and a sliding piece arranged to work in a slot in one of said parts and act by gavity against the other substantially as herein described.

4. A holder for letters and other loose papers comprising a holder proper having a hinged cover and side, a fixed part cover, a slotted hinged flap arranged to bear upon loose papers within said holder, and a sliding button carried by said flap and arranged to act by gravity against said part cover substantially as herein described for the purpose specified.

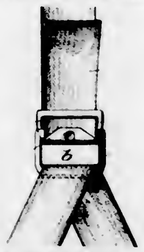
## 526,780. HEATING APPARATUS. JOHN T. GRINDROD, Heswall, assignor of one-half to Jesse Holt, Wanstead Park, England. Filed Dec. 13, 1893. Serial No. 493,522. (No model.) Patented in England, Feb. 10, 1893, No. 2,994



*Claim.*—1. A heating stove or furnace, comprising a shell having a vertical outlet or flue, an air inlet in said shell having a regulating device connected therewith, an internal partition extending downward in said shell and terminating some distance above the bottom thereof and dividing the interior of said shell into two communicating chambers, the top of said partition forming a bearing for the engagement therewith of movable dampers extending through said shell and located in proximity to said outlet or flue, and a fire clay lining in the interior of said shell, substantially as and for the purposes described.

2. A heating stove or furnace, comprising a shell provided with a vertical outlet or flue, a controlled air inlet, a detachable fuel door in said shell, an internal partition extending downward in said shell and terminating some distance above the bottom thereof and so arranged as to form the wall of two communicating internal chambers and the top of said partition recessed to form bearings or seats for movable dampers extending through said shell and located in proximity to said outlet or flue, one of said chambers lined as well as the bottom with fire clay partially supported to position by said partition, and the other chamber provided with grate bars, substantially as and for the purposes described.

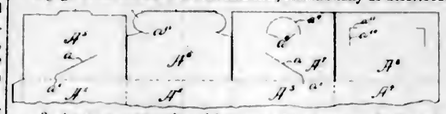
## 526,781. CLASP. HERMANN W. HOEFT, La Crosse, Wis. Filed May 1, 1893. Serial No. 472,555. (No model.)



*Claim.*—An improved clasp consisting of a essentially rectangular frame piece through which the tape is adapted to pass, and a plate having a slot through which the tape is also adapted to be passed and a hook adapted to bind the tape against one member of the frame when the frame and hook are brought together, substantially as shown and described.

## 526,782. PAPER BOX. WARREN B. HOWE and FRANK B. DAVIDSON, Chicago, Ill. Filed June 7, 1894. Serial No. 513,772. (No model.)

*Claim.*—1. A paper or strawboard box comprising connected side walls and end flaps attached to said side walls, two of the opposite flaps having oblique slits extending to the side walls to which the said flaps are attached, and the intermediate flap being made of the full width of the side of the box to which it is attached and being adapted to engage at its corners with the said slits, substantially as described.



2. A paper or strawboard box comprising connected side walls and flaps attached thereto, one of said flaps being provided with a U-shaped slit forming a tongue and adapted to receive the edge of the opposite flap, and the said flaps being provided with oblique slits reaching to the margins thereof which are attached to the said walls of the box, and an intermediate flap made of the full width of the box and adapted to engage at its corners with said slits, substantially as described.

3. A paper or strawboard box comprising connected side walls and attached flaps, two opposite flaps being provided with slits adapted to engage an intermediate flap, and a fourth flap opposite the intermediate flap adapted to engage slits in said intermediate flap, substantially as described.

4. A paper or strawboard box comprising connected side walls and attached flaps, two opposite flaps being provided with slits adapted to engage the corners of an intermediate flap, and a fourth flap opposite the intermediate flap provided with lateral tongues adapted to engage slits in said intermediate flaps, substantially as described.

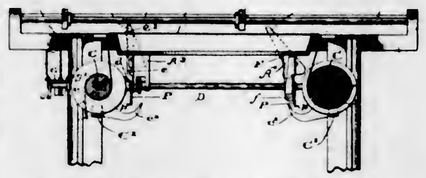
5. A paper or strawboard box comprising connected side walls and attached flaps, of which two opposite flaps are provided with slits to receive the corners of an intermediate flap, said intermediate flap being provided with slits adjacent to the said oblique slits when the flaps are folded together, and a fourth flap opposite the intermediate flap provided with lateral tongues adapted to enter the slits in the intermediate flap and to enter the said oblique slits, substantially as described.

6. A paper or strawboard box comprising four connected side walls and flaps connected therewith, two of the opposite flaps being provided with oblique slits and adapted to receive the corners of an intermediate flap, said intermediate flap being provided with slits, and the flap opposite thereto having lateral tongues to engage said slits, and lateral shoulders exterior to said tongues adapted to engage the end of said slits in the intermediate flap, substantially as described.

7. A paper or strawboard box comprising four connected side walls and flaps attached thereto, two opposite flaps being provided with oblique slits to receive the corners of the intermediate flap, and said intermediate flap being provided with slits located adjacent to said oblique slits, and a fourth flap being provided with lateral tongues and with shoulders exterior to said tongues, which latter are adapted to enter the slits in the intermediate flap and also to extend beneath the adjacent parts of the opposite flaps first mentioned, substantially as described.

8. A paper or strawboard box comprising four connected side walls and attached end-forming flaps, two opposite flaps being provided with oblique slits extending to the attached margins thereof and adapted to receive the corners of an intermediate flap, which latter is made of the full width of the said wall to which it is attached, and is provided with slits located adjacent to the oblique slits when the flaps are folded together, and the fourth flap opposite said intermediate flap being provided with lateral tongues and lateral shoulders exterior to the tongues, said tongues being adapted to engage the slits in the intermediate flap and the shoulders to engage the ends of said slits, substantially as described.

## 526,783. RIBBON-FEED-REVERSING MECHANISM. CHARLES E. JOHNSON, Mount Jackson, Ind. Filed Aug. 31, 1893. Serial No. 484,429. (No model.)



*Claim.*—1. The combination, in an automatic ribbon feed reversing mechanism, of the ribbon spools, swinging frames upon said spools, arms on said swinging frames, catch-bars pivoted within the heads of the spools, the ribbon adapted in winding to draw said catch-bars close to the spools and in unwinding to permit them to drop out and engage with the swinging frames, shifting levers, the upper ends of which extend into the path of the traveling carriage and the lower ends of which extend down adjacent to the spool-driving shaft, and pivoted points on said levers adapted to be operated by the arms on the frame and thrown into engagement with hubs or projections on said shaft, substantially as set forth.



2. The combination, in a ribbon feed reversing mechanism, of levers for engaging with and shifting the ribbon-spool feeding devices, pivoted points on said levers, frames or arms suspended from the shafts of the spools and adapted when the ribbon is unwound to throw the lever points into engagement with the feed mechanism, the traveling carriage adapted to come in contact with and operate said levers, and means on the spools for operating said frames or arms substantially as set forth.

3. The combination, in a ribbon feed reversing mechanism, with the feed mechanism, of levers extending up through the frame and into the path of the traveling carriage, said levers consisting of two parts, the upper pivoted upon the lower and provided with catches or projections whereby said upper part is enabled to yieldingly swing on its pivot as the carriage travels past it in one direction, but remain rigid in the other direction, substantially as set forth.

4. The combination, in a typewriting machine, of the traveling carriage, ribbon feeding mechanism, ribbon feed reversing mechanism, a lever formed of two parts jointed together, flexible in one direction and stiff in the other, secured to the frame-work and connected to said mechanism, the upper end whereof extends up through a slot in the frame-work into the path of said traveling carriage, and a spring whereby said lever is held and returned to its former position after the traveling carriage has passed, substantially as shown and described.

5. The combination, in a ribbon feed reversing mechanism, with the feeding mechanism, of a frame pivoted to the ribbon-spool shaft and hanging loosely thereon, and a U-shaped catch-bar pivoted within the heads of said ribbon spool and adapted to extend out and engage with said frame in one direction and provided with arms extending in the other direction whereby it is held rigid in operation, substantially as shown and described.

6. The combination, in a ribbon feed reversing mechanism, with the feed shaft, of levers for operating said feed shaft provided with pivoted swinging points of such a length that they will pass said shaft when alongside the body thereof, but will come in contact and engage with hubs or projections thereon when said hubs or projections are alongside said points, substantially as and for the purposes set forth.

7. The combination, in a ribbon feed reversing mechanism for typewriting machines, with the shifting lever, of a pivoted engaging point P' thereon provided with a wing or side projection *p*, substantially as shown and described.

8. The combination, in a ribbon feed reversing mechanism, of the spools, the mechanism whereby they are operated, and two levers for shifting or reversing said feeding mechanism extending therefrom up through the frame into the path of the carriage, one of said levers being pivoted above said feeding mechanism and the other below, whereby the carriage is adapted to operate both when moving in the same direction, whereby consumption of the usual carriage-feeding power is avoided.

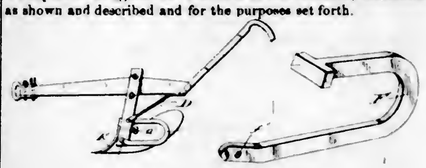
9. The combination, in a ribbon feed reversing mechanism, of the ribbon spools, the shiftable feed mechanism for operating the same, and two reversing levers adapted to engage with said feed mechanism at the lower end and extending up through the frame into the path of the carriage, whereby they are thus adapted to be operated to shift said feeding mechanism, and devices whereby upon the unwinding of the ribbon at either end, one or the other of said levers is thrown into operation, substantially as shown and described.

10. The combination, in a ribbon feed reversing mechanism, of the feed shaft D, the lever like detent G pivoted to a portion of the frame alongside said shaft at *g* and attached to said shaft by a yoke-like pivot *g'*, a limiting stud or bolt *g*$^3$, and an operating spring G' pivoted to the frame at one end and to said lever-like detent at the other end, substantially as shown and described.

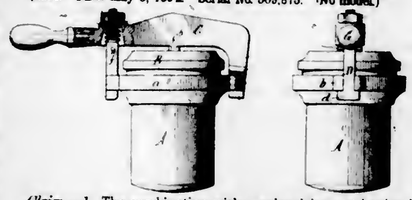
## 526,784. COMBINATION PLOW-STOCK. ADOLPHUS E. JONES, Greensburg, La. Filed Oct. 9, 1893. Serial No. 487,616. (No model.)

*Claim.*—1. An adjustable U-shaped landside, having its lower front end turned slightly up, and adapted to work against either side of the plow standard, its upper and shorter end provided with a horizontal T cross, either end of which is adapted to fit against the rear face of said standard, substantially as shown and described and for the purposes set forth.

2. The combination of the beam B, standard C, pivoted to said beam by means of the brace D, its upper end adapted to move back and forth on said beam; the adjustable U-shaped landside, having its lower front end turned slightly up and perforated horizontally and adapted to work against either side of the plow standard, its upper and shorter end provided with a horizontal T cross, either end of which is adapted to fit against the rear face of said standard, substantially as shown and described and for the purposes set forth.



## 526,785. DENTAL VULCANIZER. THEODORE G. LEWIS, Buffalo, N. Y., assignor to the Buffalo Dental Manufacturing Company, same place. Filed May 3, 1894. Serial No. 509,873. (No model.)



*Claim.*—1. The combination with a vulcanizing pot having lugs on opposite sides, of a cover, a clamping yoke for the cover engaging at one end with the lugs on one side of the pot, and a clamping bolt arranged on the opposite side of the pot and passing through an opening in the yoke, elongated in the longitudinal direction of said yoke, said bolt having at its lower end a head adapted to engage under the adjacent lugs and at its upper end a screw nut bearing upon the yoke, whereby the bolt is engaged with or disengaged from said lugs by a movement toward and from the side of the pot and is tightened or released by a vertical movement in the yoke, substantially as set forth.

2. The combination with a vulcanizing pot having lugs on opposite sides thereof, of a cover, a clamping yoke for the cover provided at one end with a depending arm adapted to interlock with the lugs on one side of the vulcanizing pot, and at its opposite end with a socket or opening, having at its upper end a nut-seat inclined toward the front end of the yoke, a laterally-swinging bolt carried by the yoke, passing through the opening of the latter, and provided at its lower end with a head interlocking with the lugs on the adjacent side of the vulcanizing pot and at its upper end with a clamping nut bearing upon the inclined seat of the yoke-opening, substantially as set forth.

3. The combination with a vulcanizing pot having lugs on opposite sides thereof, of a cover, a clamping yoke for the cover provided at one end with a depending arm adapted to interlock with the lugs on one side of the vulcanizing pot, and at its opposite end with an opening or socket, a clamping bolt capable of moving lengthwise in said opening or socket and adapted to interlock with the adjacent lugs of the vulcanizing pot, and a spring applied to said clamping bolt, substantially as set forth.

4. The combination with a vulcanizing pot having lugs on opposite sides thereof, of a cover, a clamping yoke for the cover provided at one end with a depending arm adapted to interlock with the lugs on one side of the vulcanizing pot, and at its opposite end with an opening or socket having an internal stop, a shouldered bolt capable of moving lengthwise in said opening or socket and adapted to interlock with the adjacent lugs of the vulcanizing pot, a clamping nut arranged at the upper end of said bolt, and a spring applied to the bolt between its shoulder and the stop of said socket, substantially as set forth.

5. The combination with the vulcanizing pot having lugs on opposite sides thereof, of a cover, a clamping yoke for the cover, having at one end a depending arm provided with a lug adapted to interlock with the lugs on one side of the vulcanizing pot and above its locking lug with a lateral projection adapted to rest upon the lugs of the vulcanizing pot, and a clamping bolt attached to the opposite end of the yoke and interlocking with the lugs on the adjacent side of the vulcanizing pot, substantially as set forth.

## 526,786. PROCESS OF MAKING PHENOL ALCOHOL. OTTO MANASSE, Munich, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Filed May 31, 1894. Serial No. 513,077. (No specimens.)

*Claim.*—The process for the production of "phenol-alcohols" by allowing formaldehyde to act on phenol or phenol-like substances in

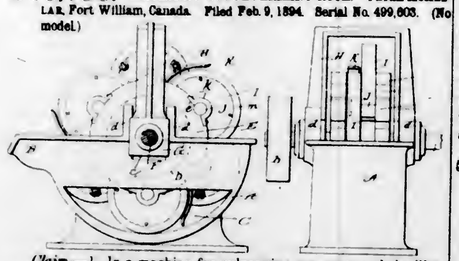
the presence of alkaline or neutral condensing agents such as soda lye, potassa lye, potassium cyanide and so on, in the manner hereinbefore described.

526,787. CHECK-BOOK. ELLSWORTH D. MIDDLEKAUFF and ANDREW N. AITKEN, San Francisco, Cal. Filed May 1, 1894. Serial No. 509,711. (No model.)



*Claim.*—In a check book, the combination with its covers and check blanks detachably connected to stubs, which are rigidly attached to the back of the book, of a blotter sheet rigidly attached to the back of such book, and adapted to engage the faces of the check blanks and record sheets, the record sheets detachably connected to stubs, which are rigidly attached to the back of the book, and stubs provided with gummed faces, such stubs being rigidly attached to the back of the book near the front cover of the same and adapted to receive the filled record sheets, all arranged and operating substantially as shown and described.

526,788. MACHINE FOR PULVERIZING ROCK. PETER MCKELLAR, Fort William, Canada. Filed Feb. 9, 1894. Serial No. 499,603. (No model.)



*Claim.*—1. In a machine for pulverizing ore, rock, and the like, the combination of a mortar or receptacle having vertical guides, a movable yoke arranged in the guides of the mortar or receptacle, and a wheel carrying impact rolls, arranged to turn in the mortar or receptacle and having its shaft mounted in the yoke, substantially as and for the purpose set forth.

2. In a machine for pulverizing ore, rock, or the like, the combination of a mortar or receptacle having vertical guides, a movable yoke having its ends arranged in said guides, a wheel arranged to turn in the mortar or receptacle and having its shaft mounted in the ends of the yoke, and a series of rotatable impact rolls carried by the wheel and so arranged that they overlap each other, substantially as and for the purpose set forth.

3. In a machine for pulverizing ore, rock, and the like, the combination of a mortar or receptacle having vertical guides, a movable yoke having its ends arranged in said guides, a wheel arranged to turn in the mortar or receptacle and having its shaft mounted in the ends of the yoke, a series of rotatable impact rolls carried by the wheel, and the curvilinear scrapers also carried by the wheel and arranged in advance of the rolls, substantially as and for the purpose set forth.

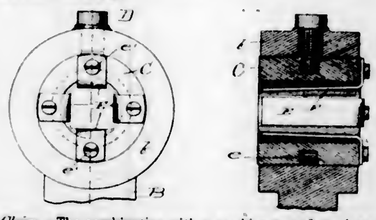
4. The herein described machine for pulverizing ore, rock, and the like, comprising the mortar or receptacle having the removable, curvilinear reinforced piece or shoe D, and also having vertical guides, the movable yoke having its ends arranged in said guide, the wheel arranged to turn in the mortar or receptacle and having its shaft mounted in the ends of the yoke, a series of rotatable impact rolls carried by the wheel and having removable rims or tires, and the curvilinear scrapers also carried by the wheel and arranged in advance of rolls, substantially as and for the purpose set forth.

526,789. GARMENT-HOLDER. CHRISTOPHER PEACOCK, North Andover, Wis. Filed Jan. 31, 1894. Serial No. 498,638. (No model.)



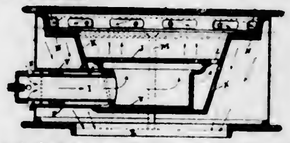
*Claim.*—A garment holder comprising a frame having parallel top and bottom pieces provided at the ends with bearings, horizontally swinging vertically disposed brackets mounted on the frame and provided with vertical bars journaled in said bearings and having horizontal arms split to form outward extending jaws having on their inner opposed faces longitudinal ribs and grooves, and clamping sleeves arranged on said arms substantially as and for the purpose described.

526,790. ROD-SUPPORT FOR SCREW OR OTHER MACHINES. CHARLES E. ROBERTS, Oak Park, Ill. Filed Jan. 12, 1894. Serial No. 496,610. (No model.)



*Claim.*—The combination with a machine manufacturing screws or other articles from rods, of a support for the outer end of the rods, said support being provided with a bushing through which the rod passes adapted to turn freely with the rod in the latter's axial rotation, and with springs secured to the bushing and bearing upon the sides of the rod so as to prevent lateral play by it, substantially as specified.

526,791. GAS-STOVE. FREDERICK W. ROBERTSHAW, Pittsburg, and JOHN M. COOPER, Bellevue, Pa. Filed Apr. 16, 1894. Serial No. 507,689. (No model.)



*Claim.*—1. In a gas stove the combination of the top and bottom plates, the body, the casing K and burner F provided with a stop plate T having an air heating chamber between them, with the gas and air inlet tube I and the air inlet tube P, the former communicating with the burner and the latter with said air space all substantially as set forth, whereby the impact of air currents on the top plate is avoided and whereby the preheating of air admitted for combustion is secured.

2. In a gas stove the combination of the body, the top and bottom plates, said top plate having a ledge N and exits O, the casing K, the burner having a perforated plate and air and gas inlets adapted to introduce the entire air and gas supply below said burner plate and below the level of the exits and the current of escaping gases, substantially as set forth.

3. In a gas stove the combination of the stove body, the top plate having a pot hole and cover and a frusto-conical body provided with exits situated near the outer edge of the cover, a burner plate having one or more annular rows of perforations surrounding an imperforate central part, and air and gas inlets adapted to deliver the entire air and gas supply below the level of said burner plate whereby cool air currents are kept from the top plate, substantially as set forth.

4. In a gas stove the body, the top and bottom plates, said top having exits O, a frusto-conical body and a ledge N, a casing K, and bolts N', whereby the casing and bottom plate are fastened together and the top and bottom plates clamped on the body, the burner F seated in the casing, the tube I supported in the burner, and the air tube P supported by the casing K, substantially as set forth.

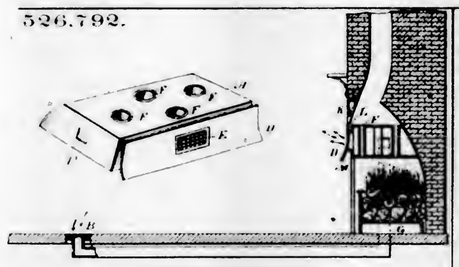
526,792. APPARATUS FOR HEATING AND VENTILATING ROOMS. THOMAS N. ROGERS, Sault Ste. Marie, Mich. Filed June 21, 1893. Serial No. 478,378. (No model.)

*Claim.*—1. An air heating drum adapted to be located within a fire place and provided on its front with an ornamental plate separate from the main drum thus forming a passage along the front of said drum up into the chimney, substantially as and for the purpose set forth.

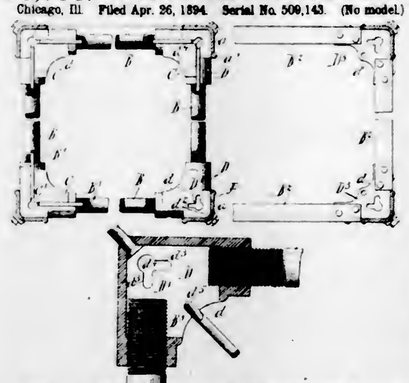
2. A fire place heater consisting of a hollow, oblong drum, provided with a series of transverse flues, an opening in front for passage of the heated air, and a front piece separate from the main drum having a lower edge extending below the same, substantially as described.



526,792.



526,793. TOWER FOR WINDMILLS. SEYMOUR A. ROUSE, Chicago, Ill. Filed Apr. 26, 1894. Serial No. 509,143. (No model.)



*Claim.*—1. The combination with the corner posts of a tower, of means for bracing the latter comprising tie rods, and adjustable struts or girts by means of which the corner posts may be spread bodily to bring the tie rods under tension, substantially as described.

2. The combination with the corner posts of a tower, of corner pieces secured to said posts, tie rods connected at their ends to the corner pieces, and adjustable struts or girts engaging the corner pieces, substantially as described.

3. The combination with the corner posts of a tower, of corner pieces secured to said posts, tie rods of fixed lengths connected at their ends to the corner pieces, and struts or girts adjustably engaging the corner pieces, substantially as described.

4. The combination with the corner posts of a tower, of corner pieces secured to said posts and provided with button hole slots, tie rods having headed ends engaging said slots, and struts or girts adjustably engaging the corner pieces, substantially as described.

5. The combination with the corner posts of a tower, of corner pieces secured to said posts, tie rods connected at their ends to the corner pieces, and struts or girts provided at their opposite ends with right and left screw threaded portions adjustably engaging corresponding screw threaded apertures in the corner pieces, substantially as described.

6. The combination with the corner posts of a tower, of corner pieces secured to said posts, and provided with button hole slots, tie rods headed at their ends to engage said slots, and struts or girts having right and left screw threaded engagement with the corner pieces, substantially as described.

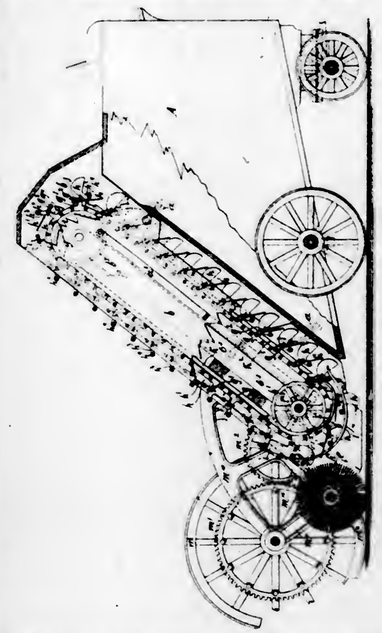
7. The combination with the angle bar corner posts of a tower, of corner pieces bolted to said posts comprising upper and lower flanges and side walls forming a corner adapted to fit within the angle of the corner posts, and having button hole slots in said flanges, tie rods having headed ends to engage said slots, and struts having right and left screw threaded engagement with said corner pieces, substantially as described.

8. The combination with the angle bar corner posts of a tower, of corner castings comprising side walls forming a corner adapted to fit within the angle of the corner posts, a bolt passing through the angle of each corner post and corner piece to secure the latter in place, substantially as described.

9. The combination with the corner posts of a wind mill tower, of corner pieces secured to said posts, tie rods connected at their ends with said corner pieces, struts adjustably engaging the latter, and apertures in said corner pieces for engaging swinging guides for the pump rod, substantially as described.

10. The combination with the corner posts of a tower, and corner pieces secured to the posts, of a lower set of angle bar struts rigidly secured to the lower corner pieces, upper sets of struts adjustably engaging the upper corner pieces, and tie rods connecting the corner pieces, substantially as described.

526,794. STREET-SWEEPER. GIOVANNI B. SICCARDI, New York, N. Y. Filed May 7, 1894. Serial No. 510,338. (No model.)



*Claim.*—1. A street sweeper consisting of a pair of side plates, fastenings for securing the same to the tail board of a cart, a revolving brush, an endless conveyer, a pair of drums around which the conveyer travels, and buckets secured to the conveyer and adapted to close automatically upon ascending and descending, and to open automatically upon rounding the drums, substantially as specified.

2. The combination of a sweeping brush with an upper and lower drum, chains passing around the same, buckets and covers pivoted thereto, rollers secured to the buckets and covers, and eccentric rails adapted to engage said rollers and to tilt the buckets and covers while rounding the lower drum, substantially as specified.

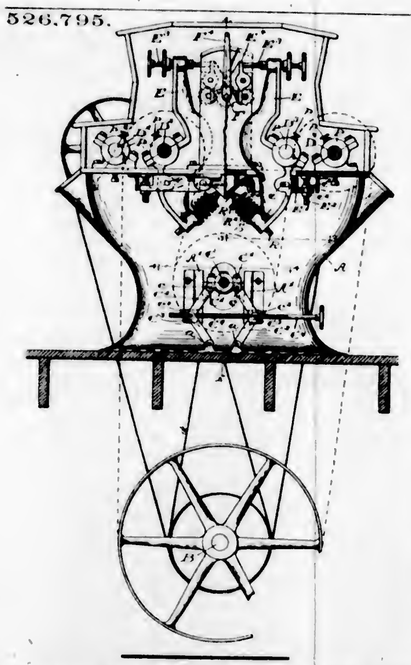
3. The combination of an upper and a lower drum with links *g*, having arms *g'*, pivot pins $g^3$, covers *h'*, rigidly connected thereto, buckets *h*, turning loosely on the pivot pins, arms *j*, stops *j'*, rollers $g^4$, $h^4$, secured to the covers and buckets respectively, and with eccentric rails *i'*, *i*, adapted to be engaged by said rollers and thereby tilt the buckets and covers, substantially as specified.

526,795. ROLLER-MILL. JOHN W. VAUGHAN, Taylorsville, Ind. Filed June 5, 1893. Serial No. 476,617. (No model.)

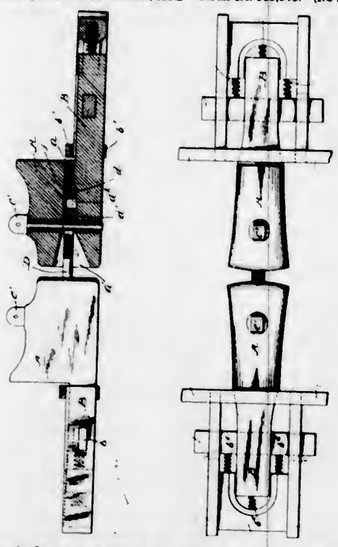
*Claim.*—1. The combination, in a roller mill, with the counter shaft C, of its boxes *C'* mounted in vertical slides *A'* on the frame-work A, the toggle links $C^3$ pivoted to said boxes and to appropriate bearings on the frame-work at the outer ends, and to nuts $C^4$ at the inner ends where they come together, and a screw threaded rod $C^4$ passing through said nuts, whereby said toggle links are operated and the bearings carrying the shaft thus elevated or depressed, substantially as set forth.

2. The combination, in a roller mill, of the frame-work, housings *F'* secured to said frame-work by pivots *e'* at one side and by screw rods $E^3$ having adjusting nuts $e^3$ at the other, pivots *e* in said housings, arms E having elongated slots mounted on said pivots, rolls supported by said arms, springs interposed between the lower end of said arms below the pivots and bearings on the frame-work, and mechanism for operating said arms at the upper ends thereof, substantially as shown and described.

526,795.



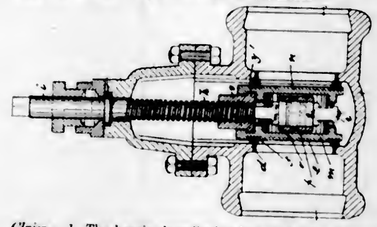
526,796. COMBINED CAR COUPLING AND BUMPER. WILLIAM WALLACK, Peoria, Tex., assignor of one-half to David Clarkson McMasters, same place. Filed Mar 29, 1894. Serial No. 505,575. (No model.)



*Claim.*—1. In an "automatic car coupler," the combination of the draw-head A, provided with the throat *a*, mouth *a'*, recess *c*, and coupling pin hole *c*, and in the bottom of said recess a slot *d*, terminating in a narrow slot *d'*, which opens into the mouth of said draw-head; lock-block $d^3$, fitting in and adapted to play back and forth in slot *d*; pin-seat *f*, adapted to fit in and play back and forth in recess *e*, and provided with a mortise hole to receive lock-block $d^3$; spiral spring *h*, fitting in the throat *a*, and holding said pin-seat forward, until its front end partly covers the coupling pin-hole *e*; coupling pin *c'*, adapted to rest on the front end of said pin-seat and drop through the link D, when said pin-seat is pushed back, substantially as shown and described and for the purposes set forth.

2. In an "automatic car coupler," the combination of the draw-head A, provided with the throat *a*, mouth *a'*, recess *c*, and coupling pin hole *c*, and in the bottom of said recess a slot *d*, terminating in a narrow slot *d'*, which opens into the mouth of said draw-head; lock-block $d^3$, having the beveled lower front corner, fitting in and adapted to play back and forth in slot *d*; pin-seat *f*, adapted to fit in and play back and forth in recess *e*, and provided with a mortise hole to receive lock-block $d^3$; spiral spring *h*, fitting in the throat *a*, and holding said pin-seat forward, until its front end partly covers the coupling pin-hole *e*; coupling pin *c'*, adapted to rest on the front end of said pin-seat and drop through the link D, when said pin-seat is pushed back, substantially as shown and described and for the purposes set forth.

526,797. GATE-VALVE. LINDON S. WHEATON, Newark, N. J. Filed Dec. 11, 1893. Serial No. 493,315. (No model.)

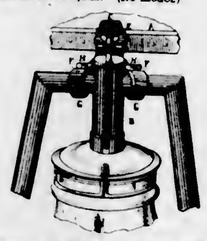


*Claim.*—1. The herein described valve mechanism, consisting of the two disks provided with inwardly projecting recessed lugs, a yoke placed between said disks, cam pieces having bearing faces in contact with each other carried by said yoke and bearing against said recessed lugs of said disks, all arranged so that, when the disks are lowered to close the valve, the yoke remains stationary and the cam pieces force the disks outward in opposite directions, substantially as described.

2. In a valve, the combination of the shell, the stem, the disks carried and adapted to be raised and lowered in said shell by said stem, with the yoke placed between said disks, cam pieces carried by said yoke and adapted to bear against said disks, and lugs placed in the lower end of said shell, upon which lugs the yoke is designed to rest when the valve is closed down, all arranged so that, when the disks are lowered, the yoke remains stationary and the cam pieces force the disks outward in opposite direction, substantially as described.

3. The combination in a valve, of the shell *a* provided with the inlet and outlet openings *b* and *c*, and with the projections *r* at its lower end, a stem *i* rotating in the upper end of the shell, a screw *k* at the lower end of said stem, a nut *q* carried on said screw, and disks *m* and *n* secured to said nut, with the yoke *q* placed between said disks, the cam pieces *t* carried by said yoke and having bearing faces in contact with each other, said cam pieces being provided with a cam surface *v*, adapted to bear against the surface of said disks *m* and *n*, all arranged so that when said stem *i* is turned the nut *q* and disks *m* and *n* are lowered in the shell to close the inlet and outlet openings, until the yoke *q* rests upon the projections *r*, when the cam pieces are operated to throw the disks *m* and *n* outward to bind against the said inlet and outlet openings, substantially as described.

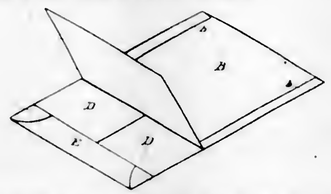
526,798. LAMP-SUPPORTER FOR VEHICLES. JACOB WISE, Mogadore, Ohio, assignor to Martha E. Wise, same place. Filed Apr 11, 1894. Serial No. 507,142. (No model.)



*Claim.*—A lantern holder for vehicles consisting of a frame bifurcated at one end, each of said bifurcated ends being rounded to form one-half of a clamp the other half being formed by a hook passing through said frame and arranged to be drawn up by a thumb nut on the other side of said frame, the other end of said frame bearing a hinged jaw arranged to form with said frame a clamp and both being drawn together by a nut and bolt substantially as shown and described.



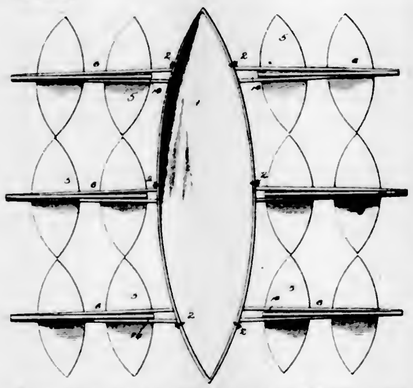
526,799. ENVELOPE. WILLIAM BARNARD, Philadelphia, Pa. Filed May 3, 1894. Serial No. 509,900. (No model.)



*Claim.*—1. An envelope comprising a main or body portion A, a back piece B secured at its opposite sides for a portion only of its length to the main or body portion and terminating in a loose end flap, a pocket at one end of the envelope adapted to receive the end flap, and portions D extending between the mouth of the pocket and the securing points of the back piece, substantially as described.

2. A blank for the manufacture of an envelope comprising a main or body portion A, a back piece B, flaps *b*, *b*, wings D, D and end piece E and confining flaps *c*, *c* for said end piece, substantially as described.

526,800. MEANS FOR RAISING SUNKEN VESSELS. JOSEPH A. BISCEGLIA, Waneta, Canada. Filed Oct. 13, 1893. Serial No. 488,018. (No model.)



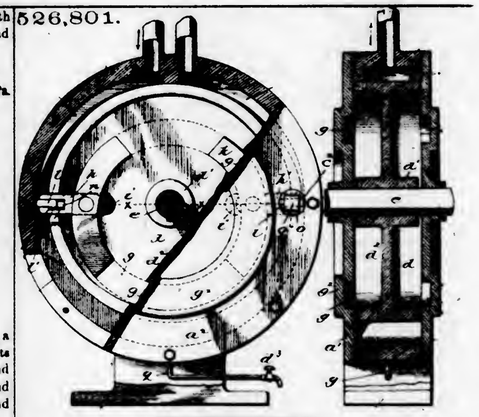
*Claim.*—In an apparatus of the character set forth, the combination of a series of attaching chains united at the bottom to a ring, a hook attached to said ring, said chains converging toward the said ring which is located at the keel of the vessel, a series of flat boats arranged along the opposite sides of the vessel, beams or lugs placed on the said flat boats and each arranged in a series of three; two of the same being longer than the third one of each series and gradually diverging toward the sunken vessel, the third beam being superposed above the others and supported by a spaced block and sustaining chains, substantially as and for the purposes specified.

526,801. ROTARY ENGINE. THOMAS L. BLACKWELL, Cordele, Ga. Filed Mar. 7, 1894. Serial No. 502,722. (No model.)

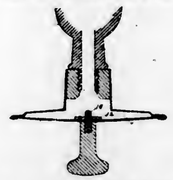
*Claim.*—1 The combination in a rotary steam engine of the eccentric piston type, of an eccentric piston head provided with movable pistons having suitable packing devices, segments pivoted to the pistons and traveling within grooves in the steam chest and eccentric to the piston head, said pistons being located at points diametrically opposite the center of said head, and tapering induction and eduction ports terminating and commencing respectively at diametrically opposite points, substantially as described.

2. In a rotary engine, a steam cylinder or chest containing a rotary piston head provided with pistons having packing bars removable endwise therefrom, in combination with removable taps or plugs located within the path of the bars and in the opposite vertical sides of the chest, whereby the packing bars can be removed without unbolting the sides of the chest, as and for the purpose set forth.

526,801.



526,802. STETHOSCOPIC INSTRUMENT. ROBERT C. M. BOWLES, Boston, Mass. Filed June 5, 1893. Serial No. 476,663. (No model.)

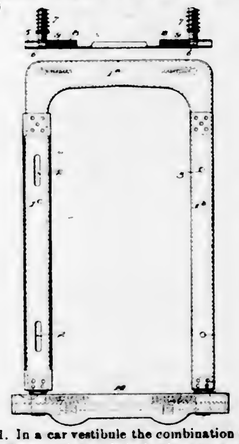


*Claim.*—1. As an improved article of manufacture, a stethoscopic instrument provided with a diaphragm firmly secured at its rim or edge and provided with a localizing projection secured to the said diaphragm within its rim or edge, substantially as described.

2. As an improved article of manufacture, a stethoscopic instrument provided with a diaphragm firmly secured at its rim or edge and provided with a localizing projection detachably secured to the said diaphragm within its rim or edge, substantially as described.

3. As an improved article of manufacture, a stethoscopic instrument provided with an air chamber having front and rear walls in vibratory condition, substantially as described.

526,803. CAR-VESTIBULE DIAPHRAGM OR FACE-PLATE. HARRY C. BUHOUP, Chicago, Ill. Filed Mar. 22, 1894. Serial No. 504,651. (No model.)



*Claim.*—1. In a car vestibule the combination with a diaphragm or face plate, of supporting and projecting stems at the top thereof, spring bearings on said diaphragm or face plate for the free ends of said supporting stems, and a horizontal buffer plate on which the verticals of the diaphragm rest; substantially as and for the purpose specified.

2. In a car vestibule, the combination with longitudinally movable carrying stems arranged at the top of the vestible, of a diaphragm or face-plate carried by said stems and having laterally yielding bearings operating against the sides of said stems; substantially as and for the purposes specified.

3. In a car vestibule, the combination with longitudinally movable stems having ball heads, of a diaphragm or face-plate having horizontal ways for the reception of said ball heads, and yielding bearings which permit the lateral movement of the diaphragm or face plate with relation to the stems; substantially as and for the purposes specified.

4. The combination with a vestibule diaphragm or face-plate, of projecting stems therefor side springs located transversely on said plate and which bear on the ends of the projecting stems; substantially as and for the purposes specified.

5. The combination with a vestibule diaphragm plate and its longitudinally movable upper supports or carrying stems, of a horizontal buffer plate its projecting stems, independent side springs located on said diaphragm plate at or near its upper part, and side springs located at and acting against the base of the diaphragm; substantially as and for the purposes specified.

6. In a car vestibule, the combination with a laterally vibrating diaphragm or face-plate, of a slotted buffer plate in which the legs or vertical side pieces of the diaphragm are loosely stepped, and a span-bar or connecting bar, for connecting the vertical legs of the diaphragm below, substantially as and for purposes specified.

7. In a car vestibule, the combination with a buffer plate, of a laterally vibrating diaphragm or face-plate each of its two side sections or legs having a knife edge bearing on the buffer plate; substantially as and for the purposes specified.

8. In a car vestibule, the combination with a buffer plate, of a laterally vibrating diaphragm or face-plate each of its two side sections or legs having a rocking bearing on said buffer-plate, and laterally acting side springs for restoring and maintaining the normal position of the diaphragm; substantially as and for the purposes specified.

9. The combination with a vestibule diaphragm, of side springs located at the top and bottom and transversely of said diaphragm, a buffer plate slotted at or near each end to engage the bottom of said diaphragm, said buffer plate having a chamber for the reception of side springs which oppose the lateral movements of the diaphragm; substantially as and for the purposes specified.

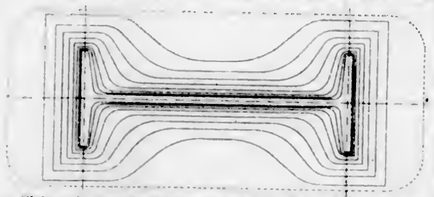
10. A diaphragm or face-plate for car vestibules, having one of its legs or verticals slotted and the other provided with spring pins; substantially as and for the purposes specified.

11. In a car vestibule, the combination of a diaphragm and a horizontal buffer plate, with longitudinal carrying stems located at or near the four corners of said diaphragm and buffer plate, the connections between said diaphragm and carrying stems provided with means to allow of said diaphragm moving laterally independent of said carrying stems; substantially as and for the purposes specified.

12. In a car vestibule, the combination with a diaphragm and horizontal buffer plate, of longitudinal carrying stems located at or near the four corners of said diaphragm and buffer plate, said diaphragm having lateral movement relative to said carrying stems, upper and lower side springs bearing upon said longitudinal carrying stems and upon the diaphragm to oppose the lateral movements of the diaphragm and buffer plate; substantially as and for the purposes specified.

## 526,804. ART OF MANUFACTURING STRUCTURAL MATERIAL.

EDWARD M. BUTZ, Allegheny, Pa., assignor to Mary H. Butz, same place. Original application filed Jan. 3, 1893, Serial No. 457,014. Divided and this application filed Apr. 24, 1893. Serial No. 471,603. (No specimens.)



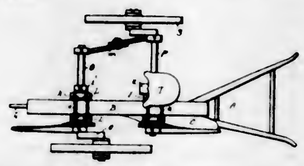
*Claim.*—1. As an improvement in the art of manufacturing structural shapes, such as I-beams, &c., the method herein described which consists in laterally displacing, by a wedge-like action, during the process of rolling, more or less of the metal, which constitutes the middle portion of an ingot, bloom or slab, so as to push it over toward the "ends" or flange portions thereof and simultaneously and in the same rolling operation, subjecting such "ends" or flange portions to a rolling compression, with reference to a uniform or nearly uniform reduction of all portions of the ingot, bloom or slab while being brought to the finished form desired, substantially as set forth.

2. As an improvement in the art of manufacturing structural shapes, such as I-beams, &c., the method herein described, which consists in progressively and simultaneously compressing the metal of an ingot, bloom or slab at all points toward the center lines of the web and flanges by a rolling action at all points, with particular reference to the embodiment of the invention illustrated in Fig. 11, substantially as set forth.

3. As an improvement in the art of manufacturing structural material, the method herein described, which consists in forming the flanges by displacing the metal along the middle portions of the ingot, bloom or slab, and simultaneously compressing the "ends" or flange portions at all points whereby any upsetting of the metal is avoided, and the ingot, bloom or slab is shaped and reduced in cross-sectional dimensions at every point, substantially as set forth.

## 526,805. PLOW-SULKY.

HIRAM CLAWSON, Clawson, assignor to Albert Bess, Hamilton, Ohio. Filed Oct. 16, 1893. Serial No. 488,333. (No model.)



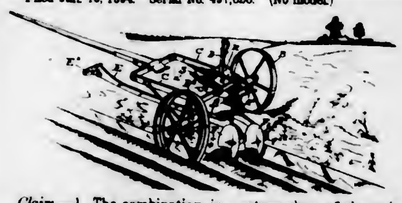
*Claim.*—1. In a plow sulky, the combination with two similar crank shaped axles having similar ground wheels journaled thereon, similar sleeves adapted to the insertion of the respective axles therethrough, and provided at one end with integral segmental racks, of bearings adapted to be detachably and adjustably secured to a plow beam and toward its opposite ends, means to adjustably secure the sleeves to the respective bearings, and levers adjustably secured to the respective axles and adapted to engage with the racks, whereby the axles may be rotatively and independently adjusted in the sleeves.

2. In a plow sulky the combination with two similar crank shaped axles, provided with ground wheels at one end, two bearings adapted to be adjustably and detachably secured to and near the ends of a plow beam respectively, of means to adjustably secure the opposite ends of the axles to the respective bearings with the rear axle horizontal and from the land side of the plow, the front axle slanting downwardly from the opposite side of the plow to incline the front wheel outwardly from a vertical position, both axles being pivotally and independently adjustable on the bearings to different angles with the plow beam whereby the direction of the ground wheels may be converged.

3. A plow sulky having in combination, crank shaped axles perpendicular to ground wheels thereon, bearings therefor and adapted to secure the axles to the front and rear portions of a plow beam with the respective ground wheels on the furrow and land side thereof, the front axle being extended beyond the land side of the beam and an extensible brace spanning the distance between the extremity of the axles and on the land side of the beam.

## 526,806. ROTARY PLOW.

JOHN W. DUNBAR, Indianapolis, Ind. Filed Jan. 16, 1894. Serial No. 497,020. (No model.)



*Claim.*—1. The combination, in a rotary plow, of the axle, the carrying wheels, the plow-beam having flattened attaching ends $E^3$ provided with a rib $e^3$ running longitudinally thereof and curved slots running transversely thereof, the plowing disk F, and the spindle-box $F^5$ provided with several grooves crossing in the center and running at different angles and also with longitudinal slots parallel with the spindle, and bolts passing through said curved transverse slots in the plow-beam ends and said longitudinal slots in the boxing, whereby the relative positions of said two parts may be varied and secured and the angle of the plowing-disk to its work thus adjustably determined, substantially as set forth.



2. The combination, in a rotary sulky plow, of the bent axle A having a crank-spindle upon one end and a straight spindle upon the other end, a land wheel B upon the crank spindle, and a furrow wheel B' having the flange $B^3$ upon the straight spindle, a frame C supported by standards extending from sleeves C' on the straight portions of the axle, a tongue extending out from said frame, braces extending back from said frame to the sleeves on the axle, a plow-beam carrying the plowing disks mounted upon the bent portion of the axle, a crank-lever mounted on the frame C and provided with the usual latch, a segment on said frame for said latch, and a link L running from the point of the angle lever D to the bent portion of the axle, said several parts being arranged and operating substantially as set forth.

## 526,807. HORSE HAY-RAKE.

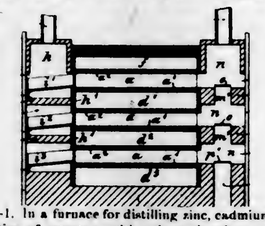
PETER P. FLEMING and CLIFFORD A. FLEMING, Huntsville, Mo. Filed Mar. 10, 1894. Serial No. 503,116. (No model.)



*Claim.*—The rake A and frame C pivotally connected together, the pivoted and adjustable double-trees F, the adjustable stay-rods H and the adjustable hooks I, substantially as and for the purpose specified.

## 526,808. FURNACE FOR DISTILLING ZINC.

CARL FRANCISCI, Schweidnitz, Germany. Filed Jan. 3, 1894. Serial No. 495,506. (No model.)

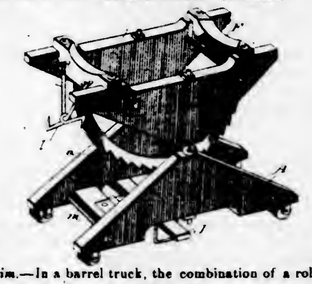


*Claim.*—1. In a furnace for distilling zinc, cadmium and the like, the combination of retorts *a*, with a front chamber, a series of condensers within said chamber that communicate with the retorts, a rear chamber that also communicates with the retorts, and with suction pipes entering the chambers, substantially as specified.

2. In a furnace for distilling zinc, cadmium and the like, the combination of retorts *a*, with a front chamber, a series of condensers within said chamber that communicate with the retorts, a rear chamber that also communicates with the retorts, perforated partitions within the rear chamber, valves for closing the same, and with suction pipes connected to the chambers, substantially as specified.

## 526,809. BARREL-TRUCK.

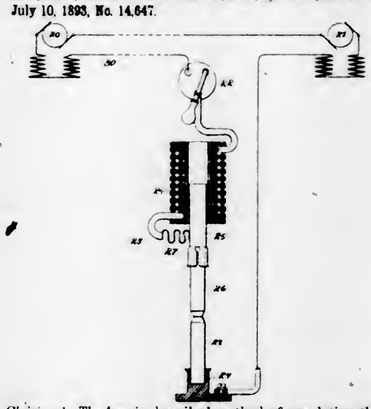
JAMES L. HAMILTON, Alamosa, Colo. Filed Feb. 28, 1894. Serial No. 501,822. (No model.)



*Claim.*—In a barrel truck, the combination of a rolling base, a barrel rack pivotally mounted on said base, a circle secured to the central portion of the rack and depending downwardly between the parts of the base, said circle having notches therein, a spring actuated foot treadle normally engaging the notches of said circle to hold the same in adjusted position, and a V formed swinging bail movably carrying a double hook, substantially as and for the purpose specified.

## 526,810. APPARATUS FOR PUTTING ELECTRIC MOTORS INTO CIRCUIT.

CARL HOFFMANN, Charlottenburg, assignor to Siemens & Halske, Berlin, Germany. Filed Oct. 29, 1892. Serial No. 450,342. (No model.) Patented in Belgium Aug. 16, 1892, No. 100,765; in Italy Sept. 23, 1892, No. 32,443; in France Nov. 8, 1892, No. 223,298; in Austria-Hungary Nov. 18, 1892, No. 38,698 and No. 69,457; in Switzerland Nov. 30, 1892, No. 5,483; in Germany Jan. 7, 1893, No. 66,622; in Norway Feb. 3, 1893, No. 2,882; in Sweden June 20, 1893, No. 4,461, and in England July 10, 1893, No. 14,647.



*Claim.*—1. The herein-described method of regulating the current from a generator to an electro motor within normal working limits, which consists in automatically and simultaneously varying the resistance of the circuit in inverse proportion to the counter electro motive force of the motor.

2. The herein described method of regulating the current from a generator of electricity to an electro motor within normal working limits, which consists in maintaining a uniform balance between the counter electro motive force of the motor and the resistance of a variable arc.

3. The herein-described method of regulating current from a generator to an electro-motor within normal working limits, which consists in automatically forming and springing an arc controlling the circuit through the motor, thereby modifying the transmitted current in proportion to the requirements of the motor; and subsequently maintaining a uniform balance between the resistance of said arc and the counter-electromotive force of the motor until the normal speed is attained.

4. The herein-described method of regulating the current from a generator to an electro motor within normal working limits, which consists in interposing between the generator and the electro motor an electric arc and controlling the resistance of said arc by the counter electro motive force of the motor.

5. The combination with a generator and an electro motor, of means interposed in circuit between the two for creating a variable arc whereby the current transmitted to the motor may be varied within

normal working limits simultaneously with and in inverse proportion to the resistance of the arc.

6. The combination with a generator and an electro motor, of means interposed in circuit between the two for automatically rupturing the circuit and creating an arc of variable resistance whereby the current transmitted may be automatically cut off or gradually varied within normal working limits as the arc is broken or its resistance increased.

7. The combination with a generator and an electro-motor, of means interposed in a three-wire system between the two for first transmitting a portion of the current through the field magnets of said motor, later a portion of said current through the armature of said motor, and subsequently automatically varying the currents so transmitted, in proportion to the counter electro-motive force from the motor.

8. In an electrical regulating device, the combination of a magnet, an armature adapted to be attracted thereby, a carbon carried by said armature, a normally open shunt circuit around said magnet, and means for simultaneously raising said armature and making circuit through said shunt.

9. In an electrical regulating device for a three-wire system, the combination of a magnet, an armature adapted to be attracted thereby, a carbon carried thereby, a fixed opposing carbon, a shunt around the said magnet, and means for simultaneously raising said armature and striking an arc between said carbons, and subsequently opening the shunt.

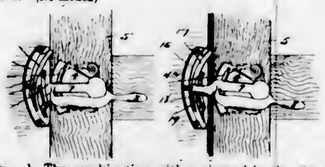
10. The combination with a generator, an electro motor and a circuit connecting the two, of a magnet included in the circuit, a reciprocating armature therefor, a carbon forming a continuation of said armature and a second fixed carbon in opposition to said first carbon as set forth.

11. The method of operating motors in circuit with a source of energy which consists in first transmitting current to the field magnets through a pair of opposed carbons in circuit with said magnet, subsequently transmitting a current to the armature through a pair of opposed carbons in circuit therewith, then separating the carbons in circuit with the field to cut out the field and finally separating the carbons in circuit with the armature to regulate the current supplied thereto.

12 The method of removing an electro motor from circuit with a suitable source of electricity, which consists in removing the field magnets from the circuit, subsequently introducing resistance into the circuit including the armature, and finally cutting said armature out of circuit, as set forth.

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526,811. LATCH. FREDERICK KALLSEN, Chicago, Ill., assignor to the Wolf, Sayer & Heller, same place. Filed Oct. 9, 1893. Serial No. 487,677. (No model.)



*Claim.*—1. The combination with a pivoted latch, of a catch or keeper therefor having an oblique upwardly opening slot whose walls form inclined bearing surfaces against which respectively the latch acts when turned on its pivot in opening and closing the door, substantially as described.

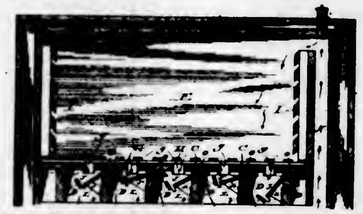
2. The combination with a pivoted latch, of a catch or keeper therefor having an upwardly opening oblique slot to receive the latch, the walls of said slot forming inclined bearing surfaces for the latch when turned on its pivot in opening and closing the door respectively, the front edge of the catch being inclined to provide a striking plate and the rear wall of the slot being extended above the apex of the striking plate, substantially as described.

3. The combination with a catch, of a base plate adapted to be secured to a door and provided with a spring chamber and with a curved slot toward its front edge, a latch bolt pivoted to the rear of said plate, an actuating spring coiled about the pivot of the bolt and having one of its ends engaged with the base and the other projected through the slot therein and engaged with the latch bolt, substantially as described.

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526,812. REFRIGERATOR. FREDERICK LUECKE, Chicago, Ill., assignor to the Wolf, Sayer & Heller, same place. Filed July 26, 1893. Serial No. 481,469. (No model.)

*Claim.*—1. A refrigerator, comprising in combination with the inclosing walls, a series of joists separated from each other and supporting a pan and an ice rack thereon and dividing the interior of the refrigerator into an ice chamber and a provision chamber and a series of troughs removably and adjustably mounted in the spaces between the joists and serving to control the opening from the ice chamber to the provision chamber and to carry off the drip water, substantially as described.

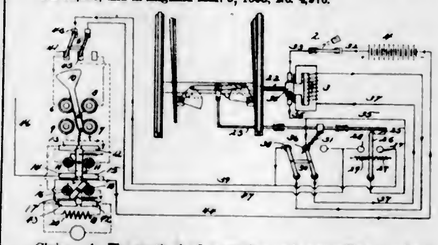


2. A refrigerator, comprising in combination an ice chamber and a provision chamber, a perforated pan forming the bottom wall of the ice chamber, a series of joists supporting said pan, hinged troughs removably secured in the spaces between said joists and hinged arms carried by the troughs with racks on the sides of the joists with which said hinged arms are adapted to engage whereby the troughs may be supported in any adjusted position and removed for cleaning, substantially as described.

3. In a refrigerator, the combination with an ice chamber and refrigerator chamber having apertures in its bottom, a provision chamber, a series of joists supporting the perforated bottom of the ice chamber, and a series of troughs arranged in the spaces between the joists and having curved hooks whereby they may be hinged to the face of the joist, hinged legs and racks secured on the face of the joists with which said legs are adapted to engage, substantially as described.

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526,813. ELECTRICAL SWITCH SETTING, INDICATING, AND CONTROLLING DEVICE. KARL MODERSBACH, Vienna, Austria-Hungary, assignor to Siemens & Halske, Berlin, Germany. Filed Nov. 15, 1893. Serial No. 491,033. (No model.) Patented in Germany Sept. 6, 1891, No. 68,722; in Austria-Hungary Jan. 29, 1892, No. 42,613 and No. 76,773; in Belgium Nov. 11, 1892, No. 102,331; in France Nov. 22, 1892, No. 226,853; in Switzerland Nov. 24, 1892, 6,232; in Italy Dec. 1, 1892, No. 33,076, and in England Mar. 3, 1893, No. 4,976.



*Claim.*—1. The method of operating and controlling a railway switch, which consists in passing a working current through an electro-motor and thereby throwing the switch; and automatically neutralizing said current upon the setting of the switch in the new position.

2. The method of operating and controlling a railway switch, which consists in passing a working current through an electro-motor in either direction and thereby correspondingly throwing the switch; and simultaneously reversing and neutralizing the working current upon the setting of the switch in the new position.

3. The method of operating and controlling a railway switch, which consists in passing a working current through an electro-motor in either direction and thereby correspondingly throwing the switch; controlling said working current by a resistance device in a return-conductor and automatically cutting said return conductor into either working circuit after the switch has been thrown thereby.

4. The method of electrically operating and controlling a railway switching system, which consists in passing a line current through a series of electro-motors controlling corresponding railway switches; neutralizing the respective motor circuits while the switches are set; actuating the respective switches by cutting out the neutralizing media from the corresponding motor circuits; and automatically restoring said neutralizing media upon the re-setting of the corresponding switches.

5. The method of electrically operating and controlling a railway switching system, which consists in passing a line current through a series of electric motors controlling corresponding railway switches; neutralizing the respective motor currents while the switches are set; actuating the respective switches by cutting out the neutralizing media from the corresponding motor circuits; and automatically reversing the respective motor circuits and neutralizing the currents thereof upon the re setting of the corresponding switches.

6. The method of electrically operating and controlling a railway switching system, which consists in passing a line current through a series of electro-motors controlling corresponding railway switches; neutralizing the respective motor currents while the corresponding switches are set; actuating said switches by the removal of the neutralizing media for the corresponding motor circuits; and automatically indicating the positions of said switches in accordance with the variations of electro-motive force in the respective motor circuits.

7. The combination with a railway switch, of an electro-motor; a generator for actuating the motor; means operated by the motor for actuating the switch; and switch devices and current controlling devices controlled by the setting of the railway switch for automatically stopping the motor, without destroying the continuity of the circuit.

8. The combination with a railway switch of an electro-motor; a generator for actuating the motor; switch devices and current controlling devices controlled by the setting of the railway switch for reversing the motor circuit and stopping the motor without destroying the continuity of the circuit; and means operated by the motor for actuating the switch in either direction in accordance with the flow of current in the circuit.

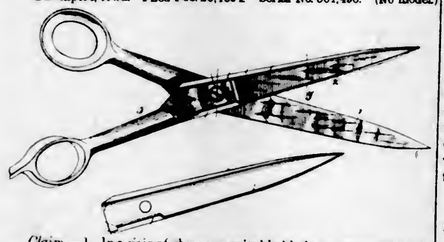
9. In an electrical switching system for railways, the combination with a generator and a central station; of a series of switch-motors actuated by said generator; means for passing the motor currents through the motors in either direction; and indicators at central station controlled by the interruption and reversal of the respective circuits.

10. In an electrical switching system for railways, a series of electro-motors; switches correspondingly actuated thereby; and switch devices controlled by the setting of the railway switch for controlling the direction and flow of the current in the switch motor circuits independently.

11. In an electrical switching system for railways, and electro-motor; a railway switch controlled thereby; and switch devices controlled by the running through of said switch for short-circuiting said motor.

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526,814. SHEARS. LUKE A. NICKERSON and PAUL A. KELLER, Davenport, Iowa. Filed Feb. 26, 1894. Serial No. 501,498. (No model.)



*Claim.*—1. In a pair of shears, a suitable blade, an upturned back edge for the same, an upturned portion in continuation of the cutting edge and adjacent to the pivotal point forming a recess, said blade having a lower transverse edge, a suitable handle, and a suitable recess or depression in said handle for receiving said transverse edge of the blade, substantially as set forth.

2. A pair of shears comprising a blade, an upturned back edge for the same, an upturned portion in continuation of the cutting edge and adjacent to the pivotal point forming a recess, said blade having a lower transverse edge, a suitable handle, a depression in said handle for receiving said transverse edge of the blade, a ridge on said handle against which the transverse edge of the blade rests, a terminal lateral inner edge for the said upturned portion of the blade, an abutting edge on the handle for said terminal inner edge, and a pivotal pin for securing the parts, substantially as set forth.

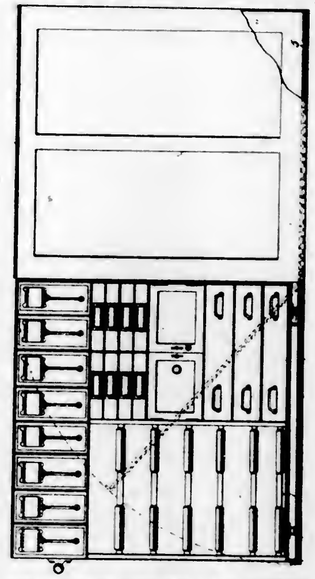
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526,815. FILE CASE OR CABINET. PETER J. PAULY, Jr., St. Louis, Mo. Filed June 23, 1894. Serial No. 515,460. (No model.)

*Claim.*—1. A telescopic cabinet comprising a fixed casing, a movable cabinet adapted to slide within the same, a suitable door secured to the bottom of the casing and adapted to fold over the movable cabinet, and to support the movable cabinet when the door is in an open position, and track rails on the inner face of the door for guiding the movable cabinet when the door is in its open position, substantially as set forth.



2. A telescopic cabinet comprising a fixed casing, a movable cabinet adapted to slide within the same, a suitable door hinged to the bottom of the fixed portion, suitable track rails on the bottom of the fixed casing, and suitable rails on the inner surface of the door forming a continuation of the rails in the casing when the door is in an open position, substantially as set forth.

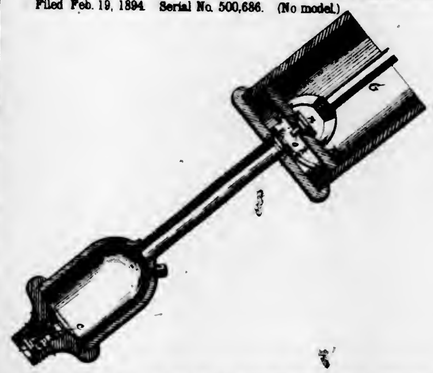


3. A telescopic cabinet comprising a fixed casing or portion, a movable cabinet within the same, a suitable door hinged to the fixed portion, track rails on the inner surface of the door, track rails in said cabinet, and suitable means on said door and movable portion for limiting the outward movement of the latter, substantially as set forth.

4. A telescopic cabinet comprising a fixed casing or portion, a movable cabinet adapted to slide within the same, suitable wheels at the bottom of said movable portion, a hinged door secured to the fixed casing, track rails on the inner surface of said door, rails on the bottom of the casing, suitable upturned lugs along the outer or upper edge of said door, a suitable downward projecting edge at the forward end of the bottom of the movable cabinet, and a suitable handle for operating the cabinet, substantially as set forth.

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526,816. LUBRICATOR. HUMBOLT PENNINGTON, Macon, Mich. Filed Feb. 19, 1894. Serial No. 500,686. (No model.)



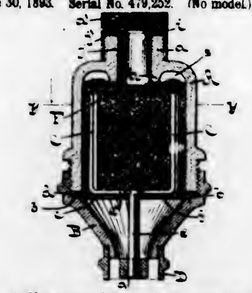
*Claim.*—1. In a lubricating device, the combination with a suitable air pump, of an oil cup having double valve seats a tube connecting it with the pump, a chamber for the oil between the seats, and two valves connected to a single stem and operating simultaneously by the

action of the pump to close and open the chamber respectively for the supply and discharge of the oil, substantially as and for the purpose set forth.

2. In a lubricating device, the combination with a pump cylinder and an oil cup communicating with each other by means of a tubular connection, a piston working in the cylinder carrying an upwardly opening valve over the tubular connection and having a valve stem, and a pivoted valve upon the head of the cylinder having a trip-lever adapted to be operated by the piston and which strikes the valve stem, a chamber for the oil in the lower end of the cup having two valve-seats and a double valve operating in connection therewith, substantially as and for the purpose described.

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526,817. **FILTER.** CORNELIUS J. PHILLIPS, New York, N. Y. Filed June 30, 1893. Serial No. 479,252. (No model.)



*Claim.*—1. A filter comprising a body provided at its top with means for attaching it to a faucet, a foraminous diaphragm closing the bottom of the body, a discharge nozzle B attached to the body below the diaphragm, a yoke shaped agitator C having its arms arranged substantially parallel with the wall of the body and its transverse portion with the diaphragm, and provided with a downwardly projecting shank extending through the diaphragm and guided in the discharge nozzle; and a thimble attached to the shank and guided on the nozzle for turning the shank from below, substantially as and for the purpose set forth.

2. A filter comprising a glass body A terminating at one end in a neck *a*, a threaded coupling sleeve *a'* secured to said neck, a foraminous diaphragm *c* closing the opposite end of the body, a nozzle B attached to the latter end, an agitator C consisting of a shank *c* extending through the diaphragm and having a bearing in the nozzle, a transverse portion, and upwardly projecting arms, and a thimble or equivalent device attached to the shank and guided on the nozzle, substantially as described.

3. The combination with the glass body A terminating at one end in a neck *a*, of a threaded coupling sleeve *a'* secured to said neck, an internal metallic sleeve *j* containing a flange *j'*, and a foraminous diaphragm *c* closing the lower end of the body, substantially as described.

4. In a filter, the combination of the body A, provided at one end with means for attaching the same to a faucet, a nozzle B attached to the opposite end, a diaphragm *c* between the body and the nozzle, an agitator C having a shank *c* extending through the diaphragm and nozzle and having a bearing in the latter, and a thimble D attached to the shank and guided on the nozzle, substantially as described.

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526,818. **HAND-CULTIVATOR.** TYREE T. RODES, Paris, Mo. Filed Feb. 21, 1894. Serial No. 501,017. (No model.)



*Claim.*—1. In a hand light skeleton cultivator, the cultivator head provided with opposite sets of diverging cultivating teeth integrally cast therewith, a central adjustable tooth revolubly mounted on the skeleton head between the central cast teeth, and adapted to be fastened to the solid portion of the head in either an upturned or downturned position, substantially as set forth.

2. In a hand cultivator, the combination with the handle; of a cast skeleton head having opposite sets of integral stationary cultivating teeth and a rim connecting the teeth and having a central bearing groove between the central ones of such teeth, an adjustable center tooth revolubly mounted in said bearing groove, and a fastening device for the inner end of said center tooth, substantially as set forth.

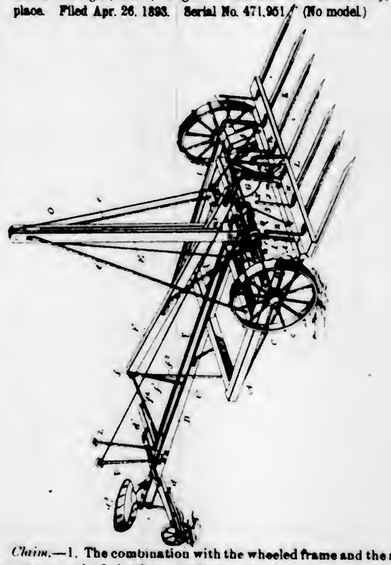
3. In a hand cultivator, the cast head having opposite sets of stationary diverging cultivating teeth, an outer curved casting rim connecting the several teeth and having a central bearing groove, and an intermediate solid portion having a similar groove aligned with that of the rim, an adjustable center tooth mounted to turn in said aligned grooves, and a fastening bolt for holding the center tooth stationary in its adjusted position, substantially as set forth.

4. In a hand cultivator, the cast head having opposite sets of stationary cultivating teeth, and an intermediate solid portion provided with a central bearing groove, a circular groove at the inner terminal of the central bearing groove, and a bolt recess or socket, a revoluble center tooth mounted to turn in said bearing groove and having a circular bearing flange or knob at one end turning in said circular groove, and a hooked or looped bolt engaging said center tooth and fitting in said bolt recess or socket, substantially as set forth.

5. In a hand cultivator, a light skeleton body having opposite sets of stationary cultivating teeth, a bearing groove, and a bolt recess or socket in the line of said groove, a center revoluble tooth mounted to turn in said groove, and a looped bolt embracing said center tooth and fitted in said recess or socket, substantially as set forth.

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526,819. **COMBINED HAY RAKE AND STACKER.** ARTHUR RYAN, Colbergen, Nebr., assignor of one-half to Warwick Guy, same place. Filed Apr. 26, 1893. Serial No. 471,961. (No model.)



*Claim.*—1. The combination with the wheeled frame and the axle-drum at one end of the frame; of an upright bearing-arm arranged at an intermediate point, a fork-lever pivoted at its inner end to said bearing-arm and having at its outer end an angled attaching foot, diverging brace-arms I secured at one end to opposite sides of the fork-lever and provided at their outer ends with angled feet *i*, a transverse end or fork-bar attached rigidly to the several angled feet, a tilting fork pivotally connected with said bar, a trip latch device for locking the said fork to said bar, and an operating connection between said drum and the fork-bar, substantially as set forth.

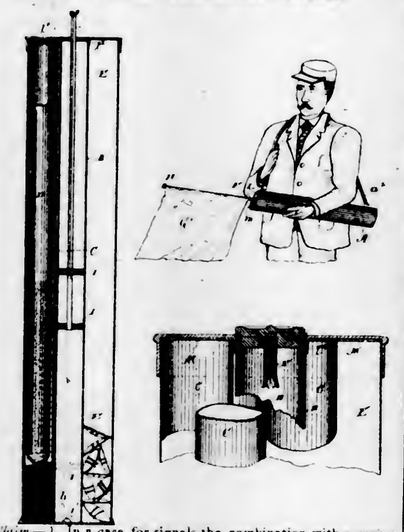
2. In a machine of the class described, the combination with the pivoted fork-lever having a fork-bar at its outer end; of a tilting fork pivotally connected with said fork-bar and having, at its inner pivoted end, a trip-pin provided with a beveled projecting end *l*, a U-shaped latch-plate M pivoted at one edge on top of said fork-bar and provided with a trip-arm *m'* arising from its top, said latch-plate being adapted to normally engage over said trip-pin, and a trip-cord attached at one end to said trip-arm, substantially as set forth.



3. In a machine of the class described, the combination with the turning axle-shaft, and the swinging fork; of the clutch winding drum mounted on said shaft and having a ratchet-flange at one end, a gravity check-dog pivoted adjacent to the winding drum and adapted to engage the top portion of the ratchet-flange, an off-standing guide-arm located adjacent to said dog and holding it to its work, a band-brake embracing the winding-drum, a lever-controlled brake-rod attached at one end to the band-brake and a branch-arm X pivoted at one end to the brake-rod and at its other end to said gravity check-dog, substantially as set forth.

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526,820. **RAILWAY-SIGNAL CASE.** ULYSSES G. SELBY, Enid, Okla. Filed Feb. 8, 1894. Serial No. 499,495. (No model.)



*Claim.*—1. In a case for signals the combination with a casing of a series of tubes located longitudinally therein, one of which tubes is centrally placed and is adapted to receive a flag and its staff and to retain the latter, and the other tubes are located partly around said central tube, so as to leave a compartment or chamber, substantially as described.

2. In a case for signals the combination with the casing A, of a central tube B, a series of tubes C, having springs C', to eject the fuses, a flag-staff adapted to operate within the tube B, and inseparably secured therewith, substantially as described.

3. The combination with the cylindrical casing A, of the central tube B, having at its lower part the openings *b*, and at its top the ring $b^3$, the series of tubes C, the exterior disk L, having the opening *l*, annular groove *l'*, flange $l^2$, rim $l^3$, circular slot $l^4$, and opening $l^5$, the interior disk M, having the openings *m'*, and $m^2$, and provided with the projection *m*, the flag-staff F, having the pistons I, and I', and cap H, and adapted to operate within the tube B, all constructed, arranged and operating substantially as and for the purpose set forth.

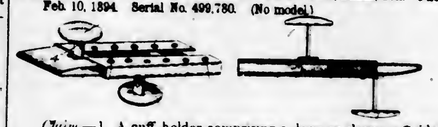
4. The combination with the cylindrical casing A, of the central tube B, having at its lower part the openings *b*, and at its top the ring $b^3$, the series of tubes C, having the springs C', the exterior disk L, having the opening *l*, annular groove *l'*, flange $l^2$, rim $l^3$, circular slot $l^4$, and opening $l^5$, the interior disk M, having the openings *m'*, $m^2$, and provided with the projection *m*, the flag-staff F, having the pistons I, and I', and cap H, and adapted to operate within the tube B, all constructed, arranged and operating substantially as and for the purpose set forth.

5. The combination with the cylindrical casing A, of the central tube B, having means for movably securing a flag-staff therein, the series of tubes C, the exterior disk L, having the opening *l*, annular groove *l'*, flange $l^2$, rim $l^3$, circular slot $l^4$, and opening $l^5$, the interior disk M, having the openings *m'*, $m^2$, and provided with the projection *m*, the flag-staff F, having the pistons I, and I', and cap H, and adapted to operate within the tube B, all constructed, arranged and operating substantially as and for the purpose set forth.

6. The combination with the cylindrical casing A, of the central tube B, having means for movably securing a flag-staff therein, the series of tubes C, having the spring C', the exterior disk L, having the opening *l*, annular groove *l'*, flange $l^2$, rim $l^3$, circular slot $l^4$, and opening $l^5$, the interior disk M, having the openings *m'*, $m^2$, and provided with the projection *m*, the flag-staff F, having the pistons I, and I', and cap H, and adapted to operate within the tube B, all constructed, arranged and operating substantially as and for the purpose set forth.

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526,821. **CUFF-HOLDER.** WILBER S. SHAW, Dallas, Tex. Filed Feb. 10, 1894. Serial No. 499,780. (No model.)

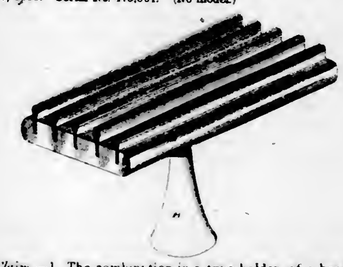


*Claim.*—1. A cuff holder comprising a loop or sleeve provided with a button at one side and having a longitudinal opening at the opposite side, a resilient depressible slide arranged in the loop or sleeve and provided with a projection arranged to engage the interior of the loop or sleeve and mounted on the depressible portion of the slide, and a button mounted on the slide and having a shank of a size to pass through said opening and adapted to enable the slide to be readily depressed to disengage the projection, substantially as and for the purpose described.

2. A cuff holder comprising a loop or sleeve provided at one side with a button and having at the opposite side a longitudinal opening and provided at each side of the opening with a series of perforations, a slide arranged in the loop or sleeve and constructed of resilient material and composed of two leaves, the outer one being provided with projections to engage the perforations of the loop or sleeve, and a button mounted on the outer leaf of the slide and having a shank of a size to pass through the longitudinal opening of the loop or sleeve, substantially as described.

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526,822. **TYPE-HOLDER.** ROBERT A. STEWART, New Rochelle, assignor of one-half to George T. Hollhan, New York, N. Y. Filed May 9, 1893. Serial No. 473,561. (No model.)

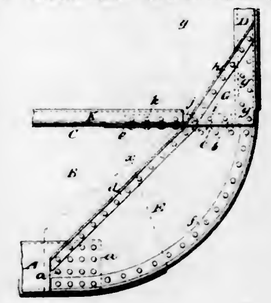


*Claim.*—1. The combination in a type holder, of a head having a series of slots therein and a series of pairs of partition strips, each pair tightly fitting in a slot in contact with each other at the lower part to hold them in place by frictional contact, and the upper part diverging outside the slots and approaching each other at their extreme upper edges, substantially as described.

2. The combination in a type-holder, of a head having a series of slots therein and a series of pairs of partition strips, each pair tightly fitting in a slot and in contact with each other at the lower part and the upper part overlapping, substantially as described.

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526,823. **CONSTRUCTION OF SHIPS.** SINCLAIR STUART, Plainfield, N. J. Filed Mar. 14, 1894. Serial No. 503,549. (No model.)

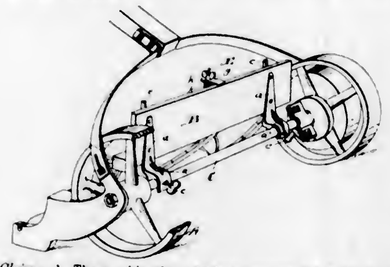


*Claim.*—1. In an iron or steel vessel having a water ballast bottom tank, the combination with the floor channels and with the margin strakes in the top of the tank extending all the way to the sides of the vessel at or near the upper turn of the bilge, of bracket plates arranged within the tank conforming to the bilge and united with the said margin strakes close to the bilge and also united with the floor channels, substantially as herein set forth.

2. In an iron or steel vessel having a water ballast bottom tank, the combination of floor channels terminating at the lower turn of the bilge, side frames terminating above the tank at the upper turn of the bilge, brackets conforming to the bilge arranged within the tank and connected with the floor channels and with the margin of the tank top, and bracket plates above the tank top connecting the margin of said top with said side frames, substantially as herein set forth.

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**526,824. DEVICE FOR GRINDING LAWN-MOWER KNIVES.** WILLIAM J. WALKER, Canton, Ohio. Filed July 14, 1894. Serial No. 517,549. (No model.)

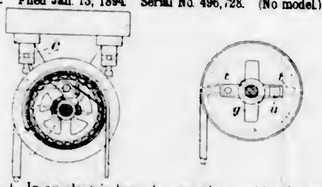


*Claim.*—1. The combination of a lawn mower, the fixed bar B, having attached thereto the arms *a*, provided with the recesses *b*, the block or head D, provided with a grinding face, the rods *c*, attached to the block or head D, the screw-threaded bar E, the spring *k*, the thumb-screw *h*, the nut *K*, and the links F, and bar G, substantially as and for the purpose specified.

2. The combination of a lawn mower and a fixed bar, an adjustable block or head, provided with arms, a screw-threaded bar, having located thereon the thumb-screw *h*, the nut *K* and the spring *k*, the links F, pivotally attached to the block or head, and to the bar B, the bar G, pivotally attached to the links F, and means for attaching the fixed bar B to a lawn mower, substantially as and for the purpose specified.

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**526,825. ELECTRIC-LAMP HANGER.** WILLIAM S. WESTON, Chicago, Ill. Filed Jan. 13, 1894. Serial No. 496,728. (No model.)



*Claim.*—1. In an electric lamp hanger, the combination of a revolving lamp supporting drum and cables or lines wound upon the drum for supporting the lamp, a circular ratchet attached to the frame, a revolving spring actuated pawl normally held in engagement with said ratchet by the spring, a hand rope and connecting means for communicating motion from the hand rope to the pawl whereby the pawl may be operated or released and held free from the ratchet by means of the hand rope by pulling on the same, substantially as specified.

2. In an electric lamp hanger, the combination of a revolving lamp supporting drum and supporting cables, a frame upon which said drum is mounted, a circular ratchet attached to said frame, a revolving spring actuated pawl adapted to engage said ratchet, and means for operating and holding the pawl free from the ratchet, substantially as specified.

3. In an electric lamp hanger, the combination of the lamp and a revolving lamp supporting drum, with a frame upon which said drum is mounted, conductor cables wound upon the drum, a circular ratchet attached to said frame, a pivoted spring actuated pawl mounted upon a revolving arm connected rigidly with the drum, said pawl being adapted to engage said ratchet, a hand rope and means for communicating motion from the hand rope to the pawl to release and hold the same free from the ratchet, substantially as specified.

4. In an electric lamp hanger, the combination with a revolving lamp supporting drum and cables wound upon the drum for supporting the lamp, of a shaft for the drum, a frame upon which said shaft is journaled, a ratchet attached to said frame, a spring actuated pawl pivoted to a revolving part connected to said shaft and adapted to engage said ratchet, a hand rope and hand rope pulley mounted upon said shaft and means for connecting the hand rope or its pulley with said pivoted pawl, whereby the pawl may be operated and held free from the ratchet by the hand rope, substantially as specified.

5. In an electric lamp hanger, the combination with a lamp supporting drum, of a hand rope drum or pulley, a common shaft upon which both said drums are mounted, a frame upon which said shaft is journaled, a ratchet secured to said frame, a pawl pivoted to a revolving part connected with said shaft, a spring for holding said pawl normally in engagement with said ratchet, said hand rope drum or pulley being loose upon said shaft and provided with a projection adapted to engage said pawl for the purpose of releasing the pawl from the ratchet, substantially as specified

6. In an electric lamp hanger, the combination with a lamp supporting drum, of a hand rope drum or pulley, a common shaft upon which both said drums are mounted, a frame upon whish said shaft is journaled, a ratchet secured to said frame, a pawl pivoted to a revolving part connected with said shaft, a spring for holding said pawl normally in engagement with said ratchet, said hand rope drum or pulley being loose upon said shaft and provided with a projection adapted to engage said pawl for the purpose of releasing the pawl from the ratchet, said hand rope drum or pulley being provided with a second flange or projection to limit the lost motion of said drum or pulley on said shaft, the lost motion being sufficient simply to operate or release the pawl, substantially as specified.

7. In an electric lamp hanger, the combination of a revolving lamp supporting drum, a shaft for the drum, a pawl mounted on a revolving part connected with the shaft, a spring for holding the pawl in engagement with the ratchet, a hand rope pulley mounted loosely upon the shaft or supporting frame, a ratchet attached to the frame to be engaged by the pawl, and means for positively operating the pawl and bringing the hand rope pulley into fixed engagement with the lamp supporting drum, substantially as specified.

8. In an electric lamp hanger the combination of the board A, metallic brackets B C secured thereto and insulated therefrom, with the two part conductor supporting drum D D, the two parts of said drum being insulated from each other and connected together by a separator *r*, metallic end plates *g g* for said drum and springs *v v* secured to said brackets B C and bearing against the metallic end plates *g g* of said drum, substantially as specified.

9. The combination in an electric lamp hanger of the metallic brackets B C, insulating bushing *x* and separator *w* inserted in the connection between said brackets B C, and said hanger board A, drum shaft *f* journaled in said brackets B C, the two part conductor cable supporting drum D D, insulating separator *r* connecting the two parts of said drum, conductor cables *y y* wound upon said drum, means for connecting the ends of said conductor cables *y y* with said metallic end plates *g g*, and springs *v* secured to said brackets B C and bearing against said metallic end plates, substantially as specified.

10. The combination in an electric lamp hanger, of the metallic brackets B C, insulating bushings *x* and separators *w* inserted in the connection between said brackets B C and said hanger board A, drum shaft *f* journaled in said brackets B C, the two part conductor cable supporting drum D D, insulating separator *r* connecting the two parts of said drum, conductor cables *y y* wound upon said drum, means for connecting the ends of said conductor cables *y y* with said metallic end plates *g g*, springs *v v* secured to said brackets B C and bearing against said metallic end plates *g g*, a ratchet *c* attached to one of said brackets, a pawl carrying arm *h* fixed to said shaft, a spring actuated pawl *i* pivoted to said arm *h*, a hand rope Z and hand rope pulley P provided with a projection or flange *m* adapted to engage and release said pawl *i*, substantially as specified.

11. The combination in an electric lamp hanger, of the metallic brackets B C, insulating bushing *x* and separator *w* inserted in the connection between said brackets B C and said hanger board A, drum shaft *f* journaled in said brackets B C, two part conductor cable supporting drum D D, insulating separator *r* connecting the two parts of said drum, conductor cables *y y* wound upon said drum, means for connecting the ends of said conductor cables *y y* with said metallic end plates *g g*, springs *v v* secured to said brackets B C, and bearing against said metallic end plates *g g*, the ratchet *c* attached to one of said brackets, a pawl carrying arm *h* fixed to said shaft, a spring actuated pawl *i* pivoted to said arm *h*, a hand rope Z and hand rope pulley P provided with a projection or flange *m* adapted to engage and release said pawl *i*, said hand rope pulley P having a second flange *n* to limit the lost motion of said hand rope pulley P in respect to said drum D D, substantially as specified.

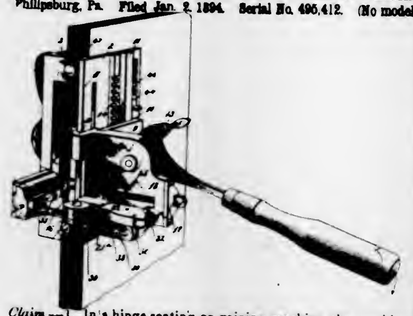
12. The combination in an electric lamp hanger of the metallic brackets B, C, insulating bushing *x* and separator *w* inserted in the



connection between said brackets B C, and said hanger board A, said brackets each forming part of the electric circuit, drum shaft *f* journaled in said brackets B C, the conductor cable supporting drum, conductor cables *y y* wound upon said drum, means for connecting the ends of said conductor cables *y y* with said metallic end plates *g g*, and springs *v* secured to said brackets B C and bearing against said metallic end plates whereby the hanger board is prevented from forming a short circuit between the two branches of the circuit under action of moisture or acids, substantially as specified.

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**526,826. HINGE-SEATING DEVICE.** WILLIAM R. WILLIAMS, Phillipsburg, Pa. Filed Jan. 2, 1894. Serial No. 495,412. (No model.)



*Claim.*—1. In a hinge seating or gaining machine, the combination of a width-cutting chisel slide, means for operating said slide, and a depth-cutting chisel block, of a tilting or rocking lever connected at one end to said block, connections between the said lever and the slide, and a trip mechanism to release the lever near the limit of the backward movement of the slide, substantially as specified.

2. The combination with a width-cutting chisel slide, and means for operating the same, of a depth-cutting chisel block, a tilting or rocking lever connected at one end to said block, a push-bar to communicate motion from the slide to the said lever, and a trip mechanism to release the lever from the push-bar near the limit of the backward movement of the slide, substantially as specified.

3. The combination with a width-cutting chisel slide, and means for operating the same, of a depth-cutting chisel block, a spring-actuated tilting lever connected at one end to said block, a push-bar carried by said slide and having a shoulder engaging a pin on the tilting lever, and a trip mechanism for disengaging said pin from the shoulder to release the tilting lever, substantially as specified.

4. The combination with a width-cutting chisel slide and means for operating the same, of a depth-cutting chisel block, a tilting lever connected at one end to said block and provided with an actuating spring, a push-bar carried by said slide and provided with a shoulder to engage a pin on the tilting lever, a retaining spring to hold the pin in engagement with said shoulder, and a trip finger carried by the push-bar to engage a stop on the tilting lever and disengage said pin from the shoulder of the push-bar, substantially as specified.

5. The combination with a width-cutting chisel slide, and means for operating the same, of a depth-cutting chisel block, a spring-actuated tilting lever connected to said block, a push-bar carried by the said slide and having a shoulder engaging a pin on the tilting lever, a trip finger adapted to engage a stop to disengage the pin from the said shoulder, and means for adjusting said trip finger to vary the point of disengagement of the slide and tilting lever, substantially as specified.

6. The combination with a slide, and a lever for operating the same, of a chisel block, connections between said slide and block whereby the latter is advanced as the former is retracted, trip mechanism for releasing said block before the slide reaches the limit of its backward movement, means for returning said block when released, and feeding devices operatively connected to said lever, substantially as specified.

7. The combination with a frame, and means for securing the same to a door, of a carriage slidably mounted upon said frame, a chisel-bearing slide, an operating lever connected to said slide, a chisel-bearing block operatively connected to said slide, and feeding devices between the carriage and the frame and operatively connected to said lever, substantially as specified.

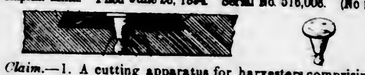
8. The combination with a frame provided with means for securing the same to a door, a carriage mounted upon said frame, a chisel-carrying slide, and means for limiting the movement thereof, of a bracket adjustably fixed to the carriage, a chisel block mounted upon said bracket and operating connections between the block and the slide, substantially as specified.

9. The combination with a frame, a carriage slidably mounted upon said frame, a width-cutting chisel slide, and means for limiting the movement thereof, of a bracket secured to said carriage, means for adjusting said carriage longitudinally of the width-cutting chisel slide, and a depth-cutting chisel block mounted upon said bracket and operatively connected to said slide, substantially as specified.

10. The combination with a frame, of a carriage mounted thereon, a chisel slide mounted upon said carriage, an operating lever connected to said slide, a rack on the frame, a feeding pawl carried by said lever to engage the rack when the slide is retracted, a locking pawl arranged to normally engage the rack, and a slotted connection between the locking pawl and the lever whereby the pawl is disengaged from the rack when the slide is retracted, substantially as specified.

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**526,827. HARVESTER CUTTER-BAR.** ARTHUR J. WOODIN, Park Rapids, Minn. Filed June 28, 1894. Serial No. 516,008. (No model.)

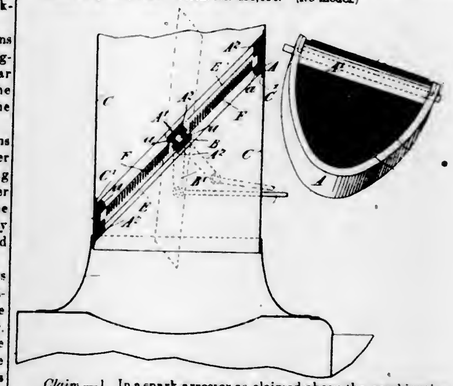


*Claim.*—1. A cutting apparatus for harvesters comprising in its construction a cutter-bar having a dove-tailed slot or depression in its upper side, a knife having a correspondingly formed shank adapted to fit therein, a pin having a knob on one end thereof and adapted to pass through the knife and into the cutter-bar, and a spring pin or rod arranged in the cutter-bar and adapted to be engaged by the knob on the first pin, substantially as described.

2. A cutting apparatus for harvesters comprising in its construction a cutter-bar having a dove-tailed groove formed in its upper side, a knife having a similarly-shaped shank adapted to fit in said groove, a headed pin adapted to pass through the shank and into the cutter-bar, the head being adapted to lie in a counter-sunk recess in the shank, and a spring pin or rod passed horizontally through the cutter-bar and through the space or passage occupied by the lower end of the first-mentioned pin, the said first-mentioned pin having a knob formed on its lower end and adapted to operate with the spring pin or rod, substantially as described.

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**526,828. SPARK-ARRESTER.** HENRY BELL, St. Kilda, Victoria. Filed Sept. 22, 1893. Serial No. 486,156. (No model.)

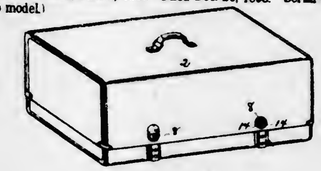


*Claim.*—1. In a spark arrester as claimed above the combination of the elliptic ring A and the boss A' the flanged pieces $A^2$ gapped bars E and grating bars F all assembled substantially as herein described and explained and as illustrated in the drawings.

2. In a spark arrester, the combination of gapped bars E, and grating bars F, fitting loosely in the gaps as and for the purpose set forth.

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**526,829. FASTENER FOR TELESCOPIC TRAVELING-CASES.** JOHN B. DUGUID, Toledo, Ohio. Filed Dec. 26, 1893. Serial No. 494,654. (No model.)



*Claim.*—1. In a telescopic traveling case, a body, body plates secured thereto, each having a raised face plate, a plurality of non-circular openings along the length of the face plates, a top, plates secured thereto, pins journaled in the plates, having a thumb piece for revolving the same, catches upon the inner ends of a size and shape of the openings, whereby when they are inserted therein and revolved, the pins engage the sides of the openings and the catches engage with the inside of the face plates, holding the pins in engaged position with the face plate.

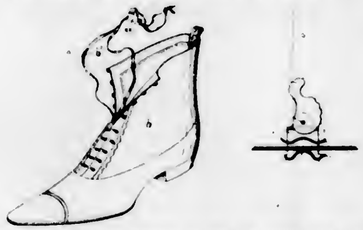
2. In a telescopic traveling case, a body, body plates secured thereto having a plurality of non-circular openings along the length of the same, a top, plates secured thereon, pins journaled in the plates, a thumb piece upon the pins for revolving the same, an elongated catch upon the inner end, of a size and shape corresponding to the openings in the body plate, whereby when the catch is inserted and turned, it engages with the inside of the body plate, said catch being at its widest point approximately the size of the pin, whereby the top is held from vertical movement.

3. In a telescopic traveling case, a body, body plates secured thereto, each having a raised face plate, a plurality of non-circular openings along the length of the face plates, a top, plates secured thereto, pins journaled in the plates, having a thumb piece for revolving the same, catches upon the inner ends, of a size and shape of the openings, whereby when they are inserted therein and revolved, the pins engage the sides of the openings and the catches engage with the inside of the face plate, holding the pins in engaged position with the face plate, and a lock for the catch.

4. In a telescopic traveling case, a body, body plates secured thereto having a plurality of non-circular openings along the length of the same, a top, plates secured thereto, pins journaled in the plate having a thumb piece for revolving the same, and a catch upon the inner end of the same of a size and shape to enter the openings in the body plate, and when turned, engage therewith, a bolt movably secured in the top plate, and means whereby when it is moved forward it engages with the recess in the thumb piece, locking the catch in an engaged position.

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**526,830. SHOE-LACE FASTENER.** EUSTACHE R. DULIE, Newark, N. J. Filed June 21, 1894. Serial No. 515,216. (No model.)



*Claim.*—1. A shoe lace fastener, or the like, comprising therein a frame *a* having arm-portions $a'$ and $a^3$ and bearings on said arms, a cam-lever pivotally arranged between said arms, and provided with scallops forming stops and an adjustable clamp-plate between said arms, with which said cam-lever can be brought into operative holding engagement said cam plate being provided with stops $c'$ and $c^3$, substantially as and for the purposes set forth.

2. A shoe lace fastener, or the like, comprising therein a frame *a* having a corrugated base, arm-portions $a'$ and $a^3$ and bearings on said arms, a cam-lever pivotally arranged between said arms, and provided with scallops forming stops and an adjustable clamp-plate between said arms, with which said cam-lever can be brought into operative holding engagement, said clamp-plate being provided with stops $c'$ and $c^3$, substantially as and for the purposes set forth.

3. A shoe lace fastener, or the like, comprising therein a frame *a* having a corrugated base, arm-portions $a'$ and $a^3$ and bearings on said arm-portions, a cam-lever pivotally arranged between said arms, provided with a cam surface $d'$ and serrations or scallops $d^3$, and a corrugated clamp-plate *c* adjustably arranged between said arms, with which said cam-lever can be brought into operative holding engagement, substantially as and for the purposes set forth.

4. A shoe lace fastener, or the like, comprising therein a frame *a* having a corrugated base, arm-portions $a'$ and $a^3$ and bearings on said arm-portions, a lip $a^{10}$ on said corrugated base, a cam-lever pivotally arranged between said arm-portions, provided with a cam surface $d'$ and serrations or scallops $d^3$, a handle portion $d^5$ and a nosing $d^4$ thereon, and a corrugated clamp-plate *c* adjustably arranged between said arms, with which said cam-lever can be brought into operative holding engagement, substantially as and for the purposes set forth.

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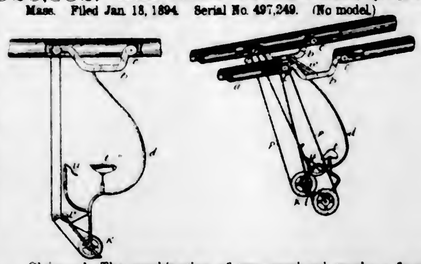
**526,831. SPRING-BED.** OSCAR S. FOSTER, Utica, N. Y. Filed Apr. 22, 1892. Serial No. 430,167. (No model.)



*Claim.*—The combination in a spring bed of a slat or bar forming a portion of the frame, a spring holder having a cylindrical body and a spiral projecting thread on the exterior thereof adapted to be engaged between the convolutions of the spring, means for securing the holder on the surface of the slat or bar, and a spiral spring having contiguous convolutions at its end engaged with and secured to the slat by having the spiral projection on the holder introduced between the contiguous convolutions of the spring, the convolutions embracing the holder with an elastic tension and the lower convolution of the spring wedged between the spiral projection and the slat or bar thereby taking up any looseness as between the holder and bar and obviating any rattling or disagreeable noise in use, all substantially as set forth.

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**526,832. TROLLEY-CYCLE.** HENRY L. GARDNER, Springfield, Mass. Filed Jan. 18, 1894. Serial No. 497,249. (No model.)



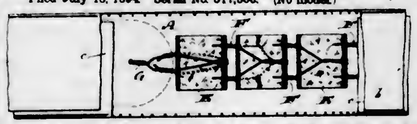
*Claim.*—1. The combination of two overhead tracks, a frame extending between the tracks, wheels carried by the frame and rolling on the tracks, a vehicle frame suspended from the overhead frame, a shaft and means for rotating the same on the depending frame, and an operative connection therefrom to one of the wheels to propel the vehicle, substantially as described.

2. The combination of two overhead tracks, a frame extending between the tracks, fore and aft wheels rolling on each track and carried by the frame, a frame depending from the overhead frame, a shaft and means for rotating the same on the depending frame, and operative connections from said shaft to one pair of said wheels, substantially as described.

3. In a trolley cycle, the combination of two overhead tracks, suitable trucks having wheels mounted thereon, a sprocket wheel mounted upon a truck wheel axle, a suitable frame depending from said trucks, a sprocket wheel mounted upon said frame, means for operating the sprocket wheel, and a sprocket chain arranged to convey motion from the frame sprocket wheel to the sprocket wheel on the truck axle, substantially as described.

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**526,833. ELECTRIC BELT.** JOHN J. HAWKEY, Beaver Dam, Wis. Filed July 18, 1894. Serial No. 517,866. (No model.)



*Claim.*—1. An electric-belt comprising a flexible waterproof casing, a pair of flexible batteries within the casing an electrode detachably connected to the inner terminals of both batteries, and two other electrodes, each of which is connected to an outer terminal of a battery.

2. An electric belt comprising a water-proof casing, two series of zinc plates individually wrapped with absorbent material, copper wire uniting each series of plates, an electrode at the outer terminal of each battery involving a series of the wire connected plates, and another electrode detachably connected to the inner terminals of both batteries.

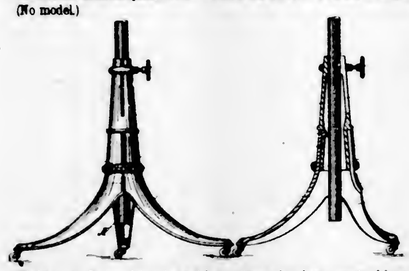
3. An electric belt provided with electrodes each consisting of a conductive plate provided with slots, and conductive strips run through the slots to form loops and bent back over the edges of the plates, said loops serving for the attachment of battery terminals.

4. An electric belt having a battery comprising a series of zinc plates individually wrapped with absorbent material, and copper wire strands uniting the plates a pair of strands being passed through openings in a plate and the absorbent material thereon, each strand twisted on itself between two of the absorbent covered plates then diverted on opposite sides of one of these plates, twisted with the other strand, then recurved and again twisted with the other end of itself.

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**526,834. KNOCKDOWN BASE AND COLUMN.** WILLIAM HETTERSCHIED, Grand Rapids, Mich. Filed Dec. 26, 1893. Serial No. 494,681. (No model.)

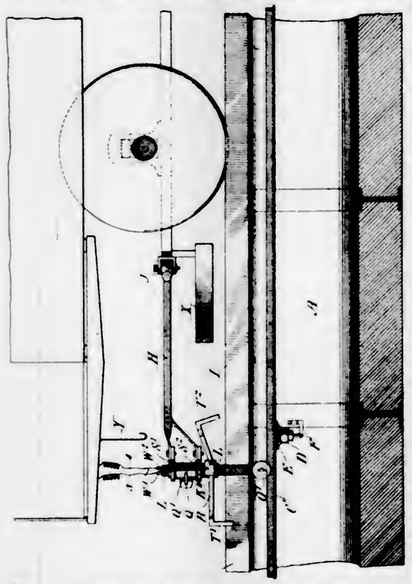


*Claim.*—1. In combination with a column, having a central lower portion, a base having diverging feet and a divided truncated conical middle portion, surrounding said lower portion of the column and having external projections, and a band having inclined planes to engage said projections, and recesses to pass over the same, substantially as described.

2. In a knock-down base and column, a truncated, conical column having an annular shoulder, a base having diverging feet and a divided truncated conical middle portion engaging said shoulder, and ribs overlapping its seams, and a band having inclined planes engaging said ribs and recesses to pass said ribs, substantially as described.

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**526,835. CONDUIT RAILWAY-TROLLEY.** ROBERT J. HEWETT, St. Louis, Mo. Filed Feb. 9, 1894. Serial No. 499,621. (No model.)



*Claim.*—1. A condnit collector provided with an adjustable steering device engaging the slot walls at a point in advance of the plow to automatically adjust the collector to curves.

2. A conduit collector provided with an adjustable steering device engaging the slot walls at a point in advance of the plow to automatically adjust the collector to curves, and means for reversing the position of the steering device when the car reverses direction of travel to adjust the collector contact in advance of the curve.

3 A conduit collector provided with a plow free to shift in vertical and horizontal planes, provided within the conduit with grooved collector contacts journaled on a horizontal axis parallel to the slot at a point between the supply conductors.

4. A conduit collector provided with a plow free to move in vertical and horizontal planes but fixed against rocking out of a vertical plane, and provided with double collector contacts capable of rocking on a horizontal axis within the conduit.

5. A conduit collector provided with a pivoted support mounted on the vehicle, to admit movement in vertical and horizontal planes a detachable plow capable of dropping within the conduit connected thereto, detachable connections for the motor leads and means for sustaining the pivoted support when the plow is disconnected.

6. A conduit collector comprising a pivoted bar mounted on the vehicle so as to permit of lateral and vertical movement, a detachable plow mounted on said bar capable of rotary movement in a horizontal plane, and a current collector engaging the conductors within the conduit mounted on said plow.

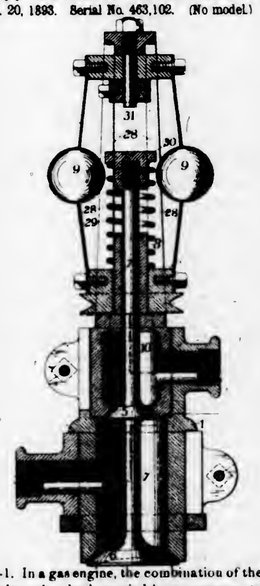
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**526,836. PROCESS OF RETINNING BATH-TUBS.** DAWSON B. HILTON, Brooklyn, N. Y. Filed June 8, 1894. Serial No. 513,924. (No specimens.)

*Claim.*—The process of retinning bath tubs which consists in washing them with acid, applying an alloy consisting of mercury and a soft metal dissolved therein, washing consecutively with nitric and muriatic acid, applying a coating of solder, washing with muriatic acid, and applying a second coating of solder, substantially as specified.

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**526,837. GAS-ENGINE.** CARL F. HIRSCH, San Francisco, Cal. Filed Feb. 20, 1893. Serial No. 463,102. (No model.)



*Claim.*—1. In a gas engine, the combination of the gas inlet valve and the air inlet valve, both carried by a common stem and moving simultaneously therewith, a valve-supporting shell or chamber for each of these valves and split collars or shells embracing the aforesaid valve-supporting shells and having openings to coincide to a greater or less degree with corresponding openings in the valve-supporting shells accordingly as the embracing collars are adjusted, together with adjusting bolts engaging lugs in the ends of the split shells, substantially as described.

2. In a gas engine, the combination with the cylinder and its piston, of a valve-supporting shell thereon, an air inlet valve having a seat in said shell, an adjustable split collar embracing said shell and capable of revolution around it, said embracing collar having a port or opening which coincides to a greater or less degree with a corresponding port or opening in the valve-shell so that the amount of air admitted to the valve at each charge can be regulated by the adjustment of the collar and means for adjusting and tightening said collar, consisting of lugs at each end thereof engaged by a bolt together with a scale for measuring the adjustment, substantially as described.

3. In a gas engine, the combination of a gas inlet valve and an air inlet valve, both of which are connected to a common stem and move simultaneously therewith, valve-supporting shells for the two valves, split collars which embrace the said shells and have their ends provided with connecting bolts and ports in the shells and the embracing collars that can be opened or closed by adjustment of the collars so as to regulate the amount of air and gas admitted at each charge, substantially as described.

4. In a gas engine, the combination of the gas inlet valve and the air inlet valve, both connected to a common stem and moving simultaneously therewith, valve supporting shells for the two valves, split collars which embrace and are adjustable around the valve shells, said collars having ports or openings adapted to coincide to a greater or less degree with corresponding ports or openings in the shells, means for adjusting the collars and securing them when adjusted and a governor mechanism applied to the upper end of the valve stem and operating substantially as described.

5. In a gas engine, the combination of a gas inlet valve and an air inlet valve, both connected to a common stem and moving simultaneously therewith, valve-supporting shells for said valves, divided collars surrounding the shells and adjustable thereon, said collars being provided with ports or openings that coincide with corresponding ports or openings in the shells which ports or openings are graduated in size in consequence of the adjustment of the collars, and a governor mechanism upplied to the upper end of the valve-stem and consisting essentially of centrifugal balls carried by flexible springs secured to pieces at top and bottom, together with a cut on the end of the valve-stem and a coiled spring encircling the same.

6. In a gas engine, the combination of the gas inlet valve, an air inlet valve, both connected to a common stem and moving simultaneously therewith, a valve-supporting shell for each valve, an adjustable collar on each shell having an inlet opening which coincides with corresponding openings in the shell and is graduated in size by the adjustment of the collar, said collars being split at one point and provided with lugs which are engaged by bolts and being also provided with indicating scales so that the amount of gas and air admitted through the inlet openings may be observable from the scales, together with a governing or regulating mechanism applied to the end of the valve-stem, substantially as described.

7. In a gas engine, the combination of a cylinder, a piston moving therein inlet valves for gas and air, an exhaust valve, the main crank shaft and two independent cams or lifting cranks, arranged in connection with the exhaust-valve so that the latter may be opened at the proper point of the piston's stroke when the engine is running either way and thus permit the crank shaft to be reversed, substantially as described.

8. In a gas engine, an exhaust valve and its rod, in combination with the main crank shaft and dual actuating mechanism for the exhaust valve arranged between it and the crank shaft so that the valve may be opened at the proper point in the piston's stroke when the engine is running in either direction and hand mechanism to change the valve-actuating devices so that the engine can be reversed at will, substantially as described.

9. In a gas engine, the combination of an exhaust valve, a pair of wheels for actuating it, a revoluble valve-rod, a tappet thereon capable of being turned to the right or to the left and actuating mechanism that will open the valve at the proper position of the engine's stroke when the engine shaft is running in either direction, substantially as described.

10. In a gas engine, the combination with the cylinder and a piston therein, of an exhaust-valve opening and closing the escape passage to the combustion chamber within the cylinder, the adjustable engine gearing as herein described to open said valve at the proper point of the engine's stroke when running either way, a squared revoluble valve-rod and an adjustable handle to turn the same, actuating wheels geared to and revolving positively in respect to the engine shaft, substantially as described.

11. In a gas engine, the combination with the cylinder and a piston moving therein, of an exhaust valve, a revoluble valve-rod having a lifting toe or extension on its lower end, the main crank shaft having a pinion thereon, gear wheels driven by said pinion and provided with pins adapted to engage the toe on the valve-rod and a handle for rotating the revoluble valve-rod so as to fix it in the proper position, substantially as described.

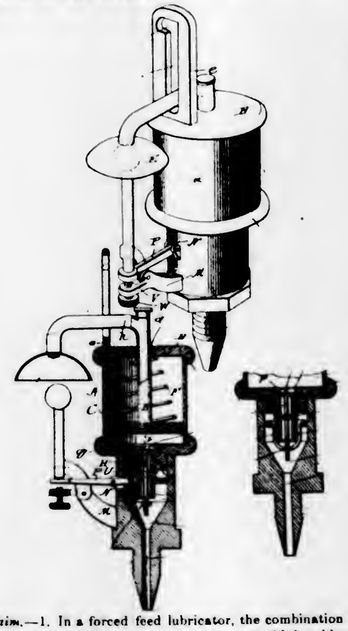
12. In a gas engine, the combination with the cylinder and a piston moving therein, of an exhaust valve, a revoluble valve-rod square in its upper section and sliding through a shell or bushing and provided on its lower end with a toe or extension, the main crank shaft having a pinion thereon, gear wheels engaged by said pinion and provided with pins adapted to engage the toe on the lower end of the valve-rod, a spring enveloping the lower section of the valve-rod and a handle for rotating the valve-rod so as to place its toe in proper position relatively to the pins on the gearing, all substantially as specified.

13. In a gas engine, the combination with the main cylinder having an annular cooling chamber to be filled with water, of a piston moving within said cylinder, a sliding exhaust valve for opening and closing the escape passage to the cylinder, the face or sides of said valve connecting with the annular cooling chamber so that the valve may be exposed to the cooling water, the revoluble valve-rod with its adjustable handle and the actuating wheels geared to and revolving positively in respect to the engine shaft and engaging the valve-rod substantially in the manner and for the purpose set forth.

14. In a gas engine, an igniting slide driven from an eccentric on the main crank shaft, having an elongated groove on one side communicating with two ports open to the engine cylinder, the lower one of said ports regulated by a screw-valve to control the inflow and pressure in the chamber of the igniting slide up to the point of ignition, the apertures or ports at the top of the igniting slide communicating with a jet burner and the interior of the main cylinder in such relation as to close the igniting port before the charge in the cylinder is exploded, substantially as described.

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526,838. LUBRICATOR. JOHN P. HUETER, Boise City, assignor of one-half to Thomas Gracia, Quartzburg, Idaho. Filed July 14, 1894. Serial No. 517,586. (No model.)



*Claim.*—1. In a forced feed lubricator, the combination with a cup, having a suitable discharge; of a piston movable in said cup, and having a stem, a gong carried by said stem and a hammer in the path of movement of said gong, the hammer and gong being designed to contact as the lubricant has been discharged from the cup, substantially as specified.

2. In a forced feed lubricator, the combination with a cup having a discharge aperture in its bottom, in combination with a spring backed plunger arranged in the cup, and having a stem carrying a gong or alarm device at its outer end, a hammer arranged in the path of said gong, and a pivoted lever backing said hammer whereby an alarm will be given when the piston descends in the cup, substantially as specified.

3. In a forced feed lubricator, the combination with a cup, having a discharge aperture in its bottom; of the nozzle, the lever pivoted in said nozzle, the yoke carried by the lever, the valve adjustably secured in the yoke, the spring interposed between the bottom of the cup and the lever, the hammer arranged to contact with the outer end of said lever, and the piston having a stem carrying a gong or the like arranged to move in the plane of the hammer, substantially as specified.

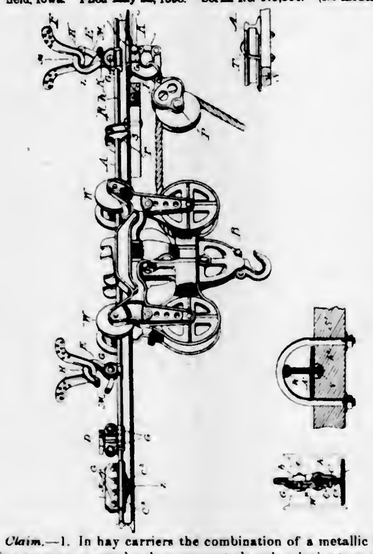
4. In a forced feed lubricator, the combination with a suitable cup; of a piston having a stem carrying a gong or the like, the nozzle secured to the cup, the bracket arm on the nozzle having the screw threaded branch, the set screw arranged therein, the pivoted lever, in the nozzle of the cup and the hammer arranged above the outer end of the lever so as to contact therewith, substantially as specified.

5. The improved device described comprising the cup having the discharge aperture in its bottom and the screw cap having the slotted upright, the bottom having the threaded boss and the tube depending therefrom, the nozzle screwed on the boss, and also threaded to be secured to the crank pin or cross head of an engine, the lever pivoted in one of the walls of the nozzle and having a ring at its inner end to surround the tube and also having diametrically disposed notches in the ring, the yoke arranged in the notches of the ring and having the screw threaded aperture, the threaded valve arranged in the stirrup, the pivoted hammer, the set screw arranged below the hammer, the plunger arranged in the oil cup, and having its stem passing through the slot of the upright and carrying a gong at its outer end, and the spring arranged in the cup above the plunger, all combined and adapted to operate, substantially as specified.

6. The combination with the nozzle; of the lever pivoted therein and having a ring at its inner end, the yoke suspended from said ring and having a threaded aperture, the valve having a threaded stem and adjustably secured in said yoke, a vibratory hammer arranged to contact with the outer end of the lever, the plunger and the gong thereon substantially as and for the purpose specified.

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526,839. HAY-CARRIER APPARATUS. WILLIAM LOUDEN, Fairfield, Iowa. Filed May 22, 1893. Serial No. 475,301. (No model.)



*Claim.*—1. In hay carriers the combination of a metallic track having an upper central web, a two part clamping device to embrace the web and a threaded bolt and nut to hold the parts together, said clamping parts where the bolt passes through them being set to one side of the center line of the track, substantially as and for the purpose set forth.

2. In hay carriers, the combination of a metallic track having an upper central web, a two part clamping device to embrace the web and a threaded bolt and nut to hold the parts together, one of said clamping parts being dished into the other one where the bolt passes through them, so as to set the head of the bolt farther from the center of said track than the nut of said bolt.

3. In hay carriers, the combination of a metallic track having an upper vertical web and two horizontal side flanges, a two part hanging device adapted to clamp upon the web and support the track, a carrier adapted to traverse the side flanges and having an opening through its upper edge to escape the hanger, and a threaded bolt and nut to hold the parts of the hanger together, said clamping parts, where the bolt passes through them, being set to one side of the center line of the track, substantially as, and for the purpose set forth.

4. In hay carriers, the combination of a metallic track having an upper vertical web, and two horizontal side flanges, a two part hanging device adapted to clamp upon the web and support the track, a carrier adapted to traverse the side flanges and having an opening through its upper edge to escape the hanger, and a threaded bolt and nut to hold the parts of the hanger together, one of the parts of said hanging device being dished into the other part where the bolt passes through them, so as to set the head of said bolt farther from the center of said track than the nut of the bolt.

5. In hay carriers a track suspending device consisting of two separable parts placed side by side and adapted to hold the track rail between them, one of the parts having suspending means at its upper end adapted to catch over a supporting device and also having a shoulder, and the other part having its upper end cut off so as to bear against the shoulder on the other and form a clamping part to hold the track rail in engagement with the suspending part, and means to hold the parts together.

6. In hay carriers, a track hanger consisting of a suspending part and a clamping part placed side by side and means for holding them together, both parts being adapted to catch under the head of the rail, the suspending part having a shoulder and the clamping part being adapted to catch over the shoulder on the suspending part, substantially as shown and described.

7. In hay carriers, a track suspending device having a hook to catch over a supporting device, said hook having a slot in its shank, and also a slot in its point, a latch pivoted in one of said slots and adapted to close the throat of the hook and a key to fasten the free end of latch in the other slot.

8. In hay carriers, a two part pulley holding hook adapted to clamp upon the track rail and means for holding the parts together, substantially as described.

9. In hay carriers, a two part pulley holding hook, each part having a jaw to catch over the flanges of the rail, and means for holding the parts together, substantially as set forth.

10. In hay carriers, a two part pulley holding hook, each part having a jaw to catch over the flanges of a track rail, means to hold the parts together, and a latch pivoted between the parts to close the throat of the hook.

11. In hay carriers the combination of a metallic track rail having a vertical web and horizontal side flanges, a carrier adapted to run on these side flanges, a pulley holding hook adapted to clamp upon said side flanges, and a stop on said rail between the carrier and said hook, said stop being adapted to abut the frame of the carrier and arrest its movement toward the hook, substantially as set forth.

12. In hay carriers, a metallic rail having a vertical web and horizontal flanges, a carrier adapted to run on said flanges, a stop placed on the under side of the flanges to arrest the movement of the carrier, and clamping means passed up around said flanges and over said web to hold the stop in position on the rail, said stop being adjustable along the rail by loosening the clamping means.

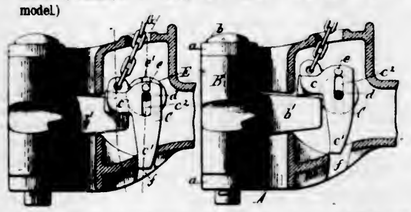
13. In hay carriers, the combination of a metallic track rail, having a vertical web and horizontal side flanges, a carrier adapted to run on said side flanges, a stop on said rail having extended ends to abut the frame of the carrier on each side of the rail, and clamping means passed up over the vertical web of the rail to clamp the stop against the under side of the rail.

14. In hay carriers the combination of a metallic track rail having a vertical web and horizontal side flanges, a carrier adapted to run on said side flanges, a stop on the under side of said rail to arrest the movement of the carrier, and jointed clamps adapted to grasp the upper edge of said web and be secured by bolts to the stop below.

15. In hay carriers, a metallic track rail, having a vertical web and horizontal side flanges and composed of two or more sections of rail, and a two part splicing device to clamp upon the vertical web of the rail and join the sections together, one of the pieces of said splicing device having holes in its lower extremity, and the other having corresponding pins which are adapted to pass through holes in the web of the rail and into the holes in the aforesaid piece, substantially as set forth.

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526,840. CAR-COUPLING. WILLIAM H. MOORES and ERNEST A. RICHELL, Buffalo, N. Y. Filed Mar. 31, 1894. Serial No. 505,851. (No model.)



*Claim.*—1. The combination with the drawhead and the swinging coupling jaw, of a vertically movable lock having a slot, a retaining arm adapted to engage with the coupling jaw and a shifting arm adapted to strike the coupling jaw for opening it, a pivot pin passing through said slot, and a stop whereby the lock is held from swing-

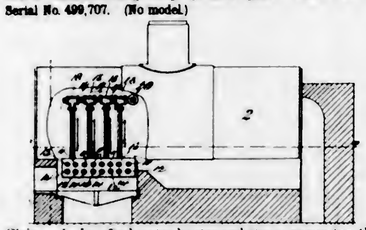
ing on said pivot pin during its vertical movement, substantially as set forth.

2. The combination with the drawhead having an upright guide, and the coupling jaw, of a depending lock having a vertical slot, a forwardly extending actuating and retaining arm and a depending shifting arm adapted to strike the coupling jaw for opening it, a transverse pivot pin passing through the slot of the lock, and a stop pin or projection arranged on the lock and sliding in the upright guide of the drawhead, substantially as set forth.

3. The combination with the drawhead having internal cylindrical bosses provided with upright guide grooves, and a stop arranged in the bottom of the drawhead, of the coupling jaw, and a pivoted depending lock capable of moving vertically in the drawhead and having pins or projections arranged to slide in the grooves of said bosses, a retaining arm adapted to engage with the coupling jaw, and a depending shifting arm adapted to bear against the stop in the bottom of the drawhead during the vertical movement of the lock, substantially as set forth.

4. The combination with the drawhead having upright guide-grooves in its sides and an opening in its bottom, of a coupling jaw, a pivoted, depending lock capable of vertical movement in the drawhead and having a retaining arm adapted to interlock with the coupling jaw, a depending shifting arm adapted to engage with the bottom opening of the drawhead, and lateral stop pins arranged in said guide grooves, substantially as set forth.

## 526,841. FEED-WATER HEATER AND STEAM-GENERATOR. DAVID MYERS, North Manchester, Ind., assignor of one-half to the Manchester Manufacturing Company, same place. Filed Feb. 10, 1894. Serial No. 499,707. (No model.)



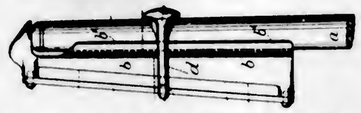
*Claim.*—1. In a feed water heater and steam generator, the combination with the side distributing chambers thereof each of which is divided into a series of separate and disconnected compartments the whole formed in one integral piece, water circulating tubes connecting each of the opposite compartments of said distributing chambers, said tubes so arranged that each successive tube circulates the fluid in opposite directions, means for supplying the feed water to one of the end compartments of said distributing chamber, and for connecting the opposite end compartment of said chamber to the boiler, vertical stand pipes connected at their bottom ends to the top sides of the compartments of one of the side chambers a series of pipes connecting the top ends of said stand pipes and a pipe connecting such pipes to the boiler, all substantially as and for the purpose set forth.

2. In a feed water heater and steam generator for steam boilers, the combination with the distributing chambers thereof built longitudinally in and flush with the exterior surface of the side walls of the setting of the boiler, transverse water circulating tubes extending between the boiler and the furnace horizontally, and connecting the opposite distributing chambers, a feed pipe connected to one of said distributing chambers and suitable pipe connections connecting the said distributing chamber with the boiler, substantially as and for the purpose set forth.

3. In a feed water heater and steam generator, the combination with a steam boiler and its furnace setting, of side water distributing chambers extending longitudinally in the side walls of the setting of said furnace and flush with the outer surface thereof, upper and lower circulating tubes connecting said distributing chambers, said tubes so arranged and connected that each successive pair of tubes circulates the fluid in opposite directions, a suitable supply pipe connecting to one end of one of said distributing chambers, a discharge pipe connecting the opposite end of said chamber to the boiler, and suitable steam receiving pipes connected at their bottom ends to said distributing chamber and having their opposite ends connected with the boiler substantially as set forth.

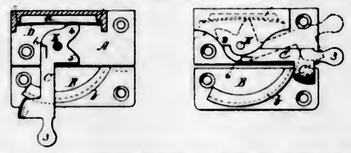
## 526,842. BILLIARD-CUE-TIP FASTENER. MORRIS P. LORAM, Jersey City, N. J. Filed May 19, 1894. Serial No. 511,765. (No model.)

*Claim.*—1. A billiard cue tip fastener, consisting of a main frame having a concave edge to bear against the cue, a head to press on the tip and a longitudinal bar between which and the main frame there is a slot, and a fastening ring surrounding the main frame and passing through the slot whereby the ring is connected to the fastener, and can be used as a suspending device when the fastener is not in use substantially as set forth.



2 A billiard cue tip fastener, consisting of a main frame *b*, a concave edge *b'* to bear against the cue, a head $b^3$ to press upon the tip, projections near the ends, a bar *c* and screws for fastening said bar to said projections, a fastening ring *d* having a notched part 6 to straddle said bar, and a round connecting bar *d'* passing through the slot between the bar *c* and main frame *b*, substantially as set forth.

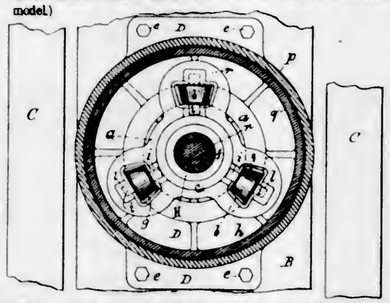
## 526,843. WINDOW OR DOOR BUTTON. FRANK P. LAWDOS, Worcester, Mass. Filed Aug. 30, 1893. Serial No. 484,361. (No model.)



*Claim.*—1. In a window fastener, the swing-bar C made as shown, with the thumb-knob the forwardly-projecting downwardly-beveled nose $C^3$ and rib-engaging recess and hook I at its outer end, and two backwardly projecting lugs 4 and 5 at right and left of its pivotal center, and a spring that acts in conjunction with said lugs for the normal retention of said swing-bar at intermediate position of its action, and affords backward yielding and retroactive movement thereof, while permitting the forward swinging adjustment of said bar for locking, in combination with the frame, the pivot-pin, and the catch-plate having the rib *b* and striker-lip F, all substantially as shown and described.

2. The within described window fastener, composed of the swing-bar having the forwardly projecting top-beveled nose $C^3$, the notch and hook I, backward projecting lugs 4 and 5, and stop-lug 6, the frame A, wherein said swing-bar is pivoted, provided with the shoulder 8, the pivoting pin E, the catch-plate having the curved rib *b* and strike-lip F, and the spring D, all disposed substantially as and for the purposes set forth.

## 526,844. CENTER BEARING FOR CAR-TRUCKS. WILLIAM ROBINSON, Boston, Mass. Filed Mar. 29, 1890. Serial No. 345,860. (No model.)



*Claim.*—1. In a car truck, the combination of the upper and lower bearing plates, each provided with an annular track, rollers inserted between said plates and traveling between and upon said annular tracks and an intermediate plate, made of one piece of metal, inserted between said upper and lower plates and swiveling concentrically therewith, said intermediate plate riding upon said rollers and holding the same in a fixed position relatively to each other but permitting them to travel freely on said annular tracks, said intermediate plate being provided with means for keeping said rollers and plate together when out of the operative position, substantially as described.

2. In a car truck, the combination, substantially as described, of upper and lower bearing plates, anti-friction rollers between the same, and a movable plate made of one piece of metal, between said bearing plates and riding upon said rollers, said movable plate swiveling concentrically with the swiveling center of the car truck and keeping said rollers in proper relative position, said movable plate being provided with pins arranged to keep said plate and rollers together when out of operative position.

3. The swiveling plate G provided with the openings *g* and recesses *l*, in combination with anti friction rollers inserted in said openings and having bearings in said recesses, and pins arranged to keep said rollers in position in the bearings of said plate G, substantially as described.

4. The plate G provided with the openings *g* and recesses *l*, in combination with anti friction rollers inserted in said openings and having bearings in said recesses, and pins passing through portions of said plate under or adjacent to the shanks of said rollers, and arranged to secure said rollers loosely in position in said plate, substantially as described.

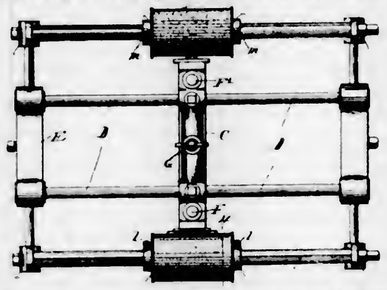
5. In a railroad car or truck, the combination, substantially as described, of the upper plate F, the lower plate D, the anti friction rollers *b* between said plates, and the plate G swiveling concentrically with said plates F and D, said plate G resting upon and controlling the position of said rollers *b*, and pins adjacent to the shanks of said rollers and arranged to keep said plate and rollers together.

6. The plate G provided with the openings *g* and recesses *l*, in combination with anti friction rollers *b* inserted in said openings and having bearings in said recesses, said plate G being provided, adjacent to said recesses, with perforated lugs *k* and pins or keys passing through said perforated lugs, substantially as and for the purpose described.

7. In a car truck, the upper and lower bearing plates F and D provided with interlocking flanges or projections of sufficient depth to secure said plates from relative lateral displacement, anti friction rollers located between said plates, an intermediate retaining plate resting upon portions of said rollers and keeping them in proper relative position, and pins arranged to secure said rollers loosely in said retaining plate, substantially as described.



## 526,845. SANDPAPERING-MACHINE. CHARLES L. RUEHS, Chicago, Ill., assignor to the Ruehs Moulding Sandpapering Machine Company, same place. Filed Aug. 11, 1893. Serial No. 482,904. (No model.)



*Claim.*—The combination in a sand papering machine with a suitable bed, driving and feeding devices and a reciprocating frame suitably connected with the driving device, of a series of block carriers mounted upon said frame, a series of grooved blocks secured in said carriers, each carrier having a pair of rolls located at the opposite ends of the block and a pair of fingers to fold the paper, and a strip of sand paper or cloth adapted to cover the face of the block, said cloth being wound upon the rolls and stretched through the fingers and longitudinally of the block; substantially as shown and described.

## 526,846. ARMOR FOR PNEUMATIC TIRES. SAMUEL M. SCHINDEL, Hagerstown, Md. Filed Mar. 5, 1894. Serial No. 502,467. (No model.)

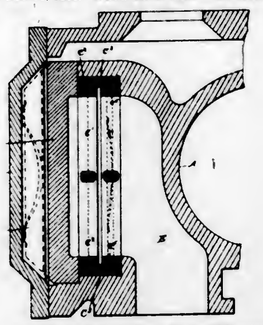


*Claim.*—1. A punctureless armor for the purposes described, consisting of an inclosed body of fibrous material, as raw cotton, and a flexible core having contact with the fibrous material, substantially as described.

2. A punctureless armor for the purposes set forth, the same consisting of a body of fibrous material, as raw cotton, and a flexible core, inclosed within a sheath, or covering, of textile or other fabric, substantially as described.

3. A punctureless armor for the purposes specified, the same consisting of a body of fibrous material, as raw cotton, inclosed within a suitable covering, or sheath, and a flexible core embedded within said fibrous material, substantially as described.

## 526,847. STEAM-ENGINE VALVE. WILLIAM G. SHEPHERD, Erie, Pa. Filed Dec. 11, 1893. Serial No. 493,399. (No model.)



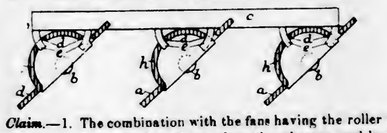
*Claim.*—1. In a steam engine valve, the combination of the valve having grooves in the bridges between its steam passages, and side plates on the sides of said valve; a relief plate between said side plates on said valve and having oppositely placed grooves therein, and packing strips in said grooves.

2. In a steam engine valve, the combination of the valve, having grooves in the bridges between its steam passages, and side plates on the sides of said valve; a relief plate between said side plates which is pinched by said side plates when under pressure, and having grooves therein oppositely placed to those in the valve; and spring actuated packing strips in said grooves.

3. In a steam engine valve, the combination of the valve having grooves in the bridges between its steam passages; a relief plate thereon having oppositely placed grooves therein; packing strips in said grooves; and side plates riveted to the valve.

4. In a steam engine valve, the combination of the valve having side plates thereon that contact the top and bottom of the steam chest, the steam exposed surface of the lower plate being greater than that of the top plate; and a relief plate for said valve between said plates.

## 526,848. HOT-AIR REGISTER. EDWARD A. TUTTLE, New York, N. Y. Filed Jan. 22, 1894. Serial No. 497,610. (No model.)



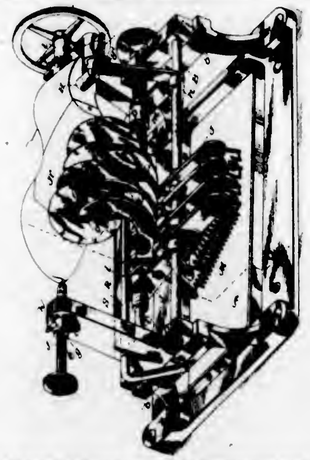
*Claim.*—1. The combination with the fans having the roller segments, of the operating rod resting and moving thereon, and having reverse cycloid teeth or prongs engaging said segments at two points distant from each other about the length of the run-way of the rod on the segments, and each moving the fans about half of their arc of movement substantially as described.

2. The combination with the fans having the roller segments, of the operating rod resting and moving thereon, and having reversely arranged cycloid teeth engaging said segment at two points distant from each other about the length of the runway of the bar on the segment, one of said teeth acting against the heel of the segment, and said rod having another tooth working by the side of the segment in opposing relation to the tooth acting against the heel of the segment, all constituting two points of connection of the rod with the segments between which the action is divided substantially as described.

## 526,849. CONFORMATOR. ABRAHAM S. ADLER, Baltimore, Md. Filed Nov. 2, 1893. Serial No. 489,866. (No model.)

*Claim.*—1. In a last-maker's conformator, the combination with a suspended last and means for turning it in transverse planes, of a series of indicators supported side by side, means for holding the series of indicators in contact with the last whereby they conform to the outlines of the last and are independently rotated by contact therewith, and means for withdrawing the indicators from the last in series.

2. In a last-maker's conformator, the combination with a suspended last turnable about suspension points at its ends, of a series of rotatable indicators supported side by side and held by a yielding pressure against said last whereby they conform to the outlines of the last when brought into contact therewith, and when the latter is turned in transverse planes, and means for withdrawing the indicators from the last in series and holding them out of contact therewith.



3. In a last-maker's conformator, the combination with a support, and a last turnable therein, of a rotatable indicator to be held by yielding pressure in contact with the walls of the last and to be rotated by the last when the latter is turned, and a spring for returning the indicator to its normal position when contact with the last is broken.

4. In a last-maker's conformator, the combination with a support, and a last mounted to turn therein, a rotatable indicator adapted to engage and be rotated by contact with the last, a spring adapted to be compressed by the rotation of the disk and to expand and return the disk to normal position, and a pointer fixed with relation to the rotatable indicator for indicating the length of its movement.

5. In a last-maker's conformator, the combination of a support, a last mounted to turn therein, a spring-actuated indicator rotated by contact with the last to measure its exterior area, and a fixed pointer for disclosing the amount of movement of the indicator.

6. In a last maker's conformator, the combination of a support, a last mounted to turn therein, a series of spring actuated indicators movable toward and from the last in series and adapted to engage its surface and to be rotated thereby, and pointers fixed with relation to the last and indicating the amount of their movement.

7. In a last-maker's conformator, the combination of a support, a last adapted to turn therein, the parallel rods one of which is turnable and provided with threads of varying sizes, arms mounted upon said rods and movable toward and from each other by means of the turnable rod, levers pivotally mounted upon said arms and carrying rotatable indicators and fixed pointers at their upper ends, and springs engaging said levers to move the indicators into contact with the last so that they may be turned by contact therewith.

8. In a last-maker's conformator, the combination of a support, a last turnable therein, the parallel rods one of which is turnable and provided with variable screw threads the transverse arms adjustably mounted on the rods side by side and having threaded portions engaging the threads of the turnable rod levers pivotally secured to said arms having their upper ends slotted or forked and provided with fixed pointers, rotatable indicators mounted in said slotted ends, springs adapted to be wound by the rotation of the indicators and to return the latter to their normal positions, other springs engaging the levers to move the upper ends with the indicators forward into contact with the last, and means for retracting the levers and indicators in series.

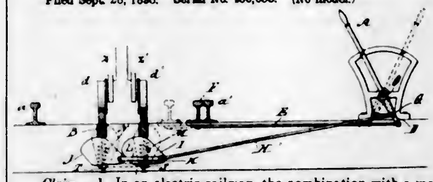
9. In a last-maker's conformator, the combination with a support, a turnable last suspended therein, the parallel rods, and the series of arms with their spring-actuated levers and indicators, of a shaft having means for engaging the levers and operating them in unison and for holding them outward in a locked position.

10. In a last-maker's conformator, the combination with a supporting frame with its parallel rods one of which has a graduated scale and the other is turnable and threaded, of a heel standard having a threaded sleeve engaging said rod whereby the standard may be adjusted, a pointer on the standard playing over the scale of the other rod, and means for suspending a last within the frame.

11. In a last-maker's conformator, the combination of a supporting frame, an adjustable heel standard having a rod mounted to turn in its upper end and provided with a plate or lever having a slotted right angled portion and a suspension point for the heel of a last, a slidable rod having a suspension point for the toe of a last, means for locking said slidable rod, and a plate removably seated in the heel suspending devices and having an extension adapted to engage the last to unite it with the rotatable heel-suspending devices.

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**526,850. CONDUCTOR-SWITCH.** GEORGE H. BENJAMIN, New York, N. Y., assignor to the Firm of Siemens & Halske, Berlin, Germany. Filed Sept. 28, 1893. Serial No. 486,653. (No model.)



*Claim.*—1. In an electric railway, the combination with a main track and an adjoining switch track; of working conductors for each of said tracks, one of said tracks having a sectional conductor normally out of the plane of the conductor of the other track, but adapted to be brought into line with the adjacent sections of the conductor of its own track and close the gap therebetween.

2. In an electric railway, the combination with a main track and an adjoining switch track; of working conductors for each of said tracks, one of said tracks having a vertically movable sectional conductor normally out of the plane of the conductor of the other track, but adapted to be brought into line with the adjacent sections of the conductor of its own track and close the gap therebetween.

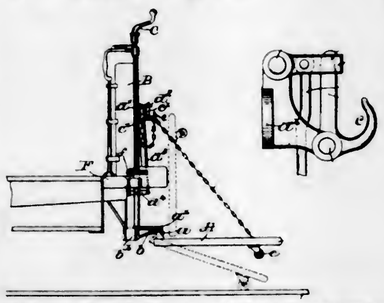
3. In an electric railway the combination with a main track and an adjoining switch track, of working conductors for each of said tracks, one of said tracks having sectional conductors adapted to lie out of the plane of the conductors of the other track, and means controlled by the throw of the switch for bringing said conductors into the path of the collector and completing the circuit.

4. In an electric railway the combination with a main track and an adjoining switch track, of working conductors for each of said tracks, one of said tracks having sectional conductors adapted to lie out of the plane of the conductors of the other track, and means controlled by the throw of the switch for bringing said conductors vertically into the path of the collector and completing the circuit.

5. In an electric railway the combination with a main track and an adjoining switch track, of working conductors for each of said tracks, one of said tracks having sectional conductors normally in a different plane from that of the main conductors, and means for bringing said sectional conductors into the plane of the main conductors to complete the circuit therethrough.

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**526,851. CAR-FENDER.** ABSHOM J. R. BERGER, Hingham, Mass., assignor to the Steel Cable Engineering Company, of Maine. Filed Nov. 15, 1893. Serial No. 490,975. (No model.)



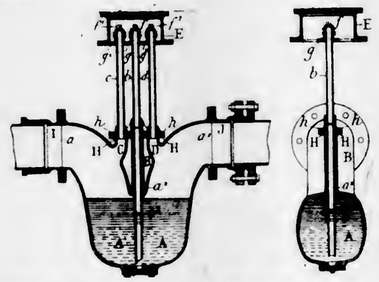
*Claim.*—1. A car fender consisting of a platform pivoted to the car and normally held above the track, combined with a hooked dog pivoted above said platform, a flexible sustaining connection secured to the platform and adapted to be engaged by the hook of said dog, a latch to normally engage said dog, a removable pin depressible in the car floor, and connections between it and the latch, depression of said pin tripping the latch and thereby permitting the dog to turn upon its pivot and disengage its hook from said platform connection, substantially as described.

2. A car fender consisting of a platform pivoted to the car, and a sustaining chain connected to said platform, combined with a dog having a hook to engage said chain and an upturned shank, and pivoted at the base of the hook, a latch to engage the shank and hold said dog in operative position, and means to trip said latch to release the shank, whereby the weight of the platform turns the dog upon its pivot to disengage the hook and sustaining chain, substantially as described.

3. A car fender consisting of a platform pivoted to the car, and a flexible sustaining connection for the platform, combined with a hooked dog pivoted above the platform to engage the connection and maintain the platform in position above the track, a latch for the dog, a pivoted lever, a link connecting it and the latch, and a removable pin adapted to extend through the car floor and rest upon said lever, depression of said pin turning the lever and releasing said latch, whereby the dog is turned to disengage the connection and permit the platform to drop into operative position, substantially as described.

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**526,852. SIPHON TEST-BOX FOR GAS-MAINS.** ADOLPHE BOUVIER, Lyons, France. Filed Apr. 21, 1894. Serial No. 508,491. (No model.)



*Claim.*—1. The siphon test box for gas mains herein shown and described, comprising the chamber A having the vertical partition, the inspection box E above said chamber, the dip tube extending nearly to the bottom of the chamber and extended within the inspection box, and the tubes on opposite sides of the dip tube and communicating with the chamber and with the inspection box, substantially as and for the purposes described.

2. A siphon test box for gas mains, comprising the chamber A provided with the pendent partition $a^3$ and the vertical tubes B, C, D, the inspection box E, the dip tube passing through a central passage in the partition $a^3$ and continued by the pipe $b$ into the inspection box, and the pipes $c$, $d$ connected with the tubes C, D and with the inspection box, substantially as and for the purposes described.

3. The combination with a divided test box or chamber, and an inspection box above the same, of the tubes C, D, within said test box or chamber, the dip tube $b'$, the pipes $b$, $c$, $d$ communicating with the tubes C, D and dip tube $b'$ within the test box or chamber, and terminating at their upper ends in the inspection box, the caps on the upper ends of said pipes, and the grease cups fastened to the pipes within the inspection box, substantially as and for the purposes described.

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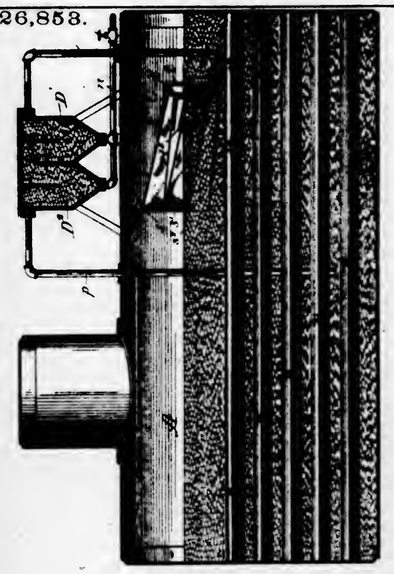
**526,853. MECHANICAL BOILER-CLEANER.** CHARLES W. BROWN, Chicago, Ill. Filed Apr. 4, 1894. Serial No. 506,312. (No model.)

*Claim.*—1. In a boiler-cleaner, a skimmer comprising a body-portion presenting a vertically disposed well having two or more inlet mouths, one above the other, a horizontally disposed outwardly flaring intake at each of said mouths, in combination with an uptake pipe, extending from the lower part of said well, settling chamber and return-pipe, all constructed and arranged to operate substantially as and for the purpose set forth.

2. In a boiler-cleaner, a skimmer C, comprising a body-portion $t$, presenting a well $t'$, two or more inlet mouths, one directly above the other, terminating in reduced openings, at the said well, and having backward inclined bases extending to the well, and two or more horizontally disposed funnels, meeting at their adjacent outer edges, and extending into the said mouths, and having backward inclined base-portions, in combination with an up-take pipe, extending from the lower part of the well, settling chamber and return pipe, all constructed and arranged to operate substantially as and for the purpose set forth.

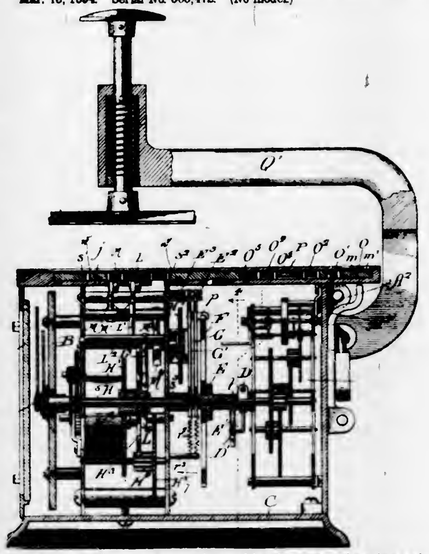


**526,858.**



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**526,854. TIME STAMP.** JACOB J. BUSENBENZ, Chicago, Ill. Filed Mar. 13, 1894. Serial No. 503,472. (No model.)



*Claim.*—1. In a time stamp, in combination, a time-keeping train and its motor, a printing-train having its independent motor and releasingly controlled by the time-keeping train, and horizontal rotary printing rings, one within the other and each carrying, at suitable intervals about its printing surface, type indicating divisions of time and connected with the printing-train to be rotated by it intermittingly in accordance with the divisions of time on the rings upon release of the printing-train, substantially as described.

2. In a time-stamp, the combination with the time keeping train and its motor and the printing train and its motor and a release mechanism operating upon the printing train and operated by the time keeping train, of horizontal rotary printing wheels one within the other and each carrying, at suitable intervals about its printing-surfaces, type indicating divisions of time, spring actuated engaging devices engaging the printing wheels to move the same, and a connec-

tion between said spring-actuated engaging devices and the printing train for moving said engaging devices against their spring resistance thereby to cause them on release to move the wheels, substantially as described.

3. In a time-stamp, in combination with the printing train and its motor and the time keeping train and its motor, and with the release mechanism operating to release the printing train at intervals and operated by the time keeping train, horizontal rotary printing rings one within the other and each carrying, at suitable intervals about its printing surfaces, type indicating divisions of time, arms and connections engaging said printing rings to move the same under independent spring tension and trips adapted to engage said arms and moved intermittingly by the printing train when the printing train is released, substantially as described.

4. In a time-stamp, in combination with a time train and its motor, the printing train and its motor and a release mechanism operated by the time train and engaging and releasing the printing train step by step, a minute printing ring, an hour printing ring and a date printing ring, each having on one face printing type and on the other face teeth constituting a ratchet and all being rotary and horizontally disposed one within the other, pawls engaging said ratchets, respectively, springs normally retaining said pawls in the advance position, spur disks intermittingly rotated by the printing train as the latter is released and arms connected with said pawls and adapted to be engaged by the spur disks, whereby the spur disks engage said arms to cause the pawls to be retracted against the resistance of their springs, the minute ring operating pawl once every minute, the hour printing ring operating pawl once every hour and the date printing ring pawl once a day, substantially as described.

5. In a time-stamp, the combination with the time train and its motor and printing train and its motor, and a release mechanism operated by the time train to engage and release the printing train step by step, of a setting mechanism actuated by hand and permanently independent of the time mechanism and operating to disconnect the release mechanism between the time train and printing train and to restrain and release the printing train by manipulator movement, substantially as described.

6. In a time-stamp, in combination with the printing train, the plate N, annular guide ways on said plate, slots in said plate coincident with certain annular guide ways, printing rings having printing type upon the upper face and ratchets on the lower face and supported in said annular guide ways, pawls passing through said slots to engage said ratchets and means actuated by the printing train for operating said pawls, substantially as described.

7. In a time-stamp, in combination with the printing train, the top plate presenting guide ways and slots as described, printing rings in said guide ways having printing type on their upper faces and ratchets on their lower faces, pawls engaging the ratchet teeth to advance the same and pawls engaging said ratchet teeth to restrain the same, substantially as described.

8. In a time-stamp, in combination with a time keeping train and its motor and the printing train and its motor, the release mechanism operated by the time keeping train and operating to restrain and release the printing train, comprising a stud-carrying disk on a shaft of the printing train, a ratchet wheel on a shaft of the time keeping train, lift bars engaged and lifted by the ratchet against spring tension, dogs on said lift bars presenting teeth, said teeth being located with relation to the stud on said disk, whereby the teeth will be engaged alternately by said stud during the operation of lifting and releasing said bars, substantially as described.

9. In a time-stamp, the combination with the time-keeping train and its motor, the printing train and its motor, and a release mechanism actuated by the time-train and operating to release the printing-train step by step, printing rings having printing-type on their upper faces and ratchets on their lower faces and all being rotary and horizontally disposed one within the other, pawls engaging said ratchets, springs holding said pawls normally in advanced position, shafts having arms carrying said pawls, arms extending from said shafts for oscillating the same in their bearings, and spur-carrying disks on shafts in the printing-train and receiving motion from the printing-train, each spur adapted to engage an arm to oscillate a pawl-carrying shaft against the tension of the pawl-retaining spring, whereby the minute ring pawl shall be retracted and released once every minute, and the other pawls on the other rings shall be released hourly or daily, as set forth.

10. The combination with the time-train and its motor and the printing train and its motor, of a release mechanism for the printing-train actuated by the time-train, comprising a ratchet wheel F on a shaft in the time-keeping train, a spur disk on a shaft of the printing-train, parallel arms G G' each having a stud $p$ $p^3$ engaged and lifted by the ratchet on the wheel F, each said bar G G' being spring retained and having the dog $p^2$ $p^4$, presenting the spur engaging tooth $p^4$ $p^5$, the parts being arranged to operate substantially as described.

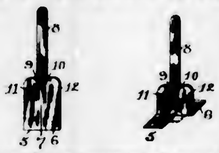
11. In a time stamp, the combination with the time-train and its motor, the printing-train and its motor and a release mechanism comprising a ratchet wheel on a shaft of the time-keeping train, bars having studs engaged by said ratchet and having dogs adapted to engage a spur disk on a shaft of the printing-train, and with said spur disk, of a hand setting mechanism for the printing train comprising a spring retained bar having a fork presenting detaining faces adapted to engage the spur on said spur disk, said bar adapted to engage the dog-carrying lift bars when elevated, thereby disconnecting said dogs from said spur disk, whereby the elevation and oscillation of said hand setting bar produces alternate release and detention of said spur disk for the release step by step of the printing-train, substantially as described.

12. In a time-stamp, the combination with a printing-ring having teeth on its lower face, of a spring controlled ring advancing pawl $K^2$ and means for operating the same and a detaining pawl $K^3$, having a connection with said advancing pawl and operating to detain the ring when the advancing pawl has advanced said ring sufficiently far in its forward movement and to be released from engagement with the ring during the requisite advancing movement of said advancing pawl, substantially as described.

13. In a time-stamp, a printing-ring O having on part of its upper surface printing-type and on the opposite part of the same surface, diametrically opposite said printing-type, designating marks, and a spring-finger $n^7$, in combination with a cover-plate P having on one side an aperture through which printing is performed, and, diametrically opposite said aperture, a slot exposing said designating marks, and a curved slot $m'$ through which said spring-finger projects and provided with recesses $m^3$, substantially as and for the purpose set forth.

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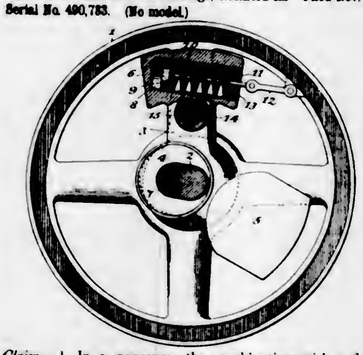
**526,855.** PAPER-FASTENER. HARRY H. CABOT, Bristol, R. I. Filed May 28, 1894. Serial No. 512,770. (No model.)




*Claim.*—A paper fastener consisting of a piece of sheet-metal having the base arms 5 and 6 separated by the slit 7, the securing-tongue extending from the metal above this slit, and the upper fastening-arms 10 and 11 separated from the tongue 8 by the slits 9 and 10 which extend downward to points opposite the upper end of the slit 7.

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**526,856.** GOVERNOR. ROLLA C. CARPENTER, Ithaca, N. Y., assignor of one-half to C. M. Giddings, Rockford Ill. Filed Nov. 13, 1893. Serial No. 490,783. (No model.)




*Claim.*—1. In a governor, the combination, with a fly wheel revolubly mounted, of a lever pivotally secured thereto, and carrying an eccentric or equivalent device, a centrifugal weight carried by said lever, a counterbalance weight secured to said lever, and a spring opposing the centrifugal force of said centrifugal weight, substantially as described.

2. In a governor, the combination, with a fly wheel revolubly mounted, a lever pivotally secured thereto, and carrying an eccentric or equivalent device, a centrifugal weight carried by said lever, and a spring opposing the centrifugal force of said weight, of a counterbalance weight secured to said lever and provided with a dash pot adapted to retard the motion of said lever, substantially as described.



3. In a governor, the combination, with a fly wheel revolubly mounted, and a lever pivotally secured thereto, of a governor weight carried by said lever, a dash pot or cylinder formed in said lever, and a piston working in said dash pot and connected to the fly wheel, substantially as described.

4. In a governor, the combination, with a fly wheel revolubly mounted, a lever pivotally secured thereto and carrying an eccentric or equivalent device, a centrifugal weight secured to said lever, and a spring opposing the centrifugal force of said weight, of a counterbalance weight likewise secured to said lever, a dash pot or cylinder formed therein, and a piston working in said dash pot and connected to the fly wheel, substantially as described.

5. In a governor, the combination, with a fly wheel revolubly mounted, a lever pivotally secured thereto and carrying an eccentric or equivalent device, and a centrifugal weight secured to said lever, of a dash pot likewise secured to said lever and having a piston connected with said fly wheel, and a governor spring, located within said dash pot cylinder, and bearing against the piston and against the end of the dash pot, substantially as described.

6. In a governor, the combination, with a fly wheel revolubly mounted, a lever pivotally secured thereto and carrying an eccentric or equivalent device, and a centrifugal weight secured to said lever, of a counterbalance weight likewise secured to said lever, a dash pot cylinder formed therein and having an adjustable cylinder head, a piston for said dash pot connected with said fly wheel, and a governor spring located within said dash pot and bearing against the piston and against the head of said dash pot, and adjustable through the adjustment of the position of said dash pot cylinder head, substantially as described.

7. In a governor, the combination, with a fly wheel revolubly mounted, a lever pivoted thereto at a point eccentric to the center of the fly wheel, a centrifugal weight secured to one end of said lever, a counterbalance weight secured to the other end of said lever, and a spring opposing the centrifugal force of said centrifugal weight, of an eccentric or equivalent device located upon said lever at a point between said pivot and said centrifugal weight, the center of the eccentric being out of line with said pivot and centrifugal weight, substantially as described.

8. In a governor, the combination, with a fly wheel 1 revolubly mounted, a lever 3 pivotally secured to said fly wheel, a centrifugal weight 5 secured to said lever, and a spring 13 for opposing the centrifugal force of said weight, of a counterbalance weight 6 likewise secured to said lever and having formed within it a dash pot 8, and a piston 9, working in said dash pot, and connected with the fly wheel, substantially as described.

9. In a governor, the combination, with a fly wheel, of an eccentric, centrifugal weight, a counterbalance weight, formed in one piece and pivotally attached to said fly wheel, and a spring for opposing the centrifugal force of said weight, substantially as described.

10. In a governor, the combination, with a fly wheel, of an eccentric, centrifugal weight, and counterbalance weight formed in one piece and pivotally attached to said fly wheel, a spring for resisting the centrifugal action of said centrifugal weight, and a dash pot adapted to impede the motion of said eccentric, substantially as described.

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**526,857.** PEDESTAL AND AXLE-BOX FOR CAR-TRUCKS. EDWARD CLIFF, Newark, N. J. Filed Apr. 4, 1894. Serial No. 506,241. (No model.)

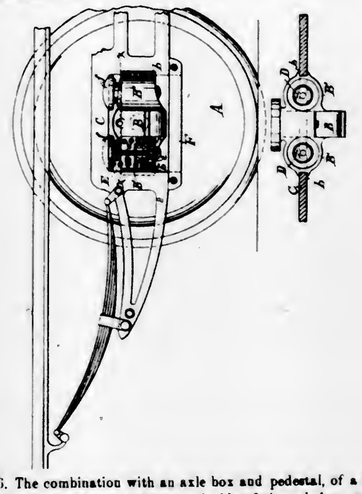
*Claim.*—1. The combination with an axle-box and pedestal, of a cylindrical casing on each side and integral with the box, grooves in said casings to receive the vertical sides of the pedestal, a partition in each casing, a spiral spring between the partition and the upper horizontal portion of the pedestal, a spiral spring below the said partition, and a bolt carrying a bearing for the lower spring and extending vertically upward through the partition and springs and secured at its upper end to the pedestal, as and for the purpose described.

2. The combination with an axle-box, and a pedestal arching over the same and provided with vertical sides connected together below the axle-box, of a casing on each side of and integral with the axle-box, and between the said vertical sides of the pedestal, and adapted to slide on said vertical sides, and a spring within each casing and between the same and the upper horizontal portion of the pedestal, as set forth.

3. The combination with an axle-box and pedestal, of a casing on each side of the axle-box and engaging with the sides of the pedestal, a partition in each of the casings, a spiral spring in the casing above the partition and bearing upon the pedestal, a spiral spring below the partition, a bolt carrying a bearing on its lower end for the lower spring and connected at its upper end to the pedestal, as set forth.

4. The combination with an axle box and pedestal, of a casing having cylindrical inner walls on each side of the axle-box and engaging with the vertical sides of the pedestal which slide thereon, a partition in each of the casings, a spiral spring in the casing above the partition and bearing upon the pedestal, a spiral spring below the partition, and a bolt carrying a bearing on its lower end for the lower spring and connected at its upper end to the pedestal, as set forth.

5. The combination with an axle-box and pedestal, of a casing having cylindrical inner walls, on each side of the axle box and engaging with the vertical sides of the pedestal, a cylindrical partition in each of the casings, a graduated spiral spring between the partition and the pedestal, a graduated spiral spring below the partition, and a bolt connecting the lower spring with the pedestal as and for the purpose described.




6. The combination with an axle box and pedestal, of a casing having cylindrical inner walls on each side of the axle-box, grooves in the outer sides of the casings engaging the vertical sides of the pedestal, a cylindrical partition in each casing concentric with the walls of the latter, an inwardly extending flange at the upper end of the partition, an outwardly extending flange at the lower end of the partition and resting on a flange extending inwardly from the lower side of the casing, a bearing above each casing on the lower side of the upper horizontal portions of the pedestal, a spiral spring within the casing in contact with the bearing, a spiral spring below and within the partition, and a bolt connecting the lower end of the lower spring with the said bearing, as described and shown.

7. The combination with an axle-box and pedestal, arching over the same of a support for a spiral spring on each side of the axle-box and between the axle box and the vertical sides of the pedestal the vertical sides of said pedestal adapted to slide on said supports, and spiral springs between the said supports and the upper horizontal portion of the pedestals, substantially as described and shown.

8. The combination with an axle box and pedestal, of a support for a spiral spring on each side of the axle-box and engaging with the vertical sides of the pedestal to slide thereon, spiral springs between the said supports and the upper horizontal portion of the pedestals, spiral springs below the said supports and bolts passing through the springs and connecting the lower springs with the said horizontal portion of the pedestal, substantially as described and shown.

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**526,858.** HAIR-CLIPPER. EDWARD A. COCHRAN, New York, N. Y. Filed Feb. 29, 1892. Serial No. 423,106. (No model.)



*Claim.*—1. The combination in a hair clipper, of a cutter plate, a comb plate and a bearing for a handle rigidly attached near one end of the comb plate, a flexible shaft and a shaft passing through the bearing, a disk upon the end of the shaft near the bearing provided with a removable cap formed as a segment of the disk and spherically recessed, a pitman having balls at its ends one of which is received into the spherical recess in the disk, a bearing upon the cutter plate with a spherical recess for receiving the other end of the pitman, and means for holding and guiding the cutter plate as it is reciprocated, substantially as set forth.

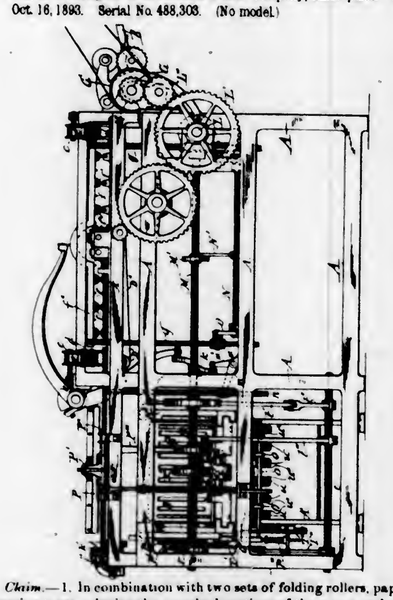
2. The combination in a hair clipper, of a cutter plate, a comb plate, and a bearing and a tubular handle screwed upon a projection from the bearing, a flexible shaft passing through the tubular handle, and a shaft passing through the bearing, a disk upon the end of the shaft near the bearing provided with a removable cap formed as a segment of the disk and spherically recessed, a pitman having balls at its ends one of which is received into the spherical recess in the disk, a bearing upon the cutter plate with a spherical recess for receiving the other end of the pitman, and means for holding and guiding the cutter plate as it is reciprocated, substantially as set forth.

3. The combination in a hair clipper, of a cutter plate, a comb plate, both of which are provided with cutting teeth on their opposite edges, a bearing for a handle rigidly attached near one end of the comb plate, a flexible shaft and a shaft passing through the bearing, a disk upon the end of the shaft near the bearing provided with a removable cap formed as a segment of the disk and spherically recessed a pitman having balls at its ends one of which is received into the spherical recess in the disk, a bearing upon the cutter plate with a spherical recess for receiving the other end of the pitman, and means for holding and guiding the cutter plate as it is reciprocated, substantially as set forth.

4. The combination in a hair clipper, of a cutter plate, a comb plate and a bearing for a handle rigidly attached near one end of the comb plate, a flexible shaft and a shaft passing through the bearing, a disk upon the end of the shaft near the bearing provided with a removable cap formed as a segment of the disk and spherically recessed, a pitman having balls at its ends one of which is received into the spherical recess in the disk, a bearing upon the cutter plate with a spherical, recess for receiving the other end of the pitman, a main plate or cover over the cutter plate having downward projections entering grooves in the cutter plate to guide the same, and spring nuts and bolts to guide and hold the main plate upon the cutter plate, substantially as set forth.

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**526,859. PAPER-FOLDING MACHINE.** TALBOT C. DEXTER, Fulton, N. Y., assignor to the Dexter Folder Company, same place. Filed Oct. 16, 1893. Serial No. 488,308. (No model.)



*Claim.*—1. In combination with two sets of folding rollers, paper-conveying tapes gripping the marginal portions of the paper, and pivoted star-wheels supporting the central portion of the paper in transit as set forth.

2. The combination of two cooperative paper-folding rollers, set apart for receiving between them two thicknesses of tape, carrying-rollers in lines with the end portions of the folding-rollers, tapes running on said end portions and carrying-rollers, and a series of pivoted star-wheels supporting the central and main portion of the paper in transit from the folding rollers substantially as and for the purpose set forth.

3. The combination, with two sets of folding rollers disposed at right angles to each other, and tapes conveying the paper from one to the other of said sets of rollers, of a vertically movable frame beneath the passage of the paper, star-wheels pivoted to said frame and in planes parallel with the line of travel of the paper, and pivoted star-wheels disposed in planes at right angles to the aforesaid vertically movable star-wheels and supporting the paper in its transit to the second folding rollers as set forth.

4. A paper-folding machine having its paper-feeding tapes arranged in lines corresponding to the blank spaces of the paper, the first folding rollers disposed above the plane of said tapes, and set apart for the passage of two thicknesses of tape, the folding knife beneath the feeding tapes and movable upward to enter the paper between said folding rollers, carrying-rollers in lines with the end portions of the aforesaid folding rollers, tapes running on said end portions and carrying-rollers and gripping the paper at its margins, the second folding rollers at right angles to the first folding rollers, a vertically movable frame between the first and second set of folding rollers, star-wheels pivoted to said frame and disposed in planes parallel with the line of travel of the paper to support the paper in its transit from one set of folding rollers to the next set, and release said paper at the end of its movement, pivoted star-wheels disposed in planes at right angles to the vertically movable star-wheels and supporting the central portion of the paper in transit to the second set of folding rollers, and traveling tapes arranged one over the other and gripping between them the margins of the paper as set forth.

5. In combination with two sets of folding rollers, and two paper-conveying tapes running on each end portion of said rollers and on carrying rollers in lines with said end portions, bridges raised to the planes above the top of the folding rollers and supporting the upper portion of the lower tape and lower portion of the upper tape in close proximity to each other to grip the marginal portions of the paper in transit, and pivoted star-wheels supporting the central portion of the paper to prevent its sagging as set forth.

6. In a paper folding machine having a plurality of folding rollers, for folding each sheet successively, the combination of the final folding rollers provided with circumferentially eularged end portions for gripping the paper solely at its margins and holding the main portions of the rollers out of contact with the printed surfaces of the paper, a packing box terminating with an open end under the folding rollers and a press-head movable longitudinally toward and from the end of the packing box to receive and compress between them the margins of the folded paper as set forth.

7. In a paper folding machine having a plurality of sets of folding rollers, the combination of the final folding rollers provided with circumferentially enlarged end portions to grip the paper at the margins thereof, a packing box under said rollers having vertical side-faces in line with the downward passage of the paper from the rollers, a vertically movable base for receiving the bottom edge of the descended paper, and a compressor movable horizontally toward and from the aforesaid side-faces of the box to compress the last fold of paper as set forth.

8. In a paper folding machine having a plurality of sets of folding rollers, the combination with the final folding rollers, of a packing box beneath the latter rollers having vertical side-faces in line with the downward passages of the paper, a base movable vertically to and from a level with the interior bottom of the packing box, a compressor movable horizontally toward and from the aforesaid side faces to compress the folds of paper, and a vertical plate movable horizontally independently of the compressor and pushing the paper into the packing box as set forth.

9. In a paper folding machine having a plurality of sets of folding rollers, the combination with the final folding rollers, of a packing box beneath said rollers and provided with vertical side-faces in line with the downward passage of the paper, a base movable vertically to and from a level with the interior bottom of the packing box, a spring supporting the base in said level, a press head movable horizontally toward and from the end of the packing box to compress the folds of the paper, a vertical plate movable horizontally independently of the press-head and pushing the compressed paper into the packing box, rotary cams and eccentric mounted on one and the same revolving shaft, and levers and pitman transmitting motion from said cams and eccentric respectively to the vertically removable base, fold-compressor and paper-pushing plate as set forth

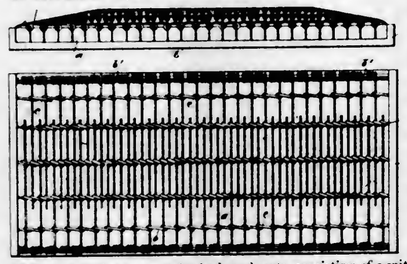
10. In combination with the folding rollers, packing box, paper-lifting base, fold-compressing press-head and paper-pushing plate, cams and eccentric mounted on one and the same revolving shaft, levers and pitman transmitting motion to the aforesaid base, press-head and paper-pushing plate, a rock-arm actuated by the aforesaid eccentric, pulleys at opposite ends of the packing box, belts on said pulleys traveling over the interior bottom of the packing box, a gear wheel attached to one of the pulley-shafts, a ratchet-wheel and pinion transmitting motion to said gear wheel, a lever actuated by the aforesaid rock-arm, and a pawl on said lever engaging the ratchet-wheel substantially as set forth.

11. In combination with the folding rollers, the packing box terminating with vertical faces in line with the downward passage of the paper, from the folding rollers, a press-head movable toward and from the end of the packing box, a spring forcing said press-head from the packing box, toggles pivoted at one end of the main frame and connected at the opposite end to the press-head, and a rotary cam depressing the toggles at their junction and thereby forcing the press-head toward the packing box as set forth and shown.



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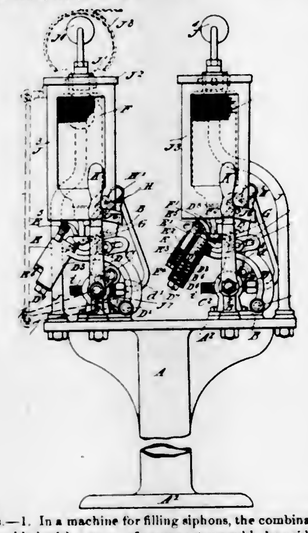
**526,860. ELASTIC WIRE SUPPORT FOR BEDS OR SEATS.** GUSTAV DOMINICK, Cologne, Germany. Filed Apr. 1, 1893. Serial No. 468,751. (No model.) Patented in Germany Sept. 13, 1892, No. 68,639; in England Jan. 8, 1893, No. 1,480; in Switzerland Jan. 24, 1893, No. 6,319; in Belgium Feb. 1, 1894, No. 103,226, and in Austria-Hungary June 17, 1894, No. 6,230 and No. 19,733.



*Claim.*—A spring support for beds and seats, consisting of a suitable frame, a series of springs arranged lengthwise of the frame and secured thereto at both ends, and another series of springs placed crosswise of the frame, each spring of the second series being fast at one end and having its other end freely guided in suitable eyes formed on, or attached to, the springs of the first series, for the purpose set forth.

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**526,861. MACHINE FOR SIRUPING AND FILLING SIPHON-BOTTLES.** THOMAS FERGUSON, Hawksburn, Victoria. Filed Sept. 19, 1893. Serial No. 485,837. (No model.) Patented in Victoria Sept. 19, 1892, No. 9,972; in New South Wales Sept. 21, 1892, No. 3,995, and in England Oct. 7, 1892, No. 17,920.



*Claim.*—1. In a machine for filling siphons, the combination with a shaft provided with a cam, of a support movable by said cam and carrying a cup for the siphon head and an arm for opening the siphon valve, substantially as described.

2. In a machine for filling siphons, the combination with a shaft provided with a cam, of a support movable by said cam obliquely to the axis of the siphon, and carrying a cup for the siphon head and an arm for opening the siphon valve, substantially as described.

3. In a machine for filling siphons, the combination with a shaft provided with a cam, of a lever hinged at one side of said shaft and in contact with said cam, and yielding devices carried on said lever, for supporting the head of the siphon, and opening the siphon valve, substantially as described.

4. In a machine for filling siphons, the combination with a movable support, of a spring for holding it yieldingly raised, a cup for the siphon head and an arm for opening the valve, both carried on said support, and each provided with an independent spring to render it yielding and means for forcibly raising the support, substantially as described.

5. In a machine for filling siphons, the combination with a movable support, of tubes carried thereby, a stem in each tube, a coiled spring in each tube acting against the stem, a cup on one of said stems and a roller on the other stem, substantially as described.

6. In a machine for filling siphons, the combination with a movable support, to receive the head of the siphon, of a cam shaft to actuate said support, and a fluid controlling valve operated by the same movement of the shaft, substantially as described

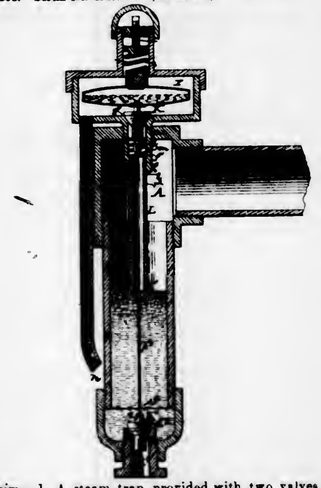
7. In a machine for filling siphons, the combination with a fixed filling nozzle, and a movable support for the head of the siphon, of a cam shaft for actuating said support, a stationary valve box at one end of said shaft, suitable connections between the filling nozzle and the valve box, and a cooperating valve face on the cam shaft, substantially as described.

8. In a machine for filling siphons, the combination with a filling-valve operating handle, and a bottle guard having a horn upon it, of an arm secured to said handle and adapted to pass in front of and be arrested by said horn, the length of the horn being such that in the reverse movement of the handle it will close the valve before the arm passes from in front of the horn, substantially as described.

9. In a machine for filling siphons, the combination with a suitable standard, of a bottle guard hinged thereon, so as to move vertically, a counterweight for said guard, a valve operating shaft, carrying a cam, and connecting devices whereby said cam lowers said guard, substantially as described.

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**526,862. STEAM-TRAP.** OSCAR GARRETT, Boston, Mass., assignor to the Crosby Steam Gage and Valve Company, same place. Filed Nov. 18, 1893. Serial No. 491,373. (No model.)



*Claim.*—1. A steam trap, provided with two valves connected vertically together, and in the same line in combination with a device connected to one valve and for operating the same as set forth.

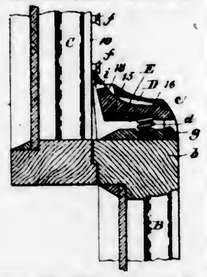
2. A steam trap, provided with two valves connected together, and in the same line the connection between the two valves being loose and an expansion device, as set forth.

3. A steam trap, provided with two valves connected together, one valve having an elongated eye in which is held a rod extending from the other valve in combination with an expansion device, as set forth.

4. The combination of the valve, K, having the elongated eye, *k*, and the valve, E, with the rod, F, secured at one end to the valve, E, and at the other end to the elongated eye, *k*, and an expansion device as set forth.

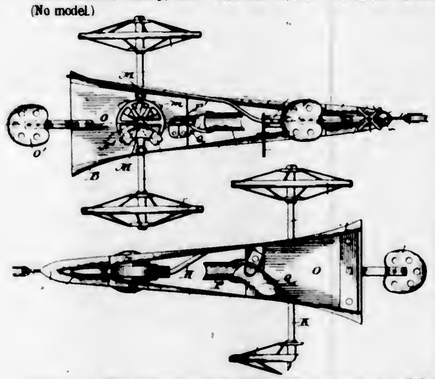
5. In a steam trap, an inner discharge pipe, and an outer discharge pipe, the latter having its discharge end turned toward the trap, as and for the purpose set forth.

526,863. **SASH-FASTENER.** UPHAM A. HOYT, Belfast, Me. Filed Aug. 13, 1894. Serial No. 520,176. (No model.)



*Claim.*—The herein described sash-fastener, consisting of the metallic box or casing D, the bell-crank-lever E pivoted within said casing and having its upright arm 18 shaped to form a catch and adapted to engage a series of pins or projections on the stile of the upper sash, and having its horizontal arm 16 provided at its outer end with a thumb piece, *c* the lever actuating spring *d* and the locking-bolt *g* sliding horizontally in a guide in the casing D and adapted to be slid beneath the thumb-piece *c* of the lever E which projects thereover and forms a guard therefor to prevent access to the same from above, all constructed to operate substantially in the manner and for the purpose set forth.

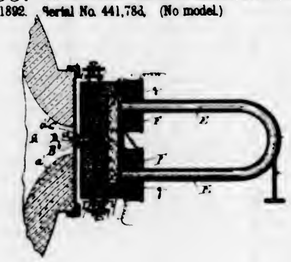
526,864. **DITCHING-MACHINE.** CHARLES W. JESCHKE and EDWARD JESCHKE, Vickery, Ohio. Filed Mar. 19, 1894. Serial No. 504,218. (No model.)



*Claim.*—1. The combination with the wedge-shape body, of the adjustable point and means for operating the same, the adjustable gage-wheel and operating lever, the adjustable scoop and lever, the mold-plow behind the scoop, and the sectional axles and steering gear connected therewith, as set forth.

2. The combination with the wedge-shape body of the point C, screw *c*, wheel *c'* and nut $c^3$, the gage-wheel F journaled in the slotted plates *f'*, *f'*, the arms and lever H, the adjustable scoop and means for regulating the same, and a mold-board plow arranged directly in the rear of the scoop and adapted to receive the dirt therefrom and carry it to one side, substantially as set forth.

526,865. **TELEPHONE.** HOSEA W. LIBBEY, Boston, Mass. Filed Aug. 1, 1892. Serial No. 441,784. (No model.)



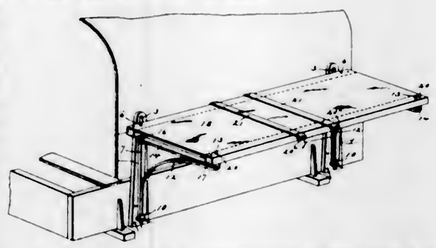
*Claim.*—1. In a telephone, an armature arranged between the poles of a horse shoe magnet, and the diaphragm, said armature being suspended by cat gut or silk cord as set forth.

2. In a telephone, a box or case inclosing an armature arranged between the poles of a horse shoe magnet, and the diaphragm, said armature being suspended by cat gut, and surrounded by sponge or its equivalent saturated or filled with a suitable material as set forth.

3. In a telephone the combination of a resonant semi-globose sound receptacle or distributer A, diaphragm B, armature G, supported by cat gut or silk cord I, and adjustable horse shoe magnet E, substantially as set forth.

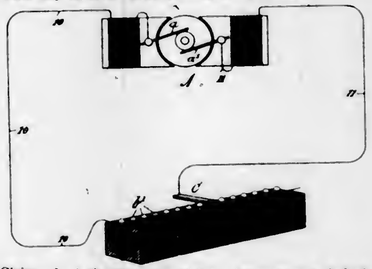
4. In a telephone, an armature having a central projection over which is passed cat gut or silk cord, for suspending the same, and which acts as a spring tension, and produces fine vibrations as set forth.

526,866. **COT.** JOSEPH H. LOONEY, Gainesville, Tex. Filed May 8, 1894. Serial No. 510,526. (No model.)



*Claim.*—The combination of two standards rigidly secured in an upright position and provided at their upper ends each with a vertically-elongated slot, an eye-bolt arranged within the respective slots of each standard and movable therein, a second eye-bolt secured to the lower end of each standard, a rod for each standard and provided at their ends with spindles adapted to be seated in the respective eye-bolts, a brace for each rod and curved in the arc of a circle and provided at each end with a spindle, one of said spindles being adapted to fit into an opening in the lower end of each of the vertical rods, cross-rods or bars for each of the vertical rods and braces and extending from one to the other and secured thereto by passing the respective spindles through openings in the rods or braces, and a cot mounted upon the cross-rods or braces, substantially as described.

526,867. **RHEOSTAT.** DUNCAN MACFARLAN, Philadelphia, Pa. Filed May 18, 1894. Serial No. 511,643. (No model.)



*Claim.*—1. A rheostat, comprising a homogeneous baked composition structure for controlling or adjusting voltage of an electric circuit and provided with pin contacts, conductors from a source of energy in connection with said structure, and a switch adapted to be manipulated in the path of said contacts, substantially as and for the purposes described.

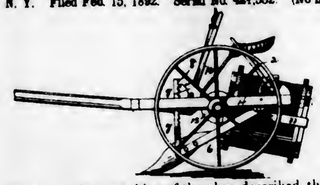
2. A rheostat, comprising a homogeneous composition cord or thread for controlling voltage of an electric circuit from a source of energy and having pin contacts connected therewith for establishing a circuit therefrom by the manipulation of a switch in the path of said contacts, substantially as and for the purposes described.

3. A rheostat, comprising an insulated homogeneous composition structure for controlling voltage of an electric circuit and provided with pin contacts, conductors from a source of energy connected with said structure, and a switch movable in the path of said contacts, substantially as and for the purposes described.

4. A rheostat, comprising a baked composition structure included in a circuit from a source of energy for controlling the voltage of a current therefrom and provided with pin contacts, a switch adapted to be manipulated in the path of said contacts and current distributer or collecting off wires connected with said switch and structure and having handling devices, substantially as and for the purposes described.

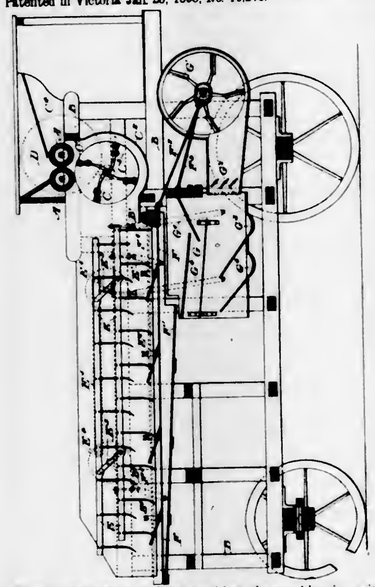


526,868. **POTATO-DIGGER.** WILLARD F. MCNAMARA, Bolivar, N. Y. Filed Feb. 15, 1892. Serial No. 421,552. (No model.)



*Claim.*—1. In a machine of the class described, the combination with the main frame mounted on wheels and extending rearwardly from the axle, of an intermediate frame pivoted on the axle and provided with a circular track-way and an adjusting lever, a separator revolubly mounted on the track-way and having a gear 16, the intermeshing pinion 15, the duplicate forwardly extending side bars pivoted to the frame in the rear of the axle, the shovels secured between the ends of said bars and entering the separator, the vertical rack bar secured at the ends of the bar 6, and the quadrant gear rotated by the ratchet lever, substantially as and for the purpose specified.

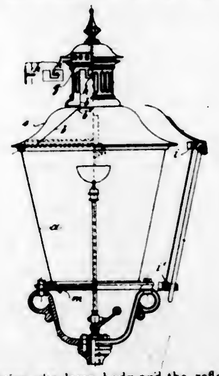
526,869. **PEA-THRASHING MACHINE.** CECIL E. PATERSON, Tooradin, Victoria. Filed Nov. 8, 1893. Serial No. 490,378. (No model.) Patented in Victoria Jan. 25, 1893, No. 10,278.



*Claim.*—In a pea thrashing machine, the combination with two rubber covered rolls, with their axes in the same horizontal plane, of a beater C driven at a higher rate of speed than said rolls with its axis below said rolls and between the vertical planes of their axes, and a casing C³ concentric with said beater, and having between them a semi-annular channel C' for the passage of the vines and opened pods, said channel inclosing one side of the beater, substantially as described.

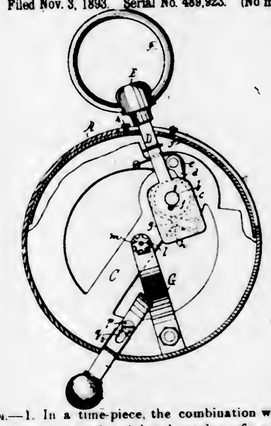
526,870. **STREET-LAMP.** WILHELM RITTER, Cologne, Germany. Filed Aug. 1, 1893. Serial No. 482,110. (No model.) Patented in Germany Jan. 7, 1860, No. 55,003; in Belgium Jan. 10, 1890, No. 89,132; in England Jan. 22, 1890, No. 1,188; in France Jan. 27, 1890, No. 203,371; in Austria-Hungary Oct. 11, 1890, No. 2,857 and No. 19,788, and in Switzerland Nov. 12, 1890, No. 3,131.

*Claim.*—1. In combination, in a lamp, the body portion, the cap *e*, the perforated dome on top thereof and the perforated crown above the dome and the reflector comprising the cylindrical part *b'* within the dome and the flaring part *b* within the cap, said parts *b b'* being arranged with a space about them for the circulation of cold air entering through the perforated dome and having their interior communicating with the perforated crown, for the escape of hot air said annular space about the flaring part *b* communicating with the interior of said flaring part around the lower edge thereof, substantially as described.



2. In combination, the lamp body and the reflector in the top thereof composed of a cylindrical part *b'* and the flaring part *b*, said parts having the groove or channel *b''* between them, substantially as described.

526,871. **WATCH-WINDING.** SOLOMON SCHEGALL, Waterbury, Conn. Filed Nov. 3, 1893. Serial No. 489,923. (No model.)



*Claim.*—1. In a time-piece, the combination with a case constructed with an elongated peripheral opening, of a movement located within the case and including a barrel or winding arbor having a ratchet-wheel secured to it, a winding-lever fulcrumed at its inner end upon the said barrel or winding arbor, and extending outward through the slot in the case, and adapted at its outer end to have the stem of the watch applied to it, a pawl mounted upon the inner end of the lever in position to engage with the said ratchet wheel, and means combined with the wheel for preventing its retrograde movement, substantially as described.

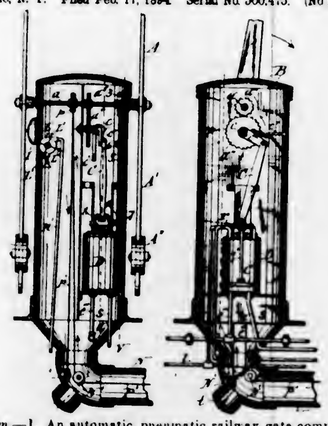
2. In a time-piece, the combination with a case constructed with an elongated peripheral opening, of a movement located within the case and including a barrel or winding arbor, having a ratchet-wheel secured to it, a winding-lever fulcrumed at its inner end upon the said barrel or winding arbor, and extending outward through the slot in the case, and adapted at its outer end to have the stem of the watch applied to it, a pawl mounted upon the inner end of the lever in position to engage with the said ratchet-wheel, means combined with the wheel for preventing its retrograde movement, and a segmental dust-guard located within the case, adapted in length to close the peripheral slot formed therein and connected with the said lever with which it movee back and forth, substantially as described.

3. In a time-piece, the combination with a case composed of a front and back portion constructed for the rotation of the latter in

the former, of a time-movement located within the case and including a setting arbor, a pinion movably mounted upon the inner end of the said arbor, a spring-carrier in which the said pinion is mounted so as to slide upon the said setting arbor, and which exerts a constant effort to slide the pinion toward the end of the arbor, an operating lever arranged to engage with the spring-carrier for normally forcing the same inward, and means located upon the inner face of the rotary back-portion of the case for engagement with the said pinion for rotating the same when the operating-lever is moved to relieve the spring-carrier and permit it to lift the pinion outward toward the end of the arbor, substantially as set forth.

4. In a time-piece having a setting arbor, in combination, the pinion *m*, slidably mounted upon the rear end of said arbor, the case-portion B, provided with pins *n*, and the spring G, the latter tending to hold the said pinion in engagement with the said pins, all substantially as described and for the purposes as set forth.

526,872. AUTOMATIC PNEUMATIC RAILWAY-GATE. CHARLES H. SHERWOOD, Utica, assignor of one-half to Henry C. Lyman, Sherburne, N. Y. Filed Feb. 17, 1894. Serial No. 500,475. (No model.)



*Claim.*—1. An automatic pneumatic railway gate comprising a vertically swinging gate-arm, gears moving said arm to and from its closed position, an air-cylinder having its piston actuating said gears, an air-compressor remote from the gate and communicating with one end of the air-cylinder to move the gate to its closed position, an air-compressor in proximity to the gate communicating with the opposite end of the air-cylinder to move the gate to its open position, valves relieving the air-cylinder from compressed air in front of the piston, and track-instrument operating said air-compressors and valves as set forth.

2. In combination with the gate proper, gears moving said gate to and from its closed position, an air-cylinder having its piston connected to said gears to operate the same, air-compressors remote from the gate in opposite directions therefrom, air reservoirs receiving the compressed air, pipes leading from said reservoirs to one and the same end of the aforesaid air-cylinder to move the gate to its closed position, normally closed valves connected to said pipes, track-instruments operating said compressors and valves, an air-compressor in proximity to the gate and communicating with the aforesaid air cylinder to move the gate to its open position, a relief valve communicating with said cylinder, and track-instruments operating said air-compressors and valves as set forth.

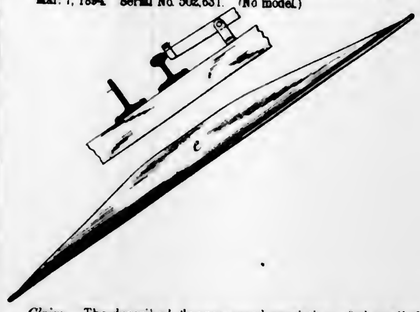
3. In combination with the gate proper, an air-cylinder provided with a piston, mechanisms transmitting motion from said piston to the gate, air-compressors remote from the gate, reservoirs receiving the compressed air, a pressure-equalizing pipe connecting said reservoirs, pipes leading from the reservoirs to one and the same end of the aforesaid air-cylinder, normally closed valves connected to the latter pipes, normally closed relief valves communicating with the opposite end of the air-cylinder, track-instruments operating the air-compressor and actuated by the engine or car passing in either direction and track-instruments actuating the valves only in one direction as set forth.

4. A gate having its free end-portion connected to the main portion by a ball and socket joint, and a spring sustaining the end-portion normally in line with the main portion as set forth and shown.

5. In combination with an alarm bell, a rotary fan bell-hammers attached to the axis of said fan, air-compressors remote from the bell, track-instruments operating said compressors, air-reservoirs receiving the compressed air, pipes leading from the reservoirs to the fan, normally closed valves connected to said pipes, and track-instruments opening said valves as set forth.

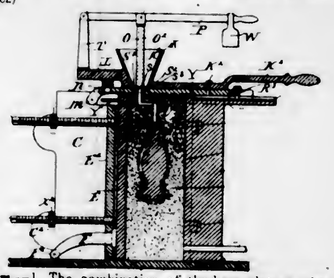
6. In combination with the shaft —*a*—, gate —A— and pinion —*a'*— attached to said shaft, the shaft —*c*—, mutilated gear —*a''*— and crank —*c''*— attached to the latter shaft, the piston —*C*—, pitman —C—, the disk —3— provided with the notch —4—, the detent —5—, and the finger —7— throwing said detent out of engagement substantially as described and shown.

526,873. FLANGER GUARD-RAIL. CHARLES H. SHERWOOD, Utica, assignor of one-half to Henry C. Lyman, Sherburne, N. Y. Filed Mar. 7, 1894. Serial No. 502,631. (No model.)



*Claim.*—The described flanger-guard consisting of the rail rigidly secured along the side of the track-rail and having the top of its ends lower than the tops of the track-rail and rising gradually to the center of its length to an elevation above the track-rail to gradually lift the flanger from said rail and then allow it to descend to the rail to scrape the same as set forth.

526,874. APPARATUS FOR CASTING METALS UNDER PNEUMATIC PRESSURE. JOHN J. C. SMITH, Passaic, N. J., and EUGENE C. SMITH, Providence R. I. Filed Jan. 10, 1894. Serial No. 496,401. (No model.)



*Claim.*—1. The combination of the base plate A, the upright plate B fixed thereto, the hinged side plates C, the adjustable plate E, the hinged top plate G, the edges of plates B, C and E being suitably channeled or grooved to receive packing, substantially as and for the purposes set forth.

2. The combination of the base plate A, the fixed and adjustable plates B, E, the side plates C, and a flanged air tight packing plate $E^1$ arranged and adapted to operate substantially as set forth.

3. The combination of the base plate A, fixed upright plate B, hinged side plates C having hooks $C^2$, adjustable upright plate E, screws J and cross bars X, arranged and adapted to operate, substantially as set forth.

4. The combination of the base plate A, upright plate B, side plates C, adjustable upright plate E having arm F provided with roller $F^3$, substantially as and for the purposes set forth.

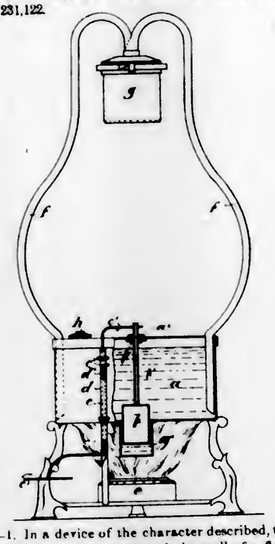
5. The combination of the base plate A, upright plate B, suitable side plates, adjustable upright plate E and top plate G hinged to said plate E, movable therewith and carrying on itself the hinged and pivoted lever $K^3$ with its receptacle K, rod O, lever P, support T and weight W all adapted to be removed by lifting the lever $K^3$, substantially as and for the purposes set forth.

6. The combination in a casting apparatus with a suitable mold casing, of a movable top plate, a metal receptacle and its lever connected to said plate by a hinge and swivel, an upright arm T on said lever, valve stem O, cross lever P and weight W, substantially as and for the purposes set forth.



7. In a casting apparatus, the combination of the top plate G, having an opening S the asbestos tube or ring $S^2$, fitting said opening in plate G, the asbestos washer $S^3$ and the metal receptacle hinged to said top plate, substantially as set forth.

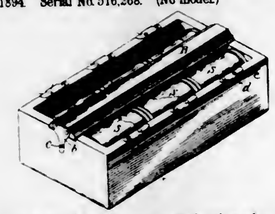
526,875. AUTOMATIC EXTINGUISHER. CARL STREBLOW, Berlin, Germany. Filed Nov. 23, 1893. Serial No. 491,783. (No model.) Patented in Germany Apr. 6, 1893, No. 72,081, and in France June 26, 1893, No. 231,122.



*Claim.*—1. In a device of the character described, the combination with a boiler, having an aperture in its wall of a float arranged therein and provided with a stem the extremity of which protrudes through the said aperture, an extinguisher, arranged adjacent to the lamp, and means for communicating the movement of said float to said extinguisher, substantially as described.

2. In a device of the character described, the combination with a boiler and a burner for supplying heat thereto, said boiler having an aperture in its wall, of a float arranged in said boiler with its stem protruding through the aperture therein, an extinguisher arranged adjacent to said burner and adapted to be actuated to extinguish the same, a rod pivoted adjacent to said boiler and having a bent upper end adapted to engage the protruding stem of the float and connected at its lower end to the extinguisher, and means for moving said rod axially substantially as set forth.

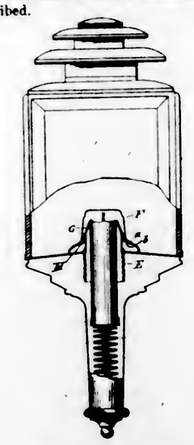
526,876. SPOOL-BOX. CHARLES TOLLNER, Pulaski, N. Y. Filed July 2, 1894. Serial No. 516,268. (No model.)



*Claim.*—In a spool holder, the combination of a box having a bottom and side walls and open at the top, of a cross-bar B extending across the box at its middle portion and hinged to the box by one end and provided at its free end with a fastening device, substantially as described.

526,877. COACH-LAMP. GEORGE H. C. TOLMAN, New Haven, Conn. Filed Apr. 23, 1894. Serial No. 508,611. (No model.)

*Claim.*—The combination with a coach-lamp having a spring actuated candle, of a cap formed from sheet metal and formed with an annular shoulder, a candle cap holder also formed from sheet-metal, with a flange extending outward from its lower edge corresponding to said shoulder and secured therein, a sleeve adapted to be secured to the inside of the said holder, and permanently united thereto, substantially as described.



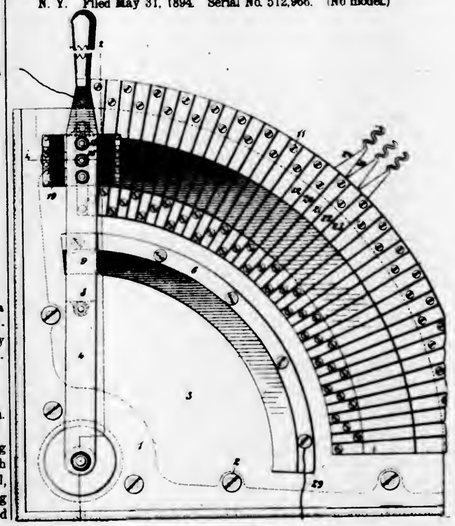
526,878. LOCK. CHARLES N. VITTUM, Meredith, N. H. Filed June 4, 1891. Serial No. 395,164. (No model.)



*Claim.*—1. In a lock, the combination with the lock case, of a suitable bolt, a tumbler D, provided with its recess *r*, pin-hole *p*, spring *s* and arm Z, in which is notched or grooved the recess *j*, the lever F provided with a post-hole *a*, a spring *t* and lever arms *x* and *y*, and independent means, consisting of the double bitted key, for operating said bolt, lever and tumbler, substantially as described.

2. In a lock, the combination with the lock-case, of a suitable bolt, a tumbler provided with a recess so constructed as to allow the bolt to be projected and withdrawn and to lock the same when it is in a projected position, and an arm projected from the body of the tumbler and adapted to be engaged by the lever, or dog F, one or more of the common tumblers C and E, for the purpose of complicating the lock, the lever F to engage the arm of the tumbler D and prevent the movement of said tumbler when the bolt is in a projected position, and independent means, consisting of the double fitted-key, for operating the bolt, lever and tumblers, substantially as described.

526,879. DYNAMO REGULATOR. JOHN VAN VLECK, New York, N. Y. Filed May 31, 1894. Serial No. 512,966. (No model.)



*Claim.*—1. The combination, in a dynamo regulator, of a support of segmental shape, a series of radial contact strips disposed on one side and extending over the periphery thereof, an arm pivoted on said support and carrying a plate in contact with said strips, resistances located at a distance from said support and conductors connected to said strips on the opposite side of the support to that on which said arm is located, and leading to said resistances, substantially as described.

2. A series of dynamo regulators, each having a support of segmental shape, the said supports having their curved peripheries side by side, a series of contact strips on each support periphery, an arm pivoted to each support and carrying a contact plate over each series of contact strips and a series of resistances connected with each series of contact strips.

3. A series of dynamo regulators, each having a support of segmental shape in substantially plate form, a series of radial contact strips disposed on one side of said plate, an arm pivoted on said support and carrying a plate in contact with said strips, and, connected with said strips and interposed between them, a series of resistances located at a distance from said support, the said supports being disposed side by side in a bank, substantially as described.

4. The combination, in a dynamo regulator, of a vertical plate support in segmental shape, a series of contact strips radially disposed thereon, an arm pivoted on said support and carrying a plate in contact with said strips, resistances interposed between said contact strips and circuit connections substantially as set forth; whereby, when said arm is in its vertical position, no resistance is interposed in circuit and whereby a greater number of resistances is interposed as said arm is moved downwardly, substantially as described.

5. The combination of a series of dynamo regulators, each having a vertical plate support in segmental shape, a series of contact strips disposed on the curved periphery thereof, an arm pivoted on said support and carrying a plate in contact with said strips and provided with an extension or handle extending beyond said curved periphery and resistances interposed between said contact strips, the said contact strips being alike in position and arrangement on curved peripheries of said supports and the said peripheries being side by side; whereby the relative condition of regulation in the circuits respectively including said regulators may be recognized by comparing the relative position of said arm extensions.

6. A multiple dynamo regulator having the combination of a series of vertical segmental partitions, each partition carrying a series of radially disposed contact strips, arms carrying contact plates bearing upon said strips and pivoted between said partitions and provided with protruding handles or extensions, and resistances disposed in circuit between said strips, and located at a distance from said partitions, substantially as described.

7. The combination, in a dynamo regulator, of the segmental support 3, contact strips 12, and pivoted arm 4 provided with a contact device bearing upon said contact strips, a series of resistances, 25 located at a distance from said support and respectively interposed in circuit between said strips and a series of conductors, as 24 26, forming a cable, 28, connecting said resistances and strips, substantially as described.

8. The combination, in a dynamo regulator, of the support 3, contact strips 12, pivoted arm 4 and guide-bar 6 disposed thereon, and, supported on and insulated from said arm 4, the bar 8 provided with guide-plates 9 engaging with bar 6 and a contact plate, 17, bearing upon said contact strips 12, and resistances interposed in circuit between said contact strips, substantially as described.

9. The combination, in a dynamo regulator, of the segmental support having a metal frame, 1, and plate 3 of non conducting material, a series of radial contact strips, 12, and guide-bar 6 on said plate 3, arm 4 pivoted on said frame 1, bar 7 insulated from and supported on arm 4, a spring contact plate carried by bar 7 and bearing on strips 12, resistances interposed in circuit between strips 12 and circuit connections, substantially as described.

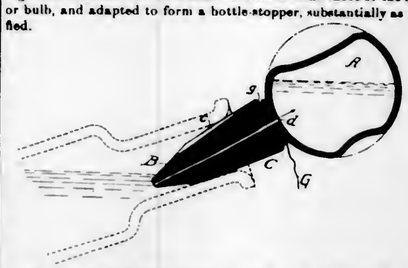
10. In a dynamo regulator having a support, a series of contact strips thereon, resistances interposed in circuit between said strips and a pivoted arm, a bar, 7, insulated from and carried by said arm, pin 15 loosely received in said bar 7, plate 17 on said pin and spring 19 acting to press said plate 17 against said strips 12, substantially as described.

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**526,880. COMBINED BOTTLE-STOPPER AND SYRINGE.** WALTER F. WARR, Camden, N. J. Filed Nov. 23, 1893. Serial No. 491,743. (No model.)

*Claim.*—1. A bottle-stopper provided at one end with a hollow bulb and at its opposite end with a conical nozzle, a centrally disposed passage extending through the nozzle and stopper into and communicating with the interior of the bulb, and said stopper being provided with a longitudinally disposed exterior air passage extending for a portion only of its length, substantially as specified.

2 A combined bottle-stopper and syringe formed of a single piece of soft rubber, and comprising a bulb, a gradually diminishing nozzle, and a neck portion situate between the nozzle and bulb, said neck portion having a slightly conical or tapering exterior and having thickened walls formed thicker or heavier than those of the nozzle or bulb, and adapted to form a bottle-stopper, substantially as specified.




3. A combined bottle-stopper and syringe, formed of a single piece of soft rubber and comprising a bulb, a conical nozzle, and a neck portion situate between the nozzle and bulb, said neck portion having a tapering exterior and adapted to form a bottle stopper, there being on the periphery of the neck portion a groove extending from a point below the junction of the nozzle with the neck to a point on the neck above the line of junction, substantially as specified.

4. The combination of a bulb, A, a nozzle, B, a tapering neck portion, C, having its walls thickened to form a bottle stopper, there being a groove or air passage longitudinally disposed upon the exterior of the neck portion, said groove terminating at a point below the upper end of the neck, so that the escape of fluid will be prevented when the neck is fully in the bottle, substantially as specified.

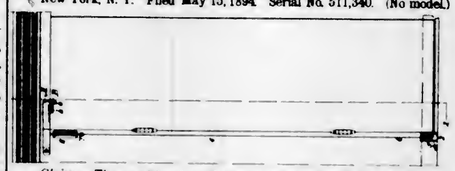
5. In a syringe the combination of a bulb, a nozzle and intervening neck portion between the nozzle and the bulb, the whole being formed preferably integral of a single piece of elastic material the walls of the nozzle being constructed to yield outwardly under pressure from within in a degree diminishing from the point toward the neck portion and a plug adapted to the mouth of the nozzle, substantially as described.

6. In a combined syringe and bottle stopper the combination of a bulb, a nozzle, and an intervening neck portion between the nozzle and bulb, the nozzle portion adapted to yield outwardly under pressure from within in a diminishing degree from the point toward the neck portion, the mouth of said nozzle portion being adapted to receive a plug, E, of greater diameter in cross section than the diameter of the bore of the nozzle, said plug being of greater diameter in cross-section intermediate in its length and diminishing in diameter toward the opposite end, substantially as described.

7. A syringe of elastic material consisting of the bulb, A, neck portion, C, nozzle, B, the walls of said nozzle constructed to yield to pressure from within in a degree diminishing from its point toward the neck portion, a plug, E, adapted to be inserted in the mouth of the nozzle, circumferential groove, *g*, and flexible cord extending from said plug around said grooved neck portion, substantially as described.

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**526,881. SAFETY-CATCH FOR DOORS.** JOSEPH A. WEAVER, Jr., New York, N. Y. Filed May 15, 1894. Serial No. 511,340. (No model.)



*Claim.*—The combination of a swinging door with a catch device therefor normally out of position for engagement with the door, a platform and means connecting the platform with the said catch device to throw the latter into position to catch and hold the door by the weight of a person stepping on the platform as he approaches the door, substantially as and for the purpose described.

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**526,882. PNEUMATIC TIRE.** CHARLES K. WELCH, Coventry, England, assignor to the Pneumatic Tyre Company, Limited, Dublin, Ireland. Filed May 16, 1894. Serial No. 511,283. (No model.)



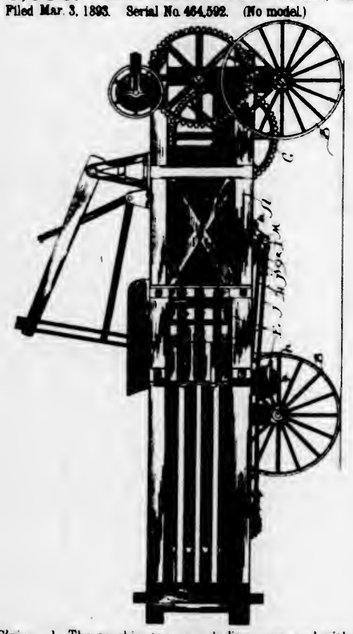

*Claim.*—1. The combination with a rim of a wheel and with the tape for covering the heads of the spokes, of a plate provided with slots through which the ends of the tape are passed and secured and with a hole for a valve stem to pass through, substantially as, and for the purpose, set forth.

2. The combination with the rim of a wheel on which a pneumatic tire is fitted and with the tape for covering the heads of the spokes, of a plate adapted to serve as a washer for the air valve of the tire and having slots through which the ends of the tape are passed and secured, substantially as, and for the purpose, set forth.



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**526,883. BALING-PRESS.** ANDREW WICKEY, Chicago, Ill. Filed Mar. 3, 1893. Serial No. 464,592. (No model.)

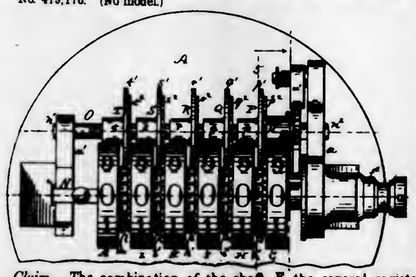


*Claim.*—1. The combination in a baling press, and with suitable plunger and tying mechanism of a frame having a slot in its bed, a rack, G, suitable connecting devices between it and the tying mechanism, whereby its reciprocation may operate the tying mechanism; a post, *g*, extending from the rack through the slot in the bed and engaging with the top of the latter, and suitable means of engagement between the plunger and said rack; substantially as described.

2. The combination with the plunger and tying mechanism of a self tying baling press, of a slotted bed, a reciprocating rack supported beneath said bed, suitable connecting gear between said rack and the tying mechanism, a movable dog carried by said rack, and a tripping device adapted to engage said dog with the plunger at the proper moment; substantially as described.

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**526,884. REGISTER FOR COUNTING THE STROKES OF PISTONS, &c.** FRANK L. WOLFE, Medford, assignor to the Crosby Steam Gage and Valve Company, Boston, Mass. Filed Jan. 25, 1892. Serial No. 419,176. (No model.)




*Claim.*—The combination of the shaft, E, the several register wheels thereon, each wheel except the last having on one face a toothed disk, and each wheel except the first having on the other face another toothed disk having two sets of teeth, one set of greater width than the other; a parallel shaft having wheels thereon, each wheel having on one side a toothed disk and on the other side a pin, the wheels on the parallel shaft overlapping the wheels on the shaft, E, and the toothed disks of the two sets of wheels intermeshing; a ratchet wheel on the parallel shaft, and a disk provided with a pawl to engage such ratchet wheel, as set forth.

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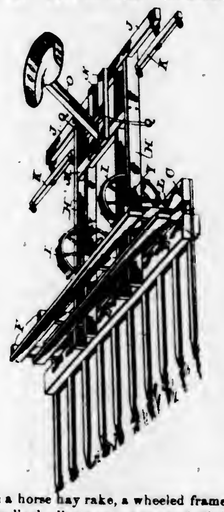
**526,885. MECHANICAL MOVEMENT FOR ENGINE-REGISTERS.** FRANK L. WOLFE, Medford, assignor to the Crosby Steam Gage and Valve Company, Boston, Mass. Filed Dec. 2, 1893. Serial No. 492,623. (No model.)



*Claim.*—The combination of the shaft, B, the pitman, $b^4$; the crank, C; the link, *d*, the crank arms, E and E', the frame, D, and the pawl bar, G, all arranged as and for the purpose set forth.

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**526,886. HORSE HAY-RAKE.** JOSEPH E. WYCKOFF, Rand, Colo. Filed June 24, 1893. Serial No. 478,699. (No model.)



*Claim.*—1. In a horse hay rake, a wheeled frame, a driver's seat mounted for longitudinal adjustment on one end of the frame, and a longitudinally adjustable rake clamped on the opposite end of the frame, substantially as set forth.

2. In a horse hay rake, a wheeled frame carrying an adjustable seat at one end, and having a head clamp at its other end, and a ground rake clamped for adjustment by said head clamp, substantially as set forth.

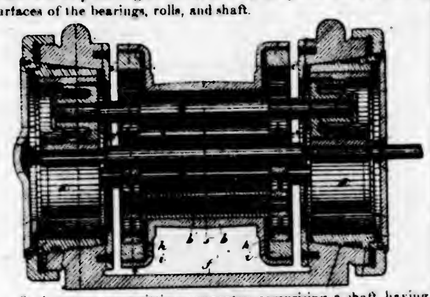
3. In a horse hay rake, the combination with the ground rake; of parallel head clamp bars clamped onto the teeth of the rake in front of the rake head and providing for the length adjustment of the rake, a rake fender frame secured to the uppermost clamp bar, rearwardly extended truck frame bars attached at their front ends to the upper clamp bar and carrying wheels adjacent to the rake head, and a longitudinally adjustable seat supported between the truck frame bars at their rear ends, substantially as set forth.

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**526,887. POWER-TRANSMITTING APPARATUS.** GEORGE J. ALTHAM, Swansea, Mass. Filed May 1, 1894. Serial No. 509,634. (No model.)

*Claim.*—1. A power transmitting apparatus comprising a shaft, connected containers surrounding the shaft and provided with internal annular bearings, a series of pairs of rolls interposed between the bearings and the shaft, shafts connecting the rolls, a pulley surrounding the driving-shaft, and a series of rolls connected with said pulley and bearing on the said roll-connecting shafts.

2. A power transmitting apparatus comprising a shaft, connected annular bearings surrounding the shaft, rolls interposed between said bearings and shaft, said rolls being movable endwise, and automatic means for reciprocating said rolls endwise to equalize the wear of the surfaces of the bearings, rolls, and shaft.



3. A power transmitting apparatus comprising a shaft having oppositely tapered sections, connected annular bearings surrounding said shaft, and rolls interposed between said bearings and shaft, said rolls being movable endwise and having portions of their peripheries tapered to co-operate, as described, with the tapered sections of the shaft in imparting initial endwise movements to the rolls, whereby the wear of the surfaces of the bearings, rolls, and shaft is equalized.

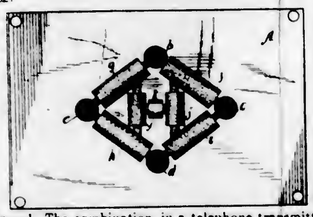
4. A power transmitting apparatus comprising a shaft, connected annular bearings surrounding the shaft rolls, interposed between the bearings and shaft, shafts connecting said rolls in pairs, and flexible connections between said rolls and their connecting shafts whereby the rolls are made self-adjusting, as set forth.

5. A power transmitting apparatus comprising a central shaft, two connected annular bearings surrounding the shaft, rolls interposed between the bearings and shaft, the rolls being connected by shafts extending parallel with the central shaft, and loose overlapping rings adapted to retain the shafts and rolls in their proper relative positions, each ring inclosing two shafts and co-operating with adjacent rings in forming bearings adapted to support the shafts laterally.

6. A contractible bearing ring transversely cut and provided with a compressible soft metal block between its ends, whereby the continuity of the ring is preserved.

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**526,888. TRANSMITTER FOR TELEPHONES.** MARK O. ANTHONY, Cincinnati, Ohio. Filed July 28, 1894. Serial No. 518,829. (No model.)



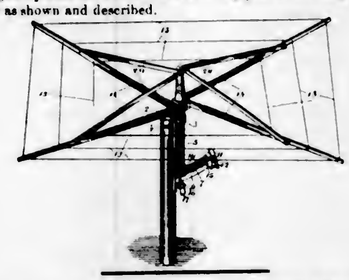
*Claim.*—1. The combination, in a telephone transmitter, with a supporting plate or diaphragm, of a series of carbon blocks projecting from the supporting plate; a series of carbon pencils extending from block to block; and a transverse pencil or pencils connecting one or more pairs of pencils in the series and locking them against rotation, substantially as and for the purpose specified.

2. The combination in a telephone transmitter, with a supporting plate or diaphragm, of a series of carbon blocks projecting from the supporting plate; a series of carbon pencils extending from block to block; a pencil extending from one of the series of an oppositely mounted pencil and adapted to hold them against rotation, and a pencil or pencils connecting other members of the series with the transverse pencil and adapted to hold them against rotation, substantially as and for the purpose specified.

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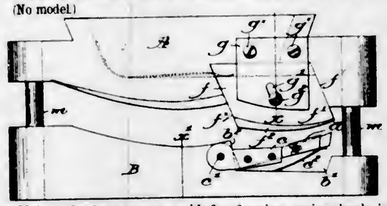
**526,889. CLOTHES-DRIER.** JOHN BROWN, Weston, Canada. Filed May 17, 1894. Serial No. 511,557. (No model.) Patented in Canada Apr. 26, 1894, No. 45,888.

*Claim.*—In a clothes reel, the combination of a fixed post, a revolving post supported by said fixed post and having radial arms and supports to said arms as specified the band securing said revolving post to the top of said fixed post, the curved support on the fixed post and having a spring-actuated lever thereon, the sliding block adapted to slide on said support, and the ratchet wheel secured to said revolving post to bear on said sliding block and adapted to be engaged by said lever when the revolving post is inclined, substantially as shown and described.



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**526,890. APPARATUS FOR MOLDING SPRING-HEELS.** JAMES P. BOSFIELD, Haverhill, Mass. Filed May 18, 1894. Serial No. 511,675. (No model.)



*Claim.*—1. A two-part mold for forming spring heels in and molding the soles of boots and shoes, each part of the said mold having a sole molding surface and one of said parts also containing a heel forming depression having a shoulder at the breast of the heel, a heel block on the other part of the said mold presenting a co-operating shoulder at the breast of the heel, and means to impart a relative lateral movement to the said co-operating shoulders one toward the other as the two parts of the mold are brought together in the operation of molding the sole, substantially as described.

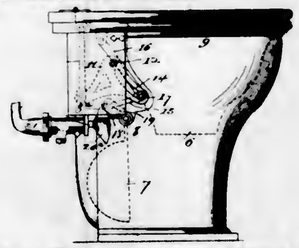
2. In a two-part spring heel forming mold, the combination with one part containing a heel-forming depression, of a yielding block on the other of said parts, and means dependent upon yielding movement of the said yielding block to impart thereto a forward movement toward the breast of the heel during the molding operation, substantially as described.

3. In a two-part spring heel forming mold, the combination with one part containing a heel-forming depression, of a heel block carried by and movable relatively to the other part of said mold, and inclined guides for said heel block in the said other part, whereby a forward or lateral movement toward the breast of the heel is imparted to said block during the molding operation, substantially as described.

4. In a two-part spring heel forming mold, the combination with one part containing a heel-forming depression, and a yielding supporting table therein, of a heel block movably attached to the other part of said mold, and means to impart to said block a forward movement toward the breast of the heel during the molding operation, substantially as described.

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**526,891. WATER-CLOSET.** JOHN CAMPBELL, Chicago, Ill., assignor to the Pullman's Palace Car Company, same place. Filed May 29, 1894. Serial No. 512,780. (No model.)



*Claim.*—1. The combination in a water closet of a lid or cover, a seat and a pan all hinged, of a slotted bell crank pivotally mounted



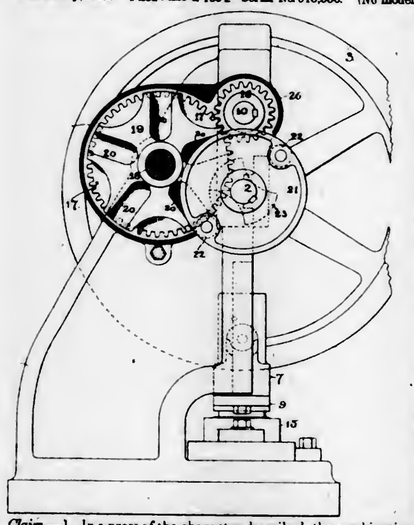
a connection between the arm of the bell crank and the lid and a lever connected to the pan and the seat respectively and said levers being pivotally connected together by a pin which works in the slot of the bell crank, substantially as described.

2. The combination with a water closet bowl of a pan, a rock shaft, a pan carried by the rock shaft, a crank arm on the rock shaft, a hinged seat and a hinged lid, a pivoted bell crank a lever pivotally connecting one arm of the bell crank with the lid and the other arm of the bell crank being slotted, links or levers pivotally connected respectively to the seat and to the crank arm and a pin or stud pivotally connecting the ends of said links or levers and adapted to traverse the slot of the bell crank, substantially as and for the purpose described

3. The combination in a water closet with a lid or cover, a seat and a pan, all hinged, of a slotted bell crank, pivotally mounted, a connection between the arm of the bell crank and the lid, and a lever connected to the pan and the seat respectively and said levers being pivotally connected together by a pin which works in the slot of the bell crank, and a flush pipe having a controlling valve adapted to be actuated by the pan operating mechanism, substantially as described.

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**526,892. DOUBLE-ACTING PRESS.** ANDREW C. CAMPBELL, Waterbury, Conn. Filed June 4, 1894. Serial No. 513,350. (No model.)



*Claim.*—1. In a press of the character described, the combination with the dies and the rotating main shaft from which the moving die is driven, of the reciprocating gate provided with the blank-holder, the crank-shaft 10, connections between the gate and said crank-shaft whereby rotation of the latter imparts a reciprocatory movement to the former, and intermediate driving and converting mechanism between the main shaft and the crank-shaft for converting continuous rotary motion of the former into intermittent rotary motion of the latter, substantially as set forth.

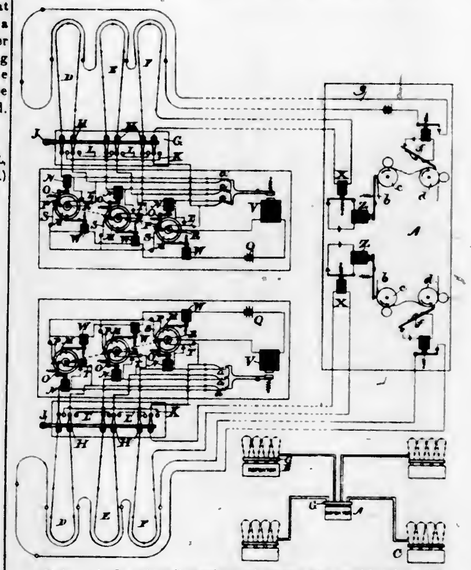
2. In a press of the character described, the combination with the dies and the rotating main shaft from which the moving die is driven, of the reciprocating gate provided with the blank-holder, the crank-shaft 10, the connections between the gate and said crank-shaft whereby rotation of the latter imparts a reciprocatory movement to the former, a rotatable, radially slotted disk 19, studs 22, carried by the main shaft and adapted to engage the slots in the disk 19 and thus impart intermittent rotary motion to said disk, and gearing intermediate the disk 19 and shaft 10, whereby the motion of the former is imparted to the latter, substantially as set forth.

3. In a press of the character described, the combination with the main shaft 2, the dies, and the connecting-rod coupling the moving die to the crank in the main shaft, of the crank-shaft 10, the reciprocating gate provided with the blank-holder, a link connection between the crank in the shaft 10 and the gate, the rotatively mounted, radially slotted disk 19, having concaves in its periphery as described, the studs 22, carried by the main shaft and adapted to engage the slots in the disk 19, the stop disk 23, on the main shaft, and its convex ends adapted to engage the concaves in the disk 19, and gearing between the disk 19 and shaft 10, whereby the former drives the latter intermittently.

4. In a press of the character described, the combination with the gate 7, the crank-shaft 10, and the links connecting the gate with the cranks in said shaft, of a rotatable, radially slotted disk 19, geared to the crank-shaft, and a continuous rotating disk 21, provided with studs 22, adapted to engage the slots in the disk 19 and impart thereto intermittent rotary impulses alternating with rests, substantially as and for the purposes set forth.

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**526,893. FIRE-ALARM-TELEGRAPH SYSTEM.** WILLIAM E. DECROW, Boston, Mass., assignor to The Gamewell Fire-Alarm Telegraph Company, New York, N. Y. Filed Mar. 13, 1893. Serial No. 465,754. (No model.)



*Claim.*—1. In a signaling telegraph system the combination with a central station and one or more local stations with circuits extending therefrom, a circuit connecting the local stations with the central station, and a switch at the local station for disconnecting the circuits therefrom and connecting them in series with the central station.

2. The combination with a central station and a local station, of a circuit connecting them, a series of circuits extending from the local station, and a switch placed at a point outside the local station for disconnecting the lines therefrom, and connecting them in series with the central station.

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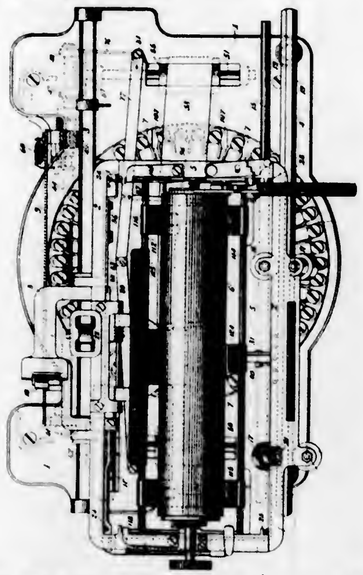
**526,894. TYPE-WRITING MACHINE.** LOUIS P. DIBB, Ilion, assignor to the Wyckoff, Seamans & Benedict, New York, N. Y. Filed Sept. 26, 1892. Serial No. 446,870. (No model.)

*Claim.*—1. In a type writing machine, the combination with a guide-rail, of a paper carriage frame having a series of guide-rolls arranged to bear on the opposite sides of said rail, the said series of guide-rolls comprising obliquely-arranged guide-rolls operating to draw or force the guide-rolls on the opposite side of the said rail against said rail as wear takes place; the axes of all of said rolls being parallel to their faces, and the said obliquely-arranged rolls being forced against the guide-rail and their pivots by the weight of the paper-carriage frame independently of the position of the platen, whereby the paper-carriage is firmly guided and the wear of the bearings automatically compensated for.

2. In a type writing machine, the combination with a guide-rail, of a carriage-frame having both horizontally and obliquely arranged guide rolls, the axes of all of which are parallel with their faces

3. In a type writing machine, the combination with a vertically-arranged guide-rail having inclined sides at its top, of a paper-carriage frame having a series of guiding rolls arranged to bear on opposite sides of said guiding rail, the faces of said guiding rolls being all parallel to their axes and so mounted or arranged as that the weight of the carriage frame will cause the rolls to bear against the inclined sides of the guide-rail and against their pivots independently of the position of the platen and cause the series of rolls to clasp or hug the guide-rail on its opposite sides.

4. In a type writing machine, the combination with a guide-rail, of a paper carriage frame having an obliquely-arranged guiding roll to bear on one side of said rail and an associated guiding roll arranged to bear on the opposite side of said rail, the construction and arrangement being such that the obliquely-arranged guiding roll is caused to constantly press against its side of the rail by the weight of the carriage, and the associated guiding roll to constantly press against its side of said rail by the drawing or wedging action of the obliquely-arranged guiding roll.



5. In a type writing machine, the combination of a guide-rail having plane sides, one of which is inclined, and a hinged paper-carriage provided with guide-rolls to bear upon said inclined side of the rail and also on the opposite side of the rail, the rolls on the inclined side of the rail operating under the weight of the carriage to draw or force the roll or rolls on the opposite side of the rail against the surface thereof, and the faces of all of the guide-rolls being parallel to their axes and to the sides of the rail against which they bear.

6. In a type writing machine, the combination of a guide rail having vertical and inclined sides, and a hinged paper-carriage having horizontally and obliquely arranged guide rolls.

7. In a type writing machine, the combination of a guide rail having a plane vertical side and a plane inclined side, and a paper-carriage having a pair of guide rolls whose faces and axes are both parallel with the vertical side of the guide rail, and an oppositely-arranged obliquely disposed guide roll whose face and axis are arranged parallel with the inclined side of the guide rail.

8. In a type writing machine, the combination of a guide rail inclined on opposite sides at its upper portion and formed with straight and parallel sides below said inclined sides, and a paper carriage provided with two pairs of guide rolls, one pair having vertical axes and faces to work in conjunction with the vertical parallel sides, and the other pair having oblique axes and faces to work in conjunction with the said inclined sides.

9. In a type writing machine, the combination of a guide rail having both inclined sides and vertical parallel sides, and a paper-carriage having two pairs of guide rolls, one pair having vertical axes and faces, and the other oblique axes and faces, and the rolls of each pair being arranged on opposite sides of the guide-rail.

10. In a type writing machine, the combination of a hinge-rod, a paper-carriage hinged upon said rod at its rear side and provided with a supporting roller, a set of horizontally and obliquely arranged guide rolls mounted at the front side of said paper-carriage, and a guide-rail having inclined and vertical faces for said guide rolls to bear upon.

11. In a type writing machine, the combination of a shifting platen-carrier having a limited back and forth movement, a shift-rod, and a pivoted latch device, having on one side of its pivot a fork or yoke to embrace said shift rod and on the opposite side of its pivot means for locking or holding the platen-carrier firmly in its normal and in its shifted position

12. In a type writing machine, the combination of a paper-carriage having a pair of stops, a shift-rod, and a shifting platen carrier having a pivoted latch comprising a pair of arms to engage said stops, and a pair of arms to embrace said rod.

13. In a type writing machine, the combination of a paper-carriage having a pair of stop-members provided each with an inclined ledge, a shift rod, a shifting platen carrier provided with a pivoted latch to reciprocate between said ledges and also to vibrate about its horizontal pivot, and composed essentially of a pair of arms to engage said ledges, and a fork to engage said shift rod.

14. In a type writing machine, the combination of a paper-carriage having stops, a shift-rod, a shifting platen carrier, a latch to lock said platen-carrier in either of its two positions and to be engaged by said shift-rod, and a spring adapted to break contact between the latch and the shift rod at the end of the stroke of the shift-rod in either direction.

15. In a type writing machine, the combination of a paper carriage having a pair of stop-members provided each with an inclined ledge, a shift-rod, a shifting platen-carrier provided with a pivoted latch having a pair of arms, to engage said ledges, and a pair of arms or a fork to engage said shift-rod, and a spring for breaking the contact of said latch with said shift-rod at the end of the stroke of the latter in either direction.

16. In a type writing machine, the combination of a paper-carriage having a lateral shifting platen, two sets of stop-screws, the adjustable stop-members, the latch, the spring, and the shift-rod.

17. In a type writing machine, the combination of a paper-carriage, a shift-rod, a shifting platen-carrier provided with a fork or yoke to be engaged by said rod, and means for breaking said engagement at the end of the throw of the shift-rod in either direction.

18. In a type writing machine, the combination of a paper-carriage, a shift-rod, a shifting platen-carrier provided with a pivoted fork or yoke to be engaged by said shift-rod, and a spring for moving said fork or yoke independently, and breaking the engagement between it and the shift-rod at the end of the throw of the latter in either direction.

19. In a type writing machine, the combination of an inking ribbon, a ribbon-spool shaft arranged to revolve always in one direction, a ribbon spool mounted on said shaft to revolve either in the direction of rotation of said shaft or in the reverse direction, another ribbon spool shaft arranged to revolve alternately in opposite directions, a ribbon-spool mounted thereon to turn with said shaft in whichever direction the same may be rotated, a connecting shaft arranged at right angles to said spool-shafts and provided at one end with a gear which meshes with a gear on the first mentioned shaft, in order that the connecting shaft may be rotated always in one direction, and provided at its opposite end with bevel gears adapted to be engaged alternately with a gear on the second mentioned spool-shaft, by endwise movements of the connecting-shaft, so as to turn the second mentioned spool shaft and its spool alternately in opposite directions.

20. In a type writing machine, the combination of an inking ribbon, a ribbon spool-shaft 50 arranged to be turned always in one direction by the carriage driving drum, a ribbon spool 54 mounted on said shaft to turn either with said shaft or in a direction opposite to that of said shaft, a bevel gear 52 on said shaft, a spool shaft 51, a spool 55 on said shaft mounted to turn always in one direction of rotation of its shaft, a bevel gear 53 on said shaft, a connecting-shaft 44 adapted to slide longitudinally and provided at one end with a bevel gear 46, which is always in engagement with the gear 52, whereby said shaft 44 is rotated always in the same direction, and provided at its opposite end with two bevel gears 47 and 48 adapted to be alternately engaged with the gear 53, and thereby rotate the shaft 51 and its spool alternately in opposite directions.

21. In a type writing machine, the combination of an inking ribbon, a pair of ribbon spool shafts, a pair of ribbon spools, a connecting shaft geared permanently to and driven by one of said shafts to revolve always in the same direction and adapted to actuate the other of said shafts alternately in opposite directions, and means, substantially as described, for automatically moving said connecting-shaft endwise to reverse the direction of movement of the ribbon.

22 In a type writing machine, the combination of an inking ribbon, a pair of ribbon-spool shafts a pair of ribbon-spools, a connecting-shaft arranged to revolve always in one direction and to move longitudinally to reverse the direction of rotation of one of said spool shafts, a bevel gear on each of said spool shafts, a bevel gear at one end of said connecting shaft, two bevel gears at the opposite end of said connecting shaft, a worm on the latter, a worm wheel having a cam and a concentric ledge, a lever connected to said connecting shaft, a spring for vibrating said lever in one direction, and a stronger spring for vibrating the lever in the opposite direction.

23. In a type writing machine, having an inking ribbon and ribbon spools and a shaft as 44 for actuating said spools, the combination of a worm, a worm wheel provided with a cam and a concentric ledge, a spring 60, a lever 59 connected to said shaft and having a pin 72, and a spring 61.

24. In a type writing machine, the combination of an inking ribbon, a ribbon-spool shaft 50, arranged to turn always in one direction, a ribbon spool 54 thereon arranged to turn in either direction a bevel gear 52 on said shaft, a shaft 44, a bevel gear 46 thereon to engage with the gear 52 to turn the shaft 44 always in one direction, bevel gears 47 and 48 at the opposite end of said shaft 44 engaging alternately with a gear 53 on a ribbon spool-shaft 51 having a ribbon-spool 55 mounted to turn always in the direction of rotation of its shaft, whereby the longitudinal movements of the ribbon are effected, a cam on the shaft 51, a vibratory spring actuated ribbon-carrier having a ribbon-guide adapted to be actuated by said cam, whereby the ribbon is moved step-by-step laterally during its longitudinal movement, a worm 49 on the shaft 44, a worm wheel having a cam and a concentric ledge, a lever 59 connected to said shaft, and springs 60 and 61 whereby the directions of movement of the ribbon are reversed.

25. In a type writing machine, the combination of a paper-carriage having a platen, a circular series of type-bars having the general plane of their pivots arranged substantially coincident with the plane of the under side of the platen and having the pivots of those type bars at each side over which the platen travels, depressed or sunken below the general plane of the pivots and the under side of the platen.

26. In a type writing machine, the combination of a paper-carriage having a platen, a type-bar disk having a sunken or depressed portion at each side in line with the path of travel of the platen, a circular series of type bars mounted upon said disk, the pivots of the type bars over which the platen travels being mounted on said depressed or sunken portions, and the pivots of the remaining type bars being mounted upon the raised portions of the disk and substantially coincident with the plane of the under side of the platen.

27. In a type writing machine, the combination of a paper-carriage having a platen, a type-bar disk having a depressed or sunken portion at each side in line with the path of travel of the platen, a circular series of type bar-hangers mounted upon the depressed or sunken portions and upon the raised portions of the disk, and a series of type bars having the pivots of those bars whose hangers are mounted upon the raised portions of the disk arranged substantially coincident with the plane of the under side of the platen.

28. In a type writing machine, having a paper-carriage, the platen cylinder of which is moved over some of the type bar pivots, the arrangement of these pivots in a plane far enough below the general plane of the type bar pivots, whereby the upper pivots and the bottom of the platen cylinder may be placed in the same plane

29. In a type writing machine, the combination of a paper-carriage having a platen, a hinged frame, and a pair of independent paper-guide roll supports mounted thereon and provided each with paper-guiding and feeding rolls.

30. In a type writing machine, the combination of a paper-carriage having a platen, a hinged frame, and a pair of guide roll supports adjustable longitudinally of said frame for different widths of paper and provided with paper gniding and feeding rolls.

31. In a type writing machine, the combination of a paper-carriage having a cylindrical platen, a spring-actuated hinged frame, and a pair of curved paper-guide roll supports mounted on said frame and provided each with a pair of guiding and feeding rolls.

32. In a type writing machine, the combination of a paper-carriage having a cylindrical platen, a hinged spring-actuated frame arranged on the under side thereof and a pair of curved paper guide roll supports adjustable longitudinally of said frame and provided each with a pair of guiding and feeding rolls, one roll of each pair being arranged on one side of the vertical axis of the platen, and one roll on the other side of said axis.

33. In a type writing machine, the combination of a paper-carriage having a platen, the arms 113, the shafts 112 and 114, the paper guide roll supports 115, the guide rolls, and the springs 116.

34. In a type writing machine, the combination of a paper-carriage having a platen, a guide roll having journals, and a guide roll support consisting of the flexible band 118, the journal box 119, and the spring cap 120.

35. In a type writing machine, the combination of a paper-carriage having a platen, a guide roll having journals, and a guide roll support having a journal-box made of a single piece of sheet metal provided with notches and folded ends, whereby end and side bearings are formed for the roll journals.

36. In a type writing machine, the combination of a main carriage having a platen-carrier adapted to be shifted transversely thereon, and a spring-pressed scale hinged to the main carriage.

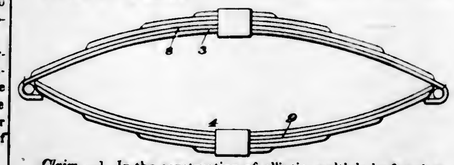
37. In a type writing machine, the combination of a main paper carriage, a shifting platen carrier, a paper-guide and table 123, hinged upon a rod as 112, and a spring pressed scale bar hinged to the main carriage.

38. In a type writing machine, the combination of a paper-carriage having a platen, a letter-spacing mechanism, one part of which is carried by a vibratory frame, a line spacing mechanism, a relatively fixed carriage-stop, and a spring-actuated lever, to act on said vibratory frame, having both a rocking and a rectilinear movement, and connected to said line spacing mechanism.

39. In a type writing machine, the combination of a paper-carriage having a platen, a letter spacing mechanism, one part of which is carried by a vibratory frame, a line-spacing mechanism, a relatively fixed carriage-stop, a lever as 87, and a lever as 83 mounted on the paper-carriage.

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**526,895.** SPRING. PHILO N. FRENCH, Pittsburg, Pa., assignor to the A. French Spring Company, same place. Filed Jan. 5, 1894. Serial No. 496,770. (No model.)



*Claim.*—1. In the construction of elliptic multiple leaf springs, the main or inner leaf of one half or section having its ends bent to form end loops in tangential, as distinguished from reverse curves, a second leaf the ends whereof brace or support the main leaf to or beyond the ends of the other half or section, and on account of the tangential bend in the main leaf is free to elongate on the main leaf when depressed in combination with a counter half section having a main leaf the ends of which are directly opposed to the added leaf of the first section and having also a second leaf which supports the main leaf to or approximately to the extreme end of its deflection and which is also free to elongate on the main leaf, substantially as set forth.

2. In the construction of elliptic multiple leaf springs, the main or inner leaf of one half or section having its ends bent to form end loops in tangential, as distinguished from reverse curves, a second leaf the ends whereof brace or support the main leaf to or beyond the ends of the other half or section and on account of the tangential bend in the main leaf is free to elongate on the main leaf when depressed in combination with a counter half section having a main leaf the ends of which are directly opposed to the added leaf of the first section and having also a second leaf which supports or braces the main leaf to or approximately to the extreme end of its deflection and which is also free to elongate on the main leaf, the ends of the main and supporting leaves of the second half or section being arranged within the loops at the ends of the first half or section, substantially as set forth.

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**526,896.** NUT-LOCK. WILLIAM H. GELBAUGH, Manitou, Colo., assignor of one-half to Arthur Hutchinson, same place. Filed Mar. 7, 1894. Serial No. 502,621. (No model.)



*Claim.*—1. The combination of the screw-threaded bolt A, the nut B, the plate or washer C, provided with the flanges *a* having the inclined edges *b*, the washer *D* provided with the cut-out *c*, and the shoulders *d*, the teeth *e*, formed upon the washers or plates C and D, the openings and recesses *h* and *h'* formed upon or in the plate D, and the spring E, provided with the tang *g*, and the lateral arm $g^3$, substantially as and for the purpose specified.

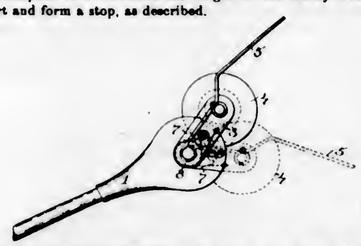
2. The combination of a bolt, provided with a nut, the washer or plate C, provided with the opening *f*, and the flanges *a*, the washer or plate D, provided with the cut-outs *c*, and the shoulders *d*, the openings *h*, and recesses *h'*, and the spring E, substantially as and for the purpose specified.

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**526,897.** ELECTRIC-RAILWAY TROLLEY. ROBERT A. GRANT, Providence, R. I., assignor of three-fourths to August F. Borchardt, Clifton A. Hall, and John Conrad Schott, same place. Filed Jan. 22, 1894. Serial No. 497,649. (No model.)

*Claim.*—1. The combination with a trolley-mast and the bifurcated end piece 1, of the pivot shaft 2, the side frames 3 pivotally connected with the end piece by the shaft 2 and forming the journal bearing for the trolley-wheel 4, the spring 10, and the stops 7, as described.

2. The combination with the trolley-mast, the end piece secured thereto, and the pivot shaft 2, of the bifurcated side frame 3 pivotally connected to the shaft 2 outside of the end piece, the trolley-wheel 4 journaled in the bifurcated side frame, and the lever 12, the whole adapted to overbalance the weight of the trolley-wheel and support and form a stop, as described.

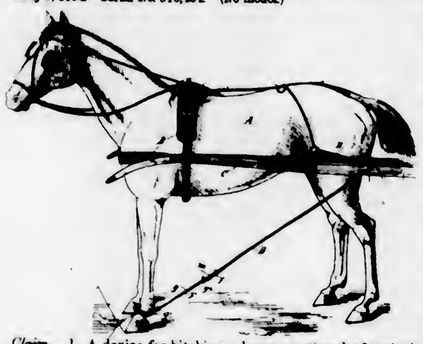


3. The combination with the end piece 1, the pivot-shaft 2, the side-frames 3, and the trolley wheel 4, of the spring 10, the ratchet-wheel 8, and pawl 9, as described.

4. The combination with the end-piece 1 of the trolley-mast, the pivot-shaft 2, the side frames 3, and the trolley-wheel 4, of the spring 10, the ratchet wheels 8, the pawls 9, and the guides 5, as described.

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**526,898. MEANS FOR HITCHING HORSES.** MARTIN P. HAGEN, Minneapolis, Minn., assignor to Samuel Alexander, same place. Filed May 8, 1894. Serial No. 510,464. (No model.)



*Claim.*—1. A device for hitching a horse or other draft animal, comprising a flexible connection securable at one end to some rearward portion of the draft rigging, and provided at its other end, with a hand operated grapple, consisting of a pair of jaws, having their stem portions pivotally connected together, a sliding clamp or lock-rim working on the stems of said jaws, and means for operating said rim, substantially as described.

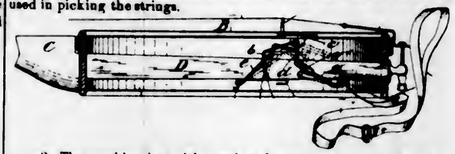
2. A device for hitching a horse, or other draft animal, comprising the flexible connection D, securable at one end to the draft rigging and having at its other end the grapple, consisting of the jaws E E' pivoted at *e*, the body-rod F, secured to the jaw E and terminating at its other end in the loop-eye *f*, the sliding rod *g* with clamp-rim *g'* working on the stems of said jaws E E' and engageable with the projection *e'* on jaw E', the keeper $g^3$ at the upper end of the rod *g*, and the spring *m* or rod F between the loop eye *f* and the said keeper *m*, substantially as and for the purposes set forth.

3. A device for hitching a horse or other draft animal, comprising the flexible strap D, securable at one end to the draft rigging and having at its other end the grapple, comprising the jaws E E', pivoted at *e* and provided respectively, with the lugs $e^2$ and *e'*, the body rod F secured at one end to the jaw E and having at its other end the loop-eye *f*, the sliding rod *g* with clamp-rim *g'* working on the stem portion of said jaws E E' and having at its other end the loop $g^4$ and keeper $g^3$, and the spring *m* on rod F between the loop eye *f*, and the keeper $g^3$, all operating substantially as and for the purposes set forth.

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**526,899. MUTE OR DAMPER FOR BANJOS.** JOHN D. HARPER, Brooklyn, N. Y. Filed Feb. 8, 1894. Serial No. 499,490. (No model.)

*Claim.*—1. A damper or mute for a stringed instrument, comprising two independently mounted pads to be applied to the head under the respective feet of the bridge, a hinged bail which carries said pads on its respective arms, a spring which holds said pads in their normal position, and a flexible connector or strap coupled at one end to the damper and adapted to be coupled at the other end to the arm or wrist of the player, whereby the latter is enabled to operate both of the damper pads simultaneously with the arm of the hand used in picking the strings.

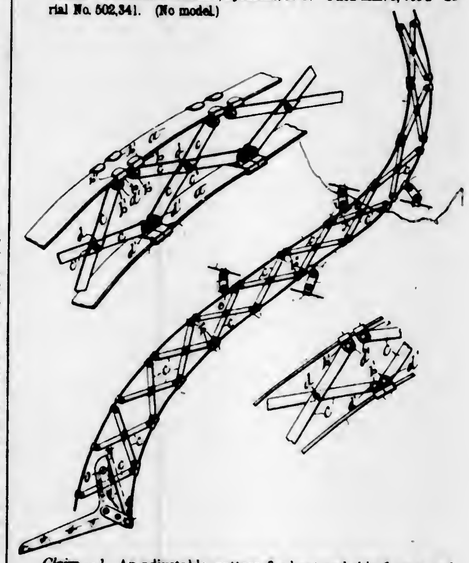


2. The combination with a stringed musical instrument having a head and a bridge resting on the head and supporting the strings, of a damper mounted on the instrument adjacent to the inner face of the head, said damper comprising a hinged bail *b*, the pads *c*, carried by the arms of the bail, the spring which holds the pads in their normal position, a bail *g*, coupled to the damper, and a flexible connector *h*, coupled to said bail *g*, substantially as set forth.

3. A damper or mute for a stringed musical instrument, comprising a plate *a*, a hinged bail *b*, having L-shaped arms, pads *c*, carried by the respective arms of the bail *b*, a spring *e*, having its branches twined about the arms of the bail *b*, and adapted to be drawn over the shoulders $b^x$, a lever bail *g*, having branches $g^x$, adapted for engagement with the fulcrum hooks $a^x$, and its branches having slotted connections with arms on the respective pads, and a flexible connector *h*, coupled to said bail *b*, substantially as and for the purposes set forth.

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**526,900. ADJUSTABLE PATTERN FOR CURVILINEAR DESIGNS.** WILLIAM J. HENLEY, Syracuse, N. Y. Filed Mar. 5, 1894. Serial No. 502,341. (No model.)



*Claim.*—1. An adjustable pattern for boat and ship-frames and analogous curved frames tapered in width from end to end, which pattern is composed of flexible bands conformable to the contours of the two opposite edges of the aforesaid frame, diagonal braces crossing each other and connected together at their crossing adjustably lengthwise of said braces and connected at their ends to the bands adjustable longitudinally in relation to the latter as set forth.

2. An adjustable pattern for boat and ship-frames consisting of prolonged skeleton frame flexible within its plane and sustained in its adjusted curved condition by adjustable bracing members of the pattern, and diagonal line-guides adjustably connected to the edges of the skeleton frame as set forth.

3. An adjustable pattern for boat and ship-frames consisting of prolonged flexible delineating bands, braces between said bands and adjustably connected thereto to allow the bands to be bent and to retain the same in the form imparted to them, and diagonal line-guides clamped on the bands adjustably lengthwise thereof as set forth.

4. An adjustable pattern for boat and ship-frames consisting of prolonged flexible delineating bands, braces between said bands and connected thereto longitudinally adjustable to sustain the bands in their adjusted curved condition, clamps connected to the bands longitudinally adjustable, and diagonal line-guides connected to said clamps adjustably to different angles as set forth.

5. An adjustable pattern for boat and ship-frames consisting of prolonged flexible delineating bands, internally projecting clamps secured to said bands longitudinally adjustable, diagonal braces crossing each other and connected together at their crossing adjustably lengthwise of the braces and adjustably fastened at their ends to the aforesaid clamps, outwardly projecting clamps likewise adjustably connected to the bands, and diagonal line-guides adjustably connected to the latter clamps as set forth.

6. The combination of the two flexible steel bands —*a*—*a*—, the clamps —*b*—*b*— each composed of two members having jaws —*b'*—*b'*— gripping opposite edges of the band and formed with perforated ears —$b''$—$b''$—, the braces —*c*—*c*— crossing each other and perforated at their crossings and at their ends, clamping-screws —*d*— clamping the braces together at their crossings, and clamping-screws —*d'*— clamping the ends of the braces between the aforesaid perforated ears substantially as described and shown.

7. The combination with the flexible steel bands —*a*—*a*— and braces —*c*—*c*— sustaining said bands in their curved condition, the clamp —*e*— composed of two members formed with jaws —*e'*—*e'*— gripping opposite edges of the band and with perforated ears —*e''*—*e''*—, the strap —*f*— clamped adjustably between said ears, the shoe —*g*— formed of two parts clamped adjustably on said strap and the guide-plate —*h*— secured to said shoe as set forth.

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**526,901. PAPER DOLL.** CHARLES M. HOYT, Brooklyn, N. Y. Filed Apr. 6, 1894. Serial No. 506,596. (No model.)



*Claim.*—1. The combination with the body of a doll or figure, formed of stiff paper, of a dress-section B, provided at its back with a flap or tab attached only at one end, said body and dress-section having reciprocal fastening devices comprising a hook and an eye, one of the elements of the fastening device being on the body and the other on the tab carried by the dress section, whereby the means for detachably securing the dress-section to the body is concealed behind said dress-section, substantially as set forth.

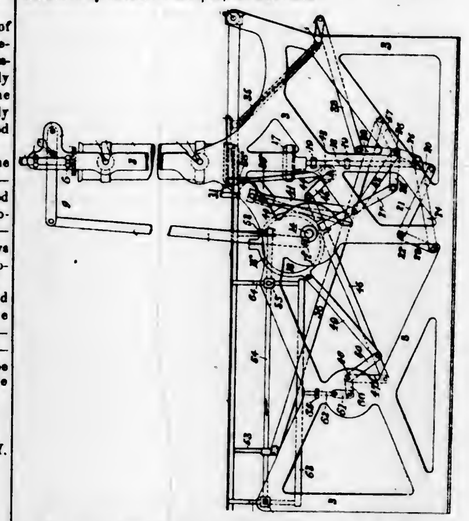
2. The combination with the body of a doll or figure, formed of stiff paper and provided with apertures *c*, of a dress-section B, provided at its back with a tab carrying hooks adapted to pass through the apertures in the body and engage the margins thereof, said hooks being arranged below the upper margin of the dress-section, substantially as set forth.

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**526,902. APPARATUS FOR MOLDING PATS OR BLOCKS OF BUTTER OR OTHER LIKE PLASTIC MATERIAL.** WILLIAM HUCKS, Jr., London, England. Filed June 13, 1893. Serial No. 477,435. (No model.) Patented in England Oct. 19, 1892, No. 18,742, and in France Apr. 25, 1893, No. 230,606.

*Claim.*—1. In apparatus for making pats of butter or the like, the combination of a molding tube and means for separating pats of butter therefrom, with a carrier for the pats and a removable tray, and means for operating the carrier so as to cause it to come into position to receive the pats as they are separated from the molding tube and transfer them in progressive order onto the removable tray, substantially as hereinbefore described.

2. In apparatus for making pats or butter or the like a reversible molding cylinder tube and piston or plunger adapted to remain in the tube and be acted upon from either end of the tube, with an operating rod adapted to be detached from said piston or plunger, substantially as and for the purpose described.



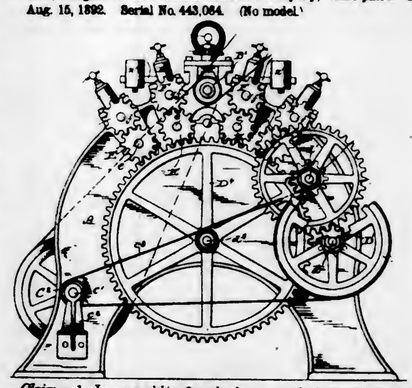
3. An apparatus for making pats of butter or the like having a die, stamp or mold, a reciprocating support for the die, and means for tilting the die when it is removed from the butter, substantially as hereinbefore described.

4. In apparatus for making pats of butter or the like, a die, stamp or mold, a reciprocating support for the die, and means for tilting the die when it is removed from the butter, in combination with bars in the delivery end of the molding tube, substantially as hereinbefore described.

5. In an apparatus for making pats of butter or the like, the combination of a cylinder or tube for containing the butter or the like, and a plunger to protrude a portion of the butter from the end of the tube, with a device for separating the portion so protruded, means for imparting forward and backward motions to the said separating device, and means for lowering the same out of the way of the butter during its backward motion, all substantially as and for the purposes set forth.

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**526,903. PLANING-MACHINE.** DAVID JENKINS, Sheboygan, Wis., assignor to the Jenkins Machine Company, same place. Filed Aug. 15, 1892. Serial No. 443,084. (No model.)



*Claim.*—1. In a machine for planing curved pieces of wood, the combination with a suitable frame, of an arc shaped bed plate, cutters journaled above and below said bed plate, a gear mounted on a stud shaft at one side of the machine frame and concentric with said

bed, feeding rollers arranged in pairs above and below the bed, pinions upon the axes of the lower rollers arranged to mesh with the teeth of said gear, similar pinions upon the axes of the upper rollers meshing with the first mentioned pinions, and means for imparting rotary motion to said gear, substantially as set forth.

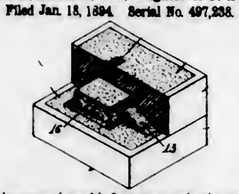
2. A machine for planing curved pieces of wood, comprising a suitable frame provided with an arc shaped bed plate, a revoluble cutter head journaled above the central part of said bed plate, an actuating pulley upon one end of the arbor of said cutter head, a pulley upon the other end of said arbor, a second pulley secured to a shaft journaled upon the machine frame, an idler gear journaled upon a stud shaft concentric with said bed plate, a train of gears for transmitting rotary motion from said shaft to said idler gear, a plurality of pinions secured to the ends of transverse shafts and meshing with said idler gear, feeding rollers carried by said shafts and adapted to engage with the lower surface of the curved pieces of wood, and a second series of pinions meshing with the first mentioned pinions and secured to the ends of shafts journaled in upwardly yielding boxes and carrying rollers arranged to engage with the upper surface of said curved pieces, substantially as set forth.

3. In a planing-machine, the combination of the frame, an arm pivoted thereto and provided with lateral projections, a rod connecting the projections a spring fast at one end to said frame and having its other end loose on the rod, a lever linked to the arm, a pulley journaled in said arm, and a driving belt opposed to the pulley, substantially as set forth.

4. In a machine for planing curved pieces of wood, the combination with a suitable frame, of an arc-shaped bed-plate, a suitably arranged cutter-head, a gear mounted on a stud at one side of the machine concentric with said bed, feed rollers arranged in pairs above and below the bed, pinions connected to the lower feed rolls and in mesh with the teeth of said gear, other pinions connected to the upper feed-rolls to mesh with the former pinions, and means for imparting rotary motion to the aforesaid gear, substantially as set forth.

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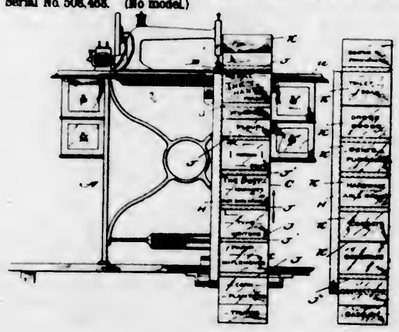
**526,904. MOLD FOR STOVE ASH-PITS.** LAZARD KAHN and HARRY V. MOORE, Hamilton, Ohio, assignors to F. & L. Kahn & Bros., same place. Filed Jan. 18, 1894. Serial No. 497,238. (No model.)



*Claim.*—The improved mold for stove ash-pits, such mold consisting of a cope and drag in contact and forming a cavity the shape of the exterior of the ash pit and forming in addition a pit extending outwardly from the front wall portion of such cavity into the joint between the cope and drag, and a core, the shape of the interior of the ash-pit, disposed within such cavity and having a frontal projection fitting said frontal pit, said core being supported by molded contact of said projection in said frontal pit and by its base making molded contact on the floor of said cavity in a plane parallel with the joint between the cope and drag, a parting being formed between said cope and drag and between said core and the cope and drag, substantially as and for the purpose set forth.

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**526,905. ENDLESS SIGN.** J. MILTON LOSE, Muncie, Ind., assignor of one-half to Enoch L. Dunlap, Sandusky, Ohio. Filed Apr. 21, 1894. Serial No. 508,468. (No model.)



*Claim.*—1. In an advertising display apparatus, the endless apron and a series of advertising cards flexibly attached at intervals to the apron across the surface thereof, in combination with guides to direct the apron in horizontal and perpendicular paths, and means for imparting movement to said apron, whereby the cards are reversed as the direction of the apron is changed from a horizontal to a perpendicular direction, substantially as set forth.

2. In an advertising display, an endless belt or apron, a series of connectors attached at suitable intervals across the exposed face of the apron, and a series of advertising cards each attached at one edge to one of the connectors, in combination with guides to direct the apron or belt in horizontal and perpendicular paths, and means for moving said apron, said connectors permitting the free edges of the cards to hang downward when the apron is traveling in perpendicular directions, substantially as and for the purposes described.

3. In an advertising display, the endless apron provided with the advertising spaces, *c*, and a series of advertising cards flexibly attached to the apron across the exposed surface thereof, in combination with guides to direct the apron in horizontal and perpendicular paths, whereby the cards are automatically reversed and the surface of the apron exposed as the direction of the belt is changed from a horizontal to a perpendicular path, as set forth.

4. In an advertising display apparatus, the combination with a suitable motor, of an endless apron provided on its surface with a series of spaces *c* designed to receive advertisements and carrying a series of cards which are attached thereto on lines between said spaces, and means, substantially as described, for guiding said apron in horizontal, inclined, and perpendicular paths, for the purposes described, substantially as set forth.

5. In an advertising display apparatus, the combination with a suitable motor, of an endless apron having a series of cards flexibly attached thereto at intervals by connectors which permit the cards to hang downward when the apron is traveling in a vertical path, and guides arranged to direct the apron, in horizontal and perpendicular paths, substantially as and for the purposes described.

6. In an advertising display, the combination of an endless apron or belt provided with a series of advertising cards each of which is flexibly attached at one edge to the apron across the surface thereof, guides, as D, G, to direct the apron in a horizontal path, and another guide below the first mentioned guides to direct the apron in perpendicular paths, substantially as described.

7. In an advertising display, an endless belt or apron provided with a series of advertising cards, and a feed-web projecting beyond one edge of said apron, substantially as described, for the purposes set forth.

8. In an advertising display, the combination with a suitable motor, of an endless apron carrying a series of flaps or cards, and guide rollers which are spaced and direct the apron to travel in horizontal and perpendicular paths, for the purposes described, substantially as set forth.

9. In an advertising display, the combination with a suitable motor mechanism, of lower guide rollers, an upper rear roller, an upper front roller, an inclined guide in a plane at one side of the front rollers, and an endless apron or belt having a series of flaps attached thereto, substantially as and for the purposes described.

10 In an advertising display apparatus, the combination with a suitable motor mechanism, of a series of spaced guide rollers, an endless apron or belt engaging with said rollers and provided at one edge with an endless web to engage with said motor mechanism, and grooved guides in contact with the opposite edge of said endless apron or belt, substantially as and for the purposes described.

11. In an advertising display, the combination with a feed mechanism, of a series of guide rollers, an endless belt or apron provided with a web at one edge thereof to engage said feed mechanism and with a series of foldable flaps which are attached to the apron at one side of the web, and grooved guide rollers in contact with the edge of said apron, substantially as and for the purposes described.

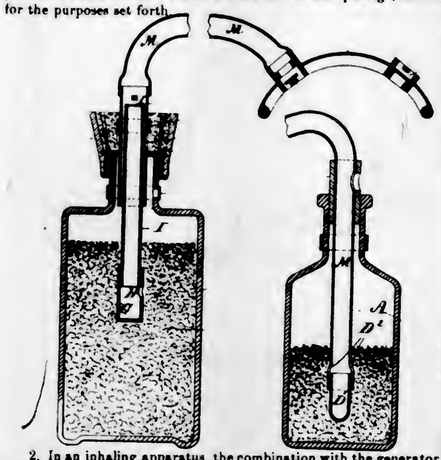
12. In an advertising display, an endless belt or apron provided with a series of spaces, *c*, a series of advertising cards or flaps, and a like series of pliable connectors each having one edge attached to a card or flap and its other edge attached to said apron on a line between said spaces, *c*, thereon, in combination with guides arranged to direct the apron in horizontal, inclined and perpendicular paths, and a suitable motor to move the apron, substantially as described, for the purposes set forth.

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**526,906. INHALING APPARATUS.** ADOLF L. LÖWENBERG, Stockholm, Sweden. Filed June 2, 1892. Serial No. 435,263. (No model.) Patented in Sweden Dec. 12, 1891, No. 3,797, and Mar. 18, 1892, No. 3,839; in Germany Mar. 22, 1892, No. 67,717; in Norway Mar. 23, 1892, No. 2,614; in England Mar. 22, 1892, No. 5,751; in Belgium Mar. 23, 1892, No. 96,962; in France Apr. 1, 1892, No. 220,576; in Switzerland Apr. 6, 1892, No. 4,966, and in Austria-Hungary Mar. 12, 1893, No. 36,261 and No. 14,062.



*Claim.*—1. In an inhaling apparatus, the combination with the generator vessel, and the mouth-piece and its passage communicating therewith, of means, substantially as described, for regulating the admission of vapor from said generator to said passage, and the supplemental valve controlled inlet for the air to said passage, as and for the purposes set forth.



2. In an inhaling apparatus, the combination with the generator vessel, and the mouth-piece and its passage communicating therewith, of means, substantially as described, for regulating the admission of vapor from said generator to said passage, the supplemental inlet for the air to said passage, and a filter arranged in said inlet, substantially as and for the purposes set forth.

3. In an inhaling apparatus, the combination with the generator vessel and the mouth-piece, of the tube M, connecting the mouth-piece with the tube C, the said tube C, having in it a valve-controlled air-inlet E, the tube D, within the generator vessel and connected with the tube C, and the cap G, on the inner end of the tube D, said cap having in it an aperture adapted to be closed or partially closed by sliding said cap onto the tube D, as set forth.

4. In an inhaling apparatus, the combination with the generator vessel A, provided with an air-inlet in its neck and a slide ring to cover the same, the tube C, extending into the vessel A and provided exteriorly to the vessel with an air-inlet E and a slide ring to cover the same, the tube D, within the vessel A and projecting outwardly into the tube C, the valve I, at the outer end of the tube D, means within the vessel A for regulating the admission of gas or vapor to the tube D, a mouth-piece N, and a tube connecting said mouth-piece with the tube C, as set forth.

5. In an inhaling apparatus, the combination with the generator vessel provided with a valved inlet for the air thereto, and the mouth-piece and its passage communicating therewith, of means, substantially as described arranged within the generating vessel for regulating the admission of vapor or gas from said generator to said passage, and the valve in said passage controlling the supply of air and vapor to said mouth-piece for inhalation, substantially as and for the purposes set forth.

6. In an inhaling apparatus, the combination with the generator vessel and the mouth-piece and its passage communicating therewith, means, substantially as described, for regulating the admission of vapor from said generator to said passage, the supplemental inlet for the air to said passage, and the valve in said passage controlling the supply of air and vapor to said mouth-piece for inhalation, substantially as and for the purposes set forth.

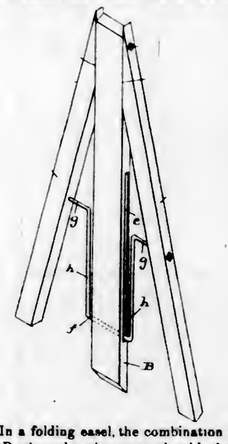
7. In an inhaling apparatus, the combination with the generator vessel, having an aperture A′ in its neck and a band $A^3$ about the neck adapted to cover or partly cover said aperture, the tube C extending into said vessel through its neck and having in it an aperture, E, and a band F, about the tube adapted to cover or partly cover said aperture, the tube D, within the vessel and extending into the inclosed end of the tube C, the valve I on the outer end of the tube D and within the larger tube C, the sliding cap G, on the inner end of the tube D, provided with a lateral aperture H, the mouth-piece and the tube connecting the same with the tube C, as set forth.

8. In an inhaling apparatus, the combination with the generator vessel and the mouth-piece and its passage communicating therewith of the supplemental inlet for the air to said passage, the filter arranged across said inlet and the valve in said passage controlling the supply of air and vapor to said mouth-piece, substantially as and for the purposes set forth.

9. In an inhaling apparatus, the combination with the vessel A, of a tube D extending into the same, a cap G, which fits snugly on the inner end of said tube and is adapted to slide on same, said cap having in its side an aperture H adapted to be closed or partially closed by sliding the cap upward on the tube, and a mouth-piece and tube communicating with the outer end of the pipe D, substantially as set forth.

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**526,907. EASEL.** HERMAN H. LUEBKEN and CHARLES W. WOOD, Baltimore, Md. Filed July 26, 1894. Serial No. 518,614. (No model.)

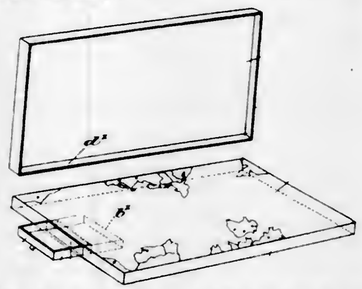


*Claim.*—1. In a folding easel, the combination of two side bars, A; a brace-bar, B, pivoted at its top to the side bars and having a longitudinal slot, *e*; and a yoke-shaped stretcher having two ends pivoted respectively to the two side bars and provided with a center, *f*, which fits loosely and slides within the said longitudinal slot.

2. In a folding easel, the combination of two side bars, A; a brace-bar, B, pivoted at its top between the two side bars and having a longitudinal slot, *e*; and a yoke-shaped stretcher comprising a wire or rod having a center, *f*, which fits loosely in the longitudinal slot of the brace bar, two pivot-ends, *g*, projecting in opposite directions and each fitting in a hole in one of the side bars, and two stretcher-arms, *h*, each connecting the said center with one of the pivot ends.

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**526,908. GAME APPARATUS.** GEORGE S. PARKER, Salem, and JOSEPH P. FRIEND, Beverly, Mass. Filed Apr. 13, 1894. Serial No. 507,342. (No model.)



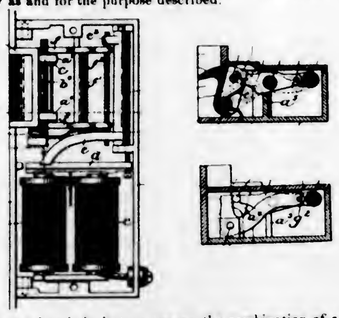
*Claim.*—In a game apparatus, a shell-like body having a continuous plane upper surface upon which the game is played, a recess extended thereinto between its upper and lower surfaces, a movable receptacle therein to contain the implements of the game, and a removable cover to fit over said body and retain said receptacle in place, substantially as described.

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**526,909. ELECTRIC LOCK.** THEODORE P. PRATT, Boston, assignor to James Wilkinson, Everett, Mass. Filed May 7, 1894. Serial No. 510,286. (No model.)

*Claim.*—1. In an electric door-opener, the combination of a casing having a bolt-receiving recess in its face-plate, a spring held pivotal keeper adapted to extend across said recess and confine a latch-bolt therein, an electro-magnet, a spring-held armature therefor con-

stituting a detent, a pivoted arm arranged to be locked by said detent against movement in one direction, a pivotal bar engaged at one end with said arm and arranged to bear at its opposite end against a part of the keeper, and a resetting bell-crank lever, one arm of which extends in the path of a part of the keeper and the other arm of which coacts with the pivotal locking bar and the detent-engaging arm, substantially as and for the purpose described.



2. In an electric lock door opener, the combination of a casing having a recess in its face-plate, a pivoted keeper which normally extends across said recess and forms one side of a bolt receiving cavity therein, said keeper being adapted to swing inwardly and thus release a latch-bolt projected into said recess, a spring which yieldingly holds said keeper in its normal position, an electro-magnet in the casing, and a keeper-locking and releasing mechanism controlled by said magnet, said mechanism comprising an arm mounted to oscillate on fixed bearings in the casing, an armature adapted to be attracted by the electro-magnet and arranged to lock said arm when released by the magnet and to release the arm when attracted by the magnet a locking carriage pivotally engaged with said arm and bearing on a projection on the keeper, said carriage being adapted to lock the keeper when the arm is locked by the armature and to be displaced with said arm by the keeper when the arm is released, and a bell-crank lever pivoted to the casing and having one arm engaged with the locking carriage and arm, and another arm engaged with the keeper, said bell-crank lever acting to restore the arm and the locking carriage to their operative positions when the keeper is being forced outwardly by its spring, as set forth.

3. In an electric lock or door opener, the combination of a casing having a recess in its face-plate, a pivoted keeper which normally forms a yielding side of a bolt-receiving cavity in said recess and is provided with ears $a^4$ $a^4$ projecting into the casing and with projections extending outwardly from said ears, a spring which yieldingly holds the keeper in its normal position, an electro-magnet in the casing, an armature adapted to be attracted by said magnet and normally retracted therefrom, a rock-shaft mounted in bearings in the casing and provided with an arm arranged to be locked by the armature when the latter is retracted, a locking carriage mounted to rock on a fixed fulcrum between the rock-shaft and the keeper, said carriage being pivotally engaged with the rock-shaft and arm and arranged to bear against projections on the keeper, and a bell-crank lever having one arm engaged with the keeper and the other with the arm, as set forth.

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**526,910. MANUFACTURE OF CEMENT.** BRIERLEY K. RIGBY, Ditton, assignor of one-half to Francis Augustus Remington Neill, St. Helens, and Austin Cooper Carr, Rainhill, England. Filed Oct. 14, 1893. Serial No. 488,147. (No specimens.)

*Claim.*—1. The method of manufacturing cement from Le Blanc lime mud which consists in adding clay to the same, calcining until overburning takes place and grinding as in ordinary cement manufacture.

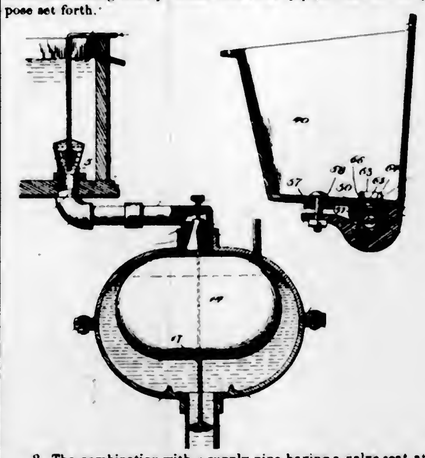
2. The improvement in the manufacture of cement from Le Blanc lime mud which consists in taking the lime mud direct from the alkali makers and without preliminary treatment mixing it with aluminous materials in the proper proportion for cement making and calcining the same until "overburnt," and grinding as in ordinary cement manufacture.

3. The improvement in the manufacture of cement which consists in making a mixture of carbonate of lime, calcium oxide and soda, combining the same with aluminous materials, calcining the same until overburned and grinding the resulting product.

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**526,911. STOCK WATERING DEVICE.** ROSS M. SANFORD, Hobart, N. Y., assignor of one-half to Thomas Rich, same place. Filed Mar. 3, 1894. Serial No. 502,223. (No model.)

*Claim.*—1. The combination with a supply pipe having a valve seat, a casing below said seat, and an outlet pipe extending vertically from the bottom of the casing; of a float and valve within the casing, and a wire depending from the float and having an eye at its lower end sliding loosely within said outlet pipe, as and for the purpose set forth.



2. The combination with a supply pipe having a valve seat at its lower end, a casing connected with said lower end, and an air vent in the top of the casing at one side of said connection; of an exit pipe for the casing, and a float and valve within the casing, as and for the purpose set forth.

3. In a stock watering device, the combination with a substantially horizontal feed pipe having a hole in its upper side; of a drinking cup having a groove in its bottom fitting over said pipe, a packing between the bottom of the groove and top of the pipe, a hole through the bottom of the cup and through the packing registering with that in the pipe, and a clamp substantially as described detachably connecting the cup with the pipe, as and for the purpose set forth.

4. In a stock watering device, the combination with a substantially horizontal feed pipe having a hole in its upper side; of a drinking cup having a groove in its bottom fitting over said pipe, a packing between the bottom of the groove and top of the pipe, a hole through the bottom of the cup and through the packing registering with that in the pipe, a pair of ears at one side of the groove, a clamp having a T-head at one end removably engaging said ears, and a curved body passing under the pipe, and means for adjustably connecting the other end of the clamp with the bottom of the cup, as and for the purpose set forth.

5. In a stock watering device, the combination with a substantially horizontal feed pipe having a hole in its upper side; of a drinking cup having a groove in its bottom fitting over said pipe, a hole through the bottom of the cup registering with that in the pipe, a pair of ears at one side of the groove, a clamp having a T-head at one end removably engaging said ears, and a curved body passing under the pipe, a bolt passing downward through the bottom of the cup and through a hole in the other end of the clamp, and a water tight washer under the head of the bolt within the cup, as and for the purpose set forth.

6. In a stock watering device, the combination with a substantially horizontal feed pipe; of a drinking cup having a groove in its bottom resting on said pipe, means for clamping the cup on the pipe, registering holes through the pipe and the bottom of the cup, and a curbing within the cup rising from its bottom around the hole therein, as and for the purpose set forth.

7. In a stock watering device, the combination with a substantially horizontal feed pipe; of a drinking cup having a groove in its bottom resting on said pipe, means for clamping the cup on the pipe, registering holes through the pipe and the bottom of the cup, a curbing within the cup rising from its bottom around the hole therein and having a notch at one side extending from the upper edge of the curb to a point even with the bottom of the cup, as and for the purpose set forth.

8. In a stock watering device, the combination with a substantially horizontal feed pipe; of a drinking cup having a groove in its bottom resting on said pipe, means for clamping the cup on the pipe, a tapering hole through the bottom of the cup registering with another hole in the pipe, and a metal strainer removably wedged in said tapering hole and having notches in its edges, as and for the purpose set forth.

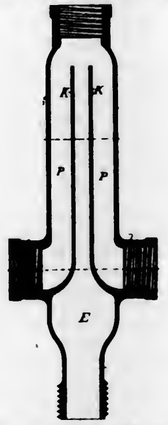


9. In a stock watering device, the combination with a substantially horizontal feed pipe; of a drinking cup having a groove in its bottom resting on said pipe, means for clamping the cup on the pipe, a tapering hole through the bottom of the cup registering with another hole in the pipe, a raised curbing around said hole within the cup, and a metal strainer removably wedged in the hole and having notches in its edges, as and for the purpose set forth.

10. In a stock watering device, the combination with a substantially horizontal feed pipe; of a drinking cup having a groove in its bottom resting on said pipe, means for clamping the cup on the pipe, a tapering hole through the bottom of the cup registering with another hole in the pipe, a raised curbing around said hole within the cup and having a notch in one side, and a removable and notched metal strainer wedged in said hole, as and for the purpose set forth.

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**526,912. FITTING FOR VENTS.** OLIVER SCHLENKER, Cincinnati, Ohio. Filed Mar. 25, 1892. Serial No. 426,429. (No model.)



*Claim.*—1. The main vent conduit E having two branch openings L, L, near each other, respectively venting receptacles for liquid and provided with diaphragms K, K, each diaphragm forming a vent passage way P for its respective vent branch L, each passage way being everywhere separated from the main vent passage of the conduit E except at the upper end of the said partitions, the partitions being respectively higher than the point at which the liquids in the respective receptacles they vent can rise, substantially as and for the purposes specified.

2. A discharge conduit A, having a connecting discharge pipe C, connected to the lower portion of the receptacle for holding liquids, and having a trap B' therein, and a main vent conduit E having a partition K, whereby a vent passage P is formed for the passage of the foul gases from said receptacle, the upper end of said partition being above the highest point that the liquids can rise in said receptacle, a vent pipe as H connecting the upper bend or part of the trap B' with a vent passage P at a point below the plane of the top of the said receptacle, the partition forming a cross diaphragm upheld by the sides of the main conduit, substantially as and for the purposes specified.

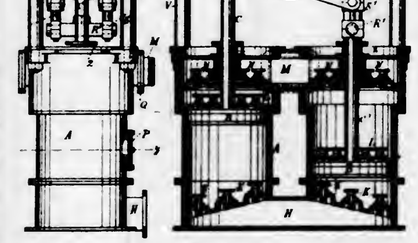
3. The combination of the receptacle for holding liquids, discharge pipe or trap B', main discharge conduit A, main vent conduit E having diaphragmatic partition K, and vent passage P, formed thereby, and vent opening inlet L, located in said main conduit above the base of said partition K, which latter extends to the side of the main conduit beneath the said inlet opening, and vent pipe H united to the trap B' and to said vent passage at a point below the top of the said receptacle for liquids, the upper end of the partition K being higher than the level to which the liquids can rise in said receptacle for liquids, the partition and vent inlet being cast with the main conduit, the pipe H being a separate one, and the inlet opening L being provided with means for the attachment thereto of said pipe, substantially as and for the purposes specified.

4. In a ventilating system, the two main conduits, one A, for the discharge of the waste fluid and solid products, and the other E for the discharge of the foul gases, and a receptacle for receiving the liquids, the main conduit being composed of sections, one of the sections having opening L, and diaphragmatic partition P, located in the latter section and beginning below the opening L and at the side of the main conduit, and connected to the side of the conduit, forming a separate vent passage way for the ventage of foul gas from the liquid receptacle, as far as the top of partition P, the latter being higher than the point in the liquid receptacle above which the liquids cannot rise, a liquid discharge pipe, connecting the liquid receptacle with the main discharge conduit A, and provided with trap B', and vent passage H, connected at one end to the trap at the upper bend thereof, and at the other end connected to opening L, below the top of the receptacle for holding liquids and forming a continuous vent passage, substantially as and for the purposes specified.

5. In a ventilating system, the two main conduits, one A, for the discharge of the waste fluid and solid products, and the other E for the discharge of the foul gases, and a receptacle for receiving the liquids, the main conduit being composed of sections, one of the sections having opening L, and diaphragmatic partition P, located in the latter section and beginning below the opening L and at the side of the main conduit, and connected to the side of the conduit, forming a separate vent passage way for the ventage of foul gas from the liquid receptacle, as far as the top of partition P, the latter being higher than the point in the liquid receptacle above which the liquids cannot rise, a liquid discharge pipe, connecting the liquid receptacle with the main discharge conduit, and provided with trap B', and vent passage H, connected at one end to the trap at the upper bend thereof, and at the other end connected to opening L, below the top of the receptacle for holding liquids and forming a continuous vent passage, the diaphragmatic partition P being cast in one piece to its section L, substantially as and for the purposes specified.

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**526,913. PUMPING-ENGINE.** GEORGE B. WHITING, Wilmington, Del., and FREDERICK M. WHEELER, Montclair, N. J., assignors to the George F. Blake Manufacturing Company, of New Jersey. Filed Jan. 18, 1892. Serial No. 418,379. (No model.)

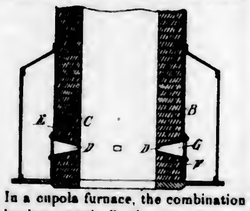


*Claim.*—1. The combination with the two vertical pump cylinders and their lifting buckets and valves, of direct acting steam cylinders and pistons with their piston rods in line and connected to the rods of the buckets, a frame and columns connecting with the pump cylinders and on which frame the steam cylinders are directly connected, a walking beam between the pump and the engine and a pivot for the same upon a bearing extending down from the frame, and link connections at the respective ends of the walking beam to the cross heads of the piston rods for unifying the action of the engine directly upon the lifting buckets substantially as set forth.

2. In a direct acting pumping engine, the combination with a pair of pump cylinders having lifting buckets and valves and valves in the lower part of the pump cylinders, of steam cylinders and piston rods connecting the buckets of the pump and the pistons of the engine, a walking-beam between the pump cylinders and the steam cylinders, links connecting the ends of the walking-beam with the piston rods, and a frame extending up from the pumps and to which the steam cylinders are directly connected and which frame also supports the pivots of the walking-beam substantially as set forth.

3. The combination in a pumping engine of two vertical pumping cylinders, buckets and rods for the same, a frame upon the pump cylinders, and steam cylinders directly connected to and supported by the frame, the piston rods of the engine being in line with and directly connected to the rods of the pumps, a walking beam between the pump and the engine and links connecting the walking-beam and the cross heads of the piston rods, the parts being arranged so that the links are in the same plane or nearly so as the piston rods at the termination of the respective strokes substantially as set forth.

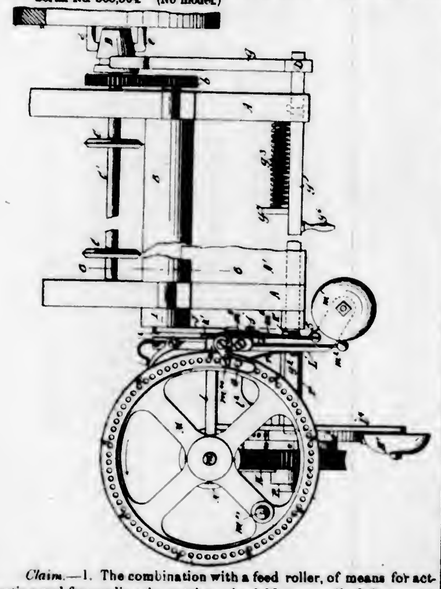
**526,914. CUPOLA-FURNACE.** JOHN H. WHITTIER, Detroit, Mich. Filed Mar. 26, 1894. Serial No. 505,092. (No model.)



*Claim.*—1. In a cupola furnace, the combination with a permanent outer shell having a vertically elongated tuyere opening near its base, a vertically sliding plate having a relatively smaller opening therein, means on the casing for adjustably securing the plate in place, and a tuyere arranged in line with the opening in the plate, substantially as described.

2. In a cupola furnace, the combination with a permanent outer casing having a vertically elongated tuyere opening therein, a vertically sliding plate having a relatively smaller opening therein and vertical elongated slots in its side, bolts on the casing passing through the slots, nuts on the bolts and a tuyere arranged in line with the opening in the plate, substantially as described.

**526,915. SIGNALING DEVICE FOR AUTOMATIC MEASURING-MACHINES.** JOHN H. WIENERS, New York, N. Y. Filed Mar. 14, 1894. Serial No. 503,564. (No model.)



*Claim.*—1. The combination with a feed roller, of means for actuating and forwarding the ratchet wheel M, a prescribed distance at each rotation of said feed roller, said ratchet wheel M, provided with a stud for tripping a bell hammer, said bell hammer and its bell, the worm gear H, having the trip $A^3$, and the hammer and bell actuated thereby, substantially in the manner and for the purpose set forth.

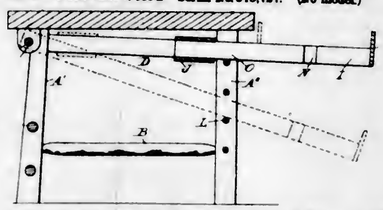
2. The combination, with a feed roller, of means for actuating and forwarding the ratchet wheel M, a prescribed distance at each rotation of the feed roller, said ratchet wheel M, a bell hammer and bell, and a stud adjustable upon the said ratchet wheel M, for the purpose of ringing said bell after a prescribed number of rotations of the feed roller, substantially in the manner and for the purpose described.

3. The combination with the long-distance wheel, H, and with the trip hammer and bell H', *o'*, of the trip $A^3$, made adjustable upon the said wheel H, for the purpose and substantially in the manner set forth.

4. In combination with the wheel H, formed with the recess *h'*, the bar *g'*, spring $g^3$, arm *g*, and clutch mechanism D, *e*, E, arranged and operating substantially in the manner and for the purpose described.

5. The combination, with the feed roller B', slide and pawl for actuating the ratchet wheel M, said ratchet wheel M, worm wheel N, gear wheel H, arm *g'*, and clutch D, of means for holding the clutch D, continuously in engagement with the friction disk E, independent of the wheel H, substantially in the manner and for the purpose described.

**526,916. MILKING-STOOL.** CORTLAND J. BLAKLEY, Laserne, Mich. Filed June 7, 1894. Serial No. 513,727. (No model.)

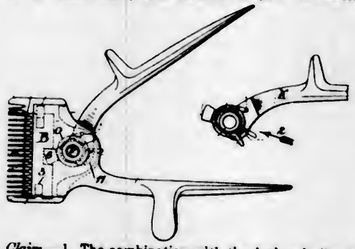


*Claim.*—1. A milking stool comprising a stool frame, a pail shelf hinged to the rear thereof, a sliding extension on said shelf adapted to be projected forward of the stool, and means for vertically adjusting the free end of the shelf and extension, substantially as described.

2. A milking stool comprising a stool frame, a pail shelf hinged to the rear of the stool beneath the seat, a sliding extension of the shelf adapted to be projected forward of the stool, and a vertical series of supports to hold the extension in its adjusted position, substantially as described.

3. In a milking stool, the combination of a seat and a three legged support therefor, a pail shelf hinged at the rear edge of the seat between the two legs and extending forwardly embracing the third leg, a series of pegs on the third leg, and a sliding extension of the shelf having notches near its outer end through which the pins are adapted to pass, whereby the shelf may be adjusted at different angles to the seat, and imperforate adjacent portions adapted to rest upon the pins, substantially as described.

**526,917. SHEARING-CLIPPERS.** EDWARD A. COCHRAN, Brooklyn, N. Y. Filed June 3, 1893. Serial No. 476,429. (No model.)



*Claim.*—1. The combination with the bed and vibrating shear, of a separate hollow cap and a handle integral therewith, a moving handle and its pivot between the cap and bed shear, a screw pivot pin for connecting the parts, a spring to act upon the moving handle and bearings for the two ends of the spring for holding the spring under tension when the movable handle is separated from the cap, substantially as set forth.

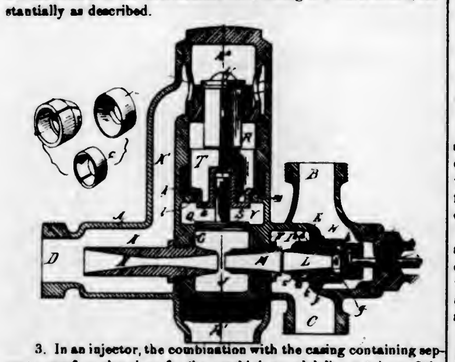
2. A hollow cap, an integral handle and the bed and vibrating shears, in combination with a pivot pin and a movable handle having a tubular hub around the pivot, a coiled spring around the hub, one end of which is connected with the handle, and a projection on the moving handle against which the other end of the spring bears when the handle is separated from the cap, there being a hole in the cap for receiving the projecting end of the spring when the parts are put together, substantially as set forth.

**526,918. INJECTOR.** JOHN DAMOUR, Detroit, Mich., assignor to the Penberthy Injector Company, same place. Filed Apr. 10, 1894. Serial No. 507,016. (Model.)

*Claim.*—1. The combination with the overflow chambers of the combining and delivery tubes of the injector and the overflow branch into which said chambers separately communicate, of valves interposed between said overflow branch and said overflow chambers, and co-operating to automatically control the overflow from said chambers into the overflow branch, and a water check applied to the valve controlling the overflow from the delivery tube, substantially as described.



2. In an injector, the combination with the casing containing separate overflow chambers for the combining and delivery tubes, of a vacuum valve adapted to be unseated by the pressure of the overflow from the combining tube, an intermediate valve or plunger adapted to be unseated by the pressure of the overflow from the vacuum valve, and a pressure valve adapted to be unseated by the intermediate valve and seated by the pressure of the overflow from the delivery tube under the control of the intermediate valve acting as a water check, substantially as described.



3. In an injector, the combination with the casing containing separate overflow chambers for the combining and delivery tubes, of the vacuum valve, an intermediate valve or plunger, and a pressure valve contained in a vertical arm of the casing one above the other, a pressure chamber formed in the arm of the casing above the pressure valve and communicating with the overflow chamber of the delivery tube, an intermediate valve chamber between the pressure valve and the intermediate valve or plunger, and communicating into the overflow branch of the injector, and a lower valve chamber between the intermediate valve and the vacuum valve and communicating through a port controlled by the vacuum valve with the overflow chamber of the combining tube, said valves operating as set forth to automatically control each other in seating and unseating, substantially as described.

4. In an injector, the combination with the casing containing separate overflow chambers for the combining and delivery tubes, of the vertical arm A' communicating with said overflow chambers and provided with an overflow branch R', the valves T and U in said arm interposed between said overflow chambers and the overflow arm, and the vacuum valve S interposed between the valve T, and the overflow chamber of the combining tube, and co-operating with the valve T to unseat the valve U by the pressure of the overflow from the combining tube, and to form a water check to delay the seating of said valve against the pressure of the overflow from the delivery tube, substantially as described.

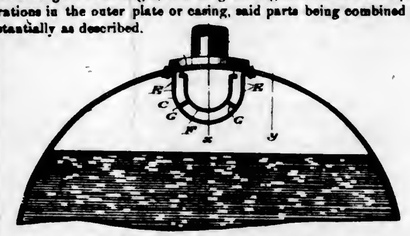
5. In an injector, the combination of the casing A, the overflow chambers K and J, the vertical arm A' of the casing communicating with the overflow chambers K and J and with the overflow branch R', the valves U, T and S contained in said vertical arm one above the other and co-operating as set forth to seat and unseat automatically, the cup or recess on top of the intermediate valve T and the pin hole *a* in the bottom of said cup, substantially as described.

6. The combination with the casing and partition separating the steam and water chambers of the injector, of a movable steam tube, extending through a stuffing box in said partition and adapted to form a water valve, lateral steam admission ports into the steam tube, and a valve seat around the rear end of the steam tube adapted to seat against the rear end of the stuffing box to form a steam valve for admitting the steam into the lateral ports of the steam tube, substantially as described.

7. The combination with the casing and partition separating the steam and water chambers of the injector, of the movable steam tube L provided with two valve seats adapted to form the steam and water valve of the injector as described, and a stuffing box consisting of the box *a*, the split rings *b c*, the collars *d f* and the spring *e* interposed between the collars, all arranged to operate substantially as described.

**526,919. SEPARATOR FOR STEAM-BOILERS.** CHARLES EDGERTON, Philadelphia, Pa. Filed May 31, 1894. Serial No. 512,946. (No model.)

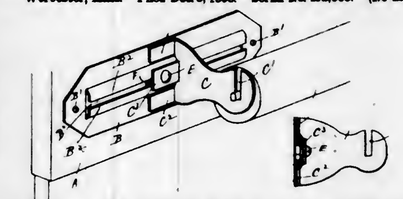
*Claim.*—1. A separator for steam boilers, comprising a bent plate having closed ends, said plate being attached to the interior of a boiler, below the steam outlet, and having a series of perforations in its sides, a second bent plate suitably supported within and out of contact with the first plate and having its edges bent outwardly to form longitudinal flanges, said flanges being located above the perforations in the outer plate or casing, said parts being combined substantially as described.



2. A steam separator consisting of a pair of bent plates suitably supported out of contact with each other, in the steam space, the outer plate being longitudinally attached to the boiler and provided with perforations, while the inner plate has longitudinally extending flanges arranged adjacent to said perforations, the above parts being combined substantially as described.

3. A steam separator consisting of a pair of bent plates suitably supported out of contact with each other in the steam space, the outer plate being longitudinally attached to the boiler, and provided with perforations, while the inner plate has its upper edges arranged adjacent to said perforations, said parts being combined substantially as described.

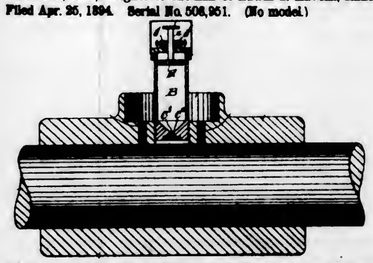
**526,920. ADJUSTABLE CURTAIN-BRACKET.** ROSELLE T. GREEN, Worcester, Mass. Filed Dec. 5, 1893. Serial No. 492,883. (No model.)



*Claim.*—1. In an adjustable curtain bracket, the combination of a slotted plate, provided with raised lips $B^2$, $B^2$, a bracket C provided with prongs $C^2$, $C^2$, adapted to bear upon the face of said slotted plate and a central prong $C^3$, adapted to be drawn into contact with the lips $B^2$, $B^2$ by the clamping mechanism and clamping mechanism by which said bracket is attached to said plate, substantially as described.

2. In an adjustable curtain bracket, the combination of a slotted plate, provided with the raised lips $B^2$, $B^2$, a bracket C having prongs $C^2$, $C^2$, arranged to bear upon the face of said plate, a central prong $C^3$ arranged to bear against said lips $B^2$, $B^2$, a clamping screw E carried by said central prong and entering the slot in said plate, and a nut F held below said lips and engaging said screw, said prongs $C^2$, $C^2$, being arranged to press with their tips upon the face of the plate and yield to the strain exerted by said screw and nut, substantially as described.

**526,921. HOT-BOX INDICATOR AND OILER.** ANDREW F. GIBBS, Cincinnati, Ohio, assignor of one-half to Edwin S. Havens, same place. Filed Apr. 26, 1894. Serial No. 508,951. (No model.)



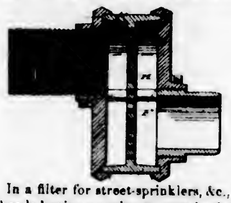
*Claim.*—1. In combination with a journal-box, an oil receptacle having a hollow shank with a fusible plug therein, said shank being secured within said box, an electrical alarm device, and a float within said oil receptacle, said parts being so located and constructed with reference to each other as that said alarm will be operated by the lowering of the float, as set forth.

2. The combination of journal box A, oil receptacle B attached to and within the shell of said box, said receptacle having discharge pas-

sage C⁸ with fusible material C⁹ therein, cap D, float E having a stem *e* projecting through an opening in said cap, metallic flange $d^3$ attached to the opposite end of said stem, electric poles *d* supported in a vertical plane beneath said flange, and wires leading off from said poles to a suitable battery and annunciator, substantially as set forth.

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**526,922. FILTER FOR TANKS OF STREET-SPRINKLERS, WATER-TANKS, BOILERS, RESERVOIRS, METERS, &c.** EDWARD HENRY, Jacksonville, Ill. Filed Apr. 9, 1894. Serial No. 506,907. (No model.)

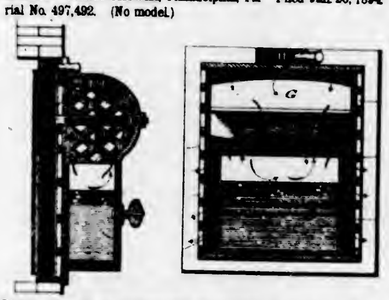


*Claim.*—1. In a filter for street-sprinklers, &c., the combination of the cylinder heads having annular grooves in their inner opposing faces near the edges of the same, a perforated disk arranged between the cylinder heads and having an integral double annular flange at its edge projecting beyond its two sides and engaging the annular grooves in the cylinder heads, means for securing said disk and heads together, a supply pipe leading through one of the cylinder heads near the bottom of the same, and a discharge pipe leading from the opposite head at the top of the same.

2. The improved filter herein described and shown consisting of a pair of cylinder heads having annular grooves in their inner faces, a perforated disk having a double annular flange engaging said grooves, means for securing the disk and cylinder heads together, a supply pipe secured in one cylinder head at the bottom of the same, a double-threaded nipple secured in the opposite cylinder head at the top thereof and adapted to pass through and engage the wall of a street-sprinkler or other tank, a discharge tube secured on the end of said nipple, and a check valve hinged to and resting upon the end of said discharge tube.

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**526,923. AIR-MOISTENING ATTACHMENT FOR HOT-AIR REGISTERS.** HENRY ILLOWIT, Philadelphia, Pa. Filed Jan. 20, 1894. Serial No. 497,492. (No model.)



*Claim.*—1. An air moistening and purifying attachment for a hot air register, consisting of a casing, having an imperforate upper front portion, in which is suitably journaled a fan, and a pan in the lower portion of said casing, the sides of the casing having openings throughout substantially their entire length, whereby the egress of the hot air is greatly facilitated, substantially as described.

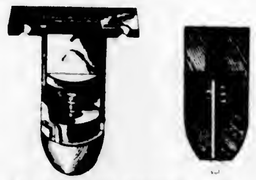
2. An air moistening and purifying attachment for a hot air register, consisting of a casing, a water receptacle in the lower portion thereof, and a fan above the same adapted to be subjected to the hot air from the register, the side walls of said casing having openings throughout their entire length, a space being provided between said side walls and the ends of the water receptacle, whereby the egress of the hot air is greatly facilitated, substantially as described.

3. A casing closed at the top portion, and open at its lower front portion, the side walls of said casing being provided with openings throughout their entire length, a fan in the top portion, and a pan in the lower portion of said casing, the front D of said pan forming a continuation of the upper part of the casing, and serving as a door, whereby the removal of said pan alone, permits of access to the interior of the device, the above parts being combined substantially as described.

4. An air moistening and purifying attachment for a hot air register, consisting of a casing, a fan mounted in the upper part thereof, said casing having a closed front, and openings in its sides, a removable pan filling the lower part of said casing below said fan and having its front wall, forming a continuation of the wall of the casing, and means substantially as described for securing the latter to the wall of a register, said parts being combined substantially as described.

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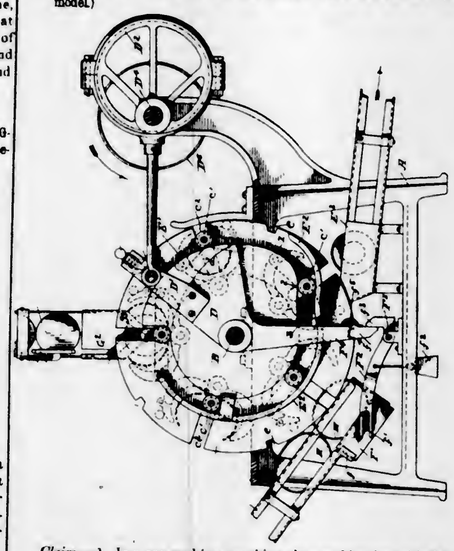
**526,924. DOOR-BOLT SOCKET.** AUGUSTUS C. JOCHMUS and FRANK M. BOUGHTON, Monterey, Cal. Filed Apr. 5, 1894. Serial No. 506,415. (No model.)



*Claim.*—In a bottom door bolt socket, the combination of a lower head with a shoulder, a central vertical opening and oppositely extending pins or studs, a spring mounted in the central opening, a socket closing head engaging the said spring, and an upper striker plate through which the said socket head extends and lies flushed with the upper surface of the same, the said striker plate being formed with an integral tube or casing which surrounds the remaining portion of the device and has lower slots to engage the said pins or studs, substantially as described.

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**526,925. CAN-MAKING MACHINE.** AXEL JOHNSON and HENRY C. BLACK, Oakland, Cal. Filed Jan. 5, 1894. Serial No. 495,766. (No model.)



*Claim.*—1. In a can making machine, the combination with the carrier wheel provided with clamping jaws, of mechanism for placing body blanks within the jaws and heads upon the blanks, and of devices for closing the jaws in order to fold the blanks around the can heads and closing the side seam of the can body.

2. A can making machine provided with devices for receiving can body blanks and can heads, and with mechanism for forming the can body around the heads, closing the side seam of the can and discharging the can from the machine.

3. In a machine for making cans having tight fitting inside heads, the combination with a device for receiving the can body blank, and can heads, and folding the can body blank around the heads and holding the same thereround until the side seam is secured, with mechanism for closing the side seam of the can, thereby securing the can body outside of the heads.

4. In a machine for making cans having tight fitting inside heads, the combination with a chute or devices for delivering the can body blanks to the machine, a movable device for receiving the can body blanks, a chute or device for placing the head within the can body blank, mechanism for closing the movable device in order to fold the can body blank around the can heads and holding the same thereround until the side seam is closed, and mechanism for closing the side seam, thereby securing the can body outside the can heads.



5. In a can making machine, the combination with the rotatable carrier wheel, the clamping jaws secured to and carried by the carrier wheel, said jaws adapted to receive the can body blanks and fold the same around the heads, a feed chute for supplying blanks to the clamping jaw and a device for conveying the blanks from the chute to the clamping jaws.

6. In a can making machine for automatically assembling can body blanks and can heads and folding the blank around the heads, whereby a can with tight inside fitting heads is produced, the combination with the movable clamping jaw for receiving the blanks and heads, devices for feeding the blanks and heads to the jaw, mechanism for closing the clamping jaw in order to fold the body blank around the heads and so holding the same until the side seam of the can is closed, and of devices for closing the side seam of the can body while held around the heads.

7. In a can making machine, the combination with the carrier wheel, of the movable clamping jaw, devices for opening and closing the clamping jaw, the mandrel for closing the seam of the can formed by the clamping jaw, mechanism for forcing the mandrel in or out of the jaw, lift rod for raising the mandrel so as to bear against the under face of the seam of the can, and of a device for forcing the jaw tightly upon the seam of the can.

8. In a can making machine, the combination with the clamping jaw, for receiving can body blanks and heads mechanism for closing the clamping jaw in order to fold the body blank around the can heads, a device for maintaining the jaw closed until the side seam of the can is closed, a mandrel for entering the can body in order to close the seam, mechanism for forcing the mandrel within the can body and raising the same so as to bear against the under face of the side seam, device for forcing the clamping jaw firmly upon the side seam, and of mechanism for lowering the mandrel and withdrawing the same from within the can after the side seam is closed.

9. In a can making machine, the combination with the clamping jaw, of the mandrel adapted to enter the can body formed by the clamping jaw, of mechanism for imparting a longitudinal movement to the mandrel, and of a device for forcing the clamping jaw tightly against the side seam of the can body held within the jaw in order to close the same.

10. The combination with the clamping jaw of a can making machine, of a mandrel adapted to enter within the can body formed by the machine, and of mechanism for imparting longitudinal and vertical movement to the mandrel, whereby the mandrel is forced into the can, raised to bear firmly against the under face of the side seam, lowered after the seam is closed and then removed from within the can.

11. In a machine for forming cans by folding the body around the heads, the combination with the clamping jaws, of mechanism for opening and closing the jaws, of the mandrel for bearing against the under face of the side seam of the can, mechanism for imparting a reciprocating and vertical movement to the mandrel, and of a device for forcing the clamping jaw tightly against the upper face of the side seam, and causing it to close by pressure upon the mandrel.

12. In a can making machine, the combination with the carrier wheel, the clamping jaw composed of two sections swinging upon the same shaft, and of mechanism for imparting an intermittent motion to the carrier wheel, said mechanism comprising therewith a sector cam which upon its forward thrust serves to close the clamping jaw and upon its rear movement carries the carrier wheel therewith.

13. In a can making machine, the combination with the carrier wheel, of the mandrel, mandrel rod, mechanism for moving the rod in or out in order to cause the mandrel to enter the can held within the carrier wheel or to be withdrawn therefrom, and of a device for raising and lowering the mandrel.

14. In a can making machine, the combination with movable devices for receiving can body blanks within the same, of mechanism for causing the closure of the movable devices in order to fold the can body around the can heads, and of a mandrel for bearing against the under face of the side seam of the can body, said mandrel having a longitudinal and vertical movement.

15. In a can making machine, the combination with the carrier wheel, of a movable clamping jaw for receiving body blanks and heads, mechanism for closing the clamping jaw whereby the body blank is folded around the cam heads, and devices for closing the side seam of the can.

16. In a can making machine, the combination of devices for receiving can body blanks and heads, folding the body blanks around the heads, closing the side seam thereof and discharging the completed can from the machine.

17. In a can making machine, the combination with the movable clamping jaw composed of two sections, one of said sections having the upper portion thereof secured thereto by a spring hinge, mechanism for feeding can body blanks and can heads to the clamping jaw when the sections are opened, the heads being placed inside the body blanks, devices for closing the clamping jaw in order to fold the body blank around the can heads, and device for closing the side seam of the can, whereby the heads are tightly secured inside the can body.

18. In a can making machine, the combination with the can head feed chutes, movable can head guide secured upon the lower ends of the chutes, said guide having a vertical movement, devices for raising said guide as the clamping jaw of the machine is closed, and of a device for maintaining the guide in its raised position until the next clamping jaw comes thereunder.

19. In a can making machine, the combination with the can head feed chute, the can head guide movably secured to the lower end thereof, and mechanism for feeding can heads to the guide as the guide is raised and lowered.

20. In a can making machine, the combination with the can head feed chute, the spring actuated dog secured thereto for regulating the feed of the can heads, and a movable guide, secured to the lower end of the can head feed chute, for receiving the can heads from the can head feed chute and conveying same to the clamping jaws of the can machine.

21. In a can making machine, the combination with the rotatable carrier wheel the clamping jaws secured thereto of the can head feed chute, a movable guide device secured to the lower end of the can head feed chute for receiving the heads from the chute and placing same within the jaw and holding same in place therein until the jaw is closed and devices for closing the jaw and raising the guide from the same.

22. In a can making machine, the combination with the carrier wheel, said wheel composed of two disks one of which is provided with a series of notches around the periphery thereof, clamping jaws held between the disks, a cam carrying a spring actuated catch for engaging the notched disk of the carrier wheel, mechanism for reciprocating the cam in order to impart an intermittent motion to the carrier wheel, and of devices for closing and opening the clamping jaws during the rotation of the carrier wheel in order to form the can and discharge the same from the machine.

23. In a can making machine, the combination with the carrier wheel, said wheel composed of two disks, one of which has a series of vertical slots cut therein, clamping jaws secured between the disks, said jaws composed of hinged sections, straps connecting the sections of the jaws, axle to which the free ends of the straps are secured, said axle extending through the vertical slots in one of the disks of the carrier wheel, a roll secured to the outer end thereof, a reciprocating cam for raising said roll in order to close the clamping jaw, and of mechanism for operating said cam.

24. In a can making machine, the combination with the carrier wheel, a mandrel, mandrel casing secured to the carrier wheel, mandrel rod, mechanism for forcing the mandrel rod in or out of the can, and devices for raising and lowering the mandrel.

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**526,926. GAGE-MEASURE.** WILLIAM J. LITTELL and MATILDA R. LITTELL, Washington, D. C. Filed Nov. 23, 1893. Serial No. 491,749. (No model.)



*Claim.*—1. As an improved article of manufacture, a measure or gage comprising a main member provided with a fixed indicating point or finger having a straight, outer edge located at right angles to said main member, and a longitudinally-adjustable slide working on the latter and provided with a corresponding indicating point or finger having a similar straight outer edge; substantially as set forth.

2. As an improved article of manufacture, a measure or gage comprising a main member provided with a fixed indicating point or finger having a straight, outer edge located at right angles to said main member, a longitudinally-adjustable slide working on the latter and provided with a corresponding indicating point or finger having a similar straight outer edge, and means for automatically locking said slide in adjusted position; substantially as set forth.

3. As an improved article of manufacture, a measure or gage consisting of a main member provided with a longitudinal series of perforations or depressions, and a longitudinally-adjustable indicating slide working on said main member and comprising an integral, yielding top plate provided with an inwardly-projecting stud adapted to engage one of said perforations or depressions; substantially as set forth.

4. In a measure or gage, the combination, with a main member provided with a graduated scale, and with a longitudinal series of perforations or depressions located respectively at the divisional points of said scale, of a longitudinally-adjustable slide provided with a yielding stud adapted to automatically engage one of said perforations or depressions to lock the slide in adjusted position; substantially as set forth.

5. In a measure or gage, the combination, with a main member provided with a scale upon its front face and a longitudinal series of perforations or depressions, of a longitudinally-adjustable slide encircling said member and provided with an indicating point or finger, and with a yielding stud projecting inwardly from said slide and adapted to coincide with and engage one of said series of perforations or depressions when the point or indicator registers with a divisional point of the scale; substantially as set forth.

6. As an improved article of manufacture, a sewing measure or gage consisting of a main member comprising an elongated plate provided with a longitudinal series of perforations or depressions, and a slide working on said main member and constructed from a spring-metal strip bent into the form of a band and having its top plate provided with an inwardly-projecting stud adapted to engage one of the series of perforations or depressions in the main member; substantially as set forth.

7. As an improved article of manufacture, a sewing measure or gage consisting of a main member comprising an elongated plate provided at one end with a fixed indicating point or finger projecting from one side thereof, and with a longitudinal series of perforations or depressions, and an adjustable slide encircling said main member and constructed from a spring-metal strip bent into the form of a band and having an indicating point or finger corresponding to the point or finger of the main member, said slide being provided with a stud struck inwardly from its top plate and adapted to engage one of said series of perforations or depressions; substantially as set forth.

8. As an improved article of manufacture, a measure or gage consisting of a main member comprising an elongated plate provided at one end with a fixed indicating point or finger projecting from one side thereof, and with a longitudinal series of perforations or depressions, and an adjustable slide encircling said main member and constructed from a spring-metal strip bent into the form of an unsecured band and having an indicating point or finger projecting from the flat bottom plate of the slide and corresponding to the point or finger of the main member, said slide being provided with a stud struck inwardly from its top plate and adapted to engage one of said series of perforations or depressions; substantially as set forth.

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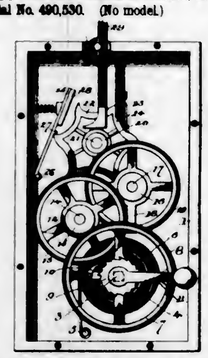
**526,927. FENCE.** JAMES H. LOWE, Liter, Ill. Filed June 6, 1894. Serial No. 513,682. (No model.)



*Claim.*—The improved fence herein described and shown consisting of uprights or stiles, central horizontal bars secured to said uprights or stiles and having their opposite ends arranged respectively between the edges of one of the uprights or stiles and projecting beyond the opposite upright or stile and overlapping the adjacent upright or stile of the adjoining panel, braces arranged on opposite sides of the line of the fence and having their upper ends bearing against the overlapped upright or stile and the overlapping end of the horizontal bar, a single securing bolt inserted transversely through the overlapping end of the horizontal bar, the overlapped upright or stile and the upper ends of both braces, and line wires secured to the uprights or stiles and extending between the same above and below the central horizontal bar.

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**526,928. MOTOR.** JAMES S. MACKIE, Barre, Vt. Filed Nov. 10, 1893. Serial No. 490,530. (No model.)

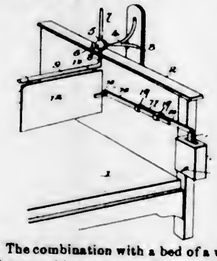


*Claim.*—1. In a motor, the combination of a series of wheels having rubber covers on their peripheries, a spring for operating said wheels, series of metal disks engaging said wheels, an escape wheel having one of said disks on its shaft engaging one of said wheels, a pawl or pallet engaging said escape wheel, and a lever having a bifurcated inner end embracing said escape wheel and adapted to be operated thereby and also provided with outwardly projecting arms to engage said pawl or pallet, substantially as described.

2. In a motor, the combination of a series of rubber covered wheels arranged in succession as a train, a series of metal disks on the shafts of said wheels and engaged by the rubber coverings of the latter, an escape wheel, a pawl or pallet adapted to engage the teeth of said escape wheel, and having a rubber pad thereon, a bifurcated lever having a wooden block at the front termination of its bifurcation and adapted to be engaged by the escape wheel, and arms at the rear to strike the said rubber pad of the pawl or pallet, said escape wheel moving through the bifurcation of the lever, and a spring for operating the said parts, substantially as described.

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**526,929. FAN.** JAMES S. MACKIE, Barre, Vt. Filed Nov. 10, 1893. Serial No. 490,531. (No model.)



*Claim.*—1. The combination with a bed of a vertically adjustable rod adapted to be turned in a horizontal plane to one side or the other and comprising the horizontal member and vertical member arranged at a right angle to the inner end thereof, a bracket in which said vertical member is adjustably mounted, a fan movably attached to said horizontal member, a clamp attached to the inner edge of said fan and vertically adjustable thereon, an adjustable bar or pitman attached to the said clamp, and operating mechanism attached to the outer end of said bar or pitman for operating the fan, substantially as and for the purpose specified.

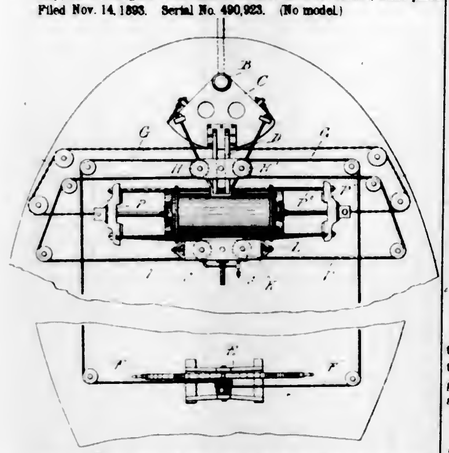
2. In a device of the character set forth, the combination with a support of a vertical and horizontally adjusted rod, a flat vertically disposed fan attached to said rod, a clamp attached to the inner edge of the said fan and vertically adjustable thereon and an adjustable bar or pitman attached to said clamp, substantially as and for the purposes specified.



3. In a device of the character set forth, the combination of a fan, a clamp attached to the inner edge thereof and vertically adjustable thereon, and an adjustable bar or pitman attached to the said clamp, substantially as described.

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**526,930. VESSEL STEERING-GEAR.** DANIEL M. MAXON, Bay City, Mich., assignor of one-half to Walter H. Whittemore, same place. Filed Nov. 14, 1893. Serial No. 490,923. (No model.)



*Claim.*—1. In a steering gear, the combination of a power cylinder, a piston therein, a valve to control said piston having supply ports to admit pressure to both sides of the piston at the same time, connections from the opposite ends of the piston to the rudder, a steering wheel, connections from the wheel to the opposite ends of the valve and the piston, substantially as described.

2. In a steering gear, the combination with the rudder, of a power piston for actuating the same, a cylinder in which said piston is located, a controlling valve for the cylinder having supply ports for admitting equal pressure to both sides of the piston, a restricted exhaust passage from the cylinder, and a wheel for actuating the valve, substantially as described.

3. In a steering gear, the combination with a wheel, a rudder, and a valve controlled power cylinder, of cable connection from the wheel on opposite sides, sheaves on the tiller on which said cable is looped, sheaves on the valve operating bar over which said cable is looped, and a piston rod extending both sides of the piston to the ends of which the opposite ends of the cables are secured, substantially as described.

4. In a steering gear, the combination of a power cylinder, a piston therein, connections from the piston to the rudder, a valve chamber, a valve having ports adapted to admit steam to both sides of the piston at the same time, a piston rod extending through both ends of the valve chamber, a plate connecting the opposite ends of the rod beside the valve chamber, sheaves on the plate, and cables from the rudder passing in opposite directions around the sheaves and connected to opposite ends of the piston rod of the power piston, substantially as described.

5. In a steering gear, the combination of a power cylinder, a piston therein connected from opposite sides to opposite sides of the rudder quadrant, a valve controlling the admission of fluid to the cylinder, a wheel, and connection from the wheel to the rudder, valve and piston, whereby the wheel may be used to operate the valve or the rudder, substantially as described.

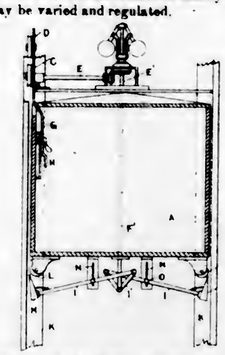
6. In a steering gear, the combination of the power cylinder, a valve chamber, the valve M therein, having tubular heads *d* provided with a series of restricted ports *e*, ports controlled by the valve to admit steam to both ends of the cylinder at the same time, and means for actuating the valve; substantially as described.

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**526,931. SAFETY-BRAKE FOR ELEVATORS.** THOMAS MAYBRICK and WILLIAM J. ASHWORTH, Manchester, England. Filed Apr. 21, 1894. Serial No. 508,519. (No model.)

*Claim.*—1. The combination of the fixed vertical guide, the hoist guided thereby, a governor geared to be driven at a speed relative to that of the hoist, a wedge arranged and adapted to enter between the hoist and its fixed guide, and a lever connection between the governor and the wedge for throwing the latter into action when the hoist is moving at abnormal speed

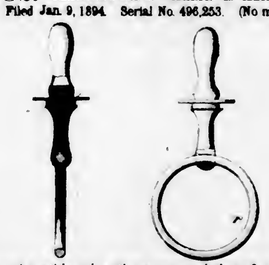
2. The combination of the fixed vertical guide, the hoist guided thereby, a governor geared to be driven at a speed relative to that of the hoist, a wedge arranged and adapted to enter between the hoist and its fixed guide, a lever for actuating said wedge actively connected with the governor, and having an adjustable pivot or fulcrum whereby the extent of movement necessary to throw the wedge into action may be varied and regulated.



3. The combination of a hoist, a governor, gearing, and connections for driving the governor at a variable rate of speed according to the speed of the hoist, connections F F' I', and I, wedges M, and guides K with adjustable pivots O and slotted guides N, substantially as and for the purpose described.

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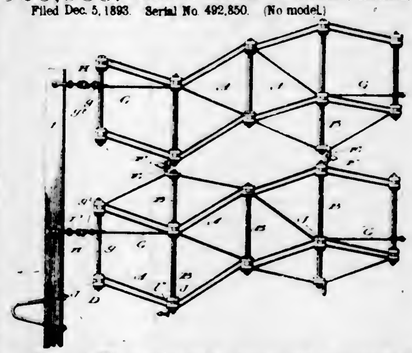
**526,932. TEETHING-RING.** MARTIN L. METZGER, New York, N. Y. Filed Jan. 9, 1894. Serial No. 496,253. (No model.)



*Claim.*—A teething ring, the same consisting of a stem bent upon itself to form two opposing and contacting members, a transverse aperture being made at the lower portion of the stem and at the lower portion of the space between the members, annular ribs formed on the opposite end of the stem, a ring passed through the said aperture in the stem, and a nipple located on the end having the said ribs, substantially as shown and described.

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**526,933. HARROW.** WILLIAM W. MICHAUX, Michaux, Va. Filed Dec. 5, 1893. Serial No. 492,850. (No model.)



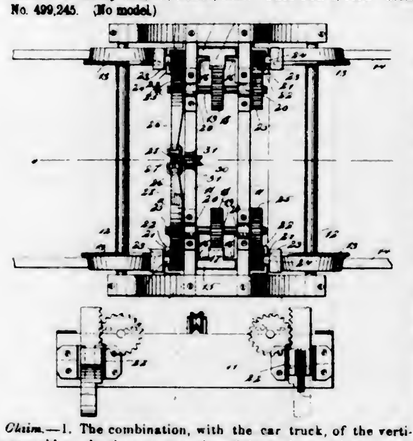
*Claim.*—1. The combination in a harrow with strips arranged on edge and zig-zag, of strips also set on edge and independent of the strips of the frame and extending from the front and rear cross bolts

of the frame in the line of draft to the next transverse bolts and thence oppositely in an inclined direction and connected with opposite ends of the central transverse bolts of the frame, substantially as specified.

2. The combination in a harrow with strips arranged on edge and zig-zag, of strips also set on edge and independent of the strips of the frame and extending from the front and rear cross bolts of the frame in the line of draft to the next transverse bolts and thence oppositely in an inclined direction and connected with opposite ends of the central transverse bolts with the front and rear ends of said strips bent upon themselves to form vertical eyes for the attachment of the draft appliances, substantially as specified.

3. The combination in a harrow frame of strips on edge, and spacing tubes and horizontally-disposed bolts with nuts, of a casting with flanges and lugs with oppositely-disposed faces, a plate with flanges, a tooth with a rectangular shank, and a block with a socket to receive one end of a tube, all held by the said bolt, substantially as specified.

526,934. CAR-BRAKE. JOHN C. MINER, Smyrna, assignor of one-half to Henry Fox, Jr., Nelson, Nebr. Filed Feb. 6, 1894. Serial No. 499,245. (No model.)



*Claim.*—1. The combination, with the car truck, of the vertically movable racks thereon, a portion of the racks carrying shoes to engage the car wheels, and the remaining racks carrying shoes to contact with the track rails, substantially as described

2. The combination, with the car truck, of the vertically movable racks thereon, a lever and gear mechanism for operating the racks, brake shoes carried by a portion of the racks to engage the car wheels, and a second set of brake shoes carried by the other racks and adapted to engage the rails of a track, substantially as described.

3. The combination, with the car truck, and the vertically movable racks thereon, of the shafts and gear wheels for moving the racks, and the spring-repressed levers for turning the shafts, substantially as described.

4. The combination with a car truck, of vertically movable racks, shoes having shanks pivoted directly to the lower ends of said racks, and a lever and gear mechanism for actuating said racks and shoes, substantially as described.

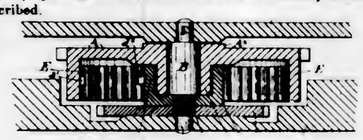
5. The combination, with the car truck, of the vertically movable racks thereon, the shoes carried by the racks and adapted to engage the car wheels, the shafts journaled on the truck and geared to the racks, the levers secured to the shafts, and mechanism for operating the levers, substantially as described.

6. The combination, with the car truck, of the vertically movable racks thereon, brake shoes pivoted to the racks and adapted to engage the car wheels, the shafts journaled on the truck and geared to the racks, the inwardly-extending spring-repressed levers secured to two of the shaft gears, and means for moving the levers against the tension of the spring, substantially as described.

7. The combination, with the car truck having the parallel cross bars, of the vertically movable shoes mounted between the bars to engage the track rails, rack bars on the shoes, shafts journaled adjacent to the rack bars, cog wheels on the shaft to engage the rack bars, and a lever mechanism for turning the shafts, substantially as described.

526,935. MAINSPRING-BARREL FOR WATCHES. CHARLES MOSLER, Geneva, Switzerland, assignor of one-half to Prosper Nordmann, same place. Filed June 20, 1894. Serial No. 515,122. (No model.)

*Claim.*—In watches, the combination of a spring-barrel A, having a projection $A^2$ and a tubular hub A', with an axis B having pivots $b'$ and $b^3$ and with a core D fixed to the said axis B and formed of a tubular portion $d'$ and of a bottom $d$ the tubular hub A' of the barrel projecting into the tubular core D, substantially as shown and described.

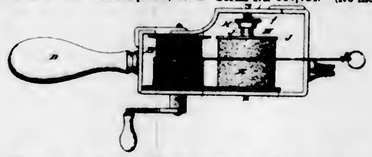


526,936. PROCESS OF MAKING BRICKS FROM COAL-DUST. BERNHARD MÜLLER, Chemnitz, Germany. Filed July 7, 1892. Serial No. 439,287. (No specimens.) Patented in Germany Apr. 12, 1892, No. 70,481; in France May 20, 1892, No. 221,785; in England May 24, 1892, No. 9,864; and in Belgium June 8, 1892, No. 100,054.

*Claim.*—1. The process of making coal briquets which consists in molding into blocks bituminous coal dust, containing from five to twelve per cent. of water, under an abnormally high pressure of not less than eight hundred kilograms, and under an abnormally low temperature of from 40° to 70° centigrade, the bituminous matter, under the high pressure and the moisture, exuding from the pores of the coal particles and serving to compactly unite them together, while owing to the low temperature, the mass remains wholly in an uncoked condition, substantially as set forth.

2. The process of making coal briquets, which consists in mixing with coal dust containing from five to twelve per cent. of water, one to three per cent. of tar, and molding said mass into blocks under an abnormally high pressure of not less than eight hundred kilograms and under an abnormally low temperature of from 40° to 70° centigrade, the oily and tarry matter under the high pressure and the moisture serving to compactly unite the coal particles, while owing to the low temperature, the mass remains wholly in an uncoked condition, substantially as set forth.

526,937. LINE-CHALKING DEVICE. JOHN W. NEFF, Buckhannon, W. Va. Filed Apr. 16, 1894. Serial No. 507,781. (No model.)



*Claim.*—1. A combined line holder and chalker, comprising a supporting frame, having a longitudinally rearwardly projecting handle a line reel journaled transversely in such frame adjacent the handle end, and a chalk holding reel journaled in front of and parallel to the reel shaft, all arranged substantially as shown whereby after the free end of the line is fastened, by grasping the handle and bearing the chalk against the line, such line will be chalked as it is reeled out as specified.

2. As an improvement in line holders and chalkers, in combination with line holding and chalking means substantially as shown, of a supporting frame therefor, having a handle at one end, and a notched projection at the other end, all arranged substantially as shown and for the purposes described.

3. An improved chalk line holder and chalker, comprising a main frame having a longitudinally rearwardly extending handle, line holding means supported in such frame arranged to feed the line longitudinally outward from the handle end, and a longitudinal forward projecting notched member on the front end of the frame as and for the purposes specified.

4. An improved chalk line holder and chalker, comprising a supporting frame, a line reel journaled transversely in the rear end thereof, a handle member projected rearwardly from such end of the frame, said reel having an outwardly projecting crank handle, a chalk holding reel journaled in front of and parallel with the line reel, and a notched member projected forward from the chalk reel end of the frame all arranged substantially as shown and described.

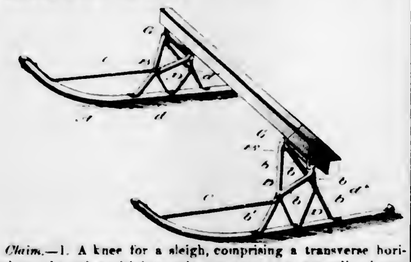
5. An improved chalk line holder and chalker, consisting of a main frame having a hand hold at one end, a line reel journaled in such end having an operating crank handle and the opposite end having a notched projection, said reel having a toothed disk, a chalk holding shaft journaled with the line reel, said shaft having a fixed toothed disk geared with the line reel toothed disk, and a threaded section, a chalk disk loosely held on the shaft, a presser disk loosely held on



such shaft and an adjustable thumb screw on the threaded end of such shaft all arranged substantially as shown and for the purposes described.

6. An improved chalk line holder and chalker comprising a frame, having a projecting handle at one end, a line reel journaled transversely in the frame at the handle end, having its shaft projected at one side and provided with a crank handle, a chalk reel journaled in front of and parallel with the line reel, and gear mechanism connecting such line and chalk reels whereby the chalk will be rotated reversely to the feed of the line, substantially as shown and described.

526,938. BOB-SLEIGH. SOREN C. PAULSON, Wahpeton, N. D., assignor of one-half to H. L. Eastman, same place. Filed Feb 23, 1894. Serial No. 501,224. (No model.)



*Claim.*—1. A knee for a sleigh, comprising a transverse horizontal round portion with integral convergent arms extending in opposite directions therefrom and merging into a single arm on each side, and a substantially U-shaped brace secured to the said arms and adapted for connection with the runner, substantially as specified.

2. The combination with a bolster, of runners mounted for independent oscillatory movement and each mounting comprising inclined arms uniting at their upper ends in a horizontal, transverse portion, a substantially U-shaped brace between said arms, and a brace connecting the front end of the runner with the foremost of said arms, substantially as specified.

3. The combination with a bolster and a runner, of a knee having a horizontal portion parallel with the bolster and pivotally held to the under side thereof and inclined integral convergent arms secured to the runner and extending in opposite directions from said horizontal portion, a brace between said arms and secured to the runner, a brace connecting one of the arms with the front end of the runner, a wear plate between the under face of the bolster and the horizontal portion of the knee, and clips securing the said horizontal portion and wear plate to the bolster, substantially as specified.

526,939. DRAFT-COMPELLING DEVICE. BENJAMIN W. PEEL, Chicago, Ill. Filed Mar. 17, 1894. Serial No. 504,061. (No model.)



*Claim.*—1. The combination with an apertured chimney, a cap thereon and exterior pockets extending the entire length of the chimney and apertured at their lower ends, of a concave perforated horizontal collar beneath said pockets projecting beyond the cap, adapted to catch drippings therefrom and deflect currents of air into the pockets, substantially as specified.

2. The combination with a chimney having upwardly inclined slits therein, of a plurality of exterior pockets extending the entire length of the chimney and apertured at their lower ends, and a concave perforated horizontal collar, surrounding the chimney at the base, and common to all of the pockets, substantially as specified.

3. The combination with a chimney having upwardly inclined slits therein, and a conical cap thereon, of a plurality of exterior tapering apertured pockets extending the entire length of the chimney, tapering to and closed at their top and closed at their bottom by a concave perforated horizontal collar adapted to deflect currents of air into the pockets, substantially as specified.

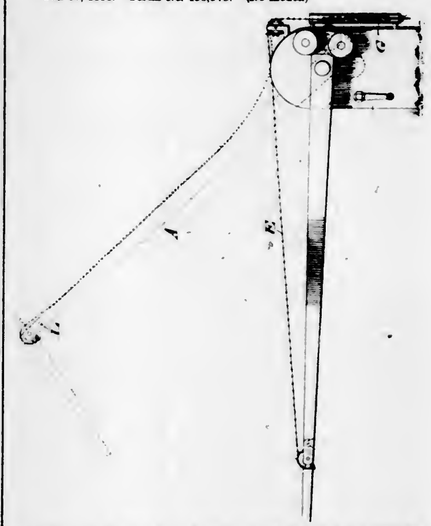
526,940. JUG OR JAR. JOHN M. PETTIT and JOSEPH W. WATT, McLuney, Ohio. Filed May 29, 1894. Serial No. 512,930. (No model.)



*Claim.*—1. As a new article of manufacture, a jug or jar having the annular recess or channel near the top, the ears arranged in said channel, and the concaved bottom having the annular flange or rim provided with the recesses or seats to receive said ears.

2. As a new article of manufacture, a jug or jar having an annular channel at the top thereof, lugs on the top of the jug and also in the channel and having the bottom formed with notches to receive the lugs and hold the jugs when nested.

526,941. GATE FOR RAILWAY-CROSSINGS. GEORGE W. PHILLIPPI, Reading, assignor to Richard M. Popham, Philadelphia, Pa. Filed Oct. 17, 1893. Serial No. 488,373. (No model.)

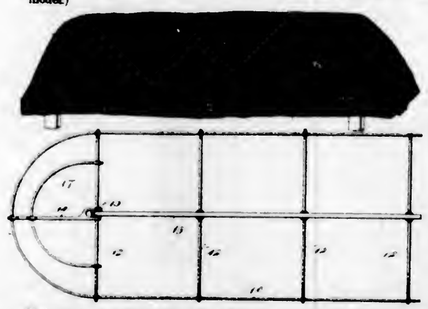


*Claim.*—1. A gate for railway crossings having a pivoted main part provided with a pin near its outer end, an extension C pivoted to said outer end and having a toothed segment connected with its axis, and a rearwardly extending tongue K adapted to be supported on said pin, the box B in which said main part is pivoted, the sprocket wheel F mounted in said box B, the chain E having one end secured to said segment and passing around the same, and a spring secured to the other end of said chain for taking up the slack of the same, said parts being combined substantially as described.

2. A gate for a railway crossing having a swinging extension mounted thereon, provided with a tongue adapted to rest on a pin on the gate proper, a toothed segment on the axis of said extension, a sprocket chain connected at one end with said segment, and passing over the same and over a sprocket wheel having a different center from the axis of the main part of the gate, a casing attached to the

gate post, a coiled spring in said casing secured to said sprocket chain, and a nut outside of said casing on a threaded end of said spring for adjusting the tension of said spring, said parts being combined substantially as described.

526,942. **FOOD-SCREEN.** JOHN H. RHOADS and GUSTAVE H. SPANNAGEL, Nokomis, Ill. Filed May 2, 1894. Serial No. 509,769. (No model.)



*Claim.*—1. A screen supporting frame comprising the horizontal frame 10, the arched bars pivotally connected at their ends with the sides of the frame, a longitudinal rod 13 connecting the arched bars and a latch 14 pivoted to one of the end arched bars at the top thereof and having a catch 16 at its free end to engage the transverse end bar of the frame 10 and hold the arched bars raised.

2. A screen supporting frame comprising the horizontal frame 10 the side bars of which are connected at one end and disconnected at one end to permit two frames to be placed end to end, a series of arched bars 12 pivotally connected at their ends to the said side bars, a longitudinal rod 13 connecting the arched bars, a latch 14 pivoted to the arched bar nearest the closed end of the frame and provided at its free end with a catch to engage the end bar 11 thereof and hold the arched bars raised, and an arched bar 17 secured between its ends to the latch 14 and pivotally connected at its ends to curved bar 12 to which said latch is pivoted, substantially as described.

526,943. **CIGAR-PACKAGE.** SAMUEL ROMAN, Montreal, Canada. Filed June 15, 1894. Serial No. 514,659. (No model.)



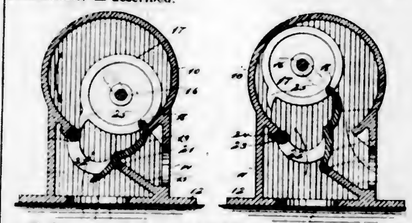
*Claim.*—1. In a cigar package a box composed of the base plate, the fixed upright end piece at one edge of said base plate, the end piece hinged at the opposite edge of the base plate, the side pieces or wings hinged at the side edges of the base plate and provided at their edges with projecting flanges which lap along the outer sides of the fixed and hinged end pieces said end pieces being triangular, and a clasp or fastening by which to secure the upper free edges of the end pieces or wings together when the box is closed, substantially as set forth.

2. A cigar package substantially as described consisting of the bundle or package of cigars made angular in cross section and held practically rigid in such shape, the box having a base plate a fixed end piece a hinged end piece and hinged side pieces or wings all substantially as and for the purposes set forth.

3. In a cigar package the improved box herein described consisting of the base provided at one edge with an upright flange, the fixed triangular end piece jointed at its lower edge to said flange, the hinged triangular end piece, the hinged side pieces or wings provided at their free edges with rigid projecting flanges which lap along the outer sides of the fixed and hinged end pieces and a fastening by which to secure the upper free edges of the end pieces or wings together when the box is closed all substantially as and for the purposes set forth.

526,944. **PUMP.** CHARLES RUMLEY, Helena, Mont. Filed Feb. 17, 1894. Serial No. 500,507. (No model.)

*Claim.*—1. A pump, comprising a cylinder having adjacent inlet and discharge ports separated by a partition, an eccentrically rotating piston held in the cylinder, and a valve pivoted to the piston and to the cylinder at the edge of one of the ports, the valve having an extended solid portion which rests on and slides over the partition, and openings therein near the end which is pivoted to the cylinder, substantially as described.

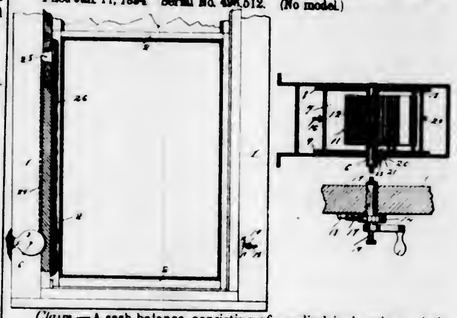


2. In a rotary pump, the combination, with a casing, or cylinder, having inlet and discharge ports and a rigid inwardly-projecting partition arranged between said ports, the piston, and a crank for propelling it in a circle, of the valve herein described, which is pivoted at one end to the piston and has lateral arms which are pivoted to the cylinder at their free or outer ends, said valve having an imperforate downward extension that slides on the aforesaid partition and thus serves as a cut off, as shown and described.

3. The combination, with the pump cylinder having the inlet and discharge ports therein, of the eccentrically rotating piston, the valve pivoted to the piston and to the cylinder so as to oscillate opposite the ports, and the cut-off on the piston adapted to move opposite one end of the valve, substantially as described.

4. A pump, comprising a cylinder mounted on a hollow base and opening into the same, inlet and discharge ports separated by a partition in the base, an eccentrically rotating piston in the cylinder, a valve pivoted to the cylinder at the edge of one port and connected to the piston at its other end, the valve being solid at one end and comprising a series of arms at the other end, and a cut-off on the piston adapted to move opposite the arms and cover the joint of the valve, substantially as described.

526,945. **SASH-BALANCE.** JOSEPH SAUERBURGER, St. Louis, Mo. Filed Jan. 11, 1894. Serial No. 496,512. (No model.)



*Claim.*—A sash balance, consisting of a cylindrical casing, a hollow shaft revolubly mounted therein, a drum revolubly mounted on said shaft and provided with a slot in its wall, a coil spring on the interior of said hollow drum and wound upon the hollow shaft, a cord or chain, a ratchet and crank-handle mounted upon the end of said hollow shaft, a spring actuated pawl adapted to engage said ratchet-wheel, and a rod carrying a pin or lug operating within said hollow shaft and engaging the walls of the slot in said drum whereby by the rotation of the rod the drum will rotate with said rod, substantially as described and for the purpose stated.

526,946. **GAME APPARATUS.** FERDINAND R. SCHLEININGER, New York, N. Y. Filed Aug. 18, 1893. Serial No. 483,493. (No model.)



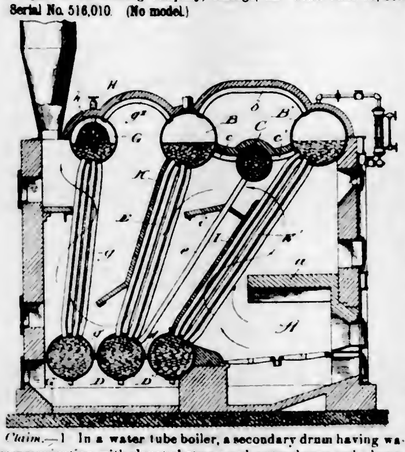
*Claim.*—1. In a game, the combination with a number of balls provided with designating means, of a box provided with a common chamber wide enough to hold several balls abreast and large enough to loosely contain all the balls, of a straight channel or groove in alignment with and communicating with the same, and being long enough to contain all the balls and narrow enough to admit but one ball at a time, the said groove being also provided with designating means corresponding with the balls.

2. In a game, the combination with a number of balls provided with designating means, of a box provided with a common chamber wide enough to hold several balls abreast and large enough to loosely contain all the balls, the said chamber being provided with an opaque covering, of a straight channel or groove in alignment with and communicating with the same, and being long enough to contain all the balls and narrow enough to admit but one ball at a time, the said groove being also provided with designating means corresponding with the balls.

3. In a game apparatus the combination with a number of balls provided with designating means, of a box provided with a common chamber wide enough to hold several balls abreast and large enough to loosely contain all the balls, of a channel or groove in alignment with and communicating with the same and being long enough to contain all the balls and narrow enough to admit but one ball at a time, the said channel being also provided with designating means corresponding with the balls, and the said box being provided with a glazed top and a removable cover.



526,947. **STEAM-BOILER.** JOHN E. SCHLIEPER, Pittsburg, Pa., assignor to the Stirling Company, Chicago, Ill. Filed June 28, 1894. Serial No. 516,010. (No model.)



*Claim.*—1. In a water tube boiler, a secondary drum having water communication with elevated steam and water drums and a lower mud drum, substantially as described.

2. In a water tube boiler, the combination of two elevated steam and water drums having communication with each other, a secondary drum arranged at a lower level than the elevated steam and water drums and having water communication therewith, a lower mud drum or drums having water communication with the elevated steam and water drums, and means for supplying and feeding water into the lower mud drum or drums, substantially as described.

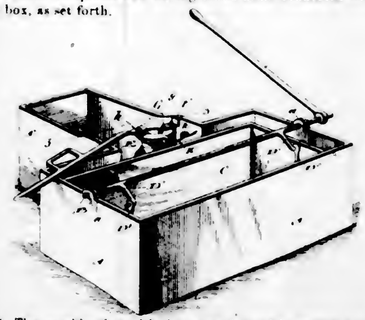
3. In a water tube boiler, the combination of two elevated steam and water drums having communication with each other, a secondary drum placed at a lower level than the elevated steam and water drums and having water communication therewith, an elevated feed water drum, a front lower mud drum or drums having water communication with the elevated steam and water drums, and a rear lower mud drum having water communication with the elevated feed drum and with the front mud drum or drums, substantially as described.

526,948. **MOLD-MOISTENER.** HENRY C. SCHRADER, Hammondville, Pa. Filed Mar. 17, 1894. Serial No. 504,011. (No model.)

*Claim.*—1. The combination with a receptacle having an extension, of a mold in the extension, and a vertically movable receptacle within said receptacle and a rock shaft and pivotal connections between the same and the movable receptacle for moving the latter vertically to displace a cooling medium to cool the mold, substantially as specified.

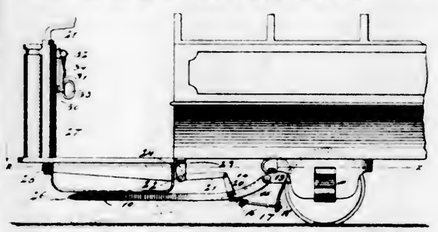
2. The combination with the outer receptacle and its extension, of the inner box mounted for vertical movement in said receptacle, the mold relatively fixed in the extension, and the rock-shaft and connections, and the lever on the end of said shaft for moving the box vertically to displace a cooling medium from said receptacle into the extension and vice versa, as set forth.

3. The combination with the outer receptacle with its extension, of the mold relatively fixed in the extension, the inner box mounted for vertical movement in the receptacle, the horizontal shaft journaled on the outer receptacle and having crank arms connected with the inner box, as set forth.



4. The combination with the outer box with extension, of the bracket in the extension, the screw rod passed vertically through the extension of the bracket, the nut on the upper end of said rod, and the mold-support carried by the lower end of the rod, substantially as specified.

526,949. **CAR-FENDER.** WILLIAM L. SHOCKLEY, Colorado Springs, Colo. Filed Dec. 20, 1893. Serial No. 494,153. (No model.)



*Claim.*—1. The combination, with a car, of a vertically-swinging spring-depressed fender hung beneath the car, a revoluble vertical shaft mounted on the car platform, and a cable and lever connection between said shaft and the fender whereby the fender may be raised substantially as described.

2. The combination, with a car, of a vertically swinging spring depressed fender beneath it, a rock shaft journaled above the fender, a crank connection between the rock shaft and the fender, a revoluble vertical shaft mounted on the car platform, and a cable connection between the vertical shaft and the rock shaft, substantially as described.

3. The combination with a car, of a vertically swinging fender hung beneath the car, a spring secured at one end to a fixed support, the free end of said spring extending below the plane of the pivoted end of the fender, a connection between the free end of the spring and the under side of the fender at a point forward of its pivoted end, the tension of said spring normally holding the free end of the fender upon the track, and mechanism for lifting the fender against the tension of the spring, substantially as described.

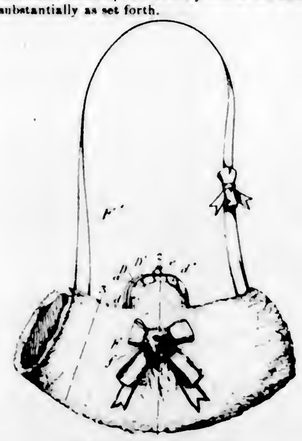
4. The combination with a car, of a vertically swinging spring depressed fender hung beneath the car, a revoluble vertical shaft mounted on the car platform, a cable and lever connection between said shaft and the fender and a latch to lock the said shaft, substantially as described

5. The combination, with the pivoted fender, the revoluble shaft for lifting the fender, the barrel for inclosing the said shaft, said barrel and shaft being notched, as specified, of a latch hung on the barrel and adapted to enter the notches in the barrel and shaft, substantially as described.

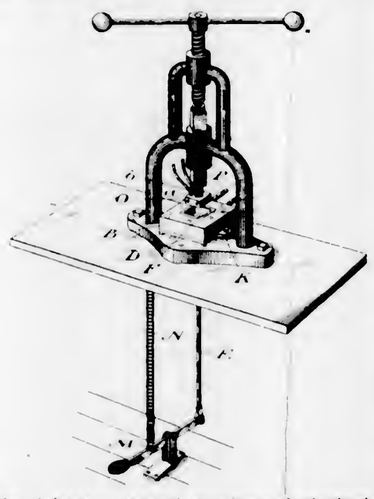
526,950. **COMBINED MUFF AND PURSE.** ISAAC SPRUNG, New York, N. Y. Filed July 7, 1894. Serial No. 516,828. (No model.)

*Claim.*—An article of wearing apparel embracing a connected muff and purse consisting of an outer tubular covering and an inner tubular lining forming a hand pocket, said covering having two correspondent circumferential flap extensions, pivoted purse jaws attached to said flap extensions, and a purse bag secured to said jaws between

said flap extensions and disposed entirely above the hand pocket of the muff, substantially as set forth.



526,951. APPARATUS FOR THE MANUFACTURE OF CARBON BRUSHES. JOHN W. TAYLOR, Peterborough, Canada. Filed May 7, 1894. Serial No. 510,386. (No model.)



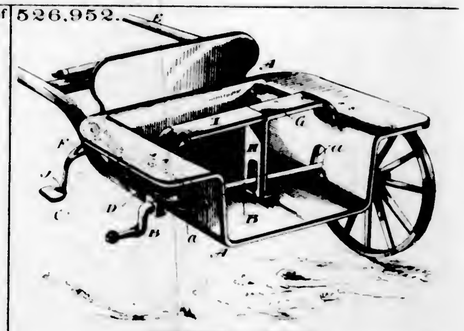
*Claim.*—1. In an apparatus for the manufacture of carbon brushes, the upper die O, having holes Q, S, T, U, drilled therein, in combination with plugs R, steam inlet *a*, and steam outlet *b*, substantially as and for the purpose specified.

2. In an apparatus for the manufacture of carbon brushes, the combination of the die barrel A, casing B, incloing a steam chamber C, surrounding the die barrel and provided with steam inlet and outlet pipes H, and I, the lower die F, connected to the treadle M, by the rod E; the upper die O, provided with a steam chamber and steam inlets and outlets *a*, and *b*, for the same; and a press J, to the spindle of which the said upper die O, is connected, substantially as and for the purpose specified.

526,952. TWO-WHEELED VEHICLE. WILLIAM F. VALENTINE, Circleville, Ohio. Filed Jan. 10, 1894. Serial No. 496,416. (No model.)

*Claim.*—In a cart for use in training colts, the combination of the body portion closed at its end and sides, a crank axle which works in slots in the sides of the said body, springs secured to a bearing of the axle and to horizontal extensions of the body, for supporting the same, a seat integral with and extending across the body portion, and provided with a lift gate, and the central slotted seat support H, all substantially as shown and described.

526,952.

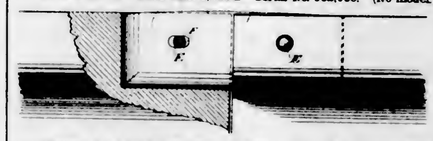


526,953. TROUSERS-STRETCHER. MARK J. WEEDEN, Springville, N. Y. Filed Sept. 28, 1893. Renewed Aug. 20, 1894. Serial No. 520,846. (No model.)



*Claim.*—In a trousers stretcher, the combination, of two substantially parallel bars A A' with their outer edges beveled, of the threaded rods B and B' seated in the bar A, and at right angles thereto, and passing through apertures in the bar A', of the thumb screws working on the said threaded rods between the bars and adapted to bear against the bar A', to hold the trousers in a stretched position, substantially as shown and described.

526,954. RAILWAY-JOINT BRIDGE. CHARLES C. WELLS, San Francisco, Cal. Filed Mar. 8, 1894. Serial No. 502,900. (No model.)



*Claim.*—1. A bridge for the joints formed by the abutting ends of railway rails, consisting of a rectangular bridge bar having the upper side made convex, and the lower portions of the ends and lower edges rounded, and a single elongated slot in each end, open-ended correspondingly-shaped channels in the top of each rail end, into which the bridge bar loosely fits with its central convex portion slightly above the surfaces of the rail ends, and a bolt passing transversely through the single slot in each rail end and the corresponding slot in each end of the bar whereby a loosely hinged and movable joint is formed.

2. A bridge for the joints formed by the meeting ends of railway rails, consisting of a rectangular bridge bar, having a single elongated slot in each end, open-ended correspondingly-shaped channels in the top of each rail end, into which the bridge bar loosely fits, and a single bolt passing through each rail end and the corresponding slot in each end of the bar whereby a loosely hinged and movable joint is formed, substantially as herein described.

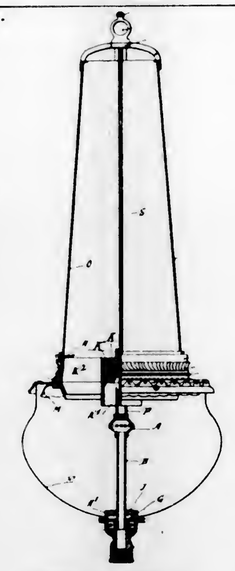
526,955. REGENERATIVE GAS-LAMP. WILLIAM WHITE, Birmingham, England, assignor of one-half to Thomas Edward Bladon, same place. Filed Sept. 25, 1893. Serial No. 486,472. (No model.) Patented in England Nov. 29, 1892, No. 21,775, and in France Sept. 21, 1893, No. 232,963.

*Claim.*—1. The combination with a regenerator having exterior air entrances, of a strip of sheet metal wound about said regenerator, the said strip having corrugations in the direction of its circumferential length and adjustable serrated edges substantially as and for the purpose described.

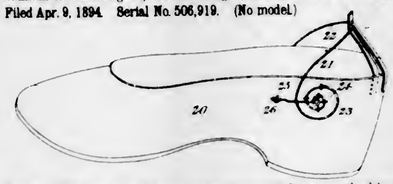
2. The combination with a cast metal regenerator body having a flange $K^3$, of sheet metal flanges L and M secured thereto, the flange L having pyramidal perforated depressions on its under side, and the flange M being corrugated all substantially as herein described.



526,955.

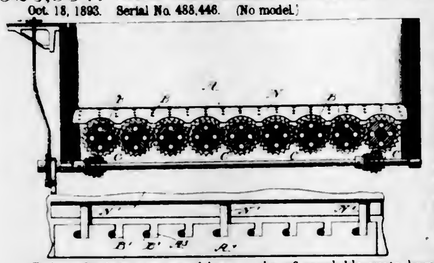


526,956. SHOE-FASTENER. ISAAC D. WRIGHT, Sedalia, Mo., assignor, by direct and mesne assignments, to Carlon C. Van Wagner, William H. Van Wagner, Isaac D. Wright, and R. H. Moses, same place. Filed Apr. 9, 1894. Serial No. 506,919. (No model.)



*Claim.*—The improved shoe-retainer, comprising an arched body having substantially vertical arms and integral coils at its ends fixed to the shoe and bent in the form of a bell-crank lever and adapted to urge the foot forward in the shoe, the coils at each end of said arched body being fixed to the shoe at a point a suitable distance in the rear of the vertical arms of said body, and horizontal portions extending across and outside of the vertical arms of said body and fixed at their forward ends to the shoe at a point some distance in advance of said arms, and acting as guides or keepers for the latter, substantially as herein specified.

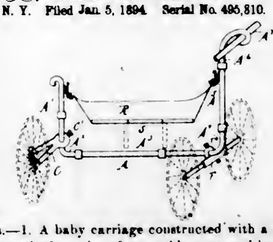
526,957. GRATE. LEE R. ANDREWS, Bath Beach, N. Y. Filed Oct. 18, 1893. Serial No. 488,446. (No model.)



*Claim.*—1. A grate comprising a series of revoluble grate bars and gear wheels connecting the same with each other, strips provided with open slots in which the grate bars are journaled, and a removable hood having posts engaging the said slots of the strips to hold the shafts of the grate bars in place, said hood covering the gear wheels, substantially as described.

2. A grate comprising a series of revoluble cylindrical grate bars, strips forming bearings for the shafts of the said grate bars, gear wheels for connecting the said grate bars with each other, a perforated hood held removably on one of the said strips to cover the said gear wheels, the said hood being provided with dovetail posts engaging correspondingly shaped dovetail grooves in the bearings for the shafts, to lock the latter in place on the corresponding strips, substantially as shown and described.

526,958. FOLDING BABY-CARRIAGE. HENRY ANHALTZER, New York, N. Y. Filed Jan. 5, 1894. Serial No. 496,810. (No model.)



*Claim.*—1. A baby carriage constructed with a frame or back-bone, composed of a series of separable parts and having upwardly-projecting parts at the front and rear, a handle held in the upper end of the rear upwardly-projecting part, a detachable rear axle on said frame, a detachable fork on the front of the same and detachable folding wheels mounted on said axle and in said fork, substantially as set forth.

2. A folding baby carriage, constructed with a frame or back-bone composed of separable sections having flanged ends, flanged screw-couplings uniting the several sections, detachable wheel-supports on said frame or back-bone and folding wheels mounted on said wheel-supports, substantially as set forth.

3. In a folding baby carriage, the combination with a back-bone or frame, of an axle composed of three rods connected by knuckle-joints, a sliding sleeve on said axle, which sleeve serves for holding the parts thereof in line, means for locking said sleeve in place, an eye on said sleeve through which part of the frame or back-bone passes, and means on said sleeve for locking the same to the frame or back-bone, substantially as set forth.

4. In a folding baby carriage, the combination with a back-bone composed of a series of detachable parts, that are connected end to end, of detachable wheel supports held on said back bone, detachable wheels mounted on said supports, which wheels have separable rims, flexible spokes and expansible hubs and a folding vehicle body suspended from said frame, substantially as set forth.

5. A folding wheel constructed with an expansible hub, a rim composed of detachable segmental sections and flexible spokes attached to the section of the expansible hub and to the sections of the rim, substantially as set forth.

6. A folding wheel, having its hollow rim formed of a series of segmental sections, each section composed of two semi-circular pieces united by screws, a stem in one end of each segmental section, which stem fits in the open end of an adjacent rim-section, substantially as set forth.

7. In a folding-wheel, the combination with a rim formed of a series of segmental sections, having screw-necks projecting from the inner edges, nuts screwed in said necks, flexible spokes having their necks in said nuts and expansible hubs to which the flexible spokes are attached, whereby said spokes can be drawn taut by expanding the hub, substantially as set forth.

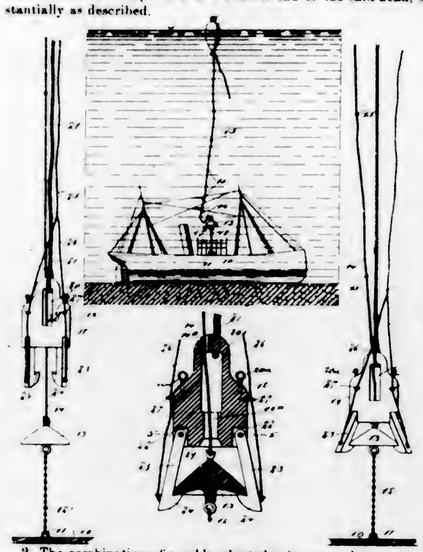
8. In a folding-wheel, the combination with a rim formed of a series of detachable sections, each having screw necks projecting from its inner edge, nuts to be screwed into said necks, which nuts have longitudinal bores, washers on the inner ends of the nuts, flexible spokes having their ends passed through the bores of the nuts and the washer and having a head resting on the washer and a hub for holding said flexible spokes, substantially as set forth.

9. In a folding-wheel, the combination with an expansible hub, composed of two sections united by articulated members, each hub-section having V-shaped apertures, flexible spokes passed through said apertures and held therein, a wheel-rim formed of detachable sections, to which the free ends of the spokes are fastened, substantially as set forth.

10. In a folding wheel, the combination with a sleeve, of two hubs on the same, toggle-levers connecting the hubs, flexible spokes attached to the hubs, and a wheel rim composed of separable sections, to which wheel rim sections the outer ends of the spokes are applied, substantially as set forth.

526,959. MEANS FOR RAISING SUNKEN VESSELS. EDWARD M. ARNOLD, Pawtucket, R. I. Filed Nov. 4, 1893. Serial No. 489,988. (No model.)

*Claim.*—1. The combination with a cable adapted to be secured to a sunken vessel and provided with a button at its lower end, of a grapple, comprising a head provided with a longitudinal opening for the passage of the cable and with a transverse opening to form a sort of a bail, and hooks pivoted to the lower end of the said head, substantially as described.



2. The combination of a cable adapted to be secured to a sunken vessel, a button having a convex upper surface and a concave lower surface, and to the upper and lower surfaces of which the said cable is attached, and a grapple, comprising a head having a longitudinal opening for the passage of the cable and provided at its lower end with pivoted hooks, substantially as described.

3. The combination with a cable adapted to be secured to a sunken vessel, and provided with a button at its lower end, of a grapple fitted to slide on the cable and provided with hooks for engaging the button, and a releasing line secured to the said lower ends of the hooks, and passed through guides on the body of the grapple substantially as described.

4. The combination with a vessel, and a cable secured to the vessel and having a buoy at its upper end and a button at its lower end, of a grapple comprising a head apertured for the passage of the cable and hooks pivoted to the lower end of the head for engaging the button, substantially as herein shown and described.

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526,960. MICROMETER-INDICATOR. JOHN BATH, Hyde Park, Mass. Filed May 2, 1894. Serial No. 509,789. (No model.)



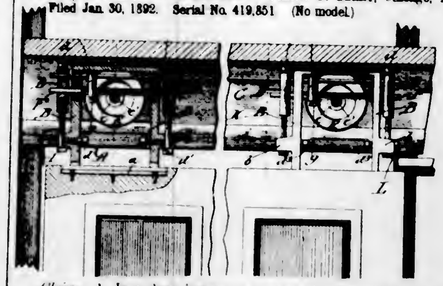
*Claim.*—1. An indicating mechanism consisting of a hollow case A; a block G fitted to slide in a groove in the upper end of the case, and adapted to carry a detachable contact piece H on its outer end and to bear against a lever at its inner end, and secured with a retaining pin I; a lever B pivoted in the upper end of the case; a lever C pivoted in the lower end of the case, the two levers being arranged to cross and act upon each other as described; a spring J deposited in a recess in the case and arranged to bear at one end against the wall of the case and at the other end against the short arm of lever C; and an arched scale K arranged on the top of the case and adapted to register with a pointer carried on the long arm of lever C; all as and for the purposes specified.

2. An indicating mechanism comprising a system of multiplying levers; a contact slide through which said levers are moved; a scale on which such movement is indicated and measured; and a shank to which such indicating mechanism is pivotally attached; all substantially as specified.

3. In combination, case A; levers B and C arranged therein as described; slide G; spring J; scale K; hub N; elastic bushing P; screw R; shank M; and screw S; all substantially as and for the purposes specified.

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526,961. DOOR-HANGER. WILBUR F. BERRY, Chicago, Ill. Filed Jan. 30, 1892. Serial No. 419,851. (No model.)



*Claim.*—1. In a door hanger, a hanger plate provided with a longitudinal bead or ridge along its under side, substantially as described.

2. In a door hanger, the combination of a yoke, trolley wheels arranged therein, tracks on which the wheels run, and a flaring box in which the tracks are laid, substantially as described.

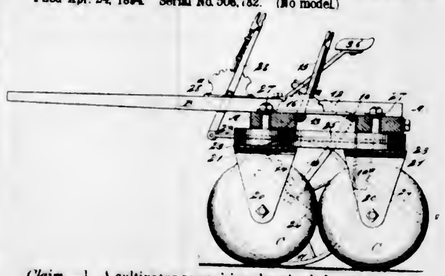
3. In a door hanger, the combination of a yoke, trolley wheels arranged therein, tracks on which the wheels run, a box in which the tracks are laid, the tracks and box being arranged to form a groove or gutter between the tracks and the sides of the box, substantially as described.

4. In a door hanger, the combination of a yoke, trolley wheels arranged therein, an axle connecting the wheels and provided with an angular groove, a rider bar fitting in the groove in such axle in such manner as to prevent lateral displacement between the bar and the groove in the axle and provided with round bearing portions at each end to permit the door to oscillate thereon, and connections between the bar and the door to support the door on the bearing portions of the bar and permit its oscillation, substantially as described.

5. In a door hanger, the combination of yokes provided with lugs or projections, adjusting blocks internally screw-threaded and carrying the rider bar and the rod, C, connecting the yokes together, and bolts screw-threaded at their ends and passing freely through the lugs and engaging the threads of the blocks for moving the blocks separately toward or from the lugs by turning the bolts separately, substantially as described.

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526,962. DISK CULTIVATOR. ANDREW L. BROOK, Lockhart, Tex. Filed Apr. 24, 1894. Serial No. 508,782. (No model.)



*Claim.*—1. A cultivator comprising the wheeled main frame having front and rear curved slots 18, at opposite sides of its longitudinal center, the rear slots 18 being farther apart than the forward slots, two rearwardly diverging bars or frames 25 provided at their ends with apertures registering with the front and rear slots, cultivator standards provided with threaded shanks 27 extending up through said apertures and curved slots and nuts on the upper ends of the standards clamping the standards and bars in position as described, whereby by loosening all of the nuts the rear ends of the bars may be adjusted toward each other and their front ends moved farther apart and the bolts adjusted axially to give the desired angle to the cultivator blades, or said bars may be adjusted toward or from each other at one end without changing the relative positions of their opposite ends.



2. A disk cultivator comprising a main frame having front and rear curved slots, two adjustable diagonal frames, one at each side of the center of the main frame and at their ends crossing the slots and having apertures in alignment therewith, cultivator standards or hangers having shanks extending up through said apertures and slots and forming the connection between the main adjustable frames, nuts on said shanks, and a lever mechanism linked to the said adjustable frames at one end whereby said frames may be moved toward and from each other, substantially as described.

3. In a cultivator, the main frame provided with a rocking axle extending there-across having crank ends carrying the wheels, a foot crank projecting from between the ends of the axle adjacent to the driver's seat, a rock shaft in front of the axle and having downwardly cranked ends linked to the axle cranks, a lever projecting up from said rock shaft adjacent to the driver's seat and a locking mechanism for said lever, substantially as described.

4. In a disk cultivator, the combination, with a frame, disk-carrying frames diagonally located on the frame having front and rear curved slots one at each side of the center, converging at their forward ends and diverging at their rear ends, the said disk frames being adjustably attached to the main frame, of a corrugated wear plate secured to the under face of each disk frame at its ends, a correspondingly corrugated face plate engaging with each wear plate, hangers projected from the face plates, a concaved cultivator disk mounted in each hanger, and a shank extending from each hanger up through the wear plate, the adjustable frames and the slots in the main frame and provided with nuts, substantially as shown and described.

5. In a disk cultivator, the combination, with a frame, disk carrying frames located on the frame having front and rear curved slots one at each end side of the center, converging at their forward ends and diverging at their rear ends, the said disk frames being adjustably attached to the main frame, of a corrugated wear plate secured to the under face of each disk frame at its ends, a correspondingly corrugated face plate engaging with each wear plate, hangers projected from the face plates, a concaved cultivator disk mounted in each hanger, and a shank extending from each hanger up through the wear plate, the adjustable frames and the slots in the main frame and provided with nuts, a lever carried by the main frame, a link projected rearwardly from the said lever, and a connection between said link and the rear ends of the disk frames, as and for the purpose set forth.

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526,963. CONDUIT FOR ELECTRIC RAILWAYS. MICHELANGELO CATTORI, Rome, Italy. Filed Apr. 3, 1894. Serial No. 506,174. (No model.) Patented in Italy May 13, 1893, LXVI, 373, May 24, 1893, LXVI, 419, and Aug. 22, 1893, LXVIII, 75.



*Claim.*—1. In an electric railway, the combination, with two corresponding adjacent sections of each of the conductors, of a rotatable circuit closer having a surface made partly of an insulating and partly of a conducting material, and stationary contact pieces adapted for continuous sliding contact with the said surface of the circuit closer, and connected to the said adjacent sections of the conductors, the said contact pieces and the insulating and conducting portions of the circuit closer being so arranged relatively to each other that the adjacent sections of one conductor are connected when the corresponding sections of the other conductor are disconnected, and vice versa, substantially as described.

2. In an electric railway, the combination, with two corresponding adjacent sections of each of the conductors, of a rotatable circuit closer provided with a shaft carrying arms adapted to be actuated by the cars, said circuit closer having a surface made partly of an insulating and party of a conducting material, and stationary contact pieces adapted for continuous sliding contact with the said surface of the circuit closer, and connected to the said adjacent sections of the conductors, the said contact pieces and the insulating and conducting portions of the circuit closer being so arranged relatively to each other that the adjacent sections of one conductor are connected when the corresponding sections of the other conductor are disconnected, and vice versa, substantially as described.

3. The combination, with two corresponding adjacent sections of each of the conductors, of a rotatable circuit closer having a continuous cylindrical surface made partly of an insulating and partly of a conducting material, and stationary contact pieces adapted for continuous sliding engagement with the cylindrical surface of the circuit closer, and connected to the said adjacent sections of the conductors, the contact pieces connected to sections of the same conductor being placed apart a smaller distance than the length of the conducting portion of the circuit closer, as and for the purpose set forth.

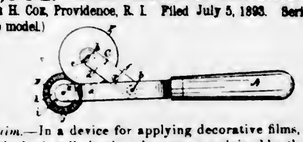
4. In an electric railway, a tubular conduit for an underground conductor, a support or chair located within the conduit above the bottom thereof and secured with its respective ends to the sides of the conduit, and a fish plate formed on or secured to the said chair, to fasten a track rail in position on the conduit, substantially as described.

5. In an electric railway, a tubular conduit for an underground conductor, a support or chair located within the conduit above the bottom thereof and secured with its respective ends to the sides of the conduit, and a fish plate formed on or secured to the said chair and extending adjacent to one of the side walls of the conduit, to permit of securing a track rail between the said side wall and the said fish plate, substantially as described.

6. A conduit for underground conductors of electric railways, consisting of tubular sections provided with supports connecting the sides of the sections above the bottom thereof, and longitudinal beams carried by the said supports and constructed to receive the covering of the conduit, as and for the purpose set forth.

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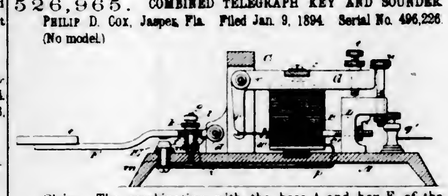
526,964. DEVICE FOR APPLYING DECORATIVE FILMS. WALTER H. COX, Providence, R. I. Filed July 5, 1893. Serial No. 479,635. (No model.)



*Claim.*—In a device for applying decorative films, the combination with the handle having the arms *a*, *a*, joined by the bar *b*, of the frame C, consisting of the side arms *d*, *d*, having the slots *e*, and connected by the bar *f*, the spring secured to the bar *b* of the handle and to the frame C, the fixed disk *g*, upon the axle *h*, the removable disk *g'* upon the said axle, and the yielding delivering roller D, journaled at the end of the arms *a*, *a*, substantially as described.

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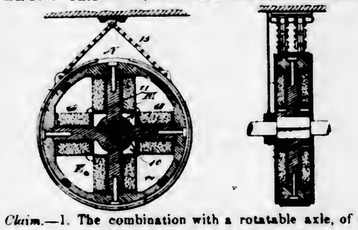
526,965. COMBINED TELEGRAPH KEY AND SOUNDER. PHILIP D. COX, Jasper, Fla. Filed Jan. 9, 1894. Serial No. 496,226. (No model.)



*Claim.*—The combination, with the base A and key F, of the threaded stud *g* inserted in the said base, and extending through a hole in the key, nuts *i*, *k* placed on the stud, and a spring *j* resting on the nut *i* and pressing the under surface of the key, substantially as specified.

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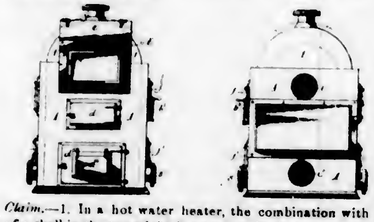
526,966. ELECTRIC FRICTION-BRAKE. BERGEN DAVIS, Newark, N. J. Filed Mar. 28, 1894. Serial No. 505,462. (No model.)



*Claim.*—1. The combination with a rotatable axle, of a drum mounted fast thereon, the same consisting of a metal hub and radial arms, and a peripheral portion formed of separate sections attached to said arms and insulated from each other, bobbins placed on the arms, a magnetizable strap surrounding such drum, and an electrical circuit extending through said bobbins, as shown and described.

2. In an electric brake, the combination, with a magnetized drum consisting of a periphery composed of pole pieces separated from one another by diamagnetic material, and electro-magnets connected with the pole pieces having consecutive pole pieces of opposite polarity, of a metallic strap or shoe held for attraction to and for frictional engagement with the drum, the drum being adapted to be revolved, substantially as and for the purpose specified.

526,967. HOT-WATER HEATER. HERMANN RISSERT, Baltimore, and ROBERT B. TALCOTT, Garrett Park, Md. Filed Feb. 13, 1894. Serial No. 500,055. (No model.)



*Claim.*—1. In a hot water heater, the combination with a fire box, of a shell in the top of the heater constituting a water chamber or space and having an outlet at its highest point, said shell being horizontally rectangular in shape, the under side thereof forming the crown of a combustion chamber and longitudinally concave but diminishing in curvature toward its rearward end and the upper side thereof having a longitudinal curvature similar to that of the under side, the forward end of the shell being located directly over and in close proximity to the fire box.

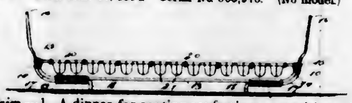
2. In a hot water heater, the combination of a shell in the top thereof constituting a water chamber or space and having an outlet at its highest point, said shell being longitudinally rectangular in shape, the under side thereof forming the crown of a combustion chamber, and longitudinally and transversely concave but diminishing in longitudinal curvature toward its rearward end and the upper side thereof having a longitudinal curvature similar to that of the under side, a water chamber forming the fire box and located directly under and near to the forward end of the shell and connected to the latter by water ways, and a fire pot beneath said fire box.

3. In a hot water heater, the combination of a shell in the top thereof constituting a water chamber or space and having an outlet at its highest point, said shell being longitudinally rectangular in shape, the under side thereof forming the crown of a combustion chamber, and longitudinally concave but diminishing in curvature toward its rearward end and the upper side thereof having longitudinal curvature similar to that of the under side, a rectangular water chamber forming the fire box and located directly under the forward end of the shell and having communication with the interior thereof, a water chamber in the bottom of the heater having an inlet, and connecting chambers and spaces between said bottom chamber and the shell and fire box water chamber.

4. In a hot water heater, the combination with a water chamber forming a fire box, of a crown water chamber having a concave under side and an outlet for the water at its highest point, a front water chamber and a rear water chamber with connecting water tubes, waterways or connections between the fire box and crown water chamber and front water chamber and between the crown water chamber and rear water chamber said front chamber having a water inlet substantially as described.

5. A hot water heater comprising a top water chamber or space the under side of which forms the crown of a combustion chamber, the fire box located beneath and in close proximity to a portion of said top chamber, a front water chamber below the fire box, a rear water chamber, and a series of sets of water tubes connecting said front and rear chambers, the tubes of one set being opposite to the spaces between the tubes of the adjoining set, and the spaces between the tubes of one set being about or nearly twice as great as the spaces between the tubes of two adjoining sets, substantially as and for the purposes set forth.

526,968. CHOCOLATE-DIPPER. CYPRIEN GOUSSET, New York, N. Y. Filed Mar. 17, 1894. Serial No. 503,978. (No model.)



*Claim.*—1. A dipper for coating confections comprising a basket or tray provided with drip cups or pockets and a cover for the basket or tray.

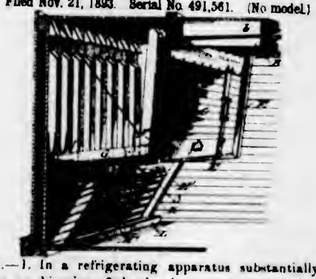
2. A chocolate dipper, comprising a basket having a series of open sided cream cups therein, and a cover for the basket, substantially as described.

3. A chocolate dipper, comprising a basket having end bails and a series of cream cups thereon, and a cover for the basket, also having end bails, substantially as described.

4. A chocolate dipper comprising an open frame, a series of parallel wires crossing the frame, and secured at their ends thereto, and a series of cups formed of a series of serpentine or zig-zag wires crossing the frame and resting at their upward bends upon said cross wires, and the second series of serpentine or zig zag wires at right angles to the first series and having their downward bends crossing the downward bends of the said first series substantially as described.

5. A chocolate dipper comprising the open wire frame 12, the strengthening rails 13 beneath the ends of the frame, bent upwardly at the top and connected by the transverse wires 14, said wires lying parallel with the ends of the frame 12 and united thereto by the integral coils 15, handles 16 formed by extension of the said wires beyond the coils, the said wires extending thence along the rails 13 as shown at 17 and terminating in feet 18, clips 19 uniting the parts 13, 17 and a series of cups formed of crossed serpentine or zig-zag wires secured at their ends to the sides and ends of the frame respectively, substantially as described.

526,969. REFRIGERATOR-CAR. CHARLES S. HARDY, San Diego, Cal. Filed Nov. 21, 1893. Serial No. 491,561. (No model.)



*Claim.*—1. In a refrigerating apparatus substantially as described the combination of the ice box or receptacle and a slatted drain guard arranged below the bottom or floor thereof substantially as set forth.

2. In a refrigerating apparatus the combination with the ice box or receptacle, formed with hinged members adapted to fold, of a drain guard arranged below said box and supported to fold or swing into and out of position for use substantially as set forth.

3. In a refrigerating apparatus the combination of the hinged floor of the ice box, the hinged drain guard and connections between the floor and guard whereby the latter will be adjusted by the movements of the floor substantially as set forth.

4. The combination of the ice box having hinged sections, the cleats sustaining such sections and the drain guard and the cleats sustaining such guard substantially as set forth.

5. In an apparatus substantially as described the combination of the hinged ice box floor, the hinged drain guard and a connection between said guard and floor formed of members sliding one upon the other substantially as set forth.

6. The combination of the hinged ice box side and floor sections, the cleats sustaining the same, the drain guard below the ice box sections, the cleats sustaining said drain guard, and a connection between said guard and the bottom or floor section said connection being formed of members sliding one upon the other substantially as set forth.

7. The combination of the hinged ice receptacle and drain guard having the illustrated rubber or flexible material sealing the joint between its wall and draft flue, the grooved grain cleats provided with rubber or suitable material and sealing the wall floor and drain guard at their ends, the hinged wall being grooved and provided with same or similar material and flush at its free edge, the hinged floor being provided with a beam at its free edge upon which ice cleats rest and are secured, said beam being grooved in such a manner that the wall and floor form a sealed joint and forming a sealed ice receptacle at all points not required for inlet and discharge of air to and from the ice receptacle by its own weight when hinged together and when in an open position substantially as illustrated and described.

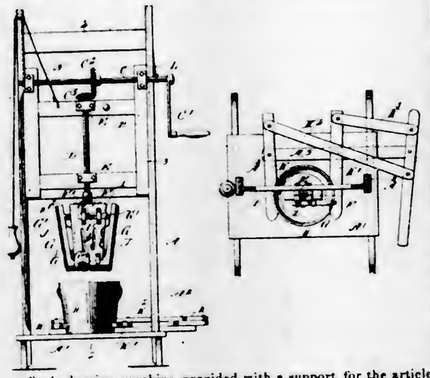
8. In a refrigerating apparatus, the combination of the hinged floor of the ice receptacle, the hinged side wall of such receptacle said wall and floor being arranged to abut at their swinging edges when opened and a sealing strip interposed between such side and floor at the joint or abutment of such parts substantially as set forth.

526,970. CLEANING-MACHINE. WILLIAM HEBB, Cambridge, Vt. Filed Apr. 21, 1894. Serial No. 508,394. (No model.)

*Claim.*—1. A cleaning machine comprising a suitable frame, a slide having vertical movement thereon, a revoluble head journaled in the said slide, a crank shaft journaled in the slide and operatively connected with the revoluble head, and brushes held on the said head, substantially as described.

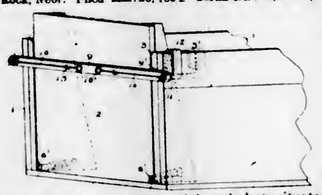


2. A cleaning machine comprising a suitable frame, a slide having vertical movement thereon, a revoluble head journaled in the said slide, means for rotating the head and L-shaped brushes held yieldingly on the said head, substantially as shown and described.



3. A cleaning machine provided with a support for the article to be cleaned a clamping and centering device comprising two clamping levers pivoted in said support, links connected with the said clamping levers, and a foot lever connected with the said links, substantially as shown and described.

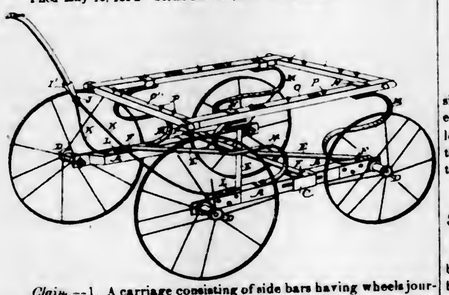
526,971. END-BOARD CHUTE FOR WAGONS. JOHN H. IRION, Table Rock, Nebr. Filed Mar. 28, 1894. Serial No. 505,447. (No model.)



*Claim.*—1. In combination the end board chute situated at the extreme rear end of the wagon box, said box having cleats, the arms 8 secured to the sides of the chute, the arms 7 pivoted to arms 8 and having extensions 7', bar 9 and hooks 12 mediately connecting said bar and box and adapted to be hung on the edges of the latter, the entire construction being supported without fastenings upon said box, substantially as set forth.

2. In combination, the end board chute of a wagon box, the bar 9 secured to the chute and made longer than the width of the box and devices consisting of hooks 12 having arms 11 and rods 10 supported upon and situated outside said box adapted to engage and hold the bar and chute either in a raised or lowered position, said arms 11 entering holes 9' in the bar when the chute is raised to obviate the spreading of the box, substantially as set forth.

526,972. CHILD'S CARRIAGE. JOHN W. JAIMISON, Vallejo, Cal. Filed May 16, 1894. Serial No. 511,457. (No model.)



*Claim.*—1. A carriage consisting of side bars having wheels journaled upon the opposite ends and joints intermediate between these ends, in combination with slides adapted to slip over said joints and be locked thereon, and diagonal braces extending between the two side frames.

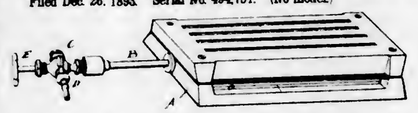
2. A folding carriage consisting of the side bars having wheel axles fixed to their opposite ends, joints intermediate between these ends whereby each side may be folded upon itself without removing the wheels, sliding sleeves adapted to fit over said joints when the parts of the side bars are in line, to retain them in this position, diagonal brace bars pivoted together in the center, having pins upon the ends adapted to enter corresponding holes in the side bars, and also to pass through the sleeves and joints of the same, whereby they are locked together.

3. A child's carriage consisting of the jointed folding side bars having wheels journaled upon the ends, joint clasps and braces, and springs fixed to the side bars, a bed frame consisting of side and end bars jointed together and clasps by which they are attached to the springs, together with a flexible containing sack folded to form a bed for said frame with a pillow at one end and having loops along its edges whereby it is secured to said frame.

4. A folding carriage consisting of the jointed side bars having wheels at the ends, joint clasps and diagonal braces whereby said side bars are fixed in position, springs fixed to said bars, a bed frame for the body, and a flexible bottom with means whereby it is secured to the bed-frame, a body composed of sides and ends jointed together at the corners, said sides being also jointed in the center whereby they may be folded together for transportation, and stanchions by which the body is secured to the bed frame.

5. A child's carriage having the folding side bars, bed-frame and body, a tapering socket piece into which the lower end of the handle is fitted and locked, and branch arms extending therefrom to the side bars with slotted ends and pins for attaching them thereto.

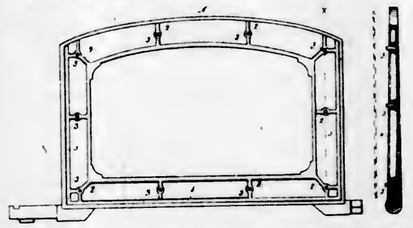
526,973. GAS-GRATE. GOTTLIEB KELLER, West Hoboken, N. J. Filed Dec. 26, 1893. Serial No. 494,751. (No model.)



*Claim.*—1. The combination, with a grate having hollow bars provided with burner apertures, of a pipe connected with said hollow grate bars, and an additional grate secured on top of the grate with the hollow bars, substantially as set forth.

2. The combination, with a grate, having hollow bars provided with burner apertures, of a pipe connected with said hollow grate bars, and an additional grate secured on top of the grate with the hollow bars, the hollow bars of one grate alternating with the bars of the grate above it, substantially as set forth.

526,974. OVEN-DOOR FOR COOKING STOVES OR RANGES. FRANK V. KNAUSS, Portsmouth, Ohio. Filed Feb. 17, 1894. Serial No. 500,567. (No model.)



*Claim.*—In an oven door for cooking stoves, ranges, and other similar objects, the combination with the frame formed with flanged edges and strengthening ribs with apertures therein, and the side and lower rails rabbeted and the metal in this frame reinforced at 4, of the plate and the rivets passing therethrough and through the apertures in the ribs, substantially as described.

526,975. PUMP-VALVE. TRUCKSON S. LA FRANCE, Elmira, N. Y. Filed Sept. 27, 1892. Serial No. 447,065. (No model.)

*Claim.*—1. The combination of the valve seat having an outer bearing, a central bearing, and a pad or cushion on the said central bearing, the valve proper fitted to said outer bearing, the supporting plate under said valve proper and arranged to abut against the cushion of the central bearing when the valve is closed, such supporting

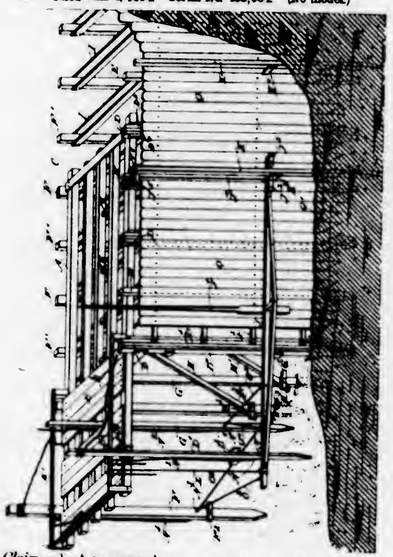
plate being formed to nearly fill the port or valve space when the valve is closed all substantially as and for the purposes set forth.



2. The improvement in valves herein described consisting of the seat having an outer bearing, an inner or central bearing provided with a pad or cushion the stem on which the valve slides, the valve proper, fitted to the outer bearing of the valve seat, the supporting plate under said valve proper made to nearly fill the port within the outer bearing and arranged to abut against the pad or cushion of the central bearing when the valve is closed all substantially as and for the purposes set forth.

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526,976. **CREVASSE-CLOSER.** MATHIAS A. LASKA, New Orleans, La. Filed Jan. 4, 1894. Serial No. 496,604. (No model.)



*Claim.*—1. A crevasse closer, comprising an arm adapted for pivotal connection with one of the posts already driven, and for detachable connection with one of the loose posts to be driven, so as to guide the loose post relatively to the fixed post, as and for the purpose set forth.

2. A crevasse closer, comprising a series of front posts, auxiliary frames adapted to be set between two adjacent posts and having longitudinal beams fastened to the said posts, and boards adapted to be nailed to the auxiliary frames to form a solid wall across the crevasse, substantially as shown and described.

3. A crevasse closer, comprising a series of front posts, auxiliary frames adapted to be set between the adjacent posts and having longitudinal beams fastened to the said posts, boards adapted to be nailed to the auxiliary frames to form a solid wall across the crevasse, back posts, braces connecting the said posts with the said front posts, and transverse beams for connecting the upper ends of the said front and back posts with each other, substantially as shown and described.

4. A crevasse closer, provided with an arm mounted to swing, and a bolt hung on the said arm and adapted to engage an aperture in the post to be driven, substantially as shown and described.

5. A crevasse closer, provided with an arm mounted to swing, a bolt hung on the said arm and adapted to engage an aperture in the post to be driven, and means, substantially as described, for locking the said bolt in position on the post, as set forth

6. A crevasse closer, comprising an arm mounted to swing, ropes connected with the said arm, and a bolt carried by the said ropes and adapted to engage a back post to guide the latter downward into the current, substantially as shown and described.

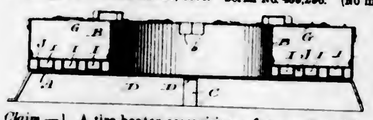
7. A crevasse closer, comprising an arm mounted to swing, ropes connected with the said arm, a bolt carried by the said ropes and adapted to engage a back post to guide the latter downward into the current, and means, substantially as described, for locking the said bolt in place on the post, as set forth.

8. A crevasse closer, provided with a main post, comprising a central post side posts adapted to be driven alongside the said central post, and guideways secured to the central post and adapted to embrace the side posts, substantially as shown and described.

9. A crevasse closer, provided with an arm having a manipulating handle and a fulcrum, a post having a transverse arm forming a rest for the said fulcrum, and a second arm held on the fulcrum end of the said first named arm and adapted to be held temporarily in place on the said post, substantially as shown and described.

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526,977. **TIRE-HEATER.** JOHN LIEFBROER and JOHN TENDOLLER, Oostburg, Wis. Filed Oct. 27, 1893. Serial No. 489,296. (No model.)



*Claim.*—1. A tire-heater comprising a fire proof shell having a cover provided with draft-openings a series of concentric gutters arranged on the bottom of the shell, and a series of radial stay-bars in direct contact with the upper edges of the said gutters, at suitable intervals, substantially as set forth.

2. A tire-heater comprising a fire-proof shell in the form of a horizontal plate having a round central opening, and vertical walls rising from the inner and outer edges of the plate, cover-sections for the shell having damper controlled draft-openings, gutters concentrically arranged on the bottom of the shell within the same, and tire-supports in the form of radial stay-bars in direct contact with the upper edges of the said gutters, at suitable intervals, substantially as set forth.

3. A tire-heater comprising a fire-proof shell in the form of a horizontal plate having a round central opening, and vertical walls rising from the inner and outer edges of said plate, detachable cover-sections, provided with suitable handles and damper controlled openings, said sections having straight ends and curved edges provided with depending ears, crossed metal bars secured to the under side of the said horizontal plate, and having their extremities turned down to form legs, a series of concentric circular gutters arranged upon the upper side of said plate, for the reception of liquid fuel, and radially disposed stay-bars, in direct contact with the upper edges of said gutters, and secured to said shell, the said stay-bars serving further as supports for the tires to be heated, all combined and adapted to operate as and for the purposes set forth.

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526,978. **RAILROAD-SWITCH.** CHARLES L. LINCOLN, Brooklyn, N. Y., assignor of one-half to Robert A. Davison, same place. Filed Sept. 27, 1893. Serial No. 486,632. (No model.)



*Claim.*—1. The combination, with the switch rail having the rearwardly extending ribbed tail piece, of the locking plate having corrugations to engage the ribs, substantially as described.

2. The combination, with the switch rail having a tail piece, as described, of the contact block held to slide at right angles to one of the siding rails, and a lever connection between the contact block and the tail piece, whereby the pressing out of the block actuates the tail piece and moves the switch rail, substantially as described.

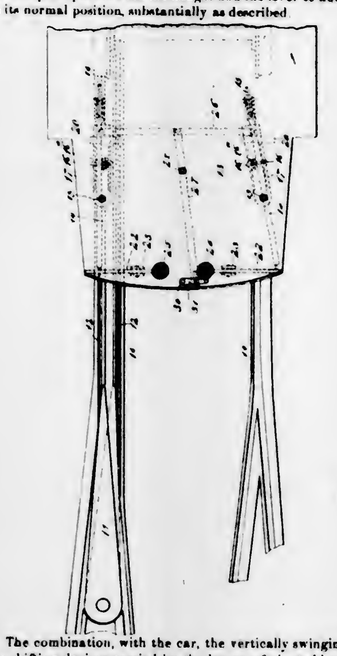
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526,979. **SWITCH-WORKING MECHANISM.** CHARLES L. LINCOLN, Brooklyn, N. Y. Filed Nov. 22, 1893. Serial No. 491,677. (No model.)

*Claim.*—1. The combination, with the car, of a vertically swinging lever carrying a shifting device, and adapted to slide laterally on its fulcrum, and a spring adapted to hold the lever in normal position on the fulcrum, substantially as described.

2. The combination, with the car, the hanger arranged beneath the same, an essentially horizontal pivot pin held in the hanger, a lever fulcrumed on the pin and adapted to slide laterally thereon, said lever carrying a shifting device at one of its ends, and a spring coiled around the pivot pin between the hanger and the lever to hold the latter in its normal position, substantially as described.





3. The combination, with the car, the vertically swinging levers and the shifting devices carried by the levers, of pivoted hangers to support the levers, an operative connection between the hangers, and means for moving the hangers transversely of the car, substantially as described.

4. The combination, with the car, the vertically swinging levers and the shifting devices carried by the levers, of pivoted hangers to support the levers, a cross bar connecting the hangers, a crank shaft mounted on the car, and an operative connection between the crank shaft and the cross bar whereby the latter may be moved transversely, substantially as described.

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526,980. **LATCH AND LOCK.** JOHN MACLACHLAN, West Hoboken, N. J. Filed Dec. 19, 1893. Serial No. 494,093. (No model.)



*Claim.*—1. In a door-latch and lock, the combination with a case, and an apertured face plate on one end of said case, of a spring pressed slide bolt therein, a transversely disposed spindle, a circular block on the spindle, and a thin pliable strap in U-form, its bow portion passing around and secured to the block at the side opposite the slide bolt, the legs of said strap having a sliding connection with the opposite sides of said bolt, substantially as described.

2. In a door latch and lock, the combination with a two part cylindrical case, and a face plate at one end of the case, apertured to receive a slide bolt, of a longitudinally perforated slide bolt in said case, a pusher rod in the rear end of the bolt, a spring on said rod, a knob-spindle extending transversely in the case, a block on the spindle, and a flat and U-shaped pliable strap slotted at ends that are connected to the bolt, set screws passing through said slots into the slide bolt at its rear end and adapted to connect the spindle block with the slide bolt, substantially as described.

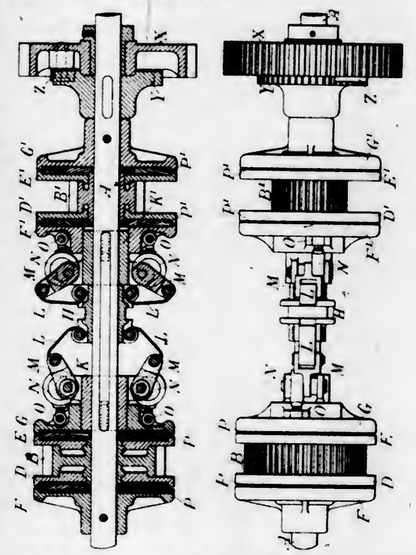
3. In a door latch and lock, the combination with a case, and a face plate at one end of the case, apertured to receive a slide bolt, of a longitudinally perforated slide bolt in said case, a pusher rod in the rear end of the bolt, said rod being provided with a head wall on its rear end, a spiral spring on the rod, a knob-spindle extending transversely in the case behind the pusher rod, a cylindrical block on said spindle, having trunnioned ends engaging perforated walls of the case, a pliable strap secured near its center on said block and lapped at its ends on the slide bolt, and screws fast in the slide bolt and loose in longitudinal slots formed in the strap near its ends, substantially as described.

4. In a door lock, the combination with a case, a slide bolt therein spring-pressed outwardly, a transverse rock shaft loosely sustained at its ends in perforations at opposite sides of the case and passing through an elongated hole in the bolt, which shaft is formed to receive and interlock at its ends with a key, curved finger springs fast on the rear end of a bolt support and pressing their free ends oppositely on flat parts of the bolt a locking limb on the shaft movable in the slot of the bolt and arranged to hold the bolt locked when the limb is forwardly projected, and a key insertible from the sides of the lock and adapted to engage the ends of the rock shaft for its partial rotation, substantially as described.

5. In a door lock, the combination with a case, a sliding latch bolt therein, and a bolt retracting device connected to a transverse knobbed spindle, of a spring pressing the bolt outwardly, a rocking shaft transversely arranged within the case, passing through a longitudinally elongated hole in the bolt, having its ends slotted for the engagement of a key, and furnished with a limb that lies in the bolt slot to lock it in forward adjustment, guard plates working in perforations of the case and loosely supporting the ends of the shaft, two plate-like curved finger springs fast by rear ends ou a head wall transversely arranged in the case and fast on the rear end of a pusher rod that is made to slide in and support the rear end of the latch bolt, which springs clasp a squared portion of the rock shaft to restrain its movement, and a key to rock said shaft, substantially as described.

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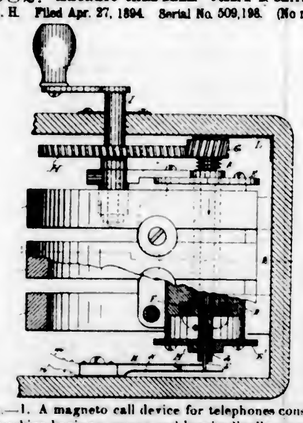
526,981. **DRIVING-GEAR FOR LOCOMOTIVES.** AUGUST PRAWATH, Dresden, Germany, assignor to the Gas Traction Company, Limited, London, England. Filed May 24, 1894. Serial No. 512,336. (No model.) Patented in France Mar. 24, 1894, No. 237,318, and in Belgium Apr. 25, 1894, No. 109,676.



*Claim.*— The combination of the rotary shaft A, the gears B and B' of different diameters and loose on said shaft, the disks D, E, and D', E', fixed to the opposite sides of said gears, the disks F and G' fixed to the shaft A at the outer sides of the disks D and E', the sleeves K, K', keyed to the shaft A at the inner sides of the disks E, D', and fitted to slide on and turn with said shaft, the disks G and F' carried on the sleeves K, K', the friction disks P, P, and P', P' located between the pairs of disks F, D, E, G, and F' D', E' G', the sleeve H loose on the shaft A intermediate the sleeves K K', eccentrics N, N, mounted on the sleeves K, K' and having their spindles provided with arms M, M, links O, O, connecting the straps of said eccentrics to the

sliding disks G and F, and links L, L, connecting the eccentric arms M, M, with the intermediate sliding sleeve H, substantially as and for the purpose shown and described.

526,982. MAGNETO CALL-BELL. JOSEPH B. SMITH, Manchester, N. H. Filed Apr. 27, 1894. Serial No. 509,198. (No model.)

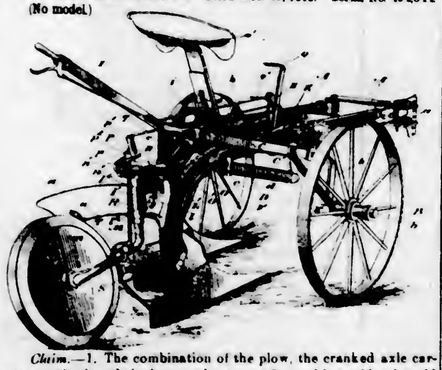


*Claim.*—1. A magneto call device for telephones consisting of a magneto machine having a rotary and longitudinally movable armature shaft, a crank-shaft, gearing intermediate said armature-shaft and crank-shaft for imparting the longitudinal movement to the armature-shaft during its rotation, said armature-shaft being adapted when rotated to break the circuit and cut in the armature of the magneto generator, and a spring for returning said armature-shaft to its normal position when at rest, substantially as described.

2. A magneto call device for telephones, consisting of a magneto machine having a rotary and longitudinally movable armature shaft, a pinion G mounted upon one end of said shaft and having inclined teeth on its periphery, a crank-shaft I having a crank handle i and spur-gear H, inclined teeth on the spur-gear meshing with the teeth on the pinion, a circuit breaker operated by the longitudinal movement of the armature shaft to break the circuit and cut in the armature of the magneto generator, and a spring for returning the armature shaft to its normal position, substantially as described.

3. A magneto call device for telephones consisting of a magneto machine having a rotary and longitudinally movable armature shaft, a pinion G mounted upon one end of said shaft and having inclined teeth on its periphery, a crank-shaft I having a handle *i* and spur-gear H, inclined teeth upon the spur-gear meshing with teeth of the pinion, an insulated projection upon the armature-shaft, a pair of electrodes connected to the telephone circuit and normally held in metallic contact with each other, and adapted to be disconnected and brought into the armature circuit of the magneto machine by the rotation of the armature-shaft, a spring for returning said armature-shaft, and a stop-plate L, substantially as described.

526,983. SULKY-PLOW. EDMUND C. WESTERVELT and CHARLES W. CLAPP, South Bend, Ind. Filed Dec. 23, 1893. Serial No. 494,544. (No model.)



*Claim.*—1. The combination of the plow, the cranked axle carrying a wheel, and the lever and segment for rocking said axle, said lever having a short arm at right angles to its main portion near the axle; with the rod pivoted to said short arm at one end and playing through a fixed support at its other end, and an expansion spring strung on said rod between the arm and support, all substantially as set forth.

2. The combination of the plow beam, the cranked axle, the land wheel thereon, and the lever fixed on said axle having a short arm projecting therefrom near the axle, at about right angles to the main body of the lever, with a bar attached to the beam or frame and extending in rear of said axle, a rod pivotally connected to said arm at one end and playing through an opening in the end of said bar at its other end, and an expansion spring strung on the rod between the arm and bar, and means for locking the lever, all substantially as specified.

3. The combination of the plow beam, the casting attached thereto, the crank shafts journaled in said casting, the furrow wheel mounted on said axle, the bell crank lever secured to said shaft and connections between the long arm of the lever and a hand lever, whereby the shaft can be rocked; and a double acting spring operating against the short arm of the lever, substantially as set forth.

4. The combination of the plow beam, the casting attached thereto, the crank shafts journaled in said casting, the furrow wheel mounted on said shaft, the bell crank lever secured at its bend to said shaft, and connections between the long arm of said bell crank lever and a hand lever for rotating said shaft; a rearwardly extending bar attached to said casting, a rod pivoted at one end to the short arm of the bell-crank lever and having its other end playing through an opening in the rear end of said bar, and an expansion spring strung on said rod intermediate the short arm and end of bar, substantially as and for the purpose set forth.

5. The combination of the plow, the swinging caster wheel in rear thereof, a brake for said wheel, the segment connected to the upper end of the caster-wheel carrying shaft, and means for locking said segment; with a bell crank lever pivoted on said segment having its vertical arm in line with the journal of the caster wheel support; the rod connecting said lever with the brake, and the pull rod pivotally connected to the vertical arm of the bell crank lever and to a foot lever, all substantially as described.

6. The combination of the plow, an angular caster-wheel carrying shaft connected thereto, the caster wheel on said shaft, the wheel brake mounted on the horizontal portion of said shaft, the segment secured to the vertical portion of the shaft, means for locking said segment, a bell crank lever having one arm pivoted to said segment, and its other arm upstanding in line with the vertical portion of said shaft, the connections between said lever and the brake, a spring for normally upholding said lever and withdrawing the brake, and connections between the vertical arm of the lever and a lever near the driver's seat, all substantially as described.

7. The combination of the plow, the sleeved bracket secured to the beam thereof above the plow, the crank shaft having one end journaled in said sleeve, and a caster wheel on its other end, and a caster wheel brake mounted on said shaft below the sleeve; the segment fixed to the shaft above the sleeve, the bell-crank lever pivoted on said segment, the rod connected to said lever near its bend, and to the wheel-brake, the spring for upholding said lever and withdrawing the brake, and the pull rod and connections for rocking said lever, the connections between rod and lever being in line with the vertical portion of said shaft so as to allow free swing of the caster wheel shaft without disarranging the brake mechanism thereof, all substantially as and for the purpose specified.

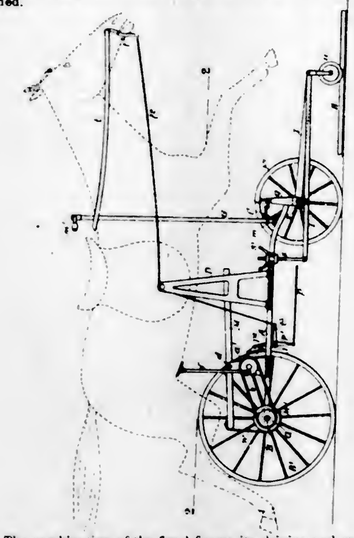
8. The combination of the plow, the bracket secured to the beam thereof, the cranked caster wheel shaft having its vertical arm journaled in said casting, the notched segment fixed on the upper end of said shaft, the spring actuated bolt for locking said segment, and the rod and foot lever for disengaging said bolt; with the spring controlled bell crank lever pivoted on said segment, having its vertical arm in line with the journal of the shaft, the caster-wheel brake mounted on the horizontal arm of the shaft, the rod connecting the brake with the bend of said lever, and the pull rod connecting the vertical arm of said lever with a foot lever beside the first mentioned foot lever, all constructed substantially as and for the purpose set forth.

526,984. MECHANICALLY-PROPELLED FIGURE. STEPHEN WILSON, Philadelphia, Pa., assignor to the Mechanical Amusement Company, Woolbury, N. J. Filed Nov. 16, 1893. Serial No. 491,087. (No model.)

*Claim.*—1. The combination of the fixed frame, the driving axle, and its wheels, the front steering axle and its wheels, a standard projecting upward from the fixed frame a figure pivoted to said standard, levers and clutches whereby forward movement can be imparted to the driving axle by the rider of said figure, and mechanism independent of said driving mechanism whereby rocking movement is imparted to the figure from said driving axle, substantially as specified.

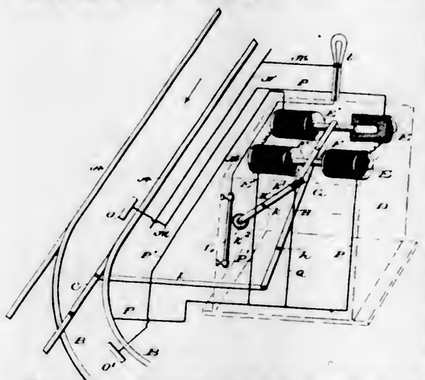


2. The combination of the fixed frame, its driving wheels and steering wheels, a figure mounted upon the fixed frame, a directing wheel, a frame carrying the same and hung to the steering axle, and means for swinging said frame so as to move the directing wheel into and out of engagement with the guide therefor, substantially as specified.



3. The combination of the fixed frame, its driving and steering wheels, braking mechanism for said driving wheels, and a connection between said braking mechanism and the steering axle, whereby the brakes are automatically applied with more or less force in rounding a curve, substantially as specified.

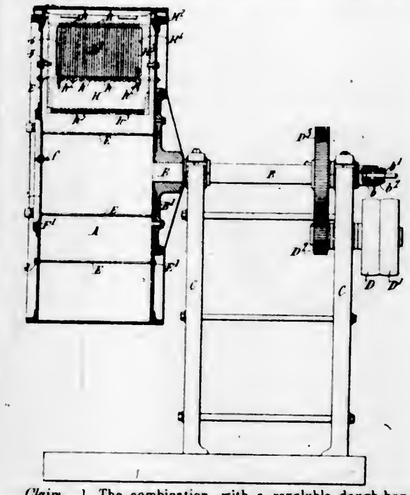
526,985. AUTOMATIC SWITCH FOR ELECTRIC RAILWAYS. WILBER S. WRIGHT and JOHN R. VENUS, New Orleans, La. Filed Dec. 6, 1893. Serial No. 492,957. (No model.)



*Claim.*—1. In an electrically operated railway switch, the combination of magnets E E', an armature common to both, a pivoted lever connected at one end to said armature and at its other end to a switch-rod, contacts arranged adjacent to the main track and to the switch, two independent electric circuits, one through the magnet E, and the other through the magnet E', and respectively connected at one end to said contacts and grounded at the other, a contact-maker carried by the car and operating to complete the circuit from the trolley line through said magnets, a conductor leading from the trolley wire through an electric light to a stationary contact, and a movable contact connected with a ground wire and operated by the armature to make and break the circuit through the lamp, substantially as described and for the purpose specified.

2. In an electrically operated railway switch, the combination of magnets E, E', an armature common to both, a pivoted lever connected at one end to the armature and at its other end to a switch rod, contacts arranged adjacent to the main track and to the switch, two independent electric circuits, one through the magnet E and the other through the magnet E', and respectively connected at one end to said contacts and at the other end to the switch rail, a branch circuit including an electric lamp and mechanism controlled by the said magnets for alternately throwing in and out of circuit the lamp, substantially as described.

526,986. MACHINE FOR MIXING OR WORKING DOUGH. JOHN ADAIR, Waterford, Ireland, assignor to the Adair Syndicate, Limited, London, England. Filed Mar. 3, 1894. Serial No. 502,369. (No model.) Patented in England Feb. 24, 1888, No. 2,750; Sept. 26, 1889, No. 15,143, Nov. 23, 1889, No. 18,771, Feb. 1, 1890, No. 1,714, and Dec. 9, 1890, No. 20,123; in Canada Oct. 15, 1892, No 40,684, and in Victoria Oct. 26, 1892, No. 10,089.



*Claim.*—1. The combination, with a revoluble dough-box, of wires, rods, or knives extending across the same and fixed thereto, and a sponge blender mounted therein, substantially as described.

2. The combination, with a revoluble dough-box, of wires, rod or knives extending across the same and fixed thereto, and a sponge blender supported on pivots and adapted to swing freely between limiting stops, substantially as described.

3. The combination, with a revoluble dough-box, of wires rod or knives extending across the same and fixed thereto, a sponge blender supported on pivots and adapted to swing freely between limiting stops, an opening in said sponge blender and a wire or wires stretched across said opening, substantially as described.

4. The combination, with a revoluble dough-box, of wires, rod or knives extending across the same and fixed thereto, a sponge blender supported on pivots and adapted to swing freely between limiting stops, an opening in said sponge blender, a wire or wires stretched across said opening, and knives fixed to the sponge blender to project from the face thereof, substantially as described.

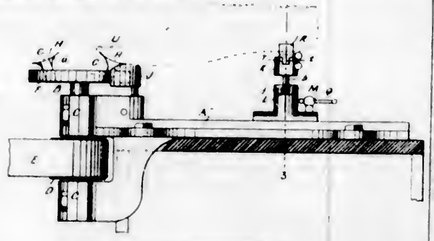
5. The combination, with a revoluble dough-box, of wires, rod or knives extending across the same and fixed thereto, a sponge blender supported on pivots and adapted to swing freely between limiting stops, an opening in said sponge blender a wire or wires stretched across said opening, knives fixed to the sponge blender to project from the face thereof, and a thoroughfare passing through the axle of the dough-box whereby water and steam may be introduced into the box without stopping the same, substantially as described.

526,987. MACHINE FOR MANUFACTURING LASTS FOR BOOTS OR SHOES. WILLIAM H. AUSTIN, Brockton, Mass., assignor to himself, William H. Cary, William Thompson, and Augustus A. Delano, same place. Filed Feb. 1, 1892. Serial No. 419,919. (No model.)

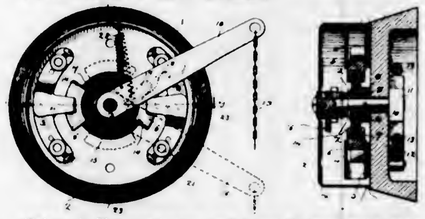
*Claim.*—1. In a last trimming machine, a support for the heel of the last, a revolving shaft, a cutter or cutters supported by said shaft and a guide or rest for the fore part of the last, its bearing surface extending in a horizontal plane in a curved line or arc of a circle outwardly from the heel support, and transversely rounded on such surface in cross section.

2. In a last trimming machine, a swiveling support for the heel of the last, a revolving shaft, cutter or cutters supported by said shaft,

and a guide or rest for the fore part of the last, its bearing surface extending from the heel support in a horizontal plane in a curved line or arc of a circle outwardly from the heel support, and transversely rounded on such surface in cross section.



526,988. ELECTRIC SWITCH. FRANK G. BERON, Waterbury, Conn., assignor of one-half to James F. Gaffney, same place. Filed June 21, 1894. Serial No. 515,275. (No model.)



*Claim.*—1. The combination with a suitable base having an upper and a lower contact on each side, of a shaft carrying a rotary insulating disk provided with contacts on opposite sides adapted to engage the contacts on the base, an angular block and a ratchet, an operating lever carrying a pawl engaging the ratchet, a spring acting to return the operating lever to its normal position when released, each actuation giving a quarter turn to the shaft, ratchet and disk to either open or close the switch, pivoted arms engaging opposite sides of the block and springs connecting said arms and acting to complete each actuation with a snap.

2 The combination with a suitable base having an upper and a lower contact on each side, of a rotary shaft carrying an insulating disk provided with contacts on opposite sides and at its lower end with an angular block 11, mechanism for imparting a quarter turn to the shaft, disk and block at each actuation, pivoted arms adapted to engage the opposite sides of said block, and springs connected to opposite arms and adapted to yield and permit the arms to move outward when the shaft block and disk are actuated, and acting when the center is passed to complete the movement and open or close the switch with a snap.

3. The combination with a suitable base having upper and lower contacts, of a shaft carrying an insulating disk provided with contacts adapted to engage the contacts on the base, an angular block 11 and a ratchet, spring controlled arms engaging the opposite sides of the block whereby each movement of the block is completed with a snap, an operating lever carrying a pawl which engages the ratchet and a spring acting to return the lever to its normal position after each actuation.

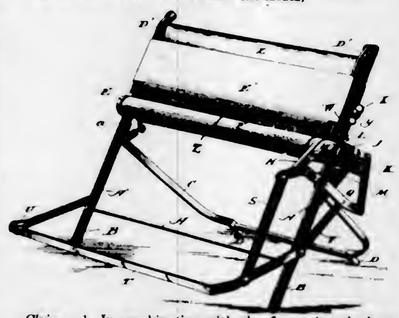
526,989. BOAT-DETACHING APPARATUS. FRANCIS BLANDING, Putnam, Conn. Filed Oct. 12, 1893. Serial No. 487,918. (No model.)



*Claim.*—1. In a releasing mechanism for launching boats, the combination with the hoisting and lowering tackle, of fixtures B B having apertured lugs between which the eyes or loops of the hoisting and lowering tackle are adapted to be placed, rods D D having end portions of smaller diameter than the apertures in the lugs and notches or recesses *d d* in the upper side of the end portions D' D' of the rods which are adapted to be engaged by the lugs when the boat is suspended by the tackle, said rods D D extending from the fixtures along the under side of the gunwales of the boat to a central thwart, a lever E pivoted to the under side of the thwart, and springs connected to said lever and to the thwart, substantially as shown and for the purpose set forth.

2. In a device for launching boats, a boat having guides attached to the opposite sides and ends thereof adjacent to the gunwales, rods D D carried by said guides and bent to conform to the shape of the boat, the ends adjacent to the bow and stern being bent to lie on a line with the keel or longitudinal center of the boat and engage with fixtures B B, having upwardly projecting portions *b b* with apertures *b' b'*; the end portions D' D' of the curved rods having notches *d d* in their upper surfaces; a cross-bar E pivoted to a central thwart or seat, and springs F F which draw upon the cross-bar so as to hold the rods D D normally out of engagement with the fixtures B B, in combination, with the hoisting and lowering tackle, substantially as shown, whereby the weight of the boat when supported by the hoisting and lowering tackle will hold the rods in locked engagement with the fixtures B B, for the purpose set forth.

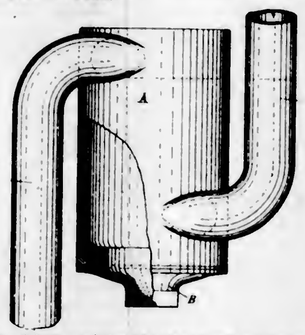
526,990. COPY-HOLDER. JOHN R. BUCKLIN, Washington, D. C., assignor to the Bucklin Copy Holder Company, Richmond, Va. Filed May 29, 1894. Serial No. 512,849. (No model.)



*Claim.*—1. In combination with the frame A and plates E, G, having the cylinder F mounted therein said cylinder being provided with friction wheel J the swinging plate K, pawl or dog O pivoted thereto, link R, arms Q and H, rod S, swinging frame T, retracting springs M, V, and stops I, P, substantially as and for the purpose set forth.

2. The combination and arrangement of the frame A, roll or cylinder F, journaled therein, the roll B', journaled in the swinging frame A', plate Z, swinging arms D', D' and adjustable plate E', substantially as and for the purpose set forth.

526,991. TRAP. HIRAM T. BUSH, Detroit, Mich., assignor to the Ideal Manufacturing Company, same place. Filed Dec. 2, 1893. Serial No. 492,622. (No model.)

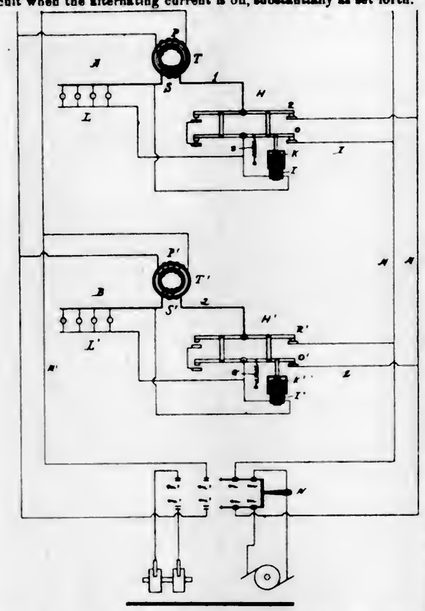


*Claim.*—A trap consisting of a tight vessel, an inlet-pipe tangentially entering said vessel near its lower part, and an outlet pipe leading out through the wall of the vessel above the level of the inlet-pipe, substantially as described.

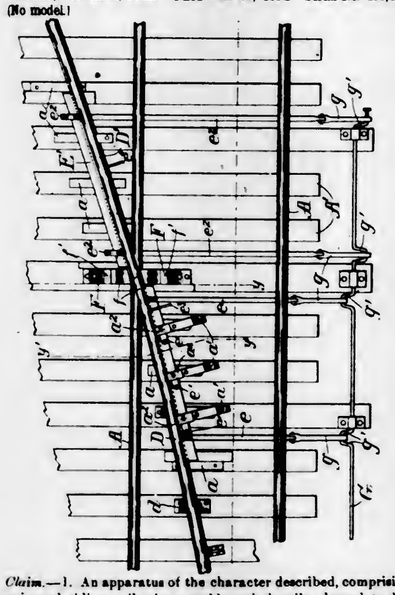
526,992. COMBINED SYSTEM OF ALTERNATING AND DIRECT CURRENT DISTRIBUTION. ALBERT L. CLOUGH, Manchester, N. H., assignor of one-half to Joseph Brodie Smith, same place. Filed May 15, 1894. Serial No. 511,289. (No model.)

*Claim.*—The combination of a source of direct and of alternating currents of conductors for the distribution of said currents, of branches to connect the translating devices to the direct current mains, of transformers having their primaries connected to the alternating current mains, and each having its secondary included in one side of its appropriate branch, and of devices to short circuit said direct current mains when the alternating current is on and to remove the short circuit when the alternating current is off, substantially as set forth.





526,993. RAILROAD-SWITCH. JAMES R. CROW and JOHN H. MULKEY, Cleveland, Tenn. Filed Jan. 30, 1894. Serial No. 498,472. (No model.)



*Claim.*—1. An apparatus of the character described, comprising the main and siding rails, the movable switch rails adapted to lap over the main rails, a fixed plate provided with double inclines placed beneath one of the main rails, two movable switch rails adapted to be forced up over these double inclines and to meet above the main rail, sliding plates adapted to push the switch rails up the said inclines and to slide beneath and support the said rails, guides for said sliding plates, toggle joints connecting said guides and said sliding plates and adapted to bear against said rails in the line of greatest resistance when said rails are set for the siding, and means for moving said sliding plates in either direction, substantially as described.

2. An apparatus of the character described, comprising the main and siding rails, the movable switch rails adapted to lap over the main rails, a fixed plate provided with double inclines placed beneath one of the main rails, two movable switch rails adapted to be forced up over these double inclines and to meet above the main rail, sliding plates adapted to push the switch rails up the said inclines and to slide beneath and support said rails, guides for said sliding plates, toggle joints connecting said guides and said sliding plates and adapted to bear against said rails in the line of greatest resistance when said rails are set for the siding, and means for moving said sliding plates in either direction, substantially as described.

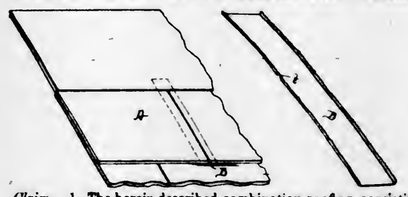
3. An apparatus of the character described, comprising the main and siding rails, the movable switch rails adapted to lap over the main rails, an operating shaft provided with a plurality of cranks, and means for turning said shaft, rods connecting said cranks to said movable switch rails, a fixed plate provided with double inclines placed beneath one of the main rails, two movable switch rails adapted to be forced up over these double inclines and to meet above the main rail, sliding plates adapted to push the switch rails up the said inclines and to slide beneath and support said rails, and means for operating said sliding plates, substantially as described.

4. An apparatus of the character described, comprising the main and siding rails the movable switch rails adapted to lap over the main rails, an operating shaft provided with a plurality of cranks, and means for turning said shaft, rods connecting said cranks to said movable switch rails, a fixed plate provided with double inclines placed beneath one of the main rails, two movable switch rails adapted to be forced up over these double inclines and to meet above the main rail, sliding plates adapted to push the switch rails up to said inclines and to slide beneath and support said rails, guides for said sliding plate, toggle joints connecting said guides and said sliding plates and adapted to bear against said rails in the line of greatest resistance when said rails are set for the siding, and means for moving said sliding plates in either direction, substantially as described.

5. An apparatus of the character described, comprising the main and siding rails, the movable switch rails adapted to lap over the main rails, an operating shaft provided with a plurality of cranks, and means for turning said shaft, rods connecting said cranks to said movable switch rails, a fixed plate provided with double inclines placed beneath one of the main rails, two movable switch rails adapted to be forced up over these double inclines and to meet above the rails, sliding plates adapted to push the switch rails up the said inclines and to slide beneath and support the said rails, guides for said sliding plates, toggle joints connecting said guides and said sliding plates and adapted to bear against said rails in the line of greatest resistance when said rails are set for the siding, and connecting rods between the operating shaft and said sliding plates, for moving said sliding plates in either direction, substantially as described.

6. An apparatus of the character described, comprising the main and siding rails, the movable switch rails adapted to lap over the main rails, an operating shaft provided with a plurality of cranks, and means for turning said shaft, rods connecting said cranks to said movable switch rails, a fixed plate provided with double inclines placed beneath one of the main rails, two movable switch rails adapted to be forced up over these double inclines and to meet above the main rail, sliding plates adapted to push the switch rails up the said inclines and to slide beneath and support said rails, and connecting rods between the operating shaft and said sliding plates for operating said sliding plates, substantially as described.

526,994. COMBINATION-ROOFING. CHARLES H. DANA, West Lebanon, N. H. Filed May 29, 1894. Serial No. 512,884. (No model.)



*Claim.*—1. The herein described combination roofing, consisting of a series of courses of wooden shingles, and a series of supplementary narrow, metallic strips, of trough-form, one of said strips being placed underneath each joint in the courses, and upward spurs or teeth on the lateral edges of said strips, substantially as specified.

2. The herein described combination roofing, consisting of a series of single lapped wooden shingles, and a series of supplementary,

narrow, trough-shaped metallic strips of spring character, and longitudinally convexed, one of said strips being placed underneath each joint of the courses, and extending above the laps thereof, and teeth or spurs on said strips for retaining them in place, substantially as specified.

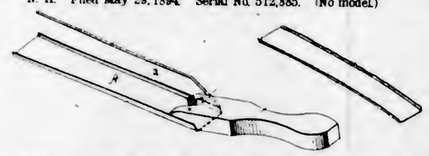
3. The herein described repair strip or shingle consisting of a thin metallic strip or plate, having at each lateral edge a longitudinal ridge or flange formed at its upper edge with teeth or spurs, substantially as specified.

4. The herein described repair strip or shingle consisting of a thin metallic strip or plate of spring character, and having at each edge a longitudinal rib or flange having its upper edge formed with teeth or spurs for retaining said strip in place, substantially as specified.

5. The herein described repair strip or shingle, comprising a metallic spring metal, trough shaped strip, longitudinally convex, and provided with upward spurs or teeth on its edge flanges, substantially as specified.

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526,995. ROOFING-TOOL. CHARLES H DANA, West Lebanon, N. H. Filed May 29, 1894. Serial No. 512,885. (No model.)

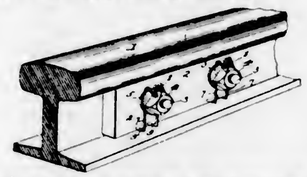


*Claim.*—1. The herein described roofing tool or implement comprising a narrow, elongated blade, adapted to be inserted beneath a shingle, and having upturned edge flanges extending the length thereof, and of the same height throughout, and an upwardly projecting handle attached to one end portion of such blade, substantially as specified.

2. The herein described roofing tool, or implement, comprising a blade, a handle attached thereto, and an over-guide, substantially as specified.

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526,996. NUT-LOCK. ARTHUR EDWARDS, Willow Springs, Mo. Filed July 7, 1894. Serial No. 516,848. (No model.)



*Claim.*—1. A nut lock consisting of a wire section bent upon itself to form a loop, the V-shaped recess 8 formed therein and adapted to engage the nut, the free ends of the arms of the loop being adapted to be bent in any desired direction to engage a fixed portion of the device supporting it to prevent the lock turning on the bolt, substantially as described.

2. A nut lock consisting of a wire bent upon itself to form a U-shaped loop, a V-shaped recess formed in the closed end of said loop, said closed end being adapted to be bent over the nut to lock it, the V shaped recess engaging one corner thereof, the free ends of the arms of the loop being adapted to engage the device supporting it and prevent the lock turning on the bolt, substantially as described.

3. A nut lock consisting of a wire bent to form a U-shaped loop, a V-shaped recess formed in the closed end of said loop, said closed end being bent at right angles to the arms of the loop and adapted to be bent down over the nut as described, the free ends of the arms of the loop being adapted to be bent in any direction, substantially as described and for the purpose set forth.

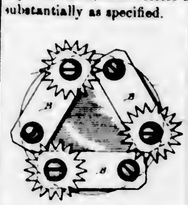
4. A nut lock consisting of a wire bent to form a U-shaped loop, recess 8 formed therein, the free ends of the arms of the loop being adapted to be bent as described, in combination with a washer provided with a recess 10 and projections 11, substantially as described and for the purpose set forth.

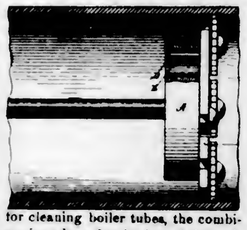
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526,997. DEVICE FOR CLEANING THE INTERIORS OF BOILER-TUBES. WILBER D. FORSYTH and EROS T. BELL, Dublin, Ind. Filed Nov. 21, 1893. Serial No. 491,571. (No model.)

*Claim.*—1. The herein described tool or implement for removing scale from the interior of boiler tubes, comprising a head or carrier adapted to be rapidly rotated, a series of arms loosely connected at one end portion to said head or carrier, said arms being parallel with the face of the head or carrier to which they are pivoted, and rolling cutters carried by the free end portions of said arms, substantially as specified.

2. In a tool or implement for cleaning boiler tubes, a series of arms supported loosely in planes at right angles to the axis of the tube, said arms being adapted to be forced through the tube under rapid rotation, and a series of rolling cutters carried by said arms, substantially as specified.





3. In a tool or implement for cleaning boiler tubes, the combination with a suitable head or carrier adapted to be forced through a boiler tube and rapidly rotated, of a series of arms loosely pivoted to said head or carrier and extending therefrom in planes parallel with the face of the head or carriar to which they are attached, and small serrated cutter wheels loosely journaled on said arms, substantially as specified.

4. In a device for removing scale from the interior of boiler tubes, the combination with a head or disk, and means for rapidly rotating such head or disk, of a series of arms eccentrically pivoted to the forward face of said head or disk, pins or projections on the posterior faces of said arms engaging apertures or slots in said head or disk, and rolling cutters carried by the free portions of said arms, substantially as specified.

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526,998. AERATOR. HARRY FOWELL, Belleville, Canada. Filed Mar. 2, 1894. Serial No. 502,044. (No model.) Patented in Canada Mar. 3, 1892, No. 38,394.



*Claim.*—1. In an aerator the combination with the strainer provided with a tapering bottom and a collar extending down from the bottom, of a conical deflecting plate provided at the top with an upwardly extending cylindrical collar having an inwardly extending bead formed around it and perforations made in the bead, and at the bottom edge with a vertical rim and perforations situated at the bottom of the conical portion within the rim, and a saucer shaped deflecting plate provided at its outer edge with a vertical rim and having its inner ends supported above the conical plate, F, beneath the perforations in the collar, D, so as to form an annular opening around the collar as and for the purpose specified.

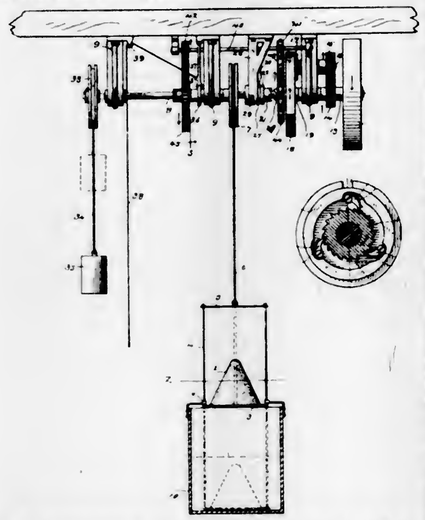
2. In combination, the truncated conical deflector, the ice receptacle suspended beneath the truncated portion, the conical cap covering the opening to said receptacle, an annular collar projecting from said cap having an inwardly projecting perforated bead, and a strainer having a downwardly projecting flange fitting said collar and supported by the bead, substantially as described.

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526,999. MACHINE FOR WETTING HAT-BODIES ON CONES. GEORGE W. GROVER and JAMES A. NORTHROP, New Milford, Conn.; said Grover assignor to Clarence L. Morgan, Danbury, Conn. Filed Feb. 26, 1894. Serial No. 501,478. (No model.)

*Claim.*—1. The combination with a support for a hat cone and a shaft from which said support is suspended, of means for locking said shaft against rotation, driving mechanism operating independently of the shaft and provided with a clutch member, a sleeve also provided with a clutch member which is carried by the shaft and is adapted to be moved longitudinally thereon, and suitable mechanism intermediate the shaft and sleeve by which the sleeve is moved to place the clutch members in engagement when the shaft is rotated by the downward movement of the support, the engagement of said clutch members causing the shaft to be reversed and the support to be raised to its normal position.





2. The combination with a support for a hat cone and a shaft carrying a pulley from which said support is suspended, of driving mechanism supported by the shaft but rotating independently thereof, a sleeve carried by the shaft and free to move longitudinally thereon, a clutch member 20 rotating with the driving mechanism, a clutch member 21 on said sleeve, clutch operating mechanism by which the sleeve is moved to place the clutch members in engagement when the shaft is rotated by the downward movement of the support, the engagement of said clutch members causing the shaft to be reversed and the support to be raised, and a latch 37 by which the shaft is locked against rotation and the support held at the raised position.

3. The combination with a support for a hat cone and a shaft from which said support is suspended, of driving mechanism operating independently of the shaft, clutch mechanism by which the driving mechanism and shaft may be connected and mechanism operated by rotation of the shaft when the support moves downward to place the clutch members in engagement whereby the shaft is reversed and the support returned to its normal position.

4. The combination with a support for a hat cone and a shaft from which said support is suspended, of driving mechanism operating independently of the shaft, a clutch member 20 rotating with the driving mechanism, a sleeve 22 carried by the shaft and having longitudinal motion thereon and provided with a clutch member 21 and an angle pin 27, a loose collar 24 carried by the sleeve but capable of independent rotation and provided with a pin 25 and a stud 26, and a rigid depending arm 28 having an oblique slot 29 which is engaged by the stud so that when the shaft is rotated by the downward movement of the support the pin on the loose collar is engaged by the angle pin on the sleeve which rotates the loose collar and through the engagement of the stud with the oblique slot moves the collar and sleeve longitudinally on the shaft and places the clutch members in engagement.

5. The combination with a support for a hat cone, a shaft 8, gear wheel 45 loose thereon and carrying a ratchet 46, and driving mechanism rotating independently of the shaft, said driving mechanism carrying a clutch member 20, of shaft 40 carrying a pinion engaging gear wheel 45, a chain and sprocket connection between shaft 40 and the driving mechanism, a hub 48 carried by the shaft and having pawls engaging the ratchet, a sliding sleeve carried by the shaft, and provided with a clutch member 21 and mechanism whereby the sleeve is moved to place the clutch members in engagement when the shaft is rotated by the downward movement of the support, during which movement the pawls engage the ratchet so that the downward movement of the support is limited by the speed of the driving mechanism, the engagement of the clutch members acting to reverse the movement of the shaft, during which movement the pawls slide over the teeth of the ratchet.

6. The combination with a support for a hat cone, shaft 8 carrying a hub 48 with a collar 36 having a notch 52 and gear wheel 45 loose on said shaft and carrying a ratchet 46, of driving mechanism rotating independently of the shaft and carrying a clutch member 20, shaft 40 carrying a pinion engaging the gear wheel, a chain and sprocket connection between the driving mechanism and shaft 40, pawls in said hub which engage the ratchet, sleeve 22 having a clutch member 21, mechanism for moving said sleeve to place the clutch members in engagement when the shaft is rotated by the downward movement of the support, and a latch adapted to engage the notch to lock the shaft against rotation when the support is at the raised position.

7. The combination with the tank having guides 11, support 3 carried by rods 4 which slide in the guides and shaft 8 from which the support is suspended, of driving mechanism rotating independently of the shaft and carrying a clutch member 20, a sleeve 22 carrying a clutch member 21 and adapted to slide longitudinally on the shaft and mechanism for moving said sleeve to place the clutch members in engagement when the shaft is rotated by the downward movement of the support.

8. The combination with support 3, shaft 8 from which said support is suspended and driving mechanism rotating independently of the shaft and carrying a clutch member 20, of sleeve 22 carrying a clutch member 21 and adapted to slide longitudinally on the shaft, mechanism for moving said sleeve to place the clutch members in engagement when the shaft is rotated by the downward movement of the support, gear wheel 45 loose on the shaft and carrying a ratchet 46, hub 48 carried by the shaft and having pawls engaging the ratchet, and mechanism intermediate the driving mechanism and the gear wheel for driving the latter, said pawls engaging the ratchet when the shaft is rotated by the downward movement of the support so that the movement is limited by the speed of the driving mechanism, and the pawls sliding over the teeth of the ratchet when the shaft is rotated by the driving mechanism through the engagement of the clutch members.

9. In combination, shaft 8, driving mechanism rotating independently of the shaft and carrying a clutch member 20, sleeve 22 carried by the shaft and having longitudinal movement thereon said sleeve having a clutch member 21, and mechanism for moving said sleeve to place the clutch members in engagement when the shaft is rotated in one direction, the engagement of said clutch members acting to reverse the movement of the shaft.

10. In combination shaft 8, driving mechanism rotating independently of the shaft and carrying a clutch member 20, sleeve 22 carried by the shaft and having longitudinal movement thereon, said sleeve having a clutch member 21 and an angle pin 27, loose collar 24 carried by said sleeve and having a pin 25 and a stud 26, an arm 28 having an oblique slot 29 which is engaged by said stud so that when sleeve 22 is rotated by the shaft the loose collar is rotated through the engagement of the pins, and through the engagement of the stud with the angle slot the collar and sleeve are moved longitudinally on the shaft thereby placing the clutch members in engagement and reversing the movement of the shaft.

11. In combination shaft 8 having a notched collar 36, driving mechanism rotating independently of the shaft and carrying a clutch member 20, sleeve 22 carried by the shaft and having longitudinal movement thereon, said sleeve having a clutch member 21, mechanism for moving said sleeve to place the clutch members in engagement when the shaft is rotated in one direction, the engagement of said clutch members acting to reverse the movement of the shaft, and a swinging latch adapted to engage the notched collar to lock the shaft against rotation after the reversed movement.

12. In combination shaft 8 carrying a hub 48 having pawls 50, gear wheel 45 loose on said shaft and carrying a ratchet engaged by said pawls, driving mechanism rotating independently of the shaft and carrying a clutch member 20, sleeve 22 carried by the shaft and having longitudinal movement thereon, said sleeve having a clutch member 21, mechanism for moving said sleeve to place the clutch members in engagement when the shaft is rotated in one direction, and mechanism intermediate the driving mechanism and gear wheel 45 by which the latter is driven, said pawls engaging the ratchet simultaneously with the movement of sleeve 22 so that the movement of shaft 8 in one direction is limited by the speed of the driving mechanism, said pawls sliding over the teeth of the ratchet when the movement of the shaft is reversed through the engagement of the clutch members.

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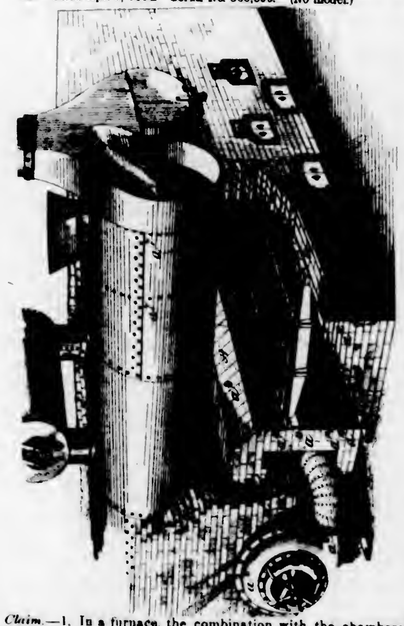
527,000. NON-CONDENSING APPARATUS FOR STEAM-WHISTLES. JOHN G. HERMES, Mount Vernon, N. Y. Filed Aug. 2, 1894. Serial No. 519,275. (No model.)

*Claim.*—1. The combination with a steam whistle, of a steam supply pipe and a steam discharge pipe in permanent and uninterrupted communication with each other whereby a continuous circulation of steam is maintained through said pipes, a branch passage leading from said pipes to the whistle and a valve arranged in said branch passage, substantially as described.



2. A circulating pipe for a steam whistle, said circulating pipe comprising a supply branch, a discharge branch housed in the supply branch, in combination with a whistle substantially as described.

527,001. **BAGASSE-BURNER.** EDOUARD A. KOCH, Bayou Goula, La. Filed Apr. 9, 1894. Serial No. 506,899. (No model.)



*Claim.*—1. In a furnace, the combination with the chambered bridge and side walls, the chambers thereof communicating with a source of air-supply and provided with outlets terminating in air-tuyeres opening into the combustion-chamber, of a grate composed of alternate hollow and solid bars, the hollow bars being connected with the chamber of the bridge-wall, and regulating dampers in the bridge-wall chamber controlling the air-supply, substantially as described.

2. In a furnace, the combination with the chambered side and bridge walls, the chambers thereof communicating with a source of air supply and provided with outlets terminating in air-tuyeres opening into the combustion-chamber, of a grate composed of alternate hollow and solid bars, the hollow bars being connected with the chamber of the bridge-wall, and dampers in the bridge wall chamber by which the air-blast may be controlled and directed through the tuyeres or the hollow bars, substantially as described.

3. In a furnace, a chamber in a wall, the chamber having a horizontal partition, provided with one or more valves or dampers operated to establish or cut off communication between the parts of the chamber above and below the partition, and having openings out of the chamber, above and below the partition, substantially as and for the purpose set forth.

4. In a furnace, the combination with the chambered side and bridge walls, a connection from a source of air-supply to the chambers and outlets from the chambers terminating in air-tuyeres opening into the combustion-chamber, of a grate composed of alternate hollow and solid bars, the hollow bars being connected with the chamber of the bridge-wall and provided with removable lids or covers and outlets between the adjoining surfaces of the bar and the lid, substantially as described.

5. A hollow grate-bar, open at the top and provided with an inlet, a lid removably secured upon the bar and completely closing the open top, the edges of the lid projecting beyond the sides of the bar, and a series of outlets formed between the adjoining faces of the bar and lid, substantially as described.

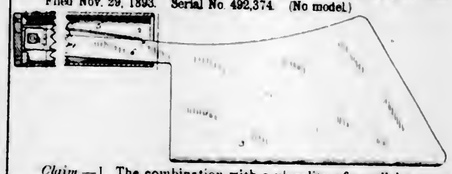
6. A hollow grate-bar, open at the top and provided with an inlet, a lid removably secured upon the bar, and completely closing the open top thereof, the lower face of the lid being beveled from each edge, inward toward the center and diagonally notched or grooved to form a series of outlets discharging the air toward the bridge-wall and directly into and under the fuel, substantially as described.

7. A hollow grate bar having lateral openings slanting upward and backward to discharge the air, when the grate-bar is in position, backward and directly under and into the fuel, and provided with a lid projecting laterally over the openings, to guard them and spread the blast, substantially as described.

8. The combination with the hollow grate-bar having lateral openings slanting upward and rearward, of grate-bars having their surfaces provided with one or more grooves, substantially as described.

9. The combination with a hollow grate bar of a lid or cover having a spacing rib or spacing ribs forming longitudinal passages on its surface, and made detachable and in sections, substantially as and for the purpose set forth.

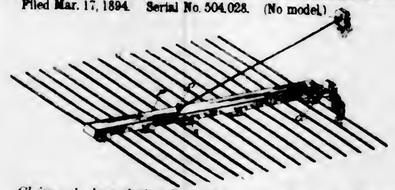
527,002. **CHOPPING-KNIFE.** REINHOLD MAYER, Bridgeport, Conn. Filed Nov. 29, 1893. Serial No. 492,374. (No model.)



*Claim.*—1. The combination with a plurality of parallel cutters having shanks 4, of a handle provided with slots at its forward end through which the shanks pass, a hub at the base of the handle to which the shanks are pivoted and springs within the handle which bear upon the backs of the cutters and permit the latter to yield in use.

2. The handle having slots at its forward end and bosses 11 at its rear end and a cap secured to the handle by screws engaging the bosses and having a hub 8, in combination with a plurality of cutters having shanks which pass through the slots and are pivoted to the hub and springs secured to the top of the handle and bearing upon the tops of the cutters as and for the purpose set forth.

527,003. **CLOTHES-DRIER.** BENJAMIN F. NICHOLAS, Renovo, Pa. Filed Mar. 17, 1894. Serial No. 504,028. (No model.)



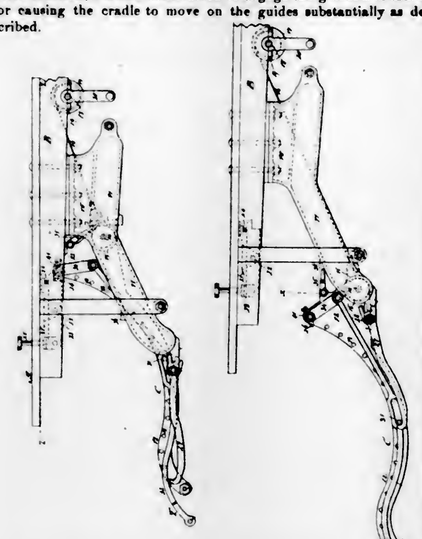
*Claim.*—1. In a clothes drier, the combination, with a horizontal bar and a series of removable rods secured to and extending at right angles from said bar, of an end plate having a downwardly extending trunnion formed with a round portion and a tapering, angular portion, and a wall plate having a laterally projecting lug formed with an opening having a tapering, angular portion and a cylindrical portion corresponding in shape to the shape of said trunnion, whereby said bar may be locked at right angles to and also parallel with the wall, substantially as described.

2. In a clothes drier, the combination, of a bar having a series of loops secured thereto, a plate extending downwardly from one end of said bar, a series of removable rods, and means for pivotally securing said bar to a wall or other support, substantially as described.

527,004. **CAR-FENDER.** ROBERT RAPHAEL, Brooklyn, N. Y., assignor to William J. McKelvey, same place. Filed Oct. 27, 1893. Serial No. 489,300. (No model.)



*Claim.*—1. A car fender composed of brackets adapted to be secured to the bottom of a car, downwardly inclined guides formed on these brackets, a cradle constructed to engage the guides and means for causing the cradle to move on the guides substantially as described.



2. A car fender composed of brackets adapted to be secured to the bottom of a car, guides formed on these brackets and provided with horizontal sections and with downwardly inclined sections, a cradle constructed to engage these guides and means for causing the cradle to move on the guides substantially as described.

3. A car fender composed of brackets adapted to be secured to the bottom of a car, downwardly inclined guides formed on the brackets, a cradle constructed to engage the guides, a dog 26 secured to the cradle, a lever 23 pivoted in the car and adapted to engage the dog 26 and means for throwing said lever out of engagement with the dog 26 substantially as described.

4. A car fender composed of brackets adapted to be secured to the bottom of a car, downwardly inclined guides formed on these brackets, a cradle constructed to engage these guides and to move thereon and dogs 27 and pins 31 for supporting the cradle when the same has moved down on its guides substantially as described.

5. A car fender composed of brackets adapted to be secured to the bottom of a car, downwardly inclined guides formed on these brackets a cradle constructed to engage these guides and to move thereon, a stop for retaining the cradle at the upper ends of said guides and the tripping frame for automatically releasing the cradle whenever said tripping frame comes in contact with an obstruction substantially as described.

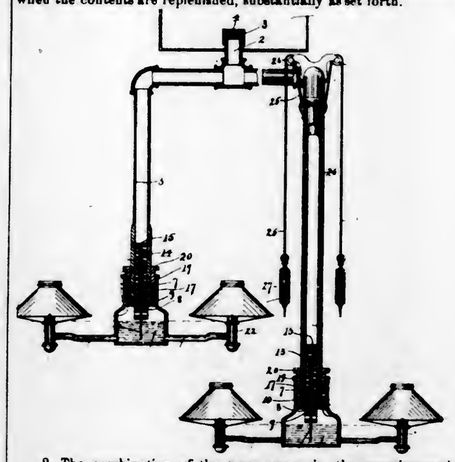
6. A car feoder composed of brackets adapted to be secured to the bottom of a car, downwardly inclined guides formed on these brackets, a cradle constructed to engage these guides and to move thereon, a tripping frame connected to the cradle and dogs 27 and pins 31 for supporting the cradle and the tripping frame substantially as described.

7. A car fender composed of brackets adapted to be secured to the bottom of a car, downwardly inclined guides formed on these brackets, a cradle constructed to engage these guides and to move thereon, a rock-shaft 41 mounted in the cheeks of the cradle, a dog 26 mounted on this rock-shaft, a suitable abutment to engage said dog when the cradle is situated on the upper ends of the inclined guides, levers 34 mounted on the rock-shaft 41 and the tripping frame T connected to said levers substantially as described.

8. In a car fender brackets secured to the bottom of the car and provided with horizontal ways, said ways being downwardly inclined at their outer ends and a cradle constructed to engage such ways substantially as described.

527,005. **APPARATUS FOR LIGHTING BUILDINGS.** JOHN S. ROBLIE, West Bay City, Mich. Filed Aug. 25, 1892. Serial No. 444,060. (No model.)

*Claim.*—1. The combination of the lamp reservoir, the superimposed supply tank, a supply pipe leading from the tank and extending into said reservoir and provided with an upwardly facing valve seat, a valve upon the seat and provided with a guide pin extending below the pipe and in proximity to the bottom of said reservoir, and means for automatically lifting the reservoir to open the valve when the contents of the reservoir are reduced, and for lowering the same when the contents are replenished, substantially as set forth.



2. The combination of the lamp reservoir, the superimposed supply tank, a supply pipe leading from the tank and extending into the reservoir and provided on its lower end with an upwardly facing valve seat, a valve upon the seat and provided with an operating pin extending below the end of the pipe, and means as a spring for supporting the reservoir and for automatically moving the reservoir to contact with the end of said guide pin to lift the valve when the oil supply is diminished, substantially as described.

3. The combination of a lamp reservoir, a supply tank above the reservoir, a supply pipe leading from the tank and with its vertical lower end passed into the reservoir, and provided with an upwardly facing valve seat, a valve upon the seat and provided with a downwardly extending operating pin reaching below the end of the pipe, a spring for lifting the reservoir to contact with the pin for opening the valve, and for permitting a downward movement of the same when the reservoir has received its oil supply, substantially as set forth.

4. The combination of the superimposed open tank, a supply pipe leading from the tank and provided with a vertical lower portion having on its end an upwardly facing valve seat and a valve upon the seat and provided with an operating pin extending below the end of the pipe, with a lamp reservoir having its bottom in proximity to said operating pin and having on its upper portion an open neck passed over the end of the supply pipe, a spring carried by the supply pipe for supporting the reservoir and means for adjusting the spring, for the purpose set forth substantially as described.

5. In an apparatus of the class described, the combination with an elevated tank and a depending supply tube provided with a valve for regulating the flow of oil therethrough, of a lamp reservoir loosely supported on the supply tube and arranged to automatically open the valve as the supply of oil in said reservoir is reduced, substantially as described.

6. In an apparatus of the class described, the combination with an elevated tank and depending supply tube provided with a valve for regulating the flow of oil therethrough, of a lamp reservoir loosely supported on said tube, and means for automatically moving the reservoir on the tube and opening the valve thereof as the supply of oil in said reservoir is reduced, substantially as described.

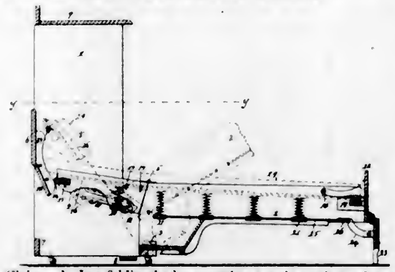
7. The combination with an elevated tank and depending supply tube provided with an internal valve having a stem which projects beyond the lower end of the supply tube, of a lamp reservoir loosely supported on said tube near the lower end thereof and communicating therewith, and means for automatically moving said reservoir longitudinally on the supply tube and into contact with the depending valve stem as the supply of oil in said reservoir is reduced, substantially as and for the purpose described.

8. The combination with an elevated tank and depending supply tube provided at its lower end with an annular flange or collar, 16, of a lamp reservoir fitted around the lower end of the supply tube and having its upper end closed, a valve arranged within the supply tube and provided with an operating pin that extends into the lamp reservoir, and a coil spring fitted around the tube between the collar 16 thereon and the upper end of the lamp reservoir and adapted to move the reservoir longitudinally of the tube to open the

valve therein as the supply of oil in said reservoir is reduced, substantially as described.

9. The combination with an elevated tank and a depending supply tube, of a casing or shell, 24, fitted loosely on the tube and adapted to move longitudinally thereof, a lamp reservoir carried by the casing 24 and communicating with the supply tube, a valve arranged within the supply tube and provided with an operating pin that extends into the lamp reservoir, and means attached to the casing 24 for automatically moving the same and the reservoir supported thereby longitudinally of the supply tube, to open the valve therein, as the supply of oil in said reservoir is reduced, substantially as described.

527,006. FOLDING BED. MARKS SAMUELS, New York, N. Y. Filed June 14, 1894. Serial No. 514,562. (No model.)



*Claim.*—1. In a folding bed comprising a main section, a foot section and a head section, the combination of guides attached to the sides of the main section, a guiding face arranged in the rear of said guides, and lugs or supports secured to the head section and adapted to pass into and out of the guides, said head section being guided by said guiding face, substantially as described.

2. In a folding bed comprising a main section, a foot section and a head section, the combination with guides or ways attached to the main section, lugs or supports attached to the head section and adapted to pass in and out of said guides, a friction roll carried by the free end of the head section, and a guiding face, for guiding said lugs into and out of said guides as the bed is folded and unfolded, substantially as described.

527,007. BASE FOR FURNITURE. WILLIAM P. TRACY, Grand Rapids, Mich. Filed Apr. 19, 1894. Serial No. 508,112. (No model.)



*Claim.*—1. In combination the platform and hinged leaf, the base mounted on the platform, a rolling support between the base and platform, and a pivotal connection for the base, said pivotal connection having sliding movement from the platform forward upon the leaf, substantially as described.

2. In combination, the platform, the leaf hinged thereto, said platform and leaf having a groove or way therein, the base having a pivot sliding in said groove, and casters supporting said base, substantially as described.

3. In combination, the platform, the leaf hinged thereto, said platform and leaf having a groove or way therein, a base having a pivot provided with a sliding connection with said groove, casters supporting the base, and a bearing ledge upon the rear of the platform adapted to contact with one of the corners of the base, substantially as described.

4. In combination, the platform having a groove or way therein, the base mounted on casters thereon and having a pivot sliding in said groove or way and the grooved leaf hinged to said platform and adapted to form a continuation thereof, said base having an opening or recess adapted to receive the leaf when the same is swung upward, substantially as described.

5. In combination, the platform, the leaf hinged thereto, said platform and leaf having a groove transversely therein, a base mounted on casters on said base, a block sliding in said groove and having pivotal connection with the base, and extensions from the ends of said block filling up said grooves and providing a flush bearing surface for the casters, substantially as described.

6. In combination with the grooved platform and leaf, the block sliding in said groove, the base and a pivotal connection between said base and block comprising the pivot pin extending through the bottom of the base, and having a spring encircling the same and exerting a downward pressure upon said bottom, substantially as described.

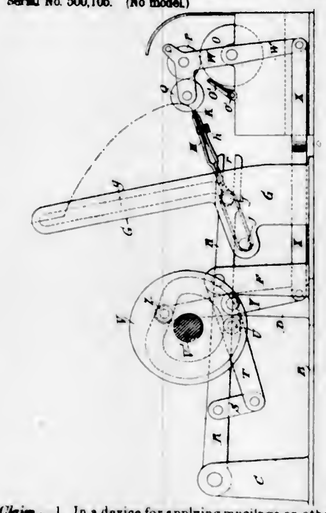
527,008. COMBINED WIRE-STRETCHER AND STAPLE PULLER. GEORGE H. WILBER, Carthage, Mo. Filed May 11, 1894. Serial No. 510,884. (No model.)



*Claim.*—1. In a wire stretcher, a bar composing the body of the stretcher, rearwardly curved prongs on one end of said bar and a V-shaped slot in the body of said bar at the inner end of said prongs for the purpose of grasping a wire; substantially as described.

2. In a wire stretcher, the combination of a bar, rearwardly curved prongs on one end of said bar, a V-shaped slot between said prongs in the body of said bar, and a claw on the opposite end of said bar; substantially as described.

527,009. DEVICE FOR MECHANICALLY APPLYING MUCILAGE. VICTOR H. BASKERQUE, Washington, D. C. Filed Feb. 14, 1894. Serial No. 500,105. (No model.)



*Claim.*—1. In a device for applying mucilage or other substance, a carrier therefor, means for giving travel thereto to bring the said carrier into end-on contact with the material to which said substance is to be applied, and means for applying the said substance to that face only of the said carrier that makes contact with said material, while the said carrier is stationary, substantially as set forth.

2. In a device for applying mucilage or other substance, curved or angular guideways G, a carrier K, and holder H provided with guides traveling in the said guideways, an actuating cam V, a lever R, connections between the said lever and the said cam and between the said lever and the said holder causing the said cam to give travel to the said holder within the said guideways, and means co-operating with or driven by the said cam V to deliver mucilage or other substance to the said carrier while the holder is at rest, substantially as and for the purposes set forth.

3. In combination with a carrier operating to apply mucilage or other substance, a supply device consisting of one or more rotary rollers mounted in a movable frame and arranged to receive mucilage or other substance, and means for giving motion to the said frame to bring the said roller or rollers into contact with the said carrier from time to time, substantially as and for the purposes set forth.

4. In combination with a carrier operating to apply mucilage or other substance, a supply device consisting of one or more rotary rollers arranged to receive mucilage or other substance, and means for giving motion to the said roller or rollers to bring it into contact with the said carrier from time to time, the path of travel of the said roller or rollers being such as to bring the roller or rollers into contact with the face of the carrier in a plane perpendicular thereto and passing through the axis of the roller and the central line of the carrier substantially as and for the purposes set forth.

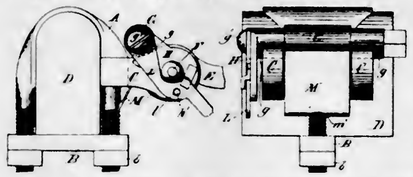


5. In combination with a carrier operating to apply mucilage or other substance, a supply device consisting of a tank or well containing the mucilage or other substance, a rotary roller O partially immersed therein, one or more rotary rollers in contact with said roller O and mounted upon a movable frame, and means for actuating the said frame cooperating with the said carrier to bring one of the said rollers in contact with the said carrier at suitable times, substantially as and for the purposes set forth.

6. In combination with a carrier operating to apply mucilage or other substance, a supply device consisting of a tank or well containing mucilage or other substance, a rotary roller O partly immersed therein, one or more rotary rollers in contact with said roller O mounted upon a movable frame, a scraper or brush for removing excess of mucilage or other substance from the said roller O, and means for actuating the said frame co-operating with the said carrier to bring one of the said rollers in contact with said carrier at suitable times, substantially as and for the purposes set forth.

7. In a device for applying mucilage or other substance, curved or angular guideways G, a carrier K and holder H therefor, provided with guides traveling in said guideways, an actuating lever R for the said holder, an actuating cam V, connections for operating the said lever by the said cam, a supply device consisting of a tank or well containing the mucilage or other substance, a movable frame W, connections for operating the said frame by the said cam, and one or more rotary rollers mounted upon the said frame for supplying the said mucilage or other substance from time to time, from the said tank or well to the said carrier, substantially as and for the purposes set forth.

527,010. THILL-COUPLING. RICHARD BRENT and EDWIN BRENT, Wilkes-Barré, Pa., assignors of one-third to John Brent, same place. Filed Nov. 7, 1893. Serial No. 490,283. (No model.)



*Claim.*—1. In a thill coupling, the coupling bolt provided at one end with an annular groove in combination with a pair of interlocking hooks or latches, suitably pivoted in the device, and adapted to engage with each other and one of them engaging with said groove, substantially as described.

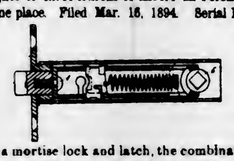
2. In a thill coupling, the combination with the grooved coupling bolt, of the pin G, having cams, *g*, and interlocking hooks at the end thereof and a flat spring embracing said pin, substantially as described.

3. In a thill coupling the pin G, having cams *g*, the rigid hook H, provided at its outer end with a catch or pin and the pivoted hook L, adapted to engage with said pin in combination with an anti-rattler spring, embracing said pin, by a circular loop and having a curved end bearing against the thill iron, and a coupling pin with which said hooks engage substantially as described.

4. In a thill coupling, the coupling bolt passing through the eyes of the arms C and thill iron E, and having at one end an annular groove, in combination with a pin, having a locking-lever H, means for holding such lever in place and the anti-rattler spring, having a loop embracing said pin for holding it in place, substantially as described.

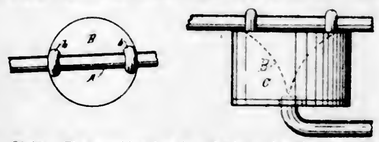
5. In a thill coupling, the anti-rattler spring M, having a loop *m*, and curved ends bearing respectively against the clip and the thill iron, in combination with a pin passing through the loop of the spring and provided with eccentrics or cams adapted to bear against the arms of the clip for tightening said spring, substantially as described.

527,011. MORTISE-LOCK. FRANKLIN P. BURKHARDT, Chelan, Wash., assignor of three-fourths to Albert M. Pershall and Alfred F. Nichols, same place. Filed Mar. 16, 1894. Serial No. 503,898. (No model.)



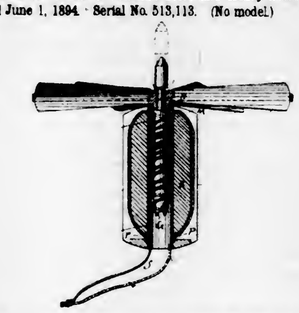
*Claim.*—In a mortise lock and latch, the combination of the herein described case or shell, having slots therein; the face plate rotatably attached thereto; the spring actuated frame adapted to move reciprocally within the case, the reversible bolt rotatably attached to the frame; the swinging tumblers engaging with the slots in the case, and the intermediate plate 10 provided with an angular slot, all constructed and arranged substantially as and for the purposes herein set forth.

527,012. HYDROCARBON-BURNER. HARVEY CLUFF, Grand Rapids, Mich. Filed July 13, 1893. Serial No. 480,395. (No model.)



*Claim.*—The combination, in a hydrocarbon burner, of supply pipes, an inverted cone suspended therefrom, a feed pipe having its discharge jet directly under, and near to the apex of said cone, a jacket around said cone with apertures for the free passage of the burning vapor and a cover pivoted to the bottom of said jacket for the regulation of the supply of air to said burning vapor, substantially as specified.

527,013. CEILING-TOP. GERHARD DIERS, New York, N. Y., assignor of two-thirds to Johanna Diers and Henry Duhne, same place. Filed June 1, 1894. Serial No. 513,113. (No model.)



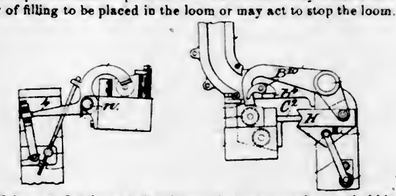
*Claim.*—1. The combination with a windwheel of a tubular stem projecting downward from the center of the same and having a notch at its end opposite the windwheel, of a sliding rod in said stem and holder for receiving said stem, substantially as set forth.

2. The combination with a windwheel of a stem projecting from the same and a holder having a bore for receiving said stem, which holder is provided with side grooves for guiding a cord and with holes extending from said grooves to the bore of the holder, substantially as set forth.

3. The combination with a windwheel of a tubular stem projecting from the same and a longitudinally split rod mounted to slide in the tubular stem, substantially as set forth.

527,014. LOOM. GEORGE O. DRAPER, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Mar. 22, 1894. Serial No. 504,610. (No model.)

*Brief.*—A detector co-operating with the filling-carrier becomes effective when the filling is nearly exhausted, whereby the production of imperfect cloth is prevented. The detector may cause a new supply of filling to be placed in the loom or may act to stop the loom.



*Claim.*—1. In a loom a shuttle carrying an exposed cop or bobbin of filling, a detector independent of the shuttle to contact with the filling at predetermined intervals to determine its volume, and devices intermediate the detector and a filling supplying mechanism to cause a new supply of filling to be placed in the shuttle when the former supply shall have been exhausted to a predetermined amount, substantially as described.

2. In a loom, a lay having a shuttle-box, and a shuttle therein open at one side to expose the filling on the bobbin or cop within said shuttle, combined with a detector independent of the shuttle to enter the latter and contact with the filling wound on the bobbin or cop, for the purpose set forth.

3. In a loom, the combination with a lay, its shuttle-box, a shuttle therein having an opening at two sides to thus expose the filling on the bobbin or cop and let a cop pass through it from side to side, of a detector independent of the shuttle, and means to cause it to enter the said shuttle and contact with the filling on the bobbin or cop therein, substantially as described.

4. The combination with a lay, its shuttle-box a shuttle therein open at one side, a detector independent of the shuttle, means to cause it to enter the shuttle box and contact with the filling on the bobbin or cop therein as the lay is moved forward, and a rock-shaft, of a trigger attached to said rock-shaft and having a block or projection which is struck by said detector to turn said rock-shaft when the filling on the bobbin or cop in the shuttle has been exhausted to the predetermined point, substantially as described.

5. The lay, its shuttle-box and shuttle having an open side, and a detector carried by the lay and shaped to enter the open side of the shuttle and contact with the mass of filling therein, combined with a spring to cause the said detector to enter the shuttle while the lay is being moved toward the breast beam, and a device to turn the said detector in a direction to cause it to retire from said shuttle when the lay is being moved away from the breast beam, substantially as described.

6. In a loom, the following instrumentalities, viz:—a shuttle open at its opposite sides; a lay having at one end a shuttle-box open for the passage through it of a bobbin or cop discharged from said shuttle, a holder to contain a series of bobbins or cops; a pusher co-operating with said holder and adapted to act on a bobbin or cop therein and put it automatically into said shuttle while in the shuttle-box under it and cause the incoming bobbin or cop to eject the more or less spent bobbin or cop from the shuttle and shuttle box; a shuttle-box at the opposite end of the lay; a detector co-operating with that shuttle-box; devices to actuate the detector and cause it to enter said shuttle-box and the shuttle therein and contact with the mass of filling carried thereby, said detector having an arm or extension the position of which during the movement of the lay toward the breast beam is determined by the quantity of filling on the bobbin or cop in said shuttle, a trigger, and a block thereon adapted to be struck by said detector when the filling on the bobbin or cop has been unwound to the predetermined point, and devices between said block and said pusher to effect the operation of the latter when the detector strikes the said block, substantially as described.

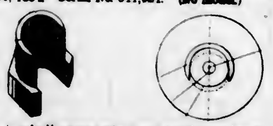
7. A rock-shaft; a trigger carried thereby having an adjustable block; a lay having a shuttle-box, and a shuttle therein; combined with a detector independent of the shuttle, means to cause it to enter said shuttle when in said shuttle-box as the lay is being moved toward the breast beam and contact with the mass of filling therein, the said detector having an arm adapted to strike the block of said trigger and turn said rock-shaft when the filling has been exhausted to a predetermined point, substantially as described.

8. A holder to contain a series of bobbins or cops; a lay having a slotted shuttle-box; a shuttle therein open at its opposite sides, a bobbin or cop in said shuttle; a bunter; a pusher to put a bobbin into said shuttle and discharge a bobbin therefrom and through said shuttle-box; and a dog attached to said pusher provided with a spring switch, combined with an arm having a projection to co-operate with said switch and change the position of said dog on said pusher and with relation to said bunter, to operate, substantially as described.

9 A rock-shaft having at one end an arm or finger, and at its other end a trigger having a block; a lay having a shuttle-box, and a shuttle therein; combined with a detector independent of the shuttle, and means to cause it to enter said shuttle when in said shuttle-box as the lay is being moved toward the breast beam and to contact with the mass of filling in said shuttle, the said detector having an arm adapted to strike the block of said trigger and turn said rock-shaft only when the filling has been exhausted to a predetermined point, substantially as described.

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**527,015. CENTERING DEVICE FOR SPINDLES.** GEORGE O. DRAPER, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed May 21, 1894. Serial No. 511,921. (No model.)



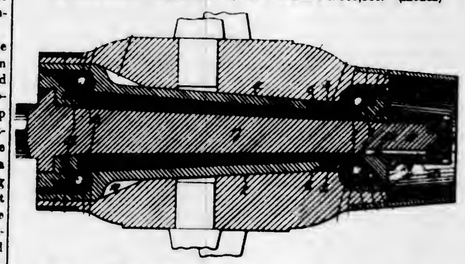
*Claim.*—1. A spindle supporting-case having a shank, and a spindle rail having a hole to receive said shank loosely, combined with a segmental open sided bushing composed of a base having an upright wall adapted to be interposed between the said shank at one side and the inner wall of the hole in the said rail and adjustable around said shank within the hole in said rail, to operate, substantially as described.

2. A ring rail, a ring thereon, a spindle rail, a supporting case having its shank entered loosely in a hole in the spindle rail, and a sleeve whirl spindle mounted in said supporting case, combined with a segmental open-sided bushing inserted between said shank and said rail and adjustable around said shank, and means to secure the said case to said rail, whereby adjustment of the supporting case may be readily and accurately effected to center the spindle to the center of the ring, substantially as described.

3. A spindle rail, a spindle supporting case having its threaded shank inserted loosely in a hole in said rail, and a nut on said shank, combined with a segmental bushing having an upright flange adapted to be interposed between said shank and rail, and having a base located below said rail and adapted to be acted upon by said nut, the base of the bushing and the nut being free to be engaged by a suitable wrench, substantially as described.

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**527,016. JOURNAL-BEARING.** ANDREW C. FARNSWORTH, Chicago, and CHARLES H. ROBERTS, Oak Park, Ill.; said Roberts assignor to said Farnsworth. Filed Mar. 12, 1894. Serial No. 503,309. (Model.)



*Claim.*—1. The combination with the axle and a hub having a conical bore chambered at each end and provided with countersinks or notches in one end, of a conical axle box having its smaller end threaded, a fixed shell on the larger end of said box, a removable shell threaded on the smaller end of said box and adapted to draw the box home in the hub, fins or feathers fitting in said notches for preventing the box from turning with said removable shell, whereby the box may be tightened up in the hub at will, anti-friction balls and cones arranged in said shells and supporting the hub upon the axle, the end of said box being provided with a dressed flange projecting into said shell and retaining said balls on one side, and also with a rigid shoulder for limiting the extent of protrusion of said dressed flange, and means for retaining said balls on the other side, substantially as set forth.

2. The combination with a hub having anti-friction balls arranged therein, of an axle having a threaded end terminating in a reduced centrally located integral rigid nib, a bearing cone, and a cap-nut bearing against both said nib and cone, the threaded portion of said axle extending inward beyond the nut whereby the latter may be turned farther on by reducing the length of the nib, substantially as set forth.

3. The combination with a hub having anti-friction balls arranged therein, of an axle having a threaded end terminating in a reduced centrally located integral rigid nib, a bearing cone and a cap-nut bearing at the inner side of its head or cap against said nib and at its inner end against said cone, the threaded portion of said axle being of the same diameter as the adjoining portion of the axle whereby the cone will not hang thereon and the nut may be turned farther on for tightening the cone when the length of the nib is reduced, substantially as set forth.

4. The combination with a hub, the axle box having a shell and anti-friction balls therein, of the axle having a flange flush with the inner end of said hub, and a bearing cone shrunk over said flange and axle and being flush with the outer side of said flange, substantially as set forth.

5. The combination with a hub, an axle box having a shell, an axle, a cone thereon, of balls in said shell resting on said cone, a steel race for said balls fitting removably in said shell, and a removable ring crowded in said shell and holding said race and balls in place, substantially as set forth.

6. The combination with a hub having a shell, and the axle, of anti friction devices supporting the hub upon said axle, a race secured in said shell for said anti-friction devices, and a cushion confined between said race and shell, substantially as set forth.



7. The combination with a hub, an axle and a bearing cone, of a shell secured within said hub, a number of races arranged within said shell, balls arranged between said races and cone, a ring interposed between and being held in place by said races, for holding the balls in place on one side, and means for holding said balls in place on their other sides, substantially as set forth.

8. The combination with a hub, an axle and a bearing cone or collar, of a number of races secured within said hub, anti friction balls arranged between said races and cone or collar, and a ring interposed between and held in place by said races and having salient edges for holding said balls in place on one side, and means for holding said balls in place on their other sides, substantially as set forth.

9. The combination with a hub, an axle and a bearing cone or collar, of a number of races secured within said hub and having their inner adjacent corners beveled or cut away, balls arranged between said races and cone or collar, a ring arranged between said races and having one edge complementary in shape to their said beveled or cut away corners and its other edge projecting between the balls and having salient edges for holding the balls in place on their inner sides, and means for holding the balls in place on their outer sides, substantially as set forth.

10. The combination with a hub, an axle and a bearing cone or collar, of a shell secured within said hub and provided at one side with a flange 13, a race arranged within said shell and surrounding said flange, a second race arranged adjacent to said first race, balls interposed between said races, a ring arranged between, and held in place by said races and having its outer edge projecting over the balls for holding them in place, and a ring 15 for holding the outer one of said races in place and having a projecting edge for holding the outer balls in place, substantially as set forth.

11. The combination with a hub and an axle, of an axle box arranged within said hub and having a shell on one end adapted to fit in one end of the hub and the other end of said box being provided with a shoulder 6, a removable shell fitting on the latter end of said box and abutting against said shoulder 6 and having a socket or perforation, a detachable latch or catch secured to said box and engaging in said socket or perforation, and anti friction devices in said shells for supporting the hub upon the axle, substantially as set forth.

12. The combination with a hub and an axle, of an axle box arranged within said hub and having a reduced end provided with a shoulder 6, a shell having a neck fitting on said end and abutting against said shoulder, a pair of spring latches or catches secured within said box and passing into said neck for securing the neck and box together, and anti friction devices arranged within said shell for supporting the hub upon the axle, substantially as set forth.

13. The combination with a hub and an axle and bearing cones thereon, of an axle box in said hub provided with a cup-shaped shell at each end, and the ends of said box being provided with the flanges 7—13 projecting into said shells, respectively, an annular removable race arranged in each of said shells and surrounding said flanges, respectively, so as to be held in place by the latter in the event the races break, anti-friction balls arranged in said races and the retaining rings 15 crowded into said shells against said races and each being of sufficient width to retain both the races and the balls in place, substantially as set forth.

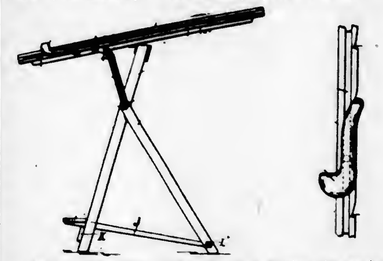
14. The combination with a hub and an axle and bearing cones thereon, of an axle box in said hub provided with a cup-shaped shell at each end, and the ends of said box being provided with the flanges 7—13 projecting into said shells, respectively, an annular removable race arranged in each of said shells and surrounding said flanges, respectively, so as to be held in place by the latter in the event the races break, anti-friction balls arranged in said races, rubber cushions arranged around said flanges 7—13, between the races and the shells and the retaining rings 15 crowded into said shells against said races and cushions and being of sufficient width to project over said cushions, rings and balls for retaining them in place, substantially as set forth.

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**527,017. FOLDING DRAFTING-TABLE.** JOHN H. FRY, Grand Rapids, Mich., assignor of one-half to James G. Alexander, same place. Filed Mar. 22, 1894. Serial No. 504,744. (No model.)

*Claim.*—1. The combination of the top A, having cleats A′, secured to the under side thereof, the paired long legs B, B, having their upper and lower ends connected together by the bars K′ and K, respectively and their upper ends hinged to the under side of said top, the paired short legs C, C, pivoted at their upper ends to the long legs B, the rod D, tube D″ and nut D′ and the flat braces E, E, connecting the upper ends of the legs C, to the top A, having the upper portions curved as shown and pivoted to cleats A′ and the slot E′ engaging the rod D, whereby the said top is tilted and secured in an inclined position or folded and secured in a position parallel to said long legs B, substantially as set forth.

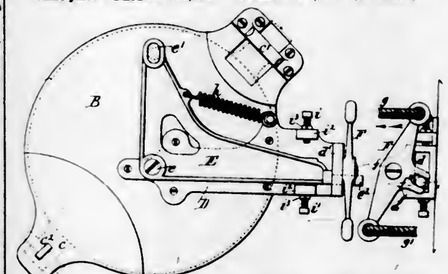
2. The combination with the top A, the paired legs B, B, hinged thereto as set forth, the paired short legs C, C, pivoted at their upper ends to the long legs B, B, the rod D, tube D″ and nut D′ the flat braces E, having curved portion E″, and slot E, arranged as shown, the bar I′ connecting the lower ends of legs C, the bar I, arranged against the outside of legs B, and paired bars J, connecting the bars I, and I′, substantially as and for the purposes set forth.



3. In combination with the top A having the groove G and notches H in its edge, the movable rail L having end piece F provided with studs F″ and F′ substantially as and for the purposes set forth.

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**527,018. OPERATING DEVICE FOR FARE-REGISTERS.** MARTIN T. GRAY, Buffalo, N. Y., assignor of one-half to Frank W. Barker, same place. Filed Nov. 13, 1893. Serial No. 490,764. (No model.)



*Claim.*—1. In an operating device for fare registers, the combination with a base plate or support, of an elbow lever pivoted to said base plate, swinging in a plane parallel therewith, and having one of its arms constructed to engage with the actuating device of the fare register, and an actuating lever, adapted to be operated by a cord or rod and having a laterally projecting arm which engages with the other arm of said elbow lever, whereby the latter is swung on its pivot by the movement of the actuating lever, substantially as set forth.

2. In an operating device for fare registers, the combination with a base plate or support, of an elbow lever pivoted to said base plate, swinging in a plane parallel therewith, and having one of its arms constructed to engage with the actuating device of the fare registers, and its other arm provided with a pin or projection,—an actuating lever adapted to be operated by a cord or rod and having a slotted or bifurcated arm projecting laterally therefrom and engaging with the pin of the elbow lever and a spring for returning the parts to their normal position, substantially as set forth.

3. In an operating device for fare registers, the combination with a base plate or support, of an elbow lever pivoted to said base plate, swinging in a plane parallel therewith and having its upper arm provided with a slot adapted to engage with the actuating pin of the fare register and its lower arm provided with a pin arranged in the plane of the arm and an actuating lever adapted to be connected with an operating cord, swinging in a plane at right angles to that of the elbow lever and having a laterally projecting bifurcated arm which engages with the pin of the elbow lever, substantially as set forth.

4. In an operating device for fare registers, the combination with a base plate or support having a slotted angular guide lug, of an elbow lever pivoted to said base plate, swinging in a plane parallel therewith and having its upper arm provided with a slot adapted to engage with the actuating pin of the fare register and its lower arm provided with a pin arranged in the plane of the arm and guided in said slotted lug, and an actuating lever pivoted to said slotted lug and having a bifurcated arm engaging with the pin of the elbow lever, substantially as set forth.

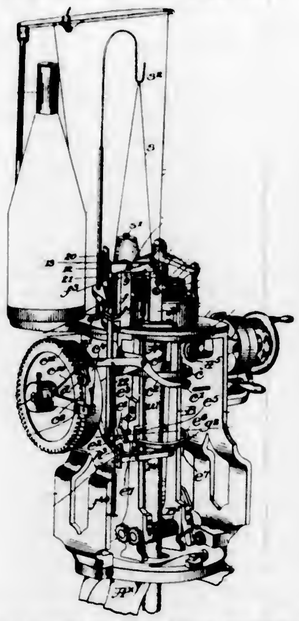
5. In an operating device for fare registers, the combination with a base plate or support, of an elbow lever pivoted to said base plate,—swinging in a plane parallel therewith, and having one of its arms constructed to engage with the actuating device of the fare register,

an actuating lever engaging with said elbow lever and adjustable stops arranged on opposite sides of one of the arms of the elbow lever, substantially as set forth.

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527,019. **THICKENING-THREAD MECHANISM FOR KNITTING-MACHINES.** ELMER L. LANG and FREDERICK H. DANIELL, Franklin Falls, assignors to Sulloway Mills, Franklin, N. H. Filed Feb. 6, 1893. Serial No. 461,232. (No model.)

*Brief.*—The thickening thread clamp or lever is connected by a link to a lever bearing on a ring-cam carried by the rotating take-up frame, the lever being held in engagement with the ring by a spring When the splicing-thread is to be run in, the ring or cam is tilted to one side or the other by pattern devices, allowing the splicing-thread to run in upon the desired side of the web. Provision is made for lost motion between the link and the clamping-lever.



*Claim.*—1. In a knitting machine the following instrumentalities:—viz., a needle cylinder, a dial plate, a thread guide adapted to receive both the main or knitting thread and a splicing thread, a clamp for the splicing thread, a splicing thread controlling cam, devices to tip the said cam in one or the other direction, and devices intermediate said cam and the said clamp to operate the same, whereby the thread clamp may be made to clamp the splicing thread substantially as described, with relation to the operation of the needle actuating cams to put the splicing thread into one or the other half or side of the web or tube being knitted, substantially as described.

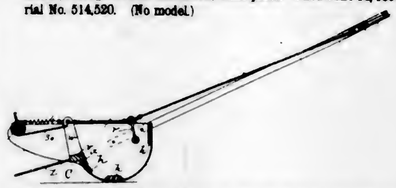
2. In a knitting machine, a needle cylinder, a dial plate, a splicing thread clamp, and a main thread lifter, combined with a thread guide adapted to conduct to the needles of the machines both the main thread and the splicing thread, the opening in the said thread guide being of such size with relation to the diameter of the main and splicing threads to enable the main thread to run freely without injuriously fraying the splicing thread, the upward movement of the lifter, when the clamp is being opened to release the splicing thread, putting the main thread in contact with the splicing thread to carry it with it to the needles, substantially as described.

3. In a knitting machine, a thread guide adapted to receive both the main and splicing threads, a splicing thread clamp, a rest for the splicing thread on its way into the said thread guide, a lever to which the said clamp is secured, a splicing thread actuating cam, devices intermediate said cam and said lever, and adjusting devices carried by said intermediate devices to afford more or less lost motion between the said actuating devices and the lever carrying the said clamp, to thus adapt the machine for the reception of the splicing thread upon a greater or less number of needles to thus regulate the width of the re-inforce made by the splicing thread, substantially as described.

4. In a knitting machine, the combination with the rotating cage, of a pivoted splicing thread actuating cam, a pawl, a shaft having an eccentric and a star wheel, a pattern cylinder, and intermediate devices to control the position of said pawl to move the said shaft and its eccentric and tip the said cam at the desired times during its rotation, substantially as described.

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527,020. **CRANBERRY-GATHERER.** JAMES M. MOODY and SIDNEY R. MOODY, Harwich, Mass., assignors, by direct and mesne assignments, to Augustus M Nickerson, same place. Filed June 14, 1894. Serial No. 514,520. (No model.)



*Claim.*—1. A cranberry gatherer comprising a body; two stripper jaws fitted to rock in said body one of said jaws being adapted to move up from bottom to top of the vines, and devices for conjointly actuating said jaws.

2. In a cranberry gatherer, a body fitted to slide on the ground in combination with two toothed stripper jaws fitted to rock in said body, one of said jaws being adapted to move up from the bottom to the top of the vines and devices under the control of the operator for actuating said jaws conjointly, substantially as described.

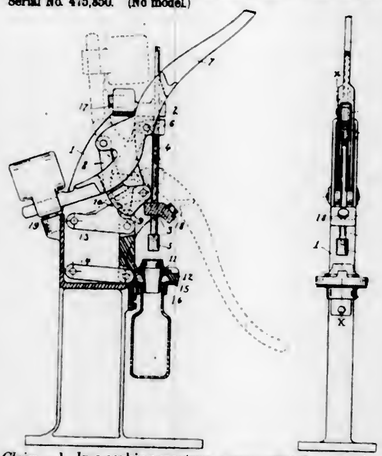
3. In a cranberry gatherer, a body having a curved bottom forming a receptacle, said bottom being fitted to slide on the ground and form a fulcrum for rocking the body in combination with two stripper jaws fitted to rock in said body, one of said jaws being adapted to move up from bottom to top of said vines, and operating mechanism for said jaws.

4. In a cranberry-gatherer the rocking body and a handle for actuating said body in combination with the toothed jaw, C, adapted to move up from bottom to top of the vines, the toothed jaw, D, devices for closing said jaws and a spring for opening the same, substantially as described.

5. In a cranberry-gatherer, the body having the curved receptacle, *f*, and a handle in combination with the spring-pulled rocking jaw, C, having teeth adapted to move from bottom to top of the vines, the spring-pulled rocking jaw, D, provided with teeth and mechanism adapted to be operated from the handle for actuating said jaws, substantially as set forth.

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527,021. **CORKING-MACHINE.** GERRIT NORTON, New York, N. Y., assignor to Martha Matilda Norton, same place. Filed May 29, 1893. Serial No. 475,850. (No model.)



*Claim.*—1. In a corking machine, a supporting frame, a plunger, a lever mechanism consisting of a lever and a toggle-link to which said lever is hinged, one of the elements of said lever mechanism being hinged to the frame close to the plunger and below the lever and the other hinged to the plunger, in combination with a vertically guided cork-pressing mechanism, so that the depression of the lever will bring all of said hinges into substantially the same vertical plane, and when they are so situated the cork-pressing mechanism will be lifted, substantially as described.

2. In a corking machine, a supporting frame, a plunger, a lever hinged thereto, and a toggle-link to which said lever is hinged, said toggle-link being hinged to the frame close to the plunger, in combination with a vertically guided cork-pressing mechanism, so that the depression of the lever will bring all of said hinges into substantially the same vertical plane, and when they are so situated the cork-pressing mechanism will be lifted, substantially as described.

3. In a corking machine, a supporting frame, a plunger, a lever hinged thereto and a toggle-link to which said lever is hinged, said toggle link being hinged to the frame close to the plunger and below the lever, in combination with a vertically guided cork pressing mechanism, so that the depression of the lever will bring all of said hinges into substantially the same vertical plane, and when they are so situated the cork-pressing mechanism will be lifted, substantially as described.

4. The combination with a supporting frame and a vertically guided cork-pressing mechanism of a plunger, a lever attached thereto, a toggle-link to which said lever is fulcrumed, and contacting parts between said toggle-link and cork pressing mechanism by which the latter is lifted, substantially as described.

5. In a corking machine the combination with a supporting frame of a plunger, a cork-pressing tube, and two parallel links connected therewith one above the other and hinged to the frame, and means for driving the plunger and lifting the cork-pressing tube, substantially as described.

6. The combination with a supporting frame, of a plunger, a lever attached thereto, a toggle link to which said lever is fulcrumed, a cork-pressing tube, two parallel links connected therewith and hinged to the frame, and a contact between one of said parallel links and the toggle-link, substantially as described.

7. In a corking machine, a cork-pressing tube having a tubular extension and its supporting ring, in combination with a bracket below said cork-pressing tube, and an annular space between said tube and bracket, substantially as described.

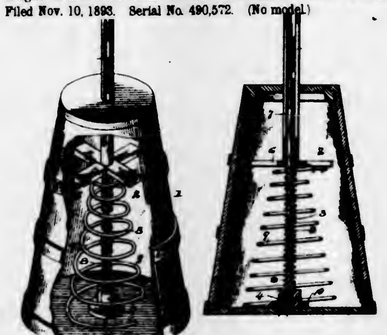
8. In a corking machine, a cork-pressing tube having a tubular extension in combination with a bracket below said cork-pressing tube, and a centering ring attached thereto, substantially as described.

9. In a corking machine, the combination with a supporting frame of a plunger, a lever attached thereto, a link to which said lever is fulcrumed, and two contacts between said frame and lever when the latter is depressed, the attachments between said lever and plunger and between said lever and link lying between the said contacts, substantially as described.

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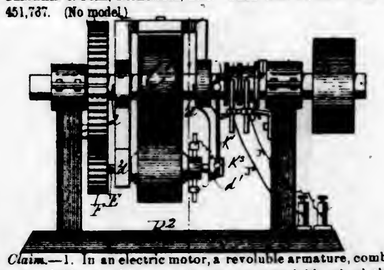
527,022. **CHURN-DASHER.** GEORGE W. PARRISH, Salem, Va., assignor of one-half to Chas. D. Denit and Frank G. Webber, same place. Filed Nov. 10, 1893. Serial No. 490,572. (No model.)



*Claim.*—The combination with a churn tub, of a socket fixed to the bottom of the tub at its center and having a vertical sleeve or barrel provided with a vertical slot terminating in a lateral offset, a guiding post adapted to fit in the sleeve or barrel of the socket and provided with a lateral pin to engage said slot and offset, whereby the guiding post is detachable from the churn tub, a tubular slotted staff slidably fitted upon the guiding post, a dasher-head fixed to the lower end of the tubular staff, a coiled spring arranged between the dasher-head and the socket and coiled around the guiding post, and a spiral spring fixed at its upper end to the under side of the dasher-head and resting at its base upon the bottom of the churn tub around said socket, whereby the said spring is adapted to fold compactly when the dasher is depressed, substantially as specified.

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527,023. **DIFFERENTIALLY-GEARED ELECTRIC MOTOR.** BENJAMIN C. POLE, Deanewood, D. C. Filed Nov. 12, 1892. Serial No. 451,767. (No model.)



*Claim.*—1. In an electric motor, a revoluble armature, combined with a revoluble wheel intergearing to a nonrevoluble wheel, the diameter of the revoluble wheel being all outside of the outside diameter of the non revoluble wheel, said armature revolving around a central supporting shaft, and with its field magnets also revolving substantially as and for the purposes set forth.

2. In an electric motor a revoluble armature and field magnet, parallel shafts to each other and revoluble supporting shaft substantially as and for the purposes set forth.

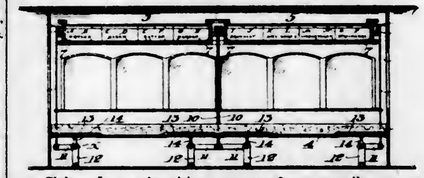
3. In an electric motor a revoluble central supporting shaft, attached and keyed to the field magnet part of the motor, and the armature carried by journals connecting to field magnets, a revoluble gear wheel intergearing to a non revoluble wheel the diameter of the revoluble wheel being all outside of the outside diameter of the non revoluble wheel to give the draft to the revoluble wheel for the revolution of the motor substantially as and for the purposes set forth.

4. In an electric motor provided with revoluble and non revoluble wheels as hereinbefore set forth, the diameter of the revoluble wheel arranged to fall outside of the diameter of the nonrevoluble wheel and means to supply the electric currents to and from the motor, all arranged to revolve around the central supporting shaft, substantially as and for the purposes set forth.

5. In an electric motor a revoluble wheel on an armature of suitable material as raw hide, wood or vulcanized fiber, intergeared to a non revoluble wheel, all adjusted to revolve on a central shaft substantially as and for the purposes set forth.

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527,024. **ADVERTISING APPARATUS.** WILLIAM H. REIFF, Philadelphia, assignor of one-half to Robert E. M. Evans, Norristown, Pa. Filed July 14, 1894. Serial No. 517,512. (No model.)



*Claim.*—In an advertising apparatus for street railway cars, &c., the combination with a seat provided with a series of normally-elevated independently-movable sections, of a rotatably-mounted display drum arranged lengthwise of the seat, a series of ratchet wheels thereon corresponding with said sections, pawl bearing arms adjacent to the ratchet wheels respectively, levers adjacent to said sections respectively, and independent connections between said levers and the respective pawl-bearing arms, whereby the said drum is progressively rotated by the action of either seat section, substantially as described.

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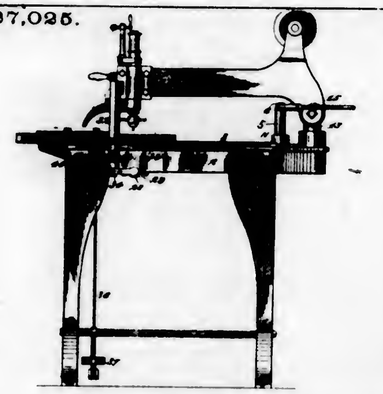
527,025. **ROUTING-MACHINE.** CARL SCHRAUBSTADTER, Jr., and CHARLES R. SCHILLING, St. Louis, Mo., assignors to the Western Engravers' Supply Company, same place. Filed Dec. 1, 1893. Serial No. 492,431. (No model.)

*Claim.*—1. In a routing machine, the combination of the movable table, a gage hinged to the table, and a stationary cam for automatically lifting the gage, substantially as set forth.

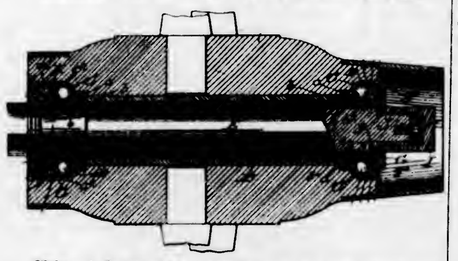
2. In a routing machine, the combination of an arm, a cross head or bar on which the arm rests, vertical rods extending from the cross-head, a cam secured to one of said rods, a movable table and a gage pivoted to the table, and adapted to be automatically lifted by said cams; substantially as and for the purpose set forth.

3. In a routing machine, the combination of a table, a gage hinged to the table, and an adjustable cam 44, substantially as and for the purpose set forth.

527,025.



527,026. JOURNAL-BEARING. EDWARD C. SENDELBACH, Chicago, and JOHN N. WILKINS, Ravenswood, Ill.; said Wilkins assignor to said Sendelbach. Filed Oct. 14, 1893. Serial No. 488,166. (No model.)



*Claim.*—1. In an axle or journal bearing, the combination with a removable box and anti friction devices arranged therein, of a continuous fixed sleeve B whose end is projected into said box and thereby retains said anti-friction devices upon one side, and means for retaining said anti-friction devices on the opposite side, substantially as set forth.

2. In an axle or journal bearing, the combination with a removable box and anti-friction devices arranged therein, of a fixed sleeve projecting into said box and upon which sleeve said box is adjustably secured whereby the extent of protrusion of said sleeve into the box may be varied, said projected end of the sleeve serving to retain the anti-friction devices upon one side, and means for retaining said anti-friction devices upon the opposite side, substantially as set forth.

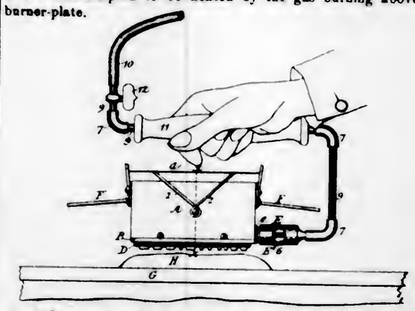
3. In an axle or journal bearing, the combination with a removable box and anti-friction devices arranged therein, of a fixed sleeve secured to and projecting into said box and thereby retaining the anti-friction devices upon one side, said sleeve being provided with a shoulder for limiting the extent of its protrusion into the box, and means for retaining the anti-friction devices upon the opposite side, substantially as set forth.

4. In an axle or journal-bearing, the combination with a removable box and anti-friction devices arranged therein, of a continuous fixed sleeve B whose end projects into said box and thereby retains the anti-friction devices upon one side, and a removable retaining ring secured in said box on the other side of said anti-friction devices, substantially as set forth.

527,027. METHOD OF AND APPARATUS FOR PRODUCING LETTERS OR CHARACTERS IN BREAD. RICHARD M. SHAFFER, Baltimore, Md. Filed June 11, 1894. Serial No. 514,192. (No model.)

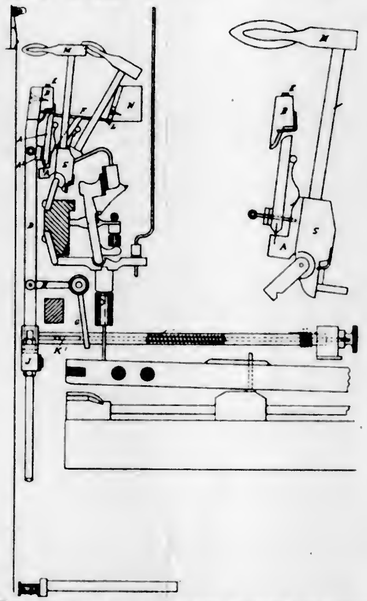
*Claim.*—1. The herein-described method of producing letters or characters in bread, which consists in impressing said letters or characters in the blocks of dough by means of a die heated to a degree sufficient to sear the surfaces of the impressed letters or characters, whereby as the dough rises in the act of baking said letters or characters are caused to remain intact.

2. In an apparatus of the class above described, the combination, with a burner-box open on its lower side and having suitable draft-openings, of a burner located in and closing said open side of the box, the burner-plate having a longitudinal groove in its under side and perforated on each side of said groove, means for admitting gas to the interior of the burner, and a die secured on the outer side of the burner and adapted to be heated by the gas burning above the burner-plate.



3. In an apparatus of the class above described, the combination, with a burner-box open on its lower side and having suitable draft-openings, of a burner located in and closing said open side of the box and provided with a projecting nipple, an air-mixer secured to said nipple, gas-pipe connected with the mixer, a handle on said pipe, and a flexible tube leading from a gas-supply and connected with the gas-pipe.

527,028. REPETITION ATTACHMENT FOR PIANOFORTES. WALTER SIMKINS, London, England. Filed Jan. 8, 1894. Serial No. 496,179. (No model.)

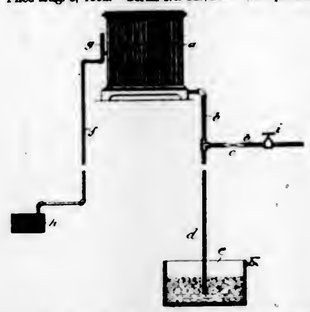


*Claim.*—1. A repetition attachment for pianofortes comprising a notched and clothed bar such as B, supported in a plane parallel to the plane of the strings by rods such as D jointed to arms H secured to a shaft C, and reciprocated by means of an extension to one of the rods D engaging in a clutch such as J on the end of a connecting rod actuated by any suitable motive power, the said bar B being brought into its operative position by partially rotating the aforesaid shaft C and put into its inoperative position by releasing the extension from the clutch J, the said bar B when in its operative position being located in the path of projections such as the adjustable spring controlled tongue pieces A', secured to or formed one on each hammer butt or shank, all the parts being arranged so as to operate substantially in the manner and for the purposes hereinbefore set forth and illustrated in the accompanying drawings.

2. The combination of bar D and a rotating shaft and arms for reciprocating the said bar with a series of hammer butts provided with adjustable tongue pieces arranged to be operated on by the said bar substantially as and for the purposes set forth.



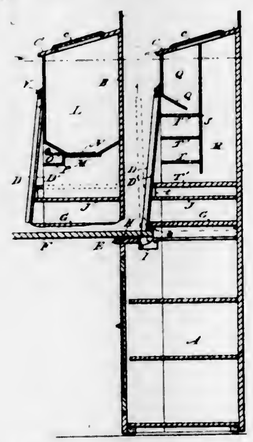
527,029. METHOD OF HEATING. WILLIAM P. SKIFFINGTON, New York, N. Y., assignor of three-fourths to Andrew G. Paul, Boston, Mass. Filed Aug. 8, 1892. Serial No. 442,434. (No specimens.)



*Claim.*—1. The method of heating which consists in supplying steam in measured quantities at or below atmospheric pressure and causing the flow of said steam to the place of use by reducing the pressure thereat.

2. The method of heating which consists in supplying steam in measured quantities at or below atmospheric pressure, and causing the flow of said steam to the place of use by exhausting the air therefrom, and causing the steam to condense thereat and conducting away the water of condensation, substantially as before set forth.

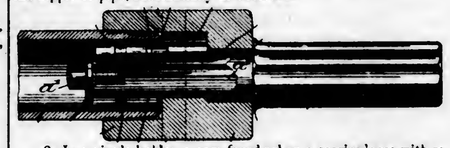
527,030. KITCHEN-CABINET. WILSON THOMPSON, St. Louis, Mo., assignor of two-thirds to Horace C. Mosher, Galesburg, Ill., and James S. Beckwith, Dunlap, Tenn. Filed June 7, 1893. Serial No. 476,835. (No model.)



*Claim.*—A kitchen cabinet with shelves, bins and compartments, substantially as shown and described, in combination with a specific form of bread board front and particular means for controlling its position, consisting of a board loosely mounted to slide in horizontal guides below a main inner cross shelf bearing on its rear, and above an outside cross shelf having frictional contact therewith, stops between the board and cabinet, and supports for the inner lower end of said board, in rotating it upward when fully drawn out.

527,031. NIPPLE-HOLDER. JOHN H. VIRTUE, Boston, Mass., assignor to the Trimont Manufacturing Company, Portland, Me. Filed Jan. 13, 1894. Serial No. 496,761. (No model.)

*Claim.*—1. A nipple holder, consisting of a cam-faced arbor, a holder loosely connected therewith, a sleeve to receive within it the nipple or pipe to be threaded, and a dog located between the holder and the arbor and adapted to enter and engage the interior of the nipple or pipe, the sleeve surrounding the nipple or pipe preventing expansion thereof during the operation of the dog and arbor within the nipple or pipe, substantially as described.

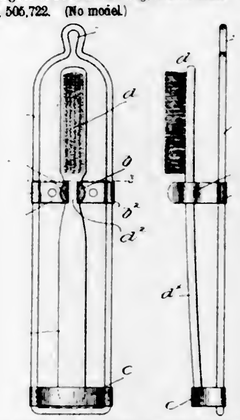


2. In a nipple-holder, a cam-faced arbor, a carrier loose with relation thereto, a series of dogs located between said arbor and carrier, a sleeve to receive within it the end of the nipple or pipe to be threaded when the said pipe is applied outside the said dogs and arbor, combined with a spring-clip surrounding said dogs to aid in retaining them in place upon the arbor, substantially as described.

3. In a nipple holder, the combination with a cam faced arbor, of a surrounding notched carrier, and a sleeve having a tapered interior adapted to receive the threaded end of a pipe, to operate, substantially as described.

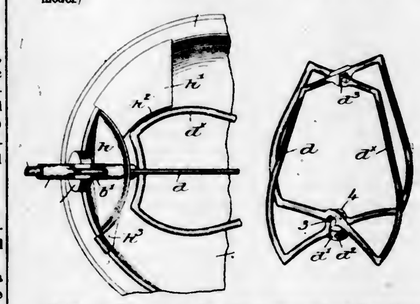
4. In a nipple holder, a cam-faced arbor, a surrounding loose carrier provided with notches, a series of dogs located in said notches and between the said holder and arbor, the said dogs being provided with recesses opposite that part of the holder which constitutes an abutment for the inner end of the pipe, and a co-operating sleeve to receive within it the threaded end of the pipe, substantially as described.

527,032. BRUSH-SUPPORT. GEORGE F. WHITING, North Cambridge, assignor to Fred E. Whiting, Boston, Mass. Filed Mar. 30, 1894. Serial No. 506,722. (No model.)



*Claim.*—A tooth-brush holder comprising in its construction an elongated support having a longitudinally adjustable clip to engage the neck of the brush and a guard to confine the handle.

527,033. MACHINE FOR KNEADING DOUGH. ALEXANDER WEBBER, Beverly, Mass. Filed Feb. 5, 1894. Serial No. 499,213. (No model.)



*Claim.*—1. The combination with a rotatable kneading-blade and its actuating shaft, of a friction roll on said shaft, and a pan to con-

tain the material, said pan being directly engaged and positively rotated by said roll, substantially as described.

2. The combination with a kneading blade, and its shaft, of an actuating roll on said shaft, a kneading pan in engagement therewith, and a presser roll adapted to bear upon and maintain the pan in engagement with the actuating roll, to be positively rotated thereby, substantially as described.

3. A rotating blade-actuating shaft, a kneading blade carried thereby, and an actuating roll on said shaft, combined with a kneading pan having a grooved rim to be engaged and positively rotated by said roll, and a rim shield or clearer for said pan, substantially as described.

4. The combination with a kneading pan, and an actuating roll in engagement therewith to positively rotate it, of an adjustable presser roll to maintain the pan in engagement with the actuating roll, said rolls guiding the pan in its rotation, and means to rotate the actuating roll, substantially as described.

5. In a kneading apparatus, a rotatable actuating shaft and a kneading blade carried thereby combined with a support or bearing extended over the rim of and into the pan and through which the shaft is extended, to protect the latter, a kneading pan, and a shield for the base of the kneading blade and the pan rim, substantially as described.

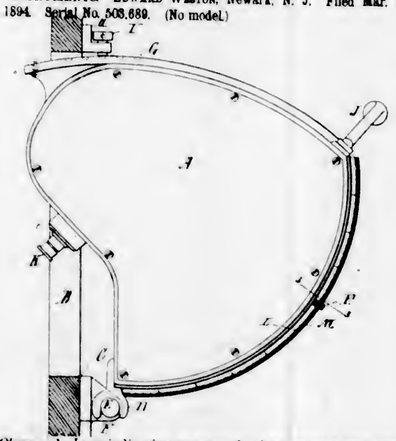
6. The combination with the kneading pan, a rotatable shaft, and connections between them to positively rotate the pan, of a skeleton kneading-blade attached to said shaft, and a detachable auxiliary blade adapted to be connected to the kneading blade at an angle thereto, substantially as described.

7. The combination with a rotatable actuating shaft, and a friction roll thereon, of a pan to contain the material, directly engaged and positively rotated by said roll, a skeleton kneading-blade secured to said shaft, and a detachable auxiliary blade adapted to be sprung into place on said kneading-blade, substantially as described.

8. A rotatable blade actuating shaft, a kneading blade detachably secured thereto, and a pan for the material, combined with frictional connections between said shaft and pan to rotate the latter positively, a shield located at the base of the blade, and clearers extended therefrom near the paths of movement of the blade and pan, substantially as described.

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527,034. **SCALE AND INDEX FOR ELECTRICAL MEASURING-INSTRUMENTS.** EDWARD WESTON, Newark, N. J. Filed Mar. 15 1894. Serial No. 503,689. (No model.)



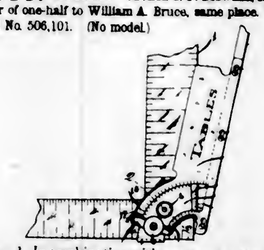
*Claim.*—1. In an indicating or measuring instrument a scale plate of salient cross-section, a movable index and transverse arm or projection on said index extending over said scale plate.

2. In an indicating or measuring instrument a scale plate of salient cross-section, a movable index and a transverse arm or projection on said index extending over said scale plate and conforming in shape to the cross-section thereof.

3. In an indicating or measuring instrument a scale plate of salient cross-section provided with a longitudinal slot, an index movable in said slot and a transverse arm or projection on said index extending over said scale plate.

4. In combination with an indicating or measuring instrument of the type herein specified and disposed on a curved edge thereof, a scale plate of salient cross-section and conforming longitudinally to the curvature of said edge, an index and a transverse arm or projection transverse to said index and extending over said scale plate.

527,035. **SQUARE.** GEORGE G. F. BOSWELL, Indianapolis, Ind., assignor of one-half to William A. Bruce, same place. Filed Apr. 2, 1894. Serial No. 506,101. (No model.)



*Claim.*—1. In combination with a square, a segmental guide plate provided with end flanges adapted to center such guide plate on the corner of the square, means of securing the same to the square, and a blade rotatably mounted on such guide plate, substantially as shown and described.

2. In combination with a square, provided with a hole, a guide plate provided with end flanges, and a central aperture, a bolt adapted to secure the guide plate to the square, the diameter of the bolt being less than the aperture in the guide plate, and a blade provided with curved guide arms adapted to embrace and be movable on the edges of such guide plate.

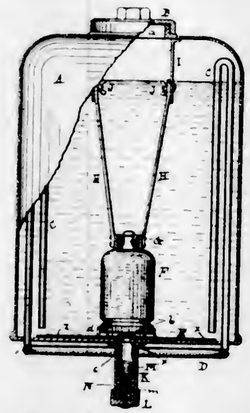
3. In combination with a square, a segmental guide plate provided with beveled edges and adjustably secured to the square, and blade provided with curved arms having beveled edges adapted to fit and be movable on the guide plate, a bracket connecting such guide arms, and a set screw operating in such bracket and adapted to clamp the blade in any desired position.

4. In combination with a square, a segmental guide plate adjustably secured to the square, and a blade provided with curved arms adapted to embrace and be movable on the guide plate, means of clamping such blade to the square, and a gage detachably secured to the edge of the blade.

5. In combination with a square, a segmental guide plate provided with beveled edges and adjustably secured to the square, and a blade provided with curved arms having beveled edges adapted to fit and be movable on the guide plate a bracket connecting such guide arms, and a set screw operating in such bracket and adapted to clamp the blade in any desired position, and suitable pitch scales on the edges of the guide plate and guide arms.

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527,036. **CHEMICAL FIRE-EXTINGUISHER.** MARTIN L. BOSWORTH, Warren, R. I. Filed Sept. 30, 1893. Serial No. 486,842. (No model.)



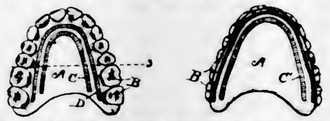
*Claim.*—1. In combination with a chemical fire-extinguisher, having a tank and cover and a fragile vessel secured in said tank to contain the chemical substance, the tubes C and sprinkler D, the flexible metallic disk E, fastened to the tank bottom and in contact with the bottom of said vessel, a spring-actuated hammer, adapted, when released to strike a blow upon said disk and thereby to break said vessel, but held from such movement by a mass of solder, fusible at a comparatively low temperature and fastening said hammer to a fixed support, substantially as shown.



2. The combination of the tank A, having a central aperture *x* in its bottom, the cover B, the tubes C, the sprinkler D, the flexible, metallic disk E, soldered at *z* to the tank-bottom and covering said aperture *x*, the central boss *b* upon the disk E, of a diameter greater than that of the aperture *x*, the central projection *c* extending beneath said disk E, the fragile vessel F for chemicals, resting upon the boss *b* of the disk E and secured in position within the tank, and a spring-actuated hammer, adapted, when released, to deliver a blow upon said projection *c* of the disk E, but held from such movement by a mass of solder *o*, fusible at a comparatively low temperature and fastening said hammer to a fixed support, substantially as shown.

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527,037. **ELECTRIC MOUTH-BATTERY.** LEVI L. FUNK, Chicago, Ill. Filed Nov. 27, 1893. Serial No. 492,058. (No model.)



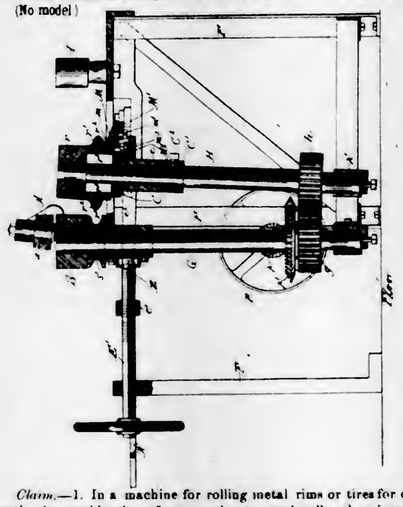
*Claim.*—1. In an electric mouth battery the combination of metal plates of opposite electric polarity so disposed as to be exposed to excitation by the saliva or other fluids in the mouth, and that the organs of the mouth shall form elements of the circuit of the battery; conductors, not exposed to excitation by saliva or other fluids in the mouth, connecting the several plates, substantially as described.

2. In an electric mouth battery, the combination of a series consisting of more than one metal plate with a second series of metal plates of opposite electric polarity, conductors connecting the several plates, all of such plates disposed so as to be exposed to electrical excitation by the saliva or other fluid in the mouth of the wearer, such conductors disposed so as not to be exposed in such electrical excitation, and that the organs of the mouth will form elements in the circuit of the battery: substantially as described.

3. In an electric mouth battery the combination of a non-conducting plate adapted to fit in the mouth of a person, metal plates of opposite electric polarity embedded in the non-conducting plate, conductors connecting the metal plate, and embedded in the non-conducting plate, such metal plates so disposed as to be exposed to the action of an electric excitation by the saliva or other fluids in the mouth, and that the organs of the mouth shall form elements completing the circuit of the battery: substantially as described.

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527,038. **MACHINE FOR ROLLING CAR-WHEEL TIRES.** WILLIAM E. WILLIAMS, Chicago, Ill. Filed Sept. 21, 1892. Serial No. 446,457. (No model.)



*Claim.*—1. In a machine for rolling metal rims or tires for car-wheels, the combination of an exterior grooved roll and an interior roll, adapted to grip the tread of the tire between them and feed the tire along, with a ribbed and independently adjustable interior roll adapted to roll up the outer flange of the rim or tire; substantially as described.

2. In a machine for rolling metal rims or tires for car wheels, the combination of a stationary exterior grooved roll and an adjustable interior roll, adapted to grip the tread of the tire between them and feed the tire along, with a ribbed and independently adjustable interior-roll adapted to roll up the outer flange of the rim or tire; substantially as described.

3. In a machine for rolling metal rims or tires for car-wheels, the combination of an exterior grooved roll and an adjustable interior roll, adapted to grip the tread of the tire between them and feed the tire along, with a ribbed interior roll, adjustable both with and independently of the plane roll, and adapted to roll up the outer flange of the rim or tire; substantially as described.

4. In a machine for rolling metal rims or tires for car-wheels, the combination of an exterior grooved roll and an interior plane roll, adapted to grip the tread of the tire between them and feed the tire along, a ribbed and independently adjustable interior roll adapted to roll up the outer flange of the rim or tire, and a rocking spinning-roll adapted to turn down the inner flange of the rim or tire; substantially as described.

5. In a machine for rolling metal rims or tires for car wheels, the combination of an exterior grooved roll, an interior roll fixed to its shaft, and an interior ribbed roll, of annular form, encompassing said shaft and laterally adjustable with relation thereto; substantially as described.

6. In a machine for rolling metal rims or tires for car-wheels, the combination of the shafts G H and their rolls S *r r'*, with the adjustable sash E controlling the position of shaft H and its roll *r*, and the adjustable bearing M controlling the position of roll *r'*; substantially as described.

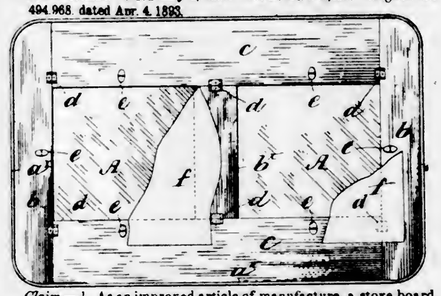
7. In a machine for rolling metal rims or tires for car-wheels, the combination of the shafts G H and their rolls S *r r'*, with the adjustable sash E controlling the position of shaft H and its roll *r*, and the adjustable bearing M, supported by the sash E, and controlling the position of the roll *r'*; substantially as described.

8. In a machine for rolling metal rims or tires for car-wheels, the combination of the shaft H, the roll *r*, the adjustable support E and its operating device E' the roll *r'* and its independently adjustable bearing M mounted upon the support E, and the levers M' M² mounted and connected as described and provided with an operating-device N; substantially as described.

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# REISSUES.

11,444. **MANUFACTURE OF STOVE-BOARDS.** JOHN L. SCHULTZ and ADELAIDE C. WESTLAKE, Brooklyn, N. Y.; said Schultz assignor to said Westlake. Filed May 1, 1894. Serial No. 509,724. Original No. 494,968, dated Apr. 4, 1893.



*Claim.*—1. As an improved article of manufacture, a stove board composed of a seamless sheet of metal A having an inturned flange extending entirely around its margin, a lining composed of thin sections of wood, *b* and *c*, the outer edges of which take under the said flange, and metal fasteners which extend through the metal sheet and wood lining sections near the inner margins of the latter and are clinched down, substantially as and for the purposes set forth.

2. As an improved article of manufacture, a stove board composed of a seamless sheet of metal, A, having an inturned flange extending entirely around its margin, a lining composed of thin sections of wood *b* and *c*, the outer edges of which take under said flange, clips *d*, which secure together the adjacent sections of wood, and metal fasteners which extend through the metal sheet and wood lining and are clinched down on the latter, substantially as and for the purposes set forth.

3. As an improved article of manufacture, a stove board composed of a seamless sheet of metal, A, having an inturned flange around its margin, a lining composed of thin sections of wood, *b* and *c*, the outer edges of which take under the flange on the plate, and clips *d*, which secure together the adjacent sections of wood, the flanged por-

tions at one end of the clips being housed between the metal sheet A and the wood lining, substantially as set forth.

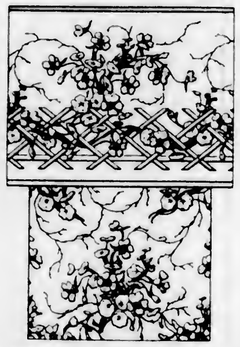
# DESIGNS.

23,662. WALL-PAPER. LOUIS CLÉMENCET, West Hoboken, N. J., assignor to M. H. Birge & Sons, Buffalo, N. Y. Filed Aug. 27, 1894. Serial No. 521,463. Term of patent 3½ years.



*Claim.*—The design for wall paper herein shown and described

23,663. WALL-PAPER. LOUIS CLÉMENCET, West Hoboken, N. J., assignor to M. H. Birge & Sons, Buffalo, N. Y. Filed Aug. 27, 1894. Serial No. 521,464. Term of patent 3½ years.



*Claim.*— The design for wall paper herein shown and described.

23,664. WALL-PAPER. LOUIS CLÉMENCET, West Hoboken, N. J., assignor to M. H. Birge & Sons, Buffalo, N. Y. Filed Aug. 27, 1894. Serial No. 521,466. Term of patent 3½ years.



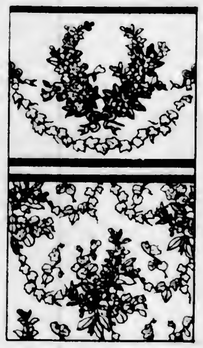
*Claim.*—The design for wall paper herein shown and described.

23,665. WALL-PAPER. LOUIS CLÉMENCET, West Hoboken, N. J. assignor to M. H. Birge & Sons, Buffalo, N. Y. Filed Aug. 27, 1894. Serial No. 521,465. Term of patent 3½ years.



*Claim.*—The design for wall paper herein shown and described.

23,666. WALL-PAPER. LOUIS CLÉMENCET, West Hoboken, N. J., assignor to M. H. Birge & Sons, Buffalo, N. Y. Filed Aug. 27, 1894. Serial No. 521,467. Term of patent 3½ years.



*Claim.*—The design for wall paper herein shown and described.

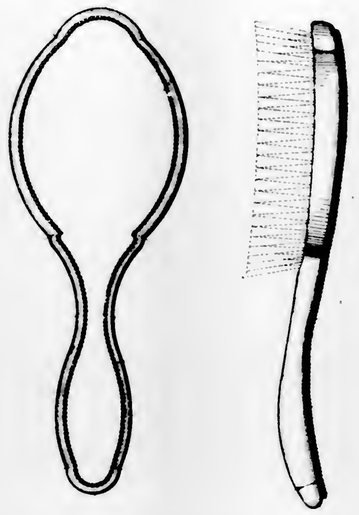
23,667. WALL-PAPER. MARY G. HATCH, New York, assignor to M. H. Birge & Sons, Buffalo, N. Y. Filed Sept. 4, 1894. Serial No. 522,137. Term of patent 3½ years.



*Claim.*—The design for wall paper herein shown and described.

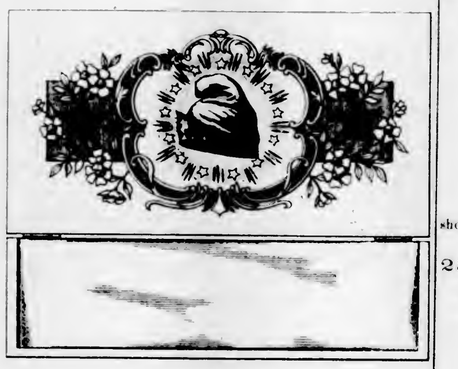


23,668. BACK FOR BRUSHES OR SIMILAR ARTICLES. CHARLES C. WIENTGE, Providence, R. I., assignor to the Howard Sterling Company, same place. Filed May 10, 1894. Serial No. 510,799. Term of patent 7 years.



*Claim.*—The design for backs of brushes or similar articles as herein shown and described.

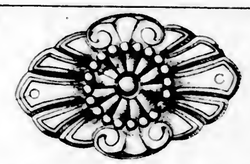
23,669. ORNAMENTAL PATTERN FOR CIGAR-BOXES. SAMUEL D. GEORGE, Brooklyn, assignor to the American Lithographic Company, New York, N. Y. Filed Aug. 21, 1894. Serial No. 520,931. Term of patent 7 years.



*Claim.*—The design for an ornamental pattern for cigar boxes, substantially, as shown and described.

23,670. COVERING-PLATE FOR BILLIARD-TABLE CUSHION-RAIL BOLTS. MOSES BENNINGER, Chicago Ill., assignor to the Brunswick-Balke-Collender Company, same place. Filed Sept. 22, 1893. Serial No. 486,230. Term of patent 14 years.

23,670.



*Claim.*—The herein shown and described new design of billiard table cushion-rail bolt head mask, or covering-plate; the characteristic features of which are its oblong shape, or configuration, the sort of center-piece *f*?; and its scalloped perimeter.

23,671. LAMP-FOUNT HOLDER. JOHN C. MILLER and EDWARD SCHMITZ, Waterbury, Conn., assignors to the Matthews & Willard Manufacturing Company, same place. Filed Aug. 24, 1894. Serial No. 521,246. Term of patent 3½ years.



*Claim.*—The design for a lamp fount holder, as herein described and shown.

23,672. BASE FOR LAMPS. JOHN C. MILLER, Waterbury, Conn., assignor to the Matthews & Willard Manufacturing Company, same place. Filed Aug. 24, 1894. Serial No. 521,247. Term of patent 3½ years.



*Claim.*—The design for a base for lamps, as herein described and shown

23,673. BASE FOR LAMPS. JOHN C. MILLER, Waterbury, Conn., assignor to the Matthews & Willard Manufacturing Company, same place. Filed Aug. 24, 1894. Serial No. 521,248. Term of patent 3½ years.



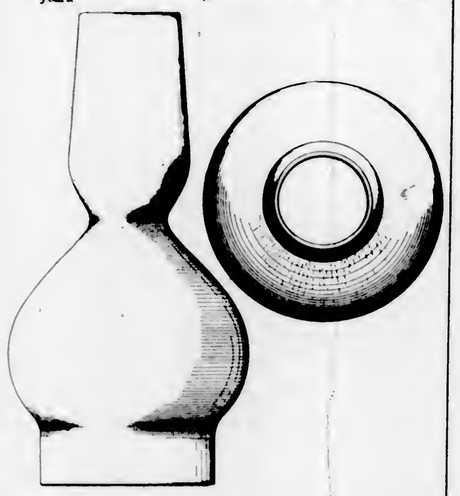
*Claim.*—The design for a base for lamps, as herein described and shown

23,674. BASE FOR LAMPS. JOHN C. MILLER, Waterbury, Conn., assignor to the Matthews & Willard Manufacturing Company, same place. Filed Aug. 24, 1894. Serial No. 521,249. Term of patent 3½ years.



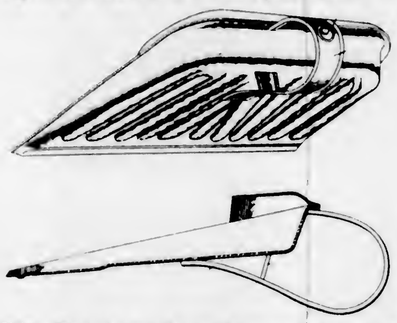
*Claim*—The design for a base for lamps, as herein described and shown.

23,675. LAMP-CHIMNEY. WILLIAM J. PATTERSON, Ellwood City, Pa. Filed Aug. 23, 1894. Serial No. 521,132. Term of patent 7 years.



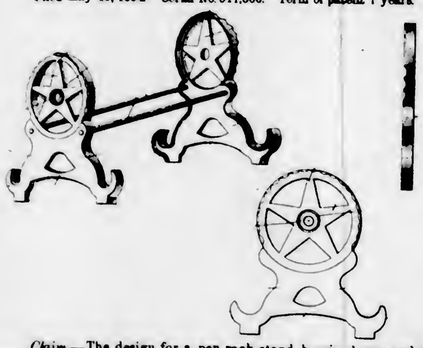
*Claim.*—The design for a lamp chimney, as herein shown and described.

23,676. DUST-PAN. MARY C. PAYNE, South Haven, Mich. Filed Aug. 22, 1894. Serial No. 521,037. Term of patent 14 years.



*Claim.*—The design for a dust-pan herein shown and described.

23,677. PEN-RACK STAND. JAMES M. KEEP, New York, N. Y., assignor to the Tower Manufacturing and Novelty Company, same place. Filed May 15, 1894. Serial No. 511,366. Term of patent 7 years.



*Claim.*—The design for a pen rack stand herein shown and described.

23,678. COLUMN. AMOS A. FENN, Leavenworth, Kans. Filed Aug. 25, 1894. Serial No. 521,344. Term of patent 7 years.



*Claim.*—The design for a column herein shown and described.

23,679. PISTOL-GRIP ENGINE. PIERRE CHOUTEAU, St. Louis, Mo. Filed Mar. 13, 1894. Serial No. 503,513. Term of patent 14 years.



*Claim.*—The design for a pistol grip engine substantially as herein shown and described.

23,680. HAND-LEVER. NAPOLEON DU BRUL, Cincinnati, Ohio. Filed Sept. 1, 1894. Serial No. 521,967. Term of patent 14 years.



*Claim.*—The design for a hand lever; substantially as herein shown and described.

# TRADE-MARKS

## REGISTERED OCTOBER 2, 1894.

25,279. GOLD BUTTONS, PINS, AND CHARMS. CARL L. ROST, Crawfordsville, Ind. Filed July 21, 1894.




*Essential feature.*—The representation of a chariot race and the words "TRIBE OF BEN HUR." Used since February 1, 1894.

25,280. COLLARS AND CUFFS MADE OF PYROXYLIN MATERIALS. THE FIBERLOID COMPANY, Newburyport, Mass. Filed June 13, 1894.

OLD GLORY

*Essential feature.*—The words "OLD GLORY." Used since May 1, 1894.

25,281. CORSETS AND GLOVES. J. LICHTENSTEIN & SONS, New York, N. Y. Filed Sept. 7, 1894.

CLOVER

*Essential feature.*—The word "CLOVER." Used since July 1, 1894.

25,282. KNIT UNDERWEAR. HAY & TODD MANUFACTURING CO., Ypsilanti, Mich. Filed Oct. 17, 1893.




*Essential feature.*—A diamond shaped figure having at its obtuse angles re-entrant curves and at its acute angles curved projections with the word "YPSILANTI." Used since 1889.

25,283. CLOTHING FOR MEN AND BOYS. GREENEWALD & CO., Philadelphia, Pa. Filed July 30, 1894.

"SAM SON"

*Essential feature.*—The word "SAMSON." Used since December 14, 1893.

25,284. CHEWING-GUM. THE CHATTANOOGA MEDICINE COMPANY, Chattanooga, Tenn. Filed Aug. 15, 1894.

Pattens

DIXIE

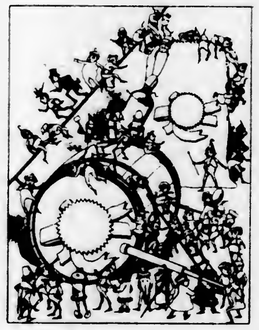
*Essential feature.*—The words "DIXIE" and "PATTENS." Used since June 15, 1894.

25,285. CHEESE. LA SOCIÉTÉ DES CAVES ET DES PRODUCTEURS RÉUNIS, Roquefort, France. Filed July 28, 1894.

SOCIÉTÉ

*Essential feature.*—The word "SOCIÉTÉ." Used since July 1, 1842.

25,286. WHEAT-FLOUR. NORTON & CO., Chicago, Ill. Filed Aug. 23, 1894.



*Essential feature.*—A pictorial representation of the Brownies with many of the figures appearing as sporting upon and climbing a flour barrel. Used since August 9, 1894.

25,287. CLOVER-SEED. GILLETT & HALL, Detroit, Mich. Filed Sept. 10, 1894.

G. & H.



*Essential feature.*—The representation of an acorn and the letters "G. & H." Used since October, 1891.

25,288. VETERINARY REMEDIES. GEORGE B. STEWART, Blue Rapids, Kans. Filed Sept. 4, 1894.

S. D. C.

*Essential feature.*—The letters "S. D. C." Used since September 1, 1890.

25,289. REMEDY FOR DISEASES OF HORSES. HENRY L. LOHMEYER, Pittsburg, Pa. Filed Aug. 11, 1894.

NANCY HANKS

*Essential feature.*—The words "NANCY HANKS." Used since November, 1893.

25,290. LINIMENT FOR HORSES AND OTHER ANIMALS. GEORGE W. POMROY, Jr., Hartford, Conn. Filed Aug. 31, 1894.

POMROY'S MAGIC LOTION.

*Essential feature.*—The words "POMROY'S MAGIC LOTION." Used since May 1, 1894.

25,291. TONIC REMEDY FOR CERTAIN NAMED DISEASES. LANGE TONIC CO., New York, N. Y. Filed Aug. 24, 1894.



*Essential feature.*—The four letters "A L S R" in the form of a monogram which represent and stand for the four words "ANDREW LANGE'S STOMACH REMEDY." Used since August 6, 1894.

25,292. COUGH REMEDY. STUART MEDICINE CO., Elmira, N. Y. Filed Sept. 12, 1892.

KILLAKOFF

*Essential feature.*—The word "KILLAKOFF." Used since March 5, 1888.

25,293. TABLETS FOR THE CURE OF HEART DISEASE. WILLIAM W. LACEY, Boston, Mass. Filed June 11, 1894.




*Essential feature.*—The representation of a heart and the word "HEART" upon it. Used since February 1, 1891

25,294. INTERNAL REMEDIES FOR PURIFYING THE BLOOD. FREDERIC OXNARD, Buffalo, N. Y. Filed Aug. 23, 1894.

HUNGARIAN BLOOD PURIFIER.
F. Oxnard

*Essential feature.*—The fac-simile signature "F. OXNARD" associated with the words "HUNGARIAN BLOOD PURIFIER." Used since October 20, 1893.



25,295. VEGETABLE BITTERS. EDWARD N. BATES, Portland, Me. Filed July 16, 1894.

OLD
DR. BUZZELL'S



*Essential feature.*—The facial likeness of Dr. Buzzell and the words "OLD DR. BUZZELL'S." Used since May 1, 1893.

25,296. NATURAL MINERAL WATER. MARTIN VAN BUREN SAUNDERS, Detroit, Mich. Filed July 30, 1894.




*Essential feature.*—The words "PLYMOUTH ROCK" and the representation of a rock with a face cut on the larger end of the rock. Used since February 26, 1894.

25,297. LUBRICATING-OILS. W. H. CROSSMAN & BRO., New York, N. Y. Filed Sept. 5, 1894.

Mineralina

*Essential feature.*—The word "MINERALINA." Used since January, 1894.

25,298. PORTLAND CEMENT. LAGERDORFER PORTLAND CEMENT FABRIK VON EUG. LION & CO., Hamburg, Germany. Filed May 8, 1894.



*Essential feature.*—A representation of the French steel structure, the Eiffel tower. Used since January 6, 1890.

25,299. FERTILIZERS. LUCIEN SANDERSON, New Haven, Conn. Filed Sept. 7, 1894.

FERTILINE

*Essential feature.*—The word "FERTILINE." Used since August 30, 1894.

25,300. ROACH-POWDER. GUSTAV ROLKE, Columbus, Ohio. Filed July 5, 1894.

G. ROLKE'S
"Sure Death"
Róach Powder.



*Essential feature.*—A picture which represents a woman standing with her hands clasped over her left shouider and an expression of horror depicted on her face, in a kitchen having a window in the back ground, a stove and a tall pipe therefor, a picture and various cooking utensils suspended from the wall of the room with roaches on the floor and on the inner border of the picture, and the words "G. ROLKE'S SURE DEATH ROACH POWDER." Used since May, 1893.

25,301. POWDER TO FACILITATE THE EXECUTION OF MUSIC. LOUIS H. GUNNERMAN, Thorndale, Pa. Filed Aug. 2, 1894.




*Essential feature.*—The representation of a music scroll and the words "MUSICIAN'S GERMAN FINGER POWDER." Used since February 11, 1893.

25,302. CLOTHES-PINS. HOWELLS, MOFFITT & CO., Kane, Pa. Filed Apr. 27, 1894.

GEM

*Essential feature.*—The word "GEM." Used since January 1, 1894.

25,303. WATER-WHEELS. THE JAMES LEFFEL & COMPANY, Springfield, Ohio, and New York, N. Y. Filed Aug. 14, 1894.

Cascade

*Essential feature.*—The word "CASCADE." Used since June 15, 1894.

25,304. STEAM-ENGINE CONDENSERS. THE GEO. F. BLAKE MANUFACTURING COMPANY, New York, N. Y. Filed Aug. 30, 1894.

SPIROJECTOR.

*Essential feature.*—The word "SPIROJECTOR." Used since April, 1894.

25,305. CERTAIN NAMED HARDWARE. MARSHALL-WELLS HARDWARE COMPANY, Duluth, Minn. Filed July 27, 1894.




*Essential feature.*—A crescent shaped circle with the figure of a star suspended in center of the opening at top and word "ZENITH" written across the face. Used since March 1, 1894.

PHOTO-LITH. WASHINGTON, D.C. THE NORRIS PETERS CO.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## DECISIONS OF THE U. S. COURTS.

### Court of Appeals of the District of Columbia.

WELLS *et al. v.* REYNOLDS *et al.*

*Decided September 20, 1894.*

ELEVATOR-VALVE-CONTROLLING MECHANISM—INTERFERENCE—PATENTEE VERSUS APPLICANT—PRIORITY OF INVENTION—AWARDED TO THE PATENTEE.

Where the invention has been reduced to practice in a positive form under the patent and the applicant has simply filed his application, without doing anything to adapt and render the invention practical, and where he knew of the issue of the patent within a few days after its issue, and made no suggestion that the invention was his, but recommended it to purchasers, both orally and in writing, as the invention of the patentee, and where he did not assert any title to it until six months after the issue of the patent and after he had left the employ of the company who owned the patent to do service for a rival company, *Held* that priority must be awarded to the patentee.

*Mr. Frank T. Brown* for the appellants.

*Mr. J. H. Raymond* and *Messrs. Foster & Freeman* for the appellees.

ALVEY, *C. J.:*

This is an appeal from a ruling of the Commissioner of Patents, made in an interference proceeding, taken as between a prior patent and an application for a patent for certain improvements in valve-controlling mechanism for hydraulic elevators. The question presented is solely as to the priority of invention claimed as between two individuals—the appellant, the holder of the prior patent, and the appellee, the applicant for a patent, and at whose instance the interference was declared.

It appears that Reynolds, the appellee, had obtained a patent or patents for operating the movement of elevators, and that such patent or patents had been assigned to the Crane Elevator Company, of Chicago, and at the time of obtaining such patent both Reynolds and Wells were in the employ of that company. Subsequently both Wells and Reynolds left that company and became connected with the Standard Elevator Company, of Chicago—Wells as superintendent and general manager and Reynolds as mechanical engineer. These two companies were rivals in the manufacture and sale of elevators.

The Standard Company desired to manufacture elevators that would not infringe the prior patent granted to Reynolds and then owned by its rival, the Crane Elevator Company, and the question arose and was discussed as to how the prior patent could be evaded or avoided. The counsel of the Standard Company, after investigation, advised that sheaves in the bottom of the shaft, having a horizontal motion and connected with the stopping and starting mechanism, would effect the desired result without danger of infringing the prior patent held by the rival company. To give form and practical working effect to this suggestion, both Wells and Reynolds exercised their inventive ingenuity, and the result was that both claim to have been successful in devising the same modification of the prior patented invention.

In June, 1891, Wells filed two applications for patents, having reference to different parts and combinations of the same subject-matter, and upon those applications, in due course of proceeding, he obtained patents, issued to himself and the Standard Elevator Company jointly. These patents were issued on the 18th of August, 1891, and are numbered 457,844 and 457,845.

On the 6th of February, 1892, nearly six months after the issue of the patents to Wells, Reynolds made application for a patent for the same modification of his prior patent that Wells had covered by his claims and patents, and upon filing his application Reynolds, by his attorney, applied to the Commissioner of Patents to declare an interference between his application and the previous patent issued to Wells. Such interference was declared, and the regular proceeding was taken thereon.

The original declaration of interference embraced three counts under three separate distinct interferences—Nos. 15,587, 15,588, and 15,589—but by stipulation of the parties, with the approval of the Examiner of Interferences, the cases were consolidated under No. 15,587. The issues in Nos. 15,588 and 15,589 became, respectively, counts 2 and 3 under No. 15,587. The issues, as formulated in the Patent Office, are defined as follows:

First. The combination, with the cage, traveling cables, and an operating device, of sheaves arranged within the bights of the cables, and a carrier for said sheaves supported to reciprocate horizontally under the contracting and relaxing of the bights and connecting with the starting and stopping device of the engine.

Second. The combination, with the traveling carriage, of two cords or cables connecting with an operating device on the car, horizontally-movable sheaves near the bottom of the elevator-shaft, around which the cables pass in opposite directions, and guiding-sheaves at the top and bottom of the elevator-shaft, around which the cables pass, said cables being then attached to the car.

Third. The combination, in an elevator, with a trav-

eling carriage, of two ropes or cables, each having one of its ends connected with a controlling device on the carriage and their other ends secured to the car, horizontally-movable sheaves around which the two cables respectively pass in opposite directions, and guiding-sheaves near each side of such pair of movable sheaves, and an adjustable support near the top of the well for the loops of the cables.

The principal matter at issue is the device by which the bottom sheaves have a horizontal position and movement instead of the vertical movement of the sheaves in the prior patent issued to Reynolds.

The declaration of interference having been made and testimony taken for the respective parties, the single question was presented for determination, which of the two parties named was entitled to priority of invention?

The record shows that the case was fully and carefully examined and considered by the officers in the Patent Office, though there was a diversity of views entertained, and different conclusions were deduced from the evidence by those officers. The Examiner of Interferences held that Reynolds was not entitled to priority as against the patents previously issued to Wells, and on appeal to the three Examiners-in-Chief that Board concluded and held that—

in fact there was not much of invention in the matter anyway,

and they did not find sufficient evidence to overcome Wells's patent, recognized and indorsed as it was by Reynolds, or to show that such patent was surreptitiously obtained, and they therefore affirmed the decision of the Examiner of Interferences awarding priority to Wells. From this decision Reynolds appealed to the Commissioner of Patents in person.

The Commissioner reversed the concurring decisions of the Examiner of Interferences and of the Examiners-in-Chief and held that Reynolds was entitled to priority of invention. In the reasoning of the Commissioner much stress is laid upon the fact of the non-production by Wells of certain sketches and drawings that were placed in his hands and upon the apparent want of candor and the improbabilities of his testimony relating to the time and the circumstances at and under which he conceived the invention and attempted to reduce it to form.

Wells swears that he conceived and sketched the invention in April, 1891, and that he made known the fact to his superior officer in the Standard Elevator Company shortly thereafter. This officer, Beidler, the president of the company, corroborates the statement of Wells to a certain extent, but not in a very definite form. Reynolds swears that he first conceived the idea of the invention and illustrated it by a sketch or drawing on the 11th of May, 1891, upon an occasion when the question of adopting a device that would evade his former patent was being discussed, and that Wells, Brown the attorney, and others were present participating in the discussion; that the sketch was the same day reduced to an accurate scale-drawing and signed by him as inventor and by Wells and another as witnesses. Reynolds swears that this drawing, thus signed by him, was left in the hands and possession of Wells, and that it has not been produced, though he has required its production. Neither have the original sketches been produced. Wells swears that he has no such sketches or drawings in his possession and knows nothing of them.

The testimony bearing directly upon the factum of priority of invention is certainly very unsatisfactory: and if the case stood upon that testimony alone we should be inclined to agree with the Examiners-in-Chief and conclude, as they said they would have concluded but for the other facts of the case, that Reynolds was the prior inventor and entitled to a patent; but there are other facts in the case, which, in the absence of countervailing evidence, are controlling in their effect, and which we think were not given their due and sufficient weight in arriving at his conclusion by the Commissioner of Patents.

It appears that some time in May, 1891, Wells handed sketches of the device in question to Smith, a professional draftsman, who made the drawings for Wells, to be filed by the latter with his application for patents. The application was filed in the Patent Office on the 13th of June, 1891, and the patents were issued on the 18th of August, 1891, and Reynolds became acquainted with the fact of the issue of the patents a few days thereafter. At that time both Wells and Reynolds were in the employ of the Standard Elevator Company, and it was not until February 6, 1892, and a few days after he had left the employ of the Standard Company and resumed his connection with the Crane Company that he made his application to the Patent Office for a patent. Apart from this simple application for a patent he has done nothing to adapt and render practical and complete the invention, whereas under the patents to Wells the invention has been reduced to practice in a positive form.

Now, the pre-existing fact of the issue of the patents to Wells for the same invention imposed upon Reynolds the burden of proving beyond reasonable doubt the priority of invention. The patent makes a strong *prima facie* case in favor of Wells. The grant of Letters Patent is *prima facie* evidence that the patentee is the first inventor of the device described in the Letters Patent and of its novelty, and in cases of doubt that doubt should be resolved in favor of the pre-existing patent. (*Morgan* v. *Daniels*, 67 O. G., 811; 153 U. S., 120, 123.) As said by a former Commissioner of Patents:

It is only after he has overcome the patentee's *prima facie* case, arising from the previous grant of the patent, *by proof beyond reasonable doubt*, that he is entitled to have the burden of proof shifted to the patentee (Com. Dec. for 1891, p. 73.)

But, in addition to this *prima facie* presumption in favor of the priority of invention arising from the issue of the patent to Wells, there are other facts that weigh against the claim of Reynolds. The Standard Company was the joint owner of the Wells patent, and from the time of the alleged invention to February 1, 1892, Reynolds was in the employ of that company, and during that time he recommended parties to purchase elevators of the company because of the improvement of Wells's invention, and speaking of the improvement as patented to Wells, and in no manner suggesting any claim of his own. In his letter to Pabst, of Milwaukee, dated August 28, 1891, he says:





When I was in your office a few days since, the question was raised by your people as to the right of the Standard Elevator Company to place an operating-lever in its elevator-cars. I take pleasure in inclosing herewith a patent granted to our Mr. Wells, for the latest and best lever device yet brought out. This patent has been granted by the United States Government, with knowledge fresh in mind of all the recent controversies by the different elevator manufacturers before the Patent Office, in relation to lever devices. I hope this patent will be considered an answer to the question, whether or not the Standard Company have the right to use a lever in the cars.

The right here so plainly recognized in the Standard Company to use the device in its elevators certainly did not exist, if the claim of Reynolds now asserted be well founded. He was either recognizing what he knew at the time to be the right of the matter or he was attempting to deceive and mislead both his employer and the public.

It further appears in the testimony of Wells, which could have been easily refuted if false, that Reynolds recognized and spoke of the invention patented to Wells as being the invention of Wells, and to Mr. Leiter, then negotiating for the purchase of elevators from the Standard Company, Reynolds recommended the lever improvement of Wells as being "for some reasons better than any other." This treatment of the invention is wholly inconsistent with the claim now made that he, Reynolds, was the original and first inventor of the device. These declarations and recommendations of his, made both in writing and orally, amount to a disclaimer of any right in himself, and the claim now made to priority of invention would seem to be an afterthought and not given form until after he had gone back and resumed his relation with the Crane Elevator Company.

It is true, in explanation of the delay in making his application for a patent, he says that he was advised by Wells and Brown not to make application; but he is an intelligent man and has had considerable experience in obtaining patents, and he must be supposed to have known the effect in the Patent Office of undue delay and failure to reduce his invention to a fixed, positive, and practical form. If such advice was given, coming from the source it did, he must have known the motive and the effect of following such advice, and therefore it could furnish him no excuse for the delay, nor, in the meantime, for treating the invention as belonging to Wells and inducing third parties to deal with it as such. The strong inference from the conduct to which we have referred is that Reynolds knew that he had no rightful claim as original inventor of the device, and hence he made no claim until moved thereto by subsequent events.

There are other circumstances in the case; but the facts to which we have referred are the most important, and it is unnecessary to refer to the evidence in greater detail. Upon the whole we concur in the conclusion reached by the Examiner of Interferences and the Examiners-in-Chief that Wells is entitled to priority of invention, and we must therefore dissent from the conclusion reached by the Commissioner of Patents that Reynolds is entitled to priority of invention. We shall therefore direct a certificate of the proceedings in this court and of this decision to be returned to the Commissioner of Patents to be entered of record in the Patent Office, as the law directs.

Reversed and ordered to be certified to Commissioner of Patents.

## U. S. Circuit Court of Appeals—Ninth Circuit.

PACIFIC CABLE RAILWAY COMPANY *v.* CONSOLIDATED PIEDMONT CABLE COMPANY.

*Decided May 28, 1894.*

HALLIDIE—TRAMWAY FOR CURVES AND CABLE-GRIPS—CONSTRUED. Reissue Patent No. 10,681, dated February 2, 1886, to Andrew S. Hallidie, for tramway for curves and cable grips, examined and *Held* to be limited, in view of the art, to the combination of a separate guide-rail, slot, and cable-carrying sheaves, and not infringed by a guide-rail formed of the lower flange of the slot-iron.

THIS was a suit brought by the Pacific Cable Railway Company against the Consolidated Piedmont Cable Company for infringement of a patent.

*Mr. William F. Booth* for the appellant.

*Messrs. Wheaton, Kalloch & Kierce* for the appellee.

Before GILBERT, ROSS, and HANFORD, Judges.

GILBERT, *J.*:

This appeal is taken from the final decree of the circuit court dismissing the bill in a suit brought by the appellant as complainant, alleging infringement by the defendant of Reissue Letters Patent No. 10,681, of date February 2, 1886, granted to Andrew S. Hallidie, for "tramway for curves and cable-grips."

The patent under consideration relates to improvements in cable railways. In such railways the traveling cable is carried in an underground tube between the tracks. The car carries a grip, the shank of which extends downward through a continuous narrow slot in the top of the tube. At the end of the shank a gripping device grasps and holds the cable, thereby propelling the car. The slot in the tube is bounded by slot-irons, which are parallel with the tracks and lie midway between the same. In passing around a curve of the track the cable is carried against horizontal sheaves lying upon the inner side of the curve, within the tube. When the grip, holding fast to the cable, reaches a curve in the road, the tendency of the cable in passing around the curve is to draw the grip toward the inner wall of the curve and to strike the horizontal sheaves. To prevent such striking of the sheaves is the object of the Hallidie invention.

In the Hallidie device a guide-rail is placed within the tube, against the inner wall of the same, at the curve, and between the horizontal cable-carrying sheaves and the slot-iron. The guide-rail, as described in the patent, may be either smooth or furnished with horizontal rollers set at intervals along its entire length. If the smooth rail is used, the grip-shank is furnished with a horizontal friction-roller so placed as to revolve against the rail. If the guide-rail with rollers is used, the grip-shank carries a pivoted skate-shaped shoe, which comes in contact with and passes over the rollers. Letters Patent for the Hallidie invention were first granted in England December 13, 1879. On February 12, 1884, the application for the American patent was filed. The claim of the patent as finally allowed reads as follows:

In a cable railway, the main curve of the track and slot, in combination with the guide-rail beneath and the cable-carrying sheaves for carrying the cable around the curves, and a grip, as set forth.

It is to be noted that in this claim, as formulated, no reference is made to the device or mechanism to be used to bring the grip-shank into bearing upon the

guide-rail; but in the specification and drawings the roller and pivoted shoe are plainly indicated and described. The defendant has no separate guide-rail upon its cable-railway curves, but uses for the purpose of a guide-rail the lower flange of the slot-iron, which is widened upon the inner wall of the curve to furnish a smooth bearing-surface for the grip-shank, the contact of which is direct and without the interposition of a roller. It is contended by the appellant that the relationship of these parts, their functions, and objects are the same in the two structures, and that the mode of operation of each combination is the same, accomplishing the same result by the same means, and that, therefore, the defendant has infringed the Hallidie patent.

In considering the question of infringement it is necessary first to determine what is the Hallidie invention. Between the year 1864 and the year 1876 several patents were granted for improvements in cable tramways and the various devices used in connection therewith. In some of these patents distinct reference was made to the passage of curves in the cable railways. In the patent to A. E. Beach, (No. 42,039,) of March 22, 1864, the statement is made that—

the rails which pass around sharp curves are intended to be interiorly enlarged so as to receive stationary friction-wheels within them, for the cable to press against, and thus reduce friction.

On April 18, 1876, a patent was granted to A. E. Hovey for an improvement in rope-gripping devices for propelling vehicles, (Letters Patent No. 176,136,) and on September 18, 1877, a patent was granted to the same patentee for an improvement in endless-rope traction-railways. (Letters Patent No. 195,372.) In his gripping device Hovey placed two horizontal friction-rollers *l l*, and described them as—

secured horizontally, so as to prevent the shank of the griper from coming in contact with the sides of the slot as it moves through the tube.

In his second patent he described his slot-iron as—

formed of angle-iron for greater strength, to resist the weight and strain from vehicles passing over them, and as affording a plane bearing-surface within and beneath the groove for the grinding-rollers in the gripe.

The operation of this combination described in the Hovey patents is precisely the same as that of Hallidie, and although Hovey has made no specific claim for or reference to the adaptability of his combination of rollers and guide-rail to curves in the track such adaptation is plainly discernible from a simple inspection of its construction. When the Hallidie American patent was applied for, the Examiner at first rejected the application upon the ground that the Hovey patent of September 18, 1877, described substantially the same device. Hallidie thereupon distinguished his device from that of Hovey in two respects: first, that in the Hovey device the slot-rails were at too great an elevation above the grip and cable to successfully resist the pressure upon a curve, whereas the Hallidie guide-rails were placed lower and in the horizontal plane of the grip, and, second, that the slot-irons, as usually made, were not of strength sufficient to resist the pressure and would be liable to be separated or displaced. Upon these considerations the Hallidie claim was allowed and the patent was granted. The Hallidie combination, as patented, therefore takes the cable-carrying sheaves, which were old, and the grip, which was old, and introduces the new element of a separate guide-rail, and applies the combination to a curve in the road, which was also old.

Without pausing to discuss the merit of his patent, or to decide whether invention is displayed in his combination, or whether his combination, as described in his claim, is inoperative for want of some device or mechanism to bring the grip-shank into bearing against the guide-rail, it is sufficient for the purposes of this appeal to confine ourselves to the consideration that, in view of the prior patents, Hallidie must be limited to his combination as described, one of the elements of which—and the only new element—is the separate guide-rail. This the defendant has not used. On the contrary, it has used for the bearing-surface of its grip-shank a rail, which was old and had been described and used for the same purpose in the Hovey patents of 1876 and 1877. This difference is sufficient to establish the defense of non-infringement; but if we are to regard as part of the Hallidie combination the horizontal friction-roller by which the bearing of the grip-shank against the smooth guide-rail is effected then it will become apparent that the defendant has made still further deviation from the Hallidie device by dispensing with the friction-roller and bringing the grip-shank into direct bearing upon the guide-rail by means of a projection of the grip-shank or a shoe firmly fixed thereon. It is true that in the application for his American patent Hallidie inserts the following clause, which does not appear in his application for the English patent:

In practice I prefer to employ a shoe which will travel upon the smooth guide-rail, as this will produce a smoother and more even movement.

But no claim is made for the shoe in that connection, and it is not intimated that Hallidie then or at any time has claimed to be the inventor of the combination with the shoe or the discoverer of the fact that a smoother or more even movement is thereby produced. The evidence, on the contrary, makes it probable that the idea of the shoe in conjunction with the smooth guide-rail was taken by Hallidie from its use by Hovey in a cable railway constructed by the latter for the Chicago City Railway Company nearly two years before the application for Hallidie's American patent was filed.

In either view of the complainant's patent it is evident that the defendant is not justly chargeable with its infringement, and the decree of the circuit court, dismissing the bill, is affirmed, with costs to the appellee.

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## U. S. Circuit Court—Northern District of New York.

GOLDSTEIN *v.* WHELAN *et al.*

*Decided June 20, 1894.*

TRADE-MARK—AFFIDAVITS.

Where affidavits are filed which are not entitled in the cause, they cannot properly be considered by the court. (*Buerk* v. *Imhauser*, 10 O. G., 907; see also *Hawley* v. *Donnelly*, 8 Paige, 415.)

MOTION for a preliminary injunction to restrain the infringement of a registered Trade-Mark.

*Mr. Charles H. Duell* for the complainant.

*Mr. Howard P. Denison* for the defendants.





COXE, *J.:*

This action is brought to restrain the defendants from infringing the complainant's registered Trade-Mark "Napoleon." Both parties are citizens of this State.

In his statement, filed February 23, 1894, the complainant says:

My Trade-Mark consists of the word symbol "Napoleon." * * * The word may be printed in connection with an ornamental label having, among other figures or forms, a picture of Napoleon I, without materially altering the character of the Trade-Mark, the essential feature of which is the word "Napoleon." The Trade-Mark is used to designate a certain brand of cigars.

Affidavits, not entitled in the cause, are presented by the defendants showing that long prior to the complainant's use the name "Napoleon" had been used, with a portrait of the first emperor, to designate a brand of cigars precisely as the complainant uses it at the present time. It also appears that this use was practically continuous from 1876. If the facts stated in these affidavits are true, the complainant's registered Trade-Mark, no matter what construction is placed upon it, is anticipated in every particular. (*Stachelberg* v. *Ponce*, 46 O. G., 337; 128 U. S., 686.) This proposition must be conceded; but it is argued that the affidavits disclose a case of unfair competition in trade, and that this court, having once acquired jurisdiction, may retain it even as to matters not alleged in the bill and cognizable only by the State courts.

It is thought that the cases cited by the complainant hardly go to the necessary extent. It is probably true that when a Federal question is involved the court is justified in adjudicating upon all questions growing out of the transaction involved. But is this true where it appears that there is no Federal question? In other words, can the court retain jurisdiction to pass upon a cause of action solely cognizable by the State courts, after it is demonstrated that no Federal question is involved, simply because the bill alleges facts which, if true, would give the Federal court jurisdiction?

In the case relied upon by the complainant (*Omaha Horse Railway Co.* v. *Cable Tram-Way Co. of Omaha*, 32 Fed. Rep., 727,) the court says:

No mere assertion that a Federal question exists, or that a right is claimed under the Federal Constitution, is, of itself, sufficient to give jurisdiction; it must appear that there is some real, substantial Federal question involved.

(See also *Foster's Practice*, vol. 1, p. 534, par. 293.)

Surely there is force in the suggestion that the bill must be dismissed the moment the court determines that the complainant's registered Trade-Mark is invalid.

It is not the purpose of the court at this time to pass definitively upon this proposition. It is, to say the least, doubtful, and a preliminary injunction should never issue in a doubtful case.

The court has treated the motion thus far as if the defendants' affidavits were regularly before it, thinking it for the interest of both parties that this should be done. These affidavits cannot, however, properly be considered under the decision of *Buerk* v. *Imhauser*, (10 O. G., 907,) for the reason that, with one exception, they are not entitled in the cause. The circuit court of this circuit there said regarding similar papers:

Perjury could not be assigned on these affidavits by reason of the want of the title. They appear to be mere extra-judicial oaths, and are not receivable in this court.

(See also *Hawley* v. *Donnelly*, 8 Paige, 415.)

If the complainant is convinced that the defect is the result of an oversight and is one which can be readily remedied, it is possible that some agreement looking to a waiver of the objection can be reached.

It follows that the restraining order heretofore granted must stand, without prejudice to the defendants, upon properly entitled affidavits to move to vacate the same.

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## U. S. Circuit Court—Northern District of Illinois.

COLBY *v.* CARD.

*Decided April 30, 1894.*

1. COLBY—TOY BANK—VALID.

Letters Patent No. 373,223, granted November 15, 1887, to Edward J. Colby, for a toy bank, *Held* to be valid.

2. SAME—CONSTRUCTION OF CLAIM—INFRINGEMENT.

The claim for "a toy bank consisting of a hollow toy provided with a coin-receiving and coin-discharging aperture, a movable cover for the discharging-aperture, and a spring-latch to secure the same from within, said spring-latch being normally closed, but constructed to be opened by the weight of the coin within," *Held* infringed by a device consisting of the same elements, but in which the cover to the discharging-aperture is retained in place until a pressure applied through the contained coin greater than the weight of the coin releases said cover.

*Messrs. Barton & Brown* for the complainant.

*Mr. Henry M. Brigham* and *Mr. Cyrus J. Wood* for the defendant.

GROSSCUP, *J.:*

The complainant claims under Letters Patent No. 373,223, issued November 15, 1887, to Edward J. Colby, for an alleged improvement in toy locomotives.

The first and principal claim of the patent is as follows:

A toy bank consisting of a hollow toy provided with a coin-receiving and coin-discharging aperture, a movable cover for the discharging-aperture, and a spring-latch to secure the same from within, said spring-latch being normally closed, but constructed to be opened by the weight of the coin within.

The essential feature of the plaintiff's patent is the combination, with a hollow toy having a coin receiving and discharging aperture, of a spring-latch which secures the opening-aperture from within until the specific weight of coin operating thereon opens the latch.

The defendant's device is a plain tube, with like opening and discharging apertures and a spring-latch so arranged with reference to the capacity of the tube that the last of a given number of coins is forced through the open aperture, and thus communicates the pressure to the latch, which causes it to open. The pressure operating upon the latch in the case of the complainant's device and necessary to overcome the resistance of the spring is the weight of the coin. The pressure in the defendant's device is the weight of the coin, with such added force as is communicated to the column of the coin by the forced introduction of the last piece.

In one the operating force is weight, pure and simple; in the other the operating force is weight added to by the pressure which is communicated, by a wedge, through a solid column.

The principal question is whether these are mechani-

cal equivalents. In my opinion they are. The defendant adopted complainant's idea of a spring, and has simply so strengthened it that a little pressure, added to the weight of the coin, is needed to overcome its resistance. This is no reasonable advancement upon or differentiation from the complainant's idea.

The complainant's patent is not, in my opinion, anticipated either by the Bossert or by the Gabbey patents. It is not seriously claimed that the first is an anticipation of the complainant's particular combination. In regard to the Gabbey patent, it seems to me that while the weight of the contained grain causes the opening and shutting of the valves, and thereby the registration of the amounts, something analogous to the Colby invention, yet the machines, as machines, are different.

With the patent before the inventor he would have to exercise almost as much of invention to adapt it to the peculiar requirements of a money-bank as would an inventor in producing it without the presence of the Gabbey patent.

For the foregoing reasons the finding will be for the complainant against the defendant, George C. Card, and an injunction will issue accordingly.

# TRADE-MARK LAW OF GREECE

## OF JANUARY 16, 1893.

*(Translated from La Propriété Industrielle by Examiner F. A. Seely, United States Patent Office.)*

ARTICLE I. Any distinctive mark of the products of industry, of agriculture, of stock-breeding and of commerce in general, is considered as a trade-mark. The mark may be affixed to the product itself or to the package that contains it; and the name of a manufacturer or merchant or the firm name of either shall be considered as a trade-mark.

ART. II. The use of a trade-mark is optional; but no one shall have the legal right to protection in the exclusive use of a mark unless he shall have deposited three copies of it and one typographical cut at the office of the civil tribunal of first instance of the district where he has his principal establishment, or, in default of that, an establishment and his domicile. Legal protection is assured for ten years from the date of deposit; by a new deposit in the same form this term may be extended for a new period of ten years. He alone has the right to make such a deposit who has been the first to use the mark publicly and for one year without interruption. There shall be paid a fee of sixty drachmas in gold for each deposit.

ART. III. A record of each deposit shall be kept in a Register for that purpose; this register shall be numbered, and the record signed by the depositor or by his specially authorized attorney—and by the clerk. The record shall mention the day and hour of deposit and the class of industry to which the mark is appropriated; to it shall be annexed the power of attorney and the receipt establishing the payment of the fee prescribed in the preceding article. The record shall have affixed a stamp of two francs. Records of deposit shall be at the disposition of any one who desires to search them or to make an extract from them. One of the copies deposited shall be preserved in the clerk's office; the second, signed by the clerk, shall be attached to a copy of the record on stamped paper and sent at once to the depositor or to his authorized representative; the third, accompanied by a copy of the record also on stamped paper, and the typographic cut, shall be sent within a week to the Director of the School of Industrial Arts.

ART. IV. It shall be the duty of the Director to enter the mark on a special register according to the class of industry or commerce; the name of the depositor shall be recorded in an index open to public inspection; the mark shall be exposed in a public hall, and a declaration of the deposit, together with a summary description of the product and of the mark, shall be inserted in the *Official Journal* with a reproduction of the mark itself, and this within the period of two weeks from the date on which the matter was sent to the Director of the School of Industrial Arts.

ART. V. The title to a trade mark cannot pass to another except with the right to deal in the product. This transfer shall have no effect with respect to third parties until after the deposit and the publication of an extract from the instrument which shall verify it in the forms prescribed in Articles II and IV. The transfer shall also be noted on the margin of the record of deposit of the mark, and this note shall be attested by the signature required by Article III. It shall be subject to a fee of thirty drachmas in gold, the receipt for which shall be entered on the record.

ART. VI. The penalty of imprisonment of not less than six months and a fine not exceeding 1,000 drachmas, or either of these, shall be imposed upon—first, whoever counterfeits a trade-mark or makes a fraudulent use of a counterfeit mark; second, whoever shall have fraudulently affixed to his product a mark that belongs to another; third, whoever, without counterfeiting a mark, shall have made an imitation of a nature to deceive or shall have used such imitation; fourth, whoever shall have knowingly sold or put on sale an article bearing a counterfeit mark. Public prosecution for the offenses contemplated in this article cannot be instituted until ten days after the insertion in the *Official Journal* required by Article IV, and for an act committed after the expiration of that period. Nevertheless the depositor can from the day following the deposit sue in a civil action for the judicial recognition of his right to the exclusive use of the mark, and then offenses committed subsequent to legal notice of the civil action may be prosecuted even in advance of the publication in the *Official Journal*.

ART. VII. The penalties ordained hereafter may be doubled in case of repetition of the offense when the latter shall occur within five years from the date of the earlier.

ART. VIII. The court shall order that every judgment be inserted at the cost of the offender in two journals at the capital, if the offense has been committed in Athens, or if elsewhere, in one journal of Athens and another of the place where the offense was committed.

ART. IX. The court shall order in every case—even in that of acquittal—the destruction of the counterfeit marks: if the mark cannot be destroyed without injury to the article to which it is affixed, the court may order the total or partial destruction of the article also.

ART. X. Besides the penalties above named, whoever shall infringe the present law shall be bound to make good the damage he has caused—the merchandise bearing a counterfeit mark and the instruments employed to perpetrate the offense may be awarded by the court to the injured party, if they belong to the guilty person; and if the injured party has commenced an action for damages and has accepted said articles, upon a summary valuation made by the court, for the whole or part of the compensation.

ART. XI. No public prosecution can be instituted but on the complaint of the injured party.

ART. XII. The registry of a mark which shall not have been made in conformity with the provisions of the present law may be declared void by the tribunal by whose clerk it may have been registered, on the demand of any interested third party. The extract from the judgment shall be entered, at the instance of the complainant, on the margin of the record, within one month from the date when it shall be in force, under penalty of a fine of not less than 25 drachmas. Every private dispute resulting from an action under this law shall be determined by the tribunal of first instance as an affair of commerce, unless it shall have been instituted, simultaneously with the public suit, before the *tribunal correctionel*.

ART. XIII. Foreigners and Greek subjects carrying on their industry or commerce outside of Greece, shall enjoy the benefit of this law if, in the country where they are located, there is a law for the protection of trade-marks and a diplomatic convention for the reciprocal protection of Greek trade marks. Provided that it shall be necessary for the enjoyment of this privilege in Greece, besides the deposit of the mark, first, to produce a certificate from competent local authority, authenticated by the Greek Consul, establishing the fact that the formalities have been accomplished required by the laws of the applicant's country to secure protection of the mark; second, to elect a domicile at Athens before a notary; third, to declare in writing that the applicant submits to the jurisdiction of the Athenian tribunals. The effect of protection in Greece shall terminate when the period of protection fixed by law shall expire, or if the Diplomatic Convention for Reciprocity shall cease to be in force. In no case can foreigners or Greeks residing abroad have a larger protection in Greece for their trade marks than they enjoy in the country where their establishment is situated.

ART. XIV. An indemnity shall be paid from the public treasury to the clerks of tribunals of the first instance in the sum of two drachmas for each record of deposit, and to the Director of the School of Industrial Arts in the same sum for each mark registered. These functionaries shall submit triennial statements, under supervision of the superior hierarchs, to the Minister of the Interior who shall give them orders for payment.

ART. XV. All provisions in conflict with this law are abolished.

ART. XVI. A royal decree will prescribe in fuller detail the deposit, the publication and the exhibition of marks, as well as everything concerning the execution of this law.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 69.—No. 2. TUESDAY, OCTOBER 9, 1894. PRICE—$5 per year.

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## RULES OF THE COURT OF APPEALS OF THE DISTRICT OF COLUMBIA

RELATING TO

### Appeals from the Commissioner of Patents.

No. XX.

1. All certified copies of papers and evidence on appeal from the decision of the Commissioner of Patents, authorized by section 9 of the act of Congress approved February 9, 1893, shall be received by the clerk of this Court, and the cases, by titling and number as they appear on the record in the Patent Office, shall be placed on a separate docket from the docket of the cases brought into this Court by appeal from the Supreme Court of the District of Columbia, to be designated as the "Patent Appeal Docket;" and upon filing such copies, the party appellant shall deposit with the clerk, or secure to be paid as demanded, an amount of money sufficient to cover all legal costs and expenses of said appeal; and upon failure to do so his appeal shall be dismissed. The clerk shall, under this titling of the case on the docket, make brief entries of all papers filed and of all proceedings had in the case.

2. The appellant, upon complying with the preceding section of this rule, shall file in the case a petition, addressed to the Court, in which he shall briefly set forth and show that he has complied with the requirements of sections 49 2 and 4913 of the Revised Statutes of the United States, to entitle him to an appeal, and praying that his appeal may be heard upon and for the reasons assigned therefor to the Commissioner; and said appeal shall be taken within forty days from the date of the ruling or order appealed from, and not afterward.

3 The clerk shall provide a minute-book of his office, in which he shall record every order, rule, judgment, or decree of the Court in each case, in the order of time in which said proceedings shall occur; and of this book the index shall be so kept as to show the name of the party applying for the patent, the invention by subject-matter or name, and, in cases of interference, the name of the party with whose pending application or unexpired patent the subsequent application is supposed to interfere.

4. The cases on this docket shall be called for argument on the second Monday of January, March, May, and November in each year, and the cases shall be called in regular order as they may stand on the docket. A copy of these rules shall be furnished to the Commissioner of Patents; and it shall be the duty of the clerk of this Court to give special notice to the said Commissioner at least fifteen days immediately preceding the times thus respectively fixed for the hearing of said cases; the said notice to name the place of the sitting of the Court, the titling of the cases on the docket of this Court, the respective numbers thereof, and the number of each case as it appears of record in the Patent Office; and thereupon the Commissioner shall give notice to the parties interested or concerned by notice addressed to them severally by mail.

5. The clerk shall furnish to any applicant a copy of any paper in any of said appeals on payment of the legal fees therefor

6. The appeals from the Commissioner of Patents shall be subject to all the rules of this Court provided for other cases therein, except where such rules, from the nature of the case, or by reason of special provisions inconsistent therewith, are not applicable.

No. XXI.

Wherever the judgment, decree, or order appealed from is based upon or has reference to a written opinion filed in the case by the court below, such opinion shall constitute a part of the transcript to be sent to this Court; and such opinion, and also the written reasons or grounds assigned by the Commissioner of Patents in appeals from the Patent Office, shall be printed as part of the record to be printed under Rule 6.

No. XXII.

All motions for reargument, or for modifications of judgments or decrees, shall be made in writing and filed with the clerk of the Court within fifteen days from the time of the opinion or judgment delivered; and it shall be the duty of the clerk of this Court to deliver a copy of such motion to each member of the Court without delay, and during such period of fifteen days no mandate shall issue unless upon special order of the Court for cause shown.

No. XXIII.

The reporter of the decisions of this Court shall have access to and the right to copy all the opinions of this Court; and the clerk shall furnish such reporter a copy of the printed record, and briefs of counsel filed, in each case decided by the Court.

No. XXIV.

These rules shall be printed, and a copy thereof shall be furnished to each of the justices of the Supreme Court of the District of Columbia, and to the clerk of that Court, and also to the Commissioner of Patents.

No. XXV.

The foregoing rules shall be of force and effect in the Court of Appeals of the District of Columbia from and after the 25th day of September, A. D. 1891, and be binding upon all those subject to the jurisdiction of said Court until altered or rescinded; but no right or duty created or imposed by pre-existing rules shall in any manner be impaired or discharged.

### Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., September 29, 1894.*

SIR: The Secretary of the Interior has ordered that Richmond Wisehart, of New Castle, Ind., be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,
JOSEPHUS DANIELS,
*Chief Clerk.*

The Commissioner of Patents.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., September 29, 1894.*

SIR: The Secretary of the Interior has ordered that Jesse C. Hansel, of Hoboken, N. J., be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,
JOSEPHUS DANIELS,
*Chief Clerk.*

The Commissioner of Patents.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., October 2, 1894.*

SIR: The Secretary of the Interior has ordered that Samuel R. Yost, of South Bethlehem, Pa., be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,
JOSEPHUS DANIELS,
*Chief Clerk.*

The Commissioner of Patents.

## Price of Printed Copies of Patents.

Attention is called to the fact that under date of May 14, 1891, the price of uncertified printed copies of patents was fixed at the *uniform price of ten cents each*, whether purchased singly or in quantities.

## Issue of October 9, 1894.

| | | |
|---|---|---|
| Patents | 358 | No. 527,039 to No. 527,396, inclusive. |
| Designs | 7 | No. 23,681 to No. 23,687, inclusive. |
| Trade-Marks | 31 | No. 25,306 to No. 25,336, inclusive. |
| Labels | None. | |
| Prints | None. | |
| Reissues | 1 | No. 11,445. |
| Total issue | 397 | |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | 2 | | Nevada | | |
| Arizona Territory | | | New Hampshire | | |
| Arkansas | | | New Jersey | 10 | |
| California | 11 | | New Mexico Territ'y | | |
| Colorado | 6 | | New York | 64 | 9 |
| Connecticut | 18 | 3 | North Carolina | 1 | |
| Delaware | | | North Dakota | | |
| District of Columbia | 2 | | Ohio | 27 | 2 |
| Florida | | | Oregon | | |
| Georgia | 4 | | Pennsylvania | 44 | 5 |
| Idaho | | | Rhode Island | 1 | |
| Illinois | 28 | 2 | South Carolina | 1 | |
| Indiana | 4 | | South Dakota | | |
| Indian Territory | | | Tennessee | 1 | 1 |
| Iowa | 10 | 1 | Texas | 3 | 1 |
| Kansas | 4 | 1 | Utah Territory | | |
| Kentucky | 5 | | Vermont | | |
| Louisiana | | | Virginia | 2 | |
| Maine | 1 | 2 | Washington | 1 | |
| Maryland | 5 | | West Virginia | 1 | |
| Massachusetts | 28 | 3 | Wisconsin | 10 | |
| Michigan | 9 | | Wyoming | 1 | |
| Minnesota | 3 | | U. S. Army | | |
| Mississippi | 1 | | U. S. Navy | | |
| Missouri | 10 | 1 | | | |
| Montana | | | Total to citizens of the United States | 320 | 31 |
| Nebraska | 2 | | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Argentine Republic | | | Mexico | 1 | |
| Austria-Hungary | 3 | | Netherlands | | |
| Belgium | | | Newfoundland | | |
| Bermuda | | | New South Wales | 1 | |
| Brazil | | | New Zealand | | |
| British Guiana | | | Norway | | |
| Canada | 8 | | Queensland | 1 | |
| Chile, Republic of | | | Russia | | |
| Cape Colony | | | Scotland | 1 | |
| Colombia | | | South Australia | | |
| Cuba | | | Spain | | |
| Denmark | 1 | | Sweden | | |
| Ecuador | | | Switzerland | 1 | |
| England | 16 | | Victoria | 2 | |
| Finland | | | West Australia | | |
| France | 4 | | | | |
| Germany | 5 | | Total to citizens of foreign countries | 45 | |
| India | 1 | | | | |

# APPLICATIONS UNDER EXAMINATION.

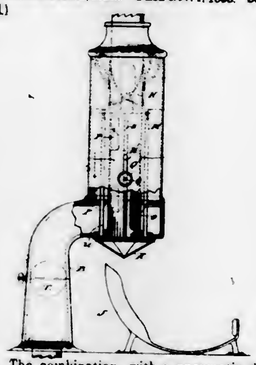
*Condition at Close of Business October 2, 1894*

| Division No. | Subjects of invention. | Oldest new application awaiting office action. | Oldest amended application awaiting office action. | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Sept. | Sept. 29 | 52 |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | Sept. 4 | Sept. 28 | 71 |
| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting, and Leather Working Machinery. | Sept. 4 | Sept. 28 | 133 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | Sept. 4 | Sept. 27 | 82 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire-Escapes and Ladders, etc. | Sept. 24 | Sept. 26 | 38 |
| 2 | Farm Stock, Products, etc. | Sept. 4 | Sept. 26 | 98 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | Sept. 4 | Sept. 22 | 223 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | Sept. 6 | Sept. 13 | 72 |
| 19 | Stoves and Furnaces | Sept. 4 | Sept. 10 | 232 |
| 37 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Sept. 4 | Sept. 7 | 137 |
| | *Between one and two months.* | | | |
| 10 | Carriages and Wagons | Aug. 11 | Sept. 24 | 152 |
| 12 | Mechanical Engineering, Store-Service, etc. | Aug. 3 | Sept. 24 | 145 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers | Aug. 28 | Sept. 22 | 123 |
| 8 | Furniture, Beds, Store Furniture, etc. | Aug. 15 | Sept. 21 | 277 |
| 20 | Builders' Hardware, Safes, Dentistry, Undertaking, Artificial Limbs, etc. | Aug. 21 | Sept. 20 | 178 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, Surgery. | Aug. 4 | Sept. 14 | 194 |
| 1 | Tillage and Fences | Aug. 2 | Sept. 13 | 248 |
| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Aug. 6 | Sept. 8 | 188 |
| 21 | Textiles, etc. | Aug. 3 | Sept 4 | 155 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Aug. 18 | Aug. 17 | 148 |
| | *Between two and three months.* | | | |
| 26 | Electricity, Generation, Distribution, Motive Power, Electric Railways, etc. | July 10 | Sept. 21 | 193 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, Cutlery, etc. | July 7 | Sept. 20 | 185 |
| 18 | Steam-Engineering, etc. | July 28 | Sept. 19 | 232 |
| 3 | Metallurgy, Metal-Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | July 2 | Sept 18 | 64 |
| 23 | Instruments of Precision, Acoustics, etc. | July 7 | Sept. 12 | 177 |
| 30 | Lamps, Gas-Fittings, Linotyping, Type-Writing Machines, Optics. | July 6 | Aug. 30 | 256 |
| 17 | Paper-Manufactures and Printing | July 13 | Aug. 16 | 227 |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | July 3 | Aug. 15 | 326 |
| | *Between three and four months.* | | | |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | June 30 | Sept. 22 | 156 |
| 34 | Railway-Cars and Fluid-Pressure Railway-Brakes. | June 22 | Sept. 21 | 285 |
| 29 | Wood-Working Machines, Carpentry, Coopering and Roofing, etc. | June 27 | Sept. 15 | 209 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | June 13 | Sept. 10 | 514 |
| 24 | Sewing-Machines, Crinoline and Corsets, Apparel, and Toilet. | June 28 | Sept. 4 | 164 |
| | Total number of applications awaiting action | | | 5,925 |
| | *Under one month in arrears.* | | | |
| | Designs | Sept. 20 | Sept. 20 | 48 |
| | Trade-Marks | Sept. 24 | Sept. 29 | 30 |

# PATENTS

## GRANTED OCTOBER 9, 1894.

**527,039. TERMINAL FOR PNEUMATIC DISPATCH-TUBES.** OAKES AMES, Canton, Mass., assignor to the Meteor Despatch Company, Portland, Me., and Boston, Mass. Filed Nov. 1, 1893. Serial No. 489,772. (No model.)



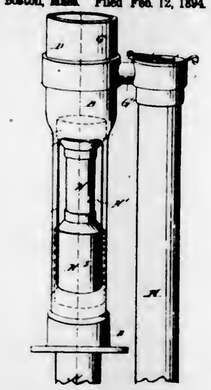
*Claim.*—1. The combination, with a pneumatic dispatch tube system, of a terminal and means for directing the propelling air current through said terminal in opposition to the travel of the carrier.

2. The combination, with a pneumatic dispatch tube system, of a terminal, means for directing the propelling air current through said terminal in opposition to the travel of the carrier, and means for varying the pressure of the air current moving in opposition to the travel of the carrier.

3. In a pneumatic dispatch tube system, a terminal consisting of an inner cylinder through which the carrier passes from the main tube and an outer cylinder, valves closing the passage between the main air tube and the inner cylinder and diverting the air current into the outer cylinder, and means for directing the air current into the inner cylinder below the valves in a direction opposite to the travel of the carrier, whereby the velocity of the carrier is reduced in passing through said terminal, substantially as set forth.

4. The combination, with a pneumatic dispatch tube system, of a terminal and means for directing the propelling air current through said terminal across the line of travel of the carrier whereby the travel of the carrier is opposed and its velocity is retarded.

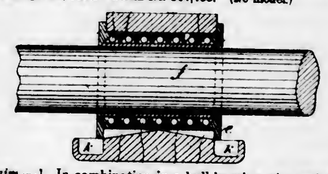
**527,040. PNEUMATIC CASH-CARRIER APPARATUS.** OAKES AMES, Canton, Mass., assignor to the Meteor Despatch Company, Portland Me., and Boston, Mass. Filed Feb. 12, 1894. Serial No. 499,879. (No model.)



*Claim.*—1. The combination with a pneumatic dispatch tube provided with an opening or outlet for the delivery of the carrier from the pneumatic tube, of an open ended sliding tube adapted to move back and forth in said tube to open and close said opening and provided with a cushioning device located at that end of the tube with which the carrier contacts to take up the momentum of the carrier as it contacts with said device.

2. The combination with a pneumatic dispatch tube provided with an opening or outlet for the delivery of the carrier from the pneumatic tube, of an open ended sliding tube adapted to move back and forth in said tube to open and close said opening and provided with a cushioning device located within one end of the said sliding tube to take up the momentum of the carrier as it contacts with said device.

**527,041. BALL-BEARING.** WILDSMITH BADGER, London, England. Filed Apr. 16, 1894. Serial No. 507,735. (No model.)



*Claim.*—1. In combination in a ball bearing, the casing having the interrupted screw thread on the interior thereof, the balls, and the rings upon which said balls bear, said rings being arranged in the casing and having interrupted screw threads engaging the threads of the casing, substantially as described.

2. In combination in a ball bearing, the divided casing having an internal interrupted screw thread, the plurality of rows of balls and the rings upon which the balls bear, said rings being arranged in the casing and having interrupted screw threads, substantially as described.

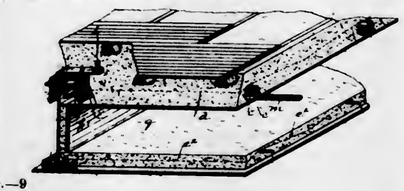
3. In combination in a ball bearing, the casing having the internal interrupted screw thread, the balls and the rings upon which said balls bear arranged within the casing and having corresponding interrupted screw threads and notches *d'* substantially as described.

4. In combination in a ball bearing, the casing with the interrupted screw threads on the interior thereof and the rings forming the races for the balls and having corresponding interrupted screw threads, said casing having the channels for the discharge of the balls and the pocket for receiving the balls, substantially as described.

5. In combination, in a ball bearing, the casing *a* having the interrupted screw threads on the interior thereof, the removable cover *a'*, the rings *d* forming races for the balls and having corresponding interrupted screw threads, said rings having also the notches *d'* and said casing having the inclined channel and the pocket for receiving the balls, substantially as described.

6. In combination in a ball bearing, the casing having the interrupted internal threads, the removable cap having an uninterrupted thread, the balls and the rings within the casing having interrupted threads corresponding to the thread of the casing, substantially as described.

**527,042. FIREPROOF FLOOR AND CEILING.** CHARLES A. BALPH, Pittsburg, and Elisha P. S. Wright, Avalon, Pa. Filed Feb. 23, 1894. Serial No. 501,106. (No model.)



*Claim.*—1. In a floor or ceiling, the combination with the beams, of metal bars connecting said beams, an open-work covering extending over said bars, and concrete completely embedding said bars and open-work covering, substantially as and for the purposes set forth.

2. In a floor or ceiling, the combination with the beams, of metal bars connecting said beams, said bars being supported by hangers on said beams, an open-work covering extending over said bars, and concrete completely embedding said bars and open-work covering, substantially as and for the purposes set forth.

3. In a floor or ceiling, the combination with the beams, of hangers straddling said beams, metal bars supported thereby, an open-work covering extending over said bars, and concrete completely embedding said bars and open-work covering, substantially as and for the purposes set forth.

4. In a floor or ceiling, the combination with the beams, of metal bars connecting said beams, said bars being supported on their edges, an open-work covering extending over said bars, and concrete completely embedding said bars and open-work covering, substantially as and for the purposes set forth.

5. In a floor or ceiling, the combination with the beams, of bars having longitudinal ribs formed thereon connecting said beams, said bars being supported on their edges, an open-work covering extending over said bars, and concrete embedding said bars and open-work covering, substantially as and for the purposes set forth.

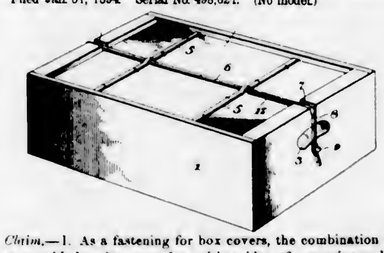
6. In floor or ceiling construction, the combination with the beams, of a centering suspended therefrom, said centering having side pieces, substantially as and for the purposes set forth.

7. The combination with the beams, of bars connecting the upper portions of said beams, an open-work covering extending over said bars, concrete embedding said bars and open-work covering, bars connecting the lower portions of said beams, an open-work covering extending over said bars, and concrete embedding said bars and open-work, substantially as and for the purposes set forth.

8. The combination with the main supporting beams, of solid metal supporting bars of length corresponding substantially to the space between the beams and extending transversely of and connected to the beams, said bars being supported on their edges, and a filling of concrete completely surrounding said bars and supported thereby, substantially as and for the purposes set forth.

9. The combination with the main supporting beams, of solid metal supporting bars of length corresponding substantially to the spaces between the beams and extending transversely of and connected to the beams, said bars being supported on their edges, and having longitudinal ribs on their side faces, and a filling of concrete completely surrounding said bars and supported thereby, substantially as and for the purposes set forth.

## 527,043. BOX-FASTENER. EDWIN A. BECK, Fort Worth, Tex. Filed Jan. 31, 1894. Serial No. 498,621. (No model.)



*Claim.*—1. As a fastening for box covers, the combination with a cover provided on its upper face with guides, of a securing rod slidingly arranged in the guides and located on the upper face of the cover, the ends of the rod projecting beyond the same and provided at one end with a hasp, and having at its other end a hook adapted to removably engage and interlock with an opening of a box or case, to which the cover is applied, substantially as described.

2. The combination of a box or case provided at its ends with openings, a cover, a rod arranged longitudinally of the cover and slidingly mounted on the upper face of the same and provided at one end of the box or case with a depending hasp arm and having its other end bent inward and forming an inward extending open loop and having a depending extension and hooked exteriorly into the adjacent opening said extension projecting below the opening and engaging the inner face of the box or case, substantially as described.

3. The combination of a box or case provided at its ends with openings, a cover fitting within the upper edges of the box or case and provided at one end with a longitudinal slot, and a longitudinally disposed securing rod attached to the upper face of the cover and provided at one end with a depending hasp arm arranged adjacent to and adapted to be received in said slot and arranged adjacent to the same to permit the cover to be moved longitudinally, said rod having at its other end a hook engaging the adjacent opening, substantially as described.

## 527,044. ANIMAL-TRAP. CLARENCE L. BROWN, Canfield, Ohio. Filed Apr. 5, 1894. Serial No. 506,487. (No model.)



*Claim.*—1. A trap, comprising a receptacle provided with an entrance opening, and a plate secured to the inner face of the receptacle and located above the entrance opening, and provided with a series of downwardly and inwardly inclined tines formed integral with the plate and being resilient, whereby they may be bent upward to permit the inward passage of an animal, substantially as described.

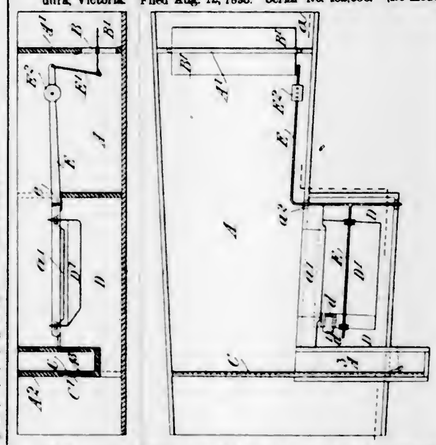
2. A trap comprising a receptacle having an entrance opening, and a series of downwardly inclined resilient tines arranged within the receptacle adjacent to the entrance opening and constructed of a single piece of sheet metal and provided with a flange rigidly secured to the receptacle, substantially as described.

## 527,045. SCREW-PROPELLER. ALFRED W. CASE, Highland Park, Conn. Filed Nov. 1, 1893. Serial No. 489,694. (No model.)



*Claim.*—A screw propeller comprising a hub with projecting blades, each of which is a counterpart of the other in shape and in its position with relation to the axis of the hub and to its plane of revolution around the same, and which has its uninterrupted working surface described by a straight generatrix and extending without break from the hub to the outer end of the blade, said working surface being set on an angle across the axis of the hub, and also inclined forwardly from the hub to the outer end of the blade, whereby each blade operates to thrust outwardly as well as rearwardly when in motion, all substantially as described.

## 527,046. AUTOMATIC WATER-METER. GEORGE CHAFFEY, Mildura, Victoria. Filed Aug. 12, 1893. Serial No. 482,958. (No model.)

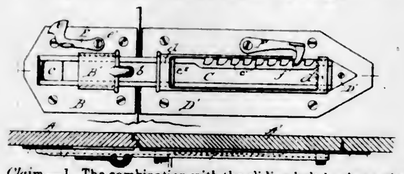


*Claim.*—1. In combination the casing having the inlet port, the valve therefor, the cross plate C, the overflow pocket D, the discharge opening through the cross plate C, the lever connected with the valve, the device carried thereby and arranged in the overflow pocket to be operated by the rise of water in the casing and the sill $a'$ arranged to direct the water to the said pocket, substantially as described.

2. In a water meter the combination of a box such as A having pockets such as D and $A^2$ with the butterfly valve B' at inlet opening, the balanced beam such as E carrying regulating pan such as D' furnished with slide $d'$ and orifice $d$ and with the outlet opening C preferably furnished with a slide such as C' substantially as herein described and as illustrated in my drawings.



## 527,047. SHUTTER-BOWER. AUGUSTUS G. CHRISTMAN, Reading, Pa. Filed Apr. 7, 1894. Serial No. 506,683. (No model.)

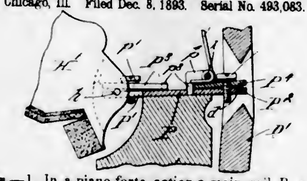


*Claim.*—1. The combination with the sliding bolt having a pivot hole at the outer end thereof, of a keeper or box fixed to the opposite shutter and provided with a pivot pin *b* and a movable piece adapted to swing into the path of the bolt and to move the end thereof into engagement with the pivot pin, the bolt being free to ride past the pin when said movable piece is moved from its path, substantially as set forth.

2. The combination with the sliding bolt having a pivot hole at the outer end thereof and a series of adjustment notches near the opposite end, of a keeper or box fixed to the opposite shutter and provided with a pivot pin *d*, a movable piece adapted to swing into the path of the bolt and to move the end thereof outward into engagement with the pivot pin and a lock to engage one or other of said notches, substantially as set forth.

3. The combination with the sliding bolt having a projecting finger piece $c^3$ formed integral therewith, of a casing therefor, having raised cross-bars *d* and *d'*, and an opening in the back large enough to admit the bolt to the rear of said cross-bars, and a separate plate *D'* arranged to fill a portion of said opening after the bolt is entered substantially as set forth.

## 527,048. PIANO-ACTION. ULYSSES G. CLARK and CARLOS MORGAN, Chicago, Ill. Filed Dec. 8, 1893. Serial No. 493,083. (No model.)



*Claim.*—1. In a piano-forte action a main rail R, a horizontal plate P having projections $P^2$—$P^3$ on each side thereof, said projections on one side set opposite the spaces of the other side as shown.

2. In a piano-forte action a main rail R.—a plate P'—projections $P^2$—$P^3$ spaced as described, a straight spoon T set at an angle in the wippen G, as and for the purpose shown and described.

3. In a piano-forte action, an upright main rail R, horizontal flanges fixed on said rail for holding hammer and damper pivots, said flanges having independent detachable caps for each pivot as shown, the caps for the damper pivot provided with a pivot for holding the damper spring.

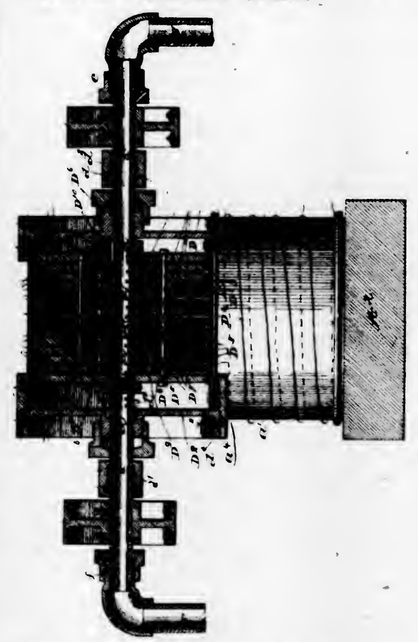
4. In a piano-forte action, the damper lever recesses for the admission of its pivot flange, said flange having a detachable cap clamping rigidly the damper lever pivot within the recess, substantially as shown.

## 527,049. MOISTENING DEVICE. THOMAS J. CLOSE, Philadelphia, Pa. Filed July 20, 1894. Serial No. 518,076. (No model.)



*Claim.*—In a device for moistening stamps, envelopes and other surfaces, a tube of impervious material with one or more flexible sides, said tube having an opening for the introduction of water, a cap or plug to close said opening, an opening at its outer end, wicking material extending through said outer opening and into said tube, in combination with a roller, placed in proximity to said wicking material, substantially as and for the purpose described.

## 527,050. DYNAMIC ELECTRIC HEATER. HERMAN R. COLLINS, Fulton, assignor of one-half to Warren H. Boles, Syracuse, N. Y. Filed Sept. 22, 1892. Serial No. 446,600. (No model.)



*Claim.*—1. The herein described heater, the same comprising magnetic fields, a short circuited armature arranged in connection with the magnetic fields to cut lines of magnetic force and generate heat, and a circulating fluid conduit arranged in proximity to said armature and leading away from the same, whereby the circulating fluid therein is heated, substantially as and for the purpose set forth.

2. The herein described heater, the same comprising magnetic fields, a short circuited armature arranged in connection with the magnetic fields to cut lines of magnetic force and generate heat, a circulating fluid conduit arranged in proximity to said armature and leading away from the same, whereby the circulating fluid therein is heated, and suitable mechanism for forcing the fluid through said conductor, substantially as and for the purpose specified.

3. The herein described heater, the same comprising magnetic fields, a hollow short circuited armature arranged in connection with the magnetic fields to cut lines of magnetic force and generate heat, a conduit or pipe for discharging the fluid into the concavity of the armature, and a conduit or pipe for withdrawing the heated fluid from the armature, substantially as and for the purpose set forth.

4. The herein described heater, the same comprising magnetic fields, a hollow short circuited armature arranged in connection with the magnetic fields to cut lines of magnetic force and generate heat, a conduit or pipe for discharging the fluid into the concavity of the armature, a conduit or pipe for withdrawing the heated fluid from the armature, and suitable mechanism for forcing the fluid through said pipes, substantially as and for the purpose specified.

5. The herein described heater, the same comprising magnetic fields, a short circuited armature provided with hollow electric conductors arranged in connection with the magnetic fields to cut lines of magnetic force and generate heat, and fluid conduits for passing a fluid through the hollow electric conductors of the armature, substantially as and for the purpose described.

6. The herein described heater, the same comprising magnetic fields, a short circuited armature formed with conduits or passages extending from its center outward, and provided with hollow electric conductors connected to said conduits or passages and arranged in connection with the magnetic fields to cut lines of magnetic force and generate heat, and fluid conduits for passing a fluid through the conduits or passages of the hollow conductors of the armature, substantially as and for the purpose specified.

7. The herein described heater, the same comprising magnetic fields, a short circuited armature arranged in connection with the magnetic fields to cut lines of magnetic force and generate heat and

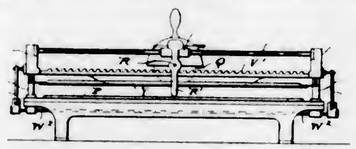
formed with a pair of conduits or passages at its opposite ends for receiving a circulating fluid, a series of pipes carried by the armature and arranged around its periphery, said pipes being formed of electric conducting material and having their opposite extremities connected to said conduits or chambers for conveying the circulating fluid from one conduit or passage to the other, and conduits or pipes for conveying said fluid toward and away from said end conduits or passages of the armature, substantially as and for the purpose set forth.

8. The herein described heater, the same comprising magnetic fields, a short circuited armature arranged in connection with the magnetic fields to cut lines of magnetic force and generate heat and formed with a pair of conduits or passages at its opposite ends for receiving a circulating fluid, a series of pipes carried by the armature and arranged around its periphery, said pipes being formed of electric conducting material and having their opposite extremities connected to said conduits or chambers for conveying the circulating fluid from one conduit or passage to the other, a hollow shaft for the armature formed with separated chambers connected to the conduits or passages at the ends of the armature, and conduits or pipes for conveying said circulating fluid toward and away from said hollow shaft, substantially as and for the purpose specified.

9. The herein described heater, the same comprising magnetic fields, a short circuited armature arranged in connection with the magnetic fields to cut lines of magnetic force and generate heat and formed with a pair of conduits or passages at its opposite ends for receiving a circulating fluid, a series of pipes carried by the armature and arranged around its periphery, said pipes being formed of electric conducting material and having their opposite extremities connected to said conduits or chambers for conveying the circulating fluid from one conduit or passage to the other, a hollow shaft for the armature formed with separated chambers connected to the conduits or passages at the ends of the armatures, conduits or pipes for conveying said circulating fluid toward and away from said hollow shaft, and suitable mechanism for forcing the circulating fluid under pressure through said pipes, substantially as and for the purpose set forth.

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**527,051. APPARATUS FOR CUTTING PATTERNS FOR CLOTH, &c.** MARTINSON CRAMBY, Bradford, England. Filed Jan. 25, 1894. Serial No. 498,055. (No model.) Patented in England Aug. 2, 1893, No. 8,188.

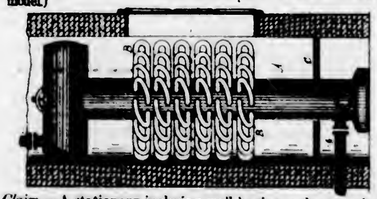


*Claim.*—1. In combination, in a pattern cutting machine, the series of cutters D, the means for feeding the material thereto, the cutter Q arranged to travel transversely of the cutters D, the carriage for said cutter, the horizontal ways upon which the carriage moves, the vertical ways at the ends of the horizontal ways and along which the said horizontal ways may be guided vertically and the means for raising and lowering the said horizontal ways with the cutter, substantially as described.

2. In a pattern cutting machine the combination of the traveling cutting knife Q, pinion V rack V' presser plate Y with the links W, W, and operating means therefor all arranged substantially in the manner and for the purpose hereinbefore set forth.

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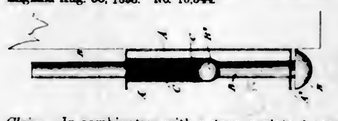
**527,052. STEAM-BOILER SUPPORT AND WALL.** GEORGE A. CRANE, Cleveland, Ohio. Filed Sept. 25, 1893. Serial No. 486,391. (No model.)



*Claim.*—A stationary inclosing wall having a door at about its center, in combination with a vertical boiler having removable U shaped tubes about its center opposite said door, a turn-table upon which said boiler is fixed, and a base and rollers on which said table rests, substantially as set forth.

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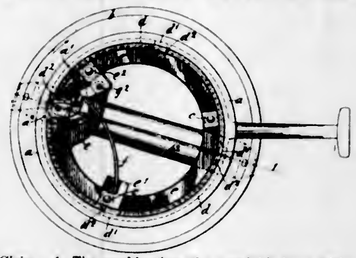
**527,053. DOOR-CHECK.** EDGAR DREDGE, London, England. Filed Mar. 12, 1894. Serial No. 503,276. (No model.) Patented in England Aug. 30, 1893. No. 16,344.



*Claim.*—In combination with a door, a plate A secured thereto having turned over ends provided with perforations one of which has a straight side, a bolt guided in said perforations and having a flat side and a rounded or button foot, a handle projecting from said bolt, a spring encircling the bolt between the handle and upper end of the plate, said bolt having a groove adapted to permit the upper portion of the bolt to overhang the straight edge of the perforation when the bolt is raised and the handle turned, substantially as described.

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**527,054. ROTATABLE SIGNAL-LAMP.** GEORGE C. DRESSEL, New York, N. Y. Filed June 13, 1894. Serial No. 514,364. (No model.)



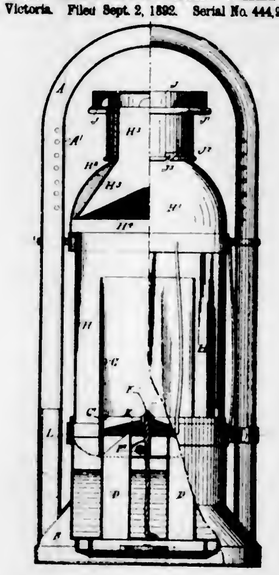
*Claim.*—1. The combination of a revoluble lamp with a spring arm, a roller connected thereto, and a notched bracket ring surrounding the lamp and adapted to be engaged by the roller, substantially as specified.

2. The combination of a revoluble lamp with a spring arm, a pivoted yoke, a roller journaled thereto, and a notched bracket ring adapted to be engaged by the roller, substantially as specified.

3. The combination of a revoluble lamp with an inclosed ring *e* a spring arm and a pivoted yoke secured to the ring, a roller journaled to the yoke, and a bracket ring having beveled notches adapted to be engaged by the roller, substantially as specified.

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**527,055. MINER'S SAFETY-LAMP.** WILLIAM E. FIELD, Hawthorn, Victoria. Filed Sept. 2, 1892. Serial No. 444,909. (No model.)





*Claim.*—1. A miner's safety-lamp the sides of which are impermeable to gases and vapors, provided with wire gauze below the top of the wick, wire gauze above the top of the chimney, a cone-shaped asbestos lined tube above the latter and an adjustable ventilator cap fitted to said tube, substantially as described.

2. A miner's safety lamp, the sides of which are impermeable to gases and vapors, provided with a wire gauze bottom, a shutter adjusted to move horizontally in proximity with such bottom, a device for closing such shutter, and a fusible wire or a combustible cord connected to the shutter whereby such closing device is normally held out of action, substantially as set forth.

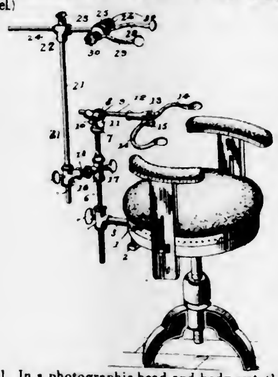
3. In a miner's safety lamp, the combination with a chamber inclosing the flame, of two wire gauze screens interposed between the flame and the admission ports for the air, a shutter placed between such screens, a device for closing such shutter and a fusible or combustible restraining device, whereby the closing device is normally held out of action, substantially as set forth.

4. A miner's safety-lamp the sides of which are impermeable to gases and vapors provided with a wire gauze bottom, a spring actuated shutter adjusted to close an opening arranged above said bottom and a fusible wire or combustible cord connected to said shutter and to the casing, which wire or cord when severed allows the spring to act to close the shutter, substantially as described.

5. In a miner's safety-lamp, the combination with a chamber inclosing the flame, of a contracted pipe at the top and a vertically and circumferentially adjustable ventilator cap cooperating with said pipe and provided with ventilator openings and with means for fixing it in place, substantially as described.

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**527,056. PHOTOGRAPHIC HEAD AND BODY REST.** WILLIAM M. GILSON, Blanchard, Iowa. Filed Dec. 9, 1893. Serial No. 493,198. (No model.)



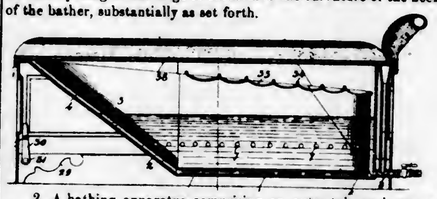
*Claim.*—1. In a photographic head and body rest, the combination of a standard a horizontal arm supported by the standard and terminating at its front end in a centrally perforated disk, a transverse screw passing through the perforation of the disk and rigidly connected with the disk and having its opposite sides threaded, the disks 26 provided at their peripheries with laterally extending circumferential cam flanges, the head rest arms provided at their inner ends with concavo-convex disks centrally perforated to receive the screw and arranged thereon and fitting against the said cam flanges, and nuts arranged on the outer extremities of the screws and engaging the disks of said arms, substantially as described.

2. In a photographic head and body rest, the combination of a seat provided with a rearwardly offset vertically disposed socket, the main standard 6 vertically adjustable therein and carrying at its upper end the adjustable body supporting and embracing arms 14 extending over the rear of the seat, the vertical standard 21 rearwardly offset from the main standard 6 and adjustably connected therewith, the horizontal arm terminating at its front end in a centrally perforated disk, a transverse screw passing through the perforation of the disk and rigidly connected with the disk and having its opposite sides threaded, the disks 26 provided at their peripheries with laterally extending circumferential cam flanges, the head rest arms provided at their inner ends with concavo-convex disks centrally perforated to receive the screw and arranged thereon and fitting against the said cam flanges, and nuts arranged on the outer extremities of the screws and engaging the disks of said arms, substantially as described.

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**527,057. BATHING APPARATUS.** SAMUEL S. GOLDMAN, St. Louis, Mo. Filed Nov. 4, 1893. Serial No. 489,902. (No model.)

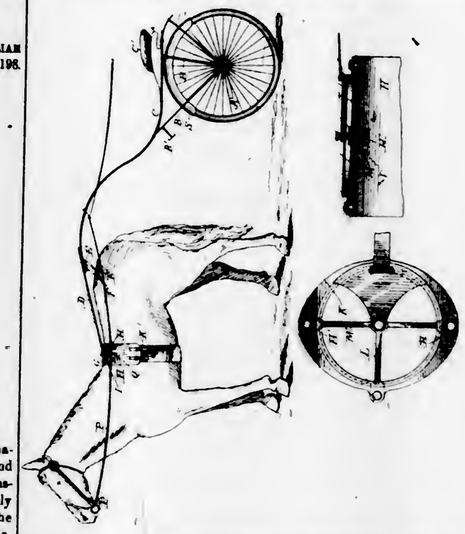
*Claim.*—1. In a bathing apparatus, the combination of a bath tub, transverse rods adapted to slide along the upper edges of said tub, and a shield suspended from said rods, the said shield having a suitable opening at one edge to conform to the curvature of the neck of the bather, substantially as set forth.



2. A bathing apparatus comprising an outer tub, an inner removable perforated tub for the same, suitable projecting pegs on the outer surface of the inner tub adapted to rest against the inner surface of the outer tub, a water heater adapted to be superposed over one end of the outer tub, suitable outlet pipes for said heater, a suitable inlet pipe for the space between the inner and outer tub, said inlet pipe being adapted to communicate with the outlet pipe of the heater, substantially as set forth.

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**527,058. VEHICLE.** LAWSON W. HAMPTON, Elizabethton, Tenn. Filed Mar. 12, 1894. Serial No. 503,337. (No model.)



*Claim.*—1. A vehicle consisting of a single wheel, a reach or shaft having one end connected to the wheel, a horizontal circular way or guide adapted to be secured to the horse, a block revolubly mounted at the center of the said way or guide and adapted to swing around the extent of the same, the block having its outer end slidably connected to the guide, and the reach being connected at its forward end to the block, whereby the vehicle is attached to the horse, substantially as described.

2. A vehicle consisting of a single wheel, a reach connected at one end to the wheel and extending forwardly toward the horse, a circular way or guide adapted to be secured to the horse, a cross bar extending below the guide and across the same, a spindle connected to the bar and arising vertically therefrom and in the center of the guide and a block revolubly mounted on the spindle and having therein parallel flanges adapted to embrace the way or guide, whereby the block will be free to swing on a vertical axis, the forward end of the reach being connected to the block, substantially as described.

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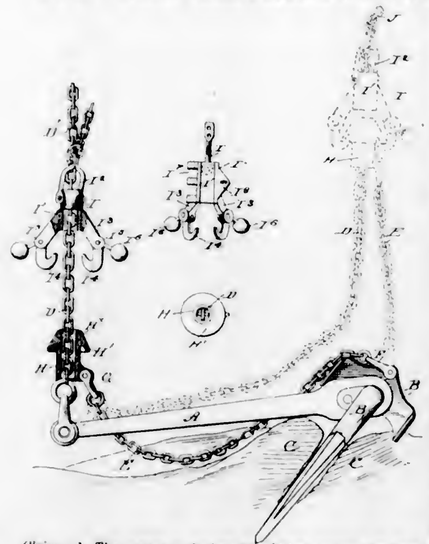
**527,059. PROCESS OF MAKING ARTIFICIAL STONES OF SMALL SIZE FOR TOYS, &c.** FRANZ HERRMANN, Iserthal, Austria-Hungary. Filed Apr. 5, 1894. Serial No. 506,430. (No specimens.)

*Claim.*—1. The method of forming artificial stones consisting in mixing finely powered quartz, talc, china clay and magnesia in sub-

stantially the proportions specified, treating the resultant compound with a solution of chloride of magnesium to form a moist powder, and then pressing the same in molds and leaving it to harden, substantially as described.

2. The herein described compound for artificial stone consisting of finely powdered quartz, talc, china clay and magnesia and a solution of chloride of magnesium in substantially the proportions specified, substantially as described.

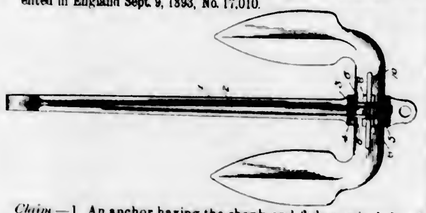
527,060. **MEANS FOR RAISING ANCHORS.** HENRY A. HOUSE and HENRY A. HOUSE, Jr., Bridgeport, Conn., assignors of one-half to Robert Rintoul Symon, London, England. Filed Nov. 25, 1893. Serial No. 491,971. (No model.) Patented in England Oct. 6, 1893, No. 18,760.



*Claim.*—1. The means or devices for raising anchors by transferring the lifting point from the shackle end of the shank to the head or fluke end of the anchor, which consist of a sleeve sliding on the main cable, a chain connecting the said sleeve to the head or fluke end of the anchor and grappling apparatus adapted to slide on the main cable and to engage with the aforesaid sleeve, combined, arranged and operating substantially as described.

2. The means or devices for raising anchors which consist of a sleeve H free to slide on the main cable D and provided with a lip H' adapted to be engaged by the hooks of the grappling apparatus, a chain or rope E connecting the sleeve H with the head or fluke end of the anchor, and grappling apparatus I sliding on the main cable D and provided with hooks I⁴ adapted to engage with the sleeve H so as to connect the chain J with the chain E combined and operating substantially as described.

527,061. **ANCHOR.** HENRY A. HOUSE and HENRY A. HOUSE, Jr., East Cowes, assignors of one-half to Robert Rintoul Symon, London, England. Filed May 21, 1894. Serial No. 511,967. (No model.) Patented in England Sept. 9, 1893, No. 17,010.



*Claim.*—1. An anchor having the shank and flukes swiveled and cast together, said shank having stop shoulders adjacent to the eye and the fluke arm having stop lugs to contact with the shoulders and fins projecting from the arm to engage the ground, the said shoulders, stops and fins being cast on their respective parts, substantially as described.

2. An anchor having the shank and flukes cast in swiveled connection with each other and having cast thereon stops and fins, substantially as described.

3. An anchor having the shank and flukes cast in swiveled connection with each other, the eye of the shank having shoulders with a free space between them, the stop lugs cast on the fluke arm extending through the free space to bear laterally against the eye and to abut against the shoulders and the fins cast on the arm and forming extensions of the cast lugs, substantially as described.

527,062. **CUFF-HOLDER.** WILLIAM M. HOWE, Austin, Minn. Filed Dec. 26, 1893. Serial No. 494,707. (No model.)



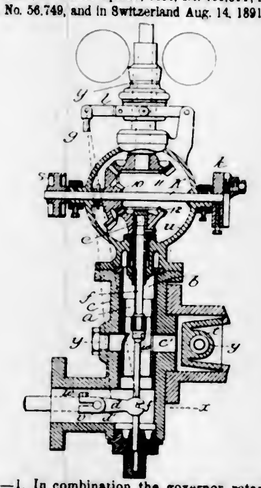
*Claim.*—1. A cuff holder consisting of a body or button portion *a* provided with the shank *b* having the open-sided recess *c* at its end or bottom, of the rod or shank *e* fitted to turn in the said shank *b* and provided at one end with the circular needle *f* housed in said recess and the disk *h* to which the other end of said rod or shank *e* is secured; so that by turning said disk *h* the said circular needle may be rotated in said recess *c* to cause it to be engaged with or disengaged from the fabric of the shirt sleeve to which the cuff is to be secured.

2. A cuff holder comprising a body or button portion *a* provided with the elliptical shank *b* having the open sided recess *c* at its end or bottom and having also the projecting lip *b'*, of the rod or shank *e* fitted to turn in the said shank *b* and provided at one end with the circular needle *f* housed in said recess and the disk *h* to which the other end of said rod or shank *e* is secured.

3. In a cuff holder, the combination with the body portion provided with an elliptical shank having a recess at its bottom or lower end and also a projecting lip, of a circular needle within said recess, means for rotating the said needle, and an indicator or index for determining the position of said needle within the recess, substantially as described.

4. In a cuff holder, the combination with the body portion consisting of the head *a* and the shank *b* provided with the open-sided recess *c* and the lip *b'*, of the disk or cap *h*, the rod *e* secured to said disk or cap and turning therewith, the circular needle *f* formed at the end of said rod and turning within said recess *c*, and the indicator or index *f'*, substantially as described.

527,063. **VALVE-GEAR.** GÉZA JALSOVICZKY, Buda-Pesth, Austria-Hungary. Filed Aug. 11, 1892. Renewed Mar. 9, 1894. Serial No. 503,063. (No model.) Patented in Austria-Hungary Jan. 16, 1891, No. 3,782; in England Apr. 9, 1891, No. 6,097; in Belgium Apr. 22, 1891, No. 71,259; in France Apr. 23, 1891, No. 199,814; in Germany Aug. 13, 1891, No. 56,749, and in Switzerland Aug. 14, 1891, No. 334.

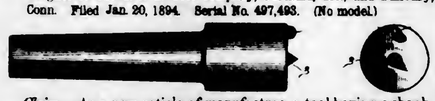


*Claim.*—1. In combination the governor, rotary sliding valve, the casing therefor, the valve *t* and its chamber arranged adjacent to the casing of the rotary valve and communicating therewith, the said rotary valve having longitudinal movement in its casing, the lever *d* within the said casing, connected with the valve stem, the outside arm $d^3$ and the connection thereto from the governor, substantially as described.

2. In combination, the valve casing, the rotary valve therein arranged to have sliding movement, the slide valve *t*, the governor having connection with the rotary valve for raising and lowering the same, the means for rotating both the governor and the rotary valve consisting of the shaft extending through the casing *u* the gear 10 thereon, the gears 11 and 12 connected respectively to the governor and the rotary valve and the means for rotating the shaft consisting of the crank disk and the connections *m*, *n*, therefrom to the slide valve *t*, substantially as described.

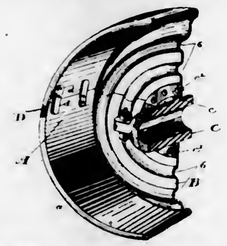


527,064. **DRIVING-CLUTCH.** MORRIS C. JOHNSON, Hartford, Conn., assignor to the T. & B. Tool Company, Portland, Me., and Danbury, Conn. Filed Jan. 20, 1894. Serial No. 497,493. (No model.)



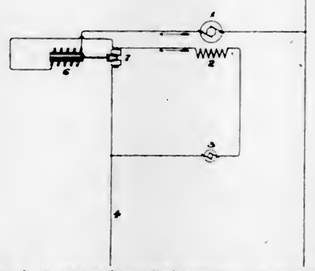
*Claim.*—As a new article of manufacture, a tool having a shank and a head with a fixed conical center on the axis of the tool, said head being smaller in diameter than the part it is to engage when in use, and a spring plunger projecting from the face of the head on one side of the axis of the tool for engaging a bearing on the end of the part to be rotated, substantially as specified.

527,065. **PULLEY.** OLIVER W. KETCHUM, Toronto, Canada. Filed Jan. 19, 1893. Renewed Mar. 9, 1894. Serial No. 503,066. (No model.)



*Claim.*—A split pulley comprising an integral web and rim, the latter having a beaded edge, a hub having a flange secured to the web, and means for making a firm connection at the joint of the split rim portions, said means consisting of a wire D contained within the bead of the rim and bridging the split, substantially as described.

527,066. **DEVICE FOR PROTECTING SEPARATELY-EXCITED GENERATORS.** BENJAMIN G. LAMME, Pittsburg, Pa., assignor to the Westinghouse Electric and Manufacturing Company, same place. Filed Feb. 28, 1894. Serial No. 501,772. (No model.)



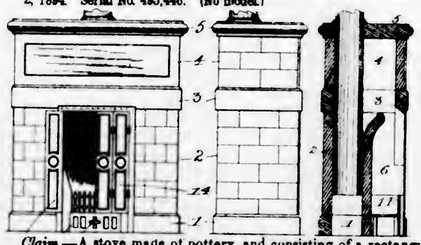
*Claim.*—1. A separately excited generator, a normally closed break common to both armature and field magnet circuit thereof, and electro-magnetic means controlled by excessive current in said armature circuit, for opening said break, substantially as described.

2. A separately excited generator, a normally closed break, and circuits leading thereto from the armature and field magnet so as to lead the currents of both circuits in the same direction across said break when closed, in combination with means for opening said break, substantially as described.

3. A separately excited generator, a normally closed break common to both armature and field magnet circuit thereof, and means for opening said break, substantially as described.

4. A separately excited generator, a break common to both armature and field magnet circuit thereof, a bridging piece for closing said break, a solenoid in the armature circuit, and a core actuated by said solenoid, and mechanically connected to said bridging piece, substantially as described.

527,067. **STOVE.** NICHOLAS LEHMANN, Atlanta, Ga. Filed Jan. 2, 1894. Serial No. 495,446. (No model.)

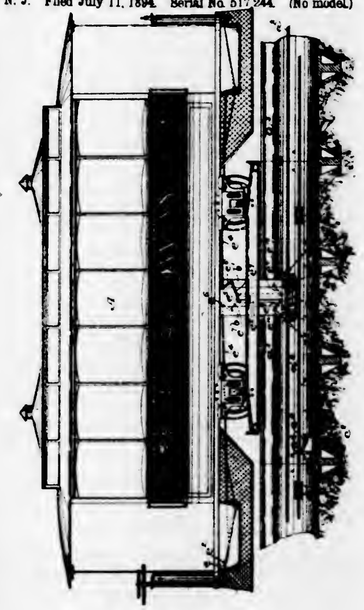


*Claim.*—A stove made of pottery, and consisting of a rectangular main section having its front wall depressed in such a manner as to form an upwardly flaring fire-chamber, a base section of correlative shaped and depressed correlatively forming an ash-chamber, a binding section of greater thickness or strength resting on top of the main section and a rectangular section seated thereon, a cover on top of same, and an eduction flue leading downwardly through said cover into the space behind the fire-box and nearly to the bottom of the stove, all combined arranged and operating substantially as and for the purpose specified.

527,068. **PROCESS OF MANUFACTURING ROOFING-PAINTS.** DAVID L. MEARS, Arkansas City, Kans. Filed Jan. 19, 1893. Renewed Mar. 8, 1894. Serial No. 502,922. (No specimens.)

*Claim.*—The process herein described of manufacturing roofing paint, consisting in mixing powdered asbestos, New York plaster, ground litharge and ground white lead; in the proportions set forth, then introducing the mixture into rectified coal tar, slowly boiling the same and constantly stirring during the boiling, substantially as described.

527,069. **CABLE STOP MECHANISM.** EDWIN NEIL, Newark, N. J. Filed July 11, 1894. Serial No. 517,244. (No model.)



*Claim.*—1. In an appliance for controlling the operation of the working cable of cable cars, the combination, with said working cable, of an extra or idle cable in the conduit with said working cable, said extra or idle cable being connected at the power station with means for shutting off the power from the working cable, substantially as and for the purposes set forth.

2. In an appliance for controlling the operation of the working cable of cable cars, the combination, with said working cable, of an extra or idle cable in the conduit with said working cable, and mechanism connected with the car body and operated therefrom, to be engaged with said extra or idle cable, to cause the same to move with the car body and shut off the power driving the working cable, substantially as and for the purposes set forth.

3. In an appliance for controlling the operation of the working cable of cable cars, the combination, with said working cable, of an extra or idle cable in the conduit with said working cable, chocks or blocks on said extra or idle cable, a clutch fork on the car body, and mechanism for throwing said fork in holding engagement with one of said chocks or blocks on said extra or idle cable, to cause the same to move with the car body and shut off the power driving the working cable, substantially as and for the purposes set forth.

4. In an appliance for controlling the operation of the working cable of cable cars, the combination, with the working cable, of an extra or idle cable, in the conduit with said working cable, movable supports or carriers for said extra or idle cable, chocks or blocks on said extra or idle cable, a clutch fork on the car body, and mechanism for throwing said fork in holding engagement with one of said chocks or blocks on said extra or idle cable, to cause the same to move with the car body and shut off the power driving the working cable, substantially as and for the purposes set forth.

5. In an appliance for controlling the operation of the working cable of cable cars, the combination, with said working cable, of an extra or idle cable in the conduit with said working cable, supports or carriers for said extra or idle cable, each support comprising therein a suitable base, a spring-actuated post pivotally arranged on said base, and means connected therewith for retaining said post in its upright position, chocks or blocks on said extra or idle cable, a clutch fork on the car body, and mechanism for throwing said fork in holding engagement with one of said chocks or blocks on said extra or idle cable, to cause the same to move with the car-body and shut off the power driving the cable, substantially as and for the purposes set forth.

6. In an appliance for controlling the operation of the working cable of cable cars, the combination, with the said working cable, of an extra or idle cable in the conduit with said working cable, supports or carriers for said extra or idle cable, each support comprising therein a suitable base, a spring-actuated post pivotally arranged on said base, and means connected therewith for retaining said post in its upright position, chocks or blocks on said extra cable, a clutch fork on the car-body, and mechanism for throwing said fork in holding engagement with one of said chocks or blocks on the idle cable, to cause the same to move with the car-body and shut off the power driving the cable, said mechanism consisting, essentially, of an operating lever $c^4$, bell crank $c$, connecting rod $c^4$, bell crank $c^3$, and a rod $c^5$ connecting said bell-crank $c^3$ with said clutch fork, substantially as and for the purposes set forth.

7. In an appliance for controlling the operation of the working cable of cable cars, the combination, with the working cable of an extra or idle cable in the conduit with said working cable, chocks or blocks on said extra or idle cable, a clutch fork on the car body, and mechanism for throwing said fork in holding engagement with one of said chocks or blocks on said extra or idle cable, to cause the same to move with the car body and shut off the power driving the working cable, said mechanism consisting essentially, of an operating lever $c^4$, bell crank $c$, connecting rod $c^4$, bell crank $c^3$, and a rod $c^5$ connecting said bell crank $c^3$ with said clutch fork, substantially as and for the purposes set forth.

8. In an appliance for controlling the operation of the working cable of cable cars, the combination, with said working cable, of an extra or idle cable in the conduit with said working cable, chocks or blocks on said extra or idle cable, a clutch fork on the car body, and mechanism for throwing said fork in holding engagement with one of said chocks or blocks on said extra or idle cable, to cause the same to move with the car body and shut off the power driving the working cable, said mechanism consisting essentially, of an operating lever $c^4$, bell crank $c$, connecting rod $c^4$, bell crank $c^3$, and a rod $c^5$ connecting said bell crank $c^3$ with said clutch fork, and a pivoted stop $g$ connected with said mechanism to retain the said clutch fork in its holding engagement with said extra or idle cable, substantially as and for the purposes set forth.

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**527,070.** ELECTRICAL CONVERTER. JAMES W. PACKARD, Warren, Ohio. Filed Jan. 3, 1894. Serial No. 496,548. (No model.)

*Claim.*—1. A converter having a primary coil, a secondary coil, and a cylinder or double ring inclosing both of said coils and composed of alternately arranged plates having their inner portions of unequal width, as set forth.



2. A converter having a primary coil and a secondary coil, and a series of plates inclosing said coils and consisting each of inner and outer parallel portions and corresponding end portions, the inner portions of each alternate plate being of greater width than the inner portions of the next adjacent plates, substantially as set forth.

3. The herein-described improved converter, consisting of the primary coil and the secondary coil surrounding said primary coil, and the cylinder or double ring inclosing both of said coils and consisting of two sets of plates having inner and outer parallel portions connected together at one end and split at the other, the said inner portion of one set of plates being of greater width than the inner portion of the other set, substantially as set forth.

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**527,071.** ELECTRICAL FUSE-BOX. JAMES W. PACKARD, Warren, Ohio. Filed Jan. 3, 1894. Serial No. 496,549. (No model.)



*Claim.*—1. A fuse-box having a central longitudinal bore or chamber open at one end and closed at the other and having fixed electrical contacts at each end, a central longitudinal core located in said bore or chamber and having the fuse-wire connected to its ends, and a spring bearing against said core holding the same in position with one end in direct eegagement with one of said electric contacts and forming the connection between the other end of said core and the other one of said electrical contacts, substantially as set forth.

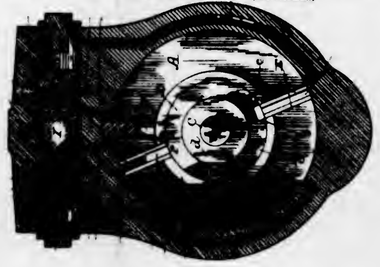
2. A fuse-box having a central longitudinal bore or chamber open at one end and closed at the other and having an electrical contact block at said closed end and an electrical contact at the other, or forward end, a central longitudinal core located in said bore or chamber and having blocks at its ends, the fuse-wire connected to said blocks, and a spring bearing against said core holding the forward one of said block in contact with said forward electric contact of said box, and forming the contact between the other one of said blocks of said core and the said contact block at the closed end of said box, substantially as set forth.

3. The combination with the box having an electric contact-ring at one end, the contact block at the other end, and the screws holding said ring and block, of the core having a block at each end, one of said blocks having projecting portions in engagement with said ring, and the spring bearing against said core and forming the contact between the other one of said blocks of said core and the contact block of the box, substantially as set forth.

4. The combination with the box having the ring at one end provided with opposite slots, the block having a central hole, and the screws holding said block and ring, of the core having a block at each end, one of said blocks being provided with lateral arms designed to be inserted through said slots, the bent plate impact spring in contact with one of said blocks of said core, and the fuse-wire, substantially as set forth.

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**527,072.** STEAM-ENGINE. JOHN R. PEARCE, Amory, Miss. Filed Mar. 14, 1894. Serial No. 503,613. (No model.)





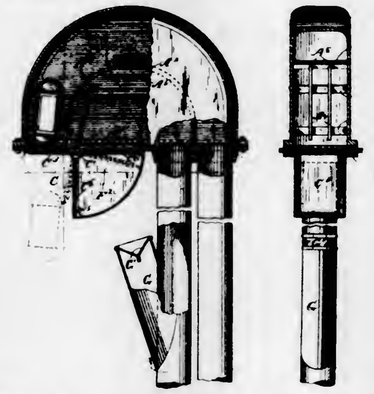
*Claim.*—1. The combination in an engine, of a cylinder, a steam-chest, a piston valve therefor, an oscillating piston working in said cylinder, and ports near the bottom of said cylinder leading to the opposite ends of the steam-chest, substantially as described.

2. The combination in an engine, of a cylinder having a division O, a steam-chest, a piston valve therefor having grooves W, X, W', ports M, M' leading into the upper part of the cylinder, ports G, G' leading from the lower part of the cylinder, and exhaust ports N, N', and a piston B, having wings E, E, substantially as described.

3. The oscillating engine herein described, comprising the cylinder A, having division O, provided with packing strip P, steam passages G, G' formed in the sides of said cylinder, a piston B having packing ring D, and wings E E forced outward by springs, a steam-chest H having ports M, M', N, N', a piston valve working therein, having grooves W, X, W' and an inlet port L, all substantially as shown and described.

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**527,073.** VALVE FOR PNEUMATIC-DISPATCH-TUBE SYSTEMS. ALBERT W. PEARSALL, New York, N. Y., assignor to the Meteor Despatch Company, Boston, Mass. Filed Apr. 16, 1894. Serial No. 507,675. (No model.)



*Claim.*—1. In a pneumatic dispatch tube system, the combination, with a terminal having an opening for the discharge of carriers, of a valve normally closing said opening and held in its closed position by the pressure in the system.

2. In a pneumatic dispatch tube system, the combination with a termical having an opening for the discharge of carriers, of a valve provided with leaves and pivoted in said opening, which is normally closed by two of the leaves of the valve of different areas.

3. In a pneumatic dispatch tube system, the combination with a terminal having an opening for the discharge of carriers, of a valve having connected surfaces of different areas exposed to the pressure of the system and normally closing said opening.

4. In a pneumatic dispatch tube system, the combination with a terminal having an opening for the discharge of carriers, of a valve normally closing said opening and provided with surfaces of different areas exposed to the pressure of the system and adapted to move in opposite directions when the valve is opened by the momentum of the carrier.

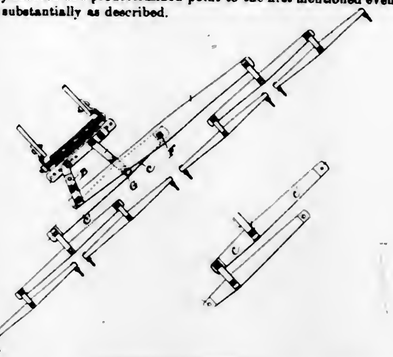
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**527,074.** DRAFT-EQUALIZER. STALEY D. POOLE, Moline, Ill., assignor to the Deere & Company, same place. Filed Feb. 19, 1894. Serial No. 500,784. (No model.)

*Claim.*—1. The combination with the draft bar arranged at one side of the center of the draft, of outwardly extending arms adjustably held upon said draft bar, an evener bar fulcrumed at its inner end upon one of said arms, and a second evener bar fulcrumed upon the end of the other arm at a point located at a predetermined distance from the inner end of said bar, the inner end of said second bar being pivotally secured at a central point to the first mentioned evener bar, substantially as described.

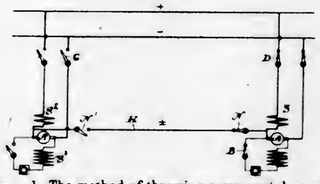
2. The combination with a pair of arms adapted to be secured to the clevis of a draft bar, of an evener bar fulcrumed at its inner end upon one of said arms, and a second evener bar fulcrumed at a point located at a predetermined distance from the inner end of said second bar, the inner end of said second bar being pivotally secured at a predetermined point to the first mentioned evener bar, substantially as described.

3. The combination with the draft bar arranged at one side of the center of the draft, of outwardly extending arms adjustably held upon said draft bar, an evener bar fulcrumed at its inner end upon one of said arms, and a second evener bar fulcrumed upon the end of the other arm at a point located at a predetermined distance from the inner end of said bar, the inner end of said second bar being pivotally secured at a predetermined point to the first mentioned evener bar, substantially as described.



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**527,075.** RUNNING COMPOUND-WOUND DYNAMO-ELECTRIC MACHINES IN MULTIPLE. WILLIAM B. POTTER, Schenectady, N. Y., assignor to the General Electric Company, of New York. Filed June 2, 1894. Serial No. 513,338. (No model.)



*Claim.*—1. The method of throwing compound dynamo-electric machines into multiple relation, which consists in energizing the series coil of the idle machine with current from the other machines, to acquire a preliminary magnetization.

2. The method of throwing compound dynamo-electric machines into multiple relation, which consists in energizing the series coil of the idle machine with current from the other machines, and then adjusting its shunt coil to attain the requisite magnetization for the proper operation of the machine.

3. The method of throwing compound dynamo-electric machines into multiple relation, which consists in energizing the series coil of the idle machine with current from the machines already in operation, then building up its magnetization by its shunt coil, throwing the machine into circuit, and then adjusting the load between the different machines.

4. The method of throwing compound dynamo-electric machines into multiple, which consists in connecting the series coil of the idle machine between the positive bus-bar and the machines already in operation, then closing the field switch of the idle machine and building up its magnetization by its own shunt coil, then connecting the negative terminal to the negative bus-bar, and then distributing the load between the machines, as herein set out.

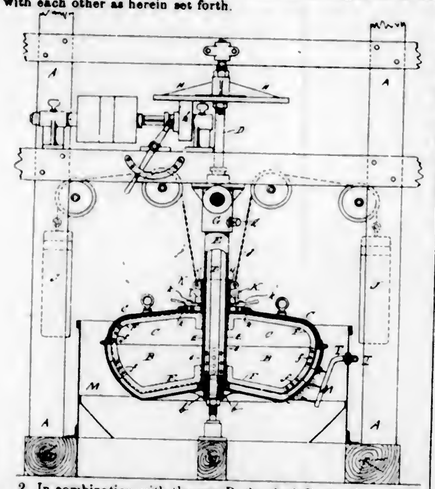
5. The method of throwing compound dynamo-electric machines into multiple relation, which consists in closing the equalizing connection between the idle machine and the others, closing the connection to the positive bus-bar, thus throwing in its series coil, then closing its field-switch and adjusting the shunt so that the machine generates current of approximately full potential, then throwing the machine into circuit by closing the connection to the negative bus-bar, and then adjusting the machines till their loads are equalised.

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**527,076.** AMALGAMATOR AND SEPARATOR FOR RECOVERING PRECIOUS METALS FROM ORES. EDWARD READING and ARTHUR RIGBY, Sidney, New South Wales. Filed Mar. 28, 1892. Serial No. 426,771. (No model.)

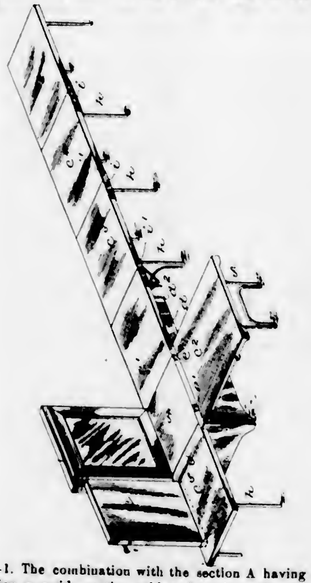
*Claim.*—1. In apparatus for saving the precious metals from their ores, a rotating pan, that is provided with a removable cover, in combination with a central hollow shaft that is perforated at its lower end, for admitting water into the pan and which carries radial

arms, and scrapers *f* carried by said arms and arranged out of line with each other as herein set forth.



2. In combination with the pan B, the shaft D, the sleeve E the movable cover, the sleeve K and locking means between the cover and the sleeve, substantially as described.

527,077. FOLDING OR EXTENSION TABLE. WINFIELD S. ROLLINGS, Indianapolis, Ind. Filed Apr. 21, 1894. Serial No. 508,423. (No model.)

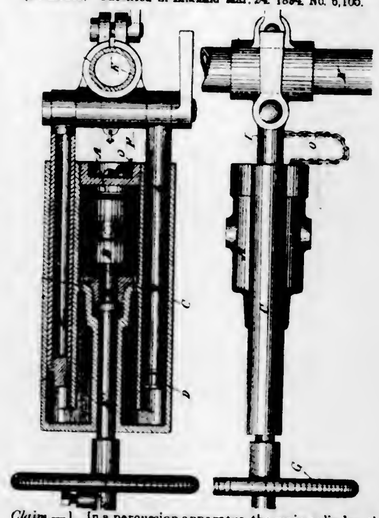


*Claim.*—1. The combination with the section A having an upward extension *a*, a side section *c*, hinged to the said extension *a*, side section *c'*, hinged to the section A and adapted to swing downwardly, sliding bars adapted to support said section *c'* flush with the top of section A, the side section $c^3$ hooks on the lower edge of said section $c^3$ adapted to engage either of two sets of staples on section A whereby to support said section $c^3$ in either an upright or horizontal position, folding legs *f'*, carried by said section $c^3$, and a section $c^5$ adapted to form an extension of the table section A, said section being cut away near one edge to receive the lower end of section *c*, all arranged as and for the purpose specified.

2. The combination with the section A having an upward extension *a*, a side section *c*, hinged to the said extension, *a*, side section *c'* hinged to the section A and adapted to swing downwardly, sliding bars adapted to support said section *c'* flush with the top of section A, the side section $c^3$, hooks on the lower edge of said section $c^3$ adapted to engage either of two sets of staples on section A whereby to support said section $c^3$ in either an upright or horizontal position, folding legs *f*, carried by said section $c^3$ and a section $c^5$ adapted to form an extension of the table section A said section being cut away to receive the lower end of section *c*, a supplementary extension or table top section and notched projections and pins carried by the said supplementary section and the section *c'*, adapted to engage for the purpose specified.

3. The combination of the table section having the upward extension and the hinged side-section connected to said extension, and the convertible side-section having folding legs and a cut away portion to receive said hinged side-section, substantially as described.

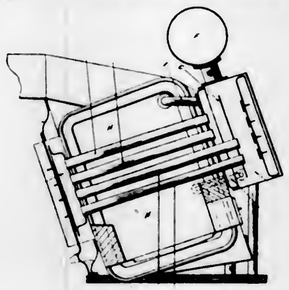
527,078. PERCUSSION APPARATUS FOR DRILLING. JAMES M. ROSS, Glasgow, Scotland. Filed May 12, 1894. Serial No. 511,060. (No model.) Patented in England Mar. 24, 1894, No. 6,105.



*Claim.*—1. In a percussion apparatus, the main cylinder, the drill carrier having limited movement therein, the piston hammer adapted to contact with the drill carrier, ports for admitting fluid to reciprocate said piston, and the auxiliary cylinder and piston having ports whereby a portion of the motive fluid is utilized to keep the drill pressed constantly against the surface to be operated upon, substantially as described.

2. In combination, the main cylinder, the drill carrier having limited movement therein, the reciprocating piston hammer co-operating with said spindle, ports for admitting the motive fluid to reciprocate said piston, the auxiliary cylinder having constant communication with the motive fluid supply, and the rigid piston extending from the drill support into the supplemental cylinder, substantially as described.

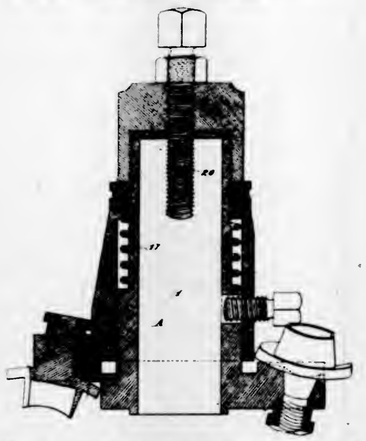
527,079. WATER-TUBE BOILER. MONTAGUE H. C. SHANN, Brisbane, Queensland. Filed Jan. 29, 1894. Serial No. 498,394. (No model.)





*Claim.*—In a water tube boiler, a series of tubes, a steam drum, an intermediate chamber between the tubes and said drum, receiving one end of the said tubes, a chamber connecting the opposite ends of the tubes, a water jacket forming the sides of the space inclosing the tubes and double pipe connections between said water jacket and chamber, one set of connections J being outside the casing and the the other set I within the same, substantially as described.

527,080. CUTTER-HEAD. SAMUEL J. SHINER, Milton, Pa. Filed Feb. 24, 1894. Serial No. 501,420. (No model.)



*Claim.*—1. A circular bit cutter-head formed with a base-flange having bit-seats on the opposite upper and lower faces thereof, said bit-seats being oppositely inclined in the direction of rotation and oppositely inclined from the base of the flange outward and having bolt-holes oppositely inclined from the bit-seats inward, bits on the bit-seats, and clamping-bolts in the bolt-holes, substantially as and for the purpose specified.

2. In a circular-bit cutter-head the combination of the section A having radial flanges formed with bit-seats upwardly inclined in the direction of rotation and downwardly and outwardly inclined, and bolt-holes in said seats at right angles to the upwardly inclined seat and inclined outward from the under face of the bit-flange, and the section B having radial flanges to set between the flanges of the other section and formed with bit-seats on the under face of the radial flanges inclined downward in the direction of rotation and upward and outward and bolt-holes in said seats at right angles to the downwardly inclined seat and inclined inward from the seat to the other face of the flange, circular-bits on the respective seats of the sections and clamping bolts in the bolt-holes thereof, substantially as and for the purpose specified.

3. The combination of the sections A and B formed with intersecting radial flanges at their bases having upper and lower bit-seats on the alternating flanges, said bit-seats being oppositely inclined in the direction of rotation and oppositely inclined from the base of the flanges outward and having bolt-holes oppositely inclined from the axis of the head and at right angles to the plane of the bit-seats, circular bits having integral clamping-bolts, and clamping-nuts on the bolts, as specified.

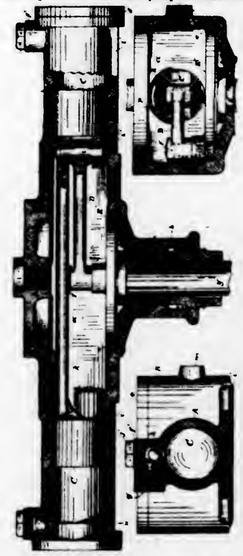
527,081. GAS-COMPRESSOR. BENJAMIN F. SILLIMAN, Cleveland, Ohio. Filed Dec. 12, 1893. Serial No. 493,513. (No model.)

*Claim.*—1. In a gas compressor having the cylinders arranged in alignment and in open relation with a casing constituting a supply chamber for both of said cylinders, the combination of the pistons C C' united by a top bar and a shaft provided with a disk and link in operative connection with said pistons below said bar, the said disk being guided in a recess in the bottom of said casing, substantially as shown and for the purpose described.

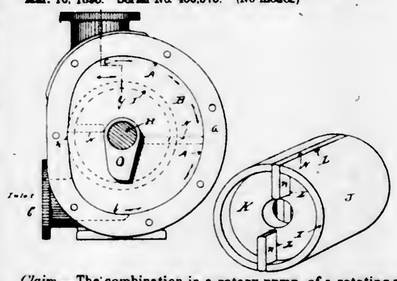
2. In combination with the cylinders A A', casing B, pistons C C' and shaft E with disk E' and the link D in operative connection with said pistons and said disk, the casing B provided with a stuffing box for said shaft, directly above which is a recessed bearing for said disk, substantially as shown and for the purpose described.

3. In a gas compressor of the class described, the disk of the operating shaft perforated and guided in a recess of the casing part thereof substantially as shown and for the purpose described.

4. In a gas compressor of the class described, the casing thereof having, in the interior upper side, recesses *p* for admission of gas, and a circular recess above its stuffing box in combination with a vertical operating shaft and disk guided in said box and recess, a link and pistons, united by a top bar, alternately establishing open relation of said recesses *p* and the compression cylinders, all constructed and arranged substantially as and for the purpose described.

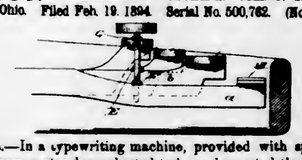


527,082. ROTARY PUMP. EDWARD F. SMITH, Erie, Pa. Filed Mar. 16, 1893. Serial No. 466,375. (No model.)



*Claim.*—The combination in a rotary pump, of a rotating cylinder, consisting substantially of a shell provided with countersunk heads and a central longitudinal diaphragm, forming a division separating the two halves of said cylinder, a slot at one side of said diaphragm, through one side of the periphery and of the heads of said cylinder, and a like slot at the opposite side of said diaphragm, through the opposite side of the periphery and of the heads of said cylinder, radially moving valves in said slots extending outward through the slots in the countersunk heads, to the ends of the cylinder shell, and cams on the heads of the pump shell adapted to be engaged by the ends of the valves during their outward movement only, substantially as set forth.

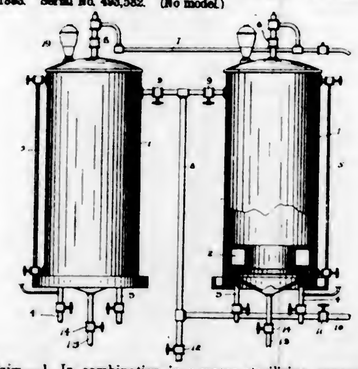
527,083. TYPE-WRITING MACHINE. JOHN P. SMITH, Cleveland, Ohio. Filed Feb. 19, 1894. Serial No. 500,762. (No model.)



*Claim.*—In a typewriting machine, provided with spacing and shifting levers, a stop-key adapted to be reciprocated through a pre-

determined range and to engage with and simultaneously actuate the said spacing and shifting levers, substantially as shown and described.

527,084. **WATER-STERILIZING APPARATUS.** AUSTIN V. M. SPRAGUE, Rochester, N. Y. Filed Mar. 14, 1893. Renewed Dec. 13, 1893. Serial No. 493,582. (No model.)



*Claim.*—1. In combination in a water sterilizing apparatus, a water inlet pipe and an outlet, said inlet pipe being connected with a pressure main and provided with two cocks, as 9 and 12, and an intermediate draw-off pipe whereby the introduction of germs by leakage is obviated, a heating device to kill germs, and an air filter to prevent the entrance of germs within the tank consisting of cotton or the like, substantially as set forth.

2. The combination of a water sterilizing apparatus with the air filter and valve consisting of a case adapted to be secured in a tank having a valve near one end and a receptacle for filtering material at the other end and a perforation to admit air to pass through the filtering material to the valve, substantially as set forth.

3. The combination of a water sterilizing apparatus with the air filter and valve consisting of a case adapted to be secured in a tank having a valve near one end and a receptacle for filtering material at the other end and a perforation to admit air to pass through the filtering material to the valve and a perforated diaphragm to prevent the filtering material entering the valve, substantially as set forth.

527,085. **CARBURETOR.** JAMES O. SPRAGUE and JOHN W. GUTHRIE, Sacramento, Cal. Filed Feb. 12, 1894. Serial No. 499,946. (No model.)

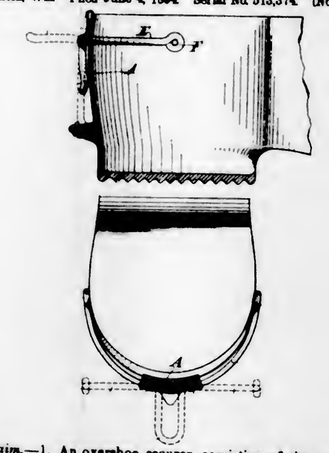


*Claim.*—1. A carburetor having an outlet pipe connecting with the upper portion thereof, and having the lower end reduced and provided with a series of plates at different levels and perforated at different points to cause the inflowing air to make a tortuous circuit, an inverted conical fender disposed above the series of plates, an oil inlet pipe attached to the lower portion of the carburetor, and an air inlet pipe communicating with the carburetor at the lowest point below the aforesaid series of plates, substantially as set forth.

2. A carburetor having its lower end reduced, a series of plates disposed at different levels in the lower end of the carburetor, and perforated at different points, inverted conical shaped fender arranged above the series of plates, a gage to determine the level of the hydrocarbon, and tube connecting the lower end of the reservoir with the lowest portion of the carburetor, an air inlet pipe communicating with the lower end of the carburetor below the series of plates, a heater for raising the air to the required temperature prior to entering the carburetor, and an outlet pipe communicating with the upper end of the said carburetor, substantially as set forth.

3. The herein shown and described carburetor, composed of a reservoir and carburetor placed side by side, the reservoir having an air tube therein, a tube connecting the lower end of the reservoir with the lower end of the carburetor and provided with a gage cock, a series of plates located in the lower end of the carburetor and arranged at different relative heights and perforated at different positions, an inverted conical shaped fender arranged above the said series of plates, a gage to determine the level of the hydrocarbon in the carburetor, an inlet pipe for supplying air to the lowest position of the carburetor, a heater for raising the temperature of the air to the proper degree, and an outlet pipe communicating with the upper end of the carburetor, substantially as set forth.

527,086. **OVERSHOE-SECURER.** ORVILLE R. TOWER, North Greenfield, Wis. Filed June 4, 1894. Serial No. 513,374. (No model.)



*Claim.*—1. An overshoe securer, consisting of the combination with the heel of an overshoe or rubber, of a hinge loop or loops attached to the rear outer surface of the heel, retaining bars or arms hinged to said loop or loops and extending around to the sides of the heel and adapted to press against the sides, and a downward projecting lip attached rigidly to said retaining arms and adapted to serve as a lever for engaging or disengaging said retaining arms, substantially as described.

2. An overshoe securer, consisting of the combination with the heel of an overshoe or rubber of a hinge loop or loops attached to the rear outer surface of the heel, curved retaining arms or bars hinged to said loop or loops and adapted to engage against the sides of said heel, buttons or bearings on the ends of said bars adapted to be pressed by them against the heel, and a downward projecting lip attached to the retaining bars and adapted to serve as a lever for engaging and disengaging said retaining arms, substantially as described.

3. An overshoe securer, consisting of the combination with the heel of an overshoe or rubber of a supporting plate doubled upon itself over said heel, a hinge loop or loops attached to the outer portion of said plate, retaining arms or bars hinged to said loop or loops and adapted to engage the sides of said heel, and a downward projecting lip rigidly attached to said retaining arms, and adapted to serve as a lever for engaging or disengaging said retaining arms, substantially as described.

527,087. **CAR-AXLE-BOX PEDESTAL.** SAMUEL J. VAN STAVOREN, Philadelphia, Pa., assignor of one-half to Charles F. Van Horn, same place. Filed Feb. 8, 1894. Serial No. 499,563. (No model.)

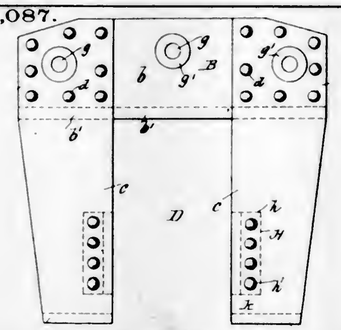
*Claim.*—1. A wrought metal axle-box pedestal composed of a top-plate B having bottom $b'$ and parallel sides $b\ b$, separated depending ways or guides, the upper ends of which overlap and are secured to the sides $b\ b$ of plate B, substantially as set forth.

2. A wrought metal axle-box pedestal composed of a top plate B having bottom $b'$ and parallel sides $b\ b$, separated depending ways or guides, the upper ends of which overlap and are secured to the sides $b\ b$ of plate B, and having transverse brackets or bars H joining the sides $c\ c$ at their lower ends, substantially as set forth.

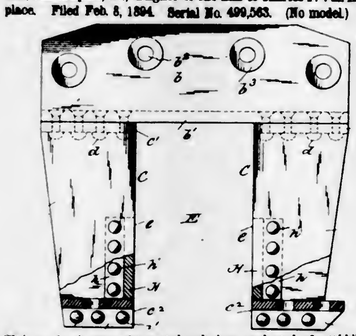
3. A wrought metal axle box pedestal composed of "U" shaped top plates B having bolt opening $g$, "U" shaped ways or guides C C with open upper ends secured to the sides of plate B, and having transverse brackets or bars H, substantially as set forth.



527,087.



527,088. **CAR-AXLE-BOX PEDESTAL.** SAMUEL J. VAN STAVOREN, Philadelphia, Pa., assignor of one-half to Charles F. Van Horn, same place. Filed Feb. 8, 1894. Serial No. 499,563. (No model.)

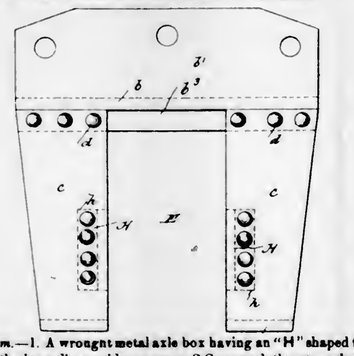


*Claim.*—1. A wrought metal axle-box pedestal of a "U" shaped top plate having "U" shaped depending ways or guides secured to the under surface of the top plate and brackets, and transverse brackets or bars secured to the parallel sides of the ways or guides, substantially as set forth.

2. The combination of a wrought metal, "U" shaped top plate B having bolt openings in its top and sides and depending "U" shaped ways or guides C C secured to the under side of the top plate B, substantially as set forth.

3. Axle-box pedestal consisting of a "U" shaped top plate B oblong depending ways or guides C C having at their upper ends edge flanges secured to the under side of top plate, substantially as set forth.

527,089. **CAR-AXLE-BOX PEDESTAL.** SAMUEL J. VAN STAVOREN, Philadelphia, Pa., assignor of one-half to Charles F. Van Horn, same place. Filed Feb. 8, 1894. Serial No. 499,564. (No model.)

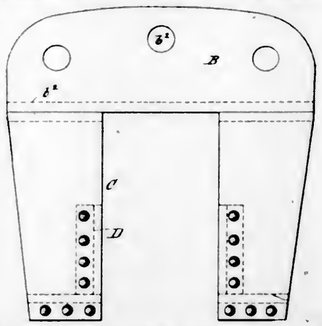


*Claim.*—1. A wrought metal axle box having an "H" shaped top-plate with depending guides or ways C C secured thereto, substantially as set forth.

2. A wrought metal axle box having a top plate B with upper and lower vertical sides $b'\ b'\ b^3\ b^3$ and "U" shaped guides or ways having sides $c\ c$ with free or open upper ends secured to sides $b^3\ b^3$ of plate B, substantially as set forth.

3. In a wrought metal axle-box the combination of a top-plate B and "U" shaped guides or ways secured to the top-plate, substantially as set forth.

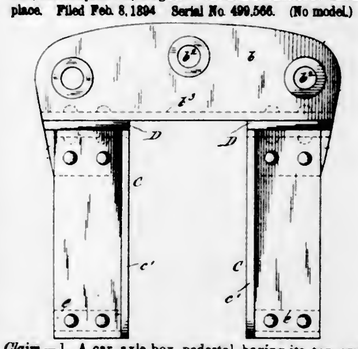
527,090. **CAR-AXLE-BOX PEDESTAL.** SAMUEL J. VAN STAVOREN, Philadelphia, Pa., assignor of one-half to Charles F. Van Horn, same place. Filed Feb. 8, 1894. Serial No. 499,565. (No model.)



*Claim.*—1. An axle-box pedestal composed of top angle irons B, and U shaped guides C secured together, substantially as set forth.

2. In an axle-box pedestal the combination of angle iron top plates B, the inverted U shaped guides C uniting said angle irons, and brace or braces for the lower ends of said guides, substantially as set forth.

527,091. **CAR-AXLE-BOX PEDESTAL.** SAMUEL J. VAN STAVOREN, Philadelphia, Pa., assignor of one-half to Charles F. Van Horn, same place. Filed Feb. 8, 1894. Serial No. 499,566. (No model.)



*Claim.*—1. A car axle box pedestal having its top and guides composed of "L" shaped angle irons connected together, and braces for said guides, substantially as set forth.

2. A pedestal composed of two top parallel angle-irons B B connected by cross-plates D, depending angle-iron guides C C, and connections and braces for said guides, substantially as set forth.

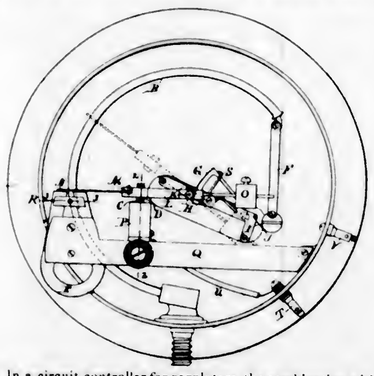
527,092. **CIRCUIT-CONTROLLER FOR REGULATORS.** BARTON R. WARD, New York, N. Y. Filed Oct. 13, 1893. Serial No. 488,056. (No model.)

*Claim.*—1. In a circuit controller for regulators, the combination with a pair of contacts movable with relation to each other, of a contracting and expanding member for causing said motion, and a magnet for retaining said contacts in engagement until said member exerts a predetermined degree of power.

2. In a circuit controller for regulators, the combination with a fixed contact, of a movable contact, an expanding and contracting member connected to said movable contact, and a magnet for retaining said contacts in engagement during a predetermined interval.

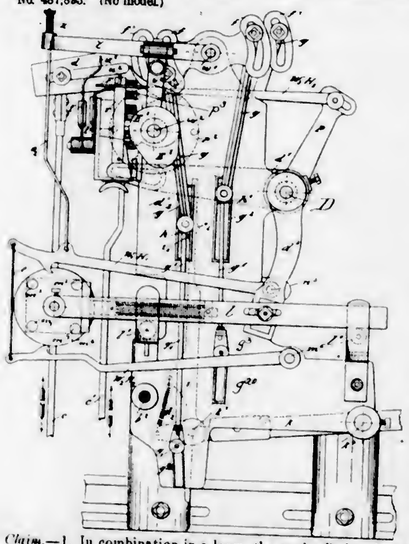
3. In a circuit controller for regulators, the combination with an expanding and contracting member, of a fixed contact, a movable contact connected to said member, a magnet for retaining said contacts in engagement until said member exerts a predetermined degree of power, and means for regulating the strength of said magnet.

4. In a circuit controller for regulators, the combination with an expanding and contracting member of a fixed contact, a movable contact carrying arm connected to said member and provided with a clamp at one end, an armature removably secured in said clamp for the purpose set forth, and a magnet located in the path of said armature.



5. In a circuit controller for regulators, the combination with an expanding and contracting member of a fixed contact and a magnet, of a movable contact carrying arm connected to said member, an armature removably clamped in one end thereof, and an adjustable counterpoise attached to the other end of said arm, as and for the purpose set forth.

## 527,093. SHEDDING MECHANISM FOR LOOMS. HERMANN WENKEL, Schönlinde, Austria-Hungary. Filed Oct. 11, 1893. Serial No. 487,893. (No model.)



*Claim.*—1. In combination in a loom, the card cylinder, the adjustable needle board, the shaft $w^2$, the cam $E^3$ thereon means for turning said shaft, the connection from said cam to the needle board to move the needle board step by step, the pawls for operating the card cylinder, the means for reciprocating the cylinder against the pawls to turn the cylinder, the lever Z connected to the pawls for throwing the same into and out of action, the cam for operating the lever Z, means for throwing the lever Z into and out of connection with the cam, said means comprising the chain, means for operating the same and the devices between the chain and the lever Z, substantially as described.

2. In combination, in a loom, the card cylinder, the adjustable needle board, the shaft $w^2$, the cam $E^3$ thereon means for turning the shaft, the connection from the cam to the needle board the pawls for operating the card cylinder, the means for reciprocating the cylinder against the pawls to turn the cylinder, the lever Z connected to the pawls for throwing them into and out of action, the cam $E'$ $E^3$, the arm $v'$ on the lever Z arranged in line with the cam portion $E'$, the movable arm $v^3$ carried by the lever Z and arranged to be moved into and out of line with the cam portion $E^3$, the means for holding up the lever Z, and the chain for operating the holding means and also the movable arm $v^3$, substantially as described.

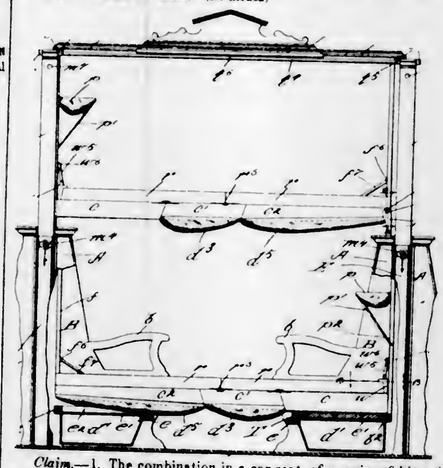
## 527,094. WEARING SURFACE FOR DOOR-MATS, FLOORS, &c. HERBERT D. WHITELEY, Cheetham, England. Filed Apr. 13, 1894. Serial No. 507,396. (No model.) Patented in England Aug. 25, 1891, No. 14,339.



*Claim.*—1. A wear plate comprising a perforated spike plate, and the material in which the said spike plate is cast and embedded, said material covering the upper and lower sides of the spike plate and extending through the perforations thereof substantially as described.

2. A wear plate comprising the perforated spike plate, the material in which said plate is embedded and cast, said material covering both the upper and the lower sides of the said plate, and extending through the openings thereof, and the projections *c* extending downwardly from the lower side of the spike plate, substantially as described.

## 527,095. CAR-SEAT. CARL WOWRA, Chicago, Ill. Filed Dec. 20, 1893. Serial No. 494,232. (No model.)



*Claim.*—1. The combination in a car seat, of a series of hinged sections which form the seat and back of the car seat, said sections being adapted to be extended to form a berth, and side bars detachably secured to said extended sections to stiffen the same, said side bars being arranged on the upper side of said sections to form guard rails for the berth, substantially as described.

2. In a car seat, the combination with a series of hinged sections forming the seat and back thereof and adapted to be extended in horizontal alignment with one another to form a berth, of means for raising said sections to an elevated position, and side bars detachably secured to said extended sections, to stiffen and support the same, substantially as described.

3. In a car seat, the combination with a series of hinged sections which form the seat and back thereof and which can be extended to form a berth, of stiffening side bars detachably secured to the upper side of the berth so that they form guard rails for the same, removable locking devices to secure said side bars in their operative position, racks secured to the removable back of the car seat, and a shaft carrying pinions which engage said racks and elevate the same together with the said hinged sections, substantially as described.

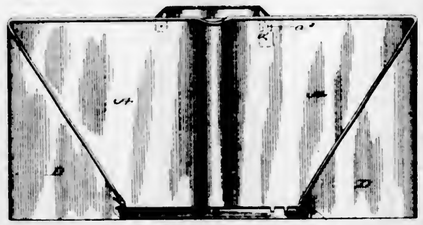
4. In a car seat, the combination with a series of hinged sections adapted to be extended to form a berth, of removable side bars detachably secured to said hinged sections, and vertically sliding wedges arranged to drop behind said side bars and lock the same in position, substantially as described.



5. The combination with a car seat composed of sections hinged together in such a manner that the said sections can be extended to form a berth, of means, substantially as described, for elevating said sections, and sliding bars carried by said sections and attached at their inner ends to a crank, and means for turning said crank and for throwing the ends of the bars into the suitable seats in the side frames to support the berth, substantially as described.

6. In a car seat, the combination with the side frames, of hinged sections which form the seats and berths, means for elevating and supporting said hinged sections, vertically sliding extension arms mounted in said side frames, a curtain support carried by said arms and means for holding said arms in their extended positions, substantially as described.

## 527,096. COMBINED MUSIC HOLDER AND STAND. JOHN WUNDER, Dubuque, Iowa. Filed Mar. 23, 1894. Serial No. 504,758. (No model.)



*Claim.*—1. In a music holder and stand combined, the combination with the flexibly-connected sections A, A, of an extension bar B hinged to the outer side edge of one section A and provided adjacent to its outer end with a notch $a^x$, a second extension bar B hinged to the outer side edge of the other section A, a section B' hinged at one edge to the outer edge of one of the sections B and provided toward its opposite edge with a series of notches *b*, adapted to co-act with the notch $a^x$ in the manner described, and means substantially as described for preventing folding or flexing of the sections A, A, when the latter are extended, as specified.

2. The music holder and stand combined, having the folding or flexibly connected wings or extensions, one having an articulated or hinged section, having a series of notches adapted to be engaged by the other flexibly connected wing or extension, substantially as described.

3. In a music holder and stand combined, the combination with the folding or flexibly connected lids or covers of a plate arranged vertically adjacent to the flexible connecting portion or back of the covers and secured to said back and having bent or angle portions at opposite ends, a spring plate arranged vertically and adapted to clamp between it and the angle plate sheets of music as described, screw-bolts working in the spring plate and angle plate at opposite ends, and provided with nuts, and means for preventing the flexing of the covers and maintaining same in an extended position, as described for the purpose specified.

## 527,097. PNEUMATIC TIRE. ERNEST W. YOUNG, Michigan City, Ind. Filed May 8, 1894. Serial No. 510,441. (No model.)



*Claim.*—1. A hollow or pneumatic tire containing a perforated patching-ply secured thereto at its edges, substantially as set forth.

2. A hollow or pneumatic tire containing a patching-ply secured thereto at its edges, and apertured near said edges, substantially as set forth.

3. A hollow or pneumatic tire containing a longitudinally arranged patching ply secured thereto at its edges, apertured near said edges and having its free intervening portions normally adjacent to the base or rim side of the tire, substantially as set forth.

4. A hollow or pneumatic tire containing a longitudinally arranged patching-ply apertured near said edges secured to opposite sides of the inflatable tubular portion of the tire, and having its free intervening portions normally adjacent to the base or rim side of the tire, substantially as set forth.

5. A pneumatic-tire air-tube provided with a longitudinal, apertured or perforated patching-ply secured thereto at its edges, substantially as set forth.

6. A pneumatic air-tube provided with a single wall or layer on its tread side, and a double layer on its opposite side, one layer constituting an apertured or perforated patching-ply adapted to be cemented to the tread-side layer through a puncture therein, substantially as set forth.

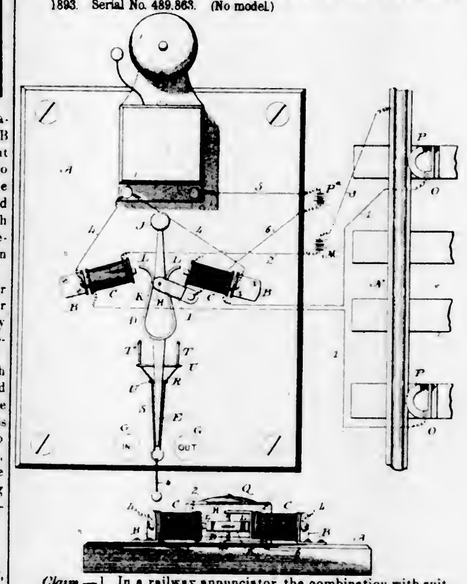
7. A pneumatic-tire air-tube having a patching-ply secured longitudinally therein, on opposite sides thereof, with perforations near its junction-lines, substantially as set forth.

8. A pneumatic-tire air-tube having separate overlying perforated slack diaphragms constituting patching-plies, secured longitudinally therein, on opposite sides thereof, substantially as set forth.

9. The hereinbefore described hollow or pneumatic wheel tire consisting of the combination of a casing or sheath, an air-tube therein, an apertured or perforated patching-ply secured longitudinally therein, on opposite sides thereof, and an air-valve, the combination being and operating as set forth.

10. The combination, substantially as hereinbefore set forth, of a casing or sheath, an air-tube, a series of separate superposed apertured or perforated diaphragms or patching-plies therein, and an air-valve passing through the casing and air-tube, for the purposes specified.

## 527,098. RAILWAY-ANNUNCIATOR. CHARLES R. ALSOP, Middletown, Conn., assignor to Lucy C. Alsop, same place. Filed Nov. 2, 1893. Serial No. 489,863. (No model.)




*Claim.*—1. In a railway annunciator, the combination with suitable track signals arranged at distances apart on a track; of separate adjacent electro magnets each included in a separate signal circuit with said track signals, an indicating hand mounted to play between said electro magnets and having a permanent armature magnet, and a separate alarm circuit including therein the metallic cores of the electro magnets and the armature magnet of the indicating hand, said alarm circuit being closed by the movement of the indicator against the core of either magnet substantially as set forth.

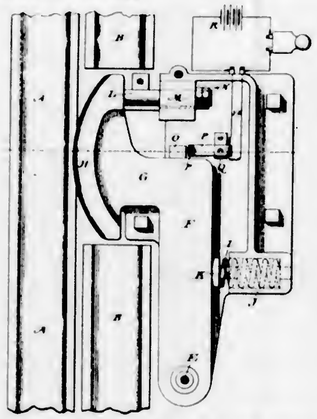
2. In a railway annunciator, the combination of oppositely arranged electro magnets each of which is included in a separate signal circuit and both of which are included in a common alarm circuit, a pivotally supported indicating hand mounted to play between the adjacent ends of the magnets and having a polarized armature portion adapted to contact with the magnet cores, and a suitably supported compressible spring-wire releasing frame having separate strike arms adapted to engage at one side of the indicating hand to release the same from either of the electro magnets, substantially as set forth.

3. In an annunciator, the combination of oppositely disposed electro magnets included in suitable signal circuits, an indicating hand mounted pivotally and having an intermediate permanent armature magnet adapted to play between the exposed core ends of the electro magnets, an alarm circuit including therein the metallic cores of the electro magnets and the permanent indicating hand magnet, and a separate hand operated mechanical releasing device for releasing the indicating hand from either magnet, substantially as set forth.

4. In an annunciator for railway signals, the combination of a pair of electro magnets oppositely arranged and each included in a separate circuit with a separate track signal, a metallic pivot bracket, a counterbalanced indicating hand pivotally mounted in said bracket and having an intermediate polarized armature portion with outturned extremities playing between the exposed core ends of the electro magnets, and a weighted extremity extended above its point of pivot, and a bell or alarm circuit having its wires connected to the metallic cores of the electro magnets and said metallic pivot bracket, whereby such circuit is closed by the movement of the polarized armature against the magnet cores, substantially as set forth.

5. In an annunciator, the combination with the oppositely arranged electro-magnets and the indicating hand having a permanent armature magnet; of a substantially U-shaped spring wire releasing frame mounted for longitudinal movement below the indicating hand and having a narrowed extension at one end and angularly exposed strike arms at its opposite terminals adapted to engage the sides of the indicating hand, and different sized guide loops embracing said releasing frame to provide for the contraction thereof, substantially as set forth.

## 527,099. ELECTRIC TRACK-SIGNAL. Charles R. Alsop, Middletown, Conn., assignor to Lucy C. Alsop, same place. Filed Nov. 27, 1893. Serial No. 492,128. (No model.)



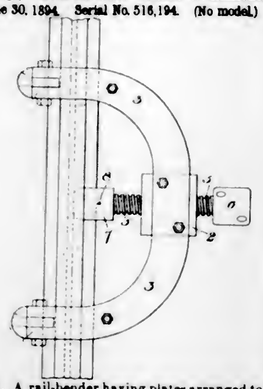
*Claim.*—1. In an electric track signal, the combination of suitably arranged separated contact springs, a signal circuit having the wires thereof connected separately to said springs, and a horizontal spring actuated contact lever mounted to play on a vertical pivot adjacent to one side of a track rail and normally out of contact therewith to leave a space of a width less than a car wheel flange which is adapted to move said contact lever laterally between said contact springs, substantially as set forth.

2. In a track signal, an inclosed chair box arranged adjacent to a track rail, a stationary contact, included in signal circuit, mounted within said chair-box, a horizontal spring actuated contact lever arranged to play on a vertical pivot within said chair box and having a contact lug adapted to be moved against said stationary contact to close the signal circuit, and adjusting devices for adjusting the contact edge of said lever in close proximity to one side of the track rail to leave a narrow space for the flange of a car wheel to pass through substantially as set forth.

3. In an electric track signal, an inclosed chair-box arranged adjacent to a track rail, separated contact springs mounted inside of said chair box and having outturned free ends, a normally open signal circuit having the wires thereof connected separately to said springs, a horizontal spring actuated contact lever mounted to play on a vertical pivot within said box and having a curved rounded contact edge disposed in close proximity to the track rail to leave a space narrower in width than the flange of a car wheel which passes through such space, and an off-standing contact lug adapted to be forced by the flange of the car wheel between the outturned ends of said contact springs, substantially as set forth.

4. In an electric track signal, an inclosed chair-box having a spring socket at one side and a widened guide lug at one end, a contact lever pivotally mounted at one end within said chair-box and provided at its other free ends with an arm having a curved rounded contact edge disposed in close proximity to a track rail, and a reduced guide stem adapted to move in said widened guide lug, check nuts adjustably mounted on the free end of said guide stem, separated contacts adapted to receive there-between one end of said contact lever, and a normally open signal circuit having the wires thereof connected separately to said separated contacts, substantially as set forth.

## 527,100. RAIL-BENDER. Harry W. Armstrong, Oakmont, Pa. Filed June 30, 1894. Serial No. 516,194. (No model.)



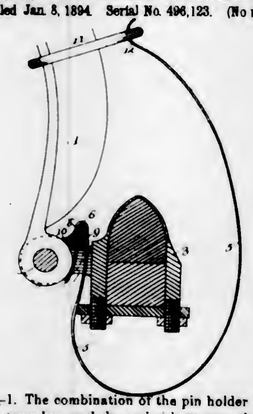
*Claim.*—1. A rail-bender having plates arranged to extend above and below the rail, bearing-blocks held between the ends of the plates, and means for applying pressure to the rail between the bearing-blocks; substantially as described.

2. A rail bender comprising plates extending above and below the rail, bearing-blocks pivoted in the ends of the upper plate and arranged to be removably secured to the lower plate, and a screw-shaft for applying pressure to the rail; substantially as described.

3. A rail-bender comprising plates extending above and below the rail, bearing-blocks having slots through which extend pivot-pins upon the upper plates, the end-portions of the lower plates being slotted to receive the lower ends of the bearing blocks, and a screw-shaft for applying pressure; substantially as described.

4. A rail-bender comprising a casting having a screw-threaded shaft passing therethrough, curved plates secured thereto and arranged to extend above and below the rail, and removable bearing-blocks held in their outer ends; substantially as described.

## 527,101. THILL-SUPPORT. Demas A. Barrackman, Decatur, Ill. Filed Jan. 8, 1894. Serial No. 496,123. (No model.)



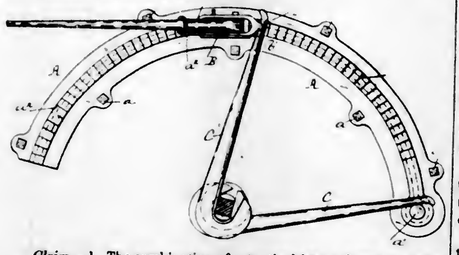
*Claim.*—1. The combination of the pin holder composed of the ears and the cross bar, and the spring bent around the cross bar, diverted to engage the thill eye, and extended around the axle to form a thill support, substantially as set forth.

2. The combination of the pin holder composed of the ears and the cross bar, and the spring bent around the cross bar and having one end adapted to bear against the thill eye while the other end extends around the axle to form a thill support, substantially as set forth.

3. The combination of the pin holder composed of ears 10 and cross bar 8, the cross bar having a depression as 8ª and a teat as 9, and the spring 5 bent around the cross bar at 6 and terminating in the anti-rattler 7, substantially as set forth.



## 527,102. JACK. Josiah Barrett, Allegheny, Pa., assignor to the Duff Manufacturing Company, same place. Filed Jan. 9, 1894. Serial No. 496,228. (No model.)



*Claim.*—1. The combination of a toothed bar, a frame, an operating lever mounted in the frame, a pawl carried by the lever, and a yielding link connected to the pawl and so supported by the frame as to be compressed on the backward movement of the pawl, and to draw the pawl from the toothed bar when freed therefrom, substantially as set forth.

2. The combination of a toothed bar, a frame, an operating lever mounted in the frame, a pawl carried by the lever and engaging with the toothed bar, a yielding link connected to the pawl and connected at the opposite end to a spring and acting to draw the pawl from the toothed bar, substantially as set forth.

3. The combination of a toothed bar, a frame, an operating lever mounted in the frame, two pawls carried by the lever and engaging with the toothed bar, a spring, and links connecting the two free ends of the springs to the pawls and acting to draw the pawls from the toothed bar, substantially as set forth.

4. The combination of a toothed bar, a frame, an operating lever mounted in the frame, a pawl carried by the lever and engaging with the toothed bar, and a yielding link having a slot at the end fitting over a finger on the pawl and so mounted as to draw it from the toothed bar, substantially as set forth.

5. The combination of a toothed bar, a frame, an operating lever mounted in the frame, a pawl carried by the lever and engaging with a toothed bar and having a rigid finger thereon, a spring carrying block movable to and from the pawl and held rigid in its operative position, and a spring carried by the block and acting through the rigid pawl finger to draw the pawl from the rack, substantially as set forth.

6. The combination of a toothed bar, a frame, an operating lever mounted in the frame, a pawl carried by the lever and engaging with the toothed bar, an adjustable block and a yielding connection between the adjustable block and the pawl, acting to withdraw the pawl from the toothed bar, substantially as set forth.

7. The combination of a toothed bar, a frame, an operating lever, a pawl carried by the lever and engaging with the toothed bar, a spring, a link connected to the spring and the pawl and acting to withdraw the pawl from the toothed bar, and a lever controlling the position of the spring so as to provide for the automatic forward and backward movement of the mechanism, substantially as set forth.

8. The combination of a toothed bar, a frame, an operating lever mounted in the frame, two pawls carried by the lever engaging with a toothed bar, a spring having two free ends, links connected to said free ends and to the pawls, and a lever controlling the position of the free ends of the springs so as to provide for the forward and backward movement of the mechanism, substantially as set forth.

9. The combination of a toothed bar, a frame, an operating lever mounted in the frame, a pawl carried by the lever engaging with the toothed bar, a spring having its backward movement controlled by a stop, and a link connecting said spring and the pawl, substantially as set forth.

10. The combination of a toothed bar, a frame, an operating lever mounted in the frame, a pawl carried by the lever and engaging with the toothed bar, a spring having its backward movement controlled by a stop, a link connecting said spring and the pawl, and a lever controlling the positions of the spring so as to provide for the forward or backward movement of the mechanism, substantially as set forth.

11. The combination of a toothed bar, a frame, an operating lever mounted in the frame, a pawl carried by the lever and having a rigid finger thereon, a movable block carrying a spring and a stop for controlling the movement of the spring, said spring carried by the block acting through the rigid finger to raise and hold the pawl from the rack, substantially as set forth.

12. The combination of a toothed bar, a frame, an operating lever, a pawl carried by the lever, a movable block carrying a spring and having a stop thereon for controlling the movement of the spring, and a link connecting the spring and the pawl, substantially as set forth.

13. The combination of a toothed bar, a frame, an operating lever carrying the pawl, a lever having a block mounted thereon carrying a spring, and a link connecting said spring to the pawl, substantially as set forth.

14. The combination of a toothed bar, a frame, an operating lever, a pawl carried by the lever, a lever having a block mounted thereon and having a stop for controlling the movement of the block, a stop on the frame with which said block contacts, and a link connecting the spring on the block with the pawl, substantially as set forth.

15. The combination of a toothed bar, a frame, a lever mounted therein and carrying a pawl, a spring and a link connecting the spring to the pawl, a lever controlling the position of the spring, and a trip controlling the position of the lever, substantially as set forth.

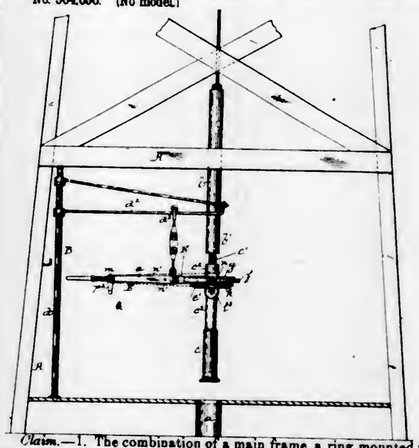
16. The combination of a toothed bar, a frame, a lever mounted therein carrying a pawl, a lever carrying a block having a spring mounted thereon, a link connecting said spring with the pawl, and stops on the lever carrying the block and on the jack frame for controlling the position of the block, substantially as set forth.

17. The combination of a toothed bar, a frame, an operating lever mounted therein and carrying a pawl, the lever *g* having the stops $g$ $g^3$, the block *h* mounted on the lever and having a tongue engaging with said stops, the stops *m m'* on the frame, a spring on the block, and a link connecting said spring with the pawl, substantially as set forth.

18. The combination of a rack having a base plate, and a T-shaped head provided with teeth, and a frame fitting over the T-shaped head and having flanges extending under the same, one flange being adapted to bear upon the under surface of the head and the other flange being adapted to bear upon the upper face of the base plate, substantially as set forth.

19. The combination of a horizontal stationary toothed bar, a frame sliding thereon, an operating lever mounted in the frame and carrying a pawl engaging with the toothed bar, a handle pivoted on the operating lever, and a flexible connection between the handle and pawl, the handle being so pivoted to the operating lever as to lie against the same and leave the flexible connection slack, but when raised from the operating lever to draw the pawl from the toothed bar through such flexible connection, substantially as set forth.

## 527,103. TOOL FOR HANDLING DRILL-BITS OR OTHER TOOLS. Josiah Barrett, Allegheny, Pa. Filed Mar. 17, 1894. Serial No. 504,030. (No model.)



*Claim.*—1. The combination of a main frame, a ring mounted to swing therein, and a rotary tool holder swiveled in said ring and having a seat to receive the tool or other article to be handled, substantially as set forth.

2. The combination of a suspended main frame, a ring mounted to swing therein and having an open portion, and a rotary tool holder to turn in said ring and having an open portion and a seat to receive the tool to be handled, substantially as set forth.

3. The combination of a suspended main frame, a ring mounted to swing therein having an open portion, and a rotary tool holder swiveled to turn in said ring, the tool holder being formed of a body portion having an open side, and a swinging segment hinged therein, substantially as set forth.

4. The combination of a main frame, a ring mounted to swing therein a rotary tool holder mounted to turn therein, said tool holder being formed of a body portion and a swinging segment hinged to said body portion, said body portion and segment having geared faces thereon, and gearing engaging with said faces to turn the same, substantially as set forth.

5. The combination of a main frame, a ring mounted to swing therein and having an open portion, and a rotary tool holder mounted to turn in said ring, said tool holder being formed of a body portion and a swinging segment hinged thereto, said segment engaging with the end of the ring so as to close the segment against the body portion, substantially as set forth.

6. The combination of a main frame, a ring mounted to swing therein and having an open portion, and a rotary tool holder mounted to turn in said ring, said tool holder being formed of a body portion and a swinging segment hinged thereto, said segment engaging with the end of the ring so as to close the segment against the body portion, and said ring having an extension to engage with the outer face of the swinging segment, substantially as set forth.

7. The combination of a main frame, a ring mounted to swing therein, a rotary tool holder mounted in said ring and having a geared face, and a pinion mounted on said ring and engaging with said geared face and acting to turn the tool holder, substantially as set forth.

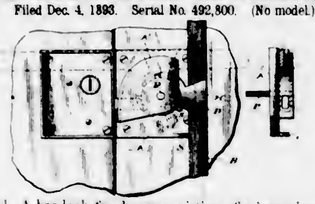
8. The combination of a main frame, a ring mounted to swing therein, a rotary tool holder mounted to turn in said ring and having a geared face, a shaft carrying a pinion engaging with said geared face, and gearing on the main frame connected to and turning said shaft, substantially as set forth.

9. The combination of a main frame, a ring mounted to swing therein, a rotary tool holder mounted to turn in the ring and having a geared face, a shaft mounted on said ring and carrying a pinion meshing with the geared face and carrying another pinion, and a pinion mounted on the main frame and meshing with and turning the pinion on the shaft, substantially as set forth.

10. The combination of a main frame, a ring mounted to swing therein, a rotary tool holder mounted to turn in said ring and having a geared face, a shaft mounted on the ring and having a pinion engaging with said geared face and carrying a pinion at its outer end, a pinion mounted on the main frame and meshing with said gear pinion, a sprocket wheel rigid with the pinion on the main frame, a sprocket mounted at the outer end of said main frame, and a sprocket chain connecting said sprockets, substantially as set forth

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527,104. BAR-LOCK FOR DOORS. TONY H. BENNINGER, Louisville, Ky. Filed Dec. 4, 1893. Serial No. 492,800. (No model.)



*Claim.*—1. A bar-lock for doors consisting of a base-piece with bolt openings therein, a pivoted drum supported in said base-piece, a detachable rocking-bar, a hooked support therefor adapted to be carried on said drum, and a bolt opening in said hooked piece adapted to register with the bolt opening in the base piece when the bar is in a horizontal position.

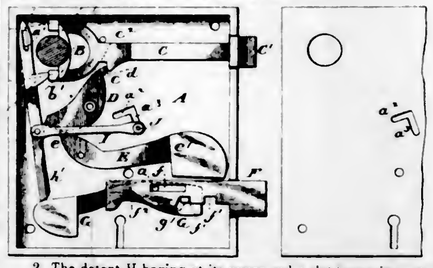
2. A bar-lock for doors consisting of a base piece with bolt opening therein, a drum revoluble in said base piece, a bar carried from said drum by an attaching hook, a bolt opening therein, and stops on the base piece plate adapted to limit the movement of said bar, all substantially as specified.

3. A bar-lock for doors consisting of a base-block, a pivoted drum supported therein, a stud projecting radially from said drum, a door-bar, a hooked support connected thereto adapted to interlock with said projecting stud, a pivotal support for said drum provided with squared end, coinciding bolt openings in said base-block and hooked support and an auxiliary lock supported in such relation to the base-block that its bolt will enter said bolt holes in base-block and hooked support when the bar is in a horizontal position, substantially as shown and specified.

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527,105. LOCK. GEORGE BRUST, DAVID F. REINHARD, and LOUIS P. DUMBEL, Mount Carmel, Ill. Filed Feb. 20, 1894. Serial No. 500,926. (No model.)

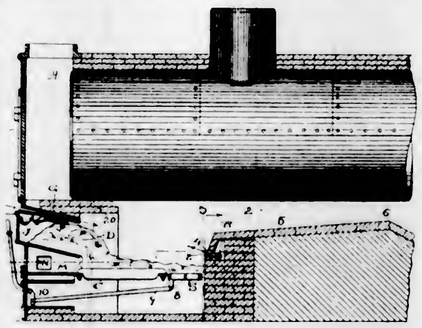
*Claim.*—1. The combination with a subjacently notched latch C, of a cam-lever D having one end that works in said notch and an end-weighted lever having a point which travels over said cam of the lever D, to operate it in the manner described.



2. The detent H having at its upper end a slot to receive a stud on case, in combination with the arm I pivoted thereto and having a handle pin J which traverses an angle-groove in case as and for the purpose set forth.

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527,106. SETTING FOR STEAM-BOILERS. WILLIAM W. BURR, Cleveland, Ohio. Filed Apr. 2, 1894. Serial No. 506,031. (No model.)



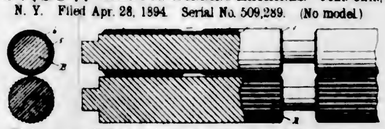
*Claim.*—1. A boiler furnace having a fuel supply chamber built into the front wall thereof and closed to prevent entrance of air through the coal, an arched combustion oven into which said chamber discharges and a supporting wall at the center of the said arch subdividing said oven, substantially as set forth.

2. The furnace described having a fuel supply chamber confined within the front wall thereof and closed to exclude the passage of air through said chamber, and an arched oven extending inward under the boiler from the inner end of said chamber, and air supply passages above said chamber discharging into the top of the said oven, substantially as set forth.

3. The boiler and the furnace wall having the boiler built therein, a fuel supply chamber built into the front of said wall, an arched oven extending inward from over the top of said chamber and overlapping the front end of the boiler and a fresh air passage over said fuel chamber and discharging into the top of the oven, in combination with air inlet passages through the rear wall of the furnace, substantially as set forth.

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527,107. ROLL FOR SPINNING-MACHINES. JOHN CAIN, Utica, N. Y. Filed Apr. 28, 1894. Serial No. 509,289. (No model.)



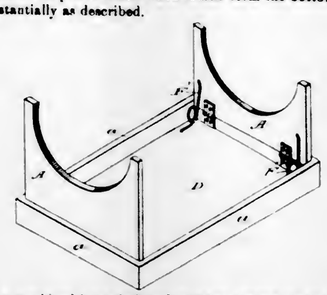
*Claim.*—A roll for a spinning machine consisting of a body, two bands of padding secured to the body and having an interval between them and a covering conforming to the surface of the roll with its bands of padding.

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527,108. KNEE-DESK AND READING-STAND. ANNA R. COOPER, Jersey City, N. J. Filed Mar. 19, 1892. Serial No. 425,640. (No model.)

*Claim.*—1. The combination in a combined knee desk and carrying receptacle, of a top which forms the desk, side and end pieces thereon which together with said top form a box, and adjustable supports on said end pieces which when folded form the bottom of the box, substantially as described.

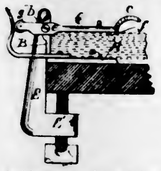




2. In a combined knee desk and carrying receptacle, the combination of a top which forms the desk, side and end pieces thereon which together with said top form a box, adjustable supports on said end pieces curved at their free edge to fit the knee and adapted to form the bottom of the box when folded, a clamping plate on said top adapted to hold articles thereon, and a spring for said plate formed with an eye adapted for the suspension of the desk, substantially as described.

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527,109. CLOTH-HOLDER. WILLIAM H. CUMMINGS, Utica, N. Y. Filed Sept. 25, 1893. Serial No. 486,381. (No model.)

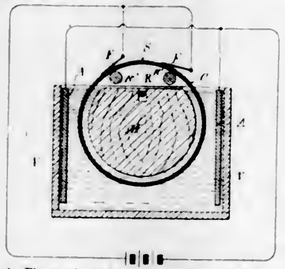


*Claim.*—4. A cloth holder comprising a base, uprights secured thereto, and the upper clamping member pivoted to said uprights and provided with rearwardly extending arms, spring arms —D— secured to said base and engaging with the rearwardly extending arms, and means for securing the holder to the table.

2. A cloth holder comprising a base, uprights secured thereto, the upper clamping member pivoted to said uprights, provided with rearwardly extending arms, spring arms —D— secured to said base, anti-friction rollers secured to the rear end of the rearwardly projecting arms of the upper clamping member and engaging with said spring arms, substantially as described for the purposes set forth.

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527,110. METHOD OF AND APPARATUS FOR ELECTRODEPOSITION OF METALS. CHARLES R. FLETCHER, Boston, Mass. Filed June 20, 1894. Serial No. 515,130. (No model.)



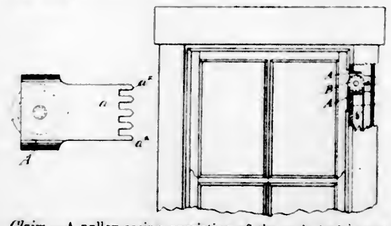
*Claim.*—1. The method of electro-coating metal sheets with metal or metals, which consists in attaching the sheets to a rotating cathode base, and electro-coating the exposed convex surface of the sheet, then reversing the sheet upon the cathode base and electro-coating the opposite surface of the sheet, the several edges of the sheet receiving thereby a double treatment, substantially as set forth.

2. The method herein described of electro-coating metal sheets which consists in bending said sheet to an arc of smaller diameter than that of a cylindrical rotating cathode base, attaching the sheets to said cathode base by springing them on the same, depositing metal upon the exposed surface of the sheets, then opposite bending and reattaching the sheets to the cathode base and coating their opposite surfaces, as set forth.

3. In an electrolytic apparatus the combination with an insulating cylindrical cathode base forming a support for the metal sheets to be coated, of a series of projections or plugs fitted in holes near its ends and wires strung on said plugs for retaining the sheets in position on the cathode base as set forth.

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527,111. PULLEY-CASING FOR WINDOW-FRAMES. JAMES H. FOOTE, Cincinnati, Ohio. Filed Jan. 27, 1894. Serial No. 498,174. (No model.)



*Claim.*—A pulley-casing consisting of the main body portion A having the rearward side extension *a*, each of which extensions terminates in a sharpened point capable of being driven into the solid wood of the frame, for the purposes set forth.

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527,112. TYPE-WRITING-MACHINE ATTACHMENT FOR WRITING AND TRANSLATING MESSAGES IN CIPHER. RICHARD HARTE, Croydon, England. Filed Jan. 18, 1894. Serial No. 497,246. (No model.)

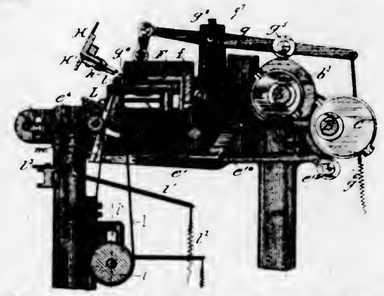


*Claim.*—In a type writing machine for translating communications into or out of cipher, the combination, with the type-operating key and the type operated thereby, of a set of tablets corresponding with and removably applied to, said keys, said tablets being connected in separate rows by flexible tapes fixed at the ends to a common frame, and the said tablets bearing characters or signs corresponding, according to a pre-arranged system, to the characters or signs imprinted by the operation of other than the keys to which the tablets are respectively applied, as specified.

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527,113. KNITTING-MACHINE. SAMUEL JAROS, Hartford, Conn., assignor to the Beach Manufacturing Company, same place. Filed Jan. 3, 1889. Serial No. 295,354. (No model.)

*Brief.*—The machine is of the kind known as warp-knitting machines and makes a fleece-lined fabric, the fibrous material being deposited upon the thread and secured thereto during the knitting operation



*Claim.*—1. A knitting machine, in combination with a reciprocating needle bar and a series of latch needles secured thereto, a fleece bar the intermittingly actuated fleece clamp borne on said fleece bar, means for actuating the fleece clamp, and means for feeding the fleece to the needles independent of the clamp all substantially as described.

2. In combination in a knitting machine, the hooked needles, a fleece bar, a feed roll and the endless apron extending over the fleece bar and the feed roll, the fleece clamp borne on the fleece bar, and a stop located in the path of movement of the fleece clamp and by contact with which the clamp is opened; all substantially as described

3. In a knitting machine, in combination with the reciprocating needle bar, bearing a series of fixed latch needles, the cam shaft *b* having an eccentric secured thereto, an adjustable connecting rod extending from said eccentric to said needle bar, the sinker bar G, the sinker lever *g*, guide blocks *g'* located in guide slots in the side parts of the frame of the machine, means for actuating the lever *g'*, means for actuating the guide blocks *g'*, the thread guide bar H, and means for operating the said bar, all substantially as described.

4. In a knitting machine, in combination with a reciprocating needle bar, bearing a series of fixed needles, the lever *g*, the reciprocating sinker bar suspended from said lever, the vertically adjustable pivot support for said lever *g* formed in the frame of the machine, means for actuating the lever *g*, the adjustable lever $e^4$, the fleece bar E, supported on said lever, the lever $e^{10}$ supporting the lever $e^4$ at one end, and in operative contact with the cam $e^{13}$ on the shaft B at the opposite end, the cam $e^{13}$, and the fleece clamp mechanism, all substantially as described.

5. In a knitting machine, in combination with a series of latch needles fixed to a reciprocating needle bar, the lever $e^4$, the reciprocating fleece bar E borne on said lever, the adjustable pivot $e^7$ of the supporting lever $e^4$, and the lever $e^{10}$ having an adjustable pin at one end and its opposite end in operative contact with the cam on the main shaft B, all substantially as described.

6. In a knitting machine, in combination with a series of latch needles fixed on a reciprocating needle bar, the sinker bar borne in an adjustable guide and bearing a series of sinkers, the fleece bar E, and mechanism for moving said fleece bar, the feed roll *i*, the endless apron I passing around the fleece bar and feed roll, the fleece clamp L bearing a series of guard fingers *l* and pivotally supported on the fleece bar, the arm projecting from the fleece clamp, and the adjustable stop $l^3$ secured to the frame of the machine, all substantially as described.

7. In a knitting machine, in combination with a series of latch needles secured to a reciprocating needle bar, the sinker bar, borne in an adjustable guide, the fleece bar, the fleece clamp pivoted thereon and the fleece feed mechanism connected therewith and independent of the clamp, the thread carrier, and mechanism whereby each thread guide is moved in a path around and between each of two adjacent needles, all substantially as described.

8. In a knitting machine, in combination with the fleece bar E, the feed roll *i*, the belt I passing over the said roll and the fleece bar, the pressure roller *m*, the fleece clamp L pivotally connected to the fleece bar, the clamp opening device, mechanism for operating the fleece bar, the sinker bar *g* borne in an adjustable guide, the sinker bar operating mechanism, the needle bar F bearing the fixed series of latch needles, and the guide bar bearing a series of thread guides, and the means whereby said guides are given a rectilinear movement around each of two adjacent needles, all substantially as described.

9. In a knitting machine, in combination with fleece feeding mechanism, fabric forming devices including a guide bar borne on the reciprocating supports on the frame of the machine, means for reciprocating said supports, and means for causing an endwise reciprocation of the guide bar on the supports, all substantially as described.

10. In a knitting machine, in combination with the fabric forming mechanism driven from a shaft *b*, the shaft B bearing the cam $i^3$, the tilting lever $i^4$ bearing a spring pawl $i^7$ and in operative contact with the cam $i^3$, and a ratchet wheel $i^5$, the fixed pawl $i^{13}$, the toothed wheel $i^4$ borne on the journal of the ratchet wheel $i^5$, the chain $i^6$, the toothed wheel $i^3$ secured to the shaft of the fleece feed roll i, and the within described fleece feed roll and apron, all substantially as described.

11. In a knitting machine, in combination with the needle bar and its operative mechanism as described, the sinker bar and its operative mechanism, the thread guide bar H supported on the shafts *h'*, the shafts *h'* in engagement with the jointed lever $H^3$, the cam $b^{13}$ borne on the rotary shaft *b* and in operative contact with the end of the lever $H^3$ opposite the thread guide bar, and means for moving said bar longitudinally, all substantially as described.

12. In a knitting machine, in combination with a reciprocating needle bar bearing a series of fixed needles, a fleece bar movably supported on a system of levers including a jointed lever, the jointed lever provided with clamping means at the joint, and means for actuating the lever, all substantially as described.

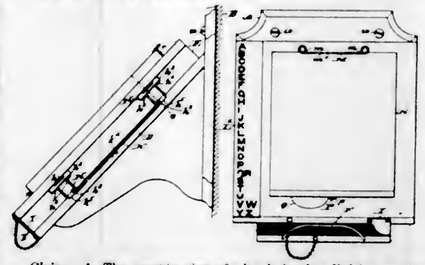
13. In a knitting machine, a thread guide bar borne on reciprocating supports, the supports and means for reciprocating them, means for imparting longitudinal reciprocation to said bar, a secondary bar supported by the first mentioned bar, and means for imparting longitudinal movement to said secondary bar, all substantially as described.

14. In a knitting machine, in combination with a needle bar and its operating mechanism, a sinker bar and its operating mechanism, a thread guide bar borne on reciprocating supports, the supports, means for reciprocating the supports, and the guides as described for preventing a tilting movement of the said bar, all substantially as described.

15. In a knitting machine, a thread guide bar borne on reciprocating supports, the reciprocating supports borne in bases adjustably secured to the frame of the machine, the bases and the thread guide bar operating mechanism, all substantially as described.

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**527,114. COMBINED BOOK-HOLDER, INDEX, AND WRITING-TABLET.** CHESTER F. JOHNSON, Lowell, Mass. Filed Aug. 7, 1893. Serial No. 482,509. (No model.)



*Claim.*—1. The combination of a book, having division-marking tags, secured to the leaves thereof and projecting from said leaves, and a cover having index-marks, corresponding to the divisions of said book, said cover having also a ledge arranged at substantially equal distances from all of said tags, as and for the purpose specified.

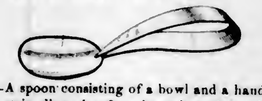
2. The combination of a book, having division-marking tags, secured to the leaves thereof and projecting from said leaves, and a cover having index-marks, corresponding to the divisions of said book, said cover having also a ledge arranged at substantially equal distances from all of said tags and provided with lines arranged at right angles with the outer face of said cover to indicate the proper positions of said tags, as and for the purpose specified.

3. The combination of a table, adapted to support a book, a cover, a hinge connecting said table and cover, said hinge having a leaf adapted to be attached to said table and having a skeleton angle-iron, and a clamp, adapted to be fastened to said cover and to secure said angle-iron thereto, as and for the purpose specified.

4. The combination of a table, adapted to support a book, a cover, a hinge connecting said table and cover, said hinge having a leaf adapted to be attached to said table and having a skeleton angle-iron, a clamp, provided with transverse slots, and screws driven through said slots, into the inner face of said cover, to enable the position of said clamp and hinge to be adjusted on said cover, as and for the purpose specified.

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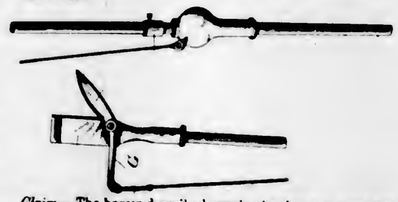
**527,115. SPOON.** SOPHIE H. KIMBALL, Ceres, N. Y. Filed Mar. 20, 1894. Serial No. 504,438. (No model.)



*Claim.*—A spoon consisting of a bowl and a handle formed of a single metal strip diverging from its ends and forming a relatively broad central section bent at or near its center, the upper section carried upwardly and the lower section down and curved upwardly toward the bowl, the opposite ends being secured to the bowl adjacent to each other whereby a grasping portion is formed at or near the bowl and by the upper section of the handle.

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**527,116. PRUNING-TOOL.** GIDEON KLINEFETTER and JONATHAN W. NASH, Nortonville, Kans. Filed July 3, 1894. Serial No. 516,471. (No model.)

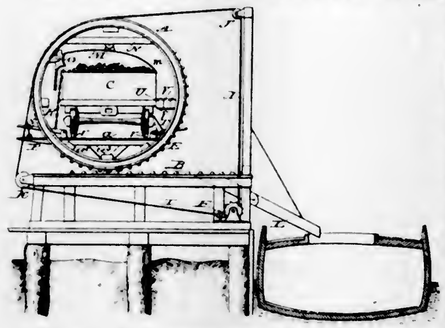


*Claim.*—The herein described pruning implement, comprising the handle, a chisel-blade secured to one end of said handle, a shear blade pivoted to the face of the chisel blade and provided with a lateral arm, a collar secured to the handle a sliding weighted sleeve mounted on the handle, a rod connected at one end to said sleeve and a chain connecting the other end of said rod with the lateral arm of the shear blade, all substantially as shown and described.



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**527,117. DUMPING APPARATUS FOR RAILWAY-CARS.** TIMOTHY LONG, Cleveland, Ohio, assignor to The Long Manufacturing Company, same place. Filed Feb. 23, 1893. Serial No. 463,650. (No model.)

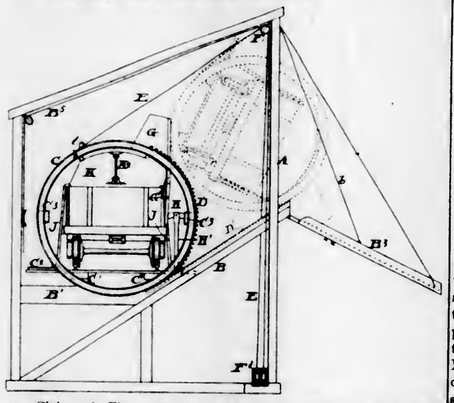


*Claim.*—1. In a dumping apparatus a revolving platform comprising a series of rings, longitudinal timbers uniting the said rings, a floor supported and braced from the lower timbers, the levers Q and T mounted on the floor and having grappling hooks connected therewith, the pivoted cover M, the latch-lever O to hold the cover M in either of its two positions, and the timber U connected by links V with one of the longitudinal timbers, substantially as described.

2. A dumping apparatus comprising a trestle-work provided with rails D having cog teeth secured between them, rings A connected by longitudinal timbers constituting a rolling platform, cog gearing E secured to some of the rings A to engage with the said cog teeth, a floor secured to the lower longitudinal timbers and stayed by braces $a^3$, longitudinal tracks *r* on the floor, levers Q and T provided with grappling hooks to secure the car on the said floor, a cover M pivotally supported between its edges, a latch lever O for securing the said cover in either of its two positions, a timber U, and links V connecting the said timber U with a longitudinal timber, substantially as described.

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**527,118. DUMPING APPARATUS.** TIMOTHY LONG, Cleveland, Ohio, assignor to The Long Manufacturing Company, same place. Filed Dec. 20, 1893. Serial No. 494,139. (No model.)



*Claim.*—1. The combination in a dumping apparatus, of a rolling platform comprising rings C, longitudinal floor beams C', cross-ties supported on said beams, track-rails and run boards $C^9$, supported on said ties, side beams $C^3$ and covering board $C^4$ uniting said rings C; a discharge spout G connected with the covering board, a supporting leaf G' hinged to lower edge of said spout; the jointed bars H pivotally attached to said leaf and the side rail $C^9$, links H' pivoted to the jointed bars H and connected with levers I fulcrumed on the runboard $C^9$, grappling hooks J, connected with levers J'—also fulcrumed on the runboard, all constructed to operate substantially as described.

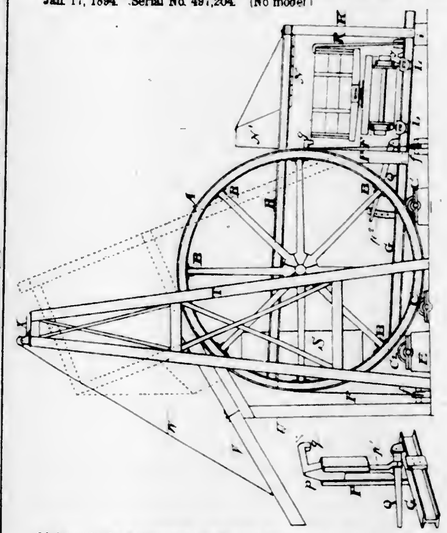
2. The combination in a dumping apparatus of a rolling platform comprising rings C, longitudinal floor beams C', cross-ties supported on said beams, track rails, and runboards $C^9$, supported on said ties, side beams $C^3$ and covering board $C^4$ uniting said rings C; a discharge spout G connected with the covering board; end boards K suspended by hangers *k* to axles L provided with grooved wheels *l l*, track bars $l^2$, on which said wheels run, guard rods L' over said wheels, brace rods $R^3$ pivotally connecting the end boards with the covering board, the fixed pulleys *m m*, intermediate pulleys $M^2$, cord M attached to the axles and running over said pulleys, as means for adjusting said end boards over the ends of the car box; all constructed to operate substantially as described.

3. In a dumping apparatus for railway cars, a cylindrical frame C constructed and arranged substantially as described, in combination with the inclined transverse track beams B, grooved gear teeth on said beams, grooved segment teeth D on the rings C, cables E, having one of their ends attached to upper ends of inclined track beams B and passing down and around said end rings, thence up and through sheaves F, at upper corners of trestle frame, thence down to and through sheaves F' at bottom of trestle frame, where power is to be applied for pulling said cables for rolling the cylindrical frame, substantially as and for the purpose set forth.

4. The combination in a dumping apparatus, of a rolling frame having spout G of the supporting trestle A, and a fixed apron extending the full length of the trestle, and having slanting partitions $B^7$ dividing the apron into chutes, and adapted to receive the spout G when the car platform is rolled over and to discharge the car load through said chutes into a number of receptacles substantially as described.

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**527,119. DUMPING APPARATUS.** TIMOTHY LONG, Cleveland, Ohio, assignor to The Long Manufacturing Company, same place. Filed Jan. 17, 1894. Serial No. 497,204. (No model.)



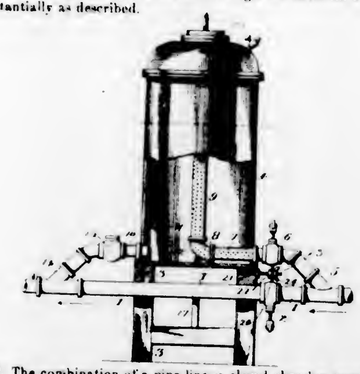
*Claim.*—1. In a dumping apparatus for railway cars, a cylindrical frame composed of rings A, longitudinal bars uniting said rings, wheels C fixed on axles D journaled on pillar blocks E, on the dock and said wheels arranged in pairs, the forward pairs C located nearer the center of gravity than the rear pairs C, and the third emergency pairs of wheels $C^3$; beams G and H attached to said rings A and extending outward, and joined at their ends by posts K roof or cover N and spout N', and a car track, hooks R and P, *q*, for holding the car, and means for rotating the cylindrical frame, in combination substantially as described.

2. In a dumping apparatus the combination with the beams G and the cylindrical frame, of the track truck consisting of the rails J J cross rods M and casters L secured to rails J J and adapted to run on the lower flange of the beams, substantially as described.

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**527,120. FIRE-EXTINGUISHER.** CLARENCE R. MACOMBER, Worcester, Mass., assignor, by direct and mesne assignments, to the Macomber Chemical Fire Extinguisher Company, Portland, Me. Filed Dec. 23, 1891. Renewed Mar. 7, 1894. Serial No. 502,780. (No model.)

*Claim.*—1. The combination of a pipe line and inclosed chamber, containing the chemical, induction and eduction pipes leading from said main pipe and connected with said chamber, said induction and eduction pipes being of the same size as the main pipe line, and a suitable valve or valves arranged so that any portion, or the whole of the main stream may be diverted through the chemical chamber substantially as described.



2. The combination of a pipe line, a closed chamber containing chemical, branch induction and eduction pipes leading from said main pipe line and connected to said chamber and valves in the branch induction pipe and in the main pipe line and connections between said valves arranged so that the valves will be oppositely operated, so that any portion of the main stream may be diverted through the tank, substantially as described.

3. The combination of a pipe line, a closed chamber containing chemical, branch induction and eduction pipes leading from said main pipe and connected to said chamber, a forwardly opening check valve located in the branch eduction pipe and valves in the branch induction pipe and in the main pipe line and connections between said valves arranged so that the valves will be oppositely operated and so that the added area of the openings of both valves will remain constant whereby any portion of the main stream may be diverted through the tank, substantially as described.

4. The combination of pipe 1, the chamber 4, the induction and eduction pipes leading from the main pipe to said chamber, the valves located in the branch induction pipe and in the main pipe, a connection as a link or rod between said valves connected so that one valve will be opened as the other is closed and means for holding the said valves in their adjusted positions, substantially as described.

5. In a fire extinguisher, a chemical tank having an induction and an eduction pipe, a strainer over the mouth of said eduction pipe and an outlet arranged in the induction pipe so as to direct a stream or jet against the face of said strainer whereby the same will be kept clear, substantially as described.

6. In a fire extinguisher, a chemical tank having induction and eduction pipes connected to the bottom thereof, said induction pipe being carried to the inside of said tank and a vertical perforated pipe connected to said induction pipe and extending to near the top of the tank, substantially as described.

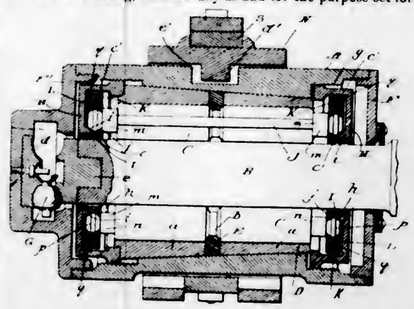
7. In a fire extinguisher, a chemical tank having an induction and an eduction pipe connected to the bottom thereof, said induction pipe being carried to substantially the center of the tank as by pipe 7 and the vertical pipe 9 to which the pipe 7 is connected, said pipes 7 and 9 being perforated for the purpose set forth, substantially as described.

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**527,121. ROLLER-BEARING AXLE-BOX.** JAMES D. MATTISON, Saginaw, Mich. Filed May 29, 1893. Serial No. 475,992. (No model.)

*Claim.*—1. In an anti-friction roller bearing, the combination of a box, a series of bearing rollers having their ends reduced, and a series of intermediate or separating rollers having enlargements *m*, to engage the reduced ends of the bearing rollers and also having the beveled enlargements *p*, of the rings H, connected to the box and having a beveled flange resting within and engaging the beveled enlargements *p* of the intermediate rollers, the adjustable rings I, connected to the rings H, and resting within the intermediate rollers and having beveled surfaces to engage the enlargements *p*, the rings K, arranged around the intermediate rollers and having their inner edges beveled to engage the enlargements *p*, and also having the lateral threaded flanges, and the rings L, engaging the threads of the rings K, and having their inner edges beveled to engage the beveled enlargements *p*, all substantially as and for the purpose set forth.

2. In an anti-friction roller bearing, the combination with a box having its ends recessed and threaded and also having the intermediate portion of its interior reduced in diameter from its outer to its inner end, and the heads connected to the box and having central apertures for the passage of a journal or shaft; of the bearing rollers arranged in the box, a beveled housing interposed between the bearing rollers and the box and rings H, engaging the threads of the box and the housing, substantially as and for the purpose set forth.



3. In an anti-friction roller bearing, the combination with a box having its ends recessed and threaded and also having the intermediate portion of its interior reduced in diameter from its outer to its inner end, and the heads connected to the box and having central apertures for the passage of a journal or shaft, of the bearing rollers arranged in the box and having their ends reduced, a beveled housing interposed between the bearing rollers and the box, a series of intermediate or separating rollers having enlargements *m*, to engage the reduced ends of the bearing rollers and also having the beveled enlargements *p*, the rings H, engaging the threads of the box and having a beveled flange resting within and engaging the beveled enlargements *p* of the intermediate rollers, the adjustable rings I, connected to the rings H, and resting within the intermediate rollers and having beveled surfaces to engage the enlargements *p*, the ring K, arranged around the intermediate rollers and having their inner edges beveled to engage the enlargements *p*, and also having the lateral threaded flanges and the rings L, engaging the threads of the rings K, and having their inner edges beveled to engage the beveled enlargements *p*, all substantially as and for the purposes set forth.

4. In a bearing, the combination with a frame having a projection depending from its upper cross bar and also having blocks or shoes in its upper corners provided with curvilinear seats or sockets; of a box arranged loosely in said frame and having a groove or recess in its upper side to receive the projection of the frame, and also having projections on its opposite sides, provided with curvilinear seats or sockets; of the rocking arms Q, having the upper rounded ends *v*, engaging the seats or sockets of the frame and also having the lower rounded ends to engage the seats or sockets of the box, all substantially as and for the purpose set forth.

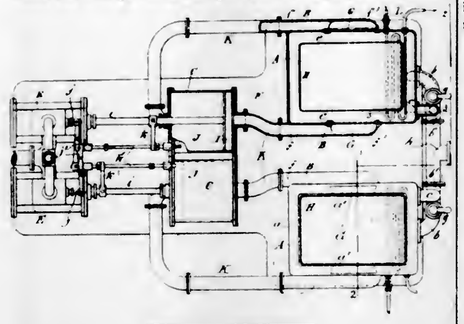
5. In a bearing, the combination with a frame having blocks or shoes in its upper corners provided with curvilinear seats or sockets, and a box arranged loosely in said frame and having projections on its opposite sides provided with curvilinear seats or sockets; of the rocking arms Q, having the upper rounded ends *v*, engaging the seats or sockets of the frame and the lower rounded ends engaging the seats or sockets of the box and also having the straight or approximately straight shoulders $v^3$, at one side of the ends *v*, and the curved shoulders $v'$, at the opposite side of said ends *v*, substantially as and for the purpose specified.

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**527,122. DISH-CLEANER.** JOHN J. O'NEILL, New York, N. Y. Filed May 20, 1892. Serial No. 433,777. (No model.)

*Claim.*—1. In apparatus for washing dishes, the combination of two receptacles A A receiving the dishes, each of said receptacles having passages communicating with their interiors, a support F for said receptacles, two pumps C C each consisting of a cylinder J and a plunger I reciprocating in said cylinder, pipes K K, the one connected to said cylinder at one side of said piston, and the other connected thereto at the other side of said piston, and said pipes respectively communicating with inlet passages at the opposite sides of said receptacle, similar pipes for the other pump and receptacle, said pipes, and the pump and receptacle to which they are connected, constituting each a complete liquid circuit, and means for simultaneously moving the pistons in said cylinders in opposite directions to circulate water through said circuits, substantially as and for the purpose set forth.

2. In apparatus for washing dishes, a cast metal receptacle A having substantially vertical side walls and overhanging flanges *a* at top of said walls, inlet and outlet passages B having tubular portions *f* and enlargements *f''* and formed integrally with said receptacle A, and gates G movably mounted in the side walls of said receptacle, and having flanges *a'* at top corresponding with said flange *a*, all combined and arranged substantially as and for the purpose set forth.



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**527,123. MEANS FOR TRANSPORTING BEER.** VALENTIN OPPL, Cleveland, Ohio. Filed May 11, 1894. Serial No. 510,876. (No model.)



*Claim.*—The vehicle and the tubular tank supported across the front and rear axles of the vehicle and having a valved opening in its bottom and an air opening in its top, in combination with air pumps at the side of said tank and power connections between the said pumps and one of the wheels of the vehicle consisting of a crank shaft across the rear of the tank, pitmen from said shaft to the pumps and sprocket chain connections from the said shaft to one of the rear wheels of the vehicle, substantially as set forth.

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**527,124. PRICE AND WEIGHING SCALE.** ORANGE O. OZIAS, Dayton, Ohio. Filed Apr. 15, 1893. Serial No. 470,472. (No model.)

*Claim.*—1. In a computing scale, the combination with the longitudinally movable computing beam, of a stop rest for supporting said beam at each end, with means for elevating and depressing said rests, whereby the beam may be supported in horizontal position while being moved; substantially as described.

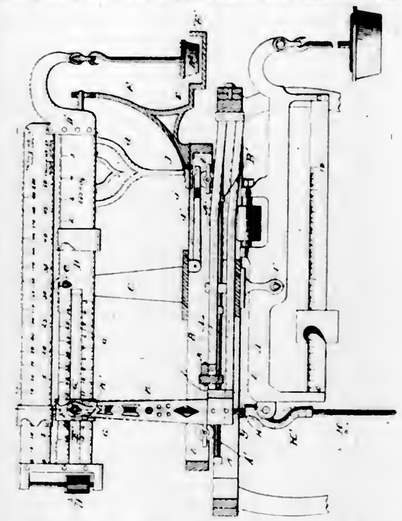
2. In a computing scale, the combination with the longitudinally movable computing beam, and a connector extending from the platform to the beam and adjustably connected therewith, of a support for holding said connector while the beam is being shifted and a support for the forward end of the beam, with means for elevating said supports into operative position; substantially as described.

3. In a computing scale, the combination with the longitudinally movable computing beam and the connector for the platform, adjustably connected therewith, of the support for the connector held against longitudinal movement with the beam, and the support for the forward end of the beam, movable longitudinally therewith and means for moving said supports into operative position; substantially as described.

4. In a computing scale, the combination with the base, the carriage movable longitudinally thereon and the computing beam fulcrumed on the carriage, of the support for the rear end of the beam carried by the base, and the support for the forward end of the beam carried by the carriage with means for moving said supports into operative position; substantially as described.



5. In a computing scale, the combination with the base, the carriage movable longitudinally thereon, the computing beam fulcrumed on the carriage, and the connector for the platform adjustably connected with the beam, of an arm pivotally connected with the base, a support or stop rest for said connector connected to and guided in its vertical movements by the said pivoted arm and mechanism for raising the support into operative position, substantially as described.



6. In a computing scale, the combination with the base, the carriage movable longitudinally thereon, the computing beam fulcrumed on the carriage and the connector for the platform adjustably connected with the beam, of the support or stop rest for said connector and the arms arranged in a vertical plane and pivotally connecting the said support and the base, whereby the support is maintained in vertical position; substantially as described.

7. In a computing scale, the combination with the base the carriage movable longitudinally thereon, the computing beam fulcrumed on the carriage, the connector for the platform adjustably connected with the beam and the support or stop rest for said connector, of the arms pivotally connecting said stop rest and base and the arm pivotally connected with the carriage for supporting the forward end of the beam, with means for raising said arms into operative position, substantially as described.

8. In a computing scale, the combination with the base, the carriage movable longitudinally thereon, the computing beam fulcrumed on the carriage and the connector for the platform, adjustably connected with the rear end of the beam, of the stop rest for the connector and rear end of the beam, the arms pivotally uniting the said stop rest and the base and the cam bar journaled on the carriage and cooperating with the stop rest to raise the same into operative position; substantially as described.

9. In a computing scale, the combination with the base, the carriage movable longitudinally thereon, the computing beam fulcrumed on the carriage, the connector for the platform adjustably connected with the rear end of the beam, the stop rest for the connector and the rear end of the beam, pivotally connected with the base, and the support for the forward end of the beam connected to and moving with the carriage, of the cam bar journaled in the carriage and cooperating with said stop rest and support to move the same into operative position; substantially as described.

10. In a computing beam, the combination with the base, the longitudinally movable computing beam and the support for the end of the beam, of the cam bar movable with the beam for elevating the support, and the pawl for holding the support elevated, moved into and out of operative position by the cam bar; substantially as described.

11. In a computing scale, the combination with the base the longitudinally movable computing beam, the support for the end of the beam pivotally connected with the base, and the cam bar movable with the beam for moving said support into operative position, of the pawl for holding the support in operative position moved into and out of operative position by the cam bar; substantially as described.

12. In a computing scale, the combination with the base, the lon

gitudinally movable computing beam, the support for the end of the beam, the pivotal arms connecting the support and base, the lateral projection on said arms and the cam bar cooperating with said lateral projection to move the support into operative position; substantially as described.

13. In a computing scale, the combination with the base, the longitudinally movable computing beam and the toothed cam bar movable longitudinally with the beam, of the stationary projections on the base for cooperation with the teeth on the cam bar to hold the beam in adjusted position; substantially as described.

14. In a computing scale, the combination with the base, the longitudinally movable carriage and the computing beam fulcrumed thereon, of the toothed cam bar journaled in the carriage and movable longitudinally therewith, and the stationary projections secured on the base for cooperation with the teeth on the bar to hold the carriage in adjusted position, with means for turning said bar to disengage the teeth; substantially as described.

15. In a computing scale, the combination with the base, the longitudinally movable carriage and the computing beam fulcrumed thereon, of the stop rest for the end of the beam, the pivotal arm carrying said stop rest having the lateral projection, the pawl pivotally connected to the said lateral projection and adapted to rest on the base to support said rest in operative position and the cam lever journaled in the carriage and cooperating with the lateral projection to raise the stop rest, and cooperating with the pawl to move the same away from the base when the stop rest is lowered, substantially as described.

16. In a computing scale, the combination with the base and the weighing beam fulcrumed thereon, of the longitudinally movable computing beam and the flexible connection extending from the computing beam to the weighing beam, whereby binding is prevented when the arcs described by the beams do not coincide; substantially as described

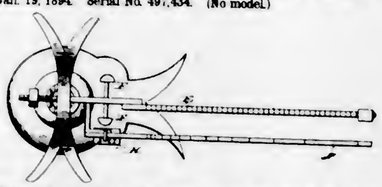
17. In a computing scale, the combination with the base and the weighing beam fulcrumed thereon, and the longitudinally movable computing beam, of a flexible connection for the attachment of the platform, extending past and connected with the weighing beam and adjustably connected with the computing beam, whereby binding is prevented when the arcs described by the beam do not coincide; substantially as described.

18. In a computing scale, the combination with the base, the longitudinally movable computing beam having the bar on the rear end notched on the upper side and the support for the forward end of the beam, of the price per unit weight or connecting block sliding on the notched end of the beam, and having teeth for cooperation with the notches therein, and a bearing for the under side of the bar and a movable support for said weight or connecting block with means for moving said support whereby the block is lifted to disengage the teeth and, together with the support for the forward end, to support the beam in horizontal position to permit of its independent longitudinal movement; substantially as described.

19. In a computing scale, the combination with the longitudinally movable graduated computing beam notched to correspond to one set of graduations, and a connecting block for the platform connections cooperating with the notched beam, of a support for holding said connector while the beam is being shifted, and supports for opposite ends of the beam while being moved, with means for throwing said supports into operative position and disengaging the connecting block from the toothed surface while the bar is being moved: substantially as described.

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527,125. PRICE-SCALE. ORANGE O. OZIAS, Dayton, Ohio. Filed Jan. 19, 1894. Serial No. 497,434. (No model.)



*Claim.*—1. A price scales consisting of the goods or substance supporting mechanism, a beam mounted in fixed bearings in balance with said mechanism without the counterpoise, said beam having graduations indicating unit prices, the distance between the graduations indicating regular rises in value increasing from the inner to the outer end of the beam, a counterpoise and supplemental counterpoise weights indicating uniform cost prices at any rate on the beam; substantially as described.

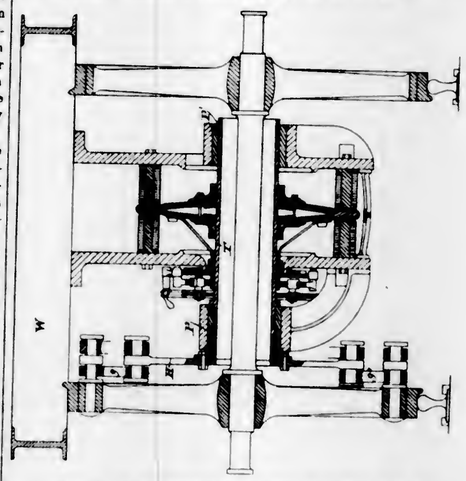
2. In a price scales, the combination with the goods or substance supporting mechanism, of the beam having graduations thereon indicating unit prices, the distance between the graduations, indicating regular rises in value, increasing from the inner to the outer end of the beam, and a counterpoise; substantially as described.

3. In a price scales, the combination with the goods or substance supporting mechanism, of the differentially graduated beam and counterpoise weights marked and indicating cost prices at any rate on the beam; substantially as described.

4. In a price scales, the combination with the goods or substance supporting mechanism, of the differentially graduated beam pivoted in fixed bearings indicating unit prices, a counterpoise weight indicating a cost price at any unit rate, and supplemental counter weights each indicating a fixed cost price at any rate per unit; substantially as described.

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527,126. ELECTRIC LOCOMOTIVE. NICOLAS J. RAFFARD, Paris, France, assignor to the Thomson-Houston Electric Company, of Connecticut. Filed July 23, 1891. Renewed Apr. 13, 1894. Serial No. 507,460. (No model.) Patented in France Sept. 10, 1883, No. 157,466.



*Claim.*—1. The combination in an electric locomotive, of an electric motor supported from the axle through spring supports allowing of relative movements due to vibrations of the parts, a part driven by the motor and surrounding the axle, but out of direct or rigid contact therewith, and a flexible driving connection between such part and the axle.

2. The combination in an electric locomotive, of a driving axle, and an electric motor having its armature surrounding the axle, but leaving a space or play around the same sufficient to permit relative vibrations, and driving connections between the armature and axle.

3. The combination in an electric locomotive, of a driving axle, and an electric motor for the same having its armature attached to a tube or hollow shaft, leaving around the axle a space or play sufficiently great to permit it to follow the irregularities of the track without coming in contact with the hollow arbor, thereby protecting the motor from the vibrations or shocks occasioned by the rolling and the imperfections of the track.

4. The combination in an electric locomotive, of a driving axle, and an electric motor for the same having its field magnet or magnets carried by frames supported on the axle and having its armature attached to a tube or hollow shaft journaled in said frame, leaving around the axle a space or play sufficient to permit vibration of the axle.

5. The combination with a driving axle of an electric locomotive, of an electric motor for the same having its armature attached to a hollow shaft surrounding the axle, but leaving a space around the same, elastic collars or cushions in said space between the axle and hollow shaft, and driving connections between the hollow shaft and the axle or wheels.

6. The combination with a driving axle of an electric locomotive, of an electric motor for the same having its armature attached to a hollow shaft surrounding the axle but leaving a space around the same, elastic collars or cushions in said space between the axle and hollow shaft, and flexible driving connections between the hollow shaft and the axle or wheels.

7. The combination in an electric locomotive, of a driving axle, an armature surrounding said axle, but not in direct or rigid contact



same, elastic collars or cushions in said space between the axle and hollow shaft, and flexible driving connections between the hollow shaft and the axle or wheels.

7. The combination in an electric locomotive, of a driving axle, an armature surrounding said axle, but not in direct or rigid contact therewith, and a flexible driving connection between said armature and axle permitting movement of the axle within the armature.

8. The combination in an electric locomotive, of a driving axle, an armature surrounding said axle but not in direct or rigid contact therewith, arms or projections respectively attached to said armature and axle, and yielding or elastic devices engaging with and operatively connecting said arms.

9. The combination in an electric locomotive, of a driving axle, an armature surrounding said axle but not in direct or rigid contact therewith, arms or projections respectively attached to said armature and axle, and links engaging with and operatively connecting said arms.

10. The combination in an electric locomotive, of a driving axle, an armature surrounding said axle but not in direct or rigid contact therewith, arms or projections attached to said armature and axle, and elastic links engaging with and operatively connecting said arms.

11. An electric locomotive having a frame spring-supported from bearings on the axles, an electric motor having its field magnet supported by said frame, and its armature journaled in said frame, said armature surrounding the axle, but being out of direct or rigid contact therewith and flexible driving connections between said armature and axle, for the purpose set forth.

12. An electric locomotive having a driving motor with its field magnet mounted on a frame spring-supported on the axles and its armature journaled in the field magnet frame and surrounding the driving axle, but being out of direct or rigid contact therewith, and flexible driving connections between said armature and axle.

13. An electric motor surrounding the axle and having multipolar field-magnets presented endwise to the armature, and having an armature of the full diameter of the motor.

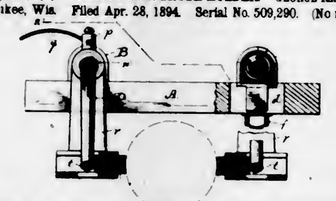
14. The combination of the driving axle, the frame journaled thereon, the electric motor with a hollow armature surrounding the axle but separated therefrom by a space permitting play, and roller bearings for said hollow armature carried by the aforesaid frame.

15. In an electric locomotive, the combination of a driving axle with a motor whose armature surrounds the axle and oppositely placed driving connections between the armature and axle for forward and backward movement.

16. In an electric locomotive, the combination of driving axles having the wheels of one axle of different diameter from those of another, and motors mounted on and driving each driving axle.

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527,127. COMMUTATOR-BRUSH HOLDER. GEORGE RAUCH, Milwaukee, Wis. Filed Apr. 28, 1894. Serial No. 509,290. (No model.)



*Claim.*—1. An insulating base attachable to a commutator supporting-frame, and brush-holders connected to said base, each holder comprising a shell provided with a binding-post and brush-guide, a crank having a flanged arm run through the shell and its other arm loosely engaged with the brush-guide a rotarily adjustable washer on that arm of the crank engaging, said shell, and a spiral-spring connecting the washer and arm-flange, substantially as set forth.

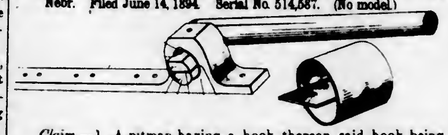
2. An insulating base attachable to a commutator supporting frame, sleeves adjustable longitudinally of the base, shells adjustable in the sleeves transversely of the base, a binding-post and brush-guide on each shell, a crank having a flanged arm run through the shell and its other arm loosely engaged with the brush-guide, a rotarily adjustable washer on that arm of the crank engaging said shell, and a spiral-spring connecting the washer and arm-flange, substantially as set forth.

3. An insulating base centrally notched to fit a grease-box for a commutator shaft or journal and provided with openings for engagement of bolts or screws employed to retain said grease-box in position, sleeves adjustable longitudinally of the base, shells adjustable in the sleeves transversely of the base, a binding post and brush-guide on each shell, and a crank that has one arm thereof under spring-tension within said shell and its other arm loosely engaged with the adjacent brush-guide, substantially as set forth.

4. An insulating base attachable to a commutator supporting frame, sleeves adjustable longitudinally of the base, shells adjustable in the sleeves transversely of the base, a binding-post and brush-guide on each shell, and a crank that has one arm thereof under spring-tension within said shell and its other arm loosely engaged with the adjacent brush-guide, substantially as set forth.

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527,128. PITMAN CONNECTION. THOMAS REGAN, Crawford, Nebr. Filed June 14, 1894. Serial No. 514,587. (No model.)

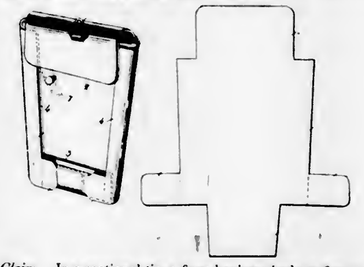


*Claim.*—1. A pitman having a hook thereon, said hook being formed with a transverse slot, a bushing adapted to fit over the hook and having a plate extending across its interior, said plate being adapted to fit into the slot of the hook, and means for holding the bushing in place, substantially as described.

2. A pitman having a hook formed with a transverse slot therein, a bushing adapted to embrace the hook, a plate extending across the interior of the bushing and adapted to lie in the slot of the hook, the outer end of said plate being extended beyond the corresponding end of the bushing, and a pin passing through the extended end of the plate and operating to hold the bushing in place, substantially as described.

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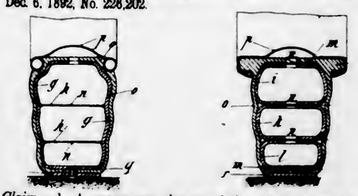
527,129. NECKTIE. DAVID SANGUINETTE, St. Louis, Mo. Filed Apr. 26, 1894. Serial No. 509,071. (No model.)



*Claim.*—In a sectional tie, a form having a body or face portion, upper and lower flaps for the same, lateral folded portions, the upper flap folded parallel to the face and exterior to the lateral portions, the lower flap folded parallel to the face but interior to the lateral portions, wings on said lateral portions folded parallel to one another but exterior to the lower flap, the whole adapted to hold a suitable covering of corresponding shape, substantially as set forth.

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527,130. PNEUMATIC TIRE. JULES E. SIÉGHAL, Paris, France. Filed Jan. 25, 1894. Serial No. 498,012. (No model.) Patented in France Dec. 6, 1892, No. 226,202.



*Claim.*—1. A pneumatic tire consisting of a series of separate superposed air chambers polygonal in cross section and in communication with each other, substantially as described.

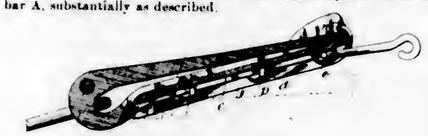
2. A pneumatic tire consisting of a series of superposed chambers polygonal in cross section and in open communication with each other, substantially as described.

3. A pneumatic tire consisting of a series of superposed chambers polygonal in cross section and in open communication with each other, said tire having a flat tread and a metal strip interposed between the outer chamber and said tread, substantially as and for the purposes specified.

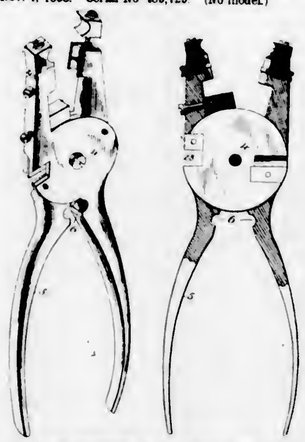
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527,131. HAME-FASTENER. BENJAMIN O. SMITH, Kansas City, Mo. Filed Nov. 17, 1893. Serial No. 491,205. (No model.)

*Claim.*—A hame fastener comprising a bar having a bifurcated hook-shaped end, flanges at its opposite end, and hooks having straight slots formed therein projecting from its rear side, a hook having trunnions cast therewith adapted to enter said slots, a hook lever pivoted to said bar, and a frame consisting of the side bars formed with slots at one end, and a connecting bar at the other end of said side bars provided with a rearwardly extending projection, whereby said frame may be pivotally and adjustably secured to the bar A, substantially as described.



527,132. FUSE-CAPPER. GEORGE A. TEEL, Newport Beach, Cal. Filed Nov. 1, 1893. Serial No. 489,729. (No model.)



*Claim.*—1. In an implement of the character set forth, the combination of a pair of jaws having relatively adjustable crimping devices in connection therewith and a rubber gage block carried by one of said jaws, substantially as described.

2. In an implement of the character set forth, the combination of a pair of jaws having heads with cutters thereon, and handles with fuse resizing recesses adapted to relatively co-act, grooves in the outer ends of said jaws, screw-posts adjustably mounted in said jaws, and having inner reduced ends with concave grooves therein, outer dovetail plates with serrated surfaces and slides adjustably mounted on said serrated plates, substantially as described.

3. In an implement of the character described, a combination of a pair of jaws made concave in their inner edges, crimping plugs having their inner ends formed with a concave and extended into the said concave edges of the jaws and adjustable relative to the latter, and slides relatively adjustable on the ends of the jaws substantially as described for the purpose specified.

4. In an implement of the character described, the combination of a pair of jaws, made concave in their inner edges, crimping plugs having their inner ends formed to a concave and extending into the said concave edges of the jaws, and adjustable relative to the latter, plates held in dovetail grooves in the ends of the jaws and serrated on their outer ends, slides adjustable on the said plates, and having their inner faces serrated, and means for holding the said slides in the adjusted position, substantially as described.

527,133. ARTIFICIAL LEG. CHARLES H. TRUAX, Chicago, Ill., assignor of one-half to George E. Marks, New York, N. Y. Filed Jan. 12, 1891. Serial No. 377,459. (No model.)

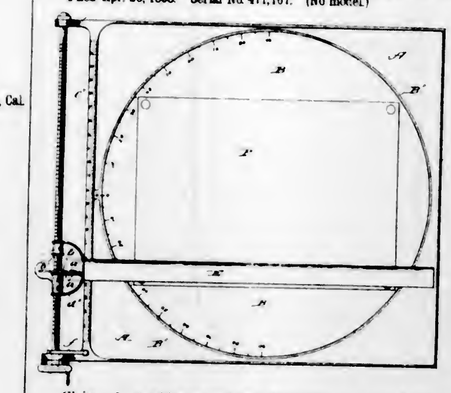


*Claim.*—1. An artificial leg member constructed from aluminium wrought in hollow form and having secured therein bridge pieces to support the connections, substantially as described.

2. An artificial leg comprising in combination a plurality of members constructed wholly or in part from aluminium in hollow form and provided with hinge joints, said joints having their bearing portions formed of steel or suitable hard metal and their shanks or extensions of aluminium, substantially as described.

3. An artificial foot member constructed wholly or in part from aluminium in two or more longitudinal sections, with the margins of the sections interlocked substantially as described.

527,134. DRAWING-BOARD. ARTHUR C. VAN HORN and EDWIN E. BARNEY, Groton, N. Y.; said Barney assignor to said Van Horn. Filed Apr. 20, 1893. Serial No. 471,167. (No model.)



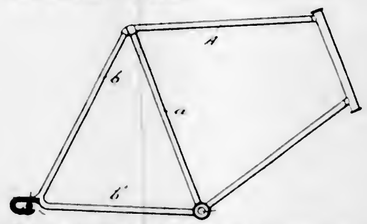
*Claim.*—1. A table or stand provided with a normally fixed scale upon its side, a board pivotally mounted upon the said stand, a ruling blade and positive means of attachment between the said stand and ruling blade for positioning said blade with reference to the scale, in the manner described and for the purpose specified.

2. A stand or table having an opening in its face, a circular board pivoted in said opening, one side of said board marking the degrees in a half circle, in combination with a fixed scale and a ruling blade secured to said stand at right angles thereto, and positive means of attachment between the said blade and stand to move the blade and position it at different points in relation to the said scale on the stand and board, in the manner described and for the purpose specified.

3. The combination of the table having the fixed scale C, and the leading screw provided with the hand wheel and indexed portion *b*, with the ruling blade and means for engaging the blade with the thread of the screw, and to disengage it therefrom at will, substantially as set forth.

4. The combination of the leading screw D, the wheel *e*, and spring *f* with the wheel F, blade E and connections, substantially as set forth.

527,135. BICYCLE. JOHN G. ZIEGLER, Reading, Pa., assignor to the Relay Manufacturing Company, same place. Filed Oct. 16, 1893. Serial No. 488,226. (No model.)

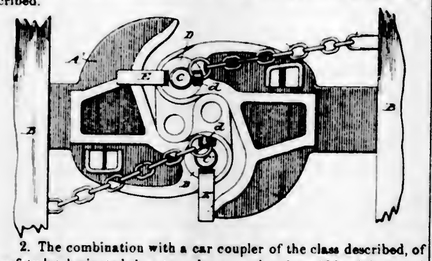


*Claim.*—A bicycle having a frame with a rear fork and a crank mechanism forward thereof, said fork being formed with an axle adjusting slot *e* opening at its forward end outside of the fork arms, substantially as and for the purpose set forth.

527,136. SAFETY DEVICE FOR CAR-COUPLINGS. JOHN L. ARTER, Sunbury, Pa. Filed May 22, 1894. Serial No. 512,045. (No model.)

*Claim.*—1. The combination with a car coupler of the class described, of a safety latch and means for projecting said latch into engagement with an interlocking coupler in case of breakage of the draw head or coupler to which it is attached, for the purpose described.





2. The combination with a car coupler of the class described, of a safety latch pivoted thereto and means whereby said latch is turned into position to engage an interlocking coupler in case of breakage of the draw head or coupler to which it is attached, for the purpose described.

3. The combination with a car coupler of the class described, of a latch pivoted to the coupler and having an arm adapted to overhang the adjacent coupler and a chain or connection between said latch and the car, substantially as described.

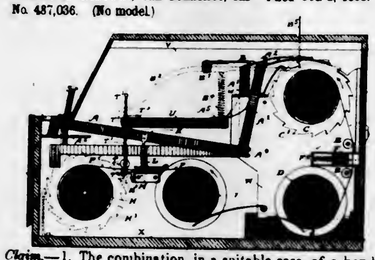
4. The combination of a car coupler of the class described, of a safety latch consisting of a ring or disk having a perforation and mounted upon the hinge pin of the coupler, an arm adapted to overhang the adjacent coupler, an eye opposite the arm and a chain or connection uniting said eye to the car body, substantially as described.

527,137. SASH-HOLDER. JEREMIAH CLAYPOOL, Marshall, Ill. Filed Feb. 8, 1894. Serial No. 499,508. (No model.)



*Claim.*—The combination, in a window-sash and window frame, with a cylinder *a*, suspended eccentrically within a recess *x*, said cylinder being provided with a wood, or other suitable filling *d*, the metallic plate *i*, and the groove *c*, a shaft *b* and a handle, or knob *h*; all substantially as and for the purposes set forth and described.

527,138. VOTE REGISTERING AND RECORDING MACHINE. HERBERT A. CLIFFORD, San Francisco, Cal. Filed Oct. 2, 1893. Serial No. 487,036. (No model.)



*Claim.*—1. The combination, in a suitable case, of a key-board composed of independently acting key-levers, rollers carrying a record-sheet of indefinite length beneath the key-levers, an individual punch or marking device to each key-lever operated by the movement of said lever to punch or mark the record-sheet at every stroke of the lever, means for locking each key-lever to hold it out of action at every stroke or movement and for releasing and throwing into action again all the moved key-levers simultaneously, and means for moving said record-sheet after every time of release of said key-levers when they are restored to action and before they can be operated again, substantially as hereinbefore described.

2. In a voting-machine the combination, of a case having a key-board composed of key-levers separately operative from the outside, spools or rollers carrying register-tapes set with relation to a sight-opening as described, means for connecting every key-lever with its individual tape, whereby every stroke of the lever moves the tape a given distance and the numbers on said tape are exposed in order at the sight-opening to register the strokes of the key-lever, and means for locking or holding said register tapes at rest when the machine is not in use and for releasing all the said tapes when the machine is brought into operation, substantially as hereinbefore described.

3. In a voting-machine the combination, of a pivoted key-lever having a horizontal member forming a key, and an upright member extending above the pivot, a trigger to engage and lock said upright member when the key is depressed, a spring holding said trigger down against the lever and means for raising said trigger to release the lever, in combination with a set of spools or rollers carrying a register-tape a ratchet-wheel on one of said spools and a pawl connected to the key-lever to engage and move said spools a given distance at the stroke of the key whereby the tape is drawn from one spool and wound upon the other by the strokes of the key-lever to register the number of strokes of the key, substantially as hereinbefore described.

4. In a voting-machine, a pivoted key-lever having a horizontally extending member forming a key and an upright member above the pivot, a locking-trigger engaging and locking said upright member as the key is depressed, a spring holding said trigger against the key-lever and means for raising said trigger to release the lever, a set of spools carrying a register-tape and means connecting one of said spools with the key-lever to move the register-tape a given distance at every depression or stroke of the key, in combination with a record-sheet set with relation to a punch or marker fixed on said lever and adapted by the stroke of the lever to record the stroke on the sheet beneath, and means for moving said record-sheet a given distance after every stroke of the key to bring a new portion under the punch, substantially as described.

5. In a voting-machine, the combination, of a key-board composed of a number of separately operative key-levers, means actuated by each lever independently of the other levers to register the strokes of the key-levers, means for locking each key-lever when moved and for releasing all the locked levers at one time, and a sheet and mechanism for recording thereon the strokes of all the key-levers and for moving said sheet after each recording operation, consisting of a punch or marking device on each key-lever above the sheet and a stationary die-plate or bed beneath the sheet, rollers on which said sheet is wound and means connected with one of said rollers outside the machine for moving a sheet a given distance forward after each recording operation, substantially as hereinbefore described.

6. In a voting-machine, the combination, with the spools or rollers C D numbered tape G, key levers A A', ratchet-wheel C', pawl $A^3$ and spring B, of the movable locking-bar E having points to engage and hold the tapes from moving, springs $F^2$ to throw the bar into action and means for moving and holding the bar out of action, substantially as hereinbefore described.

7. In a voting-machine, the combination of a case having a key-board composed of levers operative from the front of the machine, an opening at the back of the case and a door to cover said opening, spools or rollers carrying numbered tapes behind said sight-opening, means connecting the key-levers with said tape-carrying spools to move the tapes a given distance at every stroke of the keys, means for locking the key-levers when moved and for unlocking them after the stroke to set them for another stroke, and a locking device adapted to lock or prevent movement of all the tapes when the sight-opening is uncovered and to release the tapes when the said opening is closed, consisting of the movable bar adapted to seize the tapes and springs to throw said bar into action against the tapes and a finger or projection on the door of the sight-opening adapted to throw off the bar when the door is closed, substantially as hereinbefore described.

8. In a voting-machine, the combination, with a key-lever, a register-tape having numbers on its face and mechanism actuated by said key-lever to move said tape a given distance to expose the numbers thereon in consecutive order by a single stroke of the key-lever, of a continuous sheet on which are recorded the strokes of each key-lever by the direct action of the key-lever itself upon the sheet in addition to the record presented by the register tapes, and mechanism connected to the key-lever, actuated by the stroke of the lever, to punch or mark the record sheet, means for locking the key-levers when depressed and mechanism for releasing all the depressed levers simultaneously to restore them to position, and means connected with said releasing-mechanism to move said record-sheet a given distance for recording the next stroke of the lever substantially as hereinbefore described.

9. In a voting-machine, the combination, with the key-levers, of means connected to each lever to register each stroke or movement of said lever and a locking mechanism to hold each key-lever out of action as it is depressed and to simultaneously release and throw into action all the locked key-levers after such depression, consisting of the rocking-bar B' trigger B, spring $B^4$, lever $B^2$ and cord $B^5$, substantially as hereinbefore described.

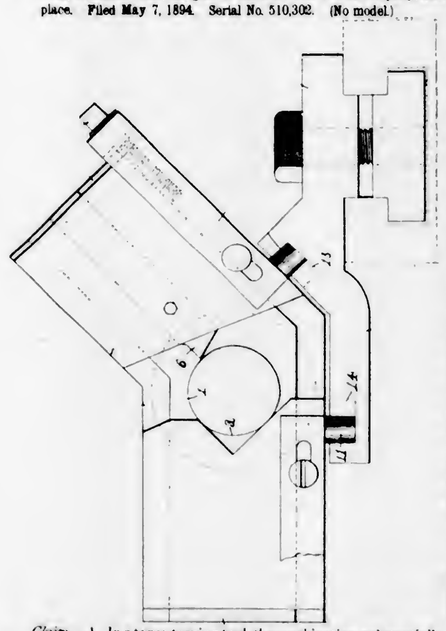
10. In a voting machine, the combination of a case having a flat key-board composed of individual key-levers bearing indentifying numbers on the key, one for each candidate, a raised tablet behind the key-board divided into columns or spaces corresponding in number and position to the keys, and marked or numbered to correspond with the keys, individual registering-mechanism at the back of the case, arranged in front of a sight-opening therein, and connecting

mechanism between each key-lever and its individual registering-mechanism adapted to operate the same at each stroke of the key, means for locking each key when moved by the voter and for releasing simultaneously all the keys operated by the individual voter, a counter record-sheet on which are permanently recorded the movements of each key, recording mechanism actuated by each key to record the movements thereof on said record-sheet and mechanism connected with the key-releasing mechanism aforesaid to advance and space the said record-sheet after the votes of one voter are recorded thereon and bring a blank portion of said sheet into position for receiving the record of the next voter constructed for operation substantially as described.

**527,139. PROCESS OF PREPARING AND PRESERVING COCOANUT.** NELSON A. CLOSSON, Boston, Mass., assignor to the Tropical Cocoanut Company, same place. Filed July 7, 1894. Serial No. 516,823. (No specimens.)

*Claim.*—The process of preparing cocoa nut which consists in comminuting the meat, adding to the comminuted meat about ten per cent. of its weight of water, heating the mixture slowly and gently, extracting the soluble matter from the fiber by pressure, maintaining the heat of fiber thus separated and stirring the same, simultaneously evaporating the extracted matter in a partial vacuum, adding sugar during said evaporation and finally combining with said evaporated extract about one half of said fiber, both the extract and the fiber being kept hot and the latter well stirred during the operation, substantially as set forth.

**527,140. TAPER-TURNING TOOL FOR LATHES.** ZORESTER B. COES, Hamilton, Ohio, assignor to the Niles Tool Works Company, same place. Filed May 7, 1894. Serial No. 510,302. (No model.)



*Claim.*—1. In a taper turning tool, the combination, substantially as set forth, of a shank adapted for longitudinal feeding motion upon the work a distance equal to the whole length of taper to be turned, a tool-block mounted upon a slide-way carried by said shank and arranged to move thereon radial to the work to be turned, a narrow notched back-rest block mounted upon a slide-way carried by said shank and arranged to move thereon radial to the work to be turned, and a pair of stationary transversely angular guide-ways engaging said two blocks and controlling their radial movements, and having a length equal to the whole length of taper to be produced.

2. In a taper turning tool, the combination, substantially as set forth, of a shank adapted for longitudinal feeding motion upon the work a distance equal to the whole length of taper to be turned, a tool-block mounted upon a slide-way carried by said shank and arranged to move thereon radial to the work to be turned, a narrow notched back-rest block mounted upon a slide-way carried by said shank and arranged to move thereon radial to the work to be turned, and a pair of stationary transversely angular guide-ways engaging said two blocks and controlling their radial movements, and having a length equal to the whole length of taper to be produced, and having differing transverse angles.

3. In a taper turning tool, the combination, substantially as set forth, of a shank adapted for longitudinal feeding motion upon the work a distance equal to the whole length of taper to be turned, a tool-block mounted upon a slide-way carried by said shank and arranged to move thereon radial to the work to be turned, a narrow notched back-rest block mounted upon a slide-way carried by said shank and arranged to move thereon radial to the work to be turned, a pair of stationary transversely angular guide-ways engaging said two blocks and controlling their radial movements, and having a length equal to the whole length of taper to be produced, and screws arranged to alter the transverse relationship between said blocks and their respective guide-ways.

4. In a taper turning tool, the combination, substantially as set forth, of a shank adapted for longitudinal feeding motion upon the work a distance equal to the whole length of taper to be turned, a tool-block mounted upon a slide-way carried by said shank and arranged to move thereon radial to the work to be turned, a narrow notched back-rest block mounted upon a slide-way carried by said shank and arranged to move thereon radial to the work to be turned, and at an angle to the movement of said tool-block, and a pair of stationary transversely angular guide-ways engaging said two blocks and controlling their radial movements, and having a length equal to the whole length of taper to be produced.

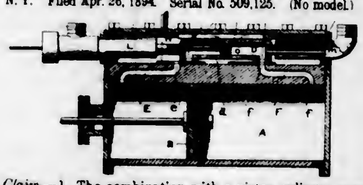
5. In a taper turning tool, the combination, substantially as set forth, of a shank adapted for longitudinal feeding motion upon the work to be turned, a tool-block mounted upon a slide-way carried by said shank and arranged to move thereon radial to the work to be turned, a guide pin carried by said tool-block, a notched back-rest block mounted upon a slide-way carried by said shank and arranged to move thereon radial to the work to be turned, a guide-pin carried by said back-rest block, and a pair of stationary transversely angular longitudinal grooves engagiug said two guide pins and controlling their radial movements.

6. In a taper turning tool, the combination, substantially as set forth, of a shank adapted for longitudinal feeding motion upon the work to be turned, a tool-block mounted upon a slide-way carried by said shank and arranged to move thereon radial to the work to be turned, a notched back-rest block mounted upon a slide-way carried by said shank and arranged to move thereon radial to the work to be turned, and a stationary guide-plate having a pair of transversely angular longitudinal guide-grooves engaging said block and controlling their radial movements.

7. In a taper turning tool, the combination, substantially as set forth, of a shank adapted for longitudinal feeding motion upon the work to be turned, a tool-block mounted upon a slide-way carried by said shank and arranged to move thereon radial to the work to be turned, a notched back-rest block mounted upon a slide-way carried by said shank and arranged to move thereon radial to the work to be turned, an adjustable bar carried by each of said blocks and provided with a guide-pin, and a pair of stationary transversely angular guide-ways engaging said guide pins and controlling their radial movements.

8. In a taper turning tool, the combination, substantially as set forth, of a slide-way, a tool-block and a back-rest block mounted independently thereon, and a pair of transversely angular longitudinal guide-ways engaging said blocks, and having a length equal to the whole length of taper to be produced.

**527,141. BALANCED SLIDE-VALVE.** GEORGE COOK, Buffalo, N. Y. Filed Apr. 26, 1894. Serial No. 509,125. (No model.)



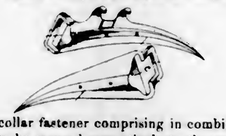
*Claim.*—1. The combination with a piston cylinder and a steam chest, of the fixed exhaust pipes, the chambered slide valve having the live steam recess *d* in its under side, and the hollow piston stems connected to the valve to communicate with the exhaust steam chamber therein and provided with the heads which fit tightly in the exhaust pipes, substantially as described.

2. The combination with a piston cylinder, and a steam chest, of the slotted seat-plates on the inside of the steam chest, the chambered slide valve provided with the slotted wear plates which ride upon the seat plates, the exhaust pipes and the hollow piston stems attached to the slide valve and working in the exhaust pipes, substantially as described.

3. The combination with the piston cylinder and a steam chest, of the exhaust pipe K attached to one head of the steam chest, the other exhaust pipe L of uniform diameter attached to the other head of said steam chest, the casting N attached to the protruding end of the exhaust pipe L and having the elbow *n* and the stuffing box, a slide valve, the hollow piston stems attached to the slide valve and working in the exhaust pipes, and the valve stem, substantially as described.

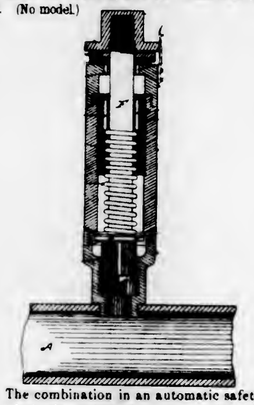


**527,142. HORSE-COLLAR FASTENER.** HERBERT W. COOPER, Moline, Ill. Filed Feb. 11, 1892. Serial No. 421,215. (No model.)



*Claim.*—A collar fastener comprising in combination two metal plates adapted to be secured respectively to the separable ends of a horse collar, each of said plates having a staple at its end and projected at substantially right angles from its body, and one of said plates being transversely apertured in the rear of its staple to permit the passage of the other of said staples, whereby the two parts may be interlocked and the legs and bow of one staple pull or operate against the other and the apertures thereof register to accommodate a key to prevent vertical separation of the parts, substantially as described.

**527,143. AUTOMATIC SAFETY RELIEF-VALVE FOR AIR-BRAKES.** JACOB COPPERSMITH, Erie, Pa. Filed Mar. 19, 1894. Serial No. 504,232. (No model.)



*Claim.*—1. The combination in an automatic safety relief valve for railway car air brakes, of a valve, connected to the air supply pipe of said brakes, a spring adapted to automatically open said valve against the air pressure whenever said pressure falls below a fixed amount, and means for closing said valve, so as to render it inoperative, substantially as and for the purpose set forth.

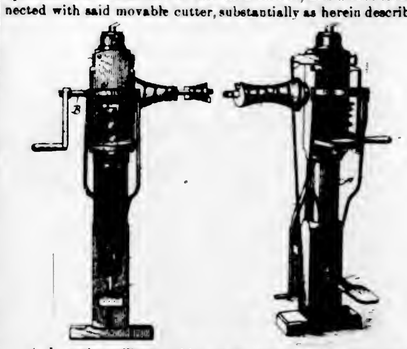
2. The combination in an automatic safety relief valve for railway car air brakes, of a valve body, a valve seat *d* in the section D of said valve body, a valve E adapted to close upon said seat, a valve stem F connected with said valve, an adjustable nut G surrounding said valve stem, a spring H operating on said valve to open it, and a cap nut I and loose valve on the upper end of the valve stem, substantially as and for the purpose set forth.

**527,144. WIRE-COILING MACHINE.** GEORGE W. CROWDER, Goldthwaite, Tex. Filed June 23, 1894. Serial No. 515,490. (No model.)

*Claim.*—1. In a wire coiling machine of the character described the combination with a post and its reversible mandrel shaft, of the oppositely grooved interchangeable mandrels, substantially as herein described.

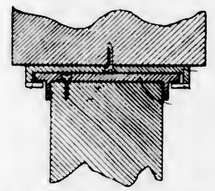
2. In a wire coiling machine of the character described, the combination with a post and its reversible mandrel shaft, removable crank, and pins *b b'*, of the oppositely grooved interchangeable mandrels, and a pin for removably securing them to the shaft, substantially as herein described.

3. In a wire coiling machine of the character described, the combination with a post, its reversible mandrel shaft, and the oppositely grooved interchangeable mandrels, of the fixed cutters at opposite sides of the upper end of the post, and a movable cutter adapted for operation with either one of the fixed cutters, and a foot lever connected with said movable cutter, substantially as herein described.



4. In a wire coiling machine of the character described, the combination with a post, its reversible mandrel shaft, and the oppositely grooved interchangeable mandrels, of the fixed cutters at opposite sides of the upper ends of the post and having notched upper edges and pivot apertures below the notches, the movable cutter having a notched upper edge, and a pivot to connect it removably with either one of the fixed cutters, a foot lever and a connection between the foot lever and the movable cutter, substantially as herein described.

**527,145. FURNITURE-LEG ATTACHMENT.** EDWARD DEMPSEY, Philadelphia, Pa. Filed Feb. 11, 1893. Serial No. 461,894. (No model.)



*Claim.*—1. A furniture leg attachment consisting of two substantially rectangular plates A and B, one of which is adapted to be secured to the body of the furniture, or other fixture and having ways or guides *a* and a limiting stop, and the other having a depending socket-flange B' fitting the leg, and a fastening device located at the front or outer ends of said plates for locking the leg to the body, substantially as described.

2. The combination with a substantially rectangular plate A, having on one surface projecting ways or guides *a a*, and a limiting stop intermediate of said guides, of a correspondingly shaped plate B having on one surface a depending socket flange, a laterally projecting flange E on each of said plates, and a locking screw or device C on one of said flanges E in front of and outside of said socket-flange substantially as described.

**527,146. MACHINE FOR MANUFACTURING BOXES OR PLATES.** MAX ESCHENBECK, Jersey City, N. J., assignor to Julius Mohs, Dresden, Germany. Filed Sept. 22, 1893. Serial No. 486,248. (No model.) Patented in Germany Aug. 27, 1892, Nos. 70,794 and 71,017.

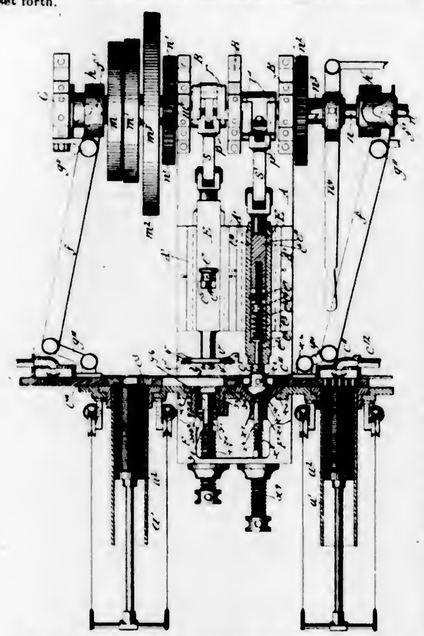
*Claim.*—1. In a box-making machine, the combination, with a magazine, and a pair of dies, of a carrier-plate, a blank-carrier mounted on the carrier-plate, and having a blank-receiving recess and means for moving the carrier-plate, whereby the blank-carrier is alternately brought opposite the magazine and between the dies, substantially as set forth.

2. In a box-making machine, the combination, with a magazine, and a pair of dies, of a carrier-plate, a blank-carrier mounted on the carrier-plate, a steaming device attached to the carrier-plate, and means for moving the carrier-plate, whereby the blank-carrier is brought alternately over the magazine or between the dies, and the steaming device is alternately brought over the magazine and then removed, substantially as set forth.

3. In a box-making machine, the combination, with a magazine, and a pair of dies, of a carrier-plate provided with an opening, and

a series of interchangeable blank-carriers insertible in the said opening, substantially as set forth.

4. In a box-making machine, the combination, with a slotted female die, and a pair of fingers pivoted in the slots and provided with studs at their outer ends, of a plunger, and a plate attached to the plunger and provided with beveled outer corners arranged to engage the studs on the fingers when the plunger descends, substantially as set forth.



5. In a box-making machine, the combination, with a slotted female die, and a pair of fingers pivoted in the slots and provided with studs at their outer ends, of a plunger, a plate attached to the plunger and provided with beveled outer corners arranged to engage the studs on the fingers when the plunger descends, and a spring connected to each finger and arranged to return the latter to its normal position, substantially as set forth.

6. In a box-making machine, the combination, with a plunger, a die carried by the plunger, and means for giving the plunger two reciprocations, of a die retaining device, intermediate the die and plunger whereby the die is held in contact with the blank during the second reciprocation of the plunger, substantially as set forth.

7. In a box-making machine, the combination, with a plunger, of mechanism for giving the plunger first a long reciprocation and then a short reciprocation, a die carried by the plunger, and means for holding the die stationary during the short reciprocation of the plunger, substantially as set forth.

8. In a box-making machine, the combination, with a central plunger-core having a threaded axle hole, of an outer shell surrounding the central core, a die projecting through the outer shell, a spindle screwed into the axle hole in the central core, and provided with a collar, and a spring between the die and the said collar, substantially as set forth.

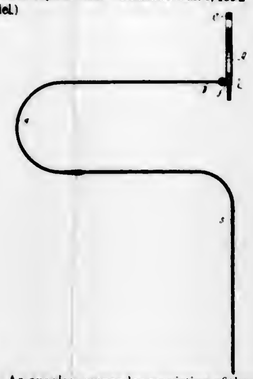
9. In a box-making machine, the combination, with a shaft, a sleeve loose on the shaft, a pulley and a gear pinion fixed to the sleeve, a gear wheel meshing into the gear pinion, and a shaft on which the gear wheel is fixed, of a gear pinion on the second shaft, a gear wheel loose on the first shaft, means for locking the latter gear wheel to the first shaft, a crank attached to the first shaft, a plunger, a crank rod attached to the crank, a guide arm pivoted at one end, and a connected rod attached to the plunger at one end and to the crank rod and guide arm at the other end, substantially as set forth.

10. In a box-making machine, a stripper-device comprising an annular plate, a series of slotted fingers and a series of screws passing through the slots in the fingers and threaded into the annular plate, substantially as set forth.

11. In a box-making machine, the combination, with a carrier-plate, and a pair of slotted cross-strips, and a pair of slotted stop-plates, of a series of screws passing through the slots in the cross-strips and stop-plates and threaded into the carrier plate, substantially as set forth.

12. In a box-making machine, a stripper device comprising an open plate in combination with a series of fingers adjustably attached to the open plate, substantially as described.

527,147. EYEGLASS-SUSPENDER. HENRY J. GREEN, Brooklyn, N. Y. Filed Sept. 8, 1892. Renewed Mar. 9, 1894. Serial No. 503,064. (No model.)



*Claim.*—An eyeglass suspender consisting of the temple wire with an ear hook which is connected to the desired glass by a pivot joint, and the tubular cord fitted on said wire at one end, to hang loosely therefrom permitting it to be fastened to a garment button or other device like the ordinary eyeglass cord, substantially as and for the purpose described.

527,148. THILL-COUPLING. WALTER S. HARTLEY, Little York, Ill. Filed Feb. 15, 1894. Serial No. 500,231. (No model.)



*Claim.*—1. In a thill coupling, the combination with the clip having two ears, one of which has an eye and the other of which has a slot struck on a curve around the center of said eye and open at its upper end; of a crank comprising a shaft journaled in said eye, an arm at the inner end of the shaft, and a pin at the other end of the arm adapted to enter said slot, and a thill-iron having an eye removably mounted on said pin, as and for the purpose set forth.

2. In a thill coupling, the combination with the clip having two ears, one of which has an eye and the other of which has a slot struck on a curve around the center of said eye and open at its upper end; of a crank comprising a shaft journaled in said eye, an arm at the inner end of the shaft, and a pin at the other end of the arm adapted to enter said slot, a thill-iron having an eye removably mounted on said pin, and a spring connected with the clip and pressing said thill-iron-eye forward and downward upon the pin and the latter toward the bottom of said slot, as and for the purpose set forth.

3. In a thill coupling, the combination with the clip having two ears, one of which has an eye and the other of which has a slot struck on a curve around the center of said eye and open at its upper end; of a crank comprising a shaft journaled in said eye and having a squared outer end, an arm at the inner end of the shaft, and a pin at the other end of the arm having a reduced free end adapted to enter said slot, and a thill-iron having an eye removably mounted on said pin, as and for the purpose set forth.

4. In a thill coupling, the combination with the clip having two ears, one of which has an eye and the other of which has a slot struck on a curve around the center of said eye and open at its upper end; of a crank comprising a shaft journaled in said eye and having a squared outer end, an arm at the inner end of the shaft, and a pin at the other end of the arm having a reduced free end adapted to enter said slot, a thill-iron having an eye removably mounted on said pin, and a spring connected with the clip plate with its free end standing between said ears and curved behind the eye of the thill-iron so as to press said eye forward and to bear the reduced end of the pin into the bottom of the slot, as and for the purpose set forth.

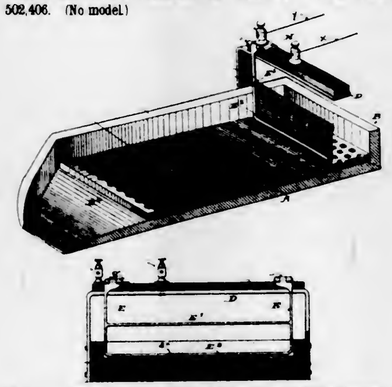


527,149. LEGGIN. MAX Z. LEVY, Kansas City, Mo. Filed Feb 15, 1894. Serial No. 500,201. (No model.)



*Claim.*—In a leggin, the combination with a sheet of flexible material provided with apertures in one side margin and with expansive gores in its upper margin, of straps slidingly engaging said apertures, buckles carried by one end of said straps and engaging adjustably the body-portion thereof, buttons carried by the outer side of said straps and holes in the ends of the straps engaging said buttons, substantially as set forth.

527,150. ELECTRIC ORE-AMALGAMATING APPARATUS. JOHN C. LUDWIG, San Francisco, Cal. Filed Mar. 5, 1894. Serial No. 502,406. (No model.)



*Claim.*—1. The combination substantially as hereinbefore set forth, of a suitable trough or sluice-box having a plate of conducting metal on the bottom, an apron of fabric lying loosely upon and covering the surface of said plate to retard the flow of pulp and arrest the finer particles of gold, a metallic connection of one end of said apron with a conductor adapted for connecting the same with one pole of a dynamo electric machine, and means for connecting the metallic plate with the opposite pole of the machine.

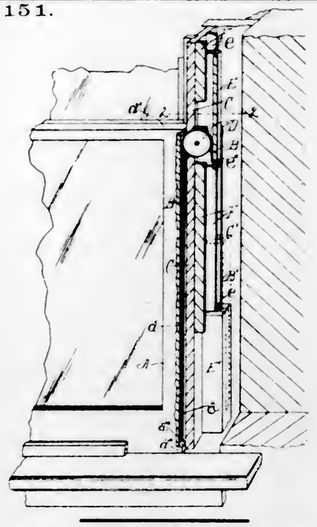
2. The combination substantially as hereinbefore set forth, of a suitable trough or sluice-box, the metallic plate A having pockets or depressions in its surface, the swinging frame E and means adapted to connect said frame with one pole of an electric generator, the apron C attached at one end to said swinging frame and covering the surface of the metallic plate, and means for connecting to said plate a conductor from the other pole of the electric generator.

3. The herein described amalgamating apparatus comprising a zinc plate forming the bottom of a trough or box with raised sides means for connecting said plate with one pole of a dynamo-electric machine a flexible apron of textile fabric lying loosely on and covering the surface of said plate undulating with the surface of the pulp and a metallic connection at one end of said apron and means for connecting the same with the opposite pole of the same generator, substantially as described for operation as set forth.

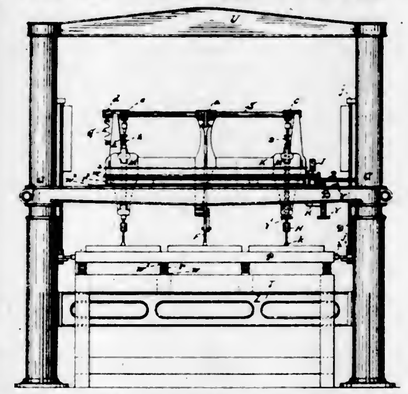
527,151. SASH-WEIGHT HERBERT MARSHALL, Los Angeles, Cal. Filed Oct. 9, 1893. Serial No. 487,571. (No model.)

*Claim.*—A sash weight provided on its front side with a straight cord and pulley chambering runway arranged longitudinal the weight and extending into the weight beyond its center of gravity, said weight being adapted to be suspended by a cord attached to such weight at the rear of its center of gravity and passing upward through such runway.

527,151.



527,152. CARVING-MACHINE. WILLIAM MAYBECK, Somerville, Mass. Filed Feb. 20, 1894. Serial No. 500,883. (No model.)



*Claim.*—1. In an automatic carving machine, one or more rotary motors, preferably electric motors, adjustable to a fixed position with relation to the model, each having a hollow driving shaft with a longitudinal internal groove, in combination with their respective tool-spindles each provided with a corresponding key or feather, thus permitting a lineal movement within and independent of said driving-shafts, and a proportionally adjustable guide or feeler, together with means whereby the longitudinal movements of the feeler are to a greater, equal or less degree synchronously imparted to the revoluble tool spindles, all substantially as shown and for the purpose specified.

2. In an automatic carving machine, the combination of one or more tool spindles "N" provided with feather "*f*," motor shaft "A" internally and longitudinally grooved, and the perforated arms "*a*, *a*," and feeler "F" with the controlling shaft "S," levers "*c*, *c*," springs "*s*, *s*," and "G," all supported on motor carriage "K" substantially as shown and described.

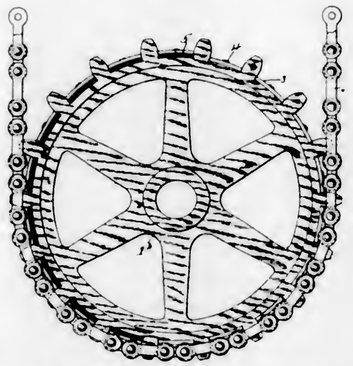
3. In an automatic carving machine, a carriage to which an end-to-end movement is imparted by suitable mechanism and to which are attached rotary motors provided with hollow driving shafts having longitudinal internal grooves, revoluble tool-spindles with sliding keys or feathers providing for lineal movement within and independent of the driving shafts and means for imparting said lineal movement to tool spindles as determined by an adjustable feeler, in combination with a chucking platen and means for imparting thereto an end to end movement at right angles to that of the motor carriage, all substantially as shown and described.

4. In an automatic carving machine the combination of a main screw and corresponding nut; worm, worm-wheels and change-gears; weighted lever and swinging plate; tilting levers and adjustable cams, with the vibratory carriage and adjustable track-bed, all substantially as set forth.

5. In an automatic carving machine, the combination of the winged spindles, levers and pawls, with the vibratory carriage and racheted chucking platen all substantially as shown and for the purpose specified.

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**527,153.** SPROCKET-WHEEL. PETER D. MURPHY and EDWARD KOLB, Lockport, N. Y. Filed Feb. 5, 1894. Serial No. 499,087. (No model.)

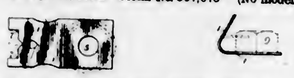


*Claim.*—1. A sprocket wheel having removable plates secured between the teeth in length equal to the distance between said teeth for the purpose described.

2. The combination with the toothed wheel, of plates adapted to fit on the periphery thereof between the teeth and the interposed packing for the purpose described.

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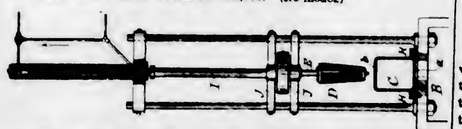
**527,154.** NUT-LOCK. WILLIAM W. OWENS, Peterborough, Canada. Filed Apr. 10, 1894. Serial No. 507,073. (No model.)



*Claim.*—As a nut lock, the plate having therein the combination, of a bolt hole near one end and at unequal distances from the end and side limits as specified, the curved cut outs opposite one another in the side limits, a rectangular cut out in the end opposite that having the bolt hole therein, and a hole in the plate between said curved and rectangular cut outs as a means by which to bend a portion of the plate toward the said bolt hole, substantially as shown and described.

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**527,155.** EXPANDING-TOOL. NAT. W. PRATT, Brooklyn, N. Y. Filed Mar. 3, 1893. Serial No. 464,539. (No model.)



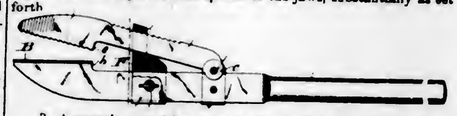
*Claim.*—In an expanding tool, the combination of a tapered mandrel and a series of tapered expanding rollers, each comprising two oppositely tapered truncated cones united at their bases, one of which bears with frictional contact upon the said mandrel, and the other of which presents a working surface on a line substantially parallel with the axis of the tool.

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**527,156.** WRENCH. WILLIAM E. PUGSLEY, Lincoln, Nebr., assignor of one-half to David Fitzgerald, same place. Filed Feb. 21, 1894. Serial No. 501,007. (No model.)

*Claim.*—1. A wrench comprising a handle-bar having one end in the form of a jaw, another jaw having a shank pivotally connected to the handle-bar, a collar loose on the handle-bar and jaw-shank, and a wedge-block fast in the collar between said handle-bar and jaw-shank, substantially as set forth.

2. A wrench comprising a handle-bar having one end in the form of a jaw and provided intermediate of its extremities with a concave socket, another jaw provided with a shank having a half-round terminal engaging the handle-bar socket, a clip fast on said handle-bar, a pivot connecting said jaw-shank terminal with the clip, and a sliding device that regulates the spread of the jaws, substantially as set forth.



3. A wrench comprising a handle-bar having one end in the form of a jaw, another jaw having a shank pivotally connected to the handle-bar, a collar loose on the handle-bar and jaw-shank, a wedge-block fast in the collar between said handle-bar and jaw-shank, and a set-screw for locking the collar in adjusted position, substantially as set forth.

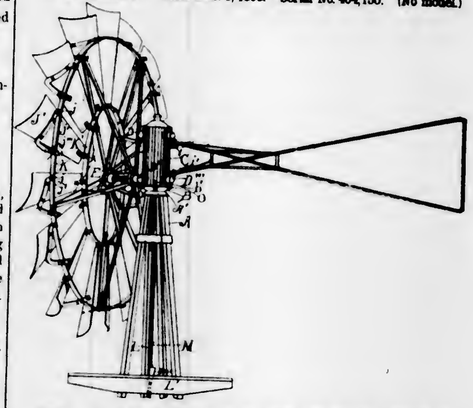
4. A wrench comprising a handle-bar having one end in the form of a jaw another jaw having a serrated shank pivotally connected to the handle-bar, a serrated collar loose on the handle-bar and jaw-shank, and a wedge block fast in the collar between said handle-bar and jaw-shank, substantially as set forth.

5. A wrench comprising a handle-bar having one end in the form of a jaw provided upon its working face with longitudinal flutes, another jaw having a shank pivotally connected to the handle-bar, a collar loose on the handle bar and jaw-shank, and a wedge-block fast in the collar between said handle-bar and jaw-shank, substantially as set forth.

6. A wrench comprising a handle-bar having one end in the form of a jaw provided upon its working face with longitudinal flutes, another jaw having a transversely serrated working face and a shank pivotally connected to the handle-bar, a collar loose on the handle-bar and jaw-shank, and a wedge-block fast in the collar between said handle-bar and jaw-shank, substantially as set forth.

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**527,157.** WINDMILL. NICHOLAS I. RIGBY and HENRY B. REAVIS, Los Angeles, Cal. Filed Mar. 1, 1893. Serial No. 464,155. (No model.)



*Claim.*—1. A windmill having its wings respectively secured to wing supports each of which supports has one end pivotally attached to the ring of the wheel and has its other end adjustably attached to the wheel ring, whereby the inclination of the wing with relation to the wheel-ring can be changed by adjusting one end of the wing support.

2. In a windmill, the adjustable wing support having its body curved to receive the wing and having at one end a short rearwardly projecting attaching pivot arm adapted to be pivotally attached to the ring of the wheel, and having at its other end a rearwardly projecting wing-supporting and adjusting bracket provided along its length with a series of adjusting holes arranged in the arc of a circle of which the pivotal point of the attaching arm is the center.

3. In a windmill, the combination of the turn table provided with the casing seat; the casing secured in such seat and projecting upwardly therefrom and provided in its side walls with oppositely arranged openings adapted to receive removable journal boxes therein; the removable journal boxes arranged in such openings and secured to the casing, the shaft journaled in such journal boxes, and the cover arranged to close the upper part of the casing.

4. The combination of the turn-table provided upon its upper face



with the casing seat; the tubular casing secured to the turn-table and projecting upward therefrom and provided in its side-walls with the openings to receive removable journal boxes therein, the removable journal boxes, two being arranged in the openings in the upper part of the casing upon opposite sides thereof to receive and journal the ends of the crank shaft, and two boxes arranged in the lower part of the casing upon opposite sides thereof to receive and journal the wheel shaft; the crank shaft and the wheel shaft arranged in their respective journal boxes; suitable operative means connecting the wheel shaft with the crank shaft, and the cover arranged to close the upper part of the casing.

5. In a windmill the combination of a ring of the wheel formed of a thin band of metal having its greatest width arranged transverse the plate of the wheel, the wing support having its body curved to receive the wing and having one end arranged to form a short rearwardly projecting pivotal attaching arm, and having its other end arranged to form a rearwardly projecting wing supporting and adjusting bracket and provided with a series of holes arranged in the arc of a circle of which the pivotal point of the attaching arm is the center; the bolt arranged to pivot the attaching arm to the wheel ring and the bolt arranged to secure the supporting bracket to the wheel ring.

6. In a windmill, the combination of the vane provided with the upper and lower pivotal supports, and provided with a longitudinal slot arranged to allow longitudinal movement of one supporting member of the vane with relation to its respective pivotal support, and the vane operating rod pivoted to a fixed portion of the mill substantially at one side of the axis of the vane when the mill is thrown into the wind and having its other end attached to the vane.

7. In a windmill, the combination of the vane provided with the upper and lower pivotal supports, and provided with a longitudinal slot arranged to allow longitudinal movement of the upper supporting member of the vane with relation to the upper pivotal support, and the vane operating rod pivoted to a fixed portion of the mill substantially at one side of the axis of the vane when the mill is thrown into the wind and having its other end attached to the vane at a point intermediate the ends of the vane.

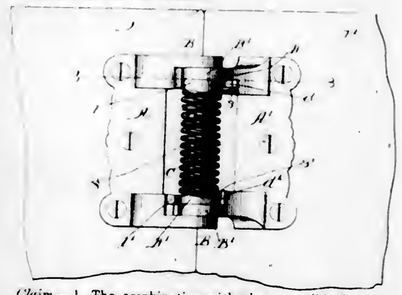
8. The crank connection comprising the combination of the opposing shaft ends provided respectively with a crank arm and a sprocket wheel; such sprocket wheel provided with a series of holes tapering toward the outside of the wheel and arranged respectively at varying distances from the center of the wheel, the crank pin having one end tapered to fit the tapering holes in the sprocket wheel and having its other end provided with a crank-pin-attaching plate having bolt holes therethrough and arranged to fit upon the crank arm; such crank arm provided with a series of bolt holes arranged with such relation to the holes in the crank-pin-plate and the holes in the sprocket wheel that when the bolts are shifted from one to another series of holes in the crank arm the crank pin will be respectively brought into different positions corresponding with one of the holes in the sprocket wheel.

9. In a windmill, the combination of the turn-table; the wrought metallic cylinder secured upon such turn-table and provided with openings arranged to receive the journal bearings; such journal bearings, two being arranged in the upper part of the cylinder upon opposite sides thereof to receive and journal the ends of the crank shaft, and respectively formed of an integral box having its inner end open and its outer end closed and provided near its mid-length with attaching lugs projecting from such box and arranged to fit upon and to be attached to the cylinder; and two boxes arranged in the lower part of the casing upon opposite sides thereof to receive and journal the wheel shaft, one of such boxes being closed at one end and open at the other and the other box being open at both ends, each box being integral and provided near its mid-length with attaching lugs projecting from the box and arranged to be attached to the cylinder; such crank shaft arranged in the upper journal boxes; the wheel shaft arranged in such lower journal boxes, a sprocket wheel secured upon the crank shaft; a sprocket wheel secured upon the wheel shaft; a sprocket chain arranged on such sprocket wheels, to communicate power from the wheel shaft to the crank shaft, and means for securing the boxes to the cylinder.

10. The crank connection comprising the combination of the opposing shaft ends provided respectively with a crank arm and a sprocket wheel; such sprocket wheel provided with a series of holes arranged respectively at varying distances from the center of the wheel; the crank pin having one end arranged to fit the holes in the sprocket wheel and having its other end provided with a crank-pin-attaching plate having bolt holes therethrough and arranged to fit upon the crank arm; such crank arm provided with a series of bolt holes arranged with such relation to the holes in the crank-pin-plate and the holes in the sprocket wheel that when the bolts are shifted from one to another series of holes in the crank arm the crank pin will be respectively brought into different positions corresponding with one of the holes in the sprocket wheel.

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**527,158.** SPRING-HINGE. HERBERT A. RIPPIEN, Freeport, Ill., assignor of one-half to David H. Bokhof, same place. Filed Apr. 11, 1893. Serial No. 469,875. (No model.)

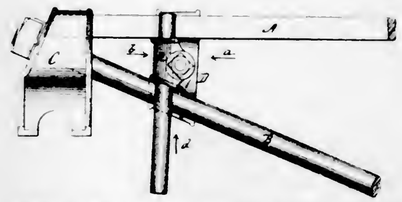


*Claim.*—1. The combination with the reversible leaves, A, A' provided with ears pivoted together to form knuckle joints, of the spring lying between the ears and the plates engaging the ends of the spring and adapted to press in opposite directions against each of the leaves, the pintle line of the hinge being out of the plane of the two leaves and the leaves being reversible and adapted to present either of their opposite faces to the surface of a door and its casing, whereby the spring may lie within the edge of a door or be projected from the face thereof.

2. The combination with the leaves, A, A', having ears, B, B, B', B', pivoted together to form knuckle joints, of the spring, S, and the plates, D, D', engaging the ends of the spring and formed with arms, *d*, *d*, and lugs, *l*, *l'*, respectively, the two arms being adapted to press in opposite directions against one leaf and the two lugs in opposite directions against the other leaf, and the leaves being reversible whereby the spring may lie either within or without the edge of the door; substantially as shown and described.

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**527,159.** FINGER-GUARD CLAMP FOR BRAKE-BEAMS. HENRY B ROBISCHUNG, Kalamazoo, Mich., assignor to the Chicago Railway Equipment Company, Chicago, Ill. Filed Feb. 7, 1894. Serial No. 499,407. (No model.)



*Claim.*—1. A finger guard clamp having a base plate and a clamp fold or ear adapted to hold a guard pin or finger; substantially as and for the purposes specified.

2. A finger guard clamp having a base plate provided with converging seats for the tension and compression members of a brake beam, and a fold or ear parallel to the base plate for holding a guard finger; substantially as and for the purposes specified.

3. A guard finger clamp having a base plate with raised center and converging seats for the compression and tension members of a brake beam, and a spring fold or ear parallel with the raised center of the base plate, the said fold or ear and raised center of the base plate having aligned bolt holes; substantially as and for the purposes specified.

4. A guard finger clamp having a base plate provided with guard finger lugs, and a parallel fold or ear, substantially as and for the purposes specified.

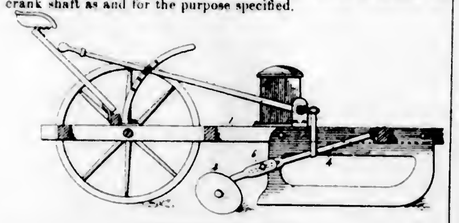
5. A guard finger clamp having a base plate with converging seats, guard finger lugs, and a parallel fold or ear, substantially as and for the purposes specified.

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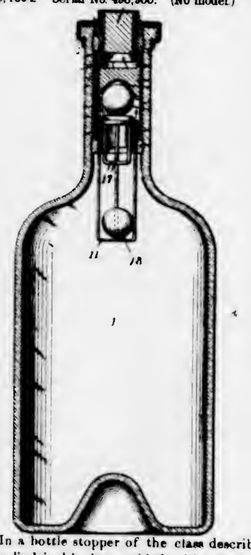
**527,160.** RIDGING ATTACHMENT FOR CORN-PLANTERS. LEROY RUNYAN, Iola, Kans. Filed Mar. 8, 1894. Serial No. 502,861. (No model.)

*Claim.*—1. In an attachment for corn planters, the combination with a swinging frame consisting of a cross bar integral with rearwardly extending arms, of diverging extremities secured together and adjustably attached to the said arms, and rotatable disks secured on said extremities as and for the purpose specified.

2. In an attachment for corn planters the combination with a swinging frame consisting of a cross bar integral with rearwardly extending arms, of diverging extremities secured together and adjustably attached to said arms, disks rotatably mounted on the extremities of a crank shaft connecting the arms and a lever operating the crank shaft as and for the purpose specified.



527,161. BOTTLE-STOPPER. CHARLES B. SCHOENMEHL, Waterbury, Conn., assignor of three-fourths to Victory L. Sawyer, same place. Filed Jan. 6, 1894. Serial No. 496,955. (No model.)



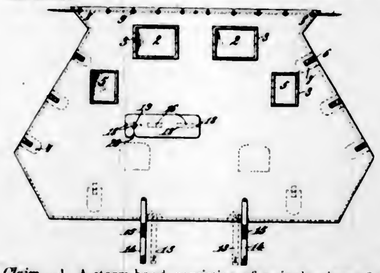
*Claim.*—1. In a bottle stopper of the class described, the combination with a cylindrical body provided with valve mechanism to prevent the refilling of the bottle, of an extension as shown formed integral with said body and whose outer diameter above the top of the bottle is less than that of the lower portion thereof, a flat shoulder formed upon the body flush with the top of the bottle neck, a thin metallic seal having a flat top, an opening therethrough and a downwardly projecting flange to be turned in under the rim of the neck of the bottle.

2. The combination in a bottle stopper, of the class described, of a cylindrical body having a reduced top and an opening therethrough, a thin metallic seal having an opening in its center adapted to fit around the extension and to be turned under the rim of the neck of a bottle, packing rings around the upper and lower portion of the body, a pair of loops 11 attached to the body and independent of the bottle for the purpose of retaining a ball.

3. In a bottle stopper of the class described, the combination with a cylindrical body having a reduced central opening in the top thereof, of a block within said body provided with lugs upon its sides forming fluid-passages between the block and body, a ball and valve arranged below the block and within the body, the U-shaped wire guides attached to the valve to permit of its free operation.

4. In a bottle-stopper, the combination with a seal of the class described, of a cylindrical body adapted to fit within the neck of a bottle and having a reduced end projecting up above the top of the bottle and through the seal, packing rings around the top and bottom of the body, a pair of loops attached to the lower end of the body, a block having fluid passages between it and the body, a ball and valve to allow the fluid to pass in one direction, the whole arranged for the purposes described.

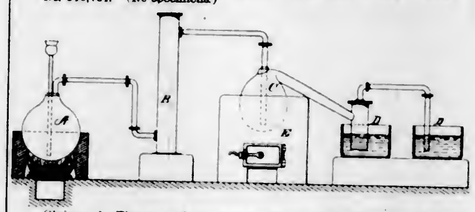
527,162. STORM-HOOD FOR TOP-CARRIAGES. ARTHUR W. SCIDMORE, Three Rivers, Mich. Filed Jan. 8, 1894. Serial No. 496,081. (No model.)



*Claim.*—1. A storm-hood consisting of a single piece of fabric and having parallel upper and lower edges, said hood being provided with lateral angular extensions, below which it increases in width to a point near the lower edge, and from said point decreases, the hood being provided with front and side lights and with suitable means for attachment, substantially as described.

2. The combination with a carriage-top, of a storm-hood having a series of eyeleted openings along its upper edge adapted to receive loops, or eyes, upon the carriage-top, a strip of suitable material attached at a single point to said upper edge; its ends passing through said loops, or eyes, a series of covered hooks attached along the diverging side-edges, and straps attached at, or near, the lower edge to draw the same over the dash-board, the upper edge of said hood being provided with angular, lateral extensions, and suitable lights being set in the front and sides, substantially as described.

527,163. PROCESS OF MAKING PHOSPHORUS. ARTHUR SHEARER and RALPH R. CLAPP, London, England. Filed May 10, 1894. Serial No. 510,781. (No specimens.)



*Claim.*—1. The manufacture or production of phosphorus from phosphate of alumina by subjecting phosphate of alumina to heat in the presence of hydrochloric acid gas, a metallic chlorid and carbon substantially as hereinbefore described.

2. In the manufacture or production of phosphorus, the improvement consisting in mixing ground or finely divided metallic chlorid and carbon, and calcined phosphate of alumina, and subjecting them to heat in a closed vessel or retort in the presence of dried hydrochloric acid gas, substantially as hereinbefore described.

527,164. ROLLER-SKATE. JOHAN A. SEGERBERG, Denver, Colo. Filed July 6, 1894. Serial No. 516,781. (No model.)

*Claim.*—1. A roller skate consisting of two wheels set at angles to one another, their rims touching each other at their point of contact with the ground.

2. A roller skate consisting of two wheels set at angles to one another, their rims touching each other at their point of contact with the ground, in combination with means for adjusting the distance between said wheels.

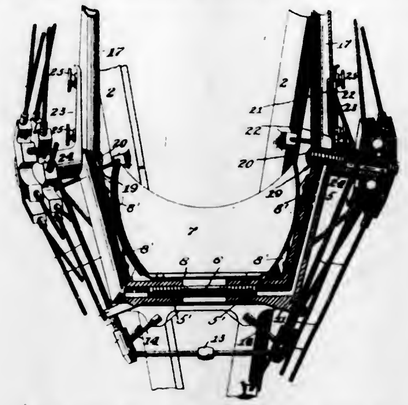
3. A roller skate consisting of two wheels set at angles to one another, their rims touching each other at their point of contact with the ground, and of an intermediate foot-support arranged below the axle.

4. In a roller skate, the combination with the axle having its opposite ends inclined downward, and having a depressed central portion, of the wheels mounted on the inclined ends of the axle outside of the depressed portion thereof, means for adjusting said wheels toward and from one another, and a foot-support mounted on the depressed central portion of the axle.

5. A roller skate consisting of two wheels set at angles to one another, their rims touching each other at their point of contact with the ground, and provided with two rubber tires so constructed as to be interchangeable.



6. A roller skate consisting of two wheels set at angles to one another, their rims touching each other at their point of contact with the ground, and provided with two rubber tires so constructed as to be interchangeable, means for adjusting the distance between the wheels, and an intermediate foot-support arranged below the axle.



7. In a roller skate, the combination of the wheels, the axle formed in two sections each provided at its inner end with a depending portion provided with a screw-threaded bore, the tie-bar having oppositely screw threaded ends fitting the respective screw-threaded bores, and the foot-support mounted on the depending portions of the axle.

8. In a roller skate, the combination of the axle having a depressed central portion, the wheels mounted on the ends of the axle outside the depressed central portion thereof, the foot-support mounted on the depressed portion of the axle, a tie-rod extending down from each end of the axle outside the depressed portion thereof, screw-couplings mounted on the lower ends of said tie rods below the depressed central portion of the axle, and a tie-bar connecting the respective screw-couplings.

9. In a roller skate, the combination of the axle having a depressed central portion, the wheels mounted on the ends of the axle outside the depressed portion thereof, the foot-support mounted on the depressed portion of the axle, tie-rods secured to the ends of the axle outside the depressed portion thereof, screw-couplings mounted on the lower ends of said tie-rods below the depressed portion of the axle, brace rods extending from said screw-couplings to the toe and heel-portions of the foot-support, and a tie-bar connecting the respective screw-couplings.

10. The combination of two wheels arranged to rotate in planes at angles to one another and tires mounted on said wheels and each provided with two plane surfaces arranged at angles to one another, the correspouding surfaces on the respective tires being arranged at corresponding angles, whereby when the tires are in position on the wheels, two of said surfaces will be contact.

11. The combination with the axle having downwardly inclined ends, of the wheels mounted on the inclined ends of the axle; the adjacent faces of the wheel rims being in contact, one of said rims having an annular concentric groove and the other rim having an annular concentric rib engaging said groove.

12. A roller skate comprising the foot-support 7 intermediate the wheels 1, and provided with the adjustable ankle braces 17, carrying the adjustable ankle pads 15, and pivotally supported by the ends 4 of the axle.

13. In a roller skate, the combination of the axle, the wheels mounted thereon, sleeves collared on said axle between the wheels and provided with slotted tongues, the supporting rods having on their inner sides perforated lugs secured to the axle, and clamp screws for clamping said supporting rods to the slotted tongues on the sleeves.

14. The combination with the wheels arranged to rotate in planes at angles to one another and having grooved rims provided with contacting surfaces one having a concentric groove and the other having a concentric rib engaging said groove, of the tires mounted on the grooved rims and having in cross section a triangular form with plane inner contacting surfaces.

527,165. HEDDLE FOR LOOMS. HERMANN VOGELSANG, Dülken, Germany, assignor to the Gibbs Loom, Harness and Reed Company, Clinton, Mass. Filed Feb. 12, 1894. Serial No. 499,874. (Model.)

*Claim.*—A wire heddle formed of parallel strands of wire soldered together, and having a central thread-receiving eye, the heddle being formed with twisted portions at each side of said eye, and having end loops or eyes which are formed by twisting the ends of the parallel wires back and around the body portion of the heddle, substantially as described.



527,166. RELOADING CARTRIDGE-HOLDER. ARTHUR J. WATSON, Mean Meer, India. Filed July 3, 1894. Serial No. 516,518. (No model.)



*Claim.*—1. In apparatus for loading the chambers of revolvers or like fire-arms the combination with a cylinder or holder for the reception of cartridges, from which the latter are fed to the fire arm to be loaded of a rotatable plate or cover secured to said cylinder or holder and means for rotating said plate or cover to different positions to lock or release the cartridges in said cylinder or holder, substantially as described.

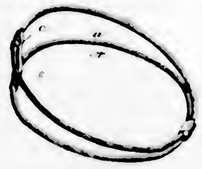
2. In apparatus for loading the chambers of revolvers or like fire arms the combination with a cylinder or holder having chambers or recesses for the reception of cartridges, corresponding in number with, and from which the cartridges are fed to the chambers in the revolver to be loaded, of a plate or cover secured to one end of the cylinder or holder and having under-cut projections thereon to engage the rims of the cartridges when in position in the holder; and means for partially rotating the cover plate to cause the projections to engage or disengage as required, the rims of the cartridges substantially as hereinbefore described.

3. The combination with the cylinder or holder for the cartridges and a rotatable plate or cover secured to one end of said cylinder or holder and adapted to be rotated in opposite directions to respectively lock the cartridges in said cylinder or holder and release the same, of a case for said parts having a bayonet slot therein and a stud on the cylinder or holder adapted to engage said slot for securing the case, said stud and slot being so arranged that the movement required to disengage the same is in a direction which insures the locking of the cartridges in the cylinder or holder by the plate or cover, substantially as described.

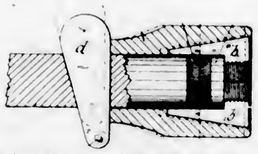
527,167. MAST-HOOP. WILLIAM R. BAKER, Watertown, N. Y. Filed May 9, 1894. Serial No. 510,651. (No model.)

*Claim.*—1. As a new article of manufacture a mast hoop having two rear isolated or diverging bearing surfaces or points upon the mast, substantially as sent forth.

2. As a new article of manufacture, a mast or sail hoop consisting of a single or continuous piece coiled or curved toward the rear into two diverging circles or coils from a single point at the front, with the ends thereof clasped or secured upon the intermediate body portion, substantially as set forth.

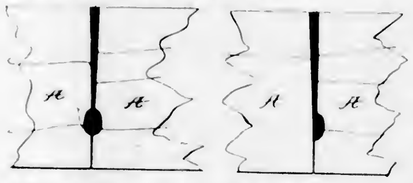


527,168. NIPPLE-HOLDER. GEORGE F. BARD, Norwich, Conn. Filed Apr. 21, 1894. Serial No. 508,549. (No model.)



*Claim.*—A nipple holder consisting of a shank squared adjacent one end as at $a'$, a set of cone-shaped jaws each being chambered at each end and having an intermediate portion as $b^4$ formed to engage said shank as set forth, a collar mounted to slide on said jaws and a device substantially as described for moving said collar to close the jaws.

527,169. CALKING VESSELS. ALFRED J. BROOKS, Chester, Pa. Filed Jan. 30, 1894. Serial No. 498,480. (No model.)



*Claim.*—The combination of two planks having coincident chamfered and grooved edges and fibrous material packed into the space formed by the chamfers and grooves, substantially as described.

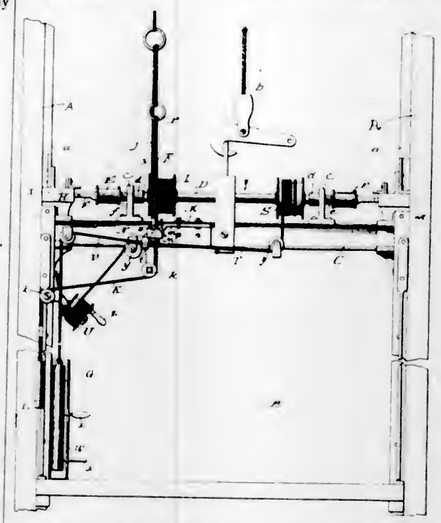
527,170. SUSPENDER-BUCKLE. WILLIAM L. DORAN, Niagara, Canada. Filed July 12, 1894. Serial No. 517,336. (No model.)



*Claim.*—1. A buckle frame made from a piece of wire and composed of the lower side *c*, and upper side *f*, connected by two ends *d*, and having the bearings *e*, above the upper side, in combination with a clamp made from a piece of wire and pivoted in the bearings *e* of the frame and composed of a lower side *h*, and an upper side *k*, connected by ends *i*, and having the portions *j*, between the upper side *k*, and ends *i*, substantially as specified.

2. In a buckle, the combination with a frame made from a piece of wire and composed of the lower side *c*, an upper side *f*, connected by the two ends *d*, and having the hook depending from the lower side and bearings *e*, above the upper side; of a clamp made from a single piece of wire and composed of the lower side *h*, shaped to form a tongue or finger and an upper side *k*, connected by ends *i*, and having the portions *j*, journaled in the bearings *e*, of the frame, substantially as specified.

527,171. SAFETY DEVICE FOR ELEVATORS. FREDERICK T. ELLITHORPE, Newark, N. J. Filed July 3, 1894. Serial No. 516,459. (No model.)



*Claim.*—1. In an elevator, the combination of a car, standards or guides therefor, a rotary shaft carried by the car a drum S on said shaft, devices adapted to be forced into engagement with the standards or guides by the rotation of the shaft in one direction, a drum arranged in the car, and a rope or chain connecting said drum in the car and the drum on the rotary shaft, substantially as and for the purpose set forth.

2. In an elevator, the combination of a car, a rotary shaft carried by the car a drum I on said shaft, a cable wound on the drum I of the rotary shaft, a keeper mounted on the car, a connection intermediate of the cable and the keeper, and devices under the control of the elevator conductor connected with and adapted to normally retain the keeper in engagement with the connection intermediate of the same and the cable, substantially as and for the purpose set forth.

3. In an elevator the combination of a car, a rotary shaft carried by the car a drum I, on said shaft, a cable wound on the drum I of the rotary shaft, a keeper mounted on the car, a connection intermediate of the cable and the keeper, and a weight connected with the keeper and adapted to normally retain the keeper in engagement with the connection intermediate of the same and the cable; said weight being so arranged that it may be raised by the elevator conductor to release the connection from the keeper, substantially as specified

4. In an elevator, the combination of a car, a rotary shaft carried by the car drums I, S, on said shaft a drum arranged in the car, a rope or chain connecting said drum in the car and the drum S, so that the shaft may be rotated in one direction by a person within the car, a cable J, wound on the drum I, of the rotary shaft, a keeper mounted on the car, a connection intermediate of the cable and the keeper and devices under the control of the elevator conductor connected with and adapted to normally retain the keeper in engagement with the connection intermediate of the same and the cable, substantially as specified.

5. In an elevator, the combination of a car, a rotary shaft carried by the car drums I, S, on said shaft a drum arranged in the car, a rope or chain connecting said drum in the car and the drum S, so that the shaft may be rotated in one direction by a person within a car, a cable J, wound on the drum I, of the rotary shaft, a keeper mounted on the car, a weight as L, and rope or chain connecting the weight L, and the cable and adapted to be engaged and normally retained by the keeper, substantially as specified.

6. In an elevator, the combination of a car, a rotary shaft carried by the car drums I, S, on said shaft a drum arranged in the car and connected by a rope or chain with the drum S, a cable J, wound on the drum I, of the rotary shaft, a keeper mounted on the car, a weight L, a rope or chain connecting the weight L, and the cable and adapted to be engaged by the keeper, and a weight Q, connected with the keeper and adapted to normally retain it in engagement with the rope or chain between the cable and the weight L; said weight Q, being so arranged in the car as to be under the control of the conductor, substantially as specified.



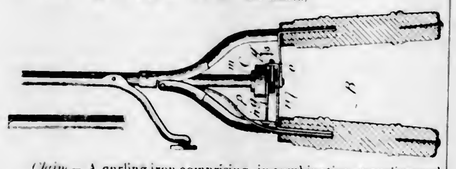
7. In an elevator the combination of a car, a rotary shaft carried by the car a drum I, on said shaft a cable J, wound on the drum I, a weight as L, a rope or chain connecting the weight and the cable, and provided with a ring, a keeper member M, carried by the car and comprising a spring plate and a head having the upper grooved portion and the lower beveled portion, a pivoted keeper member N, arranged adjacent to the keeper member M, and having its lower portion weighted and its upper portion beveled or inclined, and a suitable means for normally holding the keeper member N, against the keeper member M, so as to enable the two to retain the ring, substantially as specified.

8. In an elevator, the combination of a car, a rotary shaft carried by the car a drum I, on said shaft a keeper member M, carried by the car and comprising a spring plate and a head having the upper grooved portion and the lower beveled portion, a pivoted keeper member N, arranged adjacent to the keeper member M, and having its lower portion weighted and its upper portion beveled or inclined, a suitable means for normally holding the member N, against the member M, a cable J, wound upon the drum I, and a cord or chain connected to said cable and carrying a device adapted to be engaged and normally retained by the keeper members M, N, substantially as specified.

9. In an elevator, the combination of a car, a rotary shaft carried by the car, a wheel or drum S, on said shaft, devices adapted to be forced into engagement with the standards or guides by the rotation of the shaft in one direction, a wheel or drum arranged in the car, and a connection between the wheel or drum in the car and the wheel or drum on the shaft, substantially as specified.

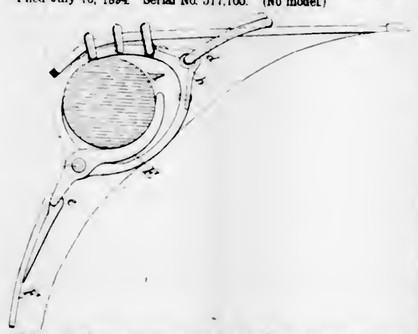
10. In an elevator, the combination of a car, a rotary shaft carried by the car, a drum I, on said shaft, a cable wound on the drum of the rotary shaft, a keeper mounted on the car, and devices under the control of the attendant and adapted to normally enable the keeper to hold the cable, substantially as specified.

527,172. CURLING-IRON. ROBERT FRIEDEL, Chicago, Ill. Filed June 9, 1894. Serial No. 514,012. (No model.)



*Claim.*—A curling iron comprising, in combination, a curling-rod A having pivotally supported on it a spring-controlled jaw-piece A', a handle-portion *r* having pivotally connected with it a spring controlled handle-portion *q* and provided with bearings *l* and *o* in which the rod is journaled, a clutch-device C on the rod, comprising the rigid member *m* and the loose yielding member *l* provided with the sleeve *k*, a finger *n* extending from said spring-controlled handle-portion, a cord *g* connecting said yielding handle portion with the sleeve to wind thereon by its rotation in one direction, and a cord *f* connecting said finger with the sleeve to wind thereon by its rotation in the opposite direction, substantially as described.

527,173. SHAFT-TUG. JAY D. HARRIGAN, Gouverneur, N. Y. Filed July 10, 1894. Serial No. 517,105. (No model.)

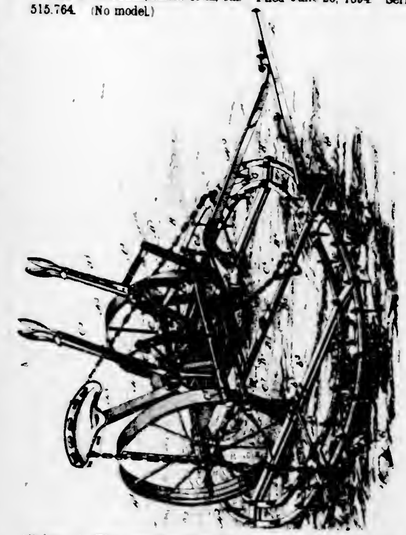


*Claim.*—1. The combination with the shaft tug, formed of a closed ring, of a lever pivoted intermediate of its length to the lower side of the tug, a loop in the lower end of said lever, and a strap connected with said loop, as and for the purpose set forth.

2. The combination with the shaft tug, formed of an irregular shaped ring, of a lever pivoted intermediate of its length to the lower side of the tug and having its upper end curved to lie with its concave side against the shaft, a loop in the lower end of said lever, and a strap connected with said loop, as and for the purpose described.

3. The combination with the gig-saddle and the shaft-tug, formed of an irregular metallic closed ring, of a lever pivoted intermediate of its length to the lower side of the tug and having its upper end curved and bifurcated to lie on opposite sides of the said tug, means to secure the tug to the gig-saddle, and a loop in the lower end of the lever to receive a connection, as set forth.

527,174. COMBINED SULKY HARROW AND CULTIVATOR. THOMAS J. HUBBELL, Santa Cruz, Cal. Filed June 26, 1894. Serial No. 515,764. (No model.)



*Claim.*—1. The combination with a sulky, of an open harrow frame formed in sections adapted to swing vertically and suspended in a horizontal plane from and inclosing said sulky, and a tension mechanism mounted on the sulky separate and independent of the suspension mechanism and loosely engaging sections of the harrow frame at opposite sides of the sulky to enable it to be moved out of engagement with said sections when they are to be raised or have free movement, substantially as set forth.

2. The combination with the sulky and the harrow or cultivator suspended therefrom, of a rock-shaft on the sulky provided with depending spring arms engaging the said frame, with their lower free ends said lower ends being disconnected from the harrow and adapted to be swung upwardly therefrom without affecting the suspension devices, substantially as herein described.

3. The combination with the sulky and the sectional harrow or cultivator frame suspended therefrom, of a rock-shaft on the sulky and provided with spring arms engaging the said sections, with their lower free ends; said lower ends being disconnected from the harrow and adapted to be swung upwardly therefrom without affecting the suspension devices, substantially as herein described.

4. The combination with the sulky and the longitudinal central bar suspended threfrom and provided at opposite sides with vertically swinging harrow or cultivator sections, of a transverse rock-shaft on the sulky and having downwardly and rearwardly extending arms bearing on said sections, with their lower free ends; said lower ends being disconnected from the harrow and adapted to be swung upwardly therefrom without affecting the suspension devices, substantially as herein described.

5. The combination with a sulky having a forwardly extending reach, a longitudinal central bar suspended beneath the sulky, and a tongue to which said reach and bar are connected, of frame sections hinged to said bar, and a tension or weighing mechanism carried by the sulky separate and independent of the suspension mechanism and loosely engaging the said frame sections to hold them down said tension or weighting mechanism being movable upwardly out of engagement with the frame sections, substantially as herein described.

6. The combination with a sulky having a forwardly extending reach, a longitudinal central bar suspended beneath the sulky, a

tongue to which the reach and bar are connected, and the frame sections hinged to said bar, of a rock-shaft on the sulky provided with spring arms bearing loosely at their lower free ends on the said sections and provided with an operating mechanism for throwing them down into engagement with and raising them away from said frame sections, substantially as herein described.

7. The combination with the sulky, having transverse rock-shafts thereon provided with operating levers, and chains depending from one of said shafts, of a sectional harrow or cultivator frame suspended from said chains, and spring arms extending down from the other rock-shaft and bearing loosely on said frame sections whereby said arms may be swung up away from the frame sections, substantially as herein described.

8. A weighting or tension mechanism for harrows or cultivators comprising a rock-shaft, spring arms projecting therefrom and each having parallel flanges on its lower end, and mechanism for rocking the shaft, substantially as herein described.

9. A harrow frame divided longitudinally and transversely into four hinged sections, and a central bar forming the longitudinal axis of said sections, and formed of two sections hinged in alignment with the transverse hinging points of said frame sections, substantially as herein described.

10. A circular harrow frame comprising a sectional hinged central bar, side frame sections hinging thereon at their opposite ends and each formed of two transversely divided sections having braces also hinged, the transverse hinges of the sections aligning with the hinge of the central bar, substantially as herein described.

11. A harrow frame comprising a central round bar, and harrow frame sections, each provided with round eyes at their opposite ends through which the bar freely passes, and stops to prevent the eyes from longitudinal movement, along the bar, substantially as herein described.

12. The combination with the sulky having a round bar longitudinally and centrally therebelow, frame sections having round eyes to slip on and off of the round bar and mechanism on the sulky connected with said bar and sections for raising and lowering them substantially as herein described.

13. The combination with the sulky having a forwardly extending reach and a tongue connected therewith, of a round central longitudinal bar having an apertured bracket at its forward end to which the rear end of the tongue is pivoted, hinged frame sections having eyes passed upon the bar, stops on the bar to prevent rearward movement of the eyes, and mechanism on the said sulky connected with the frame sections for simultaneously raising and lowering them, substantially as herein described.

14. The combination with the sulky having a forwardly extending reach, and a tongue pivoted thereto near its rear end, of a central longitudinal round bar pivoted at its forward end to the rear end of the tongue, semi-circular frame sections having eyes passed upon the bar, stop pins on the bar to prevent rearward movement of the eyes, and mechanism on the sulky for raising and lowering the bar and sections hinged thereon, substantially as herein described.

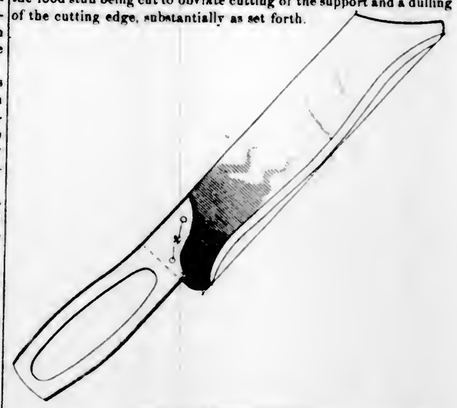
15. The combination, with the sulky having a reach and a tongue pivoted thereto near its rear end, of a central longitudinal bar in two hinged sections and pivoted at its front end to the rear end of its tongue, transversely divided semi-circular frame sections having eyes at their opposite ends through which the bar freely passes, stops to prevent longitudinal movement of said eyes; the members of said frame sections being hinged at their abutting ends in alignment with the hinge of the said bar and mechanism on the said sulky for raising and lowering the said bar and frame sections, substantially as herein described.

16. A sulky harrow comprising the sulky proper having two transverse rock-shafts, the operating levers of which are at opposite sides of the driver's seat, a forwardly extending reach to which the tongue is pivoted near its rear end, a longitudinally and transversely jointed circular harrow having a jointed bar pivoted at its front end to the rear end of the tongue, chains extending down from one rock shaft to the harrow sections and bar, and spring arms extending from the other rock-shaft and bearing on the harrow frame, substantially as herein described.

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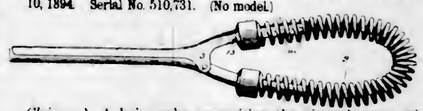
**527,175. BREAD OR CAKE KNIFE.** JOSEPH W. HURD, Belvidere, Ill. Filed Nov. 2, 1893. Serial No. 489,849. (No model.)

*Claim.*—The herein-described bread and cake knife having a blade provided with front and rear rounded blunt or unsharpened toe and heel portions at the lower front and rear corners thereof, the outer edges of said toe and heel portions being in the same longitudinal plane and adapted to come in sliding contact with the support for the foodstuff being cut, and a compoundly curved and beveled cutting edge formed between the rounded toe and heel portions the widest point of the portion of the blade provided with said cutting edge being located at a central point of the blade and above the plane of the blunt or unsharpened toe and heel portions thereof whereby said cutting edge will be prevented from coming in contact with the support for the food stuff being cut to obviate cutting of the support and a dulling of the cutting edge, substantially as set forth.



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**527,176. CURLING-IRON.** CHARLES H. JOHNSON, Derby, Conn., assignor of one-third to James R. Brinsmade, same place. Filed May 10, 1894. Serial No. 510,731. (No model.)

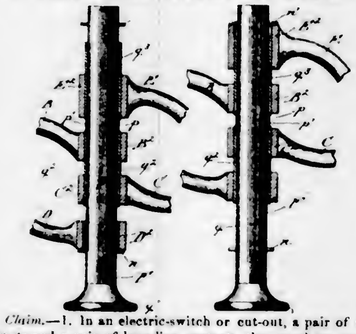


*Claim.*—1. A hair curler comprising the pivoted arms, spiral spring handle and the ferrules, the ends of said spiral spring embracing the ends of the arms and the said ferrules being arranged on said arms, and inclosing the said spring ends, substantially as described.

2. A hair curler comprising the pivoted arms one of which is solid and the other formed of sheet metal bent into channel form, the spiral spring handle, fitting on the arms and ferrules covering the ends of the spiral spring, the said sheet metal arm having a lug bent from its edge between the coils of the wire to hold the spring to said sheet metal arm, substantially as described.

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**527,177. ELECTRIC SWITCH.** RAYMOND S. KELSCH, Chicago, Ill. Filed May 28, 1894. Serial No. 512,768. (No model.)



*Claim.*—1. In an electric-switch or cut-out, a pair of main-line contacts and a pair of loop-line contacts, the members constituting one said pair being adjacent to each other and intermediate of the other said pair, and a sliding switch-bar provided with longitudinally extending conducting surfaces separated from each other by an insulating space, the bar being mounted to move between positions, wherein it extends at its insulating space at opposite sides of one of the said intermediate contacts, whereby in one position it engages with one of its conducting surfaces the two intermediate contacts, and in the other position each of its conducting surfaces engages an intermediate and an outer contact, substantially as and for the purpose set forth.

2. In an electric-switch or cut-out, the combination of a support, a pair of loop-line conductors, and a pair of main-line conductors, secured to the support, the members constituting one of said pairs being adjacent to each other and intermediate of the other said pair, and all the conductors presenting contact openings in line with each other, and a switch-bar extending through said openings, having conducting surfaces separated by an insulating space, the bar being movable in the said openings, to operate substantially as described.



3. In an electric-switch or cut out, the combination of a support, a pair of conductors terminating in contact tube sections $D^2$ and $E^2$, a pair of conductors terminating in contact tube-sections $B^2$ and $C^2$ intermediate of and in line with the contacts $D^2$ $E^2$, one said pair being loop-line conductors and the other said pair main-line conductors, and a switch-bar F extending through said tube-sections, having conducting surfaces $q^2$ $q^3$ separated by an insulating space $p$, the bar being movable in the said tube-sections, to operate substantially as described.

4. In an electric switch or cut-out, the combination with the support, of loop contact tube sections, main-line contact-tube sections intermediate of the said loop contacts, and a sliding switch-bar movable in the said tube-sections and having conductor surfaces, separated by an insulating space, and fitting the said tube-sections, the bar being movable in the tube section contacts between positions wherein it extends at its insulating-space at opposite sides of one of the said main-line contacts, whereby in one position it engages with one of its conducting surfaces the two main-line contacts, and in the other position each of its conducting surfaces engages a main-line and a loop contact, substantially as described.

5. In an electric switch or cut-out, the combination of a support, loop-line conductors D and E, and main-line conductors B and C, secured to the support, the main-line conductors being intermediate of the loop conductors, all the conductors presenting contact openings in line with each other, and a switch-bar F extending through said openings, having conducting surfaces $q^2$ $q^3$ separated by an insulating space, $p$, the bar being movable in the said openings, to operate substantially as described.

6. In an electric switch or cut-out, the combination of a support, loop-line conductors terminating in contact tube-sections $D^2$ and $E^2$, main-line conductors terminating in contact tube-sections $B^2$ and $C^2$ intermediate of and in line with the contacts $D^2$ $E^2$, and a switch-bar F extending through said contacts and provided with ferrules $q^2$ $q^3$, affording conductors fitting the contacts, and separated by an insulating space $p$, the bar being movable in said contacts, to operate substantially as described.

7. In an electric-switch or cut-out, the combination of a support, a pair of conductors, terminating in contact tube-sections $D^2$ and $E^2$, a pair of conductors terminating in contact tube-sections $B^2$ and $C^2$, intermediate of and in line with the contacts $D^2$ $E^2$, one said pair being loop-line conductors and the other said pair being main-line conductors a switch-bar F, extending through said contacts, and comprising a body portion $q$ of insulating material, split-spring contact ferrules $q^2$ and $q^3$ of conducting material on the body portion, and separated by an insulating space $p$, and stops on the switch-bar, the bar being movable in said contacts a distance limited by engagement of the said stops with stops on the support, to operate substantially as and for the purpose set forth.

8. In an electric-switch or cut-out, the combination of a support, a pair of conductors terminating in contact tube-sections $D^2$ and $E^2$, one said pair being loop-line and the other said pair being main-line conductors a pair of conductors terminating in contact tube-sections $B^2$ and $C^2$ intermediate of and in line with the contacts $D^2$ $E^2$, and a switch-bar F extending through said contacts and provided with ferrules $q^2$ $q^3$, affording conductors fitting the contacts, and separated by an insulating space $p$, provided with a covering $p'$ of incombustible and non-conducting material, the bar being movable in said contacts, to operate substantially as described.

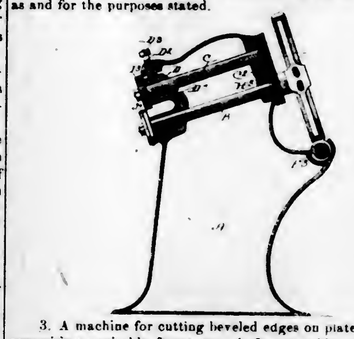
9. A cut-out for electric circuits comprising, in combination, a support, a pair of binding-posts D' E' communicating with contact tube-sections $D^2$ $E^2$, a pair of binding-posts B' C', communicating with contact tube-sections $B^2$ $C^2$, the contacts $B^2$ $C^2$ being intermediate of and in line with the contacts $D^2$ $E^2$, and a sliding switch-bar F, extending through said contacts, comprising a body-portion $q$ of insulating material, split spring contact-ferrules $q^2$ and $q^3$ of conducting material fastened upon the said body-portion and separated by an insulating space $p$, and stops limiting the movement of the switch-bar, the whole being constructed to operate substantially as described.

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**527,178. MACHINE FOR CUTTING BEVELED EDGES ON PLATE METAL.** DAVID LENNOX, Marshalltown, Iowa. Filed June 18, 1894. Serial No. 514,999. (No model.)

*Claim.*—1. A machine for cutting beveled edges on plate or sheet metal, comprising two parallel shafts rotatably mounted in a suitable frame, the one above the other, means for driving the shafts, a disk attached to the end of the upper shaft and having a cutting edge on its outer periphery and a disk on the lower shaft with a cutting edge on its inner periphery in approximate alignment with the aforesaid cutting edge and having its periphery inclined outwardly from said cutting edge divergent relative to the axis of the disk, for the purposes stated.

2. A machine for cutting beveled edges on plate or sheet metal, comprising a suitable frame, two parallel, rotatable shafts in vertical alignment and inclined downwardly toward the front of the frame, means for driving said shafts in opposite directions, a disk fixed to the forward end of the upper shaft having a cutting edge on its outer periphery, a disk fixed to the lower shaft having a cutting edge on its inner periphery in approximate alignment with the cutting edge of the upper disk, and having a horizontal top surface, substantially as and for the purposes stated.

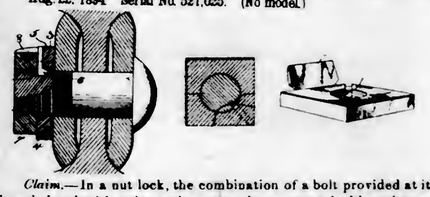


3. A machine for cutting beveled edges on plate or sheet metal comprising a suitable frame two shafts rotatably mounted therein, means for driving said shafts in opposite directions and a cutting disk having a beveled periphery fixed to the shaft and a second cutting disk having an angular forward edge on the periphery fixed to the shaft with said angular edge in close proximity to the inner edge of the beveled disk and an anti-friction roller located in the rear of said cutting disk and means for adjusting the same relative to the disks, for the purposes stated.

4. A machine for cutting beveled edges on plate or sheet metal comprising a suitable frame, two shafts rotatably mounted therein the one above the other and extended at an incline downwardly toward the front of the machine, means for vertically adjusting the upper shaft a cutting disk having a beveled periphery fixed to the lower shaft, a cutting wheel having a flat periphery fixed to the top shaft, a shaft rotatably mounted in the rear end of the machine frame, a belt wheel slidingly but non-rotatably mounted therein, a clutch for throwing said wheel in or out of gear, a worm formed on or fixed to said shaft, a gear wheel in mesh with said worm and fixed to one of the aforesaid shafts, two gear wheels in mesh with each other and fixed to said shafts and a tube fixed to the side of the machine frame, a bar slidingly but non-rotatably mounted therein and having a bifurcated end, a roller mounted on said end, a shaft rotatably but non-slidingly mounted in the opposite end of said tube and connected with said bar, and a hand wheel on the outer end of said shaft for the purposes stated.

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**527,179. NUT-LOCK.** THOMAS J. LITZINGER, Patton, Pa. Filed Aug. 22, 1894. Serial No. 521,025. (No model.)



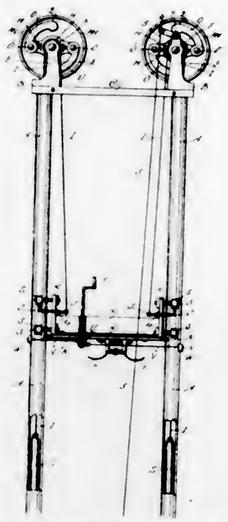
*Claim.*—In a nut lock, the combination of a bolt provided at its threaded end with a depression or socket, a nut, a locking plate or washer provided with an L-shaped seat consisting of a recess arranged at the front of the plate or washer and extending inward at the bolt-opening thereof, said plate or washer being provided at one of its edges with a flexible wing or flange extending outward and adapted to be bent against the adjacent edge of the nut, and an L-shaped key arranged in the seat of the locking plate or washer and interposed between the same and the nut, and provided at its inner end with an oppositely-beveled tooth engaging the depression or socket of the bolt, substantially as described.

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**527,180. AUTOMATIC FIRE-ESCAPE.** ISAAC MILLS and JOHN YOUNGSON, Hamilton, Canada. Filed Jan. 5, 1894. Serial No. 495,841. (No model.)

*Claim.*—1. The combination of the vertical tubes A, provided at their upper ends with rigid collars, B, having vertical standard bear-

ings E, and cross braces C, the shafts F, cable pulleys H, cables I, with weights L, circular casings M, the cross arms N, secured to said shafts with friction governors O, pivoted at O', thereto, and the receptacle K, provided with guide rollers S, substantially as and for the purpose hereinbefore set forth.

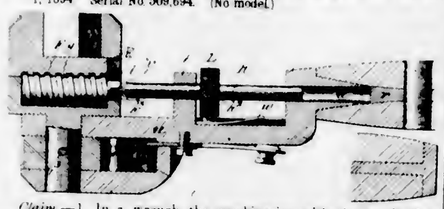


2. The combination of the vertical tubes A, having upper collars B, with standards E, and casings M, the cross braces C, the through shafts F, with cable pulleys H, and cables I, the cross arms N secured to said shafts and the friction governors O, pivoted thereto, the receptacle K having guide rollers S, and inner guides R, the vertical lever T, applied to eccentrics U, rods V, and outer clips W and the independent cable 5, attach to lever of friction arm 6, substantially as and for the purpose hereinbelore set forth

3. In an automatic fire escape, the sliding receptacle K, having guide rollers S, guides R, vertical tubes A, the brake lever T, supplied with the eccentrics U, rods V, and outer clips W, the ground cushion spring X, in combination with the described rotary mechanism in castings M located on top of said tubes, substantially as and for the purpose hereinbefore set forth.

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527,181. WRENCH. FRANK W. NELSON, Chicago, Ill. Filed May 1, 1894. Serial No. 509,694. (No model.)



*Claim.*—1. In a wrench, the combination with the stock of a rotary jaw-head B having the fixed jaw D and recessed to afford a guide extending entirely through it for the extension of the movable jaw, and also to afford a housing below the guide for the adjusting-screw, the walls of said housing forming the bearings for the adjusting-screw; movable jaw D', having the extension E sliding in said guide, and made concave and screw-threaded on its under surface, screw F housed in the recess in the jaw head below the guide, and engaging with the screw threads on the extension E of the movable jaw, means on the stock for turning the screw, and pawl and ratchet mechanism for turniog the jaw-head, substantially as described.

2. In a wrench, the combination with the stock of the rotary jaw head B carrying the fixed jaw D, and having extending through it a guide recess for the movable jaw, deepened between its ends to serve as a housing for the adjusting screw, movable jaw D' having at a right angle to it the screw-threaded extension E sliding in the guide recess in the jaw-head, adjusting-screw F, housed within the jaw-head below the guide and engaging with the extension E, extension *k* of said screw projecting through an opening in the housing and provided with a recess *i*, sliding and rotary shaft K mounted in bearings on the stock in line with the extension *k*, and provided with the disk L and with the beveled end *e* to enter the recess *i* for adjusting the movable jaw D', and pawl and ratchet mechanism for turning the jaw-head, substantially as described.

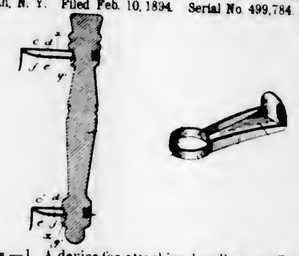
3. In a wrench, the combination with the stock provided on its under side with recesses *b*, and having the upper plate *u*, lower plate *p* and recessed projection *q*, of the ratchet-disk C, between the plates *u* and *p* and rigidly fixed to a rotary shaft *o* journaled in said plates, jaw-head B also rigid upon the shaft *o* and carrying the fixed jaw D and movable jaw D' with means for adjusting the latter, spring pawls G pivoted in the projection *q* of the stock and normally engaging the ratchet disk on opposite sides of the center thereof, projections *d* at the inner edges of the pawls G, and spring lever I, pivoted upon the stock and provided with prongs *e* to engage the projections *d*, and with a lug *c* to enter the recesses *b*, substantially as described.

4. In a wrench, the combination with the stock of the rotary jaw-head B, having extending through it a recess provided with side channels *l* and carrying a fixed jaw D, movable jaw D' having the extension E provided with ribs *m* fitting the channels *l* and concave on its under side and provided with female screw-threads *y*, screw F, engaging the screw threads of the extension E, and having the journal-like extension *k* provided with a recess *i*, rotary sliding shaft K mounted in bearings on the stock and carrying the disk L for operating the screw F to adjust the movable jaw D', and pawl and ratchet mechanism for turning the jaw-head, substantially as described

5. In a wrench, the combination with the movable jaw D' and screw F for adjusting it, of the sliding and rotary shaft K supported in projections upon the stock in line with the screw and carrying the disk L, and a spring *w* on the stock for engaging the disk L, substantially as described

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527,182. COFFEE OR TEA POT HANDLE. ORMEL W. PIERCE, Olean, N. Y. Filed Feb. 10, 1894. Serial No. 499,784. (No model.)



*Claim.*—1. A device for attaching handles to coffee pots, consisting of two sections of sheet metal, one of which is provided with a lug for attaching to the vessel and with two arms adapted to encircle the handle, and the remaining section being secured to the first at the part between the arms and lug, substantially as described

2. A device for attaching handles to coffee and tea-pots, consisting of two sections of sheet metal, one of which is provided with longitudinal flanges, a lug for attaching to the vessel and two arms adapted to encircle the handle and having studs on their ends which are arranged to enter the handle thus securing it, and the remaining section being secured to the longitudinal flanges of the first, substantially as described.

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527,183. TOP-PROP FOR BUGGIES. LEWIS C. POLLARD, Waterville, Me. Filed July 14, 1894. Serial No. 517,555. (No model.)

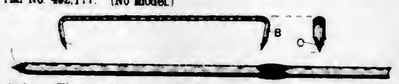


*Claim.*—1. The combination with the cylinder A, having the groove *a*, and longitudinal slot *a'*, and grooves or ways *d'*, *d²*, with the curvilinear spring and headed bolt and nut, substantially as described.

2. The combination with the cylinder A, having the groove *a*, and longitudinal slot *a'*, and grooves or ways *d'*, *d²*, curvilinear spring B, and headed bolt and nut, of the receptacle C, and cushion E, secured to the free end of the spring B, substantially as and for the purposes set forth.



527,184. STAPLE-FASTENER FOR WOODEN VESSELS OR BOXES. FRANK W. RICHEY, Chicago, Ill. Filed Nov. 27, 1893. Serial No. 492,177. (No model.)



*Claim.*—The herein-described staple fastener for wooden vessels and boxes formed of a single length of wire and comprising a straight body portion having duplicate point-shanks bent from both ends thereof at an angle, said point-shanks being provided at their outer extremities with duplicate point bevels formed at both sides of the longitudinal centers thereof and tapered at the other outer side edges into an entering point, said point bevels meeting at the center of the shanks in a point ridge also tapering to the entering point, substantially as set forth.

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527,185. VENTILATING-CAP. THOMAS J. RYAN, Buffalo, N. Y. Filed Dec. 7, 1893. Serial No. 493,073. (No model.)



*Claim.*—1. A shallow or low street cap for pipes, the same being concavo-convex in form and provided with a series of rounded exterior corrugations extending continuously from a common point at the center to the outer edge, thereby producing scallops at the edge of the cap to form vents or openings, said corrugations being also regularly and spirally curved from the center of the cap to the edge to obviate slipping, substantially as set forth.

2. A shallow or low street cap for pipes having a series of corrugations spirally curved from the center to the edge thereof to obviate slipping, scallops agreeing with the corrugations and formed at the edge of the cap, auxiliary vent openings or perforations near the edge, and the integral annular rim 5, formed at the outer edge of the cap and adapted to rest upon the ground, substantially as set forth.

3. A cap for pipes, the same being of concavo-convex form and being provided on its under side with a series of radial brackets having notches for engaging the edge of the pipe, the upper ends of said notches being provided with inwardly disposed depending lugs for engaging the inner surface of the pipe, substantially as specified.

4. A cap for pipes, the same being of concavo-convex form and being provided on its under side with a series of radial brackets having notches for engaging the edge of the pipe, the upper ends of said notches being provided with inwardly disposed depending lugs for engaging the inner surface of the pipe, and means for binding the cap upon the pipe, substantially as specified.

5. The cap of concavo-convex form adapted to be arranged over a pipe and having the internal brackets radiating therefrom, the same being provided with a plurality of notches arranged in the same plane and adapted to engage pipes of various types, and means for locking the cap upon the pipe, substantially as specified.

6. The herein described cap for pipes with flanged upper ends, the same being of concavo-convex form and having internal radial brackets provided upon their under and inner sides with locking notches adapted to embrace the upper end of the pipe and engage the inner and outer sides thereof and also its flange, and means for locking the cap in position upon the pipe, substantially as specified.

7. The herein described improved cap, the same being of concavo-convex form, and corrugated to form internal ribs and having internal inclined brackets following the ribs produced by the corrugations and provided with notches arranged in the same annular plane to engage the upper edge of a pipe, and means for locking the cap in position upon a pipe, substantially as specified.

8. The herein described cap for pipes, the same being of concavo-convex form and having upon its inner side pipe-engaging brackets, a radial slotted plate having a roughened under surface and clamping-screws arranged in the slot of the plate, and a movable clamp having a roughened side for engaging the plate and receiving the screw, and its inner end shaped to engage the pipe, substantially as specified.

9 The herein described cap for pipes, the same being provided upon its inner side with radially inclined brackets, each having a plurality of notches, and one of said brackets being cut away at its lower end or below its upper notch wedge-shaped keys adapted to fit in the upper of said notches, a threaded perforation formed in the cap below said brackets in line with the second series of notches, a binding-screw arranged therein, a slotted bracket arranged below the binding-screw in line with the third set of notches, a clamping-plate located under the bracket, and the clamping-screw passed through the clamping plate and the slot in the bracket, substantially as specified.

10. The herein described cap for pipes, the same having internal radially inclined brackets, the edges of which are provided with a plurality of pipe-engaging notches arranged in different annular planes, a wedge-shaped key adapted to fit in the upper of said notches, a threaded perforation formed in the cap in line with the second series of notches, a binding-screw therein, a slotted bracket arranged in line with the third series of notches, a clamping-screw in the slot, and a clamping-plate engaged by the clamping-screw, substantially as specified.

11. The herein described pipe cap for pipes of different sizes having flanges at their upper ends having an inner series of radial brackets provided with a plurality of locking notches, the inner sides of which are extended into inwardly disposed lugs to engage inside of the pipe end, and the outer sides of which are shouldered to engage under the pipe flange on the outside thereof, and adjustable locking devices arranged to also engage under the pipe flange and hold the locking notches firmly in engagement with the inner and outer upper ends of the pipe, substantially as set forth

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527,186. TOBACCO-PIPE. WARREN E. TROTT, Brooklyn, N. Y. Filed Nov. 11, 1893. Serial No. 490,715. (No model.)



*Claim.*—1. A tobacco pipe having a straight slot extending the entire length of its stem and open to the smoke-passage in the latter, said slot being of substantially the same width as the smoke passage, and a tenon or closing strip fitting into the slot between the side-walls thereof in an air-tight manner, said tenon having projecting parts which take under overhanging parts on the pipe when the tenon is in place, substantially as set forth.

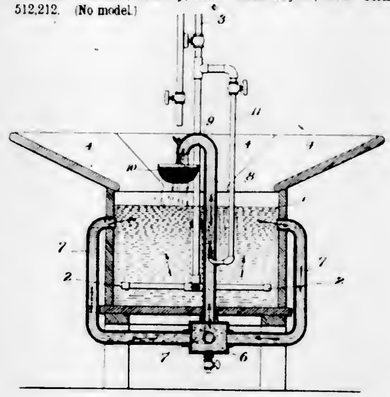
2. A tobacco pipe having a straight slot extending the entire length of its stem and open to the smoke passage in the latter, said slot being of substantially the same width as the smoke passage, and a sliding tenon or closing strip with rabbeted edges fitted into the side walls of the slot and closing the same in an air-tight manner, substantially as set forth.

3. The combination with a tobacco pipe having its stem provided with a slot which opens into the smoke-passage in the stem and extends substantially the entire length of the stem, of a sliding covering strip, with rabbeted edges, fitted into and closing said open slot, and a removable mouthpiece secured to said strip and provided with a band which fits over the end of the stem and forms a smoke tight joint when the parts are in place, substantially as set forth.

4. A tobacco pipe having its stem provided with a straight slot extending the entire length of the stem and open to the smoke passage in the latter, said slot being of substantially the same width as the smoke-passage, a tenon or closing strip fitting into the slot between the side walls thereof in an air-tight manner, and a removable mouthpiece secured to said strip and provided with a band which fits over the end of the stem and forms a smoke-tight joint when the parts are in place, substantially as set forth.

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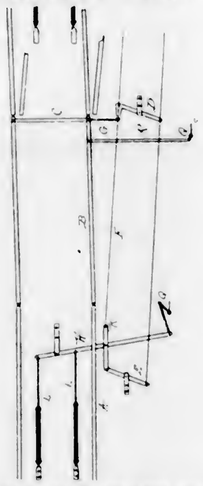
527,187. WATER-PURIFIER FOR HAT-SIZING MACHINES. WILLIAM J. WILEY, Danbury, Conn. Filed May 23, 1894. Serial No. 512,212. (No model.)



*Claim.*—1. In a hat-sizing apparatus, the combination of the sizing tank containing hot water, the sub-reservoir, the pipes which supply the latter with water from said tank, the pipe leading from said reservoir up through said tank and extending above the level of the water in the latter, the strainer depending below the mouth of the last mentioned pipe at the upper end of the same, and the steam pipe leading upwardly therein, substantially as set forth.

2. The combination of the tank 1 containing hot water, the sub-reservoir 6, the pipes 7 leading from said tank into said reservoir, the pipe 8 leading from said reservoir up through the tank and extending above the level of the water therein, the strainer 10 suspended below the mouth of the pipe 8 at its upper extremity, and the steam pipe 11 extending laterally within the pipe 8 and directed upwardly therein, substantially as set forth.

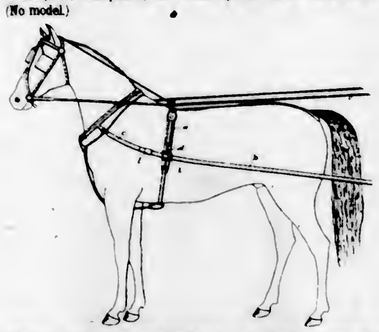
527,188. **RAILWAY-SWITCH.** THOMAS D. WILLEVER, Irvington, assignor of one-half to George O. Willever, Phillipsburg, N. J. Filed Apr. 10, 1894. Serial No. 507,064. (No model.)



*Claim.*—1. A railway switch comprising toggles L, L, lever H, switch rails B, bar C, link G, levers D, E, and wires F, F', adapted to be operated by a shifting tappet wheel on the engine or other vehicle on the track, substantially as described and set forth.

2. A combined railway switch and signal comprising toggles L, L, lever H, switch rails B, bar C, link G, levers D, E, wires F, F', signals S and rod R, all adapted to be operated by a shifting tappet wheel on the engine or other vehicle on the track, substantially as described and set forth.

527,189. **HARNESS.** EDWIN F. WILT, Elgin, assignor to John Rineck, Jr., Hampshire, Ill. Filed Apr. 24, 1894. Serial No. 508,864. (No model.)

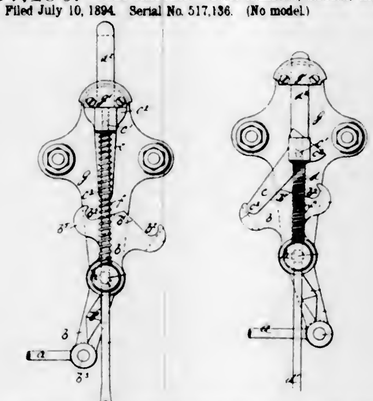


*Claim.*—1. In a harness for horses, a vertical bar secured to the saddle skirt and having a series of eyes formed therein, a hook on the hame tug adapted to connect with the eyes of the bar, a bail or loop on the hame tug, and a tongue frame fitting over the bail and having a tongue thereon, the trace being adapted to pass through the tongue frame and bail and to engage the tongue on the former, whereby the trace is connected to the hame tug and the two supported by the saddle skirt, substantially as described.

2. In a harness for horses, a vertical bar secured to the saddle skirt and having therein a series of eyes, a clip secured to the hame tug, a hook on the clip and adapted to engage with the eyes of the vertical bar, a bail pivotally connected to the clip and a removable tongue frame adapted to fit over the bail and having a tongue or finger thereon, the trace being adapted to pass through a portion of the tongue frame and through the bail and to engage with the tongue on the former, whereby the trace is connected to the hame tug and the two supported by the saddle skirt, substantially as described.

3. In a harness for horses, a vertical bar secured to the saddle skirt, and extending longitudinally therewith, said bar having therein a series of eyes, a hook on the hame tug and adapted to engage the eyes on the vertical bar whereby the hame tug is connected to the skirt and supported, and means for connecting the hame tug and trace, substantially as described.

527,190. **BELT-SHIPPER.** LUIGI ARMANNI, London, England. Filed July 10, 1894. Serial No. 517,136. (No model.)



*Claim.*—1. In a belt shipper, the combination with a hanger, a belt shifting rod, and an oscillating lever connected to the latter and pivoted to the hanger, of a striker rod adapted for longitudinal movement on the hanger, a pendent striker pivoted to said rod above the oscillating lever and adapted to cooperate therewith to reverse its position, a connection for operating the striker-rod and striker and a spring serving to return said rod to its normal position when said connection is released, substantially as set forth.

2. In a belt shipper; in combination;—a belt shifting rod; an oscillating lever connected thereto and formed with a double inclined and catch ended part; a guide rod adapted for longitudinal movement a pendent striker pivotally connected to the guided rod and adapted at each descent to engage with and reverse the position of the lever; a connection for operating the rod and striker by pulling thereon; and a spring for automatically returning the rod and striker when said connection is released;—as set forth.

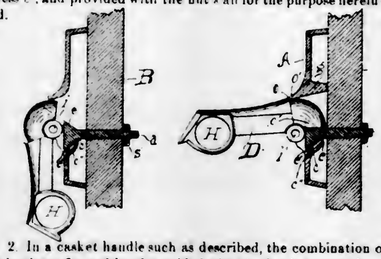
3. In a belt shipper, the combination with a hanger or carrying plate, a lever formed with a double inclined part as $b'$, terminating in cup-like catches and provided with a projection as $b^2$ and pivotally supported on the carrying plate by a shoulder pin, of a striker rod, guided in the hanger plate and said shoulder pin and having an incurved part as $d'$, a spring surrounding the striker-rod, a striker pivotally connected to said rod and adapted to cooperate with the inclined part of the lever, a belt shifting rod connected to said lever and a flexible pendent connected to the striker rod, substantially as set forth.

4. In a bel shipper, the combination with a hanger provided with a projecting part $g'$ at its top and an oscillating lever connected to said hanger and formed with projections as $b^2$, of a striker-rod guided in said hanger, a pendent striker having a flattened upper end and pivotally connected to the striker-rod above said lever and adapted to cooperate with the latter, a belt shifting rod connected to the oscillating lever, a spring applied to the striker-rod and a pendent cord connected to said rod, substantially as set forth.

527,191. **CASKET-HANDLE.** LOUIS H. BANNISTER, Pasadena, Cal. Filed Aug. 8, 1894. Serial No. 519,765. (No model.)



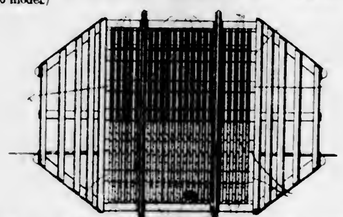
*Claim.*—1. In a casket handle as set forth, the combination of the bolt having its head provided with a hook arranged to enter the recess $c'$, and provided with the nut $x$ all for the purpose herein specified.



2. In a casket handle such as described, the combination of the bolt having a flanged head provided with the hook arranged to enter the recess $c'$, and the arm provided with a recess to allow the upper flange of the bolthead to enter therein when the handle is in place and the arm is elevated.

3. In a casket handle, the combination with the lug and arm provided respectively with recesses engaging the bolthead; the arm having the shoulder $o$ bearing upon the shoulder and brace $o'g$, and the bolt provided with the nut $x$ all substantially as described and for the purpose herein specified.

527,192. **GUARD FOR RAILWAYS.** ONWARD BATES and GILMAN W. SMITH, Chicago, Ill. Filed Apr. 21, 1894. Serial No. 508,458. (No model.)



*Claim.*—1. In a cattle guard the combination of wooden slats and metal surface strips composed of flat steel bars with blunt teeth struck up from their edges, substantially as set forth.

2. A cattle guard embracing in combination a series of wooden slats, a series of spacing thimbles between said slats, bolts extending through said slats and thimbles, and a series of metal surface strips on the upper sides of said slats having blunt teeth projecting upward from both edges thereof, substantially as set forth.

3. In a cattle guard, the combination, substantially as set forth, of a series of wooden slats, and a series of metal strips, with teeth projecting upward at their edges, covering a portion only of the tops of the slats.

4. In a cattle guard, the combination substantially as set forth, of a series of wooden slats, and a series of metal strips with upward projecting teeth thereon, covering a portion only of the tops of the slats.

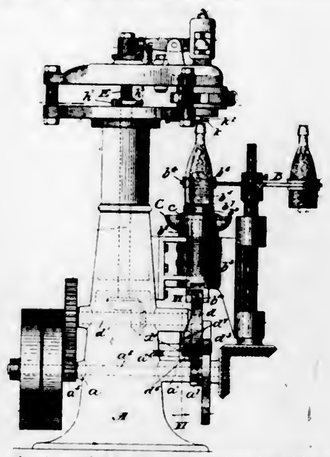
527,193. **BOTTLE-CAPPING MACHINE.** ALFRED L. BERNARDIN, Evansville, Ind., assignor to the Bernardin Metallic Cork Company, same place. Filed May 4, 1894. Serial No. 510,052. (No model.)

*Claim.*—1. In a bottle capping machine, the combination with a supporting standard and a driving shaft, of mechanism for raising the bottle, devices for compressing the caps into engagement with the shoulder of the bottle, mechanism for automatically feeding the caps, and jaws arranged upon a stationary portion of the standard for aligning the bottle for the reception of the cap, substantially as described.

2. In a bottle capping machine, the combination with a supporting standard and a driving shaft, of mechanism for raising the bottle, devices for compressing the caps into engagement with the shoulder of the bottle, a revolving table and means for automatically feeding the caps, together with jaws yieldingly held upon a stationary portion of the standard for aligning the bottle for the reception of the caps, substantially as described.

3. In a bottle capping machine, the combination with a supporting standard and a driving shaft, of mechanism for raising the bottle, devices for compressing the cap into engagement with the shoulder of the bottle, mechanism for automatically feeding the caps, together with a reciprocating bar for preventing the caps from crowding the feeding mechanism, substantially as described.

4. In a bottle capping machine, the combination with a supporting standard and a driving shaft, of mechanism for raising the bottles, devices for compressing the cap into engagement with the shoulder of the bottle, mechanism for holding the bottle in proper alignment, mechanism for automatically feeding the caps, together with a cam-actuated reciprocating bar for preventing the caps from crowding the feeding mechanism, substantially as described.



5. In a bottle capping machine, the combination with a supporting standard and a driving shaft, of mechanism for raising the bottles, devices for compressing the cap into engagement with the shoulder of the bottle, mechanism for automatically feeding the caps, together with a yielding plunger for retaining and adjusting the caps upon the head of the bottle in its ascent, substantially as described.

6. The combination, in a bottle capping machine, of mechanism for raising the bottles, devices for compressing the caps into engagement with the shoulder of the bottle, mechanism for feeding the caps, devices for aligning the bottle for the reception of the caps, together with a yielding plunger for retaining and adjusting the cap during the ascent of the bottle, substantially as described.

7. In a bottle capping machine, the combination with a supporting standard and a driving shaft, of mechanism for raising the bottles, devices for compressing the caps into engagement with the shoulder of the bottle, mechanism for automatically feeding the caps, devices for preventing the caps from crowding the feeding mechanism, mechanism for aligning the bottle for the reception of the caps, together with a yielding plunger for retaining and adjusting the caps on the bottle head during its ascent, substantially as described.

8. In a bottle capping machine, the combination with the revolving feed table, of a reciprocating feed finger, a stationary plate supported above said table, and a reciprocating bar arranged above said stationary plate for preventing the caps from crowding against the feed-finger, substantially as described.

9. In a bottle capping machine, the combination with the main shaft and counter-shaft, of a vertical shaft rotated by said counter-shaft, a revolving feed-table mounted on said vertical shaft, a reciprocating feed-finger, and a reciprocating bar operated by the vertical shaft for preventing the caps from crowding against the feed-finger, substantially as described.

10. In a bottle capping machine, the combination with the revolving table and mechanism for feeding the caps, of a reciprocating retaining bar arranged above said table for preventing the caps from crowding the feeding mechanism, and means for operating said bar, substantially as described.

11. In a bottle capping machine, the combination with a rotary shaft and means for rotating said shaft, of a revolving feed-table secured to the shaft, means for feeding the caps a cap retaining bar arranged above said table, and a cam secured to the shaft for operating the retaining bar, substantially as described.

12. In a bottle capping machine, the combination with a vertical shaft and means for rotating said shaft, of a revolving feed table secured to the shaft, a spring-pressed cap retaining bar arranged above said table, together with a cam for operating the retaining bar, substantially as described.

13. In a bottle capping machine, the combination with a vertical shaft and means for rotating said shaft, of a revolving table mounted on said vertical shaft, a reciprocating finger, a stationary feed-plate arranged above said table, and a supplemental plate secured to the

feed plate to form a covered single passage for the caps, substantially as described.

14. In a bottle capping machine, the combination with the supporting standard and the head plate arranged thereon, of a revolving table, sliding jaws arranged in said head plate, and connections between the jaws and the revolving table for actuating said jaws, substantially as described.

15. In a bottle capping machine, the combination with the supporting standard and the head plate arranged thereon, of a revolving table having a cam thereon, of spring-pressed jaws arranged in the head plate, and means connected with the sliding jaws and operated by the cam of the revolving table, substantially as described.

16. In a bottle capping machine the combination with the supporting standard and cap-compressing mechanism, of aligning jaws yieldingly arranged upon the standard below said cap compressing mechanism, substantially as described.

17. In a bottle capping machine, the combination with the supporting standard and the head plate, of a revolving table having a cam on the under side thereof, a sliding block adapted to be moved by the cam of the revolving table, jaws arranged in the head plate, and means connecting the jaws adapted to be operated by the sliding block, substantially as described.

18. In a bottle capping machine, the combination with the supporting standard and the head plate, of a revolving table having a cam on the under side thereof, a spring pressed sliding block arranged to contact with the cam of the revolving table, sliding jaws arranged in said head plate, and pivotal arms engaging the jaws and adapted to be operated by the sliding block, substantially as described.

19. The combination with feed and cap-compressing mechanisms, of a stationary centering bar, and a movable plunger arranged in said bar, substantially as described.

20. The combination with feed and cap-compressing mechanisms, of a cap-retaining plunger yieldingly arranged within the stationary portion of the cap-compressing mechanism, substantially as described.

21. The combination with the feed and cap-compressing mechanisms, of a stationary centering bar, and a spring-pressed cap-retaining plunger arranged in said bar, substantially as described.

22. In a bottle capping machine, the combination with the driving shaft, the cap feeding and compressing mechanism, and a plunger for raising the bottles, of a cam mounted upon a counter-shaft and arranged to operate the plunger, a radially slotted wheel mounted loosely upon the drive shaft, a gear wheel turning with said slotted wheel to revolve the bottle holder spindle when the slotted wheel is turned by said cam, together with a sliding block for locking the slotted wheel, substantially as described.

23. In a bottle capping machine, the combination with the standard, the drive shaft, and the bottle holder, of a slotted wheel mounted on said standard, a counter-shaft, a cam arranged on the counter-shaft to rotate the slotted wheel a locking device engaging the slotted wheel and arranged to be released by said cam, and connections between the slotted wheel and the bottle holder whereby both may rotate in unison, substantially as described.

24. In a bottle capping machine, the combination with the standard, the drive shaft, and the bottle holder, of a slotted wheel mounted on said standard, a counter-shaft, a cam arranged on the counter-shaft to rotate the slotted wheel a sleeve provided with slots secured to said slotted wheel, a spring-pressed locking device engaging the slots of the sleeve, the said locking device arranged to be released by the cam, and connections between the bottle holder and the slotted wheel, whereby both wheel and bottle holder may rotate in unison substantially as described.

25. In a bottle capping machine, the combination with bottle lifting mechanism, of a bottle holder provided with apertures and bottle-holding cups or thimbles arranged in said apertures, substantially as described.

26. In a bottle capping machine, the combination with the bottle holder, the bottle raising plunger and mechanism therefor, of a deflector arranged above the plunger mechanism and having an aperture through which said plunger passes, substantially as described.

27. In a bottle capping machine, the combination with the bottle lifting mechanism, of a bottle holder provided with apertures therethrough, perforated bottle holding cups or thimbles arranged in said apertures, and means for revolving the bottle holder, substantially as described.

28. In a bottle capping machine, the combination with the bottle holder, the bottle raising plunger and mechanism therefor, of a deflector arranged above the plunger mechanism and having an aperture through which said plunger passes, and a trough arranged below said deflector, substantially as described.

29. In a bottle capping machine, the combination with the supporting standard and cap-compressing mechanism, of aligning jaws arranged upon the standard below said cap-compressing mechanism, together with means for opening and closing said jaws, substantially as described.

30. In a bottle capping machine, the combination with a standard, of a revolving table arranged upon said standard, a reciprocating feed-finger, a stationary feed-plate arranged above said table, together with a supplemental plate secured to the feed plate to form a covered passage for the caps, substantially as described.

31. In a bottle capping machine the combination with bottle lifting mechanism, of a bottle holder, and bottle-holding cups or thimbles provided with apertures arranged upon said bottle holder, substantially as described.

## 527,194. TAPE-MEASURE. FRANK L. CHURCH, Troy, N. Y.

Filed Dec. 7, 1893. Serial No. 493,029. (No model.)

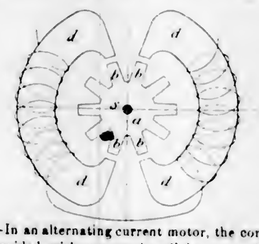


*Claim.*—1. The combination with a marked tape, of a hook secured to the tape at or near one end and comprising a shank extending lengthwise of the tape, a runway-bar crossing the tape at approximately right angles thereto and a bend at the end of the bar, substantially as described.

2. The combination with a marked tape, of a hook, secured to the tape at or near one end and comprising a shank extending lengthwise of the tape, a runway-bar crossing the tape, and a pointed end bent at approximately right angles to the bar and inclined to the plane of the bar and shank, substantially as described.

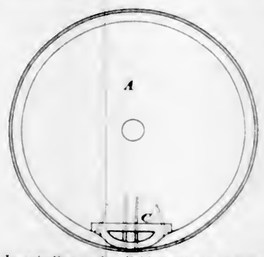
3. The combination with a hook, comprising a shank, a runway bar extending at approximately right angles to the shank and a bend at the end of the bar; of a marked tape, and a pivotal connection between the hook and tape, substantially as described.

## 527,195. ALTERNATING-CURRENT MOTOR. CARL CORPER, Cologne, Germany. Filed May 15, 1894. Serial No. 511,304. (No model.)



*Claim.*—In an alternating current motor, the combination of an armature provided with unwound radial arms, and field magnets comprising two semi-circular sections having inwardly projecting poles at the ends thereof, every two adjacent poles of which act simultaneously on adjacent arms of the armature, substantially as described.

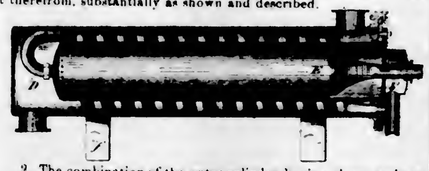
## 527,196. GRINDING AND POLISHING WHEEL. FRANK E. CUDELL, Cleveland, Ohio. Filed Feb. 14, 1894. Serial No. 500,111. (No model.)



*Claim.*—In grinding and polishing wheels, the combination with wheel A, of a loose belt B attached at one or more points to the periphery of the wheel, whereby the centrifugal force of the revolving wheel extends the circle of the belt, substantially as and for the purpose specified.

## 527,197. WORT-COOLER. HENRY E. DECKEBACH, Cincinnati, Ohio. Filed May 19, 1894. Serial No. 511,769. (No model.)

*Claim.*—1. The combination, in a wort cooler, of the outer and inner cylinders separated from each other to form jackets for the passage of the wort and the cooling liquid, a spiral coil within the wort jacket for the cooling liquid, said coil and the walls of the jacket being in close proximity to retard the movement of the wort through the jacket and keep it in contact with the cooling-surfaces, the central cylinder for the cooling liquid, communicating with the coil, induction and eduction pipes communicating with the wort jacket, and similar pipes to receive the cooling liquid into the device and discharge it therefrom, substantially as shown and described.



2. The combination of the outer cylinder, having close ends, an inner cylinder forming, with the outer cylinder, a closed jacket for the passage of wort, a central cylinder separated from the cylinder forming the inner wall of the wort jacket, having a reduced neck passed to the outside of the cooler, and separated from the surrounding cylinder, but communicating with it through perforations in the inner end of said central cylinder, the inner and intermediate cylinders together forming a jacket for the cooling liquid, the cooling coil connected to the end of the intermediate cylinder and coiled around in the wort jacket, said coil in proximity to the walls of the jacket to compel the wort to travel in a spiral path, an induction pipe at one end of the said wort jacket, and an eduction pipe at the opposite end, to connect with the pipe leading to the fermenting tuns, a pipe to introduce cooling liquid to the inner cylinder, and a discharge pipe leading outside of the cooler for said cooling liquid after it has passed through the inner cylinder and coil, substantially as shown and described.

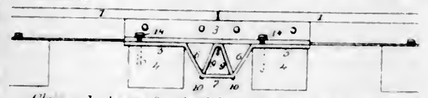
3. In a wort cooler, the combination of the outer case or cylinder, A, having induction branch, *a*, and eduction branch, *a'*, the flanged ring, $a^2$, at one end of said cylinder, the inner cylinder, B, having flanged ring, *b*, for coupling the inner and outer cylinders, and closing the jacketed space between them, the spiral coil, D, connected to the inner end of the cylinder, B, coiled around it toward the opposite end, and having a branch passing to the outside of the cooler, the inner cylinder, E, having a reduced neck passing through the end of the cooler to receive the pipe conveying the cooling liquids, said cylinder, E, being open at the inner end and bearing against the end of the intermediate cylinder, B, and having its end perforated to pass portions of the cooling liquid from the cylinder, E, around the space in the jacket between it and the cylinder, B, the head, *b'*, closing the end of cylinder, B, and perforated to pass the cooling liquid from the jacketed space between the cylinders, E and B, substantially as shown and described.

4. In a wort cooler, the combination of the outer cylinder, having induction pipe at one end and eduction pipe at the other, flanged ring around the open end of said cylinder, an inner cylinder having flanged ring closing the jacket between the said cylinder and the outer cylinder, bolts and nuts for detachably securing the two cylinders together, perforated heads secured to the front end of said intermediate cylinder, a central cylinder having reduced neck passing centrally through said head, having its inner end open to bear against the concavo-convex end of the surrounding cylinder and perforations communicating with the jacket between the inner and intermediate cylinders, the cap, C, surrounding the reduced neck of the inner cylinder, the cooling coil, D, connected to the inner end of the intermediate cylinder and coiled around said cylinder at the forward end, forming a spiral path in the jacket between the intermediate and outer cylinders, the discharge pipe, C, for the cooling liquid, communicating with the space between the inner and intermediate cylinders, and the branch in the coil passing through the head of the inner cylinder and communicating with said discharge pipe, whereby the wort is compelled to travel in a spiral path in the jacketed space between the outer and intermediate cylinders, and the cooling liquid passed to the inner cylinder and from there partly through the coil and partly in the space or jacket between the inner and central cylinders, substantially as shown and described

5. The combination of the outer cylindrical case a central cylinder, having its open end protruding through the end of said case, double cylinders intermediate the central cylinder and outer case, said intermediate cylinders being closed at their ends to form a jacket for the cooling liquid, and said cylinders forming communicating wort jackets between the outer case and intermediate cylinder, and the intermediate cylinder and central cylinder, the wort supply pipe connected to the inner jacket, the wort discharge pipe leading from the outer jacket, cooling coils in both the inner and outer wort jackets, a supply pipe for the outer coil, the opposite end of said coil connected to discharge into the jacket between the intermediate cylinders, the discharge pipe leading from said jacket at its forward end, said inner coil connected to the inner end of the central cylinder to receive the cooling liquid from it, and the opposite end of said inner coil passing to the outside of the cooler, and a supply pipe for the cooling liquid connected to the front end of the central cylinder, substantially as shown and described.

6. The combination of the outer cylindrical case, the central cylinder having its open end protruding through the end of said case, the two cylinders closed at their ends intermediate the central cylinder and outer case, and detachably connected to the outer case and to each other at their inner ends by ringed flanges opening communication between the spaces or jackets between the inner cylinder and intermediate cylinder, and between said intermediate cylinder and the outer case, cooling coils in said jackets, the inner coil communicating with the central cylinder and the outer coil communicating with the jacket between the intermediate cylinders, the wort supply and discharge pipes communcating with said jackets, and the supply and discharge pipes for the cooling liquids, substantially as shown and described.

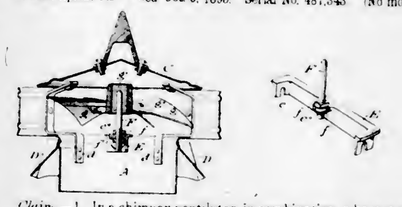
## 527,198. TRUSS FOR JOINTS OF RAILWAY-RAILS. WILLIAM F. DIMMICK, Decatur, Ill. Filed Nov. 15, 1893. Serial No. 490,971. (No model.)



*Claim.*—1. A truss for the joints of railway rails, comprising a bridge plate composed of seat portions, downwardly converging portions and a horizontal portion connecting the converging portions, slots at the intersections of the converging portions with the lower horizontal portions, and an A-shaped truss having studs adapted to engage the slots of the bridge plate, substantially as set forth.

2. In joint trusses, the combination of the bridge plate comprising the parts 5, 6 and 7 and slotted, or perforated, at 11 and at 12, the truss comprising parts 8, 9 and 10, the angle bars having the slots 13, and spikes as 14 to secure the angle bars and the bridge plate together, while connecting both with the ties, substantially as set forth.

## 527,199. CHIMNEY CAP AND VENTILATOR. WILLIAM EARLE, Philadelphia, Pa. Filed Oct. 6, 1893. Serial No. 487,343. (No model.)

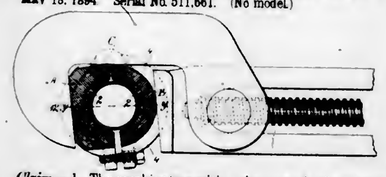


*Claim.*—1. In a chimney ventilator, in combination, a base, a supporting bar, an upwardly projecting spindle adjustably secured to said bar, and a ventilator wheel mounted on said spindle, substantially as set forth.

2. In a chimney ventilator, in combination, a base, a supporting bar removably attached thereto, an upwardly projecting spindle secured to said bar, and a ventilator wheel consisting of a hub having integral outwardly extending arms or bars which serve as the supports for blades attached thereto, said hub embodying a recess by which it is seated upon said spindle, substantially as set forth.

3. In a chimney ventilator, in combination with the base, projections mounted in said base, a supporting bar having recesses adapted to receive said projections and having flanges adapted to rest upon an edge of the base, substantially as set forth.

## 527,200. PIPE-CLAMP. CHARLES HALL, New York, N. Y. Filed May 18, 1894. Serial No. 511,661. (No model.)



*Claim.*—1. The combination with a pipe wrench of separate movable clamps having smooth interior surfaces to come into contact with

the smooth or thin pipe and projections on the exterior to come at the edges of the jaws of the pipe wrench and steady the clamps in such wrench substantially as specified.

2. The combination with a pipe wrench, of separate clamps adapted to fit upon the pipe and to be received between the jaws of the pipe wrench, such clamps having an internal lining of rubber, leather or other yielding material, a hinge for uniting the two parts of the clamp, and flanges upon the exterior surfaces of the clamps to come at opposite sides of the pipe wrench jaws, substantially as set forth.

3. The combination with a pipe wrench, of separate clamps adapted to fit upon the pipe and to be received between the jaws of the pipe wrench, such clamps having an internal lining of rubber, leather or other yielding material, a hinge for uniting the two parts of the clamp and a screw for holding the clamp around the pipe, substantially as set forth.

4. The clamps for ornamental pipes, composed of two parts each having a lining of rubber, leather or similar yielding material within the recesses in the inner surfaces of the clamp, flanges upon the exterior surfaces of the clamps to come adjacent to the edges of the pipe wrench, and a screw for holding the parts of the clamp to the pipe, substantially as set forth

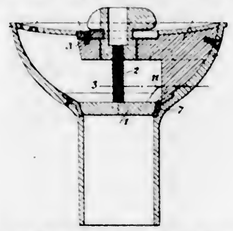
5. The two-part clamp for smooth pipes, having an interior surface adapted to fit the surface of the pipe, means for holding the two parts of the clamp together, the exterior surface of such clamp being cylindrical to be acted upon by a pipe wrench, substantially as specified.

6. The two part clamp for smooth or thin pipes having an interior surface adapted to fit the surface of the pipe, means carried thereby for holding the two parts of the clamp together, the exterior surface of such clamp being flat at one place to be acted upon by a wrench, substantially as specified.

7. The two-part clamp for smooth pipes, having an interior surface adapted to fit the surface of the pipe, means for holding the two parts of the clamp together, the exterior surface of such clamp being flat at one place and cylindrical at another place, so as to be acted upon by a wrench, substantially as specified

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**527,201.** VALVE. KRISTEN N. HARBOE, Copenhagen, Denmark. Filed May 16, 1893. Serial No. 474,464. (No model.)



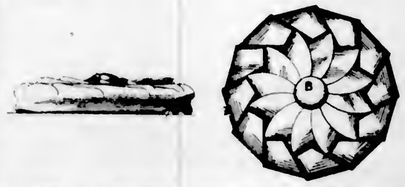
*Claim.*—1. In a gate or valve for outlet pipes, the combination with a basin or bowl provided with a movable top strainer having a central aperture and a transverse rib fixed to the basin and having an aperture registering with said aperture, of a valve adapted to seat in the outlet passage and having a spindle, and means attached to said spindle and extending through said central aperture of the strainer, whereby said valve may be operated, substantially as set forth.

2. In a gate or valve for outlet pipes, the combination with a basin or bowl provided with a movable top strainer having a central aperture and a transverse rib fixed to the basin and having an aperture registering with the aforesaid aperture, of a valve provided with a screw-threaded spindle and adapted to seat in the outlet passage, a nut adapted to receive said screw-threaded spindle and to turn within the aperture of said rib, said nut being provided with an annular groove, and means attached to said rib and projecting into said groove whereby relative longitudinal movement of said nut to said rib is prevented, substantially as set forth.

3. In a gate or valve for outlet pipes, the combination with a basin or bowl provided with a top-strainer hinged at one side to said basin and having a central aperture and a transverse rib fixed to the basin and having an aperture registering with the aforesaid aperture, of a valve adapted to seat in the outlet passage and having a screw-threaded spindle projecting upwardly into the aperture of said rib, a nut extending above the strainer and adapted to receive the screw-threaded spindle, said nut being provided with an annular groove and a plate secured to said rib and projecting into the groove of said nut, said plate being located within the aperture of the strainer, substantially as set forth.

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**527,202.** TOBACCO-POUCH. ROBERT HEYWOOD and JOHN H. NUNN, London, England. Filed July 28, 1894. Serial No. 518,814. (No model.)

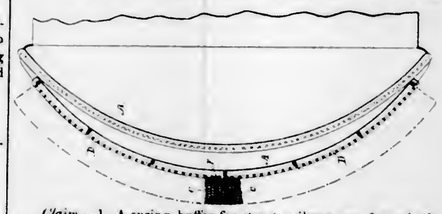


*Claim.*—1. A self closing tobacco pouch, as shown and described, and consisting of a single serrated piece or disk of rubber, or other material, molded at the center to a saucer-shaped form, to receive the tobacco, the outer serrated portion being folded over, as described, to form the cover, the said cover opening out comparatively flat, and retaining that position naturally and without extraneous means, as set forth.

2. The combination with a self-closing tobacco pouch, the cover of which is produced by tangentially folding over a serrated border to assume a conventional floral design, of a flat headed button or stud, to keep the cover closed, when the pouch is full, as set forth.

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**527,203.** SPRING-BUFFER FOR STREET-CARS. HENRY A HOWE, New York, N. Y., assignor to himself, Joseph Livingston, and Albert H. Gross, same place. Filed July 2, 1894. Serial No. 516,252. (No model.)

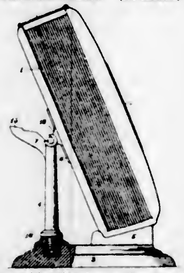


*Claim.*—1. A spring buffer for street railway cars formed of a long wire helix coiled into a cylindrical form and the adjacent interlocking portions of the small helices held together by an interlaced larger helix, substantially as set forth.

2. A spring buffer for street railway cars formed of a long wire helix coiled into a cylindrical form and the adjacent interlocking portions of the small helices held together by an interlaced larger helix, in combination with plates having holes fastened to the platform or guard of the car, and wire laced through the holes and around the wires of the helices for securing the spring buffer in position, substantially as set forth.

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**527,204.** ALBUM. CHRISTIAN JAEGER, Philadelphia, Pa. Filed June 18, 1894. Serial No. 514,880. (No model.)



*Claim.*—1. The combination in an album of, a book and a stand upon which the book is supported normally in an inclined position, with a trunnion and circular socket having a radial opening provided with side walls ranging at an inclination to the plane of the book when it occupies the above mentioned position, substantially as described.

2. The combination in an album of, a stand having a seat, a support detachably adapted to said seat, a book adapted to occupy an inclined position with its binding edge on said stand, a trunnion and a socket having a radial opening provided with side walls ranging at



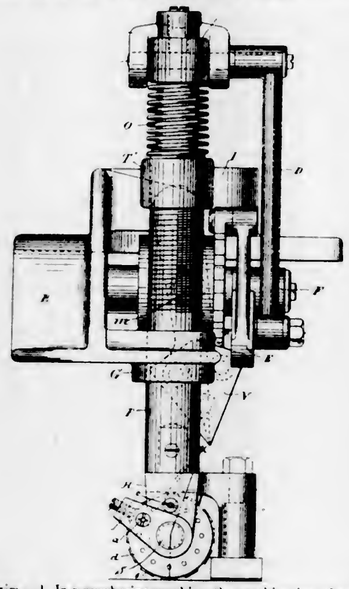
an inclination to the plane of the book when it occupies the above mentioned position, substantially as described

3. An album comprising a stand, a book whose binding edge is supported by the stand, a trunnion plate applied to said book and having laterally ranging trunnions or knobs, and a support constructed with a pair of sockets or bearings having an interval between them and having radial openings whose side walls are disposed at an inclination to the plane of the book when its binding edge rests upon the stand, substantially as described.

4. The combination in an album of, a stand, a book normally inclined to the stand, a pivotal and detachable connection comprising a trunnion and a socket having a radial opening whose walls are at an inclination to the normal plane of the book, and a finger for checking the range of movement of the book in such position that its binding edge is clear of the stand whereby the trunnion is free to pass through the radial opening, substantially as described.

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**527,205.** NUMBERING MECHANISM. MARGARET E. KNIGHT, South Framingham, and CHARLES S. GOODING, Brookline, assignors to said Knight, and Robert D. Evans and John S. Lockwood, Boston, Mass. Filed May 29, 1894. Serial No. 512,829. (No model.)



*Claim.*—1. In a numbering machine, the combination of numbering dies, reciprocating mechanism which carry said dies, a tilting lever adapted to engage one or more of said dies, a cam-plate to act upon said lever and mechanism to change its position at each stroke of the reciprocating mechanism whereby said tilting lever will be changed automatically from one position to another by the movement of said reciprocating mechanism, for the purpose described.

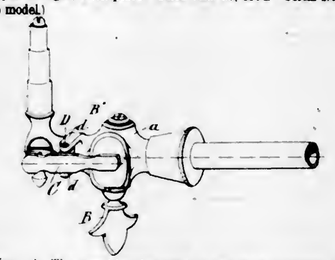
2. In a numbering machine, the combination of a reciprocating plunger carrying movable numbering disks at one end, a pivoted lever provided with devices to engage one or more of said disks, a swinging cam-plate to act upon said pivoted lever when the plunger is raised, a cam to vibrate said cam-plate and mechanism connecting said cam with the plunger, whereby said cam-plate will be be swung from one extreme of its path of vibration to the other at each stroke of said plunger for the purpose described.

3. In a numbering machine, the combination of a plunger carrying numbering dies, and devices to engage and move one or more of said dies, mechanism to reciprocate said plunger, a cam surface to act upon said die moving devices when the plunger is raised, a cam to vibrate said cam-surface, a ratchet and pawl to operate said cam, and mechanism which connects said pawl with the plunger actuating mechanism, whereby each stroke of the plunger will swing said cam-surface from one side to the other of said die moving devices for the purpose described.

4. In a numbering machine the combination of a reciprocating plunger; adjustable numbering dies and a crank-lever adapted to engage and reciprocate one or more of said dies, supported by said plunger; a vibrating lever supporting a wedge-shape plate in the path of movement of one arm of said crank-lever and mechanism connecting said vibrating-lever and the plunger operating mechanism, which is adapted, at each stroke of the plunger to move said wedge-plate from one side to the other of the middle of the arc of vibration of the said arm of the crank-lever, for the purpose described.

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**527,206.** SAFETY DEVICE FOR LOCKING GAS-COCKS. ADOLF KOHN and SAMUEL KOHN, New York, N. Y., assignors of one-third to Leopold Burger, same place. Filed Jan. 23, 1894. Serial No. 497,757. (No model.)



*Claim.*—1. The combination, with a gas-cock, consisting of the barrel, the plug and its key, said plug having a gas-passage and said barrel having a hole located in the same plane as the gas passage, and wherewith the latter is adapted to register when the plug is turned, of a spring-actuated lever pivoted on the barrel of the cock and provided with a locking-pin adapted to pass through said hole and normally engage in either end of said gas-passage, substantially as set forth.

2. The combination, with a gas-cock and the burner, said cock consisting of the barrel having a hole in one side, the plug and its key said plug having a gas-passage, of a lever pivoted on the barrel, a V-shaped spring adapted to act on one end of the lever, the base of said burner having a recess in which the inner end of the spring is permanently fixed, and a locking-pin on the other end of said lever, adapted to pass through said hole and normally engage in either end of said gas-passage, substantially as set forth.

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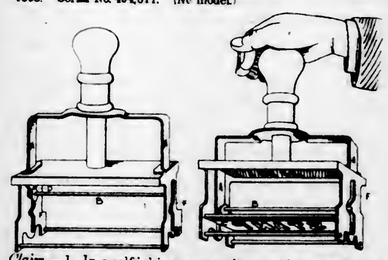
**527,207.** SPEED-MEASURE FOR SHAFTING. WILLIAM LANG, Brooklyn, N. Y., assignor to George W. Church, Newark, N. J. Filed Mar. 14, 1894. Serial No. 503,597. (No model.)



*Claim.*—In a speed-indicator, the combination of a supporting casing provided with bearings on its circumference, a spindle journaled in said bearings, said spindle being provided with a transmitting worm and an annular groove, registering gear-wheels operated by the worm, and index-hands fixed relatively to the bearings of the spindle, and attached to the journals of the wheels, one of said hands being provided with a spring arm normally projecting into said annular groove, so as to retain the spindle in position in the bearings, substantially as set forth.

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**527,208.** SELF-INKING HAND-STAMP. SETH H. LEAVENWORTH, Cincinnati, Ohio, assignor to Will T. Cressler, same place. Filed Dec. 26, 1893. Serial No. 494,811. (No model.)



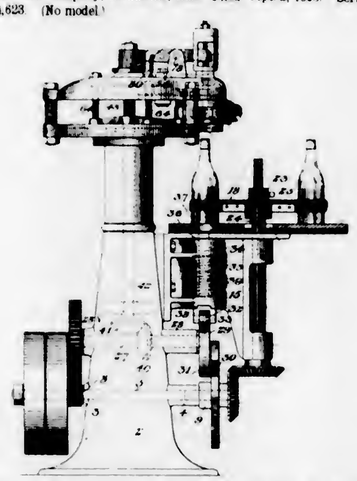
*Claim.*—1. In a self inking stamp, the combination of the standard, slotted near its ends on top to guide the stamp carrying yoke,

and having its legs vertically slotted at their upper and lower ends, said slots being V or cam shaped intermediate the ends, the tubular extension projecting from the center of said standard, the yoke centrally provided with a hollow handle, the spring seated in the upward tubular extension of the standard and entering said handle, the arms of said yoke being adapted to slide through the slots in the top of the standard along the inside walls of the standard legs and notched at E, the stamp plate journaled in the lower ends of said arms and having lugs extending beyond the journals, a rod secured in the extended ends of said lugs, and passing through the slots in the legs of the standard to traverse the slots in said legs, the inking pad underneath the standard top, and the stamp secured to the face of the plate, C, substantially as shown and described.

2. The combination, substantially as hereinbefore set forth, of the standard having its top plate slotted near the end, and its legs vertically slotted at their upper and lower ends, said slots being V or cam shaped intermediate the ends, a spring pressed yoke adapted to slide in said slots in proximity to the inner walls of the standard legs and having its lower ends notched at E, a stamp plate journaled in the lower ends of said arms, the rod, B, secured in the lugs of said plate and having its extended ends projecting through the slots in the legs, said rod when seated against the bottom of the notch in said yoke being vertically above the pins by which the plate is journaled to the yoke, whereby the plate and yoke are locked rigidly together while said pin is traversing the vertical portion of the slot in the standard.

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527,209. BOTTLE-CAPPING MACHINE. FRANK M. LEAVITT, Brooklyn, N. Y., assignor, by mesne assignments, to the Bernardin Metallic Cork Company, Evansville, Ind. Filed Sept. 2, 1893. Serial No. 484,623. (No model.)



*Claim.*—1. The combination, in a bottle capping machine, of mechanism for compressing the flange of the cap around the bottle shoulder, bottle feed-mechanism comprising a spring-pressed plunger, a bottle holder secured upon a spindle and cam mechanism arranged below the plunger for raising the bottle and imparting a partial revolution to the spindle, together with mechanism for automatically feeding the caps, substantially as described.

2. In a bottle capping machine, the combination with a supporting standard and a driving shaft, of mechanism for raising the bottle, devices for compressing the caps into engagement with the shoulder of a bottle, and a revolving table and means for automatically feeding the caps, all operated from a single source of power, substantially as described.

3. In a bottle capping machine, the combination with the standard and driving shaft, of a revolving feed table, automatic compression devices, a bottle plunger, a spindle carrying the bottle holder and a cam and roller substantially as described for imparting a partial rotation to the bottle holder and raising the bottle plunger, substantially as described.

4. In a bottle capping machine, the combination with the cap feeding and compressing mechanism, of a plunger, a cam for operating the plunger, a radially slotted wheel arranged to be engaged by a roller projecting from said cam, a spindle having a gear connection with said slotted wheel, and a bottle holder having radial arms corresponding in number to the slots in said radially slotted wheel, the whole being so arranged relatively that a step by step rotation is imparted to said spindle to successively present the bottles in the holder to the action of the plunger, substantially as described.

5. The combination with a standard and driving shaft, of a spindle geared to said shaft and carrying the bottle holder, a counter-shaft also geared to the driving shaft, a vertical shaft in gear with said counter-shaft, a revolving feed table mounted upon said vertical shaft and a plunger and cam mechanism for raising the bottle, substantially as described.

6. In a bottle capping machine, the combination with the driving shaft, the cap feeding and compressing mechanism, and the plunger for raising the bottles, of a cam mounted upon a counter-shaft, and arranged to operate the plunger, a radially slotted wheel mounted loosely upon the driving shaft, and a gear wheel turning with said slotted wheel, to revolve the bottle holder spindle, when the slotted wheel is turned by said cam, substantially as described.

7. The combination in a bottle capping machine, with the standard, driving shaft, and cap feeding and compressing mechanism, of a bottle holder spindle, and mechanism for operating said spindle, comprising bevel gearing, a radially slotted wheel loosely mounted on the driving shaft and a cam mounted on a counter-shaft and provided with a projecting roller adapted to enter the slots of the wheel and revolve the latter by a series of partial revolutions, substantially as described.

8. In a bottle capping machine, the combination with a stationary bottle-supporting table formed with a plunger opening and a central spindle opening, of a spindle projecting above said table, and a bottle holder adjustably secured to said spindle, substantially as described.

9. In a bottle capping machine, the combination with a stationary bottle-supporting table formed with a plunger opening and a central spindle opening, of a spindle projecting above said table and a bottle holder adjustably secured to said spindle and comprising a series of radial arms provided with clamping fingers, substantially as described.

10. In a bottle capping machine, the combination with a stationary bottle supporting table formed with a plunger opening and a central spindle opening, of a spindle projecting above said table and a bottle holder secured to said spindle to turn therewith and means for adjusting said holder vertically, substantially as described.

11. In a bottle capping machine, the combination with means for feeding the bottles and mechanism for compressing the caps, of cap feeding mechanism comprising a revolving feed table provided with a cam slot, and a reciprocating finger having a roller traveling in said slot, substantially as described.

12. In a bottle capping machine, the combination with means for feeding the bottles and mechanism for compressing the caps, of cap feeding mechanism comprising a revolving feed table formed with a cam slot, a reciprocating finger having a roller traveling in said slot and a stationary plate supported above the revolving table, substantially as described.

13. In a bottle capping machine, the combination with the revolving feed table, of a reciprocating finger, a stationary plate supported above said table, and a spring arranged across the path of movement of said finger, substantially as described.

14. In a bottle capping machine, the combination with the revolving feed table formed with a cam slot as described, of a reciprocating finger provided at one end with a depending roller adapted to enter said slot, and recessed and flanged at its outer end, substantially as described.

15. In a bottle capping machine, the combination with the main shaft and a counter-shaft, of a vertical shaft geared to said counter-shaft, a revolving feed table mounted on said vertical shaft and formed with a cam slot, a reciprocating feed finger, and a stationary plate supported above the feed table, substantially as described.

16. In a bottle capping machine, the combination with a revolving vertical shaft extending through the cap plate of the machine, of a cap feeding table revolving with the shaft, a cam wheel mounted upon the upper end of the shaft, and a rocking lever one end of which contacts with said cam wheel, while the other end controls the compression mechanism, substantially as described.

17. In a bottle capping machine, the combination with a vertical shaft projecting above the cap plate of the machine, of a cam wheel mounted upon the upper end of said shaft, a rocking lever one end of which contacts with said cam wheel while the other end controls the compression mechanism, a gear wheel mounted upon the vertical shaft below the cap plate, a revolving chuck and a train of gearing for revolving said chuck from said shaft, substantially as described.

18. In a bottle capping machine, the combination with the standard and its cap plate and the vertical shaft, of a depending stud, a toothed sleeve arranged thereon, a revolving chuck and gearing connecting said sleeve with the vertical shaft and chuck, substantially as described.

19. The combination with the feed mechanism, of a stationary sleeve having a ball bearing, a movable sleeve arranged within the stationary sleeve, a centering rod extending through said sleeve, and a revoluble chuck mounted upon said ball bearing, substantially as described.

20. In a bottle capping machine the combination with the cap feeding mechanism, of a depending stationary sleeve having a ball bearing at its lower end, a movable sleeve arranged within the stationary sleeve, and having a beveled lower end, a revoluble chuck mounted on said ball bearing and formed with channels, sliding blocks supported in said channels, one of said blocks having a cam surface while the other one carries a crimping roller, and a tilting lever adapted to contact with both of said blocks, substantially as described.

21. The combination with the revoluble chuck formed with an upper and a lower channel divided by a hollow partition, of a sliding block provided with a compression roller a sliding block formed with a cam surface, a spring seated in the hollow partition and a tilting lever adapted to strike both of said blocks, substantially as described.

22. The combination with the stationary and movable sleeves extending into the chuck, of the centering rod, and sliding blocks seated in channels of the chuck one of said blocks having a cam surface adapted to contact with the beveled end of the movable sleeve, while the other block carries the compression roller, and a tilting lever adapted to strike said blocks, substantially as described.

23. The combination with a revolving chuck, of cam blocks, sliding blocks arranged in proximity to the cam blocks and a centrally fulcrumed striking lever, operated by the cam blocks the ends of which strike the sliding blocks, substantially as described.

24. The combination with the chuck, of a sliding block carrying the compression wheel at one end and provided with a plug at its opposite end and a rocking lever carried by the chuck arranged to contact with the plug to press the sliding block inwardly, substantially as described.

25. The combination with the chuck, of a sliding block consisting of a headed rod section and a slotted tubular section; said rod fitting within the tubular section, a spring interposed between the sections, and a stop lug, substantially as described.

26. The combination with the chuck, of two sliding blocks seated in channels formed in the chuck, and means substantially as described for forcing one of said blocks outward and simultaneously forcing the other block inward, substantially as and for the purpose set forth.

27. The combination with the stationary and sliding sleeves, the latter formed with a beveled lower end, of a stationary centering rod, a lever for depressing said sliding sleeve, a revoluble chuck provided with channels, sliding blocks in said channels, and means for moving said blocks simultaneously in opposite directions, substantially as described.

28. In a bottle capping machine, the combination with a vertical shaft projecting above the cap-plate of the machine, of a cam wheel mounted upon the upper end of said shaft, a rocking lever one end of which contacts with said cam wheel while the other end controls the compression mechanism, a chuck, and means connected with the vertical shaft for revolving said chuck, substantially as described.

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527,210. DECORATING GLASS WITH ALUMINIUM. CHARLES MARGOT, Geneva, Switzerland. Filed May 28, 1894. Serial No. 505,391. (Specimens.)

*Claim.*—The method herein specified of ornamenting or marking glass or other vitreous surfaces, consisting in bringing into contact with such surface a stylus or marker of aluminum, and pressing and moving the same to cause a portion of the metal to adhere to and be transferred from the stylus to the glass or vitreous surface, substantially as set forth.

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527,211. ELECTRIC-ARC LAMP. MAX MAYER, New York, N. Y., assignor to the Auerbach-Woolverton Electric Company, of New Jersey. Filed June 18, 1894. Serial No. 514,840. (No model.)

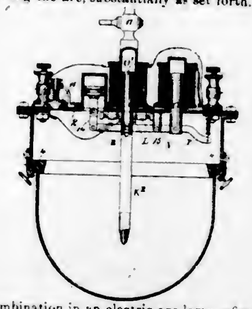
*Claim.*—1. In an electric arc lamp, the combination with the hanging glass and the inverted base, of carbons and carbon holders hanging downwardly from the base as an inverted pyramid, and means for feeding the carbons in one pair with uniformity, an electro-magnet having a helix above the inverted base, a central tube connected at its lower end with the base, a core within the tube, and lever connections to one of the carbon holders for regulating the electric arc, substantially as set forth.

2. The combination with a hanging glass, an inverted base, and means for connecting the glass at its upper edge to the base, of carbon holders hanging as an inverted pyramid below the base, a main and a shunt helix above the base and supported by the same, tubes within the helices and closed at their upper ends and opening at their lower ends through the inverted base, cores within said tubes, and a lever mechanism connecting the cores and acting upon a movable carbon holder for drawing the electric arc, substantially as set forth.





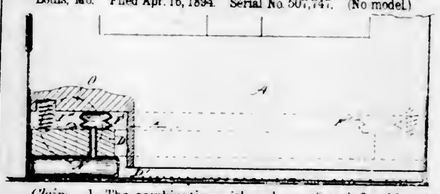
3. The combination in an electric arc lamp, of an inverted base, a hanging glass secured at its upper edge to the base, stationary and movable carbon holders hanging as an inverted pyramid below the inverted base, a shunt and a main circuit helix above and resting upon the base and the binding post and connections above the base, tubes within the helices closed at the upper ends and opening through the base, cores within the tubes, a lever with which the cores are connected, and a branch lever and connection for moving one of the carbons and drawing the arc, substantially as set forth.



4. The combination in an electric arc lamp, of an inverted base and a hanging glass connected at its upper edge to the base, carbons and converging carbon holders connected to and hanging below the inverted base, means for feeding the carbons with uniformity in one pair of holders and an electro-magnet and connections for acting on the other carbon in drawing the arc, substantially as specified.

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527,212. AUTOMATIC DOOR-STRIP. WILLIAM N. MORRISON, St. Louis, Mo. Filed Apr. 16, 1894. Serial No. 507,747. (No model.)



*Claim.*—1. The combination with a door of an inflatable tube mounted along the edge of the door, a compressor cylinder communicating with said tube, and a piston operated in said cylinder by the movement of the door.

2. The combination with a door, of an inflatable tube mounted on the door, a compressor cylinder carried by the door and communicating with said tube, and a piston supported on the door frame and co-operating with said cylinder and tube substantially as shown and described.

3. The combination with the grooved bottom edge of a door, of a closing strip mounted therein consisting of a body strip having an inflatable cushion edge, springs supporting said strip, pneumatic bulbs on the top of said strip reacting on the door, pipe connections from the bulbs above to the inflatable cushion below, and an air-compressor communicating with the cushion and bulbs, adapted to supply and exhaust air automatically to and from said cushion and bulbs, by the act of shutting and opening said door respectively.

4. The combination with the bottom edge of a door, of a closing strip consisting of a body strip and a collapsible tube on its bottom edge, collapsible bulbs above the strip contacting with the door above to press the strip downward when expanded, means to support the said strip, and an air compressor to deliver and exhaust air to and from said tube and bulbs, consisting of an air-cylinder on the closing side of the door and a buffer piston therefor on the door frame, substantially as shown and described.

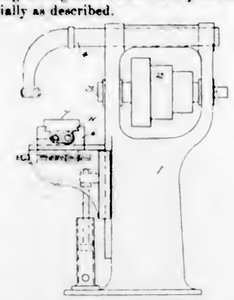
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527,213. MILLING-MACHINE. EDWARD J. MCCLELLAN, New York, N. Y. Filed Jan. 9, 1894. Serial No. 496,290. (No model.)

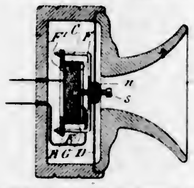
*Claim.*—1. The combination in a machine tool, of a slide, a hydraulic feed cylinder to feed said slide, and a hydraulic check cylinder with regulating valve, to control said slide, substantially as described.

2. The combination in a milling machine, of a slide, a hydraulic feed cylinder to feed said slide, and a hydraulic check cylinder with regulating valve to regulate the rate of feed and control the slide, substantially as described.

3. The combination in a milling machine, of a slide, a hydraulic cylinder organized both to feed and check said slide; and pipes connecting the ends of said cylinder with regulating and reversing valves, said valves being arranged to be worked by but one handle in common, substantially as described.



527,214. TELEPHONE-TRANSMITTER. Thomas McCoubray, New York, N. Y. Filed Aug. 16, 1894. Serial No. 520,544. (No model.)



*Claim.*—1. A telephonic transmitter having an electrode of comminuted or powdered conducting material sustained between a pair of conducting disks and a ring or cup which in turn is wholly sustained by a stirrup secured to the diaphragm.

2. A telephonic transmitter having an electrode of comminuted or powdered conducting material sustained in a confined position by a stirrup which in turn is secured to the diaphragm.

3. A telephonic transmitter having an electrode of comminuted or powdered conducting material sustained in a confined position by a stirrup which in turn is secured to the diaphragm, in combination with additional means carried also by the diaphragm for effecting an adjustment of the electrode.

4. A telephonic transmitter provided with comminuted or powdered conducting material held in place by two disks having spirally corrugated surfaces.

5. A telephonic transmitter provided with comminuted or powdered conducting material held in place by two disks having spirally corrugated surfaces, the spirals of which are oppositely disposed.

6. A telephonic transmitter having an electrode of comminuted or powdered conducting material sustained between a pair of conducting disks surrounded by a cup or ring which in turn is wholly sustained by a stirrup detachably secured to the diaphragm.

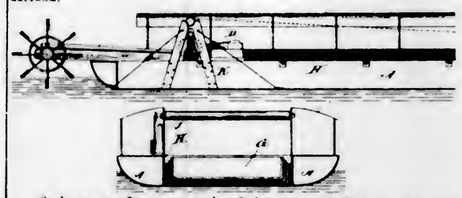
7. A telephonic transmitter having an electrode of comminuted or powdered conducting material sustained between a pair of conducting disks surrounded by a cup or ring which in turn is wholly sustained by a stirrup detachably secured to the diaphragm, in combination with an adjusting screw extending through the diaphragm and the stirrup and into mechanical contact with one of the disks, substantially as described.

8. A telephonic transmitter having an electrode of comminuted or powdered conducting material held between a pair of conducting disks surrounded by a ring or cup secured to a stirrup which in turn is wholly sustained at a point near the center of the diaphragm, in combination with an adjusting screw extending through the stirrup and into mechanical contact with one of the disks, substantially as described.

9. A telephonic transmitter having an electrode of comminuted or powdered conducting material held in place by a pair of conducting disks surrounded by a cup or ring detachably secured by a stirrup which in turn is detachably secured to the diaphragm, in combination with an adjusting screw extending through the diaphragm and the stirrup and having mechanical connection with one of the disks.

527,215. FREIGHT-BARGE. Alexander K. McRae, Chicago Ill., assignor to Florence N. Oliver McRae, same place. Filed Nov. 20, 1893. Serial No. 491,487. (No model.)

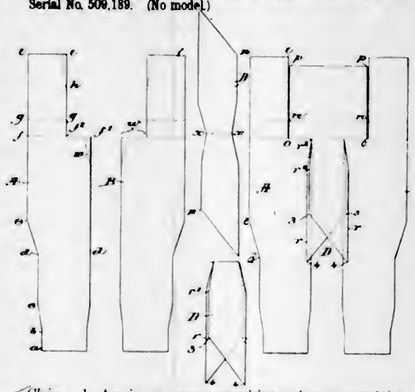
*Claim.*—1. The herein-described improvement in means for transporting freight upon shallow waters, comprising a steam boat having an open interior and its engines and boilers located at the sides of said open interior and a series of barges of progressively varying external dimensions contained within said boat whereby they are adapted to be nested within the open interior, substantially as described.



2. In means for transporting freight upon shallow waters, the combination with a steam boat having a paddle wheel at its stern, an open interior and open bow, a marine skid hinged at its inner end within the opening at the bow and adapted to be lowered to project into the water, windlasses located fore and aft of the boat, and a series of barges of progressively varying sizes, said windlasses being adapted for connection with the skid and with the barges, whereby the latter may be drawn into the interior space of the boat and nested together for carriage when empty, substantially as described.

3. A boat of the class described having its interior open, a series of removable truss rods having their ends socketed into the frame of the boat along the sides of the open interior and provided with turnbuckles and a series of barges of progessively varying external dimensions adapted to be nested within the boat and to support its bottom when the truss rods are removed, substantially as described.

527,216. UNION GARMENT AND METHOD OF KNITTING SAME. Walter A. O'Brien, Boston, Mass. Filed Apr. 27, 1894. Serial No. 509,189. (No model.)



*Claim.*—1. A union garment comprising a piece A containing one leg and part of the front of the garment, a piece B containing the other leg and the other part of the front of the garment, the back, and a back flap folded upon itself and united to the waist portion at its line of fold and also united to the leg portions along opposite edges and having its adjacent sides overlapped, substantially as described.

2. A union garment comprising a piece A containing one leg and part of the front of the garment, a piece B containing the other leg and the other part of the front of the garment, the back, and a back flap terminating in oppositely tapered ends and folded upon itself and united to the waist portion at its line of fold and also united to the leg portions along opposite edges and having its adjacent sides overlapped, substantially as described.

3. The herein described union garment, it being composed essentially of two halves or fronts, each presenting fabric to surround and cover a leg and substantially one-half of the front of the waist and bust above, and each half having a waist start presenting a series of loops consolidated in the line of the bottom of the waist; a two-ply back flap having its upper end in the line of the bottom of the waist, and a piece of fabric knitted to the waist starts and to the upper end of the back flap to constitute the back of the waist and the back and shoulder covering portion above it, said piece of fabric having selvage edges adapted to be joined with the selvage edges of each part of the front under the arm seye, all substantially as shown and described.



4. The herein described method of knitting union garments, which consists in knitting separately the two halves A, B, of the garment of the proper width and shape substantially to the bottom of the waist line at the back, running the loops off from some of the needles to make "waist starts" having loops, continuing the knitting at one side of the "waist starts" toward the top of the garment to form a bust covering portion, running the loops of the bust covering portion off the needles, knitting a back flap, picking the loops thereof and of the "waist starts" of the two halves of the fabric onto needles in the same row, knitting the fabric to cover the back from the "waist starts" to the neck, and uniting the back flap doubled upon itself to the leg covering portions of the two halves, and thereafter uniting portions of each leg to other portions thereof from the ankle up to the lower ends of the back flap, substantially as described.

5. The herein described steps in the method of knitting union garments which comprehends knitting separately the two halves A, B, of the garment, each of the proper width and shape up substantially to the bottom of the waist line at the back, running the loops off from some needles to leave loops to constitute "waist starts," continuing the knitting at one side the "waist starts" toward the top of the garment to form a bust covering portion, running the loops of the bust covering portion off the needles, knitting a two-ply back flap, picking the loops of the back flap onto needles, picking the loops of the "waist starts" onto other needles in the same row, said needles being less in number than the needles the said loops were made upon, knitting the back of the garment to the said "waist starts" and to the said back flap, and thereafter uniting the edges of the back flap to each leg covering portion, uniting the selvages of the leg covering parts of the two halves each to the other from the ankle to the lower end of the back flap, and uniting the main part of the back and of the bust covering portion to the arm seye, substantially as described.

6. The herein described method of knitting union garments, which consists in knitting separately the two halves A, B, of the garment of the proper width and shape up substantially to the bottom of the waist line at the back; consolidating some of the loops onto a less number of needles than were required to knit the loops and thus form "waist starts" to leave loops; continuing the knitting at one side the "waist starts" toward the top of the garment to form a bust covering portion; knitting a two-ply back flap; picking the loops of the back flap onto needles; picking the loops of the "waist starts" onto other needles in the same row and upon a less number of needles than the said loops were made upon; knitting the back of the waist to the said "waist starts" and to the said back flap, and knitting the back of the garment to the back of the waist, and thereafter uniting the two front halves each to itself for a part of its length to form suitable legs; uniting the edges of the back flap to each leg, and uniting the main part of the back and of the back of the waist to the fronts above the bottom of the waist, substantially as described.

7. In the manufacture of union garments, the method of knitting the web or fabric for a leg and front, which comprehends knitting the leg, widening the web as described to substantially the widest course for the top of the hip, then transferring part of the loops to change the character of the knitting for the waist, and consolidating the loops for part of the width of the web, running the loops off for part of the width of the web to leave a "waist start," and then continuing the knitting for the front of the waist and the bust covering part of said front, substantially as described.

527,217. VISE. Henry C. Rasmer, San Francisco, Cal. Filed Feb. 19, 1894. Serial No. 500,682. (No model.)



*Claim.*—The combination of a bed, a nut-seat thereon, a mutilated nut resting in said seat having a rectilinear longitudinal movement in the seat, means for normally throwing the nut into one end of its seat, a jaw on the bed, a mutilated screw working in connection with said nut and a jaw carried by said screw.

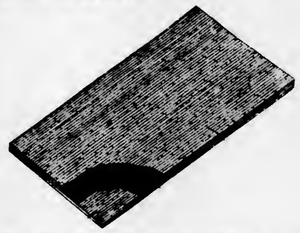
527,218. METALLIC-COVERED WAX FOR DENTAL OR OTHER PURPOSES. Adrian S. Rutherford, New York, N. Y. Filed July 30, 1891. Serial No. 401,150. (No model.)



*Claim.*—1. A new article of manufacture adapted for the uses herein described, consisting of a layer of wax permanently provided with a coating of metallic foil, substantially as set forth.

2. A new article of manufacture adapted for the uses herein described, consisting of a layer of wax permanently provided with a coating of metallic foil on both of its surfaces, substantially as set forth.

527,219. WAX PRODUCT FOR DENTAL OR OTHER PURPOSES. Adrian S. Rutherford, New York, N. Y. Filed July 30, 1891. Serial (No 401,151. (No specimens.)



*Claim.*—1. As a new article of manufacture, a wax product adapted for use in dentistry and for other purposes, the same consisting exclusively of independent layers or sheets of wax of different grades of hardness and toughness united together in a single layer or sheet of the same thickness as a single layer or sheet of ordinary sheet-wax of commerce, substantially as set forth.

2. As a new article of manufacture, a wax product consisting exclusively of independent layers or sheets of wax of different shades or colors, and different grades of hardness or toughness, united together in a single layer or sheet of the same thickness as a single layer or sheet of ordinary sheet-wax of commerce, substantially as set forth.

527,220. CASH DRAWER AND REGISTER. Charles H. Shaw, Brooklyn, N. Y. Filed Jan. 8, 1894. Serial No. 496,032. (No model.)

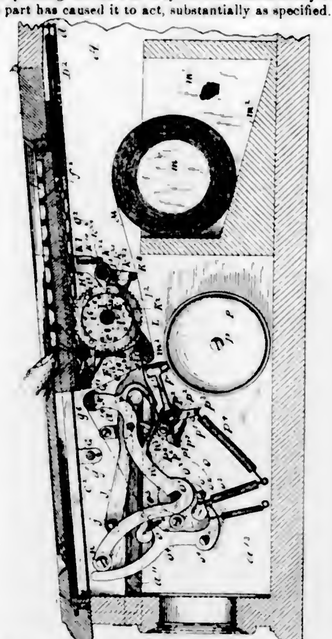
*Claim.*—1. The combination of a case, slides bearing symbols, two sets of detents for preventing movement of the slides in opposite directions, the shaft $c^5$ supporting such detents, the bed or platen N, pivoted bars for supporting such bed or platen, and a movable part whose continued movement first actuates said pivoted bars to move the bed or platen N, and then rocks shaft $c^5$ to throw one set of detents out of engagement and the other set of detents into engagement, substantially as specified.

2. The combination of a case, slides bearing symbols, two sets of detents for preventing movement of the slides in opposite directions, the shaft $c^5$ supporting such detents, the bed or platen N, pivoted bars for supporting such bed or platen, a continuous traveling strip, a pawl and ratchet connection for moving such strip, a part through which an imprint on such strip may be seen, and a movable part whose continued movement first actuates said pivoted bars to move the bed or platen N, then rocks the shaft $c^5$ to throw one set of detents out of engagement and the other set of detents into engagement and finally actuates said pawl and ratchet connection to move the traveling strip to a position where the imprint just made may be seen, substantially as specified.

3. The combination of a case, slides bearing symbols, two sets of detents for preventing movement of the slides in opposite directions the shaft $c^5$ supporting such detents, the bed or platen N, a total adding mechanism, and a movable part whose continued movement first actuates said pivoted bars to move the bed or platen N, and then rock shaft $c^5$ to throw one set of detents out of engagement and the other set of detents into engagement, substantially as specified.

4. The combination of a case having a part provided with an opening, slides normally occupying this opening, a printing mechanism contained within said case, a total adding mechanism attached to said part, a drawer or slide for controlling the action of said printing and total adding mechanisms which permits of the adjustment of

the slide in its normal position and locks the same from adjustment in its abnormal position, a continuous traveling strip, a supply and a take up roll for such strip, and a part substantially parallel to said strip arranged in line with said slides, and through which the imprint from the printing mechanism may be seen immediately after said movable part has caused it to act, substantially as specified.



5. The combination of a case having a part provided with an opening, slides having printing types on their lower surfaces and indicating symbols upon their upper surfaces and which normally occupy this opening, two sets of detents for preventing movement of the slides in opposite directions, the shaft $c^5$ for supporting such detents, a continuous traveling strip, a part in line with said slides, under which the slides move and through which the strip may be seen, said part being substantially parallel to said strip, a printing mechanism and a drawer or slide for rocking the shaft $c^5$ to throw either set of detents into and out of engagement and also for feeding the strip after an imprint has been made to a position where the imprint may be immediately seen, substantially as specified.

6. The combination of slides having gear teeth on one face and indicating symbols on opposite face, the two sets of detents E, E', $E^2$, $E^3$, $E^4$ and H, H', $H^2$, $H^3$, $H^4$, the shaft $c^5$ to which such detents are pivoted and to which there is attached an arm $c^6$, a drawer or slide for rocking the arm $c^6$ and shaft $c^5$, and the spring $c^{10}$ for returning the arm and the shaft, substantially as specified.

7. The combination of a number of slides, ratchets or projections upon the slides, two sets of detents which co-act with the ratchets or projections, and a drawer or movable part which when moved outwardly will release one set of detents so as to allow the slides to resume their normal position, and subsequently apply the other set of detents so as to lock the slides in their normal position until after said drawer or movable part shall have been moved in or closed, substantially as specified.

8. The combination of a number of slides, ratchets or projections on the slides, two sets of detents which coact with these ratchets or projections, to prevent motion in opposite directions, and means whereby the set of detents opposite to that which holds them in any position, will be thrown into action in an attempt to move more than one slide at once, thereby locking the slides, substantially as specified.

9 The combination of a number of slides having ratchets or projections on their faces, two sets of pawls or detents engaging with these ratchets or projections to prevent motion in opposite directions, a shaft having projections or stops arranged along its length, and to which these two sets of detents or pawls are pivoted, springs for holding one pawl or detent in each set against a common stop or projection, an arm attached to one end of said shaft, a spring attached to this arm, and to a fixed piece and of a greater strength than the strength of any one of the springs which holds the pairs of pawls or detents against a common stop, but less in strength than two of such springs, so that on an attempt to move two or more slides at once the said shaft will be oscillated and the opposite set of pawls or detents be thrown into engagement, substantially as specified.

10. The combination of a number of slides having gear teeth on one face and indicating symbols on the opposite face, two sets of detents for preventing movement of the slides in opposite directions, the shaft $c^5$ to which such detents are pivoted, springs for holding these detents against a set of stops or shoulders on the shaft $c^5$, toothed wheels engaging with the gear teeth upon said slides, a number of adding wheels each provided with a radial tooth and a number of projecting pins or studs, a single shaft for bearing said adding and toothed wheels, a pawl and ratchet connection between each toothed wheel and an adjacent adding wheel, a two armed oscillating lever having one of its arms in the path of a radial tooth upon one of said adding wheels, and whose other arm coacts with the projecting pins or studs on the next higher adding wheel when said two armed lever is caused to oscillate by a rotation of one of the radial toothed adding wheels, substantially as specified.

11. The combination of a number of slides having gear teeth on one face and indicating symbols on the opposite face, two sets of detents for preventing movement of the slides in opposite directions, the shaft $c^5$ to which such detents are pivoted, springs for holding these detents against a set of stops or shoulders on the shaft $c^5$, toothed wheels engaging with the gear teeth upon said slides, a number of adding wheels each provided with a radial tooth and a number of projecting pins or studs, a single shaft for bearing said adding and toothed wheels, a pawl and ratchet connection between each toothed wheel and an adjacent adding wheel, a two armed oscillating lever having one of its arms in the path of a radial tooth upon one of said adding wheels, a spring for returning the lever to its normal position, a stop for defining the normal position of the lever, the remaining arm of said two-armed lever coacting with the projecting pins or studs on the next higher adding wheel when said two armed lever is caused to oscillate by a rotation of one of the radial toothed adding wheels, substantially as specified.

12. The combination with printing mechanism of a take up roller for a paper strip, a drawer or slide having a pin or stud affixed to it, supports for said take up roller which are moved by said pin or stud, a pawl or dog supported on the supports for the take up roller, a pawl or dog pivoted to a stationary support, an independent piece coacting with said pawls or dogs and a ratchet wheel on the take up roller with which said pawls or dogs coact, substantially as specified.

13. The combination with a take up and a supply roll for a recording strip, of a ratchet wheel, pawls or dogs engaging with this ratchet wheel, a hand piece pivoted independently of the take up roller supports whereby the pawls or dogs may be disengaged from the ratchet wheel to permit of the removal of the take up roll, substantially as specified.

14. The combination of slides having finger spaces on their upper surfaces, printing types on their lower surfaces and provided with longitudinal grooves at their sides, rods $c^9$ fitting into such grooves and wholly inclosed within the bodies of said slides, cross bars $c^8$ fastening said rods $c^9$ together, a part having a beveled edge extending transversely to the length of the slides, two sets of detents for preventing the movement of the slides in opposite directions, the shaft $c^5$ to which such detents are pivoted and a drawer or slide for rocking the shaft $c^5$, substantially as specified.

15. The combination with the glass plate $a^{13}$, of indicating and recording slides which move under said plate, two sets of detents for preventing movement of the slides in opposite directions, the shaft $c^5$ to which such detents are pivoted, a continuous traveling strip, a take up roll for such strip whose shaft is provided with a pawl and ratchet connection, pivoted bars for supporting such take up roll, a bed or platen also supported in said pivoted bars, and a drawer or slide for rocking the shaft $c^5$ and actuating said pawl and ratchet connection to cause the strip to be fed under the glass plate, substantially as specified.

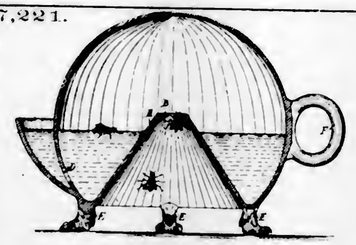
16. The combination of the two sets of detents H, H', $H^2$, $H^3$, $H^4$ and E, E', $E^2$, $E^3$, $E^4$, springs for pressing these detents against a series of stops or shoulders, the shaft $c^5$ to which such detents are pivoted, the arm $c^6$ attached to such shaft, the spring $c^{10}$ attached to such arm and a drawer or slide for rocking arm $c^6$ and shaft $c^5$, substantially as specified.

**527,221. FLY-TRAP.** CHARLES SELKACOW, Lethbridge, Canada. Filed Jan. 12, 1894. Serial No. 496,667. (No model.) Patented in Canada Jan. 13, 1892, No. 41,561.

*Claim.*—A fly trap consisting of a globular shaped vessel, the bottom part of which extends upward into the interior of the same and terminates in an opening B, the same being provided with a lip or spout C on the side thereof and beginning at the bottom of the side wall, said lip or spout having communication with the receptacle by means of the aperture D at the lower intersection of the spout and wall of vessel, substantially as shown and described.



**527,221.**



**527,222. TIME-FUSE.** WILLIAM J. SMITH, New Haven, Conn., assignor to Charles S. Larrabee, trustee, Bath, Me. Filed Oct. 25, 1893. Serial No. 489,120. (No model.)



*Claim.*—1. An exploder for projectiles provided with a spring actuated hammer, a lock for holding the hammer in position with the spring compressed, a spring for moving the lock in one direction to release the hammer, and a detent for holding the lock in position with its spring compressed, substantially as set forth.

2. The combination in an exploder for projectiles, of a spring actuated hammer, a lock therefor, a detent for holding the said lock, a spring for actuating the lock, and a dash pot for regulating the movement of the lock, substantially as set forth.

3. The combination in an exploder for projectiles, of a spring actuated hammer, a lock, a spring for actuating the lock, a dash pot for regulating the movement of the lock, a detent for holding the lock, and a valve and passages arranged to regulate the flow of the liquid from the dash pot, substantially as set forth.

4. The combination with a projectile having a recess, of a case fitted to said recess, a cylinder in said case provided with a piston and piston rod, spring for moving the piston in one direction, an escape port and valve, and a liquid filling the cylinder on one side of the piston, a hammer and lock therefor connected with the piston, and a detent for locking the lock in its position with the actuating spring compressed, substantially as set forth.

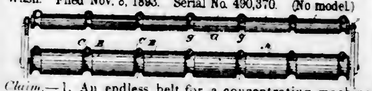
5. The combination in an exploder for projectiles, of a spring actuated hammer, a lock, a spring for actuating the lock, and a detent consisting of a block arranged to move longitudinally in the shell on striking an object and constructed to release the lock when so shifted and a dash pot controlling the movement of said lock, substantially as set forth.

6. The combination in an exploder for projectiles, of a spring actuated hammer, a lock, a detent therefor, a spring actiug on the lock, and a dash pot and valve for regulating the movement of the liquid from the dash pot, the said detent arranged to move longitudinally in the shell when the shell strikes an object, substantially as set forth.

7. The combination with a recessed shell, of a block or frame A containing a hammer and spring for actuating the same, a lock for holding the hammer in its retracted position, a spring for moving the lock in one direction, a dash pot for regulating the movement of the lock, and a detent consisting of a sliding block arranged to constitute a bearing for a part of the lock and to release the lock when the block moves forward, substantially as set forth.

8. The combination in an exploder for projectiles, of a case or block containing a spring actuated hammer, a sliding rod extending beneath said hammer when the spring is compressed and provided with a piston sliding in a cylinder, a spring bearing against said piston, a passage extending between the ends of the cylinder and provided with an adjustable valve, and a detent for the rod 5, arranged to move longitudinally in the shell, substantially as set forth

**527,223. ORE-CONCENTRATOR.** AMOS C. SPRINGER, Seattle, Wash. Filed Nov. 8, 1893. Serial No. 490,370. (No model.)

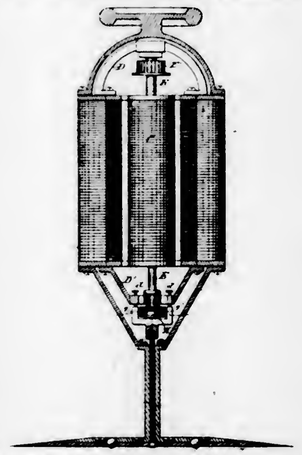


*Claim.*—1. An endless belt for a concentrating machine, composed of canvas or other fabric and ropes sewed or secured thereto in such manner that each of said ropes projects from each surface of the belt forming ribs or ridges both outside and in and extending in the line in which the belt is intended to travel, substantially as herein described.

2. An endless belt for a concentrating machine, composed of canvas or other fabric and ropes placed upon the inner surface of the belt in the line in which the belt is intended to travel, the canvas or fabric of the belt being stitched or secured to and through the ropes in a plane parallel to the general surface of the belt whereby a covered portion of the ropes projects from the outer surface of the belt dividing it into runs, channels or sluices, and an exposed portion of the ropes projects from the inner surface of the belt, substantially as herein described.

3. In an endless belt concentrator, the combination of an endless belt composed of canvas or other fabric and ropes placed upon the inner side thereof in the line of the belt travel, the canvas or fabric of the belt being stitched or secured to and through the ropes in a plane parallel to the general surface of the belt whereby a covered portion of the rope projects from the outer surface of the belt and an uncovered portion thereof projects from the inner surface, and drums and rollers upon which the belt is mounted, provided with grooves with which the ropes engage to guide the belt, substantially as herein described.

**527,224. CLOTH-CUTTING MACHINE.** ARTHUR THYLL, New York, N. Y., assignor to the Electric Cutter Company, same place. Filed Nov. 7, 1891. Renewed Mar. 17, 1894. Serial No. 504,100. (No model.)



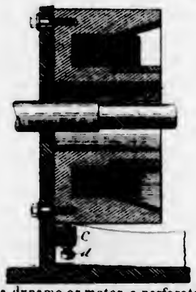
*Claim.*—1. In a cloth cutting machine, an electric motor mounted on a standard having a base-plate, the rotating shaft of which motor is provided with a screw-shaped guide-wheel having a groove in its rim, in combination with angular guide-pieces loosely fitted in a bearing and having guide-pins engaged by the said guide-wheel to move alternately up and down, and serrated knife-blades attached to the angular guide-pieces, substantially as set forth.

2. In a cloth cutting machine, the combination of an electric motor, with a casing inclosing the same, a rotary shaft of the motor with bearings therefor, a screw-wheel mounted on the said shaft, angular guide-pieces having knife-blades attached thereto, guide pins attached to the angular guide pieces and being engaged by the said screw-wheel, and a grooved standard fastened to the base-plate, in which standard the knife blades are alternately moved up and down by the rotary motion of the motor-shaft, substantially as set forth.

3. In a cloth cutting machine, the combination of the rotating shaft E having the guide-wheel H keyed thereto, with the bracket D', the angular guide pieces G G' having pins *d' d* loosely fitted in the bracket D', guide-pins *g g'* engaged by the said screw-wheel and vertically movable knife-blades *k k'*, the cap J, and the grooved standard K inclosing the knife-blades and being attached to the said cap and the base plate of the machine, substantially as set forth.

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**527,225. ADJUSTER FOR FIELD-MAGNETS OF DYNAMO-ELECTRIC MACHINES OR MOTORS.** MONTGOMERY WADDELL, Bridgeport, Conn., assignor to Montgomery Waddell, receiver of the Waddell-Entz Company, of West Virginia. Filed Sept. 6, 1893. Serial No. 484,920. (No model.)



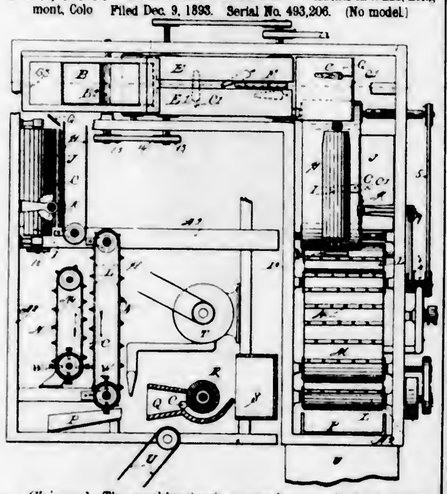

*Claim.*—1. In a dynamo or motor, a perforated frame, fastening devices extending through the perforations to support the field magnets, and a support mounted on the frame carrying adjusting devices upon which the field magnets rest, substantially as described.

2. In a dynamo or motor a magnet supporting frame A, perforations c in said frame, screws *b* extending through the perforations to support and adjust field magnets B, a support C carrying adjusting screws *d* mounted on frame A, substantially as shown and described.

3. An adjuster for field magnets for dynamos or motors consisting of a supporting frame A, a support C mounted thereon and carrying screws *d*, as and for the purposes specified.

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**527,226. CORN-HUSKING MACHINE.** WILLIAM H. WEBB, Longmont, Colo. Filed Dec. 9, 1893. Serial No. 493,206. (No model.)



*Claim.*—1. The combination in a corn husker of a hopper and a feed roller provided with grooves or pockets for feeding the ears from said hopper; of a carrying belt arranged to receive the ears from said roller of two additional belts arranged side by side above said carrying belt to bear on the ears, and a pendant arranged between said upper belts to intercept the ears, the belts and pendant operating to turn and deliver said ears stalk end forward, and means for rotating said belt and roller, as specified.

2. The combination in a corn husking machine of an ear receiving belt and a rotating roller longitudinally arranged over said belt to bear on said ears and adapted to feed them laterally at the same time said belt is feeding them forward; guides arranged parallel with said belt to arrest the lateral movement of the ears, and separated to admit between them the ear stalk; a saw arranged adjacent to the said guides and interposed in the path of the stalk for cutting the stalk from the ear, and means for rotating said mechanism, as herein set forth.

3. In a corn husking machine the combination with a cleaning device comprising a rotating brush and a concentric casing and hopper arranged to receive ears from the husking mechanism and guide them between said casing and brush, whereby any remaining husks may be removed from them, and means for rotating said brush, of the belts L, and M, rotating in opposite directions and provided with projecting teeth or cutters adapted to remove the husks from said ears, as set forth.

4. The combination in a corn husking machine of a hopper and a rotative feed roller provided with grooves and pockets adapted to feed the ears from the hopper; endless carrying belts arranged to receive between them the ears from said roller, and a depending lever arranged to intercept the ears between said belts whereby they may be turned stalk end forward in the belts, and a chute arranged to receive the ears from said belts with an endless carrying belt arranged to receive the ears from said chute; a roller journaled over said belt adapted to feed said ears laterally on said belt against a guide; a guide provided with a central opening to receive the stalks of the ears and a saw journaled in juxtaposition to said guide and in the path of the end of the ear, operating to cut the stalk and husks free from the end of the ear, and means for driving said mechanism, as set forth.

5. The combination in a corn husker of a carrying belt arranged to receive unhusked ears; a rotary roller arranged longitudinally over said belt to bear on the ears and rounded or tapered at the ear receiving end, and operating to feed said ears transversely on said belt; a guide arranged parallel to said belt to receive the lateral abutment of said ears provided with a central groove in its edge for the reception of the ear stalk, and a saw journaled in juxtaposition to said guide to intercept the ears and cut the stalk and the roots of the husks from them, with a second carrying belt provided with numerous short projecting points or teeth arranged to receive the ears from the first mentioned belt, and an additional belt moving in an opposite direction provided also with projecting points or teeth arranged above said belt to contact with the ears and operating to give them a rotative motion as they are carried forward by the lower belt, and to separate the husks from them by impingement of the projections against them, and means for rotating said mechanisms, as specified.

6. In a corn husking mechanism the combination of a receiving and carrying belt, a roller rotating at right angles to the forward movement of said belt adapted to feed them laterally against a guide for a predetermined distance as they are carried forward by said belt; a guide secured parallel with said conveying belt provided with a recess for the reception of the ear stalks; a rotary cutter mounted between the belt and said guide and in the path of the stalk end of the ear, with endless belts arranged to receive between them the ears from said carrying belt and provided with projecting cutters adapted to impinge and pierce the husks of said ears, means for rotating said belts in opposite directions and at different ratios of speed whereby the ears may be rotated against the cutters and at the same time carried forward, and means for adjusting said belts vertically or horizontally; a blower arranged to deliver a current of air across the path of the ears and husks as they fall from the last mentioned belts, and a conveyer arranged to receive said husks and transport them from the machine; a hopper or chute arranged to receive the ears from said belts; a rotary brush journaled in a concentric casing below said hopper or chute in the path of said ears, and means for driving the several mechanisms, as herein set forth.

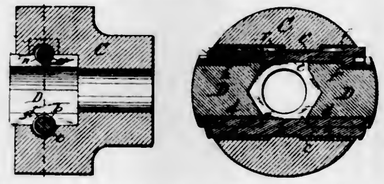
7. The combination with a hopper and a feed roller, belts adapted to receive the ears between them from said roller, a pendent arranged to intercept the ears between said belts and switch them from a transverse to a longitudinal position; a chute to receive the ears from said belts; a carrying belt arranged to receive the ears from said chute; a roller journaled to rotate against the ears and feed and hold them endwise against a guide as they are carried forward by said belt; a guide arranged parallel with said belt to receive the endwise movement of said ears provided with a recess in its edge adapted to receive the ear stalk; and a saw journaled between said guide and belt in the path of the ends of the ears, and two belts arranged to receive between them the ears from the last named belt, and arranged to rotate in opposite directions and at different ratios of speed, and provided with projecting teeth, points or cutters adapted to impinge the husks and force them from the ears; of a blower arranged to separate the husks from the ears as they leave the belts, and a hopper arranged to receive the said ears; a rotary brush and a concentric casing arranged below said hopper in the path of the ears adapted to clean them, and means for driving the several mechanisms, substantially as set forth.

8. The combination in a corn husker with a hopper and a feeding roller, of endless conveying bolts arranged to receive the ears from said roller, a pendant, and means for switching the ears stalk end forward on said belt; a second conveying belt arranged to receive the ears from the first named belt, a roller adapted to feed and hold the ears against the guide, a cutter adapted to separate the stalk from the ear and loosen the husks at the stalk end, and a mechanism for separating the husks from the ears consisting of two endless belts arranged one above the other to receive the ears between them transversely, and arranged to rotate in opposite directions and at different ratios of speed, and to contact with them and rotate them as they are carried forward by the faster belt; of projecting teeth, or cutters attached to said belts adapted to impinge, pierce, and thereby remove the husks from said ears as they pass in opposite directions by them, all arranged as and for the purpose herein set forth and described.

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**527,227. DRILL-CHUCK.** JAMES H. WESTCOTT, Oneida, N. Y., assignor of one-half to the Westcott Chuck Company, same place. Filed June 13, 1894. Serial No. 514,891. (No model.)




*Claim.*—1. A dr. l-chuck having jaws movable toward and from each other and an adjusting screw engaging said jaws at one side, and a supplemental brace seated movably in the chuck-body at the opposite side of the jaws and adjustably engaging the jaws endwise to move the same toward and from each other independent of the adjusting screw and equalizing the strain at opposite sides of the jaws as set forth.

2. The combination of a chuck-body provided with a diametrical groove and with smooth channels in both sides of said groove and parallel therewith, jaws sustained longitudinally movable in the diametrical groove at opposite sides of the axis of the body and provided with screw-threaded channels directly opposite the aforesaid smooth channels, and screws working in said channels whereby the strains upon opposite sides of the jaws are equalized as set forth.

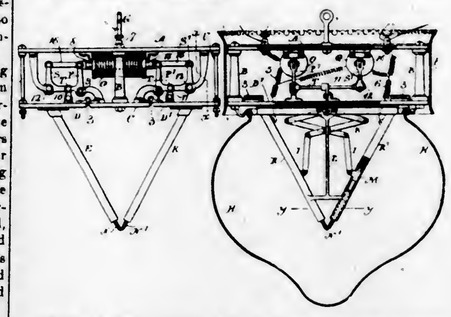
3. The combination of the chuck-body provided with a diametrical groove and with smooth channels in the sides of said groove and parallel therewith; jaws sliding in the aforesaid groove, one of said jaws being provided with screw-threaded channels in both sides, and the other of said jaws being provided with a smooth channel in one side and with a screw-threaded channel in the opposite side and having its threads pitched reverse from the threads of the channels in the same side of the other jaw, a right and left screw working in the latter channels, and a screw engaging the screw-threaded channel in the opposite side of one of the jaws and sliding in the smooth channel of the companion jaw and shouldered on said jaw to obtain a hold thereon for tying the two jaws together as and for the purpose set forth.

4. The combination of the chuck-body provided with a diametric groove and with smooth channels in the sides of said groove and parallel therewith, jaws sliding in said groove and having in one of their corresponding sides, screw-threaded channels pitched in opposite directions from each other and smooth channels in the opposite side, a right and left screw working in the screw threaded channels, an internally screw-threaded sleeve in one of said smooth channels, a key securing said sleeve to the jaw, and a screw working in said sleeve, and having a smooth shank in the smooth channel of the other jaw and shouldered thereon as set forth.

5. The combination of the chuck-body provided with a diametric groove and provided in one side of said groove with a smooth channel parallel therewith, jaws sliding in said groove and provided respectively with right and left screw-threaded channels, an externally screw-threaded sleeve in one of said channels, and a screw working in the other screw-threaded channel and detachably secured in the aforesaid sleeve as set forth.

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**527,228. ELECTRIC-ARC LAMP.** JOHN E. WOOLVERTON, New York, N. Y., assignor, by direct and mesne assignments, to the Auerbach-Woolverton Electric Company, of New Jersey. Filed Feb. 9, 1894. Serial No. 499,592. (No model.)



*Claim.*—1. Rigid tubular carbon holders converging, in combination with sliding sockets within the tubular carbon holders for the reception of carbons or electrodes, lazy tongs connections substantially as specified for causing a uniform feed of the two carbons as consumed, a second pair of carbon holders, sockets and lazy tongs mechanism, and means for moving one pair of carbon holders in relation to the other pair of carbon holders for forming the electric arc, substantially as set forth.

2. The combination with a supporting plate, of a central plate and two side plates and hinges for connecting the side plates to the central plate, carbon holders in pairs permanently connected to the respective side plates, means for feeding the carbons uniformly into contact with each other in each pair, an electro-magnet and connections therefrom for swinging one or both of the plates on their hinges to move one pair of electrodes away from the other pair of electrodes in forming the arc, substantially as set forth.

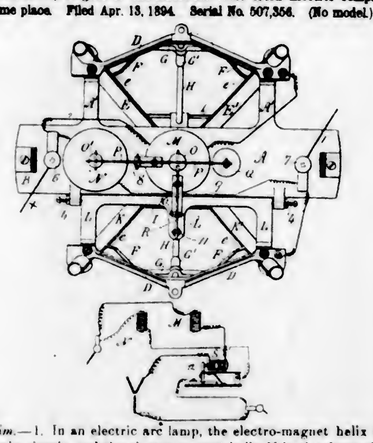
3. The combination with a pair of converging carbon holders and means for feeding the carbons uniformly into contact with each other, of a second pair of carbon holders, means for feeding the carbons uniformly into contact with each other, a plate to which one pair of carbon holders is connected, hinges upon which the plate can be moved, an electro-magnet in the main circuit, a connection therefrom for moving the plate and drawing the electric arc, a second electro-magnet in a shunt between the supply wires, and lever connections therefrom acting in the opposite direction to the connections from the magnet in the main circuit for regulating the electric arc, substantially as set forth.

4. The combination with a pair of converging carbon holders and means for feeding the carbons uniformly into contact with each other, of a second pair of carbon holders, means for feeding the carbons uniformly into contact with each other, a plate to which one pair of carbon holders is connected, hinges upon which the plate can be moved, an electro-magnet in the main circuit, a connection therefrom for moving the plate and drawing the electric arc, an adjustable stop for regulating the extent of motion of the plate, a second electro-magnet in a shunt between the supply wires, and lever connections therefrom acting in the opposite direction to the connections from the magnet in the main circuit for regulating the electric arc, substantially as set forth.

5. The combination in an electric lamp, of one pair of carbon holders and means for feeding the carbons with uniformity and into contact with each other, the second set of converging carbon holders and means for feeding the carbons into contact with each other and uniformly, supports to which the respective pairs of carbon holders are permanently connected, and hinges upon which one of the carbon holders can be swung, a main electro-magnet and a shunt electro-magnet, and lever connections to the respective electro-magnets and acting in the opposite direction for moving the electrodes and regulating the electric arc, substantially as set forth.

6. The combination in an electric lamp, of one pair of carbon holders and means for feeding the carbons with uniformity and into contact with each other, the second set of converging carbon holders and means for feeding the carbons into contact with each other and uniformly, plates to which the respective pairs of carbon holders are permanently connected, a supporting plate and hinges upon which the carbon holders and their plates can be swung, a main electro-magnet and a shunt electro magnet, and lever connections to the respective electro-magnets and acting in the opposite direction for moving the respective pairs of electrodes and regulating the electric arc, substantially as set forth.

527,229. ELECTRIC-ARC LAMP. John E. Woolverton, New York, N. Y., assignor to the Auerbach-Woolverton Electric Company, same place. Filed Apr. 13, 1894. Serial No. 507,356. (No model.)



*Claim.*—1. In an electric arc lamp, the electro-magnet helix M in the main circuit, and the electro-magnet helix N in the shunt circuit, in combination with the respective cores O and O', the lever P with which such cores are connected, the dash pot and the connection from its piston to the lever P, the carbon holders converging to the apex of an inverted pyramid, the hinge connection for the moving carbon holder, a lever receiving its motion from the core of the main electro-magnet, and an adjustable connection therefrom to the hinged support for the movable carbon holder, substantially as set forth.

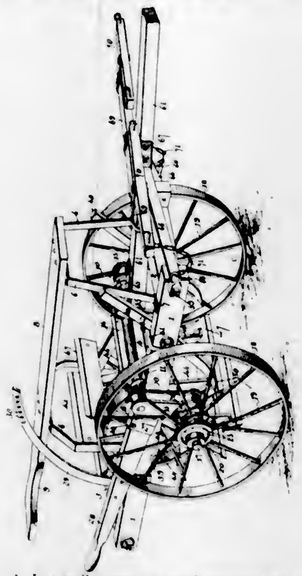
2. The combination in an electric arc lamp, of two fixed converging tubular carbon holders slotted longitudinally throughout their length, carbon receiving sockets movable longitudinally in the holders, an arch frame and guide-bar rigidly supported and connected with the carbon holders, a tube sliding on the guide-bar and having a T-head, and hinged links extending from the T-head to the sockets, substantially as set forth.

3. The combination in an electric arc lamp, of two fixed converging tubular carbon holders slotted longitudinally throughout their length, carbon receiving sockets movable longitudinally in the holders, an arched frame and guide-bar rigidly supported and connected with the carbon holders, a tube sliding on the guide-bar and having a T-head, hinged links extending from the T-head to the sockets, a hinged plate and carbon holding tube therewith connected, a stop finger at the lower end of the tube, and an electro-magnet acting upon the hinged plate to draw the arc, substantially as set forth.

4. The combination in an electric arc lamp, of a base plate having arms projecting at one side thereof, an arch frame permanently connected to the arms but insulated therefrom, tubular carbon holders slotted longitudinally and converging at their lower ends, a guide-bar connected with the arch frame and with the carbon holders, a tube sliding upon the guide bar and having a T-head, sliding sockets for the carbons within the carbon holders, hinged links connecting the T-head of the tube and the sockets for insuring uniformity in the feed of the carbons, a frame hinged to the base plate, and a carbon holder carried thereby, an electro-magnet in the main circuit, a sliding core and a lever engaging therewith and a connection therefrom to the hinged frame for drawing the arc, a shunt magnet and its core, a lever connection between the said core and the core of the main line magnet for regulating the length of the electric arc, and a dash-pot and a connection from the piston thereof to the lever for regulating the rapidity of movement of the parts, substantially as set forth.

5. The combination in an electric arc lamp, of a base plate having arms projecting at one side thereof and a suspending frame above the base plate, an arch frame permanently connected to the arms but insulated therefrom, tubular carbon holders slotted longitudinally and converging at their lower ends, a guide bar connected with the arch frame and with the carbon holders, a tube sliding upon the guide-bar and having a T-head, sliding sockets for the carbons within the carbon holders, hinged links connecting the T-head of the tube and the sockets for insuring uniformity in the feed of the carbons, a frame hinged to the base plate, and a carbon holder carried thereby, an electro-magnet in the main circuit, a sliding core and a lever engaging therewith and a connection therefrom to the hinged frame for drawing the arc, a shunt magnet and its core, a lever connection between the said core and the core of the main line magnet for regulating the length of the electric arc, a dash pot and a connection from the piston thereof to the lever for regulating the rapidity of movement of the parts, a cut-out magnet, the helix of which is in the main circuit, and the shunt magnet circuit passing through the armature and contact of said cut out magnet, substantially as set forth.

527,230. STALK-CUTTER. Herod W. Allen, Latta, S. C. Filed Feb 23, 1893. Serial No. 463,398. (No model.)



*Claim.*—1. In a stalk cutter, the combination of the rectangular frame-work provided at opposite under sides with bearing boxes, a transverse cutter shaft journaled for a fixed rotation in said bearing boxes, a rotary cutter mounted on said cutter shaft, staple bearings detachably fitted to opposite upper sides of the frame work in front of said cutter shaft, a separate and independent transverse shaft or axle 14, journaled in said staple bearings and provided at its opposite extremities outside of the frame-work with cast metal crank arms having at their extremities wheel spindles, one of said cast metal crank arms being provided with an integral off-standing lever socket 27, the ground wheels journaled on the spindles of the crank arms, an operating lever removably fitted at one end in said lever socket, and an adjustable locking device for said lever, substantially as set forth.

2. In a machine of the class described, the combination of the rectangular framework, the cutter rotatably mounted therein, the crank-shaft, the ground-wheels carried thereby, means for raising and lowering the cranks of the shaft, the cross-bars arranged in front of the shaft, the eye-bolts passing through the front cross-bar, the rear concentrically curved flanged and slotted guide-arm 54 located upon the rear bar, the draft-beam abutting against said guide-arm and embraced by the flanges thereof, the metal plate secured upon the draft-beam and having its rear end reduced and threaded and extended through the slot in the guide-arm beyond which it is provided with a nut, and a U-shaped bracket secured to the under side of the draft-beam and pivoted to the eye-bolts, substantially as specified.

527,231. FLOWER-HOLDER. Ella E. Bailey, Baltimore, Md. Filed May 12, 1894. Serial No. 510,971. (No model.)



*Claim.*—1. In a holder for flowers, the combination of a loop-shaped frame; a jaw inclosed within the said frame and having serrated teeth which confront an interior side of the frame; a spring coacting with the said frame and jaw to cause the flower stems to be pressed or gripped between the interior side of said frame and the serrated teeth of the jaw; and means for attaching the holder to a dress or coat.



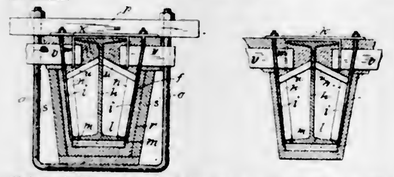
2. In a holder for flowers, the combination of a loop-shaped frame; a jaw comprising a base provided with two parallel side flanges each having on its edge teeth or serrations; a spring coacting with the said frame and jaw to cause the serrated teeth of the jaw to press against the flower stems; and means for attaching the holder to a dress or coat.

3. In a holder for flowers, the combination of a band of metal forming a loop shaped frame having at one end a headed pin and provided with a key-hole shaped slot which engages said pin; a serrated jaw; a spring to cause the said jaw to press; and means for attaching the holder to a dress or coat.

4. In a holder for flowers, the combination of a loop-shaped frame; a serrated jaw; a spring between the base of the frame and said jaw, and a pin attached to the said base.

5. In a holder for flowers, the combination of a frame; a jaw inclosed within the frame,—said jaw comprising two parallel side flanges each having on its edge teeth or serrations; a spring coacting with the said frame and jaw to cause the serrated teeth of the jaw to press against the flower stems; and means for attaching the holder to a dress or coat.

527,232. FIREPROOF BEAM. Charles A. Balph and Elisha P. S. Wright, Pittsburg, Pa. Filed May 26, 1894. Serial No. 512,503. (No model.)



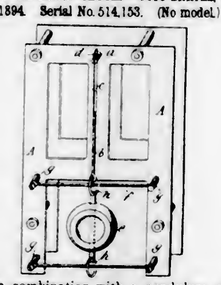
*Claim.*—1. The method of forming a protecting covering for beams consisting in suspending therefrom a protecting conduit, encircling the greater portion of said beam, suspending a second conduit from said beam inclosing said first mentioned conduit, and filling in the space between said conduits with concrete, and also embedding the portion of the beam not encircled by the said first mentioned conduit with concrete, substantially as and for the reasons set forth.

2. The combination with the beam of a closed protecting conduit inclosing same, and concrete completely embedding said conduit, substantially as and for the purposes set forth.

3. The combination with the beam, of stirrups suspended therefrom, a closed protecting conduit inclosing said beam and supported within said stirrups, and concrete completely embedding said conduit, substantially as and for the purposes set forth.

4. The combination with the beam, of stirrups suspended therefrom, a protective slab on the bottom flange of said beam, side and top slabs inclosing said beam, all said slabs being supported by said stirrups, and concrete completely embedding said slabs, substantially as and for the purposes set forth.

527,233. PENDULUM CLOCK. Otto Bartel, New York, N. Y. Filed June 11, 1894. Serial No. 514,153. (No model.)



*Claim.*—1. The combination with a pendulum, of one or more guide or guard rails mounted in proximity thereto, the said guard rails co-operating with the pendulum to guide and support the same when the pendulum has been turned to a position other than the normal operating position thereof, substantially as described.

2. The combination with a pendulum, of one or more guide or guard rails mounted in proximity thereto, and guiding devices upon the pendulum co-operating with the guard rails to guide and support the pendulum when the same has been turned to a position other than the normal operating position thereof, substantially as described

3. The combination of a pendulum provided with one or more guiding openings, of one of more guard rails co-operating with the guiding openings to guide and support the pendulum when the same has been turned into a position other than the normal operating position, substantially as described.

4. The combination of a pendulum provided with apertures, of guards or rails co-operating with the walls of said apertures, as and for the purpose as described.

5. An apertured pendulum in combination with one or more guards or rails extending through the aperture, as and for the purpose as described.

6. The combination of a freely swinging pendulum, of supports extraneous to the pendulum, and one or more guiding devices on the pendulum normally out of engagement with the support when the pendulum is in the normal position of operation, and adapted to co-operate with the support to support the pendulum when the same has been moved into a position other than the normal position of operation, substantially as described and for the purposes set forth.

7. In a clock movement, the combination of one or more guide rails *f*, a pendulum provided with one or more rings *k* through which the guide rail or rails extend, substantially as described.

527,234. INSECTICIDE. Charles A. Bruederle, Fond du Lac, Wis. Filed July 27, 1894. Serial No. 518,767. (No specimens.)

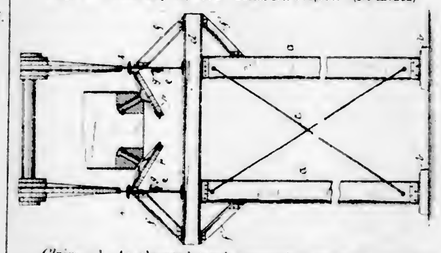
*Claim.*—The herein-described composition of matter to be used for the destruction of potato bugs and like noxious insects, consisting of oxide of iron, white arsenic, muriate of potash, sulphate of copper, and kainite, in the proportions specified.

527,235. VOICE-RECTIFIER. Vittorio Carpi, Chicago, Ill. Filed Dec. 20, 1893. Serial No. 494,150. (No model.)



*Claim.*—As a new article of manufacture, a device for rectifying defects of the voice consisting of a thin triangular plate adapted to be thrust apex foremost into the mouth, the sides forming the apex being provided with serrations adapted to engage the teeth, substantially as described

527,236. ELEVATED RAILWAY. John C. des Granges, Pittsburg, Pa. Filed May 21, 1894. Serial No. 511,936. (No model.)



*Claim.*—1. An elevated track supporting structure comprising supporting posts, cross beams resting on said posts and having their ends projecting beyond said posts, rail supporting girders on said cross-beams and braces extending outwardly from the upper portions of said girders to the projecting ends of said cross-beams, substantially as set forth.

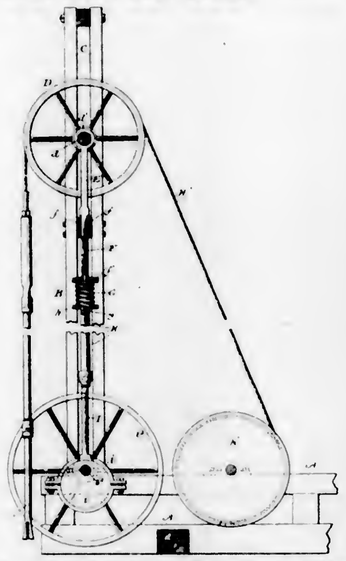
2. An elevated track supporting structure comprising supporting posts, cross-beams resting on said posts and having their ends projecting beyond said posts, rail supporting girders on said cross-beams and braces extending outwardly from the upper portions of said girders to the projecting ends of said cross-beams and from said projecting ends inwardly to said posts, substantially as set forth.

3. The combination of supporting posts, longitudinal I-beams supported thereby, supporting rails on the upper flanges of said I beams,

and guide rails secured beneath said flanges on the inner faces of said beams, substantially as set forth.

4. The combination of supporting posts, longitudinal I-beams supported thereby, supporting rails on the upper flanges of said I-beams, guide rails secured beneath said flanges, on the inner faces of said beams, said guide rails having faces *m*, *n*, substantially as set forth.

527,237. DRILLING-MACHINE. ROBERT M. DOWNIE, Beaver Falls, Pa., assignor to the Keystone Driller Company, same place. Filed Dec. 18, 1893. Serial No. 493,921. (No model.)



*Claim.*—1. In a drilling machine, the combination of a spring supported derrick pulley, a drill jar having an independent longitudinally movable and freely revoluble part adapted to support the entire weight of the string of tools, and a wire drilling cable arranged over said pulley and connected to said longitudinally movable and freely revoluble part of the drill jar, said part of the drill jar being adapted to freely rotate in response to the torsional energy of the cable when relieved of the weight of the tools, substantially as set forth.

2. The combination with a well drilling rope or cable; of a cylindrical swivel drill jar adapted to have one of its members suspended from the lower end of said rope and its other member connected to the drilling tool, said swivel drill jar being adapted to turn bodily with the drilling rope as the same untwists in response to the suspended weight thereon, substantially as set forth.

3. In combination with a well drilling rope or cable, of a cylindrical swivel drill jar having a casing and an independently revoluble jar head moving longitudinally therein and attached to the lower end of said drilling rope or cable, substantially as set forth.

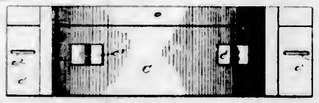
4. In combination with a drilling cable; of a set of jars comprising a casing having a fixed upper jar plug and a movable jar head arranged to independently rotate within the casing below said plug and attached to the lower end of the drilling cable said movable jar head being adapted to have a jarring and frictional contact with the upper fixed plug, substantially as set forth.

5. A drill jar comprising a cylindrical casing having an upper guide or jar plug provided with a lower tempered jar end, and an inner longitudinally moving and independently revoluble jar head adapted to be connected to the lower end of the drilling rope or cable and provided with an upper tempered jar end, said inner jar head being adapted to freely rotate within the casing when relieved from contact with the upper jar plug, substantially as set forth.

6. In combination with a wire drilling cable; of a set of jars comprising a cylindrical casing having side vent slots and a lower solid end, a perforated guide plug detachably fitted into the upper end of the casing, an inner longitudinally movable and independently revoluble jar head arranged to work below the said guide plug and connected to the lower end of the drilling cable, and a cable guide tube fitted at its lower end into said jar head and adapted to slide in the central opening of the guide plug substantially as set forth.

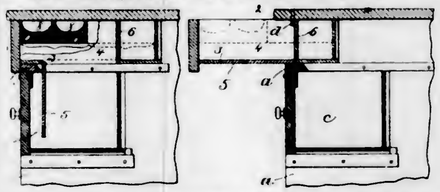
7. In combination with the wire drilling cable; of a set of jars comprising a casing having an upper jar plug and inclosing a pocket below said plug, and a longitudinally moving and independently revoluble jar head arranged within the casing pocket below said plug and attached to said drilling cable, said head being adapted to move below the jar plug in the pocket to take up the surplus length of the drilling cable, substantially as set forth.

527,238. METALLIC BURIAL-VAULT COVER. WILLIAM ECKELS, Mechanicsburg, Pa. Filed Apr. 6, 1894. Serial No. 506,605. (No model.)



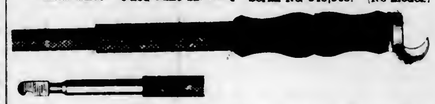
*Claim.*—A cover for a vault or tomb, comprising a series of convexo concave arch plates with transverse flanges, conforming to the curve in the plates, said plates also having side flanges with transverse slots across the same in each plate or section and at both sides thereof, and means on the plates for lowering or lifting the same, substantially as described.

527,239. CASH-RECEPTACLE. FRANK R. GARFIELD, Concord, Mass. Filed Apr. 19, 1894. Serial No. 508,157. (No model.)



*Claim.*—A money receptacle comprising a casing, a money drawer therein having a change side and a sales side, the latter having a bottom which is held in position by the casing when the drawer is opened and drops automatically when the drawer is closed, and a cash-holder arranged to receive the contents of the sales side when the drawer is closed, as set forth.

527,240. INSTRUMENT FOR CHIROPODISTS' USE. FANNIE M. GARIES, New York, N. Y., assignor of one-half to Mary E. Bustard, same place. Filed June 22, 1894. Serial No. 515,365. (No model.)



*Claim.*—1. In an instrument for the purposes described, a device for trimming and burnishing the nails consisting of a handle portion having a beveled cutting edge, a rounded end portion having a V-shaped groove, and a rounded semi-circular indentation in the side thereof and opposite to the cutting edge, substantially as and for the purposes set forth.

2. As a new article of manufacture, an instrument for the purposes described consisting of a hollow handle, a series of tubes telescopically arranged and adapted to fit within said handle, having reducing surfaces of different degrees of coarseness, a stem fitting within said tubes terminating in a solid head piece having a beveled cutting edge, a rounded end portion having a V-shaped groove, and a rounded semi-circular indentation in the side thereof and opposite to the cutting edge, a screw plug adapted to fit into the hollow handle having a stem, integral therewith, provided with flat reducing surfaces of different degrees of coarseness, and a recess extending across the outer portion of said screw plug adapted to receive a folding semi-circular knife blade, substantially as specified.

527,241. CAR-VENTILATOR. OTTILIE H. GOLDBERG, St. Louis, Mo. Filed Mar. 12, 1894. Serial No. 503,265. (No model.)

*Claim.*—1. In a car ventilator, a rectangular casing having flaring open ends located adjacent an opening in the upper portion of a car, an oscillating rectangular ventilator located within said opening, and a ventilator located within a rectangular casing upon the interior of a car, substantially as shown and described.

2. A car ventilator, comprising a rectangular sheet metal casing located upon the outside of the car and provided with flaring open ends, an oscillating ventilator located within said rectangular casing and within the wall of the car, a rectangular casing located upon the interior of the car and having a ventilator located therein and immediately in front of the oscillating ventilator, and means for operating said oscillating ventilator, substantially as specified.



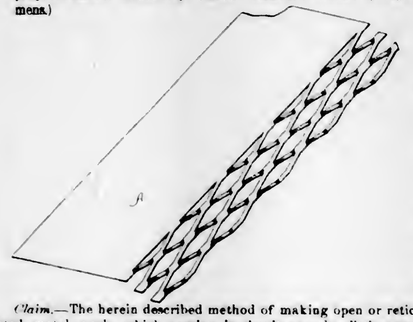


3. In a car ventilator, an oscillating ventilator comprising a rectangular frame, a series of ventilator slats partially rotating within said rectangular frame, a longitudinally extending rod secured to the edges of said ventilator slats, a rectangular casing located within an opening in the side wall of the car, and to which is centrally pivoted the before mentioned oscillating ventilator, and means for operating said oscillating ventilator, substantially as specified.

4. In a car ventilator, a rectangular casing having flaring and open ends located adjacent an opening in the side wall of a car, an oscillating ventilator centrally pivoted to the frame work within said opening, and a reticulated casing located upon the interior of the car and over said oscillating ventilator, substantially as specified.

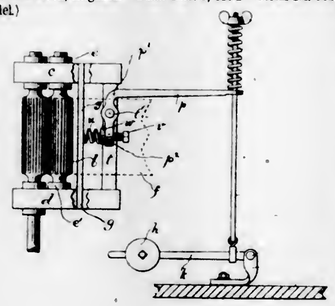
5. In a car ventilator, the combination of the following elements, to-wit: a rectangular casing 2 having the flaring open ends 4, an oscillating ventilator 8 comprising the rectangular frame work 9, partially rotatable slats 15, a longitudinally extending rod 17 connecting said ventilator slats 15, a cord or chain 21 passing over a grooved wheel 19, and a rectangular frame work 23 provided with the ventilator slats 25 held together by the longitudinally extending rod 27 provided with the head 28, all to operate in the manner set forth and for the purposes specified.

527,242. METHOD OF MAKING EXPANDED SHEET METAL. JOHN F. GOLDING, Chicago, Ill., assignor to the Expanded Metal Company, of Missouri. Filed May 7, 1894. Serial No. 510,343. (No specimens.)



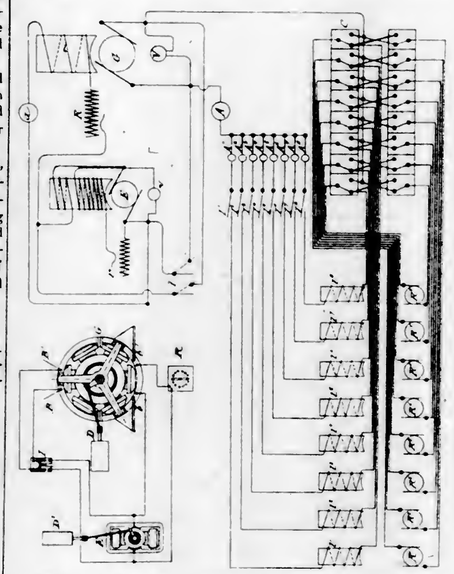
*Claim.*—The herein described method of making open or reticulated metal work, which consists in simultaneously slitting and bending portions of a plate or sheet of metal in such manner as to stretch or elongate the bars connecting the slit portions and body of the sheet or plate, and then similarly slitting and bending in places alternate to the first mentioned portions, thus producing the finished expanded sheet metal of the same length as that of the original sheet or plate, substantially as described.

527,243. COMBING-MACHINE. ARTHUR L. HAGGAS and ROBERT HEATON, Oakworth, England. Filed Mar. 3, 1894. Serial No. 502,184. (No model.)



*Claim.*—In a combing machine, the combination of drawing-off rollers, movable bearings for one of said rollers, a cross-pressure bar, a bent lever having one arm arranged to act against the middle of said bar, a spring interposed between said arm of the lever and the bar, a weighted lever, a rod connected therewith and passing loosely through the bent lever, and a spring interposed between the lever and a nut on the rod.

527,244. ELECTRIC LOCOMOTION ON RAILWAYS. JEAN J. HEILMANN, Paris, France. Filed Apr. 20, 1894. Serial No. 508,297. (No model.) Patented in France Feb. 22, 1894, No. 236,493; in Belgium Feb. 24, 1894, No. 108,722, and in England Mar. 12, 1894, No. 5,118.



*Claim.*—1. In an electro locomotive system of the type set forth, the combination with a main dynamo driven by an engine having a fixed cut-off, of an exciting dynamo driven by a separate engine, and a rheostat for varying the current supplied by said exciter to the main field magnets.

2. In an electro locomotive system of the type set forth, the combination with a main dynamo driven at varying speed by an engine having a fixed cut-off, of an exciting dynamo of constant potential, driven by a separate engine, and a rheostat for varying the current supplied by said exciter, substantially as described.

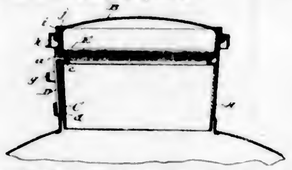
3. In an electro locomotive system of the type set forth, the combination with a main dynamo driven at varying speed by an engine having a fixed cut off, of an exciting dynamo of constant potential driven by a separate engine, and means for reducing the current supplied by the exciter when the work of the main dynamo is increased, substantially as described.

4. In an electro locomotive system of the type set forth, the combination with a main dynamo driven by a principal engine, of an exciting dynamo driven by a separate engine, circuit connections between said exciter and the armature of the main dynamo, and a switch controlling said connections, whereby the current of the exciter may be passed through the armature of the main dynamo as well as its field, and thus operate it as a motor temporarily, to start the principal engine from a dead center, substantially as described.

527,245. MILK-CAN. ERNEST A. KARSTNER, Baltimore, Md. Filed Mar. 14, 1894. Serial No. 503,630. (No model.)

*Claim.*—1. The combination of a can or vessel cover or top having a groove or seat in its depending flange, a can or vessel adapted to receive the flange of the cover or top and having an aperture *a*, a spring catch connected at one end to the can or vessel and having an angular branch adapted to take through the aperture *a*, of the same and into the groove or seat of the cover flange, and a reinforce piece F, connected to the can or vessel over the spring catch and having a slot to permit play of the catch, substantially as specified.

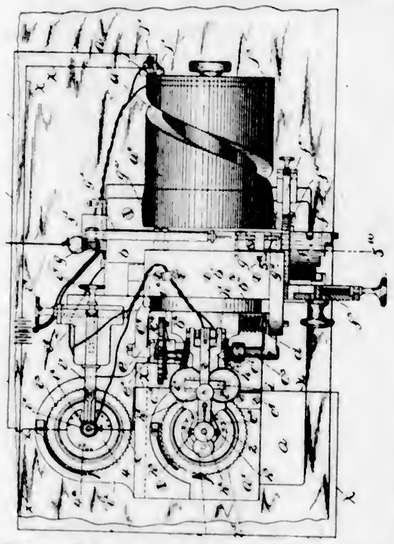
2. A can or vessel cover or top comprising a cover or top proper having a shoulder as *i*, a bed of solder *j*, arranged against and reinforced by said shoulder *i*, and a flange C, seated in the said bed of solder and connected by the same to the cover or top proper, substantially as and for the purpose specified.



3. The combination with a can or vessel having an aperture *a*, and a spring catch connected at one end to the can and having an angular portion adapted to take through the aperture *a*, and engage a cover or top; of a reinforce piece connected to the can over the spring catch and having a slot *f*, to permit play of said catch, substantially as specified.

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527,246. ORNAMENTING-MACHINE. EDWARD A. MARSH, Newton, Mass. Filed Feb. 27, 1894. Serial No. 501,715. (No model.)



*Claim.*—1. In a machine of the character described, an ornamenting implement capable of assuming different angular adjustments with respect to the work, intermittently operating means for progressively varying the angularity of said implement, and means for automatically restoring the implement to its initial adjustment after it has been moved a predetermined extent.

2. In a machine of the character described, the combination with a movable work-holder, of an ornamenting implement capable of assuming different angular adjustments with respect to the work, and means actuated by the work-holder or carrier for varying the angular adjustment of the said ornamenting implement.

3. In a machine of the character described, the combination of an ornamenting implement capable of assuming different angular adjustments with respect to the work, a movable work-holder, and means actuated thereby for intermittently and progressively varying the angularity of the implement.

4. In a machine of the character described, the combination of an ornamenting implement capable of assuming different angular adjustments with respect to the work, a movable work-holder, means actuated thereby for intermittently and progressively varying the angularity of the implement, and means for automatically restoring the implement to its initial adjustment after it has been moved a predetermined extent.

5. In a machine of the character described, the combination of an oscillatory spring-pressed tool support, a ratchet for tilting the same, a movable work-holder, and means actuated thereby for intermittently moving the ratchet.

6. In a machine of the character described, the combination of an oscillatory spring-pressed tool support having a projection or stud on one side, a ratchet having lateral teeth for engagement with said projection and peripheral teeth for engagement of a detent-pawl, a movable work-holder, and means actuated thereby for intermittently turning the ratchet.

7. In a machine of the character described, the combination of an oscillatory tool-holder for disposing the tool at different angles to the work, a tool-spindle longitudinally movable therein and yieldingly upheld, an electro-magnet carried by the oscillatory support and arranged to depress said spindle, and pattern-devices controlling an electric circuit through said magnet.

8. In a machine of the character described, a movable work-holder, a step-gage controlling the relative positions of the ornamenting implement and the work for the formation of different delineations, and means actuated by the movable work-holder for intermittently changing the adjustment of the step-gage.

9. In a machine of the character described, a movable work-holder, a rotatively adjustable step-gage controlling the relative positions of the ornamenting implement and the work for the formation of different delineations, and means actuated by the work-holder for intermittently changing the rotative adjustment of the step-gage.

10. In a machine of the character described, a movable work-holder, a step-gage controlling the relative positions of the ornamenting implement and the work, means actuated by the movable work-holder for intermittently changing the adjustment of the step-gage, a spring tending to return the gage to its initial adjustment, and means for releasing the step-gage in the restoration of parts to normal condition on the completion of a piece of work.

11. In a machine of the character described, the combination of a rotatable and longitudinally movable pattern-cam having a spiral acting section, and a work-supporting carriage having a bearing-piece for contact with the said pattern-cam, said carriage being yieldingly actuated toward the cam.

12. In a machine of the character described, the combination of a rotatable and longitudinally movable pattern-cam composed of a plurality of disks having spiral acting sections fitting together end to end, and a work-supporting carriage having a bearing piece for contact with the pattern-cam, said carriage being yieldingly actuated toward the cam.

13. In a machine of the character described, the combination of a rotatable and longitudinally movable pattern-cam having a spiral engaging section, a carriage having a bearing-piece for contact with said cam and yieldingly actuated toward the latter, a rotary work-holder on said carriage, and gearing connecting the said work-holder and the pattern-cam, and maintaining a positive relation therebetween.

14. In a machine of the character described, the combination of a shaft, a sleeve splined thereon and having a screw, a half-nut movable into and out of engagement with said screw, a lever for returning the sleeve to its initial position, a pattern-cam on the sleeve and having a spiral peripheral acting section, a work-supporting carriage having a bearing-piece for engagement with the cam, and means for yieldingly actuating the said carriage toward the cam.

15. In a machine of the character described, the combination of an electrically controlled ornamenting tool, means for causing a traverse of the tool over the work, means for periodically changing the relation of the work and tool for the formation of different delineations, movable circuit-controlling pattern devices geared to have a fixed rate of movement relative to the tool's traverse, and a traveling contact-piece arranged to bring said devices severally into circuit, substantially as described.

16. In a machine of the character described, the combination of an electro-magnet controlling operative engagement of the tool with the work, means for periodically changing the relation of the work and tool for the formation of different delineations, means for causing a traverse of the tool over the work, circuit-controlling pattern-disks, a switch-board whose members are connected with said disks, and a screw carrying a contact-piece for successively engaging the switch board members.

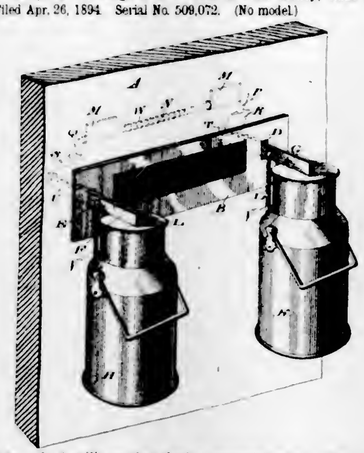
17. In a machine of the character described, the combination of an electro-magnet controlling operative engagement of the tool with the work, means for periodically changing the relation of the work and tool for the formation of different delineations, means for causing a traverse of the tool over the work, circuit-controlling pattern-disks, a switch board whose members are connected with said disks, a screw carrying a contact-piece for successively engaging the switch-board members, a pattern-cam on said screw and having spiral acting sections, and a work-supporting carriage having a bearing piece for contact with said cam and yieldingly impelled toward the latter.

18. In a machine of the character described, the combination of an electro-magnet controlling operative engagement of the tool with the work, means for periodically changing the relation of the work and tool for the formation of different delineations; means for causing a traverse of the tool over the work, circuit controlling pattern disks, a switch-board whose members are connected with said disks, and a traveling contact piece adapted to successively connect with members of the switch board with the changes in relation of the work and the tool.



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527,247. FASTENER FOR MILK-CANS. GEORGE MCDERMOTT, Philadelphia, Pa., assignor of one-half to John Malley, same place. Filed Apr. 26, 1894. Serial No. 509,072. (No model.)



*Claim.*—1. A milk serving device, comprising two cans, racks from which the same are supported, locking devices for said racks whereby the removal of one of the latter cannot be effected except by the placing of the other can in position, substantially as described.

2. A milk serving device comprising a partition, two slots through the same, and a latch pivoted above and provided with the dogs R, S, projecting at different angles and adapted to engage the racks T and U of the cans, substantially as described.

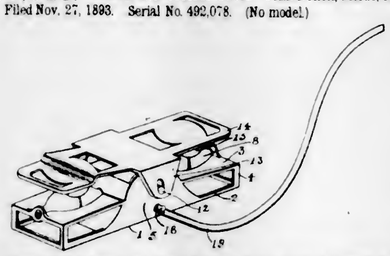
3. A milk serving device, comprising milk cans, racks for supporting the same, locking devices for said racks, whereby the removal of one of the latter can not be effected until the other rack is placed in position, an end of each bar extending over the top of the can suspended therefrom, so that no access can be had to interior when said racks are placed in position, said parts being combined substantially as described.

4. A partition having a slot therein, a latch pivoted over one end of said slot, and a rack from which a can is suspended having one end adapted to be engaged by the latch, and the other end adapted to extend over the cover of said can and prevent access thereto when the same is in position, said parts being combined substantially as described.

5. A bar having a rack on the inner end thereof, and a milk can suspended from said bar, the outer end of said bar being adapted to extend over the top of the can and lock the same, said parts being combined substantially as described.

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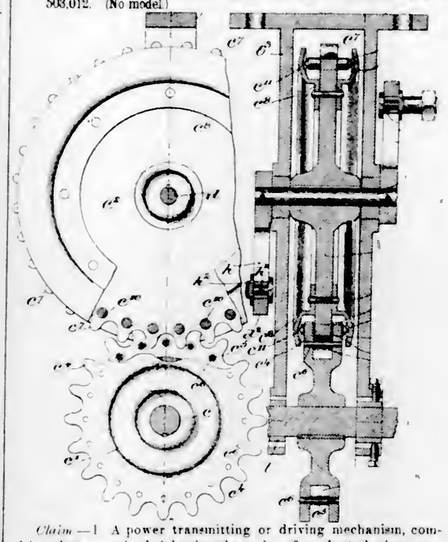
527,248. PEDAL AIR-COMPRESSOR. JOHN NORTH, Toledo, Ohio. Filed Nov. 27, 1893. Serial No. 492,078. (No model.)



*Claim.*—In a pedal air compressor, a frame having a central air reservoir, compressible bulbs arranged at each end of the frame, a pedal plate arranged above the frame having end portions coincident with the bulbs and downwardly extending side flanges, vertical slots in the flanges, pins upon the frame for engagement with the slots, whereby when the plate is in operative position to alternately compress the bulbs, the pins are seated in the upper ends of the slots and the plate has a rocking motion, and when in a normal position the plate is raised above the bulbs.

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527,249. POWER-TRANSMITTING OR DRIVING MECHANISM. CASIMIR PAUTHONIER, Boston, Mass. Filed Mar. 9, 1894. Serial No. 503,012. (No model.)

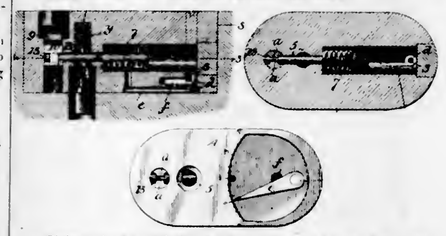


*Claim.*—1. A power transmitting or driving mechanism, comprising the gear wheel $c'$, having the series of teeth $c^4$, the intervening groove $c^5$, and the friction rolls in said groove, and the gear wheel $c^3$ provided with a series of teeth to enter the groove $c^5$ and engage the friction rolls therein, and laterally projecting friction rolls $c^{10}$ engaging the teeth $c^4$, substantially as described.

2. A power transmitting or driving mechanism comprising the gear wheel $c'$, having the series of parallel teeth $c^4$, and the intervening groove $c^5$ provided with the friction rolls $c^9$, and the gear wheel $c^3$ having the teeth $c^7$, the laterally projecting rolls $c^{10}$, and the roll-retaining flanges $c^8$, substantially as described.

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527,250. TIME-FUSE FOR PROJECTILES. WILLIAM J. SMITH, New Haven, Conn., assignor to Charles S. Larrabee, trustee, Bath, Me. Filed Oct. 24, 1893. Serial No. 489,039. (No model.)



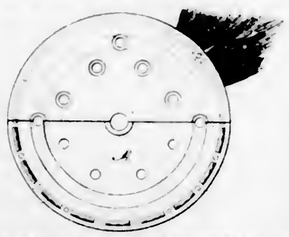
*Claim.*—1. An exploder for projectiles consisting of a case provided with a dash-pot, a spring for actuating the piston of the dash-pot, a hammer, and a spring for actuating the same, a locking device for the hammer connected to be operated by the piston of the dash-pot, and a detent for the locking device having its end exposed to be acted on by the force of the explosion of the charge in the gun, substantially as set forth.

2. The combination of a case provided with a hammer and a spring for operating the same, a dash-pot, an adjustable valve for regulating the flow of liquid from the dash-pot, a lock for the hammer connected with the piston of the dash pot, and a detent for said lock with one end exposed to the action of the gases on the explosion of the charge of the gun, substantially as set forth.

3. The combination of the case A, its cylinder, piston, spring and adjustable valve, a piston rod extending from the piston, a hammer bearing on the said piston rod, and a spring for actuating the ham-

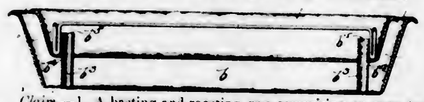
mer, and a detent for said rod consisting of a bolt, the head of which is exposed outside of the case, substantially as set forth.

527,251. MANUFACTURE OF BRUSHES. JOSEPH STAUDER, Berlin, Germany. Filed June 21, 1893. Serial No. 478,388. (No model.) Patented in Austria-Hungary Apr. 24, 1893, No. 2,295 and No. 3,806; in France Apr. 25, 1893, No. 229,595, and in England May 19, 1893, No. 10,041.



*Claim.*—A brush in which the tufts of bristles are held together by disks adapted to be secured together, said disks being secured by pins C, and rings or fillets C', and constituting supports or bearings independent of one another, for the separation of the tufts of bristles, substantially as and for the purpose described.

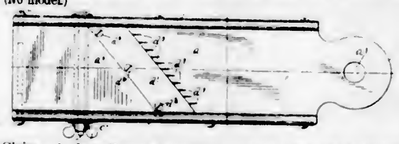
527,252. BASTING AND ROASTING PAN. JAMES STROUD, New York, N. Y. Filed Dec. 11, 1893. Serial No. 493,358. (No model.)



*Claim.*—1. A basting and roasting pan comprising an open top outer vessel for containing water, and a smaller, open top inner vessel for meat, said inner vessel provided with hollow supporting legs having steam inlet and outlet passages, the inner vessel being of such a diameter and depth relative to the outer vessel and that there is secured a water space between the bottoms of the two vessels, and a steam circulating space between the side walls of the two vessels, substantially as described.

2. A basting and roasting pan comprising an outer vessel for containing water and a smaller, open top inner vessel for meat, provided with hollow supporting legs having steam inlet and outlet passages, said legs extending up a short distance above the bottom of the inner vessel, and an elevated open rack located within the inner vessel, the inner vessel being of such a depth and diameter relative to the outer vessel as to form a water space between the bottoms of the two vessels, a steam circulating space between the side walls of the vessels and a steam escape passage between the upper edges of the vessels, substantially as described.

527,253. POTATO-SLICER. CHARLES B. STRUBLE and CORNELIUS S. TURNER, Minneapolis, Minn. Filed Mar. 26, 1894. Serial No. 505,047. (No model.)

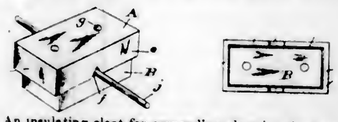


*Claim.*—1. In a slicer the combination with the series of vertical knives $d^3$, driven into the bed section, of retaining pieces also driven into said bed section between said knives, for holding the said knives from displacement, under the shrinkage of the wood, substantially as described.

2. In a slicer, the combination with a wooden bed section provided with a series of slicing knives driven therein, of retaining brads or staples driven into the wood, with their heads overlapping the shanks of the knives for retaining the same in place, substantially as described.

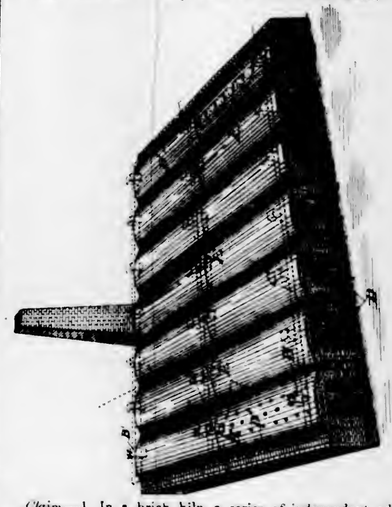
527,254. INSULATOR. WILLIAM D. TRIMBLE, Baltimore, Md. Filed Feb. 2, 1894. Serial No. 498,843. (No model.)

*Claim.*—1. An insulating cleat for suspending electric wires, comprising the upper piece, A, having a socket closed on all vertical sides and open on the bottom and provided with notches in its side flanges; and a clamping piece provided with notches and fitting up within the said socket, so that the latter projects down around it on all sides.



2. An insulating cleat for suspending electric wires, comprising the upper piece, A, having a socket closed on all vertical sides and open at the bottom and provided with a bridge extending longitudinally thereof,—the sides and the bridge having one or more notches; and a clamping piece having a recess closed on all sides and adapted to fit up within the said socket with the bridge of the upper piece in said recess, and said clamping piece provided with one or more notches to coincide with the notches in the sides of the said upper piece.

527,255. BRICK-KILN. WILLIAM A. WILFORD, Todmorden, Canada. Filed Apr. 14, 1894. Serial No. 507,560. (No model.)



*Claim.*—1. In a brick kiln, a series of independent adjacent chambers with intervening walls between them having horizontal passages opening from one chamber into the next adjoining chamber, two main flues, one of said chambers discharging into one of the main flues, and the next adjoining chamber discharging into the other main flue, and means for conveying the gases from the main flues and discharging them into the atmosphere, each of said chambers provided with a series of draft openings to supply a current of atmospheric air to the fire within the chamber, and means for supplying fuel to the fire within the chamber, substantially as specified.

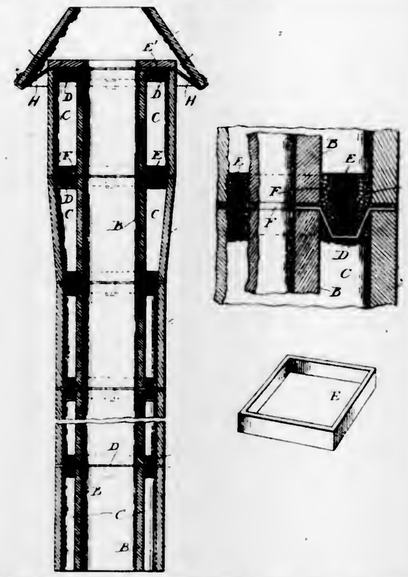
2. In a brick kiln, a series of independent adjacent chambers, with intervening walls, horizontal passages connecting the chambers, means for closing the said passages, two main flues, a supplemental flue for each of said chambers, discharging into either the one or the other of the main flues, and means for conveying the gases from the main flues, substantially as specified.

3. In a continuous brick kiln the combination of a series of independent adjacent chambers, two central longitudinal main flues between the rows of chambers, a supplemental flue for each chamber, the supplemental flues of the alternate chambers discharging into one of the main flues, and the supplemental flues from the intervening chambers discharging into the other main flue, an outlet from the main flues, a series of passages formed through the walls of each of the chambers to admit of a current of atmospheric air to the chamber, a series of vertical passages formed through the top of each of the chambers to admit of the entry of the fuel to the chamber, a series of horizontal passages formed through the dividing wall or partition between the adjacent chambers to permit of the fire being drawn from one chamber into the other, substantially as specified.

527,256. FLUE. FRANCIS B. WISDOM and EDWARD G. WISDOM, Chicago, Ill. Filed Apr. 30, 1894. Serial No. 509,489. (No model.)



*Claim.*—1. A flue, having double walls with an intervening air-space, said walls being built up of a number of separate sections of pipe placed end to end, and means dividing said air space into separate dead air spaces substantially as set forth.



2. A flue, having double walls with an intervening air-space, bridges supported by the walls and spanning the air-space, and means supported by the bridges and dividing the air space into separate dead-air chambers, substantially as set forth.

3. A flue, having double walls with an intervening air-space, each of said walls being built up of a number of separate sections of pipe placed end to end and arranged so that the joints of one wall are opposite the joints of the other wall, bridges supported by the walls and spanning the space between them, and rings supported by the bridges and breaking joints with the sections of pipe of which the walls are built up, substantially as set forth.

4. A flue, having double walls with an intervening air space, said walls being built up of a number of separate sections of pipe placed end to end and so arranged that the joints of one wall are opposite the joints of the other wall, bridges supported by the walls and spanning the air-space, said bridges being bent to form shoulders which engage the walls and center the pipe sections of which the inner wall is built up, substantially as set forth.

5. A flue, having double walls with an intervening air-space, said walls being built up of a number of separate sections of pipe placed end to end, bridges supported by the walls and spanning the air-space, rings supported by the bridges, and mortar or similar material filling the joints between the several parts, substantially as set forth.

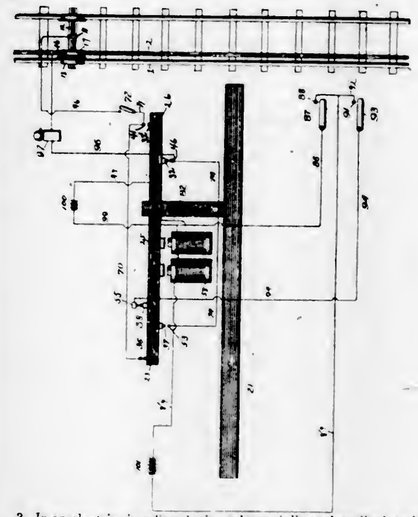
6. A flue, having double walls with an intervening air-space, said walls being built up of a number of separate sections of pipe placed end to end and so arranged that the joints of one wall are opposite the joints of the other wall, bridges supported by the walls and spanning the air-space, rings supported by the bridges and breaking joints with the sections of pipe of which the walls are built up, and mortar or similar material filling the spaces between the walls and ring, substantially as set forth.

7. A flue, having double walls, bridges resting upon the top of the flue and having portions bent downward between said walls, a ring supported by said bridges, brackets formed in continuation of said bridges, and a wind-guard supported by said brackets, substantially as set forth.

527,257. ELECTRICAL SIGNAL. HARRY H. WINTER, Colorado City, Colo. Filed Apr. 10, 1893. Serial No. 469,813. (No model.)

*Claim.*—1. In an electric signaling device for railroads an insulated rim elastically attached to the wheel of a vehicle and adapted to engage an auxiliary rail; the said wheel connected with one pole of a battery and the said rim with the other pole substantially as set forth.

2. In an electric signaling device consisting of a railway the rails of which form an electric conductor, a second conductor along the track, and a cable extending along the track; a circuit closer attached to the end of the said cable, said circuit closer consisting of a sliding bar and attachments, provided with an automatic lock, a movable and stationary point, wires connecting said points with the two conductors respectively, said movable point adapted to be brought and held in contact with said stationary point by sliding bar and attachments and lock, in combination with a vehicle carrying a battery and signaling device connected to the said conductors, substantially as described.

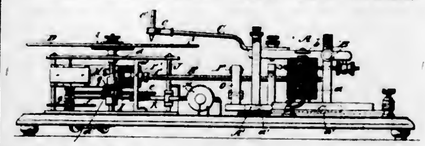


3. In an electric signaling device substantially as described, a circuit closer consisting of a sliding bar provided with an automatic lock and attachments, stationary and movable points, said movable point adapted to be brought in contact with and held against said stationary point by the sliding bar and attachments and lock, substantially as set forth.

4. In an electric signaling device, the combination of a railway the rails of which form an electrical conductor, a second conductor along the track, a vehicle adapted to travel upon said track, a pole changer within the said vehicle, one side of which is connected with the track rails and the other side connected with the second conductor, a battery connected with the said pole changer, an electric magnet connected with one pole of an independent battery, the lever of said pole changer connected with the other pole of the independent battery, said lever adapted to connect the poles of the battery with the rails and the second conductors and to change the polarity of the said rails and conductors; and signaling device included in the circuit of the first battery, substantially as described.

5. In an electric device a pole changer, one side of which is connected with a conductor and the other side connected with a second conductor; a battery connected with the said pole changer; an electric magnet connected with one pole of an independent battery; the lever of said pole changer connected with the other pole of the independent battery, said lever adapted to connect the poles of the battery with the first conductor and the second conductor, and to change the polarity of the said conductors, as set forth.

527,258. SIGNAL-RECORDING DEVICE. WILLIAM H. ADKINS, Rome, Ga. Filed Dec. 29, 1893. Serial No. 495,120. (No model.)



*Claim.*—1. In an electric recording signaling system, the combination with a rotary recording disk, and a motor for actuating the same, of a sliding carriage actuated by said motor to travel away from said disk, a magnet and its armature carried by said carriage, a pencil holder actuated by the armature, and mechanism for releas-

ing said motor actuated by the electric signals, substantially as described.

2. In an electric recording signaling system, the combination with a rotary recording disk, of a sliding carriage carrying a magnet and its armature, a pencil holder carried by said armature, a motor for rotating said disk and actuating said carriage, and an electric starting device for said motor connected in series with the magnet actuating the pencil holder, substantially as described.

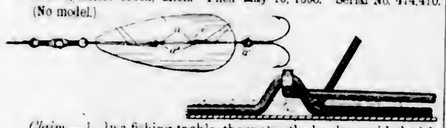
3. In an electric recording signaling system, the combination with a rotary recording disk, of a sliding carriage carrying a magnet and its armature, a pencil holder carried by said armature, a motor for rotating said disk and actuating said carriage, a detent normally holding said motor inactive and carrying an armature, and a magnet connected in series with the magnet actuating the pencil holder for releasing the detent, substantially as described.

4. In an electric recording signaling system, the combination with an electro-magnet and its armature carrying a pencil holder, of a motor actuating a recording disk and having a notched wheel, an escapement arm engaging said wheel and carrying an armature, and an electro-magnet connected in series with the magnet actuating the pencil holder for controlling the armature of the escapement wheel, substantially as described.

5. In an electric recording signaling system, the combination with a rotary recording disk, of a sliding carriage carrying a magnet and its armature, a pencil holder carried by said armature, a motor for rotating said disk, a screw-threaded shaft driven by said motor and detachably engaging said carriage, and a stopping and starting device for the motor controlled by a magnet connected in series with the magnet actuating the pencil holder, substantially as shown and described.

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527,259. FASTENING FOR FISHING-TACKLE. MASSON B. ALLEN, Battle Creek, Mich. Filed May 16, 1893. Serial No. 474,410. (No model.)

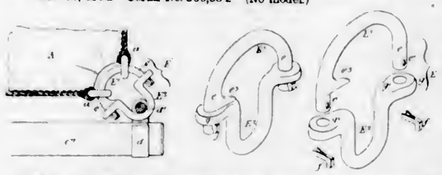


*Claim.*—1. In a fishing tackle, the spoon, the hook provided with an eye and the spring wire link having a loop $a^3$ in its body portion projecting up from the spoon and a free hook extremity passing through the eye of the hook and engaging the loop over the surface of the spoon, substantially as described.

2. In a fishing tackle the spoon the hook provided with an eye, the swivel provided with an eye in combination with a spring wire link having two free hook extremities and two loops $a^2$ $a^2$ both projecting up from the surface of the spoon said free hook extremities engaging the loops $a^3$ and co-acting therewith to retain the hook and swivel, substantially as described.

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527,260. CLEW-RING. THOMAS AYRES, Philadelphia, Pa. Filed Feb. 16, 1894. Serial No. 500,334. (No model.)



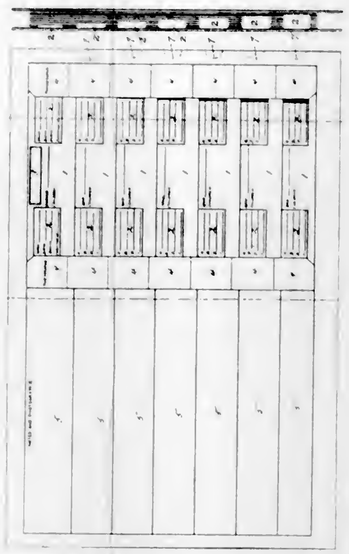
*Claim.*—1. The combination in a two part ring, of the section E' U-shaped and having extended ends, with a U-shaped section $E^2$ having arms perforated for the passage of the extended ends of the section E', a shoulder on either of the sections forming a fillet and securing devices on said extended ends for locking the sections together, substantially as described.

2. The combination in a two part ring, the section E' being U-shaped having extended ends, a shoulder on one arm forming a fillet when the two parts of the ring are together, the other arm being of an even diameter with the body of the ring, with a section $E^2$ U-shaped having laterally extending perforated arms, with securing devices for fastening the two rings together, substantially as described.

3. The combination in a two part ring, the section $E^2$ having a narrow U-shaped portion, and laterally extending perforated arms, the section E' being U-shaped with arms adapted to the perforated arms of the section $E^2$, a shoulder on the portion E' adapted to form a fillet on one side of the ring and a projection on one of the arms of the section $E^2$ forming a fillet on the opposite side of the ring, with means for securing the portions together, substantially as described.

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527,261. ANCESTRAL-RECORD BOOK. FREDERIC W. BAILEY, New Haven, Conn. Filed Mar. 14, 1894. Serial No. 503,584. (No model.)



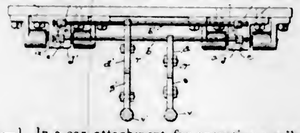
*Claim.*—1. An ancestral record book, the alternate pages of which are each provided with spaces or divisions for the paternal and maternal ancestry, and the top of the page is provided with a space for the family surname, a portion of each leaf being cut away whereby but one of the spaces for the maternal ancestry will be visible therethrough, substantially as set forth.

2. An ancestral book, each leaf of which, except the last one is perforated, one side or page of said leaf being provided with spaces for paternal and maternal ancestors, the maternal ancestor spaces registering with the perforations and the paternal spaces of each page beginning one space nearer the top of the page than the maternal space that is visible through the preceding page, the other page of said leaf being provided with spaces for notes and photographs, substantially as set forth.

3. An ancestral record book, in which the entries are made working from the beginning of the book toward the end, and in which one of two opposite pages throughout the book is provided with one or more transverse divisions or sections, extending horizontally on the page, and the right-hand page is provided with one or more corresponding transverse horizontal sections, each of said sections having two spaces thereon, one for the paternal ancestry, and the other for the maternal ancestry, and said page provided with openings or perforations, for access to a succeeding page, in combination with a supplemental page, adapted to be attached to the top of the last mentioned page, for the purpose stated, substantially as set forth.

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527,262. STREET-CAR MECHANISM FOR OPERATING SWITCHES. EVERETT A. BARBER, Lakewood, and ARTHUR B. BABBITT, Pawtucket, R. I. Filed June 27, 1894. Serial No. 515,833. (No model.)



*Claim.*—1. In a car attachment for operating a railway switch two pairs of vertical bars having inclined shoes on their lower ends, held on sliding boxes having springs on each side to keep them in place when not moved by obstructions, in combination with horizontal bars to connect said pairs of vertical bars, springs for raising the horizontal and vertical bars, levers to raise and lower said rods, and means for operating said levers from the car platform, substantially as described.

2. In a car attachment for operating a railway switch the combination of the pins $v$, $v'$, levers $s$, $s'$ and $d$, $d'$, with the rods $b$, $b'$ and the deflector bars $a$, $a'$, connected by said bars $b$, $b'$, with springs $p$ $p'$ for raising said bars $b$ $b'$ and deflector bars $a$ $a'$, substantially as described.



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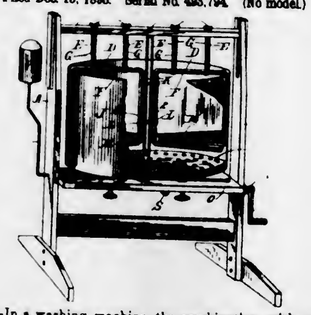
527,263. SURGICAL NEEDLE. HELEN A. BLANCHARD, New York, N. Y. Filed Jan. 23, 1894. Serial No. 497,772. (No model.)



*Claim.*—A surgical needle having its penetrating portion formed as a lancet of greater width than the adjoining portion of the blade, said blade having a thread-engaging notch, one side of which is substantially at a right angle to the blade, and the other side inclined therefrom toward the point.

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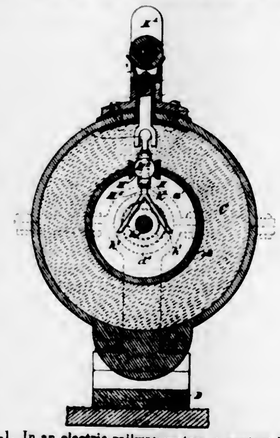
527,264. WASHING-MACHINE. GEORGE BRANDER, Sutherland, Iowa. Filed Dec. 15, 1893. Serial No. 493,794. (No model.)



*Claim.*—In a washing machine, the combination, with a frame, of a brace secured to the upper portion thereof, a rotatable tub upon the frame, a vertical shaft having its upper end rigidly secured to the brace and its lower end set in the bottom of the tub, and its central portion formed of two parallel rods, two roller frames suspended from the brace, one upon each side of the vertical shaft, and movably secured to its respective rod, and means for operating the tub, substantially as set forth.

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527,265. CONDUIT SYSTEM FOR ELECTRIC RAILWAYS. WILLIAM A. BUTLER, New York, N. Y., assignor to John Gilmore Boyd, same place. Filed Apr. 20, 1894. Serial No. 508,322. (No model.)



*Claim.*—1. In an electric railway system, a contact box consisting of an inner closed stationary shell having a conductor arranged therein, extending therefrom and adapted to be connected with the lead of an electric circuit, an exterior shell capable of rocking about the inner shell, a contact arm carried by the inner shell, and adapted to be moved into contact with the conductor therein, a conductor extending through and carried by the outer shell and mechanically and electrically connected with the contact arm of the inner shell, and insulating material filling the space between the two shells, substantially as set forth.

2. In an electric railway system, a contact box consisting of an inner closed stationary shell having a conductor arranged therein, extending therefrom and adapted to be connected with the lead of an electric circuit, an exterior shell capable of rocking about the inner shell, a contact arm carried by the inner shell, and adapted to be moved into contact with the conductor therein, a conductor extending through and carried by the outer shell and mechanically and electrically connected with the contact arm of the inner shell, and insulating material filling the space between the two shells, substantially as set forth.

3. In an electric railway system, a contact box consisting of a closed stationary inner shell having arranged therein a contact or conductor adapted to be connected with a circuit exterior to the shell, a contact arm pivoted in or upon the inner shell and adapted to make electrical connection with said conductor, a closed rocking exterior shell and a conductor therethrough, and mechanically and electrically connected with the contact arm of the inner shell, substantially as set forth.

4. In an electric railway system, the combination of the bracket having a coupling box G and a tubular extension $D^3$, of a contact box consisting of a closed stationary shell having a tubular projection seated in the tubular extension of the bracket, an insulated conductor extending from the chamber of the coupling G through the tube of the shell to the interior thereof, said conductor being formed with a connected tube, a contact face within the shell, a contact arm pivoted in said shell and adapted to be moved into contact with said conductor, a closed exterior shell mounted upon the tubular extension of the bracket and having a conductor extending therethrough, and electrically and mechanically connected with the contact arm, substantially as set forth.

5. In an electric railway system, the combination of the bracket having a coupling box G and a tubular extension $D^3$, of a contact box consisting of a closed stationary shell having a tubular projection seated in the tubular extension of the bracket, an insulated conductor extending from the chamber of the coupling G through the tube of the shell to the interior thereof, said conductor being formed with a connected tube, a contact face within the shell, a contact arm pivoted in said shell and adapted to be moved into contact with said conductor, a closed exterior shell mounted upon the tubular extension of the bracket and having a conductor extending therethrough and electrically and mechanically connected with the contact arm, a main conductor or lead of the circuit secured in the coupling G and electrically connected with the conductor extending from the inner shell, and insulating material filling the space between the inner and outer shells, substantially as set forth.

6. In an electric railway system, a contact box consisting of a closed inner shell, a contact or conductor arranged therein, the cylindrical pivoted plug having its bearings in a slot in the rim of the shell, the rocking contact arm carried by the plug and adapted when moved to make contact with the conductor within the shell, the rocking exterior closed shell, a conductor extending therethrough and mechanically and electrically connected with said contact arm, and insulating material filling the space between the two shells, substantially as set forth.

7. In an electric railway system, a contact box consisting of a closed inner shell having the circuit conductor or contact located therein and an insulated pivoted contact arm extending through the shell, the inner end of which is adapted to be moved into connection with said conductor, the outer closed rocking shell having a conductor arranged in the wall thereof, and extending to the exterior thereof, said conductor being formed with a socket to receive the head or end of the contact, an arm whereby the contact arm is electrically and mechanically connected with the switch arm, and adapted to be moved by the rocking of the outer shell, substantially as set forth.

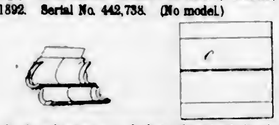
8. The combination, substantially as set forth, of a conduit, the main conductor running therethrough, a series of brackets, each having a coupling box through which the main conductor passes, and a contact box consisting of a closed inner shell, a rocking closed outer shell, a conductor or contact projecting from the outer shell, and controlling the contacts within the inner shell, and a contact device carried by the car adapted to rock the outer shells to complete the circuit.

9. The combination, substantially as set forth, of the conduit, contact boxes or devices arranged therein at intervals, a sectional trolley track each section being supported above the boxes by normally upright pivoted parallel bars and adapted when depressed to complete the circuit through the track section, the adjacent ends of track sections being respectively curved or inclined and having overlapping cut away ends with intervening insulation, and a conducting trolley carried by the car and running upon the sectional track.

10. The combination of a conduit, contact boxes arranged therein at intervals and each having a pivoted conductor extending therefrom and controlling contacts therein, pivoted arms arranged in the conduit between the contact boxes, a sectional trolley track each section of which is pivotally connected with one end of said pivoted conductors and one of said pivoted arms, and the trolley wheel running on said track, the combination being and operating substantially as set forth.

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**527,266.** COIN-CASE. ROBERT L. CHOPE, Detroit, Mich. Filed Aug. 10, 1892. Serial No. 442,738. (No model.)



*Claim.*—1. A coin case consisting of a blank having reinforced edges with an intermediate notch, said edges being cut away on their outer ends forming tongues of the inner portions, and a pasting strip on the edge of the case, substantially as described.

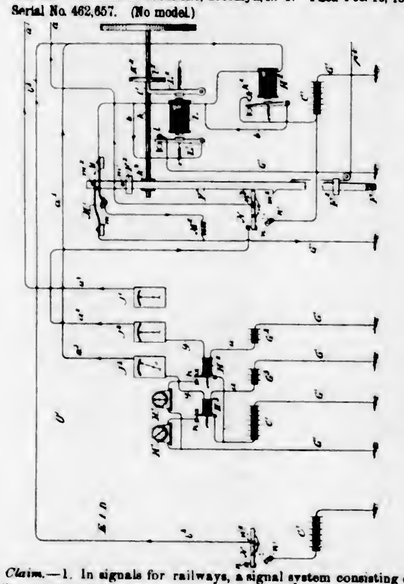
2. A coin case consisting of a single piece of paper, folded at opposite ends at points midway the center and ends, its folded ends being folded back forming reinforcements, notches formed in the reinforced ends of the blank, and the edges on opposite sides of the notches turned in to form reinforced flanges, substantially as described.

3. A coin case consisting of a single piece of paper folded at opposite ends at points midway the center and ends, its folded ends being folded back forming reinforcements, notches formed in the reinforced ends of the blank at one side of the centers thereof and the edges on opposite sides of the notches turned in to form reinforced flanges, substantially as described.

4. A coin case consisting of a blank folded inward at its opposite ends, its folded ends folded back forming reinforcements, the reinforced edges being bent in to form right angle flanges, and the portion intermediate the edges formed into a cylinder, substantially as described.

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**527,267.** SYSTEM OF ELECTRIC BLOCK-SIGNALS FOR RAILWAYS. WILLIAM M. CUTHBERT, Brooklyn, N. Y. Filed Feb. 16, 1893. Serial No. 462,657. (No model.)



*Claim.*—1. In signals for railways, a signal system consisting of a railroad divided into sections, and the sections into blocks, each section having an office provided with a suitable indicating instrument or instruments, an automatic signal post to each block, a cab signal setting device in advance of and connected to the signal post; a signal located in the cab of a locomotive engine or on a train, and having means of connection with said device; each section office being electrically connected with each post in its section, and each post being electrically connected to the post next preceding it, substantially as specified.

2. In signals for railways and the like; a signal system consisting of the following: one or more sections, each of which has an office or station; an indicating instrument or instruments in each office or station; the section or sections divided into any desired number of blocks, a signal-post at the entrance of each block, means operated by a passing engine or train for changing a set signal at a post and a special closed circuit and a line-wire extending from each individual post to its corresponding indicating instrument or instruments in its respective office or station, to control said instrument or instruments and show the condition of the block represented by said post, substantially as set forth.

3. In signals for railways and the like, a signal system consisting of the following:—one or more sections, each of which has an office or station, indicating instrument or instruments in each office or station; the section or sections divided into any desired number of blocks, a signal post at the entrance of each block, a closed circuit to control said indicating instrument or instruments, and an open circuit of greater electro-motive force than the closed circuit; means operated by the engine for changing the signal, as it passes the post, a switch operated by the signal changer to close said open circuit, for the purpose of changing the signal to safety at the post at the entrance of the block the train is leaving, substantially as specified.

4. The combination in a signal system of one or more sections, each of which is provided with an office or station, one or more blocks in each section provided with a signal post at the entrance of each block, indicating instrument or instruments located in the office or station, a closed circuit connecting each post with an indicating instrument or instruments, a resistance coil, an open circuit of greater electromotive force than the closed circuit and connecting the post of one block with the post of the block next preceding it, a device in each post operated by a passing engine for changing the signal and releasing the short circuit spring in this post to bring the coil into action in the closed circuit, and indicate on said instrument that the block the engine is entering is occupied; and by operating a switch close said open circuit and thereby through suitable mechanism change the signal at the signal post at the entrance of the block the engine is leaving; and by the short circuit spring in this post cut out the coil and show on the indicating instrument that this block is clear or unoccupied.

5. The combination in a signal system of an indicating instrument or instruments, located in an office or station, a closed circuit, a signal post connected by said circuit with said indicating instrument, a short circuit spring a resistance coil and means in the signal post operated by a passing engine for changing the signal to release or open the short circuit spring, and bring the coil into circuit and show on said indicating instrument the character of the signal displayed at the post.

6. The combination in a signal system of an indicating instrument or instruments, located in an office or station, a closed circuit, a signal post connected by said circuit, with said indicating instrument, a short circuit spring, a resistance coil, and means located in said post for closing said spring, cut out the coil and show on the said indicating instrument, the character of the signal displayed at said post.

7. The combination of an open circuit, a relay or circuit closer, an enumerating instrument, all located in an office or station, a signal post provided with a break spring, a closed circuit connecting said relay with said break spring, and means operated by a passing engine or train which operates on the break spring, for the purpose of indicating on said office instrument the passing of a train past said post, and the number of cars in such train, substantially as specified.

8. In a signal system, the combination of a signal post provided with danger and safety signals, means operated by a passing engine or train for setting a signal, a stop for holding the signal when set, an open local circuit and battery, a relay magnet, electro magnets for releasing the set signal, a foreign battery having an open primary circuit extending to and connected with said relay, and means located at a distance operated by a passing engine or train to close said primary circuit and actuate the relay to close said local circuit, substantially as specified.

9. In a signal system, the combination of a signal post provided with danger and safety signals; means operated by a passing engine or train for setting a signal, a stop for holding the signal when set, a foreign battery, a primary open circuit and a circuit closer, a secondary open (local) circuit and battery, a relay magnet and electro magnets for releasing a set signal, substantially as set forth.

10. In a railway system, an enumerating instrument, located at an office or station, a local battery and open circuit a relay magnet, a closed circuit, which passes through said relay to a signal post, means operated by a passing engine or train which alternately open and close said closed circuit, and actuates said relay to alternately close and open said local circuit and so actuate said enumerating instrument, substantially as specified.

11. In railway or other signals the combination with a signal



changer, of an electro magnet having two synchronized armatures, one of which is of less resistance than the other and is provided with means of connection with a ground wire, thereby changing the circuit and reducing the electrical resistance to the other armature, which is thereby caused to release a set signal, substantially as specified.

12. The combination in a signal system of an indicating instrument or instruments located in an office, a signal post, an electrical circuit extending from said instrument or instruments to said post, a break spring, a resistance coil, and means located in said post and actuated by a passing engine or train and operating on said break spring, to indicate on said indicating instrument or instruments, the passing of an engine or train, and the character of the signal displayed at said post, substantially as specified.

13. In a signal system for railways, consisting of a railway divided into sections and the sections into blocks, each section having an office or station, and each block an automatic signal post, electrically connected with its respective office, and with the signal post next preceding it, and also having mechanism operated by a passing engine or train to set a danger signal at said post, in combination therewith, an adjunct to said post consisting of a post P provided with an arm, a roller mounted on the end of the arm nearest the track; said adjunct being located at the side of the track at a distance from and in advance of said signal post, and having means of connection with said post whereby its roller is thrown into a position simultaneously with and by the setting of a danger signal at said signal post, to actuate the lever $S^3$. located on a passing engine to set a danger signal in the cab of said engine, substantially as shown and described.

14. In railway signals, a device for setting a signal in a signaling apparatus on a passing engine or train, said device consisting of the post P, pivoted lever or arm R′, having a roller mounted on that end of the arm nearest the track, and a counter balance on the other or rear end a chain $p^5$. and pulley $p^6$. said arm and roller when in an operative position having a relative height to the lever $S^3$. located on said engine or train, substantially as shown and described.

15. In railway signals, a device for setting a signal in a signaling apparatus on a passing engine or train consisting of the post P. having the limb $P^3$. said post having the rollers $P^4$. a sliding arm $P'$. provided with a roller on that end nearest the track, a chain $p^3$. and pulley $p^4$. a second chain $p^2$. connected to said arm, and passing over the roller $P^2$. of the limb and a weight $p^1$. on its free end, said arm and roller when in an operative position having a height relative to lever $S^3$. located on said engine or train, all combined and operating substantially as described and for the object set forth.

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**527,268.** EYEGLASSES. JOSEPH H. E. DE CELLES, Southbridge, Mass. Filed May 3, 1894. Serial No. 509,908. (No model.)



*Claim.*—1. As an improved article of manufacture, eyeglasses adapted to be moved apart in a straight line, and provided with a bridge or connection between the lenses, consisting of two pairs of rods, extending parallel to each other, the outer ends of one pair secured to one bridge side arm, and the outer ends of the other pair secured to the other bridge side arm, and the inner ends of each pair secured to a cross head or plate, mounted and adapted to slide on the other pair of rods, and a spring extending between the plates, substantially as set forth.

2. In eyeglasses, the combination with the bridge side arms, of two pairs of rods arranged parallel to each other, one pair secured to one bridge side arm, and the other pair secured to the other bridge side arm, and the inner ends of each pair secured to a cross head or plate supported and adapted to slide on the other pair of rods, and a spring extending between said plates, for the purpose stated, substantially as set forth.

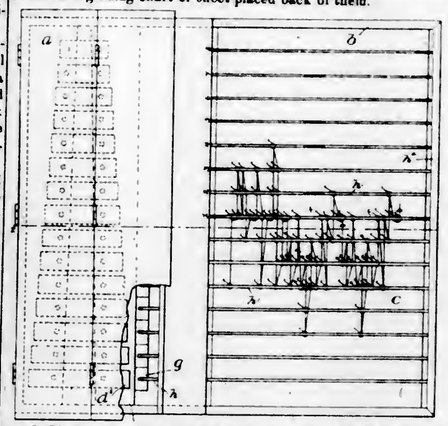
3. In eyeglasses, the combination with the bridge side arms, of two pairs of rods arranged parallel to each other, one pair secured to one bridge side arm, and the other pair secured to the other bridge side arm, and the inner ends of each pair secured to a cross head or plate supported and adapted to slide on the other pair of rods, and a spring extending between the cross heads or plates, and between the two pairs of rods, for the purpose stated, substantially as set forth

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**527,269.** MUSICAL INSTRUMENT. JAMES DODD, Boston, Mass. Filed Jan. 30, 1894. Serial No. 498,436. (No model.)

*Claim.*—1. The combination, with a musical instrument, of elongated controlling devices suitably connected with the sound-producing devices of the instrument and spaced apart to disclose characters on a guiding chart or sheet placed back of them.

2. The combination, with a musical instrument, of parallel elongated actuating devices operatively connected with the sound producing devices of the instrument, and spaced apart to disclose characters on a guiding chart or sheet placed back of them.



3. The combination, with a musical instrument having a sounding board and hammers, of parallel actuating bars operatively connected with the said hammers and spaced apart to disclose guide-line sheet music placed back of them, substantially as, and for the purpose described.

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**527,270.** LIFE-SAVING GUARD FOR CARS. LOUIS E. DUBOIS, Toronto, Canada. Filed Nov. 20, 1893. Serial No. 491,517. (No model.)



*Claim.*—1. In a life saving guard for cars the combination with the car of a spindle pivotally connected to the car, a balance connected to the spindle, a framework rigidly connected to the ends of the spindle, a netting secured to the framework and to the car, a lever to operate the spindle, and a switch mechanism adapted to cut on or off the current to the motor of the car, operated by the respective movement of the lever, substantially as set forth.

2. In a life saving guard for cars the combination with the car of a spindle pivotally connected thereto, a framework connected to the ends of the said spindle and adapted to be raised and lowered thereby, a balance mounted on said spindle and adapted to counter balance the framework, a bell crank lever connected to the spindle, a foot lever connected to the bell crank lever and pivotally connected to the car, said foot lever adapted to operate the spindle and move the guard into a vertical or horizontal position, a latch plate connected to the car and adapted to hold the foot lever in its adjusted position, a netting secured to the framework, and to the car, said framework having a cushioned front, a spindle connected to the front of the framework, wheels mounted upon said spindle and adapted to travel on the rails, a canvas covering connected to the side bars at the front to form a platform, substantially as set forth.

3. In a life saving guard for cars the combination with the car of a spindle pivotally connected to the car, a frame work connected to each end of the said spindle and moving therewith, a canvas platform connected to the front end of the framework, a netting con-

nected to the canvas platform, and to a cross bar connected to the dash board, and means for moving the guard into a vertical or horizontal position as required, substantially as set forth.

4. In a life saving guard for cars the combination with the car of a spindle pivotally connected to the car, a frame work connected to each end of the said spindle and moving therewith, a canvas platform connected to the front end of the framework, a netting connected to the canvas platform, and to a cross bar connected to the dashboard, and means for moving the guard into a vertical or horizontal position as required, and a switch mechanism adapted to cut on or off the current from the motor as required operated by the respective movement of the operating mechanism of the guard, substantially as set forth.

5. In a life saving guard the combination with the car of a spindle pivotally connected thereto, a bracket secured to each end of the spindle, a framework, the end of each of the side bars of the framework pivotally connected to its respective bracket, a spring connected to and adapted to bear down the said side bars, and means for moving the framework into a horizontal or vertical position, a netting secured to the framework and to the dashboard of the car, substantially as set forth.

6. In a life saving guard the combination with the car of a spindle pivotally connected thereto, a bracket secured to each end of the spindle, a framework, the end of each of the side bars of the framework pivotally connected to its respective bracket, a spring connected to and adapted to bear down the said side bars, means connected to the spindle to counter balance the framework, a bell crank lever connected to the spindle, a foot lever pivotally connected to the car and to the bell crank lever, said foot lever and bell crank lever adapted to operate the said spindle substantially as set forth.

7. In a life saving guard the combination with the car of a spindle pivotally connected thereto, a bracket secured to each end of the spindle, a framework, the end of each of the side bars of the framework pivotally connected to its respective bracket, a spring connected to and adapted to bear down the said side bars, means connected to the spindle, to counter balance the framework, a bell crank lever connected to the spindle, a switch mechanism adapted to be operated by the movement of the foot lever to respectively cut on or off the current to the motor, substantially as set forth.

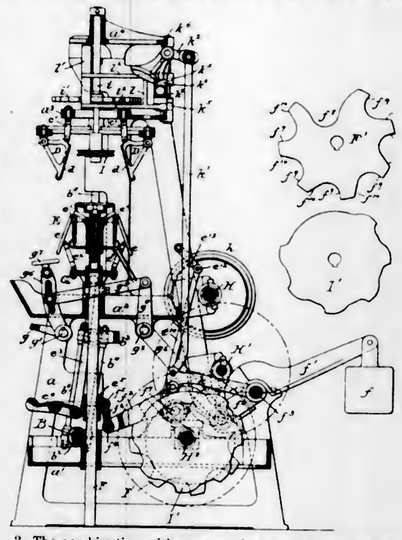
8. In a life saving guard for cars the combination of the car hangers connected to the under side of the platform of the car having bearings to receive a spindle, a spindle mounted in the bearings of the hangers, a bracket connected to each end of the spindle, a frame work composed of two side bars the ends of which are connected to the said brackets, and a cushioned front, a spindle connected to the front ends of the side bars, wheels mounted on the spindle, a canvas covering connected to the side bars on the front forming a platform, arms connected to the outer side of the dashboard, a cross bar carried by said bars, a netting, the upper end of which is secured to the cross bar, and the lower end connected to the framework, a chain connected to each end of the cross bar and to the framework, an elastic cord connected to the middle of the cross bar and to the framework, a balance weight connected to the spindle and adapted to counter balance the guard, a bell crank lever connected to the spindle, a foot lever passing through the platform the lower end of which is connected to the bell crank lever, and the upper end fitted with a pedal substantially as described.

9. In a life saving guard for cars the combination with the car of hangers secured to the under side of the platform of the car, bearings forming part of the hangers, a spindle mounted in said bearings and extending across the car, a bracket mounted on each end of the spindle, a framework, the ends of the side bars of which are mounted in said brackets, springs connected to said side bars and bearing against said brackets, a cushioned front connected to the said bars, a spindle connected to the front of the said bars, wheels mounted on said spindle, a canvas covering connected to the side bars and to the front, a netting connected to the front of the framework, and to a cross bar held by arms connected to the car, an elastic cord connected to the cross bar and to the front of the framework, stay or guy ropes connected to the cross bar and to the front of the framework, chains connected to the ends of the cross bar and to the framework, a balance weight connected to the spindle and adapted to lift the guard into a vertical position, a compound lever connected to the spindle a foot lever passing through a slot in the platform, the lower end of the foot lever connected to the compound lever, a plate inclosing the slot having a corresponding slot therethrough, and recesses at each end of the slot, springs to throw the foot lever into either of the said recesses, a switch, a spring connected to the foot lever and adapted to move the switch, to either cut in or out the current to the motor, substantially as specified.

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**527,271. HAT-STRETCHING MACHINE.** RUDOLF EICKEMEYER, Yonkers, N. Y. Filed June 15, 1894. Serial No. 514,644. (No model.)

*Claim.*—1. The combination in a hat stretching machine, of cooperating stretching fingers, and ribs; a rotative hat supporting shell; a rotative disk which clamps the tip of a hat body between it and said shell; means for automatically separating the stretching devices for freeing the hat body from their engaging contact, and means which intermittingly rotate said disk and shell, for automatically rotating the hat body at proper intervals in the operation of the stretching devices, and presenting fresh portions of the hat body thereto.



2. The combination with co-operating sets of hat stretching devices, of a rotative hat supporting shell; a rotative disk coincident with and adapted to bear upon and clamp the tip of a hat body carried on said shell; and a rotating cam, operatively coupled by intermediate mechanism with said disk, for rotating it step by step, and changing the position of the hat body with relation to the stretching devices.

3. In a hat stretching machine, the combination substantially as hereinbefore described, of stretching fingers, a slidable spindle, a rotative hat supporting shell, and stretching ribs carried on said spindle independently of said shell; a lever coupled at one end to said spindle, and an operating cam beneath said lever, provided with a stop seat at which the spindle is maintained at its lowest position, also with a lifting face by which the spindle is raised to its highest position, also with a series of concave faces, by each of which, the spindle is partially lowered from, and raised to its highest position, also a series of intervening peripheral working faces, and a retiring face, which fully lowers said spindle into its top seat.

4. In a hat stretching machine, the combination substantially as hereinbefore described, with a former carried by a vertically reciprocated spindle, and having expansible stretching ribs, of a rotating cam, provided with working faces as described, which impart to the former spindle its extreme lifting and lowering movements, and also a series of intervening vertical reciprocations from its highest position, and a scroll cam, which automatically causes the stretching ribs to be gradually expanded during the entire hat stretching operation.

5. The combination with a ribbed former, and automatic mechanism for expanding its stretching ribs, of a hand wheel screw, which controls an adjustable pivotal connection between portions of the expanding mechanism, and is accessible at the front of the machine, for enabling an operator to accurately adjust the expanding mechanism, and to vary the strain of the stretching devices upon a hat body.

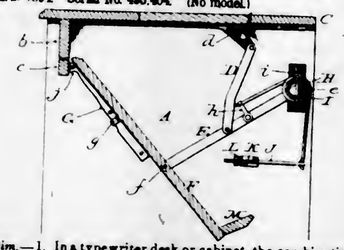
6. In a hat stretching machine, a ribbed former composed of a cylindrical hollow shell, stretching ribs hinged to the outside of said shell near its top, and an annular steam chamber, at the base of said shell, adapted to discharge steam upwardly, in combination with a rigid pipe mounted in the machine, a flexible intermediate steam pipe, and a cock for controlling the supply of steam required during the stretching operation, for heating hat bodies carried by the former.

7. In a hat stretching machine, the combination with a former, and its supporting spindle, of a lever, and cam, for actuating said spindle, a steam pipe flexibly connected with said former, and a steam cock, automatically operated, by a link connected with said lever, substantially as described, whereby the supply of steam will be varied according to the position of the former, and its relation to the overlying stretching devices.



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**527,272. TYPE-WRITER CABINET.** MICHAEL FOLEY, Herkimer, N. Y., assignor to the Standard Furniture Company, same place. Filed Jan. 2, 1894. Serial No. 495,404. (No model.)



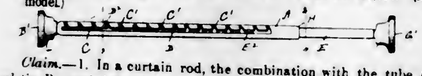
*Claim.*—1. In a typewriter desk or cabinet, the combination with the shelf; of means substantially such as shown and described for raising and lowering the shelf; a guide bar G secured to the desk and provided at its upper end with a recess *j* on its under face; and a clip G secured to the shelf and engaging the front face of the guide bar.

2. In a typewriter desk or cabinet, the combination with a shelf or table; of means substantially such as shown and described for raising and lowering the shelf; a guide bar G secured to the desk and provided at its upper end with a recess *j* on its under side; and a clip *g* secured to the shelf and engaging the front face of the guide bar,—said clip being arched or rounded where it bears against the bar.

3. In combination with a desk and its lid or cover; a bracket *d* secured thereto and extending in rear of the lid hinge when the lid is closed; a platform; a pivoted arm E supporting said platform; a link D connecting the arm and bracket; and a spring connected to the arm, whereby when the lid is closed, the spring will act to keep it closed.

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**527,273. CURTAIN-ROD.** HENRY A. FOWLER and JOHN H. LINGLEY, Worcester, Mass. Filed Jan. 23, 1892. Serial No. 419,067. (No model.)



*Claim.*—1. In a curtain rod, the combination with the tube A and tip B, carried by the end of said tube, of a spindle D inclosed within said tube, a collar D′ attached to said spindle and to said tube, whereby the spindle is held from longitudinal movement, and concentrically within said tube, a tube E with one end sliding on said spindle and inclosed within said tube A, a spring between said fixed collar D′ and the end of said tube E, and a tip G carried by the opposite end of said tube E, substantially as described.

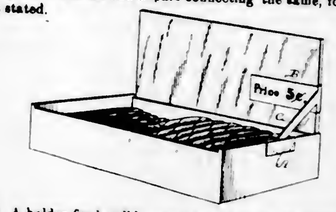
2. In a curtain rod, the combination with a tube A and tip B, said tube having a longitudinal slot C, and a series of notches C′ in one side of said slot, of a spindle D inclosed within said tube A, a collar D′ attached to said spindle, by which it is held concentrically within said tube, a pin $D^2$ projecting radially from said collar and adapted to be carried in one of said notches by the partial rotation of said spindle, a tube E provided with a slot E′ and having one end inclosing said spindle and inclosed by said tube A, a spring placed between said fixed collar D′ and the end of said tube E, a tip G carried by the opposite end of said tube E, and a pin $E^2$ held in said spindle and entering said slot E′, whereby said spindle is rotated by the rotation of said rod, substantially as described.

3. In a curtain rod, the combination with a tube A, and a tip B carried by the end of said tube, of a spindle D inclosed within said tube A, a collar D′ attached to one end of said spindle and also to said tube A, whereby said spindle is held concentrically, and from longitudinal movement within said tube, a pin $E^2$ projecting radially from the opposite end of said tube, a tube E having one end sliding over said spindle and inclosed within said tube A, a spring F between the end of said tube E and said fixed collar D′, with its tension applied to push the tube E off the spindle, said tube E having a longitudinal slot E′ inclosing said pin $E^2$ with the end of said slot closed so as to limit the sliding motion of said tube E as actuated by said spring and prevent said tube E and said spindle from becoming disconnected and a removable tip G carried by the outer end of said tube E to allow the curtain rod to receive a curtain, substantially as described.

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**527,274. BOX-LID HOLDER.** WILLMORE W. FOWLER, Oskaloosa, Iowa. Filed Feb. 9, 1894. Serial No. 499,612. (No model.)

*Claim.*—1. A holder for box lids, comprising a part U-shaped in transverse section adapted to overlap and clamp the top edge of one of the end pieces of a box, a like part adapted to overlap and clamp the edge of a box lid and a part connecting the same, for the purposes stated.



2. A holder for box lids comprising a part A, adapted to engage and clamp the top and sides of one of the end pieces of a box, a part adapted to overlap and clamp the edge of a box lid and a support pivotally attached to one of said clamps and fixed to the other, and a joint in said support, substantially as and for the purposes stated.

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**527,275. EYEGLASSES.** IVAN FOX, Philadelphia, Pa. Filed Aug. 5, 1892. Serial No. 442,211. (No model.)



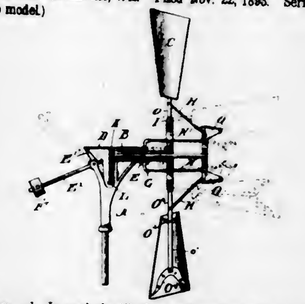
*Claim.*—1. An eye glass in which are combined.—first, a bridge spring provided with nose pieces;—second, lenses;—and, third, lens-supports formed of pliable or bendable non-resilient metal and interposed between and connective of the bridge spring and the respective lenses,—substantially as and for the purposes set forth.

2. In an eye-glass, in combination:—first, a bridge spring;—second, lenses;—and, third, lens-supports consisting of U-shaped loops of pliable or bendable and non-resilient metal interposed between and connective of the bridge spring and the respective lenses,—substantially as set forth.

3. In an eye-glass, in combination:—first, a bridge spring;—second, lenses;—and, third, lens-supports consisting of U-shaped loops of pliable or bendable and non-resilient metal, the bights of which extend out of the planes of the lenses, and which are connective of the bridge spring and said lenses,—substantially as and for the purposes set forth.

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**527,276. WINDMILL.** FRANK A. FRANKLIN and FRED I. FRANKLIN, Evansville, Wis. Filed Nov. 22, 1893. Serial No. 491,656. (No model.)

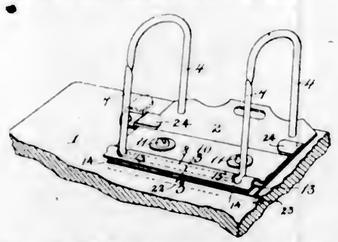


*Claim.*—1. In a wind mill, the combination of a spider I, mounted on the windmill shaft; fans C, pivoted on said spider; at their inner ends the spider G, mounted on the windmill shaft; bell crank levers Q pivoted in spider G; connections H, between said levers and fans C; swivel E, mounted on the main shaft bearing; connections N, between said levers Q and said swivel; weight lever pivoted to main frame, and carrying weight; and shipper rod D, connecting said weight lever and said swivel, substantially as set forth.

2. In a windmill, the combination of the spider I, mounted on the windmill shaft B; the fans C, pivoted to said spider I; at their inner ends the spider G on said shaft B; the bell crank levers Q, mounted in said spider G, connections H, between said levers Q and said fans the swivel E, on the main shaft bearing; the slots N′ in said spider I; the connecting rods N between said levers Q and said swivel and working in said slots; the weight lever pivoted to the main frame of the windmill; and carrying the weight F; and the shipper rod D, connecting said weight lever and said swivel, substantially as set forth.

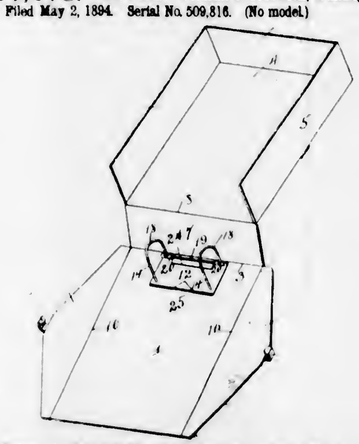
3. In a windmill, a windwheel, consisting of a hub or spider I, having ears I', I', formed upon the circumference thereof, and the fans C formed of the back bone O' bifurcated at $O^2$ and pivoted to the aforesaid spider, all combined, substantially as set forth.

## 527,277. BILL-FILE. WILLIAM O. GOTTWALS, Washington, D. C. Filed May 2, 1894. Serial No. 509,815. (No model.)



*Claim.*—In a bill file the combination with a base plate, of curved arch-members fixed thereon and constituting the transfer wires, movable arch-members constituting the receiving or filing wires, a transverse rock-shaft flattened on its under side to form an eccentric portion which acts on the top of said plate and carrying said movable arch-members, and a spring formed with a concavity on its under side, secured on the top of said plate over the rock-shaft and engaging the upper side of the latter in said concavity to form an upwardly yielding bearing for the shaft, substantially as set forth.

## 527,278. BILL-FILE. WILLIAM O. GOTTWALS, Washington, D. C. Filed May 2, 1894. Serial No. 509,816. (No model.)



*Claim.*—1. In a bill-file, the combination, with a file board provided with the paper-holding device, of a cover hinged to the upper end of said board, and side flaps hinged to the sides of the boards and adapted to clasp upon the cover when the latter is in place over said paper-holding device, substantially as set forth.

2. In a bill file, the combination, of a file board provided with a paper-holding device, a cover hinged to the upper end of said board and having end and side pieces, and side flaps hinged to the sides of the file board and adapted to be clasped over the side pieces of the cover when the latter is in place, substantially as set forth.

3. In a bill file, the combination, of a file board provided with paper-holding arches, of a cover hinged to the upper end of said board and having side and end pieces, and having next to the file board an end piece hinged to said board and hinged to the main portion of the cover, and side flaps hinged to the file board and adapted to be secured to the cover when the latter is in place.

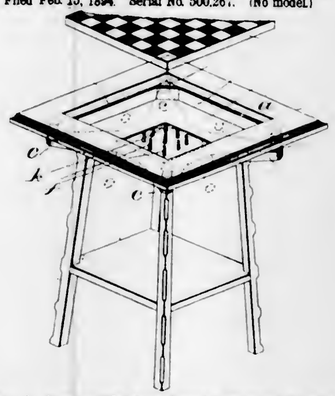
4. In a bill file, a base plate provided with a malleable bearing or bearings 20 having apertures and separated at one side from said plate, arch-members rigidly affixed to said plate, and movable curved arch-members formed with a bottom transverse bar, having their vertical portions passed through said apertures, and the said transverse bar situated within said bearing or bearings, the ends of said arch-members being adapted to overlap and engage each other as described.

5. In a bill file, the combination, of a base plate provided with fixed arch-members and having a portion bent up to form a malleable bearing or bearings separated from the plate at one side and provided with apertures, and movable curved arch-members having a transverse connecting bar at their lower ends situated within said bearing or bearings and having their vertical portions passed through said apertures, the ends of one set of said arch-members being provided on their sides opposite to the other arch-members with grooves or sockets in which the ends of said other arch-members are adapted to rest, substantially as set forth.

6. In a bill file, a base plate having fixed arch-members and movable curved arch-members, the latter being provided with a transverse bar, and elastic bearings on said plate separated from the plate at one side adapted to receive said transverse bar, and having apertures for the vertical portions of said movable arch-members, substantially as set forth.

7. In a bill file the combination with a paper holding device comprising a base-plate, a bearing or bearings thereon, stationary arch-members, and movable arch-members having a journal held in said bearing or bearings, of a securing plate adapted to be attached to the file-board and having a tongue passing between said journal and base-plate, substantially as set forth.

## 527,279. SUPPORT FOR GAME-BOARDS. JOHN GREEN, Renovo, Pa. Filed Feb. 15, 1894. Serial No. 500,267. (No model.)



*Claim.*—1. A support for game-boards consisting of a table having a removable game-board forming the center thereof and a supplemental top or frame supporting the primary top and provided with a support for a separate game-board.

2. A support for game-boards consisting of a table having a removable game-board forming the center thereof and a supplemental top or frame supporting the primary top and provided with an opening in its center to support a separate game-board.

3. A support for game-boards consisting of a table having a removable game-board forming the center thereof and a supplemental top or frame supporting the primary top and provided with a support for a separate game-board, and a game-board supported in said separate board.

4. A support for game-boards consisting of a table having a removable and reversible game-board forming the center thereof, a supplemental top or frame supporting the primary top and provided with a support for a separate game-board, and a tray surrounding said game-board.

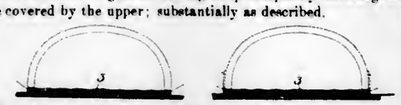
5. A support for game-boards consisting of a table provided with a removable game-board center in the primary top thereof, a supplemental top or frame supporting the primary top and having an opening in the center thereof and supported upon suitable legs, a game-board supported in said supplemental top and a third game-board forming a top for the second game-board.

6. A support for game-boards consisting of a table provided with a skeleton frame-top having a removable center, a supplemental top or frame having radial arms on which the skeleton-frame-top is supported, a game-board supported by the supplemental top, and a tray.

7. A support for game-boards consisting of a table having a removable game-board center in a primary top, and one or more removable game-boards supported in a supplemental top.

## 527,280. SOLE FOR SLIPPERS OR SHOES. JACOB K. GRIFFITH, Latrobe, Pa. Filed Mar. 6, 1894. Serial No. 502,508. (No model.)

*Claim.*—1. As a new article of manufacture, an outer sole for shoes and slippers, having a sewing strip secured thereto along a line separated from its edge, said sewing strip completely inclosing the space covered by the upper; substantially as described.

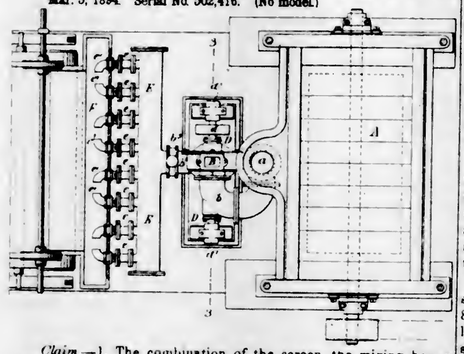


2. As a new article of manufacture, an outer sole for shoes and slippers, having a sewing strip secured thereto along a line separated from its edge, said sewing strip completely inclosing the space covered by the upper, and a laterally projecting flexible protecting strip arranged to be secured to the upper; substantially as described.

3. As a new article of manufacture, an outer sole for shoes and slippers, having a laterally projecting flexible protecting strip extending completely around the same and arranged to be secured to the upper; substantially as described.



## 527,281. MACHINE FOR BREAKING UP STRINGS OR BALLS OF PAPER-STOCK. CHARLES L. HAMILTON, Philadelphia, Pa. Filed Mar. 5, 1894. Serial No. 502,416. (No model.)



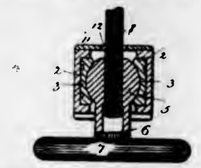
*Claim.*—1. The combination of the screen, the mixing box, a breaker situated between the screen and mixing box, with a manifold connected to the breaker and communicating with the mixing box at several points, substantially as described.

2. The combination of the screen, the mixing box, a breaker situated between the screen and mixing box, a manifold connected to the breaker, with pipes extending into the mixing box and adjustable nozzles on said pipes, substantially as described.

3. The combination of the screen, a mixing box, the breaker between the screen and mixing box, the manifold E communicating with the breaker having a series of pipes communicating with the mixing box, the nozzles of the pipes being arranged in pairs, the nozzles of each pair being turned toward each other within the mixing box, substantially as described.

4. The combination of the screen, discharge pipe therefor, a valve in said discharge pipe; a breaker cylinder having blades, a driven shaft, a disk on said shaft also having blades, a discharge pipe for the breaker, a valve therein, a manifold communicating with the discharge pipe, a series of pipes extending from said manifold and entering the mixing box, and nozzles on said pipes, substantially as described.

## 527,282. BALL-AND-SOCKET JOINT FOR USE IN MILLS. WILLIS N. HARTSHORN, Brooklyn, assignor to Samuel Carey, New York, N. Y. Filed June 4, 1894. Serial No. 513,375. (No model.)



*Claim.*—1. In a ball-and-socket joint, the combination with a ball provided with a screw-threaded hole, of a screw-threaded rod or spindle, means secured to or formed integral with the ball for rotating the same, and a socket for the ball, substantially as shown and described.

2. In a ball-and-socket joint, the combination with a ball provided with a screw-threaded hole, of a screw-threaded rod or spindle adapted to screw into the same, a hand-wheel secured to or formed integral with the ball, and a socket for the ball, substantially as shown and described.

3. In a ball-and-socket joint, the combination with a ball provided with a screw-threaded hole, of a screw threaded rod or spindle adapted to screw into the same, a hand-wheel secured to or formed integral with the ball, a bifurcated casing for the ball, and means for forcing the sides of such bifurcation inward toward one another, substantially as shown and described.

4. In a ball-and-socket joint, the combination with a ball provided with a screw-threaded hole, of a screw-threaded rod or spindle adapted to screw into the same, a hand-wheel secured to or formed integral with the ball, two socket-gibs located one on each side of the ball, a bifurcated casing holding the gibs in place against the ball, and means for forcing the sides of the bifurcated casing inward toward one another so as to compress the ball between the gibs, substantially as shown and described.

5. In a mill of the class described, the combination with a stone-balancing-lever A, of a ball-and-socket at either end of such lever, two pivot-shafts 16 secured to one of the stones of the mill, and mechanism connecting the ball of one of the sockets with one of the pivots 16, and like mechanism connecting the other ball with the other pivot, substantially as shown and described.

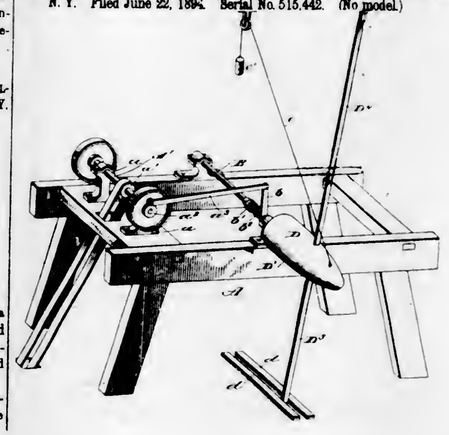
6. In a mill of the class described, the combination with the pivot-shafts 16 secured to one of the stones of the mill, of rods or spindles 8 secured at one end to such pivot-shafts and provided at the other ends with screw-threads, a ball screwed upon each of such spindles and provided with means for rotating the same, a pivoted stone-balancing-lever A, and sockets for such balls located in the lever A, substantially as shown and described.

7. In a mill of the class described, the combination with the pivot-shafts 16 secured to one of the stones of the mill, of rods or spindles secured at one end to such pivot-shafts and provided at the other end with screw-threads, a ball screwed upon each of such spindles and provided with a hand-wheel for rotating the same, a stone-balancing lever A, and sockets for the balls connecting the same with the lever A, substantially as shown and described.

8. In a mill of the class described, the combination with the pivot-shaft 16 secured to one of the stones of the mill, of rods or spindles 8 secured at the upper ends to such pivot-shafts and provided at the lower ends with screw-threads, a ball screwed upon each of such spindles and provided with means for rotating the same, two socket-gibs for each of the balls, a stone-balancing-lever A, having a bifurcation at each end thereof forming a casing for one of the balls and its gibs, and means for forcing the sides of the bifurcations inward toward one another so as to compress the balls between the gibs and lock the same against movement, substantially as shown and described.

9. In a mill of the class described, the combination with two pivot-shafts 16 secured to one of the stones of the mill, of a pivoted stone-balancing-lever A having a bifurcation or fork B at either end, a ball located in a suitable socket in each of such bifurcations B, means for forcing the sides of such bifurcations inward toward one another so as to lock the balls against movement in their sockets, and mechanism connecting each of such balls with one of the pivot-shafts 16, substantially as shown and described.

## 527,283. FELTING-MACHINE. RYAN HEATON, Howell's Depot, N. Y. Filed June 22, 1894. Serial No. 515,442. (No model.)



*Claim.*—1. In a felt hardening or forming machine, the combination of a hollow cone, means for imparting a vibratory movement thereto, and a shell formed of parts D and D′ which are adapted to incase the cone, together with bars $D^3$ and $D^4$ which bear against the parts of the shell and hold them together, substantially as shown and for the purpose set forth.

2. In a felting machine, the combination of an oscillating shaft B, a cone C secured to one end of the shaft, a shell formed of parts D and D′ which incase the cone, a bracket to which the parts of the shell are hinged the upper part of the shell being provided with a weighted flexible connection for elevating the same, a bar $D^4$ for holding the said upper part depressed, a bar $D^3$ hinged to the lower part of the shell and guides with which the bar $D^3$ engages for holding the lower shell elevated, substantially as shown and for the purpose set forth.

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527,284. **NURSING-BOTTLE.** HEINRICH HERRMANN, Lauffen, Germany. Filed May 17, 1894. Serial No. 511,604. (No model.)



*Claim.*—1. In a nursing bottle, the combination, with a stopper, a feeding tube extending into the bottle, and a vent tube extending through the stopper, of a receptacle for containing antiseptic material, and a valve device arranged to shut off communication between the receptacle and the vent tube, and open communication between the vent tube and outside air, substantially as set forth.

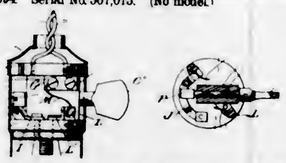
2. In a nursing-bottle, a stopper provided with a feeding tube extending below the stopper and provided with a stop cock, in combination with a vent tube extending the length of the stopper, a receptacle for antiseptic material communicating with the vent tube, a middle chamber interposed between the vent tube and the receptacle and opening into the outer air, a gravity valve for closing the upper end of the vent tube and a second gravity valve connected to the first gravity valve, and so arranged as to close the lower orifice of the receptacle when the first gravity valve is raised sufficiently, substantially as set forth.

3. For the purpose of completely sterilizing, and maintaining sterilized, the liquid food in a nursing bottle, a stopper of rubber, cork, or the like, provided with a feeding tube, C, extending to the bottom of the bottle and provided with a cock, c, in combination with a vent tube, D, provided with a vapor-escape valve, F, and a ball-valve, *f*, and a receptacle, E, for antiseptic wool or the like, substantially as and for the purpose set forth.

4. In a nursing-bottle, a stopper provided with a tube extending substantially down to the bottom of the nursing-bottle, and provided with a stop-cock at its outer end, in combination with a vent tube passing through the stopper, a receptacle for antiseptic material, perforated at its top, an intermediate chamber provided with an escape orifice for vapors, an outer pipe extending from the bottom of the receptacle into the intermediate chamber, and a plate adapted to slide on the outlet pipe and closing the upper end of the vent tube, and a ball-valve carried by the same for closing the lower end of the outlet pipe by the pressure of the vapor in the bottle, substantially as set forth.

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527,285. **INCANDESCENT-LAMP SOCKET.** LUKE R. PECK, St. John's, Mich., assignor of one-half to Robert G. Steel, same place. Filed Apr. 10, 1894. Serial No. 507,015. (No model.)

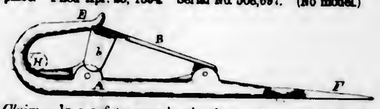


*Claim.*—1. In a lamp socket, the combination with the casing, of an insulated switch block secured in the casing consisting of upper and lower apertured disks and a vertical diaphragm connecting the disks, binding posts secured on opposite sides of the diaphragm, binding posts secured on the lower disk, a plate on the lower disk, a spring arm on the plate, means for engaging the spring arm with one of the binding posts, and fusible connections between the binding posts on the disk and diaphragm, substantially as described.

2. In a lamp socket, the combination with the casing, of an insulated switch block secured in the casing consisting of upper and lower apertured disks and a vertical diaphragm connecting the disks having a lateral aperture therein, binding posts secured on opposite sides of the diaphragm, binding posts secured on the lower disk, connections between the binding posts on the diaphragm and disk, a plate on the lower disk, a spring arm on the plate, and a shaft passing through the lateral aperture in the diaphragm having a projection on its end adapted to engage the spring arm of the plate for forcing the same against one of the binding posts, substantially as described.

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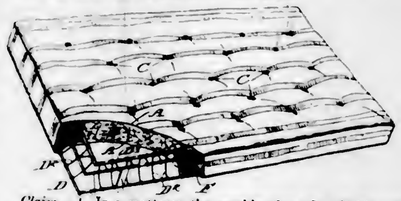
527,286. **SNAP-HOOK.** CHARLES N. PERKINS and JOHN P. SCOLLAY, Lawrence, Mass.; said Scollay assignor to Daniel Gallagher, same place. Filed Apr. 23, 1894. Serial No. 508,697. (No model.)



*Claim.*—In a safety snap-hook, the combination of the stock A, the lock-lever D, the tongue B, both being pivoted to the stock, the tongue having checks or guards; and the spring C, for holding the lever D in its two positions, and bearing on the tongue; all substantially as and for the purpose described.

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527,287. **MATTRESS.** GEORGE S. PERREN, Chicago, Ill. Filed Feb. 19, 1894. Serial No. 500,709. (No model.)



*Claim.*—1. In a mattress, the combination of a pliable cover, a suitable yielding filling, and a marginal member embedded in the mattress and elastic in lines perpendicular to the plane of the mattress and substantially unyielding in lines parallel to said plane, substantially as described.

2. In a mattress, the combination of a pliable cover, a suitable yielding filling, superposed marginal bars, D′, embedded in said filling, and springs for keeping said bars normally separated, substantially as described.

3. In a mattress, the combination of a pliable cover, a suitable yielding filling, superposed marginal bars, D′, bars, $D^3$, located in a plane parallel to the plane of the bed and extending between the bars, D′, and springs extending from said bar, $D^3$, to said bars, D′, substantially as described.

4. In a mattress, the combination of a pliable cover, a suitable yielding filling, superposed marginal bars, D′, a bar, $D^3$, springs, $D^3$, extending from said bar, $D^3$, to said bars, D′, a cover, F, extending around said group of bars and inclosing an empty space, F′, substantially as described.

5. In a mattress, the combination of a pliable cover, a suitable yielding filling, a marginal member consisting of the bars, D′, $D^3$, and springs secured by their ends to the bars, D′, and between their ends to the bars, $D^3$, substantially as described.

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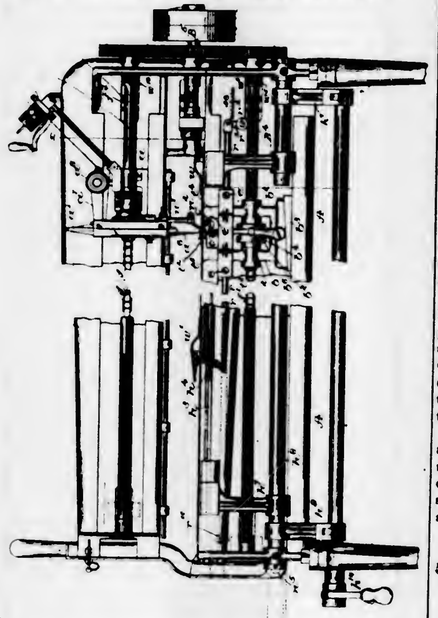
527,288. **SEWING-MACHINE.** JOHN B. PRICE, Wollaston, Mass., assignor to Oscar Hinds, Atlanta, Ga. Filed Sept. 16, 1892. Serial No. 446,079. (No model.)

*Claim.*—1. In a sewing machine for sewing together the ends of pieces of cloth, it containing the following instrumentalities, viz:—a stationary work-support, clamps connected therewith to engage two pieces of material near the selvage edges thereof, and hold the same in place while the ends of the material are being stitched together, two parallel rotating shafts $B^3$, $B^4$, gearing to connect the same, a needle bar having a needle, a carriage in which said needle bar is mounted, a rotating shaft in said carriage and connected with and adapted to reciprocate the needle bar, a second carriage located below the work-support, a device therein to engage the loop of needle thread in the formation of a stitch, a cam carried by said carriage movable therewith and adapted to be rotated by the shaft $B^4$, independent guide-ways for said carriages, a flexible driver for each of said carriages, a driven shaft with which said drivers are connected, and from which they derive motion, a main shaft, and adjustable connections between the said main shaft and driven shaft whereby the motion of such driven shaft may be varied to affect the length of stitch, substantially as described.

2. In a sewing machine, a work support; clamps to hold in place on said support the material, the ends of which are to be stitched together; a carriage provided with a needle bar; a needle therein a carriage provided with stitch-forming mechanism complemental to the needle; guide-ways for said carriages; and two flexible drivers, one connected with each of said carriages, combined with a shaft having sprocket wheels to engage and actuate said drivers, and a friction clutch device applied directly to and adapted to rotate said sprocket wheel shaft, substantially as described.



3. In a sewing machine, the combination of a carriage adapted to support and move part of the stitch-forming mechanism, guide-ways in which said carriage travels and means to take up wear between said carriage and its guide-ways consisting of a beveled portion of the carriage next adjacent one of such guide-ways and an adjustable gib interposed between the said beveled portion and the guide-way next adjacent thereto, substantially as described.



4. In a sewing machine, a work-support, a carriage provided with a needle-bar, a needle therein, a needle bar actuating-shaft mounted in bearings in said carriage, a shaft $B^3$ grooved longitudinally, a movable toothed gear splined to said shaft, connections between said carriage and gear whereby the latter moves with the former, a toothed gear on the needle bar actuating shaft in mesh with the movable toothed gear, a carriage provided with stitch-forming mechanism complemental to the needle, guide-ways for said carriages, and two flexible drivers, one connected with each of said carriages, combined with a shaft having sprocket wheels to engage and actuate said drivers, a clutch applied directly to said sprocket wheel shaft, and means for actuating said clutch and thereby rotating said shaft, substantially as described.

5. In a sewing machine, a work-support, a carriage provided with a needle-bar, a needle therein, a needle-bar actuating-shaft mounted in bearings in said carriage, a shaft $B^3$ grooved longitudinally, a movable toothed gear splined to said shaft, connections between said carriage and gear whereby the latter moves with the former, a toothed gear on the needle-bar actuating-shaft in mesh with the movable toothed gear, a carriage provided with stitch-forming mechanism complemental to the needle, and including a lever mounted on said carriage, a cam to actuate said lever, a rotating shaft on which said cam is splined loosely and capable of longitudinal movement, guide-ways for said carriages, and two flexible drivers, one connected with each of said carriages, combined with a shaft having sprocket wheels to engage and actuate said drivers, and a clutch applied directly to said sprocket wheel shaft, and means for actuating said clutch and thereby rotating said shaft, substantially as described.

6. In a sewing machine, the following instrumentalities, viz:—a work-support; clamps to hold in place on said support the material to be stitched; a carriage provided with a needle bar; a needle in said bar; a carriage provided with stitch-forming mechanism complemental to the needle; guide-ways for said carriages; two flexible drivers, one connected with each of said carriages, an upright shaft, as $f^4$, provided with two sprocket wheels to impart motion to said flexible drivers; a clutch, one part of which is mounted on said upright shaft; actuating devices for said clutch, and a stop lever, combined with devices actuated by one of said carriages to effect the release of said stop lever and thereby arrest the movement of the clutch, substantially as described.

7. In a sewing machine, the stitch forming mechanism, and slidable carriages upon which they are mounted, drivers for such carriages, the shaft $f^4$, and means to connect the said shaft and drivers, the hub $f^6$ on said shaft, a surrounding ring, a series of rolls between the ring and hub, a bar, as $f^{14}$, provided with a feed regulating device, and devices to reciprocate said bar, combined with a stop-lever normally in operative position with relation to the said feed-regulating device during the sliding operation of the carriage, and means for moving the stop lever out of operative connection with the feed-regulating device, substantially as described.

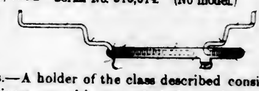
8. The combination, in a sewing machine, of a work-support having a longitudinal space for the operation of the stitch-forming mechanism, cloth-cutting mechanism consisting essentially of a bar located along one edge of the work-support and parallel to the line of stitching, and provided with a groove for the passage of the cutting blade, a clamping bar adapted to cooperate with said grooved bar to clamp together transversely the two ends of two pieces of material to be stitched, and having a slot to guide the cutter-head, a cutter-head, a blade thereon and a connected foot, the blade being adapted to cut the cloth transversely while held in the clamp to thus insure uniform overlapping of the material to be stitched preparatory to the stitching operation, substantially as described.

9. In a sewing machine, the combination with the upper and lower complemental stitch-forming mechanism, of the work-holding plates separated from one another in the plane of movement of the stitch-forming mechanisms and having holes along their parallel edges, combined with the cloth clamping and stretching devices consisting of spring-jaws supported upon blocks movable in the space between the plates and supported by such plates and having pins to engage the holes in such plates, substantially as described.

10. In a sewing machine, the stitch-forming mechanism and slidable carriages upon which they are mounted, drivers for such carriages and the driving shaft $f^4$, and its co-operating clutch actuating devices, said devices including a feed regulating device made as a screw, combined with a stop-lever, an arm on which it is pivoted, and a positioning screw and spring, as and for the purposes set forth.

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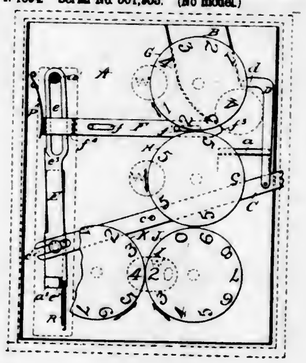
527,289. **SHADE OR GLOBE HOLDER.** FRANK RHIND, Meriden, assignor to The Bridgeport Brass Company, Bridgeport, Conn. Filed July 5, 1894. Serial No. 516,614. (No model.)



*Claim.*—A holder of the class described consisting of arm having base pieces curved in arcs of circles, and a holding strip having holes through which the arms are passed, the inner edge of said holding strip being turned downward to form an engaging flange and the other edge being curved downward and inward so that the joint is on the under side.

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527,290. **REGISTERING SAVINGS-BANK.** CHARLES A. RICHARDS, Reading, Pa., assignor of one-half to Benjamin F. Fox, same place. Filed Mar. 1, 1894. Serial No. 501,953. (No model.)



*Claim.*—1. In a registering savings bank the combination with one or more dial operating slides of an operating lever therefor and an arm E and regulating bar F adapted to operate substantially as set forth.

2. In a registering savings bank the combination with one or more dial operating slides of an operating lever therefor, an arm E a regulating bar F and a finger D on said lever arranged to force the coin past the regulating bar, substantially as set forth.

3. In a registering savings bank the combination with a series of two or more dial operating slides, of an operating lever, a pivoted arm E loosely connected thereto and adapted to engage one or other of said slides, and a regulating bar F arranged to control the movement of said arm, substantially as set forth.

4. In a registering savings bank the combination with a series of two or more dial operating slides, of an operating lever having an end slot $e'$, an arm E engaging said slotted lever and capable of both a vertical and transverse movement, and a regulating bar F arranged to move the same into engagement with one or other of said slides, substantially as set forth.

5. In a registering savings bank the combination with a series of two or more dial-operating slides and a single lever arranged to operate either one of said slides separately, of a corresponding series of dials having wheels at the rear thereof arranged in gear as described an arm on each of said slides adapted to rotate one of said toothed wheels and an additional dial arranged in gear with the last of said series, all substantially as set forth.

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**527,291.** TOBACCO OR CIGAR MOISTENER. JAY A. ROBINSON, Denver, Colo. Filed Apr. 19, 1894. Serial No. 508,130. (No model.)

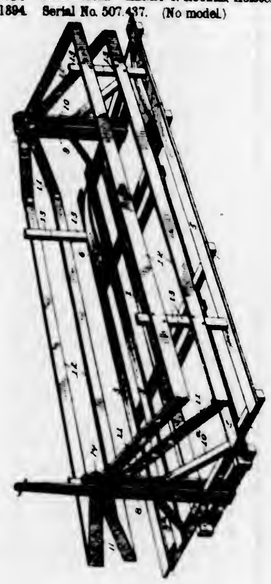


*Claim.*—1. In a tobacco moistener, a rectangular hollow porous block having an open bottom, the lower edges being roughened to permit the entrance of water into the interior of the block, substantially as and for the purpose set forth.

2. A tobacco moistener, comprising a water tray, and a plurality of hollow porous blocks having open bottoms and resting upon the bottom of the tray, substantially as shown and described.

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**527,292.** HAY-RACK. HENRY C. ROGERS, Holstein, Iowa. Filed Apr. 13, 1894. Serial No. 507,437. (No model.)



*Claim.*—1. In a rack, the combination of the bolsters 1, cross-pieces 2 and 4, and the standards 7, 8, 9, 10 secured to said cross-pieces, and the racks pivoted thereto, substantially as shown and described.

2 In a rack, the combination of the bolsters 1, cross-pieces 2, 4, secured to said bolsters, the standards 7, 8, 9, 10, secured to the cross-pieces 2, 4, and having pivoted thereto a number of racks composed of arms 11, connecting slats 12 and spacing pieces 13, substantially as and for the purpose set forth.

3. In a rack for wagons, the combination of the bolsters 1, adapted to rest upon the running gear of the wagon the cross-pieces 2, 4 secured to the bolsters 1, slats 5 and wheel fenders 6 secured to said cross pieces 4, and standards 7, 8, 9, 10, secured to the cross pieces 2, 4 and having pivoted thereto a number of racks, composed of arms 11, connecting slat 12 and spacing pieces 13, substantially as shown and described.

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**527,293.** RAILWAY-SWITCH. AUGUSTIN F. SCHINNER, Milwaukee, Wis. Filed Mar. 28, 1894. Serial No. 505,463. (No model.)



*Claim.*—1. The combination, of electro-magnets, a reciprocative core, said core provided with projecting pins, a metal bar provided with end rollers and having fingers, the bar being so mounted on a metal post connected electrically to an electric supply that a finger on the bar will engage a pin on the core, and the bar be moved endwise by the movement of the core, the bar being also adapted to tilt by gravity when its point of support on the post is changed by the movement of the bar endwise, opposite sets of metal plates between which the rollers at opposite ends of the bar are adapted to pass alternately as the bar is tilted in reverse directions, the sets of plates being connected electrically, respectively, to the electro-magnets, the bar and the plates being adapted by their connections and contacts to transmit an electric current from the electric supply to one or the other of the electro-magnets, substantially as set forth.

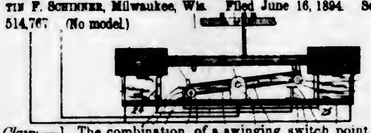
2. In a device for shifting a railroad switch, the combination, of electro-magnets, a metal core reciprocative endwise in the magnets, said core provided with recesses at suitable distances apart, the core being connected mechanically to, and so as by its movement to actuate, the switch, a shifting bar arranged to be shifted mechanically by the movement of the core, said bar in its alternate positions adapted to close and complete electric circuits through the magnets for actuating the core, and a horizontally swinging bar, its opposite ends being alternately drawn toward the respective magnets by the alternate energizing of the magnets, said horizontally swinging bar provided with projecting fingers, each finger adapted alternately to engage a recess of the core as said recess is brought into alignment therewith by the reciprocation of the core, substantially as set forth.

3. In a device for shifting a railroad switch, the combination of electro-magnets, a metal core reciprocative endwise in the magnets, said core provided with recesses at suitable distances apart, the core being connected mechanically to, and so as by its movement to actuate, the switch, a shifting bar arranged to be shifted mechanically by the movement of the core, said bar in its alternate positions adapted to close and complete electric circuits through the magnets for actuating the core, a horizontally swinging bar, its opposite ends being alternately drawn toward the respective magnets by the alternate energizing of the magnets, said horizontally-swinging bar provided with projecting fingers, each finger adapted to alternately engage a recess of the core, as a recess is brought into alignment therewith by the reciprocation of the core, and a stationary bar between the swinging bar and the core, said stationary bar provided with openings through which the fingers of the swinging bar project, substantially as set forth.

4. In a device for shifting railroad switches, the combination, of electro-magnets, a metal core reciprocative endwise in the magnets, said core provided with recesses at a suitable distance apart, the core being connected mechanically to, and so as by its movement to actuate, the switch, a shifting bar arranged to be shifted mechanically by the movement of the core, said bar in its alternate positions adapted to close and complete electric circuits through the magnets for actuating the core, a horizontally swinging bar, its opposite ends being alternately drawn toward the respective magnets by the alternate energizing of the magnets, pivoted arms each having one end bent at an angle to form a pin, and its other end formed into segmental teeth, and through pivoted arms connected to the swinging bar and operated thereby, said arms provided at one end with teeth meshing with the teeth of the angular arms, each pin of an angular arm adapted to engage a recess of the core as a recess is brought into alignment therewith by the reciprocation of the core, substantially as set forth.



**527,294.** TRACK-SWITCH FOR ELECTRIC RAILWAYS. AUGUSTIN F. SCHINNER, Milwaukee, Wis. Filed June 16, 1894. Serial No. 514,767. (No model.)



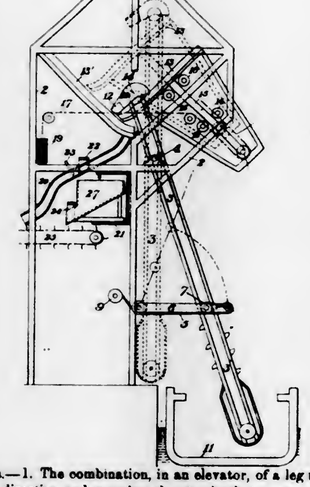
*Claim.*—1. The combination, of a swinging switch point, a plurality of electro-magnets, a core reciprocative in the magnets, which core is connected to the switch point in such manner that the movement of the core correspondingly moves the switch point, a conductor leading from a main source of supply, a trolley wire, an insulated strip therein, a conductor leading from said insulated strip to the respective magnets, and a shifting bar electrically connected with the conductor leading from the main supply, said bar arranged to be shifted by the movement of the core, and in its alternate positions to close and complete electric circuits through the magnets for actuating the core, substantially as set forth.

2. The combination of a swinging switch point, a plurality of electro-magnets, a core reciprocative in the magnets, which core is connected mechanically to the switch point in such manner that the movement of the core correspondingly moves the switch point, a shifting bar arranged to be shifted by the movement of the core, plates in electric connection severally with one of the magnets, which plates are arranged to be contacted severally by the shifting bar, a conductor leading from a main source of electric supply and connecting electrically with the shifting bar, a trolley wire, an insulated strip therein, and a conductor leading from said insulated strip to the respective magnets, substantially as set forth.

3. The combination, of a swinging switch point, a plurality of electro-magnets, a core reciprocative in the magnets, said core having projecting fingers, and being connected to and by its movement to actuate the switch point, a conductor leading from a main source of supply, a trolley wire, an insulated strip therein, a conductor leading from the insulated strip to the respective magnets, and a sliding and tilting bar electrically connected with the conductor leading from the main supply, said bar provided with fingers adapted to engage the core pins, and in its alternate positions to close and complete electric circuits through the magnets for actuating the core, substantially as set forth.

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**527,295.** ELEVATOR. JOHN W. SEAVER, Allegheny, Pa. Filed Jan. 10, 1894. Serial No. 496,429. (No model.)

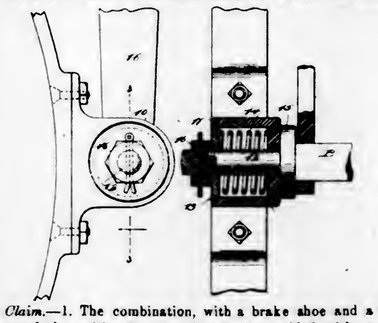


*Claim.*—1. The combination, in an elevator, of a leg movable in a vertical direction and carrying elevator buckets, a movable chute along which the discharge end of the leg moves, a stationary chute, and means for moving the movable chute along the stationary chute as the elevator leg rises or falls; substantially as described.

2. The combination, in an elevator, of a stationary inclined chute, an inclined chute bodily movable in a direction parallel therewith, and an endless conveyer having its delivery end movable relatively to the movable chute; substantially as described.

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**527,296.** VEHICLE-BRAKE SHOE. HENRY F. SHEPHARD, New York, N. Y. Filed Jan. 10, 1894. Serial No. 496,392. (No model.)

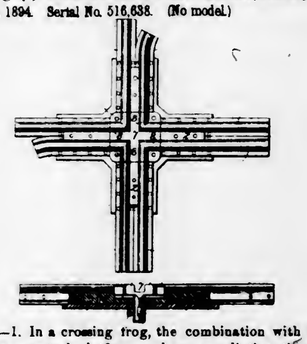


*Claim.*—1. The combination, with a brake shoe and a barrel connected therewith, of a carrying shaft provided with a spindle loosely passed through the barrel, and a spring encircling said spindle, and compressed within the barrel, and its ends resting free and being thus adapted to slide on the opposite contact surfaces, whereby the said barrel tends to maintain any position in which it may be placed, substantially as shown and described.

2. The combination, with a brake shoe, a barrel connected therewith, open at one end, and a washer adapted to close the said open end of the barrel, of a carrying shaft provided with a spindle loosely mounted in a barrel and its washer and provided with a collar adapted for frictional engagement with one portion of the barrel, a retaining device carried by the spindle and serving to maintain the washer of the barrel in position, and a spring encircling the spindle and arranged with its ends in contact with washer and the rear wall of the barrel, and compressed endwise, as and for the purpose specified.

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**527,297.** CROSSING-FROG. JOHN C. SHIPMAN, Sunbury, Pa. Filed July 5, 1894. Serial No. 516,638. (No model.)



*Claim.*—1. In a crossing frog, the combination with the base block having a central platform and arms radiating therefrom to which main and guard rails may be attached, of an angle block adapted to be seated upon the platform and provided on its upper surface with intersecting grooves and angular ridges or rails, substantially as described.

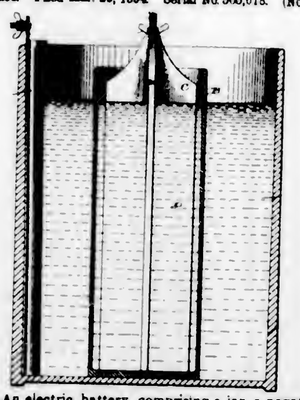
2. In a crossing frog, the combination with the base block having a central platform provided with V-shaped grooves and having arms, of an angle block adapted to rest on the platform and provided on its lower surface with ridges corresponding to the grooves and on its upper surface with angular ridges or rails separated by intersecting grooves, substantially as described.

3. In a crossing frog, the combination with the base plate consisting of a central platform and arms radiating therefrom and adapted for the attachment of the rails, of a foundation plate beneath the base block connected thereto by rivets or bolts and an angle block seated upon the platform and provided with angular rails upon its upper surface separated by intersecting grooves, substantially as described.

4. In a crossing frog, the combination with the base block having a central platform and radiating arms and a central perforation, of an angle block adapted to rest on the platform and provided with a post or stud upon its lower side, and means for retaining the post in the perforation of the base block, the upper side of the angle block being provided with angular rails and separated by intersecting grooves, substantially as described.

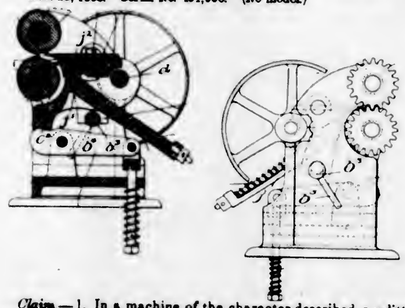
5. In a crossing frog, the combination with the base block having radiating arms and a central platform, of the rails attached to the arms, the foundation plate beneath the rails and the base block and connected thereto, and the angle block arranged upon the platform, and means for securing the angle block to the base block, substantially as described.

527,298. ELECTRIC BATTERY. MILTON E. SMITH and MAURICE F. GEER, Rochester, N. Y., assignors of one-third to Paul C. Brewer, same place. Filed Mar. 29, 1894. Serial No. 505,618. (No model.)



*Claim.*—An electric battery, comprising a jar, a negative electrode extending into a suitable fluid contained in the said jar, a porous cup held in the said jar and extending into the said fluid, a positive electrode held in the said porous cup, and an exciting fluid in the said porous cup, said fluid containing chromic acid, substantially as shown and described.

527,299. MACHINE FOR SPLITTING INSOLES FOR BOOTS OR SHOES. FLORENTINE L. STONE, Brockton, Mass., assignor of two-thirds to the Bouvé, Crawford & Company Corporation, same place. Filed Nov. 25, 1893. Serial No. 491,990. (No model.)



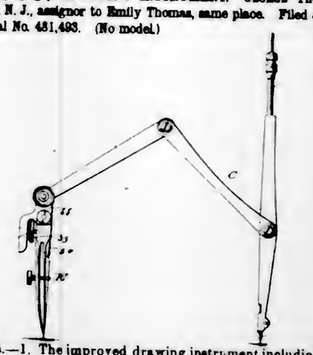
*Claim.*—1. In a machine of the character described, a splitting-knife; a pair of feed-rollers, one having a raised surface throughout a portion of its circumference adapted to co-act with the other roller in advancing the work upon the knife, and a lower inoperative surface throughout the remainder of its circumference said roller being adjustable to commence feeding at different points in its raised surface; means for rotating said feed-roller; and means for stopping the same at the end of each complete revolution.

2. A machine of the character described, comprising in its construction a splitting-knife, feed-rollers for advancing the work thereagainst to a predetermined extent, and ejecting means for pushing the work back when that extent has been reached.

3. A machine of the character described, comprising in its construction a splitting-knife, feed-rollers for advancing the work thereagainst to a predetermined extent, and a spring-pressed ejector against which the work is carried by the feed-rollers.

4. In a machine of the character described the combination of a splitting knife, feed rollers, one having a raised surface throughout a portion of its circumference adapted to co-act with the other in advancing the work upon the knife, and a lower inoperative surface throughout the remainder of the circumference, and ejecting means for pushing the work back when said lower surface arrives opposite the opposed roller.

527,300. DRAWING-INSTRUMENT. GEORGE THOMAS, Jersey City, N. J., assignor to Emily Thomas, same place. Filed July 26, 1893. Serial No. 481,493. (No model.)

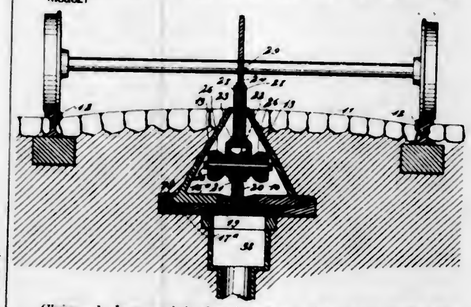


*Claim.*—1. The improved drawing instrument including the tracing arm provided with a lateral screw-threaded post at its outer end, and a detachable point or arm for carrying a tracing device, the same having its head provided with a lateral slot adapted to receive said post, a nut adapted to screw on the post, and a sleeve interposed between said arm and nut, substantially as described.

2. In a drawing instrument, the combination with the tracing arm, having a pivoted head provided with a downward extension, of a pen or other tracing device which is pivoted to said head, a screw fixed in the pen and having an attached turning disk and its free end abutting the said extension, and a spring applied on the opposite side of said pen and bearing on the pivoted head, as shown and described.

3. In a drawing instrument, the combination, with two sections to be united, one of the sections being provided with a head having a countersunk aperture produced therein and a slot leading into the aperture, of a clamping device adapted to be secured to the other section, comprising a threaded stud permanently secured to the section and provided with a tapering square section, a conical expanding sleeve held to slide upon the tapering section of the stud, and a lock nut adapted for engagement with the sleeve, as and for the purpose specified.

527,301. CONDUIT ELECTRIC RAILWAY. JAMES R. TOOLE, Northumberland, Pa. Filed Jan. 24, 1894. Serial No. 497,857. (No model.)



*Claim.*—1. In a conduit electric railway, the conduit composed of two similar parts, each having an inwardly-extending base and an inclined side, the inwardly extending base portions being spaced apart to form a drainage slot and provided at intervals with ribs which cross said slot substantially as described.

2. The conduit having a suitable base split longitudinally through a greater part of its length, the edges of the base portions at the split being spaced apart to form a drainage slot, ribs crossing the slot and forming insulator supports and inclined sides converging upward, substantially as described.

3. The conduit, comprising a series of sections abutting end to end and of a generally triangular shape, and the clamping pieces dovetailed upon the abutting portions of the sections, substantially as described.

4. The combination, with the conduit having the slotted bottom and the meeting ribs, of the insulators dovetailed into the ribs and adapted to carry the line wire, substantially as described.

5. The combination, with the conduit and the line wire therein, of the trolley consisting of a conducting arm, a wheel journaled in the arm to run on the wire, and guide wheels on the sides of the trolley, the guide wheels being of insulating material, substantially as described.



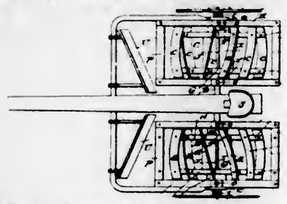
6. The combination, with the conduit and the line wire therein, of the trolley comprising a hinged arm extending through the conduit slot, a trolley wheel journaled in the arm and adapted to run on the wire, and insulated guide wheels on opposite sides of the trolley, substantially as described.

7. The trolley comprising the arm having slide ways in its opposite sides, insulating slides mounted in said slide ways, and the trolley wheel on the lower end of the arm, substantially as herein described.

8. The sectional electric conduit composed of a series of abutting sections each formed of two similar parts having inclined sides and base portions provided at the ends of their inner edges with ribs spacing said edges apart and also forming supports for the line wire, and the slides 13ª mounted on the abutting ends of the sections, substantially as shown and described.

9. An electric conduit comprising the two similarly formed parts, each having an inclined side piece spaced apart to admit the trolley arm, and base sections spaced apart to form a drainage slot, and provided with abutting ribs, clamps securing the said two parts together sleepers on which said connected members rest, and a trough or water channel below the sleepers and conduit, and having outlets at intervals, substantially as herein described.

527,302. STALK-CUTTER. WILLIAM R. USRY, Gadsden, Ala., assignor of one-half to Charles Whitley Ewing, same place. Filed May 17, 1894. Serial No. 511,601. (No model.)



*Claim.*—1. In a stalk chopper, the combination with a tongue and an axle, of two independent revolving cutters fitted on the axle on opposite sides of the tongue and each cutter carrying a series of diagonal knives or blades, the blades on one cutter being arranged in a reverse diagonal position to the blades on the other cutter, substantially as described.

2. In a stalk chopper, the combination with a tongue and an axle, of the independent revolving cutters fitted loosely on the axle, and each cutter provided with the two series of arms which are arranged out of line with each other and the knives or blades secured to the outer ends of the spokes in a diagonal position to the axis of the cutter, the blades of one cutter being arranged in reversed diagonal order to the blades on the other cutter, substantially as and for the purposes described.

3. In a stalk chopper, the combination with a transverse axle a revolving cutter consisting of two hub. provided with radial spokes, a thimble fitted around the axle and interposed between the hubs, means for clamping the hubs, upon the ends of the thimble, and the blades or knives secured to the outer ends of the radial spokes, substantially as and for the purposes described.

4. In a stalk chopper, the combination with a transverse axle a revolving cutter comprising the two hubs provided with radial spokes, the thimble fitted around the axle and interposed between and bearing against the hubs, the draw bolts connecting the hubs, and the blades secured to the spokes, substantially as described.

5. In a stalk chopper, the revolving cutter comprising the spaced hubs which are provided with radial spokes and with sockets in their opposing faces, the thimble interposed between the hubs, and provided at its ends with tenons which are fitted in the sockets of said hubs, the draw bolts, and the blades secured to the spokes, substantially as described.

6. In a stalk chopper, the revolving cutter comprising the spaced hubs having the axle bearings and the projecting bosses, the thimble interposed between the hubs and bearing against the same outside of the circle of the bearings on the axle, the draw bolts, the blades, and collars fitted in said bosses of the hubs, substantially as and for the purposes described.

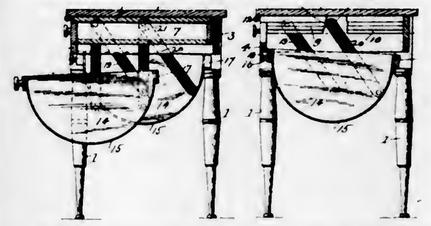
7. In a stalk chopper, the combination with the axle, of the revolving cutter having its hubs provided with the recessed bosses and the bearings, the thimble fitted around the axle and clamped to and between the hubs, and with the blades secured to the spokes on said hubs, and the clamping collars fitted to the axle against the hubs and provided with bosses which fit in the recessed bosses of the hubs, substantially as described.

8. In a stalk chopper, the combination with an axle, of the revolving cutter adjustable longitudinally on the axle and comprising the hubs provided with the radial spokes, and the thimble which is fitted around the axle and clamped between the hubs, and the collars clamped to the axle at opposite ends of the revolving cutter and adjustable longitudinally on the axle with said cutter, substantially as described.

9. The combination with an axle, of the revolving cutter fitted loosely upon and adjustable longitudinally on said axle, the collars clamped to said axle on opposite sides of the cutter and provided with the arms, and a shield over the cutter and carried by the arms to be adjustable with the collars and the cutter, substantially as described.

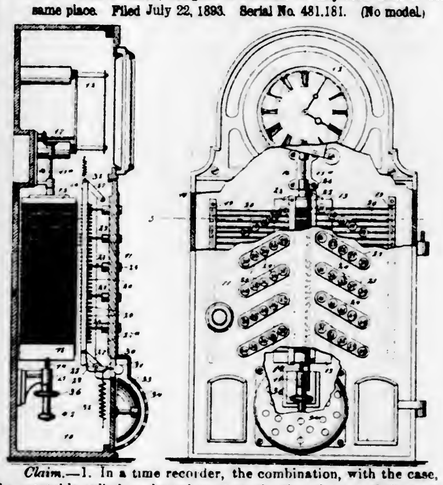
10. The combination with an axle, of the revolving cutter, the collars clamped to said axle and provided with the side arms, the rear knife bar fixed to said side arms, the front bar attached to the side bars and the shield attached to the front and rear bars, substantially as described.

527,303. KITCHEN-TABLE. FRED R. VAN HOUTEN, Hoytville, Mich. Filed Mar. 20, 1894. Serial No. 504,390. (No model.)



*Claim.*—The combination with a kitchen table, of the swinging flour bins, having front cleats adapted to engage with the front bar of the table, the front arms having their lower ends pivoted to the ends of the bins at or near the center and their upper ends pivoted to the table near the front thereof, the rear arms pivoted to the ends of the bins in rear of the front arms and formed with slots at their upper ends, and the studs secured to the table with which said slots engage, said rear arms serving to support the bins when open and by means of the slots allowing the bins to be turned on the pivots to disengage the cleat from the front board of the table, substantially as described.

527,304. WORKMAN'S TIME-RECORDER. EDWARD G. WATKINS, Gardner, Mass., assignor of one-half to Heywood Bros. & Co., same place. Filed July 22, 1893. Serial No. 481,181. (No model.)



*Claim.*—1. In a time recorder, the combination, with the case, the rotatable cylinder adapted to carry the time sheet, and the parallel pivoted marking levers, of two links pivoted to the case, a rod having its respective ends connected with the free ends of the said links, said rod being arranged in the path of travel of the marking levers and essentially perpendicular thereto, a bell, and an operative connection between the said rod and the bell, substantially as described.

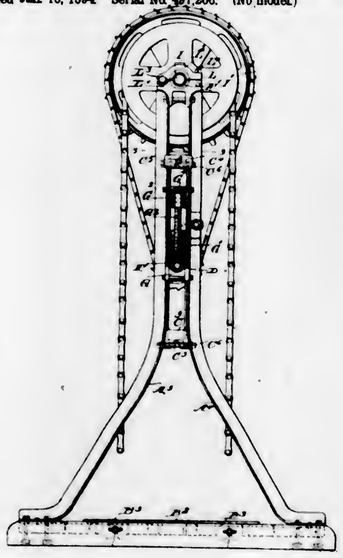
2. In a time recorder, the combination, with the revoluble cylinder adapted to carry the time sheet, and a marking mechanism located adjacent to the cylinder, of a screw adapted to rotate together with the cylinder, and a stationary screw threaded bearing for supporting the said screw, whereby the cylinder is displaced axially during its rotation, substantially as and for the purpose specified.

3. In a time recorder, the combination, with the revoluble cylinder adapted to carry the time sheet, and a marking mechanism located adjacent to the cylinder, of a socket adapted to support the cylinder and formed with a screw-threaded portion, a pin constructed to slide in the socket yet to rotate therewith, one end of said pin being adapted to engage a central opening in the bottom of the cylinder, to rotate with the latter, means for moving the said pin into and out of engagement with the cylinder, and a stationary female-threaded bearing constructed to receive the screw-threaded portion of the said socket, substantially as and for the purpose specified.

4. In a time recorder, the combination, with the revoluble cylinder adapted to carry the time sheet, and a marking mechanism located adjacent to the cylinder, of a socket adapted to support the cylinder and formed with a screw-threaded portion, a pin constructed to slide in the socket, yet to rotate therewith, the angular outer end of said pin being adapted to engage a correspondingly shaped central opening in the bottom of the cylinder, to rotate with the latter, a transverse pin projecting from the first named pin and outwardly through an opening in the socket, a sleeve inclosing the socket and provided with a cam slot for the reception of the said transverse pin to move the same longitudinally of the socket when the sleeve is rotated, means for preventing a displacement of the said sleeve longitudinally of the socket, and a stationary female-threaded bearing constructed to receive the screw-threaded portion of the socket, substantially as and for the purpose specified.

5. In a time recorder, the combination, with a revoluble cylinder adapted to carry the time sheet, and a marking mechanism located adjacent to the cylinder, of a socket formed with a shoulder and with a screw-threaded portion above the same adapted to support the cylinder, a stationary female-threaded bearing constructed to receive the screw-threaded portion of the said socket, a pin capable of sliding longitudinally in the socket, said pin having an angular section near its upper end adapted to engage a correspondingly shaped central opening in the bottom of the cylinder to rotate with the latter, a transverse pin secured to the first named pin and projecting outwardly therefrom through a longitudinal slot in the socket, a sleeve inclosing the lower end of the socket and provided with a cam slot for the reception of the said transverse pin to move the same longitudinally of the socket when the sleeve is rotated, and a spring located in the socket and adapted to press the longitudinal pin upward, and hold the upper end of the sleeve in contact with the shoulder of the socket, substantially as and for the purpose specified.

527,305. CHAIN HOD-ELEVATOR. GUSTAV P. WERB, Brooklyn, assignor to the Pelham Hod Elevating Company, New York, N. Y. Filed Jan. 18, 1894. Serial No. 497,266. (No model.)



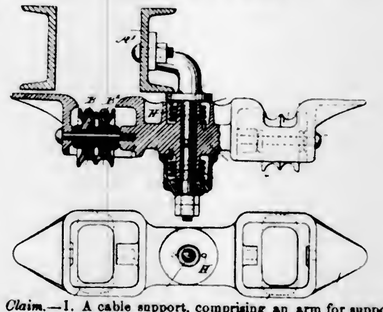
*Claim.*—I. In a chain hod-elevator, the combination with a frame having standards connected with each other, of fixed blocks attached to the said standards, bearing boxes having curved exterior surfaces seated in the said fixed blocks, a shaft journaled in the said bearing boxes, adjustable blocks engaging, with their concave under surfaces, the said bearing boxes opposite the fixed blocks, and pivoted screw rods on which screw the said adjustable blocks, substantially as shown and described.

2. In a chain hod elevator, the combination with a frame having standards connected with each other, of fixed blocks attached to the said standards, bearing boxes having curved exterior surfaces seated in the said fixed blocks, a shaft journaled in the said bearing boxes, adjustable blocks engaging, with their concave under surfaces, the said bearing boxes opposite the fixed blocks, pivoted screw rods on which screw the said adjustable blocks, and blocks fixed in the said standards and carrying the pivots for the said screw rods, substantially as shown and described.

3. A chain hod elevator, provided with a frame comprising two standards, each formed of two T-irons, blocks for fastening the T-irons together, a transverse brace for connecting the standards with each other, the said brace comprising two horizontal bars formed with bolts at their ends, plates engaged by the said bolts and bearing against the said plates, and diagonal braces formed with flanges having notches engaging the said bolts, substantially as shown and described.

4. A chain hod elevator, provided with a frame comprising two standards, each formed of two T-irons, blocks for fastening the T-irons together, a transverse brace for connecting the standards with each other, the said brace comprising two horizontal bars formed with bolts at their ends, plates engaged by the said bolts and bearing against the said plates, diagonal braces formed with flanges having notches engaging the said bolts, and bolts connecting the T-irons with each other and adapted to form a rest for the bolts of the horizontal bars, substantially as shown and described.

527,306. CABLE-SUPPORT. ERIK G. P. WERB, Brooklyn, assignor to the Pelham Hod Elevating Company, New York, N. Y. Filed Jan. 23, 1894. Serial No. 497,792. (No model.)



*Claim.*—1. A cable support, comprising an arm for supporting the cable and mounted to swing on a fixed pivot, and springs connected with the said arm and adapted to be compressed when the arm is swung out of its normal position in either direction, the said springs being also adapted to automatically return the arm to its normal position as soon as the arm is released, substantially as shown and described.

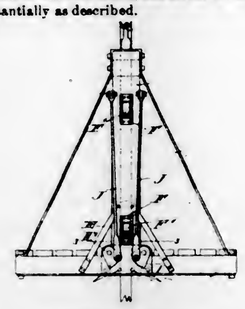
2. A cable support, comprising an arm for supporting the cable, a fixed pivot on which the said arm is mounted to swing, and springs held on the said arm and coiled on the hub thereof and also fastened to the said fixed pivot, substantially as shown and described.

3. A cable support, comprising an arm having heads carrying the pulleys for supporting the cables, a fixed pivot on which the said arm is mounted to turn, a spring coiled on the hub of the said arm and fastened with one end to the arm and with its other end to the said pivot, a second spring coiled on the hub of the said arm and likewise fastened to the latter at one end, and a cup secured on the said pivot and connected with the outer end of the second spring, substantially as shown and described.

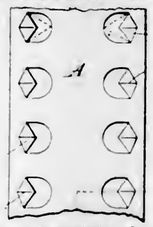
527,307. ELEVATOR-PLATFORM. GUSTAV P. WERB, Brooklyn, assignor to the Pelham Hod Elevating Company, New York, N. Y. Filed Apr. 19, 1894. Serial No. 508,145. (No model.)

*Claim.*—An elevator platform, comprising a platform proper and spaced metallic plates located at the sides thereof, posts arranged between the said plates, bolts passing through the plate, posts and platform to secure them in relation to each other, shafts provided with reduced ends journaled in the said plates, safety clutches secured on the outer ends of the said shafts, and means for actuating the said clutches, substantially as described.





527,308. BOX-CORNER BINDER. ALBERT A. WOOD, Atlanta, Ga. Filed Feb. 2, 1894. Serial No. 498,905. (No model.)



*Claim.*—1. A binder strip consisting of a strip of thin metal, having spurs punched and bent up therefrom, the hole wherefrom said spurs are punched being enlarged, substantially as and for the purpose specified.

2. A binder strip consisting of a strip of thin metal having spurs punched and bent up therefrom, and small hooks on the points of said spurs, substantially as specified.

3. A binder strip consisting of a thin metallic strip, having spurs punched and bent up along its edges said spurs being strengthened by lateral bending, extending from the base nearly to the point and being left approximately flat on the point, substantially as and for the purpose specified.

527,309. CASTRATING-INSTRUMENT. JOHN E. ANDERSON, Carbon, Wyo. Filed June 21, 1894. Serial No. 515,249. (No model.)



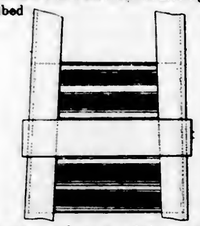
*Claim.*—1. A veterinary castrating instrument, composed of spring jaws, having their broad free ends curved inward, and two shear-like blades connected with and arranged between the jaws, and pivoted together at their rear ends, as shown and described, whereby the jaws and blades open simultaneously, and the blades make their complete cut before the jaws close, but their edges are prevented from contact with the jaws, as specified.

2. The improved castrating instrument, composed of spring jaws having their free ends curved inward as shown, and two shear-like blades pivoted together and connected with the jaws, and arranged longitudinally between them in rear of their converging ends, as shown and described.

3. The improved castrating instrument, composed of spring jaws, having converging free ends and inturned longitudinal flanges on opposite side edges, a cutting blade riveted to one of said flanges, and the other blade having a slot-and-pin connection with the opposite flange, as shown and described.

527,310. POST OR COLUMN. OSCAR ANDRÉ, Neuilly-sur-Seine, France. Filed Sept. 15, 1893. Serial No. 485,620. (No model.) Patented in France Mar. 27, 1893, No. 228,930.

*Claim.*—1. A metallic post or column consisting of corner uprights, a corrugated supporting frame arranged within the corner irons, and the tightening hoops or bands fitted externally to the corner irons to bind the irons and internal frames tightly together, substantially as described



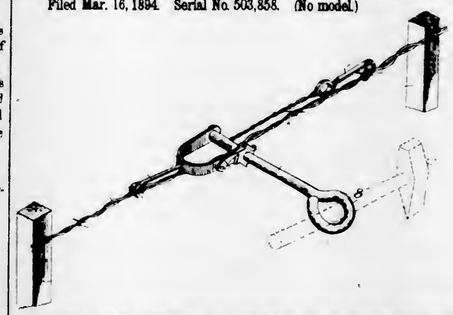
2. A metallic post or column consisting of the corner uprights pyramidically arranged, a series of thin corrugated sheet iron supporting frames situated within said corner irons and at suitable distances from each other, and means for binding the corner irons and internal frames tightly together, substantially as described.

3. The combination with the corner uprights or posts of a brace having its bent ends united to a pair of the corner posts, substantially as described.

4. The metallic post or column herein shown and described, comprising a series of angular corner irons pyramidally arranged in relation to each other, each corner iron composed of sections which have their meeting lapped ends clamped together, a series of corrugated metallic brace frames fitted within the corner irons, and the external clamps on the corner irons to brace the same against the internal brace frames, substantially as described.

5. In a metallic post or column, the corner irons composed of sections which have their meeting ends interlocked by a tongue and groove joint and provided with an external clamp, combined with brace frames arranged within the corner irons transversely to the length thereof, and external bands fitted tightly around the corner irons, substantially as and for the purpose described.

527,311. WIRE-STRETCHER. JOHN W. AUSTIN, Pilot Point, Tex. Filed Mar. 16, 1894. Serial No. 503,858. (No model.)



*Claim.*—As an improved article a fence wire stretcher consisting of the bent plate, the hook swiveled thereto and provided with a split hook at its free end, the rotatable rod passing through apertures in said plate and having one end formed into a loop or eye, the stretching wire secured to said rod, and the rod connected with said wire and having its free end formed into a split hook; substantially as described.

527,312. METHOD OF SMELTING. WILLIAM L. AUSTIN, Denver, Colo. Filed Apr. 2, 1894. Serial No. 506,097. (No specimens.)

*Claim.*—1. In the art of smelting pyrites, sulphides, arsenide or antimonide compounds, zinc-blende and other ores, or artificial furnace products of a like chemical nature, the method of securing continuous combustion and smelting without the continued use of coke, charcoal, or coal, in the charge, which consists in first heating the lower part of a charge containing one or more of these substances or compounds, together with the necessary fluxes, up to a point where combustion can take place, and then continuously maintaining the temperature of the tuyere zone at such point by the introduction into the furnace thereat, of a combustible material, substantially as and for the purpose specified.

2. In the art of smelting pyrites, sulphides, arsenide or antimonide compounds, zinc-blende and other ores, or artificial furnace products of a like chemical nature, the method of securing continued combustion and smelting without the continued use of carbonaceous fuel in the charge, which consists in first heating the lower part of a

charge up to a point where combustion can take place, and then subjecting the charge to the action of an air blast while continuously maintaining the temperature of the tuyere zone at the desired point by introducing combustible material into the furnace through the tuyeres, substantially as and for the purpose shown.

3. In the art of smelting pyrites, sulphides, arsenide or antimonide compounds, zinc-blende, and other ores or artificial furnace products of a like chemical nature, the method of securing combustion and smelting without the use of carbonaceous fuel in the charge, which consists in introducing into the body of a heated furnace such compounds or ores mixed with a material, as limestone, for preventing premature fusion of the charge, and in producing and maintaining at or near the zone of fusion a predetermined temperature by the burning of combustibles introduced into the furnace at such point, substantially as and for the purpose set forth.

4. In the art of smelting pyrites, sulphides, arsenide or antimonide compounds, zinc-blende and other ores, or artificial furnace products of a like chemical nature, the method of keeping up the combustion and smelting without the use of carbonaceous fuel in the charge, which consists in introducing such compounds or ores, mixed with limestone, into the body of a heated furnace, and there subjecting them to the action of an air-blast; at the same time producing and maintaining, at or near the zone of fusion, an atmosphere consisting largely of reducing gases, formed from combustible materials introduced through the tuyeres, substantially as and for the purpose specified.

5. In the art of smelting pyrites, sulphides, arsenide or antimonide compounds, zinc-blende and other ores, or artificial furnace products of a like chemical nature, the method of keeping up the combustion and smelting without carbonaceous fuel in the charge, which consists in feeding such ores, mixed with limestone, down in a column within a heated furnace; keeping such column out of contact with the furnace walls as it passes down toward the zone of fusion, and subjecting the charge to a blast of air; all the while producing and maintaining, in the smelting zone, a temperature high enough to effect the dissociation of the metallic and non-metallic elements in the charge by burning in that part of the furnace carbonaceous gases, substantially as and for the purpose shown.

6. In the art of smelting pyrites, sulphides, arsenide or antimonide compounds, zinc-blende and other ores, or artificial furnace products of a similar chemical nature, the method of keeping up the combustion and smelting without carbonaceous fuel in the charge; which consists in feeding them, mixed with limestone, in a central column, down within a heated furnace; feeding in around such column, so as to form a layer in contact with the same entirely surrounding it and keeping it out of contact with the furnace walls, as it descends toward the zone of fusion, a not easily fused material, (other than carbonaceous fuel) which will remain unfused until it comes to or near the zone of fusion; subjecting the charge to an air blast and continuously producing and maintaining a reducing atmosphere, within the tuyere zone, by burning, in that part of the furnace, carbonaceous gases resulting from the combustion of material introduced through the tuyeres, substantially as and for the purpose described.

7. In the art of smelting pyrites, sulphides, arsenide or antimonide compounds, zinc-blende and other ores, or artificial furnace products of a like chemical nature, the method of keeping up the combustion and smelting without carbonaceous fuel in the charge; which consists in mixing with them a certain proportion of material as limestone (sufficient to prevent their premature fusing together and forming a solid mass) and feeding the mixture down within a heated furnace, keeping it from contact with the furnace walls by a layer of not readily fused material; subjecting the charge to an air-blast, and continuously maintaining a reducing atmosphere in the tuyere zone, by burning in that part of the furnace carbonaceous gases resulting from the combustion of material introduced through the tuyeres, substantially as and for the purpose specified.

8. In the art of smelting pyrites, sulphides, arsenide or antimonide compounds, zinc-blende and other ores, or artificial furnace products of a like chemical nature, the method of keeping up the combustion and smelting without carbonaceous fuel in the charge, which consists in feeding them mixed with a material, as limestone to prevent premature fusion of the charge possessing similar qualities, in requisite proportion, down into a heated furnace; while producing and maintaining a reducing atmosphere immediately in front of the tuyeres of the furnace, by burning there carbonaceous material, introduced through the said tuyeres, and subjecting the charge to an air-blast, substantially as and for the purpose described.

9. In the art of smelting pyrites, sulphides, arsenide or antimonide compounds, zinc-blende and other ores, or artificial furnace products of a like chemical nature, the method of keeping up the combustion and smelting without carbonaceous fuel in the charge, which consists in producing and maintaining a reducing zone in front of the tuyeres of a furnace, by introducing and burning carbonaceous material through the said tuyeres; at the same time producing by the same means a high enough temperature to dissociate the metallic and non-metallic compounds of the charge, so that they may be burned by the oxygen of an air current, and subjecting the charge to an air-blast, substantially as and for the purpose described.

10. In the art of smelting pyrites, sulphides, arsenide or antimonide compounds, zinc-blende and other ores, or artificial furnace products of a like chemical nature, the method of keeping up the combustion and smelting without carbonaceous fuel in the charge, which consists in producing and maintaining, in the smelting zone of the furnace, a temperature sufficient to dissociate their metallic and non-metallic contents, by burning carbonaceous material introduced through the tuyeres, and mixing with these ores, &c., a material as limestone to prevent their premature fusing and sticking together before reaching the smelting zone; and feeding this mixture down into the heated furnace and subjecting the charge to an air-blast, substantially as and for the purpose specified.

11. In the art of smelting pyrites, sulphides, arsenide or antimonide compounds, zinc blende and other ores or artificial furnace products of a like chemical nature, the method of keeping up the combustion and smelting without carbonaceous fuel in the charge; which consists in introducing such compounds or ores down in a column within a heated furnace; keeping such column out of contact with the furnace walls, as it passes down toward the zone of fusion, by a layer which contains granular quartzose material (other than carbonaceous fuel), less fusible than the ores in said column, and subjecting the charge to a blast of air; all the while producing and maintaining in the smelting zone a temperature sufficient to dissociate the metallic and non-metallic elements of these ores and compounds; and at the same time producing and maintaining a reducing atmosphere before the tuyeres, substantially as and for the purpose shown.

12. In the art of smelting pyrites, sulphides, arsenide or antimonide compounds, zinc-blende and other ores or artificial furnace products, of a like chemical nature, the method of keeping up the combustion and smelting without carbonaceous fuel in the charge; which consists in mixing such ores and compounds with lime, or similar material, to preclude their sticking together before the smelting zone is reached; and feeding the mixture down into a heated furnace; introducing carbonaceous material through the tuyeres and burning it, so as to produce a reducing atmosphere in the neighborhood of said tuyeres; at the same time maintaining a constant temperature, through the combustion of such carbonaceous material, introduced in the manner aforesaid, which suffices for dissociation of the metallic and non-metallic elements of the ores and compounds named, substantially as and for the purpose specified.

13. In the art of smelting pyrites, sulphides, arsenide or antimonide compounds, zinc-blende and other ores, or artificial furnace products of a similar chemical nature, the method of keeping up the combustion and smelting without carbonaceous fuel in the charge, which consists in feeding them, mixed with lime or other similar substance, down in a column within a heated furnace, preventing said column from coming into contact with the furnace walls, by a layer of granular material not easily fusible, fed simultaneously with it, and subjecting the charge to a blast of air; all the while producing and maintaining a temperature in the smelting zone, sufficient to dissociate the metallic and non-metallic elements of these ores, &c., by introducing carbonaceous materials through the tuyeres and burning them, substantially as and for the purpose shown.

14. In the art of smelting pyrites, sulphides, arsenide or antimonide compounds, zinc-blende and other ores or artificial furnace products of a similar chemical nature, the method of keeping up the combustion and smelting without carbonaceous fuel in the charge; which consists in mixing them with a sufficient quantity of limestone, and feeding this mixture down in a column within a heated furnace, preventing said column from coming into contact with the sides of the furnace, by feeding simultaneously with it (between it and the furnace walls) a layer of material of a less easily fusible character than the central column, such column of ore or other compounds being mixed with limestone and together with the enveloping layer or zone of more or less silicious material, when they reach the smelting zone, being subjected to a blast of air, in the presence of a temperature sufficiently high to separate the metallic and non-metallic elements of the sulphides, arsenides and antimonides contained therein, which temperature is produced and maintained by the admission to the furnace, through the tuyeres or other suitable openings, of carbonaceous materials, care being taken to prevent the formation of accretions, consisting of ferric oxide or zinc compounds, in the lower parts of the furnace, by regulating the supply of these carbonaceous materials, substantially as and for the purpose indicated.

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**527,313. COMBINED ICE-CREAM FREEZER AND CHURN.** Ira T. Barrett, Abingdon, Ill. Filed Apr. 17, 1894. Serial No. 507,905. (No model.)

*Claim.*—1. The combination of a frame, a vertical shaft journaled thereon and provided at its lower end with a polygonal head, gearing for rotating the shaft, a coupling sleeve composed of sections and having the lower portion of its longitudinal opening forming a socket adapted to receive the shaft of a churn or ice cream freezer, the upper portion of said longitudinal opening being enlarged, forming upper and lower shoulders and receiving the head of the vertical shaft, whereby the coupling sleeve is permitted a limited vertical movement, and means for connecting the sections of the sleeve, substantially as described.



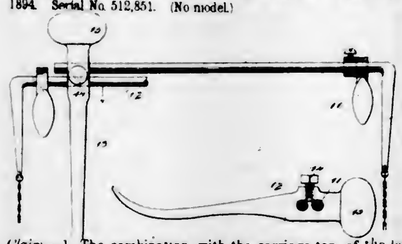


2. The combination of a frame, a vertical shaft journaled thereon and provided at its lower end with a polygonal head, gearing for rotating the shaft, a coupling sleeve having an upper exterior conical portion and composed of sections, the lower portion of its longitudinal opening forming a socket to receive detachably the shaft of an ice cream freezer or churn and the upper portion of the opening being enlarged and receiving the head of the vertical shaft, and a spiral spring arranged on the conical portion of the sleeve and connecting the sections thereof, substantially as described.

3. The combination of a frame, a vertical shaft journaled thereon, gearing for rotating the shaft, a coupling sleeve carried by the shaft and provided at its lower end with a socket, an outer receptacle mounted on the frame, an inner rotary cream can arranged within the outer receptacle and provided with a cover having peripheral teeth, a cross-bar detachably secured to the top of the outer receptacle and having a central depressed circular portion provided with a central opening and a side bearing opening, a shaft arranged in the cream can and extending upward to the cover thereof, a gear wheel arranged in the central opening of the cross-bar and fixed to the shaft of the cream can, a pinion meshing with the gear wheel and the peripheral teeth of the can and provided with a pinion journaled in the side bearing opening of the cross-bar, and a plate arranged on the central depressed portion of the cross-bar and having one end bolted thereto and provided with depending longitudinal flanges to form a casing and provided at its opposite ends with a notch engaging a projection of the adjacent portion of the cross-bar, substantially as described.

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**527,314. CARRIAGE-TOP WORKER.** August C. Bendler, Milwaukee, Wis., and William E. Bendler, Chicago, Ill. Filed May 29 1894. Serial No. 512,851. (No model.)



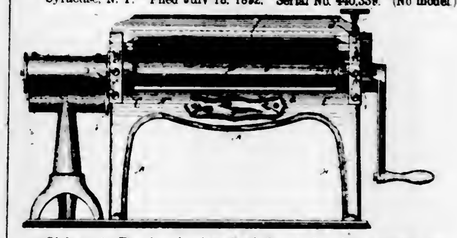
*Claim.*—1. The combination, with the carriage top, of the longitudinally extensible crank shaft journaled thereon, a handle for the crank shaft, and an operative connection between the cranks of the shaft and the braces of the carriage top, substantially as described.

2. The combination, with the carriage top, of the two-part crank shaft thereon, a handle forming the coupling which connects the two sections of the shaft, and an operative connection between the cranks of the shaft and the braces of the carriage top, substantially as described.

3. The combination, with the carriage top, of the two-part crank-shaft journaled thereon, the counterbalanced handle forming the coupling between the two shaft sections, cranks on the ends of the shaft, and a connection between the cranks and the braces of the carriage top, substantially as described

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**527,315. PHOTOGRAPHIC BURNISHER.** Warren H. Boles, Syracuse, N. Y. Filed July 18, 1892. Serial No. 440,339. (No model.)



*Claim.*—1. The herein described frame for photographic burnishers, the same comprising a bar or body *a* formed concavo-convex in cross section and provided with a convex upper face, and legs B B and arms C C formed integral with the bar or body *a*, in combination with burnisher rollers supported by said arms C C, substantially as and for the purpose specified.

2. In a photographic burnisher, the combination of a frame provided with journal bearings, a revoluble hollow burnisher roller journaled in one of said bearings and having its opposite ends projecting beyond the same, a spindle journaled in the other bearing and provided with an enlarged annular shoulder fixed within the adjacent end of the roller and abutting against the inner face of said other bearing, and means, substantially as described, secured to the outer end of said spindle for rotating the roller, substantially as and for the purpose specified.

3. In a photographic burnisher, the combination with a frame and a burnisher roller journaled therein; of a feed roller and a supporting bearing or head for the feed roller consisting of a horizontal bar arranged above the feed roller, ears depending from the opposite ends of said bar and provided with journal bearings for receiving the feed roller, and rearwardly projecting lugs pivoted to the frame, substantially as and for the purpose specified.

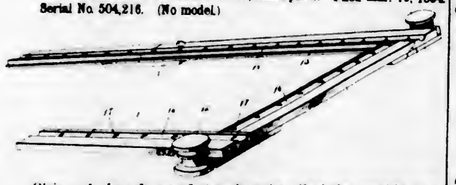
4. In a photographic burnisher, the combination with a frame provided with a stop and a burnisher roller journaled therein, of a feed roller, a supporting bearing or head for the feed roller consisting of a horizontal bar, provided with diverging flanges extending downwardly on opposite sides of the upper face of the feeding rollers, ears depending from said bar and provided with journal bearings for receiving the feed roller, rearwardly projecting lugs provided upon said bearing or head and pivoted to the frame and a forwardly projecting ear provided upon the bearing or head for engaging the stop of the frame, substantially as and for the purpose set forth.

5. In a photographic burnisher, the combination with a frame, an upwardly projecting arm provided upon the frame and formed with a projecting lug and a burnishing roller journaled in the frame; of a feed roller, a supporting bearing or head for the feed roller consisting of a horizontal bar arranged above the feed roller, ears depending from the opposite ends of said bar and provided with journal bearings for receiving the feed roller, rearwardly projecting lugs pivoted to the frame, and a forwardly projecting ear arranged beneath the projecting lug of the arm upon the frame, and an adjusting screw mounted in said projecting lug of the arm upon the frame and engaging the forwardly projecting ear of said bearing or head for moving the feed roll toward and away from the burnisher roll, substantially as described.

6. In a photographic burnisher, the combination with a frame, upwardly projecting arms at its opposite extremities each formed with a projecting lug, and a burnishing roller journaled in the frame; of a feed roller, a supporting bearing or head for the feed roller consisting of a horizontal bar arranged above the feed roller, ears depending from the opposite ends of said bar and provided with journal bearings for receiving the feed roller, rearwardly projecting lugs pivoted to the frame, and forwardly projecting ears arranged beneath the lugs of the arms of the frame, a spring interposed between one of the said lugs and the adjacent ear of said bearing or head.

and an adjustable screw movable through the other ear and having one extremity bearing against the other lug for adjusting the feed roller toward the burnishing roller, substantially as and for the purpose set forth.

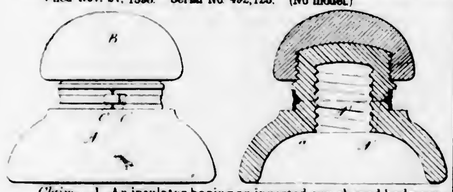
527,316. LACE-CURTAIN FRAME. MILLIE V. BOSSALL, Salem, Ohio, assignor to the Pelzer Art Co., same place. Filed Mar. 19, 1894. Serial No. 504,216. (No model.)



*Claim.*—1. In a frame of the class described the combination with an end bar having an undercut end and a projecting portion below the same, of a side bar arranged movably upon the projecting portion and beyond whose outer edge said projecting portion extends and having a rib at its inner edge for engaging the undercut-portion, and a binding device arranged upon that portion of the projecting portion lying beyond the side-bar, substantially as specified.

2. In a frame of the class described the combination with an end bar having an undercut end and a projecting portion below said end, of a side bar mounted upon and adapted to slide over the projecting portion, and having a rib at its inner edge engaging the undercut portion, said projecting portion extending beyond the side bar and a binding-knob eccentrically journaled upon the projection beyond the outer edge of the side bar, substantially as specified

527,317. INSULATOR. EDWARD J. BULLOCK, Wallingford, Conn. Filed Nov. 27, 1893. Serial No. 492,123. (No model.)



*Claim.*—1. An insulator having an inverted cup shaped body constructed with a hub, which is adapted to have its base encircled by the wire, and a removable head applied to the said hub, and constructed to overhang the base thereof by being made of larger external diameter than the same, substantially as described.

2. An insulator having a body provided with an annular recess, a removable head applied to the said body, and a metal wearing surface located in the said recess, substantially as described.

3. An insulator having an inverted cup-shaped body constructed with an externally threaded hub, which has an annular recess formed in its base, an internally threaded removable head adapted to be applied to the threaded outer end of the said hub, and a metal wearing surface located in the said recess, substantially as described.

4. An insulator having a body constructed with an externally threaded hub which has an annular recess formed in its base, a removable head, and a metal wearing surface consisting of a strap, located in the said recess, having its ends secured together, constructed with a longitudinal groove, and held against slipping in the said recess, substantially as described.

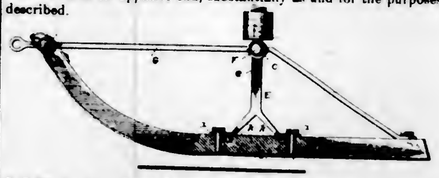
527,318. INSULATOR-PIN. EDWARD J. BULLOCK, Wallingford, Conn., assignor of one-half to Merwin D. Tuttle, same place. Filed Feb. 9, 1894. Serial No. 499,656. (No model.)



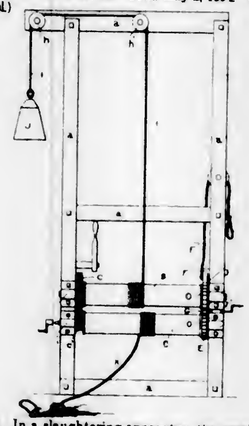
*Claim.*—An insulator-pin for electric wires, having a long longitudinal bore formed in it, a metal reinforce located within the said bore but shorter than the length of the same, and a plug fitted tightly into the open end of the bore over the outer end of the reinforce, and sealing the same within the pin, substantially as and for the purpose described.

527,319. SLEIGH-KNEE. LEWIS L. CHAFFIN, Monticello, Minn. Filed Jan. 6, 1894. Serial No. 495,943. (No model.)

*Claim.*—The combination with a runner, and a beam, of the upright knee forked at its upper end and fastened to the runner, the spaced groups of bearings rigid with the beam and receiving the upper forked arms of the knee between themselves, the pivotal bolt, the continuous brace fitted on the bolt and fastened at its ends to the runner, and another brace fastened to the runner at one end and to the bolt at its opposite end, substantially as and for the purposes described.



527,320. BUTCHERING APPARATUS. MICHAEL CHERRY and DANIEL DYKERT, Carlisle, Pa. Filed May 2, 1894. Serial No. 509,801. (No model.)



*Claim.*—1. In a slaughtering apparatus, the combination with a frame, of the rolls journaled therein and geared to rotate in opposite directions, a check mechanism for each roll, a drop weight and cord connected with one of the rolls, and a hauling cable connected to the other roll, substantially as described

2. In a slaughtering apparatus, the combination of the rolls geared directly together for simultaneous rotation in opposite directions, a drop weight and rope connected to one of the rolls, a hauling cable coiled on the other roll, and independent check mechanisms for said rolls so combined therewith as to permit both rolls to rotate simultaneously when the drop weight descends and to coil the hauling cable on its roll, for the purposes described, substantially as set forth.

3. In a slaughtering apparatus, the combination of an upright frame, the two rolls journaled thereon and geared together for simultaneous rotation, and each roll provided with a ratchet, a pawl F adapted to engage with the ratchet of one roll and provided with a pull cord, the rock shaft carrying a pawl which engages with the ratchet of the other roll, a drop weight having its cable passing over suitable guides and attached to one roll, and a hauling cable coiled on the other roll, substantially as as and for the purposes described

4. A slaughtering apparatus, comprising an upright frame having the guide sheaves, the upper and lower rolls journaled on the frame and geared directly together, the ratchets D, E, fast with said rolls, the pawl F having the pull cord, the rock shaft carrying the pawl G, the drop weight, the cable I connected to said drop weight and upper roll and passing over the guides sheaves, a guide L, and a hauling cable fastened to the lower roll, passing through guide L, and having a noose, M, substantially as and for the purposes described

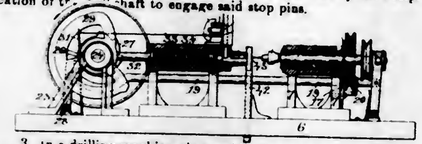
527,321. DRILLING-MACHINE. RICHARD D. CLAPP, Boston, Mass., assignor to J. P. Carl Weis, Providence, R. I. Filed Dec. 29, 1892. Serial No. 456,630. (No model.)

*Claim.*—1. In a drilling-machine, in combination, a rotatable-bearing journaled in a frame, a rotating-device secured thereto, a device for interrupting the rotation thereof, and a rotatable drill-shaft eccentrically journaled therein and free to reciprocate, as described.

2. In a drilling-machine, the combination with a rotatable-bearing, a driving-pulley mounted thereon and stop-pins secured thereto,



of a drill-shaft eccentrically journaled in said bearing, free to reciprocate therein, and a device adapted to be operated by the reciprocation of the drill-shaft to engage said stop pins.

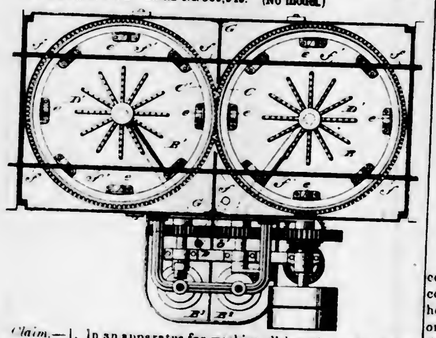


3. In a drilling-machine, the combination with a rotatable bearing, a driving pulley mounted thereon, a drill-shaft eccentrically journaled therein and free to reciprocate independently thereof, of a pivoted-bar adapted to reciprocate said drill-shaft, and a cam-controlled shaft adapted to vibrate said bar, as described.

4. In a drilling-machine, the combination with a plunger-case, a chuck having an entrance slot mounted thereon, a spring-plunger free to reciprocate therein, and a cam mounted on a shaft for operating the plunger against the spring, of a removal-chute 42 having the perforation 45 and located immediately in front of the chuck, as described.

5. The combination with a frame, the sleeve-bearing 8 journaled therein, the pulley-wheel 10 secured to said sleeve and furnished with stop-pins, the drill-shaft 12 having the pulley 14 eccentrically journaled in said sleeve and free to reciprocate therein, the swivel-bearing 15 mounted on the end of the drill-shaft, the spring-operated pivoted-arm 16 engaging this bearing, and the spring-operated stop-arm 17 having the finger 18 pivoted to the frame, of the shaft 19 pivoted to the arm 16 and to the pivoted stop-arm 28, the strap 20 clamped to the shaft 19 and carrying the pivoted-pawl 21, and a cam 26 mounted on a shaft and having steps as 27 for operating the arm 28, as described

527,322. DISH-CLEANER. MARY A. CROSBY, Durand, Wis. Filed May 3, 1894. Serial No. 509,949. (No model.)



*Claim.*—1. In an apparatus for washing dishes, the combination, of a receptacle having turn-tables C and C' with tracks, stationary platforms with tracks located adjacent the turn-tables, together with a central partition and end gates connected to each other and adapted to be moved in unison, substantially as shown and for the purpose set forth.

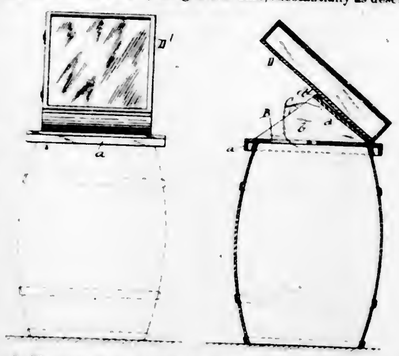
2. In a dish-washing apparatus, the combination, of a receptacle having spraying devices, a central partition and end gates which are adapted to be lowered to form separate compartments, the end gates and central partition being connected to each other and to a counterbalancing weight, substantially as shown and for the purpose set forth.

3. In a dish-washing apparatus, the combination, of turn-tables C and C' having tracks, said turn-tables being mounted in a receptacle having side pieces and a top, of end gates H H and a central partition G connected to each other by a central bar, a flexible connection attached to said bar and passing over a pulley to receive a counterbalancing weight, spraying devices D and D' located above and below the turn-tables, and baskets having grooved rollers whereby they are adapted to travel on the tracks of the turn-tables, substantially as shown and for the purpose set forth.

527,323. SHOW-CASE AND BARREL-COVER. HENRY DAUB and DAVID J. REX, Pittsburg, Pa. Filed July 9, 1894. Serial No. 516,986. (No model.)

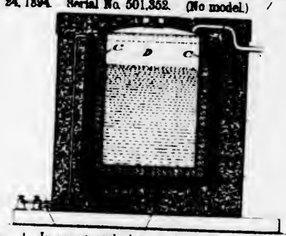
*Claim.*—1. In combination with a receptacle for goods, a cover for such receptacle, a frame mounted on said cover and a display-case, provided with a transparent cover, hinged to rock in said frame

2. A combined show-case and cover, consisting of the base or cover part, having an opening therein, a frame, C, mounted on said base, the rocking show-case hinged to said frame and adapted to close and uncover the opening in said base, substantially as described.



3. The combination with a barrel or other receptacle of a cover for the same provided with an opening to afford access to the contents of said receptacle, a frame on said cover, closed on the sides and top but open in front, and a show-case hinged to the top of said frame, whereby said show-case is adapted to rest on said frame to close the opening in said base and to be turned on said frame to uncover said opening, substantially as described.

527,324. ELECTRIC HEATER. JESSE R. DAVIS, Parkersburg, W. Va., assignor of one-third to Charles A. Wade, same place. Filed Feb. 24, 1894. Serial No. 501,352. (No model.)



*Claim.*—1. In an electric heater having a heat resisting medium composed of electrically conductive carbon particles mixed with non-combustible and non-conductive material, the combination with said heating medium and its insulating layers or walls; of two electrodes one constructed as a plate at the bottom of the heating medium, and the other constructed as a gravitating ring-shaped electrode arranged at the top of said heating medium substantially as and for the purpose described.

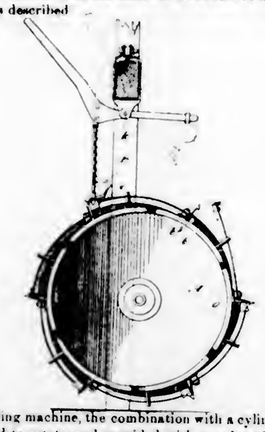
2. In an electric heater having an annular heat resisting medium comprised of electrically conductive carbon particles mixed with non-combustible and non-conductive material, the combination with said heating medium and its insulating layers or walls constructed to form a central heating chamber with an opening at the top; of two electrodes one constructed as a plate and placed at the bottom of the heating medium and extending beneath the central chamber, and the other constructed as a gravitating ring-shaped electrode placed at the top of the heating medium and surrounding the central chamber substantially as shown and described.

527,325. WOOD-BENDING MACHINE. JOHN DAWSON, Brooklyn, assignor to J. W. Mason & Co., New York, N. Y. Filed Apr. 4, 1894. Serial No. 506,329. (No model.)

*Claim.*—1. In a bending machine, the combination with a rotary hollow box adapted to receive steam or other heating agent and provided with curved seats on its periphery to receive the material to be bent, of clamping plates having one end secured to the box at one end of the seats, and latches secured to the box at the other end of the seats for engaging the free ends of the clamping plates to lock the material in said seats, substantially as described.

2. In a bending machine, the combination of a cylindrical hollow box mounted to rotate and provided with a series of seats which are tangential to the curvature of the box, clamping plates or bars having one end secured to the said box and projecting over the seats

thereof, and latches carried by the box and engaging the free ends of the plates or bars to lock the material to be bent in the said seats, substantially as described.



3. In a bending machine, the combination with a cylindrical hollow box mounted to rotate and provided with a series of tangential and longitudinally ranging seats to receive the material to be bent, of a series of spring plates for each seat, each plate having one end secured to the box and provided with a flanged head at its free end, and spring latches having hooked ends, said latches being secured to the box and engaging the heads of the said plates, to lock the material to be bent in the said seats.

4. In a bending machine, the combination with a rotary box provided with seats, of clamping plates or bars having one end secured to the box, latches carried by the box and engaging the free ends of said plates or bars, and a lever mechanism for engaging the locking plates or bars and the latches, substantially as and for the purpose set forth.

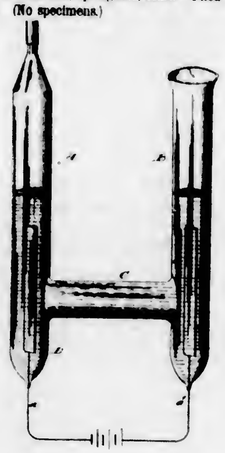
5. The combination in a bending machine, with a box adapted to be rotated and to receive steam or other heating agent, and having a series of seats thereabout, of a series of clamps for each seat, and a carriage above the box adapted to travel longitudinally thereof and provided with lever devices adapted to be moved against said clamps, substantially as described.

6. In a bending machine the herein described devices for closing and releasing the clamps, consisting of a carriage, a lever thereon, and a rocking yoke supported from the lever, substantially as described.

7. In a bending machine, the herein described devices for closing and releasing the clamps, consisting of a carriage, a lever thereon, a depending bar pivotally suspended from the lever, and a rocking yoke pivoted to the depending bar near its free end, substantially as described.

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527,326. **PROCESS OF PRODUCING OZONE.** JOHN T. DONOVAN and HENRY L. GARDNER, Springfield, Mass. Filed Feb. 5, 1894. Serial No. 499,072. (No specimens.)



*Claim.*—1. The process of generating ozone which consists in submitting to electrolytic action a solution of a permanganate of a solid metallic base in water substantially as and for the purpose described.

2. The process of generating ozone which consists in submitting to electrolytic action a solution of potassium permanganate in water substantially as and for the purpose described.

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527,327. **LOCKING STOP-COCK FOR TRAIN-PIPES OF AIR-BRAKE SYSTEMS.** JOHN T. ELDRIDGE, Murfreesborough, N. C. Filed Feb. 21, 1894. Serial No. 500,969. (No model.)



*Claim.*—1. The combination with the stop cock and its operating stem or handle of the sliding locking sleeve inclosing said stem or handle and adapted to abut at its inner end against the valve casing and a permutation locking mechanism carried by the sleeve and stem or handle and forming a permanent part thereof to lock said sleeve against the casing and prevent the cock from being operated substantially as set forth.

2. The combination with the valve stem or handle of a locking sleeve or handle turning and sliding thereon to abut against the valve casing and prevent rotation of the valve, and a locking mechanism carried by the sleeve and stem or handle to prevent longitudinal and rotary movement of the sleeve substantially as set forth.

3. The combination with the stop cock and its operating handle having a stop lug working between the two lugs or shoulders on the casing, of a locking sleeve movable on the handle and adapted at its inner end to engage said handle lug and one of the said casing lugs and a locking mechanism locking the said sleeve to the handle and preventing the cock from being operated, substantially as set forth.

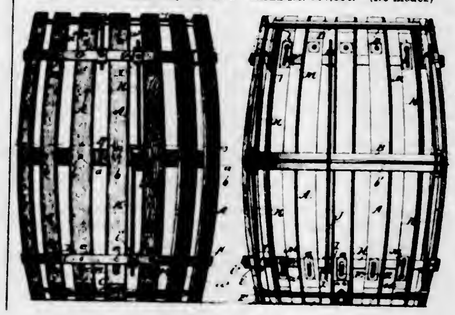
4. The combination with the stop cock the casing of which is provided with two lugs or shoulders between which a stop lug on the handle works, of a locking sleeve mounted on the handle and having a slotted or recessed forward end to engage said stop lug and prevent rotation of the sleeve an extension or arm at the forward end of the sleeve to engage the casing and prevent turning of the handle and a series of locking rings to lock the sleeve to the handle substantially as set forth.

5. The combination with the valve handle having a stop lug near its inner end of the locking sleeve on the handle provided at its inner end with a slot or recess to engage said lug and with an extension or arm to contact with a valve casing, an open chamber between the ends of the sleeve a series of rings turning in said chamber and interlocking pins and grooves between the inner faces of the ring and the adjacent surface of the handle to lock the sleeve against longitudinal movement on the handle, substantially as set forth.

6. The combination with the stop cock handle having a stop lug near its inner end to work between lugs or shoulders on the valve casing and also provided with a series of longitudinal aligned pins, of a sleeve having a longitudinally extending internal groove to permit it to slide past the pins, and an open chamber between the ends of the sleeve, a series of permutation rings mounted on the handle within said chamber and provided with transverse and annular internal grooves to operate in connection with said pins, the said sleeve being provided at its front end with an arm or extension to engage the cock casing and with a recess or notch to engage the handle stop lug substantially as set forth.

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527,328. **KNOCKDOWN BARREL.** HARTLEY ELLIS, East Liverpool, Ohio. Filed July 18, 1894. Serial No. 517,880. (No model.)





*Claim.*—1. A cask substantially as described comprising the staves, the interior middle and exterior end hoops and the bolts connecting the end hoops with the middle hoop, substantially as set forth.

2. A cask comprising the staves the middle hoop held to the staves the end hoops arranged to slide along the staves and the bolts connecting the hoops substantially as set forth.

3. In a knock down cask the combination with the staves having near their ends the longitudinal slots the hoops having studs or projections entering said slots and devices by which to force said hoops along and retain them upon the staves substantially as set forth.

4. A knock down cask comprising the staves, the middle hoop held thereto, the end hoops sliding upon said staves toward and from the middle hoop and bolts connecting said sliding hoops with the fixed middle hoop, substantially as set forth.

5. In a knock down cask the combination of the staves provided near their ends with the longitudinal slots the end hoops having studs entering said slots, the middle hoop held to the staves, bolts connecting the end hoops directly together and bolts connecting such end hoops with the middle hoop substantially as set forth.

6. In a knock down cask the combination of the staves provided near their ends with longitudinal slots and at or near their middles with sockets or openings, the middle hoop having studs entering such sockets or openings, the end hoops having studs entering the slots in the staves and the connecting bolts substantially as set forth.

7. In a knock down cask the combination of the end hoops and middle hoop provided with bolt seats composed of lugs and plates integral therewith and secured to the said hoops, the staves, and the connecting bolts substantially as set forth.

8. A knock down cask comprising the staves, the end hoops, the middle hoop, bolts connecting the hoops, the top and fastenings therefor independent of the hoop connecting bolts, substantially as set forth.

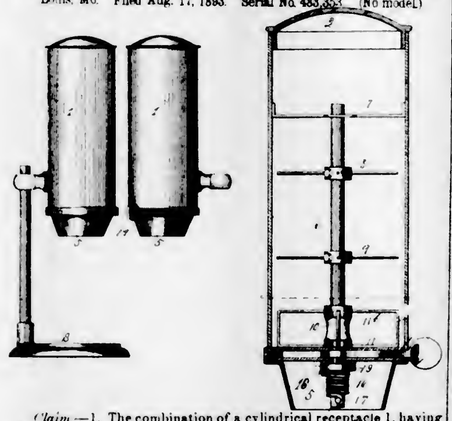
9. In a knock down cask the combination of the bottom having projections the staves having openings or sockets to receive said projections and provided with the end hoops movable along the staves and means for forcing the end hoops along the staves and for securing them substantially as set forth.

10. The improved knock down cask herein described consisting of the staves provided centrally with sockets or openings and near their ends with longitudinal slots, the middle hoop having projections to enter the slots or openings the end hoops having studs to enter the longitudinal slots of the staves the bolts connecting the ends hoops together, the bolts connecting such end hoops with the middle hoop, the bottom having projections entering sockets in the staves and the top and the bolts connecting the top with the top hoop substantially as set forth.

11. A cask comprising the staves, the interior middle hoop held to the staves, the exterior end hoops, bolts connecting the end hoops together and bolts connecting such end hoops with the middle hoop, substantially as set forth.

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527,329. **SOAP-POWDER CANISTER.** BENJAMIN R. FOSTER, St. Louis, Mo. Filed Aug. 17, 1893. Serial No. 483,353. (No model.)

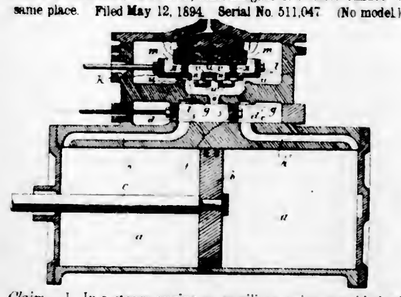


*Claim.*—1. The combination of a cylindrical receptacle 1, having a floor 3 formed with a feed-opening $3^a$ and a bottom 4 formed with a discharge opening $4^a$, a vertical rock-shaft 6 having radial stirring arms, the valve-plate 12, secured to the rock-shaft between the floor and the bottom, having a measuring pocket 13 located normally over the discharge opening in the bottom, and a thumb-lever whereby the valve-plate is moved to bring the pocket beneath the feed-opening, and a spring for returning, instantaneously jarring, and holding the valve-plate with its pocket in discharging position, substantially as described.

2. The combination of a cylindrical receptacle 1, having a floor 3 formed with a feed-opening $3^a$ and a bottom 4 formed with a discharge-opening $4^a$, a vertical rock-shaft 6 having a skeleton-scraper at its lower end formed with radial lower arms 11 for sweeping the floor and vertical side-arms $11^a$ for sweeping the sides of the receptacle, the valve-plate 12, secured to the rock-shaft between the floor and the bottom having a measuring pocket 13 located normally over the discharge opening in the bottom, and a thumb-lever whereby the valve-plate is moved to bring the pocket beneath the feed-opening, and a spring for returning, instantaneously jarring, and holding the valve-plate with its pocket in discharging position; substantially as described.

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527,330. **VALVE AND STEAM-CHEST FOR ENGINES.** EDWARD W. HARDEN, Cincinnati, Ohio, assignor to Fredric Candee Weir, same place. Filed May 12, 1894. Serial No. 511,047. (No model.)



*Claim.*—1. In a steam engine an auxiliary valve provided with a central receiving chamber, one or more ports on its lower seat face, one or more recesses on the upper seat and one or more independent steam passages connecting said recesses and ports, substantially as specified.

2. In a steam engine an auxiliary shell valve provided with one or more supply ports at the end of the shell, a series of ports on its lower face, a series of recesses $j$, on the upper valve seat and one or more communicating steam passages pierced through the shell, substantially as specified.

3. In a steam engine an auxiliary shell valve with a central supply chamber, one or more ports leading therefrom, one or more recessed ports on the under face, one or more recesses in the upper seat, one or more independent steam passages connecting the seat recesses within the recessed ports, substantially as specified.

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527,331. **PICK.** MARTIN HARDSOCG, Ottumwa, Iowa. Filed Dec. 1, 1893. Serial No. 492,512. (No model.)



*Claim.*—1. In a pick, the combination of a handle, and a head comprising a body having an eye to receive the handle, and lugs or ears extending laterally from the head and disposed on opposite sides of the eye, and having longitudinal ribs or projections upon their inner sides, the said lugs or ears possessing sufficient ductility to permit of them being swaged in against the handle substantially as specified.

2. As an improved article of manufacture, a pick head comprising a body having an eye to receive a handle and lugs extending from the body and disposed on opposite sides of the eye and having longitudinal ribs or projections upon their insides, the said lugs possessing sufficient ductility to permit of them being swaged in against a handle, substantially as and for the purpose set forth.

3. As an improved article of manufacture, a pick head comprising a body having an eye, and lugs extending from the body and bowed in the direction of their length and having ribs or projections upon their inner sides, the said lugs possessing sufficient ductility to permit of them being swaged in against a handle, substantially as and for the purpose set forth.

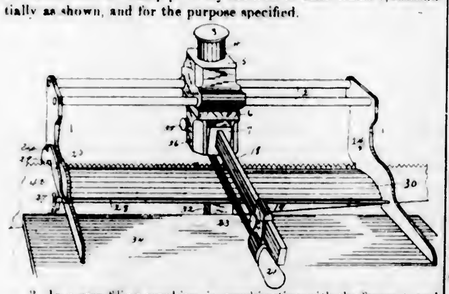
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527,332. **SAW-FILING MACHINE.** JASPER N. HOWARD, Wichita, Kans. Filed Feb. 13, 1894. Serial No. 500,099. (No model.)

*Claim.*—1. In combination with a saw-clamp, the frame 1, the rods 2, the sliding guide head, provided with the set screws 3, spring 8, cylinder 9, the vertically adjustable guide head 6, the guide block

7, with a file guide rail 18, all arranged and operated, as shown and described.

2. In a saw-filing machine, the combination of a supporting frame 1, the sliding guide head 5, and 6, adjustable vertically, and rotary, said head held to slide upon the rods 2, the guide block 7, the transverse guide rail 18, adapted to slide in said guide block 7, the rotary adjustable file handles 21 the gage 19 in conjunction with the guide head, and the saw clamp pivotally secured to said frame 1, substantially as shown, and for the purpose specified.

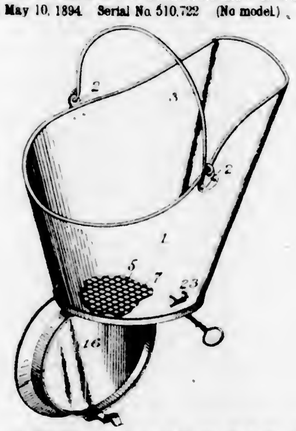


3. In a saw-filing machine, in combination with the frame 1, and cross rods 2, the sliding guide head, made in two sections 5 and 6, the thumbscrew 3, spring 8, cylinder 9, set screw 10, the perpendicular adjustable stand 17, guide block 7, gage 15, and the file guide rail 18, adapted to slide in said guide block 7, all arranged and operated as shown and described.

4. In combination with a saw filing machine, the saw clamp, pivoted to the frame 1, the depending jaws 29 connected at their lower extremity by the cross rail 39, the cross rod 28, pivotally secured to the two standards of the frame 1, said cross rod provided at one end with the handle 27, and lugs 31, the jaws 25, provided with the notches 26, all arranged and operated substantially as shown, and specified.

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527,333. COAL-HOD. JAMES H. HUMBERT, Waynesborough, Va., assignor of two-thirds to I. N. Funkhouser and J. H. Wine, same place. Filed May 10, 1894. Serial No. 510,722. (No model.)



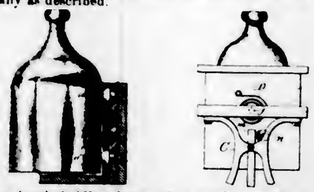
*Claim.*—1. In a combined coal hod and ash sifter, the combination with the hinged bottom, of the vibrating screen provided with a pivoted handle adapted to be folded up under the screen when the bottom is closed and extended outwardly when the bottom is open; substantially as and for the purpose specified.

2. In a combined coal hod and ash sifter, the combination with the body having a lug near its lower edge, the bottom hinged to said body diametrically opposite said lug, the spring catch and stop secured to said bottom, the inwardly extending flange at the lower edge of said body and the flange above said lower edge secured to the interior of said body, of the vibrating screen confined between said flanges, the lugs secured to the lower side thereof and the folding handle pivoted to said lugs; substantially as described.

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527,334. BOTTLE OR VESSEL HOLDING DEVICE. FRANK G. KAMMERER, Chicago, Ill. Filed Apr. 19, 1893. Serial No. 470,989. (No model.)

*Claim.*—1. In a bottle holding device, the combination of a box or case having cushions formed with recessed faces secured therein at suitable points to form frictional bearings for bottles or vessels, substantially as described.



2. In a bottle holding device, the combination of a box or case having cleats secured therein, and cushions having recessed faces secured to said cleats and adapted to frictionally hold a bottle or vessel in said box or case, substantially as described.

3. In a bottle holding device, the combination of a box or case for holding bottles or vessels, half-spherical elastic cushions formed with recessed faces secured in said box or case, and means for pivotally supporting said box or case, whereby the bottles or vessels will be frictionally held against movement when the box or case is tilted substantially as described.

4. The combination, in a bottle holding device, of a suitable frame, a box or case pivotally mounted therein, and coiled or helical springs attached to said box or case at one end and to said frame at the other end at diametrically opposite points and away from the centers of said springs, substantially as described.

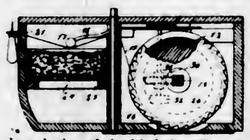
5. The combination in a box or case for holding bottles or vessels provided with recessed cleats, of half spherical cushions, and means for securing said cushions immovably in the recesses of said cleats, substantially as described.

6. The combination, in a bottle holding device, of a suitable frame, a box or case adapted to hold bottles or vessels pivotally mounted in said frame, a stop secured to said box or case, and a cushioned stop secured to said frame in position to engage the first named stop, whereby said box or case may be arrested at its normal position, substantially as described.

7. The combination, in a box or case for holding bottles or vessels provided with recessed cleats, of semi-spherical elastic cushions formed with a recessed bearing face, and means for securing said cushions to said cleats, substantially as described.

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527,335. COMBINED LINER AND MEASURE. SANNOSUKE KAYAMI, Belmont, Cal. Filed May 27, 1893. Serial No. 475,747. (No model.)



*Claim.*—1. In a device of the kind described, the combination with a casing, a revoluble spool in the casing, and a cord wound upon the spool and extending out through the casing, of a ratchet on the spool, a spring pawl engaging the ratchet wheel, and a sliding rod resting upon the pawl, substantially as described.

2. In a device of the kind described, the combination with a casing, a revoluble spool in the casing, and a cord wound on the spool and having one end extending out through the casing, of an ink well in the casing beneath the cord, and a depressible guide for forcing the cord into the ink well, substantially as described.

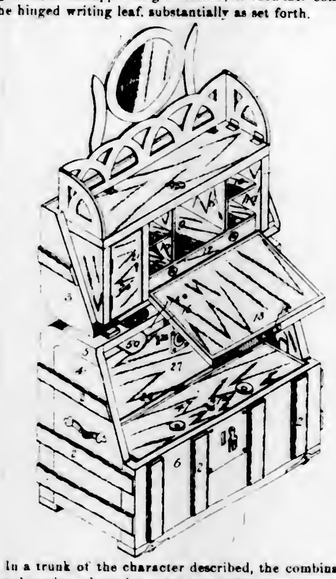
3. In a device of the kind described, the combination with a casing, a spool mounted therein, and a cord wound on the spool and having one end extending out through the casing, of an ink well in the casing beneath the cord, and a sliding rod in the casing and provided with an arm carrying at its end a guide under which the cord passes, substantially as described.

4. In a device of the kind described, the combination with a casing a spool mounted in the casing, and a cord wound on the spool and having one end extending out through the casing, of a pawl and ratchet for locking the spool, an inking well in the casing beneath the cord, and a sliding rod having one end resting upon the pawl and provided with a guide for forcing the cord into the ink well, substantially as described.

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527,336. TRUNK. ISAAC B. KAUFFMAN, Marble Hill, Mo. Filed Apr. 16, 1894. Serial No. 507,700. (No model.)

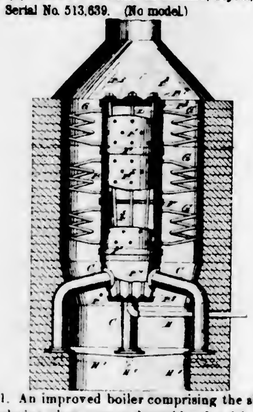
*Claim.*—1. In a trunk of the character described, the combination with the lower section having a horizontal strip with a slot, the inwardly extending lugs and the pivoted supporting bars, having the flaring arms, of the upper hinged section, divided into compartments and the hinged writing leaf, substantially as set forth.



2. In a trunk of the character described, the combination with the hinged section adapted to serve as a writing desk, the lower stationary section having a horizontal partition, the door hinged thereto, the removable horizontal and vertical partitions, the grooved cleats and strips and the retaining screws, of the removable tray having a lock the bolt of which is adapted to project through an aperture in the front thereof, and engages with a slot in the front of the said lower section, substantially as and for the purpose set forth.

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527,337. BOILER. HARRY H. KELLEY, Elyria, Ohio. Filed June 6, 1894. Serial No. 513,639. (No model.)



*Claim.*—1. An improved boiler comprising the shell and the spiral water circulating pipes arranged outside of and having their ends connected with said shell, the axes of the said spirals being arranged at an angle to that of the shell.

2. A vertical boiler having a central sectional column or shell, the water circulating pipes in the form of coils the axes of which are inclined to the direction of length of the shell both ends of said coils entering the same section of the shell in a horizontal direction, substantially as shown and described.

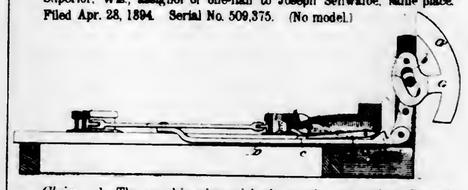
3. In a boiler the head having an opening for the stay bolt and provided, surrounding the outer end of said opening, with a recess or socket, the stay bolt passed through said opening, the packing in the recess or socket surrounding such bolt, and the nut on said bolt and having on its under side a projecting portion entering the recess in the head and bearing against the packing in such recess, substantially as set forth.

4. The improved boiler herein described comprising the lower head having on its upper side the bosses provided with threaded sockets, the sections set one upon the other packed joints between such sections the upper head having openings and having surrounding the upper end thereof recesses, the stay bolts passed through said openings and threaded into the sockets of the lower head, and the nuts threaded on the said bolts above the upper head and having on their under sides portions projecting into the recesses in said upper heads, substantially as and for the purposes set forth.

5. The improved boiler herein described consisting of the boiler formed in cylindrical sections, the lower one of which tapers inwardly toward its lower end, the joint rings fitted between the said sections and having outer cylindrical and inner radial plates, the latter fitting between the ends of the boiler sections, the water legs joining at their upper ends with the tapered sides of the lower section of the boiler, the boiler heads, the upper one having bolt holes and recesses surrounding the same, the stay bolts and the nuts on said bolts and provided on their inner sides with projections entering the recesses in the upper heads, substantially as set forth.

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527,338. RAILROAD-SWITCH. EPHRIAM H. B. KNOWLTON, West Superior, Wis., assignor of one-half to Joseph Schwalbe, same place. Filed Apr. 28, 1894. Serial No. 509,375. (No model.)



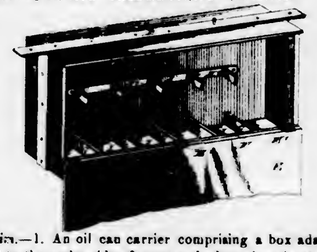
*Claim.*—1. The combination with the stationary rails A B, and the tapered and radially moving switch rails A' B' connected together as described; of the operating bar D with locking shoulder *c*, a weighted lever for moving the operating bar, a detent for locking the operating bar and weight, and a depressible bar and tilting frame arranged to be operated upon by the wheels of the train to trip or dislodge the detent substantially as shown and described.

2. The combination with the stationary rails A B, and the tapered and radially moving switch rails A' B' connected together as described: of the operating bar D with locking shoulder *c*, the lever E connected thereto at the bottom, the slotted and weighted lever G connected thereto at the top, the detent bar *e*, the vertically adjustable bar H arranged in guides beside the rail,—and the weighted and tilting frame I arranged to be acted upon by the bar H and in turn to release the detent substantially as shown and described.

3. The combination with the stationary rails, and the movable switch rails; of the operating bar D having shoulder *c* and incline *d*, the vertical lever E connected at its lower end to bar D, the slotted and weighted lever G connected to the upper end of the said lever, the detent lever *e* arranged to be acted upon by the incline *d* and to engage the shoulder *c*, and the tilting trip frame I arranged to hold bar H up and to release the detent substantially as shown and described.

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527,339. OIL-CAN CARRIER. JURGEN H. LINS, Brooklyn, N. Y. Filed July 11, 1894. Serial No. 517,194. (No model.)



*Claim.*—1. An oil can carrier comprising a box adapted to be fastened to the under side of a wagon body, a door hung on the said box and adapted to be swung downwardly to open the said box, compartments formed in the bottom of the said box and guide arms open at the front and arranged over the said compartments, the guide arms being attached to the back of the box with their open ends standing toward the door substantially as shown and described.

2. An oil can carrier, comprising a box, a strap for permanently fastening the said box to the under side of the vehicle bottom, a door hung on the said box and adapted to swing downwardly to open the box, a longitudinal strip forming part of the side of the box at the bot-

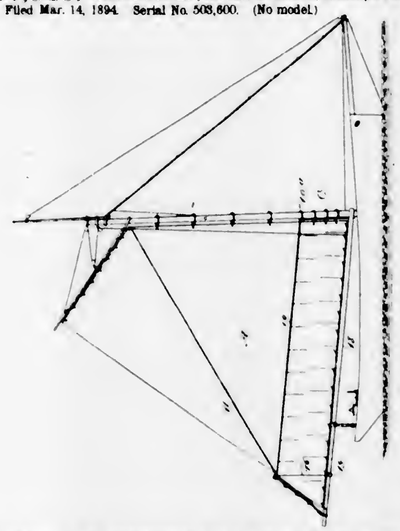
tom, and on which the said door is hinged, and transverse partitions arranged in the bottom of the box and forming, with the said strip, compartments for the reception of the oil cans, substantially as shown and described.

3. An oil can carrier, comprising a box, a strap for permanently fastening the said box to the under side of the vehicle bottom, a door hung on the said box and adapted to swing downwardly to open the box, a longitudinal strip forming part of the side of the box at the bottom, and on which the said door is hinged, transverse partitions arranged in the bottom of the box and forming with the said strip compartments for the reception of the oil cans, and a band secured to the back of the box at the inside thereof, and provided with forwardly projecting arms in alignment with the said partitions, substantially as shown and described.

4. An oil can carrier, comprising a box formed in its bottom with drip openings, a longitudinal strip forming part of the front side of the box at the bottom thereof, a door hinged on the said strip and adapted to close the front of the said box, transverse partitions arranged in the bottom of the box, and forming, in conjunction with the said strip, a series of compartments for the reception of the oil cans, and a band secured to the back of the box at the inside thereof, and having upwardly projecting arms in alignment with the said partitions to engage the sides of the cans, substantially as shown and described

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**527,340. REEFING SAILS. SAMUEL G. MARTIN, Branchport, N. J.** Filed Mar. 14, 1894. Serial No. 503,600. (No model.)



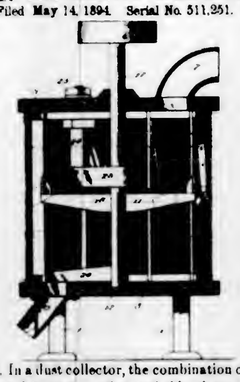
*Claim.*—1. The combination, with a fore-and-aft sail provided with a first and second reef cringle and cringles intermediate thereof, reef pennants adapted to be attached to the boom, passed through said cringles and to extend inboard, a down-haul adapted to be attached to a mast hoop, located substantially in alignment with the second reef cringle, and a reefing tackle connecting the reef pennants and down-haul, whereby both are operated simultaneously, as and for the purpose specified.

2. The combination, with a fore-and-aft sail provided with a first and a second reef cringle and cringles intermediate thereof, of reef pennants adapted for attachment to the boom, passed upward through the second reef cringle and downward through the other cringles, a stay rope attached to the sail, extending transversely thereof from the second reef cringle to an attachment with the mast hoop, a down-haul attached to the mast hoop and connected with the stay rope, and a reefing tackle connected with the down-haul and with the reef pennants, whereby both are simultaneously operated, substantially as and for the purpose specified.

3. The combination, with a fore-and-aft sail provided with a first and second reef cringle and cringles intermediate thereof, of reef pennants adapted for attachment to the boom and passed upward through the second reef cringle and downward through the other cringles, a stay rope attached to the sail, extending transversely thereof from the second reef cringle to an attachment with a mast hoop, a down-haul attached to the mast hoop, connected with the stay rope, a reefing tackle connected with the down-haul and with the reef pennants, whereby both are simultaneously operated, and a second diagonal stay rope extending from the second reef cringle to the upper inner portion of the sail, whereby the mast hoops will be drawn downward simultaneously with the action of reefing, and whereby also the sail may be converted into a storm trysail, as and for the purpose specified.

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**527,341. DUST-COLLECTOR. ROBERT MCWILLIAMS, West Newton, Pa.** Filed May 14, 1894. Serial No. 511,251. (No model.)



*Claim.*—1. In a dust collector, the combination of a cylinder composed of a top and bottom portion and side pieces connecting them, a series of hammers hinged to said side pieces, a cloth covering the cylinder, and a shaft carrying a number of cams adapted to engage and operate the hammers, revolving in said cylinder, substantially as shown and described.

2. In a dust collector, the combination of the cylinder having inlet and outlet openings, a shaft revolving within said cylinder and carrying a number of cams, and a scraper moving over the lower head of the cylinder, and a series of hammers hinged within the cylinder and adapted to be engaged by said cams, substantially as and for the purpose set forth.

3. In a dust collector, the combination of a cloth-covered cylinder provided with inlet and outlet openings a shaft carrying a number of cams, a disk, and a scraper revolving within said cylinder, a series of hammers hinged within said cylinder and adapted to be engaged by said cams, and a scraper suspended from the upper head of said cylinder over the said disk, substantially as shown and described.

4. In a dust collector, the combination of a cylinder composed of a top and a bottom, provided with an inlet opening and with a valved outlet opening, a number of side pieces connecting the said top and bottom, a cloth covering said cylinders, a series of hammers hinged within the cylinder to the said side pieces and provided with projections, a shaft located within the cylinder and carrying a number of cams which engage the projections on the hammers and a disk, a scraper suspended from the cylinder top and over the disk, and a scraper carried by said shaft and working on the bottom of the cylinder, substantially as shown and described and for the purpose set forth.

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**527,342. APPARATUS FOR SUPPLYING CARTRIDGES TO MACHINE-GUNS. JOHN A. NORTON and WILLIAM RICHARDS, London, England.** Filed Dec. 15, 1893. Serial No. 493,787. (No model.)

*Claim.*—1. In a machine gun, the combination with the slide or device for distributing the cartridges to the barrels, and the feed bar or plate having a longitudinal groove in its front face, of a movable surface or device mounted on said feed bar and projecting into the rear portion of said groove to afford a bearing for the rear ends of the cartridges, and means for actuating said movable surface from the breech mechanism of the gun, substantially as described.

2. In a machine gun, the combination with the feed-bar or feed-plate, of a movable band or belt against which the rear ends of the cartridges rest and which is geared with the breech mechanism of the gun, substantially as and for the purpose described.

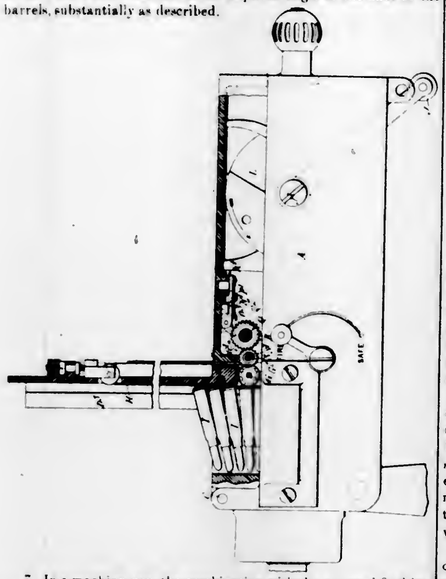
3. In a machine gun, the combination with the feed-bar or feed-plate, of a movable band or belt against which the rear ends of the cartridges rest, and means for adjusting the tension of said band or belt, substantially as described.

4. In a machine gun, the combination with the breech frame, of a feed-bar or feed-plate that is adjustable to different angles with the axes of the barrels, substantially as and for the purpose described.

5. In a machine gun, the combination with the feed-bar or feed-plate, of a movable surface carried by said bar or plate and against which the cartridges rest, and means for adjusting said bar or plate to different angles with the axes of the barrels, substantially as and for the purposes described.



6. In a machine gun, the combination with the breech frame and its socketed cover, of a feed-bar or feed-plate having a number of holes in the end that is engaged in the socket of said cover, and a pin or bolt extended through the cover and engaged in either of said holes to secure the feed-bar at the required angle to the axes of the barrels, substantially as described.

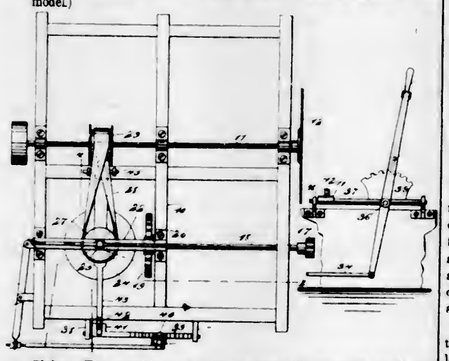


7. In a machine gun, the combination with the grooved feed-bar or plate, of an endless belt or band mounted on said bar or plate, and means for actuating said belt or band from the breech mechanism of the gun, substantially as and for the purpose described.

8. In a machine gun, the combination with the breech frame and its hinged cover, of the grooved feed-bar or plate supported on said cover, the endless belt or band mounted on said bar or plate in position for the cartridge to rest against it, and means for imparting a movement to said belt or band in the required direction for feeding the cartridges, substantially as described

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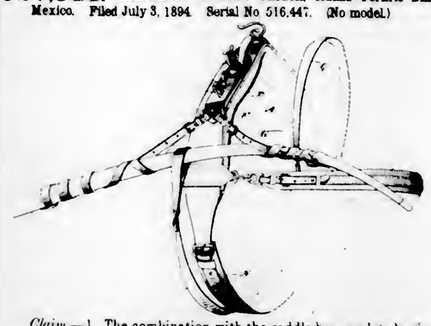
**527,343. VARIABLE GEAR FOR SAWMILLS. JACOB T. OBERDORFER, Delmount, Ohio.** Filed Jan. 15, 1894. Serial No. 496,925. (No model.)



*Claim.*—The combination with a vertically movable shaft, the friction disk thereon, the countershaft beneath the vertical shaft and the sliding pulley on the counter shaft to engage the disk, of the oscillating horizontal shaft journaled in the frame of the machine, the notched quadrant carried by said oscillating shaft, the lever fulcrumed on the oscillating shaft and adapted to be held in engagement with the notched quadrant, an operative connection between the lever and the pulley to slide the pulley, a lever connected with the vertical shaft to lift the same and a crank on the oscillating shaft on which the end of said lever rides, substantially as described.

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**527,344. HARNESS. RICARDO ORTEGA, Ciudad Porfirio Diaz, Mexico.** Filed July 3, 1894. Serial No. 516,447. (No model.)



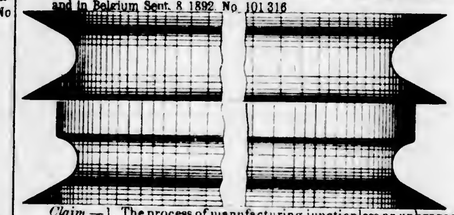
*Claim.*—1. The combination with the saddle bar or plate having a longitudinally extending socket in its lower end intersected by a transverse aperture, and a bolt pivoted on said bar or plate with its nose projecting through the said aperture into the socket, of a plate adapted at its upper end to enter the socket and there provided with an aperture to receive the bolt and the lower end of the plate being provided with means for connecting the straps thereto substantially as described.

2. The combination with the harness saddle provided at opposite sides with bars or plates, each having a longitudinally extending socket in its lower end intersected by a transverse aperture, and a bolt pivoted to each bar or plate with its nose projecting through said aperture into the socket, of a plate adapted at its upper end to enter the socket and there provided with an aperture to receive the nose of the bolt, and the diverging straps secured at their upper ends to the lower end of the said apertured plate and adapted to be wrapped around the shaft, substantially as set forth.

3. The combination with the harness saddle and the bars E at opposite sides thereof, and provided at their upper ends with transverse apertures through which the terret bolts pass to secure said bars to the saddle, the lower ends of the bars being provided with sockets and spring pressed intersecting bolts, of the plates F having apertured upper ends entering the sockets and receiving the bolts and the straps G G' depending from the lower end of plate F, substantially as described.

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**527,345. METHOD OF MANUFACTURING METALLIC RIMS FOR BICYCLE-WHEELS. CHARLES H. PUGH, Birmingham, England.** Filed May 28, 1894. Serial No. 512,788. (No specimens. Patented in England June 13, 1891, No. 10,076, and Dec. 5, 1891, No. 21,284; in Germany Sept. 3, 1892, No. 72,850; in France Sept. 7, 1892, No. 224,206, and in Belgium Sept. 8 1892, No. 101,316



*Claim.*—1. The process of manufacturing junctionless or unbrazed metallic wheel rims or hoops for the wheels of bicycles, tricycles and other velocipedes and wheel carriages, the said process consisting in forming a shallow dish from a disk of sheet metal or alloy, cutting away the bottom of said dish and forming in the cylindrical portion an annular groove, and finally expanding the ends of the said cylinder to form the flanged sides of the wheel rim or hoop, substantially as described.

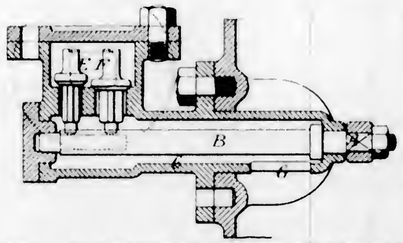
2. The process of manufacturing junctionless or unbrazed metallic rims or hoops for the wheels of bicycles tricycles and other velocipedes and wheel carriages, the said process consisting in first forming from a disk of sheet metal or alloy a flanged shallow dish, then by a spinning operation turning the flange of the said dish back to the inclination which the sides of the trough of the rim are to have, next cutting away the bottom of the dish so as to obtain a hoop flanged at one side or end, next by internal rolling forming the curved bottom of the trough of the rim to be produced and by internal spinning forming the other side of the trough of the wheel rim or hoop substantially as described.

3. The process of manufacturing junctionless or unbrazed hollow or tubular metallic rims for the wheels of bicycles, tricycles and other

velocipedes and wheel carriages, the said process consisting in forming shallow dishes from disks of sheet metal or alloy, cutting away the bottoms of said dishes and forming the cylindrical portions into flanged and trough shaped hoops, and finally introducing one of said trough shaped hoops into another trough shaped hoop of larger diameter and engaging the two hoops together by turning the edges of one over the edges of the other, substantially as described.

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**527,346. FLOAT-VALVE.** THOMAS J. RAYNER, London, England, assignor of one-half to Edward Bonar Caird, same place. Filed Mar. 7, 1894. Serial No. 502,748. (No model.) Patented in England Feb. 21, 1894, No. 3,781; in France Feb. 28, 1894, No. 236,644, and in Italy Mar. 27, 1894, LXX, 247.



*Claim.*—1. In a float valve, the combination with a float, of a rocking spindle connected therewith and provided with a lateral arm, a plurality of valve-seats of different diameters located above said arm, and a plurality of valves working in said seats and having stems of different lengths, said stems being acted upon successively by the arm, substantially as described.

2. In a float-valve, the combination with the valve casing having a plurality of valve-seats therein, of a rocking spindle journaled in said casing below the valve-seats and provided with a lateral arm, an arm carrying a float connected to said spindle and a plurality of valves working in said valve-seats and having stems of varying lengths, said stems being acted upon successively by the lateral arm, substantially as described.

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**527,347. TRANSOM-LIFTER.** WILLIAM S. ROBINSON, Fancy Farm, Ky., assignor, by direct and mesne assignments, of thirteen-sixteenths to Francis X. Pierceall, William O. Ballard, Charles A. Haeseley, Joseph M. Willett, Thomas J. Robb, and William B. Willett, same place. Filed June 11, 1894. Serial No. 514,243. (No model.)



*Claim.*—1. In mechanism for operating swinging windows, transoms and like structures, the combination with a sash-locking device, of an axle, means connecting said axle with a window-sash, a swinging arm carried by said axle, and a device operatively connected to said sash-locking device and to said swinging arm, for unlocking the sash and swinging the same to an open position, substantially as described.

2. In mechanism for operating swinging windows, transoms and like structures, the combination with a sash and a locking device therefor, of an axle, a crank lever secured to said axle, a link pivotally connected to said sash and said crank lever, a swinging arm carried by said axle, and a device operatively connected to said sash-locking device and to said swinging arm, for unlocking the sash and swinging the same to an open position, substantially as described.

3. In mechanism for operating swinging windows, transoms and the like, the combination with an axle, means connecting said axle with a sash, a sash-swinging arm carried by said axle, means for holding said arm in various positions, and a finger carried by and automatically releasing said arm, substantially as described.

4. In mechanism for operating swinging windows, transoms and the like, the combination with a movable sash-swinging arm, means for connecting said arm with a sash, a device for holding said arm in varying positions, and means carried by said arm for releasing the holding device, substantially as described.

5. In mechanism for operating swinging windows, transoms and the like, the combination with a movable sash-swinging arm, means for connecting said arm with a sash, a pawl and ratchet mechanism for holding said arm in varying positions, a pivoted trip-dog, and a finger carried by said arm to actuate said trip dog to disengage the pawl and ratchet mechanism, substantially as described.

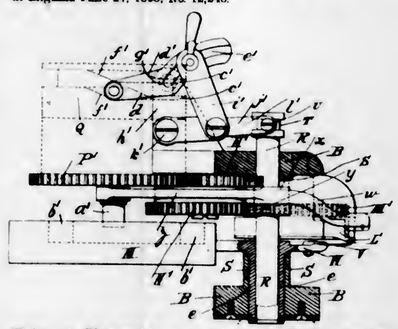
6. In mechanism for operating swinging windows, transoms and the like, the combination with a movable sash swinging arm, means for connecting said arm with a sash, a pawl and ratchet mechanism for holding said arm in varying positions, a pivoted trip-dog, a finger carried by said arm to actuate said trip-dog to disengage the pawl and ratchet mechanism, and a stop to limit the movement of said arm, substantially as described.

7. In mechanism for operating swinging windows, transoms and the like, the combination with a bracket, an axle carried thereby, an arm fixed on said axle, a crank lever fitted to said axle, a link pivotally connecting said lever to a sash, pawl and ratchet mechanism for holding said arm in various positions of adjustment, a trip-dog pivoted to the bracket and lying behind the pawl, and a finger carried by the arm and adapted to strike the trip-dog and release the pawl and ratchet mechanism in the movement of said arm, substantially as described.

8. In mechanism for operating swinging windows, transoms and the like, the combination of a sash locking device, a movable arm connected with the sash, means for holding said arm in various positions of adjustment, means for releasing said arm, and a device engaging said locking device and arm which in its continued movement releases the sash locking device, and actuates the movable arm to open the sash and to release itself to allow the sash to close, substantially as described.

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**527,348. SEWING-MACHINE.** GEORGE H. SCETRINI and GEORGE CADE, London, England, assignors to Herbert Kynaston Bridger, same place. Filed Mar. 7, 1894. Serial No. 502,751. (No model.) Patented in England June 21, 1893, No. 12,248.

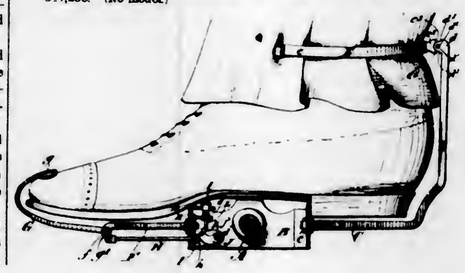


*Claim.*—1. The combination of the needle V, the shuttle $s'$, the spool-carrier B', the awl $v$, the awl lever having arms $w$, $z$, the arm $z$ provided with roller $a'$, the cam M having a race $b'$ engaged with said lever, the countershaft R on which the awl lever is mounted, the lever $j'$, link $i'$, quadrant lever $e'$, and the cam Q having steps $c'$, $d'$ to move the awl twice in the same direction, and a part $f'$ for returning the awl, substantially as described.

2. The combination with the presser-foot and the presser-foot bar $m'$, of the grip lever $q'$, screw $t'$, nut $s''$, lever $r'$ and cam P for operating said lever $r'$ to cause serrations on the grip lever $q'$ to alternately engage similar serrations on the presser-foot bar and lock said presser-foot to hold the work and subsequently release the same, substantially as described.

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**527,349. PEDAL FOR BICYCLES.** SALVATORE SCOGNAMILLO and CHRISTOPHER DOMINICI, Richmond, Va. Filed July 11, 1894. Serial No. 517,238. (No model.)



*Claim.*—1. The combination with a pedal, of a trousers clasp carried thereby, substantially as described

2. The combination with a pedal, of a trousers clasp pivotally connected therewith, substantially as described.

3. The combination with a pedal, of a trousers clasp consisting of a bent spring adapted to embrace the ankle and pivotally connected to a rod secured to the pedal, substantially as described.

4. The combination of a pedal-frame having a forwardly extending arm or rod, a toe-clamp pivoted to said arm or rod and curved at its front end to project over the toe of the rider's foot, a lengthwise movable rod pivotally connected at one end with the pivoted extremity of the toe-clamp, and devices carried by the pedal and operated by the rider's foot to longitudinally shift the lengthwise movable rod and swing the toe-clamp, substantially as described.

5. The combination with a pedal, of a toe-clamp pivotally connected therewith, a rod for throwing said clamp into and out of engagement with the foot, and a cam operated by the pressure of the foot for actuating said rod, substantially as described.

6. The combination with the pedal B, of the toe-clamp G pivotally secured to a rod F carried by the pedal and provided with an elbow $g^3$, a rod H pivotally secured to said elbow, a spring for retracting said rod, a cam J engaging the end of said rod, a push rod L connected at one end to said cam and at its other end projecting above the pedal, and a spring for raising said push-rod, substantially as described.

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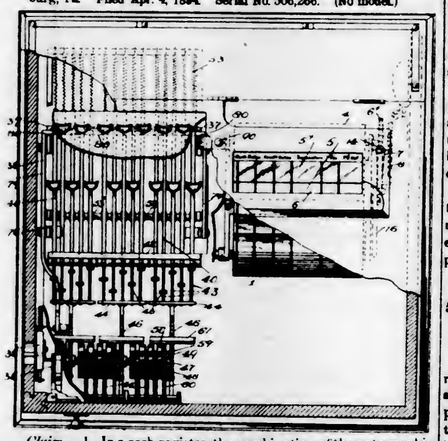
**527,350. SKATE-SHARPENING DEVICE.** FRED W. TAYLOR, Webster, Mass. Filed Feb. 5, 1894. Serial No. 499,215. (No model.)



*Claim.*—The combination in a skate sharpener of two side plates M, provided with flanges H, and grooves arranged to lie opposite each other, a file seated in these grooves, a retaining screw engaging the file transversely at the end holding it in place, means for adjustably clamping the side plates together, all combined as set forth.

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**527,351. KEY-REGISTER.** WILLIAM H. THOMPSON, East Stroudsburg, Pa. Filed Apr. 4, 1894. Serial No. 506,266. (No model.)



*Claim.*—1. In a cash register, the combination of the autographic mechanism, the key registering mechanism and the controlling means common to both mechanisms, said controlling means acting to lock the key mechanism and to operate the autographic mechanism substantially as described.

2. In a cash register, the combination of the autographic mechanism, the key registering mechanism and the drawer arranged to control both the autographic and the key registering mechanisms, substantially as described.

3. In combination in a cash register, the autographic mechanism, the drawer, the connection between the drawer and autographic mechanism for operating the same, the key registering mechanism, the connection between the same and the drawer and the means for throwing said connections into and out of operative position, substantially as described.

4. In combination in a cash register, the autographic mechanism, the drawer, the connection therefrom to the said mechanism comprising the pawl normally out of action and the push button for throwing the pawl into action, substantially as described.

5. In combination in a cash register, the autographic mechanism, the key mechanism, the drawer having connections thereto, and the push buttons for controlling said connections, substantially as described.

6. In combination in a cash register, the combination of the registering mechanism, the drawer and the signal device comprising the bell, the spring bell hammer and the lever arranged to be operated by the drawer to operate the bell hammer, said lever being pivoted independently of the hammer and engaging the same at a point between its free end and pivot substantially as described.

7. In combination in a cash register, the registering mechanism, the keys, the drawer, the drawer arrester arranged to be operated by keys, and the push button for releasing the drawer arrester independently of the keys, substantially as described.

8. In combination in a cash register, the registering mechanism, the sliding keys, the drawer having the ratchet bar, the drawer arrester comprising the finger and the pivoted frame having the rear cross bar, said keys having the inclines for engaging and operating the cross bar, substantially as described.

9. In combination in a cash register, the registering mechanism, the keys, the drawer having the ratchet bar, the drawer arrester and the means for freeing the arrester, from contact with the ratchet bar consisting of the eccentric piece pivoted on the arrester finger, substantially as described.

10. In combination, the registering mechanism, the keys the vertically movable locking bar arranged to engage the keys and to be lifted by the inward movement of the drawer for locking the keys when the drawer is closed, substantially as described.

11. In combination, the registering mechanism, the keys the vertically movable locking bar therefor and the independently pivoted lever intermediate of the locking bar and the drawer, for locking the keys when the drawer is closed and for unlocking the same when the drawer is opened substantially as described.

12. In combination, the keys, the registering mechanism comprising the series of number disks, the toothed detent wheel the detent lever pivoted in rear of the wheel extending over the same to the front and the cross bar thereon extending across the number disks and in front of the keys to be struck thereby, substantially as described.

13. In combination, the keys and the registering mechanism comprising the number disks having the ratchets, the rod for supporting the said parts removably, the carrying pawls on the registering wheels, the cut away disks on the shaft of the registering wheels and having arms and the rod upon which the said disk arms are mounted, substantially as described.

14. In combination, the keys and the registering mechanism comprising the series of registering wheels on a shaft or rod, the ratchet and detent wheels connected therewith, the carrier pawls and the detents and carrier disks, said carrier disks having arms arranged side by side with the detents on a second rod or shaft, substantially as described.

15. In combination, in an autographic register, the paper rolls, the ratchet the pawl the adjustable spring for holding said pawl normally out of action and adapted to be moved to allow the pawl to engage the ratchet normally and the push button for controlling the pawl, substantially as described.

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**527,352. HARROW.** MARQUIS J. TODD, Buffalo, N. Y., assignor to the Pitts Agricultural Works, same place. Filed Apr. 7, 1894. Serial No. 506,766. (No model.)

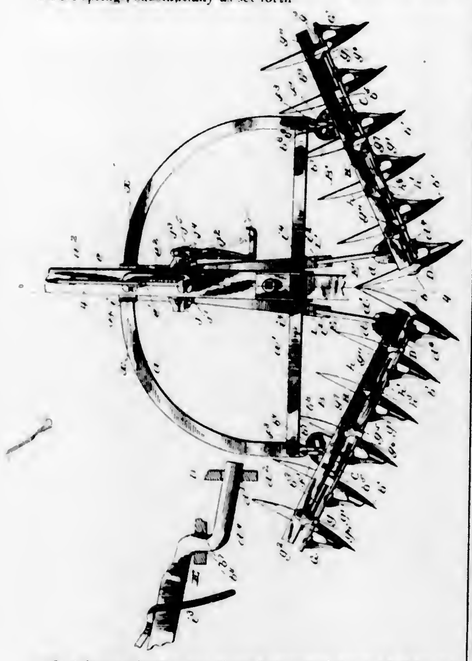
*Claim.*—1. A harrow having its draft-frame provided with a rigid-bar, two gangs of disks bearing near their outer ends angularly slotted ears to which the ends of said bar are connected, ears and plates near the inner ends of said gangs having holes or openings therein, and the adjusting bars having their ends passed through said holes or openings of said ears and plates, substantially as set forth.

2. A harrow having its draft-frame provided with a rigid bar, two gangs of disks bearing near their outer ends forwardly projecting ears provided with angular slots in which fit the hooked ends of said rigid bar, forwardly projecting ears at or near the inner ends of said gangs having holes or openings, plates on the rear of said gangs having openings therein, and adjusting bars having their ends passed through said openings of said latter ears and plates, substantially as set forth.

3. A harrow having two pivotally mounted gangs of disks, means connected to the inner ends of said gangs for adjusting the latter, and independent springs for bearing down the said inner ends of said gangs, substantially as set forth.

4. A harrow having two pivotally mounted gangs of disks, adjusting bars connected to said gangs at or near their inner ends, and independent springs bearing downwardly upon said bars at or near their connections to said gangs, substantially as set forth.

5. A harrow having two pivotally-mounted gangs of disks, adjusting bars connected to said gangs at or near their inner ends, springs bearing upon said bars, and means for regulating the tensions of said springs, substantially as set forth



6. A harrow having two pivotally-mounted gangs of disks, adjusting bars connected to said gangs at or near their inner ends, springs bearing downwardly upon said bars, a crank-shaft bearing upon said springs, and means for holding the same at any point of adjustment, substantially as set forth.

7. A harrow having two pivotally-mounted gangs of disks, adjusting bars connected to said gangs at or near the inner ends thereof, two plate-springs located over said bars and having bent or curved portions constantly held in contact with said bars, and means for adjusting the tension of said springs, substantially as set forth.

8. A harrow having two pivotally-mounted gangs of disks, adjusting bars connected to said gangs at or near the inner ends thereof, two plate-springs having bent ends provided with slots through which said bars are passed, said springs having inwardly extended portions bearing upon said bars, substantially as set forth.

9. A harrow having its draft-frame provided with a rigid-bar, two gangs of disks having angularly slotted ears near their outer ends engaged by said rigid bar, two adjusting bars connected to said gangs at or near their inner ends, and a spring located between said adjusting bars and bearing outwardly thereon, substantially as set forth.

10. A harrow having two pivotally mounted gangs of disks, adjusting bars connected to said gangs at or near the inner ends thereof, two plate-springs secured at their outer ends and having inwardly bent portions at their inner ends, said latter ends having slots through which said bars project, and a tension regulator bearing on said springs near their secured ends, substantially as set forth.

11. A harrow having two pivotally mounted gangs of disks, adjusting bars connected to said gangs at or near the inner ends thereof, two plate-springs secured at their outer ends and having inwardly bent portions at their inner ends, said latter ends having slots therein through which said bars project, a crank-shaft designed to bear on said springs at or near their secured ends, and means for adjusting and holding said crank-shaft, substantially as set forth.

12. In a harrow, the combination with the draft-frame and the pole, said frame having a rigid bar provided with hooked ends, of the two gangs of disks having ears near their outer ends provided with angular slots therein for reception of the said hooked ends of said bar, and the ears and plates also extending from said gangs near the inner ends thereof, said ears and plates having openings therein, the adjusting bars having their inner ends extended through the said openings of said ears and plates, the plate springs secured at their forward ends to said draft-frame and bearing upon said adjusting bars at or near the lower ends of the latter, and a crank-shaft for engaging said springs near their secured ends, substantially as set forth.

13. The combination with the draft-frame, and the two gangs of disks pivotally connected thereto, of the adjusting bars connected to the inner ends of said gangs, the plate-springs secured at their outer ends to said draft-frame and having inner slotted bent ends through which said bars project, and the crank-shaft having rollers thereon designed to bear upon said springs, substantially as set forth.

14. The combination with the draft-frame, the gangs of disks, and the adjusting bars, of the springs bearing on said bars, the crank-shaft designed to bear upon said springs, the foot lever fulcrumed to said crank-shaft, the toothed quadrant, and means for normally holding said foot lever in engagement with said quadrant, substantially as set forth.

15. The combination with the draft-frame, the gangs of disks, and the adjusting bars, of the springs bearing on said bars, the crank-shaft designed to bear upon said springs and having an outer angular end, the foot lever fulcrumed on said crank-shaft and having a side-recess to accommodate said angular end, an interposed spring normally forcing said lever inward, and the quadrant designed to be engaged by said lever, substantially as set forth.

16. In a disk-harrow having an upper frame, a series of scrapers, a movable bar loosely held to said frame and to which said scrapers are connected, and a spring or springs for binding said movable bar and holding the same at any point to which adjusted, substantially as set forth.

17. In a disk-harrow having an upper frame, a series of scrapers, a movable bar loosely held to said frame and to which said scrapers are connected, and a frictional clutch for binding said bar at any point to which adjusted, the same comprising a spring and an inner member held by said spring tight against said movable bar, substantially as set forth.

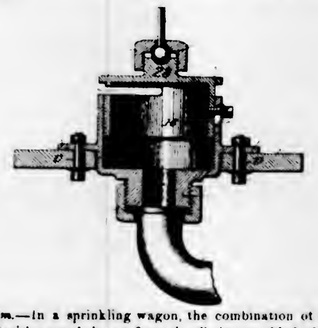
18. In a disk harrow, having an upper frame, a series of scrapers, having a bar loosely connected to said frame, means for adjusting said bar, and a spring-pressed lug or lugs designed to bear upon and hold said bar at any point to which adjusted, substantially as set forth.

19. In a disk-harrow having an upper frame, a series of keeper-plates secured to said frame having openings therein a series of scrapers having a bar movable in said keeper-plates, a lug located in said opening of said keeper-plates, and a spring bearing on said lug, substantially as set forth.

20. In a disk-harrow, having an upper frame, a series of keeper-plates secured to said frame having openings therein, a series of scrapers having a bar movable in said keeper plates, a lug located in said opening and having a head flanged at its ends, and a plate spring secured at one end, its free end bearing on said head of said lug and fitting between said end-flanges, substantially as set forth.

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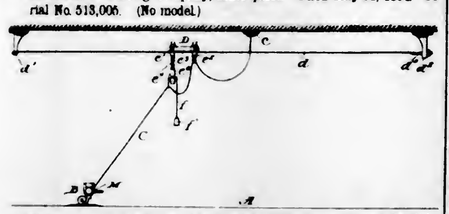
527,353. SPRINKLING-WAGON. EUGENE T. WESTERFIELD, New York, N. Y., assignor to the Westerfield Wagon and Sprinkling Truck Company, same place. Filed Oct. 20, 1893. Serial No. 488,720. (No model.)



*Claim.*—In a sprinkling wagon, the combination of a support provided with curved slots, a flanged cylinder provided with a union coupling at the bottom and rotarily adjustable in said slots, said cylinder also having the vertical slot, the cap provided with a flange having a discharge port and guided in said vertical slot, the ball and socket at the top, and connections extending to the seat of the driver, and the inlet pipe supplying the valve at the bottom, substantially as shown and described.



527,354. TAKE-UP FOR CONDUCTORS OF CLOTH-CUTTING MACHINES. JOHN WOLF, Jr., Cincinnati, Ohio, assignor to the Wolf Electrical Promoting Company, same place. Filed May 31, 1894. Serial No. 513,006. (No model.)



*Claim.*—1. In a take-up device, the combination with a flexible conductor connected to a movable body, of a track and a support therefor, a carriage adapted to travel along said track, and a yielding connection between the carriage and the flexible conductor, substantially as described.

2. In a take-up device, the combination with a flexible conductor connected to the movable body, of a track and a support therefor, a carriage adapted to travel along said track and having the conductor secured to one end, together with a yielding connection between the other end of the carriage and said conductor, substantially as described.

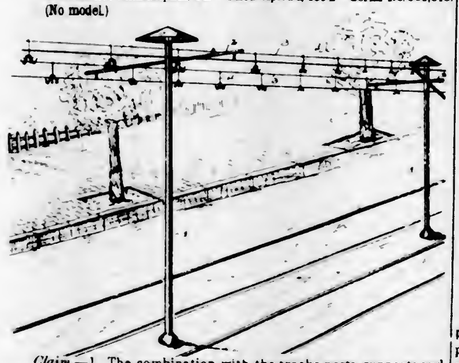
3. In a take up device, the combination with a flexible conductor, of a series of tracks and supports therefor, a carriage adapted to travel along each track arranged to hold the conductor in an elevated position; the said conductor being secured to one carriage and then to one of the ends of a second carriage and having a yielding connection between the other end of said second carriage and said conductor, substantially as described.

4. In combination with the cutting machine, the electric motor mounted thereon, and the flexible electric conductor extending from said motor to a source of electric supply, of a track and a support therefor, a carriage adapted to travel along said track, together with a yielding connection between the carriage and the conductor, substantially as described.

5. The combination with a flexible conductor connected to a movable body, the traveling carriage and a track and a support therefor, of a frame carrying a sheave depending from the carriage, and a rope passing over the sheave and secured at one of its ends to the conductor, and carrying a weight at its other end, substantially as described.

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527,355. TROLLEY-WIRE SUPPORT OR HANGER. SAM C. WOODHEAD, Philadelphia, Pa. Filed Apr. 24, 1894. Serial No. 508,813. (No model.)



*Claim.*—1. The combination with the tracks, posts, supports and trolley wire of a trolley system; of a wire attached to said supports; and a series of revoluble supports or hangers supported by said wire, whereby when said trolley wire has become broken or cut, the said supports or hangers will prevent the same from falling to the ground, substantially as described.

2. The combination with the tracks, posts, supports and trolley wire of a trolley system; of a wire attached to said supports by insulators, said wire having electrical connection with a signal located at some pre-determined point; and a series of revoluble supports or hangers supported by said wire to catch and retain said trolley wire when it has become cut or broken, and thereby form a complete circuit, through the broken trolley wire, the supports or hangers, and the wire supporting said supports or hangers, by means of which said signal will be operated, substantially as described.

3. The combination of the tracks, posts, supports, and trolley wire, of a trolley system, with a wire, attached to said supports, by means of insulators, said wire having attached thereto a support for the trolley wire, comprising a spindle, a rotary wire support, adapted to revolve on said spindle, and wire arms attached to said wire support, said arms being adapted to rest under said trolley wire, in successive order, substantially as described.

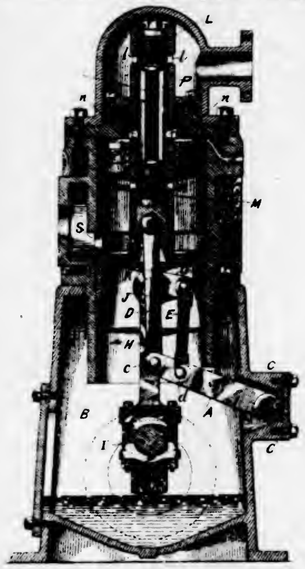
4. A trolley wire support or hanger, comprising in its construction, a spindle, having at one end a hook to suspend the support on a wire, and having at its other end a riveted head; a wire support adapted to revolve around said spindle; and wire radial arms attached to said wire support, substantially as described.

5. A trolley wire support or hanger, comprising in its construction, a spindle, having at one end a curved hook, and having at its other end a riveted head; a wire support adapted to revolve on said spindle; and wire radial arms attached to said wire support, each of said arms being composed of a single piece of wire, bent downward at an angle, an open loop formed therein, and the outer end of the wire passed upward at an angle, said radial arm being adapted to receive the broken portion of a trolley wire, substantially as described.

6. A trolley wire support or hanger, comprising in its construction, a spindle, having at one end a hook and at its other end a riveted head; a wire support adapted to revolve on said spindle, said wire support consisting of an inner wearing portion, a bushing formed of insulating material, and the wire supporting portion; and wire radial arms secured to said wire support at its periphery, substantially as described.

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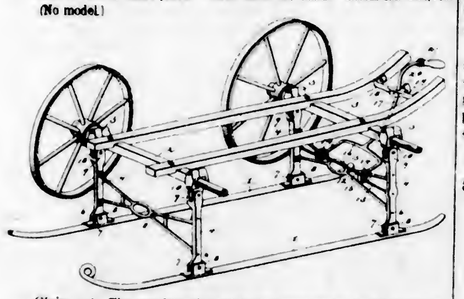
527,256. STEAM-MOTOR. CHARLES E. BEAUMONT and GEORGE P. WALLINGTON, London, England, assignors of one-third to Laurence Archer Wallington, same place. Filed June 20, 1894. Serial No. 515,112. (No model.) Patented in England Dec. 20, 1893, No. 24,536.



*Claim.*—1. In a central valve high speed engine, fluid motor or pump, the combination with the main connecting rod or rods and projections thereon, of a radial arm having one end pivoted to a non-moving part of the engine at a predetermined point in the crank chamber, a link connecting said arm with the projections on the main connecting rod or rods, and a link connecting the said lever with the centrally located valve, substantially as and for the purpose shown and described.

2. In a central valve high speed engine, fluid motor or pump, the combination of the crank I, the piston R having a tubular rod provided with ports and guide portion K, the cylinder, the piston valve F, the rod or rods H connecting the crank I and piston guide K, the radial arm A having one end pivoted to a non-moving part of the engine at a predetermined point in the crank chamber, the link D connecting the valve F with the end of the arm A and the link E connecting a projection G on the main connecting rod H with the lever A at a point intermediate its ends, substantially as and for the purpose described.

**527,357. SLED ATTACHMENT FOR BABY-CARRIAGES.** Charles J. Bongfeldt, East Marinette, Wis., assignor of one-half to Alfred Bruce, same place. Filed Mar. 22, 1894. Serial No. 504,710. (No model.)



*Claim.*—1. The combination with the running-gear of a carriage, of a pair of runners, the straight links arranged in pairs and having their lower ends hingedly connected with the runners, clips composed of opposite recessed sections and provided with depending flanges hingedly connected with the upper ends of the links said sections detachably engaging the axles of the running gear, transverse braces connecting the links and bracing the same, a cross-bar carried by the running-gear and arranged at the back thereof and provided with an eye and having a set-screw, and an operating rod having its lower end hingedly connected with the adjacent transverse brace, passing through said eye and provided at its upper end with a handle, substantially as described.

2. The combination with the running-gear of a carriage, of a pair of runners provided with bearings composed of sides, and a back forming a stop, the links arranged in pairs and hinged at their lower ends between the sides of the bearings, clips arranged at the upper ends of the links, hingedly connected thereto and composed of opposite recessed sections engaging the axles, transverse braces connecting and bracing the links, a cross bar secured to the running-gear and provided with an eye and having a set-screw, and an operating rod passing through the eye and hingedly connected at its lower end to the adjacent transverse brace, substantially as described.

**527,358. SAFETY DEVICE FOR JEWELRY.** Julius Bonner, New York, N. Y. Filed Apr. 5, 1894. Serial No. 506,455. (No model.)

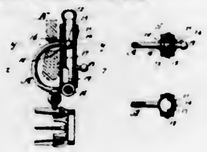


*Claim.*—1. The combination with a shank A having recesses 10, of a plate 11 having a socket 12 fitting and adjustable along the length of the shank, and a catch carried by the socketed plate and movable thereupon in a plane parallel with the surface of the said socketed plate to engage and disengage the recesses in the shank, substantially as described.

2. The combination with a shank A having recesses 10, of a plate 11 having a socket 12 loosely fitting and adjustable along the length of the shank, and a catch-plate 14 pivoted to the socketed plate and oscillating thereupon in a plane parallel with the surface of said socketed plate to engage and disengage the recesses in the shank, substantially as described.

3. The combination with a shank A having recesses 10, of a plate 11 loosely fitting and adjustable along the length of the shank, and a catch-plate pivoted to the socketed plate and oscillating thereupon in a plane parallel with the surface of the said socketed plate, said catch-plate having a segmental slot, the edges of which are approximately concentric with the pivot of the catch-plate, substantially as and for the purposes described.

**527,359. EAR-RING.** Julius Bonner, Newark, N. J. Filed Apr. 19, 1894. Serial No. 508,174. (No model.)



*Claim.*—1. The locking device provided with the openings 17 and 19, combined with a housing in which said device can slide, said housing having an opening corresponding to the opening 19, and a swinging arm provided with a head adapted to enter the locking device substantially as described.

2. The locking device provided with the openings 17 and 19, combined with a housing or guide for the locking device, and a swinging arm provided with a head adapted to enter and to be engaged by the locking device, said arm being made to act as a support and being provided with a pendant directly below the point of support substantially as described.

**527,360. WASHING-MACHINE.** James D. Cavanaugh, Lebanon, assignor to Nathan S. Althouse and James H. Knoll, Reading, Pa. Filed Jan. 23, 1894. Serial No. 497,795. (No model.)



*Claim.*—1. In a washing machine, the combination of a supporting frame, an oscillating body journaled on the frame and provided with a tooth segment, an oscillating rubber arranged within the body and having a segment connected with it and provided with teeth arranged opposite those of the segment of the body, and a pinion mounted on the frame and interposed between and meshing with said segments, whereby the body and the rubber are caused to oscillate reversely, substantially as described.

2. In a washing machine, the combination of a supporting frame, an oscillating rubber, an oscillating body journaled on the frame and receiving the rubber, journals supported on the frame and extended through the body and adjustably connected with the rubber, whereby the latter may be raised and lowered, and gearing connected with one of the journals of the rubber and with the body for reversely oscillating the rubber and the body, substantially as described.

3. In a washing machine, the combination of a supporting frame, an oscillating body journaled on the frame, an oscillating rubber arranged within the body and provided with vertical ways, bars arranged in the ways of the rubber and having vertically extending racks and provided with journals extended through the body and arranged in suitable bearings of the frame, and catches mounted on the rubber and arranged to engage the racks to secure the rubber at the desired adjustment, substantially as described.

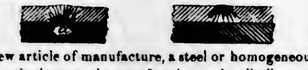
4. In a washing machine, the combination of a supporting frame, a body provided with hollow journals arranged in suitable bearings of the supporting frame, an oscillating rubber provided with journals extended through the body and arranged within said hollow journals, a segment depending from one of the journals of the rubber and provided at its outer periphery with teeth, a segment secured to the body and provided on its upper face with teeth, and a pinion journaled on the frame and meshing with the segment, substantially as described

**527,361. ENAMELING METAL-WARE.** Hubert Claus, Thale, Germany. Filed Nov. 18, 1893. Serial No. 491,335. (Specimens.)



*Claim.*—1. As a new article of manufacture, a steel or homogeneous iron article having one coat of mottled enamel.

2. As a new article of manufacture, a steel or homogeneous iron article having one enamel coat having therein a preponderance of alkaline constituents



3. As a new article of manufacture, a steel or homogeneous iron article having a single enamel coat of an intensely alkaline nature.

4. As a new article of manufacture, a metallic article having a coat of enamel of an intensely alkaline nature permeated by metallic oxides, substantially as described.

5. As a new article of manufacture, a steel or homogeneous iron article having a single coat of mottled enamel on a partly oxidized metallic surface, substantially as described.

6. As a new article of manufacture, a metallic article having a mottled coat of alkaline enamel and within said enamel metallic oxides extending from the outer surface of the enamel inwardly, substantially as described.

7. As a new article of manufacture, a steel or homogeneous iron article having a mottled coat on a partly oxidized metallic surface and having metallic oxides extending from the outer surface of the enamel inwardly, substantially as described.

8. An enamel for surfaces having therein a preponderance of alkaline constituents together with metallic oxides, substantially as described.

9. The process of enameling which consists in coating an article with an alkaline enamel and in applying thereto while still moist, a metallic salt or salts, substantially as described.

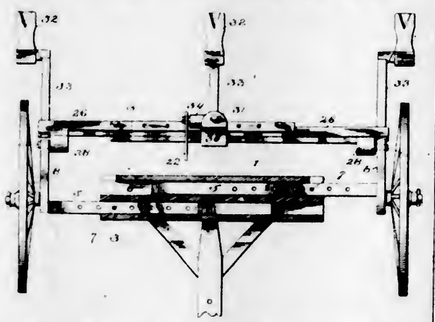
10. The process of enameling which consists in coating an article with an alkaline enamel, and in applying thereto while still moist, sulphate of iron and sulphate of copper, substantially as described.

11. The process of enameling which consists in coating an article with an alkaline enamel, and in applying thereto, while still moist, sulphate of iron, substantially as described.

12 The process of enameling which consists in coating an article with an alkaline enamel and in applying thereto, while still moist, sulphate of copper, substantially as described.

13. The process of enameling which consists in coating an article with an alkaline enamel and in applying thereto, while still moist, sulphate of iron, sulphate of copper and super-manganate of potassium, substantially as described

**527,362. LAND-MARKER.** Stonewall J. Conkwright, Winchester, Ky. Filed Dec. 14, 1893. Serial No. 493,622. (No model.)



*Claim.*—1. The combination with a lengthwise extensible wheeled axle, of rearwardly extending brackets secured to the said axle and having journal bearings, a swinging, lengthwise extensible marker-head having journals mounted in the journal bearings of the brackets, row-markers carried on and adjusted to and from one another by the lengthwise adjustment of the marker-head, and means for swinging the marker-head to raise or lower the row-maker, substantially as described.

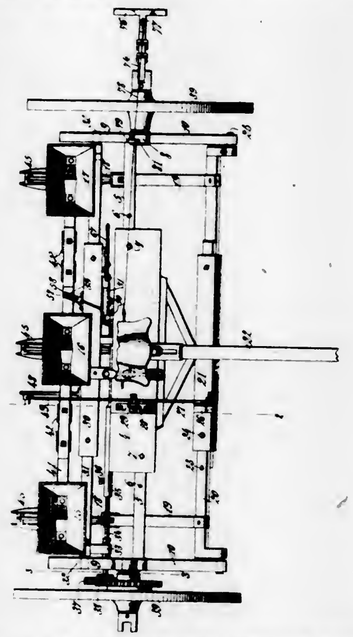
2. The combination with a lengthwise extensible wheeled axle, of rearwardly extending brackets secured to the said axle and having journal bearings, a swinging, lengthwise extensible marker-head pivotally mounted on the brackets, row-markers carried on and adjusted to and from one another by the lengthwise adjustment of the marker head, a pivoted lever, and a link pivotally connecting the lever with the said marker-head, substantially as described.

3. The combination with the boxing or housing, of laterally extensible beams arranged therein and having rearwardly extending brackets, means for locking the beams at any desired point, a laterally extensible marker-head having journals supported by the rearwardly extending brackets, row-markers mounted upon the beams and adjusted to and from one another by the movement thereof, a lever pivoted to the boxing or housing, and a link connecting the lever with the marker-head, substantially as described.

4. The combination with a boxing or housing, of laterally extensible beams having rearwardly projecting brackets carrying the journals of the ground wheels, laterally extensible overlapping beams or strips pivotally mounted in said brackets and having support in an intermediate bracket, and row-markers secured to the pivotally mounted beams or strips, substantially as described.

5. The combination with a boxing or housing, of lengthwise adjustable beams arranged therein, rearwardly extending brackets secured to the said beams and carrying the journals of the ground wheels, a marker-head composed of lengthwise adjustable beams or strips provided respectively with journals mounted in bearings on the rearwardly extending brackets, row-markers extending from the parts of the marker-head, a pivoted lever, and a link connecting the lever with the marker-head, substantially as described.

**527,363. CONVERTIBLE AGRICULTURAL MACHINE.** Stonewall J. Conkwright, Winchester, Ky. Filed May 26, 1894. Serial No. 512,527. (No model.)



*Claim.*—1. In a convertible agricultural machine, the combination with a boxing or housing to which draft devices are connected, of independent axles adjustable lengthwise in the boxing or housing, and each having at one end portion a wheel-spindle and a radially projecting arm provided with a bearing for receiving a journal or stud on the implement to be attached, substantially as described

2. In a convertible agricultural machine, the combination with a boxing or housing to which draft devices are connected, of independent axles adjustable lengthwise in the boxing or housing, and each having at one end portion a wheel-spindle and a plurality of radiating arms, each provided with a bearing for receiving a journal or stud on the implement to be attached, substantially as described

3. In a convertible agricultural machine, the combination with a boxing or housing, of independent axles adjustable lengthwise in the boxing or housing, and each having at one end portion a non-rotary wheel-spindle and a plurality of radiating arms of different length, each arm provided with a bearing for receiving a journal or stud on the implement to be attached, substantially as described.

4. In a convertible agricultural machine, the combination with a boxing or housing, of independent axles adjustable lengthwise in the boxing or housing, and each having at one end portion a wheel-spindle and a plurality of radiating arms adapted to receive and sup-

port interchangeable agricultural implements, substantially as described.

5. In a convertible agricultural machine, the combination with a boxing or housing, of independent axles adjustable lengthwise in the boxing or housing, and each having at one end portion a wheel-spindle and a rearwardly projecting arm, and a corn-planter attachment comprising lengthwise adjustable bars having their outer ends removably journaled in the said arms of the wheel-axles, a lengthwise adjustable dropper slide, devices actuated by one of the ground wheels for operating the dropper slide, and lever mechanism for rocking the corn planter attachment on said rearwardly projecting arms, substantially as described.

6. In a convertible agricultural machine, the combination with a boxing or housing, of independent axles adjustable lengthwise in the boxing or housing, and each having at one end portion a wheel-spindle and a plurality of radiating arms each provided with a bearing, a corn-planter attachment comprising lengthwise adjustable bars provided with journals or studs journaled in the bearings of two of said arms, a lengthwise adjustable head carrying furrow-runners or openers and provided at its ends with journals or studs mounted in the bearings of other radiating arms, and means for raising the corn-planter attachment and the furrow-runners or openers, substantially as described.

7. In a convertible agricultural machine, the combination with a boxing or housing, of independent axles adjustable lengthwise in the boxing or housing, and each having at one end portion a wheel-spindle and a plurality of radiating arms, a corn-planter attachment comprising lengthwise adjustable bars having their outer ends pivotally mounted in two of said radiating arms, a lengthwise adjustable head carrying furrow-runners or openers and provided at its ends with journals or studs mounted in the bearings of other radiating arms, and a lever having link connections with the corn-planter attachment and with the head carrying the furrow-runners or openers for simultaneously raising said corn-planter attachment and said furrow-runners or openers, substantially as described.

8. In a convertible agricultural machine, the combination with a boxing or housing, of independent axles adjustable lengthwise in the boxing or housing, and each having at one end portion a wheel-spindle and a plurality of radiating arms each provided with a bearing, a corn-planter attachment comprising lengthwise bars having their outer ends provided with journals or bearings pivotally mounted in the bearings of two of said radiating arms, a lengthwise adjustable head carrying furrow-runners or openers and provided at its outer ends with journals or studs mounted in the bearings of other radiating arms, a lever having link connections with the corn-planter attachment and with the head carrying the furrow-runners or openers for simultaneously raising the corn-planter attachment and the furrow-runners or openers, a lengthwise adjustable countershaft driven by one of the ground-wheels, and devices operated by said shaft for reciprocating the dropper-slide of the corn-planter attachment, substantially as described.

9. In a convertible agricultural machine, the combination with a boxing or housing, of independent axles adjustable lengthwise in the boxing or housing, and each having at one end portion a wheel-spindle and a plurality of radiating arms, a corn-planter attachment comprising a lengthwise adjustable dropper slide and lengthwise adjustable bars having their outer ends pivotally mounted in two of said radiating arms, a lengthwise adjustable head carrying furrow-runners or openers and having its outer ends pivotally mounted in other radiating arms, a lever having link connections with the corn-planter attachment and the head carrying the furrow-runners or openers for simultaneously raising the corn-planter attachment and the furrow-runners or openers, a lengthwise adjustable countershaft geared to one of the ground-wheels, a pin-wheel geared to and rotated by the countershaft, and tappet-arms connected with the dropper-slide and actuated by the pin-wheel, substantially as described

10. In a convertible agricultural machine, the combination with a boxing or housing, of independent axles adjustable lengthwise in the boxing or housing, and each having at one end portion a wheel-spindle and a plurality of radiating arms, a corn-planter attachment bodily removable and comprising lengthwise adjustable bars pivotally mounted in two of said radiating arms and provided with brackets supporting a countershaft, gearing between the countershaft and one of the ground-wheels, and devices operated by the countershaft for reciprocating the dropper-slide of the corn-planter attachment, substantially as described.

11. In a convertible agricultural machine, the combination with a boxing or housing, of independent axles adjustable lengthwise in the boxing or housing, and each having at one end portion a wheel-spindle and a plurality of radiating arms, a corn-planter attachment bodily removable and replaceable and comprising a lengthwise adjustable dropper-slide and lengthwise adjustable bars pivotally and removably mounted in two of said radiating arms and provided with brackets carrying a lengthwise adjustable countershaft geared to one of the ground-wheels, a pin-wheel, devices operated by the pin-wheel for reciprocating the dropper-slide, and a pinion mounted on the said countershaft and movable into and out of gear with the pin-wheel for controlling the action of the dropper-slide, substantially as described.

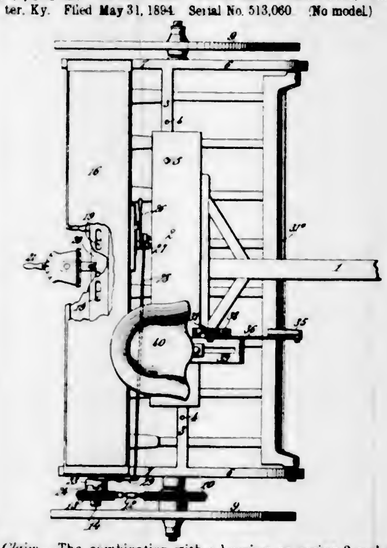
12. In a convertible agricultural machine, the combination with lengthwise adjustable axles having wheel-spindles, of sleeves or couplings mounted on the wheel-spindles, marker-bars pivoted to the sleeves or couplings to swing vertically, vertically extending guide-arms provided with cord or cable-guides, and cords or cables passing through said guides and connected with the marker-bars, whereby the driver can raise either marker-bar, substantially as and for the purposes described

13. In a convertible agricultural machine, the combination with lengthwise adjustable axles provided with wheel-spindles, of marker-bars pivotally connected with the wheel-spindles, vertically extending guide arms provided with cord or cable-guides, and cords or cables extending through said guides and connected with the marker-bars whereby the driver can raise either marker-bar, substantially as and for the purposes described.

14. The combination with a main frame, a pivotally mounted corn-planter attachment, adapted to rock in said main frame, devices for operating the corn dropping devices, and a pivotally mounted head provided with furrow-runners or openers, of a single lever, and two links extending forward and rearward and connected to the lever and to the corn-planter attachment, and the head carrying the furrow-runners or openers, whereby the corn-planter attachment and the furrow-runners may be simultaneously raised by the movement of a single lever, substantially as described.

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**527,364.** GRAIN-DRILL. STONEWALL J. CONKWRIGHT, Winchester, Ky. Filed May 31, 1894. Serial No. 513,060. (No model.)



*Claim.*—The combination with a housing or casing 2 and axle sections 3 adjustable lengthwise in the housing and each provided with a rearwardly projecting arm 7, of ground wheels mounted on spindles, one of which is provided with a sprocket wheel, a hopper having its ends detachably mounted in the rearwardly projecting arms of the axle sections and provided with seed cups, a seed wheel shaft extending through the seed cups and provided at one end with a loosely mounted sprocket wheel, a sprocket chain connecting the two sprocket wheels, a clutch section slidable on but rotatable with the seed wheel shaft and normally held in engagement with the loosely mounted sprocket wheel for locking the latter to the seed wheel shaft, a clutch lever engaging the slidable clutch section, a pivoted swinging lever mounted within convenient reach of the driver, and a link connecting the pivoted swinging lever with the clutch lever, substantially as described.

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**527,365.** BANDAGE-MACHINE. WILLIAM N. CRABTREE, Globe, Cal. Filed Apr. 18, 1894. Serial No. 507,982. (No model.)

*Claim.*—1. In a bandage roller for surgeons, a frame, having open bearings thereon, a spool arranged to removably journal in said bearings, adjustable bandage guides working in said frame, and a stirrup device pivoted to said frame and arranged to temporarily confine the spool in its bearings, substantially as specified.

2. In a bandage roller for surgeons, a frame having vertical arms at each end portion, an open bearing in one of said arms, a slotted crank axis journaled in the opposite of said arms, a spool having a journal adapted to engage said open bearing and having means for detachably engaging the slot of said axis, and a stirrup pivoted to said arms and having a slotted horizontal portion, substantially as specified.



3. A bandage roller for surgeons, comprising a frame having arms at each end, an open bearing in one of said arms, a cranked axis journaled in the opposite of said arms, and having a slot therein, a spool having a journal adapted to engage with the slot of said axis, bandage guides adjustably secured in slots in the body portion of said frame, a stirrup having arms pivoted to the arm of said frame and a slotted base portion, one of said stirrup arms having an extension forming a keeper for the spool journal which engages the said open bearing, substantially as specified.

4. In a bandage roller for surgeons, the frame, the adjustable bandage guides in said frame, the slotted stirrup pivoted to said frame, a spool arranged to detachably engage bearings in said frame, a winding crank journaled in said frame, and means for holding the bandage from unwinding from said spool, substantially as specified.

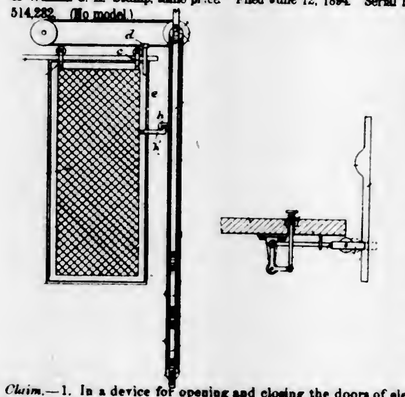
5. In a bandage rolling machine for surgeons, a spool having a hollow shaft, a disk on each end of said shaft, an axis passing through said shaft, a hook device pivoted to each of said disks, and cam arms carried by said shaft and engaging said hood devices, substantially as specified.

6. In a bandage rolling machine for surgeons, a spool having a hollow shaft, a disk on each end portion of said shaft, a hook device pivoted in a cut-away portion of each of said disks, an axis passing through said hollow shaft and having arms engaging said hook devices, parallel disks carried loosely on said axis, and a lever on one end portion of said axis, substantially as specified.

7. In a bandage rolling machine for surgeons, a spool having a hollow shaft, a disk on each end portion of said shaft, a hook device pivoted in a cut-away portion in each of said disks, a two-part axis passing through said hollow shaft, arms carried by said shaft and having cam portions engaging said hook devices, parallel disks loose on said axis, and secured to the spool disks, a lever pivotally held in one end portion of said axis, and having on one arm a projection adapted to engage with one of said parallel disks, and a spring for securing such engagement, said lever being adapted to engage with a winding crank, substantially as specified.

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**527,366.** DEVICE FOR OPENING OR CLOSING ELEVATOR-DOORS. WILLIAM J. FERGUSON, Baltimore, Md., assignor of one-half to William G. H. Stump, same place. Filed June 12, 1894. Serial No. 514,232. (No model.)



*Claim.*—1. In a device for opening and closing the doors of elevators, the combination of the horizontally-sliding elevator door: a horizontal endless chain having position above the door and connected directly therewith and moving in the same direction that the said door slides, so that in moving said chain will carry the door with it; a vertical endless chain to transmit motion to the said horizontal chain; the vertically-moving car; and a laterally-movable trip-arm on the car which is projected horizontally out from the car to engage and move the vertical chain and is automatically disengaged from said chain when the latter has been moved a sufficient distance to cause the opening or closing of the door.

2. The combination of a sliding elevator door; a horizontal endless chain, E, connected with the door; a vertical endless chain, E', adapted to transmit motion to the horizontal chain and carrying one or more knocker blocks; a vertically-moving car carrying a movable trip-arm; means for engaging the trip-arm with said knocker-block to move the vertical chain, whereby the horizontal chain is operated to open or close the door; and further means to automatically disengage the trip-arm from the knocker-block when the horizontal chain has moved the door to a full open or closed position.

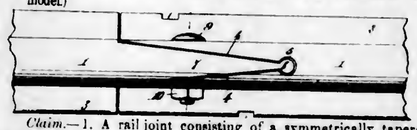
3. In a device for opening and closing the doors of elevators, the combination of the sliding elevator door having a catch; a horizontal endless chain, E, connected with the door; a vertical endless chain, E', connected so as to transmit motion to the horizontal chain and carrying a catch to engage with said catch on the door when the door is closed, and also carrying one or more knocker blocks; a vertically-moving car; and means attached to the car for engaging the said knocker blocks, whereby the vertical chain is caused to move and engage its catch with or disengage it from the catch on the door, and also actuate the horizontal chain which in turn operates to open and close the elevator door.

4. The combination of a sliding elevator door; a horizontal endless chain, E, connected with the door; a vertical endless chain, E', connected so as to transmit motion to the horizontal chain and carrying one or more knocker blocks; a stationary retractor bar, G, arranged in line between the two stretches of the said vertical chain and having a number of curved projecting faces, *g*; a vertically-moving car carrying a projectible trip-arm having two arms, *m m'*, and means for projecting the trip-arm so that its two arms will straddle the retractor bar in position for engaging either of the knocker blocks, whereby when the car moves the trip-arm engages the knocker block and the vertical chain will be moved until the arm encounters one of said curved faces of the retractor bar, substantially as described.

5. The combination of the horizontally-sliding elevator door; a vertical endless chain, E', passing over suitable pulleys adjacent to one side of the door; a horizontal endless chain, E, connected with the door and passing over pulleys which are relatively larger than those over which the said vertical chain passes,—said horizontal chain being actuated by the vertical chain, whereby a certain movement of the said vertical chain will result in a greater movement of the horizontal chain; a vertically-moving car; and means on the car for actuating said vertical chain, substantially as described.

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**527,367.** RAILWAY-RAIL JOINT. HENRY H. FIFIELD, La Plata, Mo., assignor of one-half to Silas S. Bonham, same place, and Baruch W. Bonham, Lacrosse, Mo. Filed Apr. 6, 1894. Serial No. 506,618. (No model.)



*Claim.*—1. A rail joint consisting of a symmetrically tapered, wedge-shaped tenon on the end of one rail, adapted to enter and fill a notch formed by slitting the end of the abutting rail in converging lines, said tenon having an enlargement at its apex, or extremity, adapted to lie in an opening at the point of the notch in the other rail, substantially as described.

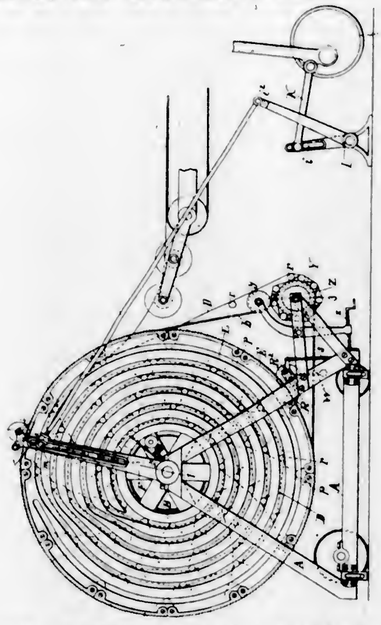
2. A rail-joint consisting of a symmetrically tapered, wedge-shaped tenon having an enlargement at its apex adapted to enter and fill a notch in the end of the abutting rail formed by converging slits extending from the edges of the tread through a thickened part of the web and through the foot, said notch having an opening at its point to receive the enlargement on the end of the tenon, substantially as described.

3. A rail joint consisting of two meeting rail-ends, having a portion of the web thickened to the width of the tread, one end provided with a notch formed by slits extending from the edges of the tread to a central opening at a distance from the end, and the other rail end having a tenon symmetrically tapered to fill said notch and provided at its apex with an enlargement, substantially as described.

4. A rail-joint consisting of two meeting rail ends, having a portion of the web thickened to the width of the tread, one end provided with a notch formed by slits extending from the edges of the tread

to a central opening at a distance from the end of the rail, and the other rail-end having a tenon symmetrically tapered to fill said notch, its apex provided with an enlargement corresponding in outline, but smaller than, the central opening in the other rail, said notch and opening extending from the tread through the foot of the rail, substantially as described.

527,368. REEL. CHARLES S. GOODING, Brookline, and WILLIAM E. C. GOUDEY, Melrose, assignors to Robert D. Evans and John S. Lockwood, Boston, and Margaret E. Knight, South Framingham, Mass. Filed May 31, 1894. Serial No. 513,029. (No model.)



*Claim.*—1. A reel having a spiral groove in the surface of one of its flanges, a traveler to run in said groove, mechanism connected with the traveler to give it reciprocating motion, and devices to interlock with the reel and move it with said traveler when the reciprocating mechanism moves in one direction, and to release and leave the traveler free to move alone when said mechanism moves in the other direction.

2. A reel provided with a groove in the outer surface of one of its flanges which corresponds substantially with the convolutions of the material wound thereon, a traveler to run in said groove, mechanism connected therewith to give it reciprocating motion, a ratchet upon the reel and a pawl to engage the teeth thereof, which is controlled by said reciprocating mechanism, whereby when said mechanism is moved in one direction the reel will be turned and when moved in the other direction the reel will remain at rest.

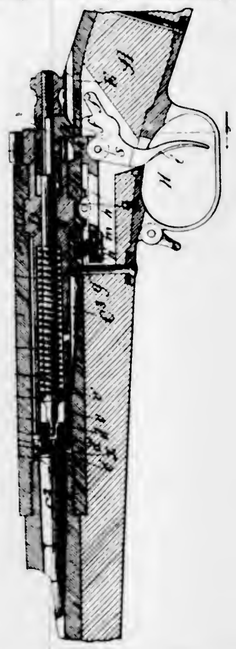
3. A reel having a spiral groove in the surface of one of its flanges, an annular ratchet upon said flange and a pawl therefor, supported by a lever pivoted at the reel axle; a traveler to run in said groove and reciprocating driving mechanism connected therewith and with said pawl-supporting lever, for the purpose described.

4. A reel having a spiral groove and an annular ratchet on one flange, a traveler to run in said groove and a pawl to engage said ratchet, a lever pivoted at the reel axle which carries said pawl and a retaining disk which overlaps the inner surface of the flange, and mechanism to give said traveler and pawl supporting lever, reciprocating motion, whereby the reel will be rotated a constant prescribed distance at each alternate stroke of said reciprocating mechanism for the purpose described.

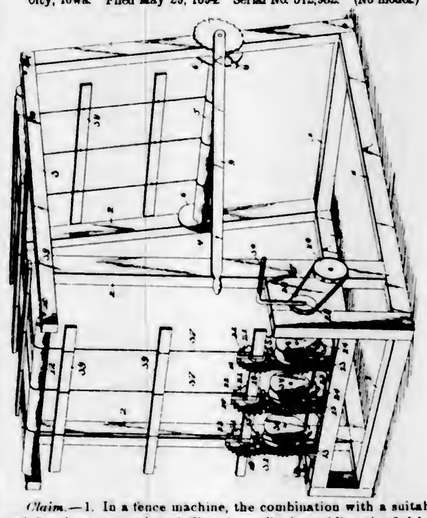
5. A reel having a spiral groove and an annular ratchet on one flange, a traveler to run in said groove, and a pawl to engage said ratchet, mechanism to reciprocate said traveler and pawl and a detent to hold the reel from retrogression substantially as described.

527,369. BOLT-GUN. HERMAN LEINEWEBER, Chicago, Ill. Filed Aug. 17, 1893. Serial No. 483,408. (No model.)

*Claim.*—In a gun, the combination with the barrel, stock and suitable trigger-mechanism, of an interposed receiver C in the forward end of which the rear end of the barrel is fastened, a reciprocating breech-block confined in the receiver to turn on its longitudinal axis, and provided with an internal longitudinal groove *v*, a firing-pin D', in the breech-block, having a controlling-spring $D^3$ confined upon it with one end *v'* thereof confined in the groove *v*, locking-means at the rear end of the breech-block operated by turning it in the receiver, and cam-mechanism at the rear ends of the firing-pin and breech-block, cooperating, by turning the breech-block to unlock it, to set the spring of the firing-pin, substantially as described



527,370. FENCE-MAKING MACHINE. PATRICK J. REGAN, Iowa City, Iowa. Filed May 29, 1894. Serial No. 512,932. (No model.)

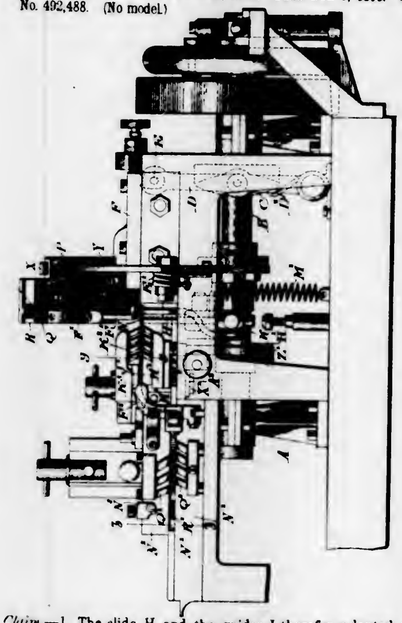


*Claim.*—1. In a fence machine, the combination with a suitable receiving drum or reel, and direction-rolls for guiding the finished fence thereto, of twisting-devices having twisting-wheels comprising centrally fixed cores provided with radial slots or kerfs, and rotatable members or rings mounted upon the peripheries of said cores and having corresponding radial slots to register with the slots or kerfs in the cores, wire-spools carried by the rotatable members or rings of the twisting-wheels, wire-guides, and operating mechanism for driving the twisting-devices, substantially as specified.

2. In a fence machine, the combination with a receiving drum or reel and means for operating the same, and direction rolls for guiding the finished fence thereto, of twisting-devices comprising standards provided at their upper ends with slots, cores fixed to the standards and provided with corresponding radial slots or kerfs, rings rotatably mounted upon the peripheries of the cores and provided with radial slots to register with the slots or kerfs in the cores, radial arms connected to and carried by the rotary rings, wire-spools mounted upon the radial arms, means for adjusting the tension of said spools, a power-shaft operatively connected with the said rings, and means for operating the power-shaft, substantially as specified.



527,371. MACHINE FOR DRESSING TYPE. GEORGE REHFUSS, JOHN G. REHFUSS, and MARTIN O. REHFUSS, Philadelphia, Pa., assignors to William W. Farmer, New York, N. Y. Filed Dec. 1, 1893. Serial No. 492,488. (No model.)



*Claim.*—1. The slide H and the guides J therefor, adapted to form the recess N at the top of said parts, in combination with the arm L, which is connected with said slide, the operating cam M on the shaft B, the spring $M^x$ attached to said slide, and a type-feeding chute which is adapted to communicate with said recess, substantially as described.

2. In a machine for dressing type, the adjustable plates Q having a flange R at one side thereof forming the channel S, and the jet breaker T guided between said plates and having the shoulder U and upper edge $G^3$ projecting into said channel, said parts being combined substantially as described.

3. The adjustable plates Q with a flange R at one side forming the channel S, the jet breaker T guided between said plates and having the shoulder U projecting into said channel, mechanism for imparting a reciprocating motion to said breaker, and an arm entering said channel, and bearing against a type therein, said parts being combined substantially as described.

4. The adjustable plates Q with a flange R having an opening in its side and forming the channel S, the jet breaker T guided between said plates and having the shoulder U thereon opposite said opening in said flange, a reciprocating slide with a cam thereon engaging said breaker, and a spring bearing against said breaker, said parts being combined substantially as described.

5. In a machine for dressing type, a type feeding chute consisting of two plates with a flange on one side forming a channel, one of said plates having a rib partly occupying said channel, and means for securing said chute in an inclined position on the outer side of said machine, said parts being combined substantially as described.

6. In a machine for dressing type, a pusher having an angular plate facing its front end, an adjusting screw secured to the top limb of said plate, and a gage bar between said top limb and said pusher, said parts being combined substantially as described.

7. A type feeding chute having a channel, a pivoted arm having a limb entering said channel, a spring bearing against said limb, a roller on the other limb of said arm, a shaft with the cam Z' thereon, and a curved cam H' on cam Z' said parts being combined substantially as described.

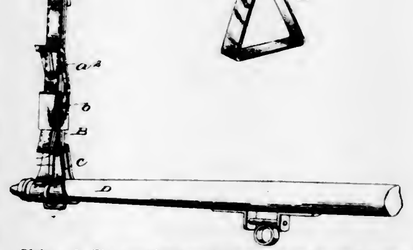
8. The operating cam $U^x$ and the slide X carrying the same, in combination with the lever Y, which is connected with said slide, the arm A' pivoted to said lever, the yoke B' on said arm, the driving shaft B, the cam D' on said shaft, the roller C' on the arm A', and a spring bearing against said lever, said yoke freely encircling said shaft, substantially as described.

9. In a type dressing machine, the block $K^3$, the curved spring L' secured thereto, a sustaining block secured to the lower end of the said spring, a stationary block and a spring secured thereto and bearing against said sustaining block, said parts being combined substantially as described.

10. In a type dressing machine, a frame with the bed J', the pusher U' below the said bed, the channel M', and the channel P' continuous thereof, the table Y' on said frame, the swinging arm X' with bearings on said table, the oscillating block W' mounted on said arm and having the pin V' fitted therein, a shaft on said frame and the cam Z' on said shaft, said parts being combined substantially as described.

11. In a type dressing machine, two sets of beds and dressers having between them the channel M', said beds and dressers being adapted to turn the type, in combination with the bent spring L', which forms one side of said channel, the pivoted sustaining block S' on the frame, engaging said spring, and the spring T' on the frame bearing against said block S', substantially as described.

527,372. NECK-YOKE ATTACHMENT. HENRY T. RICHMOND, Malvern, Iowa. Filed Apr. 4, 1894. Serial No. 506,305. (No model.)



*Claim.*—1. The combination of a breast strap having a loop *a*, at its upper end, a bearing loop or surface *a'* of leather upon the inner side of the loop *a*, and having greater width than the latter, an end-piece B carried by said breast strap and carrying a loop *b*, which receives the free end of the breast strap, a metal strap *b'* encompassing the loop *b*, and a neck-yoke carrier C swiveled to the end-piece B and having its bottom portion slotted as at *c*, the neck-yoke provided with a staple projecting through the slot *c*, and a metal strap *c'* encompassing the carrier C and passing through the staple, as and for the purpose specified.

2. The combination with the neck-yoke carrier C of a metal strap of less width than the carrier and encompassing the same, said carrier being provided at its bottom portion with a slot *c*, a neck-yoke provided with a staple passing through said slot, said strap passing through said staple and a connecting piece swiveled to the upper portion of the carrier and adapted to be connected with a breast-piece, as and for the purpose specified.

527,373. NECK-YOKE CENTER. HENRY T. RICHMOND, Malvern, Iowa. Filed Apr. 21, 1894. Serial No. 508,480. (No model.)

*Claim.*—1. The combination of the loop A, consisting of a sheet metal band *a*, and a leather strap *a'* lining the inner surface of the

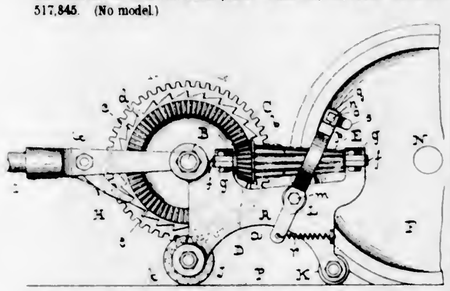
band *a*, the loop B, consisting of a sheet metal strap *b*, and a leather strap *b'* lining the inner surface of said strap *b*, the terminal metal portions of the loops being arranged to alternate with the leather portions thereof, a bolt *c*, passing through the loops and swiveling the same together, and a nut *c'* carried by said bolt, as and for the purpose specified.



2. The combination of the loop A consisting of a sheet metal band *a*, and a leather strap *a'* lining the inner surface of the band *a*, the loop B consisting of a sheet metal strap *b*, and a leather strap *b'* lining said strap *b*, on its inner surface, the terminal metal portions of the loops being arranged to alternate with the leather portions thereof, a bolt *c*, passing through the loops and swiveling the same together, a nut *c'* carried by said bolt; the neck-yoke and a set screw carried thereby, said loop A having a slot *d*, receiving said set screw, all as and for the purpose specified.

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**527,374.** MACHINE FOR MOVING RAILWAY-CARS. EDUARD W. RINGROSE, Baltimore, Md., assignor of one-half to Dashiell Bayne and Charles E. Baldwin, same place. Filed July 18, 1894. Serial No. 517,845. (No model.)

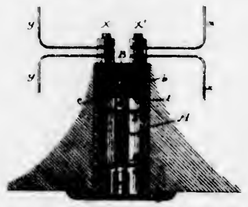


*Claim.*—1. In an apparatus for moving cars, a pair of tapered corrugated rollers between which a wheel of the car is gripped, and suitable gearing for effecting the revolution of the said rollers, substantially as specified.

2. In an apparatus for moving cars, a pair of tapered corrugated rollers arranged so as to grip the wheel of the car, devices to effect their revolution, and means whereby the apparatus is forced or drawn forward and kept in contact with the said car wheel, substantially as specified.

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**527,375.** THERMOSTAT. LEWIS G. ROWAND, Camden, N. J., assignor to the Universal Fire Alarm Company, same place. Filed June 5, 1893. Serial No. 476,628. (No model.)



*Claim.*—1. The combination in a thermostat of the cylindrical casing, a block B at one end of said casing, binding posts and contact points carried by said block, the centrally located rod G extending through said block, a nut H secured to one end of said rod and normally extending through the opening of the casing, a disk I secured to the nut on the outside of the casing, a contact plate *k* carried by the rod and a spring tending to force said contact plate into contact with the contact points of the line wires, substantially as specified.

2. The combination in a thermostat, of the casing, a block at one end thereof having a rectangular opening and provided with contact points, a rod having an inner rectangular portion adapted to said opening in the block, a nut screwed on the outer end of said rod and normally projecting through an opening in the outer end of the casing, a disk secured to said rod by fusible solder and normally bearing upon the outer end of the casing, a contact plate carried by the rod and a spring tending to force the plate toward the contact points, substantially as specified.

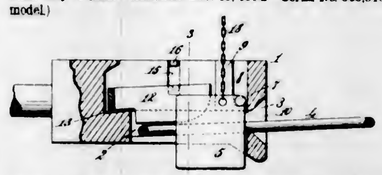
3. In a thermostat having contact points, a removable fusion plate having openings, a nut to which said plate is attached by a fusible solder, a spring pressed rod carrying said nut, a contact plate carried by said rod, and a key adapted to engage with the openings in said fusion plate, substantially as specified.

4. In a thermostat having contact points, a spring pressed rod, a contact plate carried thereby, a removable nut attached to said rod, said nut having a slotted end and a fusion plate attached to said nut, substantially as specified.

5. The within described wiring system for electric thermostats, the same comprising a closed and normally energized main line circuit connected to one of the terminals of the thermostat, and a closed and normally unenergized house line circuit connected to the other terminal of the thermostat, whereby the circuit closing devices of said thermostat unite the closed main and house circuits and cause the energizing of the latter by the former, substantially as specified.

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**527,376.** CAR-COUPLING. HENRY SCHAEFFER, Durango, Colo. Filed May 4, 1893. Renewed Mar. 13, 1894. Serial No. 503,510. (No model.)



*Claim.*—1. In a car-coupling, the combination with a draw-head having a longitudinal chamber for the link and a vertical channel intersecting said chamber longitudinally of a coupling-pin having a trunnion at its angle lying in vertical slots at or near the front of the vertical channel, and a link-holder having two parallel members which lie next the faces of the vertical channel and extend above and partly within the link-chamber, substantially as described.

2. In a car-coupling, the combination with a draw-head having a chamber to receive the link and a vertical channel cut from a point near the front of the draw-head to the rear end of the link-chamber, of a coupling-pin of greater length and width than thickness provided at its upper, front corner with a trunnion the laterally projecting ends of which lie in vertical slots above the front end of the link-chamber, and a link-holder of U-shape its closed end lying above the rear end of the chamber for the link, its parallel members lying adjacent to the faces of the vertical channel extending downward into the link-chamber, their lower edges being rounded at and near the ends, substantially as described.

3. In a car-coupler, the combination with the draw-head of a link-holder having two parallel members which are arranged in position to rest upon the entering end of the link, said members being curved upon the forward and lower edges and provided with laterally extending trunnions lying in vertical slots in the draw-head above the link, substantially as described.

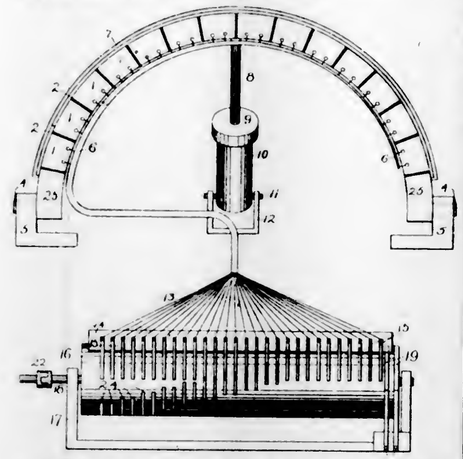
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**527,377.** APPARATUS FOR MOUNTING AND OPERATING THERMOPILES. MELVIN L. SEVERY, Boston, assignor of one-half to Francis Doane, Norwood, Mass. Filed Feb. 16, 1894. Serial No. 500,385. (No model.)

*Claim.*—1. A series of thermo-piles insulated from one another and arranged side by side upon a semi circular frame mounted on a line running substantially east and west; a series of brushes or other contact points arranged in pairs and insulated from each other; electrical connection between said pairs of brushes and the terminals of each pile; a commutator moving synchronously with the apparent diurnal movement of the sun; a series of contact points on said commutator arranged in pairs and each pair successively making contact with the corresponding pair of brushes, and electrical connection between the contact points on said commutator and the point where the current is to be utilized, substantially as set forth.

2. A series of thermo piles insulated from one another and arranged side by side upon a semi-circular frame mounted on a line running substantially east and west; a series of brushes or other contact points arranged in pairs and insulated from each other; electrical connection between said pairs of brushes and the terminals of each pile; a commutator moving synchronously with the apparent diurnal movement of the sun; a series of contact points on said commutator arranged in pairs and each pair successively making contact with the corresponding pair of brushes, and electrical connection between the contact points on said commutator and the point where the current is to be utilized, and a clock keeping solar time and moving said commutator, substantially as set forth.



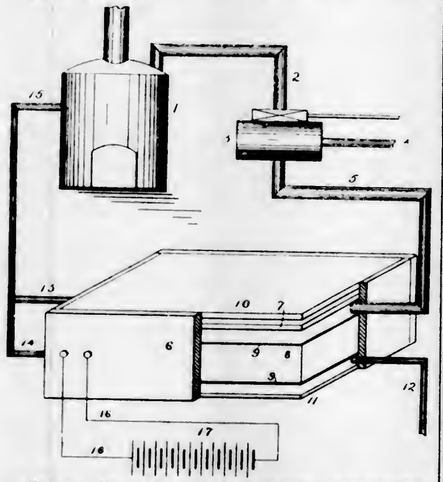


3. The combination, substantially as set forth, of a semi-circular frame supported in a plane extending substantially east and west at an angle to the plane of the horizon and capable of movement whereby said angle may be varied; mechanism for effecting this movement of the frame, and a series of thermo-piles arranged side by side upon the periphery of the frame.

4. The combination, substantially as set forth, of the frame 3; the trunnions 4 on each end of the same; the vertical supports 5; the thermo piles 1, 1; the glass jacket 7; the threaded rod 8 pivoted to the side of the frame; the nut 9 on the rod 8; and the cylinder 10 pivoted at 11 to the support 12.

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**527,378.** APPARATUS FOR UTILIZING STEAM FOR HEATING THERMOPILES. MELVIN L. SEVERY, Boston, assignor of one-half to Francis Doane, Norwood, Mass. Filed Feb. 16, 1894. Serial No. 500,386. (No model.)

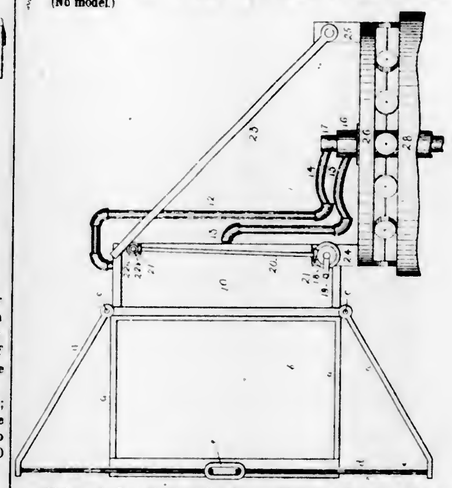


*Claim.*—1. The combination of a thermo-pile, a case containing the same having chambers or spaces extending across the opposite poles of the pile, a steam boiler, a feed water pipe 12 connected with one of the chambers, a pipe 14 also connected with said chamber and with the boiler, a steam engine, and a pipe 5 connected with the exhaust port of the engine and with the other chamber, whereby the exhaust steam may be utilized to generate a current of electricity in said pile and at the same time heat the feed water for the boiler, substantially as shown and described.

2. The combination, substantially as set forth, of a thermo-pile; a case containing the same; a water proof and heat conducting sheathing on the faces of said pile; spaces between the faces of said pile and the case; a pipe for conveying exhaust steam to one of these spaces; a pipe affording an outlet from said space; a pipe for conveying water or other cooling agent to the other space, and a pipe for discharging said cooling agent.

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**527,379.** APPARATUS FOR GENERATING ELECTRICITY BY SOLAR HEAT. MELVIN L. SEVERY, Boston, assignor of one-half to Francis Doane, Norwood, Mass. Filed Feb. 16, 1894. Serial No. 500,387. (No model.)



*Claim.*—1. In a thermo-pile, the combination of a plate of cast iron or other suitable material bent in two places, whereby two parts are formed on different planes; a similar plate having its upper end superimposed above the lower end of the first mentioned plate; a filling of some metal which is dissimilar to the metal composing said bent plates and occupying the space between said plates; insulating material placed between said plates, and means for subjecting the opposite sides of the elements thus formed to a difference of temperature, substantially as shown and described.

2. In a thermo-pile, the combination of a plate of cast iron or other suitable material bent at two points to form two parts lying in different planes, a similar plate having its upper end superimposed above the lower end of the first-mentioned plate, a filling of some material which is dissimilar to that of the bent plates, and insulating material between the plates, substantially as described.

3. A thermo-pile composed of two plates or layers of dissimilar metals intimately in contact with each other divided into insulated segments of pairs and the segments connected electrically and so that they will lie in substantially the same plane, as set forth.

4. The combination, substantially as described, of a thermo-electric pile; means for directing the rays of the sun upon the face of the pile, and means for moving said pile and heat directing device in accordance with the apparent diurnal and annual movements of the sun, whereby the face of the pile is constantly maintained opposite the sun.

5. The combination, substantially as described, of a thermo-electric pile, an electric motor operated by said pile, a pump operated by said motor, and means for conveying a cooling agent from the pump to the back of the pile.

6. The combination, substantially as described, of a case containing a thermo-electric pile, in which the side opposite the front face of the pile is composed of glass or of some other material which is transparent to the rays of the sun, but opaque to dark radiated heat; a space between this front of the case and the front of the pile, and means for moving the case in accordance with the apparent diurnal and annual movements of the sun, whereby the face of the pile is constantly maintained opposite to the sun.

7. The combination, substantially as described, of a thermo-electric pile; a case containing the same having its side opposite the face of the pile composed of some material which is transparent to the rays of the sun but opaque to dark radiated heat; a space between said front wall and the face of the pile; mechanism for moving said pile in accordance with the apparent annual and diurnal movements of the sun; a space between the back wall of the case and the back of the pile; two pipes communicating at one end with this space and at the other with a source of water under pressure, whereby a current of water is caused to flow through said last mentioned space.

8. The combination, substantially as described, of a device heated by exposure to the sun's rays; a turn-table rotating horizontally upon a suitable support, a standard upon said turn-table supporting the device which is to be thus rotated; means for rotating this turn-table; a beveled gear wheel supported vertically upon said standard; means for turning said wheel; a rod carrying at one end a beveled gear at right angles to the rod and gearing with the beveled gear on the standard, and at the other end a beveled gear gearing with a beveled gear vertically supported upon a shaft; a pinion on this shaft, and an inclined rack gearing with this pinion and pivoted at one end to the turn-table opposite the standard supporting the beveled gear.

9. The combination of a case; a rotating turn-table supporting the same; two concentric hollow shafts, on the outer one of which the turn-table rotates, and the pipes connected to the case, and each connected respectively to one of the hollow shafts, and flexible connections between these pipes and the hollow shafts.

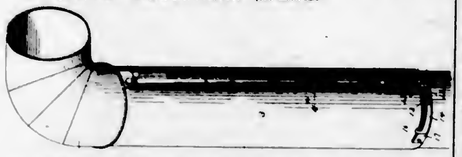
10. The combination, substantially as described, of a case containing a device to be heated by the rays of the sun; a four-sided frame having its sides set at oblique angles to the front face of the case and pivoted to the case; reflectors in the sides of this frame, and means for varying the angle of inclination of the sides of the frame.

11. A thermo-electric pile operated by solar rays and means for constantly presenting the parts thereof to be heated toward the sun from sunrise to sunset at all seasons, substantially as shown and described.

12. The combination, with a thermopile, of means for directing the rays of the sun upon one face of said pile, and means for preventing radiation of heat from said face, substantially as shown and described.

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**527,380.** STOVEPIPE-JOINT. MARTIN STEHLE, Perry, Mo. Filed May 29, 1894. Serial No. 512,919. (No model.)



*Claim.*—1. A pipe joint consisting of a section of sheet metal bent into a cylindrical form and having its contiguous edges overlapping, whereby it may be adjusted to suit the size of the pipe with which it is used, a perforated plate on one edge, a ring pivoted to the remaining edge, and a lever fulcrumed to the ring and provided at one end with a reduced or pointed portion and at the remaining end with a hook, the first end being adapted to pass into engagement with the perforations of said plate while the hook of the remaining end is adapted to take under the plate and to hold the lever in place, substantially as described.

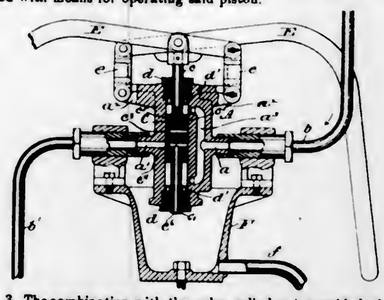
2. A pipe joint consisting of a sheet of metal bent into a cylindrical form and having its contiguous edges overlapping, a rivet at one end of said edges whereby the edges at said end are held in a fixed position, a strengthening strip riveted to the outer edge of the sheet of metal, a U-shaped strip rigidly secured to the lower end of said strengthening strip and projecting inwardly so as to embrace the two edges of the sheet of metal and to hold them in position, and a clasp for securing the said edges together, substantially as described.

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**527,381.** VALVE. GEORGE W. VAN TINE, Bayonne, N. J. Filed Oct. 25, 1893. Serial No. 489,126. (No model.)

*Claim.*—1. A valve, for hydraulic presses and the like, consisting of a valve cylinder, as A, provided with inlet and outlet ports, and a piston fitted to slide in the chamber of said cylinder and having transverse inlet and outlet passages, one or more longitudinal inlet passages communicating with the said transverse inlet passage, and a longitudinal outlet passage communicating with said transverse outlet passage, the wall of the said valve cylinder being provided with a passage communicating with the chamber of said cylinder, at the opposite ends of the said piston, and with the said inlet port, combined with means for operating said piston.

2. A valve, for hydraulic presses and the like, consisting of a valve cylinder, as A, provided with inlet and outlet ports, and a piston fitted to slide in the chamber of said cylinder and having transverse inlet and outlet passages, one or more longitudinal inlet passages communicating with the said transverse inlet passage, one or more longitudinal passages extending entirely through said piston, and a longitudinal outlet passage communicating with said transverse outlet passage, the wall of the said valve cylinder being provided with a passage communicating with the chamber of said cylinder, at the opposite ends of the said piston, and with the said inlet port, combined with means for operating said piston.

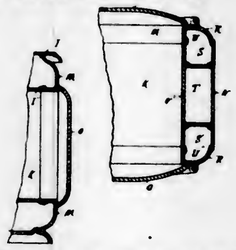


3. The combination with the valve cylinder A provided with the arms or projections $a^3$, and with inlet and outlet ports, of the piston C fitted to slide in the chamber of said cylinder and having transverse inlet and outlet passages, to communicate with the inlet and outlet ports of said cylinder, and with longitudinal inlet and outlet passages communicating with said transverse inlet and outlet passages, the operating hand levers E connected with the stem of said piston and having depending portions to be grasped by the operator, and the links e connecting the fulcrums of said levers to the said arms or projections $a^3$.

4. The combination with the valve cylinder provided with inlet and outlet ports and with a passage communicating with said inlet port and with the opposite ends of the chamber of said cylinder, of a piston fitted to slide in said cylinder and provided with the transverse passages $c^2$ and $c^4$, a longitudinal passage $c^3$ communicating with said transverse passage $c^4$ and one or more longitudinal passages $c^5$ communicating with said transverse passage $c^2$, the hand levers E connected to the piston of said valve and having depending portions to be grasped by the operators, and links connecting the fulcrum portions of said levers to stationary supports or projections formed on said valve cylinder.

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**527,382.** COOKING-STOVE. STANHOPE BOAL, Piqua, Ohio. Filed Apr. 25, 1894. Serial No. 508,975. (No model.)



*Claim.*—1. The combination with a cook stove having the usual draft flues and oven, and provided with two plates forming a flue at the rear of the oven, of a curved side plate M joined to the aforesaid flue plates and forming an extension of the rear flue, substantially as described.

2. The combination with a cook-stove having an oven and draft flues extending about said oven and up at the rear thereof at each side, of curved plates M forming extensions of the said rear flues, substantially as described.

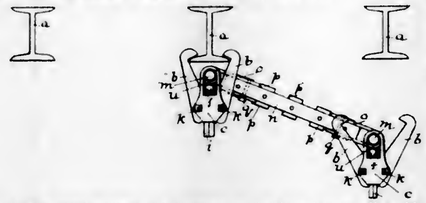
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**527,383.** HANGER APPARATUS FOR USE IN LAYING FIRE-PROOF FLOORING. CONRAD CARLSON, Brooklyn, N. Y. Filed Jan. 15 1894. Serial No. 496,863. (No model.)

*Claim.*—1. The combination with hangers on the floor beams, of platform supporting poles mounted on the hangers, and a platform supported on said poles and rotatable from one space to another, on one of the supporting poles substantially as described.



2. The combination with hangers on the floor beams of platform supporting poles mounted on the hangers, and an extensible platform supported on said poles and rotatable from one space to another on one of the supporting poles substantially as described.



3. The combination with hangers on the floor beams adjustable lengthwise along the beams, of platforms supporting poles on the hangers, and a platform supported on said poles and rotatable from one space to another on one of the supporting poles substantially as described.

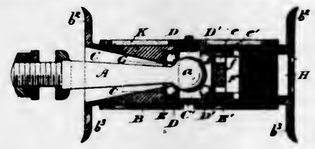
4. The combination in a platform supporting hanger, of the hook and pole holding block, and the hook locking and unlocking screw, said screw fitted in the block between the hooks and having the reversed cones, and the hooks having the points coacting with the cones respectively substantially as described.

5. The combination in a platform supporting hanger, of the hooks and pole supporting block, the screw having the reversed cones and the hooks pivoted in the block, said block made in two parts and clamped together on the screw between the cones and also clamped on the hooks substantially as described.

6. The combination of the hanger block having the pole receiving eye and pole bearing, the hooks and adjusting screw, said eye pole bearing, and screw adapted to clamp the pole and secure the hook in position substantially as described.

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**527,384.** BICYCLE-PEDAL. CHARLES H. DAVIDS, Brooklyn, N. Y. Filed Nov. 16, 1893. Serial No. 491,092. (No model.)

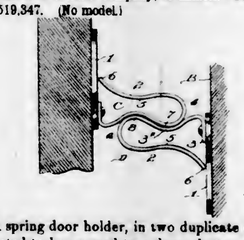


*Claim.*—1. In combination, a crank spindle provided with a globular head, a pedal having a tubular portion provided with a taper bore throughout a portion of the length of the tubular portion and with a regular bore throughout the remainder of the tubular portion, ball bearing boxes seated within the bore in position to receive opposite sides of the globular spindle head between them, and ball bearings inserted between the bearing boxes and the globular spindle head, substantially as set forth

2. The combination with a crank spindle provided with a globular head, of a pedal, comprising a central tubular portion and skeleton wing portion extending in opposite directions from the tubular portion, the tubular portion being provided with a bore regular throughout a portion of its length and conical throughout a portion of its length, the regular portion being provided with an internal screw thread, bearing boxes fitted to the interior of the bore, rubbers fitted to the wings and clamping plates to hold the rubbers in position, substantially as set forth.

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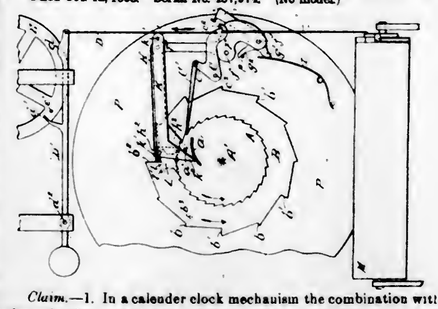
**527,385.** DOOR-CHECK. PLATO G. EMERY, Chicago, Ill., assignor to the Adams & Westlake Company, of Illinois. Filed Aug. 3, 1894. Serial No. 519,347. (No model.)



*Claim.*—A spring door holder, in two duplicate or similar parts, one being adapted to be secured to a door, shutter or the like, and the other to a wall, washboard or other fixed part, each consisting of a bracket-plate having attached thereto a spring with curved surfaces and a free end, substantially as described, the two spring parts being adapted, as the door, shutter, or the like, is thrown open to ride upon, spring over and interlock with each other by reason of their elasticity, and to be detached, as set forth.

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**527,386.** CALENDAR-CLOCK. CHARLES W. FEISHTINGER, Fritztown, assignor of one-half to Solomon Shearer, Lower Heidelberg, Pa. Filed Oct. 12, 1893. Serial No. 487,974. (No model.)



*Claim.*—1. In a calender clock mechanism the combination with independently rotatable day of the month, month of the year, and leap year wheels, of mechanism substantially as described for automatically and jointly operating said wheels while permitting independent setting of the same, substantially as set forth.

2. In a calendar clock mechanism independently adjustable month of the year and day of the month wheels in combination with mechanism for moving said day of the month wheel every day and a push lever H and lock arm K arranged to co operate with said mechanism in moving both of said wheels, substantially as set forth.

3. In a calendar clock mechanism independently adjustable leap year, month of the year, and day of the month wheels in combination with mechanism for moving said day of the month wheel every day and a push lever H and lock arm K arranged to co-operate with said mechanism in moving all of the said wheels substantially as set forth.

4. In a calendar clock mechanism the combination with the date wheel operating mechanism of the push lever H for the month of the year wheel and the rock arm F with trigger G arranged to engage the date wheel mechanism, substantially as set forth.

5. In a calendar clock mechanism independently adjustable month and day of the month wheel in combination with mechanism for moving said day of the month wheel each day, a push lever H, locking arm K engaging a shoulder on the pushing lever, rock arm F connected to the pushing lever, a spring I normally pressing said shoulder against the locking arm, and means for automatically releasing said pressure to permit the dropping of the push lever out of engagement with the locking arm, substantially as set forth.

6. In a calendar clock mechanism the combination with the month and day of the month wheels, a pushing lever H and locking arm K of an independently adjustable leap year wheel L having a leap-year projection $l$ on its periphery arranged to control the action of said push lever substantially as set forth.

7. In a calendar clock mechanism the day of the month wheel with cam $a$ and projection $a'$, the month of the year wheel with projection $b^3$, and the quartered leap year wheel with leap year extension, in combination with the push lever H having toe $h'$, shoulder $h^3$, and heel piece $h^3$, the locking arm K with stop $k'$ and heel $k^3$, and mechanism for moving the day of the month wheel and push lever, all substantially as and for the purpose set forth.

8. In a calendar clock mechanism the combination with the rock arm F, push lever H and locking arm K of the day-of-the month wheel lever C having a projection engaging the rock arm, and connections between said day of the month wheel lever and the clock mechanism comprising a cam wheel E arranged to positively operate said lever and rock arm daily, substantially as set forth.

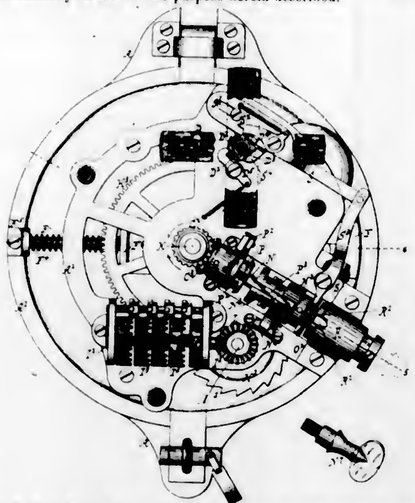
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**527,387.** FARE-REGISTER. JOHN W. FOWLER, Northport, N. Y., and WILLIAM J. ENGLAND, El-Mora, and ASTON E. NIELSEN, Elizabeth, N. J.; said Nielsen assignor to Alfred Atkinson, Brooklyn, N. Y. Filed Apr. 6, 1894. Serial No. 506,581. (No model.)

*Claim.*—1. In a fare-register, the combination of actuating-mechanism comprising a main-slide with the locking stud, setting-mechanism comprising a longitudinally-reciprocating rotary shaft with the fixed grooved collar, and a locking device comprising the rock-shaft

with a fixed bifurcated arm engaging said grooved collar of the setting shaft, and a fixed hasp-arm adapted to engage said locking-stud of the actuating slide, substantially as and for the purpose herein described.

2. In a fare-register, the combination of actuating-mechanism comprising a main-slide provided with the locking-stud, setting-mechanism comprising the longitudinally-reciprocating shaft, the fixed grooved collar thereon, the trip-indicator lever engaging said collar and the reversing-slide connected to said lever, and a locking device comprising the rock-shaft with a fixed bifurcated arm also engaging said collar and a fixed hasp arm adapted to engage said locking-spur, substantially as and for the purpose herein described.



3. In a fare-register, the combination with the trip-hand, of a setting-mechanism comprising the trip-hand-pinion on the main-shaft, adapted to turn freely in one direction, a setting-pinion meshing with said trip-hand-pinion, a circular grooved head united axially to the hub of said setting-pinion, a zero-stop at the inner edge and a recess at the outer edge of the grooved head, a longitudinally-reciprocating rotary setting shaft having one of its bearings in the united pinion and head, and a spring-catch on the setting-shaft, parallel thereto, adapted to climb and interlock with the grooved head in the inward longitudinal movement of the setting shaft and to engage said recess of the head in the rotary movement of the shaft, thereby causing the grooved head and its connections to share said rotary movement, substantially as and for the purpose herein described.

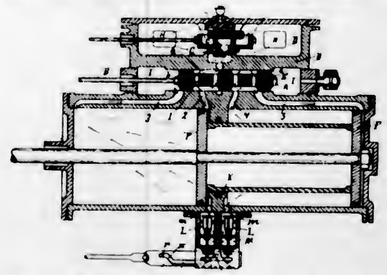
4. In a fare-register, the combination with the main-shaft, of a trip-hand-pinion thereon adapted to turn freely in one direction, a setting-pinion meshing with said trip-hand-pinion, a circular grooved head united axially to the hub of said setting-pinion, a zero-stop at the inner edge and a recess at the outer edge of the grooved head, a bearing for said united pinion and head, a longitudinally-reciprocating rotary setting shaft having its bearing, at the inner end, in the united pinion and head, a bearing for the outer end of the setting-shaft, a fixed block on the setting shaft adjacent to the grooved head, a spring-catch pivoted to said block parallel to the setting-shaft and to project inwardly from the block, for co-acting with the grooved head and its said recess, a fixed ratchet on the setting shaft, a pawl engaging the ratchet, a fixed collar on the setting-shaft with a notch in alignment with said catch, at its outer edge, and a spur on the shaft-bearing, adapted to engage said notch of the collar, all substantially as and for the purpose herein described.

5. In a fare-register, the combination with the main-shaft, of a trip-hand-pinion thereon adapted to turn freely in one direction, a setting-pinion meshing with said trip-hand-pinion, a circular grooved head united axially to the hub of the setting-pinion, a zero-stop at the inner edge and a recess at the outer edge of the grooved head, a bearing for said united pinion and head, a longitudinally-reciprocating rotary setting shaft having its bearing at the inner end in the united pinion and head, a bearing for the outer end of the setting-shaft, a shaft-retracting-spring in said bearing, a fixed block on the setting-shaft adjacent to the grooved head, a spring-catch pivoted to said block parallel to the setting-shaft and to project inwardly from the block, a fixed ratchet wheel on the setting-shaft, a pawl engaging the ratchet wheel, a fixed grooved collar on the setting-shaft with a notch in alignment with said catch, at its outer edge, a trip-indicator-lever engaging the grooved collar, a reversing-slide connected to said lever, and a spur on the shaft-bearing adapted to engage said notch of the collar, all substantially as and for the purpose herein described.

6. In a fare-register, the combination with a longitudinally-reciprocating setting-shaft and a fixed grooved collar thereon, of a rotary trip-indicator-plate parallel to the register dial-plate, a rotary indicator-shaft, a fixed ratchet wheel thereon, a feed-pawl and stop-pawl engaging said ratchet wheel, a fixed polygonal head on said indicator-shaft, a reversing-slide carrying the feed-pawl, a steadying-lug on said slide adapted to engage either of the sides of said polygonal head, and an indicator-lever engaging said grooved collar at one end and with the reversing-slide connected to the other end thereof, substantially as and for the purpose herein described.

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**527,388. STEAM-CHEST FOR COMPOUND ENGINES.** EDWARD W. HARDEN, Cincinnati, Ohio, assignor to Fredric Candee Weir, same place. Filed May 12, 1894. Serial No. 511,048. (No model.)



*Claim.*—1. In a compound engine having a duplex cylinder and piston, and a live steam port and an exhaust port in each cylinder, the combination with a live steam chest and an auxiliary valve located therein, of a separate exhaust chamber and a duplex skeleton main valve located in the exhaust chamber and provided with a central and two outside cut-off sections and having live steam passages between the cut-off sections communicating with one or more ports in the live steam chest, substantially as described.

2. In a compound engine employing a duplex cylinder and piston, and a live steam port and an exhaust port for each piston, the skeleton main valve located in the exhaust chamber provided with live steam passages extending through the valve and three or more cut-off sections formed in the seat of said valve and adapted and arranged to compound and exhaust on either side of its outside cut-off sections, substantially as specified.

3. In a compound engine provided with duplex cylinders and pistons and duplex supply and exhaust ports for each cylinder, the combination of an exhaust chamber mounted upon said cylinder, a duplex skeleton main valve located in the exhaust chamber and provided with two or more live steam ports leading through said valve and a central and two outside cut-off sections, a live steam chest mounted upon the exhaust chamber, and an auxiliary valve having a plurality of ports and cut-off sections for covering and uncovering a plurality of ports in the valve seat communicating with the through passages of the duplex skeleton main valve, substantially as described.

4. The duplex skeleton main valve provided with two or more live steam passages and three cut-off sections, in combination with an auxiliary valve and its seat having a central port E which is covered and uncovered by the central cut-off section of the main valve, substantially as specified.

5. The skeleton main valve provided with cut-off sections $b$, $b'$, $b''$, and two or more live steam passages through it between said sections, the steam passage l pierced through the central section and connecting with the supply port E, substantially as specified.

6. In a compound engine having duplex pistons and cylinders and a live steam and an exhaust passage for each cylinder, the combination with the live steam chest of the exhaust steam chest and a duplex skeleton main valve located in the exhaust chest and having a central cut-off section and two outside cut-off sections for covering and uncovering the steam ports and two or more live steam passages leading through the valve between the cut off sections, substantially as described.

7. In combination with a compounding engine the skeleton main valve having two or more live steam passages between the cut-off sections located in the exhaust chamber, in combination with a live steam chest and auxiliary valve and its seat provided with a common supply port E adapted to be closed by the central cut-off section of the main valve, simultaneously with the closing of the outside cylinder ports by the end cut-off, substantially as specified.



8. In a compound engine the combination with the opposite cylinders of the converting valves provided with ports connecting said cylinders with each other through the valve chamber and mechanism operating said valves simultaneously whereby the engine is converted from a simple to a compound and vice versa, substantially as specified.

9. In a compound engine in combination with cylinders and pistons P, P', converting valves and valve chambers provided with ports and passages connecting said piston cylinders with each other through the valve chambers and the duplex skeleton main valve with cylinder ports for directing the steam simultaneously onto the face of pistons P, P', substantially as specified.

10. In a compound engine in combination with cylinders and pistons P, P', converting valves and valve chambers provided with ports and passages connecting said piston cylinders with each other through the valve chambers and the main valve and cylinder ports for directing the steam simultaneously on to the face of pistons, substantially as specified.

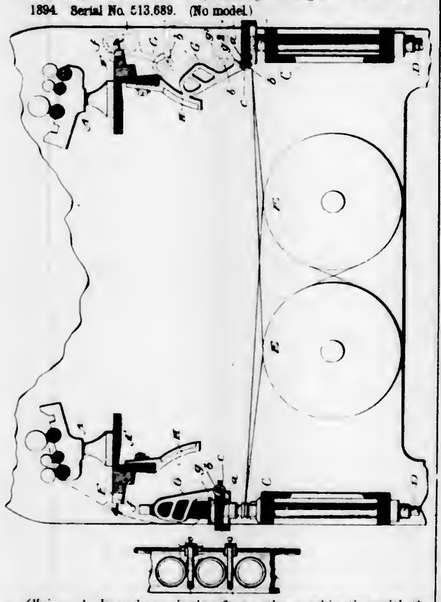
11. In combination with the converting valves L L connected to the cylinder of a compound engine, the cam lever N provided with one or more inclined grooves n' adapted to operate a pin $p$ connected to a yoke which lifts the valve stems, whereby said valves are opened and closed simultaneously with the movement of said cam lever, substantially as described.

12. In a compound engine employing an auxiliary valve, a duplex cylinder and its division ring and pistons, converting valves P, P' applied to passages in the cylinder each side of the ring and their lever N for operating the converting valve at the extreme end of its movement, substantially as described.

13. In combination with the converting valves L, L, of a compound engine, the yoke R connected with the valve stems and operated by the cam lever N provided with an inclined slot n' at each end, said slots connected by a parallel slot n and adapted to engage a pin $p$ on the yoke,—whereby said valves are raised or lowered near each end of the movement of the cam lever, substantially as specified.

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**527,389. SEPARATOR MECHANISM FOR RING-SPINNING FRAMES.** ALFRED HITCHON, Accrington, England. Filed June 6, 1894. Serial No. 513,689. (No model.)



*Claim.*—1. In a ring spinning frame, the combination with the ring rail and the separators hinged thereto, of the curved or inclined stop plates H, located in rear of the separators and secured to a stationary part of the frame, substantially as and for the purposes hereinbefore set forth.

2. In a ring spinning frame, the combination of the ring rail, the separator shaft, the separators mounted thereon and provided with front stops $g^4$, and the inclined or curved back stops H, located in rear of the separators and secured to a stationary part of the frame, substantially as and for the purposes hereinbefore set forth.

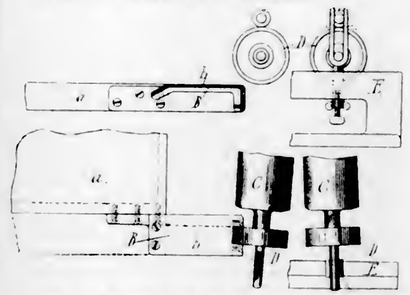
**527,390. NUT-LOCK.** PRESTON T. JOHNSTON, Frankfort, assignor of one-fourth to W. A. Orman, Russellville, Ala. Filed Feb. 23, 1894. Serial No. 501,178. (No model.)



*Claim.*—A locking device for bolt-nuts, consisting of a longitudinal groove formed in the bolt, a passage in the nut, and having at its ends an enlarged notch, and a key adapted to fit into the passage and having two studs fitting one into each of the notches in the passage in the nut, one stud being adapted to prevent the removal of the key and the other to prevent its axial movement and in addition to fit partially in the groove of the bolt, whereby the nut is locked on the bolt, substantially as described.

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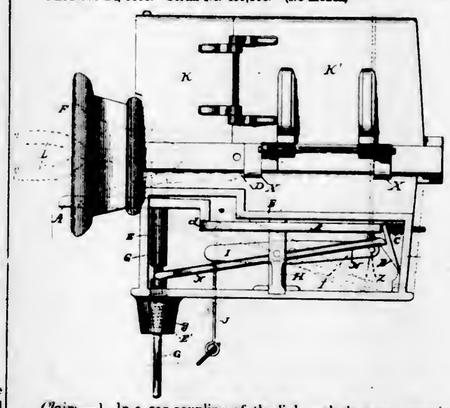
**527,391. INKING APPARATUS FOR PRINTING-PRESSES.** ROBERT MIEHLE, Chicago, Ill., assignor, by mesne assignments, to the Miehle Printing Press and Manufacturing Company, of Illinois. Filed June 11, 1890. Serial No. 355,110. (No model.)



*Claim.*—In a printing press, the combination with angularly arranged distributing rollers provided with frictional disks or collars, of a reciprocating ink-table provided with a frictional bearing surface located adjacent to the end of the table and extending beyond the same; said surface being adapted to engage said disks or collars on the distributing rollers in such manner as to give an initial rotary movement thereto before the ink-table strikes the same, substantially as described.

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**527,392. CAR-COUPLING.** OREN OLMSTEAD, Sutton, Canada. Filed Oct. 24, 1893. Serial No. 489,066. (No model.)



*Claim.*—1. In a car-coupling of the link and pin type, a vertically chambered draw head, a horizontal spring actuated coupling-pin, a spring actuated uncoupling bar, which normally protrudes through said draw head for contact with the draw head of an adjacent car, a spring actuated latch pivotally attached to the opposite end of said uncoupling bar, and a rocker lever engaging at one end with said latch and at the other with said coupling-pin, whereby the latter is made to automatically engage with a link when two draw heads come together.

2. In a car coupler, a spring pushed coupling pin projecting horizontally across the link opening of the draw-bar in combination with a lever for retracting said pin a catch for locking said lever when the pin is retracted and mechanism for automatically releasing said catch when the draw bar of the two cars contact.

3. In a car coupler; a spring-pushed sliding bar having its free end projecting longitudinally in front of the drawbar head, a spring pushed pin projecting transversely across the link opening of said head; a lever pivotally supported on the draw-bar for retracting said pin; a catch for locking said lever adapted to be released by the inward movement of said sliding bar all being combined and arranged to operate substantially as set forth.

4. In a car coupler; the chambered draw-bar head in combination with the spring M projecting from the bottom wall thereof substantially as described.

5. A car coupling having a vertically chambered throat or link opening, a spring actuated coupling-pin operating horizontally through the draw head and across said link opening, a lever for retracting said pin, and means substantially as described for operating said retracting lever from either side of a car, and for automatically releasing said coupling-pin at the moment a draw head shall come in contact with that of an adjacent car.

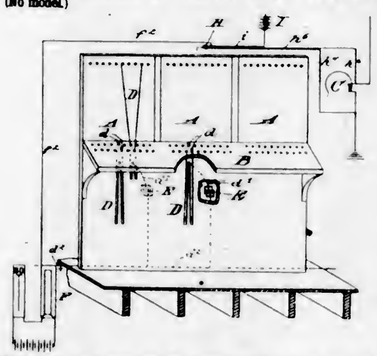
6. In a car coupler; a spring pushed pin projecting into the link opening of the draw-bar, a lever pivotally supported on said draw-bar for retracting said pin, a lever operated from the outer side of the car, for moving said retracting lever a spring catch for locking said retracting lever a spring pushed sliding bar normally holding said spring catch and fitted to release the same when struck by the draw-bar of a companion car all being combined and arranged to operate substantially as described.

7. In a car coupler; the draw-bar in combination with the spring pushed bar, A, the catch, B, operated thereby; the spring pushed coupling pin sliding transversely into said draw-bar the lever, N, for retracting said pin and adapted to be locked by said catch and mechanism for operating said lever.

8. In a car coupler; the chambered draw-bar a box supported thereon a spring pushed coupling pin projecting across the link opening of said bar; a lever for retracting said pin; a spring catch for locking said lever; the spring pushed-bar, A, sliding longitudinally through the head of said draw-bar and operating said catch; the lever, I, for actuating the retracting lever and a connection between said lever, I, and the top or side of the car for actuating the same all being combined and arranged to operate substantially as specified.

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**527,393.** BUSY-TEST FOR MULTIPLE SWITCHBOARDS. ROBERT H. POLK, Savannah, Ga. Filed Apr. 20, 1894. Serial No. 508,357. (No model.)



*Claim.*—1. In a busy-test for multiple switch-boards, a high tension current source, a connecting loop, and a condenser of such capacity that the talking current will not pass through it, interposed in the wire connecting said source and loop, and a test-plug circuit, substantially as and for the purpose specified.

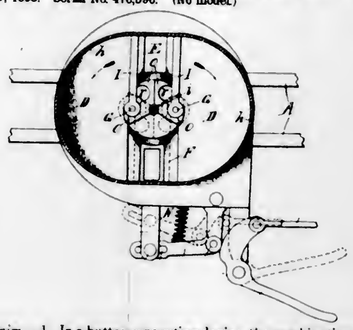
2. In a busy-test for multiple switch-boards, a local battery circuit including the primary of an induction coil and a test-circuit including the secondary of said induction coil, the subscriber's line wire on the switch-board, a condenser through which the talking current cannot pass and an indicating device, for the purposes set forth.

3. In a busy-test for multiple switch-boards, the subscriber's line on the switch-board, a loop adapted to be inserted therein, a high-voltage circuit connected with said loop through a condenser having a high faradic capacity, and through which the talking current cannot pass and an indicator adapted to be operated by the current sent through said condenser, and a switch included in the aforesaid circuit, for the purposes set forth.

4. In a busy-test for multiple switch-boards, the subscribers' lines connected thereto, a loop adapted to connect two of said subscribers' lines, a condenser through which the talking current cannot pass, a wire connecting said condenser with said loop, a wire $d^3$ extending through the switch-board, a wire connecting the condensers to said wire $d^3$ and connected to the secondary of an induction coil, said induction coil, and a local battery in the circuit of the primary thereof, a test-plug containing a switch and connected to an annunciator, a wire connecting the other side of the secondary of the induction coil to said switch and a wire extending from the other side of said switch to earth, for the purposes set forth.

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**527,394.** BUTTON-SEPARATOR. JOSEPH W. HOLMAN, Detroit, Mich., assignor of one-third to Orrin J. Price, same place. Filed Apr. 17, 1893. Serial No. 470,596. (No model.)



*Claim.*—1. In a button separating device, the combination of the receptacle having a bottom provided with opposed openings therethrough, the oppositely pivoted arms located therein to oscillate in the arc of a circle between said openings, and means for actuating said arms simultaneously in opposite directions.

2. The combination of the hopper, the table having two diametrically opposite openings therethrough, the arm pivotally mounted between said openings, the gear-wheel on the journal of said arm, the longitudinally movable rack engaging said gear, and the lever for actuating said rack.

3. The combination of the horizontal table having inclined sides and provided with openings therethrough, the opposed arms pivotally mounted on shafts journaled in said table, said arms being adapted to oscillate in a semi-circle over the face of said table in the direction of the openings therein, the gear wheels on the shafts of said arms, the longitudinally movable rack engaging with said gears, and means for actuating said rack, whereby said arms are simultaneously swung in reciprocal succession in opposite directions.

4. The combination of the hopper and table, said table having openings therethrough, the arms pivotally mounted on said table, the gates pivotally mounted and embracing the pivoted ends of said arms to close the space between the ends and the openings through said table, substantially as specified.

5. The combination of the hopper, the table having openings therein, the arms pivotally mounted to oscillate over the surface of said table between said openings, and the cap having an inclined top, said cap being located over said openings through the table and the pivoted ends of said arms.

6. The combination of the horizontal table having discharge openings therethrough, the shafts passing through said table, the arms mounted thereon to oscillate in the arc of a circle over the face of said table, the gears on said shafts, the longitudinally movable rack engaging therewith, the pivoted elbow engaging said rack, the spring for returning said elbow, and the cam-lever engaging said elbow and having connection with the cutting mechanism, substantially as and for the purpose specified.

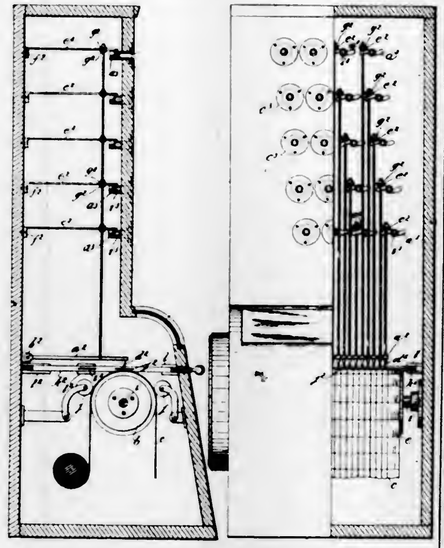
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**527,395.** EMPLOYE'S TIME-RECORDER. JAMIN S. MORSE and DENNITT R. LOVEJOY, New York, N. Y.; said Lovejoy assignor to said Morse. Filed Sept. 16, 1893. Serial No. 485,731. (No model.)

*Claim.*—1. The combination in a stationary time recorder, of the timed record sheet carrying roll, the record sheet carried thereon and having the record scale graduated to the timed roll, a series of impression stamps adapted to act on the record sheet, a series of rotating keys each adapted for actuating an impression stamp individually and means to prevent reverse action of the keys, substantially as described.



2. The combination in a stationary time recorder, of the timed record sheet carrying roll, the record sheet carried thereon and having the record scale graduated to the timed roll, the sheet guiding and controlling rolls, a series of impression stamps adapted to act on the record sheet, a series of rotating keys each adapted for actuating an impression stamp individually and means to prevent reverse action of the keys, substantially as described.



3. The combination in a stationary time recorder, of the timed record sheet carrying roll, the record sheet carried thereon, a series of impression stamps adapted to act on the record sheet, a series of rotating keys adapted for raising a stamp individually means to prevent reverse action of the keys, stamp thrusting and stamp recoiling springs substantially as described.

4. The combination in a stationary time recorder, of the time record sheet carrying roll, the record sheet carried thereon, a series of impression stamps adapted to act on the record sheet means for raising the stamps individually, and stamp thrusting and recoiling springs, said springs consisting of the plates attached at one end to the case, and carrying the stamps at the free ends substantially as described.

5. The combination in a stationary time recorder, of a series of impression stamps each provided with a stamp raising slide having the slot and the shoulder for the studs of the stamp raiser, a rotating stamp raiser a key to actuate said stamp raiser and a spring to actuate the stamp both for making the impression and withdrawing the stamp from the paper substantially as described.

6. The combination in a time recorder, of a series of impression stamps each provided with a stamp raising slide having the slot and the shoulder for the studs of the stamp raiser, a rotating stamp raiser having two studs to raise the stamp twice in a revolution, and a key to actuate said stamp raiser substantially as described.

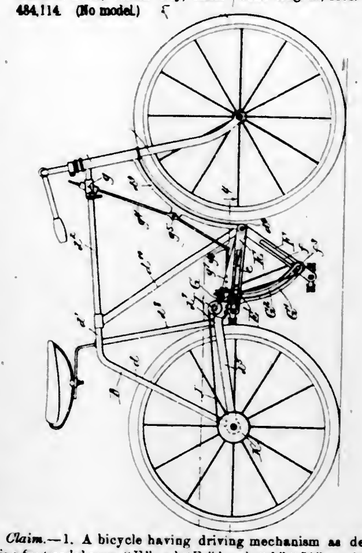
7. The combination in a time recorder, of a series of impression stamps, each provided with a stamp raising slide having the slot and the shoulder for the studs of the stamp raiser, a rotating stamp raiser having two studs to raise the stamp twice in a revolution, a key to actuate the stamp raiser having a retaining notch in one edge, and the retaining flange of the key hole plate to retain the key for the second action substantially as described

8. The combination with the stamp raising slide, of the rotating stamp raiser case having the head provided with the guide way for the slide, the cover for said guide way, said rotating stamp raiser having the studs for raising the slide and the slot for the key, and said key substantially as described

9. The combination in a time recorder, of the timed record sheet carrying roll, the record sheet carried thereon, and having the record scale graduated to the timed roll, a series of impression stamps adapted to act on the record sheet, rotating keys for actuating the impression stamps individually, means to prevent reverse action of the keys, and means for recoil of the stamps clear of the record sheet substantially as described.

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**527,396.** BICYCLE. CHARLES B. WHITAKER, Charlotte, and EDWARD D. LYON, Carson City, Mich. Filed Aug. 26, 1893. Serial No. 484,114. (No model.)



*Claim.*—1. A bicycle having driving mechanism as described; having foot pedal arms "E" and "F;" bands "J" "J';" carriage "G;" mechanism adjustably connected to arms "E" and "F" for deflecting bands "J" "J';" a projection "G" of said carriage, "G" engaging said band deflecting mechanisms of the pedal arms and thereby holding said mechanisms in position on said arms substantially as shown.

2. In a bicycle the combination, of pulleys connected to drive the driving wheel by ratchet mechanism, of flexible bands for intermittently driving said pulleys as shown, of an adjustable carriage carried on ways on the frame of the bicycle, of mechanism for adjusting said carriage at all times when the bicycle is in motion, of rollers pivoted on said carriage, said flexible bands trained over said rollers on said carriage and their ends fixed to said carriage, of oscillating foot pedal arms pivoted to the frame of the bicycle, of mechanism attached to said foot pedals for deflecting said bands between said rollers and their points of fixture of said bands on said carriage.

3. In a bicycle the combination, of oscillating pedal arms pivoted to the frame of the bicycle, of flexible bands enwrapping pulleys on the driving wheel and intermittently driving the same, of mechanism connected to the pedal arms for deflecting said bands in driving the same, which mechanism is adjustable in the radial distance of said pedal arms, of a carriage connected to the frame of the bicycle and connected by suitable mechanism to said band deflecting mechanism on the pedal arms and constructed to be adjustable in a manner that its adjustment fixes the adjustment of said band deflecting mechanism on said pedal arms, of mechanism for fixing the ends of said bands on said carriage, of rollers on said carriage over which said bands are deflected as shown.

4. In a bicycle the combination, of ways $d^5$ on the lower frame pieces of the bicycle, said ways being in the general line between the centers of the forward and rear wheels, of a carriage supported on said ways, of mechanism for adjusting said carriage at all times on said ways when the bicycle is in motion, of oscillating pedal arms pivoted to said frame in the region of the general line of said ways, of flexible bands enwrapping pulleys on the driving wheel of the bicycle and intermittently driving the same, said bands trained over rollers on said carriage and their ends fixed to said carriage, of mechanism adjustably attached to the foot pedals for deflecting said bands in the manner and for the purpose shown and described.

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# REISSUES.

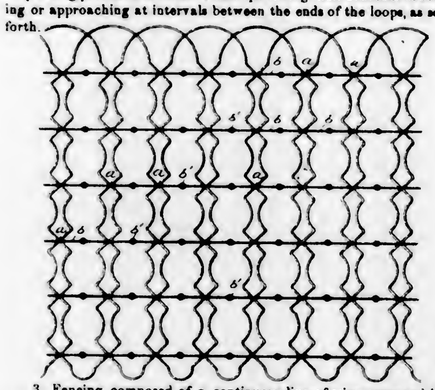
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**11,445.** WIRE FENCE. GEORGE LEHRBERGER, Newburg, N. Y. Filed Aug. 24, 1894. Serial No. 521,263. Original No. 497,523, dated May 16, 1893.

*Claim.*—1. Fencing composed of a continuous line of wire arranged in vertical loops, of parallel branches crossing at the end, the

main portions of the adjacent loops being laterally distinct from each other, as set forth.

2. Fencing composed of a continuous line of wire arranged in vertical loops crossing at the end, the main portions of the adjacent loops being laterally distinct from each other, parts of the different loops being parallel and the several loops having their branches touching or approaching at intervals between the ends of the loops, as set forth.



3. Fencing composed of a continuous line of wire arranged in vertical loops crossing at the end, and having their branches touching or approaching at intervals between the ends of the loops, and longitudinal strands connecting the branches of the loops; substantially as described.

4. Fencing composed of a continuous line of wire arranged in vertical loops crossing at the end, and having their branches touching or approaching at intervals between the ends of the loops, and longitudinal strands connecting the branches of the loops and twisted in opposite directions between the points of crossing of the loop; substantially as described.

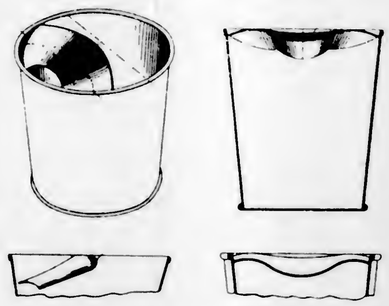
# DESIGNS.

23,681. SUPPORT FOR PITCHERS OR SIMILAR ARTICLES. FREDERIC L. THOMPSON, New Bedford, Mass., assignor to the Fairpoint Manufacturing Company, same place. Filed Mar. 31, 1893. Serial No. 468,568. Term of patent 7 years.



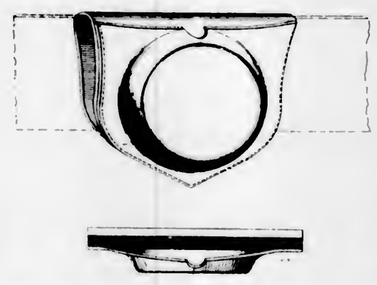
*Claim.*—The design for a pitcher or similar support herein shown and described.

23,682. DRINKING-CUP. CHARLES L. INGALLS, Lowell, Mass., assignor of one-half to Othello P. Davis, same place. Filed July 30, 1894. Serial No. 519,034. Term of patent 14 years.



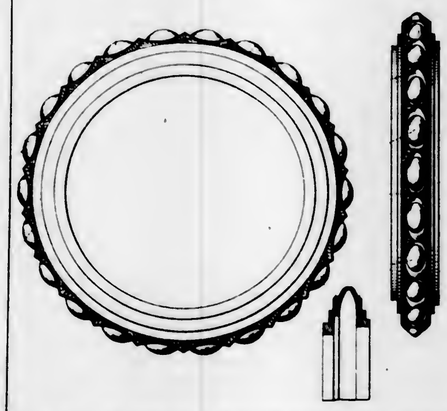
*Claim.*—The design for a drinking vessel as herein shown and described.

23,683. BELT-POCKET. RICHARD S. PORRO, New York, N. Y. Filed July 27, 1893. Serial No. 481,661. Term of patent 3½ years.



*Claim.*—The design for a belt pocket, substantially as herein shown and described.

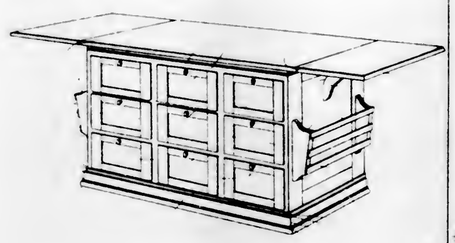
23,684. METAL RING. FREDERIC ECAUBERT, Brooklyn, N. Y. Filed June 29, 1894. Serial No. 516,121. Term of patent 14 years.



*Claim.*—The design for a metal ring substantially as set forth and represented.



23,685. DISPLAY-CASE. ROBERT BRINCKMANN, Michigan City, Ind. Filed Apr. 23, 1894. Serial No. 508,741. Term of patent 7 years.



*Claim.*—The design for a display case herein shown and described.

23,686. PADLOCK-CASE. FRANK W. MIX, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed July 31, 1894. Serial No. 519,120. Term of patent 7 years.



*Claim.*—The design for a padlock case substantially as herein shown and described.

23,687. STOVE OR RANGE. WILLIAM H. BARNES, Rochester, N. Y., assignor to the Sill Stove Works, same place. Filed June 22, 1894. Serial No. 515,430. Term of patent 14 years.



*Claim.*—1. In a design for a stove or range, the design for the base, substantially as herein shown and described.

2. In a design for a stove or range, the design for the oven-door, substantially as herein shown and described.

3. In a design for a stove or range, the design for the fire-box door, substantially as herein shown and described.

4. In a design for a stove or range, the design for an ash-pit door, substantially as herein shown and described.

5. In a design for a stove or range, the design for a central panel for the smoke-pipe, substantially as shown and described.

6. In a design for a stove or range, the design for a lower panel for the smoke-pipe, substantially as shown and described.

7. In a design for a stove or range, the design for the horizontal panels P, substantially as shown and described.

8. In a design for a stove or range, the design Q for the side panel, substantially as shown and described.

9. In a design for a stove or range, the design S for the top rail, substantially as shown and described.

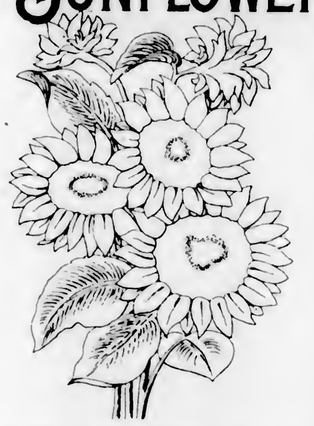
10. The herein described design for a stove or range, substantially as shown in the accompanying drawing.

# TRADE-MARKS

## REGISTERED OCTOBER 9, 1894.

25,306. LEATHER BOOTS AND SHOES. NOYES, NORMAN & Co., St. Joseph, Mo. Filed Aug. 31, 1894.

SUNFLOWER



*Essential feature.*—The representation of one or more sunflowers and the word "SUNFLOWER." Used since July 1, 1894.

25,307. CORSETS AND GLOVES. J. LICHTENSTEIN & SONS, New York, N. Y. Filed Sept. 7, 1894.



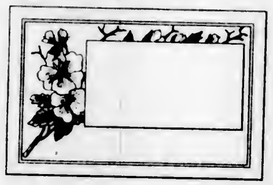
*Essential feature.*—The representation of a four leaf clover inclosed by a laurel wreath; said clover leaf bearing the letters "A, D, I, J," and the stem thereof bearing the letter "L." Used since June 1, 1894.

25,308. BLACK-DYED FABRICS. THE STERLING DYEING AND FINISHING COMPANY, Sterling, Conn. Filed July 21, 1894.

PIKE'S PROCESS.

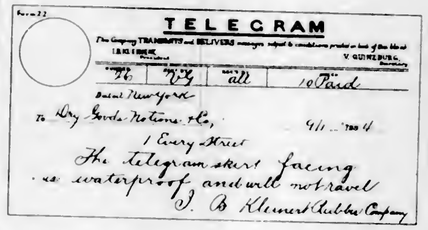
*Essential feature.*—The words "PIKE'S PROCESS." Used since May 15, 1885.

25,309. BLACK-DYED FABRICS. THE STERLING DYEING AND FINISHING COMPANY, Sterling, Conn. Filed July 21, 1894.



*Essential feature.*—The figure of a parallelogram with the representation of a sprig of apple blossoms for a back ground. Used since May 15, 1885.

25,310. RUBBER-COATED SKIRT-FACING. I. B. KLEINERT RUBBER COMPANY, New York, N. Y. Filed Sept. 7, 1894.


TELEGRAM

The Company TRANSMITS and DELIVERS messages subject to conditions printed on back of this blank

V. GUNDLFINGER, Manager.

No. 76 | Words 73 | Time filed all | Received at 10 Paid

Dated New York

To Dry Goods Notions &c.,

1 Every Street

The Telegram skirt facing is waterproof and will not travel

I. B. Kleinert Rubber Company

*Essential feature.*—The representation of a telegram comprising a printed form having the word "TELEGRAM" in large letters at the top, followed by lines of smaller type, and these by a written message. Used since August 15, 1894.

25,311. RUBBER-COATED SKIRT-FACING. I. B. KLEINERT RUBBER COMPANY, New York, N. Y. Filed Sept. 7, 1894.

TELEGRAM

*Essential feature.*—The word "TELEGRAM." Used since August 15, 1894.

25,312. MEDICINAL PREPARATION TO INCREASE THE FLOW OF HUMAN MILK. NUTROLACTIS COMPANY, New York, N. Y. Filed Aug. 30, 1894.

NUTROLACTIS.

*Essential feature.*—The word "NUTROLACTIS." Used since January 1, 1889.



25,313. ANALGESIC AND ANTIPYRETIC COMPOUND. THEODORE W. STERNBLER, New York, N. Y. Filed Sept. 1, 1894.

AMMONOL.

*Essential feature.*—The word "AMMONOL." Used since July 15, 1894.

25,314. ALTERATIVE COMPOUND AND BLOOD PURIFIER. S. WEBSTER & Co., Boston, Mass. Filed Sept. 11, 1894.

DR ANDREW JACKSON DAVIS

*Essential feature.*—The words "DR. ANDREW JACKSON DAVIS." Used since March 1, 1893.

25,315. REMEDY FOR DISEASES OF THE STOMACH AND BOWELS. HANCE BROS. & WHITE, Philadelphia, Pa. Filed May 11, 1893.

GINGERMINT

*Essential feature.*—The word "GINGERMINT." Used since February 11, 1893.

25,316. SMOKING AND CHEWING TOBACCO. SPAULDING & MERRICK, Chicago, Ill. Filed Oct. 28, 1892.

LONDON SMOKE

*Essential feature.*—The words "LONDON SMOKE." Used since May 25, 1891.

25,317. WHISKY. THE JOSEPH R. PEEBLES' SONS COMPANY, Cincinnati, Ohio. Filed May 7, 1894.




*Essential feature.*—The words and figures "OLD CABINET 1840" and ornamental scroll inclosing the words "OLD CABINET" and an ornamental circle inclosing the figures "1840." Used since March 1, 1894.

25,318. WINES, LIQUORS, CORDIALS, BEER, AND ALE. CHARLES STEES & SONS, New York, N. Y., Chicago, Ill., and Boston, Mass. Filed July 11, 1894.



*Essential feature.*—The representation of a shield having the word "PREMIER" thereon, and a crown above the shield. Used since June 21, 1894.

25,319. BEVERAGES, INCLUDING ROOT BEER AND LAGER-BEER IN BOTTLES OR OTHER PACKAGES. CHRISTIAN MAGNUS, Cedar Rapids, Iowa. Filed July 2, 1894.



*Essential feature.*—The representation of a barrel or keg lying on its side, surmounted by an eagle with wings partially spread, a young man kneeling at the faucet with one hand thereon and the other pointing toward the eagle, and a jug under the faucet. Used since July 1, 1892.

25,320. SPRING-WATER. CHARLES J. GILMAN & SONS, Brunswick, Me. Filed July 28, 1894.

PARADISE

*Essential feature.*—The word "PARADISE." Used since July 1, 1891.

25,321. SIRUP AND MOLASSES. FRITZ C. SCHULTE, San Antonio, Tex. Filed Sept. 13, 1894.

O. T. Sugar House

*Essential feature.*—The letters "O. T." and the words "SUGAR HOUSE." Used since July 15, 1893.

25,322. CONDENSED MILK. ORANGE COUNTY MILK ASSOCIATION, New York, N. Y. Filed Sept. 12, 1894.




*Essential feature.*—The representation of a flag and a waving scroll bearing the words "CONSUMER'S CONDENSED MILK." Used since 1892.

25,323. CURED MEATS AND LARD. MINNESOTA PACKING AND PROVISION COMPANY, Chicago, Ill., and South St. Paul, Minn. Filed May 22, 1894.



*Essential feature.*—The representation of the face and part of the figure of a man leaning against a hog. Used since April 19, 1894.

25,324. LARD AND COMPOUND LARD. GEORGE FOWLER, SON & Co., LIMITED, Kansas City, Kans. Filed Aug. 27, 1894.

THREE STAR



*Essential feature.*—The words "THREE STAR" and the representation of three stars. Used since August 1, 1894.

25,325. WHEAT-FLOUR. NOEL MILL COMPANY, Estill Springs, Tenn. Filed July 16, 1894.

**UNDINE**

*Essential feature.*—The word "UNDINE." Used since August 3, 1893.

25,326. CERTAIN NAMED CEREALS, FLOURS, AND FOODS. FINLEY ACKER & Co., Philadelphia, Pa. Filed July 5, 1894.

**HYGEIA**

*Essential feature.*—The word "HYGEIA." Used since July 1, 1884.

25,327. YELLOW WAX AND COLORED WAX GOODS. CHARLES ISRAEL & BROTHERS, New York, N. Y. Filed July 2, 1894.



*Essential feature.*—The representation of a round topped beehive. Used since June 1, 1878.

25,328. TOILET SOAP. THE J. B. WILLIAMS COMPANY, Glastonbury, Conn. Filed Mar. 27, 1894.

**ALDERNEY-CREAM**

*Essential feature.*—The words "ALDERNEY-CREAM." Used since January 25, 1894.

25,329. BATH AND LAUNDRY SOAP. GEORGE W. NORTON, Somerville, Mass. Filed May 4, 1894.

TIDY

*Essential feature.*—The word "TIDY." Used since 1890.

25,330. CLEANING PREPARATION FOR USE IN SWEEPING CARPETS. FERDINAND HEGHT, New York, N. Y. Filed Sept. 1, 1894.

**FERDALINE**

*Essential feature.*—The word "FERDALINE." Used since July 15, 1894.

25,331. POLISH FOR STOVES AND SIMILAR ARTICLES. J. L. PRESCOTT & Co., North Berwick, Me. Filed Sept. 15, 1894.

Enameline

*Essential feature.*—The word "ENAMELINE." Used since January 1, 1887.

25,332. VARNISHES, PAINTS, JAPANS, AND PAINTERS' SUPPLIES. N. Z. GRAVES & COMPANY, Philadelphia, Pa. Filed July 20, 1894.



**OXFORD.**

*Essential feature.*—A monogram of the letters and character "N Z G & Co" associated with the word "OXFORD." Used since November 26, 1888.

25,333. SLATES. HYATT SCHOOL SLATE COMPANY, LIMITED, Bethlehem, Pa. Filed July 12, 1894.



*Essential feature.*—The delineation of a crown. Used since May 1, 1894.

25,334. TRUNKS. C. R. STARR Co., Columbus, Ohio. Filed Aug. 24, 1894.



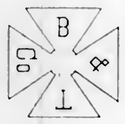
*Essential feature.*—The representation of a star. Used since August 15, 1894.

25,335. STEAM AND HOT-WATER RADIATORS. UNITED STATES RADIATOR COMPANY, Saltsburg, Pa. Filed July 23, 1894.

ORNATE

*Essential feature.*—A diamond shaped figure and the word "ORNATE" inscribed within the same. Used since June, 1894.

25,336. AGRICULTURAL TOOLS AND IMPLEMENTS. BELCHER & TAYLOR AGRICULTURAL TOOL COMPANY, Chicopee Falls, Mass. Filed July 11, 1894.




*Essential feature.*—The figure of a Maltese cross bearing the letters, "B & T Co" upon its arms. Used since April 1, 1894.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## DECISIONS OF THE U. S. COURTS

### Supreme Court of the United States.

KREMENTZ *v.* THE S. COTTLE COMPANY.

*Decided April* 10, 1893.

1. KREMENTZ—COLLAR-BUTTON—NOVELTY—VALID.
Patent No. 298,303, issued May 6, 1884, to George Krementz, for a collar-button, examined and *Held* to cover a patentable invention.

2. SAME—SAME—DOUBTS AS TO NOVELTY—DISPLACEMENT OF OTHER DEVICES ON ITS MERITS—SUFFICIENT TO UPHOLD THE PATENT.
In a suit on a patent, when the other facts leave the question of invention in doubt, the fact that the device has generally displaced other devices of its kind on its merits *Held* to be sufficient to turn the scale in favor of invention.

APPEAL from the Circuit Court of the United States for the Southern District of New York.

Mr. Justice SHIRAS delivered the opinion of the Court.

This is an appeal from a decree of the Circuit Court of the United States for the Southern District of New York, dismissing a bill filed to restrain the infringement of Letters Patent of the United States No. 298,303, granted May 6, 1884, to George Krementz, of Newark, New Jersey, for a new and improved collar-button.

Complainant's evidence, tending to show that the collar-button made by the defendants was within the claim of the patent in suit, and constituted an infringement, was not contradicted or disputed, but it was held by the court below that the patent was invalid for want of novelty. (48 O. G., 1775; 39 Fed. Rep., 323.)

In his specification the patentee states that his invention consists in a collar-button having a hollow head and stem, the said button being formed and shaped out of a single continuous plate of sheet metal. The method or process of making the button is thus described:

By means of suitable dies a metal plate is pressed into the shape shown in Fig. 2—that is, the plate is provided with a hollow stem, B, the sides of which are pressed together at about the middle, in some suitable manner, to form a head, C, at the end of the stem, as in Fig. 3; then the head is pressed toward the base plate or back, D, whereby the head will be upset, and will have the shape shown in Figs. 4 and 5. By this operation the head is hardened. The base plate or back D is then rounded out and finished, and its edge is turned over, as shown in Fig. 5.

In the accompanying diagram Fig. 1 is a side view of the completed button. Figs. 2, 3, 4, and 5 are cross-sectional elevations of the same in the different stages of the operation of making it.

*Fig. 1.*

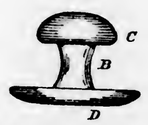



*Fig. 2*

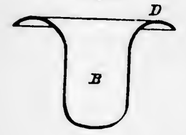



*Fig. 3.*

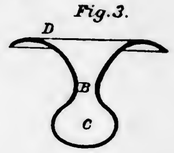



*Fig. 4.*

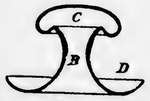
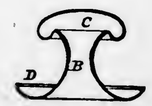



*Fig. 5.*




The advantages attributed to the invention are the doing away with soldered joints, the lightness of the hollow stem and head, as compared with buttons having solid stems and head, and the cheapness arising from the use of less material, with equal or superior strength, which, when gold is used, is quite appreciable.

The learned Judge in the court below contented himself with comparing Krementz's invention with two earlier patents, one to Stokes, No. 171,882, granted January 4, 1876, and one to Keats, No. 177,353, granted May 9, 1876, in which patents, he thinks, are to be found the special features claimed by Krementz.

The Stokes patent was for an improvement in making a stud-fastening known as Thomson's unbreakable busk-fastening, and whereby, instead of fastening the parts of the stud together by rivets, the entire busk was made out of one piece of metal, by striking up or raising the stud out of a strip of malleable sheet metal. The structure thus produced is a solid rivet-like and flat head, intended to resist a great strain, and evidently not designed to be used as a collar-button where a well-defineo round head, adapted to be used where there is no strain, is necessary and essential.

In the Keats process the button is not made of a continuous piece of sheet metal, but has side seams in the post, and has a base-plate composed of two separate parts, and the head is open on the under side. It could not be used as a collar-button, but is intended to be permanently fastened either to eyelet-holes, or to the fabric with which it is connected.

We cannot see in these devices, taken separately or together, an anticipation of the Krementz button. Indeed, the Court below concedes that—

Krementz was the first to make a stud from a single continuous piece of metal in which the head was hollow and round in shape.

The learned Judge was, however, of the opinion that—

any competent mechanic, versed in the manufacture of hollow sheet-metal articles, having before him the patents of Stokes and Keats, could have made these improvements and modifications, without exercising invention, and by applying the ordinary skill of the calling.

It is not easy to draw the line that separates the ordinary skill of a mechanic, versed in his art, from the exercise of patentable invention, and the difficulty is specially great in the mechanic arts, where the successive steps in improvements are numerous, and where the changes and modifications are introduced by practical mechanics. In the present instance, however, we find a new and useful article, with obvious advantages over previous structures of the kind. A button formed from a single sheet of metal, free from sutures, of a convenient shape, and uniting strength with lightness, would seem to come fairly within the meaning of the patent laws. The tools to be used in making the button are not described, but they are not claimed to be new. And the method or process of manufacture is described with sufficient particularity to enable any one skilled in the art to follow it. Buttons made of several pieces are liable to break at the soldered joints, and it is stated by an experienced witness that the metal by the process of soldering becomes soft and liable to bend. The different pieces are set together by hand, and are not always uniform or put together truly.

The view of the court below, that Krementz's step in the art was one obvious to any skilled mechanic, is negatived by the conduct of Cottle, the president of the defendant company. He himself was a patentee under letters granted April 16, 1878, for an improvement in the construction of collar and sleeve buttons, and put in evidence in this case. In his specification he speaks of the disadvantages of what he calls—

the common practice to make the head, back, and post of collar and sleeve buttons separate, and to unite them by solder.

His improvement was to form a button of two pieces, the post and base forming one piece, and then soldering to the post the head of the button as the other piece. Yet, skilled as he was, and with his attention specially turned to the subject, he failed to see, what Krementz afterward saw, that a button might be made of one continuous sheet of metal, wholly dispensing with solder, of an improved shape, of increased strength, and requiring less material.

It was also made to appear that the advantages of the new button were at once recognized by the trade and by the public, and that very large quantities have been sold.

The argument drawn from the commercial success of a patented article is not always to be relied on. Other causes, such as the enterprise of the vendors, and the resort to lavish expenditures in advertising, may cooperate to promote a large marketable demand. Yet, as was well said by Mr. Justice Brown, in the case of *Consolidated Brake-Shoe Co.* v. *Detroit Co.*, (47 Fed. Rep., 894)—

when the other facts in the case leave the question of invention in doubt, the fact that the device has gone into general use and has displaced other devices which had previously been employed for analogous uses, is sufficient to turn the scale in favor of the existence of invention.

*Webster Loom Co.* v. *Higgins* (21 O. G., 2031; 105 U. S., 580) was a case where the patented device consisted in a slight modification of existing mechanism, and it was contended that this slight change did not constitute a patentable invention; but this view did not prevail, the Court saying:

It is further argued, however, that supposing the devices to be sufficiently described, they do not show any invention, and that the combination set forth in the fifth claim is a mere aggregation of old devices already well known, and therefore it is not patentable. This argument would be sound if the combination claimed by Webster was an obvious one for attaining the advantages proposed—one which would occur to any mechanic skilled in the art. But it is plain from the evidence and from the very fact that it was not sooner adopted and used, that it did not for years occur in this light to even the most skillful persons. It may have been under their very eyes, they may almost be said to have stumbled over it, but they certainly failed to see it, to estimate its value, and to bring it into notice. Was the first to see it, understand its value, to give it shape and form, to bring it into notice and urge its adoption, is a question to which we shall shortly give our attention.

At this point we are constrained to say that we cannot yield our assent to the argument that the combination of the different parts or elements for attaining the object in view was so obvious as to merit no title to invention. Now that it has succeeded, it may seem very plain to any one that he could have done it as well. This is often the case with inventions of the greatest merit. It may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result never attained before, it is evidence of invention. It was certainly a new and useful result to make a loom produce fifty yards a day when it never before had produced more than forty, and we think that the combination of elements by which this was effected, even if these elements were separately known before, was invention sufficient to form the basis of a patent.

*Consolidated Valve Co.* v. *Crosby Valve Co.*, (30 O. G., 991; 113 U. S., 157;) *Magowan* v. *New York Belting Co*, (57 O. G., 845; 141 U. S., 332:) *Barbed Wire Patent*, (58 O. G., 1555; 143 U. S., 275;) *Gandy* v. *Main Belting Co.*, (59 O. G., 1106; 143 U. S., 587,) are all to the same effect.

In the very recent case of *Topliff* v. *Topliff*, (59 O. G., 1257; 145 U. S., 156,) where there was a contest between two patents, with but a slight difference between them, the Court said:

Trifling as this deviation seems to be, it renders it possible to adopt the Angur device to any side-spring wagon of ordinary construction. While the question of patentable novelty in this device is by no means free from doubt, we are inclined, in view of the extensive use to which these springs have been put by manufacturers of wagons, to resolve that doubt in favor of the patentee and sustain the patent.

We think, therefore, we are within the principle and reasoning of these cases in reversing the decree of the court below dismissing the bill and in remanding the record, with directions to proceed in the case in conformity with this opinion.

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U. S. Circuit Court—Eastern District of Pennsylvania.

JOHNSON COMPANY *v.* PENNSYLVANIA STEEL COMPANY.

*Decided January 23, 1894.*

ENTWISTLE—CABLE RAILWAY CROSSING—LACK OF INVENTION—VOID.

Claim 2 of Letters Patent No. 367,746, dated August 2, 1887, granted to E. B. Entwistle, for girder-slot-rail crossing, examined and *Held* to be void for lack of invention.





THIS was a suit in equity by the Johnson Company against the Pennsylvania Steel Company for infringement of a patent.

*Mr. George Harding* and *Mr. George J. Harding* for the complainant.

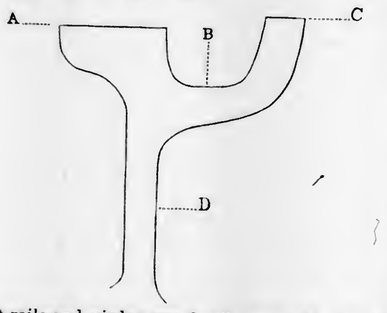
*Mr. Joshua Pusey* and *Mr. Philip T. Dodge* for the respondent.

DALLAS, *J.*:

This is a suit upon Letters Patent No. 367,746, dated August 2, 1887, granted to Edward B. Entwistle, for girder-slot-rail crossing. It contains two claims, and the bill involves both of them; but upon the hearing the complainant, without making any general admission with respect to the first claim, stated that this case would be pressed only as to the second claim, which is as follows:

2 A slot rail and girder-rail crossing consisting of main girder guard-rails and slot-rails secured together at the proper angle, and with the guard-rails overlapping the heads of the slot-rails, the latter rails being partially cut away so as to preserve the floor of the guard-rails intact, substantially as and for the purposes set forth.

"Slot-rails" are those which form the sides of the slot or orifice through which passes the shank of the grip used in the operation of a cable. A "main girder guard-rail" is a car-bearing rail of the form shown, with sufficient accuracy for the present purpose, in the accompanying sketch of an end view thereof. A is the part upon which the wheels of the cars rest or move, and is called the "head." B is the floor, C is the guard, and D is the web.




Slot-rails and girder guard-rails were old. To secure them together at the proper angle and with the main rails overlapping the heads of the slot-rails, nothing was required but the common knowledge and skill of a mechanic. In fact, in what is known in the case as the "Chicago crossing" such securing together and overlapping had been actually resorted to in constructing a crossing of slot-rails with the rails of a steam railroad. In that instance all except the head of the main rail was cut away, so as to conform it to the side of the slot-rail and admit of the head only of the former overlapping the top of the latter, and such overlapping was, in fact, made; and the two rails, though not directly connected, were indirectly secured together by means of their separate bearings upon the same I-beams.

It is true the main rail of the Chicago crossing was a T rail, not a guard-rail, and the head of the T-rail was wholly exposed above the slot-rail, whereas the patentee in this case was dealing with a guard-rail, and had it in mind, as he stated in his specification that it is desirable that the head and guard be not exposed too much above the slot-rail crossed. Accordingly, the particular matter to which his attention seems to have been directed was the making of the crossing in such manner that the undesirable exposure of the head and guard would be avoided. An obvious way to accomplish this would have been to cut away the floor of the car-bearing rail, so as to lower its head and guard to the desired point; but, as is also set forth in the specification—

it is advisable not to cut the floor entirely away, as the guard would then be rendered weak and not well sustained.

Consequently a partial cutting away of the slot-rails was resorted to, instead of cutting the floor of the guard-rail objectionably, and thus a notch was formed in the top of the slot-rails, in which the guard-rail was placed, and by this means its head and guard were sufficiently depressed without rendering its guard weak and not well sustained. Did this involve invention? This, I think, is the substantial question in the case. It is undoubtedly true that—

it is not always safe to consider that there has been no invention because it appears obvious and simple;

but, on the other hand, as said by Mr. Justice Bradley in *Atlantic Works* v. *Brady*, (23 O. G., 1330; 107 U. S., 200; 2 Sup. Ct., 225:)

It was never the object of those laws [the patent laws] to grant a monopoly for every trifling device, every shadow of a shade of an idea, which would naturally and spontaneously occur to any skilled mechanic or operator in the ordinary progress of manufactures.

Hence the difficulty, whenever the question of sufficiency of invention arises, is to determine whether the subject-matter of the particular patent should be considered an invention, however obvious and simple it may appear, or be held to be a—

trifling device, * * * which would naturally and spontaneously occur to any skilled mechanic or operator.

In the present case, after very careful consideration of the evidence and examination of the exhibits, I have reached the conclusion that the device claimed is of the latter class. There was nothing new, or in which invention was involved, in securing crossing-rails together at the proper angle, and with car-bearing rails overlapping slot-rails, and I am unable to perceive that anything beyond mechanical skill was exercised in cutting away a part of the slot-rails, so as to make the desired joint with a girder-guard without exposing its head and guard too much above the slot-rail and without so cutting the floor of the guard-rail as to weaken the guard.

A decree will be entered dismissing the bill, with costs.

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U. S. Circuit Court—District of Massachusetts.

EASTMAN COMPANY *v.* BLAIR CAMERA COMPANY.

*Decided June 1, 1894.*

1. HOUSTON—PHOTOGRAPHIC APPARATUS—NOVELTY—VALID.

Patent No. 248,179, issued October 11, 1881, to David H Houston, for improvements in photographic apparatus consisting in adding a pointer to the projecting end of the reel on which the film of sensitized paper is wound to indicate the position of film, and also fixing a pin in the same reel to perforate the edge of the film, *Held* to be for a patentable invention and not anticipated by a cloth-measuring machine, and the first and second claims infringed by a device embodying its essential features.

2. WALKER AND EASTMAN—SAME.

Patent No. 317,049, issued May 5, 1885, to Walker and Eastman, for an improvement in roll-holders for photographic films, the improvement consisting in inserting a spring in the reel on which the film of sensitized paper is wound, in order to preserve the film under tension, examined and *Held* to cover a patentable improvement and not anticipated by a map-rack, and its third, twenty-sixth, twenty-ninth, thirtieth, thirty-first, and thirty-second claims infringed by a device substantially like it, though modified in some particulars.

THIS was a suit by the Eastman Company against the Blair Camera Company for infringement of a patent.

*Mr. M. B. Philipp* for the complainant.

*Mr. John L. S. Roberts* for the defendant.

COLT, *J.*:

The two patents in controversy in this case are for improvements in photographic apparatus. The first patent was granted to David H. Houston October 11, 1881, and is No. 248,179. The second patent was granted to Walker and Eastman May 5, 1885, and is No. 317,049.

In the old photographic camera the plate upon which the image of an object was taken was made of glass covered on one side with a thin film of sensitive material. The film consisted of collodion sensitized in a bath of nitrate of silver and exposed in the camera while wet. This was known as the "wet" process. This form of apparatus was cumbersome and difficult to operate in the field. In 1880 Mr. Eastman, one of the inventors of the Walker and Eastman patent, commenced the manufacture of dry plates. These plates were coated with a film composed of an emulsion of gelatine and bromide of silver and then dried; but they were open to the objections of all glass plates—namely, they were heavy and liable to break. It was sought to overcome these objections to the use of glass plates by the substitution of strips of sensitized paper supported on rollers.

A camera must be so constructed as to exclude the light, or, as commonly expressed, it must be a "light-tight" box. It is apparent that where a long strip of material was used it became necessary to devise some means to determine the position and movement of the strip in the camera. This was done by marking off the strip into lengths proper for exposure before introduction into the camera and by inserting a colored window in the box, through which the operator could observe the marks on the paper from the outside. A device of this type, which appeared in 1875, is known as the "Warnerke roll-holder," and is described in Abney's Treatise on Photography and other publications. It consisted of a light-tight box containing two rollers and two rounded bars or guides, and the sensitized film was wound from one roller to the other over the exposing-bed. One end of each roller projected through the side of the box and was provided with a mill-head and lock-nut. The sensitized film was previously marked by black patches of paper, which could be seen through a colored-glass window at the back of the holder. The defects in this form of construction were, first, it was difficult to mark the strip without injuring it; second, the colored-glass window did not form a perfect protection to the entrance of white light into the box; third, it was difficult to observe the division-lines on the strip through the window. In 1877 E. & H. T. Anthony & Co. made one roll-holder after the Warnerke pattern, but slightly modified in structure. There is also found described in a London publication, entitled *Notes and Queries*, published in 1855, what is called "Captain Barr's dark-slide for paper." In this apparatus the paper used in connection with the rollers was in short lengths secured to a band of calico, leaving intervals of about two inches between the lengths. The indicating device consisted of a short roller outside of the box, fitted to one of the inside rollers, on which was wound a tape of the exact length of the calico strip. There were numerous defects in this apparatus, and it does not appear to have ever gone into use.

Before the inventions of Houston and Walker and Eastman there were two problems which had to be met in the practical use of a long strip of film in a camera—the sensitized strip must be properly marked and it must be held in sufficient tension. These inventions solved these problems.

The Houston improvement consists in attaching to substantially the old Warnerke roll-holder a device for marking automatically the sensitized material within the camera in such a manner as to form guides by which the operator can cut the film between successive exposures when taken into a dark-room. This is accomplished by placing a pointer outside of the box, connected with one of the rollers, which indicates the revolutions of the roller, one revolution measuring half the length of the negative or two revolutions the whole length. The same roller which carries the pointer also carries a pin which perforates the edge of the material at each revolution, and consequently every other perforation marks the space between the negatives By this device something more is done than merely measure the length of film which passes between the rollers. The pointer outside of the box indicates accurately when the film has advanced sufficiently for each negative or exposure. At the same time the pin on the periphery of the roller marks the exposed length in such a way that the division-line can be readily detected in a dark-room. This was clearly an improvement over anything which existed in the prior art.

The defendant attacks the validity of this patent by the introduction of various old registering devices for measuring cloth and other materials. A type of this class of machines is found in the Dodson patents of January 20, 1880, and August 3, 1880, and it is upon these patents that the defendant chiefly relies.

The machine of the Dodson patents is for measuring cloth or bagging. The material passes over one roller and under another roller, then over a measuring-cylinder to a spindle, upon which it is wound. The measuring-cylinder has points on its periphery and a tooth at one end of the cylinder outside of the frame, which works with a toothed registering-wheel, and another tooth on the inside of the frame, which works a click-spring. The cylinder is described as being exactly a yard in circumference and provided with projecting points which enter the bagging and prevent it from slipping. By this device the registering-wheel operates to register the number of yards unwound from the roll, while the click-spring enables the operator, by counting the clicks, to know how many yards have been unwound.





In all the cloth measuring and registering devices which existed in the art prior to the Houston patent, as disclosed by this record, there is not found the special feature of the Houston invention—namely, a projecting pin which spaces off and defines, for the purpose of cutting, a certain given length of the material. Some device of this kind was necessary in a camera using a strip of film, and, although such device may seem only a modification of old devices, yet, as the result accomplished is new and useful, I think it patentable.

On the question of the infringement of the first and second claims of the patent I have no doubt. The defendant's device embodies the essential features of the Houston invention, and the changes which are made are merely structural.

The Walker and Eastman patent represents a still further advance in the art. The strip of film ready for exposure must always be kept in a condition of tension. As the camera may be left standing for days, it was found that the film was liable to contract or expand under different conditions of weather, and, further, in the old apparatus the devices for holding the film in tension did not always work perfectly. The object of the Walker and Eastman patent was to remedy this defect. The inventors spent months of effort before they hit upon the device which is the subject-matter of their patent. The means employed by them were simple; but this fact does not detract from the merits of the invention. The improvement consists in the insertion of a spring in the receiving-reel, which operates to take up the slack end of the film or to always draw the film against the resistance of the spool. The spool and the receiving-reel, with their retarding-mechanism, will, under the ordinary process of feeding the film along, hold it in tension; but this is not sufficient to answer all the conditions which arise in the use of the instrument. By the addition of the spring this defect was overcome and the film maintained in tension under all conditions. The fact that the Walker and Eastman device has gone into general use, both in this country and abroad, proves the utility of the invention, and, if the question of invention were in doubt, this circumstance should weigh strongly with the court in resolving that doubt in favor of the patentee. (*Smith* v. *Dental Vulcanite Co.*, 93 U. S., 486, 495; *Consolidated Safety-Valve Co.* v. *Crosby Steam Gage and Valve Co.*, 30 O. G., 991; 113 U. S., 157, 171; 5 Sup. Ct., 513; *Magowan* v. *Packing Co.*, 57 O. G., 845; 141 U. S., 332, 343; 12 Sup. Ct., 71; *Topliff* v. *Topliff*, 59 O. G., 1257; 145 U. S., 156, 164; 12 Sup. Ct. 825.)

The validity of this patent is attacked on the same line of defense as the Houston patent. I shall only refer to one of the prior patents which are introduced as anticipations. I confine myself to this because it comes closer to the patent in suit and is chiefly relied upon by the defendant. This is the Mann patent of August 8, 1876, for improvement in map-racks. In that apparatus there are two rollers close together and the map is wound from one roller upon the other. These rollers are geared together by either cog or friction wheels, so that on turning a crank the two rollers move in unison. There are also two additional guide-rollers situated above and below the center rollers. The map to be displayed passes from the upper center roller under and over the upper guide-roller, then over and under the lower guide-roller back to the lower center roller. The lower guide-roller is journaled in slides, which move in the framework, and springs are introduced above these slides, which cause the roller to move downward. An inspection of the Mann patent demonstrates that the organization of rollers, brakes, and springs is quite different from that found in the Walker and Eastman patent. In fact there is nothing in the prior art which anticipates this invention.

The defendant's apparatus, though modified in some particulars, is clearly within this patent, and I am of opinion that it infringes the third, twenty-sixth, twenty-ninth, thirtieth, thirty-first, and thirty-second claims. The phrase "acting to maintain the film in a tense condition during exposure," in the third claim, does not mean, as contended by the defendant, that the tense condition is only maintained during the instant of exposure; but it should be construed as meaning that the film shall always be acted upon by such instrumentalities that, when exposure takes place, it will be found in a tense condition.

Decree for complainants.

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## U. S. Circuit Court—District of Massachusetts.

EDISON ELECTRIC LIGHT COMPANY *et al. v.* BOSTON INCANDESCENT LAMP COMPANY *et al.*

*Decided June* 11, 1894

EDISON—ELECTRIC LAMP—EQUIVALENTS—THE DOCTRINE OF EQUIVALENTS AS APPLIED TO PRIMARY INVENTIONS NOT LIMITED BY THE QUALIFICATION OF AGE OR TIME.

Claim 2 of Patent No. 223,898, issued January 27, 1880, to Edison, for an electric lamp, is for "the combination of carbon filaments with a receiver made entirely of glass and conductors passing through the glass, and from which receiver the air is exhausted, for the purposes set forth;" and platinum wire is described in the specification as the conductor passing through the glass, and is used in the Edison lamp of commerce. *Held*, however, that as his invention resides in the carbon filament, the other elements being old and subordinate and representing, so to speak, only the environment of the filament, the plain meaning of the language of the claim should not be restricted, but construed to cover all material for this purpose capable of conducting the electric current. *Held*, further, that the patent is for a pioneer invention and entitled to a broad construction, and, therefore, that the claim is infringed by a lamp using a conductor of powdered silver, although powdered silver was not known at the date of the patent as a conductor in the narrower art of electric lighting, though it was known as a conductor in the broader art of electricity.

THIS was a suit by the Edison Electric Light Company and others against the Boston Incandescent Lamp Company and others. Complainants moved for a preliminary injunction.

*Messrs. Fish, Richardson & Storrow* for the complainants.

*Mr. John Lowell* and *Mr. John Lowell, Jr.*, for the defendants.

COLT, *J.*:

The second claim of the Edison incandescent lamp patent (No. 223,898) is for—

the combination of carbon filaments with a receiver made entirely of glass and conductors passing through the glass, and from which receiver the air is exhausted, for the purposes set forth.

The defendants' lamp, constructed after the Pollard patent of November 1, 1892, contains all the elements enumerated in this claim, namely: a carbon filament, all-glass receiver, from which the air is exhausted, and conductors passing through the glass. The only difference between the two lamps is that the defendants use a film of powdered silver for the conductors passing through the glass in place of platinum wire, which Edison points out in the specification of his patent as the material to be employed and which is always found in the Edison lamp of commerce. In other respects the lamps are identical. While Edison uses platinum wire, he does not limit himself to this form of conductor in his claim. The language of the claim is "conductors passing through the glass," and therefore, on its face, the claim covers all kinds of material capable of carrying the electric current. If the claim had been limited to conductors of platinum wire, as the filament is limited to carbon, the case might be different.

The invention of Edison resides in the carbon filament. The other elements of the combination were old and subordinate and represent, so to speak, only the environment of the filament. For this reason I do not think the court should seek to restrict the plain meaning of the language of the claim. And there is another reason for giving the claim a broad construction. Edison made an important invention. He produced the first practical incandescent electric lamp. The patent is a pioneer in the sense of the patent law. It may be said that his invention created the art of incandescent electric lighting. Where a valuable invention has been made, the court will uphold that which was really invented and which comes within any fair interpretation of the patentee's claim. (*Merrill* v. *Yeomans*, 11 O. G., 270; 94 U. S., 568, 573.)

The argument of the defendants is that this claim of the Edison patent must be limited to the use of platinum wire as a conductor, or its known equivalent, and that powdered silver was not a known equivalent at the date of the Edison patent. Looking generally at the state of the electrical art at the date of the Edison patent and comparing platinum wire and powdered silver simply as elements, apart from any specific combination or invention, it cannot be said that one was not a known equivalent of the other, because powdered metals, including silver, have been recognized since 1860 as conductors of electricity. In asserting that powdered silver was not a known equivalent of platinum wire the defendants must mean that it was not a known substitute in the combination or invention of the Edison patent or in the art of incandescent electric lighting, and I think the evidence proves this to be true; but, in dealing with an invention which is broadly new, I am not prepared to accept the proposition that, in order to constitute infringement, an equivalent in a patented combination must always have been known at the date of the patent or must have been such as would occur to a skilled mechanic exercising only ordinary mechanical skill.

While the language of the Supreme Court in *Rees* v. *Gould* (15 Wall. 187,) and other cases, seems to support the defendants' contention on this question, the later decisions by that Court are not reconcilable with the board proposition that in all cases the substitution of an equivalent will avoid infringement, provided it was not known at the date of the patent, using the word "known" in its ordinary sense. (*Morley Sewing Mach. Co.* v. *Lancaster*, 47 O. G., 267; 129 U. S., 263; 9 Sup. Ct., 299; *Clough* v. *Barker*, 22 O. G., 2157; 106 U. S., 166; 1 Sup. Ct., 188; *Union Paper Bag Machine Co.* v. *Murphy*, 13 O. G., 366; 97 U. S., 120.) In the Morley case Mr. Justice Blatchford, speaking for the Court, says:

A difference in the particular devices used to accomplish a particular result in such a machine would always enable a defendant to escape the charge of infringement, provided such devices were new with the defendant in such a machine, because, as no machine for accomplishing the result existed before that of the plaintiff, the particular device alleged to avoid infringement could not have existed or been known in such a machine prior to the plaintiff's invention.

In that case the patent was for a machine for automatically sewing shank-buttons to a fabric, and it was the first machine to accomplish this result. In the defendant's machine the feeding and sewing mechanisms were new and had been patented, yet the Court held that it infringed the Morley patent. The feeding and sewing devices of the Lancaster machine in the art of automatically sewing shank-buttons to a fabric were as unknown at the date of the Morley patent as a conductor made of powdered silver at the date of the Edison patent in the art of incandescent electric lighting.

In dealing with a pioneer invention which creates a new art it hardly seems logical or reasonable to say that, because in the progress of such art some new substance or device has been discovered which can act as a substitute for one of the elements of the patented invention, any one can appropriate the invention by the employment of such substitute; and, further, if equivalency signifies equivalency in the particular combination or invention it is difficult to point out in this class of cases what known equivalents existed at the date of the patent, for the reason that the combination of elements in which the invention is embodied was first made known by the patentee. The doctrine of equivalents as applied to primary inventions rests upon a more satisfactory basis by the elimination of the qualification of age or time and by holding those things to be equivalents which perform the same function in substantially the same way. The fundamental question is whether the alleged infringer makes use of the essence of the patented invention, not whether he has adopted a known equivalent or made a patentable improvement on the invention.

The motion for preliminary injunction is granted.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 69.—No. 3. TUESDAY, OCTOBER 16, 1894. PRICE—$5 per year.

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## Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., October 3, 1894.*

SIR: The Secretary of the Interior has ordered that Lemuel C. Reeves, of Burlington, N. J., be not recognized after this date as attorney or agent in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,

JOSEPHUS DANIELS,
*Chief Clerk.*

The Commissioner of Patents.

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DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., October 6, 1894.*

SIR: The Secretary of the Interior has ordered that George W. Dearing, Jr., of New Orleans, La., be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,

JOSEPHUS DANIELS,
*Chief Clerk.*

The Commissioner of Patents.

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(ORDER No. 1,014.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., October 4, 1894.*

With the approval of the Assistant Secretary of the Interior, U. T. S. Rice, of Mattoon, Ill., is hereby disbarred from practice before the United States Patent Office, pursuant to section 487 of the Revised Statutes.

JOHN S. SEYMOUR,
*Commissioner.*

(ORDER No. 1,015.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., October 4, 1894.*

With the approval of the Assistant Secretary of the Interior, William J. Hutchins, of Wichita, Kans., is hereby disbarred from practice before the United States Patent Office, pursuant to section 487 of the Revised Statutes.

JOHN S. SEYMOUR,
*Commissioner.*

## DISCLAIMER.

520,595.—*George E. Norris*, TROY, N. Y. IMPROVEMENT IN MACHINES FOR TURNING CUFF-BLANKS. Patent dated May 29, 1894. Disclaimer filed October 6, 1894, by the patentee.

Enters his disclaimer to those parts of the specification and claims which are in the following words, to wit:

The words "an opening, 1, formed in," on the forty-seventh and forty-eighth lines of the first page of the printed specification; the word "diagonally," on the seventh-fourth line of same page; the word "diagonal," on the ninety-second line of same page; the words "the direct inward and outward movements of the sliding-plate C being converted into diagonal movements of the folding-plates E mears of the links 10," on the ninety-ninth to one hundred and second lines, both inclusive, of same page; the words "in an opening," on the tenth line of third page; the words "a pair of," on the eleventh line of same page; the words "arranged to move diagonally toward each other, swinging-links pivoted to said folding-plates and bed-piece; said folding-plates," on the eleventh to fourteenth lines, both inclusive, of same page; the word "cuff," on the fifteenth line of same page; the word "cuff," on the seventeenth line of same page; the word "diagonally" on the twenty-fourth line of same page; the words "a pair of diagonally," on the thirty-sixth and thirty-seventh lines, both inclusive, of same page, and the word "diagonally," on the fifty-sixth line of same page

## Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

## Privileges of the Scientific Library.

Persons who are not employés of the Office may, under the supervision and direction of the Librarian, make extracts, in pencil, from descriptions and drawings contained in the Scientific Library, such extracts, when in the nature of copies, not to exceed one-third of the descriptions or drawings from which the copies are made. Violation of this order will subject all persons and parties concerned in the violation to exclusion from thereafter making any such extracts or copies whatever.

## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $10; single copies, 10 cents, if mailed to foreign countries 10 cents additional for postage; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

## Issue of October 16, 1894.

| | | |
|---|---|---|
| Patents | 363 | No. 527,397 to No. 527,759, inclusive. |
| Designs | 23 | No. 23,688 to No. 23,710, inclusive. |
| Trade-Marks | 47 | No. 25,337 to No. 25,383, inclusive. |
| Labels | None. | |
| Prints | None. | |
| Reissues | 2 | No. 11,446 to No 11,447, inclusive. |
| Total issue | 435 | |

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| Brazil | ..... | ..... | New Zealand | 2 | ..... |
| Canada | 5 | ..... | Norway | ..... | ..... |
| Chile, Republic of | ..... | ..... | Queensland | ..... | ..... |
| Colombia | ..... | ..... | Russia | ..... | ..... |
| Cuba | 1 | ..... | Scotland | ..... | ..... |
| Denmark | ..... | ..... | South Australia | ..... | ..... |
| Ecuador | ..... | ..... | Spain | ..... | ..... |
| England | 19 | 6 | Sweden | ..... | ..... |
| France | 2 | 1 | Switzerland | ..... | ..... |
| Germany | 7 | 1 | Victoria | 1 | ..... |
| Hawaii | ..... | ..... | | | |
| India | 1 | ..... | Total to citizens of foreign countries | 40 | 9 |
| Ireland | ..... | ..... | | | |

## APPLICATIONS UNDER EXAMINATION.

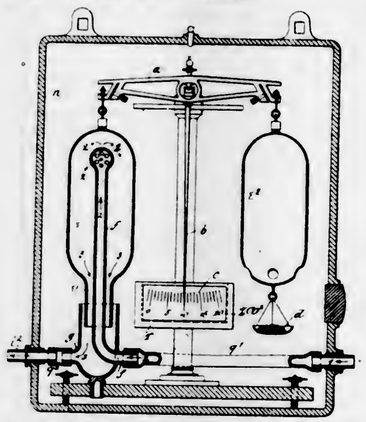
*Condition at Close of Business October 9, 1894.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | Sept. 15 | Oct. 6 | 78 |
| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting, and Leather Working Machinery. | Sept. 11 | Oct. 6 | 129 |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Sept. 12 | Oct. 4 | 58 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | Sept. 10 | Oct. 2 | 73 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire-Escapes and Ladders, etc. | Sept. 27 | Oct. 1 | 58 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | Sept. 11 | Oct. 1 | 202 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | Sept. 10 | Oct. 1 | 80 |
| 2 | Farm Stock, Products, etc. | Sept. 10 | Oct. 1 | 111 |
| 3 | Metallurgy, Metal-Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | Sept. 10 | Sept. 27 | 59 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Sept. 10 | Sept. 20 | 151 |
| 19 | Stoves and Furnaces | Sept. 10 | Sept. 18 | 219 |
| | *Between one and two months.* | | | |
| 8 | Furniture, Beds, Store Furniture, etc. | Aug. 22 | Oct. 1 | 246 |
| 10 | Carriages and Wagons | Aug. 17 | Oct. 1 | 148 |
| 12 | Mechanical Engineering, Stores-Service, etc. | Aug. 10 | Oct. 1 | 148 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | Sept. 4 | Sept. 29 | 108 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Aug. 20 | Sept. 29 | 144 |
| 20 | Builders' Hardware, Safes, Dentistry, Undertaking, Artificial Limbs, etc. | Aug. 24 | Sept. 25 | 164 |
| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Aug. 9 | Sept. 21 | 170 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, Surgery. | Aug. 17 | Sept. 18 | 192 |
| 1 | Tillage and Fences | Aug. 9 | Sept. 17 | 259 |
| 21 | Textiles, etc. | Aug. 11 | Sept. 13 | 127 |
| | *Between two and three months.* | | | |
| 26 | Electricity, Generation, Distribution, Motive Power, Electric Railways, etc. | July 24 | Oct. 3 | 185 |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | July 17 | Oct. 1 | 147 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, Cutlery, etc. | July 16 | Oct. 1 | 175 |
| 29 | Wood-Working Machines, Carpentry, Coopering and Roofing, etc. | July 14 | Oct. 1 | 193 |
| 18 | Steam-Engineering, etc | July 30 | Sept. 29 | 223 |
| 17 | Paper-Manufactures and Printing | July 13 | Sept. 12 | 227 |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | July 12 | Sept. 7 | 296 |
| 30 | Lamps, Gas-Fittings, Linotyping, Type-Writing Machines, Optics. | July 26 | Aug. 26 | 248 |
| | *Between three and four months.* | | | |
| 34 | Railway-Cars and Fluid-Pressure Railway-Brakes. | June 29 | Oct. 1 | 284 |
| 23 | Instruments of Precision, Acoustics, etc. | July 7 | Sept. 22 | 178 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | June 20 | Sept. 17 | 509 |
| 24 | Sewing-Machines, Crinoline and Corsets, Apparel, and Toilet. | July 3 | Sept. 8 | 143 |
| | Total number of applications awaiting action | | | 5,732 |
| | *Under one month in arrears.* | | | |
| | Designs | Oct. 1 | Oct. 1 | 80 |
| | Trade-Marks | Oct. 5 | Oct. 6 | 14 |

# PATENTS

## GRANTED OCTOBER 16, 1894.

527,397. **GAS-BALANCE FOR ASCERTAINING SPECIFIC GRAVITY OF GASES.** MAX ARNDT, Aix-la-Chapelle, Germany. Filed Feb 18, 1893. Serial No. 462,933. (No model.)



*Claim.*—In an apparatus for ascertaining the percentage volume of a particular kind of gas in a gaseous mixture and for ascertaining the weight of gases, a gas balance located in an air tight chamber and provided with a balance beam *a*, a balanced open vessel *e* suspended from said balance beam for the reception of the gases to be weighed, a gas delivery pipe *f* projecting into vessel *e* and in connection through orifice *i'* and tube *q'* with a source of gas supply or with a suction apparatus outside the air tight chamber, and a vessel *g* located underneath vessel *e* and in connection through orifice $i^3$ and tube $g^3$ with a suction apparatus or with a source of gas supply outside the air tight chamber, said parts *f* and *g* being so placed as to allow of the free up and down movement of vessel *e*, substantially as described and shown.

527,398. **EAR-RING.** CHARLES BABCOCK, Salt Lake City, Utah, assignor of one-fourth to Boyd Park, same place. Filed May 29, 1893. Serial No. 475,840. (No model.)

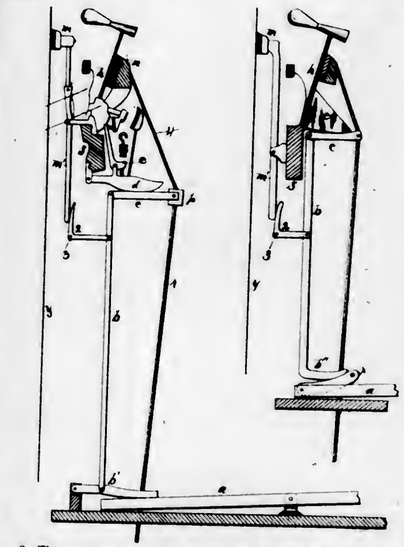


*Claim.*—In a sleeve button or stud the combination with the stud-body S having the rigid rear plate *a* provided with the rigidly attached prong $d^2$ having its lower end bent outward at substantially right angles to the stem thereof, the revoluble tube-prong $d^3$ fitted on the prong $d^2$ and bent coincident therewith and formed with a cut-away portion to take the lower end portion of the prong $d^2$, and the flat triangular spring-plate $S^3$ on the upper end of the prong $d^2$ between the upper end of the revoluble tube-prong and the rear face of the stud, substantially as and for the purpose specified.

527,399. **PIANO-ACTION.** LUTHER A. BARBER, Groton, N. Y. Filed Jan. 25, 1893. Serial No. 459,635. (No model.)

*Claim.*—1. The combination with the key, of the push-rod, the auxiliary jack lever and the pedal rail connected together, the jack lever, the jack and the hammer.

2. The combination with the key, of the push rod, the auxiliary jack-lever pivotally mounted in the rear to the vertically movable pedal rail, the pedal rail and connections between it and the soft pedal, and the buffer, the jack lever, the jack, the hammer and the buffer.



3. The combination with the key, of the push rod, the auxiliary jack-lever, pivotally mounted in the rear upon the vertically movable pedal rail, the pedal rail and connections between it and the soft pedal, and the buffer, the cam-faced jack lever, the jack, the hammer, and the buffer.

4. The combination with the key and the push rod actuated thereby, of the bell-crank lever having one arm connected to the push rod, and the other engaging with the damper stem, the damper upon said stem, the auxiliary jack lever connected to the push rod, and to the pedal rail, the cam-faced jack lever in engagement therewith, the jack, the hammer and the buffer.

5. The combination with the key and the push-rod actuated thereby, and a cam interposed between them, of the bell crank lever having one arm connected to the push rod and the other engaging with the damper stem, the damper upon said stem, the auxiliary jack lever connected to the push rod and to the pedal rail, the cam-faced jack lever, in engagement with the auxiliary lever the jack, the hammer and the buffer.

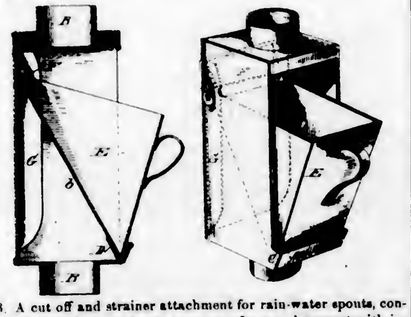
6. The combination with the jack and the jack-lever, of the push-rod, the key and a cam between and engaging with both of them to actuate the jack lever.

527,400. **CUT-OFF AND STRAINER ATTACHMENT FOR RAIN-WATER SPOUTS.** ALFRED H. BARTH, Lamar, Mo. Filed May 5, 1894. Serial No. 510,186. (No model.)

*Claim.*—1. A cut-off and strainer attachment to a rain-water spout, consisting of a suitable box having an open front, a cut-off pivotally connected thereto, a removable funnel-shaped strainer which forms a support for the cut-off when the strainer is not in use, substantially as and for the purpose set forth.

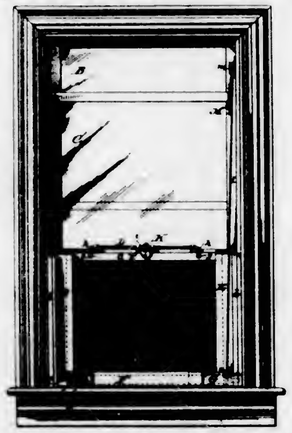
2. A cut-off and strainer attachment to rain-water spouts, consisting of a suitable box provided with an open front having an out-

wardly extending support having an inclined flange and brace, a pivoted cut-off, and a removable funnel-shaped strainer which forms a support for the cut-off when in use, substantially as and for the purpose specified.



3. A cut off and strainer attachment for rain-water spouts, consisting of a suitable box, having an open front and support with inclined flange and brace, a removable funnel shaped strainer, a cut-off and a locking plate connected to a rod having its bearings in the sides of the box, substantially as and for the purpose described.

527,401. WINDOW-SCREEN. JAMES F. BITTLE, Brunswick, Md. Filed May 28, 1894. Serial No. 512,744. (No model.)



*Claim.*—A screen attachment for windows consisting of a frame formed of two laterally extensible sections having uprights with grooved guides for the ends of the binding strip of the screen, and right angle cleats to fit against the sides of the window frame, a sectional casing for the roller, a screen attached to the roller and means for fastening the screen to the sash, and a coiled spring connecting the roller to the window frame by means of a cord, substantially as and for the purpose set forth.

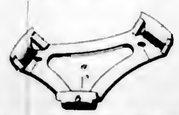
527,402. MAIL-BAG. WILLIAM BRUBAKER, Stoyestown, Pa. Filed July 5, 1894. Serial No. 516,637. (No model.)



*Claim.*—1. The combination of a mail bag, staples for holding the same closed, a lock case secured to the bag and provided with slots through which the staples pass, vertical partitions integral with the top and bottom of the case, the partitions forming spaces for confining the staples from lateral movement and provided with transverse openings, and spring actuated bolts movable through said openings, substantially as shown and described.

2 The combination with a mail bag and staples for holding the same closed, of a lock case, vertical partitions therein extended from top to bottom of the case and forming staple compartments, spring held bolts projected normally into said compartments for engaging the staples when inserted thereinto, and a means for retracting the bolts, substantially as shown and described.

527,403. SHEET-METAL SHOE PLATE OR SPIKE. WILLARD H. BUXTON, Worcester, assignor to the Lamb Manufacturing Company, Chicopee Falls, Mass. Filed May 18, 1894. Serial No. 511,642. (No model.)



*Claim.*—1. In a sheet-metal device, the combination of a base or body portion, an integral projection extending from said base or body portion, and a reinforcing brace or strip formed by slitting the blank and upsetting the metal thereof, to form the brace, substantially as described.

2. In a sheet-metal device of the character described, the combination of a substantially triangular base or body portion A, having a central part cut away as at *a*, integral spurs or projections *b* formed at the corners of said body portion, and integral braces or reinforcing strips *c* connecting the spurs *b* with the body A, said reinforcing strips being formed by slitting the blank and upsetting the metal to form the same, substantially as described.

527,404. VELOCIPEDE. CHARLES BYRNE, London, England. Filed June 30, 1894. Serial No. 516,192. (No model.) Patented in England May 7, 1894, No. 9,035.



*Claim.*—1. In a velocipede having a main frame B and a suspension frame formed of the members C, E and F, mounting the step *g* on an arm forming a rearward extension of one of the members of the fork C, as and for the purpose set forth.

2. In a velocipede having a frame consisting of a fork such as C carrying the driving wheel and pedal-crank axle bracket, a tube such as E carrying the saddle, and an arm or link such as F hinged together and suspended from the main frame B; forming or mounting an arm G on one of the members of the fork C to form a rearward extension thereof to carry the step *g*, as and for the purpose set forth.

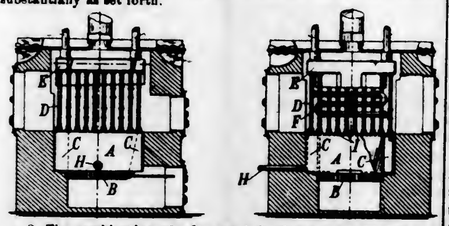
3. In a velocipede, the combination of the frame B, of the fork C carrying the pedal-crank axle bracket D, of the tube E carrying the saddle Y and trussed by one or more stays *e*, of the arm or link F, of the extension G of one of the members of the fork C and of the step *g*, all combined arranged and adapted to operate, as and for the purpose set forth.

4. In a velocipede frame, the combination of the main frame B, of the fork C carrying the pedal-crank axle bracket D and pivoted to the main frame by cone bearings consisting of the following essential parts:—male cone H, female cone H', hollow split screw *h* and tapered screw J, of the extension or arm G on one of the members of the fork C of the step *g* mounted on the extension or arm G, of the tube E carrying the saddle Y trussed by one or more stays *e*, and of the link F connecting the tube E to the frame B, both pivoted to their respective parts by coned bearings consisting essentially of the following parts:—socket K, female cones *k*, *k*, crutch shaped bracket L having slotted ends, spindle M, male cones *m m*, and flat round nuts N, all combined, arranged and adapted to operate as set forth.

527,405. STEAM OR HOT-WATER HEATER. HORACE R. CHADWICK, Howard, R. I. Filed Feb. 8, 1894. Serial No. 499,454. (No model.)

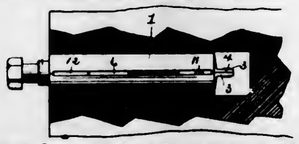
*Claim.*—1. The combination in a steam heater, of a fire pot A having a water space C and a series of tube openings in its upper surface on three sides, of a top E having a series of radial depressions upon its under surface, only one of which extends to the periphery or outer edge of the top and is provided with tube openings, said extended depression being inclined downward as it goes to the rear, whereby the water of all of the depressions can be drawn from the top, and a series of vertical flues for connecting the top and bottom, substantially as set forth.





2. The combination of a fire pot A, having a water space C, and a series of tube openings in its upper surface on three sides, a top E having a series of depressions upon its under surface, two of which extend from the extreme front to the extreme rear and are inclined downward as they go to the rear, and a series of vertical tubes for connecting the bottom and the top along two sides, and the rear end of the extension of the depression to the back of the fire box, substantially as set forth.

527,406. EXPANSION-BOLT. ISAAC CHURCH, Toledo, Ohio. Filed Dec. 1, 1893. Serial No. 492,438. (No model.)



*Claim.*—1. In an expansion bolt, a sectional shell having oppositely inclined inner face and a rigid transverse end web, means upon the web for securing the sections in assembled position, a nut in the shell, and means for moving the nut, and expandiag the shell.

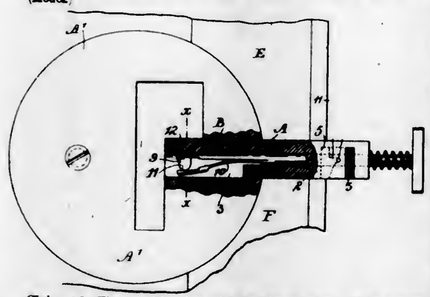
2. In an expansion bolt, a shell formed of two sections, each section having a rigid transverse web expansibly connected together, an inclined interior surface upon the shell, an inversely inclined nut, and a bolt passing through the nut and contacting with the web.

3. In an expansion bolt, a shell having an oppositely inclined inner face, an end web at one end, and a concentric ring at the opposite end, a nut and an expander in the casing the expander being held from displacement by the concentric ring, and a bolt passing through said expander and screwed into the nut.

4. In an expansion bolt, a shell having an inversely inclined interior surface, a nut and an expander in the shell, the expander having a manual application, and a bolt passing through the same and screwed into the nut, by which means the nut is moved.

5. In an expansion bolt, a shell having inclined interior faces, and polygonal sides expanders in the same of corresponding shape in cross section, and means for moving the expanders, and expanding the shell.

527,407. KNOTTER FOR SEWING-MACHINES. ALFRED W. COCHRAN, New York, N. Y. Filed Aug. 8, 1893. Serial No. 482,651. (Model.)



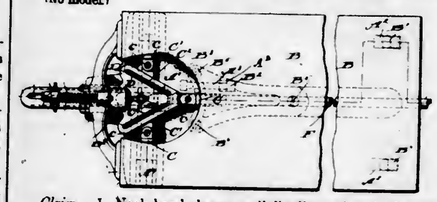
*Claim.*—1. The combination with the throat plate, with an opening for the passage of the eye-pointed needle and a longitudinal hole, of a rotatable twister within such hole having one rigid and one spring jaw, the exterior of the spring-jaw being rounding so as to be closed in its rotation by contact with the throat plate, the jaws being recessed in their inner faces to form an elongated eye and having grooves and hooks at the ends of the jaws for twisting the thread substantially as specified.

2. The combination with the throat plate having upper and lower sides with openings for the passage of the eye-pointed needle and a longitudinal hole, of a rotatable twister within such hole having one rigid and one spring jaw, the exterior of the spring jaw being rounding so as to be closed in its rotation by contact with the throat plate, the jaws being recessed in their inner faces to form an elongated eye and having grooves and hooks at the ends of the jaws for twisting the thread, and means for giving an end movement to the twister as it is rotated, substantially as specified.

3. The combination with the throat plate, of a twister formed of a cylindrical wire split longitudinally and having a spring jaw, hooks and grooves near the ends of the jaws, mechanism for giving an end movement of the twister as the same is rotated, a circular head upon the end of the twister with the upper edge removed to the level of the top of the throat plate, and a notch for receiving the finger nail for rotating such twister, substantially as set forth.

4. The combination with the throat plate having upper and lower sides, with openings for the passage of the eye-pointed needle, a diagonal slot and a longitudinal hole, of a rotatable twister within such hole having one rigid and one spring jaw, the exterior of the spring jaw being rounding so as to be closed in its rotation by contact with the throat plate, the jaws being recessed in their inner faces to form an elongated eye and having grooves and hooks at the ends of the jaws for twisting the thread, and a pin on the shank of the twister within said diagonal slot, the latter having also an offset or shoulder to form a stop for the pin, substantially as specified.

527,408. NECKBAND-CLAMP. ALLEN CONKLING and EDWARD W. BUELL, Chicago, Ill., assignors to the Troy Laundry Machinery Company, Limited, Troy, N. Y. Filed Mar. 3, 1894. Serial No. 502,196. (No model.)



*Claim.*—1. Neck-band clamps radially-disposed and adjustable to neck-bands of varied dimensions, substantially as specified.

2. A series of radially-disposed neck-band clamps and means for adjusting them simultaneously to operate upon neck-bands of varied dimensions.

3. A series of radially-disposed neck-band clamps, in combination with a cam-plate and connections between the clamps and the plate.

4. Radially disposed neck-band clamps, a slotted cam-plate and devices for connecting the clamps with the slots on the plate.

5. Radially disposed neck-band clamps, a slotted plate, means for connecting the clamps and plate, and means for giving motion to the plate.

6. Clamps mounted for radial movement simultaneously, a cam-plate, clamp and plate-connecting devices and means for determining the extent of the movement of the plate.

7. The combination with a cam-plate, of a series of radially-disposed clamps mounted for actuation by said plate, and a yoke-clamp operated by said plate.

8. A series of radially-disposed neck-back clamps, and a yoke-clamp and means for simultaneously operating said clamps.

9. A series of radially-disposed neck-band clamps, means for adjusting the operative position of the same, and means for operating them in an adjusted position.

10. The combination with a yoke-clamp, a slotted cam-plate neck band clamps and means connecting the same for positively moving the yoke-clamp in one direction and yieldingly moving said yoke-clamp in the opposite direction.

11. A neck-band clamping mechanism comprising radially-disposed clamps and a yoke-clamping mechanism, combined with means for adjusting the operative position thereof and for operating the same in said positions.

12. The combination with an ironing-board having a neck-band recess, of neck-band clamping mechanism comprising radially-disposed clamps and yoke-clamping mechanism, and means for operat-

ing the neck-band clamping mechanism adjustably connected with the yoke clamp.

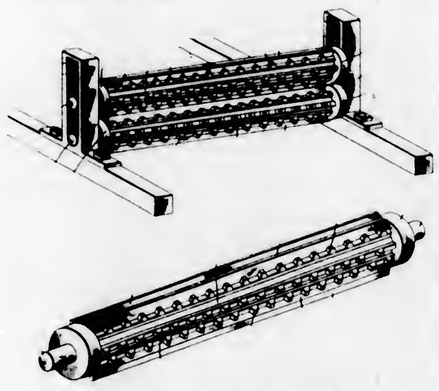
13. The combination with radially-disposed neck-band clamps and a cam-plate operatively connected therewith, of a presser yoke-clamp mounted for movement with said plate positively in one direction and yieldingly in the opposite direction.

14. A neck-band clamp and a yoke-clamp mounted for simultaneous movement, means for permitting independent movement of the yoke-clamp and means for adjusting the said yoke-clamp.

15. The combination with neck-band clamps, and a cam-plate having slots and operative connections between said plate and clamps, of a yoke-clamp mounted for movement with said plate, and also yieldingly-mounted for movement with relation to the said plate.

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**527,409. HUSKING-MACHINE FEED-ROLL.** PATRICK H. CONNER and LEROY CLARK, Monticello, Iowa. Filed Apr. 24, 1894. Serial No. 508,817. (No model.)



*Claim.*—1. A feed-roll having a series of teeth formed thereon and arranged in distinct longitudinal lines, and a groove or passage formed on the roll and between each line of teeth, said groove being extended below the base of the teeth and into the roll, in a line radial from the axis of the roll, substantially as described.

2. Feed or snapping rolls for corn-husking machines, and consisting of two co-operating rolls adapted to be arranged parallel with each other and each having a series of teeth thereon for engagement with the corn, one of said rolls having a longitudinal groove therein and in addition to the teeth, and the remaining roll having a similarly-disposed rib in addition to its teeth, the rib being adapted to mesh with the groove on the first roll as they revolve, and to break the ears of corn from the stalks, substantially as described.

3. The combination of two feed-rolls adapted to be arranged alongside each other and to be held into engagement by spring pressure and having teeth thereon for engagement with the corn, said rolls having at their ends continuous concentric flanges extended beyond the ends of the teeth and adapted to engage each other, whereby the teeth of the rolls are held from engagement with each other at all times and whereby they are prevented from chocking, substantially as described.

4. The combination of two feed-rolls for corn-husking machines, said rolls being adapted to lie parallel with each other having teeth thereon for engagement with the corn and having longitudinal grooves and ribs in addition to the teeth and adapted to mesh with each other, and break the corn from the stalks, and each roll having a continuous concentric flange adapted to engage each other and hold the rolls apart and to hold the ribs and grooves in the proper relations, substantially as described.

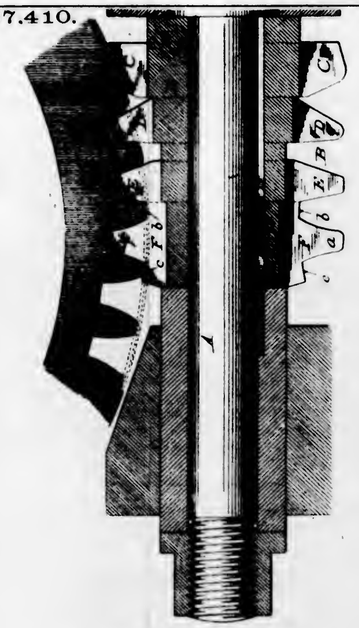
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**527,410. GEAR-CUTTER.** CONRAD M. CONRADSON, Madison, Wis. Filed Dec. 2, 1891. Serial No. 413,789. (No model.)

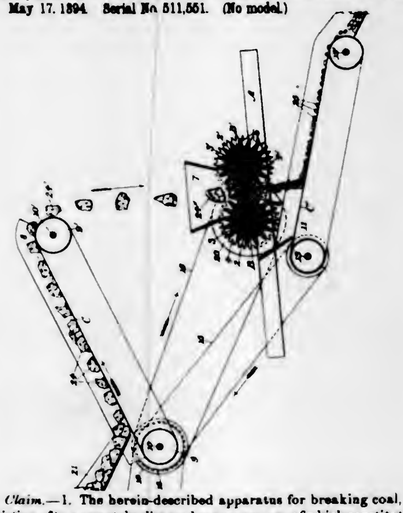
*Claim.*—1. In a gear cutter, the cutting head F provided with a central bit *a*, and the different sized cutting shoulders or bits *b* and *c* located upon opposite sides of the central bit and adapted to act successively upon the end of each tooth.

2. In a gear cutter, the combination with the cutting head F having the bits *a*, *b*, and *c*, of the progressive cutting heads C, D and E,—the said cutting heads C, D, E, and F being adapted to rotate in unison, all substantially as shown and described.

**527,410.**



**527,411. COAL-BREAKER.** BOXLEY B. COXE, Drifton, Pa. Filed May 17, 1894. Serial No. 511,551. (No model.)



*Claim.*—1. The herein-described apparatus for breaking coal, it consisting of two remotely-disposed conveyers, one of which constitutes the feed-conveyer and is located with its delivering end above a pair of break-rolls, and the other of which constitutes the discharge-conveyer and is located with its receiving end below said break-rolls, a pair of break-rolls intermediate to said conveyers, means for rotating said rolls at a given velocity, and means for imparting a traveling movement to the feed-conveyer so as to deliver the coal to the break-rolls at a maximum velocity coinciding with the peripheral velocity of said break-rolls, substantially as described.

2. The herein-described apparatus for breaking coal, it consisting of two coal-breaking rolls supported for coincident rotation upon a suitable frame-work, a coal-feeding conveyer supported with its discharge-end above and adjacent to the coal-breaking rolls, a yielding discharge-conveyer located with its receiving-end below and adjacent to said rolls, and means for rotating said rolls and for imparting a traveling movement to the two conveyers at such predetermined velocity that the feed-conveyer will be adapted for delivering coal to the break-rolls at a velocity substantially coinciding with the peripheral velocity of said rolls, substantially as described and for the purpose set forth.

3. In a coal breaking apparatus, the combination with a pair of coal-breaking rolls and with means for driving said coal-breaking rolls at a predetermined peripheral velocity, of an endless carrier or conveyer located with its discharge end above, remote from and in substantial alignment with the adjacent faces of said rolls, and means for imparting a traveling movement to said conveyer of such velocity relative to the peripheral velocity of the break-rolls as to secure to the coal delivered from said feed-conveyer to the break-rolls a velocity substantially coinciding with the peripheral velocity of said break-rolls, substantially as described and for the purpose set forth.

4. In a coal-breaking apparatus, a pair of break-rolls, in combination with a conveyer having its discharge-end above and remote from said rolls and adapted for delivering the lumps of coal with a falling movement and at an approximately-predetermined velocity to the break-rolls, and means for imparting a peripheral velocity to the break-rolls, substantially equal to the maximum velocity acquired by the falling coal when the same reaches the rolls, substantially as described and for the purpose set forth.

5. In a coal-breaking apparatus, in combination, a pair of break-rolls, a feed-conveyer located with its delivering end above and in substantial alignment with the breaking faces of the rolls, a yielding conveyer located below said rolls and means for actuating said rolls and conveyers, substantially as described and for the purpose set forth.

6. In a coal-breaking apparatus, the combination with a pair of break-rolls driven at a given peripheral velocity, of means adapted for delivering lumps of coal separately and successively to the rolls by a falling movement of a maximum velocity equal to the peripheral velocity of the rolls, and means for receiving, spreading and carrying forward the coal as it is discharged from the rolls, substantially as described and for the purpose set forth.

7. In a coal-breaking apparatus, the combination with a pair of coal-breaking rolls adapted for rotating at a given peripheral velocity, of an endless traveling feed-conveyer located with its delivering end above its receiving end and above the break-rolls and means for imparting a traveling movement to said conveyer so as to deliver the coal to the break-rolls at a maximum velocity coinciding with the peripheral velocity of said break-rolls, substantially as described and for the purpose set forth.

8. In a coal-breaking apparatus, in combination, a pair of coal-breaking rolls, means for rotating said rolls at a given peripheral velocity, an endless traveling feed-conveyer located with its delivering end above its receiving-end and above the break-rolls, means for imparting a traveling movement to said conveyer at such velocity relatively to the peripheral velocity of the break-rolls as to deliver coal to the break-rolls at a maximum velocity coinciding with the peripheral velocity of the break-rolls, an endless flexible discharge-conveyer located with its receiving end below said break-rolls, and means for actuating said discharge-conveyer so as to spread and carry forward the coal as it is discharged from the rolls, substantially as described and for the purpose set forth.

9. The herein described method of breaking coal, it consisting in feeding lumps of coal separately and successively to a breaking apparatus with a falling movement of predetermined maximum velocity, and grasping and breaking said lumps without decreasing or affecting their maximum velocity, substantially as described and for the purpose set forth.

10. The herein described method of breaking coal, it consisting in imparting a traveling movement to the lumps of coal and feeding them separately and successively with a falling movement at a predetermined maximum velocity to a pair of break-rolls; rotating said break-rolls at a peripheral velocity coinciding with the maximum velocity of the lumps of coal as they successively reach the rolls, so as to grasp and break said lumps without decreasing their velocity, and subsequently receiving, spreading and carrying off the coal after it passes the rolls, with a continuous traveling movement, substantially as described and for the purpose set forth.

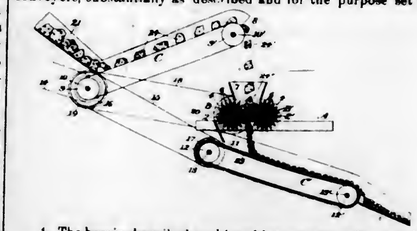
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**527,412. COAL-BREAKING APPARATUS.** BOXLEY B. COXE, Drifton, Pa. Filed May 19, 1894. Serial No. 511,778. (No model.)

*Claim.*—1. In a coal-breaking apparatus, the combination with a pair of revoluble break-rolls and with means for delivering coal thereto, of a discharge-conveyer located below said rolls and having an elastic or brush-like receiving-face, and means for imparting a traveling movement to said conveyer, substantially as described and for the purpose set forth.

2. In a coal-breaking apparatus, the combination with a pair of co-acting break-rolls, of a flexible discharge conveyer located below said rolls, and a tension-device in connection with said conveyer, substantially as described and for the purpose set forth.

3. The herein-described coal-breaking apparatus, it consisting of a pair of break-rolls revolubly connected, a feed-conveyer located above said rolls, a flexible discharge-conveyer located below said rolls, means for regulating the tension of said discharge-conveyer, and means for imparting movement to the rolls and to one or both of the conveyers, substantially as described and for the purpose set forth.

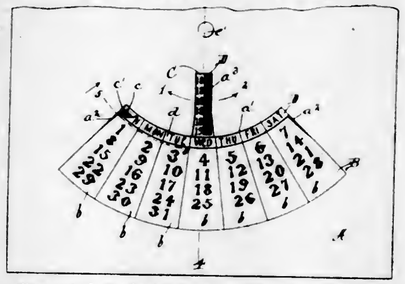


4. The herein described coal-breaking apparatus, it consisting of a pair of co-acting break-rolls, a feed conveyer located with its discharge-end above and remote from the break-rolls, an endless discharge-conveyer located with its receiving end below and adjacent to said rolls and having a tufted or brush-like coal-receiving surface, the fibers of which are adapted to yield laterally with relation to each other to cushion the blow of the coal as it drops from the break-rolls, and means for imparting a traveling movement to the conveyers and for rotating the rolls, substantially as described.

5. In a coal-breaking apparatus, the combination with a pair of co-acting break-rolls, and with means for delivering coal thereto, of a discharge-conveyer located below said break-rolls and consisting of an endless flexible belt having a tufted or brush-like coal-receiving face, the fibers of which project at right angles to the plane of the body of the belt, means for driving said belt, and means for drawing the same taut, substantially as described.

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**527,413. CALENDAR.** WILLIAM K. DAVID, Philadelphia, Pa. Filed July 11, 1893. Serial No. 480,182. (No model.)




*Claim.*—1. In a calendar, a stationary front provided with a circular opening for the display of the edges of the disks, mounted at the back thereof, and a radial slot connecting therewith, in combination with a disk mounted on a journal at the back of the front piece, a second disk mounted loosely on the same journal between the former disk and the front piece and lightly held to the back disk by frictional contact, so as to normally revolve therewith but having no positive connection thereto, and a flexible stop device on the said front disk, wholly disconnected from the back disk, adapted to contact with a fixed stop on the front when the disks are moved in one direction, and to yield so as to pass under or behind the front piece when the disks are moved in the opposite direction, whereby the disks may be rotated together continuously in the latter direction, but when rotated in the opposite or first named direction the front disk will be automatically stopped at a certain determined point while the rotation of the rear disk may be continued in the same direction, substantially as described.

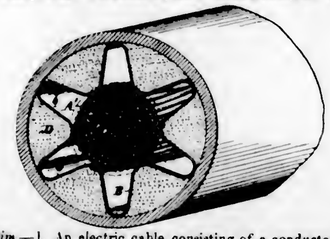
2. In a calendar, a revoluble pin, E, in combination with a back disk, D, secured thereto, a front disk, C, mounted loosely on the pin, clamped to the back disk with sufficient force to normally revolve therewith and provided with a projecting flexible stop lug, *c*, and a stop or abutment on the calendar front arranged in the path of said lug and adapted to arrest the movement of the front disk at a fixed point in one direction whereby when the disks are rotated together toward the stop on the calendar front the front disk will be arrested at a certain point while the rear disk is free to move on, and when

rotated in the opposite direction both disks will move together continuously, substantially as described.

3. In a calendar, a revoluble pivot pin, E, in combination with a back disk, D, secured thereto, the front disk, C, loose on said pin but clamped to the back disk and provided with a projecting stop lug, *c*, and the front, A, provided with circular slit, *a'*, and short radial slits, *a²*, at the respective ends of the latter, substantially as described.

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527,414. ELECTRIC CABLE. THOMAS J. DEWEES, Palmyra, N. J., assignor to the Electric Cable Construction and Maintenance Company, of Pennsylvania. Filed June 20, 1894. Serial No. 515,115. (No model.)



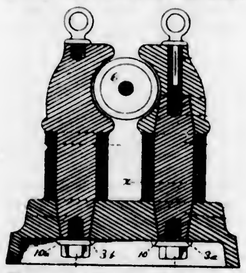
*Claim.*—1. An electric cable consisting of a conductor or conductors through which the current or currents are caused to pass, an irregular inclosing covering of fibrous material forming air spaces about the said cable, an outer metallic tubing or casing inclosing the said cable and its fibrous covering, and a moisture absorbing substance interposed between the fibrous covering of the cable and the metallic tube or casing.

2. An electric cable consisting of a conductor or conductors through which the current or currents are caused to pass, an inclosing casing of paper or fibrous material arranged in a zig zag or irregular manner about the cable forming air spaces about the said cable, an outer metallic tubing or casing inclosing the said cable and its fibrous covering, and a moisture absorbing substance such as quicklime interposed between the paper or fibrous covering of the cable and the metallic tube or casing.

3. The combination of a metallic cable formed of flexible conductors, and inclosing irregular sheath of paper or fibrous material secured about the said cable in a manner to form air spaces adjacent to the cable, an inclosing lead sheath or outer tubing, and quick-lime contained within the outer lead tube or sheath and supported by the paper or fibrous covering of the cable.

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527,415. DYNAMO-ELECTRIC MACHINE. EZRA FAWCETT, Alliance, assignor of one-half to Leonard W. Bradley, Cleveland, Ohio. Filed Feb. 15, 1894. Serial No. 500,196. (No model.)

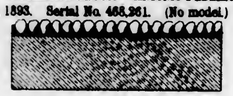


*Claim.*—1. The combination, in a dynamo or other electrical machine, of a field piece having a tapering end and a pole piece having a tapering opening to receive the tapering end of the field piece, substantially as described.

2. The combination, in a dynamo or other electrical machine, of a field piece having a tapering end, a pole piece having a tapering opening to receive the tapering end of field piece, and a bolt to fasten the field piece and the pole piece together, substantially as described.

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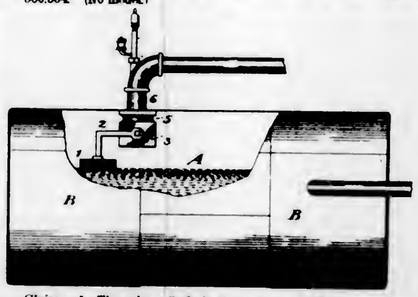
527,416. BUILDING-BLOCK. ANTONIO FEDERICI, Paterson, N. J. Filed Mar. 30, 1893. Serial No. 468,261. (No model.)



*Claim.*—A new article of manufacture consisting of a building block, the body portion of which is composed of a comparatively coarse material, the face or exposed surface being composed of finer material, such as Portland cement, into the surface of which pebbles, of substantially uniform size, are partially embedded, substantially as and for the purpose set forth.

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527,417. WATER-REGULATOR FOR BOILERS. JESSE W. FOX and HARMON W. FOX, Alverton, Pa. Filed Apr. 6, 1894. Serial No. 506,534. (No model.)

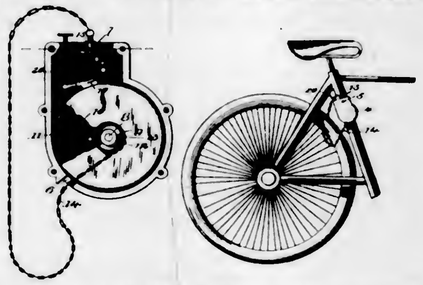


*Claim.*—1. The pipes 7, 8, 9, the screw-cap 10, the screw-plug 11 whose inner end passes through a slot of pipe 7, the pipe 12 adjustably connected by a nut with the cap 10 and attached to the valve-box 3, whereby the valve-box and its connections may be vertically raised or lowered as described.

2. The pipe 13 holding the oil-cup and the whistle pipe 12 combined with the same pipe leading to the valve-box, the valve and the float whereby the valve may be oiled and the whistle blown through the pipe which supplies steam to the pump as set forth.

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527,418. BICYCLE-LOCK. CHARLES C. FREE and NED F. HEATH, Denver, Colo. Filed Dec. 29, 1893. Serial No. 495,153. (No model.)



*Claim.*—In a lock of the character described, the combination of a spring actuated chain pulley, a chain in connection therewith and adapted to be wound thereon and having a head on the free end thereof, a lock for engaging the said head, and a frictional device consisting of a spring actuated pawl having a push rod attached to one end thereof and extending through the casing of the lock, substantially as and for the purposes specified.

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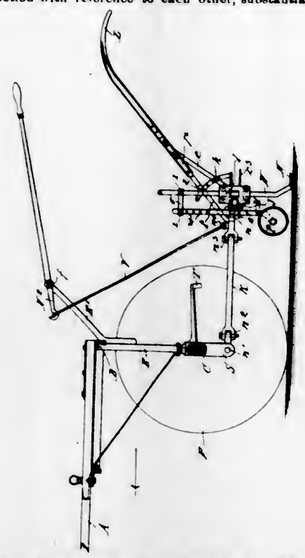
527,419. HORSE-HOE. CARL GINDLER, Salzgitter, Germany. Filed Jan. 31, 1894. Serial No. 498,598. (No model.) Patented in Germany Mar. 17, 1892, No. 73,391.

*Claim.*—1. In a horse hoe in combination with its wheels and draft frame, a tine, a caster wheel, a casing for receiving the shanks of the tine and of the caster wheel, one of said shanks being made to slide therein, a guiding bar connecting said casing with the wheel frame, and means for deflecting the guide bar vertically and laterally with reference to the draft frame, substantially as set forth.

2. In a horse hoe, in combination with its wheels and draft frame, a tine, a caster wheel, a casing for receiving the shanks of the tine and the caster wheel, one of said shanks being arranged to slide therein and being vertically adjustable with reference to the other, and a jointed regulating or guiding bar connecting with the draft frame, provided with a horizontal and a vertical pivot, and connecting the draft frame with such casing, and a handle connected with the guiding bar, substantially as set forth.



3. In a horse hoe, in combination with its wheels and draft frame a tine, a caster wheel, a casing for receiving the shanks of the tine and the caster wheel, a jointed regulating or guiding bar capable of being deflected horizontally and vertically with reference to the draft frame and comprising sections hinged together and capable of horizontal deflection with reference to each other, substantially as set forth.



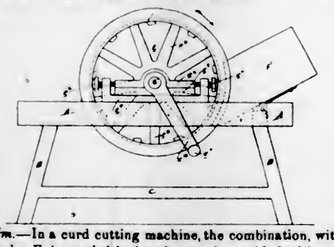
4. In a horse hoe, in combination with its wheels and draft frame, a tine, a caster wheel, a casing for receiving the shanks of the tine and the caster wheel, a jointed regulating or guiding bar capable of being deflected horizontally and vertically with reference to the draft frame and comprising sections hinged together and capable of horizontal deflection with reference to each other, the casing being hinged to the guiding bar by a horizontal pivot, substantially as set forth.

5. In a horse hoe, in combination with its wheels and draft frame, a tine, a casing wherein such tine moves vertically, a guiding bar connecting such casing with the draft frame, and four guide rollers provided on said casing, two of the rollers adjusted on one side and the other two on the opposite side of the shank carrying the foot piece of the tine, for the purpose of securing true movement of the latter, substantially as set forth.

6. In a horse hoe, in combination with its wheels and draft frame, a tine, a casing to which such tine is attached, a transverse beam supporting said casing, a jointed guiding bar connecting the casing with the draft frame such casing being capable of being reversed in its position with reference to the transverse beam, substantially as set forth.

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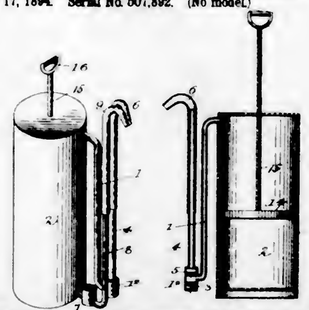
527,420. CURD-CUTTING MACHINE. JOSEPH A. GOSSELIN, Drummondville, Canada. Filed June 23, 1894. Serial No. 515,623. (No model.) Patented in Canada May 21, 1894, No. 46,124.



*Claim.*—In a curd cutting machine, the combination, with a cutting cylinder E, journaled in bearings and provided with means for revolving it, said cylinder consisting of the concavo-convex plates or pieces $e^{10}$ mounted so as to form a cylinder, there being spaces between the edges of the adjacent plates, and the said plates being provided on one face and edge with the projections $e^{11}$ and the knives $e^{12}$ each arranged on the opposite face and in the passageway between one of the said projections and the plane side of the adjacent plate, and the circular disks $e^{13}$ secured to the ends of the said plates; of means, as the chute F, for feeding material to the said cutting cylinder, substantially as described.

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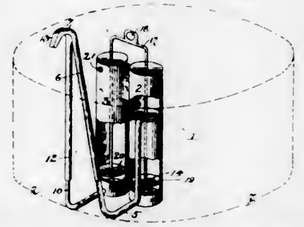
527,421. OIL-PUMP. ROBERT O. GRAHAM, Bloomington, Ill. Filed Apr. 17, 1894. Serial No. 507,892. (No model.)



*Claim.*—In a pump of the character described, the combination with the cylinder and the solid piston, of the downwardly extending filling pipe, the valve box secured to the lower end thereof having an opening communicating with the exterior, the oppositely opening valves located in said box, the upwardly extending pipe connected with said box, provided with a goose-neck, the valve box or casing connected with the cylinder having an opening communicating with the exterior, the oppositely opening valves located in said box, and the upwardly extending suction pipe connected with said box and formed with a goose neck, substantially as described.

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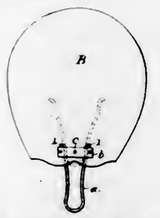
527,422. OIL-PUMP. ROBERT O. GRAHAM, Bloomington, Ill. Filed Apr. 30, 1894. Serial No. 509,543. (No model.)



*Claim.*—In a pump of the character described, the combination with the suction cylinder provided with a valve at its lower end and a downwardly and upwardly extending filling pipe connected with the upper end thereof, and the suction cylinder having a valve and a suction pipe at its lower end and an opening at its upper end, of the plungers, provided with valves, located in said cylinders and connected together so as to move in unison, the construction being such that liquid is forced out of the filling pipe and sucked into the suction pipe, upon the upstroke of said plungers; substantially as specified.

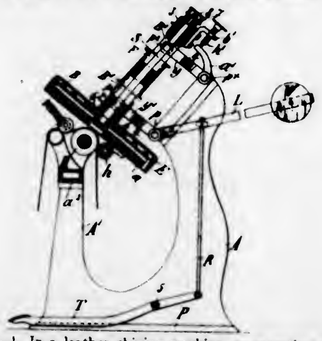
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527,423. FAN. EDWIN S. GRAUEL, Cleveland, Ohio. Filed Oct. 19, 1893. Serial No. 488,664. (No model.)



*Claim.*—In a fan, in combination, the adjustable handle *a*, having outwardly bent ends *l*, *l*, the clamp *b*, and the stop *c*, substantially as and for the purposes described.

**527,424. LEATHER-SKIVING MACHINE.** WILHELM HARTMANN and JULIUS L. THOMSON, Offenbach-on-the-Main, Germany. Filed Aug. 17, 1893. Serial No. 483,417. (No model.) Patented in France Dec. 21, 1892, No. 226,572, and in Germany Dec. 21, 1892, No. 71,821.



*Claim.*—1. In a leather skiving machine, co operating skiving devices comprising a skiving table, revoluble skiving knives having a radial relation to their axis of rotation, one of said devices movable toward and from the other, and bearings arranged in the fields between the knives and adapted to appress the leather onto the table.

2. In a leather skiving machine, co-operating skiving devices comprising a skiving table, revoluble skiving knives having a radial relation to their axis of rotation, one of said devices movable toward and from the other, and yielding cushions arranged in the fields between the knives and adapted to appress the leather onto the table.

3. In a leather skiving machine, co-operating skiving devices comprising a revoluble cylindrical skiving table, revoluble skiving knives having radial relation to their axis of rotation, one of said devices movable toward and from the other, and elastic yielding or resilient cushions arranged in the fields between the knives and adapted to appress the leather onto the table.

4. In a leather skiving machine, co operating skiving devices comprising a skiving table, a discoidal revoluble knife carrier, and knives arranged radially on said carrier, one of said devices movable toward and from the other, and bearings or cushions secured to the discoidal carrier in the fields between the knives, said bearings adapted to appress the leather onto the table.

**527,425. PULLEY-BLOCK.** HENRY V. HARTS, Cleveland, Ohio. Filed Feb. 12, 1894. Serial No. 499,915. (No model.)



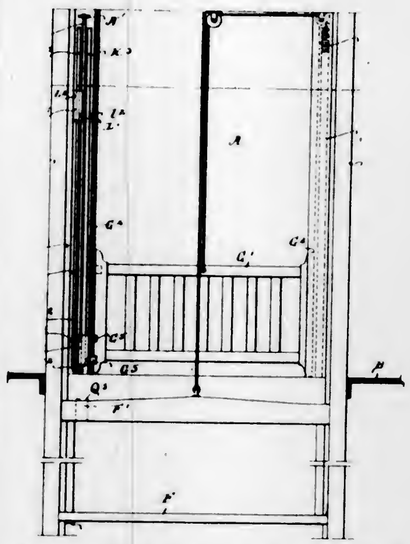
*Claim.*—1. As a new article of manufacture, the shell or casing described consisting of a single sheet of metal having sides of equal length and a connecting top portion forming the back of the shell, said back curved downward at —3—, —3— and having its outer edges —5—, —5— at a lower plane than its center and the sides of the shell having their edges —2— flared outward, a sheave supported between said sides and a suspensory ring, substantially as set forth.

2. The sheave having a lubricating pocket cast into the webbing thereof and formed at its open side with shoulders —23— along the sides, and lips —22— across its ends on a plane wholly outside of said shoulders, and a plate —20— engaged between said shoulders and lips and closing said pocket, and the webbing forming the other side of the pocket and having a plugged opening, substantially as set forth.

3. The shell or casing of the pulley, in combination with the shaft for the sheave having flat portions on top terminating in shoulders resting against the inner sides of the shell and its ends upset and forming heads, whereby the shaft is formed into a bolt to firmly hold the sides of the shell from springing inward or outward, substantially as set forth.

4. The combination of the shell, the sheave, and the combined shaft and connecting bolt through the sheave and the sides of the shell and having shoulders to limit the inward pressure of the shell and its ends upset on the outside of the shell and bearing against the same, whereby the sides of the shell are rigidly held between said shoulders and said upset ends, substantially as set forth.

**527,426. ELEVATOR APPARATUS.** WILLIAM HILL, Philadelphia, Pa., assignor to the Morse, Williams & Company, same place. Filed Apr. 9, 1894. Serial No. 506,839. (No model.)



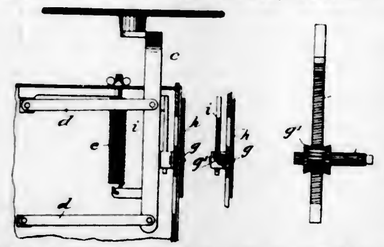
*Claim.*—1. In an elevator apparatus, the combination with the moving cage or platform, and a movable part adapted to be actuated when the platform or cage has reached a certain position, of a movable piece or plunger connected with the movable part adapted to be actuated when the platform or cage has reached a certain position, a guide for said movable plunger provided with recesses located respectively at the upper and lower portions of the guide, a pair of independent movable projections carried by said plunger and normally projecting outward but adapted to be moved with reference to the plunger when the recesses in the guide are reached, and projections carried by the moving platform or cage adapted each to strike one of the projections

2. In an elevator apparatus, the combination with the moving platform or cage, and a movable part adapted to be actuated when the platform or cage has reached a certain position, of a movable piece or plunger, a guide for said movable piece or plunger provided with recesses, one at the upper and the other at the lower portion of the guide, two independent triggers carried by said plunger or movable piece and normally projecting outwardly but each adapted to be moved with reference to the plunger when brought adjacent to one of the recesses in the guide, and one of said triggers being free to be moved when acted upon upwardly, a stationary projection carried by the elevator platform or cage and adapted to act upon one of the said triggers, a hinged projection also carried by said platform or cage and adapted to act upon the other of said triggers, and a connection between said plunger and the movable part adapted to be actuated when the platform has reached a certain position.

3 In an elevator apparatus, the combination with the moving platform or cage, and a movable part adapted to be actuated when the platform or cage has reached a certain position, of a pair of movable pieces or plungers connected together, a guide for said movable pieces or plungers provided with recesses, located at the upper and lower portion of the guide, pivoted triggers carried by each of said plungers or movable pieces and normally projecting outwardly, but each adapted to be moved on its pivot when brought adjacent to one of the recesses in the guide, and one of each of said pairs of triggers being free to be moved upward upon its pivot, a stationary projection and a hinged projection carried by the upper part of the moving platform or cage and one adapted to act upon one of the triggers of one plunger or movable piece and the other upon the other trigger of the said plunger or movable piece, a stationary projection and a hinged projection carried by the lower part of the moving platform and adapted to act one upon one of the triggers of the other plunger or movable piece and the other upon the other trigger of the said plunger or movable piece, and a connection between the one of the plungers and the movable part adapted to be actuated when the platform or cage reaches a certain position.



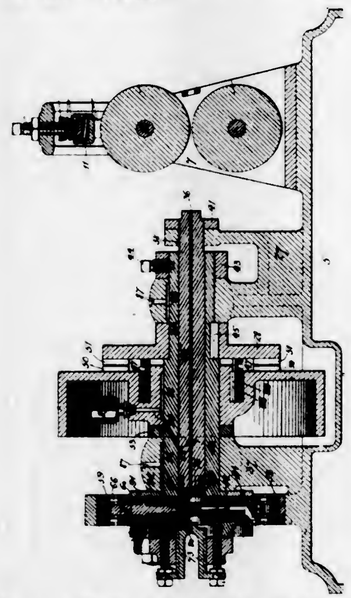
**527,427. WEIGHING-SCALE.** JACOB HOLTHOUSER, New Britain, Conn. Filed June 12, 1893. Serial No. 477,266. (No model.)



*Claim.*—1. In a weighing scale in combination with the weight supporting part and the rotary hand, a rack having its teeth cut to the shape and proportion of a screw thread, and a pinion having its teeth cut to fit the screw thread of the rack, all substantially as described.

2. In combination in a weighing machine a rack having its teeth formed on the plan of a screw thread, and a hand operating pinion having its teeth formed to correspond and intermesh with the teeth on the rack, all substantially as described.

**527,428. MACHINE FOR TWISTING AND PUNCHING GRILL-WIRES.** LOUIS KIRCHENBAUER, Chicago, Ill. Filed Feb. 5, 1894. Serial No. 499,071. (No model.)



*Claim.*—1. A grill-wire twisting machine, comprising a channeled non-revoluble spindle, a plurality of non-revoluble holders movable toward and away from each other, for grasping and releasing the wire, and a plurality of revoluble twisting-grippers also movable toward and away from each other and interposed between the non-revoluble holders and the spindle, substantially as set forth.

2. A grill-wire twisting machine, comprising a channeled non-revoluble spindle, a plurality of non-revoluble cam-actuated holders movable toward and away from each other, for grasping and releasing the wire, and a plurality of revoluble cam-actuated twisting-grippers also movable toward and away from each other and interposed between the non-revoluble holders and the spindle, substantially as set forth.

3. A grill wire twisting machine, comprising a non-revoluble channeled and longitudinally adjustable spindle, a plurality of non-revoluble holders movable toward and away from each other and also adjustable toward and away from the spindle, and a plurality of revoluble twisting-grippers also movable toward and away from each other and interposed between the holders and the spindle, substantially as set forth.

4. A grill-bar twisting and punching machine, comprising a plurality of revoluble twisting-grippers movable toward and away from each other, and a punch carried by one of the grippers and movable toward and away from an opposite gripper and serving to form the rivet-holes in the twisted wire, substantially as set forth.

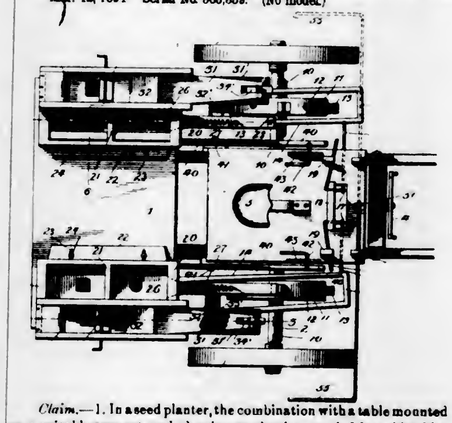
5. A grill-wire twisting and punching machine, comprising a plurality of twisting-grippers movable toward and away from each other, a die carried by one of said grippers, and a punch carried by an opposite gripper and movable upon the latter toward and away from the die, substantially as set forth.

6. A grill-bar twisting machine, comprising a set of feed rolls, a tight cam carrying disk, a loose power pulley, a reciprocating rod, a vibratory sector-arm actuated by said rod, and a pawl and ratchet gearing for the feed rolls actuated by said sector-arm, substantially as set forth.

7. A grill-bar twisting machine, comprising a set of feed-rolls, a pawl-and-ratchet gearing for intermittently actuating said rolls, a vibratory sector-arm geared to the rolls and serving to intermittently actuate the same, and a sliding-rod having an adjustable pivotal connection with the vibratory arm and thereby serving to vary the length of action of the feed-rolls, substantially as set forth.

8. A grill-wire twisting machine, comprising a set of feed-rolls, a non-revoluble channeled spindle, a plurality of non-revoluble holders movable toward and away from each other, a plurality of revoluble twisting-grippers interposed between the spindle and the non-revoluble holders, a sleeve revolnble around the spindle and channeled to receive the revoluble grippers, a cam-carrying disk tight upon the sleeve, a power-pulley loose upon said sleeve and having clutching engagement with the disk, a lever pivoted loosely upon the sleeve and having projections for engaging depressions in the machine-frame so as to throw the pulley into engagement with the disk, and a reciprocatory rod, for actuating the feed-rolls, engaged and operated by the cams on the disk, substantially as set forth.

**527,429. CORN-PLANTER.** ADAM KLINK, Coaltown, Pa. Filed Mar. 12, 1894. Serial No. 503,339. (No model.)



*Claim.*—1. In a seed planter, the combination with a table mounted on a suitable support, and planting mechanism carried by said table; of an upright at the center of the front end of the table, a long arm loosely linked at one extremity to the upper end of the upright and having its other extremity turned down, and additional uprights at the corners of the table provided with notches in either of which the body of said arm is adapted to rest, as and for the purpose set forth.

2. In a device of the character described, the combination with a main axle having a feather, a table supported by the axle, a longitudinally reciprocating slide mounted on the table, and a lug beneath the forward end of the slide; of a cam wheel splined on said feather and having threaded openings in its periphery, a number of pins removably mounted in said openings in the periphery of the cam and adapted to engage said lug, a frame pivoted at its rear end beneath the table and standing at the sides of said cam wheel, and means for moving the front end of the frame laterally of the machine, as and for the purpose set forth.

3. In a device of the character described, the combination with a main axle having a feather, a table supported by the axle, a longitudinally reciprocating slide mounted on the table, and a lug beneath the forward end of the slide; of a cam wheel splined on said feather, a number of pins mounted in the periphery of the cam and adapted to

engage said lug, a frame pivoted at its rear end beneath the table and standing at the sides of said cam wheel, a block rising from the table, an upright lever pivoted to said block and having a horizontal outturned upper end, a toothed rack rising from the table and with the teeth of which said end engages, and a link connecting the lower end of the lever with the front end of the frame, as and for the purpose set forth.

4. In a seed planter, the combination with a table mounted on a supporting axle, a cam wheel splined on said axle and carrying peripheral pins, a seed box mounted on the table in rear of said wheel, and a spout depending from the box; of a slide moving through the box and having a lug adapted to be tripped by said pins, a frame pivoted at its rear end beneath the table with its body standing astride said spout and cam wheel, and means for adjusting the front end of this frame laterally of the machine, as and for the purpose set forth.

5. In a seed planter, the combination with a table mounted on a supporting axle, a plate resting on the table and having transverse slots, set screws passing through said slots into the table for the purpose set forth, a seed box mounted on the plate, and a longitudinally reciprocating slide beneath the box; of a cam wheel splined on the axle and having peripheral pins engaging said slide, and means for adjusting the cam wheel longitudinally of the axle, substantially as described.

6. In a seed planter, the combination with a table mounted on an axle, a cam wheel splined on said axle and having peripheral teeth, means for adjusting the cam wheel longitudinally of the axle, a transversely slotted plate mounted on the table, and set screws taking through the slots and into the table for the purpose set forth; of a box rigidly mounted on the plate and having a transverse partition dividing it into compartments, slides moving above and below the bottom of the box and connected in front of it, said bottom and both the slides having holes under each compartment adapted to register with each other, a lug on the lower slide engaged by the pins on the cam wheel, a single conductor beneath the holes in both compartments, and a single delivery spout at the lower end of the hopper, substantially as described.

7. In a corn planter, the combination with a table, a seed box supported thereon, means for adjusting the box laterally of the table, a slide in the box, and mechanism for tripping the slide; of a spout beneath the box, a draw-bar pivoted to the table and having an arm at its forward end engaging a rack bar on the table, a tubular boot surrounding said spout, a slot and bolt connecting this boot with the rear end of said draw-bar so as to permit lateral adjustment of the boot, and a share in front and covering arm in rear of the boot, as and for the purpose set forth.

8. In a corn planter, the combination with a table, a seed box supported thereon, means for adjusting the box laterally of the table, a slide in the box, and mechanism for tripping the slide; of a spout beneath the box, a draw-bar pivoted to the table and having an arm at its forward end engaging a rack bar on the table, a tubular boot surrounding said spout, a slot and bolt connecting this boot with the rear end of said draw-bar so as to permit lateral adjustment of the boot, a share carried by the front end of the boot, and a covering arm carried by and in rear of the boot, as and for the purpose set forth.

9. In a seed planter, the combination with a table supported on an axle, and a cam wheel on said axle; of a seed box on the table, a slide therein operated by the cam wheel, a second seed box adjacent the first, a slide therein, an arm projecting from one slide adjacent the other, and a set screw removably passing through the latter slide into the arm, as and for the purpose set forth.

10. In a seed planter, the combination with a table mounted on an axle, a cam wheel splined on said axle, means for adjusting the wheel longitudinally of the axle, a slotted plate mounted on the table, and set screws taking through the slots into the table for permitting the adjustment of the plate laterally of the machine; of independent seed boxes mounted on the plate and provided with independent slides, a lug on one slide tripped by the cam wheel, and detachable connections substantially as described between the two slides, as and for the purpose set forth.

11. In a machine of the character described, the combination with a seed box consisting of upper and lower compartments having holes in their bottoms, a chute connecting said holes, a spout beneath the lower hole, a gage above the upper hole, slides moving just above said bottoms, a rock lever centrally pivoted on a bracket at the front end of the box, and connections between its ends and the two slides whereby the upper hole is normally opened and the lower hole normally closed by their respective slides; of mechanism substantially as described for reciprocating the lower slide, as and for the purpose set forth.

12. In a seed planter, the combination with a seed box having a hole in its bottom, a slide moving over the bottom and also having a hole, a shaft journaled across the box and having a crank-handle at its outer end, and a gage mounted on the shaft above the hole in the box bottom; of a chute below said hole, a slide beneath the chute, and mechanism for reciprocating said slides simultaneously and oppositely, as and for the purpose set forth.

13. In a seed planter, the combination with a seed box having a hole in its bottom, a slide moving over the bottom and also having a hole, a rearward incline at the front of the box, a lip at the rear of the box, the slide moving under the incline and lip, a shaft journaled across the box between the incline and lip and having a crank-handle at its outer end, and a gage mounted on the shaft above the hole in the box bottom; of a chute below said hole, a slide beneath the chute, and mechanism for reciprocating said slides simultaneously and oppositely, as and for the purpose set forth.

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**527,430.** FLOOR. RICHARD KNIGHTS, Snaresbrook, England. Filed June 23, 1894. Serial No. 515,596. (No model.) Patented in England June 20, 1893, No. 12,154, and in Belgium Apr. 16, 1894, No. 109,181.



*Claim.*—1. The combination with floor supports of a convex plate having upwardly projecting sides terminating in outwardly extending flanges, substantially as and for the purpose set forth.

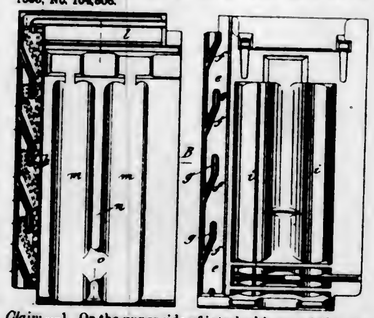
2. The combination with floor supports of two sections of a convex plate having upwardly projecting sides terminating in outwardly extending flanges, and a transverse butt strip riveted to said sections, substantially as and for the purpose set forth.

3. In a floor, a series of convex plates having upwardly projecting sides terminating in outwardly extending flanges, in combination with a series of strips riveted to the contiguous flanges of said plates, substantially as and for the purpose set forth

4. The combination, in a floor, of a series of convex plates having upwardly projecting sides terminating in outwardly extending flanges, a series of strips riveted to the contiguous flanges of said plates, convex plate sections fastened together by transverse butt strips, and other convex plate sections fastened together by longitudinal butt strips, in the manner substantially as and for the purposes set forth.

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**527,431.** ROOFING-TILE. CHRISTIAN LEBBEISTER, Aix-la-Chapelle, Germany. Filed June 2, 1894. Serial No. 513,295. (No model.) Patented in Germany Sept. 2, 1892, No. 69,029, and in Belgium June 15, 1893, No. 104,806.



*Claim.*—1. On the upper side of interlocking roof tiles, the ridges *c* branching angularly from the ridge *b* on the long edge of the tile into a recess or channel *a* and having extensions *d* parallel with ridge *b*, said ridges *c*, *d*, being symmetrical with and of a similar shape to ridges *f*, *g*, in the covering recess or channel *e* on the under side and at the opposite edge of the tile, for the purpose specified, substantially as described and shown.

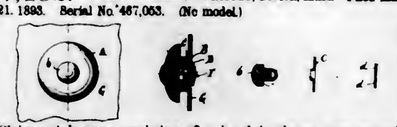
2. On the upper side of interlocking roof tiles, the ridges *c* branching angularly from the ridge *b* lengthwise of the tile into a recess or channel *a* and having extensions *d* parallel with ridge *b*, said ridges *c*, *d*, being symmetrical with and of a similar shape to ridges *f*, *g*, in the covering recess or channel *e* on the under side of the tile, in combination with sharp discharging edges *i* on the under side of the tile, for the purpose specified, substantially as described and shown.

3. In interlocking roof tiles with ridges *c*, *d*, branching angularly from the ridge *b* into the recess or channel *a* on the upper side of the tile and symmetrical with and of a similar shape to ridges *f*, *g*, in the covering recess or channel *e* on the under side of the tile in combination with sharp discharging edges *i* on the under side of the tile, a recess *o* in the ridge *n* which separates the channels *m*, *m*, said recess being located so as to come over the underneath layer of tiles, for the purpose specified, substantially as described and shown.



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**527,432.** BUTTON. HORRA W. LIBBEY, Boston, Mass. Filed Mar. 21, 1893. Serial No. 467,053. (No model.)



*Claim.*—A button consisting of a head having a countersunk hole in its center, a headed shank fitting into said countersunk hole, an antifriction disk, having a central hole with a raised edge around same a locking bar provided with holes and a wire or thread for uniting the parts and the material together substantially as set forth.

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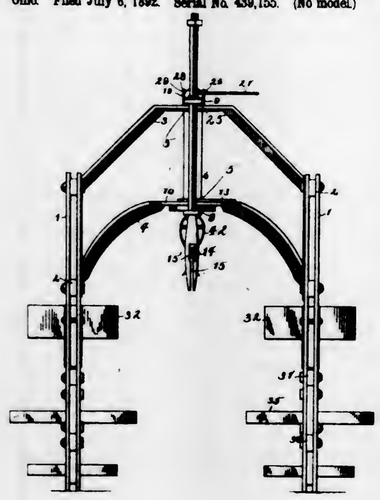
**527,433.** HARNESS ATTACHMENT. BENJAMIN S. LILLY, Broken Bow, Nebr. Filed Jan. 31, 1894. Serial No. 498,607. (No model.)



*Claim.*—The herein described harness attachment comprising the cross bar or plate *d*, the side bars *a*, connected at one end to the bar or plate *d*, and having their opposite ends curved upwardly, the cross bar *c*, connecting the curved ends of the side bars and adapted to rest on the opposite side of a strap with respect to the bar *d*, and the hook B, rising from the cross bar or plate *b*, and curving away from the frame A; said hook B, being adapted to serve the two fold function of attaching the device to a strap and receiving a check rein or the like, substantially as and for the purpose set forth.

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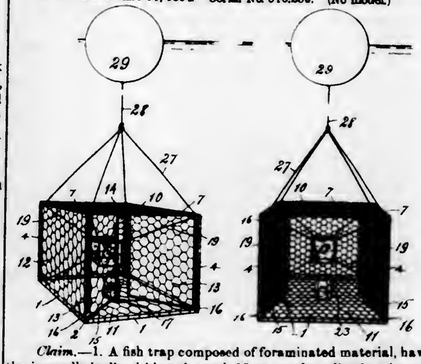
**527,434.** MITERING-MACHINE. JAMES LOCKE, Middletown, Ohio. Filed July 6, 1892. Serial No. 439,155. (No model.)



*Claim.*—In a miter cutting machine, the combination with a cross piece and vertically adjustable cutter guide rods, of mechanism for retaining the cutter guide rods in position, consisting of sliding plates, adapted to engage with the rods and hold them against the cross piece, a yielding handle connecting the sliding plates and adapted to be expanded by the spreader on one side and compressed by the compressing lugs on the other side of the cross piece, substantially as and for the purpose specified.

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**527,435.** FISH-TRAP. PHILOLOGOUS H. LOUD, Jr., Charleston, S. C. Filed June 30, 1894. Serial No. 516,239. (No model.)



*Claim.*—1. A fish trap composed of foraminated material, having the inwardly inclined hinged panels 15, means for adjusting the opening between the inner ends of said panels, and a bait receptacle within the trap, substantially as set forth.

2. A fish trap composed of foraminated material, having a suitable entrance opening, and within the trap the live or other bait receptacle 18 provided with transparent vertical walls and top and bottom panels of wire netting or equivalent open work, substantially as set forth.

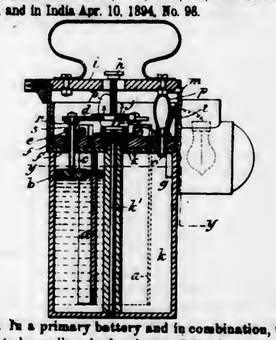
3. A fish trap composed of wire netting or similar material, having a suitable entrance opening, the bait receptacle 18, and the jar 23 containing the cone or support 26 for the bait, substantially as set forth.

4. A fish trap consisting of a bottom frame of separate pieces having pivoted apertures 3, a top frame composed of similar pieces, uprights 4 uniting and serving as pivots for said top and bottom pieces, and top, bottom and side panels of foraminated material supported on said pieces, substantially as set forth.

5. The combination of the top and bottom pieces 1 and 7 provided with quadrants 2 having perforations 3 and 8, uprights 4 passing through said perforations 3, bolts 9 engaging the perforations 8, and panels of foraminated material supported on said pieces and uprights, substantially as set forth.

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**527,436.** PRIMARY BATTERY AND PORTABLE ELECTRIC LAMP. SAMUEL W. MACQUAY, London, England. Filed Jan. 4, 1894. Serial No. 495,666. (No model.) Patented in England Feb. 13, 1893, No. 3,210; in France Nov. 17, 1893, No. 234,126; in Belgium Nov. 23, 1893, No. 107,327; in Cape of Good Hope Jan. 15, 1894, No. 398; in New South Wales Jan. 29, 1894, No. 4,852; in South African Republic Feb. 2, 1894, No. 598; in New Zealand Feb. 5, 1894, No. 6,654; in Victoria Feb. 9, 1894, No. 11,139, and in India Apr. 10, 1894, No. 98.



*Claim.*—1. In a primary battery and in combination, the cells, a frame adapted to be easily raised or lowered, insulated rods attached

to said frame, a liquid-tight plate carrying stuffing boxes, through which said rods pass and zincs in the form of plates or dies, carried on the flat by said rods, substantially as and for the purpose set forth.

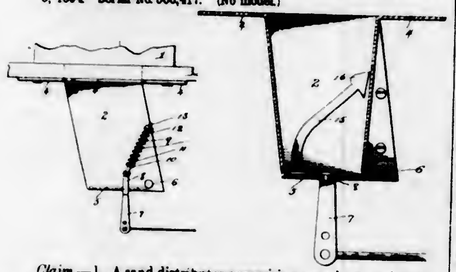
2. In a primary battery and in combination the cells, a liquid tight plate over same, the carbons, stuffing boxes carried by the plate, means for securing the latter, a frame, insulated rods attached to the frame passing through the stuffing boxes and plate, zincs carried by the rods, a cover and a handle passing through same and engaging with the frame for raising and lowering same, substantially as described.

3. In a primary battery and in combination the cells, a liquid tight plate over same, means for securing the plate, a frame, rods attached thereto passing through the plate, disks of zinc horizontally carried by the rods, means for raising and lowering the frame and zincs, a cover, the case, terminals carried by the case, spring strips carried by the plate making contact with the terminals, connections between the strips and the zincs and carbons and an incandescent lamp connected to the terminals and carried by the case substantially as described.

4. In a primary battery the combination with the cells, of a liquid tight plate covering same, means for securing the plate, a tube or passage in the plate to allow of the escape of gas from each cell, and an elastic receptacle provided with a small opening or pin hole in same, carried by the tube, substantially as and for the purpose described.

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**527,437. SANDING DEVICE.** JAMES MARTIN, Baltimore, Md., assignor of one-half to Lawrence N. Frederick, same place. Filed Apr. 5, 1894. Serial No. 506,417. (No model.)



*Claim.*—1. A sand distributer comprising a sand reservoir, a hopper connected therewith, a hinged bottom in said hopper, spring actuated rods working in bearing blocks located on the side of said hopper, and pivotal connections between the hinged bottom and said rods.

2. A sand distributer comprising a sand reservoir, a hopper having a hinged bottom, an operating arm secured to said bottom and provided with extensions, and spring controlled rods pivotally connected to said extensions, whereby the bottom is held in a closed position.

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**527,438. SHEET-METAL KNOB.** AMBROSE T. MATTHEWS, Worcester, Mass., assignor to the Matthews Manufacturing Company, same place. Filed June 8, 1894. Serial No. 513,879. (No model.)



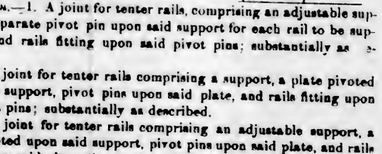
*Claim.*—1. In a sheet-metal knob, the combination of a body portion having open ends, and formed of sheet-metal, a central spindle or pintle extending through said body portion, a sheet-metal cap carried by said spindle, a spring for exerting tension upon said spindle and body portion, said cap and body portion being provided with engaging abutments or turned over edges for preventing the same from becoming disengaged, substantially as described.

2. In a sheet-metal knob, the combination of a body portion C formed of sheet-metal, a cap portion D carried by the body portion, a central spindle or pintle F having a cap which extends telescopically through the body portion C, the cap and the body portion C being provided with spun or turned over edges for preventing the same from becoming disengaged, and a coiled spring G mounted on the spindle, substantially as described.

3. In a sheet-metal knob, the combination of a body portion C stamped or formed from a split blank so as to be provided with ventilating orifices, a central spring pressed spindle having a head *g*, which extends telescopically through the body portion, and a cap portion E, fitted into the head *g*, the parts C and E being provided with edges which are turned or spun over in order to prevent the same from becoming disengaged, substantially as described.

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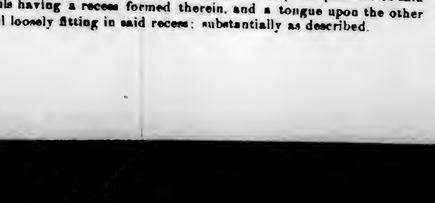
**527,439. NON-CONDUCTING MATERIAL AND METHOD OF FORMING SAME.** HENRY C. MICHELL, Toronto, Canada. Filed Apr. 24, 1894. Serial No. 508,862. (No specimens.) Patented in Canada Mar. 27, 1894. No. 45,642.



*Claim.*—The combination with tubes or pipes having transverse grooves near their ends, of cords or wires seated in said grooves and a plastic composition surrounding the tubes and wires or grooves, substantially as shown or described.

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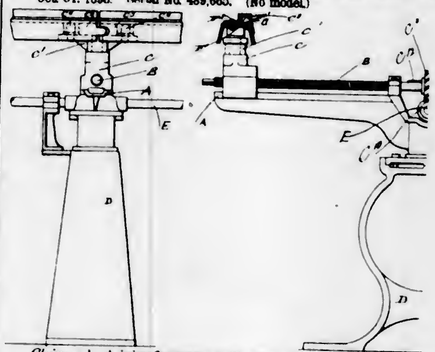
**527,440. HANGING LAMP.** JAMES H. MOSS, Irvona, Pa. Filed June 9, 1894. Serial No. 514,074. (No model.)



*Claim.*—The combination with the support, of the pulleys B B' having threaded shanks inserted in the support, the cord C passing over the pulleys and extending down an equal distance at opposite ends, the like lamp brackets secured on the ends of the cord, the lamps, and hoods for the lamps carried by the brackets, substantially as described.

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**527,441. CLOTH-STRETCHING MACHINE.** JAMES MUIR, Providence, R. I., assignor to the Phenix Iron Foundry, same place. Filed Oct. 31, 1893. Serial No. 489,665. (No model.)



*Claim.*—1. A joint for tenter rails, comprising an adjustable support, a separate pivot pin upon said support for each rail to be supported, and rails fitting upon said pivot pins; substantially as described.

2. A joint for tenter rails comprising a support, a plate pivoted upon said support, pivot pins upon said plate, and rails fitting upon said pivot pins; substantially as described.

3. A joint for tenter rails comprising an adjustable support, a plate pivoted upon said support, pivot pins upon said plate, and rails fitting upon said pivot pins; substantially as described.

4. A joint for tenter rails comprising an adjustable support, pivot pins upon said support, rails fitting upon said pivot pins and means for preventing vertical displacement of the rails; substantially as described.

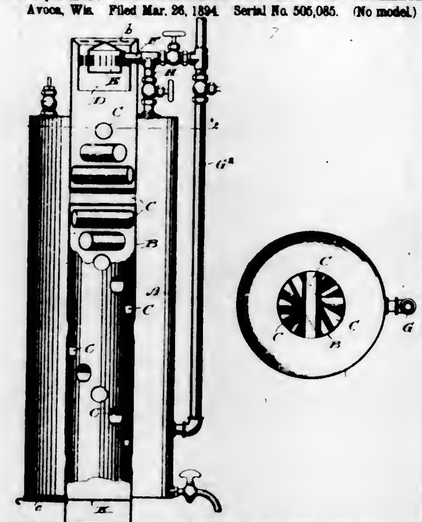
5. A joint for tenter rails comprising an adjustable support, pivot pins upon said support, rails fitting upon said pivot pins one of said rails having a recess formed therein, and a tongue upon the other rail loosely fitting in said recess; substantially as described.



6. A tenter rail joint comprising an adjustable support, a plate pivoted to said support, pivot pins upon said plate, rails fitting upon said pivot pins, one of said rails having a recess formed therein, and a tongue upon the other rail loosely fitting in said recess; substantially as described.

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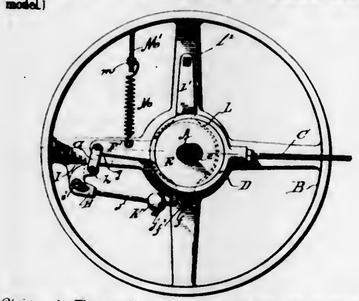
**527,442. GRAIN HEATER OR STEAMER.** JOHN P. MCCALLISTER, Avoca, Wis. Filed Mar. 26, 1894. Serial No. 505,085. (No model.)



*Claim.*—A grain-heater and steamer comprising a steamtight undivided casing having an exhaust opening, a chute extending through the casing, a series of open end transverse tubes successively arranged in the chute to have each one thereof out of line with its predecessor, an apertured shell of less diameter than said chute depending therein and having a flared and apertured upper extremity joined thereto, a hollow apertured deflector within the shell, a valve-controlled steam-pipe leading into the casing, a valve controlled branch leading from said pipe into the deflector, and another valve controlled branch connecting the one aforesaid with said casing, substantially as set forth.

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**527,443. CENTRIFUGAL SPEED-GOVERNOR.** CALVERT R. MCGARRY, Elkton, Va. Filed Jan. 9, 1894. Serial No. 496,289. (No model.)



*Claim.*—1. The combination with the wheel and its shaft, of the bell-crank lever having an arm pivoted on the wheel and an arm at right angles thereto, a weighted lever connected with the last-mentioned arm, and an eccentric connected with the cut-off valve and about which the bell crank lever works, as set forth.

2. The combination with the wheel and its shaft, of a bell-crank lever having two arms one of which is pivoted on the wheel, a pivoted lever connected with the other arm and carrying a weighted rod, and an eccentric having a hub about which the bell-crank lever works and carrying a rod for connection with the cut-off valve, as set forth.

3. The combination with the wheel and its shaft, of the bell-crank lever having two arms at right angles to each other, the lever carrying a weighted rod and pivotally connected with one of said arms, and an eccentric carrying a rod for connection with the cut-off valve and having an eccentric hub, substantially as and for the purpose specified.

4. The combination with the eccentric having an eccentric hub and oblong slot, of the wheel and its shaft passed through said slot, the bell-crank lever mounted on the eccentric hub, a pivoted lever connected with an arm of said bell-crank lever, and a weighted rod carried by said lever, as set forth.

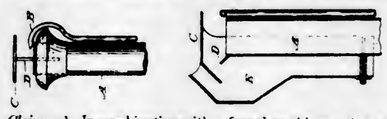
5. The combination with an eccentric having an eccentric hub with coincident oblong slots in the eccentric and hub, of a bell crank lever on the said hub, a pivoted lever connected with an arm on said bell crank-lever, and a weighted rod on the pivoted lever, as set forth.

6. The combination with the eccentric with its eccentric hub and strap connected with the cut-off valve-rod, of the bell-crank lever on the said hub and having two arms one of which is pivotally connected with the wheel, and the plate connected with the said hub and having an arm connected with the wheel, as set forth.

7. The combination with the wheel and its shaft, of the eccentric with eccentric hub and oblong slot, the bell-crank lever on said hub and having two arms one of which is pivotally mounted on the wheel, the lever pivotally connected with the longer arm and carrying a weighted rod, and the spring connecting the rim of the wheel with the longer arm, and the plate secured to said hub and having an oblong slot and an arm pivotally and adjustably connected with the wheel, all substantially as specified.

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**527,444. SPARK ARRESTER AND EXTINGUISHER.** HENRY O'HARA, Melbourne, Victoria, assignor of one-half to John Alston Wallace, same place. Filed May 26, 1894. Serial No. 512,454. (No model.)

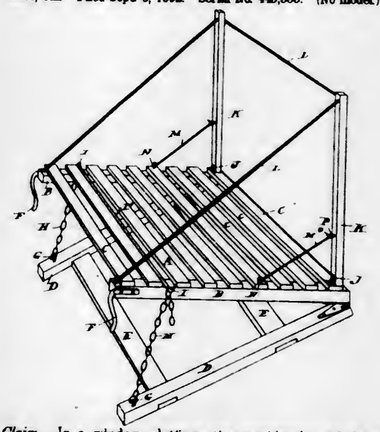


*Claim.*—1. In combination with a funnel or chimney A, a steam pipe extending to the open end thereof and adapted to discharge steam across the top and a baffle plate above the chimney, said steam pipe being interposed between the end of the chimney and said baffle plate, substantially as described.

2. In combination with a chimney or funnel, a steam pipe discharging across the top thereof, a baffle plate above the end of the chimney and a receptacle alongside the chimney with an opening thereto in line with the top of the chimney opposite the position of the steam pipe, substantially as described.

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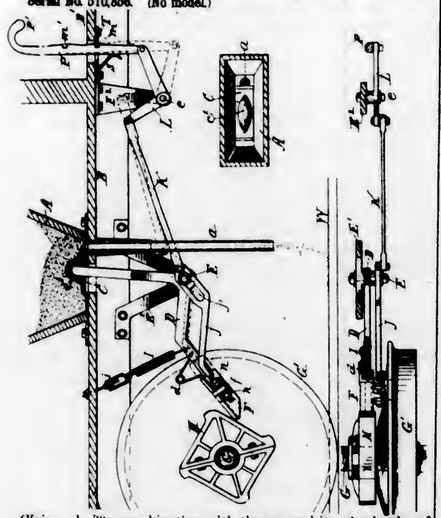
**527,445. WINDOW-PLATFORM.** GEORGE W. OUSLEY, Jr., San José, Cal. Filed Sept. 3, 1892. Serial No. 445,353. (No model.)



*Claim.*—In a window platform, the combination of the main slatted platform, having inner hooks F on portions of the same, inclined braces D, hinged to the outer edge of the said platform on opposite sides of the same and connected by cross-braces, a rod I' movably resting between the slats of the platform, and having hooks I on its opposite ends, eyebolts secured to said braces D near their inner ends, chains H attached to said eyebolts and adapted to adjustably engage the said hooks I, posts K hinged to the upper part of the platform near one edge, hooked rods M engaging the said platform

and posts for holding the latter in upright position, and a rope connecting the upper ends of said posts to each other and to the opposite side of said platform, substantially as described.

527,446. SAND-DELIVERING MECHANISM FOR STREET-CARS. ALEXANDER PARRANT, Worcester, Mass. Filed May 11, 1894. Serial No. 510,856. (No model.)



*Claim.*—1. The combination with the car and its wheel-axle, of the sand receptacle, the sliding gate and delivery chute, the gate-operating lever, the contact-shoe movable and sliding on the end of said lever, the lift-spring attached to said lever, a cam on the wheel-axle, and means for shifting said contact-shoe endwise into and from engagement with said cam, for the purpose set forth.

2. The combination with the sand-box, the sliding-gate, the gate operating angle-lever fulcrumed on the stationary pivot stud E and having the retractible contact member longitudinally movable on the end thereof; and the cam upon the car-axle, of a bar J supported by a slot or guide at the fulcrum pivot E connected with said contact member, and having its end joined by a rod with an angle-lever, and a shipper bar at the car-platform, substantially as and for the purpose set forth.

3. In a sand-delivering mechanism for street-cars, the combination with the sand-box and its delivery chute, of the sliding gate or valve having the hump *c'* upon its top side with a cavity beneath, and the operating lever connected or engaged therewith through an opening in the bottom of the sand-box.

4. In a sand-distributing mechanism for street-cars, the contact piece F sliding on the end of the gate-actuating lever, and provided with a perforated ear *f*, the bar J having its threaded end passing through said ear, with the jam-nuts n n arranged with an intervening space for loosely confining said ear, and the spring *d* normally forcing said contact piece toward the end of the lever, in combination with the actuating cam H, the sand-feeding devices and connections for working said bar J.

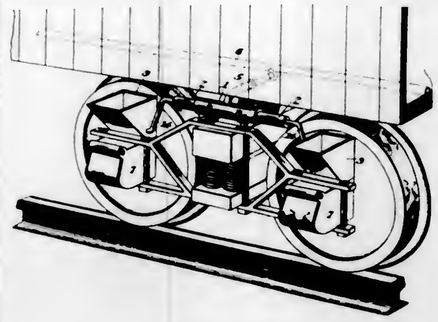
527,447. CAR-WHEEL LUBRICATOR. JAMES W. RENEAU, Houston, Tex. Filed Dec. 19, 1893. Serial No. 494,018. (No model.)

*Claim.*—1. In a lubricator, the combination, with a reservoir and a reciprocatory feed box, of a pneumatic cylinder, means for conveying pneumatic energy thereto, a piston and piston actuating spring within the cylinder, and mechanism operatively connecting the piston with the feed box, substantially as specified.

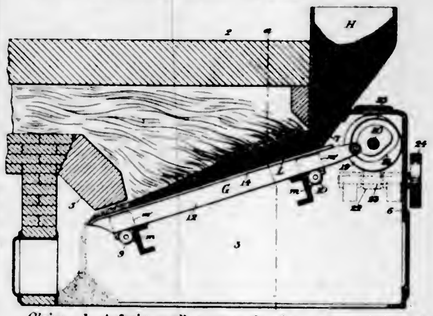
2. In a car axle lubricator, the combination, with a car, of a reservoir, movable feed box, pneumatic pressure supply pipe, cylinder, pipe connecting the interior of the cylinder with the supply pipe, a piston within the cylinder, and mechanism connecting the piston with the feed box, substantially as specified.

3. In a lubricating apparatus, the combination, with a pneumatic cylinder and means for supplying the same with pneumatic energy, of a plurality of lubricating reservoirs and feed boxes, a plurality of pistons within the cylinder and mechanism operatively connecting the feed boxes and pistons, respectively, substantially as specified.

4. In a lubricating apparatus, the combination with a pneumatic cylinder, of a plurality of pistons therein, a plurality of reservoirs and feed boxes, mechanism operatively connecting the feed boxes and pistons, respectively, means for supplying the cylinder with pneumatic energy between the pistons to actuate them simultaneously in one direction, and automatically actuating mechanism adapted to actuate the pistons in the opposite direction, substantially as specified.



527,448. TRAVELING-GRATE FURNACE. FRANCIS H. RICHARDS, Hartford, Conn., assignor to Eckley B. Coxe, Drifton, Pa. Filed Nov. 27, 1893. Serial No. 492,053. (No model.)



*Claim.*—1. A fuel-traveling grate for furnaces, consisting of a series of grate-bars supported for longitudinal movement, combined with rotary drivers and connections substantially as described for imparting a gradual and relatively slow longitudinal forward movement to the series of bars, and adapted for imparting a relatively rapid backward movement to a portion only of the bars at a time, and means for rotating said drivers, substantially as described and for the purpose set forth.

2. The herein-described fuel-traveling grate for furnaces, it consisting of a series of bars supported and adapted for longitudinal movement, in combination with bar-actuating devices which consist of differently disposed revoluble drivers having successive long and short cam-faces adapted respectively for imparting a relatively slow forward longitudinal movement to the majority of the grate-bars, and for imparting a relatively rapid backward movement to said bars, independently or successively, and connecting-devices between the grate-bars and their drivers and in constant bearing contact with the bearing faces thereof, substantially as described and for the purpose set forth.

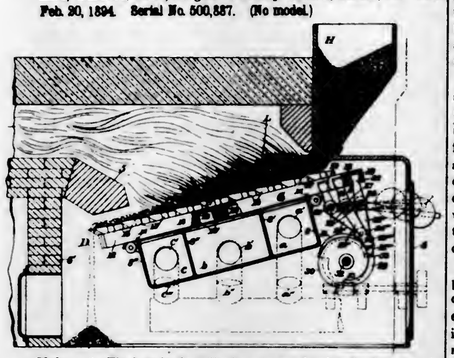
3. In a furnace, in combination, a series of longitudinally reciprocating grate-bars, a driving-shaft located transversely of the shaft adjacent thereto, means for revolving said shaft and grate-bar-actuators secured to said shaft and having long and short eccentric cam-faces in constant engagement with the grate-bars and set in successively advanced positions along said shaft whereby a revolution of said actuators will impart a general relatively slow advancing-movement, and successive relatively rapid return-movement to said grate-bars, substantially as described.

4. A fuel-traveling grate for furnaces comprising a series of lower grate bars having fuel-supporting top plates, a series of upper grate-bars having top plates in longitudinal parallelism with and partially overlapping the top plates of the lower grate-bars and so disposed as to leave air-spaces between said plates, substantially as described.



combined with rotary drivers and connections for imparting a relatively slow and gradual forward movement to the series of bars and adapted for imparting a relatively rapid backward movement to a portion only of the bars at a time, and means for rotating said drivers, substantially as described and for the purpose set forth.

527,449. TRAVELING-GRATE FURNACE. FRANCIS H. RICHARDS, Hartford, Conn., assignor to Eckley B. Coxe, Drifton, Pa. Filed Feb. 20, 1894. Serial No. 500,887. (No model.)



*Claim.*—1. The herein-described grate-mechanism for furnaces, it comprising a series of longitudinally reciprocatory grate-sections, levers carried by rock-shafts and connected with said sections, and means for actuating said rock-shafts to impart a relatively slow forward and a quick return movement to said sections successively, substantially as described.

2. The herein described grate-mechanism, it comprising a series of longitudinally-disposed reciprocatory grate-sections, and means in connection with, and adapted for imparting a relatively slow advancing and a relatively rapid retracting movement to said sections, and consisting of a series of cams and a series of slack-connected actuators connecting said cams and grate-sections, substantially as described.

3. The herein-described grate-mechanism, it comprising a series of longitudinally-disposed independently operable grate-sections and means consisting of a series of cams connected with said grate-sections by slack-connected actuators in position and adapted for imparting a relatively slow advancing movement to some of said sections and a relatively rapid retractive movement to others of said sections, simultaneously, substantially as described.

4. The herein-described grate-mechanism for furnaces, it comprising a series of longitudinally reciprocatory grate-bars each of which has a series of removable floor-plates, a series of rock-shafts adjacent to one end of said grate-bars, levers carried by said rock-shafts in engagement with the grate-bars, spiral cams having quick-drop or let-off portions, levers in operative connection with said cams and rock-shafts, weighted levers connected with said rock-shafts to retain the levers in contact with their respective cams, and means for rotating said cams, whereby the grate-bars are reciprocated, substantially as described and for the purpose set forth.

5. In a furnace, the combination with a series of longitudinally reciprocatory grate-sections arranged side by side in parallelism to form a furnace-floor, and with a series of cams and their actuating mechanism, of a plurality of rock-shafts intermediate to said cams and grate-sections, a plurality of levers fixed to each rock-shaft and operatively connected with the ends of remotely-disposed grate-sections, a series of levers fixed one to each rock-shaft and bearing at its opposite end against its operating cam, and means for retaining all of said levers in operative engagement with said cams, substantially as described.

6. The herein described grate-mechanism for furnaces, it comprising a series of longitudinally reciprocatory bars, a series of levers carried by rock-shafts and connected to said bars so as to have a limited amount of free movement longitudinally thereof, and means in position and adapted for operating said rock-shafts to impart a relatively slow advancing movement and relatively rapid retractive movement to the bars, independently or successively, substantially as described and for the purpose set forth.

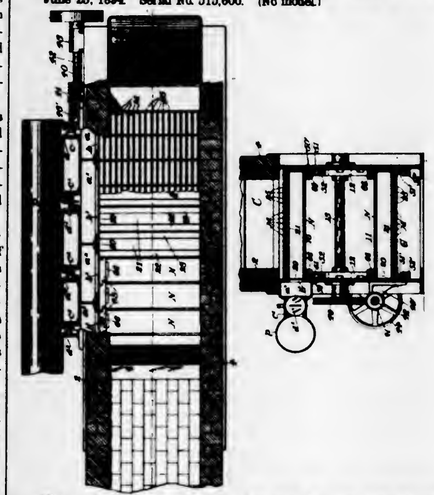
7. The herein described grate-mechanism for furnaces, it comprising a series of grate-sections, a series of levers carried by rock-shafts and connected with said grate-sections to have a limited amount of longitudinal movement independently thereof, a series of cams in connection with said levers and having let-off portions substantially as described, means for retaining the levers in operative connection with the cams, and means for rotating said cams to simultaneously advance certain of said sections with a relatively slow movement and retract others of said sections with a relatively rapid movement, substantially as set forth.

8. In a grate mechanism of the class specified, in combination a grate-bar supported for reciprocatory movement, a cam having a quick-drop or let-off portion, means for operating said cam, and a slack-connected grate-bar-actuator operatively connected with the grate-bar and cam and adapted, in connection with one portion of the cam to impart a relatively slow advancing movement to the grate-bar, and in connection with the let-off portion of the cam to impart a sudden blow to the grate-bar to inaugurate the quick-return movement of said grate-bar, substantially as described.

9. In a grate-mechanism of the class specified, in combination a series of longitudinally reciprocatory grate bars adapted to have a relatively slow advancing movement and a quick-return movement, a series of slack-connected grate-bar-actuators, a series of cams adapted for imparting, through the medium of the grate-bar-actuators, a relatively slow advancing movement to said grate-bars, and having quick-drop or let-off portions in position and adapted for imparting a sudden movement to the grate-bar actuators, separately or successively, whereby a sudden blow is imparted to the grate-bars to inaugurate the quick return movement thereof, and means for operating said cams, substantially as described.

10. In a grate-mechanism of the class specified, a grate-bar supported for reciprocatory movement, a grate-bar-actuating lever fulcrumed upon a rock-shaft and having a slack-connection at its upper end with the grate bar, a cam having a quick-drop or let-off portion in position and adapted for imparting a sudden reciprocatory movement to the grate-bar actuating lever to cause the same to impart a sudden retracting-blow to the grate-bar and means for operating said cam, substantially as described and for the purpose set forth.

527,450. TRAVELING-GRATE FURNACE. FRANCIS H. RICHARDS, Hartford, Conn., assignor to Eckley B. Coxe, Drifton, Pa. Filed June 25, 1894. Serial No. 515,600. (No model.)



*Claim.*—1. In a furnace of the class specified, the combination with the furnace chamber and its inclosing walls, of a traveling furnace-floor comprising a series of successive and independent floor-beam air-boxes each having an inlet opening at one end thereof, means for imparting a traveling movement to the series of floor-beam air-boxes, and an air-supply apparatus adjacent to the inlet-openings of and adapted for supplying air to said floor-beam air boxes, substantially as described.

2. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless traveling furnace-floor or grate having an upper and a lower run and consisting of a series of successive and independent floor-beam air-boxes each having an inlet opening at one end thereof and having outlet openings through the fuel-supporting portions thereof, means for imparting a traveling movement to the furnace floor, and an air-supply apparatus located adjacent to one edge of the upper run of said floor and adapted for supplying air to the air-boxes comprising said floor, substantially as described and for the purpose set forth.

3. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of a traveling furnace-floor comprising a series of successive and independent floor-beam air-boxes each having an inlet opening at one end thereof and having outlet openings through the fuel-supporting portions thereof, means for imparting a traveling movement to the furnace-floor, and a variable-pressure air-supply apparatus located adjacent to one edge of said furnace-floor and adapted for supplying air to the floor-beam air-boxes through the end inlets at varying pressures at successive points in the traveling movement thereof, substantially as described and for the purpose set forth.

4. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of a traveling furnace-floor comprising a series of successive and independent floor-beam air-boxes pivotally connected together and open at the fuel-supporting sides thereof and each having an inlet opening at one end thereof and a series of grate-bars secured to the open sides of each floor-beam air-box, means for imparting a traveling movement to the furnace-floor, and an air-supply apparatus in communication with the inlet openings in the ends of and adapted for supplying air to the series of floor-beam air-boxes, substantially as described and for the purpose set forth.

5. In a furnace of the class specified, in combination, a series of transversely-disposed box-like or chambered grate-beams provided with fuel-supporting floor-plates or grate-bars and pivotally connected together to form an endless traveling grate, means for imparting a traveling movement to said grate, and means for supplying air to the interior of successive grate-beams at successive points in and during the traveling movement of said grate beams, substantially as described and for the purpose set forth.

6. In a furnace of the class specified, in combination, a series of pivotally-connected box-like or chambered grate-beams open at one side and one end thereof and carrying fuel-supporting grate-bars having intermediate air spaces, means for imparting a traveling movement to the grate-beams, and an air-supply apparatus adjacent to the open ends of said beams and adapted for supplying air thereto during the traveling movement of said beams, substantially as described and for the purpose set forth.

7. In a furnace of the class specified, an endless traveling grate supported by revoluble carriers and comprising a series of pivotally-connected hollow beams open at one end thereof and having fuel-supporting plates or bars with air-spaces in communication with the interiors of said beams, in combination with an air-supply located adjacent to the open ends of said beams and in communication therewith and adapted for supplying air to the interiors of said beams at different pressures at successive points in and during the travel thereof, means in connection with said air-supply for regulating the supply of air to the successive grate-beams, and means for rotating the carriers for imparting a traveling movement to the grate, substantially as described and for the purpose set forth.

8. In a furnace of the class specified, a series of pivotally-connected chambered grate-beams each open at one side and at one end thereof and having grate-bar-engaging flanges at the open side thereof, in combination with a series of grate-bars removably engaging the flanges of said grate-beams, substantially as described.

9. In a furnace of the class specified, the combination with the furnace-chamber, of a traveling furnace-floor consisting of a series of independent grate-sections connected together, and each section comprising a rectangular beam having an inclosed air-chamber and a series of grate-bars or floor-plates removably connected with said beam, substantially as described.

10. In a furnace of the class specified, the combination with the furnace-chamber having an air supply opening of a series of independent inclosed traveling air chambers having fuel-supporting portions with air-spaces therein and having inlet openings adapted for successively registering with the air-supply opening in the furnace-chamber during the traveling movement of said chamber, substantially as described.

11. In a furnace of the class specified, a grate-section consisting of a rectangular chambered beam open at the end and at one side thereof and having oppositely-disposed inwardly-projecting flanges at the open side thereof, in combination with a series of grate-bars having, each, a depending flange in movable engagement with the flanges of said beams and having abutments at one side thereof adapted to bear against the side-face of the next adjacent grate-bar to form an air-space between adjacent bars, substantially as described.

12. In a furnace of the class specified, the combination with the furnace-chamber having a series of air-supply openings at one side thereof adjacent to the path of travel of the furnace-floor, of a series of fixed compartments communicating with said supply-openings, air supply pipes communicating with said compartments and having regulating-valves, a traveling furnace-floor comprising a series of independent inclosed air chambers connected together and supported in position to register successively with the air-supply openings of the furnace-chamber, and means for imparting a traveling movement to said furnace-floor, substantially as described and for the purpose set forth.

13. In a furnace of the class specified, the combination with the furnace-chamber having an air-supply opening through one of the side walls thereof, of a traveling furnace-floor having a fuel-supporting run supported in horizontal alignment with said air-supply opening in the furnace-chamber and consisting of a series of floor-beam air-boxes each having fuel-supporting portions with air-spaces or outlet openings therein and each having an inlet opening at one end thereof adapted for registering with the air-supply opening in the furnace-chamber during the traveling movement of said floor-beam air-boxes, and means in position and adapted for supplying air through the air-supply opening in the furnace chamber to the interior of said floor-beam air-boxes, substantially as described and for the purpose set forth.

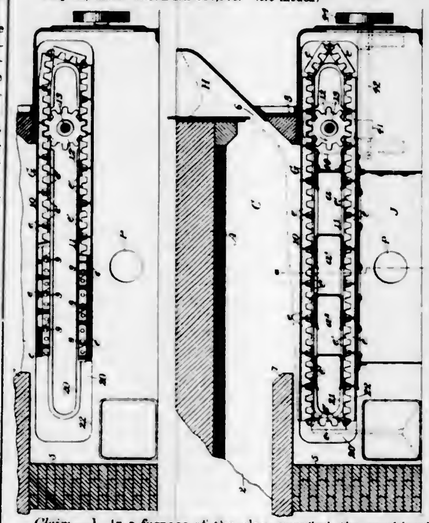
14. The herein described floor-section for traveling furnace-floors for furnaces of the class specified, it consisting of a combined floor-beam and air-box having an inlet opening at one end thereof and having outlet openings extending through the fuel-supporting sides thereof, substantially as described.

15. The herein-described floor-section for traveling furnace-floors for furnaces of the class specified, it consisting of a floor-beam air-box open at one end and at one side thereof, and a series of transversely-disposed grate-bars removably secured to the open side of said floor-beam air-box, substantially as described.

16. The herein-described floor-section for traveling furnace floors for furnaces of the class specified, it consisting of a cross sectionally rectangular floor beam longitudinally recessed to form an air-box open at one side and at one end and having longitudinal flanges at opposite sides thereof adapted for overlapping similar flanges upon adjacent floor-beams, substantially as described.

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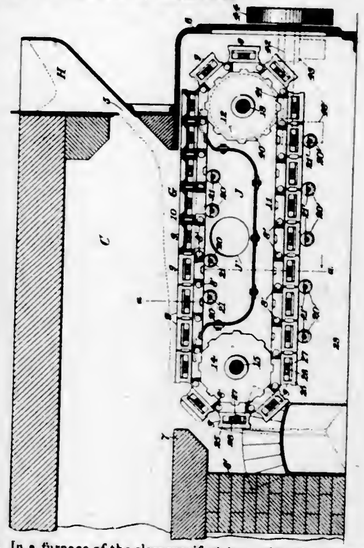
**527,451. TRAVELING-GRATE FURNACE.** FRANCIS H. RICHARDS, Hartford, Conn., assignor to Eckley B. Coxe, Drifton, Pa. Filed July 12, 1894. Serial No. 517,300. (No model.)



*Claim.*—1. In a furnace of the class specified, the combination with the furnace chamber and its inclosing walls, of an endless internally-toothed fuel carrying grate comprising an upper and lower run supported for simultaneous movement longitudinally of the furnace in opposite directions, respectively, and consisting of a series of grate-sections pivotally-connected together and having air-supply openings therethrough, fixed guide-ways for supporting and directing the movement of the upper and lower runs of the grate, revoluble drivers supported intermediate to and remote from the ends of the guide-ways and engaging the upper and lower runs of the grate, means for rotating said drivers to simultaneously impart a traveling movement to the upper and lower runs of the grate in opposite directions, respectively, and means for supplying air through both runs of said grate to the fuel carried upon the upper run thereof substantially as described.

2. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless traveling grate comprising successive fuel-supporting grate-sections, each of which has a series of air-spaces or outlet-openings, a valve connected with each grate-section in position for closing the air-spaces, means for supplying air to the fuel supported upon said grate-sections, means for imparting a traveling movement to the grate, and means for operating said valve during the traveling movement of the grate to bring the air-spaces to predetermined areas at given points in the furnace-chamber, substantially as described.





2. In a furnace of the class specified, in combination, a traveling grate comprising successive fuel-supporting grate-sections, each of which has a series of air-spaces or outlet-openings, a valve connected with each grate-section in position for closing the air-spaces, means for supplying air to the fuel supported upon said grate-sections, means for imparting a traveling movement to the grate, and means for operating the successive valves of the grate-sections during the traveling movement thereof to open or close the air-spaces of each section and bring them to predetermined areas at given points in the travel of the grate, substantially as described and for the purpose set forth.

3. In a furnace of the class specified, the combination with the furnace chamber and its inclosing walls, of a traveling furnace floor having air-supply openings therein and carrying valves contiguous to and adapted for varying the effective areas of said openings, means for supplying air to said openings, means for imparting a traveling movement to the furnace-floor, and means in position and adapted for operating the valves during the traveling movement of the furnace-floor to bring the outlet-openings of said furnace-floor to predetermined areas at given points in the travel thereof, substantially as described.

4. In a furnace of the class specified, an endless traveling furnace-floor comprising a multiplicity of perforated floor-sections connected together to form substantially an endless chain-grate, slide-valves carried by said floor-sections and having perforations adapted for registering with the perforations of said floor-sections, and means for automatically imparting a sliding movement to said valves, substantially as described and for the purpose set forth.

5. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of a perforated endless traveling furnace-floor carrying valves contiguous to the perforations thereof, means for imparting a traveling movement to said furnace-floor, and fixed cams or inclines for operating said valves during the traveling movement of the furnace-floor to bring the perforations to predetermined areas at given points in the travel of said furnace-floor, substantially as described.

6. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of a traveling furnace-floor comprising a series of transversely disposed connected floor-sections having air-supply openings therethrough, a valve carried by each of said sections in position for closing the openings therethrough, means for imparting a traveling movement to the furnace-floor, and fixed cams adjacent to and adapted for operating the several valves of the several floor-sections during the traveling movement of the furnace-floor to bring the air-supply openings in said sections to predetermined areas at given points in the travel of the furnace-floor, substantially as described.

7. In a furnace of the class specified, the combination with the pivotally connected together and having integral internal teeth at opposite ends thereof, longitudinally parallel tracks supporting the upper and lower runs of said grate and located at a distance from one another substantially equal to the width of one of the grate sections, revoluble toothed drivers in engagement with the teeth of the opposite grate-sections and carried by a shaft remote from the grate-sections at the extreme end of said tracks, means for rotating said drivers to impart a traveling movement to the upper and lower runs of the grate in opposite directions, respectively, and means for supplying air through both runs of said grate to the fuel supported upon the upper run thereof substantially as described.

3. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an inner and outer continuous track located at each side of the furnace-chamber and adapted for supporting the upper and lower runs, respectively, of a traveling grate, an endless internally-toothed traveling grate comprising an upper and lower run consisting of a series of perforated grate-sections pivotally-connected together and supported for traveling movement at opposite ends between the inner and outer tracks at each side of the furnace-chamber, revoluble drivers each of which is in engagement with the teeth of both the upper and lower runs of the traveling grate at points remote from the forward ends of the tracks, means for rotating said drivers to impart a traveling movement in opposite directions to the upper and lower runs, respectively, of the traveling grate, and for imparting an oscillating or rocking movement to the successive grate-sections as they pass from their lower run to their upper run position, and means for supplying air through the perforations of both the upper and lower runs of the grate to the fuel supported upon the upper run thereof, substantially as described.

4. In a furnace of the class specified, in combination, an endless traveling grate comprising an upper and lower run consisting of a series of pivotally-connected grate-sections having air-supply openings therethrough, means substantially as described for supporting the upper and lower runs of the grate in relatively close proximity and for effecting a rocking movement to the grate-sections as they pass from their lower run positions to their upper run positions during the traveling movement thereof, means substantially as described for imparting a traveling movement to the upper and lower runs of the grate simultaneously in opposite directions, respectively, and means for supplying air through the air-supply openings in both the upper and lower runs of the traveling grate, to the fuel supported upon the upper run thereof substantially as described.

5. In a furnace of the class specified, in combination, an endless traveling grate comprising an upper and lower run, each consisting of a series of pivotally-connected-grate sections, means substantially as described for supporting the upper and lower runs of the grate in relatively close proximity and for effecting a rocking movement to the grate-sections as they pass from their lower run positions to their upper run positions during the traveling movement thereof, means substantially as described for imparting a traveling movement to the upper and lower runs of the grate simultaneously and in opposite directions, respectively, and means for supplying air to the fuel carried by the grate at varying pressures at successive points in the traveling movement thereof, which consists in a series of air-pressure chambers located between the lower and upper runs of the grate and having inlet and outlet openings contiguous to said lower and upper runs, respectively, an air-supply chamber located below the lower run of said grate and having valve regulated outlet openings in communication with the air-pressure chambers located between the two runs of said grate, and means for supplying air to said air supply chamber, substantially as described and for the purpose set forth.

6. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of two endless tracks or guide ways secured one to each side wall of the furnace-chamber, an internally toothed endless fuel-carrying grate comprising an upper and a lower run consisting of a series of pivotally-connected transversely-disposed perforated grate-sections supported at their opposite ends by the tracks or guide-ways, a revoluble driver supported intermediate to and engaging the teeth of both the upper and lower runs of the traveling grate, means for rotating said driver, a series of air-supply chambers having inlet and outlet openings and located between the upper and lower runs of the endless grate, and an air-supply chamber located below the lower run of said grate and adapted for supplying air through the lower run of the grate to the series of air supply chambers located between the upper and lower runs of the grate and through the upper run to the fuel supported upon said grate, substantially as described and for the purpose set forth.

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**527,452. TRAVELING-GRATE FURNACE.** FRANCIS H. RICHARDS, Hartford, Conn., assignor to Eckley B. Coxe, Drifton, Pa. Filed July 14, 1894. Serial No. 517,552. (No model.)

*Claim.*—1. In a furnace of the class specified, a traveling grate having one or more fuel-supporting grate-sections with air-spaces

furnace-chamber and its inclosing walls, of an endless traveling furnace-floor supported at opposite ends of said chamber upon rollers and comprising a series of transversely-disposed floor-sections having each a series of air-supply openings, means for imparting a traveling movement to the furnace-floor, a slide valve carried by each of said sections and having rollers at opposite ends thereof, a fixed cam adjacent to each end of said sections in position to be engaged by the rollers of the valves and adapted during the traveling movement of the furnace-floor to slide said valves longitudinally of their respective sections to increase or decrease the area of the air-supply openings at predetermined points in the travel of the furnace floor, substantially as described and for the purpose set forth.

8. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless fuel-supporting traveling furnace-floor having air-supply openings therein and carrying valves contiguous to and adapted for varying the areas of said supply-openings, means for imparting a traveling movement to said furnace-floor, and means for automatically operating said valves during the traveling movement of said furnace-floor to bring the air-supply openings to predetermined areas at given points in the travel of said furnace-floor, substantially as described.

9. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless traveling furnace-floor carried upon rollers substantially as described, and having air-supply openings therein, and carrying valves in position and adapted for varying the effective areas of said openings, an air-supply chamber located intermediate to the upper and lower runs of said furnace-floor and having an open end contiguous to the air-supply openings, means for supplying air to said air-chamber at the maximum pressure required, means for imparting a traveling movement to the furnace-floor, and means for automatically operating said valves during the traveling movement of the furnace-floor to vary the areas of the air-supply openings at predetermined points in the travel of said furnace-floor to thereby reduce the effective air-supply at certain points in the length of the furnace-chamber, substantially as described.

10. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless traveling furnace-floor carried upon rollers substantially as described, and having air-supply openings therein, and carrying valves in position and adapted for varying the effective areas of said openings, an air-supply chamber located intermediate to the upper and lower runs of said furnace-floor and having an open end contiguous to the air-supply openings, means for supplying air to said chamber at the maximum pressure required, means for imparting a traveling movement to the furnace floor, fixed cams supported adjacent to and in the path of travel of the upper run of said furnace-floor and adapted for automatically operating the valves during the traveling movement of the furnace floor to bring the air-supply openings to predetermined areas at given points in the travel of said furnace-floor to reduce the effective pressures of air-supply contiguous to the fuel supported upon said furnace-floor at the requisite points in the length of the furnace chamber, substantially as described.

11. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of a perforated endless traveling furnace-floor carrying valves contiguous to the perforations thereof, means for imparting a traveling movement to said furnace-floor, two fixed oppositely-disposed cams located one at each side of the furnace-floor in the path of travel of the valves and having oppositely-inclined tracks adapted for automatically changing the positions of the valves relatively to the perforations of the furnace-floor to increase or decrease the effective areas of the perforations at predetermined points in the travel of said furnace-floor, substantially as described.

12. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of two side-plates located one at each side of the furnace-chamber, and having inwardly-projecting oppositely-disposed valve-operating tracks, a perforated endless traveling furnace floor carried upon rollers at opposite ends of the furnace chamber and having the upper and lower runs thereof supported by rollers carried upon shafts supported in bearings or sockets formed in the side-plates, valves carried by said furnace-floor contiguous to and adapted for closing said perforations and carrying rollers at opposite ends thereof in position for engagement with the valve-operating tracks, means for supplying air below the upper run of the furnace-floor, and means for imparting a traveling movement to said furnace-floor, substantially as described and for the purpose set forth.

13. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of a traveling furnace-floor comprising a series of connected floor sections or transversely disposed floor-beams each having two side-walls and a perforated fuel-supporting wall, a sliding valve located between the side-walls of each floor-section contiguous to the perforated fuel supporting wall, means for imparting a traveling movement to said furnace floor, means for supplying air below the valves of said furnace-floor, and valve-actuating cams adjacent to each end of and adapted for operating said valves during the traveling movement of the furnace-floor to vary the effective air-pressure at predetermined points in the travel of said furnace-floor, substantially as described and for the purpose set forth.

14. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of valve-operating tracks fixed at opposite sides of said furnace-chamber, and a perforated furnace-floor supported for traveling movement between said tracks and having slide-valves in bearing engagement with said tracks, substantially as described.

15. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of two oppositely disposed valve-operating tracks having inclined adjacent faces in parallel lines, a traveling furnace-floor located between said tracks and comprising a series of transversely disposed floor-sections having air-supply openings, slide-valves carried by said sections contiguous to said supply-openings and having rollers at opposite ends thereof in bearing-contact with the valve-operating tracks, and means for imparting a traveling movement to said furnace-floor whereby the valves, through the medium of the tracks, are operated to vary the areas of the air-supply openings of successive sections to vary the effective air-supply to the fuel carried by said furnace-floor, at successive points in the travel thereof, substantially as described.

16. In a furnace of the class specified, a traveling furnace-floor having air supply openings therein, in combination with oppositely-inclined valve-operating cam-tracks located one at each side of said furnace-floor in a plane corresponding to the plane of travel thereof, valves in sliding engagement with said furnace floor and located between, and in bearing-contact at opposite ends with, the said cam-tracks, an air-blast apparatus located below, and in communication with, said furnace-floor, and means for imparting a traveling movement to said furnace-floor and, through the medium of the cam-track, to simultaneously operate successive valves in varying degrees so bring the air-supply openings of the furnace-floor to varying areas at predetermined points in the travel thereof, substantially as described.

17. In a furnace of the class specified, the combination with the furnace-chamber and its side-walls, of two opposite horizontally-disposed valve-operating tracks secured one to each side-wall of the furnace and having oppositely-inclined working-faces, a perforated furnace floor supported for traveling movement intermediate to said tracks and carrying a plurality of slide-valves whose opposite ends are, in certain positions of the furnace-floor, contiguous to, and in bearing contact with, said tracks, means for supplying air below said valves, and means for imparting a traveling movement to the furnace-floor and at the same time imparting a sliding movement to said valves, substantially as described and for the purpose set forth.

18. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of a traveling furnace-floor comprising a series of floor sections each section consisting of two longitudinally-disposed perforated members connected together for sliding movement one relatively to the other, means for imparting a traveling movement to said furnace-floor, and means for automatically imparting a sliding movement to one member of each floor-section relatively to the other member of each floor-section, substantially as described.

19. In a furnace of the class specified, a traveling furnace-floor mechanism comprising a series of connected floor-sections, each section of which consists of two members connected together for sliding movement one relatively to the other and each having air-supply openings adapted for registering one with the other, means for imparting a traveling movement to said furnace-floor, and cams in position and adapted for imparting a sliding movement to one member of each floor-section relatively to the other member thereof, substantially as described.

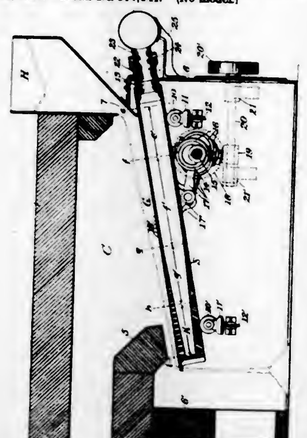
20. In a furnace of the class specified the combination with the furnace-chamber and its inclosing walls, of a series of transversely-disposed connected floor-sections comprising together a traveling furnace-floor, each section consisting of two members in sliding engagement having registering air-supply openings, fixed horizontal cam-tracks adjacent to the ends of the sliding members and adapted for imparting a sliding movement successively to one member of each floor-section at predetermined points in the traveling movement thereof, and means for imparting a traveling movement to said sections simultaneously, substantially as described and for the purpose set forth.

21. In a traveling furnace-floor, a series of perforated floor-sections having openings in the ends thereof and each having a perforated slide-valve adjacent to the perforations of said floor-section, the ends of which slide-valve extend through said end openings of the floor section and bear against the valve-operating inclines or cams, and the inclines or cams for operating said valves, substantially as described.

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**527,453. TRAVELING-FLOOR FURNACE.** FRANCIS H. RICHARDS, Hartford, Conn., assignor to Eckley B. Coxe, Drifton, Pa. Filed July 16, 1894. Serial No. 517,641. (No model.)



*Claim.*—1. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of a furnace-floor comprisiug a series of longitudinally-disposed chambered floor-sections supported within the furnace chamber and each floor-section of which series is closed at its delivering-end and has an air-supply opening or inlet in its receiving-end, and has successive series of outlet openings or air-spaces of varying aggregate areas through the fuel-supporting side thereof, and an air-supply apparatus in position and adapted for supplying air to the interior of said sections through the inlet openings thereof, substantially as described and for the purpose set forth.

2. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of a furnace-floor comprising a series of longitudinally-disposed chambered floor-sections supported for reciprocatory movement in the furnace-chamber, and each floor-section being closed at its delivering-end and having an air-supply opening or inlet in its receiving-end, and successive series of outlet openings or air-spaces of varying aggregate areas through the fuel-supporting sides thereof, means for imparting a reciprocatory movement to said floor-sections, and an air-supply apparatus in position and adapted for supplying air to the interior of said sections through their forward inlet openings and during the reciprocatory movement thereof, substantially as described and for the purpose set forth.

3 The herein-described floor section for floors of furnaces of the class specified, it consisting of a chambered beam having an inlet opening at one end thereof and having successive series of outlet openings through successive fuel-supporting portions thereof which gradually diminish in aggregate areas from the middle portion of said beam toward and at both ends thereof, substantially as described and for the purpose set forth.

4. The herein-described floor-section for floors of furnaces of the class specified, it consisting of a chambered beam having an inlet opening at one end thereof and having a series of outlet openings through the fuel-supporting portions of its forward or fuel-receiving end of relatively small aggregate area and having a series of outlet openings through the middle fuel-supporting portion thereof of relatively large aggregate area, and having outlet openings through the fuel-supporting portion at the delivering-end thereof of relatively small aggregate area, substantially as described and for the purpose set forth.

5. In a furnace of the class specified, a reciprocatory furnace-floor consisting of one or more chambered floor-beams, having an inlet opening at one end thereof, and means substantially as described in connection with each chambered floor-beam and adapted for supplying air to the fuel supported upon said beam at varying pressures at successive points in the length of said beam, substantially as described and for the purpose set forth.

6. In a furnace of the class specified, the combination with the furnace chamber and its inclosing walls, of a reciprocatory furnace-floor supported within said chamber and comprising a series of hollow floor beams each of which has an inlet opening at one end thereof, and has successive series of outlet openings through the fuel-supporting portions thereof, the aggregate areas of each series of which are gradually reduced in a given ratio from the middle fuel-supporting portion of said beam toward and at both ends thereof, and means in position and adapted for supplying air to the interior of each of said beams through their respective inlet openings, substantially as described and for the purpose set forth.

7. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of a fuel-traveling furnace-floor comprising a series of longitudinally-disposed hollow floor-beams supported for longitudinal reciprocation in the furnace-chamber and each of which beams has an inlet opening at one end thereof and has successive series of outlet openings through the successive fuel supporting portions thereof which are of relatively large aggregate area at the middle fuel-supporting portion and are of gradually-reduced aggregate area from the middle portion toward and at opposite ends of said beams, means for imparting a reciprocatory movement to said floor-beams, and an air-supply apparatus in connection with and adapted for supplying air through the inlet openings to the interior of said beams, substantially as described and for the purpose set forth.

8. In a furnace of the class specified, the combination with the furnace-chamber, of a reciprocatory furnace-floor comprising a series of floor-sections each having an internal chamber which varies in area at different points in the length thereof, and having an inlet-opening communicating with said chamber and a series of outlet-openings or air-spaces, an air-supply in communication with the chambers of the floor-sections through the inlet-opening and adapted for supplying air to said chambers during the reciprocatory movements of said sections, and means for reciprocating said floor-sections, substantially as described and for the purpose set forth.

9. In a furnace of the class specified, a furnace floor-section having an interior chamber of varying areas at different points in the length thereof and having a succession of series of air-spaces of varying aggregate areas in communication with said chamber, in combination with means for reciprocating said floor-section, and means for supplying air to the interior chamber of said floor-section during the reciprocatory movement of said floor-section, substantially as described.

10. In a furnace of the class specified, the combination with the furnace-chamber, of a fuel-traveling furnace-floor comprising a series of reciprocatory chambered floor-sections supported at an inclination in the furnace-chamber upon rollers and having inlet-openings and successive series of outlet-openings of varying aggregate areas, reciprocating mechanism for each of said sections consisting of an eccentric carried by a shaft below and intermediate to the ends of said sections, and an eccentric-strap and connecting rod connecting the floor section with the eccentric, means for simultaneously rotating the eccentrics of each floor-section to reciprocate said sections with a relatively slow advancing movement and a relatively rapid retractive movement, and an air-supply apparatus in communication with and adapted for supplying air to the several floor-sections through their inlet-openings and during the reciprocating movements of said floor-sections, substantially as described.

11. In a furnace of the class specified, the combination with a furnace-chamber, of a series of chambered floor-sections open at one end and having outlet-openings through the fuel supporting portions thereof, reciprocating mechanism in connection with said floor-sections, and air-supply apparatus having air-supply pipes extending into the open ends of said sections and adapted for permitting a longitudinal movement of said sections with relation to said pipes, substantially as described.

12. In a furnace of the class specified, the combination with the furnace-chamber, of a chambered furnace floor-section supported for longitudinal reciprocation in said furnace chamber and having an air-supply opening at one end thereof and outlet-openings in one side thereof, means for reciprocating said section, a supply-pipe having a sliding-fit in the supply-opening of said floor-section, and an air supply apparatus in communication with said supply-pipe and adapted for supplying air to the interior of the floor section during the reciprocating movement thereof, substantially as described.

13. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing-walls, of a fuel-traveling furnace-floor comprising a series of reciprocatory chambered floor-sections having air-inlet and outlet openings substantially as described, air-supply pipes having a sliding-fit in the inlet openings of said floor-sections, a stuffing-box at the inlet of the floor-section and adapted for closing the joint between the floor-sections and air-supply pipe, and means for reciprocating said floor-sections longitudinally of the air-supply pipes, substantially as described.

14. In a furnace of the class specified, the combination with the furnace chamber, and its inclosing-walls, of a furnace-floor comprising a series of longitudinally-disposed chambered floor-sections arranged side by side in the same plane and each having an inlet-opening at one end thereof adjacent to the front-wall of the furnace-chamber, an air-supply apparatus adjacent to the front-wall of the furnace-chamber and having air-supply pipes extended into the inlet-openings

of the floor-sections and adapted for supplying air to the interior of said sections during the reciprocatory movements thereof, and means in connection with and adapted for imparting relatively slow advancing and relatively rapid retracting movements to said floor-sections, substantially as described.

15. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing-walls, of a chambered floor-section supported for longitudinal reciprocation in said chamber and having a longitudinal open-ended tubular extension projected through the front-wall of said furnace-chamber: and having successive series of outlet openings through successive fuel-supporting portions of said section, the aggregate areas of the outlet openings in the successive fuel supporting portions each side the center of said beam being gradually reduced toward opposite ends of said beam, an air-supply apparatus adjacent to the front-wall of the furnace chamber and having a supply-pipe extending into the longitudinal extension of said floor-section in such manner as to permit a longitudinal movement of said section with relation to said pipe, and means for reciprocating said section, substantially as described.

16. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of a reciprocatory fuel-traveling furnace-floor comprising a series of longitudinally-disposed hollow floor beams supported for longitudinal reciprocatory movement in lines parallel to the axes thereof and each beam having an inlet opening at one end thereof and having successive series of outlet openings through successive fuel-supporting portions thereof, the middle series of which outlet openings is of relatively large aggregate area and the successive series each side of which middle series are of relatively small aggregate areas and are of gradually-reduced aggregate areas, respectively, from the middle fuel-supporting portion of the beam toward and at the opposite ends thereof, substantially as described and for the purpose set forth.

17. The herein-described grate-section for furnace-floors of furnaces of the class specified, it consisting of an oblong beam having its side edges in parallel planes and having successive air-supply openings through the successive fuel-supporting portions thereof, respectively, which openings are of greatest area at the middle portion of said beam and gradually decrease in area from said middle portion outwardly toward and at the opposite ends of said beam, substantially as described and for the purpose set forth.

18. In a furnace of the class specified, the combination with the furnace chamber and its inclosing walls, of a series of longitudinally-disposed hollow or chambered floor-sections each having an inlet opening at the forward end thereof and each having outlet openings through the fuel-supporting portions thereof, actuating-mechanism in connection with and adapted for reciprocating said floor-sections, and an air-supply apparatus adjacent to the forward ends of said floor-sections and consisting of a main air-supply pipe, and a series of branch supply-pipes in communication with the interiors of the several floor-sections and the interior of the main supply pipe, substantially as described and for the purpose set forth.

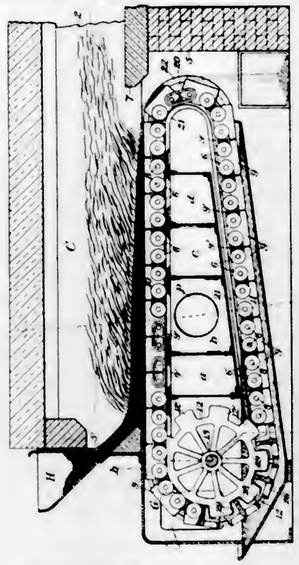
19. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of a series of longitudinally-disposed chambered floor sections supported for reciprocatory movement in the furnace-chamber and each having an inlet opening at the forward end thereof, and a series of outlet openings through the fuel-supporting portions thereof, means in connection with and adapted for reciprocating said floor-sections, a main air supply pipe supported adjacent and transversely disposed with relation to the forward ends of the floor sections and having a series of communicating branch supply-pipes having a sliding connection at one end one with each floor-section and adapted for conveying air from the main supply-pipe to the interior of said section and adapted for permitting a sliding movement of said section relatively to said branch supply-pipe, substantially as described and for the purpose set forth.

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**527,454. TRAVELING-GRATE FURNACE.** FRANCIS H. RICHARDS, Hartford, Conn., assignor to Eckley B. Coxe, Drifton, Pa. Filed July 18, 1894. Serial No. 517,875. (No model.)

*Claim.*—1. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless grate supported for traveling movement within the furnace chamber and comprising a series of transversely-disposed grate-sections, each of which has two trunnions at each end thereof having curved inner faces and angular outer faces, substantially as described, rollers carried upon pins concentric to the curved portions of said trunnions, loop-shaped coupling-links in engagement with the curved faces of adjacent trunnions of adjacent grate-sections and adapted for engaging the angular faces of said trunnions during the circuitous traveling movement of the grate to limit the lateral movement of said sections relatively to each other, and means for imparting a traveling movement to the endless grate, substantially as described.

2. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of grate-supporting guide-ways at opposite sides of the furnace-chamber, and an endless grate supported for traveling movement by said guide-ways within the furnace-chamber, and comprising a series of transversely-disposed grate-sections, each of which has two trunnions at each end thereof, which trunnions have curved inner faces and angular outer faces, substantially as described, and loop-shaped coupling-links in engagement with the curved faces of adjacent trunnions of adjacent grate-sections, substantially as described and for the purpose set forth.



3. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless grate supported for traveling movement in guide-ways secured to the side-walls of the furnace chamber, and comprising a series of coupling-link-connected grate-sections having internal teeth at opposite ends thereof and carrying rollers at said opposite ends which are supported in said guide-ways, drivers located at one end of the furnace-chamber and engaging the teeth of and imparting a traveling movement to the grate-sections, and means for rotating said drivers, substantially as described and for the purpose set forth.

4. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless grate supported for traveling movement within the furnace chamber and comprising an upper and a lower run and consisting of a series of transversely-disposed coupling-link-connected grate-sections having air-supply openings through the fuel-supporting portions thereof, and supported for traveling movement by rollers at each end thereof running in guide-ways connected with the side-walls of the furnace-chamber, driving mechanism located between the upper and lower runs of the traveling grate at one end thereof and adapted for imparting a traveling movement to said grate, and an air-blast apparatus located intermediate to the upper and lower runs of said grate and adapted for supplying air through the openings in the grate-sections to the fuel supported upon the upper run, substantially as described and for the purpose set forth.

5. In a furnace of the class specified, an endless grate supported for traveling movement within the furnace-chamber and comprising a series of longitudinally-flanged grate sections having two trunnions at each end thereof having curved inner faces and angular outer faces substantially as described, rollers carried upon pins concentric to the curved portions of said trunnions, and loop-shaped coupling links in engagement with the curved faces of the adjacent trunnions of adjacent grate sections and adapted for engaging the angular faces of said trunnions during the circuitous traveling movement of the grate, and means for imparting a traveling movement to the endless grate, substantially as described.

6. The herein-described grate-section for endless grates of the class specified, it consisting of a perforated fuel-supporting plate having a longitudinal central rib extending from end to end thereof and reinforced at opposite ends to form a driving tooth at opposite ends thereof, two cross-sectionally angular trunnions at each end of the grate-section adapted to be engaged by coupling-links, and rollers revolubly carried upon pins secured in said trunnions, substantially as described and for the purpose set forth.

7. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of a pair of coinciding circuitous grate-supporting guide-ways located one at each side of the furnace-chamber, an endless grate supported for traveling movement in said guide-ways and comprising a series of coupling-link-connected grate-sections carrying rollers at opposite ends thereof which are supported by said guide-ways and having one centrally-disposed tooth at each end adapted for engagement by the teeth of a revoluble driver, revoluble drivers located at one end of the endless grate and engaging the teeth of, and imparting a traveling movement to, the grate-sections, and means for rotating said drivers, substantially as described and for the purpose set forth.

8. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of two circuitous grate-supporting tracks located one at each side of the furnace-chamber, an endless traveling grate having an upper and lower run supported for traveling movement in opposite directions between said tracks and comprising a series of perforated grate-sections each having two cross-sectionally angular trunnions at each end thereof, coupling-links extending over the adjacent trunnions of and connecting adjacent grate-sections so as to permit a limited amount of lateral movement of said sections relatively to each other, and rollers carried at the ends of said trunnions and riding upon said tracks, means in connection with and adapted for imparting a traveling movement to the upper and lower runs of the grate in opposite directions, respectively, and an air-supply apparatus located between the upper and lower runs of the grate and adapted for supplying air through the perforations in the grate-sections to the fuel carried upon the upper run of said grate at varying pressures at successive points in the length of the furnace chamber, substantially as described

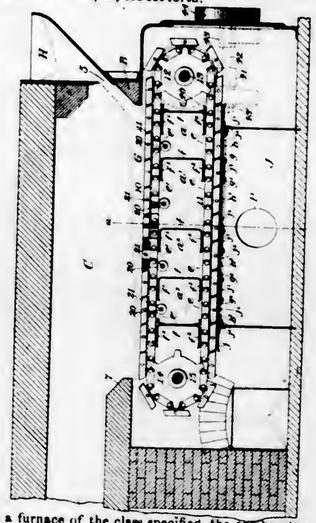
9. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of two circuitous grate-supporting tracks formed integral with the side-plates of the furnace-chamber and having at one end thereof a removable section, an endless traveling grate supported for traveling movement by said tracks and comprising a series of grate-sections having trunnions connected together by coupling-links and having rollers at opposite ends thereof supported between the tracks, substantially as described, and actuating mechanism for said grate, substantially as and for the purpose set forth.

10. The herein-described grate-section for traveling grates of furnaces of the class specified, it consisting of a perforated fuel-supporting plate having transverse flanges at the opposite ends thereof and having two cross-sectionally angular trunnions at each end thereof, each trunnion of which has a curved inner face and angular outer faces or abutments, the curved face of which trunnion constitutes a pivot-bearing for a coupling-link and the angular faces of which trunnion constitute abutments for limiting the lateral movement of said section relatively to the coupling-link, pins fixed in said trunnions, and rollers carried upon said pins at the outer ends thereof remote from the ends of said section, substantially as described and for the purpose set forth.

11. In a furnace of the class specified, the combination with the furnace chamber and its inclosing walls, of the two side-plates 23 and 23′ each having a circuitous grate-supporting guide-way, a section of which is formed integral with a removabe portion of said side-plate, an endless grate supported for traveling movement by rollers at opposite sides thereof engaging the two guide-ways and comprising a series of transversely-disposed grate-sections connected together for lateral movement by coupling links engaging trunnions of said sections intermediate to the rollers and ends of said sections, and means for imparting a traveling movement to the grate, substantially as described.



grate and its driving mechanism, of air-chambers located respectively above and below the lower run of the traveling grate and communicating with each other through said run, means for supplying air to said chambers, and means for reducing the air-pressure in the upper chamber relatively to that in the lower chamber, substantially as described and for the purpose set forth.



3. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, and with an endless traveling grate and its driving mechanism, of a plurality of variable-pressure air-chambers having outlet openings of relatively varying areas contiguous to the upper run of the traveling grate and having inlet openings contiguous to the lower run of said traveling grate, an air-supply chamber located below the lower run of said grate and having outlet openings in alignment with the inlet openings of the variable-pressure air-chambers and adapted for supplying air to said chambers through the lower run of the grate, and means for regulating the supply of air to each pressure-chamber, substantially as described and for the purpose set forth.

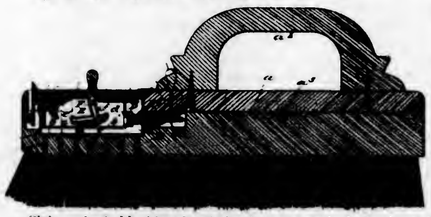
4. In a furnace of the class specified, the combination with the furnace chamber and its inclosing walls, of an endless grate supported for traveling movement in said furnace-chamber, a series of pressure reducing chambers located between the upper and lower runs of said grate and having outlet openings of varying areas contiguous to the upper run of said grate, and an air-supply chamber located below the lower run of said grate and communicating with the entire series of air-chambers, substantially as described.

5. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless grate supported for traveling movement within said furnace-chamber and having the space between the upper and lower runs thereof divided by vertical transverse partitions into a series of air-pressure-reducing chambers having outlet openings of varying areas contiguous to the upper run of said grate at successive points in the length thereof, and an air-supply chamber located below the lower run of the grate and having openings in communication with the air-pressure-reducing chambers intermediate to the upper and lower runs of said grate, means for supplying air to the air-chamber below the grate, and means for imparting a traveling movement to said grate, substantially as described and for the purpose set forth.

6. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless grate supported for traveling movement within said chamber, a plurality of air-pressure-reducing chambers located intermediate to the upper and lower runs of said grate and having outlet and inlet openings contiguous to the upper and lower runs, respectively, of said grate, an air-supply chamber located below the lower run of said grate and having successive series of outlet openings in communication with the successive air-pressure-reducing chambers, slide-valves supported contiguous to the outlet openings in the air-supply chamber and having openings adapted for registering with said outlet openings, means for supplying air to the air-supply chamber below the lower run of the grate, means for operating said valves, and means for imparting a continuous traveling movement to the endless grate, substantially as described.

7. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, and with an endless grate supported for traveling movement in said chamber, of an accumulating air-chamber located below the lower run of said grate, and a series of air-pressure-reducing chambers located intermediate to the upper and lower runs of said grate and in communication with the accumulating chamber, and having means for supplying air to the fuel supported upon the upper run of the grate, and means for varying the air-pressures at successive points in the length of the grate, substantially as described.

527,456. BRUSH. CHARLES W. ROCHE, Halifax, Canada. Filed Apr. 17, 1894. Serial No. 507,864. (No model.)



*Claim.*—1. A blacking brush having a recess in its back, and having openings leading from the recess to points between the bristles, a supply box located in the recess and having holes for the escape of the liquid blacking to the said openings, and a mixing chamber arranged within the box and provided with a valve controlled outlet, whereby the liquid blacking is admitted at will to the supply chamber, substantially as described.

2. A blacking brush having a recess in its back and having openings leading from the recess to points between the bristles, a supply box having a perforated bottom fitted in the recess, a mixing chamber located within the supply box and having a hole in one end, a valve for closing the said hole, the valve stem passing through the supply box and terminating in a knob within convenient reach of the brush handle, and a cover for closing the recess, the supply box, and the mixing chamber.

3. A blacking brush having holes in its back between the bristles, a box located in said back having a perforated bottom over said holes, a mixing chamber located in said box having a hole in one end, a valve normally over said hole having an operating rod, and a mixer block movable in said chamber, substantially as set forth.

4. The combination with the brush having a recessed or cut away portion in its back and holes leading therefrom between the bristles, of the box located in said cut away portion, having a perforated bottom, the mixing chamber located in said box and having a hole in one end, a spring-held valve normally closing said hole, and a spring pressed block movable in said mixing chamber, substantially as set forth.

5. The combination with the brush having a cut away portion in its back and holes leading therefrom between the bristles, of the cover for said back having a hinged end section and provided with slots, the box located in said cut away portion having a perforated bottom, a mixing chamber in said box having a hole in one end, the valve, the angular rod leading therefrom and extended through one of said slots in said cover, the mixer block located in said chamber, the two part rod connected to said block and extended through the other one of said slots, and the spring encircling said rod, substantially as set forth.

6. A blacking brush having a mixing chamber located in its back, a block movable in said chamber having a rod projecting therefrom, the cover having a slot through which said rod is extended, a valve for controlling the supply from said mixing chamber, the rod therefor also extended through a slot in said cover, and the slides movable with said rods for closing said slots, substantially as set forth.

527,457. SOLUBLE ALIZARIN BLUE. HENRI N. F. SCHAEFFER, Lowell, Mass. Filed Jan. 9, 1893. Renewed Dec. 2, 1893. Serial No. 492,644. (No specimens.)

*Claim.*—1. The method of making soluble modifications of insoluble alizarin derivatives, which consists in heating an insoluble alizarin derivative and boracic acid in dry form and adding to the mixture thus formed an alkali, substantially as described.

2. The method of making a soluble modification of insoluble alizarin blue, which consists in heating insoluble alizarin blue and boracic acid in dry form and adding to the mixture thus formed, an alkali, substantially as described.

3. As a new article of manufacture, an alizarin derivative soluble in water, derived from an insoluble alizarin in derivative, boracic acid and an alkali having the following characteristics, viz:—soluble in water, not decomposed by boiling, and capable of being used in wool-dyeing without precipitation of the insoluble alizarin derivative, substantially as described.

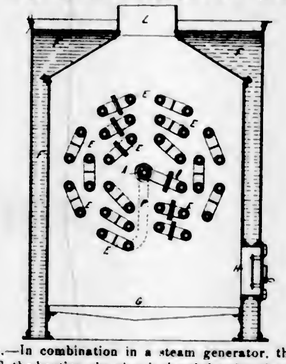
4. As a new article of manufacture, a soluble alizarin blue derived from insoluble alizarin blue, boracic acid and an alkali and having the following characteristics, viz:—soluble in water, stable when heated and not decomposed by boiling, capable of dyeing wool without precipitation of the insoluble alizarin blue, and dyeing a pure indigo shade, fast to light and soap, substantially as described.

527,458. WASHING-MACHINE. WILLIAM SMITH, Drake's Creek, Ark., assignor of one-half to Robert L. Anderson, same place. Filed Mar. 5, 1894. Serial No. 502,393. (No model.)



*Claim.*—In a "washing machine," substantially as shown and described, the combination of the frame A; rectangular box B, journaled in said frame and provided with a water tight partition *b*, set at an angle in said box, dividing the same into two equal water-tight compartments; and provided with openings C, one opening into each compartment; swinging beam *d*, bearing on each end covers D, adapted to close said opening C; threaded bolt *d'*, passing up through the top of the box and through the beam *d*; and tail nut *e*, working on said bolt and adapted to hold said beam and lids down in place, substantially as shown and described and for the purposes set forth.

527,459. STEAM-BOILER. JOSSE R. SPANOGHE, Antwerp, Belgium. Filed July 10, 1893. Serial No. 480,032. (No model.)

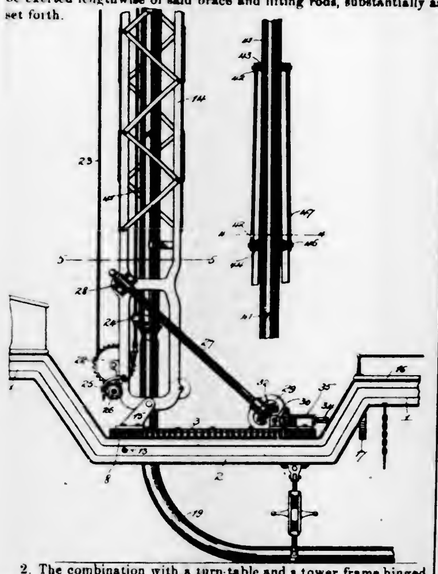


*Claim.*—In combination in a steam generator, the hot water chamber F, the heating chamber inclosed thereby, the pipe extending through the heating chamber and divided into two parts by a central partition, the inlet end of said pipe being connected with the hot water chamber and a coil of pipe one end of which is connected with the inlet end of the partitioned pipe, the other end of said coil being connected with the outlet end of the said pipe, substantially as described.

527,460. WATER-TOWER. ERNST F. STECK, Chicago, Ill. Filed Nov. 23, 1893. Serial No. 491,620. (No model.)

*Claim.*—1. The combination with a carriage and a turn-table mounted thereon and having means for turning it, of a tower frame hinged to said turn-table at its outer edge, rods for bracing and lifting said frame, mounted on said turn table and engaging with said frame, an extensible pipe mounted in said frame and having a nozzle fixed with relation to and adapted to turn with said turn-table and being permanently confined to oscillate or bend in an upright plane extending transversely of the hinge at the base of the tower frame and lengthwise of said brace and lifting rods; whereby the tower frame may be inclined in any direction to resist the recoil, and the strain resulting from the weight of the frame and such recoil will invariably be exerted lengthwise of said brace and lifting rods, substantially as set forth.





2. The combination with a turn-table and a tower frame hinged thereon and having means for raising it, of an extensible stand-pipe mounted in said frame and having a spline or feather, rollers mounted in said frame for holding and guiding said pipe, one of said rollers being provided with a groove for receiving said spline, and a nozzle fixed on said pipe against independent rotation, substantially as set forth.

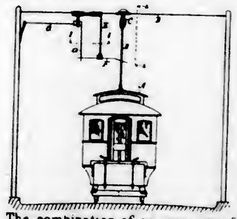
3. The combination with a turn-table and a tower frame hinged thereon, of an extensible stand-pipe arranged in said frame and being provided with a spline or feather, two series of rollers mounted in said frame near the upper end thereof and having peripheries complementary in shape to and fitting against said pipe, a number of said rollers being provided with grooves for the reception of said spline, and the two series being arranged at such a distance apart as to hold the pipe rigidly within the tower frame and away from the sides thereof, and a nozzle fixed to said pipe against independent rotation, substantially as set forth.

4. The combination with the carriage and a turn-table having means for turning it, mounted on said carriage, of a tower frame hinged to said turn-table at its outer edge or perimeter at a point remote from the center thereof, a stand-pipe in said frame, adapted to be attached to a hose and being fixed against independent rotation, a flexible nozzle on said stand-pipe fixed against independent rotation, means for erecting said tower frame, mounted upon the opposite side of said turn table, said turn-table being open under the base of said stand-pipe, and the space beneath the turn-table being unobstructed whereby the hose depending from said stand-pipe may describe a complete circle when the turn-table is rotated, substantially as set forth.

5. The combination of the carriage frame having the cross-members 10 turned outwardly or away from each other, an annular turn-table mounted upon said frame and cross-members, and being open or unobstructed underneath, a tower frame hinged to said turn table at its outer edge, a stand-pipe in said frame, adapted to be attached to a hose, means for raising said tower-frame, mounted upon the opposite side of said turn-table, said cross members being turned outwardly or away from one another under the line of movement of the base of said stand-pipe, and the base of the stand-pipe being arranged directly over the opening under the turn-table, whereby the hose may pass up through the turn-table and revolve with the stand-pipe without obstruction in its movement, substantially as set forth.

6. The combination with the truck, of a turn-table mounted thereon and having a cog ring, a tower hinged to said turn-table, a shaft journaled on said turn-table and having winding stems projecting from both sides thereof, screw rods pivoted on said turn-table and being geared to said shaft and having connection with said tower, a supplemental winding stem journaled on said turn-table intermediate of said first winding stems and being geared to said shaft and adapted to turn said screw rods simultaneously, substantially as set forth.

527,461. APPARATUS FOR SIGNALING THE APPROACH OF STREET-CARS. GARLAND B. ST. JOHN, Kalamazoo, Mich., assignor of one-half to Charles D. Fuller, same place. Filed Nov. 27, 1893. Serial No. 492,065. (No model.)



*Claim.*—1. The combination of an apparatus for signaling the approach of a street car, of the insulated vertical wire, E, the horizontal cross wire, F, attached thereto, one end of which projects across the path of a trolley pole; the vertical end of wire *a*, in position to come in contact with the cross wire, F, when the wire, F, is swung by the car passing in one direction, and the signal wire, *i*, passing through a group of signals to a ground plate at the outer end and connected with the wire, *a*, at the outer end, substantially as described for the purpose specified.

2. In an apparatus for signaling the approach of a street car, the combination of the vertical insulated wire, E, the horizontal wire, F, attached thereto, one end of which wire, F, crosses the path of the trolley pole the opposite end projecting between the vertical ends of wires, *a* and *a'*, and the wires, *a* and *a'*, connected to groups of signals in opposite directions, the said wire, F, being adapted to be swung by the passing trolley pole into contact with the vertical wire, *a*, when moving in one direction, and the vertical end of wire, *a'*, when moving in the opposite direction, to convey signals of the approach of the car, substantially as described for the purpose specified.

3. In an apparatus for signaling the approach of a street car traveling over a single track roadway, the combination of a group of signals connected by a single wire, a suitable source of electric supply; and the circuit closer operated only by the car passing in one direction, that is, by its approach so that the signal operates momentarily while the car is approaching, for the purpose specified.

4. In an apparatus for signaling the approach of a street car traveling over a single track of a roadway, the combination with groups of signals connected with the circuit closers along the line, of an electric supply in the street car adapted to connect with the groups of signals successively by means of the circuit closers when the car passes the said circuit closers being operated by the car passing in only one direction so that the signals shall operate momentarily on the approach of the car, for the purpose specified.

5. In an apparatus for signaling the approach of a street car traveling over a single track roadway, the combination of a signal, a connecting wire running from said signal to the street car line, a circuit closer at the street car line operated only by the approach of the car, and an electric supply to pass through the connecting wire to operate the signal momentarily while the car is moving in only one direction, for the purpose specified.

6. In an apparatus for the purpose of signaling the approach of a street car, the combination of, a signal, a connecting wire running from the signal to the street car line, an upwardly projecting post at the top of the car in electrical connection with the ground below the track adapted to strike the connecting wire when approaching to complete the circuit to allow an electric current from a suitable electric generator in the circuit to pass to operate the signal and a suitable insulator to prevent the post from striking the connecting wire and completing the circuit when the car is passing in the opposite direction so that the signal shall be operated only when the car approaches, for the purpose specified.

7. In an apparatus for the purpose of signaling the approach of a street car passing over a single track roadway, a part projecting into the path of a street car, an electrical conductor on said car adapted to strike said projecting part when the car moves in one direction and complete the circuit only when the car is moving in that direction, a connecting wire running forward from the projecting part in the direction of the car, a signal connected to said wire, and a suitable source of electrical supply to operate the signal momentarily on the approach of the car, for the purpose specified.

8. In an apparatus for signaling the approach of a street car traveling over a single track roadway, the combination of a signal, a con-

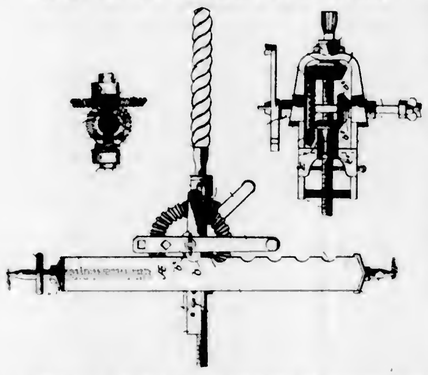
necting wire from said signal to the track, a part projecting normally into the path of the street cars, a means for closing the circuit operated by the motion of the projecting part, in but one direction, and a suitable electric generator connected in the circuit to operate the signal momentarily on the approach of the car, for the purpose specified.

9. In an apparatus for signaling the approach of street cars, the combination of a part projecting into the path of the cars, an insulator to keep the part from electrical contact with the car when moving in one direction, and a conductor of electricity to come in contact with a conductor of electricity in the car to complete a circuit when the car is moving in the opposite direction, a signal, a connecting wire from said part to the signal and a source of electric supply, for the purpose specified.

10. An apparatus for signaling the approach of street cars traveling over a single track of a roadway to possible passengers along the line, a part projecting normally into the path of the street car to be moved by it in either direction, the combination of a means for closing the circuit situated to one side of said part to be operated by it when it moves in that direction, a connecting line in the circuit running from said means for closing the circuit to as many signals as desired along the line, a suitable generator of electricity in the circuit to operate the signal momentarily, on the approach of the cars, for the purpose specified.

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**527,462. DRILLING-MACHINE.** Jeremiah Sullivan, Jr., Dudley, Pa. Filed May 5, 1893. Serial No. 473,072. (No model.)



*Claim.*—1. A drilling machine comprising the supporting frame, the frame adjustably supported thereby, the gear-wheels and pinions mounted in said latter frame, one of said pinions being hollow and having grooves in its interior surface, a two-part nut having splines fitting in said grooves, the spindle in engagement with said two-part nut, the boring tool, means for imparting motion to said gear-wheels and pinions, and means, substantially as described, for holding said hollow pinion out of operation, whereby said spindle can be fed forward at an increased rate of speed, as set forth.

2. A drilling machine, comprising the supporting frame, the frame adjustably supported thereby, the gear-wheels and pinions mounted in said latter frame, the carriage also mounted in said latter frame, the hollow pinion mounted in said carriage and having interior grooves, the two-part nut having splines or feathers fitting in said grooves, the spindle in engagement with said two part nut and operated by said gear-wheels and pinions, the boring tool, means for imparting motion to said gear-wheels and pinions, and means for holding said hollow pinion out of operation, the same comprising a gear-wheel with which said hollow pinion engages adjustably mounted on its bearing, said spindle being thereby capable of being fed forward at an increased rate of speed, substantially as set forth.

3. A drilling machine, comprising the supporting frame, the frame adjustably supported thereby, the gear-wheels mounted in the opposite sides of said latter frame, the hollow pinion mounted in one end of said latter frame, the carriage also mounted in said frame and having a hollow pinion mounted therein, the two-part nut having splines or feathers fitting in grooves of said latter hollow pinion, the spindle in engagement with said two-part nut and the first mentioned hollow pinion, the boring tool, means for imparting motion to said gear-wheels and pinions, and means for holding the hollow pinion containing said two-part nut out of operation, the same comprising a gear-wheel with which said pinion engages adjustably mounted on its bearing, whereby said spindle is capable of being fed forward at an increased rate of speed, substantially as set forth.

4. In a drilling machine, the combination of the frame, the gear-wheels mounted in opposite sides thereof, the pinion mounted in one end of said frame, the carriage on the opposite end thereof having a hollow pinion mounted therein, the two-part nut having splines or feathers fitting in grooves of said hollow pinion, the spindle in engagement therewith, means for imparting motion thereto, and means for holding said hollow pinion out of operation, the same comprising a gear-wheel with which said hollow pinion engages, adjustably mounted on its bearing, whereby said spindle is capable of being fed forward at an increased rate of speed, substantially as set forth.

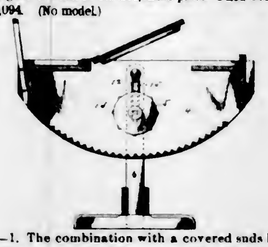
5. A drilling machine, comprising the supporting frame, the frame adjustably supported thereby, the gear wheels mounted on opposite sides thereof, one of said gear-wheels being provided with a set-screw whereby the same may be adjusted to different positions, the pinion mounted in the end of said latter frame having a flange to prevent lateral movement the carriage also mounted on said frame and having a pinion mounted therein, the pin for preventing the rotation of the latter, the spindle in engagement with said pinions, the boring tool, and means for imparting motion to said gear-wheels and pinions, substantially as set forth.

6. As an improvement in drilling machines, the frame, the frame supported thereby, the shaft mounted in said latter frame, the large gear wheel on one end of said shaft, the small gear wheel adjustably secured on the opposite end thereof, the hollow pinion mounted in the end of said frame meshing with the larger gear-wheel, the carriage also mounted on said latter frame, the hollow pinion mounted therein and meshing with said smaller gear-wheel having an elongation, the two part nut in said elongation, the spindle in engagement with said two part nut and also said former pinion, the boring tool, a pin designed to prevent rotation of said hollow pinion when out of engagement with said smaller gear-wheel and means for operating said gear-wheels and pinions, substantially as set forth.

7. In a drilling machine, the combination of a hollow pinion having grooves in the inner surface, a two-part nut the sections of which are hinged together and interiorly screw-threaded, said sections being also provided with splines or feathers fitting in the grooves of said pinion, and the screw-threaded spindle in engagement with said two part nut, said nut being designed to revolve with said hollow pinion, substantially as set forth.

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**527,463. WASHING-MACHINE.** Warren Sweet, Fort Wayne, Ind., assignor to John F. Curtice, same place. Filed Oct. 25, 1893. Serial No. 489,094. (No model.)



*Claim.*—1. The combination with a covered suds box, the frame upon which it is supported, of the removable rubber: shafts or journals rigidly attached to the frame on which the suds box hangs and is oscillated: vertically placed bars having slideways extending throughout their length, in which the projecting ends of the rubber are free to turn to and fro and move vertically: the said bars being fixed to the ends of the said journals within the suds box below the plane of the cover, so that said suds box may be oscillated between said frame and said bars without moving either, substantially as and for the purpose set forth.

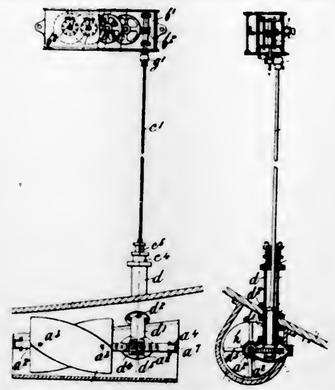
2. In a washing manhine of the character described, the combination with the suds box its cover, and the frame to which it is hung for oscillation, of the journal shaft having a square portion fixed to the said frame, the rubber, the bars formed in the same piece with the said journal shaft and the square portion, located inside the suds box below the said cover, and means located at the side of the frame for securing the said square portion to the frame and holding the bars immovably in the same horizontal plane with the said frame, the said bars having slideways in which the rubber is free to turn to and fro and to slide vertically when the suds box is oscillated, substantially as set forth.

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**527,464. SHIP'S LOG.** George Thom, Dunedin, New Zealand. Filed Mar. 22, 1894. Serial No. 504,713. (No model.)

*Claim.*—1. In an apparatus such as set forth herein for indicating the distance traveled by steam and sailing vessels, the combination of the shaft ($c$) having collar ($c^5$), with bearing ($c^3$) stuffing box ($c^4$) and tubes ($d$ and $d'$) providing a space ($c^6$) for containing oil, substantially as and for the purposes described and illustrated.



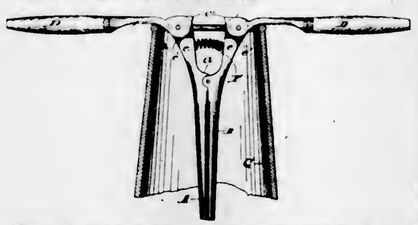


2. In combination, with the rotator, the shaft $c'$ extending therefrom, the indicator mechanism, the said shaft $c'$ having a cone friction gear $g'$ at its upper end which upper end is guided to move laterally in the indicator case, the shaft $g^3$ extending from the indicator mechanism parallel with the shaft $c'$, the driving disk $g^2$ adjustable along the shaft and the means for holding the upper end of the shaft $c'$ inwardly to press the friction wheel $g'$ against the driving disk, substantially as described.

3. The combination, in an apparatus such as described herein for indicating the distance traveled by steam and sailing vessels, of a rotator ($a$) having worm ($a^8$), with worm wheel ($c$) shaft ($c'$) bearing ($c^3$) stuffing box ($c^4$) tubes ($d$ and $d'$) space ($c^6$), regulator ($g$) and indicator ($h'$), substantially as and for the purposes set forth herein and illustrated.

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**527,465. CURLING-IRON.** Max Thomsen, Chicago, Ill., assignor to the M. Thomsen Manufacturing Company, same place. Filed Jan. 29, 1894. Serial No. 498,372. (No model.)



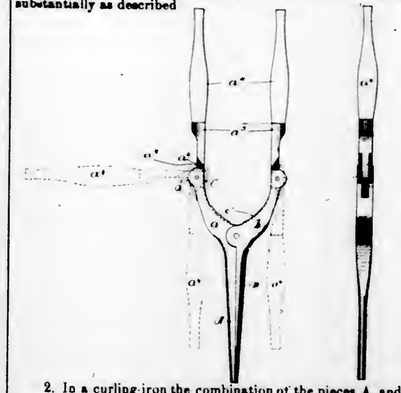
*Claim.*—1. In a curling iron, the combination with the clamping members or pieces A B pivotally connected and having projecting tongues; of two separate handles each having a spring jaw standing astride and pivoted to one of said tongues, one pair of meeting faces of each tongue and adjacent jaw-member having recesses and teeth around the pivot which frictionally engage when the handle is closed alongside or at substantial right angles to the length of the clamping member, as and for the purpose set forth.

2. In a curling iron, the combination with the clamping members or pieces A B pivotally connected near their upper ends and having projecting tongues; of two handles each having a spring jaw standing astride and pivoted to one of said tongues, one face of each of said tongues having two teeth and the inner face of one of each jaw-member having four recesses around the pivot whereby the teeth engage the recesses when the handle is open, closed, or at substantial right angles to the length of the clamping member, as and for the purpose set forth.

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**527,466. CURLING-IRON.** Max Thomsen, Chicago, Ill., assignor to the M. Thomsen Manufacturing Company, same place. Filed Mar. 23, 1894. Serial No. 504,796. (No model.)

*Claim.*—1. In a curling iron the combination of the pieces A, and B, pivotably secured together and having their upper portions bifurcated, with the separate hand-pieces pivotally secured within said bifurcations, and a bow-spring placed between the upper parts of the pieces A, and B, with its ends bearing against the ends of the hand pieces and adapted to actuate them as well as the pieces A, and B, substantially as described

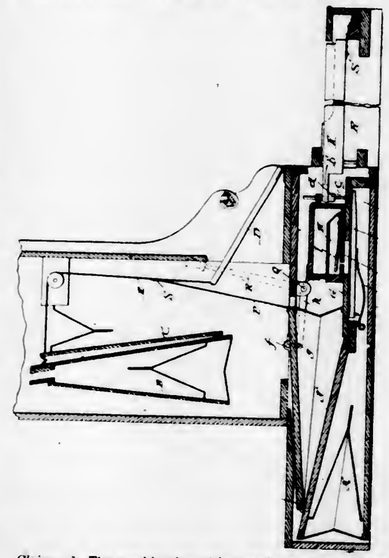


2. In a curling-iron the combination of the pieces A, and B, pivotally secured together and having respectively at their upper portions the jaws $a'$, $b'$, and the right angular shoulders $d'$, with the separate hand-pieces $a^3$, having the tongues $a^9$, provided with the shoulders $c$, said tongues being pivotally secured between the jaws, the bow-spring C, secured to the upper part of the pieces A, and B, with its ends bearing against the ends of the hand pieces and adapted to actuate them as well as the pieces A, and B, substantially as described.

3. In a curling-iron the combination of the pieces A, and B, pivotally secured together with a separate hand-piece pivotally secured to the upper end of each of the pieces A, and B, and having the rectangular shoulders $c$, at their lower ends, and a bow-spring placed between the upper parts of the pieces A, and B, with its ends extending above the pivot point of the hand-pieces, said spring being adapted to actuate the pieces A, and B, and to engage the shoulders $c$, on the hand-pieces, whereby the same may be held in a horizontal position, substantially as described.

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**527,467. REED-ORGAN.** John W. Trainer, Fort Wayne, Ind. Filed July 6, 1894. Serial No. 516,744. (No model.)



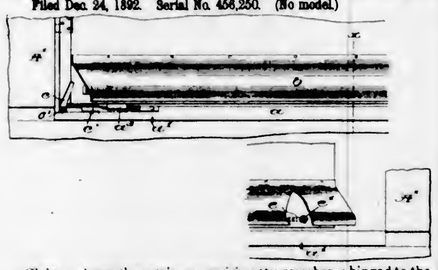
*Claim.*—1. The combination with a reed organ comprising a bellows, exhausters therefor, pedals and straps connecting the pedals and exhausters, of the attachment arranged beneath the organ and comprising a suitable casing, a set of reeds and reed cells, a set of valves

controlling the passage of air through the reed cells, a set of keys for operating said valves, a bellows, and exhausters connected with the bellows and having straps as P, adapted to be connected with the straps between the pedals and exhausters of the organ, whereby the exhausters of both organ and attachment may be operated by a common means, substantially as specified.

2. The combination with a reed organ comprising a bellows, exhausters therefor, pedals, and the straps connecting the pedals and exhausters; of the attachment arranged beneath the organ and comprising a suitable casing, a set of reeds, and reed cells, a set of valves controlling the passage of air through the reed cells, a set of keys for operating said valves, a bellows, exhausters connected with the bellows and having straps as P, adapted to be connected with the straps between the pedals and exhausters of the organ, a rock shaft journaled in the casing and having one end extended through the same and also having a handle on its extended end and a crank arm as A, and a suitable connection between the crank arm and the exhausters, substantially as specified.

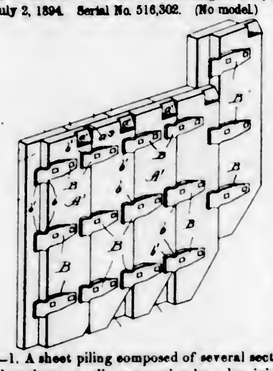
3. The combination with a casing as F, and a series of valves arranged therein and having the pins c, provided with collars or enlargements; of a frame as R, keys arranged therein and having one of their ends notched or bifurcated to engage the pins c, of the valves, and springs connecting the rear ends of the keys and the casing and adapted to return the keys to their normal position when they have been depressed, substantially as specified.

527,468. WEATHER-STRIP. WILLIAM TRUE, Pepperell, Mass. Filed Dec. 24, 1892. Serial No. 456,250. (No model.)



*Claim.*—A weather-strip, comprising the member *a* hinged to the door sill and normally lying flat thereupon, and flush with or below the top of the usual ledge on said sill, said member having a portion cut-away at one end, and the stationary lifting devices therefor placed in said cut-away portion and secured to said sill outside the door, combined with the member *b* secured to the door and adapted when the door is closed to co-operate with said member *a* to over reach and cover or inclose said lifting devices to protect the same from the weather, substantially as described.

527,469. SHEET-PILING. JAMES A. WAKEFIELD, Chicago, Ill., assignor of one-half to the Shaller & Schnigian Company, same place. Filed July 2, 1894. Serial No. 516,302. (No model.)



*Claim.*—1. A sheet piling composed of several sections each section engaged to the next adjacent section by a lap joint, and one or more yielding strips or clips engaged to one section and bearing on the next adjacent section to hold the lap joint together, substantially as described.

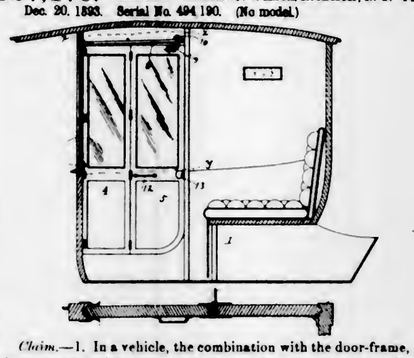
2. In a sheet piling the combination with one section of piling provided on its longitudinal edge with a flange and groove or recess, of the next adjacent section provided with a flange and groove or recess to fit those of the first named section, and a yielding clamp or clamps for binding the two sections against each other, substantially as described.

3. In a sheet piling the combination with one section composed of two thicknesses of plank engaged together to form projecting flanges on each edge of the next adjacent section also composed of two thicknesses of plank similarly engaged together, and one or more yielding strips engaged to one section and bearing on the adjacent section to hold the flange on one section against the flange of the next adjacent section, substantially as described

4. A sheet piling composed of several sections, each section composed of two thicknesses of plank engaged together with the edges breaking joints and spring metal strips engaged to the face of the section and adapted to bear upon the next adjacent section when the piling is formed, substantially as described.

5. A sheet piling composed of several sections each section made up of two thicknesses of plank engaged together, one thickness of said plank being longitudinally divided to form two pieces, said section provided on each edge with a projecting flange, the metallic strips engaged to that face of the section having the divided plank or thickness, said strips adapted to bear upon the next adjacent section when the piling is in place, substantially as described.

527,470. VEHICLE. CHARLES W. WILSON, Rochester, N. Y. Filed Dec. 20, 1893. Serial No. 494,190. (No model.)



*Claim.*—1. In a vehicle, the combination with the door-frame, of a door constructed in two sections hinged together, one of said sections being hinged to the frame and the other having a guide at one end cooperating with the frame for guiding its movements, substantially as described.

2. In a vehicle, the combination with the door-frame, of a door constructed in two sections hinged together, one of said sections being hinged to the frame and the other having a supporting projection, and a support on the frame with which said projection cooperates, substantially as described.

3. In a vehicle, the combination with the door frame, of a door constructed in two sections hinged together, one of said sections being hinged to the frame and the other provided with a roller and a supporting projection, and a guide rail with which the projection and roller cooperate, substantially as described.

4. In a vehicle, the combination with the door frame, of a door constructed in two sections hinged together, one of said sections hinged to the frame and the other provided with a guiding projection, and a recess in the frame near the hinge with which said projection cooperates to hold the door open, substantially as described.

5. In a vehicle, the combination with the door frame, of a door constructed in two sections hinged together, one of said sections hinged to the frame and the other provided with an elastic abutment, and a recess in the door frame near the hinge with which said abutment cooperates to hold the door open, substantially as described.

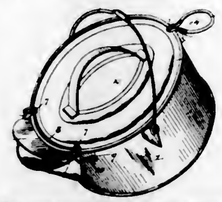
6. In a vehicle, the combination with the door frame having one more or less elastic side, of a door constructed in two sections hinged together, one of said sections hinged to the door frame and the other guided at one end on said frame, substantially as described.

7. In a vehicle, the combination with the door frame and the supporting ledge and rail, of a door constructed in two sections hinged together, one of said sections hinged to the frame and the other provided with an elastic roller and supporting projection cooperating with the rail and ledge, substantially as described.

8. In a vehicle, the combination with the door frame, of a door constructed in two sections hinged together and one of them hinged to the frame forming a toggle, and an elastic abutment for one of the door sections, whereby the door may be held closed when the toggle formed by the two sections is straightened, substantially as described.



527,471. COOKING-VESSEL. JOHN H. WILSON, Carlisle, Pa., assignor of two-thirds to Charles R. Zeigler and Milton I. Zeigler, same place. Filed Apr. 17, 1894. Serial No. 507,921. (No model.)

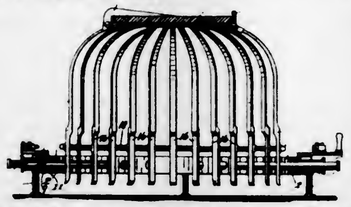


*Claim.*—1. The combination in a cooking vessel, of a body provided with a spout, a bar or rod secured to the body and having a portion projecting horizontally above the mouth of the spout, a flapper or spout-lid arranged over the mouth of the spout and having two lugs rigidly fixed thereto, the lugs being provided with openings by which the flapper may be pivoted to the rod, a top for closing the body and capable of movement toward and from the spout, the top being adapted to engage the lugs on the flapper and thereby raise the flapper, and a lever pivoted to the body and adapted to engage the top so as to move it against the lugs on the flapper, substantially as described.

2. In a cooking vessel, the combination of a body-portion having a spout terminating at its upper end below the upper edge of the body, a rod secured to the body on each side of the spout and extending outwardly, inwardly and thence horizontally so as to form an overhanging horizontal portion, a spout-lid or flapper mounted on the spout and having upwardly-extending lugs formed integral therewith, the lugs being adapted to embrace the horizontal portion of the rod so as to pivotally mount the flapper, a top mounted on the upper end of the body and completely closing the opening therein, said top being adapted to move under the horizontal portion of the rod and engage the lugs on the flapper, thereby raising the same, and a lever fulcrumed to the body and adapted to engage the top rods to move it against the lugs on the flapper, substantially as described.

3. In a cooking vessel, the combination of a body, a lid or top mounted thereon, two bearing-plates fixed to the body, and a lever adapted to engage the top and hold it in place, said lever having two arms with a tendency apart and provided with trunnions thereon, the arms being adapted to be sprung between the plates aforesaid, thereby fulcruming the lever, substantially as described.

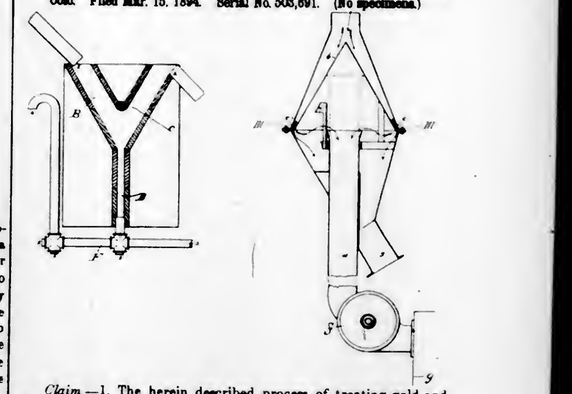
527,472. HAT-CONFORMATOR. SAMUEL H. ALTLAND, Indianapolis, Ind., and SIGMUND MAYER, Cincinnati, Ohio. Filed Oct. 23, 1893. Serial No. 488,968. (No model.)



*Claim.*—1. In a hat conformator, the combination with a retaining rim composed of upper and lower portions or sections and having a series of grooves or ways formed transversely on their inner bearing faces, said upper grooves adapted to register with said lower grooves, of a series of vertical conformator bars having outwardly projecting stems formed horizontally on said vertical bars and near the bottom ends thereof, and adapted to freely fit and to slide longitudinally in said grooves, a series of clamping eccentrics having their axes disposed transversely with the said stems and adapted to simultaneously engage said supporting stem, and suitable connecting rods and eccentric cranks for operating said eccentrics, substantially as and for the purpose set forth.

2. In a hat conformator, the combination with a retaining-rim composed of upper and lower elliptical sections having a series of diverging grooves formed in their inner bearing faces and adapted to register, of a series of vertical conformator bars having outwardly projecting stems formed integral on the outer sides of said bars at or near the bottom ends thereof, and adapted to loosely fit said grooves formed in said rim, said bars having their top outer bearing sides in vertical alignment with their bottom inner bearing sides, substantially as and for the purpose set forth.

527,473. CYANID AND CHLORINATION PROCESS FOR TREATING GOLD OR SILVER BEARING ORES. PHILIP ARGALL, Denver, Colo. Filed Mar. 15, 1894. Serial No. 503,691. (No specimens.)



*Claim.*—1. The herein described process of treating gold and silver bearing ores for extraction of the precious metals, said process consisting in reducing the ore to a granular state, separating from the granular mass the slime or dust, forming the latter into lumps or pieces as specified and roasting the same to a porous condition, and finally leaching the entire product, as set forth.

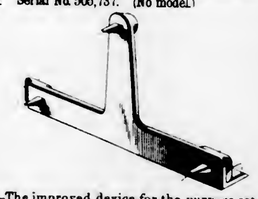
2. In the process of preparing gold and silver bearing ores for extracting the precious metals, the method of amalgamation consisting in obtaining by successive comminution of the ore in an alkaline solution a granular product and then subjecting said granulated ores and solution together to amalgamation, substantially as described.

3. A dust collector for ores, consisting of an exterior casing and interior cone, between which ore may fall in a thin layer, a feed pipe above said cone, and an adjustable discharge pipe below for the dust, substantially as described.

4. In the process of preparing gold and silver bearing ores for the extraction of the precious metals, the improvement consisting in separating the slime from the granulated ore, preventing the forming of acid in the slime by mixing lime therewith and then forming the mixture into lumps for burning, substantially as described.

5. In the treatment of gold and silver bearing ores, the improvement consisting in reducing the ore to a granulated condition, separating the slime or dust therefrom, roasting the latter in a furnace to obtain a porous product, and finally subjecting both to the action of a leaching solution, substantially as described.

527,474. FLOOR-SET. HERBERT A. BATES, Bath, Me. Filed Mar. 30, 1894. Serial No. 506,737. (No model.)

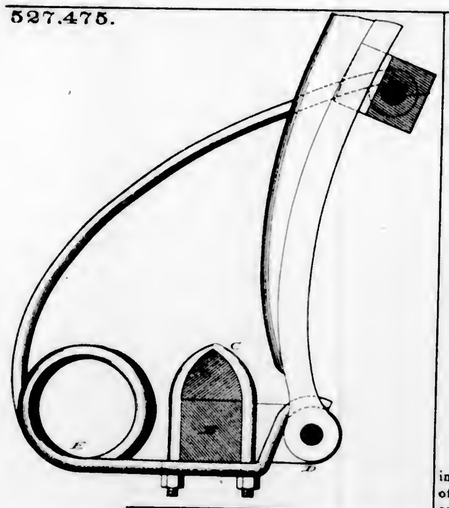


*Claim.*—The improved device for the purpose set forth, comprising in a single piece, a body-portion with an extended smooth vertical working face, a brace extending backward at right angles from the central part of said body portion, spurs on the under side, and thickened portions on the upper side of the ends of the body portion and of the free end of the brace, and overhanging projections formed by extensions of the thickened portions on the ends of the body portion, substantially as described.

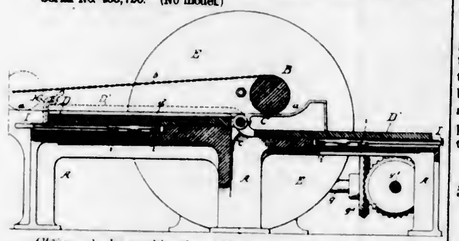
527,475. COMBINED SHAFT-SUPPORTER AND ANTIRATTLER. ELMER E. BLACKMAN, Raymond, Nebr. Filed Sept. 26, 1893. Serial No. 486,337. (No model.)

*Claim.*—The combination in carriage shaft supporters and antirattlers, of the two pieces E. having their lower ends curved to fit the upper sides of the carriage shafts, and being curled into a coil spring at the rear of the carriage axle and the shaft holder F. to which the forward ends of the pieces E. are attached, all substantially as described.

527,475.



527,476. APPARATUS FOR MANUFACTURING EMBOSSED-GLASS TABLETS. JAMES W. BONTA, Wayne, Pa., assignor to the Bonta Plate Glass Company, of West Virginia. Filed Aug. 22, 1893. Serial No. 483,720. (No model.)



*Claim.*—1. In combination, a frame-work, a table hinged thereto and having an ornamented face, a hinged table having a plain face, a glass-pressing roller, and means for operating the tables and roller.

2. An apparatus for the manufacture of ornamental glass, comprising in combination, a supporting frame, an engraved platform and a plain platform fulcrumed thereto, and to each other, a pressing roller, and means for reversing the relative positions of the platforms, substantially as specified.

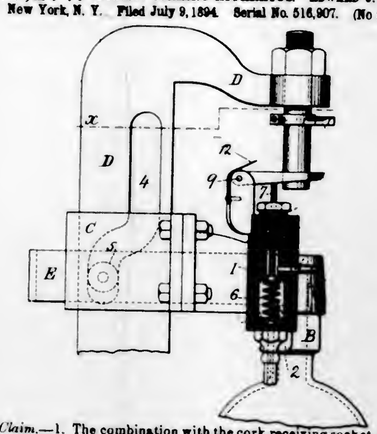
3. An apparatus for the manufacture of ornamental glass comprising in combination, an engraved platform, a pressing roller adapted to pass over the same, a second platform adapted to be clamped to the engraved platform, clamping or securing devices for holding the platens together, and mechanism for reversing the positions of the platens and for returning the engraved platen to its initial position, substantially as specified.

4. An apparatus for the manufacture of ornamental glass comprising in combination two platforms hinged together at one edge, one of such platforms being engraved, a glass pressing roller adapted to pass over the engraved platform and mechanism for moving the second platform to a position immediately over the engraved platform, for reversing the position of the platforms and for returning the engraved platform to its initial position, substantially as specified.

5. The combination of the two platforms, hinged together at one edge, one of such platforms having engraved thereon a design to be reproduced in a tablet of glass, a supporting frame, oscillated operating wheels at each side of the frame, sliding pins adapted to lock the platforms to the wheels and mechanism for operating said wheels, substantially as specified.

6. The combination of the pressing roller, the two platforms, hinged together at one edge, one of such platforms having engraved thereon a design to be reproduced in a tablet of glass, a supporting frame, oscillated operating wheels at each side of the frame, sliding pins adapted to lock the platforms to the wheels, worm gearing connected to and adapted to rotate the wheels, and mechanism for reversing the direction of the rotation of the worm gearing, substantially as specified.

527,477. BOTTLE-CORKING APPARATUS. EDWARD J. BOYD, New York, N. Y. Filed July 9, 1894. Serial No. 516,907. (No model.)



*Claim.*—1. The combination with the cork receiving socket, having a flange for the bottle neck and an opening in line with the mouth of the bottle and a cork presser, of the vertically sliding bar, a plunger carried by said bar, a spring valve and lever, and a pipe for supplying gas under pressure, and an opening leading from valve to the socket above the mouth of the bottle for supplying the gas automatically into the neck of the bottle to displace the atmosphere, which rises and passes by the cork which is loose in the holder substantially as set forth.

2. In a bottling apparatus the combination with the device for pressing and inserting the cork, of a spring valve, a lever, a finger for actuating the said valve, a supply pipe for a gas under pressure, there being an opening leading from the valve to the mouth of the bottle, so that a gas under pressure is allowed to pass into the bottle above the liquid contents thereof and displace the air which rises and passes by the cork which is loose in the holder immediately before the cork is driven into the bottle, substantially as set forth.

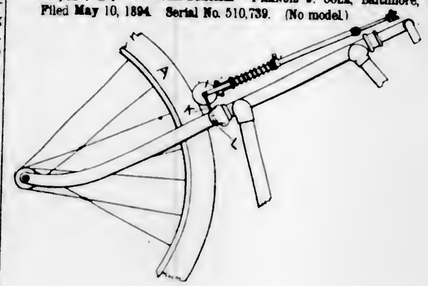
527,478. PROCESS OF PLATING METALS WITH ALUMINIUM. EDWARD C. BROADWELL, Philadelphia, Pa., assignor to Matthew J. Grier, same place. Filed Aug. 7, 1893. Serial No. 482,613. (No specimens.)

*Claim.*—1. The art of forming on metals a surface coating of aluminum or alloy thereof, which consists in placing on the foundation metal a compound decomposable by the reagency of aluminum in a molten state and subsequently bringing the foundation metal into the presence of molten aluminum or the molten alloy thereof which is to form the coating substantially as described.

2. The art of forming on metals a surface coating of aluminum or aluminum alloy which consists, first in placing upon the surface of the metal to be coated, a salt of a metal reducible from such salt by the reagency of aluminum in a molten state and second in dipping the metal, after treatment with such salt, into a bath of molten aluminum or alloy thereof substantially as described.

3. The art of forming on metals a surface coating of aluminum or alloy thereof which consists in treating the metal to be coated with a haloid salt of a metal reducible from such salt by aluminum and, second in dipping the metal thus treated into the aluminum or alloy thereof which is to form the coating substantially as described.

527,479. BICYCLE-BRAKE. FRANCIS J. COLE, Baltimore, Md. Filed May 10, 1894. Serial No. 510,739. (No model.)





*Claim.*—1. In a brake for bicycles, the combination of a roller or rollers, a roller yoke D and a substantially vertical rod E sliding through the yoke D, provided with a rubber block on its extreme end.

2. In a brake for bicycles, the combination of a roller or rollers, a roller yoke D, a substantially vertical rod E sliding through the yoke D, provided with a rubber block on its extreme lower end and a pivot connection K between the yoke D to the forks of the bicycle.

3. In a brake for bicycles, the combination of a roller or rollers, a roller yoke D and a substantially vertical rod E sliding through the yoke D, provided with a rubber block on its extreme lower end, a pivot connection K between the yoke D to the forks of the bicycle and a spring bearing on the upper part of the yoke D.

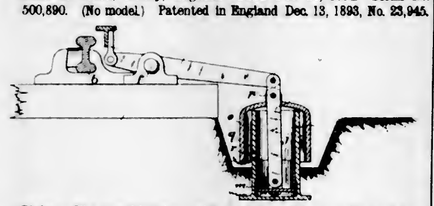
527,480. DETONATOR HOLDER OR CLIP FOR USE IN FOG RAILWAY SIGNALING. JOHN G. DIXON, Birkby, England. Filed Jan. 18, 1894. Serial No. 497,253. (No model.) Patented in England Dec. 9, 1893, No. 23,771.



*Claim.*—1. A detonator clip formed of a single piece of metal and consisting of an upper plate *c* provided with means for holding the detonator, a lower plate *d*, a bent portion *e* connecting the two said plates, and the guard pieces *f* partially cut from plate *d* and having their upper ends bearing against the end of plate *c*, substantially as set forth.

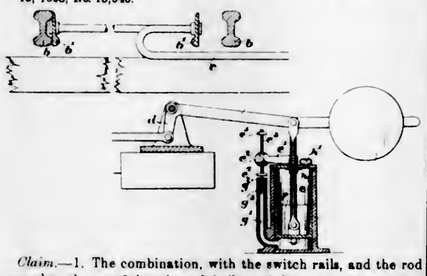
2. A detonator clip consisting of an upper plate *c* provided with a series of lips *b* arranged in circular form and adapted to hold the detonator in position, a lower plate *d*, a bent portion *e* connecting the two said plates, and the guard pieces *f* projecting upwardly from plate *d* and having their upper ends bearing against the end of plate *c*, substantially as set forth.

527,481. TREADLE FOR USE IN RAILWAY SIGNALING. JOHN G. DIXON, Birkby, England. Filed Feb. 20, 1894. Serial No. 500,890. (No model.) Patented in England Dec. 13, 1893, No. 23,945.



*Claim.*—The combination, with a depressible treadle, and the counterbalanced and pivoted lever *e*, of the dash pot cylinder *k*, the piston sliding therein, the rod *h* operatively connecting the said lever and piston, the insulated contact piece normally above the piston in the cylinder, and the two conductors connected respectively to the said contact piece and cylinder, the circuit being completed by the ascending piston, substantially as set forth.

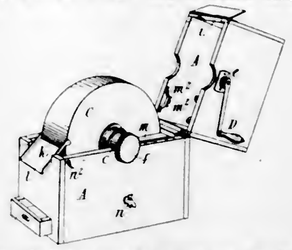
527,482. SWITCH. JOHN G. DIXON, Birkby, England. Filed Mar. 2, 1894. Serial No. 502,116. (No model.) Patented in England July 13, 1893, No. 13,646.



*Claim.*—1. The combination, with the switch rails, and the rod *c* secured to them; of the pivoted bell-crank lever, a stationary air cylinder, a piston sliding therein, a rod connecting the said piston and bell-crank lever, a weight normally holding the piston depressed, and a valve permitting the air to enter the lower part of the cylinder when the piston is raised and obliging it to descend slowly, substantially as set forth.

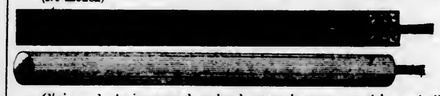
2. The combination, with the switch rails, and the rod *c* secured to them; of the pivoted bell-crank lever, the stationary air cylinder provided with the side tube *g'*, the piston, the rod *c* connecting the piston and bell-crank lever, the tappet *c'* attached to the rod *c*, the valve at the top of the cylinder, the spring-pressed valve $g^3$ at the top of the tube *g'*, and the slide $c^4$ provided with nuts on its ends above and below the said tappet, said slide being arranged over the said valve $g^3$ and adapted to operate it, substantially as set forth.

527,483. ICE-CREAM FREEZER. KING C. EDMUNDS, Calcutta, India. Filed Dec. 27, 1893. Serial No. 494,852. (No model.)



*Claim.*—In an apparatus for making ices or for analogous freezing operations and having a hollow drum with double side walls and an opening for introducing the freezing mixture thereinto and means for rotating the drum, and a receptacle for the matter or liquid to be frozen and within which receptacle the periphery of the drum rotates,—the combination therewith of scrapers *m*, hinged to the inside of such receptacle, and the springs $m^2$, in the upper part of the box or casing and bearing on said scrapers as and for the purpose set forth.

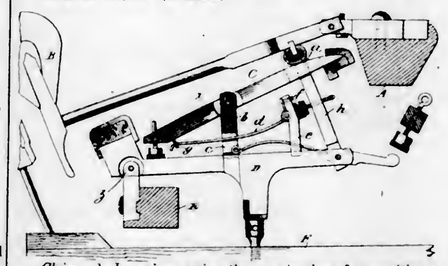
527,484. FUMIGATING-CARTRIDGE. OLE S. ERICKSON, Moscow, Idaho, assignor of three-fourths to M. J. Shields, Chas. W. Shields, and L. G. Witbeck, same place. Filed May 29, 1894. Serial No. 512,858. (No model.)



*Claim.*—1. An improved squirrel exterminator comprising a shell, having an explosive compound at its rear end, an intermediate filling of sulphur, powder and charcoal, moistened with nitric acid; a cotton plug and a fuse inserted through the plug into the intermediate filling, substantially as shown and described.

2. An improved squirrel exterminator comprising a paper shell or case, an explosive charge at the rear end of the same, a slow burning and gas generating mixture arranged next to said charge, said mixture consisting of sulphur, powder and charcoal, moistened with nitric acid, a cotton plug placed next to said mixture, and a fuse extending through the plug into the mixture, substantially as shown and described.

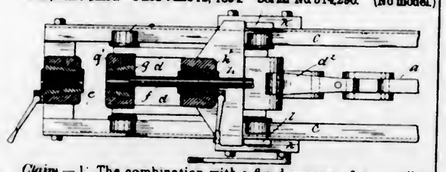
527,485. PIANO-ACTION. TORQUATO T. FISCHER, New York, N. Y., assignor to J. & C. Fischer, same place. Filed Aug. 6, 1894. Serial No. 519,554. (No model.)



*Claim.*—1. In a piano action, the combination of a repetition lever, a perforated standard on which said lever is pivoted and supported, and a spring connected to one end thereof and passing through the perforation in said standard to a connection at the opposite side thereof and means for adjusting said spring, substantially as and for the purpose specified.

2. In a piano action, the combination of a whip, a perforated standard secured thereto, a repetition lever pivoted to and supported by said standard, a spring connected to one end of said repetition lever, and secured at its other end to a second standard projecting from the whip on the opposite end thereof from that near which the spring is secured to the repetition lever, and means for adjusting the spring, substantially as and for the purpose specified.

527,486. MACHINE FOR DRAWING METAL. ALEXANDER W. FOSTER, Pittsburg, Pa., assignor to the Singer, Nimick & Company, Limited, same place. Filed June 12, 1894. Serial No. 514,290. (No model.)



*Claim.*—1. The combination with a fixed gripper of a traveling drawing die, and a pushing gripper adapted to force the rod through the traveling drawing die, substantially as set forth.

2. The combination of a fixed gripper, a traveling drawing die, a pushing gripper and stop mechanism for holding such pushing gripper stationary during the movement of the drawing die, substantially as set forth.

3. The combination of a fixed gripper, a buggy carrying a traveling drawing die, a pushing gripper mounted to slide on the buggy, and stop mechanism engaging with the pushing gripper, substantially as set forth.

4. The combination of a drawing frame having a buggy traveling thereon, a drawing die carried by the buggy, a pushing gripper in line with the drawing die and stops on the bench adapted to engage with the pushing gripper, substantially as set forth.

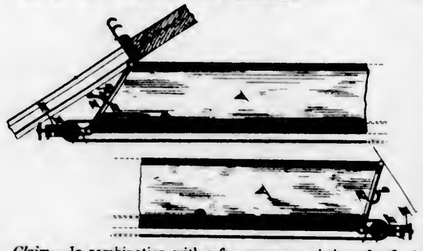
5. The combination of a drawing bench, a drawing chain traveling therein, a buggy adapted to engage with the drawing chain and having a drawing die thereon, a pushing gripper mounted to slide on the buggy and vertically movable stops mounted on the drawing bench and adapted to engage with the pushing gripper, substantially as set forth.

6. The combination of a drawing bench, a buggy traveling thereon, and carrying a drawing die, a gripper frame sliding on the buggy and extending beyond the draw-bench and carrying a gripper in line with the drawing die, and vertically movable stops mounted in the draw-bench beyond the track thereof, and adapted to engage with the gripper frame, substantially as set forth.

7. In a gripping die, the combination of a gripper or jaw seat having four or more flat tapering faces therein at angles to each other, of two gripping jaws fitting in said seat, each having two or more flat tapering outer faces engaging with like faces in the jaw seat, substantially as set forth.

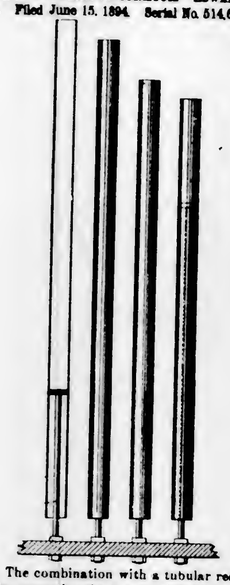
8. The combination of a gripper or jaw seat having four or more flat tapering faces projecting inwardly therefrom, and recesses between said faces, of two gripping jaws fitting in said seat, each having two or more flat tapering outer faces adapted to engage with the projecting faces of the gripper seat, substantially as set forth.

527,487. FIRE-ESCAPE. BARBARY FOX, Napoleon, Ind. Filed Aug. 28, 1894. Serial No. 521,496. (No model.)



*Claim.*—In combination with a fire-escape consisting of a flexible-tube A, having rings B, B', secured to its ends; the arms D, D', I, I', projecting rigidly from said rings; the spools E, J, clamp-bars F, K, and screws H, M, applied to said arms, in the manner described; and the endless band O, passing around these spools and having one portion external to said chute, and another portion traversing it internally, all as herein described, and for the purpose stated.

527,488. TUBULAR RESONATOR. EDWARD M. GERRY, Brooklyn, N. Y. Filed June 15, 1894. Serial No. 514,648. (No model.)



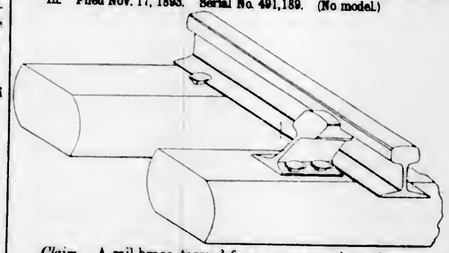
*Claim.*—1. The combination with a tubular resonator, of mechanism for rigidly supporting the same and rigidly engaging the resonator at a single nodal point thereof, substantially as and for the purpose set forth.

2. In combination with a tubular resonator, mechanism for supporting the same arranged within the tube and engaging the inner face only of the walls of the same at a nodal point, substantially as and for the purpose set forth.

3. In combination with a tubular resonator, mechanism for supporting the same consisting of a rod arranged within the tube and provided with an engaging piece adapted to be forced against the inner walls of the tube for the purpose of engaging the same, for the purpose set forth.

4. In combination with a tubular resonator, mechanism for rigidly supporting the tube and engaging the inner face only of the walls of the same at a nodal point, and means for adjusting said mechanism whereby to secure a certain vibrational value thereof, for the purpose set forth.

527,489. RAILROAD-TRACK BRACE. HOWARD GREER, Chicago, Ill. Filed Nov. 17, 1893. Serial No. 491,189. (No model.)



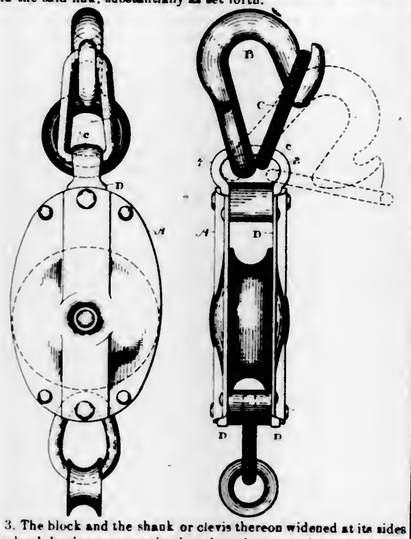
*Claim.*—A rail-brace formed from a section sheared or sawed from a parent bar having the cross-section of a T-rail, one end of the brace being cut to fit the rail to be supported the opposite end being cut any convenient shape preferably a slant of such length as to give a strong head in contact with the supported rail with sufficient bearing of foot on the tie to afford ample room for holding down bolts or spikes substantially as described and set forth.

527,490. TACKLE-BLOCK. HENRY V. HARTZ, Cleveland, Ohio. Filed Aug. 20, 1894. Serial No. 520,770. (No model.)

*Claim.*—1. A tackle block and a hook therein constructed with a reverse hook at its point and a link to engage over said reverse hook, substantially as set forth.

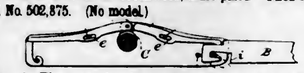


2. A tackle block and a hook and a link secured side by side in the block, the said hook having its point constructed to engage and hold the said link, substantially as set forth.



3. The block and the shank or clevis thereon widened at its sides and a hook having a reverse hook on its point secured on said shank, and a link on said shank in front of the hook thereon and arranged to engage over said reverse hook, substantially as set forth.

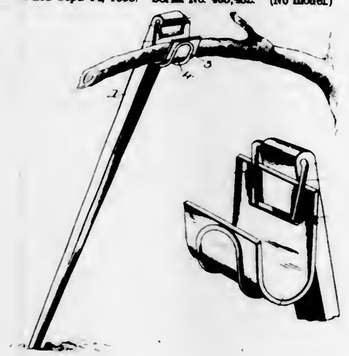
527,491. KNIFE. EPHRAIM HERRINGTON, Atlanta, Ga., assignor of one-half to William H. Greenwood, same place. Filed Mar. 8, 1894. Serial No. 502,875. (No model.)



*Claim.*—1. The combination with a knife handle, having two rivets, *m*, *m'*, fixed in said handle near one end, one rivet being in advance of the other, of a blade having a hook on its butt-end to connect with the rivet, *m*, and turn thereon, and also having a shoulder, *i*, adapted to connect with the rivet, *m'*, when the blade is closed, said rivet, *m'*, also forming an abutment for said hook when the blade is open, and a spring to bear on the attached end of the blade, substantially as and for the purposes described.

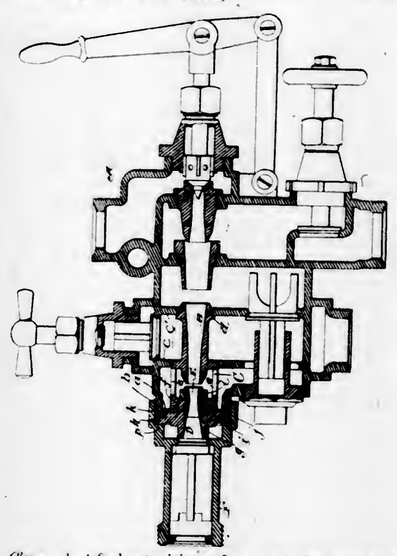
2. The combination with a knife handle, of a back spring made in two parts which are pivotally connected, each of said parts being provided with a slot, securing pins passed through said slots, a removable blade, and an eccentric, journaled in said handle and constructed to be turned so as to press against said spring at its pivotal connection, substantially as and for the purposes described.

527,492. FRUIT-TREE SUPPORT. LOUIS W. HIEN, San Jose, Cal. Filed Sept. 14, 1893. Serial No. 485,482. (No model.)



*Claim.*—The combination of a prop having a wire frame pivotally attached to the upper end thereof, formed with a lower forwardly and upwardly bent hook end, and a fabric covering over the said wire frame to avoid abrasion or injury, to the tree, substantially as described.

527,493. INJECTOR. PARKER P. HOGUE, Cincinnati, Ohio, assignor to the Automatic Injector Company, of Ohio. Filed Apr. 24, 1894. Serial No. 508,833. (Model.)



*Claim.*—1. A feed water injector for steam boilers comprising a removable end piece or bushing having a threaded bore, and an exteriorly-threaded and removable delivery tube arranged in said bore and connected to the end piece or bushing alone and not connected to or engaging any other part, substantially as specified.

2. A feed water injector for steam boilers comprising a shell or casing having interior and exterior threads at its feed end, a removable end piece or bushing carrying a removable delivery tube and having exterior threads to engage the interior threads of the casing and also having a flange *h* adapted to abut against the end of said casing, and the line check or pipe having interior threads to engage the exterior threads of the casing and also having a shoulder *p*, adapted to bear against the flange of the end piece or bushing, substantially as and for the purpose set forth.

3. A feed water injector for steam boilers comprising a casing, a removable combining tube, and a removable end piece detachably connected directly to the combining tube, whereby the end piece and combining tube may be together removed from the casing and then disconnected, substantially as specified.

4. A feed water injector for steam boilers comprising a casing, a removable combining tube arranged in said casing, a removable end piece or bushing detachably connected directly to the combining tube, and a delivery tube carried by and detachably connected to the end piece or bushing, whereby the combining tube, the end piece or bushing, and the delivery tube may be together removed from the casing and the combining tube and delivery tube then disconnected from the end piece or bushing, substantially as specified.

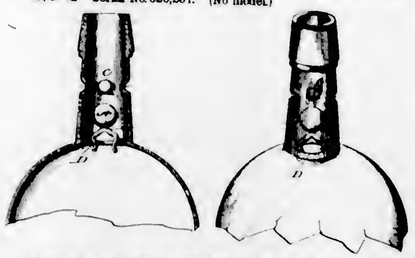
5. A feed water injector for steam boilers comprising a casing, a removable combining tube arranged in said casing and having the extended and interiorly threaded cylindrical portion C, the removable end piece or bushing detachably connected to the casing and having exterior threads to engage the threads of the portion C, and also having an interior threaded bore, and an exteriorly threaded delivery tube arranged in the bore of the end piece or bushing, substantially as specified.

6. The herein described feed water injector for steam boilers comprising a shell or casing having interior threads at its feed end, the removable combining tube arranged in the shell or casing and having the extended and interiorly threaded cylindrical portion C, the end piece or bushing D, having exterior threads to engage the threads of the casing and tube portion C, and also having the angular portion *g*, and flange *h*, and the interior threaded bore, and the exteri-

orly threaded delivery tube adapted to take into said bore and having an angular head or shoulder, substantially as and for the purpose set forth.

7. A feed water injector for steam boilers comprising a casing, a removable combining tube arranged in said casing and having the extended and interiorly threaded cylindrical portion C, and the removable end piece or bushing detachably connected to the casing and having exterior threads to engage the threads of the casing and also exterior threads to engage the portion C, substantially as specified.

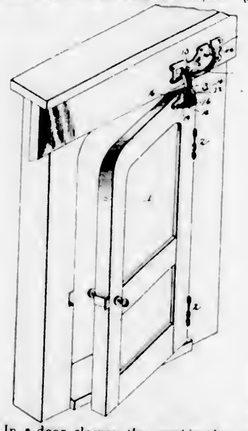
527,494. BOTTLE. STEPHEN HOWES, Jackson, Tenn. Filed Aug 13, 1894. Serial No. 520,231. (No model.)



*Claim.*—1. A bottle having a ball or valve loosely but permanently contained in the neck thereof, an internal rim or seat for said ball at the lower end of the neck, and a staple shaped spring having the legs thereof inserted in said seat, and the ball resting loosely upon its top or crown, substantially as set forth.

2. A bottle having a ball or valve loosely but permanently contained in the neck thereof, internal projections in the upper part of the neck, an internal rim or seat at the lower end of the neck, a staple shaped spring having the legs thereof inserted in said seat, and the ball resting loosely upon its top or crown, substantially as set forth.

527,495. GRAVITY DOOR-CLOSER. MYRON R. HUBBELL, Wolcott, Vt. Filed July 10, 1893. Serial No. 480,050. (No model.)



*Claim.*—1. In a door closure, the combination of an inclined track placed at the top of the door, pivotally supported at the inner end, vertically adjustable at the outer end, means for positively holding the track in the adjusted position, a hanger having a roller to travel on the track, and means for connecting the hanger with the door, substantially as described.

2. In a door closure, the combination of an inclined track placed above the top end of the door, pivotally supported at one end, vertically adjustable at the opposite end, means for positively holding the track in the adjusted position, a hanger having a roller to travel on the track, and means for adjustably connecting the hanger with the door, substantially as described.

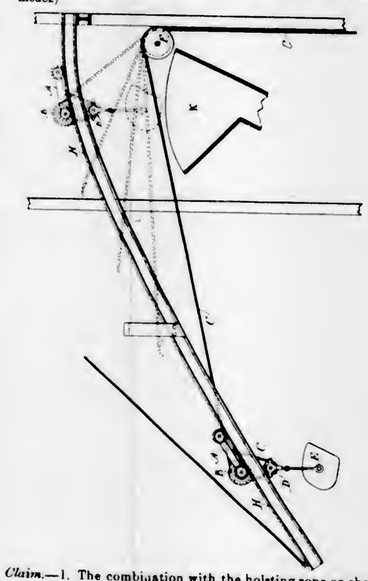
3. In a door closure, the combination of a casting secured to the door frame, a circular track pivotally supported at one end and having the other end provided with a rack plate and vertically adjustable on the casting, a pawl supported by the casting and adapted to hold the rack plate in the required position, and a hanger secured to the door and having a roller to travel on the said track, substantially as described.

4. In a door closure, a circular track inclined on its upper edge and adapted to be disposed above the door, a bracket to be attached to the door and having a large opening, a hanger having a shank which is adapted to pass through the opening in the bracket and adjustable therein laterally, vertically and pivotally, and means for securing the hanger in the required position, substantially as described.

5. In a self closing door, the combination with a bracket having a vertical opening and a notched flange, of a hanger having a flat sided shank vertically adjustable in the said bracket, and a plate apertured to receive the said shank and turn laterally therewith and engage with the notched flange, substantially as described.

6. In a self closing door the combination with a bracket having a vertical opening and a notched flange, a hanger having a threaded shank passing through the opening in the bracket and flattened, adjusting nuts having notched faces to secure the hanger in the required lateral and vertical adjustment, locking springs to hold the nuts from accidental loosening, and a plate fitted on the flattened shank and adapted to engage with the said notched flange to hold the hanger in the required pivotal adjustment, substantially as set forth.

527,496. ELEVATING APPARATUS. CHARLES W. HUNT, West New Brighton, N. Y. Filed May 15, 1893. Serial No. 474,211. (No model.)



*Claim.*—1. The combination with the hoisting rope or chain and a truck and pulley over which such rope or chain passes to the weight to be raised, of a track curved as a parabola, or approximately so, and a hoisting drum or pulley at or near the focus of the parabola, substantially as set forth.

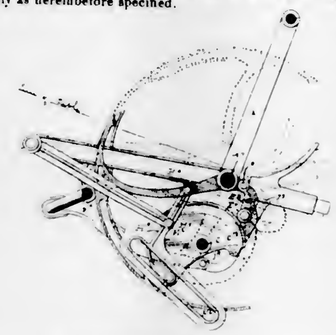
2. The combination with the hoisting rope or chain, a truck and pulley over which such rope or chain passes and a pulley connected with the weight to be raised, the end of the rope or chain being connected with the truck, of a track curved as a parabola, or approximately so, and a hoisting drum or pulley near the focus of the parabola, substantially as set forth.

527,497. GRAIN-BINDER. GEORGE G. HUNT, Bristol, Ill. Filed Dec. 16, 1893. Serial No. 493,816. (No model.)

*Claim.*—1. In a grain binder the combination of the frame having a binding arm or needle pivoted to said frame and vibratable thereon, a lever pivoted at its inner end to the binder frame and having a slot in its outer portion for the reception of a friction roller and crank pin of a driving crank, a link hinged at one end to the body of the needle and its opposite end hinged to the lever between its ends, and a driving crank mounted on a driving shaft of the binder, said crank having its pin and friction roller in the slot of the outer part of the pivoted lever, all arranged in the manner as and for the purpose hereinbefore set forth.



2. In a grain binder the combination of a vibratable binding arm or needle pivoted by a shaft to the binder frame, the shaft itself lying in a fore and aft position, a lever pivotally connected to the needle by a link, the inner end of said lever being pivoted to the binder frame outside the needle or toward the elevating mechanism in such a manner that when the lever and link are not flexed, and the full force of the lever is exerted upon the needle to compress the bundle the three pivots connecting the lever to the needle and to the binder frame are in a right line or nearly so, a shaft mounted on the frame parallel with the needle shaft and driven from the motive power of the machine, and a crank mounted on said shaft and connected by suitable means to the lever whereby a vibratory motion is imparted to the lever and needle, at the same time yielding a compound leverage upon the needle by the crank passing its center at the instant the lever and its link are fully extended, all the parts being arranged substantially as hereinbefore specified.



527,498. SNAP-HOOK. MORTIMER N. JUDD, New Britain, Conn., assignor to the North & Judd Manufacturing Company, same place. Filed July 21, 1894. Serial No. 518,268. (No model.)

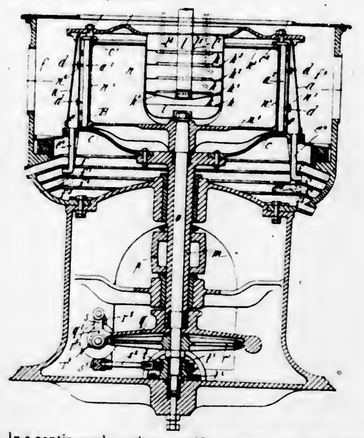


*Claim.*—1. The herein described snap hook consisting of the body having a pivotal bar cast therein, the U shaped spring extending around the back side of said pivotal bar and the tongue 8 having at its heel a thin outer rim 9 with the flange 10 on its inner side adapted to be bent around said bar, said flange being provided with the bearing stud 12 projecting laterally therefrom and arranged to bear upon the front side of said pivotal bar and support the tongue laterally for its whole width, while the space 13 is left between one side of said stud and the under side of said tongue, one arm of said spring extending through said space 13 while the other arm lies between the rim 9 and opposite side of said stud and extends forwardly therefrom, substantially as described and for the purpose specified.

2. In a snap hook having a body, spring and tongue, the pivotal bar cast in one piece with said body, and the tongue 8, having at its heel the thin outer rim 9 with the flange 10 on its inner side adapted to be bent around said pivotal bar and provided with the laterally projecting bearing stud 12 arranged to bear upon the front side of said pivotal bar and support the tongue laterally for the whole length of said bar, while at the same time a spring recess surrounds said bar and stud, substantially as described and for the purpose specified.

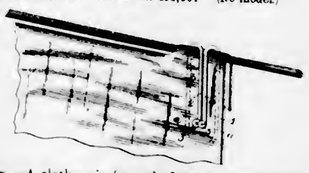
527,499. CENTRIFUGAL MACHINE. EDMOND LÉVY-SAMSON, Paris, France. Filed July 21, 1893. Serial No. 481,159. (No model.) Patented in France Feb. 12, 1892, No. 219,358; in Germany Apr. 6, 1892, No. 69,464; in Belgium Aug. 1, 1892, No. 100,772, and in Austria-Hungary Mar. 28, 1893, No. 39,858 and No. 86,589.

*Claim.*—1. In a continuously-acting centrifugal machine the combination with a stationary casing provided with circumferential channels therein, an outer drum provided with chambers therein and having pipes rotating therewith which communicate with the channels in the casing and with a central receiving and distributing chamber connected to and revolving with said outer casing and provided on the inner side thereof with tiers of circumferential channels, pipes extending to said circumferential channels within the distributer and corresponding ports opening through the sides of the distributer, of an inner radially chambered drum surrounding the distributer and provided with peripheral pivoted strainers, said inner drum revolving differentially from the outer drum so that its chambers will successively coincide with the ports of the distributer, for receiving in succession the materials to be treated and the agents with which it is to be treated, as specified.



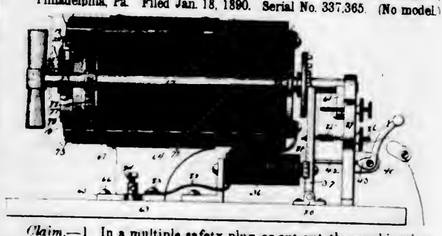
2. In a continuously-acting centrifugal machine, the combination with an outer rotating drum and with a central receiving and distributing chamber connected to and revolving therewith and provided with tiers of circumferential channels therein, means for conveying fluid thereto and corresponding ports opening through the sides of the receiver and distributer, of an inner radially chambered drum surrounding the distributer and provided with peripheral pivoted strainers, said inner drum revolving differentially from the outer drum so that its chambers will successively coincide with the ports of the distributer, for receiving in succession the materials to be treated and the agents with which it is to be treated, as specified

527,500. CLOTHES-PIN. GABRIEL W. MCCOOLE, St. Louis, Mo. Filed Dec. 29, 1893. Serial No. 495,061. (No model.)



*Claim.*—A clothes pin formed of a single piece of wire and having a long U-shaped jaw composed of substantially straight parallel members, a short jaw composed of substantially straight parallel adjacent members connected to the members of the long jaw by U-shaped connections, said members of the short jaw being inclined toward the members of the long jaw so as to bring their free ends contiguous to the long jaw or to the plane of its members, and outwardly turned loops at the free ends of the members of the short jaw, whereby the members are adapted to guide the pin and embrace the clothes on either side of the line and clamp the same below the line, substantially as set forth.

527,501. MULTIPLE SAFETY CUT-OUT. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed Jan. 18, 1890. Serial No. 337,365. (No model.)



*Claim.*—1 In a multiple safety-plug or cut-out, the combination with a series of easily fusible conductors, all connected at one end with one terminal of an electric circuit and insulated from each other at the other end; of a spring-actuated switch between the in-

sulated ends of the fusible conductors and the other terminal of the circuit; an electro-magnet in the circuit; a detent for the switch, actuated in one direction by the magnet; and a spring for actuating the detent in the other direction, substantially as described.

2. A multiple safety-plug or cut-out, consisting essentially of an electric circuit, a series of easily fusible conducting strips or rods, a spring-actuated switch adapted to include any one of the strips in the circuit, a hand-switch also included in the circuit, and a detent in operative relation to both switches, whereby the spring-actuated switch is locked when the circuit is opened by the hand switch, substantially as described.

3. A multiple safety-plug or cut-out, consisting essentially of an electric circuit, a series of easily fusible conducting strips or rods, a spring-actuated switch adapted to include any one of the strips in the circuit, a detent for the switch, an electro-magnet controlling the detent to lock the switch when the circuit is closed, and a hand-switch for opening the circuit and simultaneously locking the spring-actuated switch, substantially as described.

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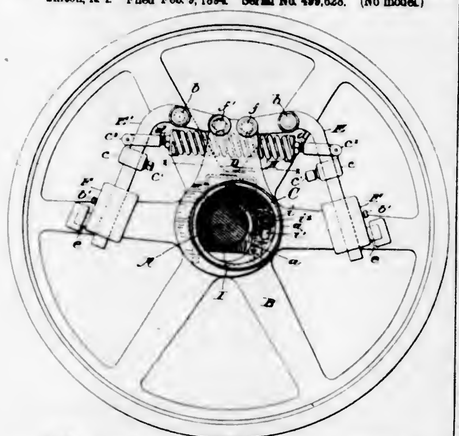
527,502. BUTTON. PAUL NEIDHARDT, Chicago, Ill. Filed Feb. 9, 1893. Serial No. 461,653. (No model.)



*Claim.*—As an article of manufacture, a button made in two separable parts constructed the one to screw into the other and receive the object to which the button is attached between them, one part having a head or enlargement and a funnel shaped shank, screw threaded internally, the smaller end of the shank being next to the head or enlargement, and the other part consisting of an externally screw threaded post and an enlargement, the base of the post being conical or funnel shaped to enter the open end of the shank, and the inner face of the enlargement having a recessed seat corresponding in shape and size to the free edge of the shank, substantially as and for the purpose described.

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527,503. STEAM-ENGINE GOVERNOR. HENRY C. NICHOLS, Hopkinton, R. I. Filed Feb. 9, 1894. Serial No. 499,628. (No model.)



*Claim.*—1. The combination, with an eccentric adapted to receive an eccentric strap and provided with guides, a shaft, and devices for moving the eccentric laterally of such shaft, of devices for engaging with said guides whereby to guide said eccentric in a direct line across the shaft while permitting of an oscillatory movement on such shaft, substantially as described.

2. The combination, with an eccentric adapted to receive an eccentric strap and provided with guides, a shaft, and devices for moving the eccentric laterally of such shaft, of a guide block loosely mounted on said shaft for co-operation with the guide whereby to guide the eccentric in a direct line across the shaft while permitting of an oscillatory movement on such shaft, substantially as described.

3. The combination, with an eccentric provided with guides, a shaft, and levers for moving the eccentric radially of such shaft, of a guide block loosely mounted on the shaft and co-operating with the guides on the eccentric, for guiding such eccentric in a direct line across said shaft while permitting it to oscillate about the same as the exigencies of the levers may require, and weights and a spring for co-operation with the levers, substantially as described.

4. The combination, with an eccentric provided with guides on its back, a shaft upon which it is mounted, bell crank levers provided with weights, and a spring, of a guide block loosely mounted on said shaft and co-operating with the guides on the eccentric whereby to guide such eccentric in a direct line across the shaft while permitting of its oscillation thereon, as the requirements of one of the bell crank levers in its movements may demand, substantially as described.

5. The combination, with an eccentric, a carrier therefor provided with guides upon its back, a shaft upon which such eccentric and carrier are mounted, bell crank levers jointed at one of their ends directly to the outer end of said carrier and provided on their other ends with weights, and a spring for co-operating with the bell crank levers, of a guide block loosely mounted on the shaft and engaging with the guides on the carrier whereby the rotation of the eccentric is effected from the bell crank levers, and its lateral movement guided in a direct line across the shaft while free to oscillate around the same, as the requirements of one of said bell crank levers may demand, substantially as described.

6. The combination, with the bell crank levers E E', and the spring H, extending between them, of the clips composed of members $c$ $c^2$ jointed together, the screw threaded rods to which the ends of the spring H are secured, and the binding screws $c'$, substantially as described.

7. A clip composed of two members $c c^2$ pivoted together, a binding screw, $c'$, and means in the inner face of the member $c^2$ whereby to connect it with a rod or bar, substantially as described.

8. The combination, with an eccentric C, and its carrier provided with the guide way A and with the slot $i'$, of the pulley B, and stud $i$ provided with a nut on its outer end, substantially as described.

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527,504. PRACTICE-PIANO. WILLIAM O. NISLEY, Portland, Oreg., assignor to the Nisley Practice Piano Company, same place. Filed Jan 19, 1893. Serial No 459,013. (No model.)



*Claim.*—1. In a practice piano, the combination with suitable keys of levers as $e$ pivotally supported on the frame and co-operating with such keys, and which levers carry trip-hammers as F; springs as $k$; a stop or rail as $d'$; and springs as $g$, suitably supported and adapted to co-operate with such trip-hammers as described.

2. In a practice piano, the combination with suitable keys of levers as $e$ pivotally supported on the frame and co-operating with such keys, and which levers carry trip-hammers as F; sounding contrivances for the heads of the trip-hammers to strike against for the purposes specified; springs as $k$; a stop or rail as $d'$; and springs as $g$, suitably supported and adapted to co-operate with such trip-hammers as described.

3. In a practice-piano, the combination with suitable keys of levers as $e$ pivotally supported on the frame and co-operating with such keys, and which levers carry trip-hammers as F springs as $k$; a stop or rail as $d'$; springs as $g$, suitably supported and adapted to co-operate with such trip-hammers; and means for adjusting said springs $g$ so as to increase or diminish their tension, as described.

4. In a practice-piano, a trip-hammer the shank of which is composed of two parts connected by a spring, substantially as and for the purposes set forth.

5. The combination in a practice-piano of bars as $h$ $h'$ for the hammers to strike against said bars being adapted to be thrown in front of the hammers and removed again for the purposes specified, bearings for said bars to operate in and means for operating the same, substantially as set forth.

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527,505. ROOFING-PLATE. PATRICK NORTON, Jersey City, N. J. Filed Apr. 21, 1894. Serial No. 508,408. (No model.)

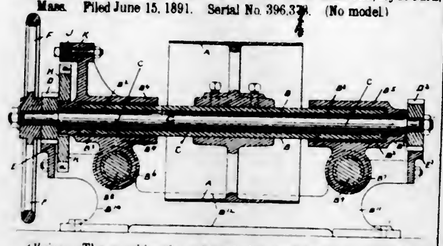


*Claim.*—A roofing plate comprising a corrugated metallic plate, a similarly corrugated, non-conducting lining, such as asbestos, on the under side of the said plate, and similarly corrugated strips or bands extending the width of the plate, and secured thereto and securing the lining theret partly by having theiro ends bent round the edges of the plate, and partly by an intermediate rivet, substantially as described.

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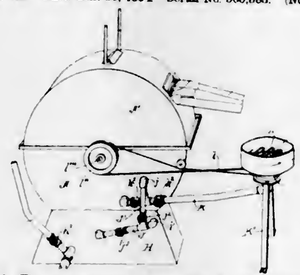
527,506. BELT-TIGHTENER. BENJAMIN F. RADFORD, Hyde Park, Mass. Filed June 15, 1891. Serial No. 396,328. (No model.)



*Claim.*—The combination of a tubular shaft having a pulley fixed thereon, bearing-blocks for opposite end-portions of said shaft, fixed parallel guide-rods, one beyond each side and both at right angles to the axis of said pulley and each supporting one of said bearing-blocks, a shaft extending through said tubular-shaft and having pinions fixed thereon, a stationary rack bar for each of said pinions, means to rotate said pinion-shaft, a disk held on said pinion-shaft and notched at its edge and a pawl-lever fulcrumed on a suitable support held on and moving with one of said bearing-blocks and adapted to be engaged with and to be disengaged from the notches of said disk and thereby to hold said pinion shaft against and to release it to turn, as described, for the purposes specified.

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527,507. WASHING-MACHINE. CLABORN P. RANDOLPH, Los Angeles, Cal. Filed Mar. 28, 1894. Serial No. 505,385. (No model.)



*Claim.*—1. The combination of the hollow case comprising a base member, a cap member adapted to fit upon the base member to form the inclosing case; a frame journaled to revolve within the case and adapted to sustain and rotate within the case suitable detachable appliances, and suitable means for rotating the frame.

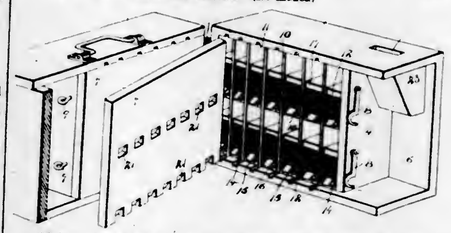
2. The combination set forth of a hollow case comprising a base member provided with an inlet and a cap member adapted to fit upon the base member and provided with an outlet; a suitable passage connecting the outlet with the inlet; a hollow cylinder journaled to revolve in such case and formed in two halves adapted to be fastened together, and having its walls provided with wings arranged around the circular wall of the cylinder and projecting outward therefrom.

3. The combination of the boiler; the base member arranged upon the boiler; the cap member hinged to the base member and adapted to fit thereupon to form an inclosing case, and provided with a suitable outlet; the steam pipe arranged in the boiler and opening near the top thereof; the discharge chute leading from the outlet; the receiving receptacle arranged to receive the discharge from the discharge chute; the return pipe leading from the bottom of the receiving receptacle and opening into the base member; the steam pipe leading from the top of the boiler and communicating with the return pipe; and suitable valves arranged to control the passages in the return and steam pipes.

4. The combination of the hollow case comprising a base member provided with an inlet and a cap member adapted to fit upon the base member and provided with an outlet; a gravity valve pivoted at the mouth of such outlet and adapted to swing upward upon its pivot to close such outlet, and to be swung outward upon its pivot to open such outlet and to form a receiving ledge to receive the discharge from the inner cylinder; a hollow cylinder journaled to revolve in the case and formed of two halves adapted to be fastened together and provided with wings arranged around the circular wall of the cylinder and projecting outward therefrom, the discharge chute leading from the outlet; the receiving receptacle arranged to receive the discharge from the discharge chute and provided with the supporting rack and the distributing plate arranged beneath such supporting rack, such receptacle being provided at its bottom with the downwardly projecting nipple; the band wheel provided with the hollow journal arranged to receive the nipple of the receiving receptacle and communicating with the return pipe; the return pipe leading from such receptacle and opening into the base member; the band wheel arranged on the shaft of the hollow cylinder, and the belt trained around the two band wheels.

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527,508. TICKET-CASE. THOMAS RATCLIFF, Casey, Ill. Filed Oct. 20, 1893. Serial No. 488,729. (No model.)



*Claim.*—1. A ticket case provided with vertical cells and having an open rear side, a door closing said rear side, guides arranged in the cells, and slides mounted upon said guides, projecting at their front ends through slots in the front side of the case and provided at their rear ends with detents to engage the rear edges of the tickets in the cells, said door being provided with a series of notches or recesses to receive the detents on the rear ends of the slides when the latter are pushed rearward, substantially as specified.

2. A ticket case provided with vertical ticket-cells, horizontal guides arranged in said cells and having dove-tailed guide slots, terminating at their outer ends in stops 20, and slides arranged upon said guides, projecting at their front ends through slots in the front of the casing, terminating at their rear ends in detents to engage the tickets and having depending dove-tailed projections 15 which fit in the correspondingly-shaped slots of the guides, the forward or outward movement of the slides being limited by the contact of said projections with the stops 20, substantially as specified.

3. A ticket case comprising separable sections 1 and 2 hinged together at one vertical edge and provided at corresponding distances from said hinged ends with vertical partitions 4, doors hinged to the sections to close their open inner sides and terminating at their free edges flush with the outer surfaces of the partitions 4, means carried by said partitions to lock the free ends of the sections together with the said doors in contact, whereby the doors are locked in their closed positions, a door for closing the outer side of the space between the partitions 4 and the adjacent or free ends of the sections, the interiors of the sections being divided into ticket-cells fitted with ticket-slides, and a slot 22 being formed in the top of one of the sections to communicate with the space between the partitions 4 and the contiguous ends of the sections, substantially as specified.

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527,509. COMB. NATHAN RHEINBERG, London, England. Filed Mar. 21, 1894. Serial No. 504,542. (No model.) Patented in England Feb. 14, 1891, No. 2,743; in France Dec. 4, 1891, No. 217,841; in Germany Dec. 13, 1891, No. 64,865, and in Belgium Feb. 19, 1892, No. 98,424.

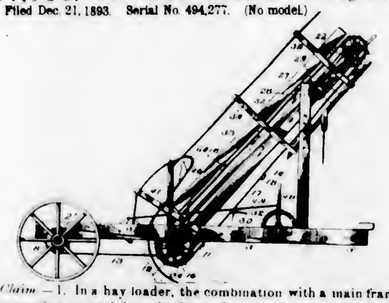


*Claim.*—1. A metallic hair comb formed of a narrow base piece, a single series of open wire teeth secured to said base piece in a parallel line, each tooth formed in an elongated open loop shape tapering toward the outer end, said loop being disposed in the plane at substantially a right angle to the longitudinal axis of the base piece, substantially as described.

2. In a metallic hair comb, the combination with a narrow trough-shaped base piece, D, of a single series of open wire teeth C, secured to said base piece, D, in a parallel line, each tooth formed in an elongated open loop shape tapering toward the outer end, said loop being disposed in the plane at substantially a right angle to the longitudinal axis of the base piece and a securing bar, D', extending through the

upper portion of the loop shaped piece and acting to confine the same in position within the trough-shaped backing, D, substantially as described

527,510. HAY-LOADER. ABRAHAM L. RICE, Wright, Iowa. Filed Dec 21, 1893. Serial No. 494,277. (No model.)



*Claim.*—1. In a hay loader, the combination with a main framework carrying an upright at its forward end, an elevator frame pivoted near the rear end of the framework and inclining forward, shafts across the ends of said frame, and an endless apron moving around said shafts; of a friction wheel mounted on the upper elevator shaft, a lever pivoted at one extremity to the elevator frame, a friction wheel mounted on a stub shaft in said lever and adapted to contact with the friction wheel on the elevator shaft, a drum journaled on the pivot of said lever, connections between said drum and the friction wheel of the lever, and a chain leading from the drum to the upper end of said upright, as and for the purpose set forth

2. In a hay loader, the combination with a main framework carrying an upright at its forward end, an elevator frame pivoted near the rear end of the framework and inclining forward, shafts across the ends of said frame, and an endless apron moving around said shafts; of a friction wheel mounted on the upper elevator shaft, a lever pivoted at one extremity to the elevator frame at a point below said friction wheel, a stub shaft carried by the lever, a friction wheel journaled on this shaft and adapted to contact with that on the elevator shaft, a drum journaled on the pivot of the lever, a chain wound on the drum and connected with the upright, a large wheel secured to the drum, a small wheel secured to the friction wheel on the lever, and belt connecting these two wheels, as and for the purpose set forth.

3. In a hay loader, the combination with a main framework carrying an upright at its forward end, an elevator frame pivoted near the rear end of the framework and inclining forward, shafts across the ends of said frame, and an endless apron moving around said shafts; of a friction wheel mounted on the upper elevator shaft, a lever pivoted at one extremity to the elevator frame, a friction wheel mounted on a stub shaft in said lever and adapted to contact with the friction wheel on the elevator shaft, a drum journaled on the pivot of said lever, connections between said drum and the upright, connections between the drum and the friction wheel on the lever for the purpose set forth, and means for rigidly supporting the front end of the elevator, substantially as described.

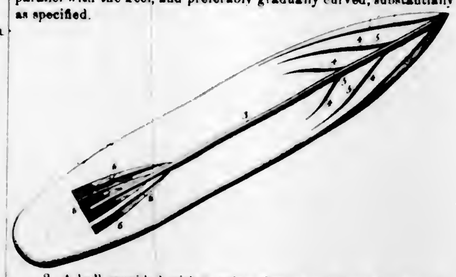
4. In a hay loader, the combination with a framework, and a forwardly inclined endless elevator; of a rake consistiog of a rake head, arms supporting said head and pivoted to the framework, means for raising and lowering the head, a cross bar rigidly supported forward of and above said head, eyes in said cross bar, and rake teeth projecting from the head forward through said eyes and then curving to the rear and extending behind and beneath said elevator, as and for the purpose set forth.

5. In a hay loader, the combination with a framework, and a forwardly inclined endless elevator; of a rake consisting of a rake head, arms supporting said head and pivoted to the framework, rake teeth carried by said head and extending behind and beneath the elevator, a bell crank lever pivoted to the framework, a rod connecting one arm of this lever with the rake head, a hand-lever also mounted on the framework, and a second rod connecting this lever with the other arm of the bell crank lever, as and for the purpose set forth.

6. In a hay loader, the combination with a framework, and a forwardly inclined endless elevator, of a rake comprising a rake head adjustably supported by the framework, teeth projecting from said head forward and then bending to the rear and extending behind and beneath said elevator, and a knife mounted on each tooth with its edge projecting away from the elevator, as and for the purpose set forth.

527,511. BOAT. GEORGE ROOKE, Emporia, Kans. Filed Jan. 16, 1893. Renewed Mar. 8, 1894. Serial No. 502,921. (No model.)

*Claim.*—1. A hull provided with a series of steps at its bow converging from the keel of the boat toward its stern and toward a line parallel with the keel, and preferably gradually curved, substantially as specified.



2. A hull provided with a series of steps at its stern, the corresponding steps upon opposite sides converging toward the bow and to the keel and preferably gradually curved, substantially as specified.

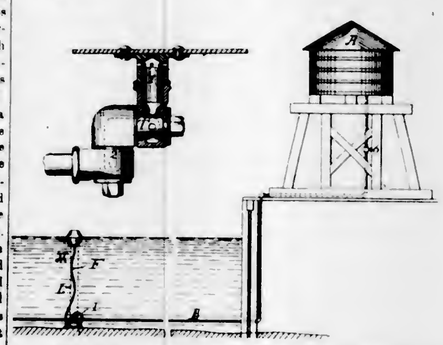
3. A hull provided with a series of steps at its bow converging from the keel of the boat toward its stern and toward a line parallel with the keel and a series of steps at its stern, the corresponding steps upon opposite sides converging toward the bow and to the keel, both series of steps, at the bow and stern, being preferably curved, substantially as specified.

527,512. FRAME FOR POCKET-BOOKS, PURSES, OR SATCHELS. MAX SCHEUER and RALPH SCHEUER, New York, N. Y., executors of Simon Scheuer, deceased. Filed Aug. 4, 1894. Serial No. 519,433. (No model.)



*Claim.*—The combination of pivotally connected L shaped jaws *a'*, *a*, of which jaw *a'*, has a catch and jaw *a*, has a notched upright side, with a spring arm secured within jaw *a*, and having a keeper and a handle that project laterally in opposite directions, all being so constructed that the keeper is adapted to enter jaw *a'*, and engage the catch, while the handle is adapted to pass in an opposite direction through the notched upright side of jaw *a*, substantially as specified

527,513. WAVE-QUIETING DEVICE. HORACE SEE and GODFREY L. CARDEN, New York, N. Y. Filed Mar. 8, 1893. Serial No. 465,104. (No model.)



*Claim.*—1. A stationary source of oil supply, and communicating therewith and conducting the oil to a distant point, a submarine pipe, a flexible branch conduit having an oil outlet, and a buoy connected to said conduit, substantially as described



2. A stationary source of oil supply, a submarine pipe leading therefrom, a flexible conduit extending from said submarine pipe and having an oil outlet, a buoy connected to said conduit near its end and means for mooring said buoy in place independently of said flexible conduit, substantially as described.

3. A stationary source of oil supply, a submarine pipe leading therefrom, a flexible conduit extending from said submarine pipe and having an oil outlet, a buoy connected to said conduit near its end, and an anchor to which both said submarine pipe and said buoy are connected, substantially as described.

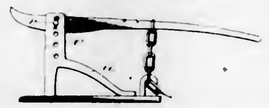
4. A stationary source of oil supply, a submarine pipe leading therefrom, a flexible conduit extending from said submarine pipe and having an oil outlet, an anchor to which said submarine pipe is connected, a buoy connected to said flexible conduit near its end, and a mooring cable or chain between said buoy and said anchor; the said cable being shorter in length than said flexible conduit, substantially as described.

5. In combination with a source of oil supply on land, the submarine pipe B, anchor C attached thereto, a flexible conduit, having an oil outlet, buoy G connected to said conduit and chain L extending from said buoy to said anchor, substantially as described.

6. In combination with a submarine oil-supply pipe having a flexible extension, a buoy, G, supporting said extension, and a perforated, flanged collar, H, uniting said extension to said buoy, substantially as described.

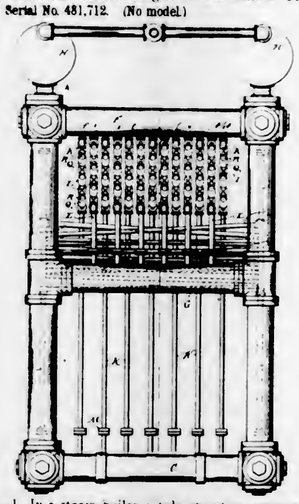
7. In combination with a submarine oil supply pipe, a pipe section, as M, connected at one end to said pipe, and a buoy, G, to which the other end of said section M is secured; the said section M having an oil outlet near its junction to said buoy, substantially as described.

527,514. TRACK-RAISER. THADDEUS F. STEED, Merkel, Tex. Filed June 1, 1894. Serial No. 513,139. (No model.)



*Claim.*—In a track raiser, the combination with a base having its upper edge beveled off at its front end, an upright rising from the base near said front end, and a hook in the base at its rear end; of a lever pivoted between its ends to said upright, the body of the lever forward of its pivot being curved upwardly and sharpened and of sufficient length to lie upon the bevel of the base and to project beyond its front edge, and a chain connected with the lever in rear of its pivot and detachably engaging said hook, as and for the purpose set forth

527,515. BOILER. HENRY TETLOW and THOMAS HARRISON, Philadelphia, Pa.; said Harrison assignor to said Tetlow. Filed July 28, 1893. Serial No. 481,712. (No model.)



*Claim.*—1. In a steam boiler, a tube structure composed of four large upright corner tubes connected at the top and bottom by large horizontal tubes, and sets of small generating tubes connecting the upper and lower horizontal tubes and having substantially horizontal portions or sections located at a distance above the lower large horizontal connecting tubes, and a grate located within the space bounded by the large upright tubes and situated above the lower horizontal connecting tubes and below the substantially horizontal portions of the small generating tubes.

2. In a steam boiler, the combination of four corner upright tubes connected on all sides by horizontal tubes, with two sets of small generating tubes respectively connected with the diagonally opposite horizontal tubes, detachable couplings between the generating tubes and the horizontal tubes, an inclosing covering for the tubes, a breeching provided with a door at the front to secure access to the front couplings, and covered openings at top and rear to secure access to the couplings at these places.

3. In a steam boiler, water circulating tubes combined with two horizontal or transverse water tubes at different elevations, a series of generating tubes of small diameter having their ends connecting with the horizontal or transverse tubes, detachable couplings adjacent to the horizontal or transverse tubes for disconnecting the generating tubes separately consisting of elbowed parts connected respectively with the return tubes and horizontal tubes and provided with communicating water passageways, and a clamping bolt for clamping the two parts together.

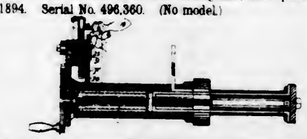
4. In a steam boiler, water circulating tubes combined with two horizontal or transverse water tubes at different elevations, a series of generating tubes of small diameter having their ends connecting with the horizontal or transverse tubes, detachable couplings adjacent to the horizontal or transverse tubes for disconnecting the generating tubes separately consisting of elbowed parts connected respectively with the return tubes and horizontal tubes and provided with communicating water passageways, and a clamping bolt for clamping the two parts together passing through the apertures parallel to the return tube and packed to prevent leakage.

5. A steam boiler composed of an upper and lower set of large horizontal tubes, the upper large horizontal tubes being located above the water level, a series of generating tubes connecting the upper and lower large horizontal tubes and having horizontal portions extending above the grate, large upright corner return tubes between the upper and lower sets of large horizontal tubes and non-connecting with the small generating tubes, whereby the steam is generated within the small generating tubes and passes thence into the upper large horizontal tubes without passing through the upright tubes and the water is returned through the large upright corner tubes, and a steam drum or drums having the inlet passages from the set of upper horizontal tubes leading directly from above the vertical return tubes, whereby the steam in passing to the inlet to the steam drum or drums will traverse the open upright return tubes, thereby becoming freed of the water of ebullition.

6. The steam boiler section consisting of the four large corner tubes A, the large side tubes B connecting the bottoms of the tubes A, the upper large side tubes connecting the top of the tubes A, the large transverse tube C connecting the rear tubes A at the bottom, the upper transverse large tubes E, F connecting the two rear and the two front tubes A respectively, the intermediate large connecting tube G between the front tubes A, and small connecting pipes between the upper and lower large connecting tubes

7. The steam boiler section consisting of the four large corner tubes A, the large side tubes B connecting the bottoms of the tubes A, the upper large side tubes connecting the top of the tubes A, the large transverse tube C connecting the rear tubes A at the bottom, the upper transverse large tubes E, F connecting the two rear and the two front tubes A respectively, the intermediate large connecting tube G between the front tubes A, and small connecting pipes between the upper and lower large connecting tubes: in combination with the grate U located between the large tubes A above the connecting tubes B, B, C and below the intermediate front connecting tube G.

527,516. LUBRICATOR. WALTER F. VAN GUTSLING, Albany, N. Y., assignor of one-third to Frederick Tillinghast, same place. Filed Jan. 10, 1894. Serial No. 496,360. (No model.)



*Claim.*—1. An automatic lubricator consisting of a lubricant-cylinder, a plunger fitted to slide in said cylinder, a feed screw arranged to move said plunger, a ratchet-wheel secured to said feed-screw, a second ratchet-wheel arranged to rotate independently of said feed-screw, and provided with a pawl that is eccentrically at-

tached to its shaft; said pawl being arranged to engage with the ratchet-wheel of the feed-screw, and a vibratile lever provided with a pawl fitted to engage with said second ratchet-wheel, substantially as specified.

2. In an automatic lubricator, the combination of lubricant-cylinders, plungers arranged to slide in said cylinders and connected to a cross-head provided with a yoke carrying a screw-threaded nut, a feed-screw fitted to engage in said nut, a ratchet-wheel secured to said feed-screw, a second ratchet-wheel arranged to rotate independently of the feed-screw, a vibratile-lever provided with a pawl fitted to engage with the second ratchet-wheel, a pawl eccentrically connected with the second ratchet-wheel and arranged to engage with the ratchet-wheel of said feed-screw, and an automatic tripping-device—substantially as specified—for disengaging the plunger-moving mechanism, as and for the purpose specified.

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**527,517. MANUFACTURE OF SCREW-STOPPERS.** JOHN J. VARLEY, London, England. Filed Feb. 27, 1894. Serial No. 501,723. (No specimens.) Patented in Canada Dec. 9, 1892, No. 41,126, and in England Jan. 11, 1893, No. 649.

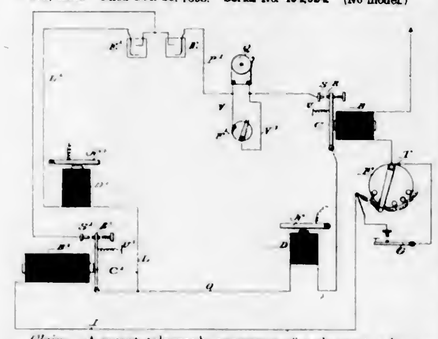


*Claim.*—1. The improved method of making screw stoppers, consisting in first making the desired form from a piece of wood, next impregnating said wooden form with a solution of gum under pressure, next stoving said impregnated form, and then coating the same with enamel, all as and for the purposes set forth.

2. The improved method of making screw stoppers, consisting in first making the desired form from a piece of wood, next impregnating said wooden form under pressure with a solution of gum, next stoving said impregnated form, next coating the same with enamel, and finally stoving the enameled product, all as and for the purposes set forth.

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**527,518. SECRET TELEGRAPHY.** ALFRED D. P. WEAVER, Jackson, Miss. Filed Dec. 26, 1893. Serial No. 494,924. (No model.)



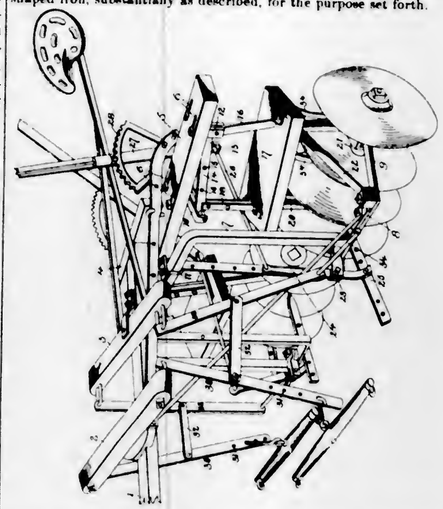
*Claim.*—A secret telegraph, consisting of a rheostat, a key arranged in a shunt around the rheostat, an extra relay operating by the variations in the main line current in being alternately thrown into and around the rheostat, an extra sounder with bell and switch arranged in a local circuit and operated by the opening or closing of the extra relay armature, an ordinary relay and sounder, and a battery for the local circuit, said battery having one pole connected with the secret telegraph instrument proper, and both its poles on the other side connected with the secret telegraph, the one pole through the armature of the ordinary relay and the other pole through the sounder for the ordinary relay substantially as shown and described.

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**527,519. COMBINED DISK CULTIVATOR AND HARROW.** HORACE L. WHITTREDGE, Admire, Kans. Filed Apr. 18, 1894. Serial No. 507,997. (No model.)

*Claim.*—1. In an agricultural implement of the character herein set forth, the combination of a sill having a gang attached thereto, a beam, an elbow-shaped iron having its vertical member attached to one end of the sill and pivotally connected at or near the elbow to the said beam, an upright at the opposite end of the said sill connected to the horizontal member of the said elbow shaped iron, and a guide attached to the beam and adapted to receive the end of the said elbow shaped iron to guide it in its movements, substantially as set forth.

2. In combination, a beam, a sill provided with a gang, an elbow shaped iron having pivotal and adjustable connection with the said beam and fixedly attached by means of its vertical member to one end of the said sill, an upright at the opposite end of the sill adjustably connected with the horizontal member of the said elbow iron, and a guide adjustably connected with the said beam and adapted to receive the end of the horizontal member of the aforesaid elbow shaped iron, substantially as described, for the purpose set forth.

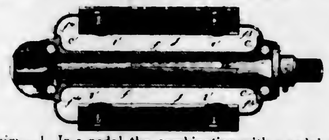


3. In combination, an arch shaped bar attached to a tongue, an approximately right angular shaped frame attached to the lower end of the arched bar and provided with a gang, a vertical bar adjustably connected with the horizontal portion of the arched bar, a lever pivotally supported between its ends and adjustably connected with the forward extension of the gang supporting device, and a hand lever operatively connected with the aforesaid lever as a convenient means of adjusting the gangs to the required inclination relative to the draft, substantially as set forth.

4. In combination, the beam 5 having slots 6, a pendant 12 adjustably supported in one set of slots, a guide 19 adjustably supported in the other set of said slots, an elbow shaped iron pivotally supported in the pendant 12, and having its horizontal member working in connection with the guide 19, and the sill 17 connected at one end to the vertical member of the elbow shaped iron and having an upright which is adjustably connected with the horizontal portion of the said iron, substantially as described, for the purpose set forth.

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**527,520. PEDAL.** JAMES S. COPELAND, Hartford, Conn., assignor to the Pope Manufacturing Company, same place, and Portland, Me. Filed Mar. 8, 1894. Serial No. 502,934. (No model.)



*Claim.*—1. In a pedal the combination with a pedal pin and a bearing inclosing device fitted to rotate thereon, of plates mounted upon said bearing inclosing device and extending outward therefrom and curved or bent and overlapping each other, and foot holds held between said overlapping portions of the plates, substantially as set forth.

2. In a pedal the combination with a barrel having enlargements within which are formed runways for ball bearings, of plates mounted upon said enlargements and extending outward therefrom and curved or bent and overlapping each other, and foot holds held between said overlapping portions of the plates, substantially as set forth.

3. In a pedal the combination of a pedal barrel having shouldered enlargements within which are formed runways for ball bearings, with plates mounted upon said enlargements and bearing against said shoulders and portions of said plates overlapping each other, and foot holds held between said overlapping portions of the plates,



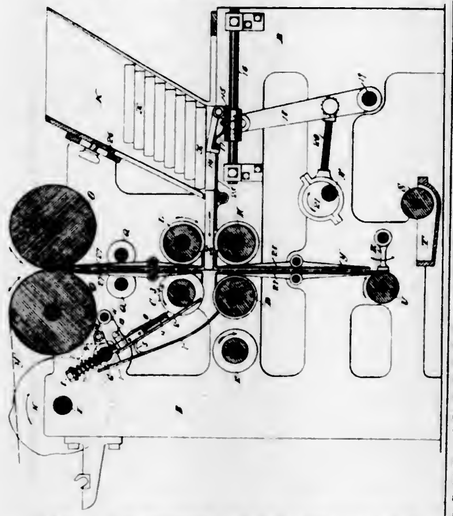
and fastening devices passing through said plates and foot holds and holding the same together, substantially as set forth.

4. In a pedal the combination of a pedal pin and a bearing inclosing device having shouldered portions, with plates mounted upon said shouldered portions and bearing against said shoulders, and portions of said plates overlapping each other, and foot holds held between said overlapping portions of the plates, and fastening devices holding said plates and foot holds together, substantially as set forth.

5. In a pedal, foot hold carrying plates extending outward from the axis of the pedal and curved or bent and overlapping each other, and foot holds held between said overlapping portions of the plates, substantially as set forth.

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**527,521. MACHINE FOR WRAPPING NEWSPAPERS, &c.** LUTHER C. CROWELL, Brooklyn, assignor, by direct and mesne assignments, to Robert Hoe, Theodore H. Mead, and Charles W. Carpenter, New York, N. Y. Filed Jan. 27, 1892. Serial No. 419,391. (No model.)



*Claim.*—1. The combination with paper feeding mechanism, of wrapper feeding mechanism by which a wrapper is advanced transversely to and into the path of movement of the paper, feeding devices by which the paper and wrapper are received from the feeding mechanism with the wrapper overlapping the leading end of the paper and projecting behind the paper sufficiently to overlap upon the layer of wrapper on the paper for pasting, pressing and delivery devices, and a carrier receiving the paper from the feeding devices and transferring the rear end to the pressing and delivery devices, and simultaneously folding the wrapper over the end of the paper, substantially as described.

2. The combination with paper feeding mechanism, of wrapper feeding mechanism by which a wrapper is advanced transversely to and into the path of movement of the paper, feeding devices by which the paper and wrapper are received from the feeding mechanism with the wrapper overlapping the leading end of the paper and projecting behind the paper sufficiently to overlap upon the layer of wrapper on the paper for pasting, pasting devices for applying paste to the wrapper, pressing and delivery devices, and a carrier receiving the paper from the feeding devices and transferring the rear end to the pressing and delivery devices, and simultaneously folding the wrapper over the end of the paper, substantially as described.

3. The combination of feeding devices advancing a paper with a wrapper lapped over its leading end and projecting behind the paper sufficiently to overlap on the layer of wrapper on the paper for pasting, pressing and delivery devices, and a carrier receiving the paper from the feeding devices and transferring the rear end to the pressing and delivery devices and simultaneously folding the wrapper over the end of the paper, substantially as described.

4. The combination of feeding devices advancing a paper with a wrapper lapped over its leading end and projecting behind the paper sufficiently to overlap on the layer of wrapper on the paper for pasting, pressing and delivery devices, a carrier receiving the paper from the feeding devices, and means for actuating the carrier to transfer the rear end of the paper to the pressing and delivery devices and advance it positively into the grasp of the latter and simultaneously fold the wrapper over the end of the paper, substantially as described.

5. The combination with paper feeding mechanism, of wrapper feeding mechanism by which a wrapper is advanced transversely to and into the line of movement of the paper, pasting devices for applying paste to the wrapper, feeding devices receiving the paper from the paper feeding mechanism with the wrapper overlapping the leading end of the paper and projecting behind the paper sufficiently to overlap on the layer of wrapper on the paper for pasting, pressing and delivery devices, and a carrier receiving the paper from the feeding devices and transferring the rear end of the paper to the pressing and delivery devices, and simultaneously folding the wrapper over the end of the paper, substantially as described.

6. The combination with feeding devices advancing a paper with a wrapper lapped over its leading end and projecting behind the paper sufficiently to overlap upon the layer of wrapper on the paper for pasting, of a pair of pressing and delivery rolls, and a carrier receiving the paper from the feeding devices and transferring the rear end to the pressing and delivery rolls and simultaneously folding the wrapper over the end of the paper, substantially as described.

7. The combination with feeding rolls advancing a paper with a wrapper lapped over its leading end and projecting behind the paper sufficiently to overlap on the layer of wrapper on the paper for pasting, of a pair of pressing and delivery rolls, and a carrier receiving the paper from the feeding rolls and transferring the rear end to the pressing and delivery rolls and simultaneously folding the wrapper over the end of the paper, substantially as described.

8. The combination with a pair of feeding rolls advancing a paper with a wrapper lapped over its leading end and projecting behind the paper sufficiently to overlap on the layer of wrapper on the paper for pasting, of a roll co-operating with one of said rolls to form a pair of pressing and delivery rolls, and a carrier receiving the paper from the feeding rolls and transferring the rear end to the pressing and delivery rolls and simultaneously folding the wrapper over the end of the paper against one of the feeding rolls, substantially as described.

9. The combination with a pair of feeding rolls advancing a paper with a wrapper lapped over its leading end and projecting behind the paper sufficiently to overlap on the layer of wrapper on the paper for pasting, of a roll co-operating with one of said rolls to form a pair of pressing and delivery rolls, a carrier receiving the paper from the feeding rolls, and means for actuating said carrier to transfer the paper to the pressing and delivery rolls and advance it positively into the grasp of the latter and simultaneously fold the wrapper over the end of the paper against one of the feeding rolls, substantially as described.

10. The combination with the rolls C, D, E, forming two pairs of feeding rolls, of a pivoted carrier receiving a paper from the rolls C, D, and means for oscillating said carrier between the rolls C, E, and advancing it to carry the rear end of the paper positively into the grasp of rolls D, E, substantially as described.

11. The combination with grooved rolls C, E, and roll D co-operating with said rolls to form two pairs of feeding rolls, of a pivoted carrier oscillating between the rolls C, E and having fingers 1, 2 entering said grooves, whereby a paper is received from the rolls C, D and the rear end delivered to the rolls D, E, substantially as described.

12. The combination with rolls C, D, E, forming two pairs of feeding rolls, of a pivoted carrier, having fingers 1, 2, between which the paper is received from the rolls C, D, and pushers 5 engaging the end of the paper, and means for oscillating said carrier and actuating said pushers to carry the paper from the rolls C, D, to the rolls D, E, and advance the rear end of the paper positively into the grasp of the latter, substantially as described.

13. The combination with rolls C, D, E, of rock shaft G, fingers 1 rigid thereon, fingers 2 and pushers 5 carried thereby but mounted to move transversely to the shaft, and means for rocking said shaft and actuating said pushers, substantially as described.

14. The combination with rock shaft G, of rod 6 sliding through said shaft, spring 7 pressing against said shaft and rod, crank arm 10 on said shaft, slotted rock arm 11 engaging said rod and engaged by said crank arm, and means for rocking said shaft G against the tension of spring 7, substantially as described.

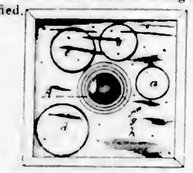
15. The combination with rock shaft G, and finger 1 rigid thereon, of rod 6 sliding through said shaft, and carrying finger 2 and pusher 5, spring 7 pressing against said shaft and rod, crank arm 10 on said shaft, slotted rock arm 11 engaging said rod and engaged by said crank arm, and means for rocking said shaft D against the tension of spring 7, substantially as described.

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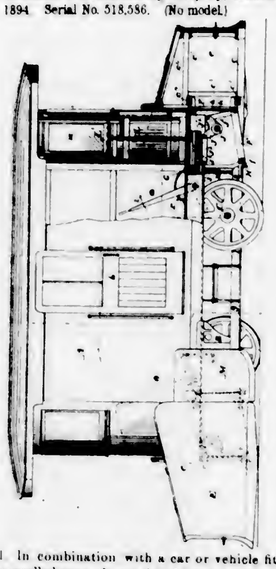
**527,522. TOY OR PUZZLE.** FRANK R. CUNNINGHAM and GEORGE A. HITCHCOCK, Ware, Mass. Filed Dec. 4, 1893. Serial No. 492,770. (No model.)

*Claim.*—In a toy or puzzle adapted to being held in and manipulated by the hand, a fixed ball in combination with a number of rings

of different sizes, located within a closed box having a transparent top, substantially as specified.



527,523. SNOW-PLOW FOR STREET-RAILWAYS. FRANCIS W. DEAN, Cambridge, and WILLIAM E. MATHEWS, Boston, assignors to the Taunton Locomotive Manufacturing Company, Taunton, Mass. Filed July 25, 1894. Serial No. 518,586. (No model.)



*Claim.*—1. In combination with a car or vehicle fitted to, and adapted to be propelled upon, the tracks of a street railway, a V shaped plow constructed and arranged to partially inclose the lower portion of one end of the vehicle body and connected to said vehicle body by a system of parallel motion links, and means having provision for raising and lowering said plow from the vehicle platform, without changing the substantial parallelism of said plow relative to the railway track.

2. In combination with a car or vehicle fitted to and adapted to be propelled upon the tracks of a street railway, a pair of V shaped plows arranged one at each end of said vehicle with their points in opposite directions; a system of parallel motion links connecting each of said plows to said vehicle body, mechanisms arranged at or near each end of the body of said vehicle and each having provision for raising and lowering one of said plows; connections between said hoisting mechanisms whereby said plows are made to balance each other, and either plow may be raised and the other lowered by operating the hoisting mechanism at either end of the vehicle.

3. The combination with a car or vehicle fitted to, and movable on a street railway track, of the plow E; the links F and F' fulcrumed on the vehicle body and pivoted to the plow as set forth; the rocker shaft J; the elbow levers J' J' the links $J^3$ and $J^3$, the rack $J^4$; the pinion $J^4$; the shaft L and hand wheel L' all constructed arranged and operating substantially as described.

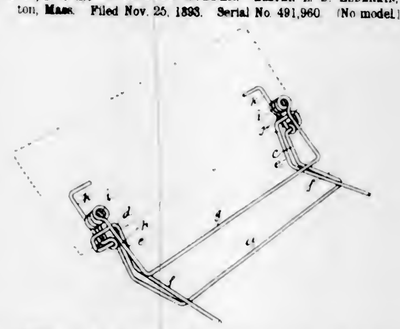
4. In combination with a car or vehicle fitted to and movable on a street railway track; a pair of V shaped plows E arranged one at each and of said vehicle body with their points facing in opposite directions; two sets or systems of parallel motion links F F' fulcrumed upon opposite ends of said vehicle body and each set pivoted to one of said plows; two shafts J, J; two elbow levers J' J' mounted on each of said shafts; two pairs of links $J^3$ connecting said elbow levers to said plows; two racks $J^4$ mounted in suitable guideways at opposite ends of the vehicle body; the pinions $J^4$ engaging said racks; the shafts L L; the hands wheels L' L'; the links $J^3$ connecting said racks to one of the elbow levers on each of the shafts J; and the two connecting rods $j$, each connecting one of the links $J^4$ to one of the elbow levers J' on the shaft J at the opposite end of the vehicle body.

5. In combination with a car or vehicle fitted to and movable on a street railway track, a V shaped plow connected to said vehicle by a system of parallel motion levers, and a pair of supplemental wings pivoted to the rear end of said plow, one at each side of the vehicle body; and means having provision for raising and lowering said wings and moving them about their pivotal connection to said plow, independently of the rise and fall of said plow.

6. The combination of a car or vehicle fitted to and movable upon a street railway track; a V shaped plow in front of and partially inclosing the end of said vehicle; a system of parallel motion levers fulcrumed upon said vehicle body and pivoted to said plow, the rods $k$, $k$, mounted in fixed bearings on said plow one on each side of the vehicle body; the two supplementary wings M M hinged to said rods so as to be movable vertically thereon; the rods $o$, $o$, attached in fixed positions to said vehicle one on each side, the two sleeves $n^3$ $n^3$ fitted to and movable vertically on said rods; the links $p$, $p$, connecting said sleeves to said wings, the rocker shaft N; the hand lever O and the two two-armed levers $n$, $n$, firmly secured on said shaft, the chains $m$, $m$, connecting one arm of said levers $n$, $n$, to said wings M; and the links $n'$ $n'$ connecting the other ends of said levers $n$, $n$, to said sleeves $n^3$, $n^3$, substantially as described.

7. In combination with a car or vehicle fitted to and movable upon a street railway track, two V shaped plows adjustably connected one to each end of said vehicle and movable vertically relative thereto; a system of levers, links or rods connecting said plows together whereby said plows are made to balance each other and maintain a substantial parallelism with the railway track in all positions to which they may be adjusted; and means having provision for raising one plow while the other is being depressed.

527,524. OPEN-BOOK HOLDER. LESTER L. D. ELDEKKIN, Boston, Mass. Filed Nov. 25, 1893. Serial No. 491,960. (No model.)



*Claim.*—1. An open-book holder comprising in its construction the spring-fingers $b$ $b$ and $f$ $f$, the straight bar $a$ connecting the forward ends of the former, and adapted to lie against the book-cover the upwardly-turned portions from the rear of the spring-fingers, and a spring-pressed cross-bar pivotally connected with the upper ends of said upwardly-turned portions, as set forth.

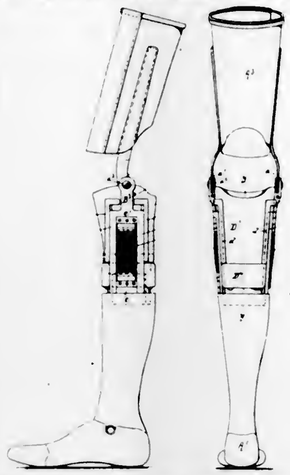
2. In an open-book holder, a member formed of a continuous wire, comprising a bar designed to lie against the outer side of the book-cover, fingers springing from the ends of said bar, up-standing portions springing from said fingers, laterally extending loops at the upper ends of said up-standing portions, substantially vertical portions extending from said loops parallel with the said up-standing portions, and fingers extending from the lower ends of the said vertical portions and designed to lie against the inner side of the book-cover; and a spring-pressed cross-bar pivoted to the said loops and designed to bear on the leaves of the book, substantially as described.

3. In an open-book holder, a supporting member having fingers to grasp the book-cover, and up-standing portions at the rear ends of the fingers; and a clamping member formed of a single wire comprising a bar for engaging the leaves of the book, arms at the ends of the bar, springs at the ends of the arms, and arms extending from said springs and pivoted to the up-standing portions of the supporting member.

4. In an open-book holder, a supporting member having fingers to grasp the book-cover, and up-standing portions at the rear ends of the fingers; and a clamping member formed of a single wire comprising a bar for engaging the leaves of the book, arms at the ends of the bar, springs at the ends of the arms, arms extending from said springs and pivoted to the up-standing portions of the supporting member, return bends by which the clamping member is pivoted to the supporting member, and card-holding fingers extending from said bends, as set forth.



527,525. ARTIFICIAL LEG. ERIC H. ERICKSSON, St. Paul, Minn. Filed Aug. 27, 1894. Serial No. 521,356. (No model.)



*Claim.*—1. In an artificial limb, the thigh portion having the straps provided with sockets, the lower leg portion having the straps provided with ears and united by pivot bolts, in combination with adjustable cushioned stops, whereby the movement of the lower limb portion may be adjusted and the joint rendered noiseless, substantially as and for the purpose set forth.

2. In an artificial limb, the thigh portion and lower limb portions united by jointed straps, a socket molded to the stump of the severed limb, and slidable vertically between said straps, and a sleeve between the lower leg portion and said socket, substantially as and for the purpose set forth.

3. In an artificial limb, the thigh portion and lower limb portions united by jointed straps, a socket molded to the stump of the severed limb, and slidable vertically between said straps, a sleeve between the lower leg portion and said socket, and elastic supporting straps uniting said socket to said straps, substantially as and for the purpose set forth.

4. The method of constructing the socket for the stump of a severed limb in an artificial leg, consisting in first forming a matrix by molding, then inserting into said matrix a wedge shaped dividing plate, then taking a "cast" of the portion of the matrix not occupied by said wedge shaped plate, then removing said wedge shaped plate, and sections of said cast, then reuniting said cast sections and wedge shaped plate to form a cast on which the socket for the stump of the severed limb can be molded, substantially as and for the purpose set forth.

527,526. STEAM-GENERATOR. HERMAN E FRANZ, Baltimore, Md. Filed Apr. 20, 1894. Serial No. 508,269. (No model.)



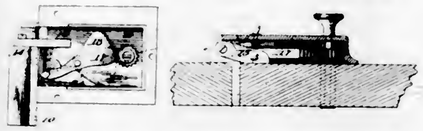
*Claim.*—1. A header inclined inwardly toward the transverse center of a steam generator and provided with openings for water circulating tubes and an opening to connect with a water conveyer on the side toward the longitudinal center of the generator and with hand-holes opposite said openings.

2. A header inclined inwardly from both sides of and toward the center of a generator and provided with holes in one of its walls for the reception of tubes, hand-holes in the opposite walls, and an opening in the upper wall to communicate with a circulating pipe.

3. The combination of a plurality of headers inclined toward the center of a generator and connected at their inner ends to a receiver or up-take pipe, a separator with which said receiver communicates, and a water drum communicating with the rear header.

4. The combination of a plurality of headers inclined toward the center of a generator and arranged one above the other, the front headers connected to a receiver or up-take pipe communicating with a separator, a pair of water drums below and on each side of the separator and connected by pipes communicating with the lower part of the separator, and a receiver or down-take communicating with the rear end of said drums and with the rear headers.

527,527. ALARM-LOCK FOR DOORS, &c. JOSEPH F. GRAYBILL, York, Pa. Filed Apr. 23, 1894. Serial No. 508,668. (No model.)

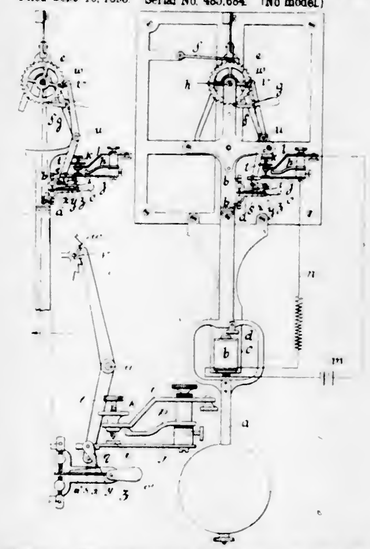


*Claim.*—1. In an alarm fastening for windows or doors, the combination with the hollow casing having a side opening 2 at the end thereof, a transverse abutment or partition at the base of the opening, and a loose plate 9 separated from the abutment by a compartment 8 of a plunger within the casing and passing through said abutment and plate, an arm upon one end of the plunger constructed to rest against the end of the casing and to pass into the side opening when brought opposite thereto, a head upon the opposite end of the plunger and a spring confined between said head and the transverse partition or abutment, substantially as described.

2. The combination with an alarm fastening for attachment to a door casing having a spring pressed plunger and trigger and a support for a cap, of a casing for attachment to the door, a pivoted lever within the casing having a support 21 for the trigger at one end and a segment gear at the opposite end, a pinion in mesh with the gear and means for turning the pinion to support the rest, substantially as described.

3. The support for attachment to a door consisting of a casing 16, a lever pivoted in the casing having a rest 21 at its forward end, and a segment gear at its rear end, a pinion in mesh with the gear, means for operating the pinion a spring for holding said rest in its lowest position, and a sliding catch for locking it in said position, substantially as described.

527,528. ELECTRIC CLOCK. CARL GULLBERG, Jersey City, N. J. Filed Sept. 16, 1893. Serial No. 485,684. (No model.)



*Claim.*—1. The combination of the contact springs, the gravitating switch point on one of the contact springs, the pendulum the friction piece carried on the pendulum, and means to normally hold the switch point clear of the friction piece, and to periodically release said switch point and allow it to catch on the friction piece, said switch point adapted to close the contact when actuated by the friction piece substantially as described.

2. The combination of the contact springs, the gravitating switch point on one of the contact springs, the pendulum the friction piece carried on the pendulum, and having its friction surface inclined downward toward the center of the range of the pendulum, and means to normally hold the switch point clear of the friction piece and to periodically release said switch point and allow it to catch on the friction piece, said switch point adapted to close the contact when actuated by the friction piece substantially as described.

3. The combination of the contact springs, the gravitating switch point on one of the contact springs, the pendulum the friction piece carried on the pendulum, the lever normally holding the switch point clear of the friction piece, the ratchet wheel actuated by the pendulum, and the stud pin on said wheel periodically thrusting the lever to release the switch point, said switch point adapted to close the contact when actuated by the friction piece substantially as described.

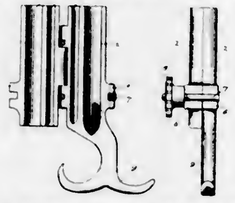
4. The combination of the electro magnet, the pendulum subject periodically to the pull of the electro-magnet, the ratchet wheel actuated by the pendulum, the circuit closing switch and the switch releasing lever said lever periodically subject to the stud of the ratchet wheel, said wheel adapted for actuating the time train substantially as described.

5. The combination of the contact springs, the gravitating switch point on one of the contact springs, the pendulum, the pivoted adjustable bar on the pendulum the friction piece carried on the pivoted adjustable bar, and means to normally hold the switch point clear of the friction piece, and to periodically release said switch point to allow it to catch on the friction piece, said switch point adapted to close the contact when actuated by the friction piece substantially as described.

6. The combination of the contact springs, the gravitating switch point on one of the contact springs, the pendulum, the pivoted adjustable bar on the pendulum the friction piece carried on the gravitating adjustable pivoted bar, with its free end between the adjusting screws, and means to normally hold the switch point clear of the friction piece and to periodically release said switch point and allow it to catch on the friction piece, said switch point adapted to close the contact when actuated by the friction piece substantially as described.

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**527,529. FIRE-ESCAPE.** VICTOR LEBER, Danbury, Conn., assignor, by mesne assignments, of one-half to Henry H. Turner, same place. Filed Jan. 8, 1894. Serial No. 6,050. (No model.)



*Claim.*—1. A device of the class described consisting of two parts 1 and 2 suitably hinged together, the inner faces of said parts being provided with half grooves 4 and 5, the half grooves in one of the parts running out on the inner faces thereof so that a firm bite may be had upon the rope, and suitable means for locking the two parts together and causing them to clamp a rope.

2. A device of the class described consisting of a clamp made in two parts suitably hinged together, the inner faces of said parts being provided with half grooves to receive ropes, the half grooves in one of said parts running out at the surface on the inner face so as to get a firm bite upon the rope and one of said parts being provided with a double hook 9 to carry a loop in use, and suitable means for locking the parts together and causing them to clamp a rope.

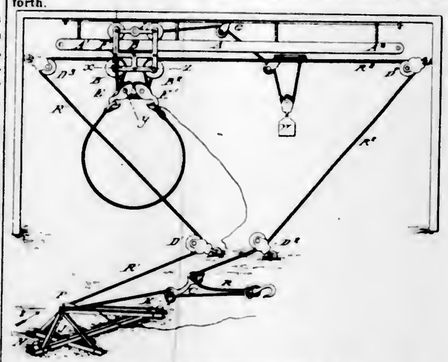
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**527,530. HAY-ELEVATOR.** WILLIAM LOUDEN, Fairfield, Iowa, assignor to the Louden Machinery Company, same place. Filed Apr. 6, 1891. Serial No. 387,891. (No model.)

*Claim.*—1. In a hay elevator, the combination with a track, and a carrier mounted to travel thereon, of a hoisting rope constructed to form a continuous circuit from and between its two points of attachment with the carrier, and a take up connected with the rope at two points whereby a loop is formed in the rope circuit, said take-up removable from the rope and shiftable thereon without changing the length of the entire rope circuit, substantially as set forth.

2. In a hay elevator, the combination with a carrier, and a continuous hoisting rope attached at the ends to the carrier, of a hook having a loop therein whereby it is removably connected with the rope, and a take up having eyes at or near its ends and horns adjacent thereto, the rope being folded to produce loops which are passed through the eyes and hooked over the horns, substantially as set forth.

3. An adjustable take up for a hoisting rope comprising a plate having two eyes therein adapted to admit therethrough a fold of the rope, and a horn in proximity to each of said eyes, said horn being adapted to catch and hold the fold of the rope, substantially as set forth.



4. In a hay elevator, the combination with a track, a carrier, and an elevating rope leading in opposite directions along the track over which the carrier is drawn, each end of the rope being first passed over a sheave in the carrier and then fastened to the carrier so as to form two loops alongside of each other, a hoisting device having parallel sheaves hung in said loops so that by operating the parts of the rope in unison, the hoisting device will be raised or lowered, and by drawing upon one part of the rope and paying out the other the carrier will be shifted in its position on the track, substantially as set forth.

5. In a hay elevator, the combination with a track, carrier and pair of hoisting blocks each of which has two sheaves therein, of a hoisting rope, the ends of which are secured to opposite sides at the ends of the carrier and passed thence downwardly to form two loops lying parallel with each other whereby to have the sheaves of the hoisting blocks strung upon them and thence in opposite directions over sheaves in the ends of the carrier thus utilizing the entire binding power of both ends of the rope upon the hoisting blocks and preventing the tipping and upsetting of the load by one of the blocks being drawn up ahead of the other, substantially as set forth.

6. In a hay elevator, the combination of a hoisting rope, a carrier having sheaves therein in different planes or out of alignment so that each end of the hoisting rope may be passed over its respective sheave and fastened at the ends to the carrier to form two loops without interfering or coming in contact with each other, two hoisting blocks, each of which has two sheaves therein, said sheaves journaled in the carrier one of the loops being in line with the sheaves in one side of the pulley blocks, and the other loop in line with the sheaves in opposite sides of the blocks, substantially as set forth.

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**527,531. JACK AND TRIP-PULLEY FOR HAY-CARRIERS.** WILLIAM LOUDEN, Fairfield, Iowa. Filed May 14, 1892. Serial No. 433,023. (No model.)

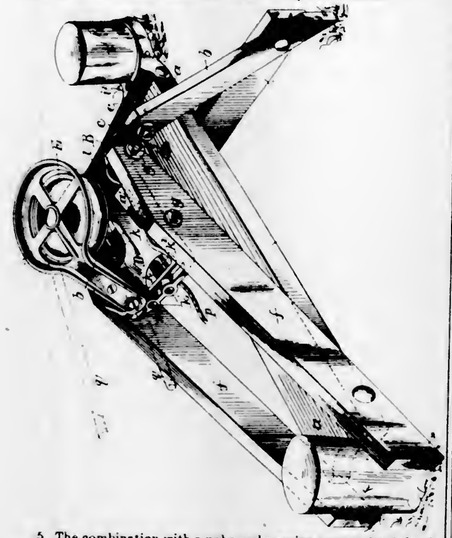
*Claim.*—1. The combination with a pair of timbers secured together at right angles to each other in the form of a cross, a pair of parallel braces secured at one end of one of the timbers and projecting beyond the latter whereby a recess is formed for a stake, a brace secured to the opposite end of this timber and also braces secured to the ends of the other timber, and a strap adapted to receive a stake said strap secured to one end of the frame, of a yoke or frame secured to the several braces, and a pulley frame, substantially as set forth.

2. The combination with a pair of timbers secured together, and braces extending upward toward a common center from the ends of these timbers, of a yoke secured to the several braces, a pulley frame pivoted to the yoke by one of the bolts which secures said yoke to the braces, and a slide latch having sliding connection with another of the bolts which secures the yoke to the braces, substantially as set forth.

3. The combination with a yoke having an inclined rear end, of a pulley frame pivoted to the yoke and having an inclining upper portion and a pulley over which this portion leads and terminates and a loop projecting below the inclining rear end of the yoke when the parts are in their normal position, substantially as set forth.



4. The combination with a yoke, of a pulley frame hinged thereto, said pulley frame provided with a downwardly projecting loop projecting below the upper edge of the yoke and a spring actuated slide latch adapted to enter the loop, substantially as set forth.

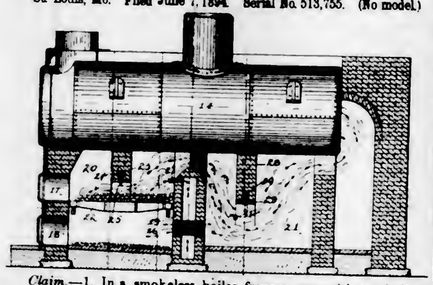


5. The combination with a yoke and a spring actuated slide latch connected therewith, of a pulley frame hinged to the yoke, said frame provided with a neck or guard projecting far enough downward to be struck by the latch when it is desired to throw the pulley frame down to its normal position, substantially as set forth.

6. The combination with a yoke or frame, and a pulley frame hinged thereto, of a spring actuated locking bar carried by the yoke or frame and adapted to have a sliding movement, a shank or prong projecting from said locking bar through one end of the yoke, a guard or neck projecting downwardly from the hinged pulley frame and adapted to be engaged by said prong or shank, and a loop on said hinged pulley frame adapted to be engaged by said locking bar and a pulley carried by said pulley frame, substantially as set forth.

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**527,532. SMOKELESS BOILER-FURNACE.** MICHEAL MCCARTHY, St. Louis, Mo. Filed June 7, 1894. Serial No. 513,755. (No model.)

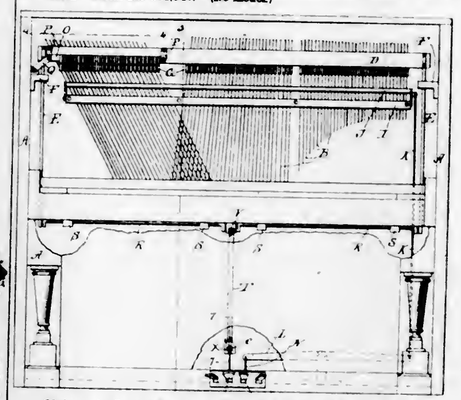


*Claim.*—1. In a smokeless boiler furnace comprising a hollow bridge wall, perforated tiles secured in the one half of the bridge wall for means to allow the air to pass from the ash pit, into the hollow bridge wall, and a perforated tile to allow the air to pass directly through the bridge-wall, from the ash pit, to the combustion chamber in the rear, small pipes or tubes secured in the upper part of the hollow bridge-wall, an air passage in an arch, located over the fire chamber, and a series of tubes connecting said air passage, to bring the air over the fire, substantially as shown and for the purpose described.

2. A smokeless boiler furnace comprising side walls 10, 11, a front wall 12, having fuel and waste passages and doors therein a back wall 13, a boiler 14, a hollow bridge-wall 19 intermediate of the front and back walls, a grate connecting the front wall and bridge-wall, a partition 23 depending from the boiler above the grate, a pipe 24 mounted in said partition and communicating with the exterior of the furnace, wings 25 leading from said pipe to the interior of the combustion chamber, registers mounted in the bridge-wall and communicating with the lower portion of the combustion chamber and hot-air room and the interior of the bridge-wall, pipes leading from the interior of the bridge-wall to points above the grate, a partition 28 depending from the boiler in the rear of the bridge-wall, the lower edge of which partition is below the top of the bridge-wall, a pipe mounted in the partition 28 and communicating with the exterior of the furnace, and wings 31 affording communication between the pipe and the hot-air room, arranged and combined as set forth.

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**527,533. PIANO.** MARTIN H. MCCHESNEY and JOSEPH G. KUNZE, Chicago, Ill., assignor to George P. Bent, same place. Filed May 14, 1894. Serial No. 511,147. (No model.)



*Claim.*—1. In a piano, in combination with the strings, the hammers and mechanisms for operating them; a series of tongues having hard strikers or contacts on the faces nearest the strings, said tongues being adjustable to receive the stroke of the hammer at a point opposite to the said hard strikers or contacts and directly behind the hard strikers or contacts, as specified.

2. In a piano, in combination with the strings, the hammers and mechanisms for operating them; two more adjustable slide-bars adapted to move at angles or obliquely to each other; one or more of said bars being adapted to travel in lines parallel or nearly parallel with the inclined strings of the piano, and devices adapted to adjust said slide-bars.

3. In a piano, the combination with the strings, the hammers and mechanisms for operating them; an adjustable hammer arrest adapted to arrest the stroke of the hammers as may be desired, and devices to adjust the same; and two or more adjustable slide-bars adapted to move at angles or obliquely to each other, and devices adapted to adjust the same.

4. In a piano, in combination with the strings, the hammers and mechanisms for operating them; a hammer-arrest adapted to arrest the stroke of the hammers and the devices adapted to adjust the same; and a series of tongues adapted to receive the stroke of the hammers, when desired.

5. In a piano, in combination with the strings, the hammers and mechanisms for operating them; two or more slide-bars adapted to move at angles or obliquely to each other and devices adapted to adjust the same; and a series of tongues adapted to receive the stroke of the hammers, when desired.

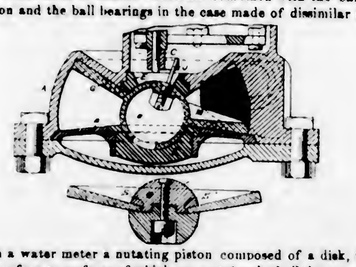
6. In a piano, in combination with the strings, the hammers and mechanisms for operating them; an adjustable hammer-arrest adapted to arrest the stroke of the hammers and devices adapted to adjust the same; two or more adjustable slide-bars adapted to move at angles or obliquely to each other and devices adapted to adjust the same; and a series of tongues adapted to receive the stroke of the hammers when desired.

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**527,534. DISK WATER-METER.** LEWIS H. NASH, South Norwalk, Conn., assignor to the National Meter Company, New York, N. Y. Filed July 23, 1891. Serial No. 400,440. (No model.)

*Claim.*—1. In a water meter a nutating piston composed of ball and disk combined with a case provided with seats for the piston ball, the disk of the piston and the spherical walls of the case being composed of substances having a larger co-efficient of abrasion than the substances composing the ball of the piston and its seats in the case.

2. In a water meter, the disk of a nutating piston and the opposing case walls made of similar materials combined with the ball of said piston and the ball bearings in the case made of dissimilar materials.



3. In a water meter a nutating piston composed of a disk, the exposed surface or surfaces of which are metal and a ball the exposed surfaces of which are of non-metallic material combined with a case and seats for the piston ball.

4. In a water meter, a nutating piston composed of a disk and ball, an exposed surface of said disk being of metal and said ball being of non-metallic material.

5. In a water meter, a nutating piston composed of a disk and ball, an exposed surface of said disk being of metal and said ball being of non-metallic material, composed of separate parts embracing the inner rim of said disk.

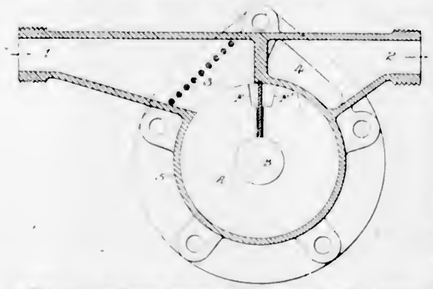
6. In a water meter of the nutating class, the combination of a disk, a ball composed of separate pieces embracing the inner edge of said disk, a pin provided with a shoulder and a screw threaded end, and a nut adapted to take on said screw threaded end, by means of which the said pieces are held together.

7. In a piston of a nutating water meter the combination of a disk composed of metal, and a ball composed of non metallic material.

8. In a water meter a nutating piston composed of a metal disk and a hard rubber ball.

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**527,535.** DISK WATER-METER. LEWIS H. NASH, South Norwalk, Conn., assignor to the National Meter Company, New York, N. Y. Filed Mar. 15, 1892. Serial No. 425,009. (No model.)



*Claim.*—1. In a water meter, the combination with a suitable case, of a piston having a motion of nutation and a port extending to the rim of the piston establishing communication between chambers on opposite sides of the piston.

2. In a water meter, the combination with a suitable case, of a piston having a motion of nutation, a port extending to the rim of the piston establishing communication between chambers on opposite sides of the piston and a bearing surface near the ball therefor.

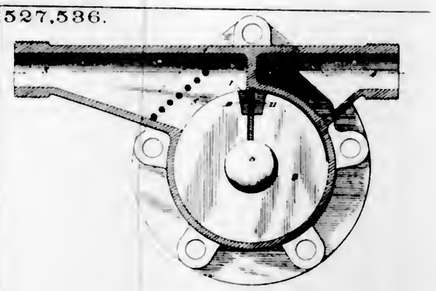
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**527,536.** DISK WATER-METER. LEWIS H. NASH, South Norwalk, Conn., assignor to the National Meter Company, New York, N. Y. Filed Dec. 12, 1892. Serial No. 454,363. (No model.)

*Claim.*—1. In a water meter, the combination of a case and a nutating piston, the rim of which approaches nearer to the side walls of its case at some places than at others in every position of the piston.

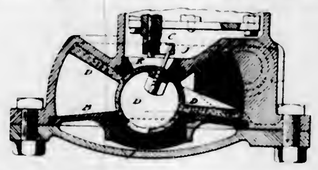
2. In a water meter, the combination of a case and a nutating piston, the rim of which approaches nearer to the side walls of its case at some places than it does in the region of the outlet port in every position of the piston.

3. In a water meter, the combination of a case and a nutating piston provided with ports, the rim of which piston approaches nearer to the side walls of the case at some places than it does at others in every position of the piston.



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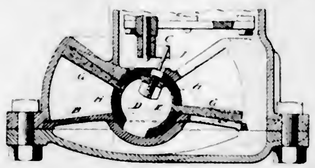
**527,537.** WATER-METER. LEWIS H. NASH, South Norwalk, Conn., assignor to the National Meter Company, New York, N. Y. Original application filed July 23, 1891, Serial No. 400,440. Divided and this application filed Nov. 2, 1893. Serial No. 489,832. (No model.)



*Claim.*—In a water meter, the combination of a piston composed of a ball and disk, both made of metal with a case made of metal and a seat for the ball made of non-metallic material.

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**527,538.** DISK WATER-METER. LEWIS H. NASH, South Norwalk, Conn., assignor to the National Meter Company, New York, N. Y. Original application filed July 23, 1891, Serial No. 400,440. Divided and this application filed Nov. 2, 1893. Serial No. 489,833. (No model.)

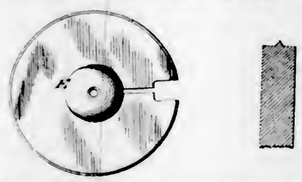


*Claim.*—1. In a water meter, the combination of a nutating piston composed of a ball and disk, both made of metal, the friction surface of the ball being coated with non-metallic material and a case, that portion of which is in frictional contact with the ball of the piston being made of metal.

2. In a water meter a nutating piston composed of ball and disk both made of metal, the friction surfaces of the ball being coated with non-metallic material and the metal surfaces of the disk being exposed.

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**527,539.** DISK WATER-METER. LEWIS H. NASH, South Norwalk, Conn., assignor to the National Meter Company, New York, N. Y. Filed Dec. 23, 1893. Serial No. 494,558. (No model.)



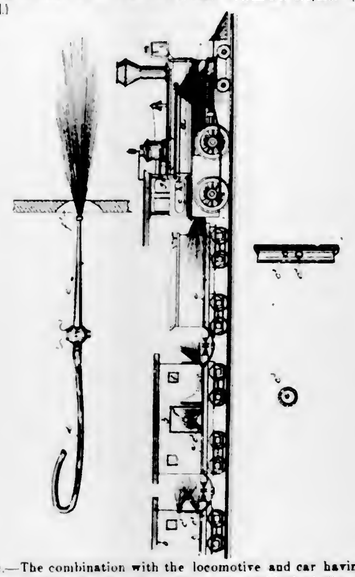
*Claim.*—1. In a nutating piston water meter, a piston provided with a knife edge periphery.

2. In a nutating piston water meter, a piston provided with a knife edge projection on its peripheral surface.

3. In a nutating piston water meter, a piston having a knife edge projection at the center of its peripheral surface.



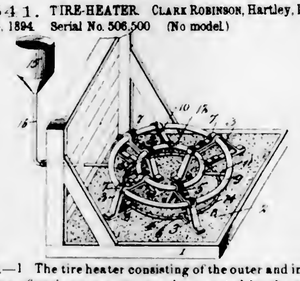
**527,540.** RAILWAY-TRAIN PROTECTING DEVICE. WILLIAM REEVES, Hoboken, N. J. Filed Nov. 9, 1893. Serial No. 490,429. (No model.)



*Claim.*—The combination with the locomotive and car having entrance ways, of the hot water pipe connecting with the boiler of the locomotive and having perforations, $c^3$, at said entrance ways of the car for spraying the said entrance ways, substantially as set forth.

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**527,541.** TIRE-HEATER. CLARK ROBINSON, Hartley, Iowa. Filed Apr. 5, 1894. Serial No. 506,500. (No model.)



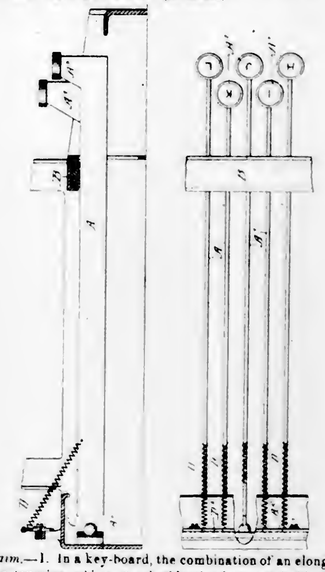
*Claim.*—1 The tire heater consisting of the outer and inner upper circular pipes, forming generators and connected by the small pipe, the oil feed pipe extending from a tank or reservoir and having the circular inner part within the outer generator pipe, formed with the series of small oil apertures, the circular burner pipe arranged between and below the upper generator pipes, connected with the inner generator pipe by a small pipe, and formed with the series of apertures inclined to both sides, and devices for supporting tires above said circular burner pipes; substantially as set forth.

2. In a tire heater the combination of the pipe-supporting brackets formed with the outer and inner upper seats and the lower central seat, and having the pipe-clamps, the circular outer and inner generator pipes and burner pipe mounted in said seats, and having the connecting-pipes as specified, the oil feed pipe leading from an oil tank and having the circular perforated inner part extending within the outer generator pipe, and the tire supports having the hooked ends to engage the upper pipes; substantially as set forth.

3. The herein-described tire heater, consisting of the supporting frame formed with the elevated end and having a suitable filling of sand or brick, the metal supporting brackets formed with the pipe-seats and clamps, the circular outer and inner generator pipes and burner pipe mounted in said seats, and having the connecting-pipes as specified, the elevated oil-tank, the feed pipe leading from said tank and having the circular perforated inner part extending within the outer circular generator pipe, the tire supports, and the conical cover formed with the rim-openings and the central pipe; substantially as set forth, for the purposes specified.

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**527,542.** KEYBOARD. ZALMON G. SHOLES, Chicago, Ill., assignor to the Remington-Sholes Typewriter Company, of Illinois. Filed Mar. 5, 1894. Serial No. 502,368. (No model.)



*Claim.*—1. In a key-board, the combination of an elongated key having a tapering end, a stop beside the key, a suitable relatively stationary support having a socket receiving said tapering end, and a spring for holding said end in said socket, substantially as described.

2. In a key-board, the combination of an elongated key having a tapering end, a suitable relatively stationary support having an opening extending through it smaller than said end, and a spring for holding said rounded end in said socket, substantially as described.

3. In a key-board, the combination of an elongated key having a spherical end, a stop beside the key, a suitable relatively stationary support having a socket receiving said spherical end, and a spring for holding said spherical end in said socket, substantially as described.

4. In a key-board, the combination of an elongated key having a spherical end, a suitable relatively stationary support having an opening extending through it smaller than said end, and a spring for holding said spherical end in said socket, substantially as described.

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**527,543.** TYPE-WRITING MACHINE. ZALMON G. SHOLES, Chicago, Ill., assignor to the Remington-Sholes Typewriter Company, of Illinois. Filed Mar. 5, 1894. Serial No. 502,369. (No model.)

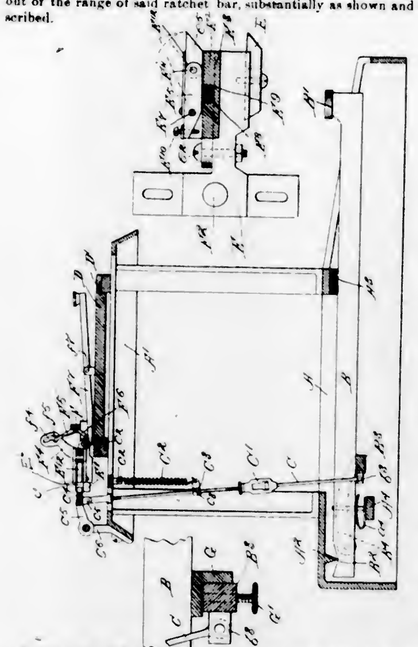
*Claim.*—1. In a type writer, the combination with the frame, A, of the key levers, B, suitably pivoted by their upper ends and provided with a stop at the front end and spring mechanism to normally hold said key levers in the elevated position, of a bar, $B^3$, provided with arms, $B^4$, hinged to the frame, A, a plate, G, located above said bar, $B^3$, and screws, G', supported by said bar, $B^3$, and adapted to raise and lower the plate, G, substantially as shown and described.

2. In a type writer, the combination with the frame, A, of a vibratory ratchet bar, $C^4$, supported by said frame, a rigid dog extending from said carriage out of the range of the normal position of said ratchet bar, a second dog extending from said carriage between the teeth of said ratchet bar and being provided with a vertical hinge independently of the rigid dog to allow movement to the left, and being provided with a horizontal hinge to allow movement in a vertical plane out of the range of the teeth of said ratchet bar, and mechanism for manually turning said dog on said horizontal hinge, substantially as shown and described.

3. In a type writer, the combination with the frame, A, of the vibratory ratchet bar, $C^4$, bracket, E, dog, E', plate, $E^3$, hinged to the bracket E dog, $E^4$, supported by said plate rock shaft, F, key lever, $F^7$, and suitable connection between said rock shaft and plate, $E^3$, and between said key lever and said rock shaft, substantially as shown and described.

4. In a type writer, the combination with the frame, A, of the vibratory ratchet bar, $C^4$, supported by said frame, the platen carriage, D, bracket, E, supported by said carriage, the dog, E', shiftable plate,

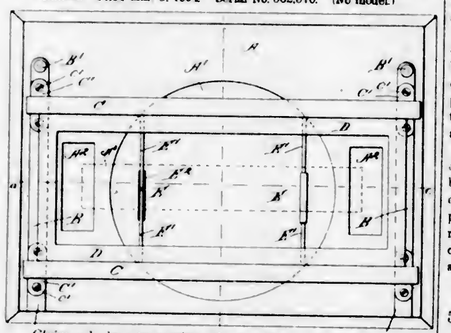
$E^3$, supported by said bracket, the dog, $E^5$, attached to said plate, a key lever, F, supported by said carriage and suitable connection between said key lever and said plate for automatically locking and manually unlocking and shifting said plate, $E^3$, to bring the dog, $E^5$, out of the range of said ratchet bar, substantially as shown and described.



5. In a type writer, the combination with the frame, A, of the platen carriage, D, bracket, E, a dog, $E^5$, secured to said bracket, a plate, $E^3$, secured to said bracket on a hinge parallel to the path of said carriage, an arm, $F^4$, applied to said plate, $E^3$, and having a right angled slot, $f^4$, an arm, $F^5$, extending into said slot, a spring for pressing said arm toward said plate, a key lever and suitable connections for manually pressing said arm rearward against the rear wall of said slot, substantially as shown and described.

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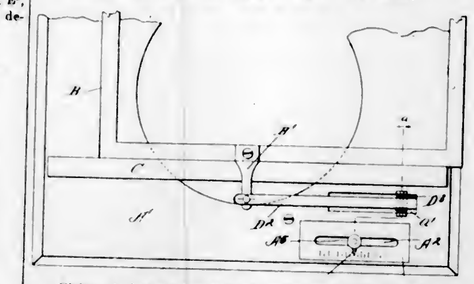
**527,544. TYPE-WRITING MACHINE.** Zalmon G. Sholes, Chicago, Ill., assignor to the Remington-Sholes Typewriter Company, of Illinois. Filed Mar. 5, 1894. Serial No. 502,370. (No model.)



*Claim.*—1. In a typewriter, the combination with the frame, A, of bars, B, detachably secured to said frame, rails, C, secured to said bars, and a platen carriage, D, and separable ribbon-supports applied to said rails, substantially as described.

2. In a type-writer, the combination with the frame, A, the carriage rails, C, and suitable removable supports to which said rails are attached, of ribbon supports, E, consisting of rods, $E'$, attached to said rails, and sleeves, $E^2$, loosely surrounding said rods, substantially as described.

**527,545. TYPE-WRITING MACHINE.** Zalmon G. Sholes, Chicago, Ill., assignor to the Remington-Sholes Typewriter Company, of Illinois. Filed Mar. 5, 1894. Serial No. 502,371. (No model.)



*Claim.*—1. In a typewriter, the combination with the frame of the machine, of a suitably mounted platen carriage, a spring drum having a part for striking the bell-hammer hereinafter mentioned, a suitable connection between said spring drum and said carriage, a part adjustable about the axis of said drum a bell-hammer supported by said part eccentric to the axis of said drum, and a bell, substantially as described.

2. In a typewriter, the combination with the frame of the machine, of a suitably mounted platen carriage, a spring drum having a part for striking the bell-hammer and engaging the stop hereinafter mentioned, a suitable connection between said spring drum and said carriage, a part adjustable about the axis of said drum, a bell-hammer and a stop supported by said part eccentric to the axis of said drum, and a bell, substantially as described.

3. In a type writer, the combination with the frame of the machine, of a carriage, a bearing supported by said frame, a shaft extending loosely through said bearing, a drum loosely surrounding said shaft and suitably connected to said carriage and inclosing a spring having one end secured to said shaft and the other end secured to said drum, a plate, E, loosely surrounding said shaft and bearing a bell, $e^2$, mechanism for securing said plate in different positions radial to said shaft, a stop attached to said arm and extending into the path of a portion of said drum, and a bell hammer so hinged as to be adapted to strike said bell and provided with a part extending into the path of a portion of said drum, substantially as described.

4. In a typewriter, the combination with the frame of the machine, of a carriage, a suitably journaled spring drum, a bell, a plate radially adjustable upon the axis of said drum and having a series of teeth upon its circumference, an adjustable gear engaging said teeth, and a bell-hammer supported by said plate eccentrically to the axis of said drum, substantially as described.

5. In a typewriter, the combination with the frame of the machine, of a carriage, a suitably journaled spring drum, a bell, a plate radially adjustable upon the axis of said drum and having a series of teeth engaging said drum, a bell-hammer and a stop supported by said plate eccentrically to the axis of said drum, substantially as described.

6. In a type-writer, the combination with the frame of the machine, of a bell and bell hammer, a support to which said bell and bell hammer are secured, said support being rotatably secured to said frame eccentric to said bell and hammer, a platen-carriage spring drum, a part connected with said platen-carriage spring drum and arranged to traverse a path substantially concentric to the axis of said support and into which said bell hammer extends, substantially as described.

7. In a type writer, the combination with the frame of the machine, of a bell, bell hammer, and stop, a support to which said bell, bell hammer, and stop are secured, said support being rotatably secured to said frame eccentric to said bell, bell hammer, and stop, a platen-carriage spring drum, a part connected with said platen-carriage spring drum and arranged to traverse a path substantially concentric to the axis of said support and into which said bell hammer and stop extend, substantially as described.

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**527,546. TROLLEY.** William H. Bacher, Bound Brook, N. J. Filed Oct. 31, 1893. Serial No. 489,629. (No model.)



*Claim.*—1. The combination in a trolley of a socketed support, and a bracket consisting of two sections branched to support the trolley wheel between them, and having arms or projections together constituting a split pintle adapted to the socket of the support, substantially as set forth.

2. The combination in a trolley of the socketed support C, the bracket A consisting of two sections having recesses at their inner faces for the reception of a transverse pin S, and a trolley wheel B turning on said pin, substantially as set forth.

3. The combination of the support C having a socket and recesses 9, 10, filled with anti-friction composition, a bracket A having a pintle extending into the socket of the support C, and with a shoulder bearing upon the upper face of the said support, a transverse pin S supported between the arms of the bracket, and a trolley wheel turning upon the said pin and provided with internal recesses filled with anti-friction material, substantially as set forth.

4. The combination of the bracket A, its pin and trolley wheel and pintle, of a support C provided with a socketed split hub having ears 12 and transverse bolt or bolts passing through said ears, substantially as and for the purpose described.

5. The combination of the bracket, the trolley wheel supported thereby, the pintle constituting part of the bracket and a support having a hub split at one side and provided with ears and transverse bolts, substantially as and for the purpose set forth.

6. The combination of the trolley wheel, bracket, and pintle, and support C having a hollow hub with an internal recess containing springs 17, 17, a bearing 18 for said springs and a lug 15 on the pintle extending between said springs, substantially as and for the purpose set forth.

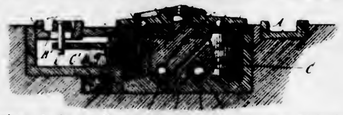
7. The combination with the support, bracket and wheel, of a pivoted contact arm and operating cord $y$, substantially as set forth.

8. The combination of a socketed support having an internal groove, a split bracket having a pintle extending into said support, and a lug on the pintle projecting into said groove, substantially as described.

9. The combination of a socketed support having an internal groove and a divided bracket having a divided pintle each section of the pintle being provided with a lug extending into said groove, substantially as described.

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**527,547. RAILWAY-SWITCH.** Emil Brombacher, Buffalo, N. Y., assignor of two-thirds to Christian Floeri and Edward F. Stein, same place. Filed July 19, 1894. Serial No. 517,956. (No model.)



*Claim.*—1. In a railway switch, the combination with the main and branch track rails and a switch tongue, of a casing sunk between the main tracks and having a top plate provided on its upper side with an annular groove, an upright rock shaft journaled in said casing and having an arm connected with the switch tongue, a shifting plate secured to said shaft above said top plate and provided on its under side with an annular groove arranged opposite the groove in said top plate and balls arranged in said grooves, substantially as set forth.

2. In a railway switch, the combination with the main and branch track rails and a switch tongue, of a casing sunk between the main tracks and provided in its bottom with an annular groove, a vertical rock shaft journaled in said casing and having a hub or enlargment provided in its under side with an annular groove arranged opposite the groove in the bottom of the casing, balls arranged in said grooves and an arm arranged on said shaft and connected with said switch tongue, substautially as set forth.

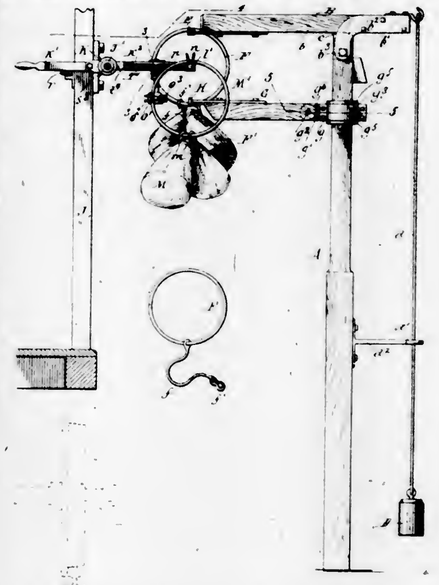
3. The combination with a switch tongue or rail and a shifting device connected therewith, of a longitudinal trip lever pivoted to the under side of a car and adapted to engage with its front arm against said shifting device and having its rear arm weighted for normally raising its front arm clear of said shifting device, and an upright hand lever pivoted upon the platform of the car and having a rearwardly extending arm bearing upon the front arm of said trip lever, substantially as set forth.

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**527,548. MAIL-BAG CATCHER.** Hugh N. Fleming, Erie, Pa. Filed Nov. 7, 1893. Serial No. 490,254. (No model.)

*Claim.*—1. The combination with the standard, of a supporting bar pivoted to swing vertically upward and provided with a cross bar having front and rear arms arranged on opposite sides of the supporting bar, a ring adapted to hang on one arm of said cross bar and support a mail bag, a catch arm arranged below the supporting bar, pivoted to swing vertically downward and provided with a cross bar having front and rear arms arranged on opposite sides of the catch arm, one arm of the latter cross bar being adapted to rest in said ring for steadying the latter, while the other arm thereof is held in the proper position for engaging with the mail-bag ring of the car, substantially as set forth.

2. The combination with the standard, of a supporting bar pivoted to the standard, a cross bar arranged on the supporting bar and provided with seats in its end portions, a catch arm pivoted to the standard below the supporting bar, a cross bar arranged on the catch arm and provided with notches in its end portions, and a ring adapted to rest with its upper and lower portions in the notches and seats of said cross bars and support a mail bag, substantially as set forth.



3. The combination with the standard, of a supporting bar arranged on the standard and provided with a cross bar, a catch arm pivoted on the standard to swing horizontally, a cross bar arranged on the catch arm and provided with a detent finger, and a ring detachably connecting said cross bars and adapted to support a mail bag, substantially as set forth.

4. The combination with the standard, of a supporting bar arranged on the standard, a weighted rope or chain arranged adjacent to the standard, and a catch arm pivoted on the standard to swing horizontally and adapted to strike said rope or chain, substantially as set forth

5. The combination with the standard, of a supporting bar pivoted to the standard to swing vertically, a weighted rope or chain arranged vertically adjacent to the standard and attached with its upper end to the supporting bar, an eye or guide in which the lower portion of the rope or chain is arranged, and a horizontally swinging catch arm pivoted to the standard and adapted to strike against said rope or chain, substantially as set forth.

6. The combination with the bag-carrying arm of the car provided with a cross bar, of a ring hung on the cross bar and adapted support a mail bag, a retaining arm arranged on the carrying arm and provided with a cross head which bears against the ring about midway of its height, and a holding spring arranged on the retaining arm and adapted to embrace the ring, substantially as set forth.

7. The combination with the bag carrying arm of the car provided with a cross bar, of a ring adapted to be hung on either end of said cross bar and support a mail bag, and a reversible retaining arm pivoted on said carrying arm, whereby the same can be swung on either side of the catch arm for engaging with said ring when hung upon either end of the cross bar, substantially as set forth.

8. The combination with the bag-carrying arm of the car provided with a cross bar and a flat sided socket, of a ring supported on said cross bar, a reversible retaining arm pivoted at one end to the carrying arm and provided with a flat sided head arranged in said socket, a holding device arranged on the other end of the retaining arm and adapted to grasp the ring, and a spring whereby the head of the retaining arm is yieldingly held in said socket, substantially as set forth.

9. The combination with an arm adapted to support a ring attached to a mail bag, of a holding spring consisting of a catch adapted to embrace said ring, a handle and a loop pivoted on said arm and a locking block arranged to slide lengthwise between the handle and the arm and adapted to hold the catch in its operative position, substantially as set forth.

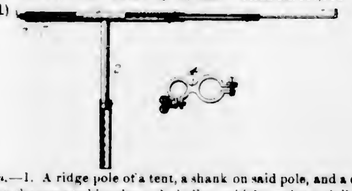
10. The combination with the bag-carrying arm of the car provided with a cross bar adapted to carry a ring supporting a mail bag, of two detent springs supported on the carrying arm and having guide arms which converge toward said carrying arm, substantially as set forth.

11. The combination with the bag-carrying arm of the car provided with a bar, of a detent spring consisting of a guide arm attached at one end to the bar and having a retaining loop at its other end which passes around said bar, substantially as set forth.

12. The combination with the bag carrying arm of the car provided with a bar, of a detent spring consisting of attaching arms secured to said bar, guide arms, coils connecting one end of both guide arms with the attaching arms, and a retaining loop connecting the other ends of the guide arms and passing around said bar, substantially as set forth.

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**527,549. ATTACHMENT FOR BICYCLES.** LOUIS A. FRANKENBERG, Columbus, Ohio. Filed July 18, 1894. Serial No. 517,844. (No model.)



*Claim.*—1. A ridge pole of a tent, a shank on said pole, and a clip for securing the same to bicycles and similar vehicles, substantially as described.

2. A ridge pole of a tent made horizontally extensible, a shank on said pole, and a clip for securing the same to bicycles and similar vehicles, substantially as described.

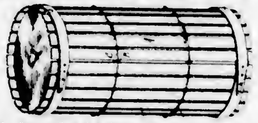
3. A ridge pole of a tent, and extensible shank on said pole, and a clip for securing the same to bicycles and similar vehicles, substantially as described.

4. A ridge pole of a tent made horizontally extensible, an extensible shank on said pole, and a clip for securing the same to bicycles and similar vehicles, substantially as described.

5. A tent attachment for bicycles and similar vehicles having extensible arms and hooks on the ends thereof to receive guys for securing the bicycle in upright position, substantially as described.

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**527,550. SLAT-AND-WIRE FABRIC.** JOHN S. GEORGE, Buffalo, N. Y. Filed July 19, 1894. Serial No. 517,982. (No model.)



*Claim.*—1. In a slat fabric, the combination with the slats, of staples penetrating adjacent slats to connect the same and provided between the slats with projecting loops, and a binding wire passing through the loops of the staples, substantially as set forth.

2. In a slat fabric, the combination with the slats and binding wire, of staples, each having a projecting loop at the edge of the slat, a leg arranged substantially parallel with the loop and penetrating the slat, and a member connecting the leg with the loop and bearing against the inner side of the slat, substantially as set forth.

3. In a slat fabric, the combination with the slats, of staples penetrating adjacent slats and connecting the same, each staple being provided with a coiled eye whereby the slats are separated, and a binding wire passing through the eyes of the staples, substantially as set forth.

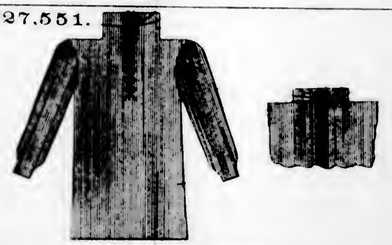
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**527,551. KNITTED SHIRT.** LOUIS W. GROAT, Hudson, N. Y. Filed July 23, 1894. Serial No. 518,323. (No model.)

*Claim.*—The herein described knitted garment, comprising a body having a wide collar open in front at the throat to form ends and provided at such ends with an adjustable fastening, by means of which the said collar may be arranged as a closed high standing collar, or a closed double-roll collar, or a turn-down or sailor collar, more or less open at the neck or throat, substantially as set forth.

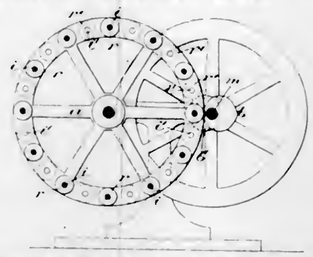
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**527,551.**



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**527,552. DRIVING-GEAR.** CARL HAMANN, Reinbeck, Germany. Filed June 8, 1894. Serial No. 513,914. (No model.)



*Claim.*—A gearing consisting of a rotarily journaled wheel *a* provided on opposite sides near the periphery with rollers *r r'* turning on gudgeons *i i'*, those on the one side having positions alternating with those on the other side, and two tappets *b b'* having a common axle *m*, the said tappets being spirally shaped and arranged at opposite sides of the wheel to operate successively on the rollers *r r'* on each side thereof, substantially as herein set forth.

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**527,553. METALLIC DRAWING-ROLLS FOR FIBROUS MATERIAL.** WILLIAM HINCHLIFFE, Huntsville, Ala. Filed Apr. 28, 1894. Serial No. 509,348. (No model.)



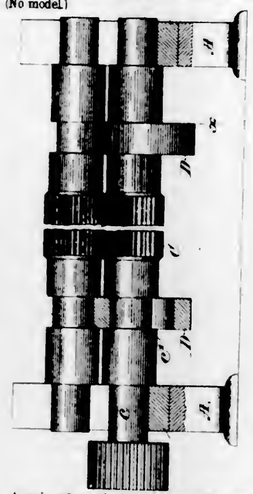
*Claim.*—1. A pair of toothed intermeshing rolls, each provided with a double tapered collar, one of said collars being made in two parts, one part adjustable toward and from the other, to thus increase or decrease the length of that collar, to thereby control the extent of the intermeshing of the teeth of one roll with the teeth of the other roll, substantially as described.

2. A pair of toothed intermeshing rolls, each provided with a tapering fixed collar, and with a double tapered collar, one of said double tapered collars being made in two parts, one part adjustable toward and from the other, to thus increase or decrease the length of that collar, to thereby control the extent of the intermeshing of the teeth of one roll with the teeth of the other roll, substantially as described.



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**527,554. DRAWING-ROLL FOR FIBROUS MATERIAL.** WILLIAM HINCHLIFFE, Huntsville, Ala. Filed May 16, 1894. Serial No. 511,441. (No model.)



*Claim.*—1. A pair of toothed drawing rolls, combined with a loose ring surrounding a portion of one of said rolls and having an internal diameter greater than the diameter of the portion of said roll within said ring, substantially as described.

3. A pair of toothed drawing rolls having guiding surfaces, combined with a pair of loose rings suspended on a part of one of said rolls and adapted to travel between parts of both rolls of the pair, said guiding surfaces preventing lateral movement of the rings on the rolls surrounded by them, as and for the purposes set forth.

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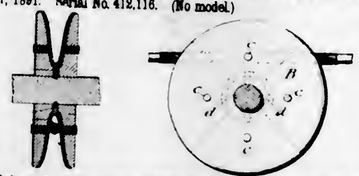
**527,555. SEPARABLE BUTTON.** JOHN HOLMES, Newark, N. J. Filed Feb. 16, 1893. Serial No. 462,624. (No model.)



*Claim.*—The improved bachelor's button herein described, in which is combined with the inner and outer plates of the head, which are centrally separate to form a chamber and are peripherally joined, a shank or stud extending through the inner plate into engagement with the front plate and having, at a point between said plates, just within the inner plate, a peripheral groove, a bent flat wire, adapted to be first bent into a U-shape, fitted into the peripheral groove, the ends of which are turned toward one another so as to meet or approximate one another, and thus forming a rigid collar inseparable from said stud, the outer edge of which forms a shoulder which engages the inner side of said inner plate, and a separable fastener, *c*, all said parts being arranged, combined and adapted to operate, substantially as set forth.

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**527,556. WEATHER PROTECTING COVERING FOR ELECTRICAL CONDUCTORS.** EDWIN J. HOUSTON, Philadelphia, Pa. Filed Nov. 17, 1891. Serial No. 412,116. (No model.)

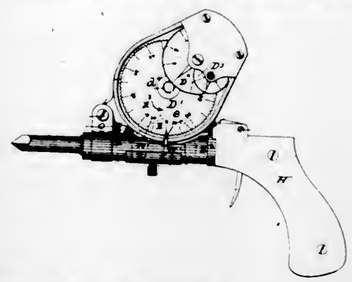


*Claim.*—1. As an improvement in electrical conductors, the combination of a contact wire with a thin, pliable, continuous, adhesive, permanent, weather-protecting coating of carbon substantially integral therewith.

2. The combination with a conductor having a thin, pliable, continuous, adhesive, permanent, weather-protecting coating of carbon, substantially integral therewith, of a contact device having a contact surface of substantially the same material as said coating, as and for the purposes set forth.

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**527,557. SPEED-INDICATOR FOR SHAFTING.** WILLIAM T. LIETNER, Gloversville, N. Y., assignor of one-half to William L. Sporborg, same place. Filed Dec. 11, 1893. Serial No. 493,305. (No model.)



*Claim.*—1. In a speed indicator the combination with a spindle adapted to make a contact engagement with a revolving shaft, and to be turned with and by the latter; of a right hand and left hand threaded worm gear, each mounted upon, adapted to slide together upon, and to turn with said spindle; and a dial-wheel having perimetral teeth adapted to engage with and be operated to turn by either of said worm gears, substantially in the manner as and for the purposes set forth.

2. In a speed indicator the combination with a spindle adapted to engage with a revolving shaft, and be turned by the latter; of a sleeve mounted on said spindle, to turn with the latter, and to slide thereon longitudinally; a left-hand threaded worm-gear upon one end of said sleeve; a right-hand threaded worm-gear upon the other end of said sleeve, and a dial-wheel having perimetral teeth adapted to engage with, and be operated by either of said worm-gears, substantially in the manner as and for the purposes set forth.

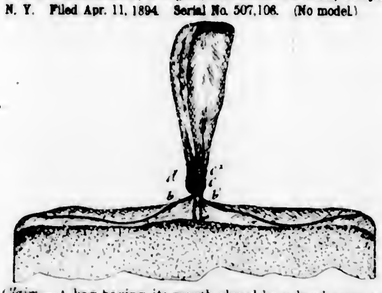
3. In a speed indicator the combination with a spindle constructed to make a contact engagement with a revolving shaft, and actuated to be turned thereby within a stock, of a sleeve arranged on said spindle and constructed to slide longitudinally thereon and to turn therewith; of a right-hand threaded worm-gear upon one end of said sleeve; a left-hand threaded worm-gear upon its other end; a semi-tube form plate on said spindle between said worm-gears, and a pin connected to said plate by which the latter and the sleeve may be moved laterally on said spindle, substantially in the manner as and for the purposes set forth.

4. In a speed indicator the combination with a dial-wheel having perimetral teeth, and mounted in a frame that is pivoted to a stock; of a spindle arranged in bearings in the latter, and adapted to be turned when in contact with a revolving shaft; of a right-hand and left-hand threaded worm-gear mounted upon said spindle, and each of said worm-gears adapted to separately engage with the teeth upon said dial-wheel, substantially in the manner as and for the purposes set forth.

5. In a speed indicator the combination with a spindle constructed with bearings in a stock and adapted to engage with and be turned by contact with a revolving shaft, and provided with a right-hand and a left-hand threaded worm-gear, laterally adjustable on said spindle, substantially as described; of arrows on the stock indicating by direction the rotation of the shaft to which the spindle is to be applied; a dial-wheel mounted in a frame and having perimetral teeth adapted to engage with either of said worm-gears when positioned in the spindle with reference to said direction arrows, substantially in the manner as and for the purposes set forth.

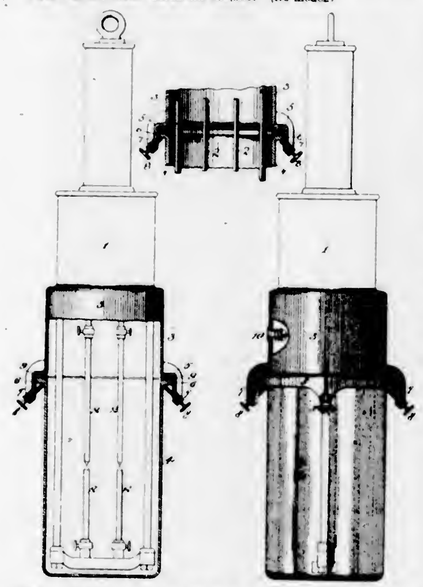
6. In a speed indicator the combination with a spindle constructed with bearings in a stock and adapted to engage with and actuated to turn by a revolving shaft and provided with a right-hand and left-hand threaded worm-gear laterally adjustable on said spindle; of arrows on the stock indicating by direction the rotation of the shaft to which the spindle is to be applied; a dial-wheel mounted in a frame and having perimetral teeth adapted to engage with either of said worm-gears; a cover-plate adapted to move laterally with said worm-gears, said cover-plate having an arrow at each end pointing in coincident direction with those upon the stock, substantially in the manner as and for the purposes set forth.

**527,558. BAG FOR CONTAINING GRANULAR MATERIAL.** Franz O. Matthiessen, Irvington, and Bartlett Arkell, Canajoharie N. Y. Filed Apr. 11, 1894. Serial No. 507,106. (No model.)



*Claim.*—A bag having its mouth closed by a bead composed of the superposed convolutions of four layers of fabric and having the end portions of said bead gathered up, bound and sewed and thereby formed into ears or handles and having the portion of said bead between said ears or handles fastened by suitable stitches, substantially as and for the purpose set forth.

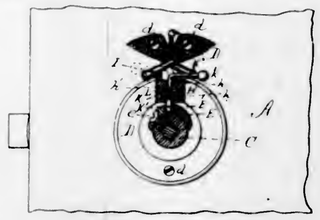
**527,559. ELECTRIC-ARC LAMP.** Alfred H. Moses, Jr., St. Louis, Mo., assignor of one-half to Jules S. Bache & Co., New York, N. Y. Filed Jan. 21, 1893. Serial No. 459,256. (No model.)



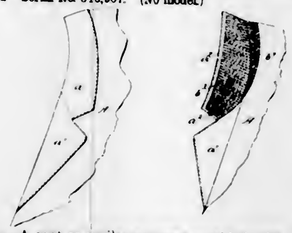
*Claim.*—In an electric arc lamp, the combination with an inclosure for the carbons or electrodes, said inclosure comprising a casing and a globe section, of a flange formed upon the casing section, a corresponding flange formed upon the globe section and adapted for contact with the casing flange, said casing having the flat under side as shown, pendants projecting from the casing flange, and adjusting screws carried by the pendants, having an upward inward inclination adapted for impinging obliquely on the said flat under side of the globe flange at a distance from the body of the globe adapted to avoid material inward pressure at the angle between the flange and the body, substantially as described, whereby the screws have a direct lifting action and wide range of adjustment, and are capable of exerting strong pressure upon the globe without injury thereto, and of insuring a tight joint between the globe and the casing sections as set forth.

**527,560. DOOR-KNOB FASTENER.** Oscar C. Rumsey, Whitman, Mass., assignor of one-half to John Bell, same place. Filed Feb. 19, 1894. Serial No. 500,614. (No model.)

*Claim.*—The hereinbefore described improvement in door knob fasteners, consisting essentially of the combination of the semicircular arc-shaped block E provided at its highest or central point with the recess E', the bracket or projection H extending horizontally over the shank of the door knob and provided with the vertical perforation A over said recess, said bracket being provided with the ledge or ridge I extending from front to rear and inclined or curved up at I' rearward from the front edge and formed at the top of said incline with the transverse notch I", and the locking bolt consisting of the vertical portion K and horizontally extending arm or handle K" adapted to mount and descend said incline or curve by swinging said handle, and the spring L within said perforation, substantially as set forth.

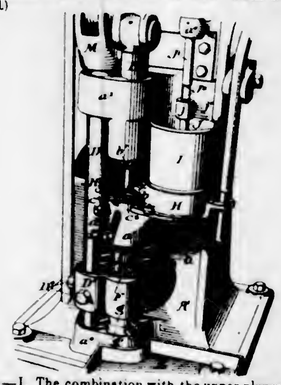


**527,561. COAT.** Nathan Schloss, Baltimore, Md. Filed July 9, 1894. Serial No. 516,961. (No model.)



*Claim.*—A coat or similar garment provided with a collar consisting of superimposed fabrics, the rear laminæ of which are permanently secured together by vertical lines of stitches, $b^4$, the upper end of the main fabric of which the collar is composed, being overturned rearwardly to compose hemmed edge, $a^3$, said collar having at its lower end an upwardly inverted arched opening, into which is inserted a crescent, B, of overlying folds of material closely connected by continuous lines of stitches, $b^4$, extending lengthwise thereof, the garment having the upper end of its back cut away with a downwardly inclined curve in alignment with the lower edge line of said crescent, as and for the purpose intended, substantially as described.

**527,562. PILL-COMPRESSING MACHINE.** Robert Shoemaker, Jr., Philadelphia, Pa. Filed Dec. 22, 1892. Serial No. 455,998. (No model.)



*Claim.*—1. The combination with the upper plunger and the die, of the lower plunger, a freely supported stem carrying said lower plunger; a laterally projecting stud arranged upon said stem; bearing pieces inclined at an angle to the direction of vertical movement of said stem and adapted to engage with said stud and actuating mechanism for said stem, substantially as set forth.

2. The combination with the lower plunger stem and the head embracing the same but sliding freely thereon, of a pair of nuts arranged upon the threaded portion of said stem in proximity to the range of movement of the head and actuating devices upon the proximate faces of said nuts whereby a limited range of movement of one nut with relation to the other is permitted, and the combined movement of said nuts beyond said range is effected, substantially as set forth.

3. A machine for compressing pills and the like comprising a die, compressing mechanism in operative relation thereto, a shaft journaled upon the frame of the machine, a feed box loosely fitting about said shaft said box having a discharge orifice adapted to register with the die, stirrers upon said shaft, means for rotating said shaft, means for reciprocating said feed box about the shaft as a pivot, substantially as described.

4. In combination with complemental mechanism of a machine for compressing pills and the like, a feed box comprising communicating compartments, one of which is a supply compartment while in the other is a discharge orifice for the material to be fed, a stirrer in said supply compartment by which the material is fed into the discharge compartment, and a stirrer in said discharge compartment by which the material is fed to the compressing mechanism; substantially as described.

5. In combination with complemental mechanism of a machine for compressing pills and the like, a feed box comprising a base having a discharge orifice for the material to be fed, a cover above the portion of said base containing the discharge orifice, the remainder of said box being open at the top to form a supply compartment, a hub with laterally projecting fingers journaled in said closed portion of the feed box and adapted to sweep over the discharge orifice, a stirrer in said supply compartment of the box, the arms of said stirrer engaging with the fingers in the closed portion of the box, and means for rotating said stirrer; substantially as described.

6. The combination with the plunger, the rod in operative connection therewith, the cams $M'$, $M^3$, the surface of each of which is at a constant distance from the diametrically opposite surface of the the other, bearings upon said rod each of which constantly engages with one of said cams, and a driving shaft carrying said cams; substantially as described.

7. The combination with the oscillating feed-box and the stirrers arranged therein, of a two-part shaft operatively connected with one of said stirrers and projecting through the bottom of said box to form a center of oscillation therefor, the respective portions of said two-part shaft being capable of longitudinal movement with relation to one another to an extent greater than the projection of said shaft beneath the bottom of said box, whereby the removal of the stirrer from the box is permitted, substantially as set forth.

8. The combination with the lower plunger-carrying stem; the head engaging therewith and the rod carrying said head, of the cams, $M'$, $M^3$, the surface of each of which is at a constant distance from the diametrically opposite surface of the other; cam rollers mounted upon said rod each of which constantly engages with one of said cams, and a driving shaft carrying said cams, substantially as set forth.



**527,563. PROCESS OF MAKING AMMONIUM BICHROMATE.** Eric A. Starke, San Francisco, Cal., assignor to the United States Smokeless Powder Company, same place. Filed Mar. 2, 1894. Serial No. 502,138. (No specimens.)

*Claim.*—1. The process of preparing ammonium bichromate consisting in mixing a solution of ammonium picrate and a solution of potassium bi-chromate together, and afterward separating the ammonium bi-chromate solution from the precipitated crystals of potassium picrate, and evaporating the ammonium bi-chromate solution to dryness.

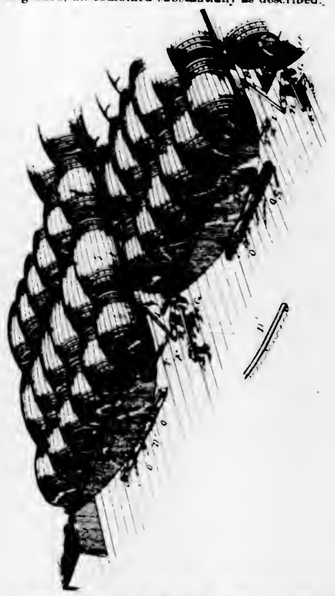
2. The method of preparing an explosive compound, consisting in mixing a solution of potassium bi-chromate and ammonium picrate in proper proportions, then evaporating the resultant mixture of ammonium picrate, ammonium bi-cromate and potassium picrate, substantially as herein described.

**527,564. APPARATUS FOR AGING WINES OR DISTILLED LIQUORS.** Theodore R. Timby, Washington, D. C. Filed Aug. 15, 1893. Renewed June 26, 1894. Serial No. 515,661. (No model.)

*Claim.*—1. In an apparatus for aging liquors, the platform, the curved rocker, and a support therefor, one of the engaging surfaces between said rocker and support having a series of projections whereby a tremor is produced as the platform rocks, all combined substantially as described.

2. In an apparatus for aging liquors, the platform, the curved rocker, and a removable jolter piece having a series of projections, said jolter piece forming one of the bearing surfaces between the rocker and its support, all combined substantially as described.

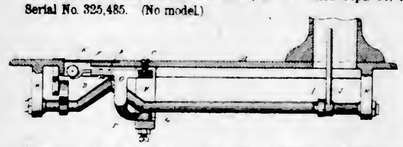
3. In an apparatus for aging liquors, the platform and its curved rocker, and a jolter piece having a series of projections and forming one of the rocker supporting surfaces, and side guides for said rockers, whereby a tremulous movement of the platform is produced and the rocker guided, all combined substantially as described.



4. In an apparatus for aging liquors, a series of platforms and driving motors therefor, each platform having curved rockers, and supports therefor, one of the bearing surfaces on which the rocker turns having a series of projections, all in combination substantially as described.

5. In an apparatus for aging liquors, the platform, the curved rocker, and a bearing therefor, one part of the engaging surfaces having a series of teeth or projections, and a spring connected to the platform, and a fixed support, all combined substantially as described.

**527,565. SHUTTLE-ACTUATING MECHANISM FOR SEWING-MACHINES.** James Tripp, New York, N. Y. Filed Sept. 30, 1889. Serial No. 325,485. (No model.)

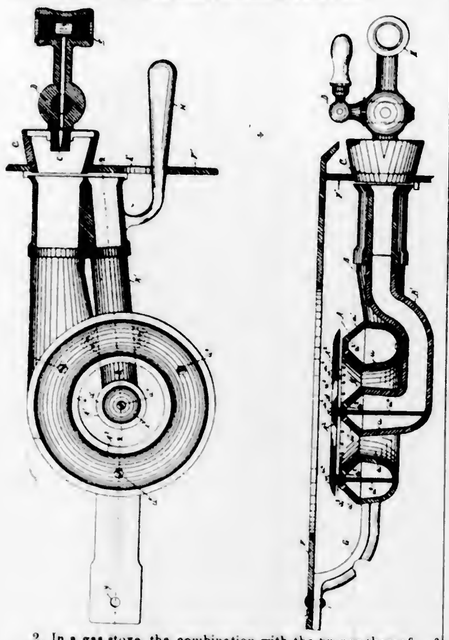


*Claim.*—1. The combination, in a shuttle-operating mechanism, of the shaft G supported from the under side of the base plate and having the inclined elbow N, the vibrating shuttle carrying lever B arranged with its axis at a right angle to and intersecting the axis of said shaft at the junction of said elbow with the shaft, and a fork attached to said lever between its pivot and the shuttle carrier and engaging the elbow of the shaft, substantially as and for the purpose set forth.

2. The combination in a shuttle-operating mechanism, of the shaft G supported from the under side of the base plate and having the elbow N, the shuttle-carrying lever B arranged with its axis at a right-angle to and intersecting the axis of said shaft at the junction of said elbow with the shaft, and a fork O P attached to said lever between its axis and the shuttle carrier, which fork engages said elbow and has its arm P pivoted to the bracket R, substantially as and for the purpose set forth.

**527,566. GAS-BURNER FOR STOVES.** Jacob B. Wallace, Erie, Pa. Filed Dec. 14, 1893. Serial No. 493,668. (No model.)

*Claim.*—1. In a gas stove, the combination with the burner thereof; of a roof-cap placed above said burner and having such width and surface contour as to shed from the jet orifices of said burner liquids or matter falling from above said burner.



2. In a gas stove, the combination with the burner thereof; of a ring shaped roof cap set above said burner, leaving an air space between it and said burner, and which projects from the top of said burner out over the burner jets, for the purposes set forth.

3. In a gas stove, the combination with the burner thereof; of a ring shaped roof cap set above said burner, leaving an air space between it and said burner, and having such width and surface contour as to shed from the jet orifices of said burner liquids or matter falling from above said burner.

4. In a gas stove, the combination of a ring shaped burner therefor having series of jets directed inwardly and outwardly; and a ring shaped roof cap set above said burner, leaving a communicating passage between it and said burner and between the outer and inner series of jets said roof cap projecting inwardly and outwardly over the burner jets for the purposes set forth.

5. In a gas stove, the combination of a ring shaped burner therefor having inwardly and outwardly directed series of jets; and a ring shaped roof cap set above said burner leaving a communicating passage between it and said burner and between the inner and outer series of jets, said roof cap having such width and contour as to shed from the jet orifices of said burner liquids or matter falling from above said burner.

6. In a gas stove, the combination of a multiple burner having a pivotal movement and each burner of which having a separate feed pipe so arranged that any one of them can be swung in line with a single gas supply by the pivotal movement of said burner; and the gas supply connections.

7. In a gas stove, the combination of a multiple burner that is pivoted to the stove at one side of the burner and each of its burners having a separate feed pipe arranged at the opposite side from the pivot and so placed that any one of them can be swung in line with a single common gas supply by swinging the burner; and the gas connections.

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**527,567. COCK FOR GAS-STOVES, &c.** JACOB B. WALLACK, Erie, Pa. Filed Feb. 8, 1894. Serial No. 499,546. (No model.)

*Claim.*—1. In combination with a fuel gas burner, and the mixer therefor; of a cock placed in the gas way and in close proximity to the mixer, the way in the plug of which is so enlarged in the cock side of the plug as to be in full register with the cock way throughout the regulating movement of said plug.

2. In combination with a fuel gas burner, and the mixer therefor; of a cock placed in the gas way in close proximity to the mixer, the plug of which has a series of ways of different sizes adapted to be brought one at a time into direct line with the gas way in the cock body.

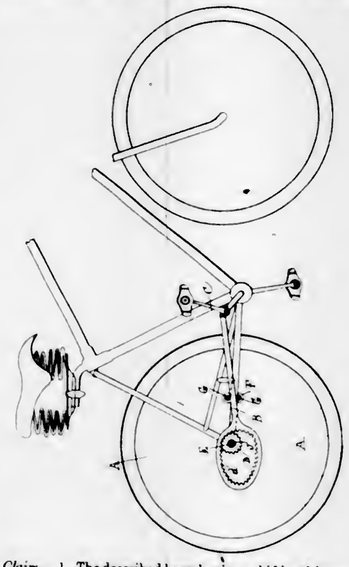


3. In combination with a fuel gas burner, and the mixer therefor; of a cock placed in the gas way in close proximity to said mixer, the plug of which has a series of regulating ways at one side of the plug, said ways being of different sizes and adapted to be brought into register with the gas way of the cock body one at a time, and all of said ways leading into an enlarged common way at the opposite side of the plug, which said common way registers with the way of the cock body when any one of the regulating ways is in register with said way in the cock body.

4. In combination with a fuel gas burner, and the mixer therefor, of a cock placed in the gas way in close proximity to said mixer, the plug of which has a series of regulating ways in the mixer side of said plug, said ways being of different sizes and adapted to be brought into register with the way leading to the mixer one at a time, and all of said ways leading into an enlarged common way in the cock side of said plug which said common way registers with the ways leading into the cock body when any one of the regulating ways is in register with said way in the cock body leading to the mixer.

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**527,568. DRIVING MECHANISM FOR BICYCLES.** GEORGE S. WEBB, Aurora, Ill. Filed Mar. 23, 1893. Serial No. 467,382. (No model.)



*Claim.*—1. The described lever having a shifting fulcrum and provided at one of its ends with an endless internal gear, in combination with and driven by the foot treadles and cranks, and with a pinion on the wheel shaft, and kept in continuous engagement with said gear, as and for the purposes set forth.

2. In combination with the gear on the axis of the main wheel, and with the pedal driving-crank, the connecting rod or tube B, provided with the continuous internal gear, and having a supporting bearing between its extremities, and on which it rides and rocks, substantially as shown and described.

3. In a bicycle a driving lever having a continuous internal gear, such gear meshing with a gear on the axle of the main wheel, and a shifting fulcrum pin or bearing point for said lever, whereby the lever has the described longitudinal movements, and also the described vibratory movements on such shifting fulcrum.

4. In combination, the reciprocating lever of the first order, having the endless set of interior teeth as described, and applied to the driving crank and to the gear on the wheel axle as set forth, whereby when the lever is at the extremity of its longitudinal movements, and consequently at its dead points, the crank shall be in position to exert its maximum leverage to overcome such dead points.

5. In combination with the cranks the internally-geared connecting rod or tube B, made, applied and operating as described, and with the pinion on the axle in constant engagement therewith, antifriction bearings G, on the frame and serving as a fulcrum for the rod, all substantially as set forth.

6. In combination with the internal gear, and with the pinion engaging therewith, the roller J., track H, and cover I, substantially as shown and described.

7. In combination with the internal continuous gear, its connecting rod or tube and pinion, the crank arm set as shown and described, a little forward of the dead center relatively to the rider, and operating as and for the purpose set forth.

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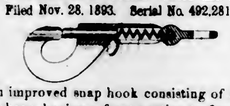
**527,569. NUT-LOCK.** DAVID D. WEIKELL, Fort Wayne, Ind. Filed Sept. 11, 1893. Serial No. 485,234. (No model.)



*Claim.*—In a nut lock, the combination with the bolt, of a nut chamfered at its distal end, and a locking piece consisting of a coil of wire adapted to engage the groove of the bolt and be forced under and engage the chamfered surface of the nut, substantially as described.

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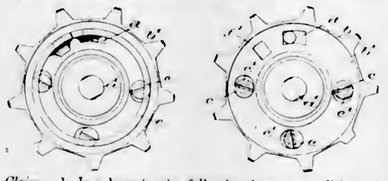
**527,570. SNAP-HOOK.** FRANK WHITE and IRA F. WHITE, Pomona, Cal. Filed Nov. 28, 1893. Serial No. 492,281. (No model.)



*Claim.*—An improved snap hook consisting of a blank adapted to be bent into shape, having a front portion to form the hook-head and nose thereof, a rear portion to form the lugs for the end of the loop, and an intervening body portion the side portions of which are cut out to form an elongated slot in the back of the body, and having also a recess in its back central portion as an outlet for sand, a slidable bolt adapted to be seated in said barrel having a knob with beveled under portions to project through the slot formed by the cut out sides of the body portion, and a loop or eye on the rear extremity of the barrel portion, substantially as herein described.

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**527,571. BICYCLE-BRAKE.** GEORGE E. WHITNEY, Boston, Mass. Filed Oct. 3, 1892. Serial No. 447,646. (No model.)



*Claim.*—1. In a bicycle, the following instrumentalities, viz:—a pedal shaft, pedals to rotate it, a wheel axle, a drive wheel thereon; a clutch brake composed of a stationary member having a cylindrical friction surface, and a ring like rotative movable member having separated ends and normally out of contact with the cylindrical friction surface of said stationary member; one of said members inclosing the other connections between said pedal shaft and the hub of said drive wheel to rotate the drive wheel and ring-like member in its forward direction and adapted by back-pedaling or pressure as described to move the ends of the ring like member with relation to each other and thereby effect the pressing together of said concentric members, to operate as a friction brake, substantially as described.

2. In a bicycle or the like, a brake composed of a stationary and a ring-like movable rotative member having separated ends, one member being concentric with and normally inoperative with relation to the other, combined with a pedal, and connections between it and said movable member to rotate it and also at times to move one of the ends thereof with relation to the other to effect the engagement of the two concentric brake members through back pressure on the pedals, substantially as described.

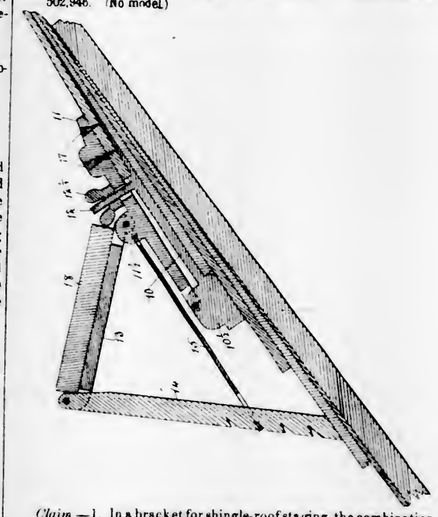
3. In a bicycle or the like, a brake composed of a stationary member, and a movable rotative member consisting of a split ring, one member being concentric with the other, combined with a pedal, and connections between it and the movable member to rotate it and also to move it into abnormal position to effect its engagement with the stationary member by back pressure on the pedal, substantially as described.

4. In a bicycle or the like, a rotatable hub, a brake composed of a stationary member, and a movable member consisting of an expansible ring secured at or near one end to said hub, combined with a pedal, connections between it and the other end of the movable brake member to normally rotate it and the hub, and also to move the ends of the ring with relation to each other to effect its engagement with the stationary member by back pressure upon the pedal, substantially as described.

5. In a bicycle, a cylindrical brake surface fixed with relation to the frame-work, a co-operating rotative split ring normally out of contact and concentric with the said stationary surface, a gear mounted loosely upon its shaft to permit a slight retrograde movement and secured to one end of and to rotate said split ring, rigid connections between said shaft and the other end of said split ring, a pedal shaft, and pedals, and devices intermediate the pedal shaft and gear to retard or retrograde said gear upon its shaft when the brake is to be applied, to thereby move one end and change the size of said split ring and press it into abnormal position against the stationary cylindrical member, substantially as described.

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**527,572. BRACKET FOR STAGING ON SHINGLE-ROOFS.** GEORGE L. WILDER, Waukegan, Ill. Filed Mar. 9, 1894. Serial No. 502,948. (No model.)



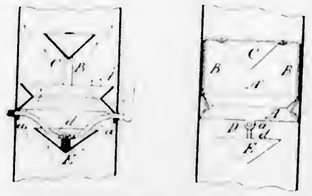
*Claim.*—1. In a bracket for shingle-roof staging, the combination, of a clamp having its lower jaw thin and tapering and its upper jaw furnished with sharp nails extending downward, a support pivoted upon this jaw, a brace pivoted on the opposite end of the support, and a locking device pivoted on the upper side of the clamp beneath the support, substantially as and for the purpose specified.

2. In a bracket for shingle-roof staging, the combination, of the jaw, 10, of the clamp, having the lug, 10¼, formed on it at one end, and being made thin and tapering at the other end; the jaw, 11, formed with the lug, 11¼, near the middle point of its upper side and furnished with the sharp nails, 17, extending downward; the screw, 12, secured in the jaw, 10, passing through the jaw, 11, and furnished with the thumb-nut, 12½; the support, 13, slotted and curved in opposite directions at either end, and pivoted on the upper part of the lug, 11¼; the brace, 14, having notches made along its edge near the lower end, and pivoted at the upper end upon the free end of the support, 13; and the locking device, 15, formed with a loop large enough to pass over the brace, 14, and pivoted on the lug, 11¼ below the pivot point of the support, 13; as and for the purpose specified.

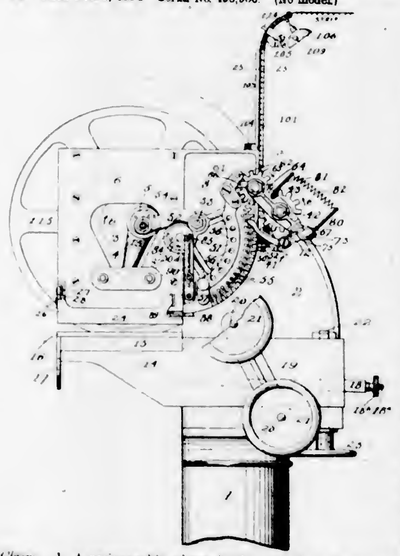
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**527,573. STOVEPIPE-DAMPER.** HOUGHTON W. WILSON, Kingston, Canada. Filed Apr. 2, 1894. Serial No. 506,061. (No model.) Patented in Canada Apr. 8, 1893, No. 42,512.

*Claim.*—In a stove and smoke pipe damper, the combination of a stationary ring contracting the passageway of the pipe, provided with two lugs on its lower edge and having its lower surface beveled upwardly and inwardly to form a deflecting face and its upper surface beveled outwardly and upwardly to prevent the formation of a pocket or shelf, a deflector some distance above and smaller than the throat of the ring above recited, a bail secured to said ring transversely to the lugs and holding said deflector on a wide spreading top, an axle curved to form a crank in the center passage through and having its ends bear and rotate in the stove pipe or flue and the lugs of the ring which latter it supports and being provided with balanced handle at one end and a deflecting disk somewhat smaller than the throat of the ring secured to the crank of said axle, substantially as set forth.



527,574. BOX-BINDING MACHINE. ALBERT A. WOOD, Atlanta, Ga. Filed Feb. 2, 1894. Serial No. 498,906. (No model.)



*Claim.*—1. A reciprocable piston having a V-shaped groove in its lower face, parallel grooves cut therein, one in each of the faces of the V-shaped channel, adapted to hold the tin strip, and an anvil corresponding in form on its upper side to the V-shaped groove, substantially as and for the purpose specified.

2. The combination of a reciprocable channeled and grooved upper die, a lower die conforming in shape to the channel in the said upper die, and plates pivoted on and extending along the sides of the upper die and a considerable distance below its face so as to contact with the box prior to the contacting of the strip in said grooves, substantially as and for the purpose specified.

3. A reciprocable grooved piston, set in a frame, an anvil fitting said groove by its upper face and having an inclined bottom side, and seated upon ledges of said frame, a wedge fitting under said anvil and on said ledges and means for clamping the said anvil in place, substantially as and for the purpose specified.

4. A reciprocating grooved piston set in a frame, and an anvil having a correlatively formed working face set on a ledge of said frame so as to slide parallel to its working face a vertically adjustable lower bearing for said anvil, means for clamping said anvil in place, and a hooked bolt engaging its back end and operating against upward movement thereof.

5. An anvil, a piston reciprocable to contact therewith, a strip guideway on said piston leading to the working face thereof, a bar secured to and carried by said piston, substantially parallel to a portion of the guideway and grooved to receive the spurs of the binder-strip and means for elastically holding said binder strip in place, for the purpose specified.

6. An anvil, a piston reciprocable to contact therewith, a strip guideway on said piston leading to the working face thereof, a bar secured to and carried by said piston, substantially parallel to a portion of the guideway and a groove to receive the spurs of a binder strip, and means for elastically holding said binder strip in place, consisting of a plate hinged to the said bar parallel thereto and spring-pressed against the strip.

7. A piston and an anvil thereunder, a feed guideway, a bar also provided with a guideway, a bell on the upper end of same, a spring pressed lever carrying the bell-striker and pivoted in the path of the strip in said guideway and provided with arms adapted to engage opposite edges of the said strip when the striker is retracted.

8. A piston and anvil thereunder, a feed guideway, a bar also provided with a guideway, a bell on the upper end of same, a spring pressed lever carrying a bell-striker pivoted in the path of a strip in said guideway and provided with arms adapted to engage opposite edges of the said strip when the striker is retracted and a finger secured to the said bar at its upper end alongside the edge of said strip and acting as a fulcrum in inserting a new strip.

9. An anvil and a piston reciprocable thereover, having correlative working faces, a strip guideway on the piston leading to the working face thereof, a shear blade set in said piston transversely of said guideway, a movable shear blade so set as to coact therewith, and means for operating said shears consisting of a shaft set revolubly in the piston and a crank thereon, a pitman connecting said crank with the said movable shear-blade, for the purpose specified.

10. An anvil and a piston reciprocable thereover, having correlative working faces, a strip guideway on the piston leading to the working face thereof, a shear blade set in said piston transversely of the said guideway, a movable shear blade so set as to coact with same, and means for operating said shears consisting of a shaft set revolubly in the piston, a crank on each end thereof, a pitman connecting said shears with the correlative crank, and a pitman connecting the other crank with the wrist-pin on the main shaft of the machine.

11. The combination of the anvil, the piston reciprocably mounted thereover, both having correlatively formed working faces, a guideway leading to the working face of the piston, shears removably secured to said piston transversely of the guideway, a stud carried on the movable blade of said shears, a pin set transversely of the end of said stud, a shaft set revolubly in the piston, a crank on each end thereof, a pitman provided at one end with an open-sided slot secured to one of said cranks the said slot in its other end engaging the pin in the stud aforesaid, and a pitman connecting the other crank on the same shaft with the wrist-pin on the main shaft of the machine, all combined, arranged and operating, substantially as and for the purpose specified.

12. A piston and anvil having correlatively formed working faces, a semi-circular curved surface on said piston, a guide-way along said curved surface leading to the working face of the piston, a shaft mounted in said piston, a segment revolubly set on said shaft and connected by a pitman with the wrist pin of the main-shaft, a feed-pawl seated in said segment so as to have radial motion relatively thereto, and to lie transversely of the guide-way, and means for causing said radial movement of said feed-pawl substantially as and for the purpose specified.

13. An anvil and a piston having correlative working faces, a semi-circular curve on said piston, a guideway therein leading to its working face, a shaft seated in said piston, carrying a cam disk having a roller and projection, and tappets seated on the frame in a position to be contacted with by said roller and projection alternately on reverse motions of the pitman, a segment revolubly mounted on said shaft and operatively connected with the crank on the main shaft by means of a pitman, a pin and slot connection between the said segment and the shaft, preventing more than a relative short movement thereof, a crank on said shaft, a feed-pawl seated so as to have radial movement on said segment and connected to said crank, and lying transversely of said guide-way.

14. An anvil, and a piston reciprocably mounted thereover, having correlative working faces, a guideway in the said piston leading to the working face thereof, a toothed segment mounted on a shaft thereon and means for imparting a semi-rotary motion thereto, a toothed wheel mounted so as to run its periphery in the guide way, a gear connected thereto on the same axis, an arm mounted on said axis, an intermediate gear mounted on said arm and meshing with the aforesaid gear, said arm swinging so as to bring said gear into mesh with the teeth of the segment, and an abutment on said segment so set as to contact with said lever on the descent of the segment and so draw the intermediate gear into mesh with the segment teeth, and means for throwing said lever back to its normal position, for the purpose specified.

15. An anvil, and a piston reciprocably mounted thereover having correlatively working faces, a guide-way in the said piston leading to the working face thereof, a toothed segment mounted on a shaft thereon and means for imparting a semi-rotary movement thereto, a toothed wheel mounted so as to run its periphery in the guide-way, a gear connected thereto on the same axis, an arm mounted on said axis, an intermediate gear mounted on said arm and meshing with the aforesaid gear, said arm swinging so as to bring said gear into mesh with the teeth in the segment, an abutment on said segment so set as to contact with said lever on the descent of the segment and so draw the intermediate gear into mesh with the segment teeth, means for throwing back said lever to its normal position, and a spring actuated lever carrying a block engaging a correlative block on the aforesaid swinging lever when same is depressed.

16. An anvil and a piston reciprocably mounted thereover, having correlative working faces, a guide-way in the said piston leading to the working face thereof, a toothed segment mounted on a shaft thereon and means for imparting a semi-rotary motion thereto, a toothed wheel mounted so as to run its periphery in the guide-way, a gear connected thereto on the same axis, an arm mounted on said axis, an intermediate gear mounted on said arm and meshing with the aforesaid gear and a block on its opposite end provided with an inclined face, said arm swinging so as to bring said intermediate gear into mesh with the teeth of the segment and an abutment on said segment so set as to contact with said lever on the descent of the segment and to draw the intermediate gear into mesh with the segment teeth, and means for throwing said lever back to its normal position, and a spring-pressed lever carrying a block having the face inclined correlatively opposite that of the block on the first mentioned lever, whereby said lever is forced downwardly by the apposition of the said inclined faces due to the swinging of said spring-pressed lever.

17. An anvil and a piston reciprocably mounted thereover having correlatively formed working faces, a guide-way in the said piston leading to the working face thereof, a toothed segment mounted on the shaft thereon, means for imparting a semi-rotary motion thereto, a toothed wheel mounted so as to run its periphery in the guide-way, a gear connected thereto on the same axis, an arm mounted on said axis, an intermediate gear mounted on said arm and meshing with the aforesaid gear, said arm swinging so as to bring said intermediate gear into mesh with the teeth of the segment and an abutment on said segment so set as to contact with said lever on the descent of the segment and so draw the intermediate gear into mesh with the teeth of the segment, and means for throwing back said lever to its normal position and a spring actuated lever, carrying a block engaging a correlative block on the aforesaid swinging lever when same is depressed and a second block thereon engaging the teeth of the gear on the feed-wheel axis when said lever is out of engagment with the first mentioned lever for the purpose of causing a planetary movement of the intermediate gear said first named blocks having peripheral surfaces whereby said spring pressed lever is prevented from moving when said swinging lever is elevated and said surfaces in contact.

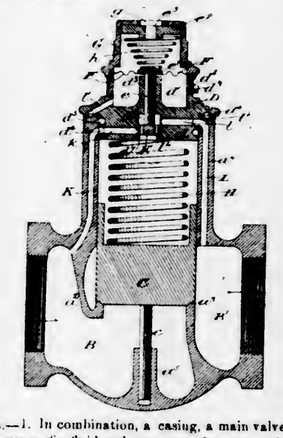
18. An anvil and a piston reciprocably mounted thereover having correlative working faces, a guideway in the said piston leading to the working face thereof, a toothed segment mounted on a shaft thereon and means for imparting a semi-rotary motion thereto, a toothed wheel mounted so as to run its periphery in the guideway, a gear connected thereto on the same axis, an arm mounted on said axis, an intermediate gear mounted on said arm meshing with the aforesaid gear, said arm being adapted so as to bring said gear into mesh with the teeth of the segment, and an abutment on said segment so set as to contact with said lever on the descent of the segment and so draw the intermediate gear into mesh with the segment teeth, and means for throwing said lever back to its normal position, an arm adjustably secured to the axis of the feed-wheel, and a spring-pressed lever pivotally secured to the extremity thereof and a block on said spring-pressed lever engaging a correlative block on the swinging lever when the latter is depressed, for the purpose specified.

19. An anvil and a piston having correlative working faces, a guideway in the piston leading to the working face thereof, a toothed segment mounted so as to be partially revoluble and means for giving same a semi-rotary movement, the feed-wheel running in said guideway, a gear secured to said feed-wheel on the same axis therewith, a swinging lever mounted on said axis and spring-pressed in the direction of elevation, an intermediate gear carried on the end of said lever so as to mesh with said segment when said lever is depressed, means for depressing it, a spring pressed lever so mounted as to engage the said swinging lever when same is depressed and hold same depressed against the action of the spring and having an extension to near the segment, and an abutment on the lower end of said segment adapted to contact with said extension of said spring pressed lever and disengage same from the swinging lever.

20. An anvil and a reciprocable piston thereover, a guideway in said piston leading to the working face thereof, a toothed segment mounted on said piston, means for causing a semi-rotary movement to said segment, a feed wheel mounted so that its periphery runs in said stripway; a gear mounted on the axis of and connected to said feed wheel, a swinging lever also mounted on said axis carrying on one end an intermediate gear meshing with the aforesaid gear and on its other end a block having an inclined working face and a stop thereon, an arm adjustably secured on said axis, a lever pivoted to said arm carrying a block of a form correlative to the aforesaid block, a second block thereon adapted to engage the teeth of the feed wheel gear, studs on each of said levers and a spring secured to each, all combined, arranged and operating substantially as and for the purpose specified.

21. An anvil and a piston reciprocably mounted thereover, both having correlative working faces, a guide-way in said piston, a recess in the bottom thereof, a spring plate seated over said recess, and a wheel dentated on its periphery to engage the strip and pivoted in such a position that the strip will be directly interposed between said wheel and spring plate when it is in the guide-way, and means for causing rotary motion of said wheel, substantially as and for the purpose specified.

527,575. REDUCING PRESSURE VALVE AND REGULATOR. EDGAR J. WOOD, Brooklyn, N. Y. Filed Feb. 13, 1894. Serial No. 500,065. (No model.)



*Claim.*—1. In combination, a casing, a main valve for controlling the passage of a fluid under pressure from a supply to the point where it is to be utilized, an auxiliary valve seated in a chamber in communication with the space back of the main valve, a flexible diaphragm for transmitting motion to the auxiliary valve, a passageway leading from the high pressure chamber in which the auxiliary valve moves, passageways leading from the opposite or low pressure side of the main valve, one to the said auxiliary valve chamber and one to the diaphragm chamber, the movement of the auxiliary valve in one direction serving to open the high pressure passageway and close the low pressure passageway and the movement of the valve in the opposite direction serving to close the high pressure passageway and open the low pressure passageway, substantially as set forth.

2. In combination, a casing, a main valve for controlling the transmission of a fluid under pressure, an auxiliary valve provided with a port extending through from its face to its back and seated in a chamber in communication with the back of the main valve, a flexible diaphragm for transmitting motion to the auxiliary valve, independent passageways leading from the low pressure side of the main valve along the wall of the casing, the one to the diaphragm chamber and the other to the auxiliary valve chamber, a third passageway leading from the high pressure side of the main valve along the wall of the valve casing to the said auxiliary valve chamber, the movement of the auxiliary valve in one direction serving to open the high pressure passageway and close the low pressure passageway and its movement in the opposite direction serving to open the low pressure passageway and close the high pressure passageway, substantially as set forth.

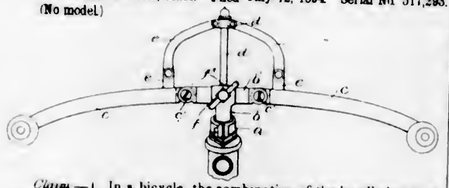
3. The valve casing, provided with a diaphragm chamber, an auxiliary valve chamber, a main valve chamber, a partition provided with an opening for the passage of a fluid under pressure, passageways connecting the interior of the casing upon one side of the partition with the auxiliary valve chamber and with the diaphragm

chamber, the diaphragm chamber having a second opening through its wall independent of the aforesaid passageway, means for opening and closing either of said passageways, an opening leading to the diaphragm chamber at pleasure, and a passageway leading from the opposite side of the said partition to the auxiliary valve chamber, in combination with the main valve, the auxiliary valve, the diaphragm and the actuating springs, substantially as set forth.

4. The combination with the valve casing provided with a partition having an opening for the transmission of fluid under pressure and further provided with a hollow neck, of a head piece provided with an auxiliary valve chamber and adapted to form a closure for the end of the said neck, a cap piece fitted to the top of said head piece, a flexible diaphragm secured between the cap and head pieces, an auxiliary valve seated in the said chamber in the head piece and having its stem connected with the flexible diaphragm, a traveling nut located within the cap piece, a spring interposed between the said nut and the diaphragm, a main valve seated within the hollow neck, a spring inserted between the said valve and head piece, passageways leading from the opposite sides of the partition to the auxiliary valve chamber and a passageway leading from one side of said partition to the diaphragm chamber, substantially as set forth.

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**527,576. ADJUSTABLE HANDLE FOR BICYCLES.** EDWARD C. WOODARD, Brockton, Mass. Filed July 12, 1894. Serial No. 517,293. (No model.)



*Claim.*—1. In a bicycle, the combination of the handle-bar post, handle-bars pivotally connected to said post and each adapted to swing downwardly to an inoperative position beside the frame of the machine, and to be adjusted upwardly from said position to variously elevated operative positions, movable equalizing connections between said handle-bars, whereby said bars are caused to maintain corresponding positions, and a fastening device co-operating with said connections whereby the handle-bars may be positively secured in any operative position to which they may be adjusted.

2. In a bicycle, the combination of a hollow handle-bar post, handle-bars pivoted thereto so as to move in a vertical plane, a slide fitted to the post, and equalizing links connecting said slide with the handle-bars.

3. In a bicycle, the combination of a hollow handle-bar post, handle-bars pivoted thereto to move in a vertical plane, a rod fitted to slide in the post, equalizing links connecting said rod and the handle-bars, and a set-screw in the post arranged to bear against the rod.

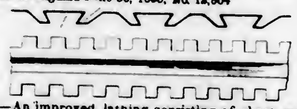
4. In a bicycle, the combination of a hollow handle-bar post, handle-bars pivoted thereto to move in a vertical plane, a rod fitted to slide in the post, equalizing links connecting said rod and the handle-bars, and a set-screw in the post arranged to bear against the rod, and having a triangular head.

5. In a bicycle, the combination of a handle-bar post, handle-bars pivoted to move in a vertical plane, equalizing connections between the bars, and a lock for fixing the bars to the post in their folded adjustment.

6. In a bicycle, the combination of a hollow handle-bar post, handle-bars pivoted thereto to move in a vertical plane, a rod fitted to slide in the post, equalizing links connecting said rod and the handle-bars, and a lock for fastening the sliding rod and the post together.

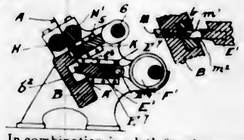
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**527,577. METALLIC LATHING.** ARTHUR O. WRIGHT, Birmingham, England. Filed Oct. 7, 1893. Serial No. 487,534. (No model.) Patented in England June 30, 1893, No. 12,804.



*Claim.*—An improved lathing consisting of sheet metal or like material having the metal extending back and inclining from the surface of the lath in opposite directions, forming oppositely inclined grooves on the face of the lath and having the dovetailed grooves on the back formed by the oppositely inclined ribs, the said oppositely inclined grooves making a clinch for the plaster on the front while the dovetailed grooves make a clinch for the plaster on the back, substantially as described.

**527,578. MACHINE FOR MAKING METAL LATHS.** ARTHUR O. WRIGHT, Birmingham, England. Filed Oct. 21, 1893. Serial No. 488,807. (No model.) Patented in England Apr. 13, 1893, No. 7,563, and June 30, 1893, No. 12,804.



*Claim.*—1. In combination in a lath forming machine, the bolster having an inclined recess, the plunger arranged to press the metal therein and the discharge plunger for forcing the lath out of the recess, said plungers operating at an inclination to the surface of the bolster, substantially as described.

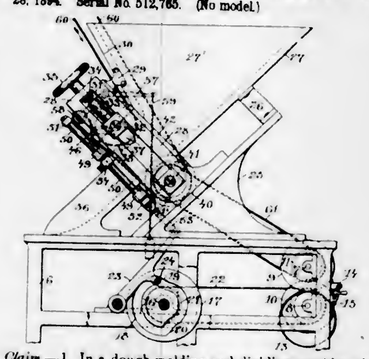
2. In combination in a lath forming machine, the bolster having the point $b'$ and the inclined recesses on each side of the same and the split plunger having pivoted parts $p'$ $p^3$ arranged to enter the inclined recesses on opposite sides of the point, said point being arranged to separate the pivoted parts and deflect them laterally into the inclined recesses substantially as described.

3. In combination in a lath forming machine, the bolster having the point $b'$ and the movable parts $b^3$ $b^4$ arranged to form with said point inclined recesses, and the plunger comprising the two parts arranged to enter the two inclined recesses formed in the bolster substantially as described.

4. In combination the bolster having the inclined recesses and the point $b'$ and the plunger comprising the two parts $p'$ $p^3$ pivotally supported and arranged to be spread apart upon contact with the point $b'$ and the spring connected to extensions $p^4$ of the pivoted parts for returning them to normal closed position, substantially as described.

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**527,579. DOUGH MOLDING AND DIVIDING MACHINE.** JOHN H. ALTHANS and JOHANNES RUCKSTINAT, Providence, R. I. Filed May 28, 1894. Serial No. 512,765. (No model.)



*Claim.*—1. In a dough molding and dividing machine, the combination with a hopper, of a bottom roll transversely journaled in fixed bearings at the lower portion of the hopper, a driving-pulley for said roll, adjustable bearings above said bottom roll, a top-roll transversely journaled in said adjustable bearings and furnished with a driving-pulley, side-plates at the ends of the rolls for closing the space between the same, extension arms secured to the adjustable bearings, arms pivoted to said extensions and depending therefrom, a transverse jaw secured to these pivoted arms and fitting against the top-roll, a belt take-up mechanism pivotally supported on the machine, and a driving-belt passing under the pulley of the top roll, over the belt take-up and under the pulley of the bottom roll, as described.

2. The combination with the frame 6, the brackets 25—25 mounted thereon, the arms 26—26 and the side-frames 28—28 secured thereto, the hopper 27' secured to the arms 26 and to the side-frames, the shaft 39 journaled in fixed bearings at the lower portions of the side-frames, the roller 40 and the pulleys 41—41' on said shaft, the bearing-blocks 32—32 movable in the side-frames and having the sockets 33, the screws 34 extending through the upper ends of the side-frames and engaged in said sockets, the shaft 39 journaled in the bearing-blocks, the pulley 38 and roller 37 mounted on said shaft, means for rotating the shafts 36 and 39 in opposite directions, and the side-plates 42—42 for closing the space between the rollers, of a chute having the rigid bottom 43, the jaw 44 adjustable in the upper portion of the chute, the arms 45—45 for supporting said jaw, the extensions 46—46, from the bearing-blocks 32, to which these

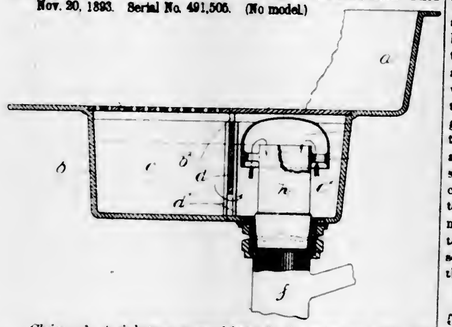


arms are pivoted, and a dividing mechanism located before said chute, as described.

3. The combination with the side-frames 28, the guides 49—49 extending therefrom, the side-rods 50—50 reciprocal in the guides, the cross-bars 51 and 52 connecting the upper and lower ends of the side-rods, the connecting-rod 53 pivoted to the cross-bar 52, the clamps 54—54 adjustable on the side-rods 50, and a wire stretched between said clamps, of the pivotally-supported lever 23 pivoted to the lower end of the connecting-rod 53 and furnished with the roller-bearing 24, the shaft 16 journaled in bearings and furnished with the pulley 21, the cam-plate 17 having the cam-groove 18, consisting of an outer and an inner dwell connected by the inclined passages 19 and 20, in which the roller-bearing 24 is engaged, and means connected with the pulley 21 for regulating the speed of the same, as described.

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**527,580. GREASE-TRAP.** JAMES BARRETT, Boston, Mass. Filed Nov. 20, 1893. Serial No. 491,506. (No model.)



*Claim.*—1. A sink-trap, comprising a basin under the sink and divided by a vertical partition which terminates above the bottom of the basin, a removable cover over said basin and provided with perforations in that part which covers the basin on one side only of the partition, an outlet-pipe on the opposite side of the partition, and a standpipe rising from said outlet-pipe and carrying a hood which covers its upper end and overhangs the same the lower end of said standpipe fitting into and removable from the upper end of said outlet pipe, substantially as described.

2. A trap, comprising in its construction a suitable receptacle having a removable partition in its upper part, and a standpipe fitting removably therein on one side of the partition and rising nearly to the top of the receptacle and having a hood over its upper open end and depending below said upper end, for the purpose described.

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**527,581. MICROMETER-SCALE.** JOHN D. BENSON, Brooklyn, N. Y. Filed Dec. 27, 1892. Serial No. 456,330. (No model.)

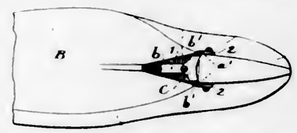


*Claim.*—1. As an improved article of manufacture, a micrometer scale for obtaining exact measurements from a level surface in units of the selected system and fractional parts of such units, said scale having one of its edges perfectly straight or level and perpendicular to a vertical line when laid down horizontally and the other or opposite edge inclined to the straight edge in a fixed proportion, the scale being supplied with a main series of transverse graduations representing divisions of a given unit in proportion to the inclination of the inclined edge, and a secondary series of intermediate graduations representing fractional parts thereof, the various graduation lines being at uniform distances apart in their respective series, and representing different fixed distances or lengths between the straight and inclined edges of the scale, the measurements being ascertained by applying the scale edgewise between the points the distance between which it is desired to obtain, and reading the nearest main graduation and the nearest secondary graduation with relation to the main graduation, substantially as described.

2. A micrometer scale for obtaining exact measurements from a level surface in units of the selected system and fractional parts of such units, said scale having one of its edges perfectly straight or level and perpendicular to a vertical line when laid down horizontally, and the other or opposite edge inclined to the straight edge in a fixed proportion, the scale being supplied with a main series of transverse graduations representing divisions of a given unit in proportion to the inclination of the inclined edge, and a secondary series of intermediate graduations representing fractional parts thereof, the various graduation lines being at uniform distances apart in their respective series, and representing different fixed distances or lengths between the straight and inclined edges of the scale, the measurements being ascertained by applying the scale edgewise between the points the distance between which it is desired to obtain, and reading the nearest main graduation and the nearest secondary graduation with relation to the main graduation, opposite sides of the scale having main and secondary graduation lines representing various parts or fractions of the selected unit of measurement, substantially as described.

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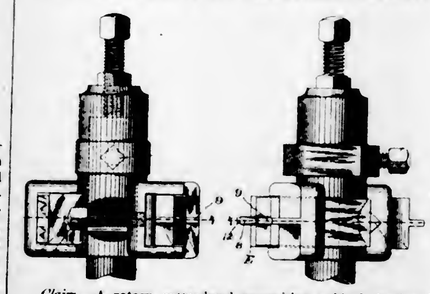
**527,582. LAST-BLOCK FASTENER.** FRANCIS E. BENTON, Stoughton, Mass. Filed Mar. 23, 1894. Serial No. 504,794. (No model.)



*Claim.*—The combination with a last, of a bifurcated spring C having the arm 1 rigidly attached to the instep block and the bifurcated spring straddling the corners $a'$ $b'$ of both the blocks A B, the tension of the springs being toward each other, as shown and described.

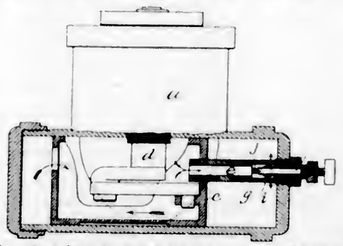
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**527,583. CUTTER-HEAD FOR WOODWORKING-MACHINES.** ELBRIDGE G. BLANEY, Jr., Swampscott, assignor to Albert H. Breed, Lynn, Mass. Filed Dec. 9, 1893. Serial No. 493,224. (No model.)



*Claim.*—A rotary cutter-head comprising a block having its outer face finished to receive a knife, and of greater width than the knife whereby to provide for adjustment of the knife in the direction of the width of the latter, the block extending outward in front of the cutting edge of the knife and having a curved end constituting a chip-breaker, a knife applied to the said outer face of the block, a yoke-shaped clamp extending around the block and knife and having a face which supports the knife close to the beveled end thereof, and a screw passing through the yoke and serving to clamp the knife in place, substantially as described.

**527,584. DOOR CHECK OR CLOSER.** EUGENE I. BLOUNT, Gardner, Mass., assignor to the Blount Manufacturing Company, Portland, Me. Filed Dec. 27, 1893. Serial No. 494,867. (No model.)

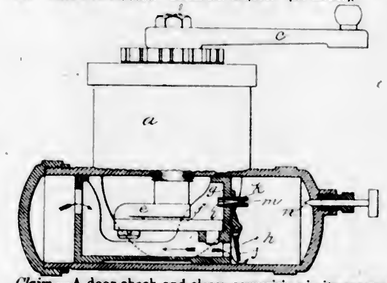


*Claim.*—1. A door check and closer comprising a liquid cylinder, a piston therein, a tube or passage-way affixed to the cylinder and communicating between the front and rear of the piston, said tube having an internal valve-seat, and a valve movable in the tube toward and from said seat and adapted to be separated from the seat and permit an unobstructed outward flow of liquid through the tube when the door is opening and to be closed on said seat to restrict the inward flow of the liquid when the door is closing.

2. A door check and closer comprising a liquid cylinder, a piston therein, a tube or passage-way affixed to the cylinder and communicating between the front and rear of the piston, said tube having an internal valve-seat, a stem or guide in said tube, and an annular valve adapted to slide on said stem toward and from the valve-seat, said valve being adapted to be separated from the seat and permit an unobstructed outward flow of liquid through the tube when the door is opening and to be closed on said seat and at the same time co-operate with the stem in restricting the inward flow of the liquid when the door is closing.

3. A door check and closer comprising a liquid cylinder, a piston therein, a tube or passage-way affixed to the cylinder and communicating between the front and rear of the piston, said tube having an internal valve-seat, an adjustable stem or guide in said tube, an annular valve movable on the stem and adapted to be separated from the seat and permit an unobstructed outward flow of liquid through the tube when the door is opening and to co-operate with said stem in restricting the inward flow of liquid through said tube when the door is closing, and means for adjusting said rod or stem to vary the restriction of the inward flow.

**527,585. DOOR CHECK OR CLOSER.** EUGENE I. BLOUNT, Gardner, Mass., assignor to the Blount Manufacturing Company, Portland, Me. Filed Dec. 27, 1893. Serial No. 494,868. (No model.)

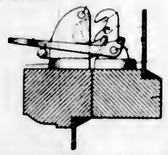


*Claim.*—A door-check and closer comprising in its construction a reciprocating piston, an independent adjustable slotted screw valve in the piston, an independent rotary and longitudinally movable pin or rod supported in the head of the casing and packed to prevent leakage, said pin or rod having a sharpened end for engaging the slot of the screw-valve in order to adjust the same, the construction and arrangement being such that the pin may be moved entirely out of the way and out of engagement with the piston when not needed for use.

**527,586. SASH-FASTENER.** EUGENE I. BLOUNT, Gardner, assignor to the Blount Manufacturing Company, Boston, Mass. Filed June 14, 1894. Serial No. 514,497. (No model.)

*Claim.*—1. A sash fastener comprising in its construction a standard attachable to the upper sash, a bracket or support attachable to the lower sash and provided with a vertically swinging catch adapted to automatically engage said standard, and a vertically swinging locking lever pivoted to the standard side of the fastener and adapted to swing across said catch, as set forth.

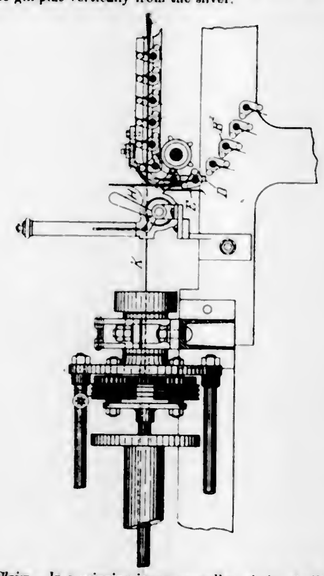
2. A sash fastener comprising in its construction a member composed of a notched standard attachable to the upper sash and a locking lever pivoted thereto, and a member attachable to the lower sash and provided with a movable catch adapted to engage said standard, and with an eccentric bearing adapted to co-operate with the said locking lever, as set forth.



3. A sash fastener comprising in its construction a notched standard adapted to be attached to the upper sash, and an open locking lever pivoted to said standard, and having resilient sides formed to co-operate with the standard in holding the lever in a raised position, and a bracket or support adapted to be attached to the lower sash and formed to co-operate with said lever in pressing the meeting rails together, as set forth.

**527,587. SPINNING-JENNY.** BENJAMIN BODELL, Auburn, N. Y. Filed Feb. 8, 1894. Serial No. 499,431. (No model.)

*Brief.*—The invention resides in the spring-guide E for withdrawing the gill-pins vertically from the sliver.



*Claim.*—In a spinning jenny an endless chain of gill bars carrying gill pins, means for driving said chain, chain rails provided with slides, toes carried by said gill bars and adapted to move along said slides, a spring guide at the end of said rail, projections carried by said toes and adapted to engage said spring guide whereby the said gill pins are perpendicularly withdrawn from the plane of the chain rail, substantially as described.

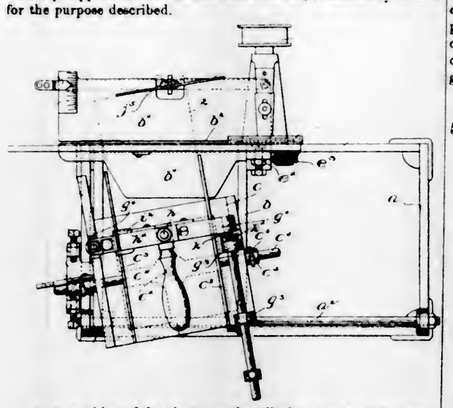
**527,588. GORE-CUTTING MACHINE.** ALBERT G. BREWER, Hopkinton, Mass. Filed Jan. 30, 1894. Serial No. 498,435. (No model.)

*Claim.*—1. A machine of the character described comprising in its construction a stationarily located cutter, a work-supporting carriage arranged to slide longitudinally thereof, and a swiveled work-guide on said carriage.

2. A machine of the character described, comprising in its construction a traveling work-supporting bed, a presser-foot carried thereby, a handle which controls the said supporting bed and the presser-foot, and a stationarily supported cutter.

3. A machine of the character described, comprising in its construction a slide-way, a carriage thereon having a work-supporting bed with a slot extending in the direction of the carriage's movement on its slide-way, a work-guide swiveled on said carriage, and a stationarily supported cutter in line with the slot, substantially as and for the purpose described.





4. A machine of the character described, comprising in its construction a swiveled work-guide, a sliding carrier thereon, and an awl or awls carried by a vertically movable holder on said carrier, said holder having a suitable handle.

5. A machine of the character described, comprising in its construction a supporting table, a swiveled work-guide, a stop-plate freely pivoted to an adjustable support, and cutting devices, substantially as described.

6. A machine of the character described, comprising in its construction a supporting table, a cutter arranged to cut on a fixed line of said table, a pivoted arm adjustable toward and from the cutting line of the table, a bearing adjustable in a slot of said arm, a stop-plate pivoted in said bearing and standing above the table, and a swiveled work-guide.

**527,589. DEVICE FOR TRADESMEN'S USE.** THEODORE L. BRISTOL, Ansonia, Conn. Filed Jan. 5, 1894. Serial No. 495,811. (No model.)

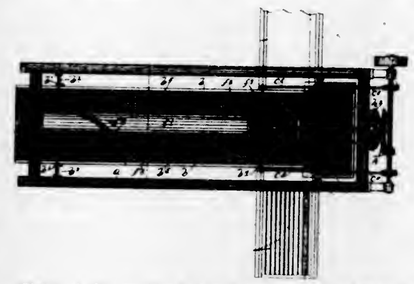


*Claim.*—1. In a device for tradesmen's use, the combination with a box having a fixed top constructed with a series of slots, of a compartment drawer located within the box, containing compartments corresponding to the said slots, and adapted to be drawn out for access to the compartments, and a sliding guard mounted in the box and interposed between its fixed slotted top and the compartment drawer, containing openings corresponding to the slots and compartments, but normally located out of line with the slots so as to interrupt communication between them, and adapted to be drawn out to establish direct communication through its openings between the said slots and compartments, substantially as described.

2. In a device for tradesmen's use, the combination with a box having a fixed top or cover constructed with a series of slots, of a compartment drawer located within the box containing a series of compartments corresponding to the slots, and adapted to be drawn out for access to its compartments, a sliding guard mounted in the box interposed between the fixed slotted top thereof and the said compartment drawer, and having openings formed in it to correspond with the slots and compartments, but normally located out of line with the former, and adapted to be drawn out to establish direct communication between the slots and compartments through its openings, an electric circuit including a bell, a double circuit-closer secured to the sliding guard and contact plates arranged within the box so that the circuit is closed when the guard is drawn outward, and also when it is moved inward, and broken between its said movements, substantially as described.

3. In a device for tradesmen's use, the combination with a box having a fixed top constructed with a series of slots, of a compartment drawer located within the box, containing compartments corresponding to the slots, adapted to be drawn out for access to its compartments, a sliding guard mounted in the box interposed between the fixed top thereof and the said compartment drawer, and containing openings corresponding to the slots and compartments, but normally located out of line with the slots, and adapted to be drawn out to establish direct communication through its openings between the slots and compartments, a money drawer located below the compartment drawer, an electric circuit including a bell, circuit closing devices applied to the sliding guard and to the money drawer respectively, and contact plates arranged within the box for engagement by the said circuit closers, so that the bell will be rung twice every time either the guard or the money drawer is operated, substantially as set forth.

**527,590. MACHINE FOR SCOURING OR CLEANING CANDIES.** GABRIEL CARLSON, Minneapolis, Minn. Filed Mar. 16, 1894. Serial No. 503,855. (No model.)



*Claim.*—1. In a machine for scouring or cleaning candies &c., the combination with a concave sieve, of one or more pairs of scouring brushes arranged, one member of each pair below and the other above the sieve, with their bristles working through the sieve and intercurrent with each other, whereby, under the action of gravity, the candies will seek the lowest traverse line of the sieve, and be subjected over and over again, to the scouring action of said brushes, substantially as described.

2. In a machine, for scouring or cleaning candies &c., the combination with a concave sieve, of one or more pairs of scouring brushes extending lengthwise of said sieve, one member of each pair below and the other above the sieve, with their bristles working through the sieve and intercurrent with each other, substantially as and for the purposes set forth.

3. In a machine, for scouring or cleaning candies &c., the combination with a concave sieve, of one or more pairs of scouring brushes extending lengthwise of the sieve, one from below and the other from above, with the bristles working through the sieve and intercurrent with each other, the upper member of which pair of brushes having its bristles in spiral arrangement, for propelling the candies lengthwise of the sieve, substantially as described.

4. In a machine, for scouring candies &c., the combination with a longitudinal shaking sieve, of one or more pairs of brushes extending lengthwise of the sieve, one member of each pair below and the other above the sieve, with their bristles working through the sieve and intercurrent with each other, substantially as and for the purpose set forth.

5. In a machine, for scouring or cleaning candies &c., the combination with a sieve of one or more pairs of rotary scouring brushes extending lengthwise of the sieve, one member of each pair below and the other above the sieve, with their bristles working through the sieve and intercurrent with each other, and the upper member of which brushes has its bristles in spiral arrangement, for propelling the candies lengthwise of the sieve, substantially as described.

6. In a machine, for scouring candies &c. the combination with a longitudinally shaking sieve, of one or more pairs of rotary brushes extending lengthwise of the sieves, one member of each pair below and the other above the sieve, with their bristles working through the sieve and intercurrent with each other, and the upper member of which brushes has its bristles in spiral arrangement, for propelling the candies lengthwise of the sieve, substantially as described.

7. In a machine, for scouring or cleaning candies &c., the combination with a longitudinally shaking concave sieve, of one or more pairs of scouring brushes extending lengthwise of the sieve, one below and the other above the same, with their bristles working through the sieve and intercurrent with each other, the upper member of which brushes has its bristles in spiral arrangement for propelling the candies, lengthwise of the sieve, substantially as described.

8. In a machine for cleaning or scouring candies &c., the combination with a sieve surface over which the candies are moved, of means for imparting a longitudinally reciprocating motion to said sieve, and a brush working transversely on the upper surface of said sieve, and fixed against reciprocating motion with the sieve, substantially as described.

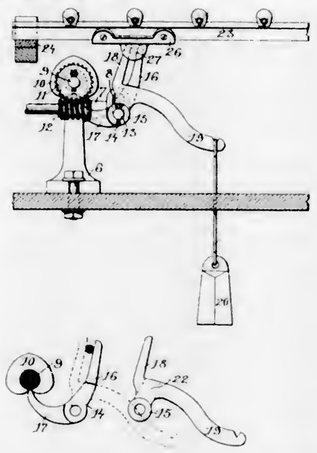
9. In a machine for scouring or cleaning candles &c., the combination with a sieve which is concave in cross section, of a brush extending longitudinally in the trough of said sieve, and having a transverse sweeping action over the same, said brush being pivoted eccentric to and swinging on a radius less than the radius of the concave of said sieve, substantially as and for the purpose set forth.

10. The combination with the hopper $k$ of the sieve $b^3$ of angular or two-way sloping form in cross section, receiving, centrally, from said hopper, of the sieve $b^4$, of concave form in cross section, receiving from said sieve $b^3$, and a rotary brush operating with a transverse sweeping action on said sieve $b^4$, substantially as and for the purposes set forth.

11. The combination with the main frame $a$, of the hopper $k$, the longitudinally shaking sieve frame $b$, provided with the sieves $b^3$, $b^4$ and $b^5$ $b^6$, as described, the tray runway crosswise of said frame, below the sieve and having its ends extended beyond the frame, the upper rotary brush with the parts $f$ $f^*$ $f^3$ $f^4$ and $f^5$, as described, and the under rotary brush with the parts $g$ $g'$ $g^3$, as described, and means for imparting the shaking motion to said sieve frame and the rotary motion to said brushes, all arranged and operating substantially as and for the purposes set forth.

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**527,591. MECHANISM FOR ACTUATING ROVING-RODS OF SPINNING-MACHINES.** GEORGE E. CHANDLER, Fall River, Mass., assignor to Ezra Dixon, Bristol, R. I. Filed Mar. 8, 1894. Serial No. 502,795. (No model.)



*Claim.*—1. In a spinning or similar machine, the combination with the traverse-rod, and a pin secured thereto, of a pair of jaws formed of independent levers having upwardly-extending arms journaled on a common shaft, each of said levers having a laterally-extending member, a weight secured to one of said members, and mechanism for depressing the other members at intervals.

2. The combination, in a spinning or other machine, with the bracket 6 provided with the arm 7 having the slot 8, the pin or shaft 13 secured in said slot, the member 14 having the arm 16 and finger 17 pivoted on said pin, the member 15 having the arm 18 and the lever 19 also pivoted on the pin 13, and means for alternately depressing the finger 17 and the lever 19, of the traverse-rod 23 mounted in supports provided with guides, and the pin 27 secured to the traverse-rod and adapted to be grasped between the arms 16 and 18, as described.

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**527,592. WRENCH.** JAMES M. COCHRAN, Jackson, Tenn. Filed June 11, 1894. Serial No. 514,201. (No model.)

*Claim.*—A wrench having its jaws pivoted together a perpendicular protrusion on each jaw having notches, and a transverse enlargement on each jaw extending from the end of the jaw to about the beginning of the perpendicular protrusion; a link adapted to surround the jaws and work in the notches of the protrusions; said transverse enlargements adapted to prevent the link from slipping from the jaw; an arch spring located between the jaws, said spring having a bifurcated end with curved points, said bifurcation adapted to fit around the pivot lug on one jaw and the end of the other jaw adapted to bear against said curved points, as set forth.

**527,592.**



**527,593. TRAVELING-GRATE FURNACE.** ECKLEY B. COXE, Drifton, Pa. Filed Aug. 8, 1894. Serial No. 519,720. (No model.)



*Claim.*—1. In a grate for furnaces of the class specified, two adjacent grate-sections progressively stepped from end to end at adjacent sides thereof to form a continuous air-space between grate-sections of varying relative areas at successive points in the length thereof, substantially as described and for the purpose set forth.

2. In a grate for furnaces of the class specified, two adjacent grate-sections having their adjacent sides progressively stepped in relative opposition from end to end to form a continuous air-space between said grate-sections of varying relative areas at successive points in the length thereof, substantially as described and for the purpose set forth.

3. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of a series of grate-sections supported for reciprocatory movement and having their adjacent sides progressively stepped from end to end to form a continuous air-space between every two adjacent sections, means for supplying air through said air-spaces, and means for reciprocating said grate-sections, substantially as described and for the purpose set forth.

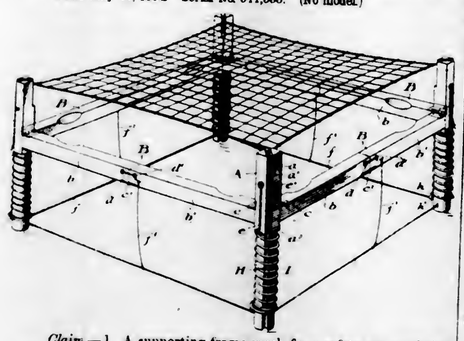
4. The herein-described grate-section for grates for furnaces of the class specified, it consisting of an oblong bar having one or both sides thereof inwardly stepped progressively from both ends toward the center to form fuel-supporting portions of varying areas at successive points in the length of said bar and to form a continuous air-space or shouldered recess each side of said bar within the extreme side lines of said bar, substantially as described and for the purpose set forth.

5. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an air-supply chamber supported in said furnace-chamber and having rollers at opposite ends thereof, a series of longitudinally-reciprocating grate-sections supported upon said rollers and having air-spaces intermediate thereto of varying areas at successive points in the length thereof, and grate-section-actuating mechanism in connection with, and adapted for imparting a relatively slow advancing movement to, certain of said grate-sections, and a relatively rapid retractive movement to others of said sections, substantially as described and for the purpose set forth.



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**527,594. SAFETY-NET.** JOSEPH P. DROMGOOLE, Philadelphia, Pa. Filed May 17, 1894. Serial No. 511,535. (No model.)



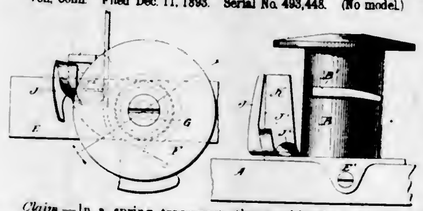
*Claim.*—1. A supporting frame work for a safety net consisting of uprights, slats formed of sections hingedly connected together and to the uprights, ropes uniting adjacent uprights to each other, and guy ropes extending from said ropes to the folding slats,—substantially as set forth.

2. A frame work for a safety net embodying uprights, springs encircling said uprights, anchors mounted upon said uprights and provided with arms adapted to bear against the lower extremities of said springs, a safety net, and ropes leading from said safety net to said anchors,—substantially as set forth.

3. In combination with an upright for a supporting frame for a safety net, grooves formed in the opposite faces of said upright, an anchor the body of which is mounted in one of said grooves, and which is provided with an arm having a projection engaged in the other of said grooves, a spiral spring surrounding said upright, and means for connecting said anchor to a safety net,—substantially as set forth.

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**527,595. SPRING TRACE-POST.** BERNARD D. DRUEN, New Haven, Conn. Filed Dec. 11, 1893. Serial No. 493,448. (No model.)



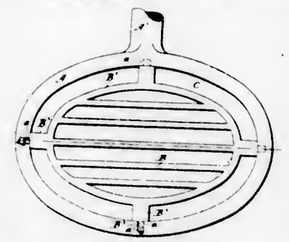
*Claim.*—In a spring trace-post, the combination with a stud adapted at its lower end to be attached to the whiffletree, and having an annular shoulder located at its lower end; of a sleeve open at both ends, provided with an outwardly projecting trace-hook, surrounding the said stud, and fitting at its lower end over the shoulder located at the lower end thereof; a cap, larger in diameter than the diameter of the sleeve, secured to the upper end of the stud and provided with a shoulder, fitting within the upper end of the sleeve and forming a bearing therefor; a spring interposed between the stud and sleeve, and secured at its upper end to the sleeve and at its lower end to the shoulder, located at the lower end of the stud; an abutment post, arranged to limit the rotation of the sleeve, and a cushion to coact with the said abutment substantially as described

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**527,596. COACH-STEP.** BERNARD D. DRUEN, New Haven, Conn. Filed Feb. 5, 1894. Serial No. 499,080. (No model.)

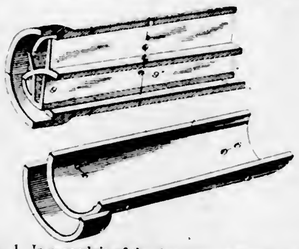
*Claim.*—1. In a coach-step, the combination with a wrought-metal frame, of a cast-metal grate, comprising grate bars, a rim in which the ends of the bars terminate, and radial arms projecting outward from the rim and adapted at their ends to be permanently secured to the wrought-metal frame, whereby a uniform space is formed between the inner periphery of the frame and the outer periphery of the rim, and whereby also the upper face of the grate is flush with the upper edge of the frame, substantially as set forth.

2. In a coach step, the combination with an oval wrought-metal frame, of a cast-metal grate, having the same oval form as the frame but enough smaller than the same to form a space between the grate and frame when the former is in position within the latter, the said grate comprising parallel bars varying in length, a rim in which the ends of the bars terminate, and radial arms projecting outward from the rim and adapted at their ends to be permanently secured to the frame, with the upper edge of which the upper face of the grate is flush, substantially as set forth.



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**527,597. UNDERGROUND CONDUIT.** JOSEPH R. EDWARDS, Toronto, Ohio. Filed June 7, 1894. Serial No. 513,822. (No model.)



*Claim.*—1. In a conduit of the character set forth, the combination with the outer pipe sections, of inner superposed wire supporting racks having upwardly projecting flanges, the said racks and pipe sections being provided with openings for the purpose of making the connection with the wires, substantially as and for the purposes specified.

2. In a conduit of the character set forth, the combination of outer pipe sections, one of which has interior longitudinally disposed ribs, a lower rack having its edges engaging said ribs and flanges projecting from the upper side thereof, said rack being of concavo-convex form and having its concaved side upperinost, and an upper concavo-convex rack with its convex side uppermost, flanges or partitions projecting upward from said convex side, all of the said parts having suitable openings for the purpose of making the connections, substantially as and for the purposes specified.

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**527,598. POCKET-STOVE OR PORTABLE WARMER.** JONATHAN T. ELLIS, Newark, N. J. Filed Dec. 18, 1893. Serial No. 493,955. (No model.)



*Claim.*—1. The improved warmer, comprising an outer casing having upper and lower openings, the latter being smaller than the other to provide a bearing for the body, a body and cover, seated in said casing and held therein by spring catches, said body consisting of a perforated piece having an interior fire chamber and air chamber separated by a wire gauze partition and a fuel support, substantially as set forth.

2. The combination with a body and cover having air perforations protected by gauze, of a central pin having inclined sides secured within the chamber formed by said body and cover, on which may be imposed or impaled a disk of compressed fuel having a central perforation to receive said pin, the walls of said perforation engaging the inclines of the pin and the said fuel being thus held away from the walls of the fire-chamber both at the bottom, sides and top, substantially as set forth.

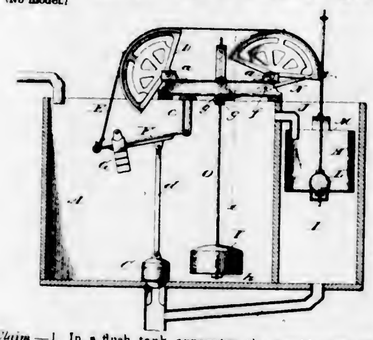
3. The combination with the body $a$, and cover $b$, and annular partition, $k$, of gauze, the flanged fire chamber bottom $h$, the flanged air chamber cover $o$, and the fire chamber cover, $i$, fastened to the cover, $b$, all arranged and combined substantially as and for the purposes set forth.

4. The improved pocket stove comprising a body and its cover, a wire gauze partition forming a central air chamber and an outer cooling chamber and an outer casing of perforated and concavo-convex and annular metal formed of one piece and a spring or springs for holding said parts in position in said casing, substantially as set forth.

5. The improved pocket stove, comprising a body and its cover, a wire partition within said body forming a fire chamber and a cooling chamber and an annular casing forming another outside cooling chamber, said casing being of one piece and having a side hole or perforation in which the body may enter and be seated and means for holding said body within said hole, substantially as set forth.

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**527,599.** AUTOMATIC FLUSH-TANK. WILLIAM W. ENSIGN, Cincinnati, Ohio, assignor to the Peck-Williamson Heating and Ventilating Company, same place. Filed June 2, 1894. Serial No. 513,303. (No model.)



*Claim.*—1. In a flush tank apparatus, the combination of the flushing tank with a constant source of water supply, a weighted valve therein controlling the exit opening, a suspended bucket to receive the overflow of the tank, a connection between said weighted valve and bucket, a valve in the bucket, a float in the flush tank and connections between said float and bucket valve, whereby when the bucket is filled it will open the flush tank valve, and whereby when the flush tank is empty the float will open the bucket valve, substantially as described.

2. In a flush tank apparatus, the combination of the flushing tank with a constant source of water supply, a valve therein controlling the exit opening, a weighted lever connected to said valve, a suspended bucket to receive the overflow of the tank, a connection between said lever and bucket, a valve in the bucket, a float in the flush tank, and connections between said float and bucket valve, whereby when the bucket is filled it will open the flush tank valve, and whereby when the flush tank is empty the float will open the bucket valve, substantially as described.

3. In a flush tank apparatus, the combination of the tank A with adjacent compartment I, the pipe B leading from the tank A, the pipe Q leading from compartment I to pipe B, the pivoted segments D D' connected by chain or cord E, the weighted lever F connected to one end of said chain and carrying valve C for pipe B, the bucket H in compartment I connected to the opposite end of the chain, the valve L in the bucket H carried by rod M, the lever N engaging said rod at one end and a second rod O in tank A at its opposite end, a float P free to slide on the rod O, and overflow J, substantially as and for the purpose described.

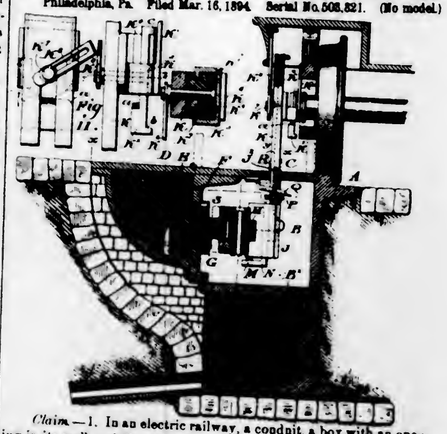
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**527,600.** DOOR-LOCK-MARKING GAGE. FRANK K. ETHERINGTON, Cambridge, Mass. Filed Nov. 20, 1893. Serial No. 491,419. (No model.)



*Claim.*—A door marking device comprising in its construction a plate or frame to bear on one side of the door, a gage-strip adjustably secured to said frame and having a lip formed to bear on the edge of the door, a gage adjustable in a slot of said strip to determine the upper end of the mark when the device is applied on one side of the door, and a gage adjustable in a slot of the lip to determine the upper end of the mark when the device is applied on the other side of the door.

**527,601.** CONDUIT ELECTRIC RAILWAY. OLIVER B. FISH, Philadelphia, Pa. Filed Mar. 16, 1894. Serial No. 503,821. (No model.)



*Claim.*—1. In an electric railway, a conduit, a box with an opening in its wall, a sliding stem in said opening having a roller thereon, an insulated wire in said box having an arm rigidly connected therewith, said arm having a hooked end adapted to be engaged by a tongue, on said stem, and a spring bearing against said stem, said parts being combined substantially as described.

2. In an electric railway, a shoe freely connected with a hanger of a car and movable therewith, a buffer for said shoe, a base on said hanger, and a roller which is mounted on the said base and bearing on the shoe, said parts being combined substantially as described.

3. In an electric railway, a feed wire and an arm connected therewith in combination with a stem and a shoe on a car for moving said stem in contact with said arm, said wire turning in a torsional manner so as to restore said arm to its normal position, substantially as described.

4. In an electric railway, the roller H and the stem G carrying the same, in combination with the arm E' on the feed wire E, said arm having a hook thereon for engagement with said stem, substantially as described.

5. In an electric railway, a box adapted to contain the circuit forming mechanism, mounted on bearings, whereby it may be turned upwardly, substantially as described.

6. In an electric railway, the box D having the feed wire passing through the same, the pipes D' supported on the sides of said box and receiving said wire, and a coupling $D^{\times}$ connecting said box with said pipes, permitting the upward rotation of said box, substantially as described.

7. In an electric railway, a hanger having a pivoted lower portion, a shoe having yielding connection with said lower portion and having flaring ends provided with faces having insulating material thereon, substantially as described.

8. In an electric railway, a feed wire, a movable arm connected therewith and adapted to impart torsion thereto, a sliding stem adapted to contact with said arm, and means on a car for operating said stem, the parts named being combined substantially as described.

9. In an electric railway, a hanger connected with a car, a shoe attached to said hanger, an insulated joint on said hanger, and a deflector on the hanger above said joint, substantially as described.

10. In an electric railway, a hanger having a jointed lower portion with a base, a shoe connected with said portion and a roller between said shoe and base, said parts being combined substantially as described.

11. In an electric railway, the hanger K, the grooved block $K^4$, the sleeve $K^5$ and the supplemental hanger $K^6$, which carries said sleeve, the parts being combined substantially as described.

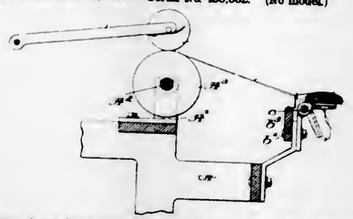
12. In an electric railway, the hanger K, the block $K^4$, the sleeve $K^5$, the supplemental hanger which carries said sleeve, and the shouldered filling piece $K^{\times}$ intermediate of said block and hanger, substantially as described.

13. In an electric railway, a hanger for a shoe, having a grooved block connected with the back thereof, a supplemental hanger with a sleeve embracing said block, and a filling piece with inclined shoulders above its outer end, and stops on its ends, said parts being combined substantially as described.

14. In an electric railway, a hanger with a slot therein, a block connected with said hanger, by a bolt passing through said slot, a link connected with said bolt, and ropes connected with limbs of said hanger and link, said parts being combined substantially as described.



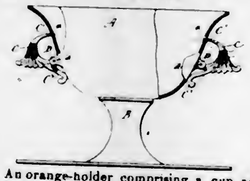
**527,602.** MACHINE FOR WINDING THREAD. JOHN W. FOSTER, Westfield, Mass., assignor to the Foster Machine Company, same place. Filed Dec. 16, 1892. Serial No. 455,332. (No model.)



*Claim.*—A tension device for drum winding frames, the same consisting of a rail or bar having a rounded friction surface, supports, bar-carrying arms and adjusting devices to adjustably pivot or connect the said bar-carrying arms with the supports *b*, whereby, by adjusting the arms, the surface of the bar may be put and held in position to enable the bar to exert more or less friction and tension on the threads being wound, substantially as described.

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**527,603.** ORANGE-HOLDER. GEORGE A. GLAHN, Wallingford Conn., assignor to Simpson, Hall, Miller & Co., same place. Filed Feb 17, 1894. Serial No. 500,534. (No model.)

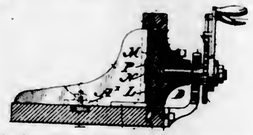


*Claim.*—1. An orange-holder comprising a cup adapted to receive an orange, and furnished with one or more pivotal fingers constructed to be projected into the cup through openings formed therein to enter the orange and prevent the same from rotation, substantially as described.

2. In an orange holder, the combination with a cup adapted to receive an orange, constructed near its upper edge with an opening, and provided upon its outer face with a lug, of a handle pivoted in the said lug, and constructed at its upper end with an inwardly projecting finger arranged in line with the opening in the cup, and at its lower end with a stop, substantially as set forth, and whereby when the handle is turned inward on its pivot, its finger will be projected through the said opening into the interior of the cup and into the orange therein which it will hold against rotation.

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**527,604.** CUTTER OR TRIMMER FOR WOOD, LEATHER, &c. JOHN A. HESS, Philadelphia, Pa. Filed Jan 8, 1894. Serial No. 496,067. (No model.)



*Claim.*—1. A cutter or trimmer for the purpose named, consisting of a base having on its front a rack, a bar connected with standards on said base, a traveler horizontally movable and guided in recesses in said base and bar, a rotary shaft mounted in said traveler, and carrying a pinion meshing with said rack, an adjustable head secured on said shaft within a recess in said traveler, a cutter secured to said head, said parts being combined substantially as described.

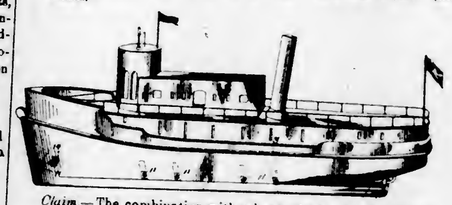
2. A cutter or trimmer for the purpose named, consisting of a base, a horizontal rack secured to the front of said base, a bar secured by standards to said base, a traveler having a tongue in a recess in said bar, a shaft mounted in said traveler and having a pinion thereon meshing with said rack, a head on said shaft within a recess in said traveler, a securing screw and washer for said head, adjusting screws in said traveler for said head, and a handle loosely mounted on the shaft and having a spring controlled pawl adapted to engage a ratchet wheel on said shaft, said parts being combined substantially as described.

3. A cutter for the purpose named, consisting of a base with a rack, a traveler guided on said base, a shaft mounted in said traveler and carrying a pinion meshing with said rack, an adjustable head with a cutter connected with said shaft, a gage adjustably secured to said base, and a handle with spring pawl engaging a gear wheel on said shaft, said parts being combined substantially as described.

4. A cutter for the purpose named, consisting of the bed A having thereon the horizontal rack B, and formed with the recess F, the standard J on said bed, the cross bar H connecting said standards, having the recess G therein, the sliding traveler E guided in said recesses G and F, a shaft mounted in said traveler, a pinion C mounted on said shaft and meshing with said rack, the head L connected with said shaft within the recessed rear face of said traveler, and a blade connected with said head, said parts being combined substantially as described.

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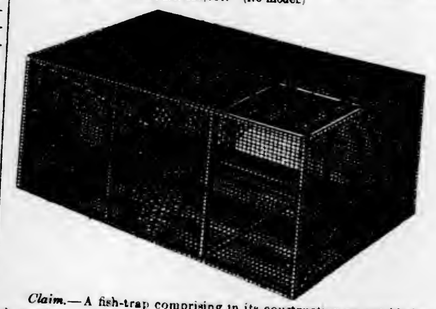
**527,605.** MEANS FOR PROPELLING BOATS. PATTILLO HIGGINS, Beaumont, Tex. Filed Oct. 5, 1893. Serial No. 487,221. (No model.)



*Claim.*—The combination with a boat, of a head fastened to the counter thereof, and tapering from front and rear to bring it about on a level with the bottom of the boat, the rear end of the head being concaved and provided with a cap, a pipe connected with an air reservoir and terminating opposite the said concaved end of the head substantially as described for the purpose set forth.

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**527,606.** FISH-TRAP. ROBERT J. HODGE, Boston, Mass. Filed Dec. 2, 1893. Serial No. 492,611. (No model.)



*Claim.*—A fish-trap comprising in its construction an outside inclosure having a vertically-extending inlet opening, and a horizontal passage-way extending across the interior of said outside inclosure from the inlet-opening therein to the opposite side of the inclosure which closes that end of the passage-way,—the said passage-way having an opening in its under side providing communication between the passage-way and the outside inclosure.

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**527,607.** VELOCIPEDE. THOMAS E. JEFFERY, Chicago, Ill. Filed Mar. 28, 1892. Serial No. 426,649. (No model.)

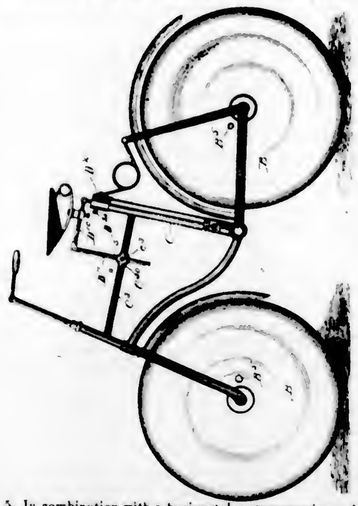
*Claim.*—1. In a velocipede, a tubular arm of the frame adapted to serve as the cylinder of an air pump, in combination with a piston therein and a piston rod extending therefrom, and means for connecting an air duct thereto: substantially as set forth.

2. In a velocipede, in combination with a tubular portion of the frame, a piston and piston rod adapted to be reciprocated therein, and an air outlet valve attached to said tubular frame: substantially as set forth.

3. In a velocipede, in combination with a tubular portion of the frame adapted to serve as the cylinder of an air pump, a piston therein, and a seat support having a rod extending longitudinally into such tubular arm of the frame and secured to the piston, whereby the said seat-supporting arm serves as the piston rod for the pump: substantially as set forth.

4. In combination with a velocipede frame having a tubular portion adapted to serve as a cylinder for the pump, the piston therein and the piston rod extending therefrom; a seat support vertically ad-

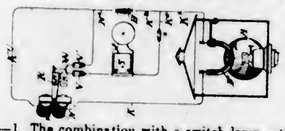
justable in the frame and connected to the upper end of said piston rod, whereby it is further supported: substantially as set forth.



5. In combination with a horizontal seat-supporting rod or arm, the seat adjustable fore and-aft on such arm, and two supports for the arm in line fore-and-aft, each of said supports being independently adjustable vertically on the frame: substantially as set forth.

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**527,608. LIGHT-INDICATOR.** LOUIS F. JOHNSON, Poughkeepsie, N. Y. Filed Apr. 7, 1894. Serial No. 506,760. (No model.)



*Claim.*—1. The combination with a switch lamp, a thermostatic circuit controller supported in proximity thereto, a battery and a magnet in electrical connection with said circuit controller, of a signal arm carried by the armature of said magnet, a normally open shunt around said circuit closer and magnet adapted to be closed by the release of said armature, and an audible signal included in said shunt, substantially as shown and described.

2. The combination with a switch lamp and thermostatic circuit controller supported in proximity thereto with a battery and magnet in connection therewith, of an armature for said magnet mounted to swing on an axis parallel with the axis of said magnet, a signal arm carried by said armature, a normally open shunt around said circuit controller and magnet, an audible signal included in said shunt, and a circuit closer in said shunt adapted to be actuated by the release of said armature, substantially as shown and described.

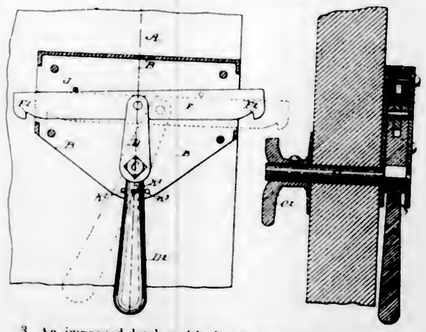
3. The combination with a switch lamp, a thermostatic circuit controller F and a battery H and magnet N in connection with said circuit controller, of an armature O mounted on a spindle *o*, an arm fixed to said spindle, a shunt around said circuit controller and magnet, mercury cups at the terminals of said shunt, a bridge carried by said signal arm and adapted to descend into said cups, and a bell S in said shunt, substantially as shown and described.

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**527,609. SLIDING-DOOR LOCK.** WILLIAM E. JOHNSON, Coon Rapids, Iowa. Filed Mar. 16, 1894. Serial No. 503,959. (No model.)

*Claim.*—1. An improved latch for sliding doors, comprising a suitable frame adapted to be secured to a sliding door, a shaft extended through said frame and door, a knob on its outer end, a lever fixed to said rock shaft with its inner end projecting below the latch frame, a latch having a hook formed on its forward end extended horizontally through the device and pivotally attached to the upper end of said lever some distance above its pivotal point, a rod extended transversely through the frame of the device above the rear end of the latch for the purposes stated and a device secured to a stationary upright and adapted to be engaged by said latch substantially as and for the purposes stated.

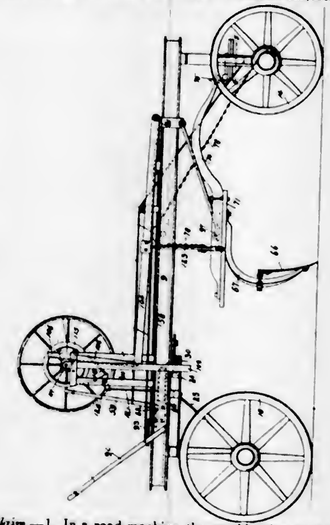
2. An improved latch and lock for sliding doors comprising a suitable frame adapted to be secured to a sliding door, a shaft extended through said frame and door, a knob on the outer end, a lever fixed to said rock shaft with its inner end projecting below the latch frame, a latch having a hook formed on its forward end extended horizontally through the device and pivotally attached to the upper end of said lever some distance above its pivotal point, a rod extended transversely through the frame of the device above the rear end of the latch for the purposes stated, and a device secured to a stationary upright adapted to be engaged by said latch and a bolt or rod adapted to be passed through the frame and the handle of said lever when the latch is in engagement with the said device secured to the stationary upright, to lock the doors, substantially as set forth



3. An improved latch and lock for sliding doors, comprising a suitable frame adapted to be secured to a sliding door, a shaft extended through said frame and door a knob on its outer end, a lever fixed to said rock shaft with its inner end projecting below the frame, a latch having a hook formed on both of its ends extended horizontally through the device and pivotally attached to the upper end of said lever some distance above the pivotal point, a guide adapted to be extended through the frame directly above either end of the latch for the purposes stated and a bolt adapted to be passed through the frame and said lever when locked with either end of the latch projection and a device adapted to be engaged by said latch, substantially as and for the purposes stated.

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**527,610. ROAD-MACHINE.** JAMES F. KIMBALL, Marlaville, Me., assignor to the Western Wheeled Scraper Company, Aurora, Ill. Filed May 19, 1893. Renewed Sept. 4, 1894. Serial No. 522,036. (No model.)



*Claim.*—1. In a road machine, the combination with a carriage body, and front and rear axles therefor, of two clutch sections mounted on one of said axles, and one of which is movable into and out of engagement with the other, a scraper-blade arranged under the carriage body, supported from a part thereof and adjustable to varying angles relative to the line of draft, devices connecting one of the said clutch sections with the scraper blade support, means for engaging the clutch sections for bodily lifting the scraper support and blade by the rotation of the axle, and means for adjusting the scraper-blade to varying angles relative to the line of draft, substantially as described.

2. In a road machine, the combination with a carriage body, and front and rear axles therefor, of two clutch sections mounted on one of said axles, and one of which is movable into and out of engagement with the other, a scraper supporting frame arranged under the carriage body and movable vertically, a scraper-blade carried by said scraper-supporting frame, devices connecting one of said clutch sections with the scraper-supporting frame, and means for engaging the clutch sections for bodily lifting the scraper frame and blade by the rotation of the axle, substantially as described.

3. In a road machine, the combination with a carriage body, and front and rear axles therefor, of two clutch sections mounted on one of said axles, and one of which is movable into and out of engagement with the other, a scraper-supporting frame arranged beneath the carriage and pivotally connected at its front end with a part thereof to swing in a vertical plane under said carriage, a transverse scraper blade carried by the rear end of the scraper supporting frame and moving vertically therewith, and means for engaging the clutch sections for bodily lifting the scraper-supporting frame and blade under the carriage body by the rotation of the axle, substantially as described.

4. In a road machine, the combination with a carriage having front and rear axles, of two clutch sections mounted on one of the axles, one clutch section being rigidly attached to the axle and the other loose thereupon and movable into and out of engagement with the rigidly attached section, a scraper-blade, devices connecting the loose and movable clutch section with the scraper-blade, means for moving the loose and movable clutch section into engagement with the rigidly attached clutch section for lifting the scraper-blade, and automatically operating mechanism for disengaging the clutch sections when the scraper-blade is raised to the desired height, substantially as described.

5. In a road machine, the combination with a body, and front and rear axles, of clutch section 49 mounted upon and keyed to said front axle, clutch section 51 movable into engagement with said clutch section 49 and loosely mounted upon said axle, spring 52, bell-crank lever 56, devices connecting said bell-crank lever with said clutch section 51, whereby by the operation of said lever said clutch section 51 will be moved into engagement with said clutch section 49, connecting device 58, lever 59 connected thereto, whereby by operating said lever said clutch sections may be thrown into engagement with each other, a scraper blade, and devices connecting said scraper blade to said clutch section 51, whereby by the rotation of said clutch section said scraper blade may be lifted, substantially as described.

6. In a road machine, the combination with a carriage body mounted on wheels, of a frame surmounting the carriage body and movable bodily in a transverse direction thereupon, a scraper blade suspended from the said transversely movable frame, and lever mechanism for bodily shifting said frame in a transverse direction upon the carriage body, substantially as described.

7. In a road machine, the combination with a body, and front and rear axles, of a clutch section 49 mounted upon and keyed to said front axle, a clutch section 51 movable into engagement with said clutch section 49 and loosely mounted upon said axle, spring 52, bell-crank lever 56, devices connecting said bell crank lever with said clutch section 51, whereby by the operation of said lever said clutch section 51 will be moved into engagement with said clutch section 49, connecting device 58, lever 59 connected thereto, whereby by operating said lever 59 said clutch sections may be thrown into engagement with each other, a scraper blade, devices connecting said scraper blade to said clutch section 51, whereby by the rotation of said clutch section said scraper blade may be lifted, and a brake for said lifting devices, substantially as described.

8. In a road machine, the combination with a carriage, and a transversely movable frame 80, of a scraper blade, bars 104—105 connected at their forward ends to said frame 80 and projecting rearward therefrom at opposite sides of the machine, means for raising and depressing the rear ends of said bars, a scraper blade suspended from said bars, and means for shifting said frame 80 laterally, substantially as described.

9. In a road machine, the combination with a carriage, and a transversely movable frame 80, of bars 104—105 connected at their forward ends to said frame and extending rearwardly therefrom, rack bars 106—107 connected to said bars 104—105, pinions intermeshing with said rack bars, means for rotating said pinions to elevate or depress said rack bars, a scraper blade, bars 123—124 supporting said scraper blade from said bars 104—105, and means for shifting said frame 80 transversely, substantially as described.

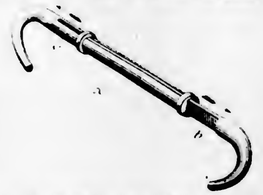
10. In a road machine, the combination with a carriage, and a transversely movable frame 80, said frame having a rack 85, of a bell-crank-lever 86, bar 88 connecting said lever with said frame 80, a lever 90, connecting rod 89, locking dog 91, lever 93, rod 94 connecting said lever 93 with said dog 91, bars 104—105, means for elevating or depressing the rear ends of said bars, a scraper blade, and supporting bars 123—124 supporting said plate, substantially as described.

11. In a road machine, the combination with a body, and front and rear axles therefor, of clutch sections carried by one of said axles, one of said clutch sections being keyed on said axle, a scraper blade, devices connecting the loosely mounted clutch section to said scraper blade, means for moving said clutch sections into and out of engagement with each other, whereby said scraper blade may be lifted by the rotation of said front axle, a cam, and a pin movable into engagement with said cam when the scraper blade reaches its highest position, whereby said clutch sections will then be thrown out of engagement with each other, substantially as described.

12. In a road machine, the combination with a body and front and rear axles therefor, of clutch sections carried by one of the axles, one clutch section being rigidly attached to the axle and the other loose and movable thereupon, a scraper-blade, a chain connected with the scraper-blade and attached to and winding upon the loose and movable clutch section, means for moving the clutch sections into engagement with each other for lifting the scraper-blade by the rotation of the axle, and devices for automatically disengaging the clutch sections when the scraper-blade reaches its highest position, substantially as described.

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**527,611. EYEGLASSES.** HENRY R KIRSTEIN, Rochester, N. Y. Filed Dec. 24, 1892. Serial No. 456,206. (No model.)



*Claim.*—1. As an article of manufacture, a pair of spectacles or eye glasses equipped with a pair of bridge side bars, one slide pin projecting horizontally from one of said side bars, two slide pins projecting horizontally from the other of said side bars, said slide pins having matched side faces, yokes by which said slide pins are mounted in sliding engagement with each other, and a spring adapted to draw the lenses together, substantially as set forth.

2. As an article of manufacture, a pair of eye glasses or spectacles, bridge side bars, one slide pin projecting from one side bar, two slide pins projecting from the other side bar, said slide pins being of such cross-section as to fit snugly together to form a cylindric or other bar, yokes mounted upon said slide pins, and a spring, substantially as set forth.

3. As an article of manufacture, a pair of eye glasses or spectacles provided with bridge side bars, a slide pin formed as an integral continuation of one side bar, two slide pins formed as integral continuations of the other of said side bars, said slide pins being of such cross-section as to fit snugly together laterally, yokes by which said slide pins are mounted free for sliding engagement with each other, and a spring tending to draw the lenses together, substantially as set forth.

4. As an article of manufacture, a pair of spectacles or eye glasses, bridge side bars extending upwardly from the clamp posts or other convenient portion of the glasses, one of said bridge side bar having a horizontal extension, of circular outline in cross-section, embodying, to form it into two slide pins, a central longitudinal slot, the other of said bridge side bars having a horizontal extension shaped to fit snugly within the said slot, yokes mounted upon the extremities of the respective pins, and a spiral spring surrounding said pins and bearing against their respective yokes, substantially as set forth.

5. As an article of manufacture, a pair of spectacles or eye glasses, bridge side bars extending upwardly from the clamp posts or other convenient portion of the glasses, one of said bridge side bars having an integral horizontal extension of circular outline in cross-section, embodying, to form it into two slide pins, a central longitudinal slot, the other of said bridge side bars having an integral extension shaped to snugly fit within the said slot, yokes mounted upon the extremities of the respective pins, and a spiral spring surrounding said pins, and bearing against their respective yokes, substantially as set forth.

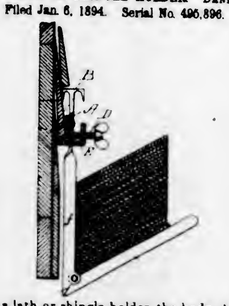
527,612. EYEGLASSES OR SPECTACLES. HENRY H KIRSTEIN, Rochester, N. Y. Filed Oct. 13, 1893. Serial No. 488,050. (No model.)



*Claim.*—1. In a bridge spring consisting of side bars, slide pins, yokes, and a spring,—a nut mounted upon and in threaded relationship with respect to one of the slide pins, in such position as to be encountered by a moving part of the bridge spring in the closing movement of the latter, substantially as set forth.

2. In a bridge spring, in combination, side bars, slide pins, a spring, and a nut mounted upon and in threaded relationship with respect to one of said slide pins at a point between the side bars, substantially as set forth.

527,613. LATH OR SHINGLE HOLDER. DANIEL C. LYONS, Atlantic, Mass. Filed Jan. 6, 1894. Serial No. 496,896. (No model.)



*Claim.*—1. In a lath or shingle holder, the body, A; the pivoted arms, *f*, and pivoted arms, *h*, provided with the stop-joint, *g*, and mechanism for detachably securing said body to a support.

2. The body, A, screw, D; a clamp, E, on said screw in combination with the pivoted arms, *f*, *h*, arranged to operate substantially as specified.

3. The body, A, and the T-iron, B, secured centrally thereto in combination with the arms, *f*, pivoted to the ends of said body to swing longitudinally thereof and the arms, *h*, pivoted to the free ends of the arms, *f*, substantially as and for the purpose set forth.

527,614. STREET LETTER-BOX. JOHN A. METCALF, Chicago, Ill., assignor of one-half to Harry A. Perry, same place. Filed Jan. 8, 1894. Serial No. 496,095. (No model.)

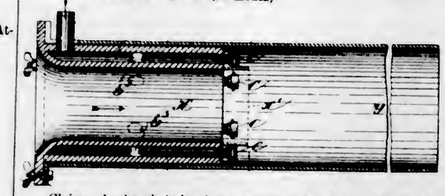


*Claim.*—1. In a letter box, the combination with the casing having an opening provided with a hinged lid, of a weighted tray normally in an open position with respect to such opening, and adapted to close the opening when turned to deposit the mail, said tray being semi-cylindric in form and weighted at the bottom and also provided with a platform entirely closing the compartments of the casing, and having a vertical extension extending from said platform, substantially as described.

2. In a letter-box, the combination with a casing or body having an opening provided with a lid and also a compartment for receiving mailable matter, of a weighted semi-cylindric tray provided with a platform extending between the sides of the box and arrested by means of stops, a vertical extension of said platform joined thereto about centrally and of such length as to permit dumping of the tray, the said tray being normally in an open position with respect to the opening at the top of the box, and adapted when turned to have its bottom brought before said opening, substantially as shown and for the purpose described.

3. In a letter-box, the combination with a casing or body provided with an opening at the top thereof which is closed by a suitable lid, a weighted tray normally closing the mail compartments of the box, the same being also provided with a platform extending through the box at the top as well as with a vertical extension joined to the platform about centrally thereof, the construction of the tray being such that when the tray is dumped the opening at the top of the box will be completely closed, while normally the position of the tray is such as to be open to receive the mail when the closing lid is raised or elevated, substantially as described.

527,615. AIR-INDUCTION APPARATUS FOR FURNACES. JONATHAN MILLS, New York, assignor of two-thirds to Everett H. Converse, Brooklyn, and Will F. Steele, New York, N. Y. Filed Mar. 15, 1894. Serial No. 503,764. (No model.)



*Claim.*—1. An air-induction apparatus for furnaces having an air-inlet *x*, of relatively restricted diameter, opening at its mouth into a passage *y*, of larger diameter than the air-inlet, an annular offset being thus formed at and laterally exterior to the mouth of the air-inlet, and steam-jet nozzles arranged at said offset about the mouth of the air-inlet and in the passage *y*, whereby an enlarged expansion chamber is formed from and beyond the point where the steam and air commingle.

2. An air-induction apparatus for furnaces, comprising a main tube having a passage *y*, an induction nozzle having an air-inlet or passage *x*, of less diameter than the passage *y* and arranged concentrically therewith, and a series of steam jets arranged within the passage *y* and around the mouth of the passage *x*, substantially as set forth.

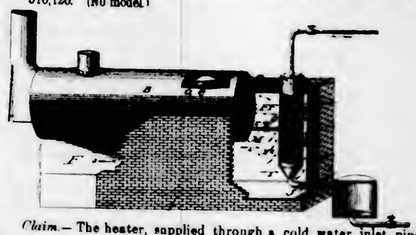
3. An air-induction apparatus for furnaces, comprising a main tube, an air-induction nozzle B, fitting into said tube and having a chamber *b* in its wall and an inlet for steam to said chamber, and a series of steam jets set in the inner end of the induction nozzle around the air-passage therethrough, substantially as set forth.

4. An air-induction apparatus for furnaces, comprising a tubular induction nozzle having an air-passage *x*, and steam jets C arranged around the mouth of said passage, and an inclosing tube about said induction nozzle, as set forth.

5. In an air-induction apparatus for furnaces, the combination with the main tube A, provided with a flange *a* at its outer end, of the induction nozzle B, adapted to fit into the tube A and having a flange *b*×, and means for detachably securing the flange *b*× to the flange *a*, whereby the ready removal of the induction nozzle is facilitated, substantially as set forth.

6. A steam-jet nozzle for an air-induction apparatus, having a cap with ajutages for the steam and a rotatable register cap to control said ajutages, substantially as set forth.

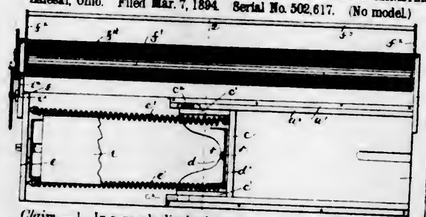
527,616. WATER-HEATER, CLEANSER, AND SCALE-PREVENTER. JOHN J. MINER, Fort Wayne, assignor of one-half to Christopher C. Miner, Columbia City, Ind. Filed May 4, 1894. Serial No. 510,120. (No model.)



*Claim.*—The heater, supplied through a cold water inlet pipe provided with a check-valve and penetrating the heater head above and outside of the fireshield and delivering cold water in the lower interior portion of said heater,—the boiler, and heater connected by the pipe N outside of and above the fireshield and by the pipe M inside of and below the fireshield and within the hot-air chamber,—the fireshield inclosing the entire heater except its upper end or head projecting through and above the fireshield,—the hot-air chamber within the fireshield and thereby inclosed with the rear end of the boiler, the open ends of the boiler flues, pipe M, and the entire heater except the head thereof,—the pipe M provided with a stop-cock and connecting the heater and boiler within said hot-air chamber or smoke space,—the pipe N provided with a stop cock and connecting the heater and boiler outside of and above the fireshield,—pipe N³ connecting at its upper end with pipe N within the heater,—the pipe N, connecting the heater and boiler above the fireshield, extending within the boiler and carrying on its inner end a skimmer converging rearwardly to the exit for sediment from the boiler to the heater through said pipe N,—the outlet pipe provided with a stop-cock and leading from the heater to the settling basin,—the settling basin provided with a blow-off pipe and the stop-cock adapted to open and close said pipe,—all constructed, combined and arranged in the manner and to effect the purposes set forth and described.



527,617. CLOTH-MEASURING MACHINE. HENRY MINISTER, Zaleski, Ohio. Filed Mar. 7, 1894. Serial No. 502,617. (No model.)

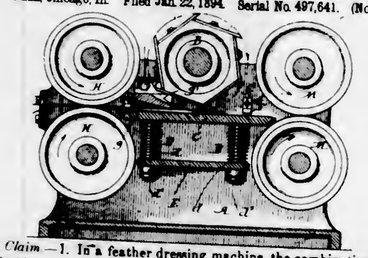


*Claim.*—1. In a goods displaying and measuring device the combination with the base and framework, an angular guide piece on each side of said base and a fixed standard rising from the base, of a traveling standard also rising therefrom, bearing wheels journaled on said traveling standard and running within said guide strips, claws or clamps journaled in said fixed and traveling standards and springs connecting said standards, substantially as and for the purpose specified.

2. In a goods displaying and measuring device the combination with a base and framework, of a fixed and a movable standard rising from said base, an adjustable connection between said standards, clamps or claws journaled on the inner faces of the standards, a roller journaled in said framework, a frame consisting of the arms $f^3$ and connecting rod $f^5$, a pressure roller $f^4$ journaled therein, a jointed connection between said roller carrying frame and the main frame of the device by means of which said pressure roller is normally in contact with said roller $f^*$, a pinion on the outer projecting end of the roller $f^*$, a gear wheel gearing with said pinion a pin projecting from said gear wheel and a registering wheel having numbered teeth with which said pin is adapted to engage at each revolution of the gear wheel substantially as specified.

527,618. WITHDRAWN.

527,619. FEATHER-DRESSING MACHINE. JAMES H. MCCONNELL, Chicago, Ill. Filed Jan. 22, 1894. Serial No. 497,641. (No model.)



*Claim.*—1. In a feather dressing machine, the combination with a suitable cutter, of a bodily yielding table opposite said cutter, means for forcing said table toward said cutter, a guide located in front of said cutter and opposite said table and provided with a groove in its face to receive the pithy portion of the feather-stem, substantially as described.

2. In a feather dressing machine the combination with a suitable cutter, of upper and lower feed rolls in front of said cutter, a yielding table with means for pressing it toward the cutter, and a guide located opposite the yielding table and intermediate the cutter and the feed rolls and having a groove to receive the pithy portion of the feather stem, substantially as described.

3. In a feather dressing machine, the combination with a suitable cutter mounted in stationary supports, of a yielding table opposite said cutter and a guide located in front of said cutter and opposite the yielding table, said guide being provided with a groove to admit the pithy portion of the feather stem, said groove having its shallowest part adjacent the cutter to determine the extent of movement of the table and the depth of cut, substantially as described.

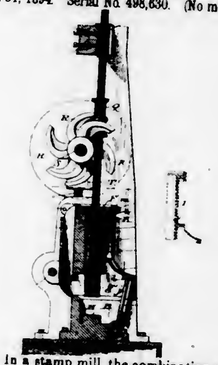
4. In a feather dressing machine, the combination with a suitable cutter for removing the pithy portion of the feather stem, of a bodily yielding table located opposite said cutter and provided with means for pressing it normally toward the same, and a guide block located in front of said cutter and provided with a groove to admit the pithy portion of the feather stem, substantially as described.

5. A feather dressing machine comprising the combination with a rotary cutter head B, of a yielding table C, the guide G, the feed rollers H, and front guide plate K having a guide groove *k*, substantially as described.

6. A feather dressing machine comprising the combination with a suitable cutter of a guide G in front of said cutter, a table or support for the feathers beneath said guide, suitable feed rolls in front of said guide F and a guide K having a groove or notch to direct the feathers, substantially as described.

7. In a feather dressing machine, the combination with a suitable cutter, of upper and lower feed rolls located in front of said cutter and a notched guide in front of said feed rolls to insure the accurate delivery of the feathers into the machine, substantially as described.

527,620. ORE STAMP-MILL. JAMES M. MCFARLAND, Colton, Cal. Filed Jan. 31, 1894. Serial No. 498,630. (No model.)



*Claim.*—1. In a stamp mill, the combination with the stamps; of a mortar having a bottom screen opening, a removable side detachably fitted in the space above said screen opening, a removable guide portion and a vertical side filling opening piercing the fixed side at one side of said upper guide portion, and means for removably locking the removable mortar side in position, substantially as set forth.

2. A mortar for stamp mills, having a lower side screen opening, an upper transverse guide portion provided with a parallel series of cylindrical stamp guides, and a removable side detachably locked in position above the screen opening and forming a section of said cylindrical guides, substantially as set forth.

3. In a stamp mill, the combination with the vertically moving stamps, of a mortar open at one side and having opposite guide grooves at the outer lower edges of the open side, an upper guide portion provided with a parallel series of cylindrical guide tubes, and rest shoulders at the opposite top edges of the open side, and a detachable mortar-side registering in the side opening of the mortar above said guide grooves and having upper shouldered ends adapted to register with said rest shoulders, and shouldered notches at the outer lower corners thereof, said notches registering with the upper extremities of the inner sides of said guide grooves, means for removably locking said mortar side in position, and the removable screen engaging said opposite guide grooves in front of the front lower edge of the mortar side, substantially as set forth.

4. In a stamp mill, the combination with the frame, of a mortar having a bottom screen opening, a removable side detachably fitted in the space above said screen opening, an upper transverse guide portion completed by said removable side and provided with a series

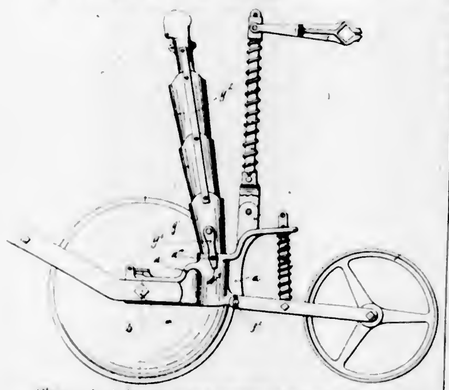
of cylindrical guide tubes, and locking grooves at the opposite top edges of the fixed and removable sides, hinged clamping bolts hinged to a fixed point of attachment and adapted to be clamped in the aligned grooves, and the cylindrical stamps guided to move in said cylindrical guide tubes, substantially as set forth.

5. In a stamp mill, the combination with the mortar; of the frame having an upper transverse guide beam provided with guide openings having vertical slots at one side, removable guide bushings fitted in said guide openings and having upper flanged ends, means for clamping the bushing tight in said opening the vertically moving stamps having stems, the upper ends of which work in said guide bushings, and means for reciprocating said stamp stems, said vertical side slots being of a width slightly greater than the diameter of said stems to admit of the removal and replacing thereof when the guide bushings are removed, substantially as set forth.

6. In a stamp mill, the combination with the frame having guide tongues at one side and the vertically reciprocating stamp stems having tappets; of vertically adjustable grooved bearing blocks mounted to slide on the guide tongues of said frame, the cam shaft having its ends journaled in said bearing blocks, and means for adjusting said sliding bearing blocks, substantially as set forth.

7. The combination of the frame having dove-tailed guide tongues at one side, the vertically reciprocating stamp stems having tappets, sliding bearing blocks arranged at opposite sides of the frame and having dove-tailed grooves engaging said tongues, and threaded sockets, vertically arranged adjusting screws having their threaded ends engaging the threaded sockets of said blocks, horizontal worm pinions mounted on said adjusting screws, a horizontal adjusting shaft mounted in the frame and having at each end worm gears engaging said pinions, and the cam shaft journaled in said bearing blocks, substantially as set forth.

527,621. **SEEDING-MACHINE.** FRANK R. PACKHAM, Springfield, Ohio, assignor to the Superior Drill Company, same place. Filed July 28, 1894. Serial No. 518,846. (No model.)



*Claim.*—1. A furrow opener consisting of a support formed integral with an angularly-arranged conduit in a substantially vertical plane, and an angularly-arranged trunnion in a substantially horizontal plane, a concave disk with its outer or convex side adjacent to said conduit, and a drag bar connected to said support by a single fastening bolt which extends through said support and said trunnion, substantially as specified.

2. The combination of a concave disk, of a support therefor having a conical angularly-arranged trunnion extending laterally from said support, and an angularly-arranged conduit adjacent to the back of said disk, a cap for said trunnion having lateral projections, a bifurcated drag bar, one fork of which is adapted to fit between said projections on said cap, and the other fork being extended between projections on the main body of said support, and a fastening bolt extending through the forked extremities of said drag bar and said trunnion, substantially as specified.

3. The combination with a single concave disk journaled on an angularly arranged trunnion, as described, and a conduit in a plane substantially at right angles to said trunnion, a conductor tube extending into said conduit, a spring catch on said conductor tube, and a projection on said tube with which said spring catch is adapted to engage, substantially as specified.

4. In a furrow opener, a support formed integral with a bearing seat for a drag bar, a laterally-extending trunnion, an angularly-arranged conduit, bearing hubs for a covering device, and projecting lugs to furnish an attachment for a lifting device, substantially as specified.

5. In a furrow opener, a support having a laterally-projecting trunnion and a vertically-arranged conduit, a lubricating chamber formed in the top of said support and having a laterally-extending passage leading therefrom and ending on the periphery of said trunnion, substantially as specified.

6. The combination with a concave disk, of a support having an integrally-formed laterally extending trunnion on one side thereof, a conduit also formed integrally with said support, said support being also provided with a bearing seat having laterally projecting flanges, and a drag bar arranged in said seat, a cap for said trunnion, and a bolt extending through said drag bar, trunnion and cap and holding the parts rigidly together, substantially as specified.

7. The combination with the support and a concave disk journaled at one side thereof, of a laterally-extending trunnion, as described, an angularly-arranged conduit adjacent to the back of said disk, perforated hubs or trunnions in the rear of said conduit, a pivoted frame on said trunnions, and a covering wheel in said frame, said covering wheel being offset in said frame so as to follow in line with said disk, substantially as specified.

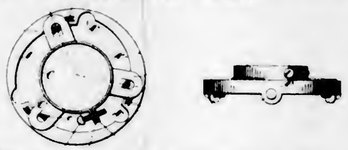
527,622. **FRUIT-GATHERER.** MICHAEL REUS, Escatawpa, Miss. Filed Dec. 19, 1893. Serial No. 494,024. (No model.)



*Claim.*—1. The combination with a receptacle having an open end and inclined extending side, of shear handles to one side of the extending side and operating at right angles thereto, cutting blades extending at right angles from one side only of the handles, one of said cutting blades being secured to and braced by the extended side, whereby such twigs as may be necessary to be removed may be cut without danger of their falling into the receptacle, and whereby the gathered fruit may be with certainty deposited into the receptacle by reason of the location of the shears at one side thereof, substantially as specified.

2. The combination with a receptacle having open upper end and an angular side prolonged beyond the open end, of a shear handle secured to the side of the receptacle at right angles to the angular side, a cutting blade extending at right angles from one side of the extremity of the handle and secured to the inclined extension of the angular side and a second handle pivoted upon the first and provided with a blade extending at right angles to its extremity and in operative relation to the first named blade, substantially as specified.

527,623. **SHADE-HOLDER FOR INCANDESCENT LAMPS.** EDGAR A. RUSSELL and NATHAN W. CRANDALL, Wallingford, Conn., assignors to the Housatonic Manufacturing Company, same place. Filed May 31, 1894. Serial No. 512,953. (No model.)



*Claim.*—1. A shade holder for incandescent electric lamps, having a shade-ring adapted to have a shade directly connected with it, and a clamping-ring made independent thereof, each ring being complete in itself, and the two rings being adapted to be connected and disconnected at pleasure without disturbing the connection of the shade and lamp to which they are respectively applied, substantially as described.

2. In a shade-holder for incandescent electric lamps, the combination with a shade-ring, of a clamping-ring provided with radial arms furnished with locking fingers which are engaged with the shade-ring for connecting the two rings together, substantially as described.

3. In a shade-holder for incandescent electric lamps, the combination with a shade-ring of a clamping-ring, one of the said rings being furnished with cams, and the other ring adapted to engage therewith for coupling the two rings together, and concentrically adjusting the clamping ring substantially as described.

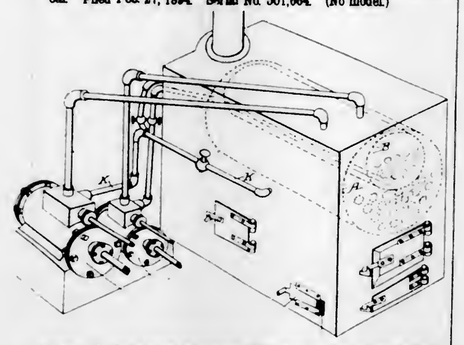
4. In a shade-holder for incandescent electric-lamps, the combination with a shade-ring having its body constructed with a large central opening, the walls of which are formed by long cams, of a clamping ring provided with radial arms having locking fingers which engage with the said cams for connecting the two rings together, substantially as described.

5. In a shade-holder for incandescent electric lamps, the combination with a shade-ring having cams which are separated from each other by clearance slots, of a clamping-ring constructed with locking fingers arranged to pass through the said slots for engagement with the said cams whereby the two rings are connected together, substantially as described.

6. In a shade-holder for incandescent electric lamps, the combination with a shade-ring adapted to have a shade connected with it, of a clamping ring adapted to be applied to the socket of an electric lamp, the two rings being made independent of each other and adapted to be coupled together by rotating one upon the other, and one being provided with stops for limiting such rotation, substantially as described.



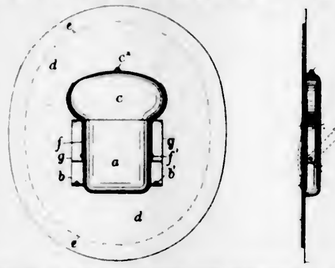
527,624. **STEAM-BOILER.** EUGENE SEYDECKER, San Francisco, assignor of four-fifths to John H. Moore and Charles F. Bailey, San Jose, Cal. Filed Feb. 27, 1894. Serial No. 501,664. (No model.)



*Claim.*—1. In a steam generator, the combination of two boilers, one inclosed within the steam space of the other, each having flues for the passage of heat, and front and rear combustion chambers with which said passages connect and a fire-place, substantially as herein described.

2. In a steam generator, the two boilers one contained within the steam space of the other, flues extending through the two boilers for the passage of heat and communicating with front and rear combustion chambers at opposite ends of the boilers, a horizontal partition situated above the line of flues of the larger boiler, whereby the heat is diverted through said flues into the front combustion chamber and thence through the upper boiler flues, and a controlling damper in said partition whereby the heat may be delivered directly to the chimney without passing through the flues, substantially as herein described.

527,625. **CIGARETTE OR MATCH CASE.** JOHN L. SOMMER, Newark, N. J. Filed Aug. 18, 1894. Serial No. 520,662. (No model.)



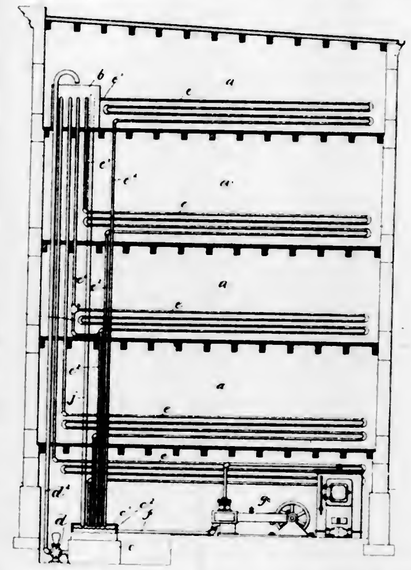
*Claim.*—1. A cigarette or match case comprising the body open at one end and provided with fastening flanges along its opposite edges formed with spring tongues as described, and a cover applied thereto and provided with projecting arms having angular extremities extended along the body of the case and pivoted to its edges contiguous to the said spring tongues, substantially as shown and described.

2. A cigarette or match case comprising the body open at one end and provided with flanges along its opposite edges formed with spring tongues as described and formed at the ends with integral prongs, and a cover applied to such body and provided with projecting arms having angular extremities extended along the body of the case and pivoted to its edges contiguous to the said spring tongues, as and for the purpose set forth.

3. The cigarette or match case adapted for application within a hat crown, consisting in the body *a* with fastening flanges *b* along its opposite edges provided with the integral spring tongues *g*, the backing *d* for the same, and the cover *c* with projecting arms *f* pivoted to the opposite edges of the body *a* contiguous to the spring tongues, as and for the purpose set forth.

4. As a new article of manufacture, a match case comprising the body *a* secured upon the backing *d* having its rear edge gummed as described in readiness for attachment to the lining of a hat within the crown, and the cover *c* pivoted to the body of the case and adapted to be shifted laterally to expose the mouth of the case, substantially as shown and described and for the purpose set forth

527,626. **HEATING AND WATER-CIRCULATING SYSTEM.** HENRY A. SPEAR, Everett, Mass. Filed Feb. 8, 1894. Serial No. 499,488. (No model.)



*Claim.*—1. A water-circulating system comprising an elevated head reservoir open to atmospheric pressure, a return water reservoir located at a lower point, a pump having connections with both reservoirs and adapted to raise water from the lower to the higher reservoir, and a series of radiating return pipes or conduits each connected with the two reservoirs, whereby they may conduct water by gravitation from the head reservoir to the return water reservoir.

2. A water-circulating system comprising an elevated head reservoir open to atmospheric pressure, a return water reservoir located at a lower point, a pump having connections with both reservoirs and adapted to raise water from the lower to the higher reservoir, a series of radiating return pipes or conduits arranged to conduct water by gravitation from the head reservoir to the return water reservoir, and means for heating the water returned by said pipes.

3. A water-circulating system comprising an elevated head reservoir open to atmospheric pressure, a return water reservoir located at a lower point, an exhaust steam pipe connecting said return water reservoir with a source of steam supply whereby the water in said reservoir may be heated, a pump having connections with both reservoirs and adapted to raise water from the lower to the higher reservoir, and a series of radiating return pipes or conduits arranged to conduct water by gravitation from the head reservoir to the return water reservoir.

4. A heating system for buildings, comprising an elevated head reservoir at the upper portion of the building, a return water reservoir at the lower portion of the building, a pump adapted to raise water from the lower to the higher reservoir, a return water conduit comprising a radiating section, an inlet section connecting one end

of the radiating section with the head reservoir, an outlet section connecting the opposite end of the radiating section with the return water reservoir, and a by-pass connecting the said inlet and outlet sections, said by pass and the receiving end of the radiating section having controlling means whereby the descending water may be caused to pass either through the radiator or through the by pass.

5. A water-circulating system comprising an elevated head reservoir; a return water reservoir located at a lower point; a pump connected with both reservoirs and adapted to raise water from the lower to the higher reservoir; and a return water conduit comprising a radiator section, an inlet section connecting the radiator with the head reservoir, and an outlet section connecting the radiator with the return water reservoir

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527,627. COMBINED LATCH AND KNOB. Charles Spengler and George Spengler, Rockford, Ill. Filed June 14, 1894. Serial No. 514,573. (No model.)



*Claim.*—1. In a device of the class described, the combination of a knob comprising a hollow casing, and a rotatable cap fitted thereon, a latch arranged at one end within the casing, and connections between the latch and the rotatable cap, substantially as specified.

2. In a device of the class described, the combination of a knob having a hollow casing, and a cap rotatably mounted thereon, a pivotal latch arranged at one end of the casing, a spring for normally holding the latch in its operative position, and connections between the latch and the rotatable cap, substantially as specified.

3. In a device of the class described, the combination of a knob having a hollow casing, and a cap rotatably mounted thereon, a pivotal latch arranged at one end within the casing, a spring for holding the latch in its operative position, and a pin carried by the cap and engaging a projection on the latch whereby motion is communicated from the cap to the latch, substantially as specified.

4. In a device of the class described, the combination of a knob having a hollow casing, and a cap rotatably mounted thereon, a pivotal latch arranged at one end in the casing and provided with a terminal projection having a perforation, and a pin carried by the cap and engaging said perforation, substantially as specified.

5. In a device of the class described, the combination of a knob having a hollow casing, and a cap rotatably mounted thereon, a bracket arranged within the casing and provided with a stud, of a latch pivotally connected to the bracket and provided with a corresponding stud, a coiled spring engaged terminally with said studs, and connections between the rotatable cap and the latch, substantially as specified.

6. In a device of the class described, the combination of a knob having a hollow casing, and a cap rotatably fitted thereon, a bracket arranged within the casing and having parallel guide-plates, a latch pivotally arranged between said guide-plates, an actuating spring interposed between the bracket and the inner arm of the latch, and connections between the rotatable cap and the latch, substantially as specified.

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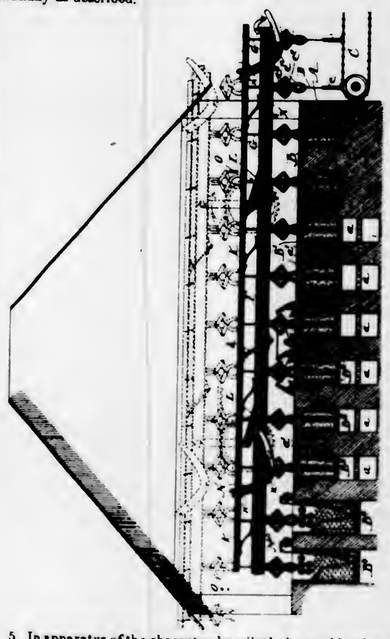
527,628. APPARATUS FOR COATING METAL PLATES. Theodore L. Thomas, Chicago, Ill. Filed Jan. 31, 1893. Serial No. 460,220. (No model.)

*Claim.*—1. In apparatus of the character described, the combination with a series of pots for containing different baths, of a series of plate holders supported above said pots containing different baths and corresponding in arrangement with said series of pots, whereby said series of plate holders may be simultaneously operated to deposit or withdraw plates into or from said pots containing different baths, and suitable mechanism for simultaneously shifting said plate holders to effect the transfer of the metal plates from the different pots into the succeeding pots of the series, substantially as described.

2. In apparatus of the character described, the combination with the plural series of pots for containing different baths, of the plural series of plate holders supported above said pots containing different baths corresponding in arrangement with said series of pots whereby said plate holders may be simultaneously operated to deposit or withdraw the plates into or from said pots and suitable mechanism for simultaneously shifting said plate holders to effect the transfer of the metal plates from the different pots into the succeeding pots in each series, substantially as described.

3. In apparatus of the character described, the combination with a series of individual pots for containing different baths, of a series of plate holders corresponding in arrangement with said series of individual pots whereby said series of plate holders may be simultaneously operated to deposit or withdraw plates into or from said pots, suitable mechanism for simultaneously shifting said plate holders and suitable mechanism for simultaneously lifting, shifting and lowering said plate holders, substantially as described.

4. In apparatus of the character described, the combination with a series of pots for containing different baths, of a series of plate holders supported above and corresponding in arrangement with said series of pots, whereby said series of plate holders may be simultaneously operated to deposit or withdraw plates into or from said pots, and suitable mechanism for shifting said holders back and forth between said pots to effect the progressive transfer of the metal plates from the different pots to the succeeding pots in the series and means for operating said plate holders to grasp and release the plates, substantially as described.



5. In apparatus of the character described, the combination with a series of individual pots for containing different baths, of a series of plate holders corresponding in arrangement with said series of pots whereby said series of plate holders may be simultaneously operated to deposit or withdraw plates into or from said pots, suitable mechanism for simultaneously shifting said holders to effect the transfer of the metal plates from the different pots to the succeeding pots of the series and mechanism for automatically opening and closing said plate holders to release and grasp the plates, substantially as described.

6. In apparatus of the character described, the combination with a series of pots for containing different baths, of a series of plate holders supported above and corresponding in arrangement with said series of pots whereby said series of plate holders may be simultaneously shifted to deposit or withdraw plates into or from said pots, a common carrier whereto said plate holders are attached and suitable mechanism for shifting said carrier to effect the transfer of the metal plates from the different pots into the succeeding pots in the series, substantially as described.

7. In apparatus of the character described, the combination with a series of equi-distant pots for containing the liquid baths, of a series of plate holders and a common carrier to which said plate holders are connected at distances apart corresponding to the distance between the pots, and mechanism for lifting, shifting and lowering said plate holders, substantially as described.

8. In apparatus of the character described, the combination with a series of pots for containing liquid baths, of a series of plate holders, a common carrier whereto said plate holders are attached, parallel cranks connected to said carrier and mechanism for operating said cranks to shift said carrier and the plate holders carried thereby, substantially as described.

9. In apparatus of the character described, the combination with a series of pots for containing different baths, of a series of plate holders corresponding in arrangement with said series of pots, each of said plate holders comprising two pivoted jaws, a carrier whereto said



plate holders are attached, mechanism for shifting said carrier back and forth between the pots and a movable releasing bar connected with the jaws of the plate holders and means for operating said releasing bar in order to open and close the jaws of the plate holders, substantially as described.

10. In apparatus of the character described, the combination with a series of pots for containing the liquid baths, of a series of plate holders corresponding in arrangement with said series of pots, each of said plate holders comprising two pivoted jaws, a common carrier whereto said plate holders are attached, a movable releasing bar, links connecting said releasing bar and the jaws of the plate holders, spring mechanism for holding said jaws normally in closed position, means for shifting said releasing bar in order to open and close the jaws of said holders and means for shifting said carrier, substantially as described.

11. In apparatus of the character described, the combination with a series of pots for containing the liquid baths, of a series of plate holders comprising pivoted jaws, a carrier beam to which said plate holders are connected, a releasing bar movably connected to said carrier beam, and connected to the jaws of said plate holders, and suitable mechanism for operating the carrier beam and shifting mechanism for automatically effecting the operation of the releasing bar, to open and close the jaws of the plate holders, substantially as described.

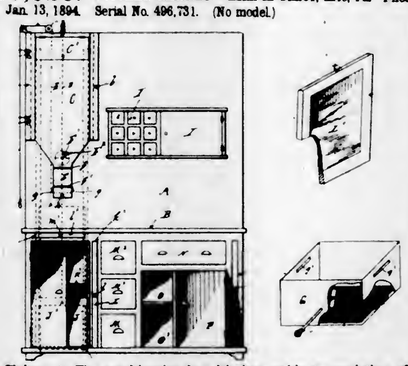
12. In apparatus of the character described, the combination with a series of pots for containing the liquid baths, of a series of plate holders comprising pivoted jaws, a carrier beam to which said plate holders are attached, a releasing bar movably connected to said carrier beam, spring mechanism for forcing said releasing bar away from said carrier beam, suitable levers and stops for shifting said releasing bar, and a latch or dog for engaging said releasing bar to hold the jaws of the plate holders in open position, and means for tripping said dog to release said releasing bar, substantially as described.

13. In apparatus of the character described, the combination with a series of pots for containing the liquid baths, of a series of plate holders and a carrier beam to which said plate holders are connected, a series of brushes located adjacent the tops of certain of said pots, and lever mechanism for simultaneously operating said brushes, substantially as described.

14. In apparatus of the character described, the combination with a series of pots for containing the liquid baths, of smoothing rolls located at the tops of the final oil pots and a series of plate holders mounted upon a common carrier, the plate holders whereby the plates are removed from the oil pots being arranged at a greater distance from the remaining plate holders, than such remaining plate holders are separate from each other, whereby the plates may be removed from the oil pots at points different from the points at which they are delivered thereto, substantially as described.

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527,629. KITCHEN-CABINET. Ezra H. Traut, Erie, Pa. Filed Jan. 13, 1894. Serial No. 496,731. (No model.)

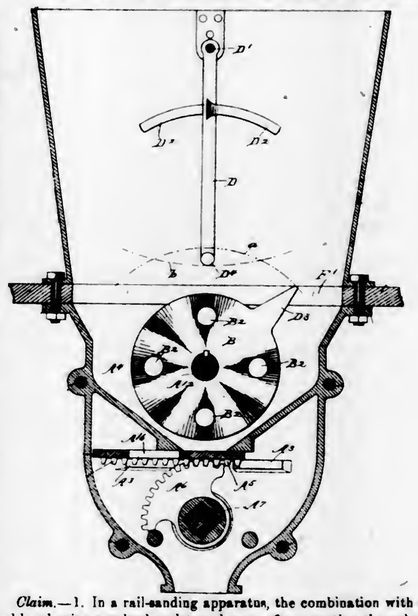


*Claim.*—1. The combination in a kitchen cabinet, consisting of a base section and an upright section, of a flour box mounted in vertical guides on the front of the upright section of the cabinet, counterbalance weights connected with said flour box and passing down behind the cabinet, a rotary flour agitator in the lower part of the flour box, a spout on the lower end of the flour box, two cut offs in said spout for measuring a given quantity of flour, and a transversely moving sifter scraper moving across a sifter removably secured to the lower end of said spout, substantially as and for the purpose set forth.

2. The combination in a kitchen cabinet, of a bread and cake cupboard in the lower part of such cabinet, a removable lining in said cupboard, gauze covered openings in one side of said removable lining, and a dampening board fitting into the cabinet adjacent to the gauze covered openings in the cupboard lining, substantially as and for the purpose set forth.

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527,630. RAIL-SANDING APPARATUS. William L. Truland, Lansingburg, N. Y. Filed May 10, 1894. Serial No. 510,732. (No model.)



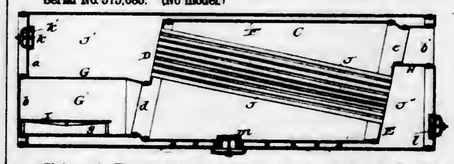
*Claim.*—1. In a rail-sanding apparatus, the combination with a sand-box having a valved outlet, and means for operating the valve, of an edgewise tapered disk rotary in the box, and having irregular surfaces on its tapered portion, and means for rotating the disk, substantially as described.

2. In a rail-sanding apparatus, the combination with a sand-box having a valved outlet, and means for operating the valve, of an edgewise-tapered disk rotary in the box, and having a plurality of apertures in the tapered part of the disk, and means for rotating the disk, substantially as described.

3. In an apparatus for sanding rails, the combination with a sand-box having a bottom-outlet, of an apertured slide for controlling such outlet, an agitator rotatably supported within the box, a common rock-shaft, gear connections between the rock-shaft and slide, and separate gear-connections between the rock-shaft and the rotary agitator, substantially as described.

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527,631. BOILER. John Vanes, Brazil, Ind. Filed June 25, 1894. Serial No. 515,683. (No model.)



*Claim.*—1. The combination with an external boiler shell, of the internal shell and flue sheets connected together and forming a combination chamber within the boiler shell, a furnace chamber situated between the front flue sheet and boiler head and having the respective ends of its shell G united to said front flue sheet and the boiler-head, a smoke exit pipe connected to the other flue sheet and boiler-head, and the straight water tubes extending through the combustion chamber and united to the flue sheets, substantially as and for the purposes described.

2. The combination with an external boiler shell, of the flue sheets and internal shell connected together and forming the combustion chamber within said boiler shell, said flue sheets being set in inclined or slanting positions and substantially parallel to each other, the fur-

nace shell fastened to one flue sheet and boiler-head and opening directly through the flue sheet into the combustion chamber, the exit pipe coupled to the other flue sheet and boiler head above the plane of the opening between the furnace shell and the front flue sheet, and the inclined straight water tubes fastened to said flue sheets, substantially as and for the purposes described.

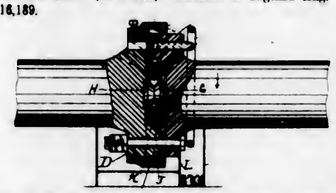
3. The combination with an external boiler shell, of the inclined flue sheets therein, the internal shell united to the flue sheets, the furnace shell united to one flue sheet and boiler head and communicating, at its rear end, directly with the combustion chamber, the exit pipe connected to the other flue sheet and boiler head on a line above the furnace shell, and the water tubes united to the two flue sheets and inclined downwardly from the front flue sheet to the rear flue sheet and arranged directly into the path of products of combustion as they emerge from the furnace chamber, substantially as and for the purposes described

4. The combination with an external boiler shell having man holes at or near the ends thereof, of the inclined flue sheets, the internal shell united to said flue sheets, the furnace shell united to the lower part of one flue sheet and boiler head and communicating directly with the combustion chamber, the exit pipe coupled to the other flue sheet and boiler shell on a line above the furnace shell, and the straight inclined water tubes fastened to the front flue sheet above the furnace shell and having their rear ends united to the rear flue sheet substantially in line with the furnace shell and below the exit pipe, substantially as and for the purposes described.

5. The combination with an external boiler shell, of the flue sheets and internal shell connected together and forming the combustion chamber, the furnace shell united to one flue sheet and boiler head and opening directly into the combustion chamber, the exit pipe coupled to the other flue sheet and boiler head on a line above the furnace shell, the hollow stay bolts between the external and internal shells, at the lower part of the boiler, and forming air inlet passages to the combustion chamber in rear of the furnace chamber, and the water tubes united to the front flue sheet above the furnace shell and coupled to the rear flue sheet below the exit pipe, substantially as and for the purposes described.

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**527,632. CONSTRUCTION OF COUPLINGS FOR SCREW-PROPELLERS.** John Verity, Bramley, England. Filed June 17, 1893. Serial No. 478,031. (No model.) Patented in England Aug. 28, 1893, No. 16,189.




*Claim.*—1. The combination of shaft sections end to end, a yielding coupling connecting the sections, and center pieces G, H, between the ends of said shaft sections to receive the end thrust.

2. The combination of shaft sections end to end, a yielding coupling connecting the sections, and consisting of flanges C, D, on the meeting ends of the sections, jaws on the adjacent faces of said flanges, adapted to engage with each other, and means at the center of the shaft sections to receive the end thrust, at the same time preventing entire engagement of the jaws, whereby the shaft sections can assume a slight angle to each other without undue strain.

3. The combination of shaft sections meeting end to end, a yielding coupling therefor, and means engaging with both sections and holding them concentric.

4. The combination of shaft sections meeting end to end, a yielding coupling therefor, and a ring J surrounding a projection K on one shaft section and engaged by suitable parts of the other section, to hold the sections concentric.

5. The combination of shaft sections A, B, flanges C, D, connecting bolts therefor, means at the center of the shaft sections to receive the end thrust, the projection K having a rounded surface, the ring J surrounding said projection and engaged by suitable parts on the other shaft section.

6. The combination of shaft sections end to end, flanges C, D, thereon, jaws E, F, on the flanges and adapted to engage each other, means at the center to receive the end thrust, and wedges P between the jaws.

7. The combination of shaft sections end to end, flanges C, D, thereon, jaws E, F, on the flanges, wedges P between the jaws, and a cam ring R adapted to hold the wedges in place.

8. The combination of shaft sections end to end, flanges C, D, thereon, jaws E, F, on the flanges and adapted to engage each other, and friction reducing pieces N between the advance or driving ahead faces of the jaws E and the reverse or driven faces of the jaws F.

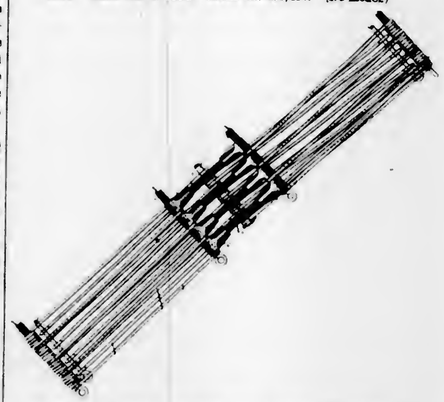
9. The combination of shaft sections end to end, a yielding coupling therefor, whereby the shafts can move out of line without undue strain, means at the center of the sections to receive the end thrust, and means for automatically introducing oil between the meeting ends of the sections.

10. The combination of shaft sections end to end, a yielding coupling therefor, and an automatic oiling device.

11. The combination of shaft sections end to end, a yielding coupling therefor, a curved tube communicating with the space between the meeting ends, and an oil receptacle into which the opposite end of said tube dips as the shaft revolves, and serving to automatically convey oil into the coupling.

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**527,633. SEAT OR CUSHION.** William Vogler, Somerville, Mass. Filed Jan. 2, 1894. Serial No. 496,417. (No model.)



*Claim.*—1. A seat or cushion composed of a series of three armed springs, each containing between its ends two spriug coils, a supporting frame for said three-armed springs comprising rods and coiled springs which are extended through said spring coils, a foot-holder to which the ends of one of the arms of said springs are connected, and connecting means between the arms of said springs, which arms constitute the top of the seat or cushion, substantially as described.

2. A seat or cushion composed of a series of three-armed springs, each containing in its bends between its ends spring coils, and a supporting frame for said three-armed springs comprising rigid rods and coiled springs which are extended through said spring coils, substantially as described.

3. A seat or cushion composed of a series of three-armed springs, each containing between its ends spring coils, and its free ends terminating in eyes, and a supporting frame for said three-armed springs comprising rigid rods and coiled springs upon which said three-armed spring are strung by passing said rods and coiled springs through the spring coils and eyes, substantially as shown and described.

4. A seat or cushion composed of a series of three-armed springs, each containing between its ends spring coils, and its free ends terminating in eyes, a supporting frame for said three-armed springs comprising rigid rods and coiled springs upon which said three-armed springs are strung by passing said rods and coiled springs through the spring coils and eyes, and connecting spring-links for the upper free ends of said three-armed springs, substantially as described

5. A seat or cushion composed of a supporting frame, comprising rods or bars, one or more of which are composed of coiled springs, a suitable foot-holder composed of a rigid rod, and a series of three-armed springs provided with coils and eyes by which they are strung upon said supporting frame and foot holder, the coiled springs of said supporting frame engagiug the uppermost coils and eyes of the three-armed springs, substantially as shown and described.

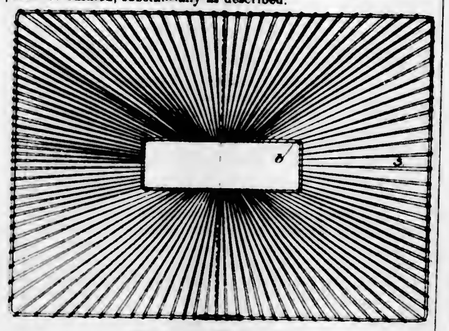
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**527,634. PILLOW OR CUSHION.** William Vogler, Somerville, Mass. Filed July 29, 1893. Renewed May 2, 1894. Serial No. 509,849. (No model.)

*Claim.*—1. A pillow or cushion composed of three frames or sections, one of which is expansible, and a series of spring wires connecting the same together, the expansible frame expanding under the action of the weight upon the pillow or cushion, substantially as described.

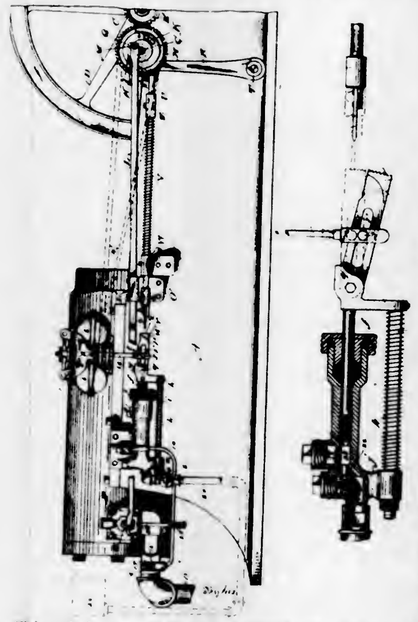


2. A pillow or cushion composed of three frames or sections one of which is expansible, and located in different horizontal planes, and a series of spring wires each connected to all of the frames, the expansible frame expanding under the action of the weight upon the pillow or cushion, substantially as described.



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**527,635. GAS-ENGINE.** Henry Voll, Springfield, Ohio, assignor to John Foos, same place. Filed Feb. 10, 1894. Serial No. 499,715. (No model.)

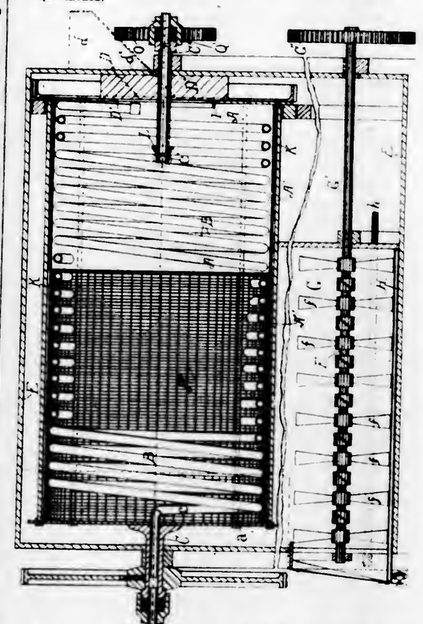


*Claim.*—1. In a gas engine, the combination with a cylinder and two valves, a supply pipe communicating with the cylinder through one of said valves and a discharge pipe communicating with the cylinder through the other of said valves, an air pipe into which the discharge pipe enters and a casing and valve permitting and cutting off communication between the air pipe and the main cylinder, a piston in the first named cylinder and a spring to force it outward, of a slotted piece pivoted to the piston, a governor whose shaft connects with said piece through said slot, and a reciprocating rod having a striking plate and actuated from the engine shaft.

2. In a gas engine, the combination with a cylinder having two valves, a supply pipe communicating with the cylinder through one of them, a discharge pipe communicating through the cylinder with the other, a piston working in the cylinder, a spring actuated rod connected with the piston, a piece pivoted to the piston and having a slot, a governor having a reciprocating shaft connected to the pivoted piece through said slot and a reciprocating rod adapted to strike the pivoted piece or not according to its position.

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**527,636. ASPHALTUM OR BITUMEN DISINTEGRATOR.** Frank Walker, San Francisco, Cal. Filed Mar. 14, 1893. Serial No. 465,919. (No model.)



*Claim.*—1. The disintegrator comprising the rotary drum provided with the interiorly arranged coil of steam pipe and having the imperforate sheet iron wall arranged at one end of such drum to retain the material to be disintegrated and having the tail end of the drum provided with peripheral openings to allow the escape of the disintegrated material; and suitable means for rotating the drum.

2. A disintegrator and mixer having an end feed and having the periphery of its drum closed at the feed end of the drum to retain therein the material to be disintegrated and having the peripheral walls at the tail portion of the machine provided with openings through which the material may fall when properly disintegrated, and having a steam heating appliance arranged within the peripheral walls of the drum and connected with axially arranged feed and exhaust pipes and having the connecting member which connects the steam heating appliance with the axial pipes at the feed end of the machine, arranged at a distance from the head of the drum sufficient to allow the material to be fed into the drum through the feed end without interfering with the rotation of such connecting member.

3. The combination of a disintegrator drum arranged to revolve and provided with the steam heating appliance and with axially arranged steam feed and exhaust pipes and with steam pipes connecting such feed and exhaust pipes with such steam heating appliance, and having one of the connecting members between one of the axially arranged steam pipes and the steam heating appliance arranged inside the drum at a sufficient distance from the feed end of the drum to allow the material to be fed into the drum at that end without interfering with such pipe; and also provided with a feed opening arranged in the head surrounding the axially arranged pipe at the feed end of the drum, and a chute arranged to discharge through such feed opening into the drum between the head thereof and the member of the steam pipe which connects between the axially arranged pipe at the feed end of the drum and the steam heating appliance.

4. The combination of a rotary disintegrator drum having a portion of its periphery provided with openings to allow the disintegrated material to fall therethrough, and a rotary conveyer arranged beneath the open portion of the periphery of the disintegrator drum to continuously mix and convey toward the tail end of the machine, the disintegrated material which falls from the openings in the peripheral walls of the drum when the machine is in operation.

5. A bitumen and asphaltum disintegrator provided with a rotary disintegrating drum having its peripheral wall at the feed end of the drum imperforate and having the tail portion of such peripheral wall provided with openings arranged to allow the disintegrated

material to pass therethrough, and a suitable steam heating appliance arranged to heat the interior of the drum.

6. A rotary bitumen disintegrator comprising a drum having one head closed and the other head provided with a feed opening and having a steam coil arranged between said heads and supported with rods; such rods, extending from one head to the other and the coil being supported and held in place by said rods; and means for supplying steam to said coil.

7. The disintegrator set forth comprising the rotary drum provided with the interiorly arranged coil of steam pipe having the imperforate sheet iron wall arranged upon the exterior of such coil at the feed end of the drum, and having the tail end of the drum provided with a screen of wire netting arranged upon the exterior of such coil of steam pipe, and suitable means for rotating the drum.

8. The bitumen and asphaltum disintegrator and mixer set forth comprising the rotary drum provided with the interiorly arranged steam pipe and having its peripheral wall at the feed end of the drum; imperforate, and having its peripheral wall at the tail end provided with openings to allow the passage of the disintegrated material therethrough; the trough arranged below the drum to catch the disintegrated material and provided at its bottom with a steam jacket; the rotary conveyer arranged in the bottom of such trough and consisting of a series of blades arranged upon a rotary shaft to mix and convey such material to the discharge end of the trough; suitable means for rotating the drum, and suitable means for operating the conveyer.

9. The bitumen and asphaltum disintegrator and mixer set forth comprising the combination of a disintegrator drum arranged to revolve and provided with the steam coil and with axially arranged steam feed and exhaust pipes and with steam pipes connecting such feed and exhaust pipes with such steam coil and having one of the members connecting the axially arranged steam pipes and the steam coil arranged inside, of the drum at a sufficient distance from one end of the drum to allow the material to be fed thereinto without interfering with such pipe, and also having a feed opening arranged at such end of the drum; the inclined trough arranged beneath the drum to catch the disintegrated material and provided at its bottom with the steam jacket; the conveyer arranged in the trough to convey the disintegrated material from the trough; suitable means for rotating the drum, and suitable means for operating the conveyer.

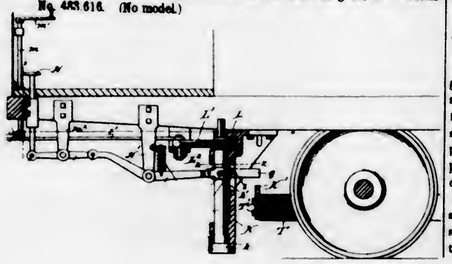
10. A disintegrator machine comprising the comoination of a drum provided in one head with a circular opening; the block fixed to the frame of the machine and arranged to close such opening and provided with the feed chute arranged to conduct the material into the drum through such opening, and the ledge or lip attached to the block arranged to extend beneath the feed chute through the circular opening to close the space between the block and the head of the drum to prevent any material from sifting between the head of the drum and the block.

11. The disintegrator and mixer set forth comprising the rotary drum having its peripheral wall provided with openings to allow the passage therethrough of the disintegrated material; the inclined trough arranged below the drum to catch the disintegrated material and provided at its bottom with a steam jacket; the rotary conveyer and mixer arranged in the bottom of such trough and provided with the blades arranged to convey the disintegrated material to the discharge end of the trough; suitable means for heating the drum; and suitable means for rotating the drum and operating the conveyer.

12. A rotary bitumen disintegrator comprising the rotary drum provided with a feed opening and with the interiorly arranged coil of steam pipe and having the imperforate peripheral wall at one end of the drum and the peripheral discharge openings at the other end of the drum and provided with the coil securing rods fixed to the heads of the drum and arranged to engage the coil to support and hold the same in place; and means for supplying steam to the coil.

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**527,637. SWITCH-ACTUATING MECHANISM.** SAMUEL WALKER and LE GRAND MARSHALL, Milwaukee, Wis. Filed Aug. 21, 1893. Serial No. 483,616. (No model.)



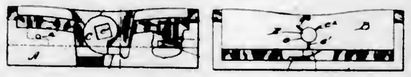
*Claim.*—1. A switch actuating device comprising a vertically disposed post movably supported upon a car, and carrying a cam at its lower end, suitable means for depressing and turning said post so as to bring said cam into position for engagement upon a desired side of said post with a switch moving device upon the track, and a stop upon the truck adapted for engagement with a projecting part of the movable mechanism to limit the downward movement of said post when it has reached a predetermined position, substantially as described.

2. A switch actuating device comprising a vertically disposed post revolubly secured in suitable bearings in a hanger beneath the car, and carrying at its lower end a suitable cam arranged eccentrically with respect to said post, suitable means for depressing and turning said post so as to present said cam for engagement upon a desired side of said post, with a switch moving device upon the track, a stop for limiting the downward movement of said post, and a stop for limiting its rotation in either direction, substantially as described.

3. A switch actuating device comprising a vertically disposed post, revolubly supported in a suitable hanger beneath the car, and carrying at its lower end a cam arranged eccentrically with respect to the axis of said post, said post being provided with an angular portion, and to slide vertically in its bearings, a suitable gear wheel slidingly engaged with the angular portion of the post, a second gear arranged to mesh with said first mentioned gear, and operatively connected with a suitable crank, and an operative connection extending from said crank above the platform, whereby said gears may be operated to partially rotate the post so as to present said cam for engagement upon a desired side of the same with a suitable switch moving device upon the track, substantially as described.

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**527,638. PRINTER'S QUOIN.** ROBERT WARG and AUGUST LINDEMANN, Milwaukee, Wis., assignors to John W. O'Neill, Chicago, Ill. Filed May 16, 1893. Serial No. 474,469. (No model.)



*Claim.*—1. A printer's quoin, comprising two sections movably engaged with each other, a suitable cam or eccentric revolubly journaled in one section and adapted for operative engagement with the other section, projecting bearing points upon the first mentioned section, and one or more slots communicating with the bearing of said cam or eccentric substantially as described.

2. A printer's quoin, comprising two sections movably engaged with each other, a suitable cam or eccentric revolubly journaled in one section and adapted for operative engagement with the other section to force said sections apart, projecting bearing points upon opposite ends of the first mentioned section, one or more suitable slots in said section communicating with the bearing of said cam or eccentric, one of said sections being provided at opposite ends with suitable slots or grooves, and the other section being provided with suitable tongues or ribs adapted for engagement with said slots or grooves, substantially as described.

3. A printer's quoin, comprising two sections movably engaged with each other, a suitable cam or eccentric journaled in one section and adapted for operative engagement with the other section, the section in which the cam or eccentric is journaled being provided with one or more radial slots communicating with the bearing of said eccentric, and having suitable projecting bearing points upon its outer face adjacent to its opposite ends, substantially as described.

4. A printer's quoin comprising two sections movably engaged with each other, guides for holding said sections in alignment, stops for limiting the outward movement of said sections, one of said sections being provided with a concave bearing face, a cam or eccentric journaled in said section, and one or more radial slots communicating with the bearing of said cam or eccentric, substantially as described.

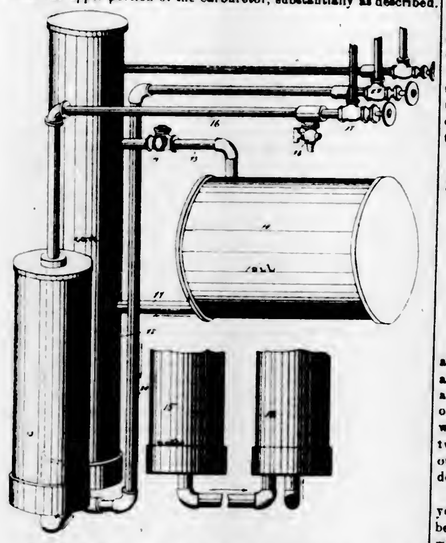
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**527,639. CARBURETOR.** EUGENE M. WESTCOTT, Hampton, Iowa. Filed July 10, 1894. Serial No. 517,060. (No model.)

*Claim.*—1. An apparatus of the kind described, comprising a gasoline supply tank, a carburetor extending above and below the supply tank and connected therewith, a water tank connected with the carburetor at the lower end of both tank and carburetor, an air supply pipe connected with the water tank at the top, an air supply pipe connected with the lower end of the carburetor, and a discharge pipe opening from the upper end of the carburetor, substantially as described.

2. An apparatus of the kind described, comprising a gasoline supply tank, a carburetor extending above and below the level of the supply tank, pipes connecting the upper and lower portions of the tank with the carburetor, means for delivering water under pressure to the lower portion of the carburetor, an air supply pipe delivering into the bottom of the carburetor, and a discharge pipe leading from the upper portion of the carburetor, substantially as described.

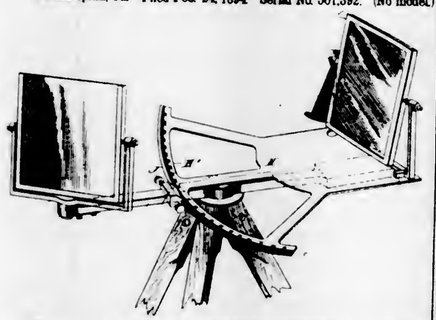




3. An apparatus of the kind described, comprising a gasoline supply tank, a carburetor extending above and below the level of the tank, a pipe connection between the carburetor and tank, a water tank connected with the lower end of the carburetor, an air supply pipe provided with an escape cock and connected with the upper end of the water tank and an air supply pipe connected with the lower end of the carburetor, an air distributer at the discharge end of the air supply pipe in the carburetor, and a discharge pipe leading from the upper part of the carburetor, substantially as described.

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**527,640. HELIOGRAPH ATTACHMENT.** ALBERT L. WETHERILL, Philadelphia, Pa. Filed Feb. 24, 1894. Serial No. 501,392. (No model.)



*Claim.*—1. A heliograph attachment, comprising a graduated segment mounted upon the mirror bar to turn with one of the mirrors carried by said bar, the center of the segment co-inciding with the pivot of the mirror, and a vernier adapted to be secured to the mirror bar, substantially as described.

2. A heliograph attachment, comprising a segment having a graduated limb and provided with lugs arranged opposite the center of the segment, to engage the mirror frame, the pivot of which coincides with the center of the segment, and a set screw for clamping the mirror frame in place on the said lugs, substantially as shown and described.

3. The combination with the mirror bar of a heliograph, of a graduated segment mounted upon the mirror bar with its center coinciding with the pivot of one of the mirrors carried by said bar, and means for securing the mirror frame to the segment to cause them to turn together, substantially as described.

4. The combination with the mirror bar of a heliograph, of a graduated segment mounted upon the mirror bar with its center coinciding with the pivot of one of the mirrors carried by said bar, means for locking the mirror frame to the segment, and a vernier secured to the mirror bar adjacent to the segment, substantially as described.

5. The combination with a heliograph mirror, of a graduated segment secured on one of the trunnions of the said mirror and extending vertically therefrom, and a vernier adapted to be fastened on the mirror frame and adapted to read on the graduated limb of the said segment, substantially as shown and described.

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**527,641. SHAFT-BEARING.** SAMUEL H. WHEELER, Chicago, Ill., assignor to The Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Filed Feb. 23, 1894. Serial No. 501,276. (No model.)

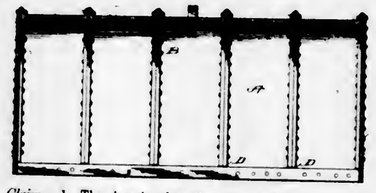


*Claim.*—1. The combination with a suitable frame-work, of an attachable yoke provided at one end with a hollow hub-like bearing adapted to be rigidly secured to said frame-work and provided with a track, a rotary shaft extending through said hub-like bearing at one end, a conical projection on said shaft arranged and operating within said hollow hub like bearing, a series of balls interposed between said track and conical projection, and a suitable bearing in the other end of said yoke for the other end of the shaft, substantially as described.

2. The combination with a suitable frame-work, of an attachable yoke provided at one end with a hollow hub-like bearing adapted to be applied to and rigidly secured in said frame-work and provided with the independent cup-shaped track, a rotary shaft extending through said hub-like bearing at one end, the conical projection on said shaft arranged and operating within said hub like bearing, a series of balls interposed between the independent cup-shaped track and conical projection, and the adjustable bearing in the other end of said yoke for the other end of the shaft, substantially as described.

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**527,642. ANNEALING-BOX.** WILLIAM H. WHITE, Apollo, Pa. Filed Aug. 11, 1894. Serial No. 520,033. (No model.)

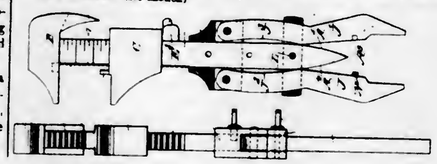


*Claim.*—1. The herein described annealing-box comprising I-beams arranged transversely of the box with their bases or flanges abutting and riveted or bolted together both upon the inside and outside of the box, said beams being bent or curved to provide an arched roof or top, and sides for the box, as specified.

2. The herein described annealing box comprising I-beams arranged transversely of the box with their bases or flanges abutting and riveted or bolted together both upon the inside and outside of the box, said beams being bent or curved to provide an arched roof or top, and sides for the box, the bases of the said beams being cut away upon the interior of the box near the lower edges of the sides of the box, and angle-strips arranged longitudinally of and within the box upon each side and riveted or bolted to the I-beams, as specified.

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**527,643. WRENCH.** ALF L. WIBE, Miles City, Mont., assignor of one-half to John S. Truscott, same place. Filed Dec. 22, 1893. Serial No. 494,430. (No model.)



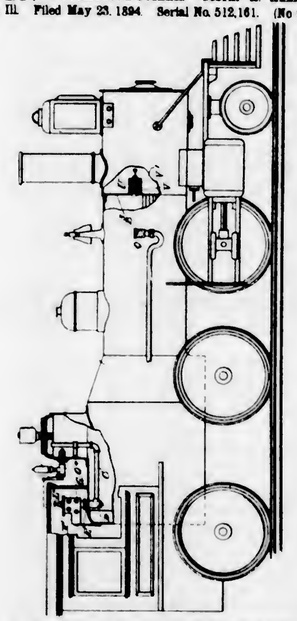
*Claim.*—A wrench, comprising a toothed stock having a fixed jaw whose gripping surface extends essentially perpendicular to the longitudinal axis of the stock, a movable jaw embracing the stock and having longitudinal sliding movement thereon, the said movable jaw being provided with teeth adapted to mesh with those of the stock, a wedge fitted to slide between the movable jaw and the stock, longitudinally of the latter, to lock the movable jaw to the stock, and a spring catch under the control of the operator, and secured to the said wedge, the said catch having a projection adapted to engage a recess in the movable jaw, substantially as described.

527,644. TICKET-HOLDER. John M. Akers, Cleveland, Ohio. Filed June 26, 1894. Serial No. 515,614. (No model.)



*Claim.*—A ticket-holder consisting of an inclosing case A slotted laterally and longitudinally, as at *a*; ticket-winding member H recessed, as at *h*; suitable means for actuating member H to wind up the ticket or tickets; ratchet-wheel D; pawl E, and spring G, all arranged substantially as shown, for the purpose specified.

527,645. LOCOMOTIVE-BOILER. Gustaf A. Akerlind, Rock Island, Ill. Filed May 23, 1894. Serial No. 512,161. (No model.)



*Claim.*—1. A locomotive boiler provided with a spring pressed valve, and with a movable weight for normally holding the valve open, and releasing the same in case of shock to the locomotive, substantially as described.

2. A locomotive boiler, provided with a spring-pressed valve held normally open on the steam conveying pipe, and a suspended weight for locking the valve in an open position and adapted to swing in case of a shock to the locomotive, to unlock the valve and permit the same to close its conveying pipe, substantially as shown and described.

3 A locomotive boiler, provided with a spring-pressed valve held normally open on the steam conveying pipe, a suspended weight for locking the valve in an open position and adapted to swing in case of a shock to the locomotive, to unlock the valve and permit the same to close its conveying pipe, and intermediate mechanism, substantially as described, for connecting the said weight with the said valve, as set forth.

4. A locomotive boiler, provided with a steam distributing box, a steam conveying pipe for connecting the said box with the steam compartment of the boiler, a valve held normally in an open position on the said steam conveying pipe, and a suspended weight in the said box and connected with the said valve, to hold the latter in an open position, substantially as shown and described.

5. In a locomotive boiler, the combination, with a weight, of arms held on a pin on the said weight and controlling a valve, and rivets for connecting the arms with each other and adapted to be sheared off on the weight being forced out of its normal position, substantially as shown and described.

6. In a locomotive boiler, the combination, with a weight, of arms held on a pin on the said weight and controlling a valve, rivets for connecting the arms with each other and adapted to be sheared off on the weight being forced out of its normal position, and means, substantially as described, for moving the said connected arms, as set forth.

7. In a locomotive boiler, the combination, with a weight, of arms held on a pin on the said weight and controlling a valve, rivets for connecting the arms with each other and adapted to be sheared off on the weight being forced out of its normal position, and means, substantially as described, for suspending the said weight to permit it to swing, as set forth.

8. In a locomotive boiler, the combination with a spring pressed valve inside of the boiler, of a rod having an annular groove or reduced portion between its ends to weaken it, and means substantially as described for holding the said rod in engagement with the valve to hold it open, substantially as herein shown and described.

9. In a locomotive boiler, the combination with a spring pressed valve, of a rod having a reduced portion for weakening it, and a weight controlled mechanism for holding the rod in engagement with the valve to hold the said valve open, substantially as and for the purpose set forth.

10. In a locomotive boiler, the combination with an auxiliary safety valve set at a higher pressure than the regular safety valve, of a protecting shell surrounding the said valve, said shell being made in two parts, one projecting into the other, substantially as and for the purpose set forth.

527,646. SAFETY APPARATUS FOR STREET-RAILWAY CARS. James J. Andrews, Hempstead, and Theodore Mott, Far Rockaway, N. Y. Filed Mar. 8, 1894. Serial No. 502,814. (No model.)



*Claim.*—1. The combination with a car platform, a bracket apparatus extended forward from the said platform, and a trap, G, constructed with a convex forwardly extended lower part, *m*, and concave rearwardly extended upper part, *n*, of an arm, *c*, extended downward from the said lower and convex part and means for transversely pivoting the arm to the front of the bracket, substantially as and for the purpose herein set forth.

2. The combination with a car platform of a bracket apparatus extended forward from the platform, a trap, G, convex at its lower and forward part and concave at its upper and rearward part and transversely pivoted to the front end of the bracket, and a spring, *f*, arranged to come into play when the said concave part approaches the limit of its backward movement, substantially as and for the purpose herein set forth.

3. The combination with a car platform a bracket apparatus extended forward from the said platform, and a trap, G, constructed with a convex forwardly extended lower part, *m*, and concave rearwardly extended upper part, *n*, of an arm, *c*, extended downward from the said lower and convex part, means for transversely pivoting the arm to the front of the bracket, and elastic tube sections arranged upon said part of the trap opposite and in front of said arm and its pivotal connection with the bracket, substantially as and for the purpose herein set forth.

4. The combination with a car platform of a bracket apparatus projected forward from said platform, a trap G, convex at its lower forward part, *m*, concave at its upper rearward part, *n*, and transversely pivoted to the front of said bracket, and elastic tube sections, *g*, attached to the said convex part of the trap to sustain the impact of the latter, substantially as and for the purpose herein set forth.

5. The combination with a car platform, of a bracket apparatus projected forward from said platform, a trap, G, convex at its lower forward part, *m*, concave at its upper rearward part, *n*, and transversely pivoted to the front of said bracket, and a spring, *f*, arranged to come into play when the aforesaid concave part approaches the limit of its backward movement to relieve the jar incident to the cessation of said movement, substantially as and for the purpose herein set forth.



6. The combination of a bracket bar, D, constructed for pivotal attachment to the front of a car platform, the brace, E, pivoted at one end to the bracket bar and at the other constructed for removable attachment to the front of the said platform, the trap, G, pivoted at its lower part to the bracket rod, and a lifting rod, F, connected with the brace, substantially as and for the purpose herein set forth.

7. The combination of a bracket bar, D, pivoted to the front part of a car platform, a trap, G, pivoted to the front end of said bracket bar, a brace, E, pivoted at one end to the bracket bar and detachably pivoted at the other end to the said platform, and means for lifting the bracket bar, brace, and trap, to close the same parts in a raised position substantially vertical and parallel with the dashboard, substantially as and for the purpose herein set forth.

8. The combination of a bracket bar, D, constructed for pivotal attachment to the front of a car platform, the brace, E, pivoted at one end to the bracket bar and at the other constructed for removable attachment to the front of the said platform, the trap, G, pivoted at its lower part to the bracket rod, and a guide, *r*, for retaining said rod in a vertical position when the apparatus is in position for expected use, substantially as and for the purpose herein set forth.

9. The combination of a bracket bar, D, constructed for pivotal attachment to the front of a car platform, the brace, E, pivoted at one end to the bracket bar and at the other constructed for removable attachment to the front of the said platform, the trap, G, pivoted at its lower part to the bracket rod, elastic tube sections, *g*, provided upon said convex part of said trap, and a guide, *r*, for retaining the rod in a vertical position when the apparatus is in position for expected use, substantially as and for the purpose herein set forth.

10. The combination of a bracket bar, D, constructed for pivotal attachment to the front of a car platform, the brace, E, pivoted at one end to the bracket bar and at the other constructed for removable attachment to the front of the said platform, the trap, G, pivoted at its lower part to the bracket rod, elastic tube sections, *g*, provided upon said convex part of said trap, and a spring, *f*, provided at the back of the concave upper part of said trap, and a guide, *r*, for retaining the rod in a vertical position when the apparatus is in position for expected use, substantially as and for the purpose herein set forth.

11. The combination of a bracket bar, D, pivoted to the front part of a car-platform, a trap, G, provided with a downwardly projecting arm, which is pivoted to the bracket-bar, a brace, E, pivoted at one end to said bracket bar and at the other detachably connected with the front of said platform, a lifting rod, F, pivoted to said brace, a guide, *r*, for guiding said rod and a dash-board, *a*, so proportioned to the brace and lifting rod that the pivot of the latter may reach the top of the dash-board when the parts are raised, whereby the lifting rod may be turned back over the top of the dash-board to hold the parts in their folded condition, substantially as herein set forth.

527,647. CONSTRUCTION OF FIREPROOF FLOORS. Robert Astley, London, England. Filed Sept. 5, 1893. Serial No. 484,873. (No model.)



*Claim.*—In the construction of fireproof floors the combination of the lintels C of fireclay or terra-cotta resting on metal joists B with strips of corrugated iron D resting on the lower flanges of the said joists between the lintels and concrete over the corrugated iron all substantially as described and shown by the accompanying drawings.

527,648. TONGS FOR HANDLING METAL. Charles J. Bagley and Llewelyn Roberts, Stockton-on-Tees, England. Filed June 16, 1894. Serial No. 514,781. (No model.) Patented in France May 12, 1894, No. 238,490; in Austria May 21, 1894, No. 18,092, and in Belgium May 24, 1894, No. 83,959.

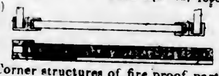
*Claim.*—1. In a lifting appliance for handling slabs of heated material, the combination with the bent levers crossing each other and pivoted together and having the hook-shaped ends $a^3$ and the lever arms $a'$; of chains attached to the said lever arms $a'$ and supporting said arms and normally causing the hooks $a^3$ to swing toward each other; and hand-operated means for causing said arms $a'$ to approach to or recede from each other, and a wedge adapted to lock said arms, substantially as and for the purposes described.

2. In a lifting appliance for handling slabs of heated material, the combination with the bent levers crossing each other and pivoted together and having the hook-shaped ends $a^3$ and the lever arms $a'$; of chains attached to the said lever arms $a'$ and supporting said arms and normally causing the hooks $a^3$ to swing toward each other; and a pair of long rods pivoted together near one end and connected at the said end to said arms $a'$, and terminating in handles at the opposite end, substantially as and for the purposes described.



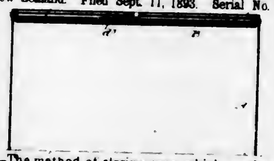
3. In a lifting appliance for handling slabs of heated material, the combination with the bent levers crossing each other and pivoted together and having the hook-shaped ends $a^3$ and the lever arms $a'$; of chains attached to the said lever arms $a'$ and supporting said arms and normally causing the hooks $a^3$ to swing toward each other; and a wedge adapted to lock said arms; and a pair of long rods pivoted together near one end and connected at the said end to said arms $a'$, and terminating in handles at the opposite end, substantially as and for the purposes described.

527,649. FIREPROOF BUILDING CONSTRUCTION. Thomas Bailey, New York, N. Y. Filed Apr. 12, 1893. Serial No. 470,002. (No model.)



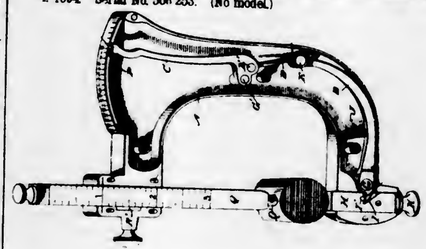
*Claim.*—Corner structures of fire proof partitions consisting of dovetail ribbed and grooved plates placed with the ribs and grooves horizontally and entered at the ends in the grooves of vertical channel bars having duplex grooves in angular relation to each other corresponding with the angles of the corners substantially as described.

527,650. METHOD OF CLOSING CANS. John Banbury, Auckland, New Zealand. Filed Sept. 11, 1893. Serial No. 485,216. (No model.)



*Claim.*—The method of closing cans, which consists in placing a wire between the inner surface of the can body and a marginal upturned flange of the cover, and then applying pressure to bring the said flange and the adjacent surface of the can body nearer to each other and thereby firmly hold the wire between them, substantially as described.

527,651. CALIPERS. John Bath, Hyde Park, Mass. Filed Apr. 4, 1894. Serial No. 506,253. (No model.)



*Claim.*—1. A caliper embodying the combination of two multiplying levers B and C pivoted in a body A and connected by a rod D threaded through slots F and F', in said levers, into pins E and E' fitted in holes in the levers; block H fitted to slide in a groove and adapted to serve as one of the measuring points of the caliper, and provided with a notch I having a bearing pin I' arranged therein to rest on the short arm B' of lever B; a spring J operating through lever B to raise block H; and a magnified scale N upon which is indicated, by means of said levers, the position and movement of block A relatively to its counterpoint; all as and for the purposes specified.

2. In a caliper, the combination of a yielding block; two multiplying levers jointed together by means of rod D threaded through slots F F' into pins E E' substantially as described, and actuated by the yielding block; a counteracting spring J; and a micrometer scale N; all as and for the purposes specified.

3. In combination, a yielding block H; multiplying levers B and C actuated by the block; a counteracting spring J; a micrometer scale N; an adjusting nut K on a screw threaded into the block; washer K'; and an interposed check spring between the washer and nut; all as and for the purposes specified.

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**527,652. EYEGLASSES OR SPECTACLES.** WILLIAM G. BEEK, Chicago, Ill., assignor to the E. Kirstein's Sons Company, Rochester, N. Y. Filed Oct. 13, 1893. Serial No. 488,019. (No model.)



*Claim.*—1. In combination with a slide-pin bridge spring, a stop adapted to limit the closing movement of said bridge spring, and a cushioning spring mounted in connection with said stop, substantially as set forth.

2. In combination, side bars, slide pins, a spring adapted to draw said side bars together, and a cushioning spring which is compressed in the closing of the bridge spring, substantially as set forth.

3. In combination with a slide pin bridge spring, as a means to limit its closing action, a stop mounted upon one of the members and adapted to be encountered, through a cushioning spring, by another of the members in the closing movement of the bridge spring, substantially as set forth.

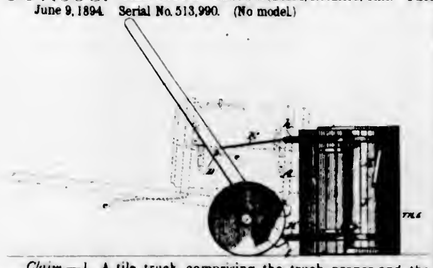
4. In combination with a slide-pin bridge spring, a cushioning spring which is compressed in the closing movement of said bridge spring, substantially as set forth.

5. In combination, side bars, slide pins, means for drawing said side bars together, a stop for limiting the approach of said side bars, and a cushioning spring which is compressed in the closing of the bridge spring, substantially as set forth.

6. In a bridge spring, in combination, side bars, slide pins, yokes, a spring for occasioning the approach of said side bars, a stop to limit the approach of said side bars, and a cushioning spring, substantially as set forth.

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**527,653. TILE-TRUCK.** JOSEPH W. BIENZ, Rockford, Ohio. Filed June 9, 1894. Serial No. 513,990. (No model.)



*Claim.*—1. A tile truck comprising the truck proper and the cradle or bed hinged at one end to said truck proper and movable at its other end toward and from the same substantially as set forth.

2. A tile truck comprising the truck proper, the cradle or bed hinged at its lower end thereto and a stay connection between the other end of the bed and the truck substantially as set forth.

3. A tile truck comprising the truck proper the bed or cradle hinged at its lower end thereto, and the stop piece fitted removably to the lower end of the bed or cradle substantially as set forth.

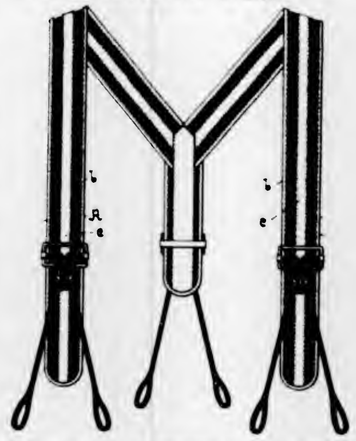
4. In a tile truck the combination of the truck proper the bed or cradle hinged thereto, the side pieces hinged to the cradle or bed and latch devices connecting said side pieces substantially as set forth.

5. A tile truck having a truck proper, a cradle or bed hinged thereto, the side pieces hinged to and detachable from the cradle or bed and a latch adapted to clamp such side pieces together substantially as set forth.

6. The improved tile truck herein described consisting of the truck proper, the cradle or bed hinged at one end thereto and movable toward and from said truck proper at its other end, the stay rod jointed at one end to the cradle or bed and hooked at its other end, the side pieces hinged to the cradle or bed, the latch by which to connect and clamp said side pieces together and the removable stop piece all substantially as and for the purposes set forth.

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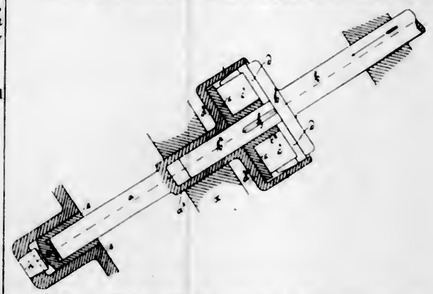
**527,654. SUSPENDERS.** LOUIS BLOOM, Vicksburg, Miss. Filed July 12, 1894. Serial No. 517,270. (No model.)



*Claim.*—In a pair of suspenders, the shoulder straps thereof formed of two strips of bobbinet with a strip of canvas interposed, the whole being bound and provided with strengthening tapes, substantially as specified.

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**527,655. SHAFT-COUPLING.** ANTON BOLSANI, Berlin, Germany. Filed June 1, 1894. Serial No. 513,154. (No model.) Patented in Germany Sept. 10, 1893, No. 75,977, and in England Oct. 23, 1893, No. 19,946.



*Claim.*—1. The combination, with the shaft *a* provided with a sleeve $a^2$ and a cylindrical chamber *a'*; of a shaft *b* provided with a part $b^2$ journaled in the said sleeve, and a disk *d*; a disk *c* splined on the part $b^2$ inside the said chamber and provided with the wedge-shaped projections *c'*; and the semi-cylindrical cheeks *d* interposed between the projections *c'* and the disk *b'* inside the said chamber, substantially as and for the purpose set forth.

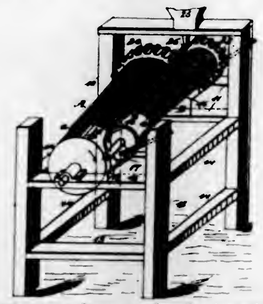
2. The combination, with the shaft *a* provided with a sleeve $a^2$ and a cylindrical chamber *a'* having ratchet-wheel teeth *h* upon its outer periphery; of a shaft *b* provided with a part $b^2$ journaled in the said sleeve, and a disk *d*; a disk *c* splined on the part $b^2$ inside the said chamber and provided with the wedge-shaped projections *c'*; the semi-cylindrical cheeks *d* interposed between the projections *c'* and the disk *b'* inside the said chamber; and the stationary pivoted pawl *g* engaging the teeth *h* and normally preventing the shaft *a* from revolving backward, substantially as and for the purpose set forth.

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**527,656. SEPARATOR.** JOHN E. BORCHARD, New Jerusalem, Cal. Filed June 19, 1894. Serial No. 515,034. (No model.)



*Claim.*—1. In a separator, a frame, a main cylinder or roller having a longitudinal inclination in direction of the forks of the frame and mounted to revolve, the said roller having a portion of its periphery roughened, a guide roller concaved longitudinally, having likewise a longitudinal inclination from the head of the frame downward and mounted to revolve contiguous to the main roller, and a driving connection between the two rollers, whereby one will be driven at a greater speed than the other, substantially as shown and described.



2. In a separator, a frame, a main roller journaled therein and having a longitudinal inclination, the said main roller being provided with a roughened surface extending from its higher end to a predetermined point near its lower end, the lower peripheral portion of the roller being smooth, a guide roller of less diameter than the main roller and longitudinally concaved, the said roller being journaled contiguous to the main roller, the guide roller having its surface roughened and a part rendered plain, corresponding to the surfaces of the main roller, whereby a discharge opening is formed between the plain surfaces of the two rollers, and a driving mechanism whereby the concaved roller is driven at a greater rate of speed than the main roller, as and for the purpose set forth.

3. In a separator, a frame, a main roller journaled in the said frame and having longitudinal inclination, the said roller being provided with a roughened surface extending from a point near its upper end to a point near its lower end, the lower portion of the roller being smooth and of slightly less diameter than the roughened portion, a longitudinally concaved guide roller, having its surface formed correspondingly with the surface of the main roller, the guide roller having likewise a longitudinal inclination but differing from that of the main roller, means, substantially as shown and described, for adjusting the guide roller to and from the main roller, and a driving mechanism whereby the two rollers are driven at different rates of speed, as and for the purpose set forth.

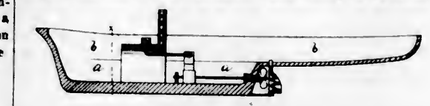
4. In a separator, the combination, with a frame, a main roller of cylindrical shape, journaled in the said frame and having longitudinal inclination in direction of the foot of the frame, the said roller having a portion of its peripheral surface roughened, the extreme lower peripheral surface of said roller being reduced in diameter and plain, of a guide roller of less diameter than the main roller, concaved longitudinally and mounted in adjustable bearings located in the frame at one side of the main roller and contiguous thereto, the guide roller being inclined from the head downward, the inclination of the guide roller varying from that of the main roller, the guide roller being made to sustain substantially a spiral relation to the main roller, the discharge end of the guide roller being higher than that of the main roller, and the space between the plain surfaces of the two rollers serving as a discharge opening for the proper grain, and a driving mechanism for said rollers, substantially as shown and described.

5. In a separator, a frame, a main roller journaled in the frame and having longitudinal inclination, being provided with a smooth peripheral surface at its lower end, the remainder of the peripheral surface being roughened, a guide roller at a greater elevation than the main roller, located adjacent thereto and having a longitudinal inclination in the same direction as the main roller, the said guide roller being longitudinally concaved and having its outer surface formed correspondingly with the surface of the main roller, whereby a discharge opening is formed between the plain surfaces of the two rollers, means for adjusting the guide roller, whereby it may sustain a spiral relation to the main roller, and a driving mechanism for the said two rollers, substantially as and for the purpose specified.

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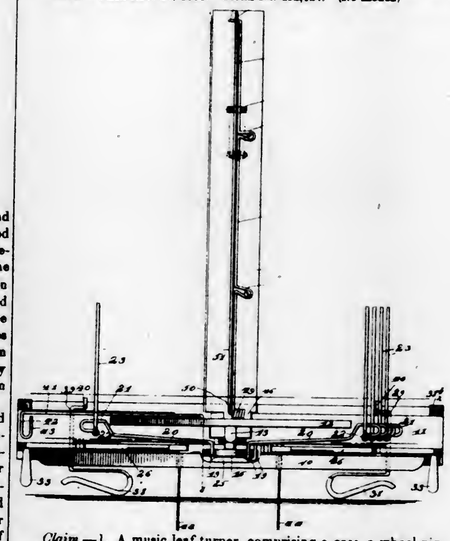
**527,657. HULL FOR VESSELS.** GILBERT T. BREWER, Hoboken, N. J. Filed Feb. 2, 1892. Serial No. 420,083. (No model.)

*Claim.*—The hull of a vessel comprising the short narrow deep draft lower section and the superimposed long wide shallow section joined one upon another, the excess of the length of the upper section forming a plain bottomed overhang at the stern of the lower section and the excess of the breadth of the upper section likewise overhanging the sides of the lower section, substantially as described.



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**527,658. MUSIC-LEAF TURNER.** CYRIL P. BROWN, Spring Lake, Mich. Filed Nov. 27, 1893. Serial No. 492,127. (No model.)



*Claim.*—1. A music leaf turner, comprising a case, a wheel pivoted thereon, a plurality of arms pivoted on the wheel and extending outwardly therefrom, swinging fingers arranged in pairs and pivoted at the outer ends of the said arms, and a lever for operating said arms and wheel, substantially as described.

2. A music leaf turner, comprising a suitable case or frame, a wheel pivoted thereon, a plurality of outwardly extending arms pivoted on the wheel and terminating at their outer ends in loops, a pair of parallel fingers pivoted to the lower member of each loop, and a lever for operating said arms and wheel, substantially as described.

3. A music leaf turner, comprising a suitable case or frame, a wheel pivoted horizontally thereon, a plurality of outwardly extending arms carried by the wheel, fingers at the outer ends of the arms to engage the leaves, and a spring lock pressing against the under side of the wheel and arms, substantially as described.

4. In a music leaf turner, the combination of the pivoted wheel, the arms carried by the wheel and having means for engaging the music leaves, and a spring beneath the wheel, pressing against the arms, substantially as described.

5. In a music leaf turner, the combination, of the wheel pivoted horizontally on the frame of the machine, the outwardly extending arms pivoted independently on the wheel, means at the outer ends of the arms for clasping music leaves, and a flat spring beneath the wheel, having an upturned end extending into the paths of the arms, substantially as described.

6. In a music leaf turner, the combination of the swinging arms having terminal loops, and the parallel fingers pivoted in the lower members of the loops and adapted to swing upward and straddle the loops, substantially as described.

7. The combination, of the pivoted wheel, the outwardly extending arms pivoted thereon, and the swinging turning lever pivoted adjacent to the wheel and provided with a projecting point to engage the arms, substantially as described.

8. The combination, with the main wheel and the outwardly extending arms having bent ends pivoted to the wheel, of the turning lever pivoted adjacent to the wheel and provided with a projecting point to engage the bent ends of the arms, and a recessed end to close over said bent ends, substantially as described.

9. The combination, of the main wheel, the arms pivoted thereon, and the turning lever comprising an arm pivoted adjacent to the wheel, and a lever pivoted on the arm and provided with a projecting point to engage the said arms, substantially as described.

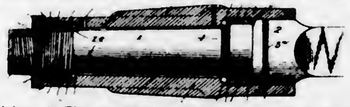
10. The combination, of the main wheel, the arms carried by the wheel, and the turning lever pivoted adjacent to the wheel, the lever having a projecting point to engage the arms, a recessed end to fit over the arms, and a shoulder on its outer side to press the arms, substantially as described.

11. The combination, of the main wheel, the arms carried by the wheel, and the turning lever to engage the arms, the lever comprising a pivoted arm, a body portion pivoted on the said arm, and a packing between the rear edge of the lever and the arm, substantially as described.

12. The combination, with the case and its turning mechanism, of the clamping hooks pivoted on the under side of the case and provided with shanks which extend upward through the case and terminate at their upper ends in cranks, substantially as described.

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**527,659. BALL-BEARING FOR VEHICLES.** EDWARD L. BROWN, Spottswood, Va. Filed July 11, 1894. Serial No. 517,188. (No model.)



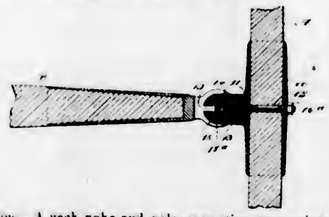
*Claim.*—1. The combination of a spindle provided with a shoulder and having, in advance of the same, an annular beveled portion, an axle-box provided at its inner end with an annular recess and having the inner terminus thereof threaded and provided with an annular groove located opposite the annular beveled portion, a threaded collar arranged in the threaded portion of said recess and provided at its inner edge with an annular groove arranged opposite that of the axle-box, and balls arranged in the grooves and located on the beveled portion of the spindle, substantially as described.

2. The combination of a spindle having a reduced threaded portion and an oppositely-threaded portion adjacent to the reduced portion, an axle-box provided at its outer end with an interiorly threaded annular recess and having an annular groove at the inner edge of the shoulder formed by the recess, an outer threaded collar arranged in the recess of the axle-box and provided at its inner end with a groove located adjacent to the said groove, an adjustable ring interiorly threaded and mounted on the threaded portion 12 of the spindle and having its inner edge beveled, and balls arranged on the beveled portion of the nut and located in the grooves of the axle-box and the collar, substantially as described.

3. The combination of a spindle having an inner cylindrical extension and provided with a shoulder and having in advance of the same an annular beveled portion, said spindle being provided adjacent to its reduced outer terminal with an oppositely-threaded portion 12, an axle-box provided at its inner and outer ends with annular recesses interiorly threaded adjacent to the shoulders formed thereby and provided at the inner edges of the shoulders with annular grooves, the inner end of the axle-box being exteuded over the cylindrical extension of the spiudle, the inner and outer exteriorly-threaded collars arranged in the recesses of the axle-box and provided at their inner edges with annular grooves located opposite the grooves of the axle-box, an adjusting ring interiorly threaded and arranged on the threaded portion of the spindle and having its inner edge beveled, and balls arranged on the beveled portions of the spindle and the ring and located in said grooves, substantially as described.

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**527,660. NECK-YOKE.** JAMES S. BROWN, Eureka, Cal. Filed Apr. 5, 1894. Serial No. 506,450. (No model.)



*Claim.*—A neck yoke and pole connection comprising the pole ferrule B provided with a horizontal slot across its front end, a vertical bolt having a flattened portion within the slot, a neck yoke ferrule 10 having apertures in its middle and a flattened raised bearing 11 on its inner face concentric with one of said apertures, and a bolt extending through said apertures for the neck yoke ferrule to pivot on and provided with a flattened slotted head 13 detachably engaging the flattened portion of the vertical bolt and having an integral washer or collar 16 engaging on the bearing 11, substantially as set forth.

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**527,661. SPARK-ARRESTER.** HENRY E. BULTMAN, Oak Park, Minn. Filed May 16, 1894. Serial No. 511,437. (No model.)



*Claim.*—1. A spark arrester, comprising a cylindrical gauze covered base, and a funnel shaped screen having its lower end secured to the cylindrical base portion and its upper end formed into a depending cone, substantially as described.

2. A spark arrester, comprising a lower cylindrical gauze covered portion having means for attachment to a smoke stack and provided with upwardly projecting and outwardly inclining bars, a top band supported on the bars, and an exterior funnel shaped screen having its bottom adapted for attachment to the cylindrical part of the arrester and its upper part bent over the top band and formed into a depending deflecting cone, substantially as described.

3. A spark arrester, comprising a lower cylindrical gauze covered portion having means for attachment to a smoke stack, a spraying screen secured to the cylindrical portion and terminating at the top in a depending conical deflector, and a movable cleaner embracing the conical deflector, substantially as described.

4. The combination, with the gauze covered spark arrester having the depending conical deflector, of the oscillating cleaner embracing the deflector and comprising parallel rings and connecting bars, substantially as described.

5. The combination, with the screen covered deflector having the supporting band at the top and the depending conical deflector projecting through the band, of hangers secured to the band, a cleaner held to slide in the hangers and arranged to embrace the deflector, and an outwardly projecting and laterally movable arm secured to the cleaner, substantially as described.

6. The combination, with the gauze covered arrester having the central conical deflector, of the slotted plate on one side of the arrester, the cleaner embracing the deflector, the slide plate held to move over the slotted plate, and the handled arm secured to the cleaner and slide plate and extending through the slotted plate, substantially as described.

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**527,662. APPARATUS FOR SCOURING AND CLEANING CANDIES.** GABRIEL CARLSON, Minneapolis, Minn. Filed Mar. 31, 1894. Serial No. 506,805. (No model.)

*Claim.*—1. An apparatus, for scouring and cleaning material with a brushing and blast action, comprising the combination with a brush, and a support for the material, co-operating to produce the brushing action, of an air blast device arranged to produce a forced blast on the material when under the brushing action, substantially as described.

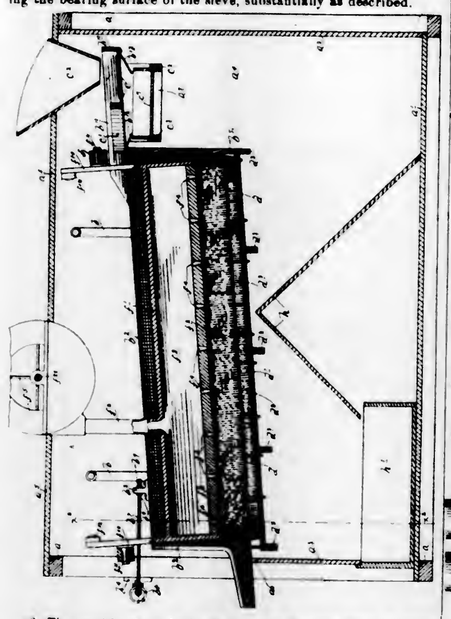
2. An apparatus, for scouring and cleaning material with a brushing and blast action, comprising the combination with a brush, and a material support, co-operating to produce the brushing action, of an air blast device delivering its blast both onto the filaments of the brush and onto the material under the brushing action, for rendering the blast operative both to clean the material and the brush, substantially as described.

3. In a scouring and cleaning machine, the combination with a material support, of an air blast device, and a brush having a hollow head receiving air, under pressure, from said blast device, and provided with outlet perforations for discharging the air among the filaments of the brush and onto the material being scoured and cleaned, substantially as described.

4. A brush lined sieve



5. A sieve composed of a meshed or perforated body and brush filaments projecting through the meshes of said body and constituting the bearing surface of the sieve, substantially as described.



6. The combination of a brush and a brush lined sieve, co-operating to produce a sweeping action on the materials passing over the brush lined sieve, substantially as described.

7. The combination of a brush and a brush lined sieve, both of which parts are movable with respect to each other, for producing a sweeping action on the materials to be scoured and cleaned, substantially as described.

8. The combination of a brush and a brush lined sieve, both of which parts are movable with respect to each other in lines at angles to each other, for increasing the sweeping action on the materials, substantially as described.

9. The combination with a brush lined sieve mounted for a longitudinal shaking motion, of a brush mounted for a transverse sweeping movement crosswise of the brush surface of said sieve, substantially as described.

10. The combination with the concave brush lined sieve mounted for longitudinal shaking motion, of the rocking brush, mounted for transverse sweeping motion crosswise of said sieve, substantially as and for the purposes set forth.

11. In a scouring and cleaning machine, the combination with the brush lined longitudinally shaking sieve, of the transversely rocking brush held against longitudinal motion and having a hollow head or air chamber with discharge outlets among the filaments of the brush, and an air blast device for supplying air under pressure to said hollow brush head, substantially as described.

12. A brush lined sieve having its brush filaments arranged to form a series of steps, substantially as and for the purpose set forth.

13. The combination with a transversely sweeping brush, of an underlying brush lined sieve having its brushes arranged longitudinally thereof with the filaments of some of the brushes projecting inward farther than those of others, for forming a series of steps or breaks, lengthwise of said sieve, substantially as and for the purpose set forth.

14. The combination with the rocking brush $f'$ $f^3$ of the adjustable cross-trees $f$, for supporting the same, substantially as described.

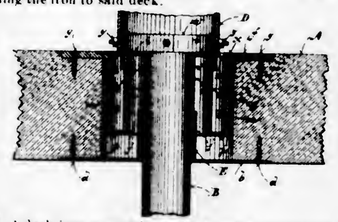
15. The combination with the rocking brush $f'$ $f^3$, of the cross trees $f$, pivoted at one end and adjustably held at the other by the hand screws $f^8$, substantially as described.

16. The combination with the hollow headed rocking brush $f'$ $f^3$ $f^4$, of the fan $f^5$ and the flexible connection $f^6$ from the fan to the air chamber of the brush head, substantially as described.

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**527,663. DECK-IRON.** FREDERIC D. CHASE, Malden, Mass. Filed Jan. 6, 1894. Serial No. 495,949. (No model.)

*Claim.*—1. A deck-iron comprising a central cylinder fitted to receive the flue, a second cylinder inclosing the first cylinder and forming an air-chamber therewith and the outer cylinder forming a water chamber opening on the deck surface and provided with a flange for attaching the iron to said deck.

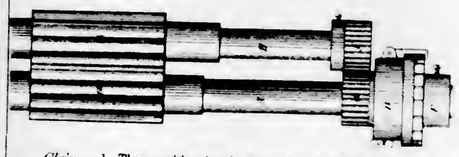


2. A deck-iron comprising an inner cylinder threaded to receive an attaching collar a collar turned thereon, a second and outer cylinder respectively forming an inwardly opening air-chamber and an outwardly opening water-chamber, said outer cylinder being provided with an attaching flange.

3. In a deck-iron, the body, C, forming chambers $j$, $l$, in combination with the screw-collar, $m$, having a flange, $x$, closing the chamber, $l$, and provided with the perforations opening into said chamber.

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**527,664. DRIVING MECHANISM FOR DRAWING-OFF ROLLERS OF COMBING-MACHINES.** CHARLES CHOLERTON, Philadelphia, Pa. Filed Dec. 18, 1893. Serial No. 493,916. (No model.)



*Claim.*—1. The combination in a machine for gilling or combing fibers, of the fluted drawing rollers and apron, with roller driving mechanism having a yielding connection between the driving and driven roller, whereby the friction of said driven roller in its bearings is overcome, and said roller has a constant advancing tendency, substantially as specified.

2. The combination in a machine for gilling or combing fibers, of the fluted rollers and apron, the shafts of said rollers, and driving mechanism for said shafts having as one of its elements a yielding connection between one of the shafts and a wheel thereon, whereby the friction of the driven shaft in its bearings is overcome, and a constant advancing tendency is imparted thereto, substantially as specified.

3. The combination in a machine for gilling or combing fibers, of the fluted drawing rollers and apron, the shafts of said rollers, gearing connecting said shafts, a yielding connection between one of said shafts and a wheel thereon, and means for regulating the tension of said yielding connection, whereby the friction of the driven shaft in its bearings will be overcome, and a constant advancing tendency will be imparted to said shaft, substantially as specified.

4. The combination in a machine for gilling or combing fibers, of the fluted drawing rollers and apron, the shafts of said rollers, gear wheels connecting said shafts, a collar on one of said shafts, a spring interposed between said collar and the gear wheel of said shaft, and serving as a means of connecting said gear wheel and collar, and means for adjusting the collar on the shaft and securing it thereto after adjustment, whereby the tension of the spring is regulated, the friction of the driven shaft in its bearings is overcome, and a constant advancing tendency is imparted to said shaft, substantially as specified.

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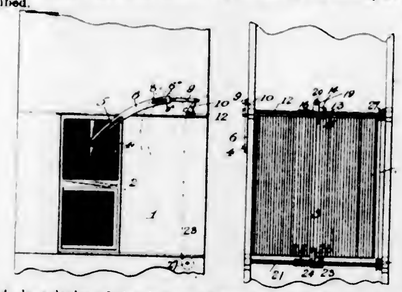
**527,665. DEVICE FOR OPERATING ELEVATOR-DOORS.** EDWARD O. CHURCH, Denver, assignor of two-thirds to J. E. Price and T. B. Stuart, Arapahoe County, Colo. Filed May 7, 1894. Serial No. 510,353. (No model.)

*Claim.*—1. In a device for closing the doors of elevator hatchways, the combination with a sliding door, having a stud, of the slotted lever pivoted to the shaft, the connecting rod, the transverse shaft having a crank connected therewith, the fixed and loose clutch members, and the spring actuated dog connected with said loose clutch member; substantially as described.

2. In a device for closing the doors of elevator hatchways, the combination with the sliding door, having a stud, the slotted lever, with which said stud engages, the connecting bar, the crank pivoted thereto, the transverse shaft to which said crank is secured, the clutch

member fixed to said shaft, the loose clutch member engaging therewith provided with set screws, and the adjustable dog; substantially as described.

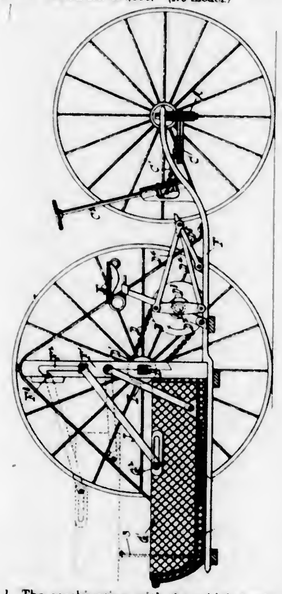
3. In a device for closing the doors of elevator hatchways, the combination with the sliding door, having a stud, the pivoted slotted lever connected therewith, the connecting bar, the crank and transverse shaft, the fixed and loose clutch members on said shaft, the dog connected with said loose clutch member and the coiled spriog, of the lower transverse shaft, the fixed and loose clutch members thereon, the dog connected with said loose clutch member, the coiled spring and the crossed rope or belt connecting said shaft; substantially as described.



4. In a device of the character described, the combination with the transverse shaft, the fixed clutch member thereon, and the loose clutch member on said shaft provided with set screws, of the dog having arms embracing said shaft and formed with slots with which said screws engage, the wheel or roller carried by said dog and the coiled spring secured to said dog and shaft; substantially as and for the purpose specified.

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527,666. VEHICLE. JOHN W. CLEARY, Brooklyn, N. Y. Filed Dec. 20, 1893. Serial No. 494,166. (No model.)

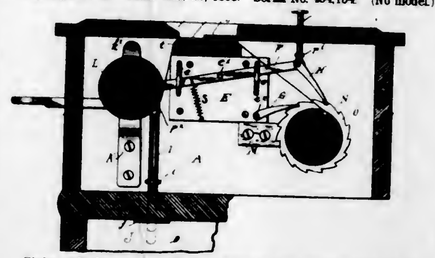


*Claim.*—1. The combioation, with the vehicle having upwardly-extending posts on opposite sides, of a stationary parcel receptacle arranged behind the posts, an upwardly moving receptacle adapted to lie within the stationary one, a pair of arms pivoted to opposite sides of the movable receptacle and to the posts, and a second pair of arms slidably connected with the upper part of the movable receptacle and with the upper ends of the posts, substantially as described.

2 The combination with a vehicle provided with upwardly extending posts having slots near their upper ends, said slots being provided with offsets, of a stationary receptacle secured upon the frame of the machine in rear of the posts, a movable receptacle adapted to rest within the stationary receptacle and having slots in its opposite sides at the top, an arm pivoted in the slots of the posts and receptacle, and a second arm pivoted to the lower part of the said receptacle and to the posts below the slots thereof, substantially as described.

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527,667. MANUAL SALES-RECORDER. HENRY C. COOPER, Springfield, Ill. Filed Aug. 26, 1893. Serial No. 484,154. (No model.)



*Claim*—1. In a manual sales recorder the combination of the box, the spring standards secured to the box, the roll of paper supported on said standards, the spring roller-supports secured to the box, the roller pivotally supported on said supports, the strip of paper extending from the roll to the roller, the means for connecting said strip with said roller the cross bar having rounded edges and supporting the central part of said strip, the operating lever fulcrumed on the box, the bolt connected with the operating lever, intermediate lever connected with said bolt, the pawl connected with the intermediate lever and adapted to rotate the ratchet wheel, the ratchet wheel connected with the roller and the detent pivotally supported on the box and adapted to engage with the ratchet wheel, as set forth and for the purpose stated.

2. In a manual sales recorder, the combination of the box, the lever fulcrumed on the box, the bolt connected with the lever, the push rod passing through the top of the box, and connected with the lever, the pawl connected with the lever and engaging with the ratchet, and the ratchet connected with and adapted to rotate the roller, as set forth and for the purpose stated.

3. In a manual sales recorder, the combination of the box having a tranverse opening in the top and having a transverse bar underlying said opening, the roll of paper horizontally supported in the box and adapted to turn freely in its supports, the horizontal roller supported in the box and adapted to turn on its supports, the strip of paper extending from the roller over the transverse bar and having its end connected with the roller, the ratchet wheel on the roller, the lever fulcrumed on the box, the spring connected with said lever, the bolt, the push-rod and the pawl connected with the lever, and adapted to rotate the roller step by step, as set forth and for the purpose stated.

4. In a manual sales recorder, the combination of the box provided with a perforated lid and a cross bar, the roll standards secured to the box, the roll of paper supported on said standards, the roller supports secured to the box, the roller provided with a ratchet wheel and adapted to turn in its supports, the strip of paper extending from the roll over the cross bar and attached to the roller, the means for attaching the strip to the roller, the plate secured to the box, the upper and lower studs on the plate adapted to support the intermediate lever and the detent respectively, the lever fulcrumed on the upper stud, the detent fulcrumed on the lower stud and engaging with the ratchet wheel, the operating lever fulcrumed in the end of the box, the bolt connected with the adjacent ends of the operating and the intermediate levers, the push rod connected with the upper end of the intermediate lever and the spring connected with said lever, as set forth and for the purpose stated.

5. The means for connecting the manual sales recorder with the drawer consisting of a horizontal cleat secured to the drawer and provided with a perforated plate; in combination with the box, the roll of paper, the horizontal roller and the transverse bar supported in the box, the strip of paper extending from the roll to the roller and passing over the transverse bar, the ratchet wheel connected with the roller, the levers and the pawl operating the roller and the bolt connected with said levers, as set forth and for the purpose stated.

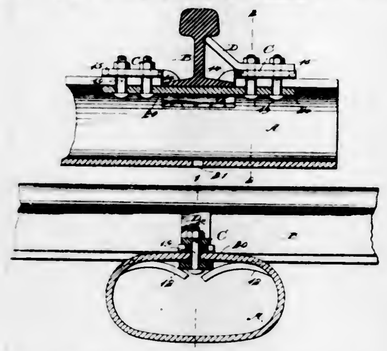
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527,668. RAILWAY-RAIL TIE. JESSE C. COWDRICK, Ogdensburg, N. J. Filed Apr. 4, 1894. Serial No. 506,319. (No model.)

*Claim.*—1. A railway tie formed of a tubular metallic body having transverse cuts in its bearing face and a longitudinal slot joining the transverse cuts, whereby opposite tongues are formed, said tongues being bent downward whereby their bearing faces are at a point below the plane of the upper face of the body of the tie, substantially as shown and for the purposes described.



2. A tubular, metallic railway tie, provided with a slot extending through from end to end in its upper face, tongues transversely formed in the said upper surface of the tie at each side of the slot therein, which tongues are projected downward below the plane of the upper surface of the tie, forming seats or bearings for the base of railway rails, substantially as shown and described.

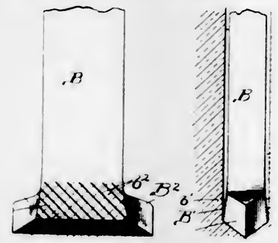


3 The combiuation with a tubular metallic railway tie having transverse cuts made in its upper face, forming opposing tongues, which tongues are separated and downwardly curved forming seats for the reception of rails, of a connecting bar or plate extending transversely across the opening between the tongues and above the inner ends of the latter, the said connecting bar being attached to the body of the tie, and retaining shoes adjustably carried by the tie, one at each side of the central portion of the opening between each set of said tongues, the said shoes comprising a shank adjustable upon the tie, and a head adapted for engagement with the flanges of the rails and likewise for engagement with the walls of the said opening in the tie above the tongues, as and for the purpose set forth.

4. The combination, with a tubular metallic railway tie having transverse cuts made in its upper face, forming opposing tongues, which tongues are separated and downwardly curved, forming seats for the reception of rails, of a connecting bar or plate extending transversely across the opening between the tongues and above the inner ends of the latter, the said connecting bar being attached to the body of the tie, and retaining shoes carried by the tie, one at each side of the central portion of the opening between each set of said tongues, the said shoes comprising a shank adjustable upon the tie and a head adapted for engagement with the flanges of the rails, and likewise for engagement with a wall of the said opening in the tie above the tongues, and a brace bar carried by the shank of one of the retaining shoes and adapted to extend upwardly and inwardly over the opening between two opposing tongues, the inner member of the said bar or plate being adapted for engagement with the outer surface of the rail at the junction of its head with its shank, substantially as shown and described.

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527,669. ROCK-DRILL. EDWIN S. CURRIER, Peninsula, Ohio. Filed Aug. 3, 1894. Serial No. 519,401. (No model.)



*Claim.*—A rock-drill consisting of a metallic bar B terminating, at its lower end, in a V-shaped bottom or cutting-surface, and having one or more lateral V-shaped or pointed enlargements $B^2$, all arranged and operating substantially as and for the purpose set forth.

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527,670. PHOSPHORIC ACID WITH AN ABSORBENT. GASTON DESCAMPS, Havana, Cuba. Filed May 22, 1894. Serial No. 512,113. (No specimens.)

*Claim.*—As a new article of manufacture, a vegetable cellulose such as saw dust or cane bagasse dried and charged with phosphoric acid, substantially as described.

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527,671. DRIVING-GEAR FOR VELOCIPEDES. WILLIAM DEVOLL, Erdington, England. Filed July 5, 1893. Serial No. 479,610. (No model.)



*Claim.*—In combination with a bicycle, a bifurcated bracket detachably secured to the frame thereof, main and supplemental crank shafts journaled therein extending through the walls of the bracket and provided with cranks upon their ends, gear wheels mounted upon said shafts within the bifurcated portion an idler gear meshing with said wheels, driving rods connecting the cranks of the supplemental shaft with cranks on the rear axle, and adjustable brace rods connecting the bracket with the frame of the bicycle, substantially as described.

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527,672. BOTTLE-STOPPER. CHARLES DE WITT, Baltimore, Md. Filed Aug. 20, 1894. Serial No. 520,838. (No model.)

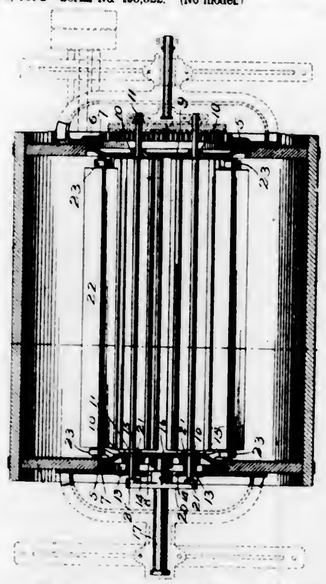


*Claim.*—1. A bottle stopper consisting of a stopper plug having a flange, adapted to project over the sides of the bottle mouth, and a downwardly projecting nipple to be inserted within the mouth of the bottle, in combination with a flexible disk washer sprung into place around said nipple so as to be in close contact therewith, and means for seating said stopper on the bottle and holding it in position thereon so as to compress the said washer between the bottle mouth, the flange, and the nipple on said plug within the mouth of the bottle, forming a double break joint, substantially as set forth.

2. The combination with a bottle, of a bottle plug provided with a nipple adapted to be inserted within the mouth of the bottle; a flange extending outwardly from said plug, a flexible disk washer sprung into a groove on said nipple and exteuding around and in close contact with said nipple, whereby its outer surface is placed under tension and its inner surface under compression, with means for seating said stopper upon the bottle and holding the same in position thereon so as to tightly compress the upper portion of the washer between the flange, nipple, and bottle mouth, forming a double break joint, substantially as described.

3. The combination with the bottle having a tapering mouth, of a bottle stopper plug, a flange projecting therefrom, and extending over the edges of the mouth, a nipple of spherical contour depending from the plug and adapted to project within the mouth of the bottle, a flexible disk washer sprung into place close around said nipple, with its outer edge extending up to the flange, with means for seating and holding said stopper plug on the bottle, so as to forcibly compress the washer between the flange, nipple, and the bottle mouth whereby the said bottle mouth may be hermetically sealed by two break joints, substantially as described.

527,673. BUTTER-WORKER. REUBEN B. DISBROW, Claremount, Minn., assignor to the F. B. Fargo & Company, Lake Mills, Wis. Filed Jan. 2, 1894. Serial No. 495,322. (No model.)



*Claim.*—1. The combination, with the revoluble cylinder having heads 4 provided with the central openings, of the independent heads arranged to fill said openings, the working rolls arranged between said independent heads, and having shafts extending through said heads, means for rotating said cylinder and also for rotating said rolls at will, and the threaded locking sleeves 13 extending through one of said heads and adapted to engage the ends of said rolls, whereby upon being tightened said independent heads and said rolls are locked upon the heads of the cylinder to rotate therewith, substantially as described.

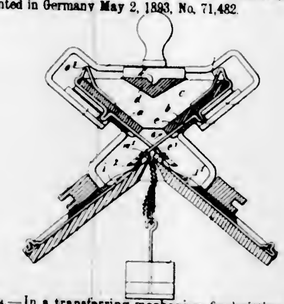
2. The combination, with a revoluble cylinder having the heads 4 provided with the central openings, of the independent heads arranged to fill said openings, the working rolls arranged between said independent heads, and having shafts extending through said heads, means for rotating said cylinder and also for rotating said rolls at will, and the threaded locking sleeves 13 extending through one of said heads and adapted to engage the ends of said rolls, and the washers 21 interposed between the ends of said locking sleeves and the adjacent ends of the rolls, substantially as described.

3. The combination, with the revoluble cylinder, adapted to contain cream or butter, and having the heads 4 provided with central openings, of the independent heads arranged to fill said openings, suitable packing arranged between said independent heads and the heads 4, the working rolls arranged between said independent heads and having shafts extending through the same, the tilting or tumbling bars arranged parallel with and in proximity to said working rolls, means for revolving said rolls, the threaded locking sleeves extending through one of said independent heads and around the shafts of the two working rolls and arranged to engage the ends of said rolls, whereby said heads may be forced apart to lock the same upon the heads 4 of the cylinder, or vice versa, as and for the purpose specified.

4. The combination, with the cylinder, of the working rolls arranged therein, means for revolving said cylinder and said rolls, and the tilting or tumbling bars 22 arranged above said rolls and adapted to revolve independently thereof, substantially as described.

5. The combination, with the revoluble cylinder having the ends 4 provided with central openings, of the independent heads 8 and 9, the working rolls extending between said heads and having shafts extending through said independent heads, a central shaft 17, means for locking the same against rotation, the arm extending from said central shaft and having bearings for the ends of the roller shaft, one of the independent heads being provided with threaded openings about the roll shafts and the threaded locking sleeves arranged in said openings and provided with handles, whereby said sleeves may be screwed against the ends of said rolls or away from the same to force said independent heads into or out of engagement with the heads 4 of the cylinder, substantially as and for the purpose specified.

527,674. TRANSFERRING APPARATUS FOR KNITTING-MACHINES. HERMANN DONNER, Chemnitz, Germany, assignor to Strickmaschinenfabrik Seyfert & Donner, Gesellschaft mit Beschrankter Haftung, same place. Filed Dec. 27, 1893. Serial No. 494,915. (No model.) Patented in Germany May 2, 1893, No. 71,482.



*Claim.*—In a transferring mechanism for knitting machines, the combination with two grooved beds *a b*, inclined toward each other, movable needles *c c'* in the grooves of said beds, said needles having bits $c^2$, of a displaceable frame *k*, having cams *l*, *m*, to engage with bits $c^2$ of said needles, the fore parts of the needles of one set crossing the fore parts of the needles of the other set, said parts adapted to receive the meshes to be transferred, and having enlarged heads with elongated eyes adapted to be coupled to the hooks of the needles of a knitting machine, for the purpose as described.

527,675. MUSICAL INSTRUMENT. EVARISTO ENRIQUEZ, San Juan Bantista, Tobasco, Mexico. Filed Oct. 30, 1893. Serial No. 489,588. (No model.) Patented in Mexico July 11, 1893, No. 463.



*Claim.*—A musical instrument, comprising an elongated solid wooden body, mainly cylindrical, flattened on top and tapered toward the head, frets on the top, strings fast at the head and keyed at the lower end of the body, a removable peg at one side, and a longitudinal pin at the lower end of the body, substantially as described.

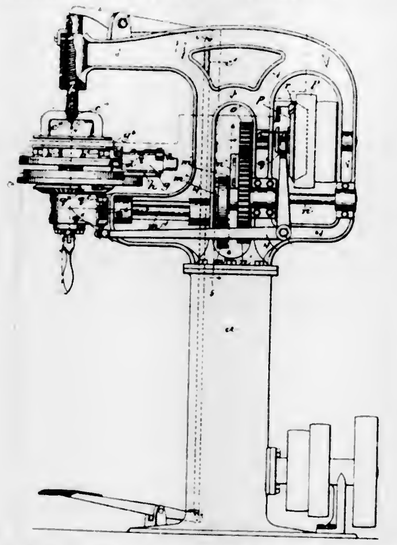
527,676. SOLE-ROUNDING MACHINE. LEWIS E. ERICSON, Boston, Mass., assignor to the Flagg Manufacturing Company, same place. Filed Aug. 1, 1894. Serial No. 519,141. (No model.)

*Claim.*—1. In a sole-rounding machine, the combination of the supporting frame, a fixed tubular stud or support such as $d^2$ rigidly secured to the supporting frame, the cam-plate supported by and detachable from the tubular stud and provided with a central slot, said plate and stud having interlocking projections and recesses whereby exactness of position of the plate is insured, and a clamping bolt fitted to turn in the orifice of the tubular stud and provided at its upper end with a head adapted to be turned across the slot in the cam plate and at its lower end with a clamping lever, as set forth.

2. A sole-rounding machine comprising in its construction a fixed pattern, a stud such as $d^2$ affixed to the supporting frame, a cam-plate attached to the upper end of said stud, a rotary driver mounted to rotate on said stud and provided on its under side with a bevel-gear, a knife-carriage engaged with said driver and with the cam-plate and having a knife co-operating with the pattern, a shaft *m* having at one end a bevel gear meshing with the bevel-gear on the driver and at the other end an eccentrically arranged roll or projection such as *m'*, shaft *n* out of line with the shaft *m* and provided with parallel guides between which the roll *m'* projects, and means for rotating the shaft *n*, as set forth.



3. A sole rounding machine comprising in its construction a fixed pattern, a fixed cam-plate, a rotary driver having a projection such as $q^7$ on its under side, a knife-carriage independently movable on said driver and impelled thereby, a driving shaft and connections between said shaft and the driver whereby the latter may be rotated, said connections including, first, a loose pulley having a clutch-member, and secondly, a sliding clutch-member rotatively engaged with the driving-shaft, a bell-crank lever pivoted to the supporting frame and engaged at one end with the sliding clutch-member, said lever being adapted to be moved by the operator to connect and disconnect the loose pulley and sliding clutch-member, and devices intermediate the said lever and the projection $q^7$ through which the lever may be moved by said projection to disconnect the loose pulley and clutch-member once during each rotation of the driver.



4. A sole-rounding machine comprising in its construction a fixed pattern, a fixed cam-plate, a rotary driver, having a projection such as $q^7$ on its under side, a knife-carriage independently movable on said driver and impelled thereby, a driving-shaft, and connections between said shaft and the driver whereby the latter may be rotated, said connections including, first, a loose pulley having a clutch member, and secondly, a sliding clutch-member rotatively engaged with the driving-shaft, a bell-crank lever pivoted to the supporting frame and engaged at one end with the sliding clutch-member, said lever being adapted to be moved by the operator to connect and disconnect the loose pulley and sliding clutch-member, a plunger or pin such as $q^4$ adapted to be depressed by the projection $q^7$, and a finger $q^3$ pivotally connected to the bell-crank lever and normally in position to be depressed by said plunger, said finger being movable so that it may be displaced to prevent the stoppage of the driver.

5. In a sole-rounding machine, the combination of the carriage, the knife-supporting slide movable on said carriage, springs supported by the carriage, and means for imparting a multiplied motion from the springs to the slide, as set forth.

6. In a sole-rounding machine, the combination of the carriage, the knife-supporting slide movable on said carriage, springs supported by the carriage, a frame movable independently on the carriage by said springs and provided with a larger and a smaller pinion, a rack affixed to the carriage and meshing with the smaller pinion, and a rack affixed to the slide and meshing with the larger pinion, as set forth.

7. In a sole-rounding machine, the combination of the carriage, the knife-supporting slide movable on said carriage, a spring or springs arranged to force the slide forward, a lever and link whereby the slide may be moved backward, ratchet-teeth and a pawl whereby the slide may be held in any position to which it may be retracted, and a pawl-displacing device whereby the slide may be released.

8. In a sole-rounding machine, the combination with the pattern, of the clamp, the yoke rigidly fixed to the clamp, the plunger having a bearing on which the yoke is adapted to rock, and a detent connected by a flexible spring with the plunger, and adapted to detachably secure the yoke to the plunger, as set forth.

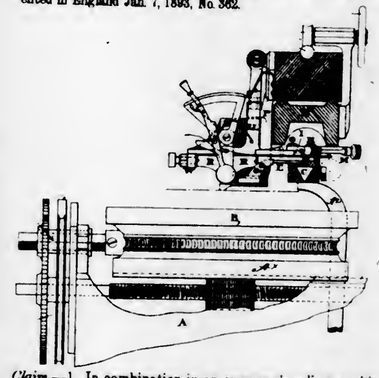
9. The cam having a fixed pattern-guiding or locating stud and two adjustable pattern-supporting studs at opposite sides of the said locating stud, as set forth.

10. The cam having a fixed pattern-guiding or locating stud and two adjustable pattern-supporting studs at opposite sides of the said locating stud, combined with a pattern having orifices for said studs.

11. The combination of the fixed cam-plate, the rotary driver having a flat upper surface and a recess in said surface, the knife-carriage having rolls entering the groove in the cam, and independently movable on the flat upper surface of the driver and the coupling connecting the driver and carriage and located in the recess of the driver.

12. The combination of the fixed cam plate, the rotary driver having a flat upper surface and a recess in said surface, the knife-carriage having rolls entering the groove in the cam, and the coupling connecting the driver and carriage and located in the recess of the driver, said coupling being connected with the carriage at a point coinciding with one of the cam-engaging rolls on the carriage.

527,677. ENGRAVING-MACHINE. EDWIN FANSHAW, Sheffield, England. Filed Aug. 22, 1893. Serial No. 483,778. (No model.) Patented in England Jan. 7, 1893, No. 362.



*Claim.*—1. In combination in an engraver's ruling machine, the support for the work, the sliding tool carrier, the tool carried thereby, the templet curve E, the adjustable rest D carrying the same, the slide F, the straight rule I adjustably carried thereby, and the means intermediate of the rule and tool holder, for controlling the action of said holder from the rule, substantially as described.

2. In combination, the tool carrier, the work table, the screw for giving the same a linear movement, the screw shaft A' arranged parallel with the said screw for giving the table a rotary movement and the adjustable driving connection between the two screw shafts whereby the relative movements may be changed, substantially as described.

3. In combination, the work table, the tool carrier with the tool thereon, the straight rule adapted to act upon the tool carrier and the means for adjusting the straight rule to different angular positions consisting of the toothed segment J, the worm M and the movable carrier N, substantially as described.

4. In combination, the work table, the tool carrier, the tool, the movable presser arranged to regulate the depth of cut and the means for adjusting said presser consisting of the eccentric and the lever for operating the same, substantially as described.

5. In combination, the work support, the tool, the carrier therefor movable about an axis and having a screw pin X', and the projection S having a groove or guide way for the end of the screw, substantially as described.

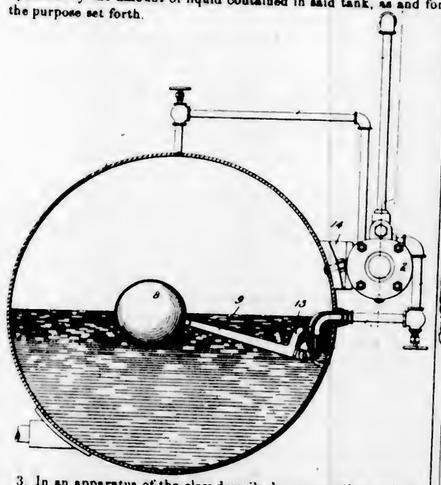
6. In combination, the work support, the tool, the holder therefor having the presser A A, the eccentric and arm E E for operating the presser, the lever L L for operating the arm E E and the adjustable straight rule I for operating the lever L L, substantially as described.

527,678. COMPRESSION-TANK. GEORGE T. FRANCIS, Chicago, Ill. Filed Apr. 19, 1894. Serial No. 508,134. (No model.)

*Claim.*—1. The combination of a compression tank adapted to receive air and a liquid, a pump for supplying air to said tank, and means for operating said pump controlled by the amount of liquid contained in said tank, as and for the purpose set forth.

2. The combination of a tank adapted to receive air and a liquid, a pump for supplying air to said tank, a motor for operating said

pump, and automatic means for controlling the action of said motor operated by the amount of liquid contained in said tank, as and for the purpose set forth.



3. In an apparatus of the class described a compression tank, an air pump, a motor for operating the same, connections between said tank and motor for supplying liquid thereto for operating the same, and a valve, operated by the amount of liquid contained in said tank for controlling the admission of liquid to said motor, as and for the purpose set forth.

4. In an apparatus of the class described, a tank, an air pump, connections between said pump and tank, a liquid motor for operating said pump, connections between said tank and motor for supplying liquid to the latter, a valve arranged in said connections, a float carried on the surface of the liquid contained in said tank, and connections between said float and valve whereby the latter is automatically operated by the amount of liquid contained in said tank, as and for the purpose specified.

5. In an apparatus of the class described a tank, adapted to contain air and a liquid, a pump for delivering air to said tank, a motor, operated by liquid from said tank for operating said pump, a float adapted to be carried on the surface of the liquid contained in said tank and having an arm pivoted intermediate its ends, and pivotally connected at the end opposite the end carrying the float to a valve for controlling the admission of liquid to said motor, as and for the purpose set forth.

6. In an apparatus of the class described, a tank, adapted to contain air and a liquid, a pump for delivering air to said tank, a motor operated by liquid from said tank for operating said pump, a float adapted to be carried on the surface of the liquid contained in said tank and having an arm pivoted intermediate its ends, and pivotally connected at one end to a valve for controlling the admission of liquid to said motor, and a projection for preventing said arm from being tilted too far and for preventing said valve from being withdrawn from its chamber, as and for the purpose set forth.

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**527,679. VALVE-GEAR FOR ENGINES.** ROBERT M. FRYER, Washington, D. C., assignor to J. P. V. Ritter, A. S. Johnson, C. H. Burgess, William C. Avery, R. R. Emmert, and George H. La Fetra, same place. Filed Feb. 3, 1894. Serial No. 498,960. (No model.)

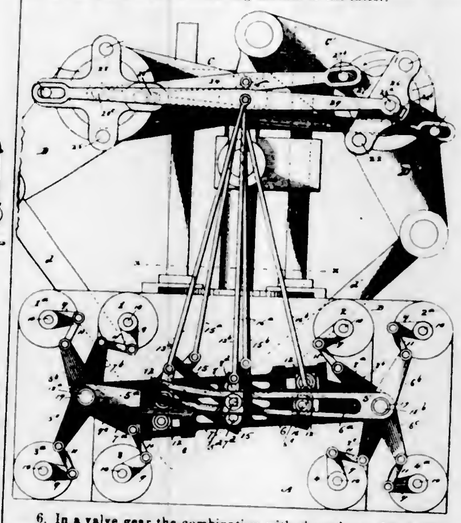
*Claim.*—1. In a valve gear the combination with the valve, of an actuating lever, means for imparting vibratory movements alternately to the respective ends of said lever, and a connection between the valve and lever at an intermediate point in the length of the latter.

2. In a valve gear for steam engines the combination with the valve, of an actuating lever, two alternately reciprocating devices so connected with the respective ends of said lever as to impart unequal vibratory movements thereto, and a connection uniting the valve with the lever between said reciprocating devices.

3. In a valve gear for steam engines the combination of two parallel oscillating shafts, a lever having fulcra on said shafts eccentric to the axes thereof, a valve, and a connection between the valve and lever at a point between said shafts.

4. In a valve gear for steam engines the combination with the valve, of an actuating lever, means for imparting independent vibratory movements to the respective ends of said lever, and a reversing mechanism between the valve and lever at an intermediate point in the length of the latter.

5. In a valve gear the combination with the valves, of a plurality of actuating levers, two alternately or successively reciprocating devices connected respectively with opposite ends of said levers to impart unequal vibratory or angular movements thereto, each end of each lever moving on the connection at the opposite end as a center, and connections between intermediate points in the lengths of said levers and the valves for imparting motion to the latter.



6. In a valve gear the combination with the valves, of two successively or alternately reciprocating devices, a plurality of levers having their opposite ends connected with the respective reciprocating devices to receive unequal vibratory or angular movements therefrom, and link connections between said levers and the valves.

7. In a valve gear the combination of two rotary reciprocating shafts, a series of levers having their opposite ends connected with the respective shafts, the connections being at different distances from the respective centers of motion; whereby unequal vibratory movements are imparted to the respective ends of the levers, and connections between the valves and levers at intermediate points between the said shafts.

8. In a valve gear the combination of two rotary reciprocating shafts, a series of levers having fulcra on one of said shafts at points eccentric to its axis, and having connections with the other shaft at relatively greater distances from its axis, whereby unequal vibratory or angular movements are imparted to the two ends of said levers, and connections between the valves and levers at points between said shafts.

9. In a valve gear the combination of two rotary reciprocating shafts, a series of levers having fulcra on one shaft eccentric to the axis thereof and connected in pairs with the other shaft at opposite sides of its axis, whereby the reciprocating movements of the shafts will impart motion to the fulcrumed ends of all the levers in the same direction and to the opposite ends of the respective pairs in opposite directions, and connections between said levers and the valves for operating the latter.

10. In a valve gear the combination of two rotary reciprocating shafts, a series of levers having fulcra on one of said shafts, and having connection with the opposite shaft, in pairs, on opposite sides of its axis, said connections being adjustable toward and from the axis, whereby the throw of the levers may be varied and adjusted, and connections between said levers and the valves for operating the latter.

11. In a valve gear the combination of two rotary reciprocating shafts, a series of levers having fulcra on one of said shafts eccentric to its axis on the side opposite the other shaft and having connections with the opposite shaft, in pairs, on opposite sides of its axis, said connections being adjustable toward and from the axis, whereby the throw of the levers may be varied and adjusted, and connections between said levers and the valves for operating the latter.

12. In a valve gear the combination with the valves, of two rotary reciprocating shafts, a series of levers having fulcra on one shaft eccentric to the axis thereof, a second series of levers similarly fulcrumed on the other shaft, said levers being connected, in pairs, with the opposite shafts at opposite sides of the axes thereof, whereby the reciprocations of the shafts will move the fulcrumed ends of either series of levers in the same direction and the opposite ends of the respective pairs in opposite directions, and connections between said levers and the valves for operating the latter.



13. In a valve gear for compound engines the combination with the valves, of two rotary reciprocating shafts connected with, and operated by, the pistons of the respective cylinders, a series of levers having their fulcra on one shaft eccentric to the axis thereof, a second series of levers similarly fulcrumed on the other shaft, the said levers connected, in pairs, with the opposite shafts at opposite sides of the axes thereof, connections between one series of levers and the valves of one cylinder, and similar connections between the other series and the valves of the other cylinder, substantially as shown and described.

14. In a valve gear for compound engines the combination of two rotary reciprocating shafts connected respectively with, and operated by, the pistons of two cylinders, connections between each of said shafts and the valves of the cylinder connected with the other shaft for setting the valves to predetermined positions preparatory to their opening and closing movements, and connections between the valves of each cylinder and the shaft controlled by the piston of said cylinder for imparting to the valves their final opening and closing movements.

15. The combination with the valves, of the crank arms connected therewith, the vibrating lever arms operatively connected with the crank arms, for operating the same, the rotary reciprocating shafts, the actuating levers connected with and operated by said shafts, connections between said levers and lever arms, and connections between the shafts and the engine pistons.

16. In a valve gear for compound engines, the combination with the valves, of two rotary reciprocating shafts connected with, and actuated by, separate pistons, a series of levers having a common fulcrum on one of said shafts eccentric to the axis thereof and adjustable toward and from said axis, a second series similarly fulcrumed on the other shaft, each series of levers being coupled with the opposite shaft, the connections being adjustable from one side of the axis to the other connections between one series of levers and the valves of one cylinder, and similar connections between the other series and the valves of the other cylinder.

17. In a valve gear for double cylinder, right angular engines the combination with the valves, of two rotary reciprocating shafts connected with, and operated by, the respective pistons, a system of levers eccentrically connected with both shafts, the eccentricity of the connection with one shaft being greater than that with the other, and link mechanisms between said levers and valves.

18. In a valve gear for double cylinder, right angular engines the combination with the valves, of two rotary reciprocating shafts connected with, and actuated by, the pistons of the respective cylinders, a system of levers connected with both shafts, the connections with one shaft being adjustable toward and from the axis and the connections with the other shaft being adjustable from one side of the axis to the other, and connections between said levers and valves, whereby compound movements are imparted for first setting the valves to predetermined intermediate positions, and then opening and closing from said intermediate positions, and whereby the valves are adapted to be reversed by shifting said connections, as shown and described.

19. In a valve gear for compound right-angular engines the combination with the valves, of two rotary reciprocating shafts connected with, and operated by, the respective pistons, a series of levers fulcrumed on one shaft eccentric to the axis thereof, a second series similarly fulcrumed on the other shaft, said levers being connected with the opposite shafts, in pairs, at opposite sides of the axes thereof, the fulcrum on either shaft and the connections with the opposite series of levers being so arranged that they will be in line with the axis of the other shaft when the piston is on the half stroke.

20. The combination with the valves, the rotary reciprocating shafts and the actuating levers connected with, and operated by said shafts, of the lever-arms, the crank-arms connected with the valves and with the lever arms, and reversing links between the actuating levers and the lever-arms, substantially as shown and described.

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**527,680. APPARATUS FOR MAKING SULFURIC ACID.** PETER S. GILCHRIST, Charleston, S. C. Filed Mar. 30, 1894. Serial No. 505,693. (No model.)



*Claim.*—1. In an apparatus for the manufacture of sulphuric acid substantially as described, an air pipe adapted to retard the flow downward and provided in its upper surface with a depression or recess adapted to receive and accumulate the weak acid, substantially as and for the purposes set forth.

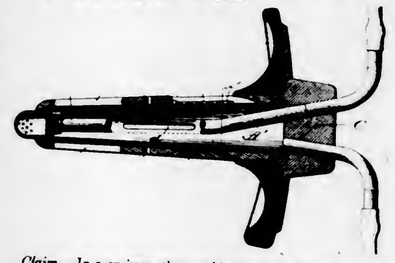
2. In an apparatus for the manufacture of sulphuric acid, an air pipe provided in its upper side with a depression or recess for the accumulation of weak acid and along its sides with longitudinal ribs or corrugations by which to retard the passage of such weak acid along such sides, and so prolong the period of exposure of such acid to the gas passed in contact with such pipe, substantially as set forth.

3. In an apparatus for manufacturing sulphuric acid a column or case provided with a series of transverse air pipes having in their upper sides depressions or recesses forming pockets in which weak acid is accumulated, the said pipes being alternated substantially as described and shown whereby the gases in passing through the series are directed into close contact with the pockets in the tops of the pipes, substantially as set forth.

4. The combination with the case or column, of the transverse air pipes therein having roughened surfaces and relatively large longitudinal corrugations on top, substantially as described.

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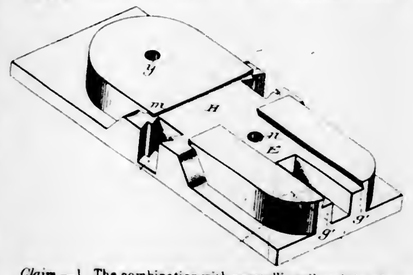
**527,681. SYRINGE.** ALBERT L. GRAY, Tarkio, Mo. Filed Jan. 18, 1894. Serial No. 497,255. (No model.)



*Claim.*—In a syringe, the combination, of a block having a pad on its inner side and induction and eduction pipes passing therethrough, together with a tube D having apertures therein and a recess $d^3$ in its upper side adjoining the pad, and a tube A' supported centrally within the tube D and having a spraying nozzle which extends beyond the end of the latter, the recess $d^3$ opening into the tube D, substantially as shown and for the purpose set forth.

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**527,682. STEEL COMBINATION RAILROAD-TIE.** JOHN R. GREEN, Woodstock, Ala. Filed Jan. 13 1891. Serial No. 377,679. (No model.)



*Claim.*—1. The combination with a metallic railroad tie, of a sectional rail sleeper, said tie having a groove, *o*, a mortise, *c*, a key seat, E, a rail-seat, H, a flange lip, *m*, *m*, two rail support notches, B and B, and having bolt holes, *n* and *y*, all substantially as set forth.

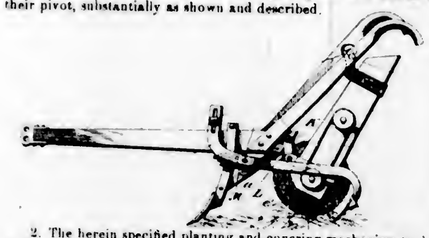
2. The combination with the tie having the mortise and groove with the tie bar having the turned down ends fitting therein of the cover plate, E, for the purpose herein set forth

3. The combination in a metallic railroad tie of a "rail support" having dove-tail notches on each end, B, and, B, adjustable in dove-tail notches B', B' on "rail sleepers," adapted to proper curvature of road, and solid rail bearing, and to prevent rail sleepers from slipping and sliding, all as substantially set forth.

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**527,683. PLANTER ATTACHMENT FOR PLOWS.** JOHN W. GRUBBS, Fair Play, S. C. Filed Feb. 2, 1894. Serial No. 498,890. (No model.)

*Claim.*—1. The combination with the ordinary plow, and a planting mechanism attached thereto, of a cuff vertically adjustable on the plow stock, beams provided with covering shovels pivotally attached to the said cuff, and means for adjusting the said beams on their pivot, substantially as shown and described.



2. The herein specified planting and covering mechanism to be attached to an ordinary plow, consisting of a hopper having rotary agitators one operated by the ground wheel shaft, the other by a sprocket wheel and chain connection with said ground wheel shaft, shackles connecting the hopper with the plow and admitting of an independent vertical movement of said hopper, a cuff vertically adjustable on the plow stock, beams pivotally connected with the cuff, and having their forward ends curved upward and slotted, and a bolt connecting the slotted ends of the beams, all substantially as shown and described.

527,684. RAILROAD CATTLE-GUARD. ANDREW J. GWIN, Minden, La., assignor of one-half to James F. Hill, same place. Filed Feb. 17, 1894. Serial No. 500,488. (No model.)



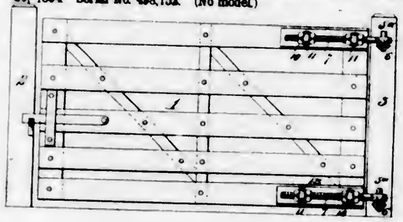
*Claim.*—1. The combination with traffic rails, and a gate arranged at a right angle thereto and adapted to slide vertically, of the movable rails alongside the traffic rails, two rock shafts having two sets of arms pivoted to said movable rails, the inner arms being fixed on the inner rock-shafts, levers which connect the latter with the gate, and devices for connecting such arms and levers, for raising the gate, as shown and described.

2. The combination with the traffic rails, the vertically slidable gate, the rock shafts F, F', having arms *a*, *a'*, movable rails supported by the latter, the links *d*, and levers *c*, pivoted loose on arms *a'*, pins *g*, which project from the latter and bear against said levers, and springs for holding the shafts and movable rails in normal position as shown and described.

3. The combination with the vertically sliding gate, or guard, of transverse rock shafts, crank arms fixed on the latter and having lateral pins, and movable rails supported on said pins, levers mounted loose on the inner rock shafts, and rods connecting them with the gate, as shown and described, whereby the movable rails have a compound horizontal and vertical movement, and when depressed allow the gate to drop but elevate the same when rotated to normal position, as shown and described.

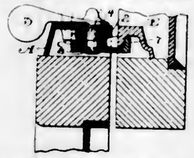
4. The combination with the vertically sliding gate, and movable rails arranged alongside the traffic rails and having a sliding connection at their inner ends, of the two sets of rock shafts provided with crank arms which are pivoted to said rails, the inner crank-arms being provided with lateral pins; the levers pivoted on the inner shafts; and rods or links *d*, which pivotally connect the said levers with the gate, as shown and described.

527,685. GATE HINGE. LOUIS HARDE, Belleville, Ill. Filed Jan. 26, 1894. Serial No. 498,152. (No model.)



*Claim.*—In a gate hinge, the combination of a pivot bolt, an adjustable screw threaded rod provided with an eye adapted to receive the pivot end of the bolt, nuts on the rod for securing eye bolts thereon, the inner ends of which are passed through perforations in a plate and in a rail of the gate and are therein secured by adjusting nuts substantially as and for the purpose set forth.

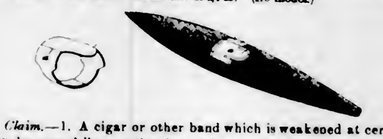
527,686. SASH-LOCK. JOHN A. HASENPFLUG, Cleveland, Ohio, assignor to the Champion Safety Lock and Novelty Company, same place. Filed Mar. 9, 1894. Serial No. 502,964. (No model.)



*Claim.*—1. In a sash lock, the casing formed in a single piece, the handled post, a cam fixed rigidly on said post inside the casing, and the locking bolt suspended on said post beneath said cam and constructed to be engaged and operated by the cam, said bolt having a projection on its top, and a channel and stop on the inside of the top of the casing for said projection, substantially as set forth.

2. The casing having a hub on its inside about the post hole and a channel at one side of said hub, the handle post extending through said hole, a cam on said post beneath its hub, and a locking bolt provided with a longitudinal slot through which the said post passes and constructed about said slot for engagement by the said cam and having a projection to engage in the said channel about the said hub, substantially as set forth.

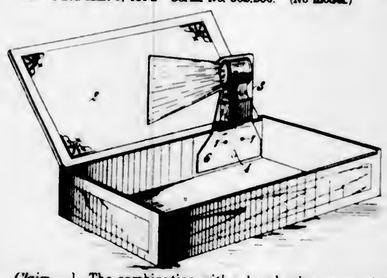
527,687. CIGAR-BAND. CHARLES HERNSHEIM, New Orleans, La. Filed Dec. 20, 1893. Serial No. 494,143. (No model.)



*Claim.*—1. A cigar or other band which is weakened at certain points by scored lines so that it may be more easily removed, the intervening portions between the scored lines having at the end a loosely projecting flap adapted to be grasped to tear the band.

2. A cigar or other band having parallel scored or weakened lines, the intervening portion between which projects at the ends beyond the edges of the band to provide a loose flap to be grasped to tear the band, substantially as described.

527,688. DISPLAY-CARD. CHARLES HERNSHEIM, New Orleans, La. Filed Mar. 3, 1894. Serial No. 502,206. (No model.)



*Claim.*—1. The combination with a box having an opening and closing lid, of an advertising or display card having a spring strip or wire extending along the body thereof and firmly secured thereupon, one end portion of said spring and card being firmly secured to the box body, substantially as described.

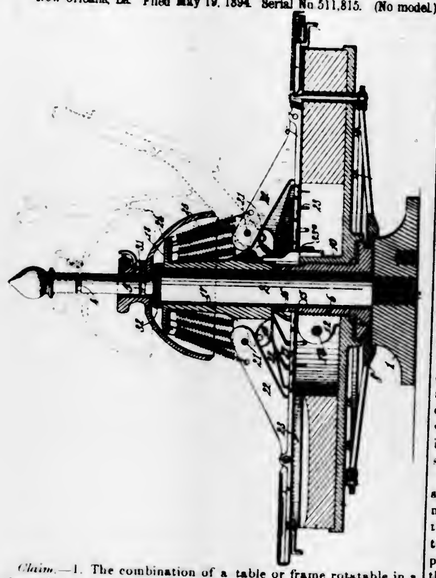
2. The combination with a box having an opening and closing lid, of an advertising or display card having a spring strip extending along the body thereof, and having one of its end portions with an attached portion of the card firmly secured to the box, substantially as described.

3. The combination with a box having an opening and closing lid, of an advertising or display card composed of layers between which a spring strip or wire is arranged to extend along the body of the card, one edge portion of the card and one portion of the spring being firmly secured to the box, substantially as described.

4. The combination with a box, of an advertising or display card secured stationary at one edge portion to the box and provided with a spring which extends along the free or unattached part of the card and is held to the box by that portion of the card which is secured stationary to the box, substantially as and for the purposes described.



527,689. CIGAR-SHAPING MACHINE. CHARLES HERNSHEIM, New Orleans, La. Filed May 19, 1894. Serial No. 511,815. (No model.)



*Claim.*—1. The combination of a table or frame rotatable in a horizontal plane and provided with a series of lower mold-sections, a rotatable lever support located above and mounted independently of the rotatable table or frame, and pivotally mounted levers radiating from said lever-support, provided with upper mold-sections or covers and adapted to be lowered upon said lower mold-sections so that the cigar bunches or fillers can be successively introduced into the lower mold-sections at one side of the machine, the upper mold-sections or covers lowered and secured to effect the molding or shaping of the bunches or fillers, and the latter carried in a circular path for delivery to the roller or operator who applies the wrappers, substantially as described.

2. The combination of a table or frame rotatable in a horizontal plane and provided with a series of lower mold sections, pivotally mounted levers carrying upper mold-sections or covers and adapted to be lowered upon said lower-mold-sections, securing devices for holding the upper mold sections or covers in operative connection with the lower mold-sections, and means for automatically swinging the levers and upper mold-sections or covers in a vertical plane when the securing devices are released, substantially as described.

3. The combination with a rotatable table or frame carrying mold-sections, of pivotally mounted levers or arms carrying mold-sections or covers and adapted to swing to and from the mold-sections on the table or frame, securing devices for holding the mold-sections or covers carried by the levers in operative connection with the mold-sections on the table or frame, and means for automatically moving the levers and the mold-sections carried thereby from the mold-sections on the table or frame when the said securing devices are released, substantially as described.

4. The combination of a horizontal, intermittently rotatable table or frame provided with an annular series of lower mold-sections, a series of pivotally mounted levers carrying upper mold-sections or covers, securing devices for holding the upper mold-sections in operative connection with the lower mold-sections, and springs suitably arranged and operating to automatically raise the levers or arms and the mold-sections or covers carried thereby when the said securing devices are released, substantially as described.

5. The combination of a rotatable table or frame provided with a series of mold-sections, a series of movable levers carrying mold-sections or covers, securing devices for holding the mold-sections of the levers in operative connection with the mold-sections of the table or frame, means for automatically moving the levers and the mold-sections carried thereby away from the mold-sections of the table or frame when said securing devices are released, and a lever-stop for limiting the movement of the levers in a direction away from the mold-sections of the table or frame, substantially as described.

6. The combination of a rotatable table or frame provided with a series of mold-sections, a series of swinging levers carrying mold-sections or covers, securing devices for holding the mold-sections of the levers in operative connection with the mold-sections of the table or frame, means for automatically moving the levers and the mold-sections carried thereby away from the mold-sections of the table or frame when the securing devices are released, and a lever-stop arranged in the path of the levers and common to all of them for limiting their movement in a direction away from the mold-sections of the table or frame, substantially as described.

7. The combination of a horizontal intermittently rotatable table or frame provided with a series of mold sections, a rotatable lever carrier mounted above the table or frame, a series of swinging levers pivotally mounted on said carrier and provided with mold-sections or covers, securing devices for holding the mold-sections of the levers in operative connection with the mold-sections of the table or frame, a lever-stop arranged above and common to all the levers for limiting them in their upward swinging movements, and means for automatically raising the levers and the mold-sections carried thereby when said securing devices are released, substantially as described.

8. The combination of a suitable pedestal or support having a vertical shaft or spindle, a table or frame rotatable on the shaft or spindle and provided with a circular series of mold-sections, a lever-carrier also rotatable on the shaft or spindle, a series of levers pivoted to and radiating from the lever-carrier and provided at their onter end portions with mold-sections or covers adapted to be lowered upon the mold sections of the table or frame, a series of suitable springs connected at one end with the lever-carrier and at the other end with the levers for automatically raising the latter, and suitable means for securing the mold-sections or covers of the levers in operative connection with the mold sections of the table or frame, substantially as described.

9. The combination of a pedestal or support having a shaft or spindle, a sleeve rotatable on the shaft or spindle, a table or frame mounted on the sleeve and rotatable therewith, a series of mold-sections arranged upon the table or frame, a lever-carrier mounted on the shaft or spindle, a series of levers pivoted to the lever-carrier and provided with mold sections or covers, securing devices for holding the mold-sections or covers of the levers in operative connection with the mold-sections of the table or frame, springs connected at one end with the lever carrier and at the other end with the levers for automatically raising the latter when the securing devices are released, and a lever-stop for limiting the swinging movement of the levers, substantially as described.

10. The combination of a rotatable table or frame having a circular series of mold-sections removably mounted thereupon, a rotatable lever-carrier having a series of radiating pivoted levers provided with mold-sections or covers, means for holding the mold-sections or covers of the levers in operative connection with the mold-sections of the table or frame, springs for automatically swinging the levers and their mold-sections or covers away from the mold sections of the table or frame, and a lever-stop adjustable to different positions for enabling the levers to be swung approximately close together so that the circular series of mold-sections of the table or frame can be removed and other mold-sections placed in position, substantially as described.

11. The combination of a pedestal or support having a vertical shaft or spindle, a table or frame rotatable on the shaft or spindle, a lever-carrier also rotatable on the shaft or spindle, a series of mold-sections removably mounted on the table or frame, a series of levers pivoted to the lever-carrier and provided with mold-sections or covers, securing devices for holding the mold-sections or covers of the levers in operative connection with the mold-sections of the table or frame, springs for swinging the levers and their mold-sections or covers away from the mold-sections of the table or frame when the securing devices are released, a lever-stop adjustable vertically on the shaft or spindle, and means for retaining the lever-stop in the position to which adjusted, substantially as described.

12. The combination with a rotatable table having a series of mold-sections arranged thereupon, of a lever-carrier, a series of levers pivoted to the lever-carrier and provided with heads, mold-sections or covers detachably mounted on the heads of the levers, and clamping devices for clamping the mold-sections or covers to the heads of the levers, substantially as described.

13. The combination with a rotatable table or frame having a circular series of mold-sections removably arranged thereupon, of a lever-carrier having a series of pivoted radiating levers provided with heads, mold-sections or covers dove-tailed to the heads of the levers.

and clamping devices for clamping the heads of the levers to the mold-sections or covers, substantially as described.

14. The combination with a rotatable table having a series of removable mold-sections, of a rotatable lever-carrier, a series of levers pivoted to the carrier and having heads provided with elastic-jaws, mold-sections or covers engaging the lever heads and the elastic-jaws thereof, and means for clamping said elastic jaws into engagement with the mold-sections or covers, substantially as described.

15. The combination with a rotatable table or frame having removable mold-sections, of pivoted levers having heads provided with elastic-jaws, mold-sections or covers dovetailed to the heads of the levers, and clamping screws for clamping the elastic-jaws of the heads in engagement with the mold-sections or covers, substantially as described.

16. The combination with a rotatable table or frame provided with mold sections, of a rotatable lever-carrier, means for adjusting the table or frame to and from the lever carrier, a connection between the table or frame and the lever-carrier for rotating them in unison, and a series of levers pivoted to the lever-carrier and provided with mold-sections or covers, substantially as described.

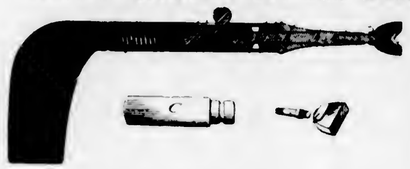
17. The combination with a pedestal or support having a shaft or spindle, a sleeve rotatable on the shaft or spindle, a table or frame adjustable on the sleeve and having mold-sections, a lever-carrier mounted on the shaft or spindle, a series of levers pivoted to the lever carrier and provided with mold-sections or covers, and securing devices for holding the mold-sections or covers of the levers in operative connection with the mold-sections of the table or frame, substantially as described.

18. The combination of a pedestal or support having a shaft or spindle, an externally screw-threaded sleeve rotatable on the shaft or spindle, a table or frame having mold-sections and an internally threaded hub engaging and adjustable upon the threaded sleeve, a lever-carrier, a series of levers pivoted to the carrier and provided with mold-sections or covers, and securing devices for holding the mold-sections or covers of the levers in operative connection with the mold-sections of the table or frame, substantially as described.

19. The combination of a rotatable base-frame or wheel having catch posts, a table or frame having mold-sections and rotatable with the base-frame or wheel, a lever support, and swinging levers connected with the lever support and having mold-sections or covers provided with latch bolts to engage the catch-posts, substantially as described.

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**527,690. DENTAL TOOL.** Jeptha G. Hollingsworth, Kansas City, Mo., assignor to the S. S. White Dental Manufacturing Company, Philadelphia, Pa. Filed Aug. 25, 1894. Serial No. 521,319. (No model.)



*Claim.*—1. The combination of the tubular casing, the hammer therein, means for actuating the hammer, the adjustable turning tool holder, means for securing the tool holder in its position of adjustment, and the detachable driving tool, substantially as and for the purpose set forth.

2. The combination of the tubular casing, the hammer therein, means for actuating the hammer, the adjustable turning tool holder, means for securing it in its position of adjustment, and the driving tool having the angular shank, substantially as and for the purpose set forth.

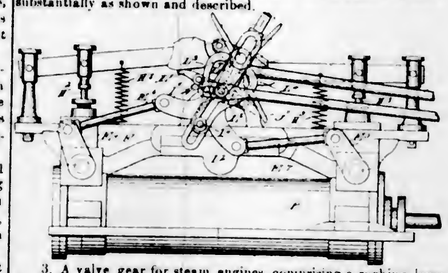
3. The combination of the tubular casing, the spring-actuated hammer, means for retracting the hammer, the adjustable turning tool holder, and means for securing the tool holder in its position of adjustment, substantially as and for the purpose set forth.

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**527,691. VALVE-GEAR.** Franklin W. Hagar, Nashville, Tenn. Filed Apr. 24, 1894. Serial No. 508,793. (No model.)

*Claim.*—1. A valve gear for steam engines, comprising a cylinder having ports at its ends open at all times, a chest containing valve chambers into which open the said ports, the said chests also containing exhaust ports leading from the said chambers and inlet channels for the live steam leading to valve seats opening into the said valve chambers, oscillating valves in the said valve chambers, puppet valves in the said seats, and means, substantially as described, for actuating the said oscillating valves and the said puppet valves in the manner set forth.

2. A valve gear for steam engines, comprising a rocking lever for the oscillating exhaust valves, and a rocking shaft journaled in the said first named rocking lever, and having an independent turning motion to control the puppet valves for the admission of steam, substantially as shown and described.



3. A valve gear for steam engines, comprising a rocking lever for the oscillating exhaust valves, a rocking shaft journaled in the said first named rocking lever, and having an independent turning motion to control the puppet valves for the admission of steam, and a valve link adapted to be operated from the main driving shaft and adapted to engage either a pin on the said lever or the said shaft, substantially as shown and described.

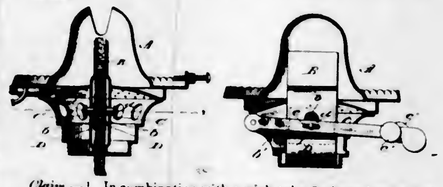
4. A valve gear for steam engines, comprising puppet valves for the admission of the live steam, oscillating exhaust valves for controlling the exhaust, a rocking lever connected with the said exhaust valves, a rocking shaft journaled in the said rocking lever, and a connection between the said rocking lever and the said puppet valves to actuate the latter, substantially as shown and described.

5. A valve gear for steam engines, comprising puppet valves for the admission of the live steam, oscillating exhaust valves for controlling the exhaust, a rocking lever connected with the said exhaust valve, a rocking shaft journaled in the said rocking lever, and a connection between the said rocking lever and the said puppet valves to actuate the latter, a valve link for the said rocking lever and operated from the main driving shaft and adapted to engage either a pin on the rocking lever or the said shaft, and a second valve link likewise operated from the main driving shaft and connected with a crank arm on the said shaft, substantially as shown and described.

6. In a valve gear for steam engines, the combination with a cam on the main driving shaft, of a frame mounted to swing forward and backward and actuated by the said cam, the said frame being connected with the oscillating exhaust valves, and a second frame mounted to slide vertically in the said swinging frame, and likewise operated from the said cam, the said second frame being connected with puppet valves for controlling the live steam to the cylinder, substantially as shown and described.

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**527,692. WICK-ADJUSTER FOR LAMP-BURNERS.** Edgar A. Humphrey, Columbus, Pa. Filed Apr. 12, 1894. Serial No. 507,235. (No model.)



*Claim.*—1. In combination with a wick-tube for lamp-burners, of levers C C pivotally supported and carrying plates D D which are located on either side of the wick, substantially as shown and for the purpose set forth.

2. In combination with a wick-tube for lamp-burners, of levers C C pivotally supported at one end, plates D D attached to the levers and located on either side of the wick, and means for separating the free ends of the levers, substantially as shown and for the purpose set forth.

3. In combination with a wick-tube for lamp-burners, of levers pivotally supported and carrying plates D D located on either side of the wick, the free ends of the levers being connected to each other so that they will move in unison, substantially as shown and for the purpose set forth.

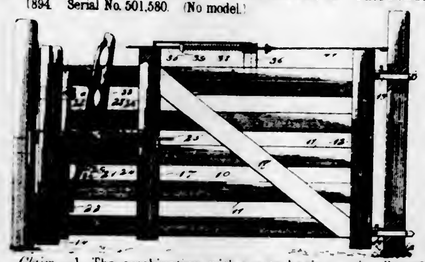
4. In combination with a wick-tube for lamp-burners having apertures *b b*, of plates connected to pivoted levers, said levers being connected to each other by headed pins which pass through the free ends of the levers, substantially as shown and for the purpose set forth.



5. In a lamp-burner, the combination, of a wick-tube having a laterally enlarged central portion with vertical slots *b*, levers C C of spring metal pivotally supported at one end and bent so that their free ends will lie normally apart, and plates D D attached to the intermediate portion of the levers by pins which pass through the slots *b*, said plates being located within the enlarged portion of the wick-tube on either side of the wick, substantially as shown and for the purpose set forth.

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**527,693. GATE.** James M. Hurst, Lucretia, Va. Filed Feb. 26, 1894. Serial No. 501,580. (No model.)



*Claim.*—1. The combination with a gate having a plurality of connected latches and a lever for operating the latches and pivoted between its ends to the gate, said lever having hand holds at its upper and lower ends and one between its ends, of a guard adapted to prevent retraction of the lever by animals and provided with recesses registering with the middle and upper hand holds, substantially as described.

2. The combination, with the swinging gate, and the gate post having a plurality of catches, of the spring pressed latch bar sliding on the gate, and a plurality of latches carried by the latch bar and arranged to engage the catches, substantially as described.

3. The combination, with the swinging gate, and the gate post having a series of catches, of the sliding spring-pressed latch bar on the gate, latches carried by the latch bar to engage the catches, and a lever fulcrumed on the gate and operatively connected with the latch bar to retract it, substantially as described.

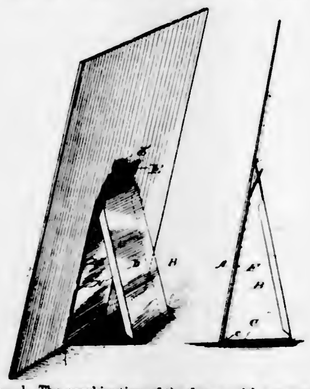
4. The combination, with the gate and the latch carrying bar, of the lever fulcrumed on the gate and connected with the bar, and the guard secured to the gate adjacent to the lever and adapted to overlap the upper end of the lever, substantially as described.

5. The combination, with the swinging gate, of the spring-pressed slide bar mounted on the gate top, and the rods connected with the slide bar and with an adjacent support near the hinged end of the gate, substantially as described.

6. The combination, with the swinging gate, of the spring-pressed slide bar mounted upon it, a housing for the slide bar, and pull rods loosely connected with the slide bar and with an adjacent support near the hinged end of the gate, substantially as described.

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**527,694. SUPPORT FOR CARDS.** William F. Jones, Baltimore, Md. Filed May 1, 1894. Serial No. 509,659. (No model.)



*Claim.*—1. The combination of the frame, with a rearwardly deflected slotted keeper arranged on the rear side of the frame, a support comprising a base piece having a jointed connection at one end with the frame and a strut piece jointed to the outer end of the base and provided at its upper end with a tongue adapted to be inserted through the slotted keeper and prolonged whereby it may operate by a spring action between said keeper and frame to retain itself in place substantially as set forth.

2. A frame provided with a support having an upright piece secured to the frame and provided at its upper end with a rearwardly projected portion having an opening and forming a keeper, the base jointed to the lower end of the upright and the strut jointed at its lower end to the outer end of the base and having at its upper end a tongue adapted to be inserted in the slot of the upright and to bind against the back of the frame, whereby to retain the tongue in the keeper substantially as set forth.

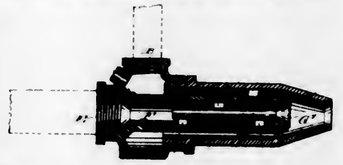
3. A support for frames formed in one piece and composed of the upright, base and strut portions the base being comparatively rigid, the upright and strut being bent from and practically jointed to the base such upright having at its upper end a deflected portion provided with an opening and forming a keeper and the strut having at its upper free end a tongue fitted to said keeper and prolonged whereby when inserted in the keeper and engaged against the frame or other object such tongue will be bent and will operate by its own tension to be retained in the keeper substantially as set forth.

4. The combination with the frame of the support composed of the upright secured to the frame and provided at its upper end with a keeper portion free at one edge from the frame and having an opening for the tongue of the strut, the base jointed at one end to the upright and the strut jointed to the outer end of the base and having at its upper end a tongue fitted to the keeper of the upright the combined length of the base and strut being less than that of the frame whereby when said parts are folded flat against the frame they will lie between the ends thereof substantially as set forth.

5. The combination with the frame having a keeper free at one edge from such frame, the practically rigid base portion having at one end a jointed connection with the frame and the strut jointed to the base piece and having at its upper free end a tongue to engage in the keeper of the frame, substantially as set forth.

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**527,695. HYDROCARBON-BURNER.** Berend Kamps, Zeeland, Mich. Filed Jan. 9, 1894. Serial No. 496,273. (No model.)

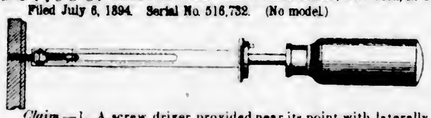


*Claim.*—1. A hydro carbon burner, comprising a pipe adapted to discharge steam under pressure, a casing surrounding the said chamber and adapted for connection with an oil supply, a nozzle secured to the casing and projecting in advance of the steam pipe, and a collar fitted between the said nozzle and steam pipe to retain the oil within the casing and nozzle, said collar being provided in its upper part, with a recess for the passage of the oil to the forward end of the steam pipe, substantially as described.

2. A hydrocarbon burner comprising a casing connected with an oil supply, a nozzle extending from the said casing and having a contracted end, a steam pipe connected with the steam supply and extending through the said casing and nozzle into the contracted end thereof, the forward end of the said steam pipe having an exterior and an interior bevel forming a blunt edge at the extreme end of the pipe, a plug fitted in the said extreme end of the steam pipe to form, with the inner bevel, a circular steam outlet, and a collar fitted between the said steam pipe and nozzle to retain the oil within the casing and nozzle, the said collar being provided on its top with a recess for the passage of the oil to the forward end of the steam pipe, substantially as shown and described.

3. A hydrocarbon burner comprising a casing connected with an oil supply, a nozzle extending from the said casing and having a contracted end, a steam pipe connected with the steam supply and extending through the said casing and nozzle into the contracted end thereof, the forward end of the said steam pipe having an exterior and an interior bevel forming a blunt edge at the extreme end of the pipe, a plug fitted in the said extreme end of the steam pipe to form, with the inner bevel, a circular steam outlet, a collar fitted between the said steam pipe and nozzle to retain the oil within the casing and nozzle, the said collar being provided on its top with a recess for the passage of the oil to the forward end of the steam pipe, and an air inlet in the said casing, substantially as shown and described.

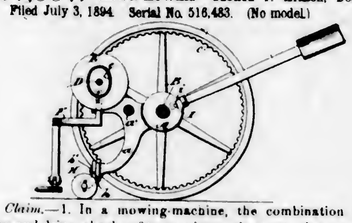
527,696. SCREW-DRIVER. Maximilian Keehn, New York, N. Y. Filed July 6, 1894. Serial No. 516,732. (No model.)



*Claim.*—1. A screw driver provided near its point with laterally extending lugs or cams, and a pair of spring prongs having jaws at their forward ends and provided at their rear ends with a sleeve sliding and turning on the screw driver, the said jaws springing toward each other when the cams or lugs lie in the plane of the slot or space which separates them and being forced apart when the sleeve is given a quarter turn to bring the lugs or cams in contact with the inner faces of the prongs and then moved forwardly on the screw driver, substantially as described.

2. A screw driver provided near its point and at right angles thereto with cams or lugs $B^3$ $B^3$ and in its other two sides with recesses $B^2$ $B^2$, and the sleeve C sliding and turning on the screw driver and having parallel prongs C $C^2$ provided at their forward ends with jaws $C^4$ and lateral recesses $C^3$ and interlocking fastening devices to connect the sleeve in its rearward position with the screw driver, the said cams serving to spread the prongs apart when the sleeve is given a quarter turn and moved rearwardly on the screw driver and permitting the prongs to spring together when the lugs or cams lie in the plane of the space separating them, substantially as described.

527,697. LAWN-MOWER. George P. Kirsch, Decatur, Ind. Filed July 3, 1894. Serial No. 516,483. (No model.)



*Claim.*—1. In a mowing-machine, the combination with the frame and drive wheels, of two reciprocating cutter bars overlapping one another, and mechanism for communicating a combined reciprocating and rising and falling motion to said cutter bars, substantially as described.

2. In a mowing machine, the combination with the frame and drive wheels, of two reciprocating cutter bars overlapping one another, bell-crank levers attached to said cutter bars and operating to communicate a combined reciprocating and rising and falling motion thereto, and mechanism operated by the drive wheels for simultaneously rocking said bell-crank levers, substantially as described.

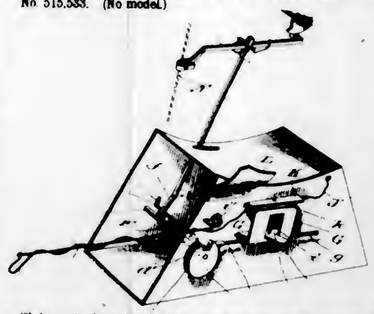
3. In a mowing-machine, the combination with the frame and drive wheels, of two reciprocating cutter bars overlapping one another, bell-crank levers attached to said cutter bars and operating to communicate a combined reciprocating and rising and falling motion thereto, a shaft rotated by said drive wheels, and a cam wheel mounted on said shaft and provided on its opposite sides with cams engaging the ends of said bell cranks to rock the latter, substantially as described.

4. In a mowing-machine, the combination with the frame and the drive wheels provided with internal peripheral gears, of a shaft journaled in said frame and carrying at its opposite ends ratchet pinions engaging said gears, a cam wheel rigidly mounted on said shaft and provided on its opposite sides with cams, downwardly depending bell-crank levers pivoted to said frame and engaging at their inner ends said cams, and overlapping cutter bars movably connected to each other and pivotally secured at their outer ends to said bell crank levers, substantially as described.

5. In a mowing-machine, the combination with the frame and drive wheels provided with internal peripheral gears, of a shaft journaled in said frame and carrying at its opposite ends ratchet pinions engaging said gears, a cam wheel rigidly mounted on said shaft and provided on its opposite sides with elliptical cams, downwardly depending bell-cranks pivoted to said frame and each provided at its inner end with friction rollers engaging the opposite sides of the adjacent cam, and overlapping cutter bars movably connected to each other and pivotally secured at their outer ends to said bell-crank levers, substantially as described.

6. The herein described ratchet mechanism, consisting of a pinion loosely journaled on a shaft and provided upon one face with ratchet teeth having inclined faces, and abrupt shoulders and a duplex rocking pawl having reversely bent ends and journaled in a transverse aperture in the shaft, substantially as and for the purpose set forth.

527,698. AUTOMATIC FIRE-LIGHTER. Adolph J. Krehbiel and Gustavus A. Heer, Halstead, Kans. Filed June 23, 1894. Serial No. 515,533. (No model.)



*Claim.*—1. In a fire lighter the combination of a clock mounted upon a base portion which carries a clamp for holding a match and a friction wheel adapted to rasp against the head of the match when the said wheel is revolved, a fuse and an extinguisher over the same, substantially as shown and described.

2. In a match lighter, the combination of the clock mounted on a base portion carrying a plate provided with a spring actuated clamp for holding a match, which is adapted to be held in contact with an eccentric friction wheel having a milled edge, and means for automatically rotating the said wheel, a fuse and an extinguisher over the same, substantially as shown and described.

3. In a fire lighter, the combination of the clock and base portion carrying the plate G, having a groove in its upper edge for the reception of a fuse, an extinguisher projecting over the said fuse, and the automatically operated friction wheel for igniting, in its rotary movement a match carried on the said plate G, substantially as shown and described.

4. In a fire lighter the combination of the clock seated on the base A, the shaft C mounted in said base having a notched friction wheel keyed to an outer end, a catch pin *f* seated in the said shaft, a stop shaft E, mounted for vertical play, and a coiled spring carried on the shaft C, one end being secured to said stop shaft, its other end secured to the said catch pin which is held in a "set" position by means of a lever connected to the clock work mechanism, substantially as shown and described.

5. A fire lighter, comprising in combination the shaft C, coiled spring thereon, the stop shaft E to which is secured one end of the said coiled spring, one end of the said shaft E seated in an elongated slot whereby when the catch pin *f* is released, and under the tension of the said spring, is caused to rotate with the shaft C, it strikes the under side of the stop shaft, which is allowed to yield slightly, all substantially as shown and described.

6. In combination with a base portion, the lever M adapted to catch the pin *f*, and hold the same "set," the upper end of the said lever M attached to a dropper *m*, a stop shaft E, mounted for vertical play, the double acting spring *m'* secured thereto, one end of the said dropper secured to the edge of the frame N, its other end designed to rest on the edge of a drop wheel O, and means for operating the same substantially as shown and described.

7. In combination with the fire lighting apparatus as described, the lever M, catch pin *f*, dropper *m*, one end secured to the edge of the frame N, its free end resting on the drop wheel O, the said drop wheel, and the dial wheel P secured to a collar Q carried on the hour post of the clock between the hands and the hour wheel, in such a manner and with sufficient friction that the dial plate and the drop wheel may be set to touch off the mechanism for lighting the match, which is carried on the base portion, all substantially as shown and described.

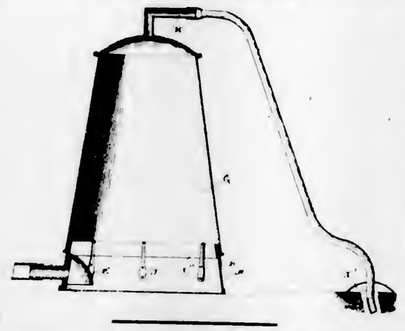
527,699. FUMIGATOR. Thaddeus A. Manahan, Fairfield, Tex. Filed July 5, 1894. Serial No. 516,632. (No model.)

*Claim.*—1. An improved fumigator comprising a chamber and a suitable outlet therefor, an inlet pipe projected into the chamber, a plate secured adjacent the inlet end of the pipe and also adjacent the wall of the chamber, and a deflector for the inner end of the pipe having its rear edge turned down and inserted between the plate and wall for holding the deflector in position, substantially as shown and described.

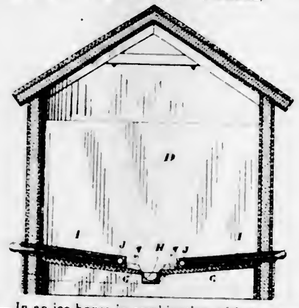
2. An improved fumigator comprising a burning chamber having a surrounding wall, a dome adapted to fit thereover, a packing arranged between the wall and the chamber, devices carried by the chamber for holding the packing in position, and inlet and exit pipes, substantially as shown and described.



3. An improved fumigator comprising a burning chamber having a surrounding wall, a dome adapted to fit thereover, a packing arranged between the dome and the wall, clips formed of metal strips and secured to the wall of the chamber and bent upward and over the packing for the purpose of holding it in position, and inlet and exit pipes, substantially as shown and described.

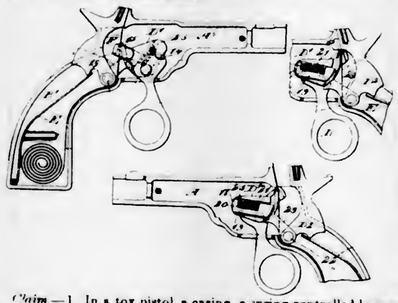


527,700. MILK-COOLING HOUSE. Elias Meck, Freeport, Canada. Filed Dec. 6, 1893. Serial No. 492,908. (No model.)



*Claim.*—In an ice house in combination with the synclinal bottom sections, transverse ribs secured to said bottom, longitudinal ribs covering the pipes *f*, the pipe I leading from the cross pipe J to the outside of the ice house, stoppers to close the ends of the pipe I, said stoppers adapted to be withdrawn to allow the warm air to enter the ice chamber to melt the ice, and a separate compartment provided with a water receptacle to catch the water from the melted ice, substantially as described.

527,701. TOY PISTOL. Henry D. Medrick, Port Jervis, N. Y., assignor of one-half to John K. Medrick, same place. Filed Mar. 7, 1894. Serial No. 502,677. (No model.)



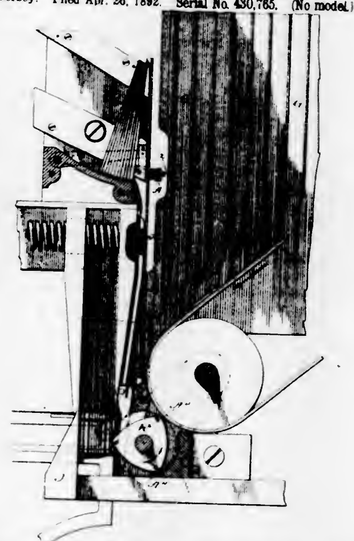
*Claim.*—1. In a toy pistol, a casing, a spring-controlled hammer pivoted in the casing, a tumbler likewise pivoted in the casing and provided with a trip acting upon the hammer, a trigger operating the tumbler, and a feed formed jointly by the tumbler and trigger, as and for the purpose set forth.

2. In a toy pistol, a casing, a spring-controlled hammer mounted in the casing, a finger projected forwardly from the hammer, a tumbler pivoted in the casing and provided with a spring-controlled slide with which the finger of the hammer engages, a trigger pivoted upon the tumbler and operating upon the same, and opposing jaws formed upon the tumbler and upon the trigger, adapted to receive between them a tape of caps and project the same, as and for the purpose set forth.

3. In a toy pistol, the combination with a casing, and a hammer pivoted therein, of a tumbler pivoted in the casing and provided with a jaw, a spring pressed slide carried by the tumbler and acting upon the hammer, and a trigger pivoted on the tumbler and provided with a U-shaped extension, between the members of which the jaw of the tumbler works, substantially as described.

4. In a toy pistol, the combination with a casing, and a pivoted and spring pressed hammer provided with a forwardly projecting finger, of a triangular tumbler pivoted in the casing and provided with a jaw and a stud, a spring pressed slide on one face of the stud and engaging the finger of the hammer, and a trigger pivoted on the tumbler and provided with a U-shaped extension between the members of which the jaw of the tumbler works, and with a guide lug, substantially as herein shown and described.

527,702. LINOTYPE-MACHINE. Ottmar Mergenthaler, Baltimore, Md., assignor to the Mergenthaler Linotype Company, of New Jersey. Filed Apr. 26, 1892. Serial No. 430,765. (No model.)



*Claim.*—1. In a linotype machine a lubricating device arranged to act upon the spacing device, substantially as described.

2. In a linotype machine and in combination with a composing mechanism, a series of matrices and a series of spaces a lubricating device arranged to act upon the spaces during their passage to the line.

3. In a linotype machine, means for applying graphite to the spacing device.

4. In a linotype machine a brush or wiper charged with graphite or its equivalent arranged to act upon the passing matrices or spaces.

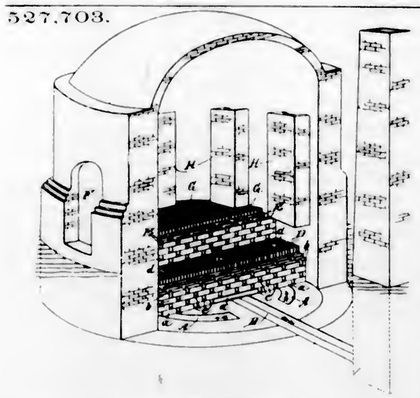
5. In a linotype machine a rotary wiper charged with a lubricant arranged to act on the successive matrices, substantially as described and shown.

527,703. BRICK-KILN. Nicholas Merley, Canton, Ohio. Filed May 28, 1894. Serial No. 512,650. (No model.)

*Claim.*—1. The combination in a down draft brick kiln, of the fire box F, and bags H, of the series of apertured walls *b* and E, the upper floor G, the intermediate floor D, having apertures *d* and *e*, and the flues A, B and C, substantially as described and for the purpose set forth.

2. The combination in a down draft brick kiln, of the fire box and inside bag of the lower series of apertured walls *b*, the upper series of apertured walls E and the middle floor, having apertures to register with the flues A, B, C, substantially as described and for the purpose set forth.

527,703.

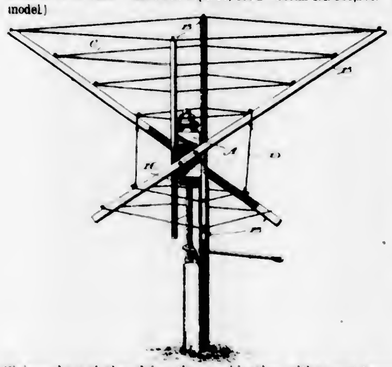


527,704. GLOVE. FREDERICK P. MERRILL, Hornellsville, N. Y. Filed Jan. 31, 1894. Serial No. 498,597. (No model.)



*Claim.*—As a new article of manufacture a glove having a body portion formed with fingers comprising front and back strips having inturned square extension pieces, integral therewith and sewed to their respective strips providing double ends on the strips, the end pieces being located on the inside of the fingers, the strips with their end pieces being sewed together at their edges, and the fingers fleing trimmed at the corners leaving the central parts of the ends intact so as to prevent unraveling; substantially as described.

527,705. CLOTHES-DRIER. WILLIAM H. MOSELEY, Sparta, Wis. Filed Nov. 15, 1893. Renewed Sept. 17, 1894. Serial No. 523,270. (No model.)

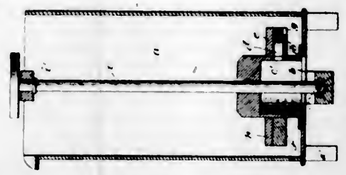


*Claim.*—In a clothes drier, the combination with a post having a plate with an elongated slot A secured to the top thereof, and forming a bearing for a vertical shaft, of a latch bar forming a bearing for the lower end of the vertical shaft, and having its engaging and looped end turned on itself, so as to engage with a stop I to retain the vertical shaft in an upright position, substantially as shown and described.

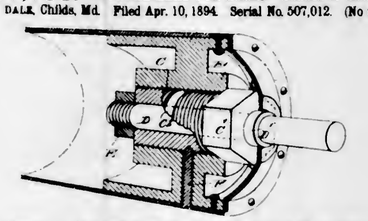
527,706. WITHDRAWN.

527,707. IRRIGATING-PUMP. MARION MCCAY and JASPER N. MCCAY, Phœnix, Ariz. Filed Feb. 16, 1894. Serial No. 500,427. (No model.)

*Claim.*—In a pump of the class described, the combination of the upright tubular body or stand pipe provided with a circular bottom inlet opening, a bearing ring or gasket fitted on the bottom of said body or stand pipe and surrounding the inlet opening thereof, a vertically arranged shaft, a hollow cylindrical piston hub having a closed upper end and a lower open end working snugly inside of said ring or gasket, said hollow cylindrical hub being provided in the sides thereof at an intermediate point with a circular series of openings, and a horizontal circular piston fitted on the exterior of said hub intermediate of its ends, said piston consisting of separate superposed plates one of which is provided with a series of curved water passages communicating at their inner ends with the openings in the sides of the hub, said water passages terminating at their outer ends in tangentially disposed peripheral discharge openings, substantially as set forth.



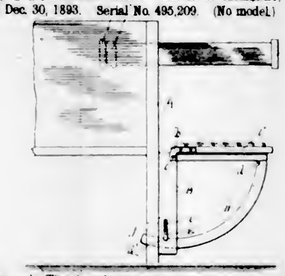
527,708. JOURNAL-HEAD FOR ROLLS. DUNCAN L. MCCORKINDALE, Childs, Md. Filed Apr. 10, 1894. Serial No. 507,012. (No model.)



*Claim.*—1. In a roll substantially as described, the combination of a cylindrical head located within the roll and having a bore, the bushing made in the form of a continuous unbroken annulus or ring and fitted and secured in the bore of the head, and having a bore extending from end to end, the journal having its shank portion fitted snugly both circumferentially and longitudinally to the bore of the bushing and extended at its inner end beyond the inner end of the bushing and a fastening engaging the said extended inner end of the journal, substantially as and for the purposes set forth.

2. In a roll substantially as described, the head located within the roll and having a central bore, the bushing having a tubular portion made continuous and unbroken in a circumferential direction and formed exteriorly to fit in the bore of the head and provided at its outer end with a flange or collar to abut the head when the bushing is adjusted thereto, such bushing having a bore, and the journal having a portion fitting in the bore of the bushing, projecting at its inner end beyond the said bushing and secured substantially as described, and having at its outer end a collar bearing against the said bushing, substantially as set forth.

527,709. PANEL-CHAIR. DAVID B. MCHENRY, Grenada, Miss. Filed Dec. 30, 1893. Serial No. 495,209. (No model.)

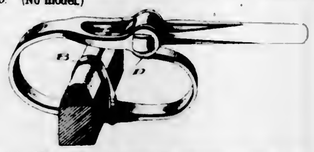


*Claim.*—1. The herein described seat attachment for benches and pews, comprising an open frame B, applied to the end of said bench or pew, a seat hinged to the upper portion of said frame and arranged to fold downwardly into said frame, a flange G at the inner portion of said seat and adapted to rest upon the upper portion of said frame when the seat is extended and thereby take the weight off the hinges, the segment shaped brace arm attached to the forward portion of said seat, a guide F in the frame B for said arm, a corresponding opening in the bench or pew end, and means for locking said arm when the seat is extended, substantially as specified.

2. The combination with a bench or pew, of the open frame B applied to the end thereof, a seat hinged to the upper portion of said frame and adapted to fold downwardly into said frame, a flange G at the inner portion of said seat adapted to rest upon the upper portion of said frame when the seat is extended and thereby take the weight off the hinges, the segment shaped brace arm attached to the forward portion of said seat, a guide F in the frame B for said arm, a corresponding opening *f* in the pew end, means for locking said arm when the chair is extended, and a back rest slidable in guides on the back of the pew or bench, substantially as specified.



527,710. COMBINED THILL-SUPPORT AND ANTIRATTLER. PETER H. MCLEAN, Jamestown, N. D. Filed June 22, 1894. Serial No. 515,375. (No model.)



*Claim.*—1. The axle, and the thill, combined with a spring which is secured to the axle and which has one of its ends bifurcated so as to receive the rear end of the thill and its other end made to bear against the thill so as to form an anti-rattler, substantially as set forth.

2. The axle A, clip B, and thill, combined with a spring C, having its rear end D bifurcated and turned forward and upward above the axle so as to receive the rear end of the thill, and its front end turned upward and backward so as to bear against the thill and form an anti-rattler, substantially as described.

527,711. PROTECTOR FOR TOPS OF ICE-CREAM CANS. CHARLES NELSON, St. Louis, Mo. Filed May 21, 1894. Serial No. 511,968. (No model.)



*Claim.*—In a protector for the tops of ice cream cans, a separate ice holding vessel consisting of a body provided with perforations, a raised portion fitting over the can lid handle, and perforations in the side of said raised portion through which the cold air passes to the ice cream can lid and a handle by which the vessel may be lifted.

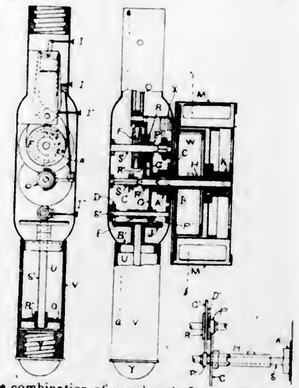
527,712. RAILWAY-CHAIR. EDWARD NENNSTIEL, Johnstown, Pa. Filed July 19, 1894. Serial No. 518,029. (No model.)



*Claim.*—A railway chair made of a single piece of resilient metal, which is adapted to engage with the ends of the rails as shown, said chair having a preponderance of metal above the flanges of the rails and a curved base, the side portions which adjoin the base being thinner and of greater resiliency than the other parts of the chair, for the purpose set forth.

527,713. FISH-ROD REEL. GEORGE H. NEWELL, Grand Rapids, Mich. Filed Mar. 31, 1894. Serial No. 506,979. (No model.)

*Claim.*—1. In a fishing rod, the combination of a reel, a reel seat arranged within the rod a spring for operating the reel placed without the reel seat, in combination with mechanism within the reel seat, and suitable mechanism for conveying the power exerted by the tension of the spring from the shaft or sleeve to which the spring is attached to the shaft which revolves with the winding reel, substantially as described.



2. The combination of a reel, a shaft supporting said reel, a hollow shaft surrounding the reel shaft, a spring connected to said hollow shaft, and a reel seat arranged within the rod and suitable mechanism within the reel seat conveying the power exerted by the spring to the reel shaft and thence to the reel, substantially as described.

3. The combination of a reel, a reel seat arranged within the rod a shaft connected to the reel on which the same revolves, a hollow shaft surrounding the reel shaft, a spring attached thereto and adapted to exert a power thereon, mechanism for conveying the power exerted by the spring from its tubular shaft to the reel shaft, and suitable means for detaching the reel from the reel seat, substantially as described.

4. The combination of a reel, a reel seat arranged within the rod a shaft supporting the reel, a spring, a shaft to which the spring is attached, surrounding the reel shaft, all placed without the reel seat, gearing connecting the tubular shaft or spring shaft to a secondary shaft within the reel seat, suitable mechanism on the secondary shaft conveying the power exerted by the spring back to a pinion or gear on the reel shaft and thereby to the reel, substantially as described.

5. In combination with a reel, a reel seat arranged within the rod a spring placed without the reel seat, suitable mechanism within the reel seat for conveying the power exerted by the spring to the reel, a ratchet mechanism for connecting the power exerted by the spring to the mechanism which operates the reel, substantially as described.

6. The combination with the reel, and spring, and the mechanism for operating the reel through the spring, of a pawl and ratchet, and a frictional device adapted to prevent the spring from reeling in the line, but not to prevent the line from being withdrawn outwardly, substantially as described.

7. The combination with a reel, and a spring adapted to revolve the reel, of mechanism connecting the spring shaft with the reel shaft, and mechanism for locking the said connecting mechanism to a frictional device, whereby the whole may be locked or retained so as to prevent the spring from withdrawing the line while allowing the line to be pulled out freely against the action of the spring, substantially as described.

8. In combination with the mechanism for operating the reel from the spring, a grooved friction wheel, a friction clutch, and suitable mechanism for operating same, whereby the operation of the reel can be controlled, substantially as described.

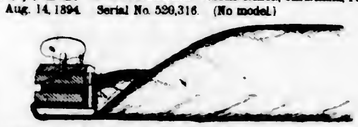
9. In combination with a reel, a reel seat arranged within the rod a spring situated outside of the reel seat, and suitable mechanism within the reel seat for conveying the power from the spring to the reel, substantially as described.

10. The combination with a rod having arranged therein a reel seat, of a reel, a spring disposed within the reel, a shaft actuated by said spring, an oscillating shell, mechanism connecting said shell to the spring actuated shaft, and mechanism arranged within the reel seat for controlling the spring, substantially as described.

11. The combination with a rod having arranged therein a reel seat, of a reel, a spring disposed within the reel, a shaft actuated by said spring, a spring winding mechanism, means for connecting said spring actuated shaft and winding mechanism, a sliding clutch for attaching and detaching the winding mechanism and spring actuated

shaft, and a spring controlling device arranged within the reel seat, substantially as described.

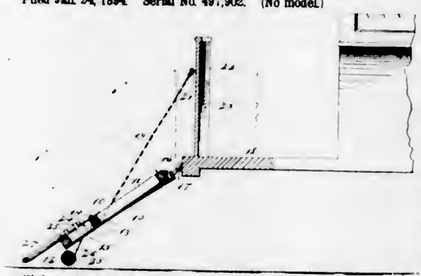
527,714. BAG-FASTENER. ALBAN NIXON, Christiana, Pa. Filed Aug. 14, 1894. Serial No. 520,316. (No model.)



*Claim.*—1. The combination with a bag, of two vertically-disposed cleats secured one to each opposite side thereof and adapted to be pressed against the sides of the bag so as to close the same, a U-shaped clip pivotally connected to the lower edge of one of the cleats and capable of embracing the two cleats and a portion of the cloth composing the bag and of folding said cloth up against the outside of one cleat and holding it so, and a set-screw for clamping the clip in place, substantially as described.

2. The combination with a bag, of two vertically-disposed cleats secured one to each opposite side of the bag, a box fixed to the under side of one cleat, a U-shaped clip pivotally mounted in the box and capable of embracing the cleats and of clamping them against the bag, a set-screw in one arm of the clip and for clamping the same against the bag, and a facing plate secured to the cleat which is adjacent to the set-screw, against which the set-screw is adapted to bear, the facing plate having a recess therein adapted for the reception of the point of the set-screw, substantially as described.

527,715. CAR-FENDER. HERMAN B. OGDEN, Brooklyn, N. Y. Filed Jan. 24, 1894. Serial No. 497,902. (No model.)



*Claim.*—1. A car fender, comprising two frames hinged together and adapted to be hung on a car, a roller supported beneath the lower frame, and an extension end on the lower frame, substantially as described.

2. A car fender, comprising two frames hinged together and having suitable covering, a roller supported beneath the lower frame, an extension end fastened to the lower frame, fastening devices on the upper edge of the top frame to attach it to a car, and chains on the sides of the fender to support it, substantially as described.

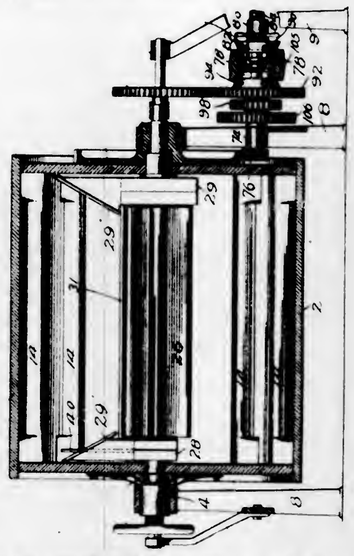
3. The combination, with the two frames hinged together, as specified, of the depending arms on the lower frame, the roller carried by the arms, and the extension end on the lower frame comprising a U-shaped frame and a cover plate, substantially as described.

527,716. COMBINED CHURN AND BUTTER-WORKER. DARIUS W. PAYNE, Minneapolis, Minn., assignor, by direct and mesne assignments, to the F. B. Fargo & Company, Lake Mills, Wis. Filed Apr. 23, 1894. Serial No. 508,566. (No model.)

*Claim.*—1. In a combined churn and butter worker, the combination of a suitable cylinder, provided with flights or carriers upon its inner surface, with means for rotating said cylinder, suitable boxings arranged within said cylinder sleeves mounted in the ends of said cylinder and supporting said boxings, rolls mounted in said boxings, suitable gearing inclosed in one of said boxings for driving said rolls, a shaft connecting with said gearing and means for driving said shaft, substantially as and for the purpose set forth.

2. In a machine of the class described, the combination with a suitable cylinder, provided with flights or carriers upon its inner surface, with means for rotating said cylinder, suitable boxings arranged within said cylinder, rolls mounted in bearings in said boxings, and means inclosed in one of said boxings for driving said rolls, substantially as and for the purpose set forth.

3. In a machine of the class described, the combination with a suitable cylinder, provided with flights upon its inner surface, with suitable boxings arranged in said cylinder, rolls mounted in bearings in said boxings, means inclosed in one of said boxings for driving said rolls, and means for retaining said boxings in a horizontal position or permitting them to rotate with the cylinder, as desired, substantially as described.



4. The combination, in a machine of the class described, of a suitable cylinder, provided with closed ends or heads, and with suitable hubs mounted in bearings, means for rotating said cylinder, suitable boxings arranged in said cylinder and supported upon sleeves extending through the cylinder hubs, rolls mounted in bearings in said boxes and means inclosed in one of said boxings for driving said rolls, substantially as described.

5. The combination, in a machine of the class described, with a suitable cylinder, provided with flights or carriers upon its inner surface, means for supporting and rotating said cylinder, suitable boxings arranged in said cylinder, rolls mounted in bearings in said boxings, means inclosed in one of said boxings for driving said rolls, and suitable non-metallic coverings surrounding and inclosing said boxings, substantially as and for the purpose set forth.

6. In a machine of the class described, the combination with the cylinder, provided with the tight ends or heads, of hubs secured upon said ends and mounted in suitable bearings in which they are free to rotate, means for driving said cylinder, suitable boxings arranged in said cylinder and provided with sleeves that extend centrally through the cylinder hubs, rolls mounted in said boxings, means inclosed in one of said boxings for driving said rolls, and means for securing said boxings in a stationary position while said cylinder is rotating or permitting said boxing to rotate with said cylinder as preferred, substantially as described.

7. The combination, with the rotating cylinder, provided with a series of flights, means for rotating said cylinder, the boxings arranged in said cylinder, hollow sleeves supporting said boxings and having drains for any material that collects therein, and the rolls mounted in bearings in said boxings, substantially as described.

8. The combination, with the rotating cylinder, provided with a series of flights, and with the tight ends or heads provided with suitable hubs, standards supporting said cylinder, boxings arranged within said cylinder and provided with sleeves or hollow shafts extending through the cylinder hubs, the rolls mounted in bearings in said boxings, the gearing arranged within one of said boxings, a driving shaft extending through one of said sleeves and connecting with said gearing, means for driving said cylinder, and means for connecting said shaft with said cylinder driving mechanism or disconnecting it therefrom, substantially as described and for the purpose set forth.

9. The combination, with the cylinder, provided with the closed ends and with hubs mounted in suitable bearings of the boxings arranged in said cylinder, the rolls mounted in bearings in said boxings, the shafts or sleeves secured upon said boxings and supported in said journal hubs and adapted to revolve therein, and the suitable stuffing boxes arranged in said hubs and surrounding said sleeves, substantially as and for the purpose set forth.



10. The combination, with the cylinder, the boxings arranged therein, the rolls mounted in said boxings, and a suitable vent tube connected with one of said boxings, for the purpose set forth.

11. The combination with the cylinder, mounted upon hollow axles or hubs, of suitable boxings arranged within said cylinder and supported upon sleeves or journals concentric with said cylinder supports, rolls mounted in bearings in said boxings, means for rotating said cylinder, and means for rotating said rolls.

12. The combination with the cylinder, provided with suitable hubs or journals, of boxings arranged within said cylinder and supported upon sleeves or journals concentric with and mounted in said cylinder hubs, rolls mounted in bearings in said boxings, means for rotating said cylinder, and means for holding said boxings stationary or permitting them to rotate with said cylinder, and means for driving said rolls.

13. The combination, with a suitable cylinder, mounted upon hollow hubs or journals, of boxings arranged within said cylinder, and mounted upon journals arranged in and concentric with said cylinder journals, stuffing boxes arranged between said journals and means for tightening said stuffing boxes, means for rotating said cylinder, and means for driving said rolls independently of said cylinder.

14. In a combined churn and butter worker, the combination with a cream-tight cylinder, of butter working rolls mounted upon boxings arranged within said cylinder, means for rotating said cylinder, and means for driving said rolls independently of said cylinder or permitting them to remain stationary as preferred.

15. In a combined churn and butter worker, the combination with a cream-tight cylinder and means for rotating the same, of suitable butter working rolls mounted in boxings arranged within said cylinder, means for driving said cylinder, means for holding said boxings in a stationary position, or permitting them to rotate with said cylinder, as preferred, and means for driving said rolls when said boxings are held in a stationary position, substantially as described and for the purpose set forth.

527,717. WOOL OR FELT BOOT. JOHN PENDERGAST, Hastings, Mich. Filed Mar. 20, 1894. Serial No. 504,359. (No model.)

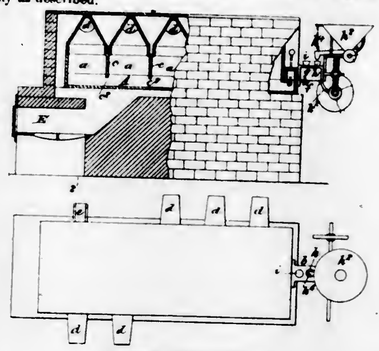


*Claim.*—1. As an improved article of manufacture, a wool or felt boot provided with leather reinforcing flaps *a* and *a'*, to which are attached flexible straps *e* provided at the free end with a plate *f* having a hinged spring-tongue *g* at its lower end adapted to engage a slotted plate connected flexibly to the juxtaposed portion of a removable overshoe; substantially as and for the purpose shown and set forth.

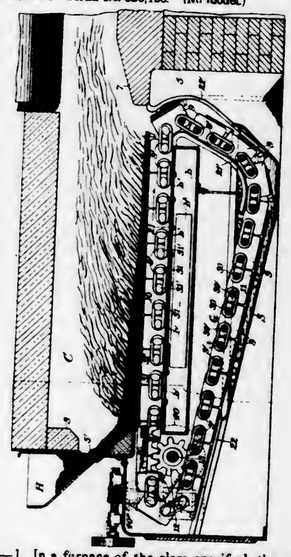
2. The combination with a wool or felt boot provided with leather reinforcing flaps *a* and *a'* to which are attached flexible straps *e* provided at the free end with a plate *f* having a hinged spring-tongue *g* at its lower end, of a removable waterproof overshoe B provided with a flexible strap or straps having a slotted plate at the free end adapted to engage the juxtaposed spring-tongue appertaining to the boot; substantially as and for the purpose shown and set forth.

527,718. STILL FOR OBTAINING NITRIC ACID, &c. MANNING PERRITICK, Stowmarket, England. Filed Oct. 10, 1893. Serial No. 487,765. (No model.)

*Claim.*—In a still or apparatus for distilling or obtaining volatile products or constituents from a mixture containing solid material the combination with a series of compartments or chambers provided at one end of the series with an inlet for the matter to be distilled and at the other end with an outlet therefor, the compartments or chambers constituting the series being successively connected near the bottoms thereof by pipes or passages through which the matter under distillation passes on its way from the inlet to the outlet, so as to seal the said pipes or passages and constitute in each chamber a separate space, above the said matter, from which the volatile constituents or products can be obtained, of a mixer or feeder for feeding the mixture composed partly of solid material to the inlet opening, substantially as described.



527,719. TRAVELING-GRATE FURNACE. FRANCIS H. RICHARDS, Hartford, Conn., assignor to Eckley B. Coxe, Drifton, Pa. Filed Aug. 13, 1894. Serial No. 520,128. (No model.)



*Claim.*—1. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless grate supported for traveling movement within said furnace chamber and comprising a series of transversely-disposed grate-beams flexibly coupled together by coupling-links at opposite ends thereof and having driver-engaging teeth at their inner sides at opposite ends, a series of longitudinally-disposed grate-bars removably carried by each grate-beam, and revolnble toothed-drivers in engagement with the teeth of said beam, substantially as described.

2. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of two remotely- and longitudinally disposed grate-supporting tracks, an endless grate having the upper and lower runs thereof supported for traveling movement upon said tracks, and comprising a series of transversely-disposed grate beams having internal teeth at opposite ends thereof and each having two link-engaging trunnions at each end thereof, coupling-links removably engaging the adjacent trunnions of and flexibly connecting adjacent grate-beams, a series of grate-bars removably carried by each grate-beam, and revoluble drivers engaging the teeth of and adapted for imparting movement collectively to said grate-beams, substantially as described.

3. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless grate supported

for traveling movement within the furnace chamber and comprising a series of transversely-disposed grate-sections each of which has two link-engaging trunnions at each end thereof, with elongated heads in angular disposition relatively to each other, and coupling links removably engaging the adjacent trunnions of adjacent grate-sections, substantially as described and for the purpose set forth.

4. In a furnace of the class specified, the combination with the furnace chamber and its inclosing walls, of an endless grate having an upper and a lower run, and consisting of a series of transversely-disposed grate sections having two trunnions at each end thereof with elongated heads, so disposed with relation to each other that their axes are at right angles, oblong loop-shaped coupling-links movably engaging the adjacent trunnions of adjacent grate-sections, tracks in position and adapted for supporting the upper run of the traveling grate, tracks in position and adapted for supporting the lower run of the traveling grate, and means for simultaneously imparting a traveling movement to the upper and lower runs of the endless grate, in opposite directions respectively, substantially as described

5. In a furnace of the class specified, the combination with a furnace-chamber and its inclosing walls, of the grate-supporting track 21, having the downwardly-extending portion at its rear end, the grate-supporting track 22, having the upwardly extending portion at its rear end, substantially as described, the endless traveling grate supported for traveling movement upon, and guided by, said tracks and their extensions, and comprising a series of transversely-disposed grate-sections having headed trunnions at opposite ends thereof and flexibly connected together by coupling-links removably engaging said headed trunnions, substantially as and for the purpose set forth.

6. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless grate having its upper and lower runs supported for movement upon tracks, and consisting of a series of transversely-disposed fuel-supporting grate-beams having fixed trunnions at opposite ends thereof, and flexibly connected together by coupling links engaging said trunnions, mechanism in position and adapted for imparting a traveling movement to the upper and lower runs of said grate, and an air-supply apparatus located intermediate to the upper and lower run-supporting tracks and adapted for supplying air through the upper run of the endless grate to the fuel supported thereon, substantially as described.

7. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless grate supported for traveling movement within said furnace-chamber, and comprising a series of transversely-disposed grate-sections having internal teeth at opposite ends thereof, and each of which grate-sections has two link-engaging trunnions at each end thereof, coupling-links movably engaging adjacent trunnions of adjacent grate-sections and revoluble drivers in position and adapted for engaging the teeth of successive grate-sections, substantially as described and for the purpose set forth.

8. In a furnace of the class specified, the combination with the furnace chamber and its inclosing walls, of two remotely- and longitudinally-disposed grate-supporting tracks, an endless grate having the upper and lower runs thereof supported for traveling movement upon said tracks, respectively, and comprising a series of internally toothed transversely-disposed grate-sections each of which has two link-engaging trunnions at each end thereof, and the coupling-links removably engaging the adjacent trunnions of adjacent grate-sections, substantially as described and for the purpose set forth.

9. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless grate supported for traveling movement within said furnace-chamber and comprising a series of transversely-disposed grate-beams each of which has two link-engaging trunnions at each end thereof and each of which has internal teeth adapted for engagement by a toothed driver, coupling-links removably engaging adjacent trunnions of adjacent grate-beams, and a series of grate-bars transversely disposed with relation to and removably-secured to said grate-beams, substantially as described and for the purpose set forth.

10. In a furnace of the class specified, the combination with the furnace chamber and its inclosing walls, of two remotely- and longitudinally-disposed grate-supporting tracks, an endless grate having the upper and lower runs thereof supported for traveling movement upon said tracks, respectively, and comprising a series of internally-toothed transversely disposed grate-beams each of which has two link-engaging trunnions at each end thereof, coupling-links removably engaging the adjacent trunnions of adjacent grate-beams, and a series of grate-bars transversely-disposed with relation to and removably secured to said grate-beams, substantially as described and for the purpose set forth.

11. In the herein described grate-section for traveling grates of furnaces of the class specified, it consisting of a grate-beam having two trunnions formed upon or fixed to each end thereof with their respective axes located approximately midway between the longitudinal axes of said beam and the side edges of said beam, and having internal teeth at opposite ends at the under side thereof adapted for engagement by drivers, substantially as described and for the purpose set forth.

12. The herein-described grate-section for traveling grates of furnaces of the class specified, it consisting of a grate-beam having teeth at the under side and at opposite ends thereof, and having two link-engaging trunnions at each end thereof having laterally-projecting link-holding flanges or heads at their outer ends, which trunnions are fixed to or formed upon said grate-sections with their respective axes located approximately midway between the longitudinal axis of the beam and the side edges of said beam, substantially as described and for the purpose set forth.

13. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of an endless grate supported for traveling movement within the furnace-chamber and comprising a series of transversely-disposed internally-toothed grate sections each of which has two link-engaging trunnions at each end thereof having laterally-projecting link-holding flanges or heads at their outer ends, and coupling-links movably engaging the adjacent trunnions of adjacent grate-sections, substantially as described and for the purpose set forth.

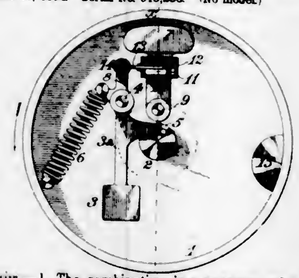
14. In a furnace of the class specified, the combination with the furnace-chamber and its inclosing walls, of two remotely- and longitudinally-disposed grate-supporting tracks, an endless traveling grate comprising a series of transversely disposed grate-sections, each of which sections has driver-engaging teeth at the inner side of each end thereof and has two transversely-disposed runners one at each end thereof supported for movement upon one of said tracks and each of which runners has two link-engaging trunnions projecting outward from the outer side thereof, and coupling-links removably engaging adjacent trunnions of the runners of adjacent grate-sections, substantially as described and for the purpose set forth

15. The herein-described grate-section for traveling-grates of furnaces of the class specified, it consisting of a grate-beam having a transverse supporting runner at each end thereof, two trunnions formed upon or fixed to each runner of said grate beam with their respective axes in parallelism with and located approximately midway between the longitudinal axis of said beam and the side edges of said beam, the driver-engaging teeth formed upon the under side of each end thereof, substantially as described, and for the purpose set forth

16. The herein described grate-section for traveling grates of furnaces of the class specified, it consisting of a grate-beam having a longitudinal grate-bar supporting flange and having a transverse supporting runner at each end thereof with driver engaging teeth adjacent thereto, two link-engaging trunnions formed upon or fixed to each runner of said grate-beam with their respective axes in parallelism with and located approximately midway between the longitudinal axis of said beam and the side edges of said beam, and transversely-disposed grate bars removably secured to the longitudinal grate-bar-supporting flange of said beam, substantially as described and for the purpose set forth.

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527,720. GOVERNOR. FRANCIS M. RITER, Pittsburg, Pa. Filed June 21, 1894. Serial No. 515,238. (No model.)



*Claim.*—1. The combination, in a governor, of a primary centrifugally adjustable weight, and a secondary weight in gravity balance with the primary weight and connected to the supporting wheel or case so that centrifugal force tending to hold it in normal position shall act through or in line with its pivot, substantially as set forth.

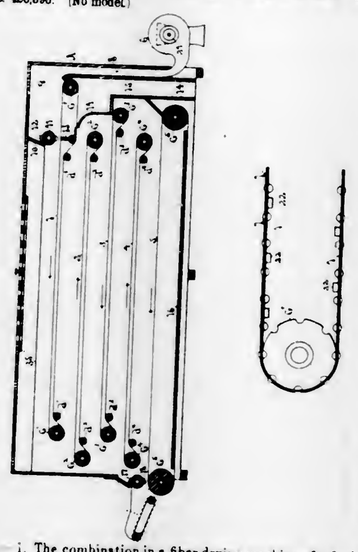
2. The combination, in a governor, of a primary centrifugally adjustable weight, a secondary weight pivoted to the supporting wheel or case independently of, and in gravity balance with, the primary weight and with its center of gravity normally in line with its pivot and the center of the shaft, and an articulated connection coupling the primary and secondary weights, substantially as set forth.

3. The combination, in a governor, of a primary centrifugally adjustable weight, a secondary weight pivoted to the supporting wheel or case independently of, and in gravity balance with, the primary weight and with its center of gravity normally in line with its pivot and the center of the shaft, and a dash pot device interposed between and connected to the primary and secondary weights, substantially as set forth.



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527,721. FIBER-DRYING MACHINE. FREDERICK G. SARGENT and ALLAN C. SARGENT, Graniteville, Mass. Filed Feb. 5, 1892. Serial No. 420,393. (No model.)



*Claim.*—1. The combination in a fiber drying machine of a feeding-in-blower, a receiving chamber for the fiber fed by said blower, which is provided with an air exit passage, a main drying chamber adjacent to the receiving chamber, and a traveling screen which extends from the receiving chamber into the drying chamber and is adapted to separate the fiber from the current of air by which it is fed to the receiving chamber and convey it into the drying chamber substantially as described.

2. The combination in a fiber drying machine of a main drying chamber, traveling screens mounted therein and arranged to deliver the fiber successively from one to another and thereby convey it through the chamber, air passages in the walls of said chamber both above and below said screens to serve as outlets and inlets for air, and an air conduit connecting the said upper and lower air passages; heating apparatus within a chamber also connected with said upper and lower air passages, and forming a second air conduit between them, a blower connected with both of said air conduits, and valves in each to regulate the currents of air produced by the action of the blower substantially as described.

3. The combination in a fiber drying machine of a main drying chamber having air ports in the top thereof, traveling screens therein arranged to deliver the fiber successively from one to the other and thereby convey it through said chamber, openings in a wall of said chamber above and below said screens to serve as outlet and inlet passages for air, heating apparatus within a chamber connected with said inlet and outlet passages and serving as one air conduit between them; a second air conduit connecting said outlet and inlet passages independently of the heating chamber, a blower connected with both of said air conduits, and valves therein to regulate the air currents from the blower as desired, substantially as described.

4. In a fiber drying machine, the combination of a drying chamber, and a traveling apron therein which consists of side carriers, cross-slats attached thereto, and a wire apron outside of said slats, with the contact surface of the slats and apron in the pivot line or neutral axis of the carriers.

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527,722. WIRE APRON. FREDERICK G. SARGENT and ALLAN C. SARGENT, Graniteville, Mass. Filed Jan. 11, 1894. Serial No. 496,515. (No model.)

*Claim.*—1. In an endless wire apron, the combination of cables, cross-slats, and wire apron, with fasteners consisting of a perforated plate secured at each end of each slat, a staple which encircles the cable and passes through the said perforation in the plate, and means for drawing down the said staple to grip the cable, substantially as described.

2. In an endless wire apron, the combination of cables, cross-slats, and a wire apron, with fasteners consisting of a perforated plate secured to each end of each slat, a staple which encircles the cable and passes through the perforation of said plate and through a slat, and means for drawing the staple into the perforation and thereby gripping the cable.

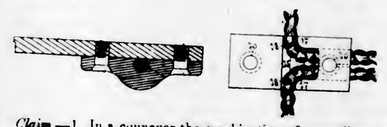


3. The combination of an endless wire apron, flexible cables to guide the same, cross-slats at intervals between said cables, and fasteners which engage the cables and are adjustably secured to the slats, thereby attaching the several parts together.

4. The combination of an endless wire apron, flexible cables to guide it, cross-slats at intervals between said cables, fasteners which engage the cables and are adjustably secured to the slats, thereby attaching the several parts together, and supporting rollers provided with grooves in their peripheries at proper intervals to receive the said slats, substantially as described.

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527,723. CONVEYER. FREDERICK G. SARGENT and ALLAN C SARGENT, Graniteville, Mass. Filed Mar. 29, 1894. Serial No. 505,580. (No model.)



*Claim.*—1. In a conveyer the combination of an endless apron, cables for supporting said apron, plates with a groove less in depth than the diameter of the cables, said plates placed at intervals along the length of the cables upon one side of the apron, an opposing slat or plate for each grooved plate upon the other side of the apron, and means for drawing the said opposed plates together and thereby gripping the apron and cable between them.

2. In a conveyer the combination of an endless apron, cables to support the same, plates placed at intervals along the cables upon one side of the apron and having a groove less in depth than the diameter of the cables but adapted to receive them, an opposing slat or plate for each grooved plate, upon the other side of the apron, with means for drawing the opposed plates together, and rollers having depressions in their peripheries arranged to receive projecting portions of the said plates and thereby move and guide the conveyer.

3. In a conveyer the combination of an endless apron, cables to support the same, plates placed at intervals along the cables upon one side of the apron and having a groove less in depth than the diameter of the cables but adapted to receive them, an opposing plate or slat for each grooved plate, upon the other side of the apron, with means for drawing the opposed plates together, and rollers provided with depressions in their peripheries arranged to receive projecting portions of the said plates and otherwise smooth surfaces to support the apron when traveling around them.

4. In a conveyer the combination of supporting or driving cables, cross-slats, plates each provided with a transverse groove adapted to receive a section of a cable and one or more supplemental grooves or passages leading from said transverse groove for the ends of a cable, and means for securing each grooved plate to a cross-slat and thereby gripping the ends of the cable, substantially as described.

5. A device for holding together cable or rope ends, consisting of opposing plates one of which is provided with a transverse groove to receive a section of the cable and supplemental grooves or passages leading from said transverse groove, and means for securing or releasing either end of said cable independently of the other.

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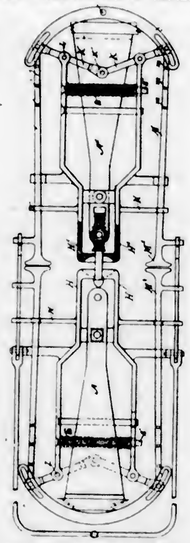
527,724. CIGAR OR CIGARETTE. PAUL C. SARAPATA and PERICLES SOUVASOGLU, Manchester, England. Filed June 18, 1894. Serial No. 514,889. (No model.)



*Claim.*—1. The combination of a cigar or cigarette with an igniter bent over the end of a cigar or cigarette, and a paper tube passed over the same end to keep the igniter in place, substantially as hereinbefore described

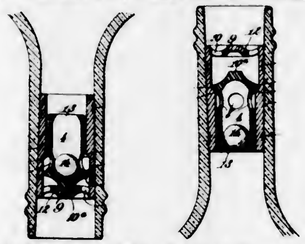
2. The combination of a cigarette, with an igniter bent over the end thereof, and a movable paper tube passed over the same end to keep the igniter in place, the said tube adapted to be slid to the other end of the cigarette to form a mouth piece, substantially as set forth.

527,725. CAR-COUPLING. FRANZ SCHALCKE, Pittsburg, Pa. Filed Feb. 7, 1894. Serial No. 499,336. (No model.)



*Claim.*—In a car coupler, a cone shaped coupling pin journaled in its bearings by outwardly extending lugs, in combination with a draw-head made in parallel sections in shape of tongs, and buffers to automatically operate the drawhead for the purpose described.

527,726. BOTTLE-STOPPER. AUGUST SCHNEIDER and DANIEL W. BROMLEY, Lexington, Ky., assignors of one-third to Byron McClelland, same place. Filed Apr. 3, 1894. Serial No. 506,197. (No model.)



*Claim.*—1. A bottle-stopper formed entirely of vitreous material and consisting of an externally tapered shell and an interiorly arranged cylindrical valve having an exterior collar formed upon its closed upper end and adapted to seat upon an interior circular shoulder, said valve being provided with exit passages in its wall below said collar, substantially as described.

2. A bottle-stopper formed wholly of vitreous material and consisting of an externally tapered shell having an interior, cylindrical valve longitudinally movable therein and provided upon its upper, closed end with an outwardly projecting collar seating upon an interior circular, shoulder, and a ball-valve loose within said cylindrical valve, the latter being provided with exit passages below the closed upper end, substantially as described.

3. The combination with a bottle of an insertible stopper, formed entirely of vitreous material and consisting of a shell tapered to fit the neck of the bottle, a movable cylindrical valve contained within said shell, and a ball-valve contained within the cylindrical valve, substantially as described.

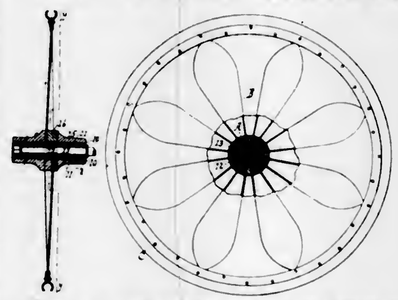
4. The combination with a bottle of a stopper insertible within the neck and provided with a perforated diaphragm upon its upper end, a cylindrical valve arranged below said diaphragm, its upper closed end provided with an outwardly projecting collar adapted to seat upon an inner circular shoulder, and a ball-valve loose within the cylindrical valve and adapted to seat within and close an opening in the lower end of the cylindrical valve, the latter being provided with exit passages below its upper closed end, substantially as described.

5. The combination with a bottle of a bottle stopper insertible in the neck of said bottle, the stopper consisting of a shell tapered externally to fit the neck of the bottle, and provided with an interior circular shoulder and a beveled seat below said shoulder, a cylindrical valve movable in said shell and provided upon its upper closed end with an outwardly projecting collar having a beveled face adapted to close upon the beveled seat in said shell and provided with exit-passages below said collar, and a ball-valve loose within said cylindrical valve and adapted to seat within and close an opening in the lower end of said cylindrical valve, substantially as described.

6. In a bottle-stopper, the combination with an externally tapered shell having a perforated diaphragm in or upon its upper end, of a cylindrical valve movable within the lower part of said shell, its upper end closed and provided with an outwardly projecting collar having a beveled face which is adapted to close upon a beveled circular seat within said shell, the wall of said valve being provided with exit passages, and a ball-valve loose within the cylindrical valve and adapted to close an opening in its lower end, substantially as described.

7. The combination with a bottle having a neck which is contracted from its open end downward, of a bottle-stopper consisting of a shell externally tapered to fit said neck, an interior, cylindrical valve and a ball-valve within the latter, substantially as described.

527,727. WHEEL FOR VEHICLES. EDWARD G. SCHLEICHER, Stamford, Conn. Filed June 21, 1894. Serial No. 515,270. (No model.)



*Claim.*—1. A wheel comprising a metallic web B corrugated radially and provided on its periphery with a wheel rim, a metal tube provided on its outer surface with screw threads, two nuts adapted to engage the screw threads of the metal tube and a corrugated disk 16 interposed between the web B and one of said nuts, substantially as described.

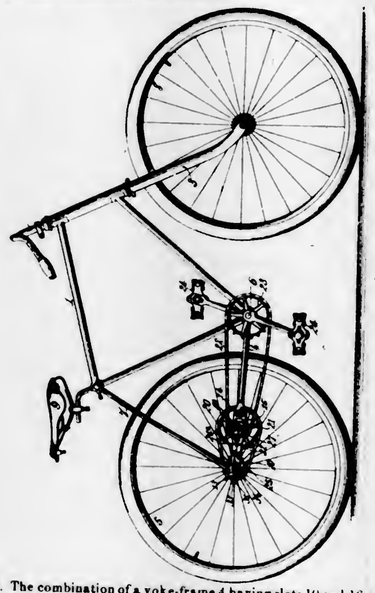
2. A wheel composed of the metal tube A provided on its outer surface with screw threads, the nuts 14, 15 adapted to engage these screw threads, the nut 14 being provided on its inner surface with grooves 17 and projections 18, the disk 16 fitting loosely upon the metal tube A and provided with grooves 19 and projections 20 and the web B provided with corrugations adapted to engage the grooves and projections on the nut 14 and the disk 16 substantially as described.

527,728. BICYCLE. SALVATORE SCOGNAMILLO and CHRISTOPHER DOMINICI, Richmond, Va. Filed July 11, 1894. Serial No. 517,239. (No model.)

*Claim.*—1. The combination of a yoke-frame having front and rear longitudinal slots and formed integral with laterally projecting abutments and a laterally projecting slotted yoke, ball bearings adjustable back and forth in the front slot of the yoke-frame and the slot in the laterally projecting yoke, a counter shaft mounted in the ball bearings and provided with two chain wheels of different diameter, a drive-wheel having an axle adjustable back and forth in the yoke-frame, adjusting devices carried by the said laterally projecting abutments for adjusting said drive-wheel, a pedal-shaft mounted in fixed bearings and having a chain-wheel, a chain connecting the chain-wheel of the pedal-shaft with one of the chain-wheels on the countershaft, and a chain connecting the other chain-wheel of the countershaft with the axle of the rear drive-wheel, substantially as described.

2. The combination of a yoke-frame having front and rear longitudinal slots and formed integral at its rear extremities with laterally projecting abutments and with a laterally projecting slotted yoke at the said front slot, a pair of ball-bearings movable back and forth in the front slot of the yoke-frame and the slot in the laterally projecting yoke, a countershaft mounted in said ball-bearings and having two chain-wheels of different diameter, a yoke connected with the ball-bearings, devices for adjusting the yoke to simultaneously move the ball-bearings, a rear drive wheel having an axle extending through the rear slots of the yoke-frame, bars having eyes engaging the drive-wheel axle and extending through the laterally projecting abutments, nuts mounted on the bars and bearing against the rear sides of said abutments, a pedal-shaft having a chain-wheel, a chain connecting the chain-wheel of the pedal-shaft with one of the chain-wheels of the countershaft, and a chain connecting the other chain-wheel of the countershaft with a chain wheel on the axle of the rear drive-wheel, substantially as described.





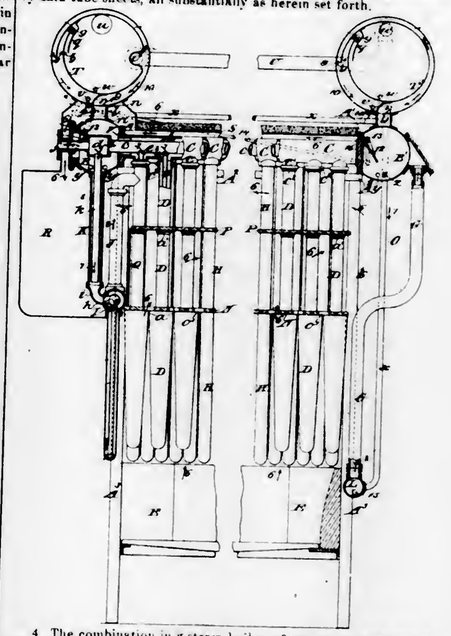
3. The combination of a yoke-frame 4 having slots 10 and 16, and a laterally projecting yoke 14 provided with a longitudinal slot 15, a pair of ball bearings movable back and forth in the slots 15 and 16, the yoke 30 connected with the ball-bearings and having a screw-threaded stem 31, a nut 32 engaging said stem, a rear drive-wheel having an axle extending through the slots 10, rods 33 having eyes 34 engaging the drive-wheel axle, nuts 35 engaging the said bars and bearing against the rear extremities of the yoke-frame, a countershaft mounted in the ball-bearings and provided with two chain-wheels of different diameter, a pedal-shaft having a chain-wheel, a chain connecting the chain-wheel of the pedal-shaft with one of the chain-wheels on the countershaft, and a chain connecting the other chain-wheel of the countershaft with a chain-wheel on the axle of the rear drive-wheel, substantially as described.

527,729. STEAM-BOILER. GEORGE SEWELL, Brooklyn, N. Y., assignor to Emeline Cornelia Sewell, same place. Filed Apr. 4, 1893. Serial No. 469,073. (No model.)

*Claim.*—1. In a steam boiler, the combination of a fire-chamber having openings in its crown plate, a second plate arranged above said crown plate with an outlet at one end from the space between the two said plates, and drop-tubes extending through said space into the fire-chamber and having those parts within the fire chamber tapered downward and those parts within the said space of smaller diameter than the parts below the crown plate, substantially as herein set forth.

2. In a steam boiler, the combination of a series of drop-tubes having abrupt enlargements at some distance from their upper ends and tapered downward from said enlargements and means of supplying said tubes with water from above, a horizontal plate supported above the enlargement of the said tubes and having openings in it between said tubes, an upper horizontal plate arranged at a distance above the first mentioned plate and closing the spaces between said tubes, a bulk-head at the front end of said plates, a smoke connection at the opposite end between the spaces below and above said upper plate, and a smoke outlet above said bulk-head, substantially as herein set forth.

3. In a steam boiler, the combination with two parallel tube-sheets and supports upon which said tube-sheets are set up edgewise, of a boiler structure comprising two water chambers one outside of one and the other outside of the other of said tube-sheets, horizontal water tubes communicating at their opposite ends respectively through said tube-sheets with said chambers, and drop tubes dependent from said horizontal water tubes, the whole of said structure being supported by said tube-sheets, all substantially as herein set forth.



4. The combination in a steam boiler, of two water chambers, a series of outer water tubes arranged in a horizontal tier and communicating at their opposite ends respectively with said chambers, drop-tubes dependent from said outer water tubes, a water box within one of said chambers, a series of inner horizontal water tubes running through said outer water tubes and communicating at one end with said water box and at the other end with the other of said water chambers, and a series of inner water tubes arranged within the drop-tubes and open at their lower ends to the latter tubes and at their upper ends to the inner horizontal water tubes, substantially as herein set forth.

5. The combination of a horizontal tier of outer water tubes, two water chambers one at each end of said tubes, drop-tubes dependent from said horizontal tubes, a water box within one of said water chambers having an opening to said chamber and a discharge outlet, inner horizontal water tubes running through said outer water tubes and communicating at one end with said water box and at the other end with the opposite water chamber, tubes within said drop tubes and open at their upper ends to the said inner horizontal tubes and at their lower ends to the drop-tubes, a valve for closing the opening of the water box to its respective water chamber and a valve for closing communication between the said outer water tubes and the opposite water chamber, all substantially as and for the purpose herein set forth.

6. The combination with a drop-tube having its lower part of inverted conical form and its upper part contracted, a horizontal water tube in communication with the upper end of said drop-tube, a second horizontal water tube within the first mentioned horizontal water tube, a vertical water tube within the drop tube in communication with said second horizontal water tube, and a circulator consisting of a winged collar fitted to the bottom of said vertical water tube and supporting said tube on the bottom of the drop tube, substantially as herein set forth.

7. The combination of a steam drum having a steam inlet in its bottom, a separating drum inside of said steam drum, and a partition arranged between said drums lengthwise thereof on one side of and adjacent to said steam inlet, the said separating drum having a longi-

tudinal opening with double overlapped edges for the admission of steam thereinto from the outer drum and having an outlet for the dried steam; substantially as herein set forth.

8. The combination with the tube-sheet A or A', of the horizontal water tubes C having their ends internally screw-threaded and outwardly flanged to abut against said tube-sheet, and the outwardly flanged sockets or thimbles screwed into the said tubes and clamping the tube sheet between their own flanges and the flanges on the tubes and forming joints between said flanges and the two faces of the tube-sheet, substantially as herein set forth.

9. The combination of the horizontal water tubes C provided with flanged internally screw-threaded sockets $c'$, and the drop-tubes provided with flanges $c^4$ and screwed into the said sockets with their flanges abutting against and forming a joint against the flanges of the said sockets, substantially as herein set forth.

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527,730. RHEOSTAT. Alton J. Shaw, Muskegon, Mich. Filed Mar. 15, 1894. Serial No. 503,725. (No model.)



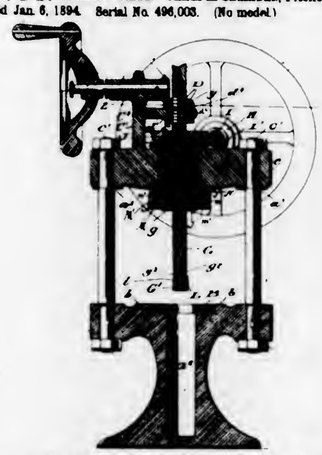
*Claim.*—1. A resistance card comprising the following elements in combination: a band of metal folded back and forth; short insulating blocks interposed between the folds and serving to separate the latter to permit free passage of air; and binding bands passing about the folded metal band and serving to retain the whole in compact form.

2. A resistance card consisting of a metallic band folded back and forth in short lengths in two or more groups; insulating blocks between the groups and between the folds of each group, and binding bands passing about the groups and serving to hold the same in a compact body.

3. A resistance card or body consisting of a band or tape of metal folded in short lengths; insulating blocks interposed between the folds, and binding bands passed about the folds in line with the insulating blocks and insulated from the folds.

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527,731. ARBOR-PRESS. James H. Sheridan, Fitchburg, Mass. Filed Jan. 6, 1894. Serial No. 496,003. (No model.)



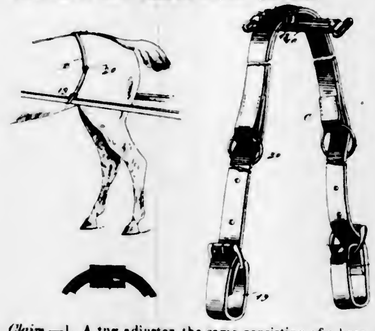
*Claim.*—1. The combination with a base, having vertical opening and plate, of a yoke supported above and by the base, a worm shaft carrying a worm, a worm gear meshing with said worm, and a screw rod passed through the worm gear, in line with the opening in the base, as set forth.

2. The combination with the base having vertical opening and the yoke supported thereon, of the worm gear mounted for rotation in the yoke and having a depending hub recessed to receive Babbitt metal, a screw rod or ram threaded through said metal, in line with and adapted to enter said opening, means on the depending hub of the worm gear for taking end thrust and means for operating the screw rod, as set forth.

3. The combination with the yoke and the worm gear with its depending portion having threaded extension, of the nut engaging the threaded extension and having an annular groove, a plate between said nut and the under side of the yoke and balls in the groove of the nut between the same and said plate, substantially as and for the purpose specified.

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527,732. TUG-ADJUSTER. Frank Sherry, Jacksonville, Ill. Filed June 12, 1894. Serial No. 514,305. (No model.)



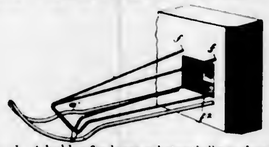
*Claim.*—1. A tug adjuster, the same consisting of a base, a loop located upon the base and having end, top and side openings, a horizontal shank extending from one end of the loop, a longitudinal slot formed in the shank and a bolt held to slide upon the base and in the said slot, said bolt being adapted to enter the loop through one of its end openings and force any straps that may be passed through said loop to an engagement with the upper portion of the loop, substantially as shown and described.

2. A tug adjuster, the same consisting of a base plate having eyes at its ends for attachment to a harness, a loop located upon the base plate near one end thereof and having side openings to receive the tug straps, end openings and an opening in its top, a shank extending from one end of the loop and secured to the base plate, the said shank having a longitudinal slot formed therein, a bolt provided with a handle at one end and held to slide in the said longitudinal slot and having guided movement in the loop through the end openings thereof, the upper surface of the bolt being cylindrical and adapted to engage with the under surface of a strap located in the loop and clamp the said strap in the loop, as and for the purpose set forth.

3. The combination, with a tug strap adjuster, the same consisting of a base adapted for attachment to a harness, a loop located upon the base, having end and top openings in addition to side openings, and a bolt having guided movement upon the base and adapted to enter the loop through the end openings thereof, of tug straps passed one upon the other through the side openings in the loop, the bolt of the adjuster being adapted for engagement with the under face of the straps, imparting to the straps an upward inclination, each strap being made to terminate at one end in a ring, the tug-holding end of one strap being passed through the ring of the opposing strap, substantially as shown and described.

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527,733. SHOE-STRING HOLDER. Henderson T. Small, Chanute, Kans. Filed Apr. 27, 1893. Serial No. 472,053. (No model.)



*Claim.*—1. A holder for laces substantially as described, comprising the hook having its outer end upturned and spread or widened adjacent to said end and the retainer overlying the hook and having at its outer end a plurality of points projecting within the widened portion of the hook all substantially as set forth.

2. A lace holding apparatus substantially as described comprising the row of hooks having their outer ends upturned and formed with sides or arms and the row of retainers arranged above the hooks and having near their outer ends points or projections projected into the plane of the space between the sides or arms of the hooks substantially as set forth.

3. A holder for laces substantially as described comprising a row of hangers and a row of retainers, one row overlying the other, the several parts of one row being formed near their outer ends with widened portions and the several parts of the other row being formed near their outer ends with points or projections arranged with respect to the widened portions of the other row, substantially as shown and described whereby the strings will be held at each side of the hook and may be released by drawing one end forward off one side of the hook then over the point of the hook and then off the other side of the hook as and for the purposes specified.

4. An improved string holder substantially as described comprising the support, the hook or hanger formed of wire secured at one end to said support and having its other end adapted to receive the strings and the retainer formed of spring metal secured at one end to the support extended thence out approximately parallel to the hook or hanger and having its outer end arranged in close proximity to that of the hook and adapted to secure the strings thereon all substantially as and for the purposes set forth.

5. An improved string holder consisting of the hook or hanger and the retainer formed of spring wire secured at one end to a suitable support extended thence outward over the hook and having a return spring portion extending inwardly over the hook and free at its inner end, substantially as set forth.

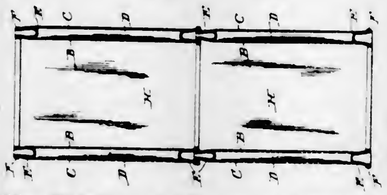
6. In a string holder, the combination of the support having a recessed seat in its face, the hook or hanger and the retainer secured at one end to the support extended thence outward and having a returned portion which projects at its inner end into the recessed seat of the support substantially as and for the purpose set forth.

7. The improved string holder consisting of the support having a recessed seat in its face, the hook having its outer end upturned and spread or widened adjacent to said end, the retainer secured at one end to the support extended thence outward over the hook having at its outer end depending points projecting within the widened portion of the hook and having a return portion extending from said points inward and fitting at its inner free end in the recessed seat of the support, substantially as set forth.

8. A holder for laces comprising the hook or hanger formed with sides or arms and the retainer one of said parts overlying the other and the retainer being formed with opposite portions which project into the plane of the space between the sides of the hook or hanger substantially as set forth.

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527,734. HOT-AIR PIPE. Charles Spindler, Jr., Peoria, Ill. Filed July 26, 1894. Serial No. 518,677. (No model.)



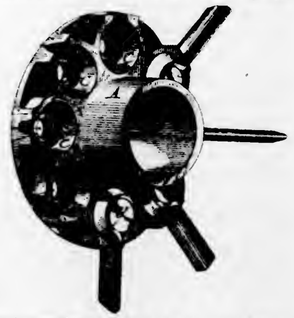
*Claim.*—The herein described flue consisting of a number of sections A each comprising an inner pipe B, and an outer pipe C, having an air space between them on all sides said sections A having one end contracted by bending the pipes B, C, inwardly at their longitudinal and transverse edges and the opposite end expanded by bending the pipes B, C, outwardly at their longitudinal and transverse edges, end pieces E having bent-over edges F adapted to overlap the edges of the sections B, C, those sections E fitting upon the contracted end of the sections A being also contracted toward their open end to conform to the contracted space between the inwardly-bent ends of pipes B, C, and the sections E fitting upon the expanded end of sections A being expanded or widened toward their open end to conform to the widened space between the outwardly bent ends of pipes B, C, said sections A fitting together with the bent over edges F of pieces E carried at one end of sections A fitting within the open end of the pieces E of the adjoining sections A, all of the pieces E being provided with openings G, as and for the purpose specified.

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527,735. WHEEL. Nils O. Starks, Madison, Wis., assignor to the Fuller & Johnson Manufacturing Company, same place. Filed Jan. 22, 1894. Serial No. 497,678. (No model.)

*Claim.*—1. In a vehicle wheel, a hub provided with a flange having a series of circular sockets in its side face; in combination with a series of spokes having eyes fitted to said sockets; and means for uniting the spokes to the flange.

2. In a wheel, the combination of a hub having a radial flange formed with recesses or seats in its side face, said seats being wider than the thickness of the spokes, and each formed with a circumferential opening of a width sufficient to receive the body of the spoke, a series of spokes each having one end provided with a perforate head or enlargement to enter one of said seats, and a series of rivets or other fastening device, each passing through the flange and through one of the spoke heads, and serving to retain such spoke in place.

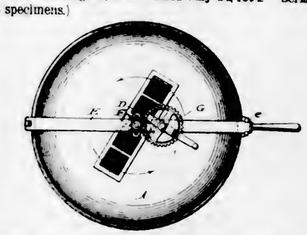


3. A wheel comprising a hub having a radial flange or rim A, said flange provided on one face with a series of substantially circular recesses or seats, openings extending through the flange in the center of said seats; raised rim c around said openings; slots formed in the outer walls of the seats or recesses, spokes provided with eyes, said eyes and spokes being adapted to fit within the seats and slots, respectively; and fastening devices passing through the eyes and the openings in the flange.

4. A wheel comprising a hub having a radial flange or rim, said flange provided on one face with a series of substantially circular recesses or seats having a groove in their bottom; openings extending through the flange and the centers of said seats; slots formed in the outer walls of the seat; spokes provided with eyes, said spokes and eyes being adapted to be seated within the seats and slots respectively; and fastening devices passing through the eyes and the openings in the flange.

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527,736. METHOD OF COATING PAPER TUBES, &c. Marvin C. Stone, Washington, D. C. Filed July 24, 1894. Serial No. 481,332. (No specimens.)



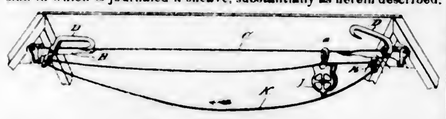
*Claim.*—1. The method of treating tubes with liquid to distribute the latter and remove the surplus, consisting in first assembling the tubes side by side, confining them in this position, subjecting the assembled tubes to a primary coating of the liquid material as by submersion or otherwise, and finally imparting to the same while confined *en masse*, a rapid rotary motion in a direction transverse to their axes; whereby the uniform distribution of the coating will be effected and the surplus material thrown off from the ends of the tube.

2. The method of treating tubes with liquid to distribute the latter and remove the surplus, consisting in first assembling the tubes side by side in a body of a thickness considerably less than the length of the tubes, confining them in this position, subjecting the assembled and confined tubes to a primary coating of the liquid material and finally rotating the body of the confined tubes rapidly in a horizontal plane, in a direction transverse to the axes of the tubes and about a point midway of the length of the same.

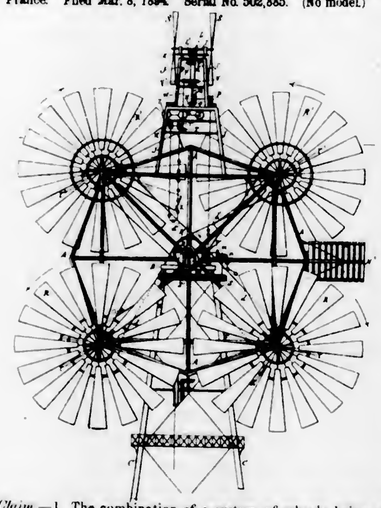
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527,737. MEANS FOR SHIFTING AND SECURING HAY-ELEVATOR PULLEYS. Judson D. Swacick, Canton, Ohio, assignor to the Ney Manufacturing Company, same place. Filed Jan. 29, 1894. Serial No. 498,333. (No model.)

*Claim.*—In combination, a support A having a projecting arm B provided at its forward end with a groove *b* a latch pivoted to said arm and having one of its ends formed into an underlying hook which is to engage said groove and its other end with a looped arm extension in which is journaled a sheave, substantially as herein described.



527,738. WINDMILL. Emmanuel C. B. Touzelin, Argenteuil France. Filed Mar. 8, 1894. Serial No. 502,885. (No model.)



*Claim.*—1. The combination of a system of wheels, being multiples of four, of a surface of any desirable extent, one half in front and at the bottom of the mill and the other half at the back and at the top and in such a manner that the center of pressure as well as of gravity of the whole system are situated on the axis of the tower and close to the plane of suspension with a frame A A A A in the shape of a water wheel pivoted around a vertical axis, as above substantially described and illustrated in the annexed drawings.

2. The combination with a frame A, of a rolling platform K, having a tube K', a shaft l mounted on the platform and having the wheels S secured thereto, the wheels R, R', mounted on the frame, the pinion N driven by the shaft I, the toothed wheel O, the pulleys P, P', the endless belt connecting said pulleys, the pinion *m*, the toothed wheel *n*, the pinion *s*, the rack *s'*, the stops *p*, *p'*, the vertical shaft W, the hollow hemispheres Z, the pinion V', the toothed wheel V, the beveled wheels T, T', the pulley H, and a rope suspended from the latter and provided with weights X, substantially as and for the purposes described.

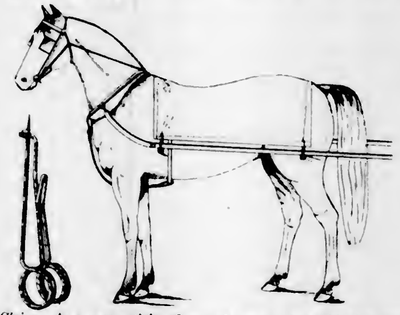
527,739. ALE-TAP. Sebastian Van Hennik, Yonkers, N. Y. Filed Jan. 20, 1894. Serial No. 497,526. (No model.)



*Claim.*—1. The combination, of the shell and tubular valve plug, provided with registering ports, the plug having its rear end seated in the shell, and having a central opening in its forward end, the crown of which forms one face of the faucet joint, the plug having radially projecting shoulders formed upon the periphery behind its crown, and the shell having inwardly extending projections in front of the shoulders on the plug, and in a line therewith parallel with the axis when the ports are closed, substantially as described.

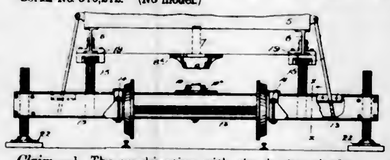
2. The combination, with the shell and tubular valve plug, provided with registering ports, the plug having its rear end seated in the shell, and having a central opening in the forward end, the crown of which forms one face of the faucet joint, the plug having radially projecting shoulders formed upon the periphery behind its crown, and the shell having inwardly extending projections in front of the shoulders on the plug and in a line therewith parallel with the axis when the ports are closed, of a tubular key having a plug seat in its one end formed by a counter bore enlargement, the shoulder formed thereby forming one face of a faucet joint, and having crown teeth projecting longitudinally from the same end and adapted to engage the shoulders upon the plug and to encircle the forward end thereof, the key having longitudinal external grooves upon the same end, as is provided with the teeth, and having inclined transverse grooves connected therewith, the said longitudinal and transverse grooves being adapted to receive the projection upon the interior of the shell, and a washer seated in the counter bore enlargement of the key and against the shoulder therein substantially as described.

527,740. HORSE-BLANKET PIN. George A. Wright and Medwin L. Jacoby, Bellevue, Ohio; said Jacoby assignor of one-eighth to John Aubrey Wright, same place. Filed Mar. 27, 1894. Serial No. 505,333. (No model.)



*Claim.*—As a new article of manufacture a horse blanket pin constructed of a single piece of wire, and comprising upwardly projecting ends inclined toward each other formed with a keeper 3, and a point 1, respectively, the two spring coils 4 located at the base of the pin, and the upwardly projecting clamping tongue 5, extending in front of the ends from between the coils, and formed with an outbent portion 6 to facilitate the insertion of the trace; the pin having a contracted portion 7 beneath which the trace is retained; the outer convolutions of the coils providing springs for the ends, and the inner convolutions of the coils providing springs for pressing the tongue inward and retaining the point in engagement with the keeper when the trace is inserted; substantially as described.

527,741. MEANS FOR SUPPORTING DREDGE OR OTHER STRUCTURES. Erastus S. Bennett, Denver, Colo. Filed June 30, 1894. Serial No. 516,212. (No model.)



*Claim.*—1. The combination with the dredge platform and the truck, of the king pin rigid in one of said parts, and loose in the other part, the transverse beam to which the truck frame is secured, said beam extending a suitable distance on each side of the truck and provided with nuts, screws engaging the nuts of the beam, suitable bearing surfaces for the lower extremities of the screws, and tie rods connecting the dredge platform with said beam, substantially as described.

2. The combination with the truck frame and the dredge platform, of the king pin rigid in one part, and loose in the other part, the transverse double I-beam to which said frame is secured, said beam extending on each side of the frame, nuts located at the extremities of the beam and held between the two parts thereof, screws engaging the nuts, and tie rods connecting the dredge platform with said beam, substantially as described.

3. The combination with the truck frame and the dredge platform, of the transverse beam to which the truck frame is secured, said beam extending a suitable distance on each side of the truck, the rigid king bolt carried by the beam and engaging a socket made fast underneath the platform, screws located on each side of the king bolt and engaging nuts carried by the beam, and suitable bearings for the upper extremities of the screws, substantially as described.

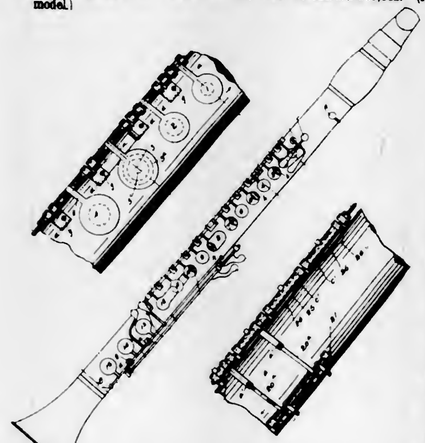
4. The combination with the dredge platform and truck frame, of the king pin connecting said platform and frame, said pin being rigid in one part and loose in the other part, the leveling side screws supporting said platform, the transverse beam supporting the side screws and receiving the king bolt, said beam extending a suitable distance on each side of the truck frame which is secured thereto, and the outer screws engaging the beam extremities, substantially as described.

5. The combination with the dredge platform and truck, of the transverse beam attached to the truck and extending a suitable distance on each side thereof, and the tie rods connecting the platform with said beam on either side of the truck, substantially as described.

6. The combination with the dredge platform and truck, of the king pin rigid in one of said parts and loose in the other, and means for adjusting the dredge platform with relation to the truck substantially as described.

7. The combination with the dredge platform and truck frame, of the king pin rigid in one of said parts and loose in the other part, and the leveling side screws located on either side of the king bolt, said screws being attached to one part (the truck frame or the dredge platform) and loose in the other part, substantially as described.

527,742. WIND REED MUSICAL INSTRUMENT. Philip J. Devault, Denver, Colo. Filed Mar. 10, 1894. Serial No. 503,062. (No model.)



*Claim.*—1. In a wind reed musical instrument, the combination with the tube, of the covers for closing the sound holes, sleeve sections movably mounted on the tube and provided at their extremities with overlapping projections, and narrow stems connecting the covers with the sleeve sections, whereby the covers proper are unobstructed by the overlapping parts, substantially as described.

2. In a wind reed musical instrument, the combination with the tube, of the covers for closing the sound holes, sleeve sections movably mounted on the tube and connected with the covers by narrow stems, the sleeve sections being provided at their extremities with overlapping projections and means engaging said projections for adjusting the position of the covers relatively to each other, whereby they all close simultaneously, substantially as described.

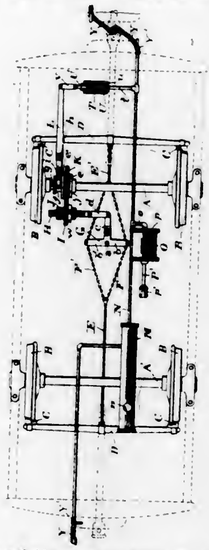
3. In a reed, wind musical instrument, the combination with the tubular body part, of a stationary shaft attached to the body part, sleeve-sections movably mounted on said shaft and provided with stems carrying covers adapted to close the sound holes, the adjacent sleeve extremities being provided with overlapping projections, and adjusting screws carried by one set of projections and adapted to engage the other set, substantially as described.

4. In a reed, wind musical instrument, the sleeve-sections provided at each extremity with a projection, one of said projections carrying an adjusting screw, and a stem attached to the sleeve and carrying a sound hole cover at its free extremity, substantially as described.

5. A wind reed musical instrument provided with connected covers for closing the sound holes, every alternate cover from 3 to 7, both inclusive and from 8 to 12, both inclusive, having projections formed on their upper surfaces, whereby the projecting parts of said surfaces are raised above the corresponding surfaces of the adjacent covers to facilitate the execution of the chromatic scale, substantially as described.

6. A reed, wind musical instrument provided with sound hole covers composed of two parts, one located directly above the other, the lower or inner part being capable of independent operation, and having an aperture much smaller than the sound hole in the tube, substantially as described.

527,743. HYDRAULIC CAR-BRAKE. William L. Fitzhugh, Baltimore, Md. Filed Apr. 16, 1894. Serial No. 507,667. (No model.)



*Claim.*—1. In a fluid pressure air brake, the combination of an operating screw connected with the brake rod of the car; a pinion having a threaded hub to turn on the said screw; a loose wheel on the car axle meshing with the said pinion; a clutch mechanism connected with the axle and coacting with the said loose wheel; and means for operating the clutch mechanism.

2. The combination of an operating screw connected with the foundation brake gear of a car; a pinion having internal screw-threads which fit and serve as a nut on the said screw; a loose gear wheel on the car-axle which gears with the said pinion; a clutch mechanism to bind the loose wheel against the car axle and cause it to revolve therewith; a cylinder and piston for operating the clutch mechanism; and means for using liquid in said cylinder to actuate the piston thereof.

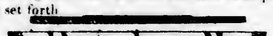
3. The combination of an operating screw connected with the brake rod of a car; a pinion having a threaded hub to turn on the said screw; a loose wheel on the car-axle meshing with the said pinion; a liquid tank or reservoir; a main cylinder connected with the train-pipe and having a piston to force liquid through said pipe under pressure; clutch mechanism coacting with the said loose wheel; an operating cylinder having a piston which operates the clutch mechanism; and means for moving the main-cylinder piston to force liquid under pressure through the train-pipe to actuate the piston in the operating cylinder.

4. The combination of an operating screw connected with the foundation brake-gear of a car; an internally screw-threaded pinion for moving the said screw; a loose gear-wheel and a rigid disk, *c*, on the car axle at one side of the wheel and a movable disk on the opposite side; a lever, L, acting to move the disk, *c'*, hard up against the loose wheel and cause said wheel and the pinion to revolve; a cylinder and piston for operating the lever; and means for using the liquid in said cylinder to actuate the piston thereof.

527,744. NAME OR INSCRIPTION PLATE FOR MONUMENTS, SIGNS, &c. Reinhold H. Follenius, St. Louis, Mo. Filed Feb. 2, 1894. Serial No. 498,918. (No specimens.)

*Claim.*—1. In a name or inscription plate, the combination of the flashed glass plate 1, having its general rear field surface 3 white

frosted, the name, inscription, ornaments &c. on said field surface and the glass enamel preservative integral cover 4, burned into and hermetically inclosing said rear surface and said inscription &c.; substantially as set forth.

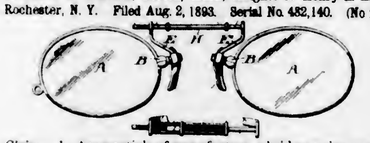


2. In a name or inscription plate, the combination of the flashed glass plate 1, having its general rear field surface 3 white frosted, the colored name, inscription, ornaments, &c. 2, in projected rear relief from the level of said surface, and the glass enamel preservative integral cover 4, that is burned into and hermetically incloses said rear surface and said inscription, &c; substantially as shown and described.

3. In a name or inscription plate, the combination of the flashed glass plate, having its general field surface 3 white frosted, the colored name, inscription, ornaments &c. 2, in projected rear relief from the level of said surface, the glass enamel integral cover 4, that is melted and burned into and hermetically incloses said rear glass surface, and said inscription &c. 2, and the frame 5, having the countersunk bed 6 in which said plate is inclosed; substantially as shown and described.

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**527,745. BRIDGE-SPRING FOR EYEGLASSES OR SPECTACLES.** BENJAMIN A. GILBERT, Boston, Mass., assignor to Henry R. Kirstein, Rochester, N. Y. Filed Aug. 2, 1893. Serial No. 482,140. (No model.)



*Claim.*—1. As an article of manufacture, a bridge spring provided with an adjustable stop to prevent the approach of the lenses beyond a selected point, substantially as set forth.

2. As an article of manufacture, a bridge spring the extremities of which are adapted to approach each other, a stop device mounted upon, and in threaded relationship with respect to, one part of the bridge spring, and in position to be encountered by another part of the bridge spring in the closing movement of said bridge spring, substantially as set forth.

3. The combination, in a bridge spring, of side bars, slide pins, yokes, a spring, and a screw shaft mounted in a threaded aperture in one of the side bars in position to be encountered by a movable part of the bridge spring, substantially as set forth.

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**527,746. ROASTING-FURNACE.** EDWIN B. GOODWIN, Boulder, Colo. Filed Dec. 5, 1893. Serial No. 492,812. (No model.)



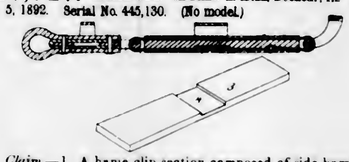
*Claim.*—1. In an ore-roasting furnace, the combination of the roasting chamber connected with a suitable source of heat, the hollow cylinder rotably mounted in said chamber and inclined downward from the feed to its discharge extremity, a hot air chamber surrounding the discharge extremity of the cylinder and separated from the source of heat whence it receives heat only by radiation, and an ore discharge pipe connected with the hot air chamber and open to receive the ore from the roasting cylinder, said pipe being provided with a conveyer, and an air passage forming the supply for the hot air chamber, and suitable suction inducing mechanism connected with the outer extremity of the cylinder, substantially as described.

2. In an ore-roasting furnace, the combination of the roasting chamber connected with a suitable source of heat, the hollow inclined cylinder rotatably mounted in said chamber, said cylinder being provided with a hollow perforated shaft, a hot air chamber at the discharge extremity of the cylinder, said chamber being separated from the source of heat, but located in suitable proximity thereto, a discharge pipe having one extremity located within the hot air chamber for the reception of the ore from the cylinder, said pipe having a conveyer and an air passage for supplying the hot air chamber, suitable suction inducing mechanism connected with the outer extremity of the hollow shaft of the cylinder, and a condensing tank, substantially as described.

3. In an ore roasting furnace, the combination of the roasting chamber connected with a suitable source of heat, a hollow cylinder rotatably mounted in said chamber, the hot air chamber surrounding the discharge extremity of the cylinder, and separated from the source of heat which it receives only by radiation, and an ore discharge pipe connected with the hot air chamber, and open to receive the air from the roasting cylinder, said pipe being provided with a conveyer and an air passage forming the supply for the hot air chamber, substantially as described.

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**527,747. HAME-TUG.** ANDREW L. HILL, Decatur, Ill. Filed Sept. 5, 1892. Serial No. 445,130. (No model.)



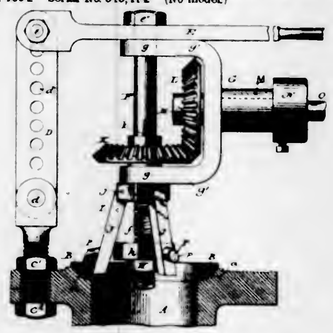
*Claim.*—1. A hame clip section composed of side bars 8 having cross bars 9, 9, and loop 11 at the forward end of the section, the strap 10 encompassing the cross bars, and the clip 12 secured to the cross bars and the strap, all in combination, substantially as set forth.

2. A tug section of a hame tug composed of link 1, block 3 in the link having recess 4, and loop 5 extended through the link and the recess of the stiffening block, all in combination, substantially as set forth.

3. A hame tug composed of link 1, block 3 in the link having recess 4, loop 5 extended through the link and the recess of the block, the side bars 8 of the clip section having an end bar pivoted in an end of the link, cross bars 9, 9 connecting the side bars, loop 11 at the forward end of the clip section, strap 10 encompassing the cross bars, and the clip 12 secured to the cross bars and to the strap, all in combination, substantially as set forth.

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**527,748. GRINDING MECHANISM.** WILLIAM H. HILL, Denver, Colo., assignor of one-half to Joshua Piccioli, same place. Filed June 22, 1894. Serial No. 515,414. (No model.)





*Claim.*—1. The combination of a screw-threaded shaft, a series of expansible and contractible arms, a support I to which they are pivotally connected and which is secured to the screw-threaded shaft, a nut arranged on the shaft and adapted to expand the arms, mechanism for rotating the shaft, a bracket composed of stationary and pivoted sections, a handle pivotally connecting the bracket with the screw-threaded shaft, and adjustable connections between the handle and the pivoted section of the bracket.

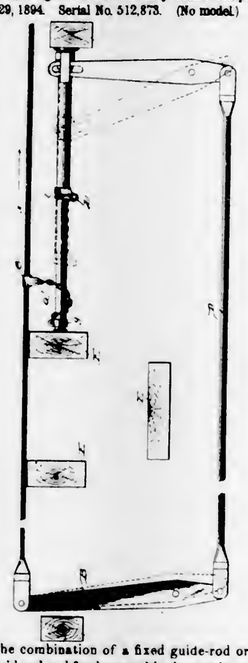
2. The combination of a rotatable screw threaded shaft, a series of expansible and contractible arms having laterally projecting lugs near their ends, means for rotating the shaft and a nut for expanding the arms.

3. The combination of a supporting bracket, a handle attached thereto, a screw-threaded shaft, a series of expansible and contractible arms, a support or head to which they are pivotally connected, a frame interposed between said support and the handle, a nut on the screw-threaded end of the shaft for expanding the arms and gearing for driving the shaft.

4. The combination of a bracket having a stationary screw-threaded member, and a pivoted, perforated member, a handle attached to the perforated member of the bracket, a screw-threaded shaft attached to the handle, a series of expansible and contractible arms connected with the shaft, and a nut for expanding the arms, a frame interposed between the handle and the inner ends of the arms, and gearing for driving the shaft.

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**527,749. BRAKE FOR RAILWAY-CARS.** HOWARD HINCKLEY, Trenton, N. J., assignor to the Hinckley Brake Company, same place. Filed May 29, 1894. Serial No. 512,873. (No model.)



*Claim.*—1. The combination of a fixed guide-rod or support, a sleeve encircling said rod and freely movable thereon in one direction, a stop or lever fulcrum carried by the sleeve, a releasable lock to hold the sleeve against movement in the opposite direction, an endwise movable operating rod, and an automatic gripping device between the rod and sleeve, said device being constructed and arranged to permit the rod to move independently of the sleeve in one direction, and cause it to carry the sleeve with it when it moves in the opposite direction; substantially as described.

2. The combination of a fixed guide rod or support, a sleeve encircling said rod and freely movable thereon in one direction, a stop or lever fulcrum carried by the sleeve, a releasable lock to hold the sleeve against movement in the opposite direction, a tubular operating rod also encircling the guide rod and movable endwise relatively to the sleeve in one direction, and a gripping device between the operating-rod and sleeve which permits the operating rod to move in one direction on the supporting rod without moving the sleeve, but causes it to move the sleeve on the supporting rod when it moves in the opposite direction; substantially as described.

3. The combination of a fixed guide-rod or support, a sleeve encircling said rod and freely movable thereon in one direction, a stop or lever fulcrum carried by the sleeve, a releasable lock to hold the sleeve against movement in the opposite direction, a tubular operating rod arranged interiorly of the sleeve and exteriorly of the supporting rod, a gripping device between said operating rod and sleeve which permits the rod to move in one direction only relatively to the sleeve, and a spring for moving the operating rod in the opposite direction and carrying the sleeve with it; substantially as described.

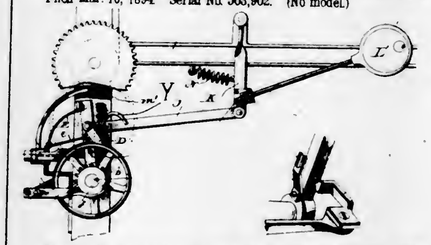
4. The combination of a fixed guide rod or support, a sleeve encircling said rod and freely movable thereon in one direction, a stop or lever fulcrum carried by the sleeve, a releasable lock to hold the sleeve against movement in the opposite direction, a tubular operating rod arranged interiorly of the sleeve and exteriorly of the supporting rod, a connection between said operating rod and a moving part of the brake mechanism, a gripping device between said operating rod and sleeve which permits the rod to move relatively to the sleeve in one direction under the action of its connection with the moving brake mechanism, and a spring inclosed within the operating rod and re-acting between the same and the fixed supporting rod for moving the operating rod and sleeve together in the opposite direction; substantially as described.

5. The combination of the fixed guide rod or support, the fulcrum carrying sleeve encircling said rod, and the loop or shackle pivoted to the sleeve and encircling the rod with a capacity for swinging in one direction only to grip the surface of the same and prevent the sleeve from moving on the rod; substantially as described.

6. The combination of the fixed guide rod F, the sleeve G inclosing the same, the dead-lever fulcrum carried by the sleeve, the releasable shackle *l* pivoted on the sleeve and encircling the rod, the tubular sleeve operating rod J, the spring S re-acting between the fixed supporting rod and the tube, the automatic gripping device between the sleeve G and the tube J, and the flexible connection *f* between the tube J and the brake rod; substantially as described.

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**527,750. MECHANISM FOR REGULATING THE MOVEMENT OF CLOTH-ROLLERS OF LOOMS.** EMILE KASTLER, Philadelphia, Pa. Filed Mar. 16, 1894. Serial No. 503,902. (No model.)



*Claim.*—In combination with the winding roller, the wheel B geared thereto, a pawl engaging said wheel, an arm C carrying said pawl and pivoted concentric with the wheel, a spring E attached to said arm, a link *e* connecting the spring and pawl, an eccentric connected to said arm to move the arm in one and a spring to move it in the other direction, and a lever M engaging the cloth roller with one of its ends and having the other end in the path of movement of the pawl carrying arm, substantially as shown and described.

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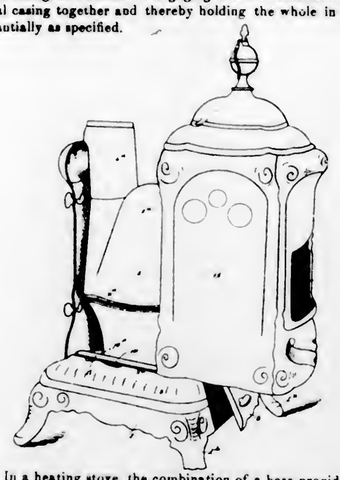
**527,751. STOVE.** WILLIAM J. KEEP, Detroit, Mich., assignor to the Michigan Stove Company, same place. Filed June 21, 1894. Serial No. 515,236. (No model.)

*Claim.*—1. In a heating stove, the combination of a leg frame having side and back panels uniting the legs, an ash pit, the bottom of which is secured to the two front legs of the leg frame, and is utilized as the connecting bar between the two front legs in place of the ordinary panel, a flange surrounding the ash pit adapted to rest upon the leg frame, a door adapted to close the opening into the ash pit and simulating the appearance of the panel connecting the legs, substantially as described.

2. In a heating stove, the combination of a leg base and a firepot base separable but adapted to be secured together, an ash pit provided with an opening extending through the front panels of the leg frame and firepot base and provided with an opening which has for its lower frame the bottom of the ash pit, substantially as described.

3. In a heating stove, the combination of a base, a firepot and dome thereover, an ornamental casing adapted to inclose the dome and firepot, means for engaging the base and one section of the orna-

mental casing, and means for engaging the two sections of the ornamental casing together and thereby holding the whole in position substantially as specified.



4. In a heating stove, the combination of a base provided with overhanging guides, an ornamental casing made in sections, of which one section is provided with lugs adapted to engage under the overhanging guides and another section is provided with means for securing the two sections together, substantially as described.

5. A heating stove, comprising the following elements: a base plate supported on four legs, an ash pit hanging underneath said base, a firepot supported on said base, an open fretwork casing resting upon said base there being holes through said base to allow the air to enter the chamber between the fire pot and the fretwork, arranged and combined as specified.

6. In a stove, a base plate provided at its upper edge with means for engaging the leg supports, an ash pit depending beneath it, openings between the outer edge of the table and the ash pit, a central opening over the ash pit, a seat for the fire pot, and an external casing spaced from the firepot, whereby a chamber is provided between it and the fire pot, adapted to produce a circulation of air from beneath the table upward.

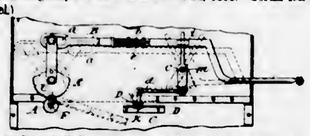
7. In a stove, a casing provided at its lower edge with means adapted to form an engaging connection between itself and the base plate so as to permit the removal of the case from the base plate without disturbing the internal parts of the stove, substantially as described.

8. In a stove, a base plate provided on its upper surface with holding tracks adapted to engage with legs on a casing, substantially as described.

9. In a stove, in combination with a fire pot, a tabular supporting plate provided with a central opening registering with the interior of the firepot, and with air openings through the base plate surrounding the fire-pot opening, the said surrounding holes communicating with the central opening by slits, whereby the intervening metal is allowed to expand and contract freely, substantially as specified.

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**527,752. DEVICE FOR OPERATING JAIL-CELL DOORS.** CHAS. A. KRUTSCH, Logansport, Ind. Filed Nov. 24, 1893. Serial No. 491,912. (No model.)



*Claim.*—1. In a jail door operating device, the shifting bar having spring connected sections, and a slotted connection with the gear for operating the door in combination with an operating lever, and connection from said bar to door locking mechanism, all substantially as shown and described.

2. The combination with the sectional spring connected bar B, the door operating gear actuated thereby, and connections from said bar to the pivoted securing bar D, of said bar D, and a lever for operating said parts, all substantially as shown and described.

3. In jail door devices, the combination of the sectional spring connected bar, having the slot at one end, the gears and lever the latter operating in said slot, a vibrating locking bar supported at its lower end by a link, and at its upper end being controlled by a cam slot, and lever connections from said sectional bar for actuating the locking bar, and means for actuating said sectional bar, all substantially as shown and described.

4. In a jail door operating device, the sectional spring bar consisting of the two parts secured together by the spring *b*, one end of one member of the bar being slotted and having guides *o, o*, the other member having a part *e*, working through said guides, in combination with gearing for opening and closing the doors, and lever connections from said sectional bar to the door securing bar, all substantially as shown and described.

5. The lever *c* in combination with shifting bar B, bar *d*, inclined plane C, and grooved wheel *k*, connected with shifting bar D, substantially as shown and for the purposes described.

6. The link *f* in connection with shifting bar D, with the grooved wheel *k* and the inclined plane C, for the purpose of throwing the bar D over the full edge of the door and thus forming the lock, substantially as shown and for the purposes set forth.

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**527,753. DOOR SPRING OR CHECK.** HENRY W. LARSSON, Springfield, Mass. Filed July 13, 1893. Serial No. 480,429. (No model.)

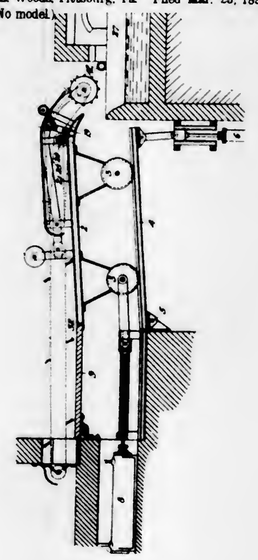


*Claim.*—1. The combination of a door and frame therefor, brackets on the frame above the door, a cylinder pivoted on one bracket, a lever pivoted on the other bracket, a link connecting the end of said lever to the door and a spring for actuating said lever to close the door, and a piston working in the cylinder pivoted at its outer end to the end of the lever, the distance between the brackets, the lengths of the lever and piston and the play of the piston in the cylinder being so proportioned that the piston is in line with the lever at one end of its play and at right angles thereto at the other end, substantially as described.

2. The combination of a spring supporting bracket a spring mounted therein, a spring lever pivotally mounted in said bracket, the latter comprising two pivotally mounted arms *f'* rigidly connected, a rod *p* extending from arm to arm and being of the same diameter throughout, a suitable check mechanism connected with said pin *p*, by a rod / which at its connecting point with the pin is of less width than the space between the two arms *f'* whereby the relative position of the several parts may be varied substantially as and for the purposes stated.

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**527,754. MANUFACTURE OF WIRE-GLASS AND APPARATUS THEREFOR.** JOHN H. LUBBERS, New Kensington, assignor of one-half to Richard E. Woods, Pittsburg, Pa. Filed Mar. 23, 1894. Serial No. 504,851. (No model.)





*Claim.*—1. The method of making wire glass, which consists in dipping wire fabric into a body of molten glass, and causing the glass to adhere thereto; substantially as described

2. The method of making wire glass, which consists in dipping wire fabric into a body of molten glass, causing the glass to adhere thereto, and regulating the thickness of the glass coating by regulating the temperature of the glass into which the fabric is dipped; substantially as described.

3. The method of making wire glass, which consists in dipping wire fabric into a body of molten glass and causing the glass to adhere thereto, and then equalizing the glass coating hy pressure; substantially as described.

4. The method of making wire glass, which consists in dipping wire fabric into a body of molten glass, causing the glass to adhere thereto, and then equalizing the glass coating by pressure between heated surfaces; substantially as described.

5. Apparatus for making wire glass, consisting in a carrier arranged in proximity to a receptacle for molten glass and adapted to carry wire fabric through the glass; substantially as described.

6. Apparatus for making wire glass consisting in a carrier arranged in proximity to a receptacle for molten glass and adapted to carry wire fabric through the glass, and a pressure roller which bears on the fabric after it has come from the glass; substantially as described.

7. Apparatus for making wire glass consisting in an endless chain carrier arranged in proximity to a receptacle for molten glass and adapted to carry wire fabric through the glass; substantially as described.

8. Apparatus for making wire glass, consisting in an endless-chain carrier arranged in proximity to a receptacle for molten glass and adapted to carry wire fabric through the glass, and guide-wheels at the position of the glass around which the fabric passes; substantially as described.

9. Apparatus for making wire glass, consisting in an endless-chain carrier arranged in proximity to a receptacle for molten glass and adapted to carry wire fabric through the glass, and guide-wheels at the position of the glass around which the fabric passes, said guide wheels being journaled removably in their bearings; substantially as described.

10. Apparatus for making wire glass, consisting in an endless chain carrier arranged in proximity to a receptacle for molten glass and adapted to carry wire fabric through the glass, said carrier having projections adapted to engage the fabric; substantially as described.

11. Apparatus for making wire glass, consisting in an endless chain carrier arranged in proximity to a receptacle for molten glass and adapted to carry wire fabric through the glass, said carrier having projections adapted to engage the fabric, means for disengaging the carrier from the coated fabric at the end of its travel, and a second carrier adapted to engage the coated fabric and to carry it forward; substantially as described.

12. Apparatus for making wire glass consisting in an endless chain carrier arranged in proximity to a receptacle for molten glass and adapted to carry wire fabric through the glass, and a reel from which the fabric is drawn; substantially as described.

13. Apparatus for making wire glass, consisting in a carrier arranged in proximity to a receptacle for molten glass and adapted to carry wire fabric through the glass, an annealing oven in proximity to the carrier, and mechanism adapted to receive the coated fabric from the carrier and to convey it to the annealing oven; substantially as described.

14. Apparatus for making wire glass, consisting in a carrier arranged in proximity to a receptacle for molten glass and adapted to carry wire fabric through the glass, said carrier being mounted on a vertically movable support and adapted to be raised and lowered thereby so as to conform to the level of glass in the receptacle; substantially as described.

15. Apparatus for making wire glass, consisting in a carrier arranged in proximity to a receptacle for molten glass and adapted to carry wire fabric through the glass, said carrier being vertically movable; substantially as described.

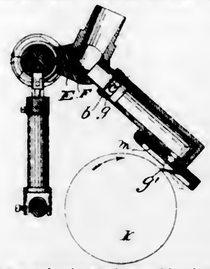
16. Apparatus for making wire glass, consisting in a carrier arranged in proximity to a receptacle for molten glass and adapted to carry wire fabric through the glass, said carrier being mounted on a vertically movable support and adapted to be raised and lowered thereby so as to conform to the level of the glass in the receptacle, and said support being also movable to and from the receptacle; substantially as described.

17. In apparatus for making wire glass, the combination of an endless chain carrier adapted to carry wire fabric through the glass in a receptacle, a second carrier leading from the first, and means for automatically disengaging the coated fabric from the first carrier and causing it to be engaged by the second; substantially as described.

18. A carrier for glass, the same consisting of a table over which the glass is moved, and an endless chain having projections adapted to engage the glass frictionally on the table and to carry it along over the same; substantially as described.

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**527,755. GRAPHOPHONE.** THOMAS H. MACDONALD, Bridgeport, Conn. Filed June 22, 1894. Serial No. 515,408. (No model.)



*Claim.*—1. In a graphophone, the combination with the sliding carriage, of a socket-piece swiveled therein on a horizontal axis and having a tubular arm, and a recorder and reproducer provided each with a tubular stem fitting said arm and adapted for detachable connection therewith, substantially as described.

2. The combination with the sliding carriage, of a socket-piece swiveled therein on a horizontal axis and having a tubular arm slotted or notched in its end, and a recorder and reproducer having each a tubular stem fitting said arm, and a catch pin for engaging said slot or notch and centering the instrument, substantially as described.

3. The combination with the sliding-carriage, of a socket-piece swiveled therein and having a tubular arm notched in the end, a reproducer having a tubular stem, a sleeve swiveled in the end of said stem and adapted to fit tightly over said arm, and a pin by means of which said sleeve is swiveled, said pin engaging the notch in said arm when the reproducer is in place, substantially as described.

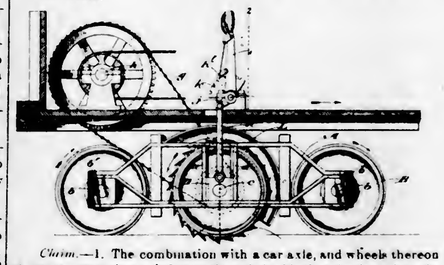
4. A reproducer for graphophones having a freely suspended supporting stem said stem containing a swivel joint permitting oscillation of the reproducer transversely to the lines of the record, substantially as described.

5. A self-adjusting recorder for graphophones comprising a freely suspended arm, a diaphragm, and a point or stylus attached rigidly to and carried wholly by said diaphragm, said recorder resting freely against the recording tablet and making contact therewith only at the point of the stylus, substantially as described.

6. A recorder for graphophones comprising a diaphragm, a recording stylus in the form of a pencil, a clamp of sheet metal bent to form a socket in which the pencil is held and two wings or flanges by which it is fixed to the diaphragm, the pencil being oblique to the latter, substantially as described.

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**527,756. ROTARY FLANGER AND TRACK-CLEARER.** JOHN S. MATHEWS and ALBERT T. DOYLE, Pendleton, assignors of one-fourth to Jesse F. Killgore, Weston, Oreg. Filed Mar. 31, 1894. Serial No. 505,888 (No model.)



*Claim.*—1. The combination with a car axle, and wheels thereon of rotary cutters journaled upon the axle beside the wheels, and mechanism for rotating said cutters upon the axle, substantially as described.

2. The combination with a car axle, and wheels thereon, having thin and shallow flanges, of rotary cutters journaled on the axle at the inner sides of the wheels, and mechanism for rotating said cutters on the axle, substantially as specified.

3. The combination with a wheeled car truck, of rotary cutters journaled on one of the truck axles to the inside of the wheels, and

mechanism for rotating said cutters on the axle, substantially as set forth.

4. The combination with a six-wheeled car truck, of rotary cutters journaled on the intermediate axle to the inside of the wheels, and mechanism for rotating said cutters, substantially as described.

5. The combination of the vertically adjustable axle, the wheels fixed thereon, the rotary cutters journaled on said axle beside the wheels and adjustable therewith and mechanism for rotating said cutters on the axle, substantially as specified.

6. The combination of the rotary cutter, having an annular recess, and radial perforations; its support, and mechanism for rotating it; with the annular band seated in said recess, and means for supplying oil to said recess, substantially as set forth.

7. The combination with a car axle and wheels thereon, the rotary hubs journaled upon the axle, the cutters carried by said hubs, and means for supplying oil to the interior of the hubs, substantially as described.

8. The combination with a car axle, and wheels fixed thereon, the rotary hubs journaled on said axle to the inside of the wheels, the cutters fixed on said hubs, the sprocket gearing for rotating the hubs, and means for adjusting said axle vertically, substantially as specified.

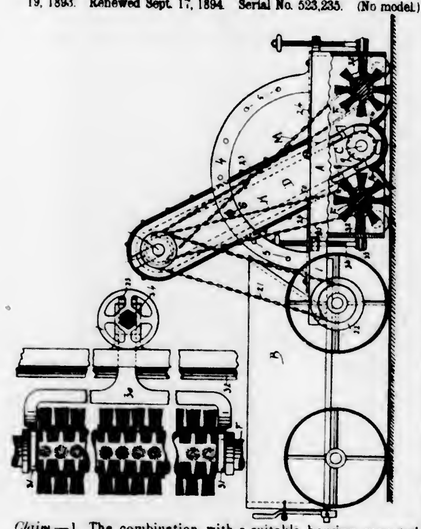
9. The combination with a six-wheeled car truck, the intermediate wheels and axle being vertically adjustable, of rotary cutters journaled on and adjustable with said axle, means for oiling the bearings of said cutters, and means for rotating them upon the axle, substantially as set forth.

10. The combination with a car axle, and wheels fixed thereon, the rotary hubs journaled on said axle to the inside of the wheels, the cutters fixed on said hubs, the sprocket gearing for rotating the hubs, and means for adjusting said axle vertically, and the fixed deflectors or guards arranged over the "up" side of the cutters, substantially as and for the purpose described.

11. The combination with a six-wheeled car truck, the intermediate wheels and axle being vertically adjustable, of rotary cutters journaled on and adjustable with said axle, means for oiling the bearings of said cutters, and means for rotating them upon the axle, and the fixed deflectors or guards arranged over the "up" side of the cutters, all constructed and arranged to operate substantially as and for the purpose set forth.

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**527,757. STREET-SWEEPER.** NAPOLEON B. MILLER, Omaha, Nebr., assignor of one-half to Frederick Mohle, same place. Filed June 19, 1893. Renewed Sept. 17, 1894. Serial No. 523,235. (No model.)



*Claim.*—1. The combination with a suitable housing, mounted upon wheels and provided with projecting sills by means of which said housing can be attached to any suitable dirt wagon of two transverse broom shafts each adjustably held within said housing by means of a bifurcated bar supporting the ends of said broom shaft, said bar being pivotally secured within the broom housing and having an extending stem and an adjusting screw secured within suitable lugs of the broom housing and adapted to raise and lower said stem all substantially as and for the purpose set forth.

2. The combination with a suitable broom housing, of two brooms held within the ends of two bifurcated bars which are pivotally mounted within said housing and provided, each, with an extending stem, screws adapted to act against said stems, a dust collecting scoop mounted between said brooms, having a central depression and two extending wings extending partially below said brooms, an endless elevator mounted above said dust collecting scoop, and means for operating the brooms and elevator, all substantially as and for the purpose set forth.

3. The combination with the wheeled housing, A, of the transverse main operating shaft, C, the bars, D D, movably secured to said shaft, and provided at their upper end with the shaft, E, the semicircular braces, 4—4, adapted to adjustably secure said bars, D—D, an endless carrier, 7, passing over said shafts, C and E, the trough, 12, secured within said housing and below said shaft, C, belt connections passing from said shaft, E, to a suitable running gear, in combination with the rotary brooms, F F, and bolt connections between the shaft, E, and said brooms all substantially as and for the purpose set forth.

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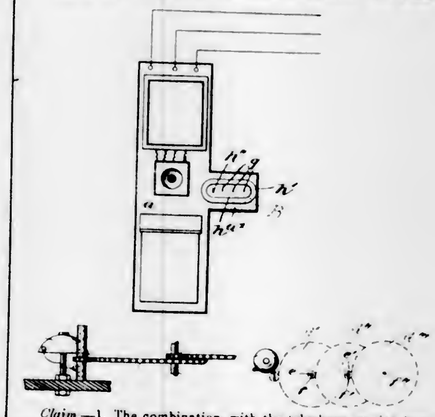
**527,758. VAPOR FACE-BATH.** HARRIET H. HOGE, Portland, Oreg. Filed Aug. 24, 1893. Renewed Sept. 24, 1894. Serial No. 523,986. (No model.)



*Claim.*—In a vapor face bath or inhaling apparatus, in combination a receptacle for the hot liquid, an upper case A having flaps *b* and a shield *d*, an air-duct extending from the exterior to the interior of said case A, said air-duct being provided with a flexible tube and suitable mouth piece, attached to its interior end, and with means for filtering the air entering through it, and the said receptacle and upper case being respectively adapted to be put together, substantially as set forth.

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**527,759. TELEPHONE-CALL REGISTER.** WILLIAM T. GENTRY, Atlanta, Ga. Filed Apr. 20, 1894. Serial No. 506,330. (No model.)



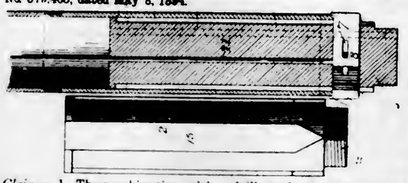
*Claim.*—1. The combination, with the telephone station instrument, of a tumbler adapted to receive a key and having connection with a sounder and adapted, by its rotation, to operate same, and a counting train and dials said train connected with said tumbler, for the purpose specified.

2. The combination with the telephone station instrument of a tumbler adapted to receive a key and having connection with a sounder, set upon the base-board of the instrument, and adapted by its rotation to operate same, and a counting train connected revolubly with said tumbler, for the purpose specified.



# REISSUES.

**11,446. WELL-DRILLING APPARATUS.** STEPHEN A. HORTON, Clarksville, Tex. Filed Sept. 21, 1894. Serial No. 523,755. Original No. 519,406, dated May 8, 1894.



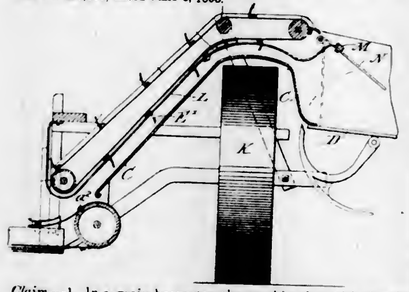
*Claim.*—1. The combination with a drill stock, of a bit-carrying core or stem fitting therein, longitudinally-movable rests mounted in a cavity near the lower end of the core or stem and provided with suitable guiding devices, a spur or pinion arranged between the planes of said rests and engaging their facing toothed or serrated surfaces, and means to operate said spur or pinion, substantially as specified.

2. The combination with a drill stock provided with interior spaced ribs, of a bit-carrying core or stem provided with exterior grooves to receive said ribs, the upper ends of said grooves being closed, and locking devices carried by the core or stem to engage the lower edge of the stock, substantially as specified.

3. The combination of a drill stock provided with interior alternate ribs and grooves, a core or stem fitting within said stock and provided with corresponding alternate grooves and ribs to interlock with those of the stock, the grooves of the core or stem being closed at their upper ends by stops or flanges to engage the upper ends of the ribs of the stock, adjustable rests carried by the core or stem, and means to extend the same to engage the lower end of the stock, substantially as specified.

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**11,447. HARVESTER-ELEVATOR.** MAURICE KANE, Austin, Ill., assignor to the Warder, Bushnell & Glessner Company, Springfield, Ohio, and Chicago, Ill. Filed Dec. 29, 1893. Serial No. 495,130. Original No. 499,169, dated June 6, 1893.



*Claim.*—1. In a grain harvester, the combination with the platform carrier at the grainward side of the drive wheel and the binder deck at the stubbleward side; a continuous deck extending from the delivery side of the platform carrier in an upwardly inclined direction to a point above the drive wheel; thence substantially horizontally above the latter to its stubbleward side, and thence downwardly at the stubbleward side of the drive wheel to the binder deck; and an endless carrier overhanging the portion of said deck at the grainward side of and above the wheel; substantially as set forth.

2. In a grain harvester, in combination with a platform carrier at the grainward side of the drive wheel and the binder deck at the stubbleward side, a fixed deck extending from the delivery side of the platform carrier to the receiving side of the binder deck, and deflected toward horizontal position at the grainward side of the drive wheel, and again deflected downward at the stubbleward side of the drive wheel; an endless carrier operating above the portion of said deck located grainward of the drive wheel and having its delivery side at a vertical plane stubbleward of the drive wheel, and deflected upward out of the direct plane between its receiving and delivery sides substantially at the vertical plane of the said deflection of said fixed deck toward horizontal position; substantially as set forth.

3. In a grain harvester, in combination with the platform carrier at the grainward side of the drive wheel and the binder deck at the stubbleward side, a continuous deck extending from the delivery side of the platform carrier to the receiving side of the binder deck, an endless carrier overhanging at its receiving side the delivery side of the platform carrier, and having its delivery side at a vertical plane stubbleward of the drive wheel and having its upper ply deflected upward and its lower ply free to yield upward out of the direct plane between its receiving and delivery sides substantially at a distance grainward from the delivery side roller; substantially as set forth.

4. In a grain harvester in combination with the platform carrier at the grainward side of the drive wheel, having its roller at the delivery side of large diameter relatively to the distance between the upper and lower ply of the carrier throughout its principal extent and having shoes B B, about which the grain-actuating ply of the carrier is deflected as it passes onto said roller; an elevator endless carrier having its receiving side and the operating roller at that side overhanging the said deflected portion of the platform carrier; substantially as set forth.

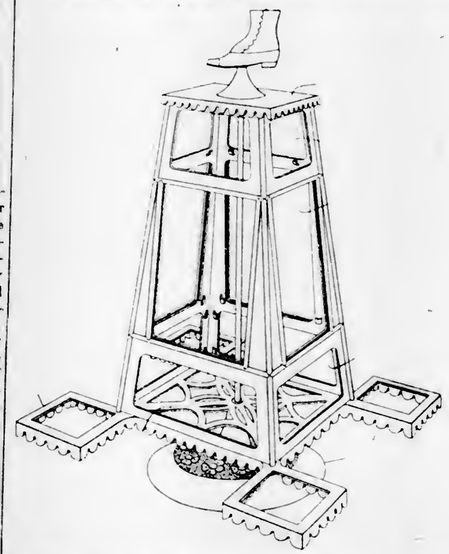
5. In a grain harvester, the combination with a drive wheel, of a mechanism for feeding the grain over the same, comprising a lower suitable support for such grain and an upper apron supported by the usual lower and upper rollers and having an additional support for the return ply of such apron located under the said ply but above the ordinary path thereof, whereby the return ply is deflected and prevented from dragging on the lower ply when the latter is lifted by the passage of the grain; substantially as and for the purpose set forth.

6. In a grain harvester, the combination with a drive wheel, a platform carrier at the grainward side and a binder deck at the stubbleward side thereof, a suitable support for the grain between such carrier and binder deck and an upper elevator apron provided with the usual upper and lower rolls and an additional or third roller located under the return ply above the ordinary path thereof, whereby said ply is deflected upward so as to give the grain throat room for passage over the wheel toward the binder; substantially as set forth.

7. In a harvester the combination of a drive wheel, a lower suitable support for the grain, and an upper feeding apron extending from the vicinity of the platform carrier to, above, and substantially across the top of the drive wheel and provided with a support for the return ply of such apron located approximately above such drive wheel, substantially as and for the purpose set forth.

# DESIGNS.

**23,688. CASTER.** GEORGE E. ROWE, Boston, Mass., assignor of one-half to Nathaniel B. Stevens, same place. Filed Aug. 24, 1894. Serial No. 521,243. Term of patent 14 years.



*Claim.*—The design for casters, substantially as herein shown and described.

23,689. SPOON. BENJAMIN T. ASH, Binghamton, N. Y. Filed Apr. 7, 1894. Serial No. 506,789. Term of patent 3½ years.



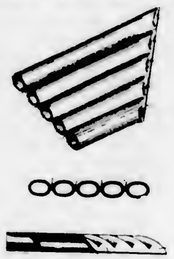
*Claim.*—The design for a spoon as herein described and shown.

23,690. SPOON. SEWARD D. SCHENCK, Binghamton, N. Y. Filed July 27, 1894. Serial No. 518,777. Term of patent 3½ years.



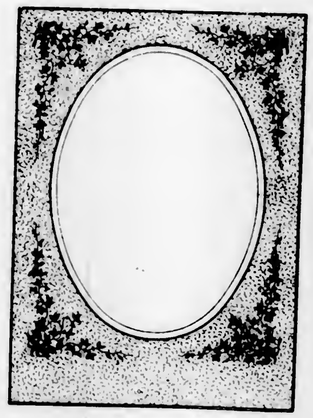
*Claim.*—A design for a spoon substantially as herein described and shown.

23,691. BONBON. CLEMENT E. GARDINER, Hempstead, N. Y. Filed Apr. 30, 1894. Serial No. 509,607. Term of patent 3½ years.



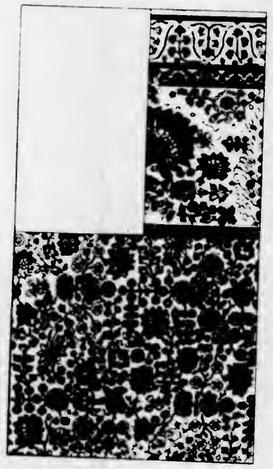
*Claim.*—The design for a bon-bon, substantially as shown and described.

23,692. PHOTOGRAPHIC-CARD MOUNT. JOHN P. ODENHEIMER, Philadelphia, Pa., assignor to the A. M. Collins Manufacturing Company, same place. Filed July 25, 1894. Serial No. 518,589. Term of patent 7 years.



*Claim.*—The design for a photograph card mount, substantially as shown and described.

23,693. CARPET. EMIL G. SAUER, Brooklyn, N. Y., assignor to the Lowell Manufacturing Company, Boston, Mass. Filed Sept. 17, 1894. Serial No. 523,285. Term of patent 3½ years.



*Claim.*—1. In a design for a carpet, the body D, substantially as shown.

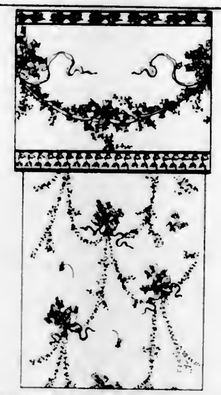
2. In a design for a carpet, the border A substantially as shown.

3. The design for a carpet, consisting of the body D and border A substantially as shown.

23,694. WALL-PAPER. GUSTAV KETTERER, Philadelphia, Pa., assignor to M. H. Birge & Sons, Buffalo, N. Y. Filed Sept. 11, 1894. Serial No. 522,753. Term of patent 3½ years.



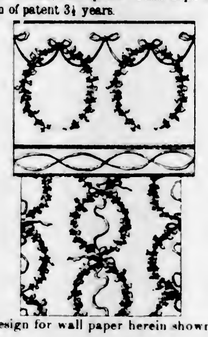
23,694.



*Claim.*—1. The design for wall paper herein shown and described.

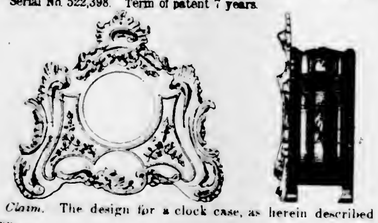
2. In the design for wall paper the border herein shown and described.

23,695. WALL-PAPER. IVY M. L. TRUITT, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Sept. 13, 1894. Serial No. 522,945. Term of patent 3½ years.



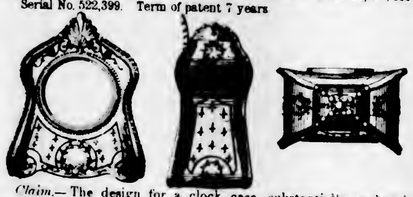
*Claim.*—The design for wall paper herein shown and described.

23,696. CLOCK-CASE. JOHN HOPSON, Jr., New London, assignor to the Waterbury Clock Company, Waterbury, Conn. Filed Sept. 7, 1894. Serial No. 522,398. Term of patent 7 years.



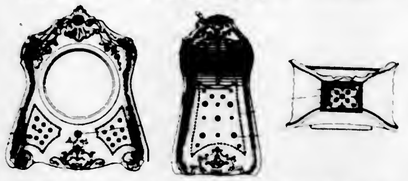
*Claim.*—The design for a clock case, as herein described and shown.

23,697. CLOCK-CASE. JOHN HOPSON, Jr., New London, assignor to the Waterbury Clock Company, Waterbury, Conn. Filed Sept. 7, 1894. Serial No. 522,399. Term of patent 7 years.



*Claim.*—The design for a clock case, substantially as herein shown and described.

23,698. CLOCK-CASE. JOHN HOPSON, Jr., New London, assignor to the Waterbury Clock Company, Waterbury, Conn. Filed Sept. 7, 1894. Serial No. 522,400. Term of patent 7 years.



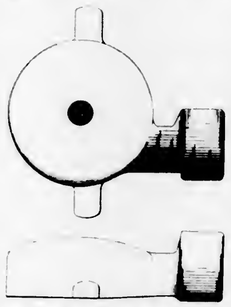
*Claim.*—The design for a clock case, substantially as herein shown and described.

23,699. RAZOR-HANDLE. FREDERICK KAMPFE, RICHARD KAMPFE, and OTTO KAMPFE, Brooklyn, N. Y. Filed Sept. 6, 1894. Serial No. 522,301. Term of patent 7 years.



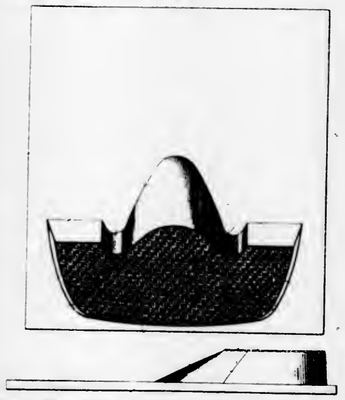
*Claim.*—The design for a razor handle, substantially as herein shown.

23,700. NOZZLE FOR LAWN-SPRINKLERS. DANIEL C. WILGUS, Los Angeles, Cal. Filed Aug. 29, 1894. Serial No. 521,644. Term of patent 7 years.



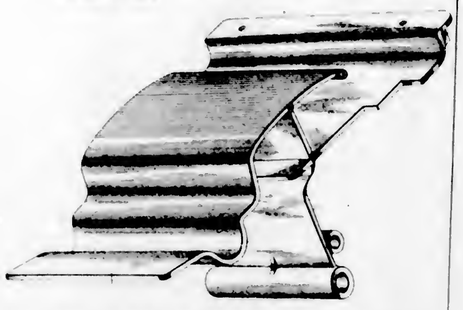
*Claim.*—The design for a nozzle for a water sprinkler substantially as herein set forth and shown.

23,701. HOOF-PAD. ARTHUR MOCKFORD, Westchester, assignor to Robert Currie, New York, N. Y. Filed July 5, 1894. Serial No. 516,659. Term of patent 14 years.



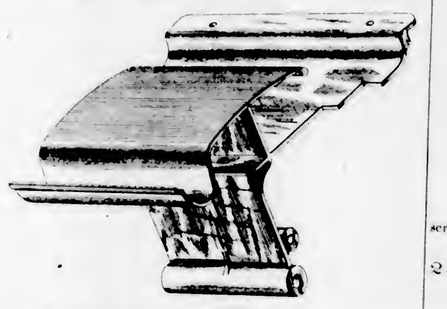
*Claim.*—The design for a hoof pad substantially as herein shown and described.

23,702. FRAME FOR CIGAR-BUNCHING MACHINES. NAPOLEON DU BRUL, Cincinnati, Ohio. Filed Apr. 9, 1894. Serial No. 506,949. Term of patent 14 years.



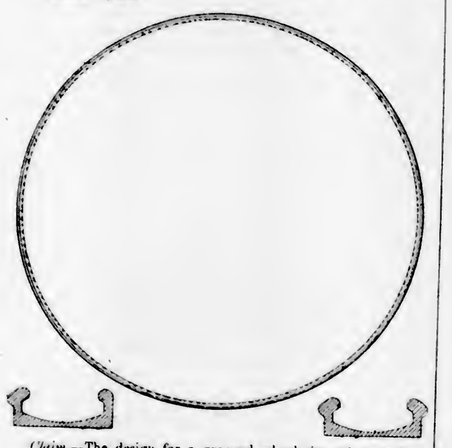
*Claim.*—The design for a frame for cigar bunching machines, substantially as herein shown and described.

23,703. FRAME FOR CIGAR-BUNCHING MACHINES. NAPOLEON DU BRUL, Cincinnati, Ohio. Filed Mar. 2, 1894. Serial No. 502,143. Term of patent 14 years.



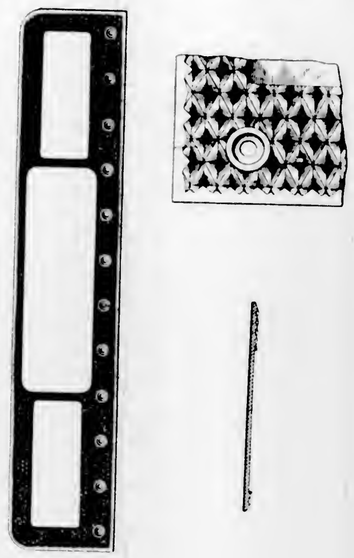
*Claim.*—The design for a frame for cigar bunching machines, substantially as herein shown and described.

23,704. METALLIC RIM FOR WHEELS. CHARLES CHALLINER, Manchester, England. Filed July 20, 1894. Serial No. 518,158. Term of patent 7 years.



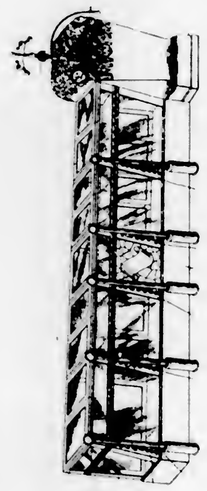
*Claim.*—The design for a grooved wheel rim, substantially as herein shown and described.

23,705. THRESHOLD-PLATE. WILLARD F. RICHARDS, Buffalo, assignor to the Gould Coupler Company, New York, N. Y. Filed Sept. 11, 1894. Serial No. 522,757. Term of patent 14 years.



*Claim.*—The design for a threshold plate herein shown and described.

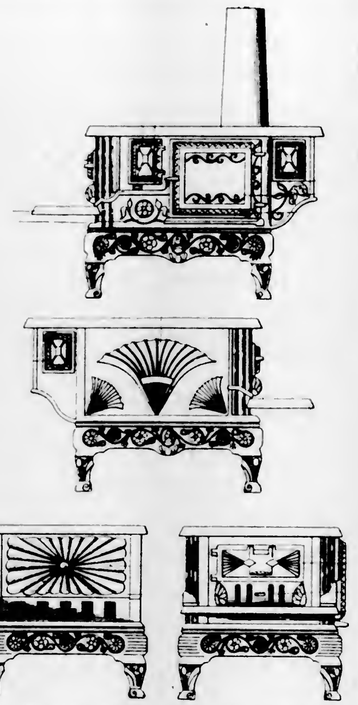
23,706. SALES-COUNTER. WILLIAM C. HUSS, Cincinnati, Ohio. Filed June 3, 1893. Serial No. 476,523. Term of patent 3½ years.



*Claim.*—A design for sales counters substantially as shown and described.

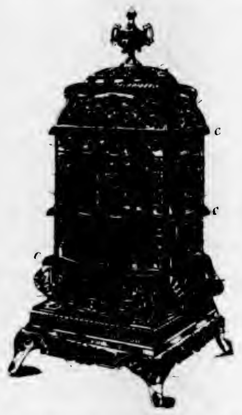


23,707. RANGE. CHARLES A. BAILEY, Cromwell, Conn., assignor to the J. & E. Stevens Company, same place. Filed Aug. 31, 1894. Serial No. 521,875. Term of patent 3½ years.



*Claim.*—The design for a range substantially herein shown and described.

23,708. STOVE. FRANK W. COLLINS, Cortland, N. Y. Filed July 12, 1893. Serial No. 480,320. Term of patent 7 years.



*Claim.*—1. In a design for a stove, the dome section showing a rectangular base having a wide polished flat nickel plated band, a row of beading in the rectangle above this band, and a flattened dome with a raised polished spray of leaf like forms, separated by lines of unpolished nickel, substantially as shown and described.

2. In a design for a stove, the generally rectangular top section B of open scroll work, with a jewel at the front, the top section extending outward below the dome, then curving inward, then at a lower plane curving outward beyond the first extension, then terminating in the foliated band C, said section having plain polished bands at the corners, substantially as shown and described.

3. In a design for a stove the upper door sections having the swell above the double doors which are curved to correspond, and have surface ornamentation substantially as shown and described.

4. In a design for a stove, the ash pit section terminating at the ends in projecting brackets and having the surface ornamentation substantially as shown and described.

5. The design for a stove substantially as shown and described.

23,709. OIL-STOVE. ALFRED A. KINNE, Minneapolis, Minn. Filed Aug. 21, 1894. Serial No. 520,932. Term of patent 7 years.



*Claim.*—The design for oil heaters or stoves, substantially as herein shown and described.

23,710. BEDSTEAD. FREDERICK HOSKINS, Birmingham, England. Filed Apr. 12, 1894. Serial No. 507,317. Term of patent 3½ years.



*Claim.*—The design for a bedstead substantially as herein shown and described.

# TRADE-MARKS

## REGISTERED OCTOBER 16, 1894.

25,337. COLLARS AND CUFFS. EMIGH & LORDELL, New York, N. Y. Filed Sept. 1, 1894.

E & L.

*Essential feature.*—A symbol composed of the letters and character "E & L." Used since 1886.

25,338. CASHMERE HOSIERY. HEINRICH SCHOPPER, Chemnitz, Germany. Filed July 25, 1894.

HIMALAYA



*Essential feature.*—The word "HIMALAYA" and an accompanying pictorial illustration of a valley and grazing sheep. Used since December, 1893.

25,339. OVERCOATS. BYCK BROS., New York, N. Y. Filed Aug. 31, 1894.

KENT

*Essential feature.*—The word "KENT." Used since June 1, 1894.

25,340. TROUSERS OR PANTALOONS. ADOLPH WALD, New York, N. Y. Filed Sept. 6, 1894.

THEY BEAR THE PALM.

*Essential feature.*—The words "THEY BEAR THE PALM." Used since 1887.

25,341. SHOES AND SLIPPERS. STRAUSS & JANDORF SHOE COMPANY, Chicago, Ill. Filed Aug. 30, 1894.




*Essential feature.*—The representations of a horse shoe inclosing a photograph within a circular frame, and a shoe standing on said frame before a rising sun, and the autograph of "LOUIS E. STRAUSS" below the photograph, and between the arms of the horse shoe. Used since June 5, 1894.

25,342. RUBBER BOOTS. WOONSOCKET RUBBER COMPANY, Providence, R. I. Filed Sept. 18, 1894.

KANT SNAG

*Essential feature.*—The words "KANT SNAG." Used since October 20, 1892.

25,343. COTTON, LINEN, AND OTHER THREADS NOT MADE OF SILK. FRANK E. KALEY, Milford, N. H. Filed Apr. 12, 1894.



VICTORIA.

*Essential feature.*—The word "VICTORIA" and the pictorial representation of a crown. Used since January 1, 1894.

25,344. PRINTED PUBLICATIONS. THE MASCOT PUBLISHING CO., New York, N. Y. Filed Sept. 9, 1893.



Mascot Publishing Co.

*Essential feature.*—The representation of a dog resting upon his haunches and wearing a collar bearing the word "MASCOT," in connection with the words "MASCOT PUBLISHING COMPANY." Used since February 1, 1893.

25,345. PUZZLES. ALPHONZO G. FRYE, Boston, Mass. Filed Sept. 6, 1894.

NINETY AND NINE

*Essential feature.*—The words "NINETY AND NINE." Used since July, 1893.



25,346. CUTLERY. KRUSIUS BROTHERS, New York, N. Y. Filed Sept. 6, 1894.

1776

*Essential feature.*—The number or date "1776." Used since July 1 1894.

25,347. CUTLERY. HERMANN BOKER & Co., New York, N. Y. Filed Aug. 24, 1894.



*Essential feature.*—The representation of an Indian chief. Used since December 3, 1868.

25,348. POCKET-KNIVES, RAZORS, TABLE-CUTLERY, AND SCISSORS. JAMES HIBBERT, Sheffield, England. Filed Sept. 4, 1894.



*Essential feature.*—A pictorial representation of a pistol in combination with the conventional representation of a heart. Used since January 15, 1893.

25,349. KNIVES, RAZORS, AND SCISSORS. F. A. KOCH & Co., New York, N. Y. Filed Aug. 30, 1894.



*Essential feature.*—The representation of an alligator. Used since May, 1894.

25,350. CUT GLASSWARE. C. DORFLINGER & SONS, White Mills Pa., and New York, N. Y. Filed Sept. 13, 1894.

LORRAINE

*Essential feature.*—The word "LORRAINE." Used since July 1, 1894.

25,351. HOLLOW GLASS TABLEWARE. WOLF & GROSS, New York, N. Y. Filed Aug. 24, 1894.



*Essential feature.*—The representation of a woman performing the so-called "skirt-dance." Used since January 7, 1893.

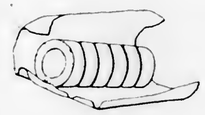
25,352. PERFUMERIES. ELLWOOD B CHAPMAN, Philadelphia, Pa. Filed Feb. 7, 1894.

QUENTIN'S

LOTOS OF THE NILE.

*Essential feature.*—The words "QUENTIN'S LOTOS OF THE NILE." Used since December 15, 1893.

25,353. SHAVING-SOAP. THE J. B. WILLIAMS COMPANY, Glastonbury, Conn. Filed Mar. 27, 1894.



*Essential feature.*—A pictorial representation of several round cakes of soap grouped to form a bar and shown with the wrapper partly removed therefrom. Used since December, 1891.

25,354. CHEWING-GUM. J. M. CLARK & COMPANY, Louisville, Ky. Filed Sept. 14, 1894.

"KIS-ME"



*Essential feature.*—The word "KIS-ME" and the representation of a crescent and human head. Used since July 2, 1894.

25,355. CIGARS. ADAM STORK, Jr., Lancaster, Pa. Filed Aug. 13, 1894.

Don Carlos

*Essential feature.*—The words "DON CARLOS." Used since May 5, 1894.

25,356. CHEWING AND SMOKING TOBACCO. SMITH & SCOTT, Paducah, Ky. Filed Sept. 19, 1894.

FORKED DEER

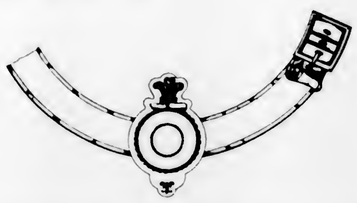
*Essential feature.*—The words "FORKED DEER." Used since September, 1883.

25,357. BEER, ALE, AND PORTER. HABICH & Co., Boston, Mass. Filed July 9, 1894.

NORFOLK

*Essential feature.*—The word "NORFOLK." Used since July, 1856.

25,358. CHAMPAGNE-WINE. GEORGE GOULET & Co., Rheims, France. Filed Sept. 13, 1894.



*Essential feature.*—The representation of a central circular seal surmounted by plumes, and an arc-shaped band at both sides of the seal and having at one side a representation of a buckle. Used since May 15, 1894.

25,359. MATCHES. ALSING & COMPANY, LIMITED, London, England. Filed June 11, 1894.




*Essential feature.*—The word "WHALE," and the representation of a whale. Used since 1884.

25,360. MATCHES. ALSING & COMPANY, LIMITED, London, England. Filed June 11, 1894.




*Essential feature.*—The word "TIMES" and the representation of a clock face. Used since 1881.

25,361. MATCHES. ALSING & COMPANY, LIMITED, London, England. Filed June 11, 1894.



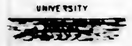

*Essential feature.*—The word "STEAMER" and the representation of a four-masted steamer. Used since 1881.

25,362. MATCHES. ALSING & COMPANY, LIMITED, London, England. Filed June 11, 1894.




*Essential feature.*—The word "INDIAN," and the representation of an Indian. Used since 1881.

25,363. MATCHES. ALSING & COMPANY, LIMITED, London, England. Filed June 11, 1894.




*Essential feature.*—The word "UNIVERSITY" and the representation of two eight-oared boats. Used since 1881.

25,364. RICE. BLOOM & SON, New Orleans, La. Filed Sept. 24, 1894.

PEARL

*Essential feature.*—The word "PEARL." Used since September 1, 1894.

25,365. WHEAT-FLOUR. SENECA S. DRYBREAD, Taylorsville, Ind. Filed Sept. 24, 1894.



SILVER MOON

*Essential feature.*—The words "SILVER MOON" and the representation of a quarter moon surrounded by stars and clouds. Used since August, 1891.

25,366. WHEAT-FLOUR. NORTON & Co., Chicago, Ill. Filed Sept. 13, 1894.

WHITE SEAL

*Essential feature.*—The words "WHITE SEAL." Used since July 1, 1894.

25,367. WHEAT-FLOUR. WASHBURN, CROSBY COMPANY, Minneapolis, Minn. Filed Sept. 20, 1894.

BREAD WINNER

*Essential feature.*—The words "BREAD WINNER." Used since November 22, 1893.

25,368. MILK FOR INFANTS AND INVALIDS. STEPHEN FRANCISCO, Montclair, Caldwell, Newark, and the Oranges, N. J. Filed Sept. 5, 1894.

"CERTIFIED

*Essential feature.*—The word "CERTIFIED." Used since August 1, 1892.



25,369. COFFEE IN THE SHAPE OF COFFEE-BEANS. ALKIRE GROCERY COMPANY, St. Louis, Mo. Filed June 11, 1894.

AFTER DINNER

*Essential feature.*—The words "AFTER DINNER." Used since February 25, 1889.

25,370. CANNED GOODS, FLOUR, MEAL, SUGAR, TEA, COFFEE, PEPPER, AND SALT. BLYTH & Co., New York, N. Y., and Rosario de Santa Fé, Argentine Republic. Filed Aug. 6, 1894.

B

*Essential feature.*—The letter "B" located in an octagonal field. Used since January 1, 1892.

25,371. COTTON-SEED, OLIVE, AND OTHER FOOD OILS. W. H. CROSSMAN & BRO., New York, N. Y. Filed July 30, 1894.

BOYD'S

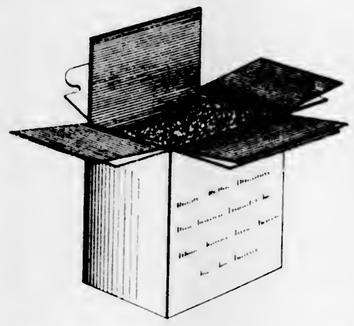
*Essential feature.*—The word "BOYD'S." Used since July 1, 1893.

25,372. BUTTERINE. BRAUN & FITTS, (Inc.,) Chicago, Ill. Filed Feb. 23, 1894.



*Essential feature.*—The words "THE ONLY HIGH GRADE" placed in a distinguishing color upon a red disk. Used since November, 1893.

25,373. PREPARED CODFISH. WILLIAM HENRY LORD, Dedham, Mass. Filed Sept. 13, 1894.



*Essential feature.*—A blue paper lining contained inside the carton or box in which fish is marketed. Used since December 29, 1893.

25,374. CANNED SALMON. JOHN A. DEVLIN, Friday Harbor, Wash. Filed Aug. 9, 1894.

ISLAND BRAND

*Essential feature.*—The words "ISLAND BRAND." Used since June 1, 1894.

25,375. REMEDY FOR HEADACHE. CHARLES C. HEARN, Quincy, Mass. Filed Sept. 11, 1894.

HEAD-EASE

*Essential feature.*—The compound word "HEAD-EASE." Used since December 21, 1893.

25,376. BLOOD-PURIFYING COMPOUNDS. S. TAPPINDER Y CO., San Pedro de la Colonia, Mexico. Filed June 6, 1894.

TAFINDA

*Essential feature.*—The word "TAFINDA." Used since October 15, 1893.

25,377. COMPOUND OF ROOTS AND HERBS USED AS A TEA. WALTER E. REID, Washington, D. C. Filed Sept. 13, 1894.




*Essential feature.*—The words "COMPLEXION TEA," and the representation of a lady's face, in profile. Used since July 30, 1894.

25,378. HERB TEA. FRANCIS J. TRAUDT, St. Louis, Mo. Filed Sept. 4, 1894.

ST. MARTIN.

*Essential feature.*—The abbreviation and word "ST MARTIN." Used since October, 1893.

25,379. TONIC AND REMEDY FOR LIVER DISEASES. MOFFITT-WEST DRUG COMPANY, St. Louis, Mo. Filed Aug. 27, 1894.

*Melachol*

*Essential feature.*—The word "MELACHOL." Used since May, 1894.

25,380. TONIC PILLS. THE SYDNEY ROSS COMPANY, Maplewood, N. J., and New York, N. Y. Filed May 7, 1894.

Dr Peck's Pills for Pallid Persons

*Essential feature.*—Four capital "P's" arranged one above the other and forming the initial letters to the words "PECK'S PILLS PALLID PERSONS." Used since January 2, 1894.

25,381. SUPPOSITORIES. BENZE & Co., Long Island City, N. Y. Filed Sept. 17, 1894.

DR PIKE'S CONES

*Essential feature.*—The words "DR. PIKE'S CONES." Used since September 1, 1891.

25,382. PAINTS FOR METALS. BRUNO GROSCHE & Co., New York, N. Y. Filed Aug. 2, 1894.

S.P.F.

*Essential feature.*—The initial letters "S. P. F." Used since May 1, 1894.

25,383. ARTIFICIAL LUMBER OR COMPOSITION MATERIAL. CHARLES A. SMITH, Minneapolis, Minn. Filed July 9, 1894.

COMPO-BOARD

*Essential feature.*—The compound word "COMPO-BOARD." Used since June 1, 1891.

PHOTO-LITH. THE NORRIS PETERS CO. WASHINGTON D.C.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE BARK.

*Decided August 29, 1894.*

DESIGNS—MODIFICATIONS—FORMER DECISIONS OVERRULED.

In a Design application showing more than one modification applicant is permitted to show, describe, and claim modifications generically. *Ex parte Hess and Hess* (56 O. G., 1334) and *ex parte Finck* (60 O. G., 157) overruled.

ON petition.

DESIGN FOR BILLIARD-TABLES.

Application of Birger Bark filed August 25, 1893, No. 484,967.

*Mr. J. N. McIntire* for the applicant.

FISHER, *Acting Commissioner:*

This is a petition in the nature of a request that the Examiner be instructed—

that those parts of my case to which the Examiner objects are material to a proper interpretation of the single claim I have made, and therefore go to the merits of the case.

The Examiner's objection is that two designs are illustrated, and he requires applicant to—

point out which one of the two designs illustrated in this case is made the subject of claim. The description should be amended to conform to the design retained.

The Examiner holds that until applicant does this it is not clear what his design is, and until he makes it clear action cannot be given on the merits.

It appears to me that the question raised is a mere matter of form. Under the practice as established by amended Rule 64 questions of form are always subordinated to those of merits, and generally formal questions should be postponed until a final determination of the merits has been reached. The Examiner therefore should have considered the case on its merits.

To obviate the necessity of another petition, however, it may be indicated at this time what practice is thought to be proper in Design applications which show more than one modification.

In the decision of December 5, 1893, the practice laid down in *ex parte Hess and Hess* (56 O. G., 1334) and in *ex parte Finck* (60 O. G., 157) was followed. On reconsideration, however, I am unable to see why one rule should be adopted in Design cases showing modifications and a different rule in applications for mechanical patents which show modifications. In all cases the questions which naturally arise from the fact that the application may show more than one modification should be disposed of in the first instance by the Examiner; but, however this may be, it seems clear that in this particular case applicant should be permitted to show, describe, and claim generically his two modifications.

The Examiner should therefore pass upon the merits of the case, and if there is no objection to the generic claim on the ground of novelty it should be allowed by the Examiner, leaving the question of validity to be passed upon by the courts.

To the extent above indicated the petition is granted.

## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court of Appeals—Eighth Circuit.

GRISWOLD *v.* HARKER *et al.*

*Decided June 25, 1894.*

SELDEN AND GRISWOLD—WAFFLE-IRONS—INFRINGEMENT.

Claims 1 and 2 of Patent No. 229,280, issued June 29, 1880, to Selden and Griswold, for an improvement in waffle-irons, consisting in the hinge connecting the parts of the pan, whereby one of the journals on which the pan rotates forms part of the hinge, while the opposite journal is formed on a divided handle, so that the pan opens in the same plane with its axis of rotation, examined and *Held* not to be restricted by the state of the art to the identical construction described, and therefore infringed by a waffle-iron making the hinge itself the journal.

APPEAL from the Circuit Court of the United States for the District of Minnesota.

STATEMENT OF THE CASE.

This was a suit by Matthew Griswold, doing business as the Griswold Manufacturing Company, against John B. Harker and F. M. Ruttan, doing business as John B. Harker & Co., for infringement of a patent. The circuit court dismissed the bill. (55 Fed. Rep., 991.) Complainant appealed.

*Mr. J. C. Sturgeon* (*Mr. F. M. Catlin*, on the brief) for the appellant.

*Mr. A. C. Paul* for the appellees.

Before CALDWELL, SANBORN, and THAYER, Judges.

SANBORN, *J.:*

This is an appeal from a decree dismissing a bill brought by the appellant, Matthew Griswold, against the appellees, John B. Harker and F. M. Ruttan, for infringement of the first two claims of Letters Patent No. 229,280, to Selden and Griswold, issued June 29, 1880, for improvements in waffle-irons. The claims are:

1. In a waffle-iron, the hinge upon which the pan opens, provided with one of the journals or pivots on which the pan is rotated.

2. The journals or pivots on which the pan rotates, formed upon or connected one with the hinge upon which the pan opens and the other on the handle for rotating and opening said pan.

In their specifications the patentees say:

In waffle-irons as ordinarily constructed the hinge connecting the two parts of the pan has been made separate from the pivot on which the pan rotates, and located at one side of the pan, relatively to said pivot.

Our improvement consists in a novel construction of the hinge connecting the two parts of the divided pan, whereby one of the pivots or journals on which the pan rotates is made to form a part of said hinge, the hinge and pivot being thus brought together, while the opposite pivot or journal on which the pan rotates is formed on the divided handle, by means of which the pan is rotated, and by means of which, also, either portion of the pan which for the time being is uppermost is lifted for opening the pan.

It further consists in a novel construction and arrangement of the socket in the rim or supporting-ring for the reception of the hinge and pivot, whereby the tilting or dumping of the pan is prevented when the cover is raised, and in a novel manner of attaching the wooden handles, as hereinafter described.

The patentees then minutely describe all the parts of the waffle-iron—the supporting-ring upon which the journals rest and within which the pan rotates; the handle to this ring; the hinge, a part of which forms one journal for the pan; the other journal, which is formed by the divided handle, one half of which is attached to each half of the pan opposite the journal formed with the hinge; the sockets in which the journals rest; the pin which limits the revolving movement of the pan, and the particular method in which they preferred to construct all the parts of the iron. They accomplish their purpose of bringing the hinge and one of the pivots or journals on which the pan rotates together by inserting the small end of a wedge-shaped block between the two inner lugs or ears formerly in common use to form the hinge of the pan and running the pin of the hinge through it. They make this block project beyond the socket provided for it in the supporting-ring and provide it with a head that prevents it from slipping through the socket to the inner side of the ring.

The waffle-iron made and sold by the appellees is described in Letters Patent No. 277,422, dated May 8, 1883, to Harker and Williams. It is provided with divided handles which form one of the journals for the rotation of the pan, and the other journal is formed by the hinge which is on the side of the pan opposite the handles. Their pan opens in the same plane with its axis of rotation, and their construction remedies the same defects and accomplishes the same purposes as does the improved construction described in the patent to Selden and Griswold. The only variation from the construction of the improvements claimed by Selden and Griswold is that the appellees do not use the block inserted between the double lugs of the hinge and the socket in which it rests to form the hinge-journal; but in lieu of this they extend beyond the supporting-ring a single semicylindrical lug from each half of the pan, pin these lugs together, and thus make the hinge itself the journal.

The court below dismissed the bill on the ground that the claims of the patent to Selden and Griswold must be restricted, in view of the prior state of the art, to the peculiar construction of the hinge formed with the journal and the novel construction and arrangement of the socket described in the patent, and that the appellees did not infringe these claims when thus construed.

The title of the appellant to this patent and the utility of the invention it describes are not contested in this court. A glance at the claims of the patent is sufficient to show that, unless they are restricted by the prior state of the art, the appellees are infringers. It was not the mere form of the hinge described in the patent in suit that Selden and Griswold were seeking to claim. It was any hinge in a waffle-iron which itself formed or was provided with one of the journals or pivots on which the pan was rotated. It was not a new hinge that they thought they had discovered or invented; but it was such an improvement in the construction of the waffle-iron that the hinge could be placed in the same line with the axis of rotation of the pan, and at the same time perform the function of holding the two halves of the pan together at all times, and the further function of a journal for its rotation, while the handles attached to the pan opposite the hinge formed the other journal. It was the combination of the following essential elements that the patentees fairly described, claimed, and sought to secure by their patent: a hinge to the pan, located in the same plane with its axis of rotation; a hinge that would hold the two halves of the pan together continuously while it was performing its functions; a hinge that was provided with a journal on which the pan might be turned; a handle to each half of the pan, located directly opposite to the hinge and together forming another journal for the rotation of the pan. It is undoubtedly true that if the prior state of the art exhibits the combination of all these essential elements, except the peculiarly-constructed hinge the patentees show, accomplishing substantially the same purpose which their improved construction brings about, then the claims of this patent must be restricted to the peculiar construction of this hinge, (*Stirrat* v. *Manufacturing Co.*, 67 O. G., 1450; 61 Fed. Rep., 980;) but the mere fact that the patentees' invention is but the combination of old ingredients or materials is no answer to the patent, for it is a general rule that a patentable invention may consist entirely in a new combination or arrangement of old or well-known ingredients or elements, provided a new and useful result is thereby attained. (*Thomson* v. *Bank*, 10 U. S. App., 500, 509; 3 C. C. A., 518; 53 Fed. Rep., 250; *Seymour* v. *Osborne*, 11 Wall., 516, 542, 548; *Gould* v. *Rees*, 2 O. G., 624; 15 Wall., 187, 189.)

The general rules governing the rights of patentees and inventors are now so well settled that they present but little difficulty; but the multiplication of patents to improvements, great and small, upon all classes of machines and implements constantly presents the difficult question whether or not the claims of the patentees are so much broader than the actual invention they have made that those who are claimed to be infringers are authorized by the prior state of the art to use the machine or device they present, notwithstanding the patent. This is the question presented in this case. In other words, the question of infringement or non-infringement must be determined by the limitations placed upon this patent by the state of the art when it was issued. (*McCormick* v. *Talcott*, 20 How., 402, 405.)

Turning to the prior state of the art, as it is disclosed by the record before us, we find that prior to the invention of these patentees the two halves of the double pan of a waffle-iron were hinged together by a





pin passing through two lugs or ears that projected from each half of the pan. Pintles projected from the double pan—on the sides of it relatively to the hinge and at right angles to the plane in which the pan opened—and these pintles were journaled upon a supporting ring or frame in which the pan was suspended, so that it could be turned upon the pintles. The pan was not provided with handles for turning it, but was made to rotate by pushing one side of it with a knife or some other utensil, and no pan of a waffle-iron had ever been constructed, so far as this record discloses, which opened in the same plane with its axis of rotation or which turned upon journals one of which was connected with or formed the hinge, while the other was formed of the handles to the pan. In this state of the art the patentees made this invention. It is plain that there was nothing in the prior construction or use of waffle-irons to restrict the claims of their patent.

But Patents No. 24,024, dated May 17, 1859, to J. P. Harrington, for improvements in machines for roasting coffee; No. 27,176, dated February 14, 1860, to E. Webster, for improvements in revolving gridirons; No. 61,478, dated January 22, 1867, to E. J. Smith, for an improved cooking utensil, and No. 96,930, dated November 16, 1869, to Link and Curtiss, for an improvement in steak-broilers, are pressed upon our attention as anticipations of this invention or restrictions of the scope of this patent.

In our opinion they do not have this effect. They do not describe waffle-irons. They describe cooking utensils consisting of supporting-rings and revolving parts composed of divided halves opening in the same planes of the axes of their rotation. Each half is provided with two semicylindrical stems on the opposite sides of the revolving parts, and these stems, when the utensils are closed, form the journals on which the revolving parts are supported and rotated upon the rings or frames. But the *sine qua non* of a waffle-iron is a hinge which will hold the divided halves of the pan continuously together during all the operations of opening, filling, emptying, and closing the pan, so that all these operations can be conveniently and quickly performed. Such a hinge was a part of every waffle-iron referred to in this record. Such a hinge, provided with a journal for the pan to turn upon, was an essential element of the combination claimed by Selden and Griswold. None of the utensils described in these anticipating patents have such a hinge. Not one of them is provided with any hinge at all. They are provided with different devices, (such as a knob on the end of one of the stems, with a notch in it, into which the corresponding stem may be inserted when the utensil is closed—Patent No. 27,176, *supra*,) by which the divided halves of the rotating parts are held together when they are closed; but the moment they are opened these halves become detached, and must again be attached to each other before they can be turned or operated. A waffle-iron constructed on this principle would be useless. From such crude and hingeless utensils as these or from the old loosely-swinging waffle iron without handles and with its hinge on one side relatively to the pivots on which the pan was journaled to the hinge provided with one of the journals on which the pan rotates and the divided handles to the pan forming the other journal, so that the pan would open in the plane of its axis and could be completely controlled by the handles at all times, shown by the patent to Selden and Griswold, was a notable step in advance—a marked improvement; and to those who made it we think the quality of inventors ought not to be denied. (*Thomson* v. *Bank*, 10 U. S. App., 512; 3 C. C. A., 518; 53 Fed. Rep., 250; *Webster Loom Co.* v. *Higgins*, 21 O. G., 2031; 105 U. S., 580, 591; *Consolidated Safety-Valve Co.* v. *Crosby Steam-Gage and Valve Co.*, 30 O. G., 991; 113 U. S., 157, 179; 5 Sup. Ct., 513; *Magowan* v. *Packing Co.*, 57 O. G., 845; 141 U. S., 332, 341, 343; 12 Sup. Ct., 71; *The Barbed-Wire Patent*, 58 O. G., 1555; 143 U. S., 275, 281, 283; 12 Sup. Ct., 443, 450.)

This view is confirmed by the facts that the patent in suit was dated June 29, 1880; that one or both the patentees have ever since been continuously manufacturing and successfully selling the irons constructed under this patent; that one of the appellees was a partner for several years in a firm which purchased these irons of one or both of the patentees, and that we now find him and his partner manufacturing and selling not the hingeless utensils shown by the patents they plead nor the old waffle-iron without handles and with its hinge on one side of the pan relatively to its pivots, but an iron which embodies the very improvements of the patentees, with the exception of the mere colorable evasion of making the hinge itself the journal in place of inserting the journal in the hinge. Actions often speak louder, and frequently more truthfully, than words. It is not impossible that the reason why the appellees are not using the old devices they plead is that the improvements described in this patent have made them useless and unmerchantable. If this is not so, they can abandon the improvements of Selden and Griswold and go back to the devices they plead.

In our opinion the first and second claims of the patent in suit are neither anticipated nor restricted by the prior state of the art nor by the patents pleaded in the answer, and the appellees are infringers of them.

The decree below is reversed, with costs, and the cause remanded, with directions to enter a decree in favor of the appellant for a perpetual injunction, damages, and costs.

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## U. S. Circuit Court of Appeals—First Circuit.

### LE. FAVOUR v. RICE.

*Decided April 26, 1894.*

RICE—BOOT AND SHOE SHANK—CONSTRUED.

Patent No. 68,652, issued September 10, 1867, to Rice, for a boot and shoe shank, construed and *Held* to be for a shank composed of steel and leather or their equivalents fastened together.

IN ERROR to the Circuit Court of the United States for the District of Massachusetts.

STATEMENT OF THE CASE.

This was an action by Caroline A. Rice, guardian, against Joseph W. Le Favour for infringement of a patent. The circuit court rendered judgment for plaintiff. Defendant brought error.

*Mr. Frederick P. Fish* and *Mr. William K. Richardson* for the plaintiff in error.

*Mr. Almon A. Strout* and *Mr. Frank L. Washburn* for the defendant in error.

Before COLT, PUTNAM, and NELSON, Judges.

COLT, *J.:*

The subject-matter of this suit is a patent granted to Andrew Jacob Rice and Andrew James Rice September 10, 1867, for an improved boot and shoe shank. The improvement consisted in making the shank of leather and steel secured together by rivets. The specification declares:

We make our shank in two parts, A and B. The part A is made in the desired shape for the shank, and the part B is made to fit upon it, and the two parts are then secured to each other in any convenient manner. We make the part A of leather, or any similar material possessing the requisite strength and pliability. * * * The part B we make of metal, as its only purpose is to strengthen the shank, and prevent it from getting out of shape. * * * Shanks of steel, leather, and other material are well known, but they are all liable to various objections. Steelshanks, though they are not liable to break, and retain their shape well, are almost certain, when the boot or shoe is worn, to cut the parts against which they bear, and all other shanks known to us are apt to break or get out of shape.

The claim is for a shank as an article of manufacture made of leather and steel, secured together by rivets.

By the seventh assignment of error the Court refused to instruct the jury, at defendant's request, as follows:

That, if the jury find that the defendant did not use in his shoes a shank made as an article of manufacture, of leather and steel, or equivalent materials, secured together by rivets, or equivalent means, the verdict must be for defendant.

The defendant's shank was made of a single piece of steel. It is clear to us that the patent can only be construed to cover a shank composed of leather and steel or their equivalents. A construction which would so enlarge the patent as to embrace a shank made entirely of steel would be in violation of the express language of the specification, wherein it is stated that steel shanks were well known and were open to the objection of cutting the parts of the leather against which they bore. There was also introduced in evidence several prior patents for different forms of steel shanks.

We think the Court, as requested by the defendant, should have charged the jury that the patent was for a shank composed of two parts—namely, leather and steel or their equivalents—fastened together, and that, if the defendant did not use a shank so constructed, he was entitled to a verdict. As to the alleged waiver of this request by agreement of counsel, except so far as it was embraced in the judge's charge, we do not think the bill of exceptions supports the position of the plaintiff, now defendant in error. At most the waiver only extended to the question of anticipation, and it did not embrace the question of the legal construction of the patent.

For these reasons the judgment of the circuit court is reversed, and this cause is remanded to that court, with directions to grant a new trial.

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## U. S. Circuit Court—Northern District of New York.

ECLIPSE MANUFACTURING COMPANY *v.* HOLLAND.

*Decided July 20, 1894.*

1. PRENTICE—DESIGN FOR A RADIATOR—LIMITATION—INFRINGEMENT.

Patent to L. H. Prentice, dated April 19, 1887, for a Design for a radiator, *Held* to be limited precisely to what is shown in the drawing.

2. SAME—SAME.

Where one person has painted a design on an object, another person cannot obtain a patent for it by simply embossing it on the same object.

THIS was a suit by the Eclipse Manufacturing Company against Holland for infringement of a Design patent.

*Mr. P. C. Dyrenforth* for the complainant.

*Mr. E. S. Jenney* and *Mr. George H. Lothrop* for the defendant.

COXE, *J.:*

This is an equity action based upon Letters Patent No. 17,270, granted to Leon H. Prentice April 19, 1887, for a Design for a radiator. The patent has been three times before the courts—on demurrer and final hearing in the Northern District of Illinois and on motion for an injunction in the Eastern District of Michigan. In the Illinois case the material portions of the patent and of the patent law are set out in full, and facts are stated which bear more or less directly upon the present controversy. All this it will be unnecessary to repeat. When the patent was first before the court, the learned Judge, in overruling the demurrer, said:

The patent now under consideration is for a design by which the surface of a radiator is to be divided by a horizontal line into two rectangular spaces, and one of them—that is, either the upper or lower of these spaces—ornamented with figures, which may be produced by embossing or depressing upon the surface, or perhaps by painting. This certainly strikes me at first impression as a very close, if not doubtful, patent. I cannot, however, say from my own knowledge, or from any familiarity with radiators in common use, that it is not new. * * * As to the point that this patent is void because it does not describe the kind of figures, I can only say that I, at present, am of opinion that if this patentee was the first to invent or produce an ornamented radiator, that is, the first to design a radiator with an upper or lower rectangular space ornamented by figures of any kind upon it, then he may be entitled to a patent for such design. It may not have required a very high order of genius or inventive talent to have conceived and produced such a design, but if it was new, if it originated with him, then I cannot on demurrer say his patent is invalid. I have nothing at present before me from which I can say that it did not require study, thought, and inventive talent to produce this design. (*Eclipse Manufg. Co. v. Adkins*, 36 Fed. Rep., 554.)

When the cause came on for final hearing, it was, so far as the prior art was concerned, in the same condition as on demurrer. No evidence—certainly no legal evidence—was introduced which in any way limited the field of invention. So far as appeared, Prentice was the first to ornament a radiator as described. No one before him had done anything which affected his design in the remotest degree. Naturally, therefore, the patent was sustained and a broad construction was placed upon it. The Court says:

It will be seen that this patent is not for any specific form of ornamentation. It does not describe what the ornamentation shall consist of further than to say in the specifications that the patentee prefers "embossed or depressed ornamentation," but what kind of ornamentation it shall be, whether a Greek pattern of lines, or a leaf, or vine, or scroll, or any other embossed or sunken figures, is not indicated. The sole scope of the patent is the idea of ornamenting the upper or lower portion of the pipes of a radiator to a uniform height, so that it will present ornamented and plain parallelograms, in contrast.

As to the claim that Prentice was not the first to conceive the idea of thus ornamenting a radiator, there is no proof on the part of the defendant which shows that any person had preceded him in this field. * * * It will be noticed that Mr. Prentice does not claim to have been the inventor of the radiator or the radiator-pipes. He simply claims his patent for the idea of ornamenting a portion of the pipes, instead of leaving them entirely with plain surfaces, and for putting this ornamentation of uniform height on each pipe, so that the radiator would show an ornamented parallelogram and a plain parallelogram in contrast. * * * I am of the opinion that the design covered by this patent comes within the first clause of section 4929, Revised Statutes, as a "manufacture" rather than within the third clause as an "original impression, ornament," etc., as is insisted by the complainant's counsel. * * * I am of opinion that the patent should be upheld, and there can be no doubt, from an inspection of the defendants' radiators, which are introduced in evidence, that the defendants infringe the patent by ornamenting their radiators for a uniform distance from the top downward, so as to show an ornamented rectangular parallelogram, and an unornamented rectangular parallelogram, one above the other. (53 O. G., 1407; 44 Fed. Rep., 280.)





Were the case here on the same proof, I should not hesitate to follow this decision: first, because it is entitled to great weight as an authority, and, second, because I think it was right. A different conclusion would have been at variance with the proofs then before the court. When the motion for a preliminary injunction came on for hearing in the Michigan district, the defendant presented several prior structures, which, concededly, limit the theater of invention and render a broad construction of the patent untenable. The proof now is substantially similar to that presented in the Michigan cause. The anticipating devices relied on are the same. That case comes much nearer, therefore, to being a precedent than the Illinois case. The decision refusing the injunction was delivered orally and has not been reported. There is some disagreement between counsel as to the ground upon which the court based the decision. There is no question, however, that the court expressed grave doubt as to the validity of the patent. There is no doubt that the motion was denied.

It now appears that the form of the radiator was old, the same being shown in the patent to Rodier and in the Billings and Thompson exhibits. It was old at the date of the patent to cast radiator-pipes with embossed ornamentation thereon. The Adams radiator (1880) is composed of three sections of uniform height, with embossed figures on the upper field and with the lower field comparatively plain. Shackleton (881) shows the idea of ornamenting an upper triangular section of a radiator. The Billings radiator (1884) is divided by paint into rectangular sections, the lower section being ornamented at its upper edge. The Thompson radiator (1886) shows a lower rectangle and two triangular sections above it. These are also made by painting. The general conformation of both the Billings and Thompson radiators is almost precisely similar to the Prentice radiator. The patent to Arci and Chapman (1884) shows a steam-radiator made like a pillar, the shaft being plain and the capital ornamented. When the pipes are assembled in the radiator, there must be an ornamented field above a comparatively plain field. All of these present clearly the contrast between upper and lower rectangles. Thompson and Billings show this contrast by painting the sections in different colors. Adams, Arci, and Shackleton show it chiefly by embossed work or similar ornamentation cast into the iron.

The foregoing are the best references offered by the defendant. As I understand the complainant's brief and the position taken by its expert, it is admitted that if the construction placed upon the patent in the Adkins case is adhered to the patent is void in view of what now appears of the prior art; but it is contended that the patent may be upheld if confined to the precise design shown in the drawing. It is argued that it should be held to cover a loop-radiator—

having ornamented figures formed in the iron extending over the crowns and down both ways for a uniform distance, leaving a plain field below.

Assuming such a construction admissible, it remains to be seen whether the patent can be upheld even if so limited. The Billings radiator unquestionably presents two contrasting rectangular surfaces. It is true that neither of these surfaces is embossed. The contrast is presented by painting and not embossing; but this conception of contrasting two rectangles is plainly the underlying idea of the Prentice patent. The Court was clearly correct in holding, in the Adkins case, that—

the scope of the patent is the idea of ornamenting the upper or lower portion of the pipes of a radiator to a uniform height, so that it will present ornamented and plain parallelograms in contrast.

The Billings radiator certainly does this. It is thus described by the defendant's expert:

The nearest approach to a radiator answering each of those requirements is the Billings radiator, which is made up of the same sort of loops, arranged the same way, and which has its end loops ornamented alike on the front and rear member of each, and in which the top ornamentation extends on the end loops down both sides for a uniform distance, with plain fields below, but the top ornamentation is not figured ornamentation in relief.

Can there be any doubt that the Billings radiator contains the fundamental idea of the Prentice patent? The question then, bluntly stated, is this: After one person has painted a design, can another have a patent who simply embosses the old design upon a similar object? Manifestly not. There can be no doubt, after reading the patent, that Prentice believed that his invention consisted chiefly in this feature of contrasting rectangles, the one ornamented, the other plain. It is evident that he regarded the transposition of the rectangles and the character and form of the ornamentation as mere incidents which would naturally occur to any one skilled in the art after the supposed new departure in the decoration of radiators had been disclosed by him. In other words, he would have maintained, had the Billings radiator been made after his own, that it infringed his patent. He would have insisted that, as he had pointed out the principal idea underlying the design, it required no inventive talent to paint on the lower section of the radiator what he had shown as embossed on the upper section. If the Prentice radiator would suggest the Billings radiator, why is not the converse true? How can it be said that it required an exercise of the inventive faculty to emboss the patterns on the Billings radiator as they now appear or to transpose the lower pattern to the crown of the radiator, emboss it there, and leave the lower section plain? Would not the substitution of embossing for painting, and vice versa, occur to any one interested in the art? Would not an ordinary decorator, having seen the Billings radiator, together with the exhibits showing embossed work in connection with this art, know enough to produce the Prentice radiator?

In *Smith v. Saddle Co.* (63 O. G., 912; 148 U. S., 674; 13 Sup. Ct., 768) the Court says:

The exercise of the inventive or originative faculty is required, and a person cannot be permitted to select an existing form and simply put it to a new use any more than he can be permitted to take a patent for a mere double use of a machine. If, however, the selection and adaptation of an existing form is more than the exercise of the imitative faculty and the result is in effect a new creation, the design may be patentable.

It is plain that the patent, if it can be upheld, must be confined to the design precisely as it is shown in the drawing, and, so construed, the defendant does

not infringe. His radiator differs in size, shape, and depth. It is more open, it has "a large pipe-like effect at the top," and it is round at the bottom instead of being "sawed off," like the Prentice radiator. The shape of the loops is different, the embossed pattern is different, and the bottom, instead of being left plain, is ornamented like the top. Instead of two contrasting fields there are three—an upper and a lower ornamented section and a plain section between them. An ordinary purchaser, looking for the specific design of the Prentice patent, could hardly be deceived.

The bill is dismissed.

## U. S. Circuit Court—Northern District of California.

COSTA *et al. v.* DROBAZ.

*Decided May* 28, 1894.

1. COSTA—FISHING-BOAT ATTACHMENT—VALID.
   Letters Patent No. 456,720, dated July 28, 1891, to Pedro Costa, for fishing-boat attachment, *Held* to be valid.
2. SAME—SAME—PRIOR PUBLIC USE—VALID.
   Where the device set up establishing prior public use did not contain one of the features of the patented device, and which feature was useful and novel, *Held* that the public use was not established.

THIS was a suit by Pedro Costa and others against Mateo Drobaz for infringement of patents.

*Mr. John L. Boone* for the complainants.
*Mr. E. S. Heller* for the defendant.

GILBERT, *J.*:

Pedro Costa and others bring a suit in equity against Mateo Drobaz for the infringement of Letters Patent No. 456,720, issued July 28, 1891, to Pedro Costa, for an improvement in fishing-boat attachments. The invention is described as follows:

The fishing-boat has a mast, B, and upon each side of the boat near the rail is fixed a short vertical post, C, having an iron band, D, fitted around its upper end. Upon the side of the band nearest the rail is fixed a staple or eye, E. To the staple a boom, F, fifty feet in length, is attached by the hook, G. Near the outer end of each boom is fixed a band and an eye, H, and from these eyes the suspending stays, I, extend up to the mast where they pass over blocks, J, and lead down to the deck, so that, by means thereof, the outer ends of the booms may be raised and lowered at will. From the outer ends of the booms the stays, K, extend to the bow of the vessel. Upon the outer ends of the booms are also fixed the eyes, L, to which are attached the lines from the ends of the fishing-net, the lines being about one hundred and twenty-five fathoms in length. By means of these attachments, a net, having a width equal to the length of the two booms and the intervening hull of the vessel, may be towed astern by means of a single vessel, and lowered for deep sea fishing, and raised and drawn upon the stern of the vessel, as occasion may require, accomplishing a result that formerly required the use of two vessels, pursuing a parallel course and maintaining a uniform intervening space.

The claim of the patent is as follows:

A vessel having vertical stanchions C upon each side, provided with metallic bands fitting their upper ends and having staples or eyes E, booms having hooks on their inner ends adapted to fit said eyes, stays by which the booms are held in a horizontal position projecting from the sides of the vessel, ropes extending from the outer ends of the booms and connecting with a net adapted to be towed behind the vessel, the lines O, having rings adapted to clasp the tow-lines, the guiding sheaves or chocks P at the stern of the vessel, and the winding-drums forward of the sheaves, substantially as herein described.

The defendant has constructed and used a vessel with fishing attachments identical with those described in the patent; but he makes defense to the suit upon the grounds, first, that the improvement described in the Letters Patent was known and publicly used on fishing boats in the waters of the Mediterranean Sea for many years prior to the application for the patent, and, second, that the patentee publicly and continuously used the said invention in and about the waters of the Pacific Ocean and within this district from 1884 until the time of filing application for the patent on December 1, 1890, and that thereby the invention was abandoned to the public.

So far as the second defense is concerned, the evidence is that the complainants built in the year 1884 and continuously thereafter operated a fishing-boat with the fishing attachment described in the patent, with the single exception that in the vessel so used there were no stanchions for the support and attachment of the inner ends of the boom, but instead thereof the booms were hooked into eyed plates, which were bolted directly against the bulwarks of the vessel upon the outer side. There is no doubt that by the public use of that vessel from the year 1884 the right to claim the combination so used was relinquished to the public; but in his application for a patent Costa added to the combination a new feature—the stanchion rising above the vessel's deck upon either side, with its band and eye for the point of support of the boom. The advantage of this element is shown to be twofold: first, the greater safety and ease of navigation resulting from attaching the booms at a higher elevation upon the vessel, and, second, the increased facility of attaching and securing, as well as detaching and otherwise handling the booms upon the part of the crew. It is not disputed that this feature of the combination is distinctly new and original with Costa, the patentee. It is therefore unnecessary to consider the evidence concerning the fishing attachments which, according to the testimony of some of the witnesses, were in use upon the Mediterranean Sea, since confessedly none of said vessels had stanchions for the support of the booms. The complainants are entitled to a decree protecting them in the use of the combination described in the claim of the patent.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 69.—No. 4. TUESDAY, OCTOBER 23, 1894. PRICE—$5 per year.

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## Order in Relation to Drawings.

NOTICE.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January* 25, 1894.

Order No. 980, respecting the alteration of drawings, was published in the OFFICIAL GAZETTE of December 19, 1893, (65 O. G., 1771,) by mistake, and was never in force. The following is the only order in force upon that subject:

(ORDER No. 986.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January* 25, 1894.

Erasures or other alterations of drawings will not be made or permitted, except in compliance with this order.

Applicants are requested to furnish, with their originals, a blue print or other photographic copy of all drawings forming part of an application, and where this is done, the original drawings may be taken to the Attorneys' room, but not otherwise.

Before making a requirement to alter an original drawing the Examiner will formally make the blue print or other copy a part of the files, and in case no such copy has been furnished by the applicant, the Office will make such copy without charge, and thereupon the required alteration may be made by the applicant, under the direction of the Examiner and subject to his approval, or, upon request, it will be made by the Office at the expense of the applicant.

The requirement to make alterations in original drawings will be made in writing, and the applicant's response must also be in writing, and in such case the copy of the drawing, the requirement to alter, and the applicant's response will form part of the record.

Action by the Office on the merits will not be suspended pending the change of a drawing, if the invention claimed may be understood by the Examiner.

For the purposes of this order the Office, upon the request of applicants, will make blue prints at the charge of five cents a sheet.

In appeal cases and upon the declaration of an interference a blue print or other copy will be sent forward with the files, the Examiner retaining the original drawings in his room until the hearing.

Except as herein required such blue print or other copy will not be made a part of the file, and may not be preserved after an application passes into a patent.

JOHN S. SEYMOUR,
*Commissioner.*

### PHOTOGRAPHIC COPIES OF DRAWINGS.

A photographic outfit has been added to the equipment of the Patent Office, and positive photographic copies of any drawing, foreign or domestic, in the possession of the Office, will be furnished upon application to parties entitled thereto, at the following rates:

Size 10x15 inches. ..... 25 cents per sheet.
Size 7x11 inches. ..... 15 cents per sheet.
Size 5x8 inches. ..... 5 cents per sheet.

If a copy of the drawings in a pending application of the size 5x8 inches be ordered sent to any address, two copies must be ordered, as one copy is always retained by the Office and placed in the file for the purposes specified in the above Order No. 986, of January 25, 1894.

In ordering copies of foreign drawings, the examining division, the class, and sub-class where such drawings may be found, must be given.

Coupons will be received in payment of the above fees.

## Indexes to Periodicals.

The following journals containing indexes to periodical literature may be found on file in the reading room of the scientific library:

*Engineering Review*, London, a monthly synoptical index of periodical literature in the English, French, and German languages, including hydraulic, railway, mechanical, electrical, mining, metallurgical, marine, military, and gas engineering.

*Electrical Engineering*, Chicago, a monthly synoptical index of electrical literature.

*Electrical World*, New York, a weekly digest of electrical articles.

*Journal of the Association of Engineering Societies*, Chicago, a monthly synoptical index of civil-engineering literature, mostly American.

*Engineering Magazine*, New York, a monthly title-index of engineering articles in the English language only.

## Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the Examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

## Price of Printed Copies of Patents.

Attention is called to the fact that under date of May 14, 1891, the price of uncertified printed copies of patents was fixed at the *uniform price of ten cents each*, whether purchased singly or in quantities.

## File-Wrappers—Entries On.

It is directed that entries shall not be made on the back of a file-wrapper, containing the application-papers for a patent, of papers or actions which do not become a permanent part of the contents of the file.

A card (Form 2-384 Office Series of blanks, sample hereto attached) will be placed in the file showing all appellate actions.

## Issue of October 23, 1894.

| | | |
|---|---|---|
| Patents | 373—No. 527,760 to No. 528,132, | inclusive. |
| Designs | 35—No. 23,711 to No. 23,745, | inclusive. |
| Trade-Marks | 22—No. 25,384 to No. 25,405, | inclusive. |
| Labels | None. | |
| Prints | None. | |
| Reissues | 3—No. 11,448 to No. 11,450, | inclusive. |
| Total issue | 433 | |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | 2 | ..... | Nevada | ..... | ..... |
| Arizona Territory | ..... | ..... | New Hampshire | 1 | ..... |
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| California | 10 | ..... | New Mexico Territ'y | ..... | ..... |
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| District of Columbia | 4 | ..... | Ohio | 31 | 1 |
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| Georgia | 3 | ..... | Pennsylvania | 36 | 3 |
| Idaho | 2 | ..... | Rhode Island | 6 | ..... |
| Illinois | 31 | 2 | South Carolina | 2 | ..... |
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| Kansas | 6 | ..... | Utah Territory | ..... | ..... |
| Kentucky | 2 | ..... | Vermont | 1 | ..... |
| Louisiana | ..... | ..... | Virginia | 4 | ..... |
| Maine | 4 | ..... | Washington | 3 | ..... |
| Maryland | 2 | ..... | West Virginia | 1 | ..... |
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| Michigan | 18 | ..... | Wyoming | ..... | ..... |
| Minnesota | 4 | ..... | U. S. Army | ..... | ..... |
| Mississippi | ..... | ..... | U. S. Navy | 1 | ..... |
| Missouri | 10 | 1 | | | |
| Montana | 2 | ..... | Total to citizens of the United States | 370 | 20 |
| Nebraska | 5 | ..... | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Argentine Republic | ..... | ..... | Mexico | 1 | ..... |
| Austria-Hungary | ..... | ..... | Netherlands | 1 | ..... |
| Belgium | 1 | ..... | Newfoundland | ..... | ..... |
| Bermuda | ..... | ..... | New South Wales | ..... | ..... |
| Brazil | ..... | ..... | New Zealand | ..... | ..... |
| British Guiana | ..... | ..... | Norway | ..... | ..... |
| Canada | 8 | ..... | Queensland | 1 | ..... |
| Chile, Republic of | ..... | ..... | Russia | ..... | ..... |
| Cape Colony | ..... | ..... | Scotland | 1 | ..... |
| Colombia | ..... | ..... | South Australia | ..... | ..... |
| Cuba | ..... | ..... | Spain | ..... | ..... |
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| Ecuador | ..... | ..... | Switzerland | ..... | ..... |
| England | 12 | 1 | Victoria | ..... | ..... |
| Finland | ..... | ..... | West Australia | ..... | ..... |
| France | 5 | 1 | | | |
| Germany | 8 | ..... | Total to citizens of foreign countries | 38 | 2 |
| India | ..... | ..... | | | |

# APPLICATIONS UNDER EXAMINATION.

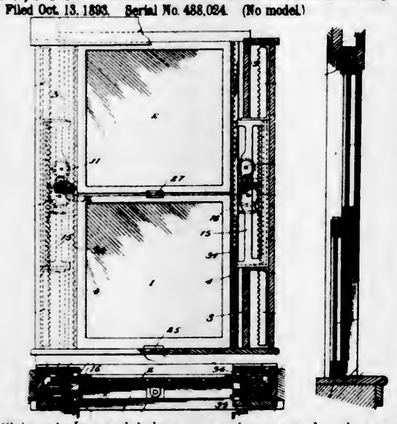
*Condition at Close of Business October 16, 1894.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Sept. 25 | Oct. 15 | 44 |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | Sept. 21 | Oct. 13 | 64 |
| 2 | Farm Stock, Products, etc | Sept. 18 | Oct. 11 | 111 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | Sept. 17 | Oct. 11 | 73 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire-Escapes and Ladders, etc. | Oct. 9 | Oct. 9 | 53 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | Sept. 18 | Oct. 8 | 160 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | Sept. 17 | Oct. 6 | 107 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | Sept. 20 | Oct. 5 | 86 |
| 3 | Metallurgy, Metal-Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | Sept. 17 | Sept. 27 | 85 |
| 19 | Stoves and Furnaces | Sept. 18 | Sept. 25 | 225 |
| | *Between one and two months.* | | | |
| 8 | Furniture, Beds, Store Furniture, etc. | Sept. 4 | Oct. 8 | 230 |
| 10 | Carriages and Wagons | Aug. 25 | Oct. 8 | 147 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, Surgery. | Aug. 18 | Oct. 3 | 192 |
| 20 | Builders' Hardware, Safes, Dentistry, Undertaking, Artificial Limbs, etc. | Aug. 31 | Oct. 2 | 150 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Aug. 30 | Oct. 2 | 147 |
| 12 | Mechanical Engineering, Store-Service, etc. | Aug. 22 | Oct. 1 | 147 |
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| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Aug. 17 | Sept. 26 | 168 |
| 21 | Textiles, etc. | Aug. 18 | Sept. 15 | 157 |
| 30 | Lamps, Gas-Fittings, Linotyping, Type-Writing Machines, Optics. | Aug. 16 | Aug. 26 | 225 |
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| 26 | Electricity, Generation, Distribution, Motive Power, Electric Railways, etc. | Aug. 8 | Oct. 15 | 145 |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | July 17 | Oct. 9 | 145 |
| 29 | Wood-Working Machines, Carpentry, Coopering and Roofing, etc. | July 20 | Oct. 8 | 190 |
| 34 | Railway-Cars and Fluid-Pressure Railway-Brakes. | July 16 | Oct. 6 | 293 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, Cutlery, etc. | Aug. 2 | Oct. 4 | 205 |
| 18 | Steam-Engineering, etc | Aug. 8 | Oct. 1 | 218 |
| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting, and Leather-Working Machinery. | July 26 | Sept. 29 | 188 |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | July 23 | Sept. 23 | 274 |
| 1 | Tillage and Fences | Aug. 9 | Sept. 17 | 264 |
| 17 | Paper-Manufactures and Printing. | July 19 | Sept. 12 | 232 |
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| 23 | Instruments of Precision, Acoustics, etc. | July 7 | Sept. 29 | 167 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | July 2 | Sept. 24 | 496 |
| 24 | Sewing-Machines, Crinoline and Corsets, Apparel, and Toilet. | July 7 | Sept. 19 | 148 |
| | Total number of applications awaiting action | | | 5,672 |
| | *Under one month in arrears.* | | | |
| | Designs | Oct. 4 | Oct. 4 | 98 |
| | Trade-Marks | Oct. 10 | Oct. 13 | 27 |

# PATENTS

## GRANTED OCTOBER 23, 1894.

527,760. SASH-BALANCE. WILLIAM W. ABBOTT, Pittsburg, Pa. Filed Oct. 13, 1893. Serial No. 488,024. (No model.)



*Claim.*—1. In a sash-balance, a gravity actuated rack, a sash carrying a rack, a pinion located between and adapted to mesh with said racks, and a horizontally movable frame carrying said pinion and gravity rack, adapted to be operated back and forth to cause the said pinion to engage or disengage the sash-rack, as and for the purpose set forth.

2. In a sash balance, a gravity actuated rack, a sash carrying a rack, a pinion connecting said racks, a movable frame carrying said gravity rack and pinion, and provided with a rack for sliding said frame back and forth, and a gear engaging said frame actuating rack, substantially as and for the purpose set forth.

3. In a sash-balance, a movable rack, a sash carrying a rack, a pinion connecting the said racks, an auxiliary pinion adapted to engage the sash-rack, and an idler gear located between said pinions whereby motion is imparted from one pinion to the other, as and for the purpose set forth.

4. The combination with a window sash having centrally located vertical pivots at both top and bottom and provided with side racks, of a gravity actuated rack located within the window frame and a pinion held in engagement therewith and adapted to engage or disengage the said sash rack, whereby the sash may be operated vertically or be permitted to disengage the pinion, and be turned on its pivot.

5. In a window, the combination of an upper and a lower sash, each having a pivot in the base of its frame, and a swinging bar or plate carried on the top of each sash adapted to receive the pivot of the other sash, as and for the purpose set forth.

6. In a window, the combination of an upper and a lower sash, each having a pivot in the base of its frame, a swinging bar or plate having a socket therein carried on the top of each sash, and adapted to receive the pivot of the other sash, and a sill-plate having sockets for the reception of the respective pivot points, as and for the purpose set forth.

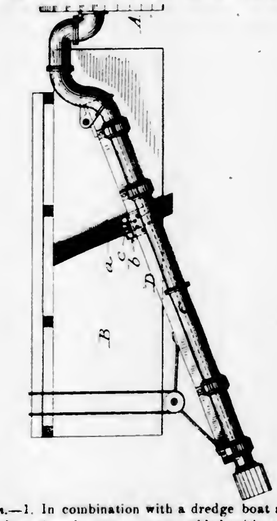
7. The combination with a sash having a pivotal and a sliding movement, and provided with racks, of a horizontally movable frame movably mounted within the window-frame, and movable racks and a pinion mounted within said movable frame, and a strip carried by the said movable frame adapted to project beyond the window frame and into engagement with the sash, as and for the purpose set forth.

527,761. FRUIT-BASKET. JOSEPH E. ASAH and FRANK MUHLENBECH, Saginaw, Mich. Filed Aug. 26, 1892. Serial No. 444,142. (No model.)

*Claim.*—A rectangular basket formed from a web composed of four thin slabs of the same width but of irregular length, bent over a rectangular form, one slab forming a portion of the bottom and sides of the basket, another slab crossing the above mentioned slab at oblique angles, and forming when bent over the form specified part of the bottom and part of each side and each end of the basket, another slab crossing the last slab mentioned at right angles and forming when bent as specified part of the bottom and part of each side and each end of the basket, another slab crossing the last mentioned slab at oblique angles and forming when bent as specified the outer bottom and ends of the basket, the band 7 surrounding the rectangular form inside of and at the edge of the basket, to which the ends of the slabs are secured when bent, the band 6 around the outside edge of the basket and secured thereto, the handle 5 secured between the bands 6 and 7 and to the slab forming the middle of the sides of the basket, and the strips 8, 8 on the bottom of the basket, as and for the purpose set forth.



527,762. DREDGING-MACHINE. LINDON W. BATES, Chicago, Ill. Filed Sept. 4, 1894. Serial No. 522,014. (No model.)



*Claim.*—1. In combination with a dredge boat and its pivoted ladder and suction-pipe; a ponton provided with a well-way; the tracks or plates *a* on the side walls of the ponton; and brackets carried by the ladder and provided with rollers to run upon the tracks.

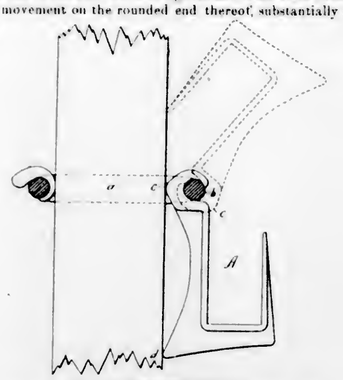
2. In combination with a dredge boat, ladder, suction-pipe, and ponton; the tracks or plates *a* carried by the ponton and diverging at their lower ends; and the brackets and rollers carried by the ladder.

3. In combination with a boat (or ponton) provided with a well-way; the tracks on the side walls of the well-way; and pivoted suction-pipe and ladder; and rollers carried by the ladder to engage the tracks.

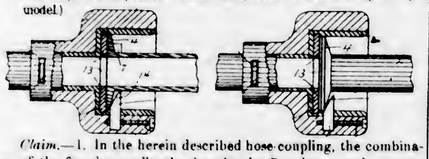
527,763. ADJUSTABLE CLAMP-HOOK. JOHN A. P. BERG, Moline, Ill. Filed Apr. 10, 1894. Serial No. 507,026. (No model.)

*Claim.*—An adjustable scaffolding hook comprising a frame to embrace the sides of a post or upright, the opposite ends of the frame

being rounded, a hook having a curved wedge shaped suspending portion at its upper end to be engaged with one rounded end of the frame by a swinging movement, and having an upper and a lower projection to engage with the post and steady the hook, the upper projection being in the plane of the frame when the hook is in position, and a curved wedge shaped tightener mounted on the opposite rounded end of the said frame to tighten and release the frame by a circular movement on the rounded end thereof, substantially as described.



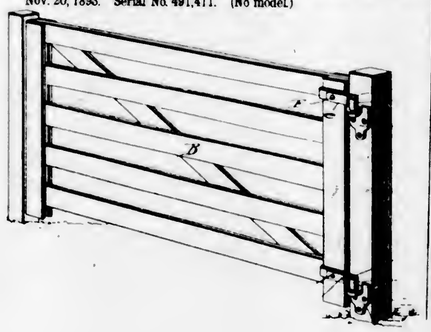
527,764. HOSE COUPLING. ALPHONSE BICHET and HENRY O'NEILL, Florence, Kans. Filed Mar. 1, 1894. Serial No. 501,961. (No model.)



*Claim.*—1. In the herein described hose-coupling, the combination of the female coupling having the slot 7 and an annular recess 15, the packing 13 to fit in said recess 15, the male coupling provided with an annular flange, the face or end having a flat surface and adapted to enter the enlarged end of the said female coupling, the flat surface of said flange to butt up against said packing 13, the rear side of said flange being beveled, the movable collar having the recesses 22, the wedge shaped dogs 5 pivoted in the said recesses 22 in the collar 1 with their free end passing through the slot 7 in the female coupling, and engaging the beveled side of the flange of the male coupling, substantially as shown and for the purpose specified.

2. In a hose coupling the combination with the male coupling having the flange 4 with its rear side beveled, the female coupling having the recesses 7, the collar 1 having the recesses 22, said collar adapted to turn on the female coupling, and provided with the slot 8, the screw 9 adapted to hold the said collar on the female coupling by passing through the slot 8, the dogs 5 having the beveled sides 14, pivoted in the recesses 22 of the collar 1 with their free ends passing through the recesses 7 and the said beveled sides 14 adapted to engage the beveled side of the flange 4, substantially as shown and described.

527,765. GATE-HINGE. GEORGE M. BOWEN, Talbott, Tenn. Filed Nov. 20, 1893. Serial No. 491,411. (No model.)



*Claim.*—1. In a gate hinge, the combination with the pintle, of a notched plate adapted to embrace the sides of the pintle shank to prevent the latter from turning, substantially as set forth.

2. In a gate hinge, the combination with the pintle having corresponding notches in the opposing sides of the pintle shank, of a notched plate adapted to be fitted in the said notches to hold the said pintle in place and prevent it from turning, substantially as set forth.

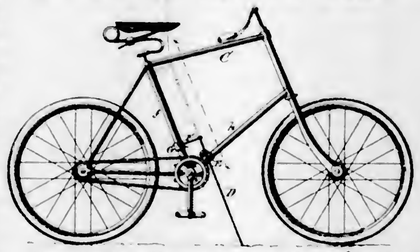
3. In a gate hinge, the combination with the batten of a gate of a strap iron folded upon itself providing an eye or socket, a bend at the opposite end adapted to embrace the end of batten, a plate upon the opposite side of the batten and a bolt passing through the said strap iron and plate, substantially as shown and described.

527,766. METAL BRUSH FOR DYNAMOS. WILHELM VON BRAUCKE, Thmertertbach, near Westig, Germany. Filed July 2, 1894. Serial No. 516,385. (No model.)



*Claim.*—Metal brushes for dynamos consisting of a large number of thin threads or wires of copper or copper alloys laid loosely side by side and held together by a metal wire-cloth, substantially as described.

527,767. SUPPORT FOR BICYCLES. DAVID BRAINERD, Denver, Colo. Filed June 26, 1894. Serial No. 515,713. (No model.)



*Claim.*—1. A bicycle support consisting of a collar secured to a frame bar of the bicycle, said collar carrying a pair of eyes through which a pair of spring-legs are adapted to slide, and a second collar to which are secured the upper ends of the spring legs, said second collar being adjustable along another frame bar for the purpose of lowering or raising the spring legs into operative and inoperative positions respectively, substantially as described.

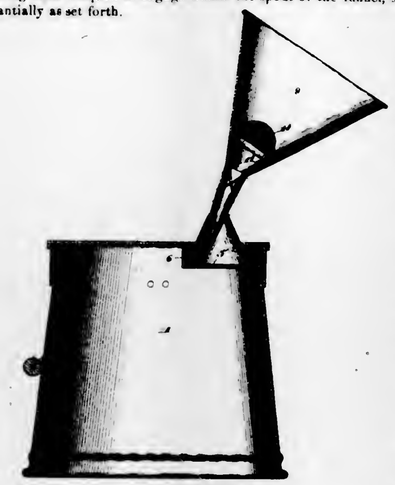
2. A bicycle support, consisting of a slidable collar, a packing or cushion, a metal bearing-plate, and a cam device for holding the collar stationary and releasing it, spring rods connecting with the collar and having stops upon their lower ends, and guides through which the rods extend, substantially as and for the purpose set forth.

527,768. MILK-PAIL. ROBERT CAMPBELL, South Haven, Mich. Filed Apr. 6, 1894. Serial No. 506,622. (No model.)

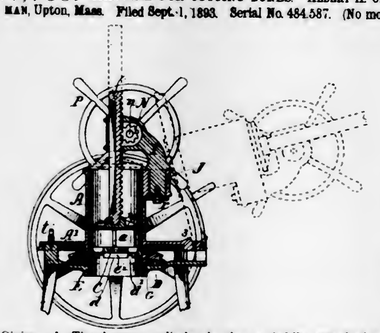
*Claim.*—1. The combination of a milk pail cover provided with a conical tube projected above and below the same, a strainer cap removably fitted over the inner end of said tube, a milk receiving funnel having its spout disposed at an angle and adapted to removably fit within the outer end of said tube, and a strainer cup removably secured within said receiving funnel, substantially as set forth.



2. The combination with a milk pail; of a pail cover having a tube extending above and below the same, a removable receiving funnel adapted to have its spout fit into the upper end of said tube, and a removable inverted strainer cup adapted to be arranged within the receiving funnel and provided with compressible spring wire securing arms adapted to engage within the spout of the funnel, substantially as set forth.



527,769. MACHINE FOR CUTTING BONES. ALBERT H. CHAPMAN, Upton, Mass. Filed Sept. 1, 1893. Serial No. 484,587. (No model.)



*Claim.*—1. The hopper-cylinder having a rigidly attached support-plate, said support-plate hinged at one end to the bed-frame to swing upward and backward, the hinged parts provided with engaging stops, as set forth, a locking device for retaining said plate and cylinder down in working position, and a feed-forcing presser-mechanism attached to said cylinder; in combination with the bed-frame carrying the hinge-ear, the annular geared cutter-bed revoluble in a ring-bearing on said bed-frame, and having a central opening with an annular ledge, and the cutter-disk supported on said ledge with its top projecting upward within and surrounded by the lower end of said cylinder, all substantially as set forth.

2. The laterally swinging crane having its lower end journaled in a bearing formed upon the feed-cylinder top, the vertically sliding toothed rack guided within the crane-head, and carrying the presser-plate, the pinion N having a shaft *n* supported in a bearing *i* on the crane-head, and the hand-wheel P fixed on said shaft, for operating said pinion and rack, in combination with the feed-cylinder, and cutting mechanism at the bottom of said cylinder, as set forth.

3. The cutter for the purpose specified, formed in a single piece consisting of a disk provided upon its face with a series of integral upwardly projecting ribs with sharp angular edges, and having slots or openings through the disk at the front of said ribs, and a peripheral rim provided with lugs or notches for sustaining said cutter in rotative action, as set forth.

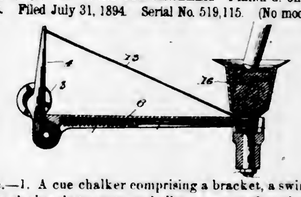
4. In a machine for cutting bones, the bed-frame having the ring-bearing fitted with vertical and horizontal bearing surfaces *e e'* the latter having an annular groove and packing G therein, and the annular rotatable cutter-bed having the central opening and downwardly extended tubular portion fitted with exterior bearing surfaces corresponding to said ring-bearing, supported on and covering the same, in combination with the cutter supported on said cutter-bed, the feed cylinder, presser mechanism, and means for operating said cutter bed.

5. In a machine for cutting bones, in combination substantially as described, the revoluble cutter-bed, the cutters, the hopper cylinder having the upright bearing formed on its exterior, the laterally swinging crane journaled in said bearing and having a hollow head with upright guide-way, a lateral, and a forwardly projecting bearing-hub thereon, the reciprocating feed-presser and its rack supported in said guide-way, the pinion meshing therewith within the crane-head, the pinion-shaft extending through said lateral bearing hub, the worm-wheel mounted on said shaft, the worm-screw operating said worm wheel, and the hand-wheel on the worm-screw-arbor, for the purposes set forth.

6. A bone-cutting-machine, comprising, in combination substantially as described, the supporting-bed, the revoluble cutter-bed carrying a cutter, the hopper-cylinder surmounting the bed and cutting devices, and having the upright bearing formed on its rim, the laterally swinging crane journaled in said bearing, its chambered head provided with a vertical guide-way and projecting bearing-sleeves, the feed-presser non-rotatably confined within said hopper-cylinder, the reciprocating rack carrying said feed-presser mounted in said guide-way, the pinion-shaft mounted in the projecting bearing and carrying the presser-actuated pinion fixed thereon, the hand-lever-wheel fixed on the outer end of said shaft, the worm-wheel mounted loose on said shaft with the knob-handled engaging-clutch connecting the shaft and worm-wheel, the worm-screw meshing with said worm-wheel, and the hand-operating-wheel fixed on the front end of the worm-arbor, for the purposes set forth.

7 In a bone-cutting machine, a feed-hopper having an upright bearing formed upon the exterior of its cylindrical rim, and the overhanging crane having its standard end journaled within said bearing, as set forth, in combination with feed-forcing appliances carried on said crane, and the cutting mechanism beneath said hopper.

527,770. BILLIARD-CUE CHALKER. FRANK G. CHESS, Rocker, Mont. Filed July 31, 1894. Serial No. 519,115. (No model.)

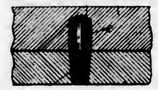


*Claim.*—1. A cue chalker comprising a bracket, a swinging arm mounted on the bracket, a rotary chalk cup mounted on the swinging arm, and a yielding belt coiled around the chalk cup and connected with the bracket and the arm, substantially as and for the purpose described.

2. A cue chalker comprising a bracket, a swinging arm mounted on the bracket, a rotary chalk cup having a stem journaled on the swinging arm and provided with a spirally grooved portion, and a yielding belt coiled around the spirally grooved portion of the stem and connected with the swinging arm and the bracket, substantially as described.

3. A cue chalker comprising a bracket having a horizontal arm to be secured to a suitable support and provided with an upward extending arm or portion, a vertically swinging arm mounted on the bracket and having a groove or channel in its lower face and provided at its outer end with a vertical bearing or socket, a chalk cup having a stem journaled in the bearing or socket and provided with a spirally grooved portion, a cord or belt coiled around the spirally grooved portion and having one end connected to the vertical arm or portion of the bracket, and a spiral spring arranged beneath the vertically swinging arm and having its inner end attached to the same and its outer end connected to the lower end of the cord or belt, substantially as described.

527,771. WATCH-MOVEMENT FRAME. DUANE H. CHURCH, Waltham, Mass. Filed May 26, 1892. Serial No. 434,444. (No model.)



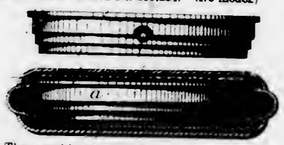
*Claim.*—1. In a watch movement frame, the combination with superimposed arbor-supporting plates such as the upper and lower

plates or the lower plate and the balance cock, of steady pins, removably secured to one of said plates and projecting from the inner side thereof, the projecting portion of each pin being tapering and entering a socket or orifice in the other plate, whereby the plates may be readily separated without liability of injury to the arbors, and attaching screws for holding the plates firmly assembled as set forth.

2. In a watch movement frame, the combination of two superimposed arbor-supporting plates, such as the upper and lower plates or the lower plate and the balance cock, and steady pins, each having a cylindrical section adapted to be secured by friction in a socket in one plate, its length being less than the depth of said socket, and a tapering section formed to enter a socket or orifice in the other plate, the described difference between the length of the cylindrical section of the steady pin and the depth of the socket receiving it enabling the pin to be driven into said socket by the bearing of the opposite plate on the tapering section of the pin, as set forth

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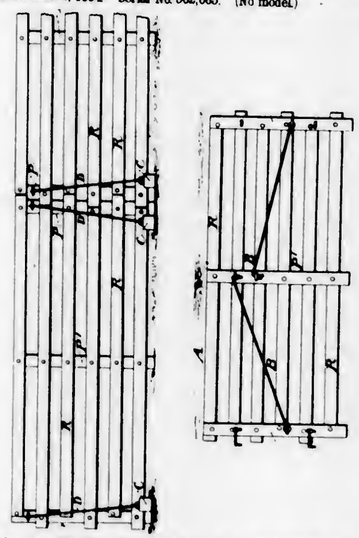
527,772. WATCH-PLATE. DUANE H. CHURCH, Newton, Mass. Filed Jan. 25, 1892. Serial No. 419,251. (No model.)



*Claim.*—The combination with a watch movement pillar plate having a case shoulder and having a recess of less diameter than the diameter of the pillar plate below the case shoulder, said shoulder being above the bottom of the recess of a dial fitted to said recess, as set forth.

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527,773. PORTABLE FENCE. WILLIAM M. COOK, Julian, Ala. Filed Mar. 2, 1894. Serial No. 502,065. (No model.)



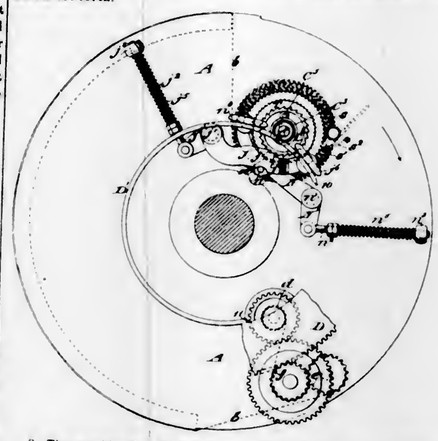
*Claim.*—A folding fence panel having the end-posts P P and middle post P' adapted simply to rest with the lower end on the ground, the rails pivoted to each of said posts, the latch-braces B B pivoted to the end posts and latching on the middle post, the terminal bed-pieces grooved to receive the lowest rail and the counter-braces D D hinged to the bed-piece and latching on the sides of the end-posts, all combined and arranged as shown and described.

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527,774. OFFSET MECHANISM FOR PRINTING-MACHINES. EDGAR H. COTTRELL, Stonington, Conn., assignor to the C. R. Cottrell & Sons Company, Westerly, R. I., and New York, N. Y. Filed Jan. 31, 1894. Serial No. 498,563. (No model.)

*Claim.*—1. The combination with the impression cylinder and a tympan supply roller therein, of a yielding stop applied to said supply roller to control the letting off of the tympan therefrom and a positive stop to stop such letting off, substantially as herein set forth

2. The combination with the impression cylinder and a tympan supply roller therein, of two ratchet-wheels one fast and the other loose on said roller and both having their teeth set in one direction, a spring applied between said loose ratchet-wheel and said roller, pawls one for each ratchet-wheel attached to said cylinder, and means for automatically engaging said pawls with and disengaging them from said ratchet-wheels by the revolution of the cylinder, substantially as herein set forth.



3. The combination with the impression cylinder and a tympan supply roller therein, of two ratchet-wheels one fast and the other loose upon said roller and having their teeth set in opposite directions, a pawl attached to said cylinder for engaging with said loose ratchet-wheel, a pawl attached to said cylinder in permanent engagement with the fast ratchet-wheel, a spring between said loose ratchet-wheel and the said roller, and means for automatically engaging its respective pawl with and disengaging it from said loose ratchet-wheel by the revolution of the cylinder, substantially as herein set forth.

4. The combination with the impression cylinder and a tympan supply roller therein, of two ratchet-wheels one fast and the other loose on said roller and both having their teeth set in the same direction, a spring between said loose ratchet-wheel and said roller, a third ratchet-wheel on said roller having its teeth set in the opposite direction, pawls attached to the cylinder for engagement with said two ratchet-wheels having their teeth set in the same direction, a pawl attached to said cylinder for permanent engagement with said ratchet-wheel having its teeth set in the opposite direction, and means for automatically engaging their respective pawls with and disengaging them from said first mentioned two ratchet-wheels by the revolution of the cylinder, substantially as herein set forth.

5. The combination with the impression cylinder and a tympan supply-roller therein, of a ratchet-wheel loose on said roller and a ratchet-wheel fast on said roller both having their teeth set in one direction, a spring between said loose ratchet-wheel and said roller, two pawls one for each ratchet-wheel pivoted to the cylinder, a stationary interrupted circular track concentric with the cylinder, and switch-pieces attached to said pawls for running outside and inside of said track for maintaining the engagement of said pawls with said ratchet-wheels and their disengagement therefrom, substantially as herein set forth.

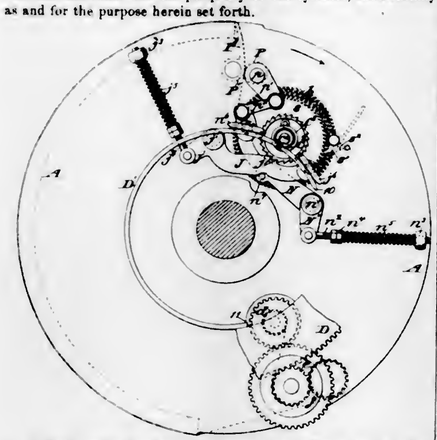
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527,775. OFFSET MECHANISM FOR PRINTING-MACHINES. EDGAR H. COTTRELL, Stonington, Conn., assignor to the C. R. Cottrell & Sons Company, Jersey City, N. J., and Westerly, R. I. Filed Apr. 5, 1894. Serial No. 506,370. (No model.)

*Claim.*—1. The combination with the impression cylinder, a supply roller in said cylinder for supplying clean portions of a tympan, a take-up roller in said cylinder for taking up the soiled portions of the tympan and automatic means for operating said take-up roller, of a tympan clamp independent of said supply roller arranged between the said supply roller and the periphery of the cylinder, substantially as and for the purpose herein set forth.

2. The combination with the impression cylinder, a supply roller in said cylinder for supplying clean portions of a tympan, a take-up roller in said cylinder for taking up the soiled portions of the tympan and automatic means for operating said take-up roller, of a tympan clamp independent of said supply roller arranged between the said supply roller and the periphery of the cylinder and automatic means for closing and loosening said clamp, substantially as herein described.

3. The combination with the impression cylinder and a tympan supply roller therein, of a yielding stop applied to said supply roller to control the letting off and tension of the tympan, and a positive tympan clamp independent of said roller and yielding stop arranged between said roller and the periphery of the cylinder, substantially as and for the purpose herein set forth.

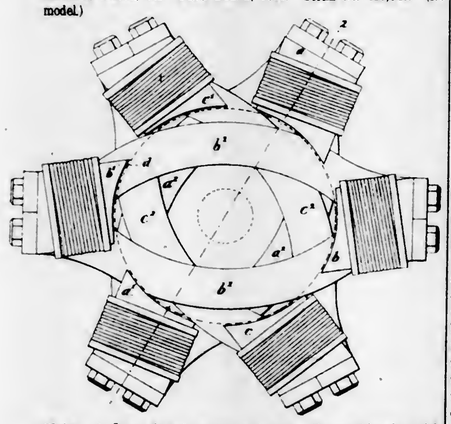


4. The combination with the impression cylinder and a roller therein for supplying a tympan sheet, of a positive tympan clamp independent of said roller arranged within the cylinder, a lever having its fulcrum on one end of the cylinder and connected with a movable member of said clamp, a stationary circular track outside of the cylinder and a switch-piece on said lever for running on the inside or outside of said circular track to hold said movable clamp member in or out of operation, substantially as herein set forth.

5. The combination with the cylinder and a tympan supply roller therein furnished with a spring-controlled ratchet-wheel, of a tympan clamping device arranged within said cylinder, a pawl lever on said cylinder for engaging with said ratchet-wheel, a clamping lever on said cylinder for operating on a movable member of said clamping device, one of said levers having a projection through which each is capable of acting on the other for the engagement and disengagement of the ratchet-wheel and the closing and opening of the clamping device, substantially as herein set forth

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527,776. ELECTRIC MOTOR OR DYNAMO. CORNELIUS F. DANIELS, Macon, Ga. Filed Dec. 2, 1891. Serial No. 413,840. (No model.)



*Claim.*—1. In an electric motor or dynamo, the combination with a suitable armature, commutator, brushes and line connections, of a series of field electro-magnets separate and independent of each other, each magnet consisting of two parts on opposite sides of the armature connected together, one forming the positive and the other the negative pole, the adjacent poles of contiguous magnets being of magnetically opposite signs, substantially as set forth.

2. In an electric motor or dynamo, a series of field electro magnets separate and independent of each other, each magnet consisting of two parts on opposite sides of the armature connected together, one forming the positive and the other the negative pole, and brushes connected in pairs, between the poles of the magnets, substantially as shown and described.

3. In an electric motor or dynamo, a series of field electro magnets separate and independent of each other, each magnet consisting of two parts on opposite sides of the armature connected together, one forming the positive and the other the negative pole, the adjacent poles of contiguous magnets being of magnetically opposite signs, and brushes connected in pairs between the poles of the magnets, substantially as shown and described.

4. In the field of an electric motor or dynamo, a series of field electro magnets electrically separate and independent of one another, each magnet consisting of two magnets on opposite sides of the armature connected electrically and one forming the positive and the other the negative pole, substantially as shown and described.

5. In an electric motor or dynamo, field magnets separate and independent of each other, each magnet consisting of two parts, as $a$ $a'$ connected by curved and angular bars as $a^2$ $a^3$, substantially as set forth.

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527,777. DEVICE FOR PREVENTING THE REFILLING OF BOTTLES. WILLIAM L. DAVIS, Boston, Mass., and BENJAMIN F. LEACH, Louisville, Ky. Filed Apr. 19, 1893. Serial No. 470,992. (No model.)



*Claim.*—1. A device for preventing the refilling of bottles or other vessels, consisting of a hollow casing or shell composed of a lower portion having a port opening, and an upper portion having an inclined inner surface attached at its base to the lower portion and provided with a port opening, a valve in said casing or shell, a weight or ball in said case or shell to act on said valve, a jacket encircling the case or shell at the junction of the upper portion to the lower portion, and a cap for the upper portion insecurely attached to the said upper portion to permit the said cap to be detached without effecting the withdrawal of the upper portion from the said jacket, substantially as described.

2. A device for preventing the refilling of bottles or other vessels, consisting of a hollow case or shell composed of an upper part provided with an inclined or conical inner surface and a lower part attached to the base of the upper part, port openings at the opposite end of said hollow case or shell, a valve in said hollow case or shell co-operating with the port in one of said parts, a ball or weight to act on said valve, a cap supported above the conical part and insecurely attached to the said conical part, a stop or arresting device to engage the said ball and limit its movement toward the end of the conical part, and a jacket encircling the said parts at the point of juncture and supporting the hollow case within the neck of a bottle below its mouth against force applied to the detachable cap, substantially as described.

3. A device for preventing the refilling of bottles or other vessels, consisting of a hollow case or shell having one end made conical on its inner side and provided with a shoulder or ridge on the inner conical surface, port openings in the case or shell at or near its opposite ends, a valve to co-operate with one of said port openings, a ball or weight to act on said valve and arrested in its movement in one direction by the said shoulder or ridge, substantially as and for the purpose specified.

4. A device for preventing the refilling of bottles or other vessels, consisting of a case or shell having one end made conical or inclined on its inner surface and provided with port openings, a check valve in said case or shell co-operating with one of said openings, a ball or weight to normally hold said valve to its seat, a stop to arrest the movement of the ball away from the said valve, and a cap attached to the shell, the said shell and cap being made of less diameter than the neck of the bottle to permit the same to be inserted into the said neck below its mouth, and a jacket for said shell to hold the device within the neck of the bottle, substantially as described.

5. A device for preventing the refilling of bottles or other vessels consisting of a case or shell composed of one portion provided with a conical inner surface and a second portion attached to the conical portion at the base of the conical portion, port openings in the said

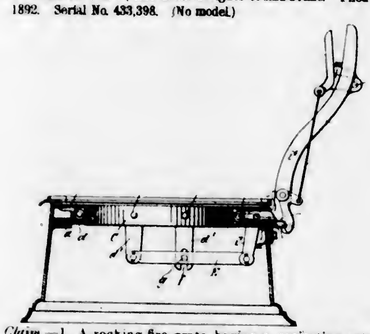
case or shell at its opposite ends, a disk valve in said case co-operating with one of said ports, a ball or weight to act on said valve, a cap insecurely attached to the conical portion of the case or shell, and a jacket encircling the lower portion of the case or shell and forming the support for the same, substantially as described.

6. A device for preventing the refilling of bottles or other vessels consisting of a hollow case or shell composed of a lower part $a^3$ and a conically-shaped upper part $a^4$ detachably secured at its base to the lower part $a^3$ and supported by the said lower part, a port opening in each of the said parts, a disk valve in said case or shell controlling one of said ports, a ball or weight in said case co operating with the said disk valve, and a jacket surrounding the lower portion of the case or shell, substantially as described.

7. In a device for preventing the refilling of bottles or other vessels, a hollow case or shell provided with a conical upper portion open at its apex or top to form an outlet port $c$, a cap of less diameter than the mouth of the bottle supported above the said apex, webs $c^3$ joining said cap to the conical portion to leave lateral port openings forming a continuation of the outlet port $c$, a lower portion of the case or shell attached to the base of the conical upper portion and provided with a port opening, a valve co-operating with the said port opening, a weight or ball located in the case or shell and co-operating with the said valve, and a jacket surrounding the case or shell at the junction of the lower portion with the base of the conical upper portion, substantially as described

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527,778. **FIRE-GRATE.** WILLIAM H. DRAKE and JOHN C. GREEN, Hackettstown, N. J.; said Green assignor to said Drake. Filed May 18, 1892. Serial No. 433,398. (No model.)



*Claim.*—1. A rocking fire grate having a projection extending outside of the ash pit and a lever for effecting the operation of the rockers, combined with a latch pivoted to the operating lever and adapted to automatically engage with such projection to lock the rockers in a horizontal position when said operating lever is restored to its normal position, substantially as described.

2. A fire grate the frame whereof is made in sections which are provided with sectional gudgeons for dumping the grate and also with gudgeon sockets through their edges and with gudgeons upon which the grate is suspended, combined with rockers whose gudgeons are inserted in the sockets of the grate sections and bolts or other fastening means co-operating with the sectional gudgeons of the grate sections to secure the same together and secure the gudgeons of the rockers in their sockets, substantially as described.

3. The combination with an ash-pit provided with gudgeon bearings, of a rocking fire grate provided with gudgeons operating within said bearings, one of said gudgeons having a lip or lug projecting through the side of the ash-pit, an operating lever pivoted within the last mentioned gudgeon with its lower end within the ash-pit and its upper end outside the ash-pit, an actuating rod for the rockers and a latch pivoted to the operating lever and coacting with the projecting lip or lug of said gudgeon, substantially as described.

4. A rocking fire grate provided with gudgeons suspended in bearings of the ash-pit, one of said gudgeons divided vertically, of an actuating rod for the rockers and an operating lever pivoted within said vertically divided gudgeon with its lower end within the ash-pit and its upper end outside the ash-pit and capable of a movement in a vertical plane on its pivot but prevented from lateral play within the socket furnished by the gudgeon, substantially as described.

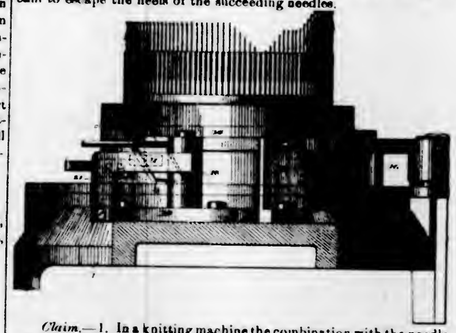
5. A fire grate capable of a rocking and dumping motion, combined with a single upright lever for effecting both rocking and dumping operations, said lever passing through and pivoted within one of the gudgeons of the grate frame, which is divided vertically for such purpose, in such a manner that its lower end is within the ash-pit and its upper end or handle outside the ash-pit, substantially as set forth

6. A fire grate capable of a rocking and dumping motion, combined with a single upright lever for effecting both rocking and dumping operations, said lever passing through and pivoted within one of the gudgeons of the grate frame in such a manner that its lower end is within the ash-pit and its upper end or handle outside the ash-pit, substantially as set forth.

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527,779. **KNITTING-MACHINE.** WILLIAM R. DILLMORE, Philadelphia, Pa. Filed Nov. 15, 1893. Serial No. 490,985. (No model.)

*Brief.*—A cam having a projecting arm is mounted in an inclined guideway in the cylinder. The arm is adapted to engage a stop which guides it upon a fixed track extending half-way around the cylinder. By these means the cam is elevated to raise one-half the needles. At the end of the track is a stop for still further raising the cam to escape the heels of the succeeding needles.



*Claim.*—1. In a knitting machine the combination with the needle cylinder and needles, and with the cam-ring, of a vertically movable cam carried by the cam ring and resting normally in an inoperative position below the heels of the needles, means for raising the cam to an operative position to engage the needles and throw them out of action, and a rigid support on the frame of the machine for positively sustaining the cam in operative position during a portion of a revolution of the cam-ring.

2. In a knitting machine the combination with the needle cylinder and its needles, of a revolving cam ring, a rearwardly and upwardly inclined guide-way in said ring, a movable cam provided with a projecting part, sustained in said guide-way, the said cam standing normally below the heels of the needles, a stop adapted to be moved into the path of the projecting part of the cam to arrest the latter and cause it to move upward in its guideway to an operative position, and a fixed support extending partially around the cam ring to sustain the cam in its operative position.

3. In a knitting machine the combination of a needle cylinder and its needles, a cam ring provided with downwardly and forwardly extending guides, a cam mounted to move upward and downward in said guides and resting normally below the heels of the needles, a finger projecting laterally from the cam, a stop arranged to be encountered by the finger, and an elevated fixed track or guide adjacent to the stop to receive the finger and sustain the cam in its elevated position.

4. In a knitting machine the combination of the needle cylinder and its needles, a cam ring, a vertically moving cam carried by the same, a stop arranged to momentarily retard the advance of the cam, but to permit it to rise, a track or guide to maintain the cam in its elevated position, a second stop serving to retard the advance of the cam but permit its ascent, and a guide or support adjacent to said second stop to hold the cam in its highest position.

5. In a knitting machine the combination of a needle cylinder and its needles, a cam cylinder, a movable normally inactive cam, a movable stop serving when in operative position to cause the cam to be moved into action as the ring is revolved, and means controlled by the movement of the ring for rendering the stop inoperative.

6. In a knitting machine the combination of a needle cylinder and its needles, a cam ring, a vertically moving cam carried by the ring a finger attached to the cam, a stop mounted on a vertical axis and arranged to be moved in the path of the finger or free of the same as desired and a guide or support adjacent to the movable stop to receive and sustain the finger of the cam, the said guide extending partially around the cam ring.

7. In a knitting machine the combination of a needle cylinder and its needles, a cam ring provided with a downwardly and forwardly inclined slot, a vertically moving cam provided with grooves to receive the edges of the slot, a finger attached to the cam, a movable stop arranged when in operative position to be encountered by the finger, and a track or guide arranged adjacent to the stop to receive the finger.



8. In a knitting machine the combination of a needle cylinder and needles, a rotatable cam ring provided with knitting cams, a vertically movable cam carried by the cam ring and normally sustained below the heels of the needle, means for elevating said cam into action, means for sustaining it in action during a portion of a revolution, and means for further elevating it to an inoperative position above the needles.

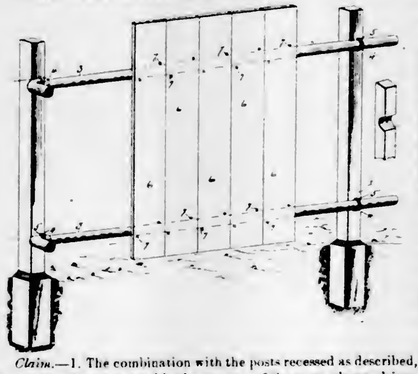
9. In a knitting machine the combination of a needle cylinder and needles, a rotatable cam ring provided with knitting cams and with an upwardly and backwardly inclined guide-way, a vertically movable cam sustained in said guide-way and provided with a projecting portion, a stop adapted to be moved into the path of a projecting portion of the cam to cause the latter to rise in its inclined guide ways to an operative position in front of the heels of the needles, a horizontal track or guide extending partially around the cam cylinder to sustain the cam in operative position during a portion of a revolution, a second stop to raise it to an inoperative position above the heels of the needles, and a short track to sustain it momentarily in said inoperative position.

10. In a knitting machine the combination of a supporting frame provided with a notch or recess, and a removable needle cylinder provided with a lug or projection adapted to enter said recess, but of less width than the same, and a transverse screw in said lug of a length to fit the recess in the frame, the said screw being adjustable longitudinally through the lug; whereby the position of the cylinder on the frame is adapted to be adjusted.

11. In a knitting machine the combination of the needle cylinder and needles, the cam ring and its knitting cams, a vertically movable cam carried by the cam ring and sustained normally below the heels of the needles, a movable stop on the frame adapted to be set in the path of a projecting part of said cam to elevate the same to an operative position, a track or guide adjacent to said stop to receive and sustain the cam, and a projection on the cam ring to throw the stop out of action after the cam has been elevated.

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527,780. **FENCE.** JOHN DONNELL, Washington, D. C. Filed Feb. 7, 1894. Serial No. 499,313. (No model.)



*Claim.*—1. The combination with the posts recessed as described, of gas pipe stringers, seated in the recesses of the posts, clamps driven into the posts and embracing the stringers, boards secured to the stringers and clamped together to form close edge joints by fastenings which pass around and embrace said stringers alternately above and below the latter, substantially as described.

2. The combination with the posts, and tubular stringer, of boards formed with perforations and secured to said stringer by a wire passed alternately over and under the stringer, substantially as described.

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527,781. **FLEXIBLE TIRE AND RIM FOR WHEELS.** STERLING ELLIOTT, Newton, Mass., assignor to the Pope Manufacturing Company, Portland, Me., and Hartford, Conn. Filed Jan. 8, 1894. Serial No. 496,053. (No model.)



*Claim.*—1. In a wheel the combination of a rim, a flexible cover or sheath and an inner inflatable tube, said cover or sheath being opened circumferentially and having circumferentially inextensible edges supported upon said rim and said rim having a ridge extending outward between said edges so as to form with said edges a bed for the inner tube, and means adapted to engage with said rim and with the inextensible edges of the cover or sheath to securely hold said edges from moving laterally off the rim and to be moved out of engagement with said edges to permit them to be displaced or removed, substantially as set forth.

2. In a wheel the combination of a rim, a flexible cover or sheath, and an inner inflatable tube, said cover or sheath being opened circumferentially and having circumferentially inextensible edges fitted and supported directly upon the outer periphery of said rim, and a medial band or ridge upon said rim between said edges having its outer periphery flush with the outer peripheries of said edges so that said edges and ridge form a substantially continuous bed for the inner tube, and means adapted to engage with said rim and with the inextensible edges of the cover or sheath to securely hold said edges from moving laterally off the rim and to be moved out of engagement to permit the said edges to be displaced or removed, substantially as set forth.

3. In a wheel a rim for a flexible tire provided with a medial band or ridge and having the portions of its outer periphery on each side of said medial band or ridge adapted to support said tire and carrying devices located in different fixed positions around its circumference and adapted to engage with the tire at different points around its circumference to hold said tire from moving laterally off the rim without restricting its movement radially and to be disengaged from said tire to permit its removal from the rim, substantially as set forth.

4. In a wheel a rim for a flexible tire having a medial band or ridge and snitable surfaces to receive the edges of said tire, and fastening devices each comprising a rod transversely mounted in said rim and held from outward movement by said medial band or ridge and having engaging parts mounted on or forming part of said rod and adapted to hold one or both edges of said tire from moving off the rim, substantially as set forth.

5. In a wheel the combination of a rim, an outer cover or sheath, and an inner inflatable tube, said cover or sheath being opened circumferentially and having circumferentially inextensible edges supported upon said rim, and said rim having a medial band or ridge between said edges of the cover or sheath, and fastening devices each comprising a rod mounted in a groove in said rim and held from outward movement by the ridge or band of the rim, and each of said fastening devices also comprising an engaging part or parts mounted on or forming part of the said rod and constructed to prevent the lateral outward movement of one or both of said edges of the cover and to be moved out of engagement with said edge or edges to enable the tire to be displaced or removed, substantially as set forth.

6. In a wheel the combination of a rim, a cover or sheath and an inner inflatable tube, said cover or sheath being opened circumferentially on its inner side and having inextensible bands inserted in or engaged with its edges and said bands being fitted and supported upon said rim, and said rim having a medial band or ridge extending outward so as to be flush with the outer periphery of the inextensible edges of the cover or sheath so that said bands of the cover and the band or ridge of the rim present a substantially cylindrical bed for the inflatable inner tube, and suitable fastening devices for preventing the bands of the cover from moving laterally off the rim, substantially as set forth.

7. In a wheel the combination of a rim, a flexible cover or sheath and an inner inflatable tube, said cover or sheath being opened circumferentially on its inner side, and having circumferentially inextensible bands inserted or engaged with its edges and said bands being fitted and supported on said rim, and said rim having a medial band or ridge between said inextensible bands of the cover or sheath, said medial band or ridge having its outer periphery flush with the outer periphery of said bands of the cover or sheath so that a substantially continuous bed is formed for the inner tube, and fastening devices each comprising a rod mounted in a groove in said rim and held from outward movement by the ridge or band of the rim, and each of said fastening devices also comprising an engaging part or parts mounted on or forming part of said rod and constructed to prevent the lateral disengagement of one or both of said edges of the cover or sheath and to be moved out of engagement with said edge or edges to enable the tire to be displaced or removed, substantially as set forth.

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527,782. **FLEXIBLE-TIRED WHEEL.** STERLING ELLIOTT, Newton, Mass., assignor to the Pope Manufacturing Company, Portland, Me., and Hartford, Conn. Filed Jan. 8, 1894. Serial No. 496,054. (No model.)

*Claim.*—1. In a wheel, the combination of a rim, a flexible cover or sheath, and an inner inflatable tube, said cover or sheath being opened circumferentially and provided with circumferentially inextensible bands of metal or similar material secured to and inclosing its edges, and said metal incased edges of the cover or sheath being

supported upon the rim, and pivoted retaining devices located in different fixed positions around the rim and adapted to engage with said metal incased edges of the cover or sheath to hold the same from moving laterally off the rim, substantially as set forth.

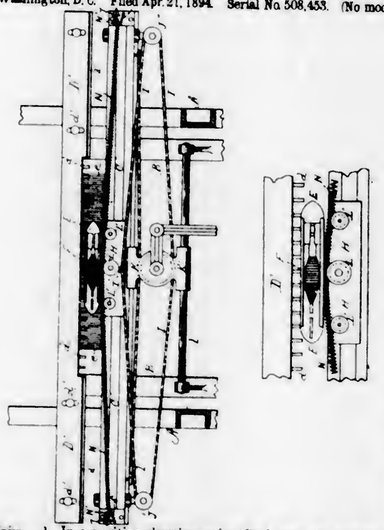


2. In a wheel the combination with a flexible tire cover or sheath opened circumferentially, and having an enlarged edge of a circumferentially inextensible band of metal or similar material attached to and inclosing the enlarged edge of said sheath, said band having an inner lip forced over upon the inclosed edge of the cover or sheath and having an outer part adapted to engage with suitable fastening devices, substantially as set forth.

3. In a wheel the combination of a rim and a flexible cover or sheath, said cover or sheath being opened circumferentially, and having enlarged edges and circumferentially inextensible bands of metal or similar material attached to and inclosing the enlarged edges of said cover or sheath, said bands having inner lips forced over upon the inclosed edges of the cover or sheath and having outer parts adapted to engage with the fastening devices, and said bands being supported upon the rim, and suitable fastening devices adapted to engage with said bands and rim to hold the edges of the cover or sheath from moving laterally off the rim, substantially as set forth.

4. In a wheel the combination of a rim, a flexible cover or sheath and an inner inflatable tube, said cover or sheath being opened circumferentially, and circumferentially inextensible bands of metal or similar material attached to and inclosing the edges of said cover or sheath, said bands having inner lips forced over upon the inclosed edges and having outer parts adapted to engage with the fastening devices, and said bands being supported upon the rim, and fastening devices comprising pivoted latches mounted on the rim and adapted in one position to engage with said metal band or bands to hold the edge or edges of the cover or sheath from moving laterally off the rim and to be moved out of said position to permit the separation of said parts, substantially as set forth.

## 527,783. POSITIVE SHUTTLE-MOTION FOR LOOMS. EDMUND H. GRAHAM, Biddeford, Me., assignor of one-half to Levi Woodbury, Washington, D. C. Filed Apr. 21, 1894. Serial No. 508,453. (No model.)



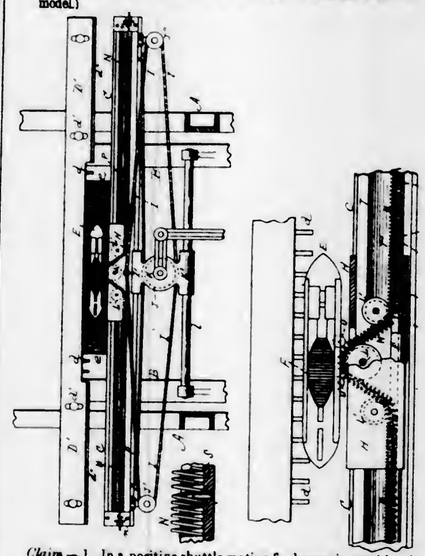
*Claim.*—1. In a positive shuttle-motion for looms, the combination with the lay, the shuttle and traveler and means for reciprocating said traveler, of a spiral spring stretched substantially horizontal from end to end of and secured to the lay and interposed between said shuttle and traveler, said traveler thereby imparting motion to the shuttle through said spiral spring, substantially as set forth.

2. In a positive shuttle motion for looms, the combination of the lay, the shuttle provided with a recess on its under side, the traveler provided with a roll corresponding with said recess, means for reciprocating said traveler, and a spiral spring stretched substantially horizontal from end to end of and secured to the lay and interposed between said shuttle and traveler and adapted to be pressed into said recess by said roll, substantially as described.

3. In a positive shuttle-motion for looms, the combination of the lay the shuttle E provided with the recess E', the traveler H provided with the rolls L L' L', the central roll L extending higher than the end rolls L', means for reciprocating said traveler and the spiral spring N stretched from end to end of and secured to said lay and interposed between said shuttle and traveler and being pressed into said recess by said central roll, substantially as set forth.

4. In a positive shuttle-motion for looms, the combination with the lay, the shuttle and traveler and means for reciprocating said traveler, of a spiral spring stretched from end to end of and secured to said lay and interposed between the shuttle and traveler, and a plain wire passed through the spiral spring for preventing its sagging, substantially as described.

## 527,784. POSITIVE SHUTTLE-MOTION FOR LOOMS. EDMUND H. GRAHAM, Biddeford, Me., assignor of one-half to Levi Woodbury, Washington, D. C. Filed June 23, 1894. Serial No. 515,494. (No model.)



*Claim.*—1. In a positive shuttle motion for looms, in combination, the shuttle and traveler, the spiral spring extending horizontally between said shuttle and traveler and pressed against the under side of the shuttle, and the box or tray secured to the lay and open at the top, said box or tray extending under and flanking the sides of the spring, substantially as set forth.

2. In a positive shuttle motion for looms, in combination, the shuttle provided with the recess E', the traveler provided internally with the rolls L L', said roll L being situated between and above the two rolls L' and the spring N extending through the traveler under the end rolls L' and over the central roll L, said spring being horizontal until the rolls are reached and then turning upward to the recess in the shuttle, substantially as described.

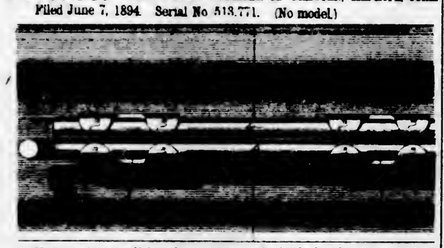
3. In a positive shuttle motion for looms, the combination with the shuttle, the traveler, and a spiral spring extending between the shuttle and the traveler, of a series of pins extending from the stationary portion of the machine between the coils of said spring, substantially as set forth.

4. In a positive shuttle motion for looms, in combination, the shuttle, the traveler, a spiral spring extending between the shuttle and the traveler, a trough or box open at the top and placed under and flanking said spring, and a series of pins extending from said box between the coils of said spring, substantially as described.

5. In a positive shuttle motion for looms, in combination, the shuttle provided with the recess E', the traveler, a spring extending between said shuttle and traveler and forced up into a recess in the former, and rolls supported by the shuttle on opposite sides of the recess intermediate the shuttle and spring, substantially as set forth.



## 527,785. RAIL-BOND. WILLIAM A. GRAUTEN, Hartford, Conn. Filed June 7, 1894. Serial No. 513,771. (No model.)

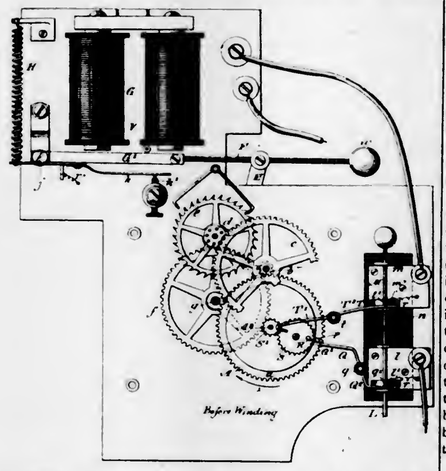


*Claim.*—1. A rail bond consisting of a body having a turned or threaded shank with a hollow end, and with a plural number of wire grooves, the outer walls of the wire grooves being formed by outward extending ears, and a bonding and a supplementary wire grasped by the ears, substantially as specified.

2. A rail bond consisting of a body having a turned or threaded shank for passing through a perforation or tapped hole in the rail, a plural number of wire grooves, the outer walls of the wire grooves being formed by outward extending ears, and a bonding and a supplementary wire grasped by the ears, substantially as specified.

3. A rail bond consisting of a body having a turned or threaded shank for passing through a perforation or tapped hole in the rail, with a plural number of wire grooves, the outer walls being formed to fold over a bonding and a supplementary wire, and a bonding and a supplementary wire held in the grooves, substantially as specified.

## 527,786. SELF-WINDING ELECTRIC CLOCK. EMIL G. HAMMER, Brooklyn, N. Y. Filed July 18, 1893. Serial No. 480,825. (No model.)




*Claim.*—1. In a self-winding clock having an electric winding mechanism, a circuit-closer consisting of two movable contact terminals normally out of contact, a circuit-closing mechanism operated by the clock movement for closing said terminals together to start the winding, and a circuit-breaking mechanism comprising a wheel geared to the winding arbor of the clock movement and a connection from said wheel to one of said terminals for separating said terminals to break the circuit and stop the winding whereby the winding ceases upon the completion of a determined extent of winding movement.

2. In a self winding clock having an electric winding mechanism, a circuit closer consisting of two movable contact terminals, normally out of contact, a circuit-closing mechanism operated by the clock movement for moving the primary terminal into contact with the secondary, and a distinct circuit-breaking mechanism operated from the winding arbor of the clock-movement for moving the secondary terminal out of contact with the primary.

3. In a self-winding clock having an electric winding mechanism, a circuit-closer for controlling the electric circuit, combined with a circuit-closing mechanism consisting of a projection carried by the clock movement and an arm connected to the circuit-closer and standing in the path of said projection to be displaced thereby at each revolution, and a circuit-breaking mechanism for breaking the circuit when the winding is completed, consisting of a wheel geared to the winding arbor and having a projection, and an arm connected to said circuit-closer standing in the path of said projection to be displaced thereby when it is turned a distance corresponding to the required rewinding.

4. In a self-winding clock having an electric winding mechanism, a circuit-closer consisting of two movable contact terminals, normally out of contact, a circuit-closing mechanism operated by the clock movement for moving the primary terminal into contact with the secondary, consisting of a projection carried by a wheel of the clock movement and an arm connected with said terminal and standing in the path of said projection to be displaced thereby at each revolution, and a circuit-breaking mechanism operated by the clock movement for moving the secondary terminal out of contact with the primary when the winding is completed, consisting of a wheel geared to the winding arbor and having a projection, and an arm connected to said secondary terminal and standing in the path of said projection to be displaced thereby when it has turned a distance corresponding to the required rewinding.

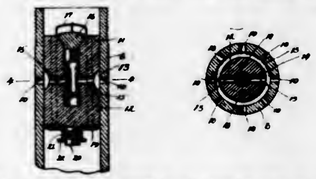
5. In a self-winding clock having an electric winding mechanism, a circuit-closer for controlling the electric circuit, combined with a circuit-closing mechanism consisting of a projection P carried by the clock movement, and an arm Q' connected to the circuit-closer and standing in the path of said projection to be displaced thereby at each revolution, and a circuit breaking mechanism for breaking the circuit when the winding is completed consisting of a planet wheel carried by one of the wheels of the clock movement and meshing with a pinion connected to the winding arbor, a projection R from said planet-wheel, and a movable arm T' connected to the circuit-closer and standing in the path traversed by said projection R when moved by the advance of the winding arbor so as to be displaced thereby to operate the circuit-closer to break the circuit.

6. In a self-winding clock having an electric winding mechanism, a circuit-closer consisting of two vertically-sliding pins one above the other, normally out of contact, and a mechanism in connection with the clock movement for lifting the lower pin into contact with and to lift the upper pin.

7. In a self-winding clock having an electric winding mechanism, a circuit-closer consisting of two vertically sliding pins, normally out of contact, a circuit-closing mechanism operated by the clock-movement for lifting the lower pin into contact with the upper one to close the circuit, and a circuit-breaking mechanism operated by the clock-movement for lifting the upper pin out of contact with the lower one to again break the circuit.

8. In a self-winding clock having an electric winding mechanism, a circuit-closer consisting of two movable contact terminals normally out of contact, a circuit-closing mechanism operated by the clock movement for lifting the primary terminal into contact with the secondary, and a circuit-breaking mechanism operated from the winding arbor of the clock movement for lifting the secondary terminal out of contact with the primary, the said circuit-breaking mechanism proportioned relatively to the advance of the clock movement to impart a subsequent lifting movement to the secondary terminal due to the advance of the clock movement in excess of the subsequent lifting movement imparted by the circuit-closing mechanism to the primary terminal, and the circuit-closing mechanism constructed to release and restore the primary terminal in advance o the release by the circuit-breaking mechanism of the secondary terminal, whereby after the breaking of the circuit the terminals are held out of contact until restored to their normal positions.

## 527,787. VALVE FOR AIR-COMPRESSORS. WALTER A. HEATH, Chicago, Ill., assignor to himself, Edward F. Braren, and Richard Philpott, same place. Filed Feb. 20, 1892. Serial No. 422,310. (No model.)



*Claim.*—1. A valve consisting of an exterior tube or casing, a valve body therein, one or more passages for permitting external air to flow through said body into the casing at one end of said valve body, means for preventing back flow through said passages, one or more passages extending through said valve body for permitting air from said end of the casing to flow in a reverse direction through

said valve body, and means for preventing back flow through the latter passages, substantially as described.

2. A valve for air-compressors, consisting of a perforated-valve casing and a valve body having one or more passages for permitting atmospheric air to flow into the compressor chamber, means for preventing back flow, one or more passages through said valve body for permitting compressed air to flow therethrough, and means for preventing back pressure through the latter passages, substantially as described.

3. An organized air compressor combining in its structure the following elements, to wit: a cylinder containing a piston, pipes opening into the cylinder near its opposite ends, and valve bodies arranged in said pipes, each of said valve bodies having one or more passages for permitting external air to flow therethrough into said cylinder, means for preventing back flow through said passages, one or more passages in each of said valve bodies for permitting compressed air to flow therethrough from said cylinder, and means for preventing back flow through the latter passages, substantially as described.

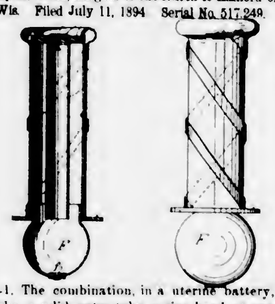
4. An air compressor, consisting of the following elements, to wit: a cylinder containing a piston, a reservoir pipe for conducting air from the cylinder, a piston head operating in said cylinder, pipes opening into said cylinder near its opposite ends and communicating with said reservoir pipe, valves arranged in said pipes and each composed of a valve body having one or more passages for permitting external air to flow therethrough into said cylinder, means for preventing back flow through said passages, one or more passages extending through each of said valve bodies for permitting compressed air from said cylinder to flow into said reservoir pipe, and means for preventing back flow through the latter passages, substantially as described.

5. The combination with a pipe, having perforations 10, of a valve body 12, having a central chamber 14, radial passages 15 communicating with said perforations 10, plug 16 for closing said chamber 14, longitudinal passages 18, and means for closing one end of said longitudinal passages against the flow of air in one direction, substantially as described.

6. The combination with a pipe, having perforations 10, of a valve body 12, having a peripheral groove 13, radial passages 15 communicating therewith, central chamber 14, plug 16 seated in the end of said chamber 14, longitudinal passages 18, ring 19 for closing one end of said passages 18, and spring 21 bearing upon said ring 19, substantially as described.

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**527,788. ELECTRIC UTERINE BATTERY.** CHARLES E. HEBARD, Grand Rapids, Mich., assignor of one-fourth to Hanford C. Keith, Rhinelander, Wis. Filed July 11, 1894. Serial No. 517,249. (No model.)



*Claim.*—1. The combination, in a uterine battery, of an inner perforated tube, a solid outer tube, a zinc head at one end of said tubes and a silver flange at the other end, and the two connected by a copper ribbon, substantially as, and for the purpose set forth.

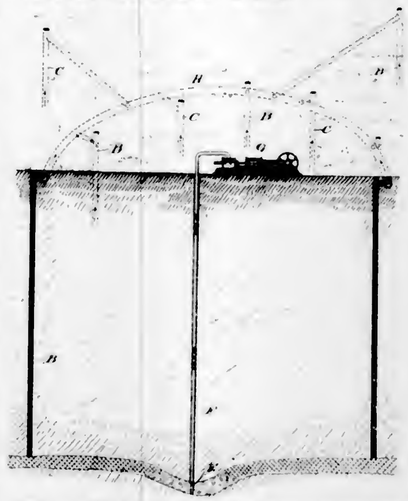
2. The combination in a uterine battery, of a perforated inner tube, a solid outer tube, an absorbent material between said tubes, said absorbent saturated with a volatile medicinal compound, a plug and valve at one end, and a rubber bulb at the other end, a soft rubber tube over the outer solid tube, a zinc head in one end, and a silver flange on the other end, said head and flange connected by a copper ribbon, substantially as and for the purpose set forth.

3. The combination in a uterine battery of a perforated inner tube, a solid outer tube, an absorbent substance containing a volatile medicinal compound between said tubes, a zinc head at one end, a metallic flange at the other end, a soft rubber tube incasing the outer tube, and a copper ribbon encircling said soft rubber tube and connecting the zinc head and the metallic flange, substantially as and for the purpose set forth.

4. The combination in a uterine battery of a perforated inner tube, a solid outer tube, an absorbent and a volatile medicinal compound within said tube, a zinc head, a silver flange and a copper ribbon connecting them; with an elastic bulb attached to the outer end of the tube, substantially as and for the purpose set forth.

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**527,789. PROCESS OF AND APPARATUS FOR MAKING GAS.** WILLIAM HECKERT and WILLIAM P. ROWLAND, Findlay, Ohio. Filed Feb. 9, 1894. Serial No. 499,623. (No model.)



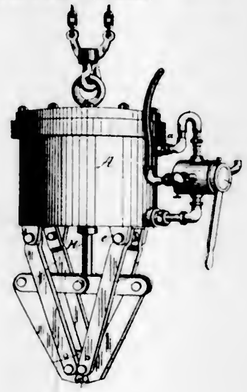
*Claim.*—1. The hereinbefore described method of producing artificial gas consisting in forcing air downwardly through a tube or other conduit to the level of an oil-bearing vein or stratum of rock, and thence along said vein or stratum to carburet the air, and then conducting the resultant gas upwardly to a main or distributer through pipes or conduits located at different points and connected to said vein or stratum, substantially as described.

2. The herein described method of making gas, which consists in forcing air under any required pressure through a tube or conduit into an oil pocket of an oil and gas bearing vein or stratum, thence through or in contact with the oil contained in said pocket and through the vein or stratum to adjacent wells, the said wells being located at different points and connecting at their lower ends with said gas and oil bearing stratum, thus serving to carburet the air in its passage and to form an artificial gas, the said gas then passing under pressure through the several wells to a main or distributer, to which they are connected, substantially as described.

3. A gas producing apparatus consisting of an air tube the lower end of which extends into an oil bearing vein or stratum, means for delivering air under pressure to said air tube, and discharge wells or conduits located at different points and connecting at their lower ends with said vein or stratum and at their upper ends with a gas main or distributer, substantially as and for the purpose set forth

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**527,790. PNEUMATIC SHEARS.** CHARLES O. HEGGEM, Massillon, Ohio, assignor to the Russell & Company, same place. Filed June 18, 1894. Serial No. 514,860. (No model.)





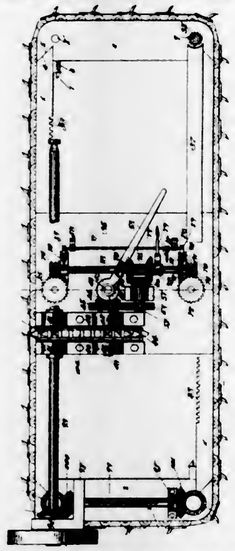
*Claim.*—1. The combination with the cylinder, piston head, and rod H, of the supports F, secured to the cylinder, the vibratable cutter heads, and the toggle, substantially as described and for the purpose set forth.

2. The combination with the cylinder and piston of the rotatable four way valve, the supporting bars F, shear heads E, cutters *g*, levers *k*, and toggle G, substantially as described and for the purpose set forth.

3. The combination with a cylinder and an air actuated piston, of the cutters or shears supported on the cylinder and actuated by the piston and the toggle, substantially as described and for the purpose set forth.

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**527,791. MINING-MACHINE.** JOHN HENWOOD, Portsmouth, Va. Filed Apr. 5, 1892. Serial No. 427,880. (No model.)



*Claim.*—1. In a mining machine, in combination with the platform and the cutting mechanism, the knock-down sliding frame mounted on the platform comprising opposite side and end bars detachably secured together, substantially as shown and described.

2. The mining-machine frame, comprising the opposite side-bars beveled at their ends, and in rear of the same provided with keepers, combined with the end-bars having angular sockets or mortises to receive the ends of the side-bars, and spring-catches extending from the end-bars and adapted to engage the keepers, substantially as specified.

3. In a mining machine, the combination with the oblong frame having the surrounding channel, the loose sprocket-wheels in the channel and at the corners of the frame, the surrounding cutter-chain and means for operating the same, of the pivot-bolt located between the two rear sprockets and in the channel in the rear of the chain, the U-shaped swinging bail having its terminals pivoted to the bolt, and provided with intermediate bearings, a sprocket-wheel having its journals mounted in the bearings between the terminals and adapted to engage the chain, a rocking-bolt beyond the bail having its upper end extended above the frame and squared to receive a wrench, an arm extending from the rocking-bolt and bearing against the inner side of the bail, a ratchet-wheel mounted on the bolt, and a spring-pressed pawl pivoted at one side of the ratchet-wheel and engaging and holding the same, substantially as specified.

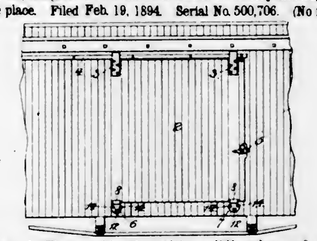
4. In a mining-machine, the combination with the rectangular frame, the sprockets at the corners of the same, the shafts for the sprockets and the cutting-chain passing around the sprockets, and gears mounted upon the two rear sprocket-shafts, of a platform upon which the frame is mounted, a motor operated on the platform, bearings located on the platform, a splined shaft mounted in the bearings, a wheel mounted on the shaft, means for communicating motion from the motor to the wheel, a beveled gear at one end of the shaft, engaging one of the gears of the sprocket-shaft, and a short transverse shaft between the two sprocket-shafts and provided at its ends with beveled gears for engaging one with the gear of the longitudinal shaft and the other with the gear of the remaining sprocket-shaft, substantially as specified.

5. In a mining-machine, the combination with the rectangular frame, the cutting-chain passing around the same, the platform for supporting the frame, of the shaft 43 and its bearings, the bevel-gear 46 mounted on the end of the shaft, the vertical shaft 47 in front of the shaft, the upper lower and loose gears 49 and 50 having the ratchet-hubs 51 and 52, the lever 53, terminating at its inner end in a yoke 54 having eyes journaled on the shaft 47, the pawls 56 arranged at opposite sides of the yoke and engaging the ratchets, the bearings 41, the shaft mounted in the bearings and adapted to slide therein, the wheel mounted on the shaft, connections between the same and shaft 43, and motion conveying devices between the said sliding shaft and chain, substantially as specified.

6. In a mining machine, the combination with the platform, the oblong frame having its inner longitudinal edges toothed, the chain surrounding the frame and provided with cutters, of the motor having a gear-wheel, the standard 57, the shaft 58 mounted therein and having the gear 59 and beveled pinion 60, the former engaging with the gear of the motor, the standards 70 slotted as at 71, the bolts passed through the slots into the platform, the shaft 73 journaled on the standard, the worms 74 on the ends of the shaft, the sleeve 75 on the shaft provided with the groove 78, the opposite beveled gears 76 and 75 upon the sleeve and at opposite sides of the beveled gear 60, the shifting-lever 79, the bearings 86, the shaft 87 mounted therein, the eccentrics 89 at the end of the shaft, loosely connected with the standards 70, the opposite vertical shafts 81, the gears 82 at the lower ends thereof, engaging with the teeth of the frame and the worms 85 at the upper ends of the shaft and engaged and operated by the worms 74 before mentioned, substantially as specified.

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**527,792. BRACKET FOR CAR-DOORS.** EDWARD A. HILL, Chicago, Ill., assignor of two-thirds to James L. Mallory and Edgar A. Hill, same place. Filed Feb. 19, 1894. Serial No. 500,706. (No model.)

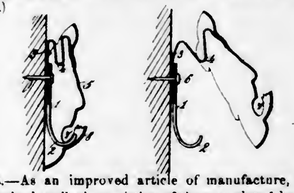


*Claim.*—1. The combination with a sliding-door, of a bracket and an attaching screw or bolt having non-rotative engagement with the bracket; said bracket having movable contact with a part of the structure in such manner as to prevent rotation of the bracket, substantially as set forth.

2 The combination with a sliding-door, of a guide-bracket engaged, and held against rotation by the door and a retaining-screw or bolt having non-rotatable engagement with the bracket, substantially as and for the purpose described.

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**527,793. HANGER FOR PICTURES.** WINFIELD S. JAEGER, Trenton, N. J., assignor to William Axford, Benjamin Holmes, and Frank D. Holmes, same place. Filed Jan. 16, 1892. Serial No. 418,257. (No model.)

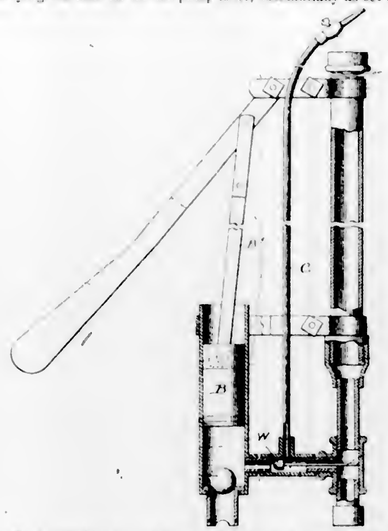


*Claim.*—As an improved article of manufacture, the picture hanger herein described, consisting of the rear plate 1 having a hook 2 at one extremity, the bendable metallic strap or shank 3 having one end connected with the upper extremity of the rear plate and provided with a bent portion intermediate its ends, and the ornamental front plate or cap-piece 5 having an orifice 7 for reception of hook 2 secured to the bendable metallic strap or shank and serving to conceal the rear plate and its hooked portion, said strap or shank bending when the ornamental plate or cap-piece is moved toward or from the front or rear plate, substantially as described.

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**527,794. SPRAYING-PUMP.** CHARLES H. JAMES, Wabash, Ind. Filed Oct. 18, 1893. Serial No. 488,449. (No model.)

*Claim.*—1. A portable spraying-pump adapted to be introduced into an independent liquid receptacle to pump liquid therefrom, comprising a pump cylinder, a discharge pipe, and an air tube, arranged vertically side by side and in line with each other and communicating at their lower ends, said pump cylinder having a liquid inlet at its bottom, and said air tube extending above the pump cylinder and carrying the fulcrum for the pump lever, substantially as set forth.

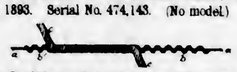


2 A portable spraying-pump adapted to be introduced into an independent liquid receptacle to pump liquid therefrom, comprising a pump cylinder with a liquid inlet at its lower end, a vertical air tube with which said pump cylinder communicates through the horizontal liquid passage G, said air tube being arranged parallel to said pump cylinder, extending thereabove, and carrying the fulcrum for the pump lever, and a liquid discharge pipe leading from said horizontal liquid passage, extending vertically between said pump cylinder and air tube, and terminating in a spraying nozzle, substantially as set forth.

3. A portable spraying-pump adapted to be introduced into an independent liquid receptacle to pump liquid therefrom, comprising a pump cylinder with a liquid inlet at its lower end, a liquid discharge pipe communicating with said pump cylinder, and a long vertical air tube closed at top and bottom and communicating near its lower end with said pump cylinder and discharge pipe, said air tube carrying near its top the fulcrum of the pump lever, and the closed upper and lower ends thereof constituting respectively the handle for steadying the pump and the foot upon which it rests, substantially as set forth.

4. In a portable spraying pump, the combination of the vertical pump-cylinder A having valve-seat *v* and ball-valve V, the closed vertical air-tube D to which said cylinder is clamped said air-tube having two sections, coupled at *d* and the laterally-placed T-coupling *e* below said coupling *d*, pipe-connections connecting said T-coupling *e* with the pump-cylinder and including the reversed T-coupling *e*, the lift-valve W within said pipe connections controlling the outlet from said pump-cylinder, the discharge pipe C connected with said T-coupling *e* extending upwardly and terminating in a spraying nozzle, the bracket *h* clamped to the air-tube D near its upper end, the pump-lever H pivoted to said bracket, the piston-rod B', and the pump-piston B, substantially as set forth.

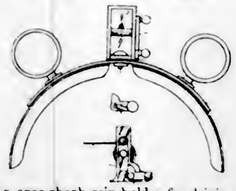
**527,795. FLEXIBLE CORD.** ROBERT KELSO, Philadelphia, Pa. Filed May 13, 1893. Serial No. 474,143. (No model.)



*Claim.*—1. A flexible cord having a central core of resilient material and an open tubular covering of internal diameter larger than the diameter of the central core made of wire loosely coiled around the core and having yielding material between the coils of wire, substantially as described.

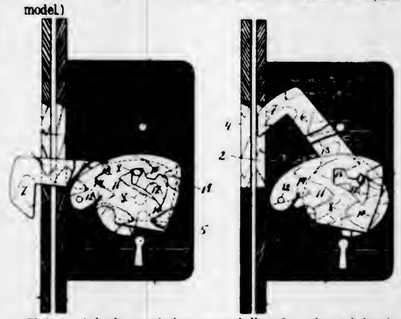
2. A flexible cord having a central core made up of a series of wires twisted together and an outer covering of wire, coiled loosely around the core, of larger diameter than the diameter of the central core, and having yielding material between the coils of the wire, substantially as described.

**527,796. OVERCHECK-REIN HOLDER.** CASWELL L. LEONARD, Veedersburg, Ind., assignor of one-half to Jacob Furr, same place. Filed July 21, 1894. Serial No. 518,179. (No model.)



*Claim.*—An over-check-rein holder for driving harness adapted to be rigidly mounted upon the harness back-band the same comprising a rectangular metallic frame securely bolted to the harness back-band, and provided with suitable reciprocal openings for the revoluble T-shaft and a flange at the side thereof forming a base for the over-balanced end of the pivoted pawl, a revoluble T shaft having a small horn standing out from about its longitudinal center, and adapted to be hooked in a suitable opening in the free end of the check rein so as to wind the check-rein around the revoluble T-shaft to lengthen or shorten said rein as may be desired by turning said shaft in the proper direction, and an overbalanced pivoted pawl mounted at the side of the rectangular frame adapted to catch the ends of the T-shaft in revolving over it so as to hold the check-rein at the desired length, substantially as specified.

**527,797. SLIDING-DOOR LOCK.** JOHN A. LOEWER and JOHN G. SIEBER, Buffalo, N. Y. Filed Dec. 1, 1893. Serial No. 492,408. (No model.)



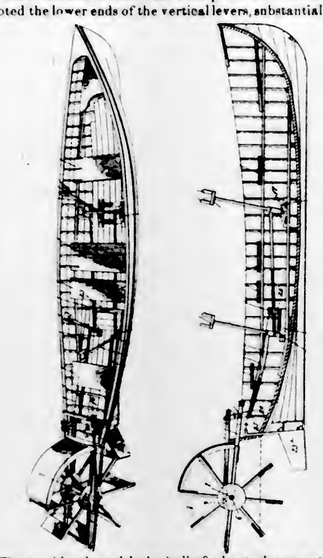
*Claim.*—A lock consisting essentially of a pivoted latch-plate provided at its free end with an engaging projection or latch and at its pivoted end with a spur above the pivot-point and a notch below the pivot-point for engagement with the key and a pivoted spring-pressed locking plate with inclined lower edge for engagement with the key and an opening in the plate having two upwardly extending seats for alternate locking engagement with the spur upon the latch-plate all combined and operating substantially as shown and described.

**527,798. MARINE PROPULSION.** JOHN S. MARTIN, Snohomish, Wash. Filed Jan. 2, 1894. Serial No. 495,407. (No model.)

*Claim.*—1. The combination with the hull of a boat, of bearings arranged in the rear of the stern, a paddle shaft having cranks, and the paddle-wheel journaled in the bearings, a pair of operating levers fulcrumed at their lower ends in front of a seat of the boat, a pair of vertical levers fulcrumed in rear of the seat, pitman rods between the upper ends of the vertical levers and the cranks of the shaft, and connecting-bars between intermediate points of the operating-levers and the lower ends of the vertical levers, substantially as specified.

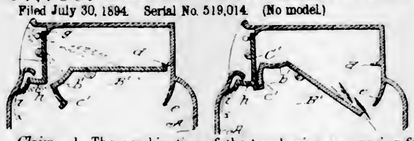
2. The combination with the hull of a boat, the cross timber, the rearwardly disposed parallel beams having bearings, the paddle-shaft arranged in the bearings and having cranks at its outer ends, the paddle-wheel arranged upon the shaft, of the slotted blocks secured to the sides of the beams, the short vertical levers intermediately fulcrumed in the slotted blocks, the pitman-rods loosely connected at their rear ends to the cranks of the shaft and at their front ends slotted and pivotally and adjustably connected with the upper ends of the short levers, the slotted bearing-blocks in front of the seat, the levers pivoted at their lower ends in bearing-blocks, said levers above their points of pivot having slots, and the rods pivoted in the slots of the levers and at their rear ends provided with slots in which are pivoted the lower ends of the vertical levers, substantially as specified





3. The combination with the hull of a boat, the cross-timber, the rearwardly disposed parallel beams having bearings, the paddle-shaft arranged in the bearings and having cranks at its ends, the paddle-wheel arranged upon the shaft, of the slotted blocks secured to the sides of the beams, the short vertical levers intermediately fulcrumed in the slotted blocks, the pitman-rods loosely connected at their rear ends to the cranks of the shaft and at their front ends slotted and pivotally and adjustably connected with the upper ends of the short levers, the slotted bearing-blocks in front of the seat, the levers pivoted at their lower ends in the bearing-blocks, said levers above their points of pivot having slots, and the rods pivoted in the slots of the levers and at their rear ends provided with slots in which are pivoted the lower ends of the vertical levers, the cross-heads at the upper ends of the operating levers, and the pairs of handles on the cross heads, substantially as specified.

**527,799. LETTER-BOX.** CHARLES W. MARTIN, New York, N. Y. Filed July 30, 1894. Serial No. 519,014. (No model.)

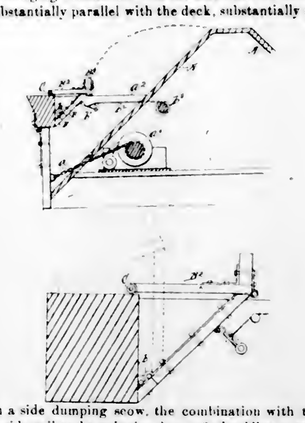


*Claim.*—1. The combination of the box having an opening for the introduction of mail matter, the straight door C, pivoted at an intermediate point of its length so as to swing in a vertical plane and adapted to normally rest in position to close the opening, and the tilting platform B, fulcrumed at an intermediate point of its length and provided at its transverse edge contiguous to the door C, with the depending, oblique flange *b*, and at the lower edge of said flange *b*, with the angularly disposed guard *c*, all adapted to operate, substantially as and for the purpose set forth.

2. The combination of the box having an opening for the introduction of mail matter, the door C, pivoted at an intermediate point of its length so as to swing in a vertical plane and normally rest in position to close the opening and having the angularly-disposed flange *b*, at its lower end and the angular projection i, at the end of said flange, and the tilting platform B', fulcrumed at an intermediate point of its length and provided at its transverse edge contiguous to the door C, with the curved flange *b'*, and at the end of said flange with the depending curved guard *c'*, having the angular projection at its end, all substantially as and for the purpose specified.

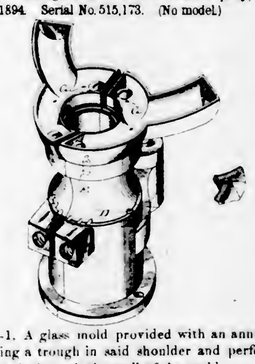
**527,800. DUMPING-SCOW.** PETER CIANCIMINO, Brooklyn, and FREDERICK W. MATTOCKS, New York, N. Y. Filed Oct. 24, 1893. Serial No. 488,985. (No model.)

*Claim.*—1. In a side dumping scow, the combination with the inclined deck, the side rail and a swinging door, of a load line gage rail having a swinging connection with the side rail, and normally on an incline substantially parallel with the deck, substantially as specified.



2. In a side dumping scow, the combination with the inclined deck, the side rail and a swinging door, of a load line gage rail hinged to said side rail and normally arranged at an angle substantially parallel with the deck, the guard board hinged to the upper portion of the gage rail, and fastening or locking devices, substantially as specified.

**527,801. GLASS-MOLD.** PETER M. MOMPER and OTTO SIGWART, Fostoria, Ohio, assignors to the Seneca Glass Company, same place. Filed July 20, 1894. Serial No. 518,173. (No model.)



*Claim.*—1. A glass mold provided with an annular shoulder or rim and having a trough in said shoulder and perforations leading from said trough through the wall of the mold.

2. A glass mold provided with an annular shoulder or rim and having perforations leading from said shoulder into the interior of the mold and provided with cup-like arms at its upper end provided with perforations in their bottoms.

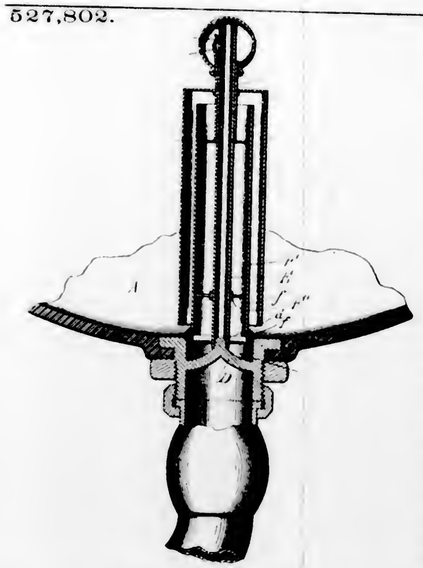
3. A glass mold provided with an annular shoulder or rim and having a trough in said shoulder and perforations leading from said trough through the wall of the mold, and provided at its upper end with cup-like arms having perforations in their bottoms.

**527,802. COMBINED LAVATORY-BASIN PLUG AND OVERFLOW.** CHARLES H. MUCKENHIRN, Detroit, assignor to Frank P. Boughton, Battle Creek, Mich. Filed Dec. 22, 1893. Serial No. 494,400. (No model.)

*Claim.*—1. In a lavatory basin, the combination with an upright secured at the discharge thereof, an open end plugging cylinder, around the upright, arms, on the cylinder, collars on the inner ends of the arms fitted around the upright, an extension on the upper collar, a bell on the extension and a spring on the extension engaging the upright, substantially as described.

2. In a lavatory basin, the combination with an upright secured at the discharge thereof formed of uniform dimensions thoughout its length, of a plugging-cylinder surrounding the upright, supporting arms on the inner face of the cylinder, collars on the inner ends of the arms, surrounding the upright and a curved spring on the upper collar engaging the upright, substantially as described.

527,802.



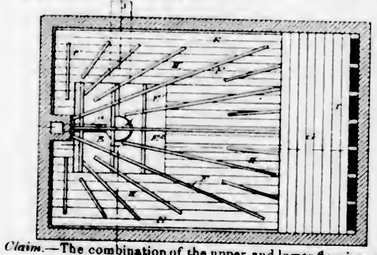
527,803. PENCIL-SHARPENER. JAMES C. MCCOLLUM, Los Angeles, Cal., assignor of two-thirds to Albert H. Judson, same place, and Charles K. Judson, Chicago, Ill. Filed Feb. 23, 1894. Serial No. 501,207. (No model.)



*Claim.*—1. A lead pencil consisting of a body portion having a longitudinal passage adapted to receive the lead and to hold it incapable of rotary movement, a spring-pressed follower-block in the passage, and adapted to give the lead a normal tendency out of the body, and a revoluble cap fitting on the body and into which the lead is pressed, the cap having on its interior a series of longitudinal and parallel knives arranged obliquely and adapted to engage the end of the lead and to form a point thereon by revolving the cap, substantially as described.

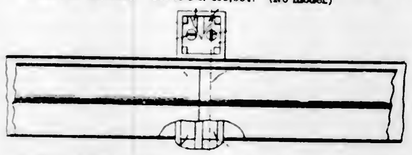
2. A lead pencil consisting of a body portion having a longitudinal passage therein, adapted to contain and hold the lead incapable of rotary movement, a spring pressed follower arranged in the passage and operating to push the lead out of the passage, a cap having a flexible tubular end adapted to fit over the front end of the body and to be held thereon capable of rotary movement by a rib and groove connection, and a series of longitudinal fingers formed integral with the forward end of the cap and extending inwardly and outwardly therefrom, the fingers having their inner edges formed with knife edges thereon and adapted to engage the end of the lead and to form a point thereon by revolving the cap, substantially as described.

527,804. HEATING AND VENTILATING APPARATUS FOR BUILDINGS. AGNES MCFADYEN, Lincoln, Nebr. Filed Apr. 13, 1894. Serial No. 507,440. (No model.)



*Claim.*—The combination of the upper and lower flooring, radial partitions arranged in the chamber between the floors and extending from an opening in the sub-floor toward, but not to the side walls of the chamber, a heater arranged directly below the opening in the sub-floor, and registers or outlets at the outer ends of the partitions.

527,805. APPARATUS FOR LEVELING THE MEETING ENDS OF RAILWAY-RAILS. GEORGE NORWOOD, Boston, Mass., assignor of two-thirds to George L. Mead and John S. Richardson, same place. Filed Dec. 28, 1893. Serial No. 495,001. (No model.)



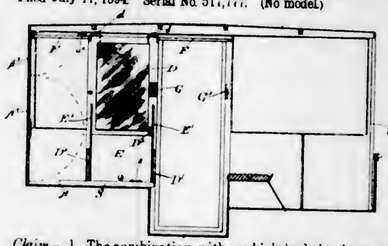
*Claim.*—1. The combination with a stand, and the meeting ends of two railway rails, of two independent rail leveling devices located side by side and interposed between said rails and stand and accessible for adjustment while the rails remain undisturbed with relation to their supports, substantially as described.

2. The stand adapted to rest on a stringer and provided with an inclined surface, and having an upwardly extended leg, combined with a wedge, and means to move the same over said inclined surface, substantially as described.

3. The stand adapted to rest on a stringer and provided with an inclined surface, and having an upwardly extended leg, and locking device to grasp the stringer, substantially as described.

4. The stand adapted to rest on a stringer or support and having two inclined ways side by side, combined with two wedges, and independent actuating devices for each of said wedges, to operate, substantially as described.

527,806. DELIVERY-WAGON. JOHN W. PILE, Marietta, Ind. Filed July 17, 1894. Serial No. 517,777. (No model.)



*Claim.*—1. The combination, with a vehicle body having a central downward extension, of a sliding door D having a lower portion E attached thereto and adapted to move vertically thereon, substantially as and for the purposes set forth.

2. The combination, with a vehicle body having a downward extension in the center, of the door D, mounted on the track F at the top, provided with a vertically-sliding lower portion E, said vehicle body having a slide-way S inside thereof adapted to receive the lower edge of the door when said lower portion is raised, substantially as set forth.

3. A vehicle door, consisting of the upper portion D having slideways D' secured thereto, and a lower portion E adapted to slide vertically thereon and provided with slides E', and having stops $e$ and $e'$ for limiting the vertical movement of said lower portion, substantially as described.

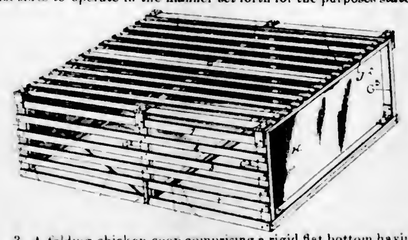
4. The combination, with a vehicle, of a door consisting of two portions, one adapted to slide vertically on the other, a track on which the whole door is adapted to slide sidewise, devices by which the two door portions are united and adapted to slide one upon the other, and a fastener by which the door is drawn closely against its jamb when closed, the tongue of said fastener being wedge shaped, substantially as described.

527,807. FOLDING CHICKEN-COOP. CHARLES B. PROCTOR, Milo, Iowa, assignor of one-half to E. L. Morgan and Henry Hinrichs, same place. Filed May 1, 1894. Serial No. 509,730. (No model.)

*Claim.*—1. In a folding chicken coop and the like, a flat rigid bottom having cleats fixed across its top, posts hinged to the ends of said cleats to fold inward, slats fixed to the posts to form sides and braces pivoted at their lower ends to the central fixed cross piece in the bottom and pivoted at their top ends to the top posts hinged to the ends of the cleats fixed on the flat bottom, to operate in the manner set forth for the purposes stated.

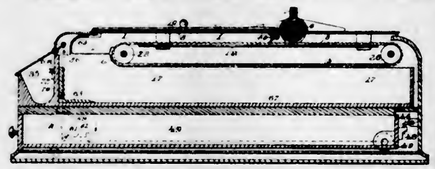


2. In a folding coop, the combination of a flexible end with a rigid flat bottom and parallel sides hinged to the ends of cleats fixed on the bottom and a jointed cover hinged to the top edges of the parallel sides to operate in the manner set forth for the purposes stated.



3. A folding chicken coop comprising a rigid flat bottom having cleats fixed across its top and posts hinged to the ends of said cleats to fold inwardly, slats fixed to the posts to produce folding side sections, a top or cover composed of two mating parts hinged to the tops of the posts that are hinged to the cleats fixed upon the rigid bottom, flexible ends fixed to the ends of the inwardly folding hinged sides, arranged and combined to operate in the manner set forth for the purposes stated.

527,808. CASH-CONTROLLING MACHINE. AUGUST QUORTRUP, Jamaica, N. Y. Filed Nov. 11, 1893. Serial No. 490,623. (No model.)



*Claim.*—1. The herein described improvement in a cash controlling machine, comprising in combination, a box or casing, two endless belts or carriers and mechanism for operating the same, one of said carriers arranged for carrying the checks and the other the money, a vertical partition between the two, a fixed immovable glass pane over a part of the check carrier, a movable glass pane over a part of the money carrier so that the money may be taken from said carrier while in transit, or said pane securely locked against intrusion and means for effecting the same, a receipt drawer directly below said carriers having a longitudinal partition therethrough to coincide with the partition of the said carriers, as set forth.

2. In a cash controlling machine comprising in combination, a box or casing, an endless belt or carrier having a corrugated upper surface, means for operating said carrier, combined with a series of check pins or devices of like character arranged to engage the said corrugations and prevent a reverse movement of the carrier, as set forth.

3. The combination, in a cash controlling machine, of the character described, of the box or casing, two endless belts or carriers mounted on rollers and means for operating the same, a longitudinal partition between such belts, thereby forming two compartments above, combined with a longitudinal partition and a divided money drawer below a rotatable brush, arranged as shown, the outer surfaces of said belts corrugated, pins loosely mounted above said outer surface to engage such corrugations and thereby prevent a retrograde movement of said belt, independent of its supporting rollers.

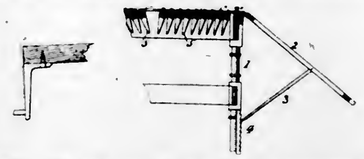
4. In combination in a cash controlling machine, of the character described, a box or casing, two endless corrugated carriers, a central partition longitudinal therethrough, a revolving brush arranged as shown, means for operating both carriers and brush, check pins to prevent a retrograde movement of one or both of said carriers, a fixed pane over a part of the check carrier, and a movable pane over a part of the money carrier, combined with a receipt drawer below said carriers having separate compartments for said checks and money.

5. The combination in a cash controlling machine of the character described, of the frame or box, lid 34 thereof, cash drawer 49, change tray 23, with a movable stop piece attached to said drawer, and a vertically operating rod attached to said lid whereby said lid and drawer may be locked against the operating mechanism of the change tray, as set forth.

6. In a cash controlling machine of the character described, comprising in combination a box or casing, endless check and money carriers, operating mechanism therefor, of the receipt drawer 16 situated directly under said carriers, having the compartments 66 and 67, longitudinally movable conveyers 64 and 65 therefor, operating rods 68 and 69 pivoted thereto, said rods arranged to be folded when not in use, against the separating partitions between said drawer and the cash pocket apartment 35, as set forth.

7. In a cash controlling machine of the character described, with a box or casing, two endless belts or carriers, operating mechanism therefor, a partition separating such carriers within said box or casing, combined with the partition 73 projecting above the machine, as set forth.

527,809. SAMPLE-BOOK RACK. JOHN READING, Akron, Ohio, assignor to the Reading Manufacturing Company, same place. Filed Feb. 5, 1894. Serial No. 499,064. (No model.)



*Claim.*—A sample book rack consisting of a supporting frame, and parallel cross bars interposed between its sides, said cross bars being mounted on rocking brackets pivotally mounted in the opposite sides of said frame, substantially as shown and described.

527,810. PROCESS OF MAKING FERTILIZERS. EDWARD RECORDS, New York, N. Y., assignor to James B. Dill, same place. Filed Feb. 10, 1894. Serial No. 499,769. (No specimens.)

*Claim.*—1. The process of disintegrating the solid parts of the tankage and offal of animals, such as the viscera and bones, by mixing the same without pulverizing with powdered marl, substantially as described.

2. The process of making fertilizers hereinbefore described, consisting in drying and pulverizing calcareous marl, adding blood, tankage or offal to the marl, drying the mixture, and subsequently alternately adding more blood, tankage or offal to the original mixture and drying the mass.

3. The process of making fertilizers hereinbefore described, consisting in drying and pulverizing calcareous marl, adding blood, tankage or offal thereto, and ultimately adding sulfuric acid to the mixture, whereby the ammonia of the blood, tankage or offal is converted into a stable compound.

527,811. DAMPER FOR MUSICAL INSTRUMENTS. ADOLF RICHTER, Rudolstadt, Germany. Filed July 6, 1894. Serial No. 516,726. (No model.)



*Claim.*—1. In mechanical musical instruments, a damper device, consisting of a slot or notch arranged in the tongue and a damper to contact with one end of said slot or notch substantially as described.

2. The combination of a slot or lateral notch $b$ in the metallic tongue, and a spring damper $a$ and means for operating the said damper substantially as described.

3. The combination of a tongue, having a slot or lateral notch $b$, and a spring damper, having a bend, $a'$, and a disk or pin barrel to contact with the tongue and with the bend of the damper in the manner and for the purpose substantially as described.

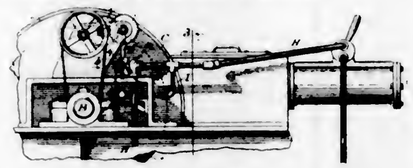
4. The combination of a tongue, having a slot or lateral notch $b$, a spring damper having in its upper part a bend $a'$ and having its upper end lying within the said slot or notch, but normally out of contact with the same, and means for actuating the said damper against the end $c$ of the said slot immediately after the tongue has been struck substantially as described.

527,812. METHOD OF AND APPARATUS FOR PRODUCING WOOD PULP. CHARLES W. ROBERTS, North Bennington, Vt. Filed Sept. 19, 1893. Serial No. 485,806. (No model.)

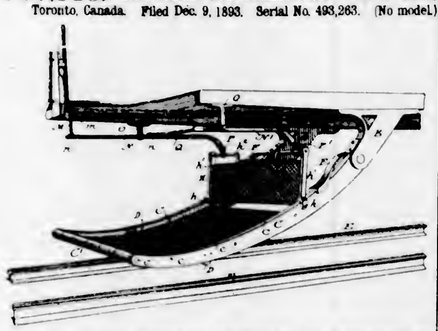
*Claim.*—1. The herein described method of producing wood-pulp which consists in feeding wood against a grind-stone, arresting the feed at recurring intervals between the beginning of the grinding and the final grinding away of the wood in the receptacle sufficiently to allow the stone to temporarily attain a higher rate of speed during each period of arrest, and resuming the feed after each arrest, substantially as specified.

2. In an apparatus for grinding wood into pulp, the combination

of a wood receptacle, a grind-stone and a fluid pressure operated plunger for moving the wood toward the grind stone, a fluid supply pipe for the plunger operating mechanism, a valve in the fluid supply pipe, and mechanism connected to the shaft of the stone for opening and closing the valve at intervals during one complete forward movement of the plunger, substantially as described.



527,813. LIFE-GUARD FOR STREET-CARS. JOHN F. RYAN, Toronto, Canada. Filed Dec. 9, 1893. Serial No. 493,263. (No model.)



*Claim.*—1. The combination, substantially as hereinbefore set forth, of a platform, a life-guard frame pivotally connected at its rear end to the under side of the platform, a foot lever or pedal for raising the life-guard frame, a link connected to the front end of the pedal, a lever connected to the lower end of the link extending backwardly and connected to the life guard frame in front of its pivotal connection with the platform, and a hand lever for operating the pedal when it is depressed.

2. The combination, substantially as hereinbefore set forth, of the platform, the hangers or brackets secured to the under side thereof, the side bars of the life guard frame pivotally connected with the hangers, rollers carried by the side bars and adapted to ride on the rails of the track, a covering for the frame, the vertical frame hinged near the rear or inner ends of the side bars, a pedal, a lever connected at its front end with the pedal and at its rear end with the vertical frame, and a hand lever for locking the pedal.

3. The combination, substantially as hereinbefore set forth, of the platform, the life guard frame pivotally connected therewith, rollers carried by the frame, springs bearing upon the life-guard frame for depressing or holding it down, levers for raising the frame from its depressed position, and a hand lever for locking the frame operating mechanism.

4. The combination, substantially as hereinbefore set forth, of the platform, the hangers or brackets, the side bars secured thereto, springs secured to the brackets and bearing on the side bars, a foot lever or pedal, levers or rods connecting the pedal with the life guard frame, and a hand lever for locking the pedal.

527,814. COAL-DRILL. PHILIP SAUER, Pomeroy, Ohio. Filed Mar. 7, 1894. Serial No. 502,741. (No model.)

*Claim.*—1. In a coal drill, the combination with the main or body bar A, having its inner side beveled or rounded at one end and also having the transverse rib A, upon its inner side adjacent to its beveled or rounded end of the adjustable bar C, having its inner side beveled or rounded at one end and also having the transverse groove *g*, in its inner side adjacent to its beveled or rounded end to receive the transverse rib of the bar A, and a suitable means for drawing the outer end of the adjustable bar C, toward the main bar and holding it in such position, substantially as and for the purpose set forth.

2. In a coal drill, a tubular and exteriorly threaded feed bar having a longitudinal slot and also having bridges crossing the said slot at intervals in the length thereof; the said bridges being provided with grooves, substantially as and for the purpose set forth.

3. In a coal drill the combination with an exteriorly-threaded and tubular feed bar having notches in its end at diametrically opposite points; of a bit comprising a shank adapted to take into the bore of the feed bar and a body adapted to be seated in the notches of said bar, substantially as and for the purpose set forth.



527,815. SPIRIT-LEVEL ATTACHMENT. AUGUST SCHNELL, Clinton, Iowa. Filed June 2, 1894. Serial No. 513,286. (No model.)



*Claim.*—1. An attachment for spirit levels consisting of a half-frame comprising an upright side piece, a horizontal bottom piece having in its upper face a recess parallel with the side piece, and a second upright side piece having in its inner face a horizontal recess, a vertical sliding plate within this half-frame having an upright recess in its inner face, and a set screw taking through a threaded boss on the first-mentioned side piece and swivelly connected with the sliding plate; combined with a block connected with and depending from the half-frame and having a foot piece at its lower extremity, as and for the purpose set forth.

2. An attachment for spirit-levels consisting of a half-frame, and means substantially as described for detachably and adjustably connecting it with a level; combined with two separated legs depending from said half-frame and having grooves in their inner edges, one face of the legs being provided with a scale adjacent the space between the legs, a block sliding in said grooves and itself having a groove in one edge which terminates short of the upper end of the block, a foot piece at the lower end of the block, and a set screw taking through one leg and resting in the groove in the edge of the block, as and for the purpose set forth.

3. An attachment for spirit levels consisting of a half-frame, and means substantially as described for detachably and adjustably connecting it with a level; combined with a cylindrical portion depending from said half-frame and consisting of two separated legs having grooves in their inner faces to produce a cylindrical cavity within said depending portion and cross bars connecting the legs at their lower ends around said cavity, a cylindrical block sliding vertically within the cavity and having an upright groove, a set screw through one of the legs with its tip normally resting in said groove, and two divergent studs at the lower end of said block forming a foot piece therefor, which foot piece stands in alignment with the half-frame when the set screw engages said groove, as and for the purpose set forth.

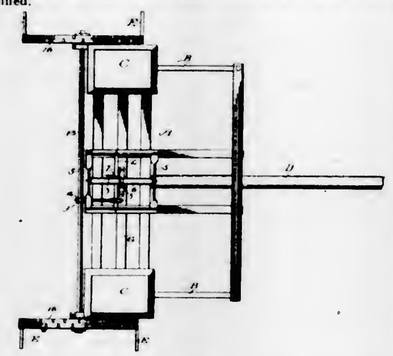
527,816. PLANTER. JOHN SPECHT and ISAIAH ARMAND, Giza, Iowa. Filed Mar. 29, 1894. Serial No. 505,619. (No model.)

*Claim.*—1. In a planter the combination with the seed dropping mechanism and seed slide, of arch shaped brackets arranged parallel and provided with a series of openings, a rotary shaft having its ends bearing in aligned openings of said series and provided with tappet arms extending in opposite directions therefrom, and a vertical lever provided with tappet engaging surfaces which are adapted to be engaged by the said tappet arms to impart a reciprocating movement to the said slide substantially as and for the purposes specified.

2. In a planter the combination with the seed boxes and seed slide, of a rocker bar provided with a series of openings in its length, a lever adapted to have its upper end adjustably attached to said rocker bar and its lower end in engagement with the said seed slide, said lever having tappet engaging surfaces thereon and a rotary shaft having tappet arms adapted to engage the said tappet on the lever, substantially as and for the purposes specified.



3. In a planter, the combination with the seed slide, of a lever having its lower end in engagement with said seed slide and provided with tappet engaging surfaces, a pair of brackets having a series of openings, a rotary shaft adjustably mounted in the said brackets and provided with tappet arms which engage the tappet surfaces of the said lever, and a rocker bar arranged at right angles to the said shaft and provided with a series of openings in its length for adjustable attachment of the said lever, substantially as and for the purposes specified.

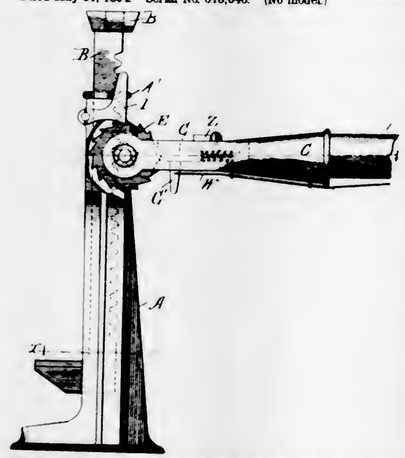


527,817. RUBBER DENTAL-PLATE BLANK. JOSEPH SPYER, Mexico, Mexico. Filed July 5, 1894. Serial No. 516,603. (No specimens.)



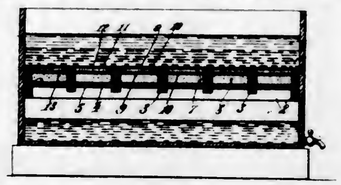
*Claim.*— A soft rubber blank adapted for use in making artificial dentures, which soft rubber blank is of the size and shape of the denture and is adapted to be shaped in any suitable manner and vulcanized, substantially as described.

527,818. LIFTING-JACK. ARTHUR L. STANFORD, Evanston, Ill. Filed May 31, 1894. Serial No. 513,040. (No model.)



*Claim.*—In a lifting jack substantially as described, safety releasing mechanism comprising in combination with the ratchet wheel, the lifting pawl G, retaining pawl I, and safety release latch Z which is pivoted upon the lever socket C whereby said safety release latch may impinge against the retaining pawl I to release same; or may be swung into the safety position and permit lever socket C to be fully elevated without releasing the pawl I substantially as and for the purpose set forth.

527,819. LEACHING APPARATUS. FREDERICK B. STRUNK, Pittsburg, Pa. Filed Jan. 25, 1894. Serial No. 497,990. (No model.)



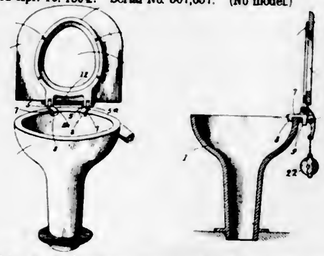
*Claim.*—In a leaching apparatus, the combination with a tank, and a horizontal layer of perforated plates supported in said tank and covered with a layer of sand laid on a sheet of muslin or equivalent material, of a number of transversely arranged iron bars embedded in said sand layer and supporting a second layer of perforated plates, the said first and second layers of perforated plates and the intervening bars and sand layers constituting a permanent filter bed, and an uppermost removable sectional layer composed of a series of perforated plates arranged edge to edge in the same horizontal plane above the said permanent filter bed and separated therefrom by a layer of sand, substantially as described.

527,820. RUBBER TIRE. JOHN C. TALLMAN, Bridgeport, Conn. Filed Nov. 10, 1893. Serial No. 490,594. (No model.)



*Claim.*—A rubber tire comprising two parts, a hollow felly having its periphery provided with a series of parallel circumferential grooves, and ribs on each side of said grooves, having their tops inclined toward the sides of the felly, and a rubber tire having side pillars adapted to fit in the two outside grooves, and a central pillar engaged in the central groove, the said side pillars being recessed to come within the side ribs and air spaces between the side pillars and the central pillar, the outer surface of the tire being designed to contact directly with the ground.

527,821. CLOSET-SEAT. WILLIAM G. VOLLMER, Buffalo, N. Y. Filed Apr. 10, 1894. Serial No. 507,057. (No model.)



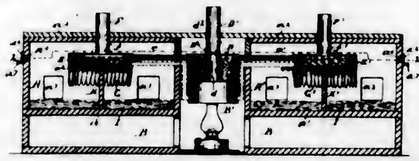
*Claim.*—1. A closet seat removable hinge portion, consisting of two clamping plates 7, each having the clamping pieces 8 and 9, set screws for securing them to a closet bowl, a pivotal portion located obliquely, as above specified, on top of each plate 7, and means substantially as above set forth for pivoting said clamping plates to a closet seat, for the purposes described.

2. In a closet seat the combination with a water closet bowl having a plain circular rim at the top, of two removable clamping plates 7, provided with set screws for securing them at any point around the top of said bowl, pivotal portions 6, set obliquely on the top of the clamping plates 7, and forming a part of the same; and a closet seat consisting of the usual wooden portion having a metal frame provided with pivotal ears and pivoted to the pivotal portions on the clamping pieces, substantially as and for the purposes described.

527,822. CHICKEN-BROODER. FRANK J. WIEGAND, Warren, Mich. Filed Nov. 2, 1893. Serial No. 489,827. (No model.)

*Claim.*—1. In a chicken brooder, a tank chamber and a water tank located in said chamber, means of heating the water in said tank, a perforated flue passing through said tank and communicating with

the exterior of said chamber, brooding chambers located laterally of said tank chamber, an additional water tank located in each of the brooding chambers, the water in all said water tanks heated by a single heater underneath the water tank in the tank chamber, substantially as set forth.



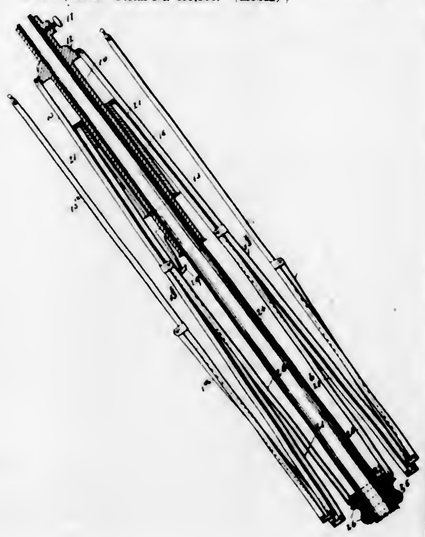
2. In a chicken brooder, a tank chamber, a water tank located within said chamber, means for heating the water in said tank, brooding chambers located laterally of said tank chamber, an additional water tank in each of said brooding chambers, a cushion on the base of the tanks in the brooding chambers, and a curtain depending from the lower edge of the tanks in the brooding chambers, the tanks in the brooding chambers provided with a flue communicating therewith and with the interior of the brooding chambers and discharging to the exterior of said brooding chambers, the tanks in the brooding chambers communicating with the tank in the tank chamber whereby all of the tanks may be heated by one heating device, substantially as set forth.

3. In a chicken brooder, a tank chamber B', brooding chambers located adjacent to said tank chamber, an underlying ventilating chamber B, a tank D located within the tank chamber constructed with a central opening therethrough, a perforated flue passing through said tank and extending through the case of the brooder, a water tank located within each of the brooding chambers communicating with the tank D, each of said water tanks within the brooding chambers provided with a flue communicating therewith and with the exterior of the brooding chambers, substantially as set forth.

4. A chicken brooder constructed with an inclosing case, a tank chamber within the case provided with a water tank, brooding chambers within the case located laterally of said tank chamber, an additional tank in each of said brooding chambers communicating with the tank in the tank chamber, a post supporting the water tank in each of the brooding chambers, a heating device to simultaneously heat the water in all of said tanks, ventilating flues communicating with the brooding chambers, with the tanks in the brooding chambers, and with the exterior atmosphere, and a ventilating flue passing through the tank in the tank chamber and communicating with the outer atmosphere, the several water tanks so connected as to produce a circulation through said tanks, substantially as set forth.

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527,823. **UMBRELLA.** ZEBULON WIRT, Monticello, Ind. Filed Dec. 17, 1891. Serial No. 415,399. (Model.)



*Claim.*—1. An umbrella frame comprising a tube or shell having a cap flange and latches secured thereto, a runner held to slide upon the shell, ribs made in sections hinged to the cap of the shell, braces made in sections pivoted to the runner and to the ribs, a second runner adapted for engagement with the latches of the shell, and braces connecting this second runner and the ribs, as and for the purpose specified.

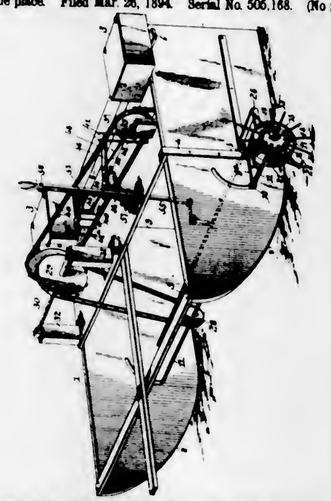
2. An umbrella frame adapted for attachment to or removal from a cane or like stick, comprising a tube or shell having a cap flange, fastening devices and latches connected therewith, ribs made in hinged sections pivoted to the cap-flange of the shell, a runner held to slide upon the shell, braces made in hinged sections pivoted to the runner and to the ribs, a second runner independent of the first and beneath it, having braces pivoted thereto and to the ribs between the cap joint of the shell and the pivotal connection of the sectional braces, substantially as shown and described.

3. In an umbrella, the combination, with a stick, a tube or shell fitted to the stick, and fastening devices removably securing the shell to the stick, the said shell being provided with a cap flange near one end and latches near the opposite end, and a runner capable of sliding movement upon the shell beneath its cap flange, of ribs constructed in hinged sections pivoted at their inner ends to the cap-flange of the shell, braces constructed in hinged sections pivoted at their inner ends to the runner and at their outer ends to the outer sections of the ribs, a second runner independent of the first and adapted to travel upon the stick below the shell, the said runner having a flange for engagement with the latches, and braces pivotally connected to the second or lower runner and to the inner sections of the ribs, as and for the purpose specified.

4. In an umbrella, the combination, with a stick, a tube or shell fitted to the stick, and fastening devices removably securing the shell to the stick, the said shell being provided with a cap-flange near one end and latches near the opposite end, and a runner capable of sliding movement upon the shell beneath its cap flange, of ribs constructed in hinged sections pivoted at their inner ends to the cap-flange of the shell, braces constructed in hinged sections pivoted at their inner ends to the runner and at their outer ends to the outer sections of the ribs, a second runner independent of the first and adapted to travel upon the stick below the shell, the said runner being provided with a rib at its upper end and an interior flexible packing, and braces each in one piece pivotally connected with the upper portion of the lower runner and the inner sections of the ribs, substantially for the purpose specified.

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527,824. **CHECK-ROW CORN-PLANTER.** ORLAN T. WOOD, Plattsmouth, Nebr., assignor to Phillip V. McCulley and Anna Wood, same place. Filed Mar. 26, 1894. Serial No. 505,168. (No model.)



*Claim.*—1. A check-row attachment for corn-planters, the same comprising a platform, adapted to rest upon the frame of a planter, seed-slide operating-mechanism arranged upon the platform, angular side-brackets depending from the edges of the platform, a rock-shaft journaled in bearings in said brackets and provided with crank-arms arranged outside the planes of the brackets, an operating-shaft mounted in bearings at the extremities of the said crank-arms, operating wheels carried by the operating-shaft, means for adjusting the rock-shaft to alter the elevation of the operating-shaft, and connections between the operating-shaft and the said seed slide-operating mechanism, substantially as specified.

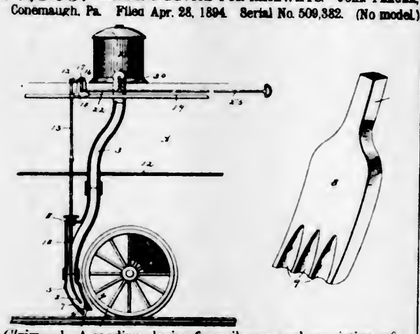
2. In a check-rower, the combination with an operating shaft, and means for driving the same, of a driving sprocket operatively connected to said shaft and having its axis arranged in a horizontal plane, a check-row chain carried by said sprocket, and an idle pulley spaced thereupon, check-row levers arranged in the path of a projection carried by said chain, rock-shafts carrying said lever, a seed slide, an oscillating lever connected with the seed-slide and having an adjustable pivotal point, and connecting rods or pitmen adjustably connected at their extremities to the oscillating lever, and arms on said rock shafts, substantially as specified.

3. The combination with an operating shaft, of an operating-wheel provided with an annular lateral flange having spaced perforations, and sockets or keepers in alignment with the perforations, spikes fitting in said perforations and sockets or keepers, set-screws for securing the spikes at the desired adjustment, a marker-wheel loosely mounted upon the said shaft contiguous to the operating wheel and having a peripheral lateral internally toothed rim, a marker carried by said wheel, and pawls mounted upon the operating-wheel to engage the teeth of said rim on the marker-wheel, substantially as specified.

4. In a check-rower, the combination with an operating shaft, planting mechanism, and connections between the shaft and the planting mechanism, of marker wheels carried by said shaft and provided with projection 24, and signal springs 26 arranged with their free ends in the paths of said projections and adapted when released by the projections to strike the said wheels, substantially as specified.

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527,825. **SANDING DEVICE FOR RAILWAYS.** JOHN YEAGER, Conemaugh, Pa. Filed Apr. 28, 1894. Serial No. 509,382. (No model.)



*Claim.*—1. A sanding device for railways, and consisting of a pipe communicating with the sand-box and arranged to deliver its contents onto the track, said pipe having a transversely-elongated emitting nozzle, and a plug located in the nozzle and having formed in one side a series of parallel and vertical slots adapted to form passages out of the pipe, said plug having a plane portion adapted to completely fill the nozzle, whereby the nozzle may be opened to various degrees, substantially as described.

2. A sanding device for locomotives, consisting a pipe communicating with the sand box and having its lower end formed with a contracted opening, and a plug fitting in said opening and capable of completely filling the same, and of moving in and out thereof, a portion of said plug being formed with a depression, capable of registering with the said opening, substantially as described.

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527,826. **CARBON FOR ELECTRIC LIGHTS.** EDWARD G. ACHESON, Monongahela City, Pa. Filed Aug. 25, 1894. Serial No. 521,324. (No model.)

*Claim.*—1. An illuminating body for electric lamps, comprising carbon associated with carbide of silicon, substantially as described.

2. A carbon rod, point or filament for electric lamps, comprising carbide of silicon as an illuminating body, associated with a body of relatively high electrical conductivity, as carbon, substantially as described.

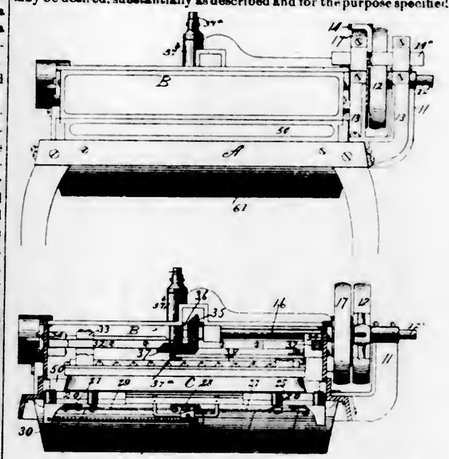
3. A carbon rod or point for electric lamps, comprising an outer body of carbon and a core of carbide of silicon, substantially as described.

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527,827. **MACHINE FOR BLACK-LEADING ELECTROTYPE-MATRICES.** OLIVER B. BEACH, Stony Creek, Conn. Filed Aug. 23, 1893. Serial No. 483,826. (No model.)



*Claim.*—1. The combination of a stationary bed, a work holder secured in a fixed position on said bed and having clamping mechanism for confining electrotype matrices, a brush for applying black lead to said matrices, guides or ways for holding said brush and matrices under suitable pressure and guiding the rubbing movement of said brush, and means for imparting a rubbing movement to said brush over the same portion of said matrices repeatedly as long as may be desired, substantially as described and for the purpose specified.



2. The combination of the brush, ways or guides for said brush extending in different directions, the two crank pins and connections for moving said brush in two different directions and means for driving said crank pins, substantially as described and for the purpose specified.

3. The combination of the brush, ways or guides extending in different directions, two crank pins and connections for moving said brush in different directions and the differential driving gear for driving one of the crank pins at a greater speed than the other, substantially as described and for the purpose specified.

4. The combination of the brush holding frame, ways or guides for said frame extending in one direction and the brush mounted on said frame by ways or guides that extend in another direction, substantially as described and for the purpose specified.

5. In a black leading machine having a brush, the combination of the bed A, the idle pulley and its shipper mounted thereon, the secondary bed hinged to said bed A operating mechanism and the driving pulley mounted on said hinged bed said driving pulley being in alignment with said idle pulley when said hinged bed is turned down on the bed A, substantially as described and for the purpose specified.

6. In a black leading machine having a brush, the combination of the bed A, the idle pulley mounted thereon, the shipper and shipper bar also mounted on said bed, the secondary bed hinged to said bed A and adapted to turn down with one part directly under the end of said shipper bar operating mechanism and the driving pulley mounted on said hinged bed, substantially as described and for the purpose specified.

7. In a black leading machine provided with a brush the bed A with removable panels 50 on opposite sides, and operating mechanism substantially as described and for the purpose specified.

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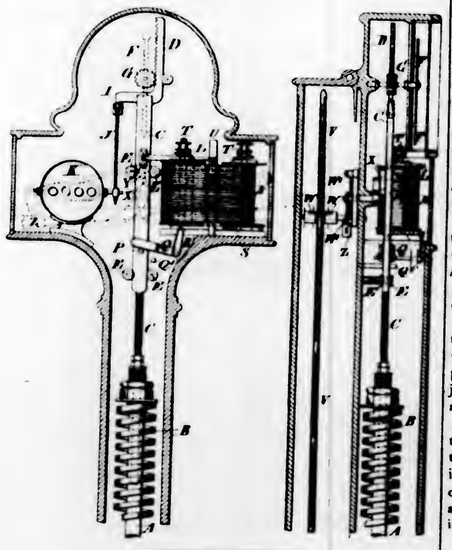
527,828. **AUTOMATIC WEIGHING-MACHINE.** EDWARD H. BECKETT, Glan-eu-lan, Tan-y-Grisiau, and CHARLES W. ROBERTS, Plas Weunydd, Blaenau-Festiniog, England. Filed Jan. 11, 1894. Serial No. 496,480. (No model.) Patented in England Jan. 31, 1893, No. 2,100.

*Claim.*—1. In combination in a weighing machine, the casing, the vertically movable rod C, the coin freed devices for controlling said rod, the marker connected with the rod to move therewith, and the paper holding means adapted to maintain the paper in proper position for receiving the markings, substantially as described.

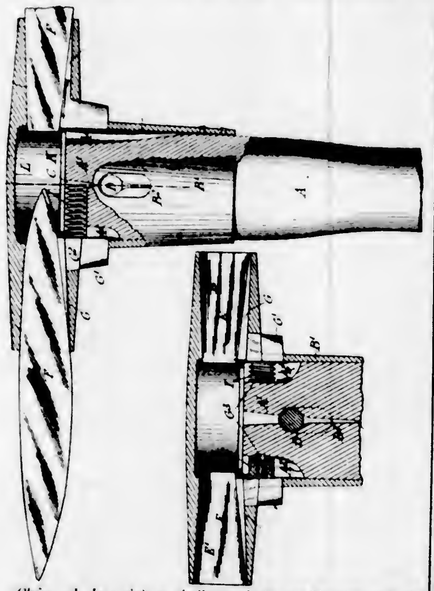
2. In combination, in a weighing machine the casing, the vertically movable rod C, the coin freed devices for controlling the same, the marker carried by the said rod, the paper reels, and the operating connections extending from and operated by the rod, C, substantially as described.

3. In combination, in a weighing machine, the casing, the vertically movable rod C, the marker carried thereby, the paper reels, the means for moving the same from the rod C, the coin freed devices

controlling the rod C and the dial mechanism operated by the rod C, substantially as described



527,829. PICK OR SIMILAR TOOL. WILLIAM K. BIRKINSHAW, Quarndon, England. Filed Mar. 29, 1893. Serial No. 468,093. (No model.)



*Claim.*—1. In a pick or similar tool, the combination with the head having the tapered tool sockets the shaft within said head, the tapered points or tools adapted to fit within said sockets, of the wedges located within the sockets with the thicker part inward, and capable of being moved inward to release the point while the shaft is in place; substantially as described.

2. In a pick or similar tool, the combination with the head having the tapered sockets, the shaft within said head, the tapered tool points adapted to fit within the tool sockets, the wedges within the sockets, having the heads, of the springs or their equivalent bearing against the wedge head, whereby the wedge will be held in proper position, but will be permitted an inward movement against the pressure of the spring; substantially as described.

3. In a pick or similar tool, the combination with the head having the tapered tool sockets, the tapered tool points fitting in said sockets, the wedges within the sockets having the heads projecting through openings in the tool head, and the shaft, having the recesses, within which the head of the wedge moves when forced inward; substantially as described.

4. In a pick or similar tool, the combination with the head having the tapered tool sockets, the tapered points fitting in said sockets, and the wedges within the sockets, having the heads projecting through openings in the tool head, said wedge heads provided with recesses on the sides engaging the walls of the sockets, whereby the wedges will be properly guided and positioned; substantially as described.

5. In a pick or similar tool, the combination with the head having the tapered sockets, the tapered points fitting in said sockets, the wedges within the sockets, having the heads, the shaft, recesses as shown, and the springs or their equivalent located in said recesses and bearing against the head of the wedge to keep it normally pressed outward; substantially as described.

6. In a pick or similar tool, the combination with the head having the tapered sockets, the tapered points fitting in said sockets, of the wedges within the sockets, having the heads, provided with a stud or projection the shaft having the recesses into which said stud or projection extends, and the coil spring or its equivalent encircling said stud or projection; as and for the purpose set forth.

7. In a pick or similar tool, the combination with the head having the tapered sockets, the tapered tool points fitting within said sockets, the wedges having the heads within said sockets, the shaft extending into the head, and having the recesses at the upper end, the spring or its equivalent within said recesses, bearing against the wedge head, and the plate secured to the top of the shaft, for holding the spring in place; substantially as described.

8. In a pick or similar tool, the combination with the handle socket tapered as shown, provided with openings at each side, of the shaft adapted to fit within said socket, having the wedge shaped slit or cut in its upper end, formed with an enlargement, and the pin adapted to enter said enlarged portion of the cut, through the openings in the side of the sockets and thus spread apart the upper ends of the shaft; substantially as and for the purpose set forth.

527,830. PROCESS OF TREATING LEAD HYDRATE PRODUCED BY ELECTROLYSIS. ARTHUR B. BROWNE, Cambridge, Mass., assignor to the American Lead Company, Kittery, Me. Filed Jan. 10, 1894. Serial No. 496,411. (No specimens.)

*Claim.*—1. In the manufacture of white lead by electrolysis, the process of treating the lead hydrate which consists in subjecting the lead hydrate, after it has been precipitated from the solution and before it has been dried, to the action of an alkaline carbonate to discharge the coloring matter, and simultaneously partially carbonate the lead hydrate.

2. In the manufacture of white lead by electrolysis, the process of treating the lead hydrate which consists in subjecting the lead hydrate, after it has been precipitated from the solution and before it has been dried, to the action of an alkaline carbonate, to discharge the coloring matter, and to simultaneously partially carbonate the lead hydrate; separating the free alkaline carbonate from the carbonated lead hydrate; then washing said carbonated lead hydrate in water and then drying the same.

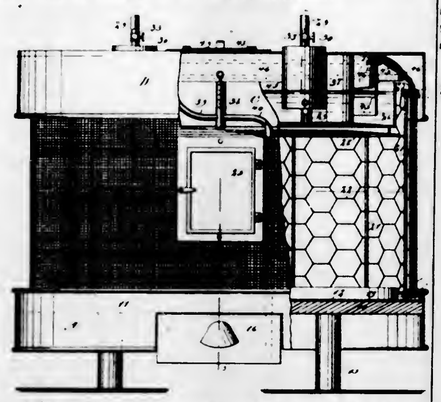
527,831. REFRIGERATING APPARATUS. ERNEST W. CARLETON and JAMES M. ODELL, Austin, Tex. Filed Aug. 25, 1893. Serial No. 484,035. (No model.)

*Claim.*—1. In a refrigerating apparatus, a refrigerating chamber the walls of which are composed of a loosely woven fabric capable of absorbing and retaining moisture, and an inner and outer binding wall of metal network, each in contact with the said fabric substantially as described.

2. In a refrigerating apparatus, a refrigerating chamber, the walls of which are composed of material capable of absorbing and retaining moisture, and a binding material of netted construction, a tank adapted to contain water located above and extending partially in the refrigerating chamber, a space intervening between the walls of the chamber and those of the tank, an absorbent material supported by the tank, extending in the same and out to an engagement with the corresponding material in the body of the refrigerating chamber, whereby water is conveyed from the tank to the walls of the refrigerating chamber by capillary attraction, and a cap covering the upper portion of the refrigerating chamber and tank, and means, substantially as shown and described, for disposing of the surplus water, as specified.



3. In a refrigerating apparatus, a refrigerating chamber having its walls composed of a moisture absorbent and moisture retaining material, a binding material holding the absorbent material in place, and a tank adapted to contain water, located partially within the chamber, a space intervening between the walls of the tank and the walls of the chamber, an absorbent material connecting the interior of the tank with the corresponding material of the refrigerating chamber, whereby through capillary attraction the walls of the chamber will be kept moist, and the temperature of the air within the refrigerating chamber will be lowered by the constant evaporation of water from its walls, as and for the purpose specified.



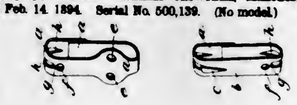
4. In a refrigerating apparatus, a refrigerating chamber having its walls composed largely of a moisture retaining material, a tank located within a portion of the chamber and adapted to contain water, an absorbent material adapted to receive water by capillary attraction, connecting the interior of the tank with the walls of the refrigerating chamber, and water reservoirs adjustably located in the tank, adapted to preserve a predetermined level of water in the tank, substantially as and for the purpose set forth.

5. In a refrigerating apparatus, the combination, with a base having a channel upon its upper face, an overflow pipe leading from the channel, and a water-receiving tank connected with the overflow pipe, of a refrigerating chamber, the wall of which is largely composed of a moisture-absorbing material, the lower end of the chamber and the material of its walls being fitted in the channel of the base, a water tank located in the upper portion of the chamber, provided with tubular standards extending through from top to bottom, a water absorbent material held in suspension over the tank, communicating with its interior and with the walls of the refrigerating chamber, a cover for the tank and chamber, and means, substantially as shown and described, for supplying water to the tank, as and for the purpose set forth.

6. In a refrigerating apparatus, the combination, with the refrigerating chamber the walls whereof are composed of a moisture absorbing and moisture retaining material, of a tank located adjacent to the said chamber, an absorbent material connecting the interior of the tank with the walls of the refrigerating chamber to continuously supply them with moisture, standards extending within the tank, and water reservoirs that are adjustable longitudinally of the standards, and constructed to preserve a predetermined level of water in the tank, substantially as described.

7. In a refrigerating apparatus, a refrigerating chamber the walls of which are largely composed of a moisture absorbing and retaining material, a water tank suspended in the upper portion of the chamber, provided with tubular standards extending from top to bottom, a rack located over the tank, an absorbent material carried by the rack, which conveys the water from the tank to the walls of the chamber, and a cap fitted loosely around the chamber and over the tank and rack, substantially as shown and described, whereby the interior of the chamber is kept cool by means of moisture, and a perfect circulation of air in the chamber is obtained, as specified.

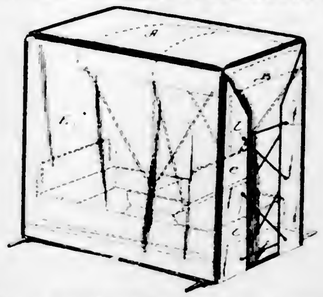
527,832. HOOK. CHARLES CROWTHER, Manchester, England. Filed Feb. 14, 1894. Serial No. 500,139. (No model.)



*Claim.*—1. The within described spring hook for fastening garments provided with the hole *f* and the adjacent slot *h* arranged at the end of the hook and extending from front to rear for the reception of the fastening thread, the said slot *h* facilitating the passage of the needle and the thread through the hook and garment, substantially as set forth.

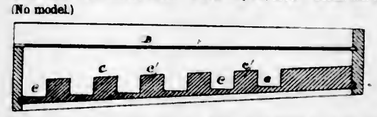
2. The within described spring hook for fastening garments provided with the integral fastening device *c* at or near one end and the hole *f* and slot *h* arranged next and close to each other at or near the other end, the said slot extending from front to rear, and facilitating the passage of the needle and the thread for the formation of stitches passing through it and the said hole to cooperate with the fastening device in the attachment of the hook to a garment, substantially as set forth.

527,833. SHIPPING-COVER FOR VEHICLES. FRANCIS G. DAVIS, Watertown, N. Y. Filed July 26, 1894. Serial No. 518,678. (No model.)



*Claim.*—A shipping-cover for vehicles having a central portion A adapted to cover the top of the vehicle, longitudinal extensions, or end-flaps, B, C, *b*, *c*, adapted to be folded down to cover the back, front and bottom, side-flaps D, E, adapted to be folded down to cover the sides, extensions *d*, *e*, of said side-flaps, adapted to be folded around upon the end-flaps, and suitable fastenings for securing the opposed edges of said extensions to each other and of said end flaps to each other, substantially as set forth.

527,834. AGITABLE SIEVE CUT-OFF. DAVID J. DAVIDSON, Brockway, assignor of two-thirds to Abraham S. Martin and Stephen G. Martin, Port Huron, Mich. Filed May 26, 1893. Serial No. 475,555. (No model.)



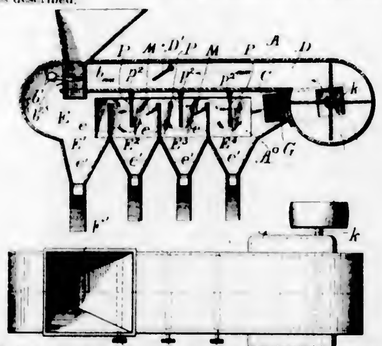
*Claim.*—1. In combination, a sieve supporting case provided with a series of independent side discharge openings, a sieve in the case above the openings, a cut-off bottom below the sieve, the upper surface of which is inclined and provided with transverse channels registering with the openings, the bottom of each channel being inclined downwardly from the opposite side to the openings so as to register with its respective opening, and means for controlling each opening, whereby the products passing through the sieve may be cut off at any desired point.

2. In combination, a sieve supporting case, one end of which is of a less height than the sides and the other end, and one of the side pieces is provided with a series of openings, the bottom of each of which toward the lowest point of the case is lower than those preceding it, a slide for controlling each opening, an inclined bottom within the case, the upper surface of which is provided with transverse inclined grooves, the lower end of each groove registering with one of the openings in the side of the case, and a sieve between the bottom and the top of the case, one end of which is substantially even with the front of the lower end whereby an outlet is formed at that end, substantially as set forth.

527,835. PURIFIER, SEPARATOR, AND GRADER. DAVID J. DAVIDSON, Port Huron, Mich., assignor of two-thirds to Abraham S. Martin and Stephen G. Martin, same place. Filed Nov. 20, 1893. Serial No. 491,378. (No model.) Patented in Canada Dec. 18, 1893, No. 44,901.

*Claim.*—1. In a separator and grader, the combination with a casing of a fan situated in one end of said casing and a hopper near the opposite end, a partition in said casing extending from said fan

to said hopper separating the interior of said casing into an upper air passage receiving air from the fan and a lower air passage delivering air to the fan, settling chambers provided at the base of said lower air passage, and adjustable diaphragms projecting downward toward said settling chambers, with air passages opening from said lower air passage into the fan casing, substantially as and for the purposes described.



2. In a separator and grader, the combination with a casing of a fan situated in one end of said casing and a hopper near the opposite end, a partition in said casing extending from said fan to said hopper separating the interior of said casing into an upper air passage receiving air from the fan and a lower air passage delivering air to the Y-shaped fan, settling chambers provided at the base of said lower air passage, and foraminous diaphragms pivoted beneath said partition, and projecting downward toward said settling chambers, with air passages opening from said lower air passage into the fan casing, substantially as and for the purposes described.

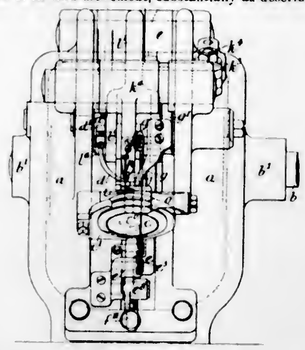
3. In a separator and grader, the combination with a casing of a fan situated in one end of said casing and a hopper near the opposite end, a partition in said casing extending from said fan to said hopper separating the interior of said casing into an upper air passage receiving air from the fan and a lower air passage delivering air to the fan; Y-shaped settling chambers provided at the base of said lower air passage, and foraminous diaphragms pivoted beneath said partition, and projecting downward toward said settling chambers, with air passages opening from said lower air passage into the fan casing, chutes at the base of said settling chambers, and double valves closing automatically and controlling said chutes, substantially as and for the purposes described.

4. In a separator and grader, the combination with a casing of a fan situated in one end of said casing and a hopper near the opposite end, a horizontal partition in said casing extending from said fan to said hopper separating the interior of said casing into an upper air passage receiving air from the fan and a lower air passage delivering air to the fan, a damper provided in said upper passage, Y-shaped settling chambers provided at the base of said lower air passage, with vertical partitions between said settling chambers, and deflectors near the tops of said vertical partitions, and foraminous diaphragms pivoted beneath said horizontal partition, and projecting downward toward said settling chambers, with air passages opening from said lower air passage into the fan casing, substantially as and for the purposes described.

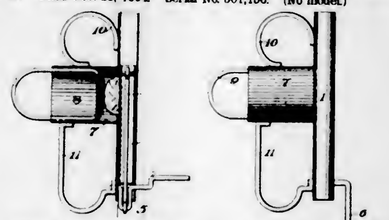
5. In a separator and grader, the combination with a casing of a fan situated in one end of said casing and a hopper near the opposite end, a horizontal partition in said casing extending from said fan to said hopper separating the interior of said casing into an upper air passage receiving air from the fan and a lower air passage delivering air to the fan, a damper provided in said upper air passage; Y-shaped settling chambers provided at the base of said lower air passage, with vertical partitions between said settling chambers and deflectors near the tops of said vertical partitions; foraminous diaphragms pivoted beneath said partition, and projecting downward toward said settling chambers, with air passages opening from said lower air passage into the fan casing, chutes at the base of said settling chambers, and double valves closing automatically and controlling said chutes, substantially as and for the purposes described.

527,836. SHOE-SEWING MACHINE. MARK T. DENNE, Eastbourne, England. Filed Oct. 6, 1893. Serial No. 487,351. (No model.)

*Claim.*—The combination with the feeding devices, of a thread puller moving in a plane parallel with the plane of movement of the needle and awl, the laterally movable head $k^6$, the curved needle and the curved awl carried by said head, the pulley $q$, pivoted to said head above the needle and awl, and said head needle and awl being in operation directly behind the thread puller when the said head is at the end of its feed movement, substantially as described.

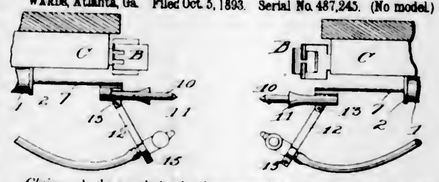


527,837. NUTMEG-GRATER. WILLIAM A. DUNLAP, Pittsburg, Pa. Filed Feb. 23, 1894. Serial No. 501,130. (No model.)



*Claim.*—In a nutmeg grater, the combination of an oblong case or shell, a feed tube arranged at one side of the case or shell, a plunger arranged within the tube and provided with a handle projecting therefrom, handles for holding the grater arranged on opposite sides of the feed tube, and a reciprocating slide, having a roughened surface arranged within the shell, substantially as set forth

527,838. AUTOMATIC AIR-BRAKE COUPLING. WILLIE M. EDWARDS, Atlanta, Ga. Filed Oct. 5, 1893. Serial No. 487,245. (No model.)



*Claim.*—1. In an air-brake hose-coupling, a rod secured to the car, a lever carrying the hose-coupling head, and pivoted to the said rod on a pin passing through lugs thereon and through the upper end of said lever, a spring pressing against the upper end of said lever to retard its movement, and means for causing said coupling head to register when elevated with an approaching coupling-head, for the purpose specified.

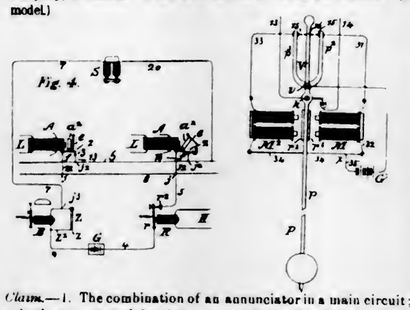
2. In an air-brake hose-coupling, a rod secured to and universally movable on the car, springs opposing end play thereof, a resilient rod secured to the back end of the aforesaid rod, a guide for said resilient rod, a lever carried on the opposite end of the universally movable rod and swinging pendent therefrom, means for retarding the full motion of said lever, a coupling-head carried on said lever, and means for guiding said head into an approaching head, for the purpose specified.

3. In an air-brake hose-coupling, a cylindrical casing secured to the car, a block having movement longitudinally thereof, springs opposing the said movement, a rod pivoted universally on said block, a lever pivoted to said rod, means for retarding the movement of said lever on its pivot, a coupling-head carried on said lever near its free end in such a position that the movement of the lever will join same to a co operative approaching coupling-head, and means for causing the two heads to register on being brought together, for the purpose specified.



4. In an air-brake hose coupling, a cylindrical casing secured to the car, a block having movement longitudinally thereof, springs opposing the said movement, a rod pivoted universally on said block, a lever pivoted to said rod, means for retarding the movement of said lever on its pivot, a coupling-head carried on said lever near its free end in such a position that the movement of the lever will join same to a co-operative approaching coupling-head, and means for causing the two heads to register on being brought together, consisting of coacting pointed plunger and flared sockets carried on said rod of each co-operative coupler, for the purpose specified.

527,839. ANNUNCIATOR-SIGNAL. ISAIAH H. FARNHAM, Wellesley, Mass., assignor, by mesne assignments, to the Western Electric Company, of Illinois. Filed Feb. 23, 1894. Serial No. 501,216. (No model.)



*Claim.*—1. The combination of an annunciator in a main circuit; a circuit closer actuated by the operation of said annunciator; an auxiliary signaling circuit including the said circuit closer, and arranged to be closed by the operation thereof; a periodic interrupter for the said auxiliary circuit, making and breaking the continuity thereof at intervals independent of the said circuit closer; and an auxiliary signal device included in the said auxiliary circuit and organized to respond to the concurrent action of the said interrupter and the said circuit closer on the said auxiliary circuit, and to give intermittent signals at suitable successive periods.

2. The combination of a series of line annunciators; a series of circuit closers for the said annunciators adapted to be actuated by the operation thereof; an auxiliary circuit in which the said circuit closers are arranged in parallel so that the operation of either of them will close it; an automatic periodic interrupter for the said auxiliary circuit, making and breaking the continuity thereof independent of said circuit closers; and an auxiliary audible signaling device common to the said series of annunciators arranged in the said auxiliary circuit and made operative by the concurrent action of the said interrupter and any one of the circuit closers, substantially as described.

3. The combination with a telephone switchboard, and call annunciators connected with the substation circuits centering at such switchboard; of a single auxiliary signal device located at such switchboard and placed in an independent circuit; circuit closers for the said circuit, one controlled by each annunciator; and a periodic interrupter for said circuit, adapted to periodically close and open the same, whereby the said auxiliary signal device may be operated on the reception of a call by any annunciator, and may repeat its signal at periodic intervals until the said call is answered; substantially as specified.

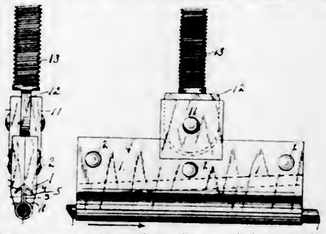
4. The combination of a system or series of call receiving telephone circuit annunciators; with an auxiliary electrical circuit; a periodic interrupter therefor; a series of circuit closers therefor, one for each annunciator, and each actuated by the operation of its associated annunciator to close its circuit; and an auxiliary signal device included in said auxiliary circuit, and requiring for its operation the concurrent action of the said periodic interrupter and some one of the circuit closers.

5. In a telephone system a switchboard or table, and a group of call annunciators associated therewith; combined with an auxiliary audible or visible signal common to a number of such annunciators; a local signaling circuit normally discontinuous at one point, and periodically broken and closed at another containing the said auxiliary signal; and circuit closers therefor controlling the said normally open point, actuated by the call annunciators respectively whereby the said auxiliary signal is caused to become intermittently operative and to direct attention to a call signal received by any of the said annunciators and remaining unanswered, substantially as described.

6. An apparatus for reporting or indicating the unobserved operation of a telephone call annunciator, comprising an auxiliary signaling circuit normally open; a series of circuit closers therefor, each associated with a separate annunciator and actuated by the operation thereof to close said circuit; a sounder included in said circuit; and a periodic interrupting device for said circuit, breaking and closing the same at regular intervals, whereby the said sounder is caused to produce a regular succession of sounds when an incoming call is neglected, substantially as specified.

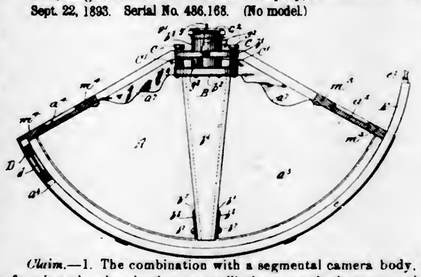
7. An apparatus for reporting or indicating the unobserved operation of a telephone call annunciator comprising an auxiliary normally discontinuous signaling circuit; a sounder included in such circuit; a series of circuit closers for the said circuit each associated with a separate call annunciator and actuated by the operation thereof to close the said circuit; a relay having its operative contacts included in the said auxiliary signaling circuit, and its helices in an independent circuit; and a periodic interrupter in said independent circuit actiug through said relay to make and break the said auxiliary signaling circuit at regular intervals, substantially as and for the purposes specified.

527,840. SUPPORT FOR TROLLEY-WIRES. FREDERICK C FISK, Buffalo, N. Y. Filed Mar. 1, 1894. Serial No. 501,913. (No model.)



*Claim.*—A support for trolley-wires consisting of twin parts riveted together and having in their contacting inner faces similar inclined grooves which register with each other to form an inclined passage extending entirely through their length, and a sleeve adapted to surround and carry the line-wire and provided with inclined flanged wings adapted when brought together for sliding and wedging engagement with the inclined passage between the twin parts, the whole being adapted to be secured to an insulating bell.

527,841. PANORAMIC CAMERA. MATHIAS FLANNANG, Newark, N. J., assignor to the Scovill & Adams Company, of Connecticut. Filed Sept. 22, 1893. Serial No. 486,168. (No model.)



*Claim.*—1. The combination with a segmental camera body, of a focusing chamber having an oscillating or swinging connection therewith, an arm for oscillating said focusing chamber, a shutter and means carried by said focusing chamber operating arm for controlling the shutter, substantially as specified.

2. The combination with a segmental camera body, of a focusing chamber having an oscillating or swinging connection therewith, an arm attached to one of the pivots of the oscillating focusing chamber, a shutter connected with the lens tube, pulleys supported to move with the oscillating focusing chamber and arm, a cord passing round said pulleys, and a lever mounted on the arm for operating said cord, substantially as specified.

3. The combination with a segmental camera body, of a focusing chamber having oscillating or swinging connection therewith, an arm attached to one of the pivots of the oscillating focusing chamber, a shutter connected with the lens tube, pulleys supported to move with the oscillating focusing chamber and arm, a cord passing round said pulleys, a lever mounted on the arm for operating said cord, and an adjustable connection between said cord and lever, substantially as specified.

4. The combination with a camera body of a focusing chamber independent of said camera body and having an oscillating or swinging connection therewith, a plate $b^3$, rigidly connected with said focusing chamber, a plate $b'$, through which the lens tube may slide,

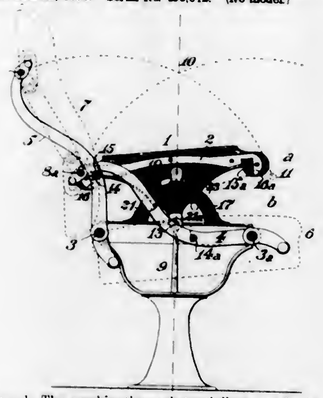
and means coacting with said plates for adjusting the focusing chamber longitudinally relatively to the camera, substantially as specified.

5. The combination with a camera body of a focusing chamber independent of said camera body and having an oscillating or swinging connection therewith, a plate $b^3$, rigidly connected with said focusing chamber, a plate $b'$, through which the lens tube may slide, and a screw co-acting with said plates for adjusting the focusing chamber longitudinally relatively to the camera, substantially as specified.

6. The combination with a camera body of a focusing chamber independent of said camera body and having an oscillating or swinging connection therewith, a plate $b^3$, rigidly connected with said focusing chamber, a plate $b'$, through which the lens tube may slide, and a screw and spring co acting with said plates for adjusting the focusing chamber longitudinally relatively to the camera, substantially as specified.

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527,842. **CAR-SEAT.** MATTHIAS N. FORNEY, New York, N. Y. Filed Dec. 22, 1892. Serial No. 456,012. (No model.)



*Claim.*—1. The combination, substantially as set forth, of a seat with a reversible back, reversing arms pivotally connected to a seat end or frame and connected to the back, an arm rest, a T arm or locking plate which is coupled to the seat end or supporting frame and is adapted to move independently thereof and of the seat, engaging devices formed on the reversing arm or arms, and corresponding devices formed on the T arm or locking plate, whereby the movement of the latter is effected in and by that of the former when the back is reversed.

2. The combination, substantially as set forth, of a car seat, a reversible back, reversing-arms pivotally connected to the seat-end or frame and connected to the back, an arm rest, a movable T arm having its center of motion eccentric to those of the reversing-arms, and engaging devices on the reversing and T-arms whereby the movement of the latter and of the arm rest is effected in and by that of the former when the back is reversed.

3. The combination, substantially as set forth, of a car-seat, a reversible back, reversing-arms pivotally connected to the seat-end or frame and connected to the back, an arm rest, a movable T-arm having its center of motion eccentric to those of the reversing-arms, and engaging devices on the reversing and T-arms, those on the T-arm being arranged trigonally to the center of its motion, and adapted to engage with corresponding devices on the reversing-arms in and by their movement when the back is reversed.

4. The combination, substantially as set forth, of a seat with a reversible back, reversing arms pivotally connected to the seat end or frame and connected to the back, a T arm or locking plate movably connected to the seat end or supporting frame, and adapted to move independently thereof and of the seat, engaging devices formed on the reversing arm or arms, and corresponding devices formed on the T arm or locking plate, and a lock whereby the T arm or locking plate and the back are secured in their reversed positions.

5. The combination, substantially as set forth, of a car seat, a reversible back, reversing-arms pivotally connected to the seat-end or frame and connected to the back, a movable T-arm having its center of motion eccentric to those of the reversing arms, engaging devices on the reversing and T-arms whereby the movement of the latter is effected in and by that of the former when the back is reversed, a lock whereby the T-arm and seat back are secured in their respective positions on either side of the seat, and an extension attached to the seat-end or frame and forming a support or bearing for the T-arm or lock, or both.

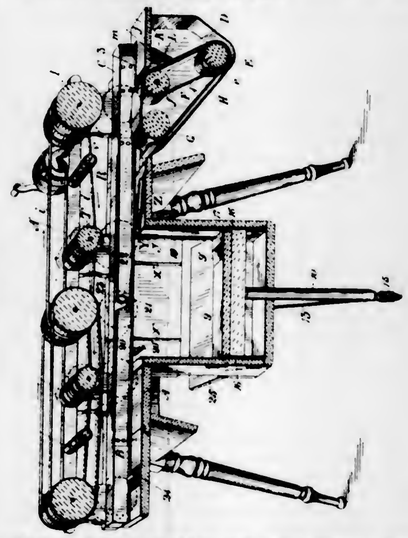
6. The combination, substantially as set forth, of a car seat with a reversible back, reversing-arms pivotally connected to the seat-end or frame and connected to the back, a movable T-arm having its center of motion eccentric to those of the reversing-arms, downward projections formed on the ends of the T-arm, each forming the outer boundary of a recess therein, and studs or projections on the reversing-arms adapted to bear against the said projections and engage in the recesses in the reversal of the back.

7. The combination, substantially as set forth, of a car-seat, a reversible back, reversing-arms pivotally connected to the seat-end or frame and connected to the back, a movable T-arm having its center of motion eccentric to those of the reversing-arms, downward projections or shoulders formed on the ends of the T-arm, each forming the outer boundary of a recess therein, studs or projections on the reversing-arms adapted to engage in the recesses and bear against the adjoining projections in the reversal of the seat-back, and a lock arranged to secure the T-arm and seat-back in either of their reversed positions.

8. The combination, substantially as set forth, of a car-seat, a reversible back, reversing-arms pivotally connected to the seat-end or frame and connected to the back, a movable T-arm having its center of motion eccentric to those of the reversing-arms, shoulders or projections formed on the ends of the T-arm, each forming the inner boundary of a recess therein, studs or projections on the reversing arms, each adapted to engage in the recesses and bear against the said projections or shoulders, and a lock arranged to secure the T-arm and seat-back in either of their positions when in use.

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527,843. **CAN-LABELING MACHINE.** FRANCIS X. GAUDRIE, Port Hope, Canada. Filed July 18, 1893. Serial No. 480,846. (No model.) Patented in Canada Aug. 30, 1893, No. 44,117.



*Claim.*—1. In a can labeling machine, a paste supplying mechanism therefor comprising a receptacle for containing the paste, rollers E F G journaled therein, a narrow belt 4 passing over grooves *e f* in the rollers E F, an endless broad pasting belt H passing around the three rollers, and means for driving one of the rollers E F, substantially as described.

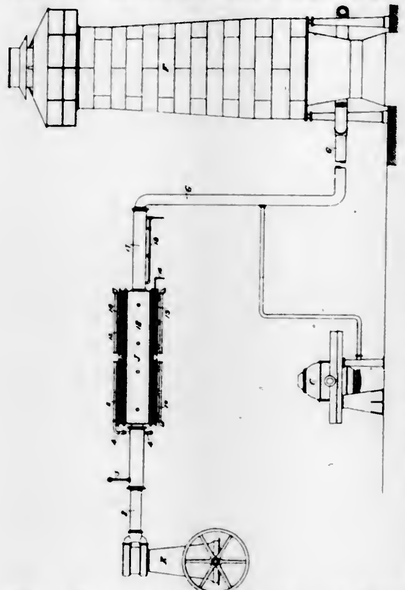
2. In a can labeling machine a paste supplying mechanism comprising the receptacle D, the three rollers, E, F, and, G, journaled therein the rollers, E, and, F, being connected together by the belt, 4, passing over the annular grooves, *e*, and, *f*, in the rollers and the roller, F, being driven through the pulley, 5, cross belt, 6, and pulley, 7, on the end of the spindle, *o*, of the intermediate roller, O, and the endless paste supplying belt H passing around said three rollers as and for the purpose specified.

3. In a can labeling machine, a label receptacle having a plunger adapted to receive the pile of blanks, vertically arranged spring fingers located in grooves in the sides of the receptacle and having their upper ends curved outwardly therefrom, and a second set of horizontally arranged spring fingers secured between the rails of the can track and having their ends overhanging the edge of the receptacle and depending within grooves in the front wall thereof, substantially as and for the purpose set forth.



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527,844. **METHOD OF AND APPARATUS FOR EXTRACTING MOISTURE FROM AIR FOR BLAST-FURNACES.** JAMES GAYLEY, Braddock, Pa. Filed Jan. 6, 1894. Serial No. 495,894. (No model.)



*Claim.*—1. The method of feeding the air-blast to blast furnaces or converters, which consists in cooling the air artificially to 0° centigrade, thereby causing its moisture to be eliminated or reduced to a small and practically uniform percentage, feeding the dried air under compression into the furnace or converter, and maintaining it constantly under compression from the time it leaves the blowing-engine until it enters the furnace; substantially as described.

2. The method of feeding the air-blast to blast furnaces or converters, which consists in compressing the air, passing it under compression into an enlarged chamber, but without substantial expansion therein, and cooling it in said chamber to at least 0° centigrade, thereby causing its moisture to be eliminated or reduced to a small and practically uniform percentage, feeding the dried air into the furnace or converter, and maintaining it constantly under compression from the time it leaves the blowing engine until it enters the furnace; substantially as described.

3. The combination with a blast furnace or converter, of a refrigerating chamber, an air outlet which leads therefrom to the furnace or converter and is of smaller diameter than the chamber, and an air compressor, connected to the chamber whereby the air is maintained under compression during its passage from the compressor to the furnace or converter; substantially as described.

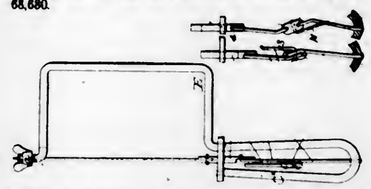
4. The combination with a blast furnace or converter, of a refrigerating chamber having a series of pipes arranged to conduct the refrigerating fluid across the direction of the air current, an air outlet which leads therefrom to the furnace or converter and is of smaller diameter than the chamber, and an air-compressor leading to the chamber, whereby the air is maintained under compression during its passage from the compressor to the furnace or converter; substantially as described.

5. The combination of a blast-furnace or converter, a pipe for delivering compressed air thereto, a refrigerating chamber in the line of said pipe, means for cooling the air therein by a liquid refrigerant, and an air compressor, leading to the chamber, whereby the air is compressed and maintained under compression until it enters the furnace or converter; substantially as described.

6. The combination with a blast furnace or converter, of a pipe for delivering compressed air thereto, a refrigerating chamber of larger diameter than the pipe, a moisture-precipitating chamber also of larger diameter than the pipe and into which the air passes from the refrigerating chamber, and having grids over which the air passes, and a pipe leading from the moisture-precipitating chamber to the furnace or converter; substantially as described.

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527,845. **SAW-FRAME.** JULES GILARDIN, Paris, France. Filed Mar. 3, 1894. Serial No. 502,258. (No model.) Patented in France Aug. 2, 1892, No. 223,409; in Switzerland Feb. 13, 1893, No. 6,336; in England Feb. 14, 1893, No. 3,318, and in Germany May 18, 1893, No. 68,680.

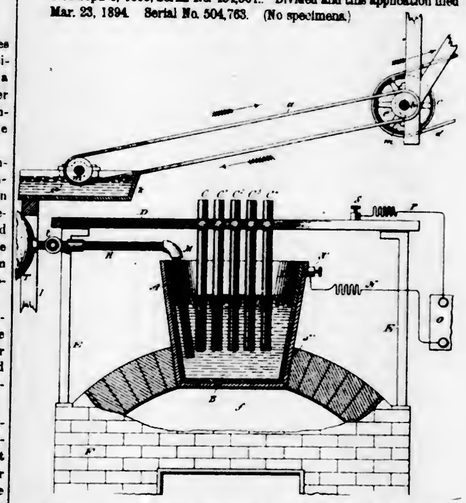


*Claim.*—1. In combination in a saw, the frame, the saw blade, the piece G secured to one end of the blade, said frame having a slitted forwardly extending end A provided with a screw thread, and the nut thereon to clamp the slit end and the end of the saw blade together, substantially as described.

2. In combination in a saw, the frame comprising the bends D E, the forwardly bent end A, and the handle comprising a prolongation of the frame formed of the sides C C', the saw blade secured at its forward end to the forwardly bent end A, the piece G intermediate of the sides C C' the latter of which is bent back along the former, the guide for said piece and the straining device located between the sides C C' and connected to the handle, said straining device comprising the oscillating runner K connected with the handle of the saw between the sides C C', the link P connecting the same with the piece G, and the handle connected to the runner substantially as described.

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527,846. **PROCESS OF REDUCING ALUMINIUM.** LEONARD WALDO, Bridgeport, and FRANK A. GOOCH, New Haven, Conn.; said Waldo assignor to the Waldo Foundry, of New Jersey. Original application filed Sept. 1, 1893, Serial No. 484,561. Divided and this application filed Mar. 23, 1894. Serial No. 504,763. (No specimens.)



*Claim.*—1. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing the chloride of aluminium and the chloride of an alkaline earth metal with the fluoride of aluminium and the fluoride of sodium, passing an electric current of suitably low voltage through the fused mass, thereby electrolyzing the same, and supplying hydrogen to the bath, substantially as and for the purposes set forth.

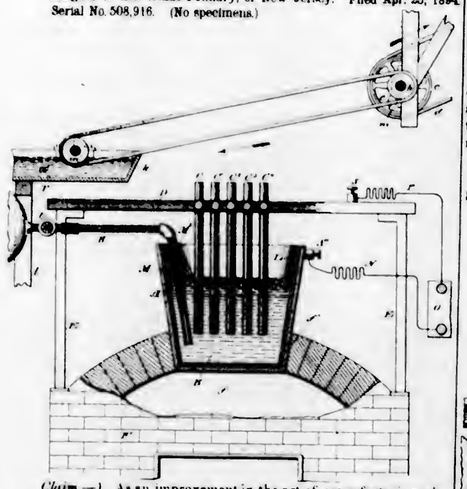
2. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing together the chloride of aluminium and the chloride of magnesium with the fluorides of aluminium and sodium, passing an electric current of suitably low voltage through the fused mass, thereby electrolyzing the same, and supplying hydrogen to the bath, substantially as and for the purposes set forth.

3. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing together the chloride of aluminium, the chloride of an alkaline earth metal and the chloride of sodium with the fluorides of aluminium and sodium, passing an electric current of suitably low voltage through the fused mass, thereby electrolyzing the same, and supplying hydrogen to the bath, substantially as and for the purposes set forth.

4. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing together the chlorides of aluminium, magnesium and sodium and the fluorides of aluminium and sodium, passing an electric current of suitably low voltage through the fused mass, thereby electrolyzing the same, and supplying hydrogen to the bath, substantially as and for the purposes set forth.

## 527,847. PROCESS OF REDUCING ALUMINIUM.

FRANK A. GOOCH, New Haven, and LEONARD WALDO, Bridgeport, Conn.; said Waldo assignor to the Waldo Foundry, of New Jersey. Filed Apr. 25, 1894. Serial No. 508,916. (No specimens.)



*Claim.*—1. As an improvement in the art of manufacturing aluminium, the herein described process which consists in passing an electric current through a suitable fused bath containing a suitable halogen compound of aluminium, thereby electrolyzing the bath, and in supplying to the bath the vapor of water, substantially as and for the purposes set forth.

2. As an improvement in the art of manufacturing aluminium, the herein described process which consists in passing an electric current through a suitable fused bath containing the chloride of aluminium and in supplying steam to the bath, substantially as and for the purposes set forth.

3. As an improvement in the art of manufacturing aluminium, the herein described process which consists in passing an electric current through a suitable fused bath containing the chloride of aluminium and the chloride of an alkaline metal, and in supplying steam to the bath, substantially as and for the purposes set forth.

4. As an improvement in the art of manufacturing aluminium, the herein described process which consists in passing an electric current through a suitable fused bath containing the chloride of aluminium and the chloride of sodium, and in supplying steam to the bath, substantially as and for the purposes set forth.

5. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing the chloride of aluminium and the chloride of an alkaline metal with the fluoride of aluminium and the fluoride of sodium, passing an electric current of suitably low voltage through the fused mass, thereby electrolyzing the same, and supplying steam to the bath, substantially as and for the purposes set forth.

6. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing together the chlorides of aluminium and sodium and the fluorides of aluminium and sodium, passing an electric current through the fused mass, thereby electrolyzing the same, and supplying steam to the bath, substantially as and for the purposes set forth.

7. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing together the chlorides of aluminium sodium and potassium, and the fluorides of aluminium and sodium, passing an electric current through the fused mass, thereby electrolyzing the same, and supplying steam to the bath, substantially as and for the purposes set forth.

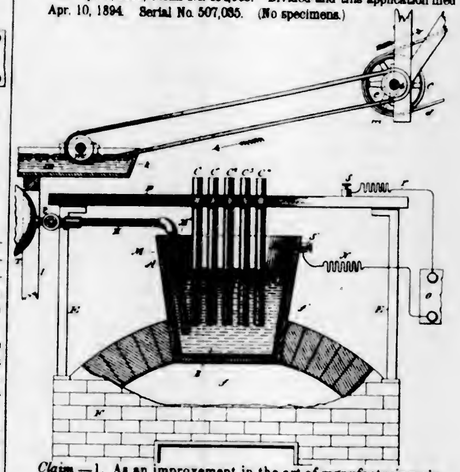
8. As an improvement in the art of manufacturing aluminium, the herein described continuous process which consists in forming a bath by fusing together the chloride of aluminium and the chloride of an alkaline metal, the fluoride of aluminium and the fluoride of sodium, maintaining an electric current through the fused mass, thereby electrolyzing the same, supplying steam to the bath and replenishing the bath from time to time by adding thereto suitable quantities of the chloride of aluminium, substantially as described.

9. As an improvement in the art of manufacturing aluminium, the herein described continuous process which consists in forming a bath by fusing together the chlorides of aluminium and sodium and the fluorides of aluminium and sodium, maintaining an electric current through the fused mass, thereby electrolyzing the same, supplying steam to the bath and replenishing the bath from time to time by adding thereto suitable quantities of chloride of aluminium, substantially as described.

10. As an improvement in the art of manufacturing aluminium, the herein described continuous process which consists in forming a bath by fusing together the chlorides of aluminium, sodium and potassium, and the fluorides of aluminium and sodium, maintaining an electric current through the fused mass, thereby electrolyzing the same, supplying steam to the bath and replenishing the bath from time to time by adding thereto suitable quantities of chloride of aluminium, substantially as described.

## 527,848. PROCESS OF REDUCING ALUMINIUM.

FRANK A. GOOCH, New Haven, and LEONARD WALDO, Bridgeport, Conn.; said Waldo assignor to the Waldo Foundry, of New Jersey. Original application filed Sept. 6, 1893, Serial No. 484,905. Divided and this application filed Apr. 10, 1894. Serial No. 507,035. (No specimens.)



*Claim.*—1. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing the chloride of aluminium and the chloride of an alkaline earth metal with the fluoride of aluminium and the fluoride of sodium, passing an electric current of suitably low voltage through the fused mass, thereby electrolyzing the same, and in supplying to the bath a suitable gaseous compound of hydrogen, substantially as and for the purposes set forth.

2. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing the chloride of aluminium and the chloride of an alkaline earth metal with the fluoride of aluminium and the fluoride of sodium, passing an electric current of suitably low voltage through the fused mass, thereby electrolyzing the same, and in supplying to the bath, substantially as and for the purposes set forth.

3. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing together the chlorides of aluminium and magnesium with the fluorides of aluminium and sodium, passing an electric current of suitably low voltage through the fused mass, thereby electrolyzing the same, and in supplying steam to the bath, substantially as and for the purposes set forth.

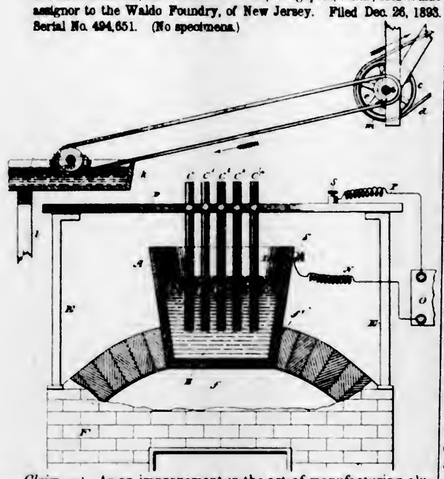
4. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing together the chlorides of aluminium, sodium and potassium, and the fluorides of aluminium and sodium, passing an electric current through the fused mass, thereby electrolyzing the same, and in supplying steam to the bath, substantially as and for the purposes set forth.



5. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing together the chlorides of aluminium, magnesium and sodium, and the fluorides of aluminium and sodium, passing an electric current of suitably low voltage through the fused mass, thereby electrolyzing the same, and in supplying steam to the bath, substantially as and for the purposes set forth.

## 527,849. PROCESS OF REDUCING ALUMINIUM.

FRANK A. GOOCH, New Haven, and LEONARD WALDO, Bridgeport, Conn.; said Waldo assignor to the Waldo Foundry, of New Jersey. Filed Dec. 26, 1893. Serial No. 494,651. (No specimens.)



*Claim.*—1. As an improvement in the art of manufacturing aluminium by reduction from its compounds, the herein described process which consists in passing an electric current through a suitable fused bath containing a suitable compound of aluminium, thereby electrolyzing the same and in introducing into the bath hydrogen in combination in a suitable solid compound substantially as and for the purposes set forth.

2. As an improvement in the art of manufacturing aluminium by reduction from its compounds, the herein described process which consists in passing an electric current through a suitable fused bath containing a suitable halogen compound of aluminium, thereby electrolyzing the same and in introducing into the bath hydrogen in combination in a suitable solid compound, substantially as and for the purposes set forth.

3. As an improvement in the art of manufacturing aluminium by reduction from its compounds, the herein described process which consists in passing an electric current through a suitable fused bath containing a suitable halogen compound of aluminium, thereby electrolyzing the same and in adding to the bath a suitable solid compound containing water in combination, substantially as and for the purposes set forth.

4. As an improvement in the art of manufacturing aluminium by reduction from its compounds, the herein described process which consists in passing an electric current through a suitable fused bath, containing a suitable halogen compound of aluminium, thereby electrolyzing the same and in adding to the bath a suitable salt containing water in combination, substantially as and for the purposes set forth.

5. As an improvement in the art of manufacturing aluminium, the herein described process which consists in passing an electric current through a suitable fused bath, containing the chloride of aluminium thereby electrolyzing the same and in adding to the bath a suitable salt containing water in combination, substantially as and for the purposes set forth.

6. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in passing an electric current through a suitable fused bath containing the chloride of aluminium and the chloride of an alkaline metal, thereby electrolyzing the same and in adding to the bath a suitable salt containing water in combination, substantially as and for the purposes set forth.

7. As an improvement in the art of manufacturing aluminium, the herein described process which consists in passing an electric current through a suitable fused bath containing the chloride of aluminium and the chloride of sodium, thereby electrolyzing the same and in adding to the bath a suitable salt containing water in combination, substantially as and for the purposes set forth.

8. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing the chloride of aluminium and the chloride of an alkaline metal with the fluoride of aluminium and the fluoride of sodium, passing an electric current through the fused mass, thereby electrolyzing the same, and in adding to the bath a suitable salt containing water in combination, substantially as and for the purposes set forth.

9. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing the chloride of aluminium and the chloride of sodium with the fluoride of aluminium and the fluoride of sodium, passing an electric current through the fused mass, thereby electrolyzing the same, and in adding to the bath a suitable salt containing water in combination, substantially as and for the purposes set forth.

10. As an improvement in the art of manufacturing aluminium, the herein described process which consists in fusing together the chlorides of aluminium, sodium and potassium, and the fluorides of aluminium and sodium, passing an electric current through the fused mass, thereby electrolyzing the same, and in adding to the bath a suitable salt containing water in combination, substantially as and for the purposes set forth.

11. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing the chloride of aluminium and the chloride of an alkaline metal with the fluoride of aluminium and the fluoride of sodium, passing an electric current through the fused mass, thereby electrolyzing the same, and in adding to the bath a suitable salt containing water of crystallization, substantially as and for the purposes set forth.

12. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing the chloride of aluminium and the chloride of sodium with the fluoride of aluminium and the fluoride of sodium, passing an electric current through the fused mass, thereby electrolyzing the same, and in adding to the bath a suitable salt containing water of crystallization, substantially as and for the purposes set forth.

13. As an improvement in the art of manufacturing aluminium, the herein described process which consists in fusing together the chlorides of aluminium, sodium and potassium, and the fluorides of aluminium and sodium, passing an electric current through the fused mass, thereby electrolyzing the same, and in adding to the bath a suitable salt containing water of crystallization, substantially as and for the purposes set forth.

14. As an improvement in the art of manufacturing aluminium, the herein described process which consists in passing an electric current through a suitable fused bath containing a suitable halogen compound of aluminium, thereby electrolyzing the same and in adding to the bath hydrated oxalic acid, substantially as and for the purposes set forth.

15. As an improvement in the art of manufacturing aluminium, the herein described process which consists in passing an electric current through a suitable fused bath containing the chloride of aluminium, thereby electrolyzing the same and in adding to the bath hydrated oxalic acid, substantially as and for the purposes set forth.

16. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing together the chlorides of aluminium and sodium and the fluorides of aluminium and sodium, passing an electric current through the fused mass, thereby electrolyzing the same, and adding to the bath in suitable quantities hydrated oxalic acid, substantially as and for the purposes set forth.

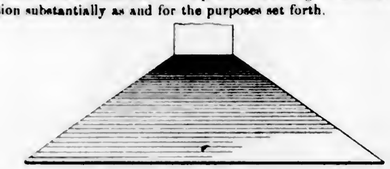
## 527,850. PROCESS OF REDUCING ALUMINIUM.

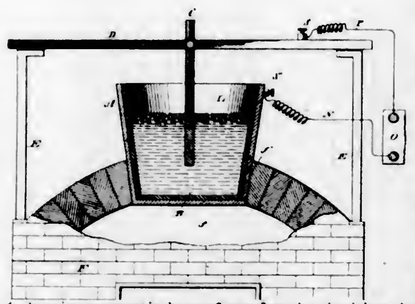
FRANK A. GOOCH, New Haven, and LEONARD WALDO, Bridgeport, Conn.; said Waldo assignor to the Waldo Foundry, of New Jersey. Filed June 30, 1894. Serial No. 516,145. (No specimens.)

*Claim.*—1. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing the chloride of aluminium and the chloride of an alkaline earth metal with the fluoride of aluminium and the fluoride of sodium, passing an electric current through the fused mass, and adding to the bath a suitable solid compound containing water in combination, substantially as and for the purposes set forth.

2. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing the chloride of aluminium and the chloride of magnesium with the fluoride of aluminium and the fluoride of sodium, passing an electric current through the fused mass, and adding to the bath a suitable solid compound containing water in combination, substantially as and for the purposes set forth.

3. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing together the chloride of aluminium the chloride of an alkaline earth metal and the chloride of sodium with the fluorides of aluminium and sodium, passing an electric current through the fused mass, and adding to the bath a suitable solid compound containing water in combination substantially as and for the purposes set forth.





4. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing the chlorides of aluminium, magnesium and sodium and the fluorides of aluminium and sodium, passing an electric current through the fused mass, and adding to the bath a suitable solid compound containing water in combination, substantially as and for the purposes set forth.

5. As an improvement in the art of manufacturing aluminium the herein described process, which consists in forming a bath by fusing the chloride of aluminium and the chloride of an alkaline earth metal with the fluoride of aluminium and the fluoride of sodium, passing an electric current through the fused mass, and adding to the bath a suitable salt containing water in combination, substantially as and for the purposes set forth.

6. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing the chloride of aluminium and the chloride of magnesium with the fluoride of aluminium and the fluoride of sodium, passing an electric current through the fused mass, and adding to the bath a suitable salt containing water in combination, substantially as and for the purposes set forth.

7. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing together the chloride of aluminium, the chloride of an alkaline earth metal and the chloride of sodium with the fluorides of aluminium and sodium, passing an electric current through the fused mass, and adding to the bath a suitable salt containing water in combination, substantially as and for the purposes set forth.

8. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing the chlorides of aluminium, magnesium and sodium and the fluorides of aluminium and sodium, passing an electric current through the fused mass, and adding to the bath a suitable salt containing water in combination, substantially as and for the purposes set forth.

9. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing the chloride of aluminium and the chloride of an alkaline earth metal with the fluoride of aluminium and the fluoride of sodium, passing an electric current through the fused mass, and adding to the bath a suitable salt containing water of crystallization, substantially as and for the purposes set forth.

10. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing the chloride of aluminium and the chloride of magnesium with the fluoride of aluminium and the fluoride of sodium, passing an electric current through the fused mass, and adding to the bath a suitable salt, containing water of crystallization, substantially as and for the purposes set forth.

11. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing together the chloride of aluminium, the chloride of an alkaline earth metal and the chloride of sodium with the fluorides of aluminium and sodium, passing an electric current through the fused mass, and adding to the bath a suitable salt containing water of crystallization, substantially as and for the purposes set forth.

12. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing the chlorides of aluminium, magnesium and sodium with the fluorides of aluminium and sodium, passing an electric current through the fused mass, and adding to the bath a suitable salt containing water of crystallization, substantially as and for the purposes set forth.

13. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing together the chloride of aluminium and the chloride of an alkaline earth metal with the fluoride of aluminium and the fluoride of sodium, passing an electric current through the fused mass, and adding to the bath in suitable quantities hydrated oxalic acid, substantially as and for the purposes set forth.

14. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing together the chloride of aluminium, the chloride of an alkaline earth metal and the chloride of sodium, with the fluoride of aluminium and the fluoride of sodium, passing an electric current through the fused mass, and adding to the bath in suitable quantities hydrated oxalic acid, substantially as and for the purposes set forth.

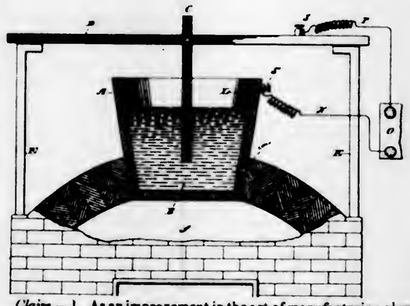
15. As an improvement in the art of manufacturing aluminium, the herein described continuous process which consists in forming a bath by fusing the chloride of aluminium and the chloride of an alkaline earth metal with the fluorides of aluminium and sodium, passing an electric current through the fused mass, adding to the bath a suitable solid compound containing water in combination, and from time to time replenishing the bath by adding thereto suitable quantities of the chloride of aluminium, substantially as and for the purposes set forth.

16. As an improvement in the art of manufacturing aluminium, the herein described continuous process, which consists in forming a bath by fusing the chloride of aluminium the chloride of an alkaline earth metal and the chloride of sodium, with the fluorides of aluminium and sodium, passing an electric current through the fused mass, adding to the bath a suitable solid compound containing water in combination and from time to time replenishing the bath by adding thereto suitable quantities of the chloride of aluminium, substantially as and for the purposes set forth.

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**527,851. PROCESS OF REDUCING ALUMINIUM.** FRANK A. GOOCH, New Haven, and LEONARD WALDO, Bridgeport, Conn.; said Waldo assignor to the Waldo Foundry, of New Jersey. Filed July 2, 1894. Serial No. 516,258. (No specimens.)





*Claim.*—1. As an improvement in the art of manufacturing aluminum, the herein described process, which consists in passing an electric current through a suitable fused bath containing the chloride of



aluminum, and adding to the bath a suitable hydrous chloride of aluminum, substantially as and for the purposes set forth.

2. As an improvement in the art of manufacturing aluminum, the herein described process, which consists in passing an electric current through a suitable fused bath containing the chloride of aluminum, and adding to the bath the hydrous crystalline chloride of aluminum, substantially as and for the purposes set forth.

3. As an improvement in the art of manufacturing aluminum, the herein described process, which consists in passing an electric current through a suitable fused bath containing the chloride of aluminum and the chloride of an alkaline metal, and adding to the bath a suitable hydrous chloride of aluminum, substantially as and for the purposes set forth.

4. As an improvement in the art of manufacturing aluminum, the herein described process, which consists in passing an electric current through a suitable fused bath containing the chloride of aluminum and the chloride of an alkaline metal, and adding to the bath the hydrous crystalline chloride of aluminum, substantially as and for the purposes set forth.

5. As an improvement in the art of manufacturing aluminum, the herein described process, which consists in passing an electric current through a suitable fused bath containing the chloride of aluminum and the chloride of sodium and adding to the bath a suitable hydrous chloride of aluminum, substantially as and for the purposes set forth.

6. As an improvement in the art of manufacturing aluminum, the herein described process, which consists in passing an electric current through a suitable fused bath containing the chloride of aluminum and the chloride of sodium and adding to the bath the hydrous crystalline chloride of aluminum, substantially as and for the purposes set forth.

7. As an improvement in the art of manufacturing aluminum, the herein described continuous process which consists in forming a bath by fusing the chloride of aluminum and the chloride of an alkaline metal with the fluoride of aluminum and the flouride of sodium, passing an electric current through the fused mass, and in adding to the bath from time to time a suitable hydrous chloride of aluminum, substantially as and for the purposes set forth.

8. As an improvement in the art of manufacturing aluminum, the herein described continuous process, which consists in forming a bath by fusing the chloride of aluminum and the chloride of an alkaline metal with the fluoride of aluminum and the fluoride of sodium, passing an electric current through the fused mass, and in adding to the bath from time to time the hydrous crystalline chloride of aluminum, substantially as and for the purposes set forth.

9. As an improvement in the art of manufacturing aluminum, the herein described continuous process, which consists in forming a bath by fusing the chloride of aluminum and the chloride of sodium with the fluoride of aluminum and the fluoride of sodium, passing an electric current through the fused mass, and in adding to the bath from time to time a suitable hydrous chloride of aluminum, substantially as and for the purposes set forth.

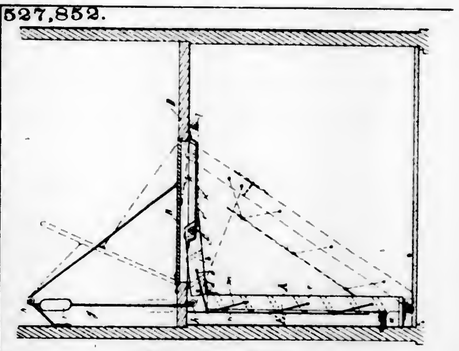
10. As an improvement in the art of manufacturing aluminum, the herein described continuous process which consists in forming a bath by fusing the chloride of aluminum and the chloride of sodium with the fluoride of aluminum and the fluoride of sodium, passing an electric current through the fused mass, and in adding to the bath from time to time the hydrous crytalline chloride of aluminum, substantially as and for the purposes set forth.

11. As an improvement in the art of manufacturing aluminum, the herein described continuous process which consists in fusing together the chlorides of aluminum, sodium and potassium, and the fluorides of aluminum and sodium, passing an electric current through the fused mass, and in adding to the bath from time to time a suitable hydrous chloride of aluminum, substantially as and for the purposes set forth.

12. As an improvement in the art of manufacturing aluminum, the herein described continuous process which consists in fusing together the chlorides of aluminum, sodium and potassium, and the fluorides of aluminum and sodium passing an electric current through the fused mass, and in adding to the bath from time to time the hydrous crystalline chloride of aluminum, substantially as and for the purposes set forth.

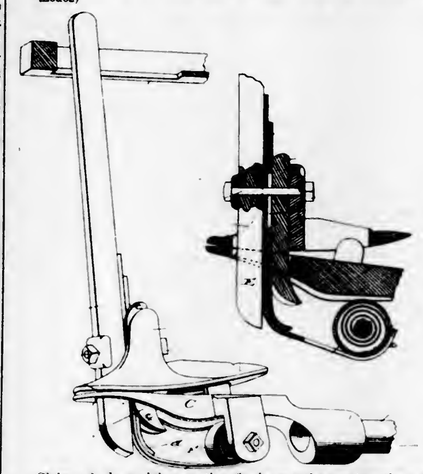
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**527,852.**



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**527,853. PICKER-MOTION FOR LOOMS.** EDMOND GUILBERT, Woonsocket, R. I. Filed May 14, 1894. Serial No. 511,184. (No model.)



*Claim.*—1. In a picker motion for looms, the combination of a lay shaft provided with a rocker bed, a picker staff, a rocker bearing on the rocker bed, an adjustable shoe J, having a longitudinal slot and connected to the inner side or back of the picker staff, a tension device, a strap connected with the rocker bed and said tension device and interposed between the shoe and the picker staff and a connecting bolt taking through the rocker, the staff, the strap, and the slot of the shoe, substantially as and for the purpose set forth.

2. In a picker motion for looms, the combination of a lay shaft, a rocker bed connected to said lay shaft and carrying a spring-actuated roller, a picker staff, a rocker bearing on the rocker bed, an adjustable shoe J, having a longitudinal slot and connected to the inner side or back of the picker staff, a strap connected to the roller on the rocker bed and interposed between the shoe and the picker staff, and a connecting bolt taking through the rocker, the staff, the strap, and the slot of the shoe, substantially as specified.

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**527,854. FLYING-TARGET TRAP.** ALBERT H. HERRARD and CHARLES C. HERRARD, Elizabeth, N. J., assignors of one-third to Wm. H. Rankin, same place. Filed Sept. 9, 1893. Serial No. 485,145. (No model.)

*Claim.*—1. In a flying target trap, the combination with the base, A, and the revoluble super-base, B, of a clutch ring, $a^1$, on said base, and a clutching mechanism for engaging said ring that is carried by said super-base.

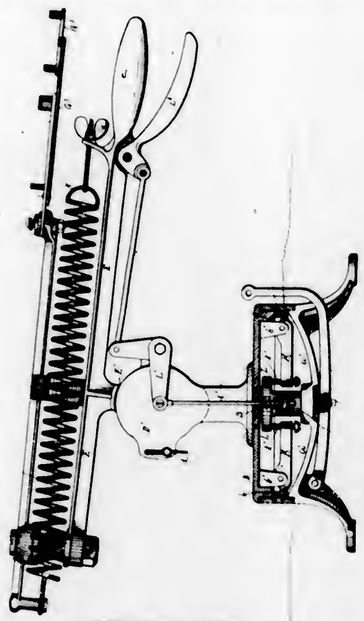
2. In a flying target trap, the combination with the fixed base, and the revoluble super-base, of a friction clutch ring on said fixed base, clutching devices for engaging said ring carried by the revoluble base, a clutch operating lever carried by the cross arm of the trap, and means, substantially as described, for connecting said clutch operating lever with the clutching devices.

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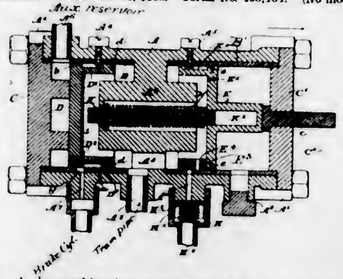
**527,852. TRAP-DOOR STAIR.** ERNST F. GROSSÉ, Gross-Krausnigk, Germany. Filed Mar. 30, 1894. Serial No. 505,734. (No model.)

*Claim.*—In combination with the floor D, a trap door thereon, horizontal guides on the under part of the floor, a ladder having its upper end supported by said guides, a hinged joint in said ladder, and an operating connection from the trap door to the upper section of the ladder, whereby in the closing of the trap door, the ladder is moved horizontally and the parts thereof broken at the hinge, substantially as described.

3. In a flying target trap, the combination of a fixed base, a revoluble base mounted to turn on said fixed base, a standard on said revoluble base, a cross arm pivoted on said standard, a handle on said cross arm for moving it pivotally, a hand-grip lever in conjunction with said handle, a clutching mechanism carried by said revoluble base for holding said part against revoluble action, and suitable gearing for operatively connecting said clutching mechanism with said hand grip lever.



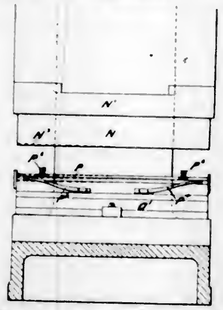
527,855. CONTROLLING AND DISCHARGE VALVE FOR COMPRESSED-AIR BRAKES. FREDERIK A. HOLLEMAN, Oisterwijk, The Netherlands. Filed Feb. 21, 1893. Serial No. 463,151. (No model.)




*Claim.*—1. In combination with a cylinder A, a train pipe connection therewith, a discharge pipe $H^3$, port $A^{10}$ in the cylinder, a valve E having a flange covering said port and provided with an opening therein registering with said port in one position, a contracted passage through said valve to the pressure side of the valve and a chamber in rear of the valve, a pin c engaging said valve and extending outside the cylinder, the said pin being adapted to move said valve to uncover the discharge, substantially as described.

2. In combination with the cylinder A, the projection $A^3$, an inlet from the train pipe, an auxiliary reservoir in connection with said cylinder, a connection from the brake cylinder and an outlet to the outside air, a valve D controlling the ports leading to the auxiliary reservoir, the brake cylinder and the outside air, a spring pressed plunger K carried by the central projection, a discharge pipe $H^3$, a port $A^{10}$ in the cylinder a valve E having a flange with an opening adapted to register with the port $A^{10}$ said valve being located in a pressure chamber and having a contracted passage through the same, a pin engaging said valve and means for operating the pin substantially as described.

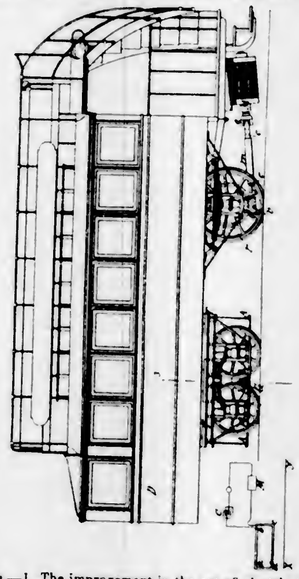
527,856. METHOD OF MANUFACTURING FLAT ZIGZAG SPRINGS. GEORGE HOOKHAM, Birmingham, England. Filed May 24, 1894. Serial No. 512,321. (No specimens.)



*Claim.*—1. The herein described method of making flat zigzag springs consisting in first forming a helix flattening the same to make the zigzag formation and then straightening the flattened spring by confining the same in straight grooves and heating it, substantially as described.

2. The herein described method of straightening flat zigzag springs consisting in confining the same in straight grooves and then heating the same while so held, substantially as described.

527,857. TRANSFORMER SYSTEM FOR ELECTRIC RAILWAYS. MAURICE HUTIN and MAURICE LEBLANC, Paris, France, assignor to the Société Anonyme pour la Transmission de la Force par l'Electricité, same place. Filed Nov. 16, 1892. Serial No. 452,145. (No model.) Patented in France Nov. 5, 1890, No. 209,323.



*Claim.*—1. The improvement in the art of electric transmission of power from a primary circuit or line to a secondary circuit by electric induction, whereby the intermediation of a closed magnetic circuit between the primary and secondary is dispensed with, the same consisting in generating in the primary circuit an alternating current of high frequency, and suppressing the self-induction of the secondary coil which is within inductive proximity to said primary, by means substantially as specified.

2. The improved means for the electric transmission of power from a primary circuit or line to a secondary circuit by electric induction, whereby the necessity of a closed magnetic circuit to carry the magnetic lines between the primary and secondary is dispensed with, consisting in the combination with a primary circuit or line carrying alternating currents of high frequency, of a secondary circuit including a secondary coil, a means for suppressing the self-induction of said coil, and a motor.



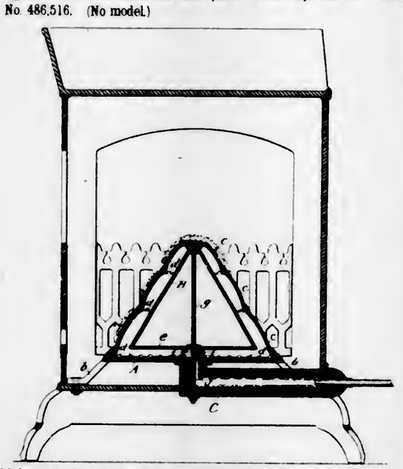
3. The improved system of electric traction, consisting in the combination with the vehicle to be driven of a stationary primary circuit extending longitudinally of its travel, and carrying alternating currents of high frequency, and a secondary circuit carried on said vehicle and including a secondary coil, a means for suppressing the self-induction of said coil, and a motor.

4. The improved system of electric traction consisting in the combination of the vehicle to be driven, a stationary primary circuit extending longitudinally of its travel and carrying alternating currents of high frequency, and a secondary circuit carried on said vehicle and including a secondary coil within inductive proximity to said primary circuit, a means for suppressing the self-induction of said coil, and a motor, and a laminated iron core for said secondary coil extended beyond the latter into closer inductive proximity to said stationary primary circuit.

5. In a system of electric traction, the combination of a stationary primary circuit for carrying alternating currents of high frequency, with a vehicle for traveling in the direction of said primary circuit, a secondary circuit carried on said vehicle and including a secondary coil G, and means for suppressing the self-induction of said coil, and a motor, a board A hung beneath said vehicle, and a bundle of wires passing through said coil and projecting beyond the ends thereof with their projecting portions extended on said board, substantially as and for the purposes specified.

6. In a system of electric traction, the combination of a stationary primary circuit for carrying alternating currents of high frequency, with a vehicle for traveling in the direction of said primary circuit, a secondary circuit carried on said vehicle including a secondary coil receiving the induction of said primary circuit, a condenser for suppressing the self-induction of said coil, and a motor to be driven by the currents induced in said coil, substantially as specified.

527,858. GAS-STOVE. ABNER B. HUTCHINS, New York, N. Y., assignor to Luther & Lederhos, same place. Filed Sept. 26, 1893. Serial No. 486,516. (No model.)



*Claim.*—1. In a gas stove, the combination of a base-plate A perforated for the reception of the inlet pipe, a block or chamber B of pyramidal form supported over the base-plate with an air-space between the lower horizontal wall of the chamber and the base-plate, a casing surrounding the chamber and conforming in shape thereto and forming the burner proper, the same being composed of superposed caps c c c having edge perforations *d*, an inlet pipe for the air and gas mixture communicating with the casing through the perforation in the base-plate, substantially as described.

2. In a gas stove, the combination with a perforated base-plate A, of a central pyramid consisting of a deflector plate E and a distributer B, the said deflecting plate being supported above the base-plate with an air space between the deflecting plate and the base-plate, a casing consisting of tiers of caps c c c having edge perforations *d*, the said casing closely surrounding the distributer B and conforming in shape thereto, bolts G for fastening the parts together, together with an inlet pipe communicating with the casing through the aperture in the base-plate, whereby the gas is uniformly distributed to the burner holes in the casing, substantially as described.

527,859. DESK OR STATIONERY IMPLEMENT. THOMAS D. INGRAM, Washington, D. C. Filed July 18, 1894. Serial No. 517,884. (No model.)



*Claim.*—1. A desk implement, provided at its forward end with cutting edges and at its rear end with upward and downward projections, whereby in resting upon a flat surface the cutting edges will be brought into contact with said surface whichever side of the implement is proximate to said surface; substantially as described.

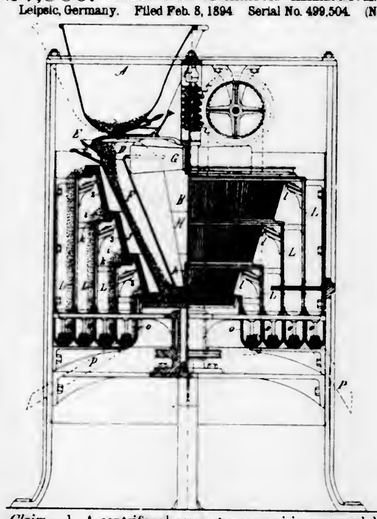
2. A desk implement, provided with a slot and pen extracting tongue, and provided at its end with downward projections, whereby when the instrument rests upon a desk surface the pen-extracting tongue is raised above said surface; substantially as described.

3. A desk implement, provided with a slot and a pen-extracting and inserting tongue, said tongue being beveled at its free end and said slot being accessible to the pen from both sides of the implement; substantially as described.

4. A desk implement, provided with a slot and a pen-extracting and inserting tongue, said tongue being beveled at its free end, and said slot being accessible to the pen from both sides of the implement and being of general U-shape at its free end; substantially as described.

5. A desk implement, comprising a sheet-metal body portion having a U-shaped slot surrounding a springy pen extracting and inserting tongue integral with the body portion and in the same plane therewith said tongue being beveled at its free end and the slot being accessible to the pen from both sides of the implement; substantially as described.

527,860. CENTRIFUGAL SEPARATOR. HERMANN F. M. KAYSER, Leipsic, Germany. Filed Feb. 8, 1894. Serial No. 499,504. (No model.)



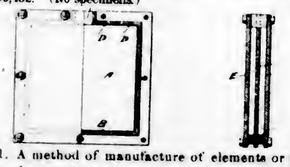
*Claim.*—1. A centrifugal separator comprising a vessel J of inverted truncated cone shape and stepped at intervals, the rotary shaft carrying said vessel the funnel F for introducing the material to the vessel and the grating around the outside of the vessel J composed of the bars with spaces between them of different sizes, said bars with the vessel forming an inclined passage for the upward movement of the material, substantially as described.

2. In combination in a centrifugal separator, the inverted truncated cone shape vessel J, the rotary shaft carrying the same, the grating about the vessel J forming a passage about the same for the material, said grating being composed of bars adapted to vibrate, and the bearings about the apparatus adapted to contact with the bars of the grating and vibrate the same as the machine is revolved, substantially as described.

3. In combination in a centrifugal separator, the inverted truncated cone shaped vessel, the grating about the same, the rotary shaft carrying said parts, said vessel and grating being stepped and forming an inclined passage for the material and the series of collect-

ing channels about the grating and corresponding to the steps thereof, substantially as described.

527,861. METHOD OF MANUFACTURING ELEMENTS OR PLATES FOR SECONDARY BATTERIES. HUGH F. KIRKPATRICK-PICARD and HENRY THAME, London, England. Filed Jan. 10, 1894. Serial No. 496,432. (No specimens.)



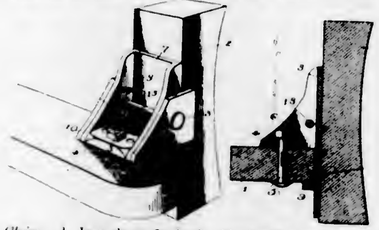
*Claim.*—1. A method of manufacture of elements or plates for secondary batteries, consisting of melting separately galena and metallic lead, mixing the same, and pouring the mixture in a molten condition into a heated metallic mold, substantially as described.

2. An element or plate for secondary batteries, composed wholly as to its operative body of lead sub-sulphide as described from a mixture of molten lead and galena, manufactured substantially as and for the purpose herein described.

3. In the manufacture of elements or plates for secondary batteries, the placing of a molten lead pole rim or portion of a rim at the bottom of a heated mold, and pouring thereon a molten mixture of metallic lead and galena, to form a homogeneous plate, substantially as described.

4. An element or plate for secondary batteries consisting as to its operative body of lead sub-sulphide, and as to one end or portion of one end of a pole rim of metallic lead homogeneously and metallically connected to the said body, substantially as described.

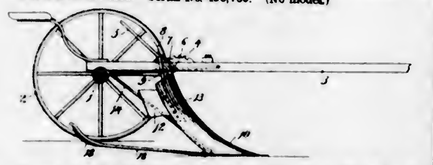
527,862. BRAKE-SHOE CLAMP. EDWARD H. KINNAMAN, Bellvue, Colo., assignor of one-half to Benjamin F. Flowers, same place. Filed Mar. 31, 1894. Serial No. 506,934. (No model.)



*Claim.*—1. In a clamp for brake blocks, the combination of a main section adapted to be rigidly secured to the brake beam and having a perpendicular and studded front face against which the brake block is adapted to lie, and two plates provided with inwardly-projecting studs and respectively adapted to lie on each side of the main section, and means for clamping the said plates against the main section, whereby the studs of the former are forced into the brake block, substantially as described.

2. In a brake-block clamp, the combination of a main section provided with a perpendicular and studded front face and with two rearwardly-extending brackets or projections adapted to respectively lie on the upper and lower sides of the brake beam and to be secured thereto by a bolt passing through one of the brackets, and two plates each provided with inwardly-projecting studs adapted to engage with the brake block, the said plates being respectively secured to each side of the main section and adjacent to the upper bracket thereof, substantially as described.

527,863. POTATO-DIGGER. MARTIN KLEMA, Caledonia, Wis. Filed Nov. 13, 1893. Serial No. 490,789. (No model.)

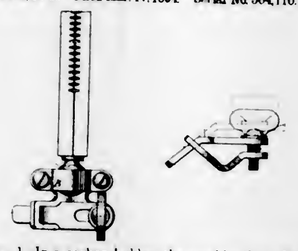


*Claim.*—1. In a potato digger, the combination, of the frame of the machine, the tongue or thill thereof provided with a slot, segmentally toothed plates upon opposite sides of the slot, a transverse pin intersecting the slot of the tongue, an operating lever passing between the segmentally toothed plates and entering the slot, the lower end of said lever provided with an elongated slot through which the pin passes, a pivoted plow, and a U-shaped banger, having its horizontal portion engaging medially the lever, and adapted to be operated thereby, and its ends engaging the upper portion of the plow substantially as set forth.

2. In a potato digger, the combination of the frame of the machine, a plow, an arm or arms extending down from the axle of the machine and provided with a transverse pin, the ends of which are journaled in bearings beneath the plow, whereby said plow is free to turn upon the pin as a pivot, and a series of bars forming a grate, the inner ends of said bars also turning upon the pin, substantially as set forth.

3. In a potato digger, the combination of the frame of the machine, a plow, arms extending from the axle of the machine, a transverse pin beneath the plow, and secured to the lower ends of the arms, said arms engaging the pin medially and at distances apart, and a series of bars constituting a grate, said bars having their inner ends engaging the pin upon the outer sides of the arms, whereby a central space is formed in the grate bar, substantially as set forth.

527,864. CARBON-HOLDER FOR ARC LAMPS. ERWIN LAVERS, Brooklyn, assignor to the General Incandescent Arc Light Company, New York, N. Y. Filed Mar. 17, 1894. Serial No. 504,110. (No model.)



*Claim.*—1. In a carbon holder, the combination of a plate having an angular portion, another plate also made angular and fitted to the first so as to be capable of sliding lengthwise relatively thereto, and means for adjusting said plates relatively to each other, substantially as specified.

2. In a carbon holder, the combination of a plate having an angular portion, another plate also made angular and fitted to a slot in the first so as to be capable of sliding lengthwise relatively thereto, and means for adjusting said plates relatively to each other, substantially as specified.

3. In a carbon holder, the combination of a plate having an angular portion, another plate also made angular and fitted to the first so as to be capable of sliding lengthwise relatively thereto, and a screw for adjusting the said plates relatively to each other, substantially as specified.

4. In a carbon holder, the combination of a plate having an angular portion, another plate also made angular and fitted to the first so as to be capable of sliding lengthwise relatively thereto, and a screw passing through a slot formed lengthwise on one of the plates and engaging with a tapped hole in the other, for adjusting the said plates relatively to each other, substantially as specified.

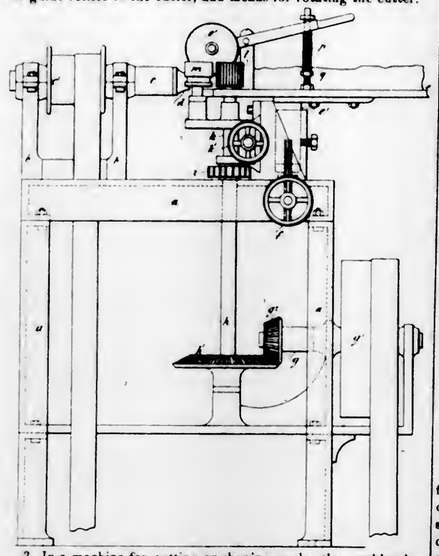
5. In a carbon holder, the combination of a plate having an angular portion, another plate also made angular and fitted to the first so as to be capable of sliding lengthwise relatively thereto, a screw passing through a slot formed lengthwise of one of the plates and engaging with a tapped hole in the other plate, and a spring interposed between said plates, substantially as specified.

527,865. MACHINERY FOR CUTTING CORKS. JOHN LOWMAN, London, England, assignor to Pablo Larios, Gibraltar. Filed Feb. 27, 1894. Serial No. 501,679. (No model.) Patented in England Nov. 25, 1892, No. 21,564; in Spain Jan. 27, 1893, No. 14,050; in Portugal Feb. 20, 1893, No. 1,758; in France Oct. 14, 1893, No. 233,411, and in Belgium Oct. 17, 1893, No. 106,781.

*Claim.*—1. In a machine for cutting or shaping corks, the combination of the cutter with an annular cutting edge and a smooth, conical or tapered exterior, a hollow rotating shaft carrying at its end the said cutter, a vertically adjustable feed table, feed rollers over the table and positively driven to feed a bar of cork to the cutter, freely revolving guide rollers overlapping the edge of the cutter interposed between the feed rollers and the end of the cutter mounted on vertical pivots on opposite sides of the cutter to act upon opposite sides of the bar of cork fed between them.



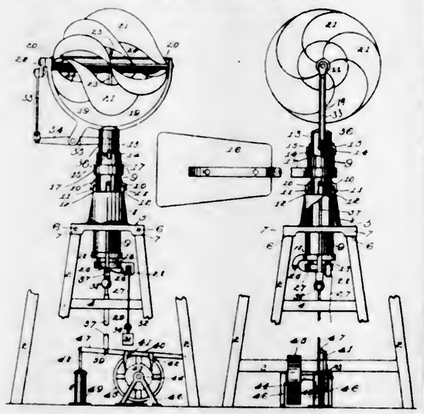
2. In a machine for cutting or shaping corks, the combination of a rapidly rotating hollow shaft armed at its end with an annular cutter having a smooth conical or tapered exterior, freely rotating guide rollers set in proximity to the cutter, overlapping the edge thereof and mounted on vertical pivots on opposite sides of the axial line of the cutter, means for adjusting the rollers toward and from each other, a pair of feed rollers mounted on vertical pivots, means for positively driving the feed rollers to feed a bar of cork through the guide rollers to the cutter, and means for rotating the cutter.



3. In a machine for cutting or shaping corks, the combination consisting of a rapidly rotating hollow shaft and cutter, with guide rollers and feed rollers in front of the cutter presenting the cork to it and a pair of slides carrying the rollers; each such slide carrying one freely rotating guide-roller and one driven feed-roller so that they both may be simultaneously adjusted to their proper working positions by the movement of the slide in its guides.

4. The combination of the cutter having an annular cutting edge, means for revolving it, the freely revolving guide rollers mounted on vertical pivots on opposite sides of the cutting edge, the positively driven feed rollers mounted on vertical pivots on opposite sides of the axial line of the cutter, a vertically adjustable table beneath the guide rollers and feed rollers, and a pressure roller O' arranged above the table and between the guide rollers and feed rollers.

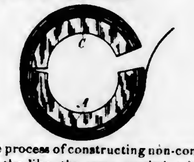
527,866. WINDMILL. PETER O. LUTHER, White Rock, S. D. Filed July 12, 1892. Serial No. 439,845. (No model.)



*Claim.*—1. In a wind mill the combination of the horizontal shaft 20, having the wings 21, said shaft 20, being journaled in the upper ends of a fork as 19, with the swivel tube 13, rigidly secured to said fork and having two friction rollers as 14, rolling upon two cams as 17, formed at the top of another tube as 9, in which it is journaled, said tube 9, being journaled in a boss as 8, at the top of the wind mill tower, and having anti-friction rollers as 11 riding on the annular top of said boss 8, and being provided with a vane as 16, for holding the tube and its cams 17, in a certain position to the wind; the sheave 28, rope 27 and weights 30 and 31, the arms 25 and 26, so arranged relatively to the vane 16, cams 17 and fork 19, that when the arms are brought together by the rope 27, the vane will hold the wind wheel shaft 20 parallel with the current of the wind, and when the rope is released the arms will spread and throw the side of the wheel to the wind, or vice versa, substantially as shown and described, and for the purpose set forth.

2. In a wind mill, the combination with a horizontal wind wheel shaft as 20 having its ends journaled in a two-armed bracket or fork as 19, of the crank 22, secured upon the end of said shaft outside the fork, the pitman 33, the two-armed lever 34, pivoted in the bracket 35, and working through a slot as 36, the connecting rod 37, having the swivel or ball joint 38, substantially as shown and described and for the purpose set forth.

527,867. PIPE-COVERING AND PROCESS OF MANUFACTURING SAME. CHARLES B. MANVILLE, Milwaukee, Wis. Filed Mar. 10, 1893. Serial No. 465,460. (Specimens.)



*Claim.*—1. The process of constructing non-conducting coverings for steam pipes and the like, the same consisting in first building up or forming an outer stock or hollow body of felt material, then inserting a mandrel or core centrally of said body leaving an intermediate surrounding space, then filling said space with a plastic fireproof non-conducting material and permitting such material to permanently adhere to the inner surface of the body, and finally allowing the material to set and then withdrawing the mandrel, substantially as described.

2. The process of constructing a covering for steam pipes and analogous articles, consisting of forming a sectional, annular outer shell by winding a sheet of pasted and adhesive fibrous material upon itself about a mandrel forming a hollow shell; removing the shell from the mandrel; inserting therein axially a core of less diameter than the aperture of the shell, and filling the space between the core and the outer shell with a fire proof material practically a non-conductor of heat, while in a plastic state; allowing the material to set and adhere to the fibrous shell becoming rigid thereto, and removing the core therefrom, as set forth.

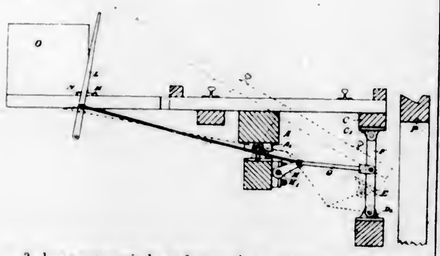
3. The process of constructing a covering for steam pipes and analogous articles, consisting of forming a sectional, annular outer shell, by winding a sheet of pasted and adhesive fibrous material upon itself about a mandrel, forming a hollow shell; removing the shell from the mandrel; inserting therein axially a core of less diameter than the aperture of the shell; filling the space between the core and the outer shell with a plastic fire proof material practically a non-conductor of heat, allowing the material to set and adhere to the fibrous shell becoming rigid thereto; removing the core therefrom, sawing the tubular covering in two longitudinally, and attaching a canvas hinge and flap thereto, substantially as described.

4. A covering for steam pipes and the like, the same comprising an outer body of wool felt, and a lining or inner body of permanently adherent composition material consisting of asbestos fiber, asbestos pulp, dextrine, and calcined plaster, as described.

527,868. AUTOMATIC DUMP FOR UNLOADING CARS. CICERO D. MATHENY, Seattle, Wash. Filed Aug. 19, 1893. Serial No. 483,548. (No model.)

*Claim.*—1. In an automatic dump for cars the combination with a section of track of pivoted bearings to one side of the center, counter-weights on the same side of the center, said counterweights being so adjusted as to permit the track to tip sidewise under the weight of loaded cars but to return the same to a horizontal position when the cars are unloaded, of toggles supporting the unbalanced weight of the loaded cars and means for holding said toggles in their extended position and of breaking the joints at will, substantially as shown and described.

2. In an automatic dump for cars the combination with a section of track of pivoted bearings to one side of the center, counterweights on the same side of the center, said counterweights being so adjusted as to permit the track to tip sidewise under the weight of loaded cars but to return the same to a horizontal position when the cars are unloaded, of the toggles supporting the unbalanced weight of the loaded cars, and rods and levers connected to these toggles whereby they may be held in their extended position and the joints broken at will, substantially as shown and described.

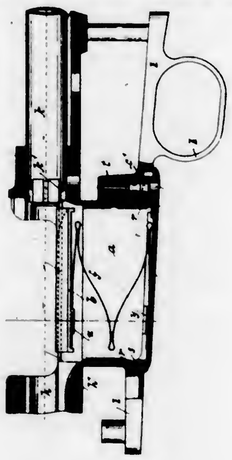


3. In an automatic dump for cars the combination, with a section of track supported on knife edge bearings located to one side of the center, independent eye bolts connecting the upper and lower portions of the dump to prevent the bearings from separating, counterweights on the same side of the center, said counterweights being so adjusted as to permit the track to tip sidewise under the weight of loaded cars but to return the same to a horizontal position when the cars are unloaded, means for holding the track in a horizontal position and for releasing it when desired, substantially as shown and described.

4. In an automatic dump for cars the combination with a section of track of pivoted bearings on one side of the center, counterweights on the same side of the center, said counterweights being so adjusted as to permit the track to tip sidewise under the weight of loaded cars but to return the same to a horizontal position when the cars are unloaded, of a series of toggles supporting the unbalanced weight of the loaded cars, a shaft carrying cranks, links connecting each crank with the center joint of its corresponding toggle and means whereby the said shaft may be operated to maintain the toggles extended or to break their joints, substantially as shown and described.

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527,869. MAGAZINE FOR BREECH-LOADING FIREARMS. PAUL MAURER, Oberndorf, Germany. Filed Sept. 15, 1893. Serial No. 485,603. (No model.) Patented in Germany July 8, 1893, No. 74,163; in Belgium July 31, 1893, No. 105,890; in France Aug. 1, 1893, No. 231,904; in England Aug. 12, 1893, No. 15,390; in Italy Aug. 12, 1893, No. 34,642/34; in Switzerland Aug. 15, 1893, No. 7,276; in Spain Sept. 30, 1893, No. 14,582; and in Austria-Hungary Jan. 23, 1894, No. 41,426 and No. 70,284.



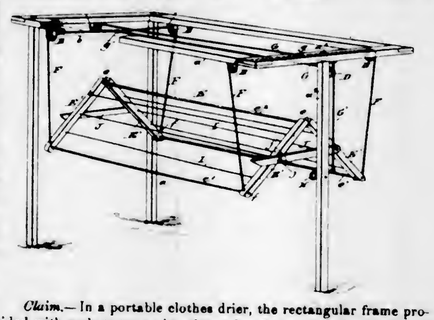
*Claim.*—1. In a breech-loading bolt gun, the receiver, the magazine, and bolt, in combination with a trigger-guard consisting of a single integral piece of metal having the fixed cartridge magazine *a* in its forward part, said guard having upright walls surrounding said magazine and seating at top against the under side of said receiver, said guard having grooves *s* at bottom, and the bottom plate for said magazine removably connected thereto, and having lugs *r* entering said grooves and retaining said plate in position on said magazine, and a snap catch carried by said guard and engaging said plate for preventing separation of the latter.

2. In a breech-loading bolt gun, the receiver and bolt, in combination with a magazine *a* and a carrier plate *b* thereon having a rib *b'* on its upper face, and projections *x* on its under face, of a trigger-guard having said magazine formed in its forward part, a bottom plate *c* closing said magazine, and having projections *y*, and a leaf spring *f* in said magazine connected to said bottom plate by said projections *y* and to said carrier plate by said projections *x* substantially as set forth.

3. In a breech-loading bolt gun, the receiver and bolt, in combination with a magazine, a carrier plate therein having projections *x* on its under face, a removable bottom plate closing said magazine and having projections *y* on its upper face, and a leaf spring *f* in said magazine connected to said top plate by said projections *x* and to said bottom plate by said projection *y*, substantially as set forth.

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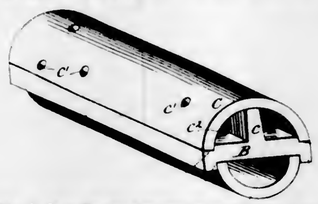
527,870. CLOTHES-DRIER. PETER J. MESLEIN, Chicago, Ill. Filed Jan. 8, 1894. Serial No. 496,071. (No model.)



*Claim.*—In a portable clothes drier, the rectangular frame provided with sockets to receive the ends of removable legs and with fixed pulleys at its corners, the removable legs having shouldered ends adapted to fit into the sockets of the frame, a rectangular clothes frame made in two parts centrally hinged together, suspending cords attached to the corners of the clothes frame and extending over the pulleys in the suspending frame then united with a single cord between the pulleys whereby the clothes frame may be raised or lowered in a horizontal position within the suspending frame, and the latch bar pivoted at the end of the hinged clothes frame whereby the latter may be held in a folded position while the clothes are being placed thereon and will automatically assume a horizontal position when the latch is unhooked, all combined and arranged substantially as and for the purpose described.

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527,871. TILE. GEORGE W. MORROW, Toronto, Ohio, assignor of three-fourths to Charles T. Young, same place. Filed Feb. 6, 1894. Serial No. 499,310. (No model.)



*Claim.*—1. In a tile, the combination of the base section, the intermediate section mounted thereon, and the crown section mounted upon the intermediate section, substantially as described.

2. In a tile, the combination of the base section, the intermediate section mounted thereon, the crown section mounted upon the intermediate section, and the longitudinal support extending from the intermediate section to the crown section, substantially as described.



3. In a tile, the combination of the base section, the intermediate section mounted thereon having its outer edges extending downwardly and outside of the edges of the said base section, and the crown section mounted upon the intermediate section with its edges inclosing the intermediate section and extending below the upper face of the latter, substantially as described.

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527,872. BEDCLOTHES-HOLDER. CARRIE E. MULLER, San Francisco, Cal. Filed June 1, 1894. Serial No. 513,166. (No model.)

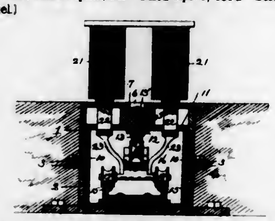


*Claim.*—1. In a bed-clothes holder formed of two strands of wire intersecting and crossing each other centrally and provided with hooks at their outer ends the clamps composed of a single strand of wire formed into attaching loops and intersecting V-shaped springs, substantially as set forth and described.

2. The combination in a bed-clothes holder composed of two strands of wire crossing each other and flexibly connected together with the outer ends formed into hooks for connecting loops or clamps also composed of a single strand, and having eyes at the ends of the arms engaging with the ends of the two strands, of the locking-lever or latch adapted to bind the bed-clothes with the clamp and lock into the loop in the manner described.

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527,873. CLOSED-CONDUIT ELECTRIC RAILWAY. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed Apr. 5, 1894. Serial No. 506,470. (No model.)



*Claim.*—1. An electric railway having a closed conduit provided with a central exposed conductor, and an interior main or supply conductor, a traveling electro magnet straddling the exposed conductor, and a trolley in the conduit for establishing the circuit between the main and exposed conductors, and carrying an armature in operative relation to the magnet, substantially as described.

2. In an electric railway the combination with a closed conduit provided with a central exposed conductor and an interior main or supply conductor, of a traveling electro magnet straddling the exposed conductor, traveling collectors in contact with the exposed conductor, and a trolley in the conduit for establishing the circuit between the main and exposed conductors and provided with an armature in operative relation to the magnet, substantially as described.

3. An electric railway having a closed conduit, a traveling electro-magnet above the conduit, a circuit closing trolley in the conduit carrying an armature for the magnet, and lugs or projections in the conduit between the magnet and armature and constituting stationary polar extensions of the magnet, substantially as described.

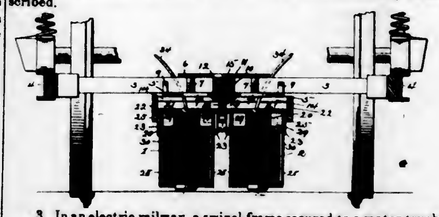
4. In an electric railway, the combination with a closed conduit provided with an interior main conductor, and exterior exposed conductor, and interior lugs projecting downwardly from the top of the conduit, of traveling magnets above the conduit, and a trolley in the conduit for establishing the circuit between the main and exposed conductors, and provided with pivoted armatures for the magnets constituting catches engaging the lugs when the magnet circuit is broken, substantially as described.

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527,874. CLOSED-CONDUIT ELECTRIC RAILWAY. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed May 24, 1894. Serial No. 512,359. (No model.)

*Claim.*—1. In an electric railway, electro magnets hung from a motor car and pivoted to tilt in the direction of the line of travel and also at right angles thereto, substantially as described.

2. In an electric railway, electro-magnets hung from a motor car and free to tilt and to swivel in a horizontal plane, substantially as described.



3. In an electric railway, a swivel-frame secured to a motor truck and one or more electro-magnets hung from the swivel-frame and free to tilt, substantially as described.

4. In an electric railway, an electro magnet provided with a mounting having slotted ears at each end, and rods secured to a motor car and passing through said ears for supporting the magnet pendulously, substantially as described.

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527,875. HARROW. FREDERICK NISHWITZ, Millington, N. J. Filed Feb. 20, 1892. Serial No. 422,303. (No model.)



*Claim.*—1. A trailing harrow-tooth formed substantially as set forth of a strip or plate of metal having a flat or horizontal front portion and a sinuously bent or reversely curved cutting portion having distinct or separate cutting edge projections, as $a^5$, and $a^6$, acting upon the soil in opposite directions.

2. A trailing harrow tooth formed substantially as set forth of a strip or plate of metal, one edge of which is rolled to a cutting edge, having a flat or horizontal front portion and a sinuously bent or reversely curved cutting portion having distinct or separate cutting edge projections, as $a^5$, and $a^6$, acting upon the soil in opposite directions.

3. A trailing harrow tooth formed substantially as set forth of a strip or plate of metal having a flat or horizontal front portion and a sinuously bent or reversely curved cutting portion having distinct or separate cutting edge projections, as $a^5$, and $a^6$, acting upon the soil in opposite directions, in combination with a gang bar on which said tooth is mounted.

4. The combination of a gang bar; a rearwardly projecting trailing cutting tooth having a horizontal or flat portion extending a short distance to the rear of the bar, and a brace extending rearwardly from the bar to the tooth, for the purpose set forth.

5. The combination of the gang bar, a trailing tooth having its end curved to embrace the bar, and a bolt passing through the curved end of the tooth and the bar and extending rearwardly and attached to the tooth, for the purpose set forth.

6. The combination of the gang bar, a trailing tooth having its end curved to embrace the bar, a bolt passing through the curved end of the tooth and the bar and extending rearwardly and attached to the tooth, and means for lengthening or shortening the rearwardly projecting portion of the bolt, for the purpose set forth.

7. The combination of a gang bar, a series of sinuously or reversely curved trailing cutting teeth projecting rearwardly from the bar and having horizontal flat portions bearing on the bar, rearwardly extending bolts or bars for bracing the teeth against vertical strain, and means for bracing the teeth against lateral strains.

8. The combination of the gang bar, a series of rearwardly projecting trailing teeth mounted thereon, draft devices, and a cradle or receptacle arranged above the teeth and in rear of the gang bar, for the purpose set forth.

9. The combination of a gang bar, a series of trailing teeth carried thereby, a seat standard supported over the teeth in rear of the gang bar, an adjusting lever pivoted on the gang bar and a link connecting the lever and the seat standard.

10. The combination of the gang bar teeth carried thereby, a seat standard projecting rearwardly over the gang bar, the shoe car-

ried by the end of the seat standard and the draft frame, substantially as set forth.

11. The combination of the gang bar teeth carried thereby, the seat standard, the cross bar thereon, the pivoted links, connecting the gang bar and cross bar, the pivoted links projecting forward from the gang bar and the pivoted draft link G connected with the seat standard.

12. The combination of the gang bar, the teeth carried thereby, the seat standard, the cross bar thereon, the pivoted links connecting the gang bar and cross bar, the pivoted links projecting forward from the gang bar, the pivoted draft link G connected with the seat standard, and the shoe on the end of the seat standard.

13. The harrow herein described, consisting of a transverse gang bar, the trailing teeth having horizontal portions and mounted thereon, the teeth being reversely or sinuously curved and having independent cutting portions $a^5$ and $a^6$ bearing upon the soil in opposite directions, and draft devices.

14. The harrow herein described, consisting of a tranverse gang bar, the trailing teeth having crushing portions and mounted thereon, the teeth being reversely or sinuously curved and having independent cutting portions $a^5$ and $a^6$ bearing upon the soil in opposite directions, draft devices and means for throwing the teeth up or down to regulate the depth of cut.

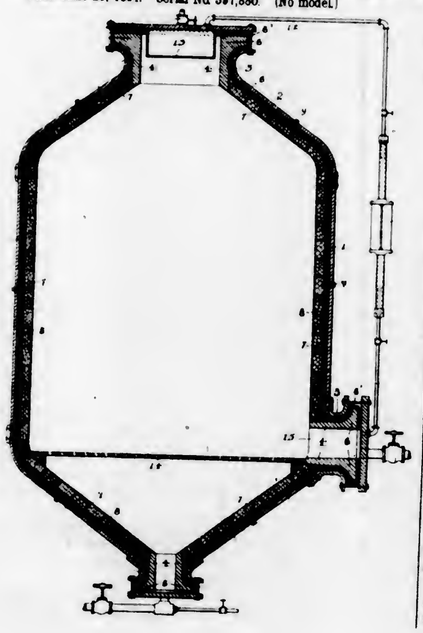
15. The combination of a draft frame, a transverse gang bar in rear thereof, and hinged thereto so as to rise and fall, a lever for raising and lowering the gang bar, and rearwardly projecting trailing cutting teeth sinuously or reversely curved and each having independent cutting projections $a^5$, $a^6$ that bear upon the soil in opposite lateral directions.

16. The combination of a draft frame, a transverse gang bar hinged thereto, trailing teeth carried by the gang bar, each tooth having a horizontal portion adjacent to the gang bar and a vertical cutting portion curved in reverse directions and having two cutting projections $a^5$ $a^6$ that exert lateral pressure upon the soil in opposite directions, a seat standard supported above the gang bar, an adjusting lever pivoted on the gang bar and a link connecting the lower end of the lever and the seat standard.

17. In a harrow the combination of a draft frame, a single transverse gang bar, and trailing teeth carried by the gang bar, each tooth being reversely or sinuously curved and having its cutting edge irregularly formed as at $a^5$ $a^6$ to present two cutters to the soil that exert lateral pressure thereon in opposite directions, substantially as set forth.

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**527,876. SULFITE-DIGESTER.** JOSHUA NORTON, Jr., Chatham, Canada, assignor to the American Sulphite Pulp Company, Boston, Mass. Filed June 29, 1891. Serial No. 397,880. (No model.)



*Claim.*—1. In a digester the combination of the shell and the cemented tile lining, with suitably formed cemented tile continuing the lining throughout the openings in the shell; substantially as set forth.

2. In a digester the combination of the shell and the cemented tile lining, with suitably formed cemented tile continuing the lining throughout an opening in the shell and the ring surrounding said tile adjacent to the edge of the shell; substantially as set forth.

3. A sulphite digester comprising a tile mold, a shell mold and an intermediately molded layer of cement such as described.

4. A sulphite digester comprising a tile mold made of unglazed tile, a shell-mold and an intermediately molded layer of cement such as described.

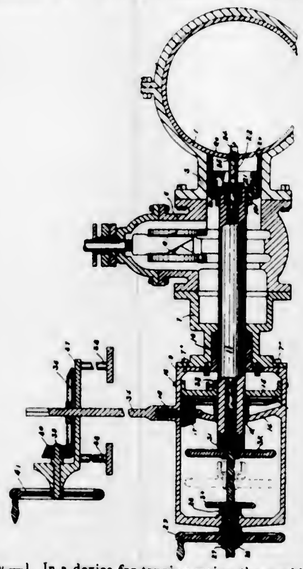
5. In a sulphite digester a removable cover, a packing, a perforated basket having a flange fixed to said cover and resting upon said packing, the body of the basket extending below the cover and within the digester neck, a space being left between the wall of said neck and the basket to permit fluid to circulate about the sides of the latter below the packing; substantially as set forth.

6. In a sulphite digester having a fluid discharge pipe in its bottom and a discharge opening or manhole situated in its side and provided with a cover, the perforated diaphragm situated in the same plane as the bottom of said manhole and a pipe also in practically the same plane and provided with a blow off valve, substantially as set forth.

7. In a digester having removable covers an adjustable telescoping water gage having separable parts and having communication with the digester through the said covers; substantially as set forth.

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**527,877. APPARATUS FOR TAPPING MAINS.** DANIEL O'NEIL, Rochester, N. Y. Filed Apr. 18, 1894. Serial No. 507,992. (No model.)



*Claim.*—1. In a device for tapping mains, the combination of a closed chamber and its cut off valve, a drill and tap whose stock serves as an abutment for receiving the thrust of a rotary cutter and a circular rotary cutter surrounding the drill and means for feeding said cutter forward, whereby the valve chamber is relieved of all strain during the cutting operation after the tap enters the main, substantially as described.

2. The combination with the split sleeve having the branch pipe, and the valve connected thereto, of the frame, and the bolts connecting it directly with the split sleeve and holding it against the valve box, a stock carrying a cutter, a stock carrying a drill and tap, feeding devices for moving the drill-stock, feeding devices for moving the cutter-stock operating on the drill-stock, and operating devices carried by the frame for rotating the cutter-stock and the drill-stock, substantially as described.

3. In a main-tapping machine, the combination with a drill-stock and a drill and tap thereon, of a cutter-stock, and a cutter thereon movable around the drill and tap, and feeding devices between the drill-stock and cutter stock for feeding the latter on the former, substantially as described.

4. In a main-tapping machine, the combination with the longitudinally movable hollow cutter-stock carrying the cutter and means for rotating it, of the longitudinally movable drill-stock extending through the cutter-stock, the drill and tap thereon, and means for rotating it, feeding devices for the cutter-stock, and independent feeding devices for the drill-stock, substantially as described.

5. In a main-tapping machine, the combination with the longitudinally movable hollow cutter-stock having the stuffing-box, and the cutter, and the wheel for rotating said stock, of the drill stock extending through the cutter-stock and rotatable independently thereof, and the drill and tap thereon, and the screw connections between the cutter-stock and drill-stock for feeding the former, substantially as described.

6. The combination with the longitudinally movable hollow cutter-stock having the stuffing-box and the cutter, and the wheel splined to said stock, of the drill-stock extending through the cutter-stock and the drill and tap thereon and the nut swiveled to the cutter-stock and connected to the drill by a threaded connection, substantially as described.

7. The combination with the frame, the wheel therein, the cutting stock splined to the wheel, and the cutter on the stock, of the rotary drill-stock having the drill and tap and extending through the cutter-stock, feeding devices between the drill stock and frame and detachable threaded connections between the drill-stock and cutter-stock for causing the feed of the latter from the former, substantially as described.

8. The combination with the frame, the wheel therein, the cutting stock splined to the wheel, and the cutter on the stock, of the threaded drill stock, the drill and tap thereon, the wheel on the frame splined to the drill-stock, the feed nut engaging the frame and drill-stock, and the feed nut threaded on the drill-stock and swiveled to the cutter-stock, substantially as described.

9. In a main-tapping machine, the combination with the frame, having the gear-wheel therein, and means for connecting said frame to a main, the pinion meshing with said gear-wheel, and a cutter-stock operated from said pinion, said parts being adapted to be located in a trench, of a frame provided with supports and having beveled gears thereon and means for rotating one of them and a shaft sliding through one of said gears and connected with the pinion on the first-mentioned frame, substantially as described.

10. In a main tapping machine, the combination with a longitudinally-movable and rotary cutter-stock, of a disk or collar loose on the stock, and a detachable fastening device for holding it in position, substantially as described.

11. In a main-tapping machine, the combination with a frame adapted to be connected to a branch of a main, a longitudinally-movable and rotary cutter-stock projecting through said frame, a collar loosely arranged on the stock near one end, a fastening for holding it in position, and connections on the other side of the frame from the collar, for releasing it and permitting movement of the stock independently of it, substantially as described.

12. The combination with the sleeve having two branches adapted to be connected to a main, and a valve or gate and cutter-frame connected to one of said branches, of a cutter-stock adapted to project through the frame, valve and branch, a bearing collar on the stock, and a holding device therefor adapted to be released from the outside of the frame, substantially as described.

13. The combination with the cutter-stock, of the collar thereon, the finger, and the shaft or rod in the stock connected to the finger and the collar for actuating the rod, substantially as described.

14. In a device for tapping mains through a gate or valve, the combination with the frame made in two parts, one of said parts having a stuffing-box therein and adapted to be arranged next the gate, of a cutter-stock and cutter, a drill-stock and a drill and tap connected thereto, and operating devices for the drill and cutter-stocks, said parts being mounted in the other portion of the frame, and detachable fastenings for securing the two parts of the frame together, substantially as described.

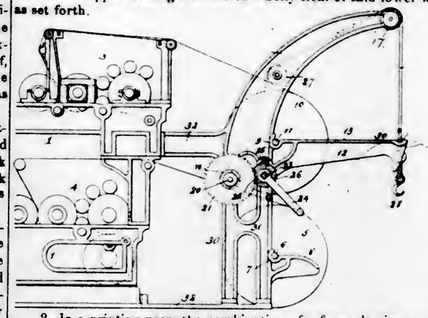
15. The combination with the frame constructed in two parts detachably connected, one of said parts having a recess, and a stuffing-box, of a cutter-stock made in two sections connected detachably, and a cutter, a collar loose on the stock and detachable holding devices therefor, a drill-stock, a drill and a tap thereon, operating devices for the cutter and drill-stocks, and feeding devices between the drill and cutter-stocks, said last-mentioned parts being mounted on the other part of the frame, substantially as described.

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**527,878. WEB-SUPPORTING DEVICE FOR PRINTING-PRESSES.** CHARLES POTTER, Plainfield, N. J., assignor to the Potter Printing Press Company, same place. Filed Dec. 21, 1893. Serial No. 494,343. (No model.)



*Claim.*—1. In a printing press, the combination with the frame having lower bearings for the spindle of a rolled web, and also having upper bearings for the spindle of another rolled web, of elevating mechanism for elevating the web of the upper bearings, and overhanging extensions of the frame providing guides for the elevating mechanism and projecting a distance beyond the position occupied by the lower web when in position in its lower bearings, whereby the web for the upper bearings is elevated wholly clear of said lower web, as set forth.



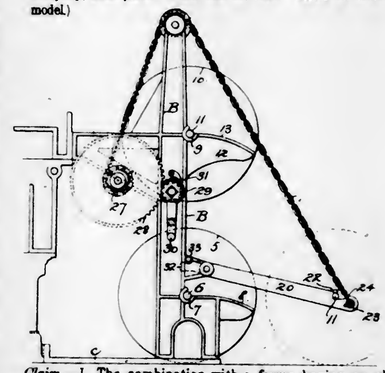
2. In a printing press the combination of a frame having upper and lower bearings for the spindles of two rolled webs, guides or ways extending outwardly substantially horizontal from the upper bearings and on which the spindle of the upper web may roll into said upper bearings, an elevating mechanism for the upper rolled web, and outwardly projecting extensions of the frame providing guides for the elevating mechanism above and vertically in line with the extremities of said guides or ways, substantially as set forth.

3. In a printing press, the combination of a frame having upper and lower bearings for the spindles of two rolled webs, guides or ways extending outwardly substantially horizontal from the upper bearings and on which the spindle of the upper web may roll into said upper bearings, said guides terminating in inward inclines, an elevating mechanism for the upper rolled web, and outwardly projecting extensions of the frame providing guides for the elevating mechanism above and vertically in line with the inclines on the extremities of said guides, as set forth.

4. In a printing press, the combination of a frame having upper and lower bearings for the spindles of two rolled webs, guides or ways extending outwardly horizontally from the upper bearings and on which the spindle of the upper web may roll into said upper bearings, an elevating mechanism for the upper rolled web comprising a lowdown winch supported by said frame, and outwardly projecting extensions of the frame providing elevating guides for the elevating rope of the winch positioned above and vertically in line with the extremities of said guides, as set forth.

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**527,879. WEB-SUPPORTING DEVICE FOR PRINTING-PRESSES.** CHARLES POTTER, Plainfield, N. J., assignor to the Potter Printing Press Company, same place. Filed Jan. 26, 1894. Serial No. 498,076. (No model.)



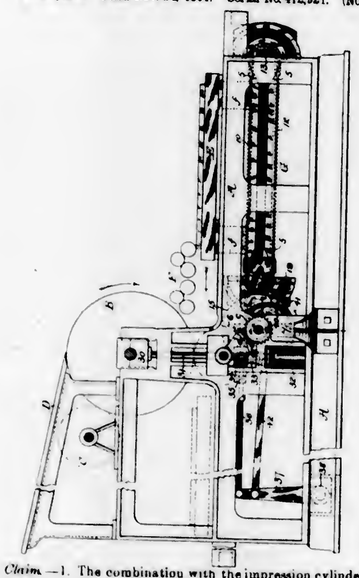
*Claim.*—1. The combination with a frame having an elevated bearing for a web spindle, and a way extending from said bearing inclined to cross the path of movement of the web spindle being elevated, of a hoist for such spindle and a movable and outwardly bearing arm for guiding said spindle onto the inclined way while being

raised, and for moving the spindle along the way into said elevated bearing substantially as described.

2. The combination with a frame having an elevated bearing for a web spindle and a way extending from said bearing inclined to cross the path of movement of the web spindle being elevated, of a pair of movable arms having bearings for a web spindle and a hoist for moving the arms to carry their bearings toward said elevated bearing with the web spindle onto the inclined way while being raised and for moving the spindle along the way into the elevated bearing, substantially as described.

3. The combination with a frame having an elevated bearing for a web spindle and an inclined way extending from said bearing, of a pair of pivoted arms having bearings for a web spindle the arc of movement of the arms crossing the incline of the way, and means for raising the arms to carry their bearings toward said elevated bearing, substantially as described.

## 527,880. CYLINDER PRINTING-MACHINE. CHARLES POTTER, Jr., Plainfield, N. J., assignor to the Potter Printing Press Company, same place. Filed Nov. 24, 1891. Serial No. 412,921. (No model.)



*Claim.*—1. The combination with the impression cylinder, form-bed and its toothed rack-bar, of a driving pinion, a disk or piece carrying an intermediate pinion meshing with the pinion and rack-bar, a guideway parallel with the rack-bar and an engaging stud or studs carried by said disk, substantially as described.

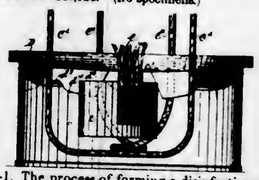
2. The combination with the impression cylinder, form-bed and its rack bar carrying a horizontal guideway and a segmental guideway at each end, of a driving pinion, a disk or piece carrying an intermediate pinion meshing with said pinion and rack-bar and having a projection for engaging each of the segmental guideways, and two studs on the disk engaging the horizontal guideway, substantially as described.

3. The combination with the toothed rack-bar carrying an open ended guideway with inclined ends and centrally disposed with relation to said rack-bar, of a driving pinion, a disk carrying an intermediate pinion meshing with said pinion and rack-bar and also having studs engaging with the guideway in both reciprocations of the rack-bar, substantially as described.

4. The combination with the toothed rack-bar carrying on its side a pair of strips forming a horizontal guideway between them, of a driving pinion, a disk carrying an intermediate pinion meshing with said pinion and rack bar and having a cut away portion to escape the pair of strips, and a pair of studs carried by the disk for engaging with the guideway, substantially as described.

5. The combination with the type bed and its toothed rack bar, of a driving pinion, a disk carrying an intermediate pinion meshing with the pinion and rack-bar, a guideway, an engaging stud or studs carried by said disk, an eccentric carried with the disk and connections between the eccentric and impression cylinder for raising and lowering the latter, as set forth.

## 527,881. SULFUR CANDLE AND PROCESS OF MAKING SAME. CHARLES R. PARKER and SEWARD W. WILLIAMS, East Orange, N. J., assignors to the Seabury & Johnson, New York, N. Y. Filed Oct. 5, 1892. Serial No. 447,928. (No specimens.)

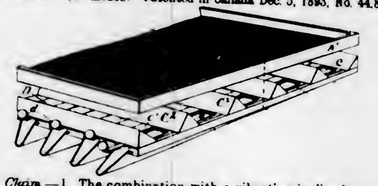


*Claim.*—1. The process of forming a disinfecting candle, consisting in placing a mold on the top of a permanent container while the latter is in an upright position with its open end upward, supporting igniting material or cords by said mold, pouring melted disinfecting material through an opening in said mold, and allowing it to flow through the latter into the container and then inserting in the mass of disinfecting material a tuft of igniting material, substantially as specified.

2. In a disinfecting candle, the combination with a case or container, of disinfecting material formed with separate circular cavities in its upper surface, and a raised central portion, the latter extending radially outward toward the case or container and terminating in the form of points alternately in said cavities, and wicks passing downwardly through the mass of the disinfecting material at the end portions of said points, substantially as specified.

3. In a disinfecting candle, the combination with a case or container, of disinfecting material formed with raised portions, and wicks passing downwardly through such raised portions and also through the mass of the disinfecting material, said raised portions being provided with roughened surfaces intermediate of said wicks and the center of the candle, substantially as specified.

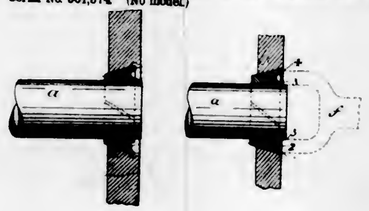
## 527,882. SIEVE CUT-OFF. WILLIAM A. PENDRY, Detroit, assignor of two-thirds to David J. Davidson, Abraham S. Martin, and Stephen G. Martin, Port Huron Mich. Filed Oct. 31, 1893. Serial No. 489,622. (No model.) Patented in Canada Dec. 5, 1893, No. 44,825.



*Claim.*—1. The combination with a vibrating inclined screen, of a bottom placed beneath said screen and independent thereof, and means for vibrating said bottom independently of said screen, a series of transverse inverted V-shaped partitions separating said bottom into a series of troughs, ported slides to open the bottom of said troughs at any desired position, and chutes arranged beneath each of said slides, substantially as and for the purposes described.

2. The combination with a vibrating inclined screen, of a bottom placed beneath said screen and independent thereof, means for vibrating said bottom at right angles to the motion of said screen, a series of transverse inverted V-shaped partitions secured to the upper side of said bottom parallel to each other, and separating said bottom into a series of parallel troughs, a plurality of ported slides adapted to open the bottom of all of said troughs at any desired position, and inclined chutes secured to the bottom beneath each of said slides, substantially as and for the purposes described.

## 527,883. TUBE-JOINT FOR SECTIONAL BOILERS. NAT. W. PRATT, Brooklyn, N. Y. Filed Mar. 28, 1891. Renewed Feb. 24, 1894. Serial No. 501,374. (No model.)

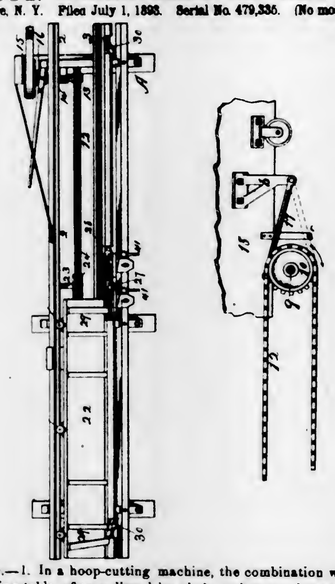




*Claim.*—1. As a means of securing a tube in its seat, a divided ring or collar of ductile material having its inner bearing surface conformed to the tube and its outer surface to a tapered seat in the sheet, plate, or header to which the tube is secured.

2. The herein described tube connection, consisting of a tube seat therefor of tapered form and having an annular groove therein, and a soft metal annulus adapted to the tube and its seat and having a projection for calking the annulus in place and adapted to interlock with said annular groove.

## 527,884. HOOP-MAKING MACHINE. DOULA C. PUTNAM, Wayne Centre, N. Y. Filed July 1, 1893. Serial No. 479,336. (No model.)



*Claim.*—1. In a hoop-cutting machine, the combination with a butt-carrying table, of an endless drive chain, a pitman rod connected thereto and means to actuate said chain continuously in one direction to reciprocate the table.

2. In a hoop cutting machine, the combination with a traversing butt-carrying table, an endless drive chain, pitman rod connected to said table, and to said chain, and means to actuate said chain continuously in one direction, of stationary hoop-cutting knives mounted adjacent to the edge of the table.

3. In a hoop cutting machine, the combination with a reciprocating butt-carrying table, of a plane having an upwardly inclined face, plane-irons projecting therefrom and engaging with the lower side of the butt, adjacent to its end when it has been carried on to said inclined face, the table and means for imparting the reverse movement.

4. In a hoop-cutting machine, the combination with a reciprocating butt-carrying table, of non-reciprocating planes adjacent to the end limits of the traverse of the table and having oppositely inclined faces, and plane-irons standing at opposite angles to said faces respectively, and alternately engaging with the lower side of the butt adjacent to its ends when it has been carried on to said inclined faces respectively and the table reverses the direction of its movement.

5. In a hoop-cutting machine, the combination with the reciprocating butt-carrying table, of non-reciprocating planes adjacent to the end limits of the traverse of the table and having oppositely and adjustably inclined faces, and plane-irons standing at opposite angles to said faces respectively, and alternately engaging with the lower side of the butt, adjacent to its ends, when it has been carried onto said faces respectively and the table reverses the direction of its movement.

6. In a hoop cutting machine, a bed, a traversing table, planes erected upon the bed and having oppositely inclined faces, and plane irons alternately engaging with the butt adjacent to its ends, in combination.

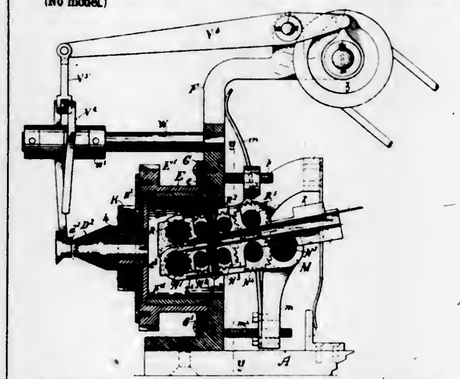
7. In a hoop-cutting machine, a bed, a traversing table, planes erected upon the bed and having oppositely inclined faces, plane irons alternately engaging with the butt adjacent to its ends, and hoop cutting knives engaging with the chamfered butt, in combination.

8. In a hoop cutting machine, a bed, a traversing table, planes erected upon the bed and having oppositely inclined faces, plane-irons alternately engaging with the butt adjacent to its ends, hoop-cutting knives engaging with the chamfered butt, and edging knives between which the hoop passes as it is cut from the butt, in combination.

9. In a hoop-cutting machine, a bed, a traversing table, planes yieldingly mounted upon the bed and having oppositely inclined faces, plane irons adapted to alternately engage with the butt adjacent to its ends, and hoop-cutting knives engaging with the chamfered butt, in combination.

10. In a hoop-cutting machine, the combination with the traversing butt-carrying table, of the planes engaging with the butt thereon, the hoop cutting knives adjacent to the edge of the table, and the edge-rounding cutters receiving the hoops from said knives.

## 527,885. TOBACCO STRIPPING OR STEMMING MACHINE. SAMUEL REID, Jersey City, N. J., assignor of one-third to Edward G. Tremaine, Brooklyn, N. Y. Filed July 3, 1894. Serial No. 516,425. (No model.)



*Claim.*—1. In a tobacco stripping or stemming machine, the combination of a hollow knife or cutter for cutting or stripping the leaves from the stem and a device for passing the leaves through the cutter, substantially as specified.

2. In a tobacco stripping or stemming machine, the combination of a hollow knife or cutter for cutting or stripping the leaves from the stem, rolls for drawing the stems through the cutter, and an inclosed passage for leading the stems from said rolls, substantially as specified.

3. In a tobacco stripping or stemming machine, the combination of a hollow knife or cutter for cutting or stripping the leaves from the stem, adjustable rolls for drawing the stems through the cutter, and an inclosed passage for leading the stems from said rolls, substantially as specified.

4. In a tobacco stripping or stemming machine, the combination of a knife or cutter for cutting or stripping the leaves from the stem, adjustable rolls for drawing the stems through the cutter, said rolls being so supported that they are held yieldingly toward each other so that the distance between the rolls will accommodate itself to stems of varying thickness, substantially as specified.

5. In a cutter for a tobacco stripping or stemming machine, the combination of two tubes, one mounted within the other, one of said tubes having its extremity serrated, while the other tube is formed to coact with such serrations, and means for rotating such tubes relatively to each other, substantially as specified.

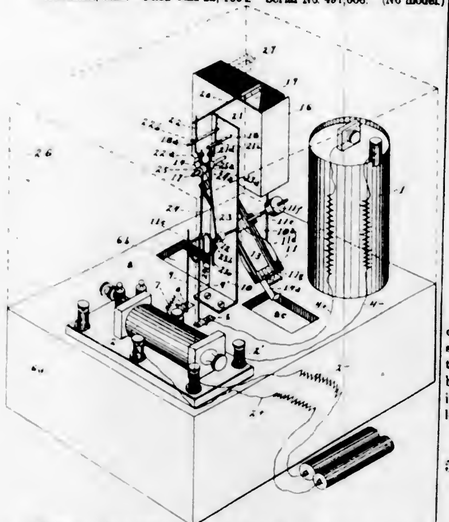
6. In a tobacco stripping or stemming machine, the combination with a standard, of a hollow stationary drum secured to said standard, a movable drum rotatably mounted upon said stationary drum and having gear teeth upon its periphery, a cutter secured to said movable drum, a spur wheel rotatably mounted upon said movable drum, a cutter secured to said spur wheel and coacting with said cutter secured to movable drum, and means for rotating said drum and said spur wheel relatively to each other, substantially as specified.

7. In a tobacco stripping or stemming machine, the combination with a standard, of a hollow stationary drum secured to said standard, a movable drum provided with spur teeth rotatably mounted upon said stationary drum, cutters carried by said movable drum, and drawing mechanism for drawing the stems through the cutter, substantially as specified.

8. In a tobacco stripping or stemming machine, the combination with a hollow knife or cutter, of a guide for directing the leaves to said knife or cutter, substantially as specified.

9. In a tobacco stripping or stemming machine, the combination with a hollow knife or cutter, of a guide for directing the leaves to said knife or cutter and means for adjusting the guide into and out of position, substantially as specified.

527,886. COIN-CONTROLLED MACHINE. ISAAC RICHARDSON, Cleveland, Ohio. Filed Jan. 22, 1894. Serial No. 497,608. (No model.)



*Claim.*—1. In a coin controlled machine, a cylinder pivoted off its center in combination with an electric circuit, the cylinder being adapted to be partially turned on its pivot by the striking of a coin upon the cylinder to open the electric circuit, substantially as described.

2. In a coin controlled machine, a cylinder pivoted off its center and having an adjustable balance weight, the cylinder being adapted to be turned a partial revolution by the striking of a coin upon one end of the cylinder, substantially as described.

3. In a coin controlled machine, the combination of a cylinder, an hour-glass inclosed within the cylinder, and an electric circuit, the cylinder being pivoted off its center and adapted to be turned through a partial revolution by the striking of a coin upon one end of the cylinder, substantially as described.

4. In a coin controlled machine, a cylinder, an hour-glass inclosed within the cylinder and an adjustable balance weight, the cylinder being adapted to be turned through a partial revolution by the striking of a coin upon one end of the cylinder, substantially as described.

5. In a coin controlled machine, a cylinder having cups formed at its ends, and an adjustable balance weight connected with the cylinder, substantially as described.

6. In a coin controlled machine, a cylinder having cups formed at its ends, an adjustable balance weight connected with the cylinder, and an hour-glass inclosed within the cylinder, substantially as described.

7. In a coin controlled machine, a cylinder having cups formed at its ends, an adjustable balance weight attached thereto, and adjustable slides secured to the cylinder, substantially as described.

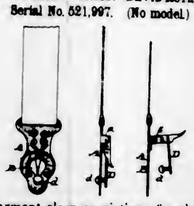
8. In a coin controlled machine, a cylinder having cups formed at its ends, an adjustable balance secured to the cylinder, adjustable slides connected with the cylinder, and an hour-glass inclosed within the cylinder, the cylinder being adapted to be turned through partial revolution by the striking of a coin upon one end of the cylinder, substantially as described.

9. In a coin controlled machine, an electric circuit, a cylinder adapted to be turned through a partial revolution by the striking of a coin upon one end of the cylinder, and connection between the cylinder and the electric circuit whereby the circuit is opened and broken by the turning of the cylinder, substantially as described.

10. In a coin controlled machine, an electric circuit, two rods which form a part of the electric circuit, a cylinder adapted to be turned through a partial revolution by the striking of a coin upon one end of the cylinder, and a rectangular frame adapted to be turned by the turning of the cylinder whereby the turning of the cylinder opens and closes the electric circuit by bringing the sides of said rectangular frame into contact with the rods forming a part of the electric circuit, substantially as described.

11. In a coin controlled machine, a combination of a chute, a coin guide within the chute, two swinging levers adapted to be operated by the coin guide, two swinging trips connected with the swinging levers, a cylinder adapted to be turned through a partial revolution by the striking of the coin upon one of its ends, an electric circuit two vertical rods forming a part of the electrical circuit and a rectangular frame adapted to be turned by the turning of the cylinder whereby the turning of the cylinder opens and closes the electric circuit, substantially as described.

527,887. GARMENT-CLASP. DAVID ROTH, Cleveland, Ohio. Filed Sept. 4, 1894. Serial No. 521,997. (No model.)



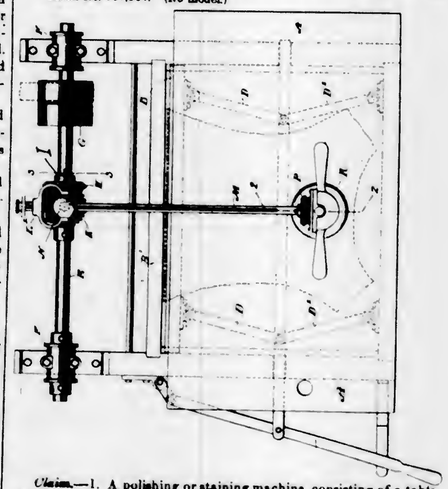
*Claim.*—A garment clasp consisting of a plate A, having slotted opening B, and ears *a*, a lever C pivoted in said ears, a spring *s* on said pivot, a tongue D pivoted to the lever C, a button *d* on said tongue, adapted to be inserted in the larger part of the opening B and by pressing down the lever C, force said button down and carry with it the fabric into the narrow part of said opening B, all of the parts located on the back of plate A, as shown and described.

527,888. BUNG-STOPPER. BARNET RUBENSTEIN, Chicago, Ill. Filed Feb. 26, 1894. Serial No. 501,557. (No model.)



*Claim.*—The combination with the hollow bushing, A, having an internal notched flange at the bottom having a substantially flat upper surface and thickening in both directions from the notches, of a stopper, B, having the head, *b*, disk, $b^1$, and the lugs, $b^2$; substantially as described.

527,889. POLISHING AND STAINING MACHINE. LUCIEN SCHMOLL and ARMAND SCHMOLL, Newark, N. J. Filed July 14, 1894. Serial No. 517,507. (No model.)



*Claim.*—1. A polishing or staining machine, consisting of a table and a revoluble holder, said holder being mounted upon a revoluble and longitudinally movable shaft, and free to be moved in all directions through the medium of a double swivel joint at the point where the power shaft and longitudinally movable shaft cross, with the gearing as described, substantially as and for the purpose specified.

2. A polishing or staining machine comprising a table, a revoluble holder free to be moved in all directions, and actuated through the medium of the power shaft E, and sliding shaft M, as described, co operating with the said shaft E, through the medium of the double swivel mechanism and the gears arranged contiguous thereto, all arranged to permit universal action of the holder, substantially as described.

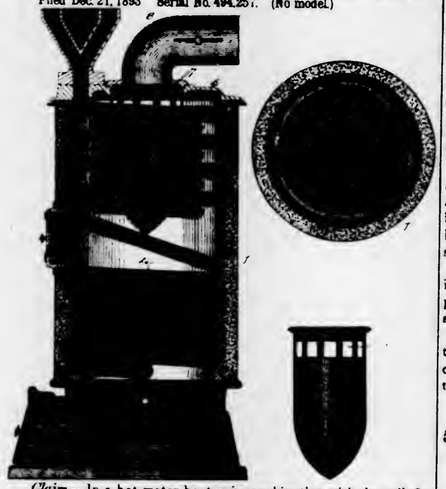
3. In a polishing or staining machine, the combination of a sliding shaft M supported by a double swivel joint, and therefore free to swing in all directions, and a holding device carried by said sliding shaft, with gears arranged around and contiguous to said double swivel mechanism to transmit power from the power shaft to the said holding device, substantially as and for the purpose described.

4. In a polishing or staining machine, a power shaft supporting a double swivel joint, and a shaft M, supported in the head N of the swivel-pin J, with a system of gearing H K L located around and contiguous to said double swivel mechanism, the gear L carrying a feather spline moving in a slot in the shaft M, in combination with a revoluble holder located at the end of the shaft L as described, substantially as and for the purpose specified.

5. The combination in a polishing or staining machine of a table A, clamping device B B', with the universal joint H K L supporting a longitudinally movable shaft M by means of the bearing N, and with the feather spline $L^3$ on the gear L moving in a slot in the shaft M and with gear wheels P Q and the polishing agent R all arranged substantially as and for the purpose specified.



527,890. HOT-WATER HEATER. WILBUR L. SHEPARD, Elmwood, Conn., assignor to the Whitlock Coil Pipe Company, same place. Filed Dec. 21, 1893. Serial No. 494,257. (No model.)



*Claim.*—In a hot water heater, in combination with the coils for the circulating medium, a hollow deflector having an open upper end, loosely resting in an opening in the cover and projecting into the center of the coils above the fire pot, said deflector having openings through its side walls from the combustion chamber near the cover, and a smoke pipe supported in the open upper end of the deflector, substantially as specified.

527,891. RAILWAY CONSTRUCTION. JOSEPH L. SILSBEE, Chicago, Ill. Filed Dec. 26, 1893. Serial No. 494,693. (No model.)



*Claim.*—1. A flexible traveling rail made in sections interlocking at their ends, substantially as described.

2. A flexible, sectional, traveling rail, the sections whereof are loosely interlocked at their ends, whereby the horizontal adjustment of the sections is maintained, while allowing said sections to slide upon each other, and to move laterally, substantially as described.

3. A flexible rail section secured to a car or platform, and adapted to interlock with a similar section on an adjacent car or platform, substantially as described.

4. A car or platform provided with a flexible rail section adapted to engage with a corresponding section on an adjacent car or platform, whereby the horizontal adjustment of the sections is maintained, substantially as described.

5. A flexible traveling rail made in sections, each section connected at one or more points to the car or platform and by means of a loosely fitting interlocking joint at its ends with the sections next adjacent, whereby the rail is adapted to yield laterally, and enabled to pass around curves, while through the interlocking a uniform level is maintained between adjacent sections of the rail, and thereby between the cars or platforms, and sufficient stiffness is imparted to the rail sections to enable them to travel on a straight line, or in conformity with the curvature of the railroad track, substantially as described.

6. The combination of a flexible, sectional, interlocking, traveling rail, wheels upon which the rail travels, and cars or platforms supported by and secured to the rail sections, substantially as described.

7. In a railway for increasing the speed of a car or platform over that of the axle, the combination of the flexible, sectional, interlocking, traveling rail resting upon the peripheries of the wheel or wheels transmitting motive power, the rail sections being connected at their ends by loose, interlocking connections preventing vertical or lateral play, but allowing the longitudinal play that is necessitated by the curvature of the railway track, and the lengths and widths of the cars and the platforms resting on it, and a car or platform resting upon and secured and carried or supported by such rail sections, substantially as described.

8. The combination of a car, pockets secured to the under side thereof, and a flexible rail section secured in such pockets, substantially as described.

9. The combination of a car, pockets secured thereto, a flexible rail section, and shoes engaging the section and retained in the pockets, substantially as described.

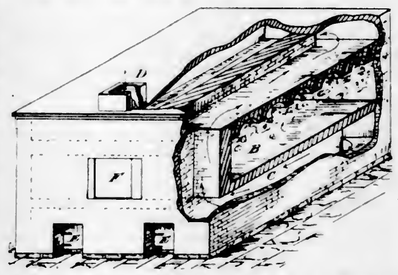
10. The combination of pockets adapted for attachment to a car body, shoes fitting in such pockets, and a rail section passing through the pockets and shoes, and secured to the latter.

11. The combination of pockets adapted to be secured to a car and provided with slotted ends, shoes having beveled and slotted ends, and adapted to be received in the pockets, and a rail section passing through both shoes and pockets, and secured to the shoes by a loose joint, whereby the rail section is afforded play in all directions, substantially as described.

12. The combination of a car, pockets secured thereto, shoes inserted into the pockets, springs interposed between the shoes and pockets, and a flexible rail section passing through both pockets and shoes, and secured to the latter, substantially as described.

13. As a means for securing a rail section to a car, the combination of a pocket with slotted ends, and adapted to be secured to the car, and a shoe adapted to be received into the pocket, and secured to the rail section, substantially as described.

527,892. BAKER'S OVEN. ALVIN T. SIMPKINS, St. Louis, Mo. Filed May 2, 1894. Serial No. 509,820. (No model.)



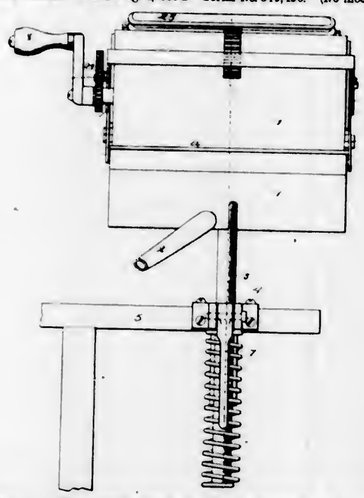
*Claim.*—1. In a baker's oven, a top for the oven chamber consisting of a series of angle bars and an interposed unshrinkable filling forming alternating ridges and recesses extending from side to side of the oven chamber transversely to the door, substantially as shown and for the purpose described.

2. An improved baker's oven, consisting of inclosing walls forming a casing, an oven proper having a door and extending inward from the back, front, and side walls of the casing leaving combustion and smoke spaces below and above said oven proper, and a vertical communicating flue at each front corner, partitions extending from the front walls nearly to the back, a chimney at or near the center of the top front of the casing communicating with the flue passages on each side, and a fire-box for each side in said combustion spaces.

3. In a baker's oven, walls forming a casing, an oven proper located below the top of said casing and heated by interposed flue passages,—the top of the oven proper consisting of a series of transversely arranged angle bars with an intermediate cement filling of varying thickness for transmitting the heat downward, substantially as shown and described.

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**527,893. COW-MILKING MACHINE.** ELSWOOD SMART, Brockville, Canada. Filed Aug. 4, 1894. Serial No. 519,490. (No model.)



*Claim.*—1. The hopper section having an adjustable back seated between flanges on the end plates, and provided with lugs at the ends, in combination with a cam frame having an eccentric slot engaging said lugs, for movement of said back inwardly and outwardly, as set forth.

2. The hopper section having an adjustable back provided with a flexible cushion or pad, a shaft provided with slotted disks carrying rolls journaled to travel in an eccentric groove at the ends of said hopper section, a pivoted or movable cam frame extending from end to end of said section and engaging said adjustable back, and springs for holding said back against the pressure of the rolls when rotated thereagainst, as set forth.

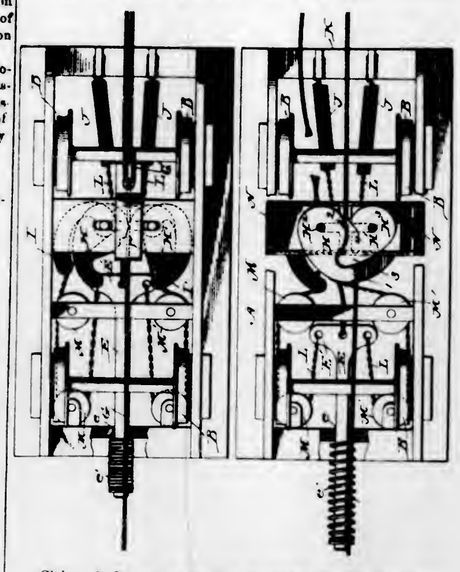
3. The hopper section having an adjustable back provided with a rubber cushion or pad clamped thereto, a shaft journaled through the ends of the hopper section, said ends having a cam groove, slotted disks keyed on said shaft, rolls journaled through said slots and into said cam grooves, a bottomless textile bag suspended in said hopper intermediate of said pad and rolls, a pivoted or movable cam frame for adjusting said hopper-back, an operating gear to rotate said shaft by hand, and a lower hopper section adjustably attached to a stool and supporting said upper section and operating as and for the purpose set forth.

4. The milking hopper constructed in two separable sections, the upper section having an adjustable back, a shaft mounted through the ends of said upper section and carrying slotted disks, rolls journaled through the slots in said disks and into a cam groove in the ends of the hopper, a movable cam frame carried by the ends of said shaft for adjusting the back of the hopper, and a lower section supporting said upper section removably, and adjustably attached to a stool, to move both sections vertically, as set forth.

5. The combination in a cow milking machine, of a hopper consisting of upper and lower sections removably secured together, the upper section being provided with an adjustable back, a cushion secured to said back, means for adjusting said back simultaneously at both ends, a rotary shaft, rolls carried by said shaft, and means for imparting an eccentric movement to said rolls during their movement with said shaft, substantially as described.

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**527,894. AUTOMATIC SAFETY-GRIP FOR INCLINED RAILWAYS.** ORSON M. SMITH, Duluth, Minn., assignor of two-thirds to M. J. Davis, R. J. McLaughlin, H. Bridgeman, and N. F. Russell, same place. Filed May 19, 1894. Serial No. 511,794. (No model.)



*Claim.*—1. In combination with an inclined-railway car provided with a spring actuated draw head, the motor cable attached to the draw-head and acting against the tension of the springs connected therewith, substantially pear shaped cable gripping jaws and connections interposed between the said jaws and the draw-head whereby the jaws are normally held apart by the force used in propelling the car and adapted upon the breaking of the propelling cable to grasp a fixed cable, substantially as described.

2. The combination with an inclined railway car of two pivoted cam shaped gripping jaws with eccentrically disposed journals and having their adjacent edges grooved as described, the cable used in propelling the car and connections interposed between said last named cable and the gripping jaws, whereby the jaws are normally held apart when the car is in motion and automatically closed upon the cable upon the breaking of the motor cable, substantially as described.

3. The combination with the car, a fixed cable, and a motor cable, of gripping-jaws normally held from gripping the fixed cable by the motor cable when under tension, said jaws being approximately pear shaped the neck portion of one being disposed to embrace the neck of the other when the jaws are gripping the fixed cable, substantially as specified.

4. The combination with a car, a fixed cable, and a motor cable, of gripping jaws normally held from gripping the fixed cable by the motor cable when under tension, one of said jaws having a recess, the other a corresponding projection to cause the two jaws to work together and grip the fixed cable firmly, substantially as described.

5. The combination with a car, a fixed, and a motor cable, gripping jaws, having eccentrically disposed journals and arms operatively connected with the gripping jaws, of two springs each having connection with a gripping jaw to normally close the same, a draw-bar operatively connected with each of the said jaws, a spring for actuating the draw-bar and exerting a force to move the draw-bar against the action of the motor cable, substantially as described.

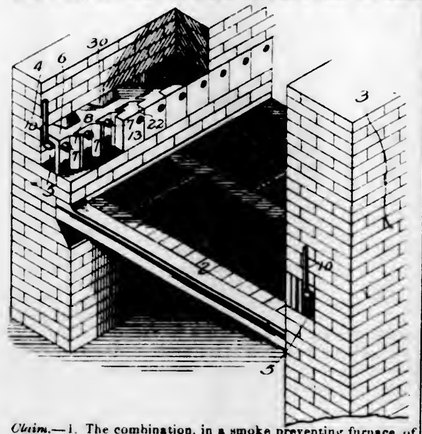
6. The combination with a car, a fixed and a motor cable, of gripping jaws having eccentrically disposed journals, yielding bearings, and a box having transverse slots for the said journals to work in, substantially as specified.

7. The combination with a car, a fixed, and a motor cable, of substantially pear shaped gripping jaws having eccentrically disposed journals, yielding bearings, and a box having slots in which said journals work, substantially as shown and described.

8. The combination with a car, a fixed, and a motor cable, of substantially pear shaped gripping jaws having eccentrically disposed journals, yielding bearings, a box having slots in which said journals work and the curved arms connected with the shafts of said jaws, substantially as described.



**527,895. SMOKE-PREVENTING FURNACE.** SAMUEL N. SMITH, Minneapolis, Minn., assignor to the Minnesota Smokeless Furnace Company, same place. Filed Jan. 22, 1894. Serial No. 497,643. (No model.)



*Claim.*—1. The combination, in a smoke preventing furnace, of the grate, with the walls of the fire-box surrounding the same, an air duct in one of said walls and above the grate level, openings for admitting air and steam into said duct, the double facing of said duct, air spaces between said facings, the two openings in the inner facing, and the single opening in the outer facing, said single opening being concentric and opposite the upper opening for the steam in the inner facing, whereby air and steam are mixed in the outer opening and discharged into the fire box, the air being heated in the space between said facings and drawn into the discharge opening by the action of the steam jet, substantially as described.

2. The combination, with the grate, of the walls of the fire-box, an air duct in one or more of said walls, a metal facing for said duct, the brick facing therefor, the vertical channels provided between said facings, the nipples projecting from the metal facing into larger openings in the brick facing, and the lower air holes provided in the inner or metal facing and communicating with said channels which in turn communicate with the openings in the brick facing, all substantially as described.

3. The combination, with the grate, of the walls of the fire-box, an air duct in one or more of said walls, a metal facing for said duct, the brick facing therefor, the vertical channels provided between said facings, the nipples projecting from the metal facing into larger openings in the brick facing and communicating with said channels which in turn communicate with the openings in the brick facing, and the steam pipe provided in said air duct and having small jets opposite the openings in said nipples and in the brick facing, substantially as described.

4. The combination, with the fire-box and its walls, of an angle bar arranged on at least one of said walls and having the inclined ribs or lugs, and the facing formed of fire-brick having the inclined rear parts to lock behind said ribs or lugs and also having the overlapping parts, whereby succeeding bricks serve to lock the others, substantially as described.

5. The combination, with the fire-box and the walls thereof, of the angle bar arranged upon or in the wall, the air duct formed beneath said angle bar, said bar provided with openings and with the inclined vertical ribs or lugs, and the fire-brick provided with the inclined shoulders adapted to project back of said ribs and also having overlapping edges or surfaces to engage one another, whereby the brick are locked in place, and said brick having openings, substantially as and for the purpose specified.

6. The combination, with the fire-box and the side walls thereof, of the angle bar arranged in said wall, the duct formed beneath said angle bar, the outer side of said bar provided with the inclined vertical ribs or lugs, and the fire-brick provided with the inclined shoulders adapted to project back of said ribs and also having overlapping edges or surfaces to engage one another, whereby the brick are locked in place, and exhaust openings in said angle bar and in said brick, said brick being provided on their rear sides with feet whereby channels are formed between the angle bar and the brick, and said angle bar provided with a lower series of air holes leading from the duct into said channels.

7. The combination, with the fire-box and the side walls thereof, of the angle bar arranged in said wall, the duct formed beneath said angle bar, the outer side of said bar provided with the inclined vertical ribs or lugs, and the fire-brick provided with the inclined shoulders adapted to project back of said ribs and also having overlapping edges or surfaces to engage one another, whereby the brick are locked in place, and exhaust openings in said angle bar and in said brick, said brick being provided on their rear sides with feet whereby channels are formed between the angle bar and the brick, and said angle bar provided with a lower series of air holes leading from the duct into said channels, and steam jets provided in said duct and concentric with the upper holes in said angle bar and the larger holes in the fire-brick or facing, all substantially as described.

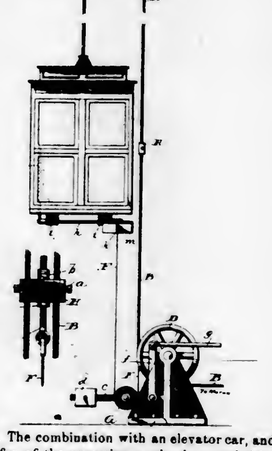
8. The combination, with the fire box and a wall thereof, of an air duct arranged in said wall, the facing bar of said duct, said bar provided with an upper and a lower series of holes, the fire-brick forming a facing for said bar, the vertical and the horizontal channels between said fire-brick and bar, the nipples forming extensions of the upper row of openings in said bar, and the larger openings in the fire-brick into which said nipples project, and steam jets provided in said duct opposite the upper row of holes in said bar, substantially as described.

9. The combination, with the side wall of a fire-box, of an air duct arranged therein, the angle bar forming the top and front side of said duct, said angle bar having a notched upper side, the steam-jet pipe arranged in said duct, the front side of the angle bar being provided with an upper and a lower series of openings, the fire-brick facing for the angle bar, channels between the same, and an upper row of holes in said fire-brick concentric with and larger than the holes in the upper row within the angle bar, substantially as described.

10. The combination, with the bar provided with the vertical ribs or lugs, of the fire-brick provided with the inclined parts conforming to the said ribs or lugs and having the outer longitudinal and overlapping parts and the vertical and horizontal channels formed upon the inner side of each brick, substantially as described.

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**527,896. ELEVATOR-CONTROLLER.** LOUIS W. SOUTHGATE, Worcester, Mass., assignor to the Otis Brothers & Company, New York, N. Y. Filed Dec. 22, 1891. Serial No. 415,932. (No model.)



*Claim.*—1. The combination with an elevator car, and the hoisting cable therefor, of the operating mechanism carried by the car, a running shifting rope connected at one end with the hoisting rope, and arranged to be operated by the said operating mechanism, and a pulley connected to the motor-controlling element around which pulley the shifting rope is passed, whereby the motor can be controlled from the car, substantially as set forth.

2. The combination with an elevator car, and a hoisting cable of the operating mechanism on the car, a running rope arranged to be operated by the said operating mechanism and connected with the said hoisting cable and passing around a pulley connected to the motor controlling element and means as a weight for moving this pulley in a direction opposite to that by which the said pulley may be positively moved by the said running rope, substantially as described.

3. The combination with an elevator car, and a hoisting cable, of the operating mechanism on the car a running rope attached to

said operating mechanism and to said hoisting cable, a pulley around which said running rope passes, a weight arranged to move said pulley in one direction and another weight carried by the car and arranged to pull on the said running rope against the pull of the first of said weights, substantially as described.

4. The combination with an elevator car, and a hoisting cable, of the operating mechanism on the car a running rope attached to said operating mechanism and to said hoisting cable, a pulley around which said cable passes, said pulley being connected to the motor controlling element, and means for adjusting said rope between said car and its point of attachment to said cable, substantially as described.

5. The combination with an elevator car, a hoisting cable, of a controlling rope attached at one end to the said hoisting cable, a pulley over which said rope runs, said pulley being connected to the motor controlling element, a weight arranged to move said pulley in one direction, and a double armed lever carried by the said car to one arm of which the other end of the rope is attached and a weight arranged on the other end of the said lever, substantially as described.

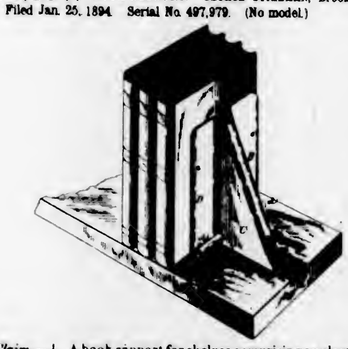
6. The combination of car A, the operating mechanism carried by the car, hoisting cable B, the controlling rope fastened at one end to the said operating mechaniam and at the other end to the hoisting cable, and a pulley G on which said rope runs, one vertical edge of said pulley being substantially in line with the hoisting cables and the other vertical edge in substantially the same vertical line as the point of attachment of the said rope to the car whereby the rope F will stand in substantially two parallel vertical lines, for the purpose stated.

7. In an elevator controller as described, the combination with the elevator car, and the operating mechanism carried thereby, of the two hoisting cables and the block fastened to the same, the eye bolt passing through the said block and adjustable relatively to the same, and a running cable attached to the said eye bolt and to the said operating mechanism and connected to move the motor controlling element, substantially as described.

8. The combination with car A, the operating mechanism thereon hoisting cable B, sheave wheel D over which the said cable runs to the motor, of the frame E in which said sheave wheel is mounted a running rope attached to the said operating mechanism and to the said hoisting cable, and a pulley around which said rope passes, said pulley being mounted on an arm which is pivoted or mounted in said frame E, said arm being connected to the motor controlling element, substantially as described.

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527,897. **BOOK-SUPPORT.** GEORGE STIKEMAN, Brooklyn, N. Y. Filed Jan. 25, 1894. Serial No. 497,979. (No model.)



*Claim.*—1. A book support for shelves comprising an elastic brace portion with double walls and depending flanges, and vertical wings, substantially as described.

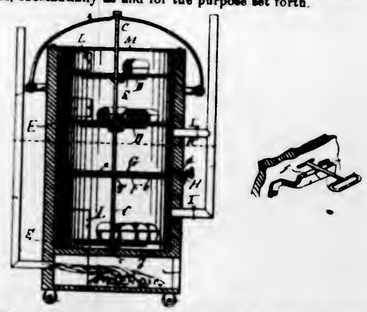
2. A book support for shelves consisting of a single piece of metal bent and fashioned to form a double walled triangular elastic brace with vertical wings and depending flanges having outwardly turned edges, substantially as described.

3. The combination with a book shelf formed with a slot or groove, of a book support consisting of a double walled brace portion, having depending flanges adapted to enter the groove or slot and vertical wings, substantially as described.

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527,898. **PORTABLE OVEN.** ISAAC STRIFE, Aultman, Ohio. Filed Feb. 21, 1894. Serial No. 500,951. (No model.)

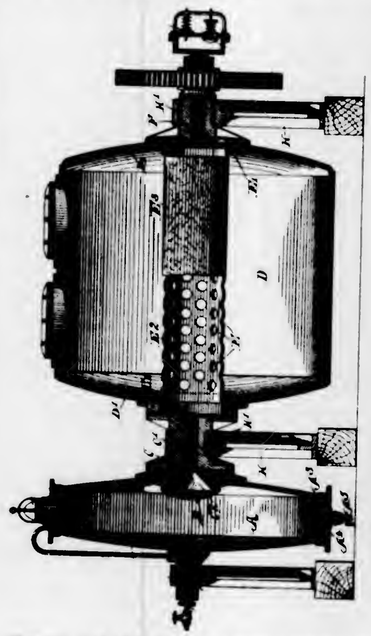
*Claim.*—1. The combination of the body or shell A, the furnace B, the shaft C, having fixed thereto the tray supports D, the trays E, the perforated plate F, fixed to the body A the perforated disk G provided with an operating handle, the pipes I, and J, provided with dampers, substantially as and for the purpose set forth.



2. The combination of the body or shell A, the furnace B the shaft C, the trays E, the perforated plate F, fixed to the body A, the disk G, provided with the handle *d*, the bracket H, provided with the notches *f*, the pin *g*, fixed to the handle *d*, the arms A, fixed to the top or upper end of the shaft C, the ring or band K the pipes I and J, and the chimney B', substantially as and for the purpose set forth.

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527,899. **ROTARY APPARATUS FOR GENERATION OF CHLORIN GAS, &c.** JOSEPH W. SUTTON, Chelmer, Queensland. Filed Feb. 1, 1894. Serial No. 498,708. (No model.)



*Claim.*—1. In combination, a chlorinator, a chlorine generator, a tubular axis of rotation common to both, the bore of said axis communicating with said chlorinator and generator and a valve casing at one end of said axis of rotation in communication with the bore thereof, for the purpose set forth.

2. In combination, a chlorinator, a chlorine generator, a tubular revoluble shaft common to both, the bore of said shaft communicating with said chlorinator and generator, a valve casing at one end of the shaft in communication with its bore and provided with inlet and outlet ports, valves for said ports, and springs adapted to hold the valves to their seats, substantially as and for the purpose set forth

3. In combination, a chlorinator and a chlorine generator revoluble about a common axis, said generator provided with a steam jacket, a portion of said hollow axis being open to the generator and chlorinator respectively, and a pipe connecting the steam jacket of said generator with another portion of said hollow axis, for the purpose set forth.



4. In combination, a chlorinator and a chlorine generator revoluble about a common hollow axis having a funnel shaped inlet opening into the generator, that portion of said axis within the chlorinator being of increased diameter and provided with perforations, for the purpose set forth.

5. In combination, a chlorinator and a chlorine generator revoluble about a common hollow axis having a funnel shaped inlet opening into the generator, that portion of said axis within the chlorinator being of increased diameter and provided with perforations, and a gas distributer, as a foraminous covering not affected by chlorine encompassing the said perforated portion of the axis, for the purpose set forth.

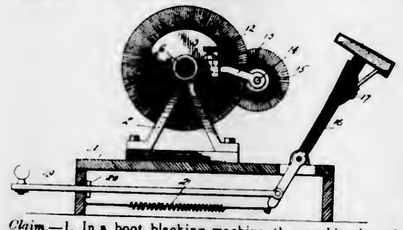
6. In combination, a chlorinator and a chlorine generator revoluble about a common hollow axis having a funnel shaped inlet opening into the generator, and a covering of a foraminous material not affected by chlorine for the said inlet, that portion of said axis within the chlorinator being of increased diameter and provided with perforations, and a gas distributer as a foraminous covering not affected by chlorine encompassing the said perforated portion of the axis, for the purpose set forth.

7. In combination, a chlorinator, a chlorine generator revoluble together about a horizontal axis, said generator provided with a steam jacket, an exhaust valve normally closing a portion of said jacket, and means for automatically opening and reclosing said valve, for the purposes set forth.

8. In combination, a chlorinator, a chlorine generator revoluble together about a horizontal axis, said generator provided with a peripheral steam jacket, a spring actuated valve normally closing an exhaust port in the outer wall of said jacket, and means for moving the valve against the stress of its spring to temporarily open the exhaust port when said port is at its lowest point during the rotation of the generator, for the purpose set forth.

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527,900. **BOOT-BLACKING MACHINE.** JEROME B. SWEETLAND, Pontiac, Mich., assignor of three-fourths to Enoch M. Beebe, Memphis, Tenn., and Edward A. Carter, Birmingham, Mich. Filed Feb. 14, 1894. Serial No. 500,151. (No model.)



*Claim.*—1. In a boot blacking machine, the combination of a base, an applying-brush and a polishing brush mounted thereon, a movable part mounted on the base, a fluid-receptacle and a blacking-receptacle carried by the movable part, and means for actuating said movable part, whereby the fluid and blacking may be applied to the applying-brush, substantially as described.

2. In a boot blacking machine, the combination, of a base, an applying brush mounted thereon, a daub-brush adjustably supported in contact with the applying-brush, a movable part mounted on the base, a blacking-receptacle and a fluid receptacle carried by said movable part, and means for actuating the movable part, whereby the brushes are moistened, and the blacking is caused to contact with the daub-brush, substantially as described

3. In a boot-blacking machine, the combination, of a base, a blacking-applying brush and a polishing-brush mounted thereon, means for operating said brushes, a daub-brush suitably supported and bearing against the blacking-applying brush, a movable part mounted on the base, a blacking-receptacle mounted on said movable part, a liquid receptacle also mounted on said movable part, and means for operating said movable part, whereby the blacking receptacle is caused to contact with the daub-brush and the liquid is caused to flow onto the applying-brush, substantially as described.

4. A boot blacking machine consisting of a base, brushes 5 and 7 supported thereon, means for operating said brushes, a daub-brush adjustably supported against the brush 7, a lever pivoted on the base, receptacles 17 and 18 mounted on said lever, and means for vibrating said lever, substantially as described and for the purpose set forth.

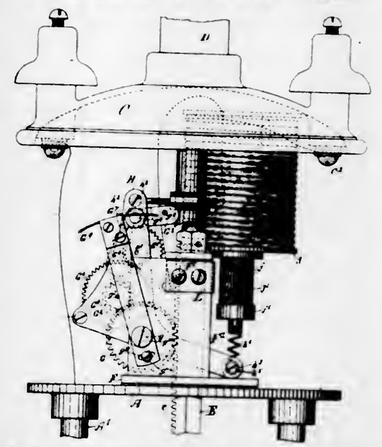
5. In a boot blacking machine the combination of a base, a brush mounted thereon, a movable part mounted on said base, a fluid receptacle mounted on said movable part, said receptacle being open at its forward end and so mounted on the movable part that in its normal position the liquid will be retained therein, and means for operating the movable part, whereby the fluid contained in said receptacle may be ejected onto the brush, substantially as described.

6. In a boot blacking machine the combination of a base, an applying brush mounted thereon, a swinging-lever also mounted on said base, a fluid receptacle mounted on said lever at its upper end, said receptacle being open at its forward end and set obliquely on the lever so that in its normal position the fluid will be retained therein, and means for swinging the receptacle-carrying lever forward, whereby the fluid contained in the receptacle will be ejected onto the applying brush, substantially as described.

7. In a boot-blacking machine, the combination of a base, a rotary brush journaled thereon, an upright lever pivoted on the base, means for throwing the lever toward the brush and for normally swinging it away from the same, a blacking receptacle on the lever, and a fluid receptacle above the blacking-receptacle and perforated at its forward end, as and for the purpose described.

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527,901. **ELECTRIC-ARC LAMP.** HANS O. SWOBODA, New York, N. Y., assignor to the General Incandescent Arc Light Company, of New York. Filed Mar. 2, 1894. Serial No. 502,046. (No model.)

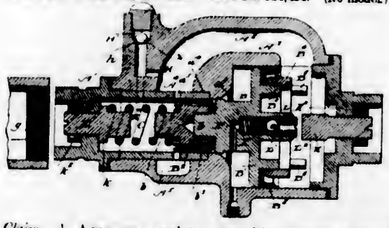


*Claim.*—1. In an arc lamp, the combination of a movable carbon support, a rotary part connected with such support, a tilting frame, a solenoid or magnet for controlling the movement of the tilting frame, an escapement, escapement wheel and balance lever carried by said tilting frame, said escapement having a laterally projecting pin, mechanism under the control of the escapement carried by said tilting frame and having a pawl and ratchet connection with said rotary part, a fixed frame, and an arm extending therefrom provided with a laterally projecting arc shaped flange at one end which coacts with the pin of said escapement to prevent movement of the latter in such a manner as not to interfere with the movement of the tilting frame, substantially as specified.

2. In an arc lamp, the combination of a movable carbon support, a rotary part connected with such support, a tilting frame, a solenoid or magnet for controlling the movement of the tilting frame, an escapement, escapement wheel and balance lever carried by said tilting frame, said escapement having a laterally projecting pin, mechanism under the control of the escapement carried by said tilting frame and having a pawl and ratchet connection with said rotary part, a fixed frame, and an adjustable arm extending therefrom provided with a laterally projecting arc shaped flange at one end which coacts with the pin of said escapement to prevent movement of the latter in such a manner as not to interfere with the movement of the tilting frame, substantially as specified.

3. In an arc lamp, the combination of a movable carbon support, a device for controlling the movement of the same, a magnet or solenoid, a tilting frame connected with the armature or core of the magnet or solenoid mechanism carried by said tilting frame and comprising an escapement wheel and escapement and a balance lever and connected with the said device which controls the movement of the movable support, a pin pivotally connected with the balance lever, a spring for holding said pin in its normal position, and a projection or pin supported by a stationary part of the lamp, for co-acting with said pin of the balance lever, substantially as specified.

**527,902. PRESSURE-REGULATOR.** WILLIAM G. TAAFEL, Newark, Ohio. Filed Aug. 27, 1894. Serial No. 521,450. (No model.)



*Claim.*—1. A pressure regulator comprising the casing having a cylinder in two diameters, the larger section of which is integral with the casing, and the smaller section being formed of an open ended tube inserted through the smaller end of the casing and provided between its ends with a circumferential series of small perforations, an annular channel formed in the casing, around said perforations, a longitudinal passage leading from said annular channel to the larger outlet end of the casing, an annular coupling or cap screwed into the smaller end of the casing, and abutting on the outer end of the smaller cylinder section, a larger annular coupling or cap at the outlet end of the casing, and a piston in two diameters working in the said cylinder; the smaller end of the piston facing the inlet end of the casing and its larger end facing the outlet end, substantially as described.

2. The combination of the casing having the cylinder in two diameters and in longitudinal alignment with the inlet and outlet ends, of a piston in two diameters, controlling the flow through the casing and having its smaller and larger ends facing the open inlet and outlet ends respectively of the casing, a longitudinal central screw mounted in a bearing in the inlet end of the casing to permit the free flow therethrough, and a spring interposed between the inner end of the screw and the smaller end of the piston; the outer end of the screw being accessible through the inlet end of the casing for adjustment, substantially as described.

3. A pressure regulator comprising the casing having the cylinder in two diameters and in longitudinal alignment with the inlet and outlet ends, a piston in two diameters controlling the flow through the casing with its larger end facing the outlet end of the casing and its smaller end facing the inlet end, a longitudinal central pressure-regulating screw mounted in the inlet end of the casing, a spring interposed between the inner end of the screw and the smaller end of the piston, and a longitudinal centra lflow regulating screw mounted in the larger outlet end of the casing with its inner end in the path of the larger end of the piston; the fluid being permitted to flow freely past the said two screws in entering and leaving the casing, substantially as described.

4. The combination with the casing having a cylinder in two diameters in line with the inlet and outlet ends, of the piston in two diameters with its smaller and larger ends facing the inlet and outlet ends of the casing, respectively, a passage extending inwardly from the face of the larger pistoo and then laterally in rear thereof into the exhaust space at the inner end of the larger cylinder section, and an excess pressure relief valve, carried by the larger piston, and controlling said passage, the said valve being wholly within the casing, substantially as set forth.

5. The combination with the casing, having a cylinder in two diameters in line with the inlet and outlet ends, of the piston in two diameters with its smaller and larger ends facing the inlet and outlet ends of the casing respectively, a valve chamber in the larger piston, a passage extending from the inner end of said chamber laterally into the exhaust space at the inner end of the larger cylinder section, a spring in the chamber, an excess pressure relief valve engaged by said spring, and a tubular threaded adjustable valve seat in the outer end of the valve chamber; the said excess pressure relief valve mechanism being carried by the larger piston and lying within the outlet end of the casing, substantially as set forth.

6. The combination with the casing having a cylinder in two diameters in longitudinal alignment with the inlet and outlet ends, of a piston in two diameters controlling the flow through the casing, and having its smaller and larger ends facing the inlet and outlet ends of the casing respectively, and a central longitudinal screw mounted within the outlet end of the casing with its inner end in the path of the larger piston and its outer end exposed for adjustment through said outlet end, substantially as set forth.

7. In a piston regulator, the combination with the annular coupling or cap for the outlet end of the casing, provided with an apertured cross-piece, of the flow regulating screw mounted in the apertured cross-piece to limit the throw of the piston or reducing valve, substantially as set forth.

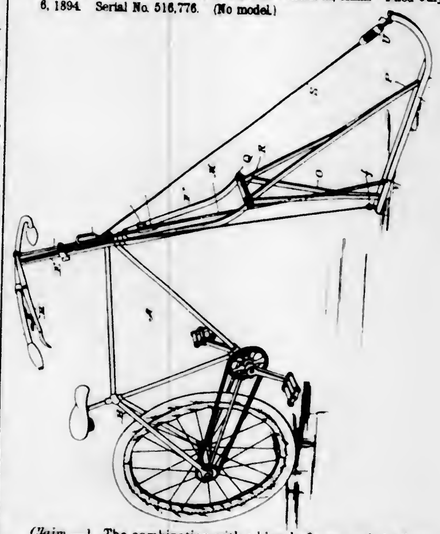
8. The combination with the regulator having an annular coupling or cap for its inlet end provided with an apertured cross piece and the double piston or reducing valve controlling communication between the inlet and outlet ends of the regulator, of a spring between the cross-piece and the face of the smaller piston and a pressure regulating screw mounted in said cross-piece and bearing on the said spring, substantially as set forth.

9. In a pressure regulator the combination with the double piston having a reduced portion on the face of its smaller piston, of an annular coupling or end cap for the inlet end of the regulator and provided with an apertured cross-piece, a pressure regulating screw extending through said cross piece and having a shoulder on its inner end, and a spiral spring guided on the inner end of said screw and on said reduced portion of the smaller piston, substantially as set forth.

10. A pressure regulator comprising the open ended casing having a cylinder in two diameters and a double piston or reducing valve aligning said open ends and controlling communication between the said open ends, of annular couplings or caps on the ends of the casing; the one at the outlet being provided with an inwardly extending central adjusting screw to limit the forward throw of the piston and regulate the flow, and the inlet coupling or cap also having an inwardly extending central screw, and a spring bearing between the inner end of the latter screw and the face of the smaller piston, substantially as set forth.

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**527,903. BICYCLE-SLED.** LEONHARD THANNER, Boerwang, Germany, assignor to Emil Christiansen, Leavenworth, Kans. Filed July 6, 1894. Serial No. 516,776. (No model.)



*Claim.*—1. The combination with a bicycle frame, and the front fork thereof; of the runner, the forked upright, and the forked brace connected with the front and rear portion of the runner, as shown, and having holes at their upper ends, a sleeve and bolt for connecting the runner to the front fork, and the adjustable tie rod connecting the front and rear ends of the runner with the bicycle frame, substantially as specified.

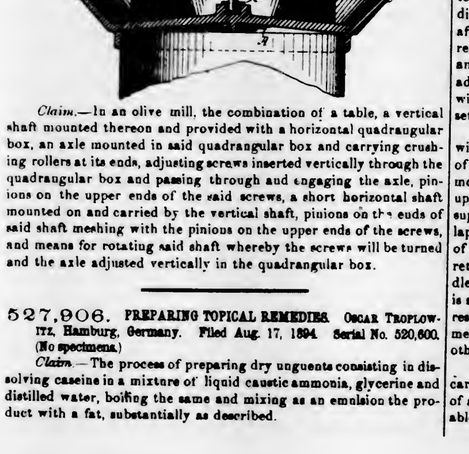
2. The improved snow and ice attachment for bicycles, consisting of the runner, the forked upright and the forked brace secured to the runner at one end, and having holes in their opposite forked ends, the adjustable tie rod secured at opposite ends to the opposite ends of the runner, and the brake rod, the whole adapted to be applied to a bicycle frame and operate, substantially as specified.

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**527,904. HARNESS.** JONAS A. THOMPSON, Suffield, Conn. Filed June 30, 1894. Serial No. 516,163. (No model.)

*Claim.*—1. In a harness, a saddle or girth in combination with a main strap provided at the front ends with means for attachment to the front ends of the shaft, a crupper attached to the rear portion of the main strap, the said main strap connected to the girth and being adapted to exteod from the crupper downwardly to the girth and then upwardly to the shafts, all substantially as described.

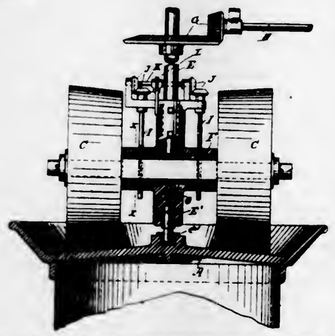
2. In combination, the vehicle shafts *b*, a saddle *a*, a girth *h*, a main strap *c*, a crupper *d* attached to the main strap, girth straps *f* connecting the main strap to the girth, the said main strap adapted to extend from the crupper downwardly to the point of attachment to the girth, and upwardly to the shafts, and means for attaching the shafts to the girth and to the main strap, all substantially as described.



3. In a harness, in combination, a saddle, a girth, straps for attaching the shafts of a vehicle to the girth, a main strap, a stay connecting the side parts of the main strap, a crupper attached to the upper and rear portion of the strap, girth straps adjustably connecting the main strap and the girth socket, the girth socket, and the shaft sockets adjustably secured to each front end of the main strap, said main strap adapted to extend from the crupper downwardly to the point of attachment to the girth and then upwardly to the shaft, all substantially as described.

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**527,905. OLIVE-MILL.** BERNARD TOULOUSE and JOHN DELORIEUX, San Francisco, Cal. Filed Dec. 20, 1893. Serial No. 494,215. (No model.)



*Claim.*—In an olive mill, the combination of a table, a vertical shaft mounted thereon and provided with a horizontal quadraugular box, an axle mounted in said quadrangular box and carrying crushing rollers at its ends, adjusting screws inserted vertically through the quadrangular box and passing through and engaging the axle, pinions on the upper ends of the said screws, a short horizontal shaft mounted on and carried by the vertical shaft, pinions on the ends of said shaft meshing with the pinions on the upper ends of the screws, and means for rotating said shaft whereby the screws will be turned and the axle adjusted vertically in the quadrangular box.

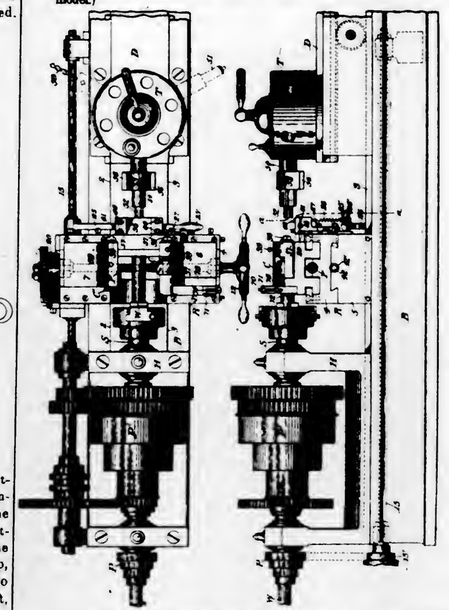
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**527,906. PREPARING TOPICAL REMEDIES.** OSCAR TROPLOWITZ, Hamburg, Germany. Filed Aug. 17, 1894. Serial No. 520,600. (No specimens.)

*Claim.*—The process of preparing dry unguents consisting in dissolving caseine in a mixture of liquid caustic ammonia, glycerine and distilled water, boiling the same and mixing as an emulsion the product with a fat, substantially as described.



**527,907. HUB-BLANK-MAKING MACHINE.** WILLIAM W. TOOKER, Hartford, Conn. Filed June 2, 1894. Serial No. 513,290. (No model.)



*Claim.*—1. In a machine for making wheel-hub blanks, the combination with a revoluble rod carrying spindle and with means for revolubly supporting the end of the rod carried by said spindle, of two oppositely-disposed cutters one for each end of the blanks located one at each side of the spindle-axis with their inner cutting edges in such planes relatively to each other as will adapt them to cut the stock simultaneously in longitudinally-overlapping continuous lines and thereby complete a wheel-hub blank by a single continuous and simultaneous operation of said two cutters, slides supporting the cutters, means for simultaneously and progressively advancing said slides toward the spindle-axis and positively maintaining the cutters equidistant from said axis, and means for automatically stopping said cutters after a predetermined period of operation, substantially as described.

2 A hub-blank-making machine comprising a revoluble rod-carrying spindle, a revoluble turret supported upon a carriage adapted for sliding movement toward and from said spindle, two oppositely-disposed cutters fixed in cutter-carrying slides and having their inner cutting edges in overlapping planes relatively to each other, feed-mechanism for progressively advancing the cutter-slides transversely toward the spiodle axis and positively maintaining the cutters equidistant from said axis, means for automatically stopping said cutters after a predetermined period of operation, a tool carried by the turret in position to engage the end of the rod carried by the spindle, and a tool-guiding device intermediate to the turret and spindle and adapted for positively maintaiuing the axis of said tool in alignment with the spindle axis, substantially as described and for the purpose set forth.

3. In a machine for making wheel-hub blanks, the combination with the revoluble rod-carrying spindle and with the revoluble turret, of two oppositely-disposed tool-carrying slides supported for sliding movement one at each side of the axial line of the spindle upon the upper member of a two-member slide-rest, two hub-forming cutters supported, one by each slide; with their inner cutting edges in overlapping planes relative to each other, a cutting-off tool carried by one of said slides at one side of the cutter-head, a tool carried by the turret and adapted for engaging the end of the rod carried by the spindle, and a guide for said tool comprising two members, one of which is secured to the tool, and the other of which is secured to the slide-rest in position to receive and guide the first-mentioned member, and means for moving the hub-forming cutters toward and from each other, substantially as described and for the purpose set forth.

4. In a machine of the class specified, the combination with a rod-carrying spindle and turret, and with a tool carried by said turret, of a transversely-disposed slide-rest comprising two members adjustable longitudinally of each other, cutter carrying slides supported for

movement in opposite directions upon one of said members, a guide-block secured to one of said members and having transversely adjustable guide-straps, and a guide carried by the turret in position to enter between the straps and guide-block, substantially as described and for the purpose set forth.

5. In a hub-blank making machine, the combination with the revoluble spindle adapted for carrying a rod, and with means for revolubly-supporting the end of said rod, of two oppositely-disposed cutters supported by oppositely-movable cutter-carrying slides, means for advancing said slides toward the spindle-axis and positively maintaining the cutters equidistant from said axis, means for automatically stopping said cutters after a predetermined period of operation, a cutting-off tool carried in a holder pivotally supported upon one of said slides at one side of the cutter-head carried thereby and adapted to have the cutting edge of said tool projected beyond the cutting edge of the aforesaid cutter by a swinging movement, substantially as described.

6. In a machine of the class specified, the combination with a revoluble spindle adapted for carrying a rod, of a cutter-carrying slide, a fixed cutter carried by said slide, a cutting-off tool supported for swinging movement at one side of the aforesaid cutter, means for progressively feeding said cutter-carrying slides toward the spindle-axis and thereby shaping the rod, and means for automatically stopping said movement after a predetermined period of operation, substantially as described.

7. In a machine of the class specified, the combination with a revoluble rod-carrying spindle and with a revoluble turret supported for sliding movement toward and from said spindle, of a compound slide rest supported for adjustment transversely of said spindle, two oppositely-disposed cutter carrying slides located one at each side of the axial line of said spindle, drop-feed mechanism in connection with said cutter-carrying slides and adapted for moving said slides transversely of the spindle axis, cutters carried by said slides with their inner cutting edges located in overlapping planes relatively to each other, a cutting-off tool supported for swinging movement at one side of one cutter and adapted to have its cutting edge projected beyond the cutting plane of the aforesaid cutter, and an automatic let-off device in connection with a drop-feed mechanism and one of the cutter-carrying slides, substantially as described and for the purpose set forth.

8. In a machine of the class specified, the combination with the revoluble rod-carrying spindle and with the revoluble turret supported upon a sliding carriage, of two oppositely-disposed cutters having bearings at points opposite their cutting edges in tool-carrying slides supported for movement in opposite directions, one slide at each side the axial line of the spindle, upon a compound slide-rest comprising two members adjustable, one longitudinally of the other, and transversely of the spindle axis; a tool carried by the turret and provided with a guide, a guide block secured to the slide-rest and having guide-ways in position and adapted to receive and position the guide of said tool, and means for moving the cutter carrying slides simultaneously in opposite directions toward and from the axial line of the spindle, substantially as described and for the purpose set forth.

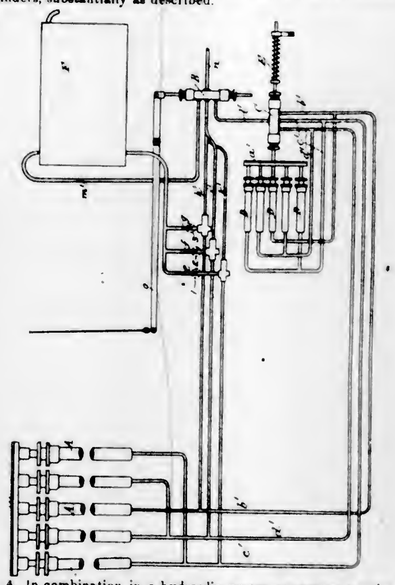
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527,908. HYDRAULIC HOISTING MACHINERY, &c. HERBERT W. UMNEY, London, England. Filed June 6, 1893. Serial No. 476,783. (No model.)

*Claim.*—1. In a hydraulic power apparatus and in combination, a main or starting valve, a single regulating valve, a pressure supply pipe leading direct from the starting valve to the regulating valve to cause all of the pressure water to pass through the said regulating valve, a series or cluster of main power cylinders, pipes extending from the single regulating valve to said cluster of cylinders the exhaust passage entirely independent of the regulating valve and constituting the only escape for the exhaust water, the series of exhaust pipes extending from the cluster of cylinders to the independent exhaust, the said single regulating valve and the single exhaust passage being common to all the cylinders of the cluster and being connected thereto by the said cluster or series of pipes and the means for regulating the position of the regulating valve to control the distribution to the various cylinders of the group, substantially as described.

2. In combination in a hydraulic power apparatus, a series of main power cylinders, a main or starting valve the single regulating valve C controlling the water pressure therein, the series or cluster of supplemental cylinders D, the supply pipes therefor also controlled by the said single valve, the connection between the supplemental pistons and the single regulating valve for controlling the same, the exhaust pipes in connection with both the main and supplemental cluster of cylinders and the exhaust passage with which said exhaust pipes connect said exhaust passage being entirely independent of the regulating valve substantially as described.

3. In a hydraulic power apparatus the combination of a cluster of main power cylinders A, a single regulating valve C controlling the supply of pressure water thereto, the cluster of supplemental cylinders D having their pistons connected with the stem of the single valve C the supply pipes for the supplemental cylinders communicating with the pressure supply between the regulating valve and the main cylinders and the resisting means acting on the stem of valve C in opposition to the pressure in the cylinder D, the said regulating valve also controlling the pressure water supply in the supplemental cylinders, substantially as described.

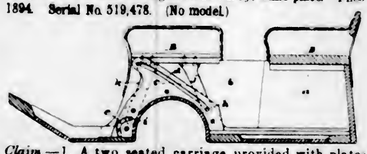


4. In combination in a hydraulic power apparatus, a series or cluster of main power cylinders A, the single regulating valve C controlling the water pressure therein, the cluster of supplemental cylinders D the supply pipes for the supplemental cylinders communicating with the pressure supply between the valve C and the main cylinders, said cluster of supplemental cylinders having their pistons connected with the stem of the regulating valve, the resisting means for placing the valve under tension in opposition to the pressure in the cluster of supplemental cylinders, the starting valve having connection with the regulating valve, and the exhaust pipes from the cluster of cylinders leading to exhaust ports in the starting valve independent of the regulating valve C, substantially as described.

5. In combination in a hydraulic power apparatus, the cluster of main power cylinders A comprising the central cylinder, the cylinders about the same connected together in pairs of which pairs one member is on one side of the central cylinder and the other member is on the opposite side the single regulating valve C for controlling the pressure in the cylinders, the means for placing a resistance on said valve the cluster of supplemental cylinders comprising a central one and a series arranged on each side of the same and connected up in pairs to correspond to the main power cylinders, said supplemental cylinders having their pistons connected with the single regulating valve, and the pipe connections between the regulating valve and the main and supplemental cylinders, substantially as described.

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527,909. CARRIAGE. FRANCIS N. VANIER, Amesbury, Mass., assignor of one-half to Augustus N. Parry, same place. Filed Aug. 4, 1894. Serial No. 519,478. (No model.)



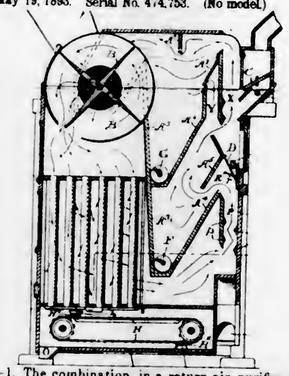
*Claim.*—1. A two seated carriage provided with plates *c* duly secured to the body and formed with longer slot *d* and shorter slot *e* and the front seat provided with pins *h*, *i*, arranged to slide in said slots as the seat is turned forward and back, substantially as specified.

2. In a two seated carriage the front seat divided in two halves B, C, each half being provided with end panel *b* and at the inner end with legs *j*, *k*, both said end panels and legs being provided with pins *h*, *i*, arranged to move in slots *d*, *e*, formed in plates *c* when the seat is turned forward and back, substantially as specified.

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527,910. RETURN-AIR PURIFIER. JESSE WARRINGTON, Indianapolis, Ind., assignor to the Nordyke & Marmon Company, same place. Filed May 19, 1893. Serial No. 474,753. (No model.)



*Claim.*—1. The combination, in a return air purifier, of an exhaust fan located at one side of the machine, an ingress gate for the material located at the other side of the machine, an air passage X alongside the said hopper into which the material is discharged, an adjustable air passage Y alongside said passage X and separated therefrom by a short partition, a hopper below said air passage X into which the material is discharged therefrom, a single air passage P below said hopper with a deflector above said passage, the air current being thus concentrated and increased in force at the lower portion of the machine and divided and reduced in force at the upper portion, substantially as shown and described.

2. The combination, in a return air purifier, of an exhaust fan located in the upper portion of the machine to one side, a hopper provided with a gate through which the material may be introduced into the machine at the other side, air passages below said gates provided with deflector boards above them, pockets alongside the air passages into each of which a portion of the material is deposited in its passage, being aided in so doing by said deflector boards, one or more of which said deflector boards is adjustable, passages leading to the eye of the fan, and an adjustable discharging orifice to the fan with a partition leading from the fan casing to near the bottom of the machine, a chamber in the bottom of the machine to receive the dust gates below the main air passage at the other side of the machine to discharge the heaver material, and gates at the sides of the machine leading from the pockets to discharge the grades of material deposited therein, substantially as shown and described.

3. The combination, in a return air purifier, of the exhaust fan, a hopper in the upper part of the machine having a discharging gate, an air passage into which the material is discharged, a second hopper at the bottom of said air passage, a gate in the bottom of said hopper which is normally held closed and which discharges into an air passage below, mechanism by which said hopper is rapidly and intermittingly opened permitting the passage of material while excluding the passage of air, the said air passage below said hopper, and receiving pockets alongside said air passages, the whole being arranged and operating substantially as set forth.

4. The combination, in a return air purifier, of a fan a passage extending substantially from the top to the bottom of the machine, connections from said passage to said fan a hopper at or near the top of the machine and alongside said passage, and a second hopper formed within said passage by a swinging gate, and a by-path leading to a depositing chamber and around said second hopper whereby the air blast first passes through material falling from said second hopper, and dropping particles taken from same in said depositing chamber, continues on its passage around by said by-path and again comes in contact with the material where it is fed in from the first hopper, thus acting upon the material twice on its way from the bottom to the top of the passages, the last action being upon the fresh material just entering the machine, thus at once removing a portion of the impurities, substantially as set forth.

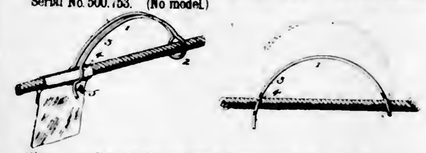
5. The combination, in a return air purifier, of the exhaust fan, the hoppers and gates for admitting material, air passages alongside said hoppers and gates, pockets alongside said passages and hoppers, a space below said pockets having gates to discharge the heavier material, and a single passage P leading from said space up to the other passages and the pockets, said passage having triangular strips or projections *p* at intervals aloug its sides, substantially as shown and described and for the purposes specified.

6. The combination, in a return air purifier, of a chamber having a comparatively small discharging orifice at one end, and a conveyer consisting of chains, cross bars and diagonally set scrapers on said cross-bars whereby the dust is both drawn forward and toward said discharging orifice, and a scraper set across the line of movement of said conveyer whereby the dust is drawn into said discharging orifice, substantially as set forth.

7. The combination, in a return air purifier, with the other separating mechanism, of a separate chamber for the dust and comparatively valueless parts, orifices in the top of said chamber for the admission of said dust, a discharging orifice at one end of said chamber, a conveyer H in said chamber consisting of chains, cross-bars, and diagonally set scrapers on said cross-bars, whereby the dust is drawn forward and toward the opening, and a scraper set at right angles with the line of movement, whereby said dust is drawn into said discharging orifice, substantially as set forth.

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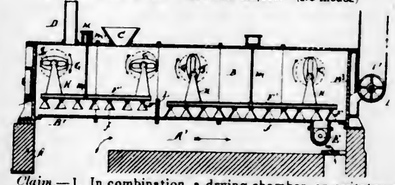
527,911. CLOTHES-PIN. WILLIAM D. WATKINS, Yoncalla, Oreg., assignor of one-half to Alice E. Derrick, same place. Filed Feb. 19, 1894. Serial No. 500,753. (No model.)



*Claim.*—A detachable clothes-pin consisting of a single piece of wire bent to form an open spring loop 2, curved arms 3—3, extending from said loop, having near their ends outwardly curved and oppositely disposed portions 4—4, and the ends 5—5 of said wire, diverging, substantially as shown and described.

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527,912. APPARATUS FOR DRYING, ROASTING, AND CALCINING SODA-ASH. JOHN R. WATSON and HERBERT WATSON, Wyandotte, Mich. Filed Dec. 4, 1893. Serial No. 492,690. (No model.)



*Claim.*—1. In combination, a drying chamber, an agitator consisting of a frame provided with cross bars $F^3$ each carrying depending scraper blades, and rotatable slotted cranks connected with said frame whereby the frame is reciprocated and given a rising and falling motion as the cranks are rotated, substantially as set forth.

2. In combination, the drying chamber provided with a transverse plate intermediate the ends of the chamber and reciprocatory agitators located on each side of the transverse plate, substantially as set forth.

3. In combination, a drying chamber, a reciprocatory agitator slotted cranks to reciprocate the agitator, and to elevate and lower it alternately on its forward and backward movements and rotatable shafts geared with said slotted cranks, substantially as set forth.

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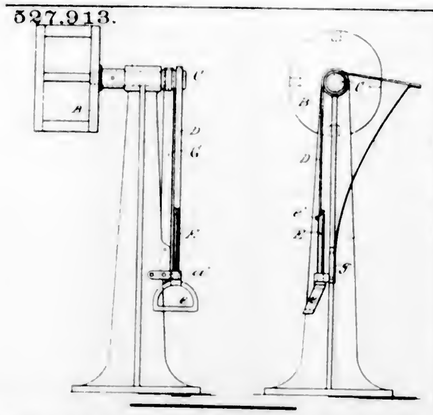
527,913. BOX-COVERING MACHINE. JULIUS WEBER, Reading, Pa. Filed Feb. 20, 1894. Serial No. 500,859. (No model.)

*Claim.*—1. A box covering machine comprising a mandrel, a chuck secured thereto, means for imparting a limited rotation to said mandrel in one direction and a spring arranged to return the same to its normal position, substantially as set forth.

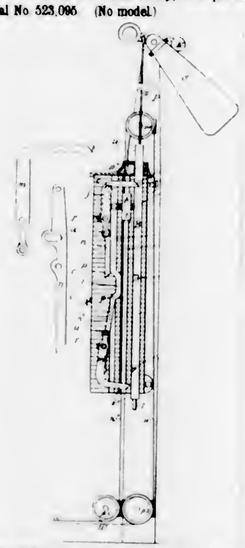
2. A box covering machine comprising a mandrel, a chuck secured thereto, straps E and D each having one end fixed to the mandrel and adapted to wind thereon in opposite directions, a spring attached to the free end of one of said straps and means for operating the other strap to rotate the mandrel, substantially as set forth.

3. A box covering machine comprising a mandrel, a chuck secured thereto, straps E and D each having one end fixed to the mandrel and adapted to wind thereon in opposite directions, a spring attached to the free end of one of said straps, means for operating the other strap to rotate the mandrel, and means for limiting the rotation to one turn, substantially as set forth.

527,913.



527,914. RAILWAY-SIGNAL. CHESTER A. WELLER, Sing Sing, N. Y., assignor of one-half to John Gibney, same place. Filed Sept. 15, 1894. Serial No. 523,096. (No model.)



*Claim.*—1. In combination with a railway signal and its operating mechanism, a compensator for the varying tension of the connecting wires, consisting of a grooved casing *c*, sliding block *b* carrying a pin *f* operated by groove *c* in the manner described, bar B notched for pin *f*, and levers *m*, *n*, *m'*, *n'*, pivoted to the casing and to each other respectively as described, wire *w*, *w'*, pulley wheels *p'*, $p^3$, $p^4$, all substantially as herein shown and described.

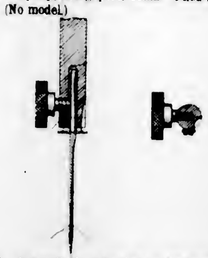
2. In combination with a railway signal and its operating mechanism, a compensator for the varying tension of the connecting wires, consisting of a casing *c*, sliding block *b* carrying a pin *f* to be operated by groove *c* in the manner described, bar B notched for pin *f* and the ends of levers *m*, *m'*, levers *n*, *n*, *m'*, *n'*, pivoted to the casing and to each other respectively as shown, the whole being actuated through wire *w*, *w'*, attached to block *b*, substantially as shown and described.

3. In combination with the actuating wire of a railway signal, a compensator for the varying tension of said wire consisting of a casing inclosing the following elements: a sliding bar B having direct connection with the signal or signals, said bar having a notch *k* with which a pin *f* engages for moving said bar, and notches *y* for locking levers; a block *b* attached to the said actuating wires and moving parallel with said bar B carrying pin *f* for moving said bar B, the pin having trunnions *t* moving in a groove in the casing which acts with a cam-like movement on pin *f* as described, and levers *m*, *n*, *m'*, *n'*, actuated by trunnions *t* of the pin *f*, and serving as locks for the bar B, as herein shown and described.

4. In a compensator as described, a moving block *b* made in two parts with zig-zag inner faces for clamping the actuating wire, mortised through the center for a sliding pin *f*, substantially as shown and described.

5. In a compensator as described, a moving block *b*, made in two parts with zig-zag joining faces for clamping the actuating wire, and carrying through its center a pin *f* for actuating the bar B, said pin having trunnioned ends to slide in a cam-like groove, the said ends bifurcated to clear the actuating wire, substantially as shown and described.

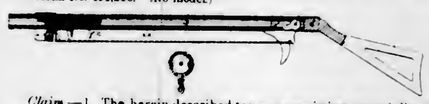
527,915. NEEDLE-BAR FOR SEWING-MACHINES. SAMUEL H. WHEELER, Chicago, Ill., assignor to The Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Filed Feb. 23, 1894. Serial No. 501,277. (No model.)



*Claim.*—1. A needle bar having at its lower end a longitudinal round bore to receive the shank of a needle, and an adjustable abutment located within said round bore at one side thereof, said abutment constituting an adjustable bearing for a flattened part of the shank of the needle, combined with a set screw screwed into the said bar and entering said round bore and acting against the shank of said needle to operate, substantially as described.

2. A needle bar having at its lower end a longitudinal round bore to receive the shank of a needle, and an adjustable threaded abutment located within said round bore at one side thereof, said abutment constituting an adjustable bearing for a flattened part of the shank of the needle, combined with a set screw screwed into said bar and entering said round bore at a point above and close to said abutment and acting against the shank of said needle to operate, substantially as described.

527,916. IGNITING SPRING-GUN. CHARLES F. WIEBACH, Newark, and ALOIS A. KOELLHOFFER, Vallsburg, N. J. Filed Jan. 29, 1894. Serial No. 498,296. (No model.)



*Claim.*—1. The herein described toy gun consisting essentially of a barrel, having a slotted opening in the bottom, indentations $a^3$ forming projections or stops on the inside of the barrel, a plunger in said barrel, and a trigger adapted to engage with said plunger and an elastic cord or band connected with said plunger and trigger, substantially as and for the purposes set forth.

2. The herein described gun, consisting essentially of a barrel, having a slotted opening in the bottom, indentations $a^3$ forming projections or stops on the inside of the barrel, lugs or ears extending downward near the front end of said barrel, a pulley arranged between said ears, a plunger in said barrel, a trigger adapted to engage with said plunger, and an elastic cord or band connected with said plunger and trigger, and passing over said pulley, substantially as and for the purposes set forth.

3. The herein described toy gun consisting essentially of a barrel having a slotted opening in the bottom, a plunger in said barrel, an igniting device on said plunger, a trigger, and an elastic band or cord connected with said plunger and trigger, substantially as and for the purposes set forth.

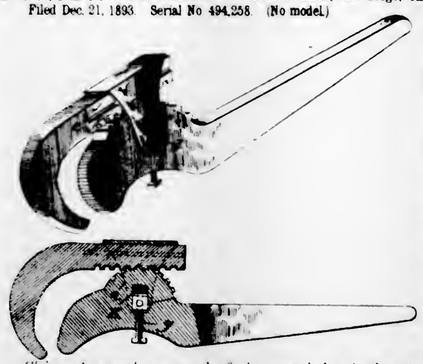
4. The herein described toy gun, consisting essentially of a barrel, having a slotted opening in the bottom, lugs or ears extending downward near the front end of said barrel, a pulley arranged between said ears, a plunger in said barrel, an igniting device on said plunger, a trigger adapted to engage with said plunger, and an elastic cord or band connected with said plunger and trigger, and passing over said pulley, substantially as and for the purposes set forth.

5. The herein described toy gun, consisting essentially of a barrel having a slotted opening in the bottom, lugs or ears extending downwardly near the front of said barrel, a pulley arranged between said lugs or ears, indentations $a^3$ in said barrel, a trigger *c* provided



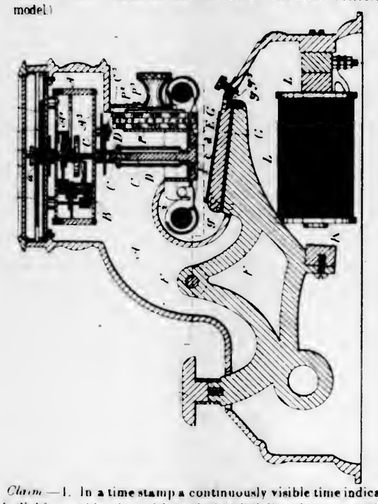
with a finger-piece and a holding or locking tooth $c^2$, a plunger *f* provided with a point *i*, a notch $f^3$ in said plunger, and an elastic cord or band *e* connected with said trigger and plunger and passing over said pulley, substantially as and for the purposes set forth.

527,917. PIPE-WRENCH. JAMES D. WILSON, San Diego, Cal. Filed Dec. 21, 1893. Serial No. 494,258. (No model.)



*Claim.*—A wrench composed of the wrench bar having the curved serrated jaw at its outer end and the toothed segment on its rear side, and the elongated slot K opposite said segment, the movable jaw having a straight shank toothed on the inner side to mesh with said segment and provided with the side grooves, the U shaped yoke embracing said shank and having the internal ribs in said grooves, substantially as described, the pivot block adjustable in said slot and to which said yoke is pivoted, and the adjusting screw, as set forth.

527,918. TIME-STAMP. JOHN C. WILSON, Boston, Mass. Filed June 17, 1891. Renewed Mar. 24, 1894. Serial No. 505,015. (No model.)



*Claim.*—1. In a time stamp a continuously visible time indicating clock dial in combination with a printing dial directly opposed thereto, a revoluble shaft at right angles to said dials provided with time indicating hands and time printing dies traversing respectively said clock and printing dials and suitable actuating mechanism, substantially as described.

2. In a time indicating and time printing clock mechanism, the combination with the minute shaft of two hour sleeves concentric therewith and arranged one on each end of said shaft the said minute shaft and the said hour sleeves co operating with and controlling minute and hour printing dies at or near one of its ends, and minute and hour indicating hands at or near its other end, substantially as described.

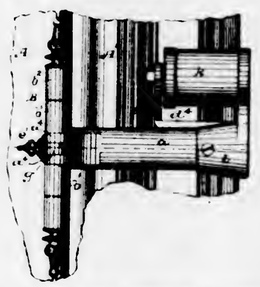
3. In a time printing and time indicating mechanism, a time train and separate concentric hour and minute time indicators or hands situated on one side of the said time train and moved and controlled thereby, in combination with separate concentric hour and minute time printing dies situated on the other side of the said time train and moved and controlled thereby in unison with said hour and minute indicators or hands, and directly opposed thereto, substantially as described.

4. In a time indicating and time printing clock mechanism a continuously visible clock dial, hands traversing said clock dial, a printing dial and hour and minute printing dies in combination with mechanism for actuating said hands and dies, the cam wheel M movable in unison with the minute printing die and provided with the projection *m*, the ratchet wheel N actuated by the said cam and provided with the projection *n*, the drum T T' concentric with said ratchet wheel, said drum being provided with the projection $t^2$, spring connection *t* spring pawls O O' engaging with said projection $t^2$, the detent Q, and a movable die connected with the drum T T' and provided with the letters "A" and "P" all arranged and operating, substantially as and for the purposes described.

5. In a time stamp the combination with time printing dial and dies of a simple lever fulcrumed in the casing of the apparatus bearing at one end a platen movable against said dial and dies, and provided at the other end with a knob, an electro magnet and circuit, and an armature secured to said lever, substantially as described.

6. In a time stamp a continuously visible time indicating clock dial in combination with a printing dial lying in a plane parallel to that of said clock dial, but opposed thereto, time indicating hands and time printing dies traversing respectively said clock and printing dials and suitable actuating mechanism, substantially as described.

527,919. DOOR-CHECK. JOSEF WOLF, Newark, N. J. Filed Sept. 27, 1893. Serial No. 486,588. (No model.)



*Claim.*—1. The door-check, consisting of a cylinder, a spring-actuated piston therein, an air-pump or cylinder arranged on and connected with said cylinder, a plunger and rod in said air-pump, and operative means connecting said plunger rod with said spring-actuated piston, substantially as and for the purposes set forth.

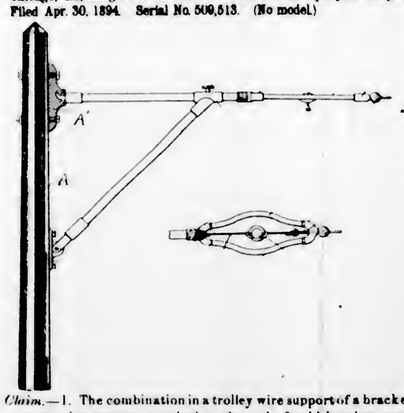
2. The door-check, comprising therein a cylinder having a longitudinal opening or slot in said cylinder, a spring-actuated piston in said cylinder, an air-pump or cylinder arranged on and connected with said cylinder, a plunger and rod in said air-pump, and operative means connecting said plunger rod with said spring-actuated piston, said means being adapted to slide in said opening or slot in said cylinder, and consisting substantially of an arm $d^4$ connected with said piston, provided with a post $d^5$ adapted to be connected with said plunger rod in said air pump, substantially as and for the purposes set forth.

3. In a door-check, the combination, of a hinge, consisting essentially of two hinge-leaves *b'* and $b^2$ and a removable pin *b*, with a spring-barrel and checking devices connected therewith, said spring-barrel being pivotally and removably connected with said hinge, substantially as and for the purposes set forth.

4. A door check, comprising therein, a hinge, consisting essentially of two hinge-leaves *b'* and $b^2$ and a pin *b*, a cylinder *a* provided with ears $a^4$ for pivotally arranging said cylinder on said pin *b*, a spring-actuated piston and piston rod in said cylinder, and a flexible connection connected with one of said hinge-leaves and with the free end of said piston rod, substantially as and for the purposes set forth.

5. A door check, comprising therein, a hinge, consisting essentially of two hinge-leaves *b'* and $b^2$ and a pin *b*, a cylinder *a* provided with ears $a^4$ for pivotally arranging said cylinder on said pin *b*, a spring-actuated piston and piston rod in said cylinder, a roller or wheel *g* on said pin *b* between said ears $a^4$, and a flexible connection connected with one of said hinge-leaves and with the free end of said piston rod, and said flexible connection passing over said roller or wheel, substantially as and for the purposes set forth.

527,920. **TROLLEY-WIRE SUPPORT.** MONTRAVILLE M. WOOD, Chicago, Ill., assignor to the Wallace Electric Company, same place. Filed Apr. 30, 1894. Serial No. 509,613. (No model.)



*Claim.*—1. The combination in a trolley wire support of a bracket arm, a span wire support attached to the end of said bracket arm, and a flexible span wire adjustably suspended between the ends of said span wire support, substantially as described.

2. The combination in a trolley support of a bracket arm, a span wire support attached to the end of said bracket arm, an eyebolt or the like passing through one end of said span wire support, and a flexible span wire having one end attached to the span wire support and the other end attached to said eye bolt whereby the tension of said span wire may be varied substantially as described.

3. The combination in a trolley supporting device of a bracket arm provided at one end with a hook a plate attached to a supporting pole, and a recess in said plate corresponding in shape to the said hook, whereby the bracket arm may be placed in position after the plate is attached to the pole.

4. The combination in a trolley supporting device of a bracket arm provided with a hook at one end and a span wire support at the other end, substantially as described.

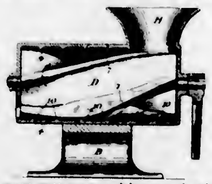
5. The combination in a trolley supporting device of a bracket arm, a span wire support attached to one end of said bracket arm, a span wire carrying an insulating hanger and adjustably suspended between the ends of its support, and an adjustable brace for said bracket arm, substantially as described.

6. The combination in a trolley wire supporting device of a bracket arm, a span wire support attached to one end of said bracket arm, and comprising two bifurcated castings connected by two bent or curved arms, and a span wire rigidly attached to one of said bifurcated castings and adjustably attached to the other casting, substantially as described.

7. A trolley wire supporting device comprising two end pieces connected by straight or curved arms and having a flexible span wire adjustably supported between said end pieces, substantially as described.

8. A trolley wire supporting device comprising a rigid arm adapted to be secured to a pole, post or the like, and an end portion thereon adapted to support a flexible span-wire, the span-wire in substantially the same axial line as the supporting arm.

527,921. **MEAT-CUTTER.** GEORGE ASHLEY and EDWARD D. ASHLEY, New Britain, Conn. Filed May 19, 1894. Serial No. 511,776. (No model.)



*Claim.*—1. A meat-cutter comprising a casing having a plurality of remotely-disposed, internally-projecting and substantially annular flanges, and a spiral formed cutter supported for rotation within said case with its cutting-edges adjacent to said flanges, substantially as described and for the purpose set forth.

2. A meat-cutter comprising a centrally and longitudinally divided two-part tubular casing, each part of which has a series of remotely-disposed internally projecting flanges, the flanges of one part being inclined in opposition to those of the other part, and a spiral cutter supported for rotation in said casing and having cutting-edges inclined in the direction of one of the series of flanges, substantially as described and for the purpose set forth.

3. In a meat-cutter, the combination with a casing and with a revoluble spirally-flanged cutter supported for rotation therein; of two sets of internal flanges carried by said casing, the flanges of one set being positioned and adapted for co acting with the flanges of the cutter to impart an advancing movement to the material being cut, and the flanges of the other set being oppositely disposed upon lines intersecting the lines of direction of the flanges of the first-mentioned set and being adapted for imparting a positive retractive movement to said material, substantially as described.

4. In a meat-cutter, the combination with a casing and with a revoluble spiral cutter supported therein, of oppositely-disposed retracting and advancing internal flanges carried by said casing and disposed upon intersecting lines and adapted in connection with the cutter for cutting the material and for imparting a zigzag advancing movement thereto, substantially as described.

5. In a meat-cutter, a casing having a plurality of pairs of internal flanges the flanges of each pair being arranged on lines intersecting the other, in combination with a revoluble cutter having spiral cutting-edges adjacent to and adapted for co-acting with said flanges for cutting and feeding the material being operated upon, substantially as described.

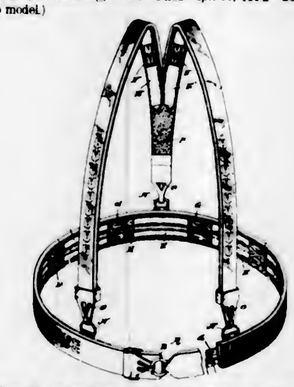
6. A meat-cutter comprising a casing having a plurality of independent annular internally projecting flanges set obliquely to the axis of the cutter, and a cutter supported for rotation within said case and having its cutting-edges adjacent to the oblique flanges of the casing, substantially as described and for the purpose set forth.

7. In a meat-cutter, a casing having series of remotely- and transversely-disposed internal flanges, the flanges of one series having gradually-reduced degrees of inclination, in combination with a spirally-flanged cutter supported for rotation in said casing and having its flanges inclined oppositely to said flanges of gradually reduced degrees of inclination, substantially as described and for the purpose set forth.

8. In a meat cutter, in combination, a tubular casing having two separate sets of internally projecting inclined and remotely-disposed flanges, the flanges of one set of which have different degrees of inclination relative to each other and are adapted for retarding the movement of the material being operated upon, with decreasing force, and the flanges of the other set of which are adapted for advancing the movement of the material, and a co-acting cutter having spiral cutting-edges and supported for rotation in said casing with its cutting-edges inclined in the direction of inclination of one of the sets of flanges, substantially as described and for the purpose set forth.

9. In a meat-cutter, the combination with the internally-flanged casing, and with the spirally-flanged revoluble cutter supported therein, of a longitudinally-grooved cutter bar, and an adjusting-screw revolubly supported in the casing and having a flange engaging in the groove of the cutter-bar, substantially as described and for the purpose set forth.

527,922. **ELECTRIC BELT.** JONAS BACKSTROM and FRANK W. JOHNSON, Stromsburg, Nebr. Filed Apr. 17, 1894. Serial No. 507,893. (No model.)



*Claim.*—1. In an electric belt, the combination of a body band or belt having an inner absorbent lining and a series of battery pockets with spaces there between, a chain battery arranged within the battery pockets next to the absorbent lining and consisting of a connected series of copper and zinc links, joint portions of said battery being exposed between the battery pockets, substantially as set forth.

2. In an electric belt, the combination of the body band or belt having an absorbent inner lining and a battery pocket interrupted at intervals by spaces, and a double chain battery consisting of a connected series of copper and zinc links each of which comprise plates of metal bent upon themselves to form connecting loops at one end and provided with openings to receive the loops of the adjacent links the joints of said battery being exposed at said spaces, substantially as set forth.

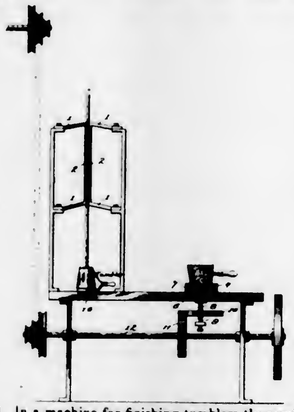


527,923. **PAVING-BLOCK.** GUSTAF BAGGE, Paris, France. Filed Feb. 3, 1894. Serial No. 499,011. (No specimens.)

*Claim.*—1. A paving block composed of crushed stones and the saw dust of a resinous wood, substantially as described.

2. A paving block composed of crushed stones, albumen and the saw dust of a resinous wood, substantially as described.

527,924. **MACHINE FOR FINISHING TUMBLERS, &c.** WILLIAM H. BARR, Tiffin, Ohio. Filed June 11, 1894. Serial No. 514,222. (No model.)



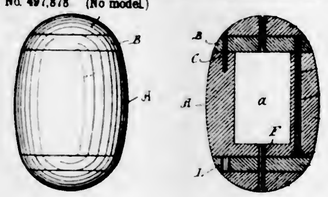
*Claim.*—1. In a machine for finishing tumblers the combination of a table having a surface-ring-seat, with a removable cup adapted to be freely seated upon and removed from said seat, a disk rotatively supported within said ring-seat free of the cup and means for rotating said disk to revolve the article supported thereon in contact with the walls of said cup.

2. In a machine for finishing tumblers, the combination of a table having a surface stud 3, with a frame having a guide 2 in co-incident relation to the surface stud and a plug for supporting the tumbler whereby to form a centering device for a plug removably placed upon said table stud and for the use of a punty, in the way and for the purpose described.

3. A machine for finishing tumblers, consisting of a table having thereon a centering device for a removable plug, a vertical frame having a guide in co-incident relation to said centering device, a ring-seat adapted to confine a removable cup upon said table, a disk rotatively supported within said ring-seat, and means for rotating said disk, the article being operated upon in successive steps as stated to finish it in the way described.

4. In the process of finishing glass articles a finishing former having its active surface composed of fine particles of cork and a base or ground composed of linseed oil and shoe-makers' wax.

527,925. **PUZZLE.** ALBERT W. BARTHOLOMEW, Boston, Mass., assignor of one-half to Lorenzo C. Paul, same place. Filed Jan. 24, 1894. Serial No. 497,878. (No model.)



*Claim.*—A puzzle box consisting of a hollow body, two disks at each end of same, the disks at the upper end being pivoted centrally to each other and eccentrically to the body so that they can be moved laterally to expose the opening in the body, and the disks at the lower end being pivoted centrally to the body, a locking pin passing through the body and openings in the inner disks at each end adapted to register with the opening in the body containing the locking pin substantially as described.

527,926. **RAILWAY-CHAIR.** GILBERT A. BARTHOLOMEW, Maumee, Ohio. Filed July 7, 1894. Serial No. 516,803. (No model.)



*Claim.*—1. The herein described railway chair consisting of two members, each comprising a horizontal foot piece for attachment to the tie, a body rising from the inner edge of the foot piece, a base projecting from the body beneath the rail, a clamp projecting from the body above the base of the rail, an upright rising from the clamp against the web of the rail, and strengthening webs on the outer faces of all said parts; and means substantially as described for connecting the bases of the two members, as and for the purpose set forth.

2. The herein described railway chair consisting of two members, each comprising a horizontal foot piece for attachment to the tie, a body rising from the inner edge of the foot piece, a base projecting from the body beneath the rail, a clamp projecting from the body above the base of the rail, an upright rising from the clamp against the web of the rail, and strengthening webs on the outer faces of all said parts; combined with a tongue projecting inward from the lower edge of the base of one member and turned up along its edge, and a tongue projecting inward from the upper edge of the base of the other member and turned down along its edge so as to form an interlocking tongue and groove on the two members, said tongue and groove being set oblique to the longitudinal line of said members, as and for the purpose set forth.

3. The herein described railway chair consisting of two members, each comprising a horizontal foot piece for attachment to the tie, a body rising from the inner edge of the foot piece, a base projecting from the body beneath the rail, a clamp projecting from the body above the base of the rail, an upright rising from the clamp against the web of the rail, strengthening webs on the outer faces of said parts at the ends of each member and at the points between its ends, and a driving lug formed integral with one end web on the outer face of one member; combined with a tongue projecting inward from the lower edge of the base of one member and turned up along its edge, and a tongue projecting inward from the upper edge of the base of the other member and turned down along its edge so as to form an interlocking tongue and groove on the two members, said tongue and groove being set oblique to the longitudinal line of said members, as and for the purpose set forth.

4. The herein described railway chair consisting of two members, each comprising a horizontal foot piece for attachment to the tie, a body rising from the inner edge of the foot piece, a base projecting from the body beneath the rail, means for connecting said bases, and a clamp projecting from the body above the base of the rail; the base of each member being hollowed out on its under side for the sake of lightness with the exception of a strengthening rib at each end and at the center of the length of the member, and a strengthening web connecting the lower face of the base with the inner face of the body at each end of each member, as and for the purpose set forth.

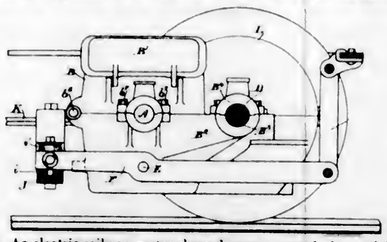
527,927. **ELECTRIC MOTOR FOR RAILWAY-CARS.** NORMAN C. BASSETT, Lynn, assignor to the General Electric Company, Boston, Mass. Filed June 28, 1893. Serial No. 479,027. (No model.)

*Claim.*—1. The combination with an electric motor centered upon an axle of the vehicle, of trunnions upon the outside of the motor vertically in line with its center of gravity, and longitudinal yokes supported by the wheel-base of the vehicle to which yokes said trunnions are pivotally connected.

2. An electric motor centered on an axle of the vehicle and having a supplementary support at a point vertically in line with its center of gravity, said support consisting of side bars supported at one

end by a transverse cross bar, and at the other end by links pivoted to a cross bar on the opposite side of the axle.

3. The combination with an electric motor centered on an axle of the vehicle, of a longitudinal supporting bar therefor carried at one end by the truck frame on one side of the axle, and at the other end by a link pivoted to the truck frame on the opposite side of the axle, and a pivotal connection between the motor and the said longitudinal bar vertically in line with the center of gravity of the motor.



4. An electric railway motor sleeved upon a car axle, but mainly supported by a supplementary frame pivotally connected at one end to the main truck, and spring supported at the other end upon a cross piece suspended from said main truck, as described.

5. An electric railway motor supported by a supplementary frame consisting of yokes extending longitudinally along the sides of said motor and suspended from the main truck frame, said motor being connected to said yokes at points below its center of gravity and prevented from swinging around said points by extensions sleeved upon the car axle, as described.

6. In an electric motor having an inclosing shell made of an upper and lower casing hinged and bolted together, trunnions on opposite sides of said lower casing, longitudinal extensions from said lower casing sleeved upon the car axle, and yokes suspended from the main truck adapted to support said trunnions but readily movable therefrom so that the motor can be allowed to swing beneath the axle and be suspended therefrom in an accessible position, and held by said longitudinal extensions, as described.

7. A waterproof motor comprising two casings hinged together at one end and sleeved upon a car axle at the other, trunnions upon opposite sides of said casings below the center of gravity of said motor, yokes supporting said trunnions, said yokes being pivotally supported near the axle end of the motor and spring-supported near the free end thereof, as described.

8. An electric railway motor comprising a lower box-shaped casing sleeved at one end upon the car axle and supported by trunnions on its sides below the center of gravity of the motor, said trunnions resting in spring-supported yokes, an upper box shaped casing hinged to said lower casing at the end away from the car axle and bolted thereto near said axle, thereby forming a substantially water-tight inclosing shell, an armature within said inclosing shell and journaled between said casings, and polar extensions upon the inner surface of said casings adapted to receive bobbins and form the field magnets of the motor, substantially as described.

9. An electric motor geared to and centered upon a car axle, and supported upon a supplementary frame pivotally connected at one end to the truck, and spring supported at the other end, as set forth.

10. An electric motor pivotally connected at points in line with its center of gravity to longitudinal yokes supported by the truck, and extensions from said motor sleeved upon the car axle, as and for the purpose described.

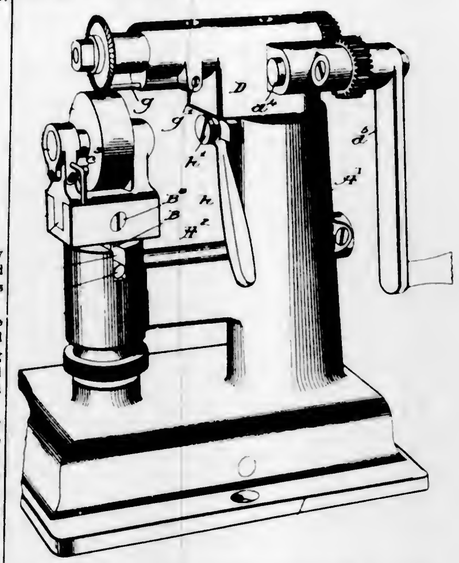
11. An electric motor comprising a lower casing sleeved upon an axle of the vehicle and flexibly supported by the truck, an upper casing hinged to said lower casing, but not extending to the car axles, an armature journaled in the said casing, and extensions on the inner wall of said casing forming the field magnet poles of the motor, as set forth.

12. An electric motor provided with a casing and extensions therefrom for centering the motor upon an axle of the vehicle, supporting devices for the said casing vertically in line with the center of gravity of the motor, and an additional supporting device on the end of the casing opposite the said extensions.

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**527,928. PINKING-MACHINE.** Charles H. Bayley, Boston, Mass. Filed Nov. 6, 1893. Serial No. 490,427. (No model.)

*Claim.*—1. In a pinking machine, a pinking cutter, its shaft, a supporting-head for such shaft, a shank extending from said head at right angles to said shaft and rigidly connected with the said head, a guide in or with relation to which said shank may slide and thereby impart only a vertical movement to such head in a right line, and means for raising and lowering said head and its appurtenances bodily, combined with a bed-roll having its acting face arranged in a plane parallel to the cutter shaft, the parallelism of the bed-roll and the cutter being maintained in all working positions of these parts and a plane of clear space extending around the cutter and bed-roll and beneath the cutter-shaft, whereby the cutter may be presented at right angles to the work and the work moved as exigencies require, substantially as described



2. In a pinking machine, a pinking cutter, its shaft, a supporting-head for such shaft, a shank extending from said head at right angles to said shaft and rigidly connected with the said head, a guide in or with relation to which said shank may slide and thereby impart only a vertical movement to such head in a right line, and means for raising and lowering said head and its appurtenances bodily, combined with a bed-roll, a laterally movable carriage in which said bed-roll is supported, the said bed-roll having its acting face arranged in a plane parallel to the cutter-shaft, the parallelism of the bed-roll and the cutter being maintained in all working positions of these parts, and a plane clear space extending around the cutter and bed-roll and beneath the cutter-shaft, whereby the cutter may be presented at right angles to the work and the work moved as exigencies require, substantially as described.

3. In a pinking machine, the following instrumentalities, viz:—a bed roll; a vertically movable head, a shank depending from said head, an adjustable nut on said shank, a post in which the shank is arranged and a spring interposed between the post and the nut on the shank normally to depress the head; a rotary cutter shaft carried thereby; a pinking cutter, and a treadle and intermediate devices to lift the said head and cutter away from the bed roll, substantially as described.

4. The bed roll, the post A', the head D having a shank *d* extended loosely in said head, the cutter shaft, its attached pinking cutter, and the spring surrounding said shank, and the spring adjusting device, combined with a treadle and intermediate devices to act on said shank and lift the said head, a device for restraining the head from rotation, and an independent head lifting device which is capable also of holding the head in its raised position substantially as described.

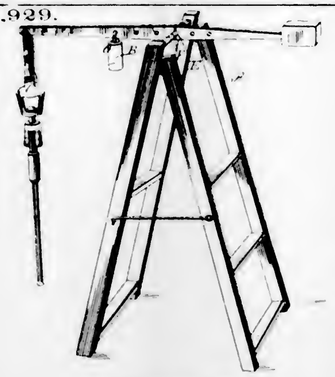
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**527,929. DRILLING-MACHINE.** Carl A. Bentrup, Clinton, Iowa. Filed May 9, 1894. Serial No. 510,597. (No model.)

*Claim.*—In a drilling machine, the combination, with a suitable base, the top of which is provided with a transverse bar provided with radial openings, of two removable pins in said openings, a beam on the bar between said pins, said beam being provided with a series of openings for adjusting the same longitudinally on said bar, a weight permanently secured to one end of the beam, and a chisel flexibly and pivotally supported from the opposite end of the beam, and a weight provided with means for suspending it from any opening in the beam on either side of the bar, substantially as set forth.

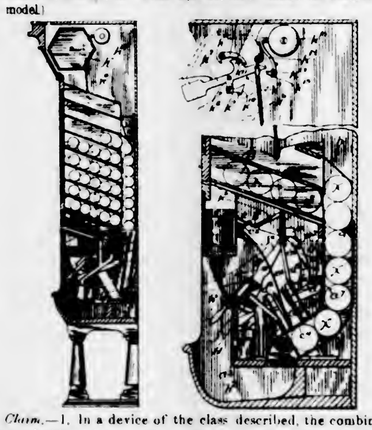


**527,929.**



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**527,930. COIN-ACTUATED VENDING-MACHINE.** Joseph P. Beretta, Chicago, Ill. Filed Apr 25, 1894. Serial No. 508,927. (No model.)



*Claim.*—1. In a device of the class described, the combination with a suitable casing containing the necessary auxiliary devices, of mechanism for delivering a definite quantity of merchandise from the interior of the casing, a coin chute, an operating handle adapted to be grasped by the hand and a coin-operated pawl adapted to engage the delivering mechanism and pivoted to the handle above the coin chute in position to be raised by said coin and thereby engaged with the delivering mechanism; substantially as described.

2. In a coin actuated vending machine, the combination with a suitable casing containing a receptacle for merchandise and suitable delivering mechanism, of a pivoted operating handle extending within the casing, a block pivoted upon said handle and bearing a pawl adapted when in the proper position to engage and operate the delivering mechanism, a coin chute having a bottom eccentric with relation to the handle pivot and a lug upon the block extending over the chute and having a cam surface oppositely arranged to the eccentric bottom of said chute, containing a shoulder adapted to engage the proper coin between it and the eccentric bottom of the chute and thereby throw the pawl upon the pivoted block into engagement with the delivering mechanism, and a surface adjacent to said shoulder adapted to roll along the top of the coin and retain said pawl in engagement until the action of the delivering mechanism is completed: substantially as described.

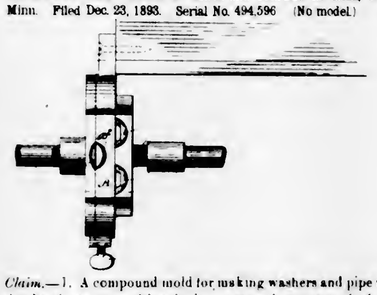
3. In a device of the class described the combination with the casing having suitable coin-actuated delivering devices and an operating handle, of a coin chute and a by-pass, said coin chute having a movable portion provided with a spring adapted to put it into register with the by-pass and means connected with the operating handle for forcing said movable portion into register with the remainder of the chute when said operating handle is in proper position for the insertion of a coin in the machine; substantially as described

4. The combination in a coin actuated vending machine with a suitable casing containing a receptacle for merchandise, a coin chute, an operating handle and coin actuated delivering mechanism adapted to be engaged with said handle by the passage of the proper coin, of a by pass for smaller coins, and a switch adapted to divert said smaller coins into said by-pass, said switch being connected with the operating handle, whereby it may be removed from its working position by the movement of the handle, substantially as described

5. In a coin-actuated vending machine, the combination with a suitable casing containing a merchandise receptacle and coin-actuated mechanism for delivering said merchandise, of a movable advertising surface, a bell adjacent thereto, a hammer adapted to strike the same, connecting devices between said delivery mechanism and the advertising surface adapted to move said advertising surface and connecting devices between said delivering mechanism and said hammer adapted to operate the latter as each package of merchandise is discharged from the casing: substantially as described

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**527,931. MOLD FOR MAKING WASHERS AND TACKS FOR PLUMBERS' USE.** David R. Black and Stephen A. Hill, Duluth, Minn. Filed Dec. 23, 1893. Serial No. 494,596. (No model.)



*Claim.*—1. A compound mold for making washers and pipe tacks for plumbers' use, comprising in its construction a central plate or section having an ingate to receive molten metal and provided on one of its faces with a matrix for forming washers of different diameters and having different sized bores and its other face forming one half of the pipe tack mold, a removable interchangeable center core ring for forming the bore of the washer, and a removable, interchangeable, outer core ring for forming the periphery of the washer and two suitable removable plates or sections forming respectively the other half of the washer mold and the pipe tack mold, an independent ingate for conducting molten metal to the pipe tack matrix, whereby one matrix can be used without the other, substantially as described

2. A mold for making washers, comprising two sections or plates, one of the sections being provided with a matrix for forming washers of different diameters, an outer removable interchangeable imperforated core ring for forming the peripheries of washers of different diameters, a peripherally located screw for securing said ring in position by bearing against its periphery, a central core for forming the bore of the washer, and an ingate for the passage of molten metal to the matrix, substantially as described.

3 A mold for making washers for plumbers' use comprising two sections or plates, one of the sections being formed with a matrix for forming washers of different diameters, a removable ring secured in said matrix, means for securing said ring in position, a central removable ring, a stud for securing said ring in position, and an ingate for the passage of the molten metal to the matrix, substantially as described.

4. A closed mold for making washers for plumbers' use constructed of two sections or plates, one of the sections being formed with a matrix for forming washers of different diameters, ring matrices of the same diameter but having different sized bores adapted to be secured in the outer edge of said matrix for forming the periphery of a washer, means for securing any one of said matrices in position, ring matrices of different diameters but having the same sized bores adapted to be secured in the center of said matrix for forming the bores of the washers, means for securing any one of said matrices in position, and an ingate for the passage of molten metal to the matrix, substantially as described.

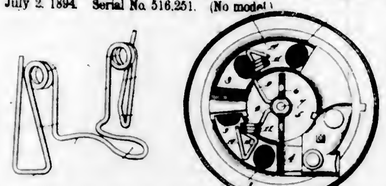
5. A mold for making washers for plumbers' use, comprising two sections or plates, one of the sections being provided with a matrix for forming washers having their outer peripheries of the same diameter but with different sized bores, an outer core ring for forming the outer periphery of the washer, a centrally supported interchangeable, removable core ring for forming the bore of the washer, means for securing the inner core ring in position, and an ingate for the passage of molten metal to the matrix, substantially as described.

6. A compound mold for making washers and pipe tacks for plumbers' use comprising in its construction a plate or section having an ingate to receive molten metal, and provided on one of its faces

with a matrix for forming washers, and its other face forming one half of a pipe tack mold, a removable interchangeable outer ring secured in the washer matrix and an inner removable outer interchangeable core ring secured in said washer matrix for forming respectively the outer periphery and the bore of the washer; and two suitable plates or sections, the faces of which form respectively the other half of the washer mold and the pipe tack mold, substantially as described.

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**527,932. CORN-PLANTER.** FRANCIS L. BLOCK, Sidney, Ill. Filed July 2, 1894. Serial No. 516,251. (No model.)



*Claim.*—1. In a brush for the seed boxes of corn planters, a single length of wire bent into the form shown and described and having the securing loop of the brush in the same plane with the scraper or finger ends of the brush.

2. A brush, adapted to be located within the seed boxes of corn planters, said brush being bent from a single length of wire in the manner shown and described, the scraping or brushing ends of said brush being divergent and in a lower plane than the securing loop of the brush.

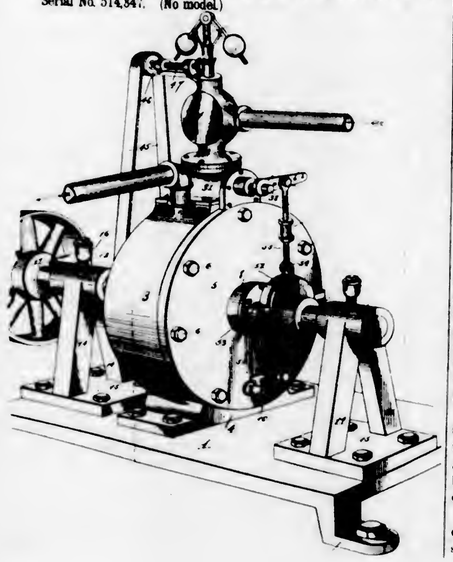
3. A brush for the seed boxes of corn planters, said brush being bent from a single length of wire, spring coils formed in the body of said lengths of wire, and the fingers or scrapers depending from the coiled spring portions of said brush.

4. A brush for the seed boxes of corn planters bent from a single piece of wire, having a securing loop formed in its center, upwardly extending bent portions, coil springs formed in the body of the wire and at the ends of the upwardly bent portions, and depending portions from said coil-springs forming scrapers or fingers, substantially as shown and specified.

5. A brush or scraper, adapted to be secured to the interior of seed boxes of corn planters formed of a single length of wire having a securing loop bent in the center thereof, laterally bent portions diverging from said securing loops, coiled spring portions formed on the ends of said laterally bent portions, and downwardly bent portions forming scrapers or fingers, substantially as shown and specified.

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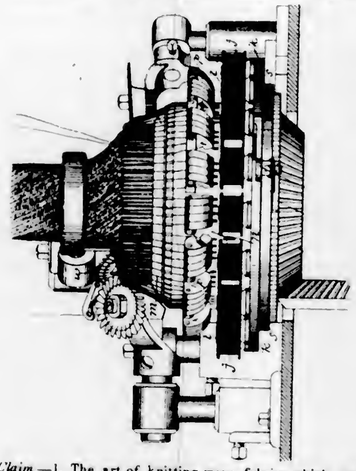
**527,933. ROTARY ENGINE.** THOMAS B. BOYLE, Houston, Ill., assignor of one-half to William D. Boyle, same place. Filed June 18, 1894. Serial No. 514,847. (No model.)



*Claim.*—In a rotary engine, the combination of a cylinder, a piston eccentrically mounted within said cylinder, and a metallic packing plate located within a cutaway portion in the cylinder, said packing plate being provided with a series of inclined grooves or cutaway portions communicating with the steam chamber between the piston and cylinder.

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**527,934. WARP-KNITTING MACHINE.** JOHN BRADLEY, North Chelmsford, Mass. Filed Jan. 13, 1894. Serial No. 496,709. (No model.)



*Claim.*—1. The art of knitting warp fabrics which consists in forming the ground fabric in the usual way, interlocking the warp threads with the ground fabric and shifting the warp threads laterally after each round of knitting to the extent of one or more rows of loops, as set forth.

2. A warp-knitting machine comprising in its construction needles and co-operating knitting mechanism for producing a ground fabric, movable warp-guides for guiding the warps into the fabric, and means for shifting the warp-guides after each course of knitting to the extent of the distance between two or more needles, as set forth.

3. A warp-knitting machine comprising in its construction needles and co-operating knitting mechanism including a filling wheel to lay in a weft thread, for producing a ground fabric, movable warp guides for guiding the warps into the fabric, and means for shifting the warp guides after each course of knitting to the extent of the distance between two or more needles, as set forth.

4. A warp knitting machine comprising in its construction needles and co-operating knitting mechanism for producing a ground fabric, movable warp-guides for guiding the warps into the fabric, means for shifting the warp guides after each course of knitting to the extent of the distance between two or more needles, and a winged or bladed wheel z adapted to act upon the warp threads and carry them over the tops of the needles to proper place, as set forth.

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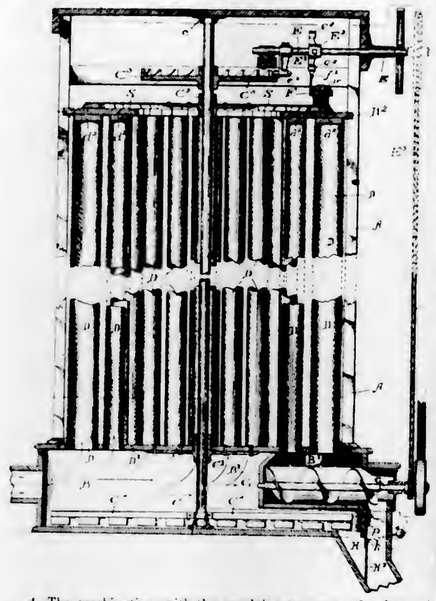
**527,935. DUST-COLLECTOR.** ALLEN C. BRANTINGHAM, Toledo, Ohio, assignor to the Nordyke & Marmon Company, Indianapolis, Ind. Filed Nov. 14, 1893. Serial No. 490,875. (No model.)

*Claim.*—1. The combination, in a dust collector, of a chamber to receive the dust laden air, a series of cloth tubes communicating with said chamber and closed at the upper ends, spring arms to which said tubes are connected at the upper end, a shaft carrying the arms and also the head through which said tubes extend at the bottom, an inclosed receptacle, a hammer or agitator positioned above said receptacle and the tubes, and means whereby the same may be operated, whereby the dust in the tubes over said receptacle may be dislodged and precipitated thereinto.

2. The combination, in a dust collector, of the chamber B, the shaft C carrying hubs $C'$ and $C^3$ bearing, respectively, the head D' and the arms S, the tubes D suspended between said head and said arms, a receptacle B' partitioned off from the chamber B, and means whereby the tubes may be jarred or agitated when they pass over said receptacle, substantially as set forth.

3. The combination, in a dust collector, of a revolving structure embodying cloth tubes, the shaft E bearing the arm $E'$ by which said structure is periodically revolved, and also bearing a hub $E^3$ having arms $e^2$ for raising the hammer, and said hammer F having an arm $f'$ whereby it may be raised and allowed to fall jarring or agitating the device thereunder, substantially as set forth.

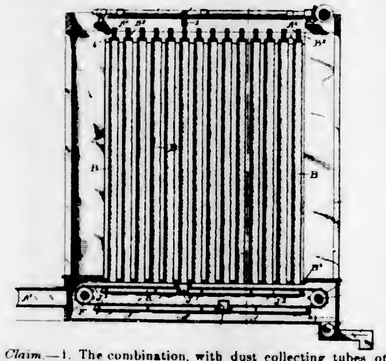




4. The combination, with the revolving structure of a dust collector embodying cloth tubes, of a wheel $C^3$ having a number of cogs equal to the number of divisions of said dust collector, and a shaft E having an arm or cog adapted to engage with and operate said cogged wheel, whereby said cogged wheel and said structure are periodically moved forward a determinate distance and there allowed to remain while the appropriate section is being jarred or agitated and the dust precipitated, substantially as set forth.

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**527,936. DUST-COLLECTOR.** ALLEN C. BRANTINGHAM, Toledo, Ohio, assignor to the Nordyke & Marmon Company, Indianapolis, Ind. Filed Feb. 12, 1894. Serial No. 499,905. (No model.)



*Claim.*—1. The combination, with dust collecting tubes, of an intermittingly moving traveling dust receptacle arranged below said tubes and an intermittingly moving traveling hammer arranged above said tubes, and mechanism connecting the receptacle and the hammer, whereby they are moved simultaneously and caused to operate upon the same tube or the same set of tubes, and upon one tube or upon one set of tubes after another.

2. The combination, in a dust collector, of a suitable frame work, dust collecting tubes mounted therein, an intermittingly moving traveling dust receptacle under the lower ends of said tubes, and an intermittingly traveling hammer above the upper ends of said tubes, means for moving said dust receptacle and said hammer uniformly from one tube or set of tubes to another tube or set of tubes, and means for operating said hammer to jar the tubes, substantially as set forth.

3. The combination, in a dust collector, of the frame-work, the dust collecting tubes, the main shaft C, the belt $C^3$ driven thereby having one or more projections $c^4$, the shaft E having an idler to carry the belt, and a spider or spiders alongside said idler wherewith the projections on said belt engage, other shafts F G and H, chain belts connecting the same, certain of said chain belts carrying dust receptacles and a hammer, a spring-handle for the hammer, and a cam or winged shaft for operating said hammer, substantially as set forth.

4. The combination, in a dust collector, with the frame-work and dust collecting tubes, of a traveling hammer, a chain belt for driving the same having a projection, a spring catch on the hammer-carriage engaging with said projection, an inclined trip at the end of the travel for disengaging said catch from said projection, and a cord and weight attached to the hammer carriage to return it to the initial point when said disengagement is effected, substantially as set forth.

5. The combination, in a dust collector, with spring-carried dust-collecting tubes, of a hammer, a hammer-carriage for said hammer mounted in traveling ways over said dust collecting tubes, means for returning said hammer and hammer-carriage to the initial point after the end of its travel is reached, and a winged shaft for operating said hammer throughout its trip, whereby it is enabled to operate successively upon each set of tubes, substantially as set forth.

6. The combination, in a dust collector, with the tubes and a traveling hammer for jarring said tubes, of a traveling catch for driving the hammer-carriage, a pawl for disengaging said catch at the end of the route, and a weight attached to the hammer-carriage by a rope for returning the same to position, substantially as set forth.

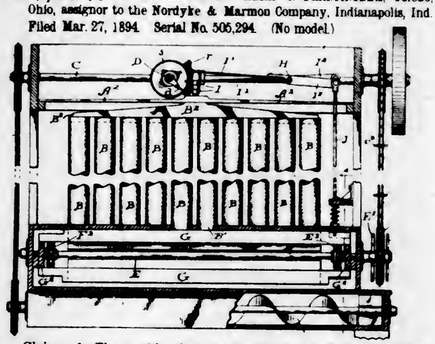
7. The combination, in a dust collector, with a set of tubes and a traveling hammer for jarring the sets of tubes successively, of a weight connected by a rope to said hammer for returning the same to position, and a dash-pot in which said weight is situated, whereby the rapidity of its movement is retarded and an air cushion provided to receive the shock of its stopping, substantially as set forth.

8. The combination, in a dust collector, of a frame-work, the stationary dust collecting tubes mounted therein, an intermittingly moving hammer arranged to travel over said tubes and operate successively upon each, an intermittingly moving dust receptacle adapted to move successively from tube to tube and receive the dust therefrom, and means for operating the same.

9. The combination, in a dust collector, of a chamber into which the dust-laden air is driven, dust collecting apparatus connected with said chamber, receiving and depositing devices in said chamber, a conveyer trough at one end of said chamber in which the dust is deposited, a conveyer therein, a practically horizontal discharging tube, and a wing on said conveyer adapted to force and pack the dust into said discharging tube, whereby the escape of air is prevented, while the escape of dust is permitted, substantially as set forth.

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**527,937. DUST-COLLECTOR.** ALLEN C. BRANTINGHAM, Toledo, Ohio, assignor to the Nordyke & Marmon Company, Indianapolis, Ind. Filed Mar. 27, 1894. Serial No. 505,294. (No model.)



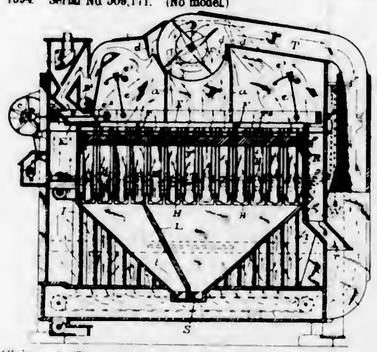
*Claim.*—1. The combination, in a tubular dust collector, of a suitable frame-work, dust-collecting tubes mounted therein, a traveling dust receptacle arranged below said tubes, a series of hammers arranged above said tubes, and mechanism, operating from the traveling dust receptacle, for throwing the hammers successively into operative position in connection with the tube or row of tubes below which the dust receptacle is at the time positioned.

2. The combination, in a tubular dust collector, of a suitable frame-work, dust-collecting tubes mounted therein, a traveling dust receptacle under the lower ends of said tubes having a suitable cam a row of hammers pivoted above said tubes, rods connected to the

outer ends of the hammer-handles and extending down into the path of the cam on the dust receptacle, and means for operating the hammer in position, substantially as set forth.

3. The combination, in a tubular dust collector, of a suitable frame-work, dust-collecting tubes mounted therein and suspended on spring-bars, an intermittingly traveling dust receptacle below said tubes having a cam thereon, a series of hammers mounted upon a pivot rod above said tubes, a shaft having a wing for operating said hammers, and rods connected to the hammer-handles and extending down into the path of the cam on the dust receptacle, whereby said hammers are thrown successively into the path or sweep of the wing on said shaft and thus operated, substantially as set forth.

527,938. COMBINED RETURN-AIR SIEVE, PURIFIER, AND DUST-COLLECTOR. ALLEN C BRANTINGHAM, Toledo, Ohio, assignor to the Nordyke & Marmon Company, Indianapolis, Ind. Filed Apr. 27, 1894. Serial No. 509,171. (No model.)



*Claim.*—1. The combination, in a single structure, of a hopper, a reciprocating sieve, an open space above said sieve divided by partitions into several divisions, a blast fan within the upper portion of said space, the eyes whereof communicate with the said several space divisions, a tube leading from said fan to a dust-chamber below the machine, a dust collector above said dust chamber, and a roof-like partition above said dust collector and below said sieve provided with interstices through which the air may pass.

2. The combination, in a purifying and grading machine, of sieving or separating devices, dust-collecting devices, and an inclined partition provided with interstices and located between the sieve and the dust collector, and a hopper-like pocket into which the material may be discharged from said partition, said pocket being provided with an adjustable valve whereby different proportions of the material may be separated and conducted through different discharging orifices, substantially as set forth.

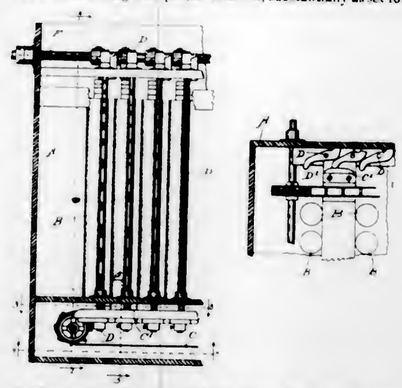
3. The combination of a sieve for receiving and sieving grain products, a dust-collecting apparatus arranged below and substantially co extensive in area with the sieve, an interposed floor adapted to receive the finished product from the sieve and convey it to the sides of the machine while still permitting the passage of air from the dust-collecting apparatus, and a fan located above the sieve and discharging below the dust-collecting apparatus, whereby the air is evenly distributed throughout the machine and drawn up through the sieve with substantially equal force at all points, giving all portions of the machine equal benefit of the air-blast, substantially as set forth.

4. The combination, with the sieving or separating devices, the dust-collecting apparatus, the interposed conveyer floor and the receiving pocket at the side, of the valve L, the pin *l* extending from said valve through a slot in the side of the machine, and a strip L' on the outside of the machine connected to said pin and covering said slot, substantially as and for the purpose set forth.

5. The combination of the sieving apparatus, the dust-collecting apparatus, the interposed floor, the receiving pockets, and spouts positioned under the rear end of the sieve and adapted to receive and convey away the coarse heavy products which may be discharged over the end of said sieve, substantially as set forth.

527,939. DUST-COLLECTOR. ALLEN C. BRANTINGHAM, Toledo, Ohio, assignor to the Nordyke & Marmon Company, Indianapolis, Ind. Filed Aug. 18, 1894. Serial No. 520,649. (No model.)

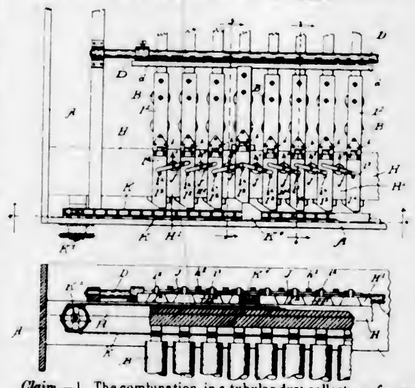
*Claim.*—1. The combination, in a dust-collector, of dust-collecting tubes, vertical rock-shafts, hammers extending out from said shafts, a traveling cam engaging with levers on said shafts, and a hammer-operating shaft having arms thereon adapted to operate said hammers when swung into proper position, substantially as set forth.



2. The combination, in a dust-collector, of a series of dust-collecting tubes spring-mounted at the upper end, rock shafts parallel with said tubes, hammers mounted upon handles secured to the upper ends of said rock-shafts and adapted to swing over the spring tube-support or to one side thereof, a traveling dust receptacle below said dust collecting tubes mounted on endless chains, cams secured to said chains or said dust receptacles and moving therewith, levers on the lower ends of said rock-shafts, said levers and said cam being so arranged relatively to each other that said shafts are operated by said cam and the hammers swung into and out of operative position, and a hammer operating shaft provided with arms adapted to engage with and operate said hammers when in operative position, substantially as set forth.

3. The combination, in a dust collector, of the dust-collecting tubes, the vertical rock-shafts carrying hammers at one end, means for operating said hammers, levers on the other ends of said shafts curved to engage with one another, whereby one upon being operated will operate the adjacent one, and a traveling cam adapted to come in contact with and operate said levers successively, substantially as set forth.

527,940. DUST COLLECTOR. ALLEN C BRANTINGHAM, Toledo, Ohio, assignor to the Nordyke & Marmon Company, Indianapolis, Ind. Filed Aug. 18, 1894. Serial No. 520,650. (No model.)



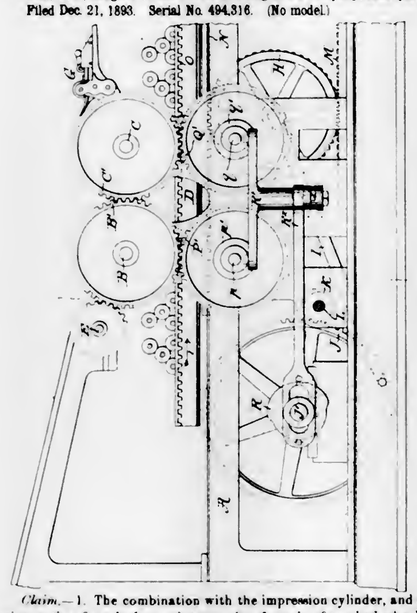
*Claim.*—1. The combination, in a tubular dust collector, of a supporting frame, the dust-collecting tubes, a series of hammers, a hammer-operating shaft having a wing, and devices for moving the hammer-structures longitudinally back and forth, and thus throwing said hammers successively into the path of said wing and withdrawing the same therefrom.

2. The combination, in a dust collector, of a series of dust collecting tubes, a hammer-operating shaft having a wing or projection on one side, a pivoted hammer for each set of tubes, a traveling wedge adapted to move each hammer-structure successively into the path of the wing on the shaft, and suitable devices for returning said hammer-structure to position, substantially as set forth.



3. The combination, in a dust collector, of a series of sets of dust collector tubes suitably supported at the upper ends, a hammer positioned over each set of tubes—the hammer-handle being hinged or pivoted at a suitable point, a traveling wedge for throwing the hammers forward successively, blocks between the hammer structures, levers pivoted on studs on said blocks, and pins on the hammer structures themselves which engage with and operate said levers and whereby each hammer structure is withdrawn as the succeeding one is thrown into position to operate, substantially as shown and described.

527,941. CYLINDER PRINTING-MACHINE. JOHN BROOKS, Plainfield, N. J., assignor to the Potter Printing Press Company, same place. Filed Dec. 21, 1893. Serial No. 494,316. (No model.)



*Claim.*—1. The combination with the impression cylinder, and a reciprocating form bed carrying a rack, of a pair of toothed wheels each in constant engagement with the rack, a gear on the cylinder out of mesh with said rack, noninterneshing intermediate gearing connecting each of the toothed wheels with the cylinder gear for rotating the cylinder, and a connective and disconnective device interposed between said pair of wheels and the cylinder gear whereby said pair of wheels alternately drive the cylinder, as set forth.

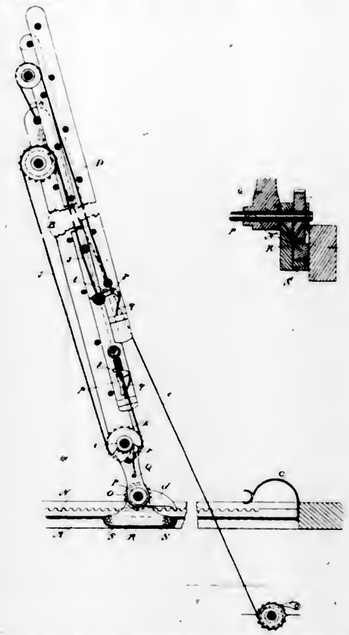
2. The combination with the two impression cylinders, and a reciprocating form bed carrying a rack, of a pair of toothed wheels each in constant engagement with said rack, a gear on each cylinder out of mesh with the rack, intermediate gearing connecting each of the toothed wheels with the two cylinder gears for rotating the cylinders alternately, and a connective and disconnective device interposed between said pair of wheels and the cylinder gears whereby said pair of wheels alternately drive the cylinders, as set forth.

3. The combination with the impression cylinder, and a reciprocating form bed carrying a rack, of a pair of toothed wheels each in constant engagement with said rack, gearing connecting each of the said toothed wheels with the cylinder, clutches for alternately connecting said pair of wheels to said gearing, an arm connecting the movable members of each clutch for simultaneous movement, and positive means for moving the arm, as set forth.

4. The combination with the impression cylinder, and its gear, and a reciprocating form bed having a rack carried therewith, of a pair of toothed wheels each in constant engagement with the said rack, two other wheels for driving the cylinder gear and out of mesh with each other and the rack, clutches for alternately connecting said other wheels with the pair of wheels, and a single cam for moving the clutches, as set forth.

5. The combination with the impression cylinder and a reciprocating form bed having a rack carried therewith, of a pair of toothwheels each in constant engagement with said rack, two other wheels for driving the cylinder, clutches for alternately connecting said other wheels with the pair of wheels, a single arm for simultaneously moving the clutches and a cam for moving the arm, as set forth.

527,942. EXTENSION FIRE-LADDER AND TRUCK. ALEXANDER B. CAIRNES, San Diego, Cal. Filed Feb. 27, 1894. Serial No. 501,665. (No model.)



*Claim.*—1. A frame mounted upon wheels having rack bars extending longitudinally upon the top, a ladder having pinions journaled at its foot adapted to engage the rack bar, a means for rotating the pinions to cause them to advance along the rack bar, fulcrum rods connected at one end to the ladder at a point intermediate between the pinions and the opposite end, and having the other ends connected with the rear end of the frame whereby the movement of the foot of the ladder along the rack bar acts to raise its outer end about the fulcrum rods as described.

2. A frame having toothed rack bars extending along its top, a ladder having a pinion shaft extending through its lower end, pinions fixed thereon engaging the rack bars, a means for rotating the shaft so that the pinions advance along the rack bars, fulcrum rods connected with the frame at the rear end and having their opposite ends connected with the sides of the ladder, whereby the outer end of the ladder is raised by the movement of the lower end toward the rear of the frame, pawls adapted to engage the rack whereby the foot of the ladder is prevented from returning as described.

3. In an extension fire ladder, a frame mounted upon wheels having toothed rack bars extending along the sides at the top, a ladder having a shaft extending across its foot with pinions fixed upon the shaft adapted to travel upon the rack bars, fulcrum rods having their rear ends attached to the rear of the frame and their opposite ends connected with the sides of the ladder, whereby the outer end of the latter is raised as the foot is caused to approach the rear of the frame, pawls engaging the rack bar to prevent the return of the foot of the ladder, and anti-frictional locking blocks connected with the pinion shaft and extending beneath the rack bars, whereby the pinions are held in mesh with the rack bars, and the lower end of the ladder prevented from being lifted by the weight outside of its fulcrum points as herein described.

4. In an extension fire ladder, a frame mounted upon wheels having rack bars extending along its sides, a ladder having a shaft extending across its lower end with pinions adapted to engage and travel upon the rack bars, and a means for rotating said pinions and retaining the foot of the ladder at any point in its advance, fulcrum rods having one end connected with the rear of the frame, and the other end with the sides of the ladder whereby the ladder is raised to any desired angle by causing its foot to approach the rear of the supporting frame, a ladder slidable in guides upon the main ladder, sprocket wheels mounted upon shafts at opposite ends of the main ladder, a chain passing around said sprocket wheels and having its ends connected with the second ladder whereby the latter is caused

to advance within its guides upon the first ladder, substantially as described.

5. In an extension fire ladder, a frame mounted upon wheels having rack bars extending along its sides, a ladder having a shaft extending across its lower end with pinions adapted to engage and travel upon the rack bars, and a means for rotating said pinions and retaining the foot of the ladder at any point in its advance, fulcrum rods having one end connected with the rear of the frame, and the other end with the sides of the ladder whereby the ladder is raised to any desired angle by causing its foot to approach the rear of the supporting frame, a ladder slidable in guides upon the main ladder, sprocket wheels mounted upon shafts at opposite ends of the main ladder, a chain passing around said sprocket wheels and having its ends connected with the second ladder whereby the latter is caused to advance within its guides upon the first ladder, a second rope or chain passing around a pulley turning upon the shaft at the upper end of the second ladder, said rope having one of its ends attached to the top of the first ladder and the other end to the bottom of the third ladder whereby the latter is caused to advance between its guides upon the second ladder while the second ladder is advancing upon the first, substantially as described.

6. In an extension fire ladder, a frame mounted upon wheels and having toothed rack bars extending along its sides, a ladder having its lower end guided to move parallel with, and pinions adapted to engage the rack bars whereby the rotation of the pinions will advance the foot of the ladder toward the rear, fulcrum rods having the lower ends attached at the rear of the frame, and the opposite ends pivoted to the sides of the ladder, so that the advancing of the foot of the ladder toward the rear will raise the outer end, another ladder slidable in guides upon the first ladder and sprocket wheels and chain whereby it is moved and stop pawls fulcrumed to the foot of each movable ladder projecting so as to engage the rounds of the ladder below, whereby the ladders are prevented from slipping down in case of breakage, as described.

7. In an extension fire ladder, a frame mounted upon wheels and rack bars extending along the upper part of the frame, a ladder having a pinion shaft extending through its foot, and pinions secured thereto adapted to travel along the rack bar and fulcrum rods having the lower ends connected with the rear end of the frame and the opposite ends pivoted to the sides of the ladder, a mechanism for partially raising the outer end of the ladder from a horizontal position so that the fulcrum levers are brought into position to act, consisting of jointed levers hinged to the rear of the frame, shafts having pinions and a mechanism whereby they are rotated and the levers extended so as to raise the outer ends of the ladder above the horizontal position as herein described.

8. An extension fire ladder consisting of a frame mounted upon wheels having rack bars extending along the upper part a ladder and fulcrum rods connected as shown, a pinion shaft and pinions whereby the foot of the ladder is advanced along the rack bar in either direction, and the springs *c* against which the lower end of the ladder is received as it is being let down for the purpose of relieving the strain as it drops into the horizontal position as herein described.

9. An extension fire ladder consisting of a portable frame support, having rack bars extending along the upper part a ladder and fulcrum rods connected as shown, a pinion shaft and pinions whereby the foot of the ladder is advanced along the rack bar and guy ropes connected with the top of the ladder at one end, and having the opposite ends coiled upon yielding spring-actuated drums with holding pawls, as herein described.

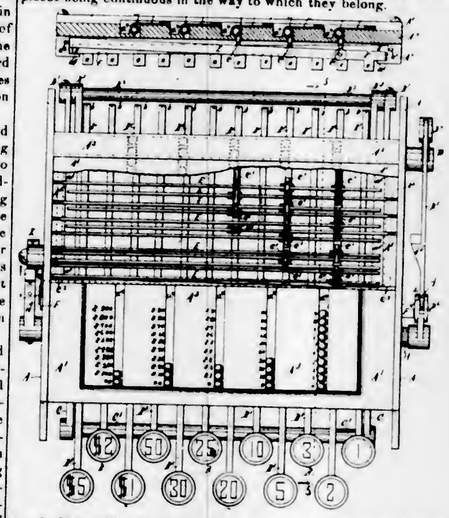
10. A portable extension ladder, a wheeled frame upon which the ladder is carried, with mechanism for raising and depressing the ladder, a supplemental hose platform beneath with foot-boards extending outwardly at the sides, a brake mechanism acting upon the rear wheels and foot levers within reach of the driver, rods extending along the sides of the frame and connecting the foot and brake levers and tubular inclosing hand rails through which the rods pass, fixed along the upper sides of the frame above the foot boards as described.

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**527,943.** CALCULATOR. WILLIAM H. CLARK, Erie, Pa., assignor of one-half to R. R. Brown, same place. Filed Apr. 13, 1894. Serial No. 507,405. (No model.)

*Claim.*—1. In an adding machine, the combination of a circuitous way for the continuous passage of tally pieces; a series of tally pieces in said way; a dial for observing the tally pieces at a certain point in said way and indicating the number of pieces in view in said way; a series of key levers of different designated values; mechanisms connected with said key levers that actuate a number of tally pieces in said way equal to the designated value of the key levers operated upon.

2. In an adding machine, the combination of a series of circuitous ways, for the passage of tally pieces, one for units, one for tens, one for hundreds, &c.; a series of tally pieces in each of said ways; a dial for observing the tally pieces at a certain point in said ways and indicating the number of such pieces in view in each of said ways; a series of key-levers having keys designated by numerals; mechanism whereby the keys having designated numerals representing units, tens or hundreds only will, when actuated, operate to bring a corresponding number of tally-pieces into view in the corresponding ways, and whereby the keys having designating numerals combining both tens and units will, when actuated, operate to bring a corresponding number of tally-pieces into view in the tens and the units ways respectively; and mechanisms, operated from said keys, whereby the tally-pieces are discharged from view and moved onward in said ways into position for reuse, the movements of said tally pieces being continuous in the way to which they belong.




3. In an adding machine, the combination of a series of ways representing in serial order a series of denominations such as cents, dimes, dollars, or five cents, dollars, hundreds of dollars as the case may be; tally pieces movable in each of said ways and representing units of each of said denominations; and a series of mechanisms, one for each way, which are operated only when the tally pieces accumulated in the way to which they belong equal the tally pieces in the next higher way, and when operated, actuate a tally piece in the next higher way and discharge from view the equivalent thereof in the way to which said mechanism belongs.

4. In an adding machine, the combination of a series of ways for the passage and exhibition of tally-pieces; said ways representing in serial order a series of denominations such as cents, dimes, dollars or five cents, dollars, hundreds of dollars, as the case may be; tally-pieces movable in each of said ways and representing units of each of said denominations; a series of gates, one for each way, which are operated only when the tally-pieces accumulated in the way to which they belong equal the value of one tally-piece in the next higher way, and when operated actuate a tally-piece in the next h gher way and discharge from view the equivalent thereof in the way to which the operated gate belongs.

5. In an adding machine, the combination of a series of circuitous ways for the continuous passage and exhibition of tally pieces; said ways representing in serial order a series of denominations such as cents, dimes, dollars, or five cents, dollars, hundreds of dollars, as the case may be; tally pieces, each moving continuously in the way to which it belongs, representing units of each of said denominations; a series of mechanisms, one for each way, which are operated only when the tally pieces accumulated in the way to which they belong equal the tally pieces in the next higher way, and when actuated operate a tally piece in the next higher way and discharge from view the equivalent thereof in the way to which said mechanism belongs.

6. In an adding machine, the combination of a series of circuitous ways for the passage and exhibition of tally-pieces; said ways representing in serial order a series of denominations such as cents, dimes, dollars, or five cents, dollars, hundreds of dollars, as the case may be; tally-pieces each moving continuously in the way to which it belongs and representing units of each of said denominations; a series of gates, one for each way, which are operated only when the tally-pieces accumulated in the way to which they belong equal the



value of one tally-piece in the next higher way, and when operated actuate a tally-piece in the next higher way and discharge from view the equivalent thereof in the way to which the operated gate belongs.

7. In an adding machine, the combination of a series of ways for the passage of tally-pieces, said ways representing, in serial order, units, tens, hundreds, &c.; a series of tally-pieces in each of said ways; a dial at which the tally-pieces in each of said ways are held in view; a series of keys of different indicated value, one or more for each of said ways; and a series of mechanisms, one for each way and controlled by said keys which when operated, cause as many tally-pieces to move, within their associated way, as equal the designated value of the operated key or keys, and to discharge from view at the dial ten tally-pieces whenever more than ten have accumulated, and, at the same time, actuate one of the tally-pieces contained in the way of next higher denomination.

8. In an adding machine, the combination of a series of ways for the passage and exhibition of tally pieces; said ways representing in serial order a series of denominations such as cents, dimes, dollars, or five cents, dollars, hundreds of dollars as the case may be; tally pieces movable in each of said ways and representing units of each of said denominations; a series of mechanisms one for each way, which are operated only when the tally pieces accumulated in the way to which they belong, equal the tally pieces in the next higher way, and when operated actuate a tally piece in the next higher way and discharge from view the equivalent thereof in the way to which said mechanism belongs; and means for moving the tally pieces discharged into position for re-use.

9. In an adding machine, the combination of a series of circuitous ways for the continuous passage of tally-pieces, said ways representing in serial order a series of denominations, which increase in value in a regular ratio; a series of tally-pieces confined in each of said ways; a series of gates, one for each way, which close said ways and cause the tally-pieces to accumulate for exhibition; mechanism for opening said gates when the accumulated tally-pieces in the way which they respectively close equals the value of one tally-piece in the next higher way; means on said gates for actuating said tally-piece in the next higher way when said gates are opened; and means for moving the tally-pieces discharged by said gates into position for use.

10 In an adding machine, the combination of a series of circuitous ways for the passage of tally-pieces, the ends of which ways lap past each other, and mechanisms for transferring the tally-pieces from one of said lapped ends to the other.

11. In an adding machine, the combination of a series of circuitous ways for the passage of tally-pieces, the ends $a^3$ and $a^4$ of which ways lap past each other; spring covers *a'* for yieldingly holding the tally-pieces in the grooves $a^3$; separators *c'*, for pushing the tally-pieces from the groove $a^3$ past the cover *a'* and into the groove $a^4$, and key-actuated mechanism for operating said separators.

12. In a machine of the class herein shown, the combination of a series of key-levers B', having their rear ends pointed as shown; a bail pivoted concentrically with said key-levers and moved by the action of each of said keys; the toggles $D'$, $D^3$ moved by said bail; and the rod $D^4$ carried by said toggles into position below any operated key-lever and above the unoperated key-levers and thereby holding the unoperated key-levers against operation.

13. In a machine of the class herein shown, the combination of the key-levers; a bail or frame moved by said key-levers, the rock-shaft D moved by said frame acting through the toggles $D'$, $D^3$; the rock-shaft H, moved by gearing connecting it with the rock shaft D; a pawl arm $H^2$ on said shaft H, that carries a pawl *k* and a ratchet K that engages said pawl and compels each key movement to be continued until finished.

14 In a machine of the class herein shown, the combination with the ways through which the tally-pieces are moved of the shaft H, which is adapted to be rocked and moved longitudinally through the action of the key-levers; arms $H^3$ on said shaft carrying pins $A^3$, which operate to move the tally pieces in said ways against the action of gravity as said shaft is actuated; and means for preventing the reaction of said tally-pieces by gravity.

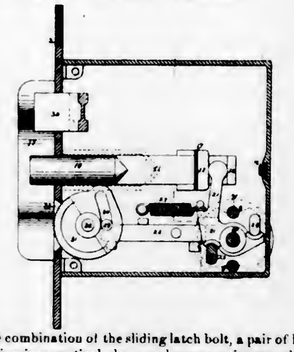
15. In a machine of the class herein shown, the combination with the plate $A^4$, having a series of sets of parallel grooves $a^3$ $a^4$; a series of bars E, below said plate having thereon separators *c'* which move in openings in said plate and act to transfer tally-pieces from the grooves $a^3$ to the grooves $a^4$; and key-levers that operate said bars E.

16. In a machine of the class herein shown, the combination with the ways through which the tally-pieces pass of gates G, for closing said ways and actuating a tally piece in the next higher way; the transverse bar F, having fingers *f'*, for moving said gates; and key-actuated mechanism for moving said bar F, longitudinally.

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**527,944.** LATCH-LOCK. BENJAMIN D. COPPAGE, Wilmington, Del. Filed Sept. 21, 1893. Serial No. 486,093. (No model.)

*Claim.*—1. A latch lock having a horizontally sliding latch bolt, a pair of laterally projecting levers hung so as to swing in a vertical plane, and secondary lever mechanism between said bolt and levers, whereby the latch bolt will be retracted on a downward movement of one of the projecting levers or by an upward movement of the other projecting lever, substantially as specified.



2. The combination of the sliding latch bolt, a pair of levers hung so as to swing in a vertical plane, and one carrying a push plate, and the other a pull plate, a bell crank lever acting upon the latch bolt and so hung in respect to the push and pull levers that one of said levers will act upon the under side of the bell crank lever on one side of the fulcrum, and the other will act upon the upper side of the bell crank on the opposite side of the fulcrum, substantially as specified.

3. The combination of the lock casing and its sliding latch bolt, the push and pull levers, detachable thimbles bearing upon the sides of the lock casing and having cap plates carrying said levers, means for securing said thimbles to the lock casing, and means for transmitting the movement of the levers to the latch bolt, substantially as specified.

4. The combination of the latch bolt, a bell crank lever engaging with the head of the latch bolt stem, push and pull levers acting on said bell crank lever, thimbles having cap plates with fulcrum pins for said levers, and transverse securing bolts adapted to lugs on the thimbles, substantially as specified.

5. The combination of the sliding latch bolt, the pair of levers hung so as to swing in a vertical plane, one of said levers carrying a push plate, and the other a pull plate, means for transmitting the movement of either of the levers to the latch bolt, and a sliding bolt for locking one of said levers the other lever being free to operate, substantially as specified.

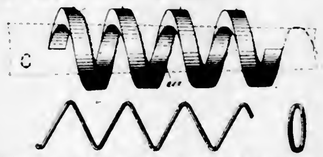
6. The combination of the sliding latch bolt, the push and pull levers, means whereby either of said levers is caused to operate the latch bolt, the sliding locking bolt for one of said levers, and a cam disk for actuating said bolt, said disk having a peripheral portion projecting into the slot in the face plate of the lock, substantially as specified.

7. The combination of a lock having a rotating barrel with keyway therein, with an escutcheon having a flaring guide flange, the lower portion of which extends closely to the edges of the key hole and is formed on and rotates with the barrel of the lock, substantially as specified.

8. The combination of the sliding latch bolt with stops of sound deadening material, substantially as specified.

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**527,945.** SPIRAL GUIDE FOR MACHINES FOR MAKING WIRE COILS. STEFANO CORIASCO, New York, N. Y. Filed Aug. 22, 1894. Serial No. 520,961. (No model.)



*Claim.*—1. A spiral guide for forming wire coils having a gradually increasing pitch from one end toward the other and a gradually decreasing internal diameter from one end toward the other, the pitch and diameter decreasing in opposite directions axially of the guide, substantially as set forth.

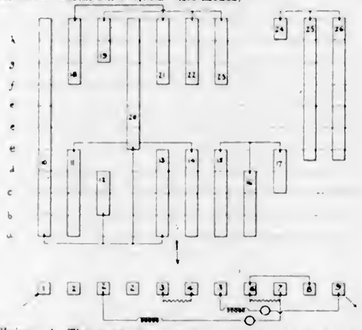
2. The combination with a spiral guide A, having a gradually varying pitch and internal diameter, of a flattened mandrel C, having a taper to fit the guide and a twisted or warped form, as set forth.

**527,946. SHADE-SUPPORT.** NATHAN W. CRANDALL, Meriden, and EDGAR A. RUSSELL, Wallingford, Conn. Filed Sept. 11, 1893. Serial No. 485,966. (No model.)



*Claim.*—In a shade-holder, the combination with a shade-ring adapted to be fitted to shades varying in size, and provided with two guides located opposite each other, of a normally open, substantially U-shaped elastic clasp located in a plane parallel to the plane of the said ring, rigidly secured opposite its opening thereto, and having each of its respective ends provided with a depending radial supporting arm, constructed to take into and slide back and forth in the said guides of the ring, substantially as set forth, and whereby the said ends of the clasp are guided when they are forced apart, and when they recover or spring back to their normal positions, and whereby also the ring and shade are supported from the said clasp.

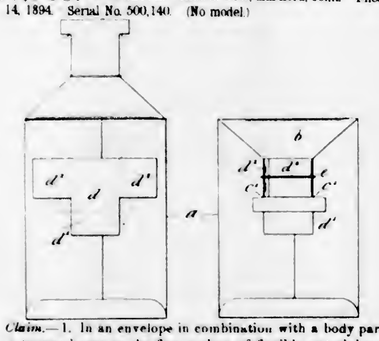
**527,947. METHOD OF AND MEANS FOR CONTROLLING ELECTRIC CARS.** HARRY P. DAVIS, Pittsburg, Pa., assignor to the Westinghouse Electric and Manufacturing Company, same place. Filed Mar 29, 1894. Serial No. 505,534. (No model.)



*Claim.*—1. The method of operating street cars driven by two electric motors, which consists in connectiug said motors in series, cutting out one of said motors, connecting the two in parallel with resistances, and diminishing the resistances in series with the two motors successively, the resistance in series with the motor previously cut out being the first cut out, substantially as described.

2. The method of changing from parallel to series arrangement in street cars driven by two electric motors, which consists in throwing a resistance in series with one of said motors only, then putting a resistance in series with the second motor; cutting out said second motor, and then throwing said second motor in series with the first motor, substantially as described.

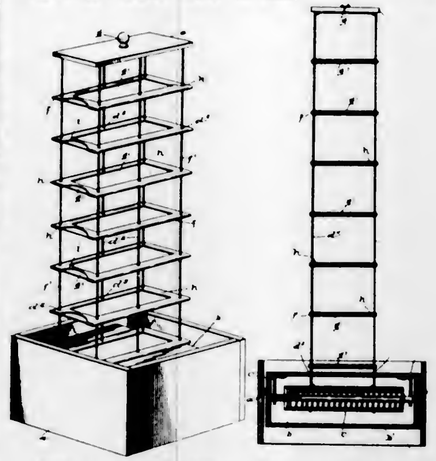
**527,948. ENVELOPE.** RIOU L. DOW, Hartford, Conn. Filed Feb. 14, 1894. Serial No. 500,140. (No model.)



*Claim.*—1. In an envelope in combination with a body part and flap, a tongue borne on the flap, a clasp of flexible material secured to the body part of the envelope and having arms adapted to fold about the tongue, and fastening means for holding the arms closed upon the tongue, all substantially as described.

2 As an improved article of manufacture an envelope having a flap, a tongue having a shoulder end borne on the flap, a clasp having flexible arms and secured to the body part of the envelope and arranged to fold upon the tongue back of the shoulder, and a flexible tie band holding the arms closed upon the tongue, all substantially as described.

**527,949. FILE-CASE.** DAVID A. DRAKE, Englewood, Ill. Filed Mar. 7, 1894. Serial No. 502,679. (No model.)



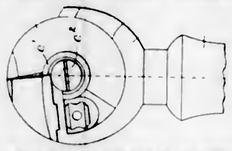
*Claim.*—1. A file case comprising the combination of a spring-actuated roller, a series of pockets adapted to have the matter to be filed placed within them, a cord connected to the roller at one end and a plate located beyond the pockets and having the remaining end of the cord connected thereto, whereby the pockets are normally compressed against each other, and whereby they may be separated at will, substantially as described.

2. A file case comprising the combination of a spring-actuated roller, pawl-and-ratchet mechanism whereby the roller may be held at any number of revolutions, a series of pockets adapted for the reception of the matter filed, and connected to each other and to the roller, whereby they are normally folded against each other, and whereby they may be opened and held so at will, substantially as described.

3. A file case comprising the combination of a spring-actuated roller, pawl-and-ratchet mechanism whereby the roller may be held at any number of revolutions, a series of pockets within which the matter to be filed is placed, cords secured to the pockets, whereby they are prevented from moving out of position, a plate arranged beyond the pockets, and a second cord connected to the spring-roller and to the plate, whereby the pockets may be folded against each other or extended at will, substantially as described.

4. In a file case, the combination of series of pockets adapted to receive the matter to be filed, a cord movable through the pockets and having its end incapable of passing the pockets, and a spring connected to the cord and having a tendency to draw the cord toward the spring, whereby the pockets are kept normally in engagement with each other and whereby they may be extended at will, substantially as described.

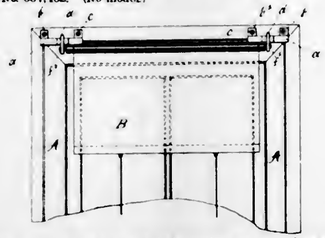
**527,950. WELT-TRIMMER.** FRANK A. DUNHAM, Brockton, Mass. Filed July 18, 1894. Serial No. 517,903. (No model.)



*Claim.*—A welt trimmer comprising in its construction a stock or shank *b* having a seat 5 and a segmental wall 6 at the outer margin of said seat, a segmental blade *a* having a curved outer edge 2 adapted to bear against said wall, and a curved inner edge 3, a washer having a beveled edge bearing on the inner edge 3 of the blade, and an attaching screw bearing on said washer, the latter being formed to simultaneously exert sidewise pressure on the blade whereby its inner side is forced against the seat 5, and edgewise pressure on the blade whereby its outer edge is forced against the wall 6.



**527,951. ADJUSTABLE BRACKET FOR SHADE OR OTHER ROLLERS.** JOHN A. DWYER, Paterson, N. J. Filed Jan. 18, 1890. Serial No. 337,402. (No model.)

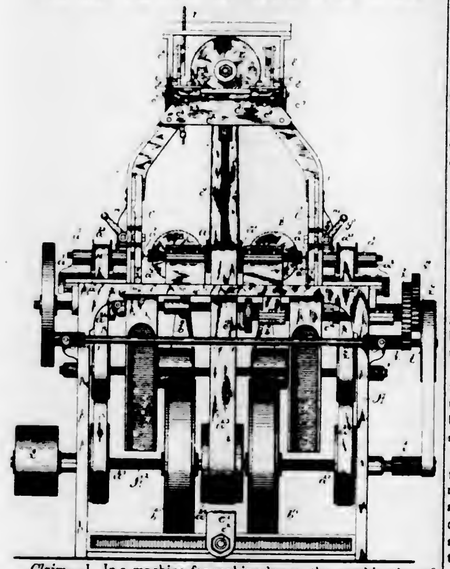


*Claim.*—1. A plate *a* having indentations or serrations *a'* formed on the back of said plate offset lips *b b'* formed on the upper edge and at each end of said plate, said lips *b*, *b'*, provided with holes *c' c'* in combination with a bracket *d* provided with a hook *d'* engaging face or angle tooth *e* lateral bearing wings $d^2$ $d^3$ and an engaging slot $d^4$, substantially as specified.

2. A plate *a* having indentations or serrations *a'* formed on the back of said plate offset lips *b b'* formed on the upper edge and at each end of said plate, lips *b b'* having countersunk holes formed in the said lips in combination with a bracket *d* provided with a hook *d'* having an angled face *e*, bearing wings $d^2$ $d^3$ on each side of the bracket *d* and extending laterally, outwardly pivot hole *f* formed in outer bars $d^4$ of bracket *d* substantially as specified.

3. An adjustable bracket consisting of a plate provided at each end with offset securing lips formed on its upper edge and having indentations formed on its back face in combination with a loose hook bracket provided with lateral supporting wings and means for engaging the pivot of a shade roller, engaging hook formed to correspond on its front face, with indentations formed on the back of supporting plate and interlock with the same substantially as and for the purpose specified.

**527,952. MACHINE FOR MAKING BUNGS.** EDWARD E. ELDER Lynn, Mass. Filed July 13, 1889. Serial No. 317,392. (No model.)



*Claim.*—1. In a machine for making bungs the combination of the following instrumentalities, a horizontal feed-way and a reciprocating strip feed to feed a blank forming strip in said feed-way to the action of a cutting saw; a cutting saw to sever bung blanks from the strip having a reciprocating movement across the feed-way; a feed chute extending from the end of the feed-way to a rotary blank holding chuck, said rotary blank holding chuck and means whereby the said chuck is opened to receive a blank, then closed upon it, and transferred to present it to the reciprocating rotary edge shaping mechanism, and then returned with the finished blank to its original position and opened to release it and the said reciprocating rotary blank edge shaping mechanism, as and for the purposes described.

2. The combination in an organized duplex bung blank making machine of two strip feed-ways held by or arranged upon a common frame; a reciprocating strip feed for each feed-way, adapted to be alternately reciprocated therein to feed the blank forming strips in each feed-way alternately to a common blank severing saw; a reciprocating blank severing saw movable alternately across each feed-way to sever in successive order a blank from the end of each strip, a blank feeding chute extending from the end of each feed-way to traveling blank holding chucks, said chucks having a rotary movement and means whereby said chucks are held open to receive the blanks and transferred to present them to the action of the reciprocating rotary edge shaping devices, and are then returned with them to their original position and are then opened to release them and the said reciprocating rotary edge shaping devices; and a common actuating shaft connected with the various devices substantially as specified, as and for the purposes set forth.

3. The combination, in a bung making machine, of the strip feed way, the feed dog, its actuating rod, the dog holding block having a limited movement upon the actuating rod between a spring and a stop, substantially as described.

4. The combination in a bung making machine of a horizontal feed-way; a vertical chute extending from its inner end; a strip feeding mechanism to feed the end of the strip over the entrance to the vertical chute; a reciprocating saw mounted upon a horizontal axis to revolve upon a vertical arc, movable across the line of the feed at the forward end of the vertical chute and rotated to cut downward, whereby the saw acts not only to sever the blank, but to force or move downwardly the severed blank in the vertical chute, substantially as described.

5. The combination in a bung making machine of a horizontal strip feed-way; a vertical chute extending from its end; a reciprocating feed-dog; and a horizontally reciprocating severing saw mounted upon a horizontal shaft, and movable across the feed-way at its juncture with the vertical chute, with a vertical shaft connected with the saw carriage or slide, and by a yielding connection with the dog-feed, as and for the purposes set forth.

6. The combination, in a bung making machine, of the strip feed way, the feed dog, its actuating rod, the crank $c^{13}$, the rock shaft $c^{11}$ connected at its upper end with the actuating rod $c^9$, substantially as described.

7. The combination in a bung making machine having a duplex organization of two horizontal feed-ways; a reciprocating strip feed-dog for each feed-way; a vertical chute extending from the end of each horizontal feed-way; a blank severing saw mounted upon a horizontal shaft carried by a horizontally movable slide and devices, substantially as specified, for reciprocating the saw slide to move the saw alternately across each feed-way at its juncture with the vertical chute, and to reciprocate the feed-dogs, substantially as described.

8. The combination in a bung making machine of a horizontal feed-way; a vertical feed-chute extending downward from its inner end; a reciprocating blank strip feed to feed a blank in said feed-way; a reciprocating saw movable across said feed-way at its juncture with the vertical chute; and a plunger movable in the section of the feed-way above the vertical chute, to push the severed blanks in successive order down the chute, as described.

9. The combination, in a bung making machine, of a chute and a plunger F, a latch for holding it elevated, a lever connected by a link therewith adapted to be moved by a moving part of the machine to lift it and a lever releasing arm or slide, substantially as described.

10. The combination of the vertical chute, the strip feeding devices, the plunger F, the traveling saw and its frame, the catch $f'$ upon the plunger, the latch *f*, the bent lever $f^4$ pivoted at $f^5$ and connected by a link $f^6$ with the plunger, and the trip latch $f^3$ supported by the saw carriage, substantially as described.

11. The combination in a bung making machine of the horizontal feed-way and its strip feed; the vertical chute extending from the inner end thereof formed with adjustable sections *g g'*; the saw B' movable across the horizontal feed-way at its juncture with the vertical chute; the blank stop; the rotary traversing and holding chuck; and the reciprocating rotary blank edge shaping devices, as and for the purposes described.

12. The combination, in a bung making machine, of the blank feeding chute with the plate $h^8$ extending below the stop $g^5$ to form a section of a guide and cut away at $h^{10}$ so that its remaining or

lower guiding surface is out of line with its upper guiding surface, as and for the purposes described.

13. The combination in a bung making machine, of the blank feeding chute made in adjustable sections to vary the width of the chute, and independent adjustable plate $h^4$ cut away at $h^{10}$ as specified, and having a combined horizontal and vertical movement in relation to the remainder of the chute, as and for the purposes described.

14. The combination, in a bung making machine, of the feed chute with the two independent plates $h^7$ $h^8$ forming a portion of the lower end only of the feed chute, one of which has the stop $g^7$ and the other of which is cut away upon its side to form a clearing space or recess $h^{10}$, the edges of which form sides of the feed chute above the point of engagement of the stops with the blank and at the point and also below the point of said engagement, and adjusting devices for varying the relative positions of the two plates $h^6$ $h^7$, as and for the purposes described.

15. The combination of the section $g$ having at its lower end a guide way, the plate $h^4$ arranged to slide in said guide way, the section $g'$ having at its lower end a guide way, the plate $h^7$ in said guide way, slots or recesses $h$ $h'$ in the plate G, a stud extending from the plate $h^4$ into the recess or slot $h'$, a stud extending from the plate $h^7$ into the recess or slot $h$, and means for moving the sections $g$ $g'$ toward and from each other to vary the width of the chute, and whereby at the same time the plate $h^4$ is moved upwardly as it is moved outwardly with the section $g$, and the plate $h^7$ is moved downwardly as it is moved outwardly with the section $g'$, and vice versa, substantially as described.

16. The combination, in a bung making machine, of the plates $h^6$ $h^7$ movable in relation to each other as specified, and the covering plate $h^{11}$ attached to the plate $h^6$ and movable therewith, and having the inclined upper edge $h^{13}$ and the covering plate $h^{13}$ attached to the plate $g'$, and having the inclined lower edge $h^{14}$, substantially as described.

17. The combination of the feed chute, the plates $h^7$ $h^8$ shaped to provide a stop for the bung blanks and clearance as specified, and also to provide a guide way below the point of engagement of the stock with the blank, and adjustable in relation to each other as described, with the sliding rotary tail stock, the rotary head stock, and a cutting tool arranged and operated to have the line of movement of its cutting edge movable across the plane of rotation of the bung blank held by the stocks, as and for the purposes described.

18. The combination in a bung making machine of a rotary and sliding tail stock, a rotary head stock, the feed chute rectangular in cross-section, the vertically movable plate $h^{11}$, the vertically adjustable stop $g^7$ and the blank holding pin M, as and for the purposes described.

19. In a machine for making bungs from flat bung blanks sawed or cut from a long blank forming strip, the combination of rotary bung blank holding and turning devices for holding the square or flat blank between them and presenting its edges to a gang of rotary cutting saws or tools, with said gang of rotary cutting saws or tools arranged upon a common operating axis or shaft, the center of which extends in a direction radial to the axis of rotation of the bung blank, and which shaft with the gang of saws or tools is moved lengthwise the axis of the rotation of the bung blank, whereby the blank is reduced to shape by a series of cutting instruments moved across the path of its rotation from one surface to the other and revolving in a plane which is at a right angle or very nearly at a right angle to the plane of its revolution, as and for the purposes described.

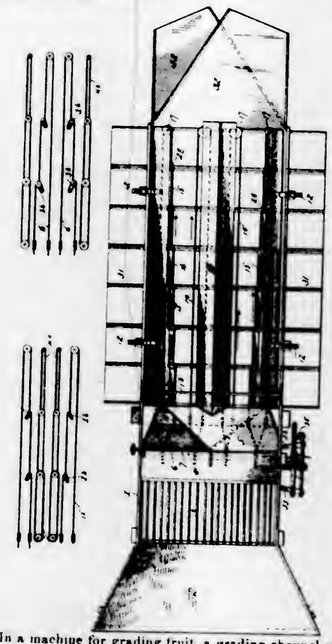
20. In a bung making machine the combination of a blank holding and turning device for holding a square bung blank with its grain in part presented to the action of rotary cutting devices, with a gang of two or more rotary cutting saws or tools, arranged upon a common shaft movable on a line parallel or very nearly parallel with the axis of revolution of the blank holding devices and caused to rotate during said movement, which saws or cutting tools are of diameters increasing in length from the outer one inwardly, whereby the said blank is reduced to shape by the combined action of a series of cutting edges advanced or moved while rotating upon an axis at or very nearly at a right angle to the plane of rotation of the blank, as and for the purposes described.

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**527,953. MACHINE FOR SORTING OR GRADING FRUIT, &c.** FRANK N. ELLITHORPE, Peachton, Ohio. Filed Jan. 20, 1894. Serial No. 497,471. (No model.)

*Claim.*—1. In a machine for grading oranges, the combination of a grading channel, a chute leading thereto, a hopper connected to the chute, a vertically movable gate working through an opening in the bottom of the chute, a transverse shaft carrying a pair of curved hooks 8, said hooks working in openings in the gate, substantially as described.

2. In a machine for grading and assorting oranges, the combination of a frame, a single hopper, two adjacent chutes leading therefrom, one of the chutes descending and terminating below the other, two grading channels supported one above the other and connected to the respective chutes, a series of troughs supported beneath each grading channel and extending outwardly from the frame, the upper series of troughs projecting out on the opposite side from the other series, whereby the fruit may be graded as to size and assorted as to quality, substantially as described.



3. In a machine for grading fruit, a grading channel consisting of two members, one of said members consisting of an endless cord or belt looped at intervals to form a series of grading openings, substantially as described.

4. In a machine for grading fruit, a grading-channel consisting of two endless conveyers or belts and pulleys for supporting the same, one of said belts having formed in it at intervals along its length offsets, whereby a series of rectangular grading openings is formed, each successive opening being wider than the preceding opening, substantially as described.

5. In a machine for grading fruit, a grading-channel consisting of two members, one of said members consisting of an endless belt or conveyer, said belt or conveyer having loops 26 formed in it at intervals, pulleys carrying these loops, and means for driving the belt, substantially as described.

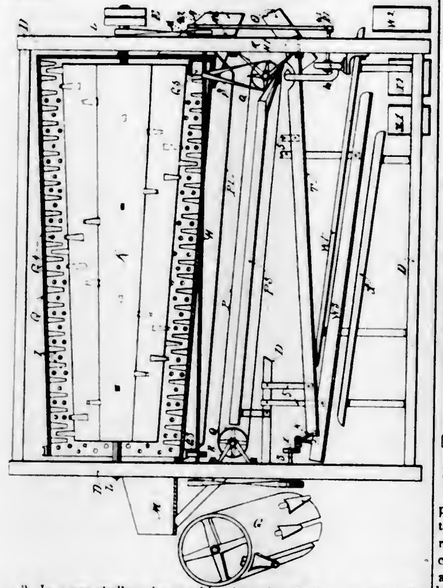
6. In a machine for grading fruit, a grading channel consisting of two members, each of said members consisting of a pair of longitudinal bars adjustably connected together and supported one above the other, and an endless conveyer carried by pulleys journaled between the bars, substantially as described.

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**527,954. PEA-SHELLER.** JOHN H EMPSON, Longmont, Colo. Filed Aug. 18, 1893. Serial No. 483,436. (No model.)

*Claim.*—1. The combination in an apparatus for shelling green peas from the vines, of an outer shell provided with several rows of thrasher blades arranged in the form of a screw thread and spaced at gradually decreasing distances apart between the ingress and egress ends of said shell, and an inner cone provided with a row of similar thrasher blades arranged to form a screw or thread and also spaced at gradually decreasing distances apart to pass between the said thrasher blades of the said outer shell, and means for rotating the inner cylinder, as herein set forth.

2. The combination in an apparatus for shelling green peas from the vines, of a conical shell provided with numerous openings in a segment of its lower portion for the egress of peas, of several rows of cushioned thrasher blades arranged spirally on its inner surface and spaced closer together at the exit end of said cylinder, of an inner conical drum with one or more rows of thrasher blades arranged to form a screw or thread and spaced also closer together at the exit end and arranged to pass between the thrasher blades of the said shell, and means for rotating the inner drum, as herein specified.



3. In a pea sheller, the combination of a shell having spirally arranged thrasher blades on its inner surface at variable distances apart, a rotatable inner drum having thrasher blades on its surface arranged spirally, and at variable distances apart, an endless belt below perforations in said shell, a chute between said belt and passing outside of the same, a blower with pipe adapted to produce a current of air upon the contents of said chute, and sieves for receiving the contents of the chute, substantially as described.

4. The combination in a pea sheller of a frame provided with a feeding table and a vibrating discharging chute, a conical shell pierced with openings for the egress of the peas, said shell being provided with an open front end, and a closed back end, and with equi-distant openings in its periphery, a series of thrasher blades secured to the inner side of said shell and arranged at variable distances apart, and a rotatable drum arranged centrally in said shell and provided with a row of thrasher blades arranged spirally and spaced at variable distances apart passing between the thrasher blades of the said outer shell, substantially as described.

5. In a pea sheller, a shell with thrashing mechanism therein, an endless slatted belt below perforations in said shell, a chute at the discharge end of said shell, a chute below said belt, and a single conveyer adapted to receive waste material from the slats of said belt and said chutes substantially as described.

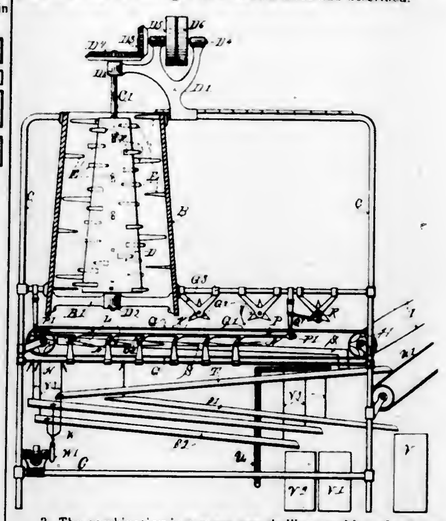
6. In a pea sheller, a drum having longitudinally extending slots in its periphery, thrasher blades adjustable in said slots, and means substantially as described for securing said blades in place, said parts being combined substantially as described.

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**527,955. PEA-SHELLING MACHINE.** JOHN H. EMPSON, Longmont, Colo. Filed Sept. 4, 1893. Serial No. 484,769. (No model.)

*Claim.*—1. A pea sheller having a frame, a stationary shell on said frame, a rotatable drum in said shell, thrasher blades on said shell and drum, a series of tedders in line with the discharge end of said shell, and a rotating endless belt below said tedders said parts being combined substantially as described.

2. The combination with the shell and inner drum in a green pea sheller, of an endless, perforated rotating belt arranged below said shell and drum; of a series of tedders arranged to agitate the vines; of an arm or arms arranged below the top of said belt and adapted to intermittently violently contact with it; of a chute arranged to catch the peas from said perforated belt and conduct them to the sieve; of a pipe communicating with a blower and adapted to produce a current of air intercepting the peas between the chute and sieves and the belt and chaff conveyer, operating to separate the chaff from the peas; of a series of sieves arranged to separate the peas into sizes, all arranged as herein set forth and described.



3. The combination in a green pea shelling machine of a frame preferably of tubing supporting a vertical conical shell arranged stationary or revoluble, having inwardly projecting arms arranged spirally and spaced successive diminishing distances apart; of an inner conical drum journaled in said shell, and provided with projecting arms spaced to pass between the arms of said outer shell; of an endless, perforated, revolving belt arranged below said shell; of tedders arranged across said belt and means for rotating them; of agitators arranged to agitate said belt by contact with it; of a blower with pipe producing a current of air arranged to separate the chaff from the peas and a series of perforated sieves arranged to separate the peas into sizes, all arranged as and for the purpose herein set forth and described.

4. In a pea sheller, a traveling belt in combination with a pivoted lever having a projection on its pivoted end, of an oscillating lever with a projection thereon adapted to abut against the projection on the first mentioned lever, and mechanism substantially as described, connecting said oscillating lever with a rotary shaft, substantially as described.

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**527,956. PEA-SHELLING MACHINE.** JOHN H. EMPSON and PETER MCDONALD, Longmont, Colo. Filed Sept. 23, 1893. Serial No. 486,313. (No model.)

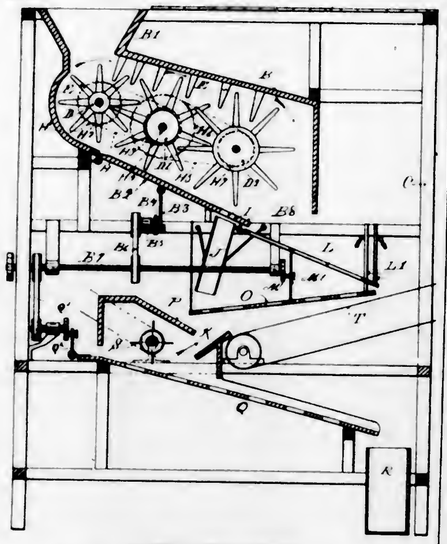
*Claim.*—1. The combination of a thrashing chamber having teeth depending from its top and enlarging vertically from its feed inlet to its discharge, means for agitating the bottom thereof, and a series of revoluble thrashing drums journaled in said chamber and provided with thrashing blades or arms, the blades of one drum intercurrent with those of the adjoining drums, substantially as set forth.

2. In a pea shelling machine, a frame with a platform thereon, a thrashing chamber supported on said frame, and enlarging vertically from its feed inlet to its discharge end, thrashing mechanism in said chamber, a hopper leading from said platform to said thrashing chamber, an inclined bottom to said thrashing chamber and means substantially as described for agitating said bottom, said parts being combined substantially as described.

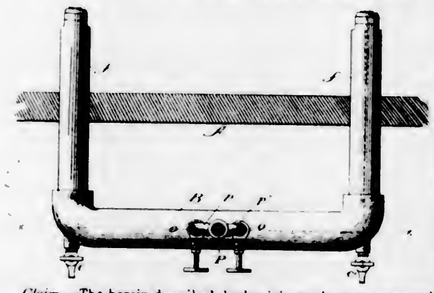
3. The combination of a thrashing chamber having an inclined bottom with an opening therein at its lowest end, an agitator at the lower end of said bottom and continuous therewith, an inclined sieve adapted to receive material from said bottom and from said agitator, a partially covered chute receiving material from said sieve, a conveyer below said sieve, and a fan in said chute, the outlet of said chute being adjacent to said conveyer, substantially as and for the purpose set forth.

4. The combination of a thrashing chamber, having the opening I in its bottom, with the agitator L continuous with said bottom, the sieve O below the discharge opening of said bottom and said agitator, and adapted to receive material therefrom, the partially covered chute P, with a fan below the same adjacent to the outlet thereof, the con-

veyer T below the sieve, O, and adjacent to the discharge opening of the chute P, and the box R, substantially as and for the purpose set forth.



527,957. DUPLEX BURNER. THOMAS P. EVANS, National Military Home, Ohio. Filed Dec. 7, 1893. Serial No. 493,024. (No model.)

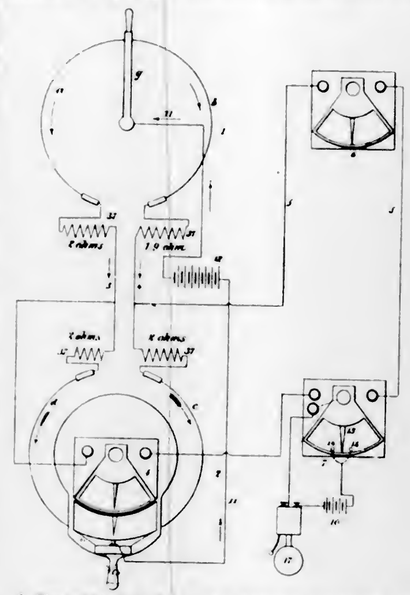


*Claim.*—The herein described duplex injector burner, composed of the U shaped hollow casting, having the central internal partition forming the two steam chambers terminating at the burners in the inner ends of the casting, the branch steam supply pipes to said chambers, the oil chambers formed longitudinally in said steam chambers on opposite sides of said partition, and having the intruding ends opposite said burner openings, the branch oil supply pipes leading into said oil chambers the oil pipes extending from said ends of the oil chambers into the burner openings, and the air inlets through the rear sides of said castings into the sides of the said oil chamber, as set forth and shown.

527,958. ELECTRICAL SIGNALING SYSTEM. BRADLEY A. FISKE, U. S. Navy. Filed May 13, 1892. Renewed Sept. 15, 1894. Serial No. 523,108. (No model.)

*Claim.*—1. The combination of a source of electricity, two similar bodies of conducting material located at distant stations, pivoted supports provided at their extremities with contact points moving upon said conductors and combined with one of said supports so as to be moved therewith, an electrical indicating or measuring instrument having a pivoted index or pointer, the pivot center of said index coinciding with the pivot center of said support; the said elements being connected in Wheatstone bridge circuit, substantially as described.

2. The combination of a source of electricity, two similar bodies of conducting material located at distant stations, pivoted supports provided at their extremities with contact points moving upon said conductors, and combined with one of said supports so as to be moved therewith an electrical indicating or measuring instrument having a pivoted index or pointer, the pivot center of said index coinciding with the pivot center of said support, a second electrical indicating or measuring instrument having a needle or pointer oscillating between fixed stops, and an electric bell or alarm in relay circuit with said stops; the said conductors, supports, measuring instrument and source of electricity being connected in Wheatstone bridge circuit, substantially as described.



3. The combination of a source of electricity, two similar bodies of conducting material, *a*, *b* *e*, *d*, located at distant stations, pivoted supports provided at their extremities with contact points moving upon said conductors, two unequal resistances in circuit at the extremities of conductor *a b*, two equal resistances in circuits at the extremities of conductor *c d*, an electrical measuring instrument having a needle or pointer oscillating between fixed stops, and an electric bell or alarm in relay circuit with said stops; the said conductors, supports, measuring instrument, resistances and source of electricity being connected in Wheatstone bridge circuit, substantially as described.

4. In an electrical signaling system, a transmitting instrument containing the cylinder 18, circuit head 20, pivoted arm 9 thereon provided with contact point 27, conductor *a*, *b*, supported on the periphery of said head 20 and insulated therefrom, and an electrical indicating instrument within said cylinder; the said cylinder having an opening through which said instrument may be seen.

5. In an electrical signaling system, a transmitting instrument containing the cylinder 18, circular head 20, pivoted arm 9 thereon provided with contact point 27, conductor *a b* supported on the periphery of said head 20 and insulated therefrom, an index finger on said arm 9 extending over said cylinder, and an electrical indicating instrument within said cylinder; the said cylinder having a scale plate below said index finger, and an opening through which said indicating instrument may be seen.

6. In an electrical signaling system a receiving instrument containing a base plate 28, a support 29 pivoted thereon, an electrical measuring or indicating instrument 8, having a pivoted index or pointer 34 and secured to said support with the pivot center of its index coincident with the pivot center of said support, a conductor, *c d*, supported on plate 28 and insulated therefrom, and a contact point carried by support 29 and bearing on said conductor, substantially as described,

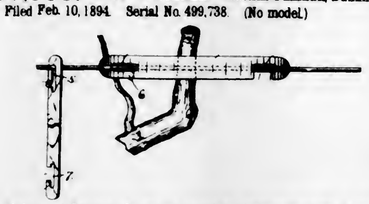
7. In an electrical signaling system, a receiving instrument containing a base plate, 28, a support, 29, pivoted thereon, an electrical measuring or indicating instrument, 8, having a pivoted index or pointer, 34, and secured to said support with the pivot center of said index coincident with the pivot center of said support, a conductor *c d* supported on plate 28 and insulated therefrom, a contact point, 11, carried by support 29 and bearing on said conductor, and an index finger, 31, also carried by said support 29 and normally disposed in



prolongation of the axis of the needle 34 when said needle is at the middle of the scale, substantially as described.

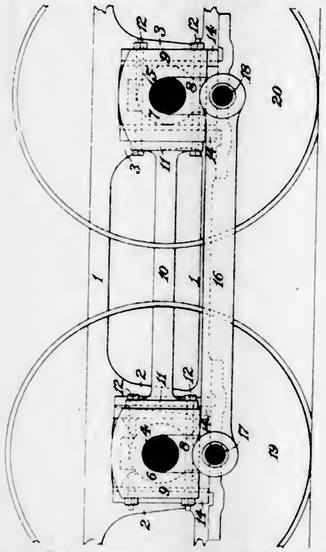
8. In an electrical signaling system, a transmitting instrument containing the cylinder 18, provided with circular heads, 20 and 21, the pivoted arm 9 provided with contact point 27, conductor *a*, *b* supported on the periphery of said head 20 and insulated therefrom, an index finger 26, an opening 40 in said cylinder beneath said finger 26 and provided with a translucent scale-plate and a source of illumination within said cylinder, substantially as described.

527,959. VINE-FASTENER. THOMAS FLESHER, Dunkirk, N. Y. Filed Feb. 10, 1894. Serial No. 499,738. (No model.)



*Claim.*—A fastener for grape or other vines consisting of an elastic flat metal strip curved or bow-shaped and provided at one end with an elongated slot for the passage of the wire having a spring lip adjacent to a side opening in the slot through which the wire is sprung into the slot, the other end of the fastener having an open angular recess for the loose insertion of the wire and a shoulder adjacent to the recess to retain the fastener in position upon the wire substantially as and for the purpose stated.

527,960. LOCOMOTIVE AXLE-BOX. MATTHIAS N. FORNEY, New York, N. Y. Filed Feb. 13, 1894. Serial No. 500,064. (No model.)



*Claim.*—1. The combination, substantially as set forth, of two axles or shafts, coupling rods and cranks connecting said axles, an axle box fitted upon one of said axles and adapted to oscillate about the center thereof, an axle box fitted upon the other axle and adapted to oscillate about the center of the first axle, and a rigid connection securing said axle boxes one to the other.

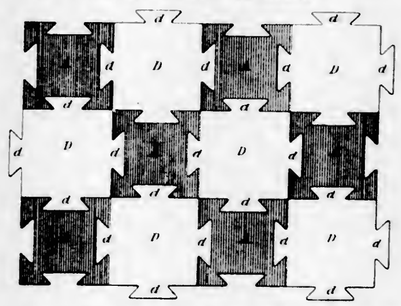
2. The combination, substantially as set forth, of two axles or shafts, coupling rods and cranks connecting said axles, a frame, bearings fitted to slide vertically in a pedestal or jaws thereon, an axle box fitted upon one of said axles and fitted concentrically in said bearings, an axle box fitted upon the other axle and adapted to oscillate about the center of the first axle, and a rigid connection securing said axle boxes one to the other

3. The combination, substantially as set forth, of two axles or shafts, coupling rods and cranks connecting said axles, a frame, bearings fitted to slide vertically in a pedestal or jaws thereon, an axle box fitted upon one of said axles and fitted concentrically in said bearings, an axle box fitted upon the other axle and fitted, with the capacity of both vertical and longitudinal movement, in a pedestal or jaws on the frame and a rigid connection securing said axle boxes one to the other.

4. The combination, substantially as set forth, of two axles or shafts, coupling rods and cranks connecting said axles, a frame, bearings fitted to slide vertically in a pedestal or jaws thereon and having inner bearing faces concentric with one of said axles which is adapted to rotate in said pedestal or jaws, an axle box fitted on said axle and having outer bearing faces concentric therewith and abutting against those of the bearings, an axle box fitted upon the other axle, and a rigid connection securing said boxes one to the other.

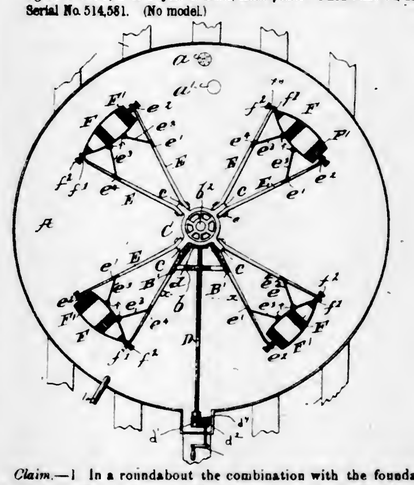
5. The combination, substantially as set forth, of a frame, bearings fitted to slide vertically in a pedestal or jaws thereon, an axle box fitted upon an axle and fitted concentrically in said bearings, end flanges projecting from said axle box on opposite sides of the frame, an axle box fitted upon a second axle and adapted to oscillate about the center of the first axle, end flanges projecting from said second-named axle box on opposite sides of the frame, and two connecting bars attached at their opposite ends to the two axle-boxes respectively.

527,961. TILE FLOOR, WALL, &c. FRANK FURNESS, Philadelphia, Pa., assignor of one-third to David H. Watts, same place. Filed Mar. 31, 1894. Serial No. 505,914. (No specimens.)



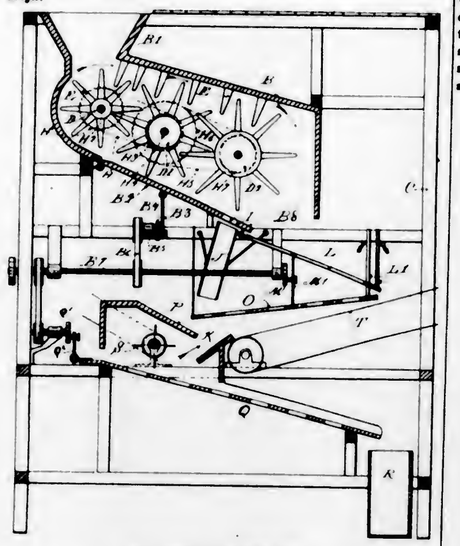
*Claim.*—A tiled floor or wall composed of a series of tiles of yielding material, said tiles having interlocking tongues, and being removable, substantially as described.

527,962. ROUNDABOUT. HENRY D. GARDY, Chester, Pa., assignor of one-half to Taylor C. Burk, same place. Filed June 14, 1894. Serial No. 514,581. (No model.)

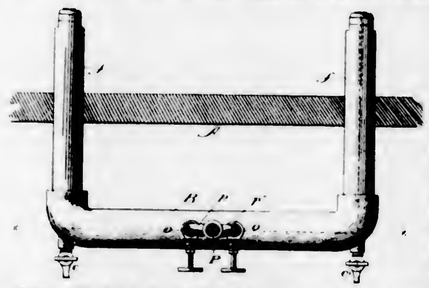


*Claim.*—1 In a roundabout the combination with the foundation, power mechanism secured thereto, and arms extending from said mechanism, of boats, a bolt or pin projecting from the bow and stern of the same, to which the arms are loosely secured, and a spring coiled around said bolt or pin on each side of the said arms.

veyer T below the sieve, O, and adjacent to the discharge opening of the chute P, and the box R, substantially as and for the purpose set forth.



527,957. DUPLEX BURNER. THOMAS P. EVANS, National Military Home, Ohio. Filed Dec. 7, 1893. Serial No. 493,024. (No model.)

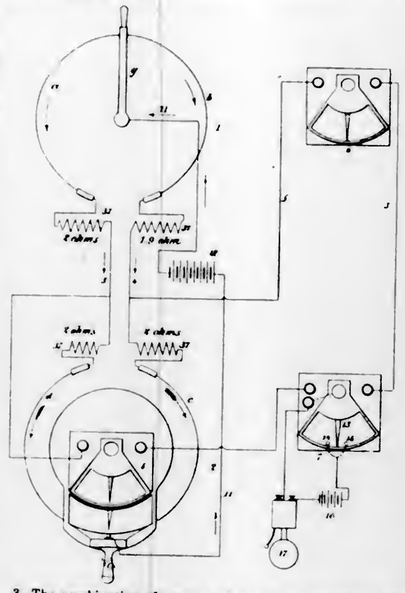


*Claim.*—The herein described duplex injector burner, composed of the U shaped hollow casting, having the central internal partition forming the two steam chambers terminating at the burners in the inner ends of the casting, the branch steam supply pipes to said chambers, the oil chambers formed longitudinally in said steam chambers on opposite sides of said partition, and having the intruding ends opposite said burner openings, the branch oil supply pipes leading into said oil chambers the oil pipes extending from said ends of the oil chambers into the burner openings, and the air inlets through the rear sides of said castings into the sides of the said oil chamber, as set forth and shown.

527,958. ELECTRICAL SIGNALING SYSTEM. BRADLEY A. FISKE, U. S. Navy. Filed May 13, 1892. Renewed Sept. 15, 1894. Serial No. 523,108. (No model.)

*Claim.*—1. The combination of a source of electricity, two similar bodies of conducting material located at distant stations, pivoted supports provided at their extremities with contact points moving upon said conductors and combined with one of said supports so as to be moved therewith, an electrical indicating or measuring instrument having a pivoted index or pointer, the pivot center of said index coinciding with the pivot center of said support; the said elements being connected in Wheatstone bridge circuit, substantially as described.

2. The combination of a source of electricity, two similar bodies of conducting material located at distant stations, pivoted supports provided at their extremities with contact points moving upon said conductors, and combined with one of said supports so as to be moved therewith an electrical indicating or measuring instrument having a pivoted index or pointer, the pivot center of said index coinciding with the pivot center of said support, a second electrical indicating or measuring instrument having a needle or pointer oscillating between fixed stops, and an electric bell or alarm in relay circuit with said stops; the said conductors, supports, measuring instrument and source of electricity being connected in Wheatstone bridge circuit, substantially as described.



3. The combination of a source of electricity, two similar bodies of conducting material, *a*, *b* c, *d*, located at distant stations, pivoted supports provided at their extremities with contact points moving upon said conductors, two unequal resistances in circuit at the extremities of conductor *a b*, two equal resistances in circuits at the extremities of conductor *c d*, an electrical measuring instrument having a needle or pointer oscillating between fixed stops, and an electric bell or alarm in relay circuit with said stops; the said conductors, supports, measuring instrument, resistances and source of electricity being connected in Wheatstone bridge circuit, substantially as described.

4. In an electrical signaling system, a transmitting instrument containing the cylinder 18, circuit head 20, pivoted arm 9 thereon provided with contact point 27, conductor *a*, *b*, supported on the periphery of said head 20 and insulated therefrom, and an electrical indicating instrument within said cylinder; the said cylinder having an opening through which said instrument may be seen.

5. In an electrical signaling system, a transmitting instrument containing the cylinder 18, circular head 20, pivoted arm 9 thereon provided with contact point 27, conductor *a b* supported on the periphery of said head 20 and insulated therefrom, an index finger on said arm 9 extending over said cylinder, and an electrical indicating instrument within said cylinder; the said cylinder having a scale plate below said index finger, and an opening through which said indicating instrument may be seen.

6. In an electrical signaling system a receiving instrument containing a base plate 28, a support 29 pivoted thereon, an electrical measuring or indicating instrument 8, having a pivoted index or pointer 34 and secured to said support with the pivot center of its index coincident with the pivot center of said support, a conductor, *c d*, supported on plate 28 and insulated therefrom, and a contact point carried by support 29 and bearing on said conductor, substantially as described,

7. In an electrical signaling system, a receiving instrument containing a base plate, 28, a support, 29, pivoted thereon, an electrical measuring or indicating instrument, 8, having a pivoted index or pointer, 34, and secured to said support with the pivot center of said index coincideot with the pivot center of said support, a conductor c *d* supported on plate 28 and insulated therefrom, a contact point, 11, carried by support 29 and bearing on said conductor, and an index finger, 31, also carried by said support 29 and normally disposed in



prolongation of the axis of the needle 34 when said needle is at the middle of the scale, substantially as described.

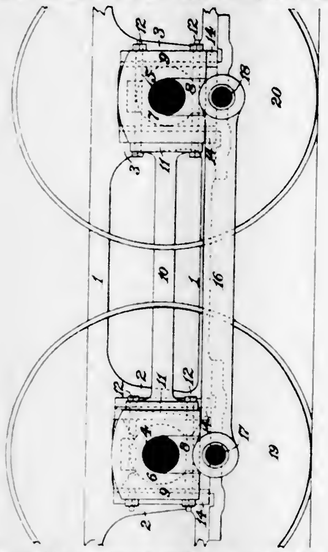
8. In an electrical signaling system, a transmitting instrument containing the cylinder 18, provided with circular heads, 20 and 21, the pivoted arm 9 provided with contact point 27, conductor *a*, *b* supported on the periphery of said head 20 and insulated therefrom, an index finger 26, an opening 40 in said cylinder beneath said finger 26 and provided with a translucent scale-plate and a source of illumination within said cylinder, substantially as described.

527,959. VINE-FASTENER. THOMAS FLESHER, Dunkirk, N. Y. Filed Feb. 10, 1894. Serial No. 499,738. (No model.)



*Claim.*—A fastener for grape or other vines consisting of an elastic flat metal strip curved or bow-shaped and provided at one end with an elongated slot for the passage of the wire having a spring lip adjacent to a side opening in the slot through which the wire is sprung into the slot, the other end of the fastener having an open angular recess for the loose insertion of the wire and a shoulder adjacent to the recess to retain the fastener in position upon the wire substantially as and for the purpose stated.

527,960. LOCOMOTIVE AXLE-BOX. MATTHIAS N. FORNEY, New York, N. Y. Filed Feb 13, 1894. Serial No. 500,064. (No model.)



*Claim.*—1. The combination, substantially as set forth, of two axles or shafts, coupling rods and cranks connecting said axles, an axle box fitted upon one of said axles and adapted to oscillate about the center thereof, an axle box fitted upon the other axle and adapted to oscillate about the center of the first axle, and a rigid connection securing said axle boxes one to the other.

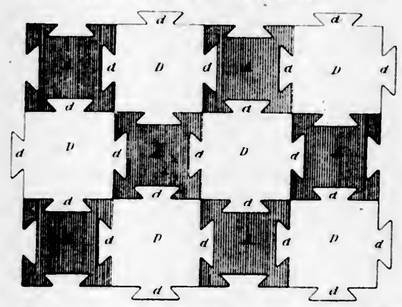
2. The combination, substantially as set forth, of two axles or shafts, coupling rods and cranks connecting said axles, a frame, bearings fitted to slide vertically in a pedestal or jaws thereon, an axle box fitted upon one of said axles and fitted concentrically in said bearings, an axle box fitted upon the other axle and adapted to oscillate about the center of the first axle, and a rigid connection securing said axle boxes one to the other

3. The combination, substantially as set forth, of two axles or shafts, coupling rods and cranks connecting said axles, a frame, bearings fitted to slide vertically in a pedestal or jaws thereon, an axle box fitted upon one of said axles and fitted concentrically in said bearings, an axle box fitted upon the other axle and fitted, with the capacity of both vertical and longitudinal movement, in a pedestal or jaws on the frame and a rigid connectiou securing said axle boxes one to the other.

4. The combination, substantially as set forth, of two axles or shafts, coupling rods and cranks connecting said axles, a frame, bearings fitted to slide vertically in a pedestal or jaws thereon and having inner bearing faces concentric with one of said axles which is adapted to rotate in said pedestal or jaws, an axle box fitted on said axle and having outer bearing faces concentric therewith and abutting against those of the bearings, an axle box fitted upon the other axle, and a rigid connection securing said boxes one to the other.

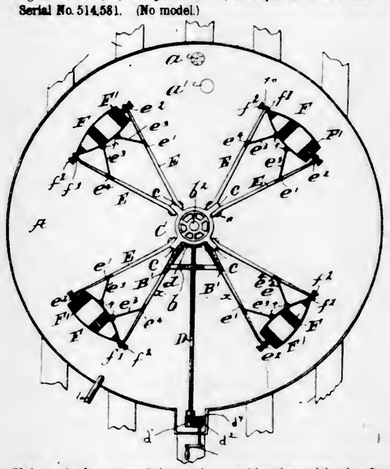
5. The combination, substantially as set forth, of a frame, bearings fitted to slide vertically in a pedestal or jaws thereon, an axle box fitted upon an axle and fitted concentrically in said bearings, end flanges projecting from said axle box on opposite sides of the frame, an axle box fitted upon a second axle and adapted to oscillate about the center of the first axle, end flanges projecting from said second-named axle box on opposite sides of the frame, and two connecting bars attached at their opposite ends to the two axle-boxes respectively.

527,961. TILE FLOOR, WALL, &c. FRANK FURNESS, Philadelphia, Pa., assignor of one-third to David H. Watts, same place. Filed Mar. 31, 1894. Serial No 505,914. (No specimens.)



*Claim.*—A tiled floor or wall composed of a series of tiles of yielding material, said tiles having interlocking tongues, and being removable, substantially as described.

527,962. ROUNDABOUT. HENRY D. GARDY, Chester, Pa., assignor of one-half to Taylor C. Burk, same place. Filed June 14, 1894. Serial No. 514,581. (No model.)

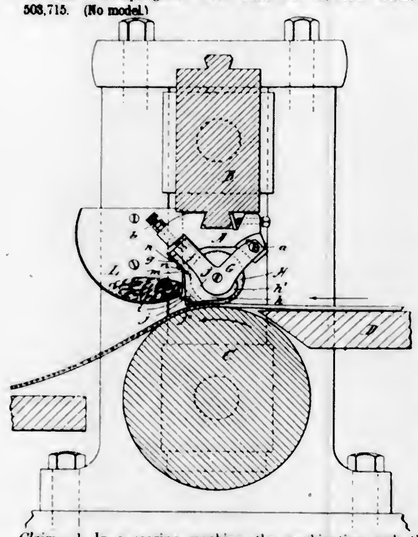


*Claim.*—1. In a roundabout the combination with the foundation, power mechanism secured thereto, and arms extending from said mechanism, of boats, a bolt or pin projecting from the bow and stern of the same, to which the arms are loosely secured, and a spring coiled around said bolt or pin on each side of the said arms.

2. In a roundabout the combination with power mechanism, of a crown wheel, arms hinged to and extending from said wheel, braces having a hooked end and loosely secured to said arms, and a boat swiveled to said arms and provided with staples or rings in one side, in which the braces are adapted to hook whereby the boats are free to take the motion of the water.

3. In a roundabout the combination with a tank, of a brace or truss work forming a foundation in the center of said tank, a crown wheel journaled on said foundation, short arms projecting from and integral with the crown wheel, of long arms hinged or pivoted to said short arms, braces loosely secured to said long arms, a boat having a swivel connection with said long arms, and provided with staples or rings in its side, in which the braces secured to the long arms hook, a journal bearing secured to the foundation, a shaft journaled therein, a cog or gear wheel secured to each end of the shaft, one of which meshes with the crown wheel, while the other engages with a cog or gear wheel by means of a belt or chain, and a suitable motor connected with the last named cog or gear wheel, all combined and operating substantially as described.

527,963. MACHINE FOR SCORING PAPER-BOARD. CHAUNCEY W. GAY, West Springfield, Mass. Filed Mar. 15, 1894. Serial No. 503,715. (No model.)



*Claim.*—1. In a scoring machine, the combination with the double-edged scoring wheel, of a shoe supported in proximity thereto, to bear upon the paper substantially as described, and having its foot bifurcated so as to lie at either side of the scoring wheel and having the heel, *i*, transversely uniting the bifurcated members of the foot and having the socket, $i^3$, and the clearer-blade, *j*, set in and extended from said socket angularly to the under surface of the foot, substantially as described.

2. In a scoring machine, the combination with a shoe, substantially as described having the upwardly extended bar-shank, *g*, the foot which is bifurcated forming the two members with the curved under surface and the rearwardly upturned toes, $A^2$, $A^2$, and the transverse uniting heel, *i*, substantially as described and shown.

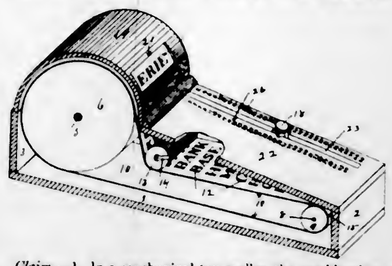
3. In a scoring machine, the combination with a hanger, G, and double-edged scoring wheel mounted thereon, of the shoe, J, having the bar-shank, *g*, provided with the slots, *k*, *k*, and having the bifurcated foot substantially as described, and the doctor-blade, *m*, having the slot in its shank, $m^3$, and the screws, *n*, *n*, for adjustably holding the shoe to the hanger, and the doctor-blade to the shoe, substantially as described.

4. In a scoring machine, the combination with the double edged scoring wheel, of a shoe mounted near, and in advance of, the wheel and formed with an aperture therethrough from front to rear, one or more clearers supported within this aperture for clearing and directing the waste stock which is excavated from the scored board forwardly through the thruat formed by said aperture in the shoe, and a receptacle in advance of the wheel and clearer for receiving such waste, substantially as described.

5. In a scoring machine, the combination with the roll, C, and the scoring wheel, of a shoe above the support roll and adjustably mounted independently of the scoring wheel, and having portions which are adapted to lie closely to the paper-board, and a clearer-blade supported by the shoe and having its working edge extended below the lower surface of the shoe, and arranged in advance, and in a plane parallel with the rotation, of the scoring wheel and between the circular knife edges thereof, substantially as described.

6. In a scoring machine, the combination with a supporting and guiding roll, C, the double-edged scoring wheel, and a hanger on which said wheel is adjustably mounted, of a shoe adjustably supported on the hanger independently of the wheel to be moved from and toward the roll, C, and having foot portions which are adapted to lie closely to the paper-board and having the clearer blade, *j*, adjustably supported thereon and the doctor-blade, *m*, which is adjustable longitudinally of its length, substantially as described.

527,964. MECHANICAL TOY SPELLER. CYRUS P. GIFFORD, Erie, Pa. Filed Jan. 18, 1894. Serial No. 497,304. (No model.)



*Claim.*—1. In a mechanical toy speller, the combination, with a case having a series of slots, the openings 20 and 21, a series of aggregate numbers adjacent to the slot pertaining to the opening 21, and numbered letters arranged alphabetically adjacent to the slots pertaining to the openings 20; of a series of bands provided with letters adapted to be displayed through the openings 20, a series of blocks sliding in the said slots and pointing to the numbered letters corresponding to the letters displayed through the openings 20; a band provided with names adapted to be displayed through the opening 21, a block sliding in the slot and pointing to the aggregate numbers aforesaid, each sliding block being connected with the band to which it pertains; and means for sliding each block and band, substantially as and for the purpose set forth.

2. The combination in a mechanical toy speller, of a case having openings 20 for letters and an opening 21 for names, bands operating on wheels within the case adapted to present letters at the letter openings 20, and a band adapted to present names at the name opening 21, and letters and figures on the top of the case, and sliding blocks communicating with the wheels supporting said lettered-bands and the band having names thereon, substantially as and for the purpose set forth.

3. The combination in a mechanical toy speller, of a case having openings 20 and 21, and slots 23 in the cover thereof, and the letters of the alphabet and figures at one side of each of said slots, wheels 6 and 9, and bands 10 having letters thereon on said wheels, tightener pulleys 13 operating on said bands 10, pulleys 7 on said wheels 6 and loose pulleys 16 at the front of the case, belts 17 operating on said pulleys, sliding blocks 18 secured to said belts, and operating in the grooves 23, substantially as and for the purpose set forth.

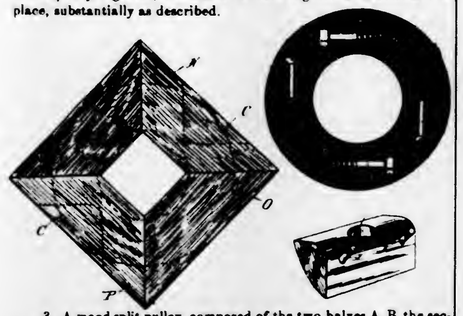
4. The combination, in a mechanical toy speller, with an inclosing case having an opening 20, a slot 23, and numbered letters adjacent to the said slot; of the shaft 5, the wheel 6 and the pulley 7 secured together and journaled thereon; the shaft 8 and the pulley 9 journaled on it; the shaft 15 and the pulley 16 journaled on it; a band passing around the wheels 6 and 9 and provided with letters visible through the opening 20; the band tightener; the cord 10 passing around the pulleys 7 and 16, and the pointer block 18 sliding in the slot 23 and having the ends of the cord 10 adjustably secured to it, substantially as set forth.

527,965. WOOD PULLEY AND METHOD OF BUILDING SAME. HENRY J. GILBERT, Saginaw, Mich. Filed Jan. 13, 1893. Serial No. 458,292. (Model.)

*Claim.*—1. A wood split pulley having the two longitudinal sections C C cut therefrom to form clamping surfaces each located in a plane approximately parallel with the dividing line of the pulley, and the planes of which clamping surfaces intersect the shaft opening, for the purpose set forth, clamping bolts and nuts for securing the two halves of the pulley together, and means for securing the said sections C in place, substantially as described.



2. A wood split pulley composed of the two halves A B separated on a line diagonally transverse to the grain of the wood, the longitudinal sections C cut therefrom to form the clamping surfaces D, the planes of which intersect the shaft opening, leaving the grain of the wood running straight between the apexes of the said sections and the shaft opening, to preserve the greatest strength of the wood at those points of the pulley, bolts and nuts for clamping the two halves of the pulley together, and means for securing the said sections C in place, substantially as described.



3. A wood split pulley, composed of the two halves A, B, the sections C cut therefrom to form the clamping surfaces D, said sections having rounded apexes or inner parts, the bolts E fixed at one end in the respective halves of the pulley and extending at their other ends through the opposite halves and projecting beyond the surfaces D, the clamping nuts F applied to the bolts E, and means, as the screws I, for securing the sections C in place, substantially as described.

4. A wood split pulley, composed of the two halves A B, the longitudinal sections C cut therefrom to form the clamping surfaces D, said sections C having rounded apexes or inner parts and being slightly separated from their seats in the body of the pulley by the spaces between the points *b*—*b*, for the purpose described, bolts and nuts for clamping the two halves of the pulley together, and means for securing the sections C in place, substantially as described.

5. A wood split pulley, composed of the two halves A, B, separated on a line diagonally transverse to the grain of the wood, the longitudinal sections C, of approximately the shape shown, cut from the opposite halves of the pulley to form the clamping surfaces D, said sections C being slightly separated from their seats in the body of the pulley by the spaces between the points *b*—*b* for the purpose described, and leaving the grain of the wood running straight between them and the shaft opening, to preserve the greatest strength of the wood at those points in the pulley, bolts and nuts for clamping the two halves of the pulley together, and means for securing the sections C in place, substantially as described

6. The herein described wood split pulley comprising four quadrant sections, said pulley having recesses, the longitudinal sections C fitting in said recesses, and means for securing the two halves of the pulley together and for securing the sections C in place, substantially as described.

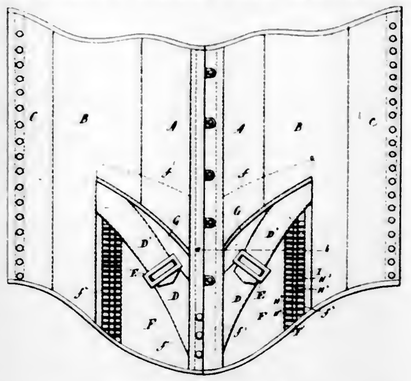
7. The herein described wood split pulley having recesses and comprising four quadrant sections, each section consisting of two or more longitudinal layers of wood secured together, the longitudinal sections C C fitting in said recesses, and means for securing the two halves of the pulley together and for securing the said sections C in place, substantially as described.

8. The herein described steps in the method of building wood pulleys, consisting in cutting the pulley stock into miter sections, securing said sections together to form the pulley block, and turning the pulley from said block, substantially as described.

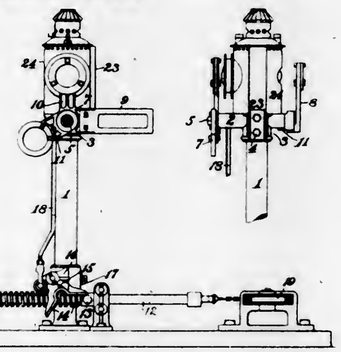
9. The herein described steps in the method of building wood pulleys, consisting in forming the pulley stock by gluing together two or more strips or longitudinal layers of wood, cutting said stock into miter sections, securing said sections together to form a pulley block, and then turning the pulley from said block, substantially as described.

527,966. ABDOMINAL CORSET. THOMAS S. GILBERT, Springfield, Mass., assignor to the Gilbert Corset Company, same place. Filed Aug. 24, 1894. Serial No. 521,209. (No model.)

*Claim.*—An abdominal corset, having front sections, hip sections and back sections, of which the lower portions of the front and hip sections are cut away to form openings, widest at their rear ends and thence tapering forward to their forward ends; auxiliary sections located within the said openings, extending up under the lower edges of the hip and front sections as cut away, throughout the length of the openings, and attached to the corset at their rear and forward ends, one of their attachments being flexible; and two corresponding, oppositely located, diagonally arranged, adjustable abdominal straps, converging at their lower ends, superimposed upon the said auxiliary sections and connected with the front and hip sections of the corset respectively, substantially as and for the purpose described



527,967. SIGNAL. EDWARD H. GOODMAN, Pittsburg, assignor to The Union Switch and Signal Company, Swissvale, Pa. Filed Apr. 26, 1893. Serial No. 471,889. (No model.)

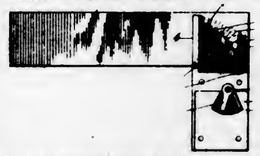


*Claim.*—1. In a signal, the combination of a vertical post, a head piece adjustably mounted on the post, a shaft mounted in the head piece, a semaphore attached to the shaft, a spring having one end attached to the shaft and its opposite end to a stationary part of the signal, and mechanism for shifting the signal against the tension of the spring, substantially as set forth.

2. In a signal, the combination of a post or support, a head-piece adjustably mounted on the post, a semaphore blade carried by the head piece, a collar movable around the post, a bell crank lever mounted on said collar, and connected to the semaphore blade and mechanism for operating the bell crank, substantially as set forth.

3. A semaphore blade formed of a flexible resilient material, substantially as set forth.

527,968. SQUARE. PETER GRABLER and JOSEPH J. BROWN, Pittsburg, Pa. Filed Oct. 24, 1893. Serial No. 489,017. (No model.)



*Claim.*—1. A try square provided with independently adjustable arms to indicate two different angles without disturbing the square proper substantially as described.

2. A try square and bevel comprising a blade and stock set at right angles, and having secured to its stock independently adjustable arms on opposite sides of the blade; and means for adjusting

the same to different angles or degrees without interfering with the square proper, substantially as described

3. A try square comprising a blade and stock set at right angles, and having secured to its stock independently adjustable arms on opposite sides of the blade, and means for locking said arms at the desired degree or angles substantially as described.

4. A combined try square and double bevel, comprising a blade and stock, independently adjustable arms pivoted on opposite sides of the square at the intersection of blade and stock, said arms carrying segmental arms or guides adapted to operate in slots, cams and thumb levers designed to lock said arms, substantially as described.

5. A combined try square and double bevel, comprising a blade and stock provided with independently adjustable arms adjustable to any angle between one and ninety degrees pivoted or hinged on opposite sides of the square and arc scales arranged on the blade on opposite sides, substantially as described.

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**527,969.** PROCESS OF MANUFACTURING ARTIFICIAL MARBLES. FEUILLEN GRAND' MONTAGNE, Brussels, Belgium. Filed May 16, 1894. Serial No. 511,505. (No specimens.) Patented in Belgium June 9, 1892, No. 100,054, and July 18, 1892, No. 100,492; in France Dec. 6, 1892, No. 226,209, and in England Jan. 24, 1893, No. 1,582.

*Claim.*—1. In the manufacture of artificial marbles, producing the veining by means of tresses or skeins of silk previously dipped in an acid solution of a metallic sulfate and then impregnated with a very thin cement, dyed to the color desired for the veining, said tresses being then withdrawn vertically through the paste, and the latter being then caused to settle down so as to produce a solid mass having no fissures, substantially as hereinbefore described.

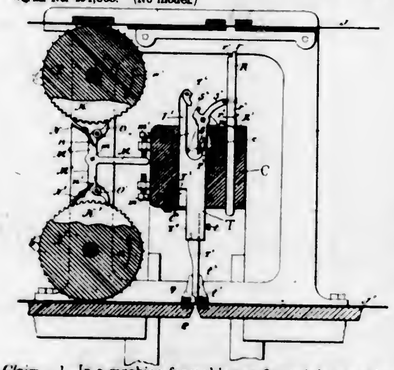
2. Polishing the artificial marbles produced as hereinbefore described, by first using a rubber moistened with alcohol and coated with tin putty and borax, then using a second rubber of flannel moistened with alcohol and salt of sorrel, substantially as described

3. The herein described process of forming artificial marble consisting in first coating the marble with stearine and then coating the same with a preparation of virgin wax melted in a water bath in essence of turpentine with a small addition of sulphur and then polishing the same, substantially as described.

4. The manufacture of impervious and permanent artificial marbles consisting in first coating the heated marbles with stearine and then, after they have become dry, coating them with a preparation consisting of virgin wax melted in a water bath in essence of turpentine with the addition of a few grams of sulphur per liter of turpentine, then polishing the same, substantially as hereinbefore described.

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**527,970.** MACHINE FOR MAKING PERFORATED SHEET-MUSIC. WILFRED E. GRIGGS, Waterbury, Conn. Filed Nov. 24, 1893. Serial No. 491,863. (No model.)



*Claim.*—1. In a machine for making perforated sheet-music, the combination with devices for feeding the pattern-strip and the music-strip, of a punching mechanism, including a punch constructed with a cutting-finger and a trimmer corresponding in width to the said finger and located directly above and in rear of the same for trimming the webs between the openings formed by the edge, substantially as described.

2. In a machine for making perforated sheet-music, the combination with a punching mechanism including a punch, a feeler and connection between the same; of two feed rolls located one above the other, for feeding the pattern and music strips respectively, and mechanism operated by the punching mechanism for rotating the feed-rolls step by step in opposite directions alternately, and including a three-armed lever located between the said rolls and having an arm for co-operation with each of the rolls and with the punching mechanism which oscillates the lever and actuates the rolls, substantially as described.

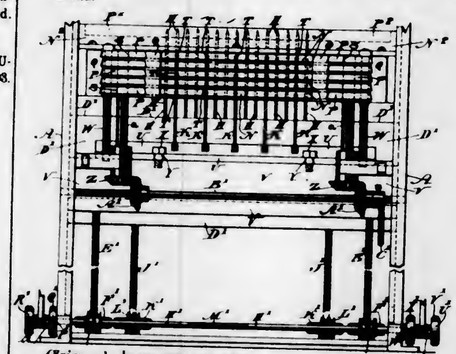
3. In a machine for making perforated sheet-music, the combination with a punching mechanism including a reciprocating cross-head, of two feed-rolls for feeding the pattern and the music-strip, each roll being provided at one end with a feed-wheel, and at each end with a row of feed-pins, of an operating lever having an operating arm which is alternately moved up and down by the cross-head of the punching mechanism, and two arms extending respectively toward the feed-rolls, each of the arms last mentioned being furnished with a spring-actuated operating-pawl, and two detents respectively engaged with the said feed-wheels, and the said arms last mentioned, which disengage them from the feed-wheels for the rotation of the feed-rolls, substantially as described.

4. In a machine for making perforated sheet-music, the combination with feeding mechanism for feeding the pattern and the music-strip, of a punching mechanism including a head, means for reciprocating the same, a feeler mounted in the head and arranged to impinge against the pattern strip, and to pass into and through the openings thereof, a pivotal locking-dog carried by the said head and connected with the feeler, and constructed at its lower end with an inner and outer shoulder, a punch-head mounted in the reciprocating head so as to slide up and down therein, and constructed to be operated upon by the inner and outer shoulders of the locking dog, a pawl carried by the punch-head, and coacting with the locking-dog to swing the same into position for operation, a punch mounted in the said punch-head, and having a cutter and a trimmer and a die receiving the said punch and the music-strip, substantially as described.

5. In a machine for making perforated sheet-music, the combination with devices for feeding the pattern-strip and the music-strip, of a punching mechanism including a punch mounted in a cross head so as to be vertically movable therein, and adapted to punch the music-strip, a feeler mounted in the said cross-head, and adapted to be vertically moved therein independent of the punch, and to coact with the pattern-strip, and means also carried by the cross-head for connecting the punch and feeler, whereby one is caused to act upon the other, substantially as described.

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**527,971.** APPARATUS FOR MAKING RUGS, &c. REUBEN J GRUBB, Philadelphia, Pa. Filed Sept. 1, 1893. Serial No. 484,536. (No model.)



*Claim.*—1. In an apparatus for manufacturing rugs, a frame, a series of plates supported thereon and having intervening spaces, a rising and falling cross-head provided with hooks movable in slots in said plates, mechanism for feeding yarn to said hooks, a second rising and falling cross head, having independent operating mechanism from said first cross-head, a plate laterally guided on said second cross head and having feeding pins connected therewith, means for connecting said latter mentioned plate to said second cross-head so as to vertically move therewith, a sliding plate with fingers engaging said feeding pins and a rod connected with said sliding plate and loosely fitting in said feeding pin plate, said parts being combined substantially as described.

2. The supporting plates B having the slots G and J therein, the vertically-moving hooks H mechanism substantially as described for supplying yarn to said hooks, the sliding plates N with the openings R therein, the eccentrics S in said openings and the shafts *a* and operating gearing thereof, in combination with the fingers T secured to said sliding plates, the feeding pins K adapted to be pressed by said fingers, and mechanism substantially as described for raising and lowering said pins, as stated.



3. The plates B having two series of slots therein, the hooks H working in one series of said slots, and the feeding pins K working in the other series, the sliding plate U with which said pins are connected, the rising and falling cross head V for said plate U, the rods W and the sliding plates N, said rods being attached to said plates N and loosely fitted in said plates U, and mechanism for supplying yarn to said hooks, said parts being combined substantially as described.

4. The supporting plates B, the hooks H movable in slots in said plates, mechanism for supplying yarn to said hooks the feeding pins K, the plate U carrying said pins, the cross head V supporting the plates U, the sliding plates N with the fingers T, the rods W attached to said sliding plates and freely inserted in the plate U, the latter having the slots Y through which passes the bolt X connecting the plate U with the cross head V, and permitting sliding motions thereof, while said plate U rises and falls on said rods W, and means for raising and lowering said cross head, said parts being combined substantially as described.

5. An apparatus for manufacturing rugs, &c. having a frame, a series of supporting plates with intervening spaces and having the slots G and J therein, a rising and falling cross head having hooks attached thereto, mechanism for supplying yarn to said hooks a rotatable shaft with worms thereon, screws working in said cross head and having worm wheels thereon meshing with said worms, a plate with feeding pins thereon and mechanism substantially as described for laterally moving said feeding pins, said parts being combined substantially as described.

6. In a machine for manufacturing rugs, &c. the plates B having therein the slots G and J, the hooks H working in said slots G, mechanism for operating said hooks mechanism for supplying yarn to said hooks, the feeding pins K with mechanism for raising and lowering the same, the plates N with fingers T guided in the plates B, and mechanism for laterally moving said plates N, said parts being combined substantially as described.

7. In a machine for manufacturing rugs, &c. the plates B having the slots G and J therein, hooks with mechanism for working the same as described, in said slots G, mechanism for feeding yarn to said hooks, feeding pins with mechanism for raising and lowering the same, mechanism for laterally moving said pins in said slots J, and reciprocating knives for cutting said yarn, said parts being combined substantially as described.

8. An apparatus for manufacturing rugs, &c. having a frame supporting plates thereon and having spaces between them, said plates having two series of slots therein, a row of hooks with mechanism for imparting a rising and falling motion thereto, a row of feeding pins secured to a sliding plate, with mechanism for imparting a rising and falling motion to the same, mechanism for imparting a lateral reciprocating motion to said pins, and a yarn-holding mechanism, said parts being combined substantially as described.

9. The frame $K^2$ with yarn directing slots $L^2$, $M^2$, the box $N^2$ in which said frame is seated, the plates B below said box, the hooks H adapted to pass through said plates into said frame so as to engage the yarn therein, and mechanism for raising and lowering said hooks, said parts being combined substantially as described.

10. In an apparatus substantially as described, the slotted frame $K^2$ in combination with the box $N^2$, the supporting plates B and the hooks H, with means for operating the same, said box having facings or cushions $P^2$ with which the yarn from said frame is in contact, said parts being combined substantially as described.

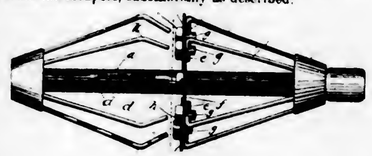
11. An apparatus for manufacturing rugs, &c. having a series of supporting plates with intervening spaces, each of said series of plates having slots therein, a vertically-movable hook working in a slot in each of said plates mechanism for feeding yarn to said hooks, a series of sliding plates provided with fingers, mechanism for reciprocating said sliding plates, a sliding cross head having a sliding plate connected therewith, feeding pins on said plate adapted to be engaged by said fingers and having both vertical and longitudinal movements in slots in said supporting plates, mechanism for raising and lowering said cross head, and mechanism for reciprocating said sliding plates, said parts being combined substantially as described.

12. In an apparatus for manufacturing rugs, &c. a supporting plate with slots therein, a cross head with mechanism for raising and lowering the same, a reciprocating plate with fingers, a rod connected with said reciprocating plate, a plate with a slot therein connected with said cross head so as to rise and fall therewith and to slide thereon, said plate being movable on said rod, feeding pins secured to said sliding plate on said cross head, and vertically moving hooks, with mechanism for feeding yarn to the same, said parts being combined substantially as described.

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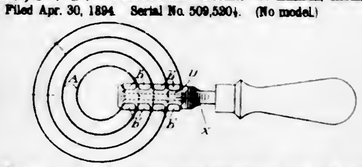
**527,972.** TUBE OR FLUE CLEANER. DANIEL HARRON, Chelsea, Mass. Filed Nov. 11, 1893. Serial No. 490,624. (No model.)

*Claim.*—The improved flue scraper comprising in its construction the rod *a*, the heads *b b* affixed to said rod, the diverging elastic arms *c* attached to one of said heads and provided with inwardly bent ends, the segmental scraping plates *f* adjustably secured to the inwardly bent portions of the arms, and the diverging elastic arms *d* attached to the other head *b* and having their ends inwardly inclined and separate from the scrapers, substantially as described.



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**527,973.** CURRYCOMB. ROBERT W. HARDIE, Albany, N. Y. Filed Apr. 30, 1894. Serial No. 509,530. (No model.)



*Claim.*—1. In a currycomb, the combination with a serrated convoluted scraping blade, of a handle, and separating blocks supporting the convolutions of said blade, and provided with retaining lips adapted to overlap the shank of said handle, substantially as shown and described.

2. In a currycomb, the combination with a serrated convoluted scraping blade, of a series of separating blocks, and a handle having its shank provided with pendent lugs having vertical recesses adapted to engage rivet heads which secure the ends of the blade to the end blocks of the series, substantially as shown and described.

3. In a currycomb, the combination with a serrated convoluted scraping blade, of separating blocks provided with projections adapted to engage corresponding openings formed in the convolutions of said blade, and a handle secured to said separating blocks, substantially as shown and described

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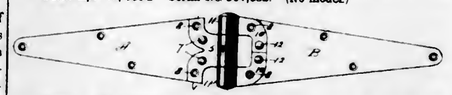
**527,974.** HEEL-VALVE FOR ATOMIZERS. JAMES HARDMAN, Jr., Belleville, N. J. Filed Nov. 28, 1893. Serial No. 492,259. (No model.)



*Claim.*—A valve for atomizers, comprising therein a sheet metal casing *a*, having a face *a'* provided with a perforation, a chamber $a^4$, a neck $a^5$ having a flange $a^6$, and a flexible disk-valve in said chamber, substantially as and for the purposes set forth.

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**527,975.** STRAP-HINGE. WILLIAM H. HART, New Britain, Conn. Filed Apr. 10, 1894. Serial No. 507,032. (No model.)



*Claim.*—The herein described strap hinge, consisting of the leaf A having a middle tongue-forming-knuckle rolled upon itself and divided into two members which are lapped upon the body of said leaf bent edgewise and turned outwardly, as shown, and a companion leaf B having two knuckles forming tongues rolled upon themselves lapped upon the body of said leaf bent edgewise and turned inwardly, substantially as described and for the purpose specified.

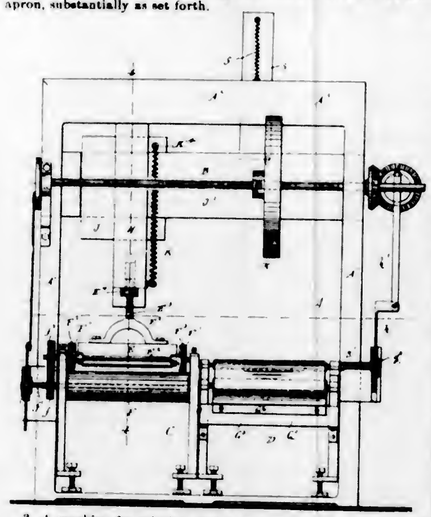
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**527,976.** WALL-PAPER MACHINE. RUDOLPH HEILMANN, New Brunswick, N. J. Filed Oct. 3, 1893. Serial No. 487,120. (No model.)

*Claim.*—1. A machine for printing wall paper and the like, constructed with a printing table and a color box having a shiftable color-apron, at all times remaining on the impression surface of the color-box, a support for a printing-block, means for shifting the printing-block support from the printing-table to the color-box and vice versa and for lowering the color-block both when above the color-box and above the printing-table, means for shifting the color-apron when the printing-block is above the printing-table, means for shifting the paper when the printing-block is above the color-block, and means for

delivering a blow upon the printing-block when it rests on the color-apron, substantially as set forth.

2. A machine for printing wall paper and the like, constructed with a printing table and a color-box adjacent to each other and a vertically and longitudinally movable support for the printing-block, means for shifting said support vertically and horizontally and lowering and raising the same both when above the printing-table and when above the color-box, an automatic paper feeding device for unwinding the paper from the roll at one end of the printing-table and drawing the paper over the printing table during the time that the printing-block is raised from said printing-table, and means for delivering a blow upon the printing block when it rests on the color-apron, substantially as set forth.



3. A machine for printing wall paper and the like, constructed with a printing table and a color-box, a vertically and horizontally movable support for a printing block, means for shifting said support horizontally and vertically and lowering or raising the same both when above the printing table and above the color box, an automatic paper-feeding device operated from the same shaft that operates the printing block, an endless color-apron in the color-box, means for shifting the color-apron from the same shaft that operates the printing block, and means for delivering a blow upon the printing block when the same rests on the color apron, substantially as set forth.

4. A machine for printing wall paper and the like, constructed with a printing table and a color-box, a horizontally and vertically movable support for a printing-block, means for shifting said block and lowering and raising the same both when above the printing-table and when above the color-box, an automatic paper feeding device connected with the printing-table, an endless apron in the color-box, means for operating the paper shifting device and the color paper shifting device alternately and at intervals, and means for delivering a blow upon the printing-block when it rests on the color-apron, substantially as set forth.

5. A machine for printing wall-paper and the like, constructed with a color-box, a vertically movable support for a printing-block, a spring pressed plunger for striking upon the printing-block support, a cam-wheel having offsets which cam-wheel raises the plunger and permits it to descend and strike the printing-block support under the action of its spring, substantially as set forth.

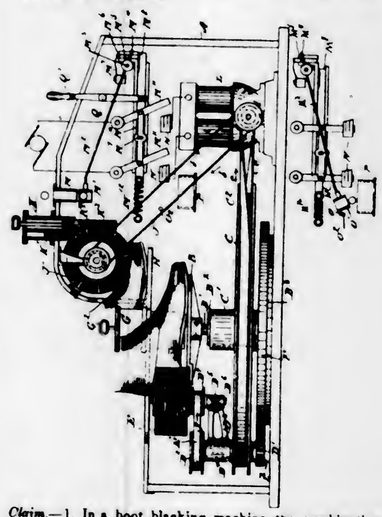
6. In a machine for printing wall paper and the like, the combination, with a printing table and color box, of a vertically movable support for the printing block, means for traversing the printing block to and over the color box, and returning the same to the printing-table a plunger, a spring acting on the plunger, which plunger can act on an offset of the printing block support, a cam wheel on which the lower end of the plunger can rest, which cam-wheel has two offsets to release the plunger and permit the same to strike the printing block support, substantially as set forth.

7. In a machine for printing wall paper and the like, the combination, with a printing table and a color box, of a suitable frame, a slide mounted to move horizontally on a cross bar of said frame, a presser-bar mounted to slide vertically in said slide, a printing block on said presser bar, a wheel pivoted on the slide and having a pin acting on the presser-bar, a crank, and a connecting rod connecting the wrist-pin of said wheel with the crank, means for forcing the printing-block into contact with the color-box when over the same, substantially as set forth.

8. In a machine for printing wall-paper and the like, the combination with a printing-table and a color-box, of a frame, a horizontal guide-rail on said frame, a slide mounted on said guide-rail, a presser-bar mounted in the slide to move vertically, a printing-block on said presser-bar, a spring for drawing said presser-bar upward, a wheel mounted on the slide, a pin projecting from said wheel, a slide piece into which said pin passes, which slide-piece is located in a recess of the presser bar, a spring connected with the slide and with the rim of the wheel for turning the wheel upward, a crank, a rod connecting the crank with a wrist pin on the wheel and means for forcing the printing-block into contact with the color-box when over the same, substantially as set forth.

9. In a machine for printing wall paper and the like, the combination, with a printing table and a color box, of a frame, a horizontally longitudinally slitted rail on said frame, a slide mounted on said rail, a vertically movable presser bar on the slide, a printing block on said presser bar, a slide piece located in a recess between the presser bar and the slide, a pin projecting from said slide piece, a wheel pivoted on the slide and engaging said pin, a spring attached to the slide and to the rim of the wheel, a spring for drawing the presser-bar upward, a crank, a longitudinally slotted connecting bar connected with the crank, a wrist-pin projecting from the wheel through said slot, and a spring arranged between the wrist-pin and the closed end of the slot of the connecting bar, and means for forcing the printing-block into contact with the color-box when over the same, substantially as set forth.

## 527,977. AUTOMATIC ELECTRICAL BOOT-BLACKING MACHINE. JOHN O HEINER Jr., Lynn, Mass. Filed Apr. 2, 1894. Serial No. 506,054. (No model.)



*Claim.*—1. In a boot blacking machine, the combination of a foot rest, a rotary brush, a frame supporting the said brush mounted on a disk revolving around said shaft, driving mechanism operated by the said revolving disk for rotating the brush and moving it around the foot rest, an electric circuit, and a circuit closer operated by the weight of a coin to close the electric circuit and thereby operate the driving mechanism.

2. In a boot blacking machine, the combination of a foot rest mounted on a shaft, a rotary brush, a frame supporting the said brush mounted on a disk revolving around said shaft, and driving mechanism operated by the said revolving disk for rotating the brush and moving it around the foot rest.

3. In a boot blacking machine, the combination of a foot rest mounted on a shaft, a rotary brush, a frame supporting the said brush and mounted on a disk revolving around the said shaft, means for holding the brush in contact with the said shoe on the foot rest during its rotation, and driving mechanism operated by the said revolving disk for revolving the said frame and thereby causing the brush to travel around the shoe and to hold the brush, during its rotation, in contact with the shoe.



4. In a boot blacking machine, the combination of a foot rest mounted on a shaft, a rotary brush, a frame supporting the said brush mounted on a disk revolving around said shaft, means operated by the disk for holding the brush in contact with the shoe on the foot rest during its rotation, and driving mechanism for revolving the said frame and thereby causing the brush to travel around the shoe and to hold the brush, during its rotation, in contact with the shoe.

5. In a boot blacking machine, the combination of a foot rest mounted on a shaft, a disk adapted to revolve around said shaft, a rotary brush, a frame supporting at one end the shaft of the rotary brush and at the other end having a shaft passing through said disk, which shaft has fixed at its lower end a rotary pulley, a fixed disk with which the said rotary pulley contacts in the revolution of the revolving disk, and causes the revolution of the said shaft, connections between the said shafts to communicate motion to the brush, and driving mechanism for rotating the said rotary disk and thereby communicate motion to the brush.

6. In a boot blacking machine, the combination of a foot rest, a rotary brush adapted to move around said foot rest to polish the sides of the shoe, another foot rest, and a brush located above the same for polishing the top of the shoe, and driving mechanism operated by the same motor for driving both brushes.

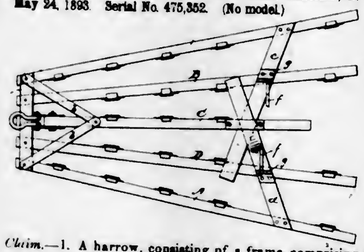
7. In a boot blacking machine, the combination of a foot rest, of a rotary brush adapted to move around the said foot rest to polish the sides of the shoe, another foot rest, and a brush located above the same for polishing the top of the shoe, blacking pots arranged in proximity to the brushes to supply the same with blacking, and driving mechanism operated by the same motor for driving both brushes.

8. In a boot blacking machine, the combination of a foot rest mounted on a shaft, a rotary brush, a frame supporting said brush and mounted on a disk revolving around the said shaft, a blacking pot arranged in proximity to the said rotary brush and adapted to supply the said brush with blacking, and driving mechanism operated by the said disk for revolving the said frame and thereby causing the brush to travel around the foot rest and pass the said blacking pot.

9. In a boot blacking machine, the combination of a foot rest mounted on a shaft, a bushing surrounding said shaft, a rotary brush, a frame supporting said brush mounted on a disk revolving around said bushing, and driving mechanism operated by the said disk for rotating the brush and moving it around the foot rest.

10. In a machine having mechanism operated by an electric circuit, a circuit closer consisting of two pivoted bars connected together and secured to a sliding bar, means, adapted to be released by the weight of a coin, for locking said sliding bar and circuit closers out of circuit, and a spring for moving said circuit closers to close the electric circuit, after the release of the locking means.

## 527,978. HARROW. PETER J. HELLER, Montclair, N. J. Filed May 24, 1893. Serial No. 475,352. (No model.)

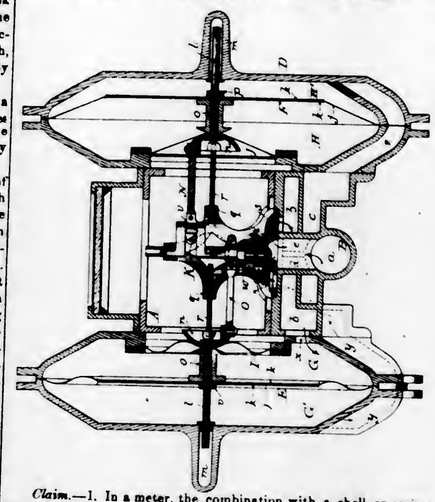


*Claim.*—1. A harrow, consisting of a frame comprising a rigid T-shaped portion, a series of rearwardly extending bars pivoted to the head of said rigid portion, braces pivotally attached to said bars and having sliding connections with the foot of the rigid portion, whereby each series may be adjusted laterally relative to the rigid portion independently of each other, and angle irons having oppositely extending horizontal extremities secured to said braces and forming a support for a seat slidably arranged thereon, substantially as set forth.

2. A harrow consisting of a frame comprising a rigid T-shaped portion, a series of rearwardly extending bars pivoted to the head of said rigid portion, braces pivotally attached to said bars and having sliding connections with the foot of the rigid portion, whereby each series may be independently and laterally adjusted relative to the rigid portion, angle irons having oppositely extending horizontal extremities, secured to said braces and forming a support for a seat slidably arranged thereon, an angular draw iron at the head of the frame, a seat bar extending from the seat to said draw iron and vertically adjustable therein, and cutter knives secured to the several bars and the rigid portion of the frame.

3. A harrow consisting of a central beam, and side beams, a seat support pivotally secured to each series of side beams, the upper ends of which are adapted to pass each other in substantially parallel directions, a seat pivotally and movably secured upon said passing ends, and a brace secured to said seat at one end and adjustably secured to the harrow at the other end, substantially as set forth.

## 527,979. METER. MICAJAH C. HENLEY and JESSE P. FULGHAM, Richmond, Ind.; said Fulgham assignor to Emma R. Fulgham, same place. Filed Mar. 2, 1894. Serial No. 502,991. (No model.)



*Claim.*—1. In a meter, the combination with a shell or casing comprising two diaphragm chambers; a diaphragm in each chamber dividing the latter into two compartments each; the supply *a*; the four inlet and outlet passages *b, c, d, e*, communicating with said compartments; a valve M provided with open outlet port *t*, elongated covered inlet port *s*, and solid portions A'; and connections between the diaphragms and valve,—whereby the complete filling of one compartment is effected before the pressure in the opposite compartment can interfere to reverse the motion of the diaphragm in the first-mentioned compartment.

2. In a meter, the combination with the hollow box A having openings in two of its sides; of the diaphragm chambers C D each having an opening in one side and applied to the open sides of the box; the diaphragms E F mounted in the chambers C D; diaphragms I and J applied to the openings in the sides of the chambers and connected with the diaphragms E and F; supply *a*; suitable passages *b, c, d, e*; a valve M controlling the flow to and from the compartments; and connections between the diaphragms I and J, and the valve.

3. In a meter, a measuring chamber having one wall formed by a flexible diaphragm; in combination with a second diaphragm dividing the chamber into two compartments; and a connection between the two diaphragms.

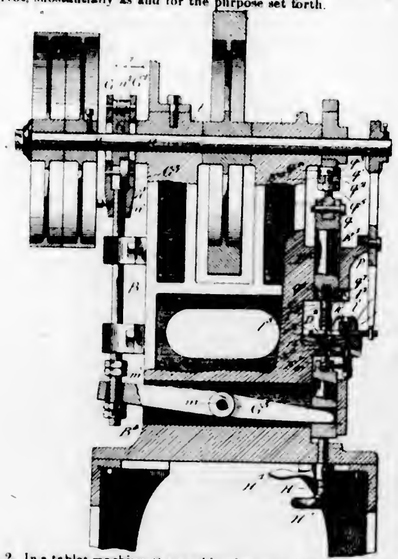
4. In a meter, two measuring chambers each having one wall formed by a flexible diaphragm; in combination with a second set of diaphragms dividing each chamber into two compartments; a connection between the diaphragms of each chamber; a valve controlling the flow of gas to and from the separate compartments; a shaft for actuating the valve; and connections between the opposing diaphragms and the shaft.

5. In a meter, the combination with the chamber C having a flexible diaphragm I forming one wall thereof; the diaphragm E within the chamber thus formed; the rod or stem *l*; block *o* between the diaphragms; block *s* on the outside; and the nut *p*.

6. In combination with the chambers and the diaphragms therein; the intermediate cranked shaft L and valve M; the frame K provided with perforated arms *q q*; stems *l* provided with blocks *s*; rods *r* carried by the blocks and supported in the arms; pitmen N and O connecting the blocks with the shaft; and a shell or casing provided with suitable ports and passages.

## 527,980. MACHINE FOR FORMING TABLETS. FRANK S. HERETH, Chicago, Ill. Filed Apr. 9, 1894. Serial No. 506,926. (No model.)

*Claim.*—1. In a tablet machine, the combination with the main-frame, drive-shaft and upper and lower reciprocal die-holders, of a die-block-support on the main-frame having a bolt-opening, a die-block on said support, a feed-plate having a bolt-opening, a bolt passing through both said bolt-openings, a spring upon the bolt, operating, with the bolt, to hold the feed-plate pivotally and yieldingly upon the said support, and means connected with the feed-plate and actuated from the drive-shaft, to turn and shake the feed-plate upon its pivot, substantially as and for the purpose set forth.



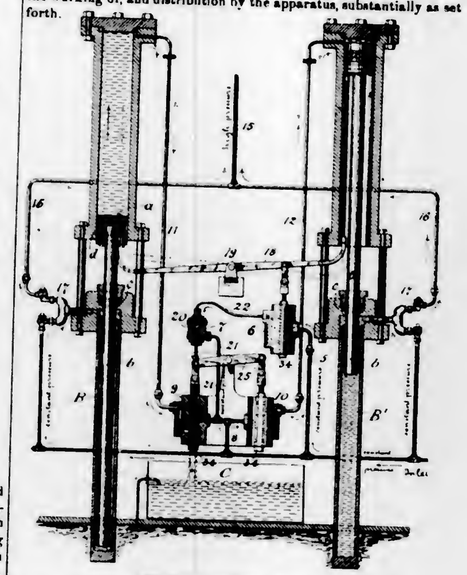
2. In a tablet machine, the combination with the main frame and drive-shaft, and upper and lower reciprocal die holders, of a die-block support on the main-frame, a plate D removably fastened upon said support containing the die-block D' and having a bolt opening *r*, a feed-plate K having a bolt opening *l*, a bolt *k* passing through the bolt openings *r l*, a spring upon the bolt, operating, with the bolt, to hold the plate K pivotally and yieldingly upon the plate D, and means connected with the feed-plate, and actuated from the drive shaft, to turn and shake the feed-plate upon its pivot, substantially as and for the purpose set forth.

527,981. APPARATUS FOR INTENSIFYING THE PRESSURE OF COMPRESSED FLUID. CAMPBELL P. HIGGINS, New York, N. Y. Filed Mar. 3, 1893. Serial No. 464,508. (No model.)

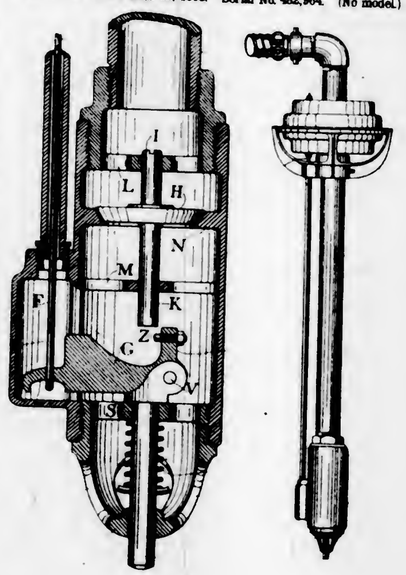
*Claim.*—1. In an apparatus for intensifying and equalizing a working fluid-pressure, the combination of a plurality of motor-cylinders and companion compression cylinders of smaller diameter, the plungers of the latter forming an extension of the pistons of the former; valved inlet-pipes connecting the compression-cylinders with a fluid pressure-supply, and valved outlet-pipes connecting said cylinders with a working-pressure distributing-pipe; valves having their pistons connected by a rock-shaft and said valves respectively connected with the motor-cylinders, for governing the inlet and outlet of fluid to and from said cylinders; an auxiliary valve for controlling the positions of said valves; and means, operated alternately by the pistons of the motor-cylinders, for shifting the auxiliary valve, substantially as and for the purposes specified.

2. In an apparatus for intensifying and equalizing a working fluid-pressure, the combination of a plurality of motor-cylinders and companion compression-cylinders of smaller diameter, the plungers of the latter forming an extension of the pistons of the former; valved inlet-pipes connecting the compression cylinders with a fluid pressure-supply, and valved outlet-pipes connecting said cylinders with a working-pressure distributing-pipe; valves having their pistons connected by a rock-shaft and said valves respectively connected with the motor-cylinders, for governing the inlet and outlet of fluid to and from said cylinders; a piston for shifting said valves; an auxiliary valve for controlling said piston; and means, operated alternately by the pistons of the motor-cylinders for shifting the auxiliary valve, substantially as and for the purposes specified.

3. In an apparatus for intensifying and equalizing a working fluid-pressure, the combination of a plurality of motor-cylinders and companion compression-cylinders of smaller diameter, the plungers of the latter forming an extension of the pistons of the former; valved inlet-pipes connecting the compression-cylinders with a fluid pressure-supply, and valved outlet-pipes connecting said cylinders with a working-pressure distributing-pipe; valves having their pistons connected by a rock-shaft and said valves respectively connected with the motor-cylinders, for governing the inlet and outlet of fluid to and from said cylinders; an auxiliary valve for controlling the pistons of said valves; means, operated alternately by the pistons of the motor-cylinders, for shifting the auxiliary valve; and pipe connections between all of said valves and the source of fluid-supply to the compression-cylinders, whereby the said source furnishes all the fluid for the working of, and distribution by the apparatus, substantially as set forth.



527,982. CAN-FILLING DEVICE. EDGAR C. HILLYER, Newport News, Va. Filed Aug. 12, 1893. Serial No. 482,964. (No model.)





*Claim.*—1. In a can filler the combination of a valve, a valve supporting piece placed under the valve, constructed and arranged to trip said valve, and a contact piece projecting through the lower end of the water pipe and arranged to automatically raise said supporting piece.

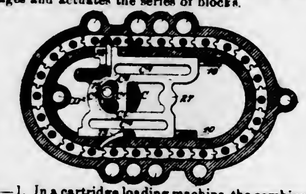
2. In a can filler the combination of a valve, provided with a downwardly projecting valve stem, an automatic contact piece and a lever pivoted to said contact piece and constructed and arranged to automatically raise and trip the valve.

3. In a can filler the combination of a main pipe A, enlargement B, automatic contact piece R, lever G (pivoted to said contact piece and adapted to automatically raise and trip the valve), valve H, connecting rod F, float C, and guard D, substantially as shown and described.

4. In a can filler the combination of a valve, an automatic contact piece projecting through the lower end of the water pipe and an intermediate valve raising and tripping lever provided with means for tripping the valve, said valve and lever being contained entirely within and protected by the water tube.

527,983. SHELL-CARRIER FOR CARTRIDGE-LOADING MACHINES. CHARLES S. HISEY, Aurora, Ind., and ELLIOTT S. RICE, Chicago, Ill.; said Hisey assignor to said Rice. Filed Mar. 1, 1894. Serial No. 501,935. (No model.)

*Brief.*—The carrier is composed of a series of independent abutting blocks sliding in an endless groove formed in the table of a cartridge-loading machine, each block having a shell-receiving cell formed therein, and also having means whereby it operatively engages the block immediately preceding it in the groove. A reciprocating carriage engages and actuates the series of blocks.



*Claim.*—1. In a cartridge loading machine, the combination with a shell carrier consisting of a series of independent abutting sliding blocks having cells formed therein adapted to receive and hold cartridge shells, of means for imparting an intermittent forward movement to the same, substantially as described.

2. In a cartridge loading machine, the combination with a shell carrier consisting of a series of independent abutting sliding blocks moving in a returning line on a horizontal plane, of means for imparting an intermittent forward movement to the same, substantially as described.

3. In a cartridge loading machine, the combination with a machine table having a groove therein, of a shell carrier consisting of a series of independent abutting blocks sliding in said groove, and means for imparting an intermittent forward movement to said carrier, substantially as described.

4. In a cartridge loading machine, the combination with a machine table having a continuous groove therein, of a shell carrier consisting of a series of independent abutting blocks sliding in said groove, and means for imparting an intermittent forward movement to said carrier, substantially as described.

5. In a cartridge loading machine, the combination with a machine table having a groove cut therein with straight sides and rounded ends, of a shell carrier consisting of a series of independent abutting blocks sliding in said groove, and means for imparting an intermittent forward movement to said carrier, substantially as described.

6. In a cartridge loading machine, the combination with a machine table having a continuous groove cut therein, of a shell carrier consisting of a series of independent abutting operatively engaging blocks moving in said groove, whereby each block assists the following block in passing around the curved portions of the groove, and means for imparting an intermittent forward movement to said carrier, substantially as described.

7. In a cartridge loading machine, the combination with a machine table having a continuous groove cut therein, of a shell carrier consisting of a series of independent abutting blocks sliding in said groove, each of said blocks being formed with a projection at one end, and a corresponding recess at the other end, whereby the blocks operatively-engage each other, and means for imparting an intermittent forward movement to said carrier, substantially as described.

8. In a cartridge loading machine, the combination with a machine table having a groove cut therein, of a shell carrier consisting of a series of independent abutting blocks sliding in said groove, and means operated by the main power shaft of the machine for imparting an intermittent forward movement to the carrier, substantially as described.

9. In a cartridge loading machine, the combination with a machine table having a groove cut therein, of a shell carrier consisting of a series of independent abutting blocks moving in said groove, the said blocks having recesses cut in their inner faces, a reciprocating carriage, provided with a spring pressed pawl for engaging with said recesses to move the carriage forward, and having a cam slot formed therein which permits a dwell of the carriage in its forward movement, and a crank pin operated by the power shaft for working in said slot and reciprocating the carriage, substantially as described

10. In a cartridge loading machine, the combination with a machine table having a groove cut therein, of a shell carrier consisting of a series of independent abutting blocks moving in said groove, the said blocks having recesses cut in their inner faces, a reciprocating carriage, provided with a spring pressed pawl for engaging with said recesses to move the carriage forward, a spring pressed pawl for engaging with said recesses to lock the carrier in its forward position, and having a cam slot formed therein which permits a dwell of the carriage in its forward movement, and a crank pin, operated by the power shaft, working in said slot and reciprocating the carriage, substantially as described.

11. In a cartridge loading machine, two or more abutting, independent, disconnected carrier blocks, each of which is formed with a shell-receiving cell, and engaging means between the blocks, whereby each block assists the movement of the following block, and yet is separately removable, substantially as described.

12. In a cartridge loading machine, a shell carrier block having a shell-receiving cell formed therein, and having a curved recess formed in one side and the corners of the other side rounded, substantially as described.

13. In a cartridge loading machine, a shell carrier block having formed therein a shell-receiving cell, and having a recess formed therein whereby the block may be engaged and moved, substantially as described.

14. In a cartridge loading machine, a shell carrier block having formed therein a shell-receiving cell, having a curved recess formed on its inner side, having the corners of the outer side rounded, and having the inner portion of the front face of the block cut away at an angle, substantially as described.

15. In a cartridge loading machine, two or more independent, abutting shell carrier blocks, each block having a shell-receiving cell formed therein, having a curved recess formed on its inner side, having the corners of the outer side rounded, and having the inner portion of the front face of the block cut away at an angle, and suitable engaging means between the blocks, substantially as described.

16. In a cartridge loading machine, a shell carrier block having formed therein a shell-receiving cell, having a curved recess formed on one side, having the corners of the other side rounded, and having a slanting recess cut in the front end of one of its sides, substantially as described.

17. In a cartridge loading machine, two or more independent, abutting shell carrier blocks, each block having a shell-receiving cell formed therein, having a curved recess formed on one side, having the corners of the other side rounded, and having a recess formed therein whereby the block may be engaged and moved, and suitable engaging means between the blocks, substantially as described.

18. In a cartridge loading machine, two or more independent, abutting, shell carrier blocks, each block having a shell-receiving cell formed therein, having a curved recess formed on its inner side, having the corners of the outer side rounded, having the inner portion of the front face of the block cut away at an angle, and having a recess formed therein whereby the block can be engaged and moved, and suitable engaging means between the blocks, substantially as described.

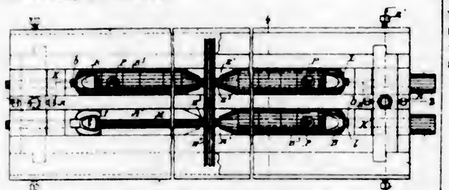
19. In a cartridge loading machine, a shell carrier block having the shell-receiving cell $A'$ formed therein, having a slanting recess $A^3$ formed at its front and on its inner side, having a curved recess $A^5$ formed on its inner side, having the corners $A^4$ of the outer side rounded, having the projection $A^6$ formed at one end, and having the corresponding recess $A^7$ formed at its other end, substantially as described.

527,984. DEVICE FOR CASTING SASH-WEIGHTS. ADDISON S. HODGES, Chelsea, assignor of one-half to Alonzo H. Smith, Salem, Mass. Filed Dec. 21, 1893. Serial No. 494,267. (No model.)

*Claim.*—1. In a device for casting sash weights, the combination of a moldboard provided with recesses for receiving the patterns, a groove formed in the moldboard below the recesses, and a cam spindle arranged within said groove for lowering the patterns, substantially as described.

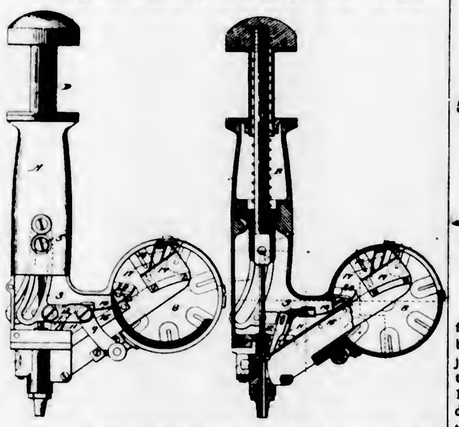
2. In a device for casting sash weights, the combination of a mold board provided with recesses for receiving the patterns, the patterns provided with notched heads, head rests for preventing the

latter from turning, core print guides, and a central divider block, substantially as described.



3. In a device for casting sash weights an adjustable sash weight pattern consisting of a head having a shank or spindle secured to it and an adjustable tube adapted to be drawn out or in on said spindle and a series of intermediate rings or ferrules for the purpose of adjusting the length of said pattern substantially as specified.

## 527,985. TACK-DRIVING MACHINE. WILLIAM T. HOOFNAGLE, Baltimore, Md. Filed Oct. 3, 1893. Serial No. 487,102. (No model.)



*Claim.*—1. The combination of a plunger tube, an inclined guide or raceway leading to said tube, a step or seat at the end of the raceway for a single tack, a driving plunger which serves when down to hold the single tack on its seat and a retaining device between the plunger and raceway for holding the column behind the seat when the plunger is up, substantially as described.

2. The combination of a plunger tube, a plunger reciprocating in and guided by said tube, a raceway opening laterally into the tube, means for delivering the tacks singly to the passage, and a magnet opposite the delivery end of the raceway to draw the tacks from the raceway and hold them in position to be driven by the plunger, substantially as described.

3. In a tack-driving implement, the combination of a plunger-tube or barrel, a stepped raceway leading to said tube, a retainer for retaining the column behind the foremost tack and a stationary magnet opposite the raceway for seating and holding the tack in the plunger tube, substantially as described.

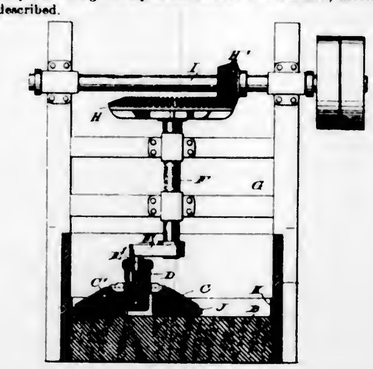
4. In a tack-driving implement having a magnetic tack lifter arranged at one side of the tack receptacle, the combination with such lifter, of a hopper or chute and an armature arranged as and for the purpose described.

## 527,986. GRINDING-MILL. CHARLES C. HOWE, Westerly, assignor to the Shannock Mica Company, Shannock, R. I. Filed Nov. 10, 1893. Serial No. 490,545. (No model.)

*Claim.*—1. In a grinding mill, the combination with a receptacle having a bed in its bottom, of a muller having a central eye and provided with a socket in said eye, and a revolving shaft provided with a crank arm having a wrist pin projecting loosely into the said socket to permit the muller to turn thereon, substantially as described.

2. A grinding mill comprising a receptacle having a bed, and a circular fixed band at the inner surface of its side, a muller adapted to be carried around in the said receptacle and resting with its under side on the top surface of the said bed, and an elastic band in the periphery of the said muller, and in frictional contact with the band in the said receptacle, substantially as shown and described.

3. A grinding mill, comprising a receptacle having a bed of wood, the grain of which is vertical, a muller having a central eye and provided with a socket in said eye and with an elastic band on its periphery, and a revolvable shaft provided with a crank arm having a wrist pin working loosely in the socket of the muller, substantially as described.

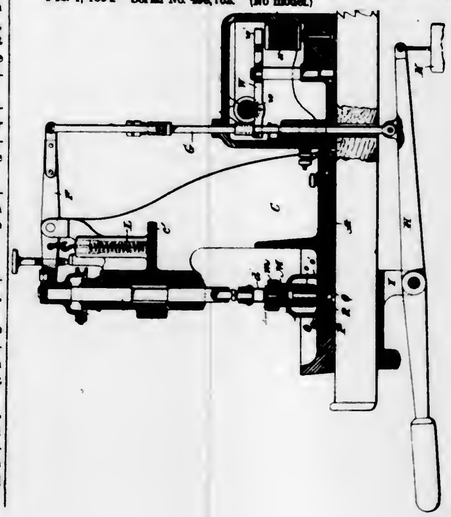


## 527,987. CAR-VENTILATOR. BENJAMIN F. HUGHSON, Cold Spring, N. Y. Filed Apr. 13, 1894. Serial No. 507,423. (No model.)



*Claim.*—A car ventilator having a tubular body 10, having open flaring ends 11, oppositely inclined passageways opening into the body between its ends, a freely swinging valve 15 pivoted at the juncture of the outer walls 14 of said passages, doors 16 hinged to the body 10 to alternately open and close the respective passageways 14, and a single rod 18, pivoted at its ends to the free edges of the doors and provided with a handle, the rod being of a length to extend from the free end of one door when closed to the corresponding edge of the other door when open, substantially as described.

## 527,988. DIAL-SINKING MACHINE. GEORGE R. HUNTER, Elgin, Ill., assignor to the Elgin National Watch Company, Chicago, Ill. Filed Feb. 1, 1894. Serial No. 498,762. (No model.)





*Claim.*—1. The combination of a work support, a tool, means for feeding the latter to its work, a stopping mechanism, and means controlled by the relative position of tool and work that set such stopping mechanism in motion before the work of the tool is to be stopped whereby the operation of the tool may continue for an interval after said mechanism has been put in motion, substantially as and for the purpose specified.

2. In a dial-sinking machine, the combination of a suitable dial support, a cutting tool, means to automatically feed the cutter to its work, and means controlled by the dial being operated upon for automatically removing it from the dial when it has cut to a predetermined point, substantially as and for the purpose shown.

3. In a dial-sinking machine, the combination of a suitable dial support, a cutting tool, an electric circuit adapted to be closed and opened by said parts, an electro-magnet in said circuit and a stop mechanism under the control of the latter, substantially as and for the purpose described.

4. In a dial sinking machine, the combination of a dial support, a cutting tool, an electric circuit including these parts and a magnet, and a mechanism to stop the cutting that is set in motion by the closing of the circuit a predeterminal interval before such cutting is to be stopped, substantially as and for the purpose set forth.

5. In a dial sinking machine, the combination of a dial support, a cutting tool, means to move the latter toward the former, means to move said tool away from the support, a stop to restrain the latter means, and mechanism to release said stop, substantially as and for the purpose shown.

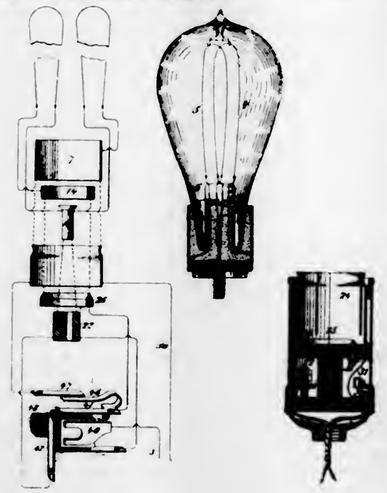
6. In a dial-sinking machine the combination of a dial support a cutter carrying spindle, a lever for moving the latter longitudinally a spring to move the spindle in one direction, a weight to move it in the other, a stop device to restrain its movement by the weight, and means to release said stop, substantially as and for the purpose described.

7. The combination of a work holder, a tool, and a stop mechanism comprising a shaft having a threaded section, a lever movable into and out of contact with the latter, and a locking dog adapted to be tripped by said lever, substantially as and for the purpose shown.

8. The combination of a work holder, a tool, means acting normally to remove the latter from the former, a stop to restrain said means, and a releasing mechanism comprising a threaded shaft and a lever having a threaded portion that is movable into and out of engagement with the thread of the shaft, substantially as and for the purpose set forth.

9. The combination of the longitudinally movable tool-carrying spindle, a weighted lever for moving it to remove the tool from work, a stop to restrain the movement of said lever, a shaft having a threaded section, a lever threaded to engage the latter, and an electro magnet to cause such engagement that is in a circuit controlled by said spindle, substantially as and for the purpose described.

## 527,989. COMBINED REGULATING INCANDESCENT LAMP AND SOCKET. CHARLES A. HUSSEY, New York, N. Y. Filed May 14, 1894. Serial No. 511,183. (No model.)



*Claim.*—1. In an electric lamp, the combination, with two filaments having two ends electrically connected and the other two ends disconnected and insulated from each other, of a circuit controller having a pair of normally open spring contact pieces in circuit respectively with the said insulated filament terminals, other spring contact pieces in circuit respectively with the common and one of the insulated terminals, and a movable contact piece adapted to make contact with said spring contact pieces and to connect said filaments in series, singly, and in multiple with conductors for supplying current to the lamp, substantially as described.

2. In an electric lamp, the combination with two filaments having their ends joined in a common terminal at one side, and disconnected and insulated terminals at the other side, of a circuit controller having a pair of normally open spring contacts in circuit respectively with the said insulated filament terminals, other spring contacts in circuit respectively with the common and one of the insulated terminals, and a rotary contact piece carrying a cam adapted to connect said filaments in series, singly, or in multiple, with the circuit mains, substantially as described.

3. In a combined incandescent electric lamp and socket, the combination, with a lamp having two filaments, and three contact pieces on the base of the lamp, insulated from each other, and forming terminals of said filaments, of a socket arranged to receive the base of said lamp, three contact pieces in said socket, insulated from each other, corresponding to and adapted to make contact with the contact pieces of the lamp when the base of the lamp is in place within the socket, a circuit controller having spring contact pieces in circuit respectively with the said insulated filament terminals, other spring contact pieces in circuit respectively with the common and one of the insulated terminals, and a movable contact piece adapted to make contact with said spring contacts and to connect said filaments in series, singly, or in multiple, with conductors for supplying current to the lamp, substantially as described.

4. In a combined incandescent electric lamp and socket, the combination, with a lamp having two filaments, a casing surrounding the base of the lamp and forming a terminal or contact piece for said filaments, and contact pieces in the base of the lamp insulated from each other and from the casing, and forming other terminals of said filaments, of a socket having a spring clasp, adapted to receive said lamp, and to make electrical contact with said casing contact pieces in said socket, insulated from each other and from the clasp, and corresponding to and adapted to make electrical contact with the contact pieces of said lamp when the lamp is in place within said socket, conductors for supplying current to the lamp, and a switch in the socket, connected with said conductors, and with said spring clasp and contact pieces, and adapted to connect said filaments singly, in series, or in multiple with said conductors, substantially as described.

5. In a combined incandescent electric lamp and socket, the combination, with a lamp having two filaments, a screw projecting from the base thereof, and forming a terminal or contact piece for said filaments, and other contact pieces in the base of the lamp, insulated from each other and from said screw, and forming other terminals of said filaments, of a socket adapted to receive said lamp, and having a contact piece with a screw threaded aperture therein adapted to receive said screw, other contact pieces in said socket insulated from each other and from the apertured contact pieces, and adapted each to make electrical contact with a contact piece of the lamp when the lamp is in place within said socket, conductors for supplying current to the lamp, and a switch in the socket, connected with said conductors, and with the contact pieces of the socket, and adapted to connect said filaments singly, in series, or in multiple with said conductors, substantially as described.

6. In a combined incandescent electric lamp and socket, the combination, with a lamp having two filaments, a screw projecting from the base thereof and forming a terminal or contact piece for said filaments, a grooved ring surrounding said screw and insulated therefrom, and forming another terminal or contact piece for said filaments, and a casing surrounding the base of the lamp and forming a third terminal or contact piece for said filaments, of a socket, having a spring clasp adapted to receive said lamp and to make electrical contact with said casing, a contact piece insulated from said spring clasp and having a screw-threaded aperture adapted to receive said screw, and a ring insulated from said clasp and apertured contact piece and adapted to make contact with the contact ring on the base of the lamp, conductors for supplying current to the lamp, and a switch in the socket, connected to said conductors, and with said spring clasp, contact ring, and apertured contact piece, and adapted to connect said filaments singly, in series, or in multiple with said conductors, substantially as described.

7. In a combined incandescent electric lamp and socket the combination, with two filaments and a supply and a return conductor for supplying current to said filaments, of a revolubly mounted conducting contact piece connected to the supply conductor, stationary contact pieces adapted to make contact with said revolving contact

piece in different positions thereof, one terminal of each filament being connected in common to one of said stationary contact pieces, and the second terminal of one filament being connected to another of said stationary contact pieces, suitable connections between the second terminal of the other filament and the return conductor, and means for connecting the second terminal of the first-mentioned filament with the return conductor when the common ends of said filaments are connected with said revolving contact piece, substantially as described.

8. In a combined incandescent electric lamp and socket, the combination, with two filaments and a supply and a return conductor for supplying current to said filaments, of a revolubly mounted conducting contact piece connected to the supply conductor, stationary contact pieces adapted to make contact with said revolving contact piece in different positions thereof, one terminal of each filament being connected in common to one of said stationary contact pieces, and the second terminal of one filament being connected to another of said stationary contact pieces, suitable connections between the second terminal of the other filament and the return conductor, two adjacent contact pieces normally separated, one connected to the second terminal of said first-mentioned filament and the other connected to the return conductor, and means for bringing said adjacent contact pieces into contact when the common ends of said filament are connected with said revolving contact piece, substantially as described.

9. In a combined incandescent electric lamp and socket, the combination, with two filaments and a supply and a return conductor for supplying current to said filaments, of a revolubly mounted conducting contact piece connected to the supply conductor, contact brushes arranged about said revolving contact piece and adapted to make contact therewith in different positions thereof, one terminal of each filament being connected in common to two of said contact brushes, and the second terminal of one filament being connected to another of said contact brushes, suitable connections between the second terminal of the other filament and the return conductor, two adjacent brushes normally separated, one connected to the second terminal of said first-mentioned filament and the other connected to the return conductor, and means for bringing said adjacent contact brushes into contact when said filaments are connected through one of said common contact brushes with the revolving contact piece, substantially as described

10. In a combined incandescent electric lamp and socket, the combination, with two filaments, 4 and 5, and a supply and a return conductor for supplying current to said filaments, of a revolubly mounted contact piece 39 connected to the supply conductor, brushes 41, 42 and 43 arranged about said contact piece 39 and adapted to make contact therewith in different positions thereof, one terminal of each filament being connected in common to brushes 42 and 43, and the second terminal of filament 5 being connected to brush 41, suitable connections between the second terminal of filament 4 and the return conductor, two adjacent brushes 46 and 47 normally separated, one connected to the second terminal of filament 5 and the other to the return conductor, and a cam 48, revolving with said contact piece 39, and adapted to bring said brushes 46 and 47 into contact when said contact piece 39 is in contact with brush 43, substantially as described.

## 527,990. ELECTRIC AND GRAVITY PLEASURE-RAILWAY.

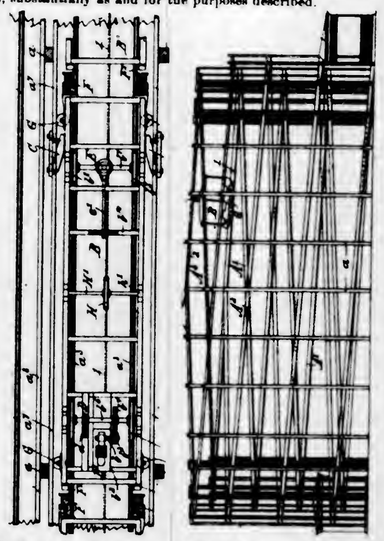
CHARLES A. IDLER, Atlantic City, N. J. Filed June 26, 1894. Serial No. 515,745. (No model.)

*Claim.*—1. A pleasure railway, comprising a structure having down and up-grade circles and a terminal and starting station common to both, top and bottom intermediate rails, an electrically propelled car having grooved wheels engaging said rails and automatically establishing and breaking a circuit through said car with a source of energy in the travel of the same over certain of said circles and serving as a means for preventing derailment of the car in its travel over certain of the other circles of the structure, substantially as described.

2. A pleasure railway provided with top and bottom intermediate rails, an electric motor car provided with grooved traveler wheels engaging said rails and automatically establishing a circuit from a source of energy through said car in its travel over certain portions of the structure and means for preventing derailment of the car in its travel by gravity over certain other portions of said structure and a pawl-and-ratchet brake mechanism connected with one end of the car for preventing retrograde movement thereof, substantially as described.

3. A pleasure railway provided with top and bottom rails, an electro-motor car provided with grooved traveler wheels adapted to engage said rails and to establish a circuit from a source of energy with the motor of said car over certain courses thereof and a means for preventing derailment over certain other courses of the structure, a spring controlled fifth-wheel connected with said car having guide-wheels extending therefrom and adapted to travel in engagement with spring controlled friction devices adapted to retard the speed of the car in its approach to the terminal or starting station of the structure, substantially as and for the purposes described.

4. In an electric and gravity pleasure railway, a motor-car provided with a fifth-wheel controlled by a spring actuated forked lever-arm, substantially as and for the purposes described.

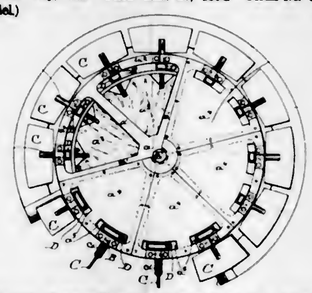


5. In an electric and gravity pleasure railway, a motor-car provided with traveler guide wheels on both sides thereof, and a spring controlled friction device connected with the structure and adapted to be brought into the path of said guide-wheels for retarding the movement of the car, substantially as and for the purposes described.

6. In an electric and gravity pleasure railway, an electric motor car having a fifth-wheel connected with the front axle of the car and provided with a forked lever-arm having an oblong slot, a cross-rod inserted therethrough and carrying springs, said rod journaled in bearings of a strip of the truck-frame of the car, substantially as described.

## 527,991. FEATHERING PADDLE-WHEEL.

JOSEPH JACOBS, Nevada City, Cal. Filed Mar. 20, 1894. Serial No. 504,423. (No model.)



*Claim.*—1. A propelling wheel having a series of driving blades adapted to be turned from the plane of rotation of the wheel to a plane at right angles thereto and back again, the body of said wheel being composed of a metallic skeleton, filled with wooden pieces, and having both faces covered with metallic plates whereby a light strong wheel with minimum resistance and adapted to be completely submerged is obtained, substantially as herein described.

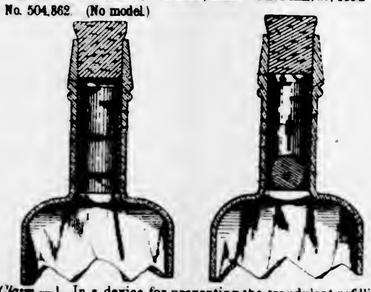
2. A propelling wheel consisting of a body composed of a metallic skeleton filled with wooden pieces, leaving openings near the wheel rim and covered on each side by metallic plates formed with openings in their outer edges, and a series of driving blades having radial shafts pivoted in the wheel rim and provided with cross arms adapted to be acted upon by fixed cams, to turn the blades into and out of action, said arms playing in and out through the openings in the wheel plates, substantially as herein described.



3. A propelling wheel consisting of a body composed of a metallic skeleton filled with wooden pieces leaving openings near the wheel rim, and covered on each side by metallic plates formed with openings in their outer edges, a series of driving blades composed of metallic skeletons filled with wooden pieces and covered on each side with metallic plates, radial shafts carrying said blades and mounted in the wheel rim, cross arms on said shafts playing in and ont of the openings in the sides of the wheels, the fixed cam track against the ends of which the said arms come in contact and against the body of which said arms travel whereby said blades are turned and held through a portion of the revolution of the wheel, and the fixed cam blocks adjacent to the ends of the cam track and lying in the path of said blades whereby through contact therewith said blades are returned, the whole wheel being adapted to be completely submerged, substantially as herein described.

## 527,992. DEVICE FOR PREVENTING REFILLING OF BOTTLES.

FREDERICK W. JOHNSON, Waltham, Mass. Filed Mar. 23, 1894. Serial No. 504,862. (No model.)



*Claims.*—1. In a device for preventing the fraudulent refilling of bottles, the combination, with a tubular casing adapted to be secured within the neck of a bottle, of two weighted disk-valves centrally pivoted within said casing in planes at right angles to each other, and adapted to open and close automatically by gravity, substantially as described.

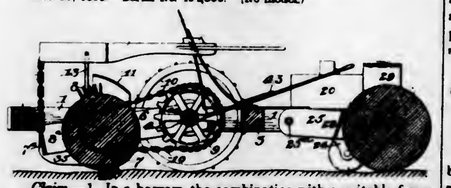
2. In a device for preventing the fraudulent refilling of bottles, the combination, with the tubular casing B adapted to be secured within the neck of the bottle, of two weighted disk-valves C, D, hung on central pivots *a*, in planes at right angles to each other, and adapted to open and close automatically by gravity, and the projections *d* on the inside of the casing forming stops for holding the valves in position when closed, all constructed and arranged to operate substantially as described.

3. In a device for preventing the fraudulent refilling of bottles, the combination, with the tubular casing B provided with two weighted disk-valves C, D, hung on central pivots *a*, in planes at right angles to each other, and adapted to open and close automatically by gravity, of a series of guard-plates *f* arranged alternately upon opposite sides of the interior of the casing B above the outer valve C, substantially as and for the purpose set forth.

4. The combination, with a bottle, of a tubular casing B secured within its neck or upper portion and provided with two weighted disk-valves C, D, hung on central pivots *a*, within said casing in planes at right angles to each other and adapted to open and close automatically by gravity, the projections *d* on the inside of the casing B forming stops for holding the valves in position when closed, and means for preventing access to the valves, all constructed to operate substantially as described.

## 527,993. HARROW.

WYATT A. O. JONES, Rogers, Ark. Filed Dec. 19, 1893. Serial No. 494,099. (No model.)



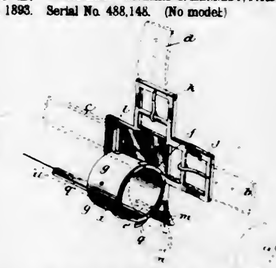
*Claim.*—1. In a harrow, the combination with a suitable frame, of supporting wheels therefor, bars pivoted concentrically to the said wheels, a tooth cylinder mounted within the said bars and driven by the said supporting wheels with an accelerated motion, means for vertically adjusting the position of the said cylinder, standards secured on the opposite sides of the rear of the said frame, each of the said standards having a vertical and rearwardly opening slot therein, and having pockets thereon above and below the rearwardly opening portion of the said slots, locking plates adapted to be inserted in the said pockets, links pivoted to the said frame and having apertures therein, and an axle, carrying a roller, the said axle passing through the apertures in the links and through the slots in the standards, substantially as described.

2. In a harrow, the combination with a suitable frame, of supporting wheels therefor, bars pivoted in the said frame, a tooth cylinder mounted in the said bar and driven by the said supporting wheels, a pivoted lever connected with the said bars, standards secured on the opposite sides of the rear of the said frame, each of the said standards having a vertical and rearwardly opening slot therein and having pockets thereon above and below the rearwardly opening portion of the said slot, a seat carried by the said standards, locking plates adapted to be inserted in the said standards, links pivoted to the said frame and having apertures therein and an axle, carrying a roller, the said axle passing through the apertures in the links and through the slots in the standards, substantially as described.

3. In a harrow and clod cutter, the combination with a suitable frame, of a shaft passing therethrough, supporting wheels mounted on the said shaft, bars pivoted upon the said shaft, a cylinder provided with teeth journaled in the said bars and having sprocket wheels thereon, sprocket wheels mounted on the said shaft of greater size than the sprocket on the said cylinder, sprocket chains passing over the said sprocket wheels, a pivoted lever connected with the said bars, flanges provided with knife edges secured to the said frame on the sides of the said cylinder standards secured on the opposite sides of the said frame, each of the said standards having a vertical and rearwardly opening slot therein and having vertical pockets thereon above and below the rearwardly opening portion of the said slot, a seat carried by the said standards, locking plates adapted to be inserted in the said standards links pivoted on the said frame and having apertures therein, and an axle carrying a roller, the said axle passing through the apertures in the links and through the slots in the standards, substantially as described.

## 527,994. HARNESS.

RICHARD G. KENNEDY, Pittsburg, Pa. Filed Oct. 14, 1893. Serial No. 488,148. (No model.)



*Claim.*—1. A harness attachment comprising the plate having strap attaching means, the tug member rigid with said plate, and having the projecting upper and lower ends, the swinging tug member at one end hinged to one edge of said rigid tug member, and the horizontally swinging cam lever or catch having an extended handle and adjustably fulcrumed to the free edge of one of said tug members, and arranged to engage a projection from the corresponding edge of the opposite member of the tug, substantially as described.

2. A harness attachment comprising the connecting plate, and a tug carried thereby and composed of the rigid and movable members, the free edge of one member of the tug having a projection, the free edge of the other member having an inwardly extending slot opposite said projection and capable of receiving the same, a pivoted catch arranged to engage said projection and lock the tug, the fulcrum or pivot of said catch adjustably held in said slot, substantially as described.

## 527,995. COIN-OPERATED CIGAR-VENDING MACHINE.

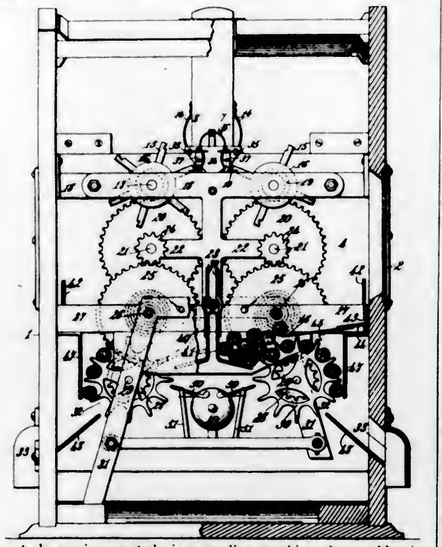
HARRY L. KIRTLEY, Huntington, W. Va., assignor to Robert E. Vickers and Franklin L. Doolittle, same place, and John F. Kirtley, Searey, W. Va. Filed July 23, 1894. Serial No. 518,268. (No model.)

*Claim.*—1. In a coin operated cigar vending machine, the combination with the delivery mechanism and with a stop-disk having stop-arms on its periphery, of a coin-operated latch lever one end of which normally lies in the path of said arms, a sliding catch-plate normally withdrawn from said path and a lever connecting said coin-operated latch-lever and catch-plate, substantially as described.

2. In a coin-operated cigar vending machine, the combination with a coin-operated latch-lever, of a disk having stop-arms released

and arrested thereby, a sliding catch-plate moved by the releasing movement of said latch-lever into the path of the stop-arms, a lever by which movement is communicated from the latch lever to the catch-plate and a spring to retract said catch-plate, substantially as described.

3. In a coin-operated cigar vending machine, the combination with a coin-operated device by which the mechanism is released and arrested, of a safety stop for arresting the machine moved into position by the coin operated release device and retracted after the coin has passed said device and a lever between the latter and the safety-stop, said lever having a fulcrum between its ends, substantially as described.



4. In a coin-operated cigar vending machine, the combination with a coin-operated latch-lever, of a disk geared to the automatic train and provided with stop-arms adapted to engage said latch-lever after making a fractional revolution, a sliding catch-plate arranged in the plane of rotation of said stop-arms, and a lever having a fulcrum between its ends by which movement is communicated from the latch-lever to the catch-plate, substantially as described.

5. In a coin-operated cigar vending machine, the combination with a spring returned latch-lever which releases and arrests the automatic train, of a disk geared to said train and having a series of equidistant, radiating stop-arms adapted to engage said latch lever, a spring retracted sliding catch-plate adapted to be projected into the path of said stop-arms, a lever having a fulcrum between its ends by which movement is communicated from the latch-lever to said catch-plate and a spring engaging said lever to retract the catch-plate, substantially as described.

6. In a coin-operated cigar vending machine, the combination with the automatic train, of a spring returned latch-lever to release and arrest the train, a disk geared to the train and having a series of equi-distant, peripheral threaded openings adapted to receive a variable number of stop-arms which engage and are released by the latch-lever, a spring-retracted sliding catch-plate adapted to be projected into the path of the stop-arms, and a lever by which movement is communicated to said catch-plate from the latch-lever, substantially as described.

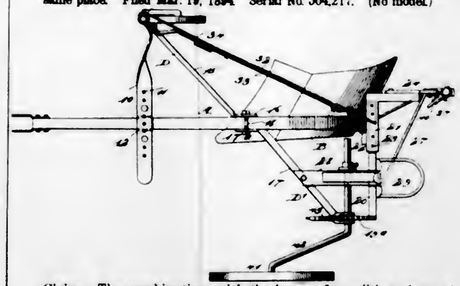
7. In a coin-operated cigar vending machine, the combination with an automatic train of gearing operating the cigar delivering mechanism, of a disk geared to said train, a spring returned latch-lever adapted to release and arrest said train, and a series of stop-arms having threaded ends screwed into threaded openings in the periphery of said disk at equal intervals to engage the latch-lever, the number of said arms being variable by increasing or diminishing the number and re-arranging them to preserve equal intervals of separation, to adapt the mechanism to the sale of cigars at different prices, substantially as described.

8. In a coin-operated, cigar-vending machine, the combination with one or more coin-chutes of parallel plates having coin-shunting pins, a series of spilling-bars centrally pivoted in vertical coin-passages beneath the pins, a series of coin-pans pivoted beneath said spilling-bars, their rear edges lying close to a plate which forms a continuation of one of the parallel plates, its edge being provided with lips, at intervals, which are inclined against the other parallel plate, said lips extending over half of each vertical coin-passage and lying beneath the spilling-bars and a series of latch-levers fastening the pans and having curved, coin-operated ends lying in passages beneath the pans and separated from each other by ribs, said passages being provided with lugs to shunt the coins into alternating coin-passages, substantially as described.

9. In a coin operated, cigar-vending machine, the combination with a cigar-delivering drum, of a clearing-cylinder of regular, polygonal form, arranged above and a little to one side of said drum and geared to revolve in the opposite direction, and at higher speed, substantially as described.

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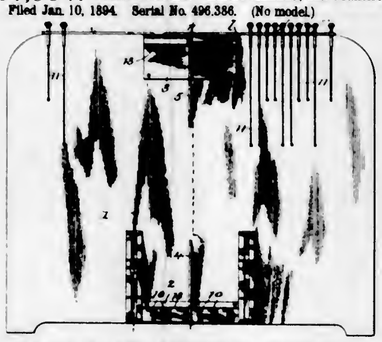
527,996. **RIDING ATTACHMENT FOR PLOWS.** JAMES KLEIHAUER, Jr., Johnson, Nebr., assignor to himself and Charles E. Curran, same place. Filed Mar. 19, 1894. Serial No. 504,217. (No model.)



*Claim.*—The combination, with the beam of a walking plow, of a riding attachment, the same consisting of a right-hand angular frame attached to the right hand side of the beam, extending across the forward portion thereof and adjustably connected with said forward portion, a furrow wheel adjustably journaled in such right-hand frame, a lift lever carried by said frame and connected with said furrow wheel, a second frame of angular construction attached to the left-hand side of the beam and extending across the rear of the beam to the opposite side, a second furrow wheel mounted to turn at the rear end of the said left-hand frame, a seat mounted upon the left-hand frame at the left hand side of the plow beam, an angular axle journaled in the left-hand side of the left hand frame, carrying a land side wheel, and a lever whereby the said axle is manipulated, as and for the purpose specified.

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527,997. **LEAF-TURNER.** HENRY KRAMER, San Francisco, Cal. Filed Jan. 10, 1894. Serial No. 496,386. (No model.)



*Claim.*—1. In a music leaf turner, the combination with a supporting frame, and a series of arms to engage with the leaves of the music, having vertical extensions at their inner ends which are journaled to the frame, coiled springs mounted on the said vertical extensions and adapted to operate the said arms when released, a spring actuated dog or catch to engage with the arm on the vertical extension of each arm to hold the latter against the tension of the spring, and keys operatively connected with the said dogs or catches to disengage the latter from the said arms, substantially as described for the purpose set forth.

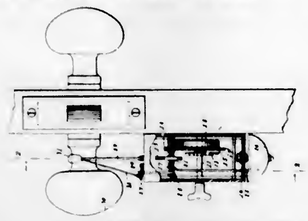
2. The herein shown and described music leaf turner comprising the following elements: a frame work provided with a suitable rest for the music, oppositely disposed pins pivoted at their outer ends and



having shouldered hub portions, springs exerting a pressure against the said shouldered hub portions, a series of arms having vertical extensions which are journaled to the frame work, spring actuated catches to engage with the arms on the aforesaid vertical extensions, and a series of keys operatively connected with the said catches whereby the latter are released, substantially as described for the purpose set forth.

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527,998. **PORTABLE BURGLAR-ALARM.** LARS G. LARSON, Moscow, Idaho, assignor to himself and Claus Lundquist, same place. Filed Aug. 3, 1894. Serial No. 519,403. (No model.)



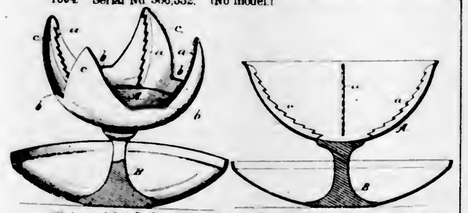
*Claim.*—1. In an alarm bell, the combination with a portable case, a bell thereon, and spring-actuated accelerating gearing within the case, of a rock shaft in the case, a pallet engaging an escapement wheel of the gearing, a detent arm on said shaft projecting through a slot in the case, a clapper on the rock shaft, extending through another slot in the case to engage the bell, a hinged locking plate having detachable contact with the detent arm, and a hanger loop having a connection with the locking plate to lift said plate, and adapted to frictionally engage a door-latch knob, substantially as described.

2. In an alarm bell for doors, the combination with a case and a suitable alarm bell mechanism in the case, and a vibratile detent arm controlling the action of said mechanism and projecting through a slot in the case, of a hinged locking plate loosely engaging the detent arm to prevent its vibration, a frictional hanger loop, and a tripping cord extending from the loop to the locking plate, substantially as described.

3. In a portable alarm bell for doors, the combination with a case, accelerating gearing within the case, a spring arranged to rotate the gearing, and means for winding said spring, of a rock shaft within the case, a pallet engaging an escapement wheel of the gearing, a detent arm on said shaft, loosely projecting through a slot in the top of the case, a hinged locking plate, a hanger loop, a tripping cord, a bell on the case, and a clapper arm extending from the rock shaft through a slot in the case to the bell, substantially as described.

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527,999. **FRUIT-HOLDER.** THOMAS LEACH, Taunton, Mass., assignor to the Reed & Barton Corporation, same place. Filed Apr. 4, 1894. Serial No. 506,332. (No model.)

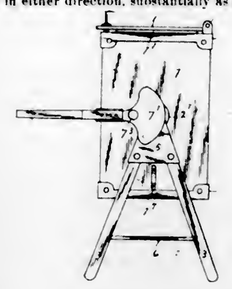


*Claim.*—The fruit holder herein described, consisting of a receptacle for fruit having in its inner walls rigid vertical ribs *a* extending from the top to the bottom and having a series of downwardly projecting ratchet teeth formed along their entire length substantially as and for the purpose described.

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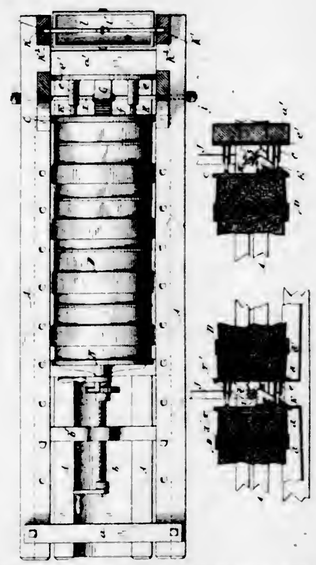
528,000. **CHURN.** CASWELL L. LEONARD and ALBERT BEVER, Veedersburg, Ind. Filed July 21, 1894. Serial No. 518,172. (No model.)

*Claim.*—A churn having a pair of V-shaped legs securely braced near the bottom by an X-shaped casting and mounted at their upper ends in a pair of castings provided with suitable reciprocal apertures for the reception of the churn-box pivots, a rectangular churn box having a removable lid held securely in position thereon by means of a hinged bar having a thumb-screw at its free outer end adapted to be screwed into a reciprocal opening of the casting at the upper end of the churn box, a pair of pivots mounted centrally at the sides of the churn-box standing out laterally therefrom and adapted to work in reciprocal openings of the V-shaped leg castings, having a small cog-wheel rigidly fixed upon the outer end of a pivot adjacent the adjustable, oscillatable lever mechanism so as to be actuated by said mechanism, a segment shaped supporting frame having a circular reciprocal opening for the reception of the movable casting pivot of the lever mechanism, and an adjustable, oscillatable lever mechanism comprising a lever handle, a segment shaped lever casting rigidly fixed to the lever handle and mounted upon a movable casting pivot adapted to be secured rigidly to the segment shaped supporting frame by a through-bolt and a section of cogs on the inner side of the segment-shaped casting adapted to mesh with the small cog wheel of the pivot so as to impart to it a complete revolution at a single stroke of the lever mechanism, and a pair of bent springs mounted rigidly upon the inner side of the V-shaped legs adapted to impede and to stop the rocking oscillatory churn-box and to revert its movement in an opposite direction successively and consecutively at about a complete revolution in either direction, substantially as specified.



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528,001. **CHEESE-PRESS.** CARL J. LUNDSTROM, Little Falls, N. Y., assignor to D. H. Burrell & Co., same place. Filed June 22, 1892. Serial No. 437,641. (No model.)



*Claim.*—1. The combination with the stationary press frame, the movable head block and the screw by which the head block is moved toward the foot block, of a movable foot block, a gear rack secured to the foot block, a gear wheel meshing with said gear rack, and an automatic pressure device whereby said gear wheel is rotated in the direction in which it moves the foot block toward the head block, substantially as set forth.

2. The combination with the stationary press frame, the movable head block and the screw by which the head block is moved toward the foot block, of a movable foot block, a gear rack secured to the foot block, a stationary gear rack secured to the press frame, a gear wheel meshing with both gear racks, and an automatic pressure de-

vice whereby said gear wheel is rotated in the direction in which it moves the foot block toward the head block, substantially as set forth.

3. The combination with the press frame and the head block, of a movable foot block provided with a rearwardly projecting gear rack, a supporting plate secured to the press frame and provided with a forwardly projecting gear rack, a transverse shaft provided with a gear wheel meshing with both gear racks, a lever connected at one end with said shaft, and a weight connected with the opposite end of said lever, substantially as set forth.

4. The combination with the press frame, the movable head block and the pressure screw whereby the head block is moved, of a movable foot block provided with a rearwardly projecting gear rack, a forwardly projecting gear rack secured to the press frame, a transverse shaft provided with a gear wheel meshing with both gear racks, a lever secured with its lower end to said shaft, a guide frame secured to the press frame and provided with a pulley, a vertically movable cross head arranged in said guide frame and provided with a weight, and a cable connecting the upper end of said lever with the cross head and passing around said pulley, substantially as set forth.

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**528,002. PROCESS OF TREATING GARBAGE.** WILLIAM MACDONALD, Philadelphia, Pa. Filed June 30, 1894. Serial No. 516,222. (No specimens.)

*Claim.*—1. The process herein described of treating garbage, said process consisting in first treating the garbage with an acid, second, expressing the liquid from the solid matter, and third, mixing the solid matter with a combustible material, substantially as described.

2. The process herein described of treating garbage, said process consisting in first, sprinkling the garbage with an acid, second, subjecting the acid treated garbage to pressure so as to remove the liquid from the solid mass, third, mixing the solid matter with an inflammable material, and fourth, forming the mass into shape suitable for use as a fuel, substantially as described.

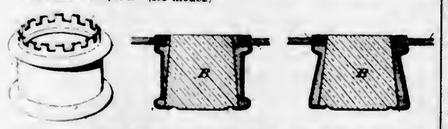
3. The process herein described of treating garbage, said process consisting in saturating the garbage as it is received with "sludge" acid, subjecting the mass to pressure to separate the liquid from the solid mass, adding to the mass of solid matter an inflammable material and compressing the inflammable material and solid material into shape, substantially as described.

4. The process herein described of treating garbage, said process consisting in sprinkling the garbage with waste sulphuric acid, separating the liquid from the solid matter, adding still wax to the solid matter and shaping the mass, substantially as described.

5. As a new article of manufacture, a fuel composed of uncharred pulp of acid deodorized garbage, combined with an adhesive combustible material, substantially as described.

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**528,003. HOLDER FOR ATTACHING LENSES TO ELEVATOR-DOORS, &c.** CHARLES W. MARK, New York, N. Y. Filed Jan. 9, 1894. Serial No. 496,281. (No model.)



*Claim.*—A lens holder consisting of a sheet metal ring having two annular enlargements, and being at one end bent inwardly to form a lens engaging shoulder, and having at its other end fingers adapted to be bent into engagement with the edges of an opening in a plate, substantially as and for the purpose specified.

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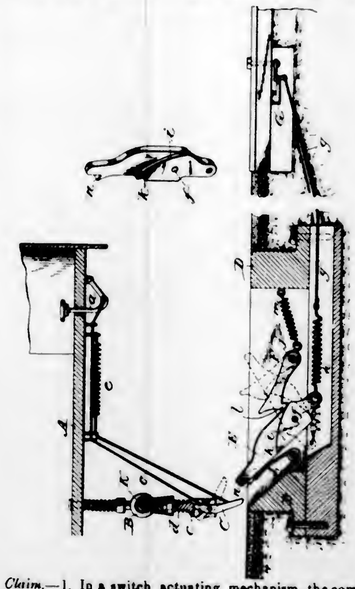
**528,004. ILLUMINATING-TILE.** JOHN W. MARK, New York, N. Y. Filed Apr. 24, 1894. Serial No. 508,879. (No model.)



*Claim.*—1. As an improvement in illuminating tiles, the combination of a tile body that has a number of light openings, a lens over each opening, cement around the sides of each lens, a ring or band formed of wire placed around the cement, and concrete or the like, in the spaces between the lenses, substantially as and for the purpose specified.

2. An illuminating tile composed of a tile body that has a number of light openings, a lens over each opening, a ring or band surrounding the lens, and made of cloth or meshed fabric, cement between the lens and band, and concrete in the spaces between the lenses, substantially as and for the purpose set forth.

**528,005. SWITCH-ACTUATING MECHANISM.** ADAM MATZ, Cincinnati, Ohio. Filed May 14, 1894. Serial No. 511,149. (No model.)



*Claim.*—1. In a switch actuating mechanism, the combination, of the following instrumentalities:—a switch tongue, a pivoted tripping-lever therefor and connected thereto, a locking-pawl for said lever, under spring tension, a tripping-dog, carried by the car, and means on the car, connected to said dog, for throwing the same, into or out of engagement with the trip lever, or pawl, substantially as described.

2. In a switch actuating mechanism, the combination, of the following instrumentalities:—a switch tongue, a pivoted tripping lever therefor and connected thereto, a locking-pawl for said lever, under spring tension, a vertically yielding tripping-dog, carried by the car, and means on the car, connected to said dog, for throwing the same, into or out of engagement with the trip lever or pawl, substantially as described.

3. In switch actuating mechanism, the combination, of the lever E, and its locking-pawl F, of a tripping-dog, carried by the car in line with said lever, and pawl, and a shoulder upon said lever to engage the trip dog and carry it over the top of the pawl, without contact, substantially as described.

4 The combination, with the switch actuating mechanism, of the shank B to which is pivoted the lever or trip dog C provided with suitable connections whereby said trip dog may be raised into a horizontal position or lowered into a vertical position at will, substantially as shown and described.

5. The combination, with the switch actuating mechanism, of the shank, B, consisting of two parts telescopically joined together, with the trip dog C, pivoted thereto, substantially as described.

6. The combination, with the switch actuating mechanism, of the shank B, consisting of two parts telescopically joined together, with the trip dog C, pivoted thereto, with suitable rods or wires connecting the upper end of said trip dog with a suitable treadle lever *a*, and the other end through the spring *e*, to a fixed portion of the car, substantially as shown and described.

7. The combination, of the box D, with the lever E, pivoted within it, with its upper end arranged in the path of travel of the trip dog C, and its lower end connected with the switch-tongue H, by the wire or rod *g*, the intervening spring *k*, the lever G; the pawl F, the spring *m*, the spring I and spring J, substantially as shown and described.

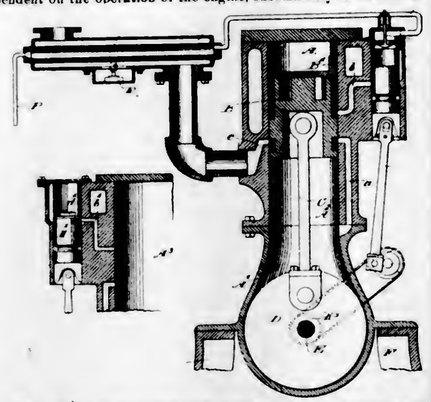
8. In switch actuating mechanism, the lever E, having a bearing shoulder *i*, the notch *k*, the shoulder *n*, in combination with the pawl F, having a tooth *l*, and spring *m*, under tension, substantially as shown and described.

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**528,006. GAS-ENGINE.** FRANK S. MEAD, Montreal, Canada. Filed Dec. 5, 1893. Serial No. 492,856. (No model.)

*Claim.*—1. A gas engine whose working cylinder is provided with a port for the admission of the inflammable vapor, a vapor pump connected to the said port, a vapor feed pipe connected to the said pump, a vaporizer connected to the said feed pipe, and a supply pipe extending to the vaporizer from a lower level, so that the inflammable fluid travels to the vaporizer only when the pump creates a suction in the said supply pipe, whereby the supply of vapor is rendered dependent on the operation of the engine, substantially as described.



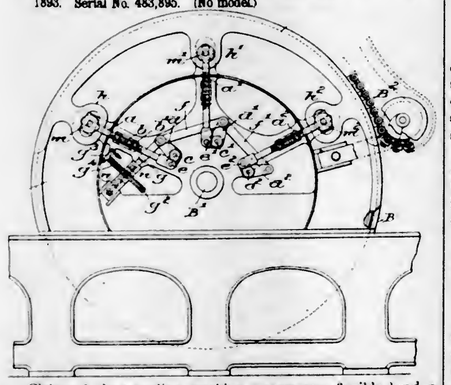


2. A gas engine provided with a working cylinder, a pump barrel located adjacent thereto, a channel connecting the pump barrel to the working cylinder, a feed pipe connected to the pump to convey the inflammable fluid thereto, pistons adapted to move in the pump barrel and in the working cylinder respectively, the ports whereby the said channel communicates with the cylinder and the pump barrel being located in the paths of travel of the working piston and the pump piston respectively, so that the inlet of the inflammable fluid is controlled both by the pump piston and by the working piston, substantially as described.

3. A gas engine provided with a working cylinder, a pump barrel located adjacent thereto, a channel connecting the pump barrel to the working cylinder, a channel or passage in the side of the pump barrel, said channel extending from a point near one end of the barrel to a point located in transverse alignment with the orifice of the channel leading to the working cylinder, a feed pipe connected to the same part of the barrel in which the said lateral channel or passage is arranged, to convey the inflammable fluid to the pump, and means, substantially as described, for controlling the inlet of the inflammable fluid to the cylinder, as set forth.

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**528,007. CARDING-MACHINE.** JOHN T. MEATS, Taunton, Mass., assignor to the Mason Machine Works, same place. Filed Aug. 24, 1893. Serial No. 483,895. (No model.)



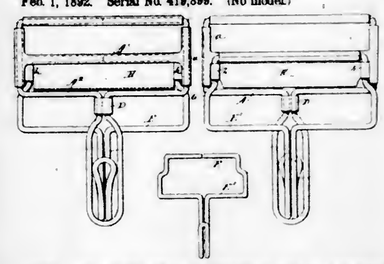
*Claim.*—1. In a carding machine, a segmental flexible bend, a series of cranks, and rods to join the same with said flexible bend, combined with connecting mechanism between said cranks or their described equivalents to insure the simultaneous movement thereof, substantially as described.

2. In a carding machine, a segmental flexible bend, a series of cranks, and rods to join the same with the said flexible bend, combined with connecting mechanism between said cranks or their described equivalents, and with an adjusting device to move said connecting mechanism and simultaneously move the said cranks or their described equivalents, substantially as described.

3. In a carding machine, a segmental flexible bend, a series of cranks, intermediate connecting devices and rods to join them to said flexible bend, combined with adjusting devices to move said connecting mechanism, and with locking mechanism to lock said parts in their adjusted position, substantially as described.

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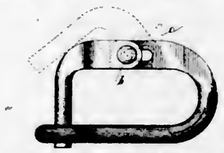
**528,008. BUCKLE.** JAMES F. MOLLOY, New Haven, Conn. Filed Feb. 1, 1892. Serial No. 419,899. (No model.)



*Claim.*—The herein described suspender buckle, consisting in the combination with a frame made of a single piece of wire and comprising an upper cross-bar A, ends B B, a lower cross-bar $A^2$ and a locking-loop C depending therefrom; of a strip of sheet-metal forming the middle bar A′ of the frame, and having its ends bent around the said ends B B thereof in vertical planes, and its edges bent rearward in horizontal planes to form a tube; a lever formed from a single piece of wire and having an upper cross-bar E, a lower cross-bar E′, a depending hook F and ends G G, the said bars E and E′ being wider in their separation from each other than the middle bar A′ and the lower bar $A^2$ of the said frame, and the upper cross-bar E of the lever being inserted into the tube formed by the sheet-metal middle cross-bar A′ of the frame; and a sheet metal clamping-plate or edge H secured by its ends to the ends G G of the lever, in position to coact with the lower cross-bar $A^2$ of the frame in gripping the web, substantially as and for the purpose set forth.

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**528,009. CLEVIS.** AUGUST MORGANFIELD, Ogden, Kans. Filed May 12, 1894. Serial No. 510,984. (No model.)



*Claim.*—1. In a clevis provided with a pin pivotally attached to one side thereof and engaging an eye in the opposite side of the same, the lock piece pivoted in conjunction with said pin and made to shut over the end of said clevis for the purpose of securing said pin in position when so engaging said eye, substantially as shown and described.

2. The combination of a clevis provided with a slot in one end and an eye in the other end thereof, with a pin pivotally attached thereto by a bolt passing through said slot and a lock-piece pivoted in conjunction with said pin and made to shut over the end of said clevis, substantially as and for the purposes set forth.

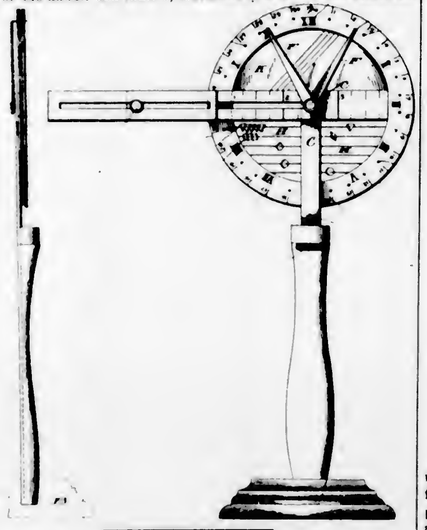
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**528,010. EDUCATIONAL APPLIANCE.** LUTHER W. MUSSER, State College, Pa. Filed June 25, 1894. Serial No. 515,685. (No model.)

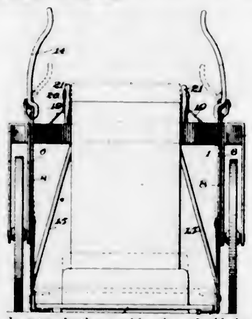
*Claim.*—1. An educational appliance consisting of a wheel with circumferential scale mounted on a pivot carried near the upper end of a shaft provided with a handle having one flat side, and a scale bar pivoted to the common pivot of the wheel, substantially as shown and described.

2. In an educational appliance, the combination of the wheel having a graduated rim divided into inches and fractions thereof and mounted on the pivot *c* carried at the upper end of a shaft C held in the handle A having one flat side, of the pointers F pivoted to the end of the said shaft and having lugs or points adapted to register with perforations about the circumferential rim, substantially as shown and described.

3. In an educational appliance, the combination of the wheel graduated with the numbers about its rim, the shaft supporting the same, the handle A with the spirit level seated therein, the two part longitudinally adjustable scale L, thus forming a square with the flat side of the handle and shaft C, substantially as shown and described.



528,011. **TRUCK FOR HANDLING SEWER-PIPE.** FRANCIS E. MCELFRESH, New Cumberland, Pa., assignor to the Standish Clay Manufacturing Company, same place, and Pittsburg, Pa. Filed Sept. 6, 1893. Serial No. 484,911. (No model.)



*Claim.*—1. In a truck, the combination of a U shaped frame provided with wheels, independent vertically movable slides mounted on the sides of the frame and provided with means for engaging the article to be moved, and independently operating catches for holding the slides when raised, substantially as set forth.

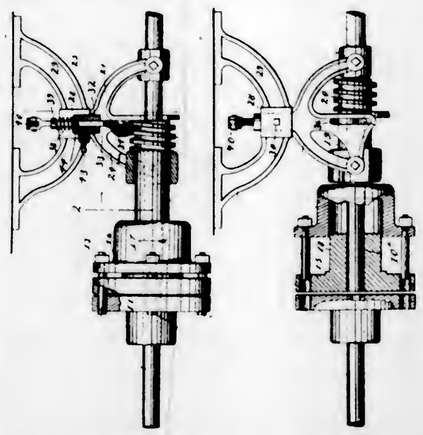
2. In a truck, the combination of a U-shaped frame provided with wheels, and having its sides adjustable toward and from each other, and vertically movable slides provided with means for engaging the article to be moved, substantially as set forth.

3. In a truck, the combination of a U-shaped frame provided with wheels, and vertically movable and horizontally swinging slides mounted on the sides of the frame and provided with means for engaging the article to be moved, substantially as set forth.

528,012. **CLUTCH-COUPLING.** THOMAS F. MCGEE and EUGENE J. MCCARTY, Clinton, Mass. Filed Aug. 4, 1894. Serial No. 519,468. (No model.)

*Claim.*—1. The combination, with the abutting shafts, of perforated flanges secured to the two shafts and arranged opposite each other, a third flange held to slide on the shafts and provided with pins to enter the perforations of the other flanges, and a screw mechanism for moving the pin flange, substantially as described.

2. The combination, with the abutting shafts, of the meeting perforated flanges rigidly secured to the two shafts, a third flange sliding on one of the shafts and provided with pins to enter the holes of the other two flanges, a screw sleeve on the third flange, and a clutch blade held in a stationary support and adapted to engage the screw, substantially as described



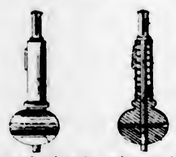
3. The combination, with the two adjacent shafts, of the perforated flanges secured to the shafts and placed face to face, a third flange held to slide on the hub of one of the perforated flanges and provided with coupling pins to enter the holes of the meeting flanges, a screw connected with the pin-carrying flange, a hanger to support the screw and its carrying shaft, and a clutch blade movable in the hanger and adapted to engage the screw, substantially as described.

4. The combination, of the abutting shafts, the meeting perforated flanges secured to the shafts, the third flange provided with pins to enter the holes in the meeting flanges and with a sleeve sliding on one of the shafts, a screw on the end of the sleeve, a hanger supporting the sleeve and its shaft, and a slidable clutch blade mounted in the hanger and adapted to engage the screw, substantially as described.

5. The combination, with the abutting shafts, the meeting perforated flanges secured to the shafts, and the third flange sliding on one of the shafts and provided with pins to enter the holes of the perforated flanges, of a sleeve on the third flange having a screw thereon, a hanger supporting the sleeve and its shaft, a spring-pressed clutch blade mounted in the hanger and adapted to engage the screw, and a guide secured to the clutch blade and adapted to abut with the end of the screw, substantially as described.

6. The combination, with the abutting shafts, the perforated flanges and the third flange having pins to engage the holes of the perforated flanges, of the sleeve and screw connected with the third flange, the hanger supporting the sleeve and its shaft, the spring-pressed clutch blade held to slide in guides in the hanger, and a lever to work the clutch blade, substantially as described.

528,013. **TUNING-KEY FOR MUSICAL INSTRUMENTS.** ANDREW MCKENZIE, Providence, R. I. Filed Aug. 29, 1894. Serial No. 521,592. (No model.)

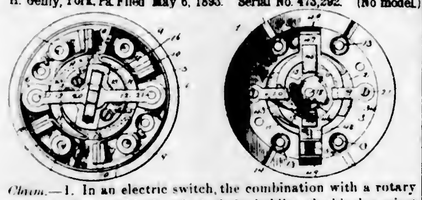


*Claim.*—1. In a tuning key for string musical instruments, a spindle having a handle to turn it by and a spool to wind the string on, in combination with a shell to receive said spindle and be rigidly held in the instrument, and a spring to create a friction between the shell and spindle, substantially as described.

2. The combination in a tuning key for string musical instruments, of a shell to be inserted rigidly in the instrument, a spindle extending through said shell, and having a spool on its end with a shoulder to come in contact with the end of the shell, a spring to be inclosed in the shell, and a handle fast to the spindle to compress the spring against the inner partly closed end of the shell, substantially as described.



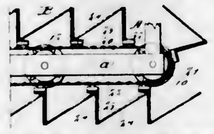
528,014. **ELECTRIC SWITCH.** JAMES F. MCLAUGHLIN, Philadelphia, Pa., assignor to James W. Difenderfer, same place, and Theodore H. Gehly, York, Pa. Filed May 6, 1893. Serial No. 473,292. (No model.)



*Claim.*—1. In an electric switch, the combination with a rotary spring actuated switch block; of a lock for holding the block against the action of the spring, composed of two sliding plates each provided with a stud in the path of a corresponding stud on the switch block; and a winding key for the spring, provided with arms engaging the lock plates to move them with their studs out of the paths of the corresponding switch block stud when the spring is wound up, substantially as described.

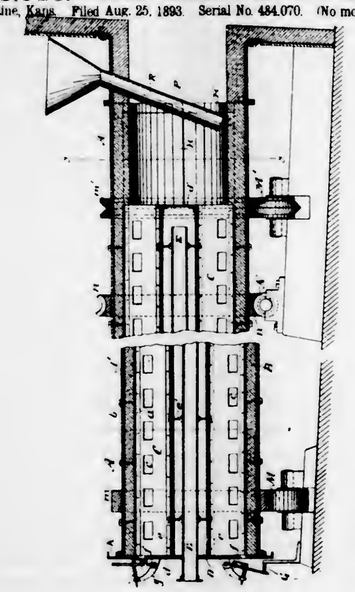
2. In an electric switch, the combination with a rotary spring-actuated switch block, of sliding plates each provided with a stud in the path of a corresponding stud on the switch block, and a winding key for the spring, a pawl and ratchet for the key and arms on the latter engaging and actuating the plates to move them with their studs out of the paths of the switch block studs, substantially as described.

528,015. **WATER-ELEVATOR.** JOSEPH MCMURRIN, Shoshone, Idaho. Filed Sept. 19, 1893. Serial No. 485,821. (No model.)



*Claim.*—The combination with the cross beams, separated by wide spaces, and endless chains to which they are rigidly attached, of a series of paddles, one being secured to each cross-beam at the rearward edge of the latter, and a series of acute-angle braces, each being attached at one end to a paddle, and its free end extending rearward and normally resting upon the portion of the adjacent cross-beam which projects from the base of the next rear paddle, as shown and described.

528,016. **FURNACE FOR ROASTING ORES.** PAUL NAEF, Argentine, Kans. Filed Aug. 25, 1893. Serial No. 484,070. (No model.)



*Claim.*—1. A revolving roasting furnace having a central metal air inlet pipe receiving air in at one end and with openings therefrom into the roasting cylinder only at the discharge end thereof, in combination with metal partitions connecting said central pipe with the cylinder walls, said partitions having holes for the passage of ore therethrough, substantially as and for the purpose set forth.

2. In a revolving roasting cylinder the combination with an inner air inlet pipe leading in from the discharging end of the furnace toward the feeding end, of an outer pipe encompassing the same and forming a return passage for the incoming air back to the discharging end, said outer pipe having air passages from the same into the roasting chamber only at the discharging end of the cylinder, substantially as and for the purpose set forth.

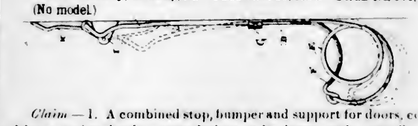
3. A revolving roasting cylinder having an open section at the feeding end with lining and ore lifting devices carried thereby of fire brick, in combination with a metal air inlet pipe and ore lifting partitions extending through the lower portion of the cylinder, said air inlet pipe discharging air into the roasting chamber near the discharging end thereof, substantially as and for the purpose set forth.

4. A revolving roasting cylinder having one or more discharge openings in the end wall thereof with spring pressed doors therefor, each hinged to the cylinder between the opening and the cylinder axis and having a radially and outwardly projecting arm therefor, in combination with a stationary piece so placed as to engage with said arms and temporarily open the doors, substantially as and for the purpose set forth.

5. A revolving roasting cylinder having an open section at the feeding end with lining and ore lifting devices of fire brick, in combination with an air inlet flue and metal ore lifting devices extending through the lower portion of the cylinder, said air inlet flue discharging air into the roasting chamber near the discharge end thereof, substantially as and for the purpose set forth.

6. A revolving roasting cylinder having one or more discharge openings in the end thereof, said openings extending inward from the surface of the furnace lining, with movable slides therefor adapted to be moved radially inward, whereby the amount of ore retained in the cylinder can be regulated, substantially as set forth.

528,017. **COMBINED DOOR-CHECK AND BUFFER.** JOSEPH P. NEELEY, Hancock, Mo., assignor of two-thirds to E. V. Allen, same place, and J. J. Neeley, Greenop, Ill. Filed June 29, 1894. Serial No. 516,106. (No model.)

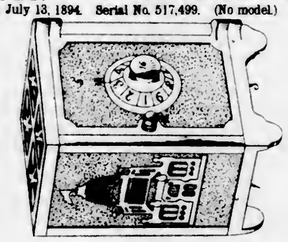


*Claim.*—1. A combined stop, bumper and support for doors, comprising a spring having convolutions at its lower end normally extending below the lower edge of the door for the purpose described, the said spring having its upper portion attached to the door, a vertically moving rod having its lower end connected with the convolution, and a lever connected with the upper end of said rod, substantially as and for the purpose set forth.

2. A combined stop, bumper and support for doors, comprising a spring having convolutions normally resting below the lower edge of the door, said spring connected with the door by means of a plate said plate having a loop, a rod extending downward through the loop and connected with convolutions of the spring, and a lever connected with the said rod, substantially as set forth.

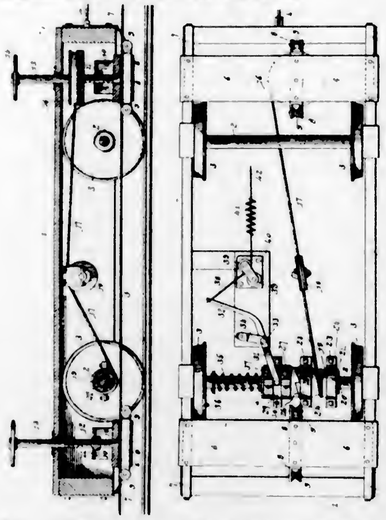
3. A combined stop, bumper and support for doors, comprising a spring connected at its upper end to the door, said spring having convolutions normally extending below the lower edge of the door, a vertically extending rod, a guide engaging the same intermediate its ends, a lever pivoted to the door, the upper end of the said rod having a lateral bend connected to said lever intermediate its ends, substantially as set forth.

528,018. **TOY MONEY-BOX.** ROBERT NICOL, Jr., Chicago, Ill. Filed July 13, 1894. Serial No. 517,499. (No model.)



*Claim.*—A toy money box consisting of a body portion and a portion removably secured to the body portion, a device for securing the parts together having an outward conical end, and a key having a conical opening adapted to fit the device for turning it.

528,019. **BRAKE.** CHRISTEN C. ONSGORD, West Duluth, Minn. Filed May 1, 1894. Serial No. 509,680. (No model.)



*Claim.*—1. The combination of a car, a propelling cable connected thereto, a stationary cable by which the car passes, a grip on the car and operating in connection with the stationary cable, said grip being connected with a drum mounted on the car-axle, a clutch for fixing the drum to the axle and having a normal tendency toward the drum, and a third cable connected to the clutch and operating to hold it out of engagement with the drum, the last-named cable being adapted, upon the breaking of the propelling cable, to break and release the clutch, thereby operating the grip to bind with the stationary cable and stop the car, substantially as described.

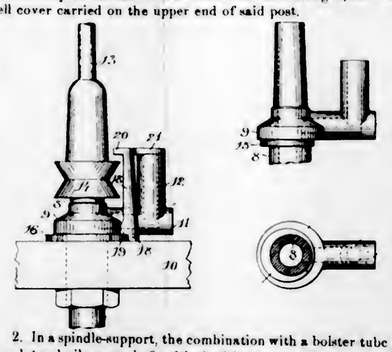
2. The combination of a car, a propelling cable connected thereto, a grip on the car, a stationary cable passing through the grip, a drum mounted loosely on one of the car axles, a clutch fixed to the axle and having a normal tendency to engage the drum, a bent lever connected to the clutch, a cable connected to the lever and adapted to hold the clutch from engagement with the drum, and a belt connecting the drum and grip whereby when the last-named cable is broken, upon the breaking of the propelling cable, the clutch will engage the drum and cause the grip to bind with the stationary rope and thus stop the car, substantially as described.

3. The combination of two cars adapted to move simultaneously in different directions on an inclined plane, a propelling rope connected to each at its ends, a grip on each car, a stationary rope for each grip, means for applying the grip, said means having a normal tendency to operate, and a third cable connected to each car and operating to hold said means inactive, whereby upon the breaking of the propelling cable the third cable will break also and allow the grip to bind with the stationary cable, thereby stopping the car, substantially as described.

4. The combination of a car, a frame depending therefrom, a threaded shaft arranged above the frame, a grip-shoe on the shaft and adapted to bind against the frame, a stationary rope passing between the frame and the shoe, a drum mounted loosely on the car-axle, a belt passing over the drum and shaft, whereby the shaft is operated, a clutch fixed to the shaft and having a normal tendency to engage the drum, a cable connected to the clutch and operating to hold the same from engagement with the drum, a propelling cable connected to the car, whereby upon the breaking of the propelling cable the clutch-cable will break and allow the drum to operate the shoe, thus gripping the stationary cable and stopping the car, substantially as described.

528,020. **SPINDLE-SUPPORT.** HENRY A. OWEN, Whitinsville, Mass., assignor to the Whitin Machine Works, same place. Filed May 10, 1894. Serial No. 510,717. (No model.)

*Claim.*—1. In a spindle support, the combination with a bolster-tube furnished with a laterally-extending oil-reservoir having an upwardly-extending oil-well, of a post extending in a plane parallel to the axis of the bolster, a support on which the post is secured, mounted eccentrically to the said bolster-tube and embracing it, and an oil-well cover carried on the upper end of said post.

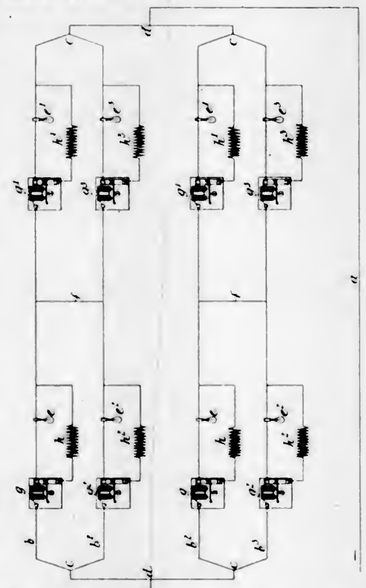


2. In a spindle-support, the combination with a bolster tube having a lateral oil-reservoir furnished with an upwardly-extending oil-well, of an eccentric cam surrounding the bolster-tube, a ring rotatable on said cam, and a vertical post rigidly secured to said ring and having a doffer-guard and oil-well cover at its upper end.

3. The combination with a bolster-tube 8 having the flange 9, the oil-reservoir 11 and the oil-well 12, and the cam 15 surrounding the bolster-tube, of the ring 16 rotatable on said cam, and the post 18 mounted on the ring and having the doffer-guard 20 and the oil-well cover 21 at its upper end, as described.

4. In a spindle-support, the combination with a bolster-tube, and a spindle vertically journaled therein and having a whirl, of a movable base having a post mounted thereon, a device for guarding the base eccentrically to the axis of the spindle, and a doffer-guard rigidly mounted on the upper end of the post.

528,021. **ELECTRIC-LIGHTING SYSTEM.** GEORGE J. PARFITT and GEORGE J. T. J. PARFITT, Keynsham, England. Filed July 12, 1892. Serial No. 439,816. (No model.)



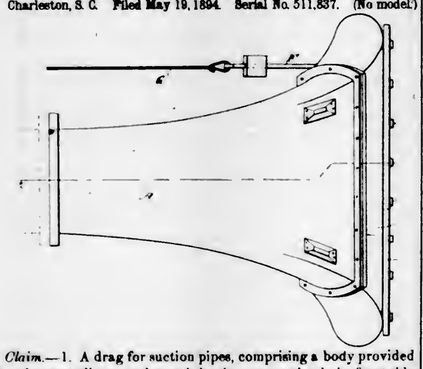
*Claim.*—1. In a multiple series circuit, each of the branches of the main line having a separate electro-magnet and a light or other electric apparatus connected in series, and each of said branches having also a resistance circuit around said lamp or apparatus, and each of said magnets adapted for operating a switch to bring said resistance into multiple with the lamp circuit when an excess of current passes through the same, and to break the resistance circuit when the lamp circuit is broken, or when no excess of current passes through the lamp circuit, all as and for the purposes set forth.

2. In a multiple series circuit, each of the branches of the main line having a separate electro-magnet and a light or other electric apparatus connected in series, and each of said branches having also a resistance circuit around said lamp or apparatus, and the armature of each of said magnets constituting a switch, for bringing the resistance into multiple with the magnet and light or other apparatus of its particular branch when attracted by its magnet, and for breaking said resistance circuit when not attracted by its magnet, all as and for the purposes set forth.

3. In a multiple series circuit, each of the branches of the main line having a separate electro-magnet and a light or other electric apparatus connected in series, and each of said branches having also a resistance circuit around said lamp or apparatus, and each of said magnets adapted for operating a switch to bring said resistance into multiple with the lamp circuit when an excess of current passes through the same, and when the lamp circuit of any branch is broken, to cause the resistance circuit of said branch to be broken also, and to cause the current from the same to pass through the other branches of the line, and the excess of current then made to pass through the other branches causing the magnets of such branches to operate their switches and to bring their resistances into multiple with the lamps or other devices on said branches, all as and for the purposes set forth.



528,022. **DRAG FOR SUCTION-PIPES.** ERNEST O. PATTERSON, Charleston, S. C. Filed May 19, 1894. Serial No. 511,837. (No model.)



*Claim.*—1. A drag for suction pipes, comprising a body provided with a downwardly curved mouth having an opening in its front side near the lower end thereof, a shaft mounted in bearings on the front side of the mouth, a valve on the shaft for closing the opening in the mouth, and a weighted lever on one end of the said shaft and with which a rope is adapted to be connected, substantially as and for the purpose set forth.

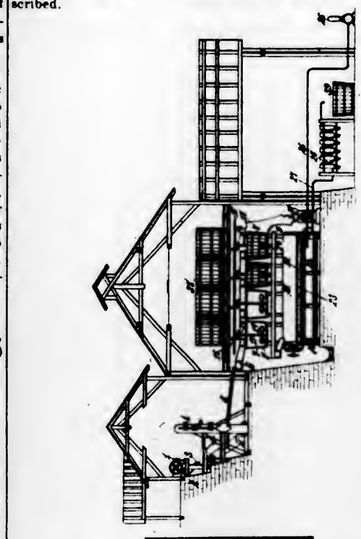
2. A drag for suction pipes, comprising a body provided with a downwardly curved mouth having an opening in its front side, a valve for closing the said opening, and a shield secured to the body and to the lower front end of the mouth below the valve, substantially as described.

3. In a drag for suction pipes, the combination with the mouth, of a scraper vertically adjustable on the mouth, substantially as described.

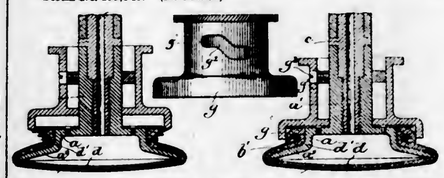
528,023. **EXTRACTING GOLD FROM ITS ORE.** LOUIS PELATAN, Paris, France, and FABRIZIO CLERICI, Milan, Italy. Filed July 18, 1894. Serial No. 517,941. (No model.)

*Claim.*—1. In the treatment of gold and silver ores, the apparatus described for dissolving amalgamating and separating the precious metals from their ores, said apparatus consisting of a crusher, an amalgamator, a dissolving apparatus comprising a vessel having an inner bottom of amalgamated copper or other suitable metal connected by wire to one pole of a generator of electricity, a central shaft having a surrounding pipe of zinc, an agitator of like material mounted thereon and connected by wire to the other pole of said generator means for revolving the shaft, the vessel being provided with an outlet, a filtration apparatus, a connected series of reciprocating and collecting vessels containing a metallic precipitating agent and means for creating a vacuum beneath the filter, to drive the solution into the precipitating vessels under pressure, substantially as described.

2. The combination with a crushing mechanism and an amalgamator, of a series of vessels containing a solution of cyanide of potassium and a salt of sodium each vessel having an amalgamated copper bottom connected to one pole of a generator of electricity and a central shaft having a zinc pipe and agitator connected to the other pole, a filter, a series of communicating closed vessels of lead, each containing a body of aluminum chips resting on a perforated diaphragm above the inlet and rising nearly to the outlet, and means for creating a vacuum beneath the filter to drive the fluid through and into the series of lead vessels under pressure, substantially as described.



528,024. **BUFFING-PAD HOLDER.** AUSTIN E. PERRY, Wakefield, assignor to George H. P. Flagg, Boston, Mass. Filed Jan. 3, 1894. Serial No. 495,545. (No model.)



*Claim.*—1 A buffing-pad holder, comprising a seat or support for the tongues of a pad, a clamp adapted to confine said tongues against said seat, and a tongue-bending device adapted to bend the tongues over said clamp.

2. In a buffing-pad holder, the combination of a pad-tongue seat or support, a tongue-clamp, a tongue-bending device, and a frictional yielding cushion adapted to be pressed by the bending-device against the pad-tongues and bend the same over the clamp.

3. A buffing-pad holder, comprising a pad-tongue seat or support, a cushion formed as an outwardly-projecting yielding flange above said seat, a tongue-clamp, and a presser adapted to bend said flange or cushion and the pad-tongues over said clamp.

4. In a buffing-pad holder, the combination of a supporting-base or body having a pad-tongue seat and a shank adapted for attachment to a shaft or spindle, a pad-tongue clamp formed to surround said seat, and a presser formed to surround said clamp, one of the two parts termed respectively the base or body and the presser being movable relatively to the other, as set forth, so that the pad-tongues may be bent by the presser over the clamp.

5. In a buffing-pad holder, the combination of a supporting-base or body having a pad-tongue seat and a shank adapted for attachment to a shaft, a pad-tongue clamp formed to surround said seat, and a presser movable on said shank and formed to surround said clamp and bend the pad-tongues over the same.

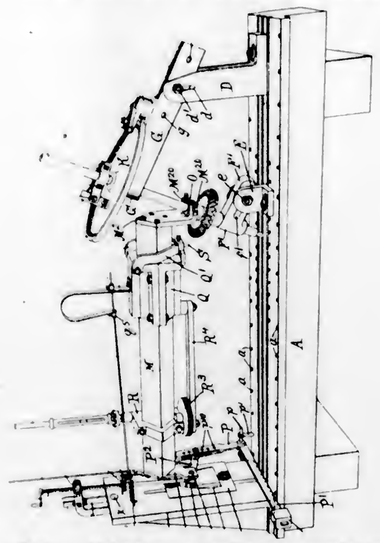
6. In a buffing-pad holder, the combination of a supporting-base or body having a pad-tongue seat and a shank adapted for attachment to a shaft, a pad-tongue clamp formed to surround said seat, a tongue bending presser movable on said shank and formed to

surround said clamp, and means for holding the presser in either its tongue-bending position or its inoperative position.

7. In a buffing-pad holder the combination of a supporting-base or body having a pad-tongue seat and a shank adapted for attachment to a shaft, a pad-tongue clamp formed to surround said seat, a tongue-bending presser having a sleeve which is movable on said shank, one of the two parts termed respectively the shank and sleeve having an offset slot and the other a stud entering said slot, whereby the presser may be held in either of two positions, as set forth.

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528,025. **GEAR-CUTTING MACHINE.** THOMAS O. PERRY, Chicago, Ill. Filed Jan. 25, 1894. Serial No. 498,059. (No model.)



*Claim.*—1. In a gear cutting machine, in combination with the support for the gear to be cut, a reciprocating cutter and its carriage, and the bar, beam or bed on which it reciprocates, the latter being pivoted at one end to the gear support and suspended at the other end, the mechanism for reciprocating the carriage mounted on the beam comprising a gear train in which the speed is reduced to the carriage operating crank wheel, the primal shaft in said train having the highest speed and having a flexible or jointed shaft connection through which power is communicated to the train from a source independent of the beam or gear support: substantially as set forth.

2. In a bevel gear cutting machine, in combination with the gear support, the cutter and the bar, beam or bed which carries it pivoted at one end to the gear support and suitably supported at the other end with capacity for oscillation, a templet adapted to be secured in a position fixed with respect to the gear support, the beam having an abutment which bears upon the templet to afford guidance to the beam, the feed screw centered on the beam and the screw block through which it operates universally pivoted upon a support rigid with the templet, and mechanism for driving the tool and operating the feed screw: substantially as set forth.

3. In a gear cutting machine, in combination with the cutter carrying beam pivoted at one end and adapted to oscillate at the other to vary the path of the cutter; a templet to control the path of the cutter suitably supported in fixed position with respect to the pivot of the beam; the beam having an abutment at its oscillating end adapted to bear against the templet; a thrust link pivoted at the center of an arc which approximates the guiding outline of the templet; and suitable means for yieldingly forcing the pivotal support of such link toward the templet: substantially as set forth.

4. In a bevel gear cutting machine, in combination with a horizontal bed, the support for the gear to be cut angularly adjustable in the bed to accommodate the bevel of the gear; a head bracket supported and adjustable on the horizontal bed remote from the gear support; the cutter and its carriage and operating mechanism, and the beam which carries them pivoted at one end at the apex of the pitch cone of the gear and suspended and counterbalanced at the other end: a templet adjustably secured to the head bracket, the beam having an abutment adapted to bear against the templet; a weighted lever to hold it laterally in contact therewith and the feed screw adapted to actuate vertically the suspended end of the beam: substantially as set forth.

5. In combination with the tool holder, the cutter having a cylindrical stem and its cutting point located eccentrically with respect thereto, a gage block having a plane vertical face, the upper end of the block and the lower end of the tool holder being provided with correlated devices, adapted to be engaged, those pertaining to the holder being symmetrical about the plane of the path of reciprocation of the cutter axis: substantially as set forth.

6. In combination with a tool-holder, the cutter having a cylindrical stem and its cutting point located eccentrically with respect thereto; gage pins set in the tool holder in the plane of the path of reciprocation of the axis of the tool stem, and projecting equally both sides of that plane; a gage block having a face $Z'$ and a rabbet $Z^2$ to receive the gate pins, the depth of the rabbet being half the width of the pins; whereby the gate block placed against either side of the pins has its face set in the plane of the path of reciprocation of the axis of the tool, and constitutes a stop for setting the cuttiug point of the cutter in such plane: substantially as set forth.

7. A subdividing wheel consisting of a flanged or crown disk, and equal cylinders arranged in a complete circle within the flange and occupying such circle fully: substantially as set forth.

8. In a gear-cutting machine, a subdividing wheel consisting of a flanged or crown disk and equal axially apertured cylinders arranged in a complete circle within the flange and occupying such circle fully: substantially as set forth.

9. The subdividing wheel having the overhanging flange and the equal cylinders located in the recess under such flange and fully occupying the same circumferentially; the overhanging flange having an aperture for the admission of the last of the cylinders, whereby the same may be driven in and made to secure the entire series of cylinders rigidly: substantially as set forth.

10. In a gear cutting machine, in combination with the bed, the gear-supporting shaft or mandrel supported on the bed; the subdividing wheel on the mandrel and the cutter-carrying beam pivotally supported on the mandrel between the position of the gear and the subdividing wheel, and adapted to be oscillated at the other end to vary the path of the cutter: substantially as set forth.

11. In a gear cutting machine, in combination with the bed, the gear-supporting shaft or mandrel; two bearings for the same at opposite sides of the position of the gear, each supported on the bed; the cutter carrying beam pivoted to the mandrel between such bearings, and adapted to be oscillated at the other end to vary the path of the cutter: substantially as set forth.

12. In a gear cutting machine, in combination with the bed; a gear-supporting mandrel; two bearings for the same at opposite sides of the position of the gear; the cutter carrying beam pivoted to the mandrel between the bearings and adapted to be oscillated at the other end; the subdividing wheel located at the opposite side of the pivot of the beam to the mandrel from the gear, and adjacent to the bearing at that side: substantially as set forth.

13. In a gear-cutting machine, in combination with the bed, the gear-supporting mandrel; two bearings which said mandrel enters at opposite sides of the position provided for the gear, each being independently adjustable with respect to inclination and position relatively to the bed; the cutter-carrying beam pivoted at one end to the mandrel between said bearings, and adapted to be oscillated at the other end to vary the path of the cutter: substantially as set forth.

14. In a gear-cutting machine, in combination with the bed, posts E and D adjustable thereon; the bars F and G secured to the posts respectively, and adapted to be both longitudinally and pivotally adjusted with respect thereto; the gear-holding mandrel H, journaled in said bars and adapted to carry the gear between the same; the cutter-carrying beam M, pivoted to the mandrel at the pitch cone apex of the gear and between the same and that bearing of the mandrel which is located on the same side of the gear, and the subdividing wheel on the mandrel at the opposite side of the beam from the gear: substantially as set forth.

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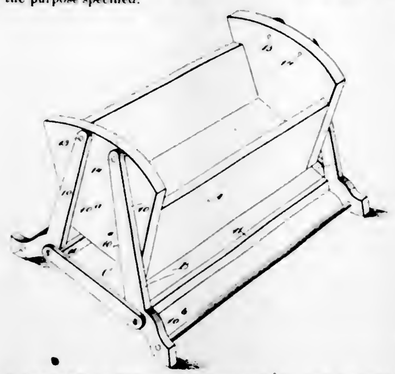
528,026. **CHILD'S CRADLE.** WILLIS E. PHILLIPS, Saguache, Colo., assignor of one-half to Perry Bertachy, same place. Filed Feb. 14, 1894. Serial No. 500,134. (No model.)

*Claim.*—1. A cradle comprising the body, two longitudinally extending laterally rocking frames below the body and having upwardly extending members at their ends to which the upper portions of the body ends are pivoted at opposite sides of a central vertical line, and links pivotally connecting the ends of said rocking frames below where they are pivoted to the body, substantially as set forth.

2. In a cradle or like object, the combination, with a basket or body, of rocking supports pivotally connected with the ends of the cradle, one at each side of the center and pivotally connected with



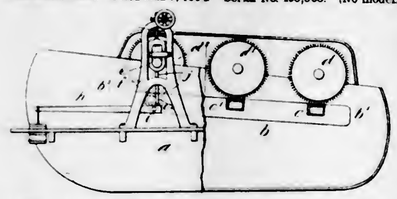
one another, the distance between the supports at each end of the cradle being greater at their lower than at their upper ends, as and for the purpose specified.



3. In a cradle or like object, the combination, with a basket or body, of opposing supports, each support consisting of connected legs, said legs being pivotally connected at each side of the center of the cradle body near the top thereof, each leg comprising a body portion pivoted to the body of the cradle, and a foot adapted to rest upon a support and at an angle to the body, and link connections between the legs of the supports at opposite ends, as and for the purpose specified.

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528,027. **PAPER-PULP-BEATING ENGINE.** JAMES D. PICKLES, Buckland, Conn. Filed Jan. 3, 1894. Serial No. 495,565. (No model.)



*Claim.*—1. In a beater engine in combination with a vat, a transverse bed substantially straight along its upper surface and inclined upward from front to rear, a series of cutter beds arranged at different levels along the bed, and a series of beater rolls arranged at different levels along the bed with their peripheries co-operating with the cutter beds, and means for driving the rolls, all substantially as described.

2. In a beater engine in combination with a vat, a transverse bed substantially straight along its upper surface and inclined upward from front to rear and having bed plates, the beater rolls mounted in the vats, standards arranged on opposite sides of the bed, a yoke adjustably supported in each standard, the beater rolls having shaft bearings in the yoke, and the counterpoise device including the lever, the connecting rod and the counter-poise weight, all substantially as described.

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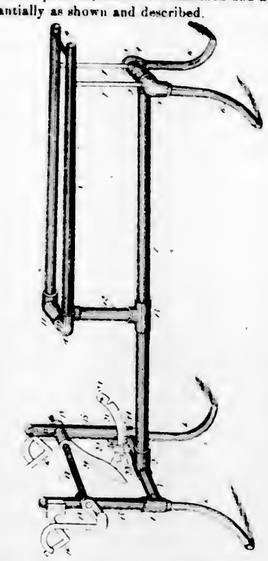
528,028. **BICYCLE-STAND.** FRANK H. PIERCE, San José, Cal. Filed July 13, 1894. Serial No. 517,401. (No model.)

*Claim.*—1. In a device of the character herein specified, the combination with a support for the saddle of an inverted bicycle, of a support for the handle bar connected therewith, and encircling means for locking the handle bar to said support, substantially as shown and described.

2. In a device of the character herein specified, the combination with the main frame mounted upon supporting legs, of a rest for the saddle of an inverted bicycle, consisting of longitudinal substantially parallel bars and encircling devices for the handle which hold it against movement, substantially as shown and described.

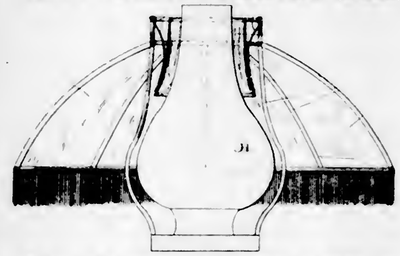
3. In a device of the character herein specified, the combination with the supporting legs, of standards mounted thereabove and bearing rigid hooks for receiving the handle bar of an inverted bicycle, movable hooks arranged to pass over the handle bar, and means for securing said hooks in position substantially as shown and described.

4. In a bicycle stand, a horizontal reach or bar, mounted upon supporting legs; longitudinal saddle receiving bars mounted above the reach; standards projecting above the reach, opposite to the saddle support, and bearing fixed hooks forming a handle bar support; movable hooks mounted upon a shaft, and arranged to pass over the handle bar; a manipulating lever fixed to said shaft, and means for locking said lever in position, the whole combined and arranged to operate, substantially as shown and described.



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528,029. **LAMP-SHADE PROTECTOR.** GEORGE REICHMAN, Philadelphia, Pa. Filed June 8, 1894. Serial No. 513,940. (No model.)



*Claim.*—1. The combination of a chimney of a lamp and the shade and shade support thereof, with a cylindrical lamp-shade protector arranged between the chimney and shade, and having a set of springs arranged around the exterior of the cylinder, and having their inner ends attached to said cylinder and their other ends adapted to engage with the shade support, substantially as described.

2. The combination of a chimney of a lamp and the shade and shade support thereof, with a cylindrical lamp-shade protector arranged between the chimney and shade, and having a set of springs arranged around the exterior of the cylinder and having their lower ends attached to the lower part of said cylinder and their upper ends bent to engage with the shade support, substantially as and for the purpose specified.

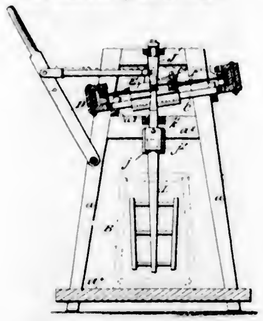
3. As a new article of manufacture, a lamp shade protector having a cylinder of mica D, double rings F at top and bottom, strips E connecting these rings, and springs having one of their ends attached near the base of the cylinder and their other ends bent to engage with the shade support, substantially as described.

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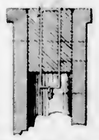
528,030. **CHURN.** CALVIN M. ROARK, Alto, Tex., assignor of one-half to Andrew J. McCuistion, same place. Filed July 10, 1894. Serial No. 517,110. (No model.)

*Claim.*—In a churn, the combination with the rotary driving spindle J, of the slide rest C, the guide pulleys D, D, journaled in the opposite ends of said slide rest, the slide-block E seated and adapted to slide on said slide rest and provided with a turn peg $e^4$, having a ratchet head $e^5$, a pawl $e^6$, engaging said head, a cord wound about

said spindle and passing around said pulleys, one end of said cord being fastened to said slide block and the other end fastened to said turn peg, a hand lever H, and a pitman G, pivotally secured to said lever and slide-block, substantially as described.

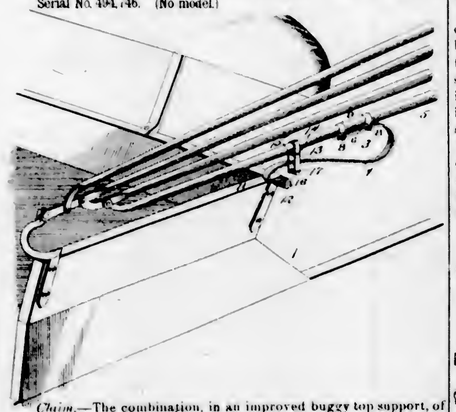


528,031. BOTTLE-STOPPER EXTRACTOR. EDWARD W. ROBINSON, Deering, Me. Filed Oct. 7, 1892. Serial No. 448,116. (No model.)



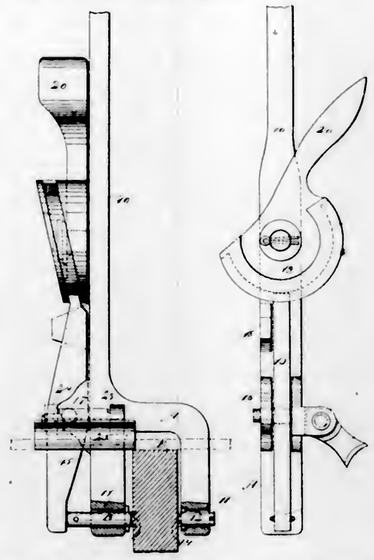
*Claim.*—The combination with a bottle stopper, of a stopper puller consisting of a single piece of flat wire passing vertically through said stopper at two different points, said wire being countersunk into the top of said stopper and having its two ends knotted together at the bottom, and so arranged that its flattened side will be presented to that portion of the stopper lying between its vertical parts, the length of the vertical parts of said wire being somewhat greater than the length of the stopper, as and for the purposes set forth.

528,032. BUGGY-TOP SUPPORT. ALVA N. ROOKS, Iuka, Ill., assignor of one-half to Charles H. Neff, same place. Filed Dec. 26, 1893. Serial No. 494,746. (No model.)



*Claim.*—The combination, in an improved buggy top support, of a buggy bow, a casting 7 having a concaved face to engage the buggy bow, perforated ears 8 formed on and projecting laterally one from each corner of said casting and on the face thereof opposite said concaved face, said ears being elevated the thickness of a spring above the adjacent face of the casting and forming a depression or seat in said face of a depth equal to the thickness of a spring, a prop-bolt, a spring 4 having one end portion fixed in said depression between said ears, the outer face of said end portion of said spring being flush with the outer faces of the said ears, clasps 9 adapted for engagement with the buggy bow and having threaded ends passed through said ears, and nuts 10 mounted upon said clasps with their edges only projecting over and contacting directly with the outer face of the said end portion of the flat spring, whereby the said spring and casting may be separated without removing said nuts from said clasps, and the said casting is rigidly connected to the buggy bow, substantially as specified.

528,033. FLOOR-CLAMP. MOSES SCHLATTER, Inman, Kans. Filed Jan. 30, 1894. Serial No. 498,474. (No model.)



*Claim.*—1. A floor clamp, comprising a body consisting of two rigidly connected members, opposing studs held in the members of the body and movable the one toward and from the other, means for moving one of the studs relatively to the other, and a pivoted clamping jaw arranged to swing in a plane that is essentially perpendicular to the path of travel of the said stud, substantially as described.

2. A floor clamp, comprising a body consisting of two rigidly connected members of which one is a handle member, opposing studs held in the said members of the body and movable the one toward the other, a lever pivoted to the body and connected to one of the studs, a cam secured to the body and engaging the said lever to rock it on its pivot, and a jaw pivoted to the body and arranged to swing in a plane that is essentially perpendicular to the path of travel of the stud connected to the lever, substantially as described.

3. A floor clamp, comprising a body consisting of two rigidly connected members, opposing toothed studs arranged in the members of the body, one of the studs being held to turn in its member, and the other being held to turn and slide in the opposite member, and means for actuating the sliding stud, substantially as described.

528,034. CHILL FOR MAKING CHILLED CASTINGS. HUBERT SCHON, Apollo, assignor, by direct and mesne assignments, to himself, Neville C. Davison, Pittsburg, and George Muth and James P. Sipe, Allegheny, Pa. Filed Mar. 15, 1894. Serial No. 503,760. (No model.)

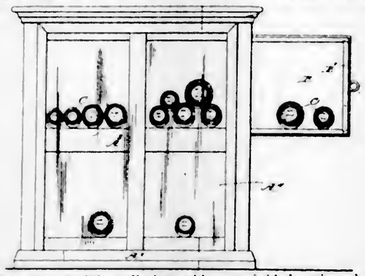


*Claim.*—1. A chill comprising a chilling surface surrounded by a series of cooling chambers, annular water ways connected by ports with the said cooling chambers to circulate water through the latter, and air spaces or channels for separating the cooling chambers from each other, substantially as shown and described.

2. A chill comprising an annular series of hollow chill blocks each forming a cooling chamber provided with an inlet and an outlet, and two annular water-ways one of which is connected with the inlet ports of the cooling chambers, while the other connects with the outlet ports of the said chambers, substantially as described.



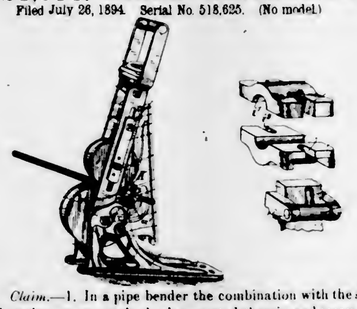
528,035. RIBBON DISPLAY-CABINET. LEWIS SCHOOLHOUSE, New York, N. Y. Filed Apr. 20, 1894. Serial No. 508,280. (No model.)



*Claim.*—1. A ribbon display cabinet, provided with a drawer having a transparent front, and a wire projecting from the drawer to form a guide therefor, said wire being bent over the front, top and bottom of the said drawer, the said wire being provided with a hump to limit the movement of the drawer, substantially as shown and described.

2. A ribbon display cabinet, provided with a drawer having a transparent front, and a wire projecting from the drawer to form a guide therefor, said wire being bent over the front, top and bottom of the said drawer, the middle portion of the said wire being formed into a handle, and the ends of the wire fastened to the inner side of the drawer, substantially as shown and described.

528,036. PIPE-BENDER. THOMAS SEATON, Sr., Toronto, Canada. Filed July 26, 1894. Serial No. 518,625. (No model.)



*Claim.*—1. In a pipe bender the combination with the standards and stationary grooved wheel supported therein and means for holding one end of the pipe, of a swing arm, E, E, pivoted on the central bolt supporting the stationary wheel and provided with a grooved wheel, F, journaled on the bolt *f*, extending through the slots, *e'*, *e'*, into the side bars, *e*, *e*, the cross bar, *f'*, the ends of which also extend through the slots, *e'*, *e'*, into the side bars, *e*, *e* and the threaded spindle, G, screwed through the cross bar, *g*, and secured in the cross bar, *f'*, at the bottom as and for the purpose specified.

2. In a pipe bender the combination with the standards and stationary grooved wheel supported therein and means for holding one end of the pipe, of a swing arm, E, E, pivoted on the central bolt supporting the stationary wheel and provided with a grooved wheel, F, journaled on the bolt *f*, extending through the slots, *e'*, *e'*, into the side bars, *e*, *e*, the cross bar, *f'*, the ends of which also extend through the slots, *e'*, *e'*, into the side bars, *e*, *e*, and the screw spindle, G, screwed through the cross bar, *g*, and secured in the cross bar, *f'*, at the bottom and the guard, H, and handle, E', arranged as and for the purpose specified.

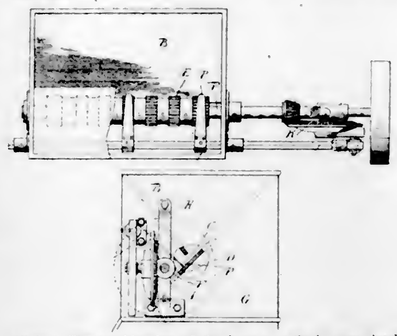
3. In a pipe bender, the vertical standards, the grooved wheel, the radial slot therein, the bolt carried by said standard extending centrally of said wheel supporting the same, a second bolt passing through said slot near the periphery of said wheel held in said standard, to prevent the rotation of said wheel and the lever arms carrying a grooved wheel and means for holding the pipe to be bent rigidly, against longitudinal movement, substantially as described.

4. In a pipe bender the combination with the standards, A, A, and stationary grooved wheel supported therein by the bolts, B, and, C, which extend through the radial recess, *d*, the segmental recess, *d'*, made in the wheel, D, and means for holding one end of the pipe, of the swing arm, E, E, provided with an adjustably held grooved wheel, F, as and for the purpose specified.

5. The combination with the standards and stationary grooved wheel supported therein and the swing arm having the adjustable grooved wheel, F, capable of rotation of the holding blocks, I, I', the block, I', of which has recesses, $i^4$, to fit upon the upwardly extending projections, *a*, *a*, of the standards, A, A, and provided with the central arc-shaped recesses, *i*, *i'*, for the reception of the pipe and means for holding such blocks together, so as to clamp the pipe during bending as and for the purpose specified.

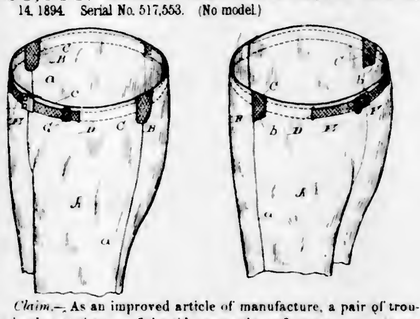
6. The combination with the standards and stationary grooved wheel supported therein and the swing arm having the adjustable grooved wheel, F, capable of rotation of the holding blocks, I, I', having the notches, $i^3$, and, $i^5$, respectively and the lower block, I', having the recesses, $i^4$, and the swing bolts, J, designed to be brought to fit into the notches, $i^3$, and, $i^5$, and clamp the blocks together by means of the butterfly bolts, K, as and for the purpose specified.

528,037. FEED DEVICE FOR ROLLER-MILLS. JOSEPH SIEBERTH, Frankenmuth, Mich. Filed May 11, 1894. Serial No. 510,861. (No model.)



*Claim.*—The combination of the hopper, a feed apron leading from the discharge end thereon, a driven feed roll in proximity to said apron, the reciprocating bar and fingers arranged as described, a drive mechanism for said bar comprising the roller L on the pinion shaft, a bracket on the machine casing having a sleeve at its end through which the roller shaft passes, the gear wheel K on the sleeve meshing with the pinion L and having a roller wrist thereon, and a link N in which said roller wrist engages connected to the reciprocating bar, substantially as described.

528,038. TROUSERS. LOUIS S. SHAUER, Chicago, Ill. Filed July 14, 1894. Serial No. 517,553. (No model.)

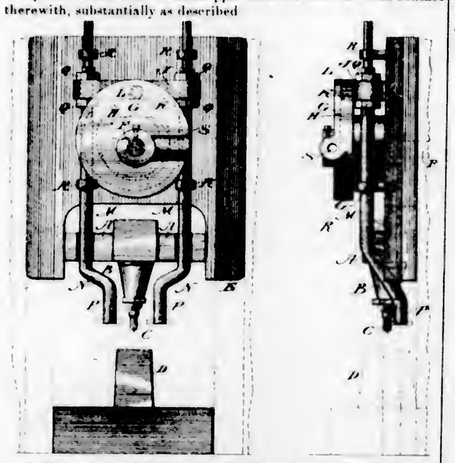


*Claim.*—As an improved article of manufacture, a pair of trousers having at the top of the side seams thereof a recess or cut-away part of substantially the same width at its top and bottom, a circumferential pocket on each side of each of said cut-away parts, an elastic piece secured in the recesses or cut-away parts, and straps passed through the pockets and attached to said elastic pieces and provided at their ends with means for adjustably securing them together, substantially as described.

528,039. PUNCHING-MACHINE AND STRIPPER THEREFOR. FREDERICK SOTTER, Coatesville, Pa. Filed June 22, 1894. Serial No. 515,528. (No model.)

*Claim.*—1. A stripper for punching machines comprising two vertical rods having feet bent into proximity with the punch, a cross bar and guides therefor, the relation of the actuating parts being such that the punch and the feet of the stripper bars reach the plate which

is to be punched at the same time, but the punch clears the plate in its upward stroke before the stripper bars are removed from contact therewith, substantially as described



2. The stripper rods M having their lower extremities bent rearwardly as shown, and guides therefor, a cross bar J, means for securing said cross bar to the rods and a stud K engaging the cam H of the disk G, the latter being mounted on the punch actuating shaft, and the above parts being combined substantially as described.

3. A frame, a reciprocating cross head with a punch guided on said frame, stripping rods having ends adjacent to said punch, a cross head to which said rods are adjustably secured, a shaft with a cam reciprocating said latter mentioned cross head, the movements of said cross heads being independent, and the above parts being combined substantially as described.

4. In a punching machine, a punch, a stripper, adapted to be actuated by connections from the punch mechanism, said stripper having its lower extremities bent rearwardly and downwardly whereby the view of the punch at any point of its stroke, from the front or either side, is at all times unobstructed, substantially as described.

5. In a punching machine, a punch, a cam adapted to be actuated by connections from the punch mechanism, stripper rods actuated by said cam and having their legs set back, said cam disk having an eye in its periphery for the insertion of a bar, whereby the machine can be moved by hand when desired, the above parts being combined substantially as described.

6. A frame, a reciprocating cross head guided in said frame, and carrying a punch, stripping rods having guides on said frame, said rods being adjustably secured to a cross head, a rotatable cam engaging said last mentioned cross head, said rods having their ends adjacent to said punch, and said cross heads being actuated by independent mechanism substantially as described

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**528,040. TELEPHONE CIRCUIT AND SIGNAL. THEODORE SPENCER, Cambridge, assignor to the American Bell Telephone Company, Boston, Mass. Filed Nov. 18, 1893. Serial No. 491,330. (No model.)**

*Claim.*—1. The combination in a telephone circuit, of the two conductors of a link connection; a source of current in a bridge between them, and an induction coil having its two windings interposed in one of the said conductors on different sides of the junctiou of said bridge; with an automatic annunciator or other visual signal in a shunt circuit round one of the said induction coil helices.

2. The combination with an induction coil having its twp helices serially connected in one of the two conductors of a telephone circuit connection cord; and a source of current in a bridge extending from a poiut on said conductor between the said helices to the other of the said two conductors; of a double automatic annunciator or like visual signal adapted to give two independent signals, the electrical connections of the said two independent signals being included in shunt circuits round the helices of the said induction coil respectively, substantially as described.

3. The combination in a switch board apparatus of a trunk circuit having branch terminals in plug sockets at a number of switchboard sections; a visual busy signal device associated with each such socket, the said signal devices being contained in a single local circuit; and a relay bridged between the two main conductors of said trunk circuit, and controlling the said local circuit; with a loop circuit formed of the two conductors of a connection cord; a battery or like source of current included in the said loop; and a terminal plug for said loop adapted to be inserted in any of the said plug sockets, and thereby to connect the said battery with the said trunk circuit, and relay, and to actuate the said busy signals, substantially as described.



4. A double conductor trunk circuit extending between two switching stations, provided at the first station with open branch terminals and busy signals at each switchboard section and an electromagnetic device bridged in between the said conductors; and means whereby upon the insertion of a loop plug into one of the open branch terminals the said electro magnetic device may be actuated and the busy signals thereby set.

5. A double conductor trunk circuit, extending between two switching stations, provided at the first station with open branch terminals mounted in plug sockets and busy signals at each switchboard section, and an electro-magnetic device controlling the said signals bridged in between the said conductors; and provided at the second station with a loop plug and an automatic switch controlled thereby, and means whereby upon the insertion of a loop plug into one of the said branch terminals, the busy signals are set, and other means enabling them to continue set until the reverse operation of the said automatic switch, as set forth.

6. The combination in a switchboard apparatus of a double conductor trunk circuit provided at one end with branch terminals in plug sockets at a number of switchboard sections; a series of associated busy signals in a local circuit, one for each socket; a relay controlling said local circuit and signals bridged between the said trunk connectors; a source of current and a plug connector adapted for insertion in any of the said plug sockets and thereupon to close the said trunk circuit through said source to energize the said relay and operate the said busy signals; with an auxiliary source of current at the other end of said trunk arranged to be connected in the main circuit thereof, and to oppose the current of the first source in the said main circuit, but to strengthen the same in the relay bridge, and a circuit changer controlling the continuity of said trunk circuit, and the connection therewith of the said auxiliary source of current; whereby the busy signals at the plug sockets may be set by the current of the first source of current and maintained after the withdrawal thereof by the current of the auxiliary source, substantially as described.

7. The combination of a looping or linking apparatus and a trunk circuit; the said apparatus being provided with double connecting plugs, and having a bridge between its cord conductors which includes a battery; the said trunk circuit having normally open branch terminals, and automatic busy signals at each switchboard section, and an electro magnet in a bridge between the two sides of the said circuit, the armature of which is grounded through the said busy signals, and whose front stop is the terminal of a normally open grounded branch which includes a battery, as set forth.

8. In a telephonic trunk line system, the combination of a looping or linking apparatus provided with double conductor plugs, and a bridge between the said conductors which includes a battery, one pole of which is grounded; a trunk circuit and an automatic electromagnetic signal as set forth in a shunt of one of said conductors around an induction coil helix; the said trunk circuit having normally open branch terminals in plug sockets, and automatic busy signals, one associated with each socket, and an electro-magnet in a bridge between the two sides of the said circuit, and an automatic attention signal in a normally closed earth branch from that side of the said trunk circuit which is connected with the ungrounded battery pole, whereby upon the insertion of a connecting plug into a branch terminal of the said trunk circuit the said battery energizes the said electro-magnet, and sets the busy signals at each switchboard section, and also sets the attention signal at the distant end of the said circuit.

9. In a telephonic trunk line system, the combination of two substation lines extending from substations and terminating at separate switching stations, of a looping or linking apparatus at the first switching station, the said looping apparatus being provided with double conductor plugs; and a trunk circuit extending therefrom to the second switching station and terminating there with a double connecting plug; a main battery in a bridge between the cords of the said link apparatus plugs, an induction coil having its helices in one of said cords, and a double automatic electro-magnetic signal as set forth in a shunt from one of the said cord conductors around the two induction coil helices respectively; the said trunk circuit having normally open branch terminals in plug sockets, and automatic busy signals at each switchboard section; an electro magnet in a bridge between the two sides of the said circuit, an automatic attention signal in a normally closed earth branch from the tip side conductor of the said circuit, a second automatic signal in a bridge between the two sides of the said circuit, an automatic switch in the sleeve side conductor of said circuit operated by the substance of the said terminal connecting plug, and a normally open auxiliary battery in the sleeve side of said circuit; whereby, upon the insertion of a loop plug into a terminal of the said trunk circuit, the said main battery energizes the said electro-magnet and sets the busy signals at each switchboard section, and also sets the attention signal at the distant end of the said circuit; and whereby, upon the withdrawal of the trunk circuit connecting plug from the said automatic switch the said attention signal is reset, the said second signal is set and one side of the automatic signal at the first switching station is also set.

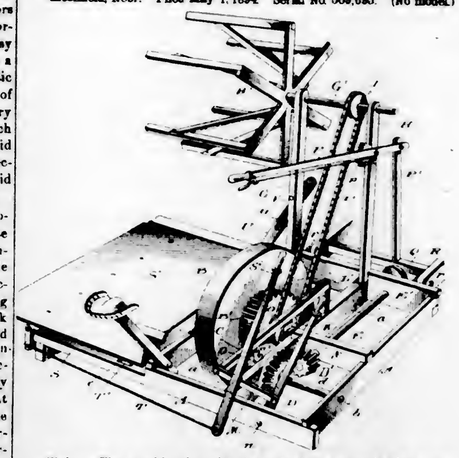
10. In a telephonic trunk line system, the combination of two substation lines extending from separate substations and terminating at separate switching stations in normally open line terminals; of a looping or linking apparatus at the first switching station, and a trunk circuit extending therefrom to the second switching station and termiuating therewith a double connecting plug; the said looping apparatus being provided with double conductor plugs and a main battery in a bridge between the cords of the said plugs, and a double automatic magneto electric signal as set forth in a shunt from one of the said cord conductors around a pole of said battery; the said trunk circuit having normally open branch terminals and automatic busy signals at each switchboard section, an electro magnet in a bridge between the two sides of the said circuit, an automatic attention signal in a normally closed earthed branch from the tip side conductor of the said circuit, a second automatic signal in a bridge between the two sides of the said circuit, an automatic switch in the sleeve side conductor of said circuit operated by the substance of the said terminal connecting plug, and a normally open auxiliary battery in the sleeve side of said circuit; whereby upon the insertion of a loop plug at the first switching station into a substation terminal, one side of the automatic signal is set; and whereby upon the insertion of the other loop plug into a terminal of the said trunk circuit, the said main battery energizes the said electro-magnet, and sets the busy signals at each switchboard section, and also sets the attention signal at the distant end of the said circuit; and whereby upon the withdrawal of the trunk circuit connecting plug from the said automatic switch the said attention signal is reset, the said second signal is set, and the second side of the automatic signal at the first switching station is also set.

11. The combination in a double conductor connection cord, of double conductor terminal plugs with a battery in a bridge between the conductors of said cord; an induction coil having its windings in one of said conductors; and automatic electro-magnetic disconnecting signals and shunts around the induction coil windings respectively; and means as set forth whereby the said signal is normally set, as set forth.

12. The combination in an operator's looping or linking apparatus of double conductor plugs with an electric generator bridged between the said conductors, and coils of high impedance on each side thereof, and an automatic electric magnetic disconnecting signal in a shunt or derivation of the said source of electric current, with non-inductive resistances looped or shunted by the said helices of the said signals, as set forth.



**528,041. CORN CUTTER AND DROPPER. JOHN STEWART, Jr., Litchfield, Nebr. Filed May 1, 1894. Serial No. 509,695. (No model.)**



*Claim.*—The combination with the main frame work having a recess *t*, of a tilting board S' provided with a cross-bar T' adapted to engage in said recess, and a slotted guide U connected to the end of the said cross-bar, for preventing the corn from falling against the driving wheel when the platform is in a horizontal position, substantially as described.

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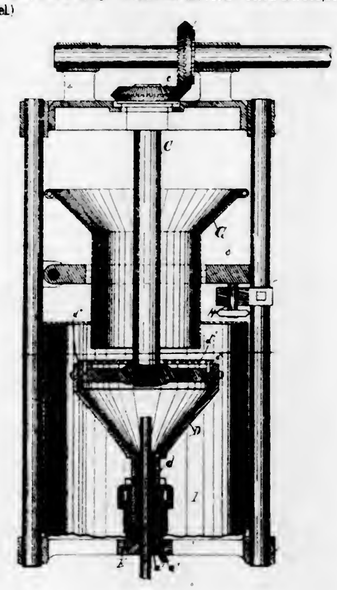
**528,042. CATHODE FOR ELECTROLYTIC PROCESSES AND METHOD OF MAKING SAME. ERNEST STOULS, Paris, France. Filed Jan. 12, 1894. Serial No. 496,680. (No specimens.) Patented in France June 22, 1893. No. 231,042.**

*Claim.*—1. As an article of manufacture a mold, core or cathode having a covering of plombagine and milk, substantially as described.

2. The herein described method consisting of taking a mold, core or cathode, coating the same with plombagine diluted in milk and rubbing the coating until dry, substantially as described.

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**528,043. MACHINE FOR TEMPERING GRAIN. GEORGE T. THOMPSON, Warsaw, Ky. Filed June 22, 1894. Serial No. 515,388. (No model.)**



*Claim.*—1. In a grain tempering machine, the combination of a hollow revoluble head, having a perforated top; means for conveying steam to the interior of the head; and a casing surrounding the head and open at the bottom for the admission of air, substantially as and for the purpose set forth.

2. In a grain tempering machine, the combination of a revoluble steam head, having at one end a tubular extension journaled in a steam tight bearing, and a perforated plate secured to the other, substantially as and for the purpose set forth.

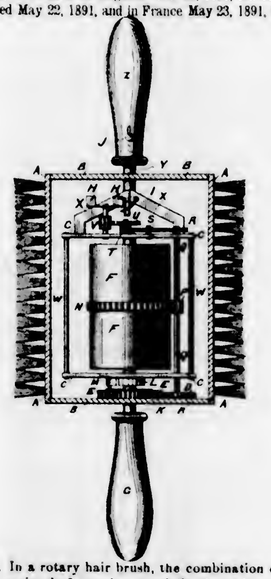
3. In a grain tempering machine, the combination of a revoluble steam head, having a tubular extension journaled in a steam tight bearing; a perforated plate carried by the head, and a casing surrounding the head at the bottom, substantially as and for the purpose set forth.

4. In a grain tempering machine, the combination of a revoluble steam head having a tubular extension journaled in a steam tight bearing, a perforated plate mounted on the head; a steam jet pipe leading into the tubular extension, and an exhaust pipe leading from the tubular extension, substantially as and for the purpose set forth.

5. In a grain tempering machine, the combination of a revoluble conical steam head, having a tubular extension journaled in a steam tight bearing, a perforated plate mounted on the head, and a steam jet pipe extending through the tubular extension and into the head, substantially as and for the purpose specified.

6. In a grain tempering machine the combination of a revoluble steam head, a hopper mounted above the head and means for raising and lowering the hopper, substantially as and for the purpose set forth.

528,044. ROTARY HAIR-BRUSHING MACHINE. IGNACIO M. TINTORÉ, London, England. Filed June 9, 1891. Serial No. 395,675. (No model.) Patented in England Oct. 22, 1890, No. 16,869, and No. 8,740, dated May 22, 1891, and in France May 23, 1891, No. 213,652.



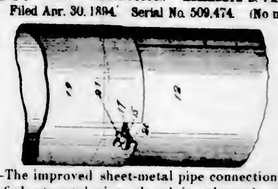
*Claim.*—1. In a rotary hair brush, the combination of a hollow brush-stock, a main shaft passing partially through said stock, a frame mounted upon said shaft within the stock and having a train of gearing connected with the brush stock, a spring-barrel surrounded by the frame and operating the gearing, a flier located within the stock and actuated by the gearing, a handle upon which the stock rotates, means for winding the barrel spring, a stop mechanism for the flier and a sliding device for operating said stop mechanism, substantially as described.

2. In a rotary hair brush, the combination of a hollow brush-stock having an attached toothed ring, a main-shaft passing partially through said stock, a frame mounted upon said shaft within the stock, a spring barrel inclosed by the frame and geared to the toothed ring, a handle upon which the brush stock rotates, means for winding the barrel spring, a stop mechanism for holding the gearing inactive, and a sliding device for operating the stop mechanism to release the gearing, substantially as described.

3. In a rotary hair brush, the combination of a hollow brush stock having an attached toothed ring, a main shaft carrying a handle and passing partially through said stock, a frame or case located within the brush-stock and carried by the main shaft, a spring-barrel geared to the toothed ring and surrounded by said frame, a flier mechanism driven by the barrel, means for winding the barrel spring, a stop mechanism for holding the flier inactive, and a sliding rod for operating said stop mechanism to release the flier, substantially as described.

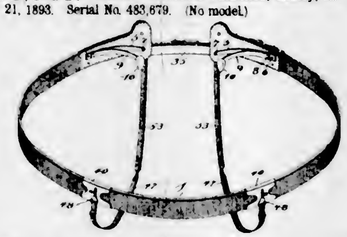
4. In a rotary hair brush, the combination of a hollow brush-stock having an attached toothed ring at one end, a flier mechanism at the opposite end, a main shaft passing partially through the brush stock, a spring barrel mounted upon said shaft and located between and geared to the toothed ring and to the flier mechanism, a handle on which the brush-stock rotates, means for winding the barrel spring, a stop mechanism for holding the flier inactive, and a sliding device for releasing the flier, all of said operating mechanism being located within the brush-stock, substantially as described.

528,045. PIPE CONNECTION. ELIZABETH B. VANVORCE, Madison, Ill. Filed Apr. 30, 1894. Serial No. 509,474. (No model.)



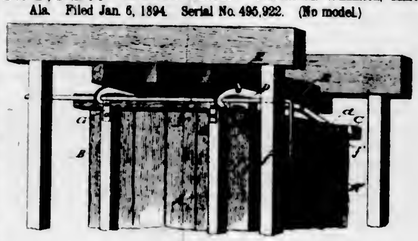
*Claim.*—The improved sheet-metal pipe connection, comprising two pieces of sheet-metal pipe placed in telescopic relation, said pipes having cut in their adjoining ends diametrically opposite pairs of parallel slits 10, 11 forming ears between said slits, said ears being bent outward at a right angle to the body of said pieces of pipe and provided with registering apertures 13, the ears upon the outer pipe being made shorter than the ears of the mating pipe an amount corresponding to the thickness of the metal, screws mounted in said apertures, and winged-nuts mounted on said screws, substantially as herein specified.

528,046. TRUSS. CLAUDIUS VERNIAUD, Quincy, Ill. Filed Aug. 21, 1893. Serial No. 483,679. (No model.)



*Claim.*—A truss constructed with an elastic belt 1, stiffening devices 2 and 4 connected to the ends of said belt, a non-elastic connecting strap 35*, one end of which is connected to the stiffening device 2 and the opposite end to the device 4 by means of the locking device 21 which are connected to said stiffening devices, elastic under straps 47 connected to the locking-devices 21, the opposite ends connected to the adjustable slides 40 which are located on the back of the belt 1, covering 52 connected to the ends of the elastic under straps adjacent to the locking devices 21, springs 5 in combination with the stiffening-devices 2 and 4, springs 9 connected to the springs 5, and pads 10 connected to the outer free ends of the spring 9, substantially as set forth.

528,047. BALE-BOX CLAMP. THOMAS M. WALLACE, Marion, Ala. Filed Jan. 6, 1894. Serial No. 496,922. (No model.)





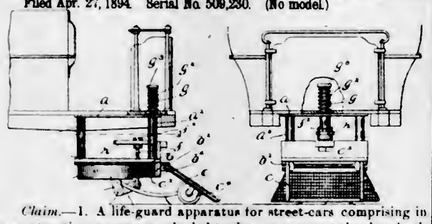
*Claim.*—1. The combination with the bale box of the clamps suspended above it, having at one end catches to engage one of the side doors and the shaft journaled to the opposite ends of the clamps and bearing in the closed position of the box outside the side door opposite that secured by the clamp catches the suspension of the clamps maintaining the same in convenient position for application in use and the journaling of the shaft to said clamps retaining the clamps and shaft in the desired relation all substantially as set forth.

2. In combination with the bale box having opposite side doors one of which is provided on its outer side with plates, the clamps supported above said box and having at one end a shaft journaled in them and bearing against said plates and at their other ends catches engaging the opposite side doors substantially as set forth.

3. The combination of the bale box end and side doors the latter being arranged to secure the former, the clamps suspended above said box and having at one end catches engaging one of the side doors and the shaft journaled in said clamps and engaging the opposite side door whereby the several parts are maintained in convenient position for application to the box and are retained in the desired relation, substantially as set forth.

4. The combination of the bale box, the clamps provided at one end with catches to engage and secure one of the box doors, the shaft journaled in and held to said clamps near their other ends and arranged and adapted to engage and secure the door opposite that held by the end catches of the clamps and supporting devices connected with the clamps and adapted to secure the same entirely independent of the box all substantially as and for the purposes set forth.

528,048. CAR-FENDER. HENRY P WEALE, Boston, assignor of two-thirds to George L. Richards and Henry E. Turner, Malden, Mass. Filed Apr. 27, 1894. Serial No. 509,230. (No model.)



*Claim.*—1. A life-guard apparatus for street-cars comprising in its construction a support swiveled to the car so as to swing in a horizontal plane, a fender pivoted to said support so as to swing in a vertical plane, a vertically movable operating piece on the car, and suitable connections between said operating piece and the fender and carried by the swiveled support, said connections having provisions for producing upward movement of the fender by depression of the operating piece, and for permitting horizontal swinging of the swiveled support while the operating piece remains stationarily located on the car.

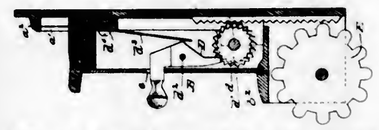
2. A life-guard apparatus for street-cars comprising in its construction a support on the car pivoted to swing in a horizontal plane, a fender pivoted to said support forward of the latter's center of oscillation so as to swing vertically, and means for moving said fender up and down comprising a vertically sliding and rotatable rod stationarily located on the car and having a slotted arm, and devices carried by the horizontally swinging support including a rod engaging said slotted arm.

3. A life-guard apparatus for street-cars comprising in its construction a support on the car pivoted to swing in a horizontal plane, a fender pivoted to said support forward of the latter's center of oscillation so as to swing vertically, and means for moving said fender up and down comprising a bell-crank lever pivoted to bearings below the center of oscillation of the said support and carried thereby, a rod connecting one arm of said lever with the fender, a rod connected with the other arm of said lever and extending vertically, and a vertically sliding and rotatable rod on the car having a slotted arm embracing the vertically extending rod on the horizontally swinging support.

4. A life-guard apparatus for street-cars the same comprising in its construction an annular support arranged to oscillate in a correspondingly formed bearing on the car and having a cross-bar at the front, a fender pivoted to the said bar so as to swing vertically, a disk pivoted concentrically with the annular support, a bell-crank lever on said disk, a pitman connecting one arm of said lever with the fender, stationarily located operating member on the car and suitable connections between the same and the other arm of the bell-crank lever.

528,049. DOOR-CHECK. HERMAN V. WERTZBERGER, Glenwood Springs, Colo. Filed Feb. 27, 1894. Serial No. 501,662. (No model.)

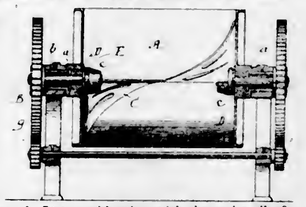
*Claim.*—1. The herein-described improved door-check, comprising the stationary frame having guide-ways and rack-bars, the box or frame movable in said guide-ways, the frictional roller carried by said box or frame, the gear-wheels engaging said rack-bars, and means for locking the same, substantially as set forth.



2. The herein-described improved door-check, comprising the stationary frame having guide-ways and rack-bars, the box or frame movable in said guide-ways and having a slot in its front wall, the frictional roller carried by said box or frame at its lower end, the gear-wheels engaging said rack-bars, the ratchet-wheel and the pawl or lever engaging said ratchet wheel and projected through said slot, substantially as set forth.

3. The herein-described improved door-check, comprising the frame having parallel overhanging flanges, an upper stop, and parallel rack bars, the box or frame provided with flanges fitting beneath said overhanging flange and having a slot in its front wall and open at its bottom and lower front end, the frictional roller projecting beyond the lower end of said box or frame, the shaft journaled in said box or frame, the gear-wheels mounted on said shaft engaging said rack-bars, the ratchet wheel also carried by said shaft, and the spring-pressed pawl or lever engaging said ratchet-wheel and projected through said slot in said box or frame, substantially as set forth.

528,050. DEVICE FOR PREVENTING LEAKAGE ABOUT JOURNALS OF MIXING-MACHINES. FREDERICK WESTERMAN, Chicago, Ill. Filed June 25, 1894. Serial No. 515,591. (No model.)

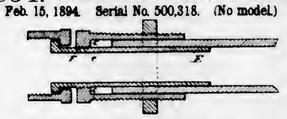


*Claim.*—1. The combination with the end wall of a chamber, a bearing outside of said end wall and a shaft B within said bearing, of a ring or plate D encircling said shaft inside said end wall and an elastic ring E encircling said shaft and serving to thrust outward said plate or ring D, substantially as described.

2. The combination of an end wall of a chamber having a bearing *a* outside thereof provided with a pocket *g*, a shaft B within said bearing, a plate or ring D mounted upon said shaft, an elastic ring E supported by said shaft and serving to thrust outward said plate or ring D, substantially as described.

3. The combination with the end wall of a chamber, a bearing outside said end wall, a shaft B journaled within said bearing, a plate or ring D encircling said shaft, an elastic ring E for forcing said plate or ring D against the inner face of said end wall and a tightening ring or band F for laterally expanding said elastic ring E, substantially as described.

528,051. HOSE-COUPLING. STEPHEN F. WHALEN, Helena, Mont. Filed Feb. 15, 1894. Serial No. 500,318. (No model.)

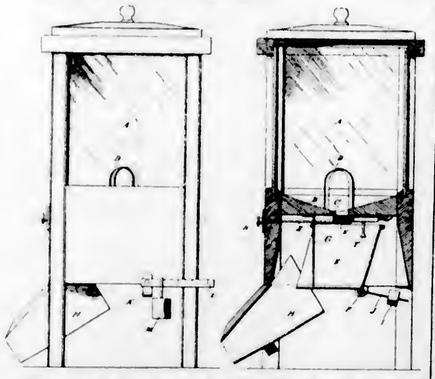


*Claim.*—1. The combination with an inner tube adapted to slip within a hose end and project therefrom, of an outer tube adapted to pass over said hose end, having one end portion divided into sections by longitudinal slots, and having its other end portion rigidly secured to the inner tube, and a ring arranged to pass back and forth over the outer tube to press said sections inward.

2. The combination with an inner tube adapted to slip within and project from a hose end, and provided with external threads upon the projecting portion, of an outer externally threaded tube longitudinally slotted from one end and provided with an internal, threaded flange to engage the threaded portion of the inner tube,

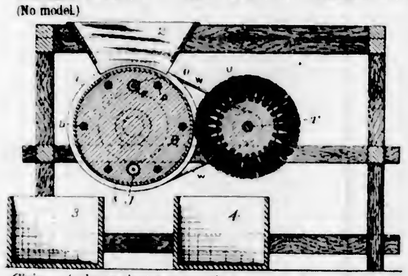
and a threaded ring encircling and engaging the outer tube, substantially as set forth.

528,052. COMBINED SCALE AND COFFEE-CASE. JOHN T. WHETSTINE and THOMAS C. BAKER, Washington, Kans. Filed May 17, 1894. Serial No. 511,611. (No model.)



*Claim.*—In an automatic measuring device, the combination of a receptacle, a discharge orifice, a tilting box beneath the orifice having both a counterpoise and a graduating weight, a permanent partition for closing said box when in a horizontal position, a cut-off for the orifice, and mechanism for operating the cut-off by hand and by the movement of the tilting-box.

528,053. MAGNETIC SEPARATING-MACHINE. WILLIAM H. WILLIAMS, Newark, N. J. Filed June 27, 1891. Serial No. 397,707. (No model.)



*Claim.*—1. In an electro-magnetic separator, the combination of a pair of magneto electric poles arranged pole to pole, and a non-magnetic conveyer moving within the magnetic field between said poles, substantially as described.

2. In an electro-magnetic separator, the combination with a pair of magneto electric poles arranged pole to pole, of a non-magnetic drum rotating within the magnetic field between said poles, substantially as described.

3. In an electro-magnetic separator, the combination with a pair of magneto-electric poles arranged pole to pole, of a non-magnetic drum rotating within the magnetic field between said poles, and flanges at the edges of said drum, substantially as described.

4. In a magnetic separator, the combination with a pair of magneto electric poles arranged pole to pole and revolving about their magnetic axis, of a non-magnetic drum revolving concentrically with said poles, and flanges at the edges of said drum, substantially as described.

5. In a magnetic separator, the combination with an electro magnet having its helices placed end to end with the poles opposed, of a non-magnetic separating drum revolving in the magnetic field, substantially as described.

6. In a magnetic separator, the combination with an electro magnet having its helices placed end to end with the poles opposed and separated by non-magnetic material, of a non-magnetic separating drum revolving within the magnetic field between the poles, substantially as described.

7. In a magnetic separator, the combination with a rotating electro magnet having its helices placed end to end with their poles opposed and rotating about the magnetic axis of the poles, of a drum of non-magnetic material rotating with the magnet and forming a separating drum within the magnetic field between the poles, substantially as described.

8. The combination with an electro magnet having its helices placed end to end with their poles opposed, and its cores extending outward to form journals, of a drum of non-magnetic material carried by said cores and forming a separating drum within the magnetic field between the poles, and means for rotating said magnet and drum about the magnetic axis of the poles, substantially as described.

9. The combination with two cores and helices arranged end to end with their poles opposed, of a non-magnetic separating drum within the magnetic field between the poles, and a yoke connecting the outer ends of the cores, substantially as described.

10. The combination with two cores and helices arranged end to end with their poles opposed, of a non-magnetic separating drum within the magnetic field between the poles, and a yoke connecting the outer ends of the cores and passing inside the drum, substantially as described.

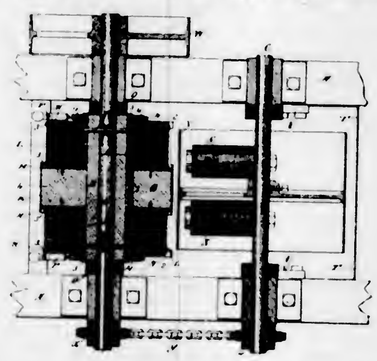
11. The combination with two cores and helices arranged end to end with their poles opposed, of the disks C, C on the cores, non-magnetic material carried by and separating the disks, a band of non-magnetic material carried by the disks and forming a drum within the magnetic field, and a yoke inside the drum connecting the outer ends of the cores substantially as described.

12. The combination with two cores and helices, of disks C, C carried by the cores, and forming the poles, the initial wires of the helices being connected through but insulated from said disks C, C and a yoke connecting the outer ends of the cores, substantially as described.

13. The combination of cores A, A mounted to rotate on an axis central thereto, a non-magnetic conveyer within the magnetic field between said cores, helices L, L on said cores having their initial wires connected together, means for securing said cores together end to end but out of contact with each other, and a yoke connecting the outer ends of the cores, substantially as described.

14. An electro magnet having the faces or polar areas of the two arms opposed and secured to rotate on an axis central to the core, and a non-magnetic drum rotating within the magnetic field between said poles, substantially as described.

528,054. MAGNETIC SEPARATOR. WILLIAM H. WILLIAMS, Newark, N. J. Filed Jan. 29, 1892. Serial No. 419,684. (No model.)



*Claim.*—1. The combination of two cores and helices mounted on a shaft of magnetic material end to end with their poles adjacent, and connections between the cores and the shaft, whereby the shaft forms a part of the yoke, substantially as described.

2. The combination of two cores and helices arranged end to end with their poles adjacent, and a yoke joining the cores and central thereto, substantially as described.

3. The combination of two cylindrical cores and helices arranged end to end with their poles adjacent, and a yoke joining the cores and lying inside the cores, substantially as described.

4. The combination with shaft B, of body E and block G of wood or similar non-magnetic material, cyliudrical cores F on said body having disks H separated by block G, and helices L on said cores, substantially as described.

5. The combination with shaft B, of body E and block G of wood or similar non-magnetic material, cylindrical cores F on said body having disks H separated by block G, and helices L on said cores, and band K of brass or other suitable non-magnetic material carried by said block and forming a separating drum, substantially as described.

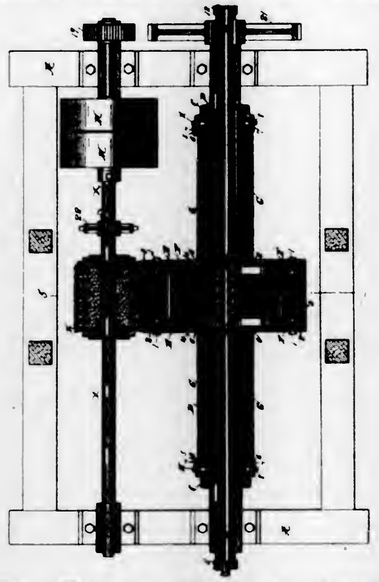


6. The combination with shaft B, of body E and block G of wood or similar non-magnetic material, cylindrical cores F on said body having disks H, separated by block G, and helices L on said cores, rings N on said body to which the terminal wires are connected, and brushes P, substantially as described.

7. The combination with a magnetic separating drum, of a stationary electro magnet forming a magnetic field adjacent to the drum, and a rotating brush drum inclosing said magnet, substantially as described.

8. The combination with a separating drum rotating in a continuous magnetic field, of a brush drum rotating in a non-continuous magnetic field, substantially as described.

528,055. MAGNETIC SEPARATOR. WILLIAM H. WILLIAMS, Newark, N. J. Filed Jan. 29, 1892. Serial No. 419,685. (No model.)



*Claim.*—1. The combination with a hollow perforated magnetic separating drum, of connections for producing an air blast from the interior of said drum outward through the perforated separating wall of the drum, substantially as described.

2. The combination with a hollow magnetic separating drum having an inner covering of wire gauze and an outer perforated metallic plate, of connections for producing an air blast from the interior of said drum outward through the wire gauze and metallic plate, substantially as described.

3. The combination with a hollow perforated magnetic separating drum, of a hollow perforated shaft on which the drum is mounted and with which it rotates, and connections for supplying an air blast to the interior of said drum through said shaft, substantially as described.

4. The combination with two cores and helices arranged end to end with their poles adjacent, of a perforated non magnetic separating drum mounted between said poles, and connections for supplying an air blast to the interior of said drum, substantially as described.

5. The combination with two rotating cores and helices arranged end to end with their poles adjacent, of a perforated non magnetic separating drum carried by and mounted between said cores, and connections for supplying an air blast for the interior of said drum, substantially as described.

6. The combination with hollow perforated shaft B, of cylindrical cores D mounted thereon with a space between the cores and said shaft, coils G on said cores, disks E on the adjacent ends of said cores forming the poles, and a perforated non magnetic separating drum carried by and mounted between said disks, substantially as described.

7. The combination with shaft B, of sleeves C carried by said shaft, cylindrical cores D mounted in said sleeves, coils G on said cores, disks E on the adjacent ends of said cores forming the poles and a non magnetic separating drum carried by and mounted between said disks, substantially as described.

8. The combination with hollow perforated shaft B, of sleeves C carried by said shaft, cylindrical cores D mounted in said sleeves, coils G on said cores, disks E on the adjacent ends of said cores forming the poles, a perforated non-magnetic separating drum carried by and mounted between said disks, and pipe J connecting with said shaft B for supplying an air blast, substantially as described.

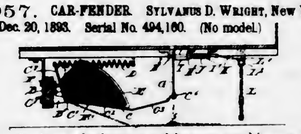
528,056. METHOD OF MAKING JOINTS IN PNEUMATIC TIRES. CHARLES R. W. WOODWARD, Chicopee Falls, Mass., assignor to the Overman Wheel Company, same place, and Hartford, Conn. Filed May 8, 1893. Serial No. 473,338. (No specimens.)



*Claim.*—1. A method of forming joints in hollow articles composed of or containing rubber, consisting in placing a hollow tape core within the joint of the thing being formed, then subjecting the same to internal pressure in a mold, which co-operates with the core to place the material between them under mechanical compression, and then reducing and removing the core by unwinding it, substantially as described.

2. A method of forming joints in pneumatic cycle tires or other hollow articles formed of or containing rubber, consisting in placing a hollow tape core furnished upon its periphery with a transfer strip, within the ends to be joined, which are secured to the said transfer strip, then subjecting the article to internal pressure in a mold which co-operates with the core to place the material between them under mechanical compression, then forming an opening in the tire, and reducing the core by unwinding it and removing it through the said opening, leaving the transfer strip covering the joint within the tire substantially as described.

528,057. CAR-FENDER. SYLVANUS D. WRIGHT, New York, N. Y. Filed Dec. 20, 1893. Serial No. 494,160. (No model.)



*Claim.*—1. A car fender, comprising a movable screen frame, means for lowering the same, and spring-pressed side wings loosely connected with the sides of the said screen frame and adapted to be unlocked on the downward movement of the screen frame, substantially as described.

2. A car fender, comprising a tripping gate hung on the front end of the car, a spring-pressed screen frame normally held in raised position and adapted to be tripped by the said gate, and spring-pressed side wings pivoted on the sides of the said screen frame and adapted to be unlocked on the downward swinging of the screen frame, substantially as shown and described.

3. A car fender, comprising a tripping gate hung on the front end of the car, a spring pressed screen frame normally held in raised position and adapted to be tripped by the said gate, spring-pressed side wings pivoted on the sides of the said screen frame and adapted to be unlocked on the downward swinging of the screen frame, and fixed pins for holding the said side wings normally in a vertical position, substantially as shown and described.

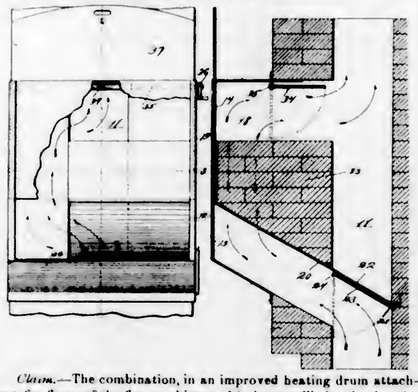
4 A car fender, comprising a pivoted spring-pressed screen frame whose main portion extends forward from its pivot, means secured to the front end of the screen frame for holding the same suspended in a raised position, a sliding bolt adapted to engage and hold the upper end of the said suspending means, and a tripping mechanism having an operative connection with the said bolt to withdraw it from engagement with the said suspending means and thereby release the screen frame, substantially as described.

5. A car fender, comprising a pivoted screen frame having an extension forming a back, a spring held on the car and connected with the said extension, to instantly cause the said screen frame to swing downward when released and to offer resistance to the screen frame when pressed on at the said extension by the object passing onto the screen frame, side wings pivoted on the side bars of the said screen frame, springs pressing on the said wings, and fixed pins for normally holding the said side wings in an uppermost position, substantially as shown and described.

6. A car fender, comprising a pivoted screen frame having an extension forming a back, a spring held on the car and connected with the said extension, to instantly cause the said screen frame to swing downward when released and to offer resistance to the screen frame

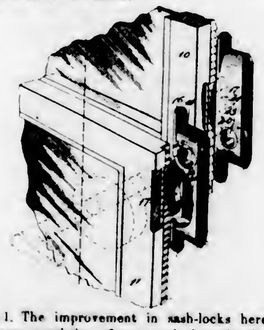
when pressed on at the said extension by the object passing onto the screen frame, a link held on the free end of the said screen frame, a bolt engaging the said link, and a gate hung on the front end of the car and connected with the said bolt, so that on the rearward movement of the gate, the bolt is withdrawn to release the said link and to trip the screen frame, substantially as shown and described.

528,058. **RADIATOR.** Charles Zitko, St. Louis, Mo. Filed Apr. 4, 1894. Serial No. 506,359. (No model.)



*Claim.*—The combination, in an improved heating drum attachment for flues, of the flue or chimney 10, the metallic box having the front plate 12 with openings 13, 14 therein in a vertical plane one below the other, the inclined lower plate 15, the horizontal upper plate 16, suitable side plates, the rear of the said box opening into said flue, the inclined partition 20 extending transversely within said box parallel to the inclined bottom plate 15 thereof and extending across the vertical passage of said flue, and said partition having an opening or port 22 therein in vertical alignment with the vertical passage of the flue, a damper located adjacent said opening or port to direct the products of combustion into said box, a body of brick or non-combustible material 33 mounted upon the inclined partition 20 within said box and projecting a distance inward beyond the walls of said flue and forming the front side thereof, and also forming a lateral vertical passage between itself and one of the side plates of said box, and said vertical passage communicating at its lower end with the space between said inclined partition and said bottom plate 15, a horizontal passage at the upper end of said box communicating with the upper end of said lateral vertical passage and with the interior of said flue at a point above said body of brick, a damper for closing said horizontal passage, and a covering for the openings 13, 14 in said front plate, substantially as herein specified.

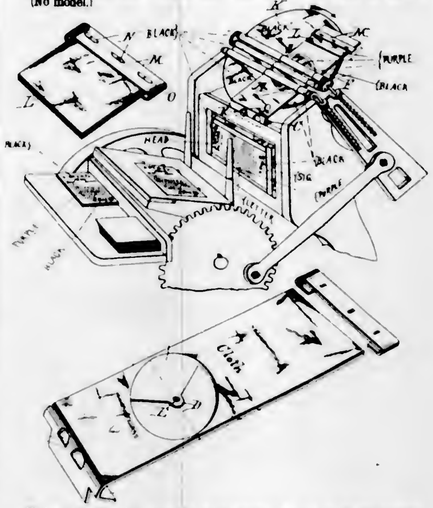
528,059. **SASH-FASTENER.** William R. Abrams, Los Angeles, Cal., assignor to Eliza Alice Abrams, same place. Filed Feb. 15, 1894. Serial No. 500,189. (No model.)



*Claim.*—1. The improvement in sash-locks hereinbefore described, the same consisting of two toothed pawls whose teeth project in opposite directions, and provided with transverse bores arranged in alignment and having internal lugs which are out of alignment, a key adapted to be inserted in said bores and to engage either lug independently of the other as specified, and rack-bars applied to sash and having teeth projecting in opposite directions, as shown and described.

2. The improved double or two-part key for operating sash fasteners, the same being composed of two bars of like angular form, and having divergent cranks on one end, as shown and described.

528,060. **TWO-COLOR ATTACHMENT FOR PRINTING-PRESSES.** Charles E. Adamson, Muncie, Ind. Filed Jan. 8, 1894. Serial No. 496,176. (No model.)



*Claim.*—1. A color printing attachment for job printing presses consisting of a thin plate for covering a part of the ink disk, the said plate carrying an ink pad or fountain and a revolving disk, all combined and operated as and for the purpose set forth.

2. A color plate for job printing presses, consisting of a thin plate made to work between the press disk and the press rollers, the said plate provided with a pivoted disk which is made to revolve by the action of the press disk, all constructed so as to be attached and adjusted to a job printing press, as and for the purpose set forth.

3. An ink distributing plate for covering a portion of the circular ink disk of a job press, consisting of a thin metal plate covered with a thin rubber cloth, the said plate provided with a pivoted circular disk, and an adjustable ink pad or fountain as and for the purpose set forth.

4. In combination with the ink disk of a job printing press, an ink plate for color printing, the said plate having a soft ink surface and a revolving distributing disk pivoted loosely to the said plate and resting on one edge of the surface of the ink disk of the press, whereby the said plate disk is made to revolve, all as and for the purpose set forth.

5. A fountain pad for an ink plate consisting of a soft pad L, having a clamping band M, and fastener for securing the said band and pad together, all in combination with an ink plate, as and for the purpose set forth.

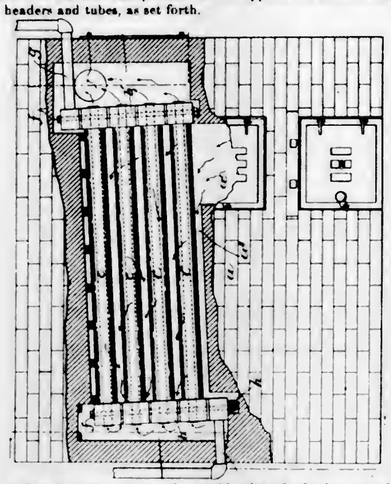
528,061. **HOT-WATER HEATING APPARATUS.** Sven J. Anderson, Everett, Mass., assignor of one-half to Nels M. Anderson, same place. Filed Apr. 2, 1894. Serial No. 506,027. (No model.)

*Claim.*—1. A hot water heater composed of headers formed of sections secured together, tubes connected at their ends with said headers and separated by spaces or passages adapted to receive the products of combustion from a fire-box, and return flues extending through the headers and through the tubes and constituting the inner walls of annular water spaces in said tubes, said passages conducting the products of combustion in one direction along the outer surfaces of the tubes while the return flues conduct said products of combustion back through the headers and tubes to the chimney, one of said headers having a series of openings for the passage of the products of combustion.

2. A hot water heater comprising in its construction two headers formed to constitute the end walls of a chamber over a furnace or fire box, and composed of sections one of said headers having transverse flues connecting said chamber with the space at the outer side of said header, tubes connected with said headers adjacent to said

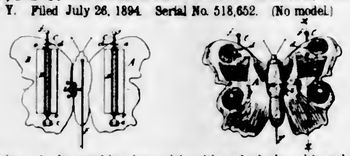


transverse flues and extending through said chamber, and return flues extending through the headers and tubes and constituting the inner walls of annular water spaces, the said chamber and transverse flues conducting the products of combustion in one direction along the outer surfaces of the tubes and through one of the headers while the return flues conduct said products in the opposite direction through the headers and tubes, as set forth.



3. In a hot water heater, the combination of a fire-box, a casing having a chamber communicating with the fire-box, two substantially vertical headers constituting the end walls of said chamber and composed of sections secured together, tubes communicating with said headers and extending through said chamber, one of said headers having each of its sections provided with a recess to form flues or openings connecting the chamber with an end space outside the said header, return flues extending through the headers and tubes and connecting said end space with another end space communicating with the chimney, flow pipes connected with the upper portion of one header, and return pipes connected with the lower portion of the other header, as set forth.

528,062. **VEIL-FASTENER.** Gerda A. Anderson, New York, N. Y. Filed July 26, 1894. Serial No. 518,652. (No model.)



*Claim.*—1. In combination, with a hinged pintle, a hinged plate and a catch for locking the pintle to the hinge-plate, a winder mounted to revolve upon the said pintle, substantially as and for the purposes set forth.

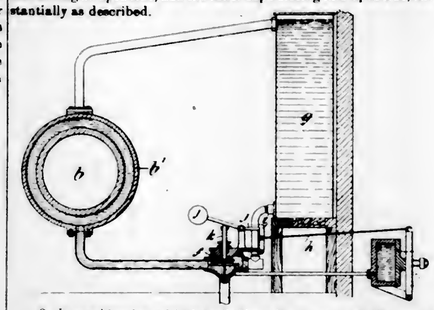
2. In a veil-fastener, the combination of a frame-part having a hinge-lug, c, and a catch, *d*, with a pintle, hinged to the said lug and adapted to engage the said catch and provided, between the said lug and catch, with a flat rectangular portion adapted to wind thereon an end of the veil, for adjusting the latter.

3. The combination of two frame-parts, A and B, adapted to be hooked or clasped together and provided with hinged lock-pintles, C, and winders, D, revolvible upon said pintles, substantially as and for the purposes specified.

4. In a veil fastener, the combination of a frame-part, B, provided with hinged lock-pintle C bearing revoluble winder, D, with a frame-part, A, provided with a sharp-pointed pin, F, for fastening it to a fabric, said frame-parts, A and B, being adapted to be hooked or clasped together, substantially as specified.

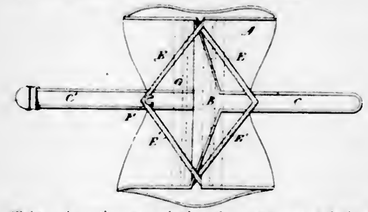
528,063. **GAS, OIL, OR SIMILAR MOTOR ENGINE.** Henry H. Andrew and Alfred R. Bellamy, Reddish, near Stockport, England. Filed Mar. 13, 1894. Serial No. 503,506. (No model.) Patented in England Nov. 17, 1892. No. 20,802.

*Claim.*—1. In combination with a water jacket of a gas engine, the outlet pipe leading therefrom, the box *d* connected with said pipe and having an open side, and the relief cap *e* closing said open side, substantially as described.



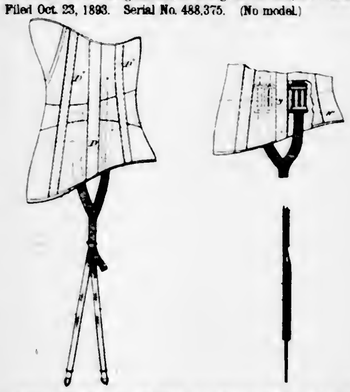
2. In combination with the relief box *d* and cover *e* the levers and rods *h*, *i*, *j*, operating upon the valve spindle and valve *k*; *f*, in such a manner as to shut off communication with the water reservoir and drain the water from the cylinder jacket on the freezing of the contents of the box *d* and consequent movement of the cover *e*, as hereinbefore described and shown.

528,064. **CORSET.** James C. Andrews, New Haven, assignor, by direct and mesne assignments, to George D. Nichols, New Canaan, Conn. Filed Oct. 23, 1893. Serial No. 488,874. (No model.)



*Claim.*—A continuous or single-strip corset, open at the back, and provided at each of its ends with a centrally arranged fastening strap, and with diagonally arranged draw-straps leading from its upper and lower corners to the same, the draw-straps of one end being detachably connected with the fastening strap thereof, and one end of the corset having a vertical opening through which the fastening strap having the detachable draw-straps may pass, substantially as described

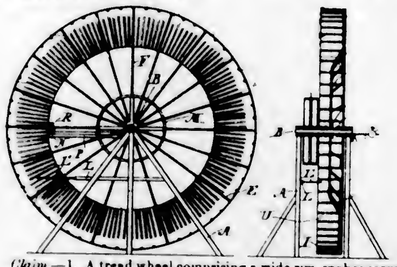
528,065. **CORSET.** James C. Andrews, New Haven, assignor, by direct and mesne assignments, to George D. Nichols, New Canaan, Conn. Filed Oct. 23, 1893. Serial No. 488,875. (No model.)



*Claim.*—A corset having each half-section made with a side bone-strip, a horizontal waist-section, and two pockets located below the said waist-section, one on each side of said bone-strip, and the said pockets being open at their lower ends; and an elastic, duplex garment-supporter connection, the respective members whereof are extended upward into the respective pockets through the open lower ends thereof, and attached at their upper ends to the waist-section

of the corset-section on each side of the said bone strip, substantially as set forth, and whereby the said members are prevented from overlying the bone strip and increasing the thickness of the corset, and whereby also the bone-strip may be carried to the lower edge of the corset without interference with the said members.

528,066. TREAD-WHEEL. HENRY ARIENS, Brillion, Wis., assignor of one-half to Robert Wittke, same place. Filed June 28, 1894. Serial No. 515,939. (No model.)



*Claim.*—1. A tread wheel comprising a wide rim, spokes secured to the inner surface transversely thereof, said spokes all turning inwardly toward the axis of the wheel at the same edge of the rim and extending inwardly toward the axis for a considerable distance in a radial plane substantially that of the said edge of the rim of the wheel, thence turning laterally to a radial plane cutting the rim of the wheel midway between its edges, and thence inwardly to the hub in said last named plane, and the hub to which the spokes are fixed, substantially as described.

2. In a tread wheel, a shaft, a hub provided with an annular flange, spokes secured to the annular flange and radiating therefrom, which spokes project radially a distance therefrom in a plane at a right angle to the shaft, that thence bend laterally to a plane parallel with and at a distance from the former plane, thence extending radially in the latter plane a distance and thence turning laterally substantially parallel with the shaft and intersecting the first mentioned plane, substantially as described.

3. The combination with a tread wheel having spokes and revolving in a vertical plane, of a governor consisting of a lever pivoted medially in a head swiveled on a fixed support, a weight on the outer arm of the lever, the lever being so disposed that when in action its unweighted arm is successively engaged and released by the spokes of the revolving wheel, and a stop adapted to prevent the weighted arm from falling below a horizontal position, substantially as described.

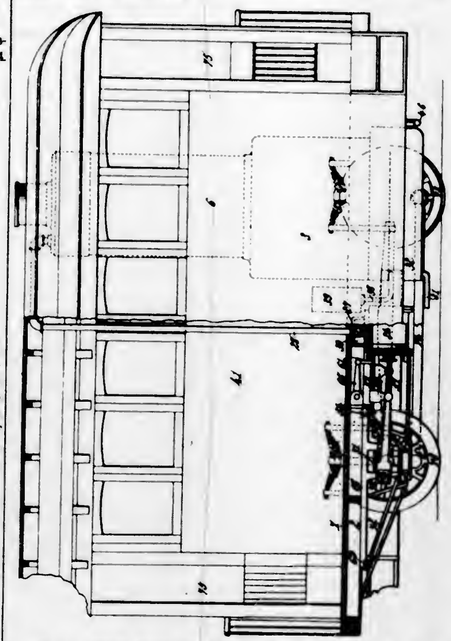
4. In a tread wheel, the combination with the shaft and spokes having their outer portions in a radial plane at a distance from the plane of the attachment of the spokes to the hub, and a rim secured to the spokes intersecting the plane of their attachment to the hub, of transverse ribs on the inner surface of the rim, and a side wall secured to the spokes adjacent to and extending inwardly a distance from the rim, substantially as described.

528,067. STEAM-MOTOR FOR CARS. JAMES A. BARHYDT, Lima, Ohio, assignor to George W. Diaman, same place. Filed July 10, 1894. Serial No. 517,147. (No model.)

*Claim*—1. In a steam motor, the combination with the engine and boiler, of a condensing apparatus located beneath the fire box of the boiler and comprising a casing having one end open to the atmosphere and its other end communicating with the fire box, and an inclosed body of pipes and headers for conducting exhaust steam alternately in opposite directions and around which the air in said casing circulates and passes to the fire box to supply a superheated natural draft and assist in the condensation of the exhaust steam, substantially as described.

2. In a steam motor, the combination with the engine and a vertical boiler having an enlarged square fire box extended below the car floor, of a condensing apparatus arranged beneath the fire box of the boiler and comprising a body of exhaust steam pipes and headers and an inclosing case open at one end to the atmosphere and communicating with the fire box to permit the passage of air around the condensing passages and supply a superheated natural draft, substantially as described

3. In a steam motor, the combination of the compound engine comprising the two double acting high pressure cylinders and the double acting low pressure cylinder, the bracket 21 supporting said cylinders and provided with the passage 27 for conducting live steam to the high pressure cylinders and the receiver or passage 30 for conducting exhaust steam from the high pressure cylinders to the low pressure cylinder, the vertical boiler having a superheating steam dome connected with the steam passage 27, and a condenser communicating with the exhaust pipe 31 of the low pressure cylinder, substantially as described.



4. In a steam motor, the combination of the boiler, the compound engine comprising two high pressure cylinders and the low pressure cylinder, the manifold or air surface condenser communicating with the exhaust pipe of the low pressure cylinder and having exhaust pipes leading from the low pressure cylinder to a main condenser, two water tanks having a connecting pipe, a main condenser connected with the manifold or air surface condenser and with one of the water tanks, a circulating pump intermediate the main condenser and the other tank and communicating therewith, and an air pump intermediate the main condenser and hot well, substantially as described.

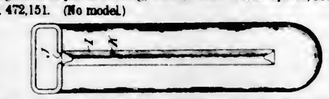
5. In a steam motor, the combination with a low pressure cylinder and two high pressure cylinders, of a manifold or air surface condenser communicating with the exhaust pipe of the low pressure cylinder, a main condenser communicating with the air surface condenser and having separate passages for water and exhaust steam, two oppositely arranged water tanks having a connecting pipe, one of said tanks being in direct communication with the main condenser, a circulating pump connected with and operated from one of the high pressure cylinders, said circulating pump being connected with the other tank and with the main condenser, and an air pump intermediate the main condenser and hot well and connected with and operated from the other high pressure cylinder, substantially as described.

6. In a steam motor, the combination of the vertical boiler having its fire box extended below the car floor, the superheating steam dome at the top of the boiler and surrounding the boiler stack, the two high pressure cylinders and the low pressure cylinder, the steam bracket supporting said cylinders and provided with the steam ways 27 and 30, the pipe connecting the steam dome with the live steam passage 27 in said bracket, a duplex condenser comprising a main condenser having passages for water and exhaust steam and an air surface condenser having passages for air and exhaust steam, whereby the air is superheated and supplied to the boiler fire box, water tanks, a circulating pump intermediate one of said tanks and the main condenser, and an air pump intermediate the other tank and the main condenser, substantially as described.

7. In a steam motor, the combination of the triple cranked shaft or axle, the compound engine supported horizontally below the car floor and comprising the two double acting high pressure cylinders and the double acting low pressure cylinder, a car frame comprising a steam bracket supporting the engine cylinders and provided with steam passages, parallel guides for the slide block cross heads of the cylinder pistons and connecting rods, and the link motion valve gear and reversing mechanism, substantially as described.



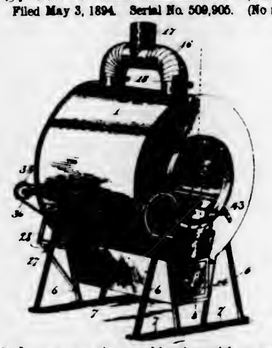
528,068. SPECTACLE-CASE. GORDON W. BEGOLE, Stony Creek, assignor to Elijah A. Darling, Willis, Mich. Filed Apr. 28, 1893. Serial No. 472,151. (No model.)



*Claim.*—1. A case for spectacles consisting of a flat non yielding integral block, having a cut out flat chamber in its center, open at one end and closed at the opposite end, a relatively narrow groove in one of its sides, of a length less than the length of the chamber, and a narrow closing strip for the groove formed separate from the block, secured to the case, substantially as described.

2. As a new article of manufacture, a spectacle case formed of a single piece of wood having a chamber and a longitudinal groove therein, and a closing strip for the groove secured to the case and formed with a flat under and arched upper face, substantially as described.

528,069. ROTARY OVEN. CHARLES J. BLOOM, Burlington Junction, Mo. Filed May 3, 1894. Serial No. 509,906. (No model.)



*Claim.*—1. In an oven the combination with a casing having front and rear bearing openings, smoke-pipes and draft openings, of an inner cylinder having a shaft extending through the rear opening, and at its front end an opening having a flange extending through the front opening of the casing, a cover for the flanged opening, bake-pan supports arranged in the inner cylinder, and means for giving motion to the shaft of said cylinder, substantially as specified.

2. In an oven the combination with an external casing, a combustion-chamber communicating therewith, and a smoke-pipe, of an inner cylinder arranged for rotation in the casing and provided with an axial opening for giving access thereto, rods arranged parallel to the axis of and within the inner cylinder around said opening and bake-pans loosely suspended on the rods, and means for rotating said inner cylinder, substantially as specified.

3. In an oven the combination with an external casing having a smoke-pipe, and a combustion-chamber communicating with the cylinder of an inner cylinder journaled for rotation in the casing and having an axial opening, means for giving motion to the cylinder and around the opening, rods arranged annularly within the cylinder and bake-pans having opposite end hooks for loosely and removably engaging the rods, substantially as specified.

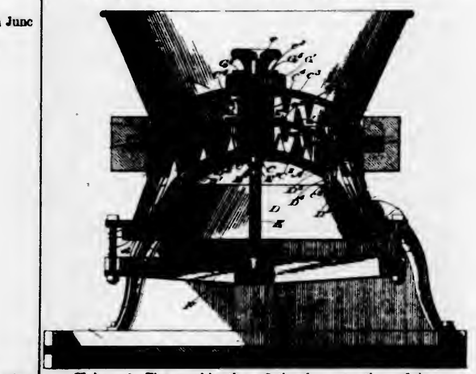
4. In an oven the combination with the outer casing having front and rear openings and a smoke-pipe, of an internal cylinder arranged in the casing and having a rear shaft extending through the rear opening of the casing and a front opening having a flange extending through the opening in the casing, a cap or cover arranged upon the flange in a removable manner and having a vent, a series of rods arranged within the cylinder around the opening, a series of bake-pans having hooks at their ends loosely suspended from the rods, and means for giving motion to the inner cylinder, substantially as specified.

5. In an oven the combination with an outer cylindrical casing having a rear bearing opening and a front opening, the U-shaped pipe having dampers at its ends and the common discharge at its center, of the inner cylinder 19 having the flanged opening 21 and the removable cover, the shaft 20 extending from the inner cylinder through the rear opening of the casing, means for rotating the shaft, a curved bracket 42 and rollers 43 for supporting the flange of the inner cylinder, substantially as specified.

6. In an oven the combination with the outer casing having the supports 6, the depending fire-box between the supports and the discharge-pipes 16 and 17 having dampers 18, of the cylinder 19 having the suspension rods 22, the loose pans 23, the shaft 20, the flanged opening 21, the cover 25 and the vent 26, the sprocket-wheel 33 on the shaft 20, the counter-shaft 37, means for operating the same, the gear 38 on the counter shaft, and means for communicating motion from the sprocket-wheel 38 to the sprocket-wheel 33, substantially as specified.

7. In an oven the combination with the outer casing having front and rear bearings, the horizontal frame 27 having braces 28, the standard 29 arising therefrom having bearings 30 and 31, the brackets 36, the counter-shaft 37, means for rotating the same, the sprocket 38, the short shaft 32, the sprocket wheels 34 and 35 arranged thereon, the chain 40 connecting the sprockets 38 and 35, of the cylinder 19 arranged for rotation in the casing and having the front flanged opening 21 provided with the cover 25, and the rear shaft 20 arranged in the bearing 30 of the standard, the sprocket-wheel 33 and the sprocket-chain 41 connecting the wheel 33 with the sprocket wheel 34, substantially as specified.

528,070. FEED-MILL. NELSON P. BOWSHER, South Bend, Ind. Filed Mar. 5, 1894. Serial No. 502,415. (No model.)



*Claim.*—1. The combination of the dome portion of the cone, having a series of key slots around its periphery each consisting of an open vertical portion $c$ and horizontal portion $c'$, with the grinding portion of the cone having a series of lugs $D^4$ corresponding to and adapted to engage the part $c'$ of said key slots, and the keys $c^2$ for closing said slots and preventing withdrawal of the lugs therefrom, substantially as and for the purpose described.

2. In a grinding mill the combination of a grinding shell, and a grinding cone; with a shaft extending axially through said cone, and having a screw threaded portion engaging therewith, said shaft being rotatable independently of the cone, whereby the latter may be raised or lowered, by the screw thread when the shaft is turned, substantially as and for the purpose specified.

3. The combination of the shell, a grinding cone, a shaft supporting said cone extending axially therethrough and having a screw-threaded engagement therewith, said shaft being rotatable with, and also independently of, the cone so as to raise or lower the latter by the threaded connection therewith, substantially as specified.

4. The combination of the casing, the grinding shell, and the grinding cone, with the shaft extending axially through said cone, having a screw threaded engagement therewith, and supporting it; means for rotating said cone and shaft, and means for rotating said shaft independently of the cone, substantially as described.

5. The combination of the casing, and a grinding shell fitted therein and secured thereto, the parts being constructed to form chambers between their opposed faces, open at top for the admission of packing; and a packing of suitable material in said chambers, substantially as set forth.

6. The combination of the casing, with a grinding shell fitted therein faceted on its outer face to form a polygonal series of chambers between it and the casing which chambers are adapted to be filled with packing, whereby the shell is rigidly kept in place within the casing and reinforced, substantially as specified.

7. In a grinding mill, the combination of the shell having a flange on its lower edge toothed or serrated on its under surface; with the cone also having a flange on its lower edge serrated on its upper surface; one of said flanges having a continuous bearing surface on its serrated face exterior to the serrations and the other lugs on its ser-

rated face exterior to its serrations, to prevent actual contact of the serrated portions of the flanges, substantially as described.

8. In a grinding mill the combination of the shell having a serrated flange on its lower edge and a smooth bearing surface exterior to the serrations and flush with the lower edges of the serrations; with a grinding cone having a serrated flange on its lower edge and a series of contact lugs exterior to the serrations adapted to engage the bearing surface on the upper flange to prevent engagement of the serrated portions of the flanges, substantially as described

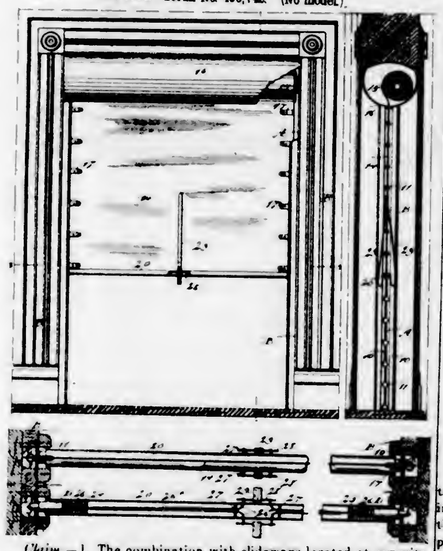
9. The combination of the casing, having a top ring, a shell secured in said casing, a cone centered in said shell, having a stem extending through said ring, and a wheel yoke mounted on the casing having a hub engaging said stem above the top-ring, said shell and cone having opposed parallel flanges on their lower edges; and a shaft carrying said cone having an adjustable screw threaded engagement therewith, substantially as set forth.

10. The combination of the casing, the grinding shell the cone centered therein, composed of upper and lower separable portions, the lower suspended on the upper portion, and a shaft carrying said cone, having a screw-threaded engagement therewith, for adjusting the latter; a wheel yoke mounted on the casing and engaging the stem of the cone, and means for rotating said carrying shaft independently of the cone, substantially as and for the purpose set forth.

11. The combination of the casing having a top ring, a shell secured in said casing, a cone centered in said shell formed of an upper dome portion supported on a vertical shaft, and a lower grinding portion suspended on the upper portion, said cone and shell having opposed parallel flanges on their lower edges, the vertical shaft supporting the cone having a screw threaded engagement with the cone for the purpose of adjusting it, means for rotating said shaft independently of the cone, and the wheel yoke mounted on the casing, and connections between said yoke and cone, all constructed and arranged to operate substantially as and for the purpose set forth.

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528,071. **CURTAIN.** ALBERT M. BRAINSHAW, Escanaba, Mich. Filed Jan. 13, 1894. Serial No. 496,742. (No model.)



*Claim.*—1. The combination with slideways located at opposite sides of the opening to be closed, said slideways being provided with apertures at intervals therein and a guide slot extending longitudinally through the apertures, of a curtain secured to a roller and provided with guides attached to the side edges thereof and projecting into the slideways, and a slat bar located at the lower end of the curtain and provided with spring controlled latches adapted to enter the apertures in the slideways, substantially as shown and described.

2. The combination, with a door-way or similar opening, of slideways constructed in sections, the lower section of each slide-way being secured to one of the jambs, the upper section of each slide-way being pivotally connected with the jamb, a housing carried by the upper portion of the upper slide-ways, a spring roller located within said housing, a curtain attached to the roller, passed downward through the housing and provided with a slat bar containing spring controlled bolts adapted to enter the slide-ways, a device for simultaneously operating the bolts in the slat bar of the curtain, and means, substantially as shown and described, for maintaining the upper slide-way sections in an inclined position, substantially as shown and described.

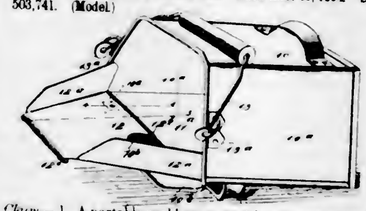
3. The combination, with chambers located at opposite sides of the opening to be closed, slide-ways located in front of the chambers, said slide-ways being provided with apertures at intervals therein, and a guide slot extending longitudinally through the apertures, and a roller mounted at the top of said opening, of a curtain secured to the roller, having its side edges extending through the guide slots in the slide-ways into the chambers at the rear of the slide ways, guides having circular heads secured to the sides of the curtain, the circular heads of said guides being located in the said chambers and provided with shanks which are attached to the curtain, a slat bar located at the lower end of the curtain, and provided with spring-controlled latches adapted to enter the apertures in the slide-ways, and means, substantially as shown and described, for manipulating said latches, as and for the purpose set forth

4. The combination, with chambers located at opposite sides of the opening to be closed, slide-ways located in front of the chambers, said slide-ways being provided with apertures at intervals therein, and a guide slot extending longitudinally through the apertures and a roller mounted at the top of the said openings, of a curtain secured to the roller, and having its side edges extending through the guide slots in the slide-ways into the chambers at the rear of the slide-ways, guides having circular heads, secured to the sides of the curtain, the circular heads of said guides being located in the said chambers and provided with shanks which are attached to the curtain, and a slat bar located at the lower end of the curtain, provided with spring-controlled latches adapted to enter the apertures in the slide-ways, the latches being located one at each end of the bar, draw cords or wires being carried through the central portion of the bar, and then carried one cord or latch of each pair out through opposite sides of the bar, and a connecting plate uniting the projecting ends of each set of cords or wires, whereby upon drawing outward upon either of the plates both latches will be drawn within the slat bar, substantially as shown and described.

5. The combination, with longitudinally slotted slideways adapted to be secured to the sides of an opening to be closed, and a roller mounted at the top of the said opening, of a curtain secured to the roller and having its side edges extending into the slideways, guides having circular heads and parallel shanks and secured to the curtain a short distance from its edges by passing them through apertures in the curtain, so that one shank and a portion of the head of each guide will lie on opposite sides of the curtain, and a bar secured to the lower end of the curtain, the said bar having its ends shaped to fit upon the slideways, substantially as shown and described.

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528,072. **PORTABLE COAL-BOX.** THOMAS BURKHOFER and ERNEST H. WEISS, Terre Haute, Ind. Filed Mar. 15, 1894. Serial No. 503,741. (Model.)



*Claim.*—1. A portable coal box, comprising a rectangular receptacle open at one end, a hinged cover adapted for extension as a scooping or discharge chute, and that when projected nearly aligns with the flat front wall of the box a transverse bail handle on the upper part of the box, and a looped handle at the front end of the box near its base, substantially as described.

2. In a portable coal box, the combination with a four-sided box open at its top, a guard piece projected above the box at one side, a bail handle, and a looped tilting handle, of a hinged cover which by extension becomes a chute, and a foot piece across the box near the guard piece, substantially as described.

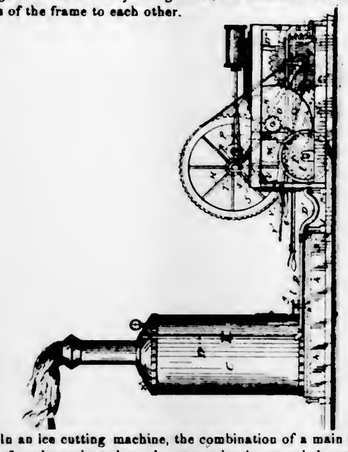
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528,073. **ICE-CUTTING MACHINE.** WILLIAM BUTTS, New York, N. Y., assignor to Charles Mulford, same place. Filed Jan. 12, 1894. Serial No. 496,646. (No model.)

*Claim.*—1. An ice cutting machine the frame of which is longitudinally extensible to increase the bearing surface upon the ice.

2. An ice cutting machine having cutting and propelling devices, and having its main frame in sections adapted to telescope and to be extended whereby the weight of the machine is distributed over a larger area of ice surface.

3. An ice cutting machine consisting of a sectional frame one section of which supports a boiler while the other section supports the traction devices and saw cutting mechanism, one of said frames having an extension adapted to enter guides in the other frame whereby the length of the frame may be regulated, and means for securing the sections of the frame to each other.



4. In an ice cutting machine, the combination of a main frame formed of sections adapted to telescope and to be extended, each section of said frame having longitudinal runners, and transverse runners on said sections and normally supported out of contact with the surface of the ice, and adapted to be moved into contact with said surface to raise the machine bodily and permit its lateral transportation.

5. In an ice cutting machine, the frame thereof, said frame being longitudinally extensible and provided with longitudinal runners, cutting and propelling devices for the machine, and transverse runners upon the forward and rear portions of each section of the extensible main frame adapted to be adjusted in pairs in vertical planes to elevate the machine bodily and permit its lateral transportation.

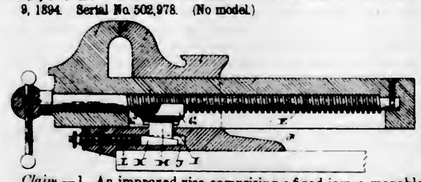
6. An ice cutting machine comprising a frame formed of sections adapted to telescope, and each section being provided with fixed longitudinal runners and vertically movable transverse runners, means for forcing the transverse runners from their normal position above the surface of the ice into contact with said surface and raising the machine bodily whereby the transverse runners support the elevated machine during its lateral transportation, and cutting and propelling devices.

7. In an ice cutting machine, a frame formed of sections and longitudinally extensible, fixed longitudinal runners and vertical movable transverse runners on each section of said frame, and means for adjusting the transverse runners comprising levers connecting the said runners in pairs, connections from the short arms of the levers to the runners, and a screw connecting the free ends of the long arms of the levers, and cutting and propelling mechanisms.

8. In an ice cutting machine, the frame for the traction devices having longitudinal and transverse runners, in combination with a lever 16 fulcrumed near one end to the frame and having its short arm connected with one of the transverse runners while its opposite end or long arm extends inwardly, and a lever 17 pivoted at one end to the lever 16 between its opposite ends, and fulcrumed near its outer end to said frame with its short arms connected with the opposite transverse runner, whereby said runners are adjusted vertically, substantially as herein described.

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528,074. **VISE.** JOHN L. CARPENTER, Auburn, N. Y. Filed Mar. 9, 1894. Serial No. 502,978. (No model.)



*Claim.*—1. An improved vise comprising a fixed jaw, a movable jaw, a screw for adjusting the latter, a nut which the screw engages, a wedge beneath the nut for holding it in said engagement, and a spring for holding the wedge normally in said position, substantially as shown and described.

2. An improved vise comprising a fixed jaw, a movable jaw, a screw for adjusting the latter, a nut which the screw engages, a device for holding the nut in said engagement, a stem extending outward from said device and provided with a pivoted break between its ends for the purpose stated, and a spring coiled about the stem, substantially as shown and described.

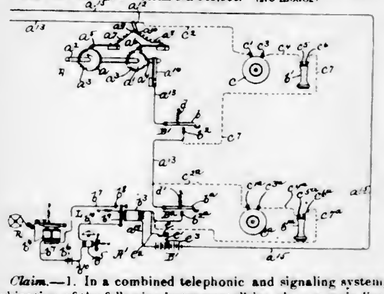
3. An improved vise comprising a fixed jaw, a movable jaw, a screw for adjusting the latter, a nut which the screw engages, a wedge for holding the nut in said engagement, a stem projecting from the wedge, a spring coiled about the stem for the purpose stated, and a means for holding the wedge withdrawn, as described.

4. In an improved vise, a base constructed with recesses I, and J, stop J', a fixed jaw, a movable jaw, a screw for adjusting the latter, a nut which the screw engages, a wedge for holding the nut in said engagement, a stem projecting from the wedge, a spring coiled about the stem which engages the wedge at one end and the stop J' at its opposite end, and a means for holding the stem and wedge withdrawn, substantially as shown and described.

5. In an improved vise, a base constructed with recesses I, and J, a fixed jaw, a movable jaw, a screw for adjusting the latter, a nut for engaging the screw, a wedge for holding the nut in said engagement, a stem extending from said wedge which is screw threaded at its onter end, a nut adjustable thereon for the purpose stated, and a spring encircling the stem for holding the wedge normally beneath the nut, substantially as shown and described.

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528,075. **COMBINED TELEPHONIC AND SIGNALING SYSTEM.** HENRY A. CHASE, Boston, Mass., assignor to Albert Watts, same place. Filed June 25, 1894. Serial No. 515,588. (No model.)



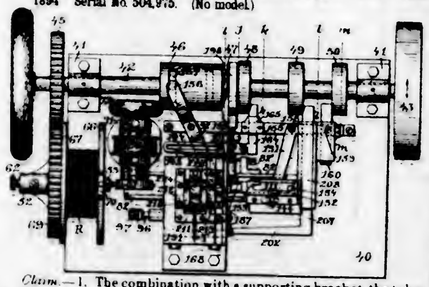
*Claim.*—1. In a combined telephonic and signaling system, the combination of the following instrumentalities, viz:—a main line circuit provided with a source of electric supply, a signal transmitting apparatus, and with a signal receiving apparatus included in the main line, a normally closed circuit controller included in the main line at the signal transmitting apparatus a shunt circuit around the said controller, a second normally closed circuit controller in the main line at the signal receiving apparatus, a shunt circuit around the second circuit controller, a telephonic apparatus comprising a transmitter and a receiver in circuit with each other and included in the shunt circuit at the transmitting station under control of the circuit controller at the transmitting station, and both transmitter and receiver being supplied with current from the main line source of supply, a second telephonic apparatus in the shunt circuit at the receiving station under control of the circuit controller at the receiving station, for the purpose specified.

2. In a combined telephonic and signaling system, the combination of the following instrumentalities, viz:—a main line circuit provided with a source of electric supply, a signal transmitting apparatus, and with a signal receiving apparatus included in the main line, a normally closed circuit controller included in the main line at the signal transmitting apparatus, a shunt circuit around the said controller, a second normally closed circuit controller in the main line at the signal receiving apparatus, a shunt circuit around the second circuit controller, a telephonic apparatus comprising a transmitter and a receiver in circuit with each other and included in the shunt circuit at the transmitting station under control of the circuit controller at the transmitting station, and both transmitter and receiver being supplied with current from the main line source of supply, and a second telephonic apparatus at the receiving station comprising a transmitter and a receiver in circuit with each other and included in the shunt around the circuit controller at the receiving station, for the purpose specified.

3. In a combined telephonic and signaling system, the combination of the following instrumentalities, viz:—a main line circuit provided with a source of electric supply, a signal transmitting appa-

ratus included in the said circuit and comprising a break wheel and a co-operating pen, and a relay at the receiving station, a normally closed circuit controller included in the main line at the signal transmitting apparatus, a shunt circuit around said controller, and a second normally closed circuit controller in the main line at the signal receiving apparatus, a shunt circuit around the second controller, a telephonic transmitter and receiver in circuit with each other and included in the shunt circuit at the transmitting apparatus, and both transmitter and receiver being supplied with current from the main line source of supply, and a telephonic transmitter and receiver at the receiving station in circuit with each other and included in the shunt circuit at the said receiving station, and both being supplied with current from the main line source of supply, substantially as described.

## 528,076. CHAIN-MACHINE. BYRON L. COLVIN, North Attleborough, Mass., assignor to James G. Cheever, same place. Filed Mar. 24, 1894. Serial No. 504,975. (No model.)



*Claim.*—1. The combination with a supporting bracket, the tubular shaft 53 secured at one end therein, the mandrel 59 having a base furnished with a threaded socket movable in the bore of the shaft, an adjusting device having a screw for engaging the threaded socket of the mandrel base, and a feed-drum rotatably mounted on the shaft, of a base secured at one side of the mandrel, a post 72 adjustable vertically in said base and having bearings at its upper end, the shaft 77 journaled in said bearings, a drive-pulley on said shaft, the cutter 78 secured on the end of the shaft and supported above the mandrel, and the dust-shield 81 supported on rods extending from one of the shaft bearings, as described.

2. In a chain machine, the combination with a link-carriage furnished with bearing sleeves at opposite sides thereof, sleeves rotatable in said bearings, spindles reciprocal in said sleeves, but held from independent rotation, and jaws for grasping a link mounted on the inner ends of the spindles, of means for rotating the sleeves in opposite directions, devices for moving the spindles inward, and springs for separating the same when released.

3. In a chain machine, the combination with a traversable base, a pin extending from the lower portion of the base, a pivoted lever having at its forward end a slot in which said pin enters and provided at its rear end with a bearing-pin, and a rotatable cam having a cam-groove in which the bearing-pin of the lever engages, said cam-groove being shaped so that the following of the bearing-pin will vibrate the lever horizontally, of a carriage rotatably mounted on said base, and mechanism secured to said carriage for grasping a link.

4. In a chain machine, the combination with a traversable base, a shaft vertically mounted therein, a gear journaled on the shaft, a guide on the upper surface of the base, a toothed rack movable in said guide and engaging the gear, and means for reciprocating the rack, of a link-carriage secured to said gear, and mechanism carried thereby for grasping a link.

5. In a chain-machine, the combination with a traversable base, and stops carried by the base, of a carriage rotatably mounted on the base, parallel shafts journaled in the carriage and furnished with intermeshing gears, a depending arm secured to the outer end of one shaft and adapted to strike the stops carried by the base when the carriage is rotated, jaws mounted on rotatable spindles at the upper portion of the carriage, and means for conveying the rotation of the shaft to the spindles.

6. In a chain-machine, the combination with a traversable base, a stop mounted thereon, and a slide movable in a guide slot in the rear portion of the base and having an upward extension, of a carriage rotatably mounted on the base, parallel shafts journaled in the carriage and furnished with intermeshing gears, an arm, secured to the rear end of one shaft, having a gear at its upper portion and adapted to be intercepted alternately by the stop and the upward extension of the slide on the base as the carriage is rotated back and forth, sleeves journaled in a line on said carriage, a gear on one of said sleeves for engaging the gear on the arm, spindles mounted in said sleeves keyed against independent rotation, and jaws secured to the inner ends of the spindles, as described.

7. In a chain-machine, the combination with a track, an adjustable stop secured thereto, a base traversable on the track, means for traversing the base, a slide, movable in a slot in the rear face of the base, having an upward extension and adapted to be intercepted by the stop on the track, a guide secured to the front face of the base, a slide movable therein, an adjustable stop secured thereto, and a roller-bearing journaled in the end thereof, of a carriage rotatably mounted on the base, rotatable mechanism carried thereby for opening the link, and pivoted arms adapted to operate said mechanism and to be operated by the sliding stops of the base.

8. In a chain-machine, the combination with a carriage, bearings mounted thereon in line, sleeves journaled in these bearings and held against reciprocation, spindles reciprocally mounted in the sleeves and keyed against independent rotation, jaws secured to the inner ends of the spindles, and spring-actuated devices for exerting an outward pressure on the spindles, of a guide on the upper surface of the carriage parallel with the spindles, arms movable in the guide and having bent ends extending over the outer ends of the spindles, bearing-pins mounted in the ends of the arms and bearing on the spindles, and mechanism for drawing these arms together.

9. In a chain-machine, the combination with a carriage, spindles carrying jaws reciprocally mounted thereon, arms movable in guides having downwardly-extending inner ends and bent outer ends which extend over the outer ends of the spindles, and bearing-pins mounted in these ends and bearing against the spindles, of a lever movable in a guide-slot having at one end a cam opening adapted to engage the downwardly-extending ends of the arms, a pin on the outer end of this lever, a sliding plate movable in a guide at a distance from the carriage having a hook-shaped end and a bearing end.

10. In a chain-machine, the combination with a traversable base, of a carriage rotatably mounted thereon, oppositely rotatable jaws reciprocally mounted on the carriage, and means for rotating and reciprocating the same.

11. In a chain-machine, the combination with a base traversably mounted, a pivoted lever for traversing the same, a drive shaft, and a cam for operating the lever, of a carriage rotatably mounted on the base, a gear secured to the carriage, a rack for engaging this gear having a pin at its outer end, a lever having a slot longer than the traverse of the base in which the pin on the rack engages, and a cam mounted on the drive shaft for reciprocating this lever.

12. In a chain-machine, the combination with a carriage, the shafts 113 and 114 journaled therein and having intermeshing gears, gears secured to the ends of the shafts, an arm secured to one of the shafts, and means for operating the arm, of the sleeves 119 and 120 journaled in horizontal bearings on said carriage, gears on these sleeves which intermesh with the gears on the ends of the shafts, the spindles 123 and 124 reciprocal in the sleeves and held from independent rotation, jaws on the inner ends of the spindles, and means for reciprocating the spindles.

13. In a chain-machine, the combination with a link frame, a carriage for conveying the links to points of attachment to the chain, and means for closing the link, of a chain-guide having pendent fingers for preventing the swaying of the lower end of the chain, and separable jaws adapted to prevent the undue upward movement of the chain.

14. In a chain-machine, the combination with a carriage provided with means for closing a link, of a plate extending above said carriage and having a transverse groove in its lower surface, a vertical rotatable chain-guide extending through a perforation in said plate, slides movable in the groove and furnished with pendent jaws between which portions of the chain-guide extend.

15. In a chain-machine, the combination with a horizontal plate having a central vertical perforation, a transverse guide-slot, and lateral openings extending between the groove and the upper surface of the plate, of a chain-guide having a suitable bore, a conical end and depending fingers rotatable in the central perforations, slides movable in the guide-slot having depending jaws and concavities into which the conical end of the chain-guide fits, pins secured to such slides and extending through the lateral openings, a cam plate supported on the upper surface of the horizontal plate having cam slots in which the ends of said pins extend and a central perforation for the chain-guide, and means for partially rotating the cam.

16. In a chain-machine, the combination with a link-forming device, and a link-attaching device, of a chain-guide 171 journaled in a vertical bearing and having pendent fingers 192, and means for preventing the undue upward movement of the finished chain.

17. In a chain-machine, the combination with the chain-guide vertically journaled in a bearing and having a gear at its upper portion, separable jaws inclosing the lower end of the chain-guide, and means for operating the jaws, of a rack reciprocal in a guide and engaging the gear of the chain-guide, and means for reciprocating the rack.



18. In a chain-machine, the combination with a rotatable chain-guide, separable jaws partially inclosing the lower end thereof for preventing the undue movement of the chain, and means for operating the jaws, of a take-up mechanism supported above the chain-guide, and means for operating the same in unison with the separation of the jaws.

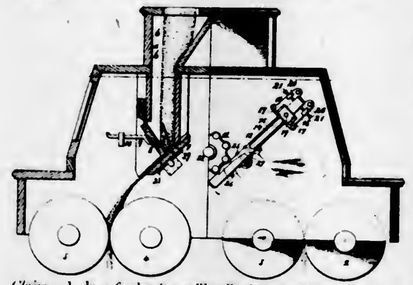
19. In a chain-machine, the combination with a horizontal plate supported on a bracket, a slide reciprocally mounted thereon, stops secured to the slide, and means for reciprocating the slide, of a take-up device journaled in bearings and having a ratchet, a plate reciprocally mounted and having an extension adapted to be operated by the stops on the slide, and oppositely operating pawls carried by the plate and adapted to alternately engage the ratchet.

20. In a chain-machine, the combination with the plate 191, the slide 195 reciprocally mounted thereon, the adjustable stops 197 and 198 secured to the slide, a take-up device actuated by said stops, a pin extending from the slide, and the bent lever 201 having a slot at its upper end with which the pin engages, of the lever 207 reciprocally mounted having at its rear end the bearing 209 and pivotally connected at its forward end with the lever 201, the drive-shaft 42 journaled in bearings, and the cam 49 having the cam-groove 210 with which the shoe 209 is engaged.

21. In a chain-machine, the combination with side plates one of said plates being furnished with a horizontal guide-slot, a shaft journaled in said side plates, a take up roll mounted on the shaft between the side plates, and a ratchet secured to the outer end of the shaft, of a plate having a slide movable in said guide slot and provided with two oppositely acting pawls for actuating the ratchet, and means for reciprocating this plate, as described.

22. In a chain-machine, the combination with the side-plates 212 and 213, the shaft 214 journaled therein, and the take-up roll 215 having the chain-groove 223 mounted on the shaft, of the presser 225 pivoted between the side plates and bearing on the take-up roll, and means for adjusting the same, as described.

## 528,077. FEEDER FOR MILL-ROLLS. GEORGE W. COMBS, Leavenworth, Kans. Filed June 11, 1894. Serial No. 514,244. (No model.)



*Claim.*—1. In a feeder for mill rolls the combination of an octagonal cam, a spring adjustably pivoted at one end and adapted to contact at its free end with the cam, and a feed board carried on the free end of the spring, substantially as shown and described.

2. In a feeder for mill rolls, a spring pivoted at one end to a bracket adjustably secured to the housing said spring being adjustable in its bracket by set screws, an inclined feed-board carried on the free end of the spring and a cam operating upon the free end of the spring.

3. In a feeder for mill rolls, a spring for vibrating the feed-board, consisting of a slotted arm pivoted to a bracket adapted to be secured to the housing and adjustable thereon by set screws and adapted to contact with a cam for vibrating the same.

4. In a feeder for mill rolls, a spring having a slotted central portion pivotally attached to the housing, a cam carried on a shaft journaled in the housing and means for adjusting the contact of the spring with the cam.

5. In a feeder for mill rolls, an adjustable spring suitably attached to the housing, a pivoted arm secured to the spring, an inclined feed-board connected with the arm and a cam in contact with the spring.

6. In a feeder for mill rolls a spring adjustably pivoted at one end to the housing set screws to adjust the spring, and a cam operating upon the free end of the spring.

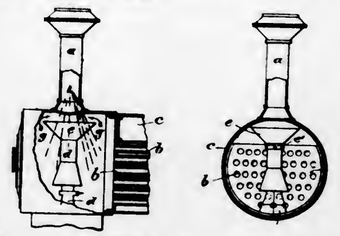
7. In a feeder for mill rolls a spring for vibrating the feed-board, consisting of a pivoted slotted arm and set screws to adjust the vibrations of the arm, said arm being adapted to contact with a cam for vibrating the same.

8. In a feeder for mill rolls the combination of a cam, a slotted spring adjustably pivoted at one end and a feed board carried on the free end of the spring.

9. In a feeder for mill rolls the combination of an adjustable slotted spring pivoted at one end to the housing, a feed board carried on the free end of the spring, and a cam operating on the free end of the spring to vibrate the feed board.

10. In a feeder for mill rolls, the combination of a cam, inclined vibrating feed-boards, springs in contact with the cam upon which the feed-boards are carried, and means in connection with the springs whereby the vibrations of the feed-boards are independently adjustable.

## 528,078. LOCOMOTIVE. CHARLES A. COUCH, Columbus, Ohio, assignor to Eveline N. Tanner, Monson, Mass. Filed Jan. 15, 1894. Serial No. 496,961. (No model.)

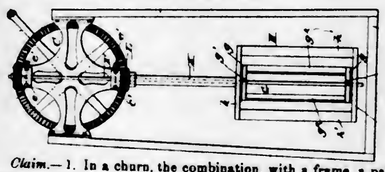


*Claim.*—1. In a locomotive, a hollow heat deflector located at the top of the exhaust flue, (*d*,) having its sides inclined inwardly and downwardly, interposed and supported between the boiler tube and the smoke stack, substantially as described.

2. In a locomotive in combination with the exhaust flue, *d*, the hollow, inverted conical shaped heat deflector, *c*, located at the top of the said exhaust flue (*d*), interposed and supported between the boiler tubes, and the smoke stack, substantially as described and for the purposes set forth.

3. In a locomotive in combination with the exhaust flue, *d*, the hollow, inverted, conical shaped heat deflector, *c*, located at the top of the said exhaust flue (*d*), and interposed and supported between the boiler tubes and the smoke stack having its upper diameter greater than the lower diameter of the smoke stack, substantially as described.

## 528,079. CHURN. JACKSON A. CRIM, Plainville, Ill. Filed Mar. 22, 1894. Serial No. 504,585. (No model.)



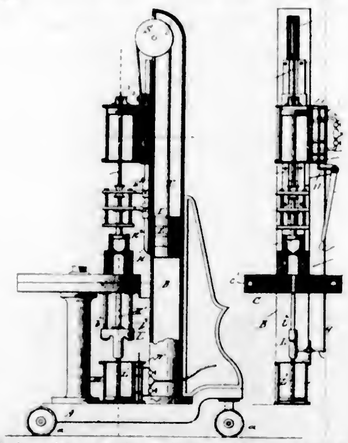
*Claim.*—1. In a churn, the combination, with a frame, a pair of forks secured to the frame, and a pair of boxes provided with flanges and inserted in the forks, of a dasher-shaft journaled in the boxes and a pin inserted through each fork, whereby the dasher-shaft is removable from the frame, substantially as described.

2. In a churn, the combination, with a stand, a pair of standards secured to the stand, a frame provided with vertical and horizontal arms, the latter being attached to the standards, a fork carried by each vertical arm, a stud extending from the center of the frame, and a bevel spur gear wheel revoluble on the stud, a crank secured to the spur wheel, a journal box mounted in each fork, a pin through each end of each fork, a main dasher shaft journaled in the boxes, a bevel gear pinion fixed on the main dasher shaft and meshing with the spur-wheel, a bevel gear pinion loose on the main dasher shaft and meshing with the spur wheel, the lower side of the loose bevel gear pinion having a square socket, a tubular dasher shaft revoluble on the main dasher shaft and having its upper end fixed in the socket in the loose bevel pinion, an inner dasher secured to the main dasher shaft, and an outer dasher secured to the tubular dasher shaft, substantially as described and for the purposes set forth.

## 528,080. GLASS-PRESS. JOHN H. CROSKEY and JOSEPH LOCKE, Pittsburg, Pa. Filed Jan. 13, 1894. Serial No. 496,786. (No model.)

*Claim.*—1. In a glass press, the combination with a mold, a plunger adapted to press glass in the same, and an air cylinder having a piston connected to said plunger, of a reciprocating plug adapted to enter said mold and form a cavity in the glass and an air cylinder having a piston connected to said plug, said plug being constructed,

proportioned and arranged to fill and close the opening in the base of the mold, and prevent the exudation of the glass substantially as described.



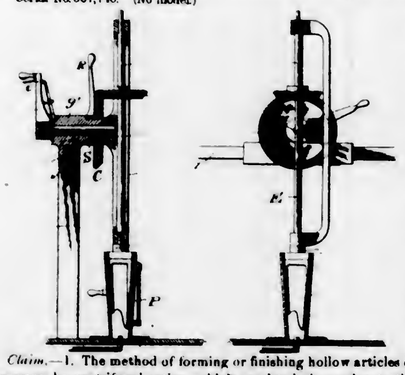
2. In a glass press, the combination of a mold, a plunger adapted to press glass in said mold, an air cylinder having a piston connected to said plunger and a spring plate or follower, of a plug adapted to enter the mold from below and an air cylinder having a piston connected to said plug, substantially as described.

3. In a glass press, the combination with a mold for making hollow glass ware, of a plunger to press the glass in the mold, a piston to which said plunger is attached, an air cylinder in which the piston works, a valve by which the admission of air to the cylinder is controlled, a plug arranged below the mold and adapted to enter the same and form a cavity in the glass, a piston to which said plug is attached, an air cylinder and its supply valve, connections between the valves of the two cylinders and a hand controlled lever by which both valves are operated simultaneously and at the will of the operator, substantially as described.

4. In a glass press, the combination with a fount, a mold arranged below the same, a plunger adapted to press glass from said fount and an air cylinder having a piston connected to said plunger, of a plug adapted to enter said mold and an air cylinder having a piston connected to said plug, substantially as described.

## 528,081. MANUFACTURE OF HOLLOW GLASS ARTICLES.

JOHN H. CROSKEY and JOSEPH LOCKE, Pittsburg, Pa. Filed Apr. 16, 1894. Serial No. 507,740. (No model.)



*Claim.*—1. The method of forming or finishing hollow articles of glass ware, by centrifugal action, which consists in imparting to the article, while heated, and while in the mold, a rapid axial motion, independently of the mold.

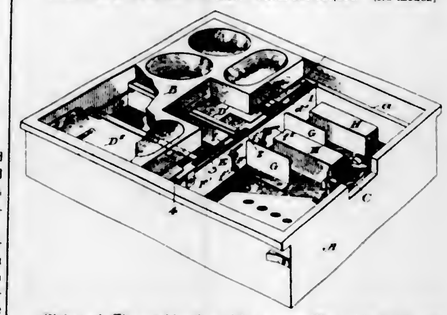
2. The method of forming or finishing hollow articles of glass ware, by centrifugal action, which consists in imparting to the glass article, a rotary motion in a vertical plane so as to cause the article to elongate and then inserting the article in a finishing mold and imparting to the glass article an axial motion, so as to cause the article to expand laterally.

3. In a glass forming and finishing machine, the combination with a forming mold, a finishing mold and a punty supporting frame mounted on a sliding sleeve and adapted to be moved over said molds successively, of mechanism for imparting axial motion to said punty rod, substantially as described.

4. In a centrifugal glass finishing machine, the combination with a finishing mold, of a mechanical revoluble punty rod E, a beveled pinion D, keyed on said punty, a punty supporting frame G, consisting of a bar having its ends bent inwardly and formed with boxes for the reception of said punty rod, a sleeve or box S, mounted and adjustable on a bar I, a horizontal shaft C having its bearings in said sleeve and connected at its inner end to the frame G, a crank or operating handle N, attached to the outer end of said shaft, and a beveled spur wheel C revolubly mounted on said sleeve and meshing with said pinion, and an operating lever attached to the collar of said spur wheel, substantially as described.

## 528,082. SAFETY MONEY-DRAWER.

MICHAEL R. DALEY, Fall River, Mass. Filed Nov. 11, 1893. Serial No. 490,656. (No model.)



*Claim.*—1. The combination with a money till provided with compartments, of separate covers therefor, movable both laterally and longitudinally to uncover said compartments, substantially as described.

2. The combination with a money till provided with compartments, arranged side by side, of a separate cover for each compartment save one, said covers being laterally and longitudinally movable over said compartments, substantially as described.

3. The combination with a money till provided with compartments arranged side by side, of a series of separate covers therefor, one less in number than said compartments and movable both longitudinally and laterally over said compartments, and one or more guides for directing the lateral movement of said covers, substantially as described.

4. The combination with a money till provided with compartments, of a series of covers therefor, one less in number than said compartments, and laterally movable over the same, and suitable locking devices adapted to prevent said covers from being opened when moved to the right, and to permit their free opening when moved to the left, substantially as described.

5. The combination with a money till provided with compartments, of a series of laterally movable covers therefor, and a lid in each cover, substantially as described.

6. The combination with a money till provided with compartments, of a series of laterally movable covers therefor, and a slide in each cover adapted to move lengthwise of the compartments, substantially as described.

7. The combination with a money till provided with compartments, of laterally movable covers for all but one of said compartments, each cover consisting of a grooved frame, and a lid sliding in the grooves lengthwise of the compartment, substantially as described.

8. The combination with a money till provided with compartments, of laterally movable covers for all but one of said compartments, a movable lid in each cover, and means for locking all the lids on one side of the open compartment, and unlocking all the lids on the other side thereof, substantially as described.

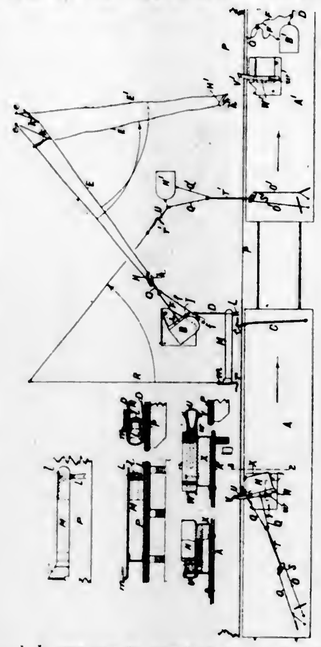
9. The combination with a money till provided with compartments, of laterally movable covers for all but one of said compartments, a longitudinally movable lid in each cover, and a locking device at the rear of one or more compartments consisting of a rock shaft having two oppositely disposed arms, and an intermediate arm, substantially as described.

10. The combination with a money till provided with compartments, and a sliding change tray above the same, of laterally movable covers for the compartments, a longitudinally sliding lid in each cover, and a lip on each lid to be engaged by the tray when it is pulled forward, substantially as described.



## 528,083. APPARATUS FOR DELIVERING MAIL-BAGS TO OR FROM TRAINS IN MOTION.

EDWARD DAVIES, near Stourbridge, England. Filed Dec. 1, 1893. Serial No. 492,530. (No model.)



*Claim.*—1. In apparatus for transferring parcels to and from a train in motion, the combination with the parcel, with the mail car and with a roadside platform, of two main members adapted to act conjointly as radius links in directions at about right angles to each other, the said links being respectively attached to centers fixed respectively on the car and on the roadside platform, and of means of automatically making and severing connection of the said links with the parcel, the said links and connections being arranged to operate substantially as specified.

2. In an apparatus for effecting the transfer of a parcel to or from a train in motion, consisting of two main members acting conjointly as radius links attached to centers on the car and roadside platform respectively, and means of automatically disconnecting the delivery link from the parcel, said means consisting of a hook adapted to be engaged with the parcel, said hook being formed on a cross bar attached at its opposite ends to two flexible connections constituting the delivery link, said connections being attached to different centers so as by their conjoint action on the hook to vary its position with regard to the line of strain, as specified.

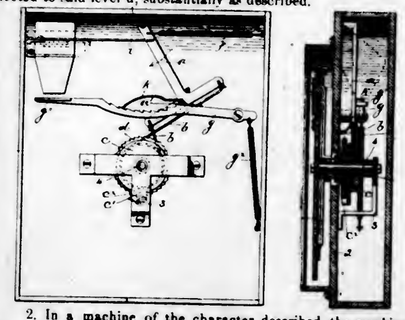
3. In an apparatus for effecting the transfer of a parcel to or from a train in motion, consisting of two main members acting conjointly as radius links attached to centers on the car and roadside platform respectively, the combination with the parcel and with the delivering and receiving links, of a sling attached to the parcel and to which the receiving link is connected at a point such that the direction of the initial pull on the parcel will not pass through the center of gravity of the parcel, as specified.

4. In an apparatus for effecting the transfer of a parcel to or from a train in motion, consisting of two main members acting conjointly as radius links attached to centers on the car and roadside platform respectively, the combination with the delivery member or link, and its means of automatic disconnection from the parcel sling, of a pivoted spring fence for holding the delivering member taut and in readiness to act, substantially as described.

## 528,084. COIN-CONTROLLED EXHIBITOR.

CLARENCE W. DE KNIGHT, Washington, D. C. Filed Sept. 29, 1894. Serial No. 524,477. (No model.)

*Claim.*—1. In a machine of the character specified, the combination with the ratchet wheel $d$ and a rotary disk, both mounted in the same axial line, of the drum or pulley $c$ carrying the pawl $c^3$, the spring $f$ for rotating the drum and disk in one direction, a cord $b$ for rotating the drum in the opposite direction, a lever $a$ having the cord $b$ connected to it, and a lever located in the path of a coin and connected to said lever $a$, substantially as described.



2. In a machine of the character described, the combination with the ratchet wheel $d$ and a rotary disk, both mounted in the same axial line, of the drum or pulley $c$ carrying the pawl $c^3$, the spring $f$ for rotating the drum and disk in one direction, a cord $b$ for rotating the drum in the opposite direction, a lever $a$ having the cord $b$ connected to it, a lever located in the path of a coin and connected to said lever $a$, and the toothed bar $g$ extending under the coin-chute and adapted to engage a pin carried by the lever $a$, substantially as described.

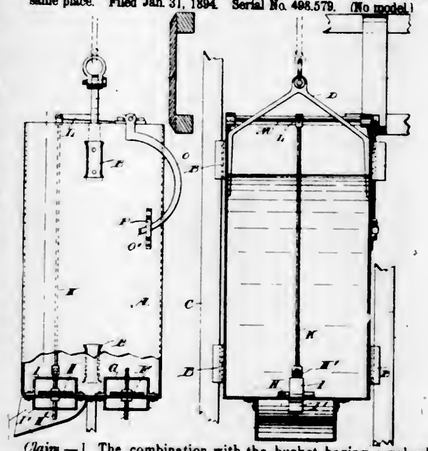
3. A coin-controlled apparatus, comprising in its construction a toothed bar located in the path of movement of a coin, a lever having a pin or projection adapted to engage the teeth of said bar, and a guard to prevent the engagement of said pin with said teeth when the lever is moving in one direction.

4. A coin controlled apparatus comprising in its construction a rotative disk, the lever $a$ having the pin $a'$ and connected with said disk to rotate it, the toothed bar $g$ extending into the path of a coin, and the spring finger $k$ having a notch or recess $k'$ and attached to the bar $g$ at one end, substantially as described.

5. A coin-controlled apparatus comprising in its construction the ratchet wheel $d$ and a rotary disk, both mounted in the same axial line, the drum or pulley $c$ carrying the pawl $c^3$, the lever $a$ having the pin $a'$ and having a flexible connection with said drum to rotate it in one direction, a spring for causing the rotation of the drum and a vibration of the lever in the opposite direction, and the toothed bar $g$ extending under the coin-chute and having the spring guard $k$ attached to it for covering some of its teeth, substantially as described.

## 528,085. BAILING DEVICE.

JAMES FATKIN, Aspen, Colo., assignor of three-fourths to Jacob Schoelkopf and Henry W. Stormer, same place. Filed Jan. 31, 1894. Serial No. 498,579. (No model.)



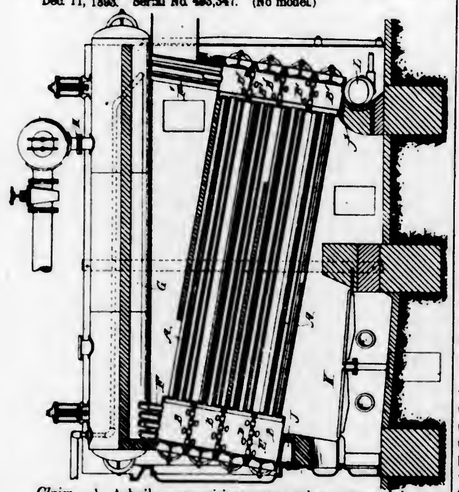
*Claim.*—1. The combination with the bucket having a valved inlet and a valved outlet in its bottom and a chute leading from said outlet, of a rock shaft journaled in bearings on the upper edge of

the bucket and provided with a crank arm between its ends, a rod pivotally connecting said arm and outlet valve, and an operating arm O secured to one outer end of said rock shaft and curved outwardly beyond the side of the bucket and then downwardly and inwardly, substantially as shown and described.

2. In a water elevating apparatus the rectangular bucket provided with a valved inlet and outlet in its bottom, a chute leading from said outlet, guide flanges on opposite sides of the bucket, a rock shaft on the upper edge connected with the outlet valve, and having a depending arm at one outer end curved outwardly beyond the rear side of the bucket and thence inwardly and provided with a stop, and a loop or guide on the side of the bucket and through which the lower end of said curved arms slides, substantially as described.

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528,086. **STEAM-BOILER.** CARL FINGER, Wilkes-Barré, Pa. Filed Dec. 11, 1893. Serial No. 493,347. (No model.)



*Claim.*—1. A boiler comprising water tubes arranged in sets, round heads connected to the front and rear ends respectively, of the sets of water tubes, said round heads being arranged in sets of pairs, a steam drum connected to each set of pairs of heads, and diagonal cross pipes connected to adjacent heads belonging to the same set of pairs, so that water and steam can pass from one round head to that located laterally above and connected to the same steam drum, substantially as described.

2. A steam boiler provided with a head comprising a circular rim, a sheet secured to the inner end of the said rim and carrying the water tubes, a ring secured to the outer end of the said rim and formed with an inwardly extending oblong flange, a man-hole cover adapted to be seated on the inner edge of the said flange, rods carrying the said cover, and bridges carrying the said rods and adapted to rest on the outer end of the said rim, substantially as shown and described.

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528,087. **BENCH OR OTHER PLANE.** THEODORE W. FULLER, Washington, D. C. Filed Oct. 4, 1893. Serial No. 487,138. (No model.)



*Claim.*—1. In combination with a plane stock or body, a metal plate inserted in the top of the same back from the edge of the throat so as to be inclosed both front and rear by the stock, the cutter supporting plate, and means whereby the same may be removably secured to said inserted plate, all as and for the purposes set forth

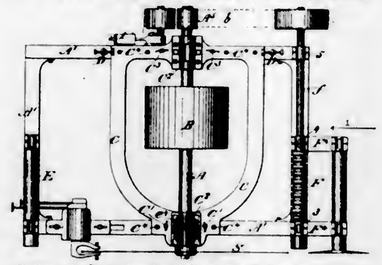
2. In combination with a plane stock or body, a metal plate inserted in the top of the same back from the edge of the throat so as to be inclosed both front and rear by the stock, the cutter supporting plate, and means whereby the same may be removably secured to said inserted plate, and means whereby the inserted plate may be secured to the plane stock, all as and for the purposes set forth.

3. In combination with a plane stock or body, a metal plate inserted in the top of the same back from the edge of the throat so as to be inclosed both front and rear by the stock, and having screw threaded sockets in the same, the cutter supporting plate, and screws or bolts passing through holes in said plate into the threaded sockets of the inserted plate, to removably secure the same together, all as and for the purposes set forth.

4. In combination with a plane stock or body, a forked or angular metal plate inserted in the top of the stock back from the edge of the throat so as to be inclosed both front and rear by the stock, the cutter supporting plate, and means whereby the same may be removably secured to said inserted plate, all as and for the purposes set forth.

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528,088. **SAWING-MACHINE.** MICHAEL GARLAND, Bay City, Mich. Filed Feb. 21, 1894. Serial No. 501,060. (No model.)



*Claim.*—1. In a circular, log saw mill, the combination, with a lower, stationary, main frame; and an upper movable husk, carrying the saw mandrel and its boxes, of means for adjusting the said upper husk to vary the plane of the saw by an elevation, or depression, of either end of the mandrel; substantially as and for the purpose set forth.

2. In a circular, log saw mill, the combination, with a lower stationary frame, or husk; and a husk mounted thereon and carrying the saw mandrel and its journal boxes, of means for swiveling the upper husk horizontally to vary the plane of the saw relatively to the line of travel of the log-carriage; and means for raising and lowering either the forward, or rear, portion of said upper husk, to vary the plane of the saw, relatively to a vertical line; all substantially as hereinbefore set forth.

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528,089. **SEAL.** JOHN R. GOGLE, Middleville, Mich. Filed Jan. 17, 1894. Serial No. 497,136. (No model.)



*Claim.*—1. A seal composed of a strip of metal having a widened end folded transversely to form a body portion composed of a plurality of sections folded together and provided with slots and a locking projection, and a binding strap integral with and extended from said body portion and provided with a hooked and slotted end adapted to enter the slots of the body portion and automatically engage its locking projection, substantially as described.

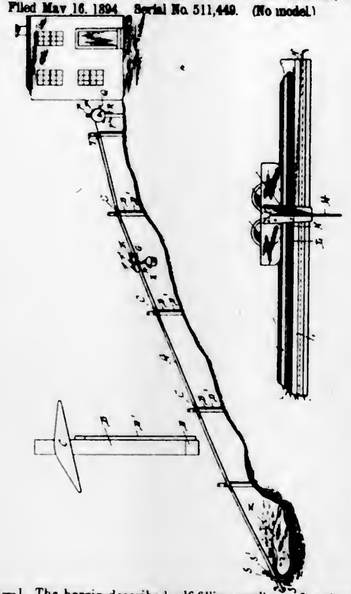
2. In a seal, the combination with a body portion provided with a locking projection and comprising a plurality of folded sections having slots that register with each other, of a hooked and slotted binding strap adapted to be passed through the slots in the body portion and automatically engage its locking projection, substantially as described.

3. A seal formed of a strip of metal, having a projecting point as A, sections as B, C and D, an extended strap as E, said section B provided with an opening G, and sections C and D provided with the slots H and I adapted to register with each other, also provided with the opening J for the insertion of the strap E, and the strap E provided with the opening K adapted to engage with the locking point A when folded in position, substantially as described.

4. In a seal, the combination with a body portion composed of a plurality of folded and slotted sections having at one end an inwardly folded and pointed locking projection, of a binding strap having one end integral with said body portion and provided at its other end with a slotted hook adapted to enter the slots of the body portion and automatically engage its pointed locking projection, substantially as described.



528,090. **WATER CONVEYER.** ADOLPHUS D. GOODWIN, Haran, Va. Filed May 16, 1894. Serial No. 511,449. (No model.)



*Claim.*—1. The herein described self filling appliance for obtaining and conveying water from a distant reservoir or spring, comprising a single elevated inclined track extending from the reservoir or spring to the point where the water is to be delivered, a carriage arranged to run on said track, a depending, swinging arm carried by said carriage, a self-filling bucket carried by said arm, a rope or cable attached to said carriage, and a windlass for operating said rope or cable, substantially as specified.

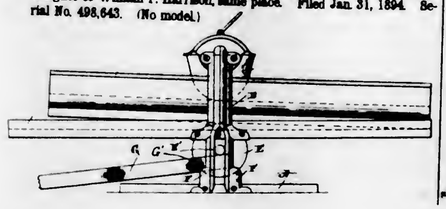
2. The herein described self-filling appliance for obtaining and conveying water from a distant spring or reservoir comprising an inclined track extending from the spring or reservoir to the point where the water is to be delivered, a carriage arranged to run on said track, a bracket depending from said carrier and carrying steadying devices embracing opposite sides of said track, a swinging arm journaled in said carriage and depending below the track, a self filling bucket carried by said arm, means for stopping said carriage at the proper point at the spring or reservoir, a rope or cable attached to said carriage, and a suitable windlass for operating said rope or cable, substantially as specified.

3. A water conveyer comprising a cable, an elevated sectional inclined track having a protected guideway for said cable, its supporting posts and arms, a carrier attached to said cable adapted to run on said track, a steadying device depending from said carrier and embracing the lower portion of the track, a weighted bucket attached to said carrier and capable of a swinging movement in a direction parallel with the track only, a buffer stop at the lower end portion of said track, and a windlass, substantially as specified.

4 In a water conveyer, the combination of a track, having a tread portion, a lateral guard flange attached thereto, and a recessed guide strip below said flange, forming a ropeway, of a carrier having wheels adapted to run on said tread, a depending bracket having steadying pulleys embracing the lower portion of said track, and a rope attached to said carrier and running in said way, substantially as specified

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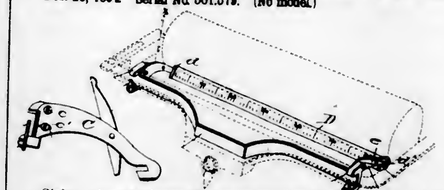
528,091. **IRONING-MACHINE.** HENRY F. GRAY, Columbus, Ohio, assignor to William P. Harrison, same place. Filed Jan. 31, 1894. Serial No. 498,643. (No model.)



*Claim.*—The combination of the base, the opposite vertical uprights extending up therefrom, the horizontal tracks secured between their ends to said uprights, the ironing board traveling on said tracks, the uprights formed with vertical slots from the base to the tracks, the pressure roller confined in and guided by said slots to move freely vertically therein, and provided with turning means, said uprights provided with fulcrum lugs F, F, on their inner faces and on opposite sides of said slots, and the pressure lever formed to rest on either set of lugs with its inner ends beneath and detached from the roller to force the same up, and the iron above said board secured to the upper ends of the uprights.

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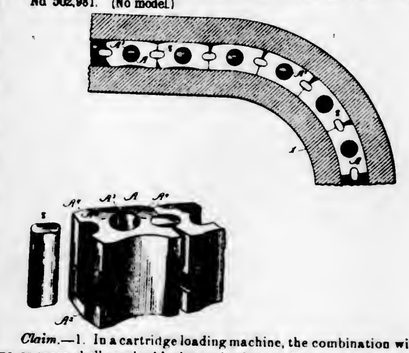
528,092. **ATTACHMENT FOR TYPE-WRITING MACHINES.** NEWTON W. HARTWELL and THOMAS J. HOWE, Louisville, Ky. Filed Feb. 26, 1894. Serial No. 501,579. (No model.)



*Claim.*—An attachment for type-writing machines composed of brackets adjustably secured to the frame of the machine, arms depending from said brackets and adjustable thereon, and a refracting and reflecting prism rhomboidal in cross section, supported by said arms in the manner and for the purposes set forth.

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528,093. **SHELL-CARRIER BLOCK.** CHARLES S. HISEY, Aurora, Ind., assignor to Elliott S. Rice, Chicago, Ill. Filed Mar. 9, 1894. Serial No. 502,981. (No model.)

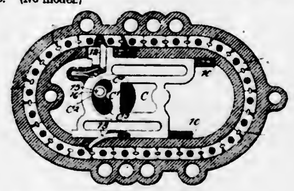


*Claim.*—1. In a cartridge loading machine, the combination with two or more shell carrier blocks, each of which is formed with a shell receiving cell, and has recesses formed at each end of the block, of suitable operatively engaging means placed in said end recesses between the blocks, substantially as described.

2. In a cartridge loading machine, the combination with two or more shell carrier blocks, each of which is formed with a shell receiving cell, and has recesses formed at each end of the block, of pins 8 placed in said end recesses between the blocks, substantially as described

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528,094. **SHELL-CARRIER-ACTUATING MECHANISM FOR CARTRIDGE-LOADING MACHINES.** CHARLES S. HISEY, Aurora, Ind., assignor to Elliott S. Rice, Chicago, Ill. Filed Mar. 12, 1894. Serial No. 503,333. (No model.)

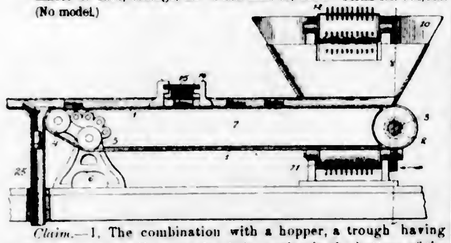


*Claim.*—In a cartridge loading machine, the combination with a shell carrier, of a reciprocating carriage actuated intermediately by

the power shaft, and adapted to have a dwell at the forward part of its movement, for engaging said carrier and imparting an intermittent forward movement to the same, and independent means on said carriage for locking the shell carrier during the dwell of the reciprocating carriage, substantially as described.

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528,095. **SHELL-FEEDING MECHANISM FOR CARTRIDGE-LOADING MACHINES.** CHARLES S. HISEY, Aurora, Ind., assignor to Elliott S. Rice, Chicago, Ill. Filed Mar. 19, 1894. Serial No. 504,186. (No model.)

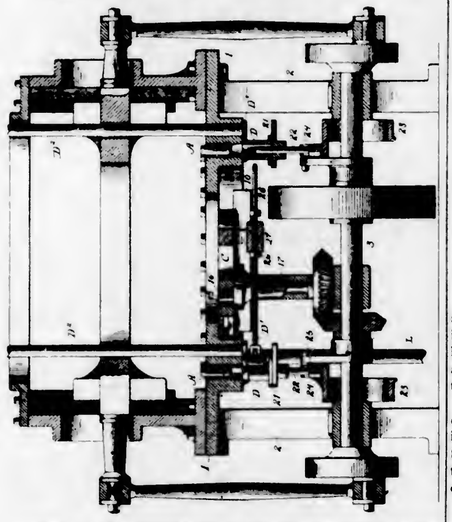


*Claim.*—1. The combination with a hopper, a trough having inclined sides, an endless rotating belt moving in the bottom of the trough, and a shell feeding tube, of a reciprocating brush, operating cross-wise of the belt, but sufficiently removed from the surface thereof to brush away the "rider" shells, and replace them on the belt at the next reciprocation, and means for operating the same, substantially as described.

2. The combination with a hopper, an endless rotating belt, and a feeding tube, of a brush acting across the face of the belt and having a lug formed on one end, and a rotating shaft, having a cam groove formed thereon in which the said lug works, for imparting a reciprocating movement to said brush, substantially as described.

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528,096. **SHELL-PLACER FOR CARTRIDGE-LOADING MACHINES.** CHARLES S. HISEY, Aurora, Ind., assignor to Elliott S. Rice, Chicago, Ill. Filed Mar. 26, 1894. Serial No. 505,177. (No model.)



*Claim.*—1. In a cartridge loading machine, the combination with a shell carrier, a shell feeder, and a shell placer, of a plunger rigidly attached to a casting, a suitable guide for said casting, and means for reciprocating said casting and thereby the plunger, substantially as described.

2. In a cartridge loading machine, the combination with a shell carrier, a shell feeder, and a shell placer, of a plunger rigidly attached to a slotted casting, a suitable guide for said casting passing through the slot in the same, and means for reciprocating said casting and thereby the plunger, substantially as described.

3. In a cartridge loading machine, the combination with a shell carrier, a shell feeder, and a shell placer, of a plunger rigidly attached to a slotted casting, a suitable guide for said casting passing through the slot in the same, and a crank operated by the power shaft for reciprocating said casting and thereby the plunger, substantially as described.

4. In a cartridge loading machine, the combination with a shell carrier, a shell feeder, and a shell placer, of a plunger attached to a slotted casting which rides on the power shaft of the machine and is formed at its upper end with an angled casting, and a crank, secured to the power shaft, and riding under said angled casting and thereby reciprocating the plunger, substantially as described.

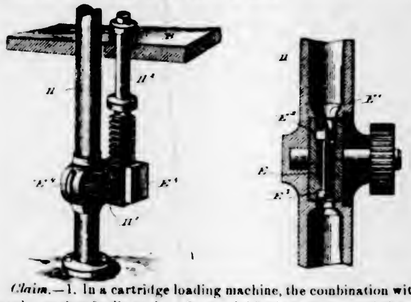
5. In a cartridge loading machine, the combination with a shell carrier, and a reciprocating carriage, actuated by the power shaft, and having a dwell at the forward part of its movement, for engaging said carrier and imparting an intermittent, forward movement to the same, of a shell feeder, a shell placer, a rod attached thereto and operated by the reciprocating carriage, whereby the shell placer will be so actuated that the dwell of the said carriage will occur at one of its operative positions, and means for forcing the shells from the shell placer into the shell carrier, substantially as described.

6. In a cartridge loading machine, the combination with a shell carrier, and a reciprocating carriage, actuated by the power shaft, and having a dwell at the forward part of its movement, for engaging said carrier and imparting an intermittent forward movement to the same, of a shell feeder, a shell placer, a rod attached thereto operated by a lug on the reciprocating carriage, whereby the shell placer will be so actuated that the dwell of the said carriage will occur at one of its operative positions, and means for forcing the shells from the shell placer into the shell carrier, substantially as described.

7. In a cartridge loading machine, the combination with a shell carrier, and a reciprocating carriage, actuated by the power shaft, and having a dwell at the forward part of its movement, for engaging said carrier and imparting an intermittent forward movement to the same, of a shell feeder, a shell placer having a rod attached thereto with collars formed on the same, a lug on the reciprocating carriage encircling the said rod and operating the same by striking the collars, and means for forcing the shells from the shell placer into the shell carrier, substantially as described.

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528,097. **POWDER OR SHOT FEEDING MECHANISM.** CHARLES S. HISEY, Aurora, Ind., assignor to Elliott S. Rice, Chicago, Ill. Filed Mar. 27, 1894. Serial No. 505,244. (No model.)



*Claim.*—1. In a cartridge loading machine, the combination with a powder or shot feeding tube, of a revoluble charger mounted therein, having a recess or pocket in its surface whose bottom is formed by a spring pressed piston, means for normally setting said piston in any desired position, and means for operating the charger, substantially as described.

2. In a cartridge loading machine, the combination with a powder or shot feeding tube, of the revoluble cylinder E mounted therein, having the recess or pocket E' cut in its surface, whose bottom is formed by the spring pressed piston $E^2$, the screw $E^3$ for normally setting the piston in any desired position, and means for operating the charger, substantially as described.

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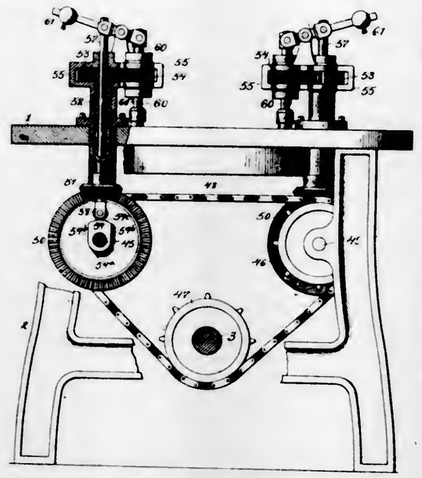
528,098. **REVOLVING CRIMPER FOR CARTRIDGE-LOADING MACHINES.** CHARLES S. HISEY, Aurora, Ind., assignor to Elliott S. Rice, Chicago, Ill. Filed Apr. 3, 1894. Serial No. 506,144. (No model.)

*Claim.*—1. In a cartridge loading machine, the combination with a shell carrier, of a revolving crimper revolubly attached to one of the arms of a pivoted lever, means for raising the other arm of the pivoted lever and thereby depressing the crimper, and means incapable of longitudinal movement for revolving the crimper, substantially as described.

2. In a cartridge loading machine, the combination with a shell carrier, of a revolving crimper revolubly attached to one of the arms of a pivoted lever, mechanism capable of producing a dwell for raising the other arm of the pivoted lever, thereby depressing the crimper, whereby the crimper is so actuated as to have a dwell upon the cartridge shell, and means incapable of longitudinal movement for revolving the crimper, substantially as described.

3. In a cartridge loading machine, the combination with a shell carrier, of a revolving crimper revolubly attached to one of the arms of a pivoted lever, means actuated by the power shaft for raising the other arm of the pivoted lever and thereby depressing the crimper, and means incapable of longitudinal movement for revolving the crimper, substantially as described.





4. In a cartridge loading machine, the combination with a shell carrier, of a revolving crimper revolubly attached to one of the arms of a pivoted lever, and actuated, through mechanism incapable of longitudinal movement, by the power shaft, and means for raising the other arm of the pivoted lever and thereby depressing the crimper, substantially as described.

5. In a cartridge loading machine, the combination with a shell carrier, of a revolving crimper revolubly attached to one of the arms of a pivoted lever, and actuated, through mechanism incapable of longitudinal movement, by the power shaft, and means, also actuated by the power shaft, for raising the other arm of the pivoted lever, and thereby depressing the crimper, substantially as described.

6. In a cartridge loading machine, the combination with a shell carrier, of a revolving crimper revolubly attached to one of the arms of a pivoted lever, and actuated, through mechanism incapable of longitudinal movement, by the power shaft, and a cam actuated by the power shaft for raising the other arm of the pivoted lever, and thereby depressing the crimper, whereby the crimper is so actuated as to have a dwell upon the cartridge shell, substantially as described.

7. In a cartridge loading machine, the combination with a shell carrier, of a revolving crimper revolubly attached to one of the arms of a pivoted lever, an arm attached to the other arm of the pivoted lever, means for raising said attached arm and thereby depressing the crimper, and means incapable of longitudinal movement for revolving the crimper, substantially as described.

8. In a cartridge loading machine, the combination with a shell carrier, of a revolving crimper revolubly attached to one of the arms of a pivoted lever, an arm attached to the other arm of the said lever, a cam actuated by the power shaft for raising said attached arm and thereby depressing the crimper, and means incapable of longitudinal movement for revolving the crimper, substantially as described.

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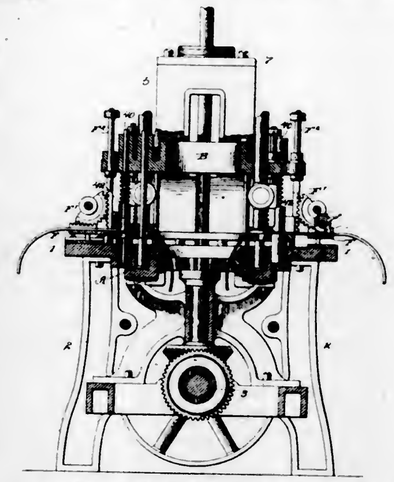
528,099. **WAD-FEEDING MECHANISM.** CHARLES S. HISEY, Aurora, Ind., assignor to Elliott S. Rice, Chicago, Ill. Filed Apr. 13, 1894. Serial No. 507,444. (No model.)

*Claim.*—1. In a cartridge loading machine, the combination with wad cutting and punching mechanism, of a reciprocating carriage, on which the wad strips lie, for feeding the said strips, and means for reciprocating the same at each actuation of the wad cutting and punching mechanism, substantially as described.

2. In a cartridge loading machine, the combination with wad cutting and punching mechanism, of actuating mechanism therefor, and a reciprocating carriage, operated at each actuation of such actuating mechanism, for feeding the wad strips, substantially as described.

3. In a cartridge loading machine, the combination with wad cutting and punching mechanism, of a reciprocating cross head, and a reciprocating carriage, operated by the reciprocation of the cross head, for feeding the wad strips, substantially as described.

4. In a cartridge loading machine, the combination with wad cutting and punching mechanism, of a reciprocating carriage for feeding the wad strips, clamps for holding the wad strips in place thereon, and means for reciprocating the carriage at each actuation of the wad cutting and punching mechanism, substantially as described.



5. In a cartridge loading machine, the combination with wad cutting and punching mechanism, of a reciprocating cross head, and a reciprocating carriage, operated intermittently by the reciprocation of the cross head, for feeding the wad strips, substantially as described.

6. In a cartridge loading machine, the combination with the wad cutting and punching mechanism, a reciprocating carriage for feeding the wad strips, grooves cut therein through which the wad strips may pass, means for holding said strips in place, and means for reciprocating the carriage, substantially as described.

7. In a cartridge loading machine, the combination with wad cutting and punching mechanism, of a reciprocating carriage for feeding the wad strips, grooves cut therein through which the wad strips may pass, friction clamps for holding said strips in place, and means for reciprocating the carriage, substantially as described.

8. In a cartridge loading machine, the combination with wad cutting and punching mechanism, of a reciprocating carriage for feeding the wad strips, grooves cut therein through which the wad strips may pass, spring pressed friction clamps for holding said strips in place, and means for reciprocating the carriage, substantially as described.

9. In a cartridge loading machine, the combination with wad cutting and punching devices, of a reciprocating cross head having a toothed rod passing therethrough, a reciprocating carriage for feeding the wad strips, and a suitably journaled segment gear meshing with teeth formed on the carriage and with the toothed rod passing through the cross head, whereby the carriage is reciprocated by the reciprocation of the cross head, substantially as described.

10. In a cartridge loading machine, the combination with wad cutting and punching devices, of a reciprocating cross head having a toothed rod with collars formed thereon passing therethrough, a reciprocating carriage for feeding the wad strips, and a suitably journaled segment gear meshing with teeth formed on the carriage and with the toothed rod passing through the cross head, whereby the carriage is reciprocated by the reciprocating cross head, and a dwell is permitted in both of its operative positions, substantially as described.

11. In a cartridge loading machine, the combination with wad cutting and punching mechanism, of a reciprocating carriage for feeding the wad strips, means for reciprocating the same, and a stripper for holding the wad strips from moving backward with the backward reciprocation of the carriage, substantially as described.

12. In a cartridge loading machine, the combination with wad cutting and punching mechanism, of a reciprocating carriage for feeding the wad strips, means for reciprocating the same at each actuation of the wad cutting and punching mechanism, and a stripper for

holding the wad strips from moving backward with the backward reciprocation of the carriage, substantially as described.

13. In a cartridge loading machine, the combination with wad cutting and punching mechanism, of a reciprocating carriage for feeding the wad strips, means for reciprocating said carriage, and means operated by the actuating mechanism of the wad cutting and punching mechanism for holding the wad strips from moving backward with the backward reciprocation of the carriage, substantially as described.

14. In a cartridge loading machine, the combination with wad cutting and punching mechanism, of a reciprocating cross-head, a reciprocating carriage for feeding the wad strips, means for reciprocating the same, and means operated by the reciprocating cross-head for holding the wad strips from moving backward with the backward reciprocation of the carriage, substantially as described.

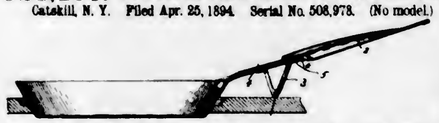
15. In a cartridge loading machine, the combination with wad cutting and punching mechanism, of a reciprocating cross-head, a reciprocating carriage operated by the reciprocation of said cross-head for feeding the wad strips, and means also operated by the reciprocating cross-head for holding the wad strips from moving backward with the backward movement of the carriage, substantially as described.

16. In a cartridge loading machine, the combination with wad cutting and punching mechanism, of a reciprocating carriage for feeding the wad strips, means for holding the wad strips in place thereon, means for reciprocating the carriage, and a stripper for holding the wad strips from moving backward with the backward reciprocation of the carriage, substantially as described.

17. In a cartridge loading machine, the combination with a wad inserting punch, and a wad cutting punch surrounded by a spring pressed collar normally projecting below the same, both arranged in a right line, of a reciprocating cross head having a toothed rod with collars formed thereon passing therethrough, a reciprocating carriage for feeding the wad strips, and a suitably journaled segment gear meshing with teeth formed on the carriage and with the toothed rod passing through the cross head, whereby the carriage is reciprocated by the reciprocating cross head, and a dwell is permitted in both of its operative positions, substantially as described.

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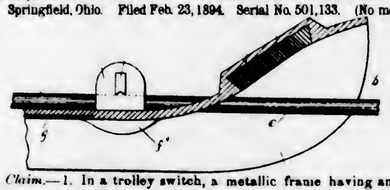
528,100. **FRYING-PAN-HANDLE REST.** CATHARINE C. HOVER, Catskill, N. Y. Filed Apr. 25, 1894. Serial No. 508,978. (No model.)



*Claim.*—A frying pan or cooking utensil provided with inclined sides and designed in use to be placed in the hole of a stove, and having an extended inclined handle, combined with a rest depending from the handle and offset from the body of the pan and having its lower end arranged in the same horizontal plane to which the body of the pan sinks when placed in a stove hole, substantially as and for the purpose described.

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528,101. **TROLLEY-WIRE SWITCH-PLATE.** GUSTAVUS A. HUBEN, Springfield, Ohio. Filed Feb. 23, 1894. Serial No. 501,133. (No model.)



*Claim.*—1. In a trolley switch, a metallic frame having an enlarged mouth or opening, and a trolley wire entering the same, and elastic cushions arranged on each side of said trolley wire, substantially as specified.

2. The combination with the frame having slotted openings therein, a trolley wire adapted to extend into said openings, perforated ears at each side of and behind said slotted openings, and a serrated key adapted to extend through said perforated ears and engage the trolley wire which is placed between said ears, substantially as specified.

3. A trolley switch consisting of a main frame having enlarged openings; slotted ways therein, projecting ears behind said ways having lateral perforations through the same, a serrated key adapted to pass through said ears, and a boss on the under side of said frame adjacent to said ears, substantially as and for the purpose specified.

4. The combination with a frame having enlarged mouths and having sockets formed therein, of cushions inserted into said sockets, open ways between said cushions and perforated ears adjacent to said ways, and a serrated key adapted to extend through said ears, substantially as specified.

5. In a trolley switch, a metallic frame cast integral with side flanges, and enlarged mouths or openings, and a wearing plate of hard metal forming the contacting track between the respective openings, substantially as specified.

6. A trolley switch having enlarged openings, and cushions therein, fastening ears arranged adjacent to said openings, and bosses opposite to said ears, and a metallic plate of hard metal extending from the respective bosses and held in position thereby, substantially as specified.

7. The combination with a metallic frame cast integral with side flanges, as described, perforated lugs and adjacent bosses, serrated keys to pass through said lugs, and a wearing plate of hard metal adapted to form the track between said bosses, substantially as specified.

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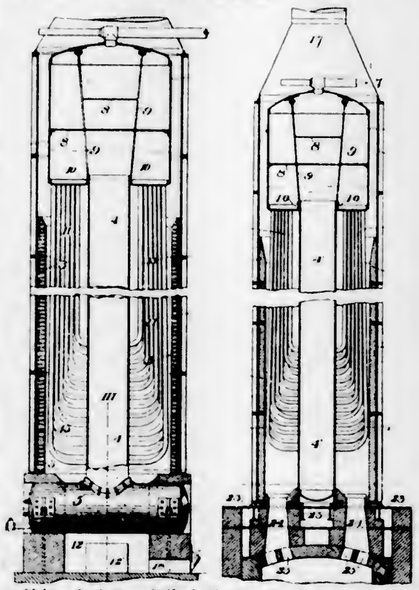
528,102. **THILL-SUPPORT.** JERE HURLEY, Ellsworth, Me. Filed Mar. 7, 1894. Serial No. 502,733. (No model.)



*Claim.*—In a shaft support a bifurcated hook on the shaft, having a rounded edge and engaging shoulders, a trip plate pivoted in the bifurcation, said trip plate having a recessed portion *k*, corresponding to the engaging shoulders, a shoulder *m* projecting beyond the rounded edge, and a shallow depression in rear of said shoulder, in combination with a loop secured to the axle and adapted to bear against said projecting shoulder *m*, and to rest behind the engaging shoulders said trip plate having a limited backward movement whereby the elevation of the shafts above their suspended position will cause the loop to override the shoulder *m*, and rest in the shallow depression, substantially as described.

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528,103. **BOILER.** CHARLES HYDE, Pittsburg, Pa. Filed June 27, 1894. Serial No. 515,818. (No model.)



*Claim.*—1. A steam-boiler having a vertical water column, water tubes communicating therewith, and a horizontal drum having its axis transverse to the vertical axis of said water-column, said horizontal drum projecting laterally from the base of the vertical column, extending across the setting of the furnace, and supported by the side walls thereof so as to support said column; substantially as described.

2. A steam-boiler having a vertical water column, a steam and water chamber at the top, of larger diameter than the column, having an inwardly flanged opening into which the column fits and to which it is secured, and stays attached to said flange and extending to the top of the chamber; substantially as described.

3. A steam-boiler having a vertical cylindrical metal casing, and an interior lining constituted of bricks recessed on their exterior so as to afford air spaces said casing having series of horizontal flanges on which the brick lining is built and by which it is supported; substantially as described.

4. A steam boiler having a vertical cylindrical metal casing having a series of interior horizontal flanges, and a brick lining contained within the casing and built on the flanges; substantially as described.

5. A vertical steam boiler having a cylindrical metal casing, and a brick-lining constituted of bricks having at the lateral margins overlapping flanges affording vertical recesses adapted to receive and to protect vertical flanges upon the casing; substantially as described.

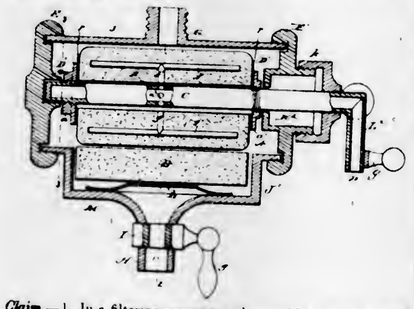
6. A vertical boiler having a furnace-chamber, a horizontal drum supported by the walls of the chamber, and a flue leading from a furnace to the furnace chamber, and arranged to prevent impinging of flame and scoriæ on the boiler; substantially as described.

7. A boiler comprising a vertical shell having a steam and water drum at its upper end of larger diameter than the shell, and pipes connecting the base of the drum and the shell, said pipes being inwardly inclined to give a freer passage to the gases; substantially as described.



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528,104. **FILTER.** WILLIAM B. LINDSAY, WILLIAM E. TONNER, and ALPHEUS LOWMILLER, Steubenville, Ohio. Filed Oct. 28, 1892. Serial No. 450,309. (No model.)



*Claim.*—1. In a filtering apparatus, the combination of a shell or case having in its side walls oppositely disposed inlet and outlet passages, means for controlling the outlet, a hollow perforated shaft extending longitudinally within the case and projecting therefrom at one end, the projecting end provided with a hollow crank, a porous filtering cylinder mounted on the shaft within the case, and a scouring block supported within the case to bear against the filtering cylinder.

2. In a filtering apparatus the combination of a shell or case closed at one end by a removable cap having a central shaft bearing, the said shell having at the opposite end an interior socket to receive and support the end of a shaft, a hollow perforated shaft having one end seated in said socket and extending thence through and beyond the bearing, at the opposite end and connected with said cap to prevent independent longitudinal movement, a filtering cylinder fixed on the shaft and having an interior chamber around the same, a scouring block arranged within the case to bear against and scour the surface of the cylinder when the latter is rotated, and a crank on the projecting end of the shaft, whereby provision is made for withdrawing the cylinder from the case by simply removing the cap, and for replacing it, without further separation of parts.

3. In a filtering apparatus the combination with the shell or case having inlet and outlet passages and adapted to be attached to a reservoir or supply pipe, of the removable end cap E', the hollow perforated shaft C extending longitudinally within the case and projecting through the cap E', the filtering cylinder mounted on the shaft within the case and having an interior chamber around the shaft, the hollow crank on the projecting end of the shaft forming an outlet from the latter, a filtering cylinder fixed on the shaft within the case and a scouring block arranged to bear against the surface of the cylinder to scour the latter.

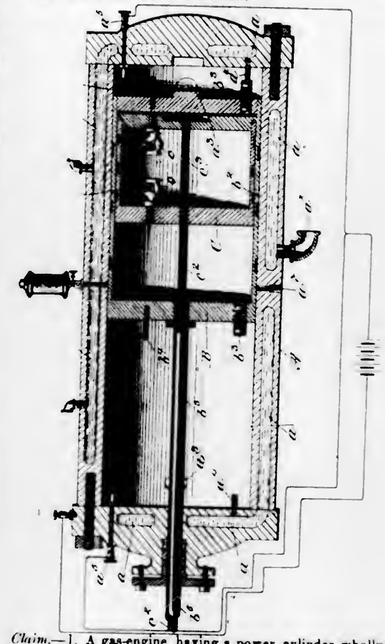
4. An integral filtering block, comprising an integral hollow cylinder open at both ends, and having within its body portion a series of chambers disposed at intervals around the hollow center, and radial passages connecting said chambers with the central chamber.

5. An integral filtering block comprising a hollow cylinder open at both ends and having within its body portion a series of longitudinal chambers disposed at intervals around the hollow center and parallel therewith, and radial passages connecting said chambers at both ends with the interior or central chamber.

6. As an improvement in filters and cleaners, the combination of a filtering medium of natural stone with a rubber or cleaner made of natural stone and adapted to scour the surface of the filtering medium.

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528,105. **GAS-ENGINE.** HENRY B. MIGLIAVACCA, Napa, Cal., assignor of one-tenth to Siro Migliavacca, same place. Filed Mar. 27, 1894. Serial No. 505,269. (No model.)



*Claim.*—1. A gas-engine having a power cylinder wholly containing two pistons, one within the other, acting in the same line of motion, substantially as set forth.

2. A gas-engine having two pistons, one within the other, acting in the same direction, and at different speeds, whereby the gas is compressed within the outer, substantially as described.

3. A gas-engine having two pistons, one within the other and acting in the same direction, the inner piston moving more rapidly than the outer and compressing the gas within the outer, and in the direction of movement of the outer, substantially as described.

4. A gas-engine having two pistons, one within the other, acting in the same direction and at different speeds for a portion of the stroke of one, and then in opposite directions for the remainder of the stroke of the same, substantially as described.

5. A gas-engine having two pistons, one within the other, acting in the same direction, and at different speeds, and the valves, whereby gas is admitted and compressed within the outer piston, substantially as described.

6. A gas-engine having two pistons, one within the other, acting in the same direction, and at different speeds, and valves, by which the gas is admitted on each stroke of the pistons, and compressed within the outer piston in the space between its end and the advancing end of the inner piston, substantially as described.

7. A gas-engine having two pistons, one within the other, acting in the same direction, at different speeds, valves, whereby on each stroke of the pistons, the gas will be compressed within the space between the end of the outer piston and the advancing end of the inner piston, and admitted to the space between the opposite end of the outer pistons and the receding end of the inner piston substantially as described.

8. A gas-engine having two pistons, one within the other, acting in the same direction, and at different speeds, valves, by which the gas is admitted to the space between adjacent ends of the pistons, where it is compressed, and valved-outlets, through which the gas is discharged into the cylinder, substantially as described.

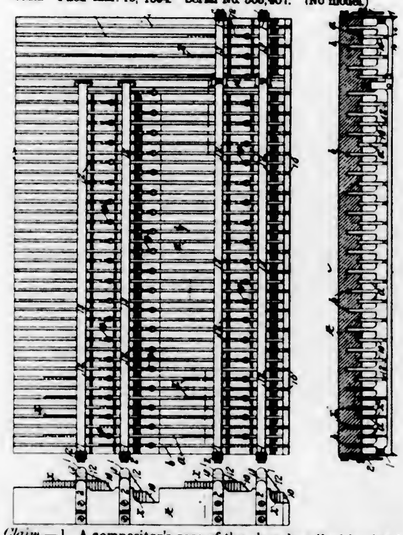
9. A gas-engine having two pistons, one within the other, acting in the same direction, and, at different speeds, admission valves by which the gas is admitted to the space between adjacent ends of the piston where it is compressed, valved outlets from the piston into the cylinder, through which the gas is discharged, and means for igniting the gas when discharged, substantially as described.

10. A gas-engine having two hollow pistons and piston-rods, one within the other, the inner piston communicating with a source of gas-supply through its hollow rod, and means for compressing the gas and igniting it when compressed, substantially as described.

11. A gas-engine having two hollow pistons and piston-rods, one within the other, and moving at different speeds, the inner piston communicating with a source of gas-supply through its hollow rod, valves by which the gas is admitted to the space within the outer piston between its ends and the ends of the inner piston, where it is compressed, valved outlets through which the compressed-gas is discharged into the cylinder, and an igniting-device, substantially as described.

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**528,106. COMPOSITION-CASE.** ROBERT W. NELSON, Hartford, Conn. Filed Mar. 13, 1894. Serial No. 503,407. (No model.)



*Claim.*—1. A compositor's case of the class described having its type channels arranged with the delivery ends of alternate channels inside the ends of the other channels, and with said inner channels of less depth than the alternate outer channels so that the type in the inner channels project in front of those of the outer channels, substantially as and for the purpose described.

2. A compositor's case having the two series of type channels *a*, *b* arranged alternately with their delivery ends on respectively inner and outer lines, the channels *a* being cut to a less depth than the channels *b*, substantially as and for the purpose described.

3. A compositor's case having the two series of type channels *a*, *b* arranged alternately with their delivery ends on respectively inner and outer lines, the channels *a* being cut to a less depth than the channels *b*, and stops 12 permitting only the end type to be removed, substantially as and for the purpose described.

4. A compositor's case having the two series of type channels *a*, *b* arranged alternately with their delivery ends on respectively inner and outer lines, the channels *a* being cut to less depth than the channels *b*, and stops 12 permitting only the end type to be removed and carried by bars 13 extending transversely to the channels, substantially as and for the purpose described.

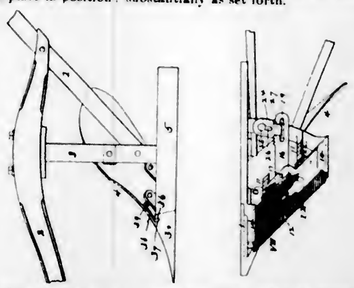
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**528,107. PLOW.** HENRY OLDENDORFF, Belleville, Ill. Filed Dec. 13, 1893. Serial No. 493,565. (No model.)

*Claim.*—1. In a plow, the shear having notched ribs and an adjustable self-sharpening plate 7, of parallelogram shape arranged horizontally and extending diagonally across the plow and having ears 10 for engaging the notched ribs on the shear, and a clamp for holding the plate in place; substantially as set forth.

2. In a plow, an adjustable self sharpening plate 7 having ears 10, the shear having ribs formed with notches 11, the clamp-plate 15 and means for holding the clamp-plate in place which in turn holds the ears of the sharpening plate in engagement with the notches; substantially as set forth.

3. In a plow, the combination of the shear 6, having the lugs 14, the adjustable self sharpening plate 7 of parallelogram shape arranged horizontally and extending diagonally across the plow, means for holding the plate to its adjustment in line with the plow, a clamp-plate 15 for securing the plate in position, and means for holding the clamp-plate in position; substantially as set forth.



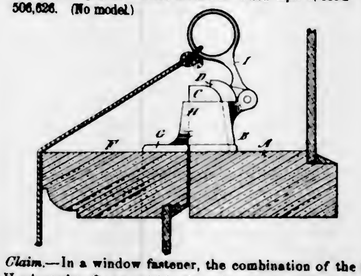
4. In a plow, a plate 7, having ears 10 for engaging notched ribs on the shear, and a clamp for holding the plate in place, consisting of a plate 15, having an arm 16 with notches 22, and a button 24 having a point 23; substantially as and for the purpose set forth.

5. In a plow, the combination of a plate 7 having ears 10 engaging notched ribs on the shear, and fitting under lugs 14 on the shear, and a clamp for holding the plate in place, consisting of a plate 15 having an arm 16 secured thereto by means of a pin 17, and an end 18 fitting in a slot in the plate; said arm having notches 22 to receive the point 23 of a button 24; substantially as and for the purpose set forth.

6. In a plow, the combination of a mold-board having a projection 35, a point 9 having a notch to receive said projection and a top notch 36, and a button 38, pivoted to the mold-board, having a downward projection engaging the top notch; substantially as set forth.

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**528,108. FASTENER FOR MEETING-RAILS OF SASHES.** JAMES PAUL and JOHN T. PAUL, Edinburgh, Scotland, assignors of one-half to Frank Montgomery Henderson Young, same place, and William John Roberts, Chapel, Gainshiels, Scotland. Filed Apr. 6, 1894. Serial No. 506,626. (No model.)



*Claim.*—In a window fastener, the combination of the boxes C and H adapted to fit one within the other, the box C being provided with a bolt or catch D adapted to engage the box H, and the box H being provided with a lever I adapted to bear upon the bolt or catch for disengaging it from the box H, substantially as and for the purpose set forth.

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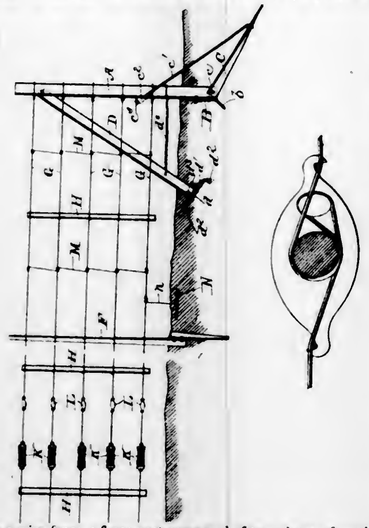
**528,109. WIRE FENCE.** HENRY C. PRATT, Canandaigua, N. Y. Filed Sept. 8, 1893. Serial No. 485,078. (No model.)

*Claim.*—1. In a wire fence the combination with the end post, of an anchor pivoted thereto, the adjusting rod connected to said anchor at a distance from its point of pivoting and engaging a portion of said post, substantially as described.

2. In a wire fence the combination with an end post composed of angle iron, of an anchor pivotally connected to one flange of said post disposed in line with the fence wires, an adjusting rod secured at one end to said anchor at a distance from the post and having its other end engaging the other flange of the post, and an earth engaging plate secured to the flange of said post disposed at right angles to the line of the fence wires, said plate having a flange extending in a horizontal direction to prevent the post from being drawn out of the ground, substantially as described.



3. In a wire fence the combination with the fence post composed of angle iron, of an anchor pivoted to the flange of said post disposed in the line of the fence wires and an adjusting rod connecting the anchor with another portion of the post, a brace pivoted to the fence post, and extending on the side opposite said anchor, said brace having on its lower end an earth engaging plate, the said post being also provided with an earth engaging plate secured to the flange disposed transversely of the line of the fence wires, substantially as described.

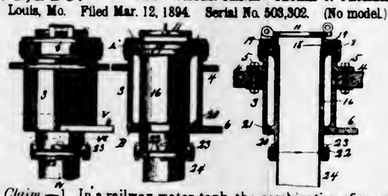


4. In a wire fence, a fence post composed of two pieces of angle iron having one flange of each vertically overlapping a flange of the other and rigidly united thereto, the other flanges of said pieces extending at an angle to said united flanges in opposite directions, whereby a broad surface is provided adjacent to the surface of the ground to prevent lateral vibration, substantially as described.

5. In a wire fence the combination with the supporting posts and a series of fence wires, of a stay bar composed of angle iron having one flange provided with apertures for loosely engaging certain of said wires, and the other flange provided with inwardly bent portions rigidly attached to the other wires to secure said bar in position and to hold said latter flange out of engagement with the fence wires loosely engaging said stay bar, substantially as described.

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**528,110. RAILWAY WATER-TANK.** THOMAS J. PROSSER, St. Louis, Mo. Filed Mar. 12, 1894. Serial No. 503,302. (No model.)



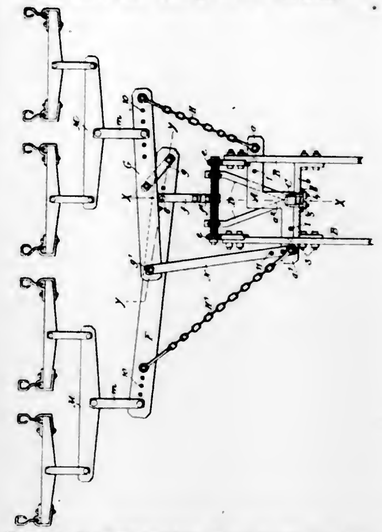
*Claim.*—1. In a railway water tank, the combination of a casing secured in the tank, a discharge pipe section located within the casing, and having a flange on its upper end resting upon the upper end of said casing and above the bottom of the tank, and a flange at its lower end bearing against said casing, a cap threaded onto the upper end of the housing and covering the upper end of the pipe section, a valve hinged to the cap, a packing located between the cap and the upper flange of the pipe section and a discharge pipe removably secured to the lower end of said section, substantially as set forth.

2. In a railway water tank, the combination of a casing secured to the tank and formed with lugs at its lower end, a revoluble discharge pipe section located within the casing and removable therefrom and a flange on the lower end of the pipe section and adapted to bear against the lugs on the casing, substantially as and for the purpose set forth.

3. In a railway water tank, the combination of a casing secured to the tank, a revoluble discharge pipe section located within the casing and removable therefrom and a suitable bearing between the said casing and pipe sections at their lower ends in order to allow the escape of all water between the casing and pipe section, substantially as shown and described.

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**528,111. DRAFT-EQUALIZER.** GEORGE W. RAYMOND, Seneca, Ill. Filed July 6, 1894. Serial No. 516,704. (No model.)



*Claim.*—1. In a draft-equalizer, the combination, with a plow-beam, of a draft-plate pivotally secured thereto, a lever, an equalizer pivotally connected to the lever, an equalizer-strap connected at one end to the point of pivotal connection of the lever and equalizer and at the other end to the draft-plate, chains connecting the ends of the lever and equalizer with the draft-plate, means for attaching the equalizer to the end of the plow-beam, and doubletrees adjustably attached to the lever and equalizer, respectively, substantially as described.

2. In a draft-equalizer, the combination, with a plow-beam, of a right angular draft-plate pivotally secured thereto, a lever, an equalizer pivotally connected to one end of the lever, an equalizer-strap connected at one end to the point of pivotal connection of the lever and equalizer and at the other end to the draft-plate, chains adjustably connecting the ends of the lever and equalizer with the draft-plate, means for attaching the equalizer to the end of the plow-beam, and doubletrees adjustably attached to the lever and equalizer, respectively, substantially as described.

3. In a draft-equalizer, the combination, with a plow-beam, of a draft-plate comprising two arms and a central portion, one of said arms being in advance of the other, pivotally secured thereto, a lever, an equalizer pivotally secured to one end of the lever, an equalizer-strap connected at one end to the point of pivotal connection of the lever and equalizer and at the other end to the draft-plate, a connecting-link pivotally secured at one end to one end of the equalizer and at the other end to the center of the lever, chains adjustably connecting the ends of the lever and equalizer with the respective arms of the draft-plate, means for attaching the equalizer to the end of the plow-beam, and doubletrees adjustably attached to the lever and equalizer, respectively, substantially as described.

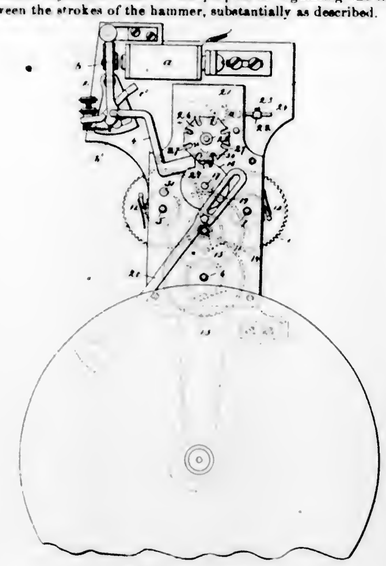
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**528,112. GONG.** JEROME REDDING, Malden, Mass. Filed July 20, 1891. Serial No. 400,031. (No model.)

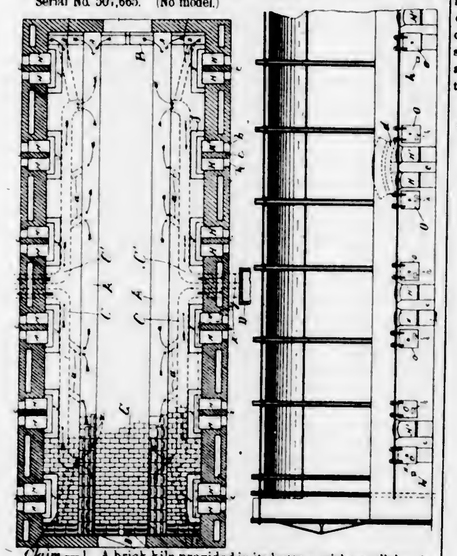
*Claim.*—1. The combination in a gong striking mechanism including a motor, a gong, and hammer, of a let-off mechanism for releasing said striking mechanism, and an adjustable regulating device for altering the degree of rapidity of the strokes of the gong, substantially as described.

2. The combination with a gong striking mechanism consisting of three driving springs and intermediate gearing, a pivoted hammer lever, a crank or disk and connecting means for operating the hammer lever from said crank or disk, and a pin for engaging a trigger lever, a let-off mechanism, and an adjustable regulating device for altering the degree of rapidity of the strokes of the gong.

3. The combination with a gong striking mechanism, of a regulating device, operated by said striking mechanism, and operating through a train of gearing, an escapement and verge provided with a rod and adjustable collar for the purpose of regulating the time between the strokes of the hammer, substantially as described.



528,113. BRICK-KILN. GEORGE S. M. RUTTER, Canton, Ohio, assignor of one-half to Jacob J. Renkert, same place. Filed Apr. 16, 1894. Serial No. 507,665. (No model.)

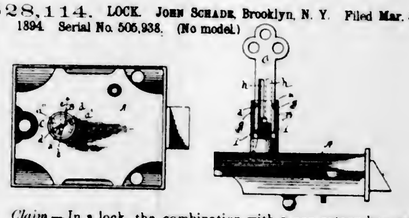


*Claim.*—1. A brick kiln provided in its bottom with parallel main longitudinal flues A, transverse end flues B, extending to the corners of the kiln and communicating between their ends with the ends of the flues A, the tops of said flues A, B, being foraminated, or intersticed to receive heat and gases from the kiln, auxiliary longitudinal closed or covered passages C C communicating with the passages A at different points and leading to a stack, the closed or covered passages E connecting the inner ends of the flues C C with the ends of the end flues B to regulate the heat in the extreme corners of the kiln, and a damper or gate mechanism for said flues substantially as set forth.

2. A brick kiln comprising the masonry work, the main chamber or kiln proper, a series of twin furnaces in the side walls of the kiln; each pair of furnaces opening at their rear open ends into a common bag or combustion chamber, a transverse air passage *k* in the bag wall and having a series of openings *l* leading from it into the bag or chamber, and inlet passages *h h* extending through the furnace walls and up through the bag wall to the respective ends of the passage *k*, parallel longitudinal flues, A A in the bottom of the kiln, transverse end flues B B communicating between their ends with said flues A; the flues A, B having perforated covers, auxiliary longitudinal flues C, C' communicating at their one end with the flue A and also having transverse passages *a* connecting them therewith, flues E E connecting the ends of flues B, B with the opposite ends of the flues C C' to regulate the heat in the extreme corners of the kiln; the flues C C' E and *a* being closed or covered with respect to the interior of the kiln, a stack into which flues C C' discharge and a gate or damper mechanism for the flues substantially as set forth.

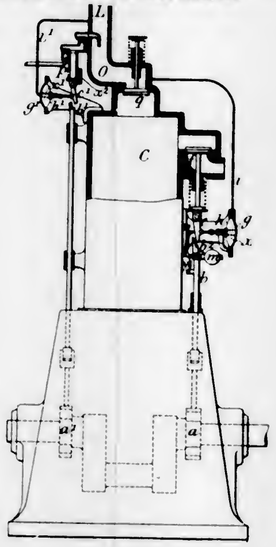
3. The combination, in a brick kiln, with twin furnaces built into the side of the kiln, and having a common bag or combustion chamber into which their rear ends open, air inlets in the bag wall and discharging into the bag, and air inlet passages leading through the front walls of the furnaces at opposite sides of the door openings inwardly and upwardly to said air inlets of the sliding doors adapted to close the respective air inlet passages when moved from over the door openings, substantially as set forth.

528,114. LOCK. JOHN SCHADE, Brooklyn, N. Y. Filed Mar. 31, 1894. Serial No. 506,938. (No model.)



*Claim.*—In a lock, the combination with a non rotary key cylinder or barrel having an internal throat or projection formed with opposite key passes or slots, a rotary disk seated in the outer portion of said cylinder or barrel and having a centrally constructed key slot, and a bolt actuating plug having lateral grooves or key seats, and a central portion against which a key can take no hold, substantially as specified.

528,115. GAS OR OIL MOTOR-ENGINE. HERMANN SCHUMM, Cologne-Deutz, Germany, assignor to the Gas-Motoren-Fabrik-Deutz, same place. Filed Feb. 21, 1894. Serial No. 501,026. (No model.) Patented in Switzerland Jan. 3, 1894, No. 7,730; in Belgium Jan. 5, 1894, No. 107,980, and in Italy Jan. 30, 1894, LXIX, 396.

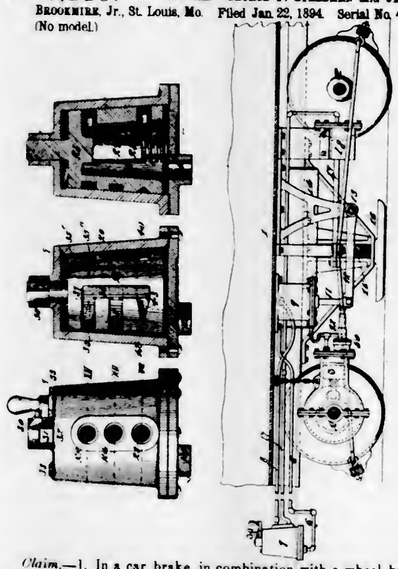




*Claim.*—1. In a four stroke cycle gas or oil motor engine the combination of an oil pump or equivalent device for introducing combustible fluid under pressure into the mixing chamber, an eccentric cam or crank on the engine shaft for actuating such device, through the medium of a stem pivoted to such device, a chamber communicating with the mixing chamber or air supply pipe, and containing a flexible diaphragm or equivalent device connected to said stem and acted upon by a spring causing it to move said stem out of line with the eccentric, substantially as and for the purposes described.

2. In a four stroke cycle gas or oil motor engine, the combination of an oil pump or equivalent device for introducing combustible fluid under pressure into the mixing chamber, and controlled by the flexible diaphragm a chamber communicating with the mixing chamber or air supply pipe of the engine, so as to supply combustible fluid to the mixing chamber during the suction stroke, a discharge valve for the combustion gases actuated by an eccentric crank or cam on the engine shaft through the medium of a pivoted stem on the valve spindle, a flexible diaphragm connected to said pivoted stem and fixed on a chamber communicating with the mixing chamber or air supply pipe of the engine, a spring tending to keep the pivoted stem in line with the rod of the eccentric, and a governor device acting upon the said pivoted stem so as to maintain this out of line with the eccentric rod when the engine is running too fast, substantially as described.

528,116. CAR-BRAKE. GEORGE F. STREDMAN and JAMES H. BROOKMIRE, Jr., St. Louis, Mo. Filed Jan. 22, 1894. Serial No. 497,630. (No model.)



*Claim.*—1. A car brake, in combination with a wheel brake mechanism, a track brake mechanism, and a pump mechanism; a single valve device by which both the wheel brake and the track brake may be applied: substantially as shown and described.

2. In a car brake, in combination with a wheel brake mechanism, a track brake mechanism, a pump, and a pressure tank; a valve device, a connection between the valve device and the pressure tank, a connection between the valve device and the wheel brake cylinder, and a connection between the valve device and the track brake cylinder; said valve device being constructed to apply both the wheel brake and the track brake; substantially as set forth.

3. In a car brake, in combination with a wheel brake mechanism, a track brake mechanism, a pump and a pressure tank; a valve device, a connection between the valve device and the pressure tank, and connections between the valve device and the cylinders of the wheel and track brakes; said valve device being constructed to apply the wheel brake and the track brake, and being constructed so that the wheel brake is first applied and the track brake first released; substantially as and for the purpose set forth.

4. In a car brake, in combination with a wheel brake mechanism, a track brake mechanism, a pump, and a pressure tank; a valve device, a pipe connection between the valve device and said tank, a pipe connection between the valve device and the cylinder of the wheel brakes, and a pipe connection between the valve device and the cylinder of the track brakes; said valve device being constructed to first apply the wheel brakes, and then the track brake without releasing the wheel brake, and being constructed to release the track brake before releasing the wheel brake; substantially as set forth.

5. In a car brake, in combination with the wheel brake mechanism and track brake mechanism and a pump, a single valve device by which both the wheel brakes and track brakes are applied; a pipe connection between the valve device and the cylinder of the wheel brake mechanism; and a pipe connection between the valve device and the track brake mechanism; said valve device being so constructed as to admit the compressed air gradually into the wheel brake cylinder, then gradually into the track brake cylinder, and then gradually release the air from the track brake cylinder, and then gradually from the wheel brake cylinder.

6. In a car brake, in combination with a pump, reservoir, a valve device and a track brake device; a wheel brake device which shall always be applied before the track brake device, by means of the same valve, and so regulated as not to allow the wheel brake device to prevent the car wheels from rotation.

7. In a car brake, in combination with a wheel brake mechanism, a track brake mechanism, and a pump mechanism; a single motorman's valve device in combination with automatic valve device by which both the wheel brakes and track brakes may be applied; substantially as shown and described.

528,117. DRAW-BAR FOR RAILWAY-CARS. ANDREW G. STEINBRENNER, St. Louis, Mo., assignor to Enrique S. Barreiras, same place. Filed May 4, 1894. Serial No. 510,103. (No model.)



*Claim.*—1. In a tension slack equalizer for stretched metal rods, the combination of the stretched slack metal rod having a loop holder end, the coupling holding bar that engages in said loop and the transpositive equalizer seated on said holder-bar and said equalizer having the respective minor and major adjustment lugs of diverse widths that are respectively adjustable from one to the other of the respective edges of said holder bar to reduce the slack engendered by the tension stretch of said metal rod: substantially as shown and described.

2. In a tension slack equalizer for stretched metal rods, the combination of the bed plate 26, provided with the elongated open slot 27, the narrow minor adjustment lug 30 and the wide major adjustment lug 32, the said lugs located and projecting from said bed-plate adjacent to reverse ends of said open slot 27, the metal rod 17, and the draw-head loop integral with said rod: substantially as shown and described.

3. In a tension slack equalizer for stretched metal rods, the combination of the rod 17, having the loop draw-head 18, the holder bar 20, and the transpositive equalizer 25, having the bed plate 26, provided with the elongated open slot 27, and having the narrow minor adjustment lug 30, with the angle retention hook 31, and the wide major adjustment lug 32, with its cotter key 34, substantially as shown and described.

4. In a tension slack equalizer for stretched metal rods, the combination of the draft frame 6, having the side pieces 5, provided with the elongated slots 21, the coupling hook 24, provided with the elongated slot 22, the draw rods 17, having the draw-head loops 18, the coupling holder bar 20, seated in working adjustment in said elongated slots 21 and 22, the transpositive equalizer 25, having the head-plate 26, provided with the elongated open slot 27, and having the narrow minor adjustment lug 30, with the angle retention hook 31, and the wide major adjustment lug 32, and the respective cotter keys 29 and 34; substantially as shown and described.

528,118. DOLLY-BAR FOR RIVETING. NEWTON D. YANT, Allegheny, Pa. Filed Feb. 17, 1894. Serial No. 500,500. (No model.)



*Claim.*—1. A dolly-bar adapted to be held against a rivet, and having a rebounding block.

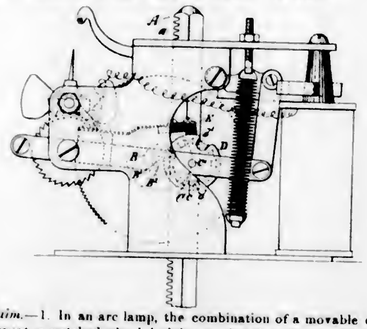
2. A dolly-bar adapted to be held against a rivet, and having a spring-actuated rebounding-block.

3. A dolly-bar adapted to be held against a rivet, and having a rebounding-block, said block being contained within the dolly-bar.

4. A dolly-bar adapted to be held against a rivet having a re-

bounding block, said block being contained within the dolly-bar and having a projecting guide stem.

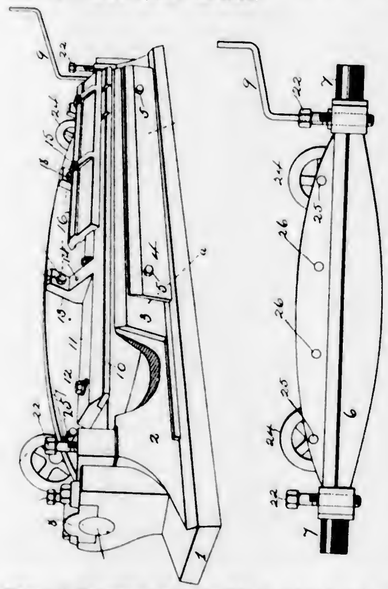
528,119. ELECTRIC-ARC LAMP. SIGMUND BERGMANN, New York, N. Y. Filed Apr. 6, 1894. Serial No. 506,563. (No model.)



*Claim.*—1. In an arc lamp, the combination of a movable carbon support, a notched wheel deriving motion therefrom and a contact piece bearing against said wheel, and caused to shift its position by the notch of said wheel, substantially as specified.

2. In an arc lamp, the combination of a movable carbon support, a wheel deriving motion therefrom, and having a single tooth, another wheel which is moved a distance of one tooth at each rotation of the said wheel having the single tooth and a circuit controlling wheel moved by the second mentioned wheel, substantially as specified.

528,120. VENEER-CUTTING MACHINE. NORMAN E. BROWN, St. Joseph, Mich., assignor of three-fourths to Merwin C. Barnes, Edward N. Hatch, John E. Klund, and John Lindt, same place. Filed Mar. 10, 1894. Serial No. 503,187. (No model.)

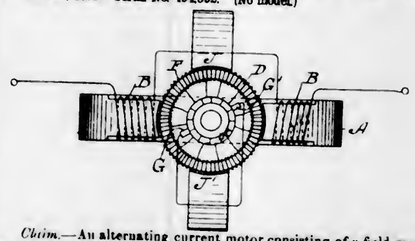


*Claim.*—1. In a veneer-cutting machine, a presser-bar clamp, a presser-bar secured thereto, a supporter or carrier having trunnions or ends journaled in the framing, adjusting screws adapted to horizontally adjust said presser-bar clamp and means, as set screws or screw bolts adapted to secure said presser bar clamp to its supporter and lock said supporter in its adjusted positions, substantially as and for the purpose set forth.

2. In a veneer-cutting machine, a framing, a knife bar, knife and knife-clamp, a presser-bar and presser-bar clamp supporter or carrier rockingly journaled in the framing a lever adapted to rock said supporter or carrier on its journals, hand-wheels and set screws adapted to transversely or horizontally adjust said presser-bar clamp and means, as screws or bolts, for connecting said presser-bar clamp and supporter and securing said supporter in its adjusted positions, substantially as and for the purpose set forth.

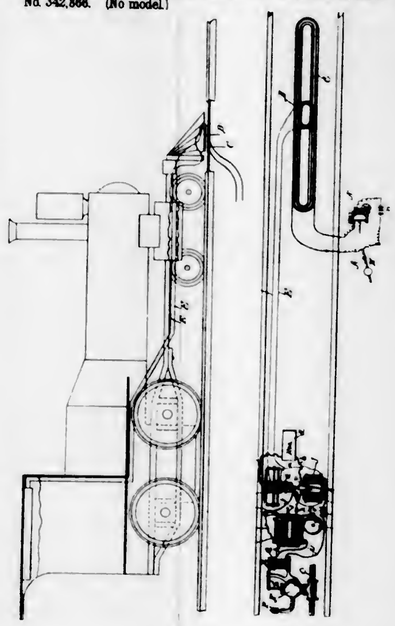
3. In a veneer-cutting machine, a framing, a knife and knife-clamp secured thereto, a presser-bar supporter rockingly journaled at its respective ends in said framing, a lever adapted to rock said supporter on its journals, set screws adapted to secure said supporter in its adjusted positions, a presser-bar clamp carrying a presser-bar and having vertically and horizontally-slotted lugs or arms, set screws for horizontally adjusting and supporting said presser-bar clamp, a spur-bar, a spur-bar clamp having grooved under face to receive said spur-bar and clamp, screws or bolts extending vertically through said spur-bar clamp and engaging the vertical slots in the lugs in the presser-bar clamp for the purpose of connecting said spur-bar clamp and presser-bar clamp, substantially as and for the purpose set forth.

528,121. ALTERNATING-CURRENT MOTOR. CHARLES T. CHILD, Ashland, Va., assignor to the Electric Power Company, of Maine. Filed Dec. 22, 1893. Serial No. 494,392. (No model.)



*Claim.*—An alternating current motor consisting of a field magnet with alternating and opposite poles; a closed circuit armature and its core with alternating and opposite poles; a commutator, and its brushes short circuiting the armature coils; and masses of iron J J' between the alternating and opposite poles of the field magnet, to reduce the current which is induced in the armature coils by the alternating current in the field coils substantially as set forth.

528,122. AUXILIARY SIGNALING SYSTEM FOR RAILWAYS. MAHLON S. CONLY, Chicago, Ill., assignor to the United States Electric Railway Signal Company, New York, N. Y. Filed Mar. 6, 1890. Serial No. 342,866. (No model.)





*Claim.*—1. In an auxiliary signaling system for railways, the combination with the stationary signals along the track, an electric circuit at each of said signals, adapted and arranged to be closed upon the operation of the signal to show danger, and a primary coil included in said circuit; of a secondary coil and circuit carried by the engine, a battery or other electric circuit also upon the engine, and a generator and signaling device included in said battery circuit, said battery circuit being adapted and arranged to operate said signaling device upon the passage of the secondary coil through the magnetic field of the primary coil of the track signal, substantially as and for the purpose described.

2. In an auxiliary signaling system for railways, the combination with the stationary signals along the track, an electric circuit at each of said signals, adapted and arranged to be closed upon the operation of the signal to show danger, and a primary coil included in said circuit; of a coil carried by the engine, an induction instrument having an electro-magnet with the terminals of which the terminals of said secondary coil connect respectively, an electric circuit also on the engine, signaling devices included in said second circuit, a secondary circuit on the engine and a relay included in said secondary circuit, substantially as described.

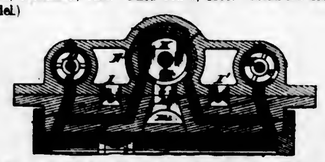
3. In an auxiliary signaling system for railways, the combination with the stationary signals along the track, an electric circuit at each of said signals, adapted and arranged to be closed upon the operation of the signal to show danger, and a primary coil included in said circuit, of a secondary coil carried upon the engine, an induction instrument, comprising a pair of permanently magnetized electro-magnets, and a vibrating armature therefor, with each of which magnets connects a terminal of said coil, a closed primary circuit of which said vibrating armature constitutes a part, a signaling device included in said primary circuit, a resistance also included in said circuit for rendering said device inoperative, a secondary circuit, of which said vibrating armature constitutes a part, operated by induction from the primary circuit, a relay magnet included in said circuit, the armature tongue of which, upon the energizing of said magnet, is adapted and arranged to shunt the primary circuit so as to cut out the resistance, and thereby operate the signaling device, substantially as described.

4. In an auxiliary signaling system for railways, the combination with the stationary signals along the track, an electric circuit at each of said signals, adapted and arranged to be closed upon the operation of the signal to show danger, and a primary coil included in said circuit; of a secondary coil and circuit carried upon the engine, a battery or other electric circuit also upon the engine, and the air brake valve, a magnet for operating said valve, and a signaling device included in said circuit; said circuit being adapted and arranged to operate said signaling device and valve, upon the passage of the secondary coil through the magnetic field of the primary coil of the track signal, substantially as, and for the purpose described.

5. In an auxiliary signaling system for railways, the combination with the stationary signals along the track, an electric circuit at each of said signals, adapted and arranged to be closed upon the operation of the signal to show danger, and a primary coil included in said circuit, of a secondary coil carried upon the engine, an induction coil comprising a pair of permanently magnetized electro-magnets and a vibrating armature therefor, with each of which magnets connects a terminal of said coil, a closed primary circuit, of which said vibrating armature constitutes a part, a valve in the air-brake pipe, an electro-magnet for operating the same, included in the primary circuit, a resistance also included in said circuit for rendering said magnet inoperative, a secondary circuit, of which said vibrating armature constitutes a part, operated by induction from the primary circuit, a relay magnet included in said secondary circuit, the armature tongue of which, upon the energizing of said magnet, is adapted and arranged to shunt the primary circuit so as to cut out the resistance, thereby rendering the said electro magnet for the valve, operative, substantially as described.

6. In an auxiliary signaling system for railways, the combination with the stationary signals along the track, an electric circuit at each of said signals, adapted and arranged to be closed upon the operation of the signal to show danger, and a primary coil included in said circuit, of a secondary coil carried upon the engine, an induction coil comprising a pair of permanently magnetized electro-magnets and a vibrating armature therefor, with each of which magnets connects a terminal of said coil, a closed primary circuit, of which said vibrating armature constitutes a part, a valve in the air-brake pipe, an electro-magnet for operating the same, included in the primary circuit, a whistle or like device connected with, and operated by the discharge of the air through said valve, a resistance also included in said circuit for rendering said magnet inoperative, a secondary circuit, of which said vibrating armature constitutes a part, operated by induction from the primary circuits, a relay magnet included in said secondary circuit, the armature tongue of which, upon the energizing of said magnet, is adapted and arranged to shunt the primary circuit so as to cut out the resistance, thereby rendering operative the electro-magnet for the valve, substantially as described.

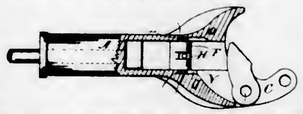
528,123. VALVE FOR STEAM-ENGINES. ARTHUR F. DEVEREUX, Cincinnati, Ohio. Filed Oct. 2, 1893. Serial No. 486,964. (No model.)



*Claim.*—1. In a steam-engine, the combination of cylinder A, having inlet-passages F, F', exhaust channels J, J', and escape port M *m*—the chest B, having inlets I, I', chamber L, provided with grooves N, N', ducts *n*, *n'*, that connect these grooves with the channels J, J', casings C, C', having grooves *c*, *c'*, and a passage leading to the escape port M *m*—the reciprocating-rotary inlet-valves D, E, fitted within these casings, and having, each, a single longitudinal slot *d*, *e*—the reciprocating-rotary outlet-valve K, fitted within the chamber L, and having a single longitudinal-slot *k*—spindles D', E', K', for operating said valves D, E, K,—and outside connections that actuate said spindles, all as herein described.

2. In a steam-engine, the combination of chamber L, longitudinal counterbalancing-chambers N, N', exhaust passages J, J', exhaust port M, and a reciprocating-rotary outlet-valve K, having a port *k* that alternately opens communication between said passages J, J', and port M, the chambers N, N', being diametrically opposite the discharging ends of said passages and receiving steam from the same through the channels *n*, *n'* as herein described.

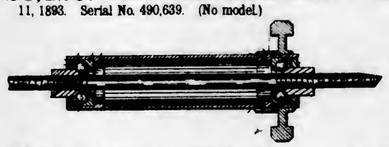
528,124. CAR-COUPLING. HENRY GALLAGER, Savannah, Ga. Filed May 3, 1894. Serial No. 509,878. (No model.)



*Claim.*—1. The combination of a drawhead, having the catch pivotally controlled, by means of trunnions at its rear end, the drawhead provided with two sets of grooves, one set of which are vertical, and the other set horizontal, said grooves adapted to provide a way for said trunnions, for the purpose of allowing said trunnions of the catch to work either upward or downward, and for the removal of said trunnions inward or outward as may be desired, substantially as set forth.

2. The combination of a drawhead having the catch pivotally controlled, by means of trunnions at its rear end, the drawhead provided with two sets of grooves, one set of which are vertical, and the other set horizontal, said grooves adapted to provide a way for said trunnions, for the purpose of allowing said trunnions of the catch to work either upward or downward, and for the removal of said trunnions inward or outward as may be desired, and the drawhead provided with an aperture in its upper wall to admit a rod, connecting the catch to suitable mechanism attached to the car, for raising or lowering the catch, substantially as set forth.

528,125. WHEEL. HENRI B. GLEASON, Oneida, N. Y. Filed Nov. 11, 1893. Serial No. 490,639. (No model.)



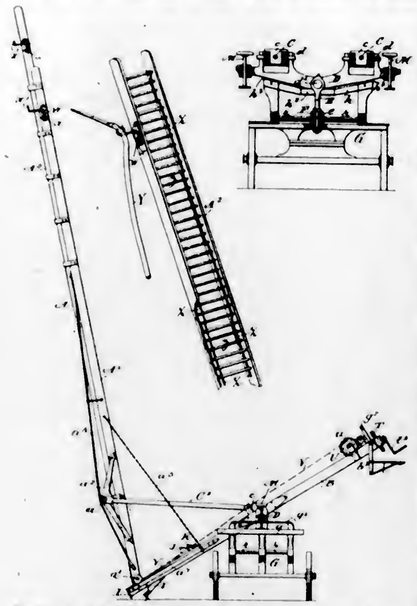
*Claim.*—1. A vehicle hub, comprising a cylindrical body, shouldered interiorly, in combination with an axle, ball bearings therein, outs upon the axle, and a dust-band comprising an annular ring case and a felt dust band within it inserted into the ends of said body

2. In a vehicle wheel, the combination with the hub-body of spokes inserted through it, and bent to lie upon its periphery and thereafter to diverge therefrom tangentially.

3. A hub comprising a cylindrical body, shoulders within it, rings within it bearing against said shoulders, an axle through the hub.

nuts upon said axle, balls between and having their bearings upon said rings and nuts, and a dust band consisting of an annular-ring case, and an annular ring of felt held in said case and projecting interiorly beyond it, in combination.

## 528,126. FIRE-LADDER APPARATUS. WILLIAM J. HORTON, Halifax, Canada. Filed Sept. 30, 1892. Serial No. 447,416. (No model.)



*Claim.*—1. A fire ladder apparatus, constructed with a frame, a rocking yoke or support swiveled thereto for horizontal movement, a platform or support pivoted to said rocking yoke and adapted to tilt and thereby obtain a ground support for a ladder, and a ladder pivoted to said platform and adapted to be raised and variably inclined, substantially as described, whereby after the platform and rocking yoke are turned horizontally and the platform is tilted downward, the platform may be vertically adjusted at the sides to level it at the ground or to laterally move the top or head of the ladder, as set forth.

2. A fire ladder apparatus, constructed with a frame, a rocking yoke or support swiveled thereto for horizontal movement, a platform or support pivoted to said rocking yoke and adapted to tilt and thereby obtain a ground support for a ladder, a ladder pivoted to said platform, and mechanism connecting the ladder and platform for raising and variably inclining the ladder, substantially as described.

3. A fire ladder apparatus, constructed with a frame, a rocking yoke or support swiveled thereto for horizontal movement, a platform or support pivoted to said rocking yoke and adapted to tilt and thereby obtain a ground support for a ladder, a ladder pivoted to the platform, and screw, nut and rod connections between the ladder and platform for raising and variably inclining the ladder, substantially as described.

4. A fire ladder apparatus, constructed with a frame, a rocking yoke or support swiveled thereto for horizontal movement, a platform or support pivoted to said rocking yoke and adapted to tilt and thereby obtain a ground support for a ladder, an extension ladder pivoted to said platform, mechanism connecting the ladder and platform for raising and variably inclining the ladder, and mechanism for extending the raised ladder, substantially as described.

5. A fire ladder apparatus, constructed with a frame, a rocking yoke or support swiveled thereto for horizontal movement, a platform or support pivoted to said rocking yoke and adapted to tilt and thereby obtain a ground support for a ladder, an extension ladder pivoted to said platform; screw, nut and rod connections between the ladder and platform for raising and variably inclining the ladder, and windlass connections for extending the raised ladder, substantially as described.

6. A fire ladder apparatus, constructed with a frame, a rocking yoke or support swiveled thereto for horizontal movement, a turntable or platform pivoted to said rocking yoke, and a ladder fulcrumed to the turntable; said frame having inclined faces next the rocking support, substantially as described, whereby the yoke and ladder platform will be free to rock on the yoke fulcrum when the platform is turned at right angles with the frame and the yoke support will be held from rocking when the platform is adjusted to transit position in line with the frame, as set forth.

7. The combination with the frame, the yoke swiveled thereto for horizontal movement and the tilting ladder supporting platform pivoted to the yoke, of leveling devices at the foot of the tilted platform, substantially as described, whereby when the platform is tilted downward to obtain a ground support for the ladder, the platform may be leveled at the ground and the head of the raised ladder may be adjusted transversely, substantially as described.

8. The combination with the frame, the tilting platform adapted when swung downward to obtain a ground support for a ladder, and a ladder pivoted to the platform, of a latch or lock device temporarily holding the tilted platform clear of the ground, substantially as described.

9. The combination with the frame, the rocking yoke swiveled thereto for horizontal movement, and the ladder sustaining platform pivoted to the yoke, of steadying screws in said yoke adapted to be turned down onto the frame when the ladder platform is tilted and gives a ground support to the raised ladder, substantially as described.

10. A fire apparatus, constructed with a wheeled truck frame, a turntable device E, *e*, thereon, a yoke or support D, journaled at *d'*, to said turntable, a tilting platform or support fulcrumed at *d*, to said yoke, a main ladder pivoted to the platform, screws C, C, on the platform, nuts on the screws, and rods C', C', connecting said nuts with the ladder, substantially as shown and described.

11. The ladder adjusting screws C, arranged between pairs of side timbers *b*, *b*, of the ladder platform, combined with the nuts c, on the screws having bearings on the parts *b*, *b*, substantially as described, whereby the screws are protected and are also relieved of transverse strains, as set forth.

12. The combination, with the tilting platform and the ladder pivoted thereto, of side rods or bars $a^7$, on the platform and lateral braces $a^5$, connected to the ladder, said braces having clips or clamps adapted to slip along the rods $a^7$, and to be tightened thereon, substantially as described.

13. The combination, with the truck frame having a portion H, provided with curved side parts connected at *h'*, to the main frame and inclined toward higher portions $h^3$; of a turntable E, *e*, on the main frame, a yoke D, fulcrumed at *d'*, to the part E, and a ladder sustaining platform fulcrumed at *d* to the yoke, substantially as described.

14. The combination, with the tilting ladder platform, of levers I, fulcrumed thereto, racks J, on the levers, pinions K, engaging the racks, and detents for the pinions and levers, substantially as described.

15. The combination, with the tilting platform, the ladder pivoted at one end thereof, and the operating screws, nuts and connecting rods on or at said platform and ladder, of the screw operating gearing *t*, *t*, T, T, *t'*, $t^2$, at the other end of the platform, and a step thereat for the operators, substantially as described.

16. The combination, with the tilting ladder platform and the ladder operating gearing at its rear end, of a swinging self-leveling step $b^3$, hung to the platform near said gearing, substantially as described.

17. The combination, with the tilting ladder platform, of a brace O, coupled to the yoke below the axis of the platform, and a bolt *o'*, clamping the brace to a bar of the platform, substantially as described.

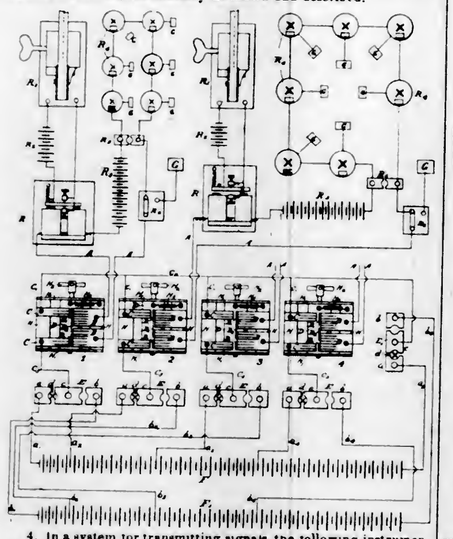
## 528,127. CIRCUIT-CHANGER FOR ELECTRIC SIGNALING SYSTEMS. JOHN F. HUNTER and SAMUEL H. LOUGH, Seattle, Wash. Filed Sept. 3, 1892. Serial No. 445,019. (No model.)

*Claim.*—1. In a system for transmitting signals, the combination with a plurality of normally closed electrical circuits with signal transmitting and receiving instruments included in each, of a battery, a plurality of normally open circuits including said battery in whole or in part as desired, and means for breaking each of the normally closed signal circuits and connecting it to its respective open battery circuit making a closed circuit through the battery and the signal transmitting and receiving instrument; substantially as described.

2. In a system for transmitting signals, the combination with a plurality of normally closed electrical circuits with signal transmitting and receiving instruments included in each and a battery for operating them, of an extra battery, a plurality of normally open circuits including said battery, a circuit changer in each closed circuit, and electrical connections therefrom to the open circuits respectively whereby any one of the signal circuits may be made to include the said extra battery; substantially as described.



3. In a system for transmitting signals the following instrumentalities, viz: two or more electrical circuits, each containing signal transmitting and receiving instruments and a battery for working the same, in combination with a circuit changing switch in each circuit, an extra battery, a common connection from one side of each circuit changer to one end of said extra battery, independent connections from the other side of said circuit changers to the other end of the battery or to such intermediate points as may be necessary to secure the right amount of current, and devices contained in each of said circuit changers for throwing into its circuit said extra battery or that portion of it contained between its two points of connection therewith, substantially as shown and described.



4. In a system for transmitting signals, the following instrumentalities, viz: two or more circuits, each containing signal transmitting and receiving instruments and a battery, in combination with a circuit changing switch, inserted in each circuit, two extra batteries, a three part plug switch for each circuit, connections from one side of each circuit changing switch to the center piece of its plug switch and from each end piece to corresponding places in the extra batteries, an extra three part plug switch, a common connection from the other side of the circuit-changing switches to the center piece of the last plug switch and from the end pieces to one end of their respective batteries, substantially as shown and described.

5. In a system for transmitting signals, two or more main line circuits with signal transmitting instruments comprising return call devices, receiving instruments in each circuit, an extra battery and circuit normally disconnected from the main line circuits, and a circuit changer in each main line circuit for connecting the extra battery circuit with the main line; substantially as described.

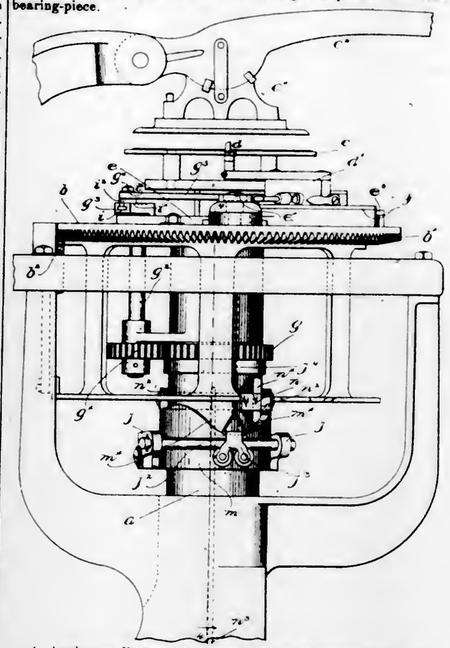
6. In a system for transmitting signals, two or more main line circuits including signal-transmitting and receiving instruments and a battery for each circuit constantly in said circuit, an extra battery and circuit normally disconnected from the main line circuits, and a circuit changer in each main line circuit with electrical connections from each circuit changer to the extra battery so that the extra battery may be placed in any one of the main line circuits; substantially as described.

## 528,128. SOLE-ROUNDING MACHINE. GIDEON JULIAN, Boston, Mass., assignor, by direct and mesne assignments, of two-thirds to S. M. Fay, same place, and Charles S. Hull, Newton, Mass. Filed Mar. 3, 1894. Serial No. 502,175. (No model.)

*Claim.*—1. A sole-rounding machine, comprising in its construction a rotary table, a knife-carrier pivoted on the table, a stationary gear, and a planet-gear carried by the rotary table and meshing with said fixed gear, said planet-gear having a crank which is connected with the knife-carrier.

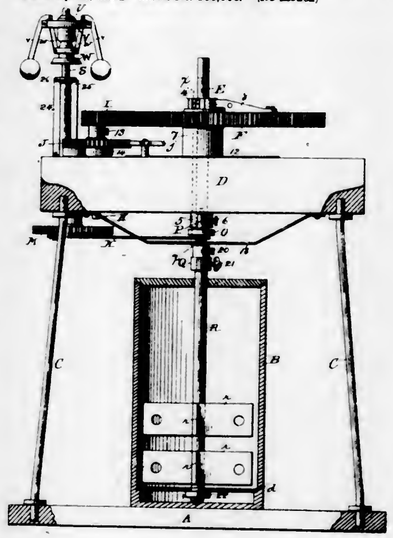
2. A sole-rounding machine, comprising in its construction a rotary table, a knife-carrier pivoted on the table, a stationary gear, a planet-gear carried by the rotary table and meshing with said fixed gear, said planet-gear having a crank, and a pitman connecting the knife-carrier and the said crank and adjustably connected with the latter.

3. A sole-rounding machine, comprising in its construction a rotary table, a knife-holder pivoted thereon, a lever carried by the table and connected with the said holder, a cam carried by said lever, a bearing-piece resting on the cam, and a weight suspended from said bearing-piece.



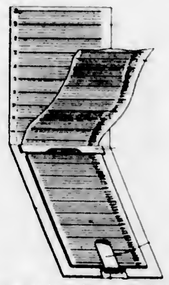
4. A sole-rounding machine, comprising in its construction a supporting column, a rotary table, a pivoted knife holder thereon, a lever pivoted to the under side of the table and embracing the column, a flexible connection between the lever and the knife-holder, a cam encircling the column and supported by the lever, a cross-bar extending through the column and bearing on the cam, and a weight suspended from the said cross-bar.

## 528,129. CHURN. MAMIE M. MONTGOMERY, Gowensville, S. C. Filed Apr. 6, 1894. Serial No. 506,600. (No model.)



*Claim.*—In a churn of the class described, the combination, with a base-plate, standards removably secured therein, a cream receptacle on the base-plate, a dasher therein, and a removable cap-plate supported by said standards, of a main shaft extending through the cap-plate, spring mechanism located within the cap-plate and adapted to impart rotary motion to said shaft, a main gear-wheel mounted on the main shaft above the cap-plate and adapted to revolve therewith in one direction only, a governor for regulating the speed of revolution of the main wheel, a shaft extending through the cap-plate and carrying a pinion on its upper end and a crank-wheel on its lower end, said crank-wheel engaging with a pinion on the governor-shaft, a short shaft mounted in the upper side of the cap-plate and carrying a pinion and a gear wheel, which respectively engage with the main wheel and the pinion on the crank-wheel shaft, a stop-pawl adapted to engage with one of the gear-wheels, an independent spindle journaled beneath the cap plate and provided with a crank-arm and a socket, the latter adapted to receive one end of a dasher-shaft, and a pitman connecting the crank-wheel and crank-arm.

**528,130. RAILWAY-TICKET AND HOLDER.** ACHILLES H. PUGH and DAVID B. MARTIN, Cincinnati, Ohio. Filed July 19, 1894. Serial No. 517,986. (No model.)



*Claim.*—1. A ticket strip holder embodying, in combination, a casing folding across its greatest length; a guide-bar adjacent to the fold adapted to pass the strip under it; a spring-clip at or near the outer end of the casing, and adapted to receive the continuous strip-ticket in the manner set forth.

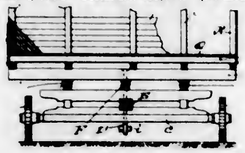
2. The combination of a folder of stiff paper or other suitable material: a guide-bar attached thereto adjacent to the fold: a spring-clip at or near the outer end, and a continuous strip-ticket attached to the folder and lying in folds beneath the clip and between it and the guide-bar and further held in place by the extension of the free end of the strip beneath the guide-bar, substantially as set forth.

3. The combination of a folder having attached to the inner side of one leaf a clip, a guide-bar attached to said leaf adjacent to the fold, and a series of numbered guide-lines upon the inner side of the other leaf, as herein set forth.

4. In a strip-ticket device, in combination with a folder having at the inner side of one leaf a series of guide cross-lines numbered, at the left side, and a guide-bar and clip attached to the other leaf: a continuous strip-ticket, adapted to be retained and fed out, as described, having a corresponding series of cross-lines extended approximately to the left edge of the strip free of numbers and being duly numbered at the opposite or right side, substantially as set forth.

5. The combination of a ticket-casing folding upon itself in two leaves: a guide-bar secured to the inner side of one leaf contiguous to the fold-line: a series of numbered guide-marks extending from the edge of the guide-bar, as a starting point, thence outwardly upon the opposite leaf, and a pivoted spring-finger attached near the outer edge of the first named leaf and folding inwardly toward the guide-bar, adapted for the attachment of a continuous strip-ticket in folds between the spring-finger and guide-bar and held by the pressure of said finger against the casing and by the free end of the strip passed outwardly beneath the guide-bar, substantially as set forth.

**528,131. MOVABLE HOUSE.** JAMES F. ROTHWELL, St. Louis, Mo. Filed Jan. 4, 1894. Serial No. 496,677. (No model.)



*Claim.*—The combination with the fore and hind gears, the bolsters, the perches, the plates located above the bolsters, the coiled springs interposed between the said plates and bolsters, the bolts connecting said plates and bolsters together, and the crossed stay chains connecting the front bolster and stay plate with the rear bolster and stay plate, of the side sills resting on said cross plates, the clips connecting said sills and plates, the cross pieces secured to said sills, the studs, the cross plates at the upper ends of the studs, the ridge pole, the floor, the siding and the roof, substantially as described.

**528,132. FLUE-CLEANER.** WILLIAM JESS, Delray, Mich. Filed Nov. 3, 1893. Serial No. 489,951. (No model.)



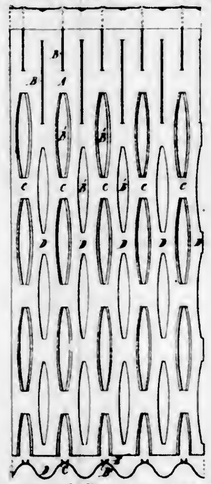
*Claim.*—1. In a flue scraper, the combination of the stem, the rotary rings mounted thereon, the curved spring arms secured at their ends in said rings, the scrapers mounted on said arms said scrapers consisting of the segmental rib-sections and the oblique acuminated ribs that are intercepted by said segmental ribs being located on opposite sides thereof and upon separate planes, one of said rings being mounted to slide on said stem to permit of the free movement of said arms.

2. In a device for the purpose set forth, the combination of the stem, the rings journaled thereon, the spring arms detachably secured at their ends in said rings, the scraper heads secured to said arms, said scrapers consisting of the segmental rib-sections and the oblique acuminated ribs that are located on opposite sides of said rib-sections in separate planes and intercepted thereby, the sleeve mounted to slide upon said stems and bearing against one of said rings, the spring in said sleeve and the screw collar for placing tension upon said spring, whereby provision is made for the longitudinal movement of one end of said arms.

3. The combination of the stem, the curved spring arms mounted thereon and detachably secured at their ends, the scrapers attached to said arms consisting of the segmental ribs intercepting the acuminated ribs which are located on opposite sides of said segmental ribs in separate planes and stand at an angle thereto.

# REISSUES.

**11,448. METALLIC LATHING.** GEORGE HAYES, New York, N. Y. Filed Sept. 11, 1894. Serial No. 522,761. Original No. 519,952, dated May 15, 1894.



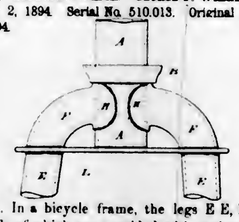
*Claim.*—1. A corrugated, slitted sheet of metal lathing, in which the corrugations are allowed for by the lateral expansion of the slits, substantially as and for the purpose described.

2. A corrugated, slitted sheet of metal lathing, having apertures therein, the edge metal of which turned outwardly, but not removed from the sheet, remains as lips, tongues, hooks or barbs, and the corrugations allowed for by lateral expansion of the openings as set forth.



3. A corrugated slitted sheet of metal lathing in which the corrugations are projected beyond the plane of the sheet by lateral expansion of the slits and the entire corrugation of the sheet allowed for by such expansion of the openings as set forth.

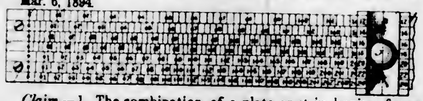
**11,449. BICYCLE-FRAME.** GEORGE F. WASHBURN, Boston, Mass. Filed May 2, 1894. Serial No. 510,013. Original No. 517,501, dated Apr. 3, 1894.



*Claim.*—1. In a bicycle frame, the legs E E, having bent portions F, the ends of which are provided with projecting lips H which are brazed to the opposite sides of the tube A, substantially as described and for the purposes set forth.

2. In a bicycle frame, the legs E E, having bent portions F, the ends of which are provided with projecting lips H, which are brazed to the opposite sides of tube A, and a yoke L uniting the tubes E E and tube A, substantially as and for the purpose set forth.

**11,450. CALCULATING-RULE.** ERNST F. STECK, Chicago, Ill. Filed Apr. 11, 1894. Serial No. 507,182. Original No. 515,978, dated Mar. 6, 1894.



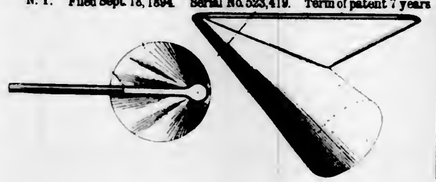
*Claim.*—1. The combination of a plate or strip having formed longitudinally thereon on one side, a series of scales, and on the other side similar scales forming a continuation of said first scales, and a double slide arranged on said plate or strip and having on one side a scale extending transversely of said plate or strip and bearing signs or characters, adapted to register respectively with the scales on said plate or strip, and a similar scale on the other side of said slide forming a continuation of the first said scale on said slide, substantially as set forth.

2. In a lumberman's rule, the combination of a plate having marked thereon a series of longitudinal graduated scales bearing numbers indicating width and the square measure of rectangular surfaces, each of said scales beginning with the same number, but each successive scale containing more numbers than the preceding one, and a slide arranged on said plate and having at its edge a scale extending transversely of the aforesaid scales and bearing numbers indicating length and increasing successively by two and adapted to register respectively with the numbers of the scales indicating width, substantially as set forth.

3. In a lumberman's rule, a plate or strip having a series of longitudinally arranged scales, in combination with a movable slide arranged thereon and having a transverse scale bearing characters indicating length and registering respectively with the scales of said series, one of said longitudinal scales having signs indicating width and the others having numbers equal respectively to the square measures of surfaces whose lengths and breadths correspond respectively with the characters in the said length and breadth scales, and each of the said numbers which indicate the square measure, being so arranged as to be substantially in line with the indicating edge of said slide when such edge is placed at the character indicating the width of the surface to be measured, substantially as set forth.

# DESIGNS.

**23,711. FABRIC-RENOVATOR.** MARY S. KJELLSTROM, New York, N. Y. Filed Sept. 18, 1894. Serial No. 523,419. Term of patent 7 years.



*Claim.*—The design for a renovator as herein shown and described.

**23,712. SUSPENDER-WEBBING.** WILLIAM LÖCKE, Philadelphia, Pa., assignor to M. W. Lipper & Co., same place. Filed Aug. 10, 1894. Serial No. 519,996. Term of patent 3½ years.



*Claim.*—The design for a suspender webbing substantially as shown and described.

**23,713. HANDLE FOR SHADE-PULLS.** GEORGE F. HENNEL, Philadelphia, Pa. Filed Jan. 26, 1894. Serial No. 498,147. Term of patent 7 years.



*Claim.*—The design for the handle of a shade pull, substantially as described and as shown in the accompanying drawings.

**23,714. CARPET.** PIERRE C. CHAMBELLAN, West Hoboken, N. J., assignor to the Bigelow Carpet Company, New York, N. Y. Filed Sept. 25, 1894. Serial No. 524,115. Term of patent 3½ years.

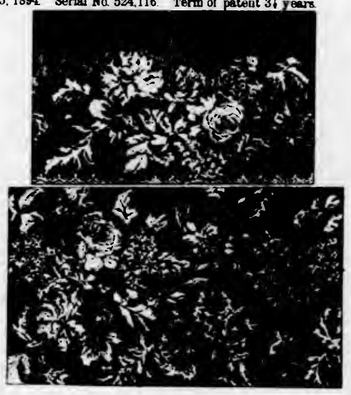


*Claim.*—1. In a design for a carpet, the body A substantially as shown.

2. In a design for a carpet, the border B substantially as shown.

3. The design for carpets consisting of the body A and border B, substantially as shown.

**23,715. CARPET.** PIERRE C. CHAMBELLAN, West Hoboken, N. J., assignor to the Bigelow Carpet Company, New York, N. Y. Filed Sept. 25, 1894. Serial No. 524,116. Term of patent 3½ years.



*Claim.*—1. In a design for a carpet, the body A, substantially as shown.

2. In a design for a carpet, the border B, substantially as shown.

3. The design for carpets, consisting of the body A and border B, substantially as shown.

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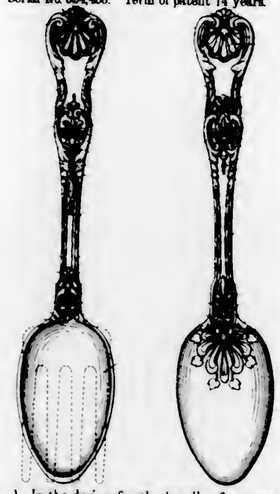
23,716. STICK OR SCARF PIN. EDWARD B. THORNTON, Providence, R. I. Filed Aug. 17, 1894. Serial No. 520,631. Term of patent 3½ years.



*Claim.*—The design for a stick or scarf pin substantially as herein shown and described.

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23,717. SPOON, &c. WILLIAM C. CODMAN, Providence, R. I., assignor to the Gorham Manufacturing Company, same place. Filed Sept. 28, 1894. Serial No. 524,403. Term of patent 14 years.



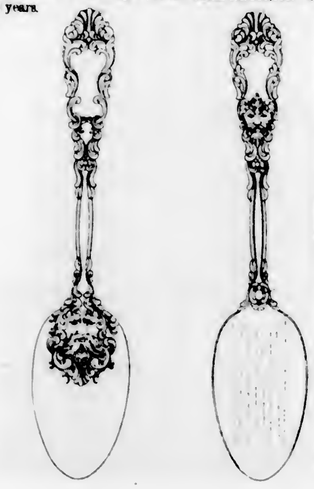
*Claim.*—1. In the design for the handle of a spoon or similar article, the obverse as herein shown and described.

2. In the design for the handle of a spoon or similar article, the reverse as herein shown and described.

3. The design for handles of spoons and similar articles as herein shown and described.

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23,718. HANDLE FOR SPOONS, &c. GILBERT L. CROWELL, Jr., Arlington, N. J. Filed July 23, 1894. Serial No. 518,399. Term of patent 14 years.



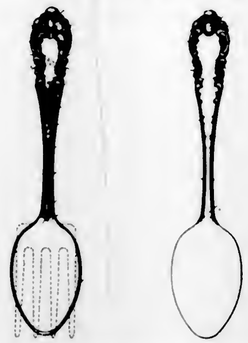
*Claim.*—1. In the design for the handle of a spoon, fork or similar article, the obverse side of the handle, substantially as shown and described.

2. In the design for the handle of a spoon, fork or similar article, the reverse side of the handle, substantially as shown and described.

3. The design for the handle of a spoon, fork or similar article, substantially as shown and described.

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23,719. HANDLE FOR SPOONS, &c. LOUIS R. HORTON, Providence, R. I., assignor to the J. R. & S. M. Knowles Company, same place. Filed Aug. 17, 1894. Serial No. 520,632. Term of patent 7 years.



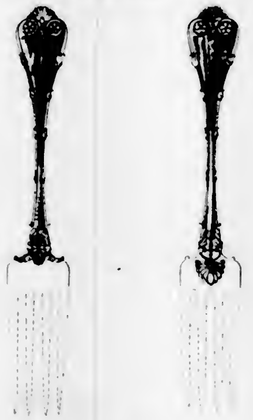
*Claim.*—1. In the design for the handle of a spoon or similar article the obverse as herein shown and described.

2. In the design for the handle of a spoon or similar article the reverse as herein shown and described.

3. The design for handles of spoons and similar articles as herein shown and described

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23,720. HANDLE FOR FORKS, &c. CHARLES OSBORNE, New York, N. Y., assignor to the Whiting Manufacturing Company, same place. Filed Aug. 7, 1894. Serial No. 519,698. Term of patent 7 years.



*Claim.*—1. In a design for a handle for spoons or similar articles, the outline herein shown and described.

2. In a design for a handle for spoons or similar articles, the obverse as herein shown and described.

3. In a design for a handle for spoons or similar articles, the reverse as herein shown and described.

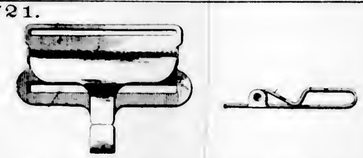
4. The design for a handle for spoons or similar articles herein shown and described.

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23,721. BUCKLE. CHARLES C. KROUSE, Williamsport, Pa. Filed Sept. 18, 1894. Serial No. 523,418. Term of patent 14 years.



23,721.



*Claim.*—The design for a buckle, substantially as herein shown.

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23,722. LAMP-BURNER. LOUIS HORNBERGER, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Sept. 19, 1894. Serial No. 523,500. Term of patent 14 years.



*Claim.*—The design for a lamp burner, substantially as shown and described.

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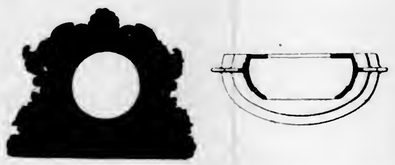
23,723. CLOCK-CASE. JOHN HOPSON, Jr., New London, assignor to the Waterbury Clock Company, Waterbury, Conn. Filed Sept. 25, 1894. Serial No. 524,113. Term of patent 7 years.



*Claim.*—The design for a clock-case as herein shown and described.

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23,724. CLOCK-CASE. JOHN HOPSON, Jr., New London, assignor to the Waterbury Clock Company, Waterbury, Conn. Filed Sept. 25, 1894. Serial No. 524,114. Term of patent 7 years.



*Claim.*—The design for a clock-case as herein shown and described.

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23,725. GUITAR. JOHN A. SUTPHEN, Zanesville, Ohio. Filed July 21, 1894. Serial No. 518,279. Term of patent 3½ years.



*Claim.*—The design for a guitar, as herein shown and described.

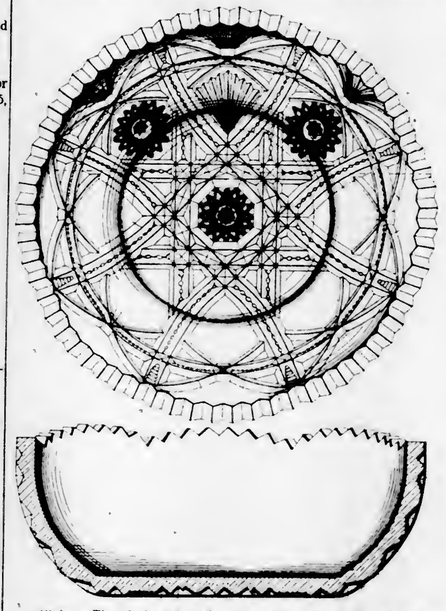
23,726. EWER OR JUG. DAVID F. HAYNES, Baltimore, Md. Filed Sept. 19, 1894. Serial No. 523,498. Term of patent 3½ years.



*Claim.*—The design for a ewer or jug as herein shown and described.

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23,727. GLASS VESSEL. HERMANN SIEGEL, New York, N. Y. Filed Sept. 24, 1894. Serial No. 523,983. Term of patent 7 years.



*Claim.*—The design for glass vessels, substantially as herein shown and described.

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23,728. SASH-LIFT. JOHN ANDREWS, Marlborough, Mass., assignor to George J. Andrews, same place. Filed Sept. 18, 1894. Serial No. 523,420. Term of patent 14 years.



*Claim.*—The design for a sash-lift substantially as herein shown and described.

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23,729. DOOR-ESCUTCHEON. GEORGE E. TYSON, Reading, Pa. Filed Sept. 27, 1894. Serial No. 524,314. Term of patent 7 years.

23,729.



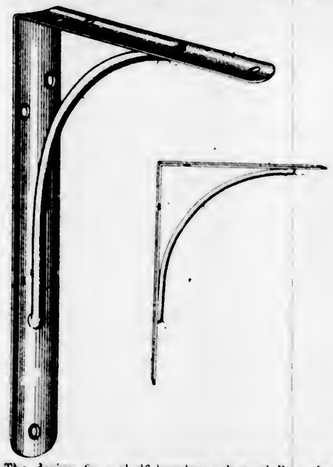
*Claim.*—The design for an escutcheon or similar article of builders hardware substantially as shown.

23,730. BRACKET. JOHN H. GAVIN, Chicago, Ill., assignor to the L. Wolff Manufacturing Company, same place. Filed Sept. 28, 1894. Serial No. 524,405. Term of patent 14 years.



*Claim.*—The design for a bracket, herein shown and described.

23,731. SHELF-BRACKET. CHARLES M. BURGESS, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed Aug. 16, 1894. Serial No. 520,525. Term of patent 14 years.



*Claim.*—The design for a shelf bracket substantially as herein shown and described.

23,732. PATTERN OR TOOL FOR GARMENT-DESIGNERS. LEOPOLD PERRETS, New York, N.Y. Filed Apr. 4, 1894. Serial No. 506,351. Term of patent 7 years.



*Claim.*—The design for a garment designer's pattern or tool, substantially as shown and described.

23,733. LAST. NICHOLAS BIER, Salem, Oreg. Filed Sept. 19, 1894. Serial No. 523,499. Term of patent 7 years.



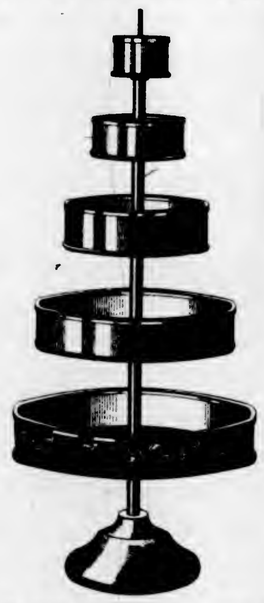
*Claim.*—The design for a last herein shown and described.

23,734. DISINFECTANT-RECEPTACLE. THOMAS S. SMITH, St. Louis, Mo. Filed Sept. 4, 1894. Serial No. 522,136. Term of patent 7 years.



*Claim.*—The design for a disinfectant receptacle, as herein shown and described.

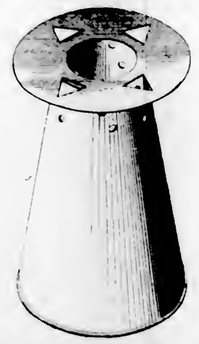
23,735. DISPLAY-STAND. GEORGE A. DRIGGS, Waterbury, Conn. Filed Sept. 17, 1894. Serial No. 523,280. Term of patent 14 years.



*Claim.*—The design for a display stand herein shown and described.

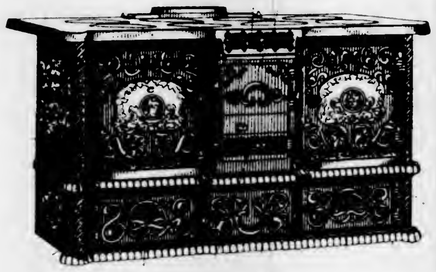


23,736. LAMP-HEATER. FRANCES RADER, Prescott, Wis. Filed Aug. 16, 1894. Serial No. 520,526. Term of patent 7 years.



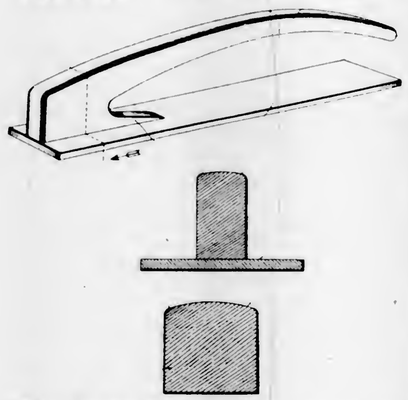
*Claim.*—The design for a lamp-heater, consisting of a truncated, conical body, and a flat, horizontal, annular top flange which overhangs said body and is provided with openings as shown.

23,737. STOVE. JOSEPH LEON GOBEILLE, Cleveland, Ohio, assignor to the Syracuse Stove Works, Syracuse, N. Y. Filed Aug. 20, 1894. Serial No. 520,845. Term of patent 7 years.



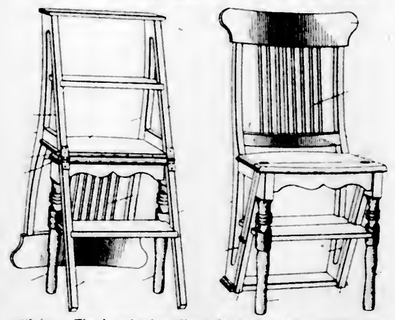
*Claim.*—The design for a stove substantially as herein shown and described.

23,738. IRONING-BOARD. JAMES H. FOUNTAIN and HENRY S. PARKER, St. Louis, Mo. Filed Sept. 10, 1894. Serial No. 522,668. Term of patent 14 years.



*Claim.*—The design for an ironing-board as herein shown and described.

23,739. STEP-LADDER CHAIR. FREDERICK H. HERHOLD, Chicago, Ill. Filed May 5, 1894. Serial No. 510,222. Term of patent 7 years.



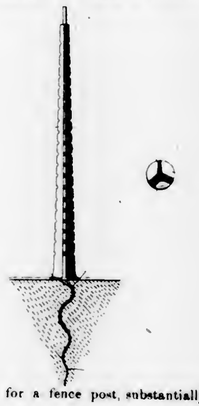
*Claim.*—The herein described design for a step-ladder chair, as set forth.

23,740. PIPE-HEAD FOR CHAIN-PUMPS. WILLIAM LICHTENBERGER, Savanna, Ill. Filed Aug. 17, 1894. Serial No. 520,640. Term of patent 7 years.



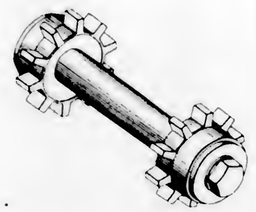
*Claim.*—The design for a pipe head, as herein described and shown.

23,741. FENCE-POST. WILLIAM JOHN NEELIN, Port Arthur, Ontario, Canada. Filed June 20, 1893. Serial No. 478,278. Term of patent 7 years.



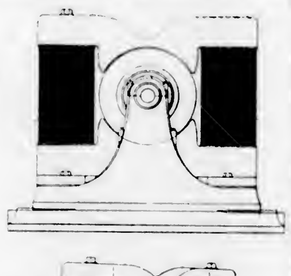
*Claim.*—The design for a fence post, substantially as herein shown.

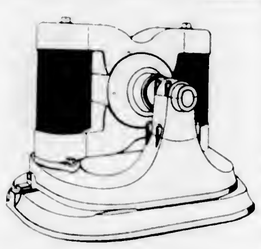
23,742. WHEEL-HUB. JACOB S. BRETZ, New York, N. Y. Filed Feb. 3, 1894. Serial No. 499,033. Term of patent 7 years.



*Claim.*—The design for a wheel-hub substantially as described and as illustrated in the accompanying drawing.

23,743. FRAME FOR DYNAMOS. CLINTON E. WOODS, Chicago, Ill. Filed June 11, 1894. Serial No. 514,253. Term of patent 14 years.





*Claim.*—The design for the frame of a dynamo electric machine substantially as herein shown and described.

23,744. GRAVE-MARKER. SIMON B. PARKER, JOSEPH K. NEWELL, and JAMES A. TURNBULL, Springfield, Mass. Filed Jan. 24, 1894. Serial No. 497,936. Term of patent 3½ years.



*Claim.*—The design for a grave-marker, substantially as shown and described.

23,745. MONUMENT. WILLIAM H. PERRY, Concord, N. H. Filed Sept. 26, 1894. Serial No. 524,204. Term of patent 7 years.



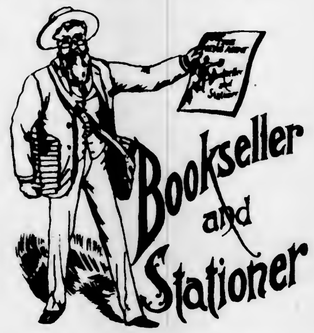
*Claim.*—The design for a monument, substantially as herein shown and described.

# TRADE-MARKS

## REGISTERED OCTOBER 23, 1894.

25,384. PRINTED PUBLICATIONS. EDWARD W. WALSH, New York, N. Y. Filed Sept. 9, 1893.

THE
NEWS AGENT




*Essential feature.*—The representation of an elderly man, with one arm extended holding a newspaper, and holding in his other hand a number of books, and having a satchel filled with books and papers suspended from his shoulder by means of a strap, and the words "THE NEWS AGENT BOOKSELLER AND STATIONER." Used since February 1, 1893.

25,385. CORSETS. JOHN E. LANCASTER, Worcester, Mass. Filed July 27, 1894.

GLOBE

*Essential feature.*—The word "GLOBE." Used since December 1, 1893.

25,386. BOOTS AND SHOES AND LEATHER FOR UPPERS. RICE & HUTCHINS, INCORPORATED, Boston, Mass. Filed Sept. 19, 1894.




*Essential feature.*—The word "ELKSKIN" associated with the representation of the head of an elk. Used since December, 1892.

25,387. SHOE-GORING. CHADBOURNE & MOORE, Boston, Mass. Filed Sept. 26, 1894.

RUBY

*Essential feature.*—The word "RUBY." Used since July 1, 1893.

25,388. SHOE-GORING. CHADBOURNE & MOORE, Boston, Mass. Filed Sept. 26, 1894.

H

*Essential feature.*—The letter "H." Used since September 1, 1892.

25,389. GINGER ALE. JOSEPH MORWITZ, Philadelphia, Pa. Filed Sept. 6, 1894.



*Essential feature.*—The representation of an Indian chief. Used since August 20, 1894.

25,390. SPRING-WATER. ARETHUSA SPRING WATER CO., Seymour, Conn. Filed July 16, 1894.

ARETHUSA

*Essential feature.*—The word "ARETHUSA." Used since March 1, 1894.

25,391. SPRING, MINERAL, AND EFFERVESCENT WATERS. FULTON WATER WORKS COMPANY, Fulton, N. Y. Filed Sept. 17, 1894.

GREAT BEAR SPRING.

*Essential feature.*—The words "GREAT BEAR SPRING." Used since November 1, 1885.

25,392. ALE AND STOUT. T. B. HALL & Co., Liverpool, England. Filed May 21, 1894.



*Essential feature.*—A pictorial representation of a boar's head. Used since January 1, 1872.

25,393. BEER. PHILADELPHIA BREWING COMPANY, Philadelphia, Pa. Filed Sept. 26, 1894.

LORELEI

*Essential feature.*—The word "LORELEI." Used since April 1, 1894.

25,394. CIGARS, CHEROOTS, AND CIGARETTES. THE HILSON COMPANY, New York, N. Y. Filed Sept. 17, 1894.



*Essential feature.*—A representation of a three-quarter figure of a man in full evening attire, wearing a high hat and top coat with fur edging. Used since November 1, 1892.

25,395. CIGARETTE-PAPER. SOCIÉTÉ ANONYME D'EXPLOITATION DES PAPETERIES L. LACROIX FILS, Angoulême, France. Filed Sept. 5, 1894.

LA ✝

*Essential feature.*—The word "LA" followed by the figure of a cross. Used since June 19, 1894.

25,396. MEDICINAL SALT FOR USE INTERNALLY. PETER JOS. LATZ, Chicago, Ill. Filed Sept. 20, 1894.

Blood-Salt.

*Essential feature.*—The name "BLOOD-SALT." Used since February 23, 1892.

25,397. CRACKERS OR BISCUITS. THE NEW YORK BISCUIT COMPANY, Chicago, Ill., and New York, N. Y. Filed Sept. 22, 1894.

Forget-Me-Not

*Essential feature.*—The double compound word "FORGET-ME-NOT." Used since August 27, 1894.

25,398. LEATHER-DRESSING. RESTORFF & BETTMANN, New York, N. Y. Filed Sept. 24, 1894.

VASEROLE

*Essential feature.*—The word "VASEROLE." Used since March 1, 1894

25,399. LEATHER-DRESSING. JOHN C. RYAN, Jr., St. Joseph, Mo. Filed July 30, 1894.

GOLDEN SEAL.

*Essential feature.*—The words "GOLDEN SEAL." Used since July 1, 1893.

25,400. SOAP POWDER. THE M. WERK COMPANY, Cincinnati, Ohio. Filed Sept. 14, 1894.

BROOM

*Essential feature.*—The word "BROOM." Used since August 29, 1894.

25,401. WOOL-OIL. THE WOOL OIL REFINING COMPANY, New York, N. Y. Filed Sept. 24, 1894.

WOOL-OLA

*Essential feature.*—The compound word "WOOL-OLA." Used since August 1, 1894.

25,402. MECHANISM AND MATERIALS FOR WATCHES AND CLOCKS. HAMMEL, RIGLANDER & Co., New York, N. Y. Filed Sept. 22, 1894.

"UNICUS."

*Essential feature.*—The word "UNICUS." Used since May 1, 1894.

25,403. SLATES. THE HYATT SCHOOL SLATE COMPANY, Limited, Bethlehem, Pa. Filed Sept. 15, 1894.

HYATT

*Essential feature.*—The word "HYATT." Used since November 23, 1885.

25,404. ROOFING, PACKING, GASKETS, INSULATING AND NON-CONDUCTING MATERIALS CONTAINING ASBESTOS. H. W. JOHNS MANUFACTURING COMPANY, New York, N. Y. Filed Sept. 14, 1894.

CANADAX

*Essential feature.*—The word "CANADAX." Used since September 1, 1894.

25,405. WELT-TRIMMERS. FRANK A. DUNHAM, Brockton, Mass. Filed July 27, 1894.




*Essential feature.*—The word "EAGLE" and the representation of an eagle. Used since June 23, 1894.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## DECISIONS OF THE U. S. COURTS.

### Supreme Court of the District of Columbia.

DURHAM *v.* SIMONDS, AS COMMISSIONER OF PATENTS.

*Decided October 9, 1894.*

1. DURHAM—DRAINAGE APPARATUS—BILL IN EQUITY, SECTION 4915, DISMISSED.

Bill in equity filed by Caleb W. Durham, for a patent for improvements in a drainage apparatus, dismissed, on the ground of lack of patentability in the subject-matter of the bill.

2. SAME—SAME—SAME—ESTOPPEL.

Where an applicant in the Patent Office withdrew claims which were rejected and substituted others with the statement that they were the ones on which he would want a final decision, *Held* that such action was a waiver by the applicant of his right to assert title to the withdrawn claims in a bill in equity under section 4915.

3. SAME—SECTION 4915—JURISDICTION OF SUPREME COURT, DISTRICT OF COLUMBIA, THEREUNDER.

The jurisdiction of the Supreme Court of the District of Columbia to proceed in a suit under section 4915 can arise only in case of refusal of an application by the Commissioner of Patents or the Supreme Court on appeal from him.

*Mr. Wm. R. Baird, Mr. J. Nota McGill*, and *Mr. Don M. Dickinson* for Durham.

*Mr. Levin H. Campbell* for the Commissioner.

COX, *J.:*

This bill is filed to obtain a decree requiring the Commissioner of Patents to issue a patent to the complainant for a certain new and improved form of drainage apparatus, which is described in the proceedings.

The complainant had made application for a patent in January, 1885, to the Patent Office. The Primary Examiner having decided adversely to him, he appealed to the Examiners-in-Chief, and from them to the Commissioner, and from his affirmance of the action of the Examiners he appealed to the Supreme Court of the District of Columbia, and, that court having affirmed the Commissioner, he has brought this suit under authority of section 4915 of the Revised Statutes.

A preliminary question is suggested as to the extent of the relief that could be granted in this form of proceeding.

In the course of the proceedings in the Patent Office the claims of complainant underwent many modifications. They were sometimes canceled, sometimes amended, increased, and again reduced in number, having been at one time as many as twenty-four, then reduced to seven and finally to three. The last appeal to the Commissioner, and from him to this Court, related only to three claims.

But the complainant insists that in this suit he may set up and ask an adjudication upon any and all of the claims presented by him from time to time to the Commissioner, although afterward withdrawn or rejected. Section 4915 provides that whenever a patent is refused either by the Commissioner of Patents or by the Supreme Court of the District of Columbia, upon appeal from the Commissioner, the applicant may have his remedy by bill in equity.

It is evident that the jurisdiction of this Court to proceed in an original suit, like the present, can only arise in case of refusal of an application by the Commissioner or by this Court on appeal from him.

The last step taken by the complainant in the Patent Office before the final rejection of his application there was to state, in a petition for a rehearing—

that the claims now standing in this case and heretofore passed upon do not accurately set up the true invention,

and that—

your petitioner having recognized the force of the objections urged, etc., has drawn other and more specific claims,

which—

he would want to be those upon which appeal would be taken and final decision had,

and which he requested "should be entered in lieu of those now standing." This was allowed, and the three claims were those which, upon rejection by the Commissioner, were appealed to this Court.

This action of the complainant would seem clearly to be a waiver of the then pending claims and of any right to correct the adverse action of the Commissioner upon them in any form. They are as completely out of the case as if they had never been before the Commissioner. To attempt to revive them here would be like attempting to revise adverse action in a suit which the plaintiff had voluntarily dismissed. Besides this, when the Commissioner refused his application the complainant had his election between bringing his suit in this Court, in equity, and prosecuting his appeal from the Commissioner and only bringing his suit upon the failure of his appeal. As he chose the latter course, I take it that the action of this Court upon the appeal is to be considered as the termination of the Office proceedings and that such action and not the previous decision of the Commissioner is to be considered as determining the jurisdiction in the present suit; and as the claims, other than the three before referred to, never went before this Court on the appeal, the condition of jurisdiction as to them fails.

My conclusion therefore is that in the present case

I am confined to the consideration of the three claims which were finally presented to the Commissioner and then, on appeal, to this Court.

I come now to the merits of these claims, but am only able to state what seem to me to be the general results of the evidence and not to review it in detail.

The complainant's application was rejected by the Office principally upon a reference to a patent issued to him in December, 1880, for an invention claimed by the Office to be substantially identical with that for which he now asks a patent. If there is any difference, it is said to be no more than what would suggest itself to one familiar with that patent and skilled in the art to which the invention relates, and it is not one which called into exercise the inventive faculty which the law encourages and rewards. If this be so, the complainant is not entitled to a patent which would, in effect, prolong his monopoly beyond the period contemplated by the law.

The patent of 1880 was for an improvement in drainage apparatus for houses and other buildings. It may be here described, generally, as consisting of an upright soil-pipe, in sections, connected below, by an elbow, with a horizontal or slightly-inclined drain-pipe and having branch pipes in the different stories to connect with water-closets and other fixtures, together with a running-trap or water seal in the drain-pipe and a ventilating air-shaft.

The device now claimed as patentable is also a drainage apparatus of the same general character as the other; but the complainant insists that it embodies patentable novelties.

The complainant says in his testimony that the device secured to him by his patent of 1880 consisted of a main drain of iron pipe, with the several sections united by bolts passing through flanges, and on this drain as a foundation the soil-pipe was erected. He proceeds to show that this mode of connecting the pipes was not received with favor by engineers, and he abandoned it and used for the drain cast-iron pipe with lead joints. In 1884, while he was constructing an apparatus for a customer having a drain-pipe of only six or seven feet in length, with leaded joints, which could be completed in the shop, all the rest of the work being screw-jointed, it flashed across his mind that if he made a trap (like B in the drawings) with screw-joints and used wrought-iron instead of cast-iron for the drain his device would be far more practicable and less expensive. It would be both, because lead joints had generally to be made at the buildings where the apparatus was to be used and by skilled workmen, whereas any ordinary workman with a wrench can screw together pipes with threaded ends. On the question of the exercise of the inventive faculty this sudden conception is exactly what he claims as the act of invention, and the invention as thus far detailed seems to consist in the substitution of wrought-iron pipes, with screw-joints, in the drain-pipe and the running-trap connections in the place of the flanged or leaded joints theretofore used.

The invention as an entirety is described in the first claim as a—

> drainage apparatus for buildings and the like, consisting of a drain-pipe, and vertical soil-pipe and branch pipes, all of wrought metal, and having cast fittings, said pipes being united by screw-threaded joints, and forming, when screwed together, a rigid and continuous structure, which will remain intact throughout its length, being supported by some part of the building, as the conditions thereof may require.

It may be remarked in passing that one advantage claimed in the specification of the patent of 1880 for the apparatus therein described was that it might rest on supports in the earth independent of the building. That is not mentioned in the present application; but it is evident that exactly the same advantage can be claimed for the new device. That which, in fact, is claimed for it is that it may also be supported on some part of the building.

The device now presented may have all the advantages claimed for it. If so, they all seem to result from the one feature of screw-joints adopted for the pipes and fittings, and that seems to be the very essence of the alleged invention.

The important question is whether that is a novelty or was already covered by the patent of 1880 and was disclosed by the specifications and drawings accompanying it.

In the specification of that patent it is said:

> This waste-pipe may be made either of wrought or cast iron pipe and the different sections should be joined together with some kind of close or tight joint, in order to prevent any leakage or escape of gases.

At that time it is evident that flange-joints, leaded joints, and screw-joints were all well known as means of connecting sections of pipes, and it could hardly be said that any one of them was not embraced in this language of the specification, even if it had stopped here; but the next sentence is:

> If wrought-iron pipe is used (*i. e.*, in the drain) the different sections or nipples are united with the ordinary screw or steam-fitting joint.

Again, with reference to the running-trap located in the drain, it is said:

> The ends of the trap are provided with flanges for the purpose of making a flanged joint with sections of the drain-pipe. The trap may, however, be provided with means for forming other suitable kinds of joints than flanged joints.

Of course this would include screw-joints, and the complainant in his testimony says:

> And while I did not altogether use screw-joints in that patent, I was aware that pipes and fittings might be so united and could probably produce a structure more nearly gas tight than one formed by adjacent flanges.

The screw-joint was well known as a means of uniting pipes for steam or drainage. In the device of 1880 all the sections of the vertical pipe were so united. So were the branch pipes united to the soil-pipe, and this last was united with the drain-pipe by being screwed into an elbow, so that the screw-joint was a prominent element in the device; and it would seem so natural to extend it to the drain-pipe and trap, if that were not already provided for in the patent, as to exclude the idea of invention; but, as we have seen, the specifications expressly provide for this very thing, and the patent of 1880 discloses and covers the drain as well as the soil pipe, of wrought-iron, and the running-trap, all united with screw-joints.

And yet we remember that what the complainant claims as his act of invention, entitling him to a patent, was the sudden conception of the utility of making the trap with screw-joints and using wrought-iron instead of cast-iron for the drain-pipe.

It may be, and there are some indications to that effect, that in his references to the screw-joints the complainant had in mind only the prevention of the leakage or the escape of gas; but it cannot be said for that reason that the patent only authorized their use for that purpose. If they are described as a part of the device or as one of the several forms of it, they are a part of it for all purposes.

Does the supposed invention consist of anything more than the discovery that one of several forms of construction, all equally covered by the patent, is more useful than others and useful for other purposes or in other respects than were in the mind of the inventor?

After sundry experiments the complainant found that a screw-joint, which he may have first thought of only as a preventive of leakage, is preferable to others on other grounds also, because it gives rigidity to the structure, because the device so constructed can be sent to customers anywhere and put up by unskilled workmen, can be made in interchangeable parts and supported in any part of the building, etc.; but, after all, is it not the same device covered by the patent of 1880? It seems to me that the patentee is bound to know the capabilities of his invention in the outset and that it is not invention to discover afterward that "he builded wiser than he knew" and that a feature in his invention which he valued for one purpose is also useful for another.

I therefore think that the complainant's invention now presented in his first claim is substantially the same as the former one and is protected by his patent of 1880, and the case falls within the rule laid down by the Supreme Court in *Miller* v. *Manufacturing Co.*, (66 O. G., 845; 151 U. S., 186,) in which that Court says:

> The result of the foregoing and other authorities is, that no patent can issue for an invention actually covered by a former patent, especially to the same patentee, although the terms of the claims may differ.

The second claim:

> 2. As an improvement in drainage apparatus having an inclined drain-pipe and composed of a series of threaded interchangeable parts, the running-trap B herein described, provided with two inclined parallel threaded openings to receive the threaded ends of inclined sections of said drain-pipe, and two similar vertical openings in the top of the trap, one to receive a perpendicular air-inlet pipe, and the other for use as a hand-hole.

I understand this claim to be simply for the trap, to be used in connection with the drain-pipe described. A running-trap with parallel openings to connect with the sections of the pipe, with two hand-holes, with screw-plugs and threaded or other joints with the drain-pipe, is provided for in the patent of 1880. The only difference is that in the patent the openings are not vertical and one of them could not be used to receive a perpendicular air-pipe. There is no claim for the air-pipe, but simply for the trap with openings, one of which can be used for the perpendicular air-pipe.

The evidence does not show any superior utility in a perpendicular over an inclined air pipe, and even if that be conceded I cannot see any patentable invention in merely changing the inclined into a vertical opening to accommodate it to the upright pipe; but, besides, there does not seem to be any novelty in the form of this trap, as it appears substantially the same in several other patents which have been referred to.

Sargent, in his patent of January, 1878, has the vertical opening so near as to be practically in his trap, with the perpendicular pipe leading to the outer air, as in this application. Knight, in his patent of March, 1878, has two vertical openings in his trap capable of the same use as those of Durham. Pike, in his patent of December, 1884, has similar openings and pipe. So has Hornbrook in his British patent of 1877.

As I understand this claim, then, it does not seem to me to present features of patentable novelty and utility.

Third claim:

> 3. As an improvement in drainage apparatus composed of a series of parts united by screw-threaded joints, the inclined threaded branch pipe, the cast fitting (F in the specification and drawing) having an inclined threaded opening to receive the threaded end of the said branch pipe at a rising grade, and a second larger threaded opening at its upper end, and the separable screw-neck flange (F') threaded on its external surface and entering said enlarged end of said fitting.

In the patent of 1880 I find a branch pipe with threaded end and a water-closet fitting receiving the end of the branch pipe, made in the form of an elbow, as in the present application, with a top or flange with screw or bolt holes for the purpose of securing the base of the water-closet to it. Then it is said that the branch pipe would be inclined from a horizontal position.

The only differences seem to be that in the present device the opening at the upper end is larger and that the flange for receiving and having screwed to it the base of the water-closet is a separate piece to be screwed into the fitting instead of being cast on it.

I am unable to see that these are patentable improvements, if, indeed, they are new.

If this claim is worth considering apart from the others, I am quite willing to be enlightened upon it.

## U. S. Circuit Court—District of New Hampshire.

LAMPREY BOILER FURNACE MOUTH PROTECTOR COMPANY *v.* ECONOMY FEED WATER HEATER COMPANY.

*Decided June 25, 1894.*

1. LAMPREY AND BUGBEE—FURNACE-MOUTH PROTECTOR—NOVELTY—VALID.

   In the Lamprey and Bugbee patent, No. 421,588, for an improvement on their Patent No. 388,367, for a structure to prevent by circulation of water the burning out of furnace-mouths, the improvement covered by claims 1 and 2, consisting of the combination, with the appliance for circulation of water set forth in the earlier patent, of a steam-dome connecting therewith and pipes affording communication with the boiler, which averts the difficulty arising from the steam generated by allowing the steam to collect in the dome and pass from it into the boiler, involves patentable novelty and was not anticipated by the Sloane patent of May 16, 1882, although that patent involved the same principle and accomplished the same results, nor by other devices previously known.

2. SAME—INFRINGEMENT.

   As the structure for the circulation of water described in the patent may be a hollow shell or other contrivance as well as pipes, an M-shaped shell structure for the channels of circulation, combined with the steam-dome device, although called a "steam-drum," is an infringement.

3. SAME—FEE—DELAY IN PAYMENT OF.

   A patent regular on its face is not subject to collateral attack because the Patent Office fee was not paid within the time prescribed by the Revised Statutes of the United States, section 4897.

THIS was a suit by the Lamprey Boiler Furnace

Mouth Protector Company against the Economy Feed Water Heater Company for infringement of a patent.

*Mr. Stephen S. Jewett* and *Messrs. Newell & Jennings* for the complainant.

*Mr. H. W. Boardman* and *Mr. F. C. Somes* for the defendant.

ALDRICH, *J.*:

The complainant claims protection for a structure designed for use in connection with various kinds of furnaces which must be highly heated. The structure is of iron and may be so placed as to sustain the mouth of the furnace; but the main purpose is to arrange about the highly-heated parts a successful circulation of water, in order that the troublesome burning out of the furnace-mouth may be averted. For a considerable number of years various devices employing water for such purpose have been in operation, but, generally speaking, with unsatisfactory results.

In 1888, B. B. Lamprey and A. C. Bugbee procured Letters Patent (numbered 388,367) in which they claimed an invention consisting of the combination, with a furnace and its mouth, of a series of pipes extending along the opposite sides and over the top of the mouth of the furnace, with inlet-pipes for the supply of water and outlet-pipes for the escape of the heated water and steam, and all so arranged and connected as to brace or support the brickwork around the mouth thereof. It is claimed that experience with this device disclosed defects of a serious character, so serious as to render the appliance of little or no value. It would seem that the failure resulted from the fact that there was no provision for steam generating in the lining or pipes as the water was passing therethrough, and, as a consequence, the steam rising to the highest point in the pipes became superheated and forced the water back into the boiler, thus leaving the pipes, and furnace-mouth as well, exposed to the highly-heated and dangerous conditions which the structure was intended to avert.

In February, 1890, Lamprey and Bugbee procured a patent based upon what was claimed to be an improvement on their earlier patent and which relieved the difficulty to which I have referred. This alleged improvement and invention, which the complainant owns and on which it now relies, is covered by the first and second claims in Letters Patent numbered 421,588, dated February 18, 1890, and consists of an appliance to the furnace-mouth linings, constructed and arranged for the circulation of water, substantially as set forth in their earlier patent, combined with a steam-dome connecting with the lining, a pipe affording means of communication between the steam-dome and boiler, and another pipe affording communication between the boiler and lining; but the material and important device is the steam-dome, which is designed to be located at a high point and where the vertical and horizontal pipes unite and above the line of the pipes through which the water circulates. In other words, it is a space above the header or manifold, (the contrivance used in the ordinary steam-radiator,) into which the steam generated in the pipes may collect, and from which it may pass, together with superheated water, into the boiler.

My conclusion is that this device is new and an improvement upon any device known prior to the patent in suit. It is proper, however, that I should state that I have not been free from doubt as to the proposition urged by the defendant that the Sloane patent of May 16, 1882, which provides for a drum in connection with its pipes, contemplates a device involving the same principle and accomplishing the same results as the one involved in the patent on which the complainant relies; but after a more careful examination I have come to the view that the complainant's improvement was not anticipated by the Sloane patent and that the steam-dome device, as combined with the structure contemplated by the earlier patent of Lamprey and Bugbee, involves patentable novelty, and is of practical utility.

The evidence satisfies me that in the old structure, under certain conditions, the circulation of water was retarded by steam generated at the highly-heated points and that the water was sometimes forced from the pipes, leaving them exposed, thus rendering the appliance worse than useless in respect to the purpose for which it was designed. It would seem that the steam dome or space above the ordinary water-line in the pipes and above the manifold or header averts the danger and relieves the difficulty described and that a combination results therefrom which accomplishes the purpose intended—that of protecting the furnace-mouth by an uninterrupted and continuous flow of water. For these reasons I must sustain the patent.

I should, perhaps, state my view as to certain positions taken by the defense upon the record and argument. One position is that there is no invention or novelty in the patent under consideration, and a large number of prior patents were introduced, which it is claimed involve all the ideas embraced in the patent in suit; and to sustain this view one McDanniell was called as a witness, who, after testifying as to the state of the art, details a conversation with Lamprey, one of the patentees, during a journey from Bristol, in November, 1888, in which the same idea was discussed, not as anything new or novel, but as a known device which might be applied to the original Lamprey and Bugbee patent. The same witness also says that he subsequently made a rough draft, and submitted it to Lamprey and Bugbee in the presence of one Covell, illustrating the known device and the manner in which it could be applied to the old Lamprey and Bugbee structure. Lamprey, Bugbee, and Covell all deny that any such conversation took place, thus putting in issue a question which it is always uncomfortable to decide; but in view of the situation, aided somewhat by the fact that McDanniell subsequently applied for a patent providing for a structure for the protection of furnace-mouths with drums at the top or ends of the water-legs and over its middle leg, into which steam formed in the channels of the heater might rise and thence pass through pipes connecting such drums with the steam-space of the boiler, I must find that McDanniell did not understand such device was old in 1888 and that the defendant's position as to the conversation is not sustained.





The defense further contended that the patent in suit was invalid for the reason that the Patent Office fee was not paid within the time provided by section 4897 of the Revised Statutes. It is not understood that this objection is open to the defense in a proceeding of this character, and I therefore dispose of this point on the ground that patents regular on their face are not the subject of collateral attack.

Defendant also contended that it was entitled to protection for the structure which it had manufactured and put in operation under the McDanniell patent of April 11, 1893; that their structure is an improvement upon anything previously in use, and that it involves patentable novelty. The defendant's manner of putting the water in circulation is different in this respect: The channels of circulation are created by an M-shaped shell structure; but the principle is the same, and the structure involves the steam-dome idea, which is the essential feature of the later patent to Lamprey and Bugbee; and, inasmuch as the Lamprey and Bugbee patent provides for and describes a structure which may be "a hollow shell or other contrivance" as well as pipes, the defendant's M-shaped shell structure, combined with the steam-dome idea, must be treated as a violation of the rights of the complainant. The result reached is that the device or appliance employed for the collection and expansion of steam and located at a point higher than the pipes or channels through which the water circulates, and whether called a "drum" or a "steam-dome," is an infringement of the complainant's rights under its patent of February 18, 1890.

Decree for complainant for injunction in accordance with these views and for an accounting according to the prayer of the bill.

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## U. S. Circuit Court—District of Massachusetts.

KNIT GOODS PATENTS COMPANY *v.* SHUMAN *et al.*

*Decided July 20*, 1894.

BARKER—SHIRT—INFRINGEMENT.

A patent for an improvement in shirts, all the claims of which apply only to shirts which have a double or supplementary front, is not infringed by a shirt having a false front forming part of the shirt, giving the appearance, without the reality, of a double or supplementary front.

THIS was a suit by the Knit Goods Patents Company against A. Shuman and others for infringement of a patent.

*Messrs. Hey & Wilkinson* for the complainant.

*Mr. James A. Skilton* for the defendants.

CARPENTER, *J.*:

This is a bill in equity to enjoin an alleged infringement of Letters Patent No. 253,256, issued February 7, 1882, to Joseph G. Barker, for a shirt. The specification and drawings show what seems to me the nearest approach to this invention which can be found in the art to which it relates. The patentee most clearly describes his invention as follows:

My invention is designed more especially for application to woolen shirts—such as are worn by bicyclers and other sportsmen—and is an improvement upon the shirt now in very general use among such men, and which is made to open in the center of its front, and is provided upon each side of said opening with a series of eyelet-holes, through which a lacing-cord of bright-colored silk is run and tied in a bow-knot at the throat, said shirt also being provided with a pair of flaps upon the inner side of said front, extending from the lower end of the opening to a point some distance below the collar of the shirt, which flaps are buttoned together before the shirt is laced up. This makes a very pretty shirt-front, and it is in great demand among the class of men who wear woolen shirts; but there is a serious objection to its use in the fact that a great deal of time is wasted in putting on and taking off the shirt, due to the fact that the lacing-cord has to be withdrawn from the eyelets for the greater part of the length of the opening in the front before the shirt can be taken off, and after the shirt is put on again the lacing-cord has to be passed through all of the eyelets from which it had previously been removed.

To obviate this objection and produce a shirt having all the good features of the old shirt, and that can be put on or taken off as readily as an ordinary shirt, is the object of my present invention; and it consists, first, in a shirt provided with a double front, arranged to be buttoned at one side of the center of said front, and with a lacing-cord run through two series of eyelets, one upon each side of the central vertical line of said front, whereby the shirt has the appearance of having its front opening laced up, while at the same time the shirt may be put on or taken off without materially disturbing the lacing-cord.

It further consists in the application to a shirt of ordinary construction of a supplementary front, secured to said shirt at one side and along its bottom by sewing or stitching and along its other vertical side by means of buttons and button-holes or other suitable separable fastenings, said front being provided with two narrow plaits or folds extending from top to bottom thereof, the free or movable edges of which are parallel with and in close proximity to each other, and on a line with the center of the shirt-front, in combination with a series of eyelet holes formed in each of said plaits at equal distances from each other and from the edge of said plait, and a lacing-cord passed alternately through an eyelet-hole in one plait and then through an eyelet-hole in the other plait or fold, so as to lace said plaits together, as will be described.

It further consists in the combination, in a shirt, of a supplementary front permanently secured to the shirt-body along one of its vertical edges and along its bottom edge by sewing or otherwise, and detachably secured to said body along its other vertical edge by buttons and button-holes or other separable fastenings, a series of eyelet-holes upon each side of and parallel with the vertical center line of said front, an eyelet formed in each end of the collar or collar-band, and a lacing-cord run through the eyelet-holes in said front, alternately from one series to the other, from the bottom to the top, and having one of its ends passed through one of the eyelet-holes in the collar and the other end through the eyelet-hole in the other end of the collar or collar-band, and then tied in a bow-knot, as will be further described.

The claims of the patent are as follows:

1. A shirt provided with a double or supplementary front, having a lacing-cord run through two rows or series of eyelet-holes arranged upon each side of the central vertical line of said front, and detachably secured to the body of the shirt along one of its vertical edges by buttons and button-holes or other separable fastenings, substantially as described.

2. In combination with a shirt of ordinary plain construction, a supplementary front permanently secured along its bottom and one vertical edge to the body of the shirt and detachably secured along its other vertical edge by buttons and button holes or other separable fastenings to said body, a pair of folds or plaits in the center of said front and extending from its top to a point near its bottom, a series of eyelet-holes in each of said plaits, and a lacing-cord run through said eyelet-holes, substantially as and for the purposes described.

3. In combination with a shirt of ordinary plain construction, the supplementary front D, provided with the folds or plaits *n* and *n'*, and secured along one of its vertical edges to the body of the shirt by buttons and button-holes or other separable fastenings, the two series of eyelet-holes *o o*, formed in the folds *n* and *n'*, the two eyelet-holes *q* and *q'*, formed in the opposite ends of the collar or collar-band, and the lacing-cord *p*, all arranged and adapted to operate substantially as described.

Without pointing out the testimony to this effect, it is sufficient to say that all the elements of the combinations here claimed are old, unless it be that a new element may be found in the lacing, which, serving for the greater part of its length a purpose only ornamental, serves at the neck the purpose of holding in place the lower margin of the collar. I have not been able to find this exact structure in the evidence. It serves, however, only the purpose of fastening, and the part of the lacing-cord so employed performs exactly the same function which was performed by the corresponding part of the lacing-cord in the old shirt, which is described and shown in the patent. The invention therefore seems to me to consist in a device for doing away with the necessity for withdrawing more than one turn of the laces, such device consisting in putting the supplementary part on the outside

instead of on the inside of the shirt, making the dependent or resulting change in the position of the buttons, and dropping or masking the fastening function of the lacing-cord, except for one fold or turn at the neck, at which point the function survives.

This interpretation of the patent seems to me to be in close accordance with the statements of the patent itself, and also with the opinion of the expert called by the complainant, who testifies as follows:

Cross-Int. 13. Please state what separate, independent, and essential new elements you find in the Barker invention of the patent in suit. Ans. It is chiefly the employment of a supplementary front, secured along one of its vertical edges and across its bottom to the body of the shirt by rows of stitches, making a permanent attachment of said parts along said portions of the supplementary front; the opposite vertical edge of the supplementary front being detachably secured to the body by buttons and buttonholes, a lacing cord running through two rows of eyelet-holes in the center of the supplementary front and through eyelet-holes in the collar or collar-band, and tied in a knot thereat. The advantages of this improved construction and combination of parts consist in the facility of putting the shirt on the person and removing it from the person without disturbing the lacing in the center of the supplementary front.

Cross-Int. 14. My question called for the separate and independent elements, and not for the entire combination of such elements. Please answer the previous question so interpreted. Ans. The elements of the combination claimed in the Barker patent are not in themselves new, when broadly considered, or when considered separate and independent of each other.

Cross-Int. 15. Do you mean to say that none of the elements in the Barker invention are in themselves novel? Ans. I do. It is the combination of these elements in a certain peculiar way which constitutes the Barker invention.

Cross-Int. 16. Please state what you understand to be the characteristics in which the combination of these old elements shows invention. Ans. They are, firstly, the peculiar attachment of the supplementary front to the body of the shirt, so as to dispense with the use of flaps, which were attached to the shirt back of the front, and were provided with buttons and buttonholes; secondly, the retention of the lacing-cord in the supplementary front, so arranged as to require only the withdrawal or inserting of one end of the lacing-cord through a single eyelet-hole in the collar-band, and leaving the lacing undisturbed in the operation of putting on and taking off the shirt. The characteristics mentioned in the question are the attachment of the supplementary front along one of its vertical edges and at its bottom to the body of the shirt by rows of stitches, and detachably connecting the opposite edge of the supplementary front by means of buttons and buttonholes, the lacing-cord running through two vertical rows of eyelet-holes in the supplementary front and through eyelet-holes in the collar-band; and, as stated in my previous answer, it is these characteristics of the combination of the enumerated elements which constitute the invention of Barker.

Observing the language of this testimony, it is seen that the witness says that the peculiar attachment of the supplementary front to the body of the shirt dispenses with the use of flaps. It might be thought from these words that it is intended to say that nothing remains to perform the function of the flaps; but on examination of the drawings and of the words of the specification it appears that this is not his meaning. The supplementary front is attached to a "shirt of ordinary construction." Looking at the description and the drawings, it appears that these words are not to be taken with minute literalness. The shirt is not of ordinary construction in all respects. The buttons are not in the ordinary place; but the ordinary shirt remains in the invention so far that those parts of the front of the shirt which in wearing are concealed by the supplementary part still remain and serve the purpose of the inside flaps of the earlier form.

Still further, and in another view of this point, a reading of the whole case of the complainant makes it clear that the old function of the lacing-cord, with its resulting inconvenience or inadequacy, is still in part retained in the invention. To remove the shirt the lacing must be disturbed. The counsel for the complainant in summing up the advantages of the invention observes that the—

lacing is disturbed but little at each operation, so that the wearer is put to little inconvenience, instead of to great trouble, in putting on the shirt.

This is not, then, a patent in which the utility is so great as to lead the court to exhaust the force of established rules of construction.

The respondents' counsel argues that this specification discloses no patentable invention. He refers, in support of his argument, to the specification and drawings themselves, and also to the prior state of the art, in which I may say that I see nothing which can limit the field of invention further than it is limited by the disclosures of the patent itself, but in which it is easy to see, as I look at it, that the old shirt shown in the patent is but the last of a long series of developments extending in this as well as in various other directions. I have not, however, considered the arguments on either side of this question, because I am clear that the respondents have not infringed the patent. I therefore leave the question of patentable invention to be settled, if settled at all, in an action in which infringement shall be found.

Turning now to the alleged infringing device, I find it to be a blouse or shirt having a false front with a false lacing, the whole fastened throughout its whole surface to the shirt, or, as it might be otherwise described, the false front forming part of the shirt and being illusive only in that it gives the appearance, without the reality, of a double or supplementary front. The lacing in this, as in the patented device, serves for most of its length little or no purpose except ornament; but the turn at the throat is passed through eyelet-holes and tied, and thus serves to fasten the collar or neckband. The whole device therefore comes within the class of shirts which appear to have, but do not have, a double front, and is therefore outside the claims of the patent in suit, all of which apply only to shirts which have a double or supplementary front.

The respondents therefore do not infringe, and the bill must be dismissed, with costs.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 69.—No. 5. TUESDAY, OCTOBER 30, 1894. PRICE—$5 per year.

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## Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., October 19, 1894.*

SIR: I have to inform you that the order of this Department, dated July 9, 1894, disbarring A. F. Posey, of Vicksburg, Miss., from practice before the Department of the Interior and the Bureaus thereof, has been rescinded.

Very respectfully,

WM. H. DE LACY,
*Acting Chief Clerk.*

The Commissioner of Patents.

## Order in Relation to Drawings.

NOTICE.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January 25, 1894.*

Order No. 980, respecting the alteration of drawings, was published in the OFFICIAL GAZETTE of December 19, 1893, (65 O. G., 1771,) by mistake, and was never in force. The following is the only order in force upon that subject:

(ORDER No. 986.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January 25, 1894.*

Erasures or other alterations of drawings will not be made or permitted, except in compliance with this order.

Applicants are requested to furnish, with their originals, a blue print or other photographic copy of all drawings forming part of an application, and where this is done, the original drawings may be taken to the Attorneys' room, but not otherwise.

Before making a requirement to alter an original drawing the Examiner will formally make the blue print or other copy a part of the files, and in case no such copy has been furnished by the applicant, the Office will make such copy without charge, and thereupon the required alteration may be made by the applicant, under the direction of the Examiner and subject to his approval, or, upon request, it will be made by the Office at the expense of the applicant.

The requirement to make alterations in original drawings will be made in writing, and the applicant's response must also be in writing, and in such case the copy of the drawing, the requirement to alter, and the applicant's response will form part of the record.

Action by the Office on the merits will not be suspended pending the change of a drawing, if the invention claimed may be understood by the Examiner.

For the purposes of this order the Office, upon the request of applicants, will make blue prints at the charge of five cents a sheet.

In appeal cases and upon the declaration of an interference a blue print or other copy will be sent forward with the files, the Examiner retaining the original drawings in his room until the hearing.

Except as herein required such blue print or other copy will not be made a part of the file, and may not be preserved after an application passes into a patent.

JOHN S. SEYMOUR,
*Commissioner.*

PHOTOGRAPHIC COPIES OF DRAWINGS.

A photographic outfit has been added to the equipment of the Patent Office, and positive photographic copies of any drawing, foreign or domestic, in the possession of the Office, will be furnished upon application to parties entitled thereto, at the following rates:

| | |
|---|---|
| Size 10x15 inches | 25 cents per sheet. |
| Size 7x11 inches | 15 cents per sheet. |
| Size 5x8 inches | 5 cents per sheet. |

If a copy of the drawings in a pending application of the size 5x8 inches be ordered sent to any address, two copies must be ordered, as one copy is always retained by the Office and placed in the file for the purposes specified in the above Order No. 986, of January 25, 1894.

In ordering copies of foreign drawings, the examining division, the class, and sub-class where such drawings may be found, must be given.

Coupons will be received in payment of the above fees.

## File-Wrappers—Entries On.

It is directed that entries shall not be made on the back of a file-wrapper, containing the application-papers for a patent, of papers or actions which do not become a permanent part of the contents of the file.

A card (Form 2-384 Office Series of blanks, sample hereto attached) will be placed in the file showing all appellate actions.

## Price of Printed Copies of Patents.

Attention is called to the fact that under date of May 14, 1891, the price of uncertified printed copies of patents was fixed at the *uniform price of ten cents each*, whether purchased singly or in quantities.

## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $10; single copies, 10 cents, if mailed to foreign countries 10 cents additional for postage; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

## Issue of October 30, 1894.

| | | |
|---|---|---|
| Patents | 387—No. 528,133 to No. 528,519, inclusive. | |
| Designs | 9—No. 23,746 to No. 23,754, inclusive. | |
| Trade-Marks | 32—No. 25,406 to No. 25,437, inclusive. | |
| Labels | None. | |
| Prints | None. | |
| Reissues | 1—No. 11,451. | |
| Total issue | 429 | |

TO CITIZENS OF THE UNITED STATES.

| States | Patents and Designs. | Trade-Marks and Labels. | States | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | | | New Hampshire | | 1 |
| Arizona Territory | | | New Jersey | 9 | 1 |
| Arkansas | | | New Mexico Ter | | |
| California | 19 | 1 | New York | 40 | 5 |
| Colorado | 4 | | North Carolina | 3 | |
| Connecticut | 17 | 2 | North Dakota | 1 | |
| Delaware | | | Ohio | 35 | 2 |
| District of Columbia | 3 | | Oklahoma Ter | 1 | |
| Florida | 5 | | Oregon | 1 | |
| Georgia | 5 | | Pennsylvania | 31 | 4 |
| Idaho | | | Rhode Island | 7 | 1 |
| Illinois | 32 | 2 | South Carolina | | |
| Indiana | 15 | | South Dakota | 2 | |
| Indian Territory | | | Tennessee | 4 | 1 |
| Iowa | 5 | | Texas | 6 | |
| Kansas | 2 | | Utah Territory | | |
| Kentucky | 5 | | Vermont | 1 | |
| Louisiana | | | Virginia | 1 | |
| Maine | | | Washington | 2 | |
| Maryland | 6 | | West Virginia | 1 | |
| Massachusetts | 36 | 1 | Wisconsin | 4 | 1 |
| Michigan | 23 | 2 | Wyoming | | |
| Minnesota | 5 | | U. S. Army | | |
| Mississippi | 1 | | U. S. Navy | | |
| Missouri | 12 | | | | |
| Montana | 2 | | Total to citizens of the United States | 359 | 24 |
| Nebraska | 4 | | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Argentine Republic | | | Italy | | |
| Austria-Hungary | 2 | | Mexico | | |
| Belgium | | | Netherlands | | |
| Bermuda | | | New South Wales | | |
| Brazil | | | New Zealand | | |
| Canada | 3 | | Norway | | |
| Chile, Republic of | | | Queensland | | |
| Colombia | | | Russia | | |
| Cuba | | | Scotland | 1 | |
| Denmark | | | South Australia | | |
| Ecuador | | | Spain | | |
| England | 13 | 4 | Sweden | 1 | |
| France | 7 | 1 | Switzerland | | |
| Germany | 9 | 3 | Victoria | | |
| Hawaii | | | | | |
| India | | | Total to citizens of foreign countries | 37 | 8 |
| Ireland | 1 | | | | |

# APPLICATIONS UNDER EXAMINATION.

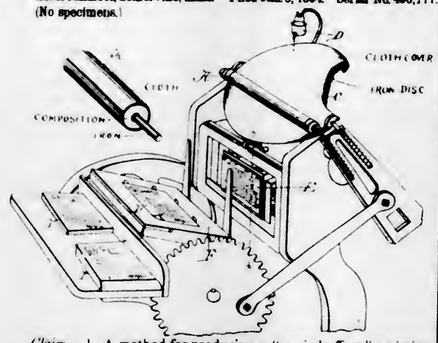
*Condition at Close of Business October 23, 1894.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Sept. 25 | Oct. 19 | 60 |
| 2 | Farm Stock, Products, etc | Sept. 25 | Oct. 18 | 107 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire-Escapes and Ladders, etc. | Oct. 16 | Oct. 17 | 42 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | Sept. 25 | Oct. 15 | 203 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | Sept. 24 | Oct. 15 | 70 |
| 25 | Arteslan and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | Sept. 28 | Oct. 13 | 137 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | Sept. 24 | Oct. 9 | 88 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Sept. 24 | Oct. 4 | 154 |
| 3 | Metallurgy, Metal-Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | Sept. 25 | Oct. 3 | 65 |
| 19 | Stoves and Furnaces | Sept. 24 | Oct. 2 | 245 |
| | *Between one and two months.* | | | |
| 33 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | Sept. 21 | Oct. 22 | 68 |
| 26 | Electricity, Generation, Distribution, Motive Power, Electric Railways, etc. | Sept. 4 | Oct. 19 | 113 |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Aug. 24 | Oct. 18 | 115 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Sept. 15 | Oct. 15 | 155 |
| 8 | Furniture, Beds, Store Furniture, etc. | Sept. 12 | Oct. 15 | 200 |
| 10 | Carriages and Wagons | Sept. 1 | Oct. 15 | 151 |
| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting, and Leather Working Machinery. | Sept. 13 | Oct. 14 | 180 |
| 12 | Mechanical Engineering, Stores-Service, etc. | Sept. 8 | Oct. 12 | 128 |
| 30 | Builders' Hardware, Safes, Dentistry, Undertaking, Artificial Limbs, etc. | Sept. 15 | Oct. 10 | 131 |
| 18 | Steam-Engineering, etc | Aug. 28 | Oct. 8 | 198 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, Surgery. | Aug. 28 | Oct. 6 | 177 |
| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Aug. 24 | Oct. 3 | 166 |
| 30 | Lamps, Gas-Fittings, Linotyping, Type-Writing Machines, Optics. | Aug. 26 | Sept. 15 | 198 |
| 21 | Textiles, etc. | Aug. 25 | Sept. 15 | 159 |
| | *Between two and three months.* | | | |
| 29 | Wood-Working Machines, Carpentry, Coopering and Roofing, etc. | Aug. 6 | Oct. 13 | 172 |
| 34 | Railway-Cars and Fluid-Pressure Railway-Brakes. | July 27 | Oct. 6 | 268 |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Aug. 6 | Oct. 5 | 239 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, Cutlery, etc. | Aug. 10 | Oct. 4 | 197 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | July 28 | Oct. 1 | 452 |
| 23 | Instruments of Precision, Acoustics, etc. | July 23 | Sept. 29 | 161 |
| 1 | Tillage and Fences | Aug. 15 | Sept. 27 | 261 |
| 17 | Paper-Manufactures and Printing. | July 27 | Sept. 27 | 188 |
| | *Between three and four months.* | | | |
| 24 | Sewing-Machines, Crinoline and Corsets, Apparel, and Toilet. | July 12 | Oct. 15 | 121 |
| | Total number of applications awaiting action | | | 5,369 |
| | *Under one month in arrears.* | | | |
| | Designs | Oct. 13 | Oct. 13 | 68 |
| | Trade-Marks | Oct. 17 | Oct. 19 | 25 |

# PATENTS

## GRANTED OCTOBER 30, 1894.

**528,133. METHOD OF PRODUCING COPIED EFFECTS ON PRINTED MATTER.** CHARLES R. ADAMSON, Muncie, Ind., assignor to Albert Hallett, Somerville, Mass. Filed Jan. 8, 1894. Serial No. 496,177. (No specimens.)

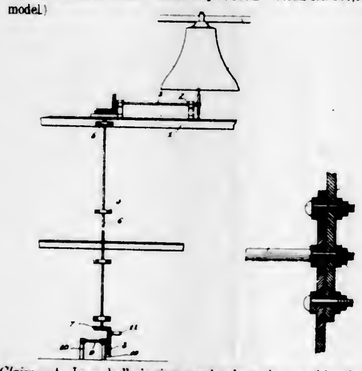



*Claim.*—1. A method for producing a "copied effect" on imitation typewriter letters which consists first, in printing the letters in a copying ink; second, covering the same form with a heavy cloth and re-printing the said letter from the said cloth covered form which is kept dampened by the press rollers acting on the said cloth cover and cloth covered ink disk to which water is supplied, all for the purpose set forth.

2. A method of producing a copied effect on imitation typewriter and autograph letters, which consists in running the letters through the press the second time on the same printing surface after the said surface has been covered with a heavy cloth or porous material and kept damp by the press rollers.

3. A method of producing a copied effect on printed imitation typewriter and autograph letters by pressing the said printed letters with a series of lines or characters corresponding to that used in the printing, the said lines or characters having a dampened cloth or porous material over their surface.

**528,134. BELL-RINGING MECHANISM.** WILLIAM G. ALEXANDER, Bozeman, Mont. Filed May 3, 1894. Serial No. 509,937. (No model.)



*Claim.*—1. In a bell ringing mechanism, the combination of a rotary shaft, arranged below and at a right angle to the bell to be rung, means for rotating the same, a bar carried by the shaft below the bell, and loose hammer rods pivoted below the bell to the bar and terminating at their outer ends in heads, substantially as specified.

2. In a bell ringing mechanism the combination of a shaft arranged below at right angles to the bell, means for rotating the shaft, a bar carried by and arranged at right angles to the shaft and recessed at diametrically opposite corners, hammer rods having heads pivoted in the recesses below the bell and elastic cushions seated in the bottoms of the recesses to support the rods when at an angle to the bar, substantially as specified.

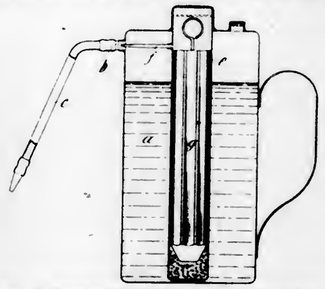
3. In a bell ringing mechanism the combination of a rotary shaft arranged and terminating below the bell, a pair of slotted overlapping arms receiving and secured to the shaft, set bolts arranged in the slots at opposite sides of the shaft and headed hammer rods pivoted to the outer ends of the bar and adapted to contact with the bell, substantially as specified.

4. In a bell ringing mechanism the combination of a horizontal shaft having a reduced threaded end, a bar comprising slotted arms overlapped and arranged on said end, washers at opposite sides of the bar, a nut on the end of the shaft against the outer washer and pivoted hammer carrying rods for the ends of the bar, substantially as specified.

5. In bell ringing mechanism the combination of a lower shaft, means for rotating the same, a bar carried by the shaft and disposed at a right angle thereto, hammer rods having heads and pivoted to the ends of the bar, stops in front of the rods for limiting their forward movement and cushions in the rear of the rods, substantially as specified.

6. In a bell ringing mechanism, a horizontal shaft, a gear carried thereby, a hammer carrying bar arranged on the shaft, hammer rods loosely pivoted to the ends of the rod, a vertical shaft, gears on the upper and lower ends thereof, a lower power shaft, a hand wheel having teeth for engaging the lower gear, all combined and operating, substantially as specified.

**528,135. DISINFECTING APPARATUS.** HILDA K. ANDERSSON, Stockholm, Sweden, assignor of one-half to David Ströstrom, same place. Filed June 18, 1894. Serial No. 514,940. (No model.) Patented in Sweden Nov. 30, 1893, No. 5,035, and in France Jan. 30, 1894, No. 235,925.

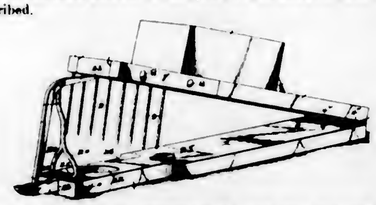


*Claim.*—A disinfecting apparatus having in combination,—an outer receptacle, a smaller one within the same, a removable heating plunger for insertion in such smaller one, a discharge-pipe from the outer receptacle, and a nozzle on the inner receptacle extending to and entering into such discharge-pipe, all substantially as shown and described

**528,136. MOLE-TRAP.** ALVIN ARNOLD, Burket, Ind. Filed June 5, 1894. Serial No. 513,546. (No model.)

*Claim.*—1. In a mole trap, the combination of a stationary base-board bifurcated at one end and adapted to lie upon the surface of the ground and over the mole hill, a lever fulcrumed in the base-board and adapted to be engaged by the mole when passing through the hill, a rod having a fork at its lower end and straddling the bifurcation in the base-board and pivoted thereto, a second lever fulcrumed to the upper end of the rod and removably connected with the first

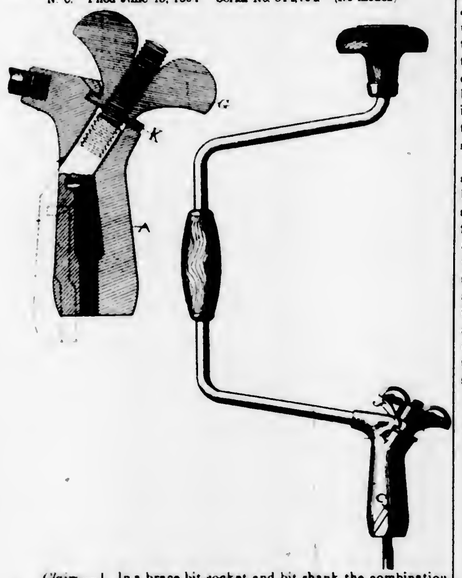
lever, and a weighted spur-carrying section pivoted to the base-board and adapted to engage the remaining end of the second lever whereby the spur-carrying section is supported, and whereby, upon the operation of the first lever, the support of said section may be destroyed and the section be allowed to fall upon the mole hill, substantially as described.



2. In a mole trap, the combination of a base-board provided with a bifurcated end and with an opening in its interior, a movable board pivoted to the base-board, spurs on said movable board and depending downwardly therefrom, a lever fulcrumed within the bifurcation of the base-board and having one of its arms notched on the upper side, a rod pivoted to the base-board over the lever, and a second lever fulcrumed to the upper end of the rod and bent to form a horizontal and vertical arm, the horizontal arm being capable of engaging the movable board and of folding into the opening in the interior of the base-board, while the vertical arm is normally seated in the notched portion of the first lever, substantially as described.

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528,137. BRACE AND BIT. JOHN W. BANNER, Banner's Elk, N. C. Filed June 15, 1894. Serial No. 514,704. (No model.)

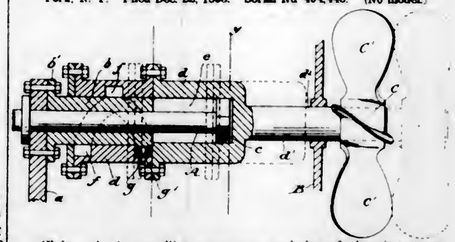


*Claim.*—1. In a brace bit socket and bit shank the combination of the head A having the recess E extending at an angle across and the slots *c c* parallel to such recess with the clamping bar H having a part to fit the recess and projections I I fitting the slots *c c* and means for drawing in the clamping bar with the bit shank having the equilateral triangular shape and with the screw tap G said tap having the circumferential flange K and being screwed on the rear end of the clamping bar with the flange fitting in the groove F, the head A having a projection I on the rear end extending out over the flange so as to keep the tap from giving back a means for drawing in and pressing out the clamping bar, substantially as described.

2. In a brace bit socket and bit shank the combination of the head A having the recess E extending at an angle across and the slots *c c* parallel to such recess with the clamping bar H having a part to fit the recess and projections to fit the slots with the screw tap G, and with the equilateral triangular shaped bit shank being secured by a triangular socket one side of said socket being represented by the inside of the head A and the other two by an acute angled gutter in the clamping bar which is adjusted to the bit shank by screw tap G allowing the bit to slide forward so as to bore a deeper hole substantially as described.

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528,138. PROPELLING APPARATUS. BENNY BERNSTEIN, New York, N. Y. Filed Dec. 22, 1893. Serial No. 494,445. (No model.)



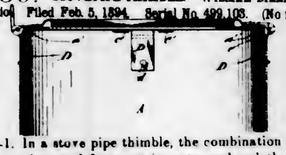
*Claim.*—1. A propelling apparatus consisting of a bearing sleeve secured to a fixed support, a guide attached thereto, a hub rotatable and reciprocable upon the bearing sleeve and formed with an internal figure 8-shaped cam-groove adapted to receive the guide carried by the bearing sleeve, a shaft extending rearwardly from the hub through the wall of the vessel and carrying the propeller blades, and means for connecting the said hub with a driving shaft, in such manner as to permit of reciprocatory motion thereof, the said bearing sleeve and the hub thereon being located within the body of the vessel substantially as shown and described.

2. A propelling apparatus consisting of a bearing sleeve secured to a fixed support, a guide attached thereto, a hub rotatable and reciprocable upon the bearing sleeve and formed with an internal figure 8-shaped cam-groove adapted to receive the guide carried by the bearing sleeve, a longitudinal recess in the said hub, a shaft extending rearwardly therefrom through the wall of the vessel, and carrying the propeller blades and a driving shaft journaled in the said bearing sleeve and provided at the end with a spider adapted to register with the recess in the hub, the said bearing sleeve and the hub thereon being located within the body of the vessel substantially as shown and described.

3. A propelling apparatus consisting of a bearing sleeve rigidly secured to a fixed support, a segmental guide swiveled to the said bearing sleeve, a hub rotatable and reciprocable upon the bearing sleeve, the said hub being formed in two portions bolted together, the forward being formed with an internal figure 8-shaped cam-groove, adapted to receive the guide carried by the bearing sleeve, the rearward part of the hub being provided with a longitudinal recess, a shaft extending from the said hub through the wall of the vessel and carrying the propeller blades, a driving shaft journaled in the fixed support and in the bearing sleeve, and provided at its end with a spider adapted to register with and work within, the longitudinal recess in the rearward part of the hub, the said bearing sleeve and the hub thereon being located within the body of the vessel substantially as shown and described.

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528,139. STOVEPIPE-THIMBLE. WILLIAM BIERMANN, Cincinnati, Ohio. Filed Feb. 5, 1894. Serial No. 499,103. (No model.)



*Claim.*—1. In a stove pipe thimble, the combination of the cylinder having an inturned flange at its outer end and the outer end slotted, bearings secured to the thimble and crossing said slots, a collar to rest upon the inturned flange of the thimble, catches journaled upon said bearings, having a long arm adapted to overlap the edge of the collar, and springs secured to the thimble to hold said catches in the locked position, substantially as shown and described.

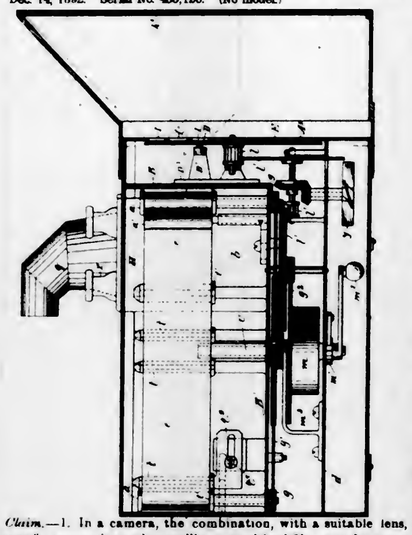
2. The combination of the thimble A having inturned flange *a'*, said inturned flange and the outer end of the thimble being slotted, the collar seated upon the inturned flange, the catch bearings secured to the thimble, the catches having cam ends journaled upon said bearings opposite said slots, and the springs secured to the inside of the thimble and pressing upon said cam ends, substantially as set forth.

3. The combination of the cylinder A having inturned flange *a'*, and slotted at *a³*, the springs D secured to the inside of the thimble and having their free ends projecting opposite said slots, the bearings C secured to the thimble across the slots, the latches C having cam ends, *c*, journaled on said bearings and having their cam ends bearing against said springs, and the collar B resting upon the inturned flange *a'* and removably confined to said flange by said latches, substantially as shown and described.

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528,140. CAMERA. JAMES R. BLACKMORE, Newark, N. J. Filed Dec. 14, 1892. Serial No. 455,120. (No model.)



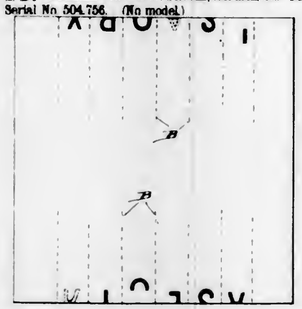
*Claim.*—1. In a camera, the combination, with a suitable lens, of means for supporting and propelling a sensitized film past the same, means for holding the lens movably whereby it may be set successively to expose different paths upon the film, and a shutter mounted upon a fixed bearing and consisting of a revolving disk having a radial slot therein adapted to uncover the lens intermittingly in each of its several positions, substantially as herein set forth.

2. In a camera, the combination, with the casing A, of the partitions B B' forming with the casing the dark chamber *b* with aperture C having lens D applied thereto, and the casing having the aperture I adjacent to the lens, feed rolls in the chamber *b* to support and propel a sensitized film adjacent to the aperture C, the slotted shutter disk E provided with pinion *l* and pivoted adjacent to the aperture I, the spring barrel *m* with gearing to rotate the feed rolls, and the gearing *l'* connecting the spring barrel with the shutter, the whole arranged and operated as herein set forth.

3. In a camera, the combination, with the casing A, of the partitions B B' forming with the casing the dark chamber *b*, with aperture C having lens D applied thereto, and the casing having the aperture I adjacent to the lens, feed rolls in the chamber *b* to propel a sensitized film adjacent to the aperture C, the shutter disk E provided with the pinion *l* and pivoted adjacent to the aperture I, the spring barrel *m* with gearing to rotate the feed rolls, the gearing *l* connecting the spring barrel with the shutter, and a governor connected with the gearing to regulate the speed of the same, substantially as herein set forth.

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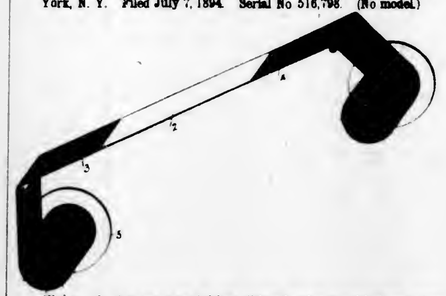
528,141. PUZZLE. MILES W. BROOKS, Atlanta, Ga. Filed Mar. 23, 1894. Serial No. 504,756. (No model.)



*Claim.*—The herein described puzzle consisting essentially of a single section of flexible material A, said section being cut from its opposite edges toward the center thereof in the manner described to form the series of parallel strips C separate from each other but integral with the body of the section, and said strips being provided with sections of letters or figures at or adjacent to their opposite edges and being adapted to be folded in the manner specified.

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528,142. TYPE-WRITER INKING-RIBBON. ALEXANDER T. BROWN, Syracuse, assignor to the Union Typewriter Company, New York, N. Y. Filed July 7, 1894. Serial No. 516,798. (No model.)

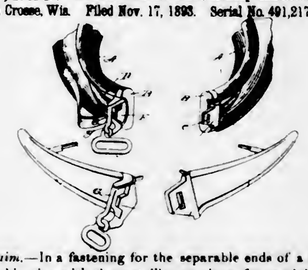


*Claim.*—1. A typewriter inking-ribbon having two kinds or colors of ink and an intermediate blank or uninked portion; substantially as and for the purpose set forth.

2. A typewriter inking-ribbon made of a continuous piece impregnated at one portion with ink of one kind or color, at another portion with ink of another kind or color, and between said portions left blank or provided with an uninked portion; substantially as and for the purpose set forth.

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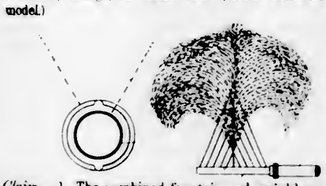
528,143. HORSE-COLLAR FASTENER. MELANCTHON T. BURKE, La Crosse, Wis. Filed Nov. 17, 1893. Serial No. 491,217. (No model.)



*Claim.*—In a fastening for the separable ends of a horse collar, the combination with the metallic cap pieces for receiving said ends having the tapered extensions fitting in the groove between the forewale and shoulder pads, of the cooperating fastening devices D, D, the larger ends of which are substantially flush with the faces of the cap pieces, one of said parts having the lip extending beyond the faces of the cap pieces and formed with an elongated transverse opening, and the other having a downwardly projecting lug over which the forwardly extending lip of the cooperating member fits, said locking parts having tapered body portions fitting in the groove between the forewale and shoulder pads on the outside and having the rivets integral therewith passing through apertures in the extensions of the cap pieces, the ends of said rivets being upset to retain the parts in place; substantially as described.

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528,144. COMBINED FOUNTAIN AND SPRINKLER. JASON R. CADWELL, Chicago, Ill. Filed Jan. 17, 1894. Serial No. 497,146. (No model.)



*Claim.*—1. The combined fountain and sprinkler consisting of a tube closed at one end and adapted to be secured to the hose at the

other end and further adapted to be moved from place to place and turned axially by moving or turning the hose, and provided with a series of lateral jetting orifices arranged in a row longitudinal of the sprinkler, those at either side of the center of the series being inclined in a longitudinal direction and toward those at the other side of the center, substantially as specified.

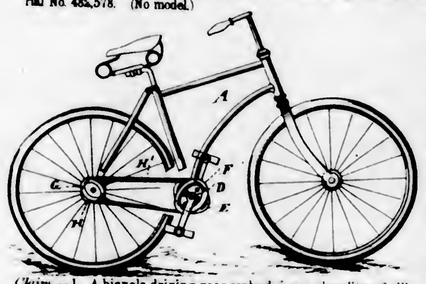
2. The combined movable fountain and sprinkler consisting of a tube closed at one end and adapted to be secured to the hose at the other end, and provided with a series of longitudinally converging jetting orifices arranged in a row longitudinal of the sprinkler, substantially as specified.

3. The combined fountain and sprinkler consisting of a tube closed at one end and adapted to be secured to the hose at the other end, and provided with a series of jetting orifices arranged in a row longitudinal of the sprinkler, the outer surface of the sprinkler being grooved at opposite sides of the orifices to widen the streams delivered therefrom in a direction transverse of the sprinkler, substantially as specified.

4. A sprinkler having a series of lateral jetting orifices arranged in a row longitudinally of the sprinkler and delivering converging streams, the outer surface of the sprinkler at opposite sides of the orifices being cut away so as to widen the jets in a direction across the sprinkler, substantially as set forth.

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**528,145.** BICYCLE. JOHN CARR, Philadelphia, Pa., assignor of one-half to John Erickson, Gloucester, Mass. Filed Aug. 7, 1893. Serial No. 482,578. (No model.)



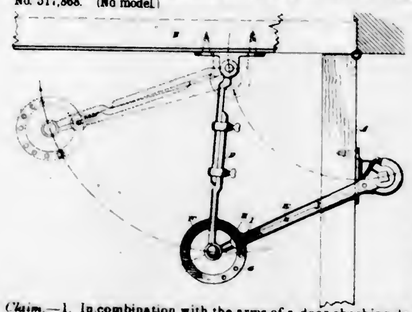
*Claim.*—1. A bicycle driving gear embodying a plurality of elliptical wheels set quartering to each other in sets, one set comprising two wheels one half the size of the other and those of each set placed quartering with relation to each other, substantially as described.

2. The combination with the frame and the rear axle and pedal shaft, of elliptical wheels on the rear axle set quartering, and chains passing over the same and over elliptical wheels also set quartering on the pedal shaft and twice the size of the first mentioned wheels, whereby lost motion is prevented, as set forth.

3. The combination with the frame and the rear axle and the pedal shaft, of elliptical wheels on the pedal shaft, set quartering with relation to each other, elliptical wheels on the hind axle and one half the size of the others, set quartering to each other and to the wheels on the pedal shaft, and chains connecting the same, whereby a taut chain is provided when the pedal is at its highest point, substantially as described.

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**528,146.** DOOR-STOP. CROMWELL O. CASE, New Britain, Conn., assignor to the P. & F. Corbin, same place. Filed July 18, 1894. Serial No. 517,868. (No model.)



*Claim.*—1. In combination with the arms of a door checking device, a plate F connected to one arm near the outer end thereof and carrying a stop projection, with a stop carried by the other arm and co-operating with the stop on the plate F, one of said stops being spring pressed, said arms being pivotally connected at their outer ends, substantially as and for the purpose specified.

2. In combination with the arms of a door checking device, a circular plate F connected to one arm near the outer end thereof and carrying the rigid stop projection H, with the spring pressed stop carried by the other arm, said stops co operating with each other and said arms being pivotally connected at their outer ends, substantially as and for the purpose described.

3. In combination with the arms of a door checking device, a ring F connected to one arm and perforated as described to facilitate adjustability of the stop H, with a spring pressed ball J carried by the other arm and projecting partially above the surface of said arm into the path of the stop H, substantially as and for the purpose specified.

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**528,147.** DOOR-KNOB. CROMWELL O. CASE, New Britain, Conn., assignor to the P. & F. Corbin, same place. Filed July 25, 1894. Serial No. 518,522. (No model.)

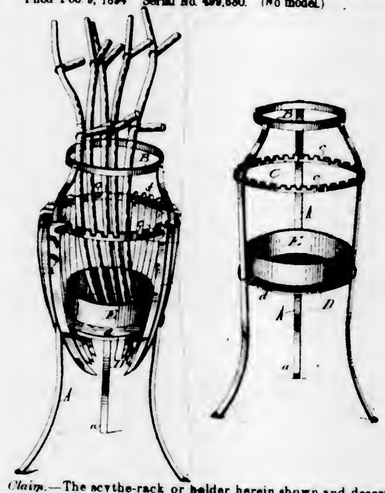


*Claim.*—1. A door knob consisting of two sheet metal shells or cups, the edge of the inner one being conformed to and by the adjacent inner surface of the outer one to prevent telescoping, the edge of the outer shell or cup being conformed to the adjacent outer surface of the inner one to prevent the separation of the parts, with a knob shank projecting from one of said cups, substantially as described.

2. The process of forming a door-knob consisting of first forming two telescopic shells, from one of which projects a suitable knob shank, and second, forcing said shells together so that the forward edge of the inner one shall be drawn inwardly, and conformed to and by the adjacent inner surface of the outer shell, the edge of which outer shell is drawn around and conformed to the adjacent part of the inner one.

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**528,148.** SCYTHE-RACK. DANIEL B. CAUBLE, Spencer, Ind. Filed Feb 9, 1894. Serial No. 499,680. (No model.)



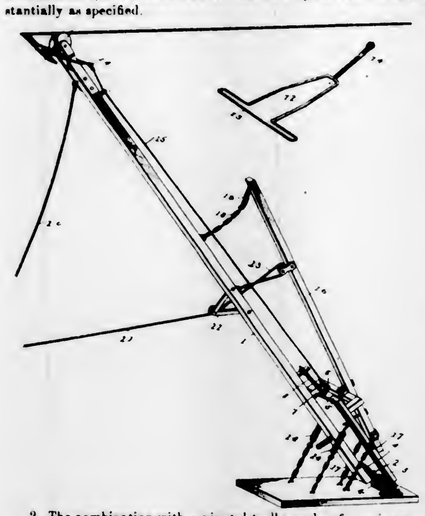
*Claim.*—The scythe-rack or holder herein shown and described, comprising, in combination, the curved legs or supports A, upper connecting band B, lower band C of larger diameter and having a series of equidistant notches c in its upper edge; base D and basin E of smaller diameter than the base, so as to leave the latter with a projecting flat rim *d*; substantially as and for the purpose herein shown and set forth.

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**528,149.** TROLLEY-CATCHER. WOODSON D. COBB, Fort Worth, Tex. Filed May 29, 1894. Serial No. 512,921. (No model.)

*Claim.*—1. The combination with a pivotal trolley-wheel, of a spring actuated supporting frame, a catch for connecting the pole to said frame, a trip arranged at the free end of the pole for engagement with a trolley-wire upon the dismounting of the trolley-wheel from said wire, and connections between the trip and said catch, substantially as specified.





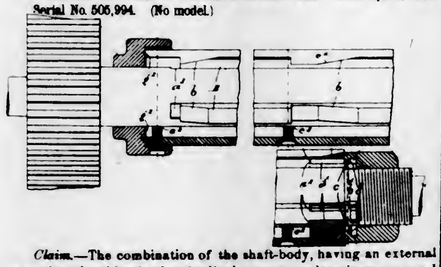
2. The combination with a pivotal trolley-pole, of a spring-actuated supporting-frame, a catch carried by the trolley-pole for engagement with said frame, a trip carried by the free end of the trolley-pole for engagement with a trolley-wire and operatively connected with said catch, an operating arm carried by the supporting-frame, and an elevating cord connected to the trolley-pole and extending around a pulley carried by said arm, substantially as specified.

3. The combination with a pivotal trolley-pole, of a spring-actuated supporting-frame, a catch carried by the pole for engagement with said frame, a trip arranged at the free end of the trolley-pole for engagement with a trolley-wire and operatively connected with the catch, an arm fulcrumed upon the supporting frame, flexible connections for limiting the upward movement of the lower end of said arm, a flexible connection between the other end of the arm and the trolley-pole, and an elevating-cord connected at one end to the trolley-pole and extending over a pulley carried by said arm, substantially as specified.

4. The combination with a pivotal trolley-pole, of a spring-actuated supporting-frame, limiting springs connected to the free ends of said frame, a catch carried by the trolley-pole for engagement with a cross-bar of the supporting frame, a trip carried by the free end of the trolley-pole and operatively connected with the catch, an arm fulcrumed upon the supporting-frame, means for limiting the upward movement of the lower end of said arm, a flexible connection between the other end of the arm and the trolley-pole and having an interposed tensile spring, and an elevating cord secured at one end to the trolley-pole and extending over a pulley on the bar, substantially as specified.

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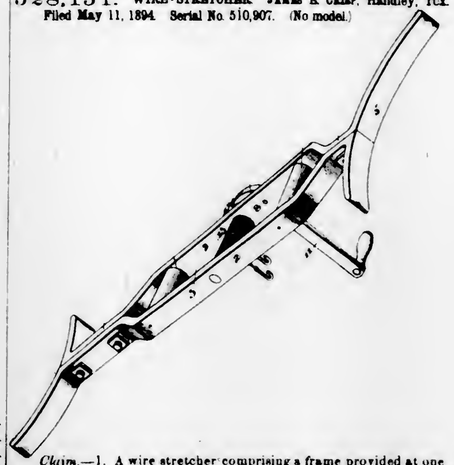
**528,150.** EXPANSION-SHAFT. JOHN C. CORAM, Lowell, assignor of one-half to Donald M. Belches, Brookline, Mass. Filed Apr. 2, 1894. Serial No. 505,994. (No model.)



*Claim.*—The combination of the shaft-body, having an external screw-thread and having longitudinal grooves, wedge-pieces arranged to slide in said grooves and provided with inclines, cylinder-segments, equal in number to said wedge-pieces and having inclines which rest upon the inclines of said wedge-pieces, said segments having a limited movement toward and from said shaft-body but longitudinally immovable thereon, a ring, having an inclined outer surface to support other inclines with which said segments are provided and having grooves to receive said wedge-pieces, and a nut, turning on said shaft-body and connected to said wedge-pieces, to move said wedge-pieces in said grooves, as and for the purpose specified.

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**528,151.** WIRE-STRETCHER. JAMES E. CRISP, Handley, TEX. Filed May 11, 1894. Serial No. 510,907. (No model.)



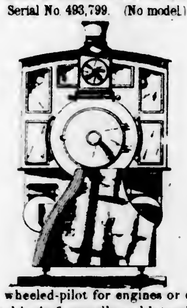
*Claim.*—1. A wire stretcher comprising a frame provided at one end with arms to bear against the fence post and having at its other end laterally extending arms forming a bearing for the chest of the operator, and a windlass shaft journaled on the frame, substantially as described.

2. A wire stretcher, comprising a frame provided at one end with short outwardly curved arms to bear against the fence post and provided at its other end with laterally extending curved arms forming a bearing for the breast of the operator and a windlass shaft journaled in the frame, substantially as described.

3. A wire stretcher, comprising a frame composed of two similar sides having its ends curved laterally to form arms and laterally offset intermediate of its ends to form a longitudinal opening, a windlass shaft journaled in the opening, rollers journaled in the opening and arranged at opposite sides of the windlass shaft, and a pawl and ratchet for holding the shaft against backward movement, substantially as described.

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**528,152.** ENGINE-PILOT. JESSE DRAKE, Jackson, Miss. Filed Dec. 15, 1893. Serial No. 493,799. (No model.)



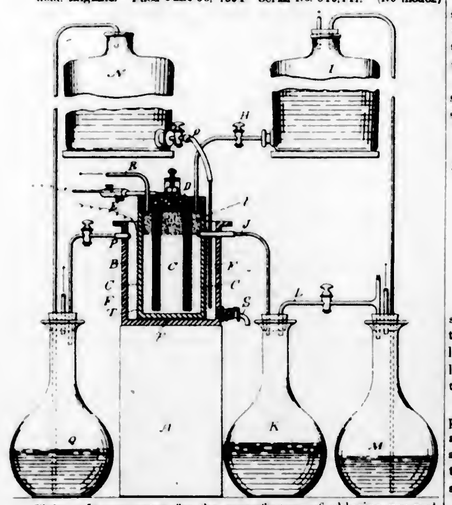
*Claim.*—1. A wheeled-pilot for engines or cars consisting of an upright smooth steel body forwardly and laterally curved into a substantial mold-board shape so as to extend diagonally across a track, and beyond the rails and provided at the front or advance side thereof with an integral longitudinally disposed guard flange or rib extending from the upper to the lower edges thereof, and agreeing with the curvature and disposition of the pilot body from which it projects substantially as set forth.

2. An engine or car pilot adapted to be attached to the front end of a locomotive engine or car and disposed diagonally across the track on which the car moves, said pilot having an integral longitudinally disposed guard flange or rib extending from the upper edge thereof

to a point at one side of one of the track rails, to form a substantial rail continuation, said flange or rib agreeing with the curvature and disposition of the pilot body substantially as set forth.

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528,153. ELECTROLYTIC APPARATUS FOR THE MANUFACTURE OF CHLORIN AND CAUSTIC SODA. THOMAS DRAKE, Huddersfield, England. Filed June 30, 1894. Serial No. 516,141. (No model.)



*Claim.*—In apparatus for the manufacture of chlorine gas and caustic soda or potash, the combination, with a porous pot C for holding a solution of chloride of sodium or potassium, and provided with the insulating material *t* at its upper part to prevent short circuiting; of the metallic cover resting on the insulated top edge of the said pot and provided with the depending pole pieces forming the anode of the cell; the reticular metallic covering T closely encircling the said pot and forming the cathode of the cell; an outer vessel for containing water, surrounding the said pot and its covering; and insulating material interposed between the bottoms of the said pot and vessel, substantially as set forth.

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528,154. PIANO-TUNING HAMMER. BENJAMIN F. FUCHS, Marble Falls, Tex. Filed May 10, 1894. Serial No. 510,771. (No model.)



*Claim.*—1. The combination of a hollow handle provided at one end with a threaded opening, a removable plug threaded in the opposite end of the handle provided with transversely disposed openings and terminating in a driving head, and a hammer-head having a shank threaded for engagement with the threaded opening, substantially as specified.

2. A tuning hammer having a lateral arm terminating in a peg-receiving socket and provided with an axial bore communicating with said socket for the reception of a driving-pin, substantially as specified.

3. A tuning hammer having lateral oppositely disposed arms terminating in peg-receiving sockets and arranged out of alignment with each other, one of said arms being provided with an axial bore for the reception of a driving-pin, substantially as specified.

4. A tuning hammer having arms provided with peg-receiving sockets, and removable tips provided with stems to fit in said sockets, substantially as specified.

5. A tuning hammer having arms provided with peg-receiving sockets and communicating axial bores, and removable tips provided with stems having angular portions to engage the peg-receiving sockets, and reduced extensions to fit in said communicating bores, substantially as specified.

6. The combination with a tuning hammer, of a peg extracting socket having a threaded bore, and grooves intersecting the threads, substantially as specified.

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528,155. LENS FOR OPTICAL PURPOSES. CARL P. GOERZ, Schöneberg, and EMIL VON HÖEGH, Wilmersdorf, Germany. Filed Feb. 11, 1893. Serial No. 461,972. (No model.)



*Claim.*—1. In an objective, a compound lens consisting of three single lenses the outer ones of which have a greater and less refractive power respectively than the intermediate lens, said intermediate lens having its surfaces curved in opposite directions and said outer lenses having their outer surfaces curved in the same direction, for the purpose set forth.

2. An objective consisting of two compound lenses each composed of three single lenses, the outer ones of which have a greater and less refractive power respectively than the intermediate lens, said intermediate lens having its surfaces curved in opposite directions, and said outer lenses having their outer surfaces curved in the same direction, for the purpose set forth.

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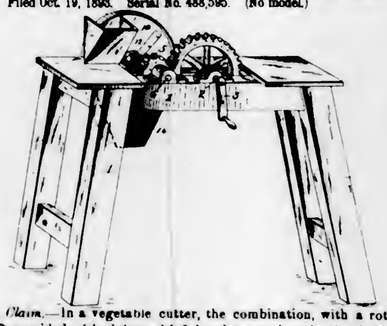
528,156. PROCESS OF REMOVING ENAMEL FROM METAL. GEORGE W. GOETZ, Milwaukee, Wis. Filed Feb. 23, 1894. Serial No. 501,242. (No specimens.)

*Claim.*—1. The process of removing enamal from metal which consists in immersing the enameled article in a molten bath of caustic alkali, substantially as and for the purposes set forth.

2. The process of removing enamel from metal, which consists in immersing the enameled article in a molten bath of caustic soda, substantially as and for the purposes set forth.

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528,157. KRAUT-CUTTER. WILLIAM A. GOFORTH, Duquoin, Ill. Filed Oct. 19, 1893. Serial No. 488,595. (No model.)

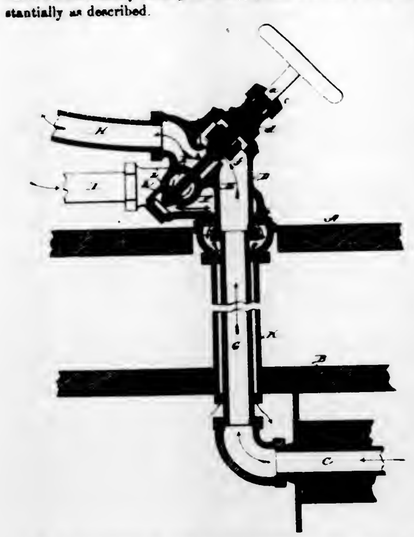


*Claim.*—In a vegetable cutter, the combination, with a rotary shaft provided with right and left hand screw threads, the shaft being contracted in diameter between the threads, of a wooden cutter disk located on the shaft normally surrounding the contracted portion, a pair of oppositely threaded nuts arranged on the screw threads and clamping the cutter disk between them, a casing surrounding the disk, and a hopper at one side of the disk, substantially as and for the purpose set forth.

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528,158. CAR-HEATING SYSTEM. EGBERT H. GOLD, Chicago, Ill. Filed Apr. 24, 1893. Serial No. 471,558. (No model.)

*Claim.*—1. The combination with a valve casing having separate steam supply and exhaust passages or chambers and located within the space to be heated, said supply chamber being connected with a source of steam supply and a heater or radiator and said exhaust chamber being also connected with the heater or radiator and with a pipe opening to the outer air and inclosing the supply pipe, of a valve for alternately closing said supply and exhaust passages, substantially as described.



2. The combination with a valve casing having separate steam supply and exhaust passages or chambers and located within the space to be heated, said supply chamber being connected with a source of steam supply and a heater or radiator and said exhaust chamber being also connected with the heater or radiator and with a pipe opening to the outer air and inclosing the supply pipe, of separate valves for closing said passages, and a hand-operated valve stem for simultaneously but alternately seating said valves, substantially as described.

3. The combination with a valve casing having separate supply and exhaust passages or chambers, said supply passage being connected with a source of steam supply and a heater or radiator and said exhaust passage being also connected with the heater or radiator and an exhaust pipe opening to the outside air in proximity to the supply pipe, of a hand-operated valve adapted to alternately close said supply and exhaust passages and an automatically operated exhaust valve also located in the exhaust passage, substantially as described.

4. The combination with a valve casing having separate supply and exhaust passages or chambers, said supply passage being connected with a source of steam supply and a heater or radiator and said exhaust passage being also connected with the heater or radiator and an exhaust pipe opening to the outside air in proximity to the supply pipe, of a hand-operated valve adapted to alternately close said supply and exhaust passages, an automatically operated exhaust valve also located in the exhaust passage, and a hand-operated valve for cutting off communication between the exhaust passage and said automatic valve, substantially as described.

5. The combination with a valve casing having separate steam supply and exhaust passages or chambers, said supply chamber being connected with a source of steam supply and a radiator or heater and said exhaust chamber being also connected with the radiator or heater and with a pipe opening to the outer air and inclosing the supply pipe, of a valve for alternately closing said supply and exhaust passages, a discharge tube also connected with the exhaust passage and extending through the exhaust pipe leading therefrom, an automatic valve for closing said discharge tube and an expansion device connected with and operating said valve, substantially as described.

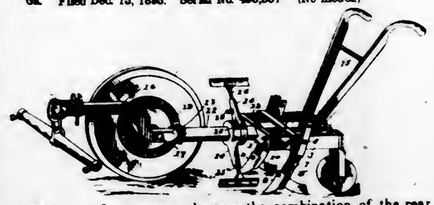
6. The combination with a valve casing having separate supply and exhaust passages or chambers, said supply passage being connected with a source of steam supply and a heater or radiator and said exhaust passage being also connected with the heater or radiator and an exhaust pipe opening to the outside air in proximity to the supply pipe, of separate valves for closing said supply and exhaust passages, a hand-operated valve stem for simultaneously operating said valves to alternately seat the same, and an automatically operated exhaust valve also located in the exhaust passage, substantially as described.



7. The combination with a valve casing having separate supply and exhaust passages or chambers, said supply passage being connected with a source of steam supply and a heater or radiator and said exhaust passage being also connected with the heater or radiator and an exhaust pipe opening to the outside air in proximity to the supply pipe, of separate valves for closing said supply and exhaust passages, a hand operated valve stem for simultaneously operating said valves to alternately seat the same, an automatically operated exhaust valve also located in the exhaust passage, and a hand-operated valve for cutting off communication between the exhaust passage and said automatic valve, substantially as described.

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528,159. COTTON-CHOPPER. JOSEPH J. GREEN, Mulberry Grove, Ga. Filed Dec. 13, 1893. Serial No. 493,551. (No model.)

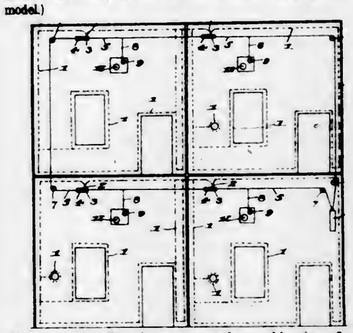


*Claim.*—1. In a cotton chopper, the combination of the rear rectangular plow carrying frame, a longitudinal shaft extending through the frame and secured to the front and rear thereof and extending forward therefrom and carrying a clevis at its front end, a stationary sleeve mounted on the shaft and arranged within the frame, shovels carried by the frame, a rotating sleeve mounted on the shaft in advance of the frame, a stub shaft projecting laterally from the shaft in advance of the rotating sleeve, a ground wheel journaled on the stub shaft, gearing connecting the ground wheel with the rotating sleeve, hoes carried by the latter, and handles secured to the stationary sleeve, substantially as described.

2. In a cotton-chopper, the combination with a rear plow-carrying frame, a shaft extending from the same and terminating in an upwardly and forwardly disposed extension adapted to be connected with a draft-device, a stub-axle extending from the extension, a ground-wheel, and gear arranged on the axle, of a hoe-carrying sleeve rotatably mounted on the shaft in rear of the stub axle, and a pinion at the front end of the sleeve engaging with the gear substantially as specified.

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528,160. FIRE-ALARM. THOMAS R. HACKWORTH and WILLIAM C. MCLELLAN, South Pittsburg, Tenn., assignors of one-fourth to Thomas S. Richards, same place. Filed May 28, 1894. Serial No. 512,777. (No model.)



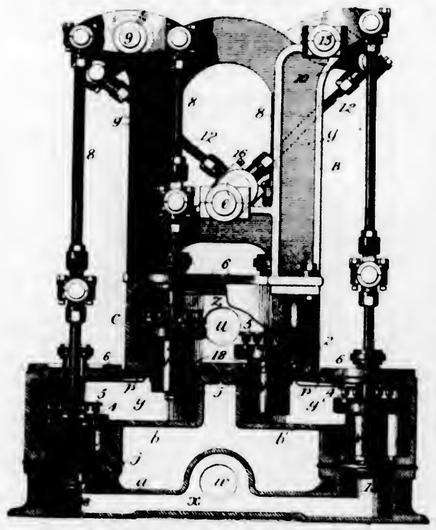
*Claim.*—1. In a fire-alarm system, the combination of continuous fuses, a flexible connection provided at intervals with fusible and combustible links to which the extremities of said fuses are attached, alarm mechanisms connected to the flexible connection, and adapted to be sounded when said connections are slacked, and means for maintaining the connection under tension, substantially as specified.

2. In a fire-alarm system, the combination of fuses, an endless flexible connection, actuating means for maintaining said connection under tension, fusible and combustible links arranged in the flexible member to which the fuses are attached, and alarm mechanisms, drums, and cords reeled on said drums and attached to the flexible connection, substantially as specified.

3. In a fire-alarm system, the combination of fuses, an endless flexible connection, links arranged at intervals in said connection and consisting of fusible and combustible members, the fusible or com-

bustible members being connected to said fuses, alarm mechanisms having operating cords connected with said connection, and means for maintaining the connection under tension, substantially as specified.

528,161. PUMP. MILAN W. HALL, Plainfield, N. J. Filed Oct. 20, 1893. Serial No. 488,708. (No model.)



*Claim.*—1. A pump having a casing with inlet, discharge and intermediate chambers and two sets of hollow valved pistons sliding in openings between said chambers, devices for reciprocating the two pistons of each set, and driving mechanism connected to actuate said devices to bring the pistons of one set at the ends of their respective strokes when those of the other set are in their mid-positions, substantially as set forth.

2. The combination in a pump, of a casing having an inlet chamber and discharge chamber and two intermediate chambers, two pistons sliding in openings between each intermediate chamber and the inlet and discharge chamber, and having water passages and valves and means for reciprocating said pistons in opposite directions arranged to bring one set of pistons to the limits of their strokes when those of the other set are in mid position, substantially as set forth.

3. The combination with the chambers, and inlet and discharge passages of a pump, of two sets of hollow valved pistons, a beam to each set of pistons, to the opposite ends of which said pistons are connected, and means for rocking the beams arranged to bring each beam to a central position as the other beam is carried to its extreme position in one direction or the other, substantially as set forth.

4. A pump having a hollow base consisting of casings having inlet, discharge and intermediate chambers, the casing for the intermediate chambers projecting beyond the discharge casing, and vertically reciprocating pistons in said casings with openings in the top of the casings provided with cylinder-caps, substantially as set forth.

5. The combination in a pump of a hollow inlet casing *a*, discharge casing *c*, intermediate casings *b*, *b'*, projecting beyond the discharge casing, said casings being detachably connected to form the hollow base of the pump, and hollow valved pistons sliding in openings connecting the different casings, substantially as set furth.

6. The combination with a pump of hollow valved pistons each consisting of a hollow cylinder 1, closed at one end, which end is greater in diameter than the cylinder, and provided with ports, and valves fitted to the ports at the expanded end of the piston, substantially as set forth.

7. The combination with the casings of a pump, of sleeves extending between said casings, hollow valved pistons sliding in said sleeves with perforations in the sleeves extending from points adjacent to the top of the chambers in the casing through the sleeves to points below the ends of the pistons when the latter are in their highest position, substantially as set forth.

8. The combination of the casings having chambers with inclined faces at the tops, sleeves extending through said tops, and perforations extending through the sleeves and hollow valved pistons sliding in the sleeves combined to operate substantially as set forth.

528,162. PROCESS OF TAWING HIDES. CHRISTIAN HEBERLING, Frankfort-on-the-Main, Germany. Filed July 27, 1893. Serial No. 481,609. (No specimens.)

*Claim.*—1. The process of tanning hides consisting in subjecting them to the action of a solution containing a compound of chromic acid and chromium.

2. The process of tanning hides consisting in subjecting them successively to the action of solutions containing a compound of chromic acid and chromium and another compound of chromium, respectively.

3. The process of tanning hides consisting in subjecting them successively to the actiou of a solution containing a compound of chromic acid and chromium and then to a solution of a thiosulphate respectively.

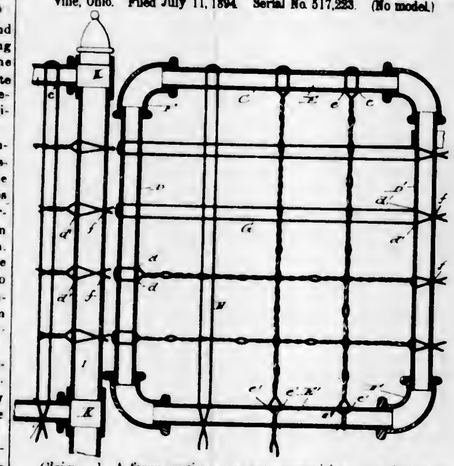
528,163. DENTAL MIRROR. EDWARD B. HITCHCOCK, Newton, Mass. Filed Feb. 12, 1894. Serial No. 499,881. (No model.)



*Claim.*—1. In a mirror for dental or surgical purposes, a cup consisting of the bottom C and rim C' provided with the slits D, and a mirror proper comprising a cup or frame consisting of the bottom E and the rim E' and the glass H secured within said frame, substantially as set forth.

2. In a mirror for dental or surgical purposes, the cup consisting of the bottom C and rim C' the latter being provided with the slits D and notch D', and the mirror proper consisting of the cup E E' provided with the handle or projection F and the glass H secured within said cup, said handle F being adapted to extend through said recess D', substantially as described.

528,164. IRON FENCE AND GATE. ISAAC K. HOLLINGER, Greenville, Ohio. Filed July 11, 1894. Serial No. 517,223. (No model.)

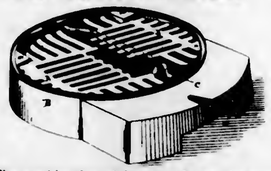


*Claim.*—1. A fence section or a gate comprising a vertical pipe having the pairs of aligned apertures *d*, at intervals in its length, a vertical pipe having the pairs of apertures *d'*, at intervals in its length in its inner side and the apertures *f*, in its outer side, said apertures *f*, being disposed in planes between those of the aperture *d'* a horizontal pipe having the pairs of aligned apertures *e*, at intervals in its length, a horizontal pipe having the pairs of apertures *e'*, at intervals in its length in its inner side and the apertures *f*, in its outer side, said apertures *f* being disposed in planes between those of the apertures *e'* a suitable means for connecting the said bars so as to form a frame, the horizontal bars formed from pieces of wire which are bent upon themselves and have their ends passed through the apertures *d*, of one vertical pipe and the apertures *d'*, of the other vertical pipe and brought together and passed through the apertures *f*, of said latter pipe and twisted, and the vertical bars intersecting the horizontal bars and formed from pieces of wire and connected to the horizontal pipes in the same manner that the horizontal bars are connected to the vertical pipes, the wires of the horizontal and vertical bars being twisted substantially as specified.



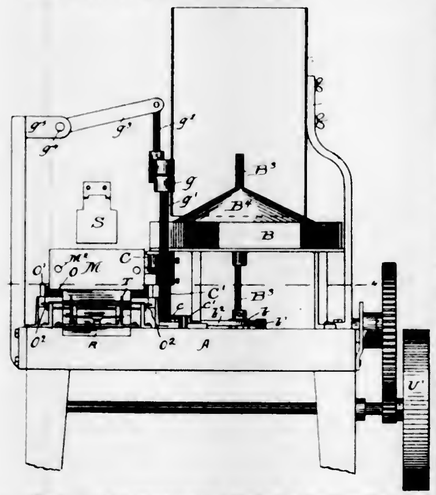
2. A fence section or gate comprising a pipe having pairs of aligned apertures *d*, at intervals in its length, a second pipe having the pairs of apertures *d'*, at intervals in its length in its inner side and the apertures *f*, in its outer side—said apertures *f*, being disposed in planes between those of the apertures *d'* and bars formed from pieces of wire which are bent upon themselves and have their ends passed through the apertures *d*, of one pipe and the apertures *d'*, of the other pipe and brought together and passed through the apertures *f*, of said latter pipe and twisted, substantially as specified.

528,165. GRATE FOR FURNACES OR STOVES. AUGUSTUS JANNEY, Akron, Ohio, assignor of one-half to John C. Weber, same place. Filed Mar. 16, 1894. Serial No. 503,943. (No model.)



*Claim.*—The combination of the grate frame, the sections A with their limiting lugs E E co-operating with the grate frame and the rocking or vibrating crank shaft with its cam surfaces operating substantially as shown and described.

528,166. CIGAR-BUNCH MACHINE. HERBERT JERSTRUM, Chicago, Ill., assignor of one-half to Herbert A. Streeter, same place. Filed Mar. 2, 1894. Serial No. 502,076. (No model.)



*Claim.*—1. In a cigar bunching machine, the combination of the following parts or elements; a series of intermittently movable hoppers; a movable charger; a movable adjustable sectional bottom for such charger; a compressing plunger to force the filler from each of said hoppers in turn into the charger; a knife; a movable guide; a plate or shelf extending from the hopper to the guide; a rolling table, bunching roller and rolling apron, a cavity for the pocket of the apron, and a movable discharger to force the filler from the charger through the guide into the pocket of the apron in the pocket cavity, substantially as specified.

2. In a cigar bunching machine, the combination of a charger with a compressing plunger to compress the tobacco into the charger, and a movable sectional bottom for the charger, the several sections of said bottom having parallel faces so that they may be brought into the same plane, means for operating said compressing plunger and the movable sectional bottom of the charger substantially as specified.

3. In a cigar bunching machine, the combination of the charger and compressing plunger of a bottom for the charger made in two or more sections, one or more of said sections being individually movable in respect to the other, the several sections of said bottom having parallel faces so that they may be brought into the same plane, means for operating said compressing plunger and the movable sectional bottom of the charger substantially as specified.

4. In a cigar bunch machine the combination of the charger and compressing plunger, with a bottom for the charger made in two or more sections, one or more of said sections being independently adjustable in respect to the other, and means for operating said compressing plunger and the movable sectional bottom of the charger, substantially as specified.

5. In a cigar bunching machine, the combination with a movable charger, of a shell over which the charger is moved, a compressing plunger for compressing the tobacco in the charger, a knife, a movable sectional bottom for the charger, whereby the middle portion of the bottom may be depressed at the time the filler is being compressed by the plunger and separated by the knife and again moved flush with the remainder of the bottom when the charger swings over said plate or shelf and means for depressing and elevating the bottom of the charger, substantially as specified.

6. In a cigar bunching machine, the combination of a hopper with a movable charger, of a shelf over which the charger is moved, a compressing plunger for compressing the tobacco in the charger, a knife, a movable sectional bottom for the charger, whereby the middle portion of the bottom may be depressed at the time the filler is being compressed by the plunger and separated by the knife and again moved flush with the remainder of the bottom when the charger swings over said plate or shelf and means for depressing and elevating the bottom of the charger, substantially as specified.

7. In a cigar bunching machine, the combination with a movable charger, of a shelf over which the charger is moved, a compressing plunger for compressing the tobacco in the charger, a knife, a movable and adjustable sectional bottom for the charger, whereby the middle portion of the bottom may be depressed at the time the filler is being compressed by the plunger and separated by the knife and again moved flush with the remainder of the bottom when the charger swings over said plate or shelf and means for depressing and elevating the bottom of the charger, substantially as specified.

8. In a cigar bunching machine, the combination of a hopper with a movable charger, of a plate or shelf over which the charger is moved, a compressing plunger for compressing the tobacco in the charger, a knife, a movable sectional bottom for the charger, whereby the middle portion of the bottom may be depressed at the time the filler is being compressed by the plunger and separated by the knife and again moved flush with the remainder of the bottom when the charger swings over said plate or shelf, a movable funnel, said table having a movable section E' secured to said funnel and means for depressing and elevating the bottom of the charger, substantially as specified.

9. In a cigar bunch machine, the combination of a hopper, with a movable charger furnished with adjustable end sections, a movable sectional bottom for said charger, a compressing plunger, a shelf over which the charger swings, a movable guide provided with adjustable end sections, and a discharger for forcing the filler from the charger through the guide and means for depressing and elevating the bottom of the charger, substantially as specified.

10. In a cigar bunch machine, the combination of a hopper, with a movable charger furnished with adjustable end sections, a movable sectional bottom for said charger, a compressing plunger, a shelf over which the charger swings, a movable guide provided with adjustable end sections, a discharger for forcing the filler from the charger through the guide, a rolling table, a rolling apron, a bunching roller and a cavity for the pocket or sag of the apron and means for depressing and elevating the bottom of the charger, substantially as specified.

11. In a cigar bunch machine, the combination of the movable charger, with a rack and gear for moving the same into position, a spring for taking up the lost motion and insuring the throwing and holding of the charge in position, a compressing plunger, a bottom for said charger, a hopper, a guide M, a rolling apron and bunching roller, a discharge to force the filler from the charger through the guide into the pocket of the apron said spring operating to throw and hold said movable charger in position both in respect to said hopper and in respect to said guide and means for depressing and elevating the bottom of the charger, substantially as specified.

12. The combination of charger C, rock shaft C', a rack and gear for operating said rock shaft, the vibrating lever carrying the rack, the notched disk on the rock shaft, and the vibrating lever $c^4$ furnished with a spring $c^5$ engaging said notched disk for taking up the lost motion and throwing or holding said charger in position, substantially as specified.

13. The combination of the charger C, with the movable and adjustable sectional bottom for said charger, means for compressing the fillings in the charger while the sectional bottom is in a curved or bellied form and a knife or means for severing the charge from the surplus material while said sectional bottom is in a curved or bellied form, substantially as specified.

14. The combination of the charger C, with the movable and adjustable sectional bottom for said charger, and a series of levers F each connected to a section of the bottom and means for adjusting and operating said levers, substantially as specified.

15. The combination of the charger C, with the movable and adjustable sectional bottom D for said charger, a series of levers F, and a series of adjusting devices *f* for said levers, substantially as specified.

16 The combination with the charger C, of the movable and adjustable sectional bottom D for said charger, a series of levers F and a series of adjusting devices *f* for said levers, said adjusting devices comprising a series of independently movable pins, and a clamp case and clamp screw, substantially as specified.

17. The combination of the charger C, with the movable and adjustable sectional bottom for said charger, the sections D of said bottom having slots $D^2$, a guide case D' for said sections, and a spring actuated bar $D^3$ for holding said sections normally in a level position, and means for limiting the movement of said sections, substantially as specified.

18. The combination with the charger C, of the movable and adjustable sectional bottom for said charger, the sections D of said bottom having slots $D^2$, a guide case D' for said sections, a spring actuated bar $D^3$ for holding said sections normally in a level position, and a stop bar $D^4$ to limit the movement of said sections D, substantially as specified.

19. The combination with the charger C, of the movable and adjustable sectional bottom for said charger, the sections D of said bottom having slots $D^2$, a guide case D' for said sections, a spring actuated bar $D^3$ for holding said sections normally in a level position, means for limiting the movement of said section and a series of independently movable levers F for operating said sections D, substantially as specified.

20. In a cigar bunch machine, the combination of a hopper, with a movable charger, a bottom for said charger composed of independently movable sections, a compressing plunger over the hopper, a movable knife, a movable guide, a shelf over which the charger swings, a rolling table, a cavity for the pocket of the apron, a bunching roller, a rolling apron, and a discharger to force the filler from the charger through the guide into the pocket, substantially as specified.

21. In a cigar bunch machine, the combination of a hopper, with a movable charger, a bottom for said charger composed of independently movable sections, a compressing plunger over the hopper, a movable knife, a movable guide, a shelf over which the charger swings, a rolling table, a cavity for the pocket of the apron, a bunching roller, a rolling apron, and a discharger to force the filler from the charger through the guide into the pocket, said shelf having a movable part secured to said guide and means for depressing and elevating the bottom of the charger, substantially as specified.

22. In a cigar bunch machine, the combination of a movable charger, a bottom for said charger composed of independently movable sections, a compressing plunger, a movable knife, a movable guide, a shelf over which the charger swings, a rolling table, a cavity for the pocket of the apron, a bunching roller, a rolling apron, and a discharger to force the filler from the charger through the guide into the pocket and means for depressing and elevating the bottom of the charger, substantially as specified.

23. In a cigar bunch machine, the combination of a horizontally swinging charger, with a vertically movable guide into register with which the charger is brought, the rolling apron, and bunching roller, a discharge to force the filler from the charger through the guide into the pocket of the apron substantially as specified.

24. In a cigar bunch machine, the combination of the following parts or elements: a series of intermittently movable hoppers; a movable charger; a movable adjustable sectional bottom for such charger; a compressing plunger to force the filler from the hopper into the charger; a knife; a movable guide; a shelf extending from the hopper to the guide, a rolling table, a cavity for the pocket of the apron, a bunching roller and rolling apron a movable discharger to force the filler from the charger through the guide into the pocket, and a reservoir $B^3$ and cone or pyramid $B^4$ forming the bottom of the reservoir and means for depressing and elevating the bottom of the charger, substantially as specified.

25. In a cigar bunching machine, the combination of the following parts or elements; a series of intermittently movable hoppers; a movable charger; a movable adjustable sectional bottom for such charger; a compressing plunger to force the filler from the hopper into the charger; a knife; a movable guide; a shelf extending from the hopper to the guide, a rolling table, a cavity for the pocket of the apron, a bunching roller and rolling apron, a movable discharger to force the filler from the charger through the guide into the pocket, and mechanism for operating said parts and means for depressing and elevating the bottom of the charger, substantially as specified.

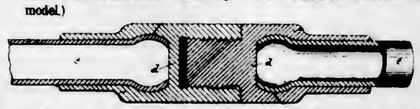
26. In a cigar bunch machine, the combination of the stationary plate B' furnished with notch $B^2$, with a series of intermittently revolving bottomless hoppers B, a charger C, a bottom for said charger, and a compressing plunger G, substantially as specified.

27. In a cigar bunch machine, the combination of the stationary plate B' furnished with a notch $B^2$, with a series of intermittently revolving bottomless hoppers B, a movable charger C, a movable sectional bottom for said charger, a compressing plunger G, and knife H serving to sever the bunch from the surplus material in the hopper and also as a removable temporary bottom for the hopper at said notch, and means for depressing and elevating the bottom of the charger, substantially as specified.

28. In a cigar bunch machine, the combination of the stationary plate B' furnished with a notch $B^2$, with a series of intermittently revolving bottomless hoppers B, a movable charger C, a movable sectional bottom for said charger, a compressing plunger G, a knife H serving to sever the bunch from the surplus material in the hopper and also as a removable temporary bottom for the hopper at said notch, a guide M and shelf E, substantially as specified.

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**528,167. COUPLING FOR HOLLOW RODS OR PIPES.** SAMUEL M. JONES, Toledo, Ohio. Filed May 7, 1894. Serial No. 510,263. (No model.)

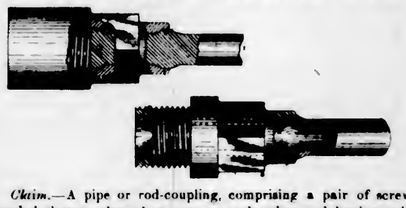


*Claim.*—1. A joint or coupling for pipes or hollow rods, comprising a sleeve having its bore contracted or closed at its inner end and chambered or enlarged adjacent to its inner end, in combination with a pipe in said sleeve having an expanded portion near its inner end and filling the chambered portion of said sleeve, substantially as shown and described, for the purpose specified.

2. The art or method of coupling a pipe with a body having a bore contracted or closed at its inner end and chambered or enlarged adjacent to its inner end, which consists in placing the end of the pipe in and against the contracted or closed end of said bore, and by compression or concussion upsetting or expanding said pipe within the chambered portion of said sleeve, substantially as shown and described, for the purpose specified.

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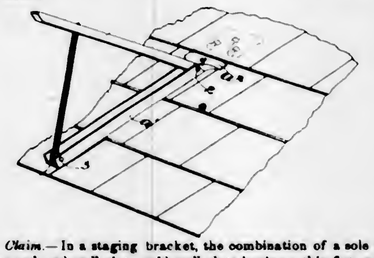
**528,168. COUPLING FOR PIPES OR RODS.** SAMUEL M. JONES, Toledo, Ohio. Filed May 31, 1894. Serial No. 512,985. (No model.)



*Claim.*—A pipe or rod-coupling, comprising a pair of screw-threaded sleeves adapted to engage each other and having axial bores, in combination with pipes or rods in said bores and expanded portions on said pipes or rods at each end of each of said sleeves, substantially as shown and described, for the purpose specified.

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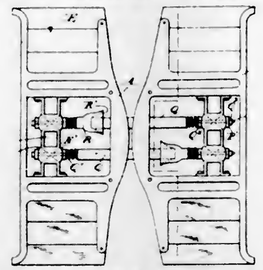
**528,169. STAGING-BRACKET.** JOHN R. KENYON and MICHAEL F. BURK, Lynn, Mass. Filed Jan. 16, 1894. Serial No. 497,033. (No model.)



*Claim.*—In a staging bracket, the combination of a sole plate, brace rod, and wall plate, said wall plate having a thin flat end portion provided with several keyhole slots for the securing nails, and also with a butt-line guide, and a limiting stop located a short distance below said butt-line guide, substantially as described.



**528,170. CAR-PLATFORM.** JOHN KREHNIEL, Cleveland, Ohio. Filed Nov. 14, 1893. Serial No. 490,915. (No model.)



*Claim.*—1. The combination in a railway car, of a platform having portions adapted to interlock with the platform of the adjoining car, and a spring applied to resist the vertical movement of said platform in relation to each other, substantially as described.

2. The combination in a railway car, of a platform provided with pivotal projections adapted to interlock with the platform of an adjoining car, and a buffer applied to said interlocking portions adapted to resist the vertical oscillation of said platforms in relation to each other, substantially as described.

3. The combination in a railway car, of the platform having projections adapted to interlock with the platform of an adjoining car, a buffer upon the adjoining car with which the ends of these projections engage, and a buffer applied to said interlocking portions adapted to resist the vertical oscillation of said platforms in relation to each other, substantially as described.

4. The combination in a railway car of the platform, arms pivoted thereto within the platform and extending through the front thereof, of bearings upon the adjoining platform with which said arms engage, and springs applied beneath said arms to resist the vertical movement of said platforms in relation to each other, substantially as described.

5. The combination in a railway car, of a platform, an arm extending through a bearing in the front of said platform and swiveled to said platform at its rear end and an elastic cushion for said arm, substantially as described.

6. The combination in a railway car, of a platform apertured at its front edge, an arm projecting through said aperture and connected to said platform by a swiveled joint at its end, a spring backing for said arm, a socketed bearing in the platform of an adjoining car, a spring cushion for said socketed bearing and a swiveled joint connecting said socketed bearing to the platform, substantially as described.

7. The combination with two coupled railway cars, each provided with a forwardly extending spring back socketed bearing, of swiveled joints connecting said arm and bearing to the platform and spring supports upon both cars beneath said arms, substantially as described.

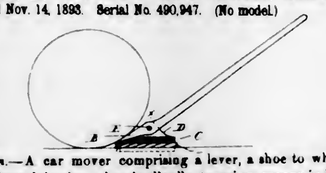
8. In a railway car, the combination with the platform having the depending portions E at the sides, the opening L, the cross bar F guided by said depending portions E, the bar G supporting the bar F, the springs H', the bolts H and nuts J, substantially as described.

9. In a railway car, the combination with the platform apertures at its front end, the arm Q, the bolt P at the rear end thereof, the cross bar M having curved faces N N', the spring Q', the collars $Q^2$ and P', and the nuts $Q^3$, substantially as described.

10. In a railway car, the combination with the platform, the forward projecting arms Q, the socketed bearing R having the bell shaped mouth R', the bolt P passing through the bar M, the spring Q' in rear of said bearing R, and a swiveled connection between said cross bearing and the bar N, substantially as described.

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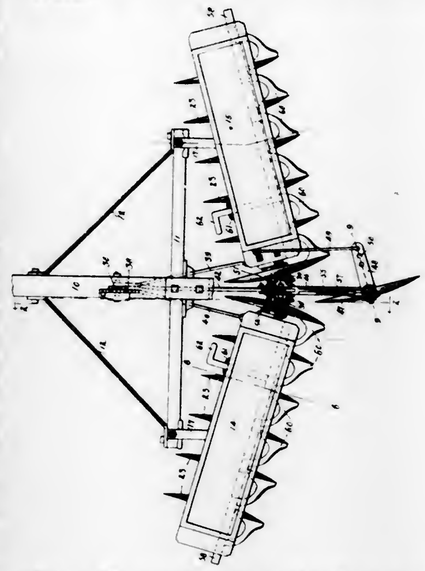
**528,171. CAR-MOVER.** AUGUST KUEBELER, Sandusky, Ohio. Filed Nov. 14, 1893. Serial No. 490,947. (No model.)



*Claim.*—A car mover comprising a lever, a shoe to which the lever is pivoted having a longitudinally tapering groove in its base with inwardly projecting side walls, and a corresponding wear block fitted in the base of the groove, its outer face being below the plane of the outer edges of the side walls, and its length being greater than the length of the shoe, substantially as described.

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**528,172. DISK HARROW.** JAMES MACPHAIL, Rockford, assignor to Abram Ellwood, De Kalb, Ill. Filed June 1, 1893. Serial No. 476,274 (No model.)



*Claim.*—1. The combination with two disk-gangs, of a pair of connected plates which couple the disk-gangs together at their inner ends and are provided with projecting flanges, and a ball having a circumferential groove into which said flanges extend, substantially as described.

2. The combination with two disk-gangs, of a pair of plates 27 and 28 which loosely engage and connect the disk-gangs together at their inner ends and are provided with flanges projecting toward each other, and a ball interposed between and engaged with the inner edges of said flanges, substantially as described.

3. The combination with two disk gangs having their shafts provided with flanged collars 25, of plates 27 and 28 having flanges 32 and 33 projecting inward toward each other and flanges 30 and 31 which couple the flanged collars of the shafts together, and a ball 34 having a circumferential groove into which the said inwardly projecting flanges extend, substantially as described.

4. The combination with a disk-gang, of a laterally movable scraper-bar 58, carrying scrapers, a vertically swinging lever 62 connected with the scraper-bar and movable bodily in lateral directions, and an inclined guide for directing the movements of the lever, substantially as described.

5. The combination with two gangs of disks, of an angularly adjustable central disk arranged between the innermost disks of said gangs and movable vertically in a right line, mechanism for angularly adjusting the disk relatively to the line of draft, and means for moving the central disk vertically in a right line, substantially as described.

6. The combination with two gangs of disks, of a central disk arranged between the innermost disks of said gangs and movable vertically in a right line and also adjustable angularly to the line of draft, mechanism for moving the central disk vertically in a right line, means for angularly adjusting said central disk, and means for locking said central disk in an elevated position, substantially as described.

7. The combination with disk-gangs, of a pivoted-bar 45, a central disk-standard 46 carried by said bar, means for turning the standard on the bar, a pivoted swinging lever 51, a rod 55 connected with the said bar and loosely engaging a part of said lever, and a spring 57 mounted on the rod, substantially as described.

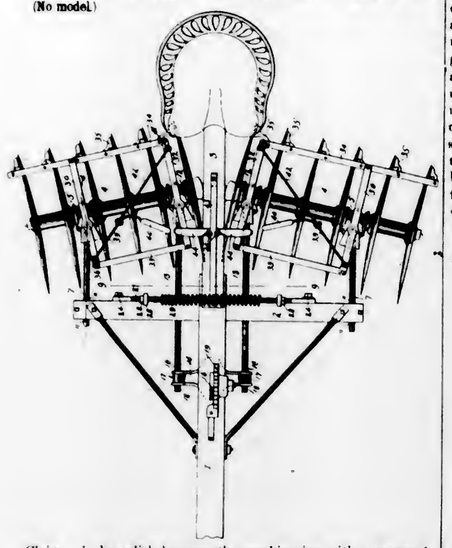
8. The combination with disk gangs, of a pivoted bar 45, a central disk standard carried thereby, lever 51, rod 55 connected to said lever and to said bar 45, and a spring 57 upon said rod 55, substantially as described.

9. In a disk harrow, the combination with two disk gangs, of a lever 36, connecting bar 42, bar 45 pivoted to said bar 42, a central disk standard carried by said bar 45, and connecting bars 39 connecting said lever 36 to said disk gangs, substantially as described.

10. The combination with disk gangs, a lever 36, connecting rods connecting said lever to the disk gangs, a central disk movable in the line of draft, devices connecting said disk with said lever 36, an arm 48 carried by said disk, and a rod 49 connecting said arm with one of the disk gangs, substantially as described.

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528,173. **DISK HARROW.** JAMES MACPHAIL, Rockford, assignor to Abram Ellwood, De Kalb, Ill. Filed July 31, 1893. Serial No. 482,035. (No model.)



*Claim.*—1. In a disk harrow, the combination with a tongue 1, cross bar 2 mounted on said tongue, and disks mounted in two opposing gangs, of journal boxes 5 journaled upon said disk gangs and provided with an opening 6, rods 7 secured at their forward ends to the cross bar 2 and having their rear ends bent at right angles and mounted in the opening 6 of the journal boxes 5, journal boxes 12 journaled upon said disk gangs between the inner pair of disks of each gang, and provided with openings similar to those in the journal boxes 5, rods 13, having their rear ends bent at right angles and mounted in the openings of said journal boxes 12, a cross-piece 14 secured to the forward ends of said rods 13, and means for forcing said cross-piece 14 forward or backward, whereby the angle of said disk gangs is varied, substantially as described.

2. In a disk-harrow, the combination with a tongue, a cross-bar mounted on the tongue, disks mounted in two opposing gangs in rear of the cross-bar to swing horizontally on pivots and connected with said cross-bar, and a lever, of rods connected with the disk-gangs and with the lever to be operated by said lever for swinging the gangs upon their pivots, separately mounted levers carried on the cross-bar in front of the disk-gangs to bear downward upon the said rods intermediate the ends of the latter, and spring mechanism for automatically forcing said levers against said rods for forcing the inner ends of the disk-gangs into the ground, substantially as described.

3. In a disk-harrow, the combination with a tongue, a cross bar mounted on the rear end of said tongue, disks mounted in two opposing gangs and adapted to be swung horizontally on a pivot, and connected with said cross bar, a lever, and rods operated by said lever to swing said gangs upon their respective pivots, of levers pivotally mounted on said cross bar and adapted to bear downward upon said rods, and a spring connecting said levers and adapted by its tension to force said levers against said rods, whereby the inner ends of said disk gangs are forced into the ground, substantially as described.

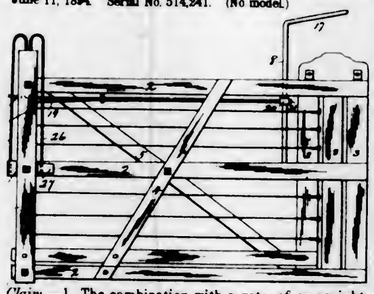
4. In a disk harrow, the combination with a tongue, a cross bar mounted on the rear end of said tongue, disks mounted in two opposing gangs and adapted to be swung horizontally on a pivot, and connected with said cross bar, a lever, and rods operated by said lever to swing said gangs upon their respective pivots, of levers pivotally mounted on said cross bar and adapted to bear downward upon said rods, a spring connecting said levers and adapted by its tension to force said levers against said rods, whereby the inner ends of said disk gangs are forced into the ground, and means for adjusting the tension of said spring so as to regulate the downward pressure of said levers upon said rods, substantially as described.

5. In a disk harrow, the combination with disks mounted in gangs, of two bars pivotally mounted above said disks, cross bars pivotally mounted on and connecting said bars, scrapers secured to one of said cross bars, and a toggle-joint foot lever pivotally mounted on said bars and adapted to force said scrapers against said disks as said foot lever is depressed, substantially as described.

6. In a disk harrow, the combination with a tongue 1, cross bar 2, and disks mounted in two opposing gangs, of journal boxes 5 journaled on said disk gangs, rods 7 secured at their forward ends to said cross bar 2 and having their inner ends bent upward at right angles and pivotally mounted in said journal boxes 5, journal boxes 12 journaled upon said disk gangs between the inner pair of disks of each gang, rods 13 having their inner ends bent upward at right angles and pivotally mounted in said journal boxes 12, bars 30 journaled upon the upward projecting end of said bars 13, bars 32 journaled upon the upward projecting end of said bars 7, cross bars 33 pivotally connecting said bars 30 and 32, cross bar 34 pivoted to the ends of said bars 30 and 32, scrapers 35 secured to said cross bar 24, and a toggle-joint foot lever pivotally mounted upon the rear end of said bars 30 and upon the forward ends of said bars 32, and adapted to force said scrapers against said disks as said foot lever is depressed, substantially as described.

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528,174. **GATE.** ARTHUR W. MACLARREN, Hennepin, Ill. Filed June 11, 1894. Serial No. 514,241. (No model.)



*Claim.*—1. The combination with a gate, of an upright or post arranged adjacent to one end of said gate, an arm secured to said upright and forming a pivotal point for the gate, a second arm secured to the upright near its upper end, a shaft loosely passing through said second arm, secured to the gate and provided with an angularly-bent portion, posts or uprights arranged at opposite sides of the gate, operating levers pivotally secured to said posts, wires or rods secured to the said levers in the manner described, one of said wires or rods being secured to the angularly-bent portion of the shaft, posts or uprights arranged adjacent to the gate and provided with catches or keepers, latches carried by the gate and adapted to engage with said catches when the gate is in its closed and open positions, horizontally-arranged rods connected at one end with said latches, and a rock-lever secured to the shaft to the arms of which lever the opposite ends of said rods are secured, all arranged for co-operation as described.

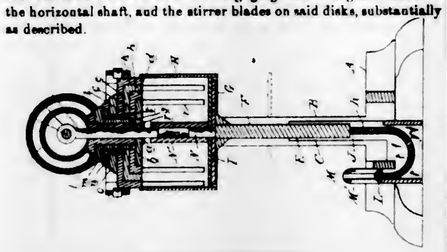
2. The combination with a gate of an upright or post arranged adjacent to one end of said gate, an arm secured to said upright and forming a pivotal point for the gate, a second arm secured to the upright near its upper end, a shaft loosely passing through said second arm, secured to the gate and provided with an angularly-bent portion, posts or uprights arranged at opposite sides of the gate, operating levers pivotally secured to the said posts, wires or rods secured to the said levers in the manner described, one of said wires or rods being secured to the angularly-bent portion of the shaft, posts or uprights arranged adjacent to the gate and provided with catches or keepers, latches carried by the upright or post of the gate and consisting of rods arranged upon opposite sides of the upright having a vertical spring portion and an upper bowed portion secured to the said post or upright, said vertical spring portions of the rods being adapted to engage with the said catches or keepers when the gate is in its closed and open positions respectively, horizontally-arranged rods connected at one end with the spring portions of the latches, and a rock-lever secured to the shaft, to the arms of which lever the opposite ends of said horizontal rods are secured, as described.

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528,175. **MIXING-MACHINE.** JOSEPH MARKUS, Detroit, Mich. Filed June 4, 1894. Serial No. 513,467. (No model.)

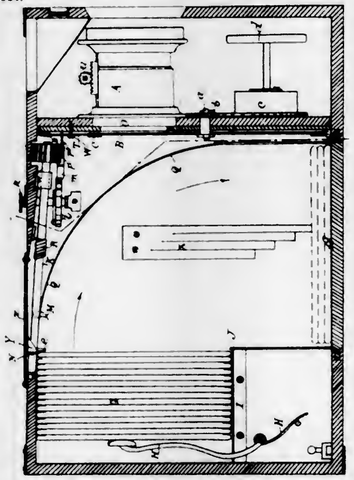


*Claim.*—In a mixing machine, the combination of a pan or tub, a horizontal drive shaft above the same, a series of beveled gear wheels secured on either side of the middle of said shaft, a vertical shaft suspended from a middle bearing on said horizontal shaft, the disks *b c e* and *i* journaled on said vertical shaft, the gear pinions *l m n o* having intereogaging collars journaled about said shaft as an axis connected to the disks and engaging with the gear wheels on the horizontal shaft, and the stirrer blades on said disks, substantially as described.



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528,176. **MAGAZINE-CAMERA.** GEORGES P. C. MARONIER, of Boulogne-sur-Mer, France. Filed July 21, 1892. Serial No. 440,851. (No model.) Patented in France Aug. 26, 1891, No. 215,659; in Belgium May 30, 1892, No. 99,886; in Luxemburg May 30, 1892, No. 1,630; in Italy May 31, 1892, No. 32,010 26, and in Spain May 31, 1892, No. 13,387.



*Claim.*—1. In a photographic apparatus, the combination with a casing, adapted to carry a series of spring-pressed plates and provided with an objective as A, of a revoluble shutter, having apertures therein, a thrust-blade or bar, and an anchor in connection with the shutter whereby the movement of the latter is controlled, a spring *l* provided with a pin as *e*, and a rod K connected with said thrust-blade and anchor and provided with spurs M and N, by which the change of the plates is effected, the entire apparatus being operated by a single movement of the thrust-blade, substantially as shown and described.

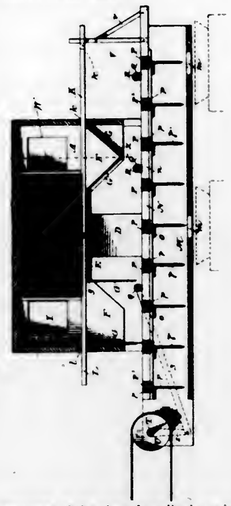
2. In a photographic apparatus, the combination with a casing, adapted to carry a series of spring-pressed plates, of a revoluble shutter having apertures therein, a thrust-blade as P, a rod K, and a spring-operated wedge as Y, said parts being connected and operating to control the shutter and change the plates successively, but at one and the same operation, substantially as shown and described.

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528,177. **COTTON ELEVATOR AND DISTRIBUTER.** WILLIAM R. MOFFITT and JAMES L. WILLIAMS, Pilot Point, Tex. Filed Nov. 17, 1893. Serial No. 491,278. (No model.)

*Claim.*—1. In a cotton elevator and distributer, an inclosed separator box having opposite suction supply and exhaust pipes, and end discharge openings at the bottom, suction-closed valves located in said discharge openings, a device for intercepting and discharging the cotton arranged to reciprocate between the discharge openings and from side to side of the opposite suction supply and exhaust pipes to alternately cut off the suction from said discharge openings, and distributing devices arranged under the discharge of said separator box, substantially as set forth.

2. In an apparatus of the class described, an inclosed separator box having opposite aligned openings suction supply and exhaust pipes connected with the opposite openings of the separator box, opposite end suction-closed discharge valves, and a separating screen arranged to reciprocate within the separator box at one side of the exhaust opening therein, and provided with a valve board carried thereby substantially as set forth.



3. In an apparatus of the class described, an inclosed separator box having end discharge pockets and opposite aligned openings, suction supply and exhaust pipes connected with said openings, valves for said discharge pockets, a vertically disposed screen frame arranged to reciprocate within the separator box over the exhaust opening thereof and provided with a wire screen covering and a central dividing valve board projected centrally from one side thereof to the opposite side of the separator box and working between the opposite valve discharge pockets, substantially as set forth.

4. In an apparatus of the class described, an inclosed separator box having opposite suction supply and exhaust openings and discharge openings at its opposite ends, suction supply and exhaust pipes connected with the suction supply and exhaust openings of the separator box, a pair of automatic discharge valves for each discharge opening, the valves of each pair being hinged to opposite sides of the discharge openings and adapted to have their lower ends closed against each other by the air suction maintained within the separator box, a vertically disposed separator screen arranged to reciprocate within the separator box over its exhaust opening and provided with a central off standing dividing valve board sliding on the bottom of the box between the opposite end openings, means for reciprocating said screen frame, and suitable distributing devices substantially as set forth.

5. In an apparatus of the class described, the combination with a suitable cotton supply; of an open cotton distributing trough provided at suitable points with bottom feed openings, and a rack carriage mounted to slide within said open trough and provided with a regularly spaced series of pivotally supported push racks working inside of the trough, and stops arranged at one side of the push racks substantially as set forth.

6. In a cotton handling apparatus, the combination with the pneumatic supply devices; of an open distributing trough provided at suitable points with feed openings, a frame or carriage arranged to slide within the trough and provided with transverse stop bars, a spaced series of push racks comprising rack-bars pivoted to the frame or carriage above and to one side of the stop bars and feed fingers secured in such rack bars at one end, bearing or supporting bars secured to the top of the frame or carriage and having roller spindles at their ends, rollers journaled on said spindles and traveling on the upper edges of said trough, and means for reciprocating said frame or carriage, substantially as set forth.

7. In an apparatus of the class described, the combination of an inclosed separator box having a suction pipe connected therewith and opposite valved discharge openings at the bottom and opposite

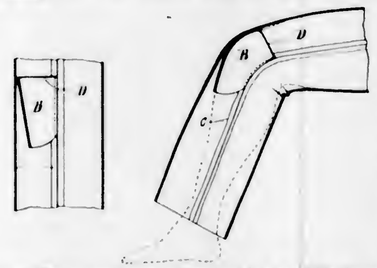
ends thereof, automatically opening and closing suction relief valves arranged above each valved opening, a cotton separating and shifting device arranged to reciprocate between the discharge openings, and suitable distributing devices below said openings, substantially as set forth.

8. In an apparatus of the class described, the combination of a separator box having opposite aligned suction supply and exhaust openings; valved discharge pockets at the opposite ends thereof, and relief valve openings in one side above each pocket, inclined valve brackets attached to the separator box over each relief valve opening, automatically opening and closing suction relief valves hinged to the valve brackets and adapted to cover and uncover the relief valve openings, a cotton separating and shifting device arranged to reciprocate between the discharge openings, and distributing devices below said openings, substantially as set forth.

9. In an apparatus of the class described, the combination of the separator box having bottom discharge openings, the reciprocating valve screen arranged within the separator box and having a slotted slide arm moving through the box, an open distributing trough arranged under the separator box, and a distributing rack mounted to slide within said trough and having an upright push arm arranged to work in the slot of said slide arm, substantially as set forth.

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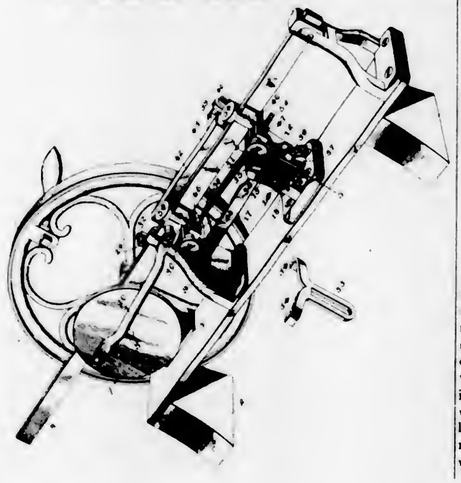
**528,178. TROUSERS OR COAT.** GEORGE J. MORSE, Hyde Park, Mass. Filed May 1, 1893. Renewed Mar. 31, 1894. Serial No. 505,966. (No model.)




*Claim.*—The improved garment described, having within the legs the reinforcing pieces B, such pieces being secured edgewise to the inward-turned edges of the material at the knee portion, connected along their upper edges to the garment, and there made of the same area as the goods of which the garment is composed, and inclined downwardly and rearwardly away from such goods so as to have a space between them, increasing downwardly, to relieve the outer material from strain, substantially as set forth.

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**528,179. SAW-FILING MACHINE.** ABRAHAM J. NEFF, Goshen, Ind., assignor of one-half to Wm. B. Lehman, same place. Filed Feb. 24, 1894. Serial No. 501,408. (No model.)



*Claim.*—1. In a device of the class described, the combination with a file-carrying bar, a driving shaft operatively connected to said bar, and means whereby the bar is elevated at one end during its return movement, of a saw-clamp, a clamp operating lever provided with an actuating spring, a slide connected to the lever and provided with a stud arranged in the path of the bar during its vertical movement, and feeding-mechanism operatively connected to the bar, substantially as specified.

2. In a device of the class described, the combination with a file-carrying bar, a driving shaft, operating connections and means for elevating one end of the said bar during its return movement, of a saw-clamp, a clamp-operating lever provided with an actuating spring, a slide connected to said lever and provided with a pivotal arm 23 carrying a stud which may be arranged in the path of the said bar, and feeding mechanism operatively connected to the bar, substantially as specified.

3. In a device of the class described, the combination with a file-carrying bar and means for reciprocating the same, and a saw-clamp arranged in operative relation with said bar, of a pawl carrying rocking lever and a guide carried by the file-carrying bar and having parallel flanges engaging an arm of said lever, substantially as specified.

4. In a device of the class described, the combination with a file carrying bar, a driving shaft operatively connected to said bar, and means for elevating the bar at one end during its return movement, of a saw-clamp, a clamp-operating lever provided with an actuating spring and connected at one end to a movable member of the said clamp, a slide provided with a stud arranged in the path of the file-carrying bar, whereby the slide is moved longitudinally as the file-carrying bar is elevated, and a screw 27 carried by the slide and engaging the adjacent end of the clamp-operating lever, substantially as specified.

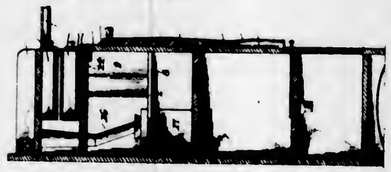
5. In a device of the class described, the combination with a file-carrying bar, and means for reciprocating the same, and a saw clamp arranged in operative relation with said bar, of a pawl-carrying lever, and a guide carried by the file-carrying bar and comprising independent flanges provided with transversely slotted extremities, and threaded studs engaging the slots in the extremities of the flanges and engaged by thumb-nuts, whereby the flanges are capable of joint and independent adjustment to vary the interval therebetween and to vary their inclination to adjust the throw of the pawl-carrying lever, one arm of the latter being engaged between said flanges, substantially as specified.

6. In a device of the class described, the combination with a file-carrying bar and means for operating the same, of file holding devices consisting of twin pairs of parallel ears fixed to the side of said bar, perpendicular to the plane thereof, file-holders slidably arranged between said ears, and means for adjusting the holders to vary the horizontal inclination of the file, substantially as specified.

7. In a device of the class described, the combination with a file-carrying bar and means for operating the same, of file-holding devices comprising parallel ears arranged in pairs upon the side of the said bar, file-holders consisting of blocks slidably fitted between said ears and having depending sockets to receive the terminals of a file, adjusting screws mounted between the outer ends of the ears and threaded in perforations in the block portions of the holders, and clamping screws carried by the blocks and adapted to secure the same at any desired adjustment, substantially as specified.

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**528,180. KITCHEN-CABINET.** PHILIP L. RAMSEY, Elkton, Ky., assignor of one-half to J. S. Grumbley, same place. Filed Dec. 9, 1893. Serial No. 493,262. (No model.)



*Claim.*—In a cabinet, the combination of a casing having a horizontal parting strip or partition provided with openings 14, a horizontal row of drawers provided at their bottoms with shouldered notches located above the openings of the parting strip or partition, a horizontally disposed locking strip located beneath the parting strip or partition and hinged at its outer edge to the same and provided with a series of upward extending bolts passing through said openings and arranged to engage the notches of the drawers, and a downwardly swinging door located beneath and arranged to engage the lower face of the locking strip, whereby the series of bolts are automatically carried into engagement with the notches of the drawers when the door is closed, substantially as described.

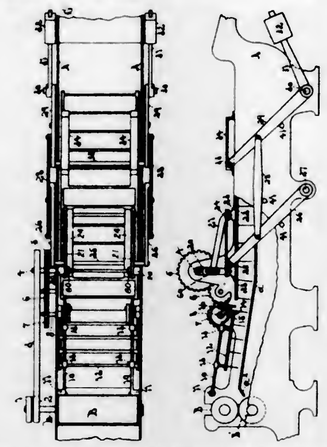


**528,181. ALUMINIUM ALLOY.** REINHARD I. ROMAN, London, England. Filed Feb. 20, 1894. Serial No. 500,927. (Specimens.) Patented in England Oct. 17, 1893, No. 19,543.

*Claim.*—The improved aluminium alloy consisting of copper, tin, antimony, wolfram and aluminium, as hereinbefore set forth.

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**528,182. WOOL-WASHING MACHINE.** FREDERICK G. SARGENT and ALLAN C. SARGENT, Graniteville, Mass. Filed June 25, 1892. Serial No. 437,956. (No model.)



*Claim.*—1. In a fiber-washing machine, the combination of the carrier bed, *a*, the pivoted rods, 10, attached to the frame, one of them being constructed with the curved portion, 15, the carrier, 12, arranged to slide to and fro on said rods and provided with a hooked or curved stud, 16, and the crank, 8, constructed to have its wrist pin engage with the stud, 16, of the carrier and traverse around the curved part, 15, of the rod, 10, and lift the latter substantially as described.

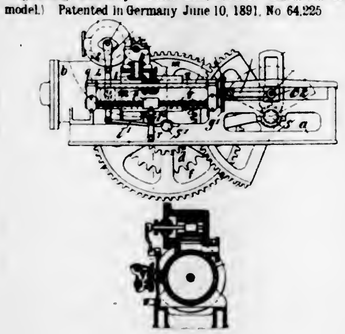
2. The combination of the bowl, the harrow provided with suspension straps or guideways, supporting rods passing across the bowl through the said guideways and each having its ends attached to the free ends of a pair of arms whose other ends are pivoted to the machine, and links connecting the pairs of arms so that all the arms shall move in concert.

3. The combination of the bowl, the harrow provided with suspension straps or guideways, pairs of supporting arms mounted on rock shafts and having their free ends provided with means for engaging with said guideways, and links connecting the pairs of arms so that all the arms shall move in concert.

4. The combination, in a fiber-washing machine, of the bowl, A, the harrow, 22, and the swinging pivoted rake, 50, within the bowl provided with teeth curved toward the feed-out end of the same, in such position that the teeth of the harrow, 22, on that side may enter between those of the rake, 50, and draw the fiber through underneath the same, substantially as described.

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**528,183. STEERING-GEAR FOR VESSELS.** OTTO SCHLEICHER, Magdeburg, Germany. Filed Mar. 2, 1893. Serial No. 464,338. (No model.) Patented in Germany June 10, 1891, No. 64,225.



*Claim.*—1. In a steering gear for vessels the combination with a power transmitting device as the sprocket wheel *f* and the steering wheel, of an engine, transmitting mechanism connecting the piston of said engine with the power transmitting wheel, a distributing valve, a shaft adapted to receive rotary motion from the steering wheel and endwise motion from the piston, and intermediate mechanism controlled respectively by the revolution and endwise movement of the shaft to unseat and seat said valve, for the purpose set forth.

2. In a steering gear for vessels, the combination with a power transmitting device, as the sprocket wheel *f* and the steering wheel, of an engine, transmitting mechanism connecting the piston of said engine with the power transmitting device, a shaft adapted to receive rotary and endwise motion from the steering wheel and piston respectively, an actuating device adapted to move with as well as lengthwise of said shaft, and intermediate mechanism operated by the actuating device and adapted to unseat the valve when moved lengthwise of its shaft and to seat said valve when moving with the shaft, for the purpose set forth.

3. In a steering gear for vessels, the combination with a power transmitting device, as the sprocket wheel *f* and the steering wheel, of an engine, transmitting mechanism connecting the piston of said engine with the sprocket wheel, a distributing valve, a screw shaft having endwise motion with the piston, gearing connecting the screw shaft with the steering wheel adapted to impart rotary motion to said shaft, an actuating sleeve on the latter, a lever in engagement with the sleeve, and intermediate mechanism connecting the lever with the distributing valve, whereby when said screw shaft is revolved in one or the other direction said lever will be moved in a corresponding direction and the movement thereof transmitted to the valve, for the purpose set forth.

4. In a steering gear for vessels, the combination with a power transmitting device, as a sprocket wheel *f* and the steering wheel, of an engine, transmitting mechanism connecting the piston of said engine with the sprocket wheel, a distributing valve, a screw shaft having endwise motion with the piston, gearing connecting the screw shaft with the steering wheel adapted to impart rotary motion to said shaft, an actuating sleeve having motion on and with said screw shaft, a lever in engagement with the sleeve, and intermediate mechanism connecting the lever with the distributing valve whereby said valve is automatically unseated when the sleeve is moved along the shaft and returned to a normal position when said sleeve moves with its said shaft for the purpose set forth.

5. In a steering gear for vessels, the combination with a power transmitting device, as the sprocket wheel *f*, and the steering wheel, of an engine, transmitting mechanism connecting the piston of said engine with the sprocket wheel, a distributing valve adapted to be operated by the steering wheel, mechanism controlled by the piston and adapted to return the valve to a normal position whenever displaced by the steering wheel, mechanism for disconnecting the steering wheel from the valve operating devices, and appliances controlled by said steering wheel and adapted to operate the sprocket wheel independently of the piston, for the purpose set forth.

6. In a steering gear for vessels, the combination with a power transmitting device, as a sprocket wheel *f*, an engine, a segment gear, as G, means connected with the rod of the piston for said engine adapted to impart an oscillating motion to said gear, the transmitting gear *d* adapted to impart motion to sprocket wheel *f*, a distributing valve, a screw spindle *o* having motion with the aforesaid piston, and the sleeve *p* provided with a radial lug and having motion with and on said screw spindle, of gearing connecting the latter with the steering wheel, lever *r*, provided with spring actuated jaws *r'* normally in engagement with the lug on the aforesaid sleeve, and intermediate connections between the stem of said valve and lever *r*, substantially as and for the purpose set forth.

7. In a steering gear for vessels, the combination with the shaft S' the connected wheels *e* and *f* loose thereon, and a coupling for coupling the same to said shaft, of the steering spindle i and the wheel *h* and pinion *i'* thereon, said spindle adapted to revolve and move endwise in its bearings, for the purpose set forth.

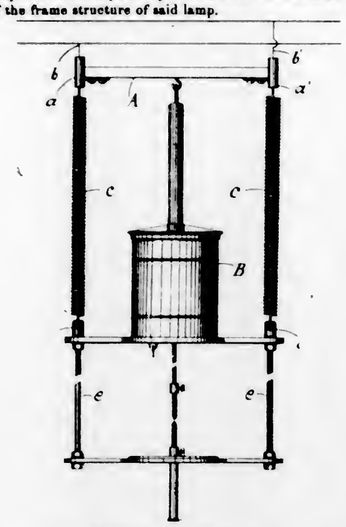
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**528,184. ELECTRIC-ARC LAMP.** RUDOLPH SIEGERDAHL, Chicago, Ill. Filed Feb. 26, 1894. Serial No. 501,489. (No model.)

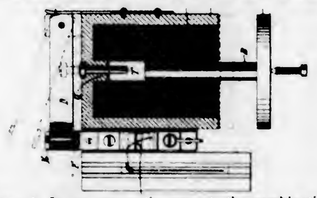
*Claim.*—1. The combination with an electric lamp, of a cross piece —A— in connection with or secured to said lamp and adapted to sustain the weight of the same, clamps *a*—*a'*— arranged to receive the circuit terminals —*b*—*b'*—, and a resistance —*c*—*c* consisting of two parts, connected respectively to said circuit terminals and lamp terminals and forming a part of the circuit on each side of the lamp, substantially as and for the purpose described.

2. The combination with an electric arc lamp provided with means adapted to sustain the weight of the same, of a resistance —*c*— consisting of two parts, interposed between the circuit terminals

and lamp terminals respectively and secured to or located on each side of the frame structure of said lamp.



528,185. AUTOMATIC ELECTROMAGNETIC CUT-OUT. LUCIUS T. STANLEY, Brooklyn, N. Y., and ALFRED E. BRADDELL, Philadelphia, Pa., assignors to Henry B. Cutter, Philadelphia, Pa. Filed Aug. 22, 1893. Renewed June 1, 1894. Serial No. 513,209. (No model.)



*Claim.*—1. In an automatic cut-out, the combination of the jacketed coil, the movable core or plunger, the pivoted switch lever and co-operating contacts and the push rod of magnetic metal between the switch lever and core, as set forth.

2. The combination of the coil, a magnetic jacket surrounding the same and provided with a boss that extends into the coil, a reciprocating plunger or core, a switch lever, and co operating contacts and a magnetic push rod extending through a perforation in the boss and adapted to be eocountered and forced against the switch lever by the movement of the core as set forth.

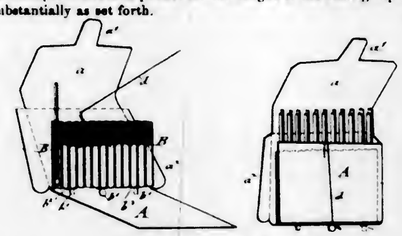
3. In an automatic cut-out the combination of the jacketed coil, the reciprocating core, the pivoted switch lever, co-operating contacts and the magnetic push rod extending through a dia-magnetic bushing in the end of the jacket under the switch lever as set forth.

4. In an automatic cut-out, the combination with an insulating block of four plates secured to the edges of the same and forming respectively, or connected with the terminal plates of the switch and the binding posts of the line, a fuse box having terminal plates to which a fuse is connected, the said plates being adapted to engage with and bridge the plates on the sides of the block and to mechanically secure the fuse-box thereto, as set forth.

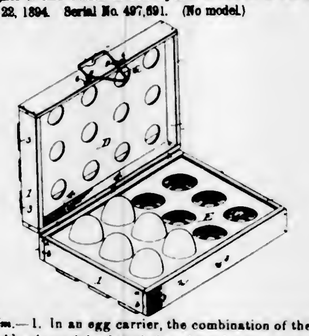
528,186. MATCH-BOX. MAX STRAKOSCH, New York, N. Y., assignor of two-thirds to Frank Wolf and Leopold Salzer, same place. Filed Nov. 7, 1893. Serial No. 490,257. (No model.)

*Claim.*—1. A match-box, composed of a wrapper or case provided with a closing top-flap, and side-flaps, a corrugated partition having an igniting-surface at each side of and secured to the wrapper, and a covering or finishing wrapper applied to the body of said main-wrapper, and adapted to form a pocket for the tongue of the closing top-flap, substantially as set forth.

2. A match-box, composed of an inclosing wrapper or case, provided with a closing top flap, and side flaps, a corrugated partition having an ignition-surface at each side, said partition being attached by anchors to slits in the bottom part of the wrapper, a fastening device for applying the wrapper tightly to the partition, and a covering or finishing wrapper united with the body of the main-wrapper, and adapted to form a pocket for the tongue of the closing top-flap substantially as set forth.



528,187. EGG-CARRIER. FRANK R. TEN EYCK, CHARLES A. TEN EYCK, and JAMES H. TEN EYCK, Auburn, N. Y.; said James H. Ten Eyck assignor to said Frank R. Ten Eyck and Charles A. Ten Eyck. Filed Jan. 22, 1894. Serial No. 497,691. (No model.)



*Claim.*—1. In an egg carrier, the combination of the end pieces and the side pieces, joined at their ends to form a rectangular frame or tray, the slats 3 arranged across the bottom thereof said frame or tray being provided in its inner face with grooves extending around its sides, said grooves fitted with perforated partitions adapted to support the eggs in said frame or tray and a top or cover tray arranged over said frame, substantially as and for the purpose set forth.

2. In an egg carrier, the combination of the end pieces and the side pieces joined at their ends to form a rectangular frame or bottom tray, the slats 3, arranged across the bottom side thereof said bottom tray being provided in its inner face with two grooves extending at different levels around its sides, perforated partitions arranged in said tray with their edges arranged in the respective grooves in said tray, the perforations in the lower partitions being smaller than and corresponding in position with the perforations in the upper partition, and a top tray, arranged over said bottom tray, substantially as described

3. In an egg carrier, the combination of the bottom tray formed of end pieces and side pieces joined at their ends to form a rectangular open topped frame and having a slatted bottom, said frame being provided in its inner face with two grooves extending at different levels around its sides, perforated partitions arranged in said bottom tray with their edges arranged in the respective grooves therein, the perforations in the lower partition being smaller than and corresponding in position to the perforations in the upper partition, the upper or top tray, also formed of end pieces and side pieces and provided with a groove extending around its inner sides, and a perforated partition arranged in said upper tray with its edges engaging the groove therein, the perforations in said partition of the upper tray being smaller than and corresponding in position to those in the upper partition of the bottom tray, substantially as and for the purpose set forth.

4 In an egg-carrier, the combination with two trays hinged together, of a fastener consisting of a cranked member formed from a single piece of wire and bent upon itself to form two eyes, and two projecting arms by which it is attached to one tray, and a link wire, having its ends secured in the eyes in the cranked member, adapted to take over a pin or stud on the other tray, substantially as described

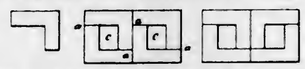
5. In an egg-carrier, a pair of trays hinged together, one of the trays having a pair of holes in one of its sides, a pair of staples near the holes, a cranked wire having outward-extending ends inserted beneath the staples, and provided with bent portions forming eyes above the ends, a link-wire having ends inserted in the eyes in the cranked wire, and a screw inserted in the side of the opposite tray and arranged to engage the link-wire, the cranked-wire being of such length as to rise the thickness of said wire above the edge of the tray, substantially as described.

6. The combination, with a bottom tray provided with perforated partitions, of an intermediate tray consisting of a rectangular frame having grooves formed in its interior surface, and having three perforated partitions fitted in said grooves, at different levels, the perforations in the lower partition being of less size than and corresponding in position to the perforations in the upper partition of the bottom tray, and the perforations in the central partition of the said intermediate tray being of less size than and corresponding in position to the perforations in the upper partition, and a top or cover tray having a partition provided with perforations of less size than and corresponding in position to the perforations in the upper partition of the intermediate tray, substantially as and for the purpose set forth.

7. In an egg carrier, the combination of a bottom and a top tray, and a series of intermediate trays, of a fastener consisting of a cranked member formed from a single piece of wire bent upon itself to form two eyes, and two projecting arms by which it is attached to one tray, and a link wire, having its ends secured in the eyes in the cranked member, and adapted to take over a pin or stud on the other tray, the said series of intermediate trays each carrying a pin or stud for connection with the link wire of the fastener of the tray below, and a fastener, the link wire of which takes over a pin or stud of the tray above, substantially as and for the purpose set forth.



528,188. ELECTRIC TRANSFORMER. ELIHU THOMSON, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Jan. 29, 1890. Serial No. 338,524. (No model.)



*Claim.*—1. A core for transformers built up of laminæ or plates of sheet iron assembled together, each plate having a shorter and a longer arm, the inner length of the shorter arm being made approximately equal to the width of the longer arm and two sets of said plates located in each lamina and the plates of each set placed with the ends of the shorter arms against the inner sides of the longer arms so as to leave two rectangular openings for the coils of wire.

2. A core for transformers having L-shaped pieces of sheet iron, in combination with other pieces which, together with the L-shaped pieces, form an approximately rectangular outline when laid in a plane, said figure having two rectangular openings therein, a number of such compound rectangular plates being assembled in a pile one above another, bolts passing through said plates for securing them together and a frame placed about the pile to secure the parts thereof against lateral displacement, substantially as described.

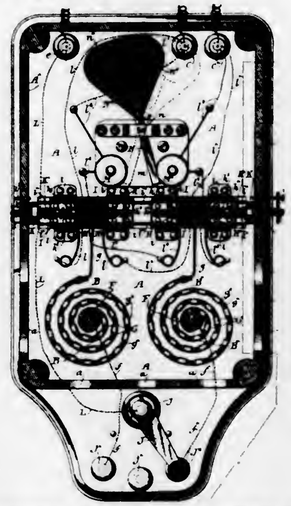
528,189. THERMOSTAT. DAVID W. THOMPSON, Chicago, Ill. Filed Nov. 19, 1889. Renewed July 8, 1891. Serial No. 398,775. (No model.)

*Claim.*—1. A thermostat comprising a base or support, a compound strip or coil, independently adjustable contact points, and posts sustaining said contact points rigidly connected with each other, a movable arm or plate to which is attached one of said parts, viz:—the said strip or coil or said rigidly connected post, said movable arm or plate being pivoted to the base so as to turn about a center of rotation coincident with the supporting posts of the strip or coil to afford simultaneous adjustment of both contact points relatively to the coil, an adjusting screw engaged with the base and with said movable arm or plate, and a support for the screw pivoted to the base and adapted to turn freely on the latter, substantially as described.

2. A thermostat comprising a base, a compound coil, a post secured in the base and supporting the coil by attachment to the inner end thereof, independently adjustable contact points located at opposite sides of the free end of the coil, a movable plate supporting said contact points, said plate being pivoted to the base concentrically with the said post, an adjusting screw engaged with said movable plate and a support for the screw pivoted to the base, substantially as described.

3. A thermostat comprising a base, a compound coil, a post secured to the base and supporting the coil by attachment to the inner end thereof, independently adjustable contact points located at opposite sides of the free end of the coil, a movable plate supporting said contact points, said plate being pivoted to the base concentrically with the said post, an adjusting screw engaged with said movable plate, said screw being arranged to bear against a part of or upon said movable plate, and a spring holding the plate in contact with the adjusting screw, substantially as described.

4. A thermostat comprising a base, a compound strip or coil mounted thereon, independently adjustable contact points, a plate sustaining said contact points and movably supported on said base, and an adjusting screw engaged with a support on the base, and with the plate, for adjusting the position of the latter, a radial arm or lever attached to the outer end of said adjusting screw by which it may be turned, and a movable indicating pin adjustable to any point in a circle about the adjusting screw and adapted for contact with the latter, substantially as described.



5. A thermostat comprising a base, a compound strip or coil mounted thereon, independently adjustable contact points, a plate supporting said contact points and movably supported upon the base, and an adjusting screw engaged with the said base and the said movable plate for adjusting the latter, said base being provided with a plurality of wires secured at their ends in the base and placed over the surface of the same to afford bearings for said plate, substantially as described.

6. A heat regulating apparatus, comprising a valve or damper, a motor for actuating the same, two thermostats, each of which embraces a compound strip or coil and two contacts points, two conductors leading from the motor to the thermostats and connected by branch conductors with the opposite contact points of both thermostats, a switch provided with three contact points, a third conductor leading from the motor to the pivot of said switch, a battery in circuit with said third conductor, and separate conductors leading from the said compound strips or coils to two of the contact points of said switch, the third contact point of the switch being insulated, whereby either thermostat may be thrown in circuit with the battery as desired or both may be thrown out of action by resting the switch on the insulated contact point, substantially as described.

7. The combination with a thermostat having two contact points, and two electric conductors connected with the said contact points, through either of which conductors an electric circuit may be completed by the action of the thermostat, and an electric indicating apparatus comprising two electro-magnets, the coils of which are in circuit with said conductors, a third intermediate electro-magnet, the coil of which is in circuit with a battery, a key for closing the circuit through the coils of said intermediate magnet, two swinging levers located at opposite sides of the intermediate magnet, and indicator cards or other indicating devices actuated by said levers, substantially as described.

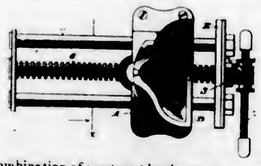
528,190. RAPID-ACTING VISE. WILFORD C. TOLES and WALLACE H. TOLES, Chicago, Ill. Filed Feb. 9, 1894. Serial No. 499,645. (No model.)

*Claim.*—1. The combination in a rapid-acting vise, of vise jaws, a mutilated screw, a nut-seat and a mutilated nut, having both a rotary and a rectilinear movement in its seat.

2. The combination of vise jaws, a rotary mutilated screw, a nut-seat, and a mutilated nut having a rotary movement in the seat coincident with said screw.

3. The combination of vise jaws, a rotary mutilated screw a nut-seat, and a mutilated nut having a spiral movement in the seat.

4. The combination of vise jaws, a rotary mutilated screw, a segmental nut-seat, and a mutilated nut having a corresponding segmental bearing in said nut-seat and adapted to move therein.

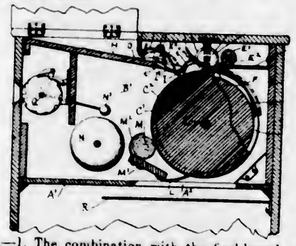


5. The combination of a nut-seat having an arc-shaped concavity and an inclined wall at one end thereof, and a nut placed therein having a spiral movement in said seat.

6. The combination of a nut-seat having an arc-shaped concavity and an inclined wall at one end thereof, a nut correspondingly formed to the nut-seat, and a spring, or equivalent, for forcing the nut to one end of the seat.

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**528,191. REGISTERING AND CANCELING BALLOT-BOX.** EDWARD K. TOLMAN, Worcester, Mass. Filed Oct. 25, 1893. Serial No. 489,102. (No model.)

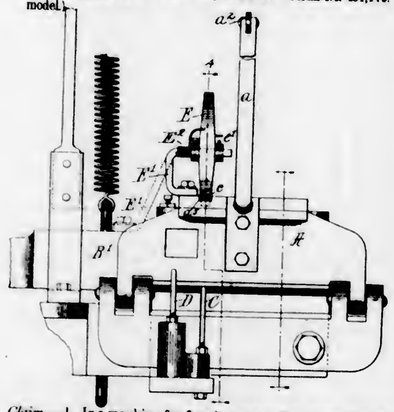


*Claim.*—1. The combination with the feed-board, a stop and means for projecting said stop above the surface of the feed-board, of a pivoted guard-plate, the ends of which are arranged on both sides of the stop, substantially as described.

2. The combination with the drum, the type-roll, of the inking roll, and means whereby the inking roll is brought into contact with the type-roll, as a ballot is received upon the drum, substantially as described.

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**528,192. MACHINE FOR FORMING CAN-BODIES.** JOHN K. UNDERDOWN, Chicago, Ill., assignor to the National Key-Opening Can Company, same place. Filed July 22, 1893. Serial No. 481,179. (No model.)



*Claim.*—1. In a machine for forming can bodies, the combination with the former and the jaws for folding the blank about the former, of a downwardly and laterally movable depressor adapted to depress a previously retracted part of the underlying end of the blank upon the superposed end of the blank.

2. In combination with the horn and folding jaws of a can body former, a movable depressor actuated by one of the said jaws, whereby a retracted tongue upon one end of a can body blank may be depressed upon the seam of the can body.

3. In combination with the jaws of a can-body former, a tongue depressor movably connected with one of the said jaws and a part attached to the other jaw arranged to engage and operate the said depressor in the act of closing the jaws.

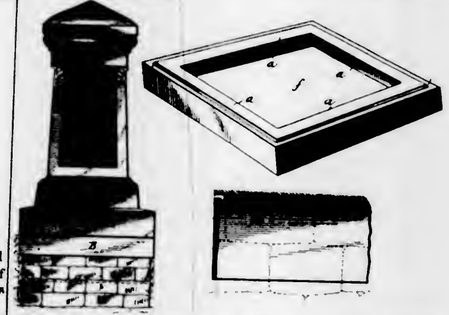
4. The combination with the jaws and horn of a can-body forming machine, of a tongue bender for retracting an inset tongue of a blank, and a tongue depressor for depressing the tongue, (belonging to the underlapping end of the blank,) upon the overlapping end of the said blank, substantially as described.

5. In combination with the jaws and horn of a can-body forming machine, a pivotally supported tongue-depressing lever having one of its ends arranged in position to strike a retracted inset tongue upon the end of a can-body blank and a striker connected with one of the jaws and arranged in position to engage the opposite end of the said depressing lever and to thereby actuate the latter.

6. In a machine for forming can bodies, the combination with the former and the jaws for folding the blank about the former, of a downwardly and laterally movable depressor and a spring for retracting said depressor.

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**528,193. CONSTRUCTION OF MEMORIAL MONUMENTS.** WILLIAM B. VAN AMRINGE, Boston, Mass. Filed Oct. 6, 1893. Serial No. 487,357. (No model.)



*Claim.*—1. In the construction of memorial tablets or monuments, or other similar superstructures, the combination with the foundation and base, of a cap or frame extending downward and surrounding the sides of the foundation and formed with a central opening, a binding material filled into said opening on top of the foundation, and a sealed joint between the said cap and base, substantially as described.

2. In the construction of memorial tablets or monuments, or other similar superstructures, the combination with a foundation, of a cap or frame fitted thereon to embrace the sides thereof and provided at the top all around with an inwardly projecting flange having a central opening, a binding material filling said opening, a base finished all around on its under surface for a distance about equal to the width of the flange and unfinished on the remainder of such surface to leave projections for entering the binding, and a sealed joint between the base and cap, substantially as described.

3. The combination with the foundation and base, of a cap or frame having the inwardly projecting flange formed with a series of indentations or channels, and a strip of soft metal interposed between said cap and base and compressed into the channels by the weight above, substantially as described.

4. The frame or cap provided with downwardly extending sides and having an upper inwardly projecting flange and central opening, said flange being formed with a series of channels or recesses, substantially as shown and for the purpose described.

5. The cap or frame formed with the longitudinal parallel channels extending for a limited space from the outer edges thereof, substantially as described.

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**528,194. WIRE-TIGHTENER.** CHARLES H. VAN WAGONER, Homer, Mich., assignor, by mesne assignments, to the Homer Steel Fence Company, same place. Filed Feb. 5, 1894. Serial No. 499,191. (No model.)

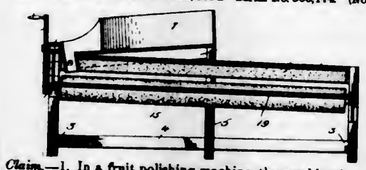




*Claim.*—In combination, the twister having one of its ends angular to receive a wrench, and carrying a spool having a groove D in its outer end and lug D' upon its opposite end, and the locking key or lever having a circular opening at one of its ends to engage the rounded portion of the twister, notches to engage the lug D' and arm H to engage the fence wire, substantially as described.

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**528,195. ORANGE-POLISHING MACHINE.** AARON WARE, Georgetown, Fla. Filed Feb. 14, 1894. Serial No. 500,174. (No model.)



*Claim.*—1. In a fruit polishing-machine, the combination with a suitable framework, of a plurality of duplicate inclined parallel polishing-rolls of equal diameters, and means for driving the same simultaneously at different rates of speed, substantially as specified.

2. In a fruit polishing-machine, the combination with twin revoluble polishing-rolls arranged side by side, of a superimposed guide-box or trough covering the interval between the rolls to hold the fruit therebetween, and having a hinged cover, and means for operating the rolls, substantially as specified.

3. In a fruit polishing-machine, the combination with a suitable framework, of a pair of parallel inclined polishing-rolls, means for operating the same, and a superimposed guide-box or trough arranged over the rolls, both of the said rolls and the interior of the trough being provided with a polishing-cover and lining respectively, substantially as specified.

4. The combination with the opposite pairs of posts, the connecting-bars, and transverse end-frames having bearings, of the pair of rolls 15 having their shafts 14 arranged in the bearings and provided at one end with the gears 16 and 17, the latter being larger than the former, the stub-shaft 10 extending from the frame above the rolls, the spur-gear 11 arranged thereon and engaging with the gears 16 and 17, the coverings for the rolls, the bottomless guide-box 20 having an interior lining and a hinged cover, the bars 6 inclined contrary to the rolls, the supporting standards 5 for the bars, and the inclined hopper 7 arranged upon the bars 6 and having the lower discharge-end 8 extending into the box, substantially as specified.

5. In a fruit polishing machine, the combination with a framework, of a plurality of juxtaposed rolls having parallel axes and provided with rubbing surfaces of sheepskin, and means for rotating said rolls simultaneously at different rates of speed, substantially as specified.

6. In a fruit polishing machine, the combination with a framework, of a plurality of polishing rolls, sheepskin coverings for said rolls, and means for operating the rolls and holding the fruit in contact with the same, substantially as specified.

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**528,196. SIGN.** CLINTON F. WEBSTER, Brockton, Mass. Filed Oct. 17, 1893. Serial No. 488,364. (No model.)

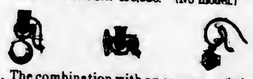


*Claim.*—1. In a sign of the class described, a back provided with one or more horizontal series of separated angular openings, and a retaining face in and back of the entrance to each of said openings, combined with one or more characters each provided with a resilient correspondingly angular fastening device comprising two members adapted to be pushed from the front of said back into and to be compressed by the walls of one of said openings, and a locking shoulder on one of the members of said fastening device to co-operate with and at the back of the retaining face of said opening, the resiliency of said device causing said locking shoulder to spring back of and to remain in locking engagement with said retaining device, to thereby maintain said character positively in position on said back, substantially as described.

2. In a sign of the class described, a back provided with one or more horizontal series of separated angular openings, and a retaining face in and back of the entrance to each of said openings, combined with one or more characters each provided with a correspondingly angular fastening device adapted to be inserted directly into one of said openings, said device having a locking shoulder adapted to lodge behind and to co operate with the retaining face of said opening to maintain the said character in proper position upon said back; a spring to press said locking shoulder laterally or to one side into engagement with said retaining face, compression of said spring disengaging said locking shoulder and retaining device to thereby permit said fastening device to be drawn directly out from said opening, substantially as described.

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**528,197. EAR-RING.** GILBERT T. WOOLOM, New York, N. Y. Filed Nov. 7, 1893. Serial No. 490,328. (No model.)

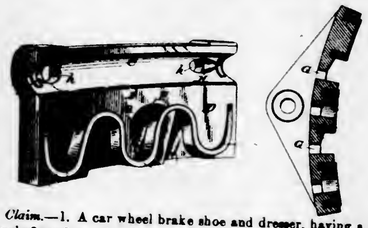


*Claim.*—1. The combination with an ear-wire of a loop-shaped lug extending upward from the lower portion of the said ear-wire, to rest against the ear-lobe and by its pressure prevent the tilting of the ear-ring, substantially as described.

2. The combination in and with an ear-wire, of a loop-shaped lug which is an integrant of that portion of the said ear-wire which does not pass into or through the ear lobe in the process of insertion therein, one branch of which lug is sinuous in a plane transverse to that of the loop, substantially as, and for the purposes, shown and described herein.

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**528,198. CAR BRAKE-SHOE AND DRESSER.** JAMES R. WORSWICK, Americus, Ga. Filed Feb. 17, 1894. Serial No. 500,499. (No model.)



*Claim.*—1. A car wheel brake shoe and dresser, having a body formed of a soft metal and having transverse cutting or dressing faces of a harder material, which are projected beyond the bearing face of the soft portion as specified.

2. In a car wheel brake shoe and dresser, in combination, the main or body portion formed of a soft metal, cutting portions formed of a harder metal cast with the soft metal, and having their inner edges projected beyond the inner face of the soft metal, as and for the purpose described.

3. A car wheel brake shoe and dresser, having transverse cutter members, projected beyond the inner face outside of its tread portion, the degree of cutting surface diminishing as it approaches that part of tread which receives the most wear, and increasing at a point where there is the least wear, as and for the purpose set forth.

4. A car wheel brake shoe and dresser, consisting of a body portion formed of two metals of different degrees of hardness, the harder one being sinuous and extending from end to end of the softer metal with its reverse edges projected above depressions to form transverse cutting members, as and for the purposes specified.

5 A car wheel brake shoe and dresser, formed of a main or body portion of a soft metal, and an integral continuous portion formed of a harder material projected transversely beyond the contact face of the body at intervals, substantially as shown and described.

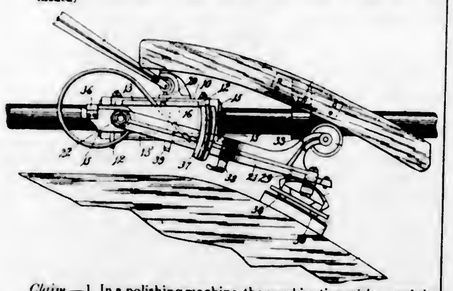
6 A car wheel brake shoe and dresser, composed of a body formed of a main portion of soft metal, and a portion of harder metal projected beyond the bearing face of the soft body, the spaces in such soft body between the hard metal portions having pockets or depressions, terminating at their outer ends in discharge openings, all arranged substantially as shown and for the purposes described.

7. A car wheel brake shoe, comprising a main or body portion of a soft metal, such as iron, and a harder portion, such as steel, formed of a sinuous or angular member extending continuously from end to end of the shoe, whereby to form transverse reversely curved cutting members, said soft body having depressions on alternate sides of the reverse curves of the cutting portions, substantially as and for the purposes described.

8. A car wheel brake shoe and dresser, formed of a body of soft metal having projecting cutting faces formed of a continuous member of harder metal cast with the soft body, sinuous or angular in shape, extending from end to end of the soft body, and having its bearing

faces concaved to fit the curvature of any wheel to which it is to be applied, substantially as shown and for the purposes specified.

528,199. RUBBING OR POLISHING MACHINE. CHARLES S. YARNELL, Minneapolis, Minn., assignor to the Moore Carving Machine Company, same place. Filed Dec. 8, 1893. Serial No. 493,086. (No model.)



*Claim.*—1. In a polishing machine, the combination with a straight guide bar, of a carriage reciprocative on the guide bar, a single swinging arm pivoted on the carriage so as to swing toward and from a plane through the axis of the guide bar, and a buffet pivoted on the free extremity of the swinging arm in such manner as to be tiltable to oblique positions with reference to the arm and to the guide bar in or parallel to the projection of the swinging movement of the arm, whereby the buffer is adapted when reciprocated by the reciprocation of the carriage to follow and polish the surface of material diverging or curving from the line of reciprocation of the carriage, substantially as described.

2. In a polishing machine, the combination with a carriage reciprocative on a guide-bar, of a swinging arm pivoted on the carriage, a buffer mounted on the free extremity of the swinging arm, a bearing also on the free extremity of the buffer-carrying arm, and a pattern or guide of substantially the same form as and disposed opposite and in a similar position to the article to be polished and so as by controlling the movement of the arm by its bearing, to hold the buffer up to its work on the surface of the article being polished, substantially as described.

3. In a polishing machine, the combination with a carriage reciprocative on a guide-bar, of a swinging arm pivoted on the carriage, a buffer mounted on the free extremity of the swinging arm, and a spring secured to the carriage and attached to the arm, adapted to counterpoise the arm, substantially as described

4. In a polishing machine, the combination, with a carriage reciprocative on the guide bar, of a swinging arm pivoted on the carriage, a buffer mounted on the free extremity of the swinging arm, and a guide secured to the carriage, in which the swinging arms move vertically, adapted to prevent lateral movement of the arm, substantially as described.

5. In a polishing machine, the combination with a carriage reciprocative on a guide-bar, of a swinging arm pivoted on the carriage, a buffer mounted on the free extremity of the swinging arm, and stops adapted to limit the movement of the swinging arm vertically, substantially as described.

6. In a polishing machine, the combination of a carriage reciprocative but non-revoluble on a guide-bar, a frame 16 secured adjustably circumferentially on the carriage, and a swinging buffer-carrying arm pivoted on the frame, substantially as described.

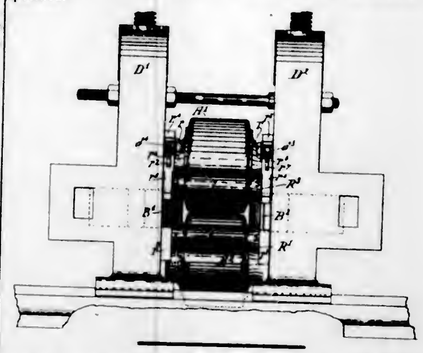
7. In a polishing machine, the combination with a carriage reciprocative on a guide bar, a swinging arm pivoted on the carriage, and a buffer-block mounted on the swinging arm, said buffer-block being provided with bosses, of an elastic buffer bearing against the bosses and secured thereto and to the buffer-block with limited freedom so as to be capable of bending into concave or convex positions in conformity to the article being polished, substantially as described.

528,200. ROLLING APPARATUS. LEVI D. YORK, Portsmouth, Ohio, assignor of one-half to James Edwin York, Duluth, Minn. Filed Jan. 19, 1894. Serial No. 497,457. (No model.)

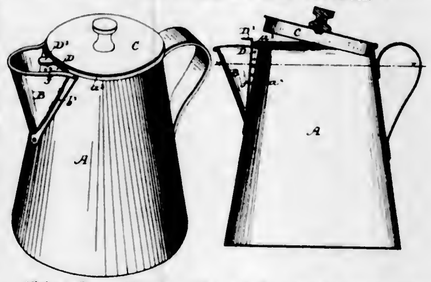
*Claim.*—1. In an apparatus for rolling metal, the combination with main reducing rolls, of supplemental sizing rolls connected with the adjustable main rolls, and moving with them when they are adjusted, substantially as specified.

2. In an apparatus for rolling metal, the combination with main reducing rolls, of supplemental sizing rolls, which move in and out of action automatically, during the process of reducing the product to standard size, substantially as specified.

3. In an apparatus for rolling metal, the combination with rolls A', $A^3$, B', $B^3$, of suitable form, of supplemental rollers R', $R^3$, $R^3$, $R^4$, the rollers $R^3$, $R^4$ being movable with the roll A', substantially as specified.

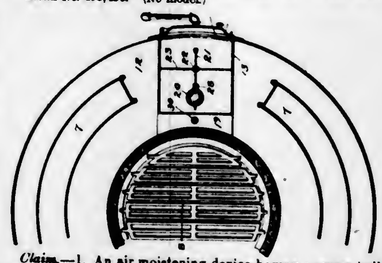


528,201. COFFEE OR TEA POT. WILLIAM O. BYRD, Baltimore, Md. Filed Mar. 21, 1894. Serial No. 504,524. (No model.)



*Claim.*—In combination with the walls of a coffee pot having a bead $a^2$ around its top edge, perforations $a^3$ in its side and a spout B in front of said perforations, the strainer D having perforations $f$ finer than the perforations $a^3$, and inserted within the spout B with its curved upper edge resting against the bead $a^2$ of the pot, whereby a liquid distributing chamber F is obtained between the perforated front wall of the pot and the strainer within the spout substantially as described.

528,202. AIR-MOISTENING DEVICE FOR HOT-AIR FURNACES. GEORGE W. FRIDRICH, St. Louis, Mo. Filed Dec. 11, 1893. Serial No. 493,439. (No model.)

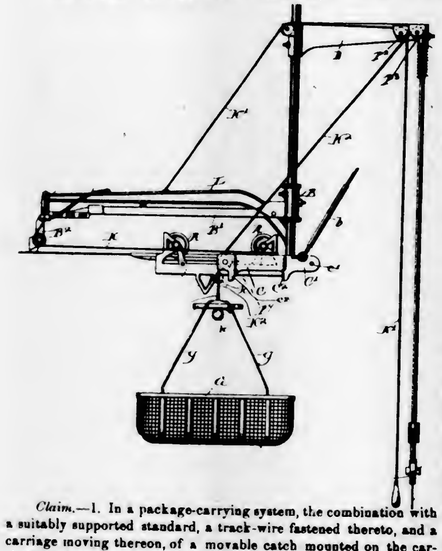


*Claim.*—1. An air moistening device having a steam boiler vertically divided into two sections communicating with each other and in contact with the flames in said furnace, a feed water pipe communicating with one portion of said steam boiler, float valve mechanism controlling the communication of the feed pipe with said boiler, a steam-pipe leading from the remaining section of said steam boiler and communicating with the hot air chamber near the top of the furnace, and a manually operated valve controlling the passage through said steam-pipe.

2. In a device of the class described, the combination of a boiler located adjacent to, and in the path of, the flames from the grate, a vertical partition in said boiler having a passage-way at the bottom thereof, a steam-pipe communicating with the closed upper end of one of the sections formed by the said partition and extending to a point of discharge in the top of the air chamber, a manually operated valve controlling a passage through said steam-pipe, a feed water pipe communicating with the remaining section of the steam boiler and having an open top, a valve normally seated on said top closing the port in the steam pipe, a valve-rod connected to said valve, a lever fulcrumed in the boiler and pivotally connected with the valve-rod, and a float adjustably connected to said lever, whereby the flow from the feed water pipe is automatically controlled.



528,203. PACKAGE-CARRIER. EMANUEL C. GIPE, Freeport, Ill., assignor to the Standard Store Service Company, same place. Filed May 13, 1893. Serial No. 474,100. (No model.)



*Claim.*—1. In a package-carrying system, the combination with a suitably supported standard, a track-wire fastened thereto, and a carriage moving thereon, of a movable catch mounted on the carriage, a plate adapted to engage said catch and a basket supported by the plate, suitably supported pulleys, cords passing over said pulleys and adapted to receive and engage said plate when the carriage reaches a given position in its movement along the wire and means for detaching the plate from the carriage after such engagement is completed, whereby the weight of the plate and basket may be transferred from the carriage to the cords; substantially as shown and described.

2. The combination with the suitably supported track wire, W, the carriage, E, moving thereon, and provided with a movable catch, the plate, F, adapted to engage said catch and formed with the notches, $F^3$, $F^3$, of the cords, $K^2$, $K^2$, passing over suitably arranged pulleys and having ends provided with the balls, $k$, $k$, and located in the line of movement of the notches, $F^3$, $F^3$, and means substantially as shown and described for operating the catch on the carriage and disconnecting the plate therefrom when the notches in the plate have come into engagement with the cords, whereby the weight of the plate may be transferred from the carriage to the balls, $k$, $k$, and cords, $K^2$, $K^2$.

3. In a package-carrying system, the combination with a suitably supported track-wire, and a carriage adapted to move thereon, of a plate detachably connected with the carriage and supporting a basket, cords passing over suitable pulleys and having ends provided with balls and hanging in the path of motion of the plate and adapted to enter notches therein, a weight attached to the ends of said cords opposite said balls and counter-balancing the same, a stop limiting the downward movement of the weight and holding said balls normally in the plane below the level of the plate, and means for disconnecting the plate from the carriage after it comes into engagement with the ends of said cords, whereby, when the plate is disengaged from the carriage, it may drop upon said balls and bring its weight upon said cords.

4. The combination with the track-wire, W, and carriage, E, moving thereon, of the plate, F, detachably fastened to the lower face of the carriage and supporting a suitable basket, the pulleys, $P^3$, $P^4$, the cords, $K^2$, $K^2$, passing over said pulleys and provided at one end with the balls, $k$, $k$, and at the opposite end with the weight, $w$, adapted to overbalance the weight of the balls, the suitably supported block, $a$, adapted to limit the upward and downward movement of the weight and thereby to limit the movement of the balls, $k$, $k$, and means for detaching the plate from the carriage, the ends of the cords, $K^2$, $K^2$, on which the balls are placed being in the path of movement of notches formed in the plate, F, whereby, as the carriage moves along the track, said notches may embrace said cords, and the plate may rest upon said walls when detached from the carriage.

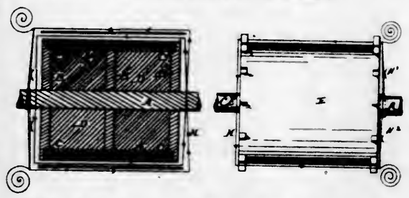
5. The combination with the standard, A, and track-wire, W, of the castings, C, D, fastened to the standard, the pulleys, $P^3$, $P^4$, supported by said castings, the cords, $K^2$, $K^2$, passing over said pulleys and provided at one end with balls, $k$, $k$, and at the opposite end with the weight, $w$, and yoke, $k'$, the vertical rod, A', and the block, $a$, attached to the lower end of said rod, and forming a stop to limit the downward movement of the weight, $w$, and the upward movement of the yoke, $k'$, the carriage adapted to move upon the track-wire and provided with a dependent catch, the plate, F, supporting a basket and adapted to engage the catch on the carriage, and means substantially as shown and described for disengaging the catch from the plate after the notches in the plate embrace the cords, $K^2$, $K^2$, the yoke, $k'$, when lying beneath the block, $a$, being adapted to hold the plate, F, in a position slightly below the bottom of the carriage; substantially as shown and described.

6. The combination with the standard, A, and track-wire, W, of the carriage moving on the wire, the rod, $E^2$, mounted in the carriage and sliding longitudinally therein, the dependent catch, $E^3$, mounted rigidly on the rod and moving therewith, a spring adapted to press the catch and rod toward the standard and the detachable plate, F, adapted to engage the catch and be supported by it in proximity to the carriage, the movement of the rod, $E^2$, against the force of said spring being adapted to release the plate, F, and disengage it wholly from the carriage; substantially as shown and described.

7. The combination with the carriage, E, having the dependent guide, $E'$, of the movable dependent catch, $E^3$, and the plate, F, formed with a slot, $F'$, adapted to embrace the guide and catch and to be engaged and held in place by the catch when in its normal position; substantially as shown and described.

8. The combination with the standard, A, track wire, W, castings, C, D, and rod, A', of the pulleys, $P^3$, $P^4$, mounted in the castings, the cords, $K^2$, $K^2$, passing over said pulleys, the tubes, $w'$, $w'$, fastened on the cords and having heads, $w^2$, $w^2$, at their lower ends, the weight, $w$, sliding on the rod, A', and tubes, $w'$, $w'$, and the block, $a$, mounted on the rod, A', and limiting the downward movement of the weight; substantially as shown and described.

528,204. ARMATURE FOR DYNAMO-ELECTRIC MACHINES AND METHOD OF MAKING SAME. THOMAS H. HICKS, Detroit, Mich. Filed July 14, 1893. Serial No. 480,471. (No model.)



*Claim.*—1. The herein described and illustrated method of winding an armature core with conductor-bobbins, consisting of winding each bobbin with two layers of coils formed of the same conductor and arranging the terminals of each bobbin in the outer layer of coils; the under layer of all of the bobbins being wound before winding any of the outer layer, substantially as illustrated and described.

2. The herein described and illustrated method of winding and straightening the bobbins of an armature core, having each bobbin formed of the same conductor, wound of two layers of coils and having only one set of terminals for the two layers of each bobbin, and the terminals all proceeding from the outer layer of coils; said method consisting of winding the under layer of all of the bobbins before winding any of the outer layer, then straightening the under layer, and finally winding the outer layer over the under layer, in the manner substantially as described.

3. The herein described and illustrated method of winding, straightening and insulating the bobbins of an armature core, having each bobbin formed of the same conductor, and wound of two layers of coils and having only one set of terminals for the two layers of each bobbin, and the terminals all proceeding from the outer layer of coils; said method consisting of winding the under layer of all the bobbins before winding any of the outer layer, then straightening the

under layer of coils and applying a circular binding band of insulation, and finally winding the outer layer of the bobbins over said insulation, substantially as described.

4. The herein described and illustrated method of winding an armature core with conductor-bobbins, having two layers of coils in each bobbin, and each bobbin formed of two conductors; said method consisting of dividing the armature into sections, winding each section with two conductors coiled in parallel, having the terminals of each conductor arranged in the outer layer of coils, the first layer of all of the bobbins being first wound, the second layer being then wound upon the first layer, substantially as described.

5. In an electric machine, a "drum-armature" divided into sections; each section containing two bobbins of armature conductors; each pair of bobbins wound by the side of and parallel to each other; the terminals of all of the bobbins being located in the outer layer of coils of said bobbins, substantially as described.

6. In an electric machine, a "drum-armature" having bobbins of conductors composed of two layers of coils; the layers of coils being separated from each other by an encircling band of insulation; the terminals of all of the bobbins being located in the outer layer of coils, substantially as described.

7. In an electric machine, a "drum-armature," the conductor-bobbins of which are composed of pairs of bobbins, each pair being wound by the side of and in parallel to each other; each bobbin being composed of two layers of coils; the two layers of coils having an encircling band of insulation between them; all of the terminals of the conductor-bobbins being located in the outer layer of coils, substantially as described.

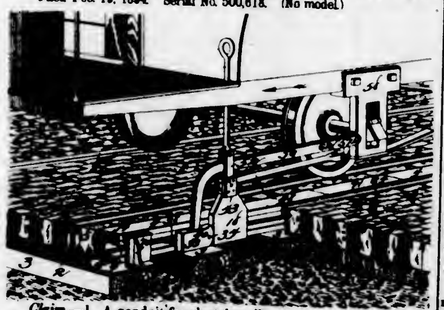
8. In an electric machine, an armature having its conductor-bobbins each composed of two divisions, with an encircling band of insulation between said divisions, and the terminals of all the bobbins proceeding from the outer layer of the bobbins, substantially as described.

9. In an electric machine, an armature having its core composed of flanges B, B′ and B², secured to the shaft A; and having non-conducting material D between said flanges; and a cylinder E, of iron wire wound upon said flanges and non-conducting material D, substantially as described.

10. In an electric machine, an armature having flanges shrunk upon the shaft of the armature, so as to be secured thereto; non-conducting material D located between said flanges; a cylinder E composed of insulated iron wire, wound upon the non-conducting material D; said flanges having slots for pins Q around their peripheral edges, substantially as described.

11. In an electric machine, an armature core composed of flanges B, B′, B², non-conducting material D, and iron wire cylinder E; the core thus formed having bobbins of conductors wound upon said core; each bobbin composed of two layers of coils, and the terminals of all of the bobbins proceeding from the outer layer of said coils, substantially as described.

## 528,205. CONDUIT ELECTRIC RAILWAY. JULIUS L. HORNIG, St. Louis, Mo., assignor of one-half to Theodore H. Wurmb, same place. Filed Feb. 19, 1894. Serial No. 500,618. (No model.)



*Claim.*—1. A conduit for electric railways, constructed of a casing 4 formed of two pieces of insulating material 5 and 6, the vertical projection 9 of the piece 6 constructed with a longitudinal depression 13 on its inner surface adjacent its upper end in which the conductor 14 is located, and held in position by a projection 15 carried by the piece 5 of said casing, substantially as set forth.

2. A casing forming a conduit, comprising two pieces of insulating material 5 and 6, the piece 5 formed wider than the piece 6 so that its free edge will project a distance over the free edge of said piece 6, and a downwardly pending projection 10 formed integral with the free edge of said piece 5 and having its lower edge at an angle relative the base of the casing, substantially as set forth.

3. In an electric railway, the combination with a casing forming a conduit constructed of two pieces of insulating material formed substantially as herein described and carrying the main conductor, of a trolley constructed of insulating material having a projection on one side adjacent its lower edge which projects into the conduit and constructed to slide upon the casing therein, a series of brush-holders located in suitable depressions in said projection and fulcrumed on the conductor, a brush connected to the free end of each of said brush-holders, a spring connected to the under side of each of the brush-holders, the free end of which engages the projection within the depression and holds the brushes up in contact with the conductor, a spring connected to the upper surface of each of the brush-holders, the free end of which engages the adjacent side of the brushes and prevents them from being disengaged from the conductor, and an electrical conductor located in the trolley having its lower end in contact with the conductor upon which the brush-holders are pivoted, substantially as set forth.

4. The combination with a casing forming a conduit, of a trolley formed of insulating material, having a projection on one side adjacent its lower end, and so formed as to fit within the conduit, brush-holders located in depressions formed in said projection and fulcrumed to a conductor having its bearings in said trolley, brushes carried by said holders and means for holding them in contact with the main conductor which is located within the conduit, a conductor having its upper end attenuated located in said trolley and having its lower end in connection with the first mentioned conductor, a circuit-breaker having its lower end attenuated and carried by a device formed of insulating material, two bars connected to the upper end of said device, a bar pivoted between the upper ends of said bars and extending upward through an opening in the platform of the car, said device which carries the circuit-breaker supported by a pipe, one end of which is pivoted to an ear carried by said circuit breaker, and the opposite end pivoted to an ear carried by the trolley-bar, substantially as set forth.

5. The combination with the herein described trolley, of a plow having a depression in its upper edge and a projection on one side, which is constructed with one end in the form of the mold-board, and said projection so constructed that it will fit within the conduit, substantially as set forth.

6. In combination with the herein described conduit-casing, of a plow having a depression in its upper edge and a projection having a chamber therein for carrying lubricant, substantially as set forth.

7. In combination with a car, of a trolley-bar having one end pivoted thereto and carried thereby and the opposite end constructed with projections and bent so as to engage the plow within the depression 40, and means for disengaging the trolley-bar from the plow, substantially as set forth.

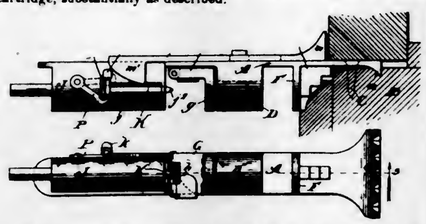
8. The combination with the herein described underground conduit-casings 4 and 100, of a trolley 82 constructed of two portions 83 and 84 having their adjacent edges hinged together by a hinge 85, a projection 98 formed on one side adjacent the lower end of the portion 83 and a projection 99 formed on the portion 84 adjacent its lower end on the opposite side from the projection 98, a brush-holder 89 located in a depression and fulcrumed to an electrical conductor 88, which is carried by the portion 83, the brush carried by said brush-holder constructed to engage the main conductor and means for holding it in connection therewith, a brush-holder 91 located in a depression in the projection 99 and fulcrumed to an electrical conductor 90 carried by the portion 84, the brush carried by said brush-holder constructed to engage the return-conductor 92 and means for holding it in contact therewith, a conductor 86 having its lower end in contact with the conductor 88, located in the portion 83 of said trolley, a conductor 87, having its lower end in contact with the conductor 90, located within the portion 84 of said trolley, circuit-breakers 93 and 94 carried by a device 95, constructed to engage the conductors 86 and 87, means for disengaging said circuit-breakers from said conductors 86 and 87, a conductor leading from the circuit-breaker 93 to the motor, and a conductor leading from said motor to the circuit-breaker 94, all arranged and combined to operate in the manner set forth.

9. An electric railway system, comprising a traveling vehicle, a main conductor, a continuous insulated holder for said conductor, a detachable trolley carried by said vehicle and guided by said conductor-holder, a contact carried by said trolley and suitable electrical connections, substantially as set forth.

## 528,206. DOOR-LOCKING BURGLAR-ALARM. HENRY J. MITCHELL, Chicago, Ill. Filed Jan. 13, 1894. Serial No. 496,768. (No model.)

*Claim.*—1. In a combination lock and alarm the combination with the door, window or the like which it is desired to lock, of a suitable supporting plate provided with means for engaging it to a stationary support, a movable device carried by said plate and adapted to limit the movement of the door, &c., a cartridge holding device carried by said plate and a longitudinally movable spring plunger released from its retracted position by the movable device and adapted to fire the cartridge, substantially as described.





2. In a combination lock and alarm the combination with the door, window, or the like, of a suitable supporting plate engaged to a stationary object, a sliding plate engaged to the supporting plate and located in the path of the door, &c., a cartridge holding barrel carried by the plate, a hinged plate adapted to hold said cartridge in the barrel, and spring mechanism released by the movement of the sliding plate and adapted to fire the cartridge, substantially as described.

3. The combination with the door, window, or the like of a suitable supporting plate engaged to the door jamb, a sliding plate on the supporting plate in the path of the door, said sliding plate detachably engaged to the main plate, a cartridge holding device on the main plate, and spring mechanism released by the sliding plate and adapted to fire the cartridge, substantially as described.

4. The combination with the door, window, or the like, of a main or supporting plate engaged to the door jamb, a cartridge holding device, a hinged plate to hold the cartridge in place, a spring impelled plunger carried by the main plate and a detachable sliding plate carried by the main plate having a projection extending in the path of the door or the like and adapted to limit the movement of the same, said sliding plate also provided with a beveled projection adapted to release the spring impelled plunger from its retracted position, substantially as described.

5. The combination with the door, window, or the like of the main or supporting plate, a cartridge holder carried thereby, a sliding plate moved by the movement of the door, &c., mechanism released by the movement of the sliding plate and adapted to fire the cartridge, and a hinged plate adapted to hold the cartridge in position, said hinged plate held in place by a pivoted latch, substantially as described.

6. The combination with the door and door jamb of a plate provided with a series of teeth extending at an angle therefrom and adapted to enter the door jamb, a cartridge holding device on said plate, means for firing the cartridge and a detachable sliding plate adapted to release the cartridge firing means, and also to limit the movement of the door, substantially as described.

7. The combination with a door or the like of the main plate carried by the door jamb, the cartridge holding device, a cartridge firing spring impelled piston, a sliding plate to release said piston from its retracted position and a pivoted catch to lock said piston in its retracted position and against release by the sliding plate, substantially as described.

## 528,207. WATCHCASE-SPRING. CHARLES NOBS, Newark, N. J. Filed Dec. 15, 1893. Serial No. 493,728. (No model.)

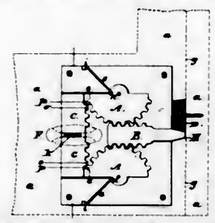


*Claim.*—1. A watch case spring provided with a tongue formed on the side thereof, said tongue being bent back and out to form a centrally arranged post on the back of the spring, in combination, with a sectional piece or backing provided with a slot or opening extending entirely through said piece or backing, whereby said piece or backing can be arranged upon said post and on the back of said spring, substantially as and for the purposes set forth.

2. The herein described watch case spring, comprising therein the metal strip *a* having a tongue formed thereon, said tongue being bent back and out centrally to form a flat post $a^3$, and a sectional piece or backing *b* having a slot or opening therein, whereby said piece or backing can be fitted over said flat post and over the back of the spring, substantially as and for the purposes set forth.

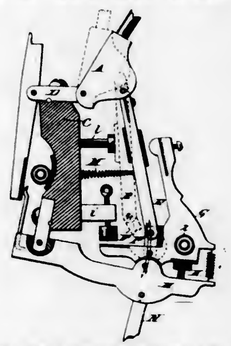
3. The herein described watch case spring, comprising therein the metal strip *a* having a tongue formed thereon, said tongue being bent back and out centrally to form a flat post $a^3$, and a sectional piece or backing *b* having a slot or opening therein, whereby said piece or backing can be fitted over said flat post and over the back of the spring, said tongue on the spring *a* and the backing *b* forming a continuous passage or hole *c*, substantially as and for the purposes set forth.

## 528,208. SASH-FASTENER. ALFRED H. PARSLOW, Tampa, Fla. Filed Mar. 31, 1893. Serial No. 468,610. (No model.)



*Claim.*—The combination in a sash fastener of the operating knob, the sliding rack plate, the springs engaging said rack plate, the half wheels, the sliding bolt provided with teeth with which said half wheels intermesh and the fastening blocks secured to the stop of the window frame substantially as specified.

## 528,209. PIANO-ACTION. JOSEPH R. PERRY, Wilkes-Barré, Pa. Filed Aug. 2, 1893. Serial No. 482,206. (No model.)



*Claim.*—1. In a piano action the links E and F pivoted together and in turn link F pivoted to a vibrating lever as G, the said vibrating lever pivoted to an actuating lever as H for the purpose specified.

2. A vibrating lever G having a jointed jack pivoted thereto said arm or lever pivoted to an actuating lever as H and having an arm extending from said first named pivot so as to come in contact with an unlocking device or buffer as *i*, in the manner shown and specified.

3. In a piano forte action the actuating lever H having vibrating lever G and link F pivoted together the said link F pivoted to link E and link E pivoted to the hammer butt all in combination with regulating check screw L of action rail C in the manner and for the purposes specified.

4. A vibrating arm or lever G having a jointed jack secured thereto and to an actuating lever as H, all secured together by means of a common pivot or pin passing through link F of the jointed jack, arm G and actuating lever H, in the manner and for the purpose specified.

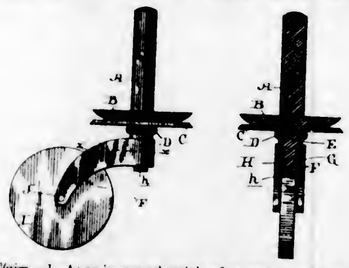
5. The vibrating arm or lever G having a jointed jack attached thereto, a reacting spring connecting the arm G with an actuating lever H and a regulating screw, the actuating lever and the said vibrating lever pivoted together and with the jack, pivoted to the actuating lever forming a common pivot for the lever G, lever H and jack link F, all combined for the purpose named.

6. A vibrating lever as G having a reacting spring said lever pivoted to an actuating lever which contains a regulating screw, said vibrating lever having a jointed jack pivoted thereto and also to the hammer butt, the said jointed jack having a reacting spring acting against the action rail C, all arranged and combined for the purpose specified.

7. A vibrating lever as G having the jointed jack pivoted thereto and to actuating lever H, said lever G having reacting spring J, and regulating screw K secured to lever H, the jointed jack pivoted to

hammer butt A having a flange D, which is secured to the action rail C, the check L reacting spring M and buffer *i*, all combined to operate in the manner and form named.

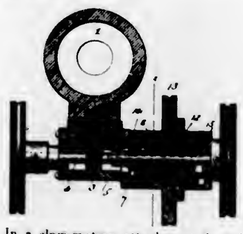
528,210. CASTER. JOSEPH J. SCHLIENTS and JACOB F. FINK, Defiance, Ohio. Filed Mar. 24, 1894. Serial No. 505,008. (No model.)



*Claim.*—1. As an improved article of manufacture, a caster having a stem A, a disk B fast thereon to receive the pressure of the bedstead, and a disk C having a vitreous under surface, arranged below the disk B, substantially as and for the purpose specified.

2. As an improved article of manufacture, a caster having a stem A provided with a groove E, a disk B fast on said stem, a second disk C having a vitreous under surface below said disk B, and a rubber ring fitting in said groove E, all substantially as described and shown.

528,211. SLOW-MOTION ATTACHMENT FOR MICROSCOPES. HIRAM G. SEDGWICK, Nashville, Tenn. Filed Feb. 10, 1894. Serial No. 499,783. (No model.)



*Claim.*—1. In a slow-motion attachment for microscopes and other instruments, the combination of the rack-bar and pinion and the shaft carrying the pinion, another pinion mounted on the shaft, a non-rotatable part engaging the latter pinion and adapted to rotate it, and means for imparting an endwise movement to said non-rotatable part, substantially as described.

2. In a slow-motion attachment for instruments, the combination of the rack-bar and pinion and shaft, a spirally-ribbed pinion on said shaft, a part embracing the said pinion and provided with internal teeth engaging said spiral ribs, and means for moving said part, substantially as described.

3. In a slow-motion for instruments, the combination of a rack-bar and pinion, a shaft carrying said pinion and provided with means for imparting the coarse-motion, another pinion mounted on said shaft and adapted to rotate with or independently of it, and means for rotating said pinion, whereby both the coarse and fine adjustments are effected through the same shaft and pinion, substantially as described.

4. The combination of a rack bar, a pinion engaging the same, a shaft carrying said pinion, means on the shaft for imparting the coarse motion, and slow-motion devices attached directly to said shaft, said devices consisting essentially of a pinion mounted directly on the shaft and means for rotating said pinion, whereby the coarse motion and the slow motion may be imparted to the rack-bar through the same rack and pinion and shaft substantially as described.

5. The combination of a rack-bar and pinion, a shaft, carrying said pinion and also means for imparting the coarse motion, and a slow-motion attachment applied directly on said shaft and adapted to rotate it, said attachment consisting essentially of a pinion having a frictional engagement with the shaft for the purpose described and means for rotating said pinion and locking it against rotation when the coarse motion is used, substantially as described.

6. The combination of a rack-bar and pinion and shaft and a slow-motion attachment consisting essentially of a slitted pinion having a frictional engagement with the shaft, and means for rotating the pinion to obtain a fine adjustment, substantially as described.

7. The combination with a rack-bar and pinion, a shaft carrying the pinion and also means for imparting the coarse motion, and a slow-motion attachment consisting essentially of a spirally ribbed pinion mounted on the shaft, an endwise movable part engaging the pinion and adapted to rotate it, and means for moving said endwise movable part, substantially as described.

8. The combination of a coarse-motion shaft and a slow-motion attachment therefor, consisting essentially of a spirally ribbed pinion mounted on the shaft and adapted to rotate with or independently of it, a non-rotatable part provided with corresponding internal ribs or grooves, and means for moving the latter part, substantially as described.

9. The combination of a coarse-motion shaft, a slow-motion attachment consisting essentially of a pinion mounted directly on the shaft and adapted to rotate with or independently of it, an endwise movable part engaging said pinion and adapted to rotate it, said part being screw-threaded externally, and an external sleeve internally threaded to engage said endwise movable part, substantially as described.

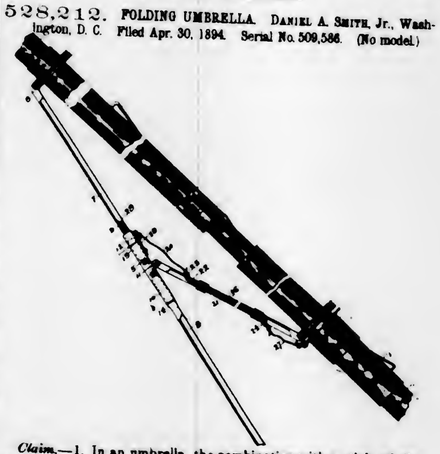
10. The combination of the coarse-motion shaft and means for rotating it, a slow-motion attachment consisting of a pinion or sleeve mounted directly on said shaft an endwise movable part engaging said pinion and threaded externally, key-ways engaging said non-rotatable part, a sleeve embracing said non-rotatable part and carrying an operating head, substantially as described.

11. The combination with the coarse-motion shaft and means for rotating it, a slow motion attachment consisting of a pinion applied directly to the shaft and provided with one or more spiral grooves, a tube or sleeve embracing said pinion and engaging its spiral ribs and being externally threaded, key-ways engaging said tube and preventing it rotating, an external sleeve threaded internally and engaging said tube, and a stop cap supported by said key-ways, substantially as described.

12. The combination with a microscope or other instrument carrying a slidable bar, a shaft journaled in the instrument and carrying a pinion engaging said bar, and means carried by the shaft for imparting coarse motion thereto, of a slow-motion attachment mounted directly on said shaft, whereby the coarse motion and the slow-motion may be imparted to the slide through the same rack and pinion and shaft, substantially as described.

13. The combination of an instrument, a rack bar, a pinion engaging said rack bar, a shaft carrying said pinion and provided with coarse motion operating devices, of a slow-motion device consisting essentially of a rotatable part carried by said shaft and adapted to rotate with it, said part being provided with one or more spiral ribs or grooves, and an endwise movable part engaging said spiral ribs or grooves and adapted to rotate said rotatable part and its shaft, substantially as described.

528,212. FOLDING UMBRELLA. DANIEL A. SMITH, Jr., Washington, D. C. Filed Apr. 30, 1894. Serial No. 509,586. (No model.)



*Claim.*—1. In an umbrella, the combination with a stick, of ribs pivoted to the stick formed of two sections, hinge connections for the sections, sleeves slidingly secured on the ribs adapted to slide over the hinges and adjacent ends of the sections, automatic locks on the sleeve for preventing the movement of the sleeve in either direction when the sleeves are over the hinges, a runner on the stick, braces connecting the runner and sleeves, means on the stick for releasing the locks and connections between the locks and said means, substantially as described.

2. In an umbrella the combination with a stick, of ribs pivoted to the stick made in two sections, hinge connections for the sections, blocks in the outer ends of the inner sections having apertures therein, sleeves on the ribs adapted to slide over the hinges connecting the sections having apertures therein registering with the apertures in the blocks when the sleeves are over the hinges, spring actuated pins adapted to normally engage the apertures when the apertures register, a runner on the stick, braces connecting the runner and sleeves, means on the stick for disengaging the pins from the apertures against the tension of the springs and connections between said means and pins, substantially as described.

3. In an umbrella, the combination with a stick, ribs pivoted to the stick formed of two sections, a hinge connecting the sections, a sleeve slidingly secured on the ribs and adapted to slide over the hinge and adjacent ends of the sections, a projection on the outer section adapted to prevent the outward movement of the sleeve beyond the hinge, a lock on the sleeve for preventing the movement of the sleeve in either direction a runner on the stick, braces connecting the runner and sleeves means on the stick for actuating the locks and a connection *b* between the locks and said means, substantially as described.

4. In an umbrella, the combination with a stick, of ribs pivoted to the stick made in two sections, a hinge connection for the sections, a block in the outer end of the inner section having an aperture therein, a sleeve on the ribs adapted to slide over the hinge connecting the sections having an aperture therein registering with the aperture in the block in the inner section when the sleeve is over the hinge leaf spring on the sleeve, a lateral pin on the free end of the spring adapted to engage the apertures, a runner on the stick, braces connecting the runner and sleeves a sleeve on the runner and connections between the sleeve and springs, substantially as described.

5. In an umbrella, the combination with a stick, of ribs pivoted to the stick made in two sections, hinge connections for the sections, sleeves slidingly secured on the ribs adapted to slide over the hinges and adjacent ends of the sections, a runner on the sticks, braces connecting the runner and sleeves, locks for rigidly locking the sleeves in position when over the ends of the sections and hinge connections and means for releasing said locks, substantially as described.

528,213. PNEUMATIC TIRE. GEORGE F. STILLMAN, Syracuse, N. Y. Filed Apr. 18, 1894. Serial No. 508,000. (No model.)



*Claim.*—1. In combination with felly A provided with hole *a*; sleeve F fitted to said hole, and provided at its outer end with a flange *c* and at its inner end with external screw threads; a tire provided with a filling tube to fit within the sleeve; a packing encircling the sleeve at its inner end; and a nut H screwing upon the sleeve and serving to seat and securely hold the sleeve in place, and also to press the packing against the inner face of the rim with sufficient force to prevent the entrance of water around the sleeve, all substantially as shown and described.

2. In combination with felly A provided with hole *a*; band E provided with a hole *b* elongated laterally; a sleeve F passing through said holes, and provided at its outer end with flange *c* and at its inner end with external screw threads; a tire provided with a filling tube to fit within the sleeve; a packing encircling the sleeve at its inner end; and a nut H screwing upon the sleeves and serving to seat and securely hold the sleeve and band in place, and also to press the packing against the inner face of the rim to prevent the entrance of water around the sleeve.

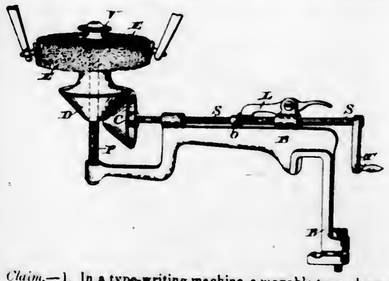
528,214. PROCESS OF DECARBONIZING STEEL. WILLIS K. TOPLEY, South Williamsport, Pa. Filed Aug. 28, 1894. Serial No 521,548. (No specimens.)

*Claim.*—1. A process of decarbonizing steel, consisting in subjecting the same while in a heated condition to the action of a bath containing an acid for penetrating the structure of the metal and an oil for softening the same; subsequently applying heat to remove the carbon; and finally, placing the metal while hot in sand to exclude the air, substantially as specified.

2. A process of decarbonizing steel, consisting in subjecting the same while in a heated condition to a bath containing vinegar, coal-oil, tallow, and saltpeter in substantially the proportions specified; subsequently heating the metal to remove the carbon; and finally placing the same while hot in sand, to exclude the air, substantially as specified.



528,215. TYPE-CLEANING BRUSH FOR TYPE-WRITING MACHINES. FRED VAN FLEET, Williamsport, Pa. Filed July 26, 1893. Serial No. 481,496. (No model.)



*Claim.*—1. In a type-writing machine, a movable type-cleaner in combination with movable parts having inclined faces and connecting and actuating devices whereby the forcing of one of the said faces against the other will place the said cleaner in operative position, and the withdrawal of the said face will permit the said cleaner to leave the said position substantially as set forth.

2. In a type-writing machine, a movable type-cleaner, in combination with friction cones whereby it is driven and connecting and actuating devices, the said cones and cleaner being movable in the direction of their axes, and the pressure of one of the said cones against the other serving to place the said cleaner in operative position substantially as set forth.

3. In a type-writing machine, a movable type-cleaner having a brush-block or downward extension, in combination with mechanism, including a longitudinally sliding shaft separate from the said brush or block extension, for moving it into and out of position and operating it and means for locking it in operative position at will substantially for the purpose set forth.

4. In a typewriting machine, the combination of a type cleaner and its support with mechanism, including a longitudinally sliding shaft, for operating it and moving it into and out of operative position, and a positive catch engaging the said shaft at will to lock it against withdrawal substantially as set forth.

5. In a type-writing machine a type-cleaner adapted to be raised into the type-opening in combination with friction cones for thus raising and for rotating it, connecting and supporting devices and a catch for retaining the said cleaner in its operative position substantially as set forth.

6. In a type-writing machine the combination of a type-cleaner adapted to slide up and down on its support with a spring arranged to move the said cleaner out of the type opening and means for moving the said cleaner into the said opening substantially as set forth.

7. In a type-writing machine, the combination of a type-cleaner movable up and down on its support, with a spring bearing on the said cleaner to depress it, and a longitudinally movable shaft, and gearing for raising the said brush into the type opening, and rotating it substantially as set forth.

8. In a type-writing machine the combination of a movable type-cleaner with a spring arranged to force it down out of the type-opening, bevel friction cones for rotating the said type-cleaner and supports and actuating devices which allow the pressure of one cone against the other to lift the brush into the said opening substantially as set forth.

9. In a type-writing machine the combination of the vertical shaft having spring-bearing at its upper end, in combination with a type cleaner and friction cone which slide on the said shaft, a spring arranged between the said bearing and the said type-cleaner to depress the latter and the said friction cone, a second friction cone in contact with the former and movable toward or from it, and a shaft for rotating the second friction cone substantially as set forth.

10. In a type-writing machine, the combination of a type-cleaner which is movable into and out of the type-opening, a friction cone which is movable with it, and a spring arranged to force them out of the said opening, of a second friction cone in contact with the former one, a shaft on which it is fixed, and bearings for the said shaft which allow the said shaft and the said second friction cone to move toward and from the axis of the brush substantially as set forth.

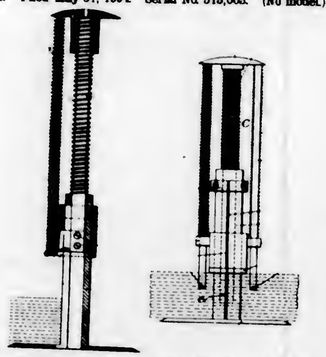
11. In a type-writing machine, the combination of an endwise movable shaft and bearings therefor with a catch, mounted in one of

the said bearings and engaging the said shaft to hold it in a certain position of longitudinal adjustment for operation, a type-cleaning brush movable into and out of the type-opening, and gearing interposed between the said shaft and the said brush whereby the latter is rotated and raised into operative position, the said catch retaining it there substantially as set forth.

12. A type-cleaner for typewriters provided with driving frictional surfaces in addition to the main driving gears substantially as set forth.

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**528,216. CLOTH-NOTCHING DEVICE.** JOHN WOLF, Jr., Cincinnati, Ohio, assignor to the Wolf Electrical Promoting Company, same place. Filed May 31, 1894. Serial No. 513,003. (No model.)



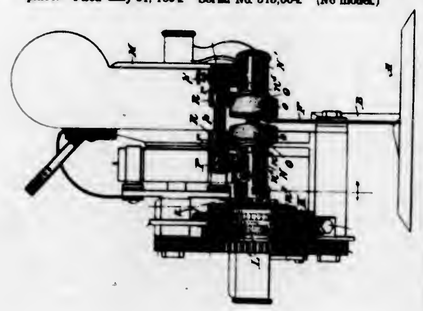
*Claim.*—1. In a notcher, the combination with a hollow vertically slotted standard, of a plunger or rod working in said standard, a knife arranged on one end of the plunger and passing through the slot of the standard, a gripping sleeve slidingly held upon the standard, a spring yieldingly connecting the sleeve to the plunger, together with another spring tending to keep the plunger in a raised position, whereby both plunger and sleeve are adapted to be operated simultaneously to grip the material and cut the notch by a single operation, substantially as described.

2. In a notcher, the combination with a hollow standard having a vertically arranged slot therein, of a plunger normally pressed upwardly by a spring, and carrying at its lower end a knife or cutter extending outwardly through a slot in the standard, a sleeve carrying a gripping jaw and slidingly held upon said standard and provided with a slot for a part of its length for the passage of said knife, together with a yielding connection between the sleeve and the plunger, whereby both plunger and gripping sleeve may be operated at the same time, substantially as described.

3. A notcher comprising a standard, a spring-pressed knife-carrying plunger having a handle on its outer end, in combination with a sleeve slidingly held upon the standard and provided with a slot for the passage of the knife of the plunger and a jaw to grip the material, a tubular stem or upright arranged upon the jaw of said sleeve, a rod secured at one of its ends to the handle and having its other end entering the tubular upright, together with a spring arranged around the upright and rod and extending between the jaw and handle, substantially as described.

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**528,217. CLOTH-CUTTING MACHINE.** JOHN WOLF, Jr., Cincinnati, Ohio, assignor to the Wolf Electrical Promoting Company, same place. Filed May 31, 1894. Serial No. 513,004. (No model.)



*Claim.*—1. In a cloth-cutting machine, the combination with the foot-plate, the standard, the yoke or plate, the cutter and means for imparting motion to said cutter, of grinding wheels mounted upon a shaft, means for rotating said shaft, a sleeve or bearing supporting said shaft at one end and provided with means for removably connecting the sleeve or bearing to the yoke or plate, substantially as described.

2. In a cloth-cutting machine, the combination with the foot-plate, the standard, the yoke or plate, the cutter and means for imparting motion to said cutter, of grinding wheels mounted upon a shaft, means for rotating said shaft, a sleeve or bearing supporting said shaft at one end and provided with handles adapted to press said grinding disks together, substantially as described.

3. The combination with the frame, the yoke, the cutter and support therefor and means for imparting motion to said cutter, of the sleeve and nuts arranged on the end thereof for securing same to said yoke, a shaft passing through the sleeve and means for rotating said shaft, grinding wheels slidingly held on the shaft, and means for normally pressing said grinding wheels apart, substantially as described.

4. In combination with the rotary cutter and the yoke or plate, the sleeve secured to said yoke so as to be radially adjustable thereon, a shaft passing through said sleeve, grinding wheels slidingly held on said shaft, together with means for holding the wheels normally apart, substantially as described.

5. The combination with the rotary cutter and the yoke or plate, of the sleeve passing through a slot in said yoke and secured to the yoke so as to be radially adjustable thereon, a dust guard arranged to cover the slot through which the sleeve passes, a shaft journaled in said sleeve, grinding wheels slidingly held on said shaft, together with means for holding the wheels normally apart, substantially as described.

6. In combination with the cutter and the yoke or plate having a pivoted section or cover thereon, a sleeve passing through a slot in said yoke and cover and secured to the yoke so as to be radially adjustable thereon, a shaft journaled in said sleeve, grinding wheels slidingly held on said shaft, together with means for pressing the wheels in engagement with the cutter, substantially as described.

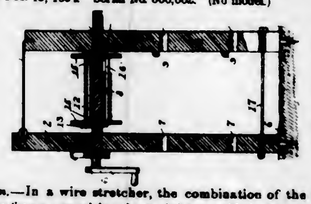
7. The combination with the frame, the cutter and the yoke or plate and means for imparting motion to the cutter, of the sleeve passing through a radial slot in said yoke, nuts arranged on the end of said sleeve on opposite sides of the yoke for adjustably securing same to said yoke, a shaft journaled in the sleeve, together with grinding wheels slidingly held on said shaft, substantially as described.

8. In a cloth-cutting machine, the combination with the foot-plate, the standard, the yoke, the rotary cutter and means for imparting motion to said cutter, of the grinding wheels mounted upon a shaft which extends obliquely to the axis of the cutter, means for imparting motion to said shaft, and a sleeve in which said shaft is journaled; the said sleeve having nuts for securing the same to the yoke in such manner as to be radially adjustable with relation to the cutter, substantially as described.

9. In combination with the rotary knife, the sleeves and means for securing same in the desired position, the shaft passing through the sleeves, collars secured to the shaft adjacent to and bearing against the sleeves, the said sleeves having projections fitting into annular grooves in the collars to provide a dust proof joint, together with grinding wheels slidingly held on the shaft between the collars, substantially as described.

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**528,218. WIRE-STRETCHER.** SILAS ALLISON, Ottawa, Kans. Filed Feb. 13, 1894. Serial No. 500,002. (No model.)



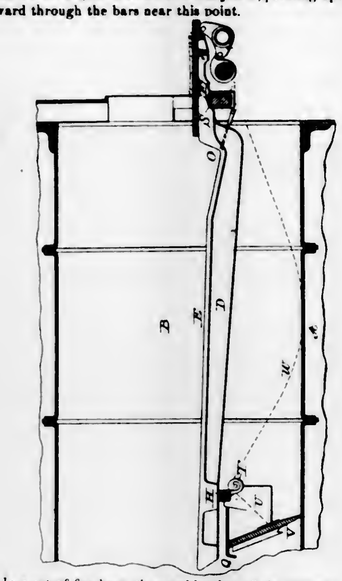
*Claim.*—In a wire stretcher, the combination of the separable supporting frame comprising the uprights provided with bearing openings and having at their lower ends spikes or points to be inserted in the ground, and a hook loosely connected with one of the uprights, and arranged to engage the top of the other upright whereby the uprights are connected, and a shaft journaled on the uprights and adapted to receive a spool of wire, substantially as described.

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**528,219. FURNACE.** EDWARD BENNIS and ALFRED W. BENNIS, Bolton, England. Filed Oct. 9, 1893. Serial No. 487,696. (No model.)



*Claim.*—1. The combination, with a set of movable fire bars having reciprocating motion, of a depression O near the front, in which the fuel can collect, and a series of steam jets P, pointing upward and backward through the bars near this point.



2. In a set of fire bars, the combination of the transverse shaft J; the cams I having the beaks K fixed thereon; the bars F having the projection X thereon; with the cams Y, levers M; and dead plate N abutting against the ends of the bars, substantially as described.

3. The combination of the revolving cams I having projections K and being fixed on the same shaft J, the washers I placed between the cams and of larger radius than said projections K and the bar continuations F each resting on a cam and separated from each other by the washers I, whereby the action of each cam is confined to its particular bar.

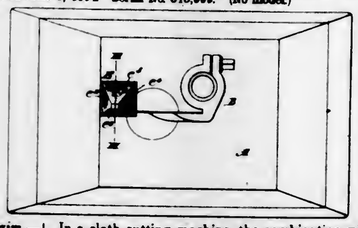
4. In combination with the bearer G having a convex top, a fire bar having two correspondingly shaped but complementary recesses R R below and a point with sloping sides S between, whereby, whenever the bar is pushed in either direction till the point passes the apex of the bearer, the bar shall come to rest at the exact right point, the top of the concavity of the bar resting on the apex of the bearer.

5. In a furnace, the combination of a series of bars, each having at substantially the same point in its length a recess at the front end having a sloping rear with a device for reciprocally advancing the bars collectively and returning them severally, whereby the reservoir of fuel is formed at the front end, and thus the bars are not readily bared at that end by the travel of the fuel.

6. The combination of a shaft J, a series of cams I thereon capable of pushing their respective fire bars backward; with a further cam Y on same shaft, bell crank M and device X F pressing against all the bars and pressed by the bell crank, whereby one shaft can be used to propel the bars backward and forward and lift them up.

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**528,220. CLOTH-CUTTING MACHINE.** JACOB BLOCH, Cincinnati, Ohio, assignor to the Wolf Electrical Promoting Company, same place. Filed June 9, 1894. Serial No. 513,999. (No model.)

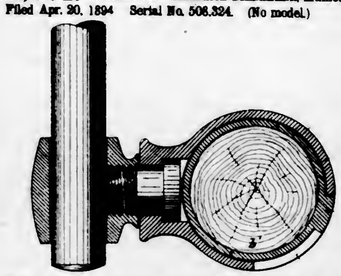


*Claim.*—1. In a cloth cutting machine, the combination with a foot-plate and cutter and means for rotating said cutter, of a cloth-lifting device consisting of a block having a substantially rectangular base, mounted upon the upper surface of the foot-plate in advance of and adjacent to the cutter, said block being provided with slanting or inclined sides each inclining upwardly from the base toward a common point, substantially as described.

2. The combination with a foot-plate, a cutter and means for rotating said cutter, of a cloth lifting device provided with a rectangular base and having the sides thereof slanting or inclined toward a common point and at an angle to the base, one of the said sides having a greater inclination than the others, and provided with a slot for the passage of the cutter, substantially as described.

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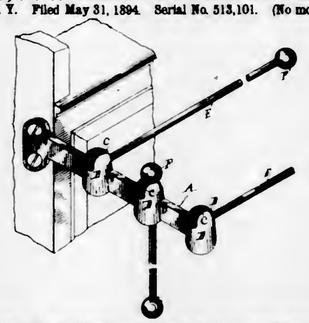
**528,221. OAR-LOCK.** HEINRICH BRINKMANN, Munich, Germany. Filed Apr. 20, 1894. Serial No. 508,324. (No model.)



*Claim.*—The combination, with a fixed erect stud, and an eye movable thereon in a horizontal plane, of a sleeve provided with a stud-opening and with a recess at the inner end of the stud-opening, and a connecting stud inserted in the stud opening and attached to the eye, said connecting stud having a head movable in the recess in the sleeve, substantially as set forth.

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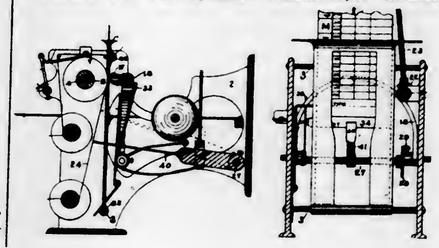
**528,222. CLOTHES-DRIER.** CHARLES E. COCHRANE, New York, N. Y. Filed May 31, 1894. Serial No. 513,101. (No model.)



*Claim.*—A towel rack consisting of a horizontal bar A, connecting cylindrical portions B B B which are provided with rounded tops projecting above said bar A, interior recesses or sockets and transverse slots through the rounded tops, rods E E E and balls D D D and F F F, the said bar A being provided with means for attaching the same to the unfinished back of a piece of furniture so that the arms may be extended parallel with the side thereof, substantially as described.

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**528,223. WORKMAN'S TIME-RECORDER.** DANIEL M. COOPER, Rochester, N. Y. Filed May 14, 1894. Serial No. 511,223. (No model.)



*Claim.*—1. In a time recorder, the combination with a time stamp, of a card guide or receiver adjustable relatively to the stamp in one direction, an actuating device for causing the stamp to mark a card in the receiver, an abutment for limiting the movement of a card relatively to the stamp, said abutment being independent of the stamp actuating device, and adjustable in a direction at an angle to the before-described movement of the guide, whereby the card may receive two or more marks in the same or different places, substantially as described.

2. In a time recorder, the combination with a time stamp and operating devices therefor, of a card guide or receiver adjustable relatively to the stamp in one direction and a movable abutment or stop for engaging a card automatically movable relatively of the stamp in another direction, substantially as described.

3. In a time recorder, the combination with a time stamp and operating devices therefor, of a card guide or receiver, an abutment limiting the movement of the card relative to the time stamp and time mechanism actuating said abutment intermittingly, substantially as described.

4. In a time recorder, the combination with a time stamp and operating devices therefor, of a card guide or receiver, an abutment limiting the movement of the card relative to the time stamp, and intermittingly operated mechanism for actuating the abutment, substantially as described.

5. In a time recorder, the combination with a time stamp, and operating devices therefor, of a card guide or receiver, an abutment limiting the movement of the card relative to the time stamp, and intermittingly operated mechanism controlled by a time movement for actuating said abutment, substantially as described.

6. In a time recorder, the combination with a time stamp and operating devices therefor, of a card guide or receiver laterally adjustable of the stamp, an abutment limiting the movement of the card relative to the stamp, and mechanism for moving said abutment, and a time movement controlling said mechanism and permitting it to cause the abutment to move a limited distance every twelve hours, substantially as described.

7. In a time recorder, the combination with the time stamp embodying marking wheels, and a time movement, of a card guide or receiver, an abutment limiting the movement of the card relative to the marking wheels, actuating mechanism for moving the abutment and controlled from the time movement of the stamp, substantially as described.

8. The combination with the time stamp embodying marking wheels, and a time movement, of a card guide or receiver, an abutment limiting the movement of the card relative to the marking wheels, a cam operating the abutment, and a motor for moving the cam, controlled by the time movement, substantially as described.

9. The combination with the time stamp embodying marking wheels and a time movement, of a card guide or receiver, an abutment limiting the movement of the card relative to the marking wheels, a rotary cam operating the abutment, and operating mechanism controlled by the time movement for intermittingly moving the cam at intervals of twelve hours each, substantially as described.

10. The combination with the time stamp embodying marking wheels, and a time movement operating them, of the card receiver open at front and rear, and movable relatively to the marking wheels, the movable abutment at the bottom of said receiver, actuating devices for moving said abutment intermittingly toward the marking wheels, a time mechanism for controlling it, a movable hammer cooperating with the marking wheels, and operating devices therefor, substantially as described.

11. The combination with the time stamp embodying marking wheels, a hammer and a time movement, of a vertically extending and laterally movable card receiver, an abutment at the bottom of said card receiver and operating devices controlled by the time movement for raising said abutment a certain distance at intervals of twelve hours, substantially as described.

12. In a time recorder, the combination with a time movement, a separate motor mechanism controlled thereby, a marking stamp operated by the time movement, and a movable abutment operated toward said marking stamp by the motor and serving to limit the insertion of a card in the stamp, substantially as described.

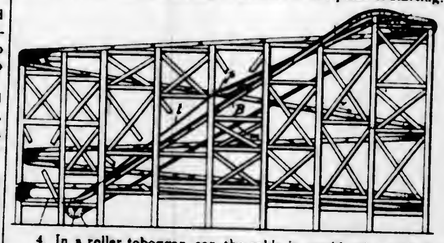
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**528,224. ROLLER-TOBOGGAN.** CHARLES N. GRANT, Haverhill, Mass., assignor of one-half to Orlando Brown, same place. Filed Jan 6, 1894. Serial No. 496,589. (No model.)

*Claim.*—1. A continuous track for toboggan-cars arranged in a curve or oval so that two members thereof cycling in the same direction around a common central point and side by side shall be approximately in the same plane and parallel for a determined distance.

2. A curved track for a toboggan car inclining downwardly for a determined distance, then ascending to the beginning of said incline: thence running approximately in parallelism in the same plane with said inclined portion, substantially as and for the purpose described.

3. In a track for toboggan cars an ascending portion and devices for carrying the car thereon; said track descending in a curve from the summit of the ascending portion a determined distance; then again ascending into the plane of said summit, and continuing in parallelism with said descending portion, to the beginning of said second ascent: then continuing to descend to the point of starting.

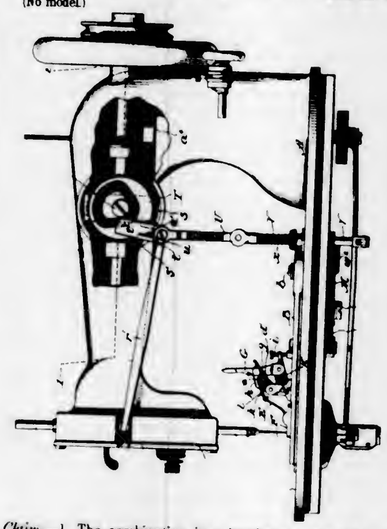


4. In a roller toboggan car, the cable in combination with the car and the clutch thereon comprising a spring-pulled pivoted arm; the wedge-block pivoted in said arm and the head-block rigidly secured to said car and registering with said wedge-block.

5. A cable grip for toboggan cars comprising a spring pulled pivoted lever, H: the grooved wedge-block, 18, loosely pivoted in the free end of said lever, and the rigid grooved head-block, 17, all being arranged to operate substantially as set forth.

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**528,225. SEWING-MACHINE FOR BARRING BUTTONHOLES.** EDMUND H. HARRIS, Philadelphia, Pa., assignor to the National Machine Company, of New York. Filed Sept. 21, 1892. Serial No. 446,440. (No model.)



*Claim.*—1. The combination in a barring machine of a cloth clamp comprising a lower movable clamp plate, levers having inclined rear ends pivoted on said plate, clamping shoes carried by the forward ends of said levers, a spring to normally separate the clamping shoes, and an operating lever acting between the inclined rear ends of said pivoted levers to force the clamping shoes toward each other substantially as described.

2. In a cloth clamp, a lower movable clamp plate, levers pivoted thereon to have both vertical and horizontal movement, clamping shoes carried by the forward ends of said levers, springs to impart vertical and horizontal movement to the clamping shoes in one direction, and an operating lever acting on said pivoted levers to impart vertical and horizontal movement thereto in a direction opposite to that imparted by said springs, substantially as described.

3. The combination in a barring machine, of a cloth clamp, comprising a lower movable clamp plate, bearings c, carried thereby, levers E, pivoted in said bearing and having their rear ends inclined from each other, clamping shoes carried by said levers E, an operating lever G, extending between the rear ends of the lever E pins *g*, thereon, engaging the under sides of the levers E and devices for vertically adjusting said operating lever, substantially as specified.

4. The combination in a barring machine of a cloth clamp, comprising a lower movable clamp plate, bearings *c*, carried thereby, levers E, pivoted in said bearings and having their rear ends inclined from each other, springs acting to depress the rear ends of said levers, clamping shoes carried by said levers, an operating lever G extending between the rear ends of the levers E, pins *g*, thereon, engaging the under sides of the levers E a lever to which said operating lever is fulcrumed, and an adjusting screw for said lever, substantially as specified.

5. The combination in a barring machine of a cloth clamp, devices for operating the same, a looping device, a needle, a needle bar, a movable frame carrying the needle bar, a pivoted lever *t* provided with a guideway, means to vibrate said lever, a block in said guideway normally coincident with the pivotal point of the lever *t* whereby it is not affected by the vibration of said lever, a connection between the block and needle bar frame, and suitable automatic devices to move said block in the guideway above the pivotal point of said lever, substantially as and for the purpose described.

6. The combination in a barring machine of a cloth clamp, devices for operating the same, a looping device, a needle, a needle bar, a movable frame carrying the needle bar, a pivoted lever *t* provided with a guideway, means to vibrate said lever, a block in said guideway, a connection between the block and said movable frame, a post connected to said block and controlled by the clamp-operating devices to hold said block coincidently with the pivotal point of the lever *t*, and a spring to move said post and block vertically when the post is released by the clamp-operating devices, substantially as described.

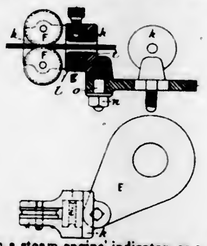
7. The combination in a barring machine of a cloth clamp, a looper, a needle, a needle bar, a movable frame carrying said needle bar, a pivoted lever *t*, a cam acting thereon, a guideway on said lever, a pivot block on said guideway, a bar connecting the needle bar carrying frame to said pivot block, a vertical post also connected to said pivot block and a cam acting on said vertical post, substantially as specified.

8. The combination in a barring machine of a cloth clamp, a looper, a needle, a needle bar, a movable frame carrying said needle bar, a pivoted lever *t*, a cam acting thereon, a guideway on said lever, a pivot block on said guideway, a bar connecting the needle bar to said pivot block, a vertical link also connected to said pivot block, a post V carrying said vertical links a pivoted lever W, connected to said post V and a cam $w^3$, adapted to act upon said lever W, substantially as specified.

9. The combination with a movable cloth clamp, and a longitudinally reciprocating and laterally movable needle bar, of a cam to move the cloth clamp, a cam normally inoperative to move the needle bar laterally, a fall cam carried by the clamp operating cam, and suitable devices interposed between the fall cam and the needle bar cam to render the latter operative to intermittently move the needle bar laterally, substantially as described.

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**528,226. STEAM-ENGINE INDICATOR.** WILLIAM M. HENDERSON, Philadelphia, Pa. Filed Jan. 3, 1894. Serial No. 495,534. (No model.)



*Claim.*—1. In a steam engine indicator, as a means to equalize the motion of the pencil to the motion of the piston, the combination of the connecting rod, pencil arm and back link, so arranged that the chord of the arc of vibration of the back link shall be coincident with the center line of the pencil arm at half stroke, the pin *x* of the connecting rod being fixed above the center line of the pencil arm to match the rise of the arc of vibration, substantially as and for the purpose shown and described.

2. In a steam engine indicator, as a means to steady the throw of the pencil arm, in combination with the connecting rod, pencil arm, and back link, the spring S embraced between and moving with the back link and pencil arm, substantially as shown and described.

3. In a steam engine indicator, in combination with the cone *c*, and collar *d*, of the steam cylinder A, the nut B with screwed gland *e* for making a permanent swivel connection, substantially as shown and described.

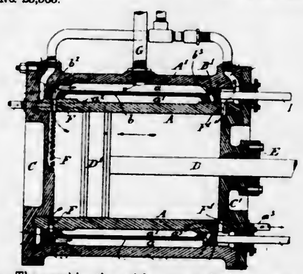
4. In a steam engine indicator, in combination with the paper drum C, and pivot plate E, the two grooved pulleys F, F, mounted on shrouded bracket *h* of sleeve *g*, rotating upon boss *i*, laterally projecting from standard *k*, held in circular path by semicircular groove and pin *o*, and having a clamping screw *m*, substantially as shown and described.

5. In a steam engine indicator, in combination with paper drum C, and pivot plate E, the pulley bracket sleeve *g* rotating upon boss *i* laterally projecting from standard *k*, and provided with a semicircular groove and pin *l*, substantially as shown and described.

6. In a steam engine indicator, in combination with paper drum C, and pivot plate E, the pulley bracket sleeve *g* rotating upon boss *i*, laterally projecting from standard *k*, and provided with a semicircular groove and screw *m*, substantially as shown and described.

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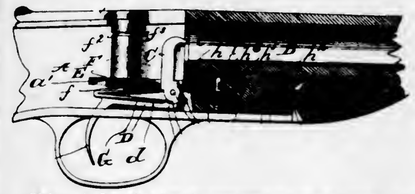
**528,227. CYLINDER AND VALVE FOR STEAM-MOTORS.** ALFRED HOLMGREN, New York, N. Y., assignor of two-thirds to John Draper, Wilmington, Del., and John Barnes, Brooklyn, N. Y. Filed Oct. 3, 1893. Serial No. 487,096. (No model.) Patented in England Dec. 19, 1892, No. 23,383.



*Claim.*—The combination with motor cylinders formed with double walls and an annular space between such walls, or ports formed through the inner wall of such cylinders and controlled by annular valves which are caused to reciprocate in the space between such walls, the valves at the opposite ends of the cylinder being connected together by an annular shell dividing the space between the walls of the cylinder into two parts, the inner one of which serves as a steam jacket, while the outer one is by means of passages through each valve placed alternately into communication with the opposite ends of the inside of the cylinder.

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**528,228. EJECTING AND COCKING MECHANISM FOR BREAK-DOWN-GUNS.** GEORGE A. HORNE, Syracuse, N. Y. Filed July 10, 1894. Serial No. 517,103. (No model.)



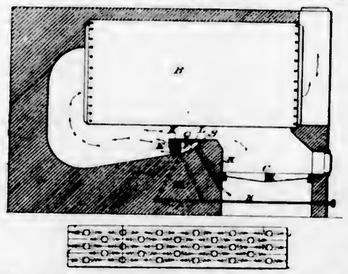
*Claim.*—1. In a fire arm the combination with the barrel, of the extractor and extractor slide, means for positively operating said slide, an ejector, a detent for holding said ejector out of operation and a part connected with said slide for releasing said detent, substantially as described

2. In a fire arm the combination with the barrel, of the extractor and its slide, means for positively operating said slide, an ejector sleeve mounted on said slide, a detent having a shoulder for arresting said sleeve and a portion extending through said sleeve into position to be engaged by said slide, and a part connected with said slide for releasing said detent and sleeve, substantially as described.

3. In a fire arm the combination with the barrel, of the extractor and its slide, the ejector sleeve mounted on said slide, the spring actuated detent having a shoulder for arresting said sleeve, and provided with a part extending into engagement with said slide, said slide and said detent having the one a cam face to engage the other for releasing said detent, substantially as described.

4. In a fire arm the combination with the barrel, of the extractor and the extractor slide provided with a recess, the ejector sleeve mounted on said slide, an ejecting spring surrounding said slide and engaging said sleeve and a spring actuated detent having a shoulder for engaging said sleeve, and an inclined part extending through an aperture in said sleeve into the recess of said slide, substantially as described.

## 528,229. STEAM-BOILER FURNACE. ENOCH R. R. HOYT, Brooklyn, N. Y. Filed June 6, 1894. Serial No. 513,685. (No model.)



*Claim.*—1. In a furnace, the combination with a combustion chamber and bridge wall, of a series of heating plates arranged in rear of the bridge wall and forming the rear wall of a heating chamber a series of air passages a corrugated plate arranged across the chamber between the bridge wall and heating plates, and a flue arranged to conduct air from below the grate of the furnace to the chamber between the bridge wall and the wall formed by the heating plates, substantially as shown and described, for the purpose specified.

2. In a furnace, the combination with a combustion chamber and bridge wall, of a series of heating plates placed upon each other arranged in rear of the bridge wall and provided with a series of air passages which increase in width and decrease in height from their forward to their rear ends, a plate arranged over the space between the bridge wall and the wall formed by the heating plates, and a flue arranged in the bridge wall to conduct air from below the grate in the furnace to the chamber between said bridge wall and heating plates, substantially as shown and described, for the purpose specified.

3. In a furnace, the combination with a combustion chamber and bridge wall, of a series of heating plates arranged in rear of the bridge wall and forming the rear wall of a heating chamber a series of air passages, formed in said plates, a corrugated plate covering the space between the bridge wall and the wall formed by the heating plates, a damper arranged in the chamber between such plates and bridge wall controlling the exit of the air from said heating chamber, and a flue arranged to conduct air to such heating chamber, substantially as shown and described, for the purpose specified.

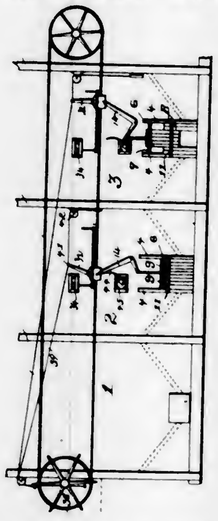
4. In a furnace, the combination with a combustion chamber and bridge wall, of a series of heating plates arranged in rear of the bridge wall and forming a series of air passages, said plates being of different widths and arranged so that the rear end of each plate projects slightly beyond the corresponding end of the next lowest plate in the series, a plate arranged over the space been the bridge wall and heating plates, and a flue arranged to conduct air to the heating chamber formed between the bridge wall and heating plates, substantially as shown and described.

5. In a furnace, the combination with a combustion chamber and bridge wall, of a series of plates arranged in rear of the bridge wall and having grooves formed in their upper and lower faces, whereby when the plates are assembled a series of air passages are formed between every pair of plates, said passages increase in width, and decrease in height from their forward to their rear sides, a cover plate arranged over the space between the bridge wall and heating plates, and a flue arranged to conduct air from below the grate in the furnace to the heating chamber formed between the bridge wall and heating plates, substantially as shown and described, for the purpose specified.

6. In a furnace, the combination with a combustion chamber and bridge wall, of a series of heating plates arranged in rear of the bridge wall and having grooves formed in their faces, whereby when the plates are assembled a series of air passages are formed between each pair of plates, the passages between each pair of plates being out of vertical alignment with the passages next above and below them, a cover plate arranged over the space between said plates and wall, and a flue arranged to conduct air from below the grate in the furnace to the heating chamber formed between the bridge wall and heating plates, substantially as shown and described, for the purpose specified.

7. In a furnace, the combination with a combustion chamber and bridge wall, of a series of plates arranged in rear of the bridge wall and forming a series of air passages which increase in width and decrease in height from their forward to their rear ends, said plates being of different widths and so arranged that the rear end of each plate projects slightly beyond the rear end of the next lowest plate in the series, a metallic plate arranged over the heating chamber formed between the bridge wall and heating plates, a series of flues arranged in the bridge wall to conduct air from below the grate in the furnace to the heating chamber between the bridge wall and heating plates, and a damper arranged in said heating chamber, substantially as shown and described, for the purpose specified.

## 528,230. GRAIN-ELEVATOR. FRANK KAUCHER, St. Joseph, Mo. Filed Jan. 3, 1894. Serial No. 495,554. (No model.)



*Claim.*—1. In grain elevators or apparatus for mixing grains, a series of bins each made with three inclined sides or floors and with a vertical front side, such front having a throat or discharge outlet therein provided with a vertical gate composed of a series of slats, severally adapted to be raised at will, and thereby serving to open and close to the required degree the discharge openings in such front side.

2. In apparatus for regulating and controlling the discharge of grain from bins, the combination with a bin having a vertical front and having its bottom inclined from two sides toward each other, and from its back down to its vertical front, a front discharging gate, composed of a series of vertical slats, severally detachable from their lifting bar, and whereby the size of the discharge outlet may be varied at will to control the amount of grain discharged from the bin.

3. In combination with a front discharging bin, a vertical grate for opening and closing its discharging outlet, composed of a series of slats severally attachable to and detachable from a connecting bar, and devices for lifting such bar, and its attached slats.

4. In combination with a bin having its discharge outlet at its front, and provided with a vertical gate composed of a bar having a series of slats attachable thereto at will, as described, a pivoted connecting rod for lifting and lowering said bar, and its attached slats; a two-armed slotted lever for actuating such rod, a traveling grip-box, and an endless cable for actuating said box and the gate.

5. In grain elevators or apparatus for mixing grains, a series of bins in combination with the endless cable, the grip box for gripping the same, provided with a notched plate 30, lever 32, fixed stop block 34, and a weighted cord 39, all substantially as set forth

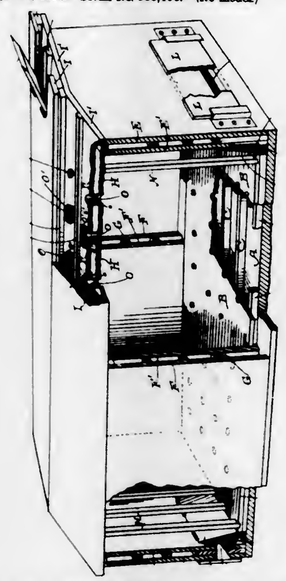
6. In grain elevators or apparatus for mixing grains, a series of bins in combination with the grooved guide bars, the sliding grip box having flanges running in said grooves, the fixed grooved bed-plate and its surface springs, and the grooved grip block, and means, substantially as described for actuating such block.

7. In combination with a bin having its discharging mouth at its front, the described gate for governing the amount of grain to be discharged, consisting of a series of vertically movable slats; a bar for connecting the same, a movable pin for effecting the engagement,



or disengagement of each slat with such bar, and guide posts to guide the rising and falling of the gate, with its attached slats.

## 528,231. VENTILATOR-CAR. HARRY H. LOVE, Sacramento, Cal. Filed Apr. 19, 1894. Serial No. 508,190. (No model.)



*Claim.*—1. A car having double floors and double roof sections with longitudinal passages extending therethrough, end openings having directing gates; through which openings air is delivered from the front of the car into the passages beneath the inner floor, openings from said passages directly into the body of the car, and openings leading from the upper part of the car into the horizontal roof passages; whereby a draft and circulation are produced through the passages and interior of the car, substantially as set forth.

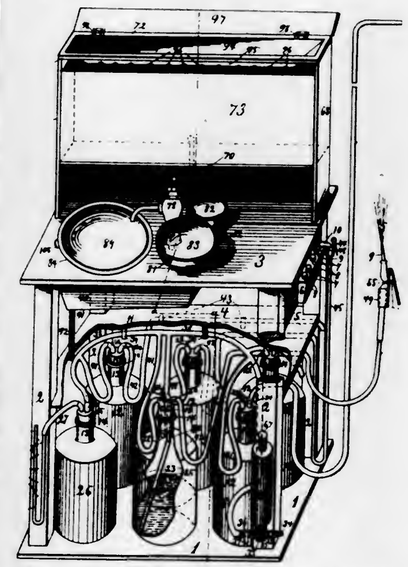
2. A car having double floors with horizontal longitudinal passages extending between them, openings at the end of the car with interior hinged automatically swinging doors whereby the air admitted into the end openings is directed into the spaces beneath the inner floor of the car from the receiving end, and acts to close the hinged door at the opposite end, passages through which the air thus received is diverted into the interior of the car, together with escape passages whereby circulation is produced.

3. A car having a double bottom, longitudinal passages between the two, openings in the lower part of the opposite ends with protecting screens and hinged automatically operating doors whereby the pressure of the air entering at the receiving end will open the door upon that end and will act to close the door upon the opposite end, passages through which the air is diverted by the open door into the channels beneath the inner floor of the car, openings through which the air is admitted through and beyond said floor into the body of the car, a double roof having longitudinal channels open at opposite ends whereby a current of air passes through said channels when the car is in motion, passages opening through the ceiling of the car into the longitudinal roof passages, through which a draft is established by the currents therein, whereby the air admitted through the lower passages is constantly drawn out through the roof passages and the circulation maintained.

4. A car provided with double side and end walls, the spaces between which open at their ends through the corners of the car into the outer air, double floors and double roof sections with longitudinal passages extending therethrough, end openings having directing gates; air being delivered through said end openings from the front of the car into the passages beneath the car floor, openings leading from said passages directly into the body of the car, and tubular passages leading from the upper part of the car body into the horizontal roof passages, substantially as set forth.

5. A car having a double bottom, a passage or passages through which air is admitted from the exterior into the channels or spaces formed between the two bottoms, openings whereby air is admitted from these channels into the interior of the car, a double roof having corresponding longitudinal channels extending through, and open at opposite ends, said passages having hinged covers at the ends adapted to be raised so as to produce flaring or funnel shaped mouths in the direction toward which the car is moving, whereby a current of air is driven through said passages, and openings through the ceiling and inner roof with gauze protecting covers flush with the inner surface of the passage in the roof whereby a circulation of air is established through the interior of the car.

## 528,232. SURGICAL CABINET AND IRRIGATING DEVICE. ERIK M. LUNDHOLM, St. Paul, Minn. Filed May 15, 1894. Serial No. 511,348. (No model.)



*Claim.*—1. In a surgical and medical cabinet the combination of a stand having a base plate or shelf as 1, a table as 3, secured together by suitable frame work, of a series of closed vessels or bottles placed upon the bottom shelf and being adapted to contain various medical solutions, a tube extending from the bottom of each vessel through a hole in the stopper and being connected with a rubber tube extending beyond the frame work and being provided with a nozzle and a self-closing clamp for shutting off the flow of the fluid through the hose when the latter is not in use; an air pump for compressing air in the vessels, a pressure gage adapted to indicate the air pressure and a hose or tube communicating with the said pump and pressure gage, and having branches communicating with the air spaces in the several vessels, substantially as and for the purpose set forth.

2. In a medical and surgical cabinet, the combination of a stand having a base plate or shelf as 1, a table as 3, secured together by suitable frame work, of a series of vessels or bottles placed upon the bottom shelf and adapted to contain various medical solutions, a tube extending from the bottom of each vessel through a hole in the stopper and being connected with a rubber tube extending beyond the frame work and being provided with nozzles and a self-closing clamp for shutting off the fluid from flowing through the hose when the latter is not in use; the hand-power air-pump 32, having the handle 67, the pressure gage 29, the air reservoir 26, and the hose or rubber tube 38, communicating with the said air pump and air reservoir and having branches communicating with the air spaces in the several vessels, the said pressure gage being connected by a special tube as 27, to the reservoir so as to prevent the jerks of the pump from having a disturbing effect on the pressure gage, substantially as shown and described.

3 In a medical and surgical cabinet and irrigating apparatus, the combination with a stand containing a series of vessels or bottles adapted to hold under air pressure different kinds of medical solutions, each bottle having a tube extending from the bottom of its interior and up through the stoppers, the rubber tubes or hose extend-

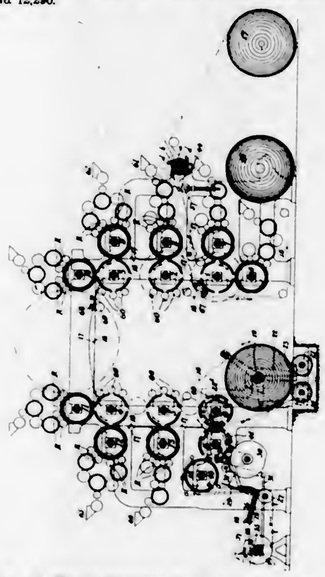
ing from said tubes in the stoppers and a sufficient distance beyond the stand to have its stream applied to patients in a surgical chair or on an operating table, said hose having glass nozzles and suitable stop cocks or shut-off clamps and said stand having a rack or block as 6, provided with holes or pockets as 7, the vials 8, snugly inserted in said holes, adapted to receive the glass nozzles, and to contain antiseptic solution, substantially as and for the purpose set forth.

4. In a medical and surgical cabinet and irrigating apparatus and in a hose having a nozzle and a shut off clamp adapted to close the hose by squeezing it flat, the combination of a cheap common grade of hose with a very flexible strong hose portion passing through the shut off clamp, substantially as and for the purpose set forth.

5. In a medical and surgical cabinet and irrigating apparatus, the combination with the lower stand having the legs or posts 2, the table 3, the storing and hose supporting shelf 4, the base or floor 1, and the irrigating apparatus arranged in and secured to said stand as shown, of the upper stand, consisting of the standards 68, the shelf 70 secured to said standards a considerable distance above the table 3, the elongated fresh water tank 73, situated on said shelf, the elongated funnel or trough 94, having the V shaped bottom with the holes 96, the hinged lid 97, for covering the funnel, the door 99, in front of the tank, the water pipes 75, 76, 77, having the union 104 and the faucet 78, said table 3, having the holes 80, 81 and 84 and the notch 105, the bowls 82 and 83, the wash bowl 89, the sink 90, having the sloping bottom 91, and the waste water pipe 92, adapted to convey the water from the sink, directly or indirectly through a hose into a suitable waste water receptacle; said hole 84, in the table 3, being provided with three pegs or supporting points, as 85 and 86, upon which the under side of the brim of the wash bowl rests and may be easily tilted over the two pegs so as to empty its contents down into the sink, said water tank 73, being held by the pipe union 104 and the thumb latches 103, may readily be removed from the stand for cleaning or repair, substantially as shown and described, and for the purpose set forth.

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**528,233. ROTARY PRINTING-MACHINE.** JULES MICHAUD, Paris, France. Filed Oct. 22, 1892. Serial No. 449,647. (No model.) Patented in France Aug. 6, 1890, No. 207,459, and in England July 20, 1891, No. 12,290.



*Claim.*—1. The combination of a rotary printing mechanism, a feed roller for feeding the web of paper to said mechanism, and provided with an axle, a ratchet wheel keyed to said axle, a driving wheel for said feed roller actuated by the machine and turning on the axle of the roller, and a pawl on said driving wheel adapted to engage said ratchet wheel, substantially as described.

2. The combination of a rotary printing mechanism, a feed roller for feeding the web of paper to said mechanism, a friction roller forming contact with said feed roller, and means for rotating said feed roll at a given speed and permitting it to rotate at a higher speed under the draft of the paper, substantially as described.

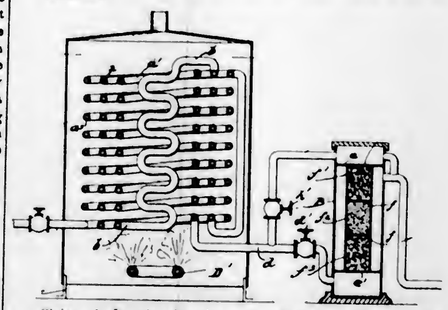
3. The combination of a rotary printing mechanism, of a polyangular drum, the periphery of which has a series of flat peripheral receiving faces for the sheets delivered, triangular partitions extending outwardly from the angles of the drum, and means for intermittently rotating said drum, substantially as described.

4. The combination of a rotary printing mechanism, a feed roller for feeding the web of paper to said mechanism, means for rotating said feed roll at a given speed and permitting it to rotate at a higher speed under the draft of the paper, and a spring roller for preventing the breaking of the paper, substantially as described.

5. The combination of a rotary printing cylinder, and a rotary blanket cylinder provided with one or more gaps in its periphery, a continuous rib surrounding said cylinder at a given point, and blankets on opposite sides of said rib, and paper holders bearing on said rib, substantially as described.

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**528,234. PIPE-CLEANING APPARATUS.** ALBERT C. MUELLER and ADAM LIEB, Allegheny, Pa. Filed Mar. 1, 1894. Serial No. 501,897. (No model.)



*Claim.*—1. In a pipe cleansing apparatus, the combination, with a suitable water heating device, of a mixing tank having a perforated body supported within the same, the said body comprising two or more cells, alkaline materials of a different character in each of the said cells, and suitable connections from the heater to the mixing tank and from the latter to the pipes to be cleansed, substantially as shown and described.

2. In a pipe cleansing apparatus, the combination, with a suitable heating device, of a mixing tank having a perforated body supported within the same adapted to receive alkaline material, the said tank connecting to the pipes to be cleansed, a chamber at the top of the tank apart from the body, and also connecting with the pipes, and suitable connections from the heater to the tank and to the chamber, substantially as shown and described.

3. In a pipe cleansing apparatus, the combination, with a water heater, a mixing tank, and the connections to and from the same, and to the pipes to be cleansed, of a perforated body supported in the said mixing tank, divided into cells, and a quantity of lye, salt and soda in the said cells, substantially as shown and described.

4. In a pipe cleansing apparatus, the combination with a mixing tank having a perforated body supported within the same adapted to receive alkaline material, the said tank connecting to the pipes to be cleansed, and a chamber at the top of the tank apart from the body, of a heater comprising a series of pipe coils arranged within a housing, a cold water pipe connecting with the beginning of the coils, a hot water pipe leading from the opposite end of the coils to the tank and connections from the said hot water pipe to the chamber at the top of the tank, substantially as shown and described.

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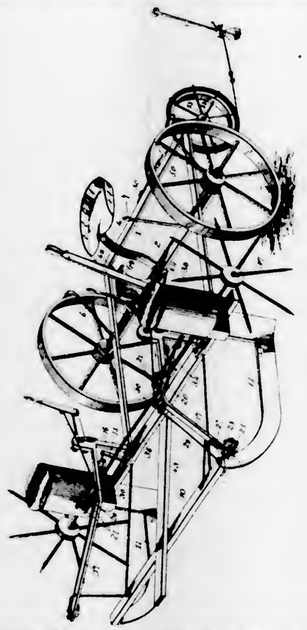
**528,235. PLANTER.** JAMES W. PARKER, Viola, Ill. Filed Apr. 22, 1893. Serial No. 471,460. (No model.)

*Claim.*—1. In a planter, the combination with the runner-frame, standards rising from the opposite sides thereof, angle-arms projecting forward from the standards, levers fulcrumed at the rear ends of the standards, guides mounted upon the standards, brackets at the front ends of the standards, each provided with a roller carrying stud, short levers pivoted to the arms adjacent to the roller carrying studs and themselves provided with roller carrying studs arranged at an angle to those of the arms, means for maintaining the studs of the short levers at an angle to those of the brackets, and wires leading from the upper ends of the short levers rearward to the hand-levers, of seed mechanism, means for operating the seed mechanism, valves arranged in the runners, check-row levers arranged in the path of the check-row wire, and connecting devices between the levers and valves, substantially as specified.



2. In a planter, the combination with the runner-frame, the standards rising therefrom, the angle-arms extending forwardly from the standards, the horizontally opposite pairs of roller-carrying studs at the rear ends of the arms, the vertical keepers traversing the same, the vertical pairs of roller-carrying studs at the angles of the arms, the front roller-carrying studs at the outer ends of the arms, the throw off levers pivoted adjacent thereto, the hand-levers at the rear ends of the arms, wire connection between the throw-off levers and the hand-levers, and bifurated check-row levers arranged in line with the pairs of roller-carrying studs of hoppers, feed-devices for the hoppers, valves in the lower ends of the runners, and connecting-devices between the valves and the check-row levers, substantially as specified.

3. In a planter of the class described, the combination with the frame having eyes at its rear end, an L-shaped arm arranged in the eyes and adapted to be swung up or down at opposite sides of its pivot and provided at its rear end with a bearing-stud, and a reel arranged upon the stud and provided with a lateral handle and a peripheral series of studs or points to give rotary motion to the reel by contact with the ground to rewind the check-wire, substantially as specified.



4. The herein described anchoring-pin, the same having a handle at its upper end, a cuff adjustably mounted on the pin, a foot-rest at one side of the cuff, and a hook at the opposite side thereof, substantially as specified.

5. In a check-row planter, the combination with a runner frame, of angle-arms extending forwardly and laterally and terminating at their front ends at the sides of said frame, check-wire guides mounted upon said angle-arms whereby the check-wire is carried inward toward the center of the machine and thence rearward parallel with and upon that side of the longitudinal center of the machine which is adjacent to the line of the check-wire, check-row levers arranged to be engaged by the projections on the check-wire, feeding devices, means for operating the same, valves in the runners, and connections between the check-row levers and the valves, substantially as specified.

6. In a check-row planter, the combination with a runner frame, of angle-arms extending forwardly and laterally and terminating near the sides of the runner frame, wire guides arranged upon the angle-arms whereby the check-wire is carried inward to a point near the longitudinal center of the frame and thence rearward parallel with said center, a throw-off device arranged to engage said check-wire and disengage it from said guides, check-row levers arranged in operative relation with the check-wire, feeding devices means for operating the same, valves in the runners, and connections between the check-row levers and the valves, substantially as specified.

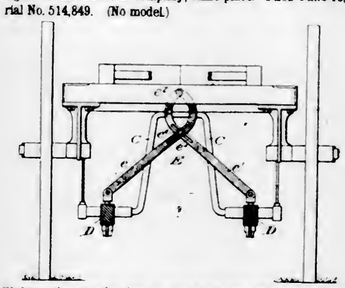
7. In a check-row planter, the combination with a runner frame, of angle-arms extending forwardly and laterally and terminating near the sides of said frame, wire guides mounted upon said angle-arms to carry the check-wire inward to a point near the longitudinal center of the frame, a pivotal dog having a roll adapted to bear upon the check-wire to hold the same in engagement with the wire guide at the extremity of the angle-arm, means for displacing said dog to release the check-wire from engagement with the guide, whereby it may be removed from the succeeding guides, check-row levers arranged in operative relation with the check-wire, feeding devices means for operating the same, valves in the runners, and connections between the check-row levers and valves, substantially as specified.

8. In a check-row planter, the combination with a runner frame, of wire guides arranged to conduct a check-wire from the side of the frame inward adjacent to the center and thence rearward parallel with said center, an adjustable retaining device to hold the check-wire in engagement with the front wire guide, a throw off lever operatively connected to said adjustable retaining device, whereby the trip wire may be disengaged from the guides, a check-row lever, feeding devices means for operating the same, valves in the runners, and connections between the check-row lever and the runners, substantially as specified.

9. In a check-row planter, the combination with the runner frame, of wire guides carried thereby and consisting of vertically-disposed roll-bearing studs, a pivotal spring-actuated dog provided with a roll-bearing stud arranged to co-operate with the front wire guide to hold the check-wire normally in engagement therewith, a throw-off lever operatively connected with said dog, a check-row lever, feeding devices, means for operating the same, valves in the runners, and connections between the check-row lever and the valves, substantially as specified.

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**528,236. SPREADER-ROD.** STALEY D. POOLE, Moline, Ill., assignor to the Deere & Company, same place. Filed June 18, 1894. Serial No. 514,849. (No model.)



*Claim.*—A spreader bar comprising two members which cross or overlap each other to form an adjusting point; the said members having their inner ends pivotally attached together, and provided with a slot in each member at the adjusting point, and a bolt passing through said slots for securing the two members in an adjusted position, substantially as described.

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**528,237. NUT-LOCK.** FRANKLIN S. ROBBINS, Allentown, Pa. Filed Jan. 19, 1894. Serial No. 497,423. (No model.)

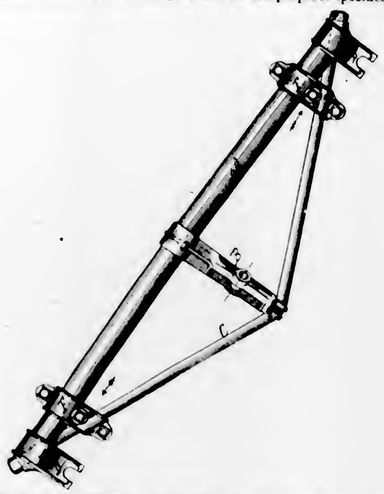


*Claim.*—The improved nut lock herein shown and described consisting of a spring plate normally bowed inwardly at its center to have an extended bearing between its ends against a fish plate or chair, said plate being provided near each end with a lateral enlargement having an opening of greater diameter than the bolt which it receives and the outer face of the plate provided with rounded ribs extending from opposite sides of the bolt openings, bolts passed through said openings and nuts upon said bolts and provided upon their inner faces with radially disposed rounded grooves to co-operate with said ribs whereby as the nuts are screwed up said spring plate is straightened to bear substantially its entire length against said fish plate, substantially as specified.

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**528,238. BRAKE-BEAM AND REINFORCING-CLAMP THEREFOR.** HENRY B. ROBISCHUNG, Kalamazoo, Mich., assignor to the Chicago Railway Equipment Company, Chicago, Ill. Filed Mar. 26, 1894. Serial No. 505,162. (No model.)

*Claim.*—1. In a trussed metallic brake-beam, the combination with a compression member, and a tension member having threaded ends, of transverse reinforce clamps provided with gripping surfaces which prevent the longitudinal movement or slipping of the tension member therein, substantially as and for the purposes specified.



2. A reinforce clamp for trussed brake-beams, said clamp composed of parallel sections having a seat for the compression member, a countersunk seat for the tension member, and means for causing the clamp sections to bind on the said compression and tension members; substantially as and for the purposes specified.

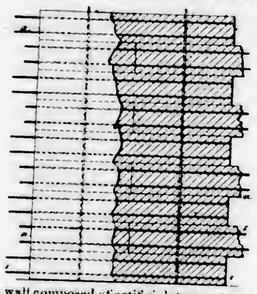
3. A reinforce clamp for trussed brake beams, said clamp composed of parallel sections, having seats for the tension and compression members of a beam, said seats provided with gripping surfaces and bolt holes located between said seats and adapted to receive a clamping bolt, substantially as and for the purposes specified.

4. A reinforce clamp for trussed brake beams, said clamp composed of parallel sections having seats for the compression and tension members of a brake-beam, said seats provided with gripping surfaces, bolt holes between said seats, and limit lugs to the outside of said seats, substantially as and for the purposes specified.

5. A reinforce clamp for trussed brake-beams, composed of parallel sections having each a series of three bolt holes, and intermediate seats for the compression and tension members of a brake-beam; substantially as and for the purposes specified.

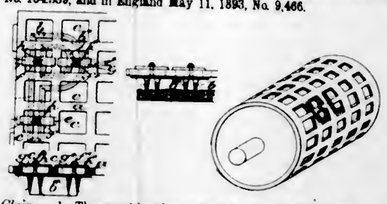
6. A reinforce clamp for trussed brake-beams, said clamp composed of parallel sections having each a series of three bolt holes, and intermediate countersunk seats for the compression and tension members of a brake-beam; substantially as and for the purposes specified.

## 528,239. WALL. FRITZ SCHWEITZER, Dusseldorf, Germany. Filed Apr. 13, 1894. Serial No. 507,453. (No model.)



*Claim.*—A wall composed of artificial stones which are perforated vertically and horizontally from end to end, a series of perforated horizontal tie rods received within the horizontal channels, and a series of sectional vertical tie rods received within the vertical channels and engaging the horizontal tie rods, substantially as specified.

## 528,240. APPARATUS FOR PRODUCING FLAT OBJECTS OF GLASS. PAUL SIEVERT, Dohlen, Germany. Filed Dec. 18, 1893. Serial No. 493,973. (No model.) Patented in France Sept. 29, 1892, No. 224,636; in Germany Jan. 14, 1893, No. 71,635; in Belgium May 5, 1893, No. 104,539, and in England May 11, 1893, No. 9,466.



*Claim.*—1. The combination with a base of skeleton form composed of bars, of fillets forming figures or patterns secured to said base, said base and fillets constituting a die through which openings are left inside and outside of the outlines of the so formed figures, substantially as herein described.

2. The combination of the base of skeleton or grid form, the dies furnished with cross bars $c\ c^a$ lying against the exterior of said base and with stud bolts $f\ f^a$ projecting through said base, and the counter cross bars $g\ g^a$ and nuts $h\ h^a$ applied to said stud bolts at the back of said base, substantially as herein set forth.

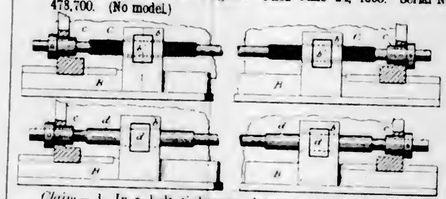
## 528,241. ELECTRIC-LAMP SHADE. EDOUARD VEDOVELLI, Paris, France, assignor to Henry Guinard, New York, N. Y. Filed Aug. 4, 1894. Serial No. 519,430. (No model.)



*Claim.*—1. An electric lamp shade consisting of a series of longitudinal wires, beads strung thereon, and of an endless expansible clasp composed of two series of intersecting pivoted links, substantially as specified.

2. An electric lamp shade consisting of a series of longitudinal wires, beads strung thereon, and of an endless expansible clasp composed of two series of intersecting pivoted links, all being so constructed that one series of said links is provided with upwardly projecting perforated lugs, to which the longitudinal wires are secured, substantially as specified.

## 528,242. BELT-TIGHTENER. MONTGOMERY WADDELL, Bridgeport, Conn., assignor to Montgomery Waddell, receiver of the Waddell-Entz Company, of West Virginia. Filed June 24, 1893. Serial No. 478,700. (No model.)

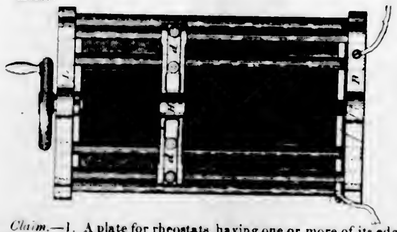


*Claim.*—1. In a belt tightener, the combination of a carriage, rails upon which said carriage traverses, studs on the rails perforated for the reception of removable nuts, and a threaded rod secured to the carriage at both ends and passing through the nuts whereby the carriage is locked to the rails, substantially as described.

2. In a belt tightener the combination of a two part carriage, one member of which traverses upon a rail having studs thereon, removable nuts held by said studs, and a threaded rod engaging said nuts for moving the carriage, the other member thereof traversing on a rail having thereon studs perforated longitudinally and a plain rod passing through said longitudinal perforations, substantially as described.



## 528,243. RHEOSTAT. MONTGOMERY WADDELL, Bridgeport, Conn., assignor to Montgomery Waddell, receiver of the Waddell-Entz Company, of West Virginia. Filed Sept. 6, 1893. Serial No. 484,919. (No model.)



*Claim.*—1. A plate for rheostats, having one or more of its edges crimped, substantially as described.

2. A rheostat consisting of alternate plates of conducting and insulating material, one or more of the conducting plates having an edge crimped and in electrical connection with the next adjoining conducting plate, substantially as described.

3. A rheostat consisting of alternate plates of conducting and insulating material, the said insulating plates being smaller than the conducting plates; one or more of the conducting plates having an end bent and in electrical connection with the next adjoining conducting plate, substantially as described.

4. A rheostat consisting of conducting plates and intervening insulating plates, one or more of said conducting plates having crimped edges to form electrical connections between adjoining conducting plates, as and for the purpose set forth.

5. The combination in a rheostat, of superposed plates of conducting and insulating material $g$, $h$, the conducting plates each having a crimped end $i$ and laid with an end of one conducting plate in contact with one end of the next, to form a continuous conductor, and circuit terminals connected therewith, substantially as described.

6. The combination in a rheostat of superposed plates of conducting and insulating material $g$, $h$, the conducting plates each having one edge crimped and laid end for end, with the crimped end of one plate in contact with the plain end of the next, to form a continuous conductor, and circuit terminals connected therewith, substantially as described.

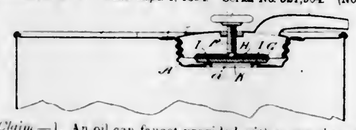
7. A rheostat consisting of conducting plates and intervening insulating plates smaller than the conducting plates, and circuit connections between the conducting plates, substantially as described.

8. A rheostat consisting of conducting plates and intervening insulating plates, one or more of said conducting plates having crimped edges to form electrical connections between adjoining conducting plates, and means substantially as described for including a greater or less number of the plates in circuit, as and for the purpose set forth.

9. A rheostat consisting of conducting plates and intervening insulating plates, one or more of said conducting plates having crimped edges to form electrical connections between adjoining conducting plates, movable brushes bearing upon the plates to include a greater or less number of the plates in circuit, and circuit-connections to the brushes, as and for the purpose set forth.

10. In a rheostat, the combination of superposed plates of conducting and of insulating material, the conducting plates, each having one edge crimped and laid with the crimped end of one plate in contact with the plain edge of the next, to form a continuous conductor, with a containing frame therefor consisting of plates A B, connecting bolts C and guide rods G, of a plate E connected electrically to the resistance plates, and to one circuit terminal, a carriage H traversing the frame and guide rods, and electrically connected with the other circuit terminal, said carriage carrying brushes N N bearing upon the conducting plates, substantially as described.

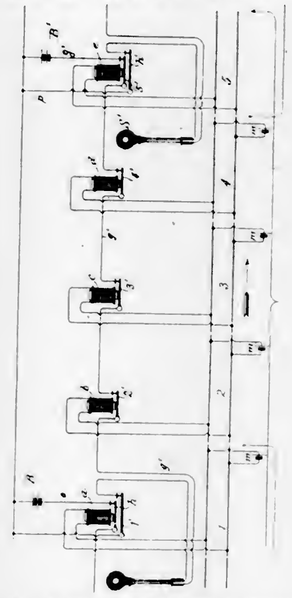
## 528,244. FAUCET FOR OIL-CANS. BENJAMIN F. WARREN, Brooklyn, N. Y. Filed Sept. 1, 1894. Serial No. 521,964. (No model.)



*Claim.*—1. An oil can faucet provided with a cup-shaped body having a flange and secured to a can, a removable cap provided with a spout and with a threaded stem connected with a plug by a swivel connection to permit of said plug seating with a valve without torsional friction and a disk of taggers metal adapted to cover an opening in the bottom of said faucet, substantially as described.

2. An oil can faucet provided with a depressed body having a flange or rim seating with and adapted to be sealed to a can and having an opening in the bottom, a metal disk or piece adapted to be sealed to a ring or annulus by soldering or sweating of the same thereto, a cap provided with a spout and a threaded stud or stem having a plug in swivel connection therewith and held to said metal disk or piece, substantially as and for the purposes described.

## 528,245. ELECTRIC RAILWAY-SIGNAL. ADONIRAM J. WILSON, Port Chester, N. Y., assignor to the Hall Signal Company, of Maine. Filed Nov. 21, 1892. Serial No. 452,631. (No model.)



*Claim.*—1. In an electric signaling system for railways, the combination of a series of track sections, each divided into sub-sections, a track circuit for each sub-section, a series of signal circuits corresponding to the track sections and each adapted to be operated upon a change in the electric condition of each of its track circuits, each track section overlapping the succeeding track section and each signal circuit overlapping the succeeding signal circuit, substantially as and for the purpose set forth.

2. In an electric signaling system for railways, the combination of a series of track sections, each divided into sub-sections, a track circuit for each sub-section, an overlapping signal circuit for each track section adapted to be operated upon a change in the electric condition of each of its track circuits, the inner sub-section of a track section being also the outer sub-section of the succeeding track section, substantially as and for the purpose set forth.

3. In an electric signaling system for railways, the combination of a series of track sections, each divided into sub-sections, a track circuit for each sub-section, an overlapping signal circuit for each track section adapted to be operated upon a change in the electric condition of each of its track circuits, the inner sub-section of a track section being also the outer sub-section of the succeeding track section, the inner end of one side of a signal circuit being also the outer end of one side of the succeeding signal circuit, substantially as and for the purpose set forth.

4. In an electric signaling system for railways, the combination of a series of track sections, each divided into a series of sub-sections, the inner sub-section of each section being also the outer sub-section of the succeeding section, a normally closed track circuit for each sub-section, an overlapping signal circuit for each track section adapted to be operated upon a change in the electric condition of the track circuits, substantially as and for the purpose set forth.

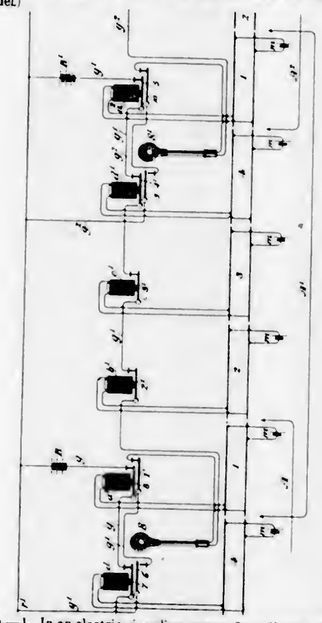
5. In an electric signaling system for railways, the combination of a series of track sections, each divided into a series of sub-sections, the inner sub-section of each section being also the outer sub-section of the succeeding section, a normally closed track circuit for each sub-section, an overlapping signal circuit for each track section,

provided with normally closed circuit breakers each adapted to be opened upon a change in the electric condition of each of its track circuits whereby a train entering upon a track section will throw the signal to danger and retain it there until it has passed entirely off the overlap of the succeeding section, substantially as and for the purpose set forth.

6. In an electric signaling system for railways, the combination of a series of track sections, each divided into a series of sub-sections, the inner sub-section of each section being also the outer sub-section of the succeeding section, over-lapping signal circuits one for each section, one side of which extends continuously along the track and the other side of which extends approximately from end to end of the section, a series of normally closed circuit-breakers in each signal circuit, a normally closed track circuit for each sub-section including the rails thereof and a magnet for operating the circuit breakers upon a change in the electric condition of said track circuit, substantially as and for the purpose set forth.

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528,246. ELECTRIC RAILWAY-SIGNAL. ADONIRAM J. WILSON, Port Chester, N. Y., assignor to the Hall Signal Company, of Maine. Filed Dec. 16, 1892. Renewed Mar. 28, 1894. Serial No. 505,497. (No model.)



*Claim.*—1. In an electric signaling system for railways, the combination of a block of a track divided into two or more sub-sections, a track circuit for each sub-section, a normally de-energized signal circuit, means preceding said block for energizing the signal circuit by sending a current therethrough to operate the signal, and means included in said signal circuit for de-energizing it upon a change in the electric condition of each of the track circuits of the block, substantially as set forth.

2. In an electric signaling system for railways, the combination of a block of a track divided into two or more sub-sections, a permanently unbroken track circuit for each sub-section, a normally de-energized signal circuit and a signal normally at danger, means preceding said block for energizing the signal circuit by sending a current therethrough to operate the signal, and means included in said signal circuit for de-energizing it upon a change in the electric condition of each of the track circuits of the block, substantially as set forth.

3. In an electric signaling system for railways, the combination of a block of a track divided into two or more sub-sections, a track circuit including the rails of the track for each sub-section, a normally de-energized signal circuit, means preceding said block for energizing the signal circuit by sending a current therethrough to operate the signal, and means included in said signal circuit for de-energizing it upon a change in the electric condition of each of the track circuits of the block, substantially as set forth.

4. In an electric signaling system for railways, the combination of a block of a track divided into two or more sub sections, a permanently unbroken track circuit including the rails of the track for each sub-section, a normally de-energized signal circuit, a signal normally at danger, means preceding said block for energizing the signal circuit by sending a current therethrough to operate the signal, and means included in said signal circuit for de-energizing it upon a change in the electric condition of each of the track circuits of the block, substantially as set forth.

5. In an electric signaling system for railways, the combination of a track divided into a series of blocks, each divided into sub-sections, a track circuit for each sub-section, a normally deenergized signal circuit for each block adapted to operate a signal near the entrance thereof, each block and each signal circuit overlapping, respectively, the succeeding block and signal circuit, means included in each signal circuit for sendiug a current therethrough to energize it upon a change in the electric condition of a track circuit of the preceding block, and means included in each signal for deenergizing it upon a change in the electric condition of each of the succeeding track circuits of its block, substantially as and for the purpose set forth.

6. In an electric signaling system for railways, the combination of a block of a track divided into two or more sub-sections, a track circuit for each sub-section, a normally open signal circuit, means preceding said block for closing the signal circuit to operate the signal, and means included in the signal circuit for breaking it upon a change in the electric condition of each of the track circuits of the block, substantially as and for the purpose set forth.

7. In an electric signaling system for railways, the combination of a block of a track divided into two or more sub-sections, a track circuit including the rails of the track for each sub-section, a normally open signal circuit, means preceding said block for closing the signal circuit to operate the signal, and means included in the signal circuit for breaking it upon a change in the electric condition of each of the track circuits of the block, substantially as set forth.

8. In an electric signaling system for railways, the combination of a track divided into a series of blocks, each divided into sub-sections, a track circuit for each sub-section, a normally open signal circuit for each block adapted to operate a signal near the entrance thereof, each block and each signal circuit overlapping, respectively, the succeeding block and signal circuit, means included in each signal circuit for closing it upon a change in the electric condition of a track circuit of the preceding block, and means included in each signal circuit for breaking it upon a change in the electric condition of each of the track circuits of its block, substantially as and for the purpose set forth.

9. In an electric signaling system for railways, the combination of a track divided into a series of blocks, each divided into sub sections, one or more sub-sections at the inner end of each block constituting one or more sub-sections at the outer end of the succeeding block, a normally closed track circuit for each sub-section, a normally open signal circuit for each block adapted to operate a signal near the entrance thereof and overlapping the signal circuit of the succeeding block, means for closing the signal circuit upon a change in the electric condition of a track circuit of a preceding block and means for breaking the signal circuit upon a change in the electric condition of each of the succeeding track circuits of its block, substantially as and for the purpose set forth.

10. In an electric signaling system for railways, the combination of a track divided into a series of blocks, each divided into sub-sections, a normally closed track circuit including the rails of the track for each sub-section, a normally open signal circuit for each block, means for closing the signal circuit upon a change in the electric condition of a track circuit of a preceding block to operate the signal, and means for breaking the signal circuit upon a change in the electric condition of each of the succeeding track circuits of its block, substantially as and for the purpose set forth.

11. In an electric signaling system for railways, the combination of a track divided into a series of blocks, each divided into sub-sections, the last one or more sub-sections of each block constituting the first one or more sub-sections of the succeeding block, a normally closed track circuit for each sub-section including the rails of the track and a magnet, a signal circuit for each block including circuit-controllers, each controlled by the magnet of a track circuit, the signal circuit being normally open at the circuit-controller of the first magnet but normally closed at the circuit controllers of the other magnets, the magnets of the last one or more track circuits of each block respectively controlling also the first one or more armatures of the signal circuit of the succeeding block, substantially as and for the purpose set forth.

12. In an electric signaling system for railways, the combination of a block divided into sub-sections, a permanently unbroken track circuit for each sub-section, a signal, a separate track circuit preceding said block, a normally open signaling circuit extending approximately from the outer to the inner end of the block and connected to said signal, said signaling circuit containing a series of normally closed circuit breakers each operated by a change in condition of one of the track circuits, and a normally open circuit breaker operated by a change in the conditon of the track circuit preceding said block, substantially as set forth.



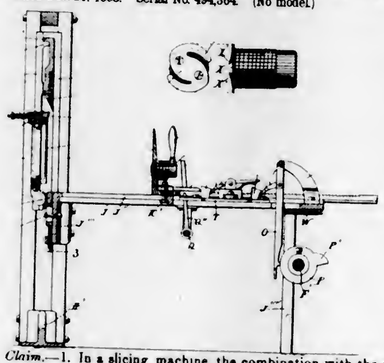
13. In an electric signaling system for railways, the combination of a block divided into sub-sections, a normally closed track circuit including the rails of the track for each sub section, a signal, a separate track circuit including the rails of the track preceding said block, a normally open signaling circuit extending approximately from the outer to the inner end of said block and connected to said signal, said signaling circuit containing a series of normally closed circuit breakers, each operated by a change in the condition of one of the track circuits of the block, and a normally open circuit breaker operated by a change in condition of the rail circuit preceding said block, substantially as set forth.

14. In an electric signaling system for railways, the combination of a track divided into a series of blocks, each divided into subsections, a track circuit for each sub-section including the rails of the track and an electro-magnet, the inner sub-section of one block corresponding with the outer sub-section of the adjoining block, a signal for each block, a signal circuit for each block connected to said signal and including normally closed circuit breakers, each controlled by an electro-magnet of one of the track circuits of the block, the electro-magnet of the overlap controlling two of said circuit breakers, one in each signaling circuit, and also including a normally open circuit breaker controlled by the electro-magnet of the sub-section of a preceding block, substantially as set forth.

15. In an electric signaling system for railways, the combination of a track divided into a series of blocks, each divided into sub-sections, a normally closed track circuit for each sub-section including an electro-magnet, a portion of the inner end of each block constituting a portion of the outer end of the succeeding block, a signal circuit for each block, one side of which comprises a portion of a wire extending continuously along the track and the other side of which comprises a loop, joining at one of its ends the first mentioned side of the circuit near the inner end of the block, and at its other end joining the said first mentioned side at a point within the exit end of the preceding block, the loop side of said signal circuit including normally closed circuit breakers, each of which is controlled by the electro-magnet of a track circuit of the block and another circuit breaker normally open and controlled by the magnet of a track circuit of the preceding block, the magnets which control the two circuit breakers at the inner end of a block also controlling the first two circuit breakers at the outer end of the succeeding section, substantially as set forth.

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528,247. SLICING-MACHINE. JAMES E. AUSTIN, Standish, Mich. Filed Dec. 21, 1893. Serial No. 494,364. (No model.)



*Claim.*—1. In a slicing machine, the combination with the vertically-movable cross head, and with a knife, of a pivoted frame movable with said cross head, and a vibratory presser bar pivoted to said frame, substantially as described and for the purposes specified.

2. In a slicing machine, the combination with the vertically movable cross head, and the longitudinally-movable knife bar, of a frame, pivoted to said cross head, and a presser bar pivoted to said frame.

3. In a slicing machine, the combination of vertically-movable cross-heads, a longitudinally movable knife bar in said cross-heads, a frame, pivoted to said cross-heads, a presser-bar, pivoted to said frame, means for regulating the extent of the vibratory motion of said presser bar and for adjusting the same, a clamp for the stock, and cams for feeding said clamp toward the knife, substantially as described.

4. In a slicing machine, the combination of the frame, vertically-movable cross-heads, a knife-bar, longitudinally movable in said cross-heads, pivoted frames, movable vertically with said knife-bar, adjustable springs pressing the ends of said pivoted frames toward the stock, and vibratory presser-bars, pivoted at its center to said pivoted frame and having depending bars acted on to shift it, substantially as described.

5. In a slicing machine, the combination of a pivoted, vertically-movable frame, and a presser-bar, pivoted thereto and provided with depending bars, substantially as described and for the purposes specified.

6. In a slicing machine, the combination with an angle plate to hold the stock, longitudinally movable rack bars secured to said plate, and stationary pawls, engaging said rack bars and serving to prevent rearward movement thereof, of means for moving said rack bars forward to feed the stock alternately or simultaneously at each end, said means embodying movable pawls engaging the rack bars, a cam shaft, adjustable cams mounted on said shaft, and connections between said movable pawls and cams, substantially as shown and described.

7. In a slicing machine, the combination with an angle plate, to hold the stock, a rack-bar secured to said angle plate, a cam, a pendulum lever, pivoted at its upper end and having its other end held yieldingly into engagement with said cam, a pawl, pivoted to said lever, and engaging said rack-bar, and a spring pawl, U, also engaging said rack bar, substantially as described.

8. In a slicing machine, a bed having dove-tail grooves near each side and a central slot, an angle plate pivoted on a bolt movable in said slot, rack bars longitudinally movable in said grooves, pivoted levers having pawls engaging said rack bars, a driving shaft connected to the knife and reciprocating the same at each revolution, a cam shaft connecting to said driving shaft to rotate at one half the speed of the same, and cams on said cam shaft adjustable to alternately, or simultaneously actuate said levers, substantially as described.

9. In a slicing machine, in combination with rack bars to move the stock to the knife, and pawls engaging and operating the same, movable plates having inclined ribs engaging said pawls and lifting the same out of engagement with said rack bars and mechanism for simultaneously moving said plates, substantially as described.

10. In a slicing machine, in combination with the rack bars, and pawls to actuate the same, pins on said pawls, plates attached to the frame by screws passing through slotted openings, ribs on said plates having inclined sides engaging said pins, a rock shaft having a lever attached and arms on said shaft engaging and moving said plates, substantially as described.

11. In a slicing machine, the combination with an angle plate to hold the stock, a rack bar, secured to said plate, a pawl operated to feed said rack-bar forward, a pawl for preventing rearward movement of the rack-bar, said pawls having pins, a movable plate, provided with inclined ribs adapted to engage said pins and thereby raise the pawls out of engagement with the rack-bar, and a rock shaft, provided with an arm, for moving said plate, as specified.

12. In a slicing machine, the combination with a device for holding the stock, and longitudinally-movable rack bars secured to said stock-holding device, of means for moving said rack bars forward to feed the stock alternately or simultaneously at each side, said means embodying movable pawls engaging the rack bars, a cam shaft, adjustable cams mounted on said cam shaft, and connections between said pawls and cams, substantially as described.

13. In a slicing machine, the combination with the table, a plate thereon to hold the stock, and a rack bar on said table connected to said plate, of a means for operating said rack bar, said means comprising a cam, a pendulum lever, pivoted at one end and having its other end held yieldingly into engagement with said cam, a pawl, pivoted to said lever and engaging said rack bar, said pawl having a pin projecting from it, and a movable rib, supported upon said table and engaging said pin for automatically releasing said pawl from its engagement with said rack bar, substantially as shown and described.

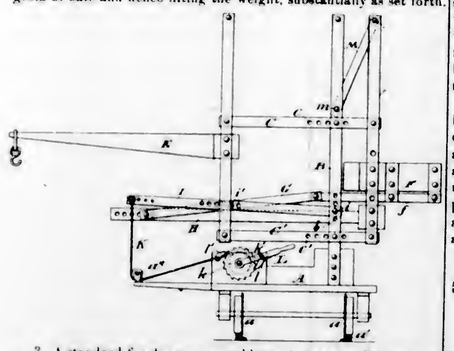
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528,248. TRAVELING CRANE. WILLIAM M. BROOKE, New York, assignor to Letty C. Benson, Brooklyn, N. Y. Filed Mar. 31, 1894. Serial No. 505,816. (No model.)

*Claim.*—1. The combination with a crane supporting arm, of a parallelogram of bars to one of which the crane arm is fixed, a standard to which two opposite sides of the parallelogram of bars are pivoted, and a lever pivoted to the standard and connected with one of the parallelogram of bars for tilting the parallelogram of bars and hence lifting the weight, substantially as set forth.

2. The combination with a standard and a suitable support for it, of a parallelogram of bars, two opposite sides of said parallelogram of bars being secured to the standard, a weight supporting arm secured to one of the parallelogram of bars, two horizontal arms se-

cured to the opposite bar of the parallelogram of bars, a link connecting said two horizontal arms and a lever pivotally secured to the standard and connected with the link for tilting the parallelogram of bars and hence lifting the weight, substantially as set forth.

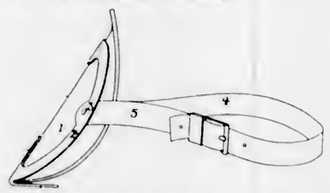


3. A standard fixed upon a movable carriage, a parallelogram of bars having two opposite sides pivotally secured to the standard and a weight supporting arm fixed to one of the two opposite sides of the parallelogram of bars, two horizontal bars fixed to the opposite side of the parallelogram of bars, a link connecting said two horizontal bars, a lever pivotally secured to the standard and connected with said link and means for operating said lever to depress the link and thereby tilt the parallelogram of bars to elevate the weight, substantially as set forth.

4. The combination with a suitable standard, a parallelogram of bars having two opposite bars of the parallelogram pivoted to the standard, a weight supporting arm fixed to one side of the parallelogram of bars, an operating lever pivotally secured to the standard and connected through intermediate parts with the opposite side of the parallelogram of bars and a stop bar pivotally secured to the standard and having a loose connection with the parallelogram of bars, substantially as set forth.

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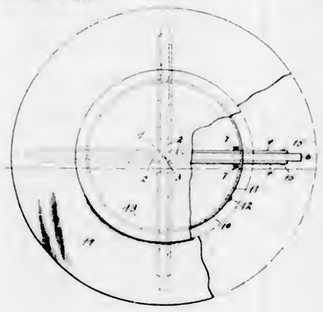
528,249. HORSE-BOOT. JOSEPH DUFFY, Terre Haute, Ind. Filed Jan. 4, 1894. Serial No. 496,658. (No model.)



*Claim.*—In a horse boot the combination with a leather or other flexible shield of a wear plate fixed thereto and a spur forming an integral part of said plate adapted to be inserted between the hoof and shoe, substantially as set forth.

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528,250. CENTER-REVOLVING FOLDING EXTENSION-TABLE. HOWARD GRAHAM, Chicopee, Mo. Filed Sept. 19, 1893. Serial No. 485,743. (No model.)

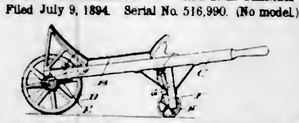


*Claim.*—1. A table of the class hereinbefore described, consisting of a central casting 1 carrying radial projections 2, radial horizontal bars 4 arranged in pairs which are provided with horizontal slots 5, a bar 6 horizontally adjustably located between each pair of radial horizontal bars 4, a ring 10 located on and connected to the top of the bars 4, a ring 11 located above the ring 10, anti-friction flanged travelers located on the ring 10 and constructed to form bearings for the ring 11, and a revolubly mounted disk located on the ring 11, substantially as set forth.

2. A table constructed with a central casting carrying radial horizontal bars arranged in pairs and provided with slots, a bar located between each pair of said radial horizontal bars and adjustably connected to them by set-screws passing through the said slots, and carrying the hinged legs, an annular table-top located upon said radial horizontal bars, and a central disk revolubly mounted upon a portion of the central casting and upheld by two rings provided with anti-friction rollers, all combined to operate in the manner set forth and for the purposes stated.

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528,251. WHEELBARROW. JANE B. A. GRENIER, Woonsocket, R. I. Filed July 9, 1894. Serial No. 516,990. (No model.)



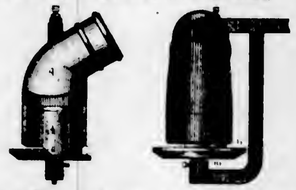
*Claim.*—1. In a wheel barrow, the combination of a frame having the notches *g*, in its end, a wheel C, having an axle or shaft, the bearings E, having apertures to receive the axle and comprising the body plates *b*, resting under the frame and the forward, upwardly and rearwardly extending branches *f*, engaging the notches *g*, in the frame, and bolts taking through the frame and the body plates of the bearings, substantially as and for the purpose set forth.

2. In a wheel barrow, the combination with a frame having the depending legs provided with a cross bar; of the depending arm G, carrying the wheel H, and comprising the section *i*, pivotally connected with the frame and having one of its sides toothed and also having a longitudinal slot, the section *j*, having a toothed side to engage that of the section *i*, a bolt taking through the section *j*, and the slot of the section *i*, and a nut mounted on said bolt, substantially as specified.

3. In a wheel barrow, the combination with a frame having the depending legs provided with a cross bar; of the depending arm G, comprising the section 1, pivotally connected with the frame and having one of its sides toothed and also having a longitudinal slot, the section *j*, having a toothed side to engage that of the section *i*, a bolt taking through the section *i*, and having a nut mounted thereon, and the lower section *k*, carrying the wheel H, and having the reduced circumferentially-grooved, circular portion *u*, designed to rest and turn in a corresponding socket in the section *j*; the meeting ends of said sections *j*, *k*, being so formed as to prevent the section *k*, from making a full turn, substantially as and for the purpose set forth.

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528,252. SPRINKLER. JOHN B HABERLE, South Bend, Ind., assignor to the Studebaker Brothers Manufacturing Company, same place. Filed Mar. 31, 1893. Serial No. 468,543. (No model.)



*Claim.*—1. The sprinkler head A a stirrup *k* and plate C pivoted to said stirrup and provided with its thimble *d*, jet opening *e* and deflecting lip *f* all capable of rotation on said pivot as to said head whereby the issuing jet may be projected to the rear or to the side as may be desired.

2. The sprinkler head A, and plate C provided with the stud *m*, combined with the lever *i* hook *k*, socket *n*, and means for locking said stud and stirrup hook together for the purpose set forth.

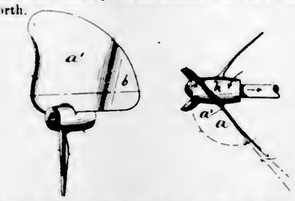
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528,253. SCREW-PROPELLER. WILLIAM H. JAY, Providence, R. I. Filed Dec. 13, 1892. Serial No. 455,032. (No model.)

*Claim.*—1. A screw-propeller blade consisting essentially of a forward or leading portion *b* bent inboard and a main portion *a'* arranged at an angle therewith exceeding one hundred and eighty degrees, whereby the said leading portion of the blade has a coarser pitch than the main portion, substantially as described.



2. A screw-propeller blade having its forward portion bent inboard to form an obtuse angle with the plane of the major portion of the blade, and having its rear or releasing portion reversely bent toward the shaft, substantially as hereinbefore described and for the purpose set forth.

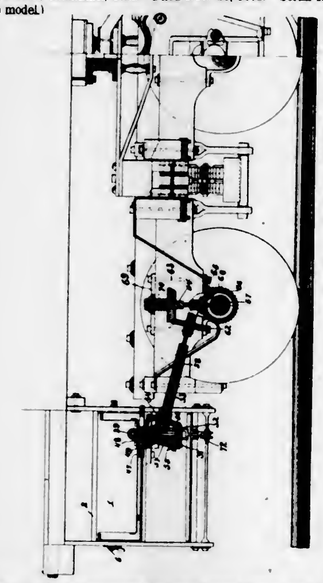


3. A screw-propeller blade having its outer peripheral edge bounded by radial lines gradually increasing in length from the front to the rear, the front portion being bent inboard to form an obtuse angle with the plane of the major portion of the blade, its rear or releasing portion being reversely bent toward the shaft, and having the greatest width of the blade at or near the hub, substantially as hereinbefore described.

4. The screw-propeller, substantially as hereinbefore described, consisting of a hub portion adapted to be fixed to a driving-shaft, and having a plurality of bent blades *a* secured to or integral with said hub; each of said blades having a forward or leading portion *b* bent inboard and a main portion *a'* arranged at an angle therewith exceeding one hundred and eighty degrees, and having the rear or releasing portion *c* of said main part bent reversely toward the shaft, whereby the said leading portion of the blade has a coarser pitch than the main portion.

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528,254. AUTOMATIC RAILWAY-CAR PROTECTOR. CHARLES KLETTNER, Cincinnati, Ohio. Filed Nov. 28, 1892. Serial No. 453,445. (No model.)



*Claim.*—1. In an apparatus for protecting railway cars, the combination of a casing designed to be located at the steps of a car and to form one of the risers thereof, and provided with a series of apertures, a series of firing wheels mounted in the casing and provided with a series of cartridge-receiving bores arranged to register successively with the apertures of the casing, firing mechanism for discharging the cartridges, actuating mechanism for rotating the firing wheels, and gearing for connecting the firing mechanism with a car axle, whereby the firing will be automatic, substantially as described.

2. In an apparatus for protecting railway cars, the combination of a casing provided with apertures and designed to be located at the steps of a car, a series of firing wheels provided at their peripheries with teeth and meshing with one another and having a series of cartridge receiving bores arranged to register successively with the apertures of the casing and the firing mechanism, substantially as described.

3. In an apparatus for protecting railway cars, the combination with the steps of a car, of a casing having its front wall forming one of the risers of said steps and provided with a series of apertures, a series of firing wheels arranged within the casing and provided with cartridge receiving bores arranged to register successively with the apertures of the casing, firing mechanism, and means for automatically operating the firing mechanism, and means for rotating the firing wheels, substantially as described.

4. In an apparatus for protecting railway cars, the combination of a casing provided with a series of apertures, a series of firing wheels provided with peripheral teeth and meshing with one another and having cartridge receiving bores arranged to register successively with the apertures of the casing, spring actuated levers fulcrumed on the casing and provided at their outer ends with firing pins, and a shaft carrying arms arranged to engage the inner ends of the levers, substantially as and for the purpose described.

5. In an apparatus for protecting railway cars, the combination of a casing, firing wheels provided with peripheral teeth and meshing with one another, spring actuated firing levers arranged in pairs, a ratchet wheel mounted on one of the firing wheels, a bell crank lever fulcrumed at its angle and provided at the outer end of one of its arms with a pivoted pawl arranged to engage the ratchet wheel, and connections between the other arm of the bell crank lever and the adjacent firing lever, substantially as described.

6. In an apparatus for protecting railway cars, the combination of a casing, the firing wheels provided with peripheral teeth and meshing with one another, and a ratchet wheel mounted on one of the firing wheels, an actuating lever provided at one end with a pivoted pawl engaging the ratchet wheel, and the firing levers, one of the said firing levers being connected with the actuating lever, substantially as described.

7. In an apparatus for protecting railway cars, the combination of a casing, of toothed firing wheels journaled on the casing and meshing with one another, spring actuated levers, a shaft provided with a crank bend and carrying arms arranged to engage the firing levers, an oscillating lever fulcrumed intermediate of its end and having one end connected with the crank bend of the shaft to rotate the latter, a transverse crank shaft having a crank bend connected with the other end of the oscillating lever and gearing for communicating motion from an axle of the car to the transverse shaft, substantially as described.

8. In an apparatus for protecting railway cars, the combination of a casing, toothed firing wheels meshing with one another and journaled on the casing, spring actuated firing levers arranged in pairs and provided at their outer terminals with pins, a ratchet wheel mounted on one of the firing wheels, an actuating lever having one end connected with the outer terminal of a firing lever and provided at its outer end with a pivoted pawl engaging the ratchet wheel, a longitudinal shaft having a crank bend and provided with arms arranged to engage the inner terminals of the firing levers and adapted to pass between the same, a transverse shaft having a crank bend, an oscillating lever fulcrumed intermediate of its ends, and a pitman connecting the oscillating lever with the crank bend of said shaft, substantially as described.

9. In an apparatus for protecting railway cars, the combination with a car, of a casing mounted at the steps of the car, firing levers journaled in the casing, firing mechanism, a shaft connected with the firing mechanism and carrying a gear wheel, an adjustable shafting composed of a sliding section and an stationary section, a gearing wheel carried by the sliding section and arranged to mesh with the said gear wheel, an operating lever fulcrumed intermediate of its ends and having one of the steps mounted on the outer portion, toggle levers having their outer ends connected with the sliding and stationary sections of the adjustable shafting and connected at their inner terminals with the operating lever, and gearing communicating motion from an axle of the car to the adjustable shaft, substantially as described.

10. In an apparatus for protecting railway cars, the combination of an adjustable shafting composed of telescoping sections toggle levers connected at their outer ends with the sections of the adjustable shafting, and an operating lever carrying a step at its outer end and connected at its inner end with the toggle levers, substantially as described.

11. In an apparatus for protecting railway cars, the combination of an adjustable shafting composed of telescoping sections, one of the sections being provided with grooves and the other sections having splines fitting in the grooves, a movable arm depending from the sliding section of the shafting, a stationary arm, a spring connecting the arms, toggle levers having their outer terminals connected with said

arms, and an operating lever connected with the inner terminals of the toggle levers, substantially as described.

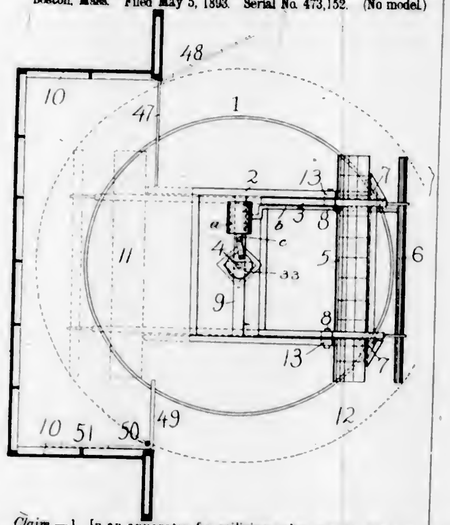
12. In an apparatus for protecting railway cars, the combination with a car, of the firing wheels, firing mechanism, and transversely disposed adjustable shafting, the longitudinally disposed adjustable shafting, gearing connecting the adjacent ends of said shafting, a vertically disposed shaft located above an axle of the car and adjustably mounted, gearing for connecting the vertical shaft with the axle and with the adjacent end of the longitudinal shaft, and means for connecting the transverse shafting with the firing mechanism, substantially as described.

13. In an apparatus for protecting railway cars, the combination with a car, of the longitudinally disposed adjustable shafting composed of telescoping sections, a yoke provided with a bearing receiving the adjacent end of said shafting, a bolt connecting the sides of the yoke, a gear wheel mounted on the bolt, a bracket arm journaled on the car and provided with a sleeve arranged on the bolt and interposed between the gear wheel and the opposite side of the yoke, gearing for connecting the longitudinally disposed shafting with an axle of the car, a gear wheel carried by the longitudinal shafting and meshing with that of the yoke, firing mechanism, and means for connecting the firing mechanism with the gear wheel of the yoke, substantially as described.

14. In an apparatus for protecting railway cars, the combination with a car truck, of a gear wheel mounted on one of the axles thereof, a bearing plate located at the top of the truck, a vertical shaft journaled at its lower end on the truck and having its upper end loosely arranged on said bearing plate, a gear wheel disposed horizontally on the vertical shaft and arranged intermediate of the ends thereof, a spring interposed between the gear wheel of the vertical shaft and the bearing plate, a pinion connecting the lower end of the vertical shaft with the gear wheel of the axle, and a longitudinally disposed shaft carrying a gear wheel connected with that of the vertical shaft, substantially as described.

## 528,255. APPARATUS FOR UTILIZING SOLAR ENERGY.

FRANK H. MONKS, Brookline, and MELVIN L. SEVERY, Boston, assignors to Francis Doane, Charles F. Crowell, and Melvin L. Severy, trustees, Boston, Mass. Filed May 5, 1893. Serial No. 473,152. (No model.)




*Claim.*—1. In an apparatus for utilizing solar energy, the combination of a turn-table, a heat receiver, a device arranged to direct rays upon said receiver, a motor to be operated by the power obtained by the receiver, and means connecting the receiver and motor for transmitting the said power to the motor, all of said devices being on the turn-table, substantially as set forth.

2. In an apparatus for utilizing solar energy, the combination of a turn-table, a heat receiver, a device for directing rays upon said receiver, a motor, all of said devices being on the turn-table, and means located at the axis of the turn-table for transmitting power from said motor, substantially as described.

3. In an apparatus for utilizing solar energy, the combination of a turn-table, a heat receiver, a device for directing rays upon said receiver, a motor, all of said devices being on the turn-table, a shaft rotatable at the axis and independently of the turn-table, and means for transmitting motion from the motor to the shaft, substantially as described.

4. The combination of a turn-table; a motor on said turn-table; a shaft at the axis of said turn-table; a pulley on said shaft, and means for connecting said pulley to the motor and to the mechanism operating outside of the turn table, substantially as set forth.

5. The combination of a turn table; a motor on said turn-table; a vertical shaft around which said turn-table rotates; a pulley on said shaft connected to the motor; a rotating horizontal bearing plate attached to a cross beam of the turn-table and having the shaft passing through the plate; and a suitably supported horizontal fixed plate on which the bearing plate rotates, substantially as set forth.

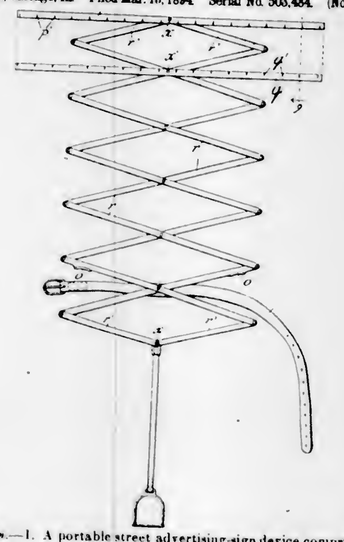
6. In an apparatus for utilizing solar energy, the combination of a turn-table; a solar heat concentrating device and a heat receiver suitably supported on said turn-table; a shelter or housing so situated as to be in the rear of the concentrator when the latter is in use, having one of its sides on a line at right angles to the meridian line, open on that side but closed on the other sides, and covering a segment of the path of the turn table to such an extent that the heat receiver and concentrator will be completely inclosed when turned back into the shelter, and means for closing the open side, substantially as set forth.

7. In an apparatus for utiliring solar energy, the combination of a turn-table; a solar ray concentrating device upon said turn table; suitable framework supporting and carrying said concentrating device, and a shelter or housing adapted to receive, inclose and preserve the efficiency of said concentrating device, all substantially as shown and described.

8. In an apparatus for utilizing solar energy, the combination of a turn-table; a fixed frame on said turn-table; a frame pivoted to said fixed frame and capable of moving in a vertical plane; a concentrator and heat receiver supported by said pivoted frame, and a counter-balance on said frame, substantially as set forth.

## 528,256. ADVERTISING-SIGN DEVICE.

WARREN C. MORRISON, Chicago, Ill. Filed Mar. 13, 1894. Serial No. 503,484. (No model.)




*Claim.*—1. A portable street advertising-sign device comprising in combination, a lazy-tongs provided with means for carrying it on the person of an itinerant bearer of the device, and an advertising sign supported on the lazy-tongs to be raised and lowered by distending and collapsing said lazy-tongs, substantially as described.

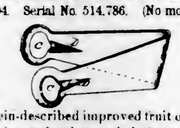
2. A portable street advertising-sign device comprising, in combination, a lazy-tongs carrying at one end an advertising-sign to be raised and lowered by distending and collapsing said lazy-tongs, a belt to which the lazy-tongs is fastened near its lower end and adapted to encircle the waist of an itinerant bearer of the device, and handles *o*, in position conveniently accessible to the hands of said bearer, on the under sides of bars *r*, substantially as described.

3. A portable street advertising-sign device comprising, in combination, a lazy-tongs A carrying at one end an advertising sign B to be raised and lowered by distending and collapsing said lazy-tongs, a belt C to which the lazy-tongs is fastened near its lower end and adapted to encircle the waist of an itinerant bearer of the device, handles *o*, in position conveniently accessible to the hands of said bearer, on the under sides of bars *r*, and a stirrup *n* suspended from the lower end of the lazy-tongs, substantially as described.



## 528,257. FRUIT-HULLER.

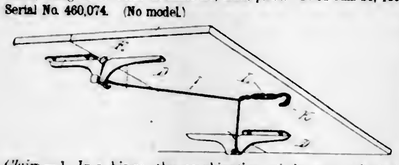
JOHN A. MURRAY, Winchester, Mass. Filed June 16, 1894. Serial No. 514,786. (No model.)



*Claim.*—The herein-described improved fruit or berry huller, consisting of the handles A terminating at their free or outer ends in the inwardly flaring rings B, substantially as set forth.

## 528,258. STOP-HINGE.

GEORGE A. MCKENZIE, West Bay City, Mich., assignor to John B. Kanouse, same place. Filed Jan. 28, 1893. Serial No. 460,074. (No model.)

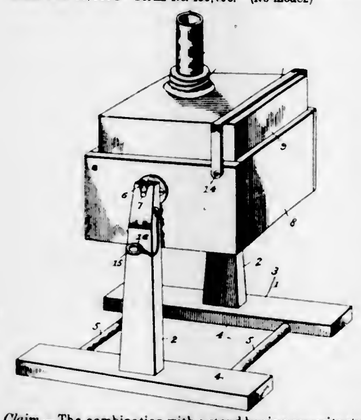


*Claim.*—1. In a hinge, the combination of the two relatively fixed members pivoted together, of an abutment on one member, a spring fin or flange on the other out of line of the abutment, bent so that the tension of its outer edge will deflect its edge into the path of the abutment to act as a lock, substantially as described.

2. In a hinge, the combination of the two members pivoted together, of an abutment on one member, a spring fin or flange on the other out of line of the abutment, its tension acting to throw its edge into the path of the abutment to act as a lock, and a pull, to move said fin out of the path of the abutment, substantially as described.

## 528,259. CAN-HOLDER.

WILLIAM V. MCKENZIE, Rahway, N. J. Filed Feb. 10, 1894. Serial No. 499,796. (No model.)

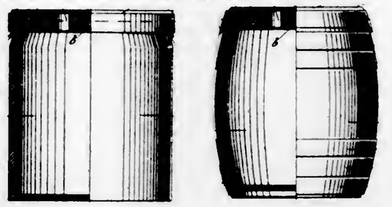


*Claim.*—The combination with a stand having opposite standards provided with bearings, of a jacket rectangular in cross-section and provided at opposite sides with journals detachably arranged in said bearings, a removable can conforming to the configuration of the jacket and located therein and extending a short distance above the same, and a rectangular locking bail pivoted to the jacket near one end thereof and engaging the top of the can, substantially as described.

## 528,260. AIR-TIGHT PACKAGE.

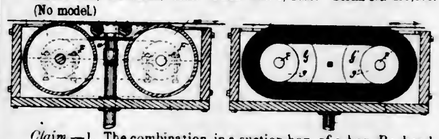
ADOLPHE RODER, Philadelphia, Pa. Filed Apr. 9, 1894. Serial No. 506,795. (No model.)

*Claim.*—The combination of a preserving jar or keg or a similar receptacle with a wax or parchment paper layer *b* with slits *b'* a presser *c* with the holes or perforations *c'*, a wax or parchment paper layer *d*, a muslin, canvas or bladder layer *e*, the latter two being stretched over the edge of the above mentioned receptacle and held in place by a metallic or wooden hoop or elastic ring *f*, drawn or driven tight over the edges of *d* and *e* and around the collar of the above mentioned receptacle, all these forming a cover for the above mentioned receptacle, coated and made airtight with a coat of paste and one or more coats of paint, varnish or other suitable material, all substantially as set forth and described.




## 528,261. SUCTION-BOX FOR PAPER-MACHINES.

EPHRAIM SANDERSON, Cleveland, Ohio. Filed Dec. 8, 1893. Serial No. 493,093. (No model.)

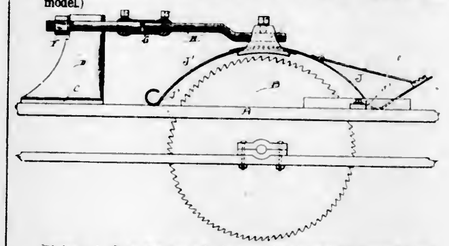


*Claim.*—1. The combination, in a suction box, of a box, B; head blocks, H, H'; rollers G, G', having hubs *g*, *g'*; flexible traveling heads encircling the hubs of said rollers and said head blocks; retaining leathers, P, P'; and a retaining plate, N, substantially as illustrated and described.

2. The combination, in a suction box, of rollers having hubs, flexible traveling heads to travel over said hubs, and head-blocks interposed between said rollers, the head-blocks having upright-pieces *h* to prevent the flexible traveling heads from being drawn inwardly on their upper lap and cross-pieces *h''* to prevent the flexible traveling heads from sagging on their upper lap, substantially as described.

## 528,262. SAFETY-GUARD FOR RIP-SAWS.

GEORGE A. SHIELDS, Anderson, Ind., assignor to the Shields Manufacturing Company, same place. Filed Jan. 31, 1894. Serial No. 498,559. (No model.)



*Claim.*—1. In a saw guard, the combination with a socket piece, the splitter engaging said socket, the adjustable two-part rod supported by said splitter, of the clamp I having the cut away portion, the wedge seated therein, the adjustable guard plates held in said clamp, and a tension device for one of said guard plates, substantially as specified.

2. In a saw guard, the clamp I, having the cut-away portion, the wedge seated therein, the holding screw, and the adjustable guard plates held in said clamp, substantially as specified.

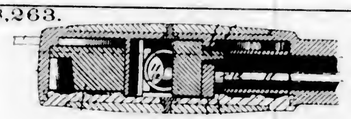
## 528,263. REVOLVER.

OLIVER E. SMITH, Chicopee, Mass., assignor to Justin P. Woodworth, same place. Filed May 4, 1894. Serial No. 510,060. (No model.)

*Claim.*—1. The combination of the hammer and firing pin with the revolving carrier block having the chamber 11, rim receiving counter-bore 12, and the open side recess 13 immediately adjacent to the hammer pin, substantially as described and for the purpose specified.

2. In a revolver of the class described, the revolving carrier block A having the chambers or shell recesses 11 with the rim receiving counter-bore 12, and open side recess opposite said rim receiving recess, substantially as described and for the purpose specified.

528,263.

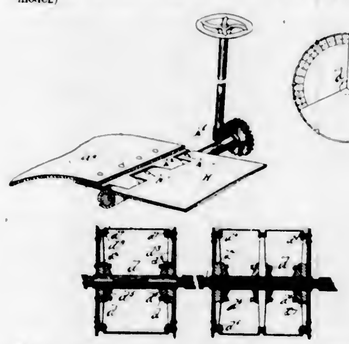


528,264. PROCESS OF VULCANIZING HARD-RUBBER ARTICLES. HEINRICH TRAUN, Hamburg, Germany. Filed July 17, 1894. Serial No. 517,794. (Specimens.) Patented in Germany Jan. 16, 1892, No. 74,491.

*Claim.*—1. In the art of vulcanizing hard rubber, the improvement, which consists in adding to the soft rubber before vulcanizing it, besides the usual vulcanizing substances, pulverized metallic aluminium, substantially as set forth.

2. As an improved article of manufacture, a hard rubber article with which is incorporated pulverized metallic aluminium, substantially as set forth.

528,265. PROPELLER FOR VESSELS. SOLOMON S. WHIPPS, Le Sueur Centre, Minn. Filed Sept. 6, 1890. Serial No. 364,207. (No model.)



*Claim.*—1. The combination, with an open-bottomed air-tight casing, and a propeller located therein, of a current divider within the casing, and a conduit arranged to conduct compressed air to the interior of the casing, substantially as set forth.

2. The combination, with a propeller compartment having a rear extension, of a number of deflectors, *b'*, arranged in advance of the said extension, substantially as set forth.

3. The combination, with a propeller compartment having a rear extension, and a propeller located in the compartment, of a series of horizontal deflectors between the propeller and the said extension, substantially as set forth.

4. In a drum for propellers, the combination with the drum shaft, of supporting wheels mounted thereon, outer disks secured to the supporting wheels, cylindrical walls, and annular fillings interposed between the disks and the cylindrical walls of the drums, substantially as set forth.

5. In a drum for propellers, the combination with the drum shaft and the supporting wheels mounted on the shaft, of outer disks, cylindrical walls, and annular wooden fillings between the disks and the cylindrical walls, all riveted to the rim of the supporting wheels, substantially as set forth.

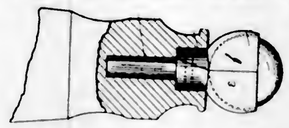
6. A propeller paddle consisting of a single piece of sheet metal flanged, and provided with a loop or sleeve, substantially as set forth.

7. In a propeller, the combination, with a plurality of cables, and a series of paddles arranged at right angles to the cables and provided with sleeves, of a series of driving rods passing through the sleeves, and a series of clamping boxes for securing the ends of the driving rods to the cables, substantially as set forth.

8. In a propeller, the combination, with a plurality of cables, and a series of paddles arranged at right angles to the cables and provided with sleeves, of a series of driving bars passing through the sleeves in the paddles and connected to the cables, a series of longitudinal braces extending along the cables from the paddles, and a series of transverse braces and diagonal braces connecting the longitudinal braces with the paddles, substantially as set forth.

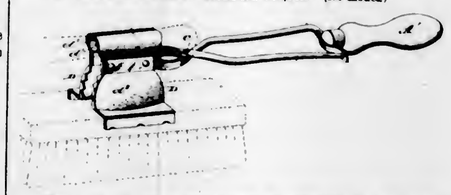
9. In a propeller, the combination, with a plurality of drums having annular and transverse grooves or gains, of a plurality of cables running in the annular grooves, and a series of paddles connected to the cables and provided with sleeves arranged to enter the transverse gains in the drums, substantially as set forth.

528,266. BALL-CASTER. LEWIS R. WHITE, Riverside, R. I. Filed May 29, 1894. Serial No. 512,830. (No model.)



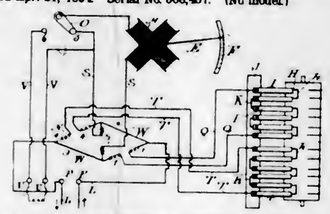
*Claim.*—The combination in a ball caster of a metal socket A composed of two parts *e* and *f*, shoulder B also composed of two unequal parts, spindle C cast entire in connection with one of these parts, and wooden ball D, all constructed and arranged so as to operate substantially as described.

528,267. HOLDER FOR BRUSHES. MORRIS WOOL, Middlebury, Vt. Filed June 21, 1894. Serial No. 515,302. (No model.)



*Claim.*—In a brush or mop holder, the combination, of the members A and B pivotally connected to each other and provided with jaws said jaws having serrated clamping edges, curved portions adapted to clamp upon a round handle and outwardly and downwardly extending portions for grasping a brush having a flat back, substantially as shown.

528,268. OHMMETER. ARAKELYAN H. ARMEN, Lynn, Mass. Filed Apr. 21, 1894. Serial No. 508,457. (No model.)



*Claim.*—1. In an instrument for measuring ohms of electrical resistance, the combination with an index and vibrating pointer, of means for taking a uniform, normal amount of current from a larger volume thereof, such means consisting essentially of a gradually-increasing rheostat having conducting wires H arranged in pairs connected at one end by transverse wires *h*, brushes I bearing on said wires H, and connections K for said brushes, and also of the bridge W, and the indicating mark denoting the normal amount of current, substantially as set forth.

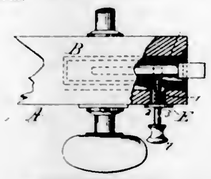
2. The rheostat cylinder G having resistance wires H *h* secured upon and nearly surrounding it, in combination with the brushes J each adapted to rest at its free end upon one of the wires H, and with the electrical connecting stripe K joining alternate brushes J, substantially as set forth.

3. The improved rheostat described, consisting of a single cylinder G, and two distinct sets of resistance wires H *h*, coiled about said cylinder at its respective ends, and with two distinct sets of brushes I I bearing upon said wires H *h*, in combination with the two arms 1 and 4 of the bridge W, substantially as set forth.

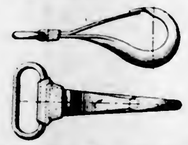
4. The instrument described having the box C and top casing D in combination with Wheatstone's bridge in the lower part of said box, the rheostat in its higher part, and with a coil and a magnet without said casing, and an index and projecting pointer above the rheostat in said case, substantially as set forth.

528,269. ATTACHMENT FOR LOCKS. LAFAYETTE L. BETTYS, Oakland, Cal. Filed June 20, 1894. Serial No. 515,063. (No model.)

*Claim.*—An attachment for the locks of doors and the like, consisting of an escutcheon having a hollow boss slotted longitudinally, oppositely inclined ends to said boss, and a locking pin having a fixed transverse guide pin, the said guide pin being adapted to travel in said slot, to be wedged upon the inclines of said boss, and to prevent the withdrawal of the sliding pin, through the escutcheon, substantially as set forth.



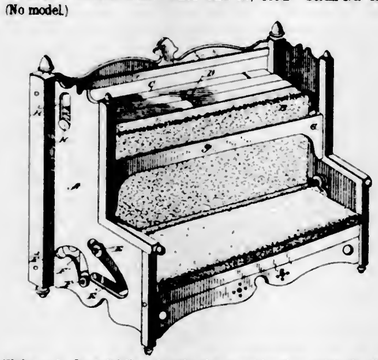
528,270. SNAP-HOOK. REUBEN C. ELDRIDGE, HERBERT M. ELDRIDGE, and LOUIS W. ELDRIDGE, Niagara, Canada. Filed Jan. 22, 1894. Serial No. 497,585. (No model.)



*Claim.*—1. In a snap hook, the combination with an attaching loop, of a sheet metal body formed at one end with a hook and at its opposite end with an integral shank portion which is folded around a cross bar of said loop and provided with ears or lips which are bent around the edges of the body and clinched against the latter, substantially as set forth.

2. In a snap hook, the combination with an attaching loop, of a sheet metal body formed at one end with a hook and at its opposite end with an integral shank portion which is folded around a cross bar of said loop and provided with ears or lips which are bent around the edges of the body and clinched against the latter and a spring tongue having a flaring attaching end which is confined between the body of the snap hook and its folded shank portion, substantially as set forth.

528,271. COMBINED SEAT AND FOLDING BERTH. PETER FRASER, Whitman, Mass. Filed Jan. 27, 1894. Serial No. 498,201. (No model.)



*Claim.*—1. In a folding berth, the combination with the framing having the upwardly and rearwardly inclined slot bearings, of the berth having pivot journals or supports resting in said slot bearings, the lever journals, forward of said first mentioned journals co-operating with the frame and forming a lever pivot for the berth, as it is turned down, whereby the first mentioned journals are caused to travel in their slot bearings and move the berth rearwardly; substantially as described.

2. In a folding berth, the combination with the framing having the upwardly and rearward inclined slot bearings, of the berth having the journals working in said bearings, whereby its rear edge may be guided from a lower position to a higher and more rearward position, and the lever journals on the berth forward of said first mentioned journals with horizontal bearings on the frame for co-operation therewith, whereby as the berth is turned down to horizontal position, the lever journals co-operating with the horizontal bearings will cause the rear journals to traverse the slot bearings and move the berth toward the rear; substantially as described.



3. In a folding berth, the combination with the framing having the upwardly and rearwardly inclined slot bearings terminating in seats at the upper end, of the folding berth, having the pivoted journal supports at the rear edge working in said inclined slot bearings and co-operating with the seats at the upper end of the same to support the rear edge of the berth with means for supporting the front edge of the berth; substantially as described.

4. In a folding berth, the combination with the framing having bearings for the lever journals, of the lower berth, having lever journals, at an intermediate point co-operating with said bearings, movable upper berth having means for supporting its forward edge, and link connections between its rear side and the rear side of the lower berth in rear of the lever journals, whereby the upper berth operates as a counterweight for the front of the lower berth and whereby the upper berth is elevated to the proper level as the lower berth is turned down into horizontal position; substantially as described.

5. In a folding berth, the combination with the framing having bearings for the lever journals, the lower berth and lever journals thereon at an intermediate point co-operating with said bearings, of the upwardly extending links connected to the berth in rear of the lever journals, the upper berth pivotally connected with the upper ends of said links to swing down into vertical position and means for supporting the front edges of the berths when in horizontal position; substantially as described.

6. In a folding berth, the combination with the framing having the bearings for the lever journals and vertical guide bearings for the rear edge of the upper berth, the lower berth and lever journals secured thereon at an intermediate point and co-operating with the bearing on the frame, of the links connected to the lower berth in rear of the lever journals, the upper berth guided in its vertical movements by the guide bearings in the frame and pivotally supported on the upper ends of the links and means for supporting the front edges of the berths in horizontal position; substantially as described.

7. In a folding berth, the combination with the framing and lower berth having the lever journals at an intermediate point co-operating with horizontal bearings in the framing, of the seat and the links pivotally connecting said seat and lever journals, whereby said seat may be folded against the forward and under side of the berth as the latter is turned down to horizontal position, with means for supporting said berth in horizontal position; substantially as described.

8. In a folding berth, the combination with the frame having the horizontal bearings for the lever journals and the upwardly and rearwardly inclined bearings, as described, the lower berth having the journals co-operating with both said sets of bearings, of the links pivotally connected to the rear portion of the berth, the upper berth pivotally connected to the upper end of said links and guided by the framing and the pivoted supports for connecting the forward portions of the berth; substantially as described.

9. In a folding berth, the combination with the framing having the horizontal bearings for the lever journals and the upwardly and rearwardly inclined bearings terminating in a seat at the rear end for the pivot journals, of the lower berth having the intermediate and rear journals, as described, co-operating with said bearings and seats, respectively, the upwardly extending links pivoted to the rear portion of the lower berth, the upper berth pivotally supported at the rear portion on the upper ends of said links and guided by the framing, whereby it may swing down between the links into vertical position and the arms pivotally connected to the front portion of the lower berth and co-operating with projections on the front of the upper berth to support the latter; substantially as described.

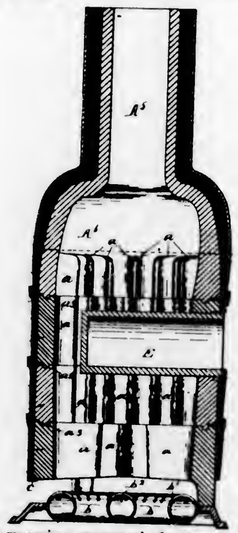
10. In a folding berth, the combination with the framing having the horizontal and upwardly and rearwardly inclined bearings at the bottom as described, and the vertical guide bearings at the top, of the lower berth having the intermediate and rear journals co-operating with said bearings, the upwardly extending links, the upper berth having the journals connected with said links and extended into the vertical guide bearings, the support for the front edge of the lower berth and the folding supports for connecting the front edges of the upper and lower berths; substantially as described.

11. In a folding berth, the combination with the framing and the lower berth pivotally connected with and bodily movable with relation to said framing, of the upper berth, guided by the framing, link connections between the rear edges of said berths and folding supports for their forward edges; substantially as described.

528,272. REFRACTORY AND NON-CONDUCTING HEAT-MAGAZINE. CHARLES H. LAND, Detroit, Mich. Filed Sept. 29, 1893. Serial No. 486,786. (No model.)

*Claim.*—1. The heat magazine herein described, constructed of refractory material with walls or partitions projecting inward close to the center of the magazine, forming a central flue and surrounding flues opening thereinto, the inner ends of said partitions or walls

forming calefactory points within the central zone of the flame, and said magazine having in combination therewith a receptacle located therein supported upon the inner ends of portions of said calefactory points and closely surrounded by other of said calefactory points, substantially as set forth.

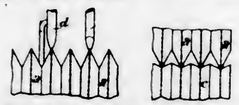


2. A heat magazine constructed of refractory material having lateral partitions or walls projecting inward close to the center of the magazine, forming a central contracted flue and outer deeply recessed flues communicating with the central flue, a burner or heater extending beneath the central flue and the outer flues, said flues open at the base and top to admit the passage of flame and air through the central and outer flues, the inner ends of said partitions or walls forming calefactory points within the central zone of the flame, substantially as set forth.

3. In combination a heating device and a heat magazine constructed of refractory material having inwardly projecting partitions or walls forming a central contracted flue and interior flues communicating therewith, the inner ends of said partitions or walls forming calefactory points within the central zone of the flame in said magazine, the central and other flues receiving the flame from the heating device, and air inlets into said outer flues and interior flues, and between the flame admitted into the outer flues and central flue, substantially as set forth.

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**528,273. PHONOGRAPH.** HENRI J. LIORET, Paris, France. Filed Dec. 20, 1893. Serial No. 494,179. (No model.) Patented in France May 18, 1893, No. 230,177.



*Claim.*—1. In a phonograph, the combination with a spirally threaded cylinder, a style *d* having a point which runs on the top of the thread of the said cylinder and an additional guiding point *d'* engaging in the groove of said thread, substantially in the manner and for the purpose herein described.

2. In a phonograph, the combination with a threaded cylinder and a resonator turning about a fixed pivot and furnished with a style to follow the threading of the cylinder, of a guiding yoke comprising a horizontal portion and vertical branches, and a guiding arm carried by the resonator and engaging under the horizontal portion of said yoke, substantially as and for the purpose herein described.

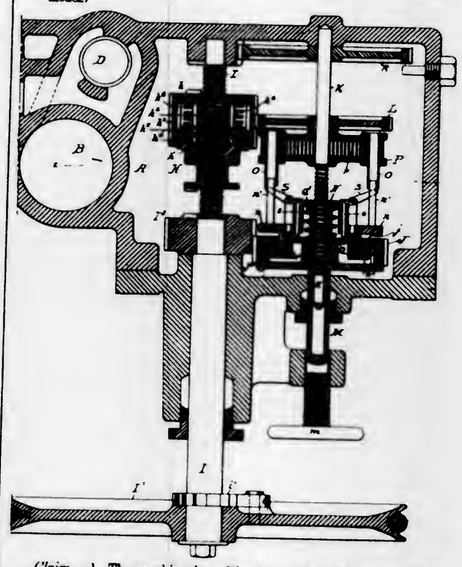
3. The method of reproducing phonographic cylinders which consists in first obtaining a metal mold by electro-deposit upon an original phonographic cylinder, next placing bodily within the so obtained mold a solid ring of plastic material capable of being softened by heat, next softening this ring by heat, and finally so distending the said ring within said mold by internal pressure that it will receive therefrom an impression corresponding with that of the original cylinder, substantially as herein described.

4. The combination in a phonographic cylinder, of a hollow cylinder *c*, disks *c'* having centering projections for said hollow cylinder and a spacing ring G' arranged between said disks and means of securing said disks to said spacing ring, substantially as herein described.

5. The combination with a motor for operating a phonograph, of a driving crank on the main spindle of said motor, an adjustable friction device between said crank and spindle and a rotary fly geared with and driven by said motor, substantially as and for the purpose herein set forth.

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**528,274. MOTOR FOR ENGINE-GOVERNORS.** CARL E. R. MARTIN, Philadelphia, Pa. Filed Feb. 20, 1894. Serial No. 500,875. (No model.)



*Claim.*—1. The combination of the threaded shaft I, a nut thereon operatively connected to a governing device, *a*, threaded shaft K, a threadnd hub mounted thereon, a loose gear wheel mounted on the shaft K and adapted to rotate said hub, means for rotating the shaft K, means for rotating the gear wheel, and an adjusting screw or sleeve adapted to regulate the longitudinal movement of the pulley.

2. The combination of the threaded shaft I, a nut thereon operatively connected to a governing device *a*, threaded shaft K, means for rotating the same, a hollow drum mounted on the shaft K, a volute spring connecting the drum and the shaft, a hub mounted on the shaft K and engaging the hollow drum, a gear wheel in frictional engagement with the said hub, and means for rotating said gear wheel.

3. The combination of the threaded shaft I, a nut thereon operatively connected to a governing device *a*, threaded shaft K, means for rotating the same, a hollow drum on said shaft provided with tubes or transverse openings around its circumference, a hub moving longitudinally on the shaft K and provided with a series of pins engaging the openings in the drum, a gear wheel loosely mounted on the shaft K and in frictional engagement with the hub, and means for rotating said gear wheel.

4. The combination of the threaded shaft I, a nut thereon operatively connected to a governing device *a*, threaded shaft K, the hollow drum, the spring connecting said drum and shaft, the hub mounted on the shaft, the gear wheel loosely fitted on the shaft K, a ring Q, provided with pins extending through the hub, levers pivoted on the hub and engaging said pins, and a spring arranged between the ring and the hub and holding the ring normally against the gear wheel.

5. The combination of the threaded shaft, a nut thereon operatively connected to a governing device, a threaded shaft, as K, a hub mounted thereon, means for connecting said hub to a rotated wheel, a spring drum, a spring connecting said drum to the shaft, K, and a gear wheel mounted on the shaft, K, and intermeshing with gear teeth provided on said nut, substantially as specified.

6. The combination of the threaded shaft, means for rotating the same, a nut on said threaded shaft operatively connected to a governing device, a pinion secured to said shaft, a second threaded shaft, K, a gear wheel loosely mounted thereon and intermeshing with said pinion, a hub mounted on said threaded shaft, K, means for clutching the hub to said gear wheel, a hollow drum also loosely mounted on shaft, K, a volute spring connecting the drum to the shaft, means for operatively connecting the hub to said drum, and a gear wheel secured to said shaft, K, and meshing with gear teeth provided on said nut, substantially as specified.



7. The combination of the threaded shaft, a nut thereon operatively connected to a governing device, a threaded shaft, as K, a hub mounted thereon, means for connecting said hub to a rotated wheel, a spring drum, a spring connecting said drum to the shaft, K, a gear wheel secured to the shaft, K, and intermeshing with gear teeth provided on the said nut, a countershaft, a balance wheel secured thereon, and gearing connecting said countershaft to the shaft, K, substantially as specified.

8. The combination of the threaded shaft, means for rotating the same, a nut on said threaded shaft operatively connected to a governing device, a pinion secured to said shaft, a second threaded shaft, K, a gear wheel loosely mounted thereon and intermeshing with said pinion, a hub mounted on said threaded shaft, K, friction rings situate between said hub and gear wheel, a spring normally tending to force said friction rings into intimate contact with each other, a hollow drum also loosely mounted on said shaft, K, a volute spring connecting the drum to the shaft, means for operatively connecting the hub to said drum, and a gear wheel secured to said shaft, K, and meshing with gear teeth provided on said nut, substantially as specified.

9. The combination of the threaded shaft, means for rotating the same, a nut on said threaded shaft operatively connected to a governing device, a pinion secured to said shaft, a second threaded shaft, K, a gear wheel loosely mounted thereon and intermeshing with said pinion, a hub mounted on said threaded shaft, K, friction rings situated between said hub and gear wheel, a spring normally tending to force said friction rings into intimate contact with each other, a hollow drum also mounted on said shaft, K, a volute spring connecting the drum to the shaft, tubes provided on said drum, pins *n'* projecting from the hub and adapted to engage in said tubes, pivoted levers carried by said hub and adapted to be acted upon by the drum to move the spring out of contact with the gear wheel, and a gear wheel, L, secured to said shaft, K, and intermeshing with gear teeth on said nut, substantially as specified.

10. The combination of the threaded shaft I, a nut thereon operatively connected to a governing device, the threaded shaft K, the gear wheel J thereon, the spring drum P and its connected parts, a hub N, mounted on the shaft K, an annular flange $n^3$ on said hub, an annular flange *j* on the gear wheel, a series of friction rings situate between said flanges, a loose ring, Q, bearing against the hub of the gear wheel, a compression spring extending between the hub and said ring, Q, the bars *s* connected to said ring, and levers, S, fulcrumed to the hub and adapted to act upon said bars *s* and ring, Q, when depressed by the spring drum, substantially as specified.

11. The combination with the nut, H, and its shaft, of its gear wheel, J, means for revolving the same, the hub, N, the threaded shaft on which said gear wheel and hub are mounted, means for connecting the hub to the gear wheel and for transmitting the rotations of the latter to the nut, H, and an adjusting sleeve, as M, for regulating the extent of movement of said gear wheel, J, substantially as specified.

12. The combination of the threaded shaft, I, the sectional nut, H, thereon, comprising opposite end disk portions *h*, *h'* a connecting sleeve $h^2$, gear teeth $h^3$ carried by the disk portions, and spring actuated friction rings connecting the disk portions to the gear teeth, substantially as specified.

13. The combination of the cylinder, B, its piston, levers connecting the piston to governing levers, the cross bar, E, the valve rod *d* connected thereto, the rod *d'* extending from said cross bar to a sliding block on one of said governing levers, a lever, G, fulcrumed to the frame, and connected at one end to the governing mechanism, a handled reversing lever, F, detachably connected to the lever, G, and a rod *e* connecting said lever, F, to the cross bar, E, substantially as specified.

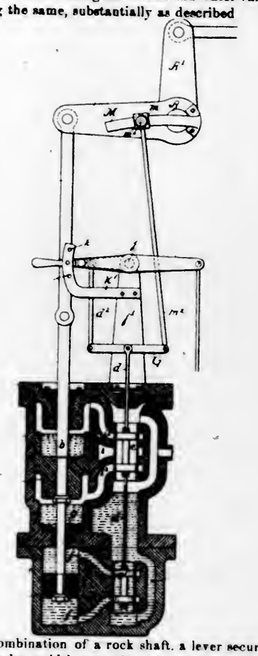
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**528,275. ENGINE-REVERSING GEAR.** CARL E. R. MARTIN, Philadelphia, Pa. Filed Mar. 29, 1894. Serial No. 505,546. (No model.)

*Claim.*—1. The combination of the cylinders and pistons, of the link controlling lever connected to said pistons, valves for said cylinders, a valve stem, two pivoted levers, one connected to said valve stem, and the other to a speed governing mechanism, and means for locking said levers together, substantially as described.

2. The combination of the cylinders, pistons therein, a piston rod extending from said pistons and connected to the link controlling lever of the engine, the valves, a valve stem, a floating lever centrally connected to said valve stem, a reversing lever connected to one end of said floating lever, and the opposite end thereof being operatively connected to the link controlling lever, an automatic speed governing mechanism and a lever operatively connected thereto and adapted to be locked to the reversing lever, substantially as described.

3. The combination of a rock shaft, a lever secured thereto, a the steam and water cylinders, pistons therein, a piston rod carrying both pistons and connected to said lever, the said steam and water valves, a reversing lever operatively connected thereto and a sliding valve sleeve surrounding said steam and water valves with means for operating the same, substantially as described



4. The combination of a rock shaft, a lever secured thereto, a segment secured to said lever and projecting beyond the center of the shaft, steam and water cylinders, the pistons therein, piston rod carrying both pistons and connected to said lever, the steam and water valves, a reversing lever operatively connected thereto, a sliding ported valve sleeve surrounding said valves, and a connecting rod extending from said valve sleeve to the segment, substantially as specified.

5. The combination of a rock shaft, a lever secured thereto, a segment secured to said lever and projecting beyond the center of the same, a pivot block adjustable on said segment, steam and water cylinders, pistons therein, a piston rod carrying both pistons and connected to said lever, steam and water valves, a single valve rod carrying the same, a reversing lever connected to said valve rod, a ported valve sleeve surrounding the valves, and a connecting rod extending from said valve sleeve to the said adjustable pivot block, substantially as described.

6. In a reversing and governing mechanism for engines, the combination of a steam cylinder and a water cylinder situated on the same vertical line, pistons therein, a piston rod connecting both pistons, governing valves for controlling the supply of steam and water to said cylinders, communicating valve chests in which said valves are contained, a ported valve sleeve surrounding said valves, and mechanism for automatically opening said valves and for effecting the movement of the valve sleeve to close the same, substantially as specified.

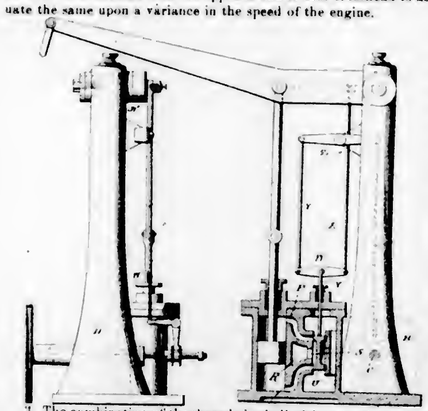
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**528,276. ENGINE-GOVERNOR.** CARL E. R. MARTIN, Philadelphia, Pa. Filed Feb. 1, 1893. Renewed Sept. 24, 1894. Serial No. 523,988. (No model.)

*Claim.*—1. In a steam engine governor, the combination of a threaded spindle driven by the engine, a sleeve loosely mounted on the said spindle and driven by an independent motor, a piston connected with the reversing gear of the engine, a valve controlling said piston, connections between said valve and the loose sleeve, and connections between said valve and the reversing gear of the engine.

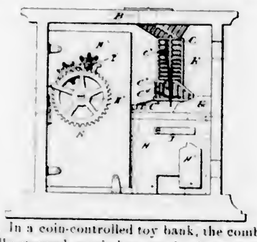
2. The combination of a piston connected with the reversing lever of the engine, a valve controlling said piston, a vibratory cross-

head pivoted to the upper end of the stem of said valve, a link connecting one end of the crosshead with the engine reversing lever, and mechanism connected with the opposite end of said crosshead to actuate the same upon a variance in the speed of the engine.



3. The combination of the threaded spindle driven by the engine, the sleeve mounted thereon and driven by an independent motor, the levers N and *b*, the links X Y and M, connecting rod *a*, arm Z, crosshead W, valve U and piston L, all arranged and operating substantially as specified.

528,277. COIN-CONTROLLED MUSICAL TOY BANK. HENRY W. PORTER, Forestville, Conn., assignor of one-half to Frederick N. Manross, same place. Filed Nov. 27, 1893. Serial No. 492,104. (No model.)



*Claim.*—1. In a coin-controlled toy bank, the combination with an automatically stopped music-box mechanism adapted to be directly operated upon and released by a coin, of an actuating mechanism for driving the music-box mechanism, after it has been released for operation as described, and controlled in being stopped and started thereby, a releasing mechanism driven by the actuating mechanism, and controlled by the music-box mechanism, and operating after a predetermined number of actuations thereof, and a locking device connected with the bank door, and operated to prepare for the opening of the same, by the said releasing mechanism, substantially as described.

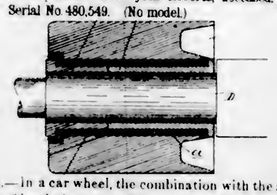
2. In a coin controlled toy bank, the combination with an automatically stopped music-box mechanism adapted to be operated upon and released by a coin, of an actuating mechanism for driving the music-box mechanism, and controlled in being started and stopped thereby, and a releasing mechanism actuated by the driving mechanism, and controlled by the music-box mechanism, and operating after a predetermined number of actuations of the device to prepare for the opening of the bank, and a latch arranged to normally hold the bank-door closed, and adapted to be acted upon by the releasing mechanism, substantially as described.

3. In a coin-controlled toy-bank, the combination with a music-box mechanism, of an actuating mechanism for driving the same, and a releasing mechanism driven by the actuating mechanism, and controlled by the music-box mechanism and operated after a predetermined number of actuations thereof, and including a wheel carrying a projecting finger, and a latch controlling the opening of the bank-door and arranged to be engaged by the finger of the said wheel, substantially as described.

4. In a coin-controlled music-box mechanism, the combination with a case therefor, of a chute mounted in the case, an actuating mechanism comprising a spring and train mounted between two heavy movement-plates, a music-box applied to the inner face of one of the said plates, and geared into the said actuating mechanism, and releasing mechanism connecting the music-box mechanism with the lower end of the coin-chute, substantially as described, whereby the music-box is set in operation by the dropping of a coin into the said chute.

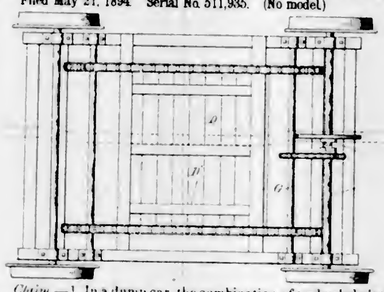
5. In a coin-controlled music-box mechanism, the combination with a chute through which the coins pass, of an operating pan located at the lower end of the chute, and a locking mechanism comprising a tripping-arm located in the chute in position to be engaged and deflected by the coins, a locking-arm connected with the said tripping arm and operated thereby and arranged to lock the pan in its elevated position, and a spring for restoring the said tripping and locking-arms into their normal positions after operations, substantially as described

528,278. CAR-WHEEL. JAMES B. ROBERTS, GEORGE A. ROBERTS, and CARRIE B. TUCKER, Three Rivers, Mich., and SAMUEL H. ROBERTS, Denver, Colo., executors of Cyrus Roberts, deceased. Filed July 14, 1893. Serial No. 480,549. (No model.)



*Claim.*—In a car wheel, the combination with the apertured hub, of a sleeve of insulating material consisting of two sections *a*, *b*, their inner ends engaging and having lateral flanges *c* at their ends, and an inner metallic bushing formed in two sections *d d*, their inner ends engaging and having lateral flanges engaging over the lateral flanges of the insulating material, substantially as described.

528,279. DUMP-CAR. GEORGE A. ROBERTS, Three Rivers, Mich. Filed May 21, 1894. Serial No. 511,935. (No model.)



*Claim.*—1. In a dump car, the combination of a wheeled platform, a hopper thereon, a cut off for the bottom of the hopper, actuating devices for said cut-off from the wheels, and means in the track for throwing said devices in and out of operation, substantially as described.

2. In a dump car, the combination of the wheeled platform, a hopper thereon, a sliding cut-off for the bottom of the hopper, an endless chain connected to the cut off and to gearing on one of the axles, a clutch for connecting the axle and gearing to actuate the cut off and means brought into operative position by the motion of the car for controlling the clutch, substantially as described.

3. In a dump car, the combination of the wheeled platform, a hopper thereon, rails at the sides of the discharge from the hopper, slats forming a cut off for the hopper, having their ends resting upon the rails, endless chains to which said slats are connected, sprocket wheels arranged on transverse shafts with which said chains engage, and a clutch for connecting and disconnecting the sprocket wheels with one of the car axles, substantially as described.

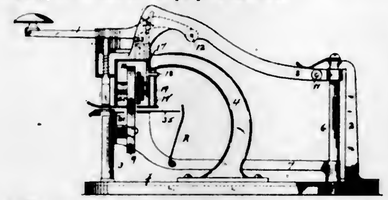
528,280. CHECK-PUNCH. JOHN C. ROBINSON, Brooklyn, N. Y. Filed May 29, 1893. Serial No. 475,815. (No model.)

*Claim.*—1. The combination of a series of dies arranged in the arc of a circle, the swinging support pivoted at the rear of said dies and carrying at its opposite end an operating lever pivoted to said support, and paper carrying rolls and actuating devices therefor, substantially as described, supported on the lever end of the support over the series of dies.

2. The combination of a series of dies arranged in the arc of a circle, the swinging support pivoted at the rear of said dies and carrying at its opposite end a die actuating handle pivoted to said support.



and paper carrying rolls and actuating devices therefor operated by said handle, substantially as described, supported on the handle end of the support, as and for the purpose described.



3. The combination of a series of dies arranged in an arc of a circle, a swinging support pivoted at the rear of said dies, an operating lever pivoted to said support, feed wheels carried by said support, a ratchet disk carried by one of said wheels, and a vertically actuated rod provided with a pawl for rotating said ratchet disk.

4. In a check punching apparatus, the combination with the dies and the operating handle therefor, of the feed wheels for the paper, a ratchet disk, a pawl operated by said handle for operating said disk, and a stop for disconnecting the pawl from the ratchet disk before the dies strike the paper.

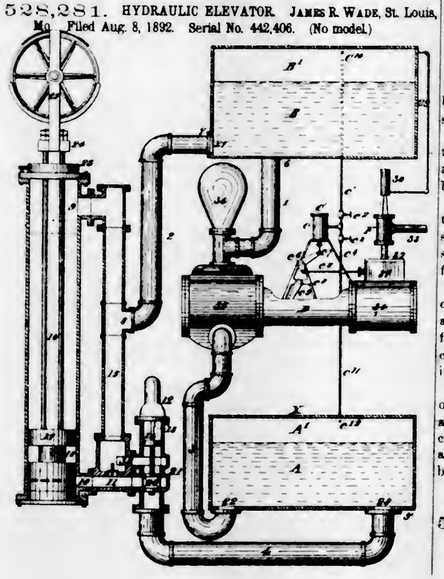
5. In a check punching apparatus, the combination with the dies and the operating handle therefor, of the feed wheels for the paper, actuating devices therefor, substantially as described, operated by said handle on its downward movement, and a trip pin or projection in the path of said actuating devices for disengaging the same from the feed wheels before the dies strike the paper.

6. In a numbering and perforating machine, the combination of the arcuate series of dies and punches, the paper carrier, a swinging support therefor pivoted concentrically with respect to said arcuate series, and having its forward end moved directly in rear thereof, and a handle pivoted on said swinging support projecting forward and overhanging said punches.

7. In a check punch the combination with a segmental row of punches and corresponding dies, of a connected check support and feed roller carried by a suitable support mounted behind the row of punches, a single selecting and actuating lever connected with said support to move with the same, and mechanism for operating the feed roller from the selecting and actuating lever

8. In a check punch the combination with a row of punches, of an upper clearing plate and feed roll carried together on a movable or swinging support adapted to be moved in a vertical plane, and mounted in turn on a movable or swinging support moved in a horizontal plane, and an actuating handle carried on said swinging support at the end thereof contiguous to the punches.

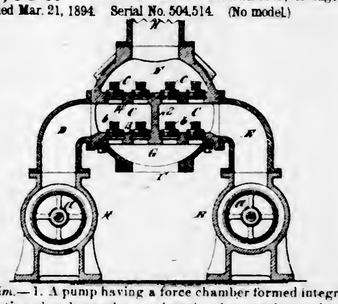
528,281. HYDRAULIC ELEVATOR. JAMES R. WADE, St. Louis, Mo. Filed Aug. 8, 1892. Serial No. 442,406. (No model.)



*Claim.*—1. In a hydraulic elevator, the combination with the hoisting cylinder, of air-tight discharge and supply compartments, pipe connections between the cylinder and said compartments, a steam pump connected with said compartments and forcing the water from the discharge compartment into the supply compartment, and an air pump with which both compartments are connected so as to be in constant communication and under the same air pressure.

2. In a hydraulic elevator, the combination with the hoisting cylinder, of air-tight discharge and supply compartments, pipe connections between the cylinder and said compartments, a steam pump connected with said compartments and forcing the water from the discharge compartment into the supply compartment, an air pump connected with both compartments and operated by the steam pump to force air into the compartments, the compartments being so connected with the air pump as to be in constant communication and under the same air pressure, a pump governor on the steam pump, an air cylinder connected with said governor, and an air pipe leading from the supply compartment to said air cylinder whereby in the event of an excess of pressure in the supply compartment the pump will be stopped.

528,282. PUMP. CHARLES C. WORTHINGTON, Irvington, N. Y. Filed Mar. 21, 1894. Serial No. 504,514. (No model.)



*Claim.*—1. A pump having a force chamber formed integral with the pulsation chamber and a suction chamber non-integral with but attached to the pulsation chamber, substantially as described.

2. A pump having a force chamber and suction valve plate integral with the pulsation chamber, and a suction chamber non-integral with but attached to the pulsation chamber, substantially as described.

3. A pump having a force chamber integral with the pulsation chamber, and having the suction chamber on the opposite side of and non-integral with but attached to the pulsation chamber, substantially as described.

4. A pump having a force chamber and suction valve plate integral with and on opposite sides of the pulsation chamber, and having the suction chamber non-integral with but attached to the pulsation chamber, substantially as described.

5. A duplex pump having the force and pulsation chambers for both sides of the pump formed integral and having the suction chamber for both sides of the pump non-integral with but attached thereto, substantially as described.

6. A duplex pump having the force and pulsation chambers and the suction valve plate for both sides of the pump formed integral, and the suction chamber for both sides of the pump non-integral with but attached thereto, substantially as described.

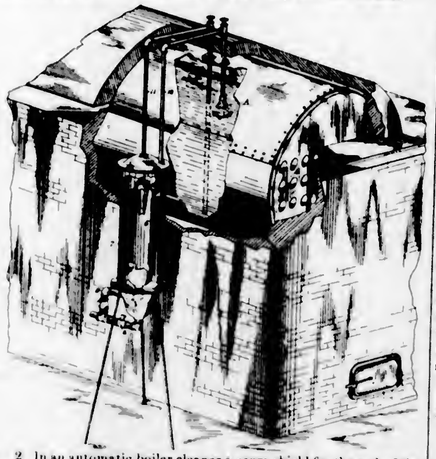
7. A duplex double acting pump having a single casting forming the pulsation and force chambers and the suction valve plate for both sides and ends of the pump, and a second single casting forming the suction chamber for both sides and ends of the pump attached to the first mentioned casting, substantially as described.

8. The combination with the pump cylinders of a duplex pump, of a single casting above the pump cylinders forming the pulsation and force chambers for both sides of the pump, the suction chamber for both sides of the pump non integral with but attached to said casting, and pipes connecting said pulsation chambers and pump cylinders, substantially as described.

9. The combination with the pump cylinders of a duplex pump, of a single casting above the pump cylinders forming the pulsation and force chambers for both sides and ends of the pump, the suction chamber for both sides and ends of the pump non-integral with but attached to said casting, and pipes connecting said pulsation chambers and pump cylinders, substantially as described.

528,283. AUTOMATIC BOILER-CLEANER. JOHN H. BARR, Roanoke, Ind.; John M. Barr administrator of said John H. Barr, deceased. Filed July 10, 1893. Serial No. 479,982. (No model.)

*Claim.*—1. In an automatic boiler cleaner a trap for the inflow of water from the boiler to the outflow pipe connected thereto and consisting of a cone shaped receiver as 13: an inclosing case for said receiver adapted to form a space for the flow of water and scum around said receiver, and provided with apertures arranged at different and graduated heights forming the only ports to said space: a bottom for said inclosing case placed below the rim of said receiver, so as to permit water and scum to pass freely into the receiver.



2. In an automatic boiler cleaner a scum shield for the end of the pipe through which the water flows back from the settling vessel or vessels into the boiler, consisting of a case or tube inclosing the end of said return pipe within the settling vessel so as to provide a space for the flow of water within it around the said end and extended above and below the said end of the return pipe so as to prevent scum and floating substances from entering said space and said return pipe; in combination with a settling vessel: an outflow pipe from the boiler to a settling vessel, and a return pipe one end of which is placed in the settling vessel where the water is freest from sediment and the other end at a point within the boiler always submerged in the water.

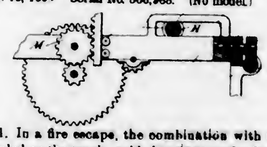
3. An automatic boiler cleaner consisting of a settling chamber or vessel placed or constructed within a larger settling vessel so that the water enters the inclosed chamber or vessel only by over-flowing into it from the inclosing vessel: an out-flow pipe 10: a return pipe 11: a scum shield as 12, located in the top of the vessel, attached to the return pipe near the top of the vessel into which the water enters by over-flow, and adapted to prevent scum and other substances from entering the return pipe and a boiler trap attached to the outflow pipe within the boiler consisting of the receiver 13, and the inclosing case 15.

4. In an automatic boiler cleaner of the class described: a boiler trap attached to the outflow pipe with the boiler, consisting of the receiver 13, the inclosing case 15 provided with the ports 16 and the removable bottom 17.

5. In an automatic boiler cleaner a settling vessel consisting of the chambers or vessel 6 placed or constructed within a larger settling vessel 7, so that the water enters the vessel 6 by over-flow into it from the vessel 7: an out-flow pipe from the boiler adapted to discharge into the vessel 7, and a return pipe to the boiler adapted to take the return flow of water from near the top of the vessel 6, and a scum shield as 12, attached to the inlet end of the return pipe, near the top of the vessel into which the water enters by over-flowing, substantially as described.

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**528,284.** FIRE-ESCAPE. CORYELL BARTHOLOMEW, Jackson, Mich. Filed Apr. 10, 1894. Serial No. 506,988. (No model.)



*Claim.*—1. In a fire escape, the combination with the truck, of a frame journaled on the truck, guide bearings on the frame, a double lazy tongs tower having the lower ends of the bottom levers slidingly engaging in the guide bearings on the frame, a rack bar centrally pivoted to the hub of the lower section of the tower, and gearing on the frame engaging the rack bar, substantially as described.

2. In a fire escape, the combination of the truck, the frame D journaled on trunnions therein, the gear segment E on one of the trunnions, the worm F for rocking the same, the double lazy tongs tower having the lower end of the bottom levers slidingly engaging in longitudinal bearings on the frame D, the rack bar K pivoted to the hub of the lower section, and working in bearings in the frame D, and gearing on the frame D for raising and lowering said rack bar, substantially as described.

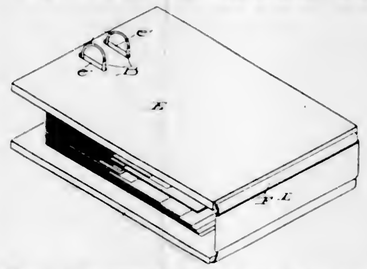
3. In a fire escape, the combination with the truck, of a frame journaled on the truck, a double lazy tongs tower on the frame, a rack bar pivoted to the hub of the lower section of the tower, a pinion on the frame engaging the rack bar, and rollers journaled on the frame on opposite sides of the plane of the axis of the pinion and on the opposite side of the rack bar, substantially as described.

4. A fire-escape, comprising in combination a support, a double lazy tongs frame thereon, made up of sections connected together on a common shaft, the hub on said shaft comprising two interlocking main hub sections journaled on the shaft and extending from end to end, two upper and lower series of connecting bars connecting into such hubs, and rings at the ends of the hubs, journaled on reduced bearings thereon, to which the other series are connected, substantially as described.

5. In a fire escape, the combination of the rocking frame the double lazy tongs frame thereon having a platform at the top, of the hubs at the crossing point of the levers comprising a central shaft *b*, the main hub sections *c d*, having interlocking ends the journal bearings A formed at the ends thereof, the rings *i* journaled thereon, the lever sections engaging screw threaded nipples in sections *c d* and rings *i*, and the washers *m* and nuts *l* on the ends of the shaft, substantially as described.

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**528,285.** INVOICE OR OTHER FILE. MAURICE BUCHBAUM, Chicago, Ill. Filed Jan. 15, 1894. Serial No. 496,844. (No model.)



*Claim.*—1. The combination in a file binder, of separable filing posts and retaining wires located at one end of the binder, and a cover joined to the base of the binder by a flexible back located at the end of the binder opposite that at which the posts and wires are located, substantially as specified.

2. The combination in a file binder, of filing posts and retaining wires located at one end of the binder, the posts being capable of a sliding movement away from the wires, and a cover flexibly united to the base of the binder at the end opposite that at which the posts and wires are located, substantially as specified.

3. In a file binder, the combined filing wires and retaining wires, having their points in normal contact, and both being extensible to allow the increase in thickness of the filed papers, substantially as specified.

4. In a file binder, the combined filing wires and retaining wires, having their points in normal contact, and both being extensible to allow the increase in thickness of the filed papers, and being provided also with means for locking their points together so as to secure uniformity in the extension adjustment, substantially as specified.

5. In a file binder, the combination of filing wires and retaining wires the points of which are in normal contact, and friction exerting tubes in which said wires are vertically adjustable, substantially as specified.

6. The file binder wherein are combined extensible filing wires, a base, a cover, and an extensible back uniting the cover to the base, substantially as specified.

7. A file binder having a base or side, a cover or side comprising two portions or boards, one of which is slotted, a flexible back attached to said base and having its other edge between said cover portions, a projection or pin attached to said back passing through the slot and adapted to serve as a means for taking up the back, and means for securing said pin to the cover, substantially as set forth.

8. The combination in a file binder of separable filing posts and retaining wires located at one end of the binder, and a cover joined to the base of the binder by an extensible back located at the other end of the binder, substantially as set forth.



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**528,286.** GALVANIC BATTERY. MARTIN M. CLARK, Chicago, Ill., assignor to the Western Electric Company, same place. Filed May 27, 1893. Serial No. 475,763. (No model.)



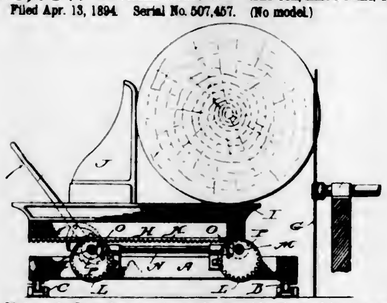
*Claim.*—1. The combination, with a negative electrode *a*, of two plates *b b'*, embracing said electrode, a plate *c*, a sack *d* of textile material secured to said plates and surrounding said electrode and a suitable solid depolarizing substance *e* contained in said sack, substantially as and for the purpose specified.

2. The combination, with the negative electrode *a*, of the two semicircular plates *b*, *b'*, embracing said electrode, a circular plate *c* below said electrode, a sack of textile material having its ends secured to said plates, and surrounding said electrode, a depolarizing substance *d* contained in the vessel thus formed, a pin through the electrode *a* adapted to prevent the electrode from being removed from the sack, substantially as and for the purpose specified.

3. The combination with the negative electrode *a* having notches *o o'*, of plates *b b'* and *c* of insulating material, sack *d* having its ends secured respectively to said plates, and a solid depolarizer *e* contained in said sack, substantially as and for the purpose specified.

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**528,287.** SAWMILL-CARRIAGE. MAT COX, Hale's Point, Tenn. Filed Apr. 13, 1894. Serial No. 507,457. (No model.)



*Claim.*—1. In a log carriage, the combination with the main frame, of a supplemental frame carrying the log, positive connections between the main and supplemental frames, and means for actuating the said connections for simultaneously lifting the supplemental frame and carrying it to the saw, substantially as described.

2. In a log carriage, the combination with the main frame, of eccentrics carried by one of the said frames and having positive connection with the other frame, and means for actuating the said eccentrics whereby the said supplemental frame is simultaneously raised or lowered and moved to and from the saw, substantially as described.

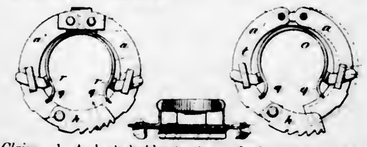
3. In a log carriage, the combination of main and supplemental frames, rack bars carried by one of the frames, toothed eccentrics provided on the other frame and meshing with the said rack bars, and means for actuating the eccentrics to simultaneously raise or lower and move the supplemental frame to or from the saw, substantially as described.

4. In combination a main frame adapted to travel in a line parallel with the plane of the saw, shafts journaled upon the frame in parallel relation with each other and the line of travel of the said frame, toothed eccentrics and miter gear wheels mounted upon the shafts, a transverse shaft having bevel gear wheels meshing with the bevel gear wheels on the said shafts, a ratchet wheel and lever mounted upon one of the shafts, a supplemental frame carrying the log and rack bars on the supplemental frame meshing with the toothed eccentrics, substantially as and for the purpose described.

5. In a log carriage, the combination of main and supplemental frames, shafts journaled upon one of the frames, eccentrics mounted upon the said shafts and having positive connection with the opposing frame, and coil springs encircling the shafts and having one end connected therewith and the other end with the frame carrying the said shafts, whereby the movements of the vertically movable frame are regulated and the weight of the log partially compensated, substantially as described.

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**528,288.** SHADE-HOLDER. NATHAN W. CRANDALL, Meriden, and EDGAR A. RUSSELL, Wallingford, Conn. Filed Sept. 11, 1893. Serial No. 485,264. (No model.)



*Claim.*—1. A shade-holder having a shade-ring comprising two pivoted segmental sheet-metal jaws, a segmental gate concentric with the said jaws and overlapping the same for adjustably securing them together, whereby the ring may be structurally expanded or contracted for adjusting it in size, a supporting clasp located in a plane parallel with that of the said ring for attaching the holder to a lamp, and means for slidably connecting the said clasp and ring, substantially as described.

2. A shade-holder having a shade-ring comprising a pair of segmental jaws, a coupling-plate to which the rear ends of the said jaws are pivoted, a pivotal, segmental gate completing the circle of the ring, pivotally connected with the forward end of one of the jaws, provided at its free end with a series of sockets or holes, and adapted to lap over the forward end of the other jaw, a catch or tooth located on the said forward end of the other jaw for engaging in either of the said sockets or holes, whereby the shade-ring formed by the said parts is rendered structurally expansible or contractible, a supporting clasp located in a plane parallel with that of the said ring for attaching the holder to a lamp, and means, including the said coupling-plate, for connecting the said clasp and ring, substantially as described.

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**528,289.** COAL-SCREEN. GEORGE W. CROSS, Pittston, Pa. Filed May 22, 1893. Renewed Sept. 26, 1894. Serial No. 524,166. (No model.)



*Claim.*—The combination of the cylindrical coal screen, adapted to rotate on trunnions in fixed bearings, and the essentially U-shaped water spray pipe, which is stationary but arranged in said trunnions and depends within the screen, its horizontal portion, $21^b$, having discharge apertures, as shown and described

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**528,290.** APPARATUS FOR MANUFACTURING CONDUIT-SECTIONS. JAMES F. CUMMINGS, Detroit, Mich., assignor to the Cummings & Engelman Conduit Company, same place. Filed Jan. 16, 1894. Serial No. 497,092. (No model.)

*Claim.*—1. The combination of the frame, caps for the ends, the plugs on said caps adapted to enter the end of the ducts, means for clamping the caps upon the conduit section, the upper cap being provided with pouring apertures, substantially as described.

2. The combination of the base, the guides thereon, the lower capped plate C slidingly engaging on said guides, means for adjusting said plate vertically, the lower capped plate K having a plug for the lower end of the casing and plugs and centering devices for the ducts, a corresponding top cap having pouring apertures and clamping devices, substantially as described.

3. The combination with a base and conduit casing, of caps for the ends of the casing, the upper cap having a fill opening therein, retaining means on the caps, ducts on the retaining means, and a clamp for retaining the casing in an upright position, substantially as described.



4. The combination with a base, of an adjustable plate thereon, a cap on the plate having duct seats thereon, a casing on the cap, ducts on the seats, a cap on the upper end of the casing having corresponding duct seats on its under face, and fill openings and means for retaining the casing in an upright position, substantially as described.

5. The combination with a base, of a conduit casing thereon, a removable cap fitted to the lower end of the casing having a duct retaining seat, a duct on the seat, a removable cap fitting the upper end of the casing having fill openings therein and a corresponding duct with which the duct engages, and means for retaining the casing in an upright position, substantially as described.

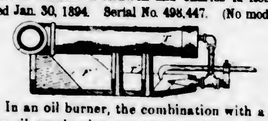
528,291. **UNDERGROUND CONDUIT.** JAMES F. CUMMINGS, Detroit, Mich., assignor of one-half to Eugene M. Engelman, Milwaukee, Wis. Filed Jan. 16, 1894. Serial No. 497,093. (No model.)



*Claim.*—1. In an underground conduit for electrical conductors, the combination of a casing, apertured blocks at the end of the casing, ducts supported at opposite ends in the apertures of the blocks, and having extensions projecting beyond the blocks and the opposite ends being correspondingly retracted from the end, substantially as described.

2. In an underground conduit for electrical conductors, the combination of the casing, apertured blocks at the end of the casing, ducts having their end portions supported in the blocks, insulating material filled around the ducts within the casing and sections of ducts spanning the joint between adjoining sections, substantially as described.

528,292. **OIL-BURNER.** JOHN DUBELMAN, Detroit, Mich., assignor of two-thirds to William H. Ashwell and Charles R. Robertson, same place. Filed Jan. 30, 1894. Serial No. 498,447. (No model.)



*Claim.*—1. In an oil burner, the combination with a steam generator, a pan, an oil supply pipe, a steam supply pipe arranged in a horizontal plane with the pan, tubular standards on the pan having open lower ends and arranged in the path of the steam jet and having openings in their rear sides, substantially as described.

2. In an oil burner, the combination of the burner pan, a steam generator supported on the pan, the jets for supplying the fluid and vapor thereto, the tubular standards T having the slots T' on the side farthest from the jets, and the back plate E of the burner pan of fire brick having the inclined face F, substantially as described.

528,293. **AXLE-NUT.** RICHARD FAWCETT, Salem, Ohio. Filed June 28, 1893. Serial No. 479,061. (No model.)

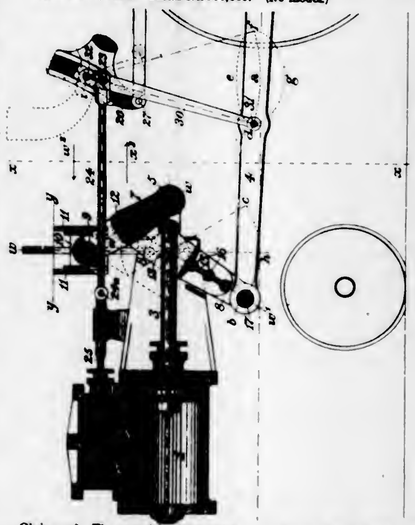
*Claim.*—1. The herein described axle nut made of a single piece of metal of such a size and shape as to approximate the internal diameter and depth of a wheel hub-band, and completely fill the interior recess formed thereby, and provided with a threaded socket or bore extending partly therethrough from its inner side, and also having an annular open groove in its periphery, said groove being closed by the hub-band when the nut is in position, the outer face of the nut being then disposed within the outer edge of the hub-band, substantially as described.

2. The herein described nut, the same being of such diameter as to approximate that of the hub-band, said nut having its inner portion of less diameter than its outer and each provided with an annular oil groove, substantially as specified.

3. The herein-described axle-nut, the same having such shape and size as to approximate the internal diameter and depth of the hub-band and completely filling the recess or cavity formed by the latter, the outer face of the nut having an annular groove 17 forming a central boss 18 with a polygonal face, the boss being arranged flush with the said outer face, substantially as described.



528,294. **MEANS FOR COUNTERBALANCING MOMENTUM OF RECIPROCATING ELEMENTS.** MATTHIAS N. FORNEY, New York, N. Y. Filed Feb. 13, 1894. Serial No. 500,063. (No model.)



*Claim.*—1. The combination, with a reciprocating piston and piston rod, of a primary lever connected at one end to the piston rod and at the other to a sliding member, a fixed guide on which the sliding member moves rectilinearly, a secondary lever journaled in fixed bearings and having one of its arms pivotally connected to the primary lever at the middle thereof, and a connecting rod connected to the opposite arm of the secondary lever, and to a crank, substantially as set forth.

2. The combination, with a reciprocating piston and piston rod, of an articulated system of oscillating levers or links, coupled to the piston rod and forming a guide to insure rectilinear motion thereof, a guiding member for said system of levers, and a connecting rod which is coupled to said system of levers and to a crank, and moves in opposite directions to the piston rod, said connecting rod being of a weight sufficient to counterbalance the piston and rod, substantially as set forth.

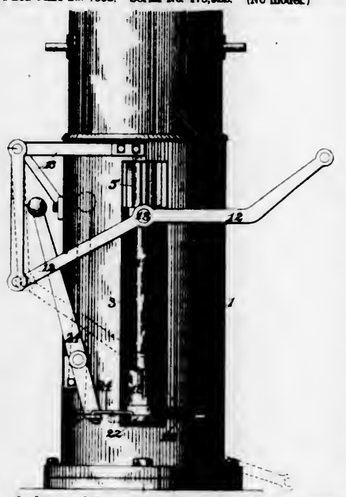
3. The combination, with a reciprocating piston and piston rod, of a primary oscillating lever coupled at one end to the piston rod and having a movable fulcrum at its opposite end, a double armed secondary lever, oscillating in fixed bearings and having one of its arms pivotally connected to the primary lever at the middle thereof, and a connecting rod coupled to the opposite arm of the secondary lever, and to a crank pin and moving in an opposite direction to the piston and its rod whereby the momentum of the said connecting rod counterbalances that of the piston and its rod, substantially as set forth.

4. The combination of a reciprocating piston and piston rod, a primary oscillating lever coupled at one end to the piston rod and having a movable fulcrum at its opposite end, a double armed secondary lever, oscillating in fixed bearings and having one of its arms pivotally connected to the primary lever, a connecting rod coupled to the opposite arm of the secondary lever and to a crank pin, a link oscillating on fixed bearings, a block fitted to slide therein, and a lever coupled to said block, to the connecting rod, and to a distribution valve, substantially as set forth.

5. The combination of a reciprocating piston and piston rod, a primary oscillating lever coupled at one end to the piston rod and having a movable fulcrum at its opposite end, a double armed secondary lever, oscillating in fixed bearings and having one of its arms pivotally connected to the primary lever, a connecting rod coupled to the opposite arm of the secondary lever and to a crank pin, a link oscillating in fixed bearings, a block fitted to slide therein, a lever coupled to said block and to the connecting rod, and an intermediate lever coupled to said lever and to a distribution valve, substantially as set forth.

6. The combination of a cylinder, a piston secured to a piston rod and reciprocating in said cylinder, a distribution valve working on a valve face above the lower line of said cylinder, a counterbalancing lever system, substantially as set forth, coupled to the piston rod, a connecting rod coupled to said counterbalancing lever system and to a crank pin, a link oscillating in fixed bearings, a block fitted to slide therein, a lever coupled to said block and to the connecting rod, and connections coupling said link with a distribution valve, substantially as set forth.

528,295. **MOLDING-MACHINE.** CHARLES HERMAN, Allegheny Pa. Filed June 26, 1893. Serial No. 478,922. (No model.)



*Claim.*—1. In a molding machine, the combination of a movable pattern board, and pattern, a stripping plate movable with the pattern board during the normal operation thereof, a post connected to the pattern board a stop for arresting the downward movement of the stripping plate during the withdrawing movement of the pattern board, and a jarring block, substantially as set forth.

2. In a molding machine, the combination of a movable cross-head or pattern board, a post connected to the pattern board, and a resilient jarring block, substantially as set forth.

3. In a molding machine, the combination of a movable cross-head or pattern board, a post or support movable with the cross-head, and a movable jarring block normally held in line with the post or support, and means for shifting the jarring block out of line with the post or support, substantially as set forth

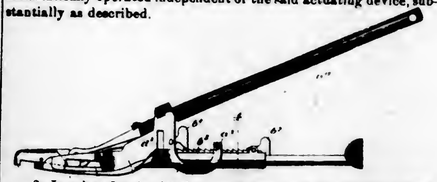
4. In a molding machine, the combination of a base plate having an opening therethrough, a movable carrier normally held over said opening, a jarring block mounted in said carrier, a reciprocating post and a cross-head, or flask-support movable with the post, substantially as set forth.

5. In a portable molding machine, the combination of a guide frame, a base plate attached to the frame, a movable cross head or pattern support, a post connected to the pattern support, a lever pivotally mounted on the frame and connected to the pattern support, and a jarring block carried by the base plate, substantially as set forth.

528,296. **LAST.** EDWARD J. HOWARD, Boston, Mass., assignor, by mesne assignments, to the Household Boot and Shoe Stretcher Company, Portland, Me. Filed Sept. 9, 1893. Serial No. 485,190. (No model.)



*Claim.*—1. In a last for shaping boots and shoes, the combination with a last frame, of a shaping piece or attachment carried by said frame, an actuating device to operate said shaping piece or attachment, and an extensible portion attached to the last frame and automatically operated independent of the said actuating device, substantially as described.



2. In a last for shaping boots and shoes, the combination with a last frame constructed to receive a plurality of pieces or attachments for shaping different parts of the boot or shoe, of a single attachment actuating device or piece carried by said frame and co-operating with each of said attachments, and an extensible heel portion attached to the last frame and automatically operated independent of the said actuating device, substantially as described.

3. In a last for shaping boots and shoes, the combination with a last frame, of a toe attachment or piece and an actuating device to operate said toe attachment, and an extensible heel portion attached to the last frame and automatically operated independent of the said toe actuating device, substantially as described.

4. In a last for shaping boots and shoes, the combination with a last frame, of a combined toe extending and lifting piece consisting of a toe piece and a pawl pivoted to the under side of the said toe piece and normally inactive when the toe piece is moved to lengthen without raising the toe of the shoe, and adapted to engage the last frame to cause the toe piece to move in the arc of a circle to both lengthen and raise the toe of the shoe, and an actuating device operative upon the toe piece in both conditions, substantially as described.

5. In a last for shaping boots and shoes, the combination with a last frame provided with a plurality of attachments, of an actuating device to operate all the said attachments, and a detachable instep raising piece forming one of said attachments, and normally inactive when the said device is operating one of the other attachments and provided with a pawl adapted to co-operate with the actuating device to render the instep piece active, substantially as described.

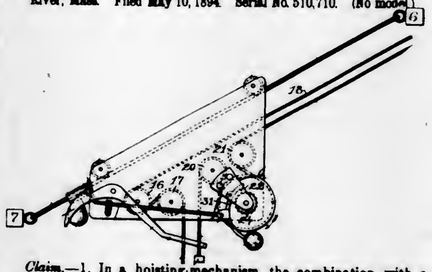
6. In a last frame for shaping boots and shoes, the combination with a last frame provided with side slots $d^3$ $d^3$, of side attachments having fingers at one end to engage said slots, and provided with arms adapted to extend across the last frame, and an actuating device to operate on said arms to turn the said attachments on their fingers as pivots, substantially as described.

7. In a last for shaping boots and shoes, the combination with a last frame, of an automatically extensible portion consisting of a sleeve $b$, and a bar $b'$ movable in said sleeve, rack teeth on said sleeve and bar, and pawls co-operating with said rack teeth, substantially as described.

8. In a last for shaping boots and shoes, the combination with a last frame provided with side openings $d^3$, of side pieces provided with arms normally extended through said openings, and means to act on said arms to operate said side pieces, substantially as described.

9. In a last for shaping boots and shoes, the combination with a last frame, of a plurality of shaping pieces or attachments carried by said frame, a single actuating device operating each of said attachments, and an extensible heel portion attached to said last frame and automatically operated independent of the said actuating device, substantially as described.

528,297. **HOISTING MECHANISM.** GEORGE F. JENNINGS, Fall River, Mass. Filed May 10, 1894. Serial No. 510,710. (No model.)



*Claim.*—1. In a hoisting-mechanism, the combination with a cable way, a chock-block adjustably mounted thereon having a trans-

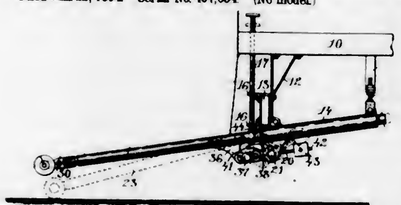
verse plate and a pendent balance-weight, of a carriage depending from the cable way and movable thereon, a pulley, having a V-shaped groove, journaled in the carriage and having a ratchet, smaller grooved pulleys journaled in the carriage above the first mentioned pulley, a pawl pivoted to the carriage and adapted to engage the ratchet, a tripping rod, pivoted to the pawl and extending beyond the front of the same, mounted on the carriage so as to reciprocate, hooks extending beyond the front of the carriage to engage the transverse plate of the chock and having arms pivoted to the sides thereof and depending below the same, a hoisting-cable passing over the small pulleys and under the ratchet pulley, and a cross-arm on said cable adapted to engage the hook arms.

2. In a hoisting-mechanism, the combination with an inclined stay, means for supporting the same the stop 8 having the transverse plate 12 adjustably mounted on the stay, and means for adjusting and holding the stop on the stay of a carriage having side-plates 13 and 14, the trolley-wheels 15—15 journaled in the carriage and traversable on the stay, cable sheaves journaled between the sides of the carriage, the side-bars 27, having hooks 28 and extensions 29, pivoted to the side plates, a hoisting cable mounted on the cable sheaves, and a cross arm for elevating the ends 29 of the hook arms, as described.

3. The combination with an inclined cable, and a stop secured thereto, of a carriage having the side-plates 13 and 14, the trolley-wheels 15 journaled between the same and traversable on the cable, the sheaves 16—17 and 20—21 journaled between the sides plates, the cable 18 passing partially around each of the sheaves 16 and 17, the arm 22 secured to the side plate 14, the friction-sheave 23, journaled between the arm 22 and the plate 13, having a V-shaped groove in its face and the ratchet 24, the pawl 31, having the weight 32, pivoted to the arm 22, the tripping-rod 34 mounted so as to reciprocate and pivotally connected with a portion of the pawl and having the bent end 35, the hoisting-cable 25 passing under the friction-wheel 23 and over the sheaves 20 and 21, and the cross-bar 26 at the end of said cable, as described.

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**528,298. CAR-FENDER.** WILLIAM G. KERR, Providence, R. I. Filed Jan. 22, 1894. Serial No. 497,634. (No model.)



*Claim.*—1. In a fender, the combination with guides adjustably secured to a car-body, shanks movable in said guides, and a fender, having side arms, pivoted to said shanks to move vertically, of means for supporting the fender in the plane of said shanks, and a device for depressing the forward end of the fender.

2. In a fender, the combination with the car-body, brackets depending therefrom, slotted guides secured to the brackets, shanks movable in the guides, a fender, having arms, pivoted to the shanks, depending plates secured to the fender arms, toggle-links pivoted to said plates, and lever-arms, to which the links are pivoted, having sleeves secured to a rotatable movable support, of means for rotating said support.

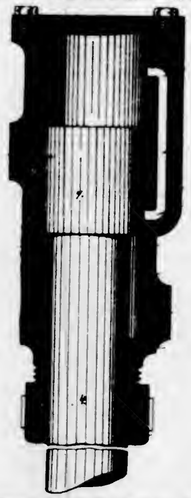
3. In a fender, the combination with slotted guides, shanks movable in said guides, depending bearing-plates secured to the shanks, a shaft journaled in the bearing-plates, and means for rotating the shaft in either direction, of a fender, having arms, pivoted to the shanks, depending plates secured to the arms, toggle-links pivoted to these plates, and lever-arms, having sleeves clamped to the shaft, pivoted to the opposite ends of the links.

4. In a fender, the combination with side bars having sockets at their forward ends and furnished with catches, plates having members movable in the sockets, springs for moving the members forward, and stops for limiting their movement, of wings pivotally secured to said plates, springs for opening the wings, and catches adapted to engage the catches on the side bars.

5. The combination with a car-body, brackets depending therefrom, slotted-guides secured to the brackets, shanks or arms movable in the guides, the bearing-plates 20 secured to the shanks, the shaft 21 journaled in the bearing-plates, the arm 41 secured to the shaft, a vertically movable plunger adapted to operate said arm, the arm 42 extending rearwardly from said shaft, and the counterweight 43 adjustable on said arm, of a fender having the side arms 23 pivoted to the forward ends of the shanks, the plates 36 depending from the side arms, the toggle-links 37 pivoted to said plates, the lever-arms 38, secured to the sleeves 39, to which the opposite ends of the links 37 are pivoted, the sleeves 39 secured on the shaft 21, the arms 44 extending from the sleeves, and means for interrupting the backward movement of these arms.

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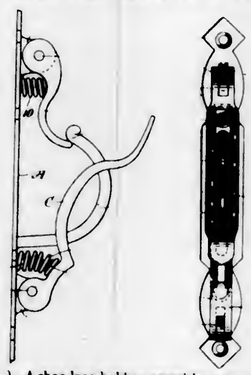
**528,299. DIRECT-ACTING ENGINE.** JAMES KIDD, Buffalo, N. Y. Filed Jan. 27, 1894. Serial No. 498,211. (No model.)



*Claim.*—An improved form of cylinder and piston for steam or compressed air engines consisting essentially of a piston having a narrow annular shoulder at the piston rod end, a cylinder of uniform interior dimensions throughout its length having an inlet-passage entering the cylinder away from its end to provide a tight space for a steam or air cushion, a single exhaust passage leading therefrom which is alternately opened and closed by the piston in its travel and a passage in the side wall of the cylinder, one end opening near the middle of the cylinder and the other one away from the end of the cylinder to provide a tight space for a steam or air cushion, such passage conducting the steam under pressure or the compressed air to the cylinder space in front of the piston to cause the return stroke, the piston in its travel alternately opening and closing the ends of the passage in the side wall of the cylinder.

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**528,300. SHOE-LACE HOLDER.** GEORGE R. MONGEAU, Lowell, Mass. Filed Aug. 9, 1894. Serial No. 519,870. (No model.)



*Claim.*—1. A shoe-lace holder comprising a base or body having an outwardly projecting bow-shaped portion adapted to receive and support a bunch of shoe-laces and a spring-actuated clamping arm or lever extending up behind the bow and pressed outwardly toward the front of the bow to hold said bunch against the front portion of the bow with a yielding pressure, substantially as described.



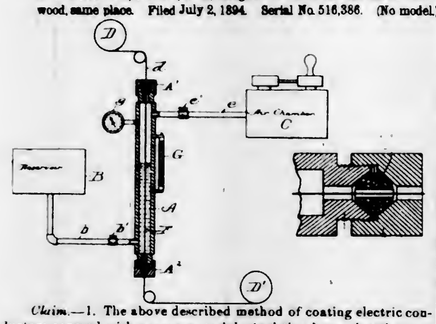
2. In a shoe-lace holder, the base or body A having an outwardly projecting portion B adapted to receive and support a bunch of shoe-laces, said portion B being provided with a spring actuated latch-piece c, in combination with a spring-actuated clamping arm or lever C extending upwardly across the bow and pressed forwardly by its spring to hold said bunch against the front of the portion B with a yielding pressure, substantially as set forth.

3. In a shoe lace holder, the base or body A having an outwardly projecting portion B adapted to receive and support a bunch of shoe-laces in combination with the spring actuated arm or lever C pivoted to the base beneath the bow B, and provided with a slot c, whereby it is adapted to pass over said bow and exert an outward pressure against the bunch of shoe-laces within the same, substantially as set forth.

4. In a shoe-lace holder, the combination of the base or body A having an outwardly projecting bow-shaped portion B, the curved-lever C pivoted to the base beneath the bow B and adapted to extend up behind the bunch of shoe-laces within said bow B, said lever being provided with a slot e whereby it is adapted to pass over and embrace the bow B, and the spring f adapted to exert an outward pressure on the lever C to hold the shoe-laces against the bow B with a yielding pressure, substantially as set forth.

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**528,301. ART OF COATING ELECTRIC CONDUCTORS.** ALBERT F. MONTGOMERY, Lincoln, R. I., assignor to Lawrence Abraham Lockwood, same place. Filed July 2, 1894. Serial No. 516,386. (No model.)

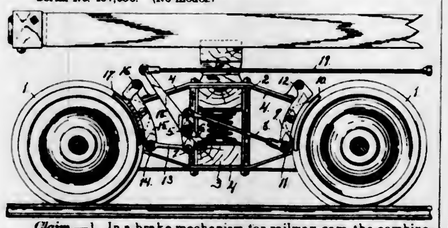


*Claim.*—1. The above described method of coating electric conductors covered with porous material consisting in moving the covered conductor lengthwise through a vacuum chamber and through a liquid partly filling that chamber, substantially as described.

2. The apparatus above described consisting of a tank, means for supplying liquid to the tank, means for creating a vacuum in the tank above the liquid; and means for drawing the wire to be coated through the tank; all organized and operating substantially as described.

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**528,302. CAR-BRAKE.** PETER MCMULLEN, Buffalo, N. Y., assignor of one-half to Michael Callahan, same place. Filed Oct. 9, 1893. Serial No. 487,658. (No model.)



*Claim.*—1. In a brake mechanism for railway-cars, the combination with the wheels of the truck, and a diamond-frame connecting the axles thereof; of brackets mounted upon said frame, levers pivotally connected at their upper ends to said brackets, double-armed levers connected with a source of power, connections between the double-armed and single levers for moving the latter, and brake shoes centrally pivoted to said single levers and standing adjacent the inside and upper portions of the treads of the wheels, as and for the purpose set forth.

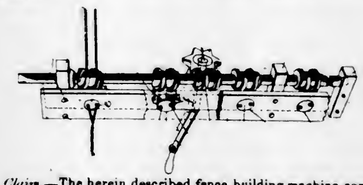
2. In a brake mechanism for railway-cars, the combination with the wheels of the truck, and a diamond-frame connecting the axles thereof; of brackets mounted upon said frame, levers pivotally connected at their upper ends to said brackets, double-armed levers connected with a source of power, rods connecting the opposite ends of the double-armed levers with the lower ends of said single levers, and brake shoes centrally pivoted to the single levers and standing adjacent the inside and upper portions of the treads of the wheels, as and for the purpose set forth.

3. In a brake mechanism for railway-cars, the combination with the wheels of the truck, and a diamond frame connecting the axles thereof; of brackets mounted upon said frame, cross-rods mounted in said brackets, levers connected at their upper ends with said cross-rods and having their lower ends connected by other cross-rods, connections between the latter cross-rods and a source of power for applying the brakes, and brake shoes centrally pivoted to said levers and standing adjacent the inside and upper portions of the treads of the wheels, as and for the purpose set forth.

4. In a brake mechanism for railway-cars, the combination with the wheels of the truck, and a diamond-frame connecting the axles thereof; of brackets mounted upon said frame, cross-rods mounted in said brackets, levers connected with said cross-rods and having their lower ends connected by other cross-rods, double-armed levers moved by a source of power, rods connecting the opposite ends of the double-armed levers with the cross-rods at the lower ends of said single levers, and brake shoes connected with the single levers and standing adjacent the inside and upper portions of the treads of the wheels, as and for the purpose set forth.

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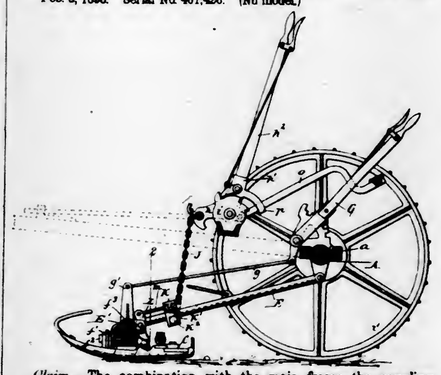
**528,303. FENCE-BUILDING MACHINE.** CHARLES NEATE, Upper Sandusky, Ohio. Filed Aug. 23, 1894. Serial No. 521,072. (No model.)



*Claim.*—The herein described fence building machine consisting essentially of the frame A, comprising the uprights having apertures *b* at intervals in their length, and the blocks D interposed between and connected with the uprights and having the extended portions *d*, the twister spools having trunnions journaled in the apertures *b* of the uprights and also having the passages *e* and the peripheral gear teeth *f*, the vertical shaft stepped at its lower end in the extended portion of the lowermost block D and journaled in the extended portions of the other blocks, the worm-screws F fixed on said shaft and engaging the gear teeth *f* of the twister spools, the worm screw F' also fixed on the shaft E, and the shaft H journaled in suitable bearings on one of the uprights of the frame and having a pinion at one end engaging the worm-screw F' and having a crank handle at its opposite end, all substantially as and for the purpose set forth.

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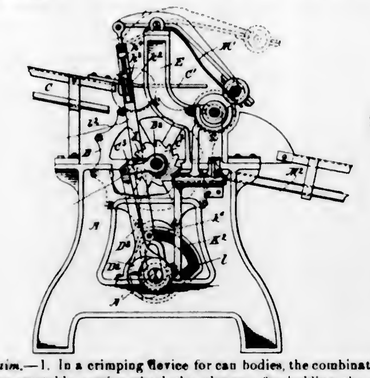
**528,304. MOWING-MACHINE.** EDWARD PRIDMORE, Batavia, N. Y., assignor to the Johnston Harvester Company, same place. Filed Feb. 8, 1893. Serial No. 461,426. (No model.)



*Claim.*—The combination with the main frame, the coupling frame, the shoe pivoted on the coupling frame, and the cutter mechanism pivoted on the shoe, of a gag lever arranged on the coupling frame and bearing with its lower arm against the shoe, a loop arranged on the coupling frame in rear of the gag lever, a lifting lever

arranged on the main frame above the loop, a chain arranged with its lower end in said loop and secured with its upper end to the lifting lever, and a rod secured with its front end to the upper arm of the gag lever and with its rear end to the lower end of the chain, substantially as set forth.

## 528,305. CRIMPING-MACHINE FOR CAN-BODIES. HENRY SCHAAKE, San Francisco, Cal. Filed Aug. 23, 1893. Serial No. 483,816. (No model.)



*Claim.*—1. In a crimping device for can bodies, the combination with the rotatable carrier wheel, the plungers for holding the can bodies while being crimped, mechanism for operating the plungers, in order to rotate the can bodies while held therebetween, and the crimping rolls, of mechanism for raising and lowering the crimping rolls, and a device for regulating the vertical movement of the crimping rolls in order to adjust the pressure thereof upon the can bodies.

2. In a crimping device for can bodies, the combination with the rotatable carrier wheel, the sockets or seats cut therein, the rods loosely working within the carrier wheel, upon which the can bodies rest and revolve, the plungers for holding the bodies while being crimped, and mechanism for operating the plungers.

3. In a crimping device, the combination with the rotatable carrier wheel, which receives and carries the can bodies while being crimped, of the run-way for feeding the can bodies to the carrier wheel, guide strips for holding the can bodies in position, the crimper rolls, and mechanism for raising and lowering the crimper rolls.

4. In a crimping machine, the combination with the carrier wheel, seats or sockets cut in the periphery thereof, supporting rods loosely working therein, the grooved collars fastened to said rods, the grooved crimping rolls, and mechanism for raising and lowering the crimping rolls.

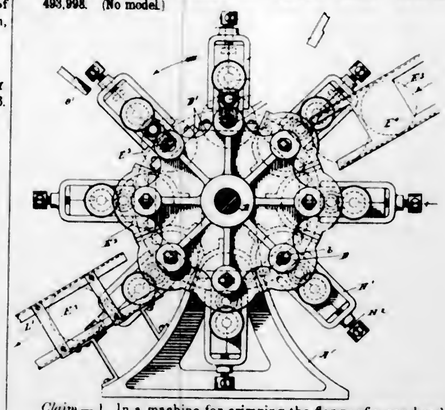
5. In a crimping machine for can bodies, the combination with the carrier wheel, the crimping rolls, the curved lever carrying the crimping rolls, mechanism for automatically operating the curved lever in order to raise or lower the crimping-rolls, and a device for adjusting the lift of the lever in order to regulate the pressure of the crimping rolls upon the can bodies.

6. In a crimping machine, the combination with the carrier wheel, mechanism for imparting a step rotation thereto, a device for engaging with the carrier wheel in order to give a positive stop thereto, mechanism for automatically releasing said device with each revolution of the operating shaft, plungers for holding the can bodies during the operation of crimping, the crimping rolls, mechanism for automatically raising and lowering the crimping rolls, and a device for regulating the pressure of the rolls upon the can bodies.

7. In a crimping machine, the combination with the carrier wheel, the run-way for feeding the can bodies to the carrier wheel, and the guide strips projecting beyond the end of the runway for holding the can bodies in position when received by the carrier wheel.

8. In a crimping machine, the combination with the carrier wheel provided with can body seats, run-way for supplying cans thereto, guide strips for holding the cans in position, until received between the plungers, plungers for receiving and holding the can bodies while being crimped, said plungers having a rotary motion, mechanism for automatically moving the plungers inward to grasp the can bodies, and outward to release the can bodies after being crimped, the crimping rolls, mechanism for automatically raising and lowering the crimping rolls, run-way for receiving the cans as discharged from the carrier wheel, and the guard for preventing the can from moving from seats in the carrier wheel until in position to be discharged

## 528,306. MACHINE FOR CRIMPING CAN-HEAD FLANGES. HENRY SCHAAKE, San Francisco, Cal. Filed Dec. 18, 1893. Serial No. 493,998. (No model.)



*Claim.*—1. In a machine for crimping the flange of a can head, the combination with the crimping rolls, of a device for receiving the can head and holding the same during the operation of crimping, and of mechanism for forcing the holding device in and out, so as to place the flange of the head between the crimping rolls and remove the same therefrom after the flange has been crimped.

2. In a machine for crimping the flange of a can head, the combination with the adjustable crimping rolls, of mechanism for imparting rotary motion thereto, a device for receiving the can head and holding the same during the operation of crimping the flange thereof, and of mechanism for forcing the holding device in and out so as to place the flange of the can head between the crimping rolls and remove the same therefrom after the flange has been crimped.

3. In a machine for crimping the flange of a can head, the combination with the adjustable crimping rolls, of a regulating device for raising and lowering the crimping rolls, a device for receiving and holding the can head while the flange is being crimped, and of mechanism for moving the holder in and out so as to place the can head flange between the crimping rolls and remove the same therefrom after being crimped.

4. In a machine for crimping the flange of a can head, prior to its being secured to the body of a can, the combination with the crimping rolls, a device for receiving the can heads, chutes for supplying heads to the holding device, and of mechanism for automatically forcing the holding device inward so as to place the flange of the can head between the crimping rolls, maintaining the same in this position until the flange is crimped and automatically releasing the holding device after the flange has been crimped.

5. In a machine for automatically crimping the flange of a can head, the combination with the rotary traveling mechanism, the crimping rolls carried thereby, mechanism for imparting motion to the crimping rolls, the holding device for the can head, the feed chute for supplying heads thereto, and of mechanism for forcing the head holding device in and out so as to place the can head flange between the crimping rolls and remove the same therefrom after having been crimped.

6. In a machine for automatically crimping the flange of a can head, the combination with the rotary mechanism, the adjustable crimping rolls, gear mechanism for imparting motion to the crimping rolls, the holding device for the head, the feed chute for supplying heads thereto, mechanism for forcing the head holding device inward so as to place the flange between the crimping rolls, holding the same in such position during the operation of crimping, and forcing it outward after having been crimped, and of the chute for receiving the heads as discharged from the holding device.

7. In a machine for crimping the flange of a can head, the combination with the crimping rolls, mechanism for imparting motion thereto, the rotating disk for imparting rotary travel to the crimping rolls, the spring actuated piston carried by a rotary traveling disk, the cam for forcing the piston inward during its travel, the device for holding the head carried by the piston and moved therewith, the chute for feeding heads to the holding device, and of the chute for receiving the discharged heads.

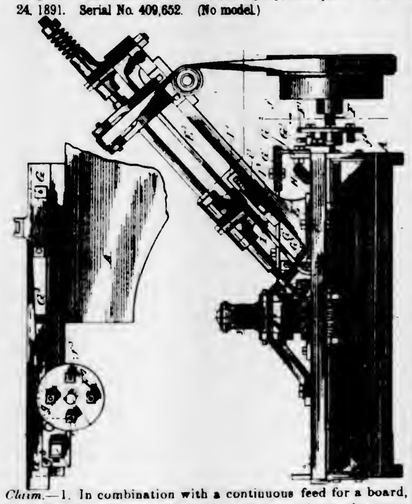
8. In a machine for crimping the flange of a can head, the combination with sliding boxes working within a frame, of the crimping rolls carried thereby, one of said boxes being spring actuated, mechanism for imparting motion to the crimping rolls, the holding device for the can heads, mechanism for moving the holding device to and from the crimping rolls, the feed chute for supplying heads and the chute for receiving the discharged heads.

9. In a machine for crimping the flange of a can head, the combination with the operating shaft, the sleeve loosely mounted thereon, disks projecting from said sleeve, the gear keyed to the operating shaft, a frame carried by the inner disks, sliding boxes secured within the frame, pinions located within the sliding boxes, operated by the gear wheel, crimping rolls operated by the pinions, the spring actuated piston working through the outer or larger disk, the head holding device carried by the piston, the cam for forcing the piston and head holding device toward the crimping rolls, the feed chute for supplying heads to the machine, and the chute for receiving the discharged heads.

10. In a machine for crimping the flange of a can head, the combination with the adjustable crimping rolls, of a device for automatically lowering the crimping rolls so as to bear upon the flange of the can head, and raising same to permit the flange to be withdrawn after having been crimped, a device for receiving the can head, and of mechanism for automatically moving said holding device inward so as to place the flange of the head between the crimping rolls, holding the same during the operation of crimping and removing the heads after the flange thereof has been crimped.



## 528,307. BORING-MACHINE. HERMAN C. SCHULZ, Chicago, Ill., assignor to the Lumber District Mill Company, same place. Filed Oct. 24, 1891. Serial No. 409,652. (No model.)



*Claim.*—1. In combination with a continuous feed for a board, and a rotating, laterally movable and lengthwise reciprocating mandrel carrying a boring tool, a rotatable shaft carrying a roller arranged in position to peripherally engage a surface of the board and adapted to be rotated by movement of the latter, a disk fixed to said shaft and provided with one or more pins or projections, a slide having means for its engagement with and disengagement from said pin or pins and connected with the mandrel, whereby, when so engaged the mandrel may move with the board, a spring arranged to move the mandrel sidewise in a direction opposite to that in which the board moves, means for forcing the mandrel toward the board while it is laterally moving in the same direction as the board and adapted to cease its action at a predetermined time, and a spring arranged to retract the mandrel lengthwise, when the means for forcing it in the opposite direction ceases to act.

2. In combination with a continuous feed for a board, an arm directed toward the board and so pivoted at its outer end as to vibrate along the path of the board, a rotating mandrel mounted on said arm and adapted to reciprocate thereon, a spring arranged to move the arm laterally in a direction opposite to that in which the board moves, a spring arranged to retract the mandrel lengthwise away from the board, mechanism actuated by the board for moving the arm in the same direction as that in which the board moves, and a self-tripping mechanism for moving the mandrel toward the board simultaneously with its lateral movement in the same direction as that of the board.

3. In combination with a laterally and longitudinally movable mandrel carrying a boring bit, means for reciprocating said mandrel, consisting of a vibrating pawl as I, connected at its pivoted end with the mandrel, a stop for the engagement of the free end of the pawl, means for disengaging the pawl from the stop, and a spring for retracting the mandrel upon such disengagement of the pawl.

4. In combination with a continuous feed for a board, a pivoted tool-carrying arm having its free end directed toward the board to be perforated; a rotating mandrel mounted on said arm, said mandrel carrying a boring bit and being adapted to have a longitudinal movement; a slide adapted to reciprocate in a path parallel with the board; a rotatable shaft adapted to be set in motion by the board, a ratchet fixed to said shaft; an automatically disengaging pawl connected with the slide and adapted to engage the ratchet; a connection between the slide and the tool carrier and a spring arranged to retract the tool-carrier laterally.

5. In combination with a continuous feed for a board, an inclined arm E, supporting guide pulleys $e^7$ $e^8$ for a belt, a vibratory arm $E^2$ pivoted to the arm E at its outer end, a mandrel $E^3$, supported on the arm $E^2$, having a belt pulley $e^9$, and adapted to reciprocate with respect to the arm $E^2$, a slide G carrying a pawl $G^2$, and provided with a lateral arm G', a rod, as $G^3$ connecting the arm G' with the free end of the arm $E^2$, a shaft F, adapted to engage the board and to be rotated thereby, a disk F, provided with one or more pins arranged to be engaged by the pawl $G^2$, for advancing the arm $E^2$ laterally, a tripping stop for disengaging the pawl, a spring H for retracting the arm $E^2$ laterally, means for advancing the mandrel lengthwise as it advances laterally and means for retracting the mandrel lengthwise, preparatory to its lateral retraction.

## 528,308. METHOD OF AND APPARATUS FOR MAKING RUBBER TYPE. LOUIS K. SCOTFORD, Chicago, Ill. Filed May 10, 1894. Serial No. 510,765. (No model.)



*Claim.*—1. The method of making matrices for rubber type which consists in securing metal type in a frame or chase, securing around the chase spacing bars, pressing against the type and the bars, the plastic material to form the matrix, and thereafter detaching the said bars from the chase and securing them to the matrix, substantially as described.

2. An apparatus for making rubber type comprising a chase in which the type are secured, a recessed plate for holding the plastic material which forms the matrix and spacing bars adapted for attachment either to the chase or to the recessed plate, substantially as described.

3. An apparatus for making rubber type comprising a chase, a recessed plate, spacing bars, and means for detachably securing the spacing bars the chase and the recessed plate, substantially as described.

4. An apparatus for making rubber type comprising a chase, a recessed plate, spacing bars made of proper size to enter within the side walls of the recessed plate, and adapted for attachment to either the chase or the recessed plate, substantially as described.

5. An apparatus for making rubber type, comprising a chase, a recessed plate, spacing bars made of proper size to enter within the side walls of the recessed plate, and means for detachably securing the said bars both to said chase and recessed plate, substantially as described.

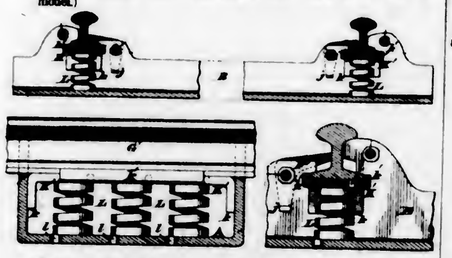
6. An apparatus for making rubber type comprising a chase, a recessed plate, spacing bars adapted for attachment to either the chase or the recessed plate, said chase and recessed plate being provided with pins and sockets to hold them in register, substantially as described.

7. An apparatus for making rubber type comprising a chase, a recessed plate, spacing bars adapted for attachment either to the chase or to the recessed plate, one of said parts being provided with guide pins and the other with sockets for the same, and coiled springs placed around the pins to separate the recessed plate from the platen, substantially as described.

8. An apparatus for making rubber type comprising a chase a recessed plate, and spacing bars, said spacing bars being provided with screw holes, and both the chase and recessed plate being also provided with screw holes arranged opposite those of the spacing bars, whereby the latter may be attached either to the chase or to the recessed plate, substantially as described.

9. An apparatus for making rubber type comprising a chase, a recessed plate, and spacing bars adapted to fit within the side walls of the recessed plate, said spacing bars being provided with screw holes, and both the chase and recessed plate being provided with screw holes opposite those in the spacing bars, whereby the latter may be secured either to the chase or to the recessed plate, substantially as described.

**528,309. RAILWAY-TRACK.** WILLIAM R. SMITH, Riverside, Ohio, assignor of two-thirds to John W. Fisher, same place, and Thomas Clifton, Cincinnati, Ohio. Filed Aug. 8, 1894. Serial No. 519,729. (No model.)



*Claim.*—1. In a railway-track, the metallic cross-tie A, having vertical side-flanges B, B'; the rails G, G', applied to said tie; and the bell-crank keepers J *j*, secured to said flanges, in the manner described, to prevent accidental detachment of said rails, as set forth.

2. In a railway-track, the metallic cross-tie A B B', having integral abutments C, C', D, D', and lugs E, E', F, F'; the bolts H, H', I, I', traversing said abutments and lugs, in the manner described; the keepers J *j*, secured to the side flanges B, B', of said tie; the springs L, housed within the latter; the chairs K, K' carried by said springs; and the rails G, G', supported upon said chairs; all as herein set forth.

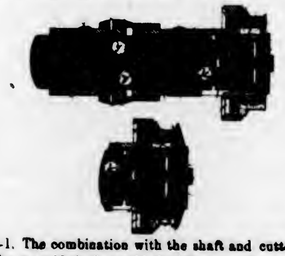
**528,310. DEVICE FOR TEACHING VOCAL MUSIC.** MARY M. VOET, Rochester, N. Y. Filed May 28, 1894. Serial No. 512,823. (No model.)



*Claim.*—1. A device adapted to be placed upon the face to aid in singing, consisting of two slotted, curved, overlapping bars and a fastener therefor, each bar being provided at its free end with a pad or cushion in position to press the sides of the face, substantially as shown and described.

2. A device to be worn upon the face by a person learning to sing, consisting of two curved, overlapping bars, formed with slots in the contiguous parts, and a fastener for said bars occupying the slots, the bars being adjustable upon each other and of a yielding nature and each provided with a pad to press the cheek of the wearer, in combination with elastic holders secured to the bars in positions to pass over the head and back of the neck respectively, substantially as shown and described.

**528,311. ROTARY TRIMMER.** AMBROSE S. VOSE, Boston, Mass. Filed Jan. 11, 1894. Serial No. 496,482. (No model.)

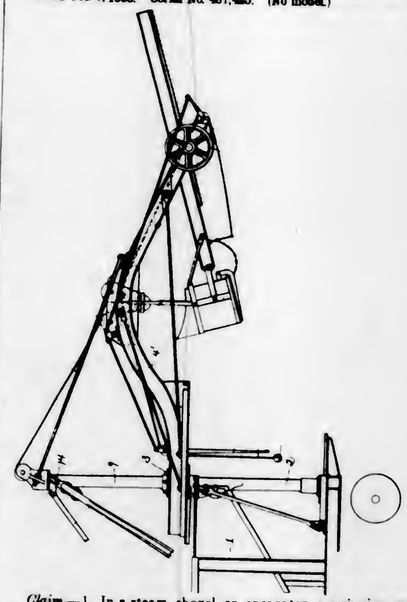


*Claim.*—1. The combination with the shaft and cutter-head of the fixed collar on said shaft provided with an annular groove, a nut fitted to rotate on said shaft and having a projection entering said groove; the threaded sleeve on said shaft turned into said nut and provided with the cap flange overlapping said head.

2. The combination with the cutter-head and knives, of the shaft, nut, the nut turned into said head; the screw connecting said nut and shaft; and the flanged guide-cap held by the screw and overlapping said head, substantially as and for the purpose set forth.

3. The shaft and cutter-head in combination with the detachable knives having lips, 16; the cap, E, provided with flanges, 19, and, 20, and mechanism for securing said cap and head to the shaft.

**528,312. STEAM SHOVEL OR EXCAVATOR.** JOHN B. WEBBER, Toledo, Ohio, assignor to the Vulcan Iron Works Company, same place. Filed Oct. 7, 1893. Serial No. 487,425. (No model.)



*Claim.*—1. In a steam shovel or excavator, a swinging crane having its highest point substantially central of its length, a shovel or dipper handle movably secured at the outer end, and means for drawing the dipper toward the excavator in filling, and into the raised portion of the crane for discharge.

2. In a steam shovel or excavator, a swinging crane comprising channel bars secured to the trunnion and having an upwardly central curved portion, sheaves journaled in the curved portion, a shovel or dipper handle movably secured at the outer end, and a hoisting rope or cable secured to the shovel or dipper and passed over the sheaves, whereby the shovel or dipper may swing from the excavator in lowering, and be drawn toward the excavator in filling, and into the curved portion in swinging.

3. In a steam shovel or excavator, the mast, the swinging circle secured therein, a crane secured to the circle trunnion, a supplemental removable mast supported centrally of the circle having braces secured to the supplemental mast and crane.

4. In a steam shovel or excavator, the excavator frame, a sectional mast supported thereon, a crane journaled upon the mast intermediate its length, braces extending from the excavator frame to the top of the mast, and braces from a casting revolubly secured upon the top of the mast to the crane.

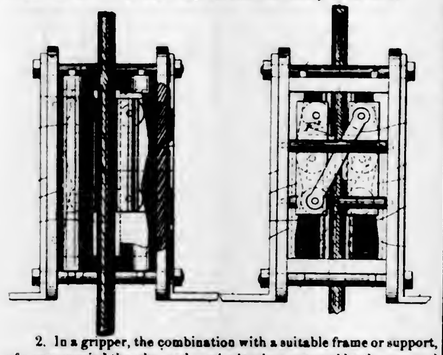
5. In a steam shovel, a mast formed with a conical upper end and a shouldered bearing, a circle wheel trunnion upon the shoulder having an annular bearing, and a supplemental mast formed with a shouldered annular bearing to fit the end of the mast, whereby the two bearings may telescope and rest upon the shoulders.

6. In a steam shovel or excavator, the excavator frame, a sectional hollow mast secured thereon, a crane journaled upon the mast intermediate its length, a casting carrying a sheave revolubly secured upon the top of the mast, a dipper handle carried by the crane, and a hoisting rope or cable connected with the dipper passing over the sheave and through the mast to the hoisting mechanism, and means for holding the mast in position.

**528,313. CABLE-GRIPPER.** JAMES WHITALL, Chicago, Ill. Filed May 16, 1894. Serial No. 511,402. (No model.)

*Claim.*—1. In a gripper, the combination with a suitable frame or support, of a cam carried thereby, a gripping jaw engaged by the cam and capable of moving relatively thereto in the direction of the length of the cable, said jaw having a yielding friction pad adapted to engage the cable, and rollers adapted to engage and bite the cable when the friction pad is compressed, substantially as set forth.





2. In a gripper, the combination with a suitable frame or support, of a cam carried thereby, and a gripping jaw engaged by the cam and capable of moving relatively thereto in the direction of the length of the cable, said jaw having rollers engaging the cam, and a friction pad projecting beyond a plane which touches the peripheries of the rollers on the side adjacent the cable, substantially as set forth.

3. In a gripper, the combination with a suitable frame or support, of a cam carried thereby, and a gripping jaw engaged by the cam and capable of moving relatively thereto in the direction of the length of the cable, said jaw having rollers engaging the cam and having a yielding pad projecting beyond a plane which touches the peripheries of the rollers on the side adjacent the cable, substantially as set forth.

4. In a gripper, the combination with a suitable frame or support, of a pair of oppositely located cams carried thereby and a pair of gripping jaws engaged by the cam and capable of moving relatively thereto in the direction of the length of the cable, said jaws having anti-friction rollers engaging the cams and adapted to engage and bite the cable, substantially as set forth.

5. In a gripper, the combination with a suitable frame or support, of a pair of oppositely located cams carried thereby, and a pair of gripping jaws capable of moving relatively to the cams in the direction of the length of the cable, said jaws having anti-friction rollers engaging the cams, and friction pads projecting beyond a plane which touches the peripheries of the rollers on the side adjacent the cable, substantially as set forth.

6. In a gripper, the combination with a suitable frame or support, of a pair of cams carried thereby, and a pair of gripping jaws engaged by the cams and capable of moving relatively thereto in the direction of the length of the cable, and means connecting said jaws and permitting their relative lateral movement toward or from each other while restraining them from relative endwise movement, substantially as set forth.

7. In a gripper, the combination with a suitable frame or support, of a pair of oppositely located cams carried thereby, and a pair of gripping jaws engaged by the cams and capable of moving relatively thereto in the direction of the length of the cable, and a link pivotally connected at one end to one end of one of the jaws and at the other end to the opposite end of the other jaw, substantially as set forth.

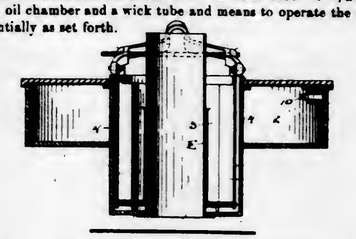
8. In a gripper, the combination with a suitable frame or support, of a cam carried thereby, and a gripping jaw engaged by the cam and capable of moving relatively thereto in the direction of the length of the cable, said jaw having a recessed housing, anti-friction rollers journaled in said housing, and adapted to engage and bite the cable and a friction pad secured in one of the recesses of the housing, and adapted to engage the cable substantially as set forth.

9. In a gripper, the combination with a suitable frame or support, of a cam carried thereby, and a gripping jaw engaged by the cam and having flanges engaging guiding shoulders upon the frame or support, substantially as set forth.

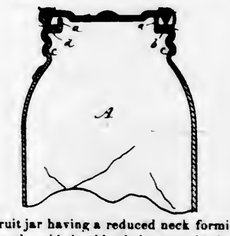
**528,314. OIL-BURNER.** CHARLES WHITTINGHAM, Cleveland, Ohio, assignor to the Cleveland Foundry Company, same place. Filed July 16, 1894. Serial No. 517,637. (No model.)

*Claim.*—1. The burner described having a central wall —4— and an air and burner tube inside of the same, thereby forming an intermediate wick space, in combination with a wick tube constructed to slide and engage frictionally on the said air and burner tube, a bridle fixed to the said wick tube, links —20— connected at each side with said bridle and a bifurcated pivoted lever connected with said links and serving to operate the wick tube, substantially as set forth.

2. The burner described consisting of the body A cast in a single piece and comprising the central vertical cylindrical wall —4— and the annular oil chamber about the top portion of the inner wall —4— and relatively of half the depth of said wall, a separate tube —7— fixed to the bottom of the wall —4— and set apart therefrom and extending above said wall, an oil duct from the bottom of the oil chamber to the chamber between wall —4— and tube —7—, a cover for the oil chamber and a wick tube and means to operate the same, substantially as set forth.

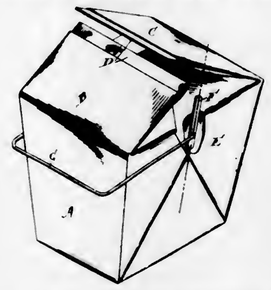


**528,315. FRUIT-JAR.** JOHN H. WILLIAMS, Albion, N. Y. Filed Dec. 7, 1891. Serial No. 414,266. (No model.)



*Claim.*—A fruit jar having a reduced neck forming a flat shoulder around its mouth, said shoulder being provided with an upright vent orifice therethrough; combined with a flat packing ring resting upon and of the same width as said shoulder and closing the orifice, a cover whose body stands over the neck and whose downturned edge has a sharp corner resting on the packing ring outside the orifice, a tubular clamp screwing on the body of the jar, extending over the outer edge of said packing ring, and having an inturned upper end embracing the edge of said cover, and a mark on said body of the jar below the lower edge of the clamp and opposite the orifice, as and for the purpose set forth.

**528,316. BUCKET-FASTENER.** HENRY L. R. WOLF, Dayton, Ohio. Filed Aug. 10, 1894. Serial No. 519,943. (No model.)

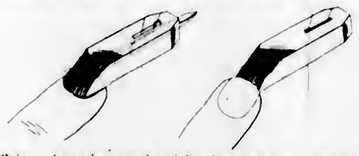


*Claim.*—1. In a box fastener, the combination with the box proper a portion of which is of more than one thickness, with an intervening space, and having a transverse perforation through such thicknesses, and a slot through one of them, of a strip of material fitting within said space and projecting through said slot and being perforated, and a device which passes through said thicknesses and said strip to hold the latter, the strip being pliable so as to be bent.

2. In a box fastener, the combination with the box proper, having its sides formed with at least two thicknesses each, and provided with transverse perforations and a slot in one thickness at each side, of a strip fitting between the thicknesses at each side and extending through said slot at each side, and a bail whose ends are passed through said perforation and strips, and bent to prevent withdrawal, the strips being pliable.

3. In a box fastener, the combination with a box having sides of at least two thicknesses each and provided with transverse perforations, and a slot through one thickness, and having lids which are reinforced by a stiffening piece adapted to overlap one another, of stripe fitted between the thicknesses at either side and extending through said slots and adapted to fold down upon the upper lid, and a bail passing through the thicknesses and the stripe and bent to prevent withdrawal.

528,317. MANICURE INSTRUMENT. CHARLES J. BAILEY, Newton, Mass. Filed Apr. 22, 1893. Serial No. 471,388. (No model.)



*Claim.*—As an improved article of manufacture, the within described manicure instrument, consisting essentially of a block of flexible rubber having one end inclined and rounded longitudinally and transversely, said end also being corrugated or ribbed longitudinally substantially as set forth.

528,318. FEED-WATER PURIFIER. STERLING L. BAILEY, Chicago, Ill. Filed Aug. 2, 1894. Serial No. 519,274. (No model.)



*Claim.*—1. In combination with a shell or casing, an internal core or cylinder composed of alternate notched or perforated rings and perforated disks, resting one upon another substantially as shown and described, the exposed surfaces within the shell being of relatively electro-positive and electro-negative substance.

2. In combination with shell A and copper lining D, a series of perforated disks E and notched or perforated rings F superposed one upon another in axial alignment with the shell or casing and composed of material which will co-operate with the copper lining to produce galvanic action.

3. In combination with shell or casing A, a series of disks E provided with passages from face to face, and an alternating series of rings F provided with lateral openings,—the surfaces exposed within the shell being relatively electro-positive and electro-negative, substantially as set forth.

4. In combination with shell or casing A provided with lugs *a*, an internal core or cylinder composed of alternate perforated disks E, and notched rings F provided with outwardly projecting lugs *g*, the surfaces exposed within the shell being relatively electro-positive and electro-negative, substantially as set forth.

528,319. PIPE-HANGER. ALLAN J. BEATON, New Britain, Conn. Filed May 3, 1893. Serial No. 472,881. (No model.)

*Claim.*—In a pipe hanger, the bracket A having a supporting shank and two chain holding sockets 4 and 5, one of which is designed for suspending the chain therefrom at right angles to the shank, and the other for suspending the chain in the same general direction as the shank, substantially as described and for the purpose specified.



528,320. NUT AND BOLT LOCK. THOMAS BERRIDGE, Stirgis Mich. Filed Apr. 20, 1894. Serial No. 508,293. (No model.)

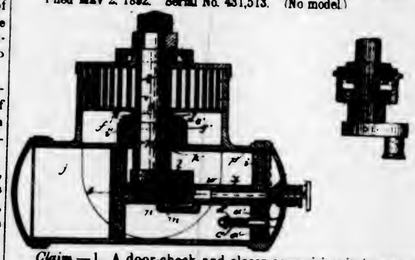


*Claim.*—1. In a nut fastening device, the combination with a part perforated to receive a bolt, and a recess therein, of a bolt adapted to be irrevolubly secured with respect to that part, and a nut for the bolt having an unyielding tapered zone adapted to enter the recess, the angles of inclination of the walls of the zone and the walls of the recess being different, substantially as set forth.

2. In a nut fastening device, the combination with a part perforated to receive a bolt, and a recess therein, of a nut adapted to be drawn by a bolt into the recess, and an unyielding tapered zone upon the nut, the angles of inclination of the walls of the zone and of the walls of the recess being different, substantially as set forth.

3. In a nut fastening device, the combination with a part perforated to receive a bolt, a bolt and means for rendering the bolt irrevoluble with respect to that part, of a recess in the part, a nut for the bolt, and an unyielding tapered zone upon the nut adapted to enter the recess, the angles of inclination of the walls of the zone and of the walls of the recess being different, substantially as set forth.

528,321. DOOR CHECK AND CLOSER. EUGENE I. BLOUNT, Gardner, assignor to the Blount Manufacturing Company, Boston, Mass. Filed May 2, 1892. Serial No. 431,513. (No model.)



*Claim.*—1. A door-check and closer comprising in its construction a piston operating spindle, a liquid chamber, and a packing nut *i'*, provided with the chamber *g'*, and the back-flow ports *l'*, as set forth.

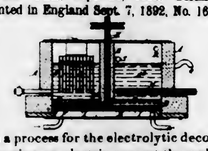


2. A door-check and closer comprising in its construction a piston operating spindle, a liquid chamber, a packing nut *i'*, packing arranged in said nut and surrounding the spindle, a ring or follower *i* bearing against said packing, and a spring bearing against said follower, as set forth.

3. A door-check and closer, comprising in its construction a piston-operating spindle, a bearing for said spindle provided with an oil-collecting chamber having back-flow ports, as set forth.

4. A door-check, comprising in its construction a liquid chamber, a piston in the said chamber provided with the stem *w* having the slotted cross bar or yoke *n*, the spindle *o*, and crank *l*, provided with the pin *k*, arranged to operate in the slot of said bar or yoke, as set forth.

528,322. PROCESS OF AND APPARATUS FOR ELECTROLYTIC DECOMPOSITION OF ALKALINE SALTS. HAMILTON Y. CASTNER, London, England. Filed Sept. 26, 1892. Serial No. 446,913. (No model.) Patented in England Sept. 7, 1892, No. 16,046.



*Claim.*—1. In a process for the electrolytic decomposition of salts of alkali metals, passing an electric current through a solution of the same to a moving body of a liquid metal or alloy which forms part of the electric circuit, forming thereby an alkaline amalgam or alloy and decomposing same by passing an electric current successively through the alkaline amalgam or alloy and an electrolyte capable of oxidizing the alkaline metal and dissolving the oxide so produced.

2. In a continuous process for the electrolytic decomposition of salts of alkali metals, passing an electric current through a solution of the same to a liquid metal or alloy, then transferring the alkaline amalgam or alloy so formed to a point where it acts as an anode and decomposing it while it still forms part of the main electric circuit.

3. In a continuous process for the electrolytic decomposition of salts of alkali metals, passing an electric current through a solution of the same to a liquid metal or alloy, continuously passing the alkaline amalgam or alloy so formed to a point where the alkaline metal is oxidized and removed while the amalgam is acting as an anode for said current and returning the amalgam to the point at which it acts as a cathode for said current.

4. In a process for the electrolytic decomposition of the salts of alkali metals, passing an electric current through a solution of same to a moving body of liquid metal or alloy, in which the alkali metal is deposited, moving the alkaline amalgam or alloy so formed and then separating the alkali metal therefrom in the form of an alkaline salt or hydrate by causing said alkaline amalgam or alloy while it is in motion to act as an anode for the current in the presence of an electrolyte.

5. In a process for the electrolytic decomposition of the salts of alkali metals, mechanically separating two different electrolytes, one of which contains the salt to be decomposed, electrically connecting said electrolytes by means of a liquid metal or alloy in contact with both, and passing an electric current through the electrolyte containing the salt being decomposed to said liquid metal or alloy, and from the liquid metal or alloy to and through the second electrolyte.

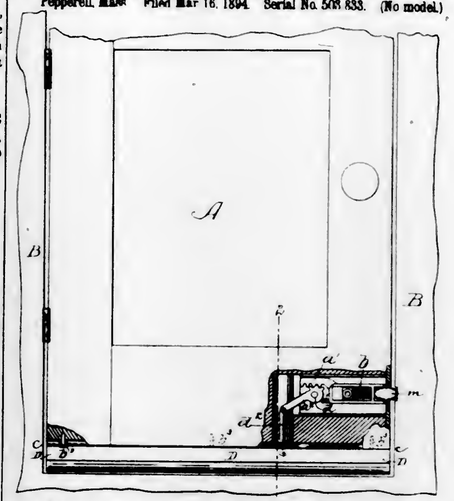
6. In a process for the electrolytic decomposition of the salts of alkali metals, decomposing the alkaline amalgam or alloy, as produced by passing an electric current through a solution of the salt being decomposed, while the amalgam is in the main electrical circuit by causing said amalgam or alloy to act as an anode in the presence of a second electrolyte, whereby the caloric energy stored or contained in the amalgam is set free in the form of electrical energy which is employed in carrying on the process.

7. In a continuous process for the electrolytic decomposition of the salts of alkali metals, mechanically separating two different electrolytes, one of which contains the salt to be decomposed, electrically connecting said electrolytes by means of a liquid metal or alloy in contact with both, and passing a given quantity or volume of electric current through the electrolyte containing the salt being decomposed to said liquid metal or alloy, and passing a lesser quantity or volume of current from said liquid metal or alloy to and through the second electrolyte.

8 In an electrolytic apparatus, the combination of two or more compartments, containing fixed electrodes and second electrodes formed of a liquid metal or alloy, openings between said compartments and mechanical means for causing the said liquid metal or alloy to flow through such openings from the bottom of one compartment to another compartment.

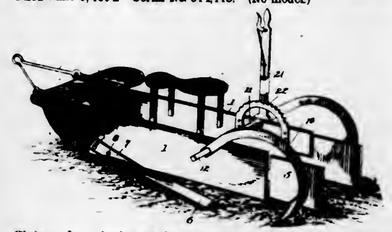
9. In an electrolytic apparatus, the combination of compartments containing fixed electrodes and second electrodes formed of a liquid metal or alloy, and openings between said compartments constantly filled by said liquid metal or alloy, which forms part of the electric circuit and at the same time seals the materials being decomposed in one compartment from mixing with those being produced in another compartment.

528,323. ATTACHMENT FOR DOORS. NATHANIEL W. COWDREY, Pepperell, Mass. Filed Mar 16, 1894. Serial No. 503,833. (No model.)



*Claim.*—In combination strip D, hinges $b^1$ $b^2$; connections $a^3$; toothed lever $a^1$; toothed slide *a*; spring *b* and roller *m* all arranged to operate with a door and its jamb substantially as described.

528,324. PLOW ATTACHMENT. MATHEW CULBERTSON and JOSEPH J. BURKE, Wilber, Nebr.; said Culbertson assignor to said Burke. Filed June 9, 1894. Serial No. 514,115. (No model.)



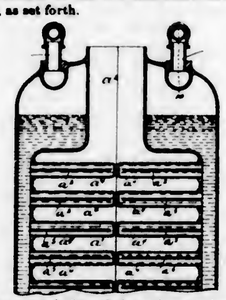
*Claim.*—In a device of the character set forth, the combination of oppositely situated runners having adjustably situated scrapers or blades on the outer sides thereof, shields connected with the rear of the runners, a shaft mounted on the upper rear portion of the said runners and adapted to be rotated, and beams adjustably mounted on the ends of said shaft and carrying shovels on their lower ends, substantially as and for the purposes specified.

528,325. STEAM OR HOT-WATER BOILER. EDWARD GURNEY, Toronto, Canada. Filed Oct. 24, 1893. Serial No. 489,002. (No model.)

*Claim.*—1. A boiler, composed of two independent sections having at their inner sides reciprocal seats or bearing surfaces, each section comprising a dome portion and a water-leg portion, the latter having inwardly-projecting nipples on its inner wall and horizontal loops or tubes engaged with said nipples and projecting into the space inclosed by the water-leg, the ends or bearing surfaces of the sections and their loops or tubes being in a uniform vertical plane and adapted to abut, and the said tubes being in rows with the tubes of one row above the spaces between the tubes of the next row, as set forth.

2. A boiler, composed of two independent sections, each including a half-dome, a half water-leg below the dome, and horizontal rows of inwardly-projecting loops or tubes separated by spaces which alternate in each row with the tubes of the next row, whereby the tubes are caused to act as baffle-plates, the water-leg having enlarge-

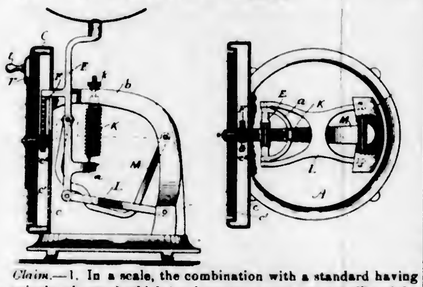
ments in line with the rows of tubes, said enlargements reducing the width of the spaces between the water-leg and the end tubes, and the ends of all the tubes being flush with or in the same vertical plane as the meeting surfaces of the two half-domes and water-legs and adapted to abut, as set forth.



3. A boiler composed of two independent sections formed to bear on each other and each comprising a dome-portion and a water-leg portion, and horizontal loops or tubes engaged with the inner walls of the water-leg portion and projecting into the fire space inclosed thereby each loop having a direct connection with said water-leg and provided with an internal partition extending nearly to its end, whereby water from the water-leg will be caused to flow along the lower portion of the tube in the fire space and back through the upper portion of the tube to the water-leg, substantially as described.

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528,326. SPRING-SCALE. MARIUS H. HANSEN, Chicago, Ill. Filed Sept. 27, 1893. Serial No. 486,635. (No model.)



*Claim.*—1. In a scale, the combination with a standard having the uninclosed arm *b* which is adapted to serve as a handle, of the weighing mechanism having an upright, a link L pivotally connected at one end to the lower end of said upright and at the other end to the standard, and a link M pivotally connected at one end to the upright and at the other to the standard, said link M being bowed downward between its points of attachment so as to leave between it and the arm *b* sufficient space for the admission of the fingers in grasping the scale to lift it, substantially as set forth.

2. In a scale, the combination with a pan, an index and means for transmitting movement from the former to the latter, of a movable scale, a pointer movable therewith and adapted to be brought into register with the index, and a fixed point opposite which the price may be read on the movable scale, substantially as set forth.

3. In a scale, the combination with a pan, an index, means for transmitting movement from the former to the latter, and a fixed disk, of a revoluble disk located behind the fixed disk and having a scale arranged thereon in a circle concentric with its center of motion, a pointer carried by said revoluble disk and adapted to be brought to register with the index, and a point on the fixed disk opposite which the price of the article may be read on the scale of the revoluble disk, substantially as set forth.

4. In a scale, the combination with a pan, an index, means for transmitting movement from the former to the latter, a fixed disk having through it a number of openings located at different distances from its center, of a revoluble disk located behind the fixed disk and having a number of scales arranged thereon opposite said openings and in circles concentric with the center of motion of the revoluble disk, and a pointer carried by the revoluble disk and adapted to be brought to register with the index, substantially as set forth.

5. In a scale, the combination with a pan, an index, and means for transmitting movement from the former to the latter, of a movable scale, a pointer carried by the movable scale and adapted to be brought into register with the index, and a fixed point opposite which the price may be read on the movable scale, the movable scale and index being without frictional contact with each other so that each may be moved without influencing the other, substantially as set forth.

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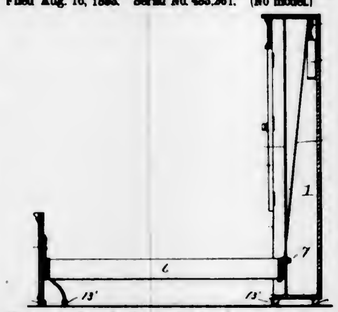
528,327. FASTENER FOR SCREENS OR SASHES. MARTIN HAUSER, Toledo, Ohio. Filed Nov. 10, 1893. Serial No. 490,509. (No model.)



*Claim.*—A catch for screens and sashes comprising a cup shaped open bottomed plate having a central stud, two catch arms journaled upon the stud, each formed with a body portion to fit within the plate, and oppositely disposed arms, one of which has an outwardly inclined upper end and a semi-circular recess, and the other a projecting stud, a spring coiled upon the central stud with its ends bearing against the projecting studs of the arms, flanges upon the plate by which to secure the same to the sash, and a hook for engagement with the window frame, and in the recesses of the arms.

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528,328. FOLDING BED. EDWARD M. KRONLAUGH, Toledo, Ohio. Filed Aug. 16, 1893. Serial No. 483,261. (No model.)

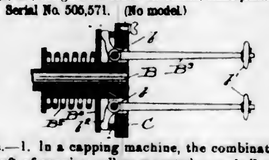


*Claim.*—1. In a folding bed, a head or cabinet, vertical rods arranged therein, a bed having swiveled guides to embrace the rods, whereby when the head is raised the guide will swing to the different inclinations of the bed, and a foot board hinged to the foot rail of the bed and means for holding the same in vertical position at all times.

2. In a folding bed, a head or cabinet, rods arranged vertically therein, bed rails arranged with their inner ends within the head, guides upon the rails for embracing the rods, comprising a journaled shaft, and a plate upon the shaft having grooved rollers journaled thereon.

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528,329. BOTTLE-CAPPING MACHINE. GEORGE W. LEBOLT, Chicago, Ill., assignor to Mack A. Claflin, same place. Filed Mar. 29, 1894. Serial No. 505,571. (No model.)



*Claim.*—1. In a capping machine, the combination with the revolving shaft of capping rollers mounted upon bell crank levers pivoted at right angles to said shaft and a spring engaging one side of the short arm of said lever to force the rollers inward, and adjustable stops upon the opposite side of said arm to limit the inward movement of the rollers, substantially as specified.

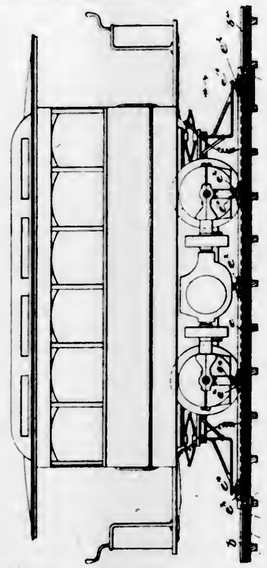
2. In a capping machine, the combination with the revolving shaft of capping rollers mounted upon bell crank levers pivoted at right angles to said shaft, and a spring surrounding said shaft and engaging one side of the short arm of said lever to force the rollers inward, and adjustable stops upon the opposite side of said arm to limit the inward movement of the rollers substantially as specified.

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528,330. CONDUIT SYSTEM FOR ELECTRIC RAILWAYS. JOHN B. LINN, Cleveland, assignor of one-half to Oliver S. Kelly, Springfield, Ohio. Filed Dec. 9, 1893. Serial No. 493,272. (No model.)



*Claim.*—1. A slot rail formed of beams having a groove therein, a conductor in the bottom of said groove, and a channel iron in the top of said groove, and contacting boxes arranged between said beams, and also provided with grooves to form a continuation of the grooved slot rail, substantially as specified.



2. The combination with a sectional slot rail, of boxes arranged between the respective sections thereof, said boxes being formed in two parts adapted to be joined together, as described, to form an outer casing, an auxiliary box arranged within said outer casing, a contacting device within the auxiliary box, and a swinging arm journaled in said outer casing, said arm having a contact within said auxiliary box, and a projecting arm extending through said casing, substantially as specified.

3. A sectional slot rail consisting of sectional rails and intermediate boxes, projecting bosses or trunnions on said sections, adapted to fit in corresponding recesses or openings in said boxes, a conductor in said rail adapted to pass through said boxes, and a channel iron arranged above said conductor adapted to close the top of said groove and thus form a depression or slot, substantially as specified.

4. The combination with the slotted beams having projecting trunnions thereon, a conductor arranged within the slots of said beams, intermediate boxes having perforated bosses adapted to receive the trunnions on said beams, a channel iron arranged at the top of said beams to form a depression or slot in the top thereof, and slots in said boxes to form a continuation of the slot in said beams, laterally projecting contact devices extending from said boxes into said slot, and means, substantially as described, for bringing said contact devices into electrical connection with said conductor when the contacting devices are moved, substantially as specified

5. A two-part box or casing, an auxiliary box within said casing, a contacting device within said auxiliary box, and a connection from said contacting device to a normally insulated conductor, a swinging arm journaled in a suitable bearing in said casing and having a projection which extends laterally into a slot formed in said casing, and a guide within said auxiliary box for guiding said arm, substantially as specified.

6. A slot rail formed of beams having a groove therein, a conductor in the bottom of said groove, a channel iron in the top of said groove, and contacting devices arranged between the beams and also provided with a groove to form a continuation of the slot rail, and a flexible collector adapted to operate said contacting devices so as to establish an electrical connection from said conductor to said collector, substantially as specified.

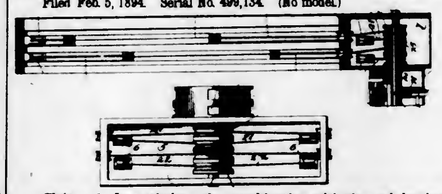
7. A slot rail formed in sections and consisting essentially of grooved beams joined together by intermediate boxes also grooved to form a continuation of said slot rail, contacting devices in said boxes, and a conductor in said groove connected to said contacting devices, channel iron in the top of said groove, and a flexible collector adapted to travel in said groove and operate said contacting devices, and supporting wheels having a central flange and extended peripheries adapted to rest on said channel iron to support said collector, substantially as specified.

8. The combination with a slot rail formed in sections with intermediate boxes, as described, each section consisting essentially of a grooved beam having therein an insulated conductor, and each box being grooved to form a continuation of said slot, of a connection from said conductor to contacting devices in said boxes, a laterally arranged shaft in each of said boxes having a swinging arm adapted to engage with said contacting devices, a flexible shoe adapted to travel in said slot, and having a metallic bottom thereon, a projecting arm on each of said shafts arranged within said slot and adapted to contact with the bottom of said shoe so as to operate said swinging arms and thus establish an electrical connection from the conductor to the metallic portion of said shoe, substantially as specified.

9. The combination with the slot beams and plates, of an intermediate box connected thereto, said box being formed of two parts, the upper part having a slotted opening to correspond with and form a continuation of the slot in said beams, the lower part being provided with a contacting device having an electrical connection to a conductor which extends through said slotted beams, a rotating shaft extending laterally from said box into the slotted opening therein and having a cam-shaped projection thereon, a swinging arm attached to said shaft and adapted to swing vertically in said box so as to establish an electrical connection with said contacting device when said shaft is rotated, substantially as specified.

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528,331. SASH-BALANCE. GODFREY LUSHER, Pasadena, Cal. Filed Feb. 5, 1894. Serial No. 499,134. (No model.)



*Claim.*—1. In a window, the combination with the sash having independently acting cords or ropes attached thereto, a shaft for operating said cords or ropes provided with a sleeve and an arm with a locking bolt therein, a second sleeve mounted on the said shaft also having an arm with a locking bolt on the same and means for holding the said locking bolts in their adjusted position, substantially as and for the purpose specified.

2. In a window, the combination of the upper and lower sash, grooved pulleys, or rollers, mounted in the sash plane, independently operating cords or ropes attached to the sash and engaging said grooved pulleys or rollers, a transversely arranged shaft having a double grooved pulley thereon, engaged by a portion of said cords or ropes, sleeve mounted on said shaft, an angular arm attached to said sleeve having a locking bolt therein, an elongated sleeve rotatably mounted on the said shaft with a double grooved pulley attached thereto adapted to be engaged by the remaining portion of said cords or ropes, an angular arm attached to said elongated sleeve and having a spring actuated bolt therein and a casing or box with slots in the same adapted to be engaged by the said bolts, substantially as and for the purposes specified.

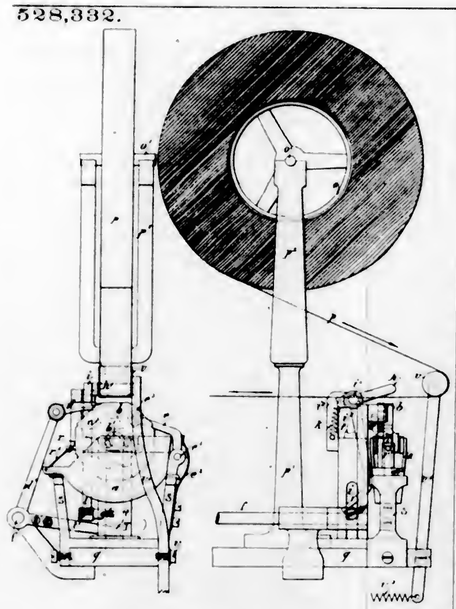
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528,332. MACHINE FOR APPLYING PARAFFIN TO CIGARETTE-PAPER. ALFRED C. MARCHAL, Paris, France. Filed Mar. 2, 1894. Serial No. 502,034. (No model.) Patented in France Jan. 18, 1894, No. 235,610.

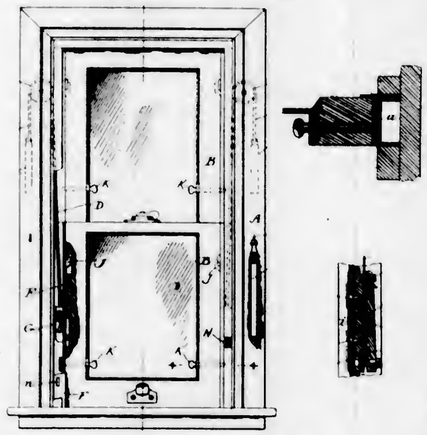
*Claim.*—1. In a cigarette making machine, mechanism for applying paraffine to the cigarette paper consisting of a paraffine cistern *a*, a polygonal drum *b* contained in the said cistern, a pad *h* for pressing the paper against the faces of the said drum, a rock-shaft *f*, pawl and ratchet mechanism actuated by the rock-shaft and connected to the drum for imparting step by step rotary movement thereto, a stamp mechanism, a connection between the stamp mechanism and the rock-shaft for actuating the stamp, and a connection between the stamp mechanism and the pad *h* for actuating the same by the movement of the stamp mechanism, substantially as described.

2. A paraffining mechanism for paper, the same consisting of a paraffine cistern, a polygonal drum dipping into said cistern, said drum having a ratchet connected thereto to move the same, a pad for pressing the paper against the drum, a rock-shaft *f* having an arm *d'* carrying a pawl *d* co-operating with the ratchet to impart a step by step movement thereto, an arm *f'* also connected to the rock-shaft and engaging the stamp mechanism to move the same, a stud *g* on the stamp mechanism, and an arm *i* carried by the pad and projecting into the path of the stud *g*, substantially as described.

528,332.



528,333. WINDOW. AMANDUS MASSALSKI, Chicago, Ill. Filed June 8, 1894. Serial No. 513,886. (No model.)





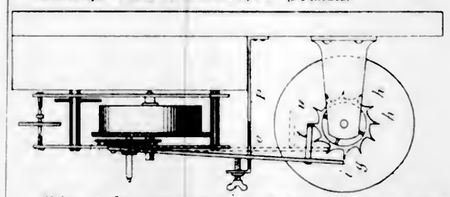


*Claim.*—1. The combination with a sash and a frame having guides, of slides fitting said guides, means detachably securing the sash to the slides, and counterbalancing devices connected to the slides, said slides being made of sheet metal bent to form three sides of a rectangle and having one of its flanges doubled upon itself and continued backward far enough to form a flange for engaging the sash, substantially as set forth.

2. The combination with the tape doubled upon itself, of a clamping block formed in two longitudinal sections $i$, $i'$ having in their meeting faces oppositely located depressions $i^2$, a pin $l'$ placed in the loop of the tape and filling the depressions $i^2$, and means for securing the two sections of the block together, substantially as set forth.

3. The combination with a tape, of a clamping block consisting of the two longitudinal sections $i$, $i'$ having in their meeting faces oppositely located depressions $i^2$, the former of said sections having at one end a loop $i^3$ adapted to receive the corresponding end of the other section, and means for securing the two sections together, substantially as set forth.

528,334. AUTOMATIC ADVERTISING DEVICE. BERNARD H. MAY and JOHN H. MORRISSEY, Chicago, Ill. Filed Feb. 6, 1892. Renewed Apr. 9, 1894. Serial No. 506,956. (No model.)

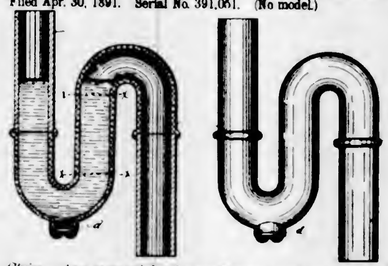


*Claim.*—1. In an automatic advertising device, the combination of a suitable supporting frame, a clock operating mechanism having a time wheel provided with spaced studs, a revoluble advertising cylinder provided with a ratchet wheel, a lever pivoted on the supporting frame and adapted to be articulated by the time wheel, a rod connected to the outer end of the pivoted lever and adapted by its gravity to fall and strike one of the teeth of the ratchet wheel of the advertising cylinder and revolve said cylinder, and to be raised again by the time wheel, substantially as described.

2. In an automatic advertising device, the combination of a suitable supporting frame, a clock operating mechanism having a time wheel provided with spaced studs, a revoluble advertising cylinder provided with a ratchet wheel, a lever pivoted on the supporting frame and adapted to be articulated by the time wheel, a rod pivotally connected to the outer end of the pivoted lever and provided with a stop and adapted by its gravity to fall and strike one of the teeth of the ratchet wheel of the advertising cylinder and revolve said cylinder, and to be raised again by the action of the time wheel, substantially as described.

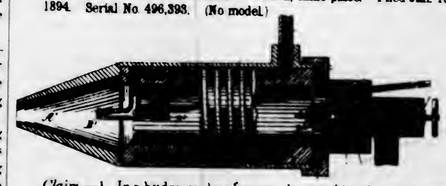
3. In an automatic advertising device, the combination of a suitable supporting frame, a clock operating mechanism having a time wheel provided with spaced studs, a revoluble advertising cylinder provided with a ratchet wheel, a lever pivoted on the frame and adapted to be articulated by the said time wheel, a rod pivotally connected to the outer end of the pivoted lever and provided with a stop, and a guide plate or bar provided with an elongated slot through which the rod passes, and an adjusting screw for regulating the lateral movement of the rod, substantially as described

528,335. SINK-TRAP. HARRY C. MONTGOMERY, Cleveland, Ohio. Filed Apr. 30, 1891. Serial No. 391,061. (No model.)



*Claim.*—As a new article of manufacture, a sink trap of the S variety consisting of a hard metal central portion having its ends terminating about midway of the said central portion and extending in opposite directions, and soft metal pipe sections secured to the said ends and forming the terminals of the trap and open to be attached to the stationary lead pipes in a building, substantially as set forth.

528,336. OIL-BURNER. CHAUNCEY G. MOORE, Indianapolis, Ind., assignor of one-half to Thomas F. Scullin, same place. Filed Jan. 10, 1894. Serial No. 496,393. (No model.)



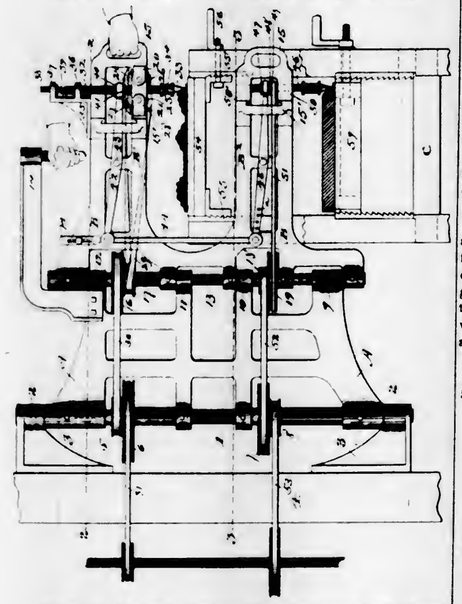
*Claim.*—1. In a hydro-carbon burner, the combination of a central chamber for the passage of steam and air, steam and air inlets at one end of said chamber, a common outlet therefor at the other end, an annular oil chamber surrounding the central chamber, an oil inlet into said annular chamber communicating with the oil supply, and an oil outlet discharging into said central chamber, said outlet being directed downwardly from the annular chamber to about the axial line of said chamber, and thence along said axial line, substantially as described.

2. In a hydro-carbon burner, the combination of an inner casing, an end cap inclosing the rear end thereof and containing steam and air openings discharging into said casing, an outer casing surrounding the inner casing and forming therewith an oil chamber, an oil inlet pipe near the rear end of said chamber, a spiral rib extending radially from one casing to the other, and longitudinally the length of the oil chamber, the distance between two consecutive threads of said rib being approximately equal to the diameter of the oil inlet, whereby a spiral oil passage of said diameter is formed around the air and steam chamber, and an oil outlet at the front end of said passage discharging into the steam and air current, substantially as described.

3. In a hydro-carbon burner, the combination of a steam and air draft chamber, an oil chamber surrounding the draft chamber, an oil outlet at its front end discharging into the steam and air current, and an end cap or cover at the rear end of the draft chamber, carrying an air inlet pipe, and a steam nozzle, the latter directed into said draft chamber and comprising a main steam vent directed along the draft chamber and divergent steam vents directed toward the walls of the draft chamber to heat the same, and thereby heat the oil in its passage through said oil chamber, substantially as described.



528,337. CARVING-MACHINE. ROBERT MORGENEIER, Winona, Minn., assignor to the American Carving and Manufacturing Company, same place. Filed Apr. 1, 1893. Serial No. 468,720. (No model.)



*Claim.*—1. In a carving machine, the combination with a frame mounted and confined to swing in a uniform plane about a fixed axis, of a connected guide-finger and tool mounted on the frame substantially parallel to its axis, the guide-finger being normally yieldingly held in contact with the pattern and capable of automatic reciprocation whereby to control the reciprocation of the cutter, substantially as described.

2. In a carving machine, the combination with a frame mounted and confined to swing in a uniform plane about a fixed axis, of a connected guide-finger and tool mounted on the frame substantially parallel to the axis thereof and capable of automatic reciprocation with reference thereto, the guide-finger being normally yieldingly held in contact with the pattern and capable of yielding to side pressure, and means for retracting the guide finger upon such lateral pressure, substantially as described.

3. In a carving machine, the combination with a frame mounted and confined to swing in a uniform plane about a fixed axis, of a connected guide-finger and tool mounted on the frame substantially parallel to the axis thereof, the guide-finger being normally yieldingly held in contact with the pattern and capable of lateral movement, and means for retracting the guide-finger and thereby reciprocating the tool with reference to the frame, substantially as described.

4. In a carving machine, the combination with swinging frame, of an independently reciprocal and gyratory guide finger carried by said frame, and a reciprocal tool connected with and reciprocated by the guide finger, substantially as described.

5. In a carving machine, the combination with swinging frames, of a gyratory and reciprocal guide finger carried by said frames and a revoluble and reciprocal tool also carried by said frames and reciprocated by the agency of the guide finger, substantially as described.

6. In a carving machine, the combination with swinging frames, of a reciprocal and gyratory guide finger and means for projecting and retracting said finger, substantially as described.

7. In a carving machine, the combination with swinging frames and a reciprocal and gyratory guide finger, and means for projecting and retracting such finger, a reciprocal and revoluble tool and a connection between said guide finger and tool whereby a reciprocal motion of the finger may be communicated to the tool, substantially as described.

8. In a carving machine, the combination with swinging frames, of a reciprocal and gyratory guide finger and a reciprocal and revoluble cutter carried on such frames, and an adjustable connection between such finger and tool, substantially as described.

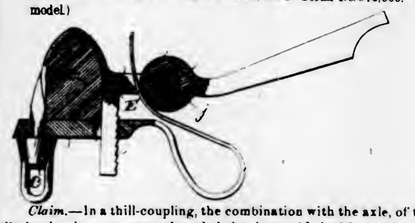
9. In a carving machine, the combination with swinging frames, of a reciprocal and gyratory guide finger and a reciprocal and revoluble cutter carried by such frames, an adjustable connection between such finger and tool, and an adjustable stop on such frames whereby the reciprocation of such finger and tool may be limited, substantially as described.

10. In a carving machine, the combination with swinging frames, of grooved and geared traction spools mounted in bearings thereon, and a guide finger tube arranged between such spools, substantially as described.

11. In a carving machine, the combination with a frame mounted and confined to swing in a uniform plane about a fixed axis, of a connected guide-finger and tool mounted thereon substantially parallel to the axis thereof and capable of automatic reciprocation with reference thereto, the guide-finger being normally yieldingly held in contact with the pattern and controlling by its reciprocation the reciprocations of the cutter, and an adjustable stop for regulating the range of the reciprocating movement, substantially as described.

12. In a carving machine, the combination with a frame mounted and confined to swing in a uniform plane about a fixed axis of a guide-finger and tool mounted thereon substantially parallel to the axis thereof and capable of automatic reciprocation with reference thereto, the guide-finger being normally yieldingly held in contact with the pattern, and a variable connection between the guide-finger and tool whereby the depth of cut of the tool may be varied, substantially as and for the purpose described.

528,338. ANTIRATTLER FOR THILL-COUPLINGS. MARTIN MCKINNON, Maxton, N. C. Filed June 29, 1894. Serial No. 516,066. (No model.)

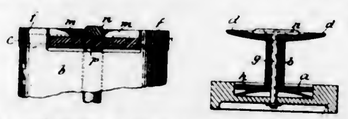


*Claim.*—In a thill-coupling, the combination with the axle, of the clip having its rear screw-threaded shank provided with the thumb-nut, and its forward shank having its front face provided with serrations, a slotted tie-plate having its forward end terminating in a flat spring extending downwardly upwardly and rearwardly abutting against the rear portion of the thill-iron and extending upwardly and beyond the same, the thill iron being secured within the yoke or ears by means of the bolt and nut, substantially as described and for the purposes set forth.

528,339. STUD OR FASTENING FOR SHIRT-WRISTBANDS, &c. JEAN NADAL, Paris, France. Filed Oct. 2, 1893. Serial No. 487,004. (No model.)

*Claim.*—1. In a cuff button, the combination of a pair of hinged wings $d$ each having two cams $m$ formed thereon, a pillar $b$ support-

ing the wings, a head *j*, a shank *g* attached to the head and passing through and revolving freely in the pillar *b*, the said shank *g* having a cross-bar *n* to engage the cams *m* in the wings *d*, whereby the wings are opened and closed by giving the head one complete rotation, substantially as described.



2. In a cuff button, the combination of a pair of hinged wings *d* having cams *m*, a pillar *b* supporting the wings, a head *j*, a shank *g* attached to the head and passing through and revolving freely in the pillar *b*, the said shank *g* having a cross-bar *n* to engage the cams *m* in the wings *d*, whereby upon rotating the head the wings will be opened, together with a spring connected to the wings for automatically restoring the same to position when the stem has been rotated to free the cross-head from engagement with the cams, substantially as described.

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**528,340. FLAT-OPENING BOOK.** WILLIAM A. PALMER, Dubuque, Iowa. Filed June 27, 1894. Serial No. 515,869. (No model.)



*Claim.*—A flat opening book having independent guards each formed by folding the material so as to make a doubled intermediate portion which terminates in an outer or rear loop, and also to make right and left hand flap portions which with the intermediate portion form two inner or forward stitching loops, said book also having leaf-sections stitched in pairs to each guard, forming a single book-section and the sections and guards being sewed to the back band or bridge straps by threads passed through the outer loops of the intermediate doubled portions of the guards and the flap portions of the respective guards lying flatwise against one another when the book is finished and closed, substantially as described.

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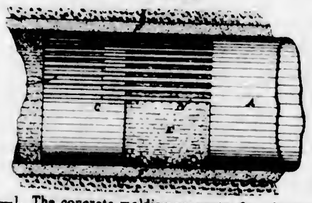
**528,341. HOOK AND EYE.** GEORGE S. PEARSON, Waterbury, Conn. Filed July 5, 1894. Serial No. 516,604. (No model.)



*Claim.*—As an improved article of manufacture, a garment hook composed of a single piece of wire bent centrally upon itself, the bend and bill of the hook being formed of the doubled strands, which are adjacent and substantially parallel to each other, the widened shank with attaching eyes on each member thereof and the inverted V-shaped duplex guard or spring formed of a continuation of the material of the eyes, and lying between the wires comprising the shank, the wires of the guard being immediately adjacent to each other, the apex of the same engaging the end of the bill, and the free ends thereof resting underneath the shank, substantially as described.

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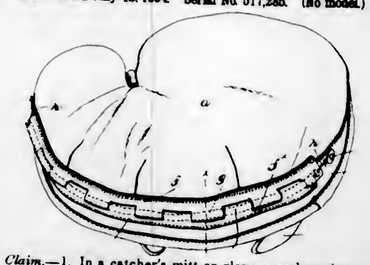
**528,342. MOLD.** ERNEST L. RANSOME, Oakland, Cal. Filed Nov. 6, 1893. Serial No. 490,182. (No model.)



*Claim.*—1. The concrete molding apparatus for subways consisting of "crown supports" having recesses in their periphery in combination with the slats of a traveling mold which they uphold and sustain within the recesses, in turn as the slats move forward.

2. Slats extending from the rear of a traveling mold in combination with a series of stationary "crown supports."

**528,343. CATCHER'S GLOVE.** ELROY L. ROGERS, Wakefield, Mass. Filed July 12, 1894. Serial No. 517,285. (No model.)

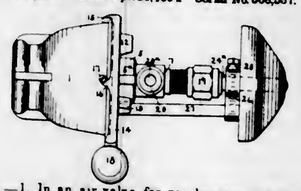


*Claim.*—1. In a catcher's mitt or glove, a pad-portion comprising a back and a front or palm piece, an edge-strip connecting the back and front pieces and formed with a dividing slit, strips of pliable material fastened to the said edge-strip along opposite sides of the slit and having elongated loops alternately arranged so that all may be brought into alignment, and a round leather locking stringer passing through the aligning loops.

2. In a catcher's mitt or glove, a pad-portion comprising a back and a front or palm piece, an edge-strip connecting the back and front pieces and formed with a dividing slit, strips of pliable material fastened to the said edge-strip along opposite sides of the slit and having elongated loops alternately arranged so that all may be brought into alignment, a round leather locking stringer passing through the aligning loops and having fastening strings at its ends, and buttons fastened to the edge-strip of the glove and adapted to receive the said fastening strings.

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**528,344. AIR-VALVE FOR GAS-BURNERS.** HENRY RUPPEL, Cleveland, Ohio, assignor to the Dangler Stove and Manufacturing Company, same place. Filed Apr. 21, 1894. Serial No. 508,537. (No model.)



*Claim.*—1. In an air valve for gas burners, a mixing-chamber having a perforated partition, a hub with lugs thereon, and an external stop-screw; in combination with a flanged and perforated shutter on said hub, said shutter provided with peripheral and lateral lugs and a weight on one side, and an arm extending from a dog on the valve-stem of the burner designed to engage said lateral lugs and operate said shutter, substantially as and for the purpose set forth.

2. In an air valve for gas burners, a mixing-chamber having a perforated partition, a hub with lugs thereon, and an external stop-screw; a weighted, flanged, and perforated shutter on said hub provided with peripheral and lateral lugs, the weight on one side of said shutter, in combination with a plug, a needle-valve having a stem projecting from said plug, an adjustable dog on said stem, and an arm extending from said dog to engage said lateral shutter lugs, whereby the air supply to said chamber is governed automatically by means of the gas supply controlling device and the shutter weight, substantially as and for the purpose set forth.

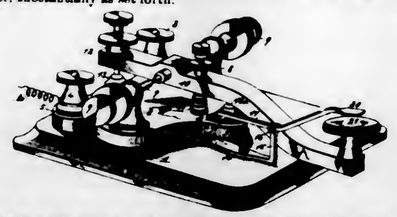
3. In an air valve for gas burners, a burner, a mixing-chamber having a perforated partition, a hub with lugs thereon, and an external stop-screw; a pipe connecting said burner with said chamber, a plug provided with a gas inlet and outlet and a valve-seat, a needle-valve in said plug having a projecting stem with a wheel fast thereon, a dog adjustably attached to said stem, and an arm secured to said dog, in combination with a weighted, flanged and perforated shutter on said hub provided with peripheral and lateral lugs, the weight on one side of said shutter, substantially as and for the purpose set forth.

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**528,345. TELEGRAPH-KEY.** CHRISTOPHER P. SHERIDAN, Leeds, Mo. Filed July 2, 1894. Serial No. 516,373. (No model.)

*Claim.*—1. In a telegraph key, the combination with a pivoted key-lever, electrically connected to one wire of the line and provided with a contact-pin, and a contact-plate located below and out of contact with said contact-pin, and electrically connected to the other wire of the line, of a plate electrically connected through the base-plate of the key and other connections to said lever, a lever pivotally supported by an arm of said plate and provided with a contact pin and a spring connected to said lever, and holding said contact pin yieldingly into engagement with the said contact-plate of the pivoted lever, substantially as set forth.

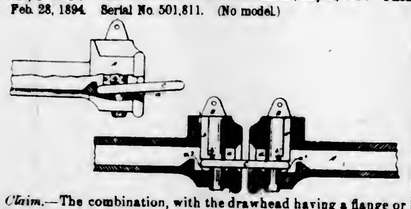




2. In a telegraph key, the combination with a pivoted key lever, electrically connected to one wire of the line, and provided with a depending contact-pin, and a contact arranged below said contact-pin and electrically connected to the other wire of the line, of a self-closing attachment comprising a base-plate electrically connected, substantially as hereinbefore set forth, to the key-lever, an arm projecting upward from said plate, a lever pivoted in the upper end of said arm and provided with a depending contact-pin at its front end and with a handle portion at its rear end adjacent to the handle portion of the lever, and a spring connected to said lever forwardly of its pivoted point, and holding the contact-pin thereof yieldingly into engagement with the contact below the contact-pin of the key lever, substantially as and for the purpose set forth.

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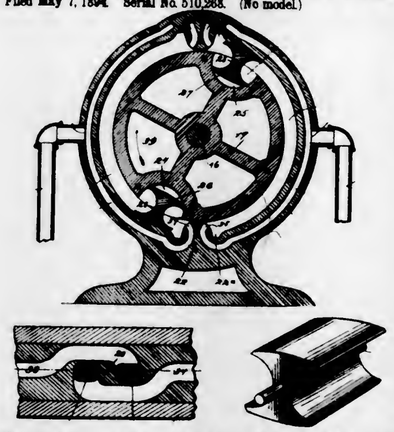
**528,346. CAR-COUPLING.** SAMUEL SELDEN, Aspen, Colo. Filed Feb. 28, 1894. Serial No. 501,811. (No model.)



*Claim.*—The combination, with the drawhead having a flange or lip at the bottom side of the entrance of the link chamber, of the coupling pin having a projection or rib at its rear side throughout a portion of its length, and two shoulders, one on each side of the projection or rib; these shoulders being placed somewhat above the lower end of the said projection or rib, substantially as described.

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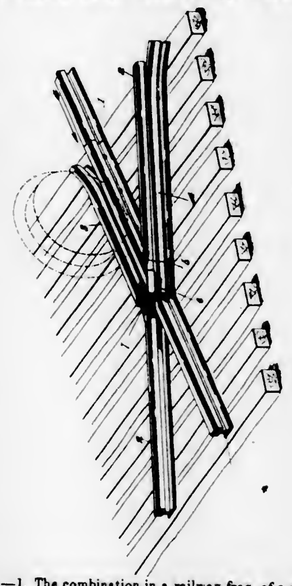
**528,347. ROTARY FORCE-PUMP.** SYLVANDER C. SHEPARD, Hannibal, Mo., assignor of one-half to Cornelius A. Treat, same place. Filed May 7, 1894. Serial No. 510,268. (No model.)



*Claim.*—A rotary pump, comprising a cylinder having inwardly extending abutments 22, 23, a shaft mounted for rotation in said cylinder, a head rigidly mounted upon said shaft and adapted for peripheral engagement with said abutments and lateral engagement with said cylinder, passages 20, 21 between said cylinder and the periphery of said head, vanes rotatably mounted upon the said head and traveling in said passages, means whereby said vanes may pass the said abutments, an induction passage 33 affording communication between an induction port 29 and one end of the passage 21 and the opposite end of the passage 20, and an eduction passage affording communication between an exhaust port 30 and the respectively opposite ends of the passages 20, 21, the ports of communication between the induction passages and the passages 20, 21 and the eduction passage and the passages 20, 21 being located in the said abutments.

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**528,348. RAILWAY-FROG.** CHARLES W. SPECKIN, Argentine, Kans. Filed Feb. 26, 1894. Serial No. 501,497. (No model.)

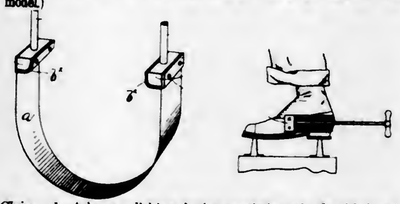


*Claim.*—1. The combination in a railway frog, of a main-rail, a wing-rail intersecting said main-rail, and notched or recessed at its upper side and at the junction point of the said wing-rail with the outer side of the main-rail, and guard-rails, forming a junction with said main-rail and said wing-rail, and notches formed in the upper side of the said guard-rails at the junction with said main- and wing-rails, substantially as set forth.

2. In a railway frog, the combination with the main rail, of a wing-rail recessed to form an inclined surface at its upper side and at the junction point of the said wing-rail with the main-rail, and guard-rails forming a junction with the wing- and main-rails and also formed at their junction points with inclined surfaces, substantially as set forth.

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**528,349. BOOT OR SHOE POLISHING DEVICE.** EDWARD STANWOOD, Brookline, Mass. Filed Feb. 5, 1894. Serial No. 499,149. (No model.)

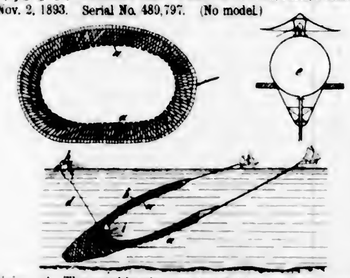


*Claim.*—1. A boot polishing device consisting of a flexible band and elongated handles connected thereto, said handles having cushions supporting the end portions of the band which is adapted to be backed by said cushions.

2. A boot polishing device comprising a pair of handles each having a head or block at one end, each head having a cushion or pad extending over one side and the bottom thereof, and a flexible strip

or band having its ends removably secured to said heads and adapted to extend over and be yieldingly supported by said cushions or pads, substantially as described.

528,350. FISHING-NET. GUSTAVE TROUVÉ, Paris, France. Filed Nov. 2, 1893. Serial No. 489,797. (No model.)



*Claim.*—1. The combination, with a fishing net, of a pneumatic tube applied along the edge of the net and adapted when inflated to serve as a float therefor and of a tube connecting the said inflatable tubular float with a supply of air under pressure whereby to enable the pneumatic float to be inflated at will and from a distance, as specified.

2. The combination, with a fishing net having an inflatable tubular float applied thereto, as described, of a buoy containing compressed air connected with the inflatable tube by a tube controlled by an electrically operated valve for the purpose of inflating the pneumatic float at will and from a distance, as specified.

3. In combination with a fishing net provided with an inflatable tubular float, the herein described buoy containing a reservoir of compressed air for supplying the pneumatic float, and electric generators of the current setting in motion the mechanism for operating the valve which controls the air supply to the float and for supplying an electric lamp by which the location of the buoy may be ascertained at night, substantially as specified.

528,351. THILL-COUPLING. CORNELIUS WILCOX, Sunbury, Ohio. Filed Apr. 28, 1894. Serial No. 509,384. (No model.)



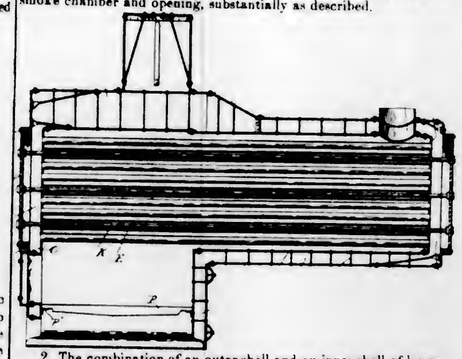
*Claim.*—1. A thill coupler comprising a plate having two apertured ears, a thill iron journaled between said ears, a yielding bearing located beneath said strip and provided with a recess in its lower side, a screw projecting through said plate with its upper end under said recess and a disk swiveled to the said upper end of said screw, substantially as herein described.

2. A thill coupler comprising a plate having two apertured ears, a thill iron journaled in said ears, a yielding bearing located beneath the eye of the thill iron, a curved plate riveted thereto with the head of the rivet countersunk in the under side of the yielding bearing, a screw working through said plate with its upper end under the countersink and a disk swiveled to said upper end of said screw, substantially as herein described.

3. A thill coupler comprising a plate having a forwardly projecting tongue terminating in a rearwardly directed hook, a forwardly directed hook and two apertured ears all integral with said plate, a thill iron journaled in said ears, a rubber strip located beneath the eye of said thill iron, a curved plate riveted thereto with the head of the rivet countersunk in the lower face of the rubber strip, a screw extending through said plate with its end under the countersink, a disk swiveled to said screw, and a binding nut, substantially as herein described.

528,352. BOILER. ROBERT WILDMAN, Bay City, Mich., assignor of one-half to Henry S. Johnson, same place. Filed June 29, 1894. Serial No. 516,115. (No model.)

*Claim.*—1. In a steam generator, the combination with an outer and an inner shell of lesser diameter and length than the outer shell and arranged within the same to form a water jacket between, of tubes connecting the heads of the inner shell, a combustion chamber located beneath the front ends of the tubes, an outer casing surrounding the shells, a smoke chamber R located above the rear ends of the shells, a flue Q located at the rear end of the water jacket and extending into the smoke chamber, a smoke opening at the front of the outer casing, and flues on the outside of the shells connecting the smoke chamber and opening, substantially as described.

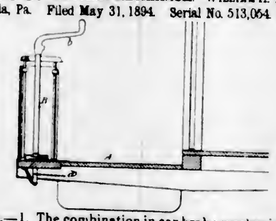


2. The combination of an outer shell and an inner shell of lesser diameter and length than the outer shell and arranged within the same to form a water jacket between tubes connecting the heads of the inner shell, a fire chamber at the forward end, depending water legs from the water chamber around the fire chamber, an outer casing surrounding the shells a flue through the water chamber at the rear end of the inner shell, return flues located between the outer shell and casing and a smoke stack at the forward end with which said return flues communicate, substantially as described.

3. In a steam generator, the combination with the shell having centrally apertured heads, of rings H surrounding the apertures and secured to the head, an annular groove in the outer faces of the rings, packing within the grooves, plates I detachably secured to the rings, tubes secured within the shell, and rods K passing through the tubes and secured to the plates I, substantially as described.

4. In a steam generator of the kind described, the combination of the inner and outer shells arranged substantially as set forth, the inner shell having a cut away portion on its under forward face, the fire chamber beneath such cut-away portion, the front and rear water legs L at front and rear of said fire chamber and the side water legs M formed by an extension of the outer casing and the wall N secured at its upper end to the side of the inner shell and at its lower end to the extension, the tubes E connecting the heads of the inner shell and a flue Q through the water chamber at the rear end of the inner shell, substantially as described.

528,353. RATCHET MECHANISM. WILLIAM H. YOUNG, Jr., Philadelphia, Pa. Filed May 31, 1894. Serial No. 513,054. (No model.)



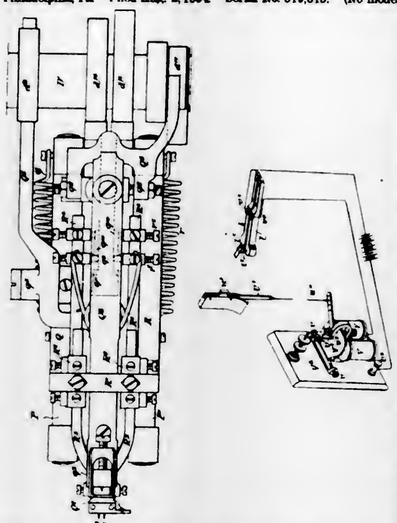
*Claim.*—1. The combination in car brake mechanism, of the handle, brake shaft, the brake chain shaft, ratchet wheel on said chain shaft, a pawl and means for throwing the pawl into and out of engagement with the ratchet wheel by the action of the brake shaft, substantially as described.

2. The combination of the ratchet wheels B' and D', a pawl on said ratchet wheel D' engaging with the teeth on the ratchet wheel B', a pawl F engaging with the teeth of the ratchet wheel D' and a supplemental pawl acted upon by a tooth on the wheel B' so that when the tooth comes into engagement with the supplemental pawl it will throw the pawl out of engagement with the ratchet wheel D', substantially as described.

3. The combination of the chain shaft D, its ratchet wheel D', a brake shaft mounted above the chain shaft, a ratchet wheel on said brake shaft, pawl on the ratchet wheel D' engaging with the ratchet wheel B', a tooth $b'$ on the ratchet B', a pawl F engaging only with the ratchet D', a supplemental pawl pivoted to said pawl F adapted to be acted upon by the tooth $b'$ of the ratchet B' when the said wheel is reversed, substantially as described.



528,354. CARD-SETTING MACHINE. CLARENCE W. ARNOLD, Philadelphia, Pa. Filed Aug. 2, 1894. Serial No. 519,315. (No model.)



*Claim.*—1. The combination of the frame, the driving shaft mounted thereon, forward feed and return feed eccentric mounted on said driving shaft, a vibrated arm E', eccentric rods adapted to engage with said arm, mechanism controlled by the carriage, for throwing the eccentric rods into and out of engagement with said arm, a feed arm E connected to the arm E', a pawl on said feed arm, a feed shaft, a feed wheel on said shaft with which the pawl engages, a carriage connected to said feed shaft, substantially as described.

2. The combination of the frame, the driving shaft mounted thereon, a carriage adapted to travel on the frame, a feed shaft, a rope or chain connecting the feed shaft with the carriage so that on the movement of the feed shaft in either direction it will move the carriage, reversing mechanism between the driving shaft and feed shaft for reversing the movement of the feed shaft, said reversing mechanism being controlled by the carriage, substantially as described.

3. The combination of the frame, the carriage mounted thereon, mechanism on said carriage for bending and setting the teeth, a carrier and feeding mechanism for the material in which the teeth are set, the driving shaft, a feed shaft for the carriage, a shifter shaft intermittently operated by the mechanism controlled by the carriage, reverse feed mechanism for the carriage controlled by the shifter shaft, substantially as described.

4. The combination of the frame, carriage mounted thereon, mechanism on said carriage for bending and setting the teeth, a carrier and feeding mechanism for the material in which the teeth are set, the driving shaft, a feed shaft for the carriage, a shifter shaft intermittently operated by the mechanism controlled by the carriage, reverse feed mechanism for the carriage controlled by the shifter shaft, a carrier for the material in which the teeth are set, mechanism for feeding said material also controlled by said shaft, substantially as set forth.

5. The combination of the driving shaft A', the eccentrics $A^2$, $A^3$ on said shaft, eccentric rods $a^2$ $a^3$, an arm E' adapted to engage with said eccentric rods, a shifter shaft H, a cam thereon, lever $H^3$ pivoted to the arm E', a slide $H^4$ acted upon by the cam and acting upon the lever, said lever engaging with one or other of the eccentric rods, the carriage, the feed shaft for the carriage, a feed wheel F' thereon, and a feed pawl *e* driven by either of the eccentrics through the arm E', substantially as described.

6. The combination of the driving shaft, the forward feed eccentric and the return feed eccentric mounted thereon, rods connected to said eccentrics, a pivoted arm E' adapted to engage with either one of the said eccentric rods, mechanism for throwing the rods into and out of engagement with said arm, a feed arm E, a feed shaft for the carriage driven by said arm, and mechanism between the arms E and E' to alter the position of the arm E in respect to the arm E', substantially as described.

7. The combination in a card setting machine, of the vibrated arm E', the feed arm E, a cam shaft $e^3$, a cam thereon mounted between the two arms so as to vary the position of the arm E in respect to the arm E', a feed shaft driven by the said feed arm E, a carriage driven by the feed shaft, teeth setting mechanism on said carriage, substantially as described.

8. The combination of the pivoted arm E, driving mechanism therefor, mechanism for shifting said driving mechanism, a feed arm E', a cam shaft, a cam thereon having a series of steps, said cam being mounted between the two arms, a feed shaft, carriage controlled by the feed shaft, mechanism for turning said cam to make the twill as the teeth are set, substantially as described.

9. The combination in a card setting machine, of the driving shaft, the eccentric rods, a pivoted arm E', mechanism for throwing either one of said rods into engagement with the arm, a pivoted arm E, a feed pawl thereon, cam shaft $e^3$ carried by the arm E', a cam having a series of steps engaging with the arm E, a ratchet wheel $e^5$, a pawl $e^4$, a cam $e^7$, with mechanism for driving said cam at the end of the stroke of the carriage to form the twill, substantially as set forth.

10. The combination in a card setting machine, of the driving shaft, the forward and return feed eccentric thereon, eccentric rods, pivoted arm E', pawls on said arm adapted to engage with either of the eccentric rods, a pivoted lever $H^2$ acting upon the rods to throw them into engagement with the arm E', a spring for moving the lever in one direction, a slide $H^4$ for moving the lever in the opposite direction, a shifter shaft, a sleeve on said shaft, a cam on said sleeve for actuating the slide, the feed arm E, a feed shaft F controlled by said arm, a carriage driven by the feed shaft, substantially as described.

11. The combination of the driven arm E', a feed arm E, a cam $e^3$ mounted between the two arms so as to vary the distance between the arms, a spring for drawing the arms together, a feed pawl *e* carried by the arm E, mechanism for raising and lowering the said pawl, a toothed wheel F', a feed shaft F upon which said wheel is mounted, a carriage driven by said shaft, said carriage having the mechanism for setting the teeth, substantially as described.

12. The combination of the driving shaft, the eccentrics thereon, eccentric rods, a pivoted arm E', feed mechanism controlled by said arm, a carriage fed by said mechanism, a shifter shaft, a sleeve driven by said shaft, a cam on said sleeve having a slow movement, the intervening mechanism between the cam and the eccentric rods for shifting said rod, quick acting cam on the shifter shaft, acting on the intervening mechanism to quick shift said mechanism, substantially as described.

13. The combination of a driving shaft, eccentrics $A^2$, $A^3$, their rods, arms E E', driven by either one of said eccentrics, a feed pawl *e* carried by the arm E, a cam $H^6$ on the driving shaft, a lever $A^5$ acted upon by said cam and acting upon the pawl, a feed shaft, a feed wheel thereon, with which the pawl engages, a carriage controlled by the feed shaft, substantially as described.

14. The combination of the feed pawl, the feed shaft, the toothed wheel on said shaft with which the pawl engages, a carriage on which is mounted the card setting mechanism, a slide $I^2$ adapted to be projected into one of the spaces of the teeth of the feed wheel to allow the pawl to skip one tooth at a certain time, substantially as described.

15. The combination of the feed pawl, the feed shaft, a toothed wheel thereon with which the pawl engages, a carriage controlled by said feed shaft, mechanism mounted on said carriage for setting the teeth, a slide $I^2$ adapted to be projected into the space between the teeth of the feed wheel, an intermittently operated cam $H^7$ for actuating the slide, substantially as described.

16. The combination in a card setting machine, the driving shaft, the longitudinal cam shaft geared thereto, a sleeve adapted to slide on and turn with said cam shaft, cams on said sleeve for actuating the wire feeding and tooth forming and setting mechanism, a carriage upon which said mechanism is mounted, a shifter shaft thrown into and out of engagement with the cam shaft by the carriage, substantially as described.

17. The combination of the driving mechanism and feeding mechanism for the carriage, the cam shaft D, cam sleeve D' driven by the cam shaft but adapted to travel with the carriage, cams on said sleeve for actuating the wire feeding and tooth forming and setting mechanism, the shifter shaft H, two trains of gear wheels $d^7$ $d^8$, clutching mechanism carried by the cam sleeve adapted to throw either one or the other of the train of gears into engagement with the driving mechanism, with reverse feeding mechanism controlled by the shifter shaft for reversing the movement of the carriage, substantially as described.

18. The combination of the frame, the driving mechanism, the cam shaft, a carriage adapted to slide on the frame mechanism on the carriage for feeding and bending the wire forming the teeth, a cam sleeve mounted on the cam shaft and adapted to travel with the carriage, pinions $D^8$, $D^9$ loose on the shaft, said pinions being geared to the shifter shaft, projections on the cam sleeve adapted to engage with lugs on the loose pinions at either end of the stroke of the carriage, cams $H^8$ $H^9$, their levers L and $L^3$ connected to their respective

loose pinions $D^3$ $D^4$ and so set that they will move their pinions so as to entirely free them from the control of the cam sleeve at a given time, substantially as set forth.

19. The combination of the driving mechanism, the carriage, the shaft D, the cam sleeve thereon adapted to turn with the shaft but slide with the carriage, pinions $D^3$ $D^4$, a shifter shaft H geared to said pinions, projections at each end of the sleeve adapted to engage with the lugs on the pinions, rods $L^3$ $L^4$ having arms engaging with the pinions $D^3$ $D^4$, levers $L$, $L^2$ engaging with their respective rods, cams $H^4$, $H^5$ acting upon said levers, said cams being mounted upon the shifter shaft, the whole arranged substantially as and for the purpose set forth.

20. The combination of the frame, the driving mechanism, the carriage, the puncturing and tooth feeding and bending mechanism mounted on the carriage, feed rolls in front of said mechanism adapted to feed the material into which the teeth are set, a ratchet wheel on one of said feed rolls, a lever K having a pawl $k$ adapted to engage with the ratchet wheel, a shifter shaft, a cam K′ thereon for actuating the lever so as to feed the material after a line of teeth have been set, substantially as described.

21. The combination in a card setting machine, of the frame, feeding mechanism, the carriage, puncturing and tooth forming mechanism mounted on the carriage, feed rolls mounted in front of the carriage, mechanism for intermittently operating said feed rolls, a rocking frame, hooked bars carried by said frame adapted to bend the tooth as it is projected through the material, a driven cam $K^2$, a lever $K^4$ acted upon by said cam, a horisontally arranged lever $K^3$ connected to the lever $K^4$ and acting upon the rocking frame, substantially as described.

22. The combination in a card setting machine, of the feeding mechanism, the carriage, puncturing and tooth forming mechanism mounted on said carriage, the driven shaft D, cam sleeve mounted thereon adapted to actuate the mechanism mounted on the carriage, a cam $K^2$, a rocking bar, a frame thereon actuated by said cam, hooks on said frame for bending each tooth as it is passed through the material, said frame being connected to the carriage, substantially as described.

23 The combination of the driving mechanism, the carriage, the feeding mechanism for feeding the material into which the teeth are set, a rocking bar mounted on the frame of the machine, a hook carrying frame adapted to slide on but rock with the bar, an arm on the carriage connected to said frame, and mechanism for rocking the bar, substantially as described.

24. The combination of the driving shaft, the fast and loose pulleys thereon, a belt shifter, a vibrating arm, a cam on the driving shaft adapted to vibrate the arm, a spring for throwing the belt shifter in one direction, a catch for retaining the shifter against the pressure of the spring, a block adapted to be inserted between the vibrating arm and the catch so as to release the shifter, an armature connected to said block, an electro magnet, the hooked arms for bending the tooth as it is projected through the material, insulating material between the hooks, wires extending from each hook to the magnet, the parts being so arranged that when a tooth is properly projected through the material the circuit will be closed and the magnet will draw the block from between the vibrated arm and the catch, substantially as described.

25. The combination of the driving shaft, fast and loose pulleys thereon, a spring actuated belt shifter, a latch for holding the belt shifter against the pressure of the spring, a pivoted arm, a cam for vibrating said arm, a sliding block mounted in the arm adapted to be raised and lowered as each tooth is projected, an armature connected to the sliding block, an electro magnet, hooks for bending the tooth as it is projected through the material, said hooks being insulated from each other, wires extending from the hooks to an electro magnet so that when a tooth is properly set the circuit will be closed and will draw the block from between the vibrated arm and the catch, substantially as described.

26. The combination of the driving shaft, fast and loose pulleys thereon, the pivoted belt shifter T, a frame T′, stops on said frame for limiting the movement of the shifter, spring $t^2$ for throwing the shifter in line with the loose pulley, a pivoted catch $t^3$ adapted to hold the shifter against the pressure of the spring and in line with the fast pulley, a vibrated arm U, a cam $u'$ on the driving shaft adapted to vibrate the arm, a slide U′ having a head or block $u^2$, a spring for holding said head in line between the vibrated arm and the catch, an armature connected to said slide, an electro magnet, the hooks adapted to engage with the tooth when it is projected through the material, wires connecting the hooks of the armature substantially as described.

27. The combination in a card sticking machine, of the holder for the material, the carriage, puncturing bar N, a shaft $N^3$, a crank thereon, a pin on said crank engaging with the puncturing bar N, platforms $g^3$ upon which the puncturing bar rests as it slides forward, a loose band for the shaft, and means for driving the shaft, substantially as described.

23. The combination in a card sticking machine, of the puncturing bar N, the crank shaft, crank thereon, a pin on the crank adapted to the bar, mechanism for driving the shaft, a platform onto which the puncturing bar is lifted by the crank and on which the bar slides as it is moved forward by the crank, a vertically movable bearing for the shaft and a spring resting on said bearing, substantially as described.

29. The combination of the crowner, the doubler in front of the crowner, means for moving the doubler, a slide carrying the crowner, a cam acting on said slide, bending arms on each side of the crowner adapted to bend the tooth over the doubler, blocks carrying the arm, pivoted in a sliding frame, a cam for operating said frame, a lever $Q^2$, a cam acting on said lever, an arm extending from said lever, cam blocks $g^{10}$ and $g^{11}$ the end of said arm being enlarged, with screws carried by extensions of the arms $R^2$, substantially as described.

30. The combination of the carriage, a frame R adapted to reciprocate on said carriage, a head mounted on said frame, pivoted blocks mounted in the head, bending arms $R^2$ secured to the blocks, each block having a rearwardly extending arm $R^4$ a slide Q, a crowner carried by side slide, and a doubler mounted in front of the crowner, means for moving said doubler, a pivoted lever $Q^4$ carried by the slide Q, a cam for operating said lever, said lever controlling the side movement of the pivoted arms $R^2$, with cams for actuating the slides Q and R, substantially as described.

31. The combination in a card sticking machine, of the crowner and doubler, mechanism for operating the same, a slide R, the cam for actuating said slide, pivoted blocks $R^2$ mounted on the slide, bending arms $R^3$ adjustably mounted in each block, rearwardly extending arms $R^4$ one mounted in each block, said arms being adjustable, set screws $r^4$, $r^5$ in said arms, a lever $Q^3$ having an arm $g^9$, cam blocks $Q^{10}$ on said arm, a head $Q^{11}$, and a spring tending to draw the arms $R^4$ together, substantially as described.

32. The combination in a card setting machine, of the carriage, puncturing bar N, a crank shaft $N^3$, crank pin $n'$ thereon carrying the puncturing bar, with a spring bearing $n^7$ for the rear end of the puncturing bar whereby on moving the bearing the puncturing bar can be readily detached from the crank shaft, and withdrawn from the machine, substantially as described.

33. The combination in the wire feeding mechanism of a card setting machine, the pivoted lever M, a cam for raising one end of such lever, spring bars $m$ $m'$ forming the opposite arm of the lever and having jaws between which the wire passes and a fixed table upon which the bars are forced when the cam actuates the lever so as to clamp the wire, substantially as described.

34. The combination in the wire feeding mechanism of a card setting machine, the pivoted lever M, a cam for raising the rear arm of said lever, the spring arms $m$ $m'$ attached to the lever near the fulcrum, one arm $m$ being above the lever and the other arm $m'$ being below the lever, a jaw $m^2$ on the spring arm $m$ and a jaw $m^2$ on the arm $m'$, a fixed table $C^2$ upon which the arm $m'$ rests so that when the lever is actuated by the cam the jaws will clamp the wire, substantially as described.

35. The combination in the wire feeding mechanism of a card setting machine, of the feeding lever having spring clamping arms $m$ $m'$ between which the wire is clamped, a cam $d^{11}$ for raising the lever and clamping the wire and a cam for laterally moving the lever for feeding the wire forward and a spring for returning the lever, substantially as described.

36. The combination in the wire feeding mechanism of a card setting machine, the pivoted lever $M^3$, the cam for raising one arm of the lever, an extension $m^6$ on the opposite arm, a table having a fixed jaw, a jaw on the extension of the lever, said jaw being forced against the fixed jaw as the opposite ends of the levers are raised by the cam, substantially as described.

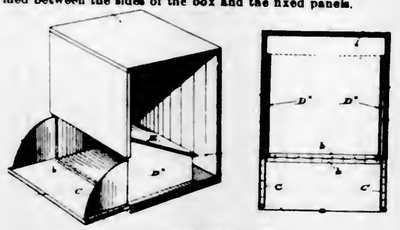
37. The combination of a pivoted lever $M^3$, the cam for lifting one arm of the said lever, a sliding extension $m^4$, a spring secured to the extension and to the lever, a jaw carried by the said extension, a fixed table having a fixed jaw between which and the jaw of the extension the wire is clamped and means for actuating the cam, substantially as described.

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## 528,355. GROCER'S SHIPPING OR SERVICE BOX OR CRATE.

ROBERT R. RAIN, San Francisco, Cal., assignor to the Tillmann & Bendel, same place. Filed May 14, 1894. Serial No. 511,282. (No model.)

*Claim.*—The herein-described shipping and service package for grocers' use, comprising a box having perpendicular sides a flat bottom and a closed top with an opening in the front side the lower edge of which is on a level with the bottom of the box, a rearwardly and downwardly inclined partition fixed across the space over said bottom the rear edge of said partition being parallel with the perpendicular rear side of the box and terminating in front thereof leaving a throat or contracted opening through which the space above the inclined partition communicates with the space beneath it, the panels extending from the front perpendicular side of the box rearwardly under and supporting the inclined bottom, the pockets formed by said panels and the hinged front attached to the bottom of the box to close up flush with the front side of the box and to open and set horizontally and flush with the bottom of the box and the quadrant shape sides fixed to the said hinged front and adapted to set into the pockets formed between the sides of the box and the fixed panels.

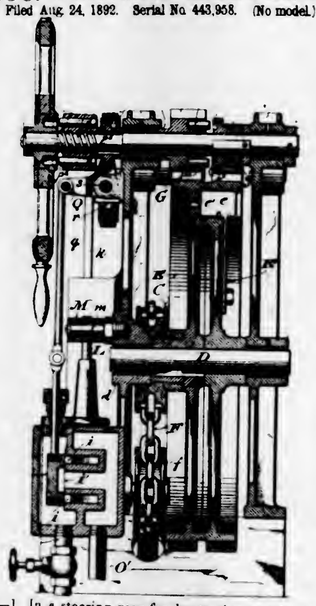




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## 528,356. STEERING-ENGINE.

MATTHIAS A. BECK, Milwaukee, Wis. Filed Aug. 24, 1892. Serial No. 443,958. (No model.)



*Claim.*—1. In a steering gear for boats, the combination of a windlass, a motor connected therewith, and a steering wheel capable of limited movement independently of the windlass and having a connection with the motor whereby its initial movement operates to start the motor, and a clutch automatically connecting the steering wheel at the limits of its independent movement with said windlass, substantially as and for the purposes set forth.

2. In a steering gear for boats the combination of a windlass, a motor connected therewith, a steering wheel capable of limited movement independently of the windlass, and a connection between the steering wheel and motor whereby the initial movement of said wheel operates to start the motor in either direction, substantially as and for the purposes set forth.

3. In a steering gear for boats, the combination of a windlass, a motor connected therewith, a steering wheel capable of limited movement without effect upon the windlass, and connections between the steering wheel and motor whereby the motor is started by the initial movement of said wheel in either direction and is stopped automatically when the windlass is moved into a position corresponding with the position in which said wheel is stopped, substantially as and for the purposes set forth.

4. In a steering gear for boats, the combination of a windlass, a motor connected therewith, a steering wheel controlling the operation of the motor, and an automatic brake for holding the windlass in any given position in which it is brought to rest, substantially as and for the purposes set forth.



5. In a steering gear for boats, the combination with a chain wheel or drum, of a motor connected therewith, a steering wheel having a screw threaded shaft, a sleeve mounted upon said shaft in engagement with the threaded portion thereof and geared with said chain wheel or drum, a connection between said sleeve and motor, whereby the motor is automatically started and stopped by the initial movement of said wheel in either direction, and the consequent movement of the steering gear, substantially as and for the purposes set forth.

6. In a steering gear for boats, the combination with a chain wheel or drum, of an engine connected therewith, a reversing valve controlling the operation of the engine, a steering wheel having a screw threaded shaft, a sleeve mounted upon said shaft in engagement with the screw thread thereon and geared with said engine or chain wheel, and a connection between said sleeve and valve, substantially as and for the purposes set forth.

7. In a steering gear, the combination with a suitable chain wheel or drum, of an engine connected therewith, a reversing valve controlling the operation of said engine, a steering wheel having a screw threaded shaft, a screw threaded sleeve mounted upon said shaft in engagement with the screw thread thereon and geared with said chain wheel or drum, an angular lever having at one end a tongued and grooved connection with said sleeve, and at the opposite end a connection with said valve, substantially as and for the purposes set forth.

8. In a steering gear for boats, the combination of a chain wheel or drum, a gear mounted upon the drum shaft, an engine connected with said gear, a reversing valve controlling the movement of said engine, a steering wheel having a screw threaded shaft, a screw threaded sleeve mounted upon said shaft in engagement with the screw thread thereon and provided with a gear engaging with the gear on the drum shaft, and a connection between said sleeve and reversing valve, substantially as and for the purposes set forth.

9. In a steering gear for boats, the combination with a suitable drum, of a gear fixed upon the drum shaft, an engine connected with said gear, a reversing valve controlling the movement of the engine, a steering wheel having a screw threaded shaft, a sleeve mounted upon said shaft in engagement with the screw thread thereon and provided with a gear engaging with the gear on the drum shaft, and with clutch formations adapted to engage corresponding clutch formations fixed upon the steering wheel shaft, and a connection between said sleeve and the reversing valve of the engine, substantially as and for the purposes set forth.

10. In a steering gear for boats, the combination of a suitable drum, a gear fixed upon the drum shaft, a similar gear loosely mounted thereon, a locking device for connecting it rigidly with the fixed gear, an engine connected with the loose gear, a reversing valve controlling the operation of the engine, a steering wheel having a screw threaded shaft, a screw threaded sleeve mounted upon said shaft in engagement with the screw thread thereon and provided with a gear engaging with the fixed gear on the drum shaft, and a connection between said sleeve and said reversing valve, substantially as and for the purposes set forth.

11. In a steering gear for boats, the combination of a suitable drum, fixed and loose gears mounted upon the drum shaft, a locking device for rigidly connecting said gears, a twin cylinder engine having two crank shafts geared with said loose gear, a steering wheel having a screw threaded shaft, a threaded sleeve mounted upon said shaft in engagement with the screw thread thereon and provided with a gear engaging with the fixed gear of the drum shaft, and a reversing valve controlling the operation of said engine connected with said sleeve, substantially as and for the purposes set forth.

12. In a steering gear for boats, the combination with a suitable drum or windlass, of a motor having a detachable connection therewith, a steering wheel connected with and controlling the operation of said motor and also having a connection with said drum or windlass but capable of a limited movement independently thereof, and a locking device by which said steering wheel may be directly geared with said drum or windlass when the motor is disconnected, substantially as and for the purposes set forth.

13. In a steering gear for boats, the combination with a suitable drum or windlass, of a motor geared therewith, a steering wheel connected with and arranged to start said motor in either direction, a brake operating normally upon some part of the steering gear to hold the same in a given position, and a connection with the steering wheel whereby said brake is released by the initial movement of said wheel in either direction, substantially as and for the purposes set forth.

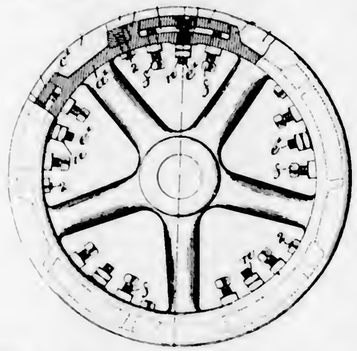
14. In a steering gear for boats, the combination with the steering wheel of a brake applied to some convenient part of the steering gear and comprising a wheel, an expansible strap placed around the periphery of said wheel and held in engagement therewith by a spring, and a cam connected with the steering wheel, the initial movement of which in either direction, operates through it to spread the brake strap out of engagement with the periphery of the brake wheel, substantially as and for the purposes set forth.

15. In a steering gear for boats, the combination with a suitable drum or windlass, of an engine connected therewith, a reversing valve controlling the operation of the engine, a steering wheel connected with said drum or windlass but capable of a limited movement independently thereof, a brake operating normally upon some part of the steering gear to hold it immovable in a given position, and connections between said brake and reversing valve and the steering wheel whereby the initial movement of the latter in either direction operates first to release said brake and then to open said valve, substantially as and for the purposes set forth.

16. In a steering gear for boats, the combination with a suitable drum or windlass of two crank shafts geared therewith, a vertical twin cylinder engine having its piston rods connected with said crank shafts, and valve actuating levers fulcrumed to a fixed support and connected at opposite ends with the piston rods and main valve rods of the engine, substantially as and for the purposes set forth.

17. In a steering gear for boats, the combination with a suitable drum or windlass and a steering wheel, of a vertical twin cylinder engine, having its piston rods connected by suitable gearing with said drum or windlass, valve actuating levers fulcrumed to a common fixed support and connected at their opposite ends with the piston rods and main valve rods of the engine, and a reversing valve controlling the operation of the engine connected with said steering wheel, substantially as and for the purposes set forth.

## 528,357. POWER-WHEEL FOR ENDLESS CONVEYERS OR ELEVATORS. AMBROSE J. B. BERGER, Hingham, Mass., assignor to the Steel Cable Engineering Company, of Maine. Filed Dec. 4, 1893. Serial No. 492,654. (No model.)



*Claim.*—1. In a power wheel for endless conveyers, an adjustable tread surface, the wheel having a series of peripheral pockets formed therein, and removable wearing blocks adapted to be secured in one end of said pockets, substantially as described.

2. In a power wheel for endless conveyers, side flanges, and the rim having a series of pockets formed in its periphery between said flanges, combined with tread wearing plates concentric to the rim and between the pockets, and adjustable connections between said plates and the wheel rim, whereby the tread surface may moved toward and from the rim and thereby radially adjusted, substantially as described.

3. In a power wheel for endless conveyers, the rim having a series of pockets formed in its periphery, and removable wearing blocks for and adapted to be secured in said pockets and extending radially beyond the tread surface of the wheel between the pockets, said extended portions engaging the conveyer attachments, substantially as described.

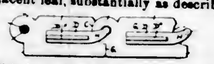
4. In a pocket wheel for cable conveyers, removable wearing blocks for and adapted to be secured in the pockets extended beyond the tread surface of the wheel, and radially recessed to receive the cable, substantially as described.

## 528,358. FLEXIBLE DOOR. EDWIN BROWN, Worcester, Mass., assignor to the Flexible Door and Shutter Company, same place and Portland, Me. Filed Nov. 27, 1891. Serial No. 413,264. (No model.)

*Claim.*—1. In a flexible door, the combination of a series of parallel leaves provided with convex edges forming barrels and concave edges to receive said barrels and staples by which the ends of said leaves are united, each of said staples having one leg driven into the ends of the leaves and having the other leg journaled concentrically in the ends of the barrels of the adjacent leaves, substantially as described.

2. In a flexible door, the combination of a series of parallel leaves hinged together at their ends by staples, hinging staples, each of said staples having one leg held in the end of a leaf and the other leg journaled in an adjacent leaf, substantially as described.

3. In a flexible door, the combination of a series of parallel leaves hinged at their ends by staples, staples attached to the ends of the leaves and provided with webs entering said leaves to hold said staples from lateral motion, said staples being provided with a leg journaled in the adjacent leaf, substantially as described.

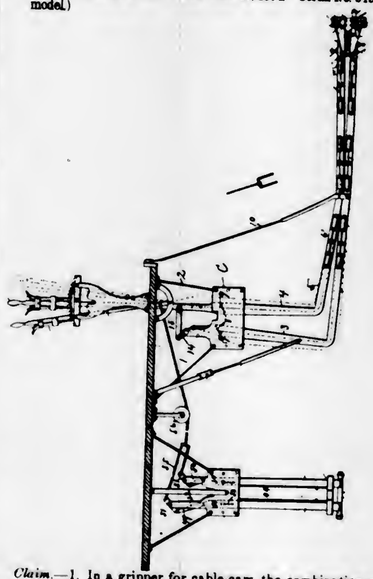


4. In a flexible door, the combination of a series of parallel leaves hinged together at their ends by staples, hinging staples uniting the ends of said leaves, said staples being provided with projecting ribs forming guides by which the movement of the door is directed, substantially as described.

5. In a flexible door, the combination of a pair of leaves, one of said leaves having a convex edge and the other leaf having a concave edge fitting said convex edge and forming an articulated joint, wires projecting from the concave edge of the leaf at one side of the plane uniting the centers of said articulated joint, said wires being bent at $E^3$ to bring their ends coincident with the axis of the articulated joint to form pintles, substantially as described.

6. In a flexible door, the combination of a series of parallel strips hinged together at their edges and forming leaves, said leaves having one edge convex to form a barrel and the opposite edge concave to receive the convex barrel of the adjacent leaf, pintles projecting from the concave edges of said leaves and said convex edges being provided with notches to receive said pintles substantially as described.

## 528,359. GRIPPER FOR CABLE RAILWAYS. BENJAMIN BROWNSTEIN, Philadelphia, Pa. Filed June 19, 1894. Serial No. 515,079. (No model.)



*Claim.*—1. In a gripper for cable-cars, the combination of grippers consisting of sections jointed together to move laterally, oppositely arranged spring-actuated jointed rods on the sections to restore them to alignment, and a lever to operate the jaws.

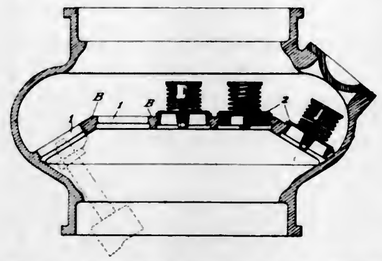
2. The combination with the forward or main gripper, composed of sections hinged together, of a lever to open and close the jaws, an auxiliary gripper arranged to the rear of the main gripper, and a lever to operate the auxiliary gripper.

3. In a gripper for cable-cars, the combination of the lower gripper-jaw consisting of a stem having its lower portion bent at substantially right angles to the stem, sections hinged to the stem, an upper member consisting of an angular stem, a sectional piece hinged thereto and bent to rock on the lower member, additional sections hinged to the rocking section, gripping-jaws on the ends of the respective members of the grippers, and a lever to open and close the grippers and jaws.



4. The combination of the housing the angular gripping stems in the housing, jointed sections on the stems, gripping-jaws on the end of the last pair of jointed sections, a support secured to the jointed-sections, and a lever to operate the jaws.

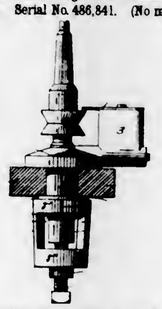
## 528,360. CHECK-VALVE. ANDREW J. CALDWELL, Brooklyn, N. Y., assignor to Henry R. Worthington, Elizabeth, N. J. Filed Oct. 24, 1892. Renewed Mar. 2, 1894. Serial No. 502,145. (No model.)



*Claim.*—1. A multiple check valve provided with a diaphragm transverse to and of greater area than the valve opening and having its center thrown up so as to place the outer valve seats at the proper angle to be drilled by a tool passing through the valve opening, substantially as described.

2. A multiple check valve provided with a diaphragm transverse to and of greater area than the valve opening said diaphragm being supported at the edges only and having its center thrown up to form an arch supporting the pressure and to place the outer valve seats at the proper angle to be drilled by a tool passing through the valve opening, substantially as described.

## 528,361. SPRING-NUT FOR SPINDLE-SUPPORTS. EDGAR J. CARROLL, Worcester, Mass., assignor to William T. Carroll, same place. Filed Sept. 30, 1893. Serial No. 486,841. (No model.)



*Claim.*—1. The combination with a spindle support, having a screw thread thereon, of a spring nut for engaging said screw thread to secure the support in position, said spring nut consisting of two flat portions, or disks, connected by two arms, one of said flat portions or disks being provided with a cylindrical screw threaded opening therein, and split radially to form two spring or clamping portions, substantially as set forth.

2. The combination with a spindle support, having a central opening throughout its length, and a screw thread thereon, of a spring nut to engage said screw thread, and secure the support in position, said spring nut consisting of two flat portions, or disks, connected by two arms, and one of said flat portions or disks being provided with a cylindrical screw threaded opening, and split radially to form two spring or clamping portions, and the other flat portion, or disk being provided with a central screw threaded opening for the reception of an adjusting bolt for the spindle, and said adjusting bolt, screwed into said last mentioned opening with its upper end extending into the central opening in the support, substantially as shown and described.

3. As an improved article of manufacture, a spring nut, or attaching device, for spindle supports, &c., consisting of two flat portions, or disks, connected by two arms, and one of said flat portions or disks being provided with a cylindrical screw threaded opening therein, and split radially to form two spring or clamping portions, substantially as set forth.

## 528,362. SPINDLE-BEARING. EDGAR J. CARROLL, Worcester, Mass., assignor to William T. Carroll, same place. Filed Feb. 21, 1894. Serial No. 501,005. (No model.)



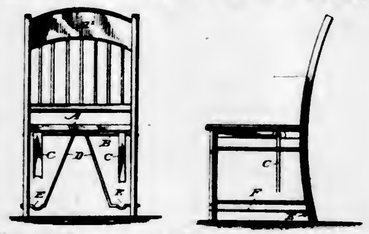
*Claim.*—1. The combination with a supporting case, and a spindle adjustable vertically therein, and said case provided with a central opening throughout its length, with an internal projecting portion near the lower end thereof, having a central screw threaded opening, of a vertically adjustable screw, screwed into said screw threaded opening, and forming an adjustable step for the spindle, and a packing surrounding said screw within the supporting case, and bearing against said internal projecting portion, and against said screw, and a packing compressing nut screwed into the lower end of said case, substantially as shown and described.

2. The combination with a supporting case open throughout its length, and provided with an internal projecting portion having a central screw threaded opening therein, and a bolster, loosely mounted in said case with its lower end resting upon the shoulder formed by the upper part of said internal projecting portion, of a vertically adjustable screw, forming a step for the spindle, which is vertically adjustable without any vertical adjustment of the bolster, said screw being screwed into the screw threaded opening in the central opening in said case, with its lower end extending below the end of said case, and a packing surrounding said screw within the case, and bearing against a shoulder within said case, and against said screw, and a packing compressing nut screwed into the lower end of said case, substantially as shown and described.

3. The combination with the supporting case, provided with a central opening throughout its length with an internal projecting portion or shoulder near the lower end thereof, having a central screw threaded opening, and a bolster loosely supported in said case and bearing at its lower end on the shoulder formed by said internal projecting portion, of a vertically adjustable screw, forming a step for the spindle, which is vertically adjustable, without any vertical adjustment of the bolster, said screw being screwed into said screw threaded opening, with its upper end engaging the lower end of the bolster, to prevent it from turning except when said screw is turned, and a packing contained within the supporting case, and bearing against the internal shoulder therein, and against the adjusting screw, and a nut for compressing said packing, loosely encircling said adjusting screw, and screwed into the lower end of said case, substantially as shown and described.

4. The combination with a supporting case, provided with a central opening throughout its length, and having an internal projecting portion near the lower end thereof, with a central screw threaded opening therein, and a bolster loosely supported in said case, with its lower end resting upon the internal projecting portion, and adapted to rotate in said case, but not to be moved vertically therein in the vertical adjustment of the spindle, of a vertically adjustable screw, forming a step for the spindle, and screwed into said screw threaded opening, with its upper end extending loosely into a notched portion in the lower end of the bolster, for the purpose stated, and a packing contained within the supporting case, and bearing against the internal projecting portion therein, and against the adjusting screw, and a nut for compressing said packing, loosely encircling said adjusting screw, and screwed into the lower end of said case, substantially as shown and described.

## 528,363. BOOTJACK ATTACHMENT. WILLIAM H. COLE, Portland, Oreg. Filed June 9, 1894. Serial No. 514,060. (No model.)



*Claim.*—1. The combination with a chair seat, of a rod supported beneath the same, and a boot jack made in two parts, one of the

said parts pivotally attached to and depending from the said rod, and the other fixed to the frame work of the chair, between the hind legs, as set forth.

2. The combination with a chair, of a rod supported beneath the seat of the same, a boot-jack made in two parts, one of the said parts pivotally attached to and depending from the said rod, and the other fixed to the frame-work of the chair between the hind legs, and a brace connecting the hind legs of the chair with the seat, thereby supporting and strengthening the same and providing means for inserting the foot between the hind legs of the chair, to use the boot-jack, as set forth.

3. The combination with a chair, of a toe-piece pivotally suspended beneath its seat, a wire beneath the seat and provided with a heel-piece, and braces connecting said wire with the front legs of the chair, substantially as specified.

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**528,364. COMBINED PLANTER AND FERTILIZER-DISTRIBUTER.** HARMON COMPTON, Lynnhaven, Va. Filed Jan. 5, 1894. Serial No. 496,859. (No model.)



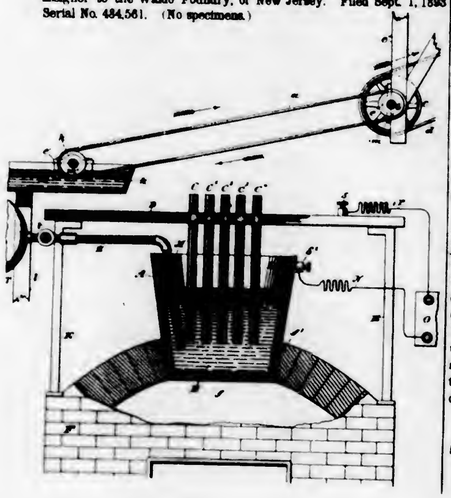
*Claim.*—1. In an agricultural implement of the character herein set forth, the combination of a shaft E, dished shaped rotary cutters mounted on the said shaft, spacing rings or washers interchangeably mounted on the said shaft to enable the said cutters being spaced the required distance apart, and interchangeable turning plows carried by the said beams and adapted to turn the furrow in or out as required, substantially as set forth.

2. In an agricultural implement of the character herein set forth, the combination of beams D, shaft E carried by the said beams, dish shaped rotary cutters and interchangeable washers or spacing rings mounted on the said shaft, turning plows removably attached to the said beams, a third beam D' mounted on the said shaft and adapted to carry a digger, and means substantially as described for raising and lowering the said beams, substantially as described for the purpose set forth.

3. In an agricultural implement the combination of an axle, interchangeable washers or spacing rings mounted on the said axle, and planting attachments mounted upon the said axle and spaced the required distance apart by proper adjustment of the said washers or spacing rings, substantially as set forth.

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**528,365. PROCESS OF REDUCING ALUMINIUM.** FRANK A. GOOCH, New Haven, and LEONARD WALDO, Bridgeport, Conn.; said Waldo assignor to the Waldo Foundry, of New Jersey. Filed Sept. 1, 1893. Serial No. 484,561. (No specimens.)



*Claim.*—1. As an improvement in the art of manufacturing aluminium, the herein described process which consists in forming a bath by fusing together the chlorides of aluminium and sodium and the chloride of another alkaline metal, with the fluorides of aluminium and sodium, passing an electric current through the fused mass, thereby electrolyzing the same, and supplying hydrogen to the bath, substantially as and for the purposes set forth.

2. As an improvement in the art of manufacturing aluminium, the herein described process, which consists in forming a bath by fusing together the chlorides of aluminium and sodium and potassium, and the fluorides of aluminium and sodium, passing an electric current through the fused mass, thereby electrolyzing the same, and supplying hydrogen to the bath, substantially as and for the purposes set forth.

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**528,366. SAD-IRON.** PETER C. GREENAWALT, Reading, Pa. Filed Feb. 5, 1894. Serial No. 499,124. (No model.)



*Claim.*—1. In a sad iron, the combination of a body portion provided with a central passage having overhanging flanges, a detachable handle having a plate attached to its lower ends, said plate being constructed with a downwardly extending, transversely arranged, and inverted T-shaped, coupling lug, and provided with an automatic gravitating latch having a lifting knob, the construction and operation being such, that, when the handle is properly placed on the iron proper, at right angles thereto, the inverted T head will enter the passage, and the gravitating latch will be forced upward, and when the handle is turned parallel with the longitudinal axis of the iron proper, the inverted T head will pass beneath the overhanging flanges of the body portion, and the gravitating latch will automatically descend and prevent the handle from being turned, substantially as described.

2. An iron proper provided with a chamber between its top and bottom and having overhanging flanges, and a central passage for the insertion of an inverted T-shaped coupling lug, and narrow end slots forming continuations of said passage, in combination with a handle having a plate attached to its lower ends, and said plate constructed with an inverted T-shaped coupling lug, said lug being cast on the under side of the plate and centrally bridging the slot in the plate, and having its lips extending transversely of the plate, and a latch having legs on each side of said lug and arranged in the slot of said plate substantially as described.

3. The combination with a sad iron proper having a chamber, and slots and a passage for the entrance of latching legs and a coupling lug, of a gravitating latch having a leg at each end, a handle having a plate connecting its ends; said plate being provided with a slot for the reception of the gravitating latch and with a bridging, inverted T-shaped coupling lug on its under side, substantially as described.

4. A handle for a sad iron, consisting of a handle proper, a plate secured to the base ends of the handle, the handle proper and the plate being provided with vertical slots, the slot in the plate extending nearly the entire length of the plate; an inverted T-shaped coupling lug on the under side of the plate, the lips thereof being transverse to the plate; a gravitating latch having its extremities inserted into the slots of the handle proper and provided with a latching leg at each end, said plate being set in the slot of the plate; and a button for raising the latch, substantially as described

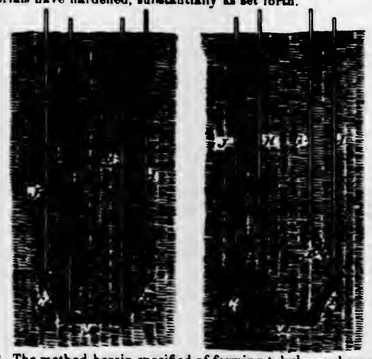
5. In a sad iron, the combination of a body portion provided with an elongated passage and overhanging flanges and a central stud projecting up into the passage, and a detachable handle provided with a centrally perforated transversely arranged inverted T head and a longitudinally arranged gravitating latch provided with a knob, the construction and operation being such that when the handle is properly placed on the iron proper at right angles thereto, the inverted T head will enter the passage and the gravitating latch will be forced upward and when the handle is turned parallel with the longitudinal axis of the iron proper the inverted T head will engage said iron and the gravitating latch will automatically descend and prevent the handle from turning, substantially as described.

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**528,367. TUBULAR UNDERGROUND STRUCTURE.** ROBERT L. HARRIS, New York, N. Y. Filed Feb. 9, 1894. Serial No. 499,584. (No model.)



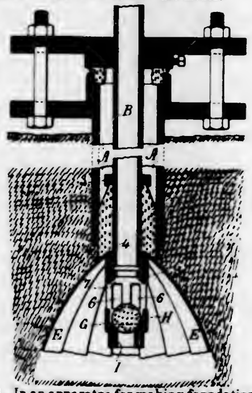
*Claim.*—1. The method herein specified of forming tubular underground structures, consisting in forcing down pipes from the surface to near the level of the lower portion of the structure, introducing cementing materials through such tubes to cause the earthy materials to adhere together, introducing other ranges of pipes with their lower ends at a higher level and continuing the formation of the cement shell between the respective ranges of pipes and drawing up one range of pipes to a higher level, introducing cement through the respective pipes for the formation of the upper portion of the tubular structure, and excavating such tubular structure after the cementing materials have hardened, substantially as set forth.



2. The method herein specified of forming tubular underground structures, consisting in forcing down pipes from the surface to near the level of the lower portion of the structure, introducing cementing materials through such tubes to cause the earthy materials to adhere together, introducing other ranges of pipes with their lower ends at a higher level and continuing the formation of the cement shell between the respective ranges of pipes and drawing up the first range of pipes to a higher level, introducing cement through the respective pipes for the formation of the upper portion of the tubular structure, introducing pipes and forcing in cementing material to divide up the tubular structure into sections by bulkheads or partitions, and excavating such tubular structure after the cementing materials have hardened, substantially as set forth.

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**528,368. TUBE FOR CEMENT FOUNDATIONS OR UNDERGROUND STRUCTURES.** ROBERT L. HARRIS, New York, N. Y. Filed Feb. 12, 1894. Serial No. 499,870. (No model.)



*Claim.*—1. In an apparatus for making foundations or inclosures by cementing material, the pipe B, in combination with the deflector case screwed upon the lower end thereof and having lateral openings, the deflector valve within the case and an adjustable ring support below the valve, substantially as set forth.

2. The combination in an apparatus for making foundations or inclosures by cementing material, of the pipe B extending to the surface of the earth, the deflector case secured to the end of the pipe and provided with lateral openings, a valve and deflector within the case, a ring support screwed into the end of the case, and an annular flap connected at the upper end of the case, substantially as set forth.

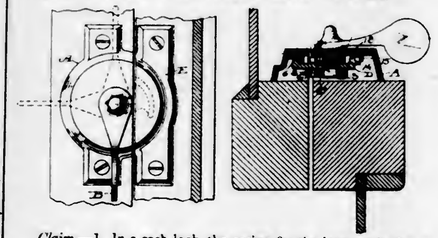
3. The combination in an apparatus for making foundations or inclosures by cementing material, of the pipe A and the pipe B within the same and extending to the surface of the earth, the deflector case secured to the end of the pipe and provided with lateral openings, a valve and deflector within the case, a support in the end of the case, an annular flap connected at the upper end of the case, and a rubber plug around the pipe B and within the pipe A, substantially as set forth.

4. In an apparatus for making foundations or inclosures by cementing materials, the pipe B, in combination with the deflector case screwed upon the lower end thereof and having lateral openings, the deflector valve within the case, and a support below the valve, substantially as set forth.

5. In an apparatus for making foundations or inclosures by cementing material, pipes through which water or cementing material may be forced down into the earth, and a valve at the lower end of each pipe to prevent the cementing material forced down through one pipe rising into either of the other pipes, substantially as set forth.

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**528,369. SASH-LOCK.** JOHN A. HASENPFLUG, Cleveland, Ohio, assignor to the Champion Safety Lock and Novelty Company, same place. Filed Dec. 18, 1893. Serial No. 493,939. (No model.)



*Claim.*—1. In a sash lock, the casing for the inner sash, the central handled rotating post, the cam plate fixed rigidly on the lower end of the said post, and a locking bolt on said post between the cam plate and the said casing, said locking bolt being engaged and rotated by said cam, arrested by the casing, and then moved longitudinally by the cam, whereby the bolt is locked, substantially as set forth.

2. A sash lock having a shell or casing constructed to be fastened to the lower sash and provided with projections about its hub on its inside, in combination with a handled post in the said casing, a plate having a cam groove in its upper side fixed to said post, and a locking bolt between the casing and said plate having a lug engaging in said groove and constructed on its top with projections to engage the projections on said casing, substantially as set forth.

3. The inclosing casing having a central opening and a cam and projections inside about said opening, a handled post in said opening, a locking bolt with an oblong hole through which the said post passes and provided with a projection at the front of said opening to engage the cam on the casing and a projection on its bottom, and a plate with an eccentric groove fixed to the said post and engaging the projections on the bottom of the said bolt, substantially as set forth.

4. In a sash lock, the casing having lugs on its inside about its center, and a cam between said lugs, the handled post extending down into said casing and the strike for the opposite sash, in combination with the locking bolt on said post provided with a rib of increasing depth about its outside and projections to engage the projection and cams on the casing, and a cam plate fixed on said post beneath the locking bolt and constructed to engage therewith and force the bolt into engagement with the strike and the lugs on the inside of the casing, substantially as set forth.

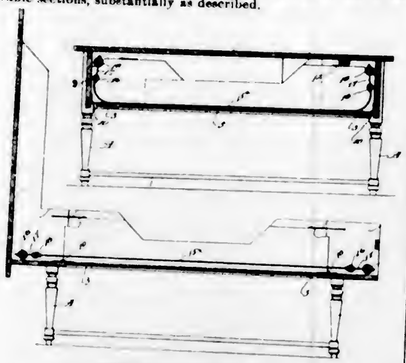
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**528,370. COMBINED FOLDING BED AND TABLE.** LEO KABELL, Chicago, Ill. Filed July 14, 1893. Serial No. 480,538. (No model.)

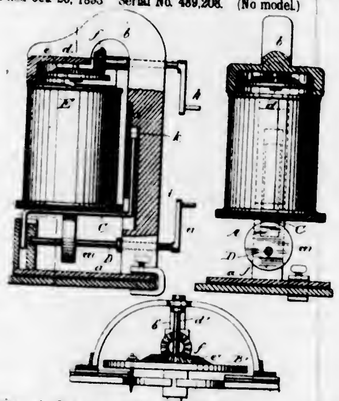
*Claim.*—1. An article of furniture comprising a supporting frame and two movable sections hinged at the opposite ends of said supporting frame a top piece 11 secured at one end to one of said sections and extending the length of the supporting frame, the free end of said top piece 11 being adapted to be supported by the other of said sections when the sections are swung inwardly, a mattress 15 connected at its opposite ends to said movable sections, and device for holding said sections in their outwardly swung position, substantially as described.

2. An article of furniture comprising a supporting frame having the side pieces 1 and 2 at each side thereof, movable end sections 6 and 7 hinged to the end of said supporting frame and having side pieces 8 located to pass between side pieces 1 and 2 of the support-

ing frame, a mattress secured at its opposite ends to said movable sections 6 and 7, a device for holding said sections 6 and 7 in their outwardly swung position and a top piece 11 carried by one of said movable sections, substantially as described.



528,371. CAN-OPENER. Charles F. Keller, Danville, Cal. Filed Oct. 26, 1893. Serial No. 489,208. (No model.)



*Claim.*—1. In a can opener, the combination with a base adapted to be clamped to a suitable support, of an upright extending from said base, an arm connected with said upright and carrying a rotary knife, means for engaging the top of a can, a standard arranged on said base opposite the said upright, a platform having guides adapted to move in guide-ways in said standard and upright, and means for raising said platform, substantially as shown and described.

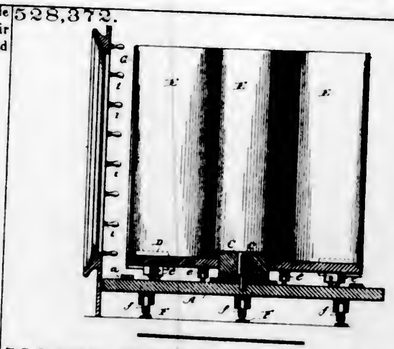
2. In a can opener, the combination of the frame A provided with the arm *b* having the chambered portion *c*, the disk B, the knife E carried thereby, the gearing for driving the disk B, the platform *l*, shaft D, crank *n*, and the eccentric *m*, substantially as specified.

3. In a can opening machine, the combination with a frame carrying a rotary knife and provided with means adapted to engage the top of a can, of a vertically movable platform, guides secured to said platform and adapted to move in guide-ways formed in the said frame, a shaft journaled beneath the said platform, an eccentric carried by said shaft, and means for turning the shaft, substantially as shown and described.

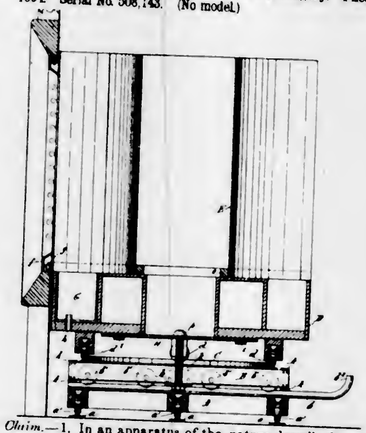
4. In a can opening machine, the combination with a frame carrying a rotary knife, of a vertically movable can carrying platform, a guide arm extending upward from one end of said platform, a similar guide arm extending downward from the opposite end of said platform, guide-ways in which said arms are adapted to move, and means for raising said platform, as and for the purpose set forth.

528,372. APPARATUS FOR DISPLAYING TABLEAUX VIVANT. Eduard von Kilanyi, Buda-Pesth, Austria-Hungary. Filed Mar. 29, 1894. Serial No. 505,625. (No model.) Patented in Germany Feb. 25, 1892, No. 1,909.

*Claim.*—In an apparatus of the nature described, the combination with a track and supporting table, of a sectional scene table provided with removable backgrounds, as and for the purpose set forth.



528,373. APPARATUS FOR DISPLAYING TABLEAUX VIVANT. Eduard von Kilanyi, Buda-Pesth, Austria-Hungary. Filed Apr. 19, 1894. Serial No. 508,143. (No model.)

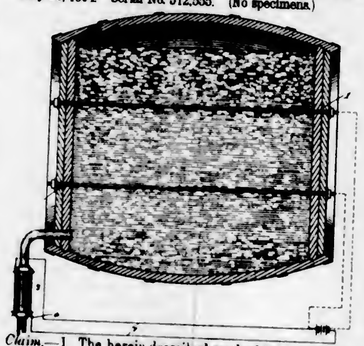


*Claim.*—1. In an apparatus of the nature described, a movable platform in combination with a table supported by and movable thereon, and a scene supporting table divided into independent sections and rotatable on said table.

2. The combination with the movable frame A of the table B moved laterally thereon, and a sectional table D rotating on table B, said table D having one or more water compartments.

3. The combination with the laterally moving frame A and table B of a table D pivotally mounted and rotatable on table B, said table D having removable back grounds E and supports *e*.

528,374. METHOD OF MANUFACTURING BEER. Paul Kropf, Chicago, Ill., assignor of one-half to August Gruell, same place. Filed May 26, 1894. Serial No. 512,555. (No specimens.)

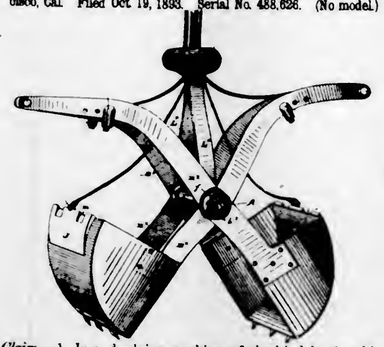


*Claim.*—1. The herein described method for manufacturing beer which consists in subjecting the liquor to the first fermentation, and then passing the current of electricity through the partially fermented beer, substantially as described.

2. The herein described method for manufacturing beer, which consists in subjecting the liquor to the first fermentation, and then passing a current of electricity through the partially fermented beer, and at the same time keeping the partially fermented beer at a low temperature, substantially as described.



528,375. DREDGING IMPLEMENT. Caspar Meier, San Francisco, Cal. Filed Oct. 19, 1893. Serial No. 488,626. (No model.)



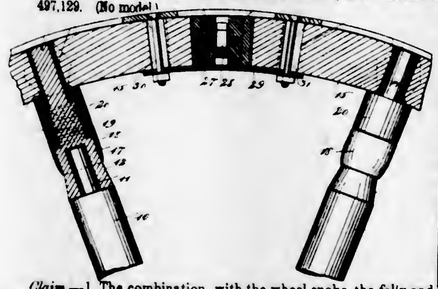
*Claim.*—1. In a dredging machine of the kind having hinged scoops, the combination, with the arms, of the transverse shaft having a journal-portion, a collar or bushing surrounding the journal-portion, the slot and key securing the collar to the shaft and the independent sleeve having a flanged head on the outer end, substantially as hereinbefore described.

2. In a dredging machine of the class herein described, the combination, with the scoops, of the counter-weight block recessed for the arms, and the elastic stops or cushions on the arms, substantially as hereinbefore described.

3. In a dredging-machine of the class herein described, the combination, with the hinged scoops, of the fixed bottom-plate on the leading edge of each scoop, the removable top-plate on the inner side of the scoop over the fixed bottom plate, the edge whereof is beveled in the opposite direction to the corresponding edge of the said bottom-plate, and the wedge-shape teeth or projections secured under the bottom-plate and extending forward beyond the cutting edge formed by the beveled plates, the said teeth being recessed for the bottom-plate and having a curved bottom face tapering from the heel upward to the point substantially as hereinbefore set forth.

4. The combination, with the scoop or bucket of the removable plate having a beveled cutting-edge and the bottom-plate having a cutting edge beveled oppositely to the edge on the upper-plate substantially as hereinbefore set forth.

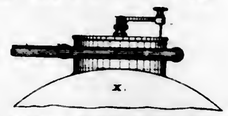
528,376. VEHICLE-WHEEL. Frank Mendenhall and Thomas F. Mendenhall, Moorepark, Mich. Filed Jan. 17, 1894. Serial No. 497,129. (No model.)



*Claim.*—1 The combination, with the wheel spoke, the felly and the tire, of a screw projecting through the felly and engaging the outer end of the spoke, a tension device threaded on the screw between its head and the felly, and a bushing held in the felly and surrounding the screw therein, the outer end of the bushing engaging the tire, while its inner end is adapted for engagement with the tension device, so that the strain on the spokes is directly transmitted to the tire through the medium of the said bushing, substantially as described.

2. The combination, with the adjacent felly sections, having radial grooves in their opposing faces of spreader blocks loosely arranged between the two sections, and provided with radially disposed ribs engaging the said grooves and a right and left screw connecting the blocks, substantially as described.

528,377. CARBURETOR. Ogilvie Moncur, Yuba, Cal. Filed Aug. 16, 1893. Serial No. 483,257. (No model.)



*Claim.*—1. The herein described carburetor-float, comprising the movable conical plate of circular shape fitted closely to the sides of the carburetor body, as described, the hollow float below the plate, the rigid arms securing the plate to the float by which the said plate is supported above the surface of the liquid, the absorbent strips attached to the under side of the plate and depending therefrom through the open space under the plates and into the body of liquid in the carburetor, and the flexible tube connected at one end to an air supply pipe outside the carburetor and at the other end inserted through the top of the conical plate and set to deliver the air into the space above the top of the liquid and through the suspended absorbent strips, substantially as hereinbefore set forth.

2. In a carburetor for gas-machines having a gasoline holding space at the bottom, the combination of a mixing-chamber at the top communicating directly with the space above the body of gasoline in the carburetor-chamber, a perforated screen inclosing opening or passage between the said chamber and the space below, an air-pipe arranged to deliver air into the said chamber inside the said screen, an air-supply pipe connected to the carburetor to deliver air into the space above the gasoline and an outlet for connecting a gas-pipe to the mixing-chamber to carry off the gas from the mixing-chamber for consumption, substantially as described.

3. In a carburetor for gas-machines, the combination with the carburetor having a carbureting-space above the body of gasoline, of a mixing chamber over the carbureting space and communicating directly with said space, a perforated screen inclosing the communicating opening or passage between the chamber and said space, an air-pipe arranged to deliver into the chamber inside said screen, an air-pipe arranged to carry air into the carbureting space below the mixing-chamber, and a valve adapted for connection with an air-pump having a compartment for each pipe-inlet with an inlet from the pump into said compartment and a rotatable disk-valve controlling said inlet apertures and having openings through it which are formed and set with relation to the inlets in the two compartments of the valve-body, as described, for varying the proportions between the two streams of air separately supplied to the carburetor, as specified.

4. In combination with the carburetor, having the carburetor-space and mixing-chamber, as described, the air-pipes —E—H— valve-body —I,— having two compartments —*m*—*m*×— with inlet-apertures in the bottom separated by a partition, a disk-valve having openings —*p*—*p*×—, and individual couplings on the valve-body communicating with the compartments for connecting the air-pipes thereto, and means for turning and setting the valve-disk, substantially as described.

528,378. PUMP. Edwin M. McGee, Carleton, Nebr. Filed Feb. 21, 1894. Serial No. 500,996. (No model.)

*Claim.*—1. The combination, with the pump barrel having a suitable plunger therein and a longitudinal channel near its open lower end, of nipples projecting from the side of the barrel opposite the channel, a movable plug mounted longitudinally in the barrel having transverse bores to register with the channel and nipples, and oppositely arranged valves in the bores of the plug, substantially as described.

2. The combination, with the pump barrel having a suitable plunger therein, and a longitudinal groove or channel near its open lower end of a pair of removable nipples opening from the barrel opposite its channel, a revoluble longitudinal plug in the barrel, and a valve mechanism carried by the plug opposite the nipple and adapted by the turning of the plug to reverse the course of the matter passing through the nipples, substantially as described.

3. The combination, with the pump barrel having a suitable plunger therein and a groove or channel near its lower open end, of the removable nipples opening from the barrel on the side opposite the channel, a movable longitudinal plug mounted in the barrel opposite the channel and nipples, transverse bores extending through the plug to register with the channel and nipples, the bores

having oppositely arranged valve seats therein, oppositely arranged valves held in the ports adjacent to the seats, and removable tubular notched or ported bushings or washers to limit the movement of the valves, substantially as described.



4. The combination, with the pump barrel having a suitable plunger therein, of the removable longitudinal extension end on the barrel, the said end having a longitudinal channel and laterally extending nipples on the side opposite the channel, a revoluble plug in the extension end having transverse bores to register with the channel and nipples, oppositely arranged valves in the bores, and means for limiting the movement of the plug, substantially as described.

5. The combination, with the removable longitudinal extension end of the barrel, and the plug therein carrying valve mechanism, as specified, of the washer on the inner end of the plug arranged to overlap the extension end, and a binding screw entering the end of the plug and overlapping the washer, substantially as described.

528,379. CLOSED-CONDUIT ELECTRIC RAILWAY. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed May 10, 1894. Serial No. 510,762. (No model.)



*Claim.*—1. In an electric railway the combination with a closed conduit, of a main or supply conductor housed therein, a sectional working conductor composed of sections in the conduit and exposed sections seated in the top of the conduit and electrically connected to the sections in the conduit, and magnetically operated switches, pivoted to the main conductor, formed with switch plates in operative relation to the underground sections of the working conductor and with armatures close to the top of the conduit, substantially as described.

2. In an electric railway, the combination with a closed conduit provided with a central longitudinal groove or trough along its top, of a main or supply conductor housed in the conduit, a working conductor composed of sections in the conduit and exposed sections seated in the trough and electrically connected to the sections in the conduit, and magnetically operated switches pivoted to the main conductor and formed with switch plates in operative relation to the underground sections of the working conductor and with armatures close to the top of the conduit between the trough and sides of the conduit, substantially as described.

528,380. CORK-HOLDING BOTTLE-CAP. WILLIAM H. NORTHALL, Evansville, Ind., assignor of two-thirds to J. H. Poisdorfer & Sons, same place. Filed Dec. 28, 1893. Serial No. 494,967. (No model.)



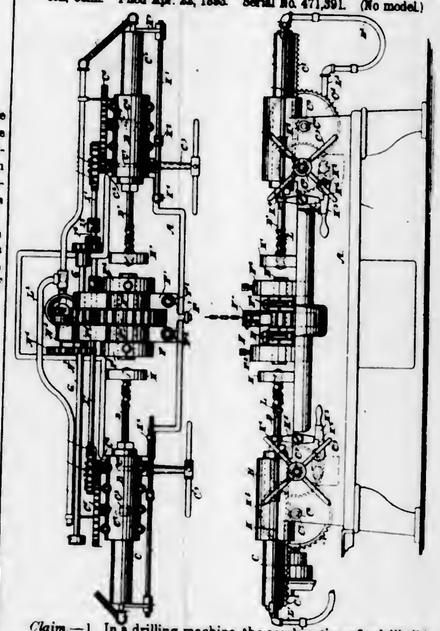
*Claim.*—1. In a cork holding bottle cap, the combination with a sheet metal neck band, of sheet metal side strips, and a sheet metal cap centrally pivoted to the side strips, and provided on top with struck up, integral cam surfaces, substantially as described.

2. In a cork holding bottle cap, the combination with a sheet metal neck band and sheet metal side strips, of a sheet metal cap centrally depressed, and pivotally connected to said side strips by means of lateral wings on the side strips, substantially as described.

3. In a cork holding bottle cap, the combination with a sheet metal neck band and sheet metal side strips, of a sheet metal cap centrally depressed, provided on top with struck up integral cam surfaces, and pivotally connected with the side strips, substantially as described.

4. In a cork holding bottle cap, the combination with a neck band of a pair of side strips, in one piece, centrally provided with lateral wings, and a cap centrally perforated, and coupled to said side strips at and by the said wings, substantially as described.

528,381. DRILLING-MACHINE. WENDELL P. NORTON, Torrington, Conn. Filed Apr. 22, 1893. Serial No. 471,391. (No model.)



*Claim.*—1. In a drilling machine, the combination of a drill slide having a cog rack and a pinion engaging said rack, with a worm-gear on the transverse shaft of said pinion, and a device for operating said worm-gear consisting of a longitudinal shaft having a corresponding worm-gear, a vertically adjustable journal box for said longitudinal shaft, a supplemental shaft having a crank arm on one end pivotally-connecting said journal box, a latch lever on the other end, a trip lever for engaging said latch lever, and suitable means connected with the drill slide for tripping said trip lever, for the purpose stated.

2. In a drilling machine, the drill slide having a parallel rod provided with an adjustable stop in combination with a trip lever, loosely engaging said rod, a latch lever engaging said trip lever, a rack and pinion connection for said slide, a crank arm on the crank of said latch lever, a vertically-adjustable box, pivotally-connected to said crank arm, a longitudinal shaft, having a worm gear, journaled in said box, suitable means for operating said shaft, and a corresponding worm-gear on the rack engaging pinion shaft, for operation in the way described.

3. In a drilling machine, the combination of the duplex drill slides, each having an operating rack and pinion connection, a worm-gear on each rack engaging pinion shaft, a longitudinal shaft of jointed sections having a worm-gear, a vertically-adjustable journal box on the outer ends of said jointed shafts, and suitable means for operating said jointed shafts, with trip mechanism connecting said adjustable journal boxes with the drill slides, whereby the movements of the latter toward each other will automatically operate to disengage the said jointed shaft worm-gear to stop the operation of the slides in the way and for the purpose stated.



4. In a drilling machine, a duplex chuck head consisting of a tubular cylindrical body having a chuck at each end, and a circumferential driving gear mediately of its ends, in combination with a bearing for supporting said chuck, duplex drill slides, and mechanism for operating the chuck and the drill slides, substantially as described.

5. In a drilling machine, the combination of the duplex drill slides each having an operating rack and pinion connection, with a duplex work-supporting chuck, a hinged supporting head forming journal bearing for said chuck and means for rotating the latter within said hinged head, substantially as described.

6. In a drilling machine, the combination of duplex drill slides each having an operating rack and pinion connection, with a duplex work-holding chuck having a gear wheel mediately of its chuck heads, a hinged supporting head forming a journal for said chuck and a shaft on which said chuck bearing head is hinged having a pinion engaging said chuck gear, substantially as described.

7. In a drilling machine, the combination of duplex drill slides each having an operating rack and pinion connection, with a rotating duplex work-holding chuck and a hinged bearing therefor adapted to be supported in alignment between said drill slides and to be turned over out of the way at the side of the machine, substantially as described for the purpose stated.

8. In a drilling machine, the combination of duplex drill slides with a rotating duplex chuck having an axial bore, a swinging bearing head for said chuck, and a gear on the latter between its heads for rotating said chuck, substantially as described.

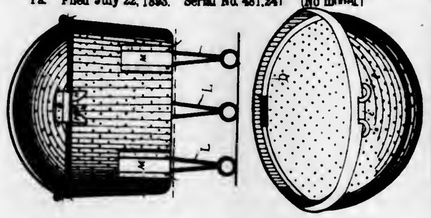
9. In a drilling machine, the combination of duplex drill slides, mechanism for connecting them for automatic operation, and a rotating duplex work-holding chuck, with a trip device for connecting and disconnecting the drill slides with their operating mechanism consisting of transverse shafts each having a crank arm connecting and engaging and disengaging said operative mechanism, rods on the drill slides each having an adjustable stop, a trip lever pivoted on the frame for each slide rod and a latch lever on each shaft, and mechanism for operating said drill slides by hand whereby both drill slides may be operated together and one of them stopped and drawn out from the work while the other continues to operate for the purpose stated

10. A duplex drilling machine, consisting essentially of two drill slides, a shaft at the back of the machine formed of three jointed sections the two end sections whereof are mounted in vertically adjustable boxes at their outer ends and provided each with a worm-gear, a driving shaft above said jointed shafts and geared to the middle section thereof, a transverse shaft beneath each drill slide having a worm-gear engaging the worm-gear of the jointed shafts and a pinion engaging a rack on the drill slide, a supplemental shaft beneath each drill slide having a crank arm pivotally-connecting said boxes, and a latch lever at its front end, a horizontal rod attached to the outer end of each drill slide, and a trip lever on the frame connecting said rod and latch lever, a swinging head, mounted on the power shaft between the drills, a duplex hollow chuck mounted in said head having a gear mediately of its ends, and a pinion on said power shaft engaging said chuck gear for operation substantially as described.

11. A drilling machine provided with a hinged work-supporting head, comprising a frame mounted to swing on the main driving shaft, a chuck head journaled in the said frame and carrying chucks at its ends, a gear wheel secured on the said chuck head between the said chucks, and a pinion in mesh with the said gear wheel and secured on the main driving shaft forming the pivot for the said frame, substantially as shown and described.

12. In a drilling machine, the combination with a driven shaft, a worm shaft carrying a worm, a universal joint connecting the said worm shaft with the said driven shaft, a journal box for the outer end of the said worm shaft and formed with a slide, a guideway mounted to swing and engaged by the said slide, a crank arm pivotally-connected with the said journal box, and a tripping mechanism, substantially as described, and connected with the said crank arm, as set forth.

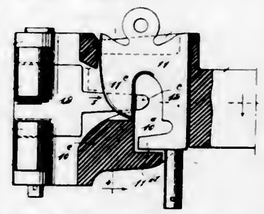
528,382. CULINARY VESSEL. AUGUST W. OBERMANN, Pittsburg, Pa. Filed July 22, 1893. Serial No. 481,241. (No model.)



*Claim.*—1. In a cooking vessel the combination of two perforated sections the lower one having a slot and an annular groove, and the upper one being provided with a clamp having a slot and inclines leading thereto, a spring seated in the annular groove and provided with a hinge to which the sections are secured, the ends of said springs adapted to fit in the slot of the clamp to lock the parts together.

2. A cooking vessel consisting of two sections attached to a spring, said spring coacting with a clamp to secure the sections in a closed position substantially as described.

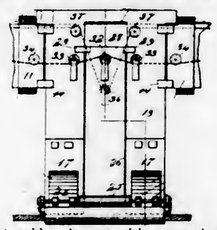
528,383. CAR-COUPLING. OTTO G. OGDEN, Louisville, Ky., assignor of one-half to Bayse N. Ogden, same place. Filed May 4, 1894. Serial No. 510,068. (No model.)



*Claim.*—1. The combination, with a forwardly recessed drawhead, and an L-shaped latch block pivoted between two jaws at one side of the front portion of the drawhead, of a vertically movable dog arranged to slide in the upper side of the latch block to lock it in open adjustment, substantially as described.

2. The combination, with a forwardly recessed drawhead, and an L-shaped latch block pivoted between two jaws at one side of the front portion of the drawhead, of a vertically movable spring pressed dog, arranged to slide in the upper jaw of the drawhead and engage an elongated socket hole in the upper side of the latch block, to limit the swinging movement of said block, substantially as described.

528,384. CABLE-GRIP. GEORGE C. ORMEROD and JOHN H. CHARLES, Asbury Park, N. J. Filed Jan. 24, 1894. Serial No. 497,851. (No model.)



*Claim.*—1. A cable grip, comprising a vertically movable slide frame having opposite spring members at its lower end, jaws carried by the spring members to engage a cable, inclined blocks on the outer sides of the spring members, and vertically movable rollers arranged to run on the blocks, substantially as described.

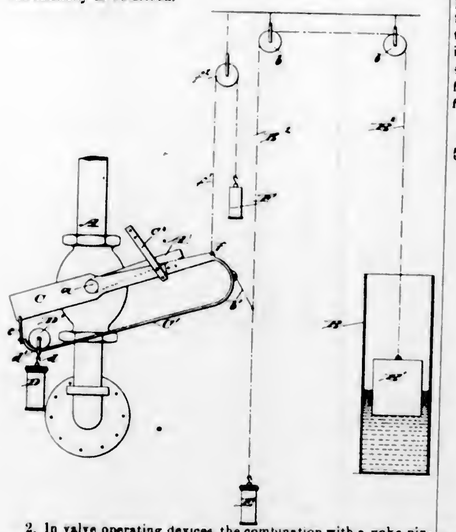
2. A cable grip, comprising a vertically movable slide frame having opposite spring members at its lower end, jaws carried by the spring members to engage a cable, inclined blocks on the outer side of the spring members, a vertically movable slide plate on the slide frame, and rollers carried by the slide plate to engage the inclined blocks, substantially as described.

3. A cable grip, comprising a vertically movable slide frame having oppositely arranged spring members at its lower end, jaws carried by the spring members to engage a cable, inclined blocks on the outer sides of the spring members, a slide plate mounted on the slide frame, a cable mechanism for raising and lowering the slide plate, and rollers carried by the slide plate and adapted to run on the inclined blocks, substantially as described.

4. A cable grip, comprising a vertically movable slide frame slotted in the center and terminating at its lower end in opposite spring members, jaws carried by the spring members, inclined blocks on the outer sides of the spring members, a slide plate held to move in the slot of the slide frame, rollers carried by the slide plate to run on the inclined blocks, and a cable mechanism for raising and lowering the slide plate, substantially as described.

528,385. VALVE-OPERATING DEVICE. CHARLES OTIS, New York, N. Y. Filed June 23, 1892. Serial No. 437,731. (No model.)

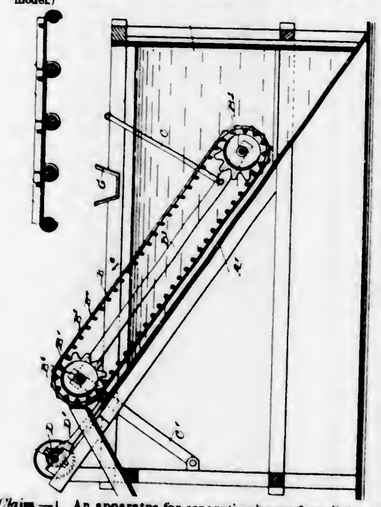
*Claim.*—1. In a valve operating device, the combination of a yoke comprising two arms separated at one end and having a link for connecting said separated ends, a shifting weight adapted to travel on said yoke, and a float operated weight connected with said yoke substantially as described.



2. In valve operating devices, the combination with a yoke pivoted to rock, and having connection with the valve to be operated, of a float, a weighted cord or chain controlled by said float and connected with the yoke, a shifting weight on the yoke, and a counteracting weight connected by a cord or chain to the yoke, substantially as described.

3. In valve operating devices, the combination with the valve, of a yoke mounted to rock, and having an arm engaging the valve arm, a float operated weight connected with such yoke and a roller traveling on such yoke and having a suspended weight adapted to swing relatively to the roller, substantially as described.

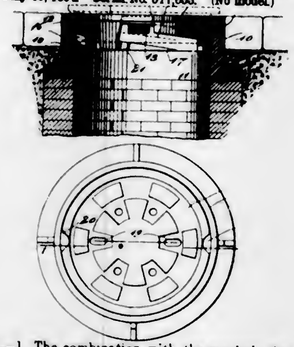
528,386. **COAL OR ORE SEPARATING APPARATUS.** FRANK PARDEE, Hazleton, Pa. Filed Dec. 20, 1893. Serial No. 494,152. (No model.)



*Claim.*—1. An apparatus for separating heavy from light material, comprising a tank having an inclined bottom and a delivery chute at the upper end thereof, an endless traveling belt arranged adjacent and essentially parallel to the inclined bottom, a movable frame in which the said belt is held, and means for imparting a reciprocating motion to the said frame and belt, while the belt travels longitudinally of the frame, substantially as described.

2. An apparatus for separating heavy from light material, comprising a tank, an endless inclined traveling belt located therein, a frame in which the said traveling belt is arranged, links pivoted to the tank and to the said frame respectively, and a driving mechanism connected to the frame to impart a longitudinal reciprocating swinging motion thereto, while the belt travels longitudinally of the frame and at the same time partakes of the swinging motion of the frame, substantially as described.

528,387. **MANHOLE-COVER.** CHARLES PARKIN, Hoboken, N. J. Filed July 10, 1894. Serial No. 517,053. (No model.)

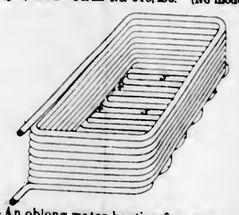


*Claim.*—1. The combination, with the manhole ring, having internal lugs, of the cover having a depending flange with inclined ways therein, and notches opening from the upper sides of the ways, substantially as described.

2. The combination, with the manhole ring having lugs on its inner side, of the cover having inclined ways or grooves on its sides to engage the lugs, the grooves or ways having notches in their upper walls, and holes in the cover top, substantially as described.

3. The combination, with the ring and lugs, of the cover having holes in its top, a depending flange to enter the ring, inclined grooves or ways in the flange to engage the lugs, and holes in the bottom walls of the ways, substantially as described.

528,388. **WATER-HEATING FIRE-GRATE.** JOHN H. PHILLIPS, Pottsville, Pa., assignor of one-half to George H. Gerber, same place. Filed May 8, 1894. Serial No. 510,436. (No model.)



*Claim.*—An oblong water-heating fire-grate adapted for use in a stove or range, constructed wholly of metal pipe, said grate comprising a base having transverse parallel open spaces extending its full width, and close vertical walls formed by coiling the pipe in close order over the edges of the base.

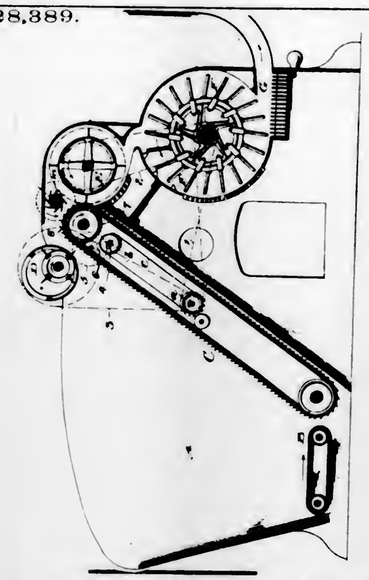
528,389. **FEEDING MECHANISM FOR MACHINES FOR OPENING COTTON.** JAMES C. POTTER, Pawtucket, R. I. Filed July 18, 1894. Serial No. 517,898. (No model.)

*Brief.*—In order to prevent the cotton from being torn in large pieces or lumps by the feeder-beater from the lifting-apron, a toothed holding-roll, H', with rearwardly-inclined teeth is placed above the lifting-apron, said roll rotating in the same direction as the lifting-apron at their point of contact and at substantially the same surface speed. In order to strip the holding-roll, the feeder-beater is placed so near thereto that its teeth pass between the teeth of said roll.

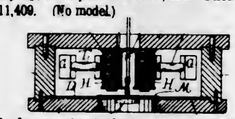
*Claim.*—The combination of the spiked lifting apron, the toothed holding roll and the feeder beater set so that its pins shall pass between the teeth of the holding roll, substantially as and for the purposes hereinbefore set forth.



528,389.



528,390. **MECHANICAL TELEPHONE.** JEROME PRINCE, Milford, Mass., assignor, by direct and mesne assignments, to the Musical Telephone Company, same place and Saco, Me. Filed May 16, 1894. Serial No. 511,409. (No model.)



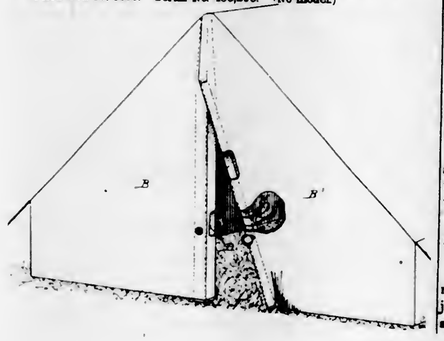
*Claim.*—1. In a mechanical telephone the shell inclosing a series of open tubes fixed in position, in combination with a suitable diaphragm and mouth-piece and a conducting wire leading therefrom, substantially as set forth.

2. In a mechanical telephone, the shell inclosing a series of glass tubes of varying lengths open at one end and held in contact with the shell, in combination with a vibrating diaphragm closing the front of the shell and with a tension wire leading therefrom, substantially as set forth.

3. In a mechanical telephone, the shell inclosing a series of resonant tubes open at one end, in combination with a magnet inclosed within the shell and having one of its poles connected to the line wire, substantially as set forth.

4. In a mechanical telephone, a diaphragm having an outer face or layer of compressed fiber, a back of woven fabric fixed to said face layer, and an interposed sheet of isinglass at and near the center of said diaphragm, substantially as set forth.

528,391. **TENT-FASTENING.** JAMES J. RINN, San Francisco, Cal. Filed Oct. 16, 1893. Serial No. 488,298. (No model.)



*Claim.*—1. The combination with a tent having its end wall provided with an entrance opening of a pole to which one edge of the tent is secured, a strip secured to the other or movable edge of the tent and adapted to overlie the outer face of the pole, and a fastening for removably securing the said strip to the pole, substantially as set forth.

2. The combination with a tent having its end wall divided into two flaps to form an entrance, of a vertical tent pole about which the edge of the stationary flap is wrapped; the said flap being provided with a strip C the ends of which engage sockets or fastenings on said pole, a rigid strip C secured to the vertical edge of the movable flap or fly, and adapted to overlie the outer face of the stationary flap and its pole, and a fastening extending through the said strip C, and the said tent pole, and adapted to be operated from the inside or the outside of the tent when the movable flap is to be opened, substantially as herein described.

3. A fastening for tent flaps, consisting of rigid strips fixed to the flaps, one of said strips being permanently secured to the tent pole, a socket passing through the tent pole having a spring-actuated pawl fitted therein, a knob shank passing through the rigid strip of the outer flap rotatable therein and having a notch on the inner end adapted to be engaged by the pawl when the flap is closed, substantially as herein described.

4. The rigid strips fixed to the flaps of a tent, the inner one being permanently attached to the tent pole, a socket passing through the tent pole having a spring-actuated pawl therein, a knob shank connected with the rigid strip of the outer flap adapted to enter the socket and having a notch which engages the pawl when the flap is closed, a spring connected with the knob shank and holding it normally in position so that the notch will engage the pawl, said spring yielding when the knob is turned so as to allow the shank to be turned until the notch is disengaged from the pawl for the purpose of opening the tent flap, substantially as herein described.

5. The vertical strips fixed to the inner edges of the tent flaps, one of said strips being fixed to the tent pole, a socket passing through the tent pole having a spring-actuated pawl therein, an outer and rotatable knob shank connected with the strip of the outer flap and having a notch adapted to engage the pawl when the flap is closed, and the shank inserted into the socket piece, a corresponding shank extending through the inner side of the tent pole having a knob upon it, the ends of the two shanks being so formed as to engage each other whereby the notch shank may be turned by a knob upon either the outer or inner shank, and the shanks disengaged when the outer flap is opened or engaged when it is closed so as to operate together and springs surrounding the shanks and yielding when either of the knobs are turned to disengage the catch, and returning the notched shank to a position to be engaged by the pawl when released.

6. The combination with a tent having a stationary and an entrance flap or fly at one end, the vertical edge of the stationary flap being wrapped about and secured to said pole, a rigid strip removably secured to the vertical edge of the removable or entrance-forming flap to swing therewith and overlie the pole, and a two part separable fastening connecting the said strip and pole, and operative from both sides of the tent, substantially as herein described.

7. A fastening for tent flaps consisting of rigid strips fixed to the flaps, one of said strips being permanently secured to the tent pole, a locking device, and knobs by which it is operated to open or close the movable flap, and a handle and guide-plate U by which the parts are brought into line when the outer flap is closed.

8. A fastening for tent flaps consisting of rigid strips attached to the vertical edges of the flap, devices for locking the flaps independently to the tent pole, and a band *a* by which the meeting angles of the flaps are secured to the tent pole independently of other fastenings.

9. A fastening for the front of tents, consisting of a rigid vertical strip secured to the outer flap, and means for fastening it to the tent pole, an extension of the inner flap adapted to fold about the tent pole, and fastenings by which it is secured thereto, whereby the pole serves to support the tent, and as a rigid strip for the inner flap.

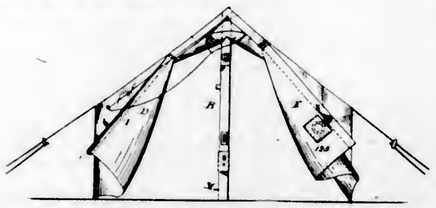
10. A tent having an entrance opening, rigid strips held within pockets formed in the canvas or other material of the tent along both edges of the opening, and a fastening means for securing both strips to close the opening, substantially as set forth.

11. A tent having an end pole and end flaps, pockets formed in said end flaps, stiffening pieces in said pockets, and locking devices for securing said stiffening pieces to the pole, substantially as set forth.

528,392. **TENT.** JAMES J. RINN, San Francisco, Cal. Filed Apr. 16, 1894. Serial No. 507,761. (No model.)

*Claim.*—1. A tent having an end pole and an entrance flap, a rigid strip secured at the edge of the entrance flap, and a universal joint by which the upper end of such strip is secured to the tent pole, substantially as described.

2. A tent having an end pole and an entrance flap, a rigid strip secured at the edge of the entrance flap and a universal joint between the strip and the tent pole, composed of members detachable from one another, substantially as described.



3. A tent having an end pole and an entrance flap, a rigid strip secured to the edge of the entrance flap, a detachable universal joint between said strip and pole and a horizontal slit in the entrance flap near the junction point, substantially as described.

4. In a tent, a tent pole and an entrance flap having a rigid strip secured at its edge, an universal joint between said pole and said strip consisting of a rotary member pivoted in the pole, and a swinging member pivoted to said rotary member, substantially as described.

5. In a tent, a tent pole and an entrance flap having a rigid strip secured at its edge, a universal joint consisting of a rotary plate pivoted to the pole, and having a hooked bracket, and a hinge on the end of the rigid strip connected to said bracket, so as to swing independently of the rotary movement of the said plate, substantially as described.

6. In a tent having an end pole, end flaps slitted transversely for the purpose described, and outer vertically movable flaps for covering said slits and having operating means for opening and closing them substantially as described and shown.

7. In a tent, an end pole around which one of the flaps is wrapped and removably secured, another end flap forming the entrance door and having a rigid strip at its edge, a universal joint between the said strip and the tent pole, and an automatic locking device for securing the entrance flap to the pole.

8. In a tent having an end pole and inner and outer end flaps each having a rigid strip at its edge, a locking device for the inner strip consisting of the spring pin 4 in the tent pole, and a bracket 6, whereby the inner strip when wrapped around the pole is held in said bracket by said pin, substantially as described and shown.

9. In combination with the tent pole and with the outer or entrance flap, an automatic lock, a means for releasing the lock operated from the outside, and a pin controlled from the inside for rendering the releasing means inoperative, substantially as set forth.

10. In combination with the tent pole, a strip in the edge of the entrance flap, a projecting bolt or catch fastened to said strip to engage a locking or latching device secured to the pole, and a push button for releasing said locking device and permitting the flap to be opened, substantially as set forth.

11. In combination with a tent having an end pole and an entrance flap, a lock for securing the flap to the end pole consisting of a bolt secured to said entrance flap, a socket in the pole into which said bolt enters, a latch for engaging the bolt when in the socket and a push button for moving and releasing the latch, substantially as set forth.

12. In combination with a tent having an end pole and an entrance flap, a lock for securing the flap to the pole, consisting of a bolt secured to the entrance flap, a socket in the pole into which said bolt enters, a pressure spring in said socket, a pivoted latch for locking the bolt when in the socket, and a push button for moving and releasing the latch, substantially as described and shown.

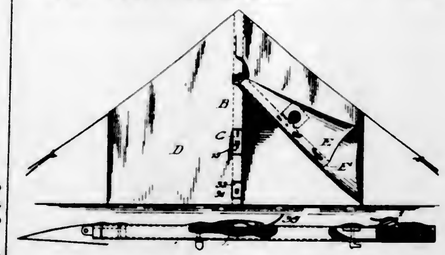
13. In combination with a tent having an end pole and an entrance flap provided with a rigid strip at its edge, a lock for securing the said flap to the pole consisting of a notched bolt secured in said strip, a lock plate on the pole having a front opening to admit said bolt into a socket in the pole, a latch adapted to enter the notch in the bolt, and a push button for operating said latch and releasing the bolt and strip, substantially as described.

14. In combination with a tent having an end pole and an entrance flap provided with a rigid strip at its edge, a lock for securing the said flap to the pole consisting of a notched bolt secured in said strip, an angular lock plate on the pole having a front opening to admit said bolt into a socket in the pole, a spring latch-lever pivoted to the plate, adapted to enter the notch in the bolt, and a push button for operating said latch and releasing the bolt and strip, substantially as described.

15. The combination with a tent having an end pole and an entrance flap of a sliding bolt in the flap, a pivoted latch on the pole, and a push button for releasing the latch, and a pin working through the tent pole from the inside and engaging the latch, and inaccessible from the outside, substantially as described and shown.

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528,393. TENT. JAMES J. RIEN, San Francisco, Cal. Filed Apr. 16, 1894. Serial No. 507,762. (No model.)



*Claim.*—1. In a tent, a recessed end pole, an entrance flap having a rigid strip at its edge, and a locking bolt secured to said strip, said bolt being adapted to enter said recess directly and to be secured therein by a downward movement in said recess.

2. In a tent, an end pole, an entrance flap having a rigid strip at its edge, a bolt secured to said strip, a recess in the pole in which is a latch, and a vertical slot in the pole, for permitting the direct entrance of the bolt and its downward movement to engage with the latch.

3. In a tent, an end pole, an entrance flap having a rigid strip in its edge and adapted to be locked to the pole and a sliding universal joint between the strip and the pole, substantially as set forth.

4. A tent having an end pole and end flaps, one of which is attached to the pole, a rigid strip in the other or entrance flap, a universal joint between said strip and the pole, having a sliding connection whereby the strip can slide upon the pole, and a lock for locking said strip to the pole by a sliding movement of the strip upon the pole, substantially as set forth.

5. In combination with the pole of a tent a rigid strip in the entrance flap adapted to be locked to the pole by a sliding motion, and one or more auxiliary catches adapted to be engaged or disengaged by the sliding motion of the strip at the same time as the main lock, substantially as described.

6. The combination with the tent pole, of the rigid strip in the entrance flap, a lock adapted to be engaged by a sliding movement of the strip and a pin on the inside entering the tent pole and strip to prevent the releasing of the latter from the outside, substantially as set forth.

7. In combination with the tent pole, the rigid entrance strip universally jointed thereto, and vertically movable, a spring buffer for absorbing the upward recoil of said strip, substantially as set forth.

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528,394. TENT. JAMES J. RIEN, San Francisco, Cal. Filed May 1, 1894. Serial No. 509,682. (No model.)



*Claim.*—1. A tent having an entrance opening, one or more entrance flaps, stiffening tubes secured at the edges of said opening, and locking devices for securing said tubes together to close the opening; such locking devices being held within the tubes substantially as set forth.

2. In a cone tent having a vertical wall, an entrance opening and an entrance flap, a stiffening tube attached to the edge of such opening and of such flap, each tube being composed of two parts united by a knee-joint substantially as and for the purpose set forth.

3. In a cone tent having a vertical wall, an entrance opening, and an entrance flap, a stiffening tube in the edge of said opening and of such flap, each tube being composed of two parts united by a knee joint, and locking devices for securing the tubes together above and below said knee joint substantially as set forth.

4. In a tent, tubes in the edges of the canvas forming the entrance opening and a detachable swinging joint for connecting such tubes together at their upper ends, substantially as set forth.

5. In a tent, the combination with a tube as C, having in its interior a vertically sliding spring bolt, of a tube as D having a latch adapted to enter a transverse passage in said tube C and engage with said bolt, substantially as described and specified.

6. In a tent, the combination with a tube C having on its interior a vertically moving spring bolt and a transverse passage, of a tube D having at its upper end a hinged latch adapted to enter such passage and engage said bolt; thereby locking the tubes together at the top, but permitting the tubes a swinging movement, substantially as and for the purposes set forth

7. In a tent, the combination with the tube C, having an opening near its bottom, of the tube D, having a bottom clip provided with a hook, to enter said opening, substantially as described and specified.

8. In a tent the combination with the tube C having secured within it a plug, provided with a transverse passage and carrying a sliding bolt, of a tube D, having an interior plug, to which is secured a latch for entering said passage and engaging with the said sliding bolt, substantially as described and shown.

9. In a tent having an entrance flap, a pocket formed in the edge of such flap, a tube having an open end adapted to be inserted within said pocket, and a plug adapted to enter said tube and having the canvas below the pocket secured to it, substantially as and for the purposes set forth.

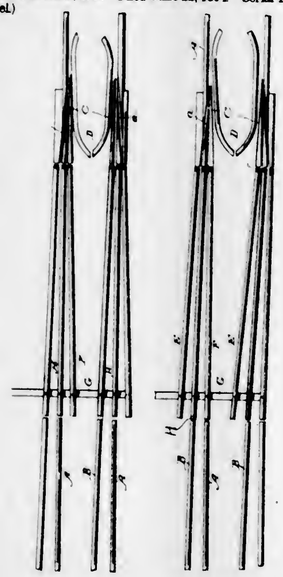
10. In a tent having an entrance opening, jointed tubes secured to the edges of said opening, and locking devices for securing such tubes together above and below the joint, whereby the tent may be opened at the joint, but remain secured at the top and bottom of the opening, substantially as set forth.

11. In a tent having an entrance opening, stiffening tubes secured at the edges of the opening, a combined rotary and hinge joint in each tube, and locking devices for securing both tubes together, substantially as set forth.

12. In a tent having an entrance opening, stiffening tubes secured at the edges of the opening, a combined rotary and hinge joint in each tube, and top, bottom, and intermediate locks for securing said tubes together, substantially as set forth.

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528,395. RAILROAD-SWITCH. WILLARD N. SANTEE and JAMES R. RYAN, Letcher, S. D. Filed June 22, 1894. Serial No. 515,343. (No model.)



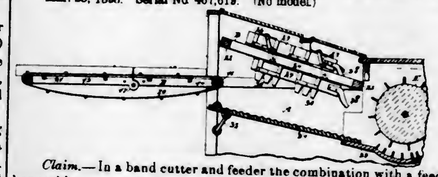




*Claim.*—The combination with the rails, of a main line and side track, the ends of the main rails having transverse grooves *a*, and inner guide rails D, of an interposed switch section composed of rails H pivoted at one end opposite the grooved ends *a* of the main rails, dummy rails E and F located one on each side of the rails H and pivoted at the ends contiguous to the pivoted ends of the rails H, and an operating rod G connecting the free ends of the several rails E, F and H to move them in unison, substantially as set forth.

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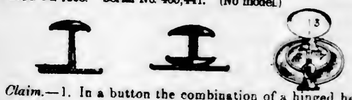
528,396. BAND-CUTTER AND FEEDER FOR THRASHERS. MICHAEL G. SCHAUER and ALDEN A. BARTLETT, Pipe Stone, Minn. Filed Mar. 25, 1893. Serial No. 467,619. (No model.)



*Claim.*—In a band cutter and feeder the combination with a feed bar and its two crank shafts, of two pairs of cutters mounted thereon each cutter comprising the plates *a*, body bar *a'*, the knives 30 on the bar *a'* and the angle straps $a^3$ projecting from the body bar and extending upwardly along the sides of the feed bar and over its upper face, substantially as set forth.

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528,397. BUTTON. JOHN SKILLING, Fall River, Mass. Filed Sept. 14, 1893. Serial No. 485,441. (No model.)

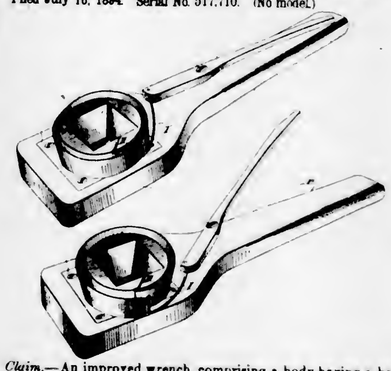


*Claim.*—1. In a button the combination of a hinged head having a shank with a stationary shoe thereon, and a hinged arm movable against the shank or inside of the shoe, substantially as described.

2. In a button, the combination of a hinged head having a shank with a double stationary shoe thereon, and a spring actuated arm hinged in the shoe nearest the shank, substantially as described.

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528,398. WRENCH. JULIUS L. STAMBAUGH, Standart, Tex. Filed July 16, 1894. Serial No. 517,710. (No model.)



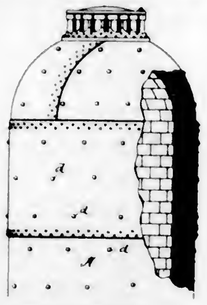
*Claim.*—An improved wrench, comprising a body having a handle member, a cap adapted to engage the nut, a spring band held to encircle the cap, having one end secured to the body adjacent to the cap, and means secured to the body for drawing up such band, whereby it can be fitted into the hub to expand against the inner wall thereof, as specified.

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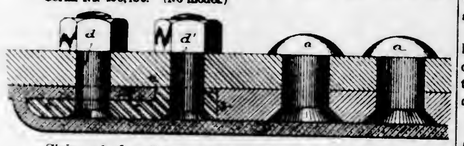
528,399. DIGESTER. HENRY W. STEBBINS, West Carrollton, assignor of one-half to J. H Friend, Dayton, Ohio. Filed Jan. 26, 1894. Serial No. 498,155. (No specimens.)

*Claim.*—The combination with the boiler shell, of a lining adjacent thereto composed of a layer of cement, a lining of lead adjacent to said cement and secured thereto, and to the boiler or shell, by lead rivets, a lining of non-heat-conducting acid-resisting material as described, adjacent to said lead lining, a lining of porous blocks adjacent thereto, a further lining or porous filling adjacent to said blocks,

and the glazed tile (*g*) set in cement, adjacent thereto, all combined and placed substantially as herein described and for the purposes specified



528,400. DIGESTER. HENRY W. STERBINS, West Carrollton, assignor of one-half to J. H. Friend, Dayton, Ohio. Filed Jan. 26, 1894. Serial No. 498,156. (No model.)

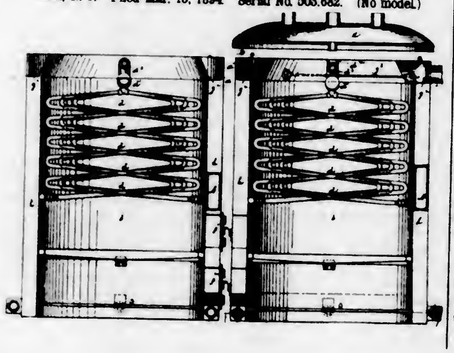


*Claim.*—1. In a digester, the sections A, of hard metal, arranged to over lap each other and form a continuous shell or boiler, the annular shoulders (*b*) formed by the inner-lying edges of each section, a series of bands having two degrees of thickness, abutting with said shoulders and made rigid to the over-lapping edges of the sections, whereby a series of annular recesses or pockets is formed in the interior of the shell, in combination with a lining of pliable metal arranged to extend in and over said pockets, whereby a continuous lining thereof is formed and maintained in position by said pockets, and by the bolts (*d*) passing therethrough, substantially as described.

2. The combination as herein described, of a digester shell and internally arranged bands forming annular pockets therein, a lining of lead adjacent to said shell and maintained by said pockets and bolts passing therethrough, a heat-absorbing and acid-resisting lining composed of Portland cement, asbestos, lamp black, sulphate of barium, litharge and silicate of soda in suitable proportions, by means of which a minimum and uniform degree of pressure and temperature is maintained, and the soft metal lining and the hard metal shell thereby preserved, substantially as herein described.

3. The combination substantially as set forth, of a digester shell, bands forming annular pockets on the interior thereof, and the interior of said shell presenting a uniform and regular surface, a lining of soft metal placed against said shell, the heat-absorbing and acid-resisting lining (*f*) herein described, adjacent to said soft metal lining, the lining (*g*) composed of porous blocks, to further prevent the transmission of heat and to reinforce or strengthen the lining (*f*), the lining (*h*) having a heat-absorbing and acid-resisting nature, and the glazed tile (*j*) all combined and arranged substantially as specified.

528,401. HEATING-BOILER. HENRY C. STEINHOFF, West Hoboken, N. J. Filed Mar. 15, 1894. Serial No. 503,682. (No model.)



*Claim.*—1. A heating boiler provided with an annular water chamber, an inclosed coil and fire chamber, a communicating heating chamber *g*, above the annular water chamber and a damper controlling the inlet opening of the heating chamber, substantially as specified.

2. The combination of tubular shells *a*, *b*, inclosing the water chamber A, with a fire chamber and heating coil inclosed by shell *b*, a partition $g^3$ between the shells, a heating chamber *g*, above such partition, and a damper controlling the inlet opening of such heating chamber, substantially as specified.

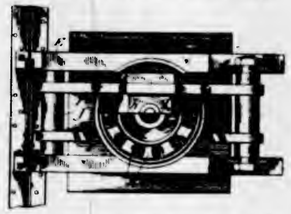
3. The combination of tubular shells *a*, *b*, inclosing water chamber A, with a fire chamber and heating coil inclosed by shell *b*, a communicating heating chamber *g*, above the water chamber, a damper controlling the inlet opening of the heating chamber, and an accumulating chamber *e*, above the heating chamber, substantially as specified.

4. The combination of tubular shells *a*, *b*, inclosing the water chamber, with a fire chamber and heating coil inclosed by shell *b*, a heating chamber above the water chamber, a damper $g^3$, controlling the inlet opening of the heating chamber, a pipe *d'*, that connects the heating coils and an accumulating chamber *e*, communicating with such pipe, substantially as specified.

5. The combination of sections B D of a heating boiler, each composed of the concentric shells *a*, *b*, and end plates *h*, that inclose the water chambers with coupling tubes that enter the water chambers and connect the boiler sections, substantially as specified.

6. A tubular boiler composed of a pair of detachable semi-tubular sections, and consisting of a pair of concentric shells, a central fire chamber, heating coils, a water chamber and heating chamber between the shells, and an accumulating chamber above the heating chamber, substantially as specified.

528,402. TURN-TABLE. CHARLES L. STROBEL, Chicago, Ill. Filed Dec. 19, 1893. Serial No. 494,094. (No model.)



*Claim.*—1. In combination with a turn table, means for supporting it on bearings off-center longitudinally, substantially as described.

2. In combination with a turn table, suspender bars for supporting it on bearings off-center longitudinally, substantially as described.

3. In combination with a turn table supported on bearings off-center longitudinally, means for rotating the turn table, substantially as described.

4. In combination with a turn table, means for supporting it on two bearings off-center longitudinally, a center stand, and anti-friction bearings interposed between the turn table and the center stand upon which the table rotates, substantially as described.

5. In combination with a turn table having main girders for carrying the track structure, a center supporting stand, cross bars and girders supported upon the center stand, and means for adjusting the relation between the cross bars and the table, substantially as described.

6. In combination with a turn table, a center supporting stand, a center supporting cap supporting the table on bearings off-center longitudinally, and pin and roller bearings interposed between the supporting cap and center stand on which the table rotates, substantially as described.

7. In combination with a turn table, a center supporting stand, a center supporting cap, and suspender bars passing over the supporting cap for supporting and holding the weight of the table on bearings off-center longitudinally, substantially as described

8. In combination with a turn table, a center supporting stand, a center supporting cap-suspender bars passing over and contacting the supporting cap, for supporting the weight of the table on bearings off-center longitudinally, and anti-friction bearings interposed between the supporting cap and the center stand on which the table rotates, substantially as described.

9. In combination with a turn table, main girders for carrying the track structure, a center supporting stand, cross-bars for supporting the table on two bearings off-center longitudinally, and means for adjusting the girder ends severally and independently located between the main girder and the cross bars, substantially as described.



10. In combination with a turn table, means for supporting it on bearings off-center longitudinally, and means for limiting the tilting of the table, substantially as described.

11. In combination with a turn table, a center supporting stand, a center supporting cap for supporting the table on bearings off-center longitudinally, means for supporting the table upon a cap on bearings off-center longitudinally, anti-friction bearings interposed between the supporting cap and the center stand upon which the table rotates, and means for limiting the tilting of the table, substantially as described.

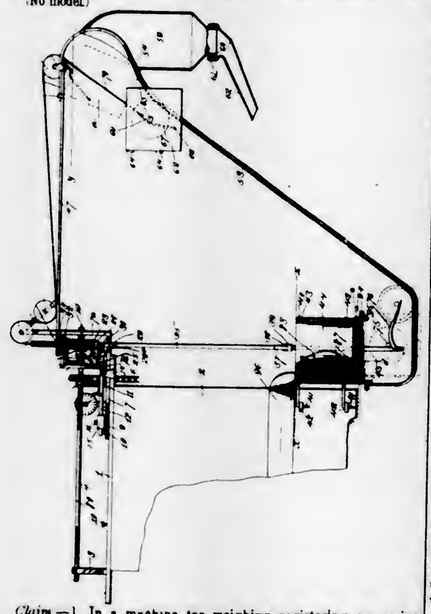
12. In combination with a turn table, a center supporting stand, a cap for such stand, means interposed between the cap and the table to support the table on bearings off-center longitudinally so that slight vertical play is left in one of the tilting points, while the other is actively operating, substantially as described.

13. In combination with a turn table, a center supporting stand, a center supporting cap, anti-friction bearings interposed between the supporting cap and the center stand upon which the table rotates, suspender bars passing over and supported by the supporting cap, and pins connected with the frame of the turn table and engaging with the suspender bars, whereby the table is supported at points off-center longitudinally, substantially as described.

14. In combination with a turn table, a center supporting stand, a center supporting cap, anti-friction bearings interposed between the supporting cap and center stand, suspender bars passing over and supported by the supporting cap at off-center points, pins secured to channel bars adapted to support both sides of the table frame and supported by suspender bars, main girders forming the sides and carrying the track mechanism, supported by the channel irons, and adjusting mechanism interposed between the girders and the channel bars for adjusting the elevation of the girder ends, substantially as described.

15. In combination with a turn table, main girders for carrying the track structure, a center supporting stand, a rotatable cap thereon, mechanism contacting the cap on bearings off-center longitudinally and supporting cross-beams, cross beams supported on the cap at off-center points and adapted to carry the entire weight of the table proper, and means interposed between the cross beams and the table proper, whereby the girder ends may be adjusted severally and independently, substantially as described.

528,403. GRAIN WEIGHING, REGISTERING, AND DISCHARGING MACHINE. LEWIS P. SUMMERS, Kansas City, assignor of one-tenth to Willie S. Mead, Sheffield, Mo. Filed Nov. 14, 1893. Serial No. 490,951. (No model.)



*Claim.*—1. In a machine for weighing, registering, conveying and discharging grain, the combination with a grain supply, of a swinging track-frame, a rotatable hopper located at one end of and adapted to rotate with the track frame, and a funnel or receptacle carried near the opposite end of the track frame, and a traveling bucket mounted upon said track-frame and adapted to receive the grain from the hopper, and dump it into the funnel or receptacle, substantially as set forth.

2. In a machine for weighing, registering, conveying and discharging grain, the combination with a thrashing machine, having a discharge chute or feed supply, and a number of bands or rings carried by said thrashing machine, of a hopper rotably supported by said bands or rings, a sliding frame also carried by said thrashing machine, and a track-frame pivotally carried by the sliding frame at one end, and detachably connected to the hopper at its opposite end, and carrying a funnel or receptacle, substantially as set forth.

3. In a machine for weighing, registering, conveying and discharging grain, the combination with a shaft, a drum mounted thereon, a track frame, and guide-pulleys carried by said track-frame, of a bucket consisting of two receptacles, a shaft extending through said bucket, a flanged roller upon said shaft and engaging the track-frame, a pivoted bail carried by said bucket, and a cable guided over said pulleys, and connecting the said bail, and the winding drum, and means to operate the shaft and cause the roller to travel upward upon the track portion of the track-frame, substantially as set forth

4. In a machine for weighing, registering, conveying and discharging grain, the combination with a shaft, a ratchet clutch-section mounted to slide upon and revolve with said shaft, and a winding-drum provided with a companion ratchet clutch-section, and loosely mounted upon the shaft, of a track-frame, guide-pulleys carried thereby, a traveling bucket mounted upon said track frame, a cable guided over said pulleys and connecting the drum and the bucket, and means to cause the slidable clutch-section to engage its companion section carried by the drum, so as to wind the cable upon said drum and elevate the bucket, and means to automatically withdraw said clutch-section from its engagement with the winding drum clutch-section so as to allow the bucket to descend by gravity to its original position, substantially as set forth.

5. In a machine for weighing, registering, conveying and discharging grain, the combination with a frame, a lever carried thereby, and a registering mechanism operatively connected to said lever, of a frame depending from said lever, and provided with guide-arms, a track-frame, and a bucket adapted to travel upon said track-frame and also upon the frame connected to the lever so as to be carried thereby, and adapted when supplied with grain to pivotally operate said lever and the registering mechanism, and to descend upon the track-frame, substantially as set forth.

6. In a machine for weighing, registering, conveying and discharging grain, the combination with a revolving shaft, a clutch-section mounted to slide upon and revolve with said shaft, a winding-drum provided with a companion clutch-section mounted loosely upon said shaft, a track-frame, guide-pulleys carried thereby, a traveling bucket mounted upon said track-frame, and a cable guided over said pulleys and connecting the winding drum and the traveling bucket, of a weighing and registering mechanism, adapted to be automatically operated by the grain laden bucket to throw the slidable clutch-section into engagement with the clutch-section of the winding-drum and elevate the bucket, and a knot or enlargement upon the cable adapted through intermediate mechanism to disengage said clutch-sections, and allow the bucket, by gravity to resume its original position, substantially as set forth.

7. In a machine for weighing, registering, conveying and discharging grain, the combination with a hopper having openings in the bottom, a slide closing said openings, and a plate carried by said slide, of a track-frame extending beneath said hopper, a traveling bucket mounted thereon, and a bar carried by said bucket and adapted, when the bucket moves upon the track-frame and beneath the hopper, to engage said plate and move the slide to expose the openings of the hopper, and adapted, when the bucket is moved from beneath said hopper, to engage said plate and move the slide back to its original position, substantially as set forth.

8. In a machine for weighing, registering, conveying and discharging grain, the combination with a hopper having openings in its bottom, and an arch or false bottom closing one of said openings, and guide-cleats arranged at the outer margins of the other openings, of a slide frame engaging said guide-cleats and closing said openings, and a pivoted plate carried by said slide-frame, and provided with a depending lug or projection, a track-frame, and a traveling bucket mounted thereon and adapted when moving in one direction to engage the depending lug of the pivoted plate and force the slide to uncover the openings in the bottom of the hopper, and adapted when moving in the opposite direction to engage the said lug and move the slide back to its original position to prevent the egress of grain from the hopper, substantially as set forth.

9. In a machine for weighing, registering, conveying and discharging grain, the combination with a hopper, and a funnel having a rotatable spout, of an inclined track-frame suitably supported and termi-

nating at its lower end beneath the hopper, and having a curved portion at the inner side of the hopper, of a traveling bucket having a wheel mounted upon the track-frame, a bail pivotally carried by the bucket inward of the axis of said wheel, a drum, a cable suitably guided and connecting the drum and the said bail, and means to wind the cable upon the drum until the bucket fulcrums upon the funnel and discharges its contents therein, substantially as set forth.

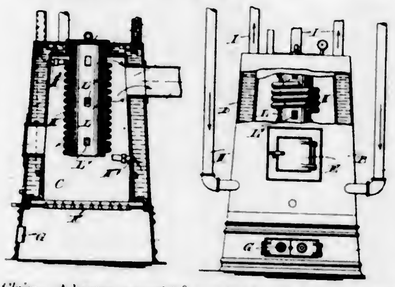
10. In a machine for weighing, registering, conveying and discharging grain, the combination with a weighing and registering mechanism, and a frame operatively connected thereto, and provided with guide-arms at its lower end, of a track-frame, and a traveling bucket having a shaft projecting therethrough, which is adapted when the bucket descends to ride upward upon the guide arms so that the weight of the bucket shall be sustained by the weighing mechanism, substantially as set forth.

11. In a machine for weighing, registering, conveying and discharging grain, the combination with a weighing and registering mechanism, and a frame operatively connected thereto, and provided with guide-arms at its lower end, of a track-frame, and a traveling bucket having a shaft projecting therethrough which is adapted when the bucket descends to ride upward upon the guide arms so that the weight of the bucket shall be sustained by the weighing mechanism, and springs arranged adjacent to the inner side of the guide-arm carrying frame, and adapted to cushion the impact of the bucket shaft against said frame, substantially as set forth.

12 In a machine for weighing, registering, conveying and discharging grain, the combination with a board mounted upon a thrashing machine, and bearing brackets carried thereby, and a hollow and slotted shaft mounted in said bearing brackets, and headed bolts or pins carried by said board, of a sliding frame, mounted upon said shaft and fitting in a recess in the lower portion of one of said bearing brackets, and having a notched inner end engaging one of said headed bolts, and a shaft mounted in said sliding frame and fitting within the first mentioned shaft, and having a pin engaging a slot thereof, a drum mounted loosely upon said shaft, and provided with a clutch-section, and a second clutch-section mounted to slide upon and revolve with said shaft, a cylindrical tube carried by said sliding frame, a hopper rotably carried by the thrashing machine, a track-frame rotably mounted at one end upon said tube, and having its opposite end engaging the loop carried by the hopper, a traveling bucket mounted upon the track-frame, a suitably guided cable connecting the bucket and the winding-drum, and means to cause the bucket to be elevated and to be allowed to descend by gravity, automatically, substantially as set forth.

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**528,404.** HEATER. CHARLES B. WANAMAKER, Allentown, Pa., assignor of one-half to William H. Hunsicker, same place. Filed Apr. 4, 1894. Serial No. 506,327. (No model.)



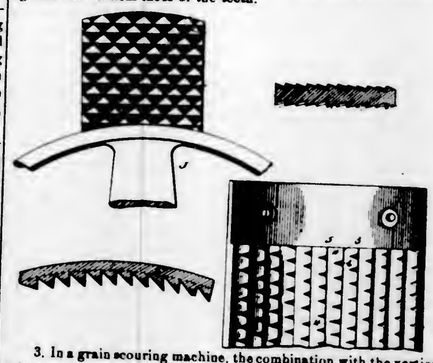
*Claim.*—A heater, comprising a casing forming a heating chamber, a water chamber surrounding the said heating chamber, return water pipes discharging into the lower part of the said water chamber, outflow pipes leading from the top of the said water chamber, a coil of pipe arranged within the said heating chamber and connected at its ends with the lower and upper parts of the said water chamber, and an apertured magazine tube extending centrally into the said heating chamber and surrounded by the said coil of pipe, the upper end of the said magazine tube being adapted to be closed by a cover, substantially as shown and described.

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**528,405.** GRAIN-SCOURING MACHINE. ROSIA W. WELCH, Baltimore, Md., assignor to Joseph S. Taylor, same place. Filed Jan. 13, 1894. Serial No. 496,831. (No model.)

*Claim.*—1. In a grain scourer, the combination with the fixed vertical cylinder adapted to receive the grain, and provided with vertical rows of teeth having the upright active forward faces and downwardly inclined upper surfaces, of means for forcing the grain forward against the vertical faces of the teeth.

2. In a grain scourer, the combination with the fixed vertical cylinder provided with vertical rows of teeth having upright forward active faces, backwardly-inclined upper faces and downwardly and outwardly inclined sides, of means for forcing the grain outward against the vertical faces of the teeth.

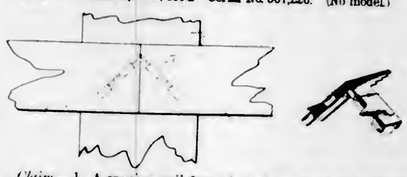


3. In a grain scouring machine, the combination with the vertical cylinder adapted to receive the grain, of the series of rotating scouring blades provided with teeth formed with upright angular faces standing in the direction of rotation, and inclining backwardly and away from the line of rotation.

4. In a grain scouring machine, the combination with a cylinder having its inner surfaces provided with teeth formed with upright active faces, of the rotating scouring blades having teeth formed with upright active faces standing in the direction of rotation and adapted to force the grain against the active faces of the teeth of the cylinder.

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**528,406.** SPACING NAIL. JOSEPH J. WHITE, New Lisbon, N. J., assignor of one-half to the Pennsylvania Machine Company, Philadelphia, Pa. Filed Apr. 12, 1894. Serial No. 507,226. (No model.)



*Claim.*—1. A spacing nail formed of sheet material comprising a spacing web adapted to be disposed perpendicularly to the opposing surfaces of the articles to be spaced, said web having a series of penetrating points extending outwardly from opposite edges of said web, said edges being each provided adjacent to the bases of said points with flanges turned at an angle to said web for engaging said articles, substantially as described.

2. A spacing nail formed of sheet material comprising a spacing web bent to provide sloping portions, for draining moisture therefrom, said web having its edges provided with points extending oppositely in the plane of the said web, and flanges turned at an angle to said web, substantially as described.

3. A spacing nail composed of sheet material comprising a spacing web, disposed perpendicularly to the adjacent faces of the articles to be spaced, said web being bent angularly to provide sloping portions for draining moisture, the edges of said web being provided with attaching points extending in opposite directions, in the plane of said web and with flanges bent at an angle to said web for engaging the articles to be spaced substantially as described.

4. A spacing nail composed of sheet material comprising a spacing web, having two opposite edges provided with attaching points, said points being angular in cross section, substantially as described.

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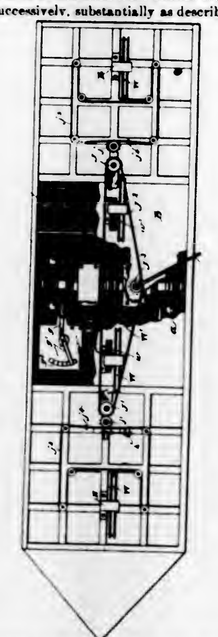
**528,407.** ELEVATED-RAILWAY CAR. ALBERT L. WIDDIS, Detroit, Mich. Filed Apr. 5, 1893. Serial No. 469,519. (No model.)

*Claim.*—1. In combination with a car adapted to travel on an elevated railway, a series of compartments, mail bags adapted to fill said compartments, and means for successively dropping the bags out of said compartments, substantially as described.

2. In a car adapted for use on an elevated railway, a series of bottomless compartments, receptacles adapted to be carried therein, and means adapted to be actuated from outside the car to drop receptacles out of said compartments, substantially as described.



3. In a car adapted to travel on an elevated railway, a series of bottomless compartments, receptacles adapted to be carried therein and means adapted to be actuated from outside the car for dropping the receptacles successively, substantially as described.



4. In combination with an elevated railway car, a compartment provided with a holding frame and a holding stirrup, a bag provided with a mouth ring having a lug thereon adapted to engage in said stirrup, substantially as described.

5. In an elevated railway car, a series of compartments without bottoms, provided with holding frames at their upper ends, swinging stirrups adapted to engage with lugs on the holding rings of bags, and means for swinging the stirrups out of engagement and dropping the bag, substantially as described.

6. In an elevated railway car, the combination of a central motor compartment, storage compartments at the ends, receptacles adapted to be secured in said storage compartments, traveling chains adapted to disengage the receptacles from the storage compartments, a lever adapted to be actuated from outside the car and to actuate said traveling chains, a shifting mechanism adapted to transfer the actuating engagement of the lever from the traveling chain in one storage compartment to the traveling chain in the storage compartment at the opposite end of the car, substantially as described.

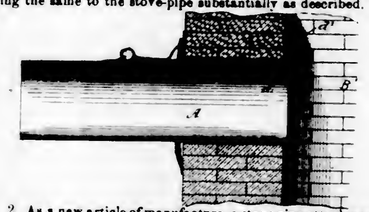
7. As a means for automatically unloading the compartments of a railway car, an endless chain adapted to engage with and release successively the packages stored in said car, a shifting bar supporting an endless sprocket chain, which is adapted to actuate the releasing chain, and a ratchet arm adapted to engage with obstacles external to the car and actuate the shifting sprocket chain, substantially as described.

8. As a means for automatically unloading the compartments of a railroad car, an endless chain adapted to engage with and release successively the packages stored in said car, a shifting bar supporting an endless sprocket chain and pinion, adapted to actuate the releasing chain, a ratchet wheel and ratchet arm adapted to engage with obstacles external to the car and to actuate said sprocket chain and through it actuate said releasing chain, substantially as described.

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**528,408.** STOVEPIPE ATTACHMENT. WELLINGTON WILSON, Bay City, Mich. Filed Dec. 1, 1893. Serial No. 492,507. (No model.)

*Claim.*—1. As a new article of manufacture, a stove pipe attachment, consisting of an elongated main member or body having at its inner end a spring coil and an arm projecting from said coil, the coil serving to receive the inner end of a pipe between itself and the main length or body and serving also to give the spring action to the arm, and a returned spring arm on the outer end of the main member, the attachment further having a fastening device at its outer end for fastening the same to the stove-pipe substantially as described.

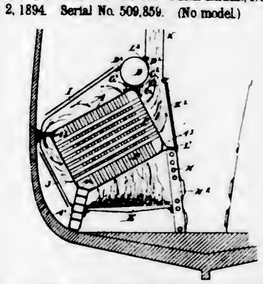


2. As a new article of manufacture, a stove pipe attachment, consisting of an elongated main member or body having a laterally projecting spring arm at its inner end, a spring coil at its outer end and a returned spring arm extending from said coil, said arm being yielding from its connection with the coil for adjusting itself to the thickness of a chimney wall, the attachment further having a fastening device at its outer end for fastening the same to the stove-pipe substantially as described.

3. As a new article of manufacture, a stove pipe attachment consisting of an elongated member or body having a spring arm at its inner end, a spring coil at its outer end an arm returned on the main member from said coil and yielding from its connection with the latter and a separate anchor having a loop loosely embracing such outer coil to move thereon, the free end of the anchor having a bent, pointed termination, substantially as described.

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**528,409.** STEAM-BOILER. DENIS AHERN, New York, N. Y. Filed May 2, 1894. Serial No. 509,859. (No model.)



*Claim.*—1. In a steam boiler having a rectangular body A of oblong cross-section, set horizontal longitudinally and inclined transversely, an inclined water-leg A', extending continuously along the length of the boiler, in combination with the grate E extended rearward beyond the center line of the body, and with the inclined furnace front having horizontal tubes H and headers H' connected to the body A, all arranged for joint operation substantially as herein specified.

2. In a steam boiler having a rectangular body A and a separating drum D extended horizontally a little above the upper angle, with connections D' therefrom to the body, a removable strip G and holding means G', G², adapted to prevent the flow of gases forward at the top, and to be easily displaced when required, all substantially as herein specified.

3. In a steam boiler having a rectangular body A, set oblique or inclined transversely and traversed by two sets of tubes B and C at right angles each to the other, the inclosing casing, the upper portion of which is composed of the removable panels I, K², adapted to be removed to allow access to the tube ends for examination or repairs without disturbing the other parts, and the drum D, and the stack K supported on such drum independently of such casing, all substantially as herein specified.

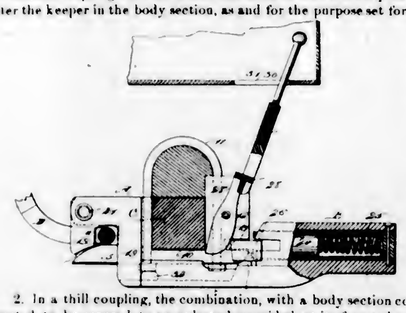
4. The boiler body A, set inclined transversely with the grate under one oblique face, two sets of tubes inclined in opposite directions, the provisions for the flow of gases downward past the rear angle of the body and upward again through the tubes C, and the stack K leading upward from the top chamber at the front and the removable panels I and K², all arranged in the hull M of a vessel, and adapted to serve substantially as herein specified.

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**528,410.** HORSE-DETACHER. MENNO M. BENNER, Gettysburg, S. D. Filed Feb. 26, 1894. Serial No. 501,576. (No model.)

*Claim.*—1. In a thill coupling, the combination, with a body section fitted to receive an axle and to be secured thereto, the said body

section being provided with jaws at one end and a keeper at its opposite end, of a locking section provided with jaws at one end, pivotally connected with one of the jaws of the body section and adapted to act in conjunction with both jaws of the said body, the locking section being provided with a bed to receive a portion of the body section, and a spring-controlled lock the latch of which is adapted to enter the keeper in the body section, as and for the purpose set forth



2. In a thill coupling, the combination, with a body section constructed to be secured to an axle and provided at its forward end with oppositely disposed jaws and with a keeper at its rear end, of a locking section, the same consisting of a bed or plate section adapted to receive a portion of the body section, an angular jaw located at the forward end of the body section, pivoted to the jaw portion of the body section and operating in conjunction with said jaws, a spring-controlled bolt located at the opposite end of the bed and adapted to enter the keeper in the body section of the coupling, and a trip mechanism, substantially as shown and described, whereby the bolt may be operated from a point above the coupling, as and for the purpose set forth.

3. In a thill coupling, the combination, with a body section constructed for attachment to an axle, and provided at its forward end with oppositely-disposed jaws and a keeper at its rear end, of a locking section the same consisting of a bed adapted to receive a portion of the bottom of the body section, an angular jaw located at the forward end of the bed, recessed to receive the jaw portion of the body and pivotally connected with one of the jaws thereof, the jaw of the locking section being provided with a surface adapted substantially for engagement with the lower jaw of the body, and a spring-controlled lock located at the inner end of the bed, the bolt whereof is adapted for engagement with the keeper of the body, a trip finger pivoted upon the body portion of the coupling and adapted for engagement with the said bolt, and means, substantially as shown and described, for operating the finger from a point above the coupling, as and for the purpose set forth.

4. In a thill coupling, the combination, with a body section constructed for attachment to an axle, and provided at its forward end with oppositely disposed jaws and a keeper at its rear end, of a locking section, the same consisting of a bed adapted to receive a portion of the bottom of the body section, an angular jaw located at the forward end of the bed, recessed to receive the jaw section of the body, the jaw of the locking section being provided with a surface adapted substantially for engagement with the lower jaw of the body, and a spring-controlled lock located at the inner end of the bed, the bolt whereof is adapted for engagement with the keeper of the body, a trip finger pivoted upon the body portion of the coupling and adapted for engagement with the said bolt, means, substantially as shown and described, for operating the finger from a point above the coupling, and a thill iron terminating in an upturned loop, which loop is adapted to be received between the jaws of the body section and to be confined by the jaw of the locking section of the coupling, as and for the purpose specified.

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**528,411. WHEEL-RIM FOR PNEUMATIC TIRES.** THOMAS BIRCH, Leeds, England. Filed Mar. 12, 1894. Serial No. 503,341. (No model.) Patented in England July 28, 1893, No. 14,518.

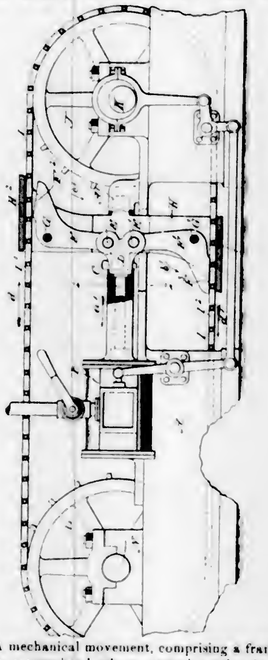


*Claim.*—1. In a wheel, the combination, with an air tube, the two angle-shaped rings B and C, and the canvas covering inclosing the two said rings and securing them to the air tube; of a detachable portion consisting of two rings A and G adapted to engage with the adjacent parts of the rings B and C, and the hinged clips for coupling the rings A and G together, substantially as set forth.

2. In a wheel, the combination, with an air tube, the two angle-shaped rings B and C, and the canvas covering inclosing the two said rings and securing them to the air tube; of a detachable portion consisting of the two rings A and G provided with projections on their outer sides, the said ring A extending under the rings B and C and having the wheel spokes secured to it; and the coupling clips G' hinged to the ring A and engaging with the said projections, substantially as set forth.

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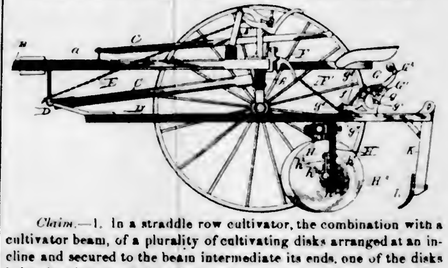
**528,412. MECHANICAL MOVEMENT.** ISAAC S. BRYANT, La Junta, Colo. Filed Dec. 12, 1893. Serial No. 493,501. (No model.)



*Claim.*—A mechanical movement, comprising a frame provided with slideways, a cross-head whose central portion is mounted to slide thereon, clamping jaws rigidly secured to the extremities of the cross-head parallel to said slideways, jaws pivoted to the cross-head on each side of the slideways, with their outer ends extending in opposite directions, a reciprocating rod pivotally connected with the inner ends of the pivoted jaws, to swing the jaws on their pivots, the reciprocating rod and the cross-head being arranged essentially in longitudinal central alignment, and an endless chain whose runs pass between the pivoted and the clamping jaws, substantially as described.

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**528,413. WHEEL-CULTIVATOR.** EDWIN CHILDREN, Council Bluffs, Iowa. Filed Dec. 9, 1893. Serial No. 493,225. (No model.)



*Claim.*—1. In a straddle row cultivator, the combination with a cultivator beam, of a plurality of cultivating disks arranged at an incline and secured to the beam intermediate its ends, one of the disks being in advance of the other, and a cultivating share arranged in the rear of the disks, laterally and outwardly beyond the path of the outer disk, but in operative proximity to the path thereof, substantially as described.

2. In a straddle row cultivator, the combination with a beam, of a cultivating disk arranged at an incline and secured to the beam intermediate its ends, and a cultivating share on the beam in the rear of and laterally and outwardly beyond the plane of the disk, but in operative proximity to the path thereof, substantially as described.

3. In a straddle row cultivator, the combination with a beam, of a cultivating disk arranged at an incline and secured to the beam intermediate its ends, a cultivating share on the beam in the rear of and laterally and outwardly beyond the plane of the disk, but in operative proximity to the path thereof, and independent means for raising the opposite ends of the beam, substantially as described.

4. In a straddle row cultivator, the combination with the cultivator frame, of an adjustable beam, a hook on the frame, a metallic frame on the beam having a segmental rack on its side, a lateral pin below the rack, a lever having a lateral tooth engaging the rack and pivotally secured on the pin, a spring on the pin engaging the lever, a pulley mounted on the metallic frame, and a chain connected to the lever, passing below the pulley and connected at its opposite end to the hook, substantially as described.

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**528,414. HAME-TUG.** JULIUS C. CLAUSEN, Hensall, Canada. Filed Feb. 5, 1894. Serial No. 499,079. (No model.)



*Claim.*—1. The combination of a buckle, a hame-tug hinged thereto, and having cross-bars provided with notches on their inner sides, and cross rods arranged in front of said bars, and a trace and its fastening hook having a tongue and out-turned point adapted to engage said cross-bars and rods, respectively, as shown and described.

2. The combination with the hame-tug having the notched cross bars and cross rods arranged in front of the latter, of the metal, trace-fastening hook, having a rearwardly projecting hook, and an out-turned point which is adapted to pass beneath and engage said cross bars, as shown and described.

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**528,415. SAW.** JOHN DANIELSON, Alhambra Springs, Mont. Filed Apr. 21, 1893. Serial No. 471,350. (No model.)

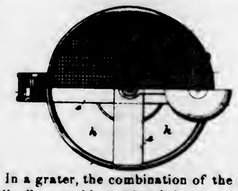


*Claim.*—1. In a saw, the combination of the saw blade and the spring frame, with the metal stiffening spring, placed centrally on the under side of the frame, substantially as shown and described.

2. In a saw, the combination of the saw blade and the spring frame, with the metal stiffening spring fastened to the frame by the clips *f f* and having the lugs *g g* and one threaded end carrying the nut *h*, substantially as shown and described.

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**528,416. GRATER FOR CULINARY PURPOSES.** JOHN DAVIDSON, Wick, Scotland. Filed Apr. 16, 1894. Serial No. 507,746. (No model.)

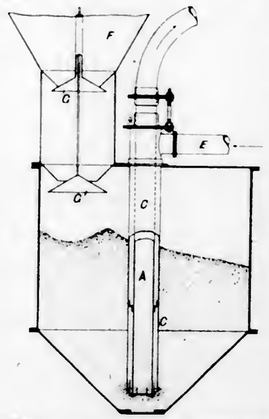


*Claim.*—1. In a grater, the combination of the body, a revolving and longitudinally movable grating disk, an opposing sieve close to its surface and on the side toward the said grating disk, and a bar extending transversely across the sieve, substantially as and for the purpose set forth.

2. In a grater, the combination of the two opposing grating surfaces, and a projection adjacent to one of the grating surfaces which prevents them coming too close together substantially as and for the purpose set forth.

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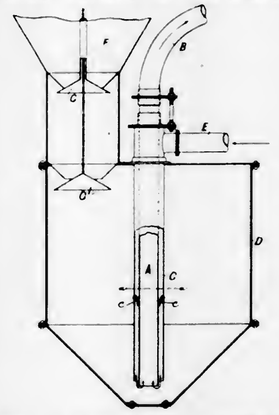
**528,417. METHOD OF CONVEYING MATERIALS.** FREDERIC E. DUCKHAM, London, England. Filed Jan. 30, 1894. Serial No. 498,482. (No model.)



*Claim.*—The improvement in the art of conveying material from a closed vessel which consists in applying to the said material pneumatic pressure corresponding to the pressure of the air blast, and in injecting the air blast into the midst of such material, the current so injected being in such relation to an exit nozzle immersed in the mass that the material will be fed by gravity directly into the path of the blast, and will then be acted upon directly and positively by the blast and be carried thereby through the exit nozzle.

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**528,418. GRAIN-CONVEYER.** FREDERIC E. DUCKHAM, London, England. Filed Jan. 30, 1894. Serial No. 498,483. (No model.)

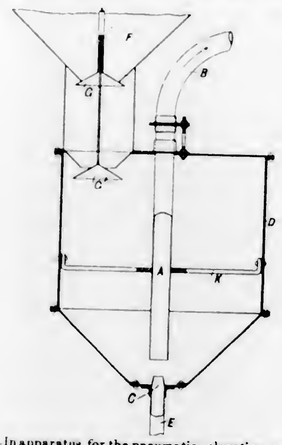


*Claim.*—1. In apparatus for the pneumatic elevation and conveyance of grain and other matters by compressed air, the combination with a closed chamber provided with an air lock, charging device, and with an air-blast supply pipe from an air compressor, of an exit nozzle within said chamber having its mouth downwardly directed near the bottom of said chamber and of a surrounding air-blast sleeve open at its lower end at such a height above the mouth of the exit nozzle as to permit of the grain or other matters in which both sleeve and nozzle are immersed, flowing by gravity beneath the sleeve so as to be interposed directly into the path of the air blast passing to the nozzle the exit nozzle leading upwardly from said chamber and being connected to a conveying pipe, the blast sleeve being closed at the upper end connected with the blast supply pipe and the sleeve and nozzle being relatively adjustable as to height, substantially as and for the purpose specified.

2. In apparatus for the pneumatic elevation and conveyance of

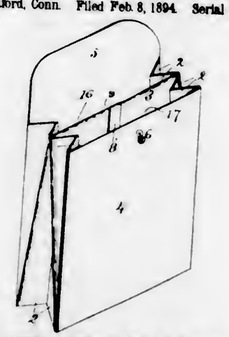
grain and other matters by compressed air, the combination with a closed chamber provided with an air lock charging device, and with an air blast supply pipe from an air compressor, of an exit nozzle within said chamber having its mouth downwardly directed near the bottom of said chamber, and of a surrounding air blast sleeve open at its lower end at such a height above the mouth of the exit nozzle as to permit the grain or other matters in which both sleeve and nozzle are immersed flowing by gravity beneath the sleeve so as to be interposed directly into the path of the air blast passing to the nozzle, the exit nozzle leading upwardly from said chamber and being connected to a conveying pipe, the blast sleeve being open at its upper end to the interior of the closed chamber to which the air blast supply pipe is connected, and the sleeve and nozzle being relatively adjustable as to height, substantially as and for the purpose specified.

528,419. PNEUMATIC GRAIN-CONVEYER. FREDERIC E. DUCKHAM, London, England. Filed Jan. 30, 1894. Serial No. 498,484. (No model.)




*Claim.*—In apparatus for the pneumatic elevation and conveyance of grain and other matters by compressed air, the combination, with a closed chamber provided with an air lock charging device, of an exit nozzle within said chamber having its mouth opening downward and of an upwardly-directed air blast nozzle in substantially axial alignment with the exit nozzle, the nozzles being located near the bottom of the chamber and the chamber containing a mass of grain or other matters in which the nozzles are immersed, the exit nozzle leading upward and being connected with a conveying pipe while the blast nozzle is connected with a supply of compressed air, the two nozzles being relatively adjustable and separated by an interval such that the grain can flow by gravity beneath the exit nozzle directly into the path of the air blast substantially as specified.

528,420. COMBINATION-CASE FOR CARDS, &c. ALFRED J. ESTLOW, Hartford, Conn. Filed Feb. 8, 1894. Serial No. 499,533. (No model.)



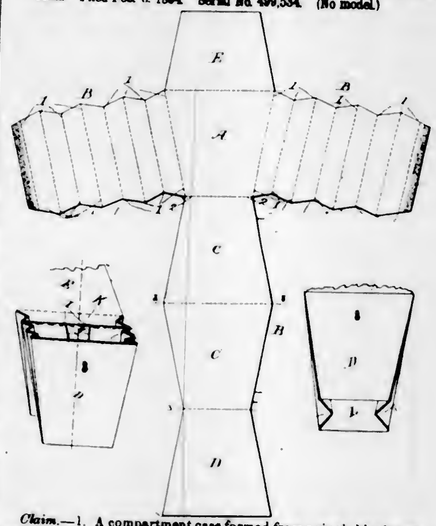

*Claim.*—1. A compartment case formed from a single blank by folding the right angle projecting sections in crimps upon the upper section, the latter forming the front, and the former the sides of the case, folding the two sections adjacent to the upper section between the crimps to form partitions, and folding the bottom section constituting the back of the case, upon the ends of the said crimped sections and securing it there, so as to leave the compartments open alternately at each end of the case, as set forth.

2. A compartment case formed from a single blank by folding the right angle projecting sections in crimps upon the upper section, the latter forming the front, and the former the sides of the case, folding a portion of the side sections inward or toward each other to divide one of the compartments, the two sections adjacent to the upper section being folded between the crimps to form partitions or compartment walls, and the bottom section, constituting the case back, folded upon the ends of the said crimped sections, leaving the compartments open alternately at each end of the case, as set forth.

3. A compartment case formed from a single blank by folding the right angle projecting sections in crimps upon the upper section, the latter forming the front, and the former the sides of the case, the two sections adjacent to the upper section being folded between the crimps to form partitions or compartment walls, and folding the bottom section, constituting the case back, upon the ends of the said crimped sections, leaving the compartments open alternately at each end of the case, in combination with the plate spring, the arms of which are located in two compartments opening in the same direction so as to grasp the contents of the intervening compartments opening in the opposite direction, as set forth.

4. The combination with a pocket case having compartments opening alternately at the top and bottom, the plate spring holder composed of a single piece of sheet metal, bent in its center upon itself, and having its ends curled inward, leaving an opening between the arms of the spring from the central bend to the curled ends, the arms being located in two of the compartments opening in the same direction so as to confine the contents of the intervening compartment opening in the opposite direction, as set forth.

528,421. COMBINATION-CASE. ALFRED J. ESTLOW, Hartford, Conn. Filed Feb. 8, 1894. Serial No. 499,534. (No model.)




*Claim.*—1. A compartment case formed from a single blank composing the front section, having side pieces adapted to be folded in crimps upon the front section, to form the sides of the case, the sections depending from the front section, two of which are folded between and separated by the said crimps, to form partitions, and the other section folded upon the crimped ends and secured thereto, to form the back of the case, leaving compartments open alternately at the top and bottom of the case, as set forth.

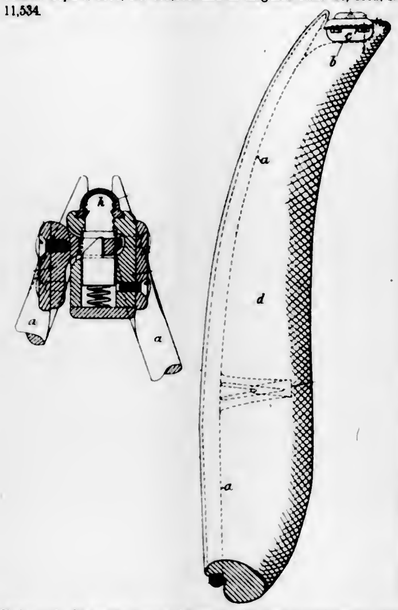
2. The herein described combination case, struck from a single blank, composed of the front section having crimped side pieces, the partition sections folded between the crimps and the back section secured to the crimped ends, to form separate compartments open alternately at each end of the case, substantially as set forth.

3. In a combination case, the V shaped front, back and partitions, and the crimped sides, all formed from a single blank by folding the crimped and partition sections between each other upon the front section, and securing the back section to the crimped ends, to form separate compartments opening alternately at each end of the case, substantially as set forth.

4. The combination with a pocket case having compartments opening alternately at the top and bottom, the wire spring holder bent to form the curve l1, arms *g*, shoulders l, and arms *h*, the said shoulders engaging the top of the compartment partitions so as to leave the arms *g*, and *h*, depending in separate compartments opening at the top of the case to retain the contents of the intervening compartment opening at the bottom of the case, as set forth.



528,422. HORSE-COLLAR. WILLIAM T. FELL, London, England. Filed Oct. 12, 1893. Serial No. 488,011. (No model.) Patented in France Sept. 3, 1891, No. 215,893, and in England June 20, 1892, No. 11,534.




*Claim.*—1. In an open topped horse collar, the combination with the ends of the said collar of the two members of a snap lock adapted to engage each other, as described, and of a safety catch or fastening adapted to engage with the bolt of the lock and lock it in its locked position, as specified.

2. A collar fastening comprising the hasp section c the casing c' having an opening for said hasp and a second opening provided with a sliding removable internally flanged cover *g*, and a spring catch within the casing c' engaging the said hasp and provided with a push piece extending up into the opening closed by the said cover and transversely grooved to receive the cover flange; whereby the spring catch cannot be moved until the cover is removed, substantially as described.

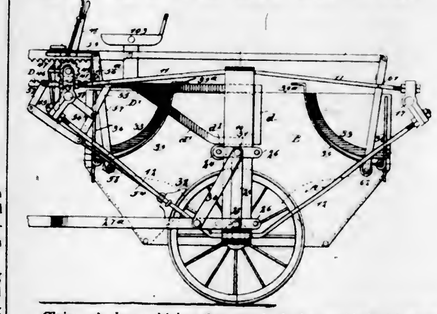
528,423. BICYCLE. LYMAN FERGUSON, Syracuse, N. Y., assignor of one-third to Ernest Young, same place. Filed Jan. 22, 1894. Serial No. 497,589. (No model.)

*Claim.*—1. In a bicycle the combination with a frame, and a driving shaft connected with the rear driving wheel, and having the pedals secured thereto, of a beveled gear secured on said shaft, in line with the lower end of the seat post and one of the bars of the frame, a shaft arranged within one of the tubular bars of the frame and provided at one end with a longitudinally movable gear that meshes with the gear on the pedal and driving shaft and at its outer end with a similar gear that meshes with a gear arranged in the head of the frame, means for revolving the gear in the head of the frame, a bell crank lever fulcrumed within the tubular seat post and having one arm connected with an operating rod and its other end engaging with the gear at the lower end of the shaft in the frame, substantially as shown and described, for the purpose specified.

2. In a propulsion device for bicycles, the combination with a pedal or driving shaft, of a beveled gear secured on said shaft in line with the lower end of the tubular seat post and inclined bar connecting said post with the head of the machine, a shaft arranged in the head and provided at its ends with bevel gears, connections between the upper gear on said shaft and suitable crank arms, a shaft mounted within the inclined bar of the frame and provided at its upper end with a gear that meshes with the gear on the lower end of the shaft in the head of the frame and at its other end with a longitudinally movable gear on the pedal shaft, a bell crank lever fulcrumed within the seat post and having an arm engaging with the longitudinally movable gear in the inclined bar of the frame, a rod arranged within the seat post and connected at its lower end with the other arm of the bell crank lever, and a handle connected with the upper end of said rod and extending through the seat post, substantially as shown and described, for the purpose specified.




528,424. SELF-LOADING CART. GEORGE F. FISCHER, Rochester, N. Y. Filed Sept. 14, 1893. Serial No. 485,458. (No model.)



*Claim.*—1. In a vehicle, a frame and a body provided with gates at both ends, mechanism for raising and lowering the body in an essentially horizontal position, and means for opening and closing either of the end gates, substantially as described.

2. In a vehicle of the class described, a carrying frame consisting of two connected parallel double truss frames, supporting wheels located in each truss frame, between the sections thereof, and provided with independent axles, and a body carrier between the truss frames, substantially as described.

3. In a vehicle of the class described, a carrying frame consisting of two connected truss frames, each truss frame being composed of an inverted U-shaped pedestal, a pair of upper truss rods engaging with the top part of the pedestal a pair of lower truss rods engaging with the bottom part thereof, supporting wheels located in each truss frame between the members of the pedestals and provided with independent axles, and a body carried between the truss frames, substantially as described.

4. In a vehicle of the character described, a frame adjustable upon its supporting wheels, and a body carried by the frame, vertically adjustable with and independent of the frame, as and for the purpose specified.

5. In a two-wheeled vehicle, a carrying frame consisting of two connected truss frames, each frame being composed of spaced upright plates connected at their upper ends and adapted to receive the wheels between them, and upper and lower truss rods engaging with the upper and lower parts respectively of the said upright plates, and extending therefrom on both sides, the outer ends of each upper truss

rod being connected to the outer ends of the corresponding lower truss rod, substantially as described.

6. In a two-wheeled vehicle, a carrying frame, the same consisting of opposing and connected truss frames, boxes held to slide vertically in the central portion of each truss frame, supporting wheels journaled in the said boxes and having independent axles, and means for adjusting the truss frames in relation to the boxes and to the wheels, substantially as described.

7. In a two-wheeled vehicle, a carrying frame consisting of two connected truss frames, each truss frame being composed of spaced upright plates connected at their upper ends and adapted to receive the wheels between them, and upper and lower truss rods extending from the top and bottom respectively of the said upright plates and converging toward each other on each side of the said plates, the ends of each lower truss rod being connected to those of the corresponding upper truss rod, substantially as described.

8. In a two-wheeled vehicle, a carrying frame, the same consisting of opposing and connected truss frames, boxes held to slide vertically in the central portion of each truss frame, supporting wheels journaled in the said boxes and having independent axles, a wedge-shaped slide located between each box and the truss frame thereof and in engagement with the said box and truss frame, and means for moving the said slides relatively to the boxes and truss frames to adjust the frames in relation to the boxes and the wheels, substantially as described.

9. In a two-wheeled vehicle, a carrying frame the same consisting of opposing and connected truss frames, a supporting wheel located in each truss frame, their axles being independent, and means for adjusting the truss frames over the wheels, as and for the purpose set forth.

10. In a two-wheeled vehicle, a dumping body provided with end gates at opposite ends, means for raising and lowering the body without changing its inclination and adjusting devices whereby the body may be inclined in direction of either end, as and for the purpose set forth.

11. In a two-wheeled vehicle, a supporting frame, wheels independently connected with opposite sides of the frame, the frame being adjustable upon the wheels, a body carried by the frame between the wheels, provided with a scoop-like end gate at opposite ends, means for operating each end gate independently, and a mechanism substantially as shown and described, whereby the body may be raised and lowered independently of the frame, as and for the purpose set forth.

12. In a vehicle, a carrying frame consisting of connected truss frames, each truss frame being provided with a pedestal, a box held to slide in each pedestal, and a carrying wheel located in each box, as and for the purpose specified.

13. In a vehicle, a carrying frame, the same consisting of side truss frames, each truss frame being provided with a central pedestal, and connecting bars uniting the side truss frames at the front and rear, boxes held to slide in the pedestals, a supporting wheel carried by each box, and adjusting devices whereby the frame may be raised or lowered upon the wheel supports, substantially as shown and described.

14. In a vehicle, the combination, with the body and its carrying frame, the boxes having guided movement relatively to the frame, and the wheels journaled in the said boxes, of bars having wedge-shaped portions engaging with the boxes and the corresponding carrying frames, and means, substantially as described, for imparting a longitudinal sliding movement to the said bars, as and for the purpose set forth.

15. In a vehicle, the combination, with the body, a double carrying frame having the body located between its members, and the wheels connected with the said frame, of suspension arms having pivotal connection with the frame and supporting engagement with opposite ends of the body, and means, substantially as described, for turning the said suspension arms on their pivots to shift the bearing of the said arms upon the body, as and for the purpose ret forth.

16. In a vehicle, the combination, with the body, provided with gates at opposite ends, bars operatively connected with the gates and engaging with the body, a double carrying frame having the body located between its members, and the wheels connected with the said frame, of suspension arms having pivotal connection with the frame and supporting engagement with opposite ends of the body, and the corresponding gate-operating bars, and means, substantially as described, for turning the said suspension arms on their pivots to shift the bearing of the said arms upon the body and operate the end gates, as and for the purpose set forth.

17. In a vehicle, the combination, with a carrying frame comprising connected side truss structures, of a body supported within the said frame, wheel supports having sliding movement in the frame, wheels journaled in the supports end gates located at each end of the body, and adjusting devices having an operative engagement with each end of the body, and capable of independent action in raising the ends of the body, the adjusting devices likewise operating the end gates, substantially as shown and described.

18. In a vehicle, a carrying frame, a body located within the frame provided with end gates at opposite ends, wheel supports having sliding movement in the frame, adjusting devices, substantially as described, whereby the body and frame may be raised and lowered suspension arms having pivotal connection with the frame and supporting engagement with the body at opposite ends, supporting devices connected with the end gates and operated from the suspension arms, and a shifting device whereby the bearing of a suspension arm upon the body is shifted, substantially as shown and described, and whereby either end of the body may be placed in dumping position, or elevated and the end gate opened or closed, as set forth.

19. In a vehicle, the combination, with a frame, of a body suspended within the frame near its ends by pivoted suspension arms, end gates located at each end of the body and controlled by the suspension arms, and shifting devices whereby the shifting at either end of the body may be independently effected, as and for the purpose specified.

20. In a vehicle, the combination, with a frame adjustable upon wheel supports, a dumping body carried by the frame and adjustable therewith, the body being provided at both ends with end gates of shovel-like construction, of an adjusting mechanism operating at each end of the body to raise or lower said ends independently of the frame, substantially as shown and described.

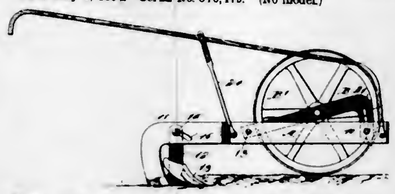
21. In a vehicle, the combination, with a frame adjustable upon wheel supports, of a dumping body carried by the frame and adjustable therewith, the body being provided at both ends with end gates of shovel-like construction, an adjusting mechanism operating at each end of the body to raise and lower said ends independently of the frame, and a draft mechanism having shifting connection with the wheel supports, whereby the vehicle may be made to travel in direction of either end, and load or dump at either end, as and for the purpose set forth.

22. In a vehicle, the combination, with a carrying frame consisting of connected truss frames, and a supporting wheel located in each truss frame, of a draft device connected with the wheel supports and with the frame above the wheel supports, whereby the equilibrium of the vehicle is preserved, substantially as shown and described.

23. In a wheeled and dumping vehicle, a body provided with an end gate at opposite ends, of a shovel-like character, dumping bars having an operative connection with the end gates, each dumping bar being further operatively connected with a rack, pinions engaging with the racks, and a mechanism, substantially as shown and described, for operating the pinions.

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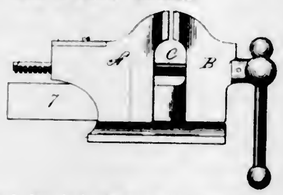
528,425. HAND-CULTIVATOR. EDWARD FRANKLIN, Boston, Ga. Filed May 8, 1894. Serial No. 510,479. (No model.)



*Claim.*—The combination, with the main frame having a downward extension at its rear end, and the support for the front end of the main frame, of a plow shank pivoted to the lower end of the said extension, and adjustably connected with the main frame adjacent to the upper end of the extension, substantially as described.

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528,426. VISE. SAMUEL FRISBIE, Unionville, Conn. Filed Jan. 3, 1894. Serial No. 496,509. (No model.)



*Claim.*—1. In a vise having two principal members, the segmental screw and the non rotary segmental nut having their blank spaces relatively arranged for sliding the screw longitudinally by the nut when the screw stands in a given position, said segmental nut being movably confined for sliding longitudinally within one of said members to facilitate the proper engagement of the threads, substantially as described and for the purpose specified.

2. In combination with the two principal members of the vise, the segmental screw, and the segmental nut having their blank spaces relatively arranged for sliding the screw longitudinally by the nut when the screw stands in a given position, said segmental nut being movably confined within a mortise and a spring for holding it in position and permitting it to yield in the longitudinal direction of the screw, substantially as described and for the purpose specified.

3. The combination of the two principal members of a vise, a segmental screw C, a bearing in the fixed one of said members for the lower side of said segmental screw, the segmental nut within a mortise above said screw, and the adjusting screw 16 for holding said nut down into engagement with said segmental screw, substantially as described and for the purpose specified.

4. In a vise, the segmental screw and movable segmental nut arranged to slide in the longitudinal direction of the screw and having the ends of their threads rounded off in both a backward and forward direction, substantially as described and for the purpose specified.

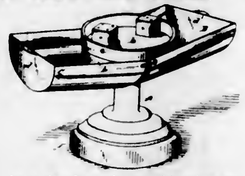
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528,427. PROCESS OF TREATING HIDES. DANIEL A. GOODMAN, Salisbury, N. C. Filed Jan. 2, 1894. Serial No. 495,431. (No specimens.)

*Claim.*—The herein described process of treating raw hides after they have first been depilated and bated in any of the usual ways which consists in first subjecting them to a bath composed of water, red arsenic, wheat bran, salt, starch and sulphuric acid in about the proportions set forth; second, removing the hides from the bath and thoroughly draining them; third, treating the hides in a bath of water and hyposulphite of soda in about the proportions specified, lastly tanning the hides in any of the well known ways.

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528,428. DICE-BOX. EUGENE GREGORY, Ann Arbor, Mich. Filed Feb. 17, 1894. Serial No. 500,515. (No model.)



*Claim.*—1. In a dice box, the combination of a foot-piece terminating in a table at its upper end, and a covering hood made in parts adapted to be closed by the hand of the operator and to drop apart to disclose the interior of the box when not so closed.

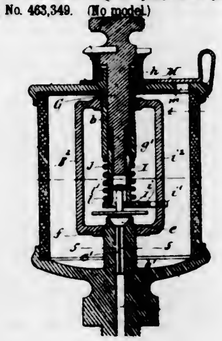
2. In a dice box, the combination of a foot-piece terminating at its upper end with a table, a flange surrounding said table, and a hood made in parts adapted to close over and conceal said table and to open and disclose said table.

3. In a dice box, the combination of a flanged table, a hood made in parts hinged to said table and adapted to move from a position of closure to a position of disclosure of said table, and stops limiting the closing movement of said hood pieces, substantially as described.

4. In a dice box, the combination of a flanged table, and a hood made in two parts closing together in the form of a hemisphere, substantially as described.

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528,429. LUBRICATOR. THOMAS J. HART, Buffalo, N. Y., assignor to the Sherwood Manufacturing Company, same place. Filed Feb. 23, 1893. Serial No. 463,349. (No model.)



*Claim.*—1. In a lubricator adapted to be carried by a crank pin or other movable part, the combination with the oil receptacle having an outlet, of a loose valve controlling said passage and having a plunger arranged in said passage, and a lifting rod having a loose connection with said valve and capable of sliding longitudinally, whereby the rod and the plunger of the valve may be reciprocated for flushing the outlet passage, substantially as set forth.

2. In a lubricator adapted to be carried by a crank pin or other movable part, the combination with the oil receptacle having an outlet, of a valve applied to said passage and capable of rising freely from its seat, a lifting rod capable of sliding lengthwise, an independent stop for the valve, adjustably connected with said lifting rod and a loose connection between said valve and said stop, substantially as set forth.

3. The combination with the oil receptacle of the lubricator and the outlet passage, of a loose valve controlling said passage, an adjusting rod capable of moving lengthwise in the lubricator and having a screw thread, a stop sleeve having a screw thread engaging with the screw thread of said adjusting rod and means for holding the sleeve from turning, substantially as set forth.

4. The combination with the oil receptacle of the lubricator having the outlet, of a loose valve applied to said outlet, an adjusting rod having a screw thread, an upright guide member arranged in the receptacle and a stop sleeve having a screw thread engaging with the thread of the adjusting rod, and a fork engaging with said guide member, substantially as set forth.

5. The combination with the oil receptacle of the lubricator having the outlet passage, of a loose valve controlling said passage, an adjusting rod capable of moving lengthwise in the lubricator, a stop sleeve adjustably mounted upon the adjusting rod, and a loose connection between said sleeve and the outlet valve, substantially as set forth.

6. The combination with the oil receptacle of the lubricator having the outlet passage, of a loose valve controlling said passage, an adjusting rod capable of moving lengthwise in the lubricator, a stop sleeve adjustably mounted upon the adjusting rod, a spring whereby the adjusting rod is held in its depressed position, and a loose connection between said stop-sleeve and the outlet valve, substantially as set forth.

7. In a lubricator adapted to be carried by a crank pin or other movable part, the combination with the oil receptacle having an outlet, of an adjusting rod, a stop sleeve capable of vertical adjustment on said rod, a valve applied to said outlet, and a stem attached to said valve, arranged loosely in said stop sleeve and provided with a nut or stop whereby it is confined in the sleeve, substantially as set forth.

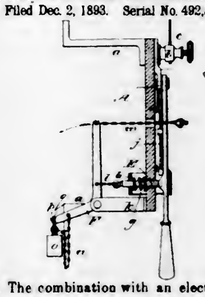
8. The combination with the oil receptacle having a retaining notch in its top, of the outlet passage for the oil, and a valve applied to said passage, an adjustable stop arranged above said valve, a vertically sliding adjusting rod carrying said stop and having a pin or projection engaging in said retaining notch, and a spring whereby the adjusting rod is depressed, substantially as set forth.

9. The combination with the oil receptacle of a lubricator having a supply aperture and a projecting marginal rim, of a laterally swinging lid adapted to close said aperture and provided at its outer end with a downwardly extending spring catch which engages under the rim of the receptacle, substantially as set forth.

10. The combination with the oil receptacle of the lubricator having a supply aperture and a marginal rim provided with a locking notch, of a laterally swinging lid adapted to close said aperture and provided at its outer end with a downwardly extending spring lip which engages under the rim of the receptacle and interlocks with the notch thereof, substantially as set forth.

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528,430. ELECTROMAGNETIC SWITCH. JOHN G. HARTEL, Keokuk, Iowa; Florence L. Hartel administratrix of said John G. Hartel, deceased. Filed Dec. 2, 1893. Serial No. 492,574. (No model.)

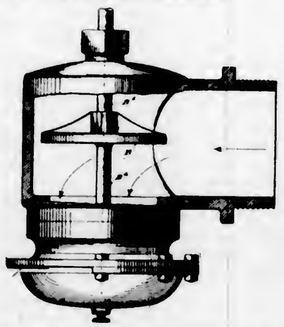


*Claim.*—1. The combination with an electric motor, of a pivoted, spring-pressed lever, forming part of an electric circuit, a con-

tact or stop forming part of such circuit, a trip catch for holding the lever normally engaged with such contact, a pivoted weighted lever, a tension device connecting the latter with the catch, an armature, and means for connecting it with the weighted lever, as shown and described, to operate as specified.

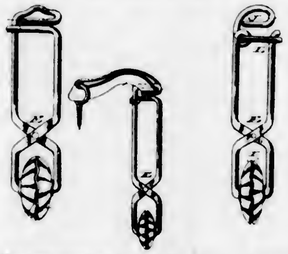
2. The combination in an electro-magnetic switch, of a spring actuated switch-lever in the circuit of a motor, a spring catch for holding said switch lever against a contact, a pivoted lever connected with the catch and a weight normally held detachably on an arm of said lever, an armature and flexible connection between it and the aforesaid pivoted lever, all substantially as shown and described.

528,431. NOZZLE. FREDERICK W. HERKENHANN, St. Louis, Mo. Filed Dec. 30, 1893. Serial No. 495,200. (No model.)



*Claim.*—In a nozzle, the combination of a cylindrical body, a concave horizontal bottom below it, and a horizontal flange on said body between which and the edge of the bottom is a water outlet slot, said flange having a horizontal surface on the under side and projecting horizontally beyond the edge of the concave bottom, substantially as described.

528,432. BEDCLOTHES-HOLDER. GEORGE H. HOLLIDER, Tacoma, Wash. Filed Dec. 12, 1893. Serial No. 493,453. (No model.)



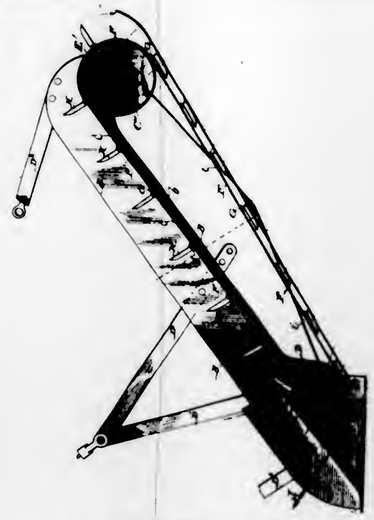
*Claim.*—The combination of a pair of pivoted arms provided with gripping jaws at their lower ends, one of said arms being extended past the upper end of the opposing arm and twisted into an open ring or loop, means for locking the arms together, an endless elastic band passed into the open ring or loop through the opening therein, and a fastening device carried by said endless band.

528,433. DREDGING APPARATUS. FRANK A. HYATT, Beaumont, Tex. Filed Jan. 5, 1894. Serial No. 495,812. (No model.)

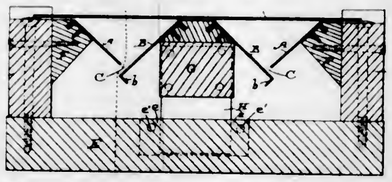
*Claim.*—1. In a dredge of the character specified, the combination with a plow and elevator, of means for suspending and adjusting the position of the same vertically, which consist in part of a swivel connection at the rear end, as shown and described.

2. In a dredge of the character specified, the combination with a plow, whose rear side is concave, of a frame pivoted to said plow, an endless-chain elevator running on drums mounted in said frame, the lower drum being arranged in the concave, as shown, and the buckets of such elevator being hinged and adapted to fold parallel to the frame, and guide bars attached to the under side of said frame, and having their lower ends arranged in coincidence with the concave of the plow, as shown and described for the purpose specified.

3. In a dredge of the character specified, the combination with the buckets, the endless chains and their connecting cross-bars, of metal bars attached to the upper side of the latter and having upturned ends engaging the ends of the buckets, substantially as shown and described.



528,434. SEPARATOR. ROBERT W. JESSUP, Los Angeles, assignor of one-half to Fairfax H. Wheelan, Santa Barbara, Cal. Filed Jan. 15, 1894. Serial No. 496,959. (No model.)



*Claim.*—1. A separator consisting of a channel composed of downwardly-converging non-moving opposing walls having a continuous discharge opening of uniform width from end to end between their lower portions, and mounted at an inclination in the direction of their length, one of said walls extending beyond the lower edge of the opposing wall and having its lower edge turned backwardly at an angle.

2. A separator consisting of a channel composed of downwardly-converging opposing walls separated below to form a continuous bottom discharge, one of said walls projecting beyond the lower edge of the opposing wall, and means for adjusting said projecting wall toward and from the opposing wall to vary the width of the discharge opening.

3. A separator having a channel composed of opposing walls separated between adjoining edges, one of said walls being immovable and the other flexible or yielding.

4. A separator consisting of a channel composed of non-moving downwardly converging opposing walls mounted at an inclination in the direction of their length and separable below to form a continuous bottom discharge opening, one of said walls being of a yielding or flexible nature.

5. A separator consisting of a channel composed of non-moving downwardly converging opposing walls mounted at an inclination in the direction of their length and separable below to form a continuous bottom discharge opening, one of said walls being of a yielding or flexible nature, and extending beyond the lower edge of the other wall.

6. In a separator, the combination of non-moving downwardly converging opposing walls mounted at an inclination in the direction of their length and forming a continuous discharge opening between their lower portions, and means for vertically adjusting one of said walls to vary the width of said discharge opening.

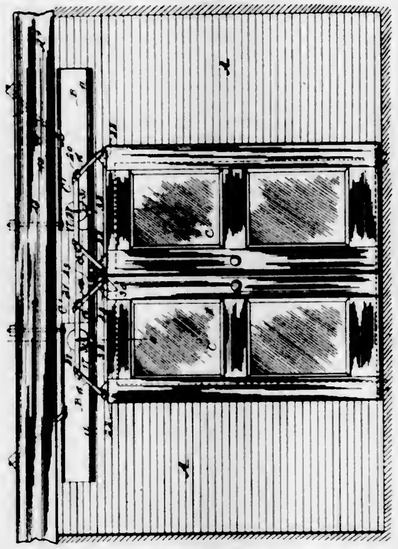
7. In a separator, the combination of the bed pieces, the fixed side piece, the inclined supporting strip secured to said side piece, the opposing inclined supporting strip, the end standards supporting



it and fitted in a saw cut or kerf in the bed pieces whereby they may be vertically adjusted, the bolts for clamping said standards in the saw kerfs, and the downwardly converging walls secured to the inclined supporting strips and forming a continuous discharge opening between their lower portions, substantially as described.

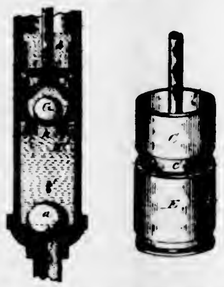
8. In a separator and in combination with the non-adjustable wall inclined in the direction of its length and width, the opposing inclined wall between which and the first wall a channel with a continuous bottom discharge opening is formed, the strip for supporting the second wall, the standards secured to the ends of the strip and the slitted bed piece with its clamping bolts whereby the standards may be vertically adjusted, substantially as described.

528,435. DOOR-HANGER. WILLIAM F. JOHNSTON, Sackett's Harbor, N. Y. Filed Apr. 11, 1894. Serial No. 507,120. (No model.)



*Claim.*— The improved door-hanger; consisting of blocks, adapted for attachment to a door, and having inclined faces provided with longitudinal grooves; two end bars inclined toward each other and having loops at their upper ends and projections on their lower ends that work in said grooves; set-screws for adjusting said bars lengthwise; the horizontal top bar, whose extremities are adjustable in the aforesaid loops; and wheels, carried centrally on said top bar; as shown and described.

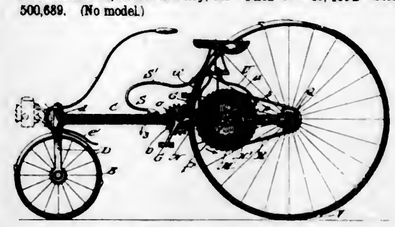
528,436. PUMP. HARRY JONES, Richmond, Ind. Filed Mar. 19, 1894. Serial No. 504,267. (No model.)



*Claim.*—1. The piston for pumps comprising two hollow cylindrical portions separated by a continuous annular peripheral port and each supported from a point in the axis by an open framework, constructed to allow free passage of water, whereby water is permitted to flow freely from the interior to the exterior of the piston in an annular sheet, as and for the purpose described

2. The piston for pumps comprising two hollow cylindrical portions connected together internally by radial arms from a portion on the axial line of the two cylindrical portions; substantially as described.

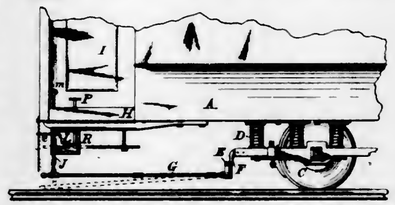
528,437. DRIVE-GEAR MECHANISM FOR BICYCLES, &c. STEPHEN KALTONIK, Punxsutawney, Pa. Filed Feb. 19, 1894. Serial No. 500,689. (No model.)



*Claim.*—1. As an improvement in drive gear mechanism for bicycles and the like, the combination with the main frame, and supporting wheels, a transverse shaft or arbor loosely journaled in the frame, a spring barrel journaled loosely on such shaft, a spring held therein and secured to the barrel and shaft, to turn said barrel forward as it expands a toothed wheel and a sprocket wheel secured on the barrel, held apart to form an annular slot, a seat spring bar secured to the frame, having one end free to vibrate, a double pawl pivoted thereto having its pawls held to engage the toothed disk at the front and rear, and having stop portions projected into the aforesaid annular slot all arranged substantially as shown and described.

2. As an improvement in drive gear devices for bicycles and the like the combination with the main frame and drive wheels, of the arbor or shaft F journaled transversely therein, having the usual hold back or detent devices, the barrel H loosely journaled on the shaft having an annular slot L the spring secured to such barrel H and shaft F said barrel having a sprocket portion and a tooth disk, and a gear member M, the crank shaft *o* the gear connections N, O, the spring seat bar S, the seat T secured to the free end thereof, the double pawls *u u'* having portions extended through the slot L formed with stops $u^1$ $u^2$ all arranged substantially as shown and for the purposes described.

528,438. SAFETY DEVICE FOR ELECTRIC CARS. JOHN M. KELLY, Rochester, N. Y. Filed Nov. 21, 1892. Serial No. 452,709. (No model.)



*Claim.*—1. The combination with a car of a fender hinged at its rear end to the car, and a pivoted catch adapted to be connected with the free or forward end of the fender, said catch located in position and adaptedto be operated by the foot of the motorman to drop the fender, substantially as set forth.

2. The combination with the body and running gear of a car, of the platform arranged underneath the body of the car, hinged at its rear end and provided at or near its front end with a supporting rod, one or more fenders attached to the front of the car, and suitable trip-mechanism operated by the contact of one of the fenders with an obstacle, substantially as described.

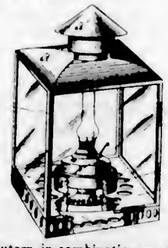
3. The combination, with the body and running gear of a car, of the platform arranged underneath the body, hinged at its rear end, and supported at its front end by a movable trip, one or more fenders attached to the front of the car, and arranged to operate the trip or catch upon the contact of one of the fenders with an obstacle, and mechanism whereby the platform or grating may be released by the motorman, substantially as described.

4. The combination, with the body and running-gear of a car, of the platform or grating G, hinged at its rear end and provided at or near its front end with the notched supporting rod J, the movable catch L, one or more fenders N and connection *e*, substantially as described.

5. The combination, with the body and running gear of a car, of the platform or grating G, hinged at its rear end and provided at

or near its front end with the notched supporting rod J, the movable catch L, one or more fenders N and connection *e*, and the tread P arranged to operate the catch, substantially as described.

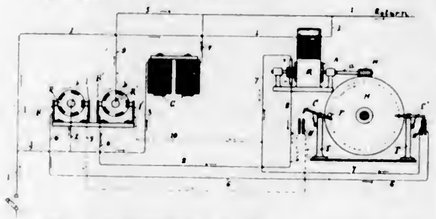
528,439. LANTERN. THOMAS LANGSTON, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Aug. 11, 1894. Serial No. 520,092. (No model.)



*Claim.*—1. In a lantern in combination, a plurality of perforations at or near the lower edge of the lantern, a false bottom or plate extending to the sides of the lantern above said perforations, a plurality of perforations in said plate and a lamp receiving well in said plate, substantially as described.

2. In a lantern in combination, a plurality of perforations at or near the lower edge of the lantern, a false bottom or plate extending to the sides of the lantern above said perforations, a plurality of perforations in said plate, a well in said plate and a lamp of less diameter than said well inclosed therein, substantially as described.

528,440. REVERSING MECHANISM FOR ELECTRIC MOTORS. JOHN MELLEN, Newport, Ky., and NATHANIEL O. GOLDSMITH, Cincinnati, Ohio, assignors to Frederic C. Weir, Cincinnati, Ohio. Filed Mar. 24, 1894. Serial No. 504,941. (No model.)



*Claim.*—1. In combination with an electric circuit, an electric motor connected in circuit therewith, a magnet connected in the main circuit, a pair of reversers connected in one of the motor circuits and having two alternate circuit terminals for said motor circuit, an armature mounted upon a power lever and operated by said magnet, and mechanism connecting the armature with the reverser, whereby the motor circuit is reversed by the breaking of the main circuit, substantially as specified.

2. In combination with a motor and its circuit connections with the main line, the reversers R R′ adapted to revolve on their common axis, and having alternate peripheral contact and insulated segments, a pair of terminals engaging with each of said reversers, one of which is out of circuit when the other is in circuit, and mechanism for operating said reversers, substantially as described.

3. The combination with a main line circuit, and a reverser, of an electric motor having one of its circuit terminals connected to the main line, and two alternate circuits arranged through the reverser and having two sets of terminals connected in the opposite motor circuit, a magnet in the main line, and operating mechanism connected therewith, whereby the reverser is operated to reverse the circuit through the motor by the making and breaking of the main circuit, substantially as specified.

4. In combination with the reversers R R′, the terminals B B′ and I I′, with two alternate circuits in connection with one of said motor circuits, mechanism in the main circuit for moving the reverser and bringing in one of said motor circuits as the other is cut out, substantially as described.

5. In combination with the reversers R R′ and their terminals, and two alternate circuit connections with the motor, the cut outs *c c′* operated alternately by the transmitting mechanism of the motor to automatically cut out its circuit, substantially as described.

6. In combination with an electric motor having an armature and the field circuit, one of said circuits being formed alternately through the circuit reversers R R′, and through alternate terminals B B′ I I′, and mechanism for operating the same by the magnet G in the main line, substantially as described.

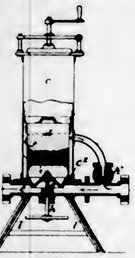
7. The reversers R R′ consisting of cylinders revolved on the common axis, the peripheries of which are composed of metallic segments and insulations, and two sets of terminals applied to the peripheries of said reversers, and so arranged that one pair of terminals is cut out when the opposite pair is cut in for reversing the circuit connections, substantially as specified.

8. In combination with an electric motor and its circuits, a reverser having two alternate circuit connections with one of the motor circuits a magnet connected in the main circuit, an armature operated by said magnet, and mechanism connecting said armature with the reverser, whereby the poles of the motor circuit are reversed each time the main circuit is made and broken, substantially as described.

9. The combination with an electric circuit, of a magnet connected in said circuit, an electric motor having one of its circuits through a reverser having alternate terminals, mechanism operated by said magnet for reversing said terminals, one or more cut-outs in the motor-circuit, and mechanism operated by said motor to automatically break the motor circuit at any predetermined time, substantially as specified.

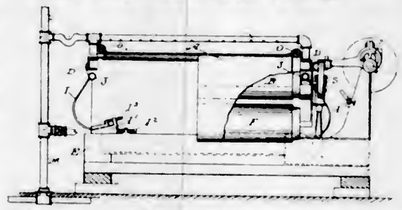
10. The combination with an electric circuit, of a magnet connected in said circuit, an electric motor having one of its circuits connected through a reverser having alternate terminals, mechanism operated by said magnet for reversing said terminals, two alternate cut-outs, and mechanism for operating said cut-outs alternately by the reversal of the motor, substantially as specified.

528,441. APPARATUS FOR AUTOMATICALLY MIXING FIRE-EXTINGUISHING SUBSTANCES WITH WATER. GEORG MÜLLER, Kaufbeuren, Germany. Filed July 2, 1894. Serial No. 516,399. (No model.) Patented in Germany May 1, 1891, No. 60,346; in Austria-Hungary Oct. 31, 1892, No. 19,144 and No. 51,591, and in France June 13, 1893, No. 230,827.



*Claim.*—An apparatus comprising a chamber *c*, a flange $c^3$ at the base thereof, a flange *c′*, a removable vessel *d* adapted to rest on said flange $c^3$ having perforated walls and a perforated floor *f*, a valve *g* at the base of chamber *c*, a pipe *e* having open ends *a b* and communicating with said chamber *c* by way of valve *g*, a branch pipe *i* from pipe *e* to chamber *c* below flange *c′*, and a cock *k* in said pipe *i*, the whole substantially as and for the purpose set forth.

528,442. CONCENTRATOR. JOHN NORBOM, San Francisco, Cal. Filed June 28, 1894. Serial No. 515,982. (No model.)



*Claim.*—1. In an endless traveling belt concentrator a frame-work having drums at opposite ends over which the belt passes, supports for said frame-work, consisting of the elastic arms curved in opposite directions having their lower ends secured to a stationary part and their upper ends connected with the sides of the belt supporting table as described.

2. In an endless traveling belt concentrator, a frame-work having drums at opposite ends over which the belt is guided, and movable elastic oppositely curved supporting arms, fixed at the lower ends and having the upper ends connected with the frame-work, and a mechanism whereby the frame-work and belt are oscillated transversely with relation to the supporting arms.

3. In an endless belt concentrator, the elastic oppositely curved arms fixed at the lower ends having the upper ends connected with and serving to support the frame or table which carries an endless traveling belt, and means for oscillating the belt and table transversely to the line of travel whereby said arms cause the opposite edges of the belt to be alternately depressed and elevated with relation to each other.

4. In an endless traveling belt concentrator, with drums at opposite ends of the table over which the belt passes, and mechanism by which an oscillating side shaking motion is imparted to the belt, oppositely curved elastic supporting arms having the upper ends connected with opposite sides of the table, and devices whereby the arms are adjusted horizontally and vertically.

5. The combination of an endless traveling belt having oppositely curved elastic arms whose ends are secured to the belt frame and a fixed part respectively whereby a transverse oscillating motion is imparted to said belt, a device for supplying water to the distributing pipe which is supported upon the belt frame and partakes of its oscillating motion, consisting of a stand pipe extending above the level of the distributer whereby a constant pressure is produced, and a flexible connecting pipe uniting the stand pipe with the distributer.

6. An endless traveling belt concentrator having elastic oppositely curved supporting arms, the ends of which are secured to the belt frame and stationary main frame respectively, a mechanism whereby a transverse oscillation of the belt and its frame is produced, a means for transmitting power to give motion to the belt around its supporting drums, consisting of a worm gear movable with the belt and table, a rotary shaft turning in stationary journals at a distance from the worm gear shaft, and a chain belt passing around sprockets attached respectively to the stationary driving shaft and the shaft of the worm gear, and extending at right angles with the line of transverse oscillation of the belt.



528,443. TRUCK. JABEZ B. RANDALL, Sanford, Fla. Filed May 12, 1894. Serial No. 511,057. (No model.)



*Claim.*—1. A truck having its frame provided with a lower end-piece projecting therefrom and a supplementary frame secured to said truck frame at one end and free at its other end, and mechanical means connected to said free end of said supplementary frame and also connected to said truck frame, whereby the former may be forced outward away from the latter by the operator pressing his foot against said mechanical means, substantially as set forth.

2. A truck having its frame provided with an end-piece projecting therefrom and a supplementary frame secured to said truck frame at one end and free at its other end, and a lever-frame connected to said free end of said former and fulcrumed on said truck frame, substantially as set forth.

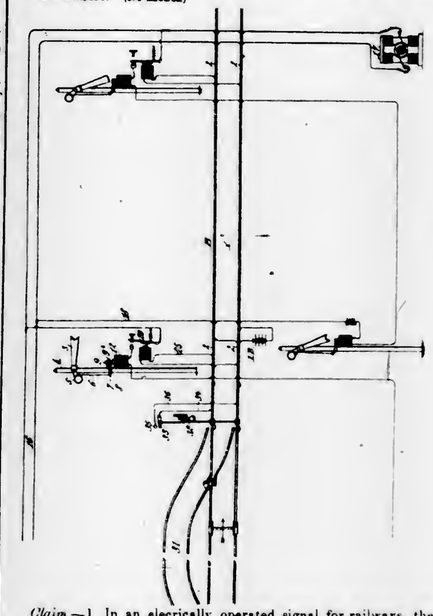
3. A truck having a frame extending over its front face and secured thereto at one end and free at its other end, a lever frame connected to said former frame, and rods pivoted to said truck and forming the fulcra for said lever frame substantially as set forth.

4. The combination with a truck, of a frame having spring-bars secured to said truck, and a lever-frame fulcrumed on said truck and connected to said former frame, substantially as set forth.

5. The combination with a truck, of a frame having corresponding side-bars secured to said truck at one end, and a cross-bar connecting the free ends of said side-bars, the lever-frame having side-bars connected to said former frame, and pivoted rods forming the fulcra for said lever-frame, substantially as set forth.

6. The herein-described improved truck having a frame composed of two outwardly bent longitudinal bars connected at one end to said truck and free at their outer ends, a curved cross-bar connected to said free ends of said bars, a lever-frame having two curved side-bars and a cross-bar, said side-bars being provided with eyes and hooked at their outer ends to engage eyes of said cross-bar of said former frame, and the rods pivoted to said truck having hooked ends engaging said eyes of said lever-frame, substantially as set forth.

528,444. ELECTRIC SIGNALING APPARATUS FOR BLOCK SYSTEMS. MATTHEW S. REILEY, Washington, D. C., assignor of sixty-seven ninety-sixths to Robert E. L. White, George W. White, James M. White, and Fred. R. Miller, same place. Filed June 13, 1894. Serial No. 514,459. (No model.)



*Claim.*—1. In an elecrically operated signal for railways, the combination with a semaphore-arm, of a rock-shaft having a lever connected thereto and provided with two or more armature-bearing arms one of which is rigid on said shaft and the other loose, the latter having a segmental slot to receive a pin projecting from the surface of the rock-shaft, and two electro-magnets adapted to attract the armatures on said arms, substantially as described.

2. In an electrically operated system of signals for railways, the combination with a series of blocks, or sections, and insulated track-sections within said blocks, of an external dynamo-circuit co-extensive with the series of blocks, a series of derived circuits, a series of electro-magnets, one for each block, semaphore-arms adapted to be moved by the magnetic attraction of said magnets, a circuit-breaker in each derived circuit, an electro-magnet adapted to attract an armature on said circuit-breaker, a circuit for said magnet including the rails of the insulated track-section in the same block, a local battery connected in series to said rails, an audible signal, a circuit and battery for the same, and a switch-arm on the automatic circuit-breaker adapted to switch the audible signal in when the circuit-breaker opens the derived circuit, substantially as described.

3. In an electrically operated system of signals for railways, the combination with a semaphore and with means for moving the same, of a dynamo circuit, a derived circuit, a circuit-breaker included in the derived circuit, electrical means for closing said circuit, a local circuit, a local storage battery, a charging circuit fed from the dynamo-circuit, and including an automatic circuit-breaker, a back-stop contact for the latter completing the charging circuit, and an electro-magnet included in the local circuit and adapted to attract an armature on the circuit-breaker in the charging-circuit, substantially as described.

4. In an electrically operated signal for railways, the combination with a storage-battery, of a dynamo circuit, a charging circuit, an automatic circuit-breaker forming part of the charging-circuit, a back-stop forming a contact which completes the charging-circuit, and an

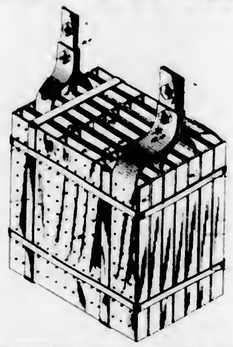
electro-magnet the coil of which is supplied with current from the storage battery, its core being adapted to attract an armature on the circuit-breaker, substantially as described.

5. In a system of electrically operated signals for railways, the combination with a single track divided into a series of blocks, or sections, insulated from each other, of two series of semaphores, one on each side of said track, a series of levers to hold the signal arms thereon at "safety," electro-magnets to operate said levers, a continuous dynamo circuit to feed the signal-operating circuits of the semaphores on one side of the track, each including a circuit-breaker, electro magnets to control the circuit-breakers, local circuits for the latter electro-magnets, local batteries to feed the local circuits; and a series of extensions of the signal-operating circuits to the magnets of the semaphores on the other side of the single track, said semaphores being placed at the farther end of the block, substantially as described.

6. In a system of electrically operated signals for railways the combination with a single line of track divided into blocks which are electrically isolated, from each other, of a series of semaphores on one side of said track, levers to hold the arms of the same at "safety," electro-magnets to operate said levers, a dynamo circuit, a series of derived circuits for the said electro-magnets, each including a circuit breaker, a series of electro-magnets to control the circuit-breakers, local circuits for the latter magnets, local batteries to feed the same, a second series of semaphores arranged on the other side of the track and at the opposite ends of the several blocks, relatively to the other series, a series of electro-magnets holding the signals of the second series at "safety," and a series of extensions of the signal operating circuits from the second terminals of the electro-magnets of the first series of semaphores to the first terminals of the electro-magnets of the second series, substantially as described.

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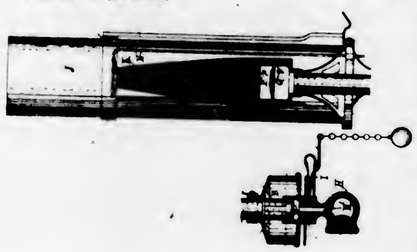
**528,445.** SECONDARY BATTERY. JOHN E. RHETTS, Salem, Ind. Filed Nov. 22, 1893. Serial No. 491,629. (No model.)



*Claim.*—In a secondary battery, a series of negative and positive electrodes each consisting of a flattened leaden receptacle having ends and bottom closed and its side walls perforated, the alternate members of said series being provided at opposite ends with integral lugs projecting from their upper ends and forming two series of binding posts, the central lugs of each series being provided with two bolt holes and the remaining lugs of the respective series being bent inward laterally and bolted to the central lugs by bolts passed through the lower bolt holes, substantially as and for the purpose set forth.

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**528,446.** GAS-BURNER. CHARLES H. ROBBINS, Owosso, assignor of one-half to S. Dean, Ann Arbor, Mich. Filed Jan. 18, 1894. Serial No. 497,290. (No model.)



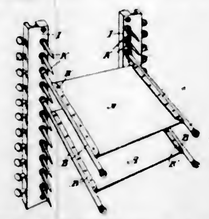
*Claim.*—1. In combination with a "Bunsen" burner and a mantle above said burner, a combined gas and air conduit, an automatically opening air valve adapted to shut off admission of air to the conduit, and means for operating said valve, substantially as described.

2. In combination with a "Bunsen" burner and a mantle above said burner, a combined gas and air conduit, an air leading-in chamber communicating with said conduit, and an automatically opening air valve adapted to shut off admission of air to the conduit, and means for operating said valve, substantially as described.

3. In combination with a conduit R, a leading-in chamber B and mantle K, a valve E, pivoted lever G, and spring F, substantially as described.

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**528,447.** LACE, VEILING, OR RIBBON HOLDER. JULIUS M. SCHLESINGER, San Francisco, Cal. Filed Aug. 28, 1894. Serial No. 521,527. (No model.)



*Claim.*—1. A holder for lace and similar goods consisting of a flat card or plate with a tubular post fixed upon opposite ends, in combination with a base or bases having adjustable projecting spindles upon which the holders are adapted to fit.

2. A lace or ribbon holder consisting of a flat plate having tubular posts upon opposite ends, said posts being stamped from sheet metal and having projecting plates formed upon the sides between which the ends of the holder are adapted to fit and be secured.

3. A holder for lace, veiling and ribbon consisting of a flat plate, tubular posts stamped from sheet metal having funnel shaped ends and plates projecting from the sides formed in a single piece with the posts and adapted to receive the ends of the holder plate, a central socket piece passing through one of the posts at right angles thereto and extending centrally into the holder plate, a corresponding socket with polygonal opening adapted to fit a revoluble spindle with correspondingly shaped end whereby the holder may be rotated to wind the material upon it.

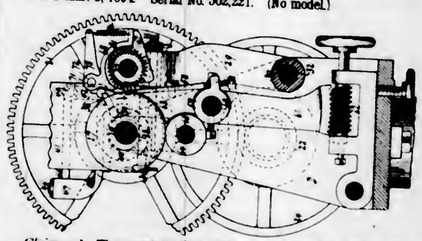
4. A lace or ribbon holder consisting of a flat plate having parallel tubular posts fixed upon its ends, in combination with base or supporting pieces having movable and adjustable spindles fixed therein adapted to fit the tubular posts.

5. A lace or ribbon holder consisting of a flat plate with tubular ends, base or supporting pieces having holes made in one side, spindles having enlarged ends fitting said holes and channels made around these ends, and locking pins whereby the spindles are retained in position.

6. A lace or ribbon holder consisting of flat plates having parallel tubular posts fixed to opposite ends, base pieces having holes made in their faces, spindles upon which the tubular posts are adapted to fit, said spindles having enlarged ends fitting the holes in the base pieces, channels made around these enlarged ends and spring-actuated locking pins movable in the base pieces and adapted to fit the channels in the spindles and lock them in position.

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**528,448.** SKIVING-MACHINE. JACOB R. SCOTT, New York, N. Y. Filed Mar. 3, 1894. Serial No. 502,221. (No model.)



*Claim.*—1. The combination with a knife, and a feed-roller, of a die-roller provided with a radially movable end-gage, means for moving the end-gage radially, and spring-actuated levers having portions arranged in the path of the end-gage when the latter is projected, substantially as and for the purposes described.

2. The combination with the die-roller, the feed roller, the knife, the end gage, the side gage and the cam actuated pusher of spring actuated levers for holding the material against the die-roller during the operation of skiving substantially as described.

3. The combination with a knife, and a feed-roller having a series of circular cavities, of a die-roller having a radially movable end gage, means for moving the end gage radially, a cap mounted over the feed-roller, and a series of spring-actuated levers pivoted on said cap and having portions arranged in the path of the end gage when the latter is projected, substantially as and for the purposes described.

4. The combination with the die-roller, the feed roller, the knife, the end gage, the edge gage and the pusher of two cams, one for actuating the pusher at the beginning of the skiving operation and the other for actuating the pusher toward the end of the skiving operation substantially as described.

5. The combination with the die-roller, the feed roller, the knife, the end gage, the edge gage, and the pusher of a fixed cam for actuating the pusher at the beginning of the skiving operation, a second cam for actuating the pusher toward the end of the skiving operation and means for adjusting this second cam according to the length of the material to be skived substantially as described.

6. The combination with a concave die-roller, a feed roller and a knife of a pressure roller for grasping the material during the operation of skiving and molding it in the same cavity in which it is skived substantially as described.

7. The combination with a concave die-roller, a feed roller and a knife of a pressure roller for grasping the material during the operation of skiving and molding it in the same cavity in which it is skived and a guide for conducting the material between the pressure roller and the die-roller substantially as described.

8. The combination with a concave die-roller, a feed roller and a knife of a pressure roller for grasping the material during the operation of skiving and molding it in the same cavity in which it is skived, a guide for conducting the material between the pressure roller and the die-roller, and means for adjusting the guide substantially as described.

9. The combination with a concave die-roller, a feed roller and a knife of a pressure roller for grasping the material during the operation of skiving and molding the same in the same cavity in which it is skived, and a knife stock provided with a concave guide way for conducting the material to the pressure roller substantially as described.

10. The combination with the die-roller, the knife and the feed roller of a ⌊ shaped lever which swings on pivots mounted in the main frame and the free ends of which form the bearings for the shaft of the feed roller, two screw bolts secured in the main frame and extending through slots in the upright branches of the ⌊ shaped lever and two set screws tapped into the main frame and acting upon the inside faces of the upright branches of the ⌊ shaped lever for adjusting and locking the feed wheel in the required position substantially as described.

11. The combination with the die-roller, the feed roller and the knife of a knife stock secured to the main frame by a shaft situated beneath the die-roller, a lever which forms the bearings for the shaft of the feed wheel and a shaft which forms the bearing for said lever and is mounted in the main frame outside of the knife stock, so that this lever together with the feed wheel can be turned down to give free access to the knife stock and the knife substantially as described.

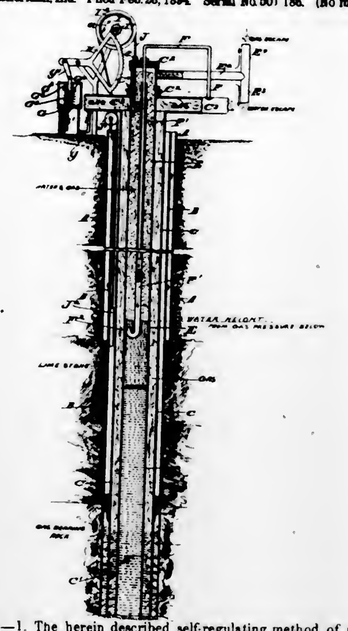
12. The combination with the die-roller and the edge gage of a shaft composed of two sections 13, 14, a clutching device for retaining these sections in line with each other and with their bearings, solid eyes 10 and 11 on the frame to form the bearings for the section 13 a removable bushing 19 fitted into the eye 10, a feather key 18 secured in the section 13 of the shaft and engaging a corresponding seat in the die-roller, a set screw 20 in the outer end of section 13 and a ridge or abutment 80 to prevent the die-roller from getting jammed against the face of the edge gage by the action of the set screw 20 substantially as described.

13. The combination with the die-roller and the edge gage of a shaft composed of two sections 13, 14, a clutching device for retaining these sections in line with each other and with their bearings, solid eyes 10 and 11 on the frame to form the bearings for the section 13 of the shaft, a removable bushing 19 fitted into the eye 10, a feather key 18 secured in section 13 of the shaft and engaging a corresponding seat in the die-roller, a set screw 20 in the outer end of section 13, a bushing 119 fitted into the eye 11 and forming a ridge or abutment 80 to prevent the die-roller from becoming jammed against the face of the edge gage by the action of the set screw 20 substantially as described.



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**528,449.** METHOD OF AND APPARATUS FOR REMOVING WATER OR OIL FROM BOTTOMS OF GAS-WELLS. RALEIGH H. STALEY, Sheridan, Ind. Filed Feb. 23, 1894. Serial No. 501,186. (No model.)



*Claim.*—1. The herein described self-regulating method of removing water or oil from the bottoms of natural gas wells which consists in sealing the gas in the bottom of the well, to cause it to raise the accumulated liquid in the outlet pipe and thus seal said pipe, and finally discharging a jet of gas upwardly into the water or oil just below its upper level by means of a connection with the upper end of the column or body of gas and automatically maintaining said jet in the same relation to the column of water according to its rise and fall; whereby the water seal is maintained and the overplus is caused to flow off continuously substantially as set forth.

2. The combination with the gas well casing and the gas pipe having a suitable offtake at its closed upper end and provided at its lower inlet end above the gas bearing rock with a packer, of the water pipe extending down along the gas pipe to the bottom of the well communicating with the gas pipe below the packer and having at its upper end an unobstructed outlet, and a small gas pipe extending from the upper end of the main gas pipe down into the water pipe to a point just below that reached by the upper surface of the column of water and there provided with an upwardly extending nozzle and means for maintaining the nozzle in its relative position to the column of water as the latter rises and falls substantially as set forth.

3. The combination with the gas and water pipes, of the smaller gas pipe extending down into the water pipe just below the point reached by the upper surface of the column of water and there provided with an upwardly discharging nozzle, and means for automatically maintaining the nozzle at the same distance under water when the latter rises and falls, substantially as set forth.

4. The combination with the gas and water pipes of the smaller gas pipe connected with the main gas pipe and having a sliding section within the water pipe provided with an upwardly discharging nozzle, of a piston operated by the gas in the main gas pipe and intermediate mechanism connecting said piston with the said sliding section to automatically preserve the relation between its nozzle and the column of water as the gas pressure varies substantially as set forth.

5. The combination with the gas and water pipes of the smaller gas pipe connected with the main gas pipe and having a counterbalanced sliding section within the water pipe and provided with an upwardly discharging nozzle, a piston operated by the gas in said main pipe and connections between said piston and sliding section substantially as set forth.

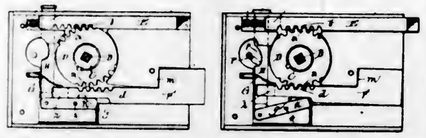
6. The combination with the gas and water pipes of the smaller gas pipe having a vertically sliding section in the water pipe and provided with an upwardly discharging nozzle, a weighted rope extending from said sliding section, a drum over which the rope passes, a

pinion for operating the drum, a toothed segment meshing with said pinion, a spring pressed piston having a piston rod connected with said segment, and a gas pipe delivering gas from the main gas pipe to the cylinder in which said piston works substantially as set forth.

7. The combination with the gas and water pipes the latter having at its upper end an upwardly extending gas outlet and a downwardly extending water outlet, of the small gas pipe having a jet discharging upwardly into the water pipe just below the level reached by the column of water and means for automatically maintaining such relation substantially as set forth.

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**528,450. LOCK.** CLAUS SWANBERG, Gilbert, Mich. Filed Aug. 3, 1894. Serial No. 519,365. (No model.)

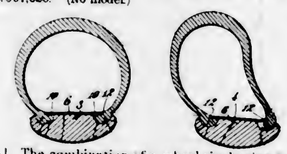


*Claim.*—1. In a lock, the combination with a knob spindle, a pinion fast therewith, a sliding latch bolt having a rack thereon in constant engagement with said pinion, a lock bolt at the opposite side of said pinion, having a rack normally out of engagement with said pinion, a push device arranged to be operated from one side of the door to throw said lock bolt into engagement with said pinion, and a key arranged to act upon said push device from the opposite side of the door, substantially as specified.

2. In a lock, the combination of a knob spindle, a pinion fast thereto, a latch bolt having a rack thereon in constant engagement with said pinion, a lock bolt upon the opposite side of the pinion and having a rack thereon normally out of engagement with said pinion, a push bar having a projecting button at one end, a rocking arm to which the opposite end portion of said push bar is loosely connected, said arm being in contact with said latch bolt, a tooth or projection on said rocking arm adapted to engage recesses on the lock bolt, and a spring bearing upon said lock bolt and normally holding it out of engagement with said pinion, substantially as specified.

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**528,451. PNEUMATIC TIRE AND WHEEL-RIM.** PARDON W. TILLINGHAST, Providence, R. I., assignor to the Tillinghast Manufacturing Company, same place and Jersey City, N. J. Filed Feb. 21, 1894. Serial No. 501,020. (No model.)



*Claim.*—1. The combination of a wheel-rim having a pair of annular grooves substantially semi-circular in cross section, an annular band rigidly secured to the wheel-rim and extending partially over the said grooves, and a pneumatic tire having a pair of edges molded and vulcanized with stretchable beads having rounded outer surfaces to fit said grooves, substantially as described

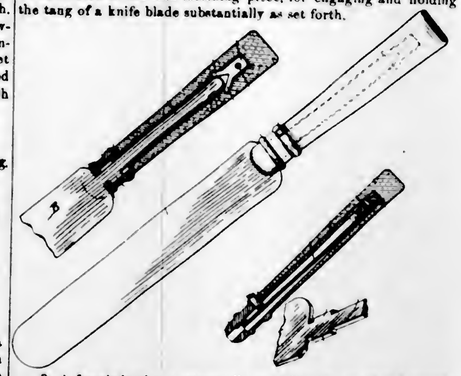
2. The combination of a wheel-rim having a pair of annular grooves substantially semi-circular in cross section, an annular band secured to the periphery of the wheel-rim and having its edges provided with annular beads which overhang the annular grooves in the wheel-rim, and a slitted or divided tire having the edges of the slit or division molded and vulcanized with annular stretchable beads having rounded outer surfaces to fit the grooves and engaged with the said annular beads of the annular band, substantially as described.

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**528,452. MEANS FOR ATTACHING KNIVES TO THEIR HANDLES.** JOSEPH WESTBY, Sheffield, and JOSEPH WHITFIELD, Menston, Wharfedale, England. Filed Oct. 16, 1893. Serial No. 488,319. (Model.) Patented in England May 18, 1893, No. 9,977.

*Claim.*—1. A knife blade provided with a tang having two lateral shoulders beveled on their inner ends, in combination with a knife handle which receives the said tang and a spring catch fastened to the said handle within the socket of the same and provided with raised lugs which are rounded for contact with the beveled ends of the said shoulders but adapted to hold the tang and blade in place when they spring into their former position after the shoulders are pressed in beyond them substantially as set forth.

2. The body of a knife handle having notches or recesses in its inner face, in combination with a fastening piece having bifurcations adapted to be bent into the said notches or recesses, and a spring catch riveted to the said fastening piece, for engaging and holding the tang of a knife blade substantially as set forth.



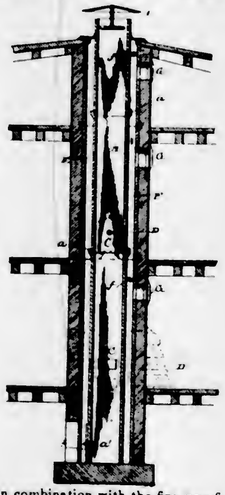
3. A ferrule having a rearwardly extending bar or plate, a spring catch for engaging a knife blade tang and a fastening piece having bifurcations which are adapted to be bent outward, the said bar, catch, and fastening piece being riveted together, in combination with a handle body formed with a hollow or socket to receive the parts thus riveted and having notches or recesses in its inner face to receive the said bifurcations substantially as set forth.

4. In combination with a hollow knife handle having a notched inner face, a fastening piece which in part is sufficiently flexible to be bent into contact with the said notched face, and a spring catch fixed to the said fastening piece and arranged to engage the tang of a knife blade substantially as set forth.

5. A ferrule having a rearwardly extending bar or plate, in combination with a fastening piece riveted to the said bar and in part capable of being bent outward, and a knife-handle body which is notched in its inner face to engage the fastening piece when thus bent, the said fastening piece operating to hold the said ferrule securely against the end of the said body substantially as set forth.

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**528,453. CHIMNEY.** EDWIN V. WINGARD, Philadelphia, Pa. Filed Nov. 25, 1893. Serial No. 491,976. (No model.)



*Claim.*—1. In combination with the fire proof chimney, as described, and the fire proof jacket about it having registers, the cut off or damper in the air space between the chimney and its jacket, substantially as described.

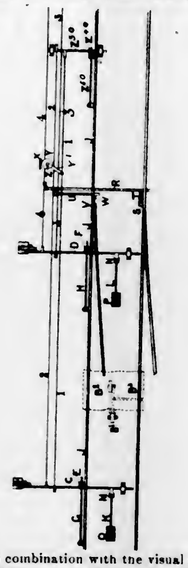
2. In combination with a fire proof chimney, a casing about it made in sections each section composed of pieces united by means of lugs on the inside of one into which the edges of the other fits, substantially as described.



3. In combination with a fire proof chimney, a casing made in sections and each section composed of pieces securely fastened one to the other and one having at the bottom an inside ledge, whereby an upper section will rest upon one next below substantially as described.

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**528,454. SELF-ACTING RAILWAY SIGNALING APPARATUS.** GEORGE H. WOOD, near Harrogate, England. Filed Oct. 13, 1892. Serial No. 448,837. (No model.) Patented in England Oct. 15, 1891, No. 17,580.



*Claim.*—1. The combination with the visual signals A and B, of the rock-shafts C and D connected with said signals and provided with cranks E, F, and lugs M, N, the levers G H pivotally connected to the track rail J and to the cranks E F and adapted to be depressed by a passing train to rock the shafts C D and operate the signals A B, the slide boxes O P, the levers K L working at one end in said boxes and connected at the other end with the lugs M N of the rock-shafts C D, the said levers K L being automatically raised, by operation of the visual signals, into position to operate an audible signal on a following train, the cranked rock-shaft $Z^{30}$ having a lever $Z^{30}$ pivotally connected therewith and with the track rail J, the wires 1 and 2 connecting the rock-shafts C and $Z^{30}$, and the wires 3 and 4 adapted to connect the rock-shaft D with another rock-shaft, such as $Z^{30}$ having a lever such as $Z^{30}$, substantially as and for the purposes described.

2. The combination with the visual signals A and B, of the cranked rock shafts C and D connected with said signals and provided with levers G H through which said rock-shafts are actuated by a passing train to set the visual signals to danger, the levers K L, connected with said rock-shafts and adapted to be raised, by operation of the visual signals, into position to operate an audible signal on a following train, the rock-shafts R, O, having arms T W, respectively, connecting with point locking blocks S, V, cranked rock shaft $Z^{30}$ provided with lever $Z^{30}$, indicator and bell ringing apparatus X, and the wires 1, 2, 3 and 4, all arranged and adapted to operate, substantially as and for the purposes described.

3. The combination of the visual signals A B having semaphore arms L', the crank-rock shafts C D and $Z^{30}$, provided with levers G H and $Z^{30}$ through which said shafts are successively operated from a passing train, the rods K' connecting the shafts C D with the semaphore arms, the point locking rock shafts R, U, the blocks S V connected with said shafts R U, the levers K L connected with the shafts C D and adapted to be raised by operation of the visual signals, into position to operate an audible signal on a following train, bell-ringing apparatus X, the wires 1 and 2 connecting the rock-shaft C with the rock shaft $Z^{30}$ and with the bell ringing apparatus X and point locking rock shaft U, and the wires 3 and 4 adapted to connect the rock-shaft D with the other point locking rock-shaft R and with another rock shaft such as $Z^{30}$ having a lever such as $Z^{30}$, all substantially as and for the purposes described.

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**528,455. SKIRT-ELEVATOR.** ARTHUR L. ZELLER, St. Louis, Mo. Filed July 23, 1894. Serial No. 518,359. (No model.)

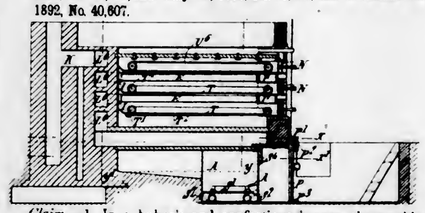
*Claim.*—1. A skirt supporter comprising the box having a mouth piece, means for supporting the box, the supporting chain passing through the box and mouth piece, having a hand-piece at its upper end, and a clamp at its lower end, the chain-clamp consisting of a fixed member, and a movable member having a stem working through the casing, and a spring surrounding the stem for forcing the movable member toward the fixed member for clamping the chain; substantially as described.



2. A skirt supporter comprising the box 1, having a mouth piece 2, the bail 6 secured to the box, the chain 5 secured to the bail, the clamp 4 secured to the chain, the chain clamp consisting of a fixed member 9, the movable member 10 having a stem 11 working through the box, the spring 12 surrounding the stem, the supporting chain 7 passing through the box and mouth-piece, having a hand-piece 8 at its upper end, and a clamp 3 at its lower end, and the push-rod 13 secured to the movable member of the chain-clamp, extending through the casing and having a push-button at its outer end; substantially as described.

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**528,456. BAKER'S OVEN.** JOHN ADAIR, Waterford, Ireland, assignor to the Adair Syndicate, Limited, London, England. Filed Mar. 3, 1894. Serial No. 502,270. (No model.) Patented in England Feb. 24, 1888, No. 2,750, July 30, 1888, No. 10,965, Aug. 24, 1888, No. 12,234, Nov. 23, 1889, No. 18,771, Feb. 15, 1890, No. 2,482, July 17, 1890, No. 11,140, and July 26, 1890, No. 11,707, and in Canada Oct. 7, 1892, No. 40,607.



*Claim.*—1. In a baker's and confectioner's oven, the combination with the heating tubes, of hollow cross girders with which the tubes are connected by means of a sliding joint, a box surrounding each said joint and containing sand to keep the same tight, and soot doors in the cross girders to admit of cleaning the tubes, substantially as described

2. In a baker's and confectioner's oven, the combination with the heating tubes and connecting-hollow cross girders, of the removable floors provided with wheels and supported on tracks above and in proximity to said heating pipes and girders, substantially as described.

3. In a baker's and confectioner's oven, the combination with the decks or tiers of heating pipes and flues provided with dampers, of the removable floors located above and in proximity to said pipes and provided with removable covers, substantially as described.

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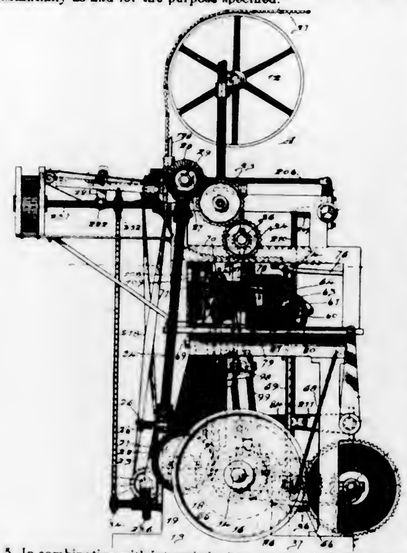
**528,457. MACHINE FOR MAKING MATCHES.** EBENEZER B. BEECHER, Westville, and JACOB P. WRIGHT, New Haven, Conn., assignor to the Diamond Match Company, Chicago, Ill. Filed Aug. 21, 1893. Serial No. 483,671. (No model.)

*Claim.*—1. In a machine for making matches, in combination with the block feeding trough provided with feeding mechanism and a stationary block guiding side, a reciprocating plunger for driving the blocks against the guiding side of the trough, and mechanism for reciprocating the plunger operated from the main drive of the machine, substantially as specified.

2. In combination with the block feeding trough and mechanism for feeding blocks through the trough, a reciprocating plunger, to engage the blocks and force them against one side of the trough, mechanism for reciprocating such plunger, and a spring interposed in such mechanism, to cause the plunger to be forced against the blocks with a yielding pressure, substantially as and for the purpose specified.

3. In combination with the block feeding trough and means for feeding the blocks along the same, a moving piece to strike and force the blocks over against one side of the trough, a lever for actuating such piece, a moving rod having a bearing to engage and move the lever, to retract the block engaging piece, and a spring engaging the lever and a bearing on the rod, substantially as and for the purpose specified.

4. In combination with the block feeding mechanism and a way for the blocks having a block-guiding face, a plunger to engage the sides of the blocks and force the mover against the guide face, a lever to which the plunger is pivoted, a reciprocating rod passing through one end of the lever, a stop on such rod, to engage the lever and move it as the rod is moved to retract the plunger, and a spring on the rod between the other side of the lever and a bearing on the rod, substantially as and for the purpose specified.



5. In combination with intermittingly moved block feeding mechanism and the way for the blocks, having a block guiding face, a knocker to strike the blocks and force them against the guiding face, and mechanism causing such knocker to strike the blocks during the periods of rest of the feeding mechanism, and then recede from the blocks, substantially as and for the purpose specified.

6. In combination with the splint-cutting cutters and a suitable way for the blocks to be cut, means for moving the cutters through the blocks, a removable plate provided with pins in line with the cutters, a holder having a part engaging a longitudinal flange on the plate, so as to hold said plate with its series of pins in a line parallel to the line of the cutters, and detachable means for holding the plate from longitudinal movement, substantially as and for the purpose specified.

7. In combination with the cutter head carrying the splint-cutting cutters, a backer having faces to support the ends of the splints in the cutters made movable toward and from the lower side of the cutters at an angle that is oblique to the plane of the latter, substantially as and for the purpose specified.

8. In a mechanism for making matches, in combination with a reciprocating head, the splint cutters carried thereby, a backer supported on such head, so as to be movable thereon, and provided with splint supporting portions to be moved under and away from the cutters, cam-ways on a stationary support, and bearings on the backer engaging such ways, whereby the backer is moved on the cutter head, as it rises and falls with the same, substantially as and for the purpose specified.

9. In combination with the reciprocating head and the splint cutters attached thereto, the backer bars, one for each cutter, reciprocally supported on the head, a bar with which the backer bars are connected, and means for moving such head, to reciprocate the backer bars, in a direction transverse to the direction in which the cutters are moved as the cutter bearing head rises and falls, substantially as and for the purpose specified.

10. In combination with the reciprocating head carrying the splint cutters, the backer bars, one for each cutter, supported on the head, so as to move up and down therewith, while being longitudinally movable thereon, so as to be moved out under the cutters and back again, a bar carried by said head to which the backer bars are attached, bearings on this bar, and cam-ways, on a suitable stationary support, whereby such bar is moved relatively to the head to carry the backer bars out under the respective cutters, during a portion of the upward travel of the cutter head, substantially as and for the purpose specified.

11. In combination with a head carrying a splint cutter adapted to cut a splint from a block, a backer, to support the splint end in the cutter, made movable obliquely toward and from a point in line with the splint, and also toward and from the cutter, and means for actuating such backer, substantially as and for the purpose specified.

12. In combination with a head carrying a splint cutter adapted to cut a splint from a block, a backer, for supporting the end of the splint held in the cutter, made movable toward and from its splint supporting position under the cutter, and a suitable guide for such backer guiding it at an angle to the plane of the end of the splint holding opening in the cutter, whereby, as the backer is moved toward its operative position, it also moves up toward the end of the cutter opening, and means for actuating the backer, substantially as and for the purpose specified.

13. In combination with a reciprocating head carrying a splint cutter, a reciprocating backer for such cutter, a guide for the backer extending at an angle oblique to the plane of the side of the cutter, at which it is to engage and support the end of the match splint, and means for reciprocating the backer, substantially as and for the purpose specified.

14. In combination with the reciprocating head for the splint cutters, the reciprocating backer bars for the cutters, guided, so as to be movable, on the head, and provided with pins, the actuating bar for the backers, a removable plate clamping the backers to such bar, provided with holes engaging the pins on the backers, and means for actuating this bar during the travel of the cutter head, substantially as and for the purpose specified.

15. In combination with the reciprocating head for the splint cutters, the backers guided in grooves in such head, the backer actuating bar secured to the backers, and guided in slots on portions of the head, rollers on the ends of such bars, and the cam-ways on stationary supports engaging such rollers, substantially as and for the purpose specified.

16. In combination with the series of splint cutters having shanks provided with pins, the block provided with grooves for the cutter shanks, a plate closing the open sides of such grooves, removably secured to the block, a shoulder on such block to engage the pins on the cutter shanks, and a plate removably attached to the block, clamping the pins against the block shoulder, substantially as and for the purpose specified.

17. In combination with the plate having the inclined grooves, the backers having their shanks guided in such grooves, the plate covering the open sides of the grooves, having its face opposite to that engaging the backer shanks at an angle to the plane of the latter, a block with grooved under face attached to such plate, and the splint cutters having their shanks in the grooves of the block, substantially as and for the purpose specified.

18. In combination with the longitudinally movable backers, the plate supporting them at an incline, the plate over them having its under side inclined and its upper face horizontal, and the splint cutters mounted upon such horizontal face, substantially as and for the purpose described.

19. In a machine for making matches, in combination with the chain carrier for the splints, a cam having cam surfaces of different height and different pitch, a rotary shaft, a disk thereon, carrying teeth of different heights to be engaged by the different cam surfaces, and suitable connections between the shaft and the carrier chain moving wheels, substantially as and for the purpose specified.

20. In a machine for making matches, a chain driving mechanism consisting of a driving shaft, a compound cam on the shaft, one working surface being higher than the other, a shaft supported by the frame, said latter shaft bearing a disk with projecting teeth of varying length that engage the compound cam, said latter shaft also bearing a pinion in mesh with a gear connected with sprocket wheels that have teeth in mesh with the teeth on the chain plates, whereby the chain is intermittently given a movement of varying distance as the teeth of varying length engage the higher or lower surfaces of the cam, substantially as specified.

21. In a machine for making matches in combination with the carrier chain, a rotary shaft having a disk with pins of different lengths projecting from its face, a rotary cam having on its periphery a cam rib, to pass between and engage the pins, and a cam face of greater pitch than that of the rib, made lower than the rib, so as to engage only a long pin on the pin disk, and suitable driving connections between the shaft and chain, substantially as and for the purpose specified.

22. In a machine for making matches, the mechanism for giving the splint carrier intermittent movements of different lengths, consisting of a rotary shaft carrying a disk provided with a series of pins, of which the one at one end of the series is higher than the others, a rotary cam having a cam rib high enough to engage all the pins, and a cam face, of greater pitch than such rib, made low enough to engage only the long pin, and suitable driving connections between the shaft and carrier, substantially as and for the purpose specified.



23. In mechanism for securing a step-by-step movement of the splint carrier of a match making machine, in combination with the rotary shaft and the disk thereon carrying the two series of pins, in which the pin at one end of each series is made longer than the others, and is separated from the short pin, at the adjoining end of the other series, by a space greater than that between the pins within one of the series, a rotary cam having a rib high enough to engage the lower pins, with one part inclined and one part in line with the travel of the rib, as the cam revolves, and a cam face lower than the rib, so as to engage only the higher pins, having an inclined portion of greater pitch than the incline of the rib, and a straight circumferential portion, parallel with the other part of the rib, substantially as and for the purpose specified.

24. In a machine for making matches, in combination with the composition vat and the rotary composition applying roller, and mixer turning therein, a rotary piece connected with the roller and mixer by suitable gearing, so as to rotate the same, two rotary wheels driven at different rates of speed, and pawl and ratchet connections between such rotary wheels and the rotary piece connected with the composition applying roller and mixer, whereby the latter devices will be driven by the wheel rotating at the greatest speed, while that is turning, and by the lower speed wheel when the other stops, substantially as and for the purpose specified.

25. In a machine for making matches, in combination with the composition applying mechanism and the moving devices thereof, a wheel, connections between the latter and the moving devices of the composition applying mechanism, the two pawls carried by the wheel, the two ratchet wheels, one for each pawl, and means for driving such ratchet wheels, at different speeds, in such direction, that their teeth, when they engage the pawls on the pawl carrying wheel, will cause such wheel to rotate, substantially as and for the purpose specified.

26. In a machine for making matches in combination with the composition vat, a mixer supported on a shaft in the vat, an applying roll supported on a shaft above the mixer such shafts bearing intermeshing gears and one of said shafts bearing a sprocket connected by a chain with a sprocket loosely mounted on its shaft, two pawls on opposite sides of such sprocket, the ratchet wheel turning with the shaft and engaged by one of the pawls, the ratchet wheel turning independent of the shaft and engaged by the other pawl on the sprocket wheel, means for rotating the shaft while the machine is in operation, and separate means for rotating the ratchet wheel independent of the shaft at a slower rate than the shaft rotates, whereby the mixer and composition roll, through one mechanism, are rotated rapidly when the machine is in motion, but more slowly through the other mechanism when the machine is stationary, substantially as and for the purpose described.

27. In a machine for making matches, in combination with the carrier holding the splints and a composition applying device, means for moving the carrier, a fan extending longitudinally over the carrier close to the headed splints therein, and means for swinging such fan transversely with reference to the carrier, substantially as and for the purpose specified.

28. In a machine for making matches, in combination with a splint cutting mechanism, a wax dipping mechanism, a composition applying mechanism, a series of drying rolls and a discharge mechanism, an endless chain for conveying the splints from mechanism to mechanism, a fan located adjacent to the path of movement of a portion of the chain and extending longitudinally over such path, and mechanism for moving the fan transversely with reference to the travel of the chain to dry the composition on the splints, substantially as specified.

29. In a machine for making matches, in combination with the frame, a runway for the endless chain supported by the frame between the drying rolls and the discharge mechanism, a rocking shaft held by the frame with arms supporting a plate or board extending longitudinally over the run-way, so as to form a fan adjacent to the run-way, a crank for rocking the shaft, and driving mechanism for rotating the crank, substantially as specified.

30. In a machine for making matches, a discharge mechanism consisting of a reciprocating head having a recessed face, a slide inserted in said recess, punching pins projecting outward from said slide, a removable backing bar, to receive the thrust of the pins and mechanism for reciprocating the head, substantially as specified.

31. In a machine for making matches, a discharge mechanism consisting of a reciprocating head, punching pins projecting outward from the front of said head and a removable backing bar to receive the thrust of the pins, substantially as specified.

32. In a machine for making matches, a discharge mechanism consisting of a reciprocating head having a recessed face, a slide inserted in said recess, punching pins projecting from said slide, an over-hanging plate for holding said slide in position, and removable clamps for securing the over-hanging plate, substantially as specified.

33. In a machine for making matches, in combination with a carrier for holding the match splints, while they are being treated, and a discharging mechanism to discharge the matches from the carrier, a moving conveyer receiving the discharged matches, and moving longitudinally with reference thereto, and means for moving such conveyer, to carry the matches discharged from the carrier at any one time, a distance greater than their length, before the next discharge of matches from the carrier takes place, substantially as and for the purpose specified.

34. In a machine for making matches, in combination with a carrier to hold the splints, while they are being treated, and a discharging mechanism to discharge from the carrier successively different portions of the quantity of completed matches held by the latter, a traveling receiving apron, to receive the discharged matches, moving longitudinally with reference thereto, and means for driving such apron at a speed sufficient to carry the matches discharged from the carrier at any one time beyond and out of the way of the matches next discharged upon the apron, substantially as and for the purpose specified.

35. In a machine for making matches, in combination with the carrier for holding the splints during treatment, adapted to hold such splints in rows, discharging mechanism operating, at intervals, to discharge, at one time, one or more of such rows, a traveling receiving apron, to receive the row or rows discharged from the carrier and moving longitudinally, with reference to the splints in such row or rows as discharged upon it, and means for moving the apron at a speed to carry the row or rows discharged upon it, at any one time, a distance greater than the length of a completed match, before the next discharge from the carrier is made by the discharging mechanism, substantially as and for the purpose specified.

36. In a machine for making matches, in combination with the carrier for holding the splints in rows, while they are being treated, the reciprocating discharger adapted to discharge the rows of matches successively from the carrier, the traveling receiving apron moving longitudinally with reference to the matches discharged upon it, and means for driving it, so that it moves, between the times of discharges by the discharging mechanism, a distance greater than the length of a match made from the splints, substantially as and for the purpose specified.

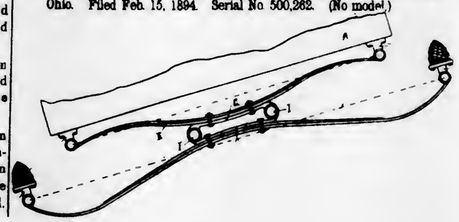
37. In a machine for making matches, in combination with a traveling carrier holding the treated splints in rows, and means for causing such rows to be successively discharged when they arrive at a given point, a traveling receiving apron, to receive the discharged rows, moving longitudinally with reference to the treated splints in such rows, and driving mechanism for the carrier and apron, relatively timed, so that, while the carrier is traveling the distance between two rows of the splints, the apron will be moved a distance greater than the length of one of such splints or matches, whereby the rows, as carried and delivered by the apron, will be separated from each other by clearly dividing spaces, substantially as and for the purpose specified.

38. In a machine for making matches in combination with a carrier plate provided with rows of splint receiving openings, the reciprocating discharger provided with means for discharging the contents from a row of holes at a time, means for actuating such discharger, a traveling receiving apron, in position to receive the rows of treated splints or matches, as they are successively discharged from the plate, moving longitudinally with reference to such splints or matches, and means for driving such apron and causing it to travel a distance greater than the length of a treated splint or match, while the discharger is moving to make two successive discharges from the plate, substantially as and for the purpose specified.

39. In a machine for making matches, in combination with the discharging mechanism, a traveling receiving apron supported by the frame adjacent to the discharge mechanism, moving longitudinally with reference to the matches received upon it, and a rapidly revolving rod for insuring the passage of the discharged matches onto the apron between the discharge mechanism and the apron, substantially as specified.

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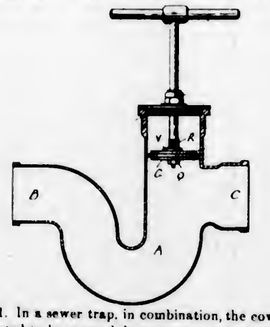
**528,458.** CARRIAGE-SPRING. CHARLES A. BEHLEN, Cincinnati, Ohio. Filed Feb. 15, 1894. Serial No. 500,262. (No model.)



*Claim.*—1. A compound spring consisting of the opposite reversible curved sections E and F, hinged together centrally by axes I, I, the end of one section being adapted to be hinged to the body and the end of the other to the carriage gear, substantially as specified.

2. A compound spring consisting of the members E, F, the axial supports G, H, and the connecting axes I, I, substantially as described.

528,459. SEWER-TRAP CLEANER. LUDGER BELIVEAU, Lynn, Mass. Filed May 17, 1894. Serial No. 511,588. (No model.)




*Claim.*—1. In a sewer trap, in combination, the cover or cap to the same adapted to be secured thereto, an opening or hole through it, a rod extending through said opening arranged to be secured to the cover, and a disk or head secured to the inner end of said rod.

2. In a sewer trap, in combination, the cover or cap to the same adapted to be secured thereto, an opening or hole through it, a rod extending through said opening arranged to be secured to the cover, and a flexible disk or head secured to the inner end of said rod.

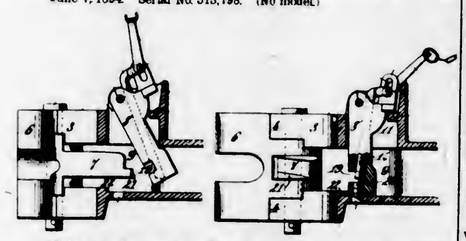
3. In a sewer trap, in combination, the cover or cap to the same adapted to be secured thereto, an opening or hole through it, a rod extending through said opening arranged to be secured to the cover, and a disk or head secured to the inner end of said rod, said head consisting of two plates of rigid material and an intermediate plate of flexible material projecting beyond the rigid plates.

4. In a sewer trap, in combination, the cover or cap to the same adapted to be secured thereto, an opening or hole through it, a rod extending through said opening arranged to be secured to the cover, a disk or head secured to the inner end of said rod and a washer between the head and cap.

5. In a sewer trap, in combination, a cover or cap to the same adapted to be secured thereto, an opening through it, a rod extending through said opening, a disk or head secured to the inner end of said rod, a screw thread on said rod above the cap, the portion of the rod above the screw thread being of smaller diameter than the screw thread and a screw nut adapted to screw onto said screw thread above said cover.

6. In a sewer trap, in combination, a cover or cap to the same adapted to be secured thereto, an opening through it, a rod extending through said opening, a disk or head secured to the inner end of said rod, said head consisting of two plates of rigid material, and an intermediate plate of flexible material projecting beyond the rigid plates, a screw thread on said rod above the cap, the portion of the rod above the screw thread being of smaller diameter than the screw thread, and a screw nut adapted to screw onto said screw thread above said cover.

528,460. CAR-COUPLING. JAMES BIRD, Tarrytown, N. Y. Filed June 7, 1894. Serial No. 513,798. (No model.)



*Claim.*—1. In a car coupling, the combination with a recessed drawhead having a laterally swinging hooked jaw provided with a tail piece normally projecting across the front of the drawhead in position to be struck by the jaw on an adjacent drawhead, of a vertically elongated gravity latch pivotally supported in the drawhead and adapted to be pressed back by said tail piece to permit the tail piece to pass to one side of and in locking engagement with said gravity latch, and a gravity pin for locking and unlocking the gravity latch, substantially as described.

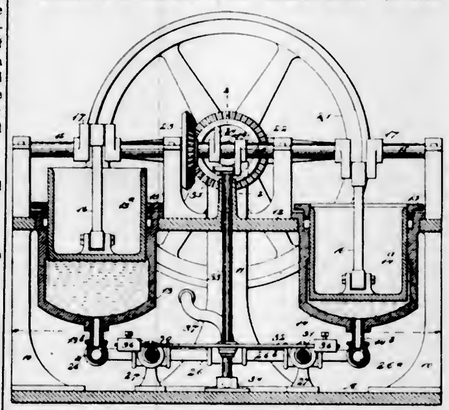
2. In a car coupling, the combination with a recessed drawhead having a laterally swinging hooked jaw provided with a tail piece normally projecting across the front of the drawhead in position to be struck by the jaw on an adjacent drawhead, of a vertically elongated gravity latch pivotally supported in the drawhead and adapted to be pressed back by and engaged with said tail piece, a locking pin for locking said gravity latch in its normally vertical position, and means for automatically actuating the said locking pin to lock and unlock the gravity latch, substantially as described.

3. In a car coupling, the combination with a recessed drawhead having a laterally swinging hooked jaw provided with a tail piece projecting in position to be struck by the jaw on an adjacent drawhead, of a vertically elongated gravity latch pivotally supported in the drawhead and adapted to be pressed back by and engaged with said tail piece, a locking pin extended longitudinally through said latch to project below the same and normally engage a locking recess in the drawhead, and means for automatically lifting said pin, by the action of the tail piece, to unlock the latch and permit its latching engagement with said tail piece, substantially as described.

4. In a car coupling, the combination with a recessed drawhead having a laterally swinging hooked jaw provided with a tail piece projecting in position to be struck by the jaw on an adjacent drawhead, of a gravity latch pivotally supported in the drawhead and having on its upper end a lug provided with a vertically elongated slot, a locking pin extended through said latch to project below the same and normally engage a locking recess in the drawhead, the upper curved end of said locking pin being provided with a bifurcation that embraces the slotted lug on the latch, a clevis connected with said bifurcation by a pin extended through the slotted lug, and means for lifting said pin to unlock the latch and permit its engagement with or disengagement from the tail piece of the laterally swinging jaw, substantially as described.

5. In a car coupling, the combination of a recessed drawhead, a gravity latch pivotally supported in the drawhead and having a transverse groove across the lower portion of its front face, a locking pin extended vertically through said latch and supported therein to project normally below the same and engage a locking recess in the drawhead, said pin provided with a transverse groove or notch adapted to coincide with the groove in the latch, and a laterally swinging hooked jaw having a tail piece projecting in position to be struck by the jaw on an adjacent drawhead and provided with a beveled pin or projection to engage the notches of the latch and pin to lift said pin, unlock the latch and swing it rearward to permit the said tail piece to pass to one side of and become engaged with the gravity latch, substantially as described.

528,461. MOTOR. GEORGE W. BROWNE and JOHN W. LITTLE, Brooklyn, N. Y. Filed Nov. 10, 1893. Serial No. 490,508. (No model.)



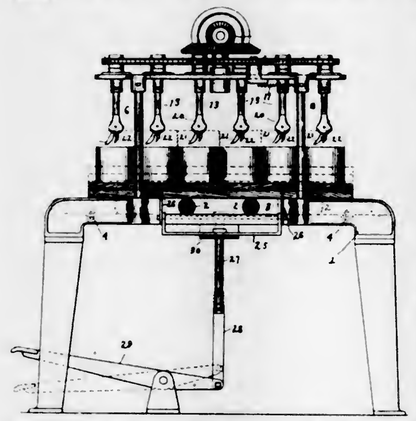
*Claim.*—1. In a motor of the class indicated, the combination with tank cylinders, pistons, and drive crank shaft of piping arranged in rectangular form beneath said cylinders, and having pipe extensions that connect with the cylinders and serve both for inlet and exhaust, alternately, and two sets of valves arranged in opposite branches of said piping, the two valves of each set being rigidly connected and operated together and one valve being between the inlet and a cylinder, and its companion valve being between the exhaust and such cylinder, whereby one opens the inlet branch of said piping as the other closes the exhaust branch, and vice versa, and means for shifting the sets of valves, alternately, as shown and described.

2. In a motor, the combination, with a drive shaft, cylinders, pistons located in the cylinders and connected with the drive shaft, and a line of piping provided with an exhaust and an inlet, the said line of piping being connected with the cylinders between the exhaust and inlet, of a pair of opposing valve casings located in the line of piping between the exhaust and inlet of each cylinder, connected valves operating simultaneously in each opposing pair of valve casings, one to close and the other to open, a weighted trip arm connected with the valves, and a trip shaft connected with the arm and rocked from the drive shaft, substantially as shown and described.

3. In a motor, the combination, with cylinders, pistons operating in the cylinders, a drive shaft connected with the pistons, and a line of piping provided with an inlet and an exhaust in communication with both cylinders, of connected valves, one acting to close while the other opens, located between each cylinder and the said inlet and exhaust, a rock shaft, a segment carried by the rock shaft, cams located upon the drive shaft and acting upon said segment, and a weighted trip arm carried by the trip shaft, connected with each set of valves, whereby each set of valves is simultaneously operated, one set of valves operating to open communication between the inlet and its cylinder and cutting off communication between the cylinder and the exhaust, the other set of valves operating in a reverse manner, as and for the purpose specified.



528,462. MACHINE FOR CLEANING CAN-TOPS. CHARLES A. BURT, Rochester, N. Y. Filed Jan. 12, 1894. Serial No. 496,577. (No model.)



*Claim.*—1. The combination with the rotary spindle, of the scraper pivoted thereon having the two arms arranged close together, one arranged to enter the orifice of a can and engage the under surface of the top and the other to engage the upper surface of the top thereof, substantially as described.

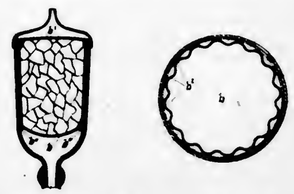
2. The combination with the rotary spindle having a displacing knob thereon, of the scraper pivoted in the knob, having two approximately parallel arms, one of them extending beyond the edge of the knob and adapted to engage the upper side of a can top, and the other adapted to enter the orifice of the can and engage the lower side thereof, substantially as described.

3. The combination with the rotary spindle, and a scraper pivoted thereon, having two arms extending approximately parallel, one of said arms being adapted to engage the top of a can, and the other to enter the aperture therein, of means for moving the spindle and can relatively toward and from each other, substantially as described.

4. The combination with the rotary spindle, and a scraper thereon having the two curved arms extending approximately parallel, one for engaging the top of a can and the other to enter the aperture thereof and engage the under surface of the top, substantially as described.

528,463. COOLER FOR BEVERAGES. JACOB BUSCH, Springfield, Ohio. Filed Feb. 23, 1894. Serial No. 501,070. (No model.)

*Claim.*—1. A cooling device having an outer casing with openings at each end thereof, and an inner receptacle arranged within the outer casing with a space between the same, removable covers for the respective casings, and means, as described, for attaching said cooler to the discharge outlet of any suitable vessel, substantially as specified.




2. A cooler consisting of an outer casing and an inner receptacle, and a removable cover for the respective parts, and outlet and inlet openings for said outer casing, said inner receptacle being provided with corrugated sides adapted to form grooves or passages for the liquid, substantially as specified.

3. An outer casing formed with outlet and inlet openings, and a removable cover, as described, an inner receptacle having corrugated sides and a curved top and bottom adapted to form deflectors for the liquid, substantially as specified.

528,464. SHOE-LACE CLAMP. LEE D. CRAIG, San Francisco, Cal. Filed Jan. 23, 1894. Serial No. 497,789. (No model.)



*Claim.*—1. A shoe-lace clamp consisting of a metal plate, to the end of which is attached an elastic strip, and to the lower side of which elastic strip is fastened a metal toothed clamp, and to the end of which elastic strip is attached a hook of suitable size and material to catch on the lower threads of the lace, substantially as described.

2. The combination with a flexible or elastic covering strip for the lacing of a shoe, a fastening device secured to the upper end of said covering strip, a hook or engaging device connected to the lower end thereof, said device designed to engage with the lower threads of the lacing so as to hold the flexible or elastic covering strip tightly against the face of the lacing, and a device secured to the under face of the covering strip which bears firmly upon the lacing, where the covering strip is held in place, so as to prevent the lacing from becoming untied.

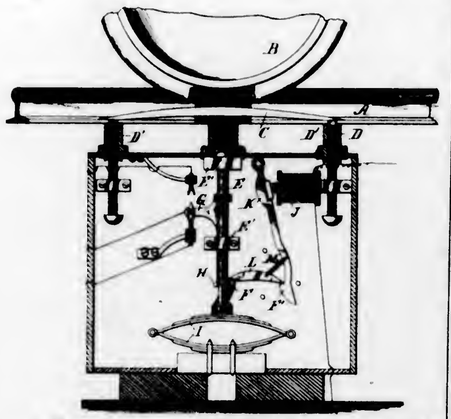
3. For a shoe lace clamp, the combination with the covering strip for the lacing of the shoe, said strip provided with end attaching devices, of the metallic clamp plate secured to the under face of the covering strip, said plate engaging with the lacing where the covering strip is secured upon the shoe.

528,465. ELECTRIC MACHINE FOR RAILWAY SYSTEMS. EDWARD DEMING, New York, N. Y., assignor of three-fourths to Samuel Corn, Henry Corn, Adolph Kaufman, and Isaac Stern, same place. Filed May 27, 1893. Serial No. 475,738. (No model.)

*Claim.*—1. The combination with a rail and wheel thereon, of a vertically movable trip located in the path of said wheel, a vertically movable bar in the path of the trip, an electric switch carried by said bar, a spring bearing against said bar and resisting its action, a pivoted catch for engaging and retaining the bar in its lowest position, and a magnet whose armature is in the path of said catch.

2. The combination with a rail and wheel thereon, of a vertically movable trip located in the path of said wheel, a vertically movable bar in the path of a trip, an electric switch carried by said bar, a spring bearing against said bar and resisting its action, a magnet, a pivoted armature for the magnet, and means for holding the bar in its lowest position and the armature away from its magnet, said means consisting of a pivoted catch, between the said bar and said armature, and a spring by which the catch is suspended from said armature.

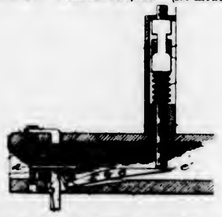
3. The combination with a rail and wheel thereon, of a vertically movable trip located in the path of said wheel, a vertically movable bar in the path of a trip, an electric switch carried by said bar, a spring bearing against said bar and resisting its action, a magnet, a pivoted armature for the magnet and a catch for holding the bar in its lowest position and the armature away from its magnet, said means consisting of a pivoted catch, between the said bar and said armature, and a spring by which the catch is suspended from said armature.



4. The combination with a rail and wheel thereon, of a vertically movable trip located in the path of said wheel, a vertically movable bar in the path of a trip, an electric switch carried by said bar, a spring bearing against said bar and resisting its action, a magnet, a pivoted armature for the magnet, and means for holding the bar in its lowest position and the armature away from its magnet, a second set of elements substantially as the above in which the magnet is in circuit with said switch, said means consisting of a pivoted catch, between the said bar and said armature, and a spring by which the catch is suspended from said armature.

5. The combination with a rail and a wheel thereon, of a trip in the path thereof, guide rods for the trip, bearings for the rods, a movable bar in the path of said trip, an arm upon the bar carrying a circuit closer, a projection upon the bar, a magnet, an armature therefor having a projection, a catch for resting upon the projections in predetermined positions, and a spring resisting the action of the bar in a direction opposite to that of the pressure of the said wheel.

528,466. CAR-COUPLING. WILLIAM H. EDWARDS, Du Bois, Nebr. Filed Nov. 14, 1893. Serial No. 409,922. (No model.)



*Claim.*—1. The combination with a coupling-pin, and a rod connected with the said coupling-pin, of a lever having a pawl to engage with the said rod to operate and elevate the coupling-pin, substantially as described.

2. The combination with a drawhead, of a coupling pin, a spring-pressed rod or bar to which said pin is connected having forward and rearward notches, the cross-rod designed to hold said rod or bar elevated and the lever having a pawl designed to engage the rearward notch of said rod or bar, substantially as set forth.

3. The combination with the drawhead having upper and lower openings, of the pin carrying rod or bar extended through said opening and having a right-angular end, the coupling pin secured to said right angular end, the forked plate carried by said rod or bar, the coil-spring bearing against said plate and the top of the drawhead, and the lever designed to engage and raise said rod or bar as against the action of its spring, substantially as set forth.

4. The combination with the drawhead, of the spring-pressed pin-carrying rod or bar, the coupling pin, the lever engaging said rod or bar, the spring-pressed rod designed to engage and operate said lever, the levers for operating said rod, and the catches for said levers, substantially as set forth.

5. In a car-coupling, the combination of a coupling-pin and a rod having a bent end to engage and carry the said coupling-pin, and having a notch or stop $b^3$, and a lever provided with a pawl to engage with the said stop $b^3$, substantially as described and for the purpose set forth.

528,467. SOLE-TRIMMING MACHINE. JOHN R. EMERY, Lynn, assignor of one-half to the Boston Shoe Tool Company, Boston, Mass. Filed Apr. 16, 1894. Serial No. 507,711. (No model.)

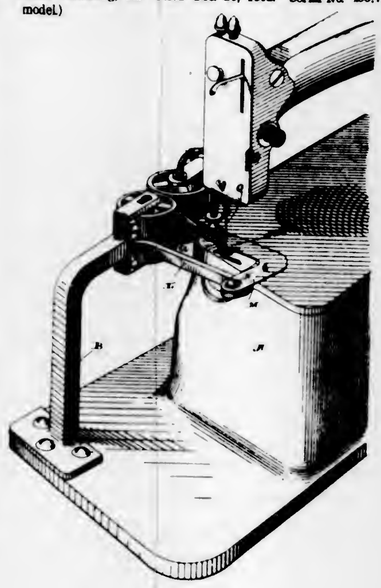


*Claim.*—1. The combination in a sole-trimming machine, of a rotating-shaft having at one extremity a slotted, radially expansible and contractible cylindrical bearing, a cutter having a bore adapted to receive said bearing, and means for expanding the slotted bearing to center the cutter and compensate for any wear of the bearing, substantially as described.

2. The combination in a sole-trimming machine, of a rotating-shaft having at one extremity a cylindrical bearing composed of radially expansible and contractible segmental sections, a screw engaged with the shaft and having a conical head for radially expanding the segmental sections and a central screw-threaded socket for receiving a clamping-bolt, a cutter centered on the said bearing by the adjustment of the conically headed screw, a yielding feather-edger or rest, and a disk-guard interlocked with the cutter and held by the clamping-bolt, substantially as described.

3. The combination in a sole-trimming machine, of a rotating-shaft having one end provided with a screw-threaded socket and a series of longitudinal slots to form a cutter-bearing composed of a series of radially expansible and contractible segmental sections, a screw engaged with said socket and having a conical head and a central screw-threaded socket, a cutter centered on the said cutter bearing, a guard at the end of the shaft, and a clamping-bolt passing through the guard into the screw-socket in the conically headed screw, substantially as described.

528,468. MACHINE FOR FORMING PLAITS. CHARLES C. EMMONS, Pittsburg, Pa. Filed Dec. 20, 1892. Serial No. 455,781. (No model.)





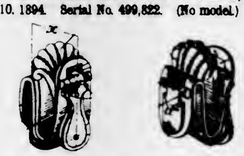
*Claim.*—1. A machine for forming plaits comprising a stitching mechanism, a former extending in a line parallel with the line of feed of the stitching mechanism, its receiving end being in front of the stitching point and its exit end in rear of said point and formed into a shaper, and presser rolls at the exit end of the shaper.

2. The combination with a stitching and pressing mechanism of a former for converting tucks into plaits, consisting of a horizontal plate having vertical fins at its rear end which taper inwardly from their outer ends, the said horizontal plate extending at opposite sides of the fins.

3. The combination with a stitching and pressing mechanism of a former for converting tucks into plaits, consisting of a horizontal bar having at its outer end vertical fins which taper inwardly from their outer ends, the said horizontal plate having its end tapered outwardly and extending at opposite sides of the fins.

4. The combination with a sewing machine and a pressing mechanism of a former for converting tucks into plaits, the former being supported above the bed of the machine to allow the passage of the goods beneath it, and having a longitudinal portion extending in a line parallel with the feed of the goods, and its outer end formed into a shaper.

528,469. DEVICE FOR HOLDING COLLARS OR CUFFS ON SHIRTS. ADOLPH FEINER and THOMAS G. SAXTON, Lexington, Ky. Filed Feb. 10, 1894. Serial No. 499,822. (No model.)

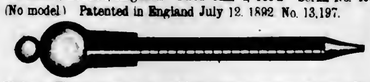


*Claim.*—1. A device for attaching collars or cuffs to shirts comprising a U shaped frame having two legs 1 and 2, the front leg 1 being slotted as at $a$, a U-shaped collar or cuff holder made of resilient material and provided with roughened holding arms, mounted in said frame, a bent lever pivoted to said front leg projecting into said slot $a$ and adapted to press said holding arms together, an extension A′ integral with said rear leg 2, bent over as shown, and slotted as at $a'$; a bent lever D pivoted in said slot, and a spring mounted on the inside of said extension and adapted to be pressed forward by said lever, substantially as and for the purposes described.

2. A device for attaching collars or cuffs to shirts comprising a U-shaped frame having its rear leg extended and slotted and curved downward, a bent lever mounted in said slotted extension, a spring mounted on the inside of said extension and adapted to be pressed forward by said lever, a U-shaped collar or cuff holder made of resilient material and provided with roughened arms mounted in said frame, and means for pressing said arms together, substantially as and for the purposes described.

3. A device for attaching collars or cuffs to shirts comprising a U-shaped frame having its rear leg extended and slotted and curved downward, a bent lever mounted in said slotted extension, a spring mounted on the inside of said extension and adapted to be pressed forward by said lever, a U-shaped collar or cuff holder made of resilient material and provided with roughened arms mounted in said frame, and a bent lever pivoted to the front of said frame and projecting into a slot therein for pressing said arms together, substantially as and for the purposes described.

528,470. STOPPER OR CAP FOR BOTTLES. FREDERICK W. FLETCHER, London, England. Filed Jan. 4, 1894. Serial No. 495,683. (No model.) Patented in England July 12, 1892. No. 13,197.



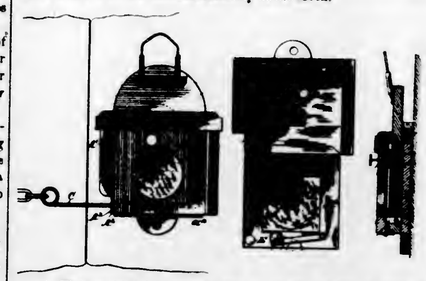
*Claim.*—The stopper A provided with a graduated tube B, elastic air chambers C and D communicating with each other, said chamber D provided with a self closing aperture or valve E, by means of which air is admitted at will into the device and the liquid in the tube delivered in accurately measured quantities.

528,471. SEAL-LOCK. THOMAS GASKINS, Arcadia, Fla. Filed June 1, 1894. Serial No. 513,160. (No model.)

*Claim.*—1. A seal box having a movable section a slide fitted to said box, interlocking devices between the box sections and the slide whereby when the latter is inserted it will hold the sections of the box closed and a marker substantially as set forth.

2. A seal box having a main and a movable section the slide fitted to said box and adapted to hold its sections closed when inserted, one of said parts the box and slide, having a card receiver, and the other part having a marker substantially as set forth.

3. The combination in a car seal of the box having its door section provided with a sight opening and provided above the said opening with a marker a restraining device by which to restrain and release said marker and the slide having the card receiver and constructed to interlock with the box sections and secure the same closed when inserted in the box substantially as set forth.



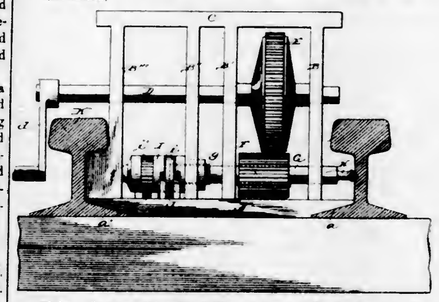
4. The combination in a car seal of the bar the box in which one end of said bar is received and held said box being made in sections, the slide by which said sections are held together and the marker substantially as set forth.

5. The combination with the hook bar of the sectional seal box, the slide having one edge recessed to receive the hook of the bar and the marker arranged to operate on the withdrawal of the slide substantially as set forth.

6. The combination of the seal box having a main and a hinged section and provided on the inner sides of said sections with headed studs the slide provided in its opposite sides with undercut grooves to receive the headed studs of the box sections the spring actuating marker supported on the hinged box section and the device for restraining and releasing said spring marker substantially as set forth.

7. The combination of the box having a movable section, a slide fitted to said box, interlocking devices between the box sections and the slide and the bar held in said box substantially as and for the purposes set forth.

528,472. DRILLING-MACHINE. TILMAN GILPIN and LEE MCHARGUE, Broadhead, Ky. Filed Dec. 7, 1893. Serial No. 493,070. (No model.)

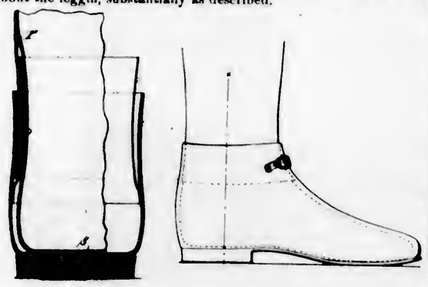


*Claim.*—In a machine for drilling railway rails, the combination with a base beveled on its opposite ends as shown for the purpose specified, of a horizontal driving shaft bearing a pinion, a horizontal screw threaded drill-stock also bearing a pinion of greater width, an interiorly screw-threaded feed nut for engaging the thread on said drill-stock, a pawl and ratchet mechanism for engaging the feed nut on both sides thereof, and a frame mounted upon the base wherein are journaled said shaft, drill-stock and feed nut, substantially as described.

528,473. LUMBERMAN'S RUBBER AND STOCKING. MOSES D. GIRARD, Pentwater, Mich. Filed Nov. 25, 1893. Serial No. 491,966. (No model.)

*Claim.*—In a lumberman's rubber, the combination with a foot portion or shoe R having an internal flap F, the lower edge of which is attached to the interior of said shoe at a point below the upper edge of the latter, its unattached portion lying close to the inner surface of the shoe and extending some distance above the top thereof, of a combined leggin and stocking foot, the stocking foot being se-

cured to the interior of the leggin at a point above the bottom of the latter and the lower edge of the leggin lying between the top of the shoe and the flap F, and a fastening for drawing the shoe top about the leggin, substantially as described.



528,474. SPRING-FROG. NATHANIEL O. GOLDSMITH, Cincinnati, Ohio, assignor to The Weir Frog Company, same place. Filed Mar. 20, 1894. Serial No. 504,432. (No model.)



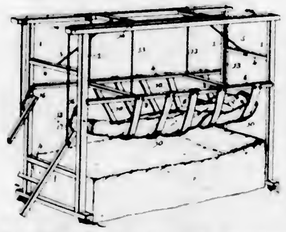
*Claim.*—1. In a spring frog a continuous main rail A, having a section of the head cut away and the web *c*, bent to come centrally under the points *a*, *b*, formed by cutting away the head of the main rail substantially as specified.

2. In a spring frog the continuous main rail A, having a section of the head cut away with the web *c*, bent to form a vertical support for the points *a*, *b*, in combination with the stationary wing rail B, and the spring wing rail C, substantially as specified.

3. The combination with the continuous main rail A, having bent web *c*, forming the vertical supports for the points *a*, *b*, of the stationary rail D, a solid filling E, said parts being secured together by through bolts substantially as specified.

4. In a spring frog, the main track rail having its continuous web bent to lie directly under two points formed by beveling its head at an angle substantially as specified.

528,475. INVALID-LIFTING APPARATUS. WILLIAM E. GOULDING, Oklahoma, Okla. Filed June 7, 1894. Serial No. 513,815. (No model.)

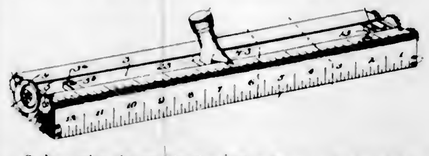


*Claim.*—In a device of the class described, the combination of a supporting-framework having parallel corner uprights, a lifting-frame having parallel side-bars which overlap at their extremities the side uprights of the supporting-frame, transverse braces connecting the side-bars of the lifting-frame and holding the extremities thereof in contact with the outer surfaces of the uprights, an operating-lever fulcrumed at one end of the supporting framework, locking devices for said operating lever, operating cords or cables connected to the lifting-frame and to the operating lever, and supporting bands or straps connected to the lifting-frame, substantially as specified.

528,476. RULING DEVICE. JAMES GRUNDY, Paterson, N. J. Filed Aug. 21, 1893. Renewed Oct. 4, 1894. Serial No. 524,929. (No model.)

*Claim.*—1. In a ruler of the class described, the combination with a frame and an inked fabric arranged therein; of a marker mounted to slide within said frame from end to end thereof over the inked fabric and adapted to contact therewith, substantially as set forth.

2. In a ruler, the combination with a frame and an inked fabric arranged therein, of a marker arranged to slide or travel within the frame from end to end thereof, and supported for an up and down movement over said inked fabric, substantially as set forth.



3. In a ruler, the combination with a frame; of an inked fabric arranged within the frame, of a marker mounted to slide within the frame from end to end, and normally and yieldingly supported above and out of contact with the inked fabric, and means for adjusting said fabric, substantially as set forth.

4. In a ruler, the combination with a frame, of an inked fabric arranged therein, of ways arranged over the inked fabric, a carriage mounted for reciprocation upon the ways, and a marking-device supported yieldingly by the carriage and adapted for contact with the inked fabric, substantially as specified.

5. In a ruler, the combination with a frame, and an inked fabric arranged therein, of ways arranged over the inked fabric, a carriage mounted for reciprocation in the ways, and a plurality of marking devices supported by the carriage, substantially as specified.

6. In a ruler, the combination with a frame, an inked fabric arranged therein, and a way arranged above the inked fabric, of a carriage mounted for movement upon the way, a plurality of marking devices carried by the carriage, means for supporting them out of contact with the fabric and for adjusting them in such contact, substantially as specified.

7. In a ruler, the combination with a frame, an inked fabric arranged therein, and a way above the same, of a carriage mounted for movement upon the way, a plurality of independent marking-devices carried by the carriage, and means for adjusting one or all into contact with the fabric, substantially as specified.

8. In a ruler, the combination with an oblong frame, opposite winding shafts, means for rotating the same, an intermediate way, and an inked ribbon connected to the shafts and extending across the bottom of the frame, of a carriage mounted for reciprocation upon the way, and a plurality of marking-devices supported by the carriage and adapted to be brought into contact with and move over said ribbon, substantially as specified.

9. In a ruler, the combination with a framework, a way arranged therein, a carriage provided with marking-devices arranged upon the way, a marking-fabric arranged under the marking devices across the bottom of the frame, of a bottom having openings in line with the travel of the marking-devices, substantially as specified.

10. In a ruler, the combination with a framework, a way arranged therein, a carriage provided with marking devices arranged upon the way, and a marking fabric arranged under the marking-devices across the bottom of the frame, of a movable bottom having openings in line with the travel of the marking-devices, substantially as specified.

11. In a ruler, the combination with the oblong frame comprising end-walls, side-walls, and external inverted L-shaped side-walls, of horizontal ways connecting the end-walls, winding-shafts arranged in the end-walls and projecting beyond the same, a marking ribbon connected to the winding-shafts and extending down between the side-walls and across the bottom of the frame, spur-gears mounted on the ends of the winding-shafts, intermediate stub-shafts, intermediate gears arranged thereon and engaging the spur-gears, a milled disk carried by one of said intermediate gears, and a marking device arranged upon the ways, substantially as specified.

12. In a ruler, the combination with the oblong frame having ways, and the subjacent marking fabric, of a carriage notched to receive the ways and provided with an inclined slot, a series of shanks 26, 27 and 28 arranged in the slots and having their upper ends slotted and connected by the clamping screw 40, the lower end of the shank 28 being laterally bent to form a horizontal portion 29 having a slot 30, and a screw 31, the inverted L-shaped arm 32 secured by the screw to the horizontal portion 29 and bifurcated at its lower end, the grooved wheel journaled in the bifurcation, and the marking wheels 37 and 38 carried by the shanks 26 and 27, the interposed spring between the screw 40 and top of the carriage, the sleeve having a pointer encircling the spring, and the threaded cap removably mounted on the upper end of the sleeve, substantially as specified.

13. In a ruler, the combination with the oblong frame, the inked fabric, and the movable marker, of opposite parallel rods arranged in slots in the end-walls of the frame, and a yielding bottom wall carried by the bars and having openings adapted to be aligned with the path traversed by the marking devices, substantially as specified.

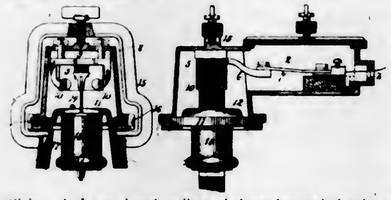


14. In a ruler, the combination with an oblong frame, an inked fabric, and a superimposed marking-device, of a bottom movably mounted upon the under side of the frame below the inked fabric and having openings, substantially as specified.

15. In a ruler, the combination with a frame, an inked fabric arranged therein, and ways arranged over the inked fabric, of a carriage carrying marking devices mounted for sliding on the ways, and adjustable stops arranged on the ways in the path of the carriage, substantially as specified.

16. In a ruler, the combination with a framework, an inked fabric arranged therein, and a way arranged over the fabric, of a carriage arranged upon the way for movement and provided with marking devices, and slotted blocks constituting stops arranged upon the way and provided with binding screws for impinging upon the way, substantially as specified.

528,477. SUPPLY SYSTEM FOR ELECTRIC RAILWAYS. CHARLES H. HARKINS, St. Louis, Mo. Filed Dec. 9, 1893. Serial No. 493,216. (No model.)



*Claim.*—1. In an electric railway, independent switches located at intervals along the track and each comprising a housing having a contact point which is in electric connection with a main conductor, and each housing having a flexible portion adapted to yield laterally with relation to said contact point, an arm secured to and carried by the flexible portion of the housing, and a brush secured to the flexible portion of the housing and adapted to be engaged by a plate on the moving car, whereby there is imparted to said arm a laterally swinging vibration to bring it into engagement with said contact point; substantially as and for the purpose set forth.

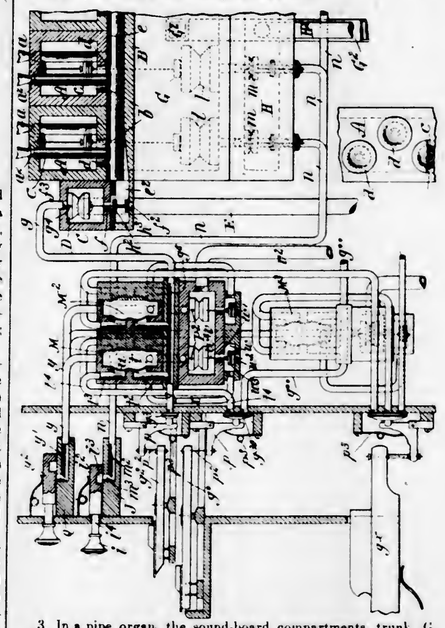
2. In an electric railway, independent switches located at intervals along the track and each comprising a housing having a flexible portion, a contact point located within the housing and which is in electrical connection with a main conductor, an arm secured to and carried by said flexible portion of the housing and extending into the path of said contact point so as to swing to and from said contact point and to stand out of contact with said point when the switch is at rest, and a flexible brush secured to and carried by said flexible portion of the housing and adapted to be engaged by a plate on the moving car to swing said arm and bring it into contact with said point, as set forth.

3. In an electric railway, independent switches located at intervals along the track and each comprising a housing having a flexible portion, a pair of contact points located within the housing, and which are in electrical connection with the main conductor, an arm secured to and carried by said flexible portion of the housing and projecting between said contact points so as to vibrate to one or the other and to stand out of contact with either of said points when the switch is at rest, and a brush secured to and carried by said flexible portion of the housing and adapted to be engaged by a plate on the moving car to vibrate said arm and bring it into contact with either one of said points according to the direction in which the car may be moving; as set forth.

528,478. ORGAN. MARTIN HETHERINGTON, Springfield, Mass., assignor to J. W. Steere & Son, same place. Filed Jan. 5, 1894. Serial No. 495,781. (No model.)

*Claim.*—1. In combination, a wind-board comprising separated wind compartments, each for a stop of pipe, pipes and pipe extensions opening through holes in the bottom of the compartments, and having the valves, the trough, B, crossing under pluralities of the compartments and having the flexible tops, *e*, and having the extended hollow end portions, $e^2$, which stand beyond the edge of the wind chest, each having a hole, $f^2$, through its wall, the wind-box, C, set next above the trough projections, $e^2$, and having the series of passages, *f*, through its bottom leading into said hollow trough extensions, a series of small pneumatics supported within said wind-box, C, carrying the valves, $h^2$, $h^3$, in respectively open and closed relations to said holes, *f*, $f^2$, and key-controlled means for operating the pneumatics, substantially as described.

2. In combination, a sound-board comprising parallel separated wind compartments each for a stop of pipes, pipes and pipe extensions which terminate within holes, *b*, which are formed in the bottoms of the compartments of larger diameter than the pipe extensions and having the downwardly opening flexible valve, *d*, attached by their margins to the lower boundaries of the hole, *b*, the series of troughs, B, ranging alongside each other under and across pluralities of the pipe extension valves and having flexible valve-operating tops, *e*, and having the extended hollow end portions, $e^2$, projected beyond the end of the first compartment of the sound-board and each having the hole, $f^2$, through its bottom opening to the atmospheric air, the wind-box, C, set against the edge of the sound-board and resting upon the projected portions of said trough and having the air-feeding conduit, E, and the series of passages, *f*, through its bottom leading into said trough extensions a series of small pneumatics, D, supported within said wind-box, C, each having the minute openings leading from its chamber to the pressure chamber within the wind-box, C, and each pneumatic carrying valves, $h^2$, and $h^3$, the former normally standing open at the passages, *f*, and the latter normally closing the openings, $f^2$, a tube communicating with the interior of each of said pneumatics, and a key-operated valve for closing each tube and adapted to open it to atmospheric air, substantially as described.



3. In a pipe organ, the sound-board compartments, trunk, G, and its feed pipe, $G^2$, pneumatics, *l*, which are imperforate and weighted, the second or sub wind-box, H, with pneumatic, *m*, having minute perforations and controlling the valves, $o^3$ and $o^4$, for openings, respectively leading from box, H, to interior of weighted pneumatic, *l*, and the opening leading through bottom of box, H, together with a feed-pipe, $H^2$, for giving into box, H, wind at greater pressure than that supplied into trunk, G, by feed pipe, $G^2$, substantially as described.

4. The combination with the series of compartments for stops of pipes, of the wind-trunk, G, ranging transversely under the ends of said compartments, and having the valved communicating passages, *j*, and the inflatable pneumatics, *l*, in said trunk, G, for holding the valves, *j*, open so that the pressure from the trunk may feed the aforesaid compartments, the wind-box, H, set below the trunk and having at its upper wall the pneumatic, *m*, with minute openings and the pipe, *n*, leading to the interior of said pneumatic, the passages leading through the bottom of box, H, under each pneumatic and having the transverse branch within the bottom wall, and the vertical branch through the side wall which enters the pneumatic, *l*, the valves, $o^3$, and $o^4$, hung from said pneumatics, *m*, and the pipe, $H^2$, for supplying a heavy wind pressure into said box, H, substantially as described.

5. A coupler comprising a suitable block, or part, with a passage through it, with the terminals of which an air conduit may be connected, and having therein a chamber, a duct leading from said passage and opening into said chamber, another duct opening at said

chamber and adapted to have a connection with another air-conduit, a valve, or valves, for closing and simultaneously opening both of said openings, and means for opening said valve, substantially as described.

6. A coupler comprising a suitable block, or part, with a passage through it, with the terminals of which an air-conduit may be connected, and having therein a chamber, a duct leading from said passage and opening into said chamber, another duct communicating with said chamber and thence continued in another air-conduit, a valve of flexible material for covering each of said chamber communicating openings, means for supplying an air pressure within said chamber for maintaining said valves closed, and means for terminating said air pressure within the chamber for permitting the valves to open, substantially as described.

7. A coupler comprising a body, or part, having several passages with the terminals of which air-conduits are connected, and having therein a common chamber, ducts leading from each of said passages and opening to said chambers, another corresponding series of ducts opening at said common chamber and adapted to have connection with another series of air conduits, valves for closing and simultaneously opening both sets of said openings, and means for causing the opening of said valve, substantially as described.

8. A coupler comprising a body, or part, with a passage through it with the terminals of which air conduits may have connection, and having therein a transfer chamber and a wind chamber, a duct leading from said passage and opening into the transfer chamber, and another duct opening at said chamber and adapted to have connection with another air conduit, a pneumatic in said wind chamber with a minute opening, a conduit for normally establishing communication for air pressure from the wind chamber to the transfer chamber, a valve device controlled by said pneumatic for shutting off the said pressure-communication between the chambers, and permitting the exhaust of the transfer chamber (for opening the valves therein) and a valved conduit for opening the interior of the pneumatic to the atmospheric air, substantially as described.

9. A coupler comprising a body, or part, with a passage through it, a transfer chamber, a separate wind chamber, and another compartment below the wind chamber with an opening leading thereto, and an outlet opening, a valve normally closing the latter opening and leaving the former open, and a pneumatic in the wind chamber for controlling the said valves, a conduit connecting said compartment with the transfer chamber, a valved conduit communicating with the pneumatic for causing a valve controlling movement thereof, and said coupler furthermore comprising a passage therethrough with a duct leading therefrom and opening to the transfer chamber, and another duct opening at said chamber and having connection with an air conduit, and the valve in said transfer chamber adapted to be air-pressed to close the said communicating ducts, substantially as described.

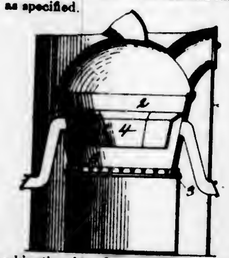
10. In an organ, the combination with a pneumatic motor for controlling organ valve mechanism, and coupler comprising a body with a transfer chamber therein, and a passage therethrough, and a pipe connected to the said motor and to said passage and another conduit, or pipe extension, leading from said passage to a proximity with a key and having a key-operated valve, said coupler having a duct leading from said passage to said transfer chamber and another duct opening at said chamber and leading thence to proximity with another key whereat it is provided with a key-operated valve, in said transfer chamber, for normally closing said ducts, and means for causing at pleasure the opening of said valve, substantially as described.

11. In an organ, the combination with pneumatic motors for controlling different organ valve mechanisms, and a conduit leading from one of the motors into proximity to a key and having a key-operated valve for closing it, and a coupler body with a transfer chamber therein, and a passage therethrough, and a pipe leading from the other of said motors to said passage and another pipe leading from said passage and having another key-operated valve for closing it and said coupler having a duct leading from said passage into the transfer chamber, and a second duct leading from said chamber and having a conduit extending therefrom to proximity with said first-named key-operated valve whereby it may also be closed thereby, and the valve in the transfer chamber for normally closing said ducts which communicate therewith, and means for causing them to open, substantially as described.

## 528,479. HEATING-FURNACE. CHARLES D. HOWARD, Syracuse, N. Y., assignor to the Howard Furnace Company, same place. Filed May 15, 1894. Serial No. 511,358. (No model.)

*Claim.*—1. The combination, in a furnace, with a fire-pot in the form of a truncated cone, of a flanged ring adapted to be inserted therein and supported at a point between the top and bottom of said fire-pot, and means whereby air may be directed against said ring, heated thereby, and discharged into the decomposing zone of the fire-pot, substantially as specified.

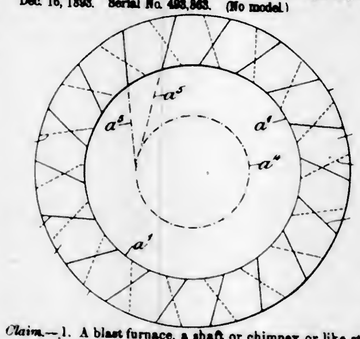
2. The combination, in a furnace, of a truncated conical fire-pot, a ring adapted to fit therein about midway between the top and bottom of the fire-pot, and conduits leading from the ash-box to said ring, so as to conduct a heated current of air against the ring and then discharge said heated air into the fuel and the decomposing zone, substantially as specified.



3. The combination, in a furnace, of a truncated conical fire-pot, a ring situated therein about midway between the top and bottom of said fire-pot, and depending flues or conduits communicating with the ring and the ash-box of the furnace, whereby a current of hot air may be conveyed from the ash box to the ring and from thence to the decomposing zone of the furnace, substantially as specified.

4. The combination, in a furnace, of a truncated conical fire-pot, a sectional ring situated therein about midway between the top and bottom of said fire-pot, each section having depending flues or conduits communicating with the ring and ash box, whereby a current of air may be conducted from said ash box to the ring, and from thence to the decomposing zone to the fuel, substantially as specified.

## 528,480. CONSTRUCTION OF BLAST-FURNACES, SHAFTS, CHIMNEYS, &c. WILLIAM P. INGHAM, Middlesbrough, England. Filed Dec. 16, 1893. Serial No. 493,863. (No model.)




*Claim.*—1. A blast furnace, a shaft or chimney or like structure formed of bricks or blocks shaped in such a manner that the joints between the same take a direction tangential to an imaginary circle struck from the center or axis of the structure; substantially as herein shown and described.

2. A blast furnace, a shaft or chimney or like structure formed of bricks or blocks shaped in such manner that the joints between the same take a direction tangential to an imaginary circle struck from the center or axis of the structure; the bricks or blocks being laid in such manner that the tangential lines of one course are reversed with relation to those of the next adjacent course, substantially as herein shown and described.

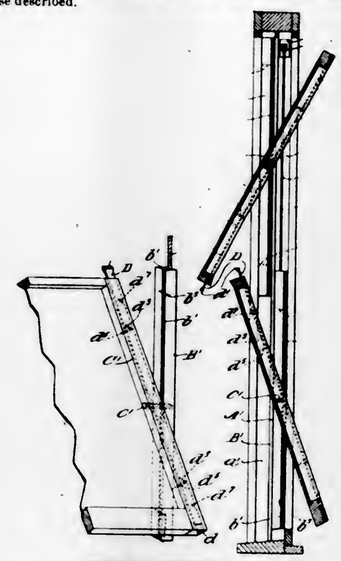
3. A brick or block to be employed in the construction of blast furnaces, shafts or chimneys and the like, at its ends shaped to the contour of the structure to be erected, and at its sides tapered or shaped to form tangents to an imaginary circle struck from the center or axis thereof, substantially as herein shown and described.

4. A brick or block to be employed in the construction of blast furnaces, shafts or chimneys and the like at its ends shaped to the contour of the structure to be erected and at its sides generally tapered or shaped to form tangents to an imaginary circle struck from the center or axis thereof, and provided with shoulders at its sides facing in opposite directions, substantially as herein shown and described.

## 528,481. WINDOW APPLIANCE. EMANUEL KEUSER, Philadelphia, Pa., assignor to Mary Keuser, same place. Filed May 17, 1894. Serial No. 511,622. (No model.)



*Claim.*—A window appliance, comprising a frame provided with weighted traveler rails or strips having slits therein and cross-pins, a sash pivoted to said rails or strips and having the side strips thereof provided with slits and pins and a locking device movably engaging the side strips of said sash and having notches for engaging the cross-pins spanning the slits of said rails or strips, substantially as and for the purpose described.



## 528,482. AXLE FOR VEHICLES. JAMES MILLER, Orlando, Fla., assignor of one-half to Charles Lord, same place. Filed Jan. 23, 1894. Serial No. 497,805. (No model.)



*Claim.*—1. The combination with an axle having its opposite ends provided with tapered bores terminating in threaded sockets, of opposite spindles tapered at each side of their centers and terminating at each end is a threaded tenon for engaging the sockets and fitting the bores, the spindle being thereby made reversible, substantially as described.

2. In an axle, the combination with the opposite metal ends provided at their inner ends with oppositely threaded sockets, reversely threaded continuous intermediate rods engaging the threads of the sockets, and the vertical strut rods connecting the intermediate rods, substantially as described.

3. In an axle, the combination with the opposite metal ends having upper and lower flanges, intermediate webs and bored vertical ribs, of spindles at the outer ends of the castings, upper and lower tie-strips embracing the axle, and fastening devices passed through the strips and the bored ribs, substantially as described.

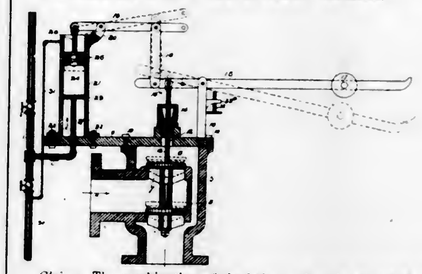
4. In an axle, the combination with the opposite metal ends provided at their inner ends with oppositely threaded sockets, the intermediate rods provided with threaded ends fitting in the sockets, vertical rods or struts provided at their ends with heads having sockets receiving the intermediate rods, and spindles, substantially as described.

5. In an axle, the combination of the metal ends provided with vertical bores, intermediate rods connecting the ends, standards provided with horizontal arms having bores registering with those of the ends, and fastening devices extending through said bores and securing the standards to the ends, substantially as described.

6. In an axle, the combination of the ends, intermediate rods connecting the ends, and plates provided with sockets to receive the intermediate rods and having opposed faces adapted to bear against and be secured to hounds, substantially as described.

7. In an axle, the combination of the ends, intermediate rods connecting the ends and located at the top and bottom thereof, vertical rods or struts provided at their ends with openings or sockets receiving the intermediate rods, and the plates 16 extending inward from the intermediate rods and provided with sockets receiving the same, said plates being adapted to be secured to the upper and lower faces of hounds, substantially as described.

## 528,483. STEAM-PUMP GOVERNOR. JAMES R. NIXON, Denver, Colo. Filed Apr. 18, 1894. Serial No. 508,063. (No model.)



*Claim.*—The combination of the balance throttle valve and the valve casing having suitable inlet and outlet ports, a plate attached to the top of the casing, a cylinder made fast to the top of the plate, said cylinder being open at the top, a pipe leading from the pressure tank and opening into the cylinder below the piston, an open-ended tube communicating with the cylinder above the piston and leading downward to a train pipe, a lever fulcrumed on a projection made fast to the cylinder, its short arm being connected with the stem of the piston, another lever fulcrumed on a support attached to the top plate, its short arm being connected with the stem of the throttle valve, its long arm being provided with a suitable weight, a link connecting the long arm of the piston-lever with the short arm of the valve-lever, and a set screw or bolt for limiting the downward movement of the long arm of the valve-lever, substantially as described.

## 528,484. TYPE-WRITING MACHINE. THOMAS OLIVER, State Centre, assignor of one-third to Charles J. Peterson, Dubuque, Iowa. Filed Sept. 12, 1892. Serial No. 445,685. (No model.)

*Claim.*—1. In a type-writer, the combination with a fixed guide, and a slidable carriage mounted upon said guide, of a tilting frame connected to said carriage, a lateral stud carried by the tilting frame, and a spring-actuated shifting lever capable of movement in opposite directions from a point of rest and provided with a compound curved slot engaging said stud whereby, by opposite movements of said lever the tilting frame may be swung in opposite directions, substantially as specified.

2. In a type writer, the combination with a pivotally mounted tilting frame and a carriage connected thereto of a shifting lever provided with a cam-slot engaging a lateral pin upon the tilting frame and a supplementary lever provided with an actuating-spring, and an ear to engage a lug on the shifting lever, substantially as set forth.

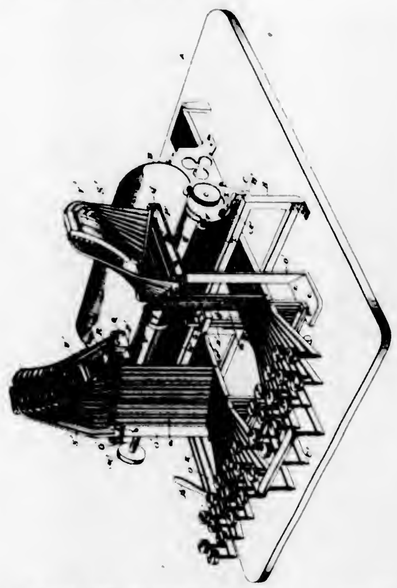
3. In a type-writer, the combination with a tilting frame and a carriage loosely connected thereto and provided with horizontal guides, of a shifting lever connected to said tilting frame and carrying a spring-actuated catch as described, and a supplementary lever provided with an ear to engage said catch when the latter is in its normal position, substantially as set forth.

4. In a type-writer, the combination with a carriage, and a rack-bar carried thereby and provided with horizontally-projecting parallel-sided teeth, of a pivotal dog capable of both oscillation and rectilinear reciprocation and provided with a fixed tooth arranged to engage the rack-teeth when the dog is moved in one direction and a spring-actuated tooth capable of lateral movement toward and from the plane of the fixed tooth, and arranged to engage the rack-teeth when the dog is moved in the opposite direction, means to reciprocate the dog to cause its teeth to alternately engage the rack-teeth, and a trip device carried by the rack-bar to swing the dog from the rack bar and out of operative relation with the rack-teeth, substantially as specified.

5. In a type-writer, the looped or U-shaped type-bars, whose arms

are pivoted at their free ends and whose closed or looped ends carry type-heads, and means to operate said type-bars, substantially as specified.

6. In a type-writer, the combination with the key levers, of U-shaped type bars having parallel axes arranged in the same horizontal plane, substantially as set forth.



7. In a type writer, the combination with key levers, of U-shaped type bars having their axes arranged in the same horizontal plane and in close proximity, whereby when at rest, the type bars telescope or fit into one another in regular series, substantially as set forth.

8. In a type-writer, a series of U-shaped type bars, of graduated lengths mounted upon parallel axes in the same horizontal plane, substantially as set forth.

9. In a type-writer, the combination with inward-facing ink-pads, of U-shaped type-bars arranged between the ink-pads and the point of impact and provided with parallel spindles arranged in the same plane, and means to operate the type-bars, substantially as specified.

10. In a type-writer, the combination of U-shaped type-bars having their spindles arranged transverse to the line of writing, type-heads connected to the closed or looped ends of the type-bars between their arms, and bearing a plurality of types, substantially as specified.

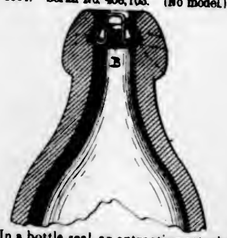
11. In a type-writer, the combination with U-shaped type bars, of type heads mounted upon spindles at the closed ends of said type bars, pivotal arms connected to said type heads and draw rods connected to said arms and secured near the pivotal points of the type bars and out of aligment respectively therewith, substantially as set forth.

12. In a type-writer, the combination with opposite facing ink pads arranged in approximately vertical planes, of the U-shaped type bars mounted upon parallel spindles and the revoluble type heads swiveled upon the closed ends of the type bars and adapted to make a half revolution when said type bars are operated, substantially as set forth.

13. In a type-writer, the combination with horizontal supporting frames having outwardly divergent side bars, of the bifurcated type bars carried by parallel spindles arranged in the same horizontal plane and mounted in bearings in said divergent bars, the revoluble type heads swiveled upon the closed ends of said type bars, the key levers and the connecting rods pivotally connected at their upper ends to cranks secured respectively to the type bars and connected at their lower ends to the key levers at approximately the same distances from the pivotal points of the latter, substantially as set forth.

14. In a type-writer, the combination of a tilting-frame capable of a plurality of positions or adjustments, means to shift such frame, a carriage connected to the tilting-frame, U-shaped type-bars having their spindles arranged transverse to the line of writing, type-heads connected to the looped ends of the type-bars between their arms and carrying a plurality of type, and means to operate the type-bars, substantially as specified.

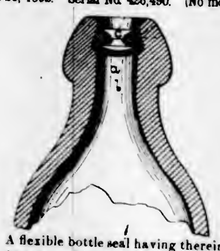
528,485. **BOTTLE SEAL OR STOPPER.** WILLIAM PAINTER, Baltimore, Md., assignor to the Crown Cork and Seal Company, same place. Filed Oct. 8, 1891. Serial No. 408,103. (No model.)



*Claim.*—1. In a bottle seal, an extracting attachment which consists of the combination of a main loop or eye adapted to receive an extracting tool, two additional loops or eyes which are embedded in the substance of the seal and one or more anchor wires whereby the embedded loops are secured within the seal, substantially as specified.

2. In a bottle seal, an extracting attachment which consists of a wire formed into a loop or eye for the reception of an extracting tool, with its ends formed into loops or eyes which are embedded in the substance of the seal, and one or more anchor wires whereby the said loops are secured within the seal, substantially as specified.

528,486. **BOTTLE SEAL OR STOPPER.** WILLIAM PAINTER, Baltimore, Md., assignor to the Crown Cork and Seal Company, same place. Filed Mar. 26, 1892. Serial No. 426,490. (No model.)



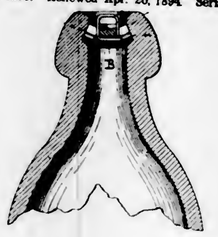
*Claim.*—1. A flexible bottle seal having therein a hole or depression combined with a metallic ring adapted for the reception of an extracting device, which ring is inserted in the said hole, whereby the movement of the extracting device is communicated to the entire annular surface around the said hole, substantially as specified.

2. A flexible bottle seal having therein a hole or depression for the reception of an extracting device, with the annular surface around the said depression protected by a metallic plate, substantially as specified.

3. A flexible bottle seal having a hole or depression therein for the reception of an extracting device, the material around the said depression being undercut and the undercut surface protected by a metallic plate, substantially as specified.

4. A flexible bottle seal having a hole or depression therein for the reception of an extracting device, the said depression being of a greater diameter at the bottom than at the top, and the undercut surface protected by an annular plate, substantially as specified.

528,487. **BOTTLE SEAL OR STOPPER.** WILLIAM PAINTER, Baltimore, Md., assignor to the Crown Cork and Seal Company, same place. Filed Oct. 8, 1891. Renewed Apr. 20, 1894. Serial No. 508,373. (No model.)

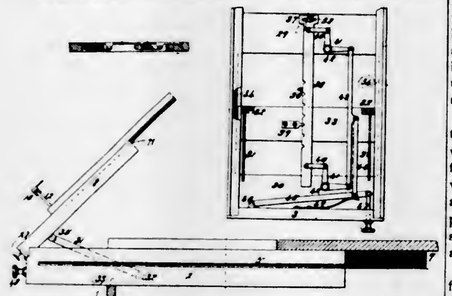




*Claim.*—1. A bottle seal having one or more slits therein cut from the upper side and extending downward partially through the seal, combined with an exterior loop the ends of which are passed through the said slits and embedded in the material of the seal, substantially as, and for the purpose specified.

2. A bottle seal having one or more slits therein of uniform depth which extend to the circumference of the seal, combined with an extractor loop the ends of which are passed through the said slits and embedded in the material of the seal, substantially as, and for the purpose specified.

528,488. **BOOK-HOLDER FOR DESKS.** GEORGE W. PAISLEY, Hillsborough, Ill. Filed June 22, 1891. Serial No. 397,093. (No model.)



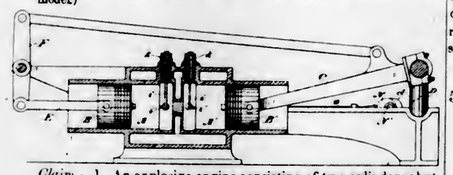
*Claim.*—1. In a bookholder, the combination of the front, the sides, the hinged frame 8, secured to the front of the rest 9 sliding on the frame, and a sliding bar, a notched bar, a dog, and rods for locking the frame in inclined position, at different heights and the rest in position on the frame.

2. In a book-holder, the combination of the front, the sides, the hinged frame 8, secured to the front and adapted to be held in an inclined position, the rest 9 sliding on the hinged frame, a rack-bar on the rest 9 means arranged to operate said rack bar and pivoted arms on the frame, provided with pins that engage the teeth of the rack-bar, substantially as and for the purpose set forth.

3. In a book-holder, the combination of the front, the sides; the hinged frame 8, secured to the front, the rest 9 sliding on the hinged frame, a rack bar on the rest arms on the frame with engaging cog-segments thereon and provided with pins that engage the teeth of the rack bar, and a link 21, bell-crank lever 23, and rod 26 for drawing the pins out of engagement with the rack-bar, substantially as and for the purpose set forth.

4. In a book-holder, the combination of the sides 2, sliding bar 33 fitting therein, rods 31 hinged to the sliding bar, and to the frame 8, a notched bar 36, a dog 39 on the sliding bar engaging the notched bar, links, crank-levers and bars for drawing the notched bar out of engagement with the dog 39, and a spring 49 for returning the parts to their normal position, substantially as, and for the purpose set forth.

528,489. **GAS-ENGINE.** JAMES PATERSON and WILLIAM PATERSON, Stockton, Cal. Filed June 14, 1894. Serial No. 514,547. (No model.)



*Claim.*—1. An explosive engine consisting of two cylinders abutting against each other with their axes in the same line, pistons reciprocating therein, one of said pistons having a connecting rod uniting it directly with the crank upon the crank shaft, and the other connected with one end of a centrally fulcrumed oscillating lever, the opposite end of which is connected with the crank, whereby the pistons reciprocate simultaneously to and from each other and the power of both is applied to the crank.

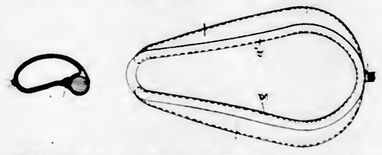
2. An explosive engine consisting of the cylinders, connecting rods and crank united, as shown, independent inlet and exhaust valves having valve stems and springs by which they are normally closed, the counter-shaft, eccentrics upon the counter-shaft with eccentric rods and arms adapted to engage the exhaust valve stems and open the valves, an intermediate yoke sliding upon the inlet valve stem and moved by an eccentric to compress the valve closing spring and allow the valve to be opened by the vacuum caused by the piston.

3. In an explosive engine, a piston reciprocating in the cylinder, an inlet valve having the stem extending out through the end of the valve chamber, a yoke sliding loosely upon the valve stem and a spring intermediate between the yoke and the valve chamber whereby the valve is normally closed, an eccentric upon a counter-shaft driven by the main engine shaft, an eccentric rod adapted to engage the yoke to cause it to reciprocate and compress the spring to allow the valve to be opened by the vacuum produced by the movement of the piston, an exhaust valve having a spring surrounding its stem whereby it is normally closed, an eccentric rod and contact piece whereby the exhaust valve stem is moved to open the valve as the engine shaft revolves, an arm or yoke hinged at the lower end and connected with the governor so as to be raised or lowered by its action, said yoke having a spur upon it which engages with a hook upon the exhaust actuating eccentric rod whereby the latter is held out of contact with its actuating eccentric during the engagement, and the upper end of the yoke is tilted so as to engage a collar upon the inlet valve stem to prevent the inlet valve from being opened.

4. An explosive engine having a cylinder, a piston reciprocating therein, a crank shaft and crank with which it is connected, inlet valves for the admission of the explosive vapor and an exhaust valve for the discharge of the products of combustion, and an igniting device consisting of an arm fulcrumed so as to extend into the cylinder and form contact with the piston when the latter approaches the explosion chamber, a hollow chamber into which the opposite end of said arm projects exterior to the cylinder, said arm being made elastic and adjustable within its chamber.

5. In an explosive engine, an igniting device consisting of an arm fulcrumed so that one end projects into the cylinder to form contact with the piston when the latter approaches the explosion chamber, and having the opposite end made elastic, a chamber extending transversely outward from the cylinder into which the elastic end of said arm projects, and screws entering said chamber from opposite sides whereby the arm is moved about its fulcrum point so that contact with the piston is regulated.

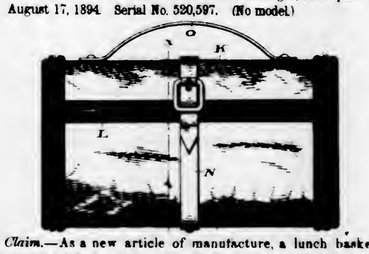
528,490. **HORSE-COLLAR.** ELWOOD C. PHILLIPS, Chicago, Ill. Filed Nov. 3 1893. Serial No. 489,918. (No model.)



*Claim.*—1. A horse collar comprising an outer casing A forming the cover for both the forewale and after-wale, said casing having a narrow part that constitutes the fore-wale and a broader part that constitutes the after-wale, a roll or filling *g* for the fore-wale located within the narrow part of said casing, and an air chamber *f* within the broader part of said casing and arranged to bear against the roll *z* and retain the same within the fore-wale, substantially as described.

2. A horse collar comprising an outer casing A having a narrow part forming the fore-wale and a broader part integral therewith forming the after-wale, the interior of said casing forming an undivided chamber, a roll or filling *g* for the fore-wale located within said narrow part of said casing and a stay-strip *e* for retaining said casing in shape, substantially as described.

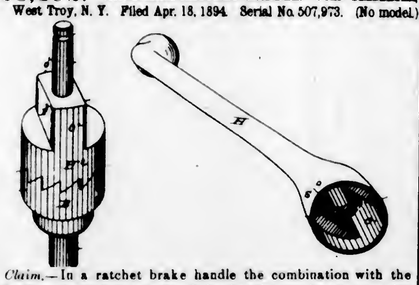
528,491. **LUNCH-BASKET.** ADAM PROBOLA, Cleveland, Ohio, assignor to L. W. Deutsch and Samuel Schweiger, same place. Filed August 17, 1894. Serial No. 520,597. (No model.)



*Claim.*—As a new article of manufacture, a lunch basket, the body and the lid of which consist each of a separate skeleton frame having solid wooden end pieces and wooden connecting pieces, the

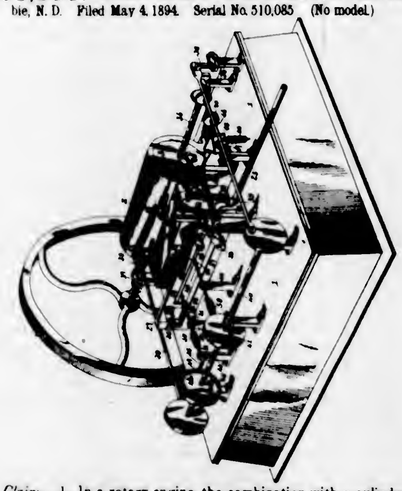
body of the basket being formed with a piece C at each side and top and a piece D centrally at its bottom connecting the ends, and the lid having side pieces F and top central piece G connecting the ends, said lid being suitably hinged to the body of the basket, and a covering K of flexible woven open-work material stretched over the frames of said body and lid and fastening strips for the cover at the edges of the basket, substantially as set forth.

## 528,492. CAR-BRAKE-RATCHET HANDLE. JOHN SEEBERGER, West Troy, N. Y. Filed Apr. 18, 1894. Serial No. 507,973. (No model.)



*Claim.*—In a ratchet brake handle the combination with the handle H, made with the socket S, having the two interior angular surfaces $F'$, $F'$, and intermediate rounded journaling surfaces $O'$, $O'$; of the ratchet D, made with the ratchet parts $R'$, $R^2$, connecting brake-rod $R^2$, and having the ratchet head made with the angular surfaces $F^2$, $F^2$, and intermediately arranged rounded journaling surfaces $O^2$, $O^2$, and having the stem $S^2$; and the spiral spring $D^2$, encircling said stem between the head and top of the socket interior, substantially in the manner as and for the purposes set forth.

## 528,493. ROTARY ENGINE. LUCAS SIVERTSON, Fort Abercrombie, N. D. Filed May 4, 1894. Serial No. 510,085. (No model.)



*Claim.*—1. In a rotary engine, the combination with a cylinder, a rotary piston, slide valves, means for operating the slide valves, ports arranged respectively upon opposite sides to the plane of the slide-valves, and cut-off valves controlling said ports, of a link connecting the stems of said cut-offs and adjustable thereon to arrange the point of attachment of either stem at the center of the link, and means for rocking the link by vibrating its ends in opposite directions, substantially as specified.

2. The combination with a cylinder, of a rotary piston, slide valves, means for operating the slide valves, ports arranged upon opposite sides of the plane of the slide valves, and cut-off valves controlling said ports, of a link connecting the stems of said cut-offs and capable of longitudinal adjustment thereof, the distance through which said link may be adjusted being twice that of the interval between said stems, means for adjusting the link and securing it at the desired adjustment, and mechanism for rocking the link, substantially as specified.

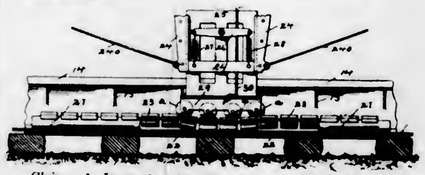
3. The combination with a cylinder, a rotary piston, having twin steam chambers and duplicate heads, slide valves, means for operating said slide valves, and ports arranged respectively above and below the plane of the slide-valves, of parallel conductors communicating respectively with the ports above and below the slide valves, controlling valves arranged in the conductors respectively between the points of communication of the conductors with the said ports and the ends of the conductors, a distributing-pipe communicating with said conductors at one end, the same being open at the opposite end, and means for reversing the positions of said controlling valves, substantially as specified.

4. The combination with a cylinder, a rotary piston provided with diametrically opposite heads, inlet and exhaust ports communicating with the cylinder, slide valves arranged between the planes of said inlet and exhaust ports, and means for operating said slide valves, of upper and lower steam conductors communicating respectively with the ports above and below the plane of the slide valves, a distributing pipe communicating with the conductors at one end, the conductors being open at the other end, valves arranged respectively near the extremities of the conductors and upon opposite sides of the points of communication of the conductors with said steam ports, a common connecting bar for the arms of said controlling valves, and means for operating the connecting bar to reverse the positions of the valves whereby communication may be established or cut-off between either conductor and the distributing-pipe, the conductor which is in communication with the distributing-pipe being closed at the opposite end by one of said valves, and the other conductor being open at the corresponding end to exhaust into the atmosphere, substantially as specified.

5. The combination with a cylinder, a rotary piston, slide valves, means for operating the slide valves, ports arranged respectively above and below the plane of the slide valves, and cut-off valves controlling the said ports, of steam conductors communicating respectively with the ports, controlling valves arranged in the conductors, a slotted link connecting the stems of said cut-off valves, and a reversing lever operatively connected with the controlling valves and with said slotted link, whereby the relative positions of the controlling and cut-off valves are simultaneously adjusted, substantially as specified.

6. The combination with a cylinder, a rotary piston, inlet and exhaust ports, cut-off valves controlling said ports, slide valves arranged between the planes of the inlet and exhaust ports, and means for operating the slide valves, of an eccentrically operated slotted link, slidable connections between said link and the cut-off valve stems, a reversing lever having a rock-shaft, an arm carried by said rock-shaft, and a slotted connecting rod fitted upon a lateral stud carried by said slotted link, the openings in said cut off valves being located respectively at different intervals, whereby when the cut-offs are operated in opposite directions the inlet and exhaust ports of each cylinder are simultaneously opened and closed, substantially as specified.

## 528,494. CLOSED CONDUIT FOR ELECTRIC RAILWAYS. WILLIAM E. STEARNS, Berlin, Conn., assignor, by direct and mesne assignments, of one-third to David L. Bradt, John P. Coghlin, and Frank O. Plummer, Worcester, Mass. Filed Apr. 7, 1894. Serial No. 506,767. (No model.)



*Claim.*—1. In an electric railway system, the combination of a compressible resilient insulating envelope, an electric conductor inclosed therein, and a traveling trolley plate having a downwardly extending perforated offset portion for shedding water, said plate carrying a series of trolley wheels co-operating with said conductor, substantially as described.

2. In an electric railway system, the combination of the compressible resilient insulating envelope 21 having an electric conductor 22 mounted therein, a traveling trolley plate 25 having a downwardly extending offset portion provided with the drainage orifices 250, and carrying an insulated bracket 29 having a series of trolley wheels mounted therein, substantially as described.

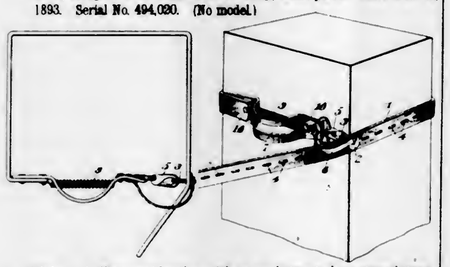
3. In an electric railway system, the combination of a compressible insulating envelope, an electric conductor mounted therein, a series of contact strips carried by said envelope, a traveling trolley-plate, and a series of trolley-wheels, journaled on fixed arbors carried by said trolley-plate, the exterior or end trolley wheels being journaled slightly above the central trolley wheels, and arranged to co-operate with the contact strips, substantially as described.



4. In an electric railway system, the combination of a compressible, insulating envelope, an electric conductor mounted therein, a series of contact strips carried by said envelope, a traveling trolley plate having a downwardly extending offset portion for shedding water, and a series of trolley wheels journaled on fixed arbors carried by said trolley-plate, and mounted to have a free lateral movement upon their arbors, substantially as described.

5. In an electric railway system, the combination of a traveling bracket 24, a vertically movable trolley plate 25, supported in and guided by said bracket, the equalizing yoke 26 and the springs 27 and 28 for forcing said trolley plate down, and a series of trolley wheels mounted upon said trolley-plate to co-operate with a series of contact strips carried by a resilient compressible conductor, substantially as described.

## 528,495. HITCHING-STRAP. JAMES H. VALLEAU, Sioux City, Iowa, assignor of one-half to T. N. Bray, same place. Filed Dec. 19, 1893. Serial No. 494,030. (No model.)



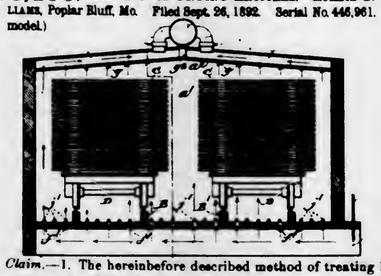
*Claim.*—1. The combination with an unobstructed apertured strap as distinguished from one having projections thereon provided with terminal fastening mechanism, of a second strap secured to the main strap and provided with fastening mechanism adjustably retained upon the strap within the apertures whereby the last named fastening mechanism may be adjusted upon the strap to engage the terminal fastening mechanism without the intervention of obstructing co-operating means, substantially as specified.

2. The combination with an unobstructed strap, of a hook and an eyelet independently secured to one end of the strap, and unobstructing means at intervals upon the strap for adjustably securing the eyelet intermediately upon the strap, substantially as specified.

3. The combination with a strap having apertures therein, of a disk, an eyelet carried on the disk and adapted to be inserted through the apertures, and a hook upon the end of the strap for fastening it to the eyelet, substantially as and for the purpose specified.

4. The combination with a strap provided with apertures, and a hook, of a disk, an eyelet adapted to be inserted through the apertures, and a strap secured to the disk and to the main strap, substantially as and for the purpose specified.

## 528,496. METHOD OF DRYING ARTICLES. HORACE D. WILLIAMS, Poplar Bluff, Mo. Filed Sept. 26, 1892. Serial No. 446,961. (No model.)

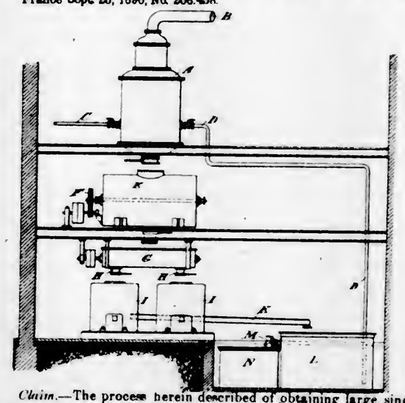


*Claim.*—1. The hereinbefore described method of treating lumber, cooperage, and the like, in a drying receptacle, or chamber, the same consisting in a passing a current of air through the chamber, continuing said current until the temperature and humidity in the chamber are substantially the same as of the entering air, and then subjecting the material to heat; substantially as described.

2. The hereinbefore described method of treating lumber, cooperage, and the like, in a drying receptacle, or chamber, the same consisting in passing a current of air through the chamber, continuing said current until the temperature and humidity in the chamber are substantially the same as of the entering air, and then subjecting the material to heat while continuing to pass the current of air; substantially as described.

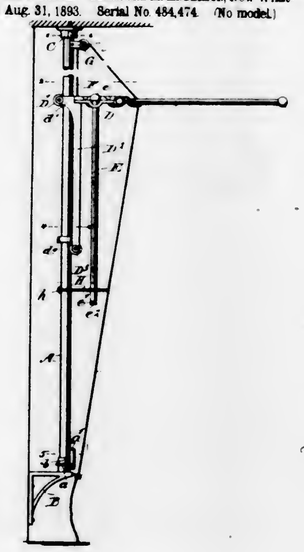
3. The hereinbefore described method of treating lumber, cooperage, and the like, in a drying receptacle, or chamber, the same consisting in passing a current of air through the chamber, continuing said current until the temperature and humidity in the chamber are substantially the same as of the entering air, further continuing said current and gradually raising the temperature in the chamber by the application of heat to a point above that of the entering air, and finally arresting the current and subjecting the material to heat in the chamber; substantially as described.

## 528,497. CRYSTALLIZATION OF SACCHARINE OR OTHER SOLUTIONS. LUDWIG WULFF, Schwerin, assignor, by mesne assignments, to Johannes Bock, Breslau, Germany. Filed June 17, 1891. Serial No. 396,615. (No specimens.) Patented in Germany Nov. 6, 1884, No. 33,190, and May 16, 1885, No. 39,957; in Austria-Hungary Dec. 14, 1886, No. 49,033 and No. 13,485; in Belgium Aug. 14, 1888, No. 82,900, and in France Sept. 25, 1890, No. 206,458.



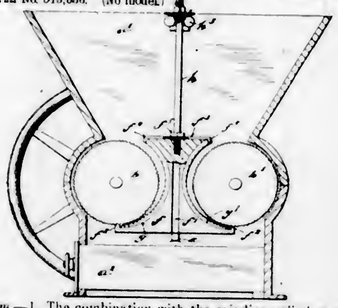
*Claim.*—The process herein described of obtaining large single crystals from a saccharine or other solution consisting in first bringing said solution to a temperature at which there will neither be any formation of crystals nor any dissolution of added crystals, next adding to the said solution separately obtained crystals which have been previously heated to about the temperature of the said solution and then keeping the whole in motion while its temperature is gradually reduced, substantially as herein set forth.

## 528,498. CLOTHES-RACK. THEODORE M. ANDERSON, New Whatcom, Wash. Filed Aug. 31, 1893. Serial No. 484,474. (No model.)



*Claim.*—A clothes rack comprising a post, a carriage vertically movable on the post, a ceiling socket fitting the upper end of the post, and a wall bracket for the lower end of the post, the bracket having a semi-circular flange forming a recess, and the post having a sliding ring adapted to embrace the said flange, and a keeper on the post preventing displacement of said ring, the ring being movable vertically on the post and flange to a point above the said flange substantially as described.

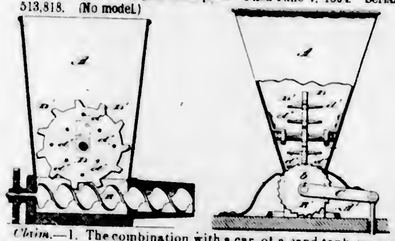
528,499. COFFEE-MILL. CON D. ANDERSON, Springfield, Ohio, assignor of one-half to J. K. Mower, same place. Filed June 6, 1894. Serial No. 513,636. (No model.)



*Claim.*—1. The combination with the grinding cylinders of the concave supporting frame supported on guides or ways and having at each side concave seats with undercut flanges at the bottom, removable grinding plates fitted to said seats, a clamping bar having the flanged ends to engage said plates and a clamping screw engaging said bar substantially as specified.

2. The combination with the grinding cylinders of the concave supporting frame supported on guides or ways and provided at each side with concave seats with undercut flanges at the bottom, removable grinding plates fitted to said seats, a clamping bar having the flanged ends to engage said plates, a screw-threaded stud extending through said bar and into said frame, a spring supported above said frame and perforated to receive said stud and adjusting nuts on said stud to bear on each side of said spring substantially as set forth.

528,500. SANDING DEVICE FOR RAILWAYS. CHARLES R. ANDREWS, Lebanon, Pa., assignor, by direct and mesne assignments of sixteen-twentieths to Thomas Williams, Clinton J. Barr, John K. Raudenbush, and Simon P. Light, same place. Filed June 7, 1894. Serial No. 513,818. (No model.)



*Claim.*—1. The combination with a car, of a sand tank or receptacle having mounted therein a stirring wheel with projecting pins or fingers and peripheral projections, a screw conveyer B adapted to engage with the peripheral projections of the stirring wheel and provided with a part *b* forming a shaft which extends beyond the side of the frame, a ratchet-wheel mounted on the shaft *b* and adapted to be turned by a lever C having a pawl *c*, and means for oscillating the lever, substantially as shown and for the purpose set forth.

2. In a sanding device for cars, the combination, of a tank or receptacle mounted upon a frame having a shaft-bearing at one end and a spout at the other, of a spiral conveyer B bearing at one end in the spout the other end being formed into a shaft which bears in the opening in the opposite end wall of the frame, and a stirrer D mounted in the tank or receptacle and having peripheral projections which are engaged by the spiral conveyer, substantially as shown and for the purpose set forth.

528,501. CURTAIN-FIXTURE FOR CARS. WILLIAM H. BEAN, West Troy, N. Y., assignor to John H. Jones, same place. Filed Apr. 18, 1894. Serial No. 507,952. (No model.)

*Claim.*—1. In a curtain fixture the combination with a tube made with two handle-slots in its under surface, of two bar-parts arranged within said tube to project beyond its ends, and each cut away longitudinally on its inner end to form thereat a spring-abutting shoulder; a spiral spring arranged within said tube between said bar-shoulders adapted to force outwardly said bars; a handle arranged within each of said bottom slots, and each connected to one of said bars where cut away, with said handles when moved inwardly toward each other adapted to draw inwardly said bars against the recoil force of the spring each bar part consisting of bars $B'$ and $B^3$ connected by a rod R, substantially in the manner as and for the purposes set forth.



2. The bars $B'$ provided with heads in combination with inner bars $B^3$ connecting rods R screwed at their ends into these bars, a spring interposed between the said bars $B^3$ to force them apart, a slotted tube containing and guiding all the aforesaid bars but allowing the heads to protrude at its ends and triggers attached to the said bars $B^3$ and protruding through the slotted tube substantially as and for the purpose set forth.

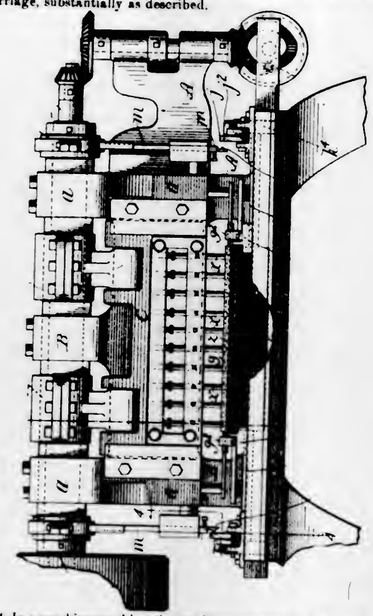
528,502. PUNCHING-MACHINE. WALTER E. BENNETT, Boston, Mass., assignor to the Morley Button Manufacturing Company, Portsmouth, N. H. Filed June 18, 1894. Serial No. 514,844. (No model.)

*Claim.*—1. In a blank punching machine, the combination with a set of reciprocatory punches, of a shiftable stock-supporting carriage with a mechanism thereon for feeding the stock forwardly on the carriage, devices for imparting to the carriage, intermittently, a half step and a full step in one direction, and then a half and a full step in the reverse direction, and mechanism operating relatively to each half step shifting of the carriage upon the feed mechanism to impart thereto a forward feed movement, substantially as and for the purposes set forth.

2. In a punching machine, the combination with the row of reciprocatory punches, of the carriage, D, mounted to slide horizontally in one direction and having the roll, *h*, for feeding the stock at right angles to such slide movement, and provided on its arbor at each end with a ratchet wheel, a pawl carrier, *j*, adjacent each ratchet wheel with a pawl thereon which engages such ratchet wheel, a cam with which engages a member of the said carriage, and which imparts separate step-like slide movements of the carriage to and fro, and a pair of vertically reciprocatory hook-bars in proximity to which the pawl-carrying-levers are alternately brought at the termination of the slide movements of the carriage, substantially as described.

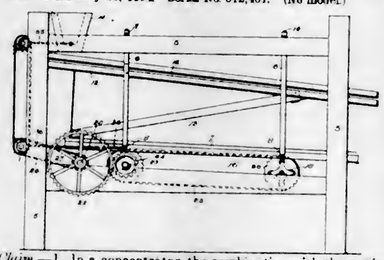
3. In a punching machine, the combination with the set of punches mounted for reciprocatory movements of the carriage, D, having thereon the feed roll, *h*, with the ratchet wheels, $h^4$, $h^4$, at each end, the levers, *j*, pivotally mounted on the carriage adjacent the ratchet wheel each with the pawl, $j^3$, which engages the said wheel, the reciprocatory bars, *m*, *m*, with the hooks which are arranged to engage the levers sidewise to lift them, the extremities of the bars, *m*, and said levers being so arranged that the bars will on their descent contact upon and depress an upswung pawl-carrying-lever, and the cam, G, for imparting the step-like slide movements to and fro of the carriage, substantially as described.





4. In a punching machine, the combination with the bed, or frame, having the slide-ways thereon, and provided with a series of dies, *y*, *y*, the main shaft, B, having the eccentrics, *d*, *d*, and the eccentrics, *i*, *i*, which are set in advance of those, *d*, and the cam, G, and its shaft which is geared to the main shaft, of the carriage to slide on the bed having the member which is in engagement with the said cam, provided with the feed-roll, *h*, with the ratchet-wheels, $h^4$, $h^4$, thereon, and the pawl-carrying-levers, *j*, each with the ratchet engaging pawl, $j^3$, and the notch, or shoulder, $j^2$, the slide, C, with the series of punches, *x*, and the strap-links, *f*, connecting it with the eccentrics, *d*, and the vertically reciprocatory bars, *m*, operatively connected with the eccentrics, *i*, *i*, and having the laterally yielding hooks, which bars and hooks co-operate with such one of the pawl-carrying levers as is by the cam-controlled position of the carriage brought subject to engagement thereby, substantially as described.

528,503. PLACER-MACHINE. ROBERT L. CHATTERSON, Denver, Colo. Filed May 25, 1894. Serial No. 512,401. (No model.)



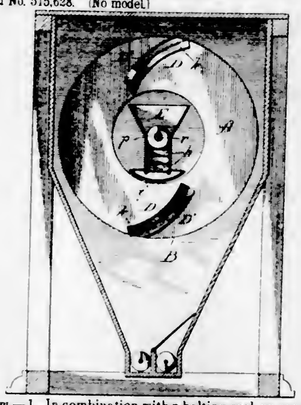
*Claim.*—1. In a concentrator, the combination with the stationary frame, the movable pan, the supporting hangers movably attached to the pan, the rods passed through the upper part of the frame, the upper extremities of the hangers being vertically slotted to receive the said rods, adjusting screws passed through threaded apertures formed in the top of the hangers and extending to the slots whereby the screws are adapted to engage the rods, two shafts 17 passed through the lower part of the frame and carrying cams adapted to engage the bottom of the pan, a main shaft 20, and another 30, journaled in the frame, pitmen connecting the hangers with the shaft 30, and suitable connections whereby motion may be transmitted from the shaft 20 to the shafts 17 and 30, as and for the purpose set forth.

2. In a concentrator, the combination with the stationary frame, of the movable pan, hangers attached to the pan at one extremity and to the frame at the opposite extremity, the upper part of the hangers being slotted vertically to receive supporting rods passed through the frame, adjusting screws passed through apertures formed in the top of the hangers and communicating with the slots, whereby the screws are adapted to engage the rods, shafts 17 passed through the lower part of the frame and carrying cams adapted to engage the bottom of the pan, shafts 20, 30 and 31 journaled in the frame, pitmen leading from shaft 30 to the hangers supporting the pan, a stationary hopper support in the framework, a false hopper movably supported in the stationary hopper, said false hopper being adapted to screen the material, a pitman leading from shaft 31 to the false hopper, and suitable connections between shafts 20, 17, 30 and 31, whereby the requisite motion may be transmitted from shaft 20 to the pan and the false hopper, as and for the purpose set forth.

3. In a concentrator, the combination with the stationary frame, of the pan provided with riffles, the hangers attached to the pan at one extremity and to the frame at the opposite extremity, shafts 17 journaled in the lower part of the frame and carrying cams engaging the bottom of the pan, said shafts being suitably connected, a main shaft 20 to which power is applied, a shaft 30 journaled in the frame, means leading from the shaft for imparting the oscillating movement to the pan, and means for connecting shafts 30 and 17 with shaft 20 whereby the rotation of the last named shaft communicates motion to the other shafts, substantially as described.

4. In a concentrator, the combination with the stationary frame, of the pan carrying the riffle-frame, the hinged, inclined trough located above the pan, the screen located above the trough, the hangers attached to the pan at one extremity, and to the frame at the opposite extremity, shafts journaled in the lower part of the frame and carrying cams engaging the bottom of the pan, said shafts being connected by chains engaging sprockets on the shafts, a main shaft 20 to which the power is applied, a shaft 30, pitmen connecting the shaft 30 with the hangers supporting the pan, and means for connecting shafts 30 and 17 with shaft 20, whereby the requisite movements may be imparted to the pan, substantially as described.

528,504. BOLTING-REEL. EMIL R. DRAVER, Alliance, Nebr., assignor to Florence N. Draver, same place. Filed June 25, 1894. Serial No. 515,628. (No model.)



*Claim.*—1. In combination with a bolting-reel, an automatic conveyer on the reel operating to return the coarse cleaning material from near the discharge-end into the feed-end of the apparatus, substantially as described.

2. In a bolting-reel, the combination with its shaft of a conveyer discharging near the feed-end of the reel and having its feed-end near the discharge-end of the reel, and a rotary sifting scoop discharging into the feed-end of the conveyer and provided with a receiving and discharging outlet for the material sifted from the scoop, substantially as described.

3. In a bolting-reel, the combination with its shaft of a spiral-conveyer discharging near the feed end of the reel and having its feed-end near the discharge-end of the reel, a hopper leading into the feed-end of the conveyer, and a rotary sifting scoop discharging into said hopper and provided with a receiving and discharging chamber for the material sifted from the scoop, substantially as described.

4. In a bolting-reel, the combination with its shaft of a spiral conveyer discharging near the feed-end of the reel and having its feed-end near the discharge-end of the reel, a hopper leading into the feed-

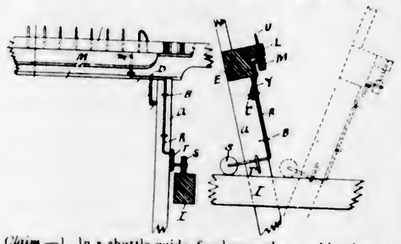
end of the conveyer and having a pocket-extension, and a rotary sifting scoop discharging into said hopper and provided with a receiving and discharging chamber for the material sifted from the scoop, substantially as described.

5. In a bolting-reel, the combination with its shaft of a spiral conveyer discharging near the feed-end of the reel and having its feed-end near the discharge-end of the reel, a hopper leading into the feed-end of the conveyer, and having a pocket-extension provided with slide-valves, and a rotary sifting scoop discharging into said hopper and provided with a receiving and discharging chamber for the material sifted from the scoop, substantially as described.

6. In a bolting-reel, the combination with the shaft, of a spiral conveyer thereon surrounded by a sleeve having its feed-end near the discharge-end of the reel and its discharge-end near the feed-end of the reel, an annular head *m'* on the reel carrying scoops D, each formed with a screen-bottom *k* and a rear chamber *D'* discharging beyond said head, and a stationary hopper *E* supported in position to receive the discharges from the said scoops, the whole being constructed and arranged to operate substantially as described.

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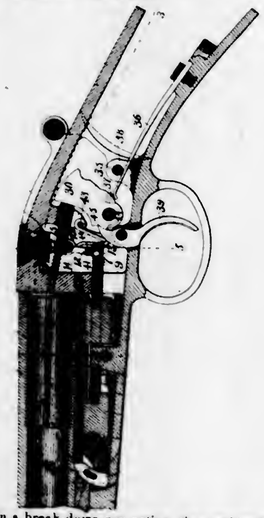
528,505. SHUTTLE-GUIDE FOR LOOMS. GEORGE W. FARMER, Indianapolis, Ind. Filed Nov. 27, 1893. Serial No. 492,037. (No model.)



*Claim.*—1. In a shuttle guide for looms, the combination with the vibrating lay E, provided with perforated bar L, of the slat M having pins U working in said perforated bar, pulley S, cross-beam I upon which said pulley travels, bent rod R connecting said pulley with slat M, guides B and T for said rod, and spring Y connected to retract the pins U, substantially as described.

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528,506. BREAKDOWN GUN. RIMMON C. FAY, Ilion, N. Y., assignor to the Remington Arms Company, same place. Filed Dec. 2, 1893. Serial No. 492,640. (No model.)



*Claim.*—1. In a break-down gun action, the combination of the frame and the trigger plate having a passage between them and a slide bolt held in said passage by the trigger plate and the frame.

2. In a break-down gun action, the combination of the frame, the trigger plate having a guiding lug, and a slotted slide bolt engaging said guiding lug, and held in position between said frame and trigger plate, and having its longitudinal movement directed by said guiding lug.

3. In a break-down gun, the combination of the top-lever having rigidly attached to its hub, a laterally projecting slotted crank-arm, the longitudinally sliding bolt having a wrist socket, and means through which the bolt may be moved by the top-lever positively in both directions, consisting of the upright rocker-arm mounted on a transverse axis and having at its ends, wrists which respectively engage in the crank-arm slot and in the wrist-socket, substantially as set forth.

4. In a break-down gun action, the combination of the top lever 19, the slotted crank 18 and the slide bolt 7, resting between the trigger plate and the frame, having a wrist bearing hole, the forward side-plate fastening screw and the rocker arm having wrists engaging the slot in said crank and wrist bearing hole in said slide bolt and pivoted on the forward side-plate fastening screw.

5. The combination of the ejector-rod, the fore-end, the trigger plate, the pivot bolt, and the movable fly having bearing on the rear of the fore-end eccentric of the pivot bolt, substantially as set forth.

6. The combination of the locking bolt, top lever and rocker, the firing pin and the screw 14 adapted to engage and limit the movement of said pin and serving as the pivot of said rocker, substantially as set forth.

7. The combination of the hammer, the trigger engaging therewith, the slide bolt, its operating rocker, the top lever 19 and the spring 40, 41 bearing in one direction against the trigger and in the other against the rocker, substantially as and for the purposes set forth.

8. In a gun lock, the combination of the frame, the trigger plate, the hammer, the rocker-arm, the trigger, and a bifurcated pivoted spring having one of its ends in engagement with the rocker arm and the other end in engagement with the trigger, and adapted to hold them apart.

9. The combination of the frame 3, the trigger plate 8, a screw 35 fixing said trigger plate and frame together, the hammer 30 and main-spring 36, fixed at one end and projecting at the other immediately beneath said screw and bearing on said hammer whereby the same screw acts as a limiting stop for said main-spring and a means of fastening trigger-plate and frame together substantially as set forth.

10. The combination of the lock frame, the trigger plate, the main spring, the side plate and the screw 35 whose head engages and holds in place the side plate, and whose shank passes through the frame and trigger plate thereby binding them together and at such a point that the shank of said screw acts as a limiting stop to the motion of the main-spring.

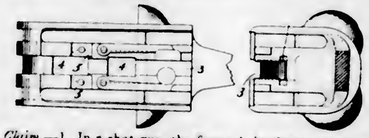
11. In a gun lock, the combination of the frame, retaining screws having partially cut away heads the side-plate having a bearing, a pivot passing through said bearing and carrying near its ends the hammer and cocking lever rigidly attached thereto, and prolonged beyond the hammer to enter a depressed bearing in the frame.

12. In a gun lock, the combination of the frame 3, the side plate 33, the semi hammer carried by said side plate, the slide-bolt operating rocker 12 and a screw 14 attaching said side-plate to said frame and passing through and forming a pivot for said rocker, substantially as set forth.

13. In a gun, the combination of the hammer, the trigger, the rocker with its slide bolt bifurcated pivoted spring, engaging with one of its ends, the rocker and with its other end, the trigger, the mainspring having a stop for limiting its motion, all so arranged as to provide a rebounding hammer as shown and described.

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528,507. GUN-FRAME. RIMMON C. FAY, Ilion, N. Y., assignor to the Remington Arms Company, same place. Filed Jan. 25, 1894. Serial No. 498,063. (No model.)



*Claim.*—1. In a shot gun, the frame 1, having locking bolt slot 2, and the slot 3 narrower than slot 2 and cut through to said slot 2 from the bottom of the frame, substantially as set forth.

2. In a shot gun, the combination of the frame and the trigger plate having cross grooves or depressions in one of the parts and corresponding projections in the other part, said projections fitting said depressions and adapted to prevent endwise movement of the trigger plate, substantially as set forth.

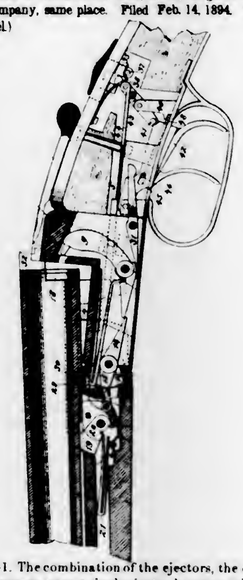
3. The combination of the gun-frame 1, having the locking bolt slot 2 and narrower slot 3 cut through to said slot 2 from the bottom



of the frame, the trigger plate 7 and the connecting block or piece 9 fastened to said trigger plate by a suitable pin and occupying said groove 3, substantially as set forth.

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528,508. EJECTOR FOR BREAKDOWN GUNS. RIMMON C. FAY and GEORGE E. HUMPHREYS, Ilion, N. Y., assignors to the Remington Arms Company, same place. Filed Feb. 14, 1894. Serial No. 500,109. (No model.)



*Claim.*—1. The combination of the ejectors, the ejector hammers, the ejector hammer sears, a single ejector hammer releasing sear common to both and the gun frame having a lug or part adapted to engage and operate said ejector hammer releasing sear, substantially as set forth.

2. The combination of the gun frame, the barrels, the main hammers, the main springs, the ejectors, the ejector-hammers, the ejector-hammer-sears and a releasing sear common to both ejector-hammers, and means operated by the cocking and discharging of said main hammers for tripping said ejector-hammer-sears, as set forth.

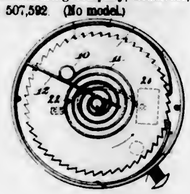
3. In a fire-arm, the combination of the ejector, the ejector hammers, the ejector-hammer-sears hooked to engage projections on said ejector hammers and the ejector hammer releasing sear having a hook located forward of the ejector hammer sear hooks, whereby the hammer is caught by the common releasing sear only after being released by the hammer sear, substantially as and for the purposes set forth.

4. The combination of the gun frame, the barrels jointed thereto, the divided ejector, independent hammers for the two parts of said ejector, independent sears for said hammers, a releasing sear common to both hammers, and means for automatically releasing said common sear, substantially as set forth.

5. The combination of the gun frame, the barrels jointed thereto, the ejector, the hammers therefor, the releasing sear common to both hammers, the fore-end wherein said releasing sear is pivoted and a part or projection rigid with the gun frame adapted to engage said releasing sear whereby the releasing sear turns with the ejector hammers and fore end in opening the gun and then suddenly releases the ejector hammers substantially as and for the purposes set forth.

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528,509. REGISTER. CHARLES C. FIELDS, Bristol, Tenn., assignor to the Fields Manufacturing Company, Louisville, Ky. Filed Apr. 14, 1894. Serial No. 507,592. (No model.)



*Claim.*—1. In a register the combination with a casing having a sight opening and a shaft arranged in the casing, of a rotatably mounted ratchet-disk upon the shaft arranged under the opening so as to expose numerals contained thereon, a curved spring pawl secured to the wall of the casing and having its free end bent to engage the teeth of the ratchet, a push-rod extending through the wall of the casing and connected to the spring-pawl, a holding pawl, means for throwing both of said pawls out of engagement with the teeth of the ratchet, and a spring for returning the disk, substantially as specified.

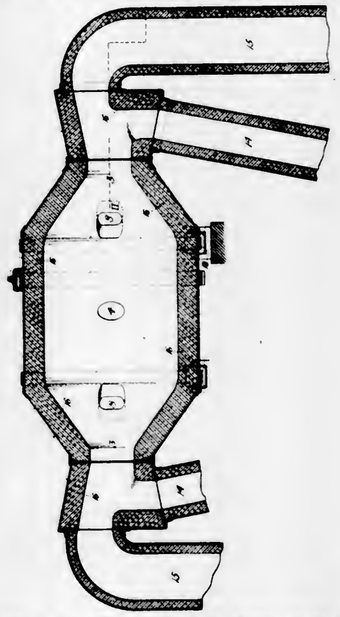
2. In a register the combination with a casing and its shaft, of a ratchet toothed disk arranged for movement upon the shaft under the sight opening formed in the casing, a curved spring feed-pawl secured to the inner surface of the wall of the casing, and at its free end bent to engage with the teeth of the ratchet disk, a push-bar extending through the wall of the casing and secured to the spring pawl for operating the latter, a holding pawl, a slot formed in the wall of the casing, a plate 20 mounted over the slot, a retracting spring for the plate and a projection extending through the slot and secured to the plate, whereby when pushed against the tension of the spring the plate will serve to disengage the pawls from the ratchet disk, and a spring for returning the disk, substantially as specified.

3. In a register the combination with the circular casing and its central shaft, of a ratchet disk arranged for movement upon the shaft, the two pawls 14 and 15 disposed toward each other and secured at diametrically opposite sides of the casing and having their free ends bent to engage with the teeth of the ratchet disk, a push-bar secured to one of the pawls and projecting through the casing, a liberating plate arranged in the casing, a spring for retracting the same, and a lug projecting from the plate through a slot in the casing, and a spring for returning the disk when the pawls are liberated by contact with the plate, substantially as specified.

4. In a register the combination with a circular casing, its central shaft, a ratchet disk loosely mounted on the shaft below a sight opening formed in the casing, a post extending from the ratchet disk, a convolute spring secured to the shaft arranged around the same and secured to the post, a stop-arm extending radially from the rim of the casing into the path of the post of the disk so as to limit the movement of the disk, of a feed pawl for the disk and means for liberating the same from engagement with the teeth of the disk, substantially as specified.

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528,510. OPEN-HEARTH FURNACE. JAMES PURVES, Munhall, Pa. Filed Sept. 22, 1892. Serial No. 446,611. (No model.)

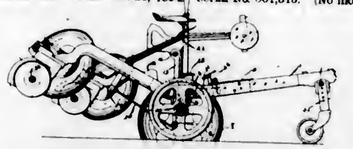


*Claim.*—1. An invertible open-hearth furnace, having opposite lateral doors, supports on which it can be turned throughout at least

a semi-revolution, a detachable spout, and an invertible door; substantially as and for the purposes described.

2. An invertible open-hearth furnace, having a lateral door, a door-frame having at the top and bottom thereof journal-supports for a roller, and a removable roller adapted to be journaled in said supports; substantially as described

528,511. ROTARY PLOW. LAFAYETTE D. RAILSBACK, Indianapolis, Ind. Filed Feb. 26, 1894. Serial No. 501,513. (No model.)



*Claim.*—1. In a rotary plow, the combination with a plow disk of a scraper mounted at an angle to the line of the furrow and behind the disk where it will square the rounded corner of the furrow, substantially as shown and described.

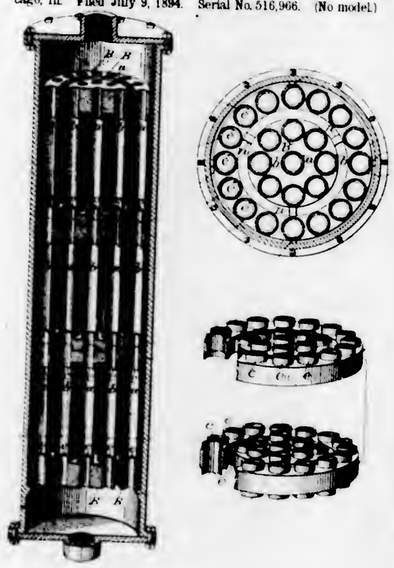
2. In a rotary plow, the combination with a plow disk, of a furrow cleaner comprising a rolling cutter adapted to follow the plow disk, and a scraper behind such rolling cutter set at an angle to the line of the furrow, substantially as shown and described.

3. In a rotary plow, the combination with a plow disk, of a furrow cleaner consisting of a casting rigidly mounted on the plow, a rolling cutter mounted on such casting and adapted to follow the plow disk, and a scraper formed on the lower end of such casting behind the rolling cutter extending at an angle to the line of the furrow, substantially as shown and described.

4. In a rotary plow, the combination of a main axle, a tongue, a disk beam pivoted at its front end to the framework, a pulley mounted under the framework near its center of weight, a chain extending from the disk beam near its rear end under such pulley, and means of connecting the draft to such chain, substantially as shown and described.

5. In a rotary plow, the combination of a main axle provided with a downwardly extending arm, a pulley mounted in the lower end of such arm near the center of weight of the framework, a tongue secured to the axle, a doubletree block mounted in the tongue, a disk beam pivoted at its front end to the framework, a downwardly extending arm secured to such disk beam, and a chain extending from the lower end of such arm under the pulley to the doubletree block, substantially as shown and described.

528,512. FEED-WATER PURIFIER. STERLING L. BAILEY, Chicago, Ill. Filed July 9, 1894. Serial No. 516,966. (No model.)



*Claim.*—1. In a water purifier, the combination of an outer shell provided with a removable cap, and a series of relatively electro-positive and negative tubes loosely mounted within the shell and freely removable therefrom.

2. In a water purifier, the combination with an outer shell, of a removable interior body composed of tubes of relatively electro-positive and negative metals, and connecting heads therefor,—and supports for said body within the shell.

3. In a water purifier, the combination with an outer containing shell, of an internal tubular body, composed of separable sections each comprising a group of tubes relatively electro-positive and negative metals.

4 The herein described water purifier, consisting of an outer shell A provided with internal lugs or projections *o*, and a removable internal tube system comprising tubes *a* and *b* of relatively electro-positive and negative metals, connected by heads B.

5. In combination with shell A, a sectional internal tube system, consisting of tubes *a* and *b* of relatively electro-positive and negative metals, arranged in groups, each group being provided with connecting heads, the lower head of one group being adapted to fit upon the upper head of the next lower group, substantially as shown and described.

6. In a water purifier, the combination of a shell A, and a sectional tube system of relatively electro-positive and electro-negative metals contained therein, the tubes being arranged in groups, and the groups being provided at their proximate ends with heads C and D, respectively furnished with nipples and sockets in axial alignment with the tubes, whereby the groups are held in proper relation.

7. In a water purifier, the combination with an outer shell, of an internal tube system of relatively electro-positive and negative metals, said tube system being provided with heads having annular openings, and being of less diameter than the shell, whereby free passage for the water is afforded between the shell and heads and through the heads.

528,513. METHOD OF IMPROVING SURFACES OF ALUMINIUM. ARTHUR V. DAVIS, Pittsburg, Pa. Filed Jan. 24, 1894. Serial No. 497,912. (No specimens.)

*Claim.*—The method of improving the surface appearance of aluminum, which consists in treating the surface with a mixture of hydrofluoric acid and nitric acid, substantially as described.

528,514. PROCESS OF MAKING BEVERAGES FROM RICE. CHU FONG, New York, N. Y. Filed July 13, 1894. Serial No. 517,466. (No specimens.)

*Claim.*—The process of making a palatable beverage from rice, which consists in boiling edible hulled rice until it is soft, then allowing it to cool, then adding to the same water and pure rice yeast in the proportions described, subjecting the mass to a single fermentation, and then distilling, producing a beverage from edible rice, direct, and from rice alone, substantially as and for the purpose described.

528,515. FLASH-LIGHT COMPOUND. ALEXANDER HENSLEY, Philadelphia, Pa. Filed May 3, 1894. Serial No. 509,888. (No specimens.)

*Claim.*—A compound for producing a flash light, composed of aluminum, a nitrate or nitrates of the metals or alkaline earths and amorphous phosphorus, substantially as and for the purposes set forth.

528,516. WITHDRAWN.

528,517. COMBINED CAN-OPENER AND VEGETABLE-PARER. GEORGE H. MITCHELL, New York, N. Y. Filed June 6, 1894. Serial No. 513,690. (No model.)

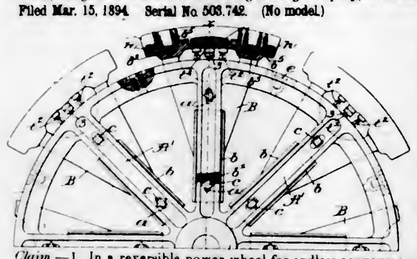


*Claim.*—1. A compound tool provided with a bar having a point at its end, a longitudinal slot in the bar, a cutter adjustable in the slot and a seat of greater depth than the length of the cutter at the inner end of the slot to protect the hand of the user.

2. A compound tool comprising a can-opener having an adjustable cutter, a seat at the inner end of the handle of greater depth than the length of the cutter to protect the hand of the user and a parer secured to one side of the bar of the can-opener.



528,518. POWER-WHEEL. AMBROSE J. B. BERGER, Hingham, Mass., assignor to the Steel Cable Engineering Company, of Maine. Filed Mar. 15, 1894. Serial No. 503,742. (No model.)



*Claim.*—1. In a reversible power wheel for endless conveyers, a main frame, combined with a series of independent and separated radially adjustable tread sections thereon, located beyond and having their faces concentric with the rim, and each provided with an engaging pocket for the driving attachments, the openings intermediate the separated ends of adjacent tread sections receiving the flights as they pass around the wheel, and permitting their inner edges to rest upon the rim of the main frame, said wheel being operative when rotated in either direction, substantially as described.

2. In a power wheel for endless cable conveyers, a main frame provided with an annular rim, combined with a series of independent and radially movable tread sections, having their faces concentric with the rim, each having an engaging pocket for the attachment, means to secure the sections in adjusted position on the frame, and adjustable supports on said rim for the inner edges of the conveyer flights, substantially as described.

3. The herein described power wheel for endless cable conveyers, consisting of a frame composed of an annular rim and supporting arms, combined with a series of radially adjustable segmental flanged tread sections secured to the said arms, each section having a pocket to receive a driving attachment, and radially adjustable bearings carried by the annular rim, each supporting the inner edges of one of the flights between the tread sections, substantially as described.

4. In a power wheel for endless cable conveyers, a series of separated tread sections, each provided with a plurality of driving attachment pockets, combined with a tread block carried by each section between the pockets, and means to adjust said tread blocks, substantially as described.

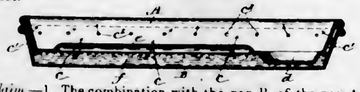
528,519. CHURN-DASHER. CHARLES S. ROGERS, Atlanta, Ga. Filed Apr. 9, 1894. Serial No. 506,938. (No model.)



*Claim.*—In a churn, a dasher consisting of a staff, blades angularly set in the lower end thereof, a headed screw screwed concentrically into the upper end of said staff, a sleeve loosely set and having longitudinal movement on said screw, a cap on the upper end of said sleeve covering the head of said screw and being provided with an opening adapted to receive and fit the head of said screw, substantially as and for the purpose specified.

# REISSUES.

11,451. MEAT-ROASTER. JAMES STROUD, New York, N. Y. Filed Sept. 15, 1893. Serial No. 485,631. Original No. 453,418, dated June 2, 1891.



*Claim.*—1. The combination with the pan B, of the pan A provided with overlapping edges and with the ridges *c*, *c*, in its bottom, orifices in said ridges and orifices $c^3$, $c^3$, $c^3$, in its side wall below its overlapping edge, the pan A being supported by and within the pan B so as to leave a water and steam space between the bottoms of the said pans, substantially as and for the purpose set forth.

2 The improved article of manufacture to wit, a meat roaster, baster and gravy collector, consisting of two pans A and B, each having an open top, and the inner one a body portion of relatively smaller diameter than the outer one, and the inner one constructed with overlapping edges, and extending from its overlapping edges into the outer pan, and also provided with ridges *c* in the bottom, and also with orifices through it for conducting steam to its interior, said inner pan being supported by and within the pan B so as to have a water and steam space between the two pans, substantially as set forth.

3 The improved article of manufacture, to wit, a meat roaster, baster and gravy collector, consisting of two pans A and B, both open at top, and with their edges on about the same plane, and the body portion of one being of relatively smaller diameter than the other, and the inner pan provided with overlapping edges and extending down from its overlapping edges into the outer pan B, and having ridges in its bottom, a depression *d* at one end of the ridges and below the surface of the bottom for receiving the drip or gravy from the outside and between the ridges, said inner pan also having steam orifices leading to its interior, below its point of support, and being supported by and within the pan B so as to form a steam and water space between said pans, substantially as described.

4. The improved article of manufacture, to wit, a meat roaster, baster and gravy collector consisting of the pan A having an open top and an overlapping edge, and provided with ridges in its bottom, a depression near one end of the ridges and below the surface of the bottom adapted to receive the drip or gravy from the outside and between the ridges, and provided with steam orifices leading to its interior for conducting steam to meat at points below the top of the pan, said pan being adapted for use with an outer pan B by extending into and resting upon the outer pan so as to form a water and steam space between the two pans, substantially as set forth.

5. The improved new article of manufacture, to wit, a roaster and baster consisting of two pans with body portions of relatively larger and smaller diameters, both open at top, and with their upper edges on about the same plane; the inner pan being provided with an overlapping edge and its body portion extending a suitable distance into the outer pan, and the two pans having a water and steam space between them, and the inner pan provided with orifices leading to its interior below its upper edge, and supported by and within the pan by having its overlapping edge rest upon the upper edge of the pan B, substantially as described.

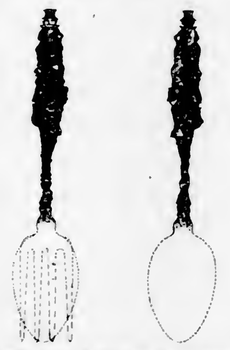
# DESIGNS.

23,746. TRIMMING. JOSEPHINE MÜLLER, New York, N. Y. Filed Sept. 29, 1894. Serial No. 524,523. Term of patent 3½ years.



*Claim.*—The design for a trimming, substantially as herein shown.

23,747. SPOON, &c. HENRY J. ROBINSON, Washington, D. C., assignor to Rieman & Dawson, same place. Filed Sept. 28, 1894. Serial No. 524,404. Term of patent 7 years.



*Claim.*—1. The design for the handles of spoons, forks and similar articles substantially as herein shown and described.

2. In a design for the handles of spoons and similar articles, the obverse, substantially as shown and described.

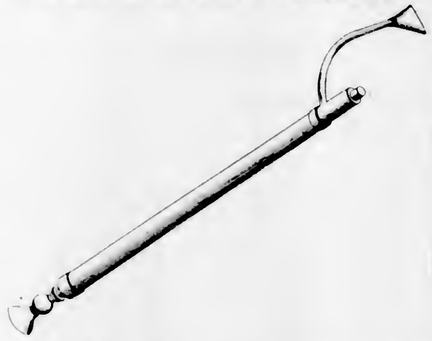
3. In a design for the handles of spoons, forks and similar articles the reverse, substantially as shown and described.

23,748. COVERED DISH. CHARLES W. FRANKHEIM, Wheeling, W. Va. Filed Sept. 29, 1894. Serial No. 524,522. Term of patent 3½ years.



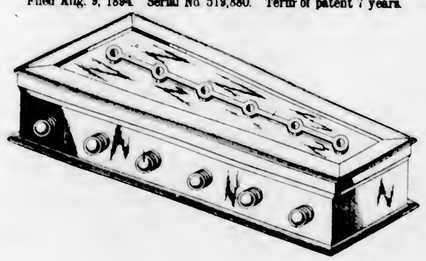
*Claim.*—The design for a covered dish herein shown and described.

23,749. BRUSH-HANDLE. WALTER J. LLOYD, Peabody, Mass. Filed Sept. 12, 1894. Serial No. 522,847. Term of patent 14 years.



*Claim.*—The design for a brush handle herein shown and described.

23,750. SPOOL-HOLDER BOX. FRANCIS A. PHELPS, Baltimore, Md. Filed Aug. 9, 1894. Serial No. 519,880. Term of patent 7 years.



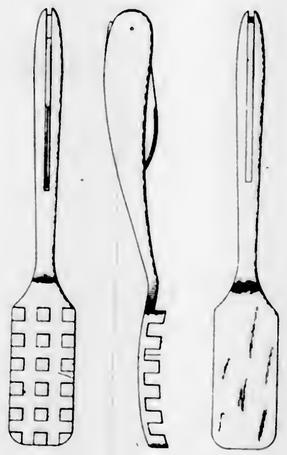
*Claim.*—The design for a box, A, having two long sides tapered or converging toward one end, and also having a ledge, *d*, extending continuously around its top and inclosing a top panel, *e*, with a center ornamental bar *f*, consisting of alternate straight and circular sections, and the long tapered sides of the box having a series of projecting knobs, *g*, arranged in a straight row, as herein shown and described.

23,751. PICTURE-FRAME. CHARLES F. MOSMAN, Bridgeport, Conn., assignor to Andrew Krouse, same place. Filed May 17, 1894. Serial No. 511,614. Term of patent 3½ years.



*Claim.*—The design for picture frames substantially as shown in the accompanying drawing.

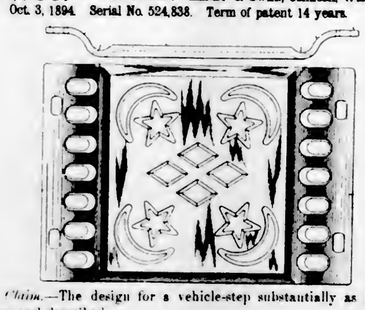
23,752. FISH-SCALER. WILLIAM J. RUEDIGALE, Detroit, Mich. Filed Sept. 25, 1894. Serial No. 524,118. Term of patent 7 years.



*Claim.*—The design for a fish scaler herein described and shown.

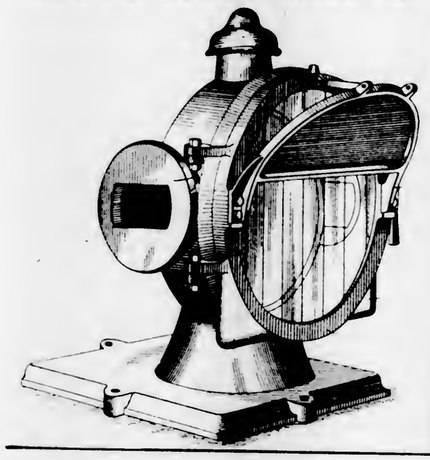


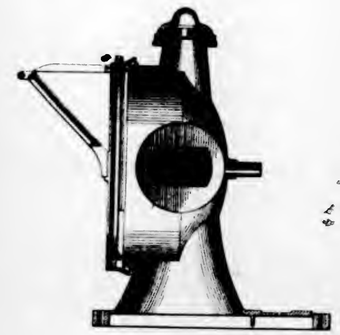
23,753. VEHICLE-STEP. HENRY C. SWAN, Oshkosh, Wis. Filed Oct. 3, 1894. Serial No. 524,838. Term of patent 14 years.

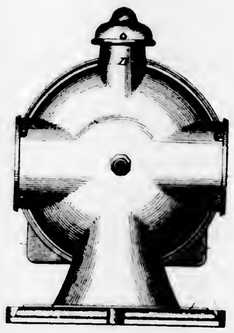


*Claim.*—The design for a vehicle-step substantially as herein shown and described.

23,754. HEADLIGHT-CASE. EDGAR A. EDWARDS, Cincinnati, Ohio. Filed Sept. 21, 1894. Serial No. 523,747. Term of patent 14 years.







*Claim.*—The design for a head-light case, substantially as described and shown.

# TRADE-MARKS

## REGISTERED OCTOBER 30, 1894.

25,406. CORSETS AND WAISTS. GEORGE D. NICHOLS, New York, N. Y. Filed May 31, 1894.

THE HYGIENIC

*Essential feature.*—The words "THE HYGIENIC" inclosed in the representation of a diamond shaped figure. Used since July 1, 1888.

25,407. MEN'S COLLARS. MILLER, HALL & HARTWELL, Troy, N. Y. Filed Oct. 6, 1894.

TA-RA-RA.

*Essential feature.*—The word "TA-RA-RA." Used since February 15, 1892.

25,408. GLOVES AND MITTENS. SARANAC GLOVE COMPANY, Littleton, N. H. Filed Aug. 22, 1894.

SARANAC

*Essential feature.*—The word "SARANAC." Used since 1875.

25,409. BOOTS AND SHOES. J. B. LEWIS COMPANY, Boston, Mass. Filed Oct. 3, 1894.

IMA

*Essential feature.*—The word "IMA." Used since July 1, 1894.

25,410. EMBROIDERY, SEWING, AND FLOSS SILK. THE NEW LONDON WASH SILK COMPANY, New London, Conn. Filed Oct. 1, 1894.

MONTAUK

*Essential feature.*—The word "MONTAUK." Used since March 15, 1894.

25,411. SASH AND CURTAIN CORDS. THE OSBAWAN MILLS COMPANY, Norwich, Conn. Filed July 9, 1894.



*Essential feature.*—The representation of a crown with plumes. Used since January 1, 1886.

25,412. SHEETINGS. JAMES A. ROBINSON, New York, N. Y. Filed Oct. 6, 1894.

SILVER CREST

*Essential feature.*—The words "SILVER CREST." Used since July 1, 1891.

25,413. WOOL PIECE GOODS, INCLUDING SERGES, ESTAMENES, AND SUITINGS. HAMLYN BROTHERS, Buckfastleigh, England. Filed Oct. 6, 1894.

DEVONIA

*Essential feature.*—The word "DEVONIA." Used since 1887.

25,414. MEDALS. GEORGE B. SOLEY, Philadelphia, Pa. Filed Sept. 18, 1894.



*Essential feature.*—The representation of Independence Hall. Used since November 1, 1887.

25,415. MEDALS. GEORGE B. SOLEY, Philadelphia, Pa. Filed Sept. 18, 1894.



*Essential feature.*—A representation of the Liberty Bell. Used since November 1, 1887.

25,416. MEDALS. GEORGE B. SOLEY, Philadelphia, Pa. Filed Sept. 18, 1894.



*Essential feature.*—The representation of a cross and crown. Used since April 1, 1891.

25,417. VITREOUS CHINA. KEYSTONE POTTERY COMPANY, Trenton, N. J. Filed Sept. 29, 1894.



*Essential feature.*—The representation of a keystone. Used since September 5, 1894.



25,418. ANTISEPTIC POWDERS, OINTMENTS, LINIMENTS, AND LOTIONS. EDWARD BLAND, Detroit, Mich. Filed Dec. 29, 1893.

Curasore

*Essential feature.*—The word "CURASORE." Used since January 1, 1894.

25,419. ABSORBENTS FOR SURGICAL AND OTHER PURPOSES. JAROS HYGIENIC UNDERWEAR COMPANY, New York, N. Y. Filed Oct. 1, 1894.

SANIA

*Essential feature.*—The word "SANIA." Used since August 15, 1894.

25,420. CERTAIN INTERNAL AND EXTERNAL REMEDIES. WILLIAM RITHEIER, Milwaukee, Wis. Filed Sept. 27, 1894.

FATHER JANSEN

*Essential feature.*—The words "FATHER JANSEN." Used since December 17, 1892.

25,421. LICORICE ROOTS, STICKS, PASTE, AND PELLETS. CARNOU & TUR, Mousnac, France. Filed July 14, 1894.

Figaro.

*Essential feature.*—The word "FIGARO." Used since January 1, 1894.

25,422. EFFERVESCING POWDER FOR A SUMMER BEVERAGE. HENRY MEAKIN, Stockton, Cal. Filed Aug. 24, 1894.

SPARKLING NECTAR-PHOSPHATE

*Essential feature.*—The fac-simile signature "HENRY MEAKIN" and the words "SPARKLING NECTAR PHOSPHATE." Used since December, 1893.

25,423. LAGER-BEER. GRAND RAPIDS BREWING COMPANY, Grand Rapids, Mich. Filed Sept. 17, 1894.

Silver Foam

*Essential feature.*—The words "SILVER FOAM." Used since August 1, 1894.

25,424. WHISKY. CARSTAIRS, MCCALL & Co., Philadelphia, Pa. Filed Oct. 5, 1894.

CARSTAIRS' MONOGRAM

*Essential feature.*—The words "CARSTAIRS' MONOGRAM." Used since August 1, 1893.

25,425. CURED MEATS. THE JOSEPH R. PEEBLES' SONS COMPANY, Cincinnati, Ohio. Filed July 16, 1894.

SWEET HICKORY

*Essential feature.*—The words "SWEET HICKORY." Used since February 27, 1892.

25,426. LARD. F. W. WAGENER & Co., Charleston, S. C. Filed July 2, 1894.

Ivory

*Essential feature.*—The word "IVORY." Used since January 1, 1884.

25,427. LARD. THE JOSEPH R. PEEBLES' SONS COMPANY, Cincinnati, Ohio. Filed July 16, 1894.

SWEET HICKORY

*Essential feature.*—The words "SWEET HICKORY." Used since February 27, 1892.

25,428. PERFUMERY, SOAPS, WASHES, LOTIONS, AND SIMILAR ARTICLES. WILLIAM SPARKS THOMSON, London, England. Filed Oct. 2, 1894.

MATSUKITA

*Essential feature.*—The word "MATSUKITA." Used since January 1, 1892.

25,429. TOILET SOAP. GRAHAM BROTHERS & Co., Chicago, Ill. Filed Oct. 1, 1894.

LANA OIL

*Essential feature.*—The words "LANA OIL." Used since February 1, 1894.

25,430. POLISHING PREPARATIONS. CHEMISCHE FABRIK HERRMANN AND ADOLF LUBSZYNSKI, Berlin, Germany. Filed Sept. 24, 1894.



*Essential feature.*—The representation of a Uhlan's helmet or tschako. Used since September 1, 1892.

25,431. CLEANING AND POLISHING PREPARATIONS. JOSEPH PICKERING & SONS, Sheffield, England. Filed Oct. 6, 1894.

ZAMPO

*Essential feature.*—The word "ZAMPO." Used since January 1, 1894.

25,432. WHITE LEAD. HENRY A. CARROLL, Memphis, Tenn. Filed Aug. 13, 1894.

SILVER SHIELD

*Essential feature.*—The words "SILVER SHIELD." Used since January 1, 1894.

25,433. PAINTERS' SIZE. A. HASTRUP & Co., Hamburg, Germany. Filed July 23, 1894.



*Essential feature.*—The representation of a man standing on a ladder and painting a ceiling. Used since May 25, 1893.

25,434. BROOMS. MERKLE-WILEY BROOM COMPANY, Paris, Ill. Filed Sept. 24, 1894.




*Essential feature.*—The representation of a broom with the words "PARIS BROOM WORKS" on the handle and the words "THE PARIS BROOM" above, and "PARIS, ILL.," below the handle. Used since February 1, 1894.

25,435. PIANO TUNING-PINS. ALFRED DOLGE & SON, New York, N. Y. Filed Sept. 24, 1894.



*Essential feature.*—The representation of an eagle with spread wings and a crown. Used since September 1, 1893.

25,436. CERTAIN NAMED IRON, STEEL, AND LEAD MANUFACTURES. RYLANDS BROTHERS, LIMITED, Warrington, England. Filed Oct. 6, 1894.




*Essential feature.*—The monogram "R B" and letter "W" inclosed in an oval figure. Used since 1805.

25,437. BINDING AND PAPER-BOX MACHINES. GEBRÜDER BREHMER, Leipsic, Germany. Filed Aug. 21, 1894.



*Essential feature.*—The representation of an open book. Used since September 15, 1893.

PHOTO-LITHO. THE NORRIS PETERS CO. WASHINGTON D.C.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## DECISION OF SECRETARY OF THE INTERIOR.

RENEWAL OF FORFEITED APPLICATIONS.

The right of an applicant to renew a forfeited application under section 4897 is exhausted when once exercised.

DEPARTMENT OF THE INTERIOR,
*Washington, D. C., October 12, 1894.*

SIR: Referring to your letter of the 22d of June, 1894, requesting to be advised as to whether section 4897, Revised Statutes of the U. S., provides for more than one renewal of an original application for patent, I transmit herewith a copy of an opinion of the Assistant Attorney-General for this Department thereon, to whom the matter was referred, and have to state that the conclusion therein reached meets with my approval.

Very respectfully,

WM. H. SIMS,
*Acting Secretary.*

The Commissioner of Patents.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE ASSISTANT ATTORNEY-GENERAL,
*Washington, D. C., June 30, 1894.*

*To the Secretary of the Interior.*

SIR: I am in receipt, by reference, of a communication from the Commissioner of Patents, submitting for my opinion the following question:

"Does section 4897, Revised Statutes, provide for more than one renewal of an original application, even though attempt is made to file the second renewal within two years from the original date?"

Section 4885 of the Revised Statutes provides as follows:

Every patent shall bear date as of a day not later than six months from the time at which it was passed and allowed and notice thereof was sent to the applicant or his agent; and if the final fee is not paid within that period the patent shall be withheld.

Failure to pay the final fee within six months from the date when the application was passed and allowed and notice thereof was sent to the applicant forfeits the right to a patent under said application; but section 4997 of the Revised Statutes provides that:

Any person who has an interest in an invention or discovery, whether as inventor, discoverer, or assignee, for which a patent was ordered to issue upon the payment of the final fee, but who fails to make payment thereof within six months from the time at which it was passed and allowed, and notice thereof was sent to the applicant or his agent, shall have a right to make an application for a patent for such invention or discovery the same as in the case of an original application. But such second application must be made within two years after the allowance of the original application. But no person shall be held responsible in damages for the manufacture or use of any article or thing for which a patent was ordered to issue under such renewed application prior to the issue of the patent. And upon the hearing of renewed applications preferred under this section, abandonment shall be considered as a question of fact.

I am unable to discover any expression in the statute which either directly or by implication indicates that it was intended to confer upon the applicant for patent the right to more than one renewal of his application where he has by neglect or refusal failed to prosecute his claim and perfect his right within the time required by the statute. His failure to pay the final fee within six months from the date of the approval of his application forfeited his right to a patent and was so far an abandonment and surrender of his exclusive right to the invention that no person could be held responsible in damages for the manufacture or use of the article or thing for which patent was applied for prior to the issue of said patent.

The effect of the statute is to restore to the applicant rights that have been forfeited and surrendered to the public by his failure to prosecute and perfect his claim within the time required by the statute. The act did not contemplate the restoration of a right that had been again forfeited by the failure of the applicant to pay the final fee within the limit prescribed by the statute, and the public would be thereafter justified in regarding his failure to perfect his application as an abandonment of the invention. Besides, the expression, "but such *second* application must be made within two years," &c., implies that no other application should be allowed.

I am, therefore, of the opinion that the statute does not contemplate that more than one renewal may be made, even though such second application for renewal is made within two years from the date of the original application.

Very respectfully,

(Signed) JOHN I. HALL,
*Assistant Attorney-General.*

Approved:

(Signed) HOKE SMITH,
*Secretary.*

## DECISIONS OF THE U. S. COURTS.

### Supreme Court of the United States.

WRIGHT *v.* YUENGLING.

*Decided October 22, 1894.*

1. WRIGHT—FRAMES FOR HORIZONTAL ENGINES—LIMITED TO THE EXACT CONSTRUCTION—AND AS TO CLAIM 1, NO INFRINGEMENT.

Patent No. 144,818, issued November 18, 1873, to William Wright, for an improvement in frames for horizontal engines, examined and *Held* that, as the novelty of the invention is at least open to doubt, the claims must be limited to a rigid construction, and, consequently, that claim 1 is not infringed by a frame which omits the "semicircular connecting-piece *d*."

2. SAME—SAME—PATENTEE CANNOT SAY THAT AN ELEMENT CLAIMED IS IMMATERIAL.

Where an element is described, declared to be an essential feature of the invention, and made an element in the claims, *Held* that the patentee is not at liberty to say that it is immaterial or that a device which dispenses with it is an infringement. (*Vance* v. *Campbell*, 1 Black, 427; *Water-Meter Co.* v. *Desper*, 101 U. S., 332; *Gage* v. *Herring*, 107 U. S., 640, 648; *Gould* v. *Rees*, 15 Wall., 187; *Brown* v. *Davis*, 116 U. S., 237, 249.)

3. SAME—SAME—AS TO CLAIM 2, VOID FOR LACK OF PATENTABILITY.

The state of the art disclosed that a cylindrical guide, a trough-like connection, and a combination of flat guides and trough each was old. *Held* that claim 2, which covers a combination of the cylindrical guide and trough-like connection, is void, as covering a mere aggregation, or, if the combination is superior to the old one, it is a difference in degree, not rising to the dignity of invention.

APPEAL from the Circuit Court of the United States for the Southern District of New York.

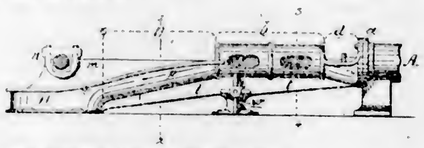
STATEMENT OF THE CASE.

This was a bill in equity for an injunction and the recovery of damages for infringement of Letters Patent No. 144,818, issued November 18, 1873, to the plaintiff Wright, for an improvement in frames for horizontal engines.

In his specification the patentee stated the object of his invention to be the—

attainment of both lightness and strength in the construction of frames for horizontal engines, and at the same time to dispense with much of the fitting and other costly work demanded by the ordinary frames of engines of this class.

The following drawing exhibits the material parts of the invention:



The patentee further stated that—

the extreme rear end of the frame, and forming part of the same, is the head *a* of the steam-cylinder A, and the portion of the frame which, in ordinary engines, is devoted to the usual flat slides, consists of a hollow cylinder, *b*, arranged concentrically with the steam-cylinder, and serving as a guide for the cross-head, the guiding-cylinder being simply bored out to receive a cross-head, adapted to it in a manner which need not here be explained, as it forms no part of my present invention. There are lateral openings *e e* in this cylindrical guiding portion of the frame, in order that access may be had to the cross-head. * * * A semicircular connecting-piece, *d*, merges at one end in the guiding-cylinder *b*, and at the other end in the cylinder-head *a*, thus uniting the two, the open top of the said connecting-piece permitting ready access to be had to the stuffing-box of the cylinder-head.

This combination, in a horizontal engine-frame, of the guiding-cylinder *b*, cylinder-head *a*, and connection *d*, constitutes an especial feature of my invention. The cylinder *b* not only forms the main body of this portion of the frame, but serves at the same time as a cross-head guide, which can be readily prepared for service by the same bar which is used for boring out the cylinder. * * * * * * * *

From the front of the guiding-cylinder *b* to the point *x*, where it meets the base H, the frame is made in the form of an inclined concavo-convex trough, D, deep enough to permit the free movement of the connecting-rod, and this trough, * * * on the line 1 2, has one side, *m*, the upper edge of which is continued in a plane coinciding with the center of the cylinder *b*, from the latter to the enlargement *n*, for receiving the bearing of the crank-shaft, the opposite side *p* of the trough extending from the guiding-cylinder *b*, with a gradually-descending curve to the base H, into the upper portion of which it merges. * * * * * * *

A strengthening-rib, *q*, extends along the upper edge of the side *p* of the trough-like connection D, and is continued along the upper edge of the base H, and also along the upper edge of the side *m* of the trough, and terminates at an extension, *f*, of the cylinder head *a*; and in order to add vertical strength to the frame a central web, *t*, extends from the base H to the cylinder-head *a*, this web merging into the foot *w*, which serves as one of the supports of the frame.

In horizontal engines there is necessarily an excessive lateral strain on the frame between the cross-head guides and the crank-shaft. This strain is effectually resisted by the comparatively light trough-like portion of the frame between the crank shaft and guiding-cylinder.

His claims were as follows:

1. A horizontal steam-engine frame in which a cylinder, *b*, for guiding the cross-head, is combined with the cylinder-head *a* and semicircular connecting-piece *d*, substantially in the manner described.
2. The combination, in a horizontal engine-frame, of the guiding-cylinder *b*, base H, and trough-like connection D.
3. A horizontal engine-frame composed of the cylinder-head *a*, guiding-cylinder *b*, connecting-piece *d*, trough D, base H, and web *t*, all combined substantially in the manner described.

The answer set up the defenses of non-infringement and want of patentable novelty by reason of certain prior patents.

Upon a hearing in the circuit court upon pleadings and proofs the bill was dismissed upon these grounds and defendant appealed.

*Mr. A. M. Todd* for the appellant.

*Mr. B. F. Lee, contra.*

Mr. Justice BROWN delivered the opinion of the Court.

The object of the invention in question was to add both lightness and strength to the construction of frames for horizontal single-crank engines. To attain this the patentee, instead of employing the ordinary flat parallel slides for the piston and cross-head, makes use of a hollow cylinder, arranged concentrically with the steam-cylinder, and serving as a guide for the cross-head, together with a trough connecting this cylinder with the base H, and deep enough to permit the free movement of the connecting-rod. This construction is further strengthened by a rib extending along the upper edge of one side, *p*, of the trough D, continued along the upper edge of the base H, and also along the upper edge of the other side, *m*, of the trough, and terminating at an extension of the cylinder-head *a*; and also, to add vertical strength to the frame, a rib or web, *t*, was extended from the base H to the cylinder-head *a*, merging in a foot, *w*, which serves as one of the supports of the frame. The cylinder-head *a*, the guiding-cylinder *b*, with its connecting-piece, the trough D, the base H, and the web *t*, are cast in a single piece and firmly bolted to the head of the steam-cylinder A.

First. The first claim is for a combination of the cylinder *b*, the cylinder-head *a*, and the semicircular connecting-piece *d*, while the third claim includes the same elements and, in addition thereto, the trough D, the base H, and the web *t*.

In view of the fact to which we shall hereinafter call attention, that a cylinder had been used long before for guiding the cross-head of a piston, it is at least open to doubt whether there was any novelty in the first claim. Such novelty, if there be any at all, consists in leaving certain lateral openings, *e e*, in the guiding-cylinder, and in taking half the top off of such cylinder as it approaches the steam-cylinder, in order to give convenient access to the cross-head. But, in the view we take of the alleged infringing device, it is unneccessary to express a decided opinion upon this point.

The connecting-piece *d*, which is described in the specification as a semicircular connecting-piece merging at one end in the guiding-cylinder and at the other end in the cylinder-head, thus uniting the two, is not only made an element of both these claims, but is said to constitute, in connection with the guiding-cylinder and cylinder-head, a special feature of the in-





vention. This so-called "connecting-piece" is distinguished from the guiding-cylinder in that it is only semicircular, and thus admitting of access to the stuffing-box with perfect freedom throughout a complete half-circle. This access is had, not through a mere hole or opening, such as are *e e*, but through such an opening as can be obtained by cutting away the upper half of the frame at this point.

The device used by the defendant contains a similar cylinder for guiding the cross-head, and a trough connecting it with the base; but this cylinder, instead of having its entire interior surface bored out, so that it may guide the cross-head in the same way that the piston is guided in the steam-cylinder, (as in the Wright patent,) merely contains an upper and a lower guide, formed of two slides or fitting-strips, the surfaces of which are bored out, but no other portion of the cylinder. We do not regard this, however, as a material departure from the Wright patent, as it constitutes a mere difference in detail of construction, not affecting in any way the operation of the cross-head of the cylinder, or changing materially the efficiency of such cylinder. Nor do we think it material that in defendant's structure there is no cylinder-head forming part of, cast with, and constituting a portion of the engine-frame, since the frame of the defendant's device terminates in a flange adapted to be bolted to a cylinder-head, and thus in fact constituting a part of it.

But the absence of the semicircular connecting-piece *d* is a circumstance worthy of more serious consideration. In the defendant's engine there is no such semicircular connecting-piece as is described in the Wright patent, but the guiding-cylinder extends backward to a connection with the head of the steam-cylinder, the side of such guiding-cylinder, through which the cross-head operates, containing an opening oval in shape and narrower at each end than in the center. The equivalent for the connecting-piece, if found at all, must be in this continuation of the guiding-cylinder backward to the steam-cylinder. But this portion of the cylinder is neither scooped out in a semicircular form, nor does it admit of ready access to the cross-head shown at this point in the Wright patent. Instead of access to the cross-head being easier at this point than any other, it is in reality more difficult, as the oval opening is narrower there than in the center. Now, while this semicircular connecting-piece may be an immaterial feature of the Wright invention, and the purpose for which it is employed accomplished, though less perfectly, by the extension of the guiding-cylinder in the manner indicated in defendant's device, yet the patentee, having described it in the specification and declared it to be an essential feature of his invention, and having made it an element of these two claims, is not now at liberty to say that it is immaterial, or that a device which dispenses with it is an infringement, though it accomplish the same purpose in, perhaps, an equally effective manner. (*Vance* v. *Campbell*, 1 Black, 427; *Water-Meter Co.* v. *Desper*, 101 U. S., 332; *Gage* v. *Herring*, 107 U. S. 640, 648; *Gould* v. *Rees*, 15 Wall., 187; *Brown* v. *Davis*, 116 U. S., 237, 249.)

If the guiding-cylinder of this patent had been a pioneer invention, it is possible the patentee might have been entitled to a construction of this claim broad enough to include the defendant's device, notwithstanding the absence of the semicircular connecting-piece; but as we have already said, the novelty of the invention is at least open to doubt, and we think the patentee should be held to a rigid construction of these claims. The opening in the guiding-cylinder, which is supposed to be the equivalent of the connecting-piece *d*, instead of increasing so as to form a semicircular opening, as in the patent, decreases, so as to prevent, if anything, ready access to the stuffing-box, and, under the circumstances, does not constitute a mechanical equivalent for it. Indeed, the guiding-cylinder of the defendant's engine bears a stronger resemblance to those shown in the prior patents hereinafter cited than to that of the Wright patent, and hence if the prior patents anticipate the Wright cylinder, the defendant's does not infringe it.

Second. The second claim of the patent is for—

the combination, in a horizontal engine-frame, of the guiding-cylinder *b*, base H, and trough-like connection D.

The guiding-cylinder, which is used in lieu of the ordinary parallel slides, was, however, by no means a novelty in the construction of engine-frames. It is found in different stages of perfection in several prior patents, viz: in a patent issued to Samuel Wright as early as 1837, for locomotive-engines, and was there used, as the patentee states, "to subserve the twofold purpose of a (steam) pump and guide;" in the patent to Gelston Sanford of February 15, 1859, in which the invention related to elongating the cylinder,

by which means it becomes a part of the frame, used for the support of the crank-shaft, and so constructed that when bored out forms a guide and rest for the cross-head;

in the patent to William Wright of August 8, 1865, in which the movement of the piston is transmitted to the main crank by means of a connecting-rod, jointed to the cross-head, to which the piston is attached, and which is guided in ways or guides, fast to the frame; and in which a semicircular connecting-piece is also shown; in that to John B. Root of August 14, 1866, in which the piston also works in two cylindrical guides attached to the cylinder-heads; in that to Maxwell and Cope of February 13, 1872; in that to Edward H. Cutler of November 26, 1872; and in that to George H. Babcock of December 10, 1872.

It is true that none of these patents exhibit distinctly the trough-like connection D of the Wright patent, but that also is found in the patent to Chilion M. Farrar of March 19, 1872, in which it is fully shown in the drawings, though not described in the specification, and is used in connection with the ordinary flat guides or parallel slides.

Wright's only invention, then, was in the combination of the cylindrical guide with the trough shown in the Farrar patent. Did this accomplish a new and valuable result it is quite possible that a patent therefor might have been sustained, but we do not find this to be the case. The cylindrical guide performs the same functions as in the prior patents; the trough, in which the connecting-rod works in the Farrar patent, is practically the same as in the Wright patent, and the combination is a mere aggregation of their respective functions. If the combination of the trough

and cylindrical guide of the Wright patent gives greater lightness and strength to the frame than the combination of the trough and the flat guides of the Farrar patent, it is a mere difference in degree, a carrying forward of an old idea, a result, perhaps, somewhat more perfect than had theretofore been attained, but not rising to the dignity of invention. We have repeatedly held patents of this description to be invalid. (*Stimpson* v. *Woodman*, 10 Wall., 117; *Smith* v. *Nichols*, 21 Wall., 112; *Guidet* v. *Brooklyn*, 105 U. S., 550; *Hall* v. *Macneale*, 107 U. S., 90.)

The decree of the court below, dismissing the bill is, therefore, affirmed.

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## Supreme Court of the United States.

### WRIGHT *v.* BEGGS.

*Decided October 22, 1894.*

APPEAL from the Circuit Court of the United States for the Southern District of New York.

*Mr. A. M. Todd* for the appellant.

*Mr. B. F. Lee, contra.*

Mr. Justice BROWN delivered the opinion of the Court.

This was a suit against the defendant Beggs as maker of the engine used by Yuengling, and is disposed of by the opinion in the last case holding the Wright patent to be invalid.

The decree of the court below dismissing the bill is, therefore, affirmed.

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## U. S. Circuit Court—Southern District of New York.

### RUDOLPH *et al. v.* WILLIAMS *et al.*

*Decided December 6, 1893.*

WILLIAMS—STONE-SAWING MACHINE—PATENT NO. 429,874—BILL IN EQUITY, SECTION 4915—DECISION OF THE COMMISSIONER OF PATENTS FOLLOWED.

Where a defeated party to an interference in the Patent Office files a bill in equity, under section 4915, against his successful contestant and patentee as defendant, the propositions submitted by the defendant that under section 4915 something more than the ordinary *quantum* of evidence is required of the complainant and that the suit must proceed upon the same lines as though it were a bill filed to set aside a judgment at law certainly have force. *Held*, however, that it was unnecessary to discuss them in this case, as the weight of evidence sustains the defense.

STATEMENT OF THE CASE.

This was a suit by Henry Rudolph and others against Benjamin A. Williams, George N. Williams, Jr., and others to obtain an adjudication that complainants were entitled to a patent.

The bill in this action was filed under section 4915 of the Revised Statutes, which, so far as applicable to the present controversy, reads as follows:

Whenever a patent on application is refused, either by the Commissioner of Patents or by the Supreme Court of the District of Columbia upon appeal from the Commissioner, the applicant may have remedy by bill in equity; and the court having cognizance thereof, on notice to adverse parties and other due proceedings had, may adjudge that such applicant is entitled, according to law, to receive a patent for his invention, as specified in his claim, or for any part thereof, as the facts in the case may appear.

The question involved is purely one of fact. It is whether Henry Rudolph or George N. Williams, Jr., is the inventor of the—

method of feeding the reciprocating saw-blade of a stone-sawing machine, which consists in imparting to said saw-blade, during its reciprocating movements, a forward or feeding movement during both its backward and forward strokes, said feeding movement corresponding in extent or rate to the speed at which the saw-blade is moving forward or back, at all times, substantially as set forth

The matter in controversy was the subject of interference proceedings between these parties. The Examiner of Interferences awarded priority of invention to Rudolph. His opinion was reversed by the Examiners-in-Chief, and their decision awarding priority to Williams was affirmed by the Commissioner.*

The opinion of the Commissioner of Patents on appeal from the decision of the Examiners-in-Chief in the interference proceedings was as follows:

MITCHELL, *Commissioner:*

The issue in controversy is as follows:

The herein-described method of feeding the reciprocating saw-blade of a stone-sawing machine, which consists in imparting to said saw-blade, during its reciprocating movements, a forward or feeding movement during both its backward and forward strokes, said feeding movement corresponding in extent or rate to the speed at which the saw-blade is moving forward or back, at all times, substantially as set forth.

Prior to the making of the invention herein involved diamond saws had been constructed so as to cut only during the forward movement of the saw—that is to say, the feeding mechanism of the saw blade operated only during the forward movement of the saw and was inoperative during its backward movement. The downward pressure of the saw-blade was relieved during its backward movement by means of a "lift" mechanism. The method or process in issue was reduced to practice when the invention was perfected by disconnecting the "lift" mechanism, thereby permitting the saw to cut while traveling in each direction, and by adding a second ratchet and ratchet-lever with appropriate mechanism for imparting a continuous or nearly continuous rotary movement in the place of the previous intermittent movement. There are therefore two elements present in the method of the issue—to wit, imparting a backward and forward movement to the saw with pressure upon the stone during both movements and feeding the saw to the stone upon both strokes, the feeding movement corresponding in extent or rate to the speed in which the saw-blade moves.

This preliminary discussion as to the construction of the issue seems to be necessary in order to determine what proof is required to show conception of the invention. Obviously it is not sufficient to prove conception of the idea of making a diamond saw cut both ways, for that would simply be the result of the method involved in the issue. It should be determined when the conception extended to the method of doing it substantially as it was finally done—that is to say, by taking off the lift and putting on a ratchet apparatus of such a kind as would give the continuous movement to the feed-operating shaft instead of an intermittent movement.

Williams's preliminary statement avers that he conceived the invention in July, 1886; that he disclosed it to Benjamin A. Williams in the same month; that he explained the invention to Rudolph, his rival in this interference some time between the 1st of August and the 1st of September; that he instructed Rudolph to put such invention on a stone-sawing machine belonging to himself, giving him full instructions as to the invention and how to apply it; that it operated successfully some time during the month of October; that about October 25, 1886, he made a pencil drawing and submitted it to his solicitor, from which to apply for Letters Patent.

In support of this statement Williams testifies that he conceived the invention in July, 1886; that about the middle of that month he explained to his cousin, Benjamin A. Williams, the nature of the mechanism or device which he intended to employ; that he reduced the invention to practice through Rudolph, his engineer; that he first directed Rudolph to remove

*G. N. Williams, Patent No. 429,874, June 10, 1890, stone-sawing machine.





the lifting apparatus from the saw, as he wished to see how the machine would work without the "lift;" that the saw ran without the lift for about a month; that at the end of the month he instructed Rudolph to have the ratchet attachment made and put upon the machine, which he did some three or four weeks afterward; that the object in removing the lift was to ascertain by trial whether it was necessary to relieve the blade in order to permit the detritus to escape from the channel in the stone, it having always been considered impossible to run a diamond saw without a lift, on account of the supposed tendency to clog the blade, thereby causing breakage; that this trial proved to him that there was nothing to prevent feeding the saw during both the forward and backward stroke; that after the apparatus was changed to feed during both movements of the saw the lift was never replaced; that the saw has been used ever since continuously, and that his first idea that Rudolph claimed the invention was some time in November or December, 1886, from common report. Williams further testifies that the rachet device did not feed exactly at first, and was removed without having actually been the means of sawing any stone; that it was soon refitted and replaced; that after it had been run successfully a part of the day it was removed, because he did not wish outside parties to know that he had succeeded in making a diamond saw cut in both directions, and that he cautioned his men to say nothing about it, as he thought of taking out a patent. Williams further testifies positively that he did not derive his first ideas of the invention from Rudolph, nor did he receive from any one any suggestions as to how the invention ought to be embodied in a working attachment to a stone-saw.

Benjamin A. Williams, a cousin of the applicant, states that in July, 1886, Williams told him how to make a saw cut both ways by applying ratchets to make the saw feed in both directions; that he said "he was going to take off the lift and put on this other ratchet;" that his cousin ordered the changes referred to; that the device was taken off for fear some outside party would see it and apply for a patent; that it was put on again and the saw run as soon as the solicitor advised them it was safe to do so, and that it was left on the machine at work and "it is there still."

George N. Williams, father of the applicant, also gives corroborating testimony.

Henry Muller also testifies on behalf of Williams. Muller was in charge of the saw to which the attachment was originally applied at the time when it was applied. He testifies that so far as he knew Mr. Williams ordered the attachment to be put upon the saw; that his reasons for thinking so are that he saw Mr. Williams explaining to Mr. Rudolph, but was not able to understand what he was saying, but that Rudolph told him "that Mr. Williams wanted to get the saw fixed so that it would cut both ways, and he said Mr. Williams wants to take a patent on that;" that this was about July, 1886; that when the attachment was taken off "Mr. Williams came up and told us to take it off;" that when it was put on "Mr. Williams told us to put it on again," and that nobody but Mr. Williams "gave any orders about putting on or taking off the attachment" in his presence; that Rudolph told him that Williams had shown him drawings for the attachment, and that Rudolph never told him that he showed Williams how to make and put on the attachment.

William Murphy, formerly in the employ of Williams, testifies that he made acquaintance with Rudolph on the evening when the latter took charge of Mr. Williams's boiler and engine; that from that time to the present he had seen him frequently; that he had several conversations with Rudolph concerning the feed attachment in his engine-room, and that Rudolph always gave him "to understand that it was Mr. George N. Williams that first proposed the altering of the saws to cut both ways."

This body of testimony on behalf of Williams is in a broad way consistent, seems to be truthful, and is fitted to discharge the burden of proof which rests upon him, unless Rudolph shall establish an earlier date by testimony equally weighty and credible.

Rudolph testifies that he conceived the invention on October 26, 1879, while on a visit which he made with the witness Zetsche to a stone-yard in Mott Haven; that while there he saw a diamond saw in operation and noticed that it was cutting only in one direction; that he saw it would be a simple matter to make it cut both ways; that he "made a little sketch and explained it to Zetsche which way that saw could be made to cut backward also forward from both ends;" that this sketch was not preserved; that to accomplish this result he intended to put "an extension in the 'rocker-arm' which had been placed on the machine and put another lever to the feed-shaft where I would have placed another ratchet;" that he would take the "lift" off the machine and run the saw without it; that where a double ratchet was put on the machine the lift would be of no use; that he fixes the date of his visit to the Mott Haven stone-yard by his shipping on that date, October 26, 1879, his furniture to Peekskill, and introduces in evidence a duplicate receipt, dated October 26, 1879, from the captain of the steamer which had transported his furniture to Peekskill. He testifies that the sketches he showed Zetsche on this date were for a double-ratchet motion for a diamond saw, and were rough sketches made at the time with lead-pencil, and that Zetsche understood the invention. On cross examination, however, he states that he does not think that Zetsche perfectly understood the invention at the time he says he described it to him in 1879.

Adolph Zetsche, who is a machinist, swears that he went into the Mott Haven stone-yard with Rudolph on October 26, 1879. He fixes the date because it was his birthday; that when they were coming out of the yard Rudolph told him that "by putting on another arm and ratchet he could make the saw feed both ways. He described a little of it there, but not much, and I did not take much notice of it;" and in answer to the question, "On this occasion you have just referred to, did Mr. Rudolph make any sketches to illustrate or explain his idea?" he says, "He made a little of it; but mostly I suppose I forgot."

This is the evidence upon which rests the so-called "conception of 1879." Even if Zetsche's testimony is to be credited it is not clear that he derived from Rudolph any conception of the method to be employed for securing the desiderated result. In a fair sense it may be said that Rudolph's conception in 1879 of the subject-matter in issue rests upon his uncorroborated testimony, which certainly is not a sufficient basis for a decision in his favor upon that question, unless such testimony is absolutely unimpeached and unaccompanied by circumstances tending to impair its credibility. Unfortunately for Mr. Rudolph it appears that October 26, 1879, fell on Sunday; that the stone-yard was not open on Sundays, and that there was no diamond saw there at all at that time. In rebuttal Rudolph says that he was in error as to the day of his visit to the stone-yard, and that it should have been October 28, 1879; but this explanation involves a conflict between his testimony and Zetsche's, who distinctly says that the event took place on October 26, 1879, because it was his birthday. Zetsche was not called in rebuttal. It is impossible to find from this testimony that Rudolph conceived the invention in 1879.

Rudolph went into the employ of R. A. & G. N. Williams, Jr., (the latter partner being the other party to this interference,) on May 17, 1886, to act as engineer and oversee the machinery in their stone-yard. He says that on the day of his being employed he looked over the machinery and remembered when he first thought of the improvement in 1879. On cross-examination, however, he testifies that he had forgotten all about the invention until his recollection was re-

vived on getting his situation at Williams's yard. He says also that he told Zetsche at that time that he would now go to work to try his invention, if Mr. Williams would give him permission, and also that he told his family; that he made more sketches of the invention at Zetsche's home on the evening of May 17, 1886, and told him (Zetsche) that he would let him do the work for him whenever he got the privilege to put the invention on the saw.

Zetsche states that Rudolph reminded him of his invention on the same day that he got the job and said that he had got a good show to put it on if the boss would let him; that a sketch was made by Rudolph and shown him, and that he guesses this sketch was thrown away. Rudolph testifies to other sketches made in June or the beginning of July, 1886, in the presence of his wife and daughter, and that these sketches were not preserved.

Adele Rudolph testifies that her father said on the day that he took his position in Williams's stone-yard that the saw cut only one way and that he knew how he could make it cut in both directions, doing double the work in the same time, and that her father made some sketches at home in the evening, right after Decoration day.

The trouble with this testimony is that it is indefinite and, it must be added, unreliable. No sketches are produced in evidence, nor is there any description by any witness clearly showing that Rudolph conceived, not only the result to be accomplished, but the method of its accomplishment. If Rudolph considered himself the inventor, and if the reduction to practice under the direction of Williams was a reduction to practice of ideas previously thought out by Rudolph, it is very strange indeed that the witness Muller, who had charge of the diamond saw that was altered, should have been told by Rudolph himself that Mr. Williams wanted to get that saw fixed so that it would cut both ways and that Mr. Williams was to get a patent upon it without asserting himself any claim whatever to the invention.

It is true that Peterson testifies that about June 11 or 12, 1886, Rudolph explained to him that the saw at that time cut on only one stroke, and that he thought he could make it cut on both strokes, and that Rudolph said he was going to take out a patent on it. Peterson fixes the date by a letter from one James Callery which he says he received at that time. This letter referred to private business solely, and Peterson admits that Rudolph called frequently upon him before and after June, 1886, and that he received numerous other letters from this same James Callery. Cross-question 41 and its answer are as follows: "Can you swear positively that in one of his later visits to you, in 1886, Mr. Rudolph did not call at the same time that you received a letter from Mr. Callery? A. I can't swear positively, but he may have been there on the same day when I received a letter from Mr. Callery, but I don't remember that he was."

It should be added that none of the witnesses for Rudolph speak of the removal of the lift as part of Rudolph's conception and sketches, and that feature, as has been seen, is an essential part of the method of the issue. Williams's conception, which is proven to have been in July, 1886, included the removal of the lift as well as the alteration in the ratchet mechanism.

Rudolph's testimony as to the reduction to practice is diametrically opposite to that of Williams. He says that he was first to remove the lift, and communicated the invention to Williams. Williams testifies that he communicated the invention to Rudolph, and instructed Rudolph to remove the lift and do the mechanical work to make the alteration. It is difficult to conceive of a more direct conflict of testimony. As has been seen, however, Williams's testimony as to the reduction to practice is substantially corroborated, and I am compelled to accept it as in the main correct. This involves the rejection of the testimony of Rudolph as to a matter where he clearly could not have been mistaken. A familiar rule requires that little, if any, weight should be attached to the balance of his testimony where it is coincident with the dictates of self-interest.

There are several other items of evidence to which I do not deem it necessary to advert in detail. I have examined the decision of the Examiners in-Chief with reference to them and concur with the conclusions with respect to such testimony reached in that opinion, and I concur also in the general conclusion of the Examiners-in-Chief that Williams is the real inventor of the method disclosed in the issue, and that the testimony, so far as it tends to the opposite result, is not to be credited.

The decision of the Examiners-in-Chief is affirmed.

*Mr. James C. Chapin* for the complainants.

*Mr. Walter S. Poor* for the defendents.

COXE, *J.:*

It is argued by the defendants that a court of equity should not, under the provisions of section 4915, award a patent to a party who has litigated the question of priority of invention through all stages of the Patent Office and been defeated simply because the court, if the question had been originally presented to it, would have reached a different conclusion. It is insisted that something more than the ordinary quantum of evidence is required of a complainant who seeks to secure a decree, upon a simple question of fact, at variance with the deliberately expressed judgment of the Patent Office officials, and it is suggested that the action must proceed upon the same lines as though it were a bill filed to set aside a judgment at law. There is certainly force in these propositions, (see *Morgan* v. *Daniels*, 67 O. G., 811; 153 U. S., 120; 14 Sup. Ct., 772;) but it is unnecessary to discuss them, for the reason that upon the record now presented the court is of the opinion that the weight of evidence sustains the contention of the defendants. There is too much of suspicion, improbability, and contradiction surrounding the complainants' evidence to justify the court in giving it credence.

The evidence here is substantially what it was in the interference proceedings, and, as the salient points have been clearly stated in the three opinions there rendered, it is unnecessary to recapitulate them here. The reasons for the decision in Williams's favor are found at length in the opinion of the Commissioner. They cannot be stated with greater cogency. I agree with him.

The bill is dismissed.



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# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 69.—No. 6. TUESDAY, NOVEMBER 6, 1894. PRICE—$5 per year.

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| PATENTS GRANTED | 647 |
| REISSUES | None. |
| DESIGNS | 780 |
| TRADE-MARKS | 788 |
| PRINTS | None. |
| LABELS | None. |
| DECISIONS OF THE U. S. COURTS— | |
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## Order in Relation to Drawings.

NOTICE.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January 25, 1894.*

Order No. 980, respecting the alteration of drawings, was published in the OFFICIAL GAZETTE of December 19, 1893, (65 O. G., 1771,) by mistake, and was never in force. The following is the only order in force upon that subject:

(ORDER No. 986.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January 25, 1894.*

Erasures or other alterations of drawings will not be made or permitted, except in compliance with this order.

Applicants are requested to furnish, with their originals, a blue print or other photographic copy of all drawings forming part of an application, and where this is done, the original drawings may be taken to the Attorneys' room, but not otherwise.

Before making a requirement to alter an original drawing the Examiner will formally make the blue print or other copy a part of the files, and in case no such copy has been furnished by the applicant, the Office will make such copy without charge, and thereupon the required alteration may be made by the applicant, under the direction of the Examiner and subject to his approval or, upon request, it will be made by the Office at the expense of the applicant.

The requirement to make alterations in original drawings will be made in writing, and the applicant's response must also be in writing, and in such case the copy of the drawing, the requirement to alter, and the applicant's response will form part of the record.

Action by the Office on the merits will not be suspended pending the change of a drawing, if the invention claimed may be understood by the Examiner.

For the purposes of this order the Office, upon the request of applicants, will make blue prints at the charge of five cents a sheet.

In appeal cases and upon the declaration of an interference a blue print or other copy will be sent forward with the files, the Examiner retaining the original drawings in his room until the hearing.

Except as herein required such blue print or other copy will not be made a part of the file, and may not be preserved after an application passes into a patent.

JOHN S. SEYMOUR,
*Commissioner.*

PHOTOGRAPHIC COPIES OF DRAWINGS.

A photographic outfit has been added to the equipment of the Patent Office, and positive photographic copies of any drawing, foreign or domestic, in the possession of the Office, will be furnished upon application to parties entitled thereto, at the following rates:

| | |
|---|---|
| Size 10x15 inches | 25 cents per sheet. |
| Size 7x11 inches | 15 cents per sheet. |
| Size 5x8 inches | 5 cents per sheet. |

If a copy of the drawings in a pending application of the size 5x8 inches be ordered sent to any address, two copies must be ordered, as one copy is always retained by the Office and placed in the file for the purposes specified in the above Order No. 986, of January 25, 1894.

In ordering copies of foreign drawings, the examining division, the class, and sub-class where such drawings may be found, must be given.

Coupons will be received in payment of the above fees.

## Indexes to Periodicals.

The following journals containing indexes to periodical literature may be found on file in the reading room of the scientific library:

*Engineering Review*, London, a monthly synoptical index of periodical literature in the English, French, and German languages, including hydraulic, railway, mechanical, electrical, mining, metallurgical, marine, military, and gas engineering.

*Electrical Engineering*, Chicago, a monthly synoptical index of electrical literature.

*Electrical World*, New York, a weekly digest of electrical articles.

*Journal of the Association of Engineering Societies*, Chicago, a monthly synoptical index of civil-engineering literature, mostly American.

*Engineering Magazine*, New York, a monthly title-index of engineering articles in the English language only.

## Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

## Price of Printed Copies of Patents.

Attention is called to the fact that under date of May 14, 1891, the price of uncertified printed copies of patents was fixed at the *uniform price of ten cents each*, whether purchased singly or in quantities.

## Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the Examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

## Issue of November 6, 1894.

| | | |
|---|---|---|
| Patents | 393 | No. 528,520 to No. 528,912, inclusive. |
| Designs | 33 | No. 23,755 to No. 23,787, inclusive. |
| Trade-Marks | 44 | No. 25,438 to No. 25,481, inclusive. |
| Labels | None. | |
| Prints | None. | |
| Reissues | None. | |
| Total issue | 470 | |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | 5 | .... | Nevada | .... | .... |
| Arizona Territory | .... | .... | New Hampshire | 3 | .... |
| Arkansas | 3 | .... | New Jersey | 22 | .... |
| California | 10 | .... | New Mexico Territ'y | 1 | .... |
| Colorado | .... | .... | New York | 69 | 18 |
| Connecticut | 19 | 3 | North Carolina | 1 | .... |
| Delaware | .... | .... | North Dakota | .... | .... |
| District of Columbia | 4 | .... | Ohio | 29 | .... |
| Florida | .... | .... | Oregon | 4 | .... |
| Georgia | .... | .... | Pennsylvania | 44 | 5 |
| Idaho | .... | .... | Rhode Island | 8 | .... |
| Illinois | 42 | 1 | South Carolina | .... | .... |
| Indiana | 8 | .... | South Dakota | .... | .... |
| Indian Territory | .... | .... | Tennessee | 1 | 1 |
| Iowa | 4 | .... | Texas | 3 | .... |
| Kansas | 2 | .... | Utah Territory | .... | .... |
| Kentucky | 6 | .... | Vermont | 1 | .... |
| Louisiana | 1 | 1 | Virginia | 1 | 1 |
| Maine | 2 | .... | Washington | .... | .... |
| Maryland | 5 | 3 | West Virginia | 2 | .... |
| Massachusetts | 34 | 5 | Wisconsin | 8 | 2 |
| Michigan | 24 | .... | Wyoming | .... | .... |
| Minnesota | 4 | 1 | U. S. Army | .... | .... |
| Mississippi | 4 | .... | U. S. Navy | .... | .... |
| Missouri | 11 | 2 | Total to citizens of the United States | 391 | 43 |
| Montana | 4 | .. | | | |
| Nebraska | 2 | .... | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Argentine Republic | .... | .... | Mexico | .... | .... |
| Austria-Hungary | .... | .... | Netherlands | .... | .... |
| Belgium | 1 | .... | Newfoundland | .... | .... |
| Bermuda | .. | .... | New South Wales | .... | .... |
| Brazil | .... | .... | New Zealand | .... | .... |
| British Guiana | .... | .... | Norway | .... | .... |
| Canada | 7 | 1 | Queensland | .... | .... |
| Chile, Republic of | .... | .... | Russia | 1 | .... |
| Cape Colony | .... | .... | Scotland | .... | .... |
| Columbia | .... | .... | South Australia | .... | .... |
| Cuba | .... | .... | Spain | .... | .... |
| Denmark | .... | .... | Sweden | 2 | .... |
| Ecuador | .... | .... | Switzerland | .... | .... |
| England | 11 | .... | Victoria | 1 | .... |
| Finland | .... | .... | West Australia | .... | .... |
| France | 6 | .... | Total to citizens of foreign countries | 35 | 1 |
| Germany | 6 | .... | | | |
| India | .... | .... | | | |

# APPLICATIONS UNDER EXAMINATION.

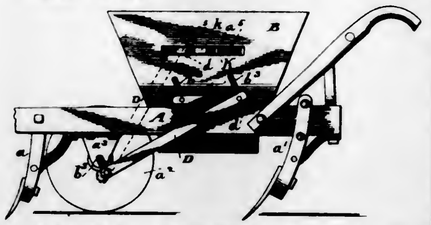
*Condition at Close of Business October 30, 1894.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | Oct. 3 | Oct. 26 | 88 |
| 2 | Farm Stock, Products, etc | Oct. 1 | Oct. 24 | 106 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire-Escapes and Ladders, etc. | Oct. 22 | Oct. 23 | 43 |
| 26 | Arteslan and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | Oct. 5 | Oct. 20 | 107 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Oct. 1 | Oct. 15 | 164 |
| 20 | Builders' Hardware, Safes, Dentistry, Undertaking, Artificial Limbs, etc. | Oct. 1 | Oct. 10 | 171 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Oct. 2 | Oct. 8 | 151 |
| | *Between one and two months.* | | | |
| 26 | Electricity, Generation, Distribution, Motive Power, Electric Railways, etc. | Sept. 10 | Oct. 29 | 96 |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Sept. 4 | Oct. 23 | 119 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | Sept. 27 | Oct. 22 | 83 |
| 8 | Furniture, Beds, Store Furniture, etc. | Sept. 27 | Oct. 22 | 178 |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Sept. 25 | Oct. 20 | 59 |
| 3 | Metallurgy, Metal-Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | Sept. 25 | Oct. 19 | 70 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | Sept. 29 | Oct. 18 | 197 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | Sept. 24 | Oct. 18 | 84 |
| 12 | Mechanical Engineering, Store-Service, etc. | Sept. 17 | Oct. 18 | 182 |
| 10 | Carriages and Wagons | Sept. 5 | Oct. 18 | 143 |
| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting, and Leather-Working Machinery. | Sept. 17 | Oct. 15 | 193 |
| 21 | Textiles, etc. | Sept. 4 | Oct. 15 | 142 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, Surgery. | Aug. 31 | Oct. 15 | 183 |
| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Aug. 31 | Oct. 11 | 157 |
| 19 | Stoves and Furnaces | Sept 24 | Oct. 2 | 273 |
| 1 | Tillage and Fences | Aug. 30 | Oct. 2 | 262 |
| 30 | Lamps, Gas-Fittings, Linotyping, Type-Writing Machines, Optics. | Sept. 10 | Sept. 25 | 214 |
| | *Between two and three months.* | | | |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Aug. 17 | Oct. 15 | 225 |
| 34 | Railway-Cars and Fluid-Pressure Railway-Brakes. | Aug. 3 | Oct. 15 | 281 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | Aug. 1 | Oct. 15 | 428 |
| 29 | Wood-Working Machines, Carpentry, Coopering and Roofing, etc. | Aug. 6 | Oct. 13 | 168 |
| 23 | Instruments of Precision, Acoustics, etc. | Aug. 9 | Oct. 11 | 179 |
| 18 | Steam-Engineering, etc. | Aug. 28 | Oct. 9 | 215 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, Cutlery, etc | Aug. 23 | Oct. 8 | 179 |
| 17 | Paper-Manufactures and Printing. | Aug. 16 | Oct. 1 | 177 |
| | *Between three and four months.* | | | |
| 24 | Sewing-Machines, Crinoline and Corsets, Apparel, and Toilet. | July 20 | Oct. 16 | 107 |
| | Total number of applications awaiting action | | | 5,394 |
| | *Under one month in arrears.* | | | |
| | Designs | Oct. 16 | Oct. 16 | 93 |
| | Trade-Marks | Oct. 22 | Oct. 29 | 10 |

# PATENTS

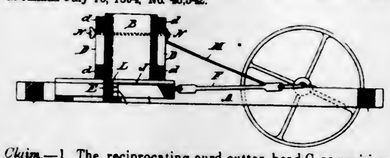
## GRANTED NOVEMBER 6, 1894.

**528,520. PLANTER AND FERTILIZER-DISTRIBUTER.** GEO. W. ASHCRAFT, Cave Spring, Ala. Filed Mar. 8, 1894. Serial No. 502,838. (No model.)



*Claim.*—The hopper of a planter having the top chambers $f$ $f^1$ and the bottom chambers $b$ $b'$, the horizontal boards F H and, between said boards, the pivoted eccentric dropper K, the upper and lower chambers communicating with each other through the dropper and the dropper-handle $k$ connecting with its operative mechanism, all combined, constructed and arranged to operate as and for the purposes set forth.

**528,521. CURD-CUTTER.** ORMOND BARNARD, Oxford Mills, Canada. Filed Aug. 11, 1894. Serial No. 520,023. (No model.) Patented in Canada July 10, 1894, No. 46,542.



*Claim.*—1. The reciprocating curd-cutter head C, comprising a supporting frame having a lower sub-floor H, and an upper sub-floor J, extending toward one another from opposite ends of the frame, said floors connected at their inner ends by intersecting knives K, in combination with a hopper B, and a stop board E, against which said knives act as set forth, for the purpose described.

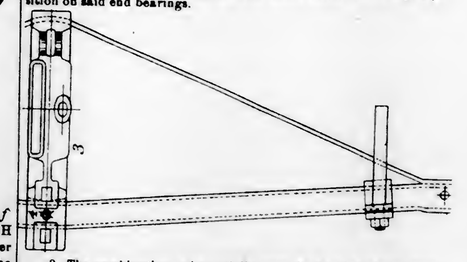
2. The cutter head C, having upper and lower half floors connected at their inner ends by intersecting knives K, in combination with a supporting frame having parallel ways or bars A, A, on which said cutter-head slides, and a bottomless hopper B, above said cutter-head, and a stop board E, in the path of said cutter head, said board resisting the thrust of the curd while being cut, and means for reciprocating said cutter head whereby the curd fed into the hopper is cut into square oblong lengths by said intersecting knives and forced therethrough by the reciprocation of the cutter-head horizontally, as set forth.

3. The combination of the supporting frame having parallel bars or ways A, A, the bottomless hopper B, on top of said ways, the stop board E below said hopper, the cutter-head C, having lower and upper sub-floors H, L, connected by intersecting knives K, said cutter-head sliding reciprocally upon said supporting frame and against said stop board and under said hopper, and a pitman, wheel or crank operating said cutter-head by suitable motive power, whereby the curd is cut into oblong lengths and discharged through the intersecting knives, as set forth.

**528,522. BRAKE-BEAM.** DAVID L. BARNES, Chicago, Ill. Filed May 22, 1894. Serial No. 512,064. (No model.)

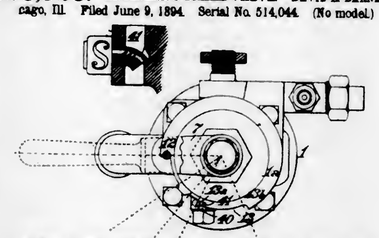
*Claim.*—1. The combination, substantially as set forth, of a tubular body, end filling pieces, and a truss bar, these members being welded together at and adjacent to the ends of the body, and brake heads recessed to fit over end bearings so formed.

2. The combination, substantially as set forth, of a tubular body, end filling pieces and a truss bar, all welded together at and adjacent to the ends of the body, brake heads recessed to fit over end bearings so formed, and rivets or bolts holding said brake heads removably in position on said end bearings.



3. The combination, substantially as set forth, of a tubular body, a truss bar welded at its ends to said body, a strut or post interposed between the body and the truss bar intermediate of their ends and having an open sided recess near one of its ends to fit over the body, a cap closing the open side of the recess in the strut, and rivets or bolts securing said cap to the strut.

**528,523. ENGINEER'S BRAKE-VALVE.** DAVID L. BARNES, Chicago, Ill. Filed June 9, 1894. Serial No. 514,044. (No model.)



*Claim.*—1. The combination of an engineer's brake valve, and an indicator or check piece fixed to the valve casing in such location as to be defaced or broken in and by the movement of the operating handle to emergency position, substantially as set forth.

2. The combination, with an engineer's brake valve, of an indicator or check piece, of soft material, fixed to the valve casing and projecting therefrom across the line of movement of the operating handle, between the service and the emergency positions thereof, substantially as set forth.

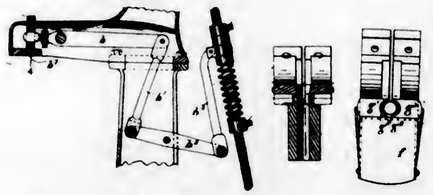
3. The combination, in an engineer's brake valve, of an operating handle which is movable between release and emergency positions; a stop or detent connected thereto, and an indicator or check piece of soft material fixed to the valve casing and projecting therefrom across the path of the stop or detent, between the service and emergency positions thereof, substantially as set forth.

**528,524. SETTING-MACHINE.** FRANK BEAN, Medford, assignor to the Standard Rivet Company, Boston, Mass. Filed Apr. 16, 1890. Serial No. 348,257. (No model.)

*Claim.*—1. In a setting machine, the combination of a throat, an anvil automatically reciprocated toward and away from the throat to clamp the work, a driving shaft, and a yielding connection,—rod $d^2$, spring $b^4$, levers $b^3$, $b^3$, $b'$ and $b$,—between the shaft and anvil, substantially as and for the purpose set forth.

2. In a setting machine, the combination of a main raceway, a throat support having a hole to receive the throat, and the throat formed with a supplementary raceway at an angle to the throat, the

throat being removable from the hole in the support and the supplementary raceway being secured to the main raceway, all substantially as and for the purpose set forth.



3. In a setting machine, the combination with a race-way, of throat G, one or more slides $g'$, spring $g^3$ and stops $g^4$ $g^5$, each slide being mounted at the raceway end of the throat and moving away from the fastening passage against the force of a spring $g^3$, and being limited in its movement toward the fastening passage by a stop $g^4$ $g^5$, and recessed on that edge toward said passage, substantially as and for the purpose set forth.

4. In a setting machine, the combination of driver D and chute $F^3$ with pusher $p$, and spring $p'$, the pusher being carried by the driver, moving therewith and also toward and away from the driver, substantially as and for the purpose set forth.

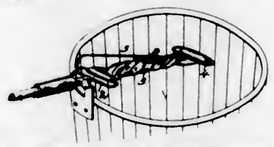
5. In a setting machine, the combination of a driver and raceway with a swinging pusher $p$, spring $p'$ and stop $p^3$, the spring moving the pusher in one direction and the stop limiting the movement of the pusher in that direction, all substantially as and for the purpose set forth.

6. In a setting machine, the combination of driver D with the adjustable pusher support $p^4$ and pusher $p$ and auxiliary stop $p^5$, stop $p^5$ being adjustable for the nicer adjustment of the pusher in relation to the raceway, all substantially as and for the purpose set forth.

7. In a setting machine, the combination of a pusher support ($p^4$), pusher $p$ loosely pinned thereto, and spring $p'$; the pusher and spring being adapted for connection at several places, as at holes $p^{10}$, substantially as and for the purpose set forth.

8. In a setting machine, the combination of an anvil B lever $b$, supporting the anvil and moving it toward and away from the throat, connecting rod $b'$, lever $b^3$, connecting rod $b^2$, spring $b^4$ and rod $d'$, spring $b^5$ forming a yielding connection between the anvil and rod $d'$, all arranged and operating substantially as and for the purpose set forth

528,525. COMBINED MOP AND WRINGER. STEWART I. BERGSTRESSER, Smethport, Pa. Filed Aug. 19, 1893. Serial No. 483,568. (No model.)



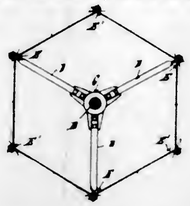
*Claim.*—1. The combination of a holder having a sleeve and an offset spring-rod terminating at its front end in a laterally elongated loop, a mop handle rotatably fitted in said sleeve and terminating in a laterally elongated loop, and a mop-cloth secured at its extremities respectively to said loops, whereby when the loop carried by the handle is opposite the offset portion of the holding-rod the handle may be rotated to twist the mop-cloth, and when the loop carried by the handle is in contact with the loop at the extremity of said rod the handle is held from rotation, substantially as specified.

2. A support for mops consisting of a plate adapted to be secured to a receptacle and having a bifurcated upper portion and having the upper ends of the arms formed thereby bent outwardly and upwardly, forming a support and stop substantially as described.

528,526. COAL-SCREEN. GEORGE F. BLAKESLEE, Duquoin, Ill. Filed Jan. 30, 1894. Serial No. 498,469. (No model.)

*Claim.*—1. The combination in a multiple sided coal screen, of a central shaft, sets of arms extending outwardly from said shaft and secured to alternate corners of the sides of the screen shell, longitudinal bars at the corners of the screen extending from one set of the arms to the next alternate set of the arms, flat perforated plates, having their edges flanged so as to fit against the ends of the arms and the bars forming the corners of the screen, and bolts passing through said flanges and bars and through the ends of the arms, substantially as and for the purpose set forth

2. The combination in a multiple sided screen, of a central shaft B, spiders C and C' secured to said shaft, arms D and D' having bolt holes $d'$ in the ends thereof and extending outwardly therefrom and secured in alternate corners of said screen, longitudinal bars F extending from the arms D to the next alternate set of arms D, and having bolt holes $f$ therein, longitudinal bars F' extending from the arms D' to the next alternate set of arms D' and having bolt holes $f$ therein, perforated plates H having longitudinal flanges A and bolt holes A' therein, and bolts $e$ passing through the bolt holes A' in the flanges, the bolt holes $f$ in the bars F and F' and the bolt holes $d$ in the ends of the arms D and D', substantially as and for the purpose set forth



528,527. DOUBLE-TENON AUGER. CHARLES BLATCHLEY, Binghamton, N. Y. Filed May 27, 1893. Serial No. 475,677. (No model.)



*Claim.*—A double tenon auger consisting of a cutter head provided with cutters and a second cutter head within the first having cutters, the said heads being adjustable in relation to each other, substantially as described.

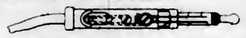
528,528. SPECTACLES OR EYEGLASSES. JOHN L. BORSOM, Philadelphia, Pa. Filed June 2, 1894. Serial No. 513,289. (No model.)



*Claim.*—1. The combination with a spectacle or eye-glass lens, of a clasp B, secured by a screw to the same, and a four-armed cushion C, set between the lens frame and the glass, so as to embrace and protect both the edge and the faces of the lens, substantially as described.

2. As an improved article of manufacture, an eye-glass, comprising a lens A, a clasp B, secured by a screw to the same, and a four-armed cushion C of celluloid or similar material, having ridges $c$ formed on two of its arms to enter the hole in the lens, all substantially as shown and described.

528,529. PLUG FOR ESTABLISHING ELECTRICAL CONNECTIONS. CHARLES W. BROWN, Montreal, Canada, assignor to the Bell Telephone Company of Canada, Limited, same place. Filed Jan. 16, 1894. Serial No. 497,112. (No model.)



*Claim.*—1. A plug for establishing electrical connections having a body portion tubular in cross section, to be inserted in a correspondingly shaped socket, and having one or more integral flexible expanders normally projecting beyond the periphery of the tubular body portion for the purpose set forth.

2. A plug for establishing electrical connections having a body portion tubular in cross section, to be inserted in a correspondingly shaped socket, and having one or more integral flexible expanders normally projecting in an inclined position beyond the periphery of the tubular body portion for the purpose set forth.

3. A plug for establishing electrical connections, having a metallic forward body portion tubular in cross section adapted to be inserted in a correspondingly shaped socket and one or more flexible sections or expanders integral with and normally projecting beyond the periphery of said body portion, in increasing lateral expansion rearward for the purpose set forth.

4. A plug for establishing electrical connections, having a metallic body portion, tubular in cross section adapted to be inserted in a correspondingly shaped socket and one or more flexible sections or expanders integral with said body portion normally projecting beyond the periphery thereof and formed by slits in same.

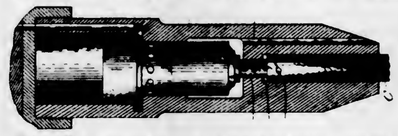
5. A plug for establishing electrical connections having a metallic forward body portion tubular in cross section adapted to be inserted in a correspondingly shaped socket, one or more flexible sections or expanders integral with said forward body portion formed by slits extending from the rear of said body portion toward its forward end and an insulated handle sleeve extending over the rear end of such forward body portion for the purpose set forth.

6. A plug for establishing electrical connections, having a metallic body portion, tubular in cross section adapted to be inserted in a correspondingly shaped socket and one or more integral flexible sections or expanders extending in an inclined position longitudinally of such body for the purpose set forth.

7. A plug for establishing electrical connections, having a metallic forward body portion, tubular in cross section adapted to be inserted in a correspondingly shaped socket, one or more flexible sections or expanders integral with said forward body portion formed by slits extending from the rear of said body portion toward its forward end, the rear end or ends of such flexible expander or expanders being reduced in thickness, and an insulated handle sleeve having its forward end extending over such reduced ends for the purpose set forth.

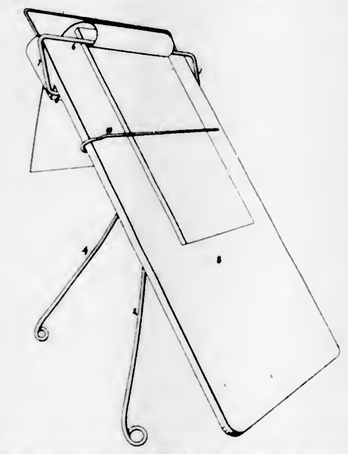


528,530. ATTACHMENT FOR ENGINES. PIERRE CHOUTEAU, St. Louis, Mo. Filed Apr. 27, 1894. Serial No. 509,201. (No model.)



*Claim.*—The combination with an engine cylinder whose end is formed with a tool-rod opening of two different diameters, one portion of which opening is non-circular in cross-section, and a tool rod formed with a shoulder which is adapted to be received in said opening, thereby locating the point of abutment of the shoulder against the cylinder, within the cylinder, thus preventing said shoulder from collecting dirt or from pinching the operator's finger, substantially as described.

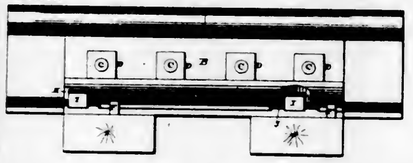
528,531. COPY-HOLDER FOR TYPE-WRITERS. SAMUEL L. COWDS, Rockford, Ill. Filed Mar. 27, 1893. Serial No. 467,902. (No model.)



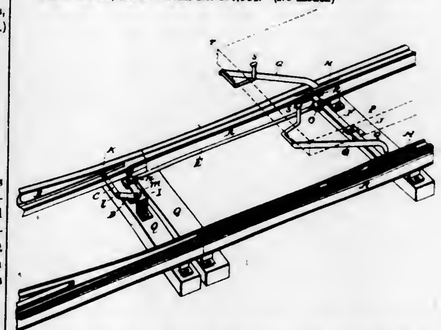
*Claim.*—A copy holder consisting of a shelf with a flat surface, and its upper end as broad as the paper to be clamped, a support having a hoop at its upper end embracing the upper end of the board, the upper portion of the loop being in the form of a straight bar to clamp the paper to the board.

528,532. NUT-LOCK. WILLIAM J. DILLEHAY, Davis, W. Va. Filed July 13, 1894. Serial No. 517,425. (No model.)

*Claim.*—A nut lock adapted for use in connection with the joints of railway rails, and consisting of a metallic plate formed with a horizontal portion adapted to lie under the several nuts of the joint and to be engaged therewith, and a downwardly and outwardly extending portion integral with the horizontal portion and adapted to project beyond the outer edge of the adjacent fish-plate, said downwardly and outwardly extending portion being formed with an opening or openings adapted for the reception of the heads of the rail-retaining spikes, the said portion also having a second opening or openings adapted to facilitate securing the nut lock in place, substantially as described.

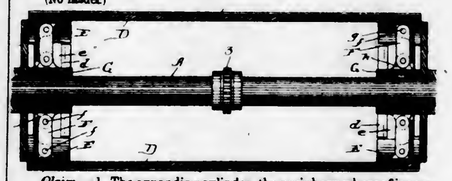


528,533. AUTOMATIC RAILWAY-SWITCH. JOSEPH M. DIXON, Brooklyn, N. Y., assignor of one-half to Arthur S. French, same place. Filed Oct. 11, 1893. Serial No. 487,901. (No model.)



*Claim.*—In a railway switch, the pivoted swing bar reaching under the surfaces of the rails at both ends, the bell crank connected with the switch, the rod uniting the bell crank and swing bar, the rails provided with narrow parallel sided slots, said swing bar being adapted to be actuated by rearwardly inclining foot levers mounted upon the cars and arranged to be pressed down through the slots in the rails, the parts being combined and arranged for operation, substantially as shown and described.

528,534. EXPANDING CYLINDER FOR POLISHING-MACHINES. EDWARD S. EVARTS, Chicago, Ill. Filed Nov. 10, 1892. Serial No. 451,523. (No model.)



*Claim.*—1. The expanding cylinder, the periphery whereof is composed of contractible staves and stationary staves, substantially as specified.

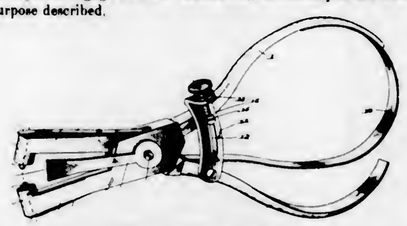
2. In an expanding cylinder, the combination of stationary staves and their supports, the latter having ways for the slides of the movable staves, said movable staves, slides attached thereto and traversing said ways, and means for moving said staves in and out, substantially as specified.

3. The combination in an expanding cylinder, of stationary heads, staves stationarily mounted thereon, movable segments E, staves mounted thereon, and means for moving said segments in and out, substantially as specified.

4. The expanding cylinder consisting of the stationary staves, the movable staves, the heads supporting the stationary staves and having ways $d$, and segments E supporting the movable staves and having slides $e$, the sliding hubs, the links and the screw for moving the hubs, substantially as specified

528,535. WATCHMAKER'S CALIPERS. GEORGE B. FARRELL, East Las Vegas, N. Mex. Filed Apr. 15, 1893. Serial No. 470,507. (No model.)

*Claim.*—The combination with a tool having pivoted jaws and provided with handles, a segmental plate secured at one end to one of the handles and having intermediate of its ends a longitudinal slot, and provided at its other end with an outwardly extending flange or seat 13 arranged at right angles to the body of the plate and provided with a threaded opening, a headed stud projecting outward from the other handle and arranged in the slot of the plate, and a set screw mounted in the threaded opening of the flange or seat 13 and arranged to engage the head of said stud, substantially as and for the purpose described.



528,536. KNITTED UNDERSHIRT. JOSEPH FELDENHEIMER, Philadelphia, Pa. Filed Aug. 9, 1894. Serial No. 519,860. (No model.)



*Claim.*—1. As an improved article of manufacture, the herein described sleeveless undershirt, of knitted fabric, having the body formed with the ribs running longitudinally and having the upper portion slitted or cut at the sides, and the narrow endless shoulder straps, formed of knitted goods with the ribs running transversely, secured at the lower portion along one edge, around the edges of the slits or cuts in the top of the body to lie beneath the arms of the wearer and form the edges of the arm openings; substantially as described.

2. As an improved article of manufacture, the herein described sleeveless undershirt of knitted fabric, having the body formed with the ribs running longitudinally and having the upper portion slitted or cut at the sides, the narrow two ply shoulder straps formed of knitted goods with the ribs running transversely, secured at the lower portion along one edge to the edges of the cuts formed in the top of the body portion, to lie beneath the arms of the wearer and form the edges of the arm openings and the substantially non-elastic edging secured along the edges of the shoulder straps over the top of the opening; substantially as described.

528,537. STEAM-VALVE. ROBERT M. FRYER, Washington, D. C., assignor to J. P. V. Ritter, A. S. Johnson, C. H. Burgess, William C. Avery, B. E. Emmert, and George H. La Fetra, same place. Filed Dec 26, 1893. Serial No. 494,749. (No model.)



*Claim.*—1. In a valve of the character described the combination of the cylindrical casing, the rotary valve therein eccentric to its chamber, and the compensating wedges movable in a circumferential direction between the valve and the walls of the chamber.

2. In a valve of the character described the combination of the cylindrical casing, the rotary valve therein eccentric to its chamber, the compensating wedges movable in a circumferential direction between the valve and the walls of its chamber, and means for adjusting said wedges.

3. In a rotary valve the combination with the valve casing and the valve therein, of movable valve seats adapted to be adjusted circumferentially to compensate for wear.

4. In a rotary valve the combination with the valve casing and the valve therein, of adjustable valve seats provided with separable face plates adapted to be removed and replaced.

5. In a rotary valve the combination with the valve casing and the valve therein, of adjustable valve seats within the casing, and means for independently adjusting said seats at either end.

6. In a rotary valve the combination with the valve casing provided with steam and exhaust ports in angular relation to each other, the rotary valve therein, a chamber between the valve and its casing on the side opposite the exhaust port, and a communicating passage arranged to connect said chamber with the exhaust port when the valve is closed, the said chamber being so located relatively to the exhaust port that a straight line between the two will pass above the axis of the valve.

7. In a rotary valve the combination with the valve casing provided with steam and exhaust ports, the rotary valve therein, a chamber between the valve and its casing on the side opposite the exhaust port, and a communicating passage through the valve to connect said chamber with the exhaust port when the valve is closed, said chamber being so located relatively to the exhaust port that a straight line between the two will pass above the axis of the valve.

8. The combination with the valve casing, the valve therein, and the compensating wedges, of the means for adjusting said wedges, the same comprising the connecting pieces *c*, *c*, connected with the wedges and provided with oppositely threaded stems, and the nut or sleeve connecting said stems, whereby the wedges are adjusted back and forth, substantially as shown and described.

9. In a rotary valve the combination of the casing, the valve therein adapted to be moved in a radial direction, a spring to hold the valve to its seat, and means for applying a vacuum pressure through the exhaust port, when the latter is closed, to assist the spring in sustaining the valve.

10. The combination of the rectangular shaft C, the grooved valve B mounted thereon, the tubular spring *c* interposed between the shaft and the valve, the spring being seated in channels formed in the respective parts and corresponding in radius with the external diameter of the spring.

528,538. SAND-BAND FOR WAGONS. JAMES A. FULTON, South Bend, Ind. Filed May 5, 1893. Serial No. 473,058. (No model.)



*Claim.*—1. The hub A provided with a ledge or sand band E, combined with an axle or skein B provided with a sand groove F extending part way around said skein, the said band E being provided with the ribs I, as and for the purposes set forth.

2. The hub A provided with a ledge or sand band E, combined with an axle or skein B provided with a groove adapted to receive said band E, the said band being provided with the inclined rib or ribs I, substantially as set forth.

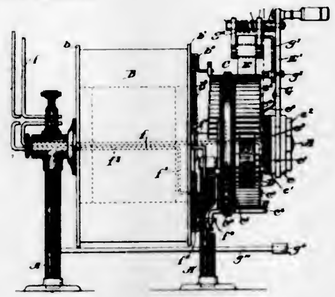
528,539. RHEOSTAT. JOHN C FYFE, Chicago, Ill., assignor of one-half to James Hayes, same place. Filed Apr. 27, 1894. Serial No. 509,246. (No model.)

*Claim.*—1. The method of ventilating and insulating layers of electrical conductors, consisting in separating said layers with silicate of soda and then subjecting same to heat sufficient to crystallize the silicate, substantially as described.

2. The method of ventilating and insulating layers of electrical conductors, consisting in separating said layers with insulation saturated with a solution of non-combustible material, then subjecting same to the action of heat sufficient to burn the insulation, substantially as described.

3. The method of ventilating and insulating layers of electrical conductors for rheostats and the like, consisting in separating said layers with insulation saturated with a solution of silicate of soda, then subjecting same to heat sufficient to burn the insulation, substantially as described.





4. The method of ventilating and insulating layers of electrical conductors for rheostats consisting in covering each layer with silicate of soda and separating each layer from the next adjacent layer, then subjecting same to heat sufficient to crystallize the silicate, substantially as described.

5. The method of ventilating and insulating layers of electrical conductors for rheostats, consisting in covering each layer with insulation saturated with a solution of silicate of soda, separating each layer from the next adjacent layer, and then subjecting the whole to the action of heat sufficient to burn the insulation, substantially as described.

6. The method of ventilating and insulating layers of electrical resistance for rheostats, consisting in passing the wire having a covering of combustible material through a solution of silicate of soda, then winding said wires to form each layer in a solid mass, then subjecting the whole to heat sufficient to burn the covering, substantially as described.

7. The method of ventilating and insulating the electrical resistance for rheostats, consisting in passing the wire having a covering of combustible material through a solution of silicate of soda, then winding same in layers, separating each layer from the layer next adjacent, then subjecting the whole to heat sufficient to burn the covering, substantially as described.

8. An electric resistance consisting of a series of layers of wire arranged upon supports, each wire being insulated from the other and the supports of each layer being placed alternately, thereby arranging each layer at angles to the next adjacent layer and electrically connected to said adjacent layer, as and for the purpose described.

9. In a rheostat, the combination with the frame having the skeleton end plates carrying supports alternately arranged thereon, of a series of layers of insulated conducting material arranged upon the supports, each layer thereby being at an angle to the next adjacent layer and connected thereto, substantially as described.

10. In a rheostat, the combination with the frame having the skeleton end plates carrying supports thereon and having a band of netting arranged upon said supports, of a series of layers of insulated wire arranged around the band of netting; the said layers being connected to each other, substantially as and for the purpose set forth.

11. In a rheostat, the combination with the frame having end plates carrying supports thereon, of a series of layers of insulated conducting material connected to each other and arranged between the plates, and a series of layers of bars of slate each layer arranged alternately to separate the layers of conducting material at an angle to the next adjacent layer, substantially as described

12. In a rheostat, the combination with the frame having the skeleton end plates carrying supports thereon, and a band of netting surrounding said supports, of a series of layers of insulated conducting material connected to each other and arranged around the netting, together with a series of layers of slate bars arranged to separate the layers of conducting material, substantially as and for the purpose described.

13. In a rheostat, a commutator composed of exposed sections removably connected to a support by a binding strap, the sections being insulated from said support and strap, the said strap being split and provided with lugs or up-turned ends in which is a bolt for tightening the same substantially as described.

14. In a commutator, the combination with the plate or disk having a varying diameter, of a series of sections arranged upon the portion having the smallest diameter and insulated therefrom, the said sections being secured to the disk by a binding strap which is insulated from the sections and the disk, substantially as described.

15. The combination with the commutator plate or disk and the stud secured thereto but insulated from said disk, of an arc-ruptnrer rotatably held upon the said stud, substantially as described.

16. The combination with the commutator plate or disk having a stud secured thereto but insulated from said disk, of an arc-rupturer removably held upon a rotatable support arranged upon said stud, substantially as described.

17. The combination with the commutator plate or disk having a stud secured thereto but insulated from the disk, of a collar rotatably held upon said stud and having yielding spokes extending therefrom, together with an arc-rupturer removably held upon said spokes, substantially as described.

18. The combination with an electric resistance, of an arc-rupturing carbon wheel connected to the resistance circuit, as described, and adapted to be energized by a movable contact when engaging said wheel, substantially as described.

19. The combination with an electric resistance and the fixed contact sections connected thereto, of a movable contact and a rotatable arc-rupturer arranged in the path of movement of the contact and forming an initial and final contact of the series of sections, substantially as described.

20. The combination with an electric resistance and the fixed contact sections connected thereto, of a yielding movable contact and a rotatable arc-rupturer arranged in the path of movement of the yielding contact and forming an initial and final contact of the series of sections, substantially as described.

21. The combination with a movable arm having a stud secured thereto, of a brush carrying yoke pivotally held upon said stud, the said yoke having two arms which are pressed in electrical contact with portions of the stud, and a twist spring engaging the yoke and the arm to allow the yoke to yield on its pivot, substantially as described.

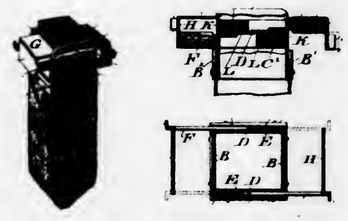
22. The combination with an electric resistance and a commutator comprising a number of fixed contact sections connected to the resistance, one of said sections being longer than the others, of a movable arm carrying a bifurcated contact to engage the longest section of the commutator to complete the circuit through that section, substantially as described.

23. In a rheostat, the combination with a stationary support, of a wheel or cylindrical arc-rupturer arranged to rotate on the support, substantially as described.

24. In a rheostat, the combination with a support, of a wheel arc-rupturer made of carbon arranged to rotate on said support, substantially as described.

25. In a rheostat, the combination with a series of exposed contacts or sections separated by insulation for a part only of their length leaving a space between the sections the remainder of their length, of a brush arranged to rotate around and contact with the sections and to one side of the insulation, the said brush being composed of a series of plates or leaves of varying lengths arranged to form a V-shaped end and yieldingly connected together, whereby the end of the brush may enter the space between the contacts so that some of the leaves may spread sufficiently to engage two adjacent sections to prevent an arc from forming as the brush leaves any one section, substantially as described.

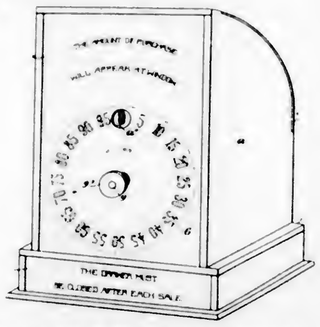
528,540. TOBACCO-CUTTER. JOHN HELLINGS, Philadelphia, Pa. Filed Feb. 7, 1894. Serial No. 499,352. (No model.)



*Claim.*—1. A tobacco pouch having a frame with sides formed of separated portions, a connecting pin or screw for said portions, and blades with backs provided with guiding arms and finger pieces, said pin forming a stop for said blades, said parts being combined substantially as described.

2. A tobacco pouch of flexible material having a frame with a securing band at the mouth thereof, blades on opposite sides of said frame having backs with finger pieces projecting therefrom, arms on the ends of said backs adapted to move in recesses between separated portions of the sides of the frame, and stops for said arms formed of securing screws in the said separated portions of the sides, said parts being combined substantially as described.

528,541. CASH REGISTER AND INDICATOR. JOHN S. HILLIARD, Philadelphia, Pa. Filed Dec. 22, 1893. Serial No. 494,373. (No model.)



*Claim.*—1. A cash register and indicator, comprising a housing having a compartment in the bottom, a spring actuated money-drawer, a pivotal catch secured into the partition forming the top of said compartment and adapted to engage a lip on said drawer, a shaft extending through the front plate having a window and said shaft provided with a stud or button, a disk rigidly secured to said shaft in rear of the front plate and provided with a lug or dog, a back-stop extending from the rear surface of said front plate and adapted to permit of the lug or dog of said disk being brought into contact with said stop, a bell, a weighted arm supported from said partition and provided with a stem having a sounder and a swinging pawl adapted to be actuated by said drawer, a support, and a spiral spring connected with said support and weighted arm, substantially as and for the purposes set forth.

2. A cash register and indicator, comprising a housing provided with upper and lower compartments separated by a partition, the upper compartment provided with a hinged lid or cover and the lower compartment provided with a money drawer having an ejecting spring, a spring catch secured to the under side of said partition and adapted to engage a lip on said drawer, a lever pivoted in an oblong slot in said partition, one extremity of said lever being provided with a pin engaging a yoke of said spring catch and the other extremity provided with a detent, a shaft extending through the front plate having a window, a disk with numerals arranged on both faces thereof rigidly secured to said shaft in rear of said front plate, a ratchet-wheel loosely mounted on said shaft and provided with a lug or dog, said ratchet wheel having a ratcheted rim, spring controlled pawls connected with said disk and the rear surface of said front plate for engaging the teeth of said wheel and rim, substantially as and for the purposes set forth.

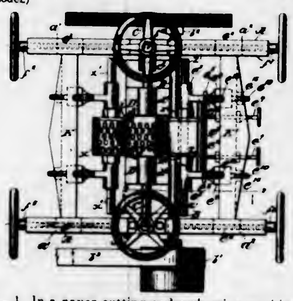
3. A cash register and indicator, comprising a housing provided with a front plate having a window, a revoluble shaft extending through said plate, a disk with numerals displayed on both faces thereof rigidly secured to said shaft and provided with a projecting lug or dog, a back-stop projecting from the rear face of said front plate and adapted to permit the lug or dog of said disk to contact therewith, a ratchet-wheel with a sleeve and a toothed rim, the sleeve of said wheel being loosely mounted on said shaft, spring controlled pawls connected with said disk and front plate and engaging respectively with said rim and wheel, said rim being provided with an index finger, a money-drawer provided with a spring catch adapted to engage with the lug or dog of said disk to permit of the release of said money-drawer, a bell, a support, a sounder connected with a weighted arm, and a spring connected with said support and arm, substantially as and for the purposes set forth.

4. A cash register and indicator, comprising a housing provided with upper and lower compartments separated by a partition, the upper compartment being provided with a hinged lid or cover and the lower compartment provided with a money-drawer having an ejecting spring tending to open the same, a shaft extending through the front plate provided with a window, said shaft being provided with a button or knob, a disk with numerals displayed on both faces of the same, said disk secured to said shaft and provided with a projecting lug or dog, a back-stop projecting from the rear face of said front plate, a toothed wheel loosely mounted on said shaft, said toothed wheel being provided with a ratcheted rim, spring detents and pawls connected with said disk and front plate and engaging said toothed wheel and ratcheted rim, a shaft supporting a revoluble registering wheel carrying a spring controlled lever arm having a spring controlled pawl normally engaging a tooth of said wheel, a spring controlled detent held in engagement with a tooth of said wheel and pivotally connected with the rear face of said front plate to prevent retrograde movement of said wheel and a lug or dog projecting from said ratcheted rim, substantially as and for the purposes set forth.

5. A cash register and indicator, comprising a housing having a compartment in the bottom, a spring actuated money drawer mounted therein, a pivotal catch secured to the partition of said compartment and adapted to engage a lip on said drawer, a shaft extending through the front plate having a window, said shaft provided with a stud or button, a disk secured to said shaft and having numerals displayed on both faces thereof, and said disk provided with a lug or dog adapted to engage with said catch, a back-stop extending from the rear face of said front plate and adapted to permit of the lug or dog of said disk being brought into contact therewith, a bell, and a weighted pivotally supported arm provided with a swinging pawl and a stem carrying a sounder, substantially as and for the purposes set forth.

6. A cash register and indicator, comprising a housing having compartments separated by a partition, one of said compartments having a spring actuated money drawer, a pivotal catch secured to said partition and adapted to engage a lip on said drawer, a shaft extending through the front plate having a window, said shaft provided with a stud or button, a disk having numerals displayed on both faces thereof and secured to said shaft and having a projecting dog or lug $g^4$, adapted to engage when the drawer is closed with said pivotal catch, and a pin $g^4$, extending from the rear face of said front plate and adapted to permit of said dog or lug being brought into contact with said pin by the actuation of said disk by means of the button or stud of said shaft, substantially as and for the purposes set forth.

528,542. PAPER CUTTING AND EMBOSSING PRESS. BERNHOM KARFIOL, Brooklyn, N. Y., assignor to the American Lace and Fancy Paper Works, of New York. Filed Feb. 12, 1894. Serial No. 499,847. (No model.)



*Claim.*—1. In a paper cutting and embossing machine, the combination with a cylindrical die suitably journaled, and cutting and embossing rollers, of brackets provided with journal bearings, to carry the shafts upon which the rollers are mounted said brackets being supported by stays having ways in which the brackets are adjustable, according to the length of the axes of the rollers, and said stays working in ways at right angles to the axis of the die and rollers and means to compress said rollers against said die and to adjust said pressure substantially as described.

2. In a paper cutting and embossing machine, the combination with a cylindrical die, and cutting and embossing rollers of brackets with journal bearings, adjustable to sustain the shafts upon which the die or rollers are mounted according to the length of their axes in close proximity to the rollers or die, the brackets sustaining the die adjustable in permanent ways, and the brackets sustaining the rollers adjustable in ways carried by stays, and means to compress the rollers against the die, substantially as described.

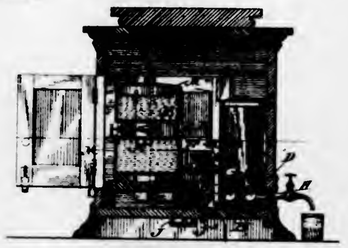
3. In a paper cutting and embossing machine, the combination with a cylindrical die, cutting and embossing rollers of brackets with journal bearings, adjustable to sustain the shafts upon which the die or rollers are mounted according to the length of their axes in close proximity to the rollers or die, the brackets sustaining the die adjustable in permanent ways, and the brackets sustaining the rollers adjustable in ways carried by braces, and means to compress the rollers against the die in a plane through the center of the axes of the die and rollers, substantially as described.

4. In a paper cutting and embossing machine, the combination with a cylindrical die, and cutting and embossing rollers, of brackets provided with journal bearings for said die and rollers, the brackets sustaining the die adjustable in stationary ways parallel with the axis of the die according to the length of its axis, and the brackets sustaining the rollers adjustable in like manner in ways carried by adjustable stays, which work in ways in the frame, and screws bearing on the ends of said stays in a direction to compress said rollers on either side of the die in a plane through the center of the axis of the rollers substantially as described.

5. In a paper cutting and embossing machine, the combination with a cylindrical die, and cutting and embossing rollers of brackets provided with journal bearings for said die and rollers, the brackets sustaining the die adjustable in stationary ways parallel with the axis of the die according to the length of its axis, and the brackets sustaining the rollers adjustable in like manner in ways carried by adjustable stays, which work in ways in the frame, and screws bearing on the ends of said stays in a direction to compress said rollers on either side of the die in a plane through the center of the axes of the rollers, a planing edge and compression roller, and means to adjust the same to bear on the cutting roller, substantially as described.



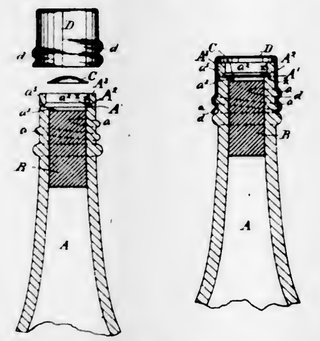
528,543. APPARATUS FOR DISPENSING ROOT-BEER, &c. SAMUEL F. KATES, Salem, N. J. Filed July 12, 1894. Serial No. 517,278. (No model.)



*Claim.*—1. A dispensing apparatus, consisting of a casing, a cooling tank in said casing, connected secondary receiving vessels in said tank, a reservoir outside of said tank and within said casing and formed of separate sections with a connecting pipe having a controlling cock, a pipe leading from said reservoir to said secondary vessels, and a discharge pipe for said secondary vessel with a faucet outside of said casing said parts being combined substantially as described.

2. A dispensing apparatus, consisting of a casing having a door thereto, a reservoir in said casing a cooling tank separate from said reservoir, a secondary receiving vessel in said tank, a pipe leading from said reservoir to said secondary vessel, a discharge pipe for said vessel with a faucet outside said casing, an over-flow pipe for said tank, and a drip pan in said casing below said over-flow pipe, said parts being combined substantially as described.

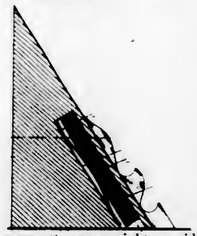
528,544. BOTTLE, &c. DANIEL R. KENPSTER, Boston, Mass., assignor, by direct and mesne assignments, of one-half to Henry R. Thompson and Edward S. Beach, same place. Filed July 12, 1894. Serial No. 517,327. (No model.)



*Claim.*—1. As a new article of manufacture, a bottle or other vessel having a mouth provided with two interior diameters and coincident interior and exterior grooves, the wall of the interior groove being at right angles to a vertical line through the bottle mouth and the wall $x'$ of said groove sloping inwardly and obliquely from its junction with said wall $x$ and the stock of the bottle neck being reduced in thickness at the bottoms of the grooves to form, between the opposed bottoms of the grooves, a thin frangible web, adapted, without fracture of contiguous portions of said neck, to be broken between the inner and outer walls of the neck, substantially as described.

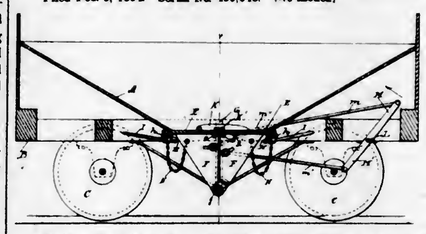
2. The herein described combination of an imperforate metal sealing disk with a bottle having a mouth provided with two interior diameters and coincident interior and exterior grooves, the wall $x$ of the interior groove being at right angles to a vertical line through the bottle neck and the wall $x'$ of said groove sloping inwardly and obliquely from its junction with said wall $x$; the stock of the bottle neck being reduced in thickness at the bottoms of the grooves to form, between the opposed bottoms of the grooves, a thin frangible web adapted, without fracture of contiguous portions of said neck, to be broken between the inner and outer walls of the neck, substantially as described.

528,545. COMBINED PAPER-WEIGHT, PEN-RACK, AND CALENDAR. THEODORE F. KRUEGER, New York, N. Y. Filed Jan. 25, 1894. Serial No. 498,007. (No model.)



*Claim.*—A transparent paper-weight provided with teats projecting from opposite sides of its inclined face, so as to form a pen-rack, said paper-weight having an upwardly extending recess opening through the bottom and adapted to provide a chamber for a calendar, substantially as set forth.

528,546. DUMPING-CAR. WILLIAM G. LANE, Pictou, Canada, assignor to the Universal Coal Dumping Car Company, Springfield, Ill. Filed Feb. 9, 1894. Serial No. 499,640. (No model.)



*Claim.*—1. A dumping car having a hopper open at its lower end and a pair of doors pivoted to jointed side pieces or wings, gravitating locking latches adapted to secure said doors in closed positions and rollers on said doors adapted to roll on guides or ways secured to the car frame substantially as and for the purpose set forth.

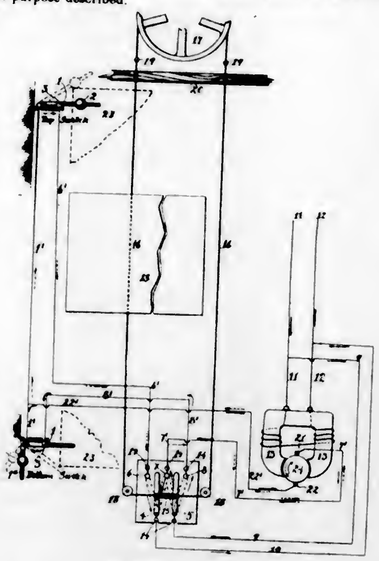
2. A dumping car having a hopper open at its lower end and a pair of doors pivoted to jointed side pieces or wings and gravitating latches adapted to secure said doors in closed positions and rollers on said doors adapted to roll on guides or ways secured to the car frame combined with a rock shaft having a releasing lever and arms connected to the respective side wings and means for releasing the latches during the opening of the doors substantially as and for the purpose set forth.

528,547. ELECTRICALLY-OPERATED ELEVATOR. ELIAS MARSHALL, Boston, Mass. Filed Jan. 20, 1894. Serial No. 497,533. (No model.)

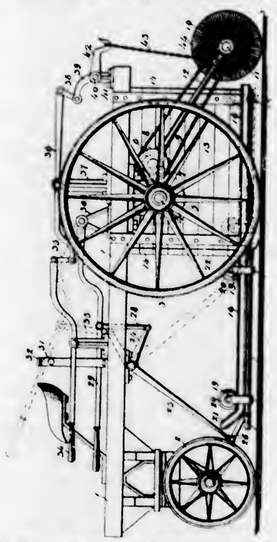
*Claim.*—1. In an elevator mechanism, the combination with an electrically operated elevator mechanism, of a three point switch or current reversing switch, "top" and "bottom" elevator well or hatchway switches; the current reversing switch being operated from the car, and the above named electrical appurtenances or devices being a part of the armature or driving motor circuits, substantially as, and for the purpose described.

2. In an electrically operated elevator mechanism, the combination of the "top" and "bottom" switches positioned in the elevator well or hatchway, the current reversing switch in operative control-ment from the elevator, the armature of the driving motor, and the fields thereof, and of efficient electrical circuits and connections in

association with aforesaid electrical means, substantially as and for the purpose described.



528,548. STREET-SWEEPER. HENRY MUELLER, Jr., St. Louis, Mo. Filed June 11, 1894. Serial No. 514,137. (No model.)



*Claim.*—1. In a street sweeping machine, a suitable frame, an open receptacle depending from said frame, and a sliding bottom adapted to co-operate with the lower edge of the rear wall of said receptacle for scraping the dirt located on said bottom, substantially as set forth.

2. In a street sweeping machine, a suitable frame, an open receptacle depending from the same, a broom located adjacent to the open end adapted to sweep dirt into said receptacle, and a sliding bottom or plate adapted to co-operate with the lower edge of the rear wall of the receptacle for scraping the dirt located on said bottom, substantially as set forth.

3. In a street sweeping machine, a suitable frame, a receptacle on said frame, depending hangers for supporting said receptacle, track rails carried by the lower end of said hangers, a sliding bottom, rollers connected to said bottom and moving on said rails, and means for operating said bottom substantially as set forth.

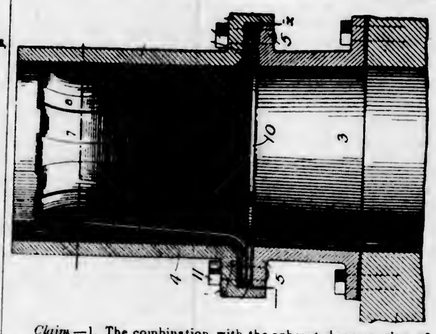
4. In a street sweeping machine, a suitable receptacle, a sliding bottom or plate co-operating therewith, supporting angle bars embracing said bottom plate, wheels mounted on said bars adjacent to the side walls of the receptacle, depending plates or hangers supporting the receptacle at either end thereof, right-angular projecting arms on said hangers, track rails carried by said right-angular projecting arms, inclined terminals or ends forming part of said rails, the said wheels adapted to pass over said rails, and suitable operating mechanism for sliding said bottom, substantially as set forth.

5. In a street sweeping machine, a suitable frame, a receptacle depending therefrom having inclined lateral walls, a vertical rear wall, and a sliding bottom co-operating with the lower edges of said walls, substantially as set forth.

6. In a street sweeping machine a receptacle having a suitable sliding bottom, a link secured to the forward end thereof, a pivoted bent lever having a long and short arm, the said long arm being pivotally secured to the end of said link, a rod secured to the free end of the short arm, a pivoted operating lever having its medial portion loosely connected to the opposite end of the said rod, and a suitable fork for securing the operating end of the operating lever, substantially as set forth.

7. In a street sweeping machine, a suitable frame, an open receptacle depending from the same, a brush located adjacent to the open end of the receptacle for sweeping dirt thereinto, suitable running gear for said brush, a sliding bottom for said receptacle, and means for supporting and guiding said bottom, substantially as set forth.

528,549. AUTOMATIC EXHAUST-NOZZLE. JOHN T. MCLELLAN, Bozeman, Mont. Filed Jan. 16, 1894. Serial No. 497,110. (No model.)



*Claim.*—1. The combination, with the exhaust sleeve or pipe, of the annular spring lining arranged therein and adapted to be distended by pressure of the exhaust steam, and to contract automatically and in a definite degree corresponding to the steam pressure substantially as and for the purpose set forth.

2. The combination, with the exhaust sleeve, of the bow springs arranged therein to form a spring lining, the lower ends of said springs being secured to the sleeve and the upper ends being in free engagement therewith, whereby said spring lining is adapted to expand and contract automatically substantially as described.

3. The combination, with the exhaust sleeve or pipe, bow springs arranged therein in two courses, one overlapping the other to form a spring lining, the lower ends of said springs being secured in the lower end of said sleeve, and the upper end being in free engagement with the upper part of said sleeve, to permit the automatic action of the spring lining constituted by said springs substantially as and for the purpose specified.

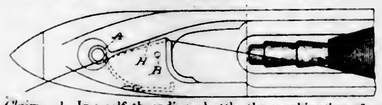
4. The combination, with the sleeve, of the bow springs arranged therein in overlapping courses to form a spring lining therefor, the bend in said springs being arranged near the tops thereof, the lower ends of said springs secured in the lower part of the said sleeve and the upper ends in free engagement therewith, substantially as described.

5. The combination, with the sleeve, of the bow springs arranged in overlapping courses therein, the lower ends of said springs being bent outwardly and secured to the lower end of said sleeve, and the outwardly bent upper ends of said springs being in free engagement with one another and with the upper end of said sleeve, substantially as described.

6. The combination, with the sleeve 4, of the bow springs arranged in overlapping courses therein, each of said springs having its lower end bent outwardly beneath the lower edge of said sleeve 4, the studs 9 whereby said ends are secured to said sleeve, the lower part of the nozzle, packing arranged between the lower ends of said springs and of said sleeve, and the lower part of the nozzle, and bolts for securing said parts together, substantially as described and for the purpose set forth.



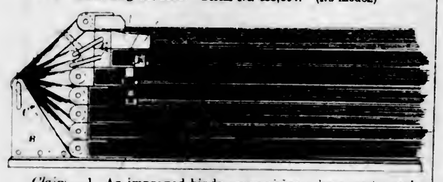
528,550. SELF-THREADING SHUTTLE FOR LOOMS. JOSEPH H. MASON, Somerville, assignor of one-half to Henry M. Hewes, Boston, Mass. Filed Nov. 7, 1893. Serial No. 490,327. (No model.)



*Claim.*—1. In a self threading shuttle the combination of a delivering eye; a feeding pin slanting upward from the eye for guiding a bight of thread into it; and a groove in the top wall of the shuttle disposed with its front end at the middle line of the shuttle and its rear end to one side thereof, forming a diagonal groove with relation to the middle line, said groove also slanting inward from top to bottom; all substantially as described.

2. In a self threading shuttle the combination of a delivering eye; a feeding pin; a groove in the top wall of the shuttle disposed with its front end at the middle line of the shuttle and its rear end to one side thereof, forming a diagonal groove with relation to the middle line, said groove also slanting inward from top to bottom; and a guide pin near the inner end of that groove, all substantially as described.

528,551. TEMPORARY BINDER. JACOB H. NELLIS, Canajoharie, N. Y. Filed Aug. 21, 1893. Serial No. 483,697. (No model.)



*Claim.*—1. An improved binder comprising a base, and a series of page-clamping devices hinged at a common center upon said base and radiating therefrom to a vertical line when arranged in succession, substantially as shown and described.

2. An improved binder comprising a base, page clamping sections adapted to turn thereon, and a longitudinally movable rod having a hook upon its outer end for the purpose of holding the pages when turned backward, substantially as shown and described.

3. An improved binder comprising a base, a series of page clamping devices, a longitudinally movable rod upon which the said devices are hinged, and a hook carried by the outer end of the rod for the purpose of engaging the leaves or pages when turned backward, substantially as shown and described.

4. An improved binder comprising a base, a series of elongated plates hinged thereto, and page clamping devices hinged to the outer edges of the said elongated plates and which have a turning movement on said plates independent of the swinging movement of the latter, substantially as shown and described.

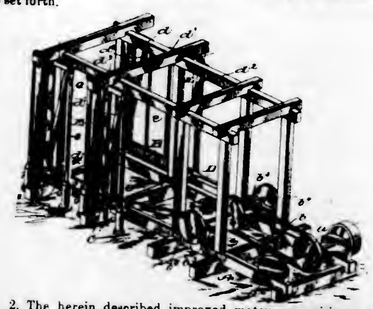
5. An improved binder comprising a base, a series of elongated plates hinged thereto, bearings projecting from the outer edges of the said plates, and page clamping devices adapted to swing in the said bearings, substantially as shown and described.

6. An improved binder comprising a base, a series of elongated plates hinged thereto, a rod forming bearings at its end upon the outer edge of the said plate, a page clamping device adapted to turn upon said bearings, and a means for holding said rod rigid with the plate, substantially as shown and described.

7. An improved binder comprising a base, elongated plates hinged thereto, rods bent between their ends and secured to the upper side of the plate, bearings formed upon the projected ends of said rod, and page clamping devices adapted to turn upon said bearing, substantially as shown and described.

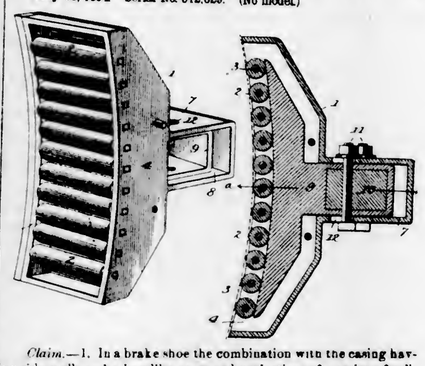
528,552. POWER-TRANSMITTER. ROBERT F. NICHOLS, Sr., Alturas, Cal. Filed Aug. 30, 1892. Renewed Oct. 18, 1893. Again renewed Sept. 20, 1894. Serial No. 523,646. (No model.)

*Claim.*—1. The herein described improved motor, comprising a main frame, a series of lever frames fulcrumed in said main frame and having upper horizontal bars and divergent bars, connecting rods depending from said horizontal bars, and slides movable in said main frame and to which said lever frames are pivotally connected, as set forth.



2. The herein described improved motor, comprising a main frame, a series of lever frames fulcrumed therein and composed of an upper horizontal bar, a central perpendicular bar secured thereto, and two divergent bars attached to said perpendicular and horizontal bars, slides to which said perpendicular bars are loosely secured, and connecting rods pivotally attached to said lever frames, substantially as set forth.

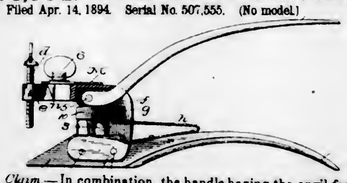
528,553. BRAKE-SHOE. JOHN O'BRIEN, Gracedale, Pa. Filed May 28, 1894. Serial No. 512,629. (No model.)



*Claim.*—1. In a brake shoe the combination with the casing having side walls and a box-like rearward projection, of a series of rollers supported in the side walls and adapted to bear upon a wheel, a brake shoe loosely arranged within the casing having a face adapted to bear upon the rollers and a shank extending into the projection of the casing and adapted to receive the end of the brake beam, substantially as described.

2. In a brake shoe the combination with the casing having side walls 4, of headed journal pins passing through said walls, rollers upon the pins, a strip 6 attached to the inner wall of the casing and arranged to bear upon the flange of the wheel and to hold the pins in the casing and a brake shoe proper arranged to bear upon the rollers, substantially as described.

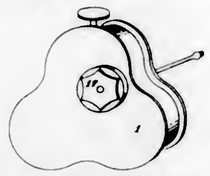
528,554. SAW-SET. JEROME W. PACKARD, Malden, Mass. Filed Apr. 14, 1894. Serial No. 507,555. (No model.)



*Claim.*—In combination, the handle having the anvil formed integral therewith of the arm having side plates fitting against the sides of the anvil and secured thereto forming a chamber, the bearing block having a depending guiding pin fitting an opening in the anvil and sliding vertically in said chamber, a leaf spring bearing under the shoulder formed by the rearward extension of said block

and the upper handle having its forward end arranged intermediate of the block and top wall of the chamber and pivoted between the side walls adapted to be operated to depress said block, substantially as described.

528,555. PORTABLE SPRING-ACTUATED CENTER-MARK TOOL. ROBERT S. PEABODY, Philadelphia, Pa. Filed May 11, 1894. Serial No. 510,850. (No model.)



*Claim.*—1. A portable spring actuated center mark tool comprising, a casing adapted to be held in the hand, a revoluble spindle carrying a marking point, a plate upon which the inner end of said spindle abuts, a spring actuated train of spur wheels for driving said spindle, a centrally pivoted L-shaped lever having one of its arms provided with a push button accessible from the exterior of the casing and having its other arm in range of the periphery of one of said wheels, and a spring for normally pressing the last mentioned arm of the lever upon the periphery of the wheel, substantially as described.

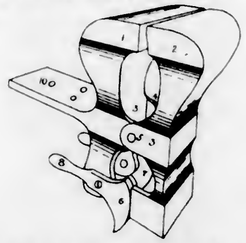
2. A portable spring actuated center mark tool comprising, a casing adapted to be held in the hand, a train of spring actuated gears for driving a spindle carrying a marking point, a ratchet wheel keyed to the winding arbor of the spring, a revoluble disk provided with a pawl adapted to engage said ratchet wheel, a spring soliciting said pawl out of range of said ratchet wheel, a second revoluble disk provided with a pin adapted to collide with said pawl when the disks are rotated in one direction and to release said pawl when the ratchet-wheel is rotating in the other direction, substantially as described.

3. In combination, a winding arbor for a spring, a ratchet wheel keyed to said arbor, a disk revoluble on said arbor and provided with a pawl tending to clear said ratchet wheel, a second disk revoluble on said arbor and provided with a projection adapted to collide with said pawl when the disks are rotated in one direction and to release said pawl when the ratchet wheel is rotating in the other direction, substantially as described.

4. In combination, a winding arbor for a spring, a ratchet wheel keyed to said arbor, a disk revoluble on said arbor and provided with a pawl tending to clear said ratchet wheel, a second disk revoluble on said arbor and provided with a projection in range of the heel of the pawl, and a spring tending to retard the rotation of the first mentioned disk, substantially as described.

5. A portable spring actuated center mark tool comprising, a casing adapted to be held in the hand, a revoluble spindle carrying a marking point and provided with spring actuated driving mechanism and a push button and retarding mechanism, and a supporting plate as 5, upon the smooth face of which the inner end of the spindle abuts, substantially as and for the purposes set forth.

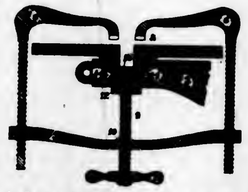
528,556. VISE. ROBERT S. PEABODY, Philadelphia, Pa. Filed May 11, 1894. Serial No. 510,853. (No model.)



*Claim.*—1. A vise comprising jaws whereof one is fixed and whereof each is provided at its lateral edges with integral ears hinged or journaled together, and means located in alignment with the ears and adapted to operate and clamp the jaws, substantially as described.

2. A vise comprising jaws whereof one is fixed and whereof each is provided at its lateral edges and intermediate of its length with the members or ears of a hinge-coupling, and cams or eccentrics interposed between the depending portions of the jaws and located beneath and in alignment with the hinge-couplings, substantially as described.

528,557. CLAMPING DEVICE FOR MACHINE-TOOLS. ROBERT S. PEABODY, Philadelphia, Pa. Filed May 12, 1894. Serial No. 511,014. (No model.)



*Claim.*—1. In combination a plate or table, a spider-frame or yoke located in rear of the plate or table, rigid fingers firmly attached to the arms of said yoke or frame and extending around in front and opposite to the face of the table, and means for shifting the yoke or frame to cause the ends of the fingers to move toward and away from the face of the table or plate, substantially as described.

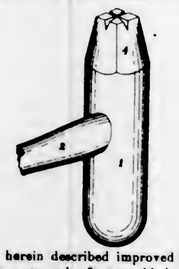
2. In combination a plate or table, a spider-frame or yoke located in rear of the plate or table, rigid fingers having one of their respective extremities screwed into the arms of the yoke or frame and extending around the edge and opposite the face of said plate or table, and means for shifting the yoke or frame to cause the free ends of the fingers to approach and recede perpendicularly to and from the face of the table or plate, substantially as described.

3. In combination a flat plate or table, a spider frame or yoke located in rear of the plate or table, L-shaped rigid fingers having one of their arms firmly attached to the frame or yoke and having the ends of their other arms grooved and disposed in front of and parallel with the face of the plate or table, and means interposed between the rear of the table and yoke or frame and adapted to shift the latter to cause the curved ends of the fingers to approach and recede perpendicularly to and from the face of the plate or table, substantially as described.

4. In combination a lathe provided with a round bed-plate, a tail-stock arm provided with an opening encircling said bed-plate and with a set-screw for clamping it thereto, and a table provided with apertures of various sizes and revolubly applied to the tailstock arm, substantially as described.

5. In combination, a lathe provided with a transversely adjustable tailstock, a table provided with apertures of various sizes and revolubly applied to said tailstock, a yoke provided with clamping fingers, and means interposed between the table and yoke and adapted to shift the latter in respect to the former, substantially as described.

528,558. RIVETING-HAMMER. ROBERT S. PEABODY, Philadelphia, Pa. Filed May 12, 1894. Serial No. 511,015. (No model.)

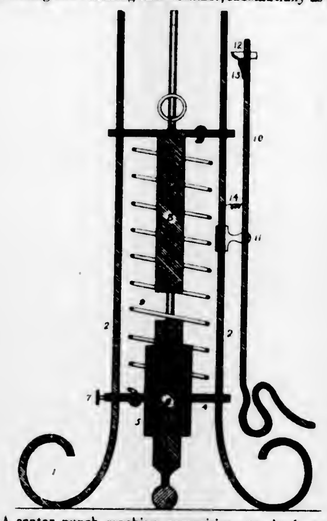


*Claim.*—The herein described improved riveting hammer head having a generally rectangular face provided at its respective corners with lozenge-shaped or rhomboidal high parts converging toward the center of the face, and having wedge-shaped grooves radiating from the center of the face toward the intermediate portions of the respective edges thereof, and said grooves being of V-shaped cross-section and increasing in depth from the center of the face toward the edges thereof, substantially as and for the purposes set forth.

528,559. CENTER-PUNCH MACHINE. ROBERT S. PEABODY, Philadelphia, Pa. Filed May 12, 1894. Serial No. 511,016. (No model.)

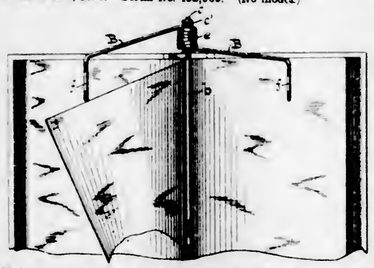
*Claim.*—1. A center punch machine comprising a main frame provided with standards carrying a sleeve, a center punch movable in and guided by said sleeve, a hammer guided by said standards and tending to strike said punch, and trigger-and detent connections for restraining and releasing said hammer, substantially as described.





2. A center punch machine comprising, standards, a yoke adjustable in respect to said standards and provided with a sleeve, a center punch movable in said sleeve, a hammer, a spring for actuating said hammer, and a trigger lever provided with detent connections for detaining said hammer in elevated position, substantially as described.

528,560. LEAF-HOLDER. JOHN H. PENDLETON, Brooklyn, N. Y. Filed Dec. 7, 1893. Serial No. 492,969. (No model.)



*Claim.*—1. A leaf holder consisting of a spring clamp formed with two members, the one adapted to bear against the back of the book, and the other to enter the angle formed by the leaves and permitting the leaves to be freely turned in either direction, and leaf-holding arms projecting from the top of the clamp adapted to reach over the open book, and terminating in rounded bearing ends lying in planes substantially at right angles to the leaves and substantially parallel to the plane of the clamp, substantially as described.

2. A leaf-holder consisting of a clamp formed of two longitudinal members adapted to encompass the back of the book and to enter between the leaves thereof, a pivot-post formed at the top of the clamp, and spring leaf-holding arms swiveled to said post to turn in a plane at right angles to said clamp, substantially as described.

3. A leaf-holder consisting of a clamp formed of two members located in planes at right angles to each other and adapted to encompass the book and to enter between the leaves thereof, a pivot-post formed at the top of the clamp, and spring leaf-holding arms swiveled to said post to turn in a plane at right angles to the clamp and terminating in curved bearing ends, substantially as described.

4. A book-leaf holder made of wire and consisting of a clamp formed of two double members located in planes at right angles to each other, one part of one of said members extending upwardly and having a coil about the same formed from part of the second member and forming a pivot post, and leaf holding arms provided with a central spring coil swiveled upon said post, substantially as described.

528,561. TROLLEY-WIRE CLIP. JAMES W. PERRY, Philadelphia, Pa., assignor to the Johns-Pratt Company, Hartford, Conn. Filed May 5, 1894. Serial No. 510,143. (No model.)



*Claim.*—1. A clip having means for attachment to an insulator, and a trough or pocket for the wire, the walls of said wire pocket being formed by separate parts that are held together on one side of the wire by a non-adjustable fastening and on the other side of the wire by an adjustable fastening, substantially as specified.

2. A clip having means for attachment to an insulator, and a trough or pocket for the wire, the walls of said wire pocket being formed by separate pieces that are held together on one side of the wire pocket by fingers on one part engaging openings on the other part and on the other side of the pocket by clamping bolts or screws, substantially as specified.

3. A clip having a body consisting of a screw socket and an elongated web with a curved recess forming a portion of the wall of the wire pocket, the ends of the curved portion of the web only being bent around to pass under and up on the opposite side so as to support the wire without the aid of the clamp plate, a clamp plate having a curved recess forming the other portion of the wall of the wire pocket and holding the wire in the pocket, and fastenings for holding the body and the clamp plate together, substantially as specified.

4. A clip having a body consisting of a screw socket and a web with a curved recess forming a portion of the wall of the wire pocket, a clamp plate forming the other portion of the wall of the wire pocket, with fingers loosely engaging with openings in the web for fastening one edge of the clamp plate to the body, and screws for fastening the other edge of the clamp plate to the body, substantially as specified.

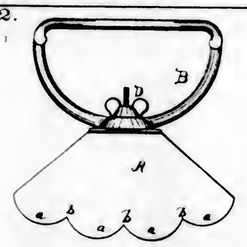
5. A clip formed in two parts with a wire pocket between them, one part being loosely hinged to the other part on one side of the wire pocket, and a removable fastening on the other side of the wire pocket for drawing the parts together so that they will bite the wire between them, substantially as specified.

6. A wire formed in two parts with a wire pocket between them, one part having a tread curved from end to end on the bottom and the other part removably held to the first part so that they will bite the wire between them, substantially as specified.

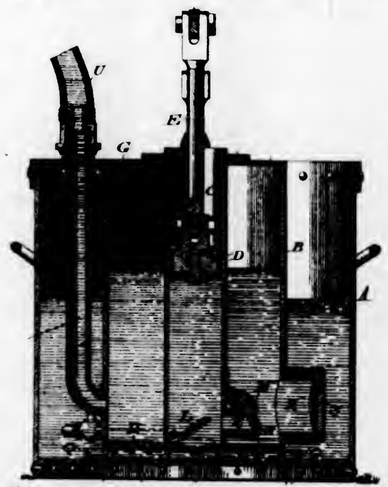
528,562. CHOPPING-KNIFE. WILLIAM L. PIKE, Groton, N. Y. Filed Jan. 24, 1894. Serial No. 497,869. (No model.)

*Claim.*—In a chopping knife the combination of a handle provided at its lower end with a disk having formed therein an opening or passage and having on its under side, on opposite sides of such opening, a pair of downwardly projecting studs, a blade having its upper portion bent to extend substantially at right angles to its body and provided with openings adapted to receive the studs on alignment with the opening in the disk at the lower end of the handle, a headed bolt extending through the aligned openings in the blade and the disk carried by the handle, and a thumb nut secured on the upper end of such bolt and bearing against the upper surface of said disk, substantially as shown and described.

528,562.



528,563. FIRE-ENGINE AND PUMP. CHARLES POUPE and CHARLES LOCK, Philadelphia, Pa. Filed Dec. 23, 1893. Serial No. 494,518. (No model.)

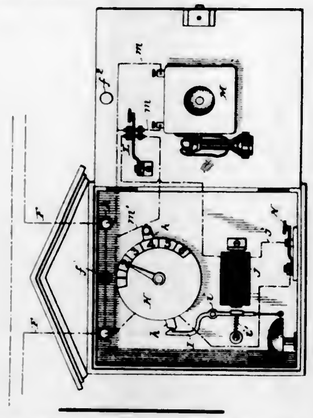


*Claim.*—1. In a fire engine and pump, a supply tank having an annulus rising from the base thereof, a cylinder in said tank having the raised bottom H, a barrel in said cylinder, the ends of the latter being projected beyond said bottom and perforated, and provided with a horizontal flange fitting within the annulus, and adapted to contact with the latter and the bottom of the tank, and a cross piece C detachably secured to the top of said tank, and adapted to hold the upper portion of said cylinder and barrel in position while said annulus and bottom of the tank hold the lower portion of said cylinder in position, substantially as described.

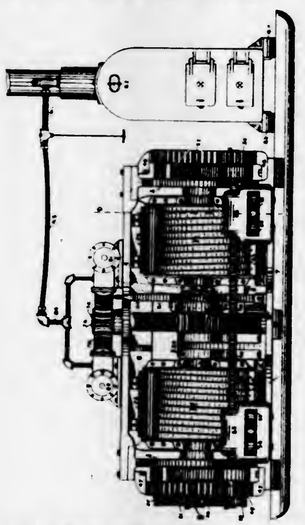
2 The exterior supply tank A having the vertical annulus Q rising from the bottom thereof, the cylinder B having the raised bottom H, and the perforated rim N projected beyond said bottom and provided with the outwardly turned flange P, fitting within said annulus and resting on the base of the tank, the barrel C in said cylinder provided with the suction and discharge valves L and M, and the cross piece C suitably secured to the tank A and adapted to hold the upper portion of the cylinder and barrel in an upright position, the above parts being combined substantially as described.

3. An exterior supply tank, a cylinder therein having a raised bottom and a barrel in said cylinder, said tank, cylinder and barrel being concentrically arranged, a perforated flanged rim for supporting said cylinder, and adapted to contact with the bottom of said supply tank, an annular ring for holding said rim in position, suction and discharge valves arranged in the lower portion of said barrel, and a manhole in the side of the cylinder for permitting access to the discharge valve, said parts being combined substantially as described.

4. A fire engine and pump, consisting of an exterior tank, and a cylinder therein serving as an air chamber and having a raised bottom and a perforated rim extended beyond the same and provided with a horizontal flange which contacts with the bottom of said tank an annular ring attached to said bottom in position to engage such flange, a barrel connected at its lower end with the bottom of said cylinder, and provided with an inlet valve in its bottom, and an outlet valve in its side, a piston in said barrel, a cross piece for holding said cylinder in place, and a discharge pipe leading from the lower portion with the central station, the main line, the battery for said line, and the switch at the central station for cutting out said battery, of sub-stations upon said line, each provided with a signal instrument and a magneto telephone and separate circuits, for said instrument and telephone, a switch for connecting the line with either the signal instrument or the telephone at pleasure, an operating lever for the signal instrument, a locking lever, I, adapted to engage and lock the operative lever, the said locking lever being operated in the direction to unlock by a magnet J, in the signal circuit, *j*, and in the opposite direction to unlock by a spring, i, when the battery is cut out from the line, substantially as described.



528,567. STUMP-EXTRACTOR. JOHN C. SHARP, Delavan, Wis. Filed May 26, 1892. Serial No. 434,506. (No model.)



*Claim.*—1. In a suitably anchored stump extractor, the combination with a winding drum and mechanism for rotating it, a draft rope attached to said drum, of a sliding draft rope guide mounted in a frame pivoted to the same center as that on which the winding drum turns, a screw carried by said pivoted frame for moving the sliding draft rope guide across the face of the drum, and mechanism for operating said screw, all substantially as shown and described.

2. In a suitably anchored stump extractor, the combination with a winding drum and mechanism for rotating it, a draft rope attached to said drum, of a sliding draft rope guide mounted in a frame pivoted to the same center as that on which the winding drum turns, a screw carried by said pivoted frame for moving said sliding draft rope guide across the face of the drum, said screw operated by a gear wheel suitably mounted thereon, and said gear wheel driven by another gear wheel connected to the winding drum so as to rotate therewith, all substantially as shown and described and for the purpose set forth.

5. In a suitably anchored stump extractor, the combination with a winding drum and mechanism for rotating it, a draft rope attached to the drum, of a sliding draft rope guide with guide rollers therein, said draft rope guide mounted in a frame pivoted to the same center as that on which the winding drum turns, a screw carried by said pivoted frame for moving said sliding draft rope guide across the face of the drum, and mechanism for operating said screw, all substantially as shown and described and for the purpose set forth.

4. In a suitably anchored stump extractor, the combination with a winding drum and mechanism for rotating it, a draft rope attached to the drum, of a sliding draft rope guide with an elongated vertical opening therein to permit a vertical play of the draft rope in passing through it, said sliding draft rope guide mounted in a frame pivoted to the same center as that on which the winding drum turns, a screw carried by said pivoted frame for moving the sliding draft rope guide across the face of the drum, and mechanism for operating said screw, all substantially as shown and described and for the purpose set forth.

5. In a suitably anchored stump extractor, the combination with a winding drum and mechanism for rotating it, a draft rope attached to said drum, a sliding draft rope guide mounted in a frame pivoted to the same center as that on which the winding drum turns, a screw carried by said pivoted frame for moving said draft rope guide across the face of the drum, mechanism for operating said screw, and of a rope holding bar placed parallel to the face of the drum for holding the draft rope thereon, all substantially as shown and described and for the purpose set forth.

6. In a suitably anchored stump extractor, the combination with a main frame and winding drum mounted therein, mechanism for rotating the drum, a draft rope attached to said drum, of a sliding draft rope guide mounted in a frame with its side pieces pivoted to the same center as that on which the winding drum turns, means for holding the side pieces of said pivoted frame up to the side pieces of said main frame of the machine, a screw carried by said pivoted frame for moving said sliding draft rope guide across the face of the drum, and mechanism for operating said screw, all substantially as shown and described and for the purpose set forth.

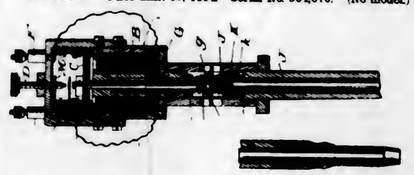
7. In a suitably anchored stump extractor, the combination with a main frame, a winding drum mounted therein, mechanism for rotating the drum, a draft rope attached to said drum, of a sliding draft rope guide mounted in a frame with its side pieces pivoted to the same center as that on which the winding drum turns, confining pieces for holding the side pieces of said pivoted frame up to the side pieces of said main frame of the machine, a screw carried by said pivoted frame for moving said sliding draft rope guide across the face of the drum, and mechanism for operating the screw, all substantially as shown and described and for the purpose set forth.

8. In a suitably anchored stump extractor, the combination with a winding drum mounted in a main frame, mechanism for rotating the drum, of a draft rope attached to said drum, thence passing through a suitable draft rope guide and connected with a load, a frame with its side pieces pivoted to the same center as that on which the winding drum turns, confining pieces for holding the side pieces of the pivoted frame up to the sides of said main frame, rack-teeth on said confining pieces, which teeth mesh with the teeth of pinion wheels suitably mounted on the pivoted frame, and said draft rope guide mounted in the pivoted frame, to swing into draft line by the action of the draft rope, when under strain, in its lining up with the load to which it may be connected, all substantially as described and for the purpose set forth.

9. In a suitably anchored stump extractor, the combination with a winding drum mounted in a main frame, mechanism for rotating the drum, of a draft rope attached to the drum, thence passing through a sliding draft rope guide and connected to a load, mechanism for moving said sliding draft rope guide across the face of the drum, a frame with its side pieces pivoted to the same center as that on which the winding drum turns, confining pieces for holding the side pieces of the pivoted frame up to the side pieces of said main frame, rack-teeth on said confining pieces, which teeth mesh with the teeth of pinion wheels suitably mounted on the pivoted frame, and said sliding draft rope guide mounted in said pivoted frame, to swing into line of draft, by action of the draft rope, when under strain, in its lining up with the load to which it may be connected all substantially as described and for the purpose set forth.

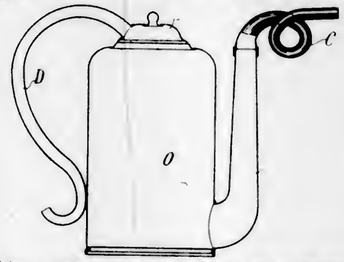
10. In a suitably anchored stump extractor, the combination with a winding drum mounted in a main frame, mechanism for rotating the drum, a draft rope attached to said drum and passing through a sliding draft rope guide and connected to a load, a screw for moving said draft rope guide across the face of the drum, mechanism for operating the screw, a frame with its side pieces pivoted to the same

528,564. ELECTRICAL RETOUCHER. CHARLES M. SAVAGE, Warren, Pa. Filed Mar. 17, 1894. Serial No. 504,076. (No model.)



*Claim.*—In an electrical retoucher for negatives, the combination of the electro magnet B, armature C, rod G, secured to said armature, and having an aperture *g*, near its free end, and adapted to telescope within a hollow shaft J, having a pin I secured in an aperture near its upper end, its free end adapted to engage a stippling point, coile.' spring K bearing against a shoulder *k* and the under side of the pin, a coiled spring H bearing against a shoulder *h*, and the upper side of the pin, a stippling motion being imparted to the point by means of a succession of blows delivered on the pin by the upper edge of the slot *g*, as and for the purpose set forth.

528,565. OIL-CAN. JEAN SCHWIEBERT, Barmen, Germany. Filed July 28, 1894. Serial No. 518,810. (No model.) Patented in Germany Sept. 16, 1893, No. 75,380; in Belgium July 13, 1894, No. 84,617; in France July 16, 1894, No. 236,935, and in England July 17, 1894, No. 13,757.



*Claim.*—A safety can for explosive liquids such as petroleum and the like in form of a hollow vessel which has no movable lid or cover and is closed entirely and which can only be filled and emptied by a spout B provided at its top with a spirally wound nozzle C, which can be taken off when the can shall be filled, and forming a hydraulic closure when put on, the can being provided with a handle D forming at the same time a feed pipe and outlet pipe for air when the can is being emptied and when it is being filled, the whole as set forth and for the purpose described.

528,566. COMBINED MUNICIPAL TELEGRAPH AND TELEPHONE SYSTEM. HARRY M. SMITHDEAL, Wilkes-Barré, Pa. Filed May 28, 1894. Serial No. 512,640. (No model.)

*Claim.*—1. In a combined telegraph and telephone system, the combination with the central station, the main line, the battery for said line and the switch at the central station for cutting out said battery, of sub-stations, each provided with a telegraph or signal instrument and a telephone upon separate circuits, a switch arranged to connect the main line with either of said circuits, a magnet in the signal instrument circuit, an operating lever for said instrument and a locking lever for said operating lever, said locking lever being operated by the magnet and arranged to be disengaged from the operating lever when the instrument circuit is connected with the main line and the battery, and engaged with said lever when the battery is cut out or the instrument circuit disconnected from the main line, substantially as described.

center as that on which the winding drum turns, confining pieces for holding the side pieces of the pivoted frame up to the sides of said main frame, rack-teeth on said confining pieces, which teeth mesh with the teeth of pinion wheels suitably mounted on the pivoted frame, and said sliding draft rope guide mounted in said pivoted frame, to swing into draft line, by action of the draft rope, when under strain, in its lining up with the load, to which it may be connected, all substantially as described and for the purpose set forth.

11. In a suitably anchored stump extractor, the combination with a winding drum, a draft rope attached to said drum, a sliding draft rope guide mounted in a frame pivoted to the same center as that on which the winding drum turns, a screw carried by said pivoted frame for moving said draft rope guide across the face of the drum, mechanism for operating said screw, of an engine for rotating the drum, and said engine connected with a source of power by means of a flexible conductor, all substantially as shown and described and for the purpose set forth.

12. In a stump extractor, the combination with a winding drum and mechanism for rotating the same, a draft rope attached to said drum, of a sliding anchor rope carrier mounted on a bearing parallel to said drum, at its rear part, and of mechanism adapted to move said sliding anchor rope carrier across the drum in correspondence with the advancement in the same direction of the draft rope, in its winding on the drum, or unwinding therefrom, all substantially as described and for the purpose set forth.

13. In a stump extractor, the combination with a winding drum and mechanism for rotating the same, a draft rope attached to the drum, a sliding anchor rope carrier mounted to slide on a bar placed parallel to the drum, at its rear part, mechanism adapted to move said anchor rope carrier across the rear part of the drum in correspondence with the advancement in the same direction of the draft rope, in its winding on the drum, or unwinding therefrom, and of means in connection with said sliding anchor rope carrier for allowing a vertical play, that it may adjust itself to the vertical angle of the anchor rope, all substantially as described and for the purpose set forth.

14. In a stump extractor, the combination with a winding drum and mechanism for rotating the same, a draft rope attached to said drum, of a rocking bar and a sliding anchor rope carrier mounted thereon, at the rear part of the drum, mechanism for moving said anchor rope carrier across the drum in correspondence with the advancement in the same direction of the draft rope, in its winding on the drum, or unwinding therefrom, all substantially as described and for the purpose set forth.

15. In a stump extractor, the combination with a winding drum and mechanism for rotating the same, a draft rope attached to said drum, a sliding anchor rope carrier suitably mounted to slide across the rear part of the drum, a screw for moving the sliding anchor rope carrier in correspondence with the advancement in the same direction of the draft rope, in its winding on the drum, or unwinding therefrom, and mechanism for operating said screw, all substantially as shown and described and for the purpose set forth.

16. In a stump extractor, the combination with a winding drum and mechanism for rotating the same, a draft rope attached to the drum, of rocking bar and a sliding anchor rope carrier mounted to slide thereon, a screw for moving said anchor rope carrier across the rear part of the drum, and mechanism for operating said screw, all substantially as described and for the purpose set forth.

17. In a stump extractor, the combination with a winding drum and mechanism for rotating it, a draft rope attached to said drum, a bar placed parallel to the drum, a sliding anchor rope carrier mounted thereon, a screw passing through the upper part of said anchor rope carrier for moving the anchor rope carrier across the rear part of the drum, mechanism for operating said screw, and of means whereby the anchor rope carrier may move in the arc of a circle on its screw bearing, while the anchor rope carrier is adjusting to the vertical angle of the anchor rope, all substantially as described and for the purpose set forth.

18. In a stump extractor, the combination with a winding drum and mechanism for rotating the same, a draft rope attached to said drum, of a bar with a sliding anchor rope carrier mounted thereon, of a slot in the upper part of said anchor rope carrier, a head or nut in said slot, a screw passing through said head or nut for moving the anchor rope carrier across the rear part of the drum, and mechanism for rotating said screw, all substantially as described and for the purpose set forth.

19. In a stump extractor, the combination with a winding drum and mechanism for rotating the same, a draft rope attached to said drum, a sliding anchor rope carrier mounted on a suitable bearing, mechanism adapted to move said sliding anchor rope carrier on its said bearing across the rear part of the drum in correspondence with the advancement in the same direction of the draft rope in its winding on the drum, or unwinding therefrom, and of a rope holding bar placed parallel to the face of the drum for holding the draft rope on the drum, all substantially as described and for the purpose set forth.

20. In a stump extractor, the combination with a winding drum and mechanism for rotating the same, a draft rope attached to said drum, of a sliding draft rope guide and mechanism for moving the same on a line parallel to the face of the drum, a sliding anchor rope carrier and mechanism for moving it across the rear part of the drum in correspondence with the movement in the same direction of said sliding draft rope guide, all substantially as shown and described.

21. In a stump extractor, the combination with a winding drum and mechanism for rotating it, a draft rope attached to said drum, of a sliding draft rope guide and mechanism for moving it across the face of the drum, a sliding anchor rope carrier, mechanism for moving said sliding anchor rope carrier across the rear part of the drum in correspondence with the movement in the same direction of the sliding draft rope guide, and a bar on which said anchor rope carrier slides, all substantially as shown and described.

22. In a stump extractor, the combination with a winding drum and mechanism for rotating it, a draft rope attached to said drum, of a sliding draft rope gulde and mechanism for moving it across the face of the drum, a sliding anchor rope carrier mounted on a rocking bar, to slide across the rear part of the drum, and mechanism for moving said sliding anchor rope carrier in correspondence with the movement in the same direction of the sliding draft rope guide, all substantially as described and for the purpose set forth.

23. In a stump extractor, the combination with a winding drum and mechanism for rotating it, a draft rope attached to said drum, a rocking bar and a sliding anchor rope carrier mounted to slide thereon across the rear part of the drum in correspondence with advancement in the same direction of the draft rope, in its winding on the drum, or unwinding therefrom, and of a rope holding bar placed parallel to the face of the drum for holding the draft rope on the drum, all substantially as shown and described and for the purpose set forth.

24. In a stump extractor, the combination with a winding drum and mechanism for rotating it, a draft rope attached to said drum, a sliding draft rope guide and mechanism for moving it across the face of the drum, a sliding anchor rope carrier and mechanism for moving it across the rear part of the drum in correspondece with the movement in the same direction of said sliding draft rope guide, and of a rope holding bar placed parallel to the face of the drum, for holding the draft rope on said drum, all substantially as described and for the purpose set forth.

25. In a suitably anchored stump extractor, the combination with a winding drum and mechanism for rotating it, a draft rope attached to the drum aod its other end connected to an eye or connection on the frame of the machine, a draft equalizing pulley on the draft rope between its said end connections to the drum and machine frame, and of a rope holding bar placed parallel to the face of the drum for holding the draft rope on the drum, all substantially as described and for the purpose set forth.

26. In a suitably anchored stump extractor, the combination with a winding drum and mechanism for rotating the same, a draft rope attached to the drum, a sliding draft rope guide, a screw for moving the same across the face of the drum, mechanism for operating said screw, of an eye or connection on the frame of the machine to which the other end of the draft rope is adapted to be attached, and a draft equalizing device on said draft rope between said frame connection and said sliding draft rope guide, all substantially as described and for the purpose set forth.

27. In a stump extractor, the combination with a winding drum and mechanism for rotating it, a draft rope attached to said drum, a frame pivoted to the same center as that on which the winding drum turns, a sliding draft rope guide suitably mounted to slide in said pivoted frame, mechanism for moving said draft rope guide across the face of the drum, of an eye or connection on the frame of the machine to which the other end of the draft rope is adapted to be attached, and a draft equalizing device on said draft rope between said frame connection and said sliding draft rope guide, all substantially as described and for the purpose set forth.

28. In a suitably anchored stump extractor, the combination with a winding drum and mechanism for rotating it, a draft rope attached to said drum, a frame pivoted to the same center as that on which the winding drum turns, a sliding draft rope guide suitably mounted to slide in said pivoted frame, a screw for moving said sliding draft rope guide across the face of the drum, mechanism for operating said screw, of an eye or connection on the frame of the machine to which the other end of the draft rope is adapted to be attached, and a draft equalizing device on the draft rope between said frame counection, and said sliding draft rope guide, all substantially as shown and described and for the purpose set forth.

29. In a stump extractor, the combinator with a winding drum and mechanism for rotating it, a draft rope attached to said drum, a sliding draft rope guide with guide rollers mounted therein, between which guide rollers the draft rope passes, a screw for moving said sliding draft rope guide across the face of the drum, mechanism for operating said screw, of an eye or connection on the frame of the machine to which the other end of the draft rope is adapted to be attached, and a draft equalizing device on the draft rope between said frame connection and said sliding draft rope guide, all substantially as shown and described and for the purpose set forth.

30. In a stump extractor, the combination with a winding drum and mechanism for rotating the same, a sliding draft rope guide and a screw for moving it, mechanism for operating said screw, a sliding anchor rope carrier, a screw for moving the same in correspondence with the advancement in the same direction of the said sliding draft rope guide, mechanism for operating the latter screw, of a draft rope with one of its ends connected to an eye or connection on the frame of the machine, and its other end attached to the winding drum, a draft equalizing pulley on the draft rope between said frame connection and said draft rope guide, all substantially as described, and for the purpose set forth.

31. In a stump extractor, the combination with a main frame and winding drum mounted thereon, a draft rope attached to said drum, a sliding anchor rope carrier and mechanism for moving it across the rear part of the drum in correspondence with the advancement in the same direction of the draft rope in its winding on said drum, or unwinding therefrom, of an engine for rotating the drum and a flexible conductor for connecting the engine with a source of power, all substantially as described and for the purpose set forth.

32. In a stump extractor, the combination with a main frame and a winding drum mounted therein, a draft rope attached to said drum, a sliding draft rope guide and mechanism for moving it across the face of the drum, a sliding anchor rope carrier and mechanism for moving the same across the rear part of the drum in correspondence with the advancement in the same direction of said sliding draft rope guide of an engine for rotating the drum and a flexible conductor connecting said engine with a source of power, all substantially as described and for the purpose set forth.

33. In a stump extractor, the combination with a main frame and a winding drum mounted therein, mechanism for rotating the drum, a draft rope attached to said drum, a sliding anchor rope carrier and mechanism for moving it across the rear part of the drum in correspondence with the advancement in the same direction of the draft rope, in its winding on said drum, or unwinding therefrom, of an auxiliary drum or spool suitably mounted on said main frame, mechanism for rotating said spool or drum, and said auxiliary drum or spool adapted to have an auxiliary draft rope connected therewith to wind thereon, all substantially as described and for the purpose set forth.

34. In a stump extractor, the combination with a main frame and a winding drum mounted therein, a draft rope attached to said drum, a sliding draft rope guide, mechanism for moving the same across the face of the drum, said sliding draft rope guide suitably mounted to slide in a frame pivoted to the same center as that on which the winding drum turns, of an auxiliary drum or spool suitably mounted on said main frame, mechanism for rotating said auxiliary spool or drum and said auxiliary drum or spool adapted to have an auxiliary draft rope connected therewith to wind thereon, all substantially as shown and described and for the purpose set forth.

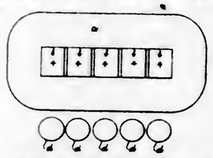
35. In a stump extractor, the combination with a main frame and a winding drum mounted therein, mechanism for rotating the drum and draft rope attached to said drum, a sliding draft rope guide and mechanism for moving it across the face of the drum, a sliding anchor rope carrier and mechanism for moving it across the rear part of the drum, in correspondence with the movement of the sliding draft rope guide, of an auxiliary drum or spool suitably mounted on said main frame, mechanism for rotating said auxiliary drum or spool, and said auxiliary drum or spool adapted to have an auxiliary draft rope connected therewith to wind thereon, all substantially as described and for the purpose set forth.

36. In a suitably anchored stump extractor, the combination with a main frame and draft mechanism mounted therein, means for operating the machine, of a quick speed pulley connected with a load or stump to be pulled, a draft rope attached to said draft mechanism, and said draft rope or an extension thereof, passiug around said pulley and its free end secured to a stump or anchor, a quick speed rope attached to the frame or clevis of said pulley and also attached to the draft rope, said quick speed pulley rope being slightly louger than the distance between its end connections, in order to leave enough slack to permit the pulley or greater power to first slowly start the load or stump, before the quick speed rope with its direct, and more speedy pull, begins its part in finishing the operation, all substantially as described and for the purpose set forth.

37. In a suitably anchored stump extractor, the combination with a winding drum and mechanism for rotating the same, a draft rope attached to said drum, of a draft rope confining device for causing the coils of the draft rope to wind closely to each other on said drum, a screw for moving said draft rope confining device, mechanism for operating said screw, and an anti-friction wheel 240, all substantially as shown and described and for the purpose set forth.



## 528,568. TALLY-TABLE. FREDERICK W. SOWATSKY and MAX SCHIMMEYER, Saginaw, Mich. Filed Dec. 14, 1893. Serial No. 493,691. (No model.)



*Claim.*—In a tally table, the combination with the table having a glass opening therein, of a series of wheels having numbered surfaces carried on a shaft underneath the glass opening, the shaft carrying the wheels journaled at each end on a pin supported by a coiled spring on a bracket depending from the board, the ratchets *j*, pawls *i* pivoted to the lever C fulcrumed in front of the wheels, and the levers C, and the push buttons *d*, operating the levers and thereby turning the wheels, substantially as specified.

## 528,569. CORRUGATED FASTENER. FERDINAND W. STARR, Springfield, Ohio. Filed Jan. 4, 1892. Serial No. 416,989. (Model.)



*Claim.*—1. As an article of manufacture, a nail or fastener consisting of sheet metal bodily corrugated and having approximately parallel edges, one end beveled from the edges to the ridge of the corrugation whereby the extreme point is formed substantially in the plane of the ridge and a counteracting bevel formed on the extreme ridge at the point of the nail adapted to control its penetrating direction, substantially as set forth.

2. As an article of manufacture a fastener consisting of a strip of sheet metal having approximately parallel corrugations formed bodily therein, said corrugated strip beveled on one side from the body ridges to the extreme edge whereby a single point is formed on each alternate ridge, and a counteracting bevel formed at the extreme points at the opposite side from the main bevel, substantially as set forth.

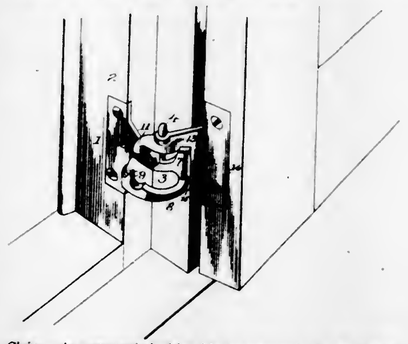
## 528,570. CARPET-LINING. CHARLES C. STEWART, Philadelphia, Pa. Filed Mar. 12, 1894. Serial No. 503,230. (No specimens.)



*Claim.*—1. A carpet lining having an infold in its side, producing a spring edge, substantially as described.

2. A carpet lining formed of a layer of paper, a ply of felt, and an intermediate filling of cotton batting, and provided with an infold side, producing a spring edge, substantially as described.

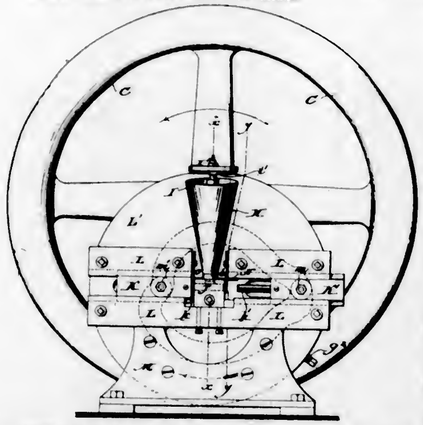
## 528,571. SHUTTER-HINGE. DAVID U. STONER, Mount Joy, Pa. Filed Oct. 13, 1893. Serial No. 488,042. (No model.)



*Claim.*—An automatic locking hinge composed of a male member having a central arm extending therefrom carrying a pintle, and having reverse inclines on opposite sides of the pintle, a semicircular rim uniting the leaf of the hinge and the extended arm provided with notches, and a female member having inclines working on the in-

clines of the male member and a downward extending lug riding on the semicircular rim and engaging the notches thereon, as set forth.

528,572. MACHINE FOR THE MANUFACTURE OF COMPRESSED TABLETS. LANCASTER THOMAS, Philadelphia, Pa. Filed Jan. 26, 1894. Serial No. 498,065. (No model.)



*Claim.*—1. In a machine for manufacturing compressed tablets, pills, &c., the combination of a mold having a central vertical feed and a pressure space on each side of said feed aperture, with reciprocating dies, or plungers, each of which, alternately, acts to convey the material to the right or left of the vertical feed into a pressure space, and to compress the same in such space against the opposite resisting die, and each of which, alternately, acts to eject the compressed pill from that side of the mold opposite to that where it entered the mold, substantially as described.

2. In a machine for manufacturing compressed tablets, pills, &c., the combination of a feeding device I with disk I' and face-cam G, for effecting the rotation thereof, and provided with lug $i'$, for effecting a vertical movement of said feeding device at each revolution thereof, substantially as described.

3. In a machine for manufacturing compressed tablets, pills, &c., reciprocating dies $k$ $k'$, bar N provided with wedge-shaped projections at or near its opposite ends, and means for reciprocating said bar alternately in opposite directions, in combination with springs adapted to ride over said projections, respectively, so as to engage with and displace the compressed tablets from the ends of the dies, substantially as described.

4. In a machine for manufacturing compressed tablets, pills, &c., the cam G in combination with feed adjusting spring G', screws $g$ and $g^2$, compressing spring $G^2$, and screw $g^3$, whereby the face of said cam is varied so as to effect a variable feed of material and the compression thereof, as desired, substantially as described.

5. In a machine for manufacturing compressed tablets, pills, &c., the combination of a mold J, die carriers K K', dies $k$ $k'$, rollers $m$ $m'$ supported on journals passing through the die carriers K K' said journals reciprocating in slots P P', feed adjusting spring G' located within the channel of rollers $m$ $m'$ and adjusting screw $g$, substantially as described.

6. In a machine for manufacturing compressed tablets, pills, &c., the combination of mold J, dies $k$ $k'$ cam G, for reciprocating said dies, carriers K K' and rollers $m$ $m'$ for connecting the dies to the cam, compressing spring $G^2$ and adjusting screw $g^3$ for effecting a variable pressure of the tablet, substantially as described.

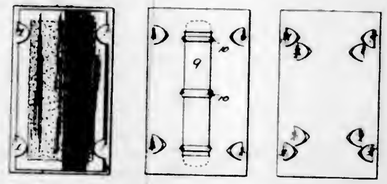
528,573. FLY-PAPER HOLDER. OTTO THUM and HUGO THUM, Grand Rapids, Mich. Filed Apr. 19, 1894. Serial No. 508,117. (No model.)

*Claim.*—1. A fly catching device comprising a curved sheet having the sticky field thereon presented in convex form and means for holding the said sheet in curved position, substantially as described.

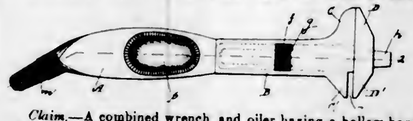
2. A holder for sticky fly paper provided with marginal stops for holding the edges of the sheet and an adjustable central support, substantially as described.

3. A holder for sticky fly paper provided with marginal stops for holding the edges of the paper and a central support formed of a separate piece and secured to the base, substantially as described.

4. A holder for sticky fly paper provided with marginal stops for holding the edges of the sheet and a flexible central support, substantially as described.

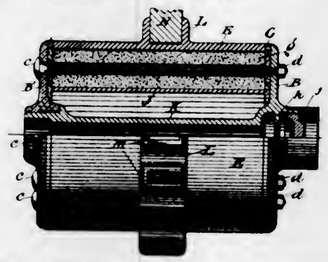


528,574. COMBINED WRENCH AND OILER. THOMAS TIERNEY, Foxborough, Mass. Filed Mar. 1, 1894. Serial No. 501,926. (No model.)



*Claim.*—A combined wrench and oiler having a hollow handle with closed bottom, a nozzle inserted in the outer end provided with a cap, and a spring plate inserted in one of the walls of the handle, a stock extension of the handle terminating in a fixed jaw a movable jaw mounted on a shank which has a screw threaded stem and a nut set in a slot in the stock which controls the movement of the movable jaw, the cheeks of the jaws which project on one side being thickened to serve as a hammer when closed together, one of the cheeks on the opposite side being cut back so that there is a space between them to serve as a wire bender, while the opposite side serves as a hammer without further adjustment, and a screw driver projection on the movable jaw, substantially as described.

528,575. WHEEL. GEORGE TURNER and JAMES M. H. VENOUR, London, England. Filed Jan. 20, 1894. Serial No. 497,481. (No model.) Patented in England Feb. 16, 1893, No. 3,458.



*Claim.*—A wheel comprising the box K cast integral with the flange B at one end and having the flange B' screwed upon its other end, the bolts connecting the flanges, the inner and outer cylinders J E extending concentrically about the box and connected by radial partitions $f$ extending longitudinally of the cylinder from end to end, said cylinders and partitions being cast in one piece, the rubber blocks in the compartments formed by the partitions and the elastic washers extending across the ends of the cylinders, the said flanges B B' extending over the washers and to the outer periphery of the cylinder E, substantially as described.

528,576. PLOW. GEORGE W. WHATLEY, Pleasant Valley, Tex. Filed June 2, 1894. Serial No. 513,257. (No model.)



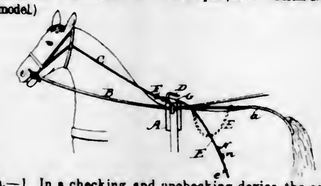
*Claim.*—1. A plow having a V shaped notch or recess formed in its upper central part and wings upon each side of said recess deflected backwardly whereby a portion of the upturned soil is admitted to the bottom of the furrow through said recess and a portion deflected by said wings to each side of the plow.

2. A plow having a V shaped notch or recess in its upper central part, in combination with a bifurcated standard secured upon each side of said depression.

3. In a double shovel plow having the beams united at their clevis ends, the combination of the adjustable brace and spreader D adapted to be placed between said beams and having its ends bent at an acute angle and provided with horizontal slots which register with perforations cut in said beams and a bolt and clamping nuts for securing said brace and spreader in position.



528,577. HORSE CHECKING OR UNCHECKING DEVICE. CLAUD C. WHEELER, Fairmont, W. Va. Filed Sept. 1, 1894. Serial No. 521,887. (No model.)



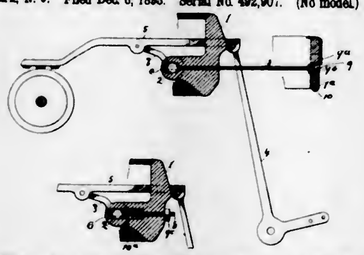
*Claim.*—1. In a checking and unchecking device the combination of a harness saddle, a chambered frame G secured thereto, and a lever D pivoted to its front end and having its lower end within said frame and its upper end provided with a branch $d^3$ on one side thereof, with a strap E having a shouldered plate $m$ secured to the top of its front portion substantially as described.

2. In a checking and unchecking device the combination of a harness saddle, a chambered frame G secured thereto, a lever D pivoted to its front end and having its lower end within said frame, and a spring $k$ having one end secured to said frame and the opposite end pressing upon said lower end of the lever D, with a strap E having a shouldered plate $m$ secured to the top of its front portion substantially as described.

3. In a checking and unchecking device the combination of a harness saddle, a chambered frame G secured thereto, a lever D pivoted to its front end and having its lower end $d$ within said frame, with a strap E having a shouldered plate $m$ secured to the top of its front portion, and a plate N having a hook $n$ and secured to the top of the rear portion of said strap substantially as described.

4. In a checking and unchecking device the combination of a harness saddle, a chambered frame secured thereto, a lever D pivoted to its front end and having its lower end $d$ within said frame, with a strap E having a shouldered plate $m$ secured to the top of its front portion, a plate N having a hook $n$ and secured to the top of the rear portion of said strap and a loop $e$ secured to said strap in the rear of the plate N substantially as described.

528,578. TYPE-WRITING MACHINE. JOHN N. WILLIAMS, Newark, N. J. Filed Dec. 6, 1893. Serial No. 492,907. (No model.)



*Claim.*—1. In combination with a type-bar, an adjusting screw or nut having operative connection with the type bar pivot or support adapted to be turned to adjust the type radially of the printing point and control the alignment of the type, substantially as set forth.

2. In a typewriter, in combination with a type-bar, a pivot therefor, a screw-pin, connected to said pivot and a nut on said pin adapted to hold the same or to be turned to adjust the pin, the pivot and type-bar radially of the printing point, substantially as set forth.

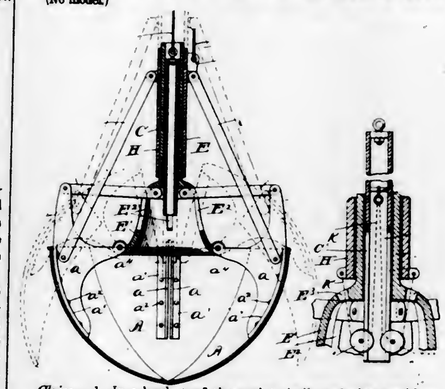
3. In a typewriter, the combination of a type-bar, a pivot therefor, a screw pin connected to said pivot and mounted on the typewriter frame, and a spring and nut adapted to act in opposite directions on said pin, substantially as set forth.

4. In a typewriter, the combination of the frame-piece 1 having slots 6, the type-bars having pivots 2, the screw-pins 8 and springs and nuts all arranged and adapted to operate, substantially as set forth.

5. In a typewriter, the combination of the frame-piece 1, having horizontal slots 6 and vertical radial slots 7, the type bars 5, the carrying and actuating arms 3, 4 and the adjusting pins 8, substantially as set forth.

6. In a typewriter, the combination of the frame-piece 1, having horizontal slots 6, the type-bars having pivots mounted in said slots, the adjusting pins for said pivots and the springs located in said slots and arranged to act on said pivots, substantially as set forth.

528,579. EXCAVATING AND HOISTING BUCKET. GURDON H. WILLIAMS, Brighton, Ohio. Filed Dec. 11, 1893. Serial No. 493,374. (No model.)



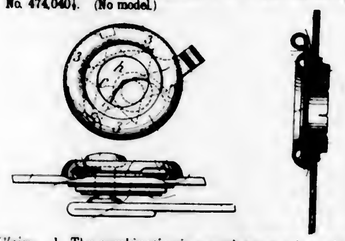
*Claim.*—1. In a bucket of the variety indicated, the combination with the sections that form the sides and bottom of the bucket-proper, of a reciprocating hoisting-cable-engaging-member located at the top and centrally of the bucket, a sleeve or tubular member E embracing said hoisting-cable engaging-member, levers rigid with the aforesaid bucket-sections and pivotally connected to the lower end of the aforesaid sleeve, links operatively connecting said levers with the hoisting-cable-engaging-member, and suitable means operatively connected with the bucket-sections for actuating the latter to separate or open, substantially as set forth.

2. In a bucket of the variety indicated, the combination with the sections that form the sides and bottom of the bucket-proper, of a reciprocating hoisting-cable-engaging-member located at the top and centrally of the bucket, a sleeve or tubular member E embracing said hoisting-cable-engaging-member, said sleeve being enlarged diametrically at its lower end, a plate $a$ secured to each of the aforesaid bucket-sections, said plates having, respectively, an upwardly-extending arm $a^3$ and an inwardly-extending arm $a^4$, the latter being pivotally connected to the lower end of the aforesaid sleeve, links operatively connecting arms $a^3$ of said plates with the hoisting-cable-engaging-member, and suitable means operatively connected with said plates at or near the inner extremity of the inwardly-extending arms of the plates for actuating the aforesaid bucket sections to separate or open, and the aforesaid sleeve being slotted to accommodate the location and operation of the aforesaid links, substantially as set forth.

3. In a bucket of the variety indicated, the combination of the sections that form the sides and bottom of the bucket-proper, said sections being adapted to separate and thereby open the bucket; a relatively stationary member E; levers, $a$ $a^3$ $a^4$, fulcrumed to said stationary member, and rigidly secured to the aforesaid bucket-sections; a reciprocating hoisting-cable-engaging-member and links B operatively connecting the aforesaid levers with said hoisting-cable-engaging-member; another reciprocating member H and means operatively connecting the same with the bucket-sections; a rope or cable attached to said member H for elevating the latter, and one or more chains or cables attached at opposite ends to the aforesaid two reciprocating-members, respectively, the arrangement of parts being substantially as and for the purpose set forth.

4. In a bucket of the variety indicated, the combination of the sections that form the sides and bottom of the bucket-proper; member E enlarged at its lower end, as at $E'$, and slotted, as at $E^2$, $E^2$ hoisting-cable; inner reciprocating-member C having laterally-projecting lugs $C'$; levers $a$ $a^3$ $a^4$; links B; outer reciprocating-sleeve, H; cable I; links G; one or more chains or cables K, and sheaves or guides K', all arranged and operating substantially as shown, for the purpose specified.

**528,580. EYELET FOR CARRIAGE AND BUGGY CURTAINS.** DE WITT C. WOOLSEY, Middlebush, N. J. Filed May 12, 1893. Serial No. 474,040. (No model.)

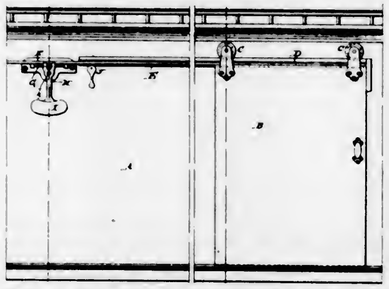


*Claim.*—1. The combination in a carriage curtain eyelet, of face and base plates each with an opening, means for connecting said plates together at their outer edges and for connecting the base plate to the carriage curtain, a plate between the face and base plates having a spring arm projecting beyond the edge of said plates and by which arm said plate can be given a partial turning motion to reduce opening and hold the button, there being a notch in the outer edge of one plate to engage the spring arm, substantially as specified.

2. The combination in a carriage curtain eyelet with a base plate, of a hollow face plate with notches 4, 5 in the edge of its rim, fingers for connecting the face and base plates together at their outer edges, and means for connecting the base plate to the carriage curtain, a movable plate between the face and base plates adapted to reduce the opening in the eyelet, a spring arm extending from said plate outwardly beyond the face plate and adapted to engage the said notches in the edge of the face plate to hold the said movable plate, substantially as specified.

3. The combination in a carriage curtain eyelet with a base plate, of a hollow face plate with notches 4, 5 in the edge of its rim, fingers for connecting the face and base plates together at their outer edges, and means for connecting the base plate to the carriage curtain, a movable plate between the face and base plates, pivoted at 6 to the base plate, and adapted to reduce the opening in the eyelet, a spring arm extending from said plate outwardly beyond the face plate and adapted to engage the said notches in the edge of the face plate to hold the said movable plate, substantially as specified.

**528,581. LOCK FOR DOORS OF MOVING VEHICLES.** CHARLES A. WRIGHT, Philadelphia, Pa. Filed Oct. 26, 1893. Serial No. 489,174. (No model.)



*Claim.*—1. The combination of a vehicle frame adapted to be subjected to sudden changes of movement and provided with a passageway, with a movable door adapted to open and close the said passageway, and an automatic locking device to lock the door to the vehicle frame upon the sudden movement of said vehicle frame but inoperative when the vehicle frame is at rest or moving uniformly.

2. The combination of a vehicle frame adapted to be subjected to sudden changes of movement and provided with a passageway, with a movable door adapted to open or close the said passageway, and a pivoted gravity actuated locking device interposed between the vehicle frame and the movable door whereby sudden jars of the vehicle frame cannot cause the door to shut with force.

3. The combination of a vehicle frame adapted to be subjected to sudden changes of movement and provided with a passageway, with a movable door adapted to open or close the said passageway, a gravity actuated locking device interposed between the vehicle frame and the movable door consisting of suitable jaws and a pivoted weighted arm to operate said jaws carried by one of said parts, and a rod or bar adapted to be grasped by the jaws secured to the other part, whereby sudden jars to the vehicle frame cannot cause the door to shut with force.

4. The combination of a vehicle frame adapted to be subjected to the sudden changes of movement and provided with a passageway, with a movable door adapted to open or close the said passageway, a gravity actuated locking device interposed between the vehicle frame and the movable door consisting of stationary jaw on the vehicle frame, a movable jaw below the stationary jaw, and a pivoted weighted arm having parts to operate said movable jaw carried by the vehicle frame, and a rod or bar interposed between and adapted to be grasped by the said jaws secured to the door, whereby sudden jars to the vehicle frame cannot cause the door to shut with force.

5. The combination of a vehicle frame adapted to be subjected to sudden changes of movement and provided with an opening or doorway, with a movable door adapted to open or close the said doorway or opening, a rod carried by the said door, and a gravity actuated locking device secured to the vehicle frame and adapted to grasp the said rod upon any sudden movement to the vehicle frame.

**528,582. CAN-OPENER.** FRANK W. WRIGHT, Wichita, Kans. Filed May 4, 1894. Serial No. 510,037. (No model.)



*Claim.*—The combination with the handle and arm portions B—D, of the slotted bar portion C, the sliding section H provided with the sections V, V, and prongs *d*—*d*—, set in said slot and carrying the point P; and the blade G punched from said bar portion, substantially as set forth.

**528,583. RUBBER HAND-STAMP.** SAMUEL D. ARNOLD, JOHN B. VENNER, and WILLIAM L. BARNARD, St. Louis, Mo. Filed May 3, 1894. Serial No. 509,902. (No model.)



*Claim.*—As an improved article of manufacture, a hand stamp having its letters or characters mounted upon a flexible type base, a flexible sheet secured to the type base and having elastic pins integral therewith and projecting from the upper face of the sheet, said pins being enlarged at their upper ends, and a body to which the enlarged portions of the pins are cemented, substantially as described.

**528,584. DYEING-MACHINE.** MURRAY BACON, Philadelphia, Pa. Filed Jan. 31, 1894. Serial No. 498,551. (No model.)

*Claim.*—1 In a dyeing machine the combination with a tank of a frame adapted to rest on the tank during the dyeing operation and support yarn carrying bars, arms suitably pivoted on the frame of the machine and to the yarn bar supporting frame and means for moving the arms so as to lift the frame from the tank and carry it to one side thereof.

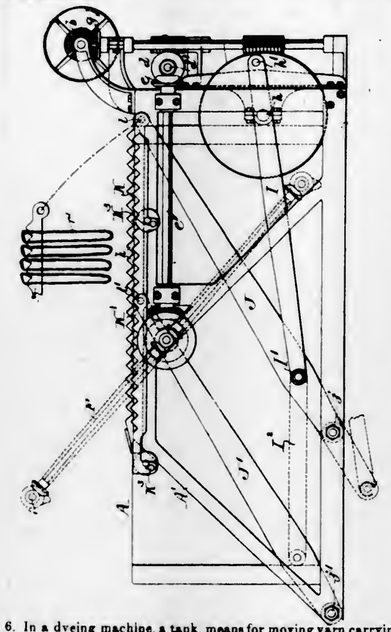
2. In a dyeing machine the combination with a tank of a frame for supporting yarn carrying bars adapted to rest on the edge of the tank, means for moving the yarn carrying bars along the edge of the tank and means for raising the frame and the yarn bars supported thereby from the edge of the tank and carrying them to one side thereof.

3. In a dyeing machine the combination with a tank of a frame for supporting yarn carrying bars adapted to rest on the edge of the tank, means for moving the yarn carrying bars along the edge of the tank and means for raising the frame and the yarn bars supported thereby from the edge of tank and carrying them to one side thereof, said means being so arranged that they cannot both be put in operation at the same time.

4. In a dyeing machine, the combination with a tank, a frame adapted to rest thereon during the dyeing operation, two parallel arms J J′ pivoted to the frame at one end and also pivoted to the frame of the machine and a connection from a suitable source of power for operating the parallel arms J J′ as described.



5. In a dyeing machine the combination with a tank a frame adapted to rest thereon during the dyeing operation, two parallel arms J J′ pivoted to the frame at one end and also pivoted to the frame of the machine and a connecting bar I pivoted to one of the arms and adapted to move the arms and the frame connected therewith as described.



6. In a dyeing machine, a tank, means for moving yarn carrying bars along the edge of the tank arms F for carrying the yarn bars to the rear of the tank, means independent of the arms F for raising the yarn carrying bars from the tank, two pulleys, gearing connecting one of the pulleys with the means for moving the bars along the edge of the tank, gearing connecting the other pulley with the raising mechanism and means for shifting a belt from one pulley to the other.

7. In a dyeing machine the combination with a tank, means for moving yarn bars along the edge of the tank, a frame, on which said bars are adapted to rest arms J J′ secured to the frame, and means for operating the arms J J′ so as to raise the frame and the yarn carrying bars from the edge of the tank.

8. In a dyeing machine, a tank, a frame adapted to rest on the edge of the tank during the dyeing operation and to support yarn carrying bars, means for moving the yarn carrying bars along the edge of the tank, arms J J′ secured to the frame, and means, as arm I, operated by crank pin *k′* for operating the arms J J′ and the frame, substantially as described.

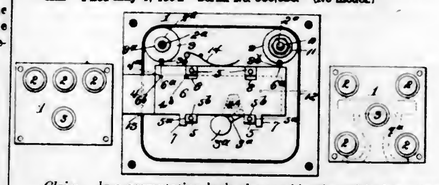
9. In a dyeing machine, a tank, a frame K having suitable notches *k* for supporting and spacing yarn carrying bars, arms J J′ secured to the frame and means for operating the arms J J′ subtantially in the manner specified.

10. In a dyeing machine, a tank, a frame adapted during the dyeing operation to rest on the edge of the tank, and support yarn carrying bars, arms J J′ secured thereto substantially as specified, a bar I secured to a crank pin *k′* and adapted to operate the arms J J′, the half throw of the crank pin *k′* being less than the distance from the pivotal point *j′* of the arm J to the point I′ where the bar I is pivoted to said bar.

11. In a dyeing machine, the combination with a worm gear G, of a gear H operated thereby, a tank, a frame for supporting yarn carrying bars above the tank and suitable connections from the gear to the frame whereby the frame is lifted by the rotation of the gear H and held in any desired position by the locking action of the worm.

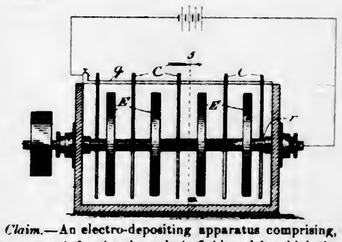
12. In a dyeing machine the combination with a worm gear G, of a gear H operated thereby, a tank, a frame for supporting yarn carrying bars above the tank, arms J J′ secured to the frame, a bar I connecting the gear H with one of the arms whereby the frame may be lifted and held in any desired position by means of the worm G and gear H.

**528,585. COMBINATION-LOCK.** HERMAN BARDITSKY, Florence, Ala. Filed May 1, 1894. Serial No. 509,626. (No model.)



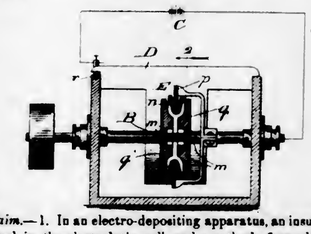
*Claim.*—In a permutation lock, the combination with the casing having square posts forming guides, and a bolt sliding between the horizontal faces of said guides and provided with a notch in its upper edge and one in its lower edge; of a locking plate sliding vertically against upright faces of said guides, a depending rib on said plate adapted to enter the notch in the upper edge of the bolt when the latter is shot, arms depending from the plate near its ends and having top ribs $6^a$, a spring bearing the plate normally downward, notched tumblers located above and below the bolt for engaging all said top ribs and preventing the rising of said plate, and a spindle having a bit for raising the plate and entering said lower notch in the bolt for moving the latter, as and for the purpose set forth.

**528,586. APPARATUS FOR ELECTRODEPOSITION.** HENRY L. BRIDGMAN, Blue Island, Ill. Filed Oct. 3, 1893. Serial No. 487,113. (No model.)



*Claim.*—An electro-depositing apparatus comprising, in combination, a vat A for the electrolytic fluid and in which the anodes D are suspended, a rotatable insulated shaft B, a cathode E secured on the shaft to rotate with it the cathode being of general plate-form with a spiral groove formed on at least one side with insulating material and having its edge covered with insulating material, and a generator having its poles connected, respectively, with the cathode, through the shaft, and the anodes, substantially as and for the purpose set forth.

**528,587. APPARATUS FOR ELECTRODEPOSITION.** HENRY L. BRIDGMAN, Blue Island, Ill. Filed Oct. 3, 1893. Serial No. 487,115. (No model.)

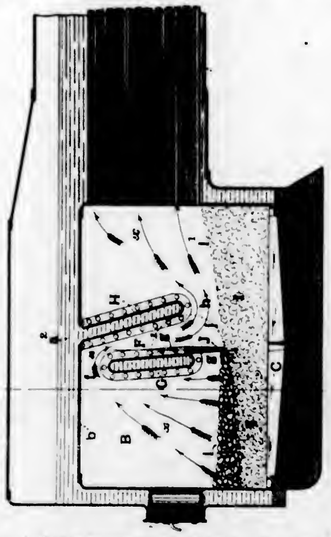


*Claim.*—1. In an electro-depositing apparatus, an insulated shaft supported in the electrolytic cell, and a cathode formed in sections separably supported on the shaft in relative positions to afford an intervening space for forming the mold to receive the deposits of metal, substantially as and for the purpose set forth.

2. In an electro-depositing apparatus, a cathode comprising a hollow mold formed with a center and an adjustable and removable annulus supported to encircle the center and formed with insulating material, substantially as and for the purpose set forth

3. In an electro-depositing apparatus, a cathode comprising a hollow wheel-mold formed with a center composed of the insulated sections *q* and *q′* separable and adjustable on a shaft B, and the sectional annulus *p* supported to encircle the center and formed with insulating material and having the internal head *n*, substantially as and for the purpose set forth.

**528,588. LOCOMOTIVE OR OTHER FURNACE.** RICHARD H. BROWN, St. Louis, Mo. Filed Feb. 19, 1894. Serial No. 500,604. (No model.)



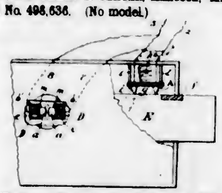
*Claim.*—1. In a locomotive or other furnace a descending flue arranged between the forward end and the rearward end of the furnace substantially as described in combination with a damper for closing the direct escape from the forward portion of the furnace into the lower end of said flue.

2. In a locomotive or other furnace the combination of the diaphragms and the damper, said diaphragms being arranged to form a descending flue in the middle portion of the fire place, substantially as described.

3. In a locomotive or other furnace the combination of the damper and the diaphragm G, said damper being at the lower end of said diaphragm substantially as described.

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**528,589. ELECTRIC BURGLAR-ALARM.** WILMOT A. BROWNELL, Boston, Mass., and JAMES B. SEAGER, Hancock, Mich. Filed Jan. 31, 1894. Serial No. 498,636. (No model.)



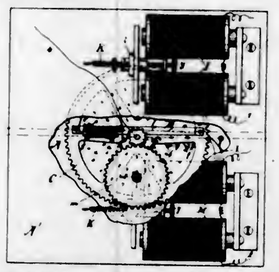
*Claim.*—1. The combination with a door, lid, or drawer, of an electric circuit, an alarm, and two pairs or sets of circuit closers or contacts, all being in series in said circuit when in connection, one pair of contacts being in the lock and adapted to be connected by the bolt when extended or by a separate conductor, and the contacts of the other pair being respectively on the door and door frame, and adapted to be connected when the door is open or ajar, all as set forth.

2. The combination with a door, lid, or drawer, of an electric circuit, an alarm, and two pairs or sets of circuit closers or contacts, all being in series in said circuit when in connection, the contacts of one pair being adapted to rest upon the metal bolt or fastener when the latter is extended, and separated by insulation when the bolt is drawn or unextended, and the contacts of the other pair being respectively on the door and door frame, and adapted to be connected when the door is open or ajar, all as set forth.

3. The combination with a door, lid, or drawer, of an electric circuit, an alarm forming part of the same, a contact on the door and another on the frame, said contact forming part of the circuit when in connection, and being only in connection when the door is open or ajar, the contact on the door being connected with one of two contacts on each side of the key hole, the other of said two contacts being connected with the main line, and said two key hole contacts being normally disconnected, and adapted to be connected by an uninsulated key or other conductor, all as and for the purposes described.

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**528,590. TELEPHONE-EXCHANGE SYSTEM.** WALLACE CHILDS, Fort Smith, Ark. Original application filed May 27, 1890, Serial No. 353,325. Divided and this application filed May 12, 1891. Serial No. 392,456. (No model.)



*Claim.*—1. An automatically operated telegraphic or telephonic exchange switch-board, comprising a series of contact points arranged in concentric circles, and a relatively moving switch-contact adapted to co-operate with said contact points substantially as described.

2. An automatically operated telegraphic or telephonic exchange switch-board, comprising a series of contact points arranged thereon in concentric circles, a relatively moving switch-contact adapted to co-operate with said contact points, and circuit wire connection from said contact points to like contact points in all like switch-boards of said exchange.

3. An automatically operated telegraphic or telephonic exchange switch board, comprising a series of contact points arranged in concentric circles, a switch contact adapted to co-operate with said contact points and move centrifugally across said circles for the purpose specified.

4. An automatically operated telegraphic or telephonic exchange switch board, comprising a series of contact points arranged in concentric circles, a rotary switch arm and contact piece, said contact piece adapted to move lengthwise of said circles of contact points and transversely thereto for the purpose specified.

5. A switch-board comprising a pathway of concentric circles, substantially as shown, in combination with circuit wires extending from said pathway to the like pathways of all the other switch-boards of the system, an electrode switch in line to a subscriber's office to connect with said circuit wires, one or more deflecting flanges, and electrical propelling devices to operate said switch.

6. A switching-instrument comprising a series of concentric circular paths, one or more deflecting flanges, a traveling switch and electrical propelling devices to move said switch substantially as and for the purpose specified.

7. In a telegraphic or telephonic system, a switch-operating-instrument, comprising two electrode hands insulated from each other, a shaft to which one of said hands is rigidly attached, a gear wheel fitting loosely over said shaft carrying the other hand, one of said hands capable of being independently operated, the other only in conjunction therewith, a plate composed of two dials or rings insulated from each other and in open circuit with a central office means to operate said hands into contact with electrode points on said dials and close said circuit; and a non-electrode hand and dial operative only in conjunction with the hand capable of independent movement to indicate the number of revolutions made by said independent electrode hand substantially as and for the purpose set forth.

8. In a switch-operatig-instrument, a compound switch having two connecting arms, gearing capable of being operated by one of said arms, line wires 1 and 2 capable of having their circuits opened or closed by and through the other of said arms; and an electrode switch as V which carries the ground wire 5, and means to operate said switch and move said arms simultaneously substantially as set forth.

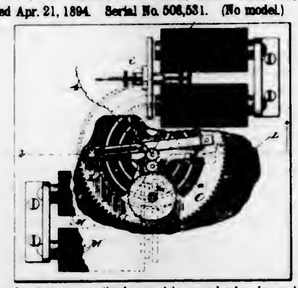
9. In a telegraph or telephone instrument of ordinary construction having one end of its main line wire run to a switching instrument, and terminating therein with a revolving electrode switch, the other end of said line run to a switch-operating-instrument, and terminating therein in a stationary insulated point, which is capable of being connected to by a switch carrying a ground wire, and means to move said switch into or out of contact with said line wire whereby said line wire may open or close a circuit with said revolving electrode switch as and for the purpose specified.

10. In a switch-board in a central office or exchange having electrical connection with a subscriber's station, a single wire having one or more contact-points in the switch-path of said switch-board and running to the switch-path of each of all the other like switch-boards and exposing but one contact-point in each of all of said other like switch-boards, an electrode-switch, and electrical propelling devices to move said switch into contact with said one or more contact-points substantially as specified.

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**528,591. TELEGRAPHIC AND TELEPHONIC EXCHANGE SYSTEM.** WALLACE CHILDS, Fort Smith, Ark. Filed May 27, 1890. Renewed Apr. 21, 1894. Serial No. 508,531. (No model.)



*Claim.*—1. A system of telegraphic or telephonic exchange with a switch-board having a pathway formed of a series of convolutions substantially as shown, with wires in open circuit run thereto connecting said switch-board with all the like switch-boards of the system, in combination with a wheel as C, carrying an arm D, with switch-roller $c^4$, and electro magnetic propelling devices therefor in line to a local station, to revolve said switch-roller and move it into connection with said wires.

2. A system of telegraphic or telephonic exchange having independent transmitters and receivers connected in open circuits converging in a central office and terminating in switch paths, the combination of an arm D, in electrical connection with each of said circuits and provided with a switch $c$ which has an electrode-roller $c^4$ and wheels as C, and $m$, one superimposed upon the other for supporting and operating said roller $c^4$ over a spiral grooved pathway, and one or more electro-magnetic propelling devices therefor in a line from one of the local stations whereby said roller $c^4$ may be moved into connection with each of circuits terminating in the said spiral grooved pathways.

3. A system of telegraphic or telephonic exchange having a series of switch-boards in a central office connected together in open circuits by as many single wires for each switch-board as there are switch-boards in the system less one, each of said wires starting from a pathway leaving an uninsulated exposed surface of the wire thereat, thence continues to the pathway of another switch-board leaving a like exposure thereat, and thence extending to and terminating under said last named switch-board, leaving an uninsulated point thereat, in an insulated group of like wires strung in like manner and for like purpose and a lever carrying a mercury cup to connect and operate with said group of wires.

4. A system of telegraphic or telephonic exchange having independent transmitters and receivers connected together in open circuits converging in a central office and terminating in switch-paths, in combination with a switch-board having a spiral pathway, an electrode switch to revolve around said switch-board in said path, and a spring to return said switch automatically from the inner end of the path to the outer end of the path.

5 A telegraph or telephone exchange having independent transmitters and receivers connected together in open circuits converging in a central office and terminating in a revolving switch, the combination of a wheel as C, carrying said switch, a smaller wheel as $m$, both rigidly attached to a revolving shaft a lever and pawl, one for each of said wheels and electro-mechanical devices to operate said wheels and move said switch into connection with the circuit wires 5.

6. A telegraph or telephone system comprising two or more switching instruments of the character described, connected together in pairs by wires, each of said instruments being connected to every other instrument one end of all of said wires starting in the switch-path of one of said instruments, each wire running to a different instrument from every other wire thence running to the path of another of said switch-instruments and the other end of each of said wires terminating in a group of all of said wires under the switch-board of said last named instrument and a lever having one end provided with a mercury cup arranged under said group of wires and the other end forming a movable contact point in the switch-path of the switching instrument and adapted to operate substantially as set forth.

7. A system of telegraphic or telephonic exchange having independent transmitters and receivers connected in open circuits converging in a central office terminating in switch-path, comprising a switch-board with convoluted path, an electrode revolving switch to move in said path and a spring to return said switch from the inner end to the outer end of said path and a radial way transverse to said convolutions.

8. An automatic system of telegraphic or telephonic exchange having a switch-board containing an electrode lever, one arm of said lever terminating in the path of a revolving switch and capable of being operated thereby, its other arm carrying a mercury terminal, which is in contact with the ends of all the circuit wires which terminate in a group, under said switch-board.

9. A switch-board having its pathway constructed in the form of a spiral in combination with circuit wires extending from said pathway to the like pathways of all the other switch-boards of the system a revolving switch in line to a local station, to connect with said circuit wires, and electro-magnetic propelling devices to operate said switch.

10. A system of telegraph or telephone exchange having a switch-board and in combination, a lever carrying a mercury cup, circuit wires grouped or bunched together and each wire so grouped extending therefrom to a different switch board, from every other wire, electro-mechanical propelling devices to operate said lever and bring the mercury cup into contact with the ends of the circuit wires so grouped.

11. A system of telegraphic or telephonic exchange having a switch operating instrument connected in open circuit with a switching instrument in the "central office," which has a dial made in two concentric circular plates joined together but insulated from each other, gearing to connect and operate at different rates of speed two electrode hands alternately or together said hands insulated from each other—and revolve them over the dial and make contact with said plates at points projecting therefrom, and means to revolve said hands.

12. A system of telegraphic or telephonic exchange with a switch-board having the switch path depressed therein, leaving one or more rims standing against which an electrode roller switch is pressed by a spring, into contact with circuit wires which rest in said rims, leaving an insulated segment of said wires exposed for said switch to roll orer, and electro-mechanical devices to revolve said switch.

13. A system of telegraphic or telephonic exchange, having a series of switch-boards each switch-board comprising a pathway in which circuit wires terminate, made in the form of a spiral and a pathway running transversely thereto, in combination with an electrode switch as $c$, electro-magnetic propelling devices to move said switch around said pathway and into connection with said circuit wires.

14. In a telegraphic or telephonic exchange system, a switch-operating instrument comprising two electrode hands and in combination, insulated from each other, a shaft to which one of said hands is rigidly attached, a gear wheel fitting loosely over said shaft carrying the other hand, one hand capable of being independently operated, the other only in conjunction therewith, a dial composed of two plates or rings insulated from each other and in open circuit with a "central office," and means to operate said hands into contact with electrode points on said dial and close said circuit.

15. In a switch operating instrument of the character shown and described—a compound switch having two connecting arms—gearing capable of being operated by one of the said arms—line wires 1 and 2 capable of having their circuits opened or closed by and through the other of the said arms, and means to operate said switch and move said arms simultaneously substantially as set forth.

16. A system of telegraph or telephone exchange having an electrode switch movably connected to a wheel as C, said switch having a spring to move it radially to the wheel and transversely to paths in which it revolves, and electro-mechanical devices to move it into contact with circuit wires 5, resting in said rims located in said paths.

17. In an automatic switching instrument for telegraph or telephone exchange, the combination of a revolving electrode switch, a spring to operate against said switch, a ratchet and pawl controlling said spring and electro-mechanical devices to revolve said switch in a convolute pathway substantially as and for the purpose set forth.

18. A system of telegraphic or telephonic exchange comprising a switch-board having a pathway formed of a series of convolutions substantially as shown, with circuit wires run thereto connecting said switch-board with all the other switch-boards of the system, in combination with a wheel as C, supporting and operating an adjustable electrode as $c^4$, and electrical propelling devices therefor in a line to a subscriber's office, to move said electrode in connection with said wires.

19. A system of telegraphic or telephonic exchange having independent transmitters and receivers connected together in open circuits converging in a central office and terminating in switch-paths, comprising a circuit making and breaking wheel carrying an elec-

trode switch therefor, radially movable on said wheel, a series of concentric switch-paths, circuit wire contact points located in said paths, and electrical propelling devices to operate said wheel and move said electrode switch into connection with each of said circuit wires substantially as specified.

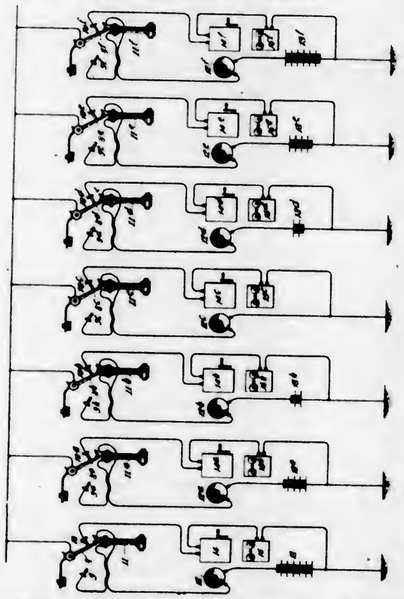
20. In an automatic switching-instrument for telegraphs, or telephones, the combination of an adjustable electrode switch, one or more deflecting flanges to guide said switch, a spring to operate against said switch, a pawl and ratchet controlling said spring, and electro-mechanical devices to move said switch in a concentric pathway substantially as shown and described.

21. In an automatic switching-instrument for a system of telegraphic or telephonic exchange, the combination with a single line or circuit of two electro-magnets, two propelling devices, two batteries of ordinary construction, one of said batteries permanently located on said line and adapted to energize one of said electro-magnets and operate but one of said propelling devices, the other battery adapted to be switched on or off said line and capable of energizing both of said electro-magnets and operating both propelling devices simultaneously, and a traveling electrode-switch capable of being operated by such mechanisms substantially as specified.

22. In a system of telegraphic, or telephonic exchange containing switching mechanisms automatically operated by electro-mechanical devices and in combination therewith a concentric circular, or winding switch-path substantially as shown, and an electrode switch, adapted to move along said switch-path into contact with circuit wire terminals located in said switch-path substantially as and for the purpose set forth.

## 528,592. TELEPHONY. FRANK R. COLVIN, New York, N. Y.

Filed July 26, 1894. Serial No. 518,611. (No model.)



*Claim.*—1. A system of telephonic intercommunication, comprising a plurality of stations connected in multiple-arc relation to the line, each station being provided with a high potential calling generator and a talking outfit organized to impose on line low potential talking currents.

2. A system of telephonic intercommunication, comprising a plurality of stations connected in multiple-arc relation to the line, each station being provided with high potential and high resistance call-receiving and transmitting apparatus and talking apparatus adapted to impose on line low potential currents arranged in independent branches of the circuit.

3. A system of telephonic intercommunication, comprising a plurality of stations connected in multiple-arc relation to a common line having high potential and high resistance calling apparatus normally in closed relation thereto and low potential direct-current talking apparatus in normally open relation thereto.

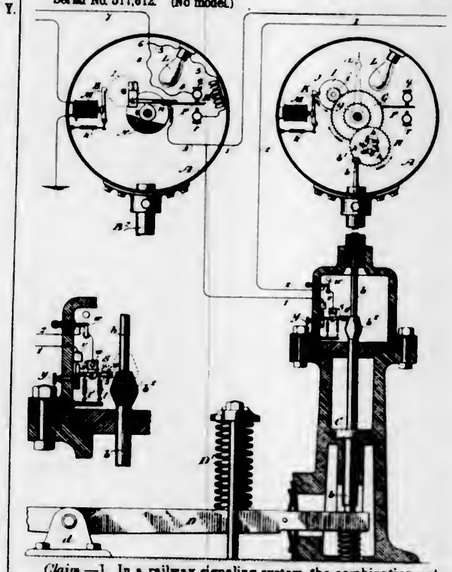
4. A system of telephonic intercommunication, comprising a plurality of stations connected in multiple arc relation to a common line, a battery or other source of continuous current, in each station branch of the circuit the electro-motive-force of the several batteries being arranged to cooperate so that whatever the distance between two subscribers in talking relation to the line, current of substantially the same strength will be furnished.

5. A system of telephonic intercommunication, comprising a plurality of stations connected to a common line, call-transmitting and receiving apparatus in normally closed relation at the several stations, a normally open talking branch including a carbon transmitter and a battery, the batteries at the several stations being arranged so as to progressively increase in electro-motive-force as the distance between the communicating subscribers is increased.

6. A system of telephonic intercommunication, comprising a plurality of stations connected in multiple-arc relation to a common line transmitting apparatus in each station branch of the circuit, said transmitting apparatus being of progressively increasing power as the distance between the stations increases so as to preserve a uniform strength of talking current for all communicating subscribers.

7. A system of telephonic intercommunication, comprising a plurality of stations connected in multiple-arc relation to a common line, and provided with transmitters in the several station branches whose batteries are arranged to act conjunctively or differentially to deliver an electro-motive-force proportionate to the distance between the communicating stations.

## 528,593. RAILWAY SIGNALING SYSTEM. MURRAY CORRINGTON, New York, N. Y. Filed Dec. 3, 1891. Renewed July 14, 1894. Serial No. 517,612. (No model.)



*Claim.*—1. In a railway signaling system, the combination, substantially as set forth, of a visual signal consisting of an index capable of moving by advance or by retrograde movements over successive intervals of a spaced dial: mechanism whereby an advance movement of said index over one space of said dial is automatically imparted by the passage of each of one or more trains beyond a signaling point at the entrance of a signal section; retracting mechanism, which by its recoil, constantly tends to impart to said index a retrograde movement over said dial; and an escapement automatically released by the passage of each of one or more trains beyond a signaling point at the exit of said signal section; which escapement, whenever actuated, permits said index to retrograde over one interval of said spaced dial.

2. In a railway signaling system, the combination, substantially as set forth, of a treadle actuated by the impact of a moving train; a rod which is raised by a connection with said treadle, but is restored to its normal position by the action of an independent retracting device, a retarding device capable of acting upon said rod only during its return movement, a visual index capable of moving by advance or by retrograde movements over successive intervals of a spaced dial; and mechanism whereby an advance movement of said



index over one space of said dial is imparted by each return movement of said raised rod.

3. In a railway signaling system, the combination, substantially as set forth, of a spaced dial, a visual index capable of moving by advance or by retrograde steps over the intervals of said dial; a rod deriving its motion from the impact of a moving train whereby successive advance movements are imparted to said index; a spring which is wound by the advance movement of said index; a detent which acts to prevent the recoil of said spring, and a device actuated from a distant signaling point, whereby said detent may be withdrawn to permit a retrograde movement to be imparted to the index by the recoil of said spring.

4. In a railway signaling system, the combination, substantially as set forth, of a spaced dial; a visual index capable of moving by advance or by retrograde steps over the intervals of said dial; a rod deriving its motion from the impact of a moving train, whereby successive advance movements are imparted to said index; a spring which is wound by the advance movement of said index, a detent which acts to prevent the recoil of said spring; an electro-magnet, included in a circuit extending from a distant signaling point; and a circuit-closer for actuating said electro magnet and withdrawing said detent, the action of which is controlled by the retrograde movement of the visual signaling apparatus at said distant signaling point.

5. In a railway signaling system, the combination, substantially as set forth, of a spaced dial; a visual index capable of moving by advance or by retrograde steps over the intervals of said dial; an electric contact-switch, which is held in one position by the index of said dial when at its zero point, but in another position at all other points in the revolution of said index, an electrically actuated signal, included in a branch of a normally closed electric circuit, which branch is cut out when said index and contact switch are in the normal or zero position, but which is included in said electric circuit when said index and switch are out of the normal position.

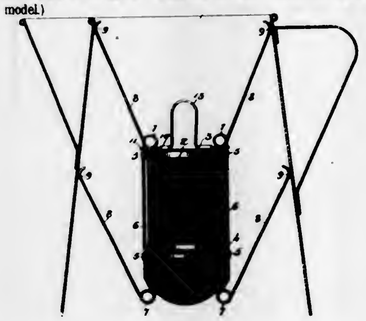
6. In a railway signaling system, the combination, substantially as set forth, of a signal comprising a spaced dial and a visual index moving by advance or by retrograde steps over the intervals of said dial; an electric contact-switch, which is held in one position when the index of said dial is at its zero point, but in another position at all other points in the revolution of said index, and an illuminating device which is energized by an electric current whenever said switch is in any other than the normal or zero position, whereby said visual signal is illuminated whenever its index is out of the position of zero.

7. In a railway signaling system, the combination, substantially as set forth, of a rod deriving a longitudinal motion from the impact of a moving train, a shoulder or angular projection upon said rod, and a wheel provided with a succession of hinged pawls upon its periphery, which engage with said shoulder when the rod is moving in one direction but not when it is moving in the opposite direction, and a visual index moved by said wheel.

8. In a railway signaling system, the combination of an electric switch, shifting apparatus for operating said switch to make or break a circuit, a signal operating circuit opened or closed by said switch, and a train actuated mechanism for mechanically imparting a determinate advance movement successively to said shifting apparatus by the automatic action of each of one or more trains in passing beyond a signaling point.

9. In a railway signaling system, the combination of a spaced dial, a pointer moving over the same, and a train actuated mechanism for mechanically imparting to said pointer a determinate advance movement successively by the automatic action of each of one or more trains in passing beyond a signaling point.

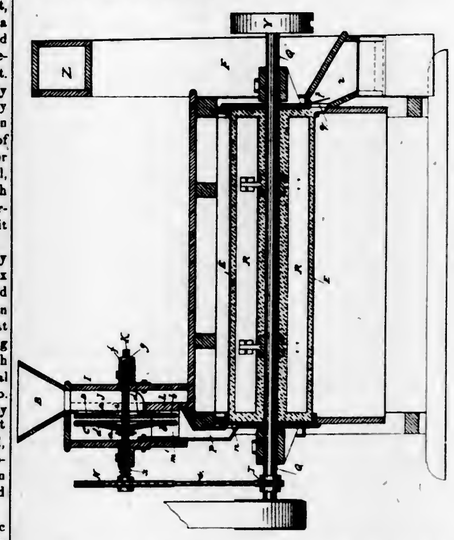
## 528,594. ADJUSTABLE COFFEE-POT ATTACHMENT. HARRY P. DURING, St. Louis, Mo. Filed Jan. 29, 1894. Serial No. 496,314. (No model.)



*Claim.*—1. A coffee pot attachment comprising a suitable holder, reinforcing rims disposed along the same, a series of brace rods secured to said rims, terminal coils for said rods, and resilient arms projecting from said coils, substantially as set forth.

2. A coffee pot attachment comprising a suitable gauze or metallic holder, a terminal reinforcing rim for the same, a second intermediate reinforcing rim, a series of brace rods secured to said rims adjacent to the holder and following the contour thereof, terminal coils on said rods, resilient arms projecting from said coils and having inwardly turned ends, a disk or cover pivoted to one of said brace rods, a retaining spring on said cover having a suitable depression co-operating with the opposite rod, and a suitable handle for said disk, substantially as set forth.

## 528,595. MACHINE FOR HULLING, SCOURING, AND CLEANING COFFEE. DAVID B. FRASER, New York, N. Y. Filed Jan. 4, 1894. Serial No. 496,639. (No model.)



*Claim.*—1. In a machine for hulling and scouring coffee, the feed hopper, the inclosed hulling plate C secured on the revoluble shaft extending through the frame inclosing said plate, and the stationary hulling plate D within said frame and having its central portion removed to form a substantial inlet opening i extending entirely around said shaft, combined with the scouring cylinder receiving the coffee from said plates and containing the driving shaft and scouring blades; substantially as and for the purposes set forth.

2. In a machine for hulling and scouring coffee, the feed hopper, the inclosed hulling plate C secured on the revoluble shaft extending through the frame inclosing said plate, the stationary hulling plate D within said frame and having its central portion removed to form a substantial inlet opening i extending entirely around said shaft, and the plates of perforated metal *d* secured to the facing sides of said hulling plates C, D, combined with the scouring cylinder receiving the coffee from said plates and containing the driving shaft and scouring blades; substantially as and for the purposes set forth.

3. In a machine for hulling and scouring coffee, the feed hopper, the inclosed hulling plate C secured on the shaft extending through the frame inclosing said plate, and the stationary hulling plate D within said frame and having its central portion removed to form a substantial inlet opening i extending entirely around said shaft, the said plates C, D, being concave at the center of their facing sides and flat at the outer portion of their facing sides, combined with the scouring cylinder receiving the coffee from said hulling plates and containing the driving shaft and scouring blades; substantially as and for the purposes set forth.

4. In a machine for hulling, scouring and cleaning coffee, the frame I supporting the hopper B and neck J leading therefrom, the horizontal shaft extending through said frame, the concave hulling plate C secured on said shaft, and the stationary concave hulling plate D having the opening i extending entirely around said shaft in line with the outlet from said neck J, combined with the scouring cylin-

der E, the fine P leading from said frame to said cylinder, the driving shaft and blades within said cylinder, the vertical blast trunk F at the end of said cylinder, the chute r leading from the cylinder to said trunk, and the bin and fan communicating with the upper end of said trunk, said bin having an outlet door at its lower end and a regulating valve at its upper end; substantially as and for the purposes set forth.

528,596. ADDING-MACHINE. HORACE D. HICKS, Whitefield, N. H., assignor of one-half to the Brown's Lumber Company, same place. Filed Nov. 27, 1893. Serial No. 492,160. (No model.)



*Claim.*—1. In a machine for adding numbers, the combination of a rotatable screw-threaded shaft, a scale bar, a pointer advanced along the bar by the rotations of the shaft, a numbered disk secured to rotate with the shaft, and a second numbered disk rotating freely in one direction, but in the other the two disks rotate together, substantially as described.

2. In a machine for adding numbers, the combination of a rotatable screw-threaded shaft, a pointer engaged and advanced by the shaft, a numbered disk fixed thereon, a second loose disk, a pawl and ratchet connection between the disks whereby the loose disk is movable in one direction independently of the shaft and in the opposite direction with the shaft, substantially as described.

3. In an adding machine, the combination of a threaded shaft, a scale bar extending parallel therewith, a pointer advanced along the scale bar by the rotations of the shaft, a pair of numbered disks, one of which is fast and the other loose on the shaft, a pawl and ratchet mechanism, whereby the disks are rotated separately and together, and a detent device, substantially as described.

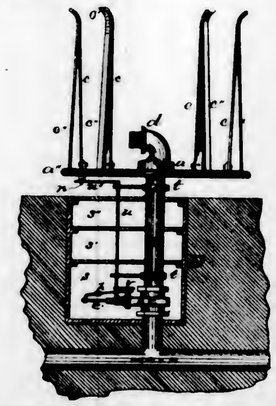
4. The combination of a pair of numbered disks fast and loose respectively upon a threaded rotatable shaft, a scale-bar, a pointer advanced along the scale-bar by the rotations of said shaft, a pair of supporting wheels, and a righting bar, substantially as described.

5. In an adding machine, and in combination with the scale-bar, a threaded shaft extending parallel with the bar, a pointer having a threaded portion in engagement with and actuated by the shaft, and having an open space communicating with said threaded portion, whereby the pointer can be disengaged from the shaft, and a spring interposed between the bar and pointer to hold the latter to the action of the shaft, in the manner and for the purpose set forth

6. In an adding machine, the combination with supporting wheels, of a pair of rotatable numbered disks, having pawl and ratchet connections between them, a screw-threaded shaft on which the disks are centered, a pointer actuated by the threads on the shaft, a scale bar, a pair of supporting wheels, a righting bar, an arm attached to one of the supporting wheels, and projecting over the peripheries of the numbered disks, and a detent on one of the disks adapted to engage the arm, all arranged and adapted to operate as set forth.

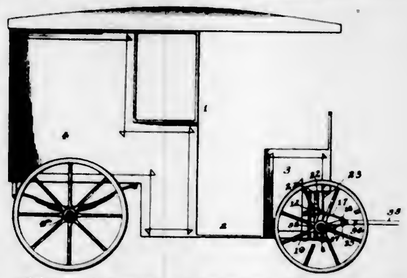
528,597. HOSE-REEL. JAMES R. HUSTER, Cato, N. Y. Filed Mar. 19, 1894. Serial No. 504,143. (No model.)

*Claim.*—1. A hose-reel comprising a base and vertical reel-arms erected thereon, each comprising a spring bent upon itself and having its free end divergent, and a rim upon said base exterior to said divergent ends of said arms.



2. The combination with the reel comprising a base and spring arms mounted thereon, of a box subdivided into air-chambers, a valve set into said box and connected to a water main and to said reel, a crank lever, an arm thereon, a push-rod connected thereto and to the valve stem, and a trip upon the reel adapted to engage with said crank-lever when the reel is rotated.

528,598. WAGON. MARCUS P. JACOBSEN, Jamestown, N. Y. Filed June 4, 1894. Serial No. 513,437. (No model.)



*Claim.*—1. In a vehicle, the combination of the body portion of an axle provided at its ends with upper and lower outward extending arms forwardly offset, and the crank spindles pivotally attached to the arms of the axle body, and located in advance of the body portion of the axle whereby the weight of a tongue and whiffletrees is counterbalanced by the weight of the body of a vehicle, substantially as described.

2. In a vehicle, an axle provided with forwardly offset spindles located in advance of the body portion of the axle, whereby they form fulcrums to counterbalance the weight of a tongue, substantially as and for the purpose described.

3. In a vehicle, the combination of a body provided at its front with vertical guides, a transversely-disposed spring located in the guides and connected with the body, an axle disposed transversely of the body and located in the guides beneath the spring and provided with upper and lower outwardly-extending arms and having upward-extending arms connected with the ends of the spring, the spindles having upper and lower arms pivotally connected to the outward extending arms of the axle, and means for connecting the spindles, substantially as described.

4. In a vehicle, the combination of a body, vertical guides arranged thereon, an axle body comprising a beam 5, an upper bar secured to the beam and terminating in upward extending arms, a lower bar secured to the beam and terminating in lower outward extending arms, and the upper arm 6 arranged at the ends of the beam, a transverse spring arranged in the guides and having its ends connected with the upward extending arms of the axle body, the integral upper and lower spindle arms having central sockets and pivoted to the outward extending arms of the axle body and terminating in forward extending crank arms, and spindles detachably secured in the sockets, substantially as described.

5. In a vehicle, the combination of a body having vertically disposed guide bars provided with forwardly offset upper portions, a transverse spring located at the upper portions of the guide bars, an axle body located in the lower portion of the guide bars and suspended from the spring, and crank spindles pivotally connected with the axle body, substantially as described.

6. In a vehicle, the combination of a body having vertical guides, an axle arranged therein, a spring supporting the axle and connected with the vehicle body, and a guide plate interposed between the axle and the body and provided with a vertical way engaged by the body, whereby the axle is prevented from moving longitudinally, substantially as described.

7. In a vehicle, the combination of a body provided with a vertical guide bar, an axle arranged therein, a spring supporting the axle, and cushions interposed between the axle and the body, substantially as described.

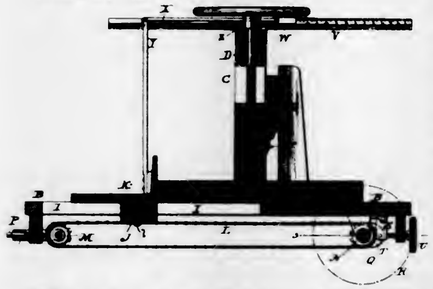
8. In a vehicle, the combination of a body provided at its front with vertical guide bars, an axle arranged therein, a spring supporting the axle, and cushions interposed between the rear face of the axle and the vehicle and comprising vertical bearing bars mounted on the body and the yielding face loosely mounted on the axle and engaging the bearing bars, substantially as described.

9. In a vehicle, the combination of a body provided at its front with vertical guide bars, an axle arranged therein, a spring supporting the axle, and cushions interposed between the rear face of the axle and the vehicle and comprising vertical bearing bars secured to the body, bolts extending rearward from the axle, plates loosely mounted on the bolt and engaging the bearing bars, and spiral springs disposed on the bolts and interposed between the axle and the plates, substantially as described.

10. In a vehicle, the combination of a body provided at its front with vertical guide bars, an axle arranged within the guide bars, a spring supporting the axle, a guide plate secured to the rear face of the axle and provided with vertical flanges forming a way, a rib secured to the body and arranged in the said way, and cushions interposed between the axle and the body, substantially as described.

11. In a vehicle, the combination of a vehicle body provided at its front with vertical guide bars, an axle body arranged in the guide bars and provided at its ends with upper and lower outward extending arms, spindles having upper and lower arms pivoted to those of the axle body and provided with crank arms, a T-shaped coupling frame connected with the axle, a transverse rod having its ends attached to the crank arms of the spindles and connected intermediate of its ends to the T-shaped coupling frame, and a tongue connected with the coupling frame, substantially as described.

528,599. PAPER-CUTTER. JOHN M. JOWER, Palmyra, N. Y. Filed Nov. 27, 1893. Serial No. 492,146. (No model.)



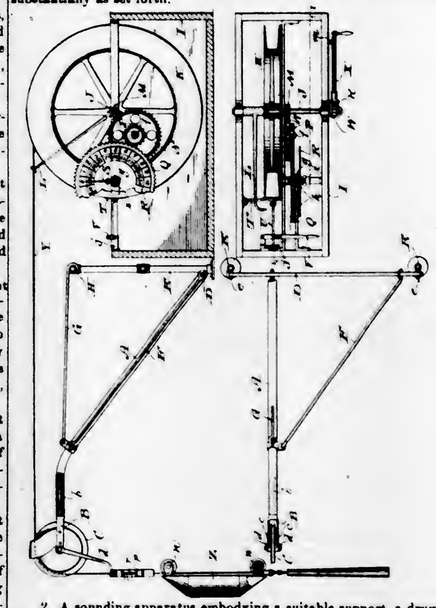
*Claim.*—1. In a paper cutter, the combination with the table; of a back-gage mounted thereon; means beneath the table for moving the back-gage; a fixed bar V provided with graduations and also grooved longitudinally; a slide or index W having its edges seated in the grooves; and a connection between the back-gage and the index.

2. In a paper cutter, the combination with the frame and table; of a back-gage and means for actuating the same; a bar V supported from the frame above the table and having graduations,—and a slide or index W mounted upon the bar and connected with the back-gage,—the said graduated bar extending toward the front of the machine so as to be always in view.

528,600. SOUNDING APPARATUS. CHARLES E. KIRTLAND, St. Francis, Wis. Filed July 5, 1894. Serial No. 516,532. (No model.)



*Claim.*—1. A sounding apparatus embodying a suitable support, a drum and means for rotating the same, a line trained from the drum over the support, a line-guard below said support, a lead attached to the outer end of the line, a float loose on said line above the lead, a mark arranged on the aforesaid line and capable of travel therewith intermediate of the float and guard but incapable of resisting run or draw of the line, and a registering mechanism in gear with the drum, substantially as set forth.



2. A sounding apparatus embodying a suitable support, a drum and means for rotating the same, a brake-mechanism for the drum, a line trained from the drum over the support, a line-guard below said support, alead attached to the outer end of the line, a float loose on said line above the lead, a mark arranged on the aforesaid line and capable of travel therewith intermediate of the float and guard but incapable of resisting run or draw of the line, and a register mechanism in gear with the drum, substantially as set forth.

3. A sounding apparatus embodying a suitable support, a drum and means for rotating the same, a line trained from the drum over the support, a line-guard below said support, a lead attached to the outer end of the line, a float loose on said line above the lead, a mark arranged on the aforesaid line and capable of travel therewith intermediate of the float and guard but incapable of resisting run or draw of the line, a spindle in gear-connection with the drum shaft, a graduated dial rotarily adjustable on the spindle, suitable means for clamping the dial in adjusted position, and a pointer opposed to said dial, substantially as set forth.

4. A sounding apparatus embodying a folding frame attachable to a vessel, a sheave having its head provided with a shank loose in the outer portion of the frame, a drum and means for rotating the same, a line trained from the drum over the sheave, a line-guard extending from the sheave-head, a lead attached to the outer end of the line, a float loose on said line above the lead, a mark arranged on the aforesaid line and capable of travel therewith intermediate of the float and guard but incapable of resisting run or draw of the line, and a register mechanism in gear with the drum, substantially as set forth.

5. A sounding apparatus embodying a suitable support, a drum and means for rotating the same, a line trained from the drum over the support, a pivotal brake-shoe for said drum, a lever-controlled, sliding-bar connected to the brake-shoe and provided with a notch, a latch for engagement with the bar-notch, a line-guard below said support, a lead attached to the outer end of the line, a float loose on said line above the lead, a mark arranged on the aforesaid line and capable of travel therewith intermediate of the float and line-guard, but incapable of resisting run or draw of the line, and a registering mechanism in gear with the drum shaft, substantially as set forth.

6. A sounding apparatus embodying a suitable support, a drum having its shaft provided with a ratchet, a crank loose on the shaft and provided with a clutch-plunger engageable with the ratchet at will, a lead-line trained from the drum over the support, a line-guard

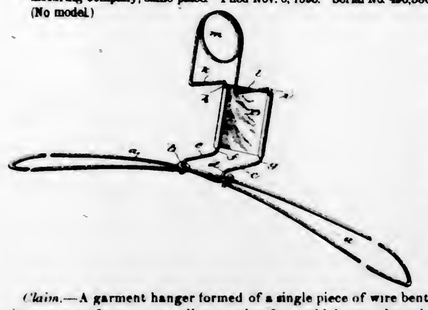
depending from the support, a float and slip-mark on the line intermediate of the lead and guard, and a registering mechanism in gear with the drum-shaft, substantially as set forth.

7. A sounding apparatus embodying a slip-mark comprising a pair of angular plates in link-connection and having inturned ends provided with eyes for passage of a lead-line, a yoke on one of the plates, a post on the other, and a spring-connection between the yoke and post, substantially as set forth.

8. A sounding apparatus embodying a slip-mark comprising a pair of angular plates in link-connection and having inturned ends provided with eyes for passage of a lead-line, a yoke on one of the plates, a post on the other and an adjustable spring-connection between the yoke and post, substantially as set forth.

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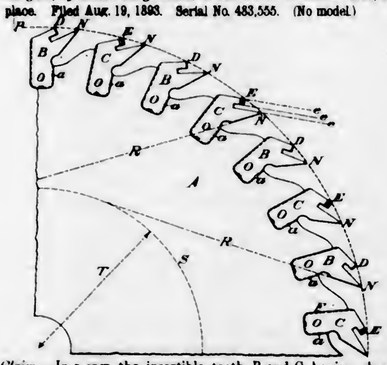
**528,601. DEVICE FOR SUPPORTING COATS, VESTS, &c.** MORRIS F. KOENIG, Hazleton, Pa., assignor to the Barber-Koenig Manufacturing Company, same place. Filed Nov. 8, 1893. Serial No. 490,380. (No model.)



*Claim.*—A garment hanger formed of a single piece of wire bent at its center to form a suspending portion from which extend vertical, parallel arms merging into horizontal arms, the adjacent, vertical arms in a different vertical plane from the suspending portion and with horizontal arms parallel with the upper horizontal arms and terminating in an arched supporting portion in substantially the same vertical plane as the suspending portion and a plate secured to the vertical parallel arm between the upper and lower horizontal arms, substantially as shown and described.

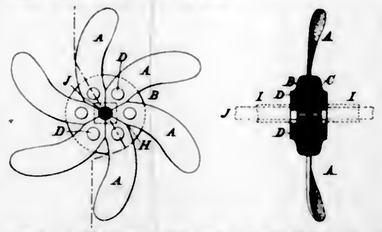
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**528,602. CIRCULAR SAW.** JAMES LITTLE, San Francisco, Cal., assignor, by mesne assignments, of one-fourth to Lars Larsson, same place. Filed Aug. 19, 1893. Serial No. 483,555. (No model.)



*Claim.*—In a saw, the insertible teeth B and C, having shanks which are inserted into recesses in the saw-plate, said teeth B, having the points D and N, and said teeth C having the points E and N, these teeth B and C being arranged to alternate with each other, and the points N being thin chisel points with their edges transverse to the plane of rotation of the saw, while the points E and D are so formed as to operate as planing teeth and are separated from their companion points N by an intervening rectangular throat, as shown, which permits said points E and D to be bent or set parallel on their edge to the main saw-plate, said points E D having likewise their edges parallel to the plane of rotation, the points E projecting in opposite directions from that of the points D, substantially as shown, and all of the tooth-points occupying forwardly inclined positions substantially parallel to each other and with their outer ends in substantially the same circular line, substantially as described.

**528,603. CULTIVATOR-TOOTH.** CHRIS MAUL, Brockport, N. Y., assignor to the D. S. Morgan & Company, same place. Filed Nov. 23, 1893. Serial No. 491,711. (No model.)

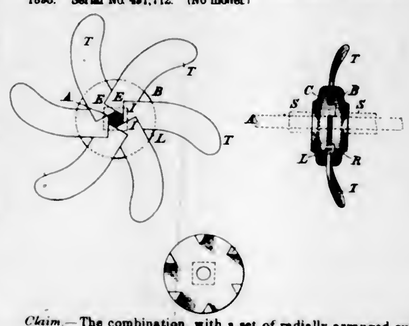


*Claim.*—1. The combination, with a set of radially arranged perforated curved spading teeth, having their inner ends beveled to form abutting edges, of opposing collars located on opposite sides of the teeth, one of said collars being provided with integral projecting lugs adapted to engage between the sides of adjacent teeth, and one of the said collars being provided with integral lugs adapted to engage in the perforations of the teeth, substantially as described.

2. The combination, with a set of radially arranged perforated spading teeth, having their inner ends beveled on the edges, of opposing collars located on opposite sides of the teeth, one of the said collars being provided with integral lugs adapted to engage in the perforations of the teeth, and the other with recesses adapted to receive the ends of the lugs, substantially as described.

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**528,604. CULTIVATOR-TOOTH.** CHRIS MAUL, Brockport, N. Y., assignor to the D. S. Morgan & Company, same place. Filed Nov. 23, 1893. Serial No. 491,712. (No model.)



*Claim.*—The combination, with a set of radially arranged cultivator teeth, each tooth having one of its inner corners notched to receive the corner of the next adjacent tooth, of the collars on opposite sides of the teeth, one of these collars being provided with integral lugs projecting between the edges of the adjacent teeth, substantially as described.

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**528,605. AUTOMATIC VEHICLE-BRAKE.** JAMES A. MOUROE and DANIEL L. DELANEY, Fredericktown, Mo. Filed May 23, 1894. Serial No. 512,236. (No model.)

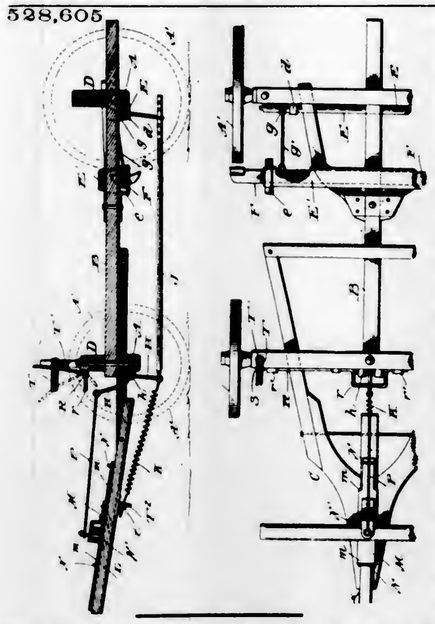
*Claim.*—1. In combination with the running gear of a vehicle and brake as described, a lever pivoted to the front axle having connection with the rock shaft and with a sliding bar or plate on the tongue, said plate carrying an evener, a hand lever with a downwardly bent loop portion, and a coiled spring having one end secured to the under surface of the tongue its other end fastened to an arm of the said lever pivoted to the axle, substantially as shown and described.

2. In combination with the automatic brakes a lever J, the pivoted lever H, a spring connecting the lower end of the pivoted lever and the under surface of the tongue, the lever or rod connecting the evener pin and the upper end of the pivoted rod H, and the hand lever R with its bent portion *r* to allow the brakes to be held from engagement with the wheels, and the vehicle to be backed.

3. In combination with the automatic brakes as described, the lever and rod connections therewith, and a sliding plate M mounted on the upper face of the tongue and having shoulders *m*, the staples N for limiting the movement of said plate, and the spring and lever connection for normally holding the sliding plate at its farthest rearward throw, all substantially as shown and described



**528,605**



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**528,606. SLEIGH-RUNNER.** HENRY PANGBORN and JAMES K. PANGBORN, Menominee, Mich. Filed Feb. 5, 1894. Serial No. 499,198. (No model.) Patented in Canada May 23, 1893, No. 43,009.



*Claim.*—1. In a sleigh runner, the combination with a solid metal runner made of T (inverted) shaped material with a metal knee secured to the runner, metal standards C, C at each end of the knee and extending above the top of the knee and beam, and a metal tongue D pivoted to one standard and adapted to turn down across the beam and be rigidly secured to the other standard, substantially as and for the purpose set forth.

2. In a sleigh runner, a device for securing the beam to the knee of the sleigh consisting of metal standards C, C on each side of the knee and extending above the top of the beam, the metal tongue D hinged to one standard and adapted to turn down across the top of the beam and be rigidly secured to the other standard, thereby rigidly holding the beam in place, as and for the purpose set forth.

3. In a sleigh, the combination of a metal runner made of T (inverted) shaped material, a metal knee secured thereto, standards C, C at each end of the knee, and extending above the knee and beam, the tongue D hinged to one standard and adapted to be turned down across the beam and be secured to the other standard, of the cross beam provided with transverse grooves at each end to receive the tongue, and provided also with a recess on its under side for receiving a cushion, and the cushion, substantially as described.

4. In a sleigh, a cushion between the knee and the beam consisting of hard rubber or other suitable material arranged as shown.

5. A sleigh runner formed of T (inverted) shaped material, the perpendicular of the T forming the rave, the beam resting on the knee, metal standards on each side of the beam secured to the rave, and a metal tongue hinged to one standard and adapted to be turned across the beam and be rigidly secured to the other standard, substantially as and for the purpose set forth.

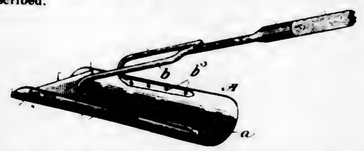
6. In a sleigh, the combination with a T (inverted) shaped metal runner, a metal knee, a cross beam, of a cushion between the knee and the cross beam and means for holding the beam on the knee substantially as and for the purpose set forth.

7. A cross beam for sleigh runners consisting of a beam having a recess on the under side of each end adapted to receive a cushion substantially as described.

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**528,607. DITCHING-TOOL.** DAVID C. PEAT, Sadorus, Ill., assignor of one-half to William Craw, same place. Filed June 20, 1894. Serial No. 515,146. (No model.)

*Claim.*—1. A ditching tool, comprising a scoop, a gate pivotally arranged therein, and a handle secured to said scoop, substantially as described.

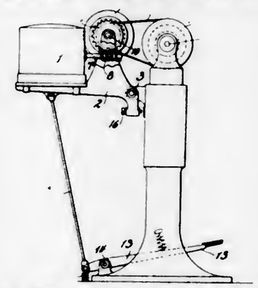


2. In a ditching tool, the combination with a curved scoop having a cutting edge at its opposite ends, of a gate pivotally connected to the sides of the scoop and arranged between said cutting edges, together with a handle secured to the sides of the scoop, substantially as described.

3. A ditching tool comprising a scoop having upwardly turned sides, and a handle provided with a bifurcated end the arms of which are curved and extend inwardly in the plane of the scoop toward the handle and rigidly secured near the upper edges of the opposite sides of said scoop by a series of rivets or bolts, substantially as described.

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**528,608. UTILIZING ELECTRIC MOTORS FOR OPERATING MACHINERY.** ERNST RICHTER, Berlin, Germany, assignor to Siemens & Halske, same place. Filed May 31, 1893. Serial No. 476,063. (No model.)



*Claim.*—1. The combination, with a power machine, of an electric motor and independent intermediate driving gearing having conjoint movable relation to the power machine, and power transmission means interposed directly between said intermediate driving gearing of the motor and the driving pulley or part of the power machine.

2. The combination, with a power machine, of a conjointly suspended electric motor and independent intermediate driving gearing, and frictional power transmission means interposed directly between said intermediate gearing and the driving pulley or part of the power machine.

3. The combination, with a power machine, of a conjointly suspended electric motor and independent intermediate driving gearing, frictional power transmission means interposed directly between said intermediate gearing and the driving pulley or part of the power machine, and an elastic buffer device partially sustaining the weight of the electric motor and intermediate driving gearing.

4. The combination, with a power machine, of a conjointly suspended electric motor and independent intermediate driving gearing, frictional power transmission means interposed directly between said intermediate gearing and the driving pulley or part of the power machine, and a treadle lever connection to the suspended motor and intermediate driving gearing.

5. The combination, with a power machine, of a conjointly suspended electric motor and independent intermediate driving gearing, frictional power transmission means interposed directly between said intermediate gearing and the driving pulley or part of the power machine, a treadle lever connection to the suspended motor and intermediate driving gearing, and an elastic buffer device partially sustaining the weight of the electric motor and intermediate driving gearing.

6. The combination, with a power machine, of a pivoted platform, an electric motor and independent intermediate driving gearing sustained thereon, and a belt connecting said intermediate gearing directly with a driving pulley of the power machine.

7. The combination, with a power machine, of a pivoted platform, an electric motor and independent intermediate driving gearing sustained thereon, a driving belt connecting said intermediate gearing directly with a driving pulley of the power machine, and a treadle lever connection to the pivoted platform.

8. The combination, with a power machine, of a pivoted platform, an electric motor and independent intermediate driving gearing

sustained thereon, a driving belt connecting said intermediate gearing directly with a driving pulley of the power machine, a treadle lever connection to the pivoted platform, and an elastic buffer next the treadle lever and sustaining part of the weight of the motor and the intermediate driving gearing.

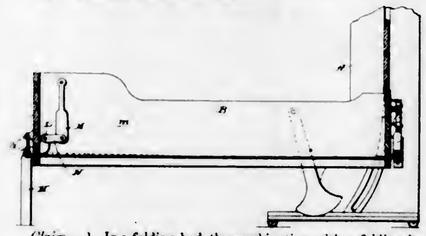
9. The combination, with a power machine, of a pivoted platform having an adjustable stop or detent limiting its downswing, an electric motor and independent intermediate driving gearing sustained on said platform, and frictional power transmission means interposed directly between said intermediate gearing and the driving pulley or part of the power machine.

10. The combination, with a power machine, of a pivoted platform, an electric motor and primary driving gearing sustained thereon, said gearing comprising a driving pulley and speed reducing worm gearing interposed between the electric motor shaft and said pulley; and a power transmitting belt running from said driving pulley to a driving pulley of the power machine.

11. The combination, with a power machine, of a pivoted platform, an electric motor and intermediate driving gearing sustained on said platform, belt guides on the power machine frame, a belt running from the work spindle or spindles of the power machine over said guides to the driving pulley of the electric motor, and an elastic expanding medium interposed between the pivoted platform and the power machine frame and lifting the platform to tighten the driving belt.

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528,609. **FOLDING BED.** HIRAM W. RUTOM, Goshen, Ind., assignor to The Goshen Folding Bed Company, same place. Filed Dec. 11, 1893. Serial No. 493,383. (No model.)

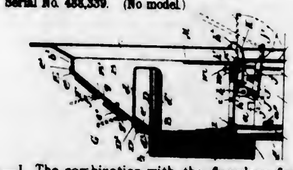


*Claim.*—1. In a folding bed, the combination with a folding bed section having the opening I, in its foot board; of the movable leg H, arranged in and guided by the said opening and having its upper portion bent so as to form the shoulder K, and the end portion L, and means for pushing the movable leg through the opening I, and into an operative position when the bed section is lowered, and drawing said leg in, out of sight, when the bed section is raised, substantially as and for the purpose set forth.

2. In a folding bed, the combination with a folding bed section having the opening I, in its foot board; of the movable leg H arranged in and guided by the said opening I, and having its upper portion bent so as to afford a shoulder K, adapted to engage the top wall of the opening I, and an end portion L, the swinging weight M pivotally connected to the bed section, and a link connecting the weight and the portion L, of the leg, substantially as specified.

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528,610. **COMBINED FIREPLACE AND GRATE.** EDWARD SCANLAN, Louisville, Ky., and JOHN ZIPP, New Albany, Ind. Filed Oct. 16, 1893. Serial No. 488,339. (No model.)



*Claim.*—1. The combination with the fire-place frame having brick retaining and supporting portions, of a removable clamp-piece having a flange to overlap the upper portions of the brick-sections, and removable fastenings for binding said clamp-piece in position, as set forth.

2. The combination with the fire-place frame having brick-retaining and supporting portions, of a removable clamp-piece having a flange to overlap the upper portions of the brick-sections and provided with apertured lugs, the hood, the removable frame, and removable fastenings for binding the said clamp-piece, hood and frame in position, substantially as specified.

3. The combination with the fire-place frame having horizontal portions and vertical lugs and vertical bars, of the hood, the frame supported on the hood, and the clamp piece having end pieces at an angle thereto and flanges and apertured lugs for detachably fastening in place and removable pins passed through the apertures of the lugs, substantially as specified.

4. The combination with the frame having hood with opening, of the frame over said opening, the clamp piece having flanges and apertured lugs passed through openings in the frame and hood, and fastenings removably engaged in said lugs to hold the frame and clamp piece in position, as set forth.

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528,611. **SOLUTION OF GOLD AND MERCURY AND PROCESS OF MAKING SAME.** IVAN SEMENOFF, St. Petersburg, Russia. Filed Dec. 14, 1893. Serial No. 493,660. (No specimens.)

*Claim.*—1. The herein-described medicinal compound consisting of a solution of chlorid of gold and a nitrate of mercury, for the purpose set forth.

2. The mode of preparing the herein-described medicinal compound, which consists in forming a solution of gold in sal ammoniac and nitric acid, and a solution of mercury in nitric acid, attenuating the gold solution by addition thereto of warm water, mixing therewith the solution of mercury, separating from said solution such gold as is precipitated, and attenuating the solution with water until it contains about one dram of gold in six pounds of water, substantially as set forth.

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528,612. **PULP BURIAL-CASKET AND PROCESS OF MAKING SAME.** GEORGE E. SHAW, Cincinnati, Ohio. Filed May 21, 1894. Serial No. 512,006. (No model.)



*Claim.*—1. A burial casket or other article of compressed and desiccated fibrous pulp, in which the fibers are compressed together undisturbed in the interlocking relations naturally assumed, in a layer having outer surfaces of relatively greatest density and desiccation and a corresponding texture thence inwardly, and being thereby approximately free from a tendency to warp, substantially as set forth.

2. The improvement in the art of forming articles from semi-fluid fibrous pulp, and removing the tendency to warp, consisting in subjecting the layer of material to compression with equal and uniform drainage at both sides, and to heat at both sides during final compression following up the natural shrinkage, substantially as set forth.

3. The improved process of forming a burial casket or other article from semi-fluid fibrous pulp, consisting in mixing with the pulp while cold a starchy substance and by heat applied during compression causing the same under the influence of heat and moisture to swell and permeate the interstices and become disseminated through the mass, substantially as set forth.

4. The improvement in the art of forming box shaped articles from semi-fluid fibrous pulp and strengthening the corner angles, consisting in forcing additional material into the mass under compression at the junction of sides, ends, and bottom, simultaneously, during the compression of the body layer, to constitute the outer angles of said junction, substantially as set forth.

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528,613. **PULP-COMPRESSION APPARATUS.** GEORGE E. SHAW, Cincinnati, Ohio. Filed June 7, 1894. Serial No. 513,810. (No model.)

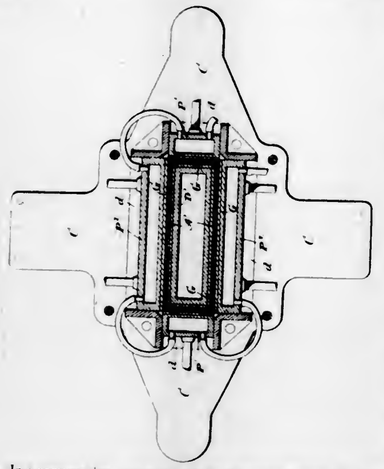
*Claim.*—1. In pulp compression apparatus, the combination of a homogeneous imperforate core co-extensive with the entire inner surface of the layer to be produced, a homogeneous imperforate compression plunger co-extensive with the entire outer surface of said layer and provided with means to operate directly against the layer held upon said core surface,—both core and plunger being hollowed to admit a heating agent directly against the entire compression surfaces,—and minutely perforated drainage and facing plates for both plunger and core also co-extensive with the compression surfaces, substantially as described.

2. In pulp compression apparatus for the production of plane sided hollow articles, the combination of a fixed, homogeneous imperforate hollow core co-extensive with the interior of the article to be produced, a series of minutely perforated drainage and facing plates fitted to the exterior of the core co-extensive with the inner sides and bottom of the article to be produced, each to each, a series of hollow imperforate plungers co-extensive with the outer sides and bottom of the article to be produced respectively, and similar minutely perforated drainage facing plates upon the plunger, whereby



equal and uniform drainage is afforded and heat applied, at both sides of the layer under compression, substantially as described.

3. A compression apparatus embodying substantially a base, a series of standards seated in and rising therefrom, an intermediate plate supported by and upon said standards, a series of compression chambers seated on said intermediate plate in radial axes, vertically and horizontally about a central opening in the plate, means attached to said plate for operating plungers in the horizontal chambers, and means attached to upward extensions of the standards for operating the plungers of the vertical compression chamber, substantially as described.



4. In a compression apparatus of the character indicated, a supporting frame embodying a base, a series of standards rising therefrom, an intermediate supporting plate for carrying the compression chambers and the means for operating the horizontal plungers, and an upper frame carried upon extensions of the central group of standards for supporting the means for operating the vertical plunger, substantially as described.

5. In compression apparatus of the character indicated, the combination of the centrally open supporting plate; the compression chambers radially arranged about said opening; the compression plungers and means of operation; a platen normally filling said opening; the core supported on said platen; the screw-shafts (one or more) supporting said platen; and the disks threaded upon said screw-shafts and furnishing a bearing for the same upon the base and by their rotation elevating or lowering the platen and core, substantially as described.

6. In compression apparatus, the combination of the core-supporting platen, the embracing ring surrounding and supported upon said platen, means for raising or lowering the platen, and bracket stops projecting in the lower path of the ring independently of the platen to engage and retain the ring and allow the platen to descend through and clear of the same, substantially as described.

7. In compression apparatus of the character indicated, in combination with a plunger operating in a compression chamber, an actuating cylinder in the rear-projected axis of the compression plunger with its piston rod connected to and operating the plunger, and adjustable regulating stops in the cylinder to limit the stroke of the piston, substantially as set forth.

8. In compression apparatus of the plunger type, in combination with two adjacent plunger chambers, a chamfered meeting edge of the junction walls, whereby a vacant space is left outside the path of the plungers as and for the purpose set forth.

9. In pulp-compression apparatus of the plunger type, the combination with imperforate plungers, of facing plates carried directly upon the plunger faces—said plates having smooth dressed outer surfaces and perforated at approximately uniform distances apart by minute drainage apertures sunk without disturbing the surrounding outer face, and connected at the rear of the plate by shallow channels, substantially as set forth.

10. In a pulp-compression apparatus, in combination with a series of centripetally acting plungers, a central imperforate core provided with facing plates fitted each to each to exactly define the interior of the body produced, each plate having a smooth dressed outer surface, and perforated at approximately uniform distances apart by minute apertures sunk without disturbing the surrounding outer surface, and connected at the rear by shallow channels, substantially as set forth.

11. In compression apparatus of the character indicated, the combination of a plunger chamber, a plunger moving therein, a perforated drainage plate facing said plunger, and a series of openings through the chamber wall in a plane perpendicular to its axis as and for the purpose set forth.

12. In pulp-compression apparatus, in combination with a compression plunger or die, a removable facing plate having an intaglio design recessed therein to form a relief design upon the compression pulp layer, and a series of minute perforations carried through the plate in the recessed portions to a drainage space at the rear of the plate, substantially as set forth.

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528,614. **PAWL-AND-RATCHET MECHANISM.** ALTON J. SHAW, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed June 7, 1894. Serial No. 513,843. (No model.)



*Claim.*—1. In combination with a ratchet, a smooth circumferential bearing surface at one side thereof, a pawl or dog adapted to engage with the teeth of the ratchet, an extensible arm connected with the pawl and provided with an extending spring, and a shoe carried by said arm and adapted to bear upon the smooth bearing surface, substantially as and for the purpose set forth.

2. In combination with ratchet wheel A and smooth drum or surface B concentric therewith, a dog or pawl F adapted to engage with the teeth of the ratchet wheel, a rockshaft H carrying said pawl, a telescopic arm J, K, carried by the rockshaft and provided with a spring L and shoe M, the shoe being arranged to bear upon the circumference of the drum substantially as described.

3. In combination with a ratchet and with a smooth bearing surface beside, and connected with said ratchet, a pivoted pawl or dog adapted to engage with the teeth of the ratchet, an extensible arm connected with the pawl and provided with an extending spring, and a shoe carried by said arm, the parts being so adjusted relatively to each other that the axis of the extensible arm shall be oblique to the surface upon which the shoe bears, when the pawl or dog is in engagement with the teeth of the ratchet.

4. In combination with a ratchet provided with a bearing surface at one side of its teeth, a pivoted pawl or dog adapted to engage with the teeth of said ratchet, an extensible arm connected with the pawl and provided with an extending spring, and a shoe carried by said arm and arranged to rest upon said bearing surface, the arm being adjusted relatively to the pawl substantially as described, whereby the axial line of the extensible arm shall at all times occupy a position oblique to and on the same side of a line extending perpendicularly from the bearing surface to the pivotal center of said arm.

5. In combination with ratchet wheel A carrying smooth bearing surface B; rockshaft H; pawl F and extensible arm J, K, carried by said rockshaft; spring L for extending said arm; and shoe M carried by said arm and arranged to bear upon surface B, the arm and pawl being relatively adjusted substantially as set forth, whereby the axial line *b b* of arm J, K, is caused to stand always on the opposite side of line *c c*, connecting the center of wheel A and shaft H, from that on which the pawl F stands.

6. In combination with a ratchet provided with a smooth cylindrical bearing surface at one side of its teeth movable with the ratchet, a pivoted pawl or dog adapted to engage with the teeth of said ratchet, a spring arm connected with said pawl and a shoe carried by said arm and arranged to rest on said bearing surface; the arm being set or adjusted relatively to said pawl, substantially as described, so that the axial line of the spring arm shall have an augle of oscillation greater on the side opposite the pawl than on the other, of a line extending perpendicularly from the pivotal center of said arm, to said cylindrical bearing surface.

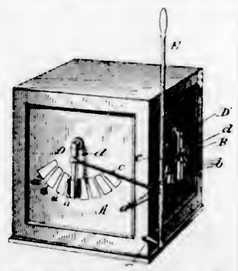
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528,615. **SWITCH-OPERATING MECHANISM FOR HOISTING MACHINERY.** ALTON J. SHAW, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed June 7, 1894. Serial No. 513,845. (No model.)

*Claim.*—1. In combination with two independent electric

switches, an operating lever common to both, and adapted to move both together and either one alone, substantially as set forth.

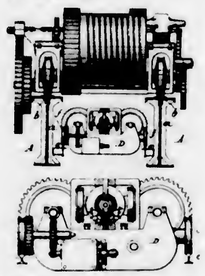
2. In combination with a combined reversing switch and rheostat A, a second reversing switch and rheostat B, and a lever E connected with the movable arms of both by universal joints, whereby the single lever is enabled to operate the two arms both simultaneously and independently.



3. In combination with two independent electric switches A and B, operating arms D and D' for said switches arranged to move in planes at right angles to each other, and a lever connected with both of said arms and carried by a universal bearing or joint, whereby the lever is enabled to operate either switch at will, or both together.

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528,616. CRANE. ALTON J. SHAW, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed June 7, 1894. Serial No. 513,846. (No model.)



*Claim.*—1. In combination with a bridge or support, two trolleys, each provided with hoisting apparatus and carried by said bridge, one trolley being placed in a lower plane than the other, whereby it is adapted to pass beneath said other trolley, substantially as set forth.

2. In combination with a bridge or support, a main trolley mounted upon the upper side thereof, and a second trolley mounted within the bridge or support and adapted to pass beneath the upper trolley, said trolleys being each provided with hoisting apparatus.

3. In combination with a bridge or support and a trolley mounted and movable upon its upper surface, two independent trolleys carried by said bridge in a plane beneath the main trolley, whereby they are adapted to pass under the main trolley and to work on both sides of the main hoisting chain while the latter is in use, each of said trolleys being furnished with hoisting apparatus.

4. In combination with the girders *a a* of a bridge, provided with rails *c c*, a trolley mounted upon said rails and adapted to travel between the girders, the hoisting drum or drums in said trolley being arranged lengthwise of the trolley or in the direction of its travel, substantially as and for the purpose set forth.

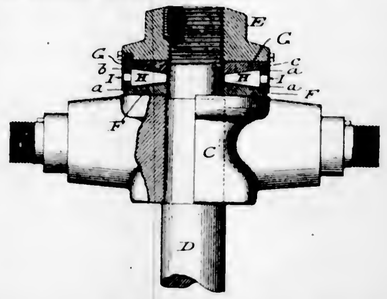
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528,617. ANTIFRICTION-BEARING. ALTON J. SHAW, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed June 7, 1894. Serial No. 513,847. (No model.)

*Claim.*—1. In a roller bearing, the combination of two opposing bearing surfaces, one provided with an annular rim or flange, and a series of interposed conical rollers, said rollers bearing against the rim or flange only at the angle formed by the meeting of their end and circumferential faces, substantially as set forth.

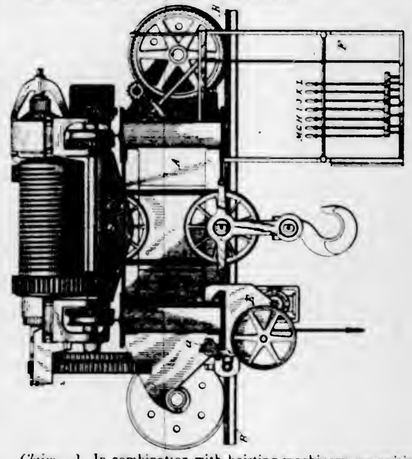
2. In combination with disks F, G, one or both provided with a rim *a*, conical rollers H interposed between said disks, the end faces of the rolls and the inner wall of the flange diverging from the point *b*, substantially as shown.

3. The combination with disk F provided with flange *a* and groove or channel *c*, of disk G, and conical rollers H interposed between the disks, substantially as described and shown.



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528,618. HOISTING MACHINERY. ALTON J. SHAW, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed June 7, 1894. Serial No. 513,849. (No model.)



*Claim.*—1. In combination with hoisting machinery comprising two or more trolleys and hoisting gear carried by each, a group of levers for controlling the traverse of said trolleys, and a second group of levers for controlling the hoisting gears thereof, the levers of one group being arranged out of line with those of the other group.

2. In combination with a plurality of trolleys and with the hoisting mechanism thereof, a plurality of levers, one for controlling the traverse of each trolley, and a plurality of independent levers for controlling the hoisting gear of said trolleys, the traverse and the hoist lever of each trolley being arranged out of line with but in close proximity to each other.

3. In a hoisting apparatus substantially such as described and shown, the combination of trolley traverse levers G, I and K, and levers H, J and L arranged in two lines or series, the levers of one group being spaced intermediate of those of the other group, whereby space is afforded to reach the levers of the farther group and operate the same.

4. In combination with trolley traverse hoist levers G, H, I and J, staggered as shown, lever M for bridge traverse, substantially as and for the purpose set forth.

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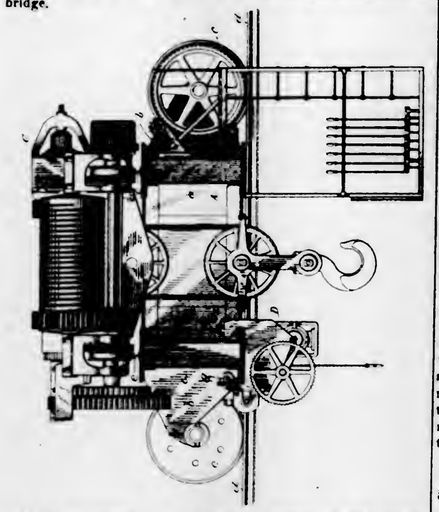
528,619. HOISTING MACHINERY. ALTON J. SHAW, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed June 7, 1894. Serial No. 513,850. (No model.)

*Claim.*—1. In combination with a bridge or support, two trolleys carried thereby, one below the other and at one side of the bridge, whereby the lower trolley is adapted to traverse the length of the bridge without colliding with the hoisting chains of the upper trolley.

2. In combination, with a bridge or support, a trolley mounted thereon and having its hoisting chains adapted to fall between the two main girders of the bridge, and a second trolley carried by one



of the girders of said bridge at a point below the main trolley, substantially as shown and described, whereby it is adapted to pass the hoisting chains of the main trolley in traversing the length of the bridge.



3. In combination with a bridge or support, a main trolley mounted upon said bridge, and a supplemental trolley D suspended from one of the girders of said bridge, substantially as shown.

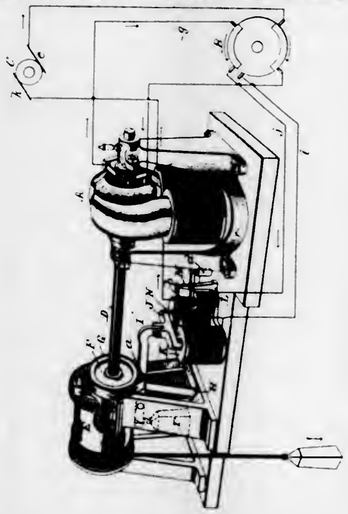
4. In combination with bridge or support A having a trolley C thereon, a trolley D having its frame adapted to clasp or overhang the lower plates of the bridge girder, and provided with rollers to traverse the upper surface of said plates.

5. In combination with bridge or support A having a trolley C mounted thereon, a trolley D, having arms extending upward beside the lower plates of the bridge girder provided with rollers to traverse the upper surface of said plates.

6. In combination with a bridge or support, two independent trolleys adapted to traverse the bridge or support in different vertical planes and each provided with hoisting mechanism.

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528,620. ELECTRIC HOISTING MACHINERY. ALTON J. SHAW, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed June 25, 1894. Serial No. 515,682. (No model.)



*Claim.*—1. In combination with electric hoisting machinery, a magnetic brake for controlling the same, a stop or detent to limit the action of the brake, and an electro-magnet included in circuit with the hoisting motor and serving to control the position of the stop or detent.

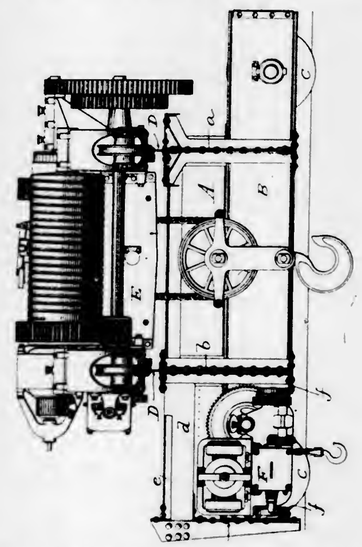
2. In combination with electric hoisting machinery, a magnetic brake for controlling the same, an elastic stop or detent to limit the action of the brake, and an electro-magnet included in circuit with the hoisting motor and serving to control the position of the stop or detent.

3. In combination with a hoisting drum, and with an electro-motor for propelling the same, an electro-magnetic brake controlling the action of the apparatus; a stop or detent movable into and out of the path of the brake controlling lever, an electro-magnet for actuating said detent, and a switch interposed between the source of electric current and the hoisting apparatus and serving to direct the current through the brake magnet and the detent-actuating magnet in series when the load is opposed to the motor, and through the detent-controlling magnet in shunt when the load is acting with the motor.

4. In combination with a source of electric energy, an electric motor, a hoisting drum propelled by said motor, a brake drum F, an automatic brake adapted to act upon said drum, a lever I for releasing said brake, provided with magnet core J, an electro-magnet K for actuating said lever, a second electro-magnet L, a counterbalanced lever M carrying a core *b* for said magnet L, a detent N carried by said lever, and a switch B adapted to direct the current from the source of energy through the magnet L either in shunt or in series with the magnet K according as the current is passed in one or the other direction through the armature of the motor A.

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528,621. HOISTING MACHINERY. ALTON J. SHAW, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed Aug. 6, 1894. Serial No. 519,584. (No model.)

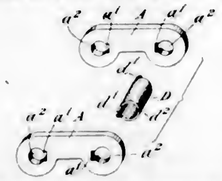


*Claim.*—1. In a traveling-bridge crane, the combination with a bridge composed of three parallel beams or girders, of two trolleys, and rails or girders therefor, two of said rails being carried by the intermediate beam or girder and the others being carried by the outer beams or girders.

2. In combination with beams *a*, *b* and *c* constituting a bridge, two trolleys E and F, the former carried upon the beams *a* and *b*, and the latter carried between the beams *b* and *c*, substantially as set forth.

3. In a traveling bridge crane, the combination with a bridge comprising three parallel beams *a*, *b* and *c*, and bracing connecting the beams *b* and *c*, two trolleys, E and F, the former mounted above the beams *a*, *b*, and the latter arranged to travel between the beams *b*, *c*, and beneath the bracing connecting said beams.

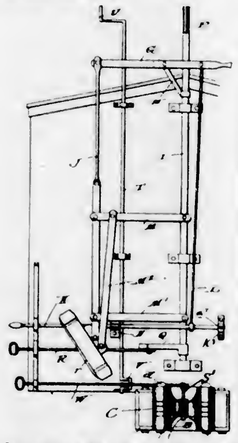
**528,622. DRIVING-CHAIN.** WILLIAM R. TRALE, Birmingham, England. Filed Mar. 13, 1894. Serial No. 503,488. (No model.) Patented in England Nov. 3, 1893, No. 20,485.



*Claim.*—1. In combination in a drive chain, the links A having eyes with notches $a'$, the bushing $d^3$ having projections $d'$ extending into the said notches and the joint pin C extending through the bushing and the eye of the link and headed over and within said eye to bear on the projection $d'$ to hold the same in place, substantially as described.

2. In combination in a drive chain, the links having the notches $a'$ extending toward each other in the main body of the link, the bushings consisting of a sheet metal piece having its edges abutting and having also the projections $d'$, said projections extending into the notches and the joint pin extending through the bushing and engaging the links the said notches and projections serving to determine the position of the bushings and abutting edges thereof where the least wear will occur, substantially as described.

**528,623. CAR-COUPLING.** JOHN D. TUNNELL, Amarillo, Tex., assignor of one-half to John R. Wheatley, same place. Filed May 14, 1894. Serial No. 511,122. (No model.)



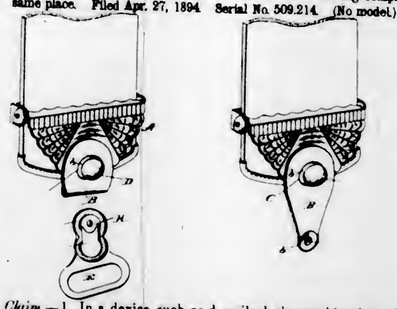
*Claim.*—1. In a car coupler, the combination with a car and the hanger $a$, guide $b$, and block $c$, connected with the car; of a draw bar arranged upon the hanger $a$, and having a reduced portion extending through the guide $b$, a spring surrounding the reduced portion of the draw bar and interposed between the draw bar and the guide $b$, and tension rods C connecting the draw bar and the block $c$, substantially as specified.

2. In a car coupler, the combination with a car, the draw bar or head, the jaws pivotally connected at their forward ends to the draw bar or head, and having shoulders $g$, at an intermediate point of their length, and springs backing the rear or inner portions of the jaws, of the rock shaft S', having a crank at its upper end, a rock shaft T, having a crank at its upper end and a crank adjacent to its lower end, and a link connecting the lower crank of the shaft T, and the upper crank of the shaft S', all substantially as specified.

3. In a car coupler, the combination of a car having a forwardly extending shelf N, a draw bar or head having its upper side open and provided with pivoted jaws adapted to move in a horizontal plane, a coupling link adapted to be engaged by the pivoted jaws, a lever G, fulcrumed at an intermediate point of its length, a link J, connecting one end of said lever and the coupling link, a rock shaft journaled upon the front of the car, and links connecting said rock shaft and the link J, one of said links being adapted to rest on the shelf N, of the car when they are swung against the end of the same, substantially as and for the purpose set forth.

4. In a car coupler, the combination of a car having a shelf N, a draw bar or head having its upper side open, and provided with pivoted jaws adapted to move in a horizontal plane, a coupling link adapted to be engaged by the pivoted jaws, a lever G, fulcrumed at an intermediate point of its length and arranged at or adjacent to the top of the car, a link J, connecting one end of said lever and the coupling link, a rock shaft journaled upon the front of the car and having a crank at its upper end and a crank Q, at an intermediate point of its length, links connecting said rock shaft and the link J, one of said links being adapted to rest on the shelf N, when they are swung against the end of the car, a rod connected to the crank Q, of the rock shaft and extending to the side of the car, a lever K fulcrumed at one end in a bracket $K^3$ upon the front of the car and a link connecting said lever and the power end of the lever G, substantially as and for the purpose set forth.

**528,624. CAST-OFF FOR SUSPENDERS.** GEORGE R. ADAMS, New Britain, Conn., assignor to the Traut & Hine Manufacturing Company, same place. Filed Apr. 27, 1894. Serial No. 509,214. (No model.)



*Claim.*—1. In a device, such as described, the combination with the buckle member having the forwardly projecting hook lip struck up from the body of the member leaving an aperture, and the spring tongue having the projection passing through said aperture and forming a spring catch underlying the hook lip, of the cast-off having a projection adapted to pass in behind the hook lip, said projection having a recess for the cooperation of the catch; substantially as described.

2. In a device, such as described, the combination with the buckle member having the forwardly projecting hook-lip struck up from the body of the member leaving an aperture, and also having the spring tongue formed integral therewith at the lower end and bent around into the aperture left by the hook lip, forming a spring catch underlying the hook lip, of the cast-off having the elongated opening therein through which the hook lip passes and the substantially flat projection H in the upper end of the aperture, adapted to pass in behind the hook lip and having the recess for cooperation with the spring catch whereby the pawls are held together, substantially as described.

**528,625. MANUFACTURE OF SHEET-METAL SUSPENDER-BUCKLES.** GEORGE R. ADAMS, New Britain, Conn., assignor to the Traut & Hine Manufacturing Company, same place. Filed May 14, 1894. Serial No. 511,204. (No model.)



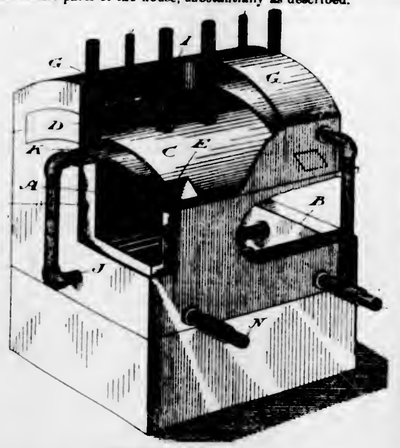
*Claim.*—1. The herein described improvement in manufacturing sheet metal locking levers for buckles for personal wear consisting in striking the locking lever up from sheet metal with lateral projections G and subsequently doubling said projections back in the form of cylindrical round ended pivots; substantially as described.

2. The herein described improvement in manufacturing sheet metal locking levers for buckles for personal wear, consisting in striking the locking lever up from sheet metal with lateral projections, bending said projections into semi-cylindrical form at right angles to the axis of the lever and finally bending the said semi-cylindrical projections down to form oppositely projecting cylindrical round ended pivots; substantially as described.

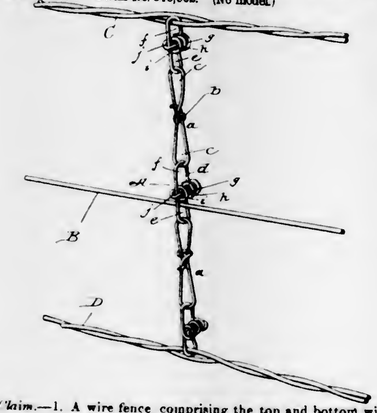
**528,626. HOT-WATER BOILER FOR HEATING PURPOSES.** THOMAS BROOKS, MICHAEL REILLY, and WILLIAM RUDKINS, Peterborough, Canada. Filed June 1, 1893. Renewed Aug. 1, 1894. Serial No. 519,215. (No model.)



*Claim.*—In a hot water heater and in combination with the fire-box thereof, a main water space formed on the sides and top of said fire-box, outlet pipes therefrom, a smoke-box above said water space, a secondary water space above said smoke-box, forming a heater independent of said main water space, outlet pipes from said secondary water space, and a pipe running through the fire-box, and connecting with the main water space above the fire-box, whereby the main heater contains the hottest water and the secondary heater water of a lower temperature, thus allowing the hottest water to be conveyed to the coldest parts of the house, substantially as described.



**528,627. WIRE FENCE.** HENRY BUCK, Mount Morris, Ill. Filed July 28, 1894. Serial No. 518,862. (No model.)

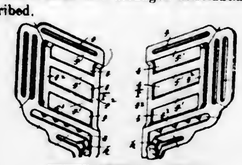


*Claim.*—1. A wire fence comprising the top and bottom wires, respectively composed of two strands wrapped together, and a stay having links $d$, at its upper and lower ends; the said links being formed of wire and having loops to engage strands of the top and bottom wires and loops for the connection of the intermediate portion of the stay and also having the aligned eyes $g$, $h$, $i$, and a wire passed through said eyes, all substantially as specified.

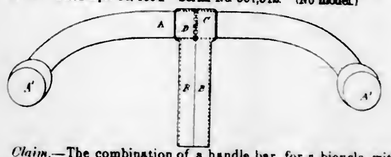
2. In a wire fence, the combination of an intermediate line wire or runner, top and bottom wires respectively composed of two strands wrapped together, and a wire chain stay comprising the short end links engaging the strands of the top and bottom wires and having the loops $e$, $f$, the aligned eyes $g$, $h$, $i$, and a wire passed through said eyes, the short intermediate link similar in construction to the end links and having one of its loops receiving the intermediate line wire or runner or one of the strands thereof, and the long links interposed between and connected with the end links and the intermediate links and having the loops $e$, all substantially as and for the purpose set forth.

**528,628. COMBINED SLIDE AND BUCKLE.** DELOS CARPENTER, Orion, Mich. Filed Feb. 4, 1892. Serial No. 420,287. (No model.)

*Claim.*—The combination with the slide F of a buckle formed integral therewith, of a single piece of sheet metal, said slide constructed with two series of loops, one series located diagonal to the other series, and said buckle provided with a spring tongue and adjacent hook constructed and arranged substantially as and in the manner described.

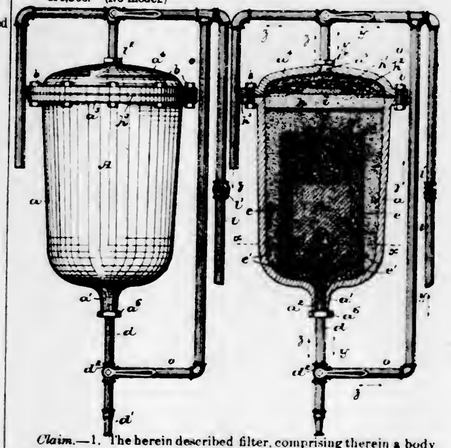


**528,629. ADJUSTABLE HANDLE-BAR FOR BICYCLES.** RINSON C. FAY, Ilion, assignor to the Remington Arms Company, New York, N. Y. Filed Apr. 14, 1894. Serial No. 507,512. (No model.)



*Claim.*—The combination of a handle bar for a bicycle, with a laterally movable adjusting bar, which is divided lengthwise, each part of the adjusting bar having a sleeve which fits on the handle bar and engages with a projection or projections thereon; substantially as and for the purposes described.

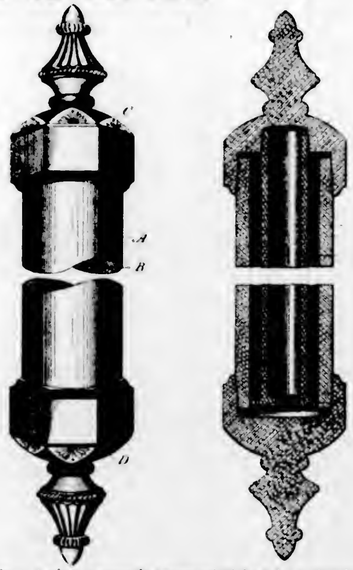
**528,630. FILTER AND METHOD OF CLEANING SAME.** WILLIAM A. FREISE, Newark, N. Y. Filed Nov. 10, 1893. Serial No. 490,506. (No model.)



*Claim.*—1. The herein described filter, comprising therein a body $a$, a dome shaped cover thereon, means for securing said cover to said body $a$, a can $c$ in said body $a$, having perforations $c'$, a filter block $c$, a filtering medium between said can and filter block, a filtering medium surrounding said can, a sheet of asbestos $h$, a layer of filtering material thereon, a spreader on said filtering material and in said cover, a sheet of asbestos $h'$, secured in said cover to prevent its displacement, a layer of asbestos material $h^2$ and a layer of coarse filtering material, all arranged substantially as and for the purposes set forth.

2. The herein described filter, comprising therein a body $a$, a dome-shaped cover thereon, means for securing said cover to said body $a$, a can $c$ in said body $a$, having perforations $c'$, a filter block $c$, a filtering medium between said can and filter block, a filtering medium surrounding said can, a sheet of asbestos $h$, a layer of filtering material thereon, a spreader on said filtering material and in said cover, a sheet of asbestos $h'$, a layer of asbestos material $h^2$ and a layer of coarse filtering material, in combination, with a pipe $l$ connected with said dome-shaped cover, a pipe $d$ connected with said tank at the bottom, a pipe $o$ connecting said pipes $l$ and $d$, a pipe $p$ connected with said pipe $l$, and shut-off cocks or valves in said pipes $l$ and $d$, substantially as and for the purposes set forth.

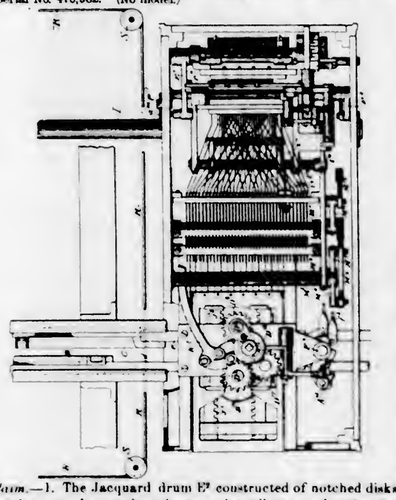
**528,631. GLASS RECEPTACLE.** CASPER T. GREEN, Dublin, assignor to Albert F. Huddleston, Randolph county, Ind. Filed Mar. 26, 1894. Serial No. 505,214. (No model.)




*Claim.*—A glass receptacle composed of the tube A closed at its ends with the removable caps C and D respectively, and carrying in it the tube B removably inserted at one end in the recess in the cap C, substantially as shown and described.

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**528,632. FABRIC-MOVING MECHANISM FOR EMBROIDERING-MACHINES.** JOSEPH A. GROEBLI, New York, N. Y., assignor to the Kursheedt Manufacturing Company, same place. Filed June 27, 1893. Serial No. 478,982. (No model.)



*Claim.*—1. The Jacquard drum $E^7$ constructed of notched disks $e'$ and of slats or rods $e^x$ set into these notches, all arranged so that the Jacquard pins may enter the slots produced between said rods or slats $e^x$, as specified.

2. The punctured card E, combined with the longitudinally slotted card-drum $E^4$, with mechanism substantially as described for rocking or swinging said drum and the card thereon, and with the Jacquard pins *h*, all arranged so that every pin *h* which is aligned with a perforation of the card will when said card and its card-drum $E^7$ are moved toward the pin pass through the hole in the card and enter the slot in the drum, substantially as and for the purpose herein shown and described.

3. The combination of the card-drum $E^7$, adapted to be embraced by a Jacquard card with series of sliding Jacquard pins *h h* and with double racks J, J', $J^2$, $J^3$, and with mechanism substantially as described intervening between said Jacquard pins *h* and said racks, said pins *h* being in groups, so that the pins in each group control the motion of a particular rack, the degree of motion depending upon the selection of the particular pin in the group as and for the purpose specified.

4. The combination of the vibrating Jacquard drum $E^9$, adapted to be embraced by a Jacquard card, with series of Jacquard pins *h* arranged in four groups, with four double racks J, J', $J^2$, $J^3$, mechanism intervening between said Jacquard pins and said racks substantially as described, for producing longitudinal movement of said racks, and with mechanism substantially as described for transversely moving each rack by connection with one of the Jacquard pins in each of the four groups, as and for the purpose specified.

5. The combination of the Jacquard drum $E^9$, adapted to be embraced by a Jacquard card, with series of Jacquard pins *h* arranged in four groups, with four double racks J, J', $J^2$, $J^3$, adapted to be moved longitudinally by certain of the pins in each group, and mechanism substantially as described for moving each rack laterally by means of one of the pins in each of said four groups, and with the shafts $D^3$ and $D^4$ having pinions adapted to be thrown into engagement with either side of said double racks, as and for the purpose herein shown and decribed.

6. In a machine for controlling the motion of an embroidery frame, the combination of said embroidery frame with the guides B C and their racks *d e*, and pinions *f g*, with shafts D, $D^3$, yoked sleeves $D^5$, $D^6$, shafts $D^3$ and $D^4$, differential gearing substantially as described for connecting the shaft $D^3$ and the sleeve $D^5$; with the shaft D, differential gearing substantially as described for connecting the shaft $D^4$ and the sleeve $D^6$ with the shaft $D^3$, double racks J, J', $J^2$, $J^3$, for engaging with pinions on said shafts $D^3$, $D^4$, and on said sleeves $D^5$, $D^6$, respectively, Jacquard pins *h* arranged in four groups, one for each of said double racks, mechanism substantially as described for communicating motion to the said racks longitudinally and laterally by means of said Jacquard pins, and means substantially as described for moving said Jacquard pins, all as and for the purpose specified.

7. The combination of the Jacquard pins *h h*, arranged in series and adapted to be moved by a Jacquard card, with the slides *i* arranged in corresponding groups in alignment with said pins and adapted to be moved by said pins in one direction, and mechanism substantially as described for locking said slides *i* after motion, including those not moved, and mechanism substantially as described for returning the slides *i* and the pins *h* to their normal positions after the movements produced by the Jacquard cards have been completed and the Jacquard card carried out of the way, as and for the purpose specified.

8. The combination of the Jacquard pins *h* arranged in groups and the corresponding slides *i* which are adapted to be moved by said pins, with the series of shears $P^{11}$, $P^{12}$, and mechanism substantially as described for moving said shears and for connecting them with a stopping mechanism, all arranged so that the slides *i* which are moved by the pins *h* escape from between said shears and so that if more than one slide of a group remains unmoved the machine will be stopped, as and for the purpose specified.

9. The combination of the Jacquard slides *i* with Jacquard pins *h* adapted to push them and mechanism substantially as described, for moving series of racks, with the locking bar O, and means substantially as described for moving the same, as specified.

10. The combination of the slides *i* and the Jacquard pins for moving the same in one direction, with the Jacquard cylinder $E^8$ adapted to be embraced by a Jacquard card, and hangers $E^9$ of said cylinder, and with the cross-bar $i^{14}$, and means for moving said cross-bar and hangers, all arranged so that said cross-bar will bring the slides *i* back again to their normal position after they have been moved by the Jacquard pins, as set forth.

11. The combination of the Jacquard pins *h* and means substantially as described for moving them, with the slides *i*, connecting rods $i^8$, slides *j*, and with the slides *k*, connected with the locking-bars $k^8$ and sliding frames G' to $G^7$, all arranged for operation upon racks connected with said sliding frames, as and for the purpose described.

12. The combination of the horizontally moving slides *j*, having notched ends, with means substantially as described for moving them, and with the lifting and embracing jaws $M^3$, M, as and for the purpose specified

13. The combination of the horizontally moving slides *j*, and means substantially as described for moving them, with the lifting and embracing jaws $M^3$, M, and with the vertically movable slides *k*, controlled by said slides *j*, and with the locking bar $M^3$, adapted to lock said vertically sliding bars *k*, substantially as and for the purposes herein shown and described.

14. The horizontally movable slides *j* connected with the vertically movable slides *k*, and with mechanism for rocking said horizontally movable slides *j*, in addition to moving them in a horizontal direction, as and for the purpose specified.

15. The slides *k*, carrying projections $k^4$, combined with the horizontal slides *j* that pass between said projections, and with the sliding hangers $k^4$, rods $k^7$, and locking bars $k^8$, substantially as and for the purpose herein shown and described.

16. The combination of the double racks J, J', $J^2$, $J^3$, with the horizontal sliding frames *l*, *l'*, $l^2$, $l^3$, arms *m*, *m'*, $m^2$, $m^3$, locking bars $k^8$, and slides G' to $G^7$, and mechanism substantially as described for moving said locking bars, all arranged so that thereby any one of the slides *l*, *l'*, $l^2$, $l^3$, can be connected to any one of the slides G' to $G^7$, as and for the purpose specified.

17. The combination of the slides G' to $G^7$ with corresponding numbers of links *g'* to $g^7$ and with a single lever H to which all of these links are attached at varying distances from its pivots, so that each motion of the lever produces different motions of the slides G' to $G^7$, as and for the purpose described.

18. The combination of the shaft $D^2$ with the toothed wheel $d^6$ mounted upon it, with the yoked sleeve $D^6$ carried by said shaft, said yoked sleeve having the pinions $d^8$ $d^9$, and with the shaft $D^4$ aligned with the shaft $D^3$ and carrying the toothed wheel $d^7$, the teeth of the wheels $d^7$ and $d^6$ being of unequal number, and the teeth of the pinions $d^8$ and $d^9$ being also unequal, said pinions meshing respectively into said toothed wheels, all arranged to produce a differential movement and a varying degree of movement in the shaft $D^3$ as rotary motion is imparted either to the shaft $D^3$ or to the sleeve $D^6$, or both, in the same or in opposite directions, substantially as and for the purpose herein shown and described.

19. The combination of the shaft $D^2$ with the shaft $D^4$ aligned with it, with the yoked sleeve $D^6$ interposed between them, the differential gear $d^6$, $d^8$, $d^9$, $d^7$ connecting said shafts with said yoked sleeve, and with the pinions $D^5$ and $D^7$ mounted respectively upon the shaft $D^4$ and sleeve $D^6$, all as and for the purpose herein shown and described.

20. The combination of the shafts D and $D^3$, their respective yoked sleeves $D^5$ and $D^6$ and their respective aligned shafts $D^3$ and $D^4$, with pinions on said aligned shafts and on said yoked sleeves, and with the double racks J, J', $J^2$, $J^3$, adapted to mesh into said respective pinions, with the longitudinally movable slides *l*, *l'*, $l^2$, $l^3$, and with the laterally movable slides L, L', $L^2$, $L^3$, said last named two sets of slides being adapted to move the double racks longitudinally and laterally as described, and with locking pawls K, $K^2$, adapted to engage said pinions and lock the same, and means substantially as described for actuating said pawls, as and for the purpose specified.

21. The combination of the shafts $D^3$, $D^4$, and their yoked sleeves $D^5$, $D^6$, the differential gearing as described, and shafts D, $D^2$, with racks J, J', $J^2$, $J^3$, arranged for automatically turning said shafts and yoked sleeves, with the vertically movable pinion $D^{16}$, idle pinion $D^{17}$, toothed wheels $D^{18}$ and $D^9$, on shafts $D^2$, $D^4$, respectively, and means substantially as described for moving the pinion $D^{16}$ into gear with the wheel $D^9$, and either with the wheel $D^{18}$ or the pinion $D^{17}$, and for registering the same for hand adjustment, substantially as and for the purpose herein shown and described.

22. The combination of the fabric-frame of an embroidery machine with mechanism substantially as described for adjusting it automatically in a vertical and horizontal direction from a Jacquard card, and with mechanism substantially as described for setting it by hand, and locking mechanism connected to the hand operated mechanism for locking the automatic mechanism as long as the hand operated mechanism is in position for operation, as specified.

23. The combination of the vertically movable bracket $D^{19}$ and its handle $D^{20}$, and spur wheel $D^{18}$ with the carrying shaft $D^4$ of said bracket, pins $D^{21}$, crank $D^{22}$ and vertical dowel-pin $D^{23}$, substantially as and for the purpose herein shown and described.

24. The combination of the vertically movable bracket $D^{19}$ and its handle, $D^{20}$, and spur wheel $D^{18}$ with the carrying shaft $D^4$ of said bracket, pins $D^{21}$, crank $D^{22}$, vertical dowel-pin $D^{23}$, and with the arm $d^{21}$ on said bracket, stops $d^{12}$, $d^{13}$ on said arm, and shaft $D^3$, substantially as described.

25. The combination of the vertically movable bracket $D^{19}$ and its handle $D^{20}$, and spur wheel $D^{18}$ with the carrying shaft $D^4$ of said bracket, pins $D^{21}$, crank $D^{22}$, vertical dowel-pin $D^{23}$, with the arm $d^{21}$ on said bracket, stops $d^{13}$, $d^{14}$ on said arm and shaft $D^3$, and with the pins $d^{15}$, $d^{16}$ and $d^{17}$ carried by said arm $d^{11}$, two of which pins are adapted to enter a socket in the upper end of the shaft $D^3$, while the third pin $d^{15}$ is incapable of entering said socket as and for the purpose specified.

26. The combination of the racks J, J', $J^2$, $J^3$, and means substantially as described for moving them, with the gear-wheels $D^7$, $D^8$, $D^{11}$, $D^{12}$ adapted to be engaged by said racks, and the shaft $D^4$ carrying one of said gear-wheels, with the vertically movable hand-driven pinion $D^{16}$ and pin $D^{32}$, which is adapted to enter between the teeth of the pinion $D^{16}$, all arranged so that said pinion $D^{16}$ will be prevented from being lifted by said pin $D^{32}$, unless the said racks are in position to be engaged to their respective gear-wheels, as and for the purpose specified.

27. The combination of the racks J, J', $J^2$, $J^3$, and means substantially as described for moving them, with the gear-wheels $D^7$, $D^8$, $D^{11}$, $D^{12}$, adapted to be engaged by said racks, and the shaft $D^4$ carrying one of said gear-wheels, with the vertically movable hand-driven pinion $D^{16}$ and pin $D^{32}$, which is adapted to enter between the teeth of the pinion $D^{16}$, all arranged so that said pinion $D^{16}$ will be prevented from being lifted by said pin $D^{32}$ unless the said racks are in position to be engaged to their respective gear-wheels, and with the pointer $D^{33}$ carried by the shaft of the pinion $D^{16}$ for indicating when the said pinion is in position to be lifted, as and for the purpose specified.

28. The combination of the rack frames *l* to $l^3$ with the series of rods *m* to $m^3$, each having a perforation, and with the locking bars $k^8$ having pins $k^9$ to meet said perforations, and with means substantially as described for moving said locking bars up and down, and with the slides G' to $G^7$, all as and for the purpose specified.

29. The combination of the rack frames *l* to $l^3$ with the series of rods *m* to $m^3$, each having a perforation, and with the locking bars $k^8$ having pins $k^9$ to meet said perforations, and with means substantially as described for moving said locking bars up and down, and with the slides G' to $G^7$, and the stationary block $G^9$, all as and for the purpose specified.

30. The combination of the embroidering frame, with racks *d e* for moving it, pinions *f g* for moving said racks, differential gearing substantially as described for moving said pinions, double racks J to $J^3$ for controlling the motion of said differential gearing, means substantially as described for moving said double racks longitudinally and laterally from a Jacquard card, and rod $k^{11}$ adapted to be moved by the Jacquard card, and mechanism substantially as described connected with said rod $k^{11}$ for stopping the machine, as and for the purpose described.

31. The fabric-frame of an embroidering machine combined by means substantially as described with a differential gearing, Jacquard pins controlling said differential gearing, means for connecting the Jacquard pins with the differential gearing, and a Jacquard card for selecting the pins to control the differential gearing, substantially as described.

32. The combination of a slotted Jacquard drum $E^9$ with the slotted or notched stepping-wheel $E^5$, spurs $e^5$ and pawl $E^{11}$, the notches of the wheel $E^5$ corresponding to the slots of the drum $E^9$, as and for the purpose specified.

33. The combination of a slotted Jacquard drum $E^9$ with the slotted or notched stepping-wheel $E^5$, spurs $e^5$ and pawl $E^{11}$, the notches of the wheel $E^5$ corresponding to the slots of the drum $E^9$, and with the fixed pawl $E^{15}$, as and for the purpose specified.

34. The combination of the lever $E^{10}$ and means substantially as described for moving it at regular intervals and of the pawl $E^{11}$ carried by said lever, with the notched stepping wheel $E^5$, fixed pawl $E^{15}$, Jacquard drum $E^9$, and means substantially as described for swinging said Jacquard drum and said stepping-wheel, all as and for the purpose specified.

35. The combination of the shaft $E^6$, hangers $E^9$ and Jacquard drum $E^9$, with the sprocket-wheels $e^9$ and $e^{10}$, sprocket chains $e^9$ and roller $e^{11}$, and with the string of Jacquard cards E, as and for the purpose specified.

36. The combination of the string of Jacquard cards E and Jacquard drum $E^9$, with the sprocket-wheels $e^9$ and $e^{10}$, sprocket-chains $e^9$, roller $e^{11}$, and with the shaft $E^6$ and gravity pawl $e^{12}$, as and for the purpose specified.

37. The combination of the slides or needles *i*, having inclined faces $i^9$, with the wedge-shaped levers $i^9$ adapted to contact with said inclined faces, and with mechanism substantially as described for moving said slides and said levers, substantially as and for the purpose described.

38. The combination of the slides *i*, having inclined faces $i^9$, double racks J to $J^3$, mechanism substantially as described intervening between said double racks and said slides *i* for communicating the motion of the slides to said racks, wedge-shaped levers $i^9$ adapted to contact the inclined faces $i^9$, and means substantially as described for unlocking the racks by said levers $i^9$, as specified.

39. The combination of the meshing slides L to $L^3$, of the double racks J to $J^3$, with the V-shaped links F to $F^3$, having jaws on their inner faces, pins $F^4$, $F^5$, shaft $F^6$ carrying said pins, link $F^8$ connected with said shaft, and means substantially as described for moving said link, all as specified.

40. The combination of the meshing slides L to $L^3$, of the double racks J to $J^3$, with the V-shaped links $F^3$, having jaws on their inner faces, pins $F^4$, $F^5$, shaft $F^6$ carrying said pins, link $F^8$ connected with said shaft, and means substantially as described for moving said link,

and with the bars $f^3$, $f^3$, $f'$, $f$, connected with the links $F^3$, $F^3$, $F'$, F, and stationary block $G^0$, substantially as and for the purpose set forth.

41. The combination of the meshing slides L to $L^3$, of the double racks J to $J^3$, with the V shaped links F to $F^3$, having jaws on their inner faces, pins $F^4$, $F^5$, shaft $F^6$ carrying said pins, link $F^8$ connected with said shaft, means substantially as described for moving said link, with the bars $f$ to $f^3$ connected with the links F to $F^3$, and stationary block $G^0$, and with the intervening crank levers $f^{32}$ standing in opposite directions, as and for the purpose specified.

42. The combination of the meshing slides L to $L^3$, of the double racks J to $J^3$, with the V-shaped links F to $F^3$, having jaws on their inner faces, pins $F^4$, $F^5$, shaft $F^6$ carrying said pins, link $F^8$ connected with said shaft, means substantially as described for moving said link, with the bars $f$ to $f^3$ connected with the links F to $F^3$, stationary block $G^0$, intervening crank levers $f^{32}$ standing in opposite directions, and with the locking-bars $k^8$, lifting bars $k^7$, and means substantially as described for moving the latter up and down, as set forth.

43. The combination of the lever A′ and its link $A^3$, and means substantially as described for moving said link and said lever at regular intervals, with the lever $A^3$, coupling-pin $a^6$ having dowel-pin $a^7$, rod $a^{13}$ and rod $k^{10}$, and means substantially as described for communicating motion to said rod $k^{10}$ by the Jacquard card, all as described.

44. The combination of the lever A′ and its link $A^3$, and means substantially as described for moving said link and said lever at regular intervals, with the lever $A^3$, coupling pin $a^6$ having dowel-pin $a^7$, rod $a^{13}$ and rod $k^{10}$, and means substantially as described for communicating motion to said rod $k^{10}$ by the Jacquard card, and with the rod $A^5$ connected to the lever $A^4$, substantially as and for the purpose specified.

45. The combination of the lever A′ and its connecting link $A^3$ and means substantially as described for imparting a regular to and fro movement to said lever and said link, with the lever $A^4$, its coupling and dowel pins and rod $k^{11}$ adapted to be moved by the Jacquard card, as and for the purpose specified.

46. The combination of the lever A′ and its connecting link $A^3$, and means substantially as described for imparting a regular to and fro movement to said lever and said link, with the lever $A^4$, its coupling and dowel pins, and rod $k^{11}$ adapted to be moved by the Jacquard card, and with the swivel $A^6$ and rod $A^7$, which is adapted to be connected with the shipping lever, as and for the purpose herein shown and described.

47. The combination of the lever A′ and its connecting link $A^3$, and means substantially as described for imparting a regular to and fro movement to said lever and said link, with the lever $A^4$, its coupling and dowel pins, rod $k^{11}$ adapted to be moved by the Jacquard card, swivel $A^6$ and rod $A^7$, which is adapted to be connected with the shipping lever, and with the latch $A^8$, lever $A^{10}$, spring $A^{14}$ and slotted shoe $A^{15}$, as and for the purpose specified.

48. The combination of the lever A′ and its connecting link $A^3$ and means substantially as described for imparting a regular to and fro movement to said lever and said link, with the lever $A^4$, its coupling and dowel pins, rod $k^{11}$ adapted to be moved by the Jacquard card, swivel $A^6$ and rod $A^7$ which is adapted to be connected with the shipping lever, with the latch $A^8$, lever $A^{10}$, spring $A^{14}$ and slotted shoe $A^{15}$, and with the levers $a^{31}$ and $a^{31}$, and wires $a^{32}$ and $a^{34}$, as and for the purpose specified.

49. The combination of the pattern-frame $a^{33}$ with the loose pin $a^{39}$, crank $a^{37}$ bearing on said pin, crank $a^{35}$ and wire $a^{36}$, and mechanism substantially as described for connecting said wire $a^{35}$ with the stopping mechanism, all arranged so that whenever the point of the pin $a^{38}$ strikes the edge of the pattern-frame the machine will be stopped, as specified.

50. The combination of the rod $A^{21}$ with the three-winged crank $A^{17}$, rod $A^{23}$, means substantially as described for moving said three-winged crank, clutch mechanism substantially as described connected to rod $A^{21}$, and hand-operating device, substantially as described connected to rod $A^{23}$, all as specified.

51. The combination of the hand operating pinion $D^{18}$ with the lever $A^{24}$ placed under said pinion and with the rod $A^{25}$ connected with said lever, and means substantially as described for operating said rod $A^{25}$, as and for the purpose specified.

52. The combination of the meshing pins $F^4$, $F^5$ and their brackets $F^9$, and their shaft $F^6$, with the sliding pin $F^{10}$, winged pawl $F^{11}$, and rod $A^{29}$, all as and for the purpose specified.

53. The combination of the meshing pins $F^4$ $F^5$ and their brackets, $F^9$, and their shaft $F^6$, with the sliding pin $F^{10}$, winged pawl $F^{11}$, and rod $A^{29}$, and with the brackets $F^{13}$ and bar $F^{14}$, all as and for the purpose specified.

54. The shear-blades $P^{11}$ and $P^{13}$ combined with the slides i and with notched and movable bar $P^{12}$, as and for the purpose specified.

55. The shear-blades $P^{11}$ and $P^{13}$ combined with the slides i and with notched and movable bar $P^{12}$, and with the crank $Q^3$ and contracting or shearing-levers $p^8$ and $p^{11}$, as and for the purpose specified.

56. The shear-blades $P^{11}$ and $P^{13}$ combined with the slides i and with notched and movable bar $P^{12}$, crank $Q^3$, contracting or shearing levers $p^8$ and $p^{11}$, and with the pin $p^{10}$ and crank $p^{14}$ and sliding pin $P^{10}$, as and for the purpose specified.

57. The shear-blades $P^{11}$ and $P^{13}$ combined with the slides i and with notched and movable bar $P^{12}$, crank $Q^3$, contracting or shearing-levers $p^8$ and $p^{11}$, pin $p^{10}$, crank $p^{14}$, sliding pin $P^{10}$, and with the bar $O^4$, as described.

58. The combination of the Jacquard pins A and means substantially as described for moving them, with the slides i, bar O, crank $O^3$, bar $O^4$ and cam Q, all as and for the purpose described.

59. In a fabric-moving-mechanism for embroidering machines, the combination of a fabric-frame, a series of Jacquard pins arranged in two or more groups or sets, mechanism intervening between each of the said pins and the fabric-frame, operating when actuated, to move the fabric-frame on one and the same line, and mechanism controlled by each pin for actuating said mechanism for moving the frame, compounding mechanism substantially as described for compounding the movements imparted to the intervening mechanism by the action of two or more selected pins, so that the movement of the fabric-frame on one line is the resultant of the several motions imparted to said intervening mechanism by the several selected pins, and a Jacquard pattern for selecting one or more pins from each of the groups, substantially as and for the purposes set forth.

60. In a fabric-moving-mechanism for embroidering machines, the combination with a fabric-frame, of a guide C therefor, with a co-operating guide B for moving the frame on one line, actuating mechanism connected to said guide for moving it, a series of Jacquard pins, each of which, when connected, imparts a different degree of movement to the actuating mechanism for the guide B, compounding mechanism connected to the actuating mechanism for the guide for compounding the several motions given by the two or more selected pins, whereby the motion imparted to the guide is the resultant of the several motions given by the pins, and a Jacquard pattern for selecting to or more pins which are adapted to thus jointly effect the adjustment on one line of the fabric-frame, substantially as and for the purposes set forth.

61. In a fabric-moving-mechanism for embroidering machines, the combination with a fabric-frame, of a series of Jacquard pins, each of which, when actuated, imparts a different extent of motion to the said fabric-frame on one line, together with compounding mechanism acting to compound the motions given by the two or more selected pins, whereby the movement of the fabric-frame on one line is the resultant of the several motions given by the selected pins, and with a Jacquard drum and pattern for selecting and actuating the pins, substantially as and for the purposes set forth.

62. In a fabric-moving-mechanism for embroidering machines, the combination with a fabric-frame, of a series of Jacquard pins, each of which, when actuated, imparts a different extent of motion to the said fabric-frame on one line, together with compounding mechanism acting to compound the motions given by the two or more selected pins, whereby the movement of the fabric-frame on one line is the resultant of the several motions given by the selected pins, with another series of pins, each of which, when actuated, imparts a different degree of motion to the fabric-frame on one line at an angle to the first line, compounding mechanism acting to compound the motions given by the two or more selected pins of the last named series, whereby the movement of the fabric-frame on the last mentioned line is the resultant of the several motions given by the last mentioned series of pins, combined with pattern mechanism for selecting and actuating the pins, all arranged so that the pins will effect, by their combined action, the extent of motion of the fabric-frame, substantially as and for the purposes specified.

63. In a fabric-moving-mechanism for embroidering machines, the combination with a fabric-frame, of a series of Jacquard pins, each of which, when actuated, imparts motion to the said fabric-frame on the same line, differing in extent only, together with compounding mechanism acting to compound the motions given by the two or more selected pins, whereby the movement of the fabric-frame on one line is the resultant of the several motions given by the selected pins, and mechanism substantially as described for determining the direction of said movement, and with a Jacquard drum and pattern for selecting and actuating the pins, substantially as and for the purposes set forth.

64. In a fabric-moving-mechanism for embroidering machines, the combination with a fabric-frame, of a series of Jacquard pins acting to impart movement to the fabric-frame on one line, with compounding mechanism substantially as described for compounding the motions given by the two or more pins, whereby the movement of the frame is the resultant of the several motions given by the two or more selected pins, and means for selecting the pins to adjust the fabric-frame, substantially as and for the purposes specified.

65. Fabric-frame of an embroidering machine, combined by means substantially as described with compounding mechanism, a swinging lever adapted to be connected with the compounding mechanism to actuate the same, and means for connecting the compounding mechanism to the lever at points at varying distances from its fulcrum, and a Jacquard card for controlling the compounding mechanism, substantially as described.



66. Fabric-frame of an embroidering machine, combined by means substantially as described with a differential gearing, a swinging lever adapted to be connected with the differential gearing to actuate the same, and means for connecting the differential gearing with the lever at points at varying distances from its fulcrum, and a Jacquard card for controlling the connections between the lever and differential gearing, substantially as described.

67. The combination of the Jacquard pins h h and a Jacquard card for selecting and moving the same, with the slides i in alignment with said pins and adapted to be moved by said pins, means for so moving said slides, and mechanism substantially as described for returning the slides i and the pins h to their normal positions, when the Jacquard card is carried out of the way, as and for the purpose specified.

68. The combination of the slides i arranged in groups or sets and adapted to be moved by the Jacquard pattern and means substantially as described for so moving the same, with a corresponding number of shears adapted to grasp the slides, mechanism for bringing the slides to a normal position out of the grasp of the shears when more than one slide of the group is between said shears, and mechanism substantially as described for moving said shears and causing them to grasp the slides and connecting them with the mechanism for bringing the slides to the normal position, as set forth.

69. The combination of the slides i adapted to be pushed by the pattern device substantially as described, and means substantially as described for so pushing the same, with the locking bar O and means substantially as described for moving the same, as specified.

70. The combination of the Jacquard pins with a pattern device adapted to move the Jacquard pins, and means substantially as described for so moving the same, and with a cross-bar $i^{14}$, and means substantially as described for moving said cross-bar, together with intermediate mechanism between the cross-bar and pins for returning the pins to their normal position, all arranged so that said cross-bar will bring the pins back to their normal position after they have been moved by the pattern device, as specified.

71. The combination of the shaft $D^2$ with the yoked sleeve $D^4$ carried by said shaft, said yoked sleeve having the pinions $d^5$ $d^6$, and with the shaft $D^4$ aligned with the shaft $D^2$, all arranged to produce a differential movement and a varying degree of movement in the shaft $D^3$, as specified.

72. The combination of the embroidering frame with racks d e for moving it, pinons f g for moving said racks, differential gearing substantially as described for moving said pinions, double racks J to $J^3$ for controlling the motion of said differential gearing, and means substantially as described for moving said double racks longitudinally and laterally by Jacquard pins adapted to be moved by a Jacquard card, and means substantially as described for automatically stopping the machine, all as specified.

73. The combination of the embroidering frame with racks d e for moving it, pinions f g for moving said racks, differential gearing substantially as described for moving said pinions, double racks J to $J^3$ for controlling the motion of said differential gearing, and means substantially as described for moving said double racks longitudinally and laterally by Jacquard pins adapted to be moved by a Jacquard card, as specified.

74. The combination in an embroidering machine, of a fabric-frame, actuating-mechanism therefor, a plurality of moving mechanisms for imparting varying ranges of movement to the fabric-frame actuating-mechanism, to move the fabric-frame on one line, mechanism for compounding the motions imparted to the fabric-frame actuating-mechanism by the moving mechanisms, whereby the movement of the fabric-frame on one line is the resultant of the several motions imparted to the fabric-frame actuating-mechanism by the moving mechanisms, series of Jacquard pins and mechanism connected thereto, substantially as described for selecting and connecting two or more of the moving mechanisms with the fabric-frame actuating-mechanism, and a Jacquard pattern co-operating with and selecting the pins, whereby two or more selected pins can effect by their combined action a predetermined movement of the fabric-frame, substantially as described.

75. The combination of the pattern E and the pattern holder $E^3$, with the sprocket-wheels $e^9$ and $e^{10}$, sprocket-chain $e^8$ and roller $e^{11}$, substantially as and for the purpose specified.

76. The combination of the meshing slides L to $L^3$, of the double racks J to $J^3$, with the V-shaped links F to $F^3$, having jaws on their inner faces, pins $F^4$ $F^5$, and shaft $F^6$ carrying said pins, all arranged substantially as specified.

77. The combination of the meshing slides L to $L^3$, of the double racks J to $J^3$, with the V-shaped links $F^3$ having jaws on their inner faces, pins $F^4$ $F^5$, shaft $F^6$ carrying said pins, bars $f^3$, $f^3$, $f'$ and $f$ connected with the links $F^3$, $F^3$, $F'$, and F, and block $G^0$, substantially as and for the purpose specified.

78. The combination of the meshing slides L to $L^3$, of the double racks J to $J^3$, with the V-shaped links F to $F^3$ having jaws on their inner faces, pins $F^4$ $F^5$, shaft $F^6$ carrying said pins, bars $f$ to $f^3$ connected with the links F to $F^3$, block $G^0$, and intervening crank levers $f^{32}$, as and for the purpose described.

79. The combination of the meshing slides L to $L^3$, of the double racks J to $J^3$, with the V-shaped links F to $F^3$ having jaws on their inner faces, pins $F^4$ $F^5$, shaft $F^6$ carrying said pins, bars $f$ to $f^3$ connected with the links F to $F^3$, block $G^0$, intervening crank levers $f^{32}$, and locking bars $k^8$, lifting bars $k^7$, and means substantially as described for moving the latter up and down, as set forth.

80. In a machine of the class described, the combination of the lever A′ and means substantially as described for moving said lever at regular intervals, with the lever $A^3$ and coupling-pin $a^6$, and means substantially as described for communicating motion to said coupling-pin, as specified.

81. In a machine of the class described, the combination of the lever A′ and means substantially as described for imparting a regular to and fro movement to said lever, with the lever $A^4$, its coupling-pins adapted to be moved by the Jacquard card, as and for the purpose specified.

82. In a machine of the class described, the combination of a pattern frame with a pattern-tracer movable therein, a device for stopping the machine, and mechanism substantially as described connecting said pattern-tracer with the device for stopping the machine, all arranged so that when the pattern-tracer is moved in contact with the walls of the frame it will be deflected, thereby actuating the device for stopping the machine, as specified.

83. The shear blades $P^{11}$ and $P^{13}$ combined with the slides i, and means substantially as described for moving the slides and operating the shear-blades, substantially as and for the purpose specified.

84. In fabric-moving-mechanism for embroidering machines, the combination of a plurality of double racks for moving the fabric-frame, a swinging lever having link mechanism connected thereto at varying distances from its fulcrum, means for connecting one or more of the racks to one or more of the mechanisms connected to the lever, Jacquard pins controlling the connection of the racks with the lever, and pattern mechanism for selecting and actuating the pins, and means for moving the lever, whereby varying ranges of movement may be imparted to the racks, as specified.

85. The combination in an embroidering machine of a fabric-frame, actuating-mechanism therefor, a plurality of moving mechanisms for imparting varying ranges of movement to the fabric-frame actuating-mechanism, to move the fabric-frame on one line, mechanism for compounding the motions imparted to the fabric-frame actuating-mechanism by the moving mechanisms whereby the movement of the fabric-frame on one line is the resultant of the several motions imparted to the fabric-frame actuating-mechanism by the moving mechanisms, series of Jacquard pin S and mechanism connected thereto substantially as described for selecting and connecting two or more of the moving mechanisms with the fabric-frame actuating-mechanism, and a Jacquard pattern co-operating with and selecting the pins, whereby two or more selected pins can effect by their combined action a predetermined movement of the fabric-frame, and another two or more selected pins in the same manner can effect the movement of the fabric-frame on a line at an angle to the first one, and mechanism also controlled and actuated by the Jacquard pattern for determining the direction of said motions, all adapted and arranged to adjust the position of the fabric-frame for every stitch, as specified.

86. In a fabric-moving-mechanism for embroidering machines, a series of slides G′ to $G^7$, a plurality of guides adapted to be coupled to one or more of the series of slides, coupling pieces $k^5$ for coupling a guide with a slide, Jacquard mechanism controlling and actuating the coupling pieces and pattern mechanism for selecting and actuating the Jacquard mechanism, all arranged so that the movement of one or more of the slides may be transmitted to one or more of the guides, substantially as described.

87. In a fabric-moving-mechanism for embroidering machines, shaft $D^4$ and sleeve $D^4$ in combination with differential gearing and mechanism substantially as described for effecting and combining the rotations of the shaft $D^4$ and sleeve $D^4$, as specified.

88. The fabric-frame of an embroidering machine, combined by means substantially as described with a compounding mechanism, Jacquard pins actuating said compounding mechanism, means for connecting the Jacquard pins with the compounding mechanism, and a Jacquard card for selecting the pins to control the compounding mechanism, substantially as described.

89. The combination in fabric-moving mechanism for embroidering machines, of a fabric frame, pattern mechanism, and series of pins A in combination with suitable stoppers and with contacting surfaces connected to the fabric-frame and co-operating with the

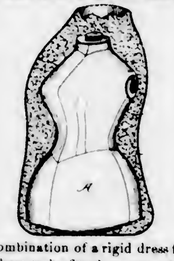
stoppers, and intervening mechanism substantially as described, by which two or more pins A can select by their joint action certain one or ones of the stoppers for co operating with the contact surfaces to arrest the motion of the fabric-frame, substantially as described.

90. Fabric frame of an embroidering machine and pattern mechanism and series of pins, which can determine different extents of movement of the fabric frame all adapted and arranged with intervening mechanism and connectors $k^3$ substantially as described for effecting such movement so that such motion is secured in a positive manner by rigid or unyielding connections $k^3$, substantially as described.

91. Fabric-frame of an embroidering machine, with pattern mechanism, and a plurality of pins controlling the movement of the fabric-frame, said pins determining individually various extents of movement of the fabric frame on one and the same line, in combination with intervening connecting and moving mechanism substantially as described, by which two or more of said pins can conjointly control the extent of movement of the fabric-frame on the one line for every stitch as specified, and with disconnecting mechanism substantially as described for disconnecting the operating mechanism from the fabric-frame actuating mechanism upon the return stroke, allowing the operating mechanism to return to its normal position leaving the fabric-frame actuating mechanism with the fabric-frame in its proper adjustment.

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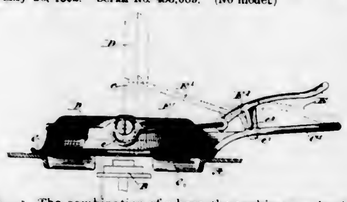
528,633. **BUST-FORM.** ROSA A. GUILLAN, Pittsburg, Pa. Filed Dec. 23, 1893. Serial No. 494,541. (No model.)



*Claim.*—The combination of a rigid dress form of curved outline approximating the bust to be fitted; a case of thin flexible material loosely surrounding said form and feathers interposed between said form and said case whereby the differences in outline between said bust and said dress form may be compensated for by shifting said feathers.

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528,634. **LEVER-HANDLE FOR WAFFLE-IRONS.** CHRISTIAN J. HESS, Minneapolis, Minn., assignor to Jas. F. Williamson, same place. Filed May 20, 1892. Serial No. 433,689. (No model.)



*Claim.*—1. The combination of a base, the cooking member having trunnions, such as a waffle iron, and a lever fulcrumed on the base and having at one end a handle and at the other end arms having bearings for the trunnions of the waffle iron.

2. The combination of a base having trunnion bearings, a cooking member having trunnions, such as a waffle iron, and a lever fulcrumed on the base and having at one end a handle and at the other end arms having bearings for the trunnions of the waffle iron.

3. The combination of a base, a cooking member having trunnions, such as a waffle iron, and a removable lever fulcrumed on the base and having at one end a handle and at the other end arms having bearings for the trunnions of the waffle iron.

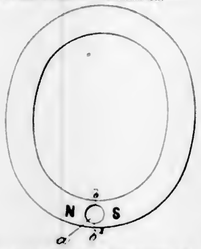
4. The combination of a base member consisting of a support having bearings and of a laterally extending handle, a cooking member having trunnions, such as a waffle iron, and a lever fulcrumed on said member and having at one end arms provided with bearings for the trunnions of the waffle iron, and at the other end with a handle within the grasp of the hand when applied to the handle of the base member, substantially as and for the purpose set forth.

5. The combination with the supporting base or ring provided with a handle having a slot and notches, as described, of the pivoted waffle iron on said base, and the lifting lever, having on its handle portion a fulcrum block constructed with a tongue and bearing ribs to fit said slot and notches as a seat, and provided with forwardly extended bearing arms applicable to the trunnions of the waffle iron, substantially as and for the purpose set forth.

6. A turnover cooking vessel, such as a waffle iron adapted for use on gas and vapor stoves, comprising the combination with a suitable base, of a griddle supported by said base, and a lever fulcrumed on said base and operative, by downward pressure thereon, to adjust the griddle in respect to the base, for affording clearance to permit the griddle to be revolved, without striking the burner.

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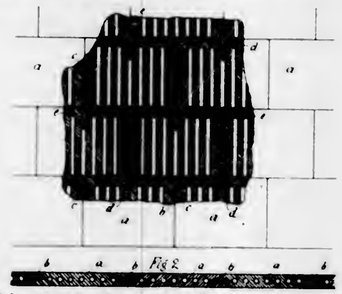
528,635. **MAGNET.** ADRIAN H. HOYT, Penacook, N. H., assignor to the Whitney Electrical Instrument Company, Saco, Me. Filed Mar. 14, 1894. Serial No. 503,568. (No model.)




*Claim.*—A permanent magnet composed of a bar of steel provided with a substantially circular opening and having its magnetic poles at opposite sides of and substantially surrounding said opening, substantially as and for the purpose described.

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528,636. **CONSTRUCTION OF WALLS.** LAMBERT KUPPER, Aix-la-Chapelle, Germany. Filed June 25, 1894. Serial No. 515,798. (No model.) Patented in Luxemburg Mar. 28, 1894, No. 2,001, and in Belgium Apr. 16, 1894, No. 109,207.



*Claim.*—1. A building-wall composed of plates *a* provided in the middle with a channel divided in two or more parts and upon their vertical edges with grooves *b* from which a number of short channels *c* branch off laterally toward the inside of the plates, substantially as described.

2. A building wall composed of plates *a* the grooves upon their vertical edges together with their ramifications and the upper part *d* of the median channel of the adjacent lower plate being filled with a binding material, substantially as set forth and for the purpose specified.

3. A board or plate for building-walls whose grooves upon their vertical edges are provided with ramifications directed toward the inside of the plate, substantially as set forth

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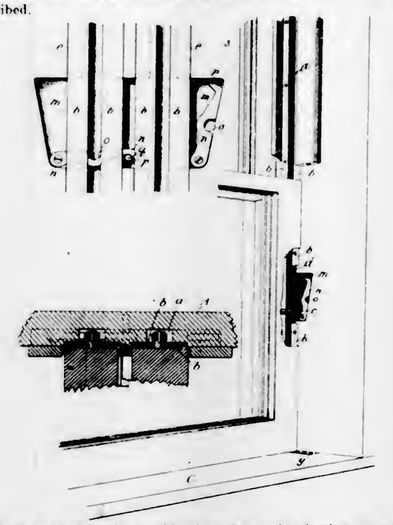
528,637. **WINDOW.** FERDINAND-CHRISTOPH VON HEYDEBRAND. UND DER LASA, New York, N. Y., assignor of one-half to George Semler, same place. Filed May 7, 1894. Serial No. 510,313. (No model.)

*Claim.*—1. In a window, the combination of a casing provided with vertical grooves, a window sash provided with pivots entering the said grooves in the casing, and bearings in the grooves normally out of engagement with the sash pivots but with which they are engaged to temporarily suspend the sash so that the same may be swung upon its pivots, substantially as described.

2. In a window, the combination of a casing, vertical grooves therein, a vertically moving sash provided with pivots entering the



said grooves in the casing, and movable bearings normally disconnected from the sash pivots but adapted to be moved into the path of the sash pivots to co-operate therewith, to temporarily suspend the sash so that the same may swing on its pivots, substantially as described.



3. In a window, the combination of a casing having grooves therein, a sash provided with pivots entering and traversing the grooves in the casing and pivoted hooks adapted to be swung into the path of the sash pivots to co-operate therewith to suspend the sash to swing upon its pivots, substantially as described.

4. In a window, the combination of a casing provided with vertical grooves, a sash provided with pivots entering and traversing the grooves, bearings within the grooves, normally out of engagement with the sash pivots but adapted to be engaged therewith to temporarily hold the window suspended, in order that the same may be turned on its pivots, and movable inside and outside beads, substantially as described.

5. In a window, the combination of a casing provided with vertical grooves, a sash provided with pivots entering the grooves, pivoted hooks adapted to be swung across the grooves to co-operate with the sash pivots to hold the sash suspended, and movable inside and outside beads, substantially as described

6. In a window the combination of a sash provided with pivots, a casing provided with vertical grooves and with recesses in proximity to said grooves, together with pivoted hooks located in the recesses and adapted to be swung across the grooves to co-operate with the sash pivots, substantially as described.

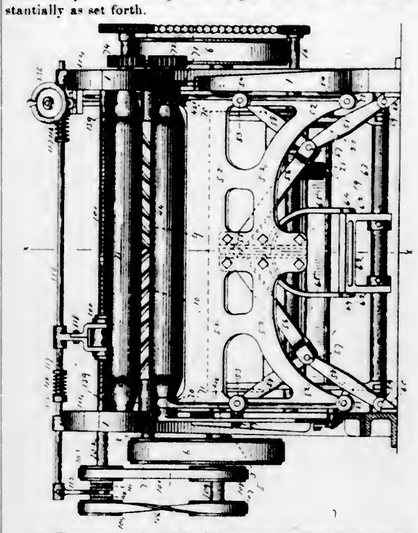
7. The combination in a window of a sash provided with pivots a casing provided with vertical grooves and recesses in proximity to said grooves pivoted hooks located within the recesses and adapted to be swung across the grooves, to co-operate with the sash pivots, and stop-pins for limiting the movement of the hooks, substantially as described

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528,638. **APPARATUS FOR SHAVING HIDES.** GEORGE A. LAWRENCE, Peabody, assignor to the Lawrence Shaving Machine Company, Salem, Mass. Filed Aug. 1, 1893. Serial No. 482,087. (No model.)

*Claim.*—1. In a machine for shaving or fleshing hides or skins, a cutting cylinder provided on its periphery with two series of spirally arranged knives 10 as shown, the two said series being on opposite sides of the longitudinal center of the cylinder and each of said series being divided into sub-series or sets of knives, each of said sub-series or set consisting of a plurality of knives whose inner ends abut against the face or side of one of the knives constituting a sub-series extending from the opposite end of the cylinder, and one at least of the knives in each sub-series extending beyond the line of the longitudinal center of the cylinder and one of the knives of each sub-series stopping short of the said central line, whereby the ends of each sub-series of spiral knives are as a whole on both sides of said line, substantially as described.

2. In combination, the lower feed-roll 44, sliding carriage 46, frame provided with the slots 47, vibrating or lifting frame 52, levers 56 pivotally secured to said lifting frame and spreading as shown, toggle joints 58 connecting at their joints with the lower ends of said spreading levers and with their outer ends secured pivotally to the frame, and to the vibrating frame respectively, hangers 67 depending from the pivot 55 connecting the two levers 56, and extension 68 from said pivot extending into the groove 59 on the frame 52, substantially as set forth.



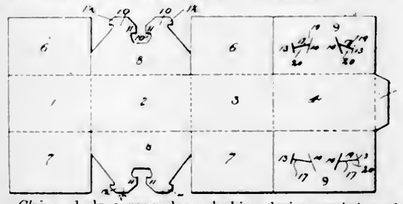
3. The combination of the lifting supports 46 sliding in the frame as described, the jaws 84 and 85 hinged together at their lower ends and provided respectively with spreading plates 82 and 83, the plates 38 secured to the frame and provided with the relatively diagonally formed grooves 92 and 37, the links or levers 87 extending from the jaws 84 to the lifting frames 46, and the links or levers 89 extending from the jaws 85 and engaging in said slots, substantially as described.

4. In combination, the spreading plate 77 pivotally secured at its lower edge to the frame, link 79, levers 41 fast on the shaft 42 supported by the frame, levers 34 pivotally secured at their upper ends to levers 41, plates 38 provided with the grooves 37, blocks 36 sliding in said grooves and pivotally secured to the lower ends of the levers 34, clutch mechanism on the shaft 16, shipping lever 26 and link 31 connecting said shipping lever with the link 31, substantially as set forth.

5. The combination of the grinding cylinder and frame, the grinding wheel 94 rotated by and sliding on the shaft 95, the rotating screw 101 supported by the frame, the nut 100 running on said screw and provided with the yoke engaging the hub of the grinding wheel, the reciprocating rod 113, mounted on the frame, the shipper 112, the clutch mechanism 110 and 111, the connection 118 sliding on said rod 113, the fixed stops 115 on said rod on opposite sides of the connection 118, the yielding stops 117, between said fixed stops and said connection, and springs between said yielding stops and said fixed stops, whereby the shipper is impelled from one clutch into engagement with the other, substantially as described.

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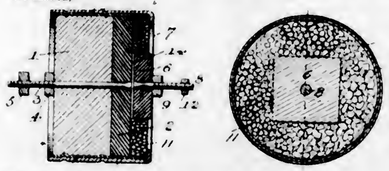
528,639. **PAPER BOX.** PHILIP LINDEMEYER, Jr., Jersey City, N. J. Filed Aug. 27, 1894. Serial No. 521,380. (No model.)



*Claim.*—1. In a paper box a locking device consisting of the folded overlapping portions, one provided with slits 13 and 14 connected by slit 17 and the other with one or more heads having hooks 11 and 12 adapted to fill said slits 13 and 14 all substantially as set forth whereby the hooks can be easily entered without breaking or tearing the paper whereby they are adapted to fill the hook receiving slits.

2. A blank for a paper box consisting of parts adapted to be folded to constitute the inclosing walls of the same and overlapping interlocked parts, one provided with slits 13, 14 and 17 and the other with hooks 11 and 12 adapted to fill the hook receiving slits, substantially as set forth.

528,640. **TELEPHONE.** WILLIAM C. LOCKWOOD and JOHN M. LOCKWOOD, Brooklyn, N. Y. Filed June 14, 1894. Serial No. 514,564. (No model.)

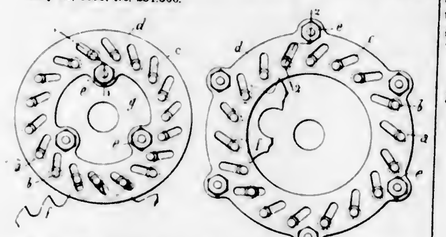


*Claim.*—1. The combination with the axially bored wooden plug surmounted by the axially bored solid carbon face and connected by a centrally disposed longer screw having a tightening nut, of the rectangular solid carbon electrode mounted upon a centrally disposed shorter screw and secured in place by a binding nut, an outer metal shell having an inwardly projecting top flange, a filling of broken carbon surrounding the rectangular carbon electrode and an air space between the carbon faced plug or filling and the solid carbon electrode, substantially as specified.

2. The combination with an open end inwardly flanged shell or incasement, an axially bored plug partly of wood and partly of solid carbon, of a carbon electrode secured upon a screw, a surrounding of broken carbon for said carbon electrode and a variable air space between said plug and the solid carbon electrode, substantially as specified.

3. The herein described process of treating the connected parts of telephones consisting in dipping them in japan or heavy thick shellac and then baking them in a highly heated oven until they assume extreme hardness and dryness, as set forth.

528,641. **GEARING.** JEAN M. MORET, Besançon, France. Filed Feb. 3, 1894. Serial No. 499,010. (No model.) Patented in France July 20, 1893, No. 231,560.

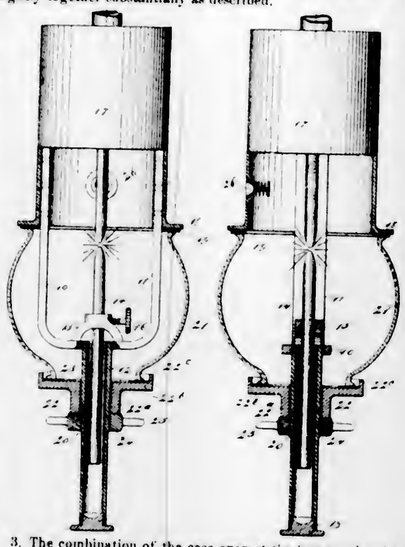


*Claim.*—The improved gearing comprising the slotted part having the rollers or pins movable in said slots and the second part having fixed teeth to engage the movable rollers or pins, said rollers or pins forming the only engaging teeth or cogs with which the slotted part is provided and having movement sufficient to allow them to yield and pass the fixed teeth of the second part of the gearing, whereby the slotted part may slip or move in advance of the second part, substantially as described.

528,642. **ELECTRIC-ARC LAMP.** ALFRED H. MORRIS, Jr., New York, N. Y. Filed Jan. 8, 1894. Serial No. 496,039. (No model.)

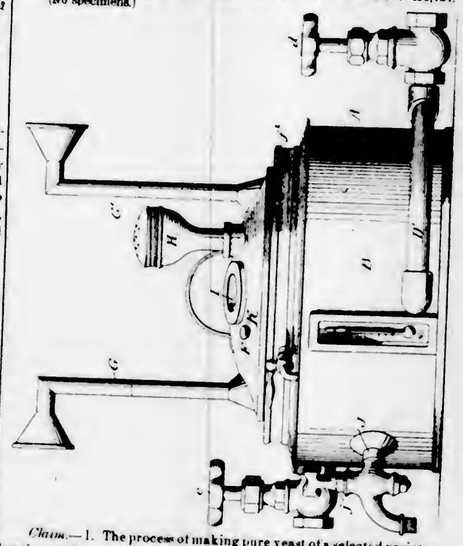
*Claim.*—1. In an electric arc lamp, the combination, with the frame, a pendant of the frame provided with a stop at one end, and an exteriorly threaded section, the surface of the pendant being plain between the thread and stop, of a casing attached to the frame and provided with a flanged lower edge, a support having sliding movement upon the pendant of the frame, a globe located upon the support and adapted for engagement with the flange of the casing, and a lock nut located upon the pendant and engaging with the support, whereby the support and lock nut may be moved together and a tight joint may be obtained between the globe and support and the globe and the casing, substantially as described.

2. The combination of the case open at its lower end and said end flanged suitably for making a joint thereat with the top of the globe, the pendent portion of the frame, the globe support adapted to slide up and down said pendent portion of the frame the globe adapted to be clamped between the globe support and the flange of the case, and the lock nut on the pendent portion of the frame, and adapted to clamp the globe support, globe and the flanges of the case tightly together substantially as described.



3. The combination of the case open at the lower end and said end flanged suitably for making a joint thereat with the top of the globe, the pendent portion of the frame, the globe support adapted to slide up and down said pendent portion of the frame the globe adapted to be clamped between the globe support and the flange of the case, a packing of elastic material for the protection of the globe and the lock nut on the pendent portion of the frame and adapted to clamp the globe support, globe and flange of the case tightly together, said globe and case being practically air-tight and provided with a relief valve substantially as described.

528,643. **PROCESS OF MANUFACTURING YEAST.** ANGELO MYERS, Philadelphia, Pa. Filed May 20, 1892. Serial No. 433,727. (No specimens.)



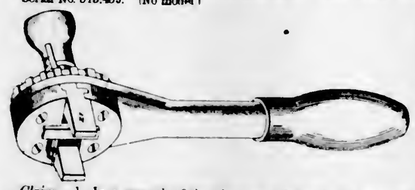
*Claim.*—1. The process of making pure yeast of a selected variety, herein set forth, which consists in combining heterogeneous yeast with a mass of nutritive material containing elements especially favorable to the development of ferments of the character required,—in fermenting the mass, at a selected temperature, in the presence of the atmosphere but from which atmospheric germs are excluded,—in combining the yeast resulting from such fermentation with fresh nutritive material, and fermenting the mass, at said selected temperature, in the presence of the atmosphere but from which atmospheric germs are excluded,—and in repeating the last mentioned step, each time with fresh nutritive material and yeast resulting from the preceding operation, until the ferments of the character not desired are eliminated and the required quality of yeast is produced, substantially as set forth.

2. The process of producing a mass of pure alcoholic yeast from a mass of wort and heterogeneous yeast, which consists in fermenting a mass of wort or saccharifeious material and heterogeneous yeast, at a temperature of about 92° Fahrenheit in the presence of the atmosphere but from which atmospheric germs are excluded,—in combining yeast resulting from said fermentation with fresh saccharifeious material, and maintaining the mass, for fermentation, at a temperature of about 92° Fahrenheit in the presence of the atmosphere but from which atmospheric germs are excluded,—and in repeating the last mentioned step, each time with fresh saccharifeious material and yeast resulting from the preceding operation, until the required quality of alcoholic yeast is produced, substantially as set forth.

3. The process of producing a mass of pure alcoholic yeast, which consists in fermenting a mass of saccharifeious material and yeast, at a temperature of 92° Fahrenheit in the presence of the atmosphere but from which atmospheric germs are excluded,—in drawing off the vigorous ferments exclusive of the dormant ferments in the lower portion of the mass,—in combining the said vigorous ferments with fresh saccharifeious material, and maintaining the mass at a temperature of 92° Fahrenheit in the presence of the atmosphere but from which atmospheric germs are excluded,—and in repeating the operation of drawing off the mass of vigorous ferments, combining them with fresh saccharifeious material and fermenting the mass under the conditions recited, until the required quality of alcoholic yeast is produced, as specified.



528,644. **RATCHET-WRENCH.** WESLEY G. ORCUTT, Ashland, Me., assignor of one-half to Henry S. Brown, same place. Filed June 4, 1894. Serial No. 513,439. (No model.)



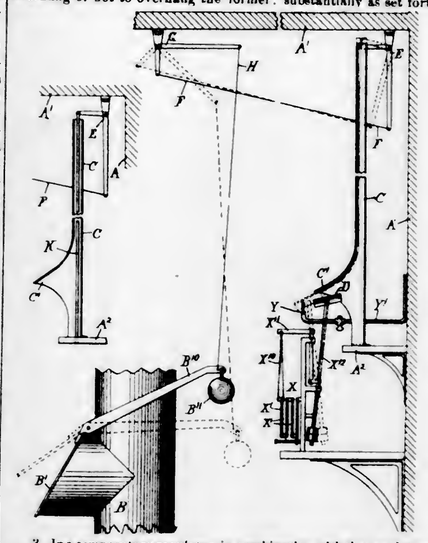
*Claim.*—1. In a wrench of the character set forth, the combination of a pair of jaws having shanks arranged at right angles thereto with outer beveled edges, the said shanks being provided with grooves, a clamp having an opening therein with grooves in a portion of the walls thereof, the side walls of the said walls being converged or beveled and said clamp also having a screw shank and a clamping nut engaging said screw shank, substantially as and for the purposes specified.

2. In a wrench of the character set forth, the combination of a shank having a handle at one end, the outer portion of said shank being flattened and supplied with a band to form a curved opening, a head rotatably mounted in said opening and having in connection therewith a ratchet-wheel and provided with an opening therethrough and a lower slot, a clamp adjustably mounted in said slot and having a screw shank extending through said opening, a handle on said shank, a clamping nut engaging said screw shank, a pair of jaws having shanks at right angles thereto engaged by the said clamp, segmental heads on opposite sides of the jaws and a rocking pawl engaging the ratchet, substantially as and for the purpose specified.

528,645. **TEMPERATURE-REGULATOR.** THOMAS O. PERRY, Chicago, Ill. Filed Nov. 6, 1893. Serial No. 490,092. (No model.)

*Claim.*—1. In a temperature regulator, in combination with a regulating valve or damper, an expanding and contracting element and connections therefrom by which its expansion and contraction may operate the damper; a heater other than that whose heat is to be regulated, and a deflector for directing the heat current therefrom to the expanding and contracting element; a thermostatic device exposed to the temperature to be regulated, and mechanism by which it operates the deflector: substantially as set forth.

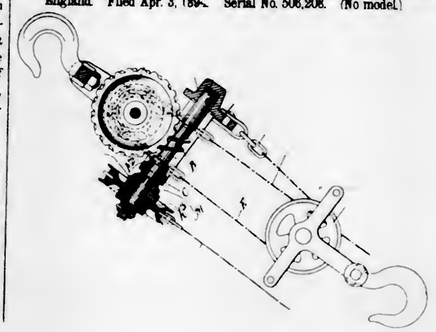
2. In a temperature regulator, in combination with a regulating valve or damper; a tube adapted to expand and contract with changes of temperature, and connections therefrom by which its expansion and contraction operate the damper; a heater other than that which produces the heat to be regulated; a deflector by which the heat current of such heater may be deflected into the tube to heat the latter; a thermostatic device exposed to the temperature to be regulated, and mechanism by which it controls the relative positions of the heating device and the deflector to cause the latter to overhang or not to overhang the former: substantially as set forth.



3. In a temperature regulator, in combination with the regulating valve or damper; a heater other than that which produces the heat to be regulated; a deflector for directing the heat current from such heater; a tube having at the lower part an open mouth into which the heat current is directed by such deflector, the tube being freely open at the upper part, such tube being fixed at one end and free to move by expansion and contraction at the other end, and connections from the end which is free to move by which the regulating valve or damper is operated: substantially as set forth.

4. In a temperature regulator, in combination with a regulating valve or damper tending normally to take a position to check the heat; an element adapted to be expanded by heat and connections therefrom to the valve or damper adapted to be put under tension and to put said expansible element under tension by said tendency of the damper; a constant heating device; mechanism to direct its heat against or away from said expansible element, and a thermostat exposed to the temperature to be regulated, and connections therefrom to the heat-directing devices, whereby said devices are operated by changes of the thermostat: substantially as set forth.

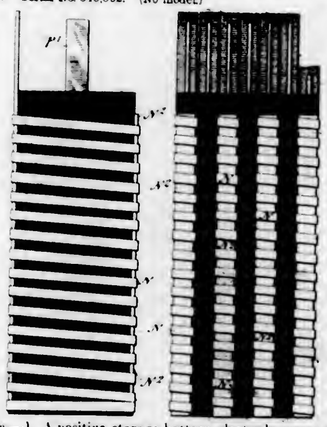
528,646. **AUTOMATIC BRAKE FOR PULLEY-BLOCKS.** JOHN W. POWELL, Smethwick, assignor to Holt & Willetts, Cradley Heath, England. Filed Apr. 3, 1894. Serial No. 506,208. (No model.)



*Claim.*—1. In combination in a hoisting apparatus, the worm shaft C, the hand chain wheel H loose thereon, and having an inclined outer face, the ratchet wheel loose on the shaft C and on the inner side of the chain wheel, the collar M on the inner side of the ratchet wheel against which it bears, and the means for holding the hand chain wheel H in place and for forcing the same against the ratchet consisting of the collar J secured on the end of the shaft C opposite the ratchet, said collar having inclines corresponding to those of the chain wheel, substantially as described.

2. In combination in a hoisting apparatus, the worm shaft C, the hand chain wheel loose thereon and having an incline on its outer face, the ratchet and pawl, the collar M, the collar J secured on the worm shaft and having the incline corresponding to that on the chain wheel and the rollers interposed between the inclined faces, substantially as described.

528,647. STORAGE-BATTERY. CHARLES J. REED, Philadelphia, Pa., assignor to the Reed Electric Company, same place. Filed June 5, 1894. Serial No. 513,562. (No model.)



*Claim.*—1. A positive storage battery electrode surrounded by a perforated envelope not readily attacked by the battery liquid, in combination with a negative electrode consisting of vertically disposed strips located on opposite faces of the surrounding protecting casing and a spirally disposed strip of lead wrapped around the entire mass and having its ends secured thereto, substantially as described.

2. A positive storage battery electrode surrounded by a protecting envelope, consisting of a sheet of perforated material having an interior coating of fibrous material, said envelope and coating being not readily attacked by the battery liquid, in combination with a negative electrode consisting of vertically disposed strips located on the opposite edges of the positive electrode and its surrounding envelope, and held in place by a strip of like material wound around the entire mass and having its ends secured, substantially as described.

3. A positive storage battery electrode of grooved form surrounded by a perforated envelope not readily attacked by the battery liquid, in combination with a negative electrode which surrounds or envelops the positive electrode and the aforesaid perforated envelope and holds all of said parts firmly together.

4. A positive grooved storage battery electrode surrounded with a sheet of paper or equivalent material for preventing disintegration, said paper or material being in turn held in place by a close fitting perforated envelope of celluloid, otherwise known as pyralin, in combination with a negative electrode which envelops or surrounds the aforesaid parts, substantially as described.

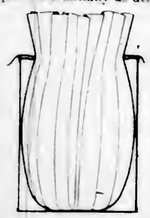
528,648. STORAGE-BATTERY. CHARLES J. REED, Philadelphia, Pa., assignor to the Reed Electric Company, same place. Filed June 8, 1894. Serial No. 513,947. (No model.)

*Claim.*—1. An accumulator or storage battery having its electrodes immersed in a solution of sulphuric acid and cadmium sulphate substantially as described.

2. In an accumulator a solution of a cadmium salt in combination with two electrodes, the positive electrode containing a compound of lead.

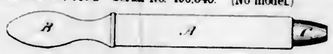
528,649. PACKING-VESSEL AND METHOD OF PRESERVING FOOD ARTICLES. HENRY SALZER, Baltimore, Md. Filed June 8, 1894. Serial No. 513,945. (No model.)

*Claim.*—1. A packing vessel or inclosure for food articles comprising a metallic can and an inclosed envelope or lining formed of a sheet of parchment paper, substantially as described.



2. A packing vessel for food-articles comprising a metallic can and an inner envelope formed of a continuous sheet of parchment paper having its edges drawn together at the top and firmly tied or united, the paper envelope being removable from the can, substantially as described.

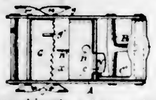
528,650. RAZOR-STROP. HENRY BEER, New Rochelle, N. Y. Filed Jan. 10, 1894. Serial No. 496,340. (No model.)



*Claim.*—1. A razor strop having a substantially flat and stiff or rigid whetting surface and provided at one end with a handle rigidly secured thereto, and at its other end with a rocker corresponding with the whetting surface, substantially as set forth.

2. A razor strop having a plurality of flat whetting surfaces and provided at one end with a handle rigidly secured thereto, and at its other end with a projection in line with the handle and curved to form rocking surfaces corresponding with the whetting surfaces, substantially as set forth.

528,651. COMBINATION-LOCK. JULES BOIS, Lyons, France, assignor to the Société Anonyme de la Serreure sans Clef, same place. Filed Jan. 9, 1894. Serial No. 496,235. (No model.) Patented in France Aug. 2, 1893, No. 232,074.



*Claim.*—1. The combination of the casing having a side opining, a sliding bolt, a series of plates each provided with an opening or slot for the reception of the bolt, there being on each plate a series of indentures or notches adapted to engage the wall of the casing opening, substantially as specified.

2. The combination of the casing having a side opening, a sliding bolt, a series of superposed plates, G, held loosely within the casing and each having an operating end portion projecting through the opening, a series of spring plates, as H, between the plates, G, there being in each plate, G, an opening for the reception of the bolt, and one edge of each plate having a series of equi-distant indentures or notches adapted to engage the wall of the casing opening, substantially as specified.

3. The combination of the casing, A, having opposite side openings, a sliding bolt, N, a series of superposed plates, G, projecting through said openings, finger catches, $g$, on each plate, intervening springs, H, between said plates, G, said springs having notches, $h$, to permit the free movement of the bolt, there being in each plate, G, an opening or slot, $g^2$ for the reception of the bolt, and one edge of each plate having a series of notches, $x$, adapted to engage the walls of the casing openings, substantially as specified.

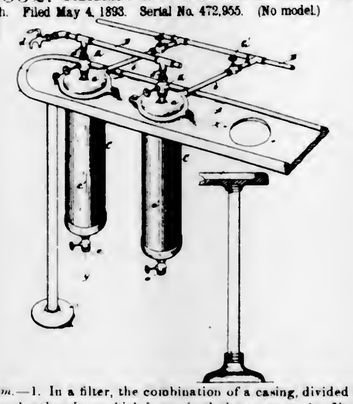
4. The combination of the casing, a series of adjustable plates having bolt receiving notches, a bolt, N, guided in said casing, an operating lug, $n$, on said bolt, a removable upper cover, D, having a lug, $s$, adapted to an opening in the side wall of the casing, a slot in said cover for the passage of the lug, $n$, and a locking catch, E, pivoted to the cover and adapted to engage in an opening in the side wall of the casing, said catch being held in a locked position by the lug, $n$, when the bolt, N, is in the locked position, substantially as specified.

5. The combination with the locking devices of a sliding bolt, a pivoted tongue, B, a pivoted locking plate, C, adapted to engage said tongue and a projecting arm, C', on said plate, with which the sliding bolt is adapted to engage, substantially as specified.

6. The combination of the casing a series of locking plates, G, therein having bolt receiving openings, a sliding locking bolt, N, having a locking tongue projecting without the casing, a pivoted tongue, B, a pivoted locking plate, C, adapted to engage the tongue, and an arm, C', having a projection, $c$, all arranged and operating substantially as set forth.



528,652. FILTERING APPARATUS. JUNIUS A. BOWDEN, Detroit, Mich. Filed May 4, 1893. Serial No. 472,955. (No model.)



*Claim.*—1. In a filter, the combination of a casing, divided into an upper chamber into which is received the water to be filtered, and two lower chambers divided by a vertical filtering wall, into one of which lower chambers is received unfiltered water from the upper chamber, and into the other of which is collected the filtered water, suitable inlet and outlet pipes, the passage-way between the upper chamber and the lower chamber for unfiltered water being a narrow slit arranged immediately adjacent to the upper end of the filtering wall and adapted to discharge a thin sheet of water from above downward across the surface thereof, substantially as and for the purpose described.

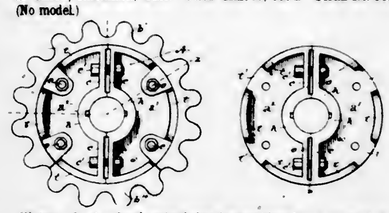
2. In a filter, the combination, in a suitable casing, of a reception chamber at the top part thereof, a dependent hollow filtering medium, an outer chamber surrounding the same, an outlet at the bottom of said outer chamber, a passage from the reception chamber to the outer chamber made in the form of a narrow slit and arranged adjacent to the top of the filtering medium, and adapted to discharge a thin sheet of water from above downward across the surface thereof, substantially as described.

3. In a filter, the combination of an inlet pipe, a support, a cap removably attached to said support, a central opening to said cap communicating with the discharge pipe, a secondary cap removably attached to the first named cap, a water way in the secondary cap with means for connecting to the central opening in first cap, the secondary cap uniting with a plate, a hollow filter tube and means for binding the same between the plate and secondary cap, an imperforated external casing removably attached to the first named cap, said casing at its lower end having a waste outlet, substantially as described.

4. In a filter, the combination of a perforated bench, a cap removably attached thereto, with a depending flange having an internal thread and a central opening in said cap, means whereby such central opening communicates with the discharge pipe, an annular flange surrounding said central opening and depending therefrom and carrying an internal thread, a secondary cap engaging in such internal thread and carrying removably dependent from its center a rod and having perforations extending from its upper to its lower surface within the engaging flange, an imperforate external barrel attached by the screw threads to the first named cap, said barrel being closed at the bottom and having therein a controllable outlet, a filtering stone inclosed centrally in said barrel and held between the second named cap, and an annular packed flange at its opposite end removably attached to the dependent rod, said filtering stone being perforated axially by a perforation larger than the dependent rod, and through which said rod passes, substantially as and for the purpose described.

5. In a filter, the combination of an inlet pipe, a support, a cap removably attached to said support, a central opening in said cap communicating with the discharge pipe, a secondary cap removably attached to the first named cap, a water way in the secondary cap with means for connecting to the central opening in the first cap, the secondary cap uniting with a plate by means of a tie rod and a hollow filtering tube supported between said plate and the secondary cap, an imperforate external casing removably attached to the first named cap, said casing at its lower end having a waste outlet, substantially as described.

528,653. MACHINE-GEAR. HARRY P. BRADFORD and JOHN A. SMITH, Cincinnati, Ohio. Filed Mar. 15, 1894. Serial No. 503,793. (No model.)



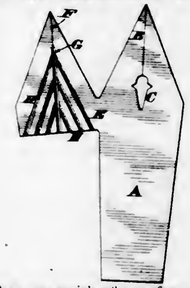
*Claim.*—1. A wheel embodying in combination a central or hub-portion, and a detachable rim composed of two equal segments each having extremities of half width and a central portion of full width, the widened portion of one segment adapted to enter and lock between the narrowed ends of the other segment, substantially as set forth

2. A wheel embodying in combination a central hub-disk having a recessed overhanging face or tread, and a detachable rim composed of two equal segments each having a central portion of full width adapted to fit and engage between the terminals of the segment, and each provided with inner radial lugs adapted to enter the recesses of the tread or face-portion of the central disk, at opposite sides of the disk and be secured together by bolts passing through each two opposite lugs and the interrening web, substantially as set forth.

3. A "split" wheel embodying in combination a central hub-disk composed of two equal halves divided in an axial plane of the shaft, and a detachable rim consisting of two members each of more than half a circle, having a central portion of full width through an arc equal to that separating the ends of the opposite portion, and terminals of half width substantially as set forth.

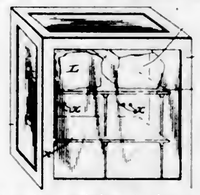
4. In a combination-wheel, the combination of a hub-disk having an overhanging face or tread with lateral recesses or interruptions, and a detachable rim in component parts divided in a plane of rotation, provided with internal lugs adapted to enter the interruptions of the disk-tread and be secured to the face of the web, as set forth.

528,654. FOUNTAIN-PEN. HARRY L. BRAHAM, Cincinnati, Ohio. Filed Aug. 2, 1894. Serial No. 519,232. (No model.)



*Claim.*—As a new article of manufacture, the pen A, having an integral fountain-plate D, of substantially the same size, shape or curvature as the concave pen-point, and provided with a longitudinal slit F; a central groove G, communicating with said slit; and a series of feeding grooves H, H, leading into this central groove G, the feeding grooves being in close contact with the under side of said concave-point, all as herein described, and for the purpose stated.

528,655. REFRIGERATOR. ROBERT BRAND and WILLIAM DICHMANN, Oshkosh, Wis. Filed May 15, 1894. Serial No. 511,307. (No model.)

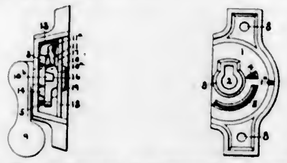


*Claim.*—1. A cooler consisting of a box or case containing an ice supporting shelf, provided with narrow corrugations inclining

toward a larger trough provided with outlets to an intermediate shelf beneath having lateral corrugations and inclining so as to conduct the drip across and around the shelf to similar intermediate shelves below, and an opening at the bottom of the box for outlet of the water, substantially as shown for the purpose specified.

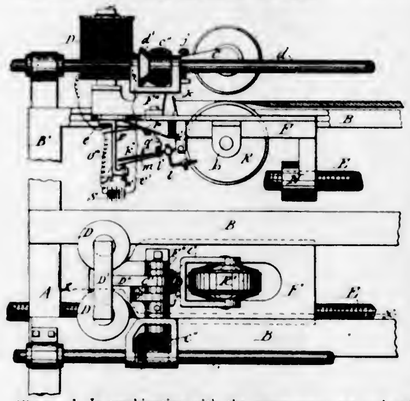
2. In a cooler for vegetables the combination with a box or case of an ice supporting shelf provided with corrugations inclining toward a larger trough provided with outlets leading to a vegetable supporting shelf beneath, having a main trough to first receive the drip, and lateral corrugations inclining therefrom, toward an outlet to a similar intermediate shelf below, each intermediate shelf being perforated to allow air circulation and an opening at the bottom of the box for outlet of the drip substantially as shown.

## 528,656. FASTENER FOR MEETING-RAILS OF SASHES. FREDERICK BUHRMEISTER, Cleveland, Ohio. Filed May 17, 1894. Serial No. 511,512. (No model.)



*Claim.*—The combination, in a fastener for the meeting-rails of sashes, of the case 1 having the elongated opening 2 surrounded on the under side by the flange 3, the lug 4 and curved flange 5 remote from said flange 3 with a space between said lug and the end of said flange 5; the lever 9 provided with the post 10 terminating in the projection $10^a$ of less diameter than said post and having the lug $10^b$ extending therefrom, said post adapted to operate in the circular part of said case opening and said post lug conforming to the elongated portion thereof; the cam 11 having the deflected portion $11^a$, the peripheral flange 13 with shoulder 15, and the lug 14 on the upper surface, the elliptical opening 12 sufficiently large to receive said lever post and permit said cam to play around the same when operated upon by said post lug, the notch 16 near said lug 14 to accommodate said post lug, and the flange 17 about said cam opening on the under side; the plate 18 perforated to receive said post projection; a washer, and the case 6 with depending lip 7, substantially as set forth.

## 528,657. PAPER-REGISTERING MACHINE. TALBOT C. DEXTER, Fulton, N. Y., assignor to the Dexter Folder Company, same place. Filed June 5, 1893. Serial No. 476,580. (No model.)



*Claim.*—1. In combination with the paper-conveyers and end-gage, a roller revolving with its top toward the side of the machine and engaging the under side of the paper arrested by the end-gage, and a presser-roller over the paper and parallel with the lower roller and movable vertically to and from the same, as set forth.

2. In combination with the paper-conveyers and end-gage, a vertically revolving roller at right angles to said conveyers and in contact with the under side of the paper arrested by the end-gage and moving with its engaging face toward the side of the machine, a vertically oscillatory arm over said roller, and a presser-roller pivoted to said arm directly over the lower roller and intermittently pressing the paper upon the same, as set forth.

3. A paper-registering apparatus comprising conveyers feeding the paper to the machine, a gage arresting the advance movement of the paper and aligning the same, paper-shifters moving the arrested and aligned paper laterally, an electrically operated stop-motion arresting the movement of said shifters and a movable side-gage operated by the laterally shifting paper and controlling said stop-motion.

4. In combination with the paper conveyers and end-gage, paper-shifting mechanism drawing the paper laterally, an electric circuit, electro magnets in said circuit, the armature adapted to arrest the action of the aforesaid shifting mechanism upon the paper, and a circuit maker and breaker actuated by the shifting paper, as set forth.

5. In combination with the paper-conveyers and end-gage, a revolving shaft under the passage of the paper and parallel with the conveyers, a roller fixed to said shaft and having its periphery engaging the under side of the paper in transit, a roller over said paper parallel with the lower roller and mounted on a vertically movable support, an electric circuit, magnets in said circuit, the armature adapted to lift the aforesaid support, and a circuit maker and breaker actuated by the paper moved by the aforesaid rollers, as set forth.

6. In combination with the paper conveyers and end-gage, a revolving shaft under the passage of the paper and parallel with the conveyers, a roller fixed to said shaft and having its periphery in proximity to the under side of the paper in transit, a vertically movable arm extending with its free end over the passage of the paper, a roller pivoted to said end of the arm, and disposed parallel with and vertically over the lower roller, an electric circuit, magnets in said circuit, the armature adapted to lift the aforesaid arm, and a circuit maker and breaker actuated by the paper moved by the aforesaid rollers, as set forth.

7. In combination with the paper-conveyers and end-gage, a roller disposed axially parallel with the conveyer and with its periphery in proximity to the under side of the paper in transit and revolving with its upper portion toward the side of the machine, a presser roller directly over the aforesaid roller and parallel therewith and mounted on a vertically movable support, an electric circuit, magnets in said circuit, the armature adapted to lift the roller-support, and a circuit making and breaking lever in the path of the paper moved by the aforesaid rollers and held normally in its circuit breaking position, as set forth.

8. In combination with the paper-conveyers, end-gage, and mechanism actuating said conveyers, a shaft under the passage of the paper parallel with the conveyers and geared with the aforesaid actuating mechanism to receive continuous rotary motion, a roller fixed to said shaft and having the top of its periphery in proximity to the passage of the paper, an arm pivoted axially parallel with the aforesaid shaft and having its free end over the aforesaid roller, a presser roller pivoted to said end of the arm and in the same vertical plane with the lower roller and pressing the paper upon said roller, an electric circuit, magnets in said circuit, the armature fixed to a lever fulcrumed intermediate of its length and engaging at its free end the aforesaid roller-supporting arm to lift the same by the attraction of the armature to the magnets, and a circuit making and breaking lever in the path of the paper and sustained normally in its breaking position, as set forth.

9. In combination with the paper-conveyers, end-gage and mechanism actuating said conveyers, the shaft —*a*— at right angles to the conveyers and receiving rotary motion from the aforesaid mechanism, the shaft —*b*— at right angles to the shaft —*a*— and geared to partake rotary motion therefrom, the roller —R— fixed to the shaft —*b*— and having the top of its periphery in proximity to the under side of the paper in transit, the arm —C— pivoted to swing with its free end vertically over the roller —R—, the roller —R'— pivoted to the free end of said arm and pressing the paper upon said lower roller, an electric circuit and magnets —D— in said circuit, the armature —D'—, the lever —D''— fixed to said armature and pivoted intermediate of its length axially in line with the pivot of the roller-carrying arm and engaging at its free end said arm from beneath the same, and a circuit-making and breaking lever in the path of the paper moved by the rollers, as set forth.

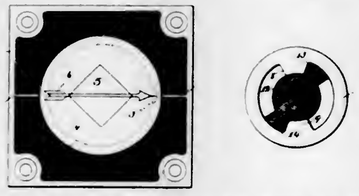
10. In combination with the paper conveyers, mechanism for operating the same, paper end-gage and the roller —R— under the passage of the paper and revolving with its top in contact with the paper and laterally from the travel of the paper, the rock-shaft —*c*—, cam —*c'*— fastened to said shaft, the arm —C— mounted loosely on the same shaft and having affixed to it the shoulder —C'— bearing on the under side of the cam —*c'*— and the roller —R'— pivoted to said arm, as set forth and shown.

11. In combination with the main-frame, paper-conveyers, mechanism for operating the same, paper end-gage, and the roller —R— under the passage of the paper and revolving with its top in contact with the paper and laterally from the travel of the paper, the rock-shaft —*d*— at right angles to the aforesaid conveyers, miter pinion —*d'*— attached to said shaft, the shaft —*c*— at right angles to the shaft —*d*—, the pinion —*c'*— on the shaft —*c*— meshing with the pinion —*d'*—, the arm —C— mounted loosely on shaft —*c*— and provided with the shoulder —C'—, the roller —R'— pivoted to said arm, the cam —*c'*— fixed to the shaft —*c*— and bearing upon the shoulder —C'—, the arm —G— secured to the shaft —*d*—, the cam —H— rotated by the actuating mechanism of the paper conveyers, the lever —I— pivoted to the main frame, the spring-rod —*e*— holding said lever in contact with the cam, and the rod —*e'*— connecting said lever to the arm —G—, substantially as described and shown.

12. In combination with the main frame, paper-conveyers and end-gage arresting the movement of the paper, lateral guides mounted on the frame, a carriage mounted on said guides, and sustained adjustably lengthwise thereof, lateral paper-shifting mechanism supported on said carriage, an electric circuit, electro magnets on the aforesaid carriage, the armature adapted to arrest the action of the aforesaid paper-shifting mechanism, and a circuit maker and breaker actuated by the shifting paper as set forth.

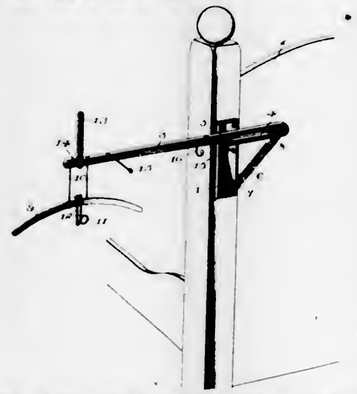


## 528,658. STEM CONNECTION FOR FOUR-WAY COCKS. ROBERT M. DIXON, East Orange, N. J., assignor to The Safety Car Heating and Lighting Company, New York, N. Y. Filed Apr. 20, 1893. Serial No. 471,208. (No model.)



*Claim.*—The combination with a cock and its plug, of a stem loosely connected with said plug and provided with an indicating arrow, the connection between the stem and plug permitting the direction of the arrow to be reversed and the plug to be turned through ninety degrees by the movement of the stem in one direction, movement thereof in the opposite direction causing the movement of the plug in the same degree, substantially as specified.

## 528,659. CLOTHES-RACK ATTACHMENT FOR BEDSTEADS. JOHN P. EDMONDS and JAMES A. KYLE, Scottsborough, Ala. Filed Feb 5, 1894. Serial No. 499,163. (No model.)



*Claim.*—1. In a clothes rack attachment, the combination of a back provided with a headed stud, a folding supporting bar or arm provided with a longitudinal slot receiving the headed stud, and a brace having one end pivoted to the supporting bar or arm adjacent to the outer end of the slot and having its other end pivoted to the back at a point below the stud, substantially as described.

2. A clothes rack attachment comprising a folding bar or arm, a curved bar arranged below the bar or arm, parallel rods connecting the curved bar with the supporting bar or arm, a hook depending from the curved bar, a folding hat peg pivoted to the supporting bar or arm, and cuff supports extending from the supporting bar or arm, substantially as described.

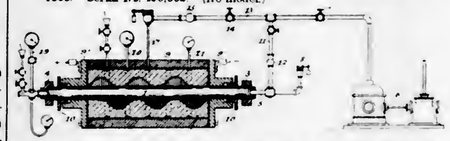
3. A clothes rack attachment comprising a back provided with a headed stud, a folding supporting bar or arm having a longitudinal slot receiving the stud, a brace having its upper end pivoted to the supporting bar or arm at the outer end of the slot and having its lower end pivoted to the back, a curved bar arranged at the outer end of the supporting bar or arm and provided with a hook, parallel rods connecting the curved bar with the supporting bar or arm, a folding hat peg pivoted to the outer end of the supporting bar or arm, and cuff supports extending from the supporting bar or arm, substantially as described.

## 528,660. PRINTER'S METAL FURNITURE. FRED B. EMERY, Boston, assignor of two-thirds to Charles S. Binner, Malden, and Edwin J. Phillips, Everett, Mass. Filed Feb. 1, 1894. Serial No. 498,780. (No model.)



*Claim.*—As a new article of manufacture a piece of filling-in printers' furniture, the said piece being additionally provided with type-holding mortises or slots of straight, curved or other suitable shape extending entirely through the block, said slots having vertical walls whereby they are adtapted to hold the types securely in position for printing, substantially as set forth.

## 528,661. PROCESS OF AND APPARATUS FOR FORMING AND TREATING METALS. GODFREY ENGEL, South Baltimore, Md. Filed Nov. 13, 1893. Serial No. 490,802. (No model.)



*Claim.*—1. The herein described process for forming or shaping metal articles, which consists in inclosing the metallic blank from which the desired article is to be formed in a mold of suitable shape, and composed of material having a great electrical resistance, heating the said blank within the mold by passing an electric current through it, and in applying pressure thereto by means of a gas or fluid of great electrical resistance, substantially as described.

2. The herein described process for forming or shaping metal articles, which consists in inclosing the metallic blank from which the desired article is to be formed in a mold of suitable shape, heating the said blank within the mold by passing an electric current through it until it becomes highly malleable and ductile, and in applying pressure thereto on both sides of the metal of the blank, by means of a gas or fluid of great electrical resistance and so expanding said blank to the shape of the mold, substantially as described.

3. In an apparatus for forming or shaping metal articles, the combination, with a mold composed of material having a great electrical resistance, having the shape of the article to be produced and adapted to receive a blank, of a source of electric energy and suitable connections for passing an electric current through the blank and heating the same, and means for applying pressure to the blank by a gas or fluid of great electrical resistance, whereby the blank may be expanded to the shape of the mold, substantially as described.

4. In an apparatus for forming or shaping metal articles, the combination, with a mold composed of material having a great electrical resistance having the shape of the article to be produced and adapted to receive a blank, of a casing surrounding said mold and adapted to resist internal pressure, a source of electric energy and suitable connections for passing an electric current through the blank within the mold and heating the same, and means for applying pressure to the sides of the metal of said blank, while heated, by a gas or fluid of great electrical resistance, whereby the blank may be expanded to the shape of the mold, substantially as described.

5. In an apparatus for forming metal articles, the combination, with a mold, composed of material having a great electrical resistance, having the shape of the article to be produced and adapted to receive a blank, of a source of electric energy and means for passing electric current through the blank and heating the same, and means for applying pressure to the interior of the blank, while heated, by a gas or fluid of great electrical resistance, whereby the blank may be expanded to the shape of the mold, substantially as described.

6. In an apparatus for forming metal articles, the combination, with a mold, composed of material having a great electrical resistance and adapted to receive a blank, of a source of electrical energy and

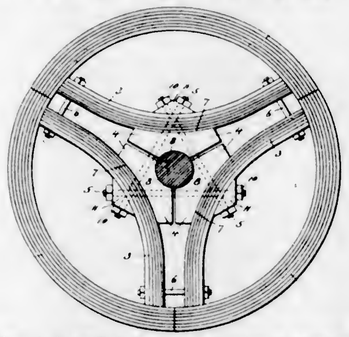
suitable connections for passing an electric current through the blank and heating the same, a casing or monitor surrounding said mold, and means for applying pressure to the blank, while heated, by a gas or fluid of great electrical resistance, whereby the blank may be caused to conform to the shape of the mold, substantially as described.

7. In an apparatus for forming metal articles, the combination, with a source of electric energy and suitable connections for passing an electric current through a blank from which the article is to be formed and heating the same, of means for applying pressure to the interior of said blank, while heated, by a gas or fluid, and means for introducing foreign substances into the interior of said blank for the purpose of treating its surface, substantially as described.

8. In an apparatus for forming hollow metal articles, the combination, with a mold adapted to receive a blank, of a source of electric energy and suitable connections for passing an electric current through said blank and heating the same, means for applying pressure to the blank, by a gas or fluid, thereby causing the blank to conform to the shape of the mold, and means for applying foreign substances to the blank while heated and within the mold, substantially as described.

9. In an apparatus for forming hollow metal articles, the combination, with a mold adapted to receive a blank and revolubly mounted, of a source of electric energy and suitable connections for passing an electric current through said blank and heating the same, means for applying pressure to the blank, by a gas or fluid, means for applying foreign substances to the blank while heated and within the mold, and means for rotating the mold, substantially as described

528,662. SPLIT PULLEY. JOHN F. W. FAWCETT, West Superior, Wis. Filed Mar. 22, 1894. Serial No. 504,677. (No model.)



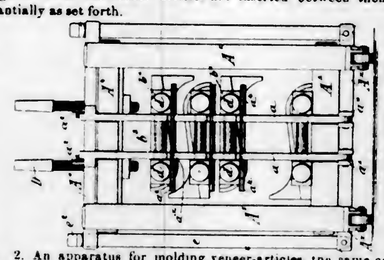
*Claim.*—1. In a split pulley, the combination of a sectional rim, the inwardly curved braces having their ends arranged adjacent to each other and to the ends of the sections of the rim, a sectional hub arranged within the braces and provided with a central shaft opening, and the clamping bolts arranged in the form of a triangle and surrounding and receiving within them the shaft opening substantially as described.

2. In a split pulley, the combination of a sectional rim, the inwardly curved braces having their ends secured to the rim adjacent to the ends of the sections thereof, a hub arranged within the braces and composed of separate approximately triangular sections having inner bearing faces and outer faces conforming to the configuration of the braces, and the triangular arranged clamping bolts passing through the ends of the hub sections and the braces and having their ends crossed, whereby a continuous clamping action is produced, substantially as described.

3. In a split pulley, the combination of a sectional rim, curved braces having their ends arranged contiguous to the rim and extending inward therefrom, a sectional hub arranged within the braces, triangular plates arranged centrally on the braces and conforming to the configuration of the same and presenting flat exterior faces, and the crossed clamping bolts arranged in the form of a triangle and passed through the hub sections, the braces and the plates, and having threaded ends provided with nuts bearing against the exterior faces of the plates, substantially as described.

528,663. APPARATUS FOR MOLDING VENEER ARTICLES. FRANK FILIP, New York, N. Y. Filed Feb. 9, 1894. Serial No. 499,652. (No model.)

*Claim.*—1. An apparatus for molding veneer-articles, the same consisting of a supporting-frame, vertical movable guide-rails applied to the frame, a number of superposed removable mold-sections supported in said frame, and provided with means for guiding them on said rails, means for supporting the individual mold-sections in raised position on the guide-rails, and means for clamping the mold-sections together after the veneer articles are inserted between them, substantially as set forth.



2. An apparatus for molding veneer-articles, the same consisting of a supporting-frame, vertical guide-rails applied to the frame, a number of superposed mold-sections supported by said frame and provided with means for guiding them on said rails, removable transverse rods applied to said guide-rails for supporting the individual mold-sections in raised position for inserting the articles of veneer between the mold-sections, and means for clamping the mold sections together after the veneer articles are inserted between them, substantially as set forth.

3. An apparatus for molding veneer-articles, the same consisting of a supporting-frame, vertical guide-rails hinged to the frame, a number of superposed removable mold-sections supported in said frame, and provided with means for guiding them on said rails, removable transverse rods applied to said guide-rails for supporting the individual mold-sections in raised position to receive the articles of veneer between them, and means for clamping the mold-sections together after the veneer articles are inserted between them, substantially as set forth.

4. An apparatus for molding veneer-articles, the same consisting of a supporting-frame, brace-rods hinged to the sides of said frame, guide-rails hinged to the ends of the frame, a number of superposed mold-sections supported in said frame, means for supporting the individual mold-sections in raised position on the guide-rails, and means for clamping the mold-sections together after the veneer articles are placed between them, substantially as set forth.

5. An apparatus for molding veneer-articles, the same consisting of a supporting-frame, movable guide-rails applied to the ends of the frame, a number of superposed mold-sections supported in the said frame, projecting blocks on the ends of the mold-sections guided upon said guide-rails, headed studs on said blocks, hoisting mechanism provided with suitable chains adapted to be passed around said studs, and means for clamping said mold-sections together upon the articles of veneer, substantially as set forth.

6. The combination of a supporting-frame formed of top and bottom plates and upright corner-pieces, hinged brace-rods applied to the sides of the supporting frame, upright guide-rails attached to the ends of the same, a number of mold-sections supported by the frame and provided with guide-blocks at the ends, having headed studs, guide-rollers supported by the said blocks, for moving along the guide rails, and transverse rods which are supported in notches of the guide-rails for supporting the individual mold-sections in raised position for inserting the articles of veneer between the mold-sections, substantially as set forth.

7. A mold-section made of cast-metal, corresponding to the shape of the article to be molded, the mold-section being provided with a beveled shoulder or ledge at each end, substantially as set forth.

8. A mold-section made of cast-metal, corresponding to the shape of the article to be molded, the mold-section being provided with a beveled ledge or shoulder at each end, and with cast-metal blocks having headed studs at their outer ends, and transverse rollers between said blocks, substantially as set forth.

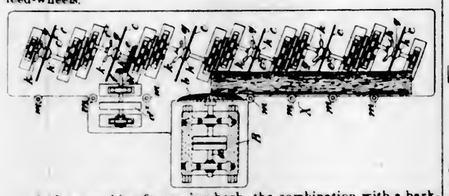
528,664. MACHINE FOR REMOVING BARK, &c. CLAES E. V FOLIN, Hammarby, Sweden. Filed Mar. 1, 1894. Serial No. 501,985 (No model.)

*Claim.*—1. In a machine for rossing bark, the combination with a rotating, bark-removing disk, *b*, and a series of log-supports *m*, aligned with the said disk, of a series of circular, saw-like feed-wheels *c*, arranged in line parallel with supports *m* and set obliquely to the path of the log, and mechanism for driving the feed-wheels and the disk *b*, the said feed-wheels being arranged to take under the log and support the same at the side opposite to the disk *b*, substantially as set forth.

2. In a machine for rossing bark, the combination with a stationary frame provided with a row of bearing rollers *m*, on upright

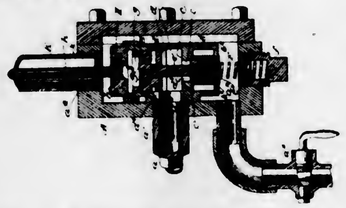


axes, to support the log at one side thereof, a row of toothed feed-wheels *c*, mounted on the base and arranged to support the side of the log opposite to the rollers *m*, said feed-wheels being arranged obliquely to the path of the log, a bark-removing disk *b*, arranged in line with the rollers *m*, and mechanism for driving said disk and feed-wheels.



3. In a machine for rossing bark, the combination with a bark-removing disk, *b*, of a series of circular, saw-shaped, stationary feed-wheels, *c*, set obliquely to the straight line through the centers of all the wheels, a part of these wheels being situated on the right hand and a part of them on the left hand of the bark-removing disk and at about the same distance one from another, and of supports *m*, in line with the bark-removing disk, and on the opposite side of the log from the feed-wheels which support the log obliquely from below.

528,665. STEAM-TRAP. OSCAR GARRETT, Boston, Mass., assignor to the Crosby Steam Gage and Valve Company, same place. Filed Feb 15, 1894. Serial No. 500,265. (No model.)



*Claim.*—1. The combination in a steam trap of a valve provided with a piston which controls the discharge from such trap and a pipe valve which communicates at one end with the piston and at the other end opens out into the trap, as set forth.

2. The combination in a steam trap of the steam trap body A; the pipe K leading therefrom; the piston and case B; the piston therein; the pipe L leading from within the valve case above the piston, up into the pipe K; the rod terminating within the pipe K near the top of the pipe L; the inlet *a* into the trap body and the discharge pipe *a'* leading from the piston or valve case B, as set forth.

3. The combination of the secondary, large or main valve with the small or primary valve, the latter being at the end of an expansion pipe which communicates at one end with the interior of the trap and at the other end with a chamber above the main valve, as set forth.

4. The combination of the secondary, large or main valve, the small or primary valve pipe, L, the rod, O, the spring, P, and a bearing on the rod and on the trap frame between which bearings the spring bears, as set forth.

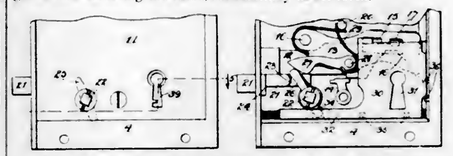
528,666. VEHICLE-WHEEL RIM. ROBERT A. GIBSON, Buffalo, N. Y. Filed Dec. 4, 1893. Serial No. 492,718. (No model.)



*Claim.*—A vehicle wheel rim, consisting of a series of strips of wood, each strip having a parallel series of longitudinal tongues and grooves on its face so that when forced together and glued, the tongues and grooves alternately interlock with each other and form a solid vehicle wheel rim, the several layers of which are rigidly secured together by glue and the interlocking tongues and grooves substantially as described.

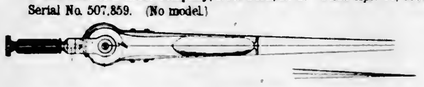
528,667. KEYHOLE-GUARD. JAMES A. GIBBS, Chicago, Ill., assignor to the Adams & Westlake Company, same place. Filed Feb. 16, 1894. Serial No. 500,372. (No model.)

*Claim.*—1. A safety-locking attachment comprising a safety locking-bolt independent of the main locking-bolt, a sliding guard arranged to cover and uncover the key-hole for the main locking-bolt, a turning-spindle carrying followers engaging the safety-bolt and guard and actuating the same, substantially as set forth.



2. A safety lock-attachment, comprising a safety locking-bolt independent of the main locking-bolt, a sliding-guard for covering and uncovering the key-hole for the main locking-bolt, a turning-spindle having followers engaging the safety-bolt and guard to actuate the same, and a spring-pressed catch or tumbler engaging one of said spindle-followers so as to hold the same at one and the other limit of its movement, substantially as set forth.

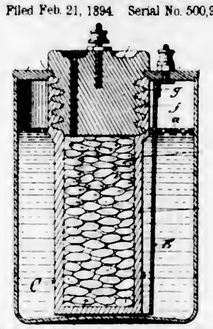
528,668. DIVIDERS. ADOLF HAFF, Pforzheim, Germany, assignor to the Keuffel & Esser Company, New York, N. Y. Filed Apr. 17, 1894. Serial No. 507,859. (No model.)



*Claim.*—1. A pair of dividers or similar instrument, provided with a forked handle pivoted to the heads of the legs of the instrument, friction-springs, the shanks of which are attached to the legs while the free ends extend over the heads and overlap one another, and means for pressing the free ends of the friction-springs together and on the head of the legs, so as to clamp the legs in any suitable position to each other, substantially as set forth.

2. A pair of dividers, provided with a handle, having a forked lower end, pivoted to the heads of the legs, friction springs the shanks of which are attached to the legs near the heads and free ends of which extend over the heads and overlap one another, and a clamping-screw arranged in said handle and provided with a stem that extends through a central bore in the handle, so as to engage the ends of the friction-springs and clamp the same to the heads of the legs, substantially as set forth.

528,669. GALVANIC BATTERY. MORTIMER M. HAYDEN, New York, N. Y. Filed Feb. 21, 1894. Serial No. 500,955. (No model.)



*Claim.*—1. A galvanic battery provided with a cover, a detachable porous cup provided with internal screw threads at the top, and a screw threaded plug connecting said detachable cup to said cover, substantially as shown and for the purposes specified.

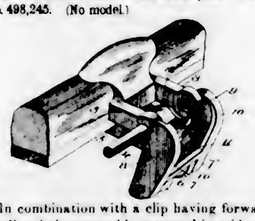
2. A galvanic battery provided with a cover, a detachable porous cup provided with internal screw threads at the top, and a screw threaded flanged plug connecting said detachable cup to said cover, substantially as shown and for the purposes specified.

3. A galvanic battery provided with a cover and with a porous cup provided with internal screw threads at the top, and a screw threaded flanged plug, whereby said cover is clamped between said cup and said flanged plug, substantially as described and for the purposes specified.

4. In a galvanic battery, a carbon porous cup provided with internal screw threads at the top, having a screw threaded plug made of carbon denser in quality than the cup itself, for the purpose set forth.

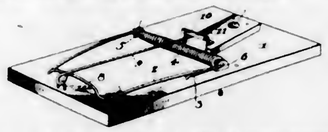
5. In a galvanic battery, a porous cup provided with internal screw threads at the top for containing a depolarizing agent, a screw threaded plug therefor, and a vent channel through said plug, substantially as described and for the purposes specified.

528,670. THILL-COUPLING. JAMES HENRETTY, Staples, Minn., assignor of one-half to John Niven, same place. Filed Jan. 27, 1894. Serial No. 498,245. (No model.)



*Claim.*—In combination with a clip having forwardly extending arms, of a headless bolt removably mounted in said arms, a tie-plate having a forwardly depressed portion formed with a bifurcation to provide two lugs, a locking frame pivotally connected to and embracing the said lugs, the upper end of the frame on the inner opposing sides thereof being recessed to form front flanges and adapted to close over the opposite ends of the headless bolt, the lower portions of the opposite sides of the said locking frame being connected by a cross bar, and a coiled spring having an arm bearing against the under side of the cross bar to hold the locking frame normally closed against the arms of the clip, substantially as and for the purposes specified.

528,671. ANIMAL-TRAP. WILLIAM C. HOOKER, Abingdon, Ill. Filed Mar. 14, 1894. Serial No. 503,629. (No model.)



*Claim.*—1. A trap, comprising a base, a spring-actuated jaw constructed of a single piece of wire coiled to form a transverse spring and extended from one end of the latter and shaped into a loop terminating at the opposite side of the coil and continued to form a transverse portion arranged within the coil, bearings receiving the ends of the transverse portion, a locking-bar, and a trigger for setting the jaw, substantially as described.

2. A trap, comprising a base, a spring-actuated jaw constructed of a single piece of wire coiled to form a transverse spring and extended from one end of the latter and shaped into a loop terminating at the opposite side of the coil and continued to form a transverse portion arranged within the coil, one end of the wire being extended rearwardly to form an arm and the other end being extended transversely, a locking-bar, and a trigger for setting the jaw, substantially as described.

3. A trap, comprising a spring-actuated jaw, a locking-bar, a trigger provided at its rear end with a catch, and an eye constructed of a single piece of sheet metal doubled above the trigger and bent rearward and having its ends secured to the upper and lower faces of the trigger, a pintle arranged in the eye and hinging the trigger to the base, and a locking-bar, substantially as described.

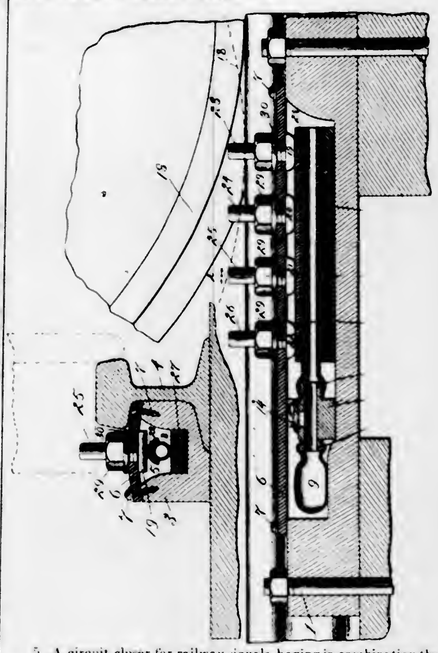
528,672. CIRCUIT-CLOSER. HENRY J. HOVEY, Oak Park, Ill. Filed Dec. 26, 1893. Serial No. 494,706. (No model.)

*Claim.*—1. A circuit closer for railway signals, having in combination the electric contacts or terminals, a fluid compressor or pump having independently movable plungers adapted to effect the compression of the fluid therein, and means for closing said contacts together by the fluid pressure from said compressor or pump, substantially as set forth.

2. A circuit closer for railway signals, having in combination the electric contacts or terminals, a fluid compressor or pump having independently movable portions adapted to effect the compression of the fluid therein, and said portions being arranged longitudinally of the rail in the path of, so as to be depressed by the wheels, and means for closing said contacts together by the fluid pressure from said compressor or pump, substantially as set forth.

3. A circuit closer, having in combination the electric contacts or terminals, a compressible or contractible chamber arranged lengthwise of the rail, means for contracting said chamber gradually from either end, and means for closing said contacts together by the movement of the contents of said chamber, substantially as set forth

4. A circuit closer for railway signals having in combination the electric contacts or terminals, a compressible fluid chamber arranged lengthwise of the rail, a fluid pressure actuated device connected to said chamber, for closing said terminals or contacts together, and means for compressing said chamber successively at different intervals in its length, substantially as set forth



5. A circuit closer for railway signals, having in combination the electric contacts or terminals, a compressible fluid chamber open at one end arranged lengthwise of the rail, a fluid pressure actuated device for closing said contacts or terminals, connected to said chamber at its other end, and means for compressing said chamber from end to end, substantially as set forth.

6. A circuit closer for railway signals having a series of depressible portions adapted by their contemporaneous depression to effect the closure of the contacts, said series being arranged lengthwise of the rail so as to be struck by the wheel threads, whereby they will be depressed contemporaneously only by wheels exceeding a certain diameter, substantially as set forth.

7. A circuit closer for railway signals, having in combination the electric contacts or terminals, an elastic tube arranged lengthwise of the rail so as to be compressed gradually from end to end by the pressure of the car wheels, and means for imparting the movement of the contents of said tube to the said contacts or terminals for closing them together, substantially as set forth.

8. A circuit closer for railway signals, having in combination the electric contacts or terminals, an elastic tube arranged lengthwise of the rail, a series of cushioned plungers arranged over said tube and adapted to be depressed by the wheels, and means at one end of said tube for imparting the pressure of the contents thereof to said contacts or terminals, substantially as set forth.

9. A circuit closer for railway signals, having in combination the electric contacts or terminals, an elastic tube provided with an elastic support and arranged lengthwise of the rail so as to be compressed by the pressure of the wheels, and means for imparting the pressure of the contents of said tube to said contacts or terminals, substantially as set forth.

10. A circuit closer for railway signals, having in combination the electric contacts or terminals, a compressible chamber, a series of plungers arranged to compress said chamber, an elastic strip by which said plungers are flexibly supported and means for imparting the pressure of the contents of said chamber to said contacts or terminals, substantially as set forth.

11. A circuit closer for railway signals, having in combination the electric contacts or terminals, a fluid compressor having plungers,



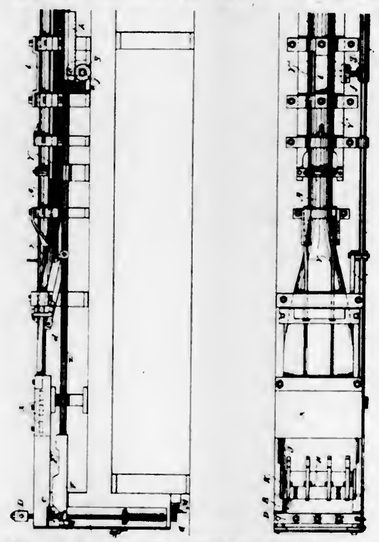
a housing or casing in which said fluid compressor is arranged, an elastic cover for closing said housing or casing, and also constituting a support for said plungers, and means for closing the contacts by the pressure from said compressor, substantially as set forth.

12. A circuit closer for railway signals, having in combination the electric contacts or terminals, an air compressor for effecting the closure of said contacts, provided with a series of plungers having stems, a housing in which said compressor is incased provided with an elastic cover through which said stems project, and nuts for securing said plungers and cover together, substantially as set forth.

13. A circuit closer for railway signals, having in combination the electric contacts or terminals, an elastic tube open at one end, an expansible bulb connected to the other end of said tube and arranged to expand against one of said contacts for closing them together, and a series of plungers arranged lengthwise of said tube and having portions arranged lengthwise of the line of travel of the train, substantially as set forth.

14. A circuit-closer having in combination the electric contacts or terminals, a series of independently depressible plungers arranged to be depressed by an object moving lengthwise of the series, a deflectable portion arranged under and lengthwise of said series and adapted to be impinged and deflected by said independently depressible plungers, and means at one end of said depressible portion for communicating the movement thereof to said contacts, substantially as set forth

528,673. CAN-MAKING MACHINE. ROBERT D. HUME, Gold Beach, Oreg. Filed Mar. 28, 1894. Serial No. 505,454. (No model.)



*Claim.*—1. In a can-making machine, a can body former, a horn about which the sheets are bent, a mechanism for feeding the sheets of tin to be delivered to the former, consisting of adherent lifters, a mechanism by which they are reciprocated so that the uppermost of a pile of sheets will be lifted from the others by each reciprocation, and a horizontally reciprocating carrier adapted to move beneath the lifted sheet and receive and withdraw it horizontally without destroying the adhesion of the lifter until the sheet has passed the edge when the carrier is retracted.

2. In a can making machine, a series of vertically moving adherent lifters adapted to lift the uppermost of a series of sheets, a horizontally reciprocating carrier, mechanism by which it is moved beneath the lifted sheet, said carrier having hooks or lugs which engage the edge of the sheet so as to withdraw it horizontally without destroying the adhesion of the lifters until the sheet is withdrawn beyond their edges when the carrier is retracted, and a pawl or stop by which the sheet is engaged after it has been removed from the lifters to prevent its being returned when the carrier is again advanced.

3. The vertically moving lifters adapted to lift successively the uppermost of a series of sheets, a bar in which the shanks of said lifters are fixed, a vertically reciprocating rod connected with the bar, and a horizontally reciprocating plate, the upper edge of which forms a cam movable beneath a pin or stud upon the vertical rod, whereby the reciprocation of the cam first raises the lifters and the sheet, while the carrier passes beneath the lifted sheet, then drops the lifters and sheet, so that its edge may be engaged by the up-turned hooks of the carrier and the sheet removed from the lifters when the carrier is reciprocated.

4. A feeding mechanism for sheets of tin consisting of a vertically moving table adapted to receive the sheets, adherent lifters vertically movable above the table and the sheets thereon, adapted to raise the uppermost sheet and deliver it to a horizontally reciprocating carrier, a vertical screw rotating in a nut connected with the table, a lever and pawl and ratchet mechanism actuated by direct connection through the rod E with the vertically moving lifters, and bevel gears by which said motion is transmitted to rotate the screw at each movement of the lifters.

5. A feeding mechanism for sheets or blanks, consisting of vertically reciprocating adherent lifters adapted to seize and lift the uppermost of a pile of sheets or blanks from the table upon which they are supported, mechanism by which the table is gradually raised to compensate for the removal of the sheets, consisting of a vertical screw, a gear on said screw, a horizontal shaft having a gear engaging the screw gear, a ratchet on the horizontal shaft and a pawl engaging said ratchet, a half nut slidable in horizontal guides upon the table engaging the screw, a lever U and a rod V connecting with the nut whereby the latter may be disengaged from the screw to allow the table to be moved.

6. A feeding mechanism for sheets or blanks, consisting of vertically reciprocating adherent lifters adapted to seize and lift the uppermost of a pile of sheets or blanks from a table upon which they are supported. mechanism whereby said lifters are reciprocated, and devices consisting of plates with teeth or notches I upon each side of the pile of sheets adapted to arrest and detach any sheet below the uppermost one which may be lifted therewith.

7. The vertically moving adherent lifters by which the sheets are singly and successively raised from the pile of blanks, a horizontally reciprocating carrier, a mechanism whereby it is advanced beneath the lifted sheet, mechanism consisting of the reciprocating cam plate F whereby the lifters and sheet are depressed simultaneously so that the latter is engaged by hooks upon the carrier whereby it is removed from the lifters when the carrier is again retracted.

8. The adherent vertically moving lifters adapted to raise sheets or blanks singly and successively from a pile situated beneath the lifters, a horizontally reciprocating carrier and mechanism whereby it is advanced beneath the lifted sheet, mechanism whereby the sheet is engaged by the carrier and removed from the lifters by the retraction of the carrier, and elastic guides J between which the sheet is moved as the carrier retracts whereby it is registered to enter the hook forming mechanism as described.

9. The reciprocating carrier adapted to receive sheets or blanks singly and withdraw them from the point where received, pawls or stops engaging the rear edges of the sheets to prevent their return upon the return movement of the carrier, and the reciprocating rods Z connected with the carrier at one end and with the crank upon the driving shaft at the other whereby the sheets are advanced by intermittent movements from the point where they are received, to be submitted to the future forming operations as described.

10. In a can making machine, a horizontally reciprocating carrier, devices for supplying sheets of tin singly thereto, mechanism whereby the carriers are intermittently reciprocated, mechanism for bending the edges of the sheets into hooks, a former forming a continuation in line with the carrier or table over which the sheet first moves, having its surface curving gradually into a convex form upon the upper side, with the curvature increasing until it merges into a cylindrical horn, carriers by which the sheet is advanced and bent around said form until the hook edges interlock beneath the cylindrical horn, and a mechanism consisting of a vertically reciprocating hammer whereby the interlocked edges are closed together beneath the horn.

11. The former around which the sheets of metal are curved, mechanism by which they are intermittently advanced along the former, a cylindrical horn into which the former merges and about which the sheets are bent so that their hook edges are interlocked beneath the cylindrical horn, a vertically reciprocating hammer adapted to close the interlocked edges and form a seam, guide bars extending along upon opposite sides of the seam and set respectively into the cylindrical horn and the reciprocating hammer with springs whereby they are forced outwardly into position to receive and guide the seam, said springs yielding to allow the guides to be forced inwardly when the seam is closed by the approaching hammer.

12. A mechanism for closing the seam beneath the horn and projecting the closed seam upon the interior of the can body, consisting of a channel formed longitudinally in the lower side of the horn and in line with the seam, spring-actuated retractile guides between which the seam is retained in line with the channel, a vertically reciprocating hammer and mechanism whereby it is actuated to close the interlocked edges of the seam and force the seam thus closed into the channel in the horn.

13. The seam closing mechanism consisting of the horn around which the sheet of metal is bent and the previously formed hooks upon its edges interlocked beneath the horn, a channel formed in the horn for the reception of the seam, retractile guides between which the opposite edges of the seam are retained, a vertically reciprocating hammer adapted to close and compress the seam into the channel, mechanism whereby the hammer is actuated consisting of a cam or eccentric mounted upon a shaft beneath the hammer, a pinion fixed to the shaft and a reciprocating rack engaging said pinion and rotating the shaft and cam to actuate the hammer.

14. A seam closing mechanism consisting of the channeled horn, retractile guides, and vertically reciprocating hammer adapted to close and compress the seam, and an anvil or resisting plate fixed above the upper side of the horn to counteract the pressure thereon

15. The cylindrical horn about which the sheets of metal are curved, interlocked, and the seam closed, and a hollow continuation of said horn having a slot in the lower side, a soldering iron suspended with its lower edge projecting through the slot, a gas jet pipe extending through the hollow horn having jet burners with flame impinging upon the top of the iron, and perforations around the periphery of the tubular extension for the admission of air to support the combustion of the burners.

16. The hollow cylindrical extension of the horn having a channel in the lower side, a soldering iron suspended therein with its lower edge projecting through the channel and standing in line with the seam of the can which is carried upon the exterior of the extension, an interior gas jet tube whereby the iron is heated, a solder carrier having an open slotted ridge upon the top through which the solder is exposed and upon which the iron rests when no can is passing between them and a heating device therefor.

17. In a can making machine, a soldering device consisting of a soldering iron suspended in the cylindrical extension of the horn about which the can bodies are formed, so that its lower edge projects through a slot in the bottom of said extension, and a solder carrier having a slotted ridge upon its upper side through which the melted solder is exposed, and upon which the lower edge of the soldering iron rests when no can is passing, and mechanism whereby the can bodies are advanced to pass between the two solder carrying surfaces so that the solder is simultaneously applied to both inside and outside of the seam.

18. In a can making machine, the hollow cylindrical extension of the horn about which the can bodies are formed, a soldering iron suspended in the slotted lower side of said extension projecting through the slot, means for heating said iron from the interior of said horn, a solder carrier yieldingly supported and heated from below, having a slotted ridge upon its upper side opposing the lower edge of the soldering iron and forming contact therewith when no can is passing, said iron and solder carrier yielding to be separated when the can body is passed between them whereby solder is applied simultaneously to both sides of the seam.

19. In a can making machine, the horn about which the body is formed and the seam closed upon the lower side, a device for applying acid to the seam after it has been closed consisting of a tank supported upon springs and adapted to contain acid, said chamber having a slot in the upper side in line with the seam, and an absorbent material fixed in said slot with its lower side dipping in the acid and the upper side projecting to form contact with the opposing seam.

20. In a can forming machine, a horn about which the can is formed, a spring supported acid tank with absorbent material projecting through a slot in the upper side in the line of travel of the passing seam whereby the acid is applied to the seam of the can, and a slot or channel made in the lower part of the horn opposed to the acid tank to prevent the acid from acting upon the horn when no cans are passing.

21. The solder carrier consisting of the covered chamber having an upwardly projecting slotted ridge through which the solder is exposed, and a means for heating the carrier, and melting the solder therein, an open tank or chamber or extension at one side of the closed carrier, and a mechanism whereby solder is supplied thereto to keep a constant level within the slotted opening.

22. A covered solder carrier with a narrow slit in the top through which molten solder is exposed in the line of travel of the seam of the can moving above the solder carrier, an open extension or tank at one side, a reciprocating cutter and mechanism for actuating said cutter at intervals to supply pieces of solder to the open chamber, and a heater beneath by which the solder is melted and a surface level maintained approximately level with the top of the slot in the carrier.

23. A solder carrier and an open chamber connected therewith, a feed chute through which solder is delivered and a reciprocating cutter adapted to sever the solder and deliver it into the open chamber, mechanism whereby the cutter is actuated, consisting of a revolving cam or eccentric and shaft, arms projecting from said shaft and a reciprocating bar with a lug or projection adapted to engage the arms and partially rotate the shaft at each reciprocation.

24. In a can making machine, mechanism for supplying the sheets or blanks to be formed into can bodies, a reciprocating carrier for receiving said sheets singly and successively, mechanism for actuating the feeder and carrier, consisting of a horizontally reciprocating bar connected therewith at one end, and with the crank or eccentric upon the main driving shaft, reciprocating carriers whereby the sheets and cans are intermittently advanced along the horn, and an eccentric or crank with connecting rod whereby said carriers are actuated independently of the feed and supply carrier.

25. In a can making machine, the hollow cylindrical extension of the horn about which the can bodies are formed, mechanism by which the outside and inside of the seams are soldered simultaneously, wipers consisting of fibrous cloth or fabric, and clamping plates between which the fabric is secured above and below the seam, whereby the latter passes between the wipers after having been soldered.

26. The clamping plates having vertical slots made through them adapted to receive fibrous wipers, adjusting screws by which the plates are moved over each other to clamp the wipers, and set screws passing through slots in one of the plates which allow of the adjustment, whereby the plates are locked together after the wipers have been secured between them.

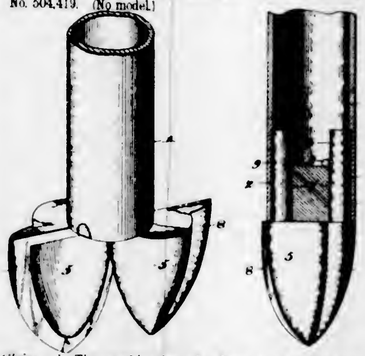
27. The solder wipers for the exterior of the seam, consisting of plates having vertical slots through which the fibrous wiping material is inserted, screws by which the plates are adjusted upon each other to clamp the material, and set screws for holding the plates together, said plates having openings made through them in line with the seam, whereby any surplus solder falls through the plates and away from the can.

28 In a can making machine, the mechanism for applying the heads to the ends of the cans and crimping the heads thereon, consisting of the cylindrical extension of the horn over which the can bodies are moved, interior conical segments by which the can body is expanded, a carrier adapted to receive can heads and reciprocate in line with the can body whereby the head is applied to the can body, and a movable plunger whereby the cans are expanded and the head crimped upon the can end after application, in combination with a locking latch, whereby the plunger and carrier are rigidly connected together until after the head has been applied to the can, and a means for disengaging the latch to allow the further advance of the plunger after the head has been applied for the purpose of crimping it upon the can end.

29. A can making apparatus consisting of an automatically operating feeder, a former and a cylindrical horn into which it merges, over which the sheet is intermittently moved to form interlocking hooks, and lock and close them to form a side seamed cylinder, soldering irons and wipers between which the seam is passed, a continuation of the horn over which the can passes, without change of form, and a mechanism whereby the head is applied and crimped thereon.

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**528,674. FENCE-POST.** SAMUEL P. IDDINGS, Troy, Ohio, assignor of one-half to J. H. Iddings, of same place. Filed Mar. 20, 1894. Serial No. 504,419. (No model.)



*Claim.*—1. The combination of a fence post, and a spear point arranged at the lower end of the post and forming an entering point for the same, and composed of two separable sections adapted to be spread to form an anchor and provided with vertical journals arranged in suitable bearings of the post, substantially as described.

2. A post provided at its lower end with a spear-point composed of two separately-journaled sections having opposite webs or flanges and adapted to turn, whereby they are spread after the post is inserted in the ground, substantially as described.

3. The combination with a tubular fence post provided at its bottom, on its interior, with shallow vertical grooves, a cylindrical



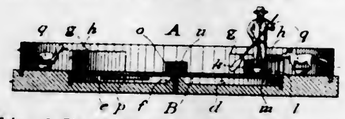
operating block arranged in the lower end of the post and provided with opposite grooves, and a point composed of separate sections provided with vertical journals arranged in said grooves and bulging beyond the sides of the block, substantially as and for the purpose described.

4. The combination with a fence post, of a spear point arranged at the lower end of the same and forming an entering point for the post and comprising two eccentrically pivoted segmental sections, capable of separation by the rotation of the post, whereby an anchor is formed at the lower end of the latter substantially as described.

5. The combination with a fence post, of two semi-spear shaped sections pivotally mounted at the lower end of the post, and fitting together to form an entering point for the post, and capable of separation, after the post has been inserted in the ground, to provide an anchor, substantially as described.

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**528,675. PUZZLE OR GAME.** JOHN A. KIRK, Washington, D. C. Filed Feb. 20, 1894. Serial No. 500,869. (No model.)



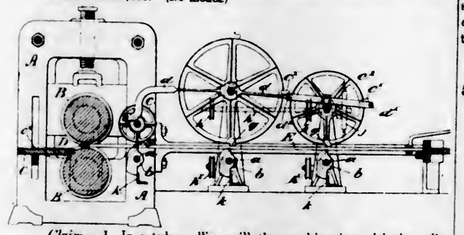
*Claim.*—1. The combination in a puzzle, game or toy adapted t be manipulated by being held in the hand; of a box A, formed of a base *a*, having a continuous outer wall or rim *b*; a continuous raised surface *c*, surrounding a circular depressed suface *d*, and forming the circular space *e*, having the fences or rims *g*, forming with the outer wall the spaces *i*, with the openings *h*, therefrom; a disk or wheel B, pivotally secured within said circular space *e*, having its upper surface on a level with the continuous raised surface *c*, and having the elliptically formed fence *k*, with the opening *l*, forming the boat shaped inclosure *m*, and the weight *p* securely fastened to its under surface; and a number of movable objects, substantially as set forth and described.

2. The combination in a puzzle, game or toy, adapted to be manipulated by being held in the hand, of a box A, composed of a base having a continuous outer wall or rim and raised surface c and having its interior divided into three compartments by parallel or curved walls or fences, with openings; the outer compartments having floors adapted to be on the same level; the inner or central compartment having a circular depressed floor, and a disk or wheel B, pivotally secured within the circular space formed by the inner edge of said raised surface; and having its upper surface on a level with said raised surface; and a weight secured at a point near the periphery of the said disk or wheel B, substantially as set forth and described.

3. The combination in a puzzle, game or toy, of a box A, having an outer and inner floor of different levels and divided into compartments by walls or fences with interior openings, with an unbalanced pivotally-secured disk or wheel having upon its upper surface a crib or cribs with openings adapted to correspond with the openings of said compartments, located on the raised floor.

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**528,676. SUPPORT FOR MANDREL-BARS OF TUBE-ROLLING MILLS.** CARL G. LARSON, Sandviken, Sweden. Filed May 16, 1894. Serial No. 511,400. (No model.)



*Claim.*—1. In a tube rolling mill, the combination with the rolls, mandrels and mandrel-bars, of rocking supports under said bars, a series of upper rocking supports arranged in line lengthwise of the mill, a frame in which these upper supports are mounted and means for shifting said frame and supports laterally, whereby they may be brought in succession over the mandrel-bars, substantially as set forth.

2. In a tube rolling mill, the combination with the rolls, mandrels and mandrel-bars, of the grooved, rocking supports arranged beneath the mandrel-bars and adapted to embrace said bars beneath and at the sides, and laterally movable rocking supports arranged over the said bars and adapted to bear on the same normally, said upper and lower supports having weights to keep them in operative position and projections in the path of the tube whereby the latter displaces the supports as it passes over the mandrel-bar.

3. In a tube rolling mill, the combination with the rolls, mandrels and mandrel-bars, and lower, rocking supports therefor, of the upper rocking supports mounted in a frame, and the means for shifting said frame laterally, said means comprising two endless chains embracing the machine and coupled to the support carrying frame, sheaves on which said chains are mounted, a shaft on which the driving sheaves are secured, and a crank for rotating said shaft.

4. In a tube rolling mill, the combination with the rolls, mandrels and mandrel-bars, of the rocking upper supports having projections $c^3$, to limit their rotation plain faces adapted to bear on the tubes, and projecting toes *g*, to bear on the crown of the mandrel-bar, said toes being in the path of the tube passing over the mandrel-bar, and rocking lower supports for said bars.

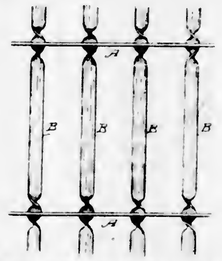
5. In a tube rolling mill, the combination with the rolls, mandrels and mandrel-bars, of upper rocking supports for the bars, and rocking gravity lower supports *b*, each having a grooved portion to receive and support the tube and a collar *b'*, arranged in the path of a tube passing over the mandrel-bar and having a groove to receive and support the said mandrel-bar, as set forth.

6. The combination with the grooved rolls, mandrels and mandrel-bars, of rocking supports arranged under said bars, and laterally movable rocking supports arranged over said bars, substantially as set forth.

7. The combination with the rolls, of a mandrel and a mandrel-bar, and a rocking support for said mandrel-bar, said support having a projecting grooved collar adapted to receive and support the mandrel bar and arranged in the path of and adapted to be engaged by the tube passing over the mandrel-bar, whereby the support is rocked, said support being also provided with a portion having a groove of larger diameter adapted to take under and support the tube when the support is rocked, substantially as set forth.

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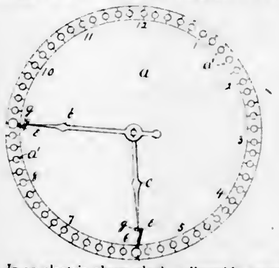
**528,677. UNION OF TRANSVERSE METAL BARS.** JOHN T. MCCORMICK, San Francisco, Cal. Filed June 14, 1894. Serial No. 514,571. (No model.)



*Claim.*—The combination of the bars A and B arranged at right angles to each other, and both being twisted as shown, the bars of one set or series having plain untwisted portions between adjacent twisted portions, and the bars of the other series being passed through slots in said untwisted portions whereby their twisted portions upon each side of the slots form locks for securing the bars together with the edges of both sets of bars uppermost at intervals.

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**528,678. ELECTRIC ALARM-CLOCK.** MICHAEL MCDONNELL, New Bedford, Mass. Filed May 29, 1894. Serial No. 512,856. (No model.)



*Claim.*—In an electric alarm clock, adjustable contact devices, consisting of the metallic posts *d d'*, having an arm *e*, bearing in its

outer extremity a flat spring *g*, adapted to yield to the slight pressure of the hand of the clock in whose path it is adjusted, substantially as shown and described.

528,679. **CORNER-BRACE.** CALVERT R. MCGAHEY, Elkton, Va. Filed Feb. 13, 1894. Serial No. 500,068. (No model.)



*Claim.*—1. A metallic corner brace for frames, comprising a body portion with flanges at right angles thereto extending in opposite directions from opposite sides thereof and extensions to embrace the corner of the frame, as set forth.

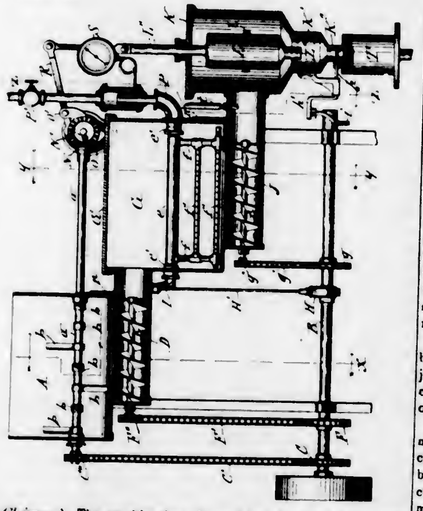
2. The combination with two frame-pieces having slits extending to the miter thereof, of a metallic corner brace having a body portion held in said slits and flanges extending in opposite directions from opposite edges of the body portion to embrace the inner and outer edges of the frame-pieces, as set forth.

3. The combination with the frame-pieces having slits extending to the miter thereof, of a metallic corner brace having a body portion held in said slits, flanges to embrace the inner and outer edges of the frame pieces, and extensions to overlap and embrace the corner, as set forth.

4. A metallic corner brace for frames, comprising a body portion with oppositely-extending flanges extending from opposite sides of the body portion in opposite directions and with angular extensions, to overlap and embrace the corner of a frame substantially as specified.

5. A metallic corner brace or stay for frames, comprising a body portion with alternately oppositely-extending flanges to embrace the inner and outer edges of the frame and opposite faces thereof, and angular extensions to embrace the corner, as set forth.

528,680. **VEGETABLE COOKING AND CANNING MACHINE.** FRANK A. ODIN, Syracuse, N. Y. Filed Apr. 5, 1894. Serial No. 506,376. (No model.)

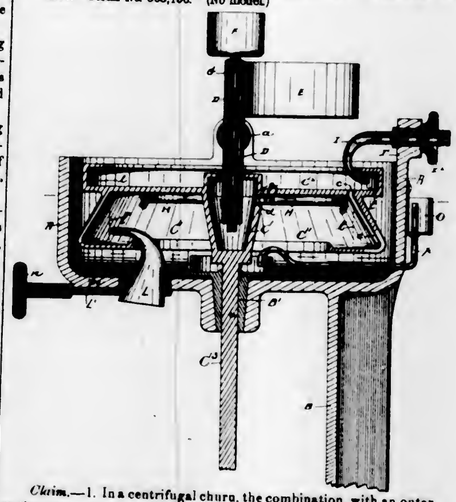


*Claim.*—1. The combination of a cooking-chamber formed with a horizontal semi-cylindrical bottom and with a discharge opening in said bottom, a tubular agitator disposed with its axis horizontally and concentric to the bottom of the cooking-chamber, a steam-induction pipe communicating with said agitator, a cylinder under the bottom of said chamber parallel therewith and communicating with the discharge opening thereof, a spiral conveyer in said cylinder, and a can-filler connected to said cylinder.

2. In combination with the can filler, a cooking chamber, a tubular rock-shaft extending horizontally through said chamber, tubular arms extending from said rock-shaft, tubes connecting said arms, a steam-pipe communicating with the interior of said rock-shaft, a conveyer under the cooking chamber carrying the cooked material to the filler, a horizontally elongated hopper, a rotary shaft extending longitudinally through said hopper, paddles attached to said shaft, and a conveyer under the hopper leading therefrom to the cooking chamber as set forth.

3. The improved filler consisting of a cylindrical case formed with a circumferentially reduced cylindrical bottom portion terminated with a further reduced discharge nozzle, a gate sliding across said nozzle, and a plunger of nearly or quite the same diameter as the interior of the reduced bottom portion of the case and entering the same and terminated with a further reduced supplemental plunger entering the nozzle substantially as described and shown.

528,681. **CHURN.** OLOF OHLSON, Newark, N. J. Filed Sept. 16, 1890. Serial No. 365,158. (No model.)



*Claim.*—1. In a centrifugal churn, the combination, with an outer stationary casing, of a cream chamber; a shaft upon which said cream-chamber is mounted; chambers C' and C³ carried by and connecting with said cream-chamber; a pipe having transverse bars on the inside thereof and connecting with said cream-chamber and the chamber C'; a conduit connecting said chambers C' and C³ and means for collecting and delivering the butter and the butter-milk into vessels arranged to receive the same as described for the purposes set forth.

2. In a centrifugal churn, the combination of a casing, a shaft mounted therein carrying a cream receptacle, a feeder for supplying cream to said receptacle, the upper and lower chambers, the pipe connecting said chambers, the pipe leading from the cream receptacle into the lower or separating chamber, and having the bars on the inside thereof, the pipe or conduit having its inner end in the upper separating chamber, and the pipe or conduit entering the lower separating chamber, substantially as and for the purpose set forth.

3. In a centrifugal churn, the combination of a separating-chamber having an opening in the bottom thereof, a cream-receptacle projecting through said opening and a pipe or tube connecting the said chamber and receptacle and having its interior provided with a series of obstructions, for the purposes set forth.

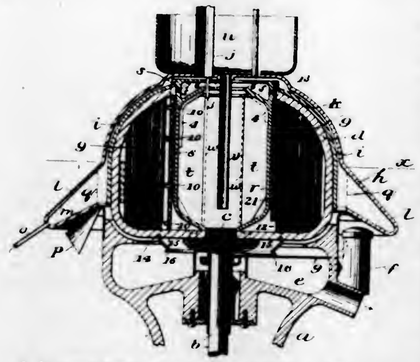
4. In a centrifugal churn the combination of the casing, the shaft mounted therein and carrying the cream receptacle, the feeder and color supplying device for said receptacle, the upper and lower chambers, the pipe connecting said chambers, the pipe leading from the cream receptacle to the lower or separating chamber and having means for churning the cream, the pipes or conduits secured to the casing and entering the separating chamber, and mechanism for rotating the shaft, all arranged and adapted to operate as described.

5. In a centrifugal churn, the combination of a cream receptacle, upper and lower chambers communicating with each other, a pipe or conduit leading from the cream receptacle to the lower chamber, said pipe having devices for churning the cream, and mechanism for revolving the said receptacle, chambers and pipe, for the purpose described.

528,682. **CENTRIFUGAL BUTTER-EXTRACTOR.** OLOF OHLSON, Newark, N.J., assignor to the United States Butter Extractor Company, of New Jersey. Filed July 9, 1892. Serial No. 439,516. (No model.)



*Claim.*—1. In a centrifugal creamer and butter machine, a rotary cream separating bowl having inner and outer cream separating chambers with cream exits from each, and a milk passage leading from the inner to the outer chamber and means for delivering the milk to the outer chamber at different heights, substantially as set forth.



2. In a centrifugal creamer and butter making machine, a rotary cream separating bowl having inner and outer cream separating chambers, each provided with wings and milk inlets and skim milk exits, a milk tank provided with a passage leading into the inner or central separating chamber substantially as set forth.

3. In combination with a rotary bowl having inner and outer separating chambers, a vertical feed channel or duct, S, arranged in the outer chamber and having a series of openings, 10, therein, and a passage 4, 6, and 7 leading from the inner chamber to said vertical channel or duct, substantially as set forth.

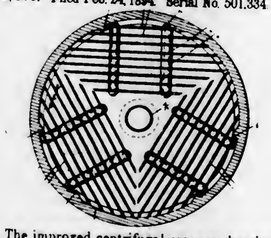
4 In combination with a rotary bowl having two cream separating chambers, a stationary cover having a butter separating chamber with said bowl and two ducts or passages admitting the flow of cream from the cream separating chambers to said butter separating chamber substantially as set forth.

5. In combination with a centrifugal cream separator, a cold air chamber stationed around said cream separator, a cold air duct leading to said chamber, the cold air being drawn into said chamber through said duct by the suction induced by the rotary separator and ducts or passages for leading the cream into said chamber, and ducts or passages for leading the butter and butter-milk from said chamber, substantially as set forth.

6. In combination with the cream separating bowl, exit passages from said bowl, formed at angles to one another and adapted to direct the outwardly issuing streams or jets of cream against one an other to break their outward force, substantially as set forth.

7. In combination with the cream separating bowl, exit passages from said bowl and a cream holding chamber provided with a receptacle adapted to receive the outwardly issuing cream and adapted to form a cream wall adjacent to said exits against which cream wall the cream is impelled by centrifugal force substantially as set forth.

528,683. **CENTRIFUGAL SEPARATING-MACHINE.** OLOF OHLSON, Newark, N. J. Filed Feb. 24, 1894. Serial No. 501,334. (No model.)



*Claim.*—1. The improved centrifugal creamer herein described in which is combined with the bowl, *b*, supply tube *k*, and partition, *j*, vertical plates arranged above said partition and, in plan, extending from the peripheral parts of the bowl inward across the radii of the bowl center, and at the nearest approach to said bowl center having openings or passages *i*, *i*, substantially as set forth.

2. The improved centrifugal separating machine, having therein, series of vertical plates, arranged in the rotary bowl in independent packs, disposed around the center at angles to the radii of the bowl center, with spaces between said plates, said packs being each separable from the bowl or the chamber therein, substantially as and for the purposes set forth.

3. In a centrifugal separating machine, the combination with the rotary bowl, of series of plates joined together, the centers of which lie nearest the center of the bowl and the opposite edges toward the periphery, substantially as set forth.

4. The centrifugal separating machine, in which is combined with the bowl having a bottom partition forming the passage, *n*, and centrally open to receive milk and, at the periphery, forming an opening or openings into the separating chamber, of packs of parallel plates fastened together and arranged edge to edge around the center of the bowl, the said packs providing cream passages at their points of approach to the said center, substantially as set forth.

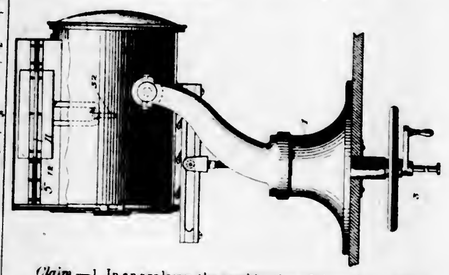
5. The centrifugal separating machine, in which is combined with the rotary bowl, and cover having a central opening, of a partition, *j*, duct *k*, for leading the milk to the passage formed by said partition, peripheral openings through said partition, plates arranged in series, in separable packs, said series extending toward and from the center, at right angles to given radii of the bowl center, substantially as set forth.

6. The improved centrifugal separating machine, in which is combined with the rotary bowl and a partition having openings at the periphery to admit an outflow of new milk to the separating chamber, of a series of plates arranged above said partition and having their outer edges at said openings to subdivide the milk as it enters, the said partitions crossing the lines of rotary motion and inclining to the lines of centrifugal force, and leading the cream inward, substantially as set forth.

7. The combination with the bowl and the horizontal partition having a central new milk inlet and peripheral new milk exits to the main chamber, of partitions arranged in the main chamber in planes of the chords of the circle of the bowl and provided with a vertical series of perforations where they approach the bowl centers, substantially as set forth.

8. The combination with the bowl and horizontal partitions having an inlet and, toward the periphery, outlets for the milk, of series of parallel plates arranged in the planes of chords of the circle of the bowl and having, at points where said plates approach more nearly the bowl-center perforation to allow an inflow of cream and at the edges having skim milk passages, substantially as set forth.

528,684. **ELECTRIC-ARC LAMP.** CHARLES K. ONGLEY, New York, N. Y., assignor to George J. Schoeffel, same place. Filed Feb. 17, 1894. Serial No. 500,550. (No model.)



*Claim.*—1 In an arc lamp, the combination of pivoted arms carrying or adapted to carry carbons, a screw threaded shaft, nuts moved thereby, and operatively connected respectively to said arms so as to move them oppositely to feed the carbons, a shunt coil and means operated thereby for turning the screw shaft to move the arms and carbons toward each other.

2. In an arc lamp, the combination of pivoted arms carrying or adapted to carry carbons, a screw threaded shaft, nuts moved thereby and operatively connected respectively to said arms so as to move them oppositely to feed the carbons, a shunt coil, means operated thereby for turning the screw shaft to move the arms and carbons toward each other, a series coil and an armature therefor operatively connected to one of said arms and adapted to move it to strike an arc.

3. In an arc lamp, the combination of pivoted arms carrying or adapted to carry carbons, a screw threaded shaft, nuts moved thereby, and operatively connected respectively to said arms so as to move them oppositely to feed the carbons, a shunt coil, armature, and circuit breaker, and a clutch connected to the screw shaft to transmit movement thereto and operated by said magnet and armature.

4. In an arc lamp, the combination of pivoted carbon carrying arms provided with grooves, a screw threaded shaft with oppositely

threaded sections, nuts thereon carrying pins extending into said grooves for moving the arms, and means for moving said screw.

5. In an arc lamp, the combination of pivoted carbon carrying arms, one of which is jointed, a series coil supported by said jointed arm on the pivot side of the joint, an armature for the magnet engaging the jointed arm on the opposite side of the joint from the pivot of the arm, and means for moving the arms toward each other.

6. The combination of carbon carrying arms 27, 28, screw 16, 17, clutch 21, nuts 18, 19, pins 20 to guide the nuts, pins 59 carried by the nuts and engaging said arms, and means including suitable coils for moving said arms.

7. The combination of pivoted carbon feeding arms, straight carbons supported so as to be advanced by said pivoted arms, a feed screw with nuts moved thereby and operatively connected to said arms, and means controlled by a shunt coil for turning the screw.

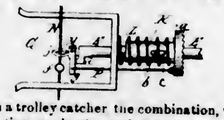
8. The combination with a search light or projector body of conductors 5, 6, supported thereby but insulated therefrom, and forming circuit terminals, a lamp, an inclosing box or case therefor, conductors 10, 11 suitably insulated from each other and adapted, respectively, to rest on conductors 5, 6, to complete the circuit and to support the lamp, and connected to the lamp in the box.

9. The combination with a search light or projector body, of an arc lamp having pivoted carbon carrying arms extending into said body in front of the reflector, and means for moving said arms to maintain the arc.

10. The combination with a search light or projector body, of an extension, 4 thereon, an arc lamp in said extension and having pivoted carbon carrying arms extending into said body in front of a reflector, and means for moving said arms to maintain the arc.

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**528,685.** TROLLEY-CATCHER. ALBERT S. OSBORN, Rochester N. Y. Filed May 9, 1894. Serial No. 510,617. (No model.)



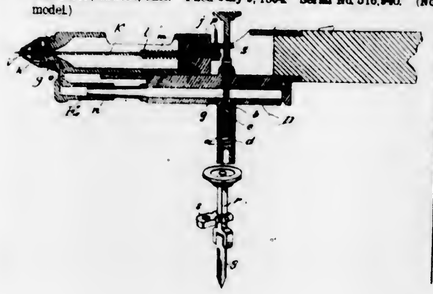
*Claim.*—1. In a trolley catcher the combination, with the trolley arm and its operating cord, of a spring-operated shaft, a winding head attached to the shaft, a fixed ratchet, a spring-operated detent which engages with the ratchet, a cord holder with which the cord engages and a connection extending from the cord-holder to the detent, whereby the disengagement of the trolley from the wire draws upon the cord holder, disengages the detent from the ratchet, and causes the cord to wind on the head, as shown and described and for the purpose specified.

2. The combination, with the trolley arm and its operating cord, of a spring-operated shaft, a winding head, a fixed ratchet, a spring-operated detent which engages with the ratchet, a cord-holder arranged opposite the winding head whereby the cord can wind on the winding head, said cord holder being pivoted to the shaft, and a connection extending from the cord holder to the detent, whereby, when the cord-holder is raised, the detent is drawn back and disengaged from the ratchet, as specified.

3. The combination, with the trolley arm and its operating cord, of a spring-operated shaft, a winding head of forked form attached thereto, a fixed ratchet, a spring-operated detent sliding on the shaft and engaging with the ratchet, a cord-holder pivoted to the end of the shaft opposite the winding head whereby the cord can wind on the latter, and a connection between the cord-holder and detent whereby the latter is disengaged from the ratchet when the cord holder is raised, as specified.

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**528,686.** AIR-BRUSH. JOSEPH S. OVERMAN and WILLIAM T. WOOLSTON, Canton, Ohio. Filed July 9, 1894. Serial No. 516,940. (No model.)



*Claim.*—1. In an air brush the combination with the tube holder, an air tube carried thereby, a color tube seated in the holder, and having a tube removably connected with the aforesaid air tube and valves for controlling the supply of coloring material and air, substantially as described and for the purpose set forth.

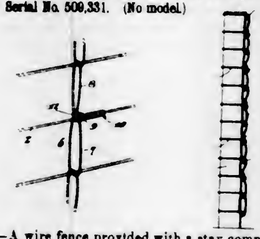
2. In an air brush, the combination with the tube holder formed with a channel or seat, and provided with an air tube, of a removable color tube supported in said seat, and provided with a tube removably sleeved upon the aforesaid air tube, and valves for controlling the supply of coloring material and air, substantially as described

3. In an air brush, the combination with the tube holder and its air tube thereto attached, of a color tube removably supported by the holder, a nose secured to the discharge end of the color tube, a tube carried by the color tube, and communicating with the interior of the nose, and connected with the aforesaid air tube, and valves to control the supply of air and coloring matter, substantially as described and for the purpose set forth.

4. The combination with holder, a removable color tube supported thereby, air tubes, a branch tube communicating with the air tubes, a spring controlled valve in said branch tube, a spring controlled valve carried by the color tube and provided with an arm, a lever having a pin engaging the valve in the branch tube, and a loose connection with the valve in the color tube, whereby when the lever is actuated both valves will be operated, substantially as described, and for the purpose set forth.

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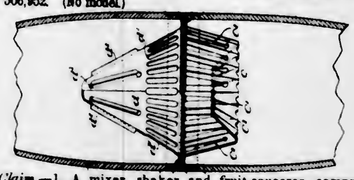
**528,687.** FENCE. ROBERT L. PARIS, Audubon, Ky., assignor of two-thirds to H. Ely and A. C. Johnson, same place. Filed Apr. 28, 1894. Serial No. 509,331. (No model.)



*Claim.*—A wire fence provided with a stay composed of a series of sections linked together, and each constructed of a single piece of wire having one of the terminals coiled around an intermediate wire, extended upward over the next adjacent wire to form the upper loop, and downward and around the intermediate wire to form an eye, and then downward around the adjacent wire to form the lower loop 7, and upward above the intermediate wire across the upper loop and said eye, and coiled around the intermediate wire, substantially as described.

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**528,688.** LIQUID MIXER, SHAKER, AND FRUIT-SQUEEZER. WILLIAM H. PAYNE, Philadelphia, Pa., assignor to J. Walter Douglass, same place. Filed June 10, 1893. Renewed Apr. 9, 1894. Serial No. 506,952. (No model.)



*Claim.*—1. A mixer, shaker and fruit-squeezer, comprising a ring, annulus or collar for accommodating the rims of two glasses, vessels or tumblers and provided on one side with a slotted and perforated truncated cone-shaped strainer and on the other side with a ribbed or roughened and slotted cone-shaped fruit squeezer, substantially as and for the purposes set forth.

2. A mixer, shaker and fruit-squeezer, comprising a ring, annulus or collar for accommodating the rims of two glasses, vessels or tumblers and provided with an inwardly projecting rib, a conical-shaped slotted and roughened squeezer connected with said rib and a disk provided with radial arms attached to said rib and bent to form a strainer, substantially as and for the purposes set forth.

3. A liquid mixer and fruit squeezer having a ring or annulus provided with inversely flaring rims for accommodating two glasses, vessels or tumblers and provided with a cone-shaped slotted and roughened squeezer and a perforated disk provided with radial arms bent to form a strainer, substantially as and for the purposes set forth.

4. A liquid mixer and fruit squeezer provided with an internally flanged ring, annulus or collar for the reception of two vessels, glasses or tumblers and a cone-shaped roughened and perforated fruit squeezer integral with the flange of the ring, annulus or collar, and a perforated strainer integral with said flange and provided with radial arms forming a truncated cone having one of its bases near to the other, substantially as and for the purposes set forth.

5. A mixer and squeezer provided with a ring, annulus or collar for the rims of two glasses, vessels or tumblers and provided with an inwardly projecting flange carrying a cone-shaped slotted fruit squeezer having certain of the edges of the slotted portion thereof turned up, substantially as and for the purposes set forth.

6. A liquid mixer and fruit squeezer having a ring, annulus or collar provided with an integral raised perforated base, and a series of slotted radial arms integral therewith and forming a strainer, substantially as and for the purposes set forth.

7. A liquid mixer and fruit squeezer provided with a ring, annulus or collar for the rims of two glasses, vessels or tumblers and provided with an inwardly projecting flange having a perforated cone-shaped squeezer with flaring edges and a perforated and slotted strainer with a dish-shaped internal body, substantially as and for the purposes set forth.

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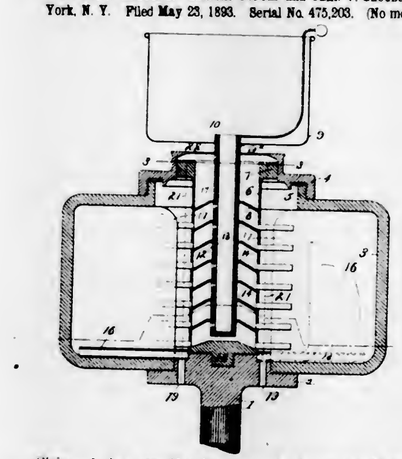
**528,689.** WINDOW-SHUTTER. DAVID POSST, Shreveport, La. Filed May 18, 1894. Serial No. 511,700. (No model.)



*Claim.*—In a window shutter, the combination of two horizontal bars arranged one at the top of the window frame and one at the middle thereof, a shutter pivotally secured to each, and operating to close the window, a sliding plate on the upper shutter adapted to engage the bar of the lower shutter, and a hook on the lower shutter adapted to operate with the window frame, whereby the shutters may be locked, substantially as described.

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**528,690.** APPARATUS FOR CENTRIFUGAL SEPARATION OF COMPOUND LIQUIDS. ANDERS PONTEN and JEAN V. SKOGLUND, New York, N. Y. Filed May 23, 1893. Serial No. 475,203. (No model.)



*Claim.*—1. In a centrifugal separator for liquids of different specific gravities, the combination with the separator bowl having separate discharges for the different materials, of a supply device for the compound liquid, and numerous tubes leading the supply liquid into the mass of liquid within the separator to points beyond or outside the inner well thereof so that such liquid is supplied in numerous planes of rotation without disturbing the inner wall of the material being separated, substantially as described.

2. In a centrifugal separator the combination of the revolving separating chamber, the central receiving apparatus which has a number of compartments and a number of inlets from each of said compartments to the separating chamber, which inlets terminate beyond the inner surface of the liquid under treatment and are located in different planes of rotation, together with separate discharge orifices for the separated liquid, substantially as described.

3. In a centrifugal liquid separator, the combination of the revolving separating chamber, the central supply tube, the receiving apparatus, partitions in said receiving apparatus which separate the compound liquids into different planes of rotation, and radial tubes which discharge the liquid from the receiving apparatus into the separating chamber, together with separate discharge orifices for each of the constituent liquids, substantially as described.

4. In a centrifugal liquid separator, the combination of the revolving separating chamber, the central supply tube, the receiving apparatus, partitions in said receiving apparatus which separate the compound liquids into different planes of rotation, and radial tubes which discharge the liquid from the receiving apparatus into the separating chamber, together with the separate discharge orifices for each of the constituent liquids, vanes parallel to the axis of rotation, extending from the walls of the separating chamber to a point inside of the outer ends of the radial tubes, substantially as described.

5. In a centrifugal liquid separator, the combination of the revolving separating chamber, with its co-operating elements, the receiving apparatus with its various compartments, the supply tank, the central supply tube, with several openings, leading from the supply tank to the different compartments of the receiving apparatus, and the means whereby the size of said openings may be increased or diminished, substantially as described.

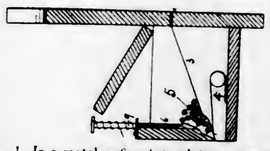
6. In a centrifugal liquid separator, the combination of the revolving separating chamber with its co-operating elements receiving apparatus with its various compartments, the stationary supply tank, the central supply tube, with several perforations, leading from the tank to the different compartments of the receiving apparatus, the inner tube having perforations which register with those of the supply tube, and the projecting handle extending from said inner tube to a point outside of the supply tank and by which said inner tube may be given a rotating or endwise motion so as to regulate to a greater or less extent the accuracy with which its perforations register with those of the supply tube, substantially as described.

7. In a centrifugal liquid separator, the combination of the revolving separating chamber, the central supply tube, the receiving apparatus, partitions in said receiving apparatus which separate the mixed liquids into different planes of rotation, and radial tubes which discharge the liquid from the receiving apparatus into the separating chamber, together with separate discharge orifices for each of the constituent liquids, certain of which discharge orifices (for the heavier liquid) are fed by discharge pipes having their initial openings in different planes of rotation, substantially as described.

8. In a centrifugal liquid separator, the combination of the revolving separating chamber, the central supply tube, the receiving apparatus, partitions in said receiving apparatus which separate the liquids to be treated into different planes of rotation, radial tubes which discharge the liquid from the receiving apparatus into the separating chamber, said tubes having their outer ends closed but being provided with holes in their sides near said outer ends, and separate discharge orifices for each of the constituent liquids, substantially as described.

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**528,691.** MATCH-SAFE. CHARLES H. RENTER, Allegheny, Pa. Filed Mar. 15, 1894. Serial No. 503,804. (No model.)



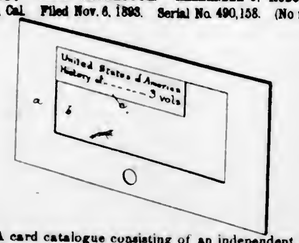
*Claim.*—1. In a match safe substantially as described, the combination of a case the front of which is provided with a slot at the bottom of the same, an inclined plane suitably secured in the interior of said case, and forming the false bottom thereof, means to maintain the front edge of said plane normally in contact with the upper edge of said slot, and a vertical blade the lower portion of which terminates in an irregular curve, and adapted when forced against said incline plane to open or expose said slot, substantially as and for the purpose set forth.

2. In a match safe substantially as described the combination of a case the front of which is provided with a slot, an inclined plane suitably supported in the interior of said case, and forming a false bottom therein, the front end of said false bottom projecting in said slot, means to normally maintain the front end of said bottom in contact with the upper edge of said slot, and a blade suitably secured in the inside of the front of said case to the rear of the slot therein, the lower portion of said blade terminating in an irregular curve, and adapted when pushed down to force the forward end of the inclined false bottom to the bottom of the slot in the front of the case, whereby one match may be delivered or discharged, substantially as and for the purpose herein described.

3. In a match safe substantially as described, the combination of a case the front of which is provided with a slot extending the entire width of the same, an inclined plane suitably supported in the interior of said case, the forward portion of said plane being formed on a slightly different angle than the major portion to the rear and projecting in and normally maintained in the upper portion of said slot, means to so maintain said plane or false bottom, and a blade operable in a groove formed in the rear of the front, the lower portion being of less width than the upper portion, and forming an irregular curve, and provided with slight protuberance on inner side thereof; the upper portion of said blade having a stem projecting above the top of the safe, whereon a spiral spring is mounted, whereby when said stem is pushed downwardly, the inclined false bottom is forced to the bottom of said slot exposing or opening the same, and enabling the discharge of a single match, substantially as and for the purpose set forth.

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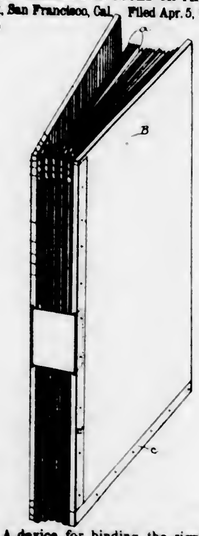
**528,692. CARD-CATALOGUE.** ALEXANDER J. RUDOLPH, San Francisco, Cal. Filed Nov. 6, 1893. Serial No. 490,158. (No model.)




*Claim.*—A card catalogue consisting of an independent and removable card adapted to stand on edge having one of its sides smooth and flat and ruled, and its opposite side recessed at points inside of its marginal lines sufficiently to receive a slip which is pasted therein whereby the surface of the slip will not project beyond the plane of the face of the card, said card being formed of a blank folded centrally having a portion of one of its members cut out and the two members folded upon themselves, and pasted together, whereby the depth of the depression formed by said cut out portion is equal to the thickness of the body of the blank, and approximately equal to the thickness of the slip, the whole card being formed as an integral whole, as herein described.

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**528,693. BINDER FOR BOOKS OR PAMPHLETS.** ALEXANDER J. RUDOLPH, San Francisco, Cal. Filed Apr. 5, 1894. Serial No. 506,466. (No model.)




*Claim.*—1. A device for binding the signatures or sections of books consisting of independent channels adapted to receive the rear edge of each of the sections, means for securing them thereto, said channels having spaces formed between the bight or bend of the material and the rear edge of the book section for the introduction of hinge rods which pass through these spaces, and hinge sections exterior to the ends of the book into which the hinge rods enter and by which the said hinge sections are connected together by lugs upon opposite sides of the hinge plates as described.

2. A binding for book sections or signatures, consisting of channels formed of material to form a back and sides between which the book section is secured, and flexible protecting strips fitting within the channels and bending outwardly over the edges of the rigid channel sections.

3. A binding for books consisting of channel sections adapted to receive the rear edges of the book sections which are secured therein, having the flexible lining channels, with edges turned over the edges of the rigid channels, and a means for attaching the name, label or index upon the rear of the binding so that it will be exposed when the book is complete and closed.

4. A binding for books consisting of the channel pieces secured to the rear edges of the book sections having spaces for the passage of the wire, hinge rods which extend through them, hinge sections consisting of U-shaped plates converging toward the outer edges, and having perforated lugs upon opposite sides of the outer edges to receive the ends of the hinge rods of the adjacent sections, whereby the inwardly projecting hinge plates lie upon each other when the book is closed, and serve to retain the back in a straight form and prevent looseness or movement thereon.

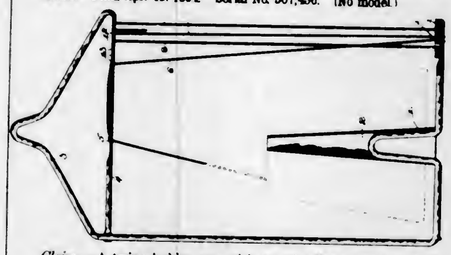
5. A binding for books consisting of the channel pieces secured to the rear edges of the book sections with passages for the reception of the hinge rods, U-shaped hinge plates having lugs upon the opposite sides of the outer edges, adapted to receive the ends of the hinge rods, said hinge plates lying upon each other when the book is closed and being capable of compression so as to correspond with the varying thicknesses of the book sections which they unite, whereby the back of the book is retained straight when closed and prevented from looseness of movement.

6. Devices for binding loose editions or sections together consisting of rigid channel plates adapted to receive and hold the edges of the parts to be bound, hinge pins passing through them and the hinge sections which are united together beyond the ends of the parts, and flexible channel pieces secured to the parts to be bound retained in place within the rigid channel pieces and extending beyond the edges thereof whereby the bound parts are held exterior to the rigid channel plates and allowed free movement without bending.

7. Devices for binding loose sections together to form a book, consisting of rigid channel plates adapted to receive and hold the edges of the parts to be bound, hinge pins passing through the channels and the hinge sections which are united together beyond the ends of the parts to be bound, and supplemental bent plates fitted into the bottom of the channel sections with holes to receive the hinge rods and retain them in a central position within the channels.

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**528,694. TWINE-HOLDER.** PETER C. SCHOWALTER, Moundridge, Kans. Filed Apr. 13, 1894. Serial No. 507,436. (No model.)

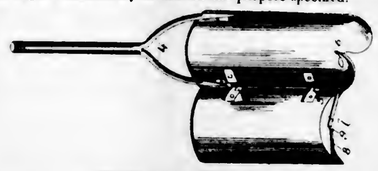


*Claim.*—A twine holder comprising a wire frame consisting of a single length of wire bent to form a vertical side portion, upper and lower parallel horizontal portions and an integral ball disposed above the upper horizontal portion, the lower horizontal portion of the frame being provided with an upwardly disposed bend to carry a tube, and the upper horizontal portion having a centrally arranged cord opening, and a separate series of closely adjacent openings located at one side of the center thereof, a pair of parallel guide rods connecting the ends of the upper and lower horizontal frame portions opposite the vertical side portion, a sliding weight provided with separate openings for each guide rod, and cord eyes located at the upper and lower ends of the wire frame and on the weight, substantially as set forth.

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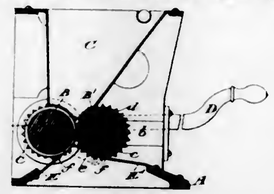
**528,695. WELL-AUGER.** EDWARD R. SKIFF, Merwin, Mo. Filed Feb. 23, 1894. Serial No. 501,227. (No model.)

*Claim.*—In a well auger the combination of the two sections, one of which is hinged to the other, a lower shouldered flange in connection with one of said sections and a pair of lower lips in connection with the opposite section, one of said lips extending downward and inwardly and the other upwardly, a suitable handle being attached to the auger, substantially as and for the purpose specified.



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**528,696. TICKET-CANCELING APPARATUS.** HENRY C. SERGEANT, Westfield, N. J., assignor to the Ingersoll-Sergeant Drill Company, New York, N. Y. Filed Jan. 18, 1894. Serial No. 497,250. (No model.)

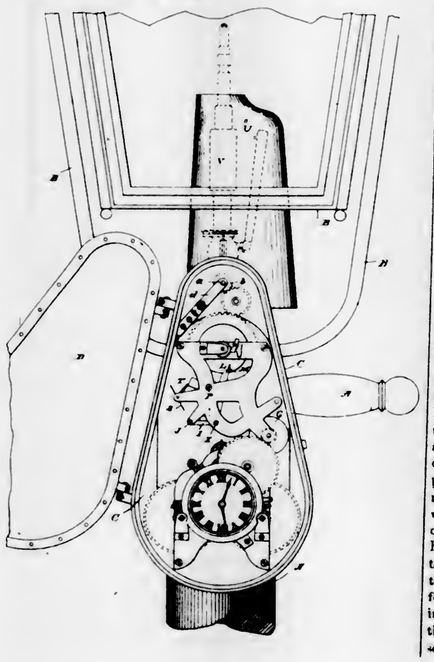


*Claim.*—1. The combination in a canceling apparatus of two rolls having circumferential rows of teeth and grooves alternating with said rows of teeth the said teeth and grooves being relatively so arranged in the two rolls that the teeth of each take into the grooves of the other substantially as herein set forth.

2. The combination of the two rolls having circumferential rows of teeth and circumferential grooves alternating with said rows of teeth, and toothed stripping blades one for each roll having their teeth lying across the grooves of their respective roll and in contact with those portions of the roll between the teeth and grooves substantially as herein set forth.

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**528,697. TIME GAS LIGHTING AND EXTINGUISHING APPARATUS.** AI B. SHAW, Medford, Mass., assignor to the New England Automatic Gas Lighting Company, Portland, Me. Filed Mar. 2, 1891. Serial No. 383,446. (No model.)



*Claim.*—1. In an automatic gas-lighting and extinguishing apparatus, a rotating cam and a lever mechanism lifted and dropped thereby, in combination with the actuating spring drum having a series of projecting pins successively engaging said mechanism with the terminal or fan-shaft, and thereby alternately arresting and releasing the rotation of the spring drum, substantially as set forth.

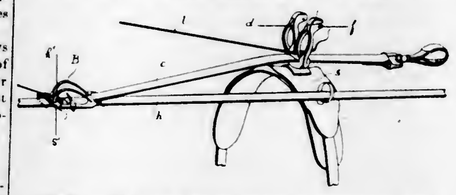
2. In an automatic gas lighting and extinguishing apparatus, a rotating cam, a lever alternately lifted and dropped thereby, an upright second lever pivoted at its foot to the first, and a third lever weighted at one end, centrally pivoted, and engaging at its other end with a notch in the edge of the second lever, in combination with a spring drum, having a series of projecting pins successively engaging said second lever, and with the rotating terminal or fan-shaft adapted to be arrested and released by said third lever, substantially as set forth.

3. The described spring-arresting and releasing apparatus, consisting of the levers I, K, O, arranged as stated, in combination with the drum F and its pins M, the disk G and its pins H, the spring N and stop T, and the fan shaft R, geared to the spring drum, substantially as set forth.

4. In an automatic gas-lighting and extinguishing apparatus, a train of gearing, having a terminal pinion *b*, the gas-cock periodically rotated thereby and having its shaft *a* longitudinally movable through said pinion, and the bracket *d* adapted to hold the pinion *b* in mesh during said movement, substantially as and for the purpose set forth.

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**528,698. HORSE-CHECKING DEVICE.** THEODORE H. SHOTTENBERG, Hubbard, Ohio, assignor of one-half to John H. Denison, same place. Filed Jan. 23, 1894. Serial No. 497,818. (No model.)

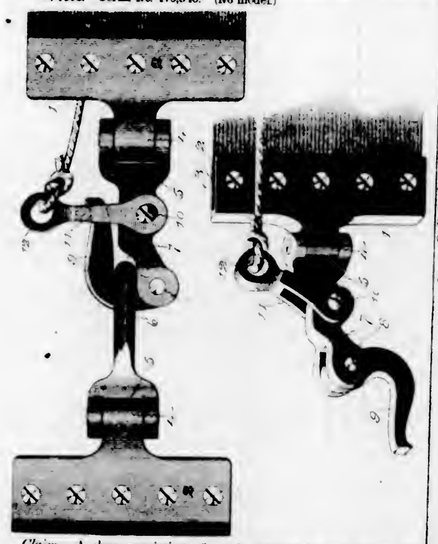


*Claim.*—1. In horse-checking devices, in combination with a means for drawing the check-strap backward, the unchecking device A, consisting of the clamp-frame *f* having an integral arched lower portion attachable to the harness saddle, above which is a portion having in its upper side and between the upward projecting frame sides a rectangular transverse space, such frame sides being upon curved lines terminating in heads that are flat upon the inner sides and highest at the breadth centers, and between which appears the check-dog *d*, said check-dog *d* being a rectangular block in its lower portion and in its upper portion two divergent prongs, each having on the outer side near the upper end the notch *n*, the vertical side of which notch *n* has an upwardly inward bevel, and in which notches *n n* appear the flat heads of the side of the frame *f*, said flat heads and frame sides being pivotally connected, substantially as described and for the purpose expressed.

2. In horse-checking devices, in combination with a suitable means for freeing the check-strap, the unlocking device B consisting of the horizontal slide *s'*, of flat metal in M form, from the outwardly curved end stems of which project downward for a slight distance, and thence extend parallel with the end stem, two similar, rectangular prongs, the forward end stem presenting a rectangular opening, and there appearing attached to and arched over the upper surface from the rear end stem to the forward end stem two divergent prongs substantially as described and for the purpose expressed.

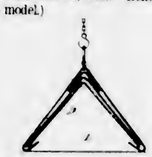
3. In horse-checking devices, in combination, the unchecking device A, consisting of the clamp-frame *f* attachable to the harness saddle and having two upward projecting sides terminating in flat heads highest at the breadth center and between which, in the upper side of the horizontal portion, occurs a rectangular transverse space, and between which sides also appears the check-dog *d*, said check-dog *d* being a rectangular block in its lower portion, and in its upper portion two divergent prongs, each having on the outer side near the upper end the notch *n*, the vertical side of which notch *n* has an upwardly inward bevel, and in which notch *n* the flat heads of the sides of the frame *f* have place pivoted thereto; and the unlocking device B, consisting of the horizontal slide *s'*, of flat metal in M form, from the end stems of which project downward for a slight distance and thence extend parallel with the end stems, two similar prongs, the forward end stem having a rectangular opening, and there appearing attached to and arched over the upper surface from the rear to the forward end stem, two divergent prongs, substantially as described and for the purpose expressed.

528,699. CLASP. JOHN C. STEVENS, Hartford, Conn., assignor, by mesne assignments, to Frederick C. Rockwell, same place. Filed June 21, 1893. Serial No. 478,340. (No model.)



*Claim.*—A clasp consisting of a pair of butts formed of two flat plates of metal for attachment to the ends of straps to be temporarily held together, each of said butts being provided with an eye, yokes pivoted to the eyes, one of said yokes having an integral solid loop and the other having an integral shank that extends out on one side with a perforation at the end out of the line of draft, a hook that when closed extends slightly forward then backward pivoted to the end of said shank on one side of the line of draft, and a locking link with a cord eye pivoted to the shank of one yoke and having a movement in the plane of the flat butt plates over the free end of the hook, substantially as specified.

528,700. TOBACCO-MOISTENING DEVICE. CHARLES N. SWIFT, New York, N. Y. Filed Dec. 31, 1892. Renewed Mar. 22, 1894. Serial No. 504,722. (No model.)



*Claim.*—1. An air-moistener, composed of a sheet metal body having in cross section the shape of an inverted V and having troughs formed along its lower edges on the inner side, and absorbent material placed against the interior of said body and extending into the troughs, substantially as set forth.

2. An air-moistener, composed of a sheet-metal body having in cross-section the shape of an inverted V and having troughs formed along its lower edges on the inner side, an absorbent material placed against the inner side of the body and extending down into the troughs, and a layer of additional absorbent material placed upon the upper part of the first mentioned layer of absorbent material, substantially as set forth.

3. An air-moistener, composed of a sheet-metal body having in cross-section the shape of an inverted V and having troughs formed along its lower edges on the inner side, an absorbent material placed against the interior of the said body and extending into the troughs and a layer of wire netting placed against the absorbent material so as to retain the same between the netting and the body, substantially as set forth.

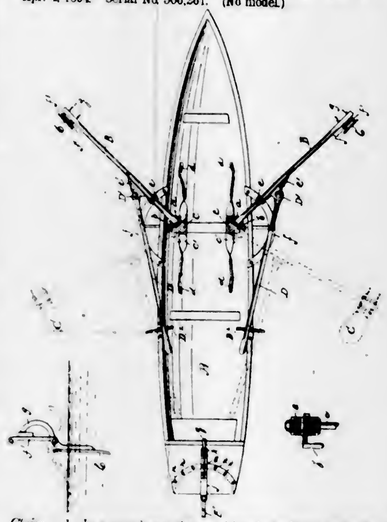
528,701. SYRINGE-VALVE. HORACE D. TAGGART, Akron, Ohio. Filed Mar. 9, 1894. Serial No. 503,068. (No model.)

*Claim.*—1. As an improved valve for flexible tubes for surgical syringes, a rigid separable hollow case having tapering ends adapted to enter the tubes and be retained therein, and a valve consisting of a cone of flexible material cut centrally, lengthwise toward its base and held by the abutting portions of said case substantially as shown and described.



2. In a valve for flexible tubes, the combination with a hollow case formed of two parts arranged to be screwed together, of a hollow cone of flexible material cut centrally lengthwise from its apex, and having a radial flange about its base adapted to be grasped between and held by the abutting parts of said case substantially as shown and described.

528,702. ROW-BOAT. GUSTAV VOGEL, Orange Valley, N. J. Filed Apr. 4, 1894. Serial No. 506,261. (No model.)



*Claim.*—1. In a row-boat, the combination of oars pivotally connected at their inner ends to a bracket or support adapted to rotate or turn horizontally, whereby said oars may be worked horizontally to propel the boat or be raised to a vertical position to serve as masts upon which to fasten a sail, and means for bracing and holding them in said vertical position, as and for the purposes set forth.

2. The combination in a row-boat, of oars pivotally connected with a suitable support secured to the boat, and capable of being worked horizontally to propel said boat or of being raised to a vertical position to serve as masts; handles pivotally connected with said oars and adapted to be grasped by the rower to propel the boat and also to serve as braces to said oars when the latter are converted into masts, as and for the purposes set forth.

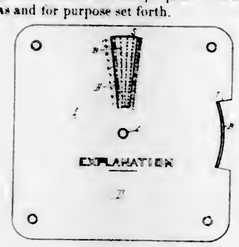
3. The combination in a row boat with oars arranged to work in a horizontal position, of paddles or blades pivotally connected to the outer extremities thereof and adapted to automatically assume a vertical and an approximately horizontal position, respectively, and a handle pivotally connected at one end with said oars, and at the other end adapted to be grasped by the rower to operate said oars, as and for the purposes set forth.

4. In a row boat, the combination of supports, *c'*, secured to the inside of the boat, curved rests, *f*, also secured to the sides of the boat, oars pivotally connected with said supports, *c'*, and working horizontally upon said rests, and blades or paddles, C, pivotally connected with said oars at their outer extremities, and adapted to assume a vertical and an approximately horizontal position as they are moved to and fro in the water, as and for the purposes set forth.

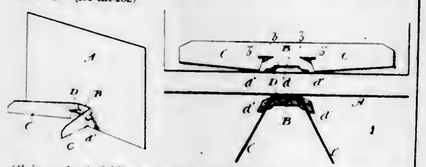
528,703. TONNAGE-COMPUTER. GEORGE C. WARREN, Saginaw, Mich. Filed Dec. 23, 1893. Serial No. 494,524. (No model.)

*Claim.*—In a tonnage computator, the combination with the disk B having upon each side thereof columns of figures radiating from the center thereof, the columns increasing or decreasing to the left or right decimally, of the frame A A consisting of two plates secured together at their corners and between which the disk B is placed and pivoted by the pivot C, and the pivot C passing through the center of the disk B and the frame A A, and forming a central bearing for the disk within the frame, a slot S in each plate of the frame, the slots being concentric to the pivotal center C, its edges being radii, the slots being directly opposite each other in the frame and each having its edges divided into spaces, the right edge having twice as many spaces as the left edge and each slot being large enough to reveal a single radial column of figures on the disk B, and the notch T in the side of the frame exposing the edge of the disk B for the purpose of rotating it as desired by the hand, as and for purpose set forth.






528,704. FOLDING SUPPORT OR STAND FOR PICTURES. DICK B. WILLIAMS, Baltimore, Md. Filed June 12, 1894. Serial No. 514,278. (No model.)



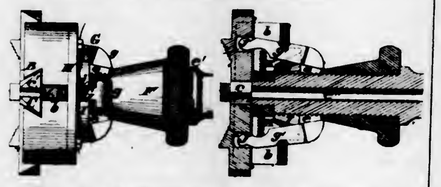
*Claim.*—1. A folding support or stand comprising a supporting part and a locking piece that are hinged on lines that intersect, one of which parts has a notch or slit, and the other a projection constructed to interlock the parts substantially as specified.

2. A folding support or stand comprising a supporting part and a locking piece that are hinged on lines that intersect, one of which parts has a slit to receive a portion of the other and the latter a projection to engage the surface adjacent to the slit to interlock the parts, the slit being narrower than the thickness of the received portion to bind against the same, substantially as shown.

3. A folding support or stand comprising a supporting part that is hinged on a vertical line, and a locking piece that is hinged on a horizontal line, the said supporting part having a horizontal slit to receive a portion of the locking piece, and the latter having a projection to engage said supporting part adjacent to the slit, substantially as specified.

4. A folding support or stand comprising two supporting parts that are hinged to a common part on parallel, vertical lines, and having each a horizontal slit, and a locking piece hinged on a horizontal line and adapted to enter both slits and having a projection at each end to engage the supporting part adjacent to a slit, substantially as and for the purpose shown.

528,705. LATHE-CHUCK. WILLIAM WOLFF, Cincinnati, Ohio. Filed June 21, 1894. Serial No. 515,222. (No model.)

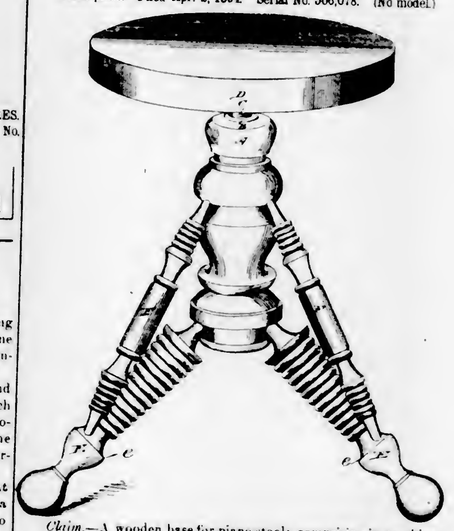


*Claim.*—1. The combination, in a chuck, of a head having a series of jaws; longitudinally-shiftable levers, loosely coupled to said jaws; and an adjustable-cone for operating said levers: the arrangement of these devices being such as to enable said jaws to be turned, end for end, without detaching any fixture of the chuck, substantially as herein described.

2. The combination, in a chuck, of a head having a series of grooves; jaws traversing said grooves; a common fulcrum-ring attached to said head; longitudinally-shiftable levers applied to said ring, and loosely coupled to said jaws; and an adjustable-cone that operates said levers; the arrangement of these devices being such as to enable said jaws to be turned, end for end, without detaching any fixture of the chuck, substantially as herein described.

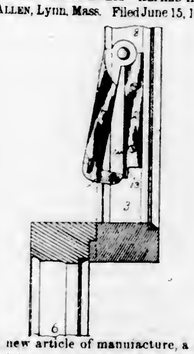
3. The combination, in a chuck, of the head A, provided with radial grooves B *b*; adjustable and reversible jaws C, traversing said grooves; notched levers G *g*, that operate said jaws; a ring H, which serves as a common fulcrum for these levers; a conical nut F, actuating said levers; an externally threaded stock E *e*, that carries said head, and has said nut engaged with it; and means for maintaining said levers in contact with said nut; the arrangement of these various parts being such as to enable the levers to be slightly shifted, and the jaws to be turned, end for end, without detaching any fixture of the chuck, all as herein described.

528,706. WOODEN BASE FOR PIANO-STOOLS. PHINEAS H. YORK, Chicago, Ill., assignor to the Tonk Manufacturing Company, same place. Filed Apr. 2, 1894. Serial No. 506,078. (No model.)



*Claim.*—A wooden base for piano stools, comprising in combination a pedestal adapted to receive a revolving spindle, spreading legs having their upper ends engaged with the pedestal at its lower end, and diagonal braces, one for each leg, engaged at their respective ends with the pedestal between its top and bottom and with the legs between their ends, substantially as described.

528,707. SASH-FASTENER. ALFRED A. ALLEN, Somerville, and CHARLES P. ALLEN, Lynn, Mass. Filed June 15, 1892. Serial No. 436,770. (Model.)



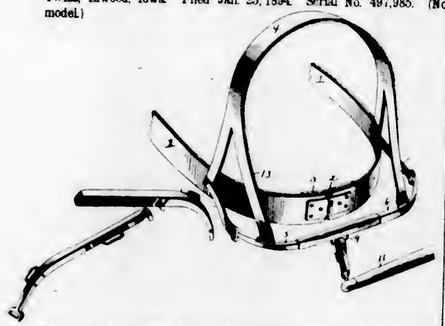
*Claim.*—1. A new article of manufacture, a sash-fastener composed of two plates jointed together, one fixed, the other movable and

adapted to swing in a plane at right angles to the movement of the sashes, said movable plate when in alignment with the fixed plate or unfolded being adapted to allow restricted movement to either sash, substantially as explained.

2. In combination with a window-frame and two sashes thereof, a fixed bar 2 upon the top sash and provided with a tongue 13 projecting from its lower end, a bar 7 movable in a vertical plane pivotally attached to the fixed bar, a projecting stop 9, and the recess 14 adapted to engage the tongue on the fixed bar, substantially as specified.

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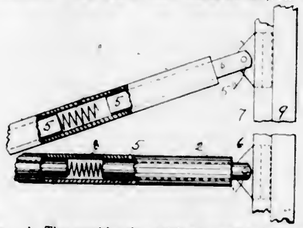
**528,708. HARNESS.** JAMES W. ANDERSON and RICHARD S. TWISS, Elwood, Iowa. Filed Jan. 25, 1894. Serial No. 497,985. (No model.)



*Claim.*—In a harness a neck yoke support consisting of two members, one member being hollow and having a longitudinal opening leading into said hollow and a cross rod located in said hollow; the other member consisting of a solid rod having a hook, said rod adapted to rest in the hollow of the first member and the hook adapted to engage the cross rod located therein; said members when engaged adapted to form a rigid bar; said support connected with the neck yoke, as set forth.

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**528,709. CURTAIN-STICK AND GUIDE.** GILBERT L. BAILEY, Portland, Me. Filed Mar. 5, 1892. Serial No. 423,946. (No model.)



*Claim.*—1. The combination, with a curtain stick; a sliding rod projecting from the end thereof; and a traveling guide, adapted to engage with a guide on the frame of a window, of a pivotal connection between said traveling guide and said sliding rod; all substantially as and for the purposes set forth.

2. The combination of a hollow curtain stick; guide-rods which slide in and project from the ends of said stick; traveling guides which engage with fixed guides of the window frame; and hinge-joints connecting said guide-rods and said traveling guides; all substantially as and for the purposes set forth.

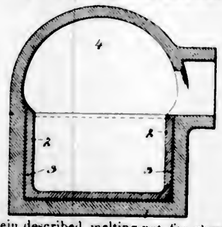
3. The combination with the curtain stick; the sliding rod; and upright guides on a window frame, of the traveling guides having body-parts that project from said upright guides; and hinge-joints between said projecting body parts and the outer ends of said guide-rods; all substantially as hereinbefore set forth.

4. The combination with a tubular curtain stick; guide-rods projecting from the ends thereof; traveling guides connected with said guide-rods; and guides, on the frame of a window, with which said traveling guides connect, of a spring, located intermediately of the inner ends of said guide-rods, and operating thereon, substantially as hereinbefore described, for the purposes set forth.

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**528,710. GLASS-HOUSE POT OR TANK.** WILLIAM H. BARR, Tiffin, Ohio. Filed Oct. 11, 1892. Serial No. 448,596. (No model.)

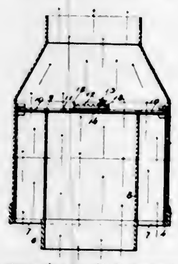
*Claim.*—1 The herein described melting-pot for glass, the same having an outer wall and bottom of refractory clay, and an inner wall and bottom of flux-resisting clay, said inner wall and bottom being spaced from the outer wall and bottom, substantially as specified.



2. The herein described melting-pot for glass, the same having an outer wall and bottom of refractory clay, an inner wall and bottom of flux-resisting clay, said inner wall and bottom being spaced from the outer wall and bottom, and separating-material, as paper, interposed between the contiguous surfaces of the inner and outer members, substantially as specified.

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**528,711. STOVEPIPE VENTILATING ATTACHMENT.** ALPHONSE BAY, St. Charles, Mo. Filed June 23, 1894. Serial No. 515,530. (No model.)



*Claim.*—1. A stove pipe ventilating attachment comprising a casing, means for securing the same in the path of a pipe, suitable fluted air pipe or sheet secured within the casing, the said casing having openings in communication with the corrugated passages formed between the inner wall of the casing and the several corrugations of the fluted pipe, and suitable openings for leading the products of combustion and air through the stove pipe, substantially as set forth.

2. A stove pipe ventilating attachment comprising an open casing adapted to be secured in the path of a pipe, a bottom for the same, openings in said bottom, a fluted or corrugated pipe or sheet secured within the casing following the contour of said openings adapted to rest on the bottom and forming air passages between the inner wall of the casing and the several corrugations of the sheet, and a damper cooperating with the upper end of the fluted sheet, substantially as set forth.

3. In a stove pipe ventilating attachment, a suitable casing, a fluted sheet or air pipe secured within the same and forming air passages between the inner wall of the casing and the several corrugations of the sheet, a damper adapted to rest on the upper end of said sheet having a number of solid lobes and openings between said lobes adapted to communicate with the fluted passages, and suitable means for operating the damper plate, substantially as set forth.

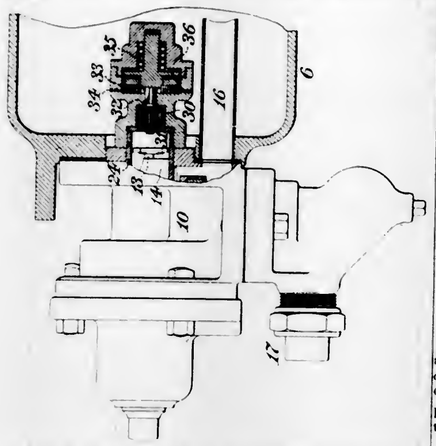
4. A stove pipe ventilating attachment comprising an outer casing, a flanged bottom for the same having suitable openings, a depending rim on said bottom, a fluted sheet or air pipe resting on said bottom, following the contour of the openings therein, and forming air passages between the inner wall of the casing and the several corrugations of the sheet, an upper end for said casing, a rim at the end of the same, the said rims and the cylindrical opening formed by the base of the corrugations being all substantially the same diameter, a lobed damper plate, having a central opening, resting on said fluted sheet, a series of openings between the lobes of the damper, guide strips below and above the damper plate adapted at the same time to secure the sheet to the walls of the casing, and suitable means for operating the damper, substantially as set forth.

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**528,712. AIR-BRAKE.** RICHARD W. BAYLEY, Pittsburg, Pa., assignor to the Westinghouse Air Brake Company, same place. Filed Nov. 23, 1891. Serial No. 412,792. (No model.)

*Claim.*—1. In an automatic air brake apparatus, the combination, with an auxiliary reservoir, and a train pipe, of a pressure regulating device adapted to limit the pressure supplied to the auxiliary reservoir to a predetermined degree, independent of any increase or excess of train pipe pressure above the normal, substantially as set forth.

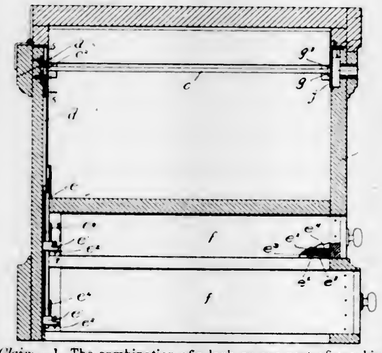




2. In an automatic air brake apparatus, the combination of a triple valve casing, a slide valve chamber or bushing therein, a regulator chamber connected thereto, a regulating valve controlling communication between the slide valve chamber and regulator chamber, a closing spring bearing on said valve, a movable abutment working in the regulator chamber and abutting against the regulating valve, an opening spring bearing against said abutment, and one or more open ports or passages leading out of the regulator chamber, substantially as set forth.

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**528,713. DRAWER-LOCK.** LEANDER C. BROWN, Boston, Mass. Filed Dec. 4, 1893. Serial No. 492,717. (No model.)



*Claim.*—1. The combination of a lock on one part of a cabinet, a keeper for the bolt of said lock on another part of the cabinet, a locking bar longitudinally movable to engage it with or disengage it from a series of drawers, a rock-shaft constructed for rotative engagement with the key of the lock, and operative connections between the rock-shaft and the locking bar whereby turning of the rock-shaft produces longitudinal movement of the bar.

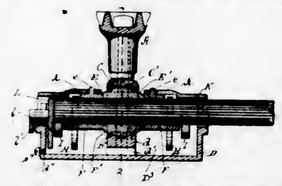
2. The combination of a lock on one part of a cabinet, a keeper for the bolt of said lock on another part of the cabinet, a locking bar longitudinally movable to engage it with or disengage it from a series of drawers, a rock-shaft transversely slotted in one end for rotative engagement with the key of the lock, and operative connections between said rock-shaft and the locking bar whereby turning of the shaft produces longitudinal movement of the bar.

3. The combination of a lock on one part of a cabinet, a keeper for the bolt of said lock on another part of the cabinet, a locking bar longitudinally movable to engage it with or disengage it from a series of drawers, a rock-shaft operatively connected with said bar and constructed for engagement of the key of the lock, and a catch for preventing rotation of the rock-shaft and displaced by the said key.

4. The combination of a lock on one part of a cabinet, a keeper for the bolt of said lock on another part of the cabinet a locking bar longitudinally movable to engage it with or disengage it from a series of drawers, a rock-shaft operatively connected with said bar and slotted for engagement of the key of the lock, and a spring-catch for engagement with the slot in the rock-shaft and arranged to be displaced by the key, substantially as and for the purpose described

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**528,714. RING-OILER BEARING.** WILSON W. CAREY, Lowell, Mass. Filed Mar. 24, 1894. Serial No. 504,932. (No model.)



*Claim.*—1. The herein described bearing consisting of the adjustable oil receptacle $D^3$, having perforated division wall *d*, and spherical recess D' therein and adjustable yoke C having spherical recess C' combined with the bearings E, F, having the respective spherical projections E' F' adapted to fit the spherical recesses C D' substantially as and for the purpose set forth.

2. The herein described ring oiler bearing consisting of the adjustable oil receptacle $D^3$ having a perforated division wall *d*, and the adjustable yoke C, the upper bearing E universally journaled in the latter and the lower bearing F universally journaled in the oil receptacle $D^3$ and having end extensions *f, f*, with notches *f' f'* for the reception of the rings H H and said rings substantially as and for the purpose set forth.

3. The herein described ring oiler bearing consisting of universally journaled bearings E, F, the latter having notched end extensions *f, f*, provided with cut away portions and rings H, H, arranged therein and loosely supported on the shaft combined with detachable end caps K K substantially as and for the purpose set forth.

4. In a ring oiler bearing an oil receptacle and upper yoke and universally journaled bearings arranged therein combined with rings H H loosely supported on the shaft, a detachable end piece L and detachable end caps K K substantially as and for the purpose set forth.

5. In a ring oil bearing an oil receptacle, and bearings for the shaft arranged in connection therewith combined with rings H H loosely supported on the shaft and detachable end caps K K substantially as and for the purpose set forth.

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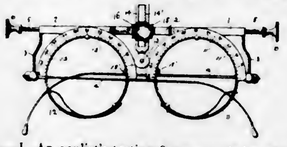
**528,715. CUFF-BUTTON OR STUD.** CHARLES C. CHAMPENOIS, Newark, N. J. Filed June 5, 1894. Serial No. 513,597. (No model.)



*Claim.*—The herein described button or stud, comprising therein, a casing *c* and a disk *c* secured therein provided with a hub having a screw-threaded hole, a perforated disk in said casing, a pair of springs *d* and *d* having spring-arms $d^3$ and $d^3$ respectively, spurs $d^4$ on each spring resting against curved portions $d^5$ of said springs, a screw-post adapted to be screwed into said hub to separate said spring-arms $d^3$ and $d^3$ and slots on the opposite sides of said post at or near the screw threaded end thereof, adapted to engage with said spring-arms and cause the parts of the button to be locked, substantially as and for the purposes set forth.

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**528,716. OCULIST'S TESTING-FRAME.** JOSEPH H. E. DE CELLES, Southbridge, Mass., assignor to the American Optical Company, same place. Filed Jan. 3, 1894. Serial No. 495,512. (No model.)



*Claim.*—1. An oculist's testing frame, consisting of two flat bars with their outer ends bent rearwardly and downwardly to form downwardly extending arms to the lower ends of which are jointed the

temples, and said temples, and the inner ends of said bars overlapping and adapted to slide longitudinally on each other to lengthen or shorten the frame, and a lens holding frame attached to each bar to move therewith, to adjust simultaneously the lens holding frames and the temples, substantially as set forth.

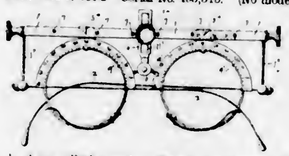
2. An oculist's testing frame, consisting of two flat bars with their outer ends bent rearwardly and downwardly to form downwardly extending arms to the lower ends of which are jointed the temples, and said temples, and the inner ends of said bars overlapping and adapted to slide longitudinally on each other to lengthen or shorten the frame, and a lens holding frame attached to each bar to move therewith, in combination with means for adjusting said bars, consisting of a screw threaded adjusting rod loosely supported in the rearwardly projecting portion of said bars, and a nut secured to the rear of each bar and mounted upon and having a threaded engagement with said bar, substantially as shown and described.

3. In an oculist's testing frame, an extension bar, consisting of two bars overlapping and adapted to slide longitudinally on each other at their inner ends, to lengthen or shorten the frame, and each bar having a lens holding frame, and a temple attached thereto, to move simultaneously therewith, substantially as shown and described.

4. In an oculist's testing frame, the combination with two bars, on which are supported the lens holding frames, the adjustable nose piece, and the temples, said bars adapted to slide on each other longitudinally, and connected at their inner ends by a block loosely mounted on said bars, and supporting the adjustable nose piece, of means for sliding or moving said bars longitudinally, consisting of a rod provided with a flange or collar for engaging said block, loosely mounted on said bar to prevent any movement thereof, and also provided with a right and left-hand thread, to engage a right-hand threaded nut and a left-hand threaded nut, secured, one to each bar, substantially as shown and described

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**528,717. OCULIST'S TESTING-FRAME.** JOSEPH H. E. DECELLES, Southbridge, Mass., assignor to the American Optical Company, same place. Filed Jan. 3, 1894. Serial No. 495,513. (No model.)



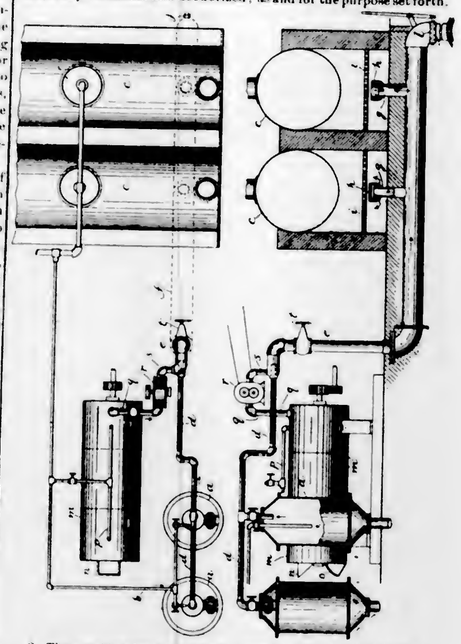
*Claim.*—1. An oculist's testing frame, consisting of a flat bar having the ends thereof bent rearwardly and downwardly, and the temples jointed thereto, and an auxiliary bar extending at the rear of, and secured to the main bar, and a screw threaded adjusting rod supported loosely in the rearwardly extending arms of the main bar, in combination with two nuts, each nut supporting a lens holding frame, and mounted upon and having a threaded engagement with the adjusting rod, and having a vertical slot in which loosely extends the auxiliary bar, and also a recess in the front side thereof, in which recess extends the main bar of the frame, said slot and recess forming sliding bearings for the nut on the main and auxiliary bars of the frame, substantially as shown and described.

2. An oculist's testing frame, consisting of a flat bar with the ends thereof bent rearwardly and downwardly, and the temples jointed thereto, and an auxiliary bar extending at the rear of, and secured to the main bar, and a screw threaded adjusting rod supported loosely in the rearwardly extending arms of the main bar, in combination with two nuts, each nut supporting a lens holding frame, and mounted upon and having a threaded engagement with the adjusting rod, and having a vertical slot therein, in which loosely extends the auxiliary bar, and also a recess in the front side thereof, in which recess extends the main bar of the frame, said slot and recess forming sliding bearings for the nut on the main and auxiliary bars of the frame, and an adjustable nose piece, consisting of a horizontal rod with a forked end, supported in the lower end of a vertical bar mounted between the main and auxiliary bars, said vertical bar provided with rack teeth and adapted to be adjusted vertically, substantially as shown and described.

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**528,718. PROCESS OF AND APPARATUS FOR DESTROYING NOXIOUS GASES.** ROYAL H. DOUD, Chicago, Ill. Filed Feb. 26, 1894. Serial No. 501,617. (No model.)

*Claim.*—1. The method as substantially herein described of utilizing and destroying offensive vapors generated in tanks and driers, and apartments of rendering, fertilizing, and similar establishments, which consists in first conducting said vapors into an enlarged chamber, next, exteriorly maintaining said chamber at a low temperature, thereby permitting said vapors to expand, and, simultaneously with such expansion, cooling the same; next, opening communication between said chamber and a furnace at a point beneath the fire grate, whereby the vapors cooled and expanded are drawn into the furnace by the natural draft thereof, and, finally, spreading said vapors, whereby they are slowly percolated through the bed of fuel, and hence, completely consumed and deodorized; as and for the purpose set forth.

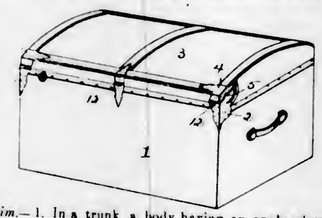


2. The combination with a tank, drier or compartment in which are generated offensive vapors, a furnace, an enlarged cooling chamber arranged adjacent thereto, means for delivering to said chamber the vapors when generated, whereby said vapors are cooled and simultaneously therewith are permitted to expand, thereby thoroughly condensing the moisture contained therein, pipe connections between said chamber and furnace, delivering into the latter at a point beneath the fire grate thereof, and a hood arranged over the delivery end of said pipe connections, whereby the vapors are spread before being drawn into and through the fire: as and for the purpose set forth.

3. The combination with a tank, drier or compartment in which are generated offensive vapors, a series of furnaces, an enlarged chamber arranged beneath the surface of the earth adjacent to said furnaces, whereby said chamber is maintained at a uniform low temperature, means for delivering thereto the vapors when generated, whereby they are expanded and simultaneously with the expansion the moisture contained therein is condensed, pipes connecting said chamber with each of said furnaces at a point beneath the grate bars and hoods arranged over the delivery end of each of said pipes: as and for the purpose set forth.

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**528,719. TRUNK.** HENRY FUCHS and JOHN F. FUCHS, Toledo, Ohio. Filed Feb. 12, 1894. Serial No. 499,918. (No model.)



*Claim.*—1. In a trunk, a body having an angle plate upon its rear corners extending above the top of the same, a top having corner plates secured upon the rear corners of the same, a pivot pin upon the corner plate in front of the rear portion of the same, and a perforation in the angle plate through which the pivots pass, a slot concentric to the pivot in the angle plate, a communicating recess and a pin in the corner plate passing through the slot carrying a spring, which when the top is raised engages in the recess of the slot, and automatically holds the top raised.

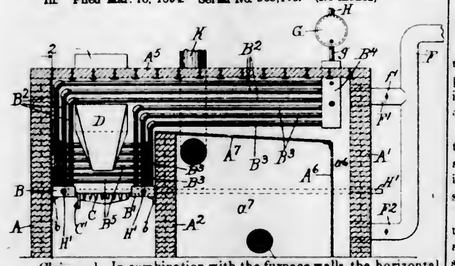
2. In a trunk, a body portion, angled plates upon the rear corners of the same, a top, corner plates upon the rear corners of the same, a pivot pin upon the corner plate and a perforation in the angle plate through which the pin passes, a projection upon the rear of the corner plate and a slot upon the rear of the angle plate, in which the projection engages when the top is lowered.

3. In a trunk, a body portion having angled plates upon its rear corners, and a top having corner plates upon its rear corners, and means for pivotally securing the same together, the angled plate upon the top having lugs, which, when the top is lowered, embrace the plate upon the body and strengthen the trunk at this point.

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**528,720. HOT-WATER HEATER.** JAMES F. HARRISON, Chicago, Ill. Filed Mar. 10, 1894. Serial No. 503,173. (No model.)



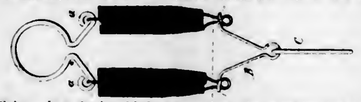
*Claim.*—1. In combination with the furnace walls, the horizontal headers B B' mounted thereon, and the grate supported between them; the pipes leading up from such headers respectively, to constitute two sides of the firebox, the pipes from both sides being thence extended in the same direction transverse to the length of the headers, whereby the pipes from one side are extended across the space between the two sides to form the top of the firebox and all extend thence together, and the final header $B^4$ into which all said pipes lead, the supply pipes of the system leading from said header $B^4$, and the return pipes leading into the headers B B': substantially as set forth.

2. In combination the headers B and B', located at the level of the grade at opposite sides thereof, pipes extending up first upward from the headers to form the opposite sides of the fire-box, and thence extending approximately horizontally in the same direction from the fire-box, and the header $B^4$, into which all said pipes lead; the supply pipes of said system leading from said headers $B^4$ and the return pipes leading into the headers B and B': substantially as set forth.

3. In combination with the firebox whose walls consist of pipes of a water circulatory system, a fuel chute or magazine for self-feeding introduced through one side of the firebox, and the door located at the opposite side, whereby said fuel chute and door cause the least possible reduction or interruption of the water circulatory pipes around the fire.

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**528,721. DUPLEX BIRD-CAGE SPRING.** ANDREW B. HENDRYX, New Haven, Conn. Filed Feb. 17, 1894. Serial No. 500,524. (No model.)

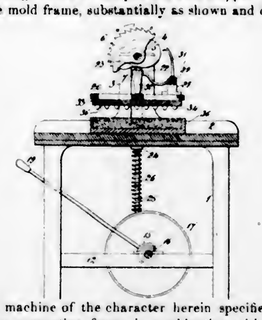


*Claim.*—In a duplex bird-cage spring, the combination with a suspension-ring, of a suspension bar, and two spiral springs connected at each end to the said ring and bar, each spring being constructed at one end with an integral longitudinal finger, contracted between its ends to form a neck, and one of the other members of the said device being constructed with horizontally arranged eyes to loosely embrace the necked portions of the said fingers, substantially as set forth, and whereby the said springs are free to rotate independently of each other, and thus compensate for their unequal extension.

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**528,722. MACHINE FOR MOLDING CONFECTIONERY.** DANIEL M. HOLMES, Arlington, N. J. Filed Apr. 13, 1894. Serial No. 507,399. (No model.)

*Claim.*—1. In a device of the character herein specified, a vertically movable form supporting frame, in combination with means for depressing the same, raising it slightly, and then again depressing it before elevating to its initial position; means for jarring the form supporting frame when depressed, and a support for a mold tray beneath the mold frame, substantially as shown and described.



2. In a machine of the character herein specified, a vertically movable form-supporting frame, in combination with means for depressing the same, raising the same slightly, and then again depressing before elevating to its initial position, substantially as shown and described.

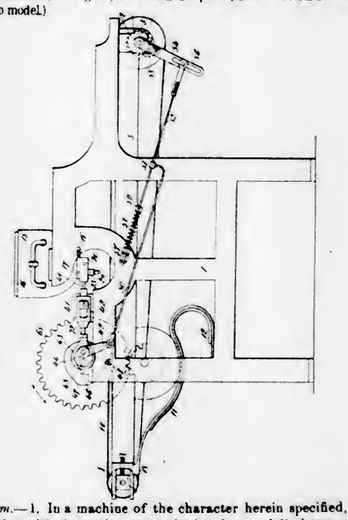
3. In a machine of the character herein specified, the combination with a form supporting frame, normally held elevated by springs, as set forth, of bearings upon said frame, and cams arranged to come in contact with said bearings said cams being provided with depressions 6 and 7, substantially as shown and described.

4. In a machine of the character herein specified, the combination with a depressible form-carrying frame bearing friction rollers, as set forth, of cams shaped as described, and arranged to depress said form-carrying frame, first to a full stroke, permit it to rise slightly, and then again descend to the full stroke, substantially as shown and described.

5. The combination with the depressible form-carrying frame, of a hammer mounted thereon, a pawl arm connected with said hammer, and a segmental ratchet, arranged substantially as shown and described.

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**528,723. MACHINE FOR MOLDING CONFECTIONERY.** DANIEL M. HOLMES, Arlington, N. J. Filed Apr. 14, 1894. Serial No. 507,541. (No model.)



*Claim.*—1. In a machine of the character herein specified, the combination with the stationary stock chamber, and discharge valve shells connected therewith, of the depressible table beneath the stock chamber, and means for causing said table to approach said chamber until the discharge valve shells enter the molds, then recede slightly, dwell in this position a moment, the table finally being forced downward to its initial position, substantially as shown and described.

2. In a machine of the character herein specified, the combina-

tion with the spring elevated, depressible table, of cams adapted and arranged to permit said table to rise, then descend slightly, and finally to force the table to its initial position, substantially as shown and described.

3. In a machine of the character herein specified, a mold supporting table, pivoted at one extremity and supported upon spring mechanism at the other, a carrying belt passing over said table, in combination with means for depressing the table, and for moving the carrying belt, substantially as shown and described.

4. In a machine of the character herein specified, a stock chamber having supporting bars placed at each side of an opening in its bottom, said bars having holding lips at their inner edges, one bar being laterally movable, in combination with stock discharging mechanism adapted and arranged to be removably held by said bars, substantially as shown and described.

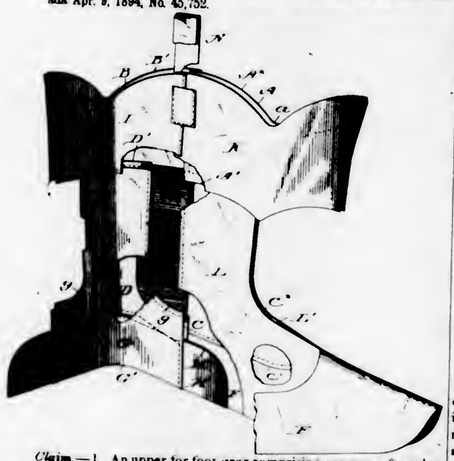
5. In a machine of the character herein specified, the combination with a stock chamber, of discharging mechanism in which is comprised a series of escape openings, a perforated reciprocable bar controlling said openings, a series of discharge cylinders provided with reciprocating pistons, and a series of discharge valve shells, connected with said cylinders, substantially as shown and described.

6. In a machine of the character herein specified, a stock discharging device in which is comprised a receiving box having a series of openings at one side, means for alternately opening and closing said openings, cylinders connected to said receiving box and containing reciprocable pistons, and discharge valve shells communicating with the cylinders, the whole combined and arranged to operate, substantially as shown and described.

7. In a device of the character herein specified, the combination with the stock chamber, of the discharge openings therefrom; cylinders communicating with said openings; a cut off at the entrance to said cylinders; pistons within said cylinders; means for reciprocating the pistons; and discharge valves connected with each cylinder and arranged to operate, substantially as shown and described.

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**528,724. BOOT OR SHOE.** OSCAR P. HURD, Binghamton, N. Y. Filed Feb. 16, 1894. Serial No. 500,402. (No model.) Patented in Canada Apr. 9, 1894, No. 45,752.

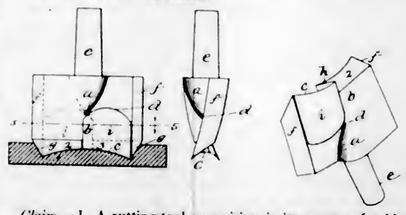


*Claim.*—1. An upper for foot gear comprising a vamp, a front leg section secured to the vamp and having its sides extending to the middle of the device, a back leg section having lower forward extensions attached to the front leg section and secured to the vamp, an inner reinforcing and staying section for the back conforming to and corresponding in shape with the said back leg section and projecting beyond the lower edge thereof a distance corresponding to the width of the rear portion of the vamp to reach to the lower edge thereof, elastic gores secured in the spaces between the opposing edges of the front and the back sections, and a counter stiffener secured between the rear portion of the vamp and the lower portion of the said reinforcing section and having its end portions projecting beyond the edges of the reinforcing section and secured to the vamp, substantially as set forth.

2. An upper for foot gear comprising a vamp, a front leg section secured to the vamp and having its sides extending to the middle of the device, a back leg section having lower forward extensions attached to the front leg section and secured to the vamp, an inner reinforcing and staying section for the back conforming to and corresponding in shape with the said back leg section and projecting beyond the lower edge thereof a distance corresponding to the width of the rear portion of the vamp to reach to the lower edge thereof, elastic gores secured in the spaces between the opposing edges of the front and back sections, and a counter stiffener secured between the rear portion of the vamp and the lower portion of the said reinforcing section and having its end portions projecting beyond the edges of the reinforcing section and secured to the vamp, a top, front and back portion secured at the sides in line with the side seam, the lower edge of the back portion being straight, and of the front portion curved, and the top edges of the leg sections being of corresponding shape, substantially as described.

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**528,725. CUTTING-TOOL.** ALBERTUS HUSSEY, Milford, assignor of one-half to O. Atherton Shepard, Brookline, Mass. Filed Jan. 15, 1894. Serial No. 496,907. (No model.)



*Claim.*—1. A cutting-tool comprising in its construction blades provided with curved cutting edges overlapping at their inner ends, and every part of which is a tangent of the circle made by their revolution, as set forth.

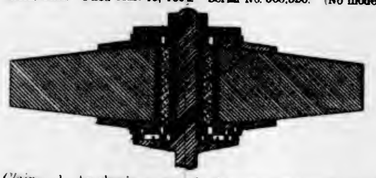
2. A cutting-tool comprising in its construction blades provided with cutting edges overlapping at their inner ends and extending outside the center, and a diagonal web connecting the inner ends of the cutting edges, as set forth.

3. A cutting-tool comprising in its construction curved blades inclined in opposite directions with respect to the axis of the tool and lapping past each other, and a milled pattern formed in one side of each blade in line with the said axis, as set forth.

4. A cutting-tool comprising in its construction blades having longitudinally beveled edges, said blades being inclined in opposite directions with respect to the axis of rotation of the tool, a milled pattern formed in one side of each blade and a single bevel on the horizontal edge of each blade to form the cutting edge thereon, as set forth.

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**528,726. ELASTIC EMERY-WHEEL.** DAVID B. HYDE, Springfield, Ohio. Filed Mar. 13, 1894. Serial No. 503,520. (No model.)



*Claim.*—1. An elastic emery wheel support consisting essentially of an arbor, and a flanged sleeve to fit said arbor, a flanged supporting sleeve on which said wheel is mounted, an intermediate elastic ring or sleeve inserted between the arbor sleeve and supporting sleeve, and a loose driving connection between the flanges of the respective sleeves, substantially as specified.

2. The combination with the arbor sleeve having a flange or collar thereon, an opening in said flange or collar, a supporting sleeve on which the wheel is mounted having a flange or collar with projections to engage in said opening, an intermediate elastic sleeve between the arbor sleeve and the supporting sleeve, clamping collars on the respective sleeves, as described, and means, substantially as described, of varying the tension of the intermediate elastic sleeve, substantially as specified.

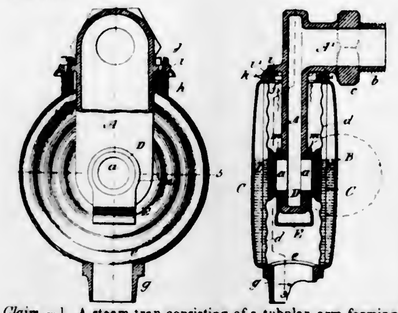
3. An arbor sleeve having stationary and removable collars, as described, a wheel-supporting sleeve also having stationary and removable collars, intermeshing parts on the respective collars of said sleeves to form a loose driving connection, as described, a yielding or elastic sleeve arranged between said supporting and arbor sleeves, and removable compression washers adapted to bear against the end of said elastic sleeve and compress the same when the removable collar on the arbor sleeve is tightened, substantially as specified.

4. The combination with an arbor, a flanged sleeve thereon having a removable clamping collar, as described, a wheel-supporting sleeve having stationary and removable collars, and a collar on opposite sides of the wheel, as described, intermeshing projections between the respective collars of said supporting and arbor sleeves to form a loose driving connection, and a rubber ring between said arbor sleeve and supporting sleeve, removable washers arranged at the end of said rubber ring adapted to compress said ring as the clamping collar is screwed onto said arbor sleeve, and engaging safety collars between said wheel sleeve and wheel, substantially as specified.



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**528,727. TRAP.** FREDERICK LAMPLOUGH, New York, N. Y., assignor to the Gold Car Heating Company Samuel Davis and Julius Wielar, same place. Filed Jan. 26, 1894. Serial No. 498,074. (No model.)



*Claim.*—1. A steam trap consisting of a tubular arm forming a steam passage, having opposite discharge openings, combined with two opposite expansion chambers having their movable walls adapted to seat against said openings respectively when heated.

2. A steam trap consisting of a casing, two opposite expansion chambers within said casing, and a tubular arm forming a steam passage entering said casing between said chambers and formed with opposite discharge openings facing the movable walls of the respective expansion chambers to be closed thereby when heated.

3. A steam trap consisting of a casing, two expansion chambers formed in opposite sides of said casing, with their movable walls facing each other, and a tubular arm forming a steam passage entering said casing radially between said chambers and formed with opposite discharge openings facing and concentric with said movable walls, to be closed thereby when the chambers are heated.

4. In a thermostatic steam trap the combination of a casing, having a thermo-expansion chamber, and formed with an opening at one side, and a tubular arm smaller than said opening entering through the opening and forming a steam passage extending radially within said casing and terminating at the center thereof, and means for detachably connecting the casing to the arm, whereby the casing may be unfastened and removed from the arm to get access to the seating faces.

5. In a thermostatic steam trap the combination of a casing having opposite flattened sides with two diaphragms fastened within it to form two opposite expansion chambers, of which the opposite sides of the casing constitute the outer rigid walls and the diaphragms constitute the inner and movable walls, and a tubular arm constituting a steam passage projecting radially into said casing to the center and formed with opposite discharge openings facing and adjacent to said diaphragms to be closed thereby when heated.

6. In a thermostatic steam trap the combination of a casing consisting of two shells of sheet metal joined edge to edge, two opposite expansion chambers within said casing, and a tubular arm constituting a steam passage projecting radially into said casing to the center and formed with opposite discharge openings facing and adjacent to the movable walls of said expansion chambers.

7. In a thermostatic steam trap the combination of a casing consisting of two shells of sheet metal joined edge to edge, with an opening between them, a collar fastened to them at said opening, an expansion chamber in said casing, a tubular arm constituting a steam passage projecting through said opening and formed with a flange, and a fastening device for detachably fastening said flange to said collar.

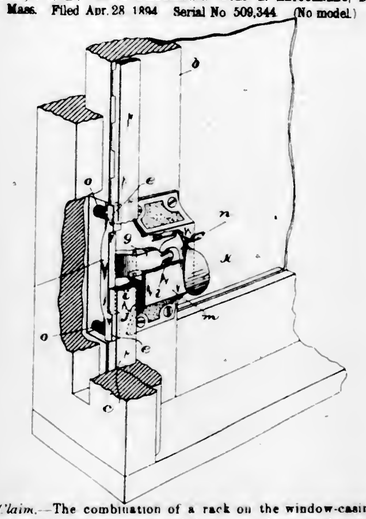
8. In a thermostatic steam trap comprising a casing, an expansion chamber and a steam passage terminating in a discharge opening facing the movable wall of said chamber, the combination therewith of a seating ring inclosing said opening and a spring pressing against said ring to hold it in place, whereby it is readily removable by pressing out said spring.

9. In a steam trap comprising a tubular arm forming a steam passage and having opposite discharge openings, and two opposite expansion chambers adapted to close said openings when heated, the combination therewith of detachable seating rings applied at said openings, and a bowed spring the opposite arms of which engage the respective rings and press toward each other to hold the rings in place.

10. In a steam trap comprising a tubular arm forming a steam passage and having opposite discharge openings, and two opposite expansion chambers adapted to close said openings when heated, the combination therewith of detachable seating rings applied at said openings, sockets formed around said openings to receive the seating rings, and a bowed spring the opposite arms of which are formed with openings to embrace the respective seating rings, and press toward each other to hold the rings in their sockets.

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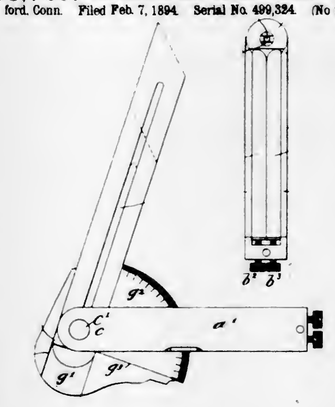
**528,728. SASH-FASTENER.** JOHN B. LETOURNEAU, Brockton, Mass. Filed Apr. 28 1894. Serial No. 509,344. (No model.)



*Claim.*—The combination of a rack on the window-casing set edgewise against the inner side of the same, a lever on the window-sash and extending transversely thereof, said lever being pivoted intermediate of its ends and formed as a dog at one end for engagement with the rack, springs exerting themselves to produce such engagement, and an angular operating lever on the sash and standing out from the same, the inner arm of said lever taking over the transversely extending lever whereby upon raising the outer end of the operating lever its inner arm will act as a cam on the transversely extending lever and disengage the dog from the rack.

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**528,729. PROTRACTOR AND BEVEL.** THOMAS J. LUMIS, Hartford, Conn. Filed Feb. 7, 1894. Serial No. 499,324. (No model.)



*Claim.*—1. In combination with a stock *a*, an adjustable blade pivoted to said stock and having a lengthwise movement along the pivot, and an auxiliary blade having an edge co-operating with one edge of the stock in a permissible adjustment of said blade, and an arm with its inner edge at right angles to the edge of the main portion of the blade, said auxiliary blade being secured to the main blade and adjustable lengthwise along the same, all substantially as described.

2. In combination with a stock having an adjustable blade, a separable protractor having arms at right angles to each other, a socket, and a graduated segment projecting from one of the arms, all substantially as described.

3. In combination with a stock and an adjustable blade pivotally secured thereto independently of the protractor, a detachable protractor having a bearing surface $g^4$ at right-angles to the surface of the protractor, and the thin graduated segment with a shoulder $g^5$ along one side of the segment located at right-angles to the said bearing surface $g^4$, all substantially as described.

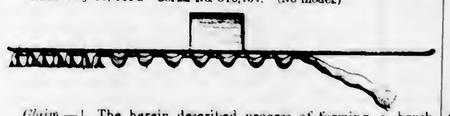
4. In combination, a stock, a slotted blade pivoted to the stock, a pivot joint having a squared portion extending through a slot in the blade, a rocker block fitted on the pivot, a nut adapted to clamp the blade and rocker block together, and an adjusting device comprising a slide and a screw mounted in the stock and adapted to thrust against the side of the rocker block, all substantially as described.

5. In combination, a stock, a slotted blade pivoted to the stock, and a pivot stud journaled in the stock and supporting between a shoulder on the stud and a nut a rocker block, adjusting slides located in sockets in the stock and on opposite sides of the central line of the stock, and adjusting screws appurtenant to each slide and adapted to thrust the latter against the rocker block, all substantially as described.

6. In combination, a stock comprising a base piece and a cover plate with a lengthwise socket between the parts, a pivot stud having journal bearings in one end of the stock, the slotted blade supported on the pivot, and means for clamping it thereto, a rocker block adapted to be clamped to the pivot and blade, means for adjusting the rocker block and blade, and an auxiliary blade having an arm at right angles therewith and means for removably securing it to the slotted blade, all substantially as described.

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528,730. BRUSH. ANTHONEY E. MAGORIS, Binghamton, N. Y. Filed May 10, 1894. Serial No. 510,757. (No model.)

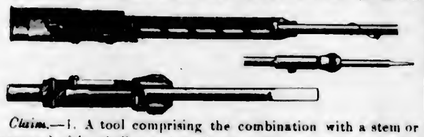


*Claim.*—1. The herein described process of forming a brush which consists in securing fibers arranged in a parallel relation to a back by parallel rows of fastenings, looping the fibers between the said fastenings, and severing the loops to form the tufts or bristle surface, substantially as set forth.

2. That improvement in the process of forming a brush, which consists in securing fibers arranged in parallel relation to a back by stitches, and looping the fibers between the said stitches, substantially as described.

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528,731. COMBINATION TOOL-HANDLE. WILLIAM J. MORRISON, Chicago, Ill. Filed Feb. 24, 1894. Serial No. 501,328. (No model.)



*Claim.*—1. A tool comprising the combination with a stem or plunger and with a shell or casing wherein said stem or plunger slides provided with means whereby revolution may be imparted thereto, of a spring for forcing said stem or plunger outward and means for holding said spring out of action, substantially as described.

2. A tool comprising the combination of a stem or plunger, a shell or casing wherein said stem or plunger slides and whereby revolution may be imparted thereto, a handle, suitable dogs and cogs for locking said shell against revolution, a coil spring within said shell and serving to force said stem or plunger outward and suitable means carried by said shell for holding said coil spring in retracted position, substantially as described.

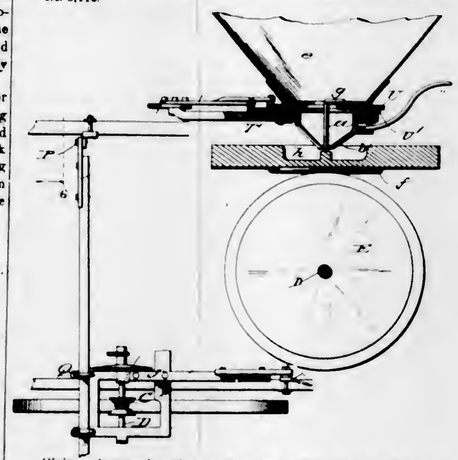
3. A tool comprising the combination of a stem A provided with a chuck at one end, a shell F wherein the opposite end of said stem is held in manner permitting it to reciprocate and rotate, said shell having its inner end provided with a cap and having its exterior provided with ratchet teeth, an open ended sleeve encircling said shell and provided with pawls to engage said ratchet teeth, a handle revolubly mounted upon the end of said shell and provided with a transverse plate and a pivot bolt extending through said transverse plate and pivotally connecting the handle to the cap of the shell and a nut upon said bolt, substantially as described.

4. A chuck having an exterior and beveled hollow head B provided with compressible ends to engage a bit of large size, an exteriorly threaded and beveled jam nut C to engage and compress said ends a sliding supplemental tool holder within said head B, said supplemental tool holder having jaws to engage a bit of smaller size and means for retaining said supplemental tool holder in position to be compressed by the operation of said jam nut, substantially as described.

5. A chuck comprising a hollow head B, a jam-nut C, mounted upon said hollow head, and a sliding tool holder E, having arms *e*, said tool holder being mounted within said hollow head and being provided with a suitable shifting bit working within a slot in said hollow head, substantially as described.

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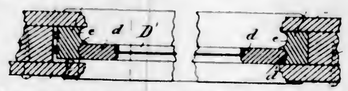
528,732. SEED-SOWER. JAMES MUSGROVE, Greenvale, Victoria. Filed Sept. 14, 1893. Renewed Sept. 7, 1894. Serial No. 522,401. (No model.) Patented in Victoria Apr. 24, 1890, No. 7,663; in New South Wales June 1, 1892, No. 3,786, and in South Australia June 25, 1892, No. 3,110.



*Claim.*—In a seed sowing machine adapted to be carried by a vehicle, the combination of a body portion in which the operative parts are arranged, a friction pulley driven by contact with one of the vehicle wheels and in connection with the operative parts of the machine whereby they are operated, and two arms rigidly secured to the body and extending at right angles to each other, one across the body of the vehicle to the opposite rail and the other parallel with the rail on which side the machine is, and having at their ends hinges whereby they may be pivotally secured to their respective rails and whereby the machine is made capable of a limited vertical movement on such hinges and the friction pulley held in contact with the wheel by which it is driven, substantially as described.

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528,733. FRAME OR CASING FOR WINDOW SASHES OR BLINDS. PETER MCKENZIE, Ottawa, Canada. Filed May 10, 1894. Serial No. 510,899. (No model.)



*Claim.*—1. In frames and casings for sashes and blinds, the combination of two posts or casing pieces forming two parallel sides of the opening of architraves or stops forming a groove channel or recess with each, casing pieces E and E' fitting in said recesses or grooves and having their opposing faces provided with grooves slidingly, elastic cushions secured to the rear face of one of said pieces rounded in cross section and adapted to receive the edges of the stiles and bearing on the contiguous post or piece and elastic cushions inserted in the joint between said cushioned piece and the architrave or stop forming one side of the channel groove or recess in which said piece is placed, and the sashes or parts having stiles with rounded edges sliding in the rounded grooves of said pieces, substantially as set forth.

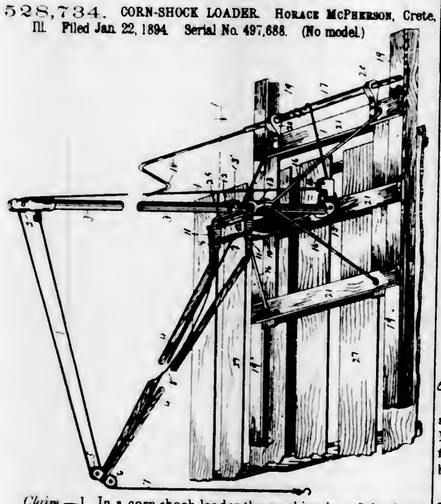


2. The combination of the posts A each with stops C C' forming a channel or recess, pieces E and E' having their opposing faces provided with grooves *e* rounded in cross section and adapted to receive the stiles of the sash slidingly, elastic cushions F secured to the rear face of one of said pieces and bearing against the contiguous post, cushions G in the face joint between said piece and one of the stops and secured to one of them and the sashes D and D' having the edges of their stiles rounded to fit and slide in the curved grooves of said pieces, substantially as set forth.

3. The combination of a piece A forming one side of an opening, stops C and C' forming a groove or channel therewith, a piece E fitting loose in said groove or channel, elastic cushions F in the rear face of said piece and bearing against the piece A and elastic cushions G in the face joint between said piece and one of the stops, substantially as set forth.

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528,734. CORN-SHOCK LOADER. HORACE MCPHERSON, Crete, Ill. Filed Jan. 22, 1894. Serial No. 497,688. (No model.)



*Claim.*—1. In a corn shock loader the combination of the frame 11, windlass 22 having the crank 10, reciprocatory latch 12 for engaging said crank, coil spring 25 sleeved on said latch, cam lever 26 pivotally attached to the rear end of said latch, and the hand rope 8 attached to said cam lever, all arranged to operate substantially as and for the purpose set forth.

2. In a corn shock loader the combination of the slidable base 21, the mast, 3, the boom, the rope 7 frame 11, windlass 22 having the crank 10, reciprocatory latch 12, for engaging said crank, coil spring 25 sleeved on said latch, cam lever 26 pivotally attached to the rear end of said latch, and the hand rope 8 attached to said cam lever, all arranged to operate substantially as and for the purpose set forth.

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528,735. CONTINUOUS EXTRACTOR. JAMES NAYLOR, Jr., Boston, Mass., assignor of three-fourths to George Thomas McLauthlin, same place. Filed Nov. 9, 1892. Serial No. 451,439. (No model.)

*Claim.*—1. In a centrifugal extractor, the combination with the supported arbor, imperforate bowl and cutters; of a supported stationary feed hopper extending into said bowl and in close proximity to said cutters and means for separation and discharge of the separated constituents as herein set forth.

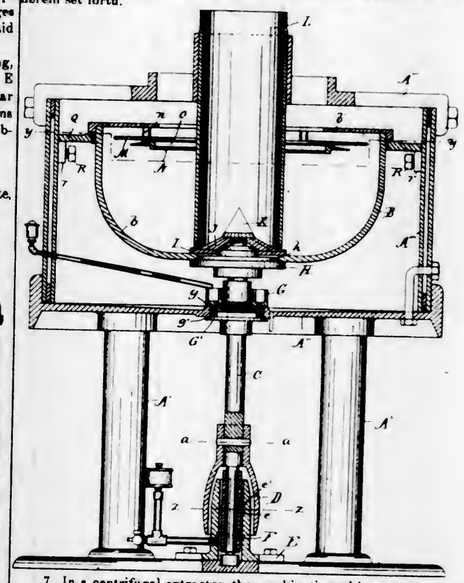
2. In a centrifugal extractor, the combination with the supported arbor bowl and cutters; of a supported stationary feed hopper provided with a serrated lower edge and means for separation and discharge of the separated constituents as herein set forth.

3. In a centrifugal extractor, the combination with the supported arbor and bowl the collar I provided with cutting edges revolving in a horizontal plane of the supported stationary feed hopper provided with a serrated lower edge and means for separation and discharge of the separated constituents as herein set forth.

4. In a centrifugal extractor, the combination with the supported arbor imperforate bowl and cutters; of the feed hopper provided with a vertical means of adjustment and support, and means for separation and discharge of the separated constituents as herein set forth.

5. In a centrifugal extractor, the combination with the supported arbor and bowl; of the collars I, J and nut K provided with cutting edges, the supported feed hopper and means for separation and discharge of the separated constituents as herein set forth.

6. In a centrifugal extractor, the combination with the supported arbor bowl and cutters; of the feed hopper supported from the frame so as to be concentric to the said cutters in their revolutions, and means for separation and discharge of the separated constituents as herein set forth.



7. In a centrifugal extractor, the combination with a supported arbor and bowl, said bowl provided with the supported rings M and N; of cutters secured to said arbor and bowl, a centrally supported feed hopper and means for discharge of the separated constituents as herein set forth.

8. In a centrifugal extractor, the combination with the supported arbor and bowl, said bowl provided with the ring M of a diameter larger than that of the ring N, said ring N having a part of its upper surface flaring so as to make a tapered passage between said rings; of means for reduction and inflow thereto and discharge of the separated constituents therefrom as herein set forth.

9. In a centrifugal extractor the combination with the bowl having its opening of greater diameter than either the contained rings M and N, the ring M having its internal diameter greater than that of the ring N, the ring N having its internal diameter to clear the outer diameter of the hopper; mounted upon the supported arbor; of means for reduction and inflow of the material and discharge of the separated constituents as herein set forth.

10. In a centrifugal extractor, the combination with the supported arbor and bowl, said bowl provided with the supported ring M having its upper and lower surfaces flat, the supported ring N having its upper surface inwardly approaching the said ring M to a point about equal to the opening of the bowl, thence inwardly in a plane and at a distance below the ring M to form the gutter O; of means for reduction and inflow thereto and discharge of the separated constituents therefrom as herein set forth.

11. In a centrifugal extractor, the combination with a supported arbor and bowl, the supported ring N, extending inwardly beyond the ring M and the cover *b'* of said bowl, so as to provide a space for the mass to accumulate between the lower part of said bowl and said ring N; of means for reduction and inflow thereto and for the discharge of the separated constituents from said bowl as herein set forth.

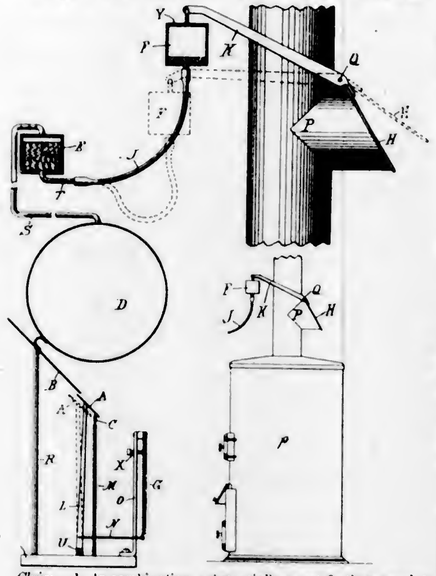
12. In a centrifugal extractor, the combination with a supported arbor and rabbeted flange provided with means for a combined revolving and gyratory motion, a bowl mounted thereon and secured thereto, said bowl carrying cutting edges; of the feed hopper L supported concentrically above said cutting edges; so that the gyratory movement of said bowl and arbor does not materially alter the opening from said hopper to said bowl, substantially as herein shown and described.

13. In a centrifugal extractor, the combination with the supported arbor and bowl provided with the ring M of greater inner and outer

diameters than the ring N, the ring N extending inwardly in close proximity to the feed hopper; both rings supported by studs n to the cover b'; of means for reduction and inflow thereto; and discharge of the separated constituents therefrom as herein set forth.

14. In a centrifugal extractor the safety ring Q provided with suitable means of support to the reinforcing and body part; in combination with the said reinforcing and supported body part of the frame, as and for the purpose set forth.

528,736. **TEMPERATURE-REGULATOR.** THOMAS O. PERRY, Chicago, Ill. Filed May 31, 1893. Serial No. 476,160. (No model.)



*Claim.*—1. In combination, substantially as set forth, a regulating valve or damper; an expanding and contracting element and connections therefrom by which its expansion and contraction operate the damper; a constantly operating heating device other than that which produces the heat to be regulated; a shield adapted to be interposed between such heating device and the expanding and contracting element to protect the latter from the heat of the former; a thermostat exposed to the temperature to be regulated, and connections therefrom adapted to control the relative positions of such heater and shield to cause the latter to be or not to be in interposition between the heater and the expanding and contracting element.

2. In combination, substantially as set forth, the chamber D, containing air or other fluid; a continuously operating heating device to which such chamber is exposed; a shield adapted to be interposed between the heating device and the chamber to protect the latter from the heat; a thermostat, and connections therefrom adapted to control the relative positions of the heating device and the shield, to cause the latter to be or not to be in interposition between the heating device and the chamber; a damper the opening and closing of which affect the temperature of the room in which the thermostat is located, and connections by which the expansion and contraction of the fluid contents of the chamber operate such damper: substantially as set forth.

3. In a temperature regulator, in combination with the chamber D containing air or other fluid, a valve or damper whose opening and closing affect the temperature of the room to be regulated; and connections by which the expansion and contraction of the fluid in the chamber operate the damper; a heating device in position adapted to heat the chamber; and a shield adapted to be interposed between the chamber and the heating device to protect the former; a thermostat located in the room whose temperature is affected by the opening and closing of the damper, and connections therefrom by which it operates the shield to move it into and out of operative position as the thermostat responds to changes in temperature: substantially as set forth.

4. In a temperature regulator, in combination substantially as set forth, a chamber containing air or other fluid; a continuously operating heating device to which such chamber is exposed; a light movable deflector adapted to be interposed between the heating device and the chamber; a thermostat connected with and adapted to move said deflector to uncover the heating device; a large fixed shield or deflector overlapping the movable deflector; a valve or damper, the opening and closing of which affect the temperature of the room in which the thermostat is located; and mechanism by which the expansion and contraction of the fluid contents of the chamber operate said damper: substantially as set forth.

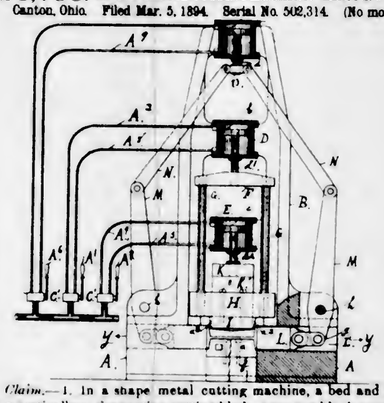
5. In a temperature regulator, in combination substantially as set forth, a regulating valve or damper; an expanding and contracting element and connections therefrom by which its expansion and contraction operate the damper; a constantly operating heating device other than that which produces heat to be regulated; a shield adapted to be interposed between the heating device and the expanding and contracting element to protect the latter from the heat of the former; a thermostat exposed to the temperature to be regulated, and connections therefrom by which it operates the shield to move it into and out of operative position as the thermostat responds to changes of temperature: substantially as set forth.

528,737. **METAL LAST.** GEORGE C. PETTIS, New Haven, Conn., assignor to the United States Rubber Company, New Brunswick, N. J. Filed Apr. 9, 1894. Serial No. 506,912. (No model.)



*Claim.*—A last constructed from sheet-metal in several parts a portion of the adjacent edges of each part set inward forming a series of channels between the parts, said channels filled with brazing material, whereby the parts are firmly united, substantially as described.

528,738. **SHAPE-METAL-CUTTING MACHINE.** LEROY S. PFOUTS, Canton, Ohio. Filed Mar. 5, 1894. Serial No. 502,314. (No model.)



*Claim.*—1. In a shape metal cutting machine, a bed and fixed dies, a vertically reciprocating cutting blade, a presser block provided at its bottom or under side with a head, horizontally moving cutting blades, and means for operating the horizontally moving cutting blades, substantially as and for the purpose specified.

2. The combination of the bed A, provided with uprights or guides, a presser block, and a vertically reciprocating cutting blade, located through the presser block, dies located below the presser block, and horizontally moving cutting blades, and means for operating the vertically reciprocating cutting blade, and the horizontally reciprocating cutting blades.

3. The combination of a series of cylinders having fixed thereto supply and return pipes, a reciprocating presser block, having attached thereto a head, having end dies, the vertically moving cutting blade extended downward through the presser block and head, the dies *f* and the horizontally moving cutting blades, and means for operating the horizontally moving cutting blades, substantially as and for the purpose specified.

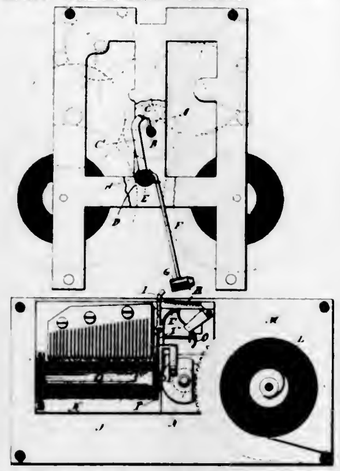
4. In a machine for cutting I beams and channel bars, a presser block, and a vertically reciprocating cutting blade, extended through the presser block, horizontally moving cutting blades located to the sides of the path of the vertically reciprocating cutting blade, and means for operating the vertically moving cutting blade, and the horizontally moving cutting blades

5. The combination of a bed, provided with horizontally moving



cutting blades, the levers M pivoted to the bed, and pivotally connected at their bottom ends to the horizontally moving cutting blades, the bars N pivoted to the top or upper ends of the levers M, and the cylinder C and dies *f*, substantially as and for the purpose specified.

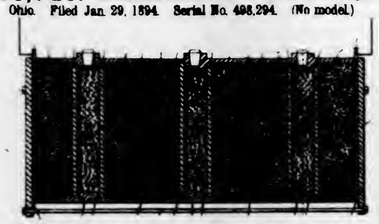
528,739. **MUSICAL CLOCK.** HENRY W. PORTER, Forestville, Conn., assignor of one-half to Frederick N. Manross, same place. Filed Nov. 27, 1893. Serial No. 492,105. (No model.)



*Claim.*—1. In a musical-clock, the combination with the center-arbor thereof, of a releasing device mounted thereupon and rotating therewith, an operating-arm engaged by the said device once during every rotation thereof, and adapted to permit the arbor and device to be "turned back," a music-hammer connected with the said arm and moving therewith, a spring for operating the hammer when it is released, and a music-box mechanism including an operating-lever arranged to be struck directly by said hammer when the same is operated by the said spring, for releasing the mechanism, which is adapted to stop automatically after one rotation of the drum of the box, substantially as described.

2. In a musical-clock, the combination with the center arbor thereof, of a releasing device mounted thereupon and rotating therewith, an operating-arm arranged to be actuated by the said device, a sleeve mounted so as to oscillate upon an arbor located in the movement below the main-arbor, and having the said arm rigidly connected with it, a hammer-arm connected with and depending from the said sleeve and carrying a hammer, a spring connected with the hammer for causing the same to strike a blow when the operating-arm is released by the releasing device, and a music-box mechanism containing an operating-lever which releases the mechanism when it is directly struck by the said hammer, substantially as set forth.

528,740. **SECONDARY BATTERY.** ELIAS M. POSTON, Springfield, Ohio. Filed Jan. 29, 1894. Serial No. 498,294. (No model.)



*Claim.*—1. In a secondary battery, an outer casing formed in sections, each of said sections being provided with internally projecting lugs or shoulders, non-conducting porous plates adapted to rest against said shoulders, and a peripheral opening extending through the outer walls of said casing between said porous plates, positive and negative electrodes arranged at and adapted to close the ends of the respective sections, active material between said porous plates and electrodes, and an electrolytic fluid within said casing, substantially as specified.

2. A secondary battery consisting essentially of a series of sections, each of said sections comprising an outer casing, porous division walls in said casing, metallic plates or walls to form positive and negative electrodes at the respective ends of said casing, an electrolytic fluid between said porous walls, active material arranged between the respective porous walls and the electrodes, and means, substantially as described, for connecting said sections together, substantially as specified.

3. The combination of a casing having a peripheral opening, non-conducting porous walls on each side of said opening to form a chamber, an electrolyte in said chamber between said porous walls, active material in the respective ends of said casing and separated from the electrolyte by said porous walls, and positive and negative electrodes in contact with said active material on opposite sides of said chamber, substantially as and for the purpose specified.

4. A sectional battery consisting essentially of an outer casing formed in sections, as described, each of said sections being provided with porous plates or walls arranged on each side of a peripheral opening and adapted to form chambers for the reception of electrolyte and active material, metallic plates in contact with the active material at or near the ends of said sections, means for connecting said sections together so that the active material of one section will be in contact with the metallic plates of the preceding sections, and means for establishing an electrical connection with the end plates of said series, substantially as specified.

528,741. **JOINT FOR VEHICLE WHEEL-RIMS.** LOUIS RASTETTER, Fort Wayne, Ind. Filed July 27, 1894. Serial No. 518,690. (No model.)

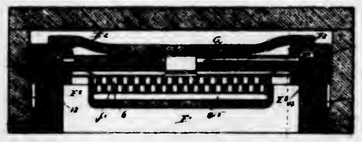


*Claim.*—1. A vehicle rim joint consisting of two interlocking ends or sections, adapted to form a locked union, as shown, and preserving the general contour of the rim, one of the said ends having a series of outwardly tapering convexo-convex tenons adapted to register with a series of corresponding mortises in the other end of the rim or abutting section, all substantially as described.

2. A joint for vehicle rims comprising two interlocking ends or sections, one of the said ends having a series of inwardly tapering longitudinal mortises 6 having concave sides, as shown, a series of concavo-concave outwardly tapering tenons 4 adapted to register with a corresponding series of mortises in the other interlocking end, and the external arms 5 for the purpose described, the other interlocking end or section having a series of outwardly tapering tenons 3 with convex sides adapted to register with the said mortises 6, and a series of mortises 7 adapted to receive the said concave tenons 4, all substantially as described.

3. In a joint for vehicle rims, the combination of one interlocking end or section having the concavo-convex arms 5 adapted to embrace the abutting end or section, a series of longitudinal mortises having concave sides, and a series of concavo-concave tenons adapted to register with a series of corresponding mortises in the abutting end or section, with another interlocking end or section having a series of tenons adapted to register with the said mortises of the other abutting end, and having a series of mortises with convex sides adapted to receive the said concavo-concave tenons, all substantially as described.

528,742. **VALVE MECHANISM FOR ENGINES.** CHARLES SCHMID, Chicago, Ill., assignor to the American Valve and Governor Company, same place. Filed July 31, 1890. Renewed Apr. 18, 1894. Serial No. 508,047. (No model.)



*Claim.*—1. In valve mechanism, the combination with a main valve having exhaust ports therein on each side of the exhaust cavity, and having a series of escape ports or openings through which waste steam will pass, of reciprocating supplemental valves having openings therein adapted to be brought coincident with said series of escape

ports, and suitable means for reciprocating said supplemental valves, substantially as described.

2. In valve mechanism, the combination with the main valve and exhaust ports therein on each side of the exhaust cavity and having a series of long narrow escape ports or openings through which the waste steam will pass, of supplemental valves for controlling the escape of steam through said exhaust ports, said supplemental valves having a series of long narrow escape ports or openings corresponding with the ports or openings of the main valve, and suitable means for operating said supplemental valves, substantially as described.

3. In valve mechanism, the combination with the main valve having exhaust chamber in its upper portion and having exhaust ports on each side of the exhaust cavity and having a series of escape ports or openings above said escape ports through which waste steam will pass to said exhaust chamber, and having also end exhaust ports leading from said exhaust chamber to the exhaust cavity of the valve, of a supplemental valve provided with escape ports and adapted to control the escape ports or openings of the main valve, substantially as described.

4. In valve mechanism, the combination with the main valve having exhaust ports therein on each side of the exhaust cavity, of a transversely reciprocating supplemental valve within said main valve and adapted to control the escape of waste steam, and suitable means for reciprocating said supplemental valve at right angles to the path of travel of the main valve, substantially as described.

5. In valve mechanism, the combination with the main valve having exhaust ports therein on each side of the exhaust cavity, and having a series of escape ports or openings, of a supplemental valve for controlling the flow of waste steam through said escape ports or openings, a suitable mechanism for reciprocating said supplemental valves, said reciprocating mechanism being adapted to cause the supplemental valves to remain stationary with respect to the main valve for a short interval preceding the release of the steam, whereby the indirect release of the steam through the supplemental valves is delayed, substantially as described.

6. In valve mechanism, the combination with the main valve having exhaust ports therein on each side of the exhaust cavity and having also the exhaust chambers $e^4$ and $e^5$, and the main exhaust chamber I' and the end exhaust ports $E^3$, and having suitable escape ports or openings 5 and 6', of the supplemental valves F and F' having escape ports or openings $f$ and $f'$, and suitable means for moving said supplemental valves, substantially as described.

7. In valve mechanism the combination with the main chambered valve having exhaust ports therein on each side of the exhaust cavity, of a transversely reciprocating supplemental valve, and means for controlling said supplemental valve comprising one or more projections united to the supplemental valve, and a corresponding projection or projections extending from the steam-chest whereby said supplemental valve may be reciprocated at right angles to the path of travel of the main valve, substantially as described.

8. In valve mechanism, the combination with a main valve, and supplemental valves therein, of means for controlling said supplemental valves comprising one or more projections united to said supplemental valve, and one or more corresponding projections extending from the steam chest, said projections having beveled portions, substantially as described.

9. In valve mechanism, the combination with a main valve having exhaust ports therein on each side of the exhaust cavity, and having escape ports or openings connecting said exhaust ports with the exhaust cavity, of supplemental valves for controlling the escape of steam through said exhaust ports and means for operating said supplemental valves comprising one or more projections extending from the supplemental valves through the main valve, and one or more corresponding projections upon the steam chest, substantially as described.

10. In valve mechanism, the combination with a main valve having exhaust ports therein on each side of the exhaust cavity, and having escape ports or openings connecting said exhaust ports with the exhaust cavity, of supplemental valves for controlling the escape of steam through said exhaust ports and operating mechanism for said supplemental valves comprising one or more beveled projections extending from the supplemental valve, and one or more beveled projections extending from the steam chest to engage said projection or projections that extend from the supplemental valve, substantially as described.

11. In valve mechanism, the combination with a main valve having exhaust ports therein on each side of the exhaust cavity, and having escape ports or openings connecting said exhaust ports with the exhaust cavity, of supplemental valves for controlling the escape of steam through said exhaust ports said supplemental valves being united together, and having projections extending through the main valve, and suitable projections from the steam chest to engage said projections from the supplemental valves, substantially as described.

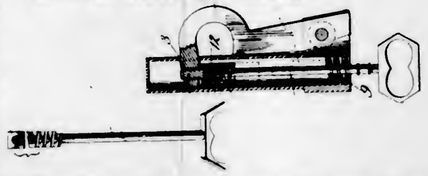
12. In valve mechanism, the combination with a main valve having exhaust ports therein on each side of the exhaust cavity, and having escape ports or openings connecting said exhaust ports with the exhaust cavity, of supplemental valves for controlling the escape of steam through said exhaust ports and means for operating said supplemental valves comprising a shifting bar extending through said main valve at each end, and connected with the supplemental valves, said shifting bar having beveled projections upon its ends, and suitable projections from the walls of the steam chest to engage said projections on the ends of the shifting bar, substantially as described.

13. In valve mechanism, the combination with the body of the main valve, of the casting E, having exhaust chambers $e^4$ $e^5$ formed with ports 2 and 3 and having the exhaust ports or openings leading from said exhaust chambers to the exhaust chamber D', supplemental valves comprising plates united at their ends, and having openings adapted to be brought coincident with the ports or openings in the exhaust chamber, and a shifting bar extending through the ends of the main valve, the exhaust chamber, and connected with the supplemental valves, substantially as described.

14. In valve mechanism, the combination with a main valve having exhaust ports for waste steam, and a supplemental valve for controlling said exhaust ports, of a shifting bar connected to said supplemental valve, and suitable bars H and H' and end bars $H^3$ to which said bars H and H' are connected, said end bars being attached to the steam chest, substantially as described.

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528,743. PADLOCK. WILLIAM SMITH, New Castle, Pa. Filed Apr. 11, 1894. Serial No. 507,149. (No model.)



*Claim.*—The combination with the hollow barrel, interiorly threaded at one end, and provided with a transverse slot near its other end, of a hasp pivotally secured to said barrel and provided with a threaded eye adapted to project into the barrel, a locking slide located within the barrel and consisting of the body portion having a rectangular recess and a threaded pin, and a key formed with a spiral thread, the edge of which is made up of a number of flattened or straight portions at right angles to each other, so as to conform to the contour of the recess in the barrel, substantially as described.

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528,744. INSULATING COMPOUND. OSCAR STILES, Omaha, Nebr. Filed Mar. 26, 1894. Serial No. 505,095. (No specimens.)

*Claim.*—1. An insulating compound, comprising the combination of the following ingredients: asbestos, alcohol, shellac, and mica, combined substantially in the proportion set forth.

2. In an insulating compound the combination of the following ingredients: asbestos, alcohol, shellac, mica, and alum, all combined substantially as and in the proportion set forth.

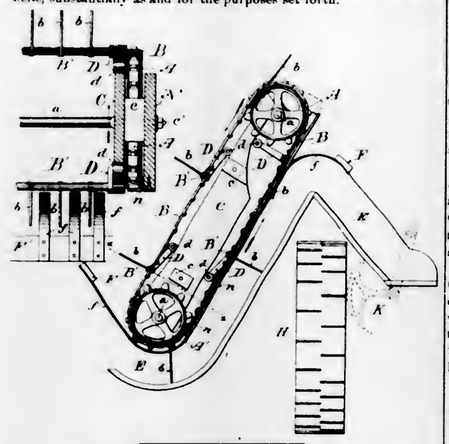
3. As a new insulating compound, the combination of six parts of alcohol, three parts of shellac, three parts of asbestos, and one part each of mica and alum, all combined as and for the purpose set forth.

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528,745. HARVESTER-ELEVATOR. OLE O. STORLE, Milwaukee, Wis. Filed Apr. 27, 1895. Serial No. 163,527. (No model.)

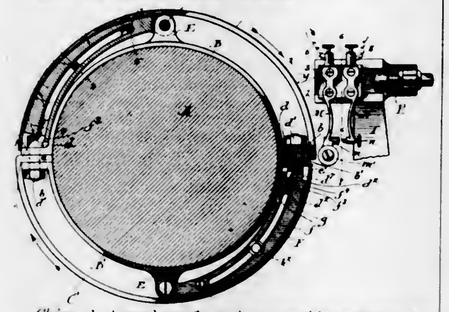
*Claim.*—1. The combination in an elevator for harvesting machines of an inclined, ascending chute, turned in opposite directions at its lower and upper ends to receive and discharge the grain, sprocket wheels carrying chain belts, rakes hinged to said chain belts transversely to said chute and provided with crank arms, and a guide traversed by said crank arms and formed with an enlargement at the lower end and a depression at the upper end which cause the rake teeth to enter said chute at the proper angle thereto and allow them to drop back toward said chain belts and to be withdrawn lengthwise from the upper turn in said chute, substantially as and for the purposes set forth.

2. The combination in a harvester elevator of an upwardly inclined chute turned in opposite directions at the ends to receive and discharge the grain and comprising a platform and guards located above and parallel with said platform, chain belts supported and driven above and parallel with said chute by suitable wheels, rakes hinged to said belts transversely thereto and having teeth arranged to project between said guards into said chute as the rakes ascend, cranks on the rake heads, a guide arranged to be traversed by said cranks, and having an enlargement at its lower end and a depression at its upper end, whereby the rake teeth are caused to enter and withdraw from the chute in the proper direction and guide ways arranged to support the rakes in their ascent and to prevent sagging of the chain belts, substantially as and for the purposes set forth.



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528,746. SPEED-STOP FOR ENGINES. BENJAMIN F. TEAL, Chicago, Ill., assignor to the Standard Valve Company, same place. Filed Mar. 9, 1894. Serial No. 503,076. (No model.)



*Claim.*—1. A speed stop for engines, comprising a pivoted arm, a spring for resisting the outward movement of said arm, said spring projecting beyond the end of said arm, a stop with which the end of said spring engages and an electric circuit controller arranged to be operated by the outward movement of said arm, substantially as described.

2. A speed stop for engines, comprising a pivoted arm having a slot formed lengthwise therein, a plate spring located in said slot and having its end projecting therefrom, a stop to engage the projecting end of said spring and an electric circuit controller arranged to be operated by the outward movement of said arm, substantially as described.

3. A speed stop for engines, comprising a pivoted arm, a plate spring carried by said arm, a shifting bolt carried by said arm for adjusting the force of said plate spring, a stop with which said spring will engage to resist the outward movement of said arm and an electric circuit controller arranged to be operated by the outward movement of said arm, substantially as described.

4. A speed stop for engines, comprising a pivoted arm F having a projecting end $f^2$, and having a slot $f$, a plate spring G located within said slot and having an end projecting therefrom, an adjusting bolt H movable within said slot $f$ and a stop or shoulder $d^2$ for limiting the outward movement of said arm F and means for controlling a valve arranged in the path of the pivoted arm and with which said arm engages, substantially as described.

5. A speed stop for engines, comprising the combination of the inner and outer plates B and B' and C and C', the intermediate pivoted arms F, suitable springs for resisting the outward movement of said pivoted arms and means for adjusting the force of said spring and means for controlling a valve arranged in the path of the pivoted arms and with which said arms engage, substantially as described.

6. A speed stop for engines, comprising an inner collar, an outer rim comprising a plate C having a free end $c'$ and an intermediate movable arm F and means for controlling a valve arranged in the path of the movable arm and with which said arm engages, substantially as described.

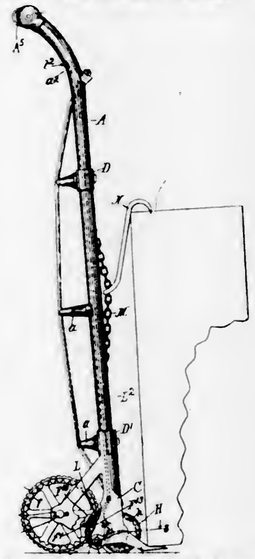
7. A speed stop for engines, comprising the inner and outer plates B and B' and C and C' having flanges whereby said plates are bolted together, and said plates C and C' having free ends $c'$, the weighted arms F pivotally sustained intermediate said plates B and B' and C and C', said weighted arms being provided with slots $f$, springs G within said slots $f$ and projecting beyond the ends thereof and bolts D with which the ends of said springs engage and means for controlling a valve arranged in the path of the weighted arms and with which said arms engage, substantially as described.

8. A speed stop for engines, comprising the combination of a pivoted arm, a spring for resisting the outward movement of said arm, an electric circuit controller comprising a contact arm having a part extending into position to be shifted by the outward movement of said pivoted arm and an adjustable support for said contact arm, substantially as described

9. The combination with the main drive shaft of an engine, of a centrifugally movable body mounted upon said shaft and an electric circuit controller located adjacent the path of said movable body and within reach thereof when said body has shifted from its normal position, said circuit controller having contact points, the passage of current between which is controlled by said movable body when shifted beyond its normal position, substantially as described.

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528,747. HAND-TRUCK. HENRY O. THOMAS, Kimball, Nebr. Filed Jan. 12, 1894. Serial No. 496,594. (No model.)



*Claim.*—1. In a truck, in combination with the principal frame and main supporting wheels journaled therein, a supplemental wheel or roller located in such position with respect to the main wheel as to be off of the ground and extend above the plane of the load-supporting surface of the truck when the latter is horizontal, the shaft or bearings of said supplemental wheel being movable with respect to the primary wheel to permit such supplemental wheel to come into peripheral contact with the primary wheel: substantially as set forth.

2. In a truck, in combination with the frame, the load-supporting wheels journaled on the frame above or forward of the truck-supporting wheels; the shoe pivotally connected to the frame and adapted to project forward of the load-supporting wheels when the truck is upright, and in tilting back toward the truck, to describe by its forward edge or point an arc outside the load-supporting wheels, and adapted to stop against the frame behind or above said load-supporting wheels, with its edge or point standing above or forward of a plane tangent to the load-supporting wheel and extending to part of the load-supporting surface of a truck; whereby such shoe may operate as a detent dog or pawl to prevent the downsliding of the load: substantially as set forth.

3. In combination with the truck frame and the load-supporting wheels journaled above or forward of the truck-supporting wheels and having their bearings or supporting shaft movable in the truck frame to permit the load-supporting wheels to come into peripheral contact with the truck-supporting wheels; a shoe pivotally connected to the frame and adapted to tilt from its forward or load-engaging position behind or above the load-supporting wheels, and stopped on the frame in such backward tilting movement with its edge or point standing above or forward of a plane tangent to the load-supporting wheels and extending to the upper part of the truck, whereby said edge of the shoe constitutes a fulcrum over which the load may be tilted to take it off the load-supporting wheels to relieve the truck supporting wheels of the friction of the latter: substantially as set forth

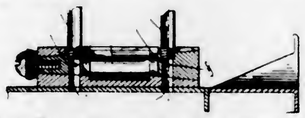
4. In combination with the truck frame, the truck-supporting wheels journaled thereon; the load-supporting wheels also journaled on the frame forward of or above the truck supporting wheels, said wheels having ratchet rims; pawls pivoted on the frame adapted to engage said rims respectively, and the spring L having two arms which operate against the pawls respectively, said pawls having a path on which the spring bears extending both sides of the fulcrum of the pawl, and a rod from said spring exteuding up to the handle end of the truck, whereby the springs may be adjusted to bear against the pawls at either side of their fulcrums to hold them into or out of engagement with their ratchets respectively at will: substantially as set forth.

5. In combination with the truck frame, the truck-supporting wheels journaled thereon; the load-supporting wheels also journaled on the frame forward of or above the truck-supporting wheels, said wheels having ratchet rims; pawls pivoted on the frame adapted to engage said rims respectively, and the spring L having two arms which operate against the pawls respectively adapted to be shifted at will past the fulcrums to hold them in or out of engagement with the ratchets respectively, and a rod from said spring extending up to the handle end of the truck: substantially as set forth.

6. In a truck frame, comprising the wheel-bearing brackets C C, provided with seats or sockets at their upper ends for the longitudinal bars, the handle or side-bars A A, and the bow B, having their ends lodged in such seats respectively, and the cross-bars D and D', and the supplemental bars $D^3$, and bolts extending through said cross-bars and supplemental bars at the seats of the tubular bars in the brackets: substantially as set forth.

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528,748. **LIQUID-CONTAINING VESSEL.** JAMES THORETON and ALONSO B. WOODARD, Wellsville, N. Y. Filed Mar. 13, 1894. Serial No. 503,460. (No model.)



*Claim.*—1. The combination with a liquid-containing vessel, of a faucet comprising a turning plug provided with liquid discharge and air vent passages and liquid discharge and air vent tubes, said plug having also tube vents communicating with said passages and which tube vents are open when the faucet is closed.

2 A liquid-containing vessel having a faucet comprising the combination with a body portion having a vertical slot and horizontal slots connecting therewith, of a tapering turning plug seated in said body portion, liquid discharge and air vent passages through said plug, liquid discharge and vent tubes communicating with said passages and swinging in said horizontal slots, and tube-vents connecting with said passages.

3. The combination with a liquid containing vessel, of a faucet comprising liquid discharge and air tubes having pointed terminals or lower ends placed back to back so that the said pointed terminals are contiguous.

4. A liquid-containing vessel having a faucet comprising the combination with the body portion B provided with slots $b$, $b'$ and $b^3$, of the plug C having passages $c$ $c'$, the tubes $e$ $e'$ swinging in said slots $b$ $b'$ and the tube vents $f$ $f'$.

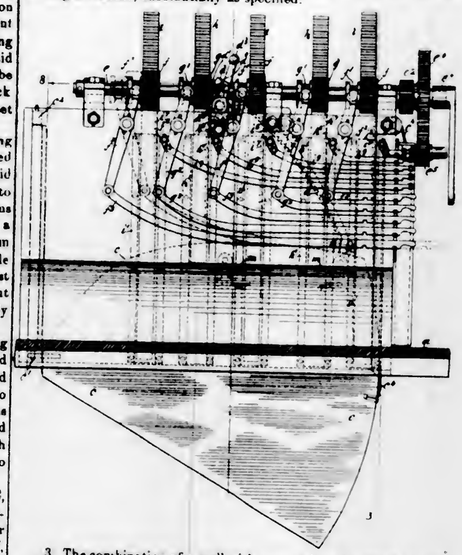
5. A liquid containing vessel having a faucet comprising the combination with the body portion B provided with slots $b$, $b'$ and $b^3$, of the plug C having passages $c$ $c'$, the tubes $e$ $e'$ swinging in said slots $b$ $b'$ and having contiguous pointed lower ends, and the tube vents $f$ $f'$.

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528,749. **CENTERBOARD.** HENRY VOSS, Jersey City, N. J. Filed July 18, 1894. Serial No. 517,848. (No model.)

*Claim.*—1. The combination of a centerboard with a series of vertically movable slides, that engage the sides of the centerboard and are adapted to oscillate and tilt the same, substantially as specified.

2. The combination of a well having a tapering lower end, with a centerboard, a series of vertically movable slides that engage the sides of the well and centerboard, and with racks and pinions for operating the slides, substantially as specified.



3. The combination of a well with a centerboard, a series of vertically movable slides, a pair of shafts extending along the well, movable pinions mounted upon the shafts, and with racks secured to the slides and operated by the pinions, substantially as specified.

4. The combination of a well with a centerboard, slides engaging the same, a pair of shafts, movable pinions mounted thereon, racks secured to the slides and operated by the pinions, and with pawls engaging the racks and adapted to lock the same in their elevated position, substantially as specified.

5. The combination of a centerboard with vertically movable slides at both sides of the same, and with mechanism for simultaneously raising the slides on one side and lowering those on the other side, substantially as specified.

6. The combination of a well with a centerboard, shafts extending along both sides of the same, two sets of movable pinions $g$, $f$, mounted thereon, racks engaged by the pinions, wedges $h$, $i$, secured to the racks, and of which the wedges $h$ are adapted to hold the centerboard in its vertical, and the wedges $i$ are adapted to hold it in its inclined position, substantially as specified.

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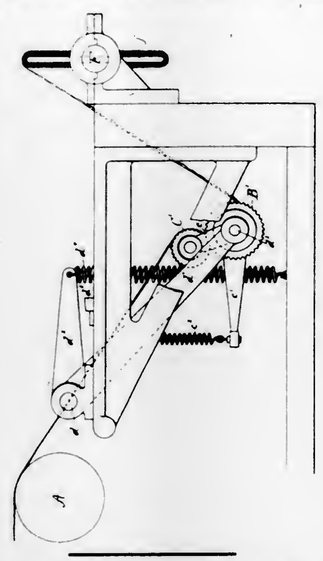
528,750. **TENSION-REGULATING ATTACHMENT FOR FABRIC-PACKAGING MACHINES.** EDWARD P. WATSON, New York, N. Y., and ROBERT W. WATSON, Preston, England. Filed Dec. 1, 1893. Serial No. 492,549. (No model.)

*Claim.*—1. In a machine for winding fabrics, the combination of a delivery guide roll, and a driven shaft adapted to revolve a winding board, with a pivoted frame, a tension roller journaled thereon lying out of the direct path from the delivery roll to the winding board, a frame pivoted to the first frame, a tension roller journaled thereon, and independent springs for holding said frames against the strain of the cloth, substantially as and for the purpose specified.

2. In a machine for winding fabrics, the combination of a delivery guide roll and a driven shaft adapted to revolve a winding board, with a pivoted frame, a tension roll B journaled thereon, a frame pivoted to the first frame, a tension roll C journaled thereon, independent springs holding said frames against the strain of the cloth and two meshing gears of unequal size secured to said two tension rolls, whereby said rolls are revolved in opposite directions and at unequal speeds, substantially as and for the purpose specified.

3. In a machine for winding fabrics, the combination of a delivery guide roll and a driven shaft adapted to revolve a winding board, a rock shaft $d$, two parallel arms $d'$ $d'$ rigidly secured thereto, a rock shaft $d^3$ journaled in the ends thereof, a tension roll B journaled on said rock shaft $d^3$, an arm $d^3$ rigidly secured to the rock shaft $d$, a contractile coiled spring fixed at one end and secured at the other to the arm $d^3$, two parallel arms $c$ rigidly secured to the rock shaft $d^3$ a tension roll journaled in their ends, an arm $c'$ rigidly secured to said rock shaft $d^3$, and a contractile coil spring secured at its end to the arm $c'$ and one of the arms $d$ $d$, substantially as and for the purpose specified

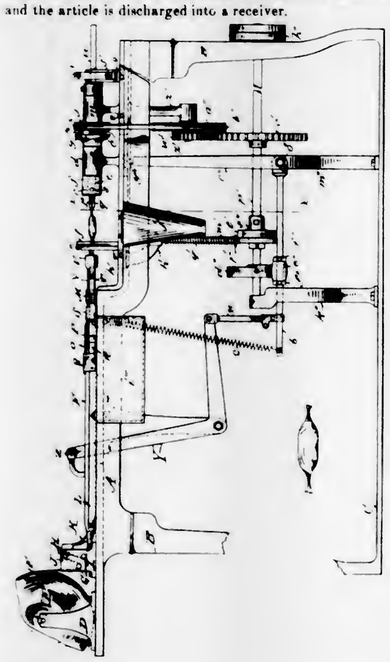




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528,751. **WRAPPING-MACHINE.** CHRISTIAN J. WEINMAN and EDWARD E. EUCHENHOFER, Dayton, Ohio. Filed Aug. 29, 1893. Serial No. 484,335. (No model.)

*Brief.*—A paper tube is formed by means of a tubular guide-conduit into which a feed-hopper projects. The articles are fed by a reciprocating plunger through the feed-hopper into the holding device. Reciprocating grippers seize the paper, draw it and the article out of the holder, and twist the ends. Shears cut off the twisted end, and the article is discharged into a receiver.



*Claim.*—1. In a wrapping machine, the combination with a conduit to guide and shape the paper, a hopper and feeding device to contain and project the articles within the paper, a holding device for the paper and enveloped article, and grippers to take hold of the paper, means to reciprocate and rotate one of said devices so engaging with the paper, whereby the paper containing the article is drawn out and twisted, and a shearing or clipping mechanism to sever the paper, substantially as described.

2. In a wrapping machine, the combination with a conduit to guide and shape the paper, a hopper and feeding device to project the articles within the paper, a holding device to hold the paper and enveloped article from rotating and grippers to take hold of the paper, and having a reciprocating and rotary movement to draw the paper and contained article out of the holding device and then to twist the paper, and the shearing or clipping device to sever the paper.

3. In a wrapping machine, the combination with a paper conduit whose cross section changes from gutter form to tubular form, a hopper and a plunger to feed articles to the tubular part of the paper, a yielding holding device to receive and clamp the paper and contained article, and grippers to take hold of the paper, and shearing or clipping devices to sever the paper, there being a rotary and reciprocating movement between the grippers and the holding device, whereby the paper with the contained article is drawn out of the holding device and the paper is twisted.

4. In a wrapping machine, the combination with a conduit whose cross section changes from the form of a gutter to a tube, a hopper and a reciprocating plunger to feed articles into the tubular part of the paper formed by said conduit, a yielding holding device for the paper and contained article, reciprocating and rotating grippers to grip and draw out the paper and contained article from the holding device and a shear or clipping device to sever the paper.

5. In a wrapping machine, the combination with a conduit whose cross section changes from gutter form to a tube, a hopper within the conduit, a plunger within the conduit and working through the hopper, a yielding holder beyond the conduit to clamp the paper and contained article, a reciprocating head carrying grippers to grip the paper and draw it and the contained article out of the holder, devices to rotate the grippers after drawing out the paper and article, and shears to sever the paper.

6. In a wrapping machine, a conduit whose cross section changes from open to closed form, a guiding core in the open form, a tubular hopper open at one side and suspended within said conduit, and a feed device to move articles through the hopper into the part of the paper which has been formed for it.

7. In a wrapping machine, the combination with a paper feeding support, a conduit whose cross section changes from open to closed form, a guiding core in the open portion of said conduit, a tubular hopper in the conduit farther along, a reciprocating plunger to move articles through the hopper and beyond it into the closed portion of the conduit, substantially as shown and described.

8. In a wrapping machine, the combination with a paper feeding support, a conduit whose cross-section changes from open to closed form, a guiding core in the open portion of the conduit, a tubular hopper in the conduit farther along, a reciprocating plunger to move articles through the hopper and beyond it into the closed portion, a holding device located at the end of the conduit and arranged to receive from the conduit the wrapping paper and contained article, and clasp the latter and hold it while the paper is being twisted.

9. In a wrapping machine, the combination with a paper feeding support, a conduit whose cross-section changes from open to closed form, a guiding core in the open portion of said conduit, a tubular hopper in the conduit farther along, a reciprocating plunger in the conduit, a holding device located at the end of the conduit, and composed of a plurality of yielding and overlapping jaws, the said plunger operating to project the articles through the conduit so that they will enter the holding device.

10. The combination with a reciprocating head, a rotating hollow shaft mounted therein, grippers carried by said hollow shaft, a gripper shaft in the hollow shaft and provided with a yoke which engages with the grippers proper, and means to hold or delay the gripper shaft after and during a slight movement of the head, so that the difference in the time of moving will effect the opening and closing of the grippers proper.

11. In a wrapping machine, the combination with a reciprocating head and a nonreciprocating head, grippers carried by the former and a rotating part carried by the latter, devices between said part and the grippers to rotate them at predetermined intervals, a shaft to actuate the grippers running through both heads, and devices to delay the reciprocating movements of said shaft with respect to the reciprocating movements of the traveling head.

12. In a wrapping machine, the combination with a reciprocating and a nonreciprocating head, a sleeve carried by each, grippers pivoted in one sleeve and the driving pulley on the other sleeve, devices between said pulley and the gripper-sleeve to rotate the latter

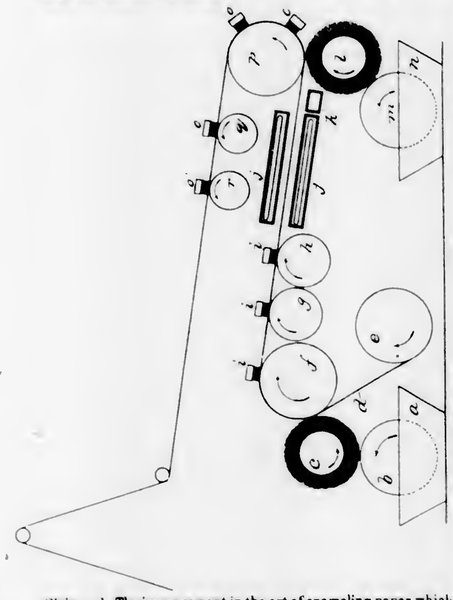
at predetermined intervals, and the gripper shaft passing through said sleeves engaging with said grippers respectively, friction devices to delay the movement of said shaft with respect to the movements of said head, and a spring to assist in moving the shaft in one direction and to resist it in the other direction.

13. In a wrapping machine, the combination with two pivoted devices forming grippers and having notches in their heel portions, of a gripper shaft having a yoke provided with knobs which engage with said notches, the notches forming shoulders to limit the opening of the grippers.

14. In a wrapping machine, the combination with the frame, a rotating cam, a bell-crank lever operated thereby in one direction and a spring to operate it in the other, and a reciprocating head carrying grippers and connecting with said lever, a shaft connecting with the grippers and means to delay the initial movements of the shaft so as to open and close the grippers, and means to rotate the head which carries the grippers.

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**528,752. PROCESS OF AND MACHINE FOR ENAMELING PAPER.** ALONZO S. WOODWARD, East Pepperell, Mass. Filed Mar. 2, 1894. Serial No. 502,130. (No model.)



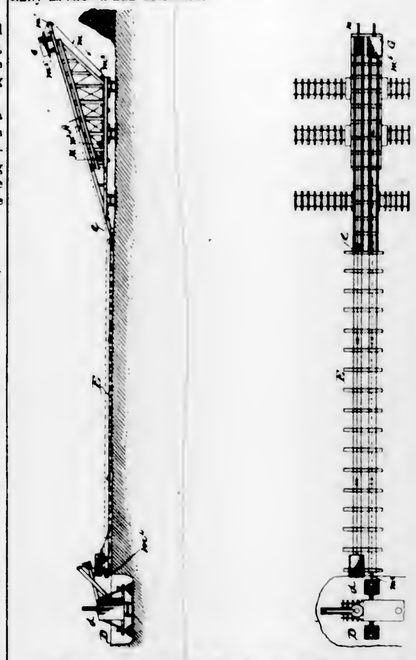
*Claim.*—1. The improvement in the art of enameling paper which consists in first applying the coating to one side of the web, spreading or distributing it evenly thereon, drying the web by subjecting the same to a current of hot air, tempering the uncoated side by subjecting the same to a current of cold air, applying coating to the uncoated side, spreading or distributing the coating thereon, and drying the web, as set forth.

2. A machine for enameling paper comprising in its construction the tank *a*, roll *b*, and brush *c*, for applying the coating to one side of the web, the reciprocating brushes i for spreading the enamel upon one side of said web, the hot air boxes *j* for drying the web, the cold-air box *k* for tempering the web, the trough *n*, roll *m*, and brush *l* for coating the other side of the web, reciprocating brushes *o* for spreading the coating last applied, and guide and draft rolls, as set forth.

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**528,753. DUMPING-INCLINE.** JAMES O. WRIGHT, Lafayette, Ind., assignor of one-half to the Marion Steam Shovel Company, Marion, Ohio. Filed Jan. 31, 1894. Serial No. 498,639. (No model.)

*Claim.*—1. The combination with the excavator and a dumping-incline movable in the direction of the cut or line of excavation, said incline bearing a track arranged lengthwise thereof, a track leading from the place of excavation to the aforesaid track on the incline, a car movable upon said tracks adapted to convey material from the place of excavation to the upper end of the dumping-incline, a dumping platform at the upper end of said incline, said dumping-platform being arranged in line with the track upon the incline and adapted to receive the laden car, and suitable apparatus for propelling the car from the place of excavation to the incline and thence to and upon the dumping-platform at the upper end of the incline, substantially as shown and described.



2. The combination with the dumping-incline provided at its upper end with a tilting or dumping-frame or platform, of a rope or cable, T, suitably connected at one end with the inner end of said frame or platform, the bolt $T^3$ connected with the other end of said rope or cable and extending loosely through any suitable object, and the spring W confined upon said bolt, substantially as shown, for the purpose specified.

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**528,754. DUST-BRUSH.** HENRY Z. ZIEGLER and AUGUSTUS I. WOOD, Philadelphia, Pa. Filed June 13, 1894. Serial No. 514,419. (No model.)



*Claim.*—A duster constructed of a piece of pelt, forming a sack, a block provided with grooves in its ends and inclosed in said sack, and an outer block secured to said inner block, the edges of said sack being between the blocks, the parts named being combined substantially as described.

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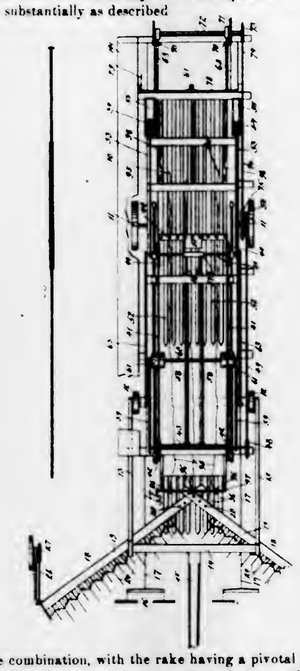
**528,755. HAY-PRESS.** JOHN F. ADAMS, Aledo, Ill. Filed Oct. 24, 1893. Serial No. 488,998. (No model.)

*Claim.*—1. The combination, with the frame of the machine, of the rakes pivoted to the sides of the frame to swing in essentially horizontal planes, the rakes extending inwardly beyond their pivots toward the center of the machine, and the aggregate length of the inner portions of the rakes being greater than the distance between their pivots so that the inner portions of the rakes may be in contact with one another in different angular positions of the rakes, and means, adapted to engage with the inner portions of both the rakes, to adjustably connect them with each other, substantially as described.

2. A machine of the kind described, provided with rakes pivoted to the sides of the machine and having a series of apertures at their inner ends for the reception of pins to adjustably connect the rakes and hold them in position, as and for the purpose set forth.

3. The combination, with the frame of the machine, of the rake backs pivoted to the sides thereof to swing in essentially horizontal planes, the rake backs extending beyond their pivots toward the center of the machine, and having apertures for the reception of pins to adjustably connect the inner ends of the rake backs at approximately the center of the machine, and rake teeth secured to the rake backs both exteriorly and interiorly of their pivots, the innermost rake teeth being placed at a distance outward from the connecting points of the rake backs, so as to leave an adjustable free space or throat between the rakes, substantially as described.





4. The combination, with the rake having a pivotal connection to the machine, the swinging rake teeth, and the revoluble crank shaft journaled on the rake for moving the teeth thereof, of a supporting wheel, a sprocket connection between the said supporting wheel and the crank shaft, and guiding rollers for the chain of the sprocket mechanism to keep the said chain in alignment with the sprocket wheels when the rake is turned about its pivot, substantially as described.

5. The combination, with the rake having a pivotal connection to the machine, the swinging rake teeth, and the revoluble crank shaft journaled on the rake for moving the teeth thereof, of a supporting wheel, a sprocket connection between the said supporting wheel and the crank shaft, a bracket in which the said wheel is journaled, and vertical guiding rollers located in the said bracket to keep the chain of the sprocket mechanism in alignment with the sprocket wheels when the rake is turned about its pivot, substantially as described.

6. The combination, with the press box, an abutment at the rear end thereof, and the baling plunger adapted to travel in the rear part of the press box, of a belt or conveyer arranged to travel longitudinally of the press box in advance of the plunger, and provided with projections adapted to enter the press box and pack the material while carrying it toward the rear end of the press box, and a feed device located at the opposite end of the belt from the plunger, substantially as described.

7. The combination, with the press box, of the parallel shafts arranged transversely above it, one shaft being held in stationary bearings and the other in bearings slidable longitudinally of the press box, extensible guide rods arranged above the box and connected with the slidable shaft, chains carried by the shafts, and combs secured to the chains and adapted to engage the said guide rods and enter the press box, substantially as described.

8. The combination with the press box, of the parallel shafts arranged transversely above it, one shaft being held in stationary bearings and the other in bearings slidable longitudinally on the press box, extensible guide rods arranged above the box and connected with the slidable shaft, chains carried by the shafts, combs secured to the chains and adapted to enter the press box, and an automatic belt tightener for preserving the tension of the chains, substantially as shown and described

9. In a machine of the kind described, the combination with the press box, the parallel shafts above it, one being held in stationary bearings and the other in slidable bearings, chains connecting the shafts, combs carried by the chains and adapted to enter the press box, means, as the weights and cables, for moving the slidable shaft in one direction, and a belt tightener connected with the two shafts and provided with pulleys to press against the chains, substantially as shown and described.

10. In a machine of the kind described, the combination with the press box, and the parallel shafts thereon, one shaft being held in stationary and the other in movable bearings, means, as the weights and cables, for moving the slidable shaft in one direction, and a belt tightener compriaing a pair of arms pivoted on the stationary shaft and provided with pulleys to press against the chains, and rods pivoted to the movable shaft and to the aforesaid arms, substantially as shown and described.

11. The combination with the press box, of screw shafts arranged longitudinally on opposite sides of the box, a plunger to slide in the box, and nuts secured to the plunger and adapted to ride on the screw shafts, substantially as shown and described.

12. The combination with the press box, of the longitudinal screw shafts on the sides of the box, the plunger arranged to slide in the box, and the nuts on the ends of the plunger to engage the screw shafts, the nuts being open on their under sides, substantially as shown and described.

13. The combination with the press box, of shafts journaled on the sides of the box and provided with screws at points opposite the rear portion of the press box, the plunger to slide in the box, nuts on the end of the plunger to engage the shafts and the screws thereon, and mechanism for carrying the plunger rearward to the screws, substantially as shown and described.

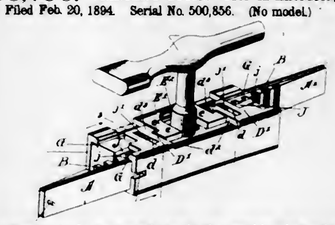
14. The combination with the plunger, of the revoluble radially-slotted face plate journaled on the plunger, and means, as the crank shaft and gear mechanism, for revolving the face plate, substantially as shown and described.

15. The combination with the plunger, of a revoluble face plate journaled thereon and provided with a slot the sides of which converge toward the center of the face plate, the gear mechanism for revolving the face plate, and a cutting-off chisel held to slide at an angle to the axis of the face plate, substantially as shown and described.

16. The combination with the open ended press box, of plungers held to slide in the press box, and catches at the rear end of the box to engage the plungers, substantially as shown and described.

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**528,756. PRINTER'S QUOIN.** OLUF A. AMUNDSON, Chicago, Ill. Filed Feb. 20, 1894. Serial No. 500,856. (No model.)



*Claim.*—1. In a printer's quoin the combination, of two wedges, of rack teeth on their adjacent faces, of a block or blocks inserted between said faces and bearing on the ends of said rack teeth for the purpose described.

2. In a printer's quoin the combination, of two wedges, of rack teeth on their adjacent faces, of a block inserted between said faces and bearing on the ends of said rack teeth for the purpose described, of backing pieces on the back of each wedge and connected to each other in a manner that the frictional resistance of locking is taken up by the backing pieces and not transmitted to the furniture of the form.

3. In a printer's quoin the combination, of two wedges, of rack teeth on the adjacent faces of said wedges, of a block or blocks interposed between the adjacent faces of said wedges, of backing pieces for each wedge which backing pieces engage each other and the interposed wedges and block or blocks thereby holding the same together for the purpose described.

4. In a printer's quoin the combination, of two wedges, of blocks interposed between said wedges, of a backing piece for each wedge, of means for preventing the entire separation of the wedges from the backing pieces.

5. In a printer's quoin the combination, of a wedge having a

groove in the length thereof, of a backing piece having a point or points engaging said groove to hold said wedge in a desired position of sliding contact with said backing substantially as shown.

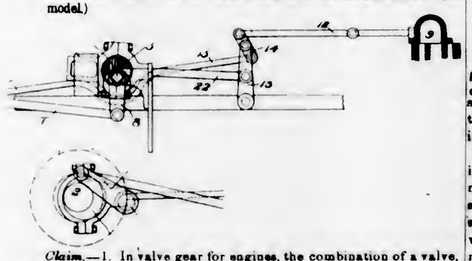
6. In a printer's quoin the combination, of two wedges, of a block or blocks interposed between said wedges, of backing pieces on the outer sides of said wedges, of means whereby each of said wedges may be made to travel in relation to the backing pieces substantially as shown.

7. In a printer's quoin the combination, of two wedges, of blocks interposed between said wedges, of backing pieces for each wedge, said backing pieces connected to each other and connected to said interposed blocks for the purpose of holding all together substantially as shown and described.

8. In a printer's quoin the combination, of two wedges, of a backing engaging said wedges and thereby holding said wedges in position to each other, of a groove F and a pin H in said wedges for the purpose of holding said wedges in position to said backing and preventing their entire detachment from said backing substantially as shown and described.

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528,757. **VALVE-GEAR FOR STEAM-ENGINES.** HARRY W. ARMSTRONG, Oakmont, Pa. Filed Oct. 5, 1893. Serial No. 487,232. (No model.)



*Claim.*—1. In valve gear for engines, the combination of a valve, a substantially horizontal variable eccentric barrel or shaft of variable throw adapted to impart travel to the valve and connected therewith, means for varying its eccentricity and causing it to reverse the travel of the valve, and a second power connection which connects the valve with one of the moving parts of the engine and is adapted to modify the action of the variable eccentric and to impart lead to the valve; substantially as described.

2. In valve-gear for engines, the combination of an oscillatory variable eccentric barrel or shaft, a connection extending therefrom to the valve, and a second intermediate power-connection which connects the valve with one of the moving parts of the engine, and is adapted to modify the action of the variable eccentric and to impart lead to the valve; substantially as described.

3. In valve gear for engines, the combination of a main valve adapted to connect the steam ports of an engine alternately with the supply and the exhaust ports, a valve-reciprocating mechanism of variable throw, having an interposed rocking arm connected with the valve, and adapted to impart travel thereto, means for varying the throw of the valve-reciprocating mechanism and for reversing its action, and a second power-connection connecting the rocking-arm with one of the moving parts of the engine and adapted to modify the action of the variable reciprocating mechanism and to impart lead to the valve substantially as described.

4. In a valve-gear for engines, the combination of a substantially horizontal oscillatory barrel or shaft of unequal eccentricity relatively to the axis on which it oscillates at different points of its length, and a yoke mounted thereon and connected with the valve, said parts being capable of relative end motion to vary the throw of the eccentric barrel or shaft, and means for oscillating the latter; substantially as described.

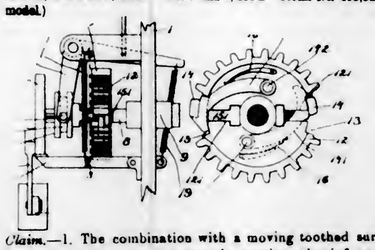
5. In valve gear for engines, the combination of a main valve adapted to connect the steam ports of an engine alternately with the supply and the exhaust ports, a variable eccentric and yoke, a rocking-arm interposed in the connection between the valve and the variable eccentric and adapted to magnify the action of the latter, said variable eccentric being adapted to impart travel to the valve, means for varying its eccentricity and for reversing its action, and a second rocking arm interposed in the connection between the first named arm and the valve, and actuated by one of the moving parts of the engine; substantially as described.

6. In valve-gear for engines, the combination of a rotatory or oscillatory variable eccentric shaft or barrel, a strap thereon, and a valve-rod pivotally connected to the strap, and having also a swivel joint; substantially as described.

7. In valve gear for engines, the combination of a main valve adapted to connect the steam ports of an engine alternately with the supply and the exhaust ports, a variable eccentric and yoke, a rocking arm interposed in the connection between the valve and the variable eccentric, said variable eccentric being adapted to impart travel to the valve, means for varying its eccentricity and for reversing its action and a second rocking-arm interposed in the connection between the first named arm and the valve, and actuated by an eccentric on the engine-shaft; substantially as described.

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528,758. **SHUTTLE-BOX OPERATING MECHANISM FOR LOOMS.** HENRY BARDSLEY, South Hadley Falls, assignor to the Knowles Loom Works, Worcester, Mass. Filed Jan. 2, 1894. Serial No. 496,330. (No model.)



*Claim.*—1. The combination with a moving toothed surface, a gear having toothless spaces on opposite portions thereof, operating connections intermediate such gear and the shuttle-boxes, and the said shuttle-boxes, of movable teeth located in such toothless spaces, the collar having cams acting upon said teeth, and means for shifting the said collar, substantially as described.

2. The combination with a moving toothed surface, the gear having the toothless spaces on opposite portions thereof, operating connections intermediate such gear and the shuttle-boxes, and the said shuttle-boxes, of the teeth pivotally mounted upon the said gear, the springs acting upon said teeth to press them inwardly, the collar provided with cams acting upon said teeth to press them outwardly, and means for shifting the said collar, substantially as described.

3. The combination with a moving toothed surface, the gear having the toothless spaces on opposite portions thereof, operating connections intermediate such gear and the shuttle-boxes, and the said shuttle-boxes, of the teeth pivotally mounted upon the said gear, the springs acting upon said teeth to press them inwardly, the collar provided with cams to press the said teeth alternately outward according as the said collar is shifted in one direction or the other, and means for shifting the collar, substantially as described.

4. The combination with a driver constituted by a moving toothed surface, of the driven gear having the toothless spaces on opposite portions thereof, the movable teeth occupying such spaces, and the sliding collar provided with cams for projecting said teeth alternately into position to enable the said moving toothed surface to engage therewith and rotate the gear until the teeth run out of mesh at the opposite blank space, substantially as described.

5. The combination with the gear having toothless spaces on opposite portions thereof, of the movable teeth occupying such spaces, the springs for retracting such teeth, and the collar provided with cams for projecting said teeth alternately, substantially as described.

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528,759. **AUTOMATIC STOP FOR MICROMETER-GAGES.** HERMAN V. BERNHARDT, Brooklyn, N. Y. Filed June 25, 1894. Serial No. 515,624. (No model.)



*Claim.*—1. An automatic stop for micrometer gages and other tools, comprising an internally toothed head, and a spring-pressed pawl or pawls adapted to engage the teeth of the said head and mounted to slide loosely on and turn with the spindle, substantially as shown and described.

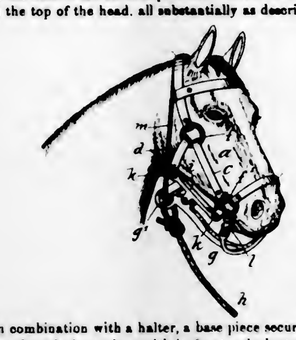
2. An automatic stop of the class described, comprising a spindle having a longitudinal movement, a pawl mounted to slide transversely on the said spindle and turning with the same, a spring pressing the said pawl laterally, and a head mounted to turn loosely on the spindle and formed with internal teeth engaged by the said pawl, substantially as shown and described.

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528,760. **HALTER.** HENRY CASEY, West Hartford, Conn., assignor of one-half to Frank H. Strong, same place. Filed June 9, 1894. Serial No. 513,966. (No model.)

*Claim.*—1. In combination with a halter, an attachment including a lever pivotally supported on the halter, said lever having its front end adapted to underlie the lower jaw of the horse, and a pull strap extending from the rear end of the lever back of the pivot and adapted to overlie the head of the horse in position to exert a downward pressure upon the top of the head, all substantially as described.





2. In combination with a halter, a base piece secured thereto, a lever pivoted to the base piece with its front end adapted to underlie the jaw of the horse but normally held out of contact therewith, a pull strap secured to the lever back of the pivot and adapted to extend over the top of the head of the horse, and a loop on the rear end of the lever for the attachment of a hitching rope, all substantially as described.

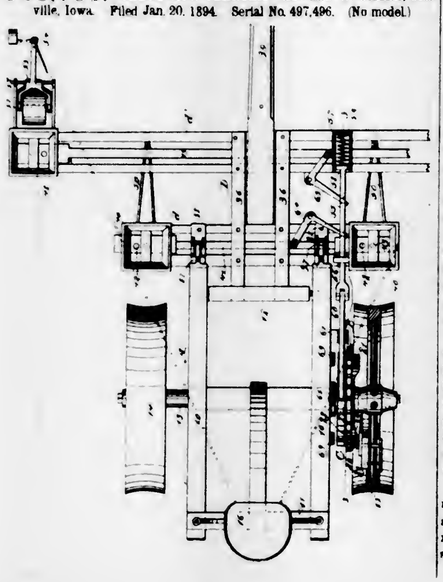
3. In combination with a halter, a base piece having sockets for the reception of the throat strap and nose band respectively, the crown piece of the halter having a socket for the passage of a pull strap, a lever pivoted to the base piece with the front end forked and adapted to underlie the jaw of the horse, the rear end of the lever back of the pivot having a ring or loop, a pull strap secured to the rear end of the lever and arranged to extend over the head of the horse through the socket in the crown piece, and the flexible connections between the front end of the lever and the rings on the nose band of the bridle, all substantially as described.

4. In combination with a halter, a lever pivotally attached thereto and adapted to underlie the lower jaw of a horse and held normally out of contact therewith, and a hitching rope attached to the lever at a point back of its pivotal support, all substantially as described.

5. In combination with a halter, a lever pivotally supported thereon, a pull strap secured to the lever back of its pivot and arranged to extend over the top of the head of a horse, and a halter secured to the lever whereby the pull strap is adapted to exert pressure upon the head of a horse, all substantially as described.

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528,761. **CHECK-ROW PLANTER.** EDWARD W. COLLINS, Coalville, Iowa. Filed Jan. 20, 1894. Serial No. 497,496. (No model.)



*Claim.*—1. In a check row planter, the combination with seed boxes, of boxes adapted to carry a marking material, a spring controlled plunger connected by angle levers with the drop slide of both boxes for simultaneously operating the same, and a driving mechanism connected with one of the wheels of the machine and with the said plunger, substantially as described.

2. In a check row planter, the combination with seed boxes and the drop slide therefor, of boxes adapted to contain a marking material, a drop slide operating in the marking boxes, angle levers fulcrumed upon the frame of the machine and connected with the drop slide of both sets of boxes, a spring controlled plunger connected with both of said angle levers for operating the same, a driving rod or bar connected with said plunger and mechanism connected with one of the wheels of the machine for operating said driving rod, substantially as shown and described.

3. In a check row planter, the combination, with a set of seed boxes, a set of boxes adapted to contain a marking material, and the drop slides of both sets of boxes, of a spring controlled plunger, angle levers fulcrumed upon fixed supports and connected with the plunger and with the drop slides of the boxes, a spring-controlled dog adapted to be carried by one of the supporting wheels of the machine, a driving gear loosely mounted upon the axle of the machine, provided with peripheral lugs and side projections for engagement with the dog, a driving bar connected with the plunger and operated upon by the lugs of the driving gear, and a guide for the dog, the said guide having an undulating surface, whereby the dog is carried into engagement with the offset on the driving gear and out of engagement therewith, as and for the purpose set forth.

4. In a check row planter, the combination, with boxes, drop slides connected therewith, a spring-controlled plunger, and levers connecting the plunger with the drop slides, of a spring-controlled dog adapted for attachment to one of the supporting wheels of the machine, a regulating wheel adapted to be loosely mounted upon the axle of the machine and provided with openings in its side face, extending through the same, an annular cam flange facing the dog, a guide connection between the dog and the cam, and fenders located at the wider portions of the cam, a driving gear adapted to be loosely mounted upon the axle and having lugs upon its periphery and projections upon one side face, the projections being adapted for engagement with the dog, and a driving rod or bar engaged by the peripheral lugs of the driving gear and pivotally connected with the said plunger, substantially as and for the purpose specified.

5. In a check row planter, the combination, with boxes, their drop slides and spring controlled plunger, and levers connecting the plunger with the drop slides, of an axle, supporting wheels located upon the axle, a spring controlled dog carried by one of the supporting wheels, a regulating wheel loosely mounted upon the axle and provided with peripheral teeth, and an annular cam rib facing the dog, the wheel having openings below the narrower portion of the cam for the passage of the dog, a guide connection between the dog and the cam, a driving wheel also loosely mounted upon the axle, having peripheral lugs and side teeth, the teeth being in engagement with the dog, a shifting lever adapted for engagement with the peripheral teeth of the regulating wheel, and a driving rod or bar pivotally connected with the plunger and operated by the projections on the driving wheel, substantially as shown and described.

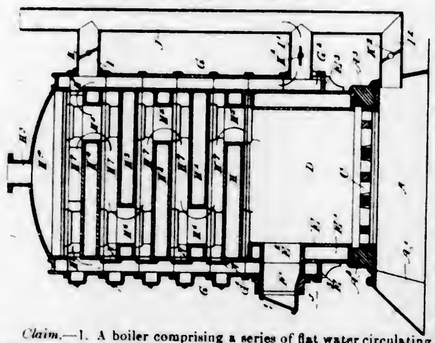
6. In a check row planter, the combination of seed boxes, of boxes adapted to carry a marking material, discharge hoppers secured upon the under face of the said seed and marking boxes and provided with valves, each of said valves comprising a stem fulcrumed upon the exterior of the hopper and a body at the lower end of the stem and adapted to enter the lower portion of the hopper through a side opening made therein and close the lower portion of the said hopper the said valve being held normally in a closed position by a spring bearing against the stem of the valve drop slides for the said seed and marking boxes, the outer ends of said drop slides being adapted to engage with the upper ends of the stems of the hopper valves and operate the same, means for disengaging said valve stems from said drop slides and a driving mechanism for simultaneously operating the said drop slides, substantially as set forth.

7. In a check row planter, the combination with the frame of the machine of the seed boxes and boxes adapted to contain a marking material, a driving mechanism for operating the drop slides of both sets of boxes, a roller located in advance of each marking box for smoothing the ground to receive the marking compound, the support for each of said rollers being pivoted to the frame of the machine and provided with upwardly extending weighted arms, and means connected with the arms for raising and lowering the said rollers, substantially as shown and described.

8. In a check row planter, the combination with the seed boxes and boxes adapted to carry a marking material, of mechanism for simultaneously operating the drop slides of both boxes, a driving gear mounted loosely on the axle of the machine and connected with the said mechanism, a dog carried by one of the supporting wheels of the

machine and engaging with said driving gear, for part of its movement to drive the same and means controlled by said dog, for engaging said driving gear to stop the revolution of the same when said dog becomes disengaged therefrom, substantially as shown and described.

528,762. BOILER. BENJAMIN F. CONNER, Columbia, Pa. Filed Dec. 13, 1893. Serial No. 493,576. (No model.)

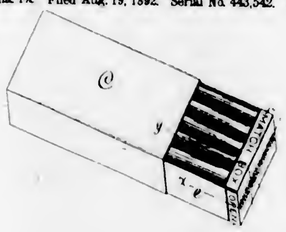


*Claim.*—1. A boiler comprising a series of flat water circulating sections, set one on top of the other, each of said sections being provided with water openings and having a single flue passing vertically through it at one side thereof, the flue being arranged alternately at the rear and front of adjacent sections, a horizontal space arranged between the top and bottom surfaces of adjacent sections and with which the said vertical openings or flues communicate, the said vertical flues and horizontal spaces forming a smoke and gas passage communicating at its lower end with the fire box, and an exterior shell surrounding the said sections and into which leads the upper end of the said smoke passage, substantially as shown and described.

2. A boiler comprising a water circulating section, the inner wall of which forms the sides of the fire box, a series of flat water circulating sections set one on top of the other, the lowermost of said sections forming the top of the fire box, each of said sections being provided with water openings and having a single vertical flue near one side thereof, the flue being arranged alternately at the rear and front of the adjacent sections, a horizontal space arranged between adjacent sections and with which the vertical flues communicate, the vertical flue and horizontal spaces forming a passage for the smoke and gases communicating with the fire box at the rear thereof, an exterior shell surrounding the said sections and into which opens the upper end of the smoke passage, a flue connected with a chimney, valved pipes leading from the upper and lower ends of the shell to the flue, and a valved pipe connecting the ash pit with the said flue, substantially as shown and described.

3. A boiler, comprising a water circulating section the inner wall of which forms the sides of the box, a series of horizontal water circulating sections set one on top of the other, the lowermost of said sections forming the top of the fire box a space being arranged between the said horizontal sections, a vertical opening or flue arranged alternately at the rear and front of adjacent sections and communication with the space above and below the section, the said vertical flues and spaces between the sections, forming a passage for the smoke and gases, an exterior shell surrounding the said sections and into which leads the upper end of the said smoke passage, doors arranged in the said shell, and doors in the said water circulating sections and located opposite the doors in the shell, to give access to the horizontal part of the said smoke passages, substantially as shown and described.

528,763. COMBINED CIGARETTE-SLIDE AND MATCH-BOX. JOSEPH T. CRAW, Jersey City, N. J., assignor of one-half to Brown & Bailey, Philadelphia, Pa. Filed Aug. 19, 1892. Serial No. 443,542. (No model.)



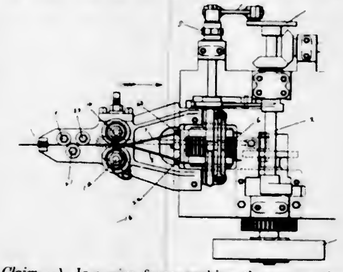
*Claim.*—1. A blank for a combined cigarette slide and match box, having a bottom D, side flaps *e*, shorter than said bottom D, and flaps *g h* adapted to form the partition between the slide and match box, flaps *i j* to form the end and top of the match box, turn-down-in flap *k*, and flaps *l m* adapted to form the sides and tucks of the match box and being cut out of the said flaps *g h*, substantially as described.

2. In a blank for a combined cigarette slide and match box, the combination of a bottom flap, side flaps of the slide formed integral with the bottom flap, flaps formed integral with said side flaps and at the ends thereof and adapted to fold in and form a partition between the slide and the match box, side, top and turn down flaps of the match box formed integral with said bottom flap, and flaps and tucks for the ends of the match box formed integral with the side flap of said box and cut out of said partition-forming flaps at such portions of the same that the aperture in the one partition-forming flap registers with the solid part of the other partition-forming flap when said partition-forming flaps are folded, substantially as described.

3 A blank for a combined cigarette slide and match box provided with the following flaps, to-wit: a bottom flap *b*, a front end flap *c* attached to the end of the flap *b*, and adapted to form the front of the slide, a turn back flap *d*, attached to said flap *c*, side flaps *e e* attached to opposite sides of the flap *b* and adapted to form the sides of the slide, flaps *g h* attached to the end of said flaps *e e* and adapted to form a partition between the slide and the match box, flap *i* attached to the rear end of the flap *b* and adapted to form an outer wall of the match box, flap *j* attached to the flap *i* and adapted to form the top of the match box, flap *k* attached to flap *j* and adapted to turn down inside the flaps *g*, *h*, flaps *l* attached to the ends of the flap *i* and adapted to form the ends of the match box, and tucks *m* attached to the flaps *l* and adapted to tuck into the match box and secure the ends thereof, substantially as described.

4. The combination with a cigarette slide of a match box which is constructed as follows, to wit: with a rear flap *i* arranged at the end of the bottom flap of the slide, a top flap *j* arranged at the side of the flap *i*, a turn down flap *k* adapted to turn down over the partition between the slide and the match box, end flaps *l* arranged at the ends of the flap *i*, and tucks *m* arranged at the free edges of the flaps *l* and adapted to tuck into the ends of the match box and hold the ends *l* closed by friction against the inside of the match box and also to act as stops to prevent the escape of the matches when the ends *l* are partly opened, substantially as described.

528,764. WIRE-FENCE MACHINE. FRED H. DANIELS, Worcester, Mass. Filed Jan. 13, 1893. Serial No. 458,192. (No model.)



*Claim.*—1. In a wire fence machine, the combination of mechanism for separating a wire rod into a plurality of members, with mechanism for advancing said separated members through the machine to the fence-forming devices, and mechanism connecting and timing the same, whereby the separated members of a wire rod may be continuously worked into finished fencing.

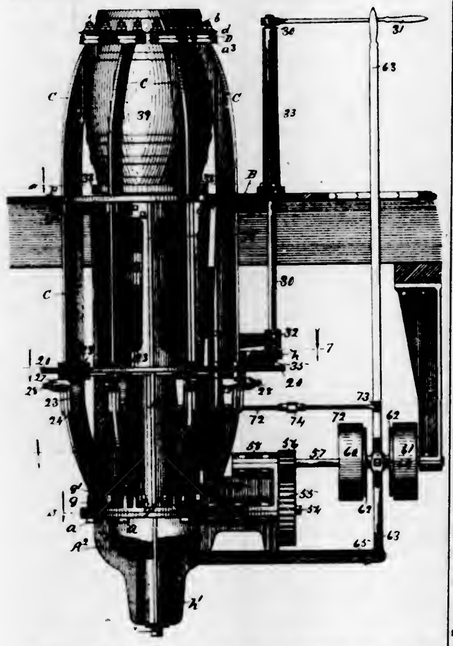
2. In a wire fence machine, the combination of mechanism for separating a longitudinally ribbed rod into a plurality of members, with mechanism for advancing said separated members through the machine to the fence-forming devices, and mechanism connecting and timing the same, whereby the separated members of the wire rod may be continuously worked into finished fencing, substantially as shown and described.

528,765. BARREL-HOOPING MACHINE. EBEN A. DELANO, Chicago, Ill., assignor to John A. Seaman, same place. Filed Feb. 1, 1893. Serial No. 460,552. (No model.)

*Claim.*—1. In a barrel hooping machine, the combination with the pull bars pivoted at one end and free at the other, and a cam plate provided with eccentric openings, of rocking arms moving in the openings in said cam plate and pivoted to the pull bars, the latter passing loosely through openings in said rocking arms, and springs carried by said rocking arms for normally forcing the pull bars against the inner faces of the openings in said rocking arms, substantially as set forth.



2. In a barrel hooping machine, the combination with the pull bars pivoted at one end and free at the other, and a cam plate provided with eccentric openings, of rocking arms moving in the openings in said cam plate and pivoted to the pull bars, the latter passing loosely through openings in said rocking arms, spring cases on said rocking arms, springs therein for forcing the pull bars against the inner faces of the openings in the rocking arms, and set screws in said cases for regulating the tension of the springs, substantially as set forth.



3. In a barrel hooping machine, the combination with the pull bars, and a cam plate provided with eccentric openings, of rocking arms moving in said openings and having apertures through which the pull bars loosely pass, depending bifurcated arms attached to the rocking arms and to which the pull bars are pivoted at a point below the rocking arms proper, and springs for normally forcing the pull bars into their innermost position with respect to the rocking arms, substantially as set forth.

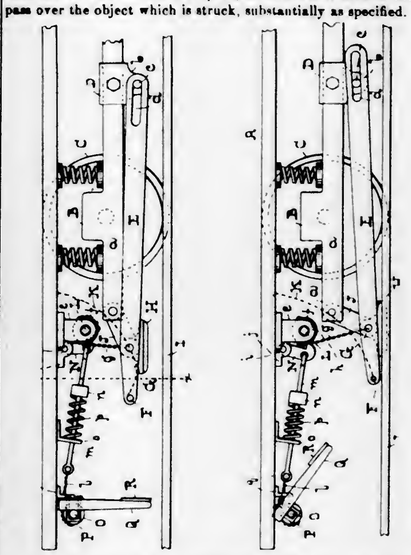
4. In a barrel hooping machine, the combination with the frame, of the rotatable or rocking spindle journaled therein, the shifting cams mounted thereon, the vertically movable plunger shaft adapted to carry the barrel to be hooped, the collar mounted on the lower end thereof, the tripping pin projecting from said collar and adapted to have frictional contact with said cams, the lever arm mounted on said spindle, the driving pulleys for imparting the vertical motion to the plunger shaft through suitable intermediate mechanism, the hand shifting lever, and the rod connecting said hand lever and the lever arm on the rocking spindle, substantially as set forth.

5. In a barrel-hooping machine the combination with, a plunger-shaft, a collar, provided with projecting arms and mounted on the lower end of the plunger-shaft, an annular counterbalance weight, the chains, connecting said arms and weight, the sheaves over which said chains run, and the screw driving-shaft, substantially as set forth.

528,766. FENDER AND BRAKE FOR STREET-CARS. JACOB S. DETRICK, Baltimore, Md. Filed Oct. 11, 1893. Serial No. 487,813. (No model.)

*Claim.*—1. In combination with a flexible apron secured to the under side of the car body and in front of the wheels thereof constructed and arranged to have a vertical and a forward and backward movement, and mechanism to support the lower end of the said apron above the track rails and in a forward position, releasing devices situated in front of the supporting mechanism, constructed to lift when struck by an object on the track and thereby pass over the same, and at the same time drop the apron and allow it to fall back, substantially as specified.

2. In combination with a flexible apron secured to the under side of a car body and in front of the wheels thereof, and mechanism to support the lower end of the said apron above the track rails, brake shoes on the supporting mechanism, and actuating devices to release the lower end of the apron, constructed to lift and thereby pass over the object which is struck, substantially as specified.



3. In combination with a supported wheel fender and elevated brake shoes, swinging releasing mechanism adapted to lift and thereby pass over an obstructing body and at the same time drop the fender and bring the brake shoes into contact with the track rails, substantially as specified.

4. In combination with some fixed part of a car truck pivoted sliding bars united by a rod at their front ends and carrying brake shoes an apron connected at one end to the said rod, and at the other to the car body, a winding drum and chain whereby the said bars, the brake shoes and the apron may be lifted, a suitable hook to hold the wound chain, another winding drum situated forward of the said mechanism connected by a chain to the said hook, and pendent bars or devices united to the said winding drum or some connection thereof, whereby, upon the pendent arms being struck the first named drum is allowed to unwind its chain and thereby drop the bars, brake shoes and apron, substantially as specified.

528,767. TROLLEY-LINE BREAKER. CHARLES H. DEY and JOHAN M. ANDERSON, Boston, Mass. Filed Feb. 16, 1894. Serial No. 500,419. (No model.)

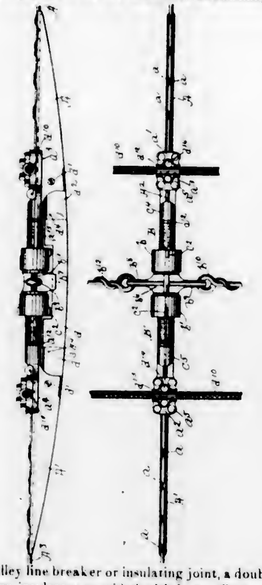
*Claim.*—1. In a trolley line breaker or insulating joint, the combination with line terminals, of a double insulation separating the said terminals, and a non-conductor interposed between the said terminals and with which the trolley wheel engages when passing from one terminal to another, and auxiliary removable terminals co-operating with the line terminals for the purpose specified.

2. In a trolley line breaker or insulating joint, the combination with a trolley line terminal having a widened portion at one end, of a trolley line clamp provided on its under side with a substantially semi-circular longitudinal groove, and bolts to secure the said clamp to the widened portion of the said terminal, substantially as described.

3. In a trolley line breaker or insulating joint, the combination with a a trolley line terminal having a widened portion at one end, of a trolley line clamp provided on its under side with a substantially semi-circular longitudinal groove, and on its upper surface with a transverse substantially semi-circular groove, means to secure the said clamp to the said terminal, and a removable feed wire clamp provided on its under side with a transverse substantially semi-circular groove co-operating with the transverse groove on the upper side of the trolley wire clamp, and means to secure the feed wire clamp to the trolley wire clamp, substantially as described.

4. In a trolley line breaker or insulating joint, the combination

with trolley line terminals, of a double insulation interposed between said terminals and consisting of two insulators secured to the said terminals and a coupling piece interposed between said insulators and to which the said insulators are secured, lugs or ears depending from said coupling piece and a non-conducting piece inserted between said lugs or ears and secured to the line terminals, substantially as described.

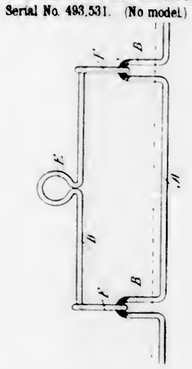


5. In a trolley line breaker or insulating joint, a double insulation consisting of two insulators provided with internally screw threaded bonnets or sleeves, a coupling piece provided with screw threaded arms with which said internally screw threaded bonnets or sleeves engage and a cushioning material interposed between the said arms and insulator and between the said insulator and its bonnet, substantially as described.

6. In a trolley line breaker or insulating joint, the combination with line terminals, of an interposed non-conducting piece, and auxiliary terminals co-operating with the line terminals and with the non-conducting pieces for the purpose specified.

7. In a trolley line breaker or insulating joint, the combination with trolley line terminals provided with screw threaded bosses, of a double insulation interposed between said terminals and consisting of insulated metal shanks or rods provided with screw threads to engage the threaded bosses of the terminals, metal caps or bonnets having holes through which the said rods are extended, and a coupling piece having arms to engage the said metal bonnets, substantially as described.

528,768. **DEVICE FOR FILING AND BINDING NEWS OR OTHER PAPERS.** CLARENCE DICKERSON, New York, N. Y.; Frank Dickerson executor of said Clarence Dickerson, deceased. Filed Dec. 13, 1893. Serial No. 493,531. (No model.)

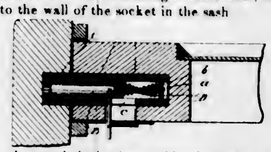


*Claim.*—1. In a filing and binding device for news and other papers, a supporting rod made of a single wire bent to form impaling loops with lateral openings, said loops projecting outward at right angles with the rod a sufficient distance to admit of any desired number of papers being filed thereon and a bail shaped handle, which may be made in part or all of wire, having hooks at the free ends of the wire, being hooked into the loops and swing freely therein, as shown and described.

2. On a paper filing device, in combination, a supporting rod made of a single wire, with open impaling loops as shown and described, a bail handle made in part or all of wire, with hooks at the free ends of the wire by which means it may be easily attached and detached by hooking it into the projecting ends of the open loops after papers have been filed thereon, as shown and for the purposes described.

528,769. **SASH-FASTENER.** JOHN H. DICKSON, New Philadelphia, Ohio. Filed Sept. 22, 1893. Serial No. 486,159. (No model.)

*Brief.*—Bolt-socket is lined with rubber and the push-bar is detachably connected to the bolt. Bolt-spring is kept from turning by being secured at its rear end to the lining of the socket, which is itself tightly fitted to the wall of the socket in the sash.



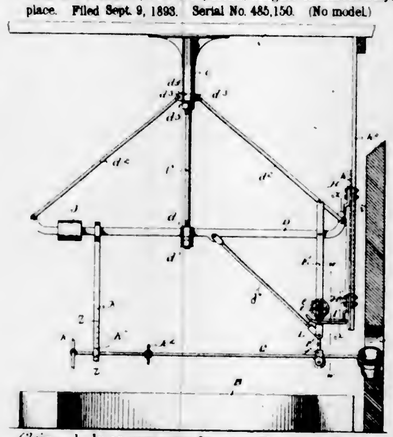
*Claim.*—1. In a sash lock, the combination, with the socketed side-bar of a sash, and a socketed casement, of a slide-bolt, a re-acting spring fast to one end of the bolt, a securing device for the other end of the spring that prevents a rotation of said spring, and a pusher bar removably engaging the slide bolt through a slot of the sash, substantially as described.

2. In a sash lock, the combination with a socketed side bar of a sash, and a socketed casement, of rubber socket linings for the sockets in said bar and casement, and a slide bolt adapted to be longitudinally moved in the linings, substantially as described.

3. In a sash lock, the combination with the socketed side-bar of a sash, a socketed casement, and a tubular lining for these sockets, of a cylindrical slide-bolt, a reacting spring fast to the rear end of the bolt, a transverse spring keeper bar engaging the spring and the lining of the sash socket, and a pusher bar detachably engaging with the slide bolt through a slot in the sash, substantially as described.

4. In a sash-lock the combination with the sliding locking bolt, its laterally-projecting pusher bar and a spring acting on said bolt, of a pendent locking plate which is hinged at its upper edge and adapted to slide on the pintle or bearing therefor, as shown and described, whereby it is adapted to be raised and adjusted laterally and dropped into engagement with either side of the pusher bar, as and for the purpose specified.

528,770. **MECHANISM FOR HANDLING MOLTEN METAL.** JOHN S. DOUGHERTY, Anaconda, Mont., assignor to Marcus Daly, same place. Filed Sept. 9, 1893. Serial No. 485,150. (No model.)



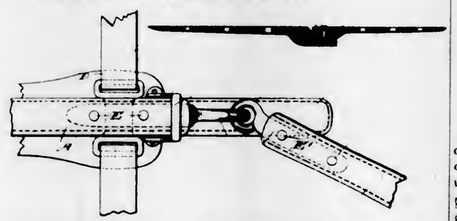
*Claim.*—1. In an apparatus for conveying metal from the furnace to the mold, the combination with a frame work constructed and adapted to revolve, a support or shaft suspended from above upon which said framework is adapted to revolve, an upright connected to said framework and adapted to support the handle of a ladle adjacent to the furnace.

2. In an apparatus for conveying metal from the furnace to the mold, the combination with a framework constructed and adapted to revolve, a support or shaft suspended from above upon which said framework is adapted to revolve, an upright connected to said framework, a support secured to said upright and adapted to have a rotary movement independent of said upright and adapted to support the handle of a ladle adjacent to the furnace.

3. In an apparatus for conveying metal from the furnace to the mold, the combination of a framework constructed and adapted to revolve, an upright connected to said framework, said upright being adapted to support the handle of a ladle adjacent to the furnace, locking devices, and means substantially as described to throw said locking devices in and out of connection with the upright and framework.

4. In an apparatus for conveying metal from the furnace to the mold, in combination, a framework provided with a horizontal member D and constructed and adapted to revolve, an upright connected to said framework and adapted to support the handle of a ladle adjacent to the furnace, latches, H, H', latch H being adapted to secure horizontal member D and latch H' adapted to secure upright F, and means substantially as described to throw said latches in and out of action.

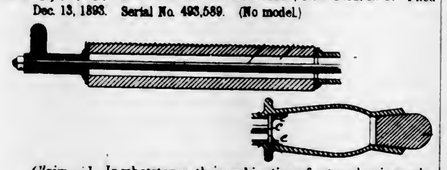
528,771. **TRACE.** GEORGE S. DUFFIN, Cheneyville, Ill. Filed July 6, 1894. Serial No. 516,736. (No model.)



*Claim.*—1. A trace formed in two sections A, B, united at their adjacent ends by jointed coupling, the shanks of which enter and are riveted in the split ends of the said trace sections, the inner side of the section A having a rearward extension crossing the coupling to take the wear, and the said coupling being in rear of and wholly independent of the back strap connections.

2. The combination with the tug D having a hook D' at its forward end, a loop $D^3$ at its rear end and a back strap connection $D^2$ in advance of the loop, of the trace formed in two sections, A, B, coupled by a jointed coupling in rear of and separate and independent of the tug and any of its parts, the trace section A extending through the loop $D^3$ and provided at its forward end with a hook to engage the hook D' the rear end of the section A having on its inner side an extension $A^2$ crossing the coupling and taking the wear, substantially as described.

528,772. **WHETSTONE.** RUFUS DUTTON, New York, N. Y. Filed Dec. 13, 1893. Serial No. 493,589. (No model.)



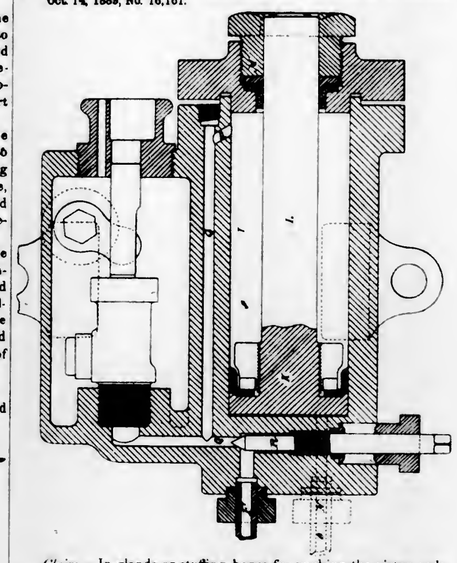
*Claim.*—1. In whetstones, the combination of a stone having a plurality of working faces and a handle with a finger post and adapted to be turned about the axis of the stone, substantially as described.

2. The combination in a whetstone of the perforated stone A containing a water chamber, washers at either end of said chamber, handles D E, one at each end of the stone A, finger post *k* on the handle E, water chamber in the handle D, and rod C tying the said handles D E against the aforesaid washers, substantially as described.

3. A whetstone consisting of a hollow stone, containing a water chamber and handles one of said handles having a water chamber which connects with the chamber in the stone and said handles tensionally connected through the stone, whereby the stone is compressed in the direction of its length, substantially as and for the purpose described.

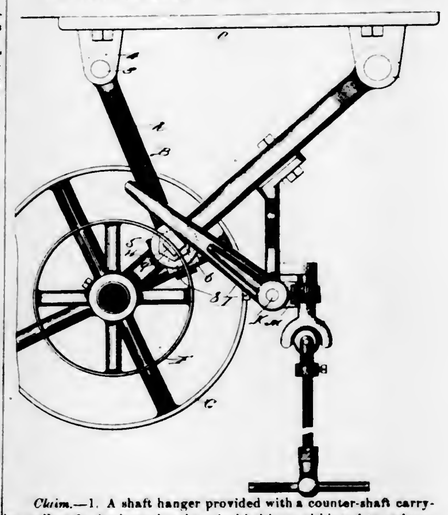


528,773. **PACKING FOR PISTON-RODS.** OLIVER J. ELLIS, London, England, assignor to I. and R. Hall, Limited, same place. Filed May 1, 1894. Serial No. 509,668. (No model.) Patented in England Oct. 14, 1889, No. 16,161.



*Claim.*—In glands or stuffing boxes for packing the piston rods of gas or other fluid compressing engines or the like, the combination of a recess in the stuffing box and means for admitting thereto fluid under pressure greater than that of the fluid whose leakage is to be prevented and a piston with differential areas for giving the said greater pressure, the larger area being acted upon by the pressure in the compressing cylinder, substantially as hereinbefore described.

528,774. **SHAFT-HANGER.** FREDERICK N. GARDNER, Beloit, Wis., assignor to Charles H. Besly, Chicago, Ill. Filed Jan. 14, 1893. Serial No. 458,339. (No model.)



*Claim.*—1. A shaft hanger provided with a counter-shaft carrying pulleys for horizontal and vertical belting and hinged to and suspended from an overhead bracket or ceiling plate, and a locking device consisting of an adjustable connection between the hanger and the bracket or ceiling plate, substantially as and for the purpose set forth.

2. The combination of a shaft hanger hung for swinging adjustment and provided with a suitable box or bearing for a counter-shaft, and a locking device consisting of a pivotally suspended bolt having an adjustable connection with the counter-shaft, substantially as described.

3. The combination of a shaft-hanger hinged to a bracket or ceiling plate and provided with a suitable box or bearing for a counter-shaft a rocking bearing on the shaft hanger, and an adjustable connection between the rocking bearing and the bracket or ceiling-plate.

4. The combination of a shaft hanger hinged to a bracket or ceiling-plate and provided with a suitable box or bearing for a counter shaft, a rocking bearing on the shaft-hanger, and a bolt hinged to the bracket or ceiling-plate and adjustably connected with the rocking bearing, substantially as described.

5. The combination of the shaft-hanger hinged to a bracket or ceiling plate, the rocking bearing supported by set screws upon the shaft-hanger and the bolt hinged to the bracket and adjustably held in connection with the rocking bearing, substantially as described.

6. The shaft-hanger carrying a counter-shaft and hinged to and suspended from a bracket or ceiling plate, and an adjustable locking connection arranged between the shaft-hanger and bracket or ceiling plate and serving to uphold the shaft hanger in an inclined position and lock it in its adjustment, substantially as described.

7. The combination of an adjustable shaft-hanger, a belt-shipping device carried by the shaft hanger and a rack and pinion for operating the belt-shipper, substantially as set forth.

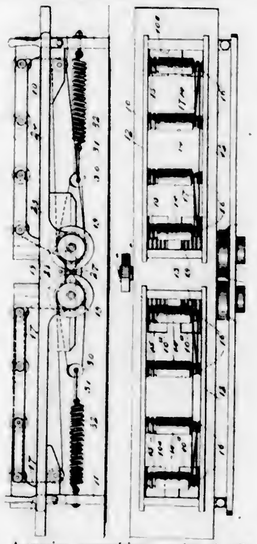
8. The combination of an adjustable shaft-hanger, a belt-shipping device carried by the adjustable shaft hanger, a rack and pinion for actuating the belt shipping device, and a handle connected with the spindle of the pinion by a universal joint, substantially as set forth.

9. The combination of the adjustable swinging shaft-hanger carrying a counter-shaft, the bracket L depending from the shaft hanger, and a shipping device supported by said bracket, substantially as described.

10. The hinged shaft hanger adjustably supported in an inclined position and provided with boxes or bearings for a counter shaft, the bracket L depending from the shaft hanger, and a belt-shipping device supported by the bracket, substantially as described.

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528,775. CARRIER. CHARLES P. HOGUE, Portland, Oreg. Filed Feb. 14, 1894. Serial No. 500,110. (No model.)



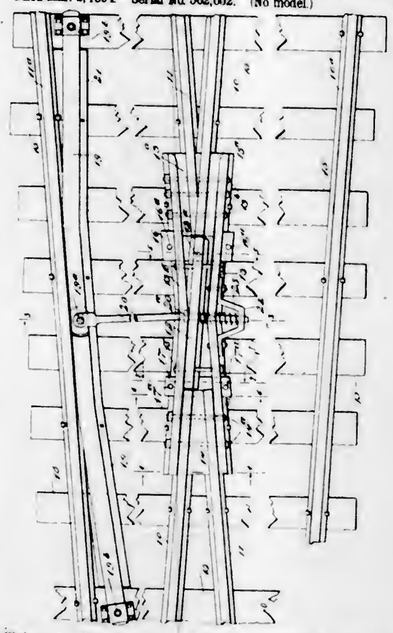
*Claim.*—1. A carrier, comprising a series of rolls, a pair of oppositely-arranged drums provided with circumferential grooves and located below the plane of said rolls, a shifting gear adapted to turn either drum, and a continuous belt passing over the two drums and engaging directly with every roll, substantially as described.

2. In a carrier, the combination with the two series of circumferentially-grooved rolls, arranged horizontally, of the two circumferentially-grooved drums, arranged side by side below the rolls, a tension pulley adjacent to each of said drums, an endless rope arranged on the said pulleys, drums, and several rolls, as shown and described, friction wheels mounted on the drum shafts, the shifting bar and a friction roller carried by the latter, as specified.

3. The herein-described carrier, comprising a bed, frames arranged on the bed and separated to form transverse passages, rolls journaled transversely in the frames, driving drums, means for changing the direction of rotation of the drums, and a continuous belt connecting the drums and the several rolls to turn them all in one direction, substantially as described.

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528,776. RAILROAD-FROG. DAVID HORRIE, Kaukauna, Wis. Filed Mar. 2, 1894. Serial No. 502,052. (No model.)



*Claim.*—1. The combination, with a main track and a side track, of two carrier rails bent toward each other between their ends, plates hung from the carrier rails, and a spring-pressed swing rail pivoted on one of said plates, substantially as described.

3. The combination, with a main track and a side track, of two carrier rails bent toward each other at their longitudinal centers, plates hung from the carrier rails near converged ends of pairs of track rails, and a spring-pressed swing rail pivoted near one end on one of the plates and slidably supported on the other plate, substantially as described.

3. The combination, with supported main track rails, and side track rails arranged on cross-ties to intersect the main track rails, of two inwardly-bent carrier rails opposite a gap left where paired main track rails and side track rails converge, plates hung from the carrier rails near the converged ends of the paired track rails, a swing rail pivoted on one suspended plate and imposed on the other plate, and a spring-pressed device that is arranged to swing the pivoted rail in advance of rolling wheels on the side track rails, substantially as described.

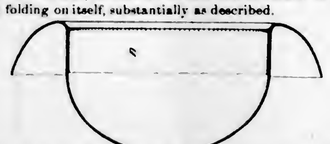
4. The combination, with two pairs of converged track rails, and two spaced parallel rails, of a frog comprising two inwardly-bent carrier rails, two plates clipped on the base flanges of the carrier rails, a swing rail pivoted near one end on one plate and slidable on the other plate, two transverse guide bolts fast in the carrier rails and loose in the swing rail, and a device to vibrate the swing rail, comprising two edge-bent tripping bars fast at their outer ends and pivoted together at their meeting ends, a shifting rod pivoted to the tripping bars where they are jointed together and passing through the carrier rails and swing rail, a bracket frame on one carrier rail, and a spiral spring pressing the frame and swing rail, substantially as described.

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528,777. HAT. DAVID HOWELL, Yonkers, N. Y. Filed Oct. 17, 1891. Serial No. 408,973. (No model.)



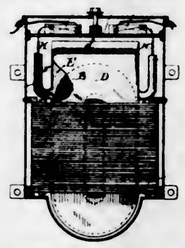
*Claim.*—1 A hat in which the sweat-leather is attached directly to the hat-body with a stitch which runs around the body on its outer side and around the leather on its inner side and is slack between the body and the leather, so that the leather can be turned in and out without folding on itself, substantially as described.



2. A hat in which the sweat-leather is attached directly to the hat-body with a stitch which runs around the body on its outer side and around the leather on its inner side and is slack between the body and the leather, the slack of the stitch being equal to the distance between the edge of the leather and the line of needle holes therein, so that the leather can be turned in and out without folding on itself, and when turned will take up all the slack of the stitch, substantially as described.

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528,778. ELECTRICAL TRANSFORMER. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Apr. 6, 1894. Serial No. 506,529. (No model.)



*Claim.*—1. In an electrical converter having its coils hermetically sealed within a lead case, and a powdered moisture absorbent contained within the lead case.

2. In an electrical converter, the combination of the coils thereof insulated with a wrapper of porous fibrous material, an inclosing case hermetically sealing the said coils, and an atmosphere within the case and surrounding the insulated wires free from moisture.

3. In an electrical converter, the combination of the coils thereof insulated with a wrapper of porous fibrous material, an inclosing case hermetically sealing the said coils, an atmosphere within the case and surrounding the insulated wires free from moisture, and a moisture absorbent substance within the hermetically sealed case.

4. In an electrical converter, the combination of the coils thereof insulated with a wrapper of porous fibrous material, an inclosing case hermetically sealing the said coils, an atmosphere within the case and surrounding the insulated wires free from moisture, four or more terminals from the coils within the case extending to without the same, and moisture proof seals sealing the outlets for said terminals.

5. The combination of the electrical coils of the converter, an inclosing metallic case fitting the said coils and hermetically sealing the same against the atmosphere provided with one or more tubular projections, terminal wires extending from the coils through the said tubular projection or projections, and a sealing substance filling the said tubular projections to seal the case against the admission of moisture.

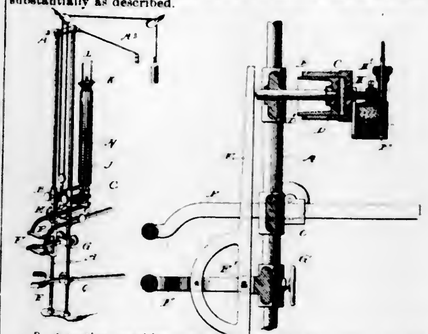
6. The combination of the converter coils and core, an outer inclosing metallic case for the same, a diaphragm detachably connected near one end of the case, a removable cap or cover fitting the extreme end of the case, a locking screw for connecting the cap or cover to the diaphragm, fuse blocks arranged upon the diaphragm and adjacent to the cap or cover, and connecting circuits leading from the coils to the exterior of the case and including the fuses.

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528,779. TESTING-MACHINE. JOHN H. KELLOGG, Battle Creek, Mich. Filed June 2, 1894. Serial No. 513,228. (No model.)

*Claim.*—1. A testing machine comprising a vertical standard, a cross head adjustable vertically on the standard, a horizontal cylinder mounted on the cross head and provided with a piston having a piston rod extending toward the standard, a fluid-containing chamber communicating with the cylinder and provided with a graduated indicator tube, and a vertically rocking lever pivotally connected with the standard and having one arm extending in operative relation to said piston rod, substantially as described.

2. A testing machine comprising a vertical frame or standard, a vertically adjustable counter-balanced cross-head on the standard, a cylinder carried thereby and provided with a piston having its rod extending through one end, a liquid containing chamber communicating with the cylinder and having an indicating tube, a second adjustable cross-head on the standard and a lever pivoted to the cros-head and extending at one end into operative relation with the piston rod, substantially as described.



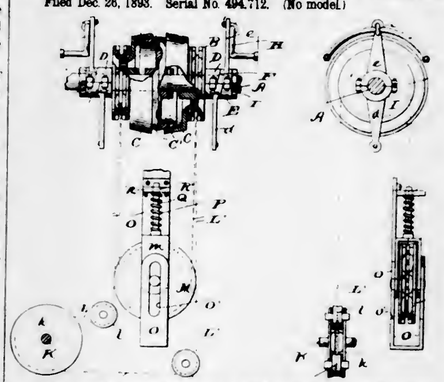
3. A testing machine comprising a vertical standard provided with a series of vertically adjustable cross-heads a cylinder on the upper cross head provided with a piston having a piston rod through one end, and a liquid containing chamber communicating with said cylinder and provided with an indicator tube, a horizontal rest adjustable in the middle cross-head and a lever mounted on the lower cross head and extending at one end into operative relation with said piston, substantially as described.

4. A testing machine comprising a cylinder, a piston in the said cylinder and adapted to be pressed by the muscular power exerted by the operator, a vessel connected with the said cylinder and containing mercury, water and oil, of which the latter extends into the cylinder, and a tube extending into the said mercury to permit the latter to ascend in the tube, substantially as shown and described.

5. A testing machine comprising a vertical standard, a counter-balanced indicator mechanism vertically adjustable on the standard, a lever adjustable on the standard toward and from the said indicator mechanism and in operative relation thereto.

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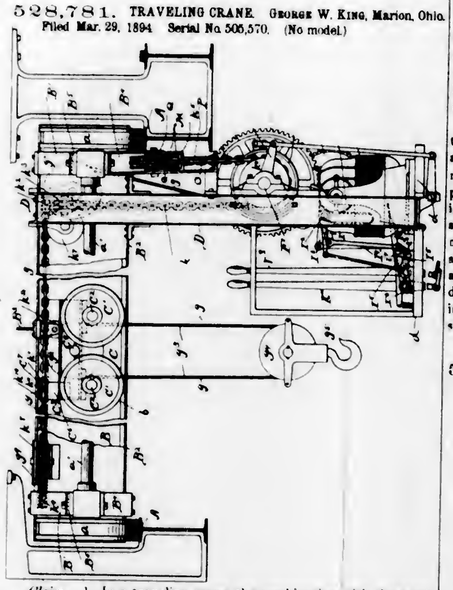
528,780. REVERSING-GEAR. GEORGE W. KING, Marion, Ohio. Filed Dec. 26, 1893. Serial No. 494,712. (No model.)



*Claim.*—The combination with a shaft adapted to rotate continuously in one direction and a reversible shaft, of two pulleys mounted loosely upon one of said shafts, a clutch for each of said pulleys, one member of each clutch being rigid or operatively connected with the pulley and the companion member of the clutch being operatively connected with the pulley-supporting-shaft, stationary guides O located in suitable proximity to the pulleys, tightening sheave M, strap or block *m* bearing said sheave, rod or member Q rigid with the sheave-block or strap, stationary bracket or member R, coil-spring P confined upon member Q between the sheave-block or strap and member R, the aforesaid guides having holes O′ engaged by the axial pin of the tightening-sheave and elongated in the direction required to accommodate the action of the aforesaid spring, endless chain or belt-

engaging the idler and operatively connected with the aforesaid pulleys and with the other shaft in such a manner that the reversible shaft is rotated in the one direction or the other according as the one or the other of the aforesaid pulleys is operatively connected with the pulley-bearing-shaft, all arranged and operating substantially as shown and described.

528,781. TRAVELING CRANE. GEORGE W. KING, Marion, Ohio. Filed Mar. 29, 1894. Serial No. 505,570. (No model.)



*Claim.*—1. In a traveling-crane, the combination with the track along which the crane-proper travels and a shaft F adapted to rotate continuously in one direction, of two pulleys mounted loose upon said shaft, suitable means for each pulley for establishing operative connection between the pulley and the shaft, and a chain or cable operatively connecting the crane-proper with each of said pulleys and adapted to actuate the crane-proper in the one direction or the other according as the one or the other of the aforesaid pulleys is operatively connected with the supporting-shaft, substantially as set forth.

2. In a traveling-crane, the combination with the track along which the crane-proper travels, and a shaft F adapted to rotate continuously in one direction, of two pulleys mounted loosely upon said shaft, a clutch for each pulley for establishing operative connection between the pulley and the shaft, an idler in suitable proximity to said pulleys, and an endless chain or cable operatively connected with one of the axles of the crane-proper and engaging said pulleys and idler, the chain or cable passing from over the one pulley to and over the idler, and thence to and over the other pulley, substantially as set forth.

3. In a traveling-crane, the combination with the crane-proper, track along which the crane proper travels, trolley and track for the trolley, an endless chain operatively connected with one of the axles of the crane-proper for propelling the latter in opposite directions, a continuous chain or cable engaging and adapted to propel the trolley in opposite directions, and a rope or cable provided with fall and hoisting-tackle at the load-carriage for hoisting and lowering the load, of a shaft arranged transversely of and at or near one end of the crane, a motor operatively connected with the shaft, and devices carried by the shaft for actuating the aforesaid chains, ropes or cables, substantially as set forth.

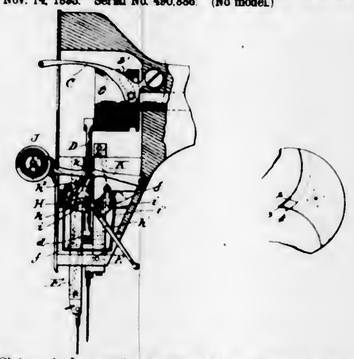
4. In a traveling-crane, in combination, a trolley or load carriage, operating-shaft, hoisting drum loose on said shaft, hoisting-rope or cable provided with fall and hoisting-tackle at the trolley or carriage and operatively connected with the hoisting-drum, means for establishing operative connection between the drum and operating-shaft, a brake for said drum, and suitable means for positively locking the drum as against rotation in the direction to lower the load, substantially as set forth.

5. In a traveling-crane, in combination, a trolley or load-carriage, operating-shaft, hoisting-drum loose on said shaft, hoisting-rope or cable provided with fall and hoisting-tackle at the trolley or carriage and operatively connected with the hoisting-drum, means for establishing operative connection between the drum and operating-shaft, a brake for said drum, a pawl or ratchet and ratchet-wheel for positively locking the drum as against rotation in the direction to lower the load, and suitable means acting to retain said pawl or ratchet in its engagement with the ratchet-wheel, substantially as set forth.

6. In a traveling-crane, the combination of the crane-proper, track for the crane-proper, a shaft on the crane-proper adapted to rotate continuously in one direction, apparatus for hoisting and lowering the load, said apparatus comprising a drum loose on the aforesaid shaft, suitable means for establishing and interrupting operative connection between said drum and shaft, suitable apparatus for actuating the crane-proper in opposite directions, and means for establishing and interrupting operative connection between said apparatus and the aforesaid shaft, substantially as set forth.

7. In a traveling-crane, the combination with the crane-proper, track for the crane-proper, a shaft carried by the crane-proper and adapted to rotate continuously in one direction, a trolley or load-carriage and track for said carriage, apparatus for propelling the crane-proper in opposite directions and means for establishing and interrupting operative connection between said apparatus and the aforesaid shaft, apparatus for propelling the trolley in opposite directions and means for establishing and interrupting operative connection between said trolley-propelling apparatus and the load-carriage or trolley, suitable apparatus for hoisting and lowering the load and comprising a drum loosely mounted on the shaft and means for establishing and interrupting operative connection between said drum and shaft, substantially as set forth.

528,782. SEWING-MACHINE. PHILIP B. LASKEY, Marblehead, Mass., assignor of one-fourth to Edward Hathaway, same place. Filed Nov. 14, 1893. Serial No. 490,886. (No model.)



*Claim.*—1. In a sewing machine, the combination with two needle bars one of which is provided with a longitudinal slot, of a reciprocating operating device or cross-head normally extending into the said slot, and an adjustable stop carried by and thus movable with the slotted needle bar and adapted to be thrown into and out of the path of movement of the said reciprocating device or cross head, to reciprocate the said needle bar or to permit the same to be stopped while the machine is in operation.

2. In a sewing machine, the combination with two needle bars, of a reciprocating operating device for said bars means constructed and adapted to disconnect said operating device from one of said bars while the machine is in operation, and a catch, supported by or formed on a stationary part of the head of the machine, for holding the needle bar which is thrown out of operation in an elevated position when it reaches the limit of its upward movement.

3. In a sewing machine, the combination with two needle bars and a take-up, of a reciprocating operating device for said bars, means constructed and adapted to disconnect said operating device from one of said bars while the machine is in operation, a catch, supported by or formed on a stationary part of the head of the machine, for holding the needle-bar which is thrown out of operation in an elevated position when it reaches the limit of its upward movement, and means, operating simultaneously with the disconnecting mechanism, for relaxing the thread of the needle which is to be thrown out of operation so that too much slack will not be drawn by the take-up.

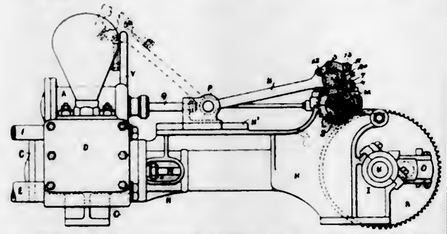
4. In a sewing machine, the combination with two needle bars and a take-up, of a reciprocating device for operating said needle bars, means for disconnecting one of said needle bars from said operating device, a movable tension device, and connections between said tension device and the needle-bar disconnecting-mechanism; whereby said tension device is lifted or moved toward said take-up when the needle bar is thrown out of operation by the disconnecting mechanism.



5. In a sewing machine, the combination with two needle bars, an operating device for said bars and means for disconnecting one or more of said bars from said operating device, of a throat plate having a throat for the needle which is to be thrown out of operation, and having also a slot into which said throat opens and which slot extends both backward and forward from said throat in the line of feed.

6. In a sewing machine, the combination with the needle bars E one of which is provided with a vertical slot, of a reciprocating block or cross head D extending into said slot, said needle bar being provided with a pivoted spring-acted stop F the upper end of which may be thrown into or out of the path of movement of the reciprocating block or cross-head D, said stop having a lug or projection *f*, a spring for moving said stop inward to its operative position, a pivoted releasing catch or retaining device *i*, a lever having a part engaging said releasing device *i* and serving to move the same outward against the stress of its spring into position to be engaged by the said lug or projection *f* on said stop, to withdraw the latter from the path of movement of the cross head or block working in the slotted needle bar, and thus throw said needle bar out of action.

528,783. COMBINED STEAM AND POWER PUMP. GEORGE DE LAVAL, Warren, Mass., assignor to the Geo. F. Blake Manufacturing Company, New York, N. Y. Filed May 23, 1894. Serial No. 512,049. (No model.)



*Claim.*—1. The combination with a pump cylinder and its driving crank and connecting rod, of a frame having a pillar block for the crank shaft, a second crank shaft supported by a pillar block on the frame, a steam cylinder and connections between the same and the cylinder of the pump, a piston rod and cross head moving upon slideways upon the frame, a connecting rod extending from the cross head to the crank shaft and having a separable box for disconnecting the rod from the crank, a driving pulley upon the engine crank shaft for a belt, a pinion upon the engine crank shaft, and a gear wheel upon the crank shaft of the pump, whereby the pump can be driven by the belt when the connecting rod of the engine is separated from its crank shaft, or be driven from the engine when the belt is disconnected, substantially as set forth.

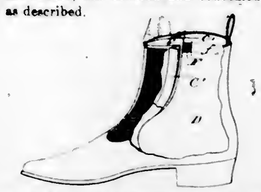
2. The combination with a pump and an engine cylinder, crank and gearing for driving the pump, of a connecting rod for the engine having a two-part box, a hinge for connecting the movable portion of the box to the end of the rod, a pivoted bolt within a groove in the connecting rod, and a nut for clamping the hinged portion of the separable box when the same is closed against the crank pin, substantially as set forth.

3. The combination with a pump and an engine cylinder, crank and gearing for driving the pump, of a connecting rod for the engine having a two-part box, a hinge for connecting the movable portion of the box to the end of the rod, a pivoted bolt within a groove in the connecting rod, a nut for clamping the hinged portion of the separable box when the same is closed against the crank pin, and a key for setting up the movable brass or bearing at the end of the connecting rod, substantially as set forth.

4. The combination with a pump cylinder and its driving crank and connecting rod, of a frame having a pillar block for the crank shaft, a second crank shaft supported by a pillar block on the frame, a steam cylinder and connections between the same and the cylinder of the pump, a piston rod and cross head moving upon slideways upon the frame, a connecting rod extending from the cross head to the crank shaft and having a separable box for disconnecting the rod from the crank, a driving pulley upon the engine crank shaft for a belt, and an adjacent loose pulley, a pinion upon the engine crank shaft, and a gear wheel upon the crank shaft of the pump, whereby the pump can be driven by the belt when the connecting rod of the engine is separated from its crank shaft, or be driven from the engine when the belt is on the loose pulley, substantially as set forth.

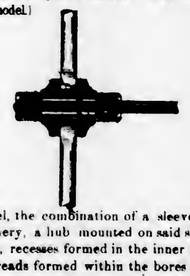
528,784. SHOE. THOMAS F. MARSHALL, Oakland, Cal. Filed Aug. 11, 1893. Serial No. 483,863. (No model.)

*Claim.*—1. A boot or shoe having an elastic gore, a water-tight lining for the gore and a bellows fold connecting the edges of the lining with the boot or shoe, the members of the bellows fold lying normally beneath the lining and meeting at an angle to lie substantially flat on each other, and covered and concealed by said lining, substantially as described.



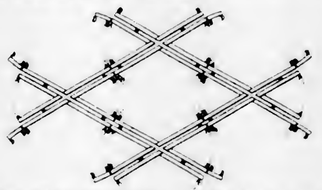
2. A boot or shoe having an elastic gore, and a water-tight lining connected with the shoe by a bellows connection, and elastic stripe forming an additional connection between the said lining and the shoe, substantially as described.

528,785. WHEEL. EDGAR D. MIENER, Brantford, assignor of one-half to William H. Hanes, Lynden, Canada. Filed Dec. 8, 1893. Serial No. 493,195. (No model.)



*Claim.*—In a wheel, the combination of a sleeve having screw-threads upon its periphery, a hub mounted on said sleeve, said hub formed of two sections, recesses formed in the inner face of each of said sections, screw threads formed within the bores of the sections, said screw-threads of the bores of each of the sections engaging the peripheral screw-threads of said sleeve, a rim, spokes having their outer ends secured to the said rim and their inner ends mounted in the recesses of the hub sections, an axle passing through the bore of the sleeve, said axle being of a less diameter than the diameter of the sleeve, journal boxes formed at each end of and within said sleeve, roller bearings disposed in said journal boxes, a chamber formed between the journal boxes and adapted to convey oil to lubricate the journals, a screw plug, 11, for said chamber, and inwardly-projecting lugs cast integral with, and disposed in the bore, of, the sleeve, said inwardly-projecting lugs adapted to be engaged by a tool for turning said sleeve when screwing on the hub sections, substantially as and for the purpose set forth.

528,786. CROSSING-FROG FOR RAILROAD-TRACKS. VAN N. MOORE and MARTIN W. MANSFIELD, Indianapolis, Ind. Filed Sept. 24, 1894. Serial No. 523,947. (No model.)

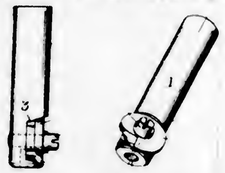


*Claim.*—The herein described crossing frog, having main rails and guard rails constructed of rails adapted to serve as the bearing rail and properly secured together and of length from their points of intersection so proportioned that said frogs can, without change in themselves, be reversed in position or interchanged with each other, as set forth.

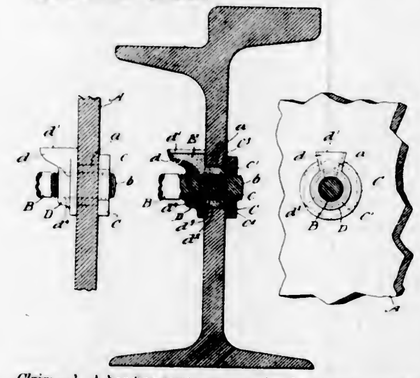
528,787. CUTTING-TOOL. WILLIAM H. NELSON, Waterbury, Conn. Filed May 1, 1894. Serial No. 509,692. (No model.)

*Claim.*—In a quill cutter of the class described the combination with a quill having a bore in the base thereof forming a guide, and a recess extending into said bore from one side provided with concave shoulders, at the top and bottom of the recess, a detachable cutter secured within said recess the axis of which is transverse to that

of the quill and guide, and the periphery thereof engaging the before mentioned concave walls, the whole arranged as specified.



528,788. BOND FOR ELECTRIC RAILWAYS. HENRY B. NICHOLS and FREDERICK H. LINCOLN, Philadelphia, Pa. Filed Sept. 20, 1894. Serial No. 523,558. (No model.)



*Claim.*—1. A bonding joint or connection for electric railways, comprising a rail provided with an opening, a bonding wire, nuts engaging therewith and provided with flanges engaging the opening of said rail, one of said nuts provided with a pour-hole to permit of molten metallic material being introduced into the same so as to expand and establish an air and water tight connection of the rail with said bonding wire, substantially as and for the purposes described.

2. A bonding joint or connection for electric railways, comprising a rail provided with an opening, a bonding wire, nuts detachably engaging said wire and provided with flanges, rims or projections adapted to snugly fit the wall of said opening, one of said nuts provided with a pour-hole and a material or substances introduced through said pour-hole, substantially as and for the purposes described.

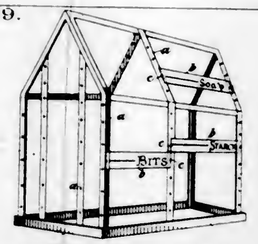
3. A bonding joint or connection for electric railways, comprising a rail having an opening, a nut engaging said bonding wire and the rear rim or projection thereof engaging the wall of said opening, a cap or jam-nut with a pour-hole engaging said bonding wire and wall of the opening of said rail, and a molten metallic substance introduced through said pour-hole to establish an air and water tight connection of said rail with said bonding wire, substantially as described.

4. The combination, with rails provided with openings, of a bonding wire having the arms threaded and extending through said openings, each of said openings engaged by nuts having threaded bores applied to the arms of said bonding-wire, one of said nuts provided with a pour-hole, and a metallic substance introduced through said pour-hole to establish between and with the members of said bond and said rails an air and water tight connection, substantially as and for the purposes described.

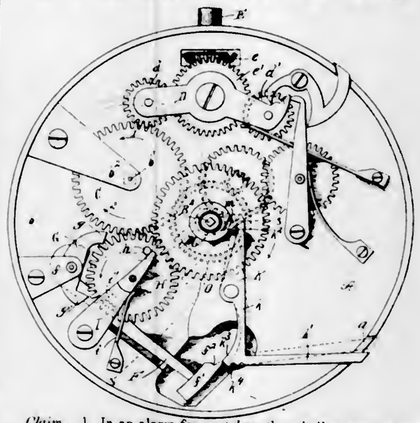
528,789. CONSTRUCTION OF BUILDINGS FOR ADVERTISING PURPOSES. EDMUND NICOLAS, Manchester, England, assignor to the Patent Plate Structure Company, Limited, same place. Filed Jan. 4, 1894. Serial No. 496,706. (No model.) Patented in England Dec. 17, 1891, No 22,072.

*Claim.*—An improved structure consisting of the combination with a skeleton frame-work for temporary office or other similar building, of panels formed of enameled iron advertising plates or tablets provided with notches in the ends thereof, and bolts or rivets passing through said notches and securing said plates in position as an integral part of the structure, whereby the said plates may be readily detached therefrom and changed at pleasure, substantially as described.

528,789.



528,790. ALARM FOR WATCHES. JOHN W. NUNAMAKER, Chicago, Ill. Filed June 29, 1894. Serial No. 516,113. (No model.)



*Claim.*—1. In an alarm for watches, the winding gear, in combination with a pivoted alarm lever provided with pallets, a pivoted supporting bracket, a toothed escapement wheel journaled on said bracket and arranged to engage normally with both the winding gear and the alarm lever pallets, a stop device for arresting the rotation of the escapement wheel on its journal, and an elastic device acting upon said pivoted bracket to hold the escapement wheel in engagement with the winding gear and pallets, but yielding to permit said wheel to be disengaged from these parts by the winding operation, substantially as described.

2. In an alarm for watches, the winding gear, in combination with a pivoted alarm lever provided with pallets, a bracket lever pivoted at one end and extending inward, a toothed escapement wheel journaled on said bracket lever some distance from its free end and provided with a pin, *h*, arranged to contact with the projecting end of the bracket on either side thereof, and a spring, *i*, arranged at the back of the said lever to normally hold the escapement wheel in engagement with the winding gear and alarm lever pallets, substantially as described.

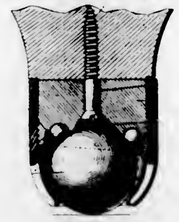
3. In an alarm for watches, a winding gear, in combination with a pivoted alarm lever provided with pallets, a pivoted bracket, I, provided with a transverse channel or groove, *i*, in its under side, a toothed escapement wheel, H, journaled on said bracket a little distance from its free end and provided with a short pin, *h*, on its face, and an actuating spring, I, mounted back of the pivoted bracket, substantially as described.

4. In an alarm for watches, a winding gear, in combination with a toothed escapement wheel normally engaged therewith, an alarm lever pivoted at one end and provided with pallets engaging with the escapement wheel and having at its other end a hammer, *f'*, with a notch, $f^3$, on its face, and the stop lever, K, provided with a curved projection, $k^3$, arranged to stop the alarm hammer normally and a notch, $k^4$, just back of this projection adapted to engage with the notch on the hammer face and thereby permanently lock the latter, substantially as described.

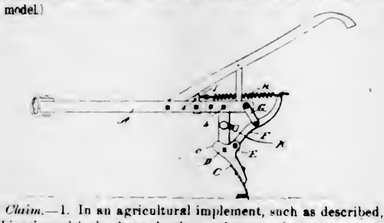
528,791. BALL-CASTER. JACOB B. OFFERLE, Warren, Pa. Filed June 21, 1894. Serial No. 515,273. (No model.)

*Claim.*—The combination with the casing G having its lower edges slit and turned inward, of the large roller seated in the lower portion of the said casing and having screw threaded engagement therewith, the lower end of the said block being concaved and the side walls of the concaved portion formed with an annular recess F, a series of small balls located in said recess and bearing on the large roller, the said recess being formed at an angle to the horizontal, so that the small balls will have a bearing on the large roller at a higher plane upon one side than at the other, and the ring F screw threaded and engaging screw threads formed in the block B having rounded upper face.





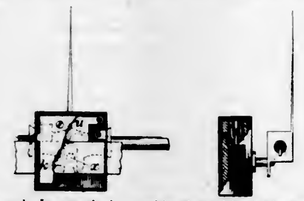
528,792. CULTIVATOR-PLOW. HENRY C. OTTEN and ANTON KATHMANN, Quincy, Ill. Filed July 18, 1894. Serial No. 517,922. (No model.)



*Claim.*—1. In an agricultural implement, such as described, the combination with the beam having a downward extension and the shovel support pivotally connected to the lower end of said extension, of the set of toggles, the lower member of which is pivotally connected to the rear portion of the shovel support and extends up above the beam and the upper member, the upper member connected to the beam and lower member, and the coil spring extending substantially parallel with the beam and connecting the extended end of the lower member of the toggle and beam, substantially as described.

2. In an agricultural implement, such as described, the combination with the beam having the downward extension and the shovel support pivotally connected thereto at the lower end and having the rearwardly projecting lug, of the toggle lever pivotally connected at one end to said lug, with its other end extended up to the beam, the upper toggle members or links, pivotally connected to the beam at one end and to the other toggle lever at an intermediate point of the latter, the set screw cooperating with the toggle to limit its inward movement, the coil spring connected to the top of the extended toggle member and the adjustable eye bolt connecting the forward end of the spring and beam; substantially as described.

528,793. COMPUTING-SCALE. HARVLIN PADDOCK and ORVILLE B. JOHNSON, St. Johnsbury, Vt., assignors to the E. & T. Fairbanks & Company, of Vermont. Filed June 9, 1894. Serial No. 514,112. (No model.)



*Claim.*—1. In a scale in combination with the beam, a sliding poise, a sliding indicator with connections between the poise and indicator, said connections including a part capable of limited movement independent of the poise, but by which the poise is moved along the beam, substantially as described.

2. In a scale in combination with the beam a sliding poise, a casing loosely supported thereon a sliding indicator with a normally broken connection between the same and the casing; substantially as described.

3. In a scale in combination with the beam a sliding poise a casing loosely supported thereon and having a slight clearance between the poise and the casing, a pin projecting from the casing an indicator having a slot into which said pin projects and has a clearance substantially the same as that between the poise and its casing; substantially as described.

4. The herein described poise comprising the central portion adapted to slide on the beam and having a surrounding casing supported thereon and having a slight swinging movement independent of said central portion; substantially as described.

5. The herein described poise comprising the central portion adapted to slide on the beam and having a surrounding casing supported thereon and having a slight swinging movement independent of said central portion, said central portion having a pointer, whereby the position of the poise may be read at any time, whether the casing has come to rest or not; substantially as described.

6. In a scale in combination with the beam a poise sliding thereon having a portion capable of limited swinging movement, a sliding indicator and a connection between the swinging portion of the poise and the indicator; substantially as described

7. In a scale, a beam, a poise sliding thereon, a casing loosely supported on said poise by suitable links as *v*, an indicator, and connections between the indicator and the casing; substantially as described.

8. In a scale, a beam, a poise sliding thereon, a part capable of limited movement independent of the poise, but adapted when the limit of that movement is reached to cause the poise to operate, and connections between said movable part and said indicator; substantially as described.

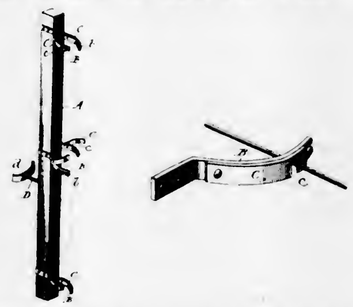
9. In a scale, a beam, a poise sliding thereon, a part capable of limited movement independent of the poise, but adapted when the limit of that movement is reached to cause the poise to operate, a pin projecting from said part, and an indicator provided with a slot with which said pin loosely engages; substantially as described.

10. In a scale, a beam, the poise *u*, the casing loosely supported thereon by the links *v*, the pin *x*, the indicating slide *k* having the slot *z* into which the pin *x* projects, substantially as described.

11. In a scale, a beam, the poise *u* with the pointer *t*, the casing in the links *v* supporting the same, the rod *w*, the indicating slide thereon provided with the slot, the pin *x* secured to the casing and extending into the slot, the casing and pin being capable of limited movement before binding on the poise and slide respectively, substantially as described.

12. In combination with the poise and indicator, the chart *A* graduated as shown and trained on the rollers *c*, *c'*, the gears and thumb piece, the shaft provided with the lugs *s*, and the stop *q* provided with notches; substantially as described.

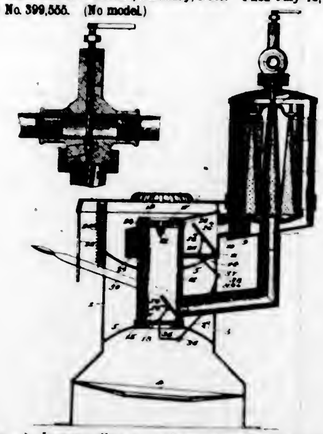
528,794. FENCE-MACHINE. OREN H. PAGE, Pleasant Grove, Minn. Filed Mar. 16, 1894. Serial No. 503,949. (No model.)



*Claim.*—1 A fence machine comprising a bar, a series of pairs of arms arranged respectively on opposite sides of the bar, the arms of each pair being arranged in different horizontal planes, and each arm having a horizontal slot in its free end, a latch pivoted to each arm and provided with a vertical slot adapted to cross the slot of the arm, and means for turning the bar back and forth.

2. A fence machine comprising a bar, a series of pairs of arms arranged respectively on opposite sides of the bar, the arms of each pair arranged in different horizontal planes, and each arm having a longitudinal slot in its free end, a latch pivoted to each arm and provided with a vertical slot adapted to cross the slot of the arm, and means for turning the arm back and forth consisting of a rod secured to said bar and provided with a curved strip to receive the knee of the operator.

**528,795. GASOLINE-STOVE.** MERRITT W. PALMER, Raymond, Ill., and CHARLES S. MUNRO, Fairbury, Nebr. Filed July 15, 1891. Serial No. 399,555. (No model.)



*Claim.*—1. In a gasoline stove, the combination with the burner-pipe, provided with a burner, and an inner evaporating chamber and an outer inclosing casing, the inner casing communicating with the outer, of an evaporator in the inner casing, a vapor-pipe leading from the inner casing to the burner-pipe, a hot-air chamber surrounding the burner-pipe and provided with air-inlets, and a pipe leading from the hot air chamber to the space between the outer and inner casing, substantially as specified.

2. In a gasoline stove, the combination with the burner-pipe provided with the burner, the inner evaporator casing open at its top, the outer casing inclosing the same and communicating therewith through said open top, and the evaporating device located in the inner casing, of the vapor-pipe leading from the inner casing to the burner-pipe, a hot-air chamber provided with air-inlets surrounding the burner-pipe, a pipe leading from the same to the space between the two casings, valves mounted over the air-inlets and the lower end of the vapor-pipe, substantially as specified.

3. In a gasoline-stove, the combination with the top having the burner-opening, the burner-pipe located below the same and provided near its upper end with the burner, the inner and outer evaporator-casing located at one side of the stove, the evaporator located in the inner casing and the vapor-pipe extending from the inner casing and communicating with the burner-pipe, of a hot-air chamber surrounding the burner-pipe, a pipe leading from the same to the space between the two casings, said hot-air chamber being provided with an opening, valves for closing said opening and the vapor-pipe, and means for simultaneously opening one and closing the other, substantially as specified.

4. In a gasoline stove, the combination with the burner-pipe, open at its lower end, the evaporator-casing and its evaporator, and the vapor-pipe leading from the evaporator to a point within the burner-pipe, of a twin-valve for closing the pipe and opening, and means for simultaneously opening one valve and closing the other, substantially as specified.

5. In a gasoline-stove, the combination with the stove top having the opening, the burner-pipe located below the same and having an opening at its bottom, and provided above the opening with a burner, the inner and outer evaporator casings, the evaporator mounted in the inner casing, the vapor-pipe leading from the inner casing to the burner-pipe, the hot-air chamber having perforations and an opening, and surrounding the burner-pipe and communicating with the space between the two casings, of the valve located over the opening in the hot-air chamber and having a depending arm, the twin-valve located in the burner-pipe, one adapted to cover the vapor-pipe and the other the opening in the burner pipe and having a depending arm, the valve-operating lever pivoted at one side of the burner-pipe, loose connections between the arms and the inner end of the lever, a spring for raising the arms, and means for locking the arms in a lowered position, substantially as specified.

6. An evaporator for gasoline stoves, consisting of a base, a series of perforated conical pipes on end upon the base, and a distributing-plate located above the pipes and provided with radial branches or conductors leading to the upper ends of the pipes, substantially as specified.

7. An evaporator for gasoline stoves, consisting of a series of perforated conical pipes, on end, cups mounted on the upper or smaller end of the pipes, perforated strips connecting the upper ends of the pipes, and a superimposed distributing-plate having radial branches leading therefrom to the cups, substantially as specified.

8. An evaporator for gasoline stoves, consisting of a series of conical minutely perforated pipes, arranged in an annular series, a band embracing the bases of the same, strips connecting the pipes near their upper ends, cups mounted on the upper ends of the pipes, and a distributing-plate of star-shape, mounted above the evaporator and having its points resting in the cups, substantially as specified.

9. In a gasoline stove, the combination with the evaporator, the hot-air chamber having an opening in its top and bottom the burner-pipe located in said opening and projected above and below the hot-air chamber, and provided at one side below the chamber with an opening, a vapor pipe leading from the evaporator to the opening in the burner-pipe and a hot air pipe leading from the hot-air chamber to the evaporator, valves mounted over an opening in the bottom of the chamber and at the bottom of the burner-pipe, valves located over the vapor and hot-air pipes, stems leading from the valve of the hot air chamber to the hot-air valve, and from the burner-pipe valve to the vapor-pipe valve and loosely connected with said hot-air and vapor pipe valve and devices for simultaneously closing or opening the valve of the burner-pipe and the valve of the hot-air chamber, and for producing a contrary operation upon the valves of the hot air and vapor pipes, substantially as specified.

10. In a gasoline burner, the combination with the table having the depending slotted bracket 32 at its front edge, the hot-air chamber 11, the burner-pipe 12 passing vertically through the same, the evaporator supported at one side of the table, the hot-air pipe 10 connecting the chamber with the evaporator, and the vapor pipe 24 connecting the burner-pipe with the evaporator, of the valves 26 and 26ª hinged over an opening 14 in the hot-air chamber and end of the hot-air pipe respectively, a link 28ª pivotally connected to the valves, the valves 27 and 28 hinged at the bottom opening in the burner-pipe and vapor-pipe respectively, the link 28ª pivoted at its ends to the valves 27 and 28, the stems 35 and 37 depending from the valves 27 and 26 respectively, the lever 30 fulcrumed at one side of the burner-pipe and terminating at its front end in a handle extending through the slotted bracket 32 and constructed to engage a notch 33 formed in the lower edge of the slot, the links 39 connecting the stems 35 and 37 with the rear end of the lever, and the spring 24 for normally raising the free end of the lever, substantially as specified.

11. In a gasoline stove, the combination with a cooking burner-pipe provided with a burner, and a hot-air chamber surrounding the burner-pipe and provided with air-inlets, one of the inlets having a valve, of an evaporating device, a vapor pipe leading therefrom to the burner pipe, a hot-air receiver communicating with the evaporating device, a pipe between the hot-air chamber and the hot-air receiver, a valve for closing communication between the hot-air chamber and the evaporating device, and devices connecting the last mentioned valve with the valve for the inlet, whereby the opening of one valve causes the simultaneous closing of the other, substantially as specified.

12. In a gasoline stove, the combination with a cooking burner-pipe provided with a burner and having an opening at its lower end, which opening is supplied with a valve, and a hot-air chamber surrounding the burner-pipe and provided with air-inlets, one of the inlets being provided with a valve, of an evaporating device, a vapor pipe leading therefrom to the burner-pipe and provided with a valve for establishing communication between the burner-pipe and the evaporator, a hot-air pipe leading from the hot-air chamber to the evaporating device, said hot-air pipe being also provided with a valve, and devices connecting the four valves together so as to move them in unison, whereby the hot-air pipe valve and the vapor pipe valve are opened simultaneously with the closing of the burner-pipe, valve and the inlet valve, substantially as specified.

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**528,796. MOTOR FOR STREET-CARS.** HARVEY S. PARK, Chicago, Ill. Filed Dec. 5, 1893. Serial No. 492,573. (No model.)

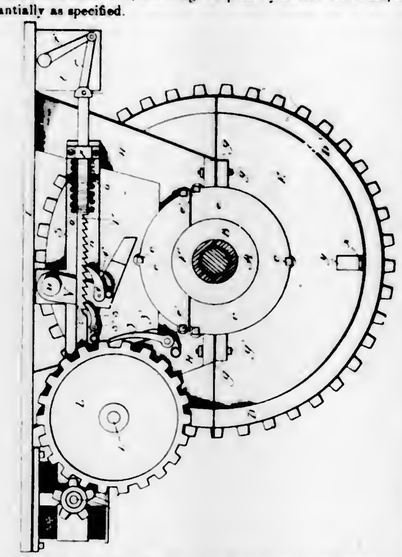
*Claim.*—1. A primary motor having a continuous and constant speed approximately and a secondary motor receiving and storing power from the primary motor, in combination with a controlling mechanism for the primary motor automatically operating to throw the motor out of use as the secondary motor reaches the limit of power, substantially as and for the purposes specified.

2. A primary motor having a continuous and constant speed approximately and a secondary motor receiving and storing power from the primary motor, in combination with a controlling mechanism for the primary motor automatically operating to throw the primary motor into use as the secondary motor is reduced in power from the limit of power, substantially as and for the purpose specified.

3. A primary motor having a continuous and constant speed approximately and a secondary motor receiving and storing power from the primary motor, in combination with a stop and start mechanism for the primary motor, a sliding bar actuating the stop and start mechanism and an arm or trip carried by the secondary motor and operating the sliding bar to throw the primary motor out of use, substantially as and for the purposes specified.



4. A primary motor having a continuous and constant speed approximately and a secondary motor receiving and storing power from the primary motor, in combination with a stop and start mechanism for the primary motor, a sliding bar connected with the stop and start mechanism, a spring receding the bar, and an arm or trip carried by the secondary motor operating to release the bar for the spring to act and recede the bar, throwing the primary motor out of use, substantially as specified.



5. A primary motor having a continuous and constant speed approximately and a secondary motor receiving and storing power from the primary motor, in combination with a stop and start mechanism for the primary motor, a sliding bar actuating the stop and start mechanism, ratchet teeth on the bar, a spring receding the bar, pawls engaging the ratchet teeth, and an arm or trip carried by the secondary motor, releasing the pawls for the spring to act and recede the sliding bar throwing the primary motor out of use, substantially as specified.

6. A primary motor having a continuous and constant speed approximately and a secondary motor receiving and storing power from the primary motor, in combination with a stop and start mechanism for the primary motor, a sliding bar actuating the stop and start mechanism, an arm or lever engaging and advancing the sliding bar and a pin moving with the secondary motor and operating the arm or lever, substantially as and for the purposes specified.

7. A primary motor having a continuous and constant speed approximately and a secondary motor receiving and storing power from the primary motor, in combination with a stop and start mechanism for the primary motor, a sliding bar actuating the stop and start mechanism, ratchet teeth on the sliding bar, an arm or lever, a pawl carried by the arm or lever engaging the ratchet teeth, and a pin moving with the secondary motor engaging the arm or lever and advancing the sliding bar, substantially as and for the purposes specified.

8. A primary motor having a continuous and constant speed approximately and a secondary motor receiving and storing power from the primary motor, in combination with a stop and start mechanism for the primary motor, a sliding bar actuating the stop and start mechanism, ratchet teeth on the sliding bar, pawls engaging the ratchet teeth, a trip or arm carried by the secondary motor releasing the pawls, a spring receding the sliding bar when released from the pawls, an arm or lever carrying one of the pawls, and a pin moving with the secondary motor and operating the arm or lever, substantially as and for the purposes specified.

9. A primary motor of an approximately continuous and constant speed and power, in combination with a secondary motor for receiving, storing and transmitting power from the primary motor, substantially as described.

10. In combination with a primary motor, a secondary motor-spring mounted around and having its inner end connected with a car axle and its outer end with winding mechanism, a car axle around which such spring is coiled and mounted, and winding mechanism interposed between such spring and the primary motor, substantially as described.

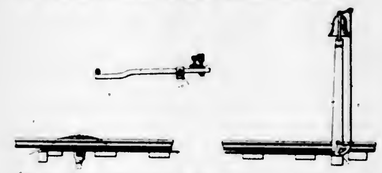
11. In combination with a primary motor, a secondary motor for receiving and transmitting power from the primary motor and mounted independently and loosely around a car axle, and a car axle connected with the secondary motor for receiving power therefrom, substantially as described.

12. In combination with a primary motor, a secondary motor receiving and transmitting power from the primary motor, mechanism interposed between the car axle and secondary motor to make or break the engagement of the axle and secondary motor, and a car axle around and upon which the secondary motor is mounted for receiving power from such motor, substantially as described.

13. In combination with a primary motor, a secondary motor for receiving and transmitting motion from the primary, a sleeve around the car axle connected with the secondary motor, a car axle upon which such sleeve is mounted, mechanism interposed between the axle and sleeve to make or break their connection, controlling pulley mounted upon such sleeve, and mechanism operating on such controlling pulley for changing the relative position of the sleeve and axle to effect their connection or disconnection, substantially as described.

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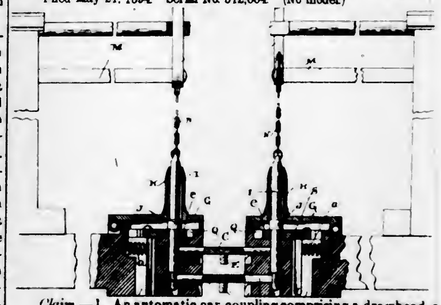
**528,797. RAILWAY-SIGNAL.** FREDERICK R. PAYNE, Chicago, Ill. Filed Nov. 6, 1893. Serial No. 490,186. (No model.)



*Claim.*—In a railway signal the combination with a track and a road bed, of a bifurcated support secured to said road bed, adjacent to the track, a lever pivoted intermediate its ends in the bifurcations of said support and nearer the track end than the outer end thereof, said lever adapted to pass underneath the rail, a curved arm or shoe rigidly secured to the track end of said lever and arranged adjacent to the inside of the track, and in the path of the flange on the car wheel, a wire extending alongside of the track in proximity to the ground and loosely connected to the outer end of said lever, by means of a staple secured to said lever having a perforation through which said wire is adapted to pass, an upright post near the track and at a distance from said pivoted lever, a bell or other signal device pivoted in the upper end of said post, a pivoted lever attached to said signal device, a bell crank lever pivoted to the lower end of said post, a connection between one arm of said bell crank lever and the pivoted signal operating lever, the first mentioned wire connected to the other arm of said bell crank lever, substantially as and for the purpose set forth.

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**528,798. CAR-COUPLING.** JOSIAH H. PEARSON, Alum Bank, Pa. Filed May 21, 1894. Serial No. 512,004. (No model.)



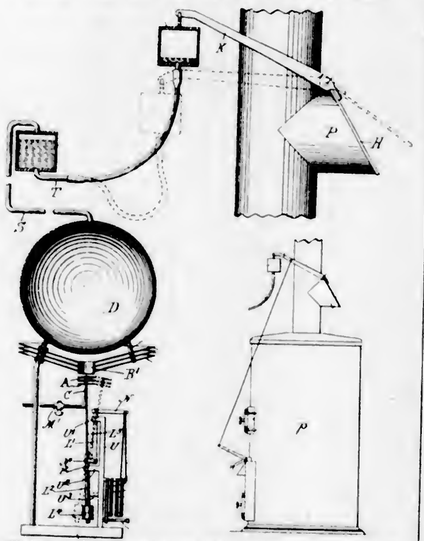
*Claim.*—1. An automatic car coupling comprising a drawhead, a horizontally sliding block, a pivoted arm coacting therewith for supporting a pin, and a depending arm from the block extending across the link opening, substantially as described.

2. An automatic car coupling comprising a draw head, a horizontally sliding block at its upper end above the link opening, an arm pivoted at one end to the said block, a pivotal pin extending through the pivotal arm into the draw head, and a depending arm from the said block extending across the rear end of the link opening, substantially as set forth.

3. A car coupling comprising a draw head, a horizontally sliding block in its upper end above the link opening, said block having a downward extension extending across the rear end of the said link opening, a spring for normally holding the said block outward, an intermediately pivoted arm or lever at the outer end of the said block and having one end pivoted to said block and coacting therewith to form a pin support, substantially as described.

4. An automatic car coupling comprising a drawhead having a horizontal cavity in its upper side, a vertical opening at the rear end of said cavity and making communication between it and the link opening, a horizontal block in said cavity with an extension into the said vertical opening, said extension having a rearwardly extending pin, a spiral spring around said pin, and a pivoted lever co-acting with the outer end of said horizontally sliding block, the parts operating substantially as described.

528,799. **TEMPERATURE-REGULATOR.** THOMAS O. PERRY, Chicago, Ill. Filed Oct. 2, 1893. Serial No. 486,988. (No model.)



*Claim.*—1. In a temperature regulator, in combination with a valve or damper to control the temperature of the apartment to be regulated, and an element adapted to expand and contract with changes of temperature; connections from such expanding and contracting element to the damper, a heater for heating the expanding and contracting element, and a shield A, adapted to be interposed between the heater and the expanding and contracting element consisting of a plurality of disks located one above another with intervals between them: substantially as set forth.

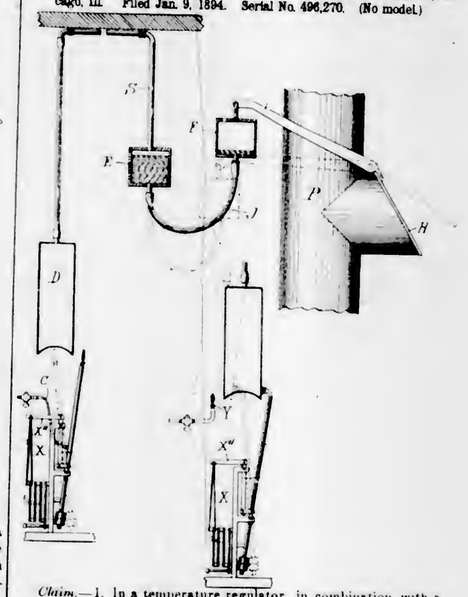
2. In a temperature regulator, in combination with a damper which controls the temperature of the apartment; an element adapted to expand and contract with changes of temperature, and connections by which its expansion and contraction operate the damper; a heater to act upon said expanding and contracting element, and the fixed shield comprising a plurality of disks B B B, or plates located one above the other with air intervals between them, and having respectively apertures in vertical line, and the movable shield located below the fixed shield and adapted to be shifted to and from a position vertically below said apertures: substantially as set forth.

3. In a temperature regulator, in combination with a damper which controls the temperature of the apartment, an element adapted to expand and contract with changes of temperature and connections by which its expansion and contraction operate the damper; a heater to act upon such element, and the plurality of disks or plates B B B, constituting a shield below the chamber; a tubular hub B which connects said shields and constitutes a flue leading through them; a heating device located in line vertically below said hub, and the movable shield A adapted to be interposed vertically above the flame, and mechanism for removing it from that position, and the thermostat and connections by which it operates the shield A: substantially as set forth.

4. In a temperature regulator, in combination with the damper which controls the temperature of the apartment, an element adapted to expand and contract with changes of temperature, and connections by which its expansion and contraction operate the damper; a heater to act upon such expanding and contracting element, the movable shield A, a vertical stem upon whose upper end it is carried, having a counterpoise at the lower end whereby it tends to remain vertical; the bracket upon which said vertical arm is fulcrumed, the lever being provided with a rolling pivotal support upon said bracket: substantially as set forth.

5. In a temperature regulator, in combination with the valve or damper, an expanding and contracting element and mechanism by which its expansion and contraction operate the valve or damper; a tube whose upper end opens underneath the expanding and contracting element; a heating device located at the lower end of said tube, and a shield adapted to be interposed between the same and the tube; and a thermostat exposed to the temperature which the opening and closing of the damper regulate, and connections therefrom to operate the shield: substantially as set forth.

528,800. **TEMPERATURE-REGULATOR.** THOMAS O. PERRY, Chicago, Ill. Filed Jan. 9, 1894. Serial No. 496,270. (No model.)



*Claim.*—1. In a temperature regulator, in combination with a regulating valve or damper, an expanding and contracting element and connections therefrom by which its expansion and contraction may operate the damper; a constant heating device; a thermostatic device exposed to the temperature to be regulated, and mechanism by which it controls the relative position of the expanding and contracting element and the constant heating device: substantially as set forth.

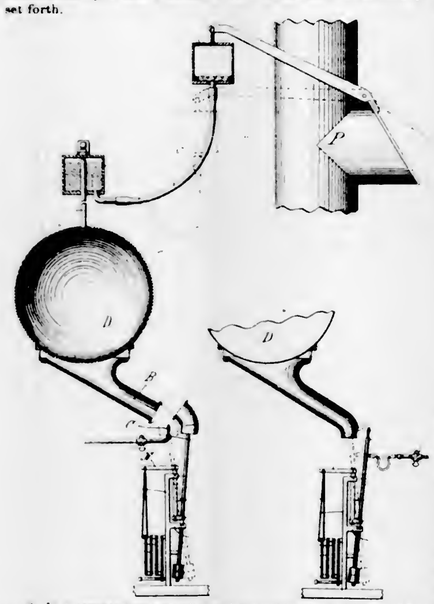
2. In a temperature regulator, in combination with the regulating valve or damper, an expanding and contracting element, and connections therefrom by which its expansion and contraction may operate the damper; a constant heating device; a thermostatic device exposed to the temperature to be regulated, and connections therefrom to the constant heating device adapted to move the latter to and from a position in which its heat is directed against the expanding and contracting element: substantially as set forth.

3. In a temperature regulator, in combination with the regulating valve or damper, an expanding and contracting element and connections therefrom by which its expansion and contraction may operate the damper; a constant heating device; a thermostatic device exposed to the temperature to be regulated, and mechanism by which it controls the relative position of the expanding and contracting element and the constant heating device; the expanding and contracting element being concave downward toward the heating device: substantially as set forth.

528,801. **TEMPERATURE-REGULATOR.** THOMAS O. PERRY, Chicago, Ill. Filed Oct. 2, 1893. Renewed Sept. 15, 1894. Serial No. 523,163. (No model.)

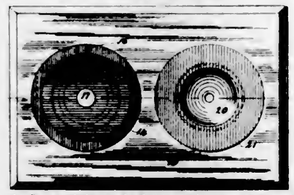


*Claim.*—1. In a temperature regulator, in combination with a valve or damper whose position affects the temperature of the apartment to be regulated, the chamber D and mechanism by which the contraction and expansion of its contents operate the damper, a heating device, and a duct adapted to conduct the heated current therefrom against the chamber, the receiving mouth of the duct being movable, and mechanism adapted to move it to and away from the position at which it may receive the heated current from the heating device; a thermostat in the apartment to be regulated, and connections by which it actuates said mechanism: substantially as set forth.



2. In a temperature regulator, in combination with a valve or damper whose position affects the temperature of the apartment to be regulated, a chamber D and mechanism by which expansion and contraction of its contents operate the damper, the heating device; the duct adapted to conduct the heating current from the heating device against said chamber; mechanism by which the relative position of the heating device and the duct are controlled to cause the mouth of the duct to overhang the heating device or not, the receiving mouth of said duct being notched at one side to permit the heating device to pass in and out of the same laterally as the relative position is changed: substantially as and for the purpose set forth.

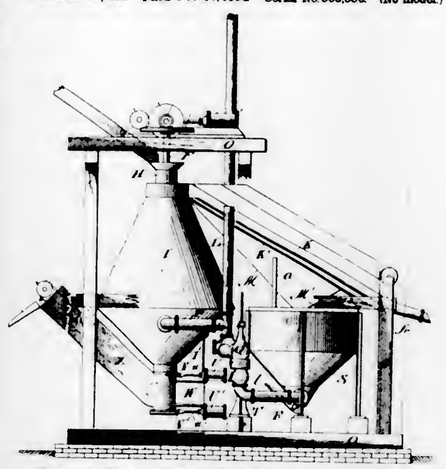
528,802. **INKSTAND.** FRANCIS B. PRATT, Canton, Miss. Filed May 24, 1894. Serial No. 512,319. (No model.)



*Claim.*—1. In an inkstand, the combination, with a base piece circularly recessed at two points in its top and having a passage extended from the bottom of one recess to the bottom of the other recess, of a flanged and interiorly threaded shell in one of said recesses, a hollow plug threaded to screw in the shell, and an adjustable perforated plug in the top of the hollow plug, substantially as described.

2. In an inkstand, the combination, with a base piece circularly recessed in its top at two points, one recess being funnel-shaped at the bottom, and having a passage extended therefrom to the bottom of the other recess, of a flanged thimble in the coniform bottomed recess, a flanged interiorly-threaded cylindrical shell in the other recess, a hollow plug threaded externally and engaging the threaded shell, and a transversely and longitudinally perforated set screw adjustable in the top of the hollow plug, substantially as described.

528,803. **COAL AND MINERAL WASHER.** ERSKINE RAMSAY, Pratt Mines, Ala. Filed Feb. 17, 1894. Serial No. 500,530. (No model.)



*Claim.*—1. The combination with the outer conical casing having its small end at the top and provided with the coal discharge near the top, of the supply shell, the revolving shaft therein carrying a feeding device for the material to be washed, the water chamber in the bottom of said conical casing provided with inlets for a water supply and outlets for discharging the water into the washer upwardly, with means for agitating the material within the washer, substantially as decribed.

2. In a coal or mineral washer, an upper casing having a discharge near the top, a bottom casing joined to said casing, provided with an outlet at the lower portion thereof, a water chamber located between the two casings and communicating at its upper side with the upper casing and its lower side with a water supply, a central feed shell, with a revolving shaft therein provided with a worm feed, and a series of stirrer arms secured to said shaft and journaled upon the feed shell above the water chamber, substantially as described.

3. In a coal and mineral washer the combination with the upper conical casing constituting the washer proper, the lower conical casing forming a waste chamber, the said chambers united at their bases, of a conical water chamber between the two communicating with the upper casing through its conical surface, and at its base with a water supply, said chamber forming with the sides of the casings an annular discharge opening into the waste chamber, with means for feeding the coal or mineral into the washer, substantially as described.

4. In a coal and mineral washer, the washer chamber having its bottom end larger than its top end, provided with a discharge for the washed material at the said smaller end, in combination with a water supply pipe or pipes opening upwardly through the bottom end, means for agitating the material within the chamber, and means for feeding the said material to the chamber, substantially as described.

5. In a coal and mineral washer an upper washing chamber or casing, having the discharge near the top, a lower waste chamber, an intermediate water chamber forming an annular discharge between the two, a conveyer or elevator for conveying the material from the lower waste chamber to a desired point above the discharge for coal, mechanism for feeding the coal downwardly into the upper chamber, with agitators or stirrers operating in said chamber, whereby the coal may be washed by water forced upwardly through the water chamber into the washer while the heavier material gradually descends to the waste chamber, and to the conveyer, substantially as described.

6. In a coal and mineral washer, the combination with the chamber or casing, I, the casing, W, intermediate water chamber, I″, and provided with a water supply, the feed shell, H, the revolving shaft, F, having the worm feed, A, the stirrers in the washer chamber and the sludge stirrer in the water chamber, with the elevator, X′, substantially as described.

7. In a coal and mineral washer, the combination with the washer chamber, the pumps having their discharge pipes connected with the supply pipes of the washer, of the stand pipe attached to and communicating with the said supply pipes, substantially as and for the purposes set forth.

8. In a fine mineral washer or settler, the combination with the tank having the discharge pipe extending upwardly within the same, of the flat deflecting plate supported above the pipe over which the water and sludge are compelled to flow outwardly, and then inwardly below the plate toward the discharge pipe, whereby some of the impurities are thrown off by their momentum as the current is deflected around the edges of the plate and the rest deposited as the current flows inward to the discharge pipe, and means for automatically maintaining the water level in the tank normally above the deflecting plate, substantially as described.

9. The combination with the casing forming the supply tank, *s*, of the discharge pipe, *r*, projecting upwardly within said tank and forming an annular settling space for impurities, the flat deflecting plate above said discharge pipe, over which plate the water and sludge are compelled to pass outwardly to the edge and then inwardly toward the discharge pipe, whereby some of the impurities are thrown off by their momentum as they round the edges of the plate and the rest are deposited as the current flows inward to the discharge pipe, and a valved outlet at the bottom of the tank for removing the impurities, substantially as described.

10. As a coal and mineral washer, the combination with the washer chamber provided with suitable supply and discharge chutes, and pumping mechanism for supplying water to said chamber, of a tank located under the discharge chute of said washer into which the water and fine mineral from said washer are centrally discharged, a fresh water supply pipe provided with a float valve at the water level in said tank, a discharge pipe projecting centrally within said tank and connected to the pumping mechanism, substantially as described.

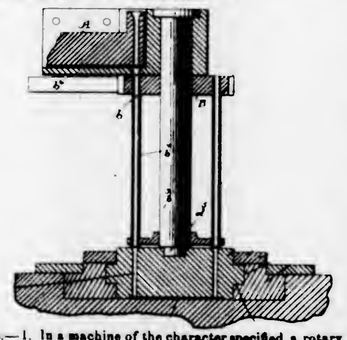
11. The combination in a fine mineral washer or settler, of the tank, the central discharge pipe extending upwardly therein, the deflecting plate supported above said discharge pipe over which plate the water and sludge are compelled to pass outwardly to the edge thereof and flow inwardly below the same to the discharge pipe, whereby the heavier ingredients are thrown off by momentum as they round the edges of the plate, a fresh water pipe opening into the tank above the plate and provided with an automatically operated valve to maintain the water level normally above the plate, and a valved outlet at the bottom of the tank, substantially as and for the purpose set forth.

## 528,804. METHOD OF AND COMPOSITION OF MATTER FOR SMELTING TITANIC IRON ORE. JOHN L. RANDALL, Brooklyn, N. Y. Filed Mar. 1, 1894. Serial No. 501,991. (No specimens.)

*Claim.*—1. The herein described method for smelting titanic iron ore, consisting in the employment of a flux with said ore, composed of cast iron fragments, puddling furnace slag, feld-spar, and a suitable fuel, all combined in a blast furnace and heated to a melting point, as herein set forth.

2. The herein described composition of matter for smelting titanic iron ore, consisting of puddling furnace slag, cast iron scrap, feld-spar and coal, about in the proportions specified.

## 528,805. NAIL MAKING, DISTRIBUTING, AND DRIVING MACHINE. FREEBORN F. RAYMOND, 2d, Newton, Mass. Filed Feb. 20, 1892. Serial No. 422,323. (No model.)



*Claim.*—1. In a machine of the character specified, a rotary nail distributer having nail passages the upper ends of which are arranged in circular order and the lower ends of which are arranged in the order in which the nails are driven, with a rotary nail carrier adapted to be moved in unison with the distributer while receiving nails, and to be moved therefrom to deliver the nails thus received, as and for the purposes described.

2. In a machine of the character specified, a rotary distributer, a nail carrier slide, a rotary nail carrying block mounted in or on said slide, and a coupling for connecting said rotary carrier with the nail distributer, as and for the purposes specified.

3. The combination in a machine of the character specified, of a rotary distributer, a movable plate having a rotary nail carrier mounted in or upon it, means for rotating the carrier C when beneath the nail distributer in unison with it, and a registering device for registering the nail carrier in the movable plate, as and for the purposes described.

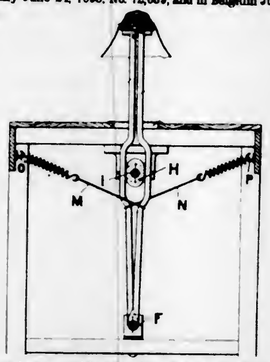
4. In a machine of the character specified, the combination of the rotary distributer having nail distributing passages, and a coupling block $d^6$, with the movable plate C, the rotary nail carrier D carried thereby, having the recess $d^8$ to fit the coupling block $d^6$, as and for the purposes specified.

5. The combination in a machine of the character specified, of a rotary distributer having a number of passages through which nails are delivered, a movable plate a rotary nail holder carried by said plate, a cam for moving said plate from a registering position in relation to the distributer to a registering position in relation to a gang of drivers, and for holding said plate with the nail holder in operative relation to the distributer, and also in operative relation to the nail drivers, a coupling for connecting the rotary nail holder with the distributer, and a registering device for holding it in registering relation to the drivers upon the end of its rotation with the distributer, as and for the purposes specified.

6. The combination in a machine of the character specified, of a rotary distributer having a number of nail-receiving and guiding passages therein open throughout their length, and a rotary nail holder having nail-receiving holes in the order and arrangement of the delivery ends of the passages of the distributer, and movable from the distributer, as and for the purposes described.

7. The combination of the plate C the rotary nail holder D having a catch $f^3$ the nail distributer, the latch F, and the starting mechanism of the nail supplying and distributer-operating mechanism, as and for the purposes described.

## 528,806. APPARATUS FOR STRETCHING FELT HAT-BODIES. ROBERT ROBINSON, Romiley, England. Filed July 6, 1893. Serial No. 479,767. (No model.) Patented in England May 17, 1893, No. 9,873; in Germany June 24, 1893, No. 72,639, and in Belgium July 12, 1893, No. 105,636.




*Claim.*—A hat stretching block, consisting of two similar block sections each provided on its outer surface with numerous separated, projecting elastic fingers, substantially as described.

## 528,807. APPARATUS FOR DRYING RAW OR PREPARED GOODS. ARGUST RÜNKEKAMP, Dortmund, Germany. Filed Aug. 16, 1892. Serial No. 443,223. (No model.) Patented in Switzerland Feb 28, 1893, No. 5,414; in England May 26, 1893, No. 9,992; in France June 2, 1893, No. 232,089; in Belgium Aug. 1, 1893, No. 100,780; in Denmark Aug. 4, 1893, and in Austria-Hungary Aug. 26, 1893, No. 544 and No. 9,557.



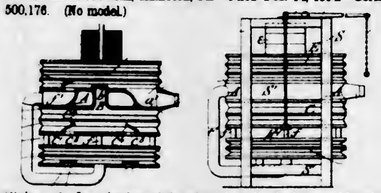


*Claim.*—1. A drying apparatus comprising a series of drying chambers, each having channels beneath the same, a source of heat connected with such channels, two conduits with which the channels are connected, valved outlets from each of the channels to both conduits, and a controlled inlet from one of such conduits to the channels, substantially as described.

2. A drying apparatus comprising a series of drying chambers having each serpentine channels beneath the same a heat generator delivering its gases to the said channels, conduits to which the serpentine channels lead, valved outlets from the channels to each of the conduits, controlled inlets from one of the conduits to the channels air inlet pipes to the drying chambers, outlets to the drying chambers, and connections between the said outlets and the generator, substantially as described.

3. A drying apparatus comprising a series of drying chambers, a furnace, a hot air chamber common to all the drying chambers, air inlet pipes fitted in the furnace and delivering to the hot air chamber, controlled inlets from the hot air chamber to the drying chambers, channels beneath the drying chambers, a receiving chamber for the gases of the furnace, such receiving chamber being common to the channels of the drying chambers, and connections between the outlets of the several channels, substantially as described.

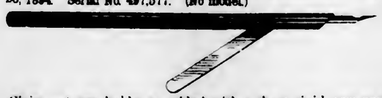
## 528,808. BELLOWS FOR FORGES, &c. SEYMOR RUCINSKI and FRANK M. KOSLOWSKI, Hazleton, Pa. Filed Feb. 14, 1894. Serial No. 500,176. (No model.)



*Claim.*—1. In a device of the class described, the combination of the tuyere box, the extensible hood mounted thereon, the two forming a receiver, the tuyeres connected with the said box, the latter having a passage leading through the same from the receiver proper to the tuyeres, a passage leading from the periphery to the interior of the receiver, and the central passage leading from beneath the base of the box through the same into the receiver, and the oppositely operated bellows respectively connected with the passages leading from the exterior of the tuyere box into the receiver, substantially as described.

2. In a device of the class described, the combination of the tuyere box, the extensible hood mounted thereon, the two forming a receiver, the tuyeres connected with the said box, the latter having a passage leading through the same from the receiver proper to the tuyeres, a passage leading from the periphery of the box to the interior of the receiver, and the central passage leading from beneath the base of the box through the same into the receiver, the bellows mounted immediately below the tuyere box and one below the other, the crown plate of the upper bellows and the base plate of the lower bellows being fixed, and the base plate of the upper and the crown plate of the lower being movable and connected to a common operating mechanism, the upper of the said bellows being connected with the central passage of the tuyere box and the lower connected by means of a pipe with the passage leading from the periphery of the box into the receiver, substantially as described.

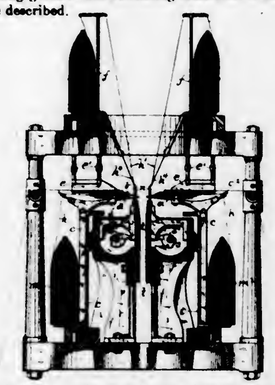
## 528,809. PENHOLDER. RAY P. SAFFOLD, Selma, Ala. Filed Jan. 20, 1894. Serial No. 497,577. (No model.)



*Claim.*—A pen holder provided with a short rigid arm projecting from the under side of the holder inclined backward at an acute angle and having its end adapted to enter into and touch the hollow of the hand of the writer when writing, substantially as and for the purposes described.

## 528,810. KNITTING-MACHINE. LEVI R. SALISBURY, Providence, R. I., assignor to Henry A. Church, same place. Filed Dec. 22, 1893. Serial No. 494,407. (No model.)

*Claim.*—1. In a knitting machine, the combination with vertically arranged mechanically actuated needles, of a knitting-thread guide $h^4$ traveling longitudinally of the machine and contiguous to the upper end of the needles, a filling-thread guide $d'$ located in advance of said guide $h^4$ and traveling in concert therewith above the needles, a series of warp-guides *g* located above said filling-thread guide, arranged at substantially right angles with and alternating with the needles, and means for projecting the outer or free ends of the warp-guides from the front to the back of the needles in advance of the traveling guide $d'$ and retracting them after it has passed, substantially as described.



2. In a knitting machine of the class described, the combination with a stationary plate *b*, mechanically actuated needles and independently movable warp-guides mounted in said plate and arranged at substantially right angles to the needles, of a continuously traveling filling-thread holder and guide mounted below the warp-guides, a traveling knitting-thread guide $h^4$ and mechanism, substantially as described, for intermittingly actuating the warp-guides endwise.

3. In a knitting machine, mechanically actuated needles a suitably mounted stationary plate, as *b*, warp-guides, as *g*, loosely mounted in the under side of said plate and provided with depending shanks, in combination with a continuously traveling cam, as *a*, arranged to successively engage said shanks to actuate the guides endwise, a filling-thread guide and a knitting-thread guide traveling in concert with said cam, substantially as described and for the purpose set forth.

4 In a knitting machine, the combination, with a continuously traveling knitting-thread holder and guide, a similarly traveling filling-thread holder and guide, and warp-guides and means for intermittingly actuating said warp-guides at right angles to the needles, of a stationary needle-bar, movable needles mounted in said bar and revolving needle-actuating cams, as $s'$, arranged in continuous series, each cam having steps, as $s^3$, $s^4$, $s^4$, increasing in height formed on its forward or advancing side, substantially as described and for the purpose set forth

5. In a knitting machine employing a plurality of threads, the combination of suitably mounted mechanically actuated needles, independently movable warp-guides arranged with respect to the needles, mechanism for successively projecting and retracting said guides endwise, and mechanisms for feeding the threads and knitting them together to produce a fabric, substantially as described.

## 528,811. LAMP-HOLDER FOR BICYCLES. THOMAS SANDERS, Birmingham, England. Filed Feb. 10, 1894. Serial No. 499,788. (No model.)



*Claim.*—1. A lamp holder for bicycles consisting of a rod or wire bent to form arms adapted to extend from beyond the periphery of

the wheel to the axle and having eyes at their inner ends to embrace the axle and a loop at the outer ends for the attachment of a lamp, substantially as described.

2. A lamp holder for bicycles consisting of the arms D, D, the eyes E E adapted to fit over the axle and the inwardly turned ends adapted to bear against the fork, substantially as described.

3. A lamp holder for bicycles consisting of the arms D, D, the loop F at the outer ends of the arms, the eyes E, E near the inner ends of the same, the inwardly turned ends adapted to bear against the fork, the loops I, I, and the bends K, K, forming foot rests, substantially as described.

4. A lamp holder for bicycles consisting of a frame constructed to embrace the front wheel of the bicycle and having its inner ends formed with eyes adapted to receive the axle and having its outer end adapted for attachment to a lamp, substantially as described.

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528,812. PYROXYLIN COMPOUND AND PROCESS OF MAKING SAME. ROBERT C. SCHUPPHAUS, Brooklyn, assignor to the Arlington Manufacturing Company, New York, N. Y. Filed July 28, 1894. Serial No. 518,869. (No specimens.)

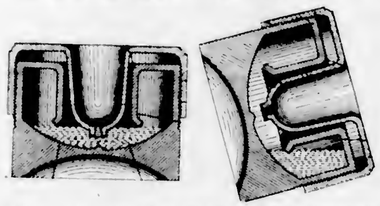
*Claim.*—1. The process herein described which consists in mingling pyroxylin with one or more alkoyl derivatives of aromatic amins or their products of substitution in a state of fusion, or of solution, substantially as described.

2. The process described, which consists in treating pyroxylin with one or more alkoyl derivatives of aromatic amins or their products of substitution under heat and pressure, substantially as described.

3. As a new article of manufacture, the product described, the same consisting of a compound of pyroxylin with one or more alkoyl derivatives of aromatic amins or their products of substitution, substantially as described.

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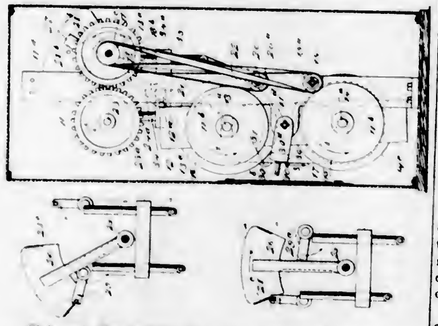
528,813. INKSTAND. THOMAS S. SHENSTON, Brantford, Canada. Filed Mar. 22, 1894. Serial No. 504,640. (No model.)



*Claim.*—In an inkstand, the well having a cavity, and an integral drop tube projecting downwardly into the cavity, combined with a screw cover having a similar tube provided with a small bore and adapted to be carried through said drop tube into the ink in the well when the cover is screwed down, substantially as set forth.

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528,814. ADVERTISING-MACHINE. WILLIAM T. SHIRLEY, St. Elmo, Tenn. Filed Mar. 30, 1894. Serial No. 505,719. (No model.)



*Claim.*—1. The combination with a supported rocking frame, rollers thereon, and a flexible sheet carried by said rollers, of a roller-rotating mechanism, and a co-acting frame rocking device operated by said sheet, substantially as described.

2. The combination with a pivotally supported frame, and two spaced rollers thereon, of a flexible sheet fast at its ends on the rollers, and mechanism arranged to alternately move the rollers and sheet in opposite directions when tripped by projections on the sheet, substantially as described.

3. The combination with a frame supported to rock from a vertical plane, two spaced rollers thereon, and a flexible sheet, of mechanism arranged to reverse the direction of rotative movement in the rollers when the frame is rocked, substantially as described.

4. The combination with a frame supported to rock from a vertical plane, two spaced rollers journaled thereon, a flexible sheet secured by ends on the rollers, and mechanism arranged to alternately change motion in the rollers when the frame is rocked, of a device actuated by the moving sheet that is adapted to periodically rock the frame, substantially as described.

5. The combination with a case and a main frame, of a rocking frame pivoted therein, two spaced main rollers, a flexible sheet on said rollers, and mechanism that moves the rollers and sheet alternately in opposite directions, changing said movement when the roller bearing frame is rocked, substantially as described.

6. The combination with a case and a main frame, of a rocking frame pivoted in the main frame, a roller supported flexible sheet in the rocking frame, and mechanism moved by the sheet which is adapted to rock the roller frame, substantially as described.

7. The combination with a main frame, of a rocking frame pivoted in the main frame, two spaced rollers on shafts journaled in the rocking frame, mechanism engaging the shaft ends and arranged to change rotation of the rollers and direction of movement for the sheet as the frame is rocked, and a device moved by the sheet that is adapted to rock the roller frame, substantially as described.

8. The combination with a main frame, a rocking frame therein, two spaced rollers on the rocking frame, and a flexible sheet fast by ends on the rollers, of gearing arranged to change the direction of rotation in the rollers as the frame is rocked, a vibratile frame on the main frame, transverse bars on the sheet adapted to periodically engage the vibratile frame oppositely, and mechanism actuated by the vibratile frame and arranged to move the rocking frame, substantially as described.

9. The combination with two horizontally supported, spaced rollers on a rocking frame, a flexible sheet secured by ends on the rollers, and mechanism arranged to rotate, and periodically change the direction of rotation for the rollers when the frame is rocked, of a frame rocking device, comprising two transverse bars on the sheet near its ends, a vibratile frame oppositely moved by said bars, two slide bars actuated by the vibratile frame, a rock shaft above the rocking frame, a tilting arm alternately engaged by the slide bars, a gravity lever on the rock shaft, a tumbling lever loosely secured to the gravity lever and having a forked connection with the top bar of the rocking frame, and a device moved by the roller actuating mechanism and adapted to rock the gravity lever, substantially as described.

10. The combination with a main frame, an upright pivoted rocking frame thereon, two spaced horizontal main rollers on shafts journaled in the rocking frame, friction wheels on projected ends of said shafts, a flexible sheet fast at its ends on the rollers, transverse bars on the sheet, and a frame rocking device actuated by the transverse bars, of a main shaft, a drum thereon, friction wheels on projected ends of the main roller shafts, smaller friction wheels having pulleys on their ends, and rotatably sustained to alternately engage with the friction wheels on the main rollers as the frame is rocked, and belts arranged to rotate the smaller friction wheels in opposite directions, substantially as described.

11. The combination with a main frame and a rocking frame, of two main rollers thereon, two supplementary rollers rotatably supported on projecting arms on the main frame, a flexible sheet engaging the main rollers and supplementary rollers, and power driven mechanism arranged to rotate the main rollers and adapted to change the direction of their rotary movement, substantially as described.

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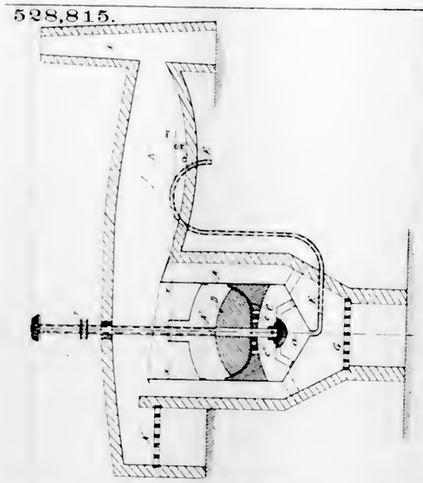
528,815. AMALGAMATOR. HENRY L. SIMMONS, Wickes, Mont. Filed Jan. 27, 1894. Serial No. 498,218. (No model.)

*Claim.*—1. The combination, with a separating device consisting of a receptacle adapted to hold molten metal, a furnace for keeping the said metal in a molten condition, and means for subjecting the material to attrition in the said receptacle; of a reducing furnace inclosing the upper portion of the said receptacle and adapted to receive the overtail, substantially as set forth.

2. The combination, with a separating device consisting of a receptacle adapted to hold molten metal, a furnace for keeping the said metal in a molten condition, and means for subjecting the material to attrition in the said receptacle; of a reducing furnace provided with a heating furnace and a chimney, the upper portion of the said receptacle being arranged between the body of the reducing furnace and its said heating furnace and adapted to discharge its overtail into the said reducing furnace, substantially as set forth.

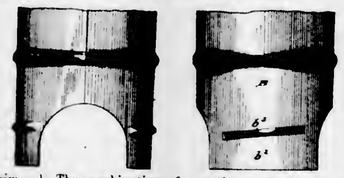


528,815.



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528,816. STOVEPIPE-JOINT. JOHAN E. SMILEY, Smiley, Ohio. Filed Mar. 22, 1894. Serial No. 504,665. (No model.)



*Claim.*—1. The combination of two pipe sections, one of which has notches in one end and intervening elastic portions provided with spiral ribs, the other sections having corresponding spiral grooves arranged oppositely, as shown and described.

2. The combination, with a pipe section, having spiral grooves arranged oppositely, in its receiving end, and a section provided with a stop-collar, and having notches in its entering end, and spiral ribs formed on the elastic portions that intervene said notches, the arrangement of said grooves and ribs coinciding, as shown and described, so that when the two pipe sections are connected, the ribbed portions of the entering section enter the plain spaces which intervene the grooves of the other section, and then, upon rotating one section, the ribs and grooves interlock, as specified.

3. As an improved article of manufacture, a stove-pipe section having its entering end provided with spiral grooves which are separated by plain spaces, and its entering end provided with spiral ribs and intervening notches, the said grooves and ribs coinciding in arrangement and pitch, as specified.

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528,817. TALLY-REGISTER FOR GRAIN-MEASURERS. CYRUS SNYDER, Battle Creek, Mich., assignor to the Advance Thresher Company, same place. Filed Nov. 15, 1893. Renewed Oct. 1, 1894. Serial No. 524,678. (No model.)



*Claim.*—1. In a register, the combination with a suitable base, of a dished annulus having diametrically opposite lugs, and a flange provided with two sets of digits, the tens and hundreds ratchet-toothed register disks arranged within said annulus and one rotated by a lug on the other, a wrist or pivot pin journaled in the said base, a lever arranged on the inner end of the wrist or pivot pin and provided with a push pawl acting on the dished annulus, and an actuating lever secured to the outer end of the wrist or pivot-pin and adapted to be actuated at intervals, substantially as described.

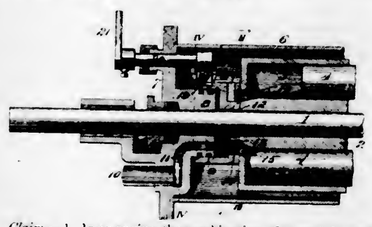
2. In a register, the combination with a suitable base, of a dished annulus having an annular series of teeth, and two sets of digits, ratchet-toothed register disks arranged at one side of the annulus, and one rotated by a lug on the other, a wrist or pivot pin journaled in the said base, a lever arranged on the inner end of the wrist or pivot pin and provided with a pivoted, spriog pressed push-pawl acting on the teeth of the annulus, and a spring pressed lever secured to the outer end of the wrist or pivot pin and adapted to be actuated at intervals, substantially as described.

3. In a tally-register, the combination with a base having a circular rib, of an annulus seated within said rib and provided with an inwardly turned toothed flange engaged by angular keepers screwed to the base, a lever carried by a wrist passing through said base, a spring-impelled pawl pivoted on said lever and meshing with the toothed flange of the annulus, and a plurality of register-disks journaled within said annulus and provided with ratchet teeth lying in different planes, one of said disks being provided with a lug lying in the plane of the teeth on the adjacent disk, and the annulus being provided with a flange displaying the nine digits and a cipher and having a lug lying in the plane of the ratchet-teeth of the first register-disk, substantially as described.

4. In a tally-register, the combination with a base having a circular rib, of an annulus having an outwardly turned flange on one edge on which are displayed a plurality of series of digits, and an inwardly turned toothed flange upon its other edge engaged by angular keepers screwed to the base, a plurality of register-disks journaled upon studs arranged within said annulus in the line of a chord of the circle described by said annulus, a lever fulcrumed upon a wrist passing through the base, and a spring impelled pawl pivoted upon said lever and meshing with the toothed flange of the annulus, the latter being provided with inwardly projecting lugs to give an intermittent movement to the first disk, and the latter having a lug communicating a similar movement to the second disk, substantially as described.

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528,818. ENGINE. CHARLES F. SPARKS, Alton, Ill. Filed June 6, 1894. Serial No. 513,669. (No model.)



*Claim.*—1. In an engine, the combination of a revolving cylinder, containing reciprocating pistons, a valve having supply and exhaust ports, and a head 7 having a hub 8 over which the chambered valve fits; substantially as and for the purpose set forth.

2 In an engine, the combination of a shaft 1, a revolving cylinder located on the shaft, reciprocating pistons contained in the cylinder, a valve 5 having a shaft opening 12 larger than the diameter of the shaft, a head 7 having a hub 8, over which the valve fits, a segment 18 engaging the rack on the valve, and means for turning the segment; substantially as and for the purpose set forth.

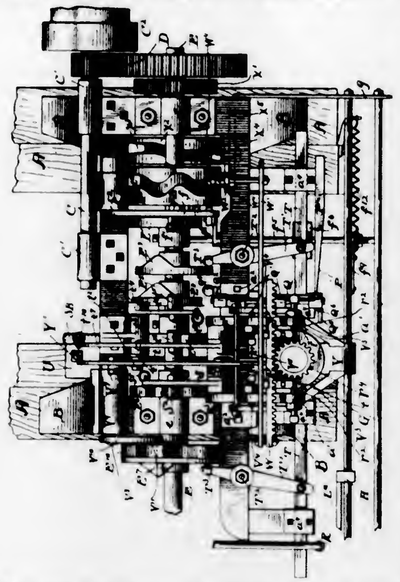
3. In an engine, the combination of a shaft, a revolving cylinder located on the shaft and containing reciprocating pistons, a valve having supply and exhaust ports and a shaft opening larger than the diameter of the shaft, and a head 7 having a hub 8 over which the valve fits, substantially as and for the purpose set forth.

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528,819. MACHINE FOR MAKING CHAINS. PHILANDER H. STANDISH, St. Mary's, Ohio. Filed Sept. 28, 1893. Serial No. 486,699. (No model.)

*Claim.*—1. In a chain-making machine, in combination a heating-furnace, a carriage adapted to convey the open-ended link from said furnace to and insert the same into the last link added to the chain, a conveyer or carrier for carrying the link-blank to be heated into or through the heating-chamber of the heating-furnace, and suitable means or mechanism for effecting the delivery of the heated link blank from said link-blank conveyer or carrier to the aforesaid link-carriage, substantially as set forth.

2. In a chain-making machine, in combination, a carriage adapted to convey the heated open ended link-blank from the heating-furnace to and insert the same into the last link added to the chain, a carrier or conveyer for feeding the link blank into or through the heating-furnace, a rotating-shaft, a cam or cam-wheel operatively mounted upon said shaft, and suitable means or mechanism for effecting the delivery of the heated link blank from said link-blank carrier or conveyer to the aforesaid link-carriage and adapted to be actuated by the aforesaid cam or cam-wheel, substantially as set forth.



3. In a chain-making machine, in combination, a carriage adapted to convey the heated open-ended link blank from the heating-furnace to and insert the same into the last link added to the chain, a carrier or conveyer for conducting the heated link blanks into or through a heating furnace, suitable means for effecting the delivery of the heated link-blank from said link-blank carrier or conveyer to the aforesaid link-carriage, a rotating shaft and suitable mechanism operatively connecting the link-blank-carrier or conveyer with said shaft for actuating said carrier or conveyer, substantially as set forth.

4. In a chain-making machine, in combination, a carriage adapted to convey the heated open-ended link-blank from the heating-furnace to and insert the same into the last link added to the chain, a carrier or conveyer for conducting the heated link-blanks into or through a heating furnace, suitable means operatively connected with a shaft for actuating said link-blank carrier or conveyer, suitable means for effecting the delivery of the heated link-blank from the furnace link-blank carrier or conveyer to the aforesaid link-carriage, and a cam or cam-wheel operatively mounted on said shaft for actuating said link-blank delivering means, substantially as set forth.

5. In a chain-making-machine, in combination, a carriage adapted to convey the heated open ended link-blank from the heating-furnace to and insert the same into the last link added to the chain, a carrier or conveyer for feeding the link blanks into or through the heating-furnace, a rotating shaft, a cam or cam-wheel operatively mounted upon said shaft, a reciprocating rod or bar terminating at one end in an upright slotted plate or fork for effecting the delivery of the heated link-blank from the link-blank holder or carrier to the aforesaid link-carriage, and suitable means for reciprocating said reciprocating-rod or bar and actuated by the aforesaid cam or cam-wheel, the arrangement of parts being substantially as set forth.

6. In a chain-making-machine, in combination, suitable means for holding the link last added to the chain in position to receive a new link, a track extending lengthwise of the machine forward of said chain-holding means, a carriage mounted on said track adapted to convey the open-ended chain-link from the heating furnace and insert the same into the link last added to the chain, and suitable means for effecting the reciprocation of said carriage, substantially as set forth.

7. In a chain-making-machine, in combination, suitable means for properly holding the last link added to the chain in position for the reception of a new link, a track extending lengthwise of the machine forward of said chain-holding-means, a carriage mounted on said track adapted to convey the heated link-blank from the heating-furnace and insert the same into the last link added to the chain, a rotating shaft, a cam or cam-wheel operatively mounted on said shaft and suitable mechanism operatively connected with said carriage and adapted to be actuated by the cam or cam-wheel, said cam-actuated mechanism being adapted to reciprocate the carriage in the one direction and one or more springs for reciprocating said carriage in the opposite direction, substantially as set forth.

8. In a chain-making machine, in combination, a suitable means for properly holding the last link added to the chain in position for the reception of a new link, a track extending lengthwise and located forward of said chain-holding means, a carriage mounted on said track, chain-holding tongs turnably supported by said carriage, said tongs being adapted to receive an open-ended heated chain-link-blank with the open end presenting downwardly, suitable means for giving the chain-holding tongs a partial turn to bring the link held by the tongs in proper position for insertion into the last link added to the chain, suitable means for engaging the link when held by the tongs and actuating the link to a horizontal position with the open end of the link presented outwardly preparatory to the turning of the tongs, suitable means for closing the jaws of the tongs preparatory to the engagement of the link by said link actuating means, suitable means for opening the jaws of the tongs after the insertion of the link into the last link added to the chain, and suitable means for reciprocating the link-carriage, substantially as set forth.

9. In a chain-making-machine, in combination, a track extending lengthwise of the machine, a carriage mounted on said track, tongs carried by said carriage, said tongs being adapted to receive an open-ended link-blank with its open end lowermost, and being rotatably supported by the carriage, the shank of the tongs having a laterally-projecting lug or member, a stationary incline located in the path of said laterally-projecting lug or member and adapted to actuate said lug or member and thereby give the link-holding tongs a partial turn, and suitable means for engaging the depending link and actuating the latter to assume a horizontal position with its open end presented outwardly, the arrangement of parts being such that the link shall be caused to assume said horizontal position preparatory to the aforesaid partial turn given to the link-holding tongs, substantially as set forth.

10. In a chain-making-machine, in combination, suitable means for holding the link last added to the chain in proper position to receive a new link, a track located forward of said chain-holding means and extending lengthwise of the machine, a carriage mounted on said track, suitable means for reciprocating said carriage, tongs supported by the carriage, suitable means for opening the tongs and suitable means for closing the tongs, the parts being so arranged and timed that the jaws shall be opened preparatory to the insertion of the open-ended link into the link last added to the chain and shall remain open until it has received another link and shall be closed upon the reception of the link, substantially as set forth.

11. In a chain making-machine, in combination, suitable means for holding the link last added to the chain in proper position to receive a link for welding, a track located forward of said chain-holding means and extending lengthwise of the machine, a carriage mounted on said track, mechanism for reciprocating said carriage, tongs turnably supported by the carriage and adapted to receive an open-ended heated link with the open end lowermost, suitable means for giving said tongs a partial turn, suitable means for opening the jaws of the tongs upon the insertion of the open-ended heated link into the link last added to the chain, suitable means for actuating the link to a horizontal or approximately horizontal position preparatory to the partial turn given to the tongs, and suitable means for closing the jaws of the tongs preparatory to the actuation of the link into a horizontal position, the arrangement of parts being substantially as set forth.

12. In a chain-making-machine, in combination, suitable means for holding the link last added to the chain in proper position to receive a link for welding, a track located forward of said chain-holding means and extending lengthwise of the machine, a carriage mounted on said track, a rotating shaft, mechanism for moving said carriage and comprising a cam or cam-wheel operatively mounted on said shaft, mechanism operatively connected with said carriage and adapted to be actuated by said cam or cam-wheel to move the carriage in the one direction, and one or more springs for moving said carriage in the opposite direction, tongs turnably supported by the carriage and adapted to receive the open-ended heated link with the open end presenting downwardly, suitable means for giving said tongs a partial turn to bring the link held by the tongs in proper position for insertion into the link last added to the chain, suitable means for opening the jaws of the tongs after said insertion and a cam or cam-wheel operatively mounted on the aforesaid shaft for actuating said tongs-opening means, suitable means for actuating the open-ended link into a horizontal or approximately horizontal position with the open end of the link presented outwardly preparatory to the partial turn given to the tongs, suitable means for closing the jaws of the tongs preparatory to the actuation of the link into a horizontal position, and a cam or cam-wheel operatively mounted on the aforesaid shaft for actuating said tongs-closing means, substantially as set forth.

13. In a chain-making-machine, the combination with the link-carriage for conveying the heated open-ended link to the point at which said link is connected with the chain, said link-carriage being provided with tongs or jaws for holding the link, the latter being received upon the lower jaw with its open end presenting downwardly, of suitable means for actuating said link into a horizontal or approximately horizontal position with the open end of the link presented outwardly, substantially as set forth.

14. In a chain-making-machine, the combination with the link-carriage for conveying the heated open-ended link to the point at which said link is connected with the chain, said link-carriage being provided with tongs or jaws for holding the link, the latter being received upon the lower jaw with its open end presented downwardly, of a stationary upright plate or member located in the path of the link-carriage and adapted to engage and lift the open end of the link into a horizontal or approximately horizontal position, substantially as set forth.

15. In a chain-making machine, the combination with the carriage for conveying the heated open-ended link to the point at which said link is connected with the chain, said carriage being provided with tongs or jaws for holding the link, the tongs being adapted to receive the link with the open end of the link presented downwardly, of suitable means for actuating said link to bring the open end thereof in proper position for insertion into the link last added to the chain, substantially as set forth.

16. In a chain-making-machine, the combination with a carriage for conveying the heated open ended link to the point at which it is inserted into the link last added to the chain, said carriage being provided with a turnable tongs adapted to hold the open-ended link in a horizontal position, of suitable means for giving said tongs a partial turn to bring the link into the proper position for insertion into the link last added to the chain and suitable means for turning the tongs into its normal position, substantially as set forth.

17. In a chain-making-machine, the combination with a carriage for conveying the heated open-ended link to the point at which it is inserted into the link last added to the chain, said carriage being provided with a turnable tongs adapted to hold the open-ended link in a horizontal position, of a stationary incline for giving said tongs a partial turn to bring the link into the proper position for insertion into the link last added to the chain, and a spring for turning the tongs back into its normal position, substantially as set forth.

18. In a chain-making-machine, the combination with the supporting-frame, a track extending lengthwise of and rigid with said frame, a link-carriage mounted upon and adapted to reciprocate endwise of said track, of a rotating-shaft, a cam operatively mounted on said shaft, an oscillating-shaft located below and arranged at right angles to the aforesaid cam-shaft, a lever fulcrumed upon said oscillating-shaft, an oscillating-lever provided with a roller or projection adapted to be engaged by said cam, a link operatively connecting the cam-actuated lever with the lever of the oscillating shaft aforesaid, a lever and link or connecting rod operatively connecting the link carriage with said oscillating-shaft, said cam-actuated mechanism being adapted to reciprocate the link-carriage in one direction, and one or more springs for reciprocating said carriage in the opposite direction, substantially as set forth.

19. In a chain-making-machine, the combination with the supporting-frame, a track extending lengthwise of and rigid with said frame, a carriage supported by and movable endwise of said rack, said carriage being adapted to convey the heated open-ended link to the point at which it is connected with the link last added to the chain suitable means or mechanism for reciprocating said carriage, the latter being provided with a sleeve or hollow member, and link-holding tongs, the shank whereof has bearing in and is adapted to be turned within said sleeve or hollow member, suitable means for preventing said tongs from moving endwise of its bearing, the shank of the tongs being provided with a laterally-projecting lug or member, of suitable means for engaging said laterally-projecting lug or member and thereupon actuating the link-holding toogs laterally to bring the link held by the tongs in proper position for insertion into the link last added to the chain, and suitable means for turning said tongs back into its normal position, substantially as set forth.

20. In a chain-making-machine, in combination, suitable means for holding the chain with the link last added to the chain in proper position for the reception of a new link, a track located forward of said chain-holding-means and arranged lengthwise of the machine, a carriage mounted upon and adapted to travel endwise of said track, a link-holding tongs rotatably supported by said carriage, said tongs being adapted to receive the open-ended heated link-blank with the open end of the link presented downwardly, a cam or eccentric interposed between the jaws of said tongs for opening said jaws, suitable means for giving said tongs a partial turn to bring the link-blank in proper position for insertion into the link last added to the chain, suitable means for causing the link-blank to assume a horizontal position with its open end presented outwardly preparatory to said partial rotation of the link-holding tongs, suitable means for actuating the aforesaid cam or eccentric to close the tongs before the link is actuated to a horizontal position, suitable means for actuating said cam or eccentric to open the tongs after the proper insertion of the link into the link last added to the chain, a rotating-shaft, a cam mounted on said shaft, suitable mechanism actuated by said cam and operatively connected with the link-carriage and adapted to reciprocate the carriage in the one direction, suitable means for reciprocating said carriage in the opposite direction, suitable means for rotating the tongs to its normal position preparatory to the reception of another link from the heating-furnace, the cam for actuating the mechanism for reciprocating said carriage away from the heating-furnace being of such construction as to cause said carriage, upon the insertion of the link into the link last added to the chain, to free the link just inserted from the tongs and to permit the open end of the newly added link to drop by gravity into position for the subsequent operations upon the link, substantially as set forth.

21. In a chain-making-machine, in combination, a suitable device or means for holding the chain, a reciprocating carriage for conveying the open-ended heated link to and inserting the same into the link last added to the chain, suitable means or mechanism for actuating said carriage, a track for said carriage, reciprocating-bars located rearward of said track and adapted to butt, lap, close or squeeze the free extremities of the open end of the link together, suitable means or mechanism for actuating said bars and suitable means or mechanism for swinging the chain-holding device outwardly into position for the connection of the open-ended link with the chain, and for swinging said device inwardly in position between the squeezing-bars, the arrangement of parts being substantially as and for the purpose set forth.

22. In a chain-making-machine, the combination with a suitable device or means for holding the chain or link last added to the chain, of suitable means or mechanism operatively connected with and adapted to swing said chain-holding-device or means in opposite directions, a rotating-shaft, a cam or cam-wheel operatively mounted on said shaft and adapted to actuate said swinging-means or mechanism in the one direction, and a spring for actuating the same in the opposite direction, substantially as set forth.

23. In a chain-making-machine, the combination with a suitable device or means for holding the chain or link last added to the chain, of a rotating shaft, a cam or cam-wheel operatively mounted on said shaft, lever-mechanism operatively connected with said chain-holding means and adapted to be actuated by said cam or cam-wheel and be thereby swung in the one direction, and a spring for actuating said lever-mechanism to swing said chain or link holding-means in the opposite direction, substantially as set forth.

24. In a chain-making machine, the combination with the supporting-frame, upright housings or standards rigid with said frame, and chain-holding device or means suitably supported between said standards or housings, of an anvil located below said chain-holding device in position to receive the link to be welded, a swinging hammer having two arms pivotally secured to said housings or standards, and adapted to strike the end of the link to be welded, and suitable means or mechanism for actuating said hammer to cause the latter to perform its function, substantially as set forth.

25. In a chain-making machine, the combination with an anvil and suitable means for holding the link last added to the chain against the anvil in position for welding, of a hammer for striking the link upon the anvil, a rotating shaft, a cam or cam-wheel operatively mounted on said shaft, lever-mechanism operatively connected with said hammer and adapted to be actuated by said cam or cam-wheel to swing the hammer in the one direction, and one or more springs for actuating the hammer in the opposite direction, substantially as set forth.

26. In a chain-making machine, the combination with the chain-holding device, a pair of squeezing-bars located a suitable distance rearward of the point at which the open-ended link is connected with the chain, said squeezing-bars being adapted to close the open end of the link, suitable mechanism for reciprocating said bars and suitable mechanism for swinging the chain-holding device from the point at which the link is connected with the chain into position to bring the newly added link between the squeezing-bars, substantially as set forth.

27. In a chain-making machine, the combination with the swinging chain holding device, a pair of squeezing-bars located a suitable distance rearward of the point at which the open-ended link is connected to the chain, and mechanism for actuating said bars to close the open end of the link, of a rotating cam-shaft, a cam operatively mounted upon the shaft, lever-mechanism operatively connected with the chain holding device and actuated by said cam to swing the chain-

holding device into position to receive the new link, and a spring for actuating said lever-mechanism to swing the chain-holding device from said position into position between the squeezing-bars, substantially as set forth.

28. In a chain-making machine, the combination with the swinging chain-holding device, a pair of squeezing-bars, suitable mechanism for actuating said bars to engage the open-ended link last added to the chain and close the open end of the same, of suitable mechanism for engaging and elevating the chain to bring the newly added link into holding engagement by the chain-holding device after the operation of the aforesaid bars, substantially as set forth.

29. In a chain-making machine, the combination with the swinging chain-holding device, a pair of squeezing-bars, suitable mechanism for actuating said bars to engage the open-ended link last added to the chain and close the open end of the same, of a bar capable of being inserted in one of the links of the chain to bring the newly added link into holding engagement by the chain-holding device after the operation of the aforesaid bars, and suitable mechanism for elevating or lifting the bar upon its insertion, substantially as set forth.

30. In a chain-making machine, the combination with the swinging chain-holding device, a pair of squeezing-bars, suitable mechanism for actuating said bars to engage the open-ended link last added to the chain and close the open end of the same, of a bar *l* capable of being inserted into one of the links of the chain, a rotating camshaft E, a cam $E^3$ operatively connected with the shaft, suitable mechanism operatively connected with the aforesaid bar and adapted to be actuated by said cam to cause the bar to engage the respective link of the chain, a cam $E^3$ operatively mounted upon said shaft and suitable mechanism operatively connected with the aforesaid bar and adapted to be actuated by said cam to elevate or lift the bar, and suitable means for returning said chain-engaging and lifting mechanism to its normal position, the parts being arranged and timed, substantially as set forth.

31. In a chain-making machine, the combination with the swinging chain-holding device, a pair of squeezing-bars, suitable mechanism for actuating said bars to engage the open-ended link last added to the chain and close the open end of the same, of a bar *l* capable of being inserted into one of the links of the chain, a rotating camshaft E, a cam $E^3$ operatively connected with the shaft, suitable mechanism operatively connected with the aforesaid bar and adapted to be actuated by said cam to cause the bar to engage the respective link of the chain, a cam $E^3$ operatively mounted upon said shaft and suitable mechanism operatively connected with the aforesaid bar and adapted to be actuated by said cam to elevate or lift the bar, and springs for returning said mechanisms to their normal position, substantially as set forth.

32. In a welded-chain-making machine, in combination, the chain-holding device, reciprocating-bars for engaging the open end of the link last added to the chain and closing said end, an anvil located rearward of said squeezing-bars and provided with a female die for receiving the link thus operated upon preparatory to the welding operation, of suitable mechanism for swinging the chain-holding-device to bring the link operated upon from its position between the squeezing-bars into engagement with the female die of the anvil, substantially as set forth.

33. In a welded-chain making machine, the combination of the supporting-frame, upright standards or housings rigid with said frame, upright chain-holding device pivotally supported by and between said housings or standards, reciprocating-bars T adapted to engage and close the open end of the link last added to the chain and located rearward of the point at which the link is connected with the chain, suitable mechanism for operating said bars, an anvil located rearward of said bars and provided with a female die for receiving said link preparatory to the welding operation, suitable mechanism for engaging and lifting the chain to cause the link to be welded to be firmly held by the chain-holding device, suitable mechanism for swinging the chain holding device from the point at which the link is connected with the chain into position between the squeezing-bars and from said position to the female-die, a hammer for welding the closed end of the link and suitable mechanism for actuating said hammer, the parts being arranged and timed substantially as and for the purpose set forth.

34. In a welded-chain-making machine, the combination of the supporting-frame having a pair of upright standards or housings *a*, a chain-holding device located between and supported from said standards, an anvil located a suitable distance below said chain-holding-device, and a hammer for co-operating with the anvil in welding the links, said hammer having a pair of upwardly and rearwardly extending arms pivoted to the upper portion of the aforesaid standards or housings, and suitable mechanism for operating the hammer, substantially as set forth.

35. In a welded-chain-making machine, the combination of the supporting-frame having a pair of upright standards or housings *a*, a chain holding-device located between and supported from said standards, an anvil located a suitable distance below said chain-holding-device, and a hammer for co-operating with the anvil in welding the links, the hammer having a pair of upwardly and rearwardly extending arms pivoted to the upper portion of the aforesaid standards or housings, of a rotating cam-shaft, a suitable cam operatively mounted upon said shaft and mechanism operatively connected with the hammer arms and adapted to be actuated by said cam to elevate the hammer from the anvil, and one or more springs for co operating with gravity in actuating the hammer to deliver its blows, substantially as set forth.

36. In a welded chain-making machine, the combination of the supporting-frame having a pair of upright standards or housings, *a*, a chain-holding device suitably supported from the upper end of said housings or standards, an anvil located a suitable distance below the chain-holding-device, a hammer adapted to co operate with the anvil in welding the links and having upwardly or rearwardly extending arms pivoted to the aforesaid standards or housings, suitable lever-mechanism for elevating or lifting the hammer from the anvil, a rotating shaft and a cam on said shaft for actuating said mechanism, said cam being shaped to cause the hammer to deliver several successive blows, and suitable means co-operating with the gravity of the hammer in actuating the latter to deliver its blows, substantially as set forth.

37. In a welded-chain-making machine, the combination with a chain-holding-device turnably supported, anvil and hammer for welding the link and mechanism for actuating the hammer to deliver successive blows, of a lever $W^3$, a rotating shaft, a cam on said shaft for operating said lever, a pinion operatively connected with the chain holding-device and a rack meshing with said pinion and operatively connected with the aforesaid lever, the parts being so arranged and timed that the chain-holding-device is given a one-half turn between successive blows of the hammer, substantially as set forth.

38. In a chain-making machine, the combination with the supporting-frame having a pair of upright standards or housings, *a*, barrel, cylinder or tube, *r*, revolubly supported from and between said housings or standards, said tube, barrel or cylinder, at its lower end, being provided with jaws for holding the link to be welded, the chain being adapted to pass from the machine upwardly through said cylinder, barrel or tube, an anvil or hammer for welding the link last added to the chain, suitable mechanism for actuating said hammer to deliver successive blows and suitable mechanism for giving the barrel, tube or cylinder a one-half turn between successive blows of the hammer, substantially as set forth

39. In a welded-chain-making machine, a revoluble and laterally swinging chain holding-device comprising a revoluble cylinder, barrel or tube pivotally supported so as to be capable of being swung laterally and four spring jaws $a^4$ detachably secured to the lower end of said cylinder, tube or barrel, the newly added link being connected with the chain a suitable distance in front of the point at which the welding operation takes place and the open end of the link being closed at a point between the points at which the connection and welding of the link take place, respectively; suitable means for closing the open end of the link and suitable means for swinging the chain-holding-device laterally to bring the same into the position required relative to the operation to be performed, and suitable mechanism for giving the chain-holding-device a one-half turn to enable the link to be welded to receive blows on opposite sides in the welding operation, the parts being arranged and timed, substantially as set forth.

40. In a welded-chain-making machine, the combination with the chain-holding-device, anvil and hammer for welding the link, suitable mechanism for actuating the hammer to deliver successive blows, and mechanism for giving the chain-holding-device a one half turn between successive hammer-blows, of suitable mechanism for swinging the chain-holding-device laterally to disengage the link to be welded from the anvil to enable said link to be turned preparatory to the delivery of the next succeeding blow of the hammer, substantially as set forth.

41. In a welded-chain making-machine, the combination with the chain holding-device, anvil and hammer for welding the link, mechanism for actuating the hammer to deliver successive blows and mechanism for giving the chain-holding-device a one-half turn between successive hammer-blows, of suitable mechanism for swinging the chain-holding-device laterally to disengage the link to be welded from the anvil to enable said link to be turned preparatory to the delivery of the next succeeding blow of the hammer, and springs acting to retain said chain-holding-device in position with the link to be welded in engagement with the anvil, substantially as set forth

42. In a welded-chain-making-machine, the combination with the chain-holding-device, anvil and hammer for welding the links, suitable mechanism for actuating the hammer to deliver successive blows and mechanism for giving the chain-holding-device a one-half turn between successive hammer-blows, of lever-mechanism for swinging the chain holding device laterally to disengage the link to be welded from the anvil to enable said link to be turned preparatory to the delivery of the next succeeding hammer-blow, a rotating-shaft, a cam operatively connected with said shaft for actuating said lever-mechanism, and suitable means for returning said lever-mechanism to its normal position upon its disengagement by the cam, substantially as set forth.

43. In a welded-chain-making machine, wherein the welding operation is at right angles or approximately at right angles to the position in which the link last added is held for the reception of the next succeeding link-blank, the combination with the chain-holding-device and mechanism for swinging said device laterally into position for the connection of the link-blank, of suitable mechanism for giving the chain-holding device a quarter-turn or approximately a quarter-turn preparatory to the reception of a new link by the link last welded, substantially as set forth.

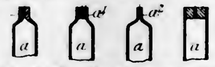
44. In a welded-chain-making machine, wherein the welding operation is at right angles or approximately at right angles to the position in which the link last added is held for the reception of the next succeeding link-blank, the combination with the chain-holding-device and mechanism for swinging said device laterally into position for the connection of the link-blank, of suitable mechanism for giving the chain-holding-device a quarter turn or approximately a quarter-turn preparatory to the reception of a new link by the link last welded, a rotating-shaft and cam operatively connected with said shaft for actuating the aforesaid chain-holding-device turning-mechanism, substantially as set forth.

45. In a chain-making-machine, wherein the welding operation is at right angles or approximately at right angles to the position in which the link last added to the chain is held for the reception of the next succeeding link-blank, the combination with the chain-holding-device and mechanism for swinging said device laterally into position for the connection of the link-blank, of suitable means for giving the chain-holding-device a quarter-turn or approximately a quarter-turn preparatory to the connection of the link-blank with the chain, said mechanism comprising a rotating-shaft a cam operatively connected with said shaft, a pinion operatively connected with the chain-holding-device, a rack meshing with said pinion, and mechanism operatively connected with said rack and adapted to be actuated by the aforesaid cam, substantially as set forth.

46. In a welded chain-making-machine, the combination with the supporting-frame, chain-holding-device, anvil and hammer for welding the links, mechanism for actuating said hammer to deliver successive blows, mechanism for giving the chain-holding device a one-half turn between successive blows of the hammer, and mechanism for swinging the chain-holding-device laterally between successive hammer-blows to permit the link being welded to be turned as required to present opposite sides alternately for receiving the hammer-blows, the roller-bearing sliding-plate or block, $X^3$, upright roller-bearing lever $W^3$ fulcrumed to said block or plate, gear operatively connected with the chain-holding-device, a rack meshing with said gear and operatively connected with the aforesaid lever, a rotating-shaft E and cam operatively connected with said shaft and engaging the roller of and thereby being adapted to actuate the aforesaid lever to give the chain-holding device a one-half turn, shaft X intergeared with the aforesaid shaft E substantially as indicated, and cam $X^3$ operatively connected with shaft X and engaging the roller of and being thereby adapted to actuate the aforesaid roller-bearing sliding-block or plate, the parts being arranged and timed, substantially as set forth.

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**528,820. METHOD OF CLOSING RECEIVERS CHARGED WITH COMPRESSED OR LIQUEFIED GASES.** EMILE STERN, Paris, France. Filed Dec. 28, 1893. Serial No. 495,004. (No model.) Patented in Switzerland Dec. 9, 1893, No. 7,823; in England Dec. 15, 1893, No. 24,165, and in Germany July 2, 1894, No. 75,907.



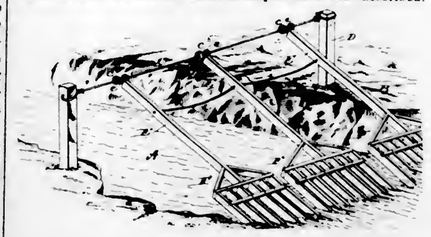

*Claim.*—The process of confining compressed or liquefied gases in metallic receivers, which consists in providing a metallic receiver capable of withstanding great internal pressure and having an opening of very small cross-section with the part through which said opening is made, of material capable of being compressed to close the opening and of maintaining said closure under the internal pressure of the gas, then applying said receiver to the charging apparatus and introducing the desired quantity of gas therein, then closing the minute opening by compressing the material around it and while the pressure of the gas is maintained by the apparatus; substantially as described.

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**528,821. FLOOD-FENCE.** JOHN W. STORY, Bladestan, Ky. Filed Feb. 2, 1894. Serial No. 498,874. (No model.)

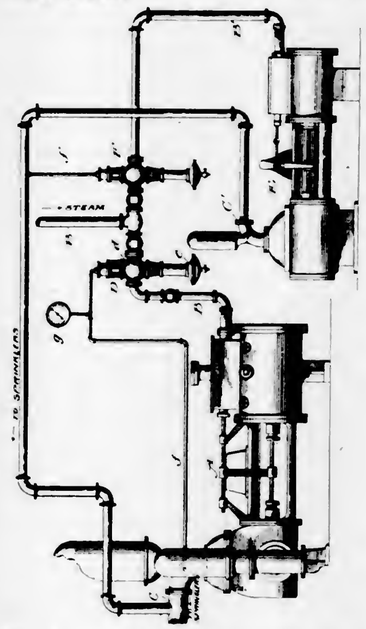
*Claim.*—The improved sectional flood-fence herein shown and described, comprising the suspension rod or cable C provided with the spacing-buttons or washers *c c*, in combination with the hinged, independent sections consisting, each, of a bar or post, E, terminating at its free end in a flat, toothed bead connected to the lower end of the post by oblique side-braces; said depending, hinged section-posts E E being connected to one another below their respective fulcrums by a flexible, slack connection; substantially as shown and described.





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**528,822. PUMPING APPARATUS FOR SPRINKLING SYSTEMS.** BENJAMIN L. STOWE, Jersey City, N. J. Filed June 28, 1894. Serial No. 516,009. (No model.)




*Claim.*—In combination with the main pump, its governor, and the sprinkler system connected to said pump, the auxiliary pump also connected to the sprinkler system, and its governor arranged and adapted to close only at a pressure exceeding that at which the main pump governor closes, substantially as and for the purposes hereinbefore set forth.

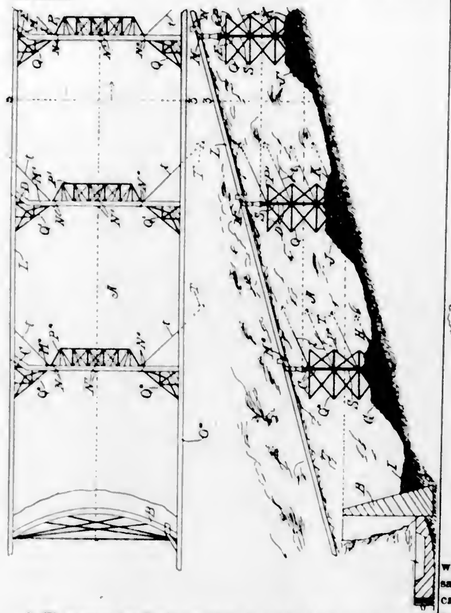
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**528,823. METHOD OF AND MEANS FOR IMPOUNDING DÉBRIS AND STORING WATER.** HARRIET W. R. STRONG, Los Angeles, Cal. Filed Dec. 28, 1893. Serial No. 494,934. (No model.)

*Claim.*—1. In hydraulic mining the method set forth of impounding débris consisting of constructing in a suitable manner a main dam and a series of auxiliary dams extending across the cañon to form reservoirs with the top of each dam above the level of the base of the dam immediately above it: conducting, by suitable sluices, the débris from the mine into the reservoirs in such a manner that the débris will be deposited at the bases of the dams respectively and on each side of the auxiliary dams.

2. The method set forth of providing reservoirs for the storage of water in mountain cañons consisting in constructing a series of dams across the cañon to form primary reservoirs or basins; running débris thereinto and thereby forming deposits in the bottoms of the

basins and thereby forming sedimentary deposits in and filling the same; and then building dams upon the foundation formed by such deposits and dams, and thus ultimately utilizing for water storage purposes, the broad spaces between the upper parts of the sides of the cañon.



3. The system set forth comprising a main dam and a series of auxiliary dams arranged across the cañon, the top of each dam being above the level of the base of the dam immediately above it, and sluices adapted and arranged to deposit débris at the bases of the dams.

4. The combination of the dam and the sluices arranged along the top of the dam and provided with gates adapted and arranged to discharge débris on the opposite sides of the dam.

5. The dams set forth comprising the central partition and lateral truss supports at the sides of the dam at the lower face thereof and a middle truss support at the upper face of the dam.

6. In the storage and impounding system the combination of the trussed dams and means for forming débris deposits so as to embed the trusses.

7. In an impounding system, the combination of the dam and the sluices arranged to discharge débris upon the opposite sides of the dam to form a support therefor.

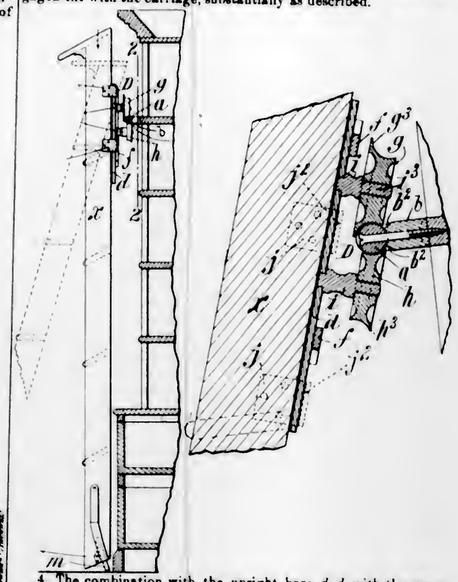
8. The combination of the partition, the lateral trusses at the lower face thereof, the middle truss at the upper face of the partition and the anchoring devices having their cables attached to the partition at the ends of the middle truss.

528,824. STEP-LADDER AND GUIDING-TROLLEY THEREFOR. WILLIAM J. SUMNER, Holyoke, Mass., assignor to the Coburn Trolley Track Manufacturing Company, same place. Filed May 8, 1894. Serial No. 510,545. (No model.)

*Claim.*—1. The combination with the round track, *a*, of the carriage having, at its side, upper and lower pairs of rollers with flanges which overlie the opposite sides of the track, and the ladder having a sliding engagement with the carriage and provided at its bottom with rollers, substantially as described.

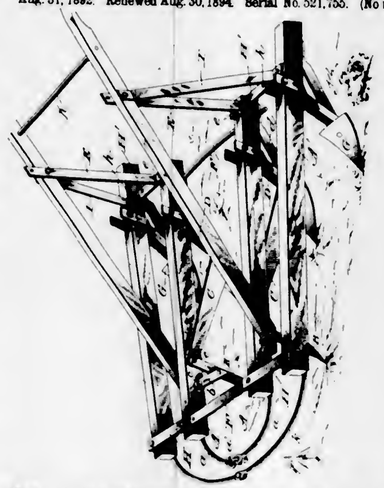
2. The combination with the round track, *a*, of the carriage consisting of the upright bars, *d*, *d*, with the studs, *i*, *i*, and the uniting cross braces, *f*, *f*, the rollers, *g*, *g*, and *h*, *h*, mounted on said studs and having flanges which embrace the track at opposite sides, the ladder arranged with the rear edges of its sides against the said carriage uprights, and the plates, *j*, with angle lugs, $j^3$, which hold said bars and ladder sides against separation, substantially as described.

3. The combination with the casing, or support, having the forwardly extending bracket lugs, *b*, *b*, of the round track-bar and the screws passing transversely through said bar and into the bracket lugs, the carriage comprising the upright bars, *d*, *d*, and the cross-braces, *f*, *f*, and rearwardly mounted flanged rollers which embrace the track, the ladder and means for holding the same to sliding engagement with the carriage, substantially as described.



4. The combination with the upright bars, *d*, *d*, with the rearwardly projected shouldered roller studs, the cross braces *f*, *f*, uniting said bars, *d*, *d*, and the rollers set on said studs and having the concave rims with the flanges, $g^3$ and $h^3$, of the round track, *b*, the ladder and means for holding the ladder to sliding engagement with the said bars, *d*, *d*, of the carriage, substantially as described.

528,825. CULTIVATOR. JOHN R. SUTER, Conway, Ark. Filed Aug. 31, 1892. Renewed Aug. 30, 1894. Serial No. 521,755. (No model.)

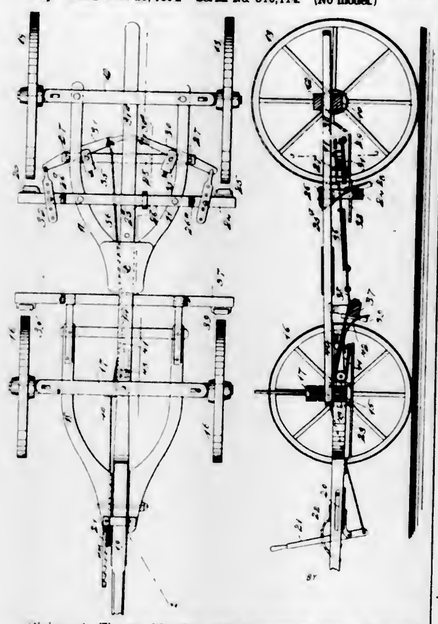


*Claim.*—1. In a cultivator, the combination, of the main beams A A connected to each other at their forward ends by a plate F and adjustably at their rear ends by a bar F' having threaded ends to receive the adjusting nuts, draft-bars *a a* connected to said beams and to each other, together with supplemental side beams carrying shovels and connected to the main beams, substantially as shown, and for the purpose set forth.

2. A cultivator comprising the main beams A A carrying shovels and connected to each other at their forward ends by a plate and adjustably at their rear ends by a bar F' having threaded ends to receive the adjusting nuts, supplemental beams A' A' carrying shovels and connected to the main beams by short plates H and H', and draft-bars attached to the forward ends of the beams and pivotally connected to each other, substantially as shown, and for the purpose set forth.



528,826. WAGON-BRAKE. VARDIMAN T. SWEENEY, Springfield, Ky. Filed June 29, 1894. Serial No. 516,114. (No model.)

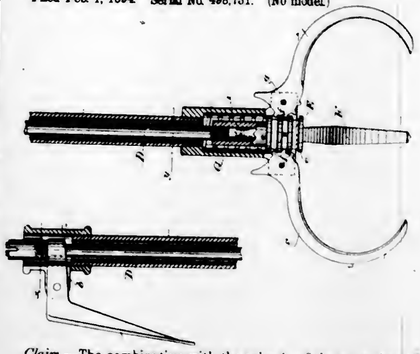


*Claim.*—1. The combination, with the running gear of a vehicle, a pole or tongue having sliding movement in the running gear, and brake bars adapted for braking engagement one with the front and the other with the rear wheels, of spring-controlled levers connected with the rear brake bar and capable when forwardly actuated of carrying the said bar rearwardly, an actuating connection between the said rear brake levers and the forward brake bar, an actuating lever fulcrumed upon the running gear, and a connection between the said lever, the forward brake bar and the rear brake mechanism, substantially as described, whereby the two brake bars will be simultaneously applied upon the manipulation of the actuating lever, as and for the purpose set forth.

2. The combination, with the running gear of a vehicle, a pole or tongue sliding in said running gear, a main brake lever fulcrumed upon the running gear, and a forward and a rear brake bar carried by the running gear, of spring-controlled levers fulcrumed at the rear of the running gear, having sliding connection at their inner ends and connected at their outer ends with the rear brake bar, a connecting bar uniting one of the levers with the forward brake bar, and a draft connection between the connecting bar attached to the rear brake mechanism, the forward brake bar and the main brake lever, as and for the purpose set forth.

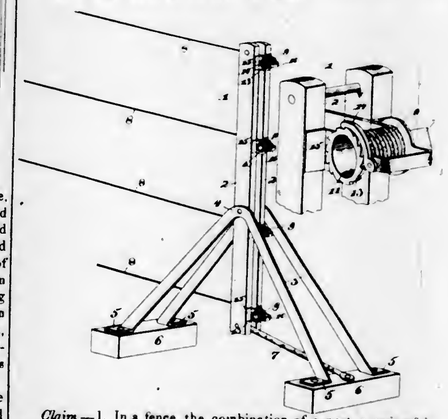
3. The combination, with the running gear of a vehicle, a tongue or pole held to slide therein, a main brake lever fulcrumed upon the running gear, and brake bars carried by the running gear and adapted one for engagement with the rear and the other with the forward wheels of the vehicle, of spring-controlled levers fulcrumed upon the running gear at the rear thereof, the inner ends of the said levers having guided movement one over the other, the said levers being normally in arched position, the outer ends of the levers being connected with the rear brake bar, a connecting rod uniting one of said levers with the forward brake bar, a cable connected with the forward brake bar and the said connecting rod and the main brake lever, an extension rearwardly projected from the tongue or pole, and a second cable connected with the said connecting bar, the forward brake bar and the extension of the pole, the said second cable being passed over a friction or guide pulley, as and for the purpose specified.

528,827. PLUMBER'S GRAPPLING-TOOL. WILLIAM THOMAS, Washington, D. C., assignor of one-half to Matthew Ruppert, same place. Filed Feb. 1, 1894. Serial No. 498,731. (No model.)



*Claim.*—The combination with the tube A, of the upper head B upon one end of the tube, the bell-crank lever C pivoted to said head and engaging the upper end of the rod D, the rod D extending the length of the tube, the serrated piece E upon the lower end of the rod adapted to engage the teeth upon the arms, the lower head G upon the tube, the arms F pivoted to the lower head, and the spring H inclosed in the lower head and adapted to hold the arms open, as shown and described.

528,828. FENCE. DANIEL W. THOMAS, Pittsburg, Ohio. Filed Apr. 6, 1894. Serial No. 506,623. (No model.)



*Claim.*—1. In a fence, the combination of a post, a pair of inverted V-shaped braces secured at their apexes to the post, at opposite sides thereof and supporting the same above the ground and a straight brace extending from the fence post below its attachment to the inverted V-shaped braces, and maintaining the post in a vertical position substantially as described.

2. In a fence, the combination of a post, a pair of inverted V-shaped braces arranged at opposite sides of the post and secured at their apexes thereto, and supporting the same above the ground anchors supporting the lower ends of the sides of said braces, and a straight brace extending from the bottom of the post and secured thereto and having its other end secured between the adjacent sides of the V-shaped braces, and maintaining the post in a vertical position substantially as described.

3. In a fence, the combination of a post composed of vertical parallel spaced bars, the inverted V-shaped braces arranged at opposite sides of the post and supporting the latter above the ground and secured at their apexes thereto, and having their sides diverging, transversely-disposed anchors supporting the braces and secured thereto, and a straight brace having its inner end secured between the bars of the post and having its other end fastened to the outer anchor, substantially as described.

4. In a fence, the combination of a post, wires, and a series of wire-stretchers each comprising a horizontally disposed rectangular frame constructed of a simple piece of metal and having the inner

ends of its sides bent at an angle and bearing against the post, said sides being provided with bearing-openings, a sleeve journaled in the bearing openings and having a wire connected to it and provided at one end with ratchet-teeth, a plug arranged in the other end of the sleeve and having a polygonal portion to be engaged by a wrench, the fastening device 19 passing through the sleeve and the plug and projecting therefrom to retain the sleeve in the frame and a pivoted pawl mounted on the frame and engaging the ratchet-teeth, substantially as described

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528,829. PLANE. JUSTUS A. TRAUT, New Britain, Conn. Filed Apr. 24, 1894. Serial No. 508,812. (No model.)



*Claim.*—1. In a plane, the combination with a main-body having a transverse mouth open at one side of said body, of a plane-cutter extending longitudinally of said body and having a transverse cutter-edge, means for securing said cutter to the plane-body in position for use and with its cutting-edge in the mouth of the main-body, and a supplementary plane-body adapted and provided with means for connection to the open-mouth side of the main-body in fixed relation thereto and having its sole in the plain of the sole of the main-body, whereby the mouth of the main body is closed on one side thereof and the edge of the cutter is guarded, thereby converting the plane into and adapting the same for use as a smooth-plane, substantially as described.

2. In a combined rabbet-and-smooth-plane, the combination of a plane-body having a transverse mouth open at one side of said body, of a plane cutter extending longitudinally of said body and having a transverse cutting-edge, means for securing said cutter to the plane body in position for use and with its cutting-edge in the mouth of the main body, a guard-plate covering the open end of said mouth and having its sole in the plane of the sole of the main body, parallel lateral pins or projections fixedly carried by said guard-plate, parallel recesses in the plane-body inclosing snid pins and adapted thereby to maintain a solid connection between the forward and rearward portions of the plane-body and to prevent misalignment of the soles of the plane-body and the guard-plate, and clamping-screws engaging said pins or projections for detachably securing the guard plate to the plane-body, substantially as described.

3. In a combined rabbet-and smooth-plane, the combination of a plane-body having a transverse mouth open at one side of said body, a plane-cutter extending longitudinally of said body and having a transverse cutting-edge, means for securing said cutter to the plane-body in position for use and with its cutting edge in the mouth of the main-body, a guard-plate covering the open end of said mouth and having its sole in the plane of the sole of the plane-body, parallel lateral pins or projections peripherally recessed and fixedly carried by said guard-plate, bosses formed upon said plane-body and having parallel recesses inclosing said pins and adapted thereby to maintain a solid connection between the forward and rearward portions of the plane-body and to prevent misalignment of the soles of the plane-body and the guard-plate, and clamping screws extending through said bosses and into the recesses thereof and having conical ends for engaging said peripheral recesses in said pins and for detachably securing the guard-plate to the plane-body, substantially as described.

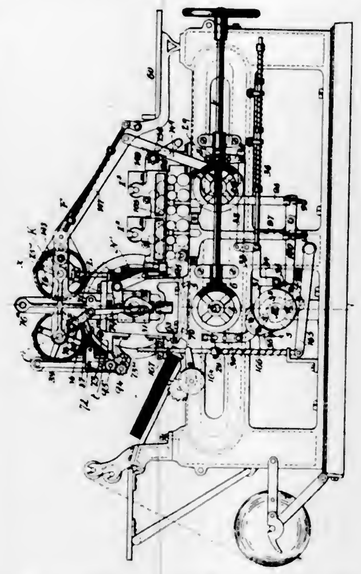
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528,830. PRINTING-MACHINE. MATTHEW VIERENGEL, Brooklyn, N. Y. Filed Feb. 9, 1892. Serial No. 420,927. (No model.)

*Claim.*—1. The combination in a printing machine of an impression cylinder provided with a plurality of impression surfaces each of which is fitted with sheet grippers, mechanism for opening and closing the grippers of each surface and a plurality of independently driven form beds, coacting with the said impression surfaces of the cylinder, substantially as specified.

2. The combination of an impression cylinder provided with a plurality of impression surfaces each of which is provided with sheet grippers, a plurality of form beds traveling in orbital guide ways coacting with the impression cylinder, mechanism for taking the sheet from one impression surface and returning it to another impression surface, suitable delivery mechanism, and means for opening and closing the sheet grippers, said means being adapted to coact with the said form beds, impression surfaces and the mechanism for taking and returning the sheet to the impression cylinder and releasing it to the delivery mechanism, substantially as specified

3. In a printing machine an impression cylinder having a plurality of impression surfaces each of which is fitted with a set of grippers for taking the sheets from a feed table, transferable gripper operating mechanism for actuating the grippers of the several impression surfaces said impression surfaces coacting with a form bed or beds, a delivery mechanism and an auxiliary cylinder provided with grippers for taking the sheet from one impression surface and returning it to another to receive a second impression, substantially as specified.



4. The combination of an impression cylinder provided with a plurality of impression surfaces each of which is fitted with a set of sheet grippers, a plurality of form beds coacting with the said impression surfaces, an auxiliary cylinder provided with grippers, mechanism for operating the said grippers to cause them to take the sheet from one impression surface and deliver it to a following one, suitable delivery mechanism and transferable devices for operating the grippers of the several impression surfaces, whereby the grippers of each impression surface may be caused to take a sheet and deliver it to the delivery mechanism, or those of one surface caused to take a sheet from the feed table and deliver it to the auxiliary cylider and those of the next surface take it from the auxiliary cylinder and deliver it to the delivery mechanism, substantially as specified.

5. The combination of an impression cylinder provided with a plurality of impression surfaces each of which is fitted with a set of sheet grippers, an auxiliary turning cylinder provided with grippers for taking the sheet from an impression surface, means for causing the auxiliary cylinder to return the sheet to a following surface, suitable delivery mechanism, a plurality of form beds coacting with the said impression surfaces and transferable gripper operating devices adapted to cause consecutive or alternate sets of grippers to take and deliver the sheets substantially as specified.

6. The combination of an impression cylinder provided with a pluralty of impression surfaces, a plurality of form beds coacting with the said cylinder, an auxiliary cylinder provided with grippers and adapted to rotate in one direction or to oscillate on its axis, means for giving said motion or motions to said cylinder, means for operating the sheet grippers of the auxiliary cylinder, suitable delivery mechanism and suitable means for causing the impression cylinder grippers to coact with the several impression surfaces, the auxiliary cylinder and delivery mechanism in causing one or more impressions to be given to a sheet, substantially as specified.

7. The combination of an impression cylinder provided with a plurality of impression surfaces each of which is fitted with a set of grippers a plurality of form beds coacting with said impression surfaces suitable delivery mechanism, an auxiliary cylinder provided with sheet grippers, a cam and lever actuated by the impression cylinder to open the auxiliary cylinder grippers, and devices for operating the impression cylinder grippers which are transferable to change the machine to print single or two colors, substantially as specified.

8. The combination of an impression cylinder provided with a plurality of impression surfaces each of which is fitted with a set of



grippers a plurality of form beds coacting with said impression surfaces, suitable delivery mechanism, an auxiliary cylinder provided with grippers, means for opening the said grippers to take the sheet from the impression cylinder, mechanism for giving reverse motions to said auxiliary cylinder, means for opening the grippers of said auxiliary cylinder on its reverse motion, means for taking the sheet from the auxiliary cylinder and conducting it in a reverse position to the impression cylinder, and a set of gripper operating devices for each of the impression surface grippers which are transferable to convert the machine from a single or color printing machine, printing one side of a sheet into a perfecting machine printing both sides, substantially as specified.

9. The combination in a printing machine of an impression cylinder, suitable form bed or beds coacting therewith, suitable delivery mechanism, an auxiliary turning or reversing cylinder provided with grippers, a shiftable device for opening the auxiliary cylinder grippers to take and release the sheet at different points, and means of shifting the said device, substantially as specified.

10. The combination of an impression cylinder provided with a plurality of impression surfaces each of which is fitted with a set of grippers, a plurality of form beds coacting with said impression surfaces a plurality of transferable gripper operating devices by the arrangement of which with respect to the impression surfaces the machine may be adapted to print single or in colors or on both sides of the sheet, an auxiliary cylinder provided with grippers for taking the sheet from an impression surface and delivering it directly or through suitable reversing and carrying mechanism to a succeeding impression surface and mechanism for shifting the point at which the auxiliary cylinder grippers take the sheet from the impression cylinder, substantially as specified.

11. The combination in an organized printing machine of a form bed or beds a single impression cylinder having impression surfaces that coact with the form bed or beds, suitable delivery mechanism, an auxiliary turning or reversing cylinder provided with sheet grippers, means by which the auxiliary cylinder may be rotated or oscillated in contact with the impression cylinder to bring about the conction of the sheet grippers of the two cylinders in the operation of transferring the sheet from one to the other, substantially as specified.

12. In a printing machine the combination of an impression cylinder having two impression surfaces each of which is fitted with grippers, two form beds coacting with the said impression surfaces, suitable delivery mechanism, an auxiliary cylinder provided with grippers for taking the partly printed sheet from one impression surface and returning it to the following one to receive a second impression (on the same or reverse side), means for operating the auxiliary cylinder to cause it to return the sheet to the cylinder either with the printed side out or reversed, and a series of gripper operating devices on each side of the machine which are adapted to be arranged to change the sheet taking and delivery points of the grippers of the respective impression surfaces whereby a sheet may be fed, imprinted and delivered by both impression surfaces at every revolution of the cylinder or one sheet may receive two impressions on the same or reverse sides at every such revolution, substantially as specified.

13. The combination in an organized printing machine of means for converting the machine into a two color machine or a sheet perfecting machine, a single impression cylinder adapted to carry a sheet against the forms, a suitable number of form beds, means for taking the sheet from the impression cylinder after receiving the first impression and returning it to the same for a second impression, a delivery mechanism provided with sheet grippers and means for preventing the said grippers from opening when the machine is arranged to print either in two colors or to perfect the sheet when the sheet passes the delivery point after receiving its first impression, substantially as specified.

14. The combination of an impression cylinder provided with a plurality of impression surfaces, and a plurality of gripper operating devices that may be separately arranged and adjusted to open and close the grippers to take and release the sheet at intervals, with an auxiliary turning cylinder provided with grippers for taking the sheet from the impression cylinder after receiving an impression, and returning it to receive another impression, and mechanism substantially as described for giving reverse motions to said auxiliary cylinder, of a cam and lever for opening and closing the auxiliary cylinder grippers, to take the sheet from the impression cylinder, and a cam for opening the said grippers to release the sheet when the cylinder reverses the sheet and returns it to the cylinder to receive another impression, and means for taking the sheet off the cylinder and guiding it to the impression cylinder, substantially as specified

15. The combination in an organized printing machine of a single impression cylinder adapted to carry a sheet to one or more forms, suitable form bed or beds, suitable delivery mechanism provided with sheet grippers, means for preventing the said grippers from opening when the sheet passes the delivery point after receiving an impression, an auxiliary cylinder provided with grippers for taking the sheet and returning it in the same or a reversed position, and means for opening the auxiliary cylinder grippers to take the sheet at one point and release it at another point, substantially as specified.

16. The combination of an impression cylinder provided with a plurality of impression surfaces, and a plurality of gripper operating devices for opening and closing the grippers to take the sheets at intervals, of an auxiliary turning cylinder constructed and arranged to take the sheet from the impression cylinder after receiving an impression, and return it in a reversed position to the impression cylinder to receive another impression, of a switch provided with spring fingers to take the sheet off the auxiliary turning cylinder, and tapes for guiding the sheet while being returned to the impression cylinder, substantially as specified.

17. The combination of an impression cylinder provided with a plurality of impression surfaces with spaces between the form bed or form beds coacting with the impression cylinder a timing pinion geared to the driving mechanism of the machine, and suitable mechanism interposed between the timing pinion and the cylinder for changing the speed of the cylinder between the impressions substantially as specified.

18. The combination of an impression cylinder provided with a plurality of impression surfaces a form bed or beds coacting therewith having a continuous uniform motion, a timing pinion and irregular gears adapted to engage the cylinder, whereby the regular motion of the driving mechanism is changed to an irregular motion of the cylinder between the impressions substantially as specified.

19. The combination of an impression cylinder provided with a plurality of impression surfaces with blank spaces between, a plurality of form beds, a driving pinion, and mechanism substantially as described, for driving the impression cylinder between the impressions and alternately slowing the speed thereof to take a sheet, and bringing it up to the speed of the bed again, substantially as specified.

20. The combination of an impression cylinder provided with a plurality of impression surfaces and toothed segments attached to the cylinder in line with the impression surfaces, a plurality of form beds, the driving mechanism of a printing machine, and a series of regular and irregular wheels interposed between the driving mechanism and cylinder to drive the cylinder between the impressions and alternately slow down the cylinder to take a sheet and speed it up to the motion of the beds, substantially as specified.

21. The combination with a form bed arranged to travel with a continuous motion forward and back in an orbital path without reversing the beds, of switches pivoted in the guide-ways adjacent to the bed driving pinions, and mechanism for positively closing the switches to allow the advancing ends of the beds to pass and to open them to intercept the following ends substantially as specified.

22. The combination with an impression cylinder provided with a plurality of impression surfaces each of which is provided with gripper mechanism and a plurality of form beds that travel with a continuous motion forward and back in an orbital path without reversing the forms, of switches pivoted in the upper and lower guide ways adjacent to each of the driving wheels and mechanism connected with both sets of switches for simultaneously and positively closing the said switches to allow the advancing ends of the beds to pass, and to open them to intercept the following ends of the bed and guide the beds in their passage from one guide way to the other, substantially as specified.

23. The combination of the side frames of a printing machine provided with orbital guideways, form beds movable in said guide-ways and provided with pins on their sides held in said guide-ways, toothed wheels for driving said beds switches pivoted in line with the upper and lower guide ways and arranged to be moved across the guide ways to intercept the rear ends of the moving beds in both guide-ways to guide the beds in ascending and descending and means for positively operating the two sets of switches simultaneously substantially as specified.

24. The combination of an impression cylinder provided with a plurality of impression surfaces, a plurality of transferable gripper operating devices, an auxiliary cylinder provided with grippers for taking and returning the sheet to the impression cylinder, mechanism for continuously rotating the auxiliary cylinder to take the sheet from one impression surface and return it to a following surface, a delivery cylinder provided with grippers for taking the sheet from the impression cylinder means for throwing the delivery cylinder grippers out of action after the sheet has received its first impression and into action after receiving the final impression, and a plurality of form beds arranged to coact with the impression cylinder substantially as specified.

25. The combination of an impression cylinder provided with a plurality of impression surfaces, a plurality of interchangeable gripper operating devices, an auxilary cylinder provided with grippers for taking and returning the sheet to the impression cylinder, mechanism for reversing the motion of the cylinder, means for taking the sheet from the auxiliary cylinder and conducting it to the impression cylin-

der, a delivery cylinder provided with grippers for taking the sheet from the impression cylinder after receiving the final impression, and a plurality of form beds arranged to act successively in conjunction with the impression surfaces of the cylinder to make a series of impressions on one side of a sheet, substantially as specified.

26. The combination of a plurality of form beds, a cylinder provided with a plurality of impression surfaces, a turning cylinder for taking the sheet from one impression surface after receiving an impression on one side from one of the forms, turning the said sheet and redelivering it to a succeeding impression surface in a reversed position to receive an impression on the opposite side from another form, and means for conducting the sheet after reversal from the turning cylinder to the impression cylinder, substantially as specified.

27. The combination with a plurality of form beds constructed and arranged to travel in orbital guide-ways as described, of counterbalancing rock-levers the ends of which bear against the under side of the beds when at opposite points of the orbital guide-ways, the construction and arrangement being such that the descending bed assists in raising the ascending bed through the rock-levers and the latter support the beds while traveling in the lower guide-ways, substantially as specified.

28. The combination with a plurality of form beds constructed and arranged to travel in orbital guide ways as described of rock-levers arranged to bear against the under side of the form beds the arrangement being such that the ends of the levers are caused to bear against and support the beds while approaching the ends of the machine on both the forward and back motions of the bed, and when the beds arrive at the ends of their forward and back motions respectively, the momentum and weights of the descending bed is conveyed by the levers to the ascending bed and aids the latter in traveling from the lower to the upper guide-ways, substantially as specified.

29. The combination of a plurality of form beds, devices for driving the same in an orbital path, and a lever for counterbalancing the beds while moving vertically and also while traveling horizontally to lessen the friction in the guide ways, substantially as specified.

30. The combination with a form bed having a continuous motion forward and back in an orbital path of motion arresting bars at each end of the machine connected with rock levers, the bars at the front end of the machine being arranged to arrest the bed on the forward motion and support the front end while passing from the upper to the lower guide ways and the bars at the opposite end arranged to arrest the rearward motion of the bed and carry the rear end thereof upward to the upper guide ways, substantially as specified.

31. The combination of a plurality of form beds, devices for driving the same in an orbital pathway and vertically movable motion arresters controlled by air springs or other suitable devices which engage the advancing ends of the beds, and in connection with the driving devices sustain the beds in a horizontal position when passing through the vertical parts of the orbital pathway, substantially as specified.

32. The combination with a plurality of form beds having continuous motion forward and back in an orbital path of motion arresters at each end of the machine pivoted to rock levers so as to move up and down alternately to carry their forked ends into alignment with the upper and lower guide ways in which the beds travel, the arrangement being such that the bars at the front end of the machine arrest the motion of one forwardly moving bed at the same moment that the bars at the opposite end arrest the motion of a rearwardly moving bed, substantially as specified.

33. In a printing machine the combination with a plurality of impression surfaces and form beds coacting therewith of a separate inking apparatus for each form comprising a fountain, fountain roll supply roll and form rolls arranged in a frame and means for lowering each apparatus separately to ink its proper form and to raise it out of the way of the other form, substantially as specified.

34. In combination with an impression cylinder provided with a plurality of impression surfaces a plurality of form beds coacting with said impression surfaces a plurality of inking apparatuses each of which is arranged to move into position to ink its appropriate form bed independently of the others and means for causing said inking apparatus to coact with the said form beds substantially as specified.

35. In combination with two inking apparatuses each of which is movable into position to ink a form independently of the other a single vertical shaft for giving both rotary and sidewise distributing motions to the rollers of the two apparatuses, and means for conveying the motions of the said shaft to the two apparatuses, substantially as specified.

36. In an inking apparatus for printing machines the combination with ink roller 113 of rollers 126, 126 mounted on connected bearings, a bracket for supporting the bearings of the said rolls, and a set screw in the said bracket for adjusting the said bearings and rolls, substantially as specified.

37. In a cylinder printing machine the combination with the form bed or beds of an adjustable impression support having arms projecting into openings in the side frames of the machine, and set screws in the openings for adjusting said supports, substantially as specified.

38. In combination with a cylinder printing machine having a plurality of forms arranged to travel in orbital guide ways perpendicular to the plane of the impression cylinder, an adjustable impression support, having arms projecting into openings in the side frames of the machine and set screws in the openings for adjusting the said support, substantially as specified.

39. The combination with the impression cylinder of a feed board arranged adjacent to the impression cylinder, a feed roller, means for reversing said feed roller on its axis at intervals, a rack bar and pinion for operating the said roller, a lever and cam operated by the printing machine for giving motion to the said rack bar to cause the feed roller to act on the sheet to be fed to the machine, a rear edge sheet straightener having an arm in position to be acted on by the toothed segments of the impression cylinder to lift the said straightener to allow the sheet to be fed forward, substantially as specified.

40. In a printing machine the combination with an impression cylinder provided with sheet grippers, an inclined feed table hinged at its rear end and having its front end adjustable vertically to compensate for the thickness of the pile of paper placed on it, and also for the decreasing thickness of the said pile as the sheets are fed to the machine, mechanism for adjusting the front edge of the said table, a feed roller hung over the feed table and adapted to withdraw the front edge of the sheet from under the divider by one motion and feed it forward by a reverse motion to the grippers of the impression cylinder, and means for reversing said roller on its axis at intervals, substantially as specified.

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**528,831.** SLEIGH. RANDALL W. WALKER, Oxford, N. Y., assignor to Fred. P. Brooks, same place. Filed July 30, 1894. Serial No. 518,962. (No model.)

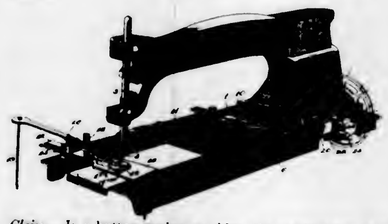


*Claim.*—1. As an improvement in sleds, sleighs, &c., the combination with the runners and the part to be carried thereby, of a support consisting of two bars rising from corresponding points upon the runners, a transverse bar extending from the bars upon one runner to those upon the other and having each of its ends placed edgewise between and fastened to each pair of said bars, and a brace bar attached to and extending from the transverse bar to each of said pairs of bars and having its end suitably fastened to them, substantially as and for the purpose specified.

2. As an improvement in sleds, sleighs, &c., the combination with the runners and the seat or platform, of a support consisting of two bars that are attached at their lower ends to each runner and converge therefrom and then extend parallel with each other, and one of which is bent horizontally for its attachment to the seat or platform, a transverse bar engaging the under side of the latter and extending across from one pair of bars to the other and having each end passed edgewise between and riveted to the same, and a brace bar riveted at one end to said transverse bar and having its other end passed between and riveted to one set of such pairs of bars, substantially as and for the purpose shown.

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**528,832.** MACHINE FOR SEWING ON BUTTONS. ALVIN WALRATH, Little Falls, N. Y. Filed Oct. 5, 1893. Serial No. 487,231. (No model.)



*Claim.*—In a button sewing machine, the combination with the driving shaft, bed plate and stitch forming mechanism, of fixed and loose driving wheels carried by the main shaft, a button holder and carrier, means for pivotally supporting the same, a cam on the main shaft, a vibrating lever connected with said cam, a rod connected pivotally to one end of said lever and to the said carrier, a ratchet wheel carrying a tappet, an operating connection between said vibrating lever and said ratchet, and mechanism connected with the loose driving wheel and operated by said tappet, whereby the machine is stopped at every revolution of the tappet.

2. In a button sewing machine, the combination with the driving shaft, bed plate and stitch forming mechanism, of fixed and loose driving wheels carried by the main shaft, of a lever fulcrumed on the bed plate and provided at an intermediate point of its length with a depending bifurcated lug that extends into cam grooves formed in a disk on the driving shaft a button holder and carrier, means for pivotally supporting the same, a rod connecting said holder and carrier with one end of the lever fulcrumed on the bed plate, a pitman connected at one end to the other end of said lever and operating at its other end a pawl that engages with the teeth a ratchet wheel, a spring pressed rod connected with the loose driving wheel and with a lever, 33, fulcrumed below the bed plate, a longitudinally movable bar arranged below the bed plate and connected with the lever, 33, and a tappet carried by the hub of the ratchet wheel adapted to contact, at each revolution, with one end of the longitudinally movable bar, substantially as shown and described, for the purpose specified.

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**528,833.** FASTENER FOR MEETING-RAILS OF SASHES. THEODORE E. WARDWELL, Stamford, Conn. Filed Mar. 26, 1894. Serial No. 505,060. (No model.)



*Claim.*—1. The combination with a locking arm having an opening 5, of a housing having a slot 24, a shaft passing through said slot and carrying a locking catch adapted to engage the opening in the locking arm and an eccentric 14, and a spring actuated plunger carrying a cross piece engaging the eccentric, rotation of said shaft and eccentric acting to draw the sashes together and to compress the spring.

2. The combination with a locking arm having an opening 5, of a housing having a slot 24, a shaft passing through said slot and carrying a locking catch adapted to engage the opening in the locking arm and an eccentric within the casing having a shoulder 21 and a spring actuated plunger having a cross piece provided with a shoul der 20 which engages shoulder 21 whereby the parts are held in position.

3. The combination with a locking arm having an opening 5, of a housing having a slot 24 and a stop 23, a shaft passing through said slot and carrying a locking catch, a disk 10 having a shoulder 11, a finger piece, and an eccentric within the housing, and a spring actuated plunger which bears against the eccentric and acts to force the shaft and locking catch to the locking position.

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**528,834.** VENTILATED FRUIT-BASKET. CHARLES W. WESTON, San Francisco, Cal. Filed Mar. 12, 1894. Serial No 503,351. (No model.)



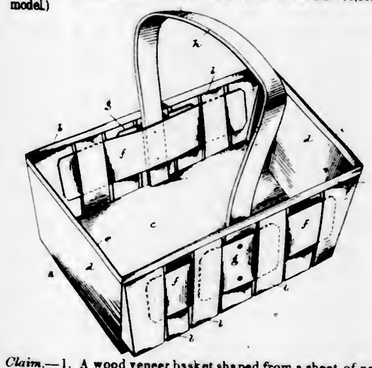
*Claim.*—1. A ventilated fruit basket made of wood veneering, consisting of two veneer strips comprising the sides bent at right angles to form the ends, when overlapped and fastened the one upon the other for the body part, combined with a continuous veneer strip, *d*, *c*, *d*, longer than the space it is intended to occupy, so that it is forced to assume a curved, or oval shape, when placed in position and fastened to the inside of the ends of said body parts, which, when so constructed, rests upon its two sides and allows a free circulation of air beneath,—substantially as herein described and set forth.

2. In a ventilated fruit veneer basket, the combination of the body part A. and *b*, and a continuous veneer strip, *d*, *c*, *d*, longer than the space it is intended to occupy, so that it is forced to assume a curved oval shape when placed in position and fastened to the inside of the ends of the body part, which, when so constructed rests upon its two sides, and allows a free circulation of air beneath, substantially as herein described and set forth.

3. In a ventilated fruit veneer basket, the combination of the body part, A and *b*, and a continuous veneer strip, *d*, *c*, *d*, slitted on its upper surface longer than the space it is intended to occupy, so that it is forced to assume a curved or oval shape when placed in position and fastened to the ends of the body part, which, when so constructed rests upon its two sides and allows a free circulation of air beneath, substantially as herein described and set forth.

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**528,835.** WOOD-VENEER-MADE BASKET. CHARLES W. WESTON, San Francisco, Cal. Filed Mar. 12, 1894. Serial No. 503,352. (No model.)



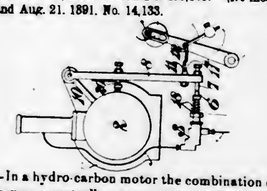
*Claim.*—1. A wood veneer basket shaped from a sheet of veneering, having its two sides, *b*, slitted or cut so as to leave a space for the circulation of air; the plane bottom, *c*; the ends, *d*; the tin folding strip, *e*, binding the edges; the long and short veneer strips, *f* and *g*, inserted in the slits of the sides of the body part, to provide a holding or socket for the ends of the handle; and the handle, *h*, inserted between said veneer strips and against one of the upright side strips extending to and resting against the bottom part, substantially as herein described and set forth.

2. In a wood veneer basket, the combination of the body part, *b*, *c* and *d*, the tin folding strips, *e*, binding the edges or upper part firmly together; with the veneer strips, *f* and *g*, and the handle, *h*, inserted between said strips and fastened to the sides, substantially as herein described and set forth.

3. In a wood veneer basket, the combination of the body part, *b*, *c* and *d*; the tin folding strips, *e*, binding the edges or upper part firmly together; the veneer strips, *f* and *g*, with the handle, the lower ends of which are inserted between said strips, *f* and *g*, and fastened to them and against the upright strips of the body-piece, C, with which strips, *f* and *g*, are inserted at right angles,—substantially as herein described and set forth.

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**528,836.** MEANS OR APPARATUS FOR EFFECTING AND CONTROLLING THE SUPPLY OF HYDROCARBON TO HYDROCARBON-MOTORS. JAMES E. WEYMAN and JAMES A. DRAKE, Guildford, England. Filed Nov. 6, 1893. Serial No. 490,175. (No model.) Patented in England Aug. 21, 1891, No. 14,133.

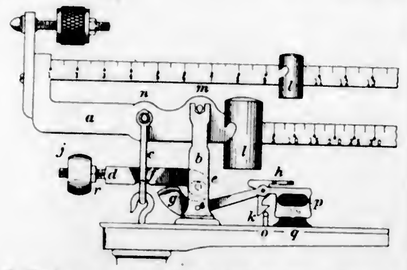


*Claim.*—In a hydro-carbon motor the combination of two levers, a pump and a vapor controller operated by the free end of one of the levers, a means for vibrating the free end of the other lever, and a centrifugal bit and miss operating connection between the free ends of said levers, whereby when the vapor controller is in or out of operation the pump is in the same condition for the purpose described.

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**528,837.** WEIGHING-SCALE. WILLIAM A. WHEELER, Littleton, N. H., assignor to the E. & T. Fairbanks & Company, St. Johnsbury, Vt. Filed Aug. 24, 1892. Serial No. 443,948. (No model.)

*Claim.*—1. The herein described scoop balance for scales comprising a weighted part normally supported by the working mechanism of the scale, and a lever pivoted to a stationary part of the scale and adapted when depressed at one end to engage with the weighted part, and means for holding the lever in its depressed position; substantially as described.



2. The herein described scoop balance for scales comprising a lever pivoted to the scale and normally supported by a working part of the scale, a second lever also pivoted to the scale adapted to engage the first lever and raise it from its support, and a catch engaging the second lever whereby the first lever is held in its raised position until the catch is released; substantially as described.

3. A scoop balance for scales comprising a pivoted lever normally supported on the loop c from which the working parts of the scale are hung, a second pivoted lever on a stationary part of the scale and having one end arranged to engage and lift the first lever upon the depression of its other end; substantially as described.

4. In a scale in combination with the loop c from which the working parts of the scale are supported, a lever *d* having an adjustable weight thereon, said lever being supported on said loop, a scale-beam pivoted upon a suitable standard, a second lever *g* pivoted on said standard, one arm of which lever is adapted to engage and lift the lever *d*, and means for holding the second lever *g* in its depressed position; substantially as described.

5. In a scale, the pivoted lever *d*, for balancing the scoop, and a second lever as *g*, one arm of which is adapted to engage the lever *d*, and a swinging latch carried by the other arm adapted to engage a catch on the scale; substantially as described.

6. In a scale, the pivoted lever *d*, for balancing the scoop and a second lever one arm of which engages the lever *d*, means for holding the other arm of said second lever in its depressed position and an indicating mechanism arranged to co-operate with said second lever to give information as to whether the scoop should be used or not; substantially as described.

7. The herein described scoop balance comprising the lever *d*, the adjustable weight thereon, the pivot for said lever, the bearing therefor on the loop, the lever *g*, having its short arm formed with a concave at its end to engage the lever *d*, and a hook and catch adapted to hold the long arm of the lever in its depressed position, substantially as described.

8. In a scale a movable part adapted to balance the scoop normally supported by the working mechanism of the scale, positive means for raising said balance from its support and a catch for holding it in its raised position; substantially as described.

9. A scoop balance for scales comprising a pivoted weighted lever supported on the working part of the scale, a second pivoted lever supported on a stationary part of the scale, with one arm adapted on the depression of the other, to engage the first lever and a catch for holding said other arm of the lever in its depressed position, substantially as described.

10. In combination with the movable part normally supported by the working mechanism of the scale and adapted to balance the scoop a lever for raising said movable part carrying a perforated curtain, and a stationary part behind said curtain provided with indicating characters thereon whereby in the upward or downward movement of the lever said characters show through the perforations in the curtain; substantially as described.

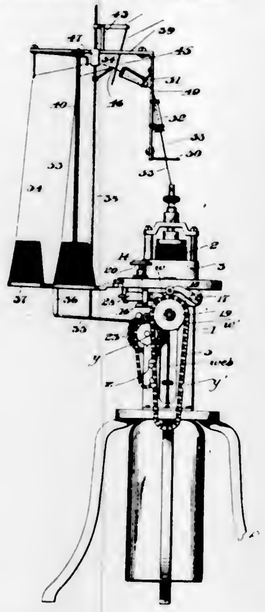
11. In combination with the lever *g* adapted to engage the scoop balancing lever the swinging latch carried by said lever *g* and adapted to engage a catch on the scale frame, and an indicating mechanism comprising a movable perforated part carried by the lever, and a stationary part supported on the scale frame; substantially as described.

12. In combination with the scoop balancing device a lever for operating the same, and an indicating mechanism composed of a stationary part and a part movable with the lever adapted to be brought into operation by the movement of said lever; substantially as described.

## 528,838. KNITTING-MACHINE. OLIVER WILSON, Philadelphia, Pa., assignor of one-third to Archibald F. Kent, Jamestown, N. Y.

Filed May 24, 1893. Serial No. 475,333. (No model.)

*Brief.*—The reinforced stitches comprising the knee portion of the web are knit successively in slack courses.



*Claim.*—1. In a knitting machine, the combination with the needle support, the cam carrier and its stitch cam, of provisions whereby the latter is actuated at predetermined intervals to effect the knitting of normal courses, single slack courses, and medium slack courses, thread-reinforcing devices, and pattern mechanism for operating the same simultaneously with the knitting of the medium slack courses, substantially as described.

2. In a knitting machine, the combination with the needle support, the cam carrier and its cam, of a V-shaped head through which the main knitting threads and an additional or reinforcing thread extend, a thread support in rear of said head, means for sustaining said head and support, and means for operating the same so as to draw the threads into the apex or reduced portion of the V-shaped head; substantially as described.

3. In a knitting machine, the combination with the needle support, the cam carrier and its cam, of a V-shaped head through which the main knitting threads and an additional or reinforcing thread extend, a thread support in rear of said head, means for sustaining said head and support and means for operating the same so as to draw the threads into the apex or reduced portion of the V-shaped head, together with means for checking the advance of the reinforcing thread at predetermined intervals; substantially as described.

4. In a knitting machine the combination with the needle support, the cam carrier and its cam, of a reciprocative rod, a V-shaped head and thread supporting arm connected therewith, and means for reciprocating said rod at predetermined intervals whereby said head and arm are moved in respect to each other; substantially as described.

5. In a knitting machine the combination with the needle support, the cam carrier and its cam, of a reciprocative rod, a V-shaped head and thread supporting arm connected therewith, and means for reciprocating said rod at predetermined intervals whereby said head and arm are moved in respect to each other, together with the frame through which said rod extends, and the collar or weight on the rod within said frame; substantially as described.

6. In a knitting machine, the combination with the needle support, the cam carrier and its cam, of a V-shaped head through which the main knitting threads and an additional or reinforcing thread extend, a thread support in rear of said head, means for sustaining said head and support, and means for operating the same so as to draw the threads into the apex or reduced portion of the V-shaped head, together with means for separating the main threads at a point in advance of the said head; substantially as described.

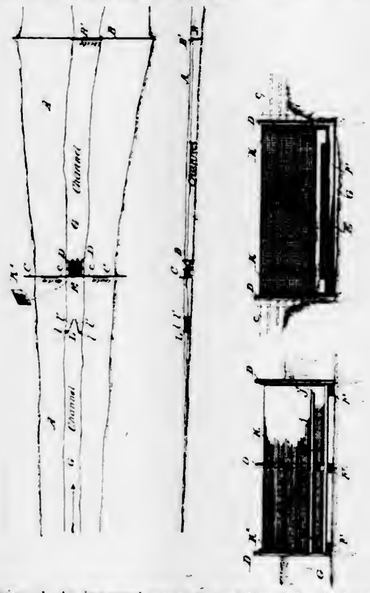


7. In a knitting machine, the combination with the needle support, the cam carrier and its stitch cam, of devices mounted on said carrier and adapted to be actuated to increase the throw of the stitch cam, a head for actuating said devices to effect the knitting of single slack courses, and a ring or abutment adjacent to said head, for actuating said devices to knit a series of medium slack courses, together with pattern mechanism for operating said head and ring or abutment at predetermined intervals; substantially as described.

8. In a knitting machine, the combination with the needle support, the cam carrier and its stitch cam, of devices mounted on said carrier and adapted to be actuated to increase the throw of the stitch cam, a head for actuating said devices to effect the knitting of single slack courses, and a ring or abutment adjacent to said head, for actuating said devices to knit a series of medium slack courses, together with pattern mechanism for operating said head and ring or abutment at predetermined intervals, thread reinforcing devices and pattern mechanism for operating the same simultaneously with the medium slack course controlling devices; substantially as described.

9. In a knitting machine, the combination with the needle support, the cam carrier and its cam, of a reciprocative V-shaped device through which the main knitting threads and an additional or reinforcing thread extend, means for sustaining said device, and means for operating the same to press the threads closely together, substantially as described.

## 528,839. FISH-TRAP. BERNICE WOOD, Benson, N. C. Filed May 8, 1894. Serial No. 510,482. (No model.)

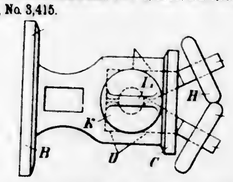


*Claim.*—1. An improved means for catching fish, which comprises a pond having a water course in one direction, a dam having a gate, a slatted fence disposed transversely across the pond at a point in advance of the dam, having a central opening, a trap or pocket secured to the rear of the central opening having a slatted floor and closed sides and rear end all arranged substantially as shown and described.

2. An improved means for catching fish comprising a pond having an inclined bottom, a central or channel gulley, a dam at the lower end of the pond having a drain gate, a trap formed of a pocket or box having closed sides and rear end and having a slatted floor, held in the said gulley, and transverse fence or guard portions extended from the trap beyond the sides of the said gulley all arranged, substantially as shown and described.

3. In a fish trapping means, a trap or pocket comprising supporting posts, cross sills connected thereto, a slatted floor connected to sills extended longitudinally between the posts, transverse sills secured on the said slatted floor, a second slatted floor secured to such sills and extended rearward but stopped short of the end of the lower slatted floor, closed side member projected up from the floor and a net portion forming the rear end of such trap or socket all arranged substantially as shown and described.

## 528,840. ANIMAL-SECURING DEVICE. JOHANN W. ZIELLENBACH, Crefeld, Germany. Filed Aug. 7, 1893. Serial No. 482,554. (No model.) Patented in England July 18, 1893, No. 13,891; in Belgium July 31, 1893, No. 105,537; in Austria-Hungary Oct. 13, 1893, No. 35,249 and No. 56,228; in France Oct. 16, 1893, No. 231,423; in Canada Nov. 7, 1893, No. 44,642; in Switzerland Nov. 8, 1893, No. 7,259, and in Norway Aug. 6, 1894, No. 3,415.



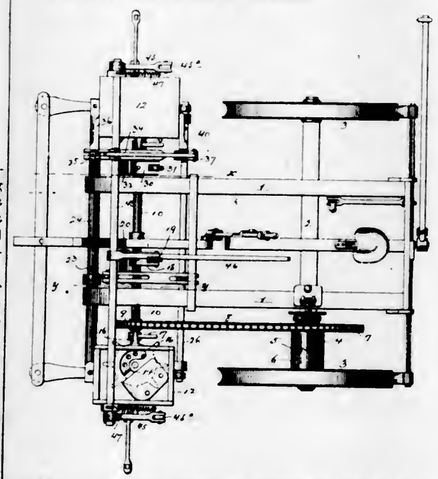
*Claim.*—In a horse securing and releasing device, the combination with the socket adapted to be secured to a wall or stationary device, and provided with a recess, and an aperture extending transversely of the recess, of a pair of horse attaching devices having each a shank for engaging said socket recess, provided with a retaining notch adapted to register with a part of said transverse aperture, and a retaining pin for engaging said aperture and the retaining notches in said shanks, for securing both shanks in said socket, substantially as described.

## 528,841. PROCESS OF PREPARING AND UTILIZING ROCK ASPHALT. WILLIAM A. ADAMS, Cincinnati, Ohio. Filed Feb. 7, 1894. Serial No. 499,398. (No model.)

*Claim.*—1. A process of preparing and using rock asphalts by reducing Kentucky rock asphalt or bituminous rock or sand to its own individual grains or granular conditions, and reducing to an impalpable flour hard or rock asphalt and thoroughly intermixing and blending the same without the aid of heat or liquids, the same when to be used to be rendered plastic by heat, substantially as and for the purposes specified.

2. The herein described process of mixing asphaltic materials by reducing asphaltic sand rock or bituminous sandstone to its own individual grains with their adhering coating of asphalt, and cooling same to a temperature of 40° to 50° Fahrenheit, and thoroughly incorporating ninety to ninety-five per cent. of such reduced cooled asphalt sand rock or bituminous sand with five to ten per cent. of powdered hard or rock asphalt or combination of the same, by mixing in the dry and cool state in suitable mixing apparatus until every grain of asphaltic sand has received its coating of powdered asphalt, the same when to be used to be heated by dry heat or steam, not by direct heat, and for the purposes specified.

## 528,842. CORN-PLANTER. WILLIAM AHLERS, Pyatt, Ill. Filed Apr. 16, 1894. Serial No. 507,808. (No model.)

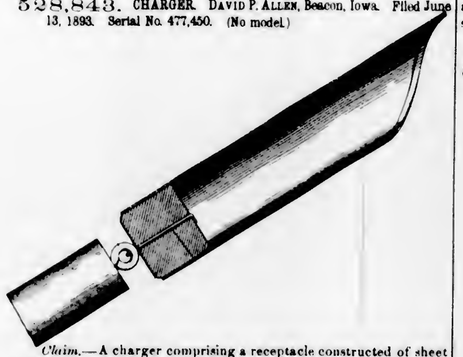


*Claim.*—1. In a corn planter, the combination with the transverse rotatable shaft, the arm provided with a roller secured thereto, the plate with which said roller engages, the bar to which said plate

is secured, the pivoted crank or arm to which said bar is pivoted, the lever to which said bar is also pivoted, the bar connected with the upper end of said lever and with a crank secured to an oscillating shaft, the lateral arms secured to said shaft, and the vertical markers connected with said arms, substantially as described.

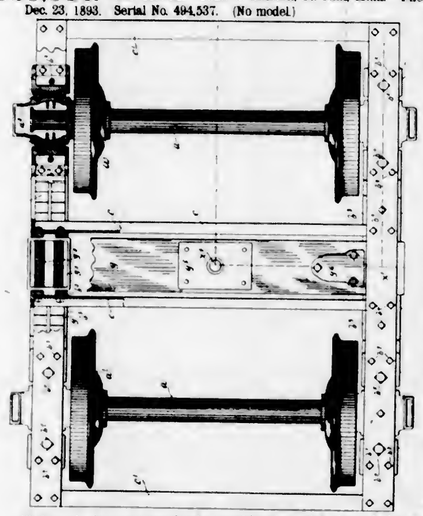
2. In a corn planter, the combination with the transverse rotatable shaft and the hand lever secured thereto, of the arm secured to said shaft, provided with a roller, the plate with which said roller engages, the bar to which said plate is secured, the pivoted crank or arm to which said bar is connected, the lever to which the opposite end of said bar is pivoted, the bar connected with the upper end of said lever, the crank secured to a transverse shaft and connected with said bar, the lateral arms secured to said shaft, and the markers connected with said arms, substantially as described.

528,843. CHARGER. DAVID P. ALLEN, Beacon, Iowa. Filed June 13, 1893. Serial No. 477,450. (No model.)



*Claim.*—A charger comprising a receptacle constructed of sheet metal and having a wooden bottom and provided with tapering inclined upper edges forming a projecting portion, a handle, and a staple and screw eye loosely hinging the handle to the bottom of the receptacle, substantially as described.

528,844. CAR-TRUCK. JOHN C. BARBER, St. Paul, Minn. Filed Dec. 23, 1893. Serial No. 494,537. (No model.)



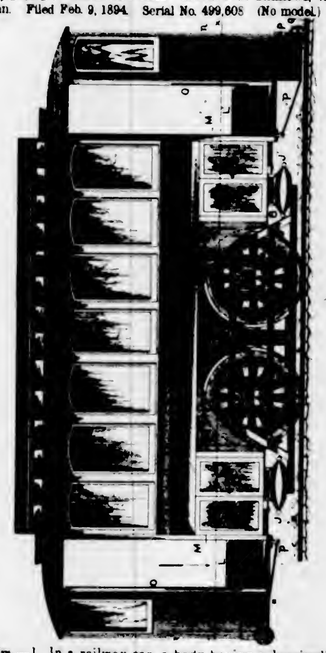
*Claim.*—1. In a car-truck, the combination with the axle boxes having the convex surfaces and side flanges, of the box pedestals having the convex surfaces and side flanges, the tie-bolts locking said parts together, and the wearing blocks with concave surfaces fitting between said boxes and pedestals and held from displacement by said side flanges, substantially as described.

2 In a car-truck, the combination with the axle boxes having the convex surfaces and side flanges, of the box pedestals having the convex surfaces, side flanges and stop-lugs, the tie-bolts locking said parts together, and the wearing blocks with concave surfaces fitting between said boxes and pedestals and held from displacement by said side flanges and stop lugs, substantially as and for the purposes set forth.

3. The side frames for car-trucks, comprising upper and lower channel bars spaced apart from each other and rigidly connected together by pedestal and bolster columns, and suitable tie bolts, certain of which tie-bolts are secured by nut-locks, comprising each an angular boss formed integral with the column, and a strap-iron washer, clamped between said boss and the nut having protruding ends adapted to be bent one for engagement with the angular edge of said boss, and the other with the angular edge of said nut, substantially as and for the purpose set forth.

4. In a car-truck, the combination with the side frames, bolster, and elliptic springs arranged longitudinally of and supported by said frames, of the bolster columns constructed to embrace both the bolster and the springs and hold the same in their proper working positions, substantially as described.

528,845. RAILWAY-CAR. CHARLES H. BARROWS, Willimantic, Conn. Filed Feb. 9, 1894. Serial No. 499,608. (No model.)



*Claim.*—1. In a railway car, a body having a longitudinal passenger-compartment and transverse, spaced, battery-compartments at or near the ends of said passenger-compartment and below the floor thereof, combined with a truck frame situated between said battery-compartments and having at its ends the bearings or cushions upon which rests the car body, the axles journaled in said truck frame, and a motor carried by the truck frame and geared with said axles, substantially as and for the purposes described.

2. A railway car consisting of a truck carrying a propelling mechanism, and a car body seated upon said truck on opposite sides of its transverse axis and provided with a longitudinal passenger compartment and with battery compartments below the floor of the passenger compartment and transversely of the car, substantially as and for the purpose described.

3. A railway car consisting of a truck carrying a propelling mechanism, and a car body sustained by cushions upon the ends of the truck and provided with transverse battery compartments below the floor of its passenger compartment and at the ends thereof, and with isolated compartments beyond the passenger compartment, for the purposes described, substantially as set forth.

4. In a railway car, a body constructed with a longitudinal passenger compartment, the isolated compartments N, N', at the ends of the body, the platforms and steps between the isolated end compartments and the longitudinal passenger compartment, and the transverse battery compartments below the floor of the passenger compartment,



and at the ends thereof, in combination with a truck upon which said body is supported, and a propelling mechanism carried by said truck, substantially as and for the purposes described.

5. The combination with a body and a truck, of the axles journaled in the truck and provided with the traction wheels, a motor sustained by the truck and having its shaft journaled in the truck frame between the traction wheels, and gearing between the motor shaft and the traction wheels, substantially as and for the purposes described.

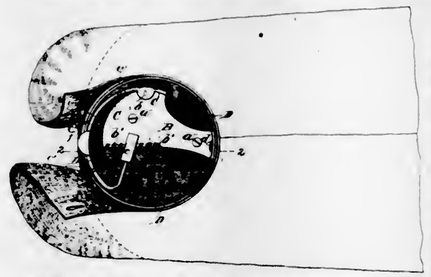
6. The combination with a truck, of a motor sustained thereon and having its armature shaft journaled on the sides of the truck frame, the axles journaled in the truck frame parallel to the motor shaft and on opposite sides thereof, the traction wheels rigid with said axles and arranged in pairs, and the gearing intermediate between the motor shaft and the traction wheels, substantially as and for the purposes described.

7. The combination of a truck frame, the motor having its shaft journaled in bearings on said truck frame, the axles disposed on opposite sides of the motor shaft and also journaled in bearings on the truck frame, the traction wheels fitted on said axles and provided with the lateral friction drums, the endless cables or chains engaging with the friction drums and with the driving pulleys or gears on the motor shaft, and the idler drums I sustained by bearings on the truck frame below the motor shaft and adjustable vertically to bear against the endless chains or cables, substantially as and for the purposes described.

8. The combination of a truck-frame, a motor having its shaft journaled therein and provided near its ends with the driving pulleys or gears, the axles, the traction wheels provided on their inner sides with the friction drums, the endless cables or chains passing beneath the motor shaft and engaging with the drive gear or pulleys thereon and said chains or cables also passing around the friction drums of the traction wheels, and the vertically adjustable idler rollers sustained by the truck frame below the shaft and bearing upwardly against the endless chains or cables, substantially as and for the purposes described.

9. The combination of the truck-frame, the motor having its shaft journaled in bearings thereon, the axles, the traction wheels, the friction drums, the idler pulleys sustained by vertically adjustable bearings in the lower part of the truck frame and in substantially the vertical plane of the motor shaft, and the endless drive chains or cables engaging with the motor shaft and passing over the idler pulleys and around the friction drums, substantially as described.

528,846. IRONING-BOARD ATTACHMENT. ROBERT N. BOSTON, Chestertown, Md. Filed July 24, 1894. Serial No. 518,432. (No model.)



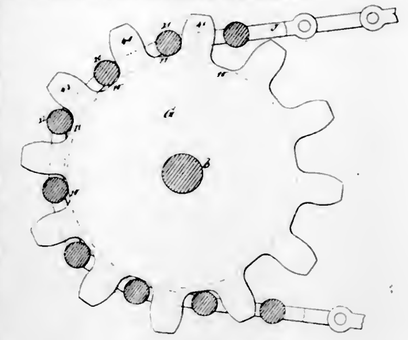
*Claim.*—1. An ironing board attachment consisting of a base plate with ratchet teeth $b'$ formed on the same, a bowed or semi-circular expanding frame C pivoted to one side of the base plate and having its other end bent inwardly to engage the ratchet teeth, and a circular lapped spring collar fastened to the base plate and encircling the expanding frame substantially as shown and described.

2. The expanding frame having overhanging lip $f$ wedge shaped projections $c'$ $c^2$ and inturned end combined with and pivoted to the base plate and an expansible spring collar section substantially as and for the purpose described.

528,847. CHAIN-GEARING. HENRY BRIGGS, Hasbrouck, N. J. Filed Jan. 18, 1894. Serial No. 497,202. (No model.)

*Claim.*—1. The combination with a sprocket wheel having deep recesses 10 alternating with shallower recesses 11 between its cogs, of a chain the bars of which simultaneously engage the successive deep and shallow recesses of the sprocket wheel so as to cause the chain-links to form sides of a polygon with alternately greater and smaller angles substantially as described.

2. The combination with the pedal shaft $f$, the sprocket wheel F mounted thereon, and the wheel B, of a sprocket wheel G having deep recesses 10 alternating with shallower recesses 11 between its cogs, and a chain the bars of which engage the sprocket wheel F and simultaneously with the successive deep and shallow recesses of the sprocket wheel G substantially as described.



528,848. WATERPROOFING COMPOUND. WILLIAM H. BROWNE, Ticonderoga, N. Y. Filed June 21, 1894. Serial No. 515,288. (No specimens.)

*Claim.*—1. The herein described waterproofing compound composed of boiled linseed-oil, alum, acetate of lead, resin and charcoal, mixed and combined in or about the proportions herein specified.

2. The herein described waterproofing compound for treating fabrics, made up of twenty parts of boiled linseed-oil, alum three parts, acetate of lead three parts, resin seven parts and charcoal five parts, the solid ingredients being pulverized and incorporated with the oil by heat, substantially as set forth.

528,849. STALL-FLOOR. WILLIAM A. BROWN and SAMUEL G. BROWN, Lynn, Mass. Filed July 21, 1894. Serial No. 518,232. (No model.)



*Claim.*—1. The combination of the supports, the flooring located on the supports, the drain-pan having a discharge opening and an upwardly extending peripheral flange seated in the supports beneath the edge of the flooring, the removable slatted floor-piece located in the drain-pan, and the intermediate frame surrounding the floor-piece and forming a sealing trough inside of the flange and the edge of the flooring and a course of cement located on the flooring flush with the frame, having a downward integral extension filling the sealing trough; substantially as described.

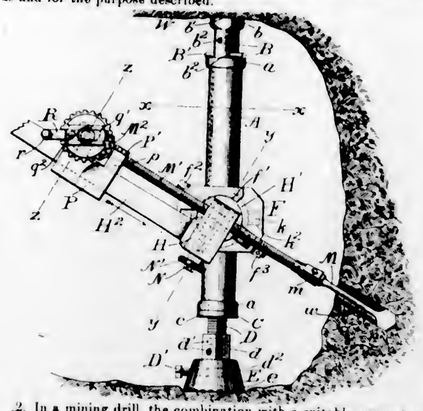
2. The combination of the supports, the flooring located on the supports, the drain-pan having a discharge opening and upwardly extending peripheral flange, the removable slatted floor piece located in the drain-pan, the intermediate frame surrounding the floor piece and forming a sealing trough, a course of cement located on the flooring flush with the frame, having a downward integral extension filling the sealing trough, and the dome-shaped screen located over the discharge opening and having a surmounting stand-pipe: substantially as described.

3. The combination of the floor 2, the seamless-drain-pan 3 supported on the floor and having an upwardly extending flange 3', the frame 5 seated within and projecting above the pan and forming (in connection with the pan and its flange) a sealing trough 6, the bed 7 of cement which surrounds the frame, and has a downward integral extension 7' filling and closing the sealing trough, and the wearing floor 14 superimposed upon and covering the bed 7; substantially as and for the purpose set forth.

528,850. MINING-DRILL. ARTHUR E. BUSSO, Ishpeming, Mich. Filed Apr. 6, 1894. Serial No. 506,614. (No model.)

*Claim.*—1. In a mining drill the combination with a suitable support, a block adjustably secured to said support and having a cone-shaped socket in one side thereof; of a drill frame having a cone-shaped lug adapted to engage in said cone shaped socket, a guide bar $H^2$ extending from and integral with said drill frame, a block P slid-

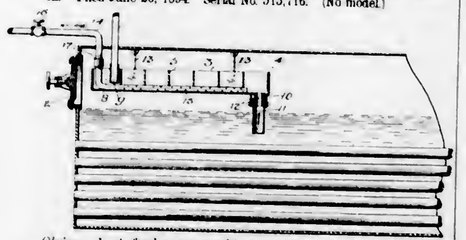
ing on the said guide bar, a screw M' journaled in said block P and passing through a female screw threaded opening in the drill frame, a pinion fast on the rear end of said screw, a gear wheel journaled in said block P and meshing in said pinion, an adjustable hand lever for turning said pinion and means for releasing the screw from the screw-threads in the frame and withdrawing it from the rock, substantially as and for the purpose described.



2. In a mining drill, the combination with a suitable support, a block adjustably secured to said support and having a cone-shaped socket in one side thereof; of a drill frame having a cone shaped lug adapted to engage in said cone shaped socket, a guide bar $H^2$ extending from said drill frame, a block P sliding on the said guide bar, a screw M' journaled in said block P and carrying a bit at its outer end, two sliding blocks moving in guideways in said drill frame and provided with a portion of a female screwthread cut in the inner side of each block, the said screwthreads normally engaging said screw M', a gear wheel mounted in the sliding block P to mesh with a pinion on the end of the screw M', and means for revolving the said gear wheel, to cause the screw M' to advance, and means for releasing the said screw M' from the screwthreaded blocks and withdrawing it from the rock; substantially as and for the purposes described.

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**528,851. FEED-WATER PURIFIER.** MILTON S. CABELL, Quincy, Ill. Filed June 26, 1894. Serial No. 515,716. (No model.)



*Claim.*—1. A feed water purifier consisting of a pan adapted to be suspended in the steam space of a boiler and having partitions forming a circuitous passage from end to end, said partitions being alternately of an electro positive and an electro negative metal, substantially as described.

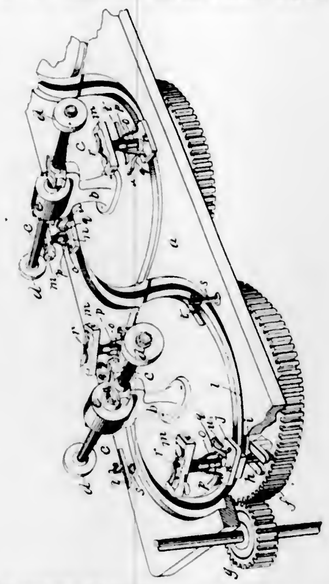
2. A feed water purifier consisting of a pan divided into a series of transverse compartments by transverse partitions alternately of electro positive and electro negative metal and a blow off pipe permanently secured in said pan and extending longitudinally thereof across the transverse compartments said permanent blow off pipe being adapted to be detachably connected with a continuation thereof extending from the steam space through the shell, substantially as described.

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**528,852. APPARATUS FOR AUTOMATICALLY POLISHING ARTICLES OF MANUFACTURE.** EDWARD L. CARRINGTON, Bristol, Conn. Filed Jan. 23, 1894. Serial No. 497,767. (No model.)

*Claim.*—1. An apparatus for polishing articles of manufacture comprising in its construction a movable carrier adapted to receive the articles to be polished, polishing means, and a plurality of means of varying contour to move and press the article on the carrier to a varying extent into contact with the polishing means, as set forth.

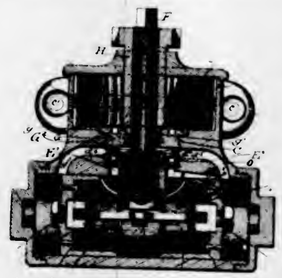
2. An apparatus for polishing articles of manufacture comprising in its construction a movable carrier provided with a vertically movable bed to receive the articles to be polished polishing means, means to move the carrier, and a plurality of means of varying contour to move the bed vertically to press the article on the carrier to varying extent into contact with the polishing means, as set forth.



3. An apparatus for polishing articles of manufacture comprising in its construction a movable carrier provided with a vertically movable bed, a lever to act upon said bed to move it vertically, and inclines or cams of varying contour to act upon said lever, as set forth.

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**528,853. DOOR CHECK OR CLOSER.** CROMWELL O. CASE, New Britain, Conn., assignor to the P. & F. Corbin, same place. Filed Aug. 18, 1894. Serial No. 520,721. (No model.)



*Claim.*—1. A door check comprising in its construction a spring chamber, a liquid chamber closed at its ends, a spring, a spindle, two pistons connected to the spindle and means for permitting the free passage of the liquid from the ends of the liquid chamber to the space between the pistons, and means for permitting the escape of the liquid from between the pistons.

2. A door check comprising a spring chamber and its spring, a liquid chamber closed at its ends, two pistons in said liquid chamber, each piston having a valved port, and a spindle located at right angles to the line of movement of the pistons and connected to said pistons.

3. A door check comprising a spring chamber and its spring, a spindle, a liquid chamber closed at its ends, two pistons connected to the spindle, means for permitting the free passage of the liquid from the ends of the liquid chamber to the space between the pistons, and a valved groove or port for regulating and controlling the escape of liquid from between the pistons.



4. A door check comprising a spring chamber and its spring, a liquid chamber closed at its ends, a spindle, two pistons connected to the spindle, means for permitting the free passage of liquid from the ends of the cylinder to the space between the pistons and a groove in the cylinder for the escape of the liquid from between the pistons, the piston adjacent to the groove in the cylinder having a groove registering with the groove in the cylinder, substantially as set forth.

5. A door check comprising a spring chamber and its spring, a closed liquid chamber, a spindle, two pistons connected with the spindle, one of said pistons having a groove therein, and a valved groove in the cylinder for regulating the escape of liquid from between the pistons, the said valved groove registering with the groove in the piston and means for permitting the passage of the liquid from the ends of the cylinder to the space between the pistons.

6. A door check comprising a spring chamber and its spring, a closed liquid chamber having a valved groove or port, a spindle, and two pistons located in the liquid chamber and connected to the spindle, one of said pistons having a tapering groove registering with the valved groove or port in the cylinder, and on its outer face with a tapering groove also registering with said valved groove or port.

7. A door check comprising a spring chamber and its spring, a liquid chamber, a spindle passing into the liquid chamber, packing for the spindle, a supplemental chamber above the packing and communicating with the liquid chamber near one end of the latter, and a piston connected to the spindle, substantially as set forth.

8. A door check comprising a liquid chamber, a spindle passing into the liquid chamber and adapted to actuate a piston, a packing sleeve through which the spindle passes, the said packing sleeve being secured in the wall of the liquid chamber, and a nut secured to the spindle and resting on the sleeve, substantially as set forth.

9. A door check comprising a liquid chamber, a spindle passing into the liquid chamber and adapted to actuate two pistons, a packing sleeve through which the spindle passes, the said packing sleeve being secured in the wall of the liquid chamber, a screw cap secured above the packing sleeve, a chamber between said cap and sleeve, and ports in the casing connecting the said chamber with the liquid chamber near the outer ends of the latter.

10. A door check comprising a liquid chamber, a packing sleeve secured in the wall of the liquid chamber, a screw cap secured above the packing sleeve, a gland in the cap, a spindle passing through the gland, cap and sleeve, and adapted to actuate a piston, and a nut secured to the spindle and resting on the sleeve.

11. A door check comprising in its construction a liquid chamber closed at its ends, a spindle, two pistons connected to the spindle, and a valve for regulating the escape of the liquid from between the cylinders.

12. A door check comprising in its construction a closed liquid chamber, a spindle, two valved pistons connected to the spindle, and a valve for regulating the escape of the liquid from between the pistons.

13. A door check comprising a closed main liquid chamber, a supplemental liquid chamber, ports connecting the latter with the main liquid chamber, a spindle passing through the supplemental chamber and terminating in the main liquid chamber, and two pistons connected with the spindle, substantially as set forth.

14. A door check comprising a liquid chamber, a packing, a spindle passing through the packing and provided with a shoulder the latter resting against the packing, and a piston connected to the spindle.

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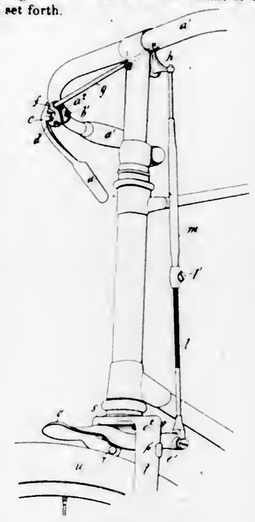
**528,854. BRAKE MECHANISM.** JAMES S. COPELAND, Hartford, Conn., assignor to the Pope Manufacturing Company, same place and Portland, Me. Filed Apr. 28, 1894. Serial No. 509,300. (No model.)

*Claim.*—1. In a brake mechanism the combination of a handle bar, two levers, a handle lever and a bell lever, both pivoted upon the handle bar and fitted to oscillate in planes substantially at right angles to each other, the handle lever being provided with a short angular extension or part at its inner end constituting the lug for the pivot pin whereby the said lever is offset from its pivotal point, and the bell lever being pivoted close to the pivot of the handle lever and having a short projection or bill which engages with said handle lever near the pivotal point thereof, a connecting rod joining said bell lever to a bell crank and connecting mechanism joining said bell crank to the brake, substantially as set forth.

2. In a velocipede the combination with a fork frame of a bracket fitting against the under side thereof and against the inner vertical sides thereof and detachably held thereto by fastening devices, and provided with fingers extending rearwardly over the fork legs, and a brake carried by said bracket, substantially as set forth.

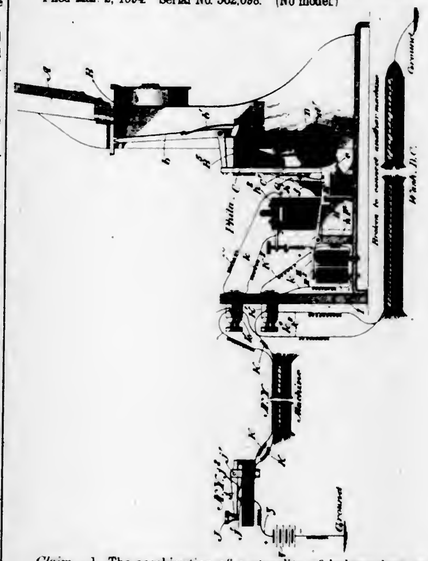
3. In a brake mechanism the combination of the trough-shaped bracket *p* having hooked fingers *p'*, *p'*, and fastening devices for securing the same to the frame of the vehicle, and the spoon brake *o* pivoted upon said bracket, substantially as set forth.

4. In a brake mechanism the combination with a handle bar, of the brake lever *a* mounted thereon, the lever *f* also mounted thereon, said levers being pivoted so as to move in planes substantially at right angles to each other, and the lug *c* on the brake lever *a* engaging with the bill *d* on the lever *f*, the connecting rod *g*, the bell-crank lever *h* and the adjustable connecting rod *l*, *m*, the spoon brake *o* having an arm *o'* to which is connected the lower end of the adjustable connecting rod *l*, *m*, and the trough-shaped bracket *p* having hooked fingers *p'*, *p'* to which bracket the brake *o* is pivoted, and fastening devices securing the said bracket to the frame of the vehicle, substantially as set forth.



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**528,855. TYPE-SETTING MACHINE.** PAUL F. COX, Battle Creek, Mich., assignor to the Cox Type Setting Machine Company, Chicago, Ill. Filed Mar. 2, 1894. Serial No. 502,098. (No model.)



*Claim.*—1. The combination of a plurality of independent machines for composing matter to be printed each having type holding channels, type ejectors, push rods and connections for operating said ejectors, a rotary shaft provided with a series of dogs adapted to operate said rods, a series of retractors for normally preventing engagement of said dogs with the rods, an electric locking device for each retractor, and means for resetting it upon the movement of the cor-

responding push rod; with a transmitter having a series of keys, one for each printing character or type contained in each of said mechanisms, with independent electric connections between each key of said transmitter and the electric locking devices of the corresponding characters in the several mechanisms, whereby upon the depression of any key of the transmitter the corresponding character is composed in each of said machines, substantially as and for the purpose set forth.

2. The combination of a push rod, a rotating dog, and a retractor, a lock and a releasing device therefor, substantially as described.

3. The combination of a push rod, a radially movable rotating dog, a retractor, and an electrically controlled locking device for said retractor, substantially as described.

4. The combination of a push rod, a movable dog adapted to engage therewith, a rotating shaft carrying said dog means for normally preventing engagement of the dog with said rod, and devices for withdrawing said means, substantially as described.

5. The combination of mechanism for ejecting a type, a rotating dog for operating said mechanism, a retractor for normally preventing said dog operating said mechanism a lock for said retractor and an electrical device for releasing said lock, substantially as and for the purpose set forth.

6. The combination of a push rod, a rotating dog for operating said rod, a retractor for normally preventing engagement of the dog with the rod, and means whereby said retractor is thrown back to normal position upon the lifting of the rod, substantially as described.

7. The combination of a type ejector, a bell crank lever and push rod for operating said ejector, a rotary dog for lifting said rod, a retractor for normally preventing engagement of the dog and rod, means for withdrawing said retractor when released, and an electrically controlled locking device therefor, substantially as set forth.

8. The combination of a type ejector, a bell crank lever and push rod for operating said ejector, a rotary dog for lifting said rod, a retractor for normally preventing engagement of the dog and rod; means for withdrawing said retractor when released, and an electrically controlled locking device therefor, and means whereby upon the lifting of the rod said retractor is moved back to normal position.

9. The combination of the series of push rods, a rotating shaft having a series of dogs respectively adapted to operate one of said rods; separate devices for normally preventing said dogs engaging said rods, and electrically controlled mechanism whereby either of said devices may be released, thereby allowing the relative dog to lift the rod, and means for resetting the device at each lifting of the rod, substantially as specified.

10. The combination of the push rods, the rotating dogs adapted to engage therewith, the retractors, the springs for withdrawing them, devices for separately locking the retractors in forward position, and the electro magnets for releasing said locking devices, substantially as described.

11. The combination of the push rods, the rotating dogs adapted to engage therewith, the retractors, the springs for withdrawing them, devices for separately locking the retractors in forward position, and the electro magnets for releasing said locking devices, and means for resetting each retractor each time the corresponding rod is moved by the dog, substantially as described.

12. The combination of the push rod, the retractile dog carried by said shaft, the retractor adapted to prevent engagement of the dog with the rod, the spring for withdrawing said retractor; the electrically controlled locking device for said retractor, and the oscillating lever whereby the retractor is moved back to normal position by the lifting of the rod, substantially as described.

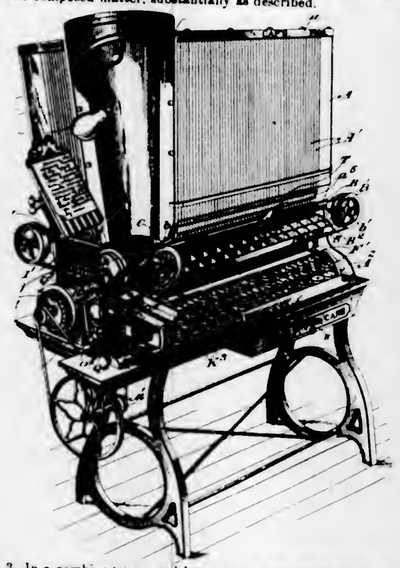
13. The combination with the type-ejectors of a type setting machine, the push rods and connections for operating said ejectors; a rotating shaft carrying a series of spring projected dogs adapted to operate said rods, the series of retractors for normally preventing engagement of said dogs with the rods, an electrical locking device for each retractor, and means for withdrawing it when released, and for resetting it upon the movement of its push rod; with a transmitter having a series of keys, and independent electrical circuit connections between each key of the transmitter and the locking device of the retractor controlling the mechanism for ejecting the type corresponding to the transmitter key, whereby upon the depression of any key of the transmitter the corresponding type is ejected and composed in the machine, substantially as and for the purpose set forth.

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**528,856. TYPE-SETTING MACHINE.** PAUL F. COX, Battle Creek, Mich., assignor to the Cox Type Setting Machine Company, Chicago, Ill. Filed Mar. 2, 1894. Serial No. 502,099. (No model.)

*Claim.*—1. In a combined type and logotype setting machine the combination with distinct sets of holders respectively for font types and three or more letter logotypes, independent ejectors for each holder, and independent carriers for conveying the ejected type and logotype characters to a common assembling race-way, and a device for pushing the type and logotypes therein all constructed substantially as described so that types and logotypes can be independently but correctly brought into position at will to be composed in a line in said race-way, by said pusher, substantially as described.

2. In a combined type and logotype setting machine, the combination of separate type and logotype holders standing at angles to each other, mechanism for ejecting the type or logotype one at a time, and separate endless belt carriers beside, and running parallel with each holder, for conveying the types into a common race-way, whereby said types and logotypes are automatically brought together in the composed matter, substantially as described.



3. In a combined type and logotype setting machine the combination of a pair of stationary channeled type holders mechanism for ejecting separate type, or logotypes, from the respective holders; mechanism for conveying the ejected type or logotype to a common race-way, a device for partially rotating the logotypes on their way to the race-way, and mechanism for aligning and forwarding them therein, substantially as described.

4. In a combined type and logotype setting machine, the combination of separate receptacles for the type and the logotype characters arranged at angles to each other, and each consisting of a series of parallel diagonal channels, keys and connections whereby upon the depression of the key the corresponding type or logotype is ejected from its channel; a common race-way or composing channel; and separate means for directing the ejected types and logotypes into said channel, substantially as described.

5. In a combined type and logotype setting machine, the combination of separate receptacles for the type and the logotype characters arranged at angles to each other, and each consisting of a series of parallel diagonal channels, keys and connections whereby upon the depression of a key the corresponding type or logotype is ejected from its channel; a common race-way or composing channel; and separate means for directing the ejected types and logotypes into said channel, and means for partially rotating said logotypes on their way to the channel, substantially as described.

6. In a combined type and logotype setting machine, the combination of a pair of stationary receptacles for the type and logotype characters respectively arranged substantially at right angles to each other, keys and connections whereby upon the depression of a key the corresponding type or logotype is ejected from its holder; a type channel or receptacle into which the ejected types or logotypes are moved; a device for pushing the types into said channel; and endless belt carriers driven one from the other for automatically directing the ejected type and logotypes from their receptacle to a common race-way, and in front of a pushing device; and a pusher whereby they are moved into said race-way, substantially as described.

7. In a type setting machine the combination of two series of type channels standing substantially at right angles to and opening away from each other, a single race-way or assembling channel, at the proximate point of said series, and independent mechanism whereby type from either channel is directed into the said race-way, substantially as described.

8. The combination of two series of type holding channels, arranged at angles to each other, a separate type carrier for each series, moving parallel therewith, a race-way at the junction of said series of channels and mechanism whereby the types are directed from the carriers into said assembling race, substantially as described.

9. The combination of two series of type channels, and an endless belt type carrier for each series; arranged at angles to each other, a single assembling race-way at the proximate point of said belts, and mechanism for diverting the type from both belts into the said race-way, and a single "pusher" for moving type into said race-way, substantially as described.

10. In a type setting machine the combination of two series of diagonal parallel type channels arranged at angles to each other, a carrier belt for each series, said belts running at angles to each other and toward a common race-way; and chutes and switches for directing the type from each belt into said race-way, and a device for pushing the types through the race-way, substantially as described.

11. The combination of two series of type holding channels, and an independent carrier for each series, a common race-way, and means for directing the types from said carriers into said race-way, and means for partially rotating the type from one series of channels, substantially as described.

12. In a combined type and logotype setting machine, the combination of receptacles for each type and logotype character arranged at angles to each other, mechanism for ejecting the separate type and logotypes at the will of the operator from their respective holders; and independent type carriers moving toward, but lying at angles to, each other for conveying the ejected type or logotype to a common race-way at the meeting point of the carriers, substantially as specified.

13. In a combined type and logotype setting machine, the combination of a receptacle for each type or logotype character, mechanism for ejecting the separate type or logotypes at the will of the operator from their respective holders; and mechanism for conveying the ejected type or logotype to a common race-way, and means for turning the logotype so that it will align with the type, substantially as described.

14. A type reservoir having a series of parallel type channels, and formed of top and bottom diagonally grooved bars, and vertical strips $a^3$, secured in the grooves of said bars, having thin longitudinal portions $a^5$ at rear, and tapered at one end as at $a^4$, substantially as described.

15. The combination of two type reservoirs arranged at angles to each other, and an endless belt carrier for each reservoir, means for driving one of said belts from the other, and mechanism for ejecting type from said reservoir directly upon its belt, and a common receiver into which the types from either belt are directed, substantially as described.

16. The combination in a type setting machine, of type reservoirs, a single assembling race-way, means for conducting type thereto from the reservoirs, and means for rotating the type from one reservoir, substantially as described, prior to its assembling in the race-way, substantially as specified.

17. The combination of two type reservoirs, a single race-way, means for conducting type from both reservoirs to said race-way, and means for partially rotating the type from one reservoir prior to its entering the race-way, and means for pushing the type successively into said race-way, substantially as described.

18. In a type setting machine, the combination of two series of type channels standing at substantially right angles to each other and both opening outwardly, means for ejecting type from any channel in either series; an endless belt carrier running beside each series, and at an angle to the other belt, a single race-way, means for directing types from either belt into the common race way; a vibrating setter for pushing type into said race-way, the gearing between the belt driving wheels, and the devices for operating said setter from one of the belt wheels, all constructed and arranged to operate substantially as and for the purpose set forth.

19. In a combined type and logotype setting machine, the combination of an ordinary type reservoir for holding type with their nicks vertical and a word logotype reservoir for holding the logotype with nicks horizontal and uppermost; with devices for ejecting separate types or logotypes at will, and separate movable carriers for respectively conveying the types and logotypes when ejected to a common race-way or composing channel, and a common setter for aligning them in said race-way, substantially as described.

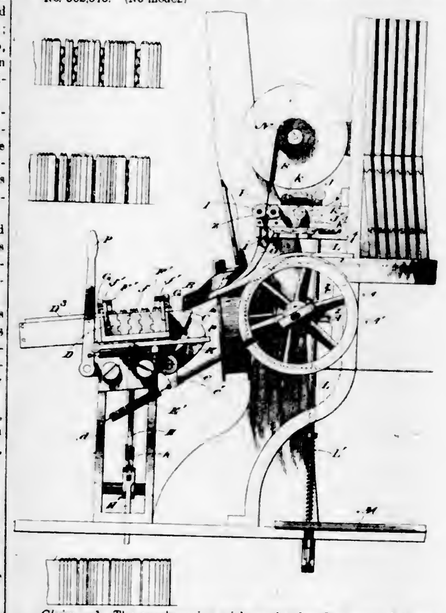
20. In a combined type and logotype setting machine, the combination of a pair of stationary receptacles for type and logotype characters respectively, arranged substantially at right angles to each other, keys and connections whereby upon the depression of a key the corresponding type or logotype is ejected from its holder; a common type channel or race-way into which the ejected types or logotypes are delivered; and an endless belt carrier beside the lower end of each receptacle for conveying the ejected types and logotypes separately to said race-way, and means whereby the types are successively moved into said race-way, substantially as described.

21. The combination of a series of type channels; an endless belt extending parallel with the series, and close to the lower ends thereof, keys and connections for ejecting the type upon the belt at will of the operator, a race-way, into which the types are delivered, and a vibrating spring controlled pusher for moving the types into said race-way, a pitman for vibrating said pusher, operated in one direction by a cam on one of the belt driving wheels and in the opposite direction by a spring, all constructed and arranged substantially as described.

22. The combination of the type holding and delivering mechanisms, and race-way, of the vibrating pusher or setter O mounted on a rock shaft, O', a pitman rod $o$ for rocking said shaft, a spring $o^2$ on said rod adapted to cause it to force said setter yieldingly in one direction, to set the type, and a rotating cam P engaging said rod to move it in the opposite direction and draw the setter outward against the action of the spring, substantially as described.

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**528,857. APPARATUS FOR AUTOMATICALLY JUSTIFYING TYPE.** PAUL F. COX, Battle Creek, Mich., assignor to the Cox Type Setting Machine Company, Chicago, Ill. Filed Mar. 5, 1894. Serial No. 502,313. (No model.)



*Claim.*—1. The combination with mechanism for composing type and spaces in line, of mechanism for forming laterally compressible "spaces" and delivering them as needed to the composing devices during the setting operation whereby the line may be subsequently mechanically justified by lineal compression, substantially as set forth.

2. The combination in a type setting machine, of mechanism for making laterally compressible spaces as needed to space the words during the setting operation and mechanism for lineally compressing the line when completed, thereby mechanically justifying the line by the yielding of the spaces, substantially as described.

3. The combination in a type setting machine, of the receiving galley, the plunger and rule therein, between which the composed types are moved in line, with mechanism whereby when the line is completed the plunger and rule can be moved lengthwise of the galley so as to set the line of type out of the way, and mechanism whereby the rule is automatically shifted from front to rear of the line of type, substantially as described.

4. The combination of the galley, the plunger therein, the rule attached to the plunger, the devices for automatically raising and lowering the rule as the plunger is reciprocated in the galley, and means for directing a line of type into the galley, between the plunger and rule, substantially as described.

5. The combination in a type setting machine, of mechanism for composing type characters, and laterally compressible spaces, and mechanism for making such spaces, and for lineally compressing the line when completed, thereby mechanically justifying the line by the compression of the spaces, and mechanism whereby the justified line may be moved out of the way of the next succeeding line, substantially as described.

6. The combination in a type setting machine of the galley, mechanism for setting and aligning type and directing the same into the galley, a plunger and rule between which the incoming line of type is received, and mechanism for moving the line when completed forward in the galley, and simultaneously shifting the rule from front to rear thereof, substantially as set forth.

7. In a type setting machine the combination of the type setting mechanism, with mechanism for making spaces and delivering them to the setting mechanism as needed during the setting up of a line, substantially as described.

8. In a type setting machine the combination with type setting mechanism, of a mechanism for making yielding compressible "spaces" at the will of the operator, and delivering them to the setting mechanism as needed during the setting up of a line, substantially as described.

9. In a type setting machine the combination with type setting mechanism, of a mechanism for making yielding "spaces" at the will of the operator, and delivering them to the setting mechanism, and means for lineally compressing the lines of type when completed whereby the line is automatically justified by the yielding of the "spaces," substantially as specified.

10. The combination with mechanism for composing type, of a pair of rolls, and a shearing device, a key lever and connections whereby upon the depression of said lever the shear and rolls are operated, to sever a "space" and means for delivering such space to the composing devices, substantially as set forth.

11. In combination with the composing mechanism of a type setting machine, of a "space" making mechanism consisting of means for feeding a space "ribbon" and means for severing it into suitable lengths for "spaces," a key, and connections whereby upon the depression of a key a "space" is severed and delivered to the composing devices, substantially as described.

12. The combination of the feed rolls, the driving gear thereof, its ratchet the rock shaft carrying a pawl engaging said ratchet, and means for rocking said shaft, with a shear blade, and means for operating it from the rock shaft, at the initial movement of the latter, and for retracting the blade immediately after it has operated, substantially as described.

13. The combination of the feed rolls, the driving gear thereof, mounted on a rock shaft and carrying a ratchet, the pawl mounted on said rock shaft, engaging said ratchet, and the key lever and connections for rocking said shaft; with the shear plate, the spring controlled latch thereon, and the finger on the rock shaft engaging said latch, substantially as described.

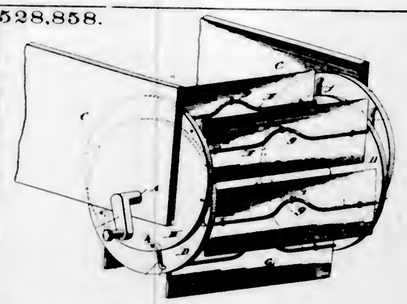
14. The combination in a type setting machine, of the type setting devices, with a "space" strip feeder, and mechanism for corrugating and severing "spaces" from said strip and delivering them to the setting mechanism at the will of the operator, substantially as described.

15. The combination in a type setting machine of mechanism for setting type; a key and mechanism for making "spaces" from a ribbon, whereby upon the depression of said key a space is severed and delivered to the setting mechanism, substantially as and for the purpose set forth.

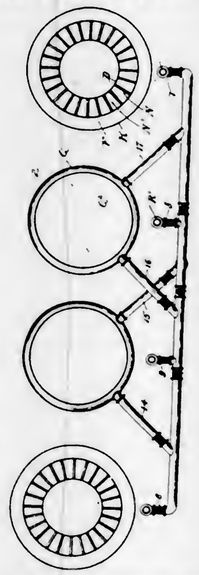
16. In a type setting machine, the combination of mechanism for delivering type to a race-way, a galley for receiving the type from the race-way, a setter for forcing the type into the galley, and a mechanism for making and delivering "yielding" spaces to the setting mechanism as required in the composition of matter; with mechanism for lineally compressing the line of type when completed thereby mechanically justifying it by reason of the yielding of the "spaces" and mechanism for moving the justified line out of the way, substantially as and for the purpose set forth.

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528,858.



528,859. EVAPORATING APPARATUS. THOMAS CRANEY, Bay City, Mich. Filed Apr. 7, 1894. Serial No. 506,709. (No model.)



*Claim.*—1. In an evaporating apparatus, the combination with the furnace, of an evaporating pan thereon, a settling leg and a valved vapor discharge pipe, of a plurality of evaporating pans having steam heating chambers, settling legs and valved vapor discharge pipes, a trunk pipe into which the discharge pipes lead, the valved branch pipes 14, 15 leading from the trunk pipe into the heating chamber of one of the pans, the valved branch pipe 16 leading into the heating chamber of the other pan, and the valve 12 in the trunk pipe between the pipes 15 and 16, substantially as described.

2. In an evaporating apparatus, the combination with a plurality of furnaces, of evaporating pans above the same, each provided with settling legs and valved discharge pipes, a plurality of intermediate evaporating pans each having steam heating chambers, settling legs, valved discharge pipes and condensers, a trunk pipe connecting the discharge pipes of all the pans and a plurality of valved pipes leading from the trunk pipe into each intermediate pan, substantially as described.

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528,858. PADDLE-WHEEL. WILLIAM CRAIGE, Paducah, Ky. Filed Jan. 6, 1893. Renewed Apr. 17, 1894. Serial No. 507,929. (No model.)

*Claim.*—The combination, with a shaft and a pair of drive-disks rigid thereon, of a series of annular disks movably supported parallel to the drive-disks, a series of feathering shafts having a cranked central portion and cranked ends, said feathering shafts journaled in the bearings of the drive-disks and having their cranked ends connected to the annular disks, a series of floats, and a series of stirrup-bolts passing through the floats and surrounding the feathering shafts, substantially as described and for the purpose set forth.

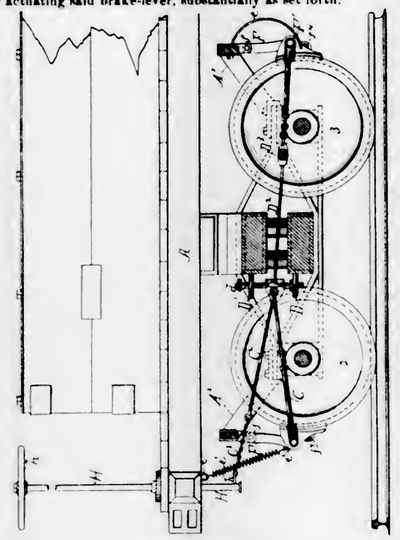
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528,860. BRAKE FOR RAILWAY-CARS. JOHN R. CRIBBS, Verona, Pa. Filed Mar. 10, 1894. Serial No. 503,219. (No model.)

*Claim.*—1. In a car brake, the combination of the beam B having a perforated central portion and provided with a brace-pipe $b^1$ leading to one end of said perforation, the rod $B^1$ extending through said brace-pipe and through the perforation in the beam B, the reinforce $b$, secured to the end of rod $b^3$ on that side of beam B opposite to brace-pipe $b^1$, and the rods C, C, each secured at one end to beam B on opposite sides of brace-pipe $b^1$ and at its other end to the free end of rod $b^3$, substantially as set forth.

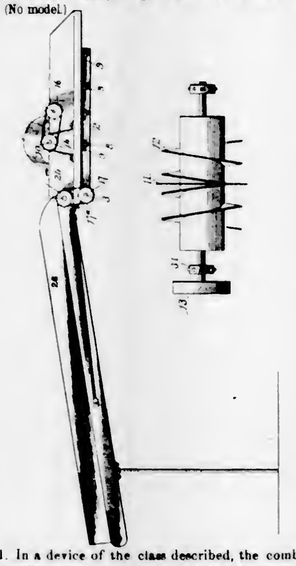


2. In a car brake, the combination of the beam B having a perforated central portion and provided with a brace-pipe $b^1$ leading to one end of said perforation, rod $b^3$ extending through said brace-pipe and also through the perforation in the beam, reinforce $b$ connected to rod $b^3$ on the side of beam B opposite to brace-pipe $b^1$, rods each connected at one end to beam B on opposite sides of brace-pipe $b^1$ and at the other end to the free end of rod $b^3$, the brake-lever having a staple, the rod connecting said rod $b^3$ with the said staple, and means for actuating said brake-lever, substantially as set forth.



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528,861. BAND-CUTTER AND FEEDER. ISAAC A. CRISP and JAMES A. STEVENSON, Halsey, Oreg. Filed July 14, 1893. Serial No. 480,520. (No model.)

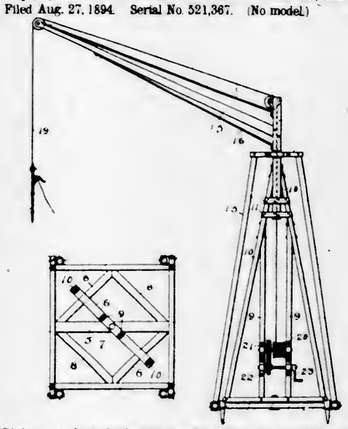


*Claim.*—1. In a device of the class described, the combination with a supporting framework, and a horizontal shaft 3 arranged transversely therein, of an apron carried at one end by said shaft, a horizontal plate 6 arranged between the upper and lower sides of the apron and parallel with and contiguous to the plane of the upper side of the apron to support the latter intermediate of its ends, a roll mounted upon said plate and supporting the other end of the apron, and means for adjusting said plate and the roll carried thereby in a horizontal plane, said means consisting of bolts engaging slotted depending flanges of the horizontal plate substantially as specified.

2. The combination with a supporting framework having side plates provided with horizontal slots 9, of a shaft 3, means to operate said shaft, a horizontal plate 6 provided with depending side-flanges, bolts extending horizontally and transversely through said flanges and engaging the said slots in the side plates, a roller 4 carried by said plate 6 at the opposite end from the shaft 3, an apron traveling upon the shaft 3 and roll 4, band-cutting mechanism arranged above said apron, and means for locking said bolts at the desired adjustment, the horizontal plate being arranged parallel with and adjacent to the upper or operating side of the apron to prevent deflection thereof substantially as specified.

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528,862. HAY-STACKER. WILLIAM C. DAWES, Marshall, Mo. Filed Aug. 27, 1894. Serial No. 521,367. (No model.)



*Claim.*—1. In a device for stacking hay, the combination of the platform, the bolster pivoted upon the platform, the derrick comprising a frame erected on said bolster together with the part 12 and arm 15, said derrick being attached to and carried with the pivoted bolster, the cap 14, posts 13, and the hay-elevating rope, substantially as set forth.

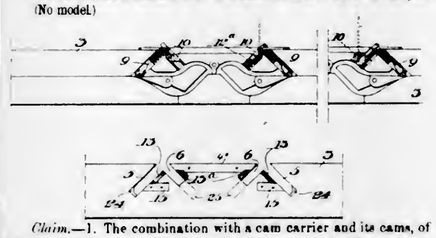
2. The hay stacker consisting of the platform, the bolster pivoted upon said platform, the derrick frame consisting of posts 9 and braces 10 and suitable ties, and a top part 12 carrying arm 15, a hay-elevating rope, a winding drum, a crank shaft, and gears intermediate the crank and drum shafts, said shafts having journals in the derrick frame, substantially as set forth.

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528,863. WITHDRAWN.

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528,864. AUTOMATIC CIRCULAR-KNITTING MACHINE. BARCLAY M. DENNEY, Camden, N. J. Filed Nov. 24, 1893. Serial No. 491,843. (No model.)



*Claim.*—1. The combination with a cam carrier and its cams, of a diagonally sliding needle engaging cam, constructed to be engaged and deflected by a needle, and means adapted normally to maintain said cam in active position, there being a cam surface or cut away portion in the path of said needle engaging cam, whereby the latter will engage a needle heel in its path and be moved diagonally thereby until it reaches the cam or cut away portion upon which it will be deflected by the needle, substantially as described.

2. The combination with a cam carrier provided with a diagonal slot or opening therein, and the knitting cams, of a guide within

said slot, a needle engaging cam mounted on said guide and projected normally into active position, there being a cam surface or cut away portion on said cam carrier, and means for maintaining said needle engaging cam normally beyond or out of engagement with the said cam surface or cut away portion; substantially as described.

3. The combination with a cam carrier, of a diagonally sliding partially rotatable needle engaging cam, means adapted to maintain said cam normally in active position, a guide for said cam, provisions whereby the same may be slid and partially turned on said guide by the pressure of a needle, a latch device to lock the said cam out of action, and means to release said latch, substantially as described.

4. The combination with a cam carrier, provided with a diagonal slot or opening therein, of a diagonally sliding needle-engaging cam, a rigid guide rod therefor in said slot or opening, a spring acting to maintain said cam normally in action, and a spring actuated device adapted to lock said cam out of action, there being a cam surface or cut away portion upon which the needle engaging cam is deflected by the pressure of a needle; substantially as described.

5. The combination with a cam carrier and its cams, of a needle-engaging cam, a guide therefor, and means tending to maintain said cam normally in action, of a spring controlled slide bolt adapted to lock said cam out of action, an outward member on said bolt, and a depending trip arm provided with a cam surface adapted to co-act with said outward member, substantially as described.

6. The combination with the cam carrier, and its cams, of a diagonally-movable needle-engaging cam, means adapted normally to maintain said cam in active position, there being a cam surface or inclined cut away portion in the path of said needle engaging cam, and a fixed needle actuating cam in front of said cam surface or cut away portion, whereby the said needle engaging cam will abut against a needle heel in its path and be moved diagonally thereby until it reaches the cam or cut away portion upon which it will be deflected by the needle, said needle being thereupon delivered to the said fixed cam; substantially as described.

7. The combination with the cam carrier, and its cams, of a diagonally-movable needle-engaging cam, means adapted normally to maintain said cam in active position, there being a cam surface or inclined cut away portion in the path of said needle engaging cam, and a fixed needle actuating cam in front of said cam surface or cut away portion, whereby the said needle engaging cam will abut against a needle heel in its path and be moved diagonally thereby until it reaches the cam or cut away portion upon which it will be deflected by the needle, said needle being thereupon delivered to the said fixed cam, together with means for temporarily locking said needle engaging cam out of action; substantially as described

8. The combination with the cam carrier and its cams, of a diagonally-movable needle engaging cam provided with a sleeve, a guide rod upon which the said sleeve is mounted so as to be partially rotatable, a spring acting upon one end of said sleeve to maintain the cam in action, a fixed cam against which the other end of said sleeve is adapted to rest, said latter end being cut away or beveled coincidently with the fixed cam, substantially as described.

9. The combination with the cam carrier, provided with the oppositely disposed diagonal slots, the guide rods in said slots, the needle-raising and needle-depressing cams partially rotatable on said rods, respectively, the spring acting to depress the raising cam, the spring acting to raise the depressing cam, there being cam surfaces in the paths of said cams respectively, together with the respective locking devices for said cams, and means for operating said locking devices, substantially as described.

10. The combination, with the cam carrier provided with a slot or opening therein, of a diagonally-disposed cam plate fitted edgewise to said slot or opening so as to be radially-movable therein, a guide rod on said plate, a spring tending normally to move the said plate outward, and a latch adapted to lock the plate inward against the action of the spring, said latch being provided with a stop adapted to abut against the said guide rod, substantially as described.

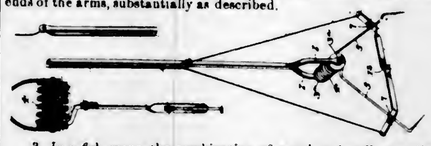
11. The combination with the cam carrier provided with a diagonal slot therein in advance of the knitting cams, the radially movable offset plate in said slot, a guide rod on said plate, a spring tending to maintain said plate normally outward, and a latch arm adapted to engage and lock said plate when the latter is moved inward; substantially as described.

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**528,865.** FISH-SPEAR. HENRY D. DIESHLER, Belvidere, N. J. Filed June 28, 1894. Serial No. 515,993. (No model.)

*Claim.*—1. In a fish spear, the combination of a main rod or handle, a coiled spring mounted at one end thereof and having its ends projected away from the spring and bent to form spurs, the said ends having a tendency toward each other, two arms pivotally joined to each other at one of their ends and pivotally connected to the respective ends of the coiled spring, the pivotal connection between the ends of the arms being arranged between the ends of the spring, and operating cords connected to the outer ends of the arms, substantially as described.

2. In a fish spear, the combination of a main rod or handle having its lower end bifurcated, a drum fixed between the arms of said bifurcated end, a coiled spring embracing the drum and having its ends or terminals projected away from the drum to form rods, the said rods being bent at their ends to form spurs, two arms having their ends joined to each other by a knuckle joint and pivotally connected to the respective rods, the arms being arranged so that the joint thereof will be located between the rods, and operating cords connected to the outer ends of the arms, substantially as described.

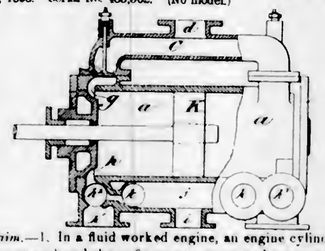


3. In a fish spear, the combination of a rod or handle, a coiled spring mounted thereon and having its ends or terminals extended to form spurs, said spurs having a normal tendency toward each other, and means substantially as described for holding said spurs apart and for permitting them to move toward each other, substantially as described.

4. In a fish spear, the combination of a rod or handle, a coiled spring mounted thereon and having its ends extended to form spurs, said spurs having a normal tendency toward each other and each formed with a flattened portion bounded at each end with a shoulder, two arms connected to each other by a knuckle joint and each provided with an opening receiving the respective flattened portions of the spurs, and cords connected to the arms at their outer ends, substantially as described.

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**528,866.** FLUID-PRESSURE ENGINE. GEORGE DIXON, Bolton, England, assignor to himself and James Musgrave, same place, and Edward Field and Francis Sanders Morris, Adelphi, England. Filed Aug. 16, 1893. Serial No. 483,302. (No model.)



*Claim.*—1. In a fluid worked engine, an engine cylinder having at one or at each end thereof separate steam and gaseous fluid supply pipes or passages, a valve acting to place the gaseous fluid supply pipe or passage in communication with said cylinder during the period of exhaust, and a valve acting to place the steam supply pipe in communication with said cylinder after compression of gaseous fluid therein.

2. In a fluid worked engine, the combination with an engine cylinder having a steam inlet and valve at one or at each end thereof, of a gaseous fluid supply pipe or passage to one or to each end of said cylinder, and a valve or valves acting to open communication between said pipe or passage and said cylinder during the period of exhaust thereof.

3. The combination with a steam engine cylinder and its steam supply and exhaust valve or valves, of a pipe or passage for supplying hot air to said cylinder, and a valve or valves acting to open and admit hot air to said cylinder during the period of exhaust thereof substantially as described.

4. The combination with a steam engine cylinder and its steam supply and exhaust valve or valves, of a supply pipe or passage for supplying hot air to said cylinder, and a non-return valve or valves adapted to open automatically during the period of exhaust of said cylinder and to close when the pressure within said cylinder exceeds that of the hot air in said pipe or passage substantially as described

5. In a fluid worked engine an engine cylinder provided at each end with an inlet passage and port for gaseous fluid, a non-return valve controlling the same and arranged to open inward when the pressure within the corresponding end of said cylinder falls below that of the gaseous fluid supplied to said inlet passage, a separate steam inlet passage and port, and a valve for controlling the same substantially as herein described.

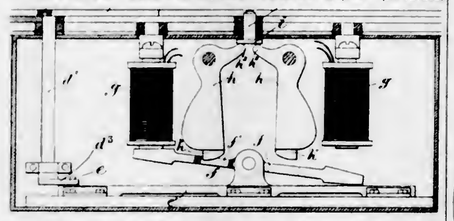
6. In a fluid worked engine an engine cylinder provided at each end with a port that serves alternately as a steam port and as an exhaust port and a valve for controlling said port, and with a hollow cover provided with an inlet passage for hot gasses in communication with its interior and also provided with one or more inlet ports each controlled by a non-return valve opening inward and normally held against its seat by a spring substantially as herein described.

7. The combination with an engine cylinder having separate inlets for heated gaseous fluid and for steam and valves for controlling said inlets, of a heater, pipes connecting the same with the gas inlet passages of said engine cylinder, a blower for forcing gas through said heater and connecting pipes, a steam generator, and a steam superheater arranged in the steam pipe between said steam generator and engine cylinder and formed with separate but adjacent passages for steam and hot gaseous fluid substantially as described for the purpose specified.



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**528,867.** AUTOMATIC RAILWAY-SWITCH. CHARLES F. DUVAL, Boston, Mass. Filed Nov. 25, 1893. Serial No. 491,959. (No model.)



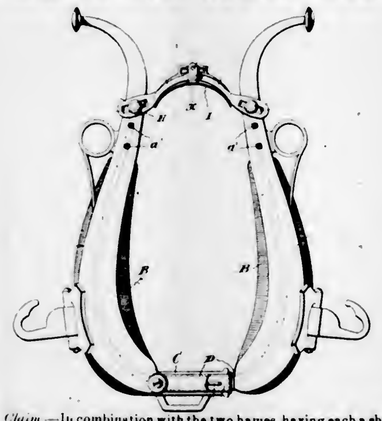
*Claim.*—1. In a railway switch-apparatus, the combination of a movable switch-point; a push-piece arranged for actuation by a passing car, operating connections between said push-piece and the switch-point with provisions for turning said point in either direction and including an adjustable member whose position determines the direction of movement of the switch-point under impulse of the push-piece; and electrical devices for establishing two different positions of the said adjustable member.

2. The combination of a switch-point; a push piece adapted to be actuated by the passing car; suitable connections between said push-piece and the switch-point adjustable to move the latter in either direction, said connections including two separate members both in operative relation with the push-piece and adapted to be moved thereby in opposite directions, and a disconnecting member movable to engage either of said members; and electro-magnets controlling said disconnecting member, substantially as described.

3. The combination of a switch-point, a slide operatively connected with said switch-point, a pivoted armature on said slide, electro-magnets adapted to co act with opposite ends of the armature-levers adapted to engage the said armature when attracted by the magnets respectively, and a push-piece adapted to actuate said levers and to be actuated by the passing car.

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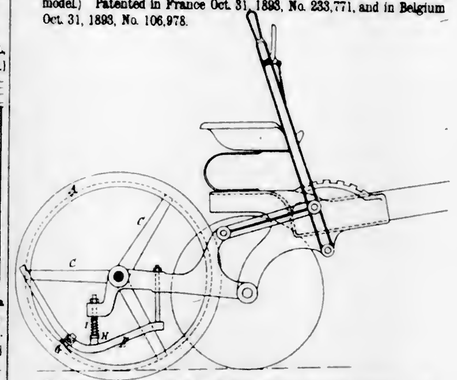
**528,868.** COMBINED HORSE-COLLAR AND HAMES. HERMAN ECKARDT, Brooklyn, N. Y., assignor to the Combination Collar Company, same place. Filed June 8, 1894. Serial No. 513,931. (No model.)



*Claim.*—In combination with the two hames, having each a shoulder pad or cushion attached, the straight hollow horizontal extension from one hame, at the lower end thereof, adapted to receive a corresponding extension of the other that has a number of notches or teeth in its side, a spring plate secured to the hollow extension and having a lip projecting into the path of the teeth of the other, and connections between the upper ends of the hames that permit lateral adjustment thereat corresponding with a like adjustment at the lower ends, which connections consist of two upwardly arched links that at their higher ends are pivoted together, and each at its lower end is pivoted to a hame, substantially as and for the purpose specified.

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**528,869.** BEET-ROOT OR POTATO HARVESTER. LOUIS F. WAUTHIER, Ligny, Belgium. Filed Mar. 1, 1894. Serial No. 501,965. (No model.) Patented in France Oct. 31, 1893, No. 233,771, and in Belgium Oct. 31, 1893, No. 106,978.

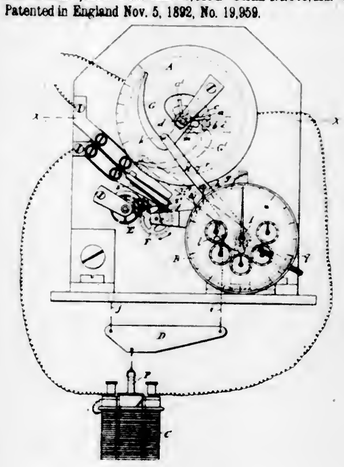


*Claim.*—1. In a machine for extracting beet roots and other roots or tubers consisting of a vehicle having two revolving flanged disks A mounted on an axis so to be inclined to each other, both in the horizontal and the vertical direction, their nearest point of approach being situated at the back and near the lowest point, the flange adapted to rest on the ground, while the outer edges of the disks enter the ground to seize the roots between them and with the wedging action as the disks rotate to raise the beets out of the soil, substantially as described.

2. A machine for extracting beet roots and other roots or tubers consisting of a vehicle having two revolving flanged disks A mounted on an axis so as to be inclined to each other in the horizontal and the vertical direction, their nearest point of approach being situated at the back and near the lowest point to seize the roots between them, with the wedging action as the disks rotate, and cutting devices between the disks for removing the heads of the beet-roots, substantially as described.

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**528,870.** APPARATUS FOR MEASURING ELECTRICITY. WILLIAM FRIESE-GREENE, London, England, assignor of one-half to Charles Brawn, same place. Filed Mar. 28, 1894. Serial No. 505,482. (No model.) Patented in England Nov. 5, 1892, No. 19,959.

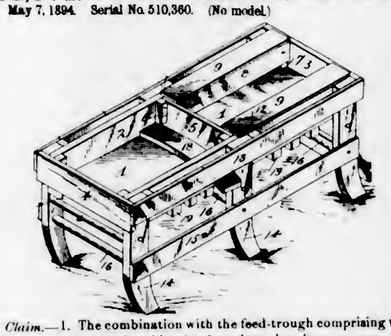


*Claim.*—1. In an apparatus for measuring electricity, the combination of a solenoid in the main circuit, a fixed rod and a movable rod parallel with the axis of said solenoid, said movable rod being adapted to be repulsed by said fixed rod, a curved arm connected to said movable rod, a solenoid provided with a plunger, mechanism for operating said plunger, and a bar sliding on said curved arm and operated by said plunger for registering the current.

2. In an apparatus for measuring electricity, the combination of a solenoid, a stationary rod parallel with the axis of said solenoid, a movable rod also pivoted near the axis of said solenoid and adapted to be repulsed by said stationary rod, a curved arm attached to said movable rod, a bar sliding on said curved arm and provided with a pawl, a solenoid provided with a plunger for operating said bar, mechanism for operating said plunger and mechanism operated by the pawl on said arm for registering the current.

3. In an apparatus for measuring electricity, the combination of a core or solenoid located in the main circuit, a fixed and a movable rod adjacent to said solenoid, a curved arm on said movable rod provided with teeth at its outer end, a solenoid provided with a plunger, a clock-work mechanism for operating said plunger, a bar provided with a stud adapted to slide on said curved arm, said stud meshing with the teeth on said arm, said bar being operated by said plunger.

528,871. **FEED-TROUGH.** ARTHUR GREER, Moniteau, Mo. Filed May 7, 1894. Serial No. 510,360. (No model.)

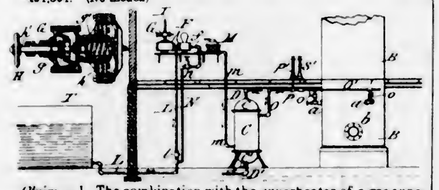


*Claim.*—1. The combination with the feed-trough comprising the bottom, the ends, and the sides, having slots therein at or near the centers, of the pivoted legs connected together by horizontal and transverse rails or bars, and the removable transverse bar fitting in said slots for holding said legs in a vertical position; substantially as described.

2. The combination with the feed-trough comprising the bottom, the sides, having slots therein near their centers, the end-boards, the guide-rails, the salt boxes, and the removable partition, of the pivoted legs, the connecting rails or bars, and the transverse bar passing through said slots; substantially as and for the purpose specified.

3. The combination with the feed-trough comprising the bottom, the sides having slots at or near their centers, and the end boards, of the pivoted legs, the bars or rails connecting the same, the slats on the lower side of the trough and the removable transverse bars, substantially as and for the purpose specified.

528,872. **OIL-FEEDING APPARATUS FOR GAS-GENERATORS.** OLAF N. GULDLIN, Fort Wayne, Ind. Filed Nov. 21, 1893. Serial No. 491,591. (No model.)



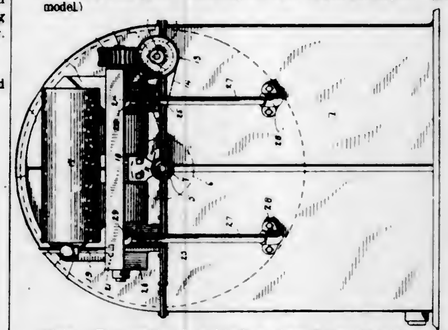
*Claim.*—1. The combination with the superheater of a gas apparatus, of an oil injector in the wall thereof, a steam heated oil heater having a steam supply pipe, an oil delivery pipe connecting the heater with the injector, a governor valve connecting the heater with said steam supply and oil delivery pipes, and means for supplying oil under pressure to the heater, substantially as described.

2. The combination with a superheater, of an oil injector, a steam heated oil heater, having steam and oil supply pipes, a meter on said oil supply pipe, means for forcing oil under pressure through the meter and heater to the injector and suitable pipe connections, substantially as described.

3. The combination with a superheater of an oil injector, an oil heater having suitable supply and delivery pipes, a meter connected in the supply pipe, a steam pump for forcing oil under pressure to the superheater, and an automatic governor valve on the steam induction pipe of said pump for maintaining a uniform pressure of oil in the delivery pipe, substantially as described.

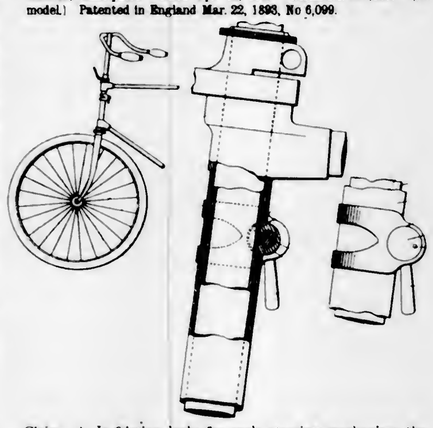
4. The combination with the superheater having an oil injector, of an oil heater, a meter, a steam pump having an automatic governor valve, an oil tank, suitable pipe connections between said devices, a return pipe connecting the delivery pipe with the suction pipe of the pump and having a safety relief valve for automatically returning oil in case of excessive pressure in the apparatus, substantially as described.

528,873. **AUTOMATIC FEED FOR WOOD-BARKING MACHINES.** WILLIAM HADLEY, Shelton, Conn., assignor of one-third to Frederick C. Wilkinson, same place. Filed Aug. 10, 1893. Serial No. 482,797. (No model.)



*Claim.*—The combination with the casing of a wood barking machine having an opening 2, and a rotating disk carrying radial cutters within said casing, of feed rollers on the outer side of the casing which hold the log that is being operated upon in contact with the radial cutters and impart rotation to the log, and an adjustable stop which is adapted to engage either a large or small sized log and provide a center for it to turn upon.

528,874. **CYCLE-STEERING LOCK.** ROBERT F. HALL, Birmingham, England, assignor to the R. F. Hall Manufacturing Company, Limited, same place. Filed Apr. 13, 1893. Serial No. 470,183. (No model.) Patented in England Mar. 22, 1893, No 6,099.



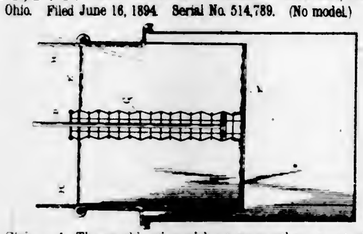
*Claim.*—1. In friction locks for cycle steering mechanism, the combination with the pillar *a* and steering post *b* the former having openings $a^3$ made through its walls, of the flexible metallic band having upon its inner face a friction block and provided with a tightening device, substantially as described.

2. In friction locks for cycle steering mechanism, the combination with the pillar *a*, and steering post *b*, the former having gaps or openings $a^3$, made through its walls, of a flexible metallic band, having upon its inner face a friction block *c*, and with the terminal ends of the band provided with a screw pin or drawing-to expedient, substantially as described and set forth.

3. In friction locks for cycle steering mechanism, the combination with the pillar *a*, and steering post *b*, the former having gaps or openings $a^3$, made through its walls, of a flexible metallic band, having upon its inner face, a friction block *c*, and provided with a screw pin, having the screw end fitted with a nut for drawing the band taut, as set forth.



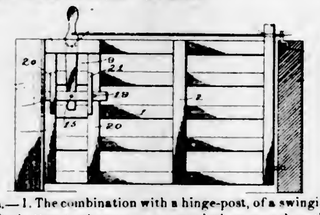
528,875. **DISH-CLEANER.** WILLIAM P. HARRISON, Columbus, Ohio. Filed June 16, 1894. Serial No. 514,789. (No model.)



*Claim.*—1. The combination with a tray or other receptacle having openings in its sides, of intermediately pivoted handles having their lower portions extending along the inner side of the tray and their lower ends bent laterally through said openings to form supports for the receptacle, substantially as specified.

2. The combination with a tray or other receptacle of handles intermediately pivoted to said tray, the walls of the tray having openings below the said pivotal points of the handles, and the lower portion of said handles extending along the inner side of the tray, bent outward through said openings and then downward substantially as shown.

528,876. **GATE.** JOHN M. HEFNER, Marietta, Tex. Filed June 20, 1894. Serial No. 515,155. (No model.)



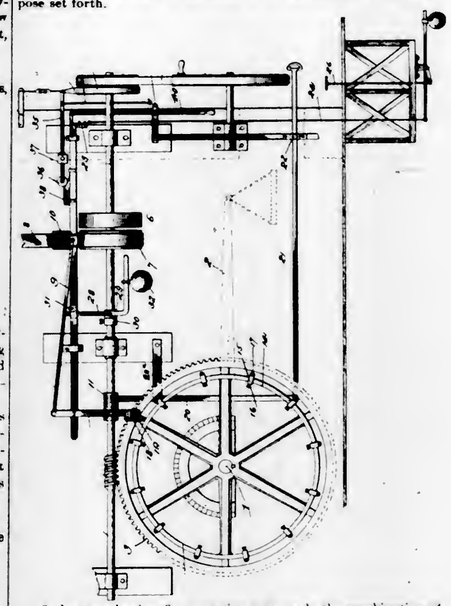
*Claim.*—1. The combination with a hinge-post, of a swinging gate hinged at its bottom to the post, an upper pintle mounted on the post, a vertically-disposed latch-operating lever fulcrumed on the gate at the outer end thereof, and the connection S extending from the lever along the top of the gate and passing through the inner end bar and terminating in an eye receiving the upper pintle of the post, substantially as described.

2. The combination of a hinge post provided with upper and lower pintles, a gate having a rigid lower eye receiving the lower pintle of the post, an upper eye receiving the upper pintle and loosely mounted on the gate, a horizontal latch slidingly mounted on the gate, and a vertical latch operating lever fulcrumed on the gate and having its lower end pivotally connected to the latch and connected above its fulcrum point with the upper eye of the gate, substantially as and for the purpose described.

528,877. **REEL-OVEN.** WILLIAM W. HIGGINS, Helena, Mont. Filed June 30, 1894. Serial No. 516,215. (No model.)

*Claim.*—1. In a mechanism for operating oven reels, the combination of the worm wheel on the reel shaft, a driving-shaft carrying a worm meshing with said wheel, fast and loose pulleys on the shaft, stops carried by the worm wheel, a part, as 11, slidably mounted on the worm shaft above the worm wheel, means for slidably adjusting said part 11 along the shaft and positively holding it in its adjusted positions, a lever 12 pivotally mounted upon said part 11 and having its lower end depending into the path of the stops on the worm wheel, a slidable bar carrying a belt-shifter and pivotally connected to the upper end of said lever 12, substantially as described.

2. An improved mechanism for operating reel-ovens consisting of wheel 3, driving shaft 4, worm 5 formed thereon, fast and loose pulleys on said shaft, stops carried by the wheel 3, pivoted lever 12, its lower end extending into the path of the stops on wheel 3, a movable support for said lever, means for horizontally adjusting or moving said support and for securing it positively in its adjusted position whereby the lever 12 may be bodily moved and set with respect to the stops carried by the worm wheel 3, bar 9 carrying a belt shifter engaging the driving belt, and means for connecting the bar 9 with the upper arm of lever 12, substantially as described and for the purpose set forth.



3. In a mechanism for operating oven reels, the combination of the worm wheel, the driving shaft carrying the worm and the fast and loose pulleys, a belt shifting rod 9, means for automatically shifting said rod from the fast to the loose pulley, means for normally pressing said rod toward the fast pulley or forward, a bolt engaging said rod and holding it locked in its backward position, a vertical rod for operating this bolt, a rock shaft extending across the front of the oven and carrying a series of pedals at intervals along its length and an arm pivotally connecting it to said vertical rod, and a weight connected to said rock shaft and adapted to automatically return the pedals and keep said bolt pressed into engagement with the belt shifting rod, substantially as described.

4. An improved mechanism for the purpose described consisting of wheel 3, driving shaft 4, fast and loose pulleys on said shaft, a belt on said pulleys, bar 9 carrying shifter 10, means for reciprocating said bar to shift the driving belt, a brake wheel on the driving shaft, a band on said wheel, pivoted lever 35, one of its ends connected to the free end of the brake band, its other end carrying a roller, an adjustable weight on the roller end of said lever, and a wedge shaped block on bar 9 engaging said roller, substantially as described and for the purpose set forth.

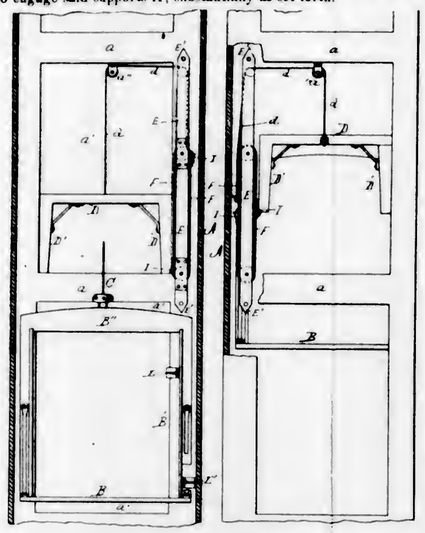
5. An improved mechanism for operating oven-reels consisting of the wheel 3 means for revolving it, an annular flange formed on said wheel, stops fitting over said flange, and adjustable thereon, set-screws to secure said stops in their adjusted positions, and pins projecting laterally from the outer ends of said stops, and mechanism operated by said stops for automatically stopping the oven reel, substantially as described.

528,878. **SAFETY ATTACHMENT FOR ELEVATORS AND ELEVATOR-GATES.** IRA M. HILL, Boston, Mass. Filed Mar. 23, 1894. Serial No. 504,805. (No model.)

*Claim.*—1. In an apparatus of the character described, the combination of the endless band F arranged to move around the pulleys F' F'', the vertical housing E supporting said pulleys and provided with the pointed ends E', projections as H' secured to said band as shown, an elevator car provided with a rod adapted to engage said projections and move said endless band, and a gate connected with said band and adapted to be raised by the movement of the latter, substantially as described.

2. The endless band F, the loops H, angle-shaped supports H' provided with the loops H'' at their outer ends, the links I connecting

said loops H and H", and an elevator car provided with a rod adapted to engage said supports H', substantially as set forth.



528,879. NECKTIE-HOLDER. JOHN H. HINES, Jr., Gloster, Miss. Filed Mar. 6, 1894. Serial No. 502,566. (No model.)



*Claim.*—1. In a necktie holder, the combination of the clasp having a portion bent upon itself to form a pivot bearing, and the arm twisted at its center, slotted at one end to receive a necktie, and pivoted in the said bearing at the other end, substantially as set forth.

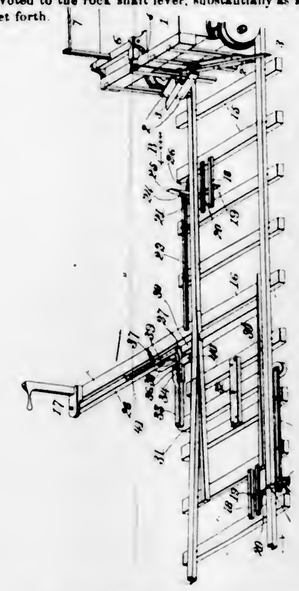
2. In a necktie holder, the clasp having its projecting end bent upon itself to form a bearing, the arm twisted at its center leaving one portion thereof at right angles to the other portion, one of the said portions having a slot to receive the necktie, and the other of the said portions pivoted in the said bearing in the same plane with the said slot and at right angles to it, and the eyelet forming the connection between the arm and clasp, so that the clasp can be turned to either side at right angles to the arm, and onto the arm in a straight line with it, substantially as shown and described and for the purpose set forth.

528,880. RAILWAY-SWITCH AND LOCOMOTIVE ATTACHMENT FOR OPERATING SAME. WILLIAM HOLLIDAY and THOMAS F. RAWLS, Barnett, Miss. Filed June 1, 1894. Serial No. 513,158. (No model.)

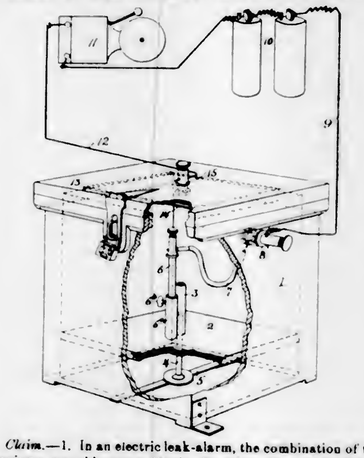
*Claim.*—1. A railway switch mechanism comprising the spring actuated tie bar, the trips, the connecting bar engaging the tie bar when the switch is open, the trigger arms slidably secured to the trips upon each side of the railway, and the oscillating bar pivoted in its center, to which one of the trigger arms is attached and the connecting bar is secured, said mechanism adapted to be operated by means upon a locomotive, substantially as set forth.

2. The combination with a railway switch provided with means adapted to be operated from a locomotive, said means consisting of the spring actuated tie bar having a notch, and provided with a flange or rest, the bar connected to the switch stand having a slotted projection and a lug engaging the notch when the switch is open, the slotted lever having a pin extending through it and the slot of the said projection, the trips, the trigger arms having a hanger, and slidably secured, one upon each side of the railway, to the trips, the plate spring having its free end located in the hangers to return the trips and trigger arms to their normal position, and the oscillating bar to which is pivoted one of the said trigger arms and the said slotted levers, substantially as and for the purpose set forth.

3. The guides secured to the front of an engine and slanting downwardly from each other, the rock shaft and its levers, the toggle-jointed levers, in combination with the reciprocating arms adapted to slide in the guides and pivoted to the toggle-jointed levers, and the lever 5 having one end connected to the toggle-joint and the other end pivoted to the rock shaft lever, substantially as and for the purpose set forth.



528,881. ELECTRIC LEAK-ALARM. CHARLES C. KAHNE, ANDREW A. ADKINS, WINFIELD S. PEIRCE, JOHN E. MARTIN, and GEORGE F. KAHNE, Ashland, Ky. Filed July 6, 1894. Serial No. 516,772. (No model.)



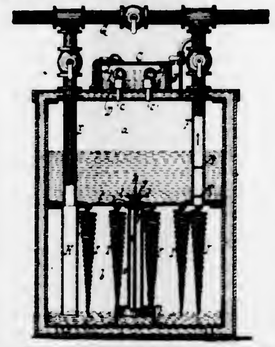
*Claim.*—1. In an electric leak-alarm, the combination of the box 1, having a movable cover 13, the float 2 working in said box, the contact plate 14 attached to said cover above the float, and the upwardly projecting contact post 6, carried by the float and adapted to be raised against the plate 14; said plate and contact post being connected with the respective terminals of an alarm circuit, substantially as set forth.

2. In an electric leak-alarm, the combination of the vertically movable float 2, the fixed contact plate 14 above said float, and the vertically adjustable post 6 inserted in a pocket $6^a$ on the float, and adapted to be raised into contact with the contact plate 14; said contact post and plate being electrically connected to terminals in an electric alarm circuit, as explained.



3. In an electric leak-alarm the combination of the bottomless box 1 having the support 5, vertical guide 4, and cover 13 carrying on its under side a contact plate 14; the float 2 having socket 3 working on guide 4, and the upwardly extending contact post 6; binding post 8 having connections through flexible conductor 7, with the contact post 6; the binding post 15 on the top 13 and in electrical connection with contact plate 14; and an electric alarm circuit 9, 10, 11, 12, having the terminals connected with the binding posts 8 and 15; substantially as set forth.

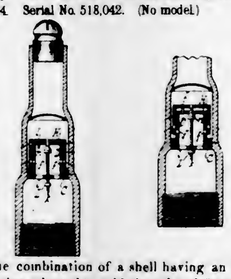
528,882. CARBURETOR. PETER KELLER, Chicago, Ill. Filed June 14, 1894. Serial No. 514,588. (No model.)



*Claim.*—1. The combination with the storage chamber *a*, mixing chamber *b*, partition *f*, gas supply and discharge pipes E, F and a perforated pipe H communicating with the gas supply pipe E and extending from the partition down into the mixing chamber near to its bottom; of conical absorbers suspended by their bases from the under side of the partition and means for maintaining the hydro-carbon liquid in the mixing chamber at a uniform level slightly above the small bottom ends of the conical absorbers substantially as described.

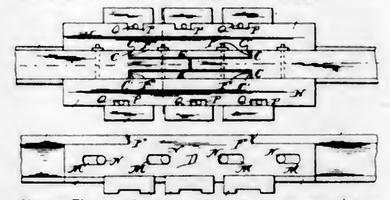
2. The combination with the storage chamber *a*, mixing chamber *b*, partition *f*, gas supply and discharge pipes E, F, perforated pipe H communicating with the gas supply pipe E and extending down into the mixing chamber near to its bottom and means for maintaining the storage and mixing chambers at a uniform temperature; of conical absorbers suspended by their bases from the under side of the partition and means for maintaining the hydro-carbon liquid in the mixing chamber at a uniform level slightly above the small bottom ends of the conical absorbers substantially as described.

528,883. GAS-BURNER. PETER KELLER, Chicago, Ill. Filed July 19, 1894. Serial No. 518,042. (No model.)



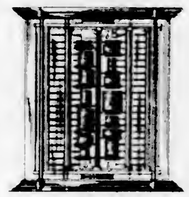
*Claim.*—The combination of a shell having an internal screw thread, a screw ring adapted to said thread and formed with the upwardly projecting nozzle having a side and a top, and gas escape holes in said side and top, the inverted cup-shaped valve fitted on the nozzle and provided with openings situated opposite to the gas escape holes in the side of the nozzle under normal conditions and which are brought above said holes when the valve is raised by the pressure of the gas, a stem for said cup-shaped valve, a bridge L secured to the screw ring for guiding the stem and a second valve carried by the stem for partly closing the nozzle top, said cup shaped valve having a guide stem engaging the nozzle for preventing rotation of said cup-shaped valve, the parts being so proportioned that when the cup-shaped valve is raised to close the openings in the side of the nozzle the upper openings in the cup-shaped valve are uncovered to permit the escape of the gas, substantially as described.

528,884. RAILWAY. CHRISTIAN F. LAIB, New London, Wis. Filed May 15, 1894. Serial No. 511,329. (No model.)



*Claim.*—The combination with the ties or sleepers and the rails having their treads cut away upon opposite sides of the web to form shoulders C C, of the fish-plates D arranged upon opposite sides of the rails and cut away toward their ends to form shoulders F' F' abutting against the shoulders C' C', said fish-plates having upwardly-extending tread portions G, lying flush with the treads of the rails, the said rails being provided with openings L, and said fish-plates being provided with slots M adapted to align with said openings L, and bolts passing through the said openings and slots and carrying nuts whereby to adapt said rails to have a longitudinal movement independently of the fish-plates, and the fish-plates provided with notches or recesses I', and bolts passing through the latter and into the ties to adapt both the rails and fish-plates to have a longitudinal movement independently of the ties or sleepers, as and for the purpose specified.

528,885. REVOLVING RIBBON-CABINET. JOHN A. N. LINDSEY, Princeton, Mo. Filed June 7, 1894. Serial No. 513,734. (No model.)



*Claim.*—1. A ribbon cabinet comprising the outer stationary glass case having a door, and a rotary annular holder mounted in bearings in said outer case, having a central compartment for the reception of surplus goods or stock and comprising a top and bottom, an annularly arranged series of vertical compartments forming the wall of said stock compartment, open at their fronts to expose the goods through said outer glass case, and hinged between said top and bottom to swing outwardly and permit access to said stock compartment, and a series of shelves in each vertical compartment, substantially as set forth.

2. A cabinet comprising an outer glass case having a door, and a rotary holder mounted in bearings therein, having a central stock compartment and comprising a top and bottom, an annularly arranged series of spaced rods connecting said top and bottom, an annularly arranged series of vertical open front compartments forming the wall of said central stock compartment and each hinging at one outer vertical edge on one of said rods to swing outwardly and permit access to the stock compartment, a series of shelves for each compartment and a slide on the upper side of each shelf for withdrawing the goods, substantially as set forth.

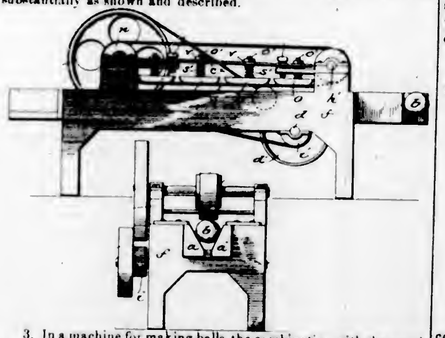
3. A ribbon cabinet comprising the outer cylindrical glass case having a segmental door, and a rotary cylindrical holder turning on bearings in the glass case and formed of top and bottom pieces connected by an annularly arranged series of spaced rods, an annularly arranged series of open front, vertical, segmental compartments forming the wall of a central stock receiving compartment inclosed thereby, and each hinged to one of said rods, a series of vertically adjustable shelves in each compartment, and a slide mounted on the upper side of each shelf and having an upturned flange or rib at its inner end and a label holder on its outer end; said label holder forming the finger piece for operating the slide, substantially as set forth.

528,886. MACHINE FOR MAKING BALLS. MILTON B. MIESLER, Ravenna, Ohio. Filed Apr. 6, 1894. Serial No. 506,628. (No model.)

*Claim.*—1. In a machine for making balls, the combination of the parallel straight bars having converging sides and adapted to be reciprocated in opposite directions, and a movable endless belt adapted

to travel between and slightly above the said reciprocating bars, substantially as shown and described

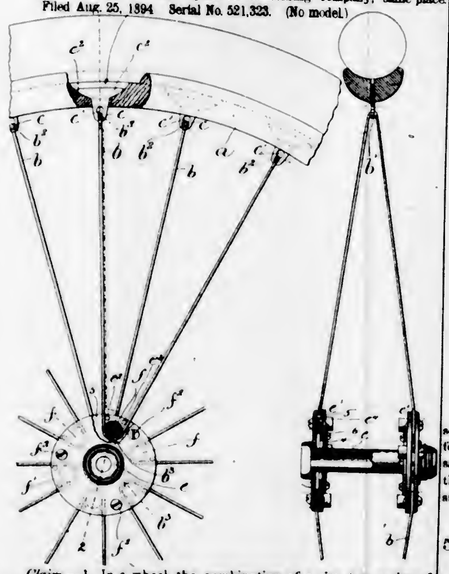
2. In a machine for making balls, the combination of the parallel straight bars having converging sides and adapted to be reciprocated in opposite directions, one of said bars being longer than the other, a movable endless belt adapted to travel between and slightly above said bars, and means for pressing upon the lower flight of said belt, substantially as shown and described.



3. In a machine for making balls, the combination with the parallel bars having converging sides and adapted to be reciprocated in opposite directions and means for operating the same, an endless belt adapted to travel between the bars and slightly above the same, said belt moving slower than the bars, and means for operating said belt from the bar operating means and the adjustable pressing devices adapted to bear upon the lower flight of the belt, substantially as shown and described.

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528,887. VEHICLE-WHEEL. FREDERICK MYERS, New York, N. Y., assignor to the Myers Manufacturing Company, same place. Filed Aug. 25, 1894. Serial No. 521,323. (No model.)



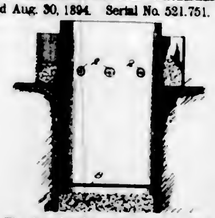
*Claim.*—1. In a wheel, the combination of a rim, two series of spokes engaged at their outer ends with the rim and having loops at their inner ends, and a hub provided with two independent spoke-straining devices whereby either series of spokes may be strained independently of the other, each straining device comprising a fixed flange and an adjustable flange between which the loops of a series of spokes are interposed, one flange having a series of studs which enter the spoke-loops and have inclined inner sides, while the other flange co-operates with said studs in straining the spokes engaged therewith, as set forth.

2. In a wheel, the combination of a rim, spokes engaged at their outer ends with the rim and provided with loops at their inner ends, a hub having a fixed flange and an adjustable flange between which said loops are interposed, one of said flanges having a series of integral wedge-shaped studs in adjustable contact with the said loops and the other a series of apertures coinciding with said studs, and means for variably adjusting one of said flanges to simultaneously and uniformly strain the spokes.

3. In combination with the rim *a* provided with slots *a'*, the spokes *b*, the hub *c*, and the conical studs or seats *f*, the ears *e* supported in said slots and having at their inner ends keyhole-shaped eyes *e'* to serve as bearings for the spokes, substantially as described.

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528,888. DRAINING DEVICE. ARCHIBALD D. MCGILL, Courtland, Miss. Filed Aug. 30, 1894. Serial No. 521,751. (No model.)



*Claim.*—1. The herein described drain device consisting in the combination with a cylindrical casing 1, provided with a series of openings 2, of a reticulated cylindrical guard 3 fitting over the casing and the openings therein, a framing 4 having notched lower edges and constructed to provide a space between it and the casing upon all sides, and a flooring or framing upon which said guard rests, said framing fitting water tight around the casing below the guard and the openings in the casing, for the purpose specified.

2. The herein described drain device consisting in the combination with a cylindrical casing 1, provided with a series of openings 2, of a reticulated cylindrical guard 3 fitting over the casing and the openings therein, a framing 4 having notched lower edges and constructed to provide a space between it and the casing upon all sides, and a flooring or framing upon which said guard rests, said framing fitting water tight around the casing below the guard and the openings in the casing, and a perforated partition arranged within the casing 1 adjacent to its lower end, for the purpose specified

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528,889. COMBINED MENU-CARD AND CHECK. JOHN A. NEWBERRY, Rouse's Point, N. Y. Filed Sept. 7, 1894. Serial No. 522,367. (No specimens.)




*Claim.*—A combined menu card and meal ticket, consisting of a series of cards bearing on one side of each card a part of the courses forming a meal and on the other side of said cards, a check or checks, said cards having portions detachable therefrom and arranged one on the other with the detachable portions adhesively secured together, substantially as described.

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528,890. RACE-TRACK-LEVELING MACHINE. WILLIAM T. NEWPORT, Farmersville, Ill. Filed Feb. 17, 1894. Serial No. 500,468. (No model.)

*Claim.*—1. In a leveling machine, the combination of a two part frame, means for connecting the parts, a roller supporting the front part of the frame means for supporting the rear part of the frame, a pulverizer, a scraper, and means for operating the scraper: substantially as and for the purpose set forth.

2. A leveling machine, having the front and rear sections of the frame adjustably connected at their inner ends, for raising and lowering the center of the machine, the front end of the machine being suitably supported on a roller and the rear end being mounted on wheels having suitable means of adjustment to vary their line of travel: substantially as and for the purpose set forth.



3. In a leveling machine, the combination of a two part frame, composed of a front and a rear section connected at their inner ends by a U-shaped yoke, a scraper supported within the yoke, a pulverizer secured to the front section of the frame of the machine, a roller for supporting the front end of the machine and movable wheels supporting the rear end of the machine: substantially as and for the purpose set forth.



4. In a race-track leveling machine, the combination of a two-part frame suitably hinged near its center, means for elevating and lowering the frame at its center, and the front end of machine supported on a roller, and the rear end mounted on wheels and means for adjusting the rear end of the machine: substantially as and for the purpose set forth.

5. In a race-track leveling machine, the combination of a two-part frame suitably hinged near its center elevated side rails forming a support for a shaft provided with segments over which are passed cords that form a connection between the shaft and frame of the machine, a lever on the shaft, a cord connecting the lever with a drum on the front frame of the machine, means for operating the drum, for elevating and lowering the frame at its center, a triangle, a lever, cords or cable connecting the triangle and lever, and means for operating them to vary the line of travel of the rear wheels of the machine: substantially as and for the purpose set forth.

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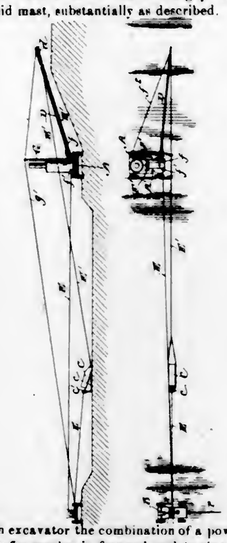
528,891. MACHINE FOR BUILDING EMBANKMENTS. WILLIAM G. PRICE, Sioux City, Iowa, assignor of one-half to George E Mott, New Orleans, La. Filed Feb. 23, 1894. Serial No. 501,159. (No model.)

*Claim.*—1. A drag scoop for an excavator comprising in its construction a suitable shaped shoe, a scoop proper pivoted at the forward end of said shoe, means for raising the rear end of the scoop proper and thus causing it to fill and after the scoop is filled permitting it to lower to its normal position and means for drawing the drag scoop forward, substantially as described.

2. A drag scoop for an excavator comprising in its construction a suitable shaped shoe, provided with a guiding support at its upper end a scoop pivoted near its forward end at the forward end of the shoe, a rope attached at the lower rear end of the shoe for elevating said rear end and passed over the guiding support on the shoe and permitting it to lower to its normal position and a rope attached to the forward end of the shoe for drawing it forward, substantially as described.

3. In an excavator the combination of the power wagon having the extended boom and mast therefor, a sheave wagon placed at a distance from said power wagon, a drag scoop adapted to operate between said sheave wagon and the end of said boom and a guy rope from said sheave wagon to the said mast, substantially as described

4. In an excavator the combination of the power wagon provided with means for moving it forward and having an extended boom and mast therefor, a sheave wagon placed at a distance from said power wagon and provided with means for moving it forward, a self dumping drag scraper adapted to operate between said sheave wagon and the end of said boom and a guy rope from said sheave wagon to said mast, substantially as described.



5. In an excavator the combination of a power wagon provided with gearing for moving it forward and having an extended boom and mast therefor, an anchor wagon placed at a distance from the power wagon, a guy rope from said anchor wagon to said mast, a winch for tightening said rope, a winch and rope for raising said boom, and a drag scoop adapted to operate between said anchor wagon and the end of said boom, substantially as described

6. In an apparatus for constructing levees the combination of a power wagon adapted to be moved by its own power and provided with a mast and extended boom, a sheave and anchor wagon placed at a distance from the power wagon and adapted to be moved forward by power from the same, a drag scoop and means for moving it between the said sheave wagon and the outer end of the said boom and causing it to dump at the latter place, and a guy rope from said anchor or sheave wagon to said mast, and a guy rope from said mast to the end of said boom, substantially as described.

7. In an apparatus for constructing levees the combination of the power wagon and a sheave and anchor wagon placed at a distance therefrom, both wagons being adapted to move forward by power from the power wagon and a drag scoop adapted to move between said wagons and means for causing said scoop to either scoop the earth or slide smoothly over the same, substantially as described

8. In a machine for building embankments, the combination of a movable power wagon, a movable sheave wagon, means for connecting the two wagons, and a tilting drag scoop connected to and operated by said wagons, whereby as the scoop is moved forward its rear end is raised, and when the scoop is filled it lowers again and is dumped at the desired point, substantially as described.

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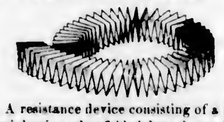
528,892. SASH-LOCK. CHARLES A. ROBERT, Portland, Oreg., assignor of one-third to Michael D. Cremar, same place. Filed Mar. 30, 1894. Serial No. 505,699. (No model.)



*Claim.*—In a window lock, the combination, with a casing provided with slide-ways formed therein, a bolt one end of which is capable of passing out through the casing, the body portion of the bolt

being reduced in width in one direction and provided with grooves to receive the slide-ways of the casing, and further provided with a pin upon one of its body faces, of a segmental arm slotted to receive the said pin, and provided with a hub fitted in the casing, a rod adapted to fit into the hub of the arm and turn said arm, and a key operating the said rod and removable therefrom, as and for the purpose set forth.

528,893. RHEOSTAT. ALTON J. SHAW, Muskegon, Mich. Filed Apr. 10, 1894. Serial No. 507,045. (No model.)

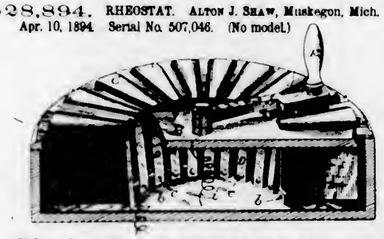


*Claim.*—1. A resistance device consisting of a band or ribbon of conducting material, crimped or folded facewise, and then coiled edgewise, substantially as shown and described.

2. The herein-described resistance block, consisting of a band or ribbon of conducting material crimped or folded facewise, and coiled edgewise upon itself, and a layer of insulating material interposed between successive folds.

3. The resistance device, consisting of crimped band A coiled edgewise upon itself, insulating strip B, and insulated binding C, all substantially as described and shown.

528,894. RHEOSTAT. ALTON J. SHAW, Muskegon, Mich. Filed Apr. 10, 1894. Serial No. 507,046. (No model.)



*Claim.*—1. A rheostat consisting of a series of blocks provided with lateral contact plates, a series of folded conducting strips interposed between the blocks and connected therewith in series, and a movable contact adapted and arranged to sweep the contact plates, substantially as described and shown.

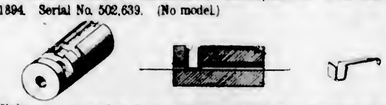
2. The herein-described rheostat or current controller, consisting of a slotted supporting plate B, a series of spacing blocks C seated in the slots and having lateral contact plates C' overhanging the plate B, folded conducting bands or strips D, connected in series with the spacing blocks, and located beneath plate B, and movable arm or lever E provided with contact fingers to bear upon the plates C.

3. The herein-described block for use in rheostats, consisting of a plate C having a lateral contact surface C' of greater width at one end than at the other, whereby it is adapted to form one of a circular series or group with narrow spaces between proximate contact surfaces.

4. A resistance block, card or section, consisting of block C, provided with lateral contact plate C', and with ears or lugs *a* and *b*, and a folded conducting strip connected at one end to one of said ears.

5. In combination with a plate or support B, a series of blocks C provided with contact plates C', and ears *a*, *b*, a series of folded conducting bands D connected in series with the plates C' through the ears *a*, *b*, and insulating material interposed between the faces of blocks C and the folded bands.

528,895. TENSION DEVICE FOR LOOM-SHUTTLES. JAMES SWEENEY, Pottstown, and GEORGE STROBLE, Philadelphia, assignors of one-third to James W. Lauderbach, Philadelphia, Pa. Filed Mar. 7, 1894. Serial No. 502,639. (No model.)



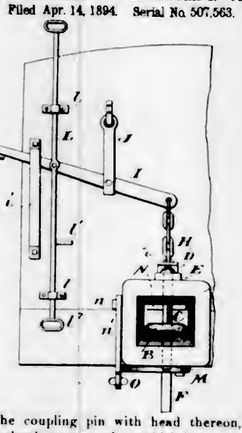
*Claim.*—1. A tension device for loom shuttles or the like of the character described consisting of a body portion provided with a central opening through its longitudinal axis, a recess at or near one end thereof extending into said central opening, a tension lever or arm within said recess and resilient means for retaining said lever or arm in normal working position, as and for the purposes set forth.

2. A tension device of the character described, consisting of a body portion provided with a central opening through its longitudinal axis, a recess at or near one end thereof extending into said central opening, a longitudinal groove on the surface of said body portion extending from said recess to the opposite end of said body portion, a lever or arm of the character described seated in said recess and groove jointly and resilient means for retaining said lever or arm in normal working position, as described and for the purposes set forth.

3. An automatic, self-adjusting tension device of the character described consisting of a body portion provided with a central opening through its entire longitudinal axis, a recess at or near one end thereof extending into said central opening, a longitudinal groove on the surface of said body portion extending from said recess to the opposite end of the body portion, a hole in said groove near said opposite end of the body portion, a lever or arm of the character described seated in said recess and groove jointly one end of the same being bent and projected into said hole in the longitudinal groove; a circumferential groove on said body portion adjacent to said recess, and resilient means in said groove for retaining said lever or arm in normal working position as described and for the purposes set forth.

4. In a loom or other shuttle, a tension device of the character described mounted in the same and consisting of an elongated body-portion provided with a central opening through its longitudinal axis, a recess at or near one end thereof extending into said central opening, a tension lever or arm of the character described within said recess and retained against lateral displacement and resilient means for retaining said lever or arm in normal working position and permitting vertical movement of the same as described and for the purposes set forth.

528,896. LINK-AND-PIN CAR-COUPLING. JOSEPH WRIGHT, Cooks, Mich. Filed Apr. 14, 1894. Serial No. 507,563. (No model.)

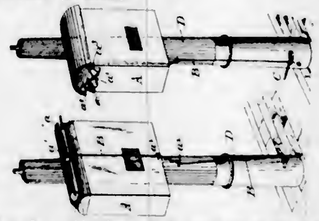


*Claim.*—1. The coupling pin with head thereon, loose plate through which its shank passes and on which its head is supported, and the pivoted guard, all combined, constructed and arranged substantially as shown, for the purpose specified.

2. The long bolt F having the notch *f'* at its lower end in combination with the pivoted trip M working in said notch, to hold up the coupling pin in the manner described.

3. A coupling-pin bolt F having the notch *f'* at its lower end and the pivoted trip M in combination as shown with the pivoted rods *n'* O and the pullrod P as and for the purpose set forth.

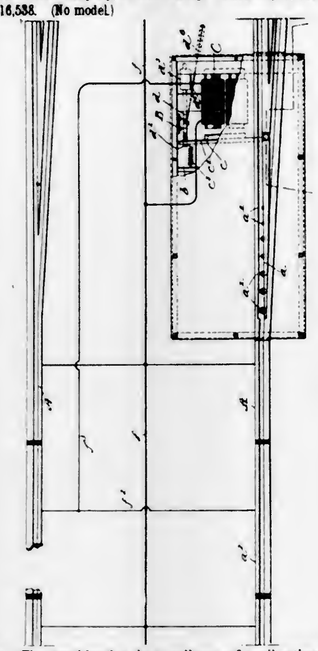
528,897. LETTER-BOX. CHARLES E. ABBOTT, Boston, assignor of one-half to Solon Bancroft, Reading, Mass. Filed Feb. 16, 1891. Serial No. 381,669. (No model.)



*Claim.*—In combination with the mail box, as described, and its hinged cover *a* over the mail opening, the cam E, under the edge of the cover and the wire and treadle operating said cam, whereby said cover can be opened by means of the treadle and will be closed by its own gravity, all as and for the purposes set forth.

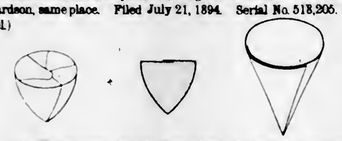


528,898. RAILWAY ELECTRIC SWITCH. WALTER V. ASH and JOSEPH H. ASH, Newark, N. J., assignors of one-half to the Ash Automatic Electric Switch Company, of New Jersey. Filed July 5, 1894. Serial No. 516,538. (No model.)



*Claim.*—The combination in a railway, of a vibrating switch-point; a pivoted armature lever fixed to said switch-point, an electro-magnet acting upon said armature lever, a trigger adapted to lock the same in one position, a cord connected with said trigger and extending to a distant point in the rails, a thrust rod projecting above the rails through an opening therein and adapted to be moved downward by the wheels of the vehicles running upon said rails and thereby moving the trigger and releasing the armature lever, substantially as described.

528,899. PROCESS OF PACKING POWDERED SUBSTANCES. JOHN BARNEWITZ, Philadelphia, Pa., assignor of one-half to Hamilton A. Richardson, same place. Filed July 21, 1894. Serial No. 518,205. (No model.)

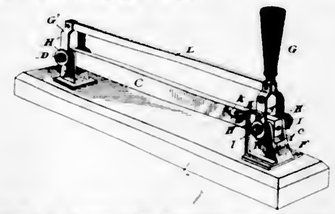


*Claim.*—1. The process herein described of packing powdered material, said process consisting in forming a wrapper, charging the wrapper with the powdered material, and then compressing the wrapper and the powdered material therein contained in a suitable mold, thus forming said powdered material into a cohering mass substantially as described.

2. The process herein described of packing powdered material, said process consisting in shaping a wrapper in the form of a cone, charging the conical wrapper thus formed with powdered material, turning down the edges of the wrapper upon the powdered material, placing the wrapper and the powdered material therein in a mold and compressing the same so as to form a package of powdered material into a cohering mass with a wrapper attached, substantially as described.

3. As a new article of manufacture, a package of powdered material having a wrapper compressed with and adhering thereto, substantially as described.

528,900. ELECTRIC SWITCH. FRANK G. BOLLES, Washington, D. C., assignor of one-third to Paul Eaton, same place. Filed Mar. 27, 1894. Serial No. 505,298. (No model.)



*Claim.*—1. A switch for controlling electric circuits, having a fixed contact and a movable contact, an operating handle on the movable contact, and movable relatively thereto, and a clamping device operated by an independent movement of said handle for tightening the contact between the fixed and movable contacts after the circuits are closed, substantially as described.

2. A switch for controlling electrical circuits, provided with a clamping device to tighten the contact between its movable and stationary parts, said device being operated by the switch handle independently of the movement which it imparts to the movable portion of the switch, substantially as described.

3. A switch for controlling electrical circuits, having its movable contact provided with a relatively movable handle, and a clamping device for tightening the contact, operated by said handle independently of the movable contact, substantially as described.

4. A switch for controlling electrical circuits, having its movable contact provided with a relatively movable handle, a stationary contact with which the movable contact engages, and a clamping device operated by said handle independently of the movable contact and serving to force the contacts together in a direction transverse to the line of movement of the movable contact after the circuit is closed, substantially as described.

5. A switch for controlling electrical circuits, having its movable contact provided with a relatively movable handle, a bifurcated stationary contact, and a clamping device operated by said handle and serving to tighten the arms of the stationary contact against the movable contact, substantially as described.

6. A switch for controlling electrical circuits, having its movable contact provided with a relatively movable handle, and a transverse bolt, and a clamping device movable axially of said bolt and operated by said handle, serving to tighten the contact between the movable and stationary parts of the switch, substantially as described.

7. A switch for controlling electrical circuits, having its movable contact provided with a relatively movable handle and a transverse bolt, and a clamping device comprising two inter-operating inclined planes one of which is movable by said handle, said clamping device operating to tighten the contact, substantially as described.

8. A switch for controlling electrical circuits, having its movable contact provided with a relatively movable handle and a transverse bolt on which said handle is fulcrumed, and two stationary washers on said bolt each having one or more cam surfaces to cooperate with similar surfaces on the end of the handle, substantially as described.

9. A switch for controlling electrical circuits, having its movable contact provided with a transverse bolt, a handle having a forked yoke fulcrumed on said bolt, and provided with cam surfaces and shoulders, washers splined on said bolt and having cam surfaces cooperating with those on the yoke, and nuts on the bolt to adjust the washers, substantially as described.

10. The combination with the stationary bifurcated contact block, of the movable contact blade, the transverse bolt, the forked handle fulcrumed thereon, and carrying the cam surfaces, the stationary cam faced washers on the bolt, the pawl pivoted to the movable contact, and the pin on the handle, substantially as described.

11. In an electric switch, the combination with the movable contact, of a handle hinged thereto, and a locking device for locking the handle to the contact, substantially as described.

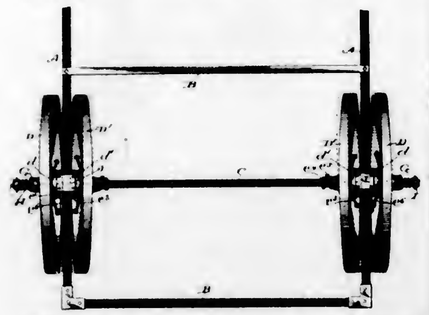
12. In an electric switch, the combination with the movable contact, of a handle movable relatively thereto, a locking device for locking the handle to the contact, and means for automatically unlocking the handle when the electric circuit is closed, substantially as described.

13. In an electric switch, a clamping device for tightening the hinge joint of the movable contact, and a handle movable relatively to the movable contact and adapted to operate said clamping device, substantially as described.

14. In an electric switch, the combination with a clamping device for tightening the hinge joint of the movable contact, of a similar device for tightening the contact between the switch terminals,

and means for operating them simultaneously, substantially as described.

528,901. **CORN-PLANTER.** JOHN A. DODD, Kewanee, assignor to Eugenio K. Hayes, Galva, Ill. Filed June 18, 1894. Serial No. 514,874. (No model.)



*Claim.*—1. In a corn planter, in combination, a planter frame, an axle, covering wheel, and an intermediate collar or annular journal mounted on the axle oblique thereto lengthwise of the axle, whereby the wheel journaled on said collar and the plane of revolution of said wheel is inclined or oblique to the axis of the axle, substantially as described.

2. In a corn planter, in combination, a planter frame, an axle, covering wheel, and an intermediate collar or annular journal, fixed to the frame and mounted on the axle oblique thereto lengthwise of the axle, whereby the wheel journaled on said collar, and the plane of revolution of said wheel is inclined or oblique to the axis of the axle, substantially as described.

3. In a corn planter, in combination, a planter frame, an axle extending across the frame, covering wheels, in pairs at each end part of the axle, and intermediate collars or annular journals, also in pairs at each end part of the axle, the two collars comprised in each part thereof fixed to the frame, projecting in opposite directions from a part of the frame, and mounted on the axle oblique thereto lengthwise of the axle, whereby the two wheels of each pair journaled on the collars are retained in positions tipped or inclined outwardly from each other from their lowermost to their uppermost parts, substantially as described.

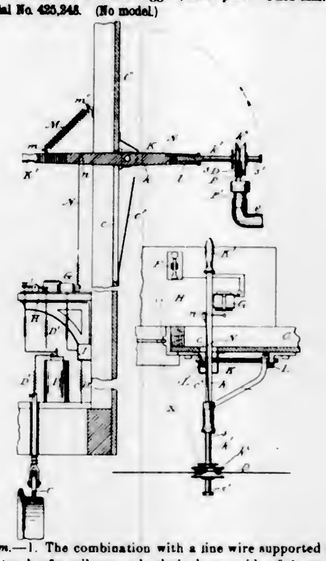
4. In a corn planter, in combination, a planter frame, an axle extending across the frame, covering wheels in pairs at each end part of the axle, and intermediate collars or annular journals also in pairs at each end part of the axle, the two collars comprised in each pair thereof fixed to each other, projecting in opposite directions from a part of the frame, and mounted on the axle oblique thereto lengthwise of the axle, whereby they retain the wheels, which are journaled on the collars, in positions inclined outwardly from each other from their lowermost to their uppermost parts, and means for adjusting said collars or journals angularly on the axle, whereby the two wheels of either pair may be adjusted to revolve at different angles of divergence from each other from their rear to their forward parts, or without any such angle of divergence, substantially as described.

5. In a corn planter, in combination, a planter frame, an axle extending across the frame, covering wheels in pairs at each end part of the axle, intermediate collars or annular journals also in pairs at each end part of the axle, the two collars comprised in each pair thereof fixed to each other and fixed to the frame and on the axle, projecting in opposite directions from a part of the frame, and mounted on the axle oblique thereto lengthwise of the axle, and a clutch gear mechanism between the axle and the hub of an inclined wheel, substantially as described.

6. In a corn planter, in combination, a planter frame, an axle extending across the frame, covering wheels in pairs at each end part of the axle, and intermediate collars or annular journals also in pairs at each end part of the axle, projecting in opposite directions from a part of the frame, and mounted on the axle oblique thereto lengthwise of the axle, whereby they retain the wheels which are journaled on the collars, in positions inclined outwardly from each other from their lowermost to their uppermost parts, and means for adjusting said collars or journals angularly on the axle, whereby the two wheels of each pair thereof may be adjusted to revolve at different angles of divergence from each other from their rear to their forward parts, or without any such angle of divergence, substantially as described.

7. In a corn planter, in combination, a planter frame, an axle, covering wheel, an intermediate collar or annular journal mounted on the axle oblique thereto lengthwise of the axle, whereby the wheel journaled on said collar, and the plane of revolution of said wheel is inclined or oblique to the axis of the axle, and means for adjusting said collar or annular journal angularly on the axle, substantially as described.

528,902. **MEANS FOR MULTIPLEX TELEGRAPHING BETWEEN CARS OF RAILWAYS.** AARON FRYER, Bath-on-the-Hudson, N. Y., assignor of one-half to David Wiggins, same place. Filed Mar. 17, 1892. Serial No. 425,248. (No model.)



*Claim.*—1. The combination with a line wire supported parallel with the track of a railway and relatively at a side of the same, and a car, of the pivoted trolley arm *k*, horizontal spindle *k'* trolley wheel $k^3$ loosely mounted on said spindle, tension spring M between said trolley arm and the car, and a wire N, for connection at will of the said spindle with an apparatus operated by electrical currents, substantially as and for the purposes set forth.

2. The combination with a line wire which is supported parallel with a track of a railway and relatively at a side of the same, two cars distant from each other and on the same track, and having, each, a trolley arm under control of an operator and pivoted to it, a horizontal spindle carried by the said arm, a trolley wheel loosely mounted on said spindle for contact with said line wire, a tension spring between said trolley arm and car for holding the trolley wheel in contact with said line wire, while either or both of said cars are moving, a telegraphing or signaling apparatus, and the wire N, for connection of said spindle with said apparatus, whereby signals or telegraphic communications may at will be had between said cars, substantially as and for the purposes set forth.

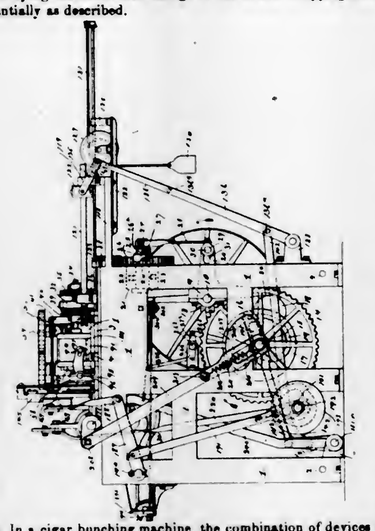
528,903. **CIGAR-BUNCHING MACHINE.** HENRY K. GARDNER, Pawtucket, R. I. Filed July 25, 1893. Serial No. 481,400. (No model.)

*Claim.*—1. The herein described process of making cigar fillers, which consists in superimposing leaves of tobacco, feeding them endwise, severing the superposed leaves crosswise into charges of the desired length, confining the charge or charges against lateral or vertical movement, feeding such charge or charges of the cut leaf laterally while so confined, then cutting or paring said charge longitudinally of the leaf and giving the resultant filler a shape approximating that of the cigar to be produced, substantially as described.

2. In a cigar bunching machine, the combination of the following instrumentalities: the feeding trough and ironing device and means for intermittently moving stripped leaf in the trough and under the ironing device, a severing knife adapted to cut the train of leaf into charges of the desired length, means for feeding the tobacco from the ironing device to the severing knife, a confining throat for receiving the charge, forming knives for shaping the charge, a plunger movable in the throat for moving the severed leaf under the forming knives, a binder wrapping device, and means for conveying the conformed charge to the said wrapping device, substantially as described.

3. In a bunching machine, the combination with the binder wrapping device, of a trough consisting of means for feeding a train of tobacco a cutting knife adjacent to the trough, and operating means whereby the leaf is cut out to the desired length, means for conforming the charge so cut to the proximate shape of the cigar to be produced, said conforming means lying in a plane substantially parallel with the trough, and at right angles to said cutting knife, and devices for conveying the conformed charge to the binder wrapping device, substantially as described.





4. In a cigar bunching machine, the combination of devices for feeding a train of superposed leaves, a knife adjacent thereto, and operating mechanism whereby a predetermined length of the superposed leaves is severed to the desired length, and cutting instrumentalities embodying means whereby the severed length of superposed leaves is conformed to the shape of the cigar to be produced, said cutting instrumentalities lying in a plane substantially parallel with said feeding devices, a rolling table and means for conveying the conformed charge from the forming knife to the rolling table, said means being arranged to prevent the leaves from displacement, substantially as described.

5. In a cigar bunching machine, the combination with a feeding trough, of a device for compressing and flattening out the leaf as it moves from the trough, a cutting knife, and means for giving an intermittent feed to the tobacco, and means for varying said feed, whereby a predetermined length of superposed leaves can be presented to the action of said cutting knife, forming blades arranged to conform the severed charge to the approximate shape of a cigar without compression, means for confining and feeding the severed charge from the severing knife to the forming blades, a rolling table, and means for conveying the conformed charge to the rolling table where it is to be incased within a binder, substantially as described.

6. In a cigar bunching machine, the combination with a feeding device adapted to move a stream of superposed leaves, a severing knife and a variable speed mechanism, arranged to operate said feeding device whereby a predetermined length of superposed leaves can be presented under the severing knife, a throat or passageway for receiving and confining the charge and restraining the leaves from displacement, a forming blade for shaping the charge, and an ejector cylinder having a pocket, an automatically and independently operated plunger movable in the throat forming means for moving the severed charge from the throat under the forming blade and into the pocket of the ejector cylinder where it is held during the operation of conforming the charge, a rolling table, and apron, and means for operating the same, to roll the charge within a binder, and devices for moving the conformed charge from the ejector cylinder into the rolling apron and incasing it within a suitable binder, substantially as described.

7. In a cigar bunching machine the combination of devices for rolling a bunch, comprising a stationary rolling table, an apron, a bunching roller and means for operating said roller, with a forming blade for giving the filler the proximate shape of the cigar, and means for presenting a length of superposed leaves to the forming blade, and devices for moving the conformed charge from the formipg blade to the rolling devices, and means for ejecting the charge from said charge moving device, substantially as described.

8. In a cigar bunching machine, the combination with a suitable rolling mechanism, of devices for feeding tobacco, a severing knife, means for giving said feed a variable movement in accordance with the desired length of the bunch, a forming blade and devices for feeding the charge to the rolling mechanism, substantially as described

9. In a bunching machine, the combination with the feeding trough, and the severing knife, of a confining passage leading from the trough to the said knife, said knife lying at the end of said passage, and a throat leading at right angles from said trough, and means for passing the tobacco through said throat, and means for rolling a bunch, substantially as described.

10. In a feeding trough for a cigar bunching machine, the combination of a series of movable belts, said belts being arranged to form a gradually opening trough, at the contracted end of which the tobacco is received, one of the belts forming a movable bottom for the trough, and means for operating said belts, substantially as described.

11. In a feeding device for a bunching machine, the combination of fixed abutments and movable belts defining the sides and bottom of a trough the side belts being disposed at an angle to the line of feed, and angularly disposed pulleys located at the mouth of the said trough, the belts being farther apart at one end than at the opposite end, a transversely located pulley also located at the mouth of said trough, and belts movable about said pulley lying within and above said abutments, means for rotatively supporting the other end of said pulleys, and devices for operating the pulleys, substantially as described.

12. In a feeding device for a cigar bunching machine, the combination of a plurality of movable belts defining the sides and bottom of a trough, an extension to said trough, means for guiding the movements of the tobacco leaf from said trough to said extension, and a deflecting and compressing device located at the mouth of said extension and adapted to direct the leaf from the trough into said extension, and means for feeding the leaf through the compressing device, substantially as described.

13. The combination, in a cigar bunching machine, of a feeding device comprising two sections, one a feeding trough, having a plurality of movable belts adapted to move the tobacco forward, the other adapted to continue the movement of the said tobacco, having a narrowed passageway therethrough, and movable means for confining the tobacco vertically, and an angularly disposed deflector located at the mouth of said contracted section, and means for operating the movable portion of said sections, substantially as described.

14. In a cigar bunching machine, an ironing mechanism comprising a plurality of movable belts horizontally disposed, one of said belts having a fixed support or bed over which it travels, the superposed belt having a yielding pressure device bearing thereon, and means for moving the belts, substantially as described.

15. In an ironing table for a cigar bunching machine, the combination with a lower belt movable over a fixed support or bed, a second belt movably supported over the lower one, and a yielding compressing device comprising a series of interlocked rollers adapted to bear upon the upper belt and located over said support or bed, a frame for supporting said interlocked rollers, and means for yieldingly pressing said rollers upon the belt and for moving the belt, substantially as described.

16. The combination in an ironing table for a cigar bunching machine, of the bed plate 71, the belt 69 movably supported and disposed above said table, an upper movable belt, pulleys for the same suitably mounted, and a frame carrying a plurality of interlocked rollers journaled in the frame, said frame and rollers being supported over and upon the upper belt, and a supplementary roller loosely mounted in said frame and bearing on said rollers, and means for yieldingly pressing said supplemental roller upon the interlocked rollers, substantially as described.

17. The combination of the lower movable belt and bed thereof, of the upper belt, and a yielding supported frame supported over the lower portion of said upper belt and having a series of inter-locked rollers journaled therein, the two belts forming a passageway between them, and yielding devices permitting the upper belt and interlocked rollers to move to and from said lower belt without relieving their pressure upon the passing tobacco leaf, substantially as described.

18. The combination in an ironing device for a cigar bunching machine, of the lower movable belt and its bed, of the upper movable belt, both belts being disposed to form a passageway between them, fixed side plates defining the sides of said passageway, the frame plates 78, 79, the roller 82 movably supported in the frame plates, a series of interlocking rollers 81, a spring 83 secured at one end to the spindle of the roller 82, the other end being fixed, said roller bearing on the interlocked rollers, substantially as described.

19. In an ironing device for a cigar bunching machine, the combination of the two moving belts whose opposing faces move in the same direction and adjusted to form a passageway between them, one being superposed above the other, a fixed bed plate for the lower belt, a series of freely mounted pressure rollers bearing upon the upper belt, and means for maintaining a downward pressure upon said pressure rollers, substantially as described

20. In a feeding device for a cigar bunching machine, the combination of the feeding trough having a plurality of movable belts defining the sides and bottom of said trough, and an ironing device comprising the movable belts adjusted to form a passageway between them, and a pressing device adapted to bear upon the upper of said last mentioned belts with a yielding pressure, substantially as described.

21. In a cigar bunching machine the combination with the feeding device adapted to move or convey tobacco, and means for giving an intermittent feed to said device, said means comprising a suitably operated pawl lever and a series of intermeshed wheels, a ratchet mechanism for said wheels, a rocking lever, a connecting rod extending between said ratchet mechanism and the rocking lever, said connection being adjustable on said rocking lever to vary the throw of said ratchet mechanism to alter the feed when desired and means for connecting the intermeshed gear with the feeding device, substantially as described.

22. In a cigar bunching machine, the combination with a feeding device of means for intermittently and variably operating said feeding device, comprising the bell crank lever 20, suitably supported and actuated, the upper arm of said lever having a slot a stud movable in said slot, the spiodle 24 having the ratchet wheel 26 thereon, the arm 25 movably supported upon said spindle and having a pawl, suitable reducing gear and connections between the ratchet wheel 26 and the feeding device, and the connecting rod 28 extending between the arm or rocker 25 and the stud 29, substantially as described.

23. In a cigar bunching machine the combination with means for feeding the tobacco, of a charge severing knife, and a guide or standard for the same, means for operating said knife, an inclosed throat extending transversely of the tobacco feeding means, one side of which is defined by said knife or its standard, said throat being adapted to receive the severed charge, and means for passing the severed charge transversely to the tobacco feeding means, substantially as described.

24. The combination in a cigar bunching machine of a knife standard or gnide having a passage way, a movable charge severing knife in the standard, aligned with said passageway, an inclosed throat extending across the line of feed adapted to receive the severed charge, means for adjusting the width of the throat, a tobacco feeding device, and devices for varying the amount of movement of the feeding device to lengthen or shorten the amount of tobacco presented under the charge severing knife, substantially as described.

25. In a cigar bunching machine, the combination of the feeding device, the severing knife, the inclosed throat adapted to receive the severed charge, said throat extending transversely to the feeding device, a plunger movable in said throat, a rolling table, means for operating the plunger, means for conveying the severed charge from the throat to the rolling table, and means whereby the movement of the plunger toward the rolling table is accomplished independently of the device which moves it from the rolling table substantially as described.

26. The combination, in a cigar bunching machine, of the charge receiving throat adapted to contain the severed charge of tobacco, a plunger, a device for reciprocating said plunger in the throat, said device consisting of means for giving the plunger a forward movement and separate means for giving the plunger a rearward movement, and a forming blade at the end of the throat substantially as described.

27. The combination with the inclosed throat adapted to receive the severed charge of tobacco, the plunger movable in said throat, and devices for moving the plunger forwardly and rearwardly in said throat, said devices consisting of independent means arranged to render the forward movement of the plunger in the throat independent of its rearward motion, and a stop for regulating the time of commencement of the rearward movement of the plunger, substantially as described.

28. In a cigar bunching machine, the combination with a movable knife carrying cutting blades arranged to conform to a section or sections of the exterior contour of a cigar to be produced, said blades being arranged back to back, of means for intermittently feeding a train of charges of leaves under the blades, and a shearing block for sustaining a charge of leaves during the act of cutting the same, substantially as described.

29. In a cigar bunching machine, the combination with a charge severing knife and the inclosed throat adapted to contain a charge of superposed leaves, means for transferring the charge in the throat, said means being arranged to permit a greater or less amount of the charge to be moved, a shearing block located at the end of the said throat and adapted to support a portion of the leaf charge, a forming knife having cutting instrumentalities conformiag to a section or sections of the exterior contour of the cigar, and being located at the end of said throat, and means for retreating the said knife synchronously with the movement of the train of charges thereunder, substantially as described.

30. In a cigar bunching machine, the combination with the inclosed throat, a receiving pocket adapted to be aligned with the opening in the throat, an abutment block between the end of the throat and the opening to the pocket, means for advancing a charge of leaf in the throat, and a forming knife formed in sections approximating the sides of a cigar and placed back to back and adapted to sever the charge lying in the pocket from that lying in the throat, said knife being arranged to sever the charge on lines conforming to the semi exterior contour of the cigar, said lines being reversed, substantially as described.

31. In a cigar bunching machine, the combination of the following instrumentalities: a confining throat, means for moving a charge of leaf within the throat, a pocket aligning with the end of the throat, both the pocket and the throat sustaining a portion of the said charge, and cutting instrumentalities having reversed blades, one blade being arranged to conform the tobacco in the pocket to one section of the exterior contour of a cigar, and the other blade arranged to conform the front end of the charge in the throat to the reversed section of a cigar, and means for removing the waste stock from between the severed portions of the charge, the conforming instrumentalities being located between the throat and the pocket, substantially as described.

32. The combination in a cigar bunching machine, of the throat, a plunger movable in the throat, a movable pocket located on the plane of the throat and arranged to be aligned with the front of the throat, means for increasing or diminishing the depth of the pocket, the throat and pocket being arranged together to sustain a charge, the said plunger being adapted to move a charge of leaf from the throat to the pocket, cutting instrumentalities for severing the charge, and a shearing block located between the end of the throat and the pocket, substantially as described.

33. The combination in a cigar bunching machine, of the throat, a plunger movable in the throat, a movable pocket located on the plane of the throat and arranged to be aligned with the front of the throat, means for increasing or diminishing the depth of the pocket, the throat and pocket being arranged together to sustain a charge, the said plunger being adapted to move a charge of leaf from the throat to the pocket, cutting instrumentalities for severing the charge, and a shearing block located between the end of the throat and the pocket, substantially as described.

34. In a cigar bunching machine, the combination with the forming knife consisting of a pair of cutting blades reversely disposed to leave vertical spaces between their ends, and a slide rest for supporting the cutting blades in their up and down movement, and a cutting block adjacent to said knife, of a pair of independently operated ejecting and gripping jaws in line with said knife and means for supporting them, the jaws comprising upper and lower members, means for vibrating both jaws, the upper members of which are adapted to lie within the space between the cutting blades, the members of each of the jaws being movable independently of the other and arranged to receive the leaf between them, support it or a portion thereof during the act of cutting or forming the same, and means for vibrating the jaws to grip and eject the gore of stock lying between the cutting blades, substantially as described.

35. In a cigar bunching machine, the combination with two juxtaposed conforming knife blades, both reversely curved and leaving vertical spaces between their ends, means for raising and lowering the knife blades and guiding them, a cutting block and pocket aligned with each other and the independently operated gripping and ejecting jaws located in line with said knife blades and arranged to remove the gore of stock left between the blades by the cutting action thereof, and means for independently operating the gripping jaws, substantially as described.

36. In a cigar bunching machine, the combination with the inclosed throat, of the oscillating transferrer cylinder having a pocket therein, a plunger arranged to work in said pocket, and means for moving the charge in said throat and into the pocket of the transferrer cylinder, and a forming knife adapted to sever the charge and leave a portion thereof in the said pocket, a cutting block adjacent to said knife, a rolling apron and means for oscillating the cylinder and operating the plunger to eject the leaf from the pocket and onto the apron, substantially as described.

37. In a cigar bunching machine, the combination with the pocketed oscillatory transferrer cylinder, means for moving the charge of leaf into the pocket in said cylinder and conforming said leaf, the forming means being located in line with the pocket, a rolling apron and means for operating it, said apron being adapted to be moved to and from said cylinder, a gripping conveyer having a jaw, means for raising said conveyer, and means for oscillating the cylinder, and means for ejecting the charge from the pocket therein and onto the apron for forming a receiving pouch therewith between the jaws of the said gripping conveyer, substantially as described.

38. In a cigar bunching machine, the combination with the gripping conveyer comprising a vibrational frame carrying at one end a plurality of opposing jaws one of which is spring operated, said jaws being upwardly movable and means for so moving said jaws, a rolling apron adapted to be raised by said frame and to lie upon said jaws, means for expanding the jaws during the upward movement of the frame, and means for conveying a cut charge of tobacco leaf from a suitable source of supply to and within the pouch between the distended jaws, and means for forming said pouch, substantially as described.

39. The combination in a cigar bunching machine of a rolling apron fast at its forward end and movably supported at its rear end to a resiliently opposed lever, a bunching roller, and means for operating it, a vibrational frame adapted to be impinged against the rolling apron, a swinging dog adapted to be brought in contact with the above mentioned lever, means for freeing the dog from said lever, and means for vibrating said lever against the stress of the spring, substantially as described.

40. In a cigar bunching machine, the combination of the following instrumentalities: an oscillatory pocketed cylinder, a plunger movable in said pocket, means for oscillating the cylinder and moving the plunger in said pocket, a rolling table and a rolling apron fized at the forward end of the rolling table and movably connected at its rear end, a vibrational lever loosely connected with the rear end of said rolling apron, a gripping conveyer having expanding jaws adapted to elevate the rolling apron up to the pocket of the ejector cylinder, means for opening the jaws of said gripping conveyer, the ejector plunger being adapted during its ejecting movement to form a pouch between the said jaws, the means for operating said gripping conveyer being adapted to vibrate the jaws away from the said pocket, an apron roller adapted to be moved forwardly to draw the pouch and its contents out from the said jaw, a device for distributing the slack in said rolling apron and means for giving the ejector cylinder, its plunger, the gripping conveyer, apron roller, and the slack distributer, their proper coactive movements one in relation to the other, substantially as described.

41. In a cigar bunching machine, the combination with the inclosed throat and its plunger movable therein, the pocketed cylinder adapted to be oscillated in front of the opening in said throat to intermittently align the pocket in the cylinder with the opening in the throat, a rolling table, a rolling apron suitably secured, the vibrational gripping conveyer adapted to receive the charge from the cylinder pocket, means for forming a pouch therein, and further means for lowering the gripping conveyer to an operative level with the rolling table, and further means for freeing the pouch and its contained charge from the gripping conveyer, and rolling the charge within a suitable binder, substantially as described.

42. In a cigar bunching machine, the combination with the rolling table of the rolling apron fixedly secured at the forward part of the table and movably secured at its rear, means for tightening and loosening the free end of the apron, the bunching roller supporting the rear portion of the apron and adapted to move the bight in the apron forwardly along the rolling table, means for vibrating the bunching roller, a vibrational frame carrying movable gripping jaws adapted to cross the path of movement of the bunching roller, means for raising said frame, means for forming the apron into a receiving pouch between said jaws and placing a quantity of tobacco therein, and means for lowering the said jaws below the path of movement of the bunching roller prior to the said roller's forward movement, substantially as described.

43. In a cigar bunching machine, the combination with a suitable rolling table and a rolling apron fixed thereto at one end and movably secured at its rear, a bunching roller adapted to move a bight in the apron upon the rolling table, and means for vibrating it forwardly and rearwardly, a vibrational frame carrying distensible gripping jaws, a device for cooveying a cut charge of tobacco leaf from a source of supply, means for moving the gripper frame to and from said device, the jaws of the gripping frame traversing the path of movement of the bunching roller, and means for forming the apron into a pouch within the jaws of the gripper frame and depositing the cut filler therein, and means for drawing the slack of the apron to the rear thereof whereby the length of the apron necessary for the formation of the pouch is obtained at the rear end of the apron, substantially as set forth and described.

44. The process of making cigar fillers consisting in superimposing leaves of tobacco, ironing the superimposed leaves to compact them, severing the superimposed leaves crosswise into charges of the length of a cigar filler, confining the charge or charges against outward movement, feeding of the charge laterally while so confined, and then cutting the fed charge lengthwise of the leaf to give an approximate shape of a cigar to the filler, substantially as described.

45. The process of making cigar fillers, consisting in feeding tobacco leaves in the direction of their length, then cutting charges on lines transversely to the length of the leaves and then cutting fillers from said charges in the direction of the length of the leaves, whereby fillers having longitudinally extending leaves are produced, substantially as described.

46. The process of making cigar fillers, consisting in feeding a series of leaves in the direction of their length, then severing the same on transverse lines to form charges, then feeding said charges, under pressure, in a train, and then severing said charges in the longitudinal length of said leaves, to form long filler bunches, substantially as described.

47. A device for feeding tobacco leaves, consisting of a horizontally disposed traveling belt, a pair of belts placed on edge over the horizontal belt, and a horizontal belt so located as to form a passage between them in advance of said vertical belts, combined with a severing knife adjacent to the passage to receive tobacco therefrom, and means for actuating said belts and said knife, substantially as described.

48. A feeding trough consisting of a horizontal belt, two endless belts placed on edge thereover, pulleys receiving said belts, certain of said pulleys carrying intermeshed gear wheels, combined with an ironing device comprising compressing devices located over the horizontal belt, and a charge severing knife, and means for operating said parts, in the manner as and for the purposes specified.

49. A feeding trough consisting of traveling belts combined with a deflector composed of a wedge shaped body, a spring acting tongue carrying said body, and an ironing device adjacent to said deflector, said deflector acting to guide leaves to said ironing device, substantially as described.

50. The combination of a horizontal feeding belt, and means for actuating it, with a superposed similarly disposed endless belt, rollers carrying said belt, a series of pressure rollers located within the web of said belt, one of said rollers having means to press it in the series on the other rollers and also in contact with said belt to take up slack therein, substantially as described.

51. The combination of a horizontal feeding belt and a pair of vertical belts, rollers around which the latter belts pass, intermeshed gears connected with said rollers, a band for turning one of said rollers, a pulley receiving said band, a shaft carrying said pulley, a crank arm, means for moving it, and means for connecting said pulley shaft with said crank arm, as and for the purposes specified.

52. The combination of a horizontal feeding belt, pulleys over which it passes, a pair of vertical belts over said horizontal belt, pulleys for guiding said vertical belts, gears for moving said vertical belts synchronously, a horizontal belt over the first mentioned belt, pulleys for guiding said belt, a shaft carrying one of said pulleys and another pulley on said shaft, a band connecting said last mentioned pulley with a pulley of one of the vertical belts, the pulley shafts of the horizontal belts being geared together, and means for operating said shafts, whereby all of the belts are moved synchronously, substantially as described.

53. The combination of synchronously movable feeding belts and means for thus actuating them, a severing knife located transversely to said belts and adjacent to their corresponding ends, means for actuating said knife, a throat extending parallel to said knife and transversely to said belts, a plunger in said throat, and means for moving said plunger, substantially as described.

54. The combination of a severing knife and means for feeding tobacco to and under it, with a throat contiguous to said knife, a plunger in said throat, a self acting device for moving said plunger forwardly and means independent thereof for retracting said plunger, as and for the purposes specified.

55. The combination of a severing knife and means for feeding tobacco under it, with a throat contiguous to said knife, a plunger in said throat, a device for moving said plunger forward, and positively acting devices for retracting said plunger, as and for the purposes specified.

56. The combination of a severing knife and means for feeding tobacco to it, with a throat contiguous to said knife, a plunger in said throat, a rod connected with said plunger, a collar or projection on said rod, means for moving said rod and plunger forwardly, a cross head in advance of said collar or projection, and devices for moving said cross head so as to act on said collar or projection to retract said plunger, substantially as described.

57. The combination of a severing knife and means for feeding tobacco to it, a throat adjacent thereto, a plunger in said throat, a rod connected with said plunger, a pulley suitably supported, a flexible connection extending from said rod over said pulley and having a weight at the end thereof whereby said plunger and rod will be moved forward by said weight, and an independently actuated device for retracting said plunger, substantially as described.

58. The combination of a severing knife and means for feeding tobacco to it, with a throat having one side open adjacent to said knife, a plunger in said throat, a rod connected with said plunger and self-acting devices connected with said rod for moving it forwardly, and with a cross head, a collar or projection on said rod for engagement with said cross head, arms pivoted to said cross head, a cam and intermediate devices connecting said arms with said cam whereby said cross head will be moved independently of the devices

that move the plunger forward, for retracting said plunger, substantially as described.

59. The combination of a severing knife and means for feeding tobacco to it, with a throat having both ends open, and an opening in one side in line with said knife, a plunger in said throat, and devices for reciprocating said plunger, substantially as described.

60. The combination with the throat and means for feeding tobacco to and from it, of a rotative transferrer cylinder having a pocket to align with said throat, a cutter between said throat and said cylinder, a plunger in the pocket of said cylinder, means for normally holding said plunger retracted, and means for advancing said plunger to eject tobacco from said pocket, and a rolling apron and rolling devices located beneath said cylinder to receive the charge and roll the bunch, substantially as described.

61. The combination of a throat, and means for feeding tobacco to and from it, with a transferrer cylinder having a longitudinally curved face, and a pocket, a plunger in said pocket, a cutter between the throat and said cylinder, a block having a curved face corresponding to the longitudinal periphery of said cylinder, and means for turning said cylinder as and for the purposes specified.

62. The combination of a throat and means for feeding tobacco to and from it, and a cutting block at one end of said throat, said cutting block having the approximate shape of one side of a cigar, with a forming knife made of blades, one of said blades corresponding to the shape of said cutting edge, the opposite of said blades corresponding to the reverse side of the cigar, and a transferrer cylinder in line with said throat, said knife working between said throat and said cylinder, substantially as described.

63. The combination of a throat and means for feeding tobacco to and from it, with a charge-receiving cylinder, an ejector therein, a reciprocating slide, a forming knife, and means for detachably connecting said knife with said slide, said knife consisting of blades in the approximate shape of opposing sides of a cigar, said blades being placed back to back, and means for turning said cylinder, substantially as described.

64. The combination of a throat and means for feeding tobacco to and from it, with a forming knife composed of two curved sections placed back to back and means for operating said knife, substantially as described.

65. A forming knife for cigars consisting of two suitably curved blades placed back to back and a reciprocating element carrying said blades, substantially as described.

66. A forming knife for cigars consisting of two concavo-convex blades having their convex portions opposed, and a reciprocating element carrying said blades, substantially as described.

67. A tobacco feeding throat and a forming knife, combined with a pair of gripping jaws located in line with said knife, a shaft for carrying and turning said jaws, a spring for holding said jaws in the normal positions, and a stop to engage one of said jaws to cause said jaws to separate to eject the tobacco held thereby, substantially as described.

68. The combination of a tobacco feeding throat and a forming knife, with a pair of gripping jaws, in line with said knife, a shaft carrying said jaws and means for turning said shaft, a spring for holding said jaws in their normal positions, a projection carried by one of said jaws, and a stop to be engaged by said projection to separate said jaws, substantially as described.

69. The combination of a tobacco feeding throat, a forming knife and means to operate it, with a pair of jaws in line with said knife, a spindle carrying said jaws, one of said jaws having a projection 176, a lug 177, a set screw 178 and a lug 183, the other jaw having an arm 180, a spring 181 and a projection 182 to be engaged by the lug 183, and means for turning said spindle to operate said jaws, as and for the purposes specified.

70. The combination of a tobacco feeding throat and a forming knife, with a pair of jaws, a spindle carrying them, a crank arm on said spindle and means for operating said crank, with a spring to keep said jaws in their normal positions and a lug to be engaged by one of said jaws to separate said jaws, substantially as described.

71. The combination of a tobacco feeding throat having a cutting block conformed to the approximate side of a cigar, with a forming knife having blades conforming to the approximate sides of a cigar, one of said blades corresponding in position to said cutting block, with a transferrer cylinder having a pocket and its side conformed to the approximate shape of the side of a cigar and corresponding in position to the other of said sections of the forming knife, and means for operating said knife and for turning said cylinder, and an ejector in the pocket of said cylinder, substantially as described.

72. The combination of a charge forming device, with a rolling apron, a rolling table, a spring actuated lever 228, to which said apron is connected, a bunching roller, an arm carrying it, and a projection or roller carried by said arm to act on said lever 228 to loosen the belt, and means for vibrating said bunching roller across said table, substantially as described.

73. The combination of a charge forming device, with a rolling apron, a rolling table, a spring actuated lever 228 having a curved portion, said apron being connected with said lever, a bunching roller, an arm carrying said roller, and a projection or roller carried by said arm to act on the curved portion of said lever, and means for vibrating said bunching roller across said table, as and for the purposes specified.

74. The combination of a charge forming device, with a rolling apron, a rolling table, a spring actuated lever 228 to which it is connected, a bunching roller, an arm carrying said roller, and a projection or bar carried by said arm for raising said lever, a slack distributing device consisting of a frame having a bar 250 to engage the apron, and a dog or hook to engage the lever 228 to tilt said frame and bar 250, and means for vibrating said bunching roller across said table, as and for the purposes specified.

75. The combination of a charge forming device, with a rolling apron, a rolling table, a lever 228 with which said apron is connected, a bunching roller, an arm carrying said roller, a pivoted frame having a bar 250, to act on said apron, a dog or hook carried by said frame and arranged to be engaged by said lever, a stop to disengage said dog or hook from said lever, a spring to actuate said frame, and means for vibrating said bunching roller across said table, substantially as described.

76. The combination of a rolling apron, and means for forming a bight or pouch therein, with a gripping conveyer to receive the bight of said apron consisting of a pair of levers 276 and a bar or roller connecting them, bell cranks pivoted on said levers and a bar or roller connecting said bell cranks, means for raising or lowering said levers 276, and devices for independently operating said bell cranks, as and for the purposes specified.

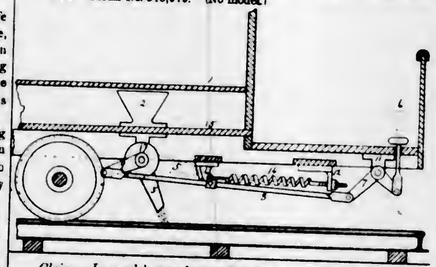
77. The combination of a rolling apron, and means for forming a bight or pouch therein, with a gripping conveyer to receive the bight of said apron, and consisting of a pair of levers, a cross bar or roller connecting them, means for raising and lowering said levers, bell cranks pivoted to said levers, a cross bar or roller connecting said bell-cranks, a spring connecting one of said bell cranks with one of said levers, and a stop rod connecting one of said bell cranks with a stationary element to move said bell cranks against the stress of said spring, as and for the purposes specified.

78. The combination of a rolling apron, and a bunching roller with a gripping conveyer consisting of levers 276, having upturned portions with rearward bends 280, a bar or roller connecting said bends, bell cranks pivoted on said levers, a bar or roller connecting said bell cranks, said bars or rollers forming a gripping jaw, and means for operating said bell crank, and means for raising and lowering the levers 276 to draw down a bight in the apron, as and for the purposes specified.

79. The combination of a rolling apron and its table, with a bunch receiving carriage extending transversely of said table, a cushioned rod connected with said carriage, belts connected with opposite ends of said rod, and means for actuating said belts, substantially as described.

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528,904. SAND-BOX FOR CARS. ADOLPH GARING, Allentown, assignor of one-half to Clinton H. Fuller, Catasauqua, Pa. Filed June 8, 1894. Serial No. 513,979. (No model.)



*Claim.*—In sand boxes for sanding car tracks, the combination of a hopper, a hanger, a circular rotary valve depending from said hanger and registering with opening in said hopper, a discharge tube rotating with said valve and adapted to be closed at discharge end by a stop bracket when thrown up out of operative position, substantially as described.

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528,905. MAGAZINE-GUN. LEWIS L. HEPBURN, New Haven, Conn., assignor to the Marlin Fire Arms Company, same place. Filed May 8, 1894. Serial No. 510,449. (No model.)

*Claim.*—1. In a magazine firearm, a tilting locking-bolt D having a horn H projecting from its upper rear end and having projecting from its forward end a depending plate provided with an inclined slot J, and operated by a pin projecting from the horizontal movable connecting rod, substantially as described.

2. In a magazine firearm, the combination of a reciprocating handle and connecting-rod attached thereto with a locking-bolt hung in the breech-block, said locking-bolt being provided with a projecting arm adapted to move in a groove S in the side of the frame adjacent thereto, said groove S being widened toward its forward end to permit the locking bolt to be tilted, substantially as described.





3. In a magazine firearm, the reciprocating handle, the connecting-rod, the locking-bolt adapted to be tilted as described, said locking-bolt having a projection R adapted to slide in a groove in the frame, and having a stud K projecting from the side of the descending plate I, adjacent to and adapted to slide in a groove in the adjacent side of a carrier-block, which is hinged near its rear end to the frame, for the purpose of raising and lowering the same, substantially as and for the purpose specified.

4. In a magazine firearm, the reciprocating handle, the connecting-rod, with the locking-bolt hung in the breech-block, said locking-bolt having a plate I depending from its forward end having a stud K projecting therefrom adapted to slide in a groove Y in the carrier W, said groove Y being curved sharply upward toward the rear end of the carrier, substantially as and for the purpose specified.

5. In a magazine firearm, a reciprocating handle and connecting-rod adapted to tilt the locking-bolt which is provided with a horn as described, the forward and rear edges of which are inclined forward as shown, in combination with a firing-pin actuated by a retracting spring G and having a groove L the forward and rear sides of which are inclined as shown, the forward incline facilitating the retraction of the firing pin by action of the horn, the forward incline being for the purpose of advancing said firing-pin slightly ahead, so that when the horn has passed the lower edge of the firing pin, the spring G will cause the said firing pin to snap back over the top of the horn H, thereby locking the locking-bolt, all substantially as and for the purposes specified.

6. In a magazine firearm, a reciprocating handle and connecting-rod, adapted to tilt the locking-bolt hung in the breech-block, said locking-bolt being provided with a horn as described in combination with a firing-pin having a groove L adapted to permit the horn to slide therein and provided with another groove M in its lower side, communicating with the groove L, all substantially as and for the purpose described.

7. In a magazine firearm, a device for releasing the cartridges from the magazine, consisting of a spring Z having a projection *m* adapted to stand normally in the path of the cartridge to be ejected from the magazine, and with a projection *a* provided with inclined sides, all adapted to be depressed by the downward action of the depending plate I provided with the groove *j*, substantially as described.

8. In a magazine fire arm, a reciprocating handle and connecting rod attached thereto adapted to tilt the locking bolt hung in the breech-block, said locking bolt having toward its rear end an upwardly projecting horn, in combination with a firing-pin locking said locking bolt when in the retracted position to prevent its being tilted and releasing said locking bolt when in the forward position, substantially as described.

9. In a magazine fire arm, a device for releasing the cartridges in the magazine consisting of a spring Z secured to the frame of the gun the forward end of said spring being loose and adapted to normally stand slightly into the path of the cartridge to be expelled from the magazine with the tilting locking bolt D provided with the depending plate I adapted to depress said spring Z on its downward movement as the locking bolt is being tilted into the horizontal position and with the carrier-block W, the forward end of which terminates slightly to the rear of the forward end of the spring Z, substantially as and for the purpose specified.

10. In a magazine fire-arm, the reciprocating parts, in combination with a spring pressed supplemental sear hung in the frame and engaging in a supplemental notch in the periphery of the hammer, and the locking bolt, said locking bolt tripping said supplemental sear at the final locking point and after the breech is fully closed substantially as described.

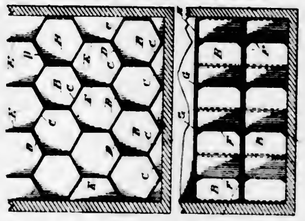
11. In a magazine fire arm, the reciprocating breech-block B, carrying a locking bolt D loosely mounted in a recess in the lower side of said breech-block, in combination with a depending plate I, secured to the forward end of said locking bolt said plate being provided with an inclined slot J and a projection R moving in a longitudinal groove S in the frame A and with a stud-projection K on said depending plate adapted to move in a groove in the side of the carrier-block W for the purpose of intermittently raising and lowering said carrier-block, substantially as described.

12. In a magazine fire-arm, the longitudinally reciprocating breech block having a locking bolt loosely hung therein upon a pivot of reduced diameter, whereby the said locking bolt has limited longitudinal movement, a cam abutment on the breech block engaged by the forward end of the locking bolt, the depending plate on the locking bolt having the inclined slot J, the operating bar P, the stud Q on said bar working in said inclined slot J, whereby the locking bolt is tilted into and out of the locking position, and the breech-block is crowded home by the cam engagement of its forward end.

13. In a magazine fire arm, a reciprocating breech-block carrying a locking bolt loosely mounted upon a pivot E of less diameter than the diameter of the perforation in the locking bolt through which it extends, the bearing surface at one end of the locking bolt being cut on a curve eccentric to the pivotal center E, to effect a cam action as the locking bolt is tilted, substantially as described.

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528,906. FRUIT-WRAPPING DEVICE. BENJAMIN LEONARD, Sacramento, assignor of one-half to Charles W. Weston, San Francisco, Cal. Filed Apr. 20, 1894. Serial No. 508,361. (No model.)



*Claim.*—1. A device for separate fruit packing, consisting of the combination of the separate wrapper, B, made of thick paper or wood veneer or other material, jointed in sections, provided with openings, G, for ventilation; the divisions or sections, C; the overlapping parts, D, as brought together to form the wrapper; the flap or outstanding section, E; the broken joints, F; the sheets, H, made of paper, wood veneer, or other material, separating the layers of wrappers with fruit therein, and for forming the foundation upon which another layer of fruit may be packed; and the box, A, in which the wrappers with fruit are packed,—substantially as herein described and set forth.

2. In a separate fruit wrapper, the combination of the wrapper, B; provided with the openings, G, for ventilation the jointed sections, C; the overlapping parts, D, and the broken joints, F; with the flap or outstanding section, E; the sheets, H, separating layers of wrappers with fruit therein; and the packing box, A, for packing the wrappers with fruit therein,—substantially as herein described and set forth.

3. In a separate fruit wrapper, the combination of the packing-box, A; the wrapper, B; provided with the openings, G, for ventilation the sections, C; the overlapping parts, D; and the broken joints,

F; the flap or outstanding sections, E; with the sheets, H, separating the layers of wrappers with fruit therein,—substantially as herein described and set forth.

4. In a separate fruit wrapper, the combination of the packing-box, A; the wrapper, B, having broken joints, F; the sections, C; the overlapping parts, D; the opening, G, providing ventilation; the flap or outstanding section, E, with the sheets, H, separating the layers of wrappers with fruit therein,—substantially as herein described and set forth.

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**528,907. RHEOSTAT AND HEATER.** ROBERT C. MITCHELL, New York, assignor of one-half to Henry W. Vail, Brooklyn, N. Y. Filed Jan. 17, 1894. Serial No. 497,209. (No model.)




*Claim.*—1. The combination of the base A, the perforated insulation B, the resistance E, with the covering F, substantially as described.

2. The combination of the base A, the resistance E, having interposed between the plate A and resistance E, the perforated insulation B of mica with a covering of insulating substance F enveloping the resistance E and contacting with the base A through the perforations D D substantially as and for the purpose specified.

3. The combination in a heater, of a metal base A, the resistance wire E with the perforated sheet or sheets of non-fusible insulation B interposed between the base A and wire E with a covering of insulating substance F substantially as and for the purpose specified.

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**528,908. WINDOW-CLEANER.** ROBERT G. MITCHELL, Huntington, Ind. Filed Feb. 23, 1894. Serial No. 501,219. (No model.)



*Claim.*—1. The brush having the water reservoir attached thereto and arranged to supply water to the brushing surface, said water reservoir having the supply openings, and a float valve having guiding means and controlling said opening, substantially as described.

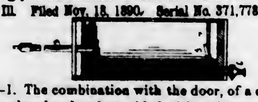
2. A reservoir brush having the vertical valve chamber arranged therein and opening to the exterior thereof, said chamber opening into the interior of the reservoir, and the float valve vertically movable in said chamber, as and for the purpose set forth.

3. The reservoir brush having the water reservoir provided with the vertical tube located therein and projecting to the exterior thereof and having the lateral opening into the interior of the reservoir, and the vertically movable float valve in said tube arranged to move above said side opening when the reservoir is full and thereby prevent water from splashing the reservoir through the open end of the tube.

4. The water reservoir having the vertical tube therein communicating with the outer air and opening into the reservoir, the vertically movable float valve therein, arranged to operate as set forth and having the downwardly extending guide or support from its lower side, the parts being arranged to operate as set forth.

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**528,909. PNEUMATIC DOOR-CONTROLLER.** JOSHUA W. GRAY, Chicago, Ill. Filed Nov. 18, 1890. Serial No. 371,778. (No model.)

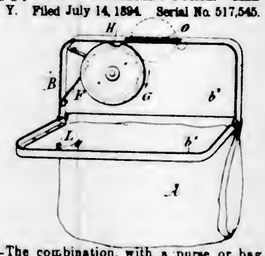


*Claim.*—1. The combination with the door, of a cylinder having an open and a closed end and provided with a piston, and mechanism, actuated by the movement of the door in one direction to set the piston, whereby on removing the pressure from the door; the piston is actuated by the pressure of air to automatically close the door, substantially as and for the purpose herein specified.

2. The combination with the door of an open ended cylinder, provided with a piston and its piston rod, a vent cock, E, in closed end of cylinder, a partition G in cylinder in front of the piston provided with valve J and vents K, and mechanism connected with the door and piston rod, and actuated by the opening movement of the door to set the piston, whereby upon the release of the door, the piston is actuated by atmospheric pressure to close the door, substantially as and for the purpose herein specified.

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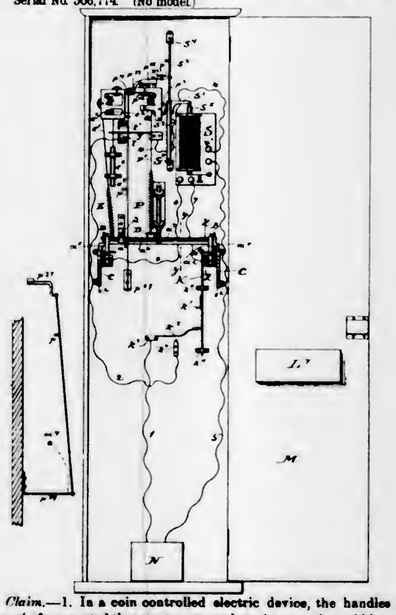
**528,910. COIN-REGISTERING PURSE.** MAX H. METAL, New York, N. Y. Filed July 14, 1894. Serial No. 517,545. (No model.)




*Claim.*—The combination, with a purse or bag, and a frame formed of two jaw-sections hinged together at their ends, one of the sections being provided with an inwardly-projecting recessed stud arranged immediately contiguous to its flange, and the other of said jaw-sections being formed of a plate having a coin slot in its flange, said plate being provided with a side observation slot, of a wheel pivoted on said plate and provided on one face with numbers that show through the observation-slot, the rim of said wheel being provided with as many teeth as there are numbers, a flange on that face of the wheel opposite the one having the numbers and having a peripheral notch adapted to permit the recess of the seat to engage the periphery of the wheel when the jaw-sections are closed, and a spring attached to the plate and engaging the wheel, substantially as set forth.

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**528,911. COIN-OPERATED ELECTRIC APPARATUS.** JOHN H. ELFERING, Cincinnati, Ohio. Filed Aug. 30, 1889. Renewed Apr. 7, 1894. Serial No. 506,774. (No model.)




*Claim.*—1. In a coin controlled electric device, the handles A, levers $a'$, $a^3$ connected thereto, transverse bar $a^4$ connecting said levers, the coin receptacle $L^3$ attached to the bar $a^4$, and having a transverse notch $L^5$, the sliding bolt L, which when the coin receptacle is empty



engages said notch when one attempts to raise the levers $a'$, the coin receptacle $L^3$ being provided with the vertical slit or receptacle intersecting said notch, for enabling a part of the periphery of the coin to fill said notch so far as the bolt L is concerned, and coin passage way leading from the exterior of the case to said coin receptacle, substantially as and for the purposes specified.

2. In a coin controlled electric device, the handles A, levers $a^3$, connected thereto, transverse bar $a^4$ connecting said levers, the coin receptacle $L^3$, carried by the bar $a^4$, and having vertical slit and transverse notch $L^5$, and beveled surface $L^6$, sliding bolt L, in guide-ways L', and having its lower end in proximity with the said transverse notch $L^5$, and wall opening $L^3$ for conducting the coin to the coin receptacle, substantially as and for the purposes specified.

3. In an apparatus for the purposes mentioned, the handles A, levers $a^3$, connected therewith, cross rod $a^7$, connected to and operated by said levers, curved rack C, having stop $c^3$, near its lower extremity, and upper stop $C^3$, double pawl $a^5$, $a^4$, pivoted at the end of lever $a^3$, spring racks B respectively accompanying levers $a^3$, and engaging limb $a^5$ of said double pawl, the limb $a^5$ of the pawl being for engaging the rack C and stops $c^3$ and $C^3$, substantially as and for the purposes specified.

4. In a coin controlled electric device, the handles A, levers $a'$, $a^3$, connected thereto, transverse bar $a^4$ connecting said levers, the coin receptacle $L^3$ attached to the bar $a^4$, and having a transverse notch $L^5$, the sliding bolt L, which when the coin receptacle is empty engages said notch when one attempts to raise the levers $a'$, the coin receptacle $L^3$ being provided with the vertical slit or receptacle intersecting said notch, for enabling a part of the periphery of the coin to fill said notch so far as the bolt L is concerned, and coin passage way leading from the exterior of the case to said coin receptacle, the cross rod $a^7$ connected to and operated by said levers $a'$ $a^3$, curved rack C, having stop $c^3$, near its lower extremity, and upper stop $C^3$, double pawl $a^5$, $a^4$, pivoted at the end of lever $a^3$, spring racks B respectively accompanying levers $a^3$, and engaging limb $a^5$ of said double pawl, the limb $a^5$ of the pawl being for engaging the rack C, and stops $c^3$ and $C^3$, substantially as and for the purposes specified.

5. In an electrical device for the purposes specified, the handles A, and levers $a^3$ connected thereto, cross rod $a^7$ carried by the levers, and device for limiting the duration of the electrical current, the spring E having one end in connection with said rod $a^7$, cord $c'$ connected to the other end thereof, pulley $c^3$, around which said cord $c'$ runs, pawl $c^4$ pivoted to said pulley, ratchet wheel $c^5$ engaging said pawl and concentric with pulley $c^3$, shaft $c^3$ of said pulley $c^3$, and ratchet wheel $c^5$, weight $c^6$, connected to the opposite end of the cord $c'$, armature 3 and contacting stop $t$, located in the path of the said weight or actuating piece $c^4$, substantially as and for the purposes specified.

6. In an electrical device for the purposes specified, the handles A, and levers $a^3$ connected thereto, cross rod $a^7$ carried by the levers, and device for limiting the duration of the electrical current, the spring E having one end in combination with said rod $a^7$, cord $c'$ connected to the other end thereof, pulley $c^3$, around which said cord $c'$ runs, pawl $c^4$ pivoted to said pulley, ratchet wheel $c^5$ engaging said pawl and concentric with pulley $c^3$, shaft $c^3$ of said pulley $c^3$, and ratchet wheel $c^5$, weight $c^6$ connected to the opposite end of the cord $c'$, and a train of clock work with escapement connected with said pulley $c^3$, and for regulating the rapidity and uniformity of the latter, and armature 3, and contacting stop in the path of the weight or actuating piece $c^4$, substantially as and for the purposes specified.

7. In an electrical device for the purposes mentioned, the handles A, levers $a^3$ connected thereto, rod $a^7$, spring P connected at one end to the rod, cord $p'$, connected at one end to the spring, ratchet wheel $p^4$, pawl $p^5$, pulley $p^3$, on shaft $p^3$, the cord $p'$ running over said pulley, train of clock work with escapement connected with said pulley, and with pinion $p^6$, rack $S^3$, coil S, and sheath $S^5$ within said coil, brake $p^{15}$ in conjunction with brake wheel $p^{14}$ of said train, lever $p^{30}$, engaging the brake $p^{15}$, and stud on reciprocating rack $S^3$ also engaging said brake, substantially as and for the purposes specified.

8. In an electrical device for the purposes mentioned, the handles A, levers $a^3$ connected thereto, rod $a^7$ moved by the levers $a^3$, cord $p'$, spring P having one end connected to rod $a^7$ and the other end connected with the cord $p'$, ratchet wheel $p^4$, pawl $p^5$ engaging the latter, pulley $p^3$, connected with the said ratchet and pawl, train of clock work with escapement combined therewith substantially as described, wheel $p^3$, operated with pulley $p^3$, reciprocating rack $S^3$, coil S, and sheath $S^5$, combined with said rack, brake $p^{15}$ in conjunction with brake wheel as $p^{14}$, lever $p^{30}$, operating on said brake wheel and stud $p^{33}$ of said rack and operating on the brake, and extension $p^{37}$ of brake, connection $p^{36}$, spring arm $p^{38}$, united to said connection, and rod $a^7$ of the levers $a^3$, substantially as and for the purposes specified.

9. In an electrical apparatus for the purposes mentioned, the coil S, sheath $S^5$ working therein, reciprocating rack $S^3$ combined therewith, pinion $p^6$ engaging said rack, lever $p^{30}$, operated by said rack, brake $p^{15}$, subject to the working of said lever, spring arm $p^{38}$, connection $p^{36}$ between said brake and said arm, and rod $a^7$ of the levers $a^3$, substantially as and for the purposes specified.

10. In an electrical apparatus for the purposes indicated, the handles A, levers $a^3$, rod $a^7$ carried thereby, devices substantially as herein described for limiting the duration of the electrical current, having cord $c'$, spring E connected at one end to rod $a^7$, and at the other end to said cord, weight $c^6$, armature 3, in the path of said weight or projection $c^4$, on said cord, and the device substantially as described for increasing the intensity of the current, having cord $p'$, spring P, attached thereto and to the rod $a^7$ of the levers $a^3$, pulley $p^3$, ratchet wheel $p^4$, with pawl, rack $S^3$, coil S and sheath $S^5$ combined with rack, substantially as and for the purposes specified.

11. In a coin controlled electrical apparatus, the handles A, levers $a^3$ connected therewith, rod $a^7$ carried thereby, cord $c'$, spring E connected to said rod $a^7$ and to cord $c'$, weight $c^6$, armature 3 in the path of the weight, rod $a^4$, cord $p'$, spring P connected to said rod $a^4$ and cord $p'$, reciprocating rack $S^3$, coil, sheath, pinion $p^6$ engaging said rack, brake $p^{15}$ operated by said rack, brake wheel $p^{14}$, substantially as and for the purposes specified.

12. In a coin controlled electrical apparatus, the handles A, levers $a^3$ connected thereto, rod $a^7$ carried by the levers $a^3$, cord $c'$, spring E strained between the rod $a^7$ and said cord, pulley $p^3$ over which said cord runs, weight $c^6$ attached to said cord, armature 3 in the path of the weight, cord $p'$, pulley $c^3$, receiving said cord, lever $p^{30}$, stud $p^{33}$ of rack $S^3$, rod K, connected to lever $a^3$, and having stud, armature $k^3$, substantially as and for the purposes specified.

13. In a coin controlled electrical apparatus, the handles A, levers $a^3$ connected thereto, rod $a^7$ of said levers, rack C having upper stop $c^3$ and lower stop $c^3$, pawl $a^5$, $a^4$, pivoted to lever $a^3$ and for engaging said rack C, and spring rack B for also engaging said pawl $a^5$, $a^4$, devices for limiting the duration of the electrical current and the cord $p'$, spring $p$ attached to rod $a^7$, and to said cord, pinion $p^6$ with pulley $p^3$, receiving said cord, rack $S^3$, and coil and sheath $S^5$ connected to the rack, substantially as and for the purposes specified.

14. In an electrical apparatus for the purposes mentioned, the combination of the handles A, and a rod $a^7$ elevated and depressed by them, and the device consisting of the arms $V^4$, $V^3$, rods $V^2$ connecting the free ends of the said arms, circuit closer V' carried by said arms, conductor V for contact with said circuit closer, spring rack $V^4$, and extension $V^5$ of the arm $V^3$, substantially as and for the purposes specified.

15. The combination of the handles A, levers $a^3$, connected thereto, rod $a^7$ carried by said levers, arms $V^3$, $V^4$, connected by rods $V^2$, spring rack $V^4$, circuit closer V' carried by arm $V^3$, stationary rack C, provided with stops $c^3$, $c^3$, pawl $a^5$, $a^4$, pivoted to lever $a^3$, spring rack B for engaging with one arm of the said last named pawl, substantially as and for the purposes specified.

16. The handles A, levers $a^3$, rod $a^7$ carried thereby, arms $V^3$, $V^4$, having extension $V^5$, spring rack $V^4$, circuit closer $V^2$ connected with said arms $V^4$, $V^3$, and cord $p'$, spring P connected to said cord, pulley $p^3$ over which said cord runs, pinion $p^6$ connected to said cord, reciprocating core, sheath $S^5$ of the core of the coil, constructed and united substantially as and for the purposes specified.

17. The combination of the handles A, levers $a^3$, connected therewith, rods $a^7$, oscillating arms $V^3$, $V^4$, rod $p^3$ connecting the free ends of said arms, spring rack $V^4$, circuit closer V', carried by the said arms, stationary rack C, in combination with stops $c^3$, $c^3$, pawl $a^5$, $a^4$, spring rack V, for engaging said pawls, and spring P attached to rod $a^7$, pinion $p^6$, rack $S^3$, meshing with said pinion and carrying the sheath $S^5$ of the coil core, substantially as and for the purposes specified.

18. The combination of the handles A, levers $a^3$ attached thereto, rod $a^7$ connected to the levers, arms $V^3$, $V^4$ attached to a stationary part of the apparatus, rod $V^2$ connecting said arms $V^3$, $V^4$, spring rack $V^4$, circuit closer V' attached to and moved by the arms, curved stationary rack C provided with the lower stop $c^3$ and upper stop $c^3$, pawl $a^5$, $a^4$ pivoted to lever $a^3$, spring rack B for engaging the pawl, cord $c'$, spring E connected to the rod $a^4$, also to cord $c'$, pulley $c^3$, around which cord $c'$ runs, armature 3, and stop conductor $t$, substantially as and for the purposes specified.

19. The combination of the handles A, levers $a^3$ attached thereto, rod $a^7$ connected to the levers, arms $V^3$, $V^4$ attached to a stationary part of the apparatus, rod $V^2$ connecting said arms $V^3$, $V^4$, spring rack $V^4$, circuit closer V' attached to and moved by the arms, cord $p'$, spring P connected to rod $a^7$ and to said cord $p'$, pinion $p^6$ operated by said cord, rack $S^3$ engaging said pinion and carrying the sheath $S^5$ of the coil core, connected to said rack, substantially as and for the purposes specified.

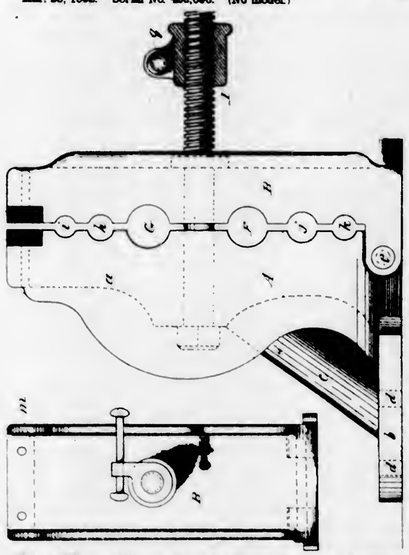
20. The combination of the handles A, levers $a^3$, rod $a^7$ attached to the levers, cord $c'$, spring E connected to said rod, pulley $c^3$ receiving said cord, weight $c^6$ connected to the arm, armature 3 in the path of the said weight, and cord $p'$, spring P attached to rod $a^7$ and to said cord $p'$, pulley $p^3$ and pinion $p^6$, rack $S^3$ engaging said pinion,

and coil and sheath $S^6$ of the core coil, said sheath connected to said rack, brake operated by said rack, brake rod and arm $p^{29}$, arms $V^3$, $V^4$ fixed to a stationary part of the machine, rod $V^2$ connecting said arms, and circuit closer operated by the said arms, and rack $V^5$ in connection therewith, the springs E and P and the arms $V^4$, $V^3$ and arm $p^{29}$ being located for receiving a direct impulse from rod $a^7$, substantially as and for the purposes specified.

21. The handles A, levers $a^3$, bar $a^4$, carried by the said levers, coin receptacle $L^2$ of the coin controlled mechanism connected to the said levers, rod $a^7$ connected to the said levers, in combination with the mechanism for limiting the duration of the current, and increasing the intensity thereof, substantially as and for the purposes specified.

22. The combination of the handles A, levers $a^3$, rod $a^7$ connected therewith, arms $V^4$, $V^3$, pivoted to a stationary part of the device, rod $V^2$ connecting said arms, elastic rack $V^5$, in connection therewith, circuit closer $V'$, operated by said arms, cord $p'$, spring P connected to the rod $a^7$ and to the said cord $p'$, pinion $p^4$ operated by the cord $p'$, rack $S^3$, coil and sheath core $S^6$, operated by the rack, shaft $p^3$ carrying pinion $p^4$, and dial or index finger $p^{34}$ on the said shaft, substantially as and for the purposes specified.

528,912. VISE. FRANK A. PICKERING, Medford, Mass. Filed Mar. 23, 1892. Serial No. 426,098. (No model.)



*Claim.*—The combination in a vise of standing jaw A, having the upright portion *a*, and the horizontal flange *b* for securing it in place for use; the movable jaw B, pivoted to jaw A at *c*, the holding screw H passing through said jaws at about the center of their length, an actuating nut I, provided with lever *q*; steel jaws *m* secured to jaws A and B, and a series of semicircular seats cut in the meeting faces of said jaws both above and below screw H, to hold varying sizes of pipe, substantially as specified.

# DESIGNS.

23,755. SCARF-PIN. GEORGE F. GREENE, Providence, R. I. Filed Oct. 6, 1894. Serial No. 525,168. Term of patent 3½ years.



*Claim.*—The design for a scarf-pin herein shown and described.

23,756. SCARF-PIN. GEORGE F. GREENE, Providence, R. I. Filed Oct. 6, 1894. Serial No. 525,164. Term of patent 3½ years.



*Claim.*—The design for a scarf pin herein shown and described.

23,757. SCARF-PIN. GEORGE F. GREENE, Providence, R. I. Filed Oct. 6, 1894. Serial No. 525,166. Term of patent 3½ years.



*Claim.*—The design for a scarf-pin herein shown and described.

23,758. SCARF-PIN. GEORGE F. GREENE, Providence, R. I. Filed Oct. 6, 1894. Serial No. 525,163. Term of patent 3½ years.



*Claim.*—The design for a scarf-pin herein shown and described.

23,759. SCARF-PIN. GEORGE F. GREENE, Providence, R. I. Filed Oct. 6, 1894. Serial No. 525,165. Term of patent 3½ years.



*Claim.*—The design for a scarf-pin herein shown and described

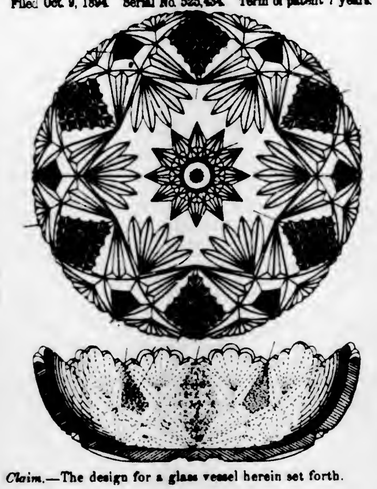
23,760. SCARF-PIN. GEORGE F. GREENE, Providence, R. I. Filed Oct. 6, 1894. Serial No. 525,167. Term of patent 3½ years.



*Claim.*—The design for a scarf pin herein shown and described.



23,761. GLASS VESSEL. THOMAS SINGLETON, Jr., New Bedford, Mass., assignor to the Pairpont Manufacturing Company, same place. Filed Oct. 9, 1894. Serial No. 525,434. Term of patent 7 years.



*Claim.*—The design for a glass vessel herein set forth.

23,762. KETTLE. SIGMUND STERNAU, New York, N. Y. Filed Oct. 6, 1894. Serial No. 525,173. Term of patent 3½ years.



*Claim.*—The design for a kettle as hereinabove shown and described.

23,763. KETTLE. SIGMUND STERNAU, New York, N. Y. Filed Oct. 6, 1894. Serial No. 525,176. Term of patent 3½ years.



*Claim.*—The design for a kettle, as hereinabove shown and described.

23,764. KETTLE-STAND. SIGMUND STERNAU, New York, N. Y. Filed Oct. 6, 1894. Serial No. 525,169. Term of patent 3½ years.



*Claim.*—The design for a kettle stand as hereinabove shown and described.

23,765. KETTLE-STAND. SIGMUND STERNAU, New York, N. Y. Filed Oct. 6, 1894. Serial No. 525,170. Term of patent 3½ years.



*Claim.*—The design for a kettle stand as hereinabove shown and described.

23,766. KETTLE-STAND. SIGMUND STERNAU, New York, N. Y. Filed Oct. 6, 1894. Serial No. 525,171. Term of patent 3½ years.



*Claim.*—The design for a kettle stand as hereinabove shown and described.

23,767. KETTLE-STAND. SIGMUND STERNAU, New York, N. Y. Filed Oct. 6, 1894. Serial No. 525,172. Term of patent 3½ years.



*Claim.*—The design for a kettle stand as hereinabove shown and described.

23,768. CHAFING-DISH. SIGMUND STERNAU, New York, N. Y. Filed Oct. 6, 1894. Serial No. 525,179. Term of patent 3½ years.



*Claim.*—The design for a chafing dish as hereinabove shown and described.

23,769. STAND FOR CHAFING-DISHES. SIGMUND STERNAU, New York, N. Y. Filed Oct. 6, 1894. Serial No. 525,177. Term of patent 3½ years.



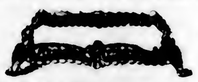
*Claim.*—The design for a stand for chafing-dishes as hereinabove shown and described.

23,770. STAND FOR CHAFING-DISHES. SIGMUND STERNAU, New York, N. Y. Filed Oct. 6, 1894. Serial No. 525,178. Term of patent 3½ years.



*Claim.*—The design for a stand for chafing dishes hereinabove shown and described.

23,771. TILE-STAND. SIGMUND STERNAU, New York, N. Y. Filed Oct. 6, 1894. Serial No. 525,180. Term of patent 3½ years.



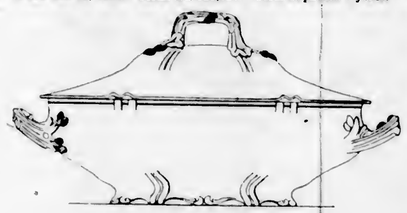
*Claim.*—The design for a tile stand as hereinabove shown and described.

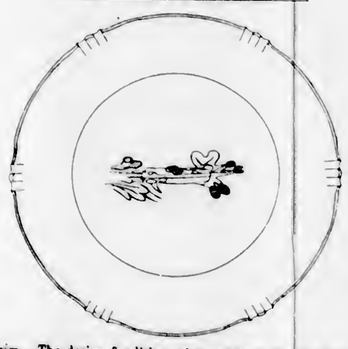
23,772. TILE. DAVID H. WATTS, Philadelphia, Pa. Filed June 29, 1893. Serial No. 479,171. Term of patent 14 years.



*Claim.*—The design for a tile as described and shown in the accompanying drawing.

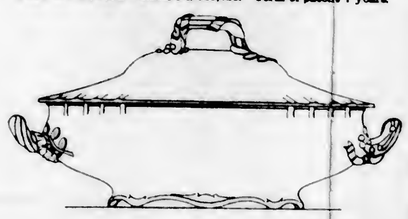
23,773. COVERED DISH. THEODORE HAVILAND, Ambazac, France. Filed Oct. 12, 1894. Serial No. 525,727. Term of patent 7 years.





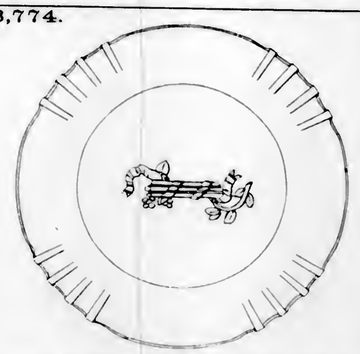
*Claim.*—The design for dishes substantially as herein shown and described.

23,774. COVERED DISH. THEODORE HAVILAND, Ambazac, France. Filed Oct. 12, 1894. Serial No. 525,728. Term of patent 7 years.



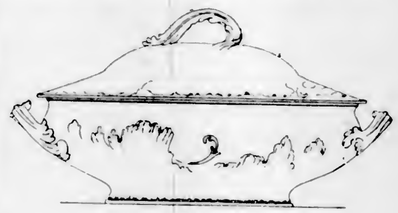
*Claim.*—The design for dishes substantially as herein shown and described.

23,774.



*Claim.*—The design for dishes substantially as herein shown and described.

23,775. COVERED DISH. THEODORE HAVILAND, Ambazac, France. Filed Oct. 12, 1894. Serial No. 525,729. Term of patent 7 years.





*Claim.*—The design for dishes substantially as herein shown and described.

23,776. GLOBE, SHADE, &c. PETER SHAW, Brooklyn, N. Y. Filed Feb. 14, 1891. Serial No. 381,523. Term of patent 7 years.



*Claim.*—The design for a globe, shade, &c., substantially as herein shown and described.



23,777. BASE FOR LAMPS. FRANZ YOKEL, Meriden, Conn., assignor to the Meriden Bronze Company, same place. Filed Oct. 9, 1894. Serial No. 525,436. Term of patent 3½ years.



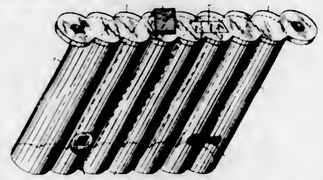
*Claim.*—The design for a base for lamps as herein described and shown.

23,778. LAMP-FOUNT HOLDER. FRANZ YOKEL, Meriden, Conn., assignor to the Meriden Bronze Company, same place. Filed Oct. 9, 1894. Serial No. 525,437. Term of patent 3½ years.



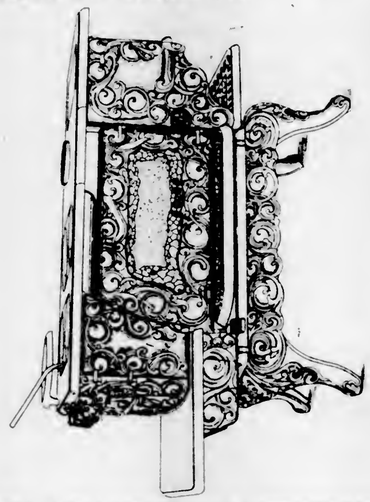
*Claim.*—The design for a lamp-fount holder as herein shown and described.

23,779. MORTISE-LOCK CASE. WILLIAM F. O'BYRNE, Orange, N. J. Filed Sept. 29, 1894. Serial No. 524,519. Term of patent 7 years.



*Claim.*—The design for a mortise-lock case herein shown and described.

23,780. STOVE. STANHOPE BOAL, Piqua, Ohio. Filed May 18, 1894. Serial No. 511,729. Term of patent 7 years.



*Claim.*—1. The design for a stove or range, substantially as herein shown and described.

2. In a stove or range the design for the leg and base frame, substantially as herein shown.

3. In a stove or range the design for the ash-pit plate substantially as herein shown.

4. In a stove or range the design for the side panel, substantially as herein shown.

5. The design for the front door frame of the stove, substantially as herein shown.

6. In a stove or range the design for the front door, substantially as herein shown.

7. In a stove or range the design for the oven door, substantially as herein shown.

8. In a stove or range the design for the reservoir plate, substantially as herein shown.

23,781. RUG. JOHN B. NEIL, New York, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 12, 1894. Serial No. 525,746. Term of patent 3½ years.



*Claim.*—The design for rugs, substantially as shown in the illustration accompanying this specification.

23,782. CARPET. ARTHUR L. HALLIDAY, New York, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 12, 1894. Serial No. 525,744. Term of patent 3½ years.



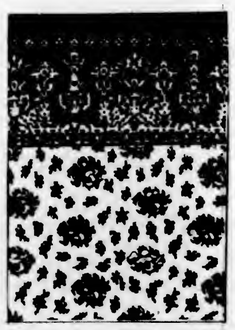
*Claim.*—The design for carpets, substantially as shown in the illustration accompanying this specification.

23,783. CARPET. JOHN B. NEIL, New York, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 12, 1894. Serial No. 525,745. Term of patent 3½ years.



*Claim.*—The design for carpets, substantially as shown in the illustration accompanying this specification.

23,784. CARPET. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 12, 1894. Serial No. 525,747. Term of patent 3½ years.



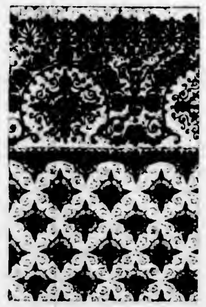
*Claim.*—The design for carpets, substantially as shown in the illustration accompanying this specification

23,785. CARPET. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., as signor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 12, 1894. Serial No. 525,748. Term of patent 3½ years.



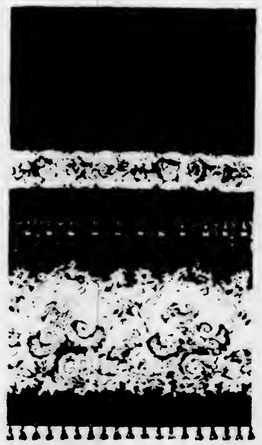
*Claim.*—The design for carpets, substantially as shown in the illustration accompanying this specification.

23,786. CARPET. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 12, 1894. Serial No. 525,750. Term of patent 3½ years.



*Claim.*—The design for carpets, substantially as shown in the illustration accompanying this specification.

23,787. WOVEN FABRIC. JULIUS G. PEGEL, Philadelphia, Pa., assignor to William T. Smith & Son, same place. Filed Oct. 8, 1894. Serial No. 525,201. Term of patent 3½ years.



*Claim.*—The design for a woven fabric, as shown in the accompanying drawing.

# TRADE-MARKS

## REGISTERED NOVEMBER 6, 1894.

25,438. BOOKS, PAMPHLETS, NEWSPAPERS, AND OTHER PUBLICATIONS. THE COLLIERY ENGINEER COMPANY, Scranton, Pa. Filed Oct. 10, 1894.




*Essential feature.*—The representation of a mail bag and the words "TAUGHT BY MAIL." Used since September 21, 1894.

25,439. NEWSPAPERS AND PERIODICALS. ORANGE JUDD COMPANY, New York, N. Y. Filed Oct. 3, 1894.




*Essential feature.*—The words "THE ORANGE JUDD FARMER." Used since September 8, 1888.

25,440. INK-RIBBONS. THORP & MARTIN COMPANY, Boston, Mass. Filed Oct. 9, 1894.



*Essential feature.*—The representation of an elephant. Used since September 27, 1894.

25,441. BOOTS AND SHOES. STEARNS SHOE CO., Boston, Mass. Filed Mar. 9, 1894.

NEVERIP

*Essential feature.*—The word "NEVERIP." Used since October, 1893.

25,442. HOSIERY. WEAR & BOOGHER DRY GOODS COMPANY, St. Louis, Mo. Filed Sept. 27, 1894.



*Essential feature.*—The word "DIXIE." Used since May 1, 1894.

25,443. RIBBONS. ABEGG & RUSCH, New York, N. Y. Filed Oct. 6, 1894.

BB

*Essential feature.*—The letters "B B." Used since January 1, 1891.

25,444. SHEETINGS. JAMES A. ROBINSON, New York, N. Y. Filed Oct. 6, 1894.

AD VALOREM

*Essential feature.*—The words "AD VALOREM." Used since July 1, 1892.

25,445. SILKS, SILK GOODS, AND RIBBONS. E. S. JAFFRAY & CO., New York, N. Y. Filed Oct. 10, 1894.

*Majestic*

*Essential feature.*—The word "MAJESTIC." Used since July 1, 1889.

25,446. CERTAIN NAMED PERSONAL FURNISHINGS AND FABRICS. PERRIN FRERES & CIE., New York, N. Y. Filed June 8, 1893.

à la Chevrette

*Essential feature.*—The words "A LA CHEVRETTE." Used since January 1st, 1892.

25,447. TAILORING WEARING-APPAREL FOR MEN AND BOYS. SCHLOSS BROS. & CO., Baltimore, Md. Filed Oct. 5, 1894.




*Essential feature.*—The words "THE BALTIMORE" displayed on the representation of a flying pennant and a view of the Battle Monument of Maryland. Used since May 1, 1894.

25,448. THREAD AND TWIST FOR EMBROIDERY, KNITTING, SEWING, AND OTHER PURPOSES. THE BRAINERD & ARMSTRONG COMPANY, New London, Conn. Filed Oct. 10, 1894.

Boston Art

*Essential feature.*—The words "BOSTON ART." Used since December 1, 1893.

25,449. THREAD AND TWIST FOR EMBROIDERY, KNITTING, SEWING, AND OTHER PURPOSES. THE BRAINERD & ARMSTRONG COMPANY, New London, Conn. Filed Oct. 10, 1894.

Honiton

*Essential feature.*—The word "HONITON." Used since February 1, 1894.

25,450. FINISHED KID. JOHN M. FENLIN, Philadelphia, Pa. Filed Oct. 4, 1894.

AJAX

*Essential feature.*—The word "AJAX." Used since June 7, 1894.

25,451. RAZORS. HERMANN BOKER & Co., New York, N. Y. Filed Oct. 11, 1894.

BICYCLE

*Essential feature.*—The word "BICYCLE." Used since August 24, 1894.

25,452. REMEDY FOR TOOTHACHE. HENRY IRVERS, Quebec, Canada. Filed Sept. 26, 1894.

QUICKCURE

*Essential feature.*—The word "QUICKCURE." Used since July 13, 1894.

25,453. NERVE TONIC, TISSUE-BUILDER, AND DYSPEPSIA SPECIFIC. BAILEY CHEMICAL CO., New York, N. Y. Filed July 12, 1894.




*Essential feature.*—The words "BAILEY'S PHOSPHO-AVENA." Used since May 1, 1894.

25,454. GERMICIDES, DEODORIZERS, AND DISINFECTANTS. CHAUNCEY PERRY, Rochester, N. Y. Filed Sept. 22, 1894.




*Essential feature.*—A picture of a winged monster bearing an archer drawing a bow, an arrow just discharged from the bow, and the accompanying words, "GILMORE'S GERMICIDE." Used since May, 1893.

25,455. CERTAIN NAMED REMEDIES. DR. KILMER & Co., Binghamton, N. Y. Filed Oct. 10, 1894.

SWAMP
ROOT

*Essential feature.*—The words "SWAMP ROOT" with the letters each on a separate panel. Used since December 26, 1881.

25,456. PILLS. DR. KILMER & Co. Binghamton, N. Y. Filed Oct. 10, 1894.

PARILLA

*Essential feature.*—The word "PARILLA" Used since January 30, 1882.

25,457. MEDICINAL AND SURGICAL PLASTERS, APPLIANCES, AND DRESSINGS. SEABURY & JOHNSON, New York, N. Y. Filed Sept 28, 1894.



*Essential feature.*—A representation of the god Mercury, having a Greek cross upon his breast as described. Used since August 1, 1885.

25,458. CASTOR-OIL AND CASTOR-OIL COMBINATIONS. MARTIN H. SMITH, New York, N. Y. Filed Oct. 4, 1894.

KASTOL

*Essential feature.*—The word "KASTOL." Used since May 1, 1894.

25,459. DENTIFRICES. WILLIAM THOMAS ARRINGTON, Memphis, Tenn. Filed Aug. 30, 1894.

DR. ARRINGTON'S
CARBOLIZED
TOOTH CREAM
FOR THE
TEETH GUMS
AND
BREATH.

*Essential feature.*—The words "DR. ARRINGTON'S CARBOLIZED TOOTH CREAM FOR THE TEETH GUMS AND BREATH," and a monogram composed of the letters "W T A." Used since May, 1892.

25,460. CERTAIN DESIGNATED MEDICINES, TOILET, AND MANICURE ARTICLES. PRENTICE & EVENSON, Janesville, Wis. Filed Jan. 25, 1893.

PANDE

*Essential feature.*—The word "PANDE." Used since 1887.

25,461. PERFUMERY. WILLIAM J. BLACKISTON, Denton, Md. Filed Sept. 29, 1894.

AFTER THE BALL

*Essential feature.*—The words "AFTER THE BALL." Used since December 1, 1893.



25,462. CARBONATED BEVERAGES, GINGER ALE, AND WEISS BEER. GEORGE SCHWEICKHART, Jr., Waukesha, Wis. Filed Oct. 12, 1894.



*Essential feature.*—A representation of the mythological figure of Pegasus or the winged horse, above a fountain or spring of water. Used since December 1, 1893.

25,463. CIGARETTES. LESLIE & WELSH, Buffalo, N. Y. Filed Oct. 9, 1894.




*Essential feature.*—The representation of a coffin lid and the words "COFFIN NAIL." Used since September, 1894.

25,464. SMOKING-TOBACCO AND CIGARETTES. ENGLISH, BELCHER & Co., Martinsville, Va. Filed Dec. 12, 1893.

DENTAL

*Essential feature.*—The word "DENTAL." Used since September 12, 1893.

25,465. CIGARS, ALL-TOBACCO CIGARETTES, AND SMOKING, CHEWING, AND LEAF-TOBACCO. S. HERSHEIM BROS. & Co., New Orleans, La. Filed Oct. 10, 1894.

SEARCH LIGHT

*Essential feature.*—The words "SEARCH LIGHT." Used since November 1, 1893.

25,466. CIGARS AND TOBACCO. SUN SEGAR CO., St. Louis, Mo. Filed Sept. 22, 1894.




*Essential feature.*—A representation of the sun, with clouds in the foreground, a suitable space being left for the insertion of the firm or other name. Used since June 10, 1894.

25,467. DRIED CURRANTS. STELLE & DORGELOH, New York, N. Y. Filed Sept. 26, 1894.



*Essential feature.*—The representation of a Christmas tree having a cake and plum pudding at its base. Used since September 1, 1894.

25,468. TEA. MARTIN GILLET & Co., Baltimore, Md. Filed Oct. 2, 1894.



*Essential feature.*—The words "SILVER MOON." Used since January 31, 1894.

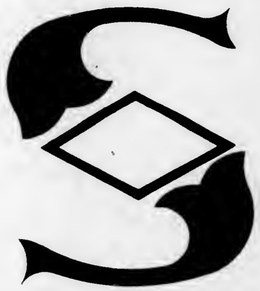
25,469. ROLLED OATS. WILLIAM H. FRUEN, Minneapolis, Minn. Filed June 18, 1894.

PETTIJOHN'S
ROLLED OATS



*Essential feature.*—The words "PETTIJOHN'S ROLLED OATS" with the picture of a Scotch Highland lassie. Used since May 31, 1894.

25,470. BUTTER. ELGIN CREAMERY COMPANY, Chicago and Elgin, Ill. Filed June 12, 1894.



*Essential feature.*—A capital letter "S" having a broken away center in which is a lozenge shaped figure. Used since April, 1891.

25,471. REFINED AND LEAF LARD. GEORGE C. NAPHEYS & SON, Philadelphia, Pa. Filed Apr. 4, 1894.

JERSEY



*Essential feature.*—The word "JERSEY" and the representation of hogs in the act of approaching a pen. Used since January 27, 1893

25,472. BEEF, MUTTON, VEAL, PORK, HAM, SAUSAGE, AND CURED MEATS. SHIPTON GREEN, New York, N. Y. Filed Oct. 10, 1894.



*Essential feature.*—A picture representing a herd of cattle together with a panel having produced thereon the representation of a bullock's head. Used since May 1, 1893

25,473. CANNED MEATS. SHIPTON GREEN, New York, N. Y. Filed Oct. 8, 1894.



*Essential feature.*—A perspective view of the buildings and grounds of the World's Columbian Exposition at Chicago, 1893. Used since September 3, 1893.

25,474. CANNED MEATS. SHIPTON GREEN, New York, N. Y. Filed Oct. 8, 1894.

Exposição

*Essential feature.*—The word "EXPOSIÇÃO." Used since September 3, 1894.

25,475. CANNED GOODS. BRYAN, MINER & READ, New Haven, Conn. Filed Oct. 18, 1894.

NUTMEG

*Essential feature.*—The word "NUTMEG" in a horizontal line Used since August 1, 1894.

25,476. STUFFING FOR FOOD. MASON & CO., Taunton, Mass. Filed Sept. 29, 1894.



*Essential feature.*—The representation of a boy carrying a waiter containing a fowl. Used since December 1, 1892.

25,477. NAILS. CHARLES F. BAKER & CO., Boston, Mass. Filed Oct. 8, 1894.




*Essential feature.*—The representation of two nails having their points interlocked and the words "HOLD FAST." Used since July 1, 1894.

25,478. MINERS' LAMPS. WILLIAM P. MCMASTERS, Munhall, Pa. Filed Sept. 24, 1894.




*Essential feature.*—The outline of a three-leaf clover with the word "MCMASTERS" within said outline. Used since July 1, 1894.

25,479. CRACKER-MACHINES. THE NEW YORK BISCUIT COMPANY, New York, N. Y. Filed Oct. 1, 1894.




*Essential feature.*—The word "EXCELSIOR." Used since 1874.

25,480. CYCLES, TENNIS-RACKETS, BALLS, AND BATS. OVERMAN WHEEL COMPANY, Chicopee Falls, Mass. Filed Apr. 23, 1894.



*Essential feature.*—The representation of a bicycle wheel, a pair of wings emanating therefrom, and the letters "W" and "C," collocated with the wheel and wings in monogram effect. Used since February, 1883.

25,481. BICYCLES AND BICYCLE PARTS. ACME MANUFACTURING COMPANY, Reading, Pa. Filed Oct. 6, 1894.

STORMER

*Essential feature.*—The word "STORMER." Used since February, 1893.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court—Central District of Ohio, Eastern Division.

THE PITTSBURGH REDUCTION COMPANY *v.* THE COWLES ELECTRIC SMELTING AND ALUMINUM COMPANY.

*Decided January 20, 1893.*

1. HALL—REDUCING ALUMINIUM BY ELECTROLYSIS—VALID.
Patent No. 400,766, granted April 2, 1889, to Charles M. Hall, for an improved process of reducing aluminium by electrolysis, which consists in dissolving alumina in a fused bath composed of the fluorides of aluminium and a metal more electropositive than aluminium, and then passing an electric current through the fused mass, examined in view of the art and *Held* to be not anticipated, and valid.

2. SAME—PROCESS—IMPROVEMENTS SUGGESTED BY ITS COMMERCIAL WORKING.
The means disclosed in Hall's patent for working his process included the fusion of the bath by external heat before the current of electricity was passed through it; but the description mentioned that in the commercial working of the process it would probably be found that the resistance of the components of the bath to the passage of a current sufficiently strong to pass through the bath would produce heat enough to maintain the fusion without the aid of external heat. *Held* that, even though the omission of the external heat might be a commercial improvement, nevertheless it was within the scope of the patent and the patentee entitled to the exclusive use of his process, whatever were the subsequent steps or means for working it.

3. SAME—THE PATENT NOT LIMITED TO EXTERNAL HEAT.
The fact that the specification describes an apparatus for fusing the bath by external heat and that the claims recite the dissolution of the alumina in the fused bath, "and then passing an electric current through the fused mass," does not restrict the patentee to external heat, for the claims specify nothing as to the heat and the patent states that the apparatus therein disclosed forms no part of the invention. (*Tilghman* v. *Proctor*, 19 O. G. 859; 102 U. S., 707.)

4. SAME—RECITAL OF BUT FAILURE TO CLAIM AN ELEMENT IN THE APPLICATION AS FIRST FILED—NO ABANDONMENT.
Before applying for the patent Hall had experimented with a carbon anode; but in his application as first filed he recited that there were certain disadvantages in its use, and it was not claimed by him until after priority of invention of the process had been awarded him in an interference with an application in which the carbon anode had been included. *Held* that this was not an abandonment of the carbon anode to the public.

5. SAME—CARBONACEOUS ANODE—CONSTRUCTION OF CLAIM 2.
The words "carbonaceous anode" in claim 2 cover both anodes made partly of and wholly of carbon.

*Mr. Thomas W. Bakewell, Mr. W. Bakewell,* and *Mr. George H. Christy* for the complainant.

*Mr. L. L. Leggett* and *Mr. Henry S. Sherman* for the defendant.

Before TAFT and RICKS, Judges.

TAFT, *J.:*

This is a suit in equity by the Pittsburgh Reduction Company against the Cowles Electric Smelting and Aluminum Company to restrain the infringement of a patent process for reducing aluminium by electrolysis (Letters Patent No. 400,766) owned by the complainant under an assignment from the original patentee, Charles M. Hall. The patent was applied for July 9, 1886, and was granted April 2, 1889.

The defenses to the suit are, first, that the patent is invalid for want of novelty, and, second, that the defendant does not infringe.

Electrolysis is a process for separating a chemical compound into its elements by passing through it an electric current. The current is effective for this purpose only when the compound is reduced to a liquid state, either by solution or fusion. The compound which is decomposed by the current is called the "electrolyte."

Aluminum is a metal which was first isolated by Wohler in 1827. There is great difficulty in obtaining the pure metal from its compounds because of the tenacity with which it unites with other substances. The compounds of aluminum are very abundant in nature. The most common, perhaps, is the oxide of aluminum, called "alumina," one molecule of which is composed of three atoms of oxygen and two atoms of aluminum. Alumina is insoluble in water and practically infusible.

Fluorine unites with the metals to form fluorides. The fluoride of sodium and the fluoride of aluminum united form what is known as the "double" fluoride of aluminum and sodium. There are several minerals found in nature which are double fluorides of aluminum and sodium, of which cryolite is much more common than the others and is found in large quantities in Greenland. Its uses are so extensive that it has become a well-known article of commerce.

More than fifty metals are known to chemists. When one of these is united with non-metallic substances and the compound is reduced to a liquid state by solution or fusion and subjected to an electric current which decomposes it, the non-metallic element of the compound will be drawn by the current to that point in the bath where the current enters it from the positive pole, called the "anode," and the metal will move in the direction of the point where the current leaves the bath for the negative pole, called the "cathode." Metals differ, however, in the ease with which the current can draw them to the cathode, and when

one is more sluggish than another in yielding to this influence the one is said to be more electropositive than another. Scientists have arranged all known metals accordingly.

The only metals more electropositive than aluminium are magnesium, calcium, strontium, barium, lithium, sodium, potassium, rubidium, and caesium. All other metals yield more readily to the current. When several compounds in solution or fusion are electrolyzed, the current will attack and decompose that compound whose parts are least firmly united, or, as the phrase is, which is least stable. As might be supposed from the foregoing, the more electropositive a metal is the more stable its compounds are likely to be. Alumina is so common in nature that every one, in a desire to get pure aluminium, would naturally turn to that as one of the simplest of its compounds; but the fact that the oxygen has proved to be so firmly united to aluminium as to resist the action of the highest heat has been very discouraging to chemists. Hall, the original patentee of the patent in suit, was a resident of Oberlin, Ohio, and a graduate of the college of that place. He had a strong taste for chemistry, and after leaving college in 1885 gave his attention, among other things, to the aluminum problem, which had baffled so many before him. He conceived the idea of obtaining aluminium from alumina by electrolysis, and concluded that, if he could find a bath made up of compounds more electrically stable than alumina which would freely dissolve alumina, the application of the current to the mixture would precipitate the aluminium upon the cathode and would free the oxygen at the anode. He discovered that the fluoride of aluminum, when united with the fluoride of any metal more electropositive than aluminium to form a double fluoride, would, when heated to fusion, dissolve alumina as freely as sugar will dissolve in water, and that an electric current passed through the fused mixture would deposit pure aluminium at the poles. Hall took out one patent for the process in which he used a double fluoride of sodium and aluminum, and in this patent he also claimed the general process broadly, as we have stated it above. This is the patent in suit. He also took out other patents, as permitted by the practice of the Patent Office, covering the process when the fluorides or other metals more electropositive than aluminum are used.

The two claims of the patent in suit which are here involved are as follows:

1. As an improvement in the art of manufacturing aluminium, the herein-described process, which consists in dissolving alumina in a fused bath composed of the fluorides of aluminum and a metal more electro-positive than aluminum, and then passing an electric current through the fused mass, substantially as set forth.

2. As an improvement in the art of manufacturing aluminum, the herein-described process, which consists in dissolving alumina in a fused bath composed of the fluorides of aluminum and sodium, and then passing an electric current, by means of a carbonaceous anode, through the fused mass, substantially as set forth.

The defendant is said to infringe both of these claims. The validity of the first, so far as it covers defendant's process, and of the second is attacked by the defendant.

We shall first consider the validity of the claims, and in that connection must refer to the history of the art.

It is said on behalf of the defendant that as far back as 1859 De Ville, a famous French chemist, published to the world the process which Hall has included in his patent. De Ville gave a great deal of time to aluminum and its production from its compounds. He was the discoverer of the purely chemical process by which, without the aid of electricity, pure aluminum has been manufactured since his day down to the present time. He also gave some attention to the manufacture of aluminum by the process of electrolysis. In the publication by De Ville on aluminum, its properties, its manufacture, and its uses—in the year 1859—we find this statement:

> Aluminum by the current: The same bath of the double chloride of aluminum and sodium can be used for coating with aluminum, especially copper, on which Captain Caron and myself have worked. In order to succeed well, one must employ a bath of the double chloride, which has been carefully purified from all metallic substances by the action of the current itself. When the aluminum which deposits at the negative pole appears pure, one attaches to this pole the piece of copper to be aluminized, and to the negative pole a bar of aluminum.
>
> (Foot-note: A compact mixture of carbon and alumina, which is transferred into chloride of aluminum gradually and in measure as the deposit of aluminum takes place, keeps the composition of the bath constant for an indefinite period of time.)
>
> The temperature must be kept somewhat below the melting point of aluminum. The deposit takes place with great facility. It is very adhering; but it is difficult to prevent the metal from getting impregnated with double chloride, which attacks it the moment one washes the piece, while, with some precaution, one succeeds. The washing of the piece must be done with much water and for a long time. Cryolite, in the same way, can be used in this operation; but it must be made more fusible by mixing it with a little double chloride of sodium and aluminum and with potassium chloride.

The process here described is not for producing pure aluminum, but for plating aluminum on copper. It will be seen that the bath which is first and chiefly recommended by De Ville is not a fluoride of aluminum and sodium, but a double chloride of aluminum and sodium—*i. e.*, a double compound of chlorine with each of these metals. Alumina will not dissolve in a double chloride of aluminum and sodium heated to a fused state. The operation of the process first described by De Ville is this: The double chloride of aluminum and sodium is heated to a state of fusion, the piece of copper is made the cathode, and a bar of aluminum is made the anode. When the current is passed through the bath, the chloride of aluminum, being the less stable compound, is dissolved into its elements. The aluminum is deposited on the copper, and the chlorine gas is freed at the positive pole, where it attacks the anode of aluminum, and its atoms unite chemically with atoms of the aluminum to re-form again molecules of aluminum chloride, which, when formed, take their place in the bath. The bath, which was partially destroyed by the disruption of the chloride of aluminum, is thus restored to be again electrolyzed. Instead of the anode of aluminum the foot-note suggests that the compact mixture of carbon and alumina may be substituted for the bar of aluminum as an anode, and that the escaping chlorine gas, being presented to the compact mixture of carbon and alumina, would unite with the aluminum of the alumina, while the oxygen of the alumina would unite with the carbon and pass off as carbonic oxide gas. The chlorine gas and aluminum would make chloride of aluminum, and, being reintroduced into the bath, would keep it constant.





Finally, it will be observed that De Ville suggests that, instead of the double chlorides of aluminum and sodium, cryolite may be used, but that it must be made more fusible by mixing with it a little double chloride of sodium and aluminum and with potassium chloride; and it is the proposition of De Ville to use cryolite in this way as the main part of the bath and an anode of carbon and alumina in accordance with the foot-note, which the defendant's counsel and experts contend is substantially the same process as that on which Hall claims a patent.

Cryolite, as we have seen, is a double fluoride of aluminum and sodium. The theory of the process of De Ville is that the electric current disrupts the fluoride of aluminum, which is a less stable compound than the fluoride of sodium. Fluorine gas is liberated at the anode, and, being presented to the mixture of carbon and alumina, unites with the aluminum and leaves the oxygen with the carbon to make carbonic-oxide gas. The fluoride of aluminum thus constituted at the anode renews the bath and is supposed to keep it constant, while the aluminum of the original fluoride of aluminum which was in the bath is deposited at the negative pole.

We are very clear in our opinion that this is not an anticipation of Hall's patent. The primary and most important step of Hall's patent is the dissolving of the alumina in the fused bath of the double fluoride of aluminum and sodium. This happens before any electrolysis occurs at all. When the electric current is applied it disrupts the alumina, sending the aluminum to the cathode and the oxygen to the anode, where it unites with the carbon anode and becomes carbonic-oxide gas. The bath material in which the alumina was dissolved—that is, the double fluoride of aluminum and sodium—is not affected by the electric current, and the process is made continuous by the simple addition of alumina to the bath. In the De Ville process, however, aluminium is not dissolved in the bath. The fused mass subjected to the current is composed of a double fluoride of aluminium and sodium, with no alumina in it. No effect comes from the presence of the alumina in the anode until after the electric current is passed through and the fluoride of aluminium has been disrupted and fluorine gas has been produced at the anode. Then the gas unites with the aluminium of the alumina and restores the bath, in a manner, to its former state, to be again disrupted by the application of the current. In the one case there is a simple solution of the alumina in a bath and its disruption by the current, the bath remaining constant, while in the De Ville process the bath itself is disrupted and restored again by the union of one of the disrupted elements with an element of the alumina in the compact anode.

In the Hall process there is simply solution of the alumina and electrolysis. In the De Ville process there was electrolysis followed by what is called an electrochemical solution of the alumina.

Defendant's counsel and experts, in their effort to make the two processes the same, rely upon the supposition that when the compact anode of carbon and alumina was inserted by De Ville into the bath of cryolite some of the alumina was necessarily dissolved in the cryolite, and so the current electrolyzed that alumina, as in the Hall process. In the first place, the experiments made on behalf of the complainant demonstrate that a compact mixture of carbon and alumina (which can only be made by the use of some binding material) may be kept in a bath of cryolite for many hours without dissolving the alumina at all. Some counter experiments by defendant are by no means so satisfactory, because the results may be attributed to the presence of other causes than the solution of the compact anode.

But suppose it to be a fact that in De Ville's process alumina was dissolved in the bath from the anode, and that thereupon it was electrolyzed, as in the Hall process. It was a mere accident, of which De Ville made no note, and which, therefore, we may reasonably infer he did not observe. Accidents of this character cannot be relied on as anticipations of a patented process (*Tilghman* v. *Proctor*, 19 O. G. 859; 102 U. S., 707, 711) when the operator does not recognize the means by which the accidental result is accomplished and does not thereafter consciously and purposely adopt such means as a process for reaching the result. De Ville did not intend that the alumina should be dissolved in the bath. If he did, why did he unite it with carbon by means of pressure and a binding material? If he had intended to dissolve the alumina, he could not have intended anything which would have so interfered with his purpose. Just as Professor Langley says, such a course would have been as reasonable as it would be for a man wishing to dissolve a lump of sugar in his coffee to varnish it or grease it. De Ville did not intend to dissolve the alumina in the bath, first, because, as we shall see hereafter, he had no knowledge that it would dissolve therein, and, second, because until the fluoride of aluminum had been decomposed in the bath by the current he did not need anything with which to restore that fluoride to the bath. He felt that it was necessary to have the alumina in a solid form in close connection with the carbon, because without the strong attraction that the carbon would have for the oxygen of the alumina the fluorine gas could not get at the aluminum of the oxide.

De Ville was seeking to electrolyze the fluoride of aluminum, while Hall was seeking to electrolyze alumina. It was a condition precedent to Hall's success that his alumina should be in a liquid state. As we have seen, it was essential to De Ville's process that this alumina should be where it was—*i. e.*, mixed in solid form with the carbon.

This brings us to a theory of the Hall process which has been advanced by one or more of the defendant's experts to show that the Hall and De Ville processes are alike. Hall says in effect in the specifications for his patent that the electrolyte in his process is the alumina held in solution and that in the decomposition the aluminum of the alumina goes to the cathode and the oxygen of the alumina goes to the anode, the fused double fluoride constituting the bath remaining unaffected. The theory—or, we would better say, the alternative theory—of the defendant's experts (for they venture more than one) is that the fluoride of aluminum is the electrolyte, and that when it is de-

composed the fluorine attacks the dissolved alumina, drives off the oxygen to the anode, and unites with the aluminum remaining, thus restoring or regenerating the bath. This theory is advanced for the purpose of showing that the Hall bath does not remain constant as he claims, but has to be regenerated, as in the De Ville process, the only difference being that in the former the alumina is held in the bath in solution, while in the latter it is held in a compact mixture of carbon and alumina. If this were the only difference between the two processes, we should hold that the Hall process was a patentable discovery, because the regeneration of the bath from the dissolved alumina, if such were the chemical action which took place, would be a successful process, because regeneration is so complete as not even to betray itself, while in the practical operation of the De Ville process the regeneration of the bath is very incomplete. The fluorine gas escapes into the air and is so corrosive as to injure both workmen and apparatus, and the process is a failure for commercial purposes. The compact mixture of carbon and alumina is hard to make and obstructs regeneration, and the substitution for it of dissolved alumina, even if their functions in the prócess are exactly the same, is the step from failure to success.

But there is no satisfactory evidence at all that the dissolved alumina is not the electrolyte, and the burden is on the defendant to show it. (*Coffin* v. *Ogden*, 5 O. G., 270; 18 Wall., 120, 124.) Professor Chandler, of the Columbia School of Mines, called as an expert witness for the complainant, demonstrates, so far as chemical actions and reactions are capable of demonstration, that it is the alumina which is decomposed by the current. He says that the alumina dissolves in the fused bath of cryolite as sugar does in water, quietly, without any of the usual evidence of chemical action, such as the production of heat or the reduction of fusibility or thickening of the liquid. This seems to show that the alumina in solution remains chemically unchanged. He refers to the fact, admitted on all hands, that when the current is applied aluminum goes to the cathode and oxygen to the anode without any indication of any other product of decomposition. This result is fully satisfied by the explanation that the alumina alone is decomposed. He refers to another fact, also admitted, that as soon as the alumina in the bath is exhausted the resistance to the current and the voltage to the current to overcome it become doubled, and are not reduced until alumina is added to the bath. This would seem to show that the electrolyte has been changed by the exhaustion of the alumina, and therefore that, when present, alumina is the electrolyte.

The professor further shows from the observations of the most reliable chemists that the heats of formation of the three compounds in the bath are such that it would require four and eight-tenths volts to decompose sodium fluoride, four volts to decompose aluminum fluoride, and two and eight-tenths volts to decompose alumina, which proves that the alumina would first yield to the action of the current and in the presence of the other two compounds would be the electrolyte.

More than this, Professor Chandler points out a fatal contradiction in the theory that the fluoride of aluminum is the electrolyte in the Hall bath. That theory assumes, on the one hand, that the dissolved alumina will be decomposed by the fluoride of aluminum, and, on the other, that the alumina is a more stable compound than the fluoride when electrolysis ensues, so that the fluoride and not the alumina becomes the electrolyte. Finally, the theory is shown to be unfounded by the total absence at the anode of fluorine gas, which would certainly be there present in perceptible quantities if fluoride of aluminum is the electrolyte and fluorine is released by the current.

No facts of any kind are advanced by the defendant's experts to meet this demonstration of Professor Chandler, which is fully concurred in by Professor Langley and Doctor Raymond. The arguments, such as they are, depend on analogies drawn from the electrolysis of entirely different compounds, as, for instance, water. With the burden on the defendant on this issue, we are very clear that it has not been sustained. An alternative theory advanced by some of defendant's experts is that when alumina is dissolved in the bath a compound of oxygen, fluorine, and aluminum, called oxyfluoride of aluminum, is formed, which is the electrolyte. It is sufficient to say of this theory that no chemist, and certainly none of defendant's experts, ever isolated such a compound, and no one knows that it exists. The reason for its theoretical existence is that such a compound is formed with the chlorides. Analogies between the fluorides and the chlorides constantly fail. In this very case we find that the former will dissolve alumina and the latter will not. The oxyfluoride of aluminum theory is mere speculation and not worthy of consideration in a case involving property rights.

The defendant company instituted a number of experiments to show that the De Ville process would work as well and in much the same way as the Hall process. The evidence concerning these experiments, although it all comes from the defendant's witnesses, leaves no doubt in our minds that they were not conducted in a fair spirit, but rather with an intense desire to force a demonstration of the identity of the De Ville and the Hall processes. Nothing else can explain the palpable disobedience to De Ville's express directions for carrying out his process. According to De Ville's directions the bath must not be heated up to the melting-point of aluminum. This is evident, because his main process contemplates an aluminum anode, and heat beyond its melting-point would destroy it as an anode, and it is for this reason that he directs that the fusibility of cryolite be reduced by mixing it with chlorides. In the experiments of the defendant the bath was heated far beyond the melting-point of aluminum. It was so hot that the carbon of the carbon-alumina anode, a large part of which was not sunk in the bath, but was exposed to the air, united with the oxygen of the air and was burned out. This left on the exterior of the anode nothing but a ring of pure alumina, which, dropping into the bath, was of course dissolved, as in the Hall process, and from it aluminum was deposited at the cathode. Then, too, stubs of the partly-used carbon-alumina anodes were ground up and thrown into the





bath of cryolite, and of course the particles of alumina separated by the grinding process from the carbon became dissolved in the bath, and the Hall process was again reproduced. De Ville did not contemplate the presence of alumina in the bath except in a compact mixture with carbon, and yet the experiments of defendant presented alumina to the bath wholly free from carbon. Even with those approaches to the Hall process the cost of producing the aluminum which was produced exceeded that of the Hall process some sixfold. Nothing could more clearly demonstrate the difference between the De Ville and the Hall processes.

We have considered the Hall process as a whole, and thus compared it with the De Ville bath-regenerating process. A comparison of his process with De Ville's and the difference would not be complete, however, without some reference to Hall's claim that he was the first discoverer of the fact that alumina would freely dissolve in the fused double fluoride of aluminum and sodium. The fact is that such a bath will dissolve from ten to twenty-five per cent. of its weight as completely as water will sugar. Defendant claims that this was well known in the art long before Hall's application. The first publication relied on to establish the claim is found in one of De Ville's works, as follows:

> Cryolite is a double fluoride of aluminium and sodium which one may produce artificially or imitate by mixing hydrofluoric acid in excess in pure and calcined alumina and carbonate of sodium in quantities such that the sodium and aluminium will be present in the proportions in which they exist in cryolite. After drying and fusing the mixture, one has a limpid and homogeneous substance which possesses all the exterior characteristics of fused cryolite. I have not yet made an analysis of it, but the weight of the substance produced is such that one must suppose that the alumina and soda have lost all their oxygen by transformation into fluoride. This cryolite, like the natural cryolite, gives aluminium when reduced by sodium. It also *yields aluminium* under the influence of an electric current, which a mixture of alumina and fluoride of sodium fused together will not do. When this experiment is made, one perceives that the alumina dissolves in the fluoride, but in small quantity, and remains in the condition of alumina because an electric current which passes through the well-fused substance yields sodium and fluorine. These experiments, which succeed very well when one employs a mixture of fluoride of sodium and fluoride of potassium, proves further that alumina at red heat is decomposed neither by sodium nor by potassium.

There is no statement here at all that cryolite will dissolve alumina. The words "when this experiment is made," etc., clearly refer to the experiment last spoken of—that is, to passing an electric current through a mixture of alumina and fluoride of sodium fused together. In such an experiment De Ville says that the alumina dissolves in the fluoride—*i. e.*, the fluoride of sodium—in small quantity. There was no cryolite in this experiment.

All the other publications relied on relate to a feature of the purely chemical process which De Ville discovered for the reduction of pure aluminum by the use of sodium. In that process the aluminum appears in tiny granules or globules of the pure metal, which De Ville found much difficulty in running together to make a button. He attributed this difficulty to the presence of a thin film of alumina surrounding each globule, formed by a union of the aluminum with the oxygen of the moisture developed in the experiment. He found that this film could be removed by washing the globules with fluoride of sodium. De Ville says:

> The facility with which aluminum gathers together in the fluorides is due, without doubt, to the property which they possess of dissolving the alumina which the moisture adhering to the chloride of aluminum deposits on the surface of the globules on the instant of their formation, and which the sodium is unable to reduce.

De Ville does not here refer to the power which double fluorides have of dissolving alumina, but to the power which the fluorides singly have of doing so, for, as we shall see from a subsequent publication, he used in his experiments the fluoride of sodium. Speaking of the same process, Charles and Alexander Tissier, in a work on aluminum, say:

> This salt (*i. e.*, fluor-spar) is without action on aluminum, of which it constitutes one of the best fluxes, especially so because of the property which it has of dissolving the alumina with which the metal may be contaminated, and thus facilitating the reunion of the metallic particles.

In speaking of the chloride of sodium the same authors say:

> This is the salt which we employ habitually in recasting aluminum. However, it does not possess, like the fluoride, the property of dissolving the alumina.

The fluoride here referred to is, of course, the fluoride of sodium. Again the same authors say:

> Such was the state of aluminum manufacture when toward the close of 1855 De Ville, surprised by the facility with which the aluminum gathered together when it was reduced from its fluoride, instead of reducing it from its chloride conceived the idea of trying how the fluoride would act under these circumstances. He perceived that the success of the operation was due to the fact that the alumina interposed between the small globules (that is, the small globules of metallic aluminum) was dissolved by the fluoride of sodium which was formed, and thus imparted to the metallic particles a much greater facility of reunion.

Referring to the same operation, Pelouze and Fremy, in a work published in 1865, say:

> It is probable that the salty, pasty state of this slag (*i. e.*, the film about the globules) is due to the alumina which the fluorides dissolve well, but thereby lose their fluidity. This slag is composed principally of common salt and fluoride of aluminum in the following proportions: common salt, sixty parts; fluoride of aluminum, forty parts. When the slag is washed the salt is dissolved, and there is left fluoride of aluminum and a little cryolite and alumina. This is the alumina which has been dissolved or retained by the fluoride bath.

Again, in a German work by Hoffman, published in 1875, there is this reference to De Ville's process of making aluminum by his purely chemical process:

> Instead of the pure chloride of aluminum, De Ville soon after employed the double fluoride of aluminum and sodium, which he reduced in a reverberatory furnace with sodium. However, the chloride of aluminum and its double salt eagerly attract moisture, and then yield on heating hydrochloric acid and alumina, (aluminum oxide.) This last coats over the separately reduced globules of aluminum with a thin skin of oxide which makes it difficult to get the globules to unite in a mass. This oxide, as Rosseau and Morin found, is dissolved by fluorides. For this reason fluor-spar, or, as Pelouze and Fremy recommended, cryolite is added to the double salt.

Payen, another chemist, in a work published in 1878, refers to the same process and says:

> Cryolite may always be used with advantage in the place of fluor-spar. It acts both as a solvent for alumina, like fluor-spar, and also increases the yield by furnishing more aluminum.

We have given all the references relied on by defendant. It is perfectly apparent to us that it was only known that cryolite would wash off the film of what was supposed to be alumina from the tiny globules of aluminum in the De Ville chemical process exactly as fluoride of sodium or fluoride of calcium would, and that cryolite was proposed merely as a substitute for those compounds in this process; but fluoride of calcium will dissolve only one per cent. of its own weight in alumina, and fluoride of sodium even less. This does not show that any chemist knew, until Hall discovered it, that cryolite would dissolve alumina as water does sugar. Indeed, it will be noticed that Pelouze and Fremy, who recommended cryolite as a substitute for fluor-spar in washing off the alumina

film, say that by such dissolving the cryolite will lose its fluidity. Considering the slight amount of alumina to be washed off, this would show conclusively that they did not know or realize that cryolite would freely dissolve alumina and not lose its fluidity at all. It will not do to say that the difference is only one of degree. If cryolite only dissolved one per cent. of its weight of alumina, Hall's process would never have been heard of. The difference between what Hall discovered and what was known before him in this regard is the difference between complete knowledge on a subject and so little as to be wholly useless and not to suggest further inquiry. It is impossible, if De Ville had any knowledge that alumina could be dissolved in cryolite, as Hall found it, that he should not have made a note of it, for all the experts agree that he observed most carefully and noted exactly all that he observed.

Another claim in this connection perhaps deserves some notice. In several patents which were taken out in England for the making of aluminum by what is the De Ville process without any variation the anode, made of a compact mixture of carbon and alumina, is referred to as a "soluble" anode. This is said to show that the patentees knew that alumina would dissolve in the cryolite bath. The expression is used merely to indicate the action of the fluorine gas, released at the anode by the current, in uniting with the aluminum of the alumina in the anode and regenerating the bath, which of course destroys the anode. It is an electrochemical solution of the anode and wholly different from a free solution of alumina in the bath without any aid from electricity. That the term "soluble" has no other meaning in this connection is evident, because an anode of pure aluminum is also called "soluble."

We have read with care every part of this voluminous record of over fifteen hundred pages, and, while we are not chemists, we have obtained a sufficient understanding of the principles applied in the Hall and De Ville processes to be entirely confident that they are wholly different and that no skilled chemist and electrician could have developed the Hall process from the De Ville process without a real discovery.

The Bell patent of 1861, the Johnson provisional specifications of 1879, the Johnson specifications of 1883, and the Graetzel patent of 1884, which are all recorded in the English Patent Office and re produced here by the defendant and relied on as anticipations of Hall's patent, are mere reproductions of the De Ville bath-regenerating process, with various attempts to avoid the difficulties which the process presents in its practical operation. The Graetzel patent, the latest of them, was a failure. This is admitted by the patentee himself, who was a witness in the case. The Johnson specifications were never even proceeded with to the procuring of a patent, and the Bell patent has never been used at all to make aluminum commercially. It is said that one reason why these spectrolytic processes, including De Ville's, were not brought into actual use was that until within a very few years there were no dynamos capable of furnishing sufficient electric volume and force to make them practical for commercial purposes.

That the improvements in the machines for producing electricity have greatly facilitated the use of electrolysis as an agent in commercial processes is not to be denied; but the failure of the De Ville process for making aluminum by electrolysis finds a far better reason in the inherent difficulties of the process itself than in the mere expense of electricity. If the De Ville process is operative with the present modes of producing electricity, why does not the defendant adopt it? It is free to any one. The various futile attempts to relieve the De Ville process of its defects are strong proof that it was and is a failure without regard to the development in the making of electricity.

There are other patents introduced to show anticipation than these which involve the De Ville process; but of these there is only one which, it is seriously contended, discloses the Hall process. This is a French patent of Fuerst, dated August 8, 1884. In this patent the patentee says:

> The process of which I claim the industrial property consists in making the electrolysis of alkaline aluminates, or alkaline earthy aluminates, in the condition of solution or of fusion. For this I take an alkaline aluminate or earthy alkaline aluminate—that is to say, one of the aluminates of potassium, of sodium, or of barium, etc. Into this body, in solution or fusion, according to the circumstances, I introduce the two poles of an electric current of suitable tension. There is nothing further to do than to receive the aluminum upon the cathodes employed, (negative poles,) where I collect it in order to melt or utilize it alone or in different alloys for all the industrial uses to which it can lend itself. As to the anodes, (positive poles,) these anodes can be, according to my desire, soluble or insoluble, and I reserve to myself the industrial property of each of these two cases. While I employ anodes which are insoluble, or are considered such industrially, I reserve to myself to maintain a constant composition in these electrolytic baths by adding to them, as is needed, oxide of aluminum.
>
> The electrolytic decomposition produced by the electric current in an alkaline aluminate, or in an alkaline earthy aluminate, can also be produced equally well whether this salt be in a state of purity, or whether several aluminates be mixed together, or whether they be mixed with other salts or foreign materials giving rise to double salts or any secondary combinations whatever; provided, let it be understood, that these salts or foreign materials, whatever they may be, will not produce decomposition of the aluminates employed. It is thus that I reserve to myself to introduce into these baths salts of ammonia, alkaline sulphites, alkaline phosphates, alkaline cyanides, alkaline chlorides, etc., the presence of which seems to have the power of improving the practice of this electrolysis.

Later on Fuerst deposited an addition to his patent, in which he says:

> In this certificate of addition I claim as my industrial property my process for the industrial production of aluminum by electrolysis of alkaline aluminates or alkaline earthy aluminates in solution or igneous fusion. And by alkaline aluminate I mean every compound into which alumina or alkaline base enter, even if there should enter into that compound one or more of the following bodies, which I shall call useful or indifferent auxiliary bodies: hydrocyanic acid, cyanides, cyanates, phosphoric acid, (pyro and meta,) boric acid, silicic acid, hydrofluoric acid, in the state of acids or salts.
>
> For me there is aluminate of alkali as soon as there is in a body alumina and an alkaline base, even in the presence of the auxiliary bodies above mentioned, whatever otherwise be in the hypotheses that might be established respecting the numerous molecular groupings which might exist or be supposed to exist.

An alkaline aluminate is either an aluminate of potassa or an aluminate of soda. Aluminate of soda is a compound of alumina and soda—*i. e.*, of the oxides of aluminum and sodium. It is a triple compound of oxygen, aluminum, and sodium. An alkaline earthy aluminate is an aluminate of baryta, strontia, lime, or magnesia—*i. e.*, a compound of alumina with baryta or strontia or the other substances. The three elements of such a compound are oxygen, aluminum, and barium or strontium, or the other substances.

The theory of the patent, and it is only a theory, as we shall see, is that if these triple compounds of oxygen, aluminum, and some other metal can only be reduced to a liquid form, either by aqueous solution or igneous fusion, the current will decompose the compound by depositing the aluminum at the cathode and will leave the compound of oxygen and the other metal in the bath. By adding alumina to the bath he proposed to restore the aluminate in the bath. Now, the electrolysis of an aqueous solution of the aluminates to produce aluminum is impossible. This is not denied. One-half of Fuerst's patent is demonstrably operative. Secondly, so far as the patent calls for the igneous solution of the aluminate of soda it is also inoperative, because that compound is infusible, and, even if it were fusible, the current would precipitate the sodium and not the aluminum. This is conceded by defendant's experts. Such facts are strong evidence that Fuerst wrote out a theory for the production of aluminum by the current without knowing by experiment whether it would work or not. All the experts in the case agree that he was a very poor chemist. In order, however, to catch future inventors in the toils of his drag-net, he mentions a great many chemical compounds which could be added to his bath of aluminates and not interfere with its working, and might even aid the electrolysis. It is perfectly obvious that he never tried any of them, and it has not been shown at the bar that one of the innumerable baths proposed by him would, when electrolyzed, produce aluminum. It does appear, however, that if hydrofluoric acid, which is one of the indifferent auxiliary bodies mentioned by Fuerst, be mixed with aluminate of soda so that the mixture shall contain eight times as much acid as aluminate the acid will entirely decompose and destroy the aluminate, and after evaporation and fusion we shall have a bath, not of the aluminate at all, but of the fluorides of aluminum and sodium. If then aluminum be added and the current applied, we shall have the Hall process exactly. An experiment of this kind was tried on behalf of defendant, and an account of it is produced in evidence as demonstrating the identity of the Fuerst and Hall processes. It is perfectly evident that no one without a knowledge of the Hall process and without the deliberate intention of producing Hall's bath would ever have derived from the Fuerst patent any information leading to such a treatment of the aluminate of soda with the hydrofluoric acid. In the first place, according to Fuerst's specifications, the acid is to be only indifferent or auxiliary. Who would think, therefore, of using eight times as much acid as aluminate in preparing an aluminate bath? Again, one imperative injunction which Fuerst imposes in his specifications was flatly disobeyed in defendant's experiment. He says he has no objection to the introduction of foreign materials as indifferent or auxiliary bodies—

> provided, let it be understood, that these salts or foreign materials, whatever they be, will not produce decomposition of the aluminates employed.

The addition of hydrofluoric acid in excess to aluminate of soda completely decomposes and destroys the aluminate, so that the bath which results after evaporation and fusion has nothing like an aluminate in it, but is a bath of fluorides. In view of the necessity for this flagrant violation of Fuerst's injunction in order to produce the Hall bath it is absurd to say that the bath can be found described within the four corners of the Fuerst patent. Fuerst does suggest that his bath can be kept constant by adding alumina; but as his bath is not Hall's bath he does not thereby come any nearer the Hall patent.

The other patents pleaded as anticipations of Hall's are even less like it than those already considered, and they were not pressed in argument.

It is objected to the validity of the Hall process that it is not operative. The argument is that it has no utility as described in the patent, for three reasons: first, because the fusion of the bath is maintained by external heat, and except with internal heat produced by the current the process is worthless and inoperative; second, because it contemplates continual interruptions in the process to remove the aluminum already deposited from the cathode, which would make the process too cumbersome and expensive for commercial use, and, third, because it does not provide for sprinkling powdered alumina over the top of the bath to be gradually stirred down into it, without which the depositing of aluminum cannot go on without interruption.

There is nothing in any of these claims. The patent disclosed a process and suggested an apparatus by which the process could be operated.

Said Mr. Justice Grier in *Corning* v. *Burden*, (15 How., 252, 267:)

> A process *eo nomine* is not made the subject of a patent in our act of Congress. It is included under the term "useful art." An art may require one or more processes in order to produce a certain result of manufacture. The term "machine" includes every mechanical device or combination of mechanical powers and devices to perform some function or to produce a certain effect or result. But where the result or effect is produced by chemical action, by the operation or application of some element or power of nature or of one substance to another, such modes, methods or operations are called processes. A new process is usually the result of a discovery—a machine of invention.

Mr. Justice Bradley, in *Tilghman* v. *Proctor*, 19 O. G. 859; (102 U. S., 707, 708,) in speaking of what was required in the specifications for a patent of a process, said:

> If the mode of applying the process is not obvious, then a description of a particular mode by which it may be applied is sufficient. There is, then, a description of the process, and one practical mode in which it may be applied. Perhaps the process is susceptible of being applied in many modes and by the use of many forms of apparatus. The inventor is not bound to describe them all in order to secure to himself the exclusive right to the process, if he is really its inventor or discoverer. But he must describe some particular mode or some apparatus by which the process can be applied with at least some beneficial result, in order to show that it is capable of being exhibited and performed in actual experience.

Now, it may be that the changes in the mode of using the Hall process indicated in the objections of defendant stated above from that recommended by Hall in his patent are great improvements; but that does not in the slightest degree affect the validity of the patent if it appear that the time when the application was made a new and useful result could be accomplished with the process by the mode which Hall suggested.

It is pressed upon us that after Hall made his discovery he worked on his processes unceasingly for a year or more under the auspices and with the aid of the defendant company, but that with the apparatus described in the patent he was able to accomplish no useful result. It is said that not until he adopted the improvements above named, which are not included in his patent, did his patent prove operative. The area of Hall's discovery was a wide one. The chemi-

cal substances within the scope of his patent which he might use in carrying it to a successful result were many, and he was in search of that method and those substances within the limits of his discovery which would most easily and economically produce aluminum. It does not at all reflect on the utility of his process that he should have been a year or more experimenting to determine just exactly what apparatus to adopt. Nor is it surprising that with lack of experience in the practical operation of the process, with no means to try it on a commercial scale, he should meet with difficulties in small experiments which disappeared afterward. It is no evidence at all, therefore, of the inutility of his method of applying the process that by nine months' experimental work under the auspices of the defendant company he did not satisfy its officers that he had made a valuable discovery. During that time he did satisfy the practical chemists who, immediately upon his leaving the Cowles Company, invested $20,000 in a plant to produce the aluminum commercially according to Hall's patent.

The apparatus suggested by Hall consisted of a crucible of iron or steel lined with carbon and placed in a furnace. The double fluoride was put in the crucible, which was then subjected to the heat of the furnace until the fluoride was fused. The poles of an electric dynamo were connected with the bath, the negative pole connecting with the carbon lining and making that the cathode, while the positive pole was connected with a piece of carbon suspended over and extending down into the fused mass. Alumina is added to the bath when fused, and an electric current of from four to six volts deposits aluminum on the bottom of the crucible. When a sufficient quantity has been deposited, the patent says that the melted aluminum may be removed from the bath by suitable means or the bath may be poured out and the aluminum picked out. It is said that there were insurmountable difficulties in this apparatus. The carbon lining of the crucible must, on the one hand, be thick to prevent the fluorides from attacking the steel or iron underneath it and to prevent the radiation of heat and consequent cooling of the bath, while, on the other hand, it must be thin to enable the heat of the furnace to get through the sides of the crucible to fuse the bath and maintain the fusion.

That there may have been better ways of applying the heat than that suggested is doubtless true; but it does not appear that the mode just described would not make aluminum, and the burden of proof on this point is on the defendant. On the contrary, the evidence is quite satisfactory that it would do so. The system was used by the complainant company for several weeks after its new plant was put in, and aluminum was made commercially, as it had been made experimentally, by Hall. The whole new plant was so constructed that heat could be applied exactly as Hall's patent suggests. This is strong evidence that neither Hall nor the men who put in $20,000 on the faith of his invention inferred from the result of his experiments that the difficulty above stated was a serious one.

After several weeks' operation it was found that the resistance of the bath of the electric current necessary to decompose the alumina produced heat enough to keep the bath in proper fusion without external heat; so the furnace was not used. Hall had said early in his experiments that such a result was likely when the process was carried on in a large way. It is probable that a manufacturer of aluminum according to Hall's patent who would use external heat only (if, indeed, it were possible to make aluminum extensively without generating electric heat more than enough to fuse the bath) could not compete, for economical reasons, with one who discarded external heat and depended alone on the heat of the current; but that is far from saying that such useful results cannot be obtained from the use of Hall's first apparatus with external heat as to entitle him to an exclusive right to his process, whatever the improvements on his apparatus in applying that process. To hold otherwise would impose upon the patentee of a process, in order that he may enjoy the monopoly, the necessity of stating in his patent not only the process and suitable apparatus for its operation, but also the very best possible apparatus for that purpose. This would be absurd and quite in conflict with the spirit of Justice Bradley's remarks in *Tilghman* v. *Proctor*, above quoted.

The same remarks apply to the other criticisms of Hall's first mode of putting his process into practice. More than that, the ladling out of the melted aluminum without emptying the crucible and the adding of powdered alumina to the bath are not even improvements upon Hall's first method, but are quite within it. He says that alumina shall be added to the bath. It was to be added for solution. It does not even take knowledge of chemistry to lead one to grind a substance to powder to facilitate its solution. Nor does it require any invention or discovery to use a ladle to remove molten aluminum from the bottom of a crucible without emptying the crucible of its other and less weighty contents.

Hall's process is a new discovery. It is a decided step forward in the art of making aluminum. Since it has been put into practical use the price of aluminum has been reduced from six or eight dollars a pound to sixty-five cents. This is a revolution in the art and has had the effect of extending the uses of aluminum in many directions not possible when its price was high. An effort has been made to show that this reduction in the price is due to the improvements in the application of electricity to the manufacture of aluminum. That the new inventions in the line of producing electric currents of great volume and intensity have contributed to render the Hall process an economical one is true; but without the Hall process the manufacture of pure aluminum must have continued to be a purely chemical one. The Cowles brothers made aluminum alloys by the use of electrical furnaces, which they have brought to a high state of perfection, doubtless, and that had an effect to reduce the price of aluminum alloys, and perhaps indirectly affected the price of pure aluminum. The fact was that the price of pure aluminum was so high that its uses were few and the market for it was small. When Hall's process, however, came into the





field of commercial manufacture pure aluminum was largely substituted for aluminum alloys, and if alloys are now desired for particular purposes they are generally made from pure aluminum. Hall was a pioneer and is entitled to the advantages which that fact gives him in the patent law.

One other thing must be alluded to before we close this long discussion of the validity of Hall's patent, and that is the French patent of Heroult. Heroult has a patent granted to him by the French government, dated April 23, 1886. The process he described is substantially one of those described by Hall. He uses a fused bath of cryolite, in which alumina is dissolved and from which by the electric current aluminum is deposited at the cathode. His anode is of carbon. Heroult made application for a patent to the United States Patent Office May 22, 1886. Hall did not make his application until July 9, 1886. An interference was declared in the Patent Office between Hall and Heroult. Hall adduced evidence to show the Commissioner of Patents that he made his invention and put it in operation February 23, 1886. The same evidence has been introduced here. It establishes beyond all reasonable doubt, by written evidence, that Hall did put his process into successful operation on February 23, 1886. The Patent Office decided the interference proceeding in Hall's favor, and it was clearly right. There was no evidence there or here to show that Heroult discovered the process before Hall, and the fact that Heroult's French patent antedates Hall's application does not affect Hall's right to a patent, because by section 4887, Revised Statutes, an inventor's right to a patent in this country is not debarred by reason of the fact that the invention has previously been patented in some other country, provided that it has not been more than two years in use in the United States. The counsel for defendant do not dispute the correctness of this conclusion; but they rely on the Heroult interference proceedings to attack the validity of that part of the second claim in the Hall patent where he specifies as part of his process the use of a carbonaceous anode. It is conceded by them that Hall had used a carbon anode in his process before filing his application; but the contention is that because in his application he alluded to it as having some disadvantages and did not include it in his first series of claims, which he afterward amended, and did not finally include it in his claims until Heroult's patent suggested its value to him, and more than two years after his application, he thereby abandoned the use of a carbon anode to the public. No authority is cited to sustain this argument. The proceedings in the Patent Office are for the purpose of reducing the description of the real discovery and the claims to such a form that a patent may properly be granted for them. Until the patentee accepts the patent he cannot be held impliedly to disclaim anything in his real discovery. If he makes a claim which is rejected and he accepts the patent without the claim, then he waives the right to a monopoly therein; but we know of no principle by which such a waiver can be implied from defective claims in the proceedings preliminary to the issuance of a patent if the claim is fully set forth in the patent as granted and admittedly covers only that which the patentee had discovered before he made his application and which he fully described therein.

And now we come to the question of infringement. The evidence leaves no doubt that the defendant company began its manufacture of pure aluminum in January, 1891, with the aid of one Hobbs, who had been the foreman of the complainant company and engaged for it in superintending the manufacture of aluminum by the Hall process. By that time the complainant company had adopted several improvements in the apparatus described in the patent for working the process. The defendant copied these improvements, as well as the process, and has sought to escape responsibility by maintaining that without these improvements the process was inoperative and the patent, which did not contain them, was invalid. Much the same course is taken as to the defense of infringement. The improvements are said to make the present process a different one from that described in the patent, and therefore the defendant does not infringe. It is needless to say that a court is not inclined to favor such defenses. There is evidence to show that the defendant used Hall's preferred bath: but, with the admissions in this case, it is unnecessary to consider the issue made on that point. It is admitted that the defendant is using a process in which alumina is dissolved in a fused bath of the double fluoride of aluminum and sodium and in which an electric current is passed through the bath containing the alumina thus dissolved, whereby aluminum is deposited at a carbon cathode and oxygen is released at a carbon anode. It is said, however, that they are not infringing the Hall patent, because the Hall patent does not cover the particular double fluoride of aluminum and sodium which they are using, which is cryolite, and because the Hall process contemplated and called for a fusion of the double fluoride by external means of heating, whereas the defendants are using to fuse the bath the heat generated by the resistance of the bath to the electric current. The whole defense of infringement is based on a narrow and wholly impossible construction of the Hall patent.

As has been before stated, this patent is a pioneer patent, and its terms will be liberally construed to cover the patentee's real discovery. (*Sessions* v. *Romadka*, 59 O. G. 939; 145 U. S., 29; *Morley Sewing Machine Company* v. *Lancaster*, 47 O. G. 267; 129 U. S., 263, 273.) Coming now to consider the claim that the patent does not cover fused cryolite as a bath, it should first be noted that cryolite is a double fluoride of aluminum and sodium, a metal more electropositive than aluminum. It is therefore exactly within the words of both claims here in suit. But the contention is that the patentee has disclaimed any right to the exclusive use of cryolite. It is not denied that the patentee had used cryolite as a bath before he made his application; but it is said that he described its use in his first application and stated in substance that it was not so good as a different proportion of the fluorides, and then subsequently omitted reference to it as a bath altogether in his final specifications. This is said to be a disclaimer of cryolite as a bath material. Hall's description of his bath is as follows:

In the practice of my invention I prepare a bath for the solution of the alumina by fusing together in a suitable crucible, A, the fluoride of aluminum and the fluoride of a metal more electro positive than aluminum—as, for example, the fluoride of sodium, potassium, etc.—these salts being preferably mingled together in the proportions of eighty-four parts of sodium fluoride and one hundred and sixty-nine parts of aluminum fluoride, represented by the formula $Na_3Al_3F_6$. A convenient method of forming the bath consists in adding to the mineral cryolite three hundred and thirty-eight four hundred and twenty-firsts of its weight of aluminum fluoride. The object of thus adding aluminum fluoride is to secure in the bath the proper relative proportions of the fluorides of aluminum and sodium.

And again the patentee says:

While I consider the proportions of fluorides of sodium and aluminum * * * hereinbefore stated as best adapted for the purpose, such proportions may be varied within certain limits without materially affecting the operation or function of the bath, as, in fact, any proportions which may be found suitable may be employed.

The patentee states first the proportions of the aluminum fluoride and sodium fluoride which he prefers for his bath. They are eighty-four parts of sodium fluoride and one hundred and sixty-nine parts of aluminum fluoride. Then he proceeds to tell a convenient way for reaching these proportions. Cryolite, as we have said, is an article of commerce. He suggests that the best bath can be made by taking cryolite and adding to it three hundred and thirty-eight four hundred and twenty-firsts of its weight in aluminum fluoride. After this, for the very object of including cryolite, which, as we know, he had used for the purpose, and all other double fluorides of sodium and aluminum which would work, he says that the proportions may be varied. What proportions does he mean? Why, the proportions of the two fluorides, of course. The labored construction that the proportions to be varied are those of the cryolite and the aluminum fluoride is wholly untenable. How may they be varied? Within certain limits. What does that mean? The patentee goes on to state when he says—

that any proportions which may be found suitable may be employed.

Cryolite is now found suitable, and the patentee had found it suitable when he made his application. Could anything be more unlikely than that Hall or his patent solicitor, after they had been successful in an interference controversy with Heroult, whose only bath was one of cryolite, would have framed his specifications with the intention of not including a cryolite bath in the monopoly he was seeking? We think the patent very aptly drawn to cover the use of every double fluoride of aluminum and sodium which can be made to produce aluminum when used as a bath in the Hall process. The proportions are immaterial so long as it is a double fluoride of these metals.

Next is the defense based on the use of external heat in Hall's apparatus, as described in his patent, and defendant's use of internal heat. Hall's claims do not say what heat shall be used to fuse the bath. The process is described as beginning with a fused bath. The argument is that because Hall in his specification describes an apparatus for the fusion of the bath by external heat therefore he limits himself to a process in which external heat is used and confers upon the world at large the right to use his process if only some other mode of applying the heat is employed, and this in the face of the words of the patent—

nor does this apparatus described herein with more or less particularity form any part of the invention herein.

We do not see how the patentee could have used stronger words to avoid the difficulty in which defendant wishes to involve him. Then, too, we have the refined point that the language of the claim itself excludes the possibility of electric heating, because it speaks of dissolving alumina in a fused bath of the double fluorides—

and then passing an electric current by means of a carbonaceous anode through the fused mass.

This language is as applicable to electric heating as to any other. The word "then" is used to indicate that the electrolysis is to follow the solution of the alumina in the fused bath. Now, whether the current or a furnace-fire fuses the bath, the current which is passed through the fused mass to perform electrolysis is passed through after the fusion.

The decision of the Supreme Court in the case of *Tilghman* v. *Proctor* (19 O. G. 859; 102 U. S., 707) is conclusive on this point. There the patent was for a process for the treatment of fats and oils in which the application of heat was one of the necessary steps. Mr. Justice Bradley, speaking for the Court, said:

Another ground assumed by the defendants to avoid the charge of infringement is, that they do not heat the mixed mass in the manner pointed out in Tilghman's specification; but, instead of heating the containing-vessel by an outside application of heat, they heat the contents by the introduction of superheated steam. But we think that this does not alter the essential character of the process. The heating by steam is clearly an equivalent method to that of heating by an external fire. The patent does not proscribe any particular method of applying the heat, except when using the pipe and coil apparatus described in the specifications; and, even in the use of this apparatus, the outward application of the heat to the pipe is suggested incidentally and as a matter of convenience rather than as an essential requisite. The patentee showed one method in which the heat could be applied. That was all that was necessary for him to do. If it could be applied in any number of different methods it would not affect the validity of the patent as a patent for a process. The method of heating the mixture by the introduction of steam may be attended with some beneficial results in producing an agitation or an automatic circulation helpful to the perfection of the admixture of the water and fat; and so far it may be an improvement on heating from without. Suppose this to be so, as before said, the introduction of an improvement gives no title to the use of the primary invention upon which the improvement is based.

Finally, it is said the defendant does not infringe because the claim calls for a carbonaceous anode and the defendant uses a carbon anode. Carbonaceous means pertaining to carbon or made of carbon. It includes anodes made partly of carbon and partly of some other substance; but it certainly covers an anode made all of carbon.

A decree will be entered for the complainant finding the complainant's patent is valid and that the defendant infringes both the first and second claims thereof, and perpetually enjoining the defendant from further infringement, with the usual reference to a master to determine the damages.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 69.—No. 7. TUESDAY, NOVEMBER 13, 1894. PRICE—$5 per year.

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### Protection of Industrial Property.

The accession of Denmark to the International Union for the Protection of Industrial Property is officially announced. This accession, which took place October 1, 1894, includes the Färöe Islands, but neither Iceland, Greenland, nor the Danish West Indies.

JOHN S. SEYMOUR,
*Commissioner of Patents.*

### Changes in Classification.

(ORDER No. 1,022.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.
*Washington, D. C., November 6, 1894.*

It is directed that the following sub-classes be established in Division IV:

Class 37. Excavating:
Hydraulic—
45. Suction-pipe mouthpieces.
46. Pipe supports.
Class 104. Railways:
147. Rails, compound.

The following changes are directed in Division XII:

In Class 57, Hoisting, sub-classes 75, Tilting, and 76, Hoist, are abolished, and the following sub-classes are established in said class:

90. Hoist and dump.
91. Hoist, raised track, and dump.
92. Raised track—
Track-end dump.
94. Raised track—
Track-end dump—
Tilting track-section.
95. Vertical hoist and dump.
96. Elevated carriers—
Ways.

In Class 186, Store-Service, sub-class 8, Ways, is abolished and a new sub-class is established, to be entitled:

12. Propulsion—
Spreaders.

A sub-class is established in Class 187, Elevators, as follows:

35. Controllers—
Running-rope.

A sub-class is established in Class 193, Conveyers, as follows:

21. Pneumatic—
Stackers.

In Division XXXIV the title of Class 188, Fluid-Pressure Railway-Brakes, is changed to Railway-Brakes, and the following sub-classes are established in the class:

Fluid-pressure—
7. Engineer's valves.
8. Train-pipe stop-cocks.

The following sub-classes are established in Class 105, Railway Rolling-Stock:

Cars, freight—
Stakes—
173. Releasable.
174. Side folding.
175. Locomotives—
Traction-increasers—
Electric.
Sanding devices—
176. Chain feed.
Sanding devices—
177. Oscillatory-feed, Reciprocatory-feed—
178. Horizontal.
179. Vertical.
180. Rotary feed.
181. Sound-deadening devices.
182. Wheel tread-surfaces.

JOHN S. SEYMOUR,
*Commissioner.*

### Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1890, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1 50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Vol. 7. Appendix No. 7, July 1, 1887, to June 30, 1888. One volume, 68 pages. In paper covers, $1 50.

Vol. 8. Appendix No. 8, July 1, 1888, to June 30, 1889. One volume, 72 pages. In paper covers, $1.50.

Vol. 9. Appendix No. 9, July 1, 1889, to June 30, 1890. One volume, 84 pages. In paper covers, $1.50.

Vol. 10. Appendix No. 10, July 1, 1890, to June 30, 1891. One volume, 98 pages. In paper covers, $1.50.

Vol. 11. Appendix No. 11, July 1, 1891, to June 30, 1892. One volume, 86 pages. In paper covers, $1.50.

### Price of Printed Copies of Patents.

Attention is called to the fact that under date of May 14, 1891, the price of uncertified printed copies of patents was fixed at the *uniform price of ten cents each*, whether purchased singly or in quantities.

### Copies of Decisions Furnished.

Hereafter an uncertified copy of every decision or action by any tribunal in this Office will be furnished by such tribunal to the interested party or parties without charge.

## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $10; single copies, 10 cents, if mailed to foreign countries 10 cents additional for postage; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

### Issue of November 13, 1894.

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| Designs | 27—No. | 23,788 to No. 23,814, inclusive. |
| Trade-Marks | 49—No. | 25,482 to No. 25,530, inclusive. |
| Labels | None. | |
| Prints | None. | |
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| India | | | Total to citizens of foreign countries | 50 | 5 |
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## APPLICATIONS UNDER EXAMINATION.

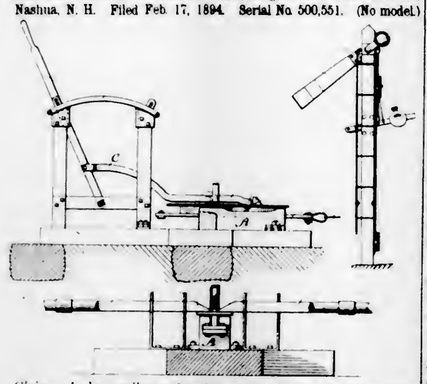
*Condition at Close of Business November 6, 1894.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. Now. | Amended | No. of applications awaiting action. |
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# PATENTS

## GRANTED NOVEMBER 13, 1894.

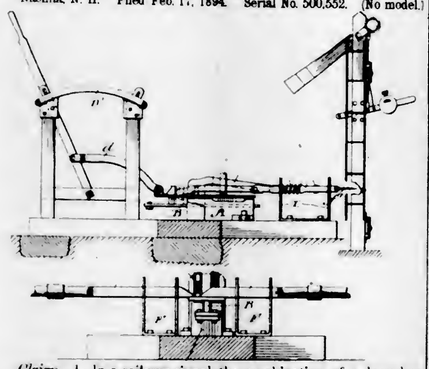
**528,913. RAILWAY-SIGNAL.** GEORGE F. ADAMS, Nashua, N. H., and JOHN S. LYNAM, Winchester, Mass., assignors to Charles S. Collins, Nashua, N. H. Filed Feb 17, 1894. Serial No. 500,551. (No model.)



*Claim.*—1. In a railway signal, the combination of an operating slide connected to and adapted to operate the semaphore or signal, a draw bar, an actuating lever connected to the draw bar, said draw bar being adapted to normally engage said slide, bevel ended levers each connected to a switch and adapted to be independently thrust, by the opening of its respective switch, under said draw bar and thus release the said slide and permit the signal connected thereto to rise to danger, substantially as described.

2. In a railway signal the combination of an operating slide connected directly to and adapted to operate the semaphore or signal and provided with a hook engaging aperture and a guiding yoke, a draw bar working in said yoke and adapted to engage the aperture in said slide to operate the latter, an oscillating lever for actuating said draw bar, bevel ended levers each connected to a switch and adapted to be independently thrust by the opening of its respective switch under said draw bar and thus release the said slide and permit the signal connected thereto to rise to danger, substantially as described

**528,914. RAILWAY-SIGNAL.** GEORGE F. ADAMS, Nashua, N. H., and JOHN S. LYNAM, Winchester, Mass., assignors to Charles S. Collins, Nashua, N. H. Filed Feb. 17, 1894. Serial No. 500,552. (No model.)



*Claim.*—1. In a railway signal the combination of a draw bar operating slide, means for actuating the same, draw bars adapted to engage said slide and each operating independent semaphores and means connected to switches and adapted to force said draw bars out of engagement with said slide to allow the semaphores connected thereto to rise to danger, substantially as described.

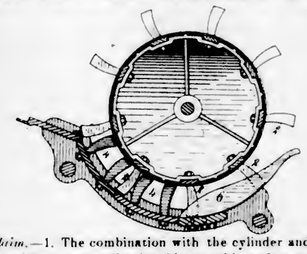
2. In a railway signal the combination of a draw bar operating slide provided with engaging apertures and guiding yokes for draw bars, means for actuating said slide, spring restrained draw bars adapted to engage said slide and each operating independent semaphores, and means connected to switches and adapted to force said draw bars out of engagement with said slide to allow the semaphores connected thereto to rise to danger, substantially as described.

3. In a railway signal the combination of a draw bar operating slide provided with engaging apertures, stops and guiding yokes for draw bars, an oscillating lever and connections for operating said slide, spring restrained draw bars adapted to engage said slide and each operating independent semaphores, and means connected to switches and adapted to force said draw bars out of engagement with the slide to allow the semaphores connected thereto to rise to danger, substantially as described.

4. In a railway signal the combination of a draw bar operating slide provided with a draw bar engaging aperture and a stop, means for operating said slide, a spring restrained draw bar provided with a hook for engaging the slide and connected to a semaphore, a bevel ended thrust rod connected to a switch and which is adapted to be thrust automatically beneath the draw bar by the opening of the switch and thereby disengage said bar from the slide, substantially as described.

5. In a railway signal the combination of a draw bar operating slide, means for actuating the same, draw bars adapted to engage said slide and each operating independent semaphores, means connected to switches and adapted to force said draw bars out of engagement with said slide to allow the semaphores connected thereto to rise to danger and means for actuating said draw bars to move them backward when released from the slide, substantially as described.

**528,915. THRASHING-MACHINE ATTACHMENT.** LORRY T. AUSTIN, Rossville, Ill., assignor of one-half to Byron E. Cronkhite, same place. Filed June 30, 1894. Serial No. 516,166. (No model.)



*Claim.*—1. The combination with the cylinder and the toothed sections of the concave of a thrashing machine, of a set of fingers beginning under the center of the cylinder and extending upward and backward adjacent to the teeth of the cylinder, substantially as set forth.

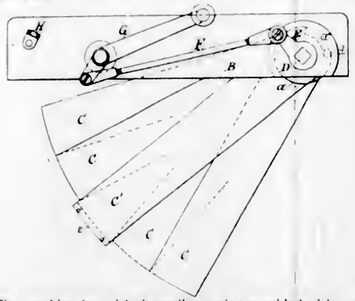
2. The combination with the cylinder and the toothed sections of the concave of a thrashing machine, of a set of fingers extending rearwardly from the toothed sections and each occupying a space between circumferential sets of teeth of the cylinder, substantially as set forth.

3. The combination with the cylinder and the toothed sections of the concave of a thrashing machine, of a set of fingers extending rearwardly from the toothed sections in a generally tangential direction with relation to the cylinder, and each occupying a space between the circumferential sets of cylinder teeth, substantially as set forth.

**528,916. CENTERBOARD FOR BOATS.** WILLIAM R. BAKER, Watertown, N. Y. Filed Mar. 7, 1894. Serial No. 502,627. (No model.)

*Claim.*—1. The combination with the well or casing provided with a shaft extending transversely therethrough near one end, and

the centerboard leaves mounted on said shaft, of a plate fixed to and turning with the shaft, a pin carried by said plate, a stationary pin in the casing, a pair of recesses in the edge of each of the leaves, and suitable means to rotate the said shaft and plate, as and for the purpose described.



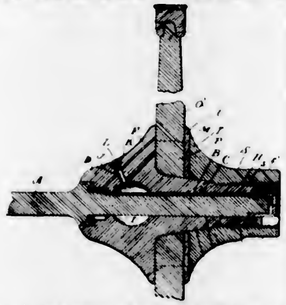
2. The combination with the well or casing provided with a shaft extending transversely therethrough near one end, and the centerboard leaves mounted on said shaft, of a plate on each side of the leaves and fixed to and turning with the shaft, a pin extending through and between the plates, a stationary pin extending through the casing, a recess in each plate, a pair of recesses in the edge of each of the leaves, and suitable means to rotate the shaft and plates, as and for the purpose described.

3. The combination with the well or casing provided with a shaft extending transversely therethrough near one end, and the centerboard leaves mounted on said shaft, of a plate fixed to and turning with the shaft, a pin carried by said plate, a stationary pin in the casing, a pair of recesses in the edge of each of the leaves equal distances apart but of different lengths and suitable means to rotate the said shaft and plate, as set forth.

4. The combination with the well or casing provided with a shaft extending therethrough near one end, and the center-board leaves mounted on said shaft, of a disk on each side of the leaves and fixed to and turning with the shaft, a pin extending through and between the disks, a stationary pin extending through the casing, a recess in each plate, a pair of recesses of different lengths in the edge of each of the leaves for the said pins to move in, the outside leaves joined together around the free ends of the central leaves and adapted when the board is open to lie in a central position, and means to operate the board, substantially as described and shown.

5. The combination with the well or casing provided with a shaft extending transversely therethrough near one end, and the centerboard leaves mounted on said shaft, of a disk on each side of the leaves and fixed to and turning with the shaft, a pin on diametrically opposite sides of the disks extending through and between them, a stationary pin extending through the casing, a recess in each disk for the stationary pin and a set of recesses of different lengths in the said leaves for each of the said pins as and for the purpose described.

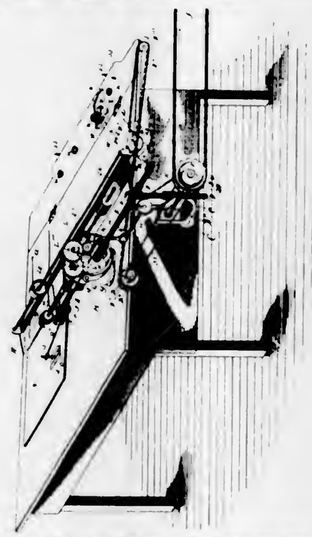
## 528,917. VEHICLE-WHEEL. EMILIUS C. F. BECKER, Milledgeville, Ga. Filed Feb. 21, 1894. Serial No. 501,015. (No model.)



*Claim.*—1. In a vehicle wheel, the combination of the inner hub member provided with an abutting flange or disk, a tapered neck G, projected from said flange or disk and exteriorly threaded from an intermediate point to the outer end thereof, and a series of rounded mortises projected from the inner side of the flange or disk and surrounding the tapered neck, said tapered neck forming the base of said mortises, the wheel spokes having inner rounded tenon ends beveled or tapered to correspond to the taper of said neck and adapted to have a wedging fit in said mortises, and the removable cap, substantially as set forth.

2. In a vehicle wheel, the combination of the inner hub member provided with an integral abutting flange or disk, a tapered neck G, exteriorly threaded for a portion of its length, and a circular series of mortise projections projected from the inner side of said flange or disk, joining with said tapered neck, and provided with continuous rounded sigmoidal shaped sides forming therebetween mortise notches having widened circular portions at their bases formed partly by the tapered neck, and contracted spaces formed between the inwardly curved portions of the sides, the wheel spokes having inner beveled abutting tenon ends correspondingly shaped to said mortise notches and having a registering wedging fit therein, and a removable hub cap engaging the threaded portion of said neck and working at one side of the spoke tenons, substantially as set forth.

## 528,918. METHOD OF AND MACHINE FOR SEPARATING AND FEEDING SHEETS OF PAPER. HARRY BRADSHAW, Topeka, Kans., assignor to the Bradshaw Paper Feeder Company, same place. Filed Aug. 31, 1891. Serial No. 404,209. (No model.)



*Claim.*—1. In a paper feeder, for feeding sheets from a pile, the method of detaching the top sheet which consists, first in vibrating a part of the sheet and thereby loosening it; secondly, bending the loosened part of the sheet; thirdly, injecting a jet of air under the bent sheet, whereby the sheet is separated from the pile; substantially as described.

2. In a paper feeder, the combination with a friction roller mounted upon a revoluble shaft journaled in a suitable frame-work, of a rubbing device for loosening the top sheet from the pile, and means for imparting to the rubbing device a plurality of reciprocations between successive actions of the friction roller, substantially as described.

3. In a paper feeder, the combination with a friction roller mounted upon a revoluble shaft journaled in a suitable frame-work, of a vibratory arm having a frictional contact with the top sheet, and means for imparting a plurality of reciprocations to said arm during each revolution of the revoluble shaft, substantially as described.

4. In a paper feeder, the combination with a revoluble friction roller mounted upon a shaft journaled in a suitable frame-work and adapted to rest upon the top sheet of the paper, of a counter roller revoluble above and upon the friction roller but in an opposite direction thereto, a clamping shoe, and timing mechanism for causing the clamping shoe to descend upon the top sheet during the initial part of the operation of the friction roller, substantially as described.

5. In a paper feeder, the combination with a revoluble friction roller, of a counter roller revoluble above and upon the feed roller but in an opposite direction thereto, a device for injecting a jet of air under the bent sheet, a clamping shoe, and timing mechanism for causing the clamping shoe to descend upon the top sheet during the initial part of the operation of the friction roller, substantially as described.



6. In a paper feeder, the combination with a revoluble friction roller, of an arm pivoted to the frame-work, mechanism for advancing said arm and causing it to press the top sheet against the friction roller when the sheet is raised by the friction roller from the pile, and a revoluble counter roller located above the friction roller and cooperating therewith, substantially as described.

7. In a paper feeder, the combination with a friction roller mounted upon a revoluble shaft journaled in a frame work pivoted to a suitable support, of a counter roller mounted upon a shaft having its bearings pivoted to the frame work and revoluble in a direction contrary to that of the friction roller shaft, and connected by gearing therewith, said feed roller shaft being provided with a cam for raising the counter roller from the friction roller when the cam is revolved, substantially as described.

8. In a paper feeder, a straightening device, consisting of a series of circumferentially and vertically adjustable revoluble disk rollers mounted in suitable supports at one end of the feed board, and suitable registering gages substantially as described.

9. The combination with the shaft, X, mounted in bearings, $x'$, of the tubular support, U, revoluble tube, V, transverse revoluble shaft, $w$, having mounted thereon disk roller, W, elastic belt, $x$, connecting shafts X and, $w$, and set screw, $v$, and a suitable support for said mechanism for the purposes specified substantially as set forth.

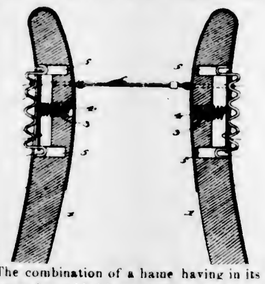
10. The combination with the feed table, of the support, C, secured thereto, adjustable vertical shaft, B, set screw, $b'$, horizontal bar, B', set screw, $b$, yoke, G pivotedly connected to the framework in which is journaled the shaft, H, having mounted thereon the feed roller, I, connecting rods, H', 20, connected by universal joint, $h$, to shaft, H, universal joint, $h'$, revoluble shaft, H'', projecting arm, B'', chain wheels, E, and 34, connected by chain, E'', for the purposes specified, substantially as set forth

11. The combination with eccentric, P, mounted on shaft, $k$, of eccentric strap, P', lever, P'', connecting rod, P''', lever $q$, elastic disk, Q, projection, $q'$, on the arm J', for the purposes specified, substantially as set forth.

12. The combination with the shoe bar, 12, pivoted to the arm J, of extension, $o'$, set screw, $o''$, vertical rod, 13, set screw, 14, clamping shoe, $o'''$ pivoted to the lower end of the rod, 13, and cam, N, mounted upon the shaft, N', for the purposes specified, substantially as set forth.

13. The combination with the tube, R secured to arm, J, flexible tube, R', transverse pipe, 21 having bent extension, 22, and arm, $p$, pitman, $p'$, connected to arm, J, for the purposes specified, substantially as set forth

## 528,919. HAME. HARRY C. BROOKENS and LOUIS BOHRINGER, Bloomington, Wis. Filed July 31, 1894. Serial No. 519,079. (No model.)

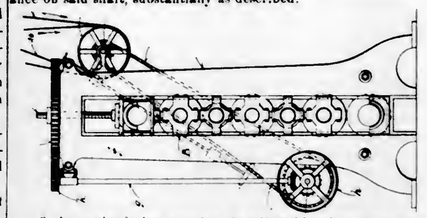


*Claim.*—The combination of a hame having in its hame-iron a longitudinal slot and provided beneath the iron at the slot with a recess, a plate arranged within the recess and located beneath the slot of the hame iron, and provided at its ends with perforations, a spring for pressing the plate outward, and a longitudinally disposed serpentine adjusting wire mounted on the outer face of the plate and projecting through the slot of the hame iron, and terminating in hooks concealed within the recess of the hame and engaging the perforations of the plate, said adjusting wires being readily depressible to permit a loop to be moved up or down on the same and to depress the adjusting wire, substantially as described

## 528,920. CALENDERING-MACHINE. ROBERT BUTTERWORTH, Somerville, Mass. Filed June 6, 1894. Serial No. 513,599. (No model.)

*Claim.*—1. In a calenderiag machine, calendering rolls movable as to the relative position of their journals in combination with a rotary shaft; a loose sprocket thereon; an adjustable friction device for locking said sprocket to the shaft against a determined resistance; drive mechanism for said sprocket; and mechanism actuated by said shaft for applying pressure to said rolls, substantially as described.

2. In a calendering machine, a series of calendering rolls in combination with mechanism for adjusting said rolls in relation to each other; a drive-shaft; a loose pulley thereon; a clutch for locking said pulley; a driven shaft for actuating said roll-adjusting mechanism; a loose wheel on said driven shaft connected with said pulley; and a friction device for locking said wheel to oppose a determined resistance on said shaft, substantially as described.

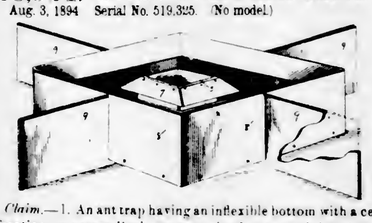


3. In a calendering machine, the adjustable calendering rolls and the screws and actuating mechanism in combination with the shaft, $m$, for actuating said mechanism, the sprocket, $p$, and its friction mechanism and the click in said mechanism for locking the sprocket to rotate in one direction

4. In a calendering machine, the shaft, $m$, and mechanism for adjusting the calendering rolls therefrom in combination with the loose sprocket, $p$, and its friction and locking mechanism; the shaft, 20; the loose pulleys thereon and a clutch for locking said pulleys.

5. In a calendering machine, the frame and its adjustable rolls in combination with the shaft, $m$; the sprocket, $p$, having a notched rim; the plates, $r$, $r^3$, for engaging said rim, the click in one of said plates engaging said notches; a screw for gaging the tension of said plates; drive mechanism for the shaft and a roll adjusting mechanism actuated from said shaft, substantially as described.

## 528,921. ANT-TRAP. WILLIAM B. CARTER, Mexia, Tex. Filed Aug. 3, 1894. Serial No. 519,325. (No model.)

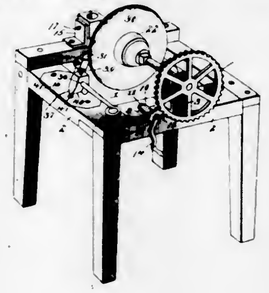


*Claim.*—1. An ant trap having an inflexible bottom with a central perforation; a perpendicular passage having a rough interior and a smooth exterior located in said perforation and perpendicular smooth sides attached to the edges of said bottom, as set forth.

2. An ant trap having an inflexible bottom with a central perforation; a perpendicular passage having a rough interior and smooth exterior located in said perforation and perpendicular smooth sides attached to the edges of said bottom; and a perforation in said bottom closed by a movable panel, as set forth.

3. In combination with an ant trap a device for preventing ants from running around the trap, consisting of perpendicular flanges secured to the sides of the trap and adapted to guide the ants up the sides thereof and into the trap, as set forth.

## 528,922. HARROW-DISK SHARPENER. JOHN A. CASE, Ipava, Ill., assignor of one-half to Noah Hall, same place. Filed May 28, 1894. Serial No. 512,762. (No model.)



*Claim.*—1. In a harrow disk sharpener, the combination of a frame or table, a shaft revolubly mounted thereon, a bearing on the table or frame and revoluble at an axis at right angles to the longitudinal disposition of the said shaft, a second shaft having one end removably connected to the first shaft and having its remaining end journaled in the said box, clamps on the second shaft, said clamps being capable of securing a harrow disk thereto, and a knife fixed to the frame or table and capable of engaging the edge of the harrow disk, substantially as described.

2. In a harrow disk sharpener, the combination of a frame or table, a driven shaft revolubly mounted thereon, a box fixed to the frame or table and capable of revolution on an axis at right angles to the longitudinal disposition of the said driven shaft, a second shaft having one end connected to the driven shaft and the remaining end journaled in the revoluble box aforesaid, a flange fixed rigidly to the second shaft, and a second flange or head slidably mounted on the second shaft and provided with means for securing it at various points thereof, and a cutter fixed to the frame or table and capable of engaging the edge of the harrow disk, substantially as described.

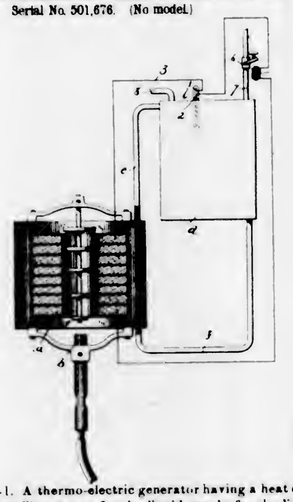
3. In a harrow disk sharpener, the combination of a driven shaft capable of having the disk fixed thereto, a frame or table upon which the said shaft is mounted, said table having a series of perforations therein, a block provided with a downwardly and forwardly extending stud capable of fitting within the respective perforations, a bar bent at right angles and passed through said block, one end of the bar being provided with a socket, and a knife located within said socket and capable of engaging and sharpening the edge of the harrow disk, substantially as described.

4. In a harrow disk sharpener, the combination with a frame or table, a sharpening knife thereon, a driven shaft mounted on the frame or table and incapable of being removed therefrom, the said driven shaft having one end squared, a box mounted so as to be capable of revolving on an axis at right angles to the longitudinal disposition of the driven shaft, said box being provided with an opening or bearing, a removable shaft provided at one end with a socket capable of receiving the squared end of the driven shaft, and having adjacent to said socket a flange or head fixed to the shaft, and a movable flange or head on the shaft and provided with means for securing it against the fixed flange or head, substantially as described.

## 528,923. PROCESS OF ALLOYING LEAD AND ZINC. FRANCIS J. CLAMER, Philadelphia, Pa. Filed Dec. 30, 1893. Serial No. 495,216. (No specimens.)

*Claim.*—The herein described process of forming an alloy of lead and zinc, consisting of melting the two metals together in a suitable vessel and introducing into the melted metal, caustic soda, substantially as described.

## 528,924. RADIATING AND SUPPLY SYSTEM FOR THERMO-ELECTRIC GENERATORS. HARRY B. COX, Hartford, Conn. Filed Feb 27, 1894. Serial No. 501,676. (No model.)



*Claim.*—1. A thermo-electric generator having a heat controlled pulsating controlling means for the liquid supply for the liquid cooling chamber of the generator, substantially as described.

2. A thermo electric generator having its liquid cooling chamber provided with controlling means for the liquid supply thereto controlled by the temperature of the cooling medium, substantially as described.

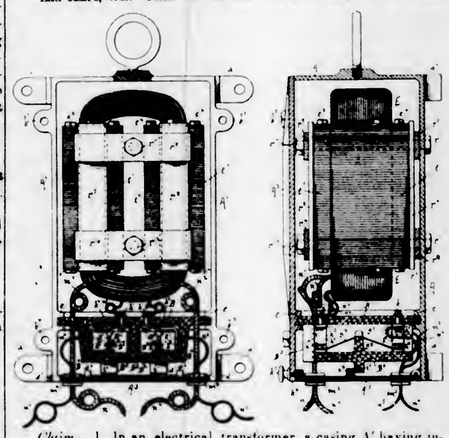
3. A thermo electric generator having a circuit for its liquid cooling medium, a liquid supply into said circuit having a valve normally closed, an electro magnetic mechanism controlling said valve, a circuit including the generator and said electro magnetic mechanism and a heat operated circuit closer controlling said circuit and controlled by the temperature of said circulating medium, substantially as described.

4. A thermo electric generator having a surrounding jacket to receive the liquid cooling medium, a circulating system for said medium in which the same can be cooled, a liquid supply for said system provided with an electrically controlled valve, a circuit from the generator including said valve, and a heat controlled circuit closer so that when the liquid in the circulating system becomes heated to a certain degree the circuit will be closed and valve operated to admit cool liquid, substantially as described.

5. The herein described mode of maintaining and cooling the liquid cooling medium of a thermo-electric generator which consists in providing an automatic pulsating cool liquid supply controlled by the temperature of the liquid in the generator, substantially as described.

6. In a thermo electric generator, the combination of a cooling liquid chamber, a valve controlled supply therefor, controlling means for said valve, a circuit including said means and the generator, and a heat controlled circuit closer operated by the temperature of the liquid of said chamber and controlling said circuit, substantially as described.

## 528,925. ELECTRICAL TRANSFORMER. FRANK S. CULVER, Eau Claire, Wis. Filed Dec. 19, 1893. Serial No. 494,058. (No model.)



*Claim.*—1. In an electrical transformer, a casing A' having insulation strips $r^3$ $r^4$ secured therein, a coil E, a core formed of "L" shaped plates suitably clamped and inclosing said coil, and insulating strips, and holding bolts, whereby said coil and coil sections may be readily inserted into and removed from said casing, substantially as and for the purpose set forth.

2. In an electrical transformer, a casing, an insulated coil, a core formed of sections of "L" shaped plates suitably clamped and inclosing said coil, non-conducting strips and binding bolts by which said coil and its core are secured in said casing, substantially as and for the purpose set forth.

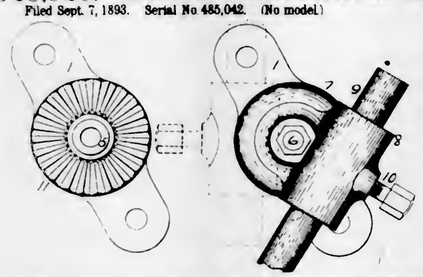
3. In an electrical transformer, a casing inclosing the coil and its cores, a non-conducting diaphragm B' forming a division across the interior of the casing, and with partitions $B^3$ $B^5$ and $B^4$, and with contact clips $A' A^2 A^3 A^4$ suitably connected to the conductor wires of said coil, contact supporting blocks $B^5$ $B^6$ and with clips $h^6$ $h^7$ $h^8$ $h^9$, adapted to engage with the clips upon said diaphragm, and with fuse wires $D' D^3$ connecting the clips upon said contact blocks, substantially as and for the purpose set forth.

4. In an electric transformer, a casing supporting the coil and its core, a non-conducting diaphragm plate having the contacts of the primary wires attached thereto, non-conducting contact blocks having contacts united by fuse wires and adapted to engage removably with the contacts on said diaphragm plate, and a door hinged in the bottom of said casing and adapted to support said contact blocks and secured by a screw knob, substantially as and for the purpose set forth.

5. In an electric transformer, a casing supporting the coil and its core and the contact blocks, a door hinged in the bottom of said casing, and with recesses opening into the opening of said door, and grooved insulator blocks for the conducting wires adapted to be inserted in said recesses and be held in place by said door when closed, substantially as and for the purpose set forth.



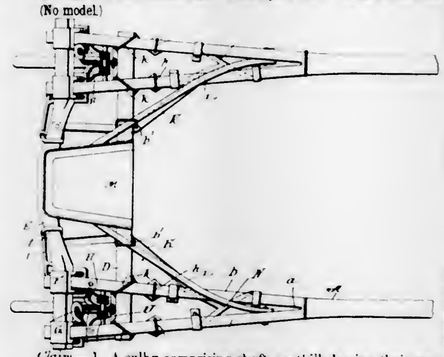
## 528,926. COLTER-CLASP. FRANK E. DAVIS, La Crosse, Wis. Filed Sept. 7, 1893. Serial No. 485,042. (No model.)



*Claim.*—1. In a colter clasp, the combination with a bed plate and means for securing the same to the beam of a plow and having radial teeth or corrugations, of a socket plate having corresponding radial teeth or corrugations, a clamping bolt on which the socket plate may be turned as a pivot and having tightening means for clamping the socket plate in its desired position and the socket plate having its socket eccentric to its axis, substantially as described.

2. In a colter clasp, the combination with a bed plate and means for securing it to a plow beam, said bed plate having a boss or projection provided with radial teeth or corrugations circularly arranged, of a socket plate having corresponding radial teeth or corrugations, a bolt having means for clamping said plates together and upon which bolt the socket plate may turn as a pivot, said socket plate having its socket eccentric to its pivotal axis and provided with adjustable means for engaging the shank of a colter, substantially as described.

## 528,927. SULKY. WILLIAM H. C. DIESSEL, WILLIS O. FOOTE, and EDWARD D. FOOTE, Mexico, Mo. Filed Apr. 7, 1894. Serial No. 506,723. (No model.)



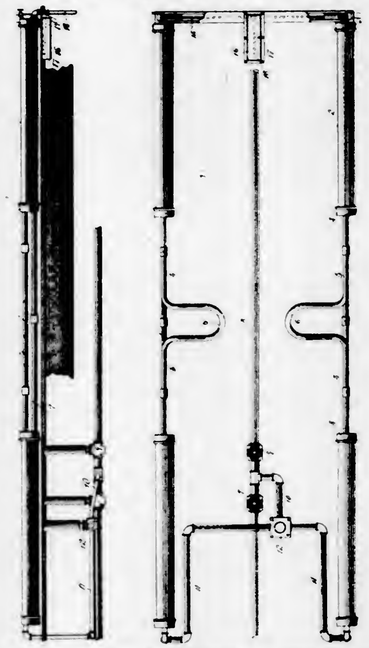
*Claim.*—1. A sulky comprising shafts or thills having their rear portions curved downwardly and their straight and curved portions bifurcated or forked so as to form branches *b*, and also having the free ends of the branches *b*, spread apart, wheels carried by the said shafts, a truss bar connected to the curved portions of the branches *b*, of the shafts or thills, a cross bar connected to the straight portions of the branches *b*, of the thills and arranged in advance of the truss bar, and a seat mounted on the truss and cross bars, substantially as specified.

2. The sulky comprising the thills having their rear portions curved downwardly and their straight and curved portions bifurcated so as to form branches *b*, and also having the ends of the branches *b*, spread apart, the cross bar secured to the branches *b*, of the thills in advance of the curve thereof, the truss bar secured to the curved portions of the branches *b*, the clips securing said parts at their intersecting points, the braces connecting the curved ends of the thills with the horizontal portions, the tie rods connecting the curved parts of the thills with said braces, the braces connecting the truss bar with the inner branches *b*, of the thills and also with the straight portion of the truss bar, the straps or braces, connecting the horizontal portions of the inner branches of the thills with the cross and truss bars, the spindles arranged in the curved ends of the branches *b*, of the thills and the small wheels carried by the spindles all substantially as specified.

3. The combination with the forked thills, of the single tree comprising the cross rods secured to said thills and the spring wires coiled around said rod and having one end secured to each cross branch and provided with a lateral branch to receive a trace, substantially as specified.

4. The single-tree comprising a wire bent about midway of its length and thence turned at an angle, and the branches wrapped or twisted and thence carried in opposite directions in a coiled manner to receive a rod or the like, and the free ends of said branches being adapted for attachment, substantially as specified.

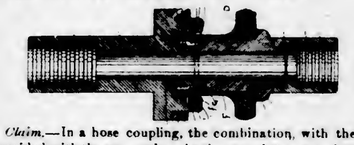
## 528,928. CAR-HEATER. ROBERT M. DIXON, East Orange, N. J., assignor to The Safety Car Heating and Lighting Company, New York, N. Y. Filed Oct. 18, 1892. Serial No. 449,268. (No model.)



*Claim.*—1. In a car heating apparatus, the combination with a steam supply pipe, and a heater provided with conduits of larger diameter than the steam supply pipe, a connecting pipe and an equalizing pipe uniting the conduits, said pipes communicating with the conduits on different levels, substantially as and for the purposes specified.

2. As a part of a car heating apparatus, the combination with a plurality of reservoirs, of two connecting pipes united to each of the reservoirs and on different levels, substantially as set forth.

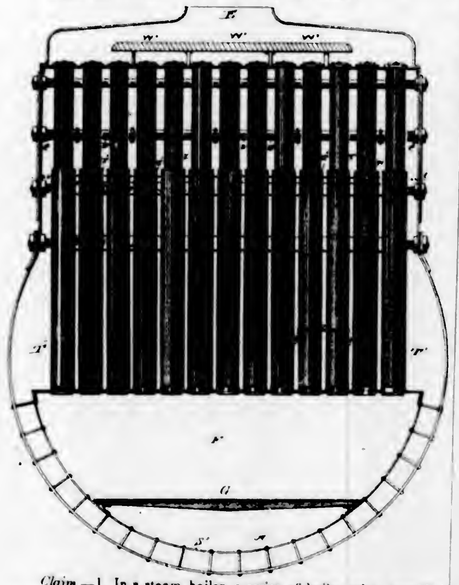
## 528,929. HOSE-COUPLING. JULES DOSTER, Montreal, Canada. Filed July 6, 1894. Serial No. 516,731. (No model.)



*Claim.*—In a hose coupling, the combination, with the portion A provided with the grooved projection *c*, and the central cylindrical projection H; of the portion B provided with the flange $F^8$ having holes $F^9$ for the projections *c* to project through, and a cylindrical chamber for the projection H to engage with; the packing material in the said chamber; and the sleeve D journaled in a circumferential groove on the portion B and provided with the inclined planes $F^7$ $F^8$

for engaging with the said grooved projections, substantially as set forth.

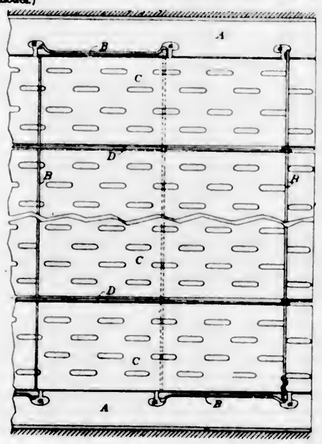
528,930. STEAM-BOILER. ELLIS F. EDGAR, Woodbridge, N. J. Filed Nov. 11, 1892. Serial No. 451,639. (No model.)



*Claim.*—1. In a steam boiler, a series of boiler tubes provided with incombustible walls located within and partially closing the tube at or about the water line, but with draft spaces at the edges of said walls, a series of circulator tubes about the boiler tubes but a short distance therefrom and extending upward to about the level of the water line and a priming plate interposed between the steam space and the upper ends of the circulator tubes, substantially as set forth.

2. In a steam boiler, a series of boiler tubes provided with incombustible walls located within and partially closing the tubes at or about the water line, with draft apertures from one face of said walls to the other, a series of circulator tubes about the boiler tubes, but a short distance therefrom, and extending upward to about the level of the water line and a priming plate interposed between the steam space and the upper end of the circulator tubes, substantially as set forth.

528,931. FIREPROOF FURRING, PARTITION, OR WALL. BETTE R. J. ELLA, New York, N. Y. Filed Feb. 24, 1894. Serial No. 501,437. (No model.)

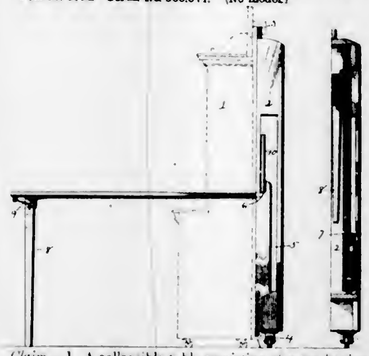


*Claim.*—1. A metallic web for fireproof partitions or furring composed, substantially as hereinbefore set forth, of two interconnected rows of strained strands of wire, and sheets of metallic lathing inserted between the said two rows of wire.

2. A metallic web for fireproof partitions or furring composed, substantially as hereinbefore set forth, of two rows of strained wires, sheets of metallic lathing inserted between the said two rows of wires, and binders between the respective sheets of lathing, which binders besides causing the two rows of strained wires to hug the sheets of lathing also act as separators or supports for the latter.

3. A metallic web for fireproof partitions or furring composed, substantially as hereinbefore set forth, of a series of strained and interconnected double strands of wire, and sheets of metallic lathing held between said double strands of wire.

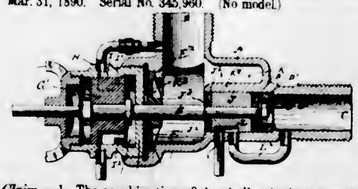
528,932. COMBINATION ARTICLE OF FURNITURE AND COLLAPSIBLE TABLE. ALBERT W. ELLISON, Point Pleasant, W. Va. Filed Feb. 16, 1894. Serial No. 500,371. (No model.)



*Claim.*—1. A collapsible table consisting of a top having hinged thereto suitable legs, a cross piece hinged at one end to the top of the table, a frame having suitable perpendicular slots and shoulders located therein, said cross piece adapted to work in said slots and rest on said shoulders, as set forth.

2. The combination of an article of furniture such as a cabinet, and a frame attached thereto, said frame adapted to slide behind the said article; a collapsible table located in said frame, consisting of a top having hinged thereto suitable legs, a cross piece hinged at one end to the top of the table, said frame also having suitable perpendicular slots and shoulders located therein, said cross piece adapted to work in said slots and rest on said shoulders, as set forth.

528,933. VALVE. RUFUS B. FOWLER, Worcester, Mass. Filed Mar. 31, 1890. Serial No. 345,960. (No model.)



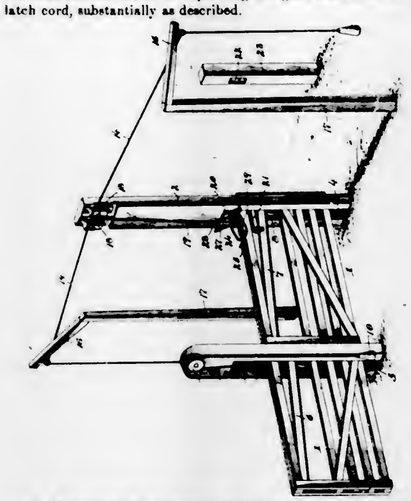
*Claim.*—1. The combination of the shell or body A provided with the shoulder $E^3$, plate E', having a central bearing for the valve spindle, valve spindle E, valve disk D and piston G' attached to said spindle, packing disk $E^3$, cylinder F, inclosing said piston and having openings H and H', pipe $H^3$, forming a water way from the shell, A and cylinder F, said piston G' having passages by which a communication is formed between the chamber G and the openings H and H' by the oscillation of the piston, substantially as described.

2. The combination with the shell or body A of valve seat D' valve disk D, piston J provided with the chamber L, outlet pipe L', and bent pipe $L^3$ forming a waste pipe substantially as described.

528,934. SLIDING GATE. DAVID FULTON, Enterprise, Oreg., assignor of one-half to A. R. Flowers, same place. Filed June 30, 1894. Serial No. 516,180. (No model.)

*Claim.*—1. The combination of a supporting frame, a gate slidingly mounted thereon and provided with a latch and having at its top a stop, a bell crank catch fulcrumed on the supporting frame and having a locking arm arranged to engage the said stop, a latch cord having one end connected with a latch and loosely engaging the bell-crank catch, and means for operating the gate connected with the latch cord, substantially as described.

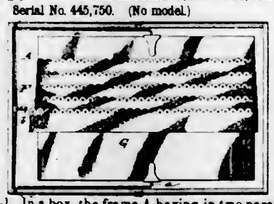




2. The combination of a supporting frame, a sliding gate mounted thereon and having a stop at its top, a bell-crank catch fulcrumed on the supporting frame and comprising a loop, an L-shaped locking arm arranged at one side of the loop and located above the gate to engage the stop thereof, and an arm extending from the other side of the loop and arranged to engage the post to hold the locking arm above the gate when the latter is closed, and means for operating the gate connected with the bell-crank catch, substantially as described.

3. The combination of a supporting frame, a sliding gate mounted thereon and provided with a latch and having a stop at its top, a bell-crank catch fulcrumed on the supporting frame and located above the gate and comprising a loop having an eye, an L-shaped locking arm extending from one side of the loop and arranged to engage the stop and an arm extending from the other side of the loop and arranged to engage the post, a latch cord connected with the latch and loosely passing through the eye of the catch, operating ropes connected with the latch cord, and means for counterbalancing the gate, substantially as described.

528,935. BOX. ANNIE M. GALLAND, New York, N. Y. Filed Sept. 13, 1892. Serial No. 445,750. (No model.)



*Claim.*—1. In a box, the frame A having in two parallel sides the longitudinal under-cut grooves, B B, said grooves loosely carrying the pivots E E, said pivots being secured to the corresponding parallel sides of the box-cover D, substantially as and for the purpose described.

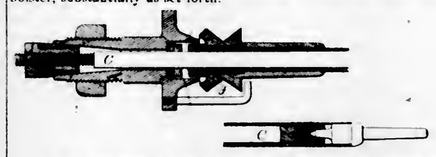
2. In a box, the combination of the frame A and cover D with the rack F pivoted at *d d*, arms *a a* supporting the reel card G, substantially as and for the purpose specified.

3. In a box the box frame A, the swinging frame F pivoted at or near one end of the box, said frame F being provided with the hook *b* arms *a a*, and carrying reel card G, all arranged substantially as and for the purpose specified.

528,936. SPINDLE AND BOLSTER. FRED M. GARCELON, Lewiston, Me. Filed Jan. 2, 1894. Serial No. 495,353. (No model.)

*Claim.*—1. The combination with a bolster and a dead spindle, of an elastic device inserted in the end of the bolster and adapted to receive the dead spindle, and an elastic washer encircling the dead spindle at the upper end of the bolster substantially as set forth.

2. The combination with a bolster and a dead spindle, of an elastic plug inserted in the lower end of the bolster and adapted to receive the lower end of the dead spindle, and an elastic washer encircling the dead spindle and located in a recess at the upper end of the bolster, substantially as set forth.



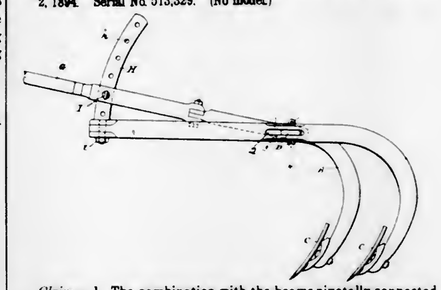
3. The combination with a bolster having a conical opening at its lower end and a dead spindle passing through said bolster and adapted to have a slight lateral movement therein, of a conical elastic plug inserted in the conical opening in the bolster and adapted to receive the lower end of the dead spindle, and an elastic washer encircling the dead spindle at the upper end of the bolster substantially as set forth.

4. The combination with a bolster having a tapering bore at the lower end, of a dead spindle having a projection thereon adapted to engage the bolster, said spindle being threaded at one end, a tapering plug screwed on the threaded end of the spindle, and an elastic or yielding material interposed between the plug and the bore of the bolster, substantially as set forth.

5. The combination with a bolster having an opening therein and a dead spindle passing through said bolster and adapted to have a slight lateral movement, of a plug having an elastic covering, inserted in the lower end of said bolster and adapted to receive the lower end of the dead spindle, and an elastic washer, encircling the dead spindle and inserted in a recess in the upper end of the bolster, substantially as set forth.

6. The combination with a bolster having a recess in its upper end and a perforation extending through the bolster, and a dead spindle adapted to pass loosely through said perforation, of an elastic plug inserted in the lower end of said bolster and adapted to receive the dead spindle, an elastic washer located in the recess in the bolster and encircling the dead spindle, and a fast collar on the dead spindle and adapted to retain said elastic washer in place, substantially as set forth.

528,937. HAND GARDEN-PLOW. WILLIAM C. GILMORE, Letts, assignor to L. Van Horn & Snyder, Louisa county, Iowa. Filed June 2, 1894. Serial No. 513,329. (No model.)



*Claim.*—1. The combination with the beams pivotally connected together at their front ends and having lateral openings between their ends from which project outwardly pairs of ribs which are vertically apertured, of a curved bar passing laterally through the said openings and between the pairs of ribs and provided in its length with a series of openings, pins adapted to pass through the opening in the ribs and the openings in the transverse bar, a draft bar having adjustable connection at its rear end with the transverse bar, and means for adjustably connecting the front end of the beams with the said draft bar at a point forward of its connection with the transverse bar, substantially as set forth.

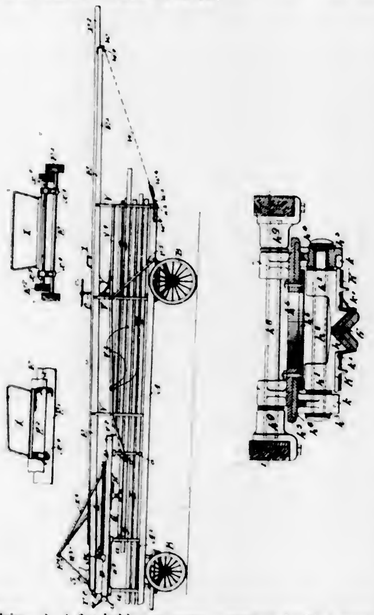
2. In combination, plow beams pivotally connected together at their front ends and having lateral openings between their front and rear ends, a transverse bar provided with a series of openings to adjustably connect the rear ends of the beams together and having a series of notches in its rear edge, spreader bars pivotally connected at their front ends and having openings in their rear ends to receive the aforesaid transverse bar and engage with the notches in the rear edge thereof, the draft beam connected with the front ends of the spreader bars, and having a vertical opening a short distance from its rear end, and a curved bar extending vertically from the pivotal ends of the beam and

passing through the vertical openings in the draft bar, and adjustably connected therewith, substantially as set forth.

3. The herein specified hand plow or cultivator composed of two beams pivotally connected together at their front ends, a curved bar, provided with a series of openings, rising vertically from the said beam and having its lower end constituting the pivotal connection of the said beams, a curved bar, having a series of openings and a series of notches in its rear edge, passing laterally through openings in the beam provided between their front and rear ends, means for adjustably connecting the beams with the said transverse bar, spreader bars pivotally connected together at their front ends and having openings in their rear ends to receive the said transverse bar and adapted to form or make adjustable connection with the notches in its rear edge, and a draft bar pivotally connected with the front ends of the spreader bars and having a vertically disposed opening to receive the curved bar projecting vertically from the beam and adapted to make adjustable connection therewith, substantially as described for the purpose specified.

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**528,938. FIRE-LADDER APPARATUS.** HENRY L. GOODWIN, New York, N. Y., assignor to John Starr, Halifax, Canada. Filed Sept. 23, 1892. Serial No. 446,662. (No model.)



*Claim.*—1. A fire ladder apparatus, constructed with a supporting frame, a tilting main ladder carrying platform, a longitudinal bar sustained by the frame, and made of angle iron or steel set apex uppermost, and a coupling connecting the ladder platform and said bar; room being provided between the frame bed and bar for one or more hand ladders, substantially as described.

2. A fire ladder apparatus, constructed with a supporting frame, a main ladder carrying platform, and a coupling connecting the frame and platform and giving turning, tilting and then vertically rocking movements to the platform and its ladder, and also giving room between the frame bed and coupling for one or more hand ladders, substantially as described.

3. A fire ladder apparatus, comprising a supporting frame, having a longitudinal bar, a main ladder carrying platform, and a coupling connecting the ladder platform and said bar and giving turning, tilting and then vertically rocking movements to the platform and its ladder, room being provided between the frame bed and bar for one or more hand ladders, substantially as described.

4. A fire ladder apparatus, constructed with a supporting frame, a main ladder carrying platform, and a coupling connecting the frame and platform and comprising a turntable device interposed between pivotal connections of the coupling with the ladder platform and the frame, said coupling having an elastic or resilient support, substantially as described.

5. A fire ladder apparatus, constructed with a supporting frame having a raised portion, a main ladder carrying platform adapted to rest on or above said raised part of the frame, an elastic or resilient bar support held by said raised portion of the frame and above the frame bed, and a coupling connecting this bar and the ladder platform and giving horizontal turning and vertical tilting movements to the platform and its ladder, substantially as described.

6. A fire ladder apparatus, constructed with a supporting frame having a raised portion, a main ladder carrying platform adapted to rest on or above said raised part of the frame, a bar support held by said raised portion of the frame and above the frame bed, and a coupling connecting said bar support and ladder platform and giving turning, tilting and then vertically rocking movements to the platform and its ladder, substantially as described.

7. A fire ladder apparatus, constructed with a supporting frame, a main ladder carrying platform, a coupling connecting the platform and frame, and giving turning, tilting and then vertically rocking movements to the platform and its ladder, and a latch device at times limiting the adjustments of the ladder platform to horizontal turning and vertical tilting movements, substantially as described.

8. A fire ladder apparatus, constructed with a supporting frame, a horizontally turning and vertically tilting main ladder carrying platform, coupled to said frame and adapted to obtain a ground support for the raised ladder, one or more screws on said ladder platform, nuts on said screws, rods connecting the nuts to the main ladder which is pivoted to the platform, a transverse shaft located on the platform near its ground end when tilted, and operating gearing connecting this transverse shaft with the screws, substantially as described.

9. A fire ladder apparatus, constructed with a supporting frame, a horizontally turning and vertically tilting main ladder carrying platform coupled to said frame and adapted to obtain a ground support for the raised ladder, one or more screws on said ladder platform, nuts on said screws, rods connecting the nuts to the main ladder which is pivoted to the platform, a transverse operating shaft located on the platform nearer its ground end when tilted, operators' floors at the main frame bed beneath the shaft, and gearing connecting said shaft with the screws, substantially as described, whereby the screws may be operated by or from the transverse shaft to raise and adjust the main ladder both from the frame bed floors and from the ground, as herein set forth.

10. In a fire ladder apparatus, the combination, with the main ladder pivoted to a platform coupled to the supporting frame, of guides or slideways on the ladder, a driver's seat fitting said slideways, and detents holding said seat to the slideways and allowing its removal from the ladder, substantially as described.

11. In fire ladder apparatus, the main ladder carrying platform having opposite side and end timbers, and intermediate cross timbers, operating screws having bearings at said intermediate timbers which distribute thereto the thrust strains of the screws, floors or plates between the intermediate cross timbers and end timbers of the platform and distributing the thrust strains of the screws to all four transverse timbers of the platform, and nut and rod connections from the screws to the main ladder which is pivoted to the platform, substantially as described.

12. In fire ladder apparatus, the combination, with the supporting frame, the main ladder carrying platform coupled thereto and having horizontal turning, and then tilting, and then vertical rocking movements, of leveling or adjusting screws at the ground end of the tilted platform, substantially as described.

13. In fire ladder apparatus, the combination, with the supporting frame, the main ladder carrying platform coupled thereto and having tilting and subsequent vertical rocking movements, of guard shoes held to the ground end of the tilted platform, and leveling or adjusting screws fitted in said shoes and protected thereby, substantially as described.

14. In fire ladder apparatus, the main frame having a rear end cross beam projecting beyond the side rails, combined with diagonally ranging braces connecting the rails and cross beam and forming a guard or fender to the latter, substantially as described.

15. In fire ladder apparatus, the main frame having a rear end cross beam projecting beyond the side rails, combined with diagonally ranging braces connecting the rails and cross beam, and stays or braces connecting the ends of the cross beam or its diagonal braces with the rear end or part of the main ladder, substantially as described.

16. In fire ladder apparatus, the combination, with the main frame rails A, having front standards $a$, $a'$, and rear standards V, of an angle iron or steel bar G, a platform D, adapted to the frame standards $a$, $a'$, a coupling H, connecting the parts G, D, the main ladder pivoted to the platform and sustained thereby and by the frame standards V, screws L, on the platform, and rods $E^4$, connecting said screws to the main ladder, substantially as described.

17. The combination, with the frame and standards $a$, thereon, of bearings $g$, on the frame hooked over the top of the standards $a$, and provided with a part $g'$, having projection $g^3$, and side flanges $g^2$, $g^3$, and an angle iron or steel bar G, sustained by said bearings and supporting the main ladder carrying platform, substantially as described.

18. In fire ladder apparatus, the coupling H, connecting the main tilting ladder platform with the frame and comprising a saddle or base piece $h$, having bearings $h'$, $h'$, a turntable $h^4$, $h^2$, $h^5$, said part $h^4$, having bearings $h^3$ $h^3$, a shaft $h^3$, loose in the bearings $h'$, $h^2$, and said part $h^5$, having bearings $h^7$, $h^7$,—bearings $h^9$, $h^9$, on the ladder platform, and a shaft $h^8$, loose in the bearings $h^7$, $h^9$, substantially as described.

19. In fire ladder apparatus, the coupling H, connecting the main tilting ladder platform with the frame and comprising a saddle or base piece $h$, having bearings $h'$, $h'$, a turntable $h^4$, $h^2$, $h^5$, said part $h^4$, having bearings $h^3$, $h^3$, provided with recesses $k$; a shaft $h^3$, loose in the bearings $h'$, $h^2$, and said part $h^5$, having bearings $h^7$, $h^7$; bearings $h^9$, $h^9$, on the ladder platform, a shaft $h^8$, loose in the bearings $h^7$, $h^9$, and bolts K, on the saddle $h$, adapted to the recesses $k$, substantially as described.

20. The combination, with the main ladder pivoted to a tilting platform, substantially as described, of a detachable driver's seat S, fitted to slideways $s'$, on the ladder and having back stops $s^2$, and bolts $s$, on the seat adapted to engage sockets in the ladder, as set forth.

21. The combination, with the frame bed A, having a rear timber $a^3$, of braces $w^2$, thereat, and stays W, having hooks at opposite ends, adapted to engage eyes on the braces $w^2$, and on the rear end of the main ladder, substantially as described.

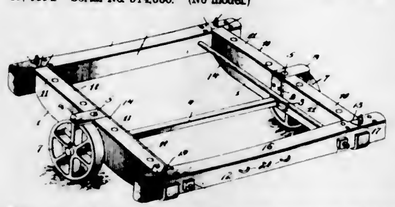
22. The combination, with the frame bed A, having a rear timber $a^3$, of braces $w^2$, thereat, and stays W, having hooks at opposite ends adapted to engage eyes on the braces $w^2$, and on the rear end of the main ladder, said stays W, having turnbuckles $w^4$, substantially as described.

23. The combination, with the steering wheel shaft C, and the adjacent ladder standard V, of a yielding bearing $z$, for the shaft, provided with a lateral slot receiving the bolt $z'$, which holds it to the standard, substantially as described.

24. The combination, with the steering wheel shaft C, having a collar or stop $c^2$, and the adjacent ladder standard V, of a slotted latch $z^4$, held yieldingly to the standard and adapted to receive the shaft above its collar or stop, substantially as described.

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**528,939. TRUCK.** JOHN D. GRABILL, Roanoke, Va. Filed June 15, 1894. Serial No. 514,680. (No model.)



*Claim.*—1. A truck comprising in its construction two longitudinal side beams, an axle mounted upon said beams, wheels operating with the axle to support the truck, metallic plates secured one to each end of the side beams and extending beyond the said ends, the extended portions of the plates being bent downwardly, outwardly and thence upwardly to form seats or pockets, and end beams removably seated in the bent portions of said plates whereby the end pieces may be removed and substituted by another set of different length, substantially as described.

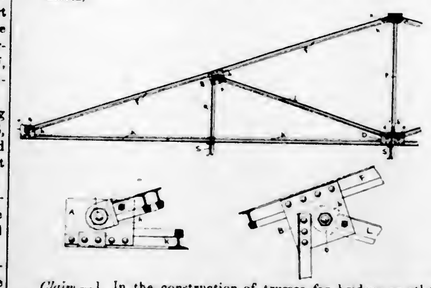
2. A truck comprising in its construction two longitudinal side beams, an axle fixed to the lower side thereof, carrying-wheels mounted on the axle and adapted to support the truck, the ends of the side beams being formed with seats or pockets thereon, and removable end beams adapted to be seated in said seats or pockets and capable of being removed and replaced by end beams of different length, substantially as described.

3. A truck comprising in its construction two longitudinal side beams, an axle fixed to the side beams, wheels mounted upon the axle and adapted to support the truck, plates secured one to each end of the side beams and extending beyond the ends thereof, the extended portions of said plates being bent downwardly, outwardly and thence upwardly to form a pocket or seat, end beams adapted to be arranged in said pockets or seats and having vertical grooves therein adapted to receive the ends of the side beams, and tie-rods extending longitudinally from one end beam to the other, substantially as described.

4. A truck comprising in its construction two longitudinal side beams provided with suitable end beams, the side beams having formed on their under sides, and oppositely thereon, upwardly-extending recesses, an angular metallic plate secured in each recess, an axle corresponding in shape with the shape of the plate and extending across from one side beam to the other and located in the plates of the recesses in the side beams, a bolt passing through the axle at each side beam and extending vertically through the same, whereby the axle is secured in place, and wheels mounted rotatably upon the axle, substantially as described.

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**528,940. CONSTRUCTION OF BRIDGES, ROOFS, &c.** JOHN E. GREINER, Baltimore, Md. Filed Feb. 14, 1894. Serial No. 500,112. (No model.)



*Claim.*—1. In the construction of trusses for bridges or other structures, the herein described hinge bearing blocks $a$, $b$, $d$ held in position by pins $o$ passing through cheek plates A, B, D, as shown and described and for the purposes set forth.

2. In the construction of trusses for bridges or other structures, the cheek plate A, Figs. 5 and 6, having lugs projecting below the lower edge and which fit snugly into notches cut into the rail; the lower edge of cheek plate on each side of lugs to bear against the upper surface of the rail flange all as shown and described and for the purpose set forth.

3. In the construction of trusses for bridges or other structures the adjusting device shown in Figs. 8 and 9 which consists of a bolt E either directly or indirectly connected to the lower chord, and at upper end to any part of the hangers P by means of either a bridge plate as H Fig. 9 or by passing through and connecting to the wedge C, all as shown and described and for the purposes set forth.

4. In trusses for bridges, roofs or other structures, the combination of hinged bearings with rigid braces independent of, yet bearing against the hinged bearing and the combination of an adjusting device, consisting of a lifting screw, bridge plate and hangers with a rigid suspender, all as shown and described and for the purpose set forth

5. In the construction of bridges or other structures, the herein described truss consisting of top and bottom chords, braces, rigid suspension members in combination with the hinged bearing blocks $a$, $b$, $d$, held in position by pin $o$, secured to cheek plates A, B, D and the adjustable device consisting of a bolt attached to lower chord and hangers as shown and described and for the purpose set forth.

6. In the construction of trusses for bridges and other structures, the hinged bearing block $a$, and the adjusting device consisting of a bolt attached to lower chord and hanger as shown and described and for the purposes set forth.

7. In the construction of trusses for bridges or other structures, the combination of hinged bearings with rigid braces independent of yet bearing against the hinged bearing and the combination of an adjusting device consisting of a lifting bolt, bridge plate and hangers with a rigid suspender, all as shown and described and for the purposes set forth.

8. In the construction of trusses for bridges or other structures, the hinged block $a$, free to oscillate confined in position by pin $o$ and cheek plates A in combination with the abutting braces F, wedge C, the rigid hangers P, the adjusting bolt E with its attachments and packing pieces, all as described and set forth in the accompanying drawings and specifications.

9. The stiff hanger P in combination with the wedge bearing C as in Fig. 8 all as described and set forth for the purposes specified

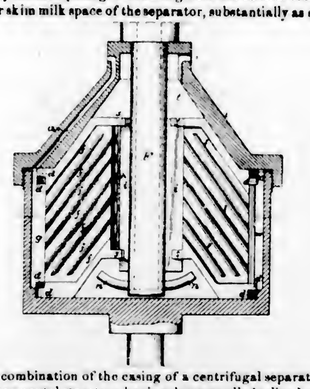
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**528,941. CENTRIFUGAL CREAM-SEPARATOR.** WILLIAM C. HARTMANN, Philadelphia, Pa. Filed Dec. 11, 1893. Serial No. 493,357. (No model.)

*Claim.*—1. The combination of the casing of a centrifugal separator with an internal structure comprising a series of segments having in their meeting faces recesses forming downwardly inclined passages providing a communication between the central cream space and the outer skim milk space of the separator, substantially as specified.

2. The combination of the casing of a centrifugal separator, with

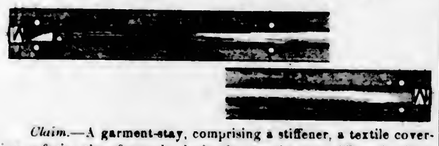
an internal structure consisting of a series of segments hinged together at their outer edges and having in their meeting faces recesses forming downwardly inclined passages extending from the central cream space to the outer skim milk space of the separator, substantially as specified.



3. The combination of the casing of a centrifugal separator, with an internal segmental structure having downwardly inclined passages communicating with the central cream space and outer skim milk space of the separator, each segment having at its upper end an internally projecting perforated flange, substantially as specified.

4. The combination of the casing of a centrifugal separator, having a central feed pipe, with a series of segments forming an internal structure with downwardly inclined passages in each segment communicating with the central cream space and outer skim milk space of the separator, and internally projecting blades for bearing upon the central feed tube carried by one or more of the segments, substantially as specified.

528,942. **GARMENT-STAY.** ELIZABETH E. HOWELL, Maryville, Mo. Filed Feb. 26, 1894. Serial No. 501,562. (No model.)



*Claim.*—A garment-stay, comprising a stiffener, a textile covering or facing therefor, and a device for securing the stiffener in place, said device consisting of a metal shank having one end bent over the end of the stiffener and its covering or facing, and the opposite end of the shank provided with laterally projecting spurs which extend through the covering or facing and are bent down over the shank, the spurs interlocking each other as shown, said device serving the double purpose of a fastener and an end-tip or protector, substantially as and for the purpose set forth.

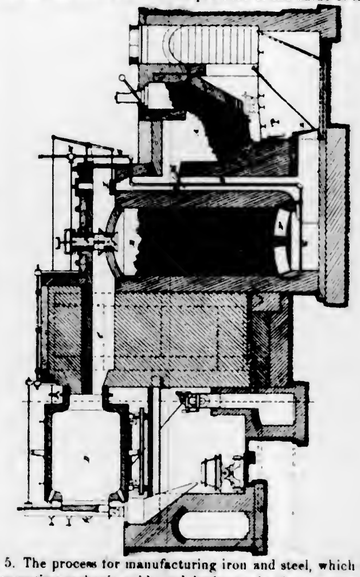
528,943. **PROCESS OF AND APPARATUS FOR THE MANUFACTURE OF IRON OR STEEL.** RUDOLPH M. HUNTER, Philadelphia, Pa. Filed Sept. 16, 1879.

*Claim.*—1. The herein described process for the manufacture of iron and steel, consisting in passing hydrogen gas under pressure considerably above the normal into carbonic acid in the presence of oxide of iron in a state of agitation and inclosed in a furnace or vessel practically air tight, the said hydrogen decomposing the said carbonic acid into oxygen and "nascent" carbonic oxide, and bringing the nascent carbonic oxide into direct contact with the oxide of iron which it readily reduces.

2. The process for manufacturing iron and steel, consisting in first passing carbonic oxide without hydrogen into a reducing furnace practically air tight and containing oxide of iron kept in a state of agitation to expose fresh surfaces, and then partly burning it to carbonic acid by the oxygen contained in the ore, and secondly in passing hydrogen into the carbonic acid in contact with the oxide of iron for the purpose of decomposing it and setting "nascent" carbonic oxide free which then attacks the partly reduced oxide of iron with great vigor readily combining with its last trace of oxygen.

3. A metallurgical furnace made practically air tight and provided with an inlet and an outlet, the latter being provided with dampers by which the escape of the reducing gases is retarded or prevented and by which they are caused to be burned under pressure in said furnace in combination with a hydrogen gas generator for producing hydrogen under pressure, and a connecting flue to conduct hydrogen into the furnace.

4. The herein described process for manufacturing iron and steel, consisting in first passing air into a bed of burning carbon, then passing the carbonic oxide produced into the bottom of a second bed of carbon, and then burning said carbonic oxide to carbonic acid by air, then passing the carbonic acid produced up through the secondary bed of carbon, reducing the gas again to carbonic oxide, then passing such carbonic oxide into a metallurgical furnace containing an oxide of iron, which gives up part of its oxygen, and secondly, in passing steam into the incandescent secondary bed of carbon, and passing the hydrogen mixed with the carbonic oxide so produced into the metallurgical furnace containing carbonic acid gas in the presence of the oxide of iron, which it decomposes forming steam and "nascent" carbonic oxide in the presence of the oxide of iron.



5. The process for manufacturing iron and steel, which consist in generating carbonic oxide and hydrogen in the separate generators or producers, then passing the carbonic oxide into the metallurgical furnace containing an oxide of iron, and after heating said oxide of iron and partly reducing the same, in passing hydrogen previously mixed with some carbonic oxide into the furnace in the presence of the partly reduced oxide of iron, and toward the completion of the deoxidation process increasing the proportion of the hydrogen, the said steps being taken in the order named.

6. The process for manufacturing iron and steel, which consists in generating carbonic oxide and hydrogen in separate generators, then passing the carbonic oxide into the metallurgical furnace containing an oxide of iron, and after heating said oxide of iron and partly reducing the same passing hydrogen previously mixed with some carbonic oxide (but the carbonic oxide being greatly in excess) into the furnace in the presence of the partly reduced oxide of iron, and toward the completion of the deoxidation of iron increasing the proportion of hydrogen so as to bring it in excess, the said steps being taken in the order named.

7. The process for manufacturing iron and steel which consists in generating carbonic oxide and hydrogen in separate generators, then passing the carbonic oxide into a metallurgical furnace containing an oxide of iron, and after heating said oxide of iron and partly reducing the same, in passing hydrogen previously mixed with carbonic oxide into the furnace in the presence of the partly reduced oxide of iron and carbonic acid under great pressure to increase the temperature the combustion of said hydrogen taking place under said pressure, and toward the completion of the deoxidation process causing the iron and steel to ball, as it comes to nature.

8. The combination of a furnace in which to reduce ores, a water gas generator provided with air and steam pipes, a valved fuel entrance for charging the water gas generator with fuel, a producer for generating carbonic oxide gas, a flue connecting the metallurgical furnace with both the water gas generator and the producer, and valves to control the gases passing from the water gas generator and producer respectively.



9. The combination of a furnace in which to reduce ores, a water gas generator provided with air and steam pipes, a valved fuel entrance for charging the water gas generator with fuel, a producer for generating carbonic oxide gas, a flue connecting the metallurgical furnace with both the water gas generator and the producer, valves to control the gases passing from the water gas generator and producer respectively and a valved flue connecting the discharge of the producer with the water gas generator, whereby the gases of the former are caused to pass into the latter.

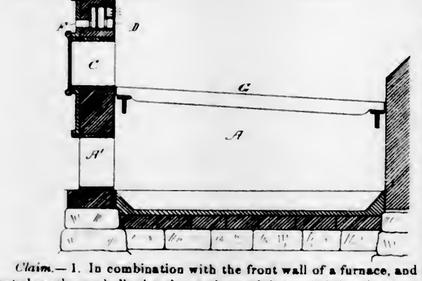
10. The combination of a rotary furnace, with a flue entering said furnace and kept in a heated condition by the escaping products of combustion, a generator to produce carbonic oxide gas communicating with said flue by a valved orifice, a generator to produce hydrogen gas connected with said flue by a valved orifice, whereby the hydrogen and carbonic oxide commingle in the heated flue before passing into the furnace.

11. The combination of a rotary furnace, with a flue entering said furnace and kept in a heated condition by the escaping products of combustion, a generator to produce carbonic oxide gas communicating with said flue by a valved orifice, a generator to produce hydrogen gas connecting with said flue by a valved orifice, whereby the hydrogen and carbonic oxide commingle in the heated flue before passing into the furnace, and a resistance or weighted valve device to keep the gases in the furnace under considerable pressure to increase the temperature by burning the hydrogen under pressure.

12. The combination of a rotary furnace, with a flue entering said furnace and kept in a heated condition by the escaping products of combustion, a generator to produce carbonic oxide gas communicating with said flue by a valved orifice, a generator to produce hydrogen connected with said flue by a valved orifice, whereby the hydrogen and carbonic oxide commingle in the heated flue before passing into the furnace, and means extending to the outside of the furnace to enable the operator to regulate at will the valves controlling the admission of the different gases and at the same time watch the progress of the reduction of the oxide of iron within the furnace.

13. The combination of a vessel to be heated, an outlet from said vessel provided with means to create a back pressure, a water gas generator communicating with the vessel by means of a flue and provided with a steam pipe whereby the water gas generated under pressure may be forced to the vessel to be heated and allowed to escape under a back pressure.

528,944. **FURNACE.** FLORENTINE A. JONES, Boston, Mass. Filed Jan. 30, 1894. Serial No. 498,529. (No model.)

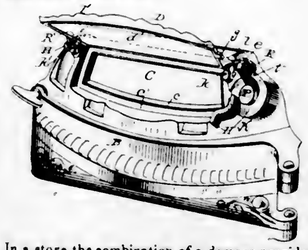


*Claim.*—1. In combination with the front wall of a furnace, and located partly or wholly therein, an air supplying and air heating box, having a vertical division wall $D^2$ and a horizontal division wall K, whereby two chambers $F^6$ and $F^6$ are formed, the lower chamber $F^6$ being directly exposed to the heat of the fire and serving as a passage through which air flows into the outlet chamber $F^6$ said chamber being provided with openings $F^7$ $F^7$, substantially as and for the purpose set forth.

2. In combination with the front wall of a furnace, and located partly or wholly therein, an air supplying and an air heating box having a vertical division wall and a horizontal division wall, whereby two chambers $F^6$ and $F^6$ are formed within the box as described, and radiating projections P P, substantially as and for the purpose set forth.

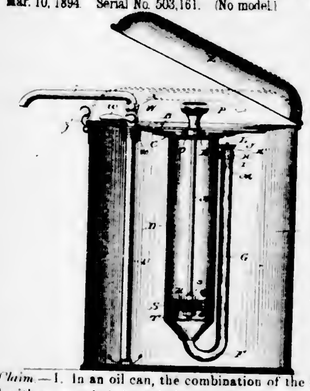
528,945. **STOVE.** WILLIAM J. KEEP, Detroit, Mich., assignor to the Michigan Stove Company, of Michigan. Filed May 31, 1893. Serial No. 476,045. (No model.)

*Claim.*—1. In a stove, the combination of a damper, a crank terminated pintle, a rotating cam having an inclined track and a grooved holding face, the groove having its axis parallel to the axis of rotation of the cam and being adapted to engage with the arm of the crank, substantially as specified.



2. In a stove the combination of a damper provided with a projection and a locking spur, a cam provided with a track the upper side of which is adapted to engage with the projection and throw the door open, the under side of which is adapted to engage with the spur and lock the door shut, substantially as described.

528,946. **OIL-CAN.** ANDREW W. KNITTEL, New Castle, Pa. Filed Mar. 10, 1894. Serial No. 503,161. (No model.)



*Claim.*—1. In an oil can, the combination of the can body provided with a central air inlet in its top, a pump cylinder secured to the top of the can and depending therein, an upright pump discharge pipe arranged at one side of the cylinder and connected at its lower end to the lower end of the cylinder and provided at its upper end with a flared valve seat, a band encircling the pump discharge pipe near its upper end and provided with guides at its opposite sides, a beveled check valve disk arranged to be seated in said flared valve seat, a valve bail encircling the top of said check valve and provided with opposite side portions sliding in the guides of said band and terminating at their lower extremities in flanged stops adapted to engage under said band, the valved piston arranged to work within the pump cylinder, and the oil discharge pipe projecting through the top of the can body and extending therein to a point near its bottom, substantially as set forth

2. In an oil can, the combination with the liquid and air tight tank having a central air inlet opening in its top, a pump cylinder arranged within the tank under said central air inlet opening and having a valved discharge pipe opening into the tank near its top, a perforated guide plate attached to the top of the tank across the central air inlet opening, a piston rod working in said perforated guide plate and having a lower threaded end, perforated head plates clamped onto the threaded end of the piston rod, a correspondingly perforated cup or flanged packing disk arranged between said head plates, a flexible valve disk fitted onto the lower one of said head plates, and the oil discharge pipe leading out of the tank from a point near its bottom, substantially as set forth.

528,947. **BILL-FILE.** OTTO HOSSFELD and PAUL KÜHNER, Berlin, Germany. Filed Feb. 20, 1893. Serial No. 463,063. (No model.) Patented in England Feb. 9, 1894, No. 2,924.

*Claim.*—1. A portfolio having in its back, a plate *n* with a slotted binder *r* said plate being provided with wires *q* in combination with a plate *t*, hung on said wires and provided with a shoulderblade to fit any of the slits of the binder, substantially as set forth.

2. A portfolio having in its back a plate *n* with a clotted binder

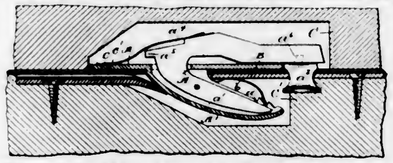
*r* said plate being provided with wires *q* adapted to slide in sleeve bearings in combination with a plate *l*, hung on said wires and provided with a shoulder blade to fit any of the slits of the binder, substantially as set forth.



3. A portfolio having in its back a plate *n* with a slotted binder *r* said plate being provided with wires *q* one having a beveled end, and the other having an offset and a perforated plate *t* slidingly mounted on said wires and adapted to enter the slots in the binder, in combination with a paper perforator composed of two hinged plates provided with pins and corresponding holes, and having hinged to one plate thereof two wires one with a beveled end and the other with an offset, corresponding to the bevel and offset of wires *q*, substantially as described and shown in the drawings.

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**528,948. FASTENER FOR CASKET-LIDS.** WILLIAM C. LANGENAU, Cleveland, Ohio. Filed June 22, 1894. Serial No. 515,337. (No model.)



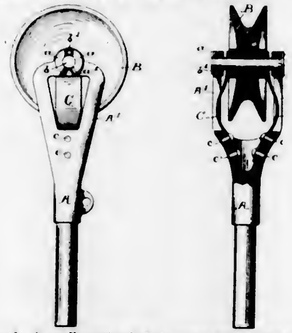
*Claim.*—1. In a fastener for casket lids, the combination of a hook portion the hook of which has a smooth outer side and a series of notches upon its inner side, a keeper having a slot for the insertion of such hook and provided with a projection which may engage the notches of the hook, and a latch within the hook and engaging the projection upon the keeper to disengage such projection from the notches in the hook, substantially as set forth.

2. In a fastener for casket lids, the combination of a hook portion the hook of which has a smooth outer side and a series of notches upon its inner side, a keeper portion having a slot for the hook of such hook portion and a spring engaging the notches in said hook portion, and a latch pivoted in said hook portion to be actuated to disengage the spring from the notches, substantially as set forth.

3. In a fastener for casket lids, the combination of a plate formed with a guide lip at one end bent at a right angle to the plate and with a hook having a smooth outer side and a series of notches upon its inner side, a keeper having a slot for the insertion of the hook and a spring engaging the notches in the same, and a latch pivoted in the hook to bear against and disengage the spring and formed with a nose which limits its play and with an actuating arm which bears against and is guided by the edge of the guide lip upon the plate, substantially as set forth.

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**528,949. TROLLEY.** BENJAMIN F. LARE and CHARLES M. GREER, Philadelphia, Pa., assignors to the Ajax Metal Company, same place. Filed May 1, 1894. Serial No. 509,708. (No model.)



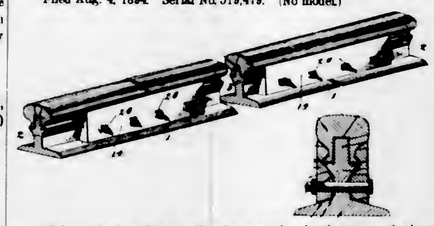
*Claim.*—1. A trolley wheel fork composed of the base A, and the two upwardly projecting arms of prongs A', A', said arms or prongs, having suitable holes drilled therein for the insertion of the trolley wheel shaft and on opposite sides of the said holes, the slots or depressions *a'*, substantially as and for the purpose described.

2. A trolley wheel fork composed of the base A, and prongs A', A', having therein the slots *a'*, *a'*, in combination with a trolley wheel B, and the shaft *b*, the ends of said shaft being made flush with the outer surface of that part of the fork through which it is inserted, substantially as shown.

3. In a trolley wheel fork composed of the base A, prongs A', A', having therein the slots *a'*, *a'*, and provided with the contact springs C, C, bent back into a depression or cut away portion in the prongs A', A', in combination with the trolley wheel B, revolving on a shaft *b*, the ends of which are flush with the sides of the prongs and held in position by a key or pin passing through the slots in the prongs A', substantially as shown.

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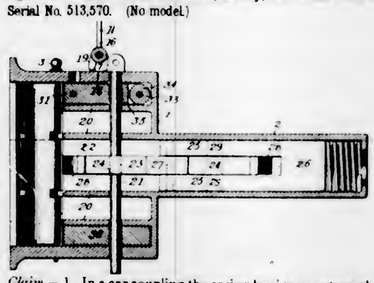
**528,950. RAILWAY-RAIL.** ALFRED F. LA SHELLS, Biggs, Cal. Filed Aug. 4, 1894. Serial No. 519,479. (No model.)



*Claim.*—In a railway rail, a base-section having a vertical portion provided on each side with a horizontal and longitudinal rib and with a longitudinal tongue arranged above and between the ribs, a tread or face section having on its under side a groove adapted to receive the tongue of the base-section and at its lower sides, respectively, two outwardly projecting ribs, said ribs having a downwardly and outwardly sloping face adapted to coincide with the edges of the ribs on the base-section, two fish-plates adapted to be arranged one on each side of the rail and adjacent to the contiguous ends of one of the sections, said plates having each formed on their inner sides a longitudinal groove, and adapted respectively to receive the two ribs of the rail and to snugly hold the same, and bolts passing horizontally from one fish-plate to the other, and through the vertical portion of the base-section, substantially as described.

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**528,951. CAR-COUPLING.** GEORGE B. LEONARD, Gracedale, assignor of one-half to Adam D. Smith, Ashley, Pa. Filed June 5, 1894. Serial No. 513,570. (No model.)



*Claim.*—1. In a car coupling the casing having a rectangular face opening in combination with vertical jaws pivoted to the casing and provided with wings adapted to engage with the inner edges of the face opening to lock the jaws in their closed position.

2. In a car coupling having a rectangular face opening the vertical jaws arranged at each side of the opening and pivoted to the casing, the elongated wings pivoted to the inner edges of the jaws and having shoulders adapted to engage with the inner edges of the face opening, springs for forcing the wings outward, and means for retracting the wings to release the jaws, substantially as described.

3. In a car coupling the combination with the casing having a rectangular face opening, angular jaws vertically arranged at each side of said opening, a cam lever on top of the casing, elbow levers pivoted on either side of the casing, and connections from the elbow levers respectively to the jaws and the cam lever, substantially as described.

4. In a car coupling the combination with the casing or head having vertical angular jaws pivoted thereto, of horizontal partitions in the rear of the jaws forming a series of compartments, a coupling pin passing through said partitions, and an arrow-head bolt having a perforation adapted to receive the coupling pin, substantially as described.



5. In a car coupling of the class described, the combination with the casing having vertical angular jaws, a compartment in the rear of the jaws, a block having horizontal jaws adapted to fit within the compartment, and a reversible arrow-head bolt centrally pivoted in the jaws of the block, substantially as described.

6. In a car coupling of the class described, the combination with the casing having vertical angular jaws and a compartment in the rear of said jaws, and with a coupling pin adapted to pass through said compartment, of a block adapted to fit within the compartment and provided with horizontal jaws, a reversible arrow-head bolt centrally pivoted in the jaws of said block, a perforation in said jaws adapted to receive a coupling-pin, and two perforations in said bolt adapted to register with the perforation in the jaws, substantially as described.

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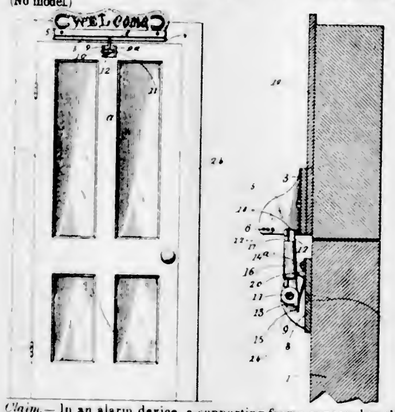
**528,952. KEYHOLE-GUARD.** MONS A. LINDER, Pullman, Ill. Filed Feb. 21, 1894. Serial No. 501,029. (No model.)



*Claim.*—In a key hole guard, the combination with an escutcheon plate having a key hole and provided at opposite sides of the same with projecting tongues S, arranged in pairs and forming a longitudinal way, and a sliding locking plate having its edges engaged by said tongues, and provided with projecting lugs located between the pairs of tongues and limiting the sliding movement of the locking plate, said locking plate being provided with a key hole and having at the top thereof an inclined or angularly-disposed slot, arranged to engage the shank of a key and adapted to hold the lug thereof away from the key hole, substantially as described.

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**528,953. BURGLAR-ALARM.** PETER H. LINDSEY and CHARLES H. SQUIRES, Lockport, N. Y. Filed Mar. 15, 1894. Serial No. 503,698. (No model.)

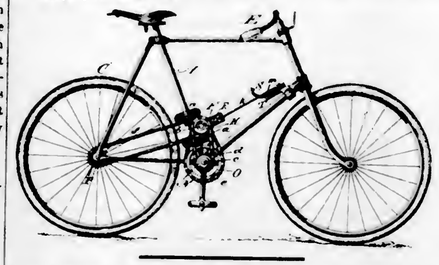


*Claim.*—In an alarm device, a supporting frame conected to the door casing and provided with a sounding wire, in combination with an alarm arm pivoted to a plate secured to the door, means substantially as described for holding the arm with a yielding force in its normal position and a friction match removably secured to said arm, both being in position to engage with the wire when moved past it, whereby an alarm and light is given simultaneously when the door is opened, substantially as described.

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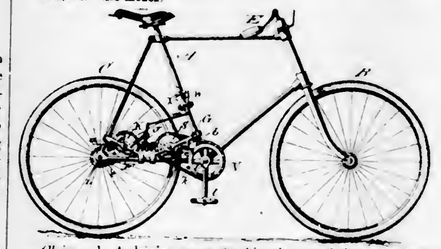
**528,954. DRIVING-GEAR FOR BICYCLES.** DAVID LIPPY and IRA E. FINFROCK, Mansfield, Ohio. Filed June 26, 1894. Serial No. 515,740. (No model.)

*Claim.*—In a driving-gear for bicycles, a suitable bracket adapted for attachment to the bicycle-frame, a shaft keyed to the bracket, a sleeve adapted to rotate upon the shaft, a clutch collar and sprocket-wheel keyed to the respective ends of the sleeve, a slidable sprocket-wheel upon the sleeve and having clutches upon its sides and means for operating them, a sprocket-wheel loosely mounted upon the sleeve and connecting with the large sprocket-wheel upon the pedal-shaft by means of a sprocket-chain, and sprocket-chains connecting the sprocket-wheels upon the sleeve with the sprocket-wheels upon the pedal-shaft and rear bicycle wheel respectively, substantially as and for the purpose set forth.



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**528,955. DRIVING-GEAR FOR BICYCLES.** DAVID LIPPY and IRA E. FINFROCK, Mansfield, Ohio. Filed June 26, 1894. Serial No. 515,741. (No model.)

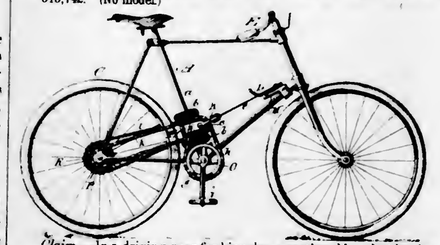


*Claim.*—1. A driving gear for bicycles, consisting of suitable brackets detachably connected to the bicycle-frame, a horizontal shaft having its bearings in the brackets, a slidable sleeve upon the shaft provided with clutches at its ends, independent pinions upon the sleeve, and a sprocket wheel having upon its face double bevel gears to engage with the pinions, and a sprocket chain engaging said sprocket wheel with a sprocket wheel upon the pedal-shaft, and means for connecting the horizontal shaft with the driving wheel substantially as and for the purpose set forth.

2. A driving gear for bicycles, consisting of suitable brackets adapted for attachment to the bicycle-frame, a horizontal shaft having its bearings in the brackets, a pinion keyed to the rear end of the shaft, a sprocket wheel engaging with the sprocket wheel upon the hub of the rear bicycle wheel through the medium of a sprocket-chain, a bevel gear upon the face of the sprocket-wheel to engage with the pinion, a slidable sleeve upon the shaft having clutches upon its ends, independent pinions upon the sleeve with which the clutches engage, a sprocket-wheel having upon its face double beveled gears to engage with the pinions, said sprocket wheel engaging with the sprocket wheel upon the pedal-shaft by means of a sprocket-chain, substantially as and for the purpose set forth

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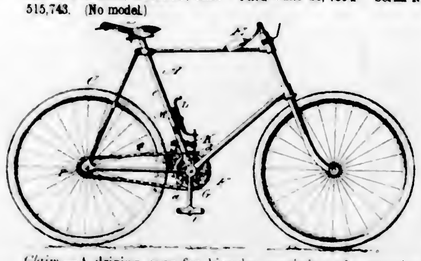
**528,956. DRIVING-GEAR FOR BICYCLES.** DAVID LIPPY and IRA E. FINFROCK, Mansfield, Ohio. Filed June 26, 1894. Serial No. 515,742. (No model.)



*Claim.*—In a driving gear for bicycles, a sectional bracket having a coupling collar for connecting it to the saddle supporting bar, a shaft having its bearings in said bracket, two sprocket wheels loosely mounted on the shaft, a third sprocket wheel rigidly connected thereto, a sliding clutch adapted to engage with the loosely mounted wheels, sprocket-chains engaging therewith and with a small and a large

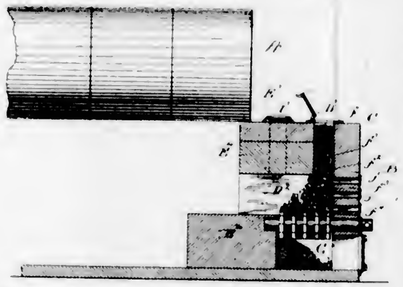
sprocket wheel upon the hub of the driving wheel, and a sprocket-chain engaging with a sprocket-wheel which is rigidly connected to the shaft of the bracket and also engaging with the sprocket wheel upon the pedal shaft, substantially as and for the purpose set forth

528,957. DRIVING-GEAR FOR BICYCLES. DAVID LIPPY and IRA E. FINFROCK, Mansfield, Ohio. Filed June 26, 1894. Serial No. 515,743. (No model.)



*Claim.*—A driving gear for bicycles, consisting of a sprocket-wheel loosely mounted upon the end of the pedal-shaft, a large gear-wheel keyed to the sprocket-wheel, a small gear-wheel loosely mounted upon the opposite end of the shaft, a small and a large gear-wheel upon the ends of a rotary shaft and meshing respectively with the large and small gear-wheels upon the pedal-shaft, a sprocket-chain connecting the sprocket-wheel with the sprocket wheel upon the hub of the rear bicycle-wheel, and a slidable double clutch upon the pedal shaft and means for operating it, substantially as and for the purpose set forth.

528,958. BOILER-FURNACE. JOSEPH LISTER, Chicago, Ill. Filed May 19, 1894. Serial No. 511,788. (No model.)



*Claim.*—In a down draft smoke consuming furnace, the combination of the inner arch $E^4$ supporting the boiler, the outer or front wall B, the relatively narrow vertical fuel duct between the front wall B and the arch and communicating with the longitudinal combustion chamber $D^4$ beneath the arch, the relatively short rotary grate bars situated longitudinally of the boiler and having their outer ends mounted in and projecting through the front wall B, and the hearth $E^3$ formed with bearing apertures for the inner ends of the short grate bars, said hearth $E^3$ extending beyond the inner face of the arch and lying directly below the boiler, substantially as set forth.

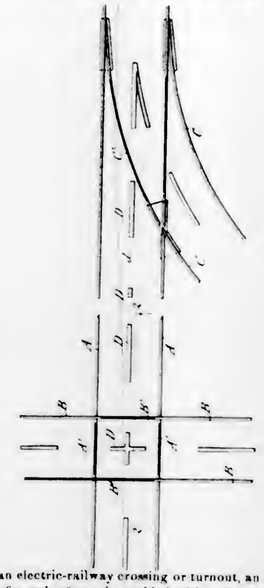
528,959. INTERSECTING ELECTRIC-RAILWAY TRACKS. MARK LOWD, Salem, Mass. Filed Feb. 10, 1894. Serial No. 499,825. (No model.)

*Claim.*—1. In an electric railway crossing or turnout, the combination, with the main-line rails, of a rail at an angle to said main-line rails and provided with a tread of insulating material in the path of the current collector carried by the car on the main line, substantially as set forth.

2. In an electric-railway crossing or turnout, an intersecting rail having a tread of insulating material and a base of metal, said intersecting rail being in the path of the current collector on the car, substantially as set forth.

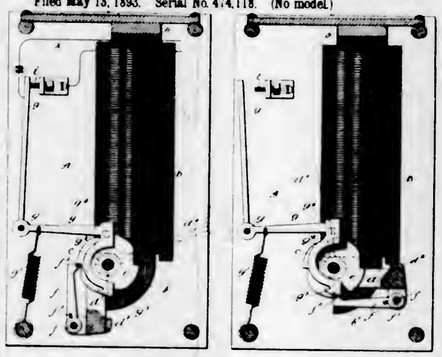
3. In an electric-railway crossing or turnout, an intersecting rail having a tread of insulating material and a web and base of metal, said intersecting rail being in the path of the current collector on the car, substantially as set forth.

4. In an electric railway crossing or turnout, an intersecting rail having a web and base of metal and a tread of insulating material secured to the web, said intersecting rail being in the path of the current collector on the car, substantially as set forth.



5. In an electric-railway crossing or turnout, an intersecting rail consisting of a web of metal provided with bolt-holes, a tread of insulating material arranged to fit on the web and provided with bolt-holes registering with those in the web, a series of bolts passing through the holes in the tread and through the holes in the web, and a bushing of insulating material surrounding each bolt where it passes through the web, substantially as set forth.

528,960. SELF-WINDING ELECTRIC CLOCK. ADAM LUDGEN, New York, N. Y., assignor of one-half to Robert Edwards, same place. Filed May 13, 1893. Serial No. 474,118. (No model.)



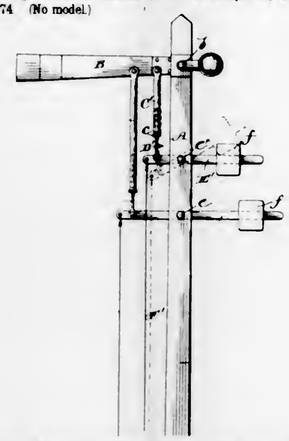
*Claim.*—1. In an electric clock the combination of an electro-magnet, an electric circuit, a vibrating armature, a notched wheel engaged and moved by the armature, a circuit-closing lever also engaging with said notched wheel, the armature engaging said circuit closing lever and lifting it out of engagement with the wheel before it engages and moves the wheel, itself.

2. In an electric clock the combination of an electro-magnet, an electric circuit, a vibrating armature, a pawl carried by said armature a notched wheel adapted to be engaged by said pawl and moved by the armature and a circuit-closing lever adapted to engage said notched wheel, the pawl when entering a notch before it engages and moves the wheel, itself acting upon the lever and throwing it out of a notch for the purpose set forth.

3. In an electric clock the combination with the magnet, armature and pawl of the circuit-closing lever provided with bracket $g^2$ and cam surface $g^3$, and the notched wheel c adapted to be engaged by the pawl and lever in alternation, substantially as described.



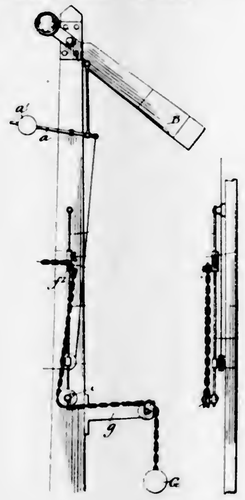
528,961. SEMAPHORE-OPERATING APPARATUS. JOHN S. LYNAM, Winchester, Mass., assignor of two-thirds to Charles S. Collins and George F. Adams, Nashua, N. H. Filed Apr. 26, 1894. Serial No. 509,074. (No model.)



*Claim.*—1. In a semaphore operating mechanism the combination of a suitable supporting post, a semaphore pivoted thereto, two or more pendent hollow arms connected to said semaphore, movable arms adapted to slide within said arms to a limited extent so as to independently support or allow the descent of the latter and means for connecting the rods to the switches or other signal operating devices, substantially as described.

2. In a semaphore operating mechanism the combination of a suitable supporting post, a semaphore pivoted thereto, pendent hollow arms connected to said semaphore rods adapted to slide within said arms to a limited extent so as to independently support or allow the descent of the latter, pivoted weighted levers connected and operating said rods and means for connecting said levers to switches or other signal operating devices, substantially as described.

528,962. COMPENSATOR FOR SIGNAL-OPERATING WIRES. JOHN S. LYNAM, Winchester, Mass., and GEORGE F. ADAMS, Nashua, N. H., assignors of one-third to Charles S. Collins, Nashua, N. H. Filed Aug. 14, 1894. Serial No. 520,301. (No model.)



*Claim.*—1. In a compensator for semaphores or signal operating wires, the combination of a pivoted lever provided with a pulley, a fixed wire adjustably connected to said lever, an operating weight attached to said lever, and a signal operating wire passed about the pulley on the said lever, substantially as described.

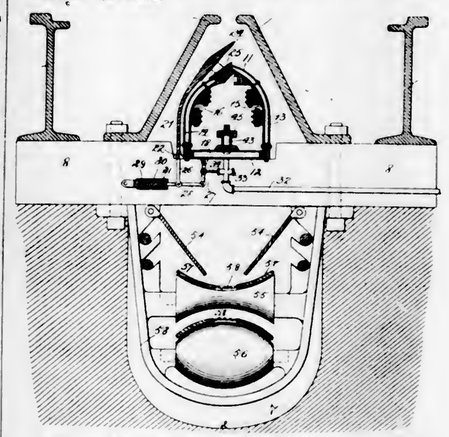
2. In a compensator for semaphores or signal operating wires, the combination of a pivoted lever, a fixed wire attached thereto, a signal operating wire passing loosely over a projection of said lever, and an operating weight so attached to said lever that upon the breaking of the fixed wire it will become detached therefrom, substantially as described.

3. In a compensator for semaphores or signal operating wires, the combination of a pivoted lever, two pulleys mounted upon the same, a fixed wire, an adjustable clamp for connecting said wire to said lever, said clamp being provided with an angular extension having a stud or nose, a pulley mounted on an arm of the semaphore post, a signal operating wire passed over one of the pulleys on said lever, and a chain connected to the fixed wire and passed over the nose of the adjustable clamp, and also over one of the pulleys on the lever and the pulley on the arm of the post and terminating in a weight, substantially as described

4. In a compensator for semaphores or signal operating wires, the combination of a pivoted weighted lever, a fixed wire, a signal operating wire passed about a projection of said lever, and means for connecting the fixed wire to the lever, but allowing it to be adjusted toward or from the fulcrum of the same whereby the relative movements of the two wires can be regulated, substantially as described.

5. In a compensator for semaphores or signal operating wires the combination of a fixed wire, a signal operating wire, compensating means for taking up the slack or allowing the contraction of said wires and a compensating weight attached to the fixed wire and engaging the compensating means but being adapted to disengage therefrom upon the breaking of the fixed wire, substantially as described.

528,963. UNDERGROUND CONDUIT FOR ELECTRIC ROADS. EZRA A. MATHERS, Romeoville, Ill. Filed June 12, 1894. Serial No. 514,347. (No model.)



*Claim.*—1. The combination with a slotted conduit having double sides forming air spaces opening into the slot on each side, of a flexible plug fitting the slot in said conduit and adapted to be lifted for a portion of its length from said slot by the passage through said slot of a trolley bar, and to close behind said trolley bar as it passes, pipes adapted to convey compressed air and communicating with said air spaces, and mechanism operated by the lifting of said plug to permit the compressed air to flow from said pipes into said air spaces as said plug is lifted, substantially as described

2. The combination with a slotted conduit having double sides forming air spaces opening into the slot on each side, of plates pivoted at one side of said slotted conduit, a flexible plug mounted upon said plates, extending throughout the length of said conduit and adapted to fit into and close said slot, a trolley bar extending downward through said slot and adapted to bear against said plates successively in its passage through said slot and to raise them successively, whereby said plug is lifted from said slot for a portion of its length by the passage of said trolley bar, said plates being adapted when relieved from the pressure of said trolley bar to fall back and force said plug again into said slot, pipes adapted to convey compressed air and com-

municating with said air spaces, and mechanism operated by the lifting of said plug to permit compressed air to flow through said pipes into said air spaces as said plates are lifted and to shut off the passage of such compressed air when said plates fall again into place, substantially as described.

3. The combination with a slotted conduit having double sides forming air spaces opening into the slot on each side thereof, plates pivoted at one side of said slotted conduit, a flexible plug mounted on said plates and adapted to fit into the slot in said conduit throughout its length, and a flexible bearing plate mounted on said plates, of a trolley bar adapted to pass downward through said slot in said conduit, conical rollers mounted upon said trolley bar and adapted to bear against said flexible plate, whereby said plates may be successively raised and said flexible plug lifted from said conduit throughout a portion of its length by the passage of said trolley bar, mechanism adapted to throw said plates and plug back as said trolley bar passes, pipes adapted to convey compressed air and connecting with said air spaces, and mechanism operated by the passage of said trolley bar to permit compressed air to flow through said pipes into said air spaces as said plug is lifted by the passage of the trolley bar, substantially as described.

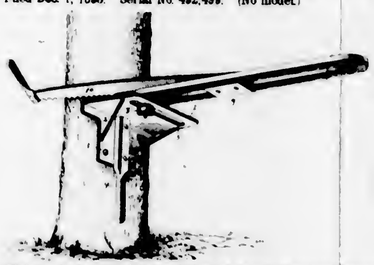
4. The combination with an outer slotted conduit, an inner slotted conduit having double sides forming air spaces opening into the slot of said inner conduit on each side, plates pivoted upon one side of said inner conduit, a flexible plug mounted upon said plates, extending the length of said conduit and adapted to fit into and close the slot therein, and a trolley bar adapted to pass through said slots into said inner conduit and to bear against said plates successively as it passes along said conduits, whereby said flexible plug is lifted for a portion of its length from said slot, of air chambers in said inner conduit opening into said air spaces between the sides thereof, pipes adapted to convey compressed air and opening into said air chambers, valves in said pipes, and mechanism connecting said valves with said plates, whereby said valves are opened to permit the passage of air into said air chambers as said plates are raised, and closed as said plates fall back, substantially as described.

5. The combination with a conduit adapted to contain electrical conductors and wires, of a trench below said conduit, supports mounted below said conduit in said trench, rollers journaled in said supports, a belt carried upon said rollers, and mechanism for moving said belt, substantially as described.

6. The combination with a conduit adapted to contain electrical conductors and wires, of a trench below said conduit, supports mounted below said conduit in said trench, rollers journaled in said supports, a belt carried upon said rollers and having open network in the middle thereof extending throughout its entire length, and mechanism for moving said belt substantially as described.

7. The combination with a conduit adapted to contain electrical conductors and wires, of a trench below said conduit, supports mounted below said conduit in said trench, pairs of rollers mounted one above the other, the upper rollers being concave and the lower rollers being convex, a belt carried upon said rollers and having open net-work in the middle thereof extending throughout its entire length, mechanism for moving said belt, and deflecting plates mounted in said trench above said belt and adapted to throw dirt or other matter falling into said conduit upon said belt, substantially as described.

## 528,964. DRAG-SAW GUIDE. GEORGE M. MIER, Batesville, Ark. Filed Dec. 1, 1893. Serial No. 492,499. (No model.)



*Claim.*—1. A saw guide consisting of a table adapted to be secured to the timber, said table having in its top an elongated perforation; an elongated arm provided with an elongated perforation said arm pivoted at one end to said table by means of a bolt attached thereto and passing through the elongated perforation of the table said arm having its other end free; a suitable means attached to said bolt and adapted to temporarily secure the arm to the table; a sliding block located in the elongated perforation of the arm; a drag saw attached at one end to the said sliding block, as set forth.

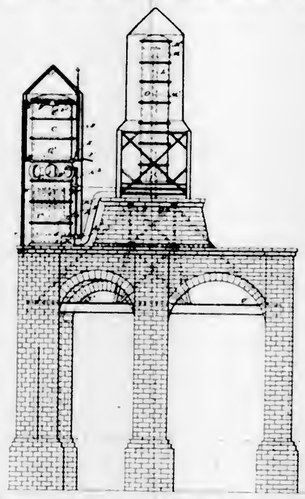
2. A saw guide consisting of a table adapted to be secured to the timber, an arm pivoted at one end to said table and having its other end free, said arm adapted to be swung around on its pivot and secured in a temporary position without removing the table from the timber; a sliding block located on said arm; a drag saw attached at one end to said sliding block, as set forth.

## 528,965. MANUFACTURE OF YELLOW AND ORANGE DYE. FRANZ MUHLERT, Pele Tyrolka, near Prague, assignor to Kinzlberger & Co., Prague, Austria-Hungary. Filed Apr. 17, 1894. Serial No. 507,884. (Specimens.)

*Claim.*—1. The process of obtaining yellow to orange yellow dyes, which consists in causing a diazotized nitranilin as meta or para nitranilin to react upon a resorcylic acid, as betaresorcylic acid, and separating the dye.

2. The herein-described, yellow to orange yellow dyes, distinguished from like dyes derived from salicylic acid by their greater tinctorial power and by their purity and brilliancy of color, and consisting of amorphous bodies insoluble in water, except the alkali salts thereof, soluble in soda lye, in alcohol, and in concentrated sulfuric acid, and separating from the latter, under addition of water, in the form of flocculent bodies.

## 528,966. STEAM-ELEVATOR. RICHARD J. MCCARTY, Kansas City, Mo. Filed June 11, 1892. Serial No. 436,370. (No model.)



*Claim.*—1. The motor cylinder C, jacket I surmounting the same exhaust pipe V' discharging steam from the engine within the jacket I, discharge pipe A and loaded valve E maintaining a regulated pressure of exhaust steam in the jacket substantially as and for the purposes set forth.

2. The combination of the motor cylinder C jacket I surrounding the same, exhaust pipe V' delivering steam within the jacket, discharge pipe A extending downward within the jacket, loaded valve E for escape steam and drip pipe F for water of condensation, as explained.

3. In a hydraulic elevator, the combination of a power piston for applying water pressure, a lifting piston for receiving such pressure, a cage connected to said lifting piston, and a relief valve $A'$ connected with the water space between the power piston and water piston and a connection between the power piston and said valve to open it automatically near the termination of the return movement of the piston as explained.

4. The combination of the steam cylinder "C," the water cylinder "$H_1$," connected therewith and containing a pump piston actuated from the steam cylinder "C," the lifting cylinder "$L_2$," having a piston "M," the water pipe "K'" connecting the water cylinders "H" and "$L_2$" to transmit pressure from one to the other, the valve "K" to control passage of water in said pipe, the relief valve "$A'$" discharging water from the pipe and the tappet "$A^3$" carried by the power piston and opening said relief valve at the proper point to arrest the motion of said piston, as explained.

5. The combination of the pressure cylinder H piston G" lifting cylinder $L_2$, piston M connecting pipe K' between the cylinders H and L, the relief valve $A'$ opening out of the water space between pistons G" and M to discharge any excess of water therefrom, the tank $p^2$ connected with the relief valve to receive such excess of water, and the priming pump $p^3$ connecting with the water space to supply water to the latter as explained.

6. The combination of the cylinders H and L, lifting piston M, vent $p^4$ in the cylinder L uncovered at the termination of the stroke of the said piston, to discharge surplus water, the tank $p^2$ receiving such discharged water, and the priming pump $p^3$ connected with the water space to supply water to the cylinders substantially as set forth.

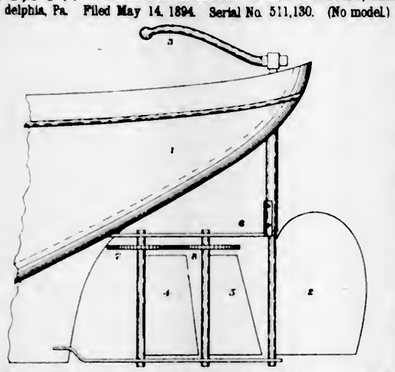
7. The combination of the lifting piston M the solid piston rod M', connected thereto and to the cage truss, and the hollow safety piston rod O connected at its upper end to the lifting piston and at its lower end adjustably to the cage truss substantially as and for the purpose explained.

8. The combination of the lifting piston M, the piston rod M' attached thereto and to the cage-truss, the hollow safety rod O attached at its upper end to the lifting piston and the flange and gland coupling L', L", between the lower end of said safety rod and the cage-truss, affording relative movement, as explained.

9. The combination of the concentric lifting rods M', O, the flanged socket piece O' resting on the rod M' the flanged collar L" connecting the rod O and socket O', and the annular block P" confined between the socket O' and collar L" and adapted for attachment of the cage-truss as explained.

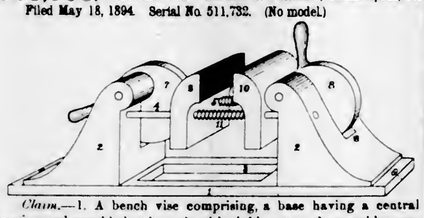


## 528,967. STEERING APPARATUS. ROBERT S. PEABODY, Philadelphia, Pa. Filed May 14, 1894. Serial No. 511,130. (No model.)



*Claim.*—The combination in a ship or vessel of, a governing rudder and means for turning and holding it to direct the course of the vessel or ship, and directing rudders located abaft the vessel and geared together and free to turn in opposite directions, substantially as described.

## 528,968. BENCH-VISE. ROBERT S. PEABODY, Philadelphia, Pa. Filed May 18, 1894. Serial No. 511,732. (No model.)

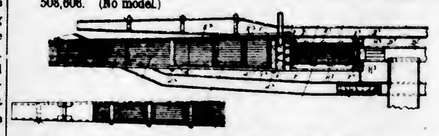


*Claim.*—1. A bench vise comprising, a base having a central opening and provided at its ends with rigid posts, rods or guides carried clear of the base and at the sides of said opening and secured at their respective ends to said posts, jaws carried clear of the base and provided with openings through which said rods or guides pass, and eccentrics journaled in recesses in the posts and operating respectively upon said jaws, substantially as described.

2. A bench-vise comprising a base provided with posts, rods or guides carried by said posts, jaws provided with openings through which said rods or guides pass, springs encircling said rods or guides and tending to separate said jaws, and eccentrics mounted on said posts and operating respectively upon said jaws, substantially as described.

3. A bench-vise comprising a base recessed or cut out at its center and provided with posts, rods carried by said posts, spring actuated jaws sliding on and carried by said rods, and eccentrics for closing said jaws, substantially as described.

## 528,969. AUTOMATIC AMALGAMATOR SLUICE-BOX. HERBERT L. PHILLIPS, St. Paul, Minn. Filed Apr. 23, 1894. Serial No. 508,606. (No model.)



*Claim.*—1. In an automatic amalgamator sluice box, a sluice box with the sides converging from the head to the tail and having a lining of amalgam plates with corrugations running lengthwise of the sluice box, substantially as and for the purpose set forth.

2. In an automatic amalgamator sluice box, a sluice box with the sides converging from the head to the tail and having a lining of amalgam plates, and with mercury troughs at suitable intervals in the bottom of said sluice box, substantially as and for the purpose set forth.

3. In an automatic amalgamator sluice box, a sluice box lined with amalgam plates having corrugations running lengthwise of the box, and with a series of removable amalgam plates set in close parallel relations lengthwise of the box and corrugated to correspond to said plates, substantially as and for the purpose set forth.

4. In an automatic amalgamator sluice box, a sluice box lined with amalgam plates and with a downward curved end, a mercury trough at the extremity of the curved end, a backwardly and upwardly curving cross partition forming a depression in the sluice box, and a convex cover above said partition and having a lining of amalgam plates, substantially as and for the purpose set forth.

5. In an automatic amalgamator sluice box, a sluice box with the sides converging from the head to the tail, a screen revolving in said sluice box and through which the material to be treated is passed and in which it is scoured and dissolved, the portion of the bottom of said sluice box next to the tail end of said separator being elevated to form a riffle or check to the flowing material, substantially as and for the purpose set forth.

6. In an automatic amalgamator sluice box, a sluice box having tubular troughs $d^3$ inserted in cavities across the bottom thereof and adapted to be oscillated and with one edge projecting upward to form riffles in the bottom of the sluice box, and adapted to support removable mercury troughs $d'$, substantially as and for the purpose set forth.

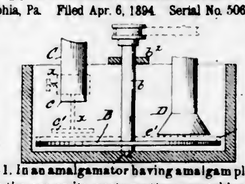
7. In an automatic amalgamator sluice box, a sluice box with its sides converging from the head to the tail, substantially as and for the purpose set forth.

8. In an automatic amalgamator sluice box, a sluice box converging from the head to the tail, and provided with a depression or siphon at its discharge end, substantially as and for the purpose set forth.

9. In an automatic amalgamator sluice box, a sluice box lined with amalgam plates and with a downward curved end $D^3$, a mercury trough at the extremity of the curved end, a backwardly and upwardly curving cross partition forming a depression in the sluice box, a convex cover above said partition and curved portion, and a corrugated cross partition, substantially as and for the purpose set forth.

10. In an automatic amalgamator sluice box, a separator formed of an outer cylinder of horizontal rods and an inner cylinder of horizontal rods set a greater distance apart than the rods of said outer cylinder and connected by heads at their ends and adapted to be revolved in the sluice box, and with a screw conveyer plate between said cylinders of rods and with the rods passing through the screw conveyer plates, whereby the material is fed from the head to the tail of the screen when said screen is revolved, substantially as and for the purpose set forth.

## 528,970. ORE WASHER OR CONCENTRATOR. CHARLES F. PIKE, Philadelphia, Pa. Filed Apr. 6, 1894. Serial No. 506,648. (No model.)



*Claim.*—1. In an amalgamator having amalgam plates, the method of preventing the ore or its waste-matters scratching or rubbing the amalgam from the plates, which consists of feeding the ore upon the plate, then causing the plate to convey the ore or its waste matters

to the discharge end of the amalgamator, and then removing the waste-matters from the plate by suction discharge, substantially as set forth.

2. In an amalgamator having amalgam plates, the method of preventing the ore or its waste matters rubbing or scratching the amalgam from the amalgam plates, which consists in feeding the ore vertically upon the plate, then causing the plate to convey the ore or its waste matters to the discharge end of the amalgamator, and then discharging such waste matters vertically from the plate by suction discharge, substantially as set forth.

3. In an amalgamator the combination of a movable amalgam plate, a feed device and a suction discharge device, substantially as set forth.

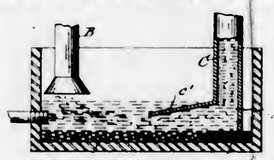
4. In an amalgamator, the combination with a distantly located feed-device and a suction-discharge device of a movable amalgamated conveyer-plate, substantially as set forth.

5. In an amalgamator, the combination of a movable amalgam plate, a feed-device having at its lower-end an adjustable arresting plate, and a suction discharge, substantially as set forth.

6. In an amalgamator, the combination of a rotating amalgam-plate, a feed-device having at its exit-end an arresting-plate, adjusting mechanism for said plate, and a suction discharge, substantially as set forth.

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**528,971. ORE WASHER OR CONCENTRATOR.** CHARLES F. PIKE, Philadelphia, Pa. Filed Apr. 6, 1894. Serial No. 506,649. (No model.)



*Claim.*—1. In an ore-washer or concentrator, the combination of a vessel adapted to contain mercury, a suction discharge-pipe for said vessel, and a mercury cover or arresting plate located adjacent to the inlet end of the suction discharge-pipe, substantially as set forth.

2. In an ore washer or concentrator, the combination of a vessel adapted to contain mercury, a suction discharge-pipe for said vessel, and a shield or arresting plate interposed between the inlet end of said discharge-pipe and the mercury in said vessel in the line of greatest force of suction in said discharge-pipe, substantially as set forth.

3. In an ore washer or concentrator, the combination of a vessel adapted to contain mercury, a suction discharge-pipe for said vessel, and a plate or shield at the inlet end of said discharge-pipe in the line of the greatest lifting force of the suction in said pipe, substantially as set forth.

4. In an ore washer or concentrator, the combination of a vessel adapted to contain mercury, a suction discharge-pipe for said vessel, and an arresting plate *b* at the inlet end of said pipe, substantially as set forth.

5. In an ore washer or concentrating vessel adapted to contain mercury, the combination of a suction discharge pipe for said vessel, and arresting plate *b* at the inlet end of said pipe provided with extensible sides for varying the thickness or depth of said plate, substantially as set forth.

6. In an ore washer or concentrator vessel adapted to contain mercury, the combination of a suction discharge-pipe for said vessel, and an adjustable mercury arresting or covering plate at the inlet end of said pipe, substantially as set forth.

7. In an ore washer or concentrator, the combination of a receiving vessel, a feed-device, a suction-discharge, a layer of mercury in said vessel and a plate interposed between the mercury and the inlet-end of the suction discharge in line with its vertical lift to prevent the force of such lift discharging mercury with the waste matter of the ore, substantially as set forth.

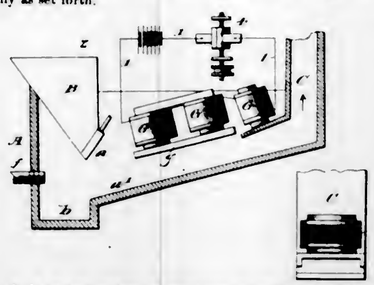
8. In an ore-washer or concentrator, the combination of a receiving vessel, a feed device, a suction discharge, a layer of mercury in said vessel, and an arresting plate between the mercury and the line of vertical lift of the suction discharge for preventing discharge of the mercury with the waste-matters of the ore, substantially as set forth.

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**528,972. ORE WASHER OR CONCENTRATOR.** CHARLES F. PIKE, Philadelphia, Pa. Filed Apr. 6, 1894. Serial No. 506,651. (No model.)

*Claim.*—1. In an ore washer, concentrator, or amalgamator, the combination of a receiving vessel, a suction discharge therein, and a magnet at or near the inlet of said suction-discharge, substantially as and for the purpose set forth.

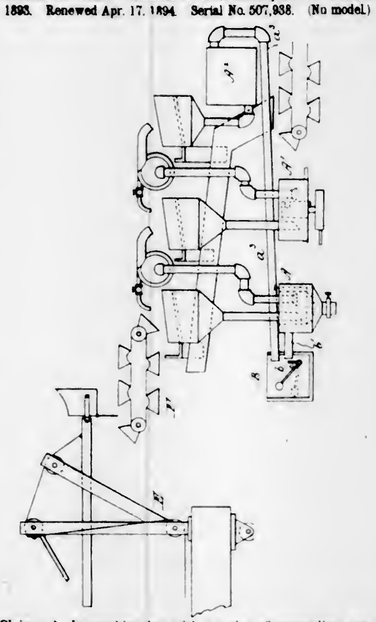
2. In an ore washer, concentrator or amalgamator, the combination of a receiving vessel, a suction-discharge therein, and a magnet at or near the inlet of said suction-discharge, and circuit connections including a source of electric supply for said magnet, substantially as set forth.



3. In an ore washer, concentrator, or amalgamator, a receiving vessel, a suction-discharge therein, a magnet at or near the inlet of said suction-discharge, and circuit connections including a source of electric supply and a circuit breaker for said magnet, substantially as set forth.

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**528,973. SYSTEM OF WASHING, CONCENTRATING, AND AMALGAMATING ORES.** CHARLES F. PIKE, Philadelphia, Pa. Filed June 10, 1893. Renewed Apr. 17, 1894. Serial No. 507,938. (No model.)



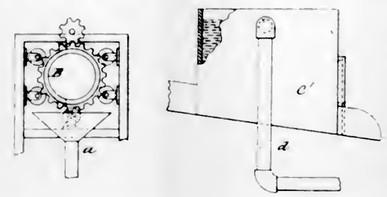
*Claim.*—1. In combination with a series of succeeding separate ore washers or concentrators, each having a feed device, a suction discharge device, screens for the feed devices of the washers, the discharge from a leading washer falling upon the feed screen of the following washer, an ore conveyer appliance leading to the screen of the first washer and a waste conveyer leading from the discharge of the last washer, substantially as set forth.

2. In combination with a series of succeeding separate ore washers or concentrators, each having a feed device and a suction discharge device, the discharge of a leading washer falling into the feed device of a following washer, and an overflow pipe for the last concentrator communicating with the ore receiving chamber of the first washer, substantially as set forth

3. In combination with a series of succeeding separate ore washers or concentrators, each having a feed device, and a suction discharge, the discharge of a leading washer falling into the feed device of a following washer, each washer having an overflow pipe and another concentrator apart from said series having a pipe connection with all of said overflow pipes to make such overflow a feed supply for said last-named concentrator, substantially as set forth



**528,974. ORE WASHER OR CONCENTRATOR.** CHARLES F. PIKE, Philadelphia, Pa. Filed June 10, 1893. Renewed Apr. 17, 1894. Serial No. 507,939. (No model.)



*Claim.*—1. In combination with an ore washer or concentrator having a feed device and a suction discharge device, of a flume or chute leading to said feed device, and a pipe connection between the washer and the flume or chute for conducting part of the water on the flume to the washer for agitating the ore or gangue supplied to the washer by its feed device, substantially as set forth.

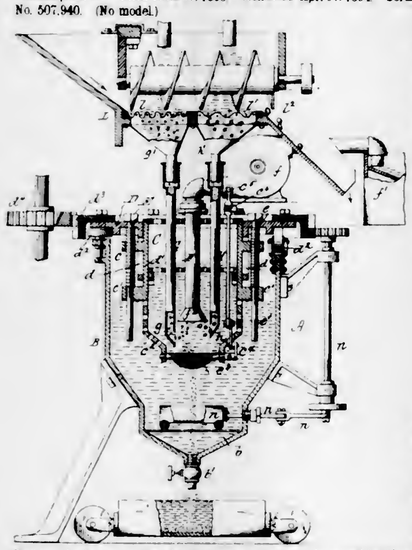
2. In combination with an ore washer or concentrator having a feed device and a suction discharge, of a flume or chute having a valve at its discharge end for controlling the flow of ore or gangue and water from the chute to the feed device for the washer, of a pipe with valve between the washer and the water level on the flume for providing a separate water supply from the flume to the washer for agitating the ore or gangue supplied to it by its feed device, substantially as set forth.

3. In combination with an ore washer or concentrator having a feed device, a flume or chute C leading to said feed device, a controlling gate or valve at the exit end of said flume, and a conduit leading from the water level on the flume to the washer or concentrator, substantially as set forth

4. In combination with an ore washer or concentrator, a flume or chute C having an exit end controlling gate, and connection from above the bottom of said flume to the washer or concentrator, substantially as set forth.

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**528,975. ORE WASHER OR CONCENTRATOR.** CHARLES F. PIKE, Philadelphia, Pa. Filed June 10, 1893. Renewed Apr. 17, 1894. Serial No. 507,940. (No model.)



*Claim.*—1. In an ore washer or concentrator, the combination of a receiving vessel, a number of feed devices for feeding ores of different grades into said vessel, and a suction discharge device, the field of force of which is differently located for the different grades of ore fed into said vessel, substantially as set forth

2. In an ore washer or concentrator, the combination of a receiving vessel, different feed devices for feeding different grades of ores into said vessel, and a suction discharge device located at varying distances from said feed devices, substantially as set forth.

3. The combination in a washer or concentrator, of a feed, a discharge device for the waste-matters, a chamber for the concentrations, and a separator below said chamber, and mechanism for actuating said separator for separating the collective concentrations into different grades, substantially as set forth.

4. In an ore washer and concentrating device, the method of separating from the pure metal the impure metal or other heavy substances desired to be saved, which consists in successively and continuously feeding all the ore or gangue into the washer, then separating all the pure and impure metals and said heavy substances from the ore or gangue, and discharging the waste-matters, and then separating the concentrations into their different desired grades, substantially as set forth.

5. In an ore washer and concentrator, the combination of a lengthwise adjustable ore or gangue receiving and discharging chamber, a suction discharge tube and adjustable feed tubes depending into said chamber, substantially as set forth.

6. The combination of a screen supply having different meshes, separate feed tube for each such grade, a suction discharge tube, and means for varying the distance of the outlet ends of said feed tubes to and from the inlet end of the suction pipe, substantially as set forth.

7. In an ore washer and concentrator, the combination of a lengthwise adjustable ore or gangue receiving and discharging chamber, means for rotating said chamber, a suction discharge and adjustable feed-tubes depending into said chamber, substantially as set forth.

8. In an ore washer and concentrator the combination of a chamber, a series of feed pipes, a discharge appliance, and the outlet ends of said feed pipes having a varying location distantly from the inlet end of said discharge appliance, substantially as set forth.

9. The combination with an ore washer and concentrator, of a chamber C having a perforated bottom, means for opening and closing said bottom, a reciprocating screen below said bottom and actuating devices for said screen, substantially as set forth.

10. The combination with an ore-washer and concentrator, of a receiving chamber for the ore or gangue having an outlet chamber for the concentrations, a separator in said outlet chamber for the concentrator, consisting of reciprocating inclined table with a quick return motion and which alters its inclination as it reciprocates, and actuating mechanism for said table, substantially as set forth.

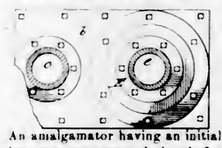
11. In an ore washer or concentrator, the combination of a receiving vessel, a suction discharge device, a number of feed devices for simultaneously feeding different grades of ore into said vessel, the outlet ends of said feed devices located at different distances from the inlet end of said discharge device, and a water supply for said vessel, substantially as set forth.

12. In an ore washer or concentrator, the combination of a receiving vessel, a feed-device for simultaneously feeding separate different grades of ore into said vessel, and a discharge device varyingly located relatively to the feed of the different grades of ore, substantially as set forth

13. In an ore washer or concentrator, the combination of a feed device for feeding different grades of ore into the vessel, and a discharge device for removing the waste matters of all the different grades fed into said vessel, substantially as set forth

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**528,976. AMALGAMATOR.** CHARLES F. PIKE, Philadelphia, Pa. Filed June 10, 1893. Renewed Apr. 17, 1894. Serial No. 507,941. (No model.)



*Claim.*—1. An amalgamator having an initial chamber containing mercury, a sinuous or tortuous path therein for the flow of ore or gangue therethrough, and a chamber containing gangs of division amalgam plates communicating with separate common pockets for alternately and repeatedly dividing the flow into separate streams and reuniting them into a single flow, substantially as set forth.

2. In an amalgamating device having a flow for passing the ore or gangue through the amalgamator, gangs of chutes in the path of said flow for dividing the flow into a number of thin streams, and pockets at the ends of said gangs for reuniting said streams in a single flow, substantially as set forth.

3. In an amalgamator, the chamber B containing a column of mercury, a series of superposed casing sections with plates between said sections, to one side of and above chamber B, said plates each having perforated and imperforated sections, and the perforations in one plate being opposite to the blank or imperforate section in the other plate, and a tortuous path between the inlet of chamber B and inlet to said casing sections, substantially as set forth.

4. In an ore washer or concentrator, a receiving and treating chamber having a siphon discharge pipe, an air exhaust device, a pipe connection from the highest point or bend of said siphon discharge to the exhaust device and actuating mechanism in gear with the exhaust device operated by the flow from the discharge pipe, substantially as set forth.

5. In an amalgamator, the combination of gangs or sets of chute amalgam plates, with pockets at each end of successive gangs common to all the chutes of said gangs, substantially as set forth.

6. In an amalgamator, the combination of gangs of alternately directed or inclined amalgam plates $f'$, and pockets $f$ joining the adjacent ends of the gangs, substantially as set forth.

7. The combination with chamber F, the gangs of alternately directed amalgam plates $f'$ and actuating devices for varying the degree of their inclination, substantially as set forth.

8. In an amalgamator, the combination with chamber F, the gangs of alternately directed or inclined amalgam plates $f'$ and separate means for each gang for independently adjusting the inclination of said gangs, substantially as set forth.

9. The combination with an amalgamator, gangs of alternately inclined amalgam plates, the suction outlet pipe $c^3$ having differently located valved outlets for varying the degree of suction from said amalgamator, substantially as set forth.

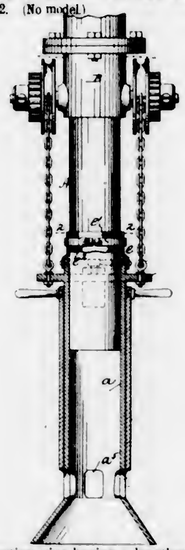
10. In an amalgamator, the combination with the suction discharge pipe therefor, differently located side valved outlets on said pipe for regulating the degree of flow through the amalgamator, and a bottom discharge outlet with valve $m$, substantially as set forth.

11. The combination of chamber F, the gangs of alternately directed chutes or plates $f'$, and flexible couplings between the ends of said gangs, and the walls of chamber F, substantially as set forth.

12. In an amalgamating device having a suction flow for passing the ore or gangue through the amalgamator, a number of alternately directed gangs of chutes in the path of said flow, and pockets at the ends of and joining said gangs, substantially as set forth.

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**528,977.** SUCTION-PIPE FOR SUCTION DEVICES. CHARLES F. PIKE, Philadelphia, Pa. Filed June 10, 1893. Renewed Apr. 17, 1894. Serial No. 507,942. (No model.)



*Claim.*—1. A suction pipe having a lengthwise adjustable inlet end, actuating devices for making such adjustment, openings in said pipe adjacent to the inlet end and an adjustable slide for said openings for varying the velocity of flow through the inlet end of the suction pipe, substantially as set forth.

2. A suction pipe having a lengthwise adjustable inlet end, one or more openings in said pipe adjacent to said inlet end, and a shutter or slide for varying the extent of said opening or openings for varying the velocity of flow in the inlet end of the suction pipe, substantially as set forth.

3. A suction pipe having an extensible and rotating inlet end, registering openings in said pipe and inlet end and actuating devices for adjusting said inlet end extensibly and for rotating it, substantially as set forth.

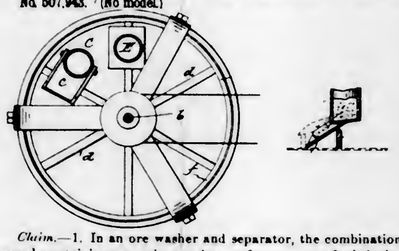
4. In combination with suction tube A, the section $a$ having openings $a^3$, the rotatable section G coupled to section $a$ having registered openings $g^4$, substantially as set forth.

5. In combination with a suction-pipe upper section, a telescoping lower section, means supported on the upper pipe section and in engagement with lower pipe section for lengthwise adjusting the latter, an inlet end at the bottom of the lower pipe section, opening or openings in said lower pipe section adjacent to its inlet end, and an adjustable device located on said lower pipe section for varying the extent of said openings to change the velocity of flow in the suction pipe inlet end, substantially as set forth.

6. In combination with a lengthwise moving and rotatable suction tube inlet section, a lower flaring or inclined end with a series of chute openings for said section, substantially as set forth.

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**528,978.** ORE WASHER OR CONCENTRATOR. CHARLES F. PIKE, Philadelphia, Pa. Filed June 10, 1893. Renewed Apr. 17, 1894. Serial No. 507,943. (No model.)



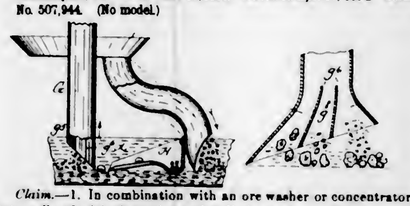
*Claim.*—1. In an ore washer and separator, the combination of a vessel containing a continuous layer of mercury, a feed device, a suction discharge device distantly located apart, and radially arranged sweeps acting to move the gangue or ore fed into said vessel from the feeding to the discharging device, substantially as set forth.

2. In an ore washer or concentrator, the combination of a vessel containing mercury, a feed device and a suction discharge distantly located apart, and rotating sweeps for moving the ore or gangue from the feed to the discharge, and means for actuating said sweeps, substantially as set forth.

3. The combination of a washer or concentrator A, the rotating sweepers or blades $d$, a feed device having a jointed arresting blade pointing in the direction of rotation of the sweepers, and a suction discharge device to the rear of said feed device, substantially as set forth.

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**528,979.** ORE WASHER OR CONCENTRATOR. CHARLES F. PIKE, Philadelphia, Pa. Filed June 10, 1893. Renewed Apr. 17, 1894. Serial No. 507,944. (No model.)



*Claim.*—1. In combination with an ore washer or concentrator, of a traveling feed device and a suction discharge device and actuating devices for said feed and discharge, substantially as set forth.

2. In combination with a stationary ore washer or concentrator vessel, of actuating mechanism for jarring said vessel, a traveling feed device and a suction discharge device, and actuating devices for said feed and discharge, substantially as set forth.

3. In combination with an ore washer or concentrator, a stationary vessel containing mercury, of mechanism for jarring said vessel, a rotating tubular feed device and a corresponding suction discharge device and actuating mechanism for said feed and discharge, as substantially set forth.

4. In combination with an ore washer or concentrator vessel containing mercury, of a traveling feed device, suction discharge device and a collector for removing impure metal floating on the surface of the mercury, substantially as set forth.

5. The combination with a washer or concentrator, a traveling feed and discharge, one in advance of the other, and the discharge acting on successively the preceding depositions, substantially as set forth.

6. In an ore washer or concentrator, the combination of a receiving vessel, a rotating feed, discharge, and greasy or impure metal collector, substantially as set forth.



7. In an ore washer, a discharge suction pipe, having its inlet end inclined from below upwardly and partitioned to provide chutes of varying suction power, substantially as set forth.

8. In an ore washer or concentrator an inlet end suction pipe having chutes of varying discharge or suction power, substantially as set forth.

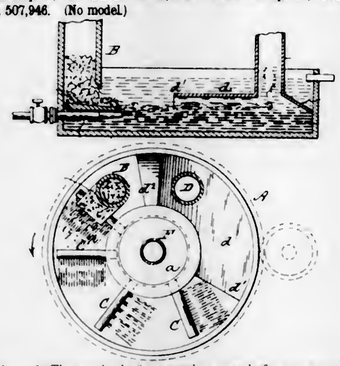
9. In an ore washer and concentrator a feed pipe, a suction discharge pipe, and a collector H, attached to one or both said pipes, substantially as set forth.

10. In an ore washer and concentrator the combination of a receiving vessel, means for jarring the same, and a rotating discharge and feed, substantially as set forth.

11. In an ore washer and concentrator the combination of a receiving vessel, and a rotating feed and a discharge distantly located relatively to their performed functions, substantially as set forth.

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**528,980.** ORE WASHER OR CONCENTRATOR. CHARLES F. PIKE, Philadelphia, Pa. Filed June 10, 1893. Renewed Apr. 17, 1894. Serial No. 507,946. (No model.)



*Claim.*—1. The method of separating metals from ore or gangue which consists in placing a layer or body of mercury in a vessel, depositing the ore adjacent to the surface of the mercury, causing said ore to be scattered or dispersed above the surface of the mercury and correspondingly propelled or conveyed from its place of supply to a place of discharge distant from the former for effecting a separation of the metal from the ore without commingling the latter with the mercury and then discharging the gangue from said vessel, substantially as set forth.

2. In an ore washer or concentrator, the combination of a vessel containing a layer or body of mercury a feed-device for said vessel having its outlet-end above the surface of said mercury for discharging the feed into said vessel in a scattered or dispersed condition above the surface of said mercury and a suction discharge device located at a distance from said feed device for conveying the waste matters of the ore from the feed across and above the surface of the mercury and for discharging the same from said vessel, substantially as set forth.

3. In an ore washer or concentrator, the combination of a mercury containing vessel, a feed-device and a suction discharge device located at a distance apart, jet-tubes for propelling the ore across and adjacent to the surface of the mercury from the feed to the discharge, substantially as set forth.

4. In an ore washer or concentrator, the combination of a mercury containing vessel, a feed-device and a suction discharge device located at a distance apart, jet-tubes for propelling the ore part way across and adjacent to the surface of the mercury, and means attached to the suction-pipe for utilizing the suction in said pipe for continuing the travel of the ore across the surface of the mercury to the discharge-pipe, substantially as set forth.

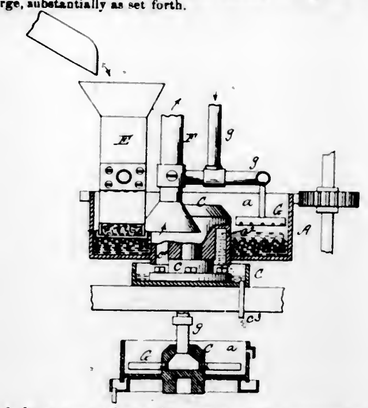
5. In an ore washer or concentrator, the combination of a mercury containing vessel, a feed-tube and a suction discharge device located at a distance apart, a jet tube or tubes at the feed end of the vessel, and a chute attached to the discharge device leading in the direction of the feed, substantially as set forth.

6. The combination of a rotating vessel A, a feed B, a discharge suction-pipe D located at a distance from the feed relative to the direction of rotation of a vessel A, and jet tube C between said feed and discharge, substantially as set forth.

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**528,981.** ORE WASHER OR CONCENTRATOR. CHARLES F. PIKE, Philadelphia, Pa. Filed June 10, 1893. Renewed Apr. 17, 1894. Serial No. 507,947. (No model.)

*Claim.*—1. In an ore washer or concentrator, the combination of a feed device, a suction discharge device distantly located from the feed, and a series of jet tubes located between the feed and the discharge, substantially as set forth.



2. In an ore washer and concentrator, the combination of a moving vessel containing mercury, means for actuating said vessel, a feed device and a suction discharge device, and a series of jet tubes located between the feed and discharge substantially, as set forth.

3. In an ore washer and concentrator, the combination of a rotating vessel containing mercury, means for rotating said vessel, a feed device, a suction discharge device, and a series of jet tubes between the feed and discharge and above the surface of the mercury, substantially as set forth.

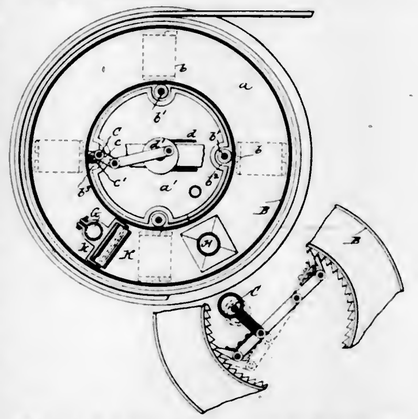
4. In an ore washer or concentrator, the combination of a vessel into which the ore or gangue is deposited, a feed device, a suction discharge device, an overflow device and a settling chamber in communication with said overflow-device, substantially as set forth.

5. In an ore washer or concentrator, the combination with a receiving vessel, a feed device having at its discharge end a jointed or hinged feed plate, and a suction discharge for said vessel, substantially as set forth.

6. In an ore washer or concentrator, the combination with a vessel containing mercury, a feed device having at its exit end a hinged plate which floats on the surface of the mercury, and a discharge device for said vessel, substantially as set forth.

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**528,982.** ORE WASHER OR CONCENTRATOR. CHARLES F. PIKE, Philadelphia, Pa. Filed June 10, 1893. Renewed Apr. 17, 1894. Serial No. 507,948. (No model.)



*Claim.*—1. In an ore washer and concentrator, the combination of a freely supported ore or gangue receiving vessel, actuating devices for rotating said vessel, actuating devices for reciprocating said rotating vessel in the line of its rotation, and a feed and a discharge device for said vessel, substantially as set forth.

2. In an ore washer and concentrator the combination of a freely supported traveling receiving vessel, actuating mechanism for imparting to said vessel its traveling movement, actuating devices for reciprocating said traveling vessel in the line of its travel and a feed device and a suction discharge device, for said vessel, substantially as set forth.

3. In an ore washer and concentrator, the combination of a freely supported traveling receiving vessel, a perforated screen supported within said vessel, actuating mechanism for reciprocating said traveling vessel in the line of its travel, and a feed device and a suction discharge device located on said vessel above said screen, substantially as set forth.

4. In an ore washer, a vessel adapted to contain and actuate a continuously moving body of mercury, a feed appliance, a discharge appliance, and means located between the feed and discharge appliances for cleaning the surface of the mercury, substantially as set forth.

5. In an ore washer or concentrator, the combination of a receiving vessel containing a continuous body of traveling or moving mercury, a feed device, a suction discharge device, and an appliance between the feed and the discharge for cleaning the surface of the moving mercury after passing the discharge and in advance of the feed, substantially as set forth.

6. In an ore washer or concentrator, the combination of a traveling vessel containing mercury, a feed device, a suction discharge device, and an appliance between the feed and discharge for cleaning the surface of the mercury, substantially as set forth.

7. In an ore washer or concentrator, the combination of an outer vessel, an inner freely supported traveling receiving vessel, flexible aprons secured to said outer vessel and overhanging the upper edges of the inner vessel, and means for reciprocating said inner vessel in the line of movement of its travel, substantially as set forth.

8. In an ore washer and concentrator having a feed and a discharge appliance, a mercury-surface-rubbing endless belt between said feed and discharge substantially as set forth.

9 In an ore washer and concentrator having a feed and a discharge appliance, a mercury surface rubbing device between said feed and discharge and separate discharge or extractor appliance for greasy or impure metal located between said rubbing device and said ore or gangue discharge, substantially as set forth.

10. In an ore washer and concentrator, the combination of a vessel containing mercury, a feed device, a discharge device for the waste matters of the ore or gangue, and a separate discharge or extractor appliance for greasy or impure metal, substantially as set forth.

11. In an ore washer or concentrator, the combination of a receiving vessel, actuating mechanism for moving said vessel continuously in one direction and simultaneously imparting to it a reciprocating motion in the line of its travel, a feed and a discharge device for said vessel, substantially as set forth.

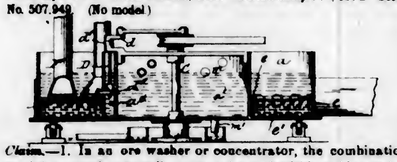
12. In an ore washer or concentrator, the combination of a traveling vessel, a feed and a discharge device for said vessel and actuating devices which impart a simultaneously traveling movement and a reciprocating motion with a quicker return than forward motion to said vessel, substantially as set forth.

13. The combination with a freely supported device B, a pivoted oscillating lever with arms of different lengths, actuating devices for said lever, and devices at the free ends of the arms of said levers for alternately engaging with mechanism on the device B for imparting to the latter a reciprocating motion having a quicker return than forward motion, which quicker return imparts to said device B a continuous intermittent travel in the line of its quick return movement, substantially as set forth.

14. In an ore washer and concentrator a rotating receiving vessel having an inner central tubular hub with overflow openings in the wall of said hub at different heights, removable plugs for said openings, an exit opening at the bottom of said hub, and a feed and a suction discharge device for said receiving vessel, substantially as set forth.

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**528,983. ORE WASHER OR CONCENTRATOR.** CHARLES F. PIKE, Philadelphia, Pa. Filed June 10, 1893. Renewed Apr. 17, 1894. Serial No. 507,949. (No model.)



*Claim.*—1. In an ore washer or concentrator, the combination of a receiving vessel, a traveling screen located within said vessel, a feed device, a discharge device for said vessel located above said screen, and actuating mechanism for imparting the traveling movement to said screen and for reciprocating it in the line of its traveling movement, substantially as set forth.

2. In an ore washer or concentrator, the combination of a traveling receiving vessel, a screen located within said vessel and traveling with it, a feed device, a discharge device in said vessel and above said screen, and actuating mechanism for imparting to the screen a reciprocating motion in the line of its travel, substantially as set forth.

3. In an ore washer and concentrator, the combination of a traveling vessel containing mercury, a screen loosely resting upon the surface of such mercury, actuating devices in engagement with said screen for imparting to it a reciprocating motion, substantially as set forth.

4. In an ore washer and concentrator, the combination of a receiving vessel, a screen within said vessel of the extent of its receiving area, a feed device and a suction discharge device located above said screen, substantially as set forth.

5. In an ore washer and concentrator, the combination of a vessel, a screen of the extent of the area of said vessel located therein and dividing it into an upper receiving chamber and a lower chamber for the concentrates, a feed device and a discharge device in the receiving chamber of said vessel, substantially as set forth.

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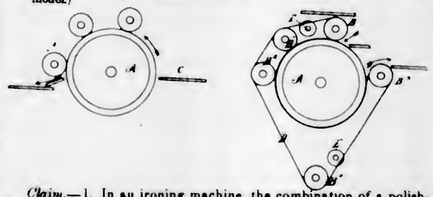
**528,984. WITHDRAWN.**

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**528,985. WITHDRAWN.**

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**528,986. IRONING-MACHINE.** SEYMOUR A. PRATT, Pontiac, Mich. Filed Mar. 12, 1891. Renewed June 13, 1894. Serial No. 514,474. (No model.)



*Claim.*—1. In an ironing machine, the combination of a polishing roller A, an endless apron D adapted to carry the goods under the roller B, and in contact with said roller A, and out over the roller $B^3$, pressure rollers B, B' and $B^3$, and tables $C^3$, $C^4$ and $C^4$, substantially as described.

2. In an ironing machine, the combination of an apron made in sections, and guides consisting of adjustable disks mounted on a shaft, the said shaft being out of contact with the apron, substantially as described.

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**528,987. CAN-TESTING MACHINE.** DARWIN D. RANNEY, Lewistown, Ill., assignor, by mesne assignments, to Moses Turner, trustee, same place. Filed May 16, 1893. Serial No. 474,451. (No model.)

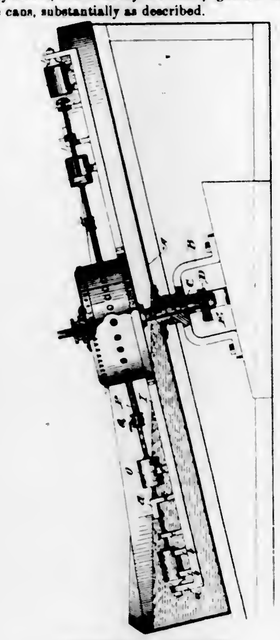
*Claim.*—1. In a can testing machine, the combination with a can carrier having chucks for the can, of a reservoir to contain air under pressure, a series of cylinders in communication with the reservoir, valves controlling the passage of air to the cylinders, pistons working in the cylinders and having piston rods, and clamp-gaskets carried by the piston rods, substantially as described.

2. In a can testing machine, the combination with a can carrier having can supports radially arranged thereon, a central air reservoir or drum mounted on and moving with the carrier, a series of cylinders radially arranged about the drum and communicating therewith by suitable pipes, valves in said pipes and adapted to control the passage of air from the drum to the cylinders and permit the exhaust of the air from the cylinders to the atmosphere, pistons within the cylinders, and hollow piston rods carrying clamp gaskets adapted to close the open ends of the cans, and mean for operating the valves automatically, substantially as described.

3. In a can testing machine the combination with a can carrier having can supports radially arranged thereon, a central air reservoir or drum mounted on and moving with the carrier, a series of cylinders radially arranged about the drum and communicating therewith by suitable pipes, valves in said pipes and adapted to control the passage of air from the drum to the cylinders and permit the exhaust of the air from the cylinders to the atmosphere, pistons within the cylinders, and hollow piston rods carrying clamp gaskets adapted to close the open ends of the cans, and means for operating the valves automatically, and a tank to contain a test liquid into which the cans are dipped while closed, substantially as described.

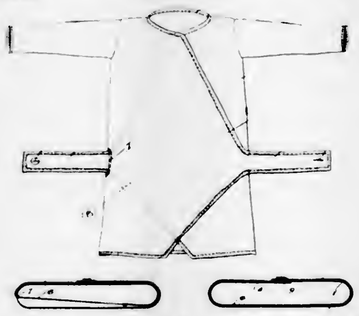
4. In a can testing machine, the combination with a rotary can carrier, a central reservoir or drum to contain compressed air, a series of cylinders arranged radially about the drum, pipes forming passages between the drum and the cylinders, and valves in said pipes, pistons working within the cylinders and having hollow piston rods, clamp gaskets carried by said rods and having apertures for the admission of air to the cans and suitable tripping mechanisms whereby the valves are first turned to permit the air to enter the cylinders and pass thence to the can and then turned to permit the air to exhaust from the cylinders, and whereby the clamp gaskets are released to release the cans, substantially as described.





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**528,988. UNDERSHIRT.** LEE RUBENS, Chicago, Ill., assignor to Lillie Rubens, same place. Filed Nov. 15, 1893. Serial No. 491,063. (No model.)

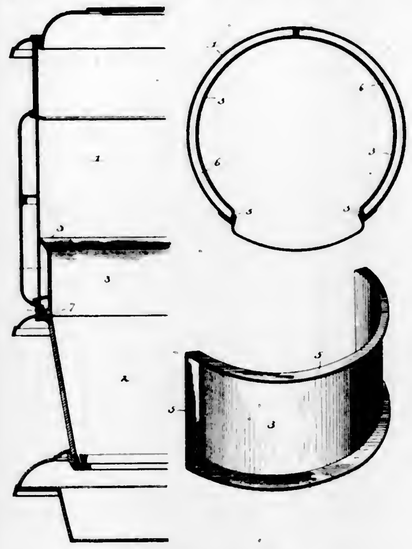


*Claim.*—As a new article of manufacture, an undershirt for infants, comprising a body portion open in front and having a neck and shoulder portion and arms, extensions 8 at the open front portion of the garment extending from the neck portion and the lower end portion of the garment laterally to overlap the front portions of the garment, and straps or bands connected to the ends thereof and of length to reach the rear portion of the garment and to be there fastened, the body of the garment having an aperture to permit the fastening of the straps or bands, substantially as described.

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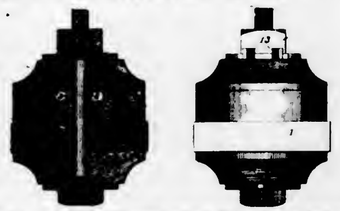
**528,989. STOVE.** ALBA A. RUBY, Quincy, Ill. Filed June 30, 1893. Serial No. 479,294. (No model.)

*Claim.*—The combination with a stove having a fire-pot provided at its upper edge with an inner ledge and a sheet metal drum or cylinder secured at its lower edge to an upstanding rim of the fire-pot which projects above said ledge, of a guard arranged concentrically within the stove, spaced from the sides of the drum or cylinder, surrounded by the latter and extending below the plane of the upper edge of the rim of the fire-pot, and resting upon said ledge of the same, substantially as specified.



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**528,990. NUT AND BOLT LOCK.** GEORGE L. RUSH, Dodge, Tex. Filed Dec. 19, 1893. Serial No. 494,017. (No model.)



*Claim.*—1. The combination with a bolt, of a washer provided with retaining projections upon one face and with an angular recess in its opposite face adapted to secure the head of the bolt, a second washer centrally apertured to receive the bolt and provided with retaining lugs upon one face, and parallel transverse grooves in its opposite face upon opposite sides of and immediately adjacent to the central bolt aperture, a nut provided with a bolt aperture and parallel grooves correlative with the grooves in the second washer, and a resilient loop key adapted to be inserted in the grooves in the washer and nut and to be secured therein by its resiliency substantially as specified.

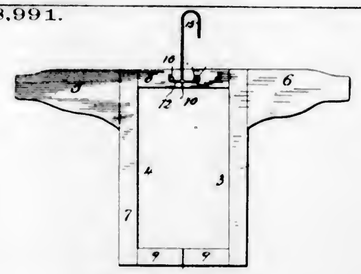
2. The combination with a bolt and a washer, provided with retaining projections upon one face and a bolt head retaining recess in its opposite face, of a second washer provided with retaining projections upon one face and transverse parallel grooves upon its opposite face, a nut provided with parallel grooves correlative with the grooves in the second washer, a resilient loop key adapted to secure the nut to the washer and an intermediate washer, provided upon its opposite faces, respectively with retaining projections and recesses, substantially as specified.

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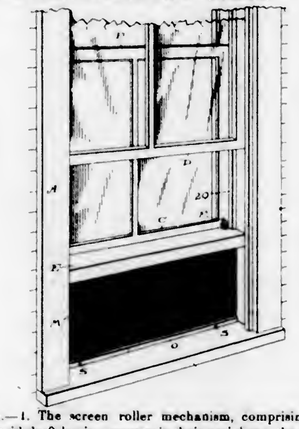
**528,991. DRYING-FRAME.** ADOLPHE C. SHARPELL, New York, N. Y. Filed May 15, 1894. Serial No. 511,296. (No model.)

*Claim.*—In a drying frame, the combination with the hinged frame sections, of the pin 16 secured to one section, the hook 12 pivoted to the other section, and provided with means for engaging the pin, and the hanger 15 secured to said hook, substantially as described.

528,991.



528,992. WINDOW-SCREEN. LOUIS H. SHOLDER, Cleveland, Ohio. Filed Jan. 27, 1894. Serial No. 498,232. (No model.)



*Claim.*—1. The screen roller mechanism, comprising a shaft, sleeves on said shaft having recesses in their periphery, the roller plate having one edge engaged in said recess and the other edge overlapping the same, and a screen fixed to said parts, substantially as set forth.

2. The roller shaft and the sleeves free to turn thereon, the cylinder on said sleeves, the screen secured to said cylinder, a spring about the shaft secured to one of said sleeves and to said shaft, and said sleeves constructed to lock on the shaft, substantially as set forth.

3. The shaft having a projection thereon, the cylinder and the sleeves on said shaft and one of the sleeves constructed to lock on said projection, and a spring fixed to said shaft and to one of said sleeves substantially as set forth.

4. The window screen and the supporting roller therefor and the box attached to the lower end of the screen, separate locking bolts near the ends of said box and the rod to operate the said bolts supported therein, substantially as set forth.

5. The box connected with the lower end of the screen, the separate locking bolts and the rod to operate said bolts in said box, and the springs connected with said bolts, and the catches engaged by said bolts, substantially as set forth.

6. The screen box provided with locking bolts connected by an operating rod, a spring for said rod, a separate spring for each bolt and means to lock said rod when moved to give tension to the bolt springs, substantially as set forth.

7. The screen box, the locking bolts having each a separate retracting spring and a rod to which the springs are attached, in combination with the staples for the bolts, the screen and mechanism to stretch the screen, substantially as set forth.

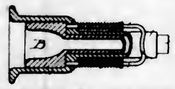
8. The screen and the roller therefor, in combination with the box to which the lower end of the screen is attached, and the locking mechanism housed in said box, substantially as set forth.

9. The roller and screen and the box for the same having an opening along its bottom, in combination with a box attached to the lower end of the screen and constructed to enter into and occupy the said opening in the roller box when the screen is rolled up, substantially as set forth.

10. The construction described, consisting of the casing for the screen roller and the screen box and the locking mechanism therein, having bolts and springs to hold the bolts under tension, and the said box having projections engaged by said casing, whereby the parts are released, substantially as set forth.

11. The window sash and the screen and the roller therein, in combination with the screen box on the lower end of the screen, and mechanism to lock said box to the sill, said mechanism constructed to release the box when the sash is lowered, substantially as set forth.

528,993. MOUTHPIECE FOR WIND-INSTRUMENTS. FREDERICK R. SKIDMORE, Milwaukee, Wis. Filed Feb. 1, 1894. Serial No. 498,709. (No model.)



*Claim.*—1. A mouth piece for wind instruments comprising a plurality of tubular sections having telescopic engagement with each other and at least one of said sections being longitudinally movable with respect to the other section or sections and adapted to be adjusted beyond or retracted within the line of the other section or sections, substantially as described.

2. A mouth piece for wind instruments comprising a plurality of tubular sections having telescopic engagement with each other, at least one of the sections being longitudinally movable with respect to the other section or sections, and suitable means for adjusting the same beyond or retracted within the line of the other section or sections, substantially as described.

3. A mouth piece for wind instruments comprising a plurality of tubular sections having telescopic engagement with each other, at least one of the said sections being longitudinally movable with respect to the other section or sections suitable means projecting to the outside of the mouth piece and adapted for operation by hand to advance the same beyond or retracted within the line of the other section or sections, and suitable means for normally retracting said movable section substantially as described.

4. A mouth piece for wind instruments comprising a plurality of tubular sections of different diameters, each suitably shaped at its forward end to enable it to be used as a mouth piece, and at least one of said sections being longitudinally movable with respect to the other section or sections and adapted to be adjusted to or beyond or retracted within the line of said other section or sections so as to enable a desired one of said sections to be used as a mouth piece, substantially as described.

528,994. STUMP-EXTRACTOR. JOHN C. SMITH, Sugartree, Mo. Filed June 18, 1894. Serial No. 514,961. (No model.)



*Claim.*—1. A stump-extractor, comprising the combination of a beam, a cant hook, a swivel pivotally connected to the shank thereof, and a band encircling the beam and secured thereto and to the swivel, substantially as described.

2. A stump-extractor comprising the combination of a beam, a band encircling the same and provided with projecting ears, a bolt passing through said ears and secured therein, a swivel bolt, having an eye embracing the bolt of the band, a swivel link connected to the swivel bolt, and a cant hook having its shank pivotally connected to the swivel link, substantially as described.

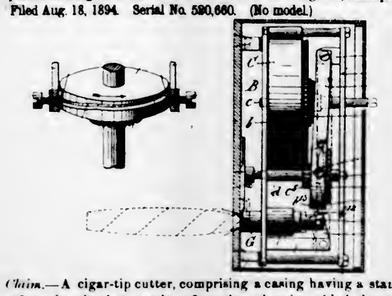
528,995. PLASTERING COMPOUND. ARTHUR W. SMITH, Sioux City, Iowa, assignor of one-half to Alice T. Bond, same place. Filed July 14, 1894. Serial No. 517,563. (No specimens.)

*Claim.*—1. The process herein described of producing a stucco retarding compound, consisting in mixing in a dry state unslaked lime and glue, and afterward adding a sufficient amount of water to thoroughly slake all the lime while mixed with the glue, and while the mixture is hot thoroughly stir the same so that the glue may come into intimate contact with the boiling lime, and add to the mixture wheat flour and tartaric-acid, substantially as and for the purpose set forth.

2. A stucco retarding compound, consisting of lime, glue, wheat flour, and tartaric-acid, in substantially the proportions named.

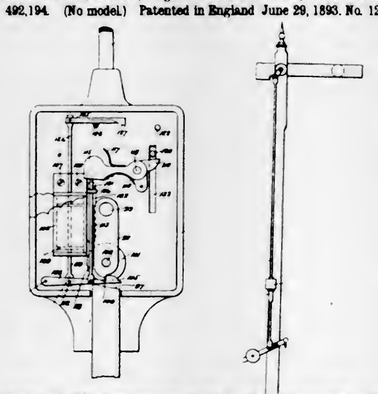


528,996. CIGAR-TIP CUTTER. FRANK P. SPARRAKER, Philadelphia, Pa., assignor of one-half to William T. Cunningham, same place. Filed Aug. 18, 1894. Serial No. 520,660. (No model.)



*Claim.*—A cigar-tip cutter, comprising a casing having a standard, a face plate having a series of openings therein, a blade located in the path of said openings, a shaft, a notched and grooved wheel, a swinging frame provided with pins engaging said wheel, a plunger adapted to close said openings, means connecting said plunger with said swinging frame and spring actuated gear-mechanism for permitting of the movement of said blade when pressure is brought to bear against said plunger, substantially as and for the purposes set forth

528,997. SIGNAL-REPLACER. WILLIAM R. STEER, Jr., and JOHN P. O'DONNELL, London, England. Filed Nov. 27, 1893. Serial No. 492,194. (No model.) Patented in England June 29, 1893. No. 12,775.

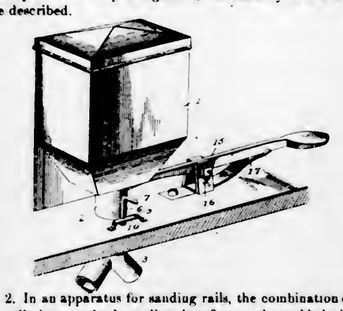


*Claim.*—1. The combination, with the signal operating rod 95, and the case attached thereto; of the rod 97 provided with a beveled edge and sliding in the lower part of the case substantially in line with the rod 95, the pivoted lever 98 provided with the catch 100 and the roller 101, the electro-magnet 106, the armature 109, the pivoted pawl 103, the rod connecting the said pawl and armature whereby the said pawl engages with the catch 105 when the electro-maguet is energized, the rod 113 connected to the pawl 103, a pivoted hammer arranged to strike the end of the rod 113 and disengage the said pawl, and a spring click normally supporting the said hammer and operatively connected with the armature, whereby the said hammer is released when the circuit is broken, substantially as set forth.

2. The combination, with the vertically movable case, and the pivoted lever 98 provided with the catch 100 and the roller 101; of the pivoted pawl 103, the electro-magnet 106, the armature 109, the rod 110 provided with a loop 111 and connecting the said armature and pawl, the rod 113 connected to the pawl 103, a pivoted hammer provided with the projecting piece 119 and arranged to strike the end of the rod 113 and move the pawl from engagement with the catch 100, a spring click normally supporting the said hammer and operatively connected with the armature, whereby the said hammer is released when the circuit is broken, and a stationary projection arranged in the path of the projecting piece 119 whereby the hammer is caused to engage with the said spring click when the case is moved upward in the action of lowering the signal arm, substantially as set forth.

528,998. SANDING DEVICE. THOMAS J. THOMAS, Knoxville Tenn. Filed Mar. 15, 1894. Serial No. 503,770. (No model.)

*Claim.*—1. In an apparatus for sanding rails, the combination of a sand box having an opening at its bottom, a discharge tube projecting above the bottom of the sand box, a valve comprising a circular head or disk 12 arranged to fit on the upper edge of the discharge tube, and the annular series of vertically disposed depending tapering arms fixed at their upper ends to the disk or head and arranged within the vertical tube, and fitting against the inner face of the same and guiding the head or disk in its vertical movement and forming tapering spaces, and means for raising and lowering the valve, whereby the sand may be agitated, substantially as and for the purpose described.



2. In an apparatus for sanding rails, the combination of a sand-box, a discharge-tube depending therefrom and provided with diverging branches, a cut-off hinged at the upper terminals of the branches and arranged to close the same, a rock shaft carrying the cut-off and provided with a crank, a rack-bar connected with the crank, a stop arranged to be engaged by the rack-bar, a sand-valve arranged at the upper end of the discharge-tube and closing the same and provided with depending sides having tapering openings, a foot-lever fulcrumed on a suitable support and connected with the sand-valve, and a spring engaging the foot-lever for holding the sand-valve normally closed, substantially as described.

528,999. PROCESS OF OBTAINING FERTILIZERS FROM WASTE LYES. LEBERECHT TRALLS, Dux, Austria-Hungary. Filed Apr. 29, 1893. Serial No. 472,386. (No specimens.) Patented in Belgium Jan. 1, 1893, No. 103,025.

*Claim.*—1. The process of obtaining a fertilizer from ammoniacal waste lyes and from lyes containing sulfate of alumina and peroxid of iron, which consists in mixing the two lyes in such proportions as to convert the sulfuric acid combined with the sulfate and peroxid into ammonium sulfate and leave the alumina in the form of a hydrate and the peroxid of iron in the form of a hydroxid, and evaporating to dryness.

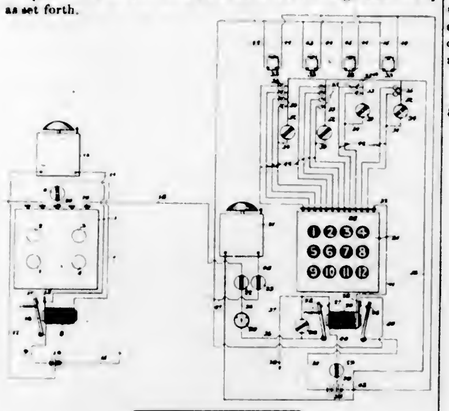
2. The herein-described process of obtaining a fertilizer from lyes containing acid salts of alumina, ammonia, and basic substances as lime, which consists in mixing with the lye containing acid salts of alumina a lye containing a basic substance, as lime, driving off the chlorine by means of heat and adding to said mixture an ammoniacal lye, for the purposes stated.

3. The herein-described process of obtaining a fertilizer from lyes obtained by leaching brown coal ashes and containing acid salts of alumina and oxid of iron, and from waste lyes resulting from the distillation of carbonaceous material, a gas liquor, and from waste lyes containing basic substances, as the lyes resulting in the manufacture of soda or potash, which consists in mixing with the lye containing the acid salts of alumina and oxid of iron a lye containing a basic substance, driving off the chlorine by heat, and adding to the mixture an ammoniacal lye in sufficient quantity to convert the sulfuric acid combined with the acid salts and iron into ammonium sulfate, for the purposes set forth.

529,000. AUTOMATIC FIRE-ALARM SYSTEM. HENRY S. TUBBARD, Rugby, and ARTHUR M. KRATS, London, England. Filed Feb. 8, 1894. Serial No. 499,559. (No model.) Patented in England Dec. 21, 1893, No. 24,658.

*Claim.*—In an automatic fire alarm system, the combination, with a series of thermostats arranged in different parts of a building, a series of alarm bells arranged in different parts of the said building, and an indicator located at a central station inside the said building and provided with a series of drops, one for each thermostat; of electric connections arranged between the thermostats, bells and indicator drops, whereby each thermostat, when heated, will operate simultaneously all the bells and that single drop to which it pertains; an electric alarm bell and an indicator drop at the fire station, connected with said electric connections in the building by a line wire and free to be operated simultaneously by any of the said thermostats;

and a police alarm bell located on the outside of the said building, included in the said line wire and operated simultaneously with but independent of the said alarm bells inside the building, substantially as set forth.

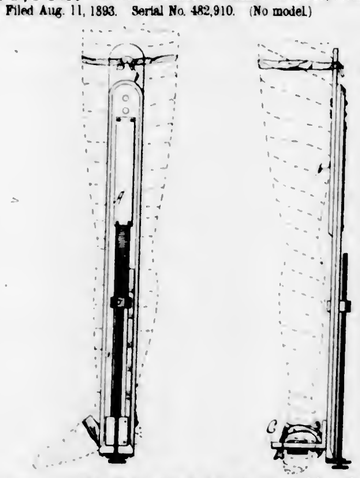


529,001. PNEUMATIC-TIRED WHEEL. HENRY W. VERDON, London, England. Filed Aug. 21, 1893. Serial No. 483,649. (No model.) Patented in England Nov. 9, 1892, No. 20,205.



*Claim.*—In a pneumatic tire, the combination of the cover A having beads or enlargements "a" "a" on each edge, the said beads or enlargements being split transversely at one or more places; of the air tube B provided with any suitable valve for inflation and deflation; and of the wheel rim C having channels "c" "c" at its edges, each having one or more gaps or openings "c'" cut or formed in it and capable of being closed by the sliding pieces "c²," as and for the purpose set forth.

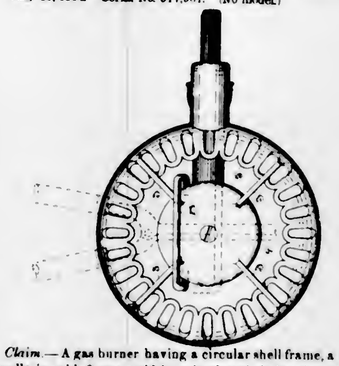
529,002. SURGICAL SPLINT. HILAND A. WEED, Jordan, N. Y. Filed Aug. 11, 1893. Serial No. 482,910. (No model.)



*Claim.*—1. The herein described splint comprising the parts —A— and —b—, means for securing them adjustably together, a foot-piece slidingly mounted within the body, a rod secured to said foot piece and its opposite end to a coil spring, said spring being secured at one end within the body —A— and means for extending the spring, bar and foot-piece.

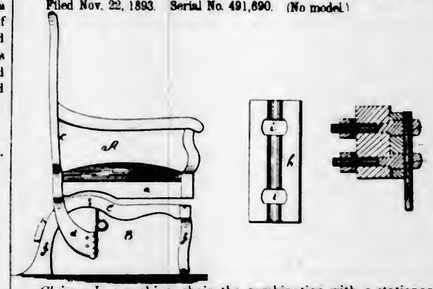
2. The herein described splint comprising the parts —A— and —b—, means for securing them adjustably together, a foot-piece slidingly mounted within the body, a rod secured to said foot-piece and its opposite end to a coil spring, said spring being secured at one end within the body —A—, a bracket —D— secured to the free end of the spring and a threaded rod —c— engaging with said bracket and having its opposite end confined, as set forth.

529,003. GAS-BURNER. CHARLES WHITTINGHAM, Cleveland, Ohio, assignor to the Cleveland Foundry Company, same place. Filed July 18, 1894. Serial No. 517,901. (No model.)



*Claim.*—A gas burner having a circular shell frame, a burner cap centrally in said frame, grid bars having their bearing edges above both said parts, and a bail pivoted on one side of said cap and adapted to rest against said bars when raised and to drop between the ends of the said bars when out of use, substantially as set forth.

529,004. ROCKING-CHAIR. THOMAS W. WIGG, Delaware, Ohio. Filed Nov. 22, 1893. Serial No. 491,690. (No model.)



*Claim.*—In a rocking chair the combination with a stationary base, and a combined seat and back having its side bars projecting below the top of the base, of parallel cross bars connecting the lower ends of said side bars and opposite sides of the base, plates attached to said parallel bars by eye bolts, and a coiled spring arranged between said bars and having its ends fitted in grooves in the plates and extending through said eye bolts, substantially as shown and described.

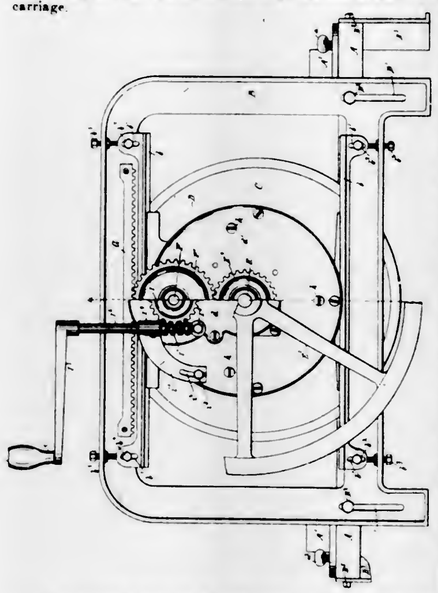
529,005. CUTTING-MACHINE. FENN WILLCOX, Newark, N. J., assignor of one-half to B. F. Willcox, New York, N. Y. Filed Dec. 27, 1893. Serial No. 494,899. (No model.)

*Claim.*—1. In a cutting machine, the combination with the platform and the frame of the machine having slides thereon; of a carriage seated on said slides and adapted to travel thereon; a main shaft journaled in said carriage; a circular cutting blade that is rotated by and in the same direction with said main shaft; a feed gear on said main shaft; an intermediate gear that meshes said feed gear; a rack attached to the top of the frame of the machine and which engages said intermediate gear; and means of driving said main shaft.

2. In a cutting machine, the combination with the platform and the frame of the machine having slides thereon; of a carriage seated on said slides and adapted to move thereon; a main shaft journaled in said carriage; a drive gear on the front end of said shaft; an internal gear that meshes said drive gear; a circular cutting blade attached to said internal gear; and mechanism for rotating said main shaft and imparting a feed movement to said carriage.

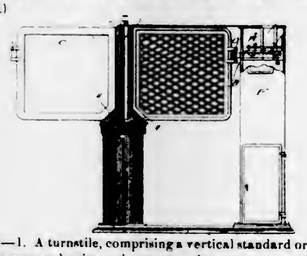


3. In a cutting machine, the combination with the platform and frame of the machine having slides thereon; of a carriage seated on said slides and adapted to move thereon; a main shaft journaled in said carriage; a drive gear on the front end of said shaft; an internal gear that meshes said drive gear and which is journaled and seated in said carriage; means of holding said internal gear to its seat; a circular cutting blade attached to said internal gear; and mechanism for rotating said main shaft and imparting a feed movement to said carriage.



4. In a cutting machine, the combination with the platform and frame of the machine having slides thereon; of a carriage seated on said slides and adapted to move thereon; a circular cutting blade carried by said carriage; mechanism for rotating said cutting blade and imparting a feed movement to said carriage; a drive wheel attached to said mechanism; a worm gear also connected with said mechanism; a worm for driving said worm gear and adapted to be thrown into and out of engagement with said gear; and means for driving said worm.

529,006. COIN-CONTROLLED TURNSTILE-GATE. ORION H. WILLIAMS, Chicago, Ill., assignor to the Casper Automatic Patent Company, Limited, New Orleans, La. Filed Sept. 1, 1893. Serial No. 484,590. (No model.)



*Claim.*—1. A turnstile, comprising a vertical standard or support, for the gate proper, having at its upper end a septum or partition carrying on its upper surface a ratchet-gear ring, and a hub provided with radial arms or wings and revoluble upon the gate-standard and also at its lower end embracing said gate-standard, and a pawl pivoted within the hub and engaging the ratchet-ring of the gate-standard, substantially as set forth.

2. A turnstile, comprising a vertical standard or support, for the gate proper, having at its upper end a septum or partition carrying on its upper surface a ratchet-gear ring, a hub provided with radial arms or wings and revoluble upon the gate-standard, and also at its lower end embracing said gate-standard, a pawl pivoted within the hub and engaging the ratchet ring, and a plurality of anti-friction balls interposed between the upper surface of the septum or partition and the lower part of the hub, substantially as set forth.

3. A turnstile, comprising a revoluble gate having a plurality of radial arms or wings, and a sliding locking-bolt, retracted by contact with the gate-arms, and a pivoted lever connected to a bell-crank lever, the latter carrying a pin, said pivoted lever being actuated voluntarily by an attendant and serving to engage the locking-bolt to prevent retraction thereof, and to release said bolt to permit the retraction of the same, substantially as set forth.

4. A turnstile, comprising a revoluble gate having a plurality of wings or arms, a sliding locking-bolt retracted by contact with the gate-arms, and a pivoted lever arranged to engage the locking-bolt to prevent retraction thereof, and also provided with a pull-rod operated by hand and serving to disengage the lever from the locking-bolt so as to permit the retraction of said bolt, substantially as set forth.

5. A turnstile, comprising a revoluble gate having a plurality of wings or arms, a sliding locking-bolt retracted by contact with the gate-arms, a pivoted lever arranged to engage the locking-bolt to prevent retraction thereof, and a foot lever or treadle operatively connected to the lever and serving to move the latter out of engagement with the locking-bolt, so as to permit the retraction of said bolt, substantially as set forth.

6. A turnstile, comprising a revoluble gate having a plurality of arms or wings, a locking mechanism for said gate comprising a pair of locking-bolts retracted by contact with the gate-arms, a lever engaging the primary bolt so as to prevent its retraction and disengagement from said bolt except by the weight of a coin, and the secondary bolt being also engaged by said lever which prevents the retraction of said bolt and which is disengaged from the bolt by contact with the coin, so as to permit retraction of said secondary bolt, substantially as set forth.

7. A turnstile, comprising a revoluble gate having a plurality of wings or arms, a locking-mechanism comprising a pair of locking-bolts retracted by contact with the gate-arms, the inner end of the secondary bolt exteoding across the patn of movement of the inner end of the primary bolt, so as to be engaged by the latter, substantially as set forth.

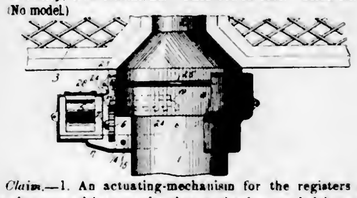
8. A turnstile, comprising a revoluble gate having a plurality of wings or arms, and a locking-mechanism comprising two bolts retracted by contact with the gate-arms, and a tilting-lever engaging one of said bolts so as to prevent its retraction and also moved out of engagement with said bolt by the weight of a coin, so as to permit the retraction of the bolt, substantially as set forth.

9. A turnstile, comprising a revoluble gate having a plurality of arms or wings, and a locking-mechanism comprising a pair of spring pressed locking-bolts retracted by contact with the gate-arms, a lever engaging the primary bolt so as to prevent its retraction, and disengaged from said bolt by the weight of a coin, and a second lever engaging the secondary bolt and disengaged therefrom by contact with the coin, so as to permit retraction of the secondary bolt, substantially as set forth.

10. A turnstile, comprising a locking-mechanism consisting of a locking-bolt retracted by contact with the gate-arms, a tilting lever normally engaging said bolt so as to prevent retraction thereof, and moved out of engagement with the bolt by the weight of a coin, so as to permit retraction of the bolt, and a screw-rod having an inclined enlargement acting upon the lever which in turn acts upon the tilting lever so as to move the latter out of engagement with the bolt and thus permit retraction of the latter, substantially as set forth.

11. A turnstile, comprising a locking-mechanism composed of two locking-bolts retracted by engagement with the gate-arms, a lever normally engaging the secondary bolt so as to prevent retraction of the latter and moved out of engagement with said bolt by contact with a coin, so as to permit retraction of the bolt, and a screw acting by contact with the lever to move it out of engagement with the bolt, substantially as set forth.

529,007. REGISTER-ACTUATING ATTACHMENT FOR TURNSTILES. ORION H. WILLIAMS, Chicago, Ill., assignor to Sylvester P. Walmsley, New Orleans, La. Filed Oct. 13, 1893. Serial No. 488,086. (No model.)



*Claim.*—1. An actuating-mechanism for the registers of turnstiles, &c., comprising a registering-mechanism carried by a station-

ary portion of the gate, and having an actuating-shaft provided with a gear-wheel, and a gear-rack secured to and entirely surrounding a movable part of the gate and engaging the gear-wheel, substantially as set forth.

2. An actuating-mechanism for the registers of turn stiles, &c., comprising a registering-mechanism carried by a stationary portion of the gate, and a sectional supporting collar also secured to said stationary portion and provided with bracket-arms extending at right angles to said portion for sustaining the register, substantially as set forth.

3. An actuating-mechanism for the registers of turn stiles, &c., comprising a registering-mechanism, a sectional collar for supporting said mechanism having at one end of each section a lug and a recess to engage a corresponding lug and recess at the adjacent end of another section, and at its opposite end a bracket-arm terminating in a flattened end-portion, and a connecting-bolt extending through said bracket arms; said bracket-arms being designed to sustain a register, and the collar being designed to securely embrace a stationary part of the gate structure, substantially as set forth.

4. An actuating-mechanism for the registers of turn stiles, &c. comprising a sectional gear-rack secured to a movable part of the gate structure having its sections detachably connected together, and entirely surrounding the same and also provided with gear-teeth for engaging the gear-wheel of a register, and also designed to embrace a part of a gate-structure, substantially as set forth.

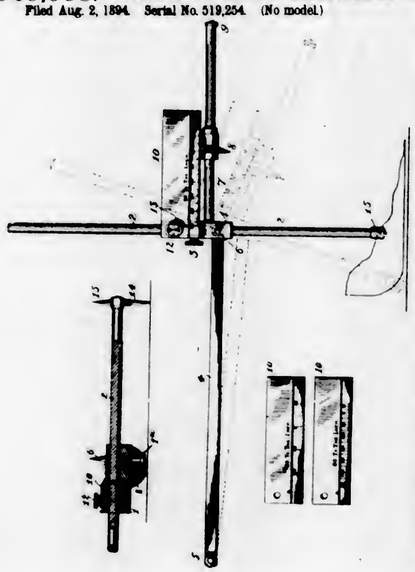
5. An actuating-mechanism for the registers of turn stiles, &c., comprising a sectional gear-rack secured to a movable part of the gate-structure having its sections detachably connected together, and entirely surrounding the same and also provided with gear-teeth for engaging the gear-wheel of the register, and further provided with supporting arms for engaging a protuberance upon the lower part of said movable gate-structure, substantially as described.

6. An actuating-mechanism for the registers of turn stiles, &c., comprising a sectional gear-rack secured to a movable part of the gate structure having its sections detachably connected together and entirely surrounding the same, and provided with gear-teeth for engaging the gear-wheel of the register, and also provided with a set screw for impinging against said movable portion of the gate-structure, so as to prevent independent movement of the rack upon said portion, substantially as set forth.

7. An actuating-mechanism for the registers of turn stiles, &c., comprising a register having its actuating-shaft provided with a gear-wheel, and supported by a stationary portion of the gate-structure, and a gear-rack carried by and entirely surrounding a movable portion of the gate-structure and engaging the gear-wheel, and a casing provided with an extension, said casing and extension surrounding the register and its attachments and also the gear-rack, substantially as set forth.

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529,008. PLANIMETER. EDWARD J. WILLIS, Richmond, Va. Filed Aug. 2, 1894. Serial No. 519,254. (No model.)



*Claim.*—1. A polar planimeter comprising a measuring-wheel having rotary and longitudinal movement on a fixed shaft, a fulcrum-bar, and a graduated scale over the straight edge of which the periphery of the wheel moves, substantially as and for the purposes set forth.

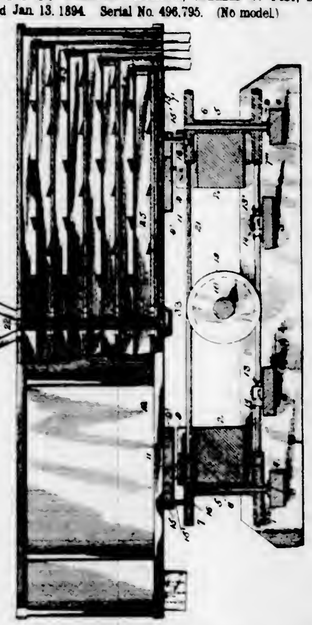
2. A polar planimeter comprising a measuring-wheel having rotary and longitudinal movement on a fixed shaft, a fulcrum-bar, and a scale replaceably attached to the frame to permit an interchange of scales and over the straight edge of which the periphery of the wheel moves, substantially as and for the purposes set forth.

3. A polar planimeter having a measuring wheel loosely mounted on a fixed shaft at right angles to the tracer-arm, and a replaceable scale adapted to be mounted on the frame in parallelism with said fixed shaft, and to be replaced by a different scale substantially as and for the purposes set forth.

4. In a polar planimeter, the combination with a frame, of a pivotally attached fulcrum-bar, a longitudinally adjustable tracer-arm, a measuring wheel turning and moving longitudinally upon a shaft at right angles to the tracer-arm, and an attachable and detachable scale mounted on the frame with its straight graduated edge lying in close proximity to the edge of the measuring wheel and in parallelism with its shaft, substantially as and for the purposes set forth.

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529,009. BOLTING-MACHINE. CHARLES W. YOST, Steelton, Pa. Filed Jan. 13, 1894. Serial No. 496,795. (No model.)



*Claim.*—1. In a bolting machine, a sieve having a series of triangular transverse stops set a short distance above the surface of the cloth, and having one side inclined to allow the coarse material to pass easily over, and one side substantially vertical to prevent the backward movement of the same under said stops, substantially as described.

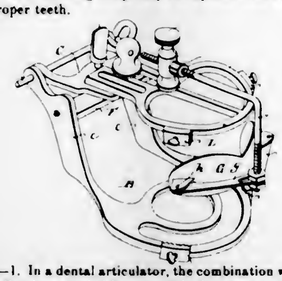
2. The combination in a bolting or sifting machine, of a frame 1, having a series of grooved plates 9, a ball 11 in each of said plates, a sieve box having corresponding plates 9′ resting on the balls, two vertical shafts 6, pulleys 7, 7′, 7″ and 7‴ mounted on said shafts, the rotary shaft 18, the belt pulley 20 and double grooved pulley 19 mounted on said shaft 18, the idler pulleys 13, 13′, a round belt 21 running on the grooved and idler pulleys, and a driving connection between the pulleys 7, 7′ and the sieve box, all substantially as described and shown.

3. The combination in a bolting or sifting machine and with the sieve box thereof, of the vertical shaft 6, grooved pulleys 7, 7′ 7″ and 7‴ mounted on said shafts, the rotary shaft 18, the belt pulley 20 and double grooved pulley 19 mounted on said shaft 18, the idler pulleys 13, 13′, a round belt 21, running over the grooved and idler pulleys mentioned, and a driving connection between the pulleys 7, 7′ and the sieve box, substantially as described and shown.



529,010. DENTAL ARTICULATOR. JOHN W. ANDERSON, Philadelphia, Pa. Filed July 21, 1893. Renewed Mar. 27, 1894. Serial No. 505,350. (No model.)

*Brief.*—A thin elastic lip-piece is adjustably carried by one of the jaw-frames to aid in getting shape of lip and thus be a guide in selecting proper teeth.



*Claim.*—1. In a dental articulator, the combination with the jaw frames, of a lip piece carried by one of the jaw frames.

2. In a dental articulator, the combination with the jaw frames, of a lip piece carried by one of the jaw frames and adjustable with reference thereto.

3. In a dental articulator, the combination with the jaw frames, of a flexible lip piece carried by one of the jaw frames.

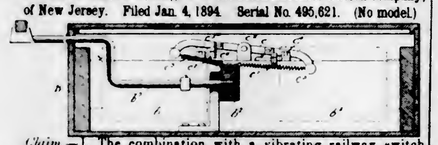
4. In a dental articulator, the combination with the jaw frames, of a lip piece detachably and adjustably carried by one of the jaw frames, and an adjustable limit stop to preserve the ascertained position of adjustment when the lip piece is detached.

5. The combination with the frames A and B, of the lip piece G provided with a rod H adapted for adjustable connection with one of the frames A, B.

6. The combination with the frames A and B, of the lip piece G provided with a rod H adapted for adjustable connection with one of the frames A, B and the adjustable limit stop K carried by the rod H.

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529,011. ELECTRIC RAILWAY-SWITCH. ROLLIN A. BALDWIN, South Norwalk, Conn., assignor to the Fitch Excelsior Switch Company, of New Jersey. Filed Jan. 4, 1894. Serial No. 495,621. (No model.)



*Claim.*—1. The combination with a vibrating railway switch point, of two electromagnets adapted to move the same in opposite directions, a circuit changer acting automatically to change the path of the current from one magnet to the other, and a controller for the circuit changing device arranged to hold the circuit changer in a given position until the circuit is broken and then permit it to operate substantially as described.

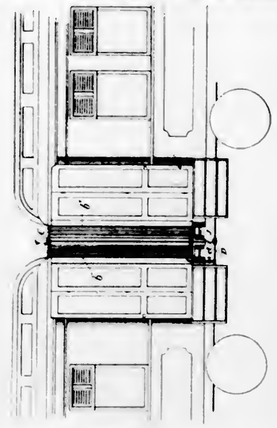
2. An electric railway switching apparatus consisting of the combination of a switch point, a reciprocating rod attached thereto, an armature carried by said rod, two electro magnets adapted to move the armature in opposite directions, a pivoted lever arranged to make and brake the circuits of said magnets respectively, springs connected to said lever and to the armature, arranged so that the movement of the armature in either direction will put one spring under tension and relax the other.

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529,012. RAILROAD-CAR. GEORGE W. BANCROFT, Chicago, Ill., assignor to the Bancroft Vestibule Car Company, same place. Filed Dec. 16, 1890. Serial No. 374,944. (No model.)

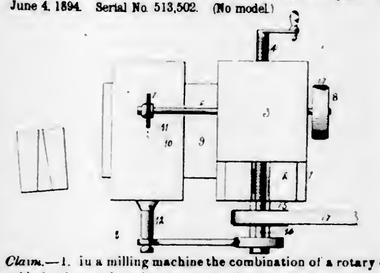
*Claim.*—1. A vestibule for cars, the sides of each section composed of two thicknesses of air-tight material with an air-space between them, made in bellows shape, the outer end of each section terminating in a face-plate or cushion, the whole forming a hollow air-tight partition, valves for introducing and discharging air from said partition, in combination with a plate provided with semi-spherical indentations fastened to the forward bottom part of each section, a plate provided with segmental-spherical holes corresponding to the indentations on the first-named plate; balls placed in said indentations and holes, and projecting downwardly through the bottom of said holes, said plates being secured or bolted together, substantially as described and for the purpose set forth.

2. A vestibule for cars, having attached to the forward bottom part of each section, a plate provided with semi-spherical indentations, a plate provided with segmental-spherical holes corresponding to the indentations on the first-named plate, balls placed in said indentations and holes, and projecting downwardly through the bottom of said holes; said plates being bolted together, substantially as described.



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529,013. MILLING-MACHINE. BENJAMIN F. BARNES, Rockford, Ill., assignor to The W. F. & John Barnes Company, same place. Filed June 4, 1894. Serial No. 513,502. (No model.)



*Claim.*—1. In a milling machine the combination of a rotary cutter atable having a pivotal movement and means for automatically imparting an oscillatory movement to the table.

2. In a milling machine the combination of a rotary cutter having a sliding movement, a table for supporting the material to be operated upon having a pivotal movement, and means for automatically imparting an oscillatory movement to the table.

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529,014. HARNESS ATTACHMENT. GEORGE BECK, St. Louis, Mo. Filed Aug. 30, 1894. Serial No. 521,675. (No model.)



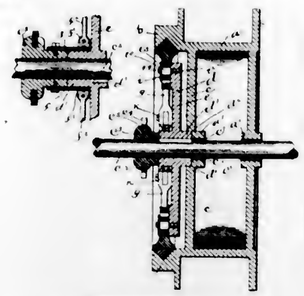
*Claim.*—An attachment to harness, consisting of a suitable casing, one or more springs contained therein, hangers having shanks with grooves to form seats for the coils of the springs and form a connection between the hangers and springs, and a slotted curved bearing upon the end of the casing for attaching a buckle thereto, substantially as and for the purpose set forth.

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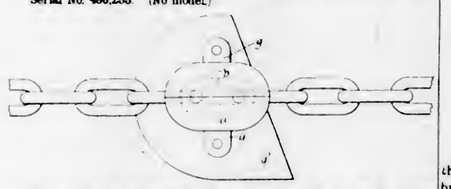
529,015. CLUTCH. DARIUS BENNETT, Nelsonville, Ohio, assignor to the Nelsonville Foundry and Machine Company, same place. Filed June 2, 1893. Serial No. 476,313. (No model.)

*Claim.*—The combination with a reel having a rim *b* and a shaft upon which said reel turns, of a driver *d* keyed upon said shaft, a sliding clutch hub on said shaft, two oppositely located clutch shoes

*g* adapted to fit within the rim *b*, a jointed connection between the ends of said clutch shoes and said sliding clutch hub, central slotted lugs *k* on said shoes and a bolt or pin projecting from said driver through said slotted lug as described substantially as and for the purpose specified.

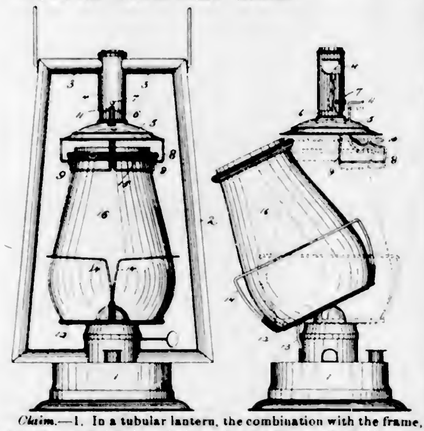


529,016. **ELEVATING OR CONVEYING CHAIN ATTACHMENT-BLOCK.** DARIUS BENNETT, Nelsonville, Ohio, assignor to The Nelsonville Foundry and Machine Company, same place. Filed Sept. 22, 1893. Serial No. 486,233. (No model.)



*Claim.*—In an attachment block for conveyer chains, the combination of the united block sections *a* and *b*, having grooves or depressions in their adjoining faces adapted to receive and form a seat for one-half of one or more chain links, and an attachment bar or plate *g* projecting from one side of said block, substantially as and for the purpose specified.

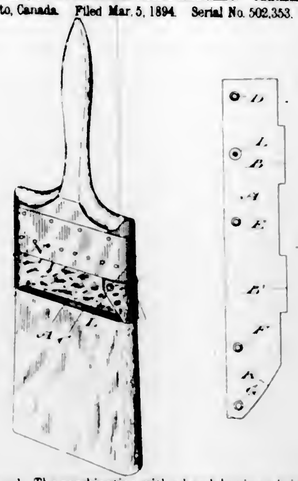
529,017. **LANTERN.** CHARLES BERGENER, Rochester, N. Y., assignor to the C. T. Ham Manufacturing Company, same place. Filed May 14, 1894. Serial No. 511,228. (No model.)



*Claim.*—1. In a tubular lantern, the combination with the frame, and the base, of the pivoted globe-plate, and means for holding the globe thereon, the vertically movable bell independent of the globe-plate, the catch thereon having the shoulder projecting beneath and co-operating with the under side of the bead on the globe, and having the elastic portion co-operating with the top of the globe and extended to form a thumb-piece above the bell, substantially as described.

2. In a tubular lantern, the combination with the lantern frame having the telescopic central tube and the projection for limiting the movement of the movable part, of the bell on the movable part of the tube, and the globe rest and catch having the shoulders near the open side, co-operating with the under side of the bead on the globe also the semi-circular bow, the central elastic extension provided with the shoulder, and the thumb-piece, substantially as described.

529,018. **BRIDLE FOR PAINT-BRUSHES.** CHARLES BOECKH, Jr., Toronto, Canada. Filed Mar. 5, 1894. Serial No. 502,353. (No model.)

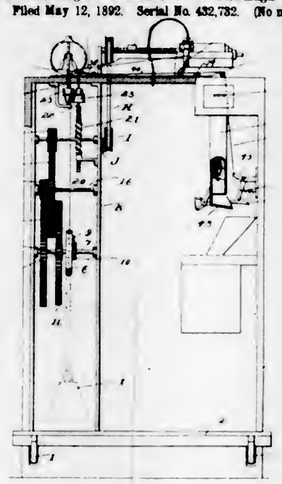


*Claim.*—1. The combination with a brush having a bridle secured thereto, of two independent metal stiffening strips secured to said bridle, leaving flexible portions between said strips, substantially as described.

2. In a brush bridle, an independent metal stiffening strip bent at H, so as to embrace and engage with a flap formed on a bridle band made of flexible material and also bent at I, so that the edge of the flexible band may be pressed against that portion of the strip which engages with the flap, substantially as and for the purpose specified.

3. A brush bridle A, provided with flaps B, B', on the lower edge of the bridle, in combination with the independent stiffening strips C, and C' attached to said flaps and leaving flexible portions between said strips and eyelet holes, D, E, F, and G, near the upper edge of the bridle, adapted to engage with studs formed on the head of the brush and a stud on the bridle, substantially as and for the purpose specified.

529,019. **COIN-CONTROLLED PHONOGRAPH.** FRANK S. CHURCH, Detroit, Mich., assignor of one-half to W. Fitz-Hugh Edwards, same place. Filed May 12, 1892. Serial No. 432,732. (No model.)





*Claim.*—1. The combination with a phonograph, of a regulated motor therefor, having an actuated period corresponding to the driving interval of the carriage and automatic means for re-setting it for each actuation, substantially as described.

2. The combination with the phonograph, of a regulated motor therefor having an actuating period corresponding to the driving period of the carriage, an independent automatic re setting device for the motor, and a re-setting device for the carriage, substantially as described.

3. The combination with a phonograph, of a regulated motor therefor, having an actuating period corresponding to the driving interval of the carriage, an independent automatic re-setting device for the motor, said re-setting device also forming the re setting device for the carriage, substantially as described.

4. The combination with a phonograph, of a motor therefor, comprising an oscillating platform and a train of gearing actuated therefrom, of a weight for returning the platform to its initial position, and an independent connection from said weight to the phonograph carriage, substantially as and for the purpose described.

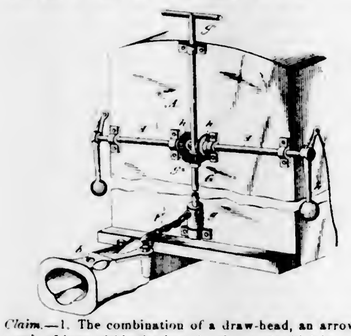
5. The combination with a phonograph, of a motor therefor, comprising an oscillating platform, a train of gearing actuated thereby, an automatic governor between the gearing and the phonograph cylinder, a weight for returning the platform to its initial position, and a connection from said weight to the phonograph carriage, substantially as described.

6. The combination with a phonograph, its carriage and a motor therefor, comprising a train of gearing, a lever forming a platform upon which the operator is adapted to stand, and a winding up connection from said lever to the motor, substantially as described.

7. In a phonograph, the combination with a carriage of a motor for driving it forward and a motor for returning it, of the finger 47 pivoted to the carriage normally held and trailing in an inclined position in the forward movement of the carriage and adapted to be rocked to a vertical position in the return movement, substantially as described.

8. The combination with a phonograph cylinder and its carriage, of a motor for driving it forward and a motor for returning it, of the finger 47 trailing in an inclined position in the forward movement of the carriage and adapted to be rocked to a vertical position in the return movement and a well at the return movement into which said finger drops, substantially as described.

529,020. **CAR-COUPLING.** ALBERT G. CLARK, Glendale, Ohio. Filed Feb. 23, 1892. Serial No. 422,369. (No model.)



*Claim.*—1. The combination of a draw-head, an arrow-headed bolt, a pair of jaws within the draw-head one of which is movable, an inclined way in the draw-head upon which the movable jaw may travel and means for withdrawing the movable jaw from its locking position, substantially as and for the purpose specified.

2. The combination of an arrow-headed bolt, a draw-head, a pair of jaws within the draw-head one of which is movable, a rock shaft, a flexible connection between the movable jaw and the rock shaft, and means for automatically restoring the rock shaft to its normal position, substantially as and for the purpose specified.

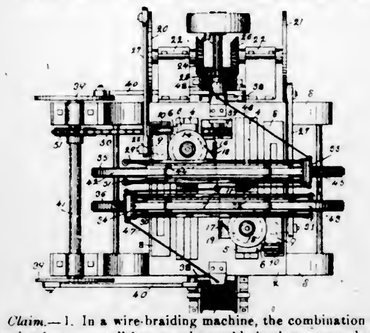
3. The combination of an arrow-headed bolt, a draw-head, a pair of jaws one of which is movable, an inclined way in the draw-head upon which the movable jaw is adapted to travel, a rock shaft, a flexible connection between the movable jaw and the rock shaft, and means for automatically restoring the rock shaft to its normal position, substantially as and for the purpose specified.

4. The combination with an arrow-headed bolt, of the draw-head B provided with chamber *b'*, the jaws C C, the link E, the chain F and the rock shaft G, substantially as and for the purpose specified.

5. The combination of the draw head B having aperture *b*, the jaws C C, the link E, the chain F and the rock shaft G, substantially as and for the purpose specified.

6. The combination of the draw-head B, the jaws C C, the link E, the chain F and the rock shaft G provided with weights adapted to return it to its normal position, substantially as and for the purpose specified.

529,021. **WIRE-BRAIDING MACHINE.** JOHN B. CLEAVELAND, Indianapolis, Ind. Filed Jan. 29, 1894. Serial No. 498,293. (No model.)



*Claim.*—1. In a wire-braiding machine, the combination of the following instrumentalities, namely, a table having a central vertical opening therein, a pair of spool-carriers mounted on said table and arranged to reciprocate thereon in a horizontal plane upon opposite sides of said opening, and a pair of wire carriers also mounted on said table, and arranged to oscillate thereon on opposite sides of said opening in vertical planes which intersect the plane of the reciprocal motion of the horizontal spool carriers, means for imparting a continuous reciprocating movement in opposite directions to said spool-carriers, and means for imparting an intermittent reciprocating movement to said wire-carriers, all substantially as and for the purpose set forth.

2. In a wire-braiding machine, the combination with the table, the semi-circular slide-way extending across and above said table, and the wire-carrier mounted on said slide way of the band-wheel arranged beneath the table, means for imparting an oscillating movement to said band-wheel, the belt mounted upon said wheel and upon idlers arranged beneath and adjacent to said slide way, and a flexible connecting member connecting the belt and the wire-carrier, whereby an intermittent reciprocating movement is imparted to the said carrier by the continuous oscillating movement of the band-wheel, substantially as set forth.

529,022. **BRIDLE-BIT.** ERNEST L. CRUGER, London, Wis. Filed Feb. 28, 1894. Serial No. 501,819. (No model.)



*Claim.*—1. A main bit having swiveled or pivoted to its ends, suitable rein-rings, cheek-pieces and clevises, and a supplemental bit loosely connected to the clevises, and rings for the over-draw check lines, substantially as and for the purpose set forth.

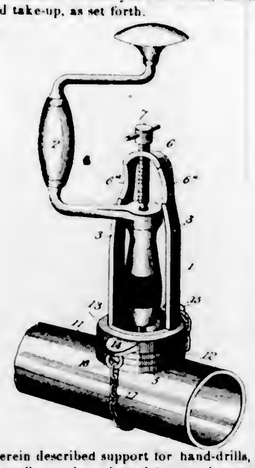
2. A main bit having swiveled or pivoted to its ends, rein rings, cheek-pieces, and clevises, and a supplemental bit loosely connected to the clevises and provided with a curb at right angles to the length thereof, and rings for the over-draw check lines loosely connected to the supplemental bit, substantially as and for the purpose specified.

529,023. **ROTARY SUPPORT FOR HAND-DRILLS.** JOHN W. DUFF, Old Orchard, Me., assignor to Wm. J. Mewer and the Duff Construction Company, same place. Filed Dec. 11, 1893. Serial No. 493,428. (No model.)

*Claim.*—1. The herein described support for hand-drills, the same comprising a loose collar or ring adapted for attachment to the ob-

ject to be drilled, a frame or yoke rotatable in said collar or ring, a ball-bearing, and a follower or feed take up, as set forth.

2. The herein described support for hand drills, the same comprising a loose collar or ring adapted for attachment to the object to be drilled, a yoke or frame rotatable in said collar or ring, an extensible arch attached to said yoke or frame, and an adjustable follower or feed take-up, as set forth.



3. The herein described support for hand-drills, the same comprising a loose collar or ring adapted for attachment to the object to be drilled, a yoke or frame rotatable in said collar or ring, an extensible arch attached to said yoke or frame, a ball-bearing for said yoke or frame, and an adjustable follower or feed take-up, as set forth.

4. The herein described support for hand-drills, the same comprising a loose collar or ring and a chain for attachment of the support to the object to be drilled, a rotary yoke or frame working in said loose collar or ring, an extensible arch attached to said yoke or frame, and an adjustable follower or feed take-up, as set forth.

5. The herein described support for hand-drills, the same comprising a loose collar or ring and a chain adapted for fixed attachment to the object to be drilled, a rotary part working in said collar or ring and provided with an extensible arch, an anti-friction device, and an adjustable screw follower or feed take-up, substantially as set forth.

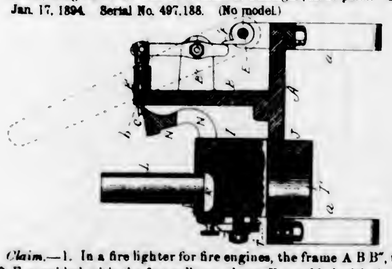
6. The herein described support for hand-drills, the same comprising a loose collar or ring provided with a flange, a rotary part working in said collar or ring and also provided with a flange, anti-friction devices contained between said flanges, and a follower or feed take up, substantially as set forth.

7. The herein described attachment or support for hand-drills, the same comprising a loose collar adapted for attachment to the object to be drilled, a rotary part working in said collar, anti-friction washers, and an adjustable screw follower or feed take-up, as set forth.

8. In a support or attachment of the character referred to, the arch provided with a centrally arranged ring shaped spring having its ends brought together and then bent apart, as shown and for the purpose set forth

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**529,024. FIRE-ENGINE LIGHTER.** CHARLES W. ENOS, Peabody, Mass., assignor of one-half to William B. Flanagan, same place. Filed Jan. 17, 1894. Serial No. 497,188. (No model.)

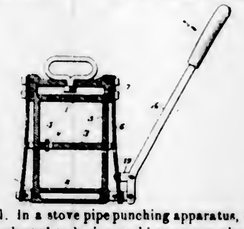


*Claim.*—1. In a fire lighter for fire engines, the frame A B B″, the shaft E provided with the fast collar or sleeve F provided with the lip or trip F″, the lever H fast on said shaft, the levers D, holding pins or rods C sliding in the perforations in the guide plate B′, and hammers N and exploding or igniting mechanism, substantially as described.

2. In a fire lighter for fire engines, the frame, block I provided with the drawer K for the fulminate, stack leading up from the said drawer, nipples R and hammers N, trip or releasing mechanism for allowing the hammers to drop, and lever for actuating the releasing mechanism, said lever being of length to be struck by the engine as it passes over it, substantially as set forth.

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**529,025. STOVEPIPE-PUNCHING MACHINE.** CHRISTIAN EHLIMAN, Glenwood, Iowa. Filed Jan. 4, 1894. Serial No. 496,704. (No model.)



*Claim.*—1. In a stove pipe punching apparatus, the combination with a frame adapted to be inserted into a stove pipe, and a plurality of movable arms provided with punches, of a single lever connected at its extremity and at a point intermediate of its ends through intermediate mechanism, with the movable arms, respectively, and adapted by its movement to simultaneously actuate the arms in opposite directions, substantially as specified.

2. The combination with a frame adapted to be inserted into a stove pipe and provided with dies, of a plurality of spring metal arms terminally secured thereto, and provided upon their opposite extremities with punches adapted to co-operate with the dies, and a single lever connected at its extremity, and at a point intermediate of its ends through intermediate mechanism with the spring arms, respectively, and adapted by its movement to actuate said arms in opposite directions, substantially as specified.

3. The combination with a frame adapted to be inserted into a stove pipe provided with movable arms, and an adjustable gage piece, of a single lever operately connected at its extremity, and at a point intermediate to its ends through intermediate mechanism with the movable arms, respectively, and adapted by its movement to actuate said arms in opposite directions, substantially as specified.

4. The combination with a frame provided with dies, spring metal arms terminally secured, and provided with punches upon their free ends, and an adjustable gage piece, of a single lever operatively connected at its extremity and at a point intermediate of its ends through intermediate mechanism with said spring metal arms, respectively, and adapted by its movement to actuate said arms in opposite directions, substantially as specified.

5. The combination with a frame piece and spring metal arms, of a ring secured to one of the arms, a punch thereon, a handle secured to the ring and in operative relation with the second spring metal arm, a punch secured to said last named arm and dies co-operating with the punches, substantially as and for the purposes specified.

6. The combination with a frame piece and spring metal arms, of a ring secured to one of the arms, a punch thereon, a handle secured to the ring and in operative relation with the second arm, a punch secured to said last named arm, dies co-operating with the punches and an adjustable gage piece upon the frame, substantially as specified.

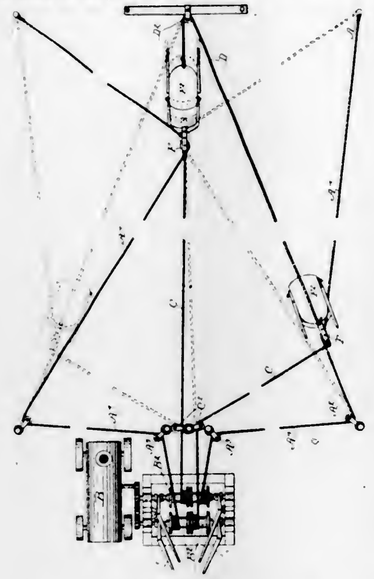
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**529,026. APPARATUS FOR DITCHING OR GRADING.** EDWARD P. FOX, Garner, Iowa. Filed Feb. 2, 1894. Serial No. 498,824. (No model.)

*Claim.*—1. A grading and ditching apparatus, comprising two scoops, one or more pulleys attached to stationary supports at the rear of the ditch, a cable attached to the rear end of each scoop and passed over said pulley or pulleys, two cables fixed to stationary supports located in the rear of the scoops and at the same distance laterally from the said pulley or pulleys as it is desired to convey the earth from the ditch, or vice versa, pulleys attached to the forward ends of the scoops over which said cables are passed, the cables attached to the forward ends of the scoops and two pulleys located in advance of the scoops, and at such a distance laterally from the aforesaid cables as it is desired to move the earth from the ditch or vice-versa, and means for applying power to any of said cables to advance the scoops.

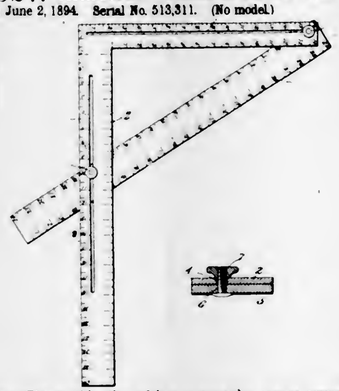
2. An apparatus for digging ditches, comprising two scoops, a pulley located at the rear central portion of the ditch, a cable attached to each scoop and passed around said pulley, a pulley attached to the front end of each scoop, two pulleys located at opposite sides of the ditch and in advance thereof, cables fixed to stationary supports in the rear of the ditch passed around said pulleys in the scoops and around the latter mentioned pulleys, two pulleys located in alignment with and in advance of the ditch and cables attached to the scoops and run through said pulleys and means for applying power to said cables for the purposes stated





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**529,027. PITCH-BOARD.** WILLIAM E. FRASIER, Osceola, Tex. Filed June 2, 1894. Serial No. 513,311. (No model.)



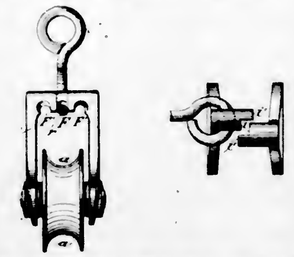
*Claim.*—The combination with a rectangular square comprising the sections 1 and 2, the same being slotted respectively as at 3 and 4, the former slot terminating opposite the slot 4, of the hypotenuse section 5 agreeing in width with the section 2 and having perforations 6 registering with the slots, the distance between the perforations and the outer edge of the hypotenuse being greater than that between the outer end of the slot 3 and that branch of the square in which it is formed, and the clamping screw 7 passing through the slots and the perforations, substantially as specified.

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**529,028. PULLEY.** FREDERICK GIER, Hoboken, N. J. Filed Apr. 17, 1894. Serial No. 507,874. (No model.)

*Claim.*—1. A live, movable or loose pulley, consisting of a sheave with axle, a movable supporting frame made in two parts and provided with strengthening flanges and three recesses in the lower portions of the top piece and reduced and overlapping top ends in which the middle recess is located, and a hook adapted to fit in these recesses, substantially as described.

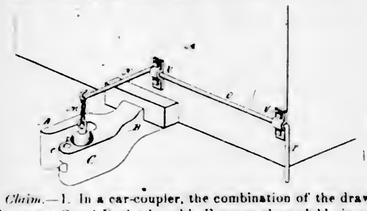
2. In a live or loose pulley, a wheel or sheave supporting frame made in two parts which are movable on the axle and provided with strengthening flanges and three recesses in the lower portions of the top piece and reduced and overlapping top ends in which the middle recess is located and a book adapted to fit in these recesses, substantially as described and for the purpose set forth.



3. In a movable pulley, a wheel or sheave supporting frame made in two parts which are movable on the axle and provided with strengthening flanges and three recesses in the lower portions of the top piece and reduced and overlapping top ends in which the middle recess is located, in combination with a wheel or sheave with axle, and a hook, substantially as described.

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**529,029. CAR-COUPLING.** GEORGE GLADFELTER, Cedar Rapids, Iowa. Filed Apr. 21, 1894. Serial No. 508,456. (No model.)

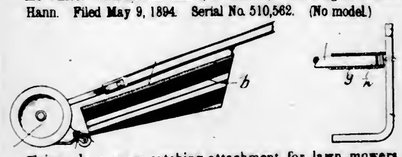


*Claim.*—1. In a car-coupler, the combination of the draw-head having arms C and D, the knuckle F mounted revolubly in a recess of the arm C and having a square central hole therein, notches G formed in the upper portion of said arm C, and pin having a square stock J and a notched shoulder Q adapted to engage with the notches in the draw-head, substantially as and for the purpose set forth.

2. In a car-coupler, the combination with a draw-head substantially as described, of the revoluble knuckle F having an angular central hole therein, the pin having an angular stock J corresponding to said hole, a serrated shoulder Q, a heavy head K and a swivel ring L, a rock-shaft lever mounted on the end of the car, and a connection of an arm of said rock-shaft with said swivel-ring, substantially as and for the purpose set forth.

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**529,030. GRASS-CATCHING ATTACHMENT FOR LAWN-MOWERS.** CHESTER K. HANN, Columbus, Ohio, assignor to Alice M. Hann. Filed May 9, 1894. Serial No. 510,562. (No model.)



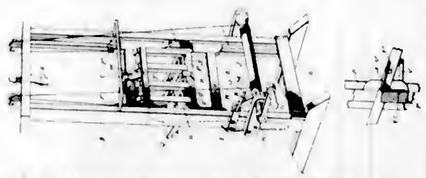
*Claim.*—In a grass catching attachment for lawn mowers the combination with the main frame and means for engaging the forward end of said frame with a lawn mower, of a coiled spring extending the entire distance between the sides of said frame and a stiffening rod within said coiled spring, substantially as and for the purpose specified.

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**529,031. ELEVATOR.** LUTHER M. JOHNSON, Paulding, Ohio, assignor of one-half to John E. Dell, same place. Filed June 4, 1894. Serial No. 513,402. (No model.)

*Claim.*—1. In an elevator, the combination of the vertical frame having the guideways, the frame fitting in said guideways, the rigid inclined platform secured to the frame, the rod secured in the frame adjacent to the rigid platform, the tilting platform hinged to said rod, the spring coiled around the rod and having one end bearing against the frame and the other end bearing against the tilting platform, the keeper secured to the tilting platform, the latch for holding

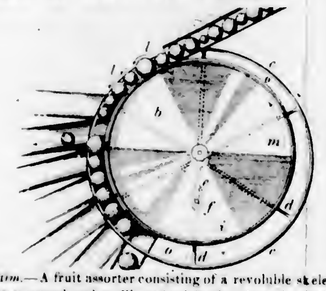
the keeper, the stop for engaging the latch to release the same and allow the platform to fall and mechanism for moving the frame.



2. In an elevator, the combination of a base, the vertical uprights rising therefrom and having guideways, the drum mounted in the uprights and having the ratchet, the dog engaging the ratchet and having a handle, the cords on the drum, the traveling frame connected to the cords, the rigid and hinged platforms carried by the traveling frame, the keeper and latch for securing the hinged platform, the stop for engaging the latch to allow the hinged platform to descend and the bale on the vertical uprights for limiting the descent of said platform.

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529,032. **FRUIT-SIZER.** HENRY C. JONES, Orange City, Fla. Filed June 28, 1894. Serial No. 515,914. (No model.)



*Claim.*—A fruit assorter consisting of a revoluble skeleton wheel inclosing a second and smaller wheel having its axis parallel to the first but eccentric thereto, so arranged as to provide an open marginal crescent shaped fruit passage between the rims of the wheels, the axis of each wheel inclined to such an angle that the weight of the fruit delivered on the upper edge will cause the wheels to revolve, either wheel communicating the motion to the other by a pin in one engaging in a slot in the other, the whole in connection with suitable spouts for conveying the fruit to and away from the wheels, all being substantially as described and for the purposes set forth.

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529,033. **BOX OR PACKAGE.** GEORGE P. KATO, Jr., Jersey City, N. J. Filed Mar. 14, 1894. Serial No. 503,539. (No model.)



*Claim.*—1. The box or package consisting of the body having the recess in its vertical sides, the cover having the vertical flange, and the plain cord wound into said recess and having its surfaces in contact with the said body and flange, substantially as and for the purposes set forth.

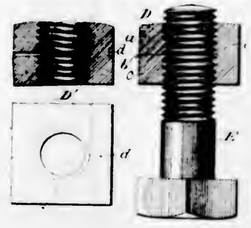
2. The box or package consisting of a body and cover, the said body at its end being provided with the recess, aperture and slit, and having the cord wound around said recess and secured at said aperture and slit respectively, substantially as set forth.

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529,034. **LOCK-NUT.** NICOLAUS LEIDGEN, Milwaukee, Wis., assignor of one-half to Otto Gelhaar, same place. Filed Apr. 2, 1888. Serial No. 269,305. (No model.)

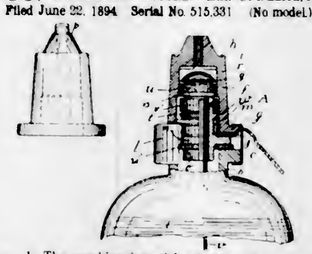
*Claim.*—1. An elastic lock nut, composed of two parts separated by a cleft extending from one side of the nut transversely through the threaded hole therein, and joined together on the opposite side of the nut by an elastic connection which tends to automatically separate the component parts and to spread or deflect the thread between them, the thread in the two parts being continuous and unbroken when the cleft is closed and they are brought together, substantially as and for the purposes set forth.

2. An elastic lock nut composed of two parts, separated by a cleft extending from one side of the nut approximately parallel with its faces through the threaded hole therein the two parts being jointed together on one side of said hole by an elastic connection which tends to separate them and thereby produce a break in or distortion of the thread, the screw thread in each part of the nut being continuous with that in the other part when the cleft is closed and the two parts are forced together, substantially as and for the purposes set forth.



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529,035. **NON-FILLING BOTTLE.** HARVEY I. LEITH, Providence, R. I. Filed June 22, 1894. Serial No. 515,331. (No model.)



*Claim.*—1. The combination with a bottle, of a perforated cap, a seal clamping the cap over the mouth of the bottle, a tube having a valve and forming a communication from the interior of the bottle to the interior of the cap, an air conduit extending from the interior of the bottle to the exterior thereof, a seal stopping up the air conduit at a point within the cap, and a flexible ligature attached to the seal and extending to the outside of the cap and of the bottle.

2. The combination with a bottle, of a perforated cap, a seal clamping the two together, a tube passing from the interior of the bottle to the interior of the cap, a cork or a similar corking material at the upper portion of said tube and fitting tightly between the tube and the cap, the tube being provided with grooves around the outside of the same, porous rings fitting in the respective grooves loosely between the tube and the inner wall of the cap and located below the cork, and a capillary conduit extending from the interior of the bottle through the wall of said tube and into the upper groove, the lower groove being connected by a conduit with the outside of the bottle and with the upper groove.

3. The combination with a bottle of a closed cap fitted over the mouth thereof and sealed thereto, an air conduit extending from the bottom of the bottle, inside, through a valved partition into the cap, and having this entrance into the cap sealed, and a flexible ligature extending from the last named seal to the outside bottle.

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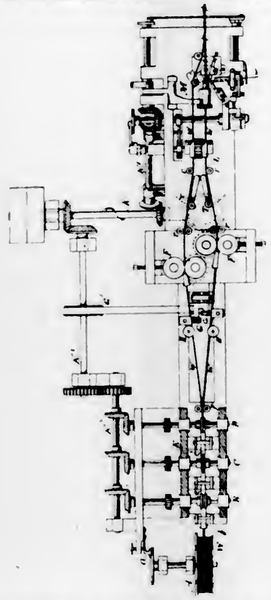
529,036. **MACHINE FOR MAKING BARBED-WIRE FENCING.** EDWIN S. LENOX, Worcester, Mass. Filed Oct. 24, 1892. Serial No. 449,892. (No model.)

*Claim.*—1. A machine for making barbed fencing from multiple or dual wire-rods organized for continuous operation, substantially as described and comprising, in combination, a slitting shear that separates the strands of the rod, forming rolls that round or shape the several strands to the required finished form and size of wire, a barbing mechanism adapted for attaching barbs to the wire, and means substantially as described for twisting the strands and coiling the product, as set forth.

2. In a machine for making barbed-wire fencing from multiple or dual rolled rods, the combination of means for supporting and delivering said rod, rotary cutters that divide the rod into separate strands, grinding wheels for removing the burr, a plurality of sets of forming rolls that separately round or shape the individual strands into wire of the desired size for fencing purposes, a barb-attaching mechanism, attaching guides, and feed-rolls that carry the strands from the forming-rolls to said barb-attaching mechanism, substantially as set forth.



3. In a machine for making twisted and barbed wire fencing direct from dual or multiple rolled rods, the combination, substantially as described, of the delivery reel, the entering guide, a slitting shear, a set of rolls for rounding the separated strands of wire, the barb-attaching mechanism, feed-appliances that support and advance the wires between the rounding-rolls and barb-attaching mechanism, a twisting and winding reel whereby the finished strands are re-assembled and twisted together, and means for simultaneously imparting power and motion to operate the shear, the rolls, the barb-attaching mechanism and the feed-appliances, substantially as set forth.



4. In a mechanism for making twisted strand wire fencing direct from dual or multiple rolled rods, the combination of a slitting shear, a set of rounding rolls, and a twisting and winding reel, whereby the rounded or finished strands of wire are re-assembled and twisted together, for the purpose set forth.

5. In a mechanism for making twisted strand wire fencing direct from dual or multiple rolled rods, the combination, substantially as described, of a slitting shear, a set of rounding rolls, guides that introduce the rod in proper relation into said shear and the separated strands of rod into the respective roll-passes, and a twister and winding-reel whereby the rounded or finished strands are re-assembled and twisted together, for the purpose set forth.

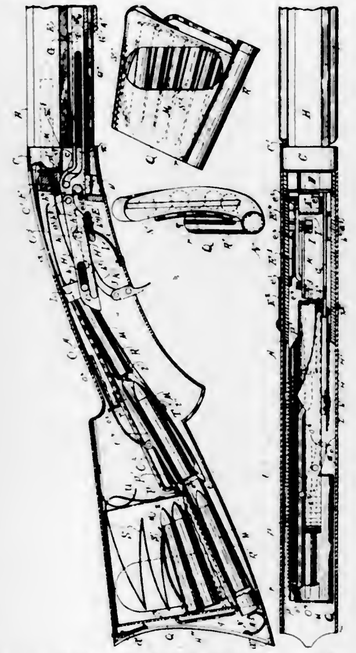
6. The combination, with the slitting-shears, the reducing-rolls and the fence-wire-barbing machinery, of the yielding take-up between the reducing rolls and barbing mechanism, substantially as and for the purpose set forth.

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529,037. **MAGAZINE-GUN.** MYRON C. LISLE, Grand Rapids, Mich., assignor of one-half to William A. Berkey, same place. Filed May 10, 1894. Serial No. 510,811. (No model.)

*Claim.*—1. The combination in a magazine gun having a sliding fore-arm and a sliding breech block; of a connecting rod pivoted to the fore arm and provided with a longitudinal slot, the back end of which inclines upward for actuating the breech block, a trunnion on said breech block to engage with said slot, a stud upon the end of said connecting rod for cocking the gun, a link pivoted to the end of the connecting rod and connecting the same with the main transfer slide, a slot in said link for the reception of the stud *f* a notched cover for said slot actuated by a spring a trip for opening said cover, a main transfer slide having a notched slide pivoted to its back end, and a spring shell extractor at its front end, an auxiliary slide having a spring pivoted to its front end, said slide actuated in one direction by the main slide, and in the opposite direction by a spring, a latch and trip for actuating said slide and a transfer tube slotted its entire length, the front end open at its upper side, and catches for holding the cartridges to place and a magazine, substantially as shown.

2. In a magazine gun, a magazine and transfer tube, transfer slides actuated by a sliding fore-arm, said fore-arm connected with the transfer slides by an actuating slide having a longitudinal slot the back end of which inclines upward to actuate the vertically reciprocating breech-block, a trunnion in the breech block arranged to travel in said slot, a link connecting the actuating slide with the transfer slides, said link having a slot corresponding in length with the inclined portion of the slot in the actuating slide, and a guide for the fore-arm having an offset in position to give the fore-arm a distance of travel corresponding with the length of the slot in the link, and a spring and thumb piece in the fore-arm in position to engage with the offset on the guide to limit the travel of the fore arm to the distance necessary to throw the breech-block down and cock the gun without moving the transfer slides, substantially as and for the purpose set forth.



3. In a magazine gun, a magazine, transfer tube, and transfer slides actuated by a sliding fore-arm, in combination with a button on the end of the stock in position to stop the fore-arm before the transfer slides engage with the cartridges in the magazine and transfer tube, substantially as and for the purpose set forth.

4. A magazine gun having a sliding fore-arm, transfer tubes and transfer slides; in combination with a slotted connecting rod between the fore-arm and the transfer slides, a stud on the side of the back end of said rod, a hammer pivoted in the receiver, a button on the side of the hammer in position to engage with the trunnion on the rod, said button connected by a shaft, passing through the hammer, to a second button on the opposite side of the hammer, a spring to actuate said buttons to throw them to a neutral point from either direction, a notch in the second button, a sear and trigger with a connecting rod between them, a sear pivoted to said connecting rod, said sear adjusted to engage with the notch on the button *c*⁴ and throw the end of the button *c*⁴ below the line of travel of the trunnion on the connecting rod G by drawing upon the trigger when the hammer is in its normal position, substantially as and for the purpose set forth.

5. A magazine gun having a sliding fore-arm, a sliding breech block, transfer tubes, transfer slides, and a shell extractor, a hammer pivoted in the receiver, a sear and a trigger with a connecting rod between them; in combination with a lever pivoted in the receiver, one arm of which is outside and one arm inside of the receiver the inner arm having a notch to engage with a stud on the side of the connecting rod between the trigger and the dog, to form a safety lock, substantially as, and for the purpose set forth.

6. The combination, in a magazine gun having a sliding fore-arm and breech block, transfer slides and shell extractor with a transfer tube having a slot for the passage of the transfer slides and its back end detachable, a body projecting out nearly at right angles from the

detached portion of the transfer tube for the storage of cartridges and a spring attached to said body and arranged to force the cartridges into the tube sidewise substantially as, and for the purpose set forth.

7. In a magazine gun, having transfer slides and a transfer tube, a detachable magazine in the butt of the gun stock and having a body projecting from one side of the tube, a spring for forcing the cartridges sidewise to the tube, a butt plate pivoted to the butt end of the gun stock, and a spring between the butt plate and the magazine to hold the magazine tube in contact with the transfer tube, substantially as, and for the purpose set forth.

8. The combination in a magazine gun having transfer slides and tubes; of a detachable magazine in the butt end of the gun stock having a body projecting from the transfer tube, a spring for forcing the cartridges toward the transfer tube sidewise; with a door pivoted into the butt of the stock, and a spring connection between said door and the magazine to hold the magazine tube in contact with the transfer tube, substantially as, and for the purpose set forth.

9. In a magazine gun, a permanent transfer tube, a detachable magazine inserted to engage with the back end of the transfer tube, transfer slides to carry the cartridges from the magazine to the gun barrel and a spring to eject the magazine from the stock, substantially as, and for the purpose set forth.

10. In a magazine gun, a transfer tube in the stock, a detachable magazine in the butt of the stock, slides for conveying the cartridges to the gun barrel, a butt plate to open and close the end of the stock, a spring to hold the magazine against the transfer tube, and a spring to eject the magazine from the stock, substantially as and for the purpose set forth.

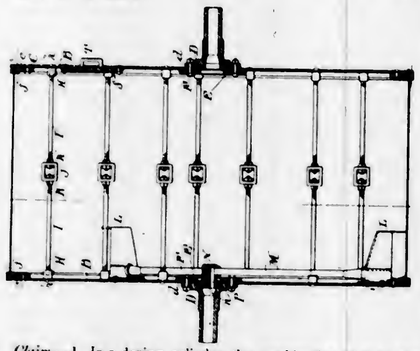
11. The combination, with a magazine gun having a permanent transfer tube, of a detachable magazine, inserted to engage with the transfer tube, and a spring for ejecting the magazine from the stock, substantially as, and for the purpose set forth.

12. In a magazine gun, a transfer tube in the stock, a detachable magazine engaging with the back end of said tube in the butt of the stock, the butt plate of the stock pivoted to open and close for the insertion and removal of the magazine longitudinally, and a catch to hold the butt plate when closed, substantially as and for the purpose set forth.

13. In a magazine gun, a hollow stock, a transfer tube and a detachable magazine within the stock, the butt plate of the stock pivoted to open and close, a catch to hold the same to place, and the magazine arranged to store the cartridges side by side and to insert and remove longitudinally through the opening of the butt plate, substantially as shown and described.

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**529,038. DRYING-CYLINDER FOR TEXTILE MACHINERY.** WILLIAM C. MACKINNEY, Philadelphia, Pa., assignor to H. W. Butterworth & Sons Company, same place. Filed Feb. 7, 1894. Serial No. 499,370. (No model.)



*Claim.*—1. In a drying cylinder, the combination of the cylindrical drying surface, with two heads arranged at its ends each of which heads consists of a heavy annular rim to which the cylinder is directly connected, and a circular plate of sheet metal secured to the annular rim by steam tight joints and perforated at its center, and a cast metal journal secured concentric with the centers of the heads and projecting outwardly.

2. In a drying cylinder, the combination of the cylindrical drying surface, with two heads arranged at its ends each of which heads consists of a heavy annular rim to which the cylinder is directly connected and a circular plate of sheet metal secured to the annular rim by steam tight joints and perforated at its center, a cast metal journal secured concentric with the center of each of the heads and projecting outwardly, and a series of transverse stay rods or bolts connecting the two heads at intervals.

3. In a drying cylinder, the combination of the cylindrical drying surface, with two heads arranged at its ends each of which heads consists of a heavy annular rim to which the cylinder is directly connected, a circular plate of sheet metal secured to the annular rim by steam tight joints and perforated at its center, a cast metal journal secured concentric with its center and projecting outwardly, and a series of stay rods or bolts connecting the two heads at intervals consisting of hubs having projections passing through the plates and riveted thereto, and bolts or rods secured to the hubs and projecting toward each other and having their ends secured together by adjusting coupling devices.

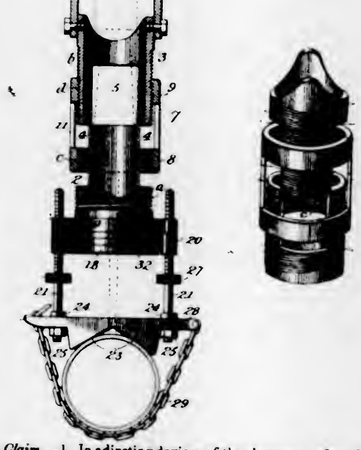
4. In a drying cylinder, the combination of the cylindrical drying surface of metal, two heads secured to the ends of the said cylinder each consisting of a heavy annular rim, a circular sheet metal plate riveted to said rim, a cast iron journal secured to the center of the plate and projecting outwardly, pins projecting through the cylinder into the peripheries of the annular rims, and annular bands or tires shrunk upon the outer surface of the cylinder and in alignment with the annular rims and over the pins.

5. A drying cylinder, composed of two heavy annular metallic rings, a cylindrical surface of sheet metal secured to said metallic rings by steam tight joints, two disks of sheet metal composing the sides of the cylinder secured to said annular metallic rings by steam tight joints and provided with central apertures, and heavy metallic hubs secured to said sheets metal disks at said apertures, the whole constituting a firm and light drying cylinder.

6. A drying cylinder, composed of two heavy annular metallic rings, a cylindrical surface of sheet metal secured to said metallic rings by steam tight joints, two disks of sheet metal composing the sides of the cylinder secured to said annular metallic rings by steam tight joints and provided with central apertures, stay rods within the cylinder connecting said sheet metal disks and secured thereto by metallic heads riveted to the disks and receiving the ends of the stay rods on the inside of the cylinder, and heavy metallic hubs secured to said sheets metal disks at said apertures, the whole constituting a firm and light drying cylinder.

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**529,039. ADJUSTING DEVICE FOR DRILLS, &c.** WILLIAM J. MEWER, Old Orchard, Me., assignor to John W. Duff and William J. C. Milliken, same place, and Henry B. Bennett, Portland, Me. Filed Dec. 11, 1893. Serial No. 493,412. (No model.)



*Claim.*—1. In adjusting devices of the character referred to, two complementary hollow sections provided with corresponding recesses and extensions, each fitting and working within the other and screw-threaded on their exterior surfaces, means for operating said sections, means at one end of the sections for attachment to the object to be drilled, and a bearing-point formed with or attached to the opposite end of the sections, substantially as described.

2. In adjusting devices of the character referred to, two complementary hollow sections provided with corresponding recesses and extensions each fitting and working within the other and screw-threaded on their exterior surfaces, means for operating said sections to lengthen or shorten the same, a gripping jaw attached to one section, and a bearing-point attached to the other, substantially as described.

3. In adjusting devices of the character referred to, two complementary hollow sections provided with corresponding recesses and extensions each fitting and working within the other, and screw-threaded on their exterior surfaces, a correspondingly screw-threaded sleeve for operating said complementary sections, a gripping jaw, means for adjusting the jaw, and a loose collar, substantially as described.

4. In adjusting devices of the character referred to, two complementary hollow sections provided with corresponding recesses or extensions, each fitting and working within the other and screw-threaded on their exterior surfaces in opposite directions to each other, a corresponding interiorly screw-threaded sleeve surrounding the sections for operating the same, the loose collar provided with bearings, the screw-rods working in said bearings, anti-friction devices, and an adjustable gripping jaw, substantially as described.

5. In adjusting devices of the character referred to, the combination of the complementary sections, and their operating sleeve, a gripping jaw, means for adjusting the jaw, and a loose collar, substantially as described.

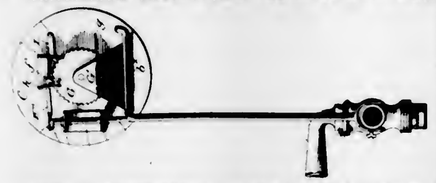
6. In adjusting devices of the character referred to, the combination of the complementary sections, the arch and bearing-point, the operating sleeve, a loose collar, and an adjustable gripping jaw, substantially as described.

7. In adjusting devices of the character referred to, the combination of the complementary sections, the adjusting sleeve, the loose collar provided with screw-threaded bearings, the screw-rods working in said bearings, anti friction devices, and a grip jaw and jam-nuts, substantially as described.

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**529,040. REGISTER-GAGE FOR FAUCETS.** ALBERT W. MEYER, Terre Haute, Ind. Filed Nov. 16, 1893. Serial No. 491,118. (No model.)



*Claim.*—1. The combination with the graduated disks, and its supporting rod, of the toothed wheel and pointer, the pawl mounted to engage the teeth of said wheel, and the vertically disposed rod mounted for partial rotation and connected directly with said pawl and adapted to be actuated by movement of a faucet, substantially as specified.

2. The combination with a faucet, of a rod supported thereon and carrying a graduated disk, a toothed wheel and pointer on said disk, a vertically disposed partially rotatable rod connected with the valve of the faucet, and a pawl connected directly with said rod and engaging the said wheel, as set forth.

3. The combination with a disk and its supporting rod, of a toothed wheel journaled on the disk, a pointer fast on the shaft of said wheel, a pawl for engagement with said wheel, a rod for attachment to a faucet mounted for partial rotation by a turning of the faucet and provided with a crank arm connected directly with said pawl, substantially as specified.

4. The combination with the disk, its supporting rod, the toothed wheel carried by a shaft on said disk and a pointer carried by said shaft, a vertical rod journaled to rotate in bearings on the disk, a crank arm carried by the upper end of said rod, a pawl connected directly with said crank arm and arranged to engage said wheel, and a guide for said pawl, as set forth.

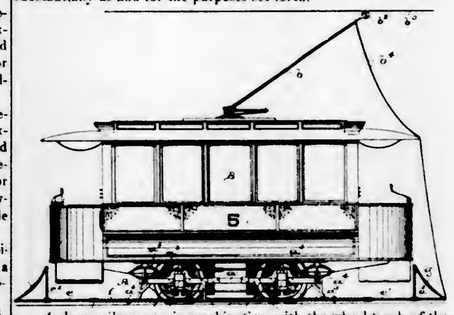
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**529,041. FENDER FOR CARS.** JOHN MCCARTHY, Newark, N. J. Filed June 2, 1894. Serial No. 513,229. (No model.)

*Claim.*—1. The herein described fender, consisting essentially of U-shaped frames $c$ and $c'$, having connecting bars $c^3$ and $c^4$, and an apron $g$, in combination, with the bearing bars $a$ of the wheel-truck of a car, and tubular guides or bearings $d$ and $d'$ on said bars $a$, in each of which the free ends of said frames $c$ and $c'$ are adapted to slide, and equalizing springs connected with said bars $c^3$ and $c^4$ and said guides or bearings, substantially as and for the purposes set forth.

2. In a fender for cars, the combination, with the fender or guard secured to slide in a supporting frame, of a trolley pole and its wheel, and means connecting said trolley pole with the fender, whereby the backward movement of said fender will disconnect the trolley wheel from the trolley wire, substantially as and for the purposes set forth.

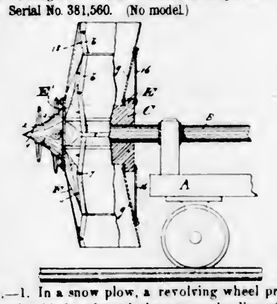
3. In a railway car, the combination of the trolley pole and wheel, with a feuder or guard arranged to have a reciprocatory sliding and horizontal movement in bearing or guides on the wheel truck of the car, and a trolley rope connected with said fender and trolley pole, substantially as and for the purposes set forth.



4. In a railway car, in combination, with the wheel-truck of the car, guides or bearings arranged on the bearing-bars of the truck, U-shaped fender frames $c$ and $c'$ arranged to slide in said guides or bearings, provided with fender aprons, equalizing springs connected with said U-shaped frames and bearings on said bearing bars, a trolley pole and wheel on the car, and a trolley rope connected with said pole and one of said U-shaped frames, substantially as and for the purposes set forth.

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**529,042. CENTRIFUGAL SNOW-WHEEL.** NEIL MCKAY, Paterson, N. J., assignor to Charles H. Otis, Brooklyn, N. Y. Filed Feb. 16, 1891. Serial No. 381,560. (No model.)



*Claim.*—1. In a snow plow, a revolving wheel provided with a series of cutting blades pivoted thereto on the line of their cutting edge and contiguous thereto substantially as described and set forth.

2. In a revolving snow plow the combination of a driving shaft, a hub secured to said shaft, lugs on said hub, radial arms secured to said lugs, and a series of flat triangular plates secured to said radial arms and hub, substantially as described and set forth.

3. In a revolving snow plow the combination with a revolving wheel, provided with a central hub, and radial arms, of a series of segmental strips forming a segmental band, and adapted to connect the outer ends of said radial arms together substantially as described and set forth.

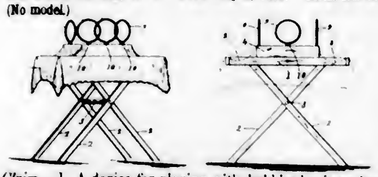
4. In a revolving snow plow the combination with a revolving wheel provided with a central hub, and radial arms secured to said hub, of a series of segmental strips forming a circular band connecting the outer ends of said radial arms, and a series of cutters pivoted to said band and said hub on the line of their cutting edge, substantially as described and set forth.

5. In a revolving snow plow, a cutter locking mechanism combining therein a cutter pivoted to the plow wheel, lugs secured to the arms against which the rear of the cutter rests, and a reciprocating bolt or slide attached to the arm, and adapted to hold and secure the rear of the cutter to said lug, substantially as described and for the purposes set forth.

6. In a revolving snow plow the combination with the segmental sections of a band connecting the ends of the arms, of pointed breakers 18, secured to said segmental sections and projecting therefrom substantially as described and for the purposes set forth.

7. In a revolving snow plow the combination with the chambered drum and the shaft provided with a hub to which said drum is secured, of supporting braces 16, secured at one end to said hub, and at the other end to the rear of said drum substantially as described and for the purposes set forth

**529,043. GAME-TABLE FOR SOAP BUBBLES.** ELIZA E. MCNAUGHTON, Phœnix, N. Y. Filed July 1, 1893. Serial No. 479,344. (No model.)



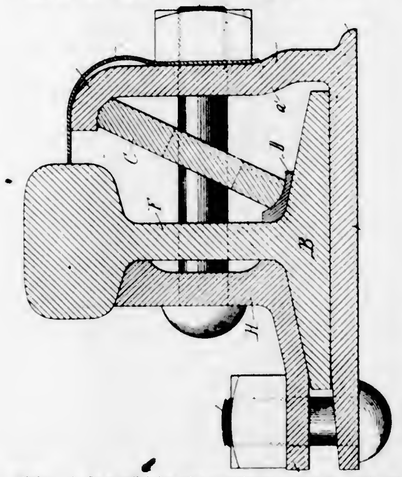
*Claim.*—1. A device for playing with bubbles having a base or table provided with a covering of material having a villous surface and consisting of a raised portion and a concave lower portion, substantially as described.

2. A device for playing with bubbles having a base or table provided with a covering of material having a villous surface and consisting of a raised central portion and a concave lower portion surrounding it, substantially as described.

3. A device for playing with bubbles having a base or table provided with a covering of material having a villous surface and consisting of a raised central portion, and devices on the raised portion marking the progress of the game and with which the bubbles are liable to come into contact also having a similar covering, substantially as described.

4. A device for playing with bubbles having a base or table provided with a covering of material having a villous surface and consisting of a raised central portion and a concave lower portion surrounding it, and a series of rings secured to the raised portion and having a similar covering, substantially as described.

**529,044. RAIL-JOINT.** MILTON C. NILES, Oak Park, Ill. Filed Sept. 29, 1894. Serial No. 524,437. (No model.)



*Claim.*—1. In a rail joint, the combination with the rails, of an upright side lever plate having a base plate passing under the rails, a clamping plate having abutment against said lever plate and against the rails and holding said lever plate at a distance from the rail flanges, and means for moving the lower edge of said lever plate inward or toward the rails, substantially as set forth.

2. In a rail joint, the combination with the rails, of a side lever plate provided with an over-hanging flange or lip and having a base plate projecting under the rails, an inclined clamping plate taking its abutment under said over-hanging lip or flange and being lodged upon the foot flanges and held against movement toward the rails by the rail webs, said clamping plate serving to hold the lower edge of the lever plate normally away from the flanges of the rails, and means for moving the said lever plate inward or toward the rails, substantially as set forth.

3. In a rail joint, the combination with the rails, of a side lever plate having a base plate extending under the rails, a clamping plate abutting against said side lever plate, a seat resting upon the rail flanges and supporting said clamping plate, the said lever plate being normally out of contact with the rails, and means for moving said lever plate toward the rails, substantially as set forth.

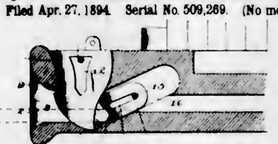
4. In a rail joint, the combination with the rails, of a side lever plate having a base plate extending under the rails, a seat lodged at the juncture of the rail webs and flanges and having a curved surface, the clamping plate abutting against said lever plate and having a curved edge resting upon said seat, and means for moving said lever plate inward or toward the rails, substantially as set forth.

5. In a rail joint, the combination with the rails, of a side lever plate having a flange at its upper edge provided with a curved surface, and a base plate at its lower edge projecting under the rails, a seat resting upon the rail flanges and against the rail webs and having a curved surface, an inclined clamping plate having its edges curved and resting respectively against the curved surfaces of said flange and seat, and means for drawing said lever plate toward the rails, substantially as set forth.

6. In a rail joint, the combination with the rails, of a side lever plate having a base plate projecting under the rails, an inclined clamping plate abutting against said lever plate and having its lower edge supported upon the foot flanges of the rails and held against inward movement toward the rails, said clamping plate holding the lower edge of the lever plate normally away from the rail flanges, a fish plate arranged on the opposite side of the rails, the bolts G passing through said base plate and supported by said fish plate, and bolts passing through said fish plate, the rails and lever plate for drawing the lever plate toward the rails, substantially as set forth.

7. In a rail joint, the combination with the rails, the transverse bolts E, an upright plate through which said bolts pass and means coacting therewith for clamping the rails, of a spring plate secured by said bolts E and having its upper edge bent over said first plate and resting against the rails, substantially as and for the purpose set forth.

**529,045. CAR-COUPLING.** GEORGE A. NORCROSS, San Antonio, Tex., assignor of seven-twelfths to W. E. Sanders and J. O. Sullivan, same place. Filed Apr. 27, 1894. Serial No. 509,289. (No model.)

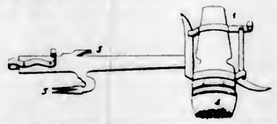


*Claim.*—1. In a car coupling, the combination of a draw-head having in its bottom a recess and provided at its top with a slot, and having the lower face of its top directly in advance of the slot horizontally disposed, a vertically movable catch located in the slot of the draw-head and tapering toward its lower end and fitting in said recess, and provided at its front with a horizontally disposed shoulder, engaging the horizontal lower face of the top of the draw-head in advance of the slot, and means for limiting the upward movement of the catch, substantially as described.

2. In a car coupling, the combination of a draw-head provided in its top with a slot and having a recess in its bottom, a downwardly tapering vertically-movable catch arranged in said slot and provided at its front edge with a horizontally disposed shoulder arranged to engage the top of the draw-head, said catch being provided with a vertical opening, a transverse pin or bolt passing through the opening and limiting the upward movement of the catch, an inclined sliding weight mounted in the draw-head and arranged at the back or in rear of the catch and bearing against the same and provided with a longitudinal slot and adapted to engage a link, and a fastening device passing through the slot of the weight and limiting its movement, substantially as described.

3. In a car coupling, the combination of a draw-head, provided in its top with a slot, a vertically movable catch arranged in the slot of the draw head, and provided at its front edge with a horizontal shoulder engaging the lower face of the top of the draw head, and a rearwardly sliding weight arranged at the back of the catch and engaging the same, whereby the shoulder is held in engagement with the draw-head, substantially as described.

**529,046. ARTICLE OR ACCESSORY FOR SMOKERS' USE.** ROBERT S. PEABODY, Philadelphia, Pa. Filed May 11, 1894. Serial No. 510,847. (Model.)

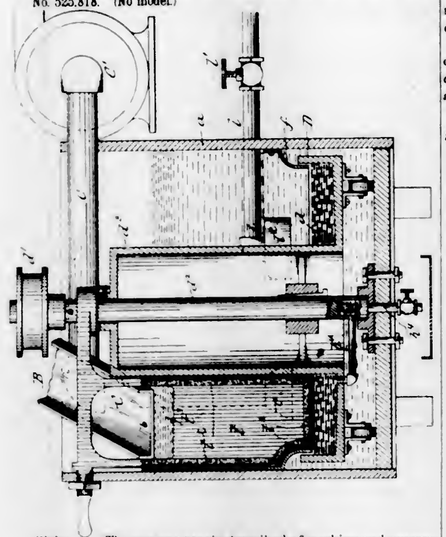


*Claim.*—1. A tobacco pipe accessory comprising, a casing or shell provided with an air inlet and with a reticulated air-outlet leading to the tobacco and having a movable ball interposed between the air inlet and outlet and operated by the incoming draft to automatically break up the air current traversing the bowl of the pipe and to jar and loosen the tobacco contained therein, substantially as described.

2. An article or accessory for smokers' use comprising, a casing or shell provided with an air-outlet leading to the tobacco, an air-inlet discharging in said shell or casing, and a light body confined between the inlet and outlet and operated by the incoming draft to break up the air currents and jar and loosen the tobacco, substantially as described.



**529,047. ORE WASHER OR CONCENTRATOR.** CHARLES F. PIKE, Philadelphia, Pa. Filed Nov. 16, 1893. Renewed Oct. 13, 1894. Serial No. 525,818. (No model.)



*Claim.*—1. The method herein described of washing and concentrating ore, which consists in feeding the ore into a depth of still or quiescent water to admit of the metal particles of the ore falling through the water faster than the waste matters, then subjecting the metal particles and waste matters to the action of a moving body of mercury at the termination of their descending movement, and then discharging such waste matters, substantially as set forth.

2. The method herein described of washing or concentrating ore, which consists in feeding the ore into a stratum or body of circulating or moving water, then causing it to pass through a stratum or body of quiescent water beneath said circulating water, and then subjecting it to the action of a moving body of mercury, substantially as set forth.

3. The method herein described of washing or concentrating ore, which consists in feeding the ore into a top stratum of circulating or moving water which agitates and distributes such ore, then causing said ore to pass from and drop through a body of quiescent water, then subjecting such ore to the action of amalgamation, and then discharging the waste matter, substantially as set forth.

4. In an ore washer, the combination of a receiving vessel adapted to contain a body of water, a layer of mercury in said vessel, means for producing a movement or circulation in the top stratum of water and causing the stratum of water above the mercury to remain quiescent, a feed device, and a suction discharge device, substantially as set forth.

5. In an ore washer or concentrator, the combination of a receiving vessel adapted to contain a body of water, a movable layer of mercury, means for moving said mercury, means for producing a movement or circulation in the top stratum of water and causing the stratum of water above the mercury to remain quiescent, a feed-device, and a suction discharge, substantially as set forth.

6. In an ore washer or concentrator, the combination of a receiving vessel adapted to contain a body of water, a rotating device with mercury in said vessel, a partition in said vessel extending from the level of the mercury to below the top of the water in the receiving vessel for causing the stratum of water above the mercury to remain quiescent and admit of the stratum of water above the top of the partition moving or circulating, substantially as set forth.

7. In an ore washer or concentrator, the combination of a stationary vessel containing a body of water, a rotating mercury containing-vessel in said stationary vessel, a feed-device, and a suction discharge, substantially as set forth.

8. In an ore washer or concentrator a receiving-vessel adapted to contain a body of water, a partition extending from above the bottom of the receiving vessel to below the level of the water contained therein, substantially as set forth.

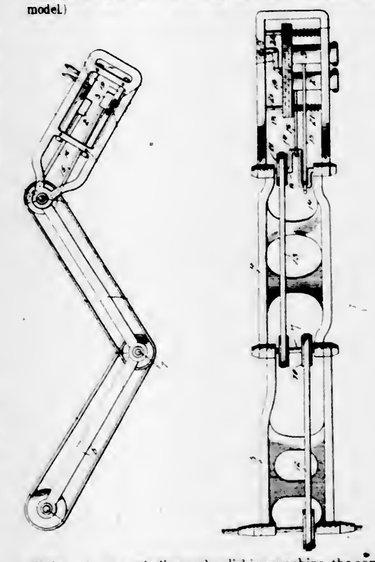
9. In an ore washer or concentrator a receiving vessel adapted to contain a body of water a partition (and an adjustable gate on said partition, substantially as set forth.

10. In an ore washer or concentrator, a receiving vessel having a suction discharge, and a feed device sealed from said suction device, substantially as set forth.

11. In an ore washer or concentrator, a receiving vessel having a feed device, a suction discharge, and a chamber inclosing the inlet end of said suction discharge, substantially as set forth.

12. In an ore washer or concentrator, the combination of a receiving vessel a suction device, a feed device, a partition between said device, and a shed or cover for the suction discharge, substantially as set forth.

**529,048. GRINDING AND POLISHING MACHINE.** MYRON H. REYNOLDS, Olean, N. Y. Filed Mar. 22, 1894. Serial No. 504,711. (No model.)



*Claim.*—1. In a grinding and polishing machine, the combination of the hinged arms a swinging frame hinged to one of the arms, the bars disposed longitudinally thereof and arranged for transverse reciprocation thereon, a crank shaft provided with oppositely-disposed crank arms, rubbers slidingly mounted on the bars, and pitmen connected with the arms of the crank shaft and with the rubbers, substantially as and for the purpose described

2. In a grinding and polishing machine, the combination of a frame, a longitudinal bar arranged for transverse movement thereon, a reciprocating rubber carried by the bar, a bell-crank lever journaled on the frame and having one of its arms connected with the bar, and a handle lever connected with the other arm of the bell-crank lever, substantially as described.

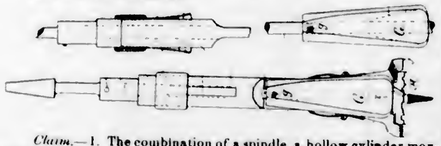
3. In a grinding and polishing machine, the combination of a frame, a bar disposed longitudinally thereof and mounted for transverse movement thereon, a reciprocating rubber carried by the bar, springs for forcing the bar upward, a bell-crank lever fulcrumed on the frame and having one of its arms connected with the bar, and a handle lever connected with the other arm of the bell-crank lever, substantially as described

4. In a grinding and polishing machine, the combination with a frame, vertical rods or shafts mounted thereon, the longitudinal bars arranged on the rods or shafts and provided with longitudinal ways, reciprocating rubbers slidingly mounted in the ways of the bars, a crank shaft having oppositely-disposed crank arms, pitmen connecting the crank arms, spiral springs disposed on the lower portions of the rods or shafts and supporting the bar, stationary handles mounted

at opposite sides of the frame, bell-crank levers journaled on the frame and each having one of its arms connected with the bar, and handle levers fulcrumed on the frame and having their outer portions arranged adjacent to the stationary handles, and their inner portions connected with the other arms of the bell-crank levers, substantially as described.

5. In a grinding and polishing machine, the combination of the hinged arms, a swinging frame hinged to one of the arms, the longitudinal bars mounted on the frame for independent transverse movement and provided with ways, the reciprocating rubbers mounted in the ways, and means for forcing the rubbers independently of each other in the direction of the work, substantially as described.

529,049. AUGER FOR BORING AND REAMING. LOUIS F. C. RICH and JOHN H. HULL, New York, N. Y. Filed May 19, 1894. Serial No. 511,768. (No model.)



*Claim.*—1. The combination of a spindle, a hollow cylinder movable longitudinally thereon and having a chuck or squared end or means of connection to a brace or boring machine, one or more reamers or cutters flexibly connected with the cylinder and capable of movement outwardly from the spindle, and a guide piece rotating with the cylinder, mounted on or carried by the spindle below the cylinder and having one or more ways with guide faces at an angle to the axis of the spindle that act to support and guide the reamers outwardly, whereby as the cylinder and reamers are rotated and fed the reamers are gradually forced outwardly from the spindle by the guide faces, substantially as and for the purpose set forth.

2. The combination of a spindle, a rotating cylinder movable longitudinally thereon, and adapted to be connected to a brace or boring machine, one or more reamers or cutters flexibly connected with the cylinder and capable of movement outwardly from the spindle, a guide piece mounted on the spindle below the cylinder, capable of rotation with the cylinder independently of the spindle and having one or more ways with guide faces at an angle to the axis of the spindle that act to support and guide the reamers outwardly, whereby as the cylinder and reamers are rotated and fed the reamers are gradually forced outwardly from the spindle by the guide faces, substantially as and for the purpose set forth.

3. The combination of a spindle having a boring cutter at its end, a rotating cylinder moving longitudinally on the spindle and adapted to be connected to a brace or boring machine, one or more reamers or cutters flexibly connected with a cylinder and capable of movement outwardly from the spindle, a guide piece mounted on the spindle at or near its boring end and rotating with the cylinder and having one or more ways with guide faces at an angle to the axis of the spindle that act to support and guide the reamers outwardly, and means for locking the spindle and cylinder to rotate together to bore a cylindrical hole with the cutter at the end of the spindle, and disconnecting the spindle and cylinder to permit the independent rotation of the cylinder, reamers and guide piece to ream out the sides of the cylindrical hole at the bottom, substantially as set forth.

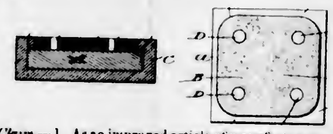
4. A combined boring and reaming tool consisting of a borer for cutting a cylindrical hole, a guide piece mounted at the end thereof immediately above the cutter and capable of rotation independently of the borer and having one or more reamer guide ways with guiding surfaces at an angle to the axis of the borer, one or more reaming cutters working in said guide ways, a support or carrying piece to which the reamers are flexibly attached, and means for locking the parts to rotate together with the reamers out of action, to bore a cylindrical hole, and then disengaging the guide piece reamers and reamer support from the borer, whereby as said parts are rotated and fed the reamers are gradually forced outwardly to ream out the bottom part of the cylindrical hole.

5. A hollow cylinder having prolonged arms, and which arms have cutters or reamers attached to their ends, which cutters or reamers have a pistol-spring attached to them acting to force them together, in combination with a spindle which passes through the hollow cylinder longitudinally, and combined with a guide with inclined planes, or slots, cut into the sides for the passage of cutters or reamers, substantially as shown and described.

6. A hollow cylinder having prolonged arms, and which arms have cutters or reamers attached to their ends, which cutters or reamers have a pistol spring attached to them acting to force them together, in combination with a spindle which passes through the hollow cylinder longitudinally, and is held rigid while boring by the action of two lugs, or catches attached to arms, or prolongations of a tube encircling the cylinder, and which lugs, or catches pass through orifices in the hollow cylinder, and are pressed into flats or cavities in the spindle, and held there by a sleeve, and combined with a guide with inclined planes, or slots cut into the sides for the passage of cutters, or reamers, and which hollow cylinder is prolonged into a shank to be inserted into an ordinary brace for the purpose of boring holes, and reaming them out at the bottom substantially as shown and described.

7. A reaming tool, comprising the following elements in combination substantially as described, a guide piece adapted to revolve within the hole whose walls are to be reamed out and having inclined guideways, reamers or cutters supported and guided in said guideways and a revolving carrier to which they are flexibly attached, whereby, as the carrier, reamers and guide piece are revolved and the former two fed the reamers are gradually advanced outwardly from the axis of rotation for the purpose described.

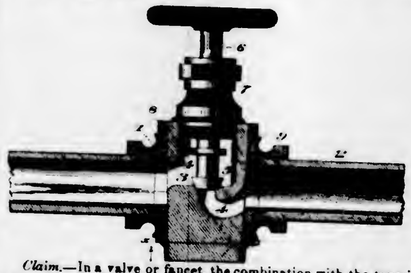
529,050. MANUFACTURE OF ARMOR-PLATES. TOLMIE J. TRESIDDER, Sheffield, England. Filed Mar. 27, 1893. Serial No. 467,785. (No model.) Patented in England Jan. 23, 1893, No. 1,470; in France Mar. 14, 1893, No. 229,056; in Belgium Mar. 15, 1893, No. 103,850; in Germany Mar. 15, 1893, No. 71,980, and in Italy Mar. 31, 1893, LXVI. 103.




*Claim.*—1. As an improved article of manufacture, an armor plate made of homogeneous metal in which the main portion of the front side of the plate is hardened and its edges and a margin extending from the front corners of said edges around on the face is left softer, substantially as described.

2. As an improved article of manufacture, an armor plate made of homogeneous metal having an unbroken surface and the main part of its face hardened, the margin of said face, the edges and back of the plate, and spots on the face in a softer state, substantially as hereinbefore set forth.

529,051. VALVE. JACOB VICTOR, Winona, Minn. Filed July 3, 1894. Serial No. 516,494. (No model.)



*Claim.*—In a valve or faucet, the combination with the tapering casing, screw threaded and flattened at its lower end and provided with a nut, of the collar having a flattened portion engaging with the flattened portion of the casing and formed with a peripheral notch, and the stud engaging therewith, substantially as described.

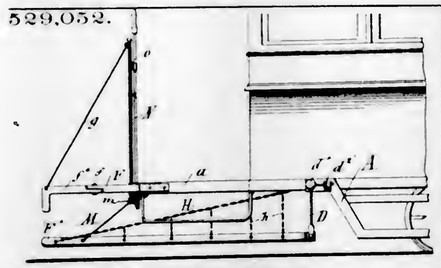
529,052. FENDER FOR CARS. FRIEDERICK D. WERNER, Brooklyn, N. Y., assignor of one-half to Henry C. Christgau, same place. Filed Feb. 23, 1894. Serial No. 501,106. (No model.)

*Claim.*—1. The combination with the bottom-frame of a car, of a fender-attachment, composed of a stationary fender, projecting in front of the car platform, and of a lower fender suspended at its rear end by spring-cushioned rods and suitable cables or chains, the lower fender-frame extending beyond the upper frame, substantially as set forth.

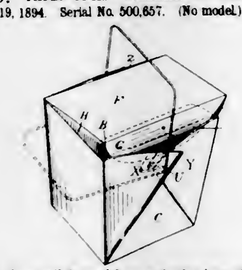
2. The combination with the bottom-frame of a car, of a stationary upper fender extending in the front of and on a level with the car platform, a netting between the upper fender-frame and the platform, guard-arms pivoted to the sides of said upper fender, and a lower fender supported in front of the truck by means of spring-cushioned rods suspended from the bottom frame of the car and suitable cables or chains, and means for raising or lowering the lower fender, substantially as set forth.



529,052.




529,053. PAPER PAIL. FREDERICK W. WILCOX, Chicago, Ill. Filed Feb. 19, 1894. Serial No. 500,657. (No model.)




*Claim.*—1. In a pail formed from a single piece of foldable material, the combination with the pail of an integral outside pocket or receptacle whose walls are formed from said material for the reception of a lid flange, substantially as described and shown.

2. In a paper pail having a chamber for contents and a lid to cover the chamber, the combination of a lid having a depending flap and an inward, upwardly-rising anti-slop-apron attached to the wall of the chamber and impinging against the lid, parallel with the depending flap, and to act as a bulwark or protector to the depending flap.

3. In a pail formed from a single piece of foldable material, the combination with the pail having a hinged lid F, of the inward, upwardly-rising, anti-slop-apron B attached to the top of the wall opposite to the hinge of the lid, as a bulwark to ward off the slopping or rising contents from the lid, said apron being adapted to rise against the lid from beneath and impinge against it when closed, substantially as described and shown.

4. In a pail formed from a single piece of foldable material, the combination with the pail of the hinged lid F, having the flap G and a pocket for the flap, and the anti-slop apron B adapted to impinge the lid, substantially as described and shown.

5. An oyster pail formed from a single piece of foldable material and consisting of a body or chamber adapted to hold fluid or partly fluid contents, and a hinged lid for said chamber having a lid-flange or tab, attached to the lid opposite the hinge thereof, said pail being also provided with an integral outside pocket or receptacle whose walls are formed from said material for the reception of the lid flange, substantially as described and shown.

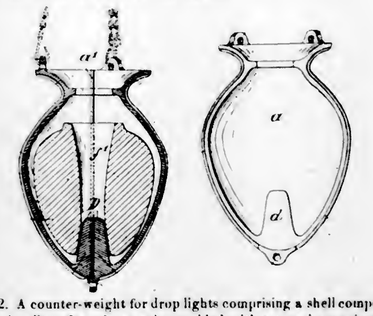
6. In a pail formed from a single piece of foldable material and having a lid an integral outside pocket adapted to receive the lid and an orifice in the lid to receive a fastening, the combination with said pail of a bail having a projecting point, adapted to engage with the orifice and lock the pail, substantially as described and shown.

7. In a pail formed from a single piece of foldable material, the combination with the pail having a lid an integral outside pocket adapted to receive the lid and an orifice in the lid for the reception of a fastening, of a bail having a projecting end adapted to engage the orifice in the lid, said projecting end being also provided with a knob on its extreme point, substantially as described and shown.

8. In a vessel constructed of foldable material the blank A, creased and bent to form the bottom D, opposite sides C, E, and F, K, corners M L, N O, Q R, and I J, said corners being adapted to be bent together and folding outwardly to form outer pockets, the lid F with flanges S H and G, and the apron B, attached to the side C.

529,054. COUNTERWEIGHT FOR SUSPENDED LAMPS. ALFRED ZEMPLINER, Vienna, Austria-Hungary. Filed July 12, 1894. Serial No. 517,358. (No model.)

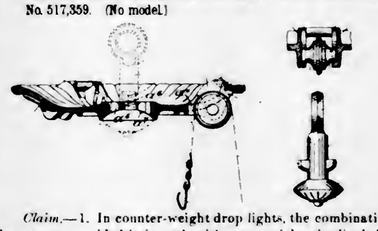
*Claim.*—1. A counter-weight for drop lights comprising a shell composed of a plurality of sections each provided with a projection, the several projections forming when united a central pillar, and a weight provided with a seat for said pillar, whereby the shell sections are locked together by the weight.




2. A counter-weight for drop lights comprising a shell composed of a plurality of sections each provided with a tapering projection, the several projections forming when united a central pillar, and a weight provided with a correspondingly tapering seat for the reception of the pillar, whereby the shell sections are locked together by the weight.

3. A counter-weight for drop lights comprising a shell composed of a plurality of sections each provided with a shoulder or offset, as $a^5$, encompassing its upper end, and with a projection at its lower inner end, the several projections forming when united a central tapering pillar, as D, in combination with a crown piece, as B, adapted to seat on offset $a^5$ and lock the upper end of the several sections together, and a weight provided with a seat for the reception of the said tapering pillar, for the purpose set forth.

529,055. CANOPY FOR COUNTERWEIGHT DROP-LIGHTS. ALFRED ZEMPLINER, Vienna, Austria-Hungary. Filed July 12, 1894. Serial No. 517,359. (No model.)



*Claim.*—1. In counter-weight drop lights, the combination with the canopy provided in its web with a central longitudinal slot, and on the under side of said web with a concave seat encompassing said slot, of a suspension rod adapted to be passed through the slot and provided with a convex bearing fitting the concave seat in the canopy, for the purpose set forth.

2. In counter-weight drop lights, the combination with the canopy provided with a central longitudinal slot and in its under side with a concave seat encompassing said slot, of a suspension rod adapted to be passed through the slot and provided with a convex bearing fitting the concave seat in the canopy, and locking lugs projecting from opposite sides of the rod and adapted to straddle the slot when said rod is passed therethrough and turned, for the purpose set forth.

3. In counter-weight drop lights, a canopy provided with radial slots at or near its rim, the lateral edges of said slots formed by vertical walls or cheeks extending above and below the web of the canopy and having formed therein substantially U-shaped recesses, in combination with chain rollers provided with journals adapted to seat and revolve in the lower end of said U shaped recesses, for the purpose set forth.

4. In counter-weight drop lights, a canopy provided with radial slots at or near its rim, the lateral edges of said slots formed by vertical walls or cheeks extending above and below the web of the canopy and having formed therein substantially U-shaped recesses, a recess, as $a^3$ in the rear edge of the slots on one side, and a rib, as $a^4$ on the under side of the web extending along said rear edge of the slot to said recess $a^3$, in combination with chain rollers provided with journals adapted to seat and revolve in the lower end of the aforesaid U-shaped recesses, for the purpose set forth.

5. In counter-weight drop lights, a canopy provided with radial slots at or near its rim, the lateral edges of said slots formed by vertical walls or cheeks extending above and below the web of the canopy and having formed therein substantially U-shaped recesses, the

bridge, *a*, at the upper end of said recesses, and the recess $a^3$ in the rear edge of the radial slots on one side thereof, in combination with chain rollers provided with journals adapted to seat and revolve in the lower end of the aforesaid U-shaped recesses, for the purpose set forth

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529,056. PACKING COMPOUND FOR THERMOCAUTERS. JOHN ZORN and FERDINAND G. LUCHESI, New York, N. Y. Filed Aug. 22, 1894. Serial No. 521,027. (No specimens.)

*Claim.*—The composition of matter hereinbefore set forth for packing thermo-cauters and the like, consisting substantially of abont four parts of magnesia and about one part of gum benzoin, substantially as set forth.

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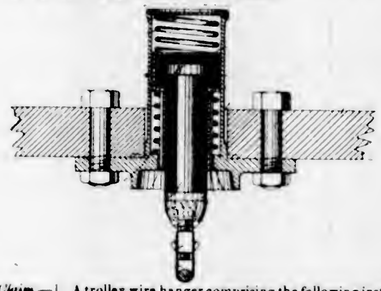
529,057. CORNER-STAY FOR BOXES OR ANALOGOUS RECEPTACLES. HORACE G. ALEXANDER and CHARLES B. ALEXANDER, Londonderry, Vt. Filed Feb. 13, 1894. Serial No. 500,006. (No model.)



*Claim.*—The combination with the sides of a box provided adjacent to the corner with vertical grooves, of a corner stay composed of vertical sides arranged at right angles and covering the corner of the box and provided at their vertical outer edges with flanges arranged at an acute angle to the sides and interlocked in said grooves and terminating short of the ends of the stay to permit a cover to be readily detached from or placed on the box, said stay being provided at the top and bottom with securing tongues, substantially as described.

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529,058. TROLLEY-WIRE HANGER. JOHAN M. ANDERSEN, Boston, MASS., assignor of one-half to Albert Anderson, same place. Filed July 19, 1894. Serial No. 517,989. (No model.)



*Claim.*—1. A trolley wire hanger comprising the following instrumentalities, viz:—an insulator to which the trolley wire is secured, a socket for the reception of said insulator and in which the said insulator is capable of being turned or rotated, a protective sleeve on the said insulator, and a locking device engaging the said sleeve to retain the insulator in its adjusted position within the socket, substantially as described.

2. A trolley wire hanger comprising the following instrumentalities, viz:—an insulator provided with an enlarged head and with a shank or stem of smaller area in cross section, a socket for the reception of the said insulator provided with a removable cap at one end and with an inwardly projecting flange at its other end forming an opening of less area than the head of the insulator and through which the said shank or stem is extended, a protective sleeve fitted on the shank of the insulator, and means to engage said sleeve, for the purpose specified.

3. A trolley-wire hanger comprising the following instrumentalities, viz:—an insulator provided with an enlarged head and with a shank or stem of smaller area in cross section, a socket for the reception of the said insulator provided with a removable cap at one end and with an inwardly projecting flange at its other end forming an opening of less area than the head of the insulator and through which the said shank or stem is extended, a fluted protective sleeve fitted on the said shank or stem, and a projection on the said inwardly extended flange to engage the fluted sleeve, for the purpose specified.

4. A trolley-wire hanger comprising the following instrumentalities, viz:—an insulator to which the trolley-wire is secured, a socket for the reception of said insulator and in which the said insulator is capable of being rotated or turned, and means to engage the said insulator to prevent its being turned or rotated from its adjusted position, substantially as described.

5. A trolley-wire hanger comprising the following instrumentalities, viz:—an insulator to which the trolley-wire is secured, a metallic socket in which the insulator is located and in which it is capable of being rotated or turned and moved longitudinally, a metallic sleeve fitted on said insulator and provided with longitudinal corrugations, ribs or projections, and means to engage said ribs or projections to prevent rotary movement of the insulator, and springs to act on the insulator in opposite directions, substantially as described.

6. A trolley wire hanger comprising the following instrumentalities, viz:—an insulator to which the trolley-wire is secured consisting of a shank or stem and an enlarged head, a socket for the reception of the said insulator, consisting of a body portion provided with a removable cap at its upper end, an inwardly projecting flange at its lower end forming an opening through which the said shank or stem is extended and a depending flange on its under side, a fluted metallic sleeve on the outside of the stem or shank of the insulator, a projection on the inwardly extended flange of the said socket to engage the said fluted sleeve, and springs within the said socket acting upon opposite sides of the head of the insulator, substantially as described.

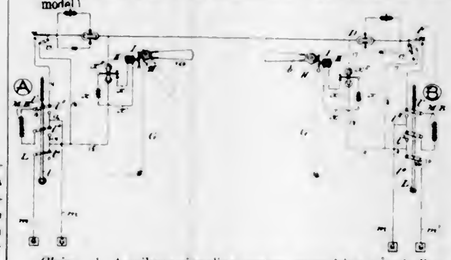
7. A trolley-wire hanger comprising the following instrumentalities, viz:—an insulator to which the trolley-wire is secured, a metallic socket in which the insulator is located and in which it is capable of being rotated or turned and moved longitudinally, a metallic sleeve fitted on said insulator and provided with longitudinal corrugations, ribs or projections, and a locking device to engage said sleeve, for the purpose specified.

8. In a trolley-wire hanger, the combination with an insulator to which the trolley wire is secured, a socket for the reception of the said insulator and in which the said insulator is capable of a rotary and longitudinal movement, and means to lock said insulator in adjusted position against rotary movement, for the purpose specified.

9. A trolley wire hanger provided with a metal socket consisting of a body portion provided at its lower end with an internal flange from an opening $a^3$, and normally open at its opposite or upper end, a cap or cover to close the said upper open end, arms extended from the lower end of the body portion and a depending skirt projecting below the said internal flange, substantially as described.

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529,059. ELECTRICAL APPARATUS FOR CONTROLLING SIGNALS. SAMUEL S. BOGART, Schraalenburg, N. J., and MICHAEL B. LEONARD, Richmond, Va., assignors to the Electric Selector and Signal Company, of West Virginia. Filed Dec. 11, 1893. Serial No. 493,329. (No model.)




*Claim.*—1. A railway signaling system comprising a main line connecting two or more stations, a main battery at each station, a local signal-circuit at each station electrically connected with said main line and including a polarized relay adapted to respond to a current of one polarity only, electrical connections adapted when in normal position to ground the terminals of the main line through the batteries at the respective stations, and also to connect the relay at each station directly but independently to ground, so as to adapt the apparatus to be used for telegraphing without affecting the relays; and a reversing switch for throwing the battery at either station into circuit with the relay at the distant station so as to cause a current of an opposite polarity from that used for telegraphing to pass over the line to the distant station and release the distant signal, substantially as described.

2. A railway signaling system comprising a main line connecting two or more stations, a local signal-circuit at each station electrically connected with said main line and including a normally grounded polarized relay adapted to respond to a current of one polarity only passing over the line from the battery at the distant station, electrical devices and connections at each station adapted when in normal position to connect the terminals of the main line to ground through the battery and permit telegraphing without affecting the relay; said devices including a reversing switch adapted to shift the ground connections of the main line terminals so as to throw the battery at the approximate station into circuit with the relay at the distant station and cause a current of an opposite polarity to that used for telegraphing to pass over the line to the distant relay and thereby release the distant signal, substantially as described.

3. In a signaling system, the combination with the main line connecting two or more stations, of a main battery at each station, a local circuit at each station electrically connected with said main line and including a polarized relay, the latter being normally electrically connected to ground, an independent ground terminal normally connected with said main line through said battery, and devices for telegraphing with the parts in normal position without affecting the relays, together with a reversing switch interposed between said ground terminals and main line connections adapted to reverse the current through the battery and place the latter in circuit with the relay at the distant station, so as to cause a current of an opposite polarity from that used for telegraphing to pass over the line to the distant station so as to energize the relay at the latter station and release the signal, substantially as described.

4. In a railway signaling system, the combination with the main line connecting two or more stations and a telegraphic apparatus, of a local circuit at each station including a polarized relay, a main battery, independent ground terminals adapted to be alternately thrown into electrical connection with opposite poles of said battery for the purpose of reversing the current through the latter, and a reversing switch, whereby a current of one polarity may be used for telegraphing without affecting the signals, while the signal at the distant station may be unlocked by a change of polarity or reversal of the current from the battery at the proximate station, substantially as described.

5. In a signaling apparatus, the combination with the main line and its keys, of the visual signals, their locking armatures and local circuit devices, and a switch at each station comprising a depending rod provided with a retracting spring and with cross-arms constituting contact points, substantially as described.

6. A system of signaling between two or more stations, comprising at each station a telegraphic apparatus, a main battery, a polarized relay and circuit connections including an electrical unlocking device adapted to respond to a current of one polarity only passing from the battery at the distant station, and a reversing switch for shifting the circuit connections to adapt the mechanism for telegraphing by reversing the current through the battery, substantially as described.

7. A system of signaling between two or more stations, comprising at each station a visual signal and an electrically controlled locking device adapted to contact or engage directly with said signal, together with a main line and local circuit connections and appliances including an unlocking magnet, a main battery, a polarized relay adapted to respond to a current passing from the distant station only, and a reversing switch, whereby the mechanism is adapted for both telegraphing and signaling by alternately reversing the current through the battery, substantially as described.

8. In a railway signaling apparatus, the combination with a main line connecting two or more stations, of a lock-signal, a telegraphic apparatus, a main battery and independent ground terminals at each station, one of said terminals connecting one pole of said battery to said main line for telegraphing, and means for shifting the circuit connections so as to reverse the current through said battery and cause a current of an opposite polarity to pass over the line from the proximate to the distant station, together with electrical devices adapted to respond to said reversed current only and unlock the distant signal, substantially as described.

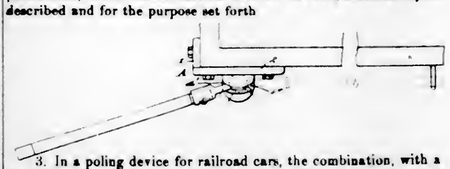
9. A system of signaling between two or more stations, comprising at each station a visual signal and an electrically controlled locking device for said signal, together with a main line and local circuit connections and appliances including an unlocking magnet, main battery, a polarized relay adapted to respond to a current passing from the distant station only, and means located at each station whereby the mechanism is adapted for both telegraphing and signaling over a single wire by alternately reversing the current through the battery, substantially as described.

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529,060. POLING DEVICE FOR RAILROAD-CARS. WILLIAM C. BOSWELL, Clarksburg, W. Va. Filed Mar. 7, 1894. Serial No. 502,731. (No model.)

*Claim.*—1. In a poling device for railroad cars, a main casting having a socket and a slot inclined at its central portion, a pole-holder having a ball movable in the socket and a shank movable in the slot, and a pole secured to the pole-holder, substantially as described and for the purpose set forth.

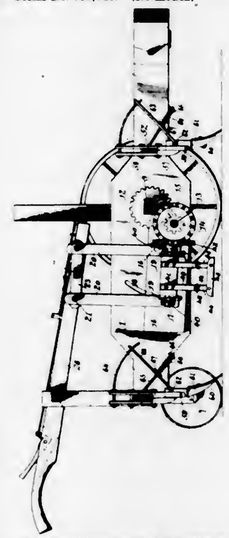
2. In a poling device for railroad cars, a main casting having a socket and a slot, a pole-holder having a ball movable in the socket and a shank movable in the slot, a pole, a screw passing through the pole-holder, and a rubber cushion back of the ball, substantially as described and for the purpose set forth



3. In a poling device for railroad cars, the combination, with a main casting having a socket and a slot, of a pole-holder having a ball movable in the socket and a shank movable in the slot, a ball secured to the pole-holder and a bracket secured to the engine tender in a horizontal line with the ball and arranged to receive the outer end of the pole, substantially as described and for the purpose set forth.

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529,061. COMBINED COTTON CHOPPER AND CULTIVATOR. ROBERT J. BROWN and JOEL E. REGISTER, Logansport, La. Filed Mar. 15, 1894. Serial No. 503,740. (No model.)



*Claim.*—1. The combination with a transverse support, of a plow standard secured thereto and having its lower end bifurcated, a plow-foot reduced at its upper end located in the bifurcation and pivoted, a bifurcated bar pivoted to and embracing the shank of the foot and having a perforation at its upper end, a curved spring-rod extending from the standard through the perforation in the bar, a rod extending from the standard through the bifurcation in the bar and beyond the same, a follower arranged on the rod, a nut arranged on the rod beyond the follower, and a coiled-spring arranged between the nut and the follower, substantially as specified.

2. The combination with a support, of a standard depending therefrom, a curved spring-rod projecting forward and downward from the standard at the upper end thereof, a foot pivoted in the lower end of the standard and carrying a plow, a bar pivoted to the upper end of the foot beyond its pivot points with said standard, said bar having a perforation in its upper end which loosely receives the spring-rod, substantially as specified.

3. In a cotton-chopper the combination with a framework, the rotatable shaft and means for operating the same, of a pair of hoe-arms extending from the shaft, extensions connected to the extremities of the same by a rule-joint, a hoe connecting the extensions, rods pivoted in the extensions, rods located in the arms and pivoted at their ends to the ends of the rods in the extensions, and coiled-springs located upon those rods in the arms, substantially as specified.

4. In a cotton-chopper, the combination with the framework, the axle, the supporting-wheels and plows, of a hoe-carrying frame hung in the framework, means for raising and lowering said frame and transmitting motion from the axle to the hoe-shaft therein, and guide-pins extending from the sides of the frame and engaging with curved slots formed in the sides of the main-frame, substantially as specified.

5. In a cotton-chopper, the combination with the main-frame, the axle, the ground-wheels, the standards at the rear end of the main frame, and a transverse fulcrum-bar connecting the same, the toothed locking posts arranged on the side-bars of the main-frame, a transverse shaft journaled in the main-frame, gearing between the same and the axle, a hoe-carrying shaft loosely hung upon the transverse shaft, means for communicating motion from the transverse shaft to the hoe-carrying shaft, suspension-devices rising from the hoe-carrying frame, handle-levers fulcrumed on the fulcrum bar and connected to the suspension-devices, bolts arranged upon the handle-levers and adapted to engage with the teeth of the locking-posts, substantially as specified.

6. In a cotton-chopper, the combination with the rectangular main-frame, the transverse axle, and the ground-wheels thereon, of a shaft journaled in the main-frame, gearing between the same and the axle, opposite side-bars hung upon the shaft and connected by transverse bars, a hoe-carrying shaft journaled in the transverse bars and a gear at the front end of the same meshing with gearing on the transverse shaft, standards rising from the transverse bars, tie-rods connecting the standards, cross-bars connecting the tie-rods, a bar connecting the cross bars and extending beyond the same, a pair of handle-levers connected to the ends of the bar, a rear fulcrum-bar supported on the main-frame, upon which the handle-levers are fulcrumed, locking-standards at the front ends of the handle-levers arranged upon the main-frame and having their rear faces toothed, reciprocating bolts for engaging the teeth arranged upon the handle-levers, springs for actuating the same, thumb-levers fulcrumed on the handle-levers, and wires between the thumb-levers and the bolts, substantially as specified.

7. In a cotton-chopper the combination with the main-frame, having a rear fulcrum, a pair of levers fulcrumed thereon, and means for locking the front ends of the levers, of a suspension-frame carried by the levers, a cotton chopping mechanism supported by the suspension-frame, a transverse axle, ground-wheels, and means for communicating motion from the axle to the chopping-mechanism, substantially as specified.

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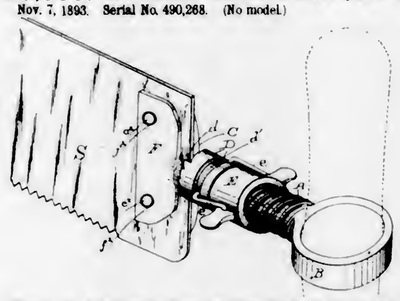
529,062. **PENHOLDER.** EDWARD L. BROWN, San Francisco, Cal. Filed July 19, 1894. Serial No. 518,040. (No model.)



*Claim.*—A pen holder consisting of a tip having a threaded socket in its inner end, a handle having a stem provided with a threaded extremity adapted to enter and engage the said socket, the handle having an annular shoulder at the base of the stem, and a sliding retaining sleeve mounted on the tip and the handle and provided with an internal annular rib fitting around the stem and forming a bearing therefor, and adapted to come into contact with the end of the tip and the annular shoulder of the handle.

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529,063. **SAW-HANDLE.** MARSHALL M. COPE, Noyo, Cal. Filed Nov. 7, 1893. Serial No. 490,268. (No model.)

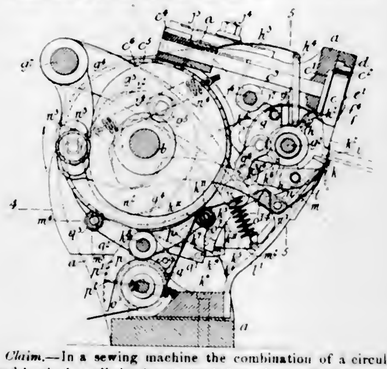


*Claim.*—1. A saw attachment comprising the handle-ring B having an integral transversely apertured externally threaded shank, a nut and sleeve or collar upon said shank, a clamping head of greater width than the diameter of the collar and nut, and provided with a reduced integral transversely apertured stem entering the bore of the shank, and a pin passed through said two transverse apertures and holding the parts in their assembled positions, substantially as herein described.

2. A saw attachment consisting in the handle-ring B having an integral transversely apertured and externally threaded tubular shank A, the nut E and its swiveled collar passed upon the shank, the head C of greater width than the bores of the nut and its sleeve, and having a pin on one face to pass through an aperture in the saw blade, a hinged clamping jaw F having an aperture receiving said pin and a reduced transversely apertured stem *c* integral with the head C and extending into the bore of the tubular shank, and a pin *c'* extending through said transverse apertures and holding the parts in their assembled positions; the said collar D being adapted to pass over the pivotal point *f'* of the head and its jaw, substantially as herein described.

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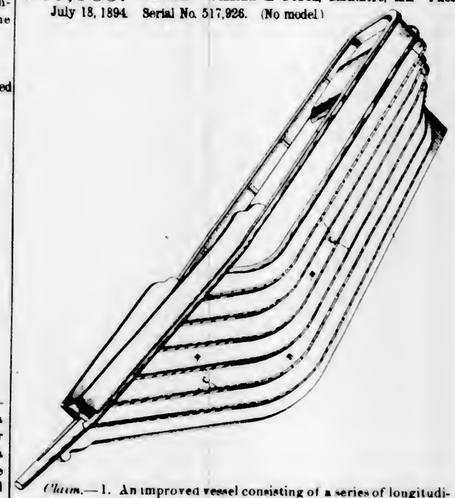
529,064. **SEWING-MACHINE.** MARK T. DENNE, Eastbourne, England. Filed Sept. 27, 1892. Serial No. 447,046. (No model.) Patented in England May 26, 1892, No. 10,025.



*Claim.*—In a sewing machine the combination of a circularly curved hooked needle having the barb formed upon the side opposite to that from which the shuttle hook enters the loop, and arranged to dip after said shuttle hook has passed, with a rotary discoidal shuttle furnished with a sharp hook and placed across the plane of movement of the needle and directly above it, and with a thread puller, the combination operating to permit the point of said hook to enter between the strands of the loop from the side opposite to the opening of the barb of the needle, and immediately below the point of the needle and to throw the loop over itself, the dip of the needle, after the hook has passed, allowing the loop to drop from the barb, thereby dispensing with any device for drawing the thread from the needle other than the hook itself, substantially as set forth

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529,065. **VESSEL.** WILLIAM E. DODGE, Baltimore, Md. Filed July 18, 1894. Serial No. 517,926. (No model.)



*Claim.*—1. An improved vessel consisting of a series of longitudinal timbers, and horizontal planking connecting the opposite edges of the said timbers, substantially as specified.

2. An improved vessel consisting of a series of vertical longitudinal timbers each arranged above and outside of the preceding one, and horizontal planking C extending in a direction transverse the vessel and having their opposite ends secured to the opposite edges of the said vertical timbers, substantially as described.



3. An improved vessel having the side and bow consisting of a series of vertical longitudinal timbers curved upward at their forward ends, and horizontal planking connecting the opposite edges of said timbers, and a stern consisting of horizontal and vertical planking and timbers in inverted step fashion, substantially as set forth.

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529,066. **DUMPING-GRATE.** EDWARD FALES, Winthrop, Mass. Filed Feb. 15, 1894. Serial No. 500,264. (No model.)



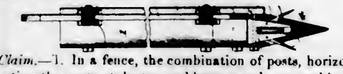
*Claim.*—1. A combined dumping and shaking grate, comprising a box or outer frame, an inner frame journaled within the said box or outer frame and adapted to be tilted or rotated upon such journals within the frame, rocking bars arranged within said tilting frame and provided with a suitable number of depending lugs, means to connect such lugs to cause all of the rocking bars to move together and a shaking bar arranged beneath said rocking bars in fixed bearings and in separable connection with one of the said depending lugs, to rock all of said rocking bars and permit the tilting frame to be tilted into and out of contact with it, the said shaking bar, substantially as described.

2. A combined dumping and shaking grate, comprising a box or frame adapted to be arranged within a heater, a grate-supporting frame pivoted within said box or frame and adapted to be tilted or rotated upon such pivot, rocking grate-bars pivoted within said pivoted frame, a slotted end-lug depending from one of said rocking bars, and a shaking bar arranged for longitudinal movement beneath the said grate and having a loop into which the depending lug projects and a pin which is in separable connection with the slot in said depending lug, substantially as and for the purpose described.

3. The combination with the shell or outer wall of a heater, with an internal box arranged within the fire pot or combustion chamber and terminating in a ledge within the combustion chamber, upon which ledge a portion of the fuel rests, and a grate frame and grate arranged within said box, the box and shell or outer wall of the heater being joined air-tight, below the ledge and the fuel-receiving surface of the grate whereby the air is diverted from the shell and passes between the box and the grate frame and thence over the ledge before reaching the walls of the combustion chamber and its temperature increased and maintained, substantially as described.

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529,067. **FENCE.** JOSEPH C. FRASER, Manix, Ill. Filed Mar. 23, 1894. Serial No. 504,835. (No model.)



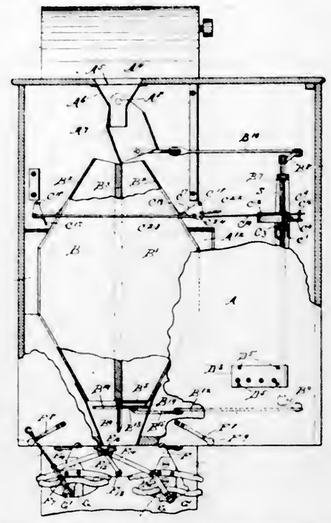
*Claim.*—1. In a fence, the combination of posts, horizontal rails connecting the posts at the top and bottom and arranged in pairs and provided, on their inner faces with oppositely disposed longitudinal supporting shoulders, a base-board located beneath the space between the lower horizontal rails, pickets arranged between the rails and supported by the base-board, and spacing blocks interposed between the pickets and supported by said shoulders, substantially as described.

2. A fence comprising posts having shanks at their lower ends and provided intermediate of their ends with recesses, the anchors secured to the posts and provided with spikes, vertical boards S arranged parallel with the posts and provided with recesses, horizontal rails connecting the posts and arranged in said recesses and provided on their inner faces with oppositely disposed horizontally arranged supporting shoulders, the base board located beneath the space between the horizontal rails and secured between the vertical boards and the posts, fastening devices passing through the posts and vertical boards and horizontal rails and located in slots, pickets arranged between the rails and supported by the base-board, and spacing blocks located between the pickets and supported by said shoulders, substantially as described.

3. The combination of a tapering point or anchor, rectangular in cross-section, and having the tapering rectangular socket and provided at its sides with inclined openings, a post having a reduced lower end fitting snugly in the socket and forming a shoulder to engage the upper edge of the point or anchor and having its outer face flush with the outer face of the same, said lower end being provided at the sides with recesses forming corner ribs, the spikes having their upper ends arranged in said recesses between said ribs and extending therefrom and passing through the openings of the anchor or point, pintles passing through the corner ribs of the post and the upper ends of the spikes and hinging the latter, and a horizontal fastening device passing through the anchor or point and the post, substantially as described.

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529,068. **GRAIN MEASURING AND REGISTERING APPARATUS.** CYRENUS A. GIBBS, Schenectady, N. Y. Filed Dec. 23, 1893. Serial No. 494,601. (No model.)



*Claim.*—1. In a grain-measuring and registering apparatus, the combination with a pair of valved hoppers, valve-operating mechanism, a continuous motor, an intermittent-grip between the motor and valve-operating machanism, and grip-actuating over-flow levers situated outside the hoppers and adapted to be operated by the weight of the overflow grain, of a registering device, and operating connections between such device and the valve operating mechanism, and bag-holding mechanism at the outlet openings of the hoppers, substantially as described

2. In a grain-measuring apparatus, the combination with a pair of valved hoppers, valve-operating mechanism, and a continuous motor, of an intermitting grip between the motor and valve-operating mechanism, and grip actuating overflow situated outside of the hoppers and adapted to be operated by the weight of the overflow grain, substantially as described.

3. In a grain-measuring apparatus, the combination with a pair of valved hoppers, a supply-conveyer, valve-operating mechanism, and a continuous motor, of an intermitting grip between the motor and valve-operating mechanism, grip-actuating overflow situated outside the hoppers and adapted to be operated by the weight of the overflow grain, and overflow chutes leading downward from such levers to the supply-conveyer, substantially as described.

4. In a grain-measuring apparatus the combination with a pair of hoppers, an oscillatory supply-chute situated above and constituting no part of said hoppers, outlet valves, mechanism for operating the chute and outlet valves, and a continuous motor, of an intermitting grip between such operating mechanism and the motor, and a pair of grip-actuating overflow levers, one for each hopper, substantially as described.

5. In a bag-holder, the combination of frame F or the like, devices for directly feeding grain into a bag, a clamp-section fixed to the frame, a movable clamp-section engageable with the fixed clamp-section, a lever-actuated operating cam in engagement with the movable clamp-section intermediate its ends and the lever whereby the grain feeding devices and the bag clamping sections are operated simultaneously, substantially as set forth.

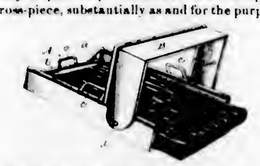
6. In a bag-holder, the combination of frame F or the like, devices for directly feeding grain into a bag, a clamp-section fixed to the frame, of a movable clamp section engageable therewith, an operating cam in engagement with the movable clamp-section intermediate its ends, a lever for operating the cam, and a spring-stop in the path of the lever, substantially as set forth.

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529,069. **DEVICE FOR PACKING TOBACCO-HANDS IN CASES OR CASKS.** DOUGLAS W. GRAY, Painted Post, N. Y. Filed Mar. 15, 1894. Serial No. 503,705. (No model.)

*Claim.*—1. A device for packing tobacco-hands in cases or casks, consisting of a tray having an open end, and a frame comprising side-

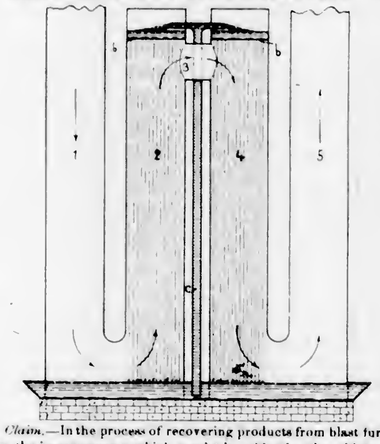
pieces and a connecting cross piece said side-pieces being pivotally secured to the sides of said tray and extending beyond the open end thereof, whereby a space is provided between the open end of the tray and the cross-piece, substantially as and for the purpose described.



2. A device for packing tobacco hands in cases or casks, consisting of a tray having an open end, a bottomless frame comprising side pieces and a connecting cross-piece, said side pieces being pivotally secured to the sides of the tray and extending beyond the open end thereof to provide a space intermediate said cross-piece and the open end of the tray, and means for limiting the downward movement of said frame, substantially as and for the purpose described.

3. A device for packing tobacco hands in cases or casks, consisting of a tray having an open end, and an end cross-piece arranged at a suitable distance from the open end of said tray and pivotally connected with the sides thereof, whereby a space is provided between the open end of the tray and the cross-piece, substantially as and for the purpose described.

529,070. PROCESS OF RECOVERING IODIDS, CHLORIDS, OR OTHER SALTS FROM BLAST-FURNACE GASES. PAUL GREDT, Esch, Belgium. Filed June 29, 1894. Serial No. 516,094. (No specimens.) Patented in Luxemburg Dec. 12, 1893, No. 1,941; in Belgium Dec. 15, 1893, No. 107,577, and in France Feb. 20, 1894, No. 234,431.

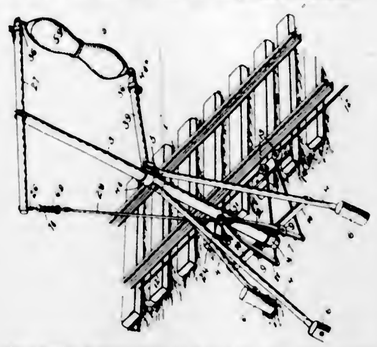



*Claim.*—In the process of recovering products from blast furnace gases, the improvements which consist in subjecting the said gases to the absorptive action of an aqueous liquid in the form of fine rain, and repeatedly circulating the said liquid until a strong lye is produced, subjecting said strong lye to heat until its volatile constituents are driven off, dissolving the solid residue which contains iodid and chlorid of potassium in water, and separating the iodid and chlorid by fractional crystallization, substantially as set forth.

529,071. MAIL-CRANE. MARTIN J. GROSS, Emporia, Kans. Filed May 19, 1894. Serial No. 511,821. (No model.)

*Claim.*—1. A crane for supporting mail bags preparatory to catching, and consisting of an arm or jib pivoted to the crane and adapted to have the mail bag attached to one end, a chain connected to the remaining end of the arm and having two eyes therein at different points throughout its length, both of which eyes are adapted to removably engage the mast, a lever connected to one eye, and trip mechanism adapted to be operated by a passing car, whereby one of the eyes of the chain is disengaged and the bag allowed to fall until stopped by the second eye, substantially as and for the purpose described.

2. A crane for supporting mail bags preparatory to catching, and consisting of an arm pivoted to the mast and adapted to have the mail bag attached to one of its arms, a chain connected to the remaining arm and having two eyes therein arranged at different points along its length, a pin passing horizontally through the mast and having its ends projected beyond each side thereof, the eyes being adapted to engage the respective ends of the pin, a lever pivoted to the mast and connected to one of the eyes of the chain whereby upon operating the lever the eye to which it is connected is disengaged from the pin and trip mechanism connected to the lever, and adapted to be operated by a passing car, whereby upon operating the lever one of the eyes is released and the bag allowed to drop until stopped by the second eye, substantially as and for the purpose described.



3. A device for supporting mail bags preparatory to catching, and consisting of a mast, an arm pivoted thereto and adapted to have the bag connected to one end thereof, said arm being capable of normally holding the bag out of the way of passing trains, and of dropping so as to place the bag within the reach of said trains, and trip mechanism connected to the arm and adapted to be engaged by the trains, whereby the arm is operated, substantially as specified.

4. A crane for supporting mail bags preparatory to catching, and consisting of a mast, an arm pivoted thereto and adapted to have the mail-bag attached to one end, a chain connected to the remaining end and having two eyes thereon arranged at different points throughout its length and adapted to engage a stud on the mast, a lever connected to one of the eyes, a cord connected to the lever, and trip mechanism on the track and connected to the cord and adapted to be operated by a passing car, whereby the lever is made to release one of the eyes on the chain and the bag allowed to drop until stopped by the second eye, substantially as specified.

5. A detent adapted to be attached to a car and to operate a trip arranged on the track, said detent consisting of a vertically reciprocating bar, and a hammer section pivoted to the lower end of the bar and a spring located at each side of the hammer and operating to hold the hammer yieldingly in position, the hammer being adapted to engage the trip and effect the operation thereof, substantially as described.

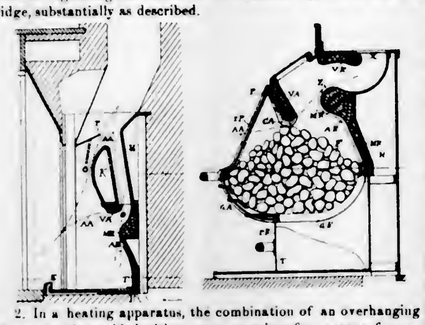
6. Detent mechanism adapted to be applied to a mail car and to operate a trip arranged on the track, said mechanism comprising the combination of a vertically reciprocating bar, a horizontal shaft connected thereto, a mail catching hook, a crank arm on the horizontal shaft, and a connecting rod pivotally connected to the horizontal shaft and to the hook, whereby the shaft is rocked as the hook is moved and the vertically reciprocating bar moved in its characteristic lines, substantially as described.

7. Detent mechanism adapted to be applied to a mail car and to operate a trip arranged on the track, said mechanism comprising the combination of a vertically reciprocating bar, and a mail catching hook pivotally connected to the bar, whereby as the hook is rocked the bar is raised or lowered, substantially as described.

8. In a mail crane, the combination of a mast, a collar rigidly mounted off the mast and loosely embracing the same, whereby the mast is allowed a rotary movement, the said collar having a stud projecting radially therefrom, a second collar fixed to the mast and engaging the first collar, whereby it is supported, the said second collar having two inclined arms adapted to lie one on each side of the stud whereby the mast is held stationary against ordinary strain and whereby it is allowed to revolve under the influence of undue strain, and bag supporting arms secured to the mast, substantially as described.

529,072. HEATING APPARATUS. JOSEPH HIRSTIN, Paris, France. Filed Apr. 24, 1894. Serial No. 508,835. (No model.) Patented in France Dec. 29, 1890, No. 210,495, and in England July 8, 1891, No. 11,622.

*Claim.*—1. In a heating apparatus provided with means for admitting a current of air above the fuel and another current beneath the same, the combination of a refractory arch in the line of the first current, a refractory fire-bridge in the line of the second current, the arch and fire-bridge being arranged as specified so that the two currents, inclosing the gases generated from the fuel, meet and effect final combustion at a point on one of said refractory elements, and a partition regulating the current of air admitted adjacent to the fire-bridge, substantially as described.



2. In a heating apparatus, the combination of an overhanging refractory arch provided with spaces or openings for passage of a current of air between it and the fuel, a refractory fire-bridge provided with means to admit a second current of air between it and the fuel, the surfaces of the two refractory elements being arranged as specified to direct said currents to a common point compressing the gases between them, and a partition for regulating the current of air admitted adjacent to the fire-bridge, substantially as described.

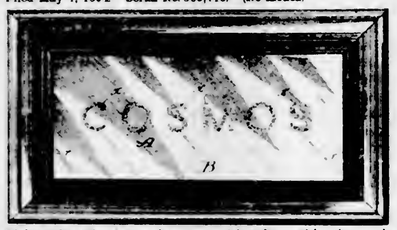
3. In a heating apparatus an overhanging arch of refractory material in close proximity to the surface of the fuel, said arch being provided with openings or passages for the currents of air and gas above the fuel from front to rear, substantially as described.

4. In a heating apparatus the combination of a corrugated arch of refractory material arranged above and in close proximity with the fuel, and metal strips forming protections therefor, substantially as described.

5. In a heating apparatus, a fire bridge of refractory material having corrugations forming channels for the passage of air above the fuel in combination with a refractory arch above the fuel and having air passages between it and the fuel, the currents of air passing through the corrugations of said fire-bridge being directed to a point of intersection with the second current, substantially as described.

6. In a heating apparatus, the combination with a grate adapted to burn solid fuel, of a refractory arch above the grate and a refractory fire-bridge, each having provision for admitting a current of air adjacent to it, one of said refractory elements having the configuration of a log and being located at the point of final combustion of the gases generated by the fuel burning on said grate, substantially as described.

529,073. LUMINOUS SIGN. WILLIAM HOSKINS, Chicago, Ill. Filed May 1, 1894. Serial No. 509,710. (No model.)




*Claim.*—1. A luminous sign, comprising, in combination, a character displaying plate of transparent or pellucid material and an illuminator at the edge of the plate mounted to cast its light laterally through the plate by way of the edge thereof, thus obtaining substantially the effect of total reflection to produce illumination of the character substantially as described.

2. A luminous sign, comprising, in combination, a plate of transparent or pellucid material, having smooth and parallel surfaces and provided with the character to be displayed, and a shielded illuminator at the edge of the plate mounted to cast its light laterally through the plate by way of the edge thereof, thus obtaining substantially the effect of total reflection to produce illumination of the said representation substantially as described.

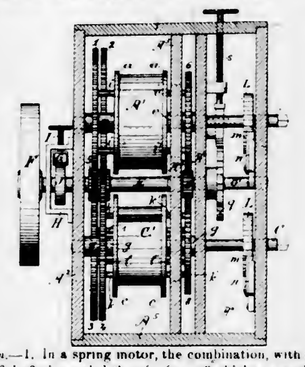
3. A luminous sign comprising, in combination, a plate of transparent or pellucid material having smooth surfaces, a character representation in the surface of the plate and a shielded illuminator in the edge of the plate mounted to cast its light laterally through the plate by way of the edge thereof, thus obtaining substantially the effect of total reflection to produce illumination of the said representation substantially as described.

4. A luminous sign, comprising, in combination, a display plate of transparent or pellucid material provided with the representation to be displayed, a chamber having an opening at the edge of the plate, and an illuminator mounted in said chamber to cast its light laterally through the plate by way of the edge thereof, thus obtaining substantially the effect of total reflection to produce illumination of the said representation substantially as described.

5. A luminous sign, comprising, in combination, a display-plate, of transparent or pellucid material provided with the representation to be displayed, a frame for the plate provided with a chamber opening to the adjacent edge of the plate, and an illuminator mounted in the chamber to cast its light laterally through the plate by way of the edge thereof, thus obtaining substantially the effect of total reflection to produce illumination of the said representation substantially as described.

6. A luminous sign, comprising, in combination, a display plate of transparent or pellucid material, provided with the representation to be displayed, a frame about the plate provided with illuminator chambers each open only to the adjacent edge of the plate, and an illuminator in each chamber mounted to cast its light laterally through the plate by way of the edge thereof, thus obtaining substantially the effect of total reflection to produce illumination of the said representation substantially as described.

529,074. SPRING-MOTOR. SAMUEL KRUEGER, Newark, N. J. Filed Nov. 6, 1893. Serial No. 490,193. (No model.)



*Claim.*—1. In a spring motor, the combination, with a frame, of a series of shafts journaled therein, four of which are each provided with a sleeve and one is provided with a pinion, a spring actuated drum and a pair of gear wheels on each sleeve, one wheel of each of said pairs of wheels being in engagement with said pinion, two of the shafts of said series being provided with pinions in engagement with the other wheels, and means for controlling the movement of each of said two pinions, substantially as set forth.

2. In a spring motor, the combination, with a frame, of a series of shafts journaled therein, four of which are each provided with a pair of spring actuated gear wheels, and one of which is provided with a pinion in mesh with one wheel of each of said pairs of wheels, a pair of the shafts of said series having pinions in engagement with the other gear wheels, each of said pinions being in engagement with two of said gear wheels, and each pinion provided with a toothed wheel, a spring actuated pawl, in engagement with each toothed wheel, and means for regulating the pressure of the pawls upon said toothed wheels, substantially as set forth.

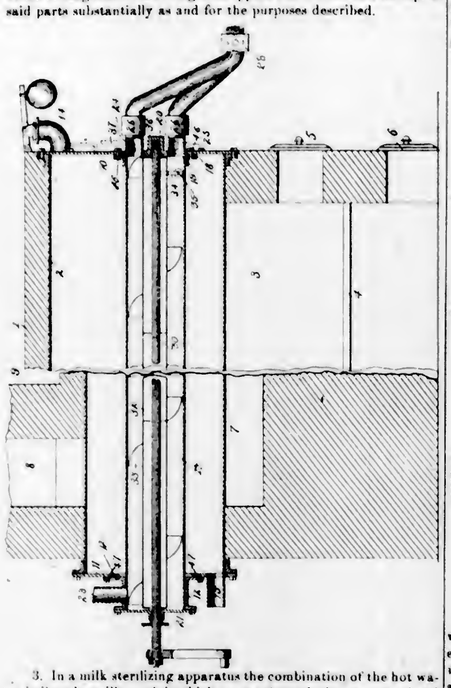
3. In a spring motor, the combination, with a frame, of a shaft journaled therein, four spring actuated drums and gear wheels for operating said shaft, a pair of regulators for controlling the drums and gear wheels, each of said regulators being provided with a toothed wheel, a pawl for each toothed wheel, a spring having its end in engagement with said pawl, and a screw for regulating the pressure of said spring and pawls against said wheels, substantially as set forth.

529,075. MILK-STERILIZING APPARATUS. EDWARD LESLIE, Paterson, N. J. Filed July 13, 1893. Serial No. 480,440. (No model.)

*Claim.*—1. In a milk sterilizing apparatus, the combination with the hot water boiler and its heads, a milk conduit arranged in said boiler and extending through said heads, an inflow connection at one end of said milk conduit, an upper and a lower outflow connection

arranged at the other end of the same, and a valve arranged in each of said upper and lower outflow connections, all said parts substantially as and for the purposes described.

2. In a milk sterilizing apparatus, a cooling table consisting of a slightly inclined top, a reservoir arranged at one end thereof, and a series of diagonal frets arranged in opposite directions on said top, all said parts substantially as and for the purposes described.



3. In a milk sterilizing apparatus the combination of the hot water boiler, the milk conduit which passes through the same, the head for said conduit provided with the central recess with flaring mouth, the rotatable shaft in said conduit provided with stirring blades and having its end rounded off so as to enter the recess in the head, and one or more arms each provided with a roller which support the end of the shaft when it is withdrawn from its bearing in the recess, substantially as described.

4. In a milk sterilizing apparatus, the combination with the furnace, of a hot water boiler arranged in said furnace, a head on each end of said boiler, a milk conduit extending through said boiler and through the heads thereof, an inflow connection on one end of the boiler, an upper and a lower valve controlled outflow connection at the other end thereof and means for cooling the outflowing milk, said means being connected with the upper and lower outflow, all said parts, substantially as and for the purposes described.

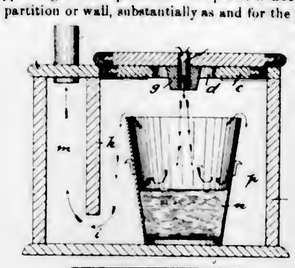
5. In a milk sterilizing apparatus, the combination with the hot water boiler, a milk conduit arranged in said boiler, a removable head on one end of said conduit, a fixed head arranged on the other end thereof and provided with a recess, having a flaring mouth, a shaft on said conduit and extending through said removable head and having its opposite end rounded off and adapted to enter said recess in the fixed head, and a series of stirring blades arranged on said shaft, all said parts, substantially as and for the purposes described.

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529,076. COMMODE. EDWARD LESLIE, Paterson, N. J. Filed Jan. 6, 1894. Serial No. 495,978. (No model.)

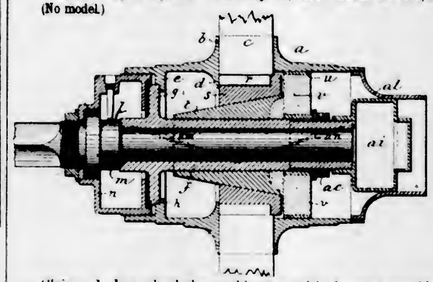
*Claim.*—1. In a commode or other excretion receptacle, the combination with the hinged seat, of a lid arranged on said seat and hinged to the receptacle, a tube in said lid and extending through said seat into the said receptacle, a partition arranged in the receptacle and extending downward to about the bottom thereof and an exhaust communicating with the interior of the receptacle through the opening left between its bottom and the partition, all said parts, substantially as and for the purposes described.

2. The combination with the commode or other excretion receptacle, of a partition plate dividing said receptacle into two compartments communicating with each other at or near the bottom of said partition plate, a seat hinged to said receptacle, a hinged lid arranged on one of said compartments, and on top of said hinged seat, a tube arranged in said lid and extending downward into said receptacle, a fixed top arranged on the other compartment, a tube or pipe connecting the latter with an exhaust, and a pail or receptacle placed in the compartment having the hinged lid, all said parts being so arranged that the upper edge of the pail in the receptacle is above the opening in the partition or wall, substantially as and for the purposes described.



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529,077. WHEEL FOR ROAD-VEHICLES. HARRY MOORE, Wellingborough, England. Filed May 22, 1893. Serial No. 475,134. (No model.)



*Claim.*—1. In a wheel, the combination, with the nave provided with mortises, a rib *d* behind the mortises, and a flange *e* near one end; of the spokes slidable in the mortises, and provided with wedge-shaped end shoes bearing against the rib *d;* an axle provided with a shoulder *l* at one end of its bearing; an axle box journaled on the axle, bearing against the said shoulder, and provided with a flange *g* operatively secured to the flange *e;* and a cone screwed upon the axle box and operating to force the said shoes and spokes outward, substantially as set forth.

2. In a wheel, the combination, with the nave provided with mortises, a rib *d* behind the mortises, and a flange *e* near one end; of the spokes slidable in the mortises, and provided with wedge-shaped shoes bearing against the rib *d;* an axle provided with the shoulder *l* and the collar *m* at one end of its bearing; an axle box journaled on the axle bearing and provided with a flange *g;* an oil box *n* screwed into one end of the nave, engaging with the collar *m*, and securing the flanges *g* and *e* together; and an adjustable cone screwed on the axle box and operating to force the said shoes and spokes outward, substantially as set forth.

3. In a wheel, the combination, with the nave provided with mortises, and the flange *e* near one end; of the spokes slidable in the mortises and provided with wedge shaped end shoes; an axle provided with oil grooves, and the shoulder *l* and collar *m* at one end of its bearing; an axle box journaled on the axle bearing, and provided with the flange *g;* an oil box *n* screwed into one end of the nave, engaging with the collar *m*, and securing the flanges *g* and *e* together; an oil catch box secured to the outer end of the axle box; a cylindrical end piece secured to the end of the nave and inclosing the said catch box; and an adjustable cone screwed on the axle box and operating to force the said shoes and spokes outward, substantially as set forth.

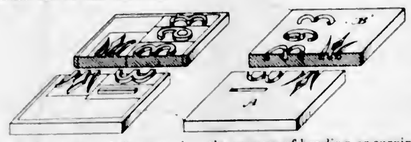
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529,078. PROCESS OF MAKING ELECTROTYPE-PLATES. JOHN W. NAUGHTON, New York, N. Y. Filed Apr. 4, 1893. Serial No. 469,040. (No model.)

*Claim.*—1. In the art of electrotyping the process herein described of forming the matrix of a form in metal; which consists in pressing the said form into metal made plastic by heat, of cooling the matrix so formed, of removing it from the form, and bending or curving it to the required shape, by placing it upon a suitable shaped former and applying to it sufficient heat to cause it to assume the shape of the said former by gravity, as herein shown and described.



2. In the art and process of electrotyping, the process of constructing plates, and forming matrices in said plates to be used in electrotyping herein described, which consists in combining and constructing plates of a combination of two, or more metals, in such proportions, that while said plates are normally rigid, they become plastic at a low temperature, of forming by pressure in such plates while plastic impressions of type forms, said impressions on said plates, when the platesare removed from the forms being adapted to be used as matrices for the reproduction of said form by electrotyping, as herein shown and described.



3. In the art of electrotyping, the process of bending or curving metallic matrices herein described, which consists in placing the matrix upon a former having the desired shape, and inducing sufficient heat upon the said matrix to render it plastic, and in this condition by gravity conform to the curvature of the former, as herein shown and described.

4. In the art of electrotyping, the process herein described, which consists in first forming plates of metals so combined that while normally they are rigid, under the influence of heat they become plastic, of causing an impression to be made in the said plate while in such condition by placing them upon, or under type forms, and inducing a pressure upon them sufficient to cause the plastic metal of the plates to enter into the interstices of said type form, of removing the impressions or matrices so formed when cooled to a normal temperature, and bending or curving them before electrotyping them, by placing them upon a former adapted for the purpose and inducing a sufficient amount of heat upon them to render them plastic and admit of their assuming the curvature of the former, as herein shown and described.

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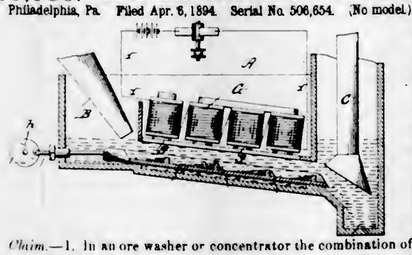
529,079. METHOD OF SEWING BOOKS. JULIUS T. O. ORTLOFF, Heidelberg, Germany. Filed Jan. 12, 1892. Serial No. 417,901. (No specimens.)



*Claim.*—The method of stitching together a series of signatures with two threads which consists in carrying a loop of one thread through the back of one signature from the outside thereof, and then passing it out through the same back at another point, carrying said loop over above the back of a second signature and holding the same, passing a loop of a second thread through the first mentioned loop and through the back of the second signature from the outside thereof at the point where the first loop is held, and carrying said second loop to the outside of the second signature at another point, drawing it over and holding it above the back of a third signature, passing a second loop of the first thread through the loop held above the last mentioned signature and through said signature as before and so on, substantially as described.

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529,080. ORE WASHER OR CONCENTRATOR. CHARLES F. PIKE, Philadelphia, Pa. Filed Apr. 6, 1894. Serial No. 506,654. (No model.)



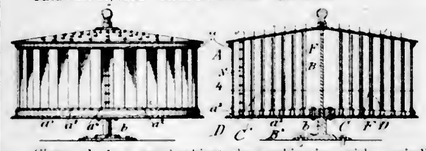
*Claim.*—1. In an ore washer or concentrator the combination of a receiving vessel, a feed device and a suction discharge device relatively distantly located in said vessel one or more magnets between said feed and discharge devices, and means for causing the material fed to the vessel to flow in a plane at an angle to a horizontal from said feed to said discharge in proximity to and below said magnets, and circuit connections including a source of electric supply for the magnets and a circuit changer substantially as and for the purposes set forth.

2. In an ore washer or concentrator the combination of a receiving vessel containing a body of water, a shaking or jigger bottom for or in said vessel, transverse riffles on said bottom, a feed inlet and a discharge outlet for the vessel, one or more magnets located above and adjacent to said bottom and circuit connections including a source of electric supply for the magnets substantially as set forth.

3. In an ore washer or amalgamator, the combination of a receiving vessel, a shaking or jigger bottom for or in said vessel, transverse riffles on said bottom, a feed device and a discharge device for said vessel, one or more magnets located between the feed and discharge devices and above and adjacent to said bottom, and circuit connections with a source of electrical supply for said magnets, substantially as set forth.

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529,081. SPOOL-CABINET. GEORGE RICHBERGER, Clarksdale, Miss. Filed June 20, 1894. Serial No. 515,136. (No model.)



*Claim.*—1. In a spool-cabinet, the combination, with a spindle provided with a suitable base, of a rotary case provided with spool-wires extending upwardly from the bottom of the same, said case having in its top openings with which the free ends of the wires register, and lifting devices extending through said openings alongside of said wires and provided with means at their lower ends whereby they are adapted to engage the lowermost spools for raising the uppermost spools through the top-openings, substantially as set forth.

2. In a spool-cabinet, the combination with a spindle provided with a suitable base, of a rotary case mounted to turn on said spindle and provided with vertical wires extending from its bottom and registering with openings in the top of the case, and lifting-wires extending through said openings and adapted to engage the lowermost spools for raising the spools through said openings, and covers attached to said lifting-wires and adapted to extend over and close said openings, substantially as set forth.

3. In a spool cabinet, the combination with a spindle provided with a suitable base, of a rotary case mounted to turn on said spindle and provided with spool-wires extending upwardly from its bottom and registering with openings in the top of the case, lifting-wires extending through said openings and provided with loops extending over said wires and with handles at their upper ends, the said loops being adapted to engage the lowermost spools on the wires for raising the spools through the openings, and covers attached to said wires and adapted to extend over and close said openings, substantially as set forth.

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529,082. BRAKE FOR RAILWAY-CARS. LUKE ROBERTS, Bradford, England. Filed Dec. 23, 1893. Serial No. 494,584. (No model.)

*Claim.*—1. In a railway or other vehicle, the combination with the brakes normally applied by the weight of the vehicle, of mechanism for operating the brakes, devices through which the power is applied to move the vehicle, and connections between said last mentioned devices and the brake operating mechanism, whereby when power is applied to move the vehicle in either direction the brakes will be thrown off, substantially as described.

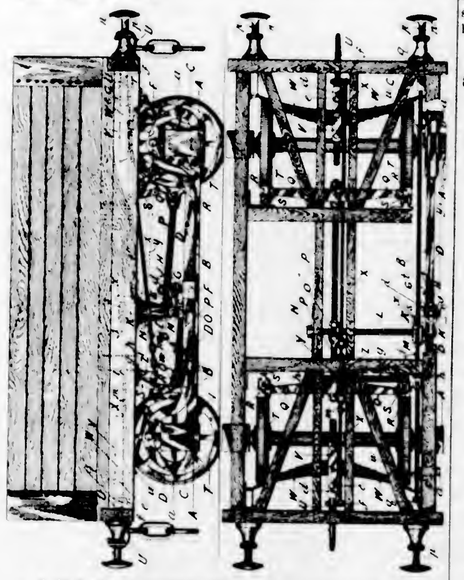
2. In a railway or other vehicle, the combination with the brakes normally applied by the weight of the vehicle, of mechanism for operating the brakes, devices located at one end of the vehicle for moving it in either direction, and connections between said last mentioned devices and the brake operating mechanism, whereby when the car is moved the brakes will be thrown off; substantially as described.

3. In a railway or other vehicle, the combination with the rock shaft, of the double armed lever mounted on said rock shaft, and connected to the brake rods, and intermediate mechanism for rocking said shaft when the vehicle is moved in either direction, substantially as and for the purpose set forth.

4. In a railway or other vehicle, the combination with the rock shaft mounted in suitable bearings, the two armed lever mounted on said rock shaft, the brake rods connected to the ends of said lever, and to the brake levers, the arm carried by the rock shaft and mechanism connecting said arm and drawbars, whereby when power is

applied to the drawbar to move the vehicle, the shaft will be rocked and the brakes thrown off, substantially as set forth.

5. In a railway or other vehicle, the combination with the rock shaft mounted in suitable bearings, of the two armed lever carried by said rock shaft, the brake rods pivotally connected to said lever and to the brake levers, the arm also carried by said rock shaft, and the rock shaft $g$ carried in suitable bearings, the drawbars, the rods connecting the drawbars and said last mentioned rock shaft, and connection between the two rock shafts, whereby when the drawbars are moved said rock shafts will be rocked and the brakes removed, substantially as described.



6. In a railway or other vehicle, the combination with the rock shaft L, mounted in suitable bearings, the two armed lever and arm carried thereby, of the rock shaft $g$, carried in suitable bearings, the two armed lever Y carried by said rock shaft, the draw bars, and rods connecting them to said lever Y, the lever Z', having two arms, also carried by said rock shaft $g$, and the rod $j$ connected to one arm of the lever Z' and to the arm $k$ carried by the rock shaft L, substantially as and for the purpose set forth.

7. In a railway or other vehicle, the combination with the drawbars at each end of the vehicle, of the brake mechanism, such as described, the rods connecting the drawbars and brake mechanism, and the flexible connection at the ends of the rods, whereby the drawbars may be moved independently, substantially as set forth.

8. In a railway or other vehicle, the combination with the brakes, normally applied by the weight of the vehicle, mechanism for operating the brakes, the lifting lever sustaining the weight of the vehicle, and connections between the brake mechanism and lifting lever, whereby when the brakes are removed the vehicle will be lifted; substantially as described.

9. In a railway or other vehicle, the combination with the brakes applied by the weight of the vehicle, the rod connected to the axle boxes on one side of the vehicle, the lifting levers supporting the vehicle pivotally connected at its ends with said rod, of the block into which the ends of the levers pass, the pin having the trunnions carried by said block, the rock shaft L, the forked arm having the bifurcated limbs, within which the trunnions of the block have a bearing, brake operating mechanism, substantially as described, connected with said rock shaft, whereby when the rock shaft is turned to remove the brakes, the inner ends of the lifting levers will be raised by the forked arms and the vehicle lifted, as set forth.

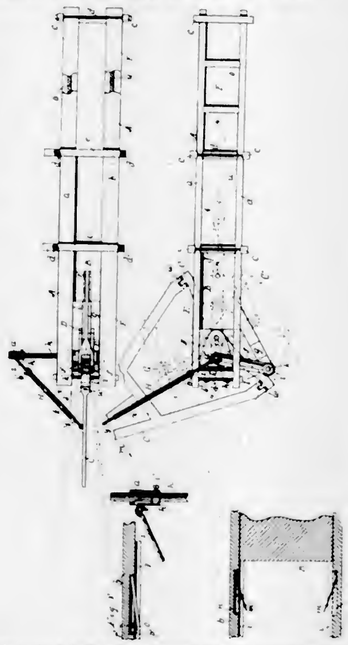
10. In a railway or other vehicle, the combination with the brakes normally applied by the weight of the vehicle, the buffers at each end, connection such as described, between the buffers and brakes, whereby when the buffers are moved inwardly the brakes will be thrown off; substantially as set forth.

11. In a railway car or other vehicle, the combination with the brakes normally applied by the weight of the vehicle the rock shaft mounted in suitable bearings, the two armed lever carried by said shaft, the brake rods connected to said two armed lever and to the brake levers, the arm $k$ also carried by said rock shaft, the rock shaft $g$, carried in suitable bearings, the lever Z', carried by said rock shaft, the rod $j$, connected to the arm $i$ and arm $k$, the buffers, the rods $t$ and $v$, the former connected to the arm $k$ and the latter to the arm $w$ of lever Z', whereby when the rods are moved inwardly the brakes will be thrown off; substantially as described.

12. In a railway or other vehicle, the combination with the brakes normally applied by the weight of the vehicle, the lifting levers, mechanism for operating both the brakes and lifting levers, the buffer spindle capable of longitudinal motion and connections between the buffer spindle and the before mentioned mechanism, whereby when the buffer spindles are moved inwardly said mechanism will be operated, the brakes thrown off and the vehicle lifted; substantially as described.

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**529,083. BALING-PRESS.** FRANK L. ROBISON, Albion, assignor of one-half to Alasco C. Robison, Canandaigua, N. Y. Filed July 12, 1893. Renewed Oct. 4, 1894. Serial No. 524,928. (No model.)



*Claim.*—1. A baling press having a frame provided at one end with a rigid hanger, in combination with a sweep lever held by the hanger, a plunger, crank arms held one above and one below the hanger, a pitman connecting the crank arms and the plunger, a vertical shaft passing through the crank arms and the hanger, and a yielding suspender for the sweep lever connecting the latter with said shaft, substantially as shown, and described.

2. A baling press consisting of a frame provided with a hanger, a plunger, crank arms held by the hanger, a pitman connecting the crank arms and the plunger, and a sweep lever, in combination with a suspender for the sweep lever, a shaft held by the hanger to support the suspender and a movable collar on the shaft to regulate the elevation of the suspender, substantially as shown and described.

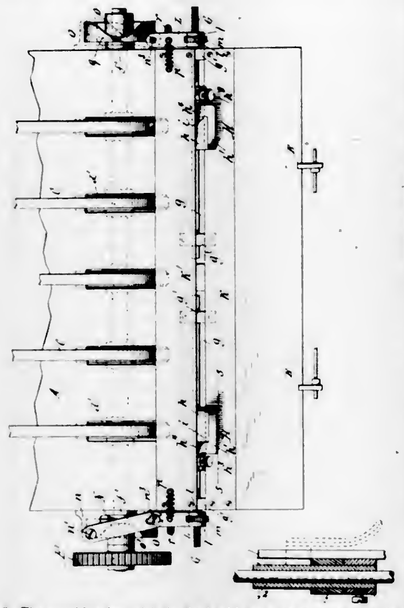
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**529,084. SIDE-REGISTERING MECHANISM FOR PAPER-FEEDERS.** GEORGE SAGUE, Poughkeepsie, N. Y. Filed Apr. 9, 1894. Serial No. 506,849. (No model.)

*Claim.*—1. The combination with the feed table, of an actuating rod capable of a reciprocating movement in the direction of its axis and also capable of an oscillating movement about its axis, a gripper jaw which is connected with said rod and moved on the feed table by the reciprocating movement of said rod, and a gripper jaw also connected with said rod and moved on the feed table with the first mentioned jaw by the reciprocating movement of said rod and moved toward and from said first mentioned jaw by the oscillating movement of said rod, substantially as set forth.

2. The combination with the feed table, of a transverse actuating rod capable of a reciprocating and an oscillating movement, and a gripper provided with a sliding jaw which partakes of the reciprocating movement of the actuating rod, and with an oscillating jaw which also partakes of the reciprocating movement of said rod, substantially as set forth





3. The combination with the feed table, of a transverse actuating rod capable of a reciprocating and of an oscillating movement, a gripper adjustably secured to the actuating rod for effecting the coarse adjustment, an actuating rock-arm attached to the outer end of said actuating rod, and means whereby said rod can be adjusted in the direction of its length in said rock arm to effect the fine adjustment of the gripper, substantially as set forth.

4. The combination with the feed table, of an actuating rod capable of a reciprocating and of an oscillating movement, an oscillating gripper jaw provided with a sleeve which is secured to said rod and rocks therewith, and a sliding gripper jaw provided with an eye loosely mounted on the sleeve of the oscillating jaw, substantially as set forth.

5. The combination with the feed table, of an actuating rod provided with a screw-threaded portion, a gripper mounted on said rod, an actuating arm provided with a bifurcated eye embracing the screw-threaded portion of the actuating rod, and connected therewith so that said rod is capable of sliding therein, but is held against turning therein, and an adjusting screw nut arranged upon the screw threaded portion of the actuating rod within the eye of the actuating arm, substantially as set forth.

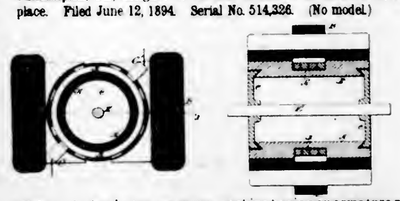
6. The combination with the feed table, of a transverse actuating rod capable of a reciprocating movement in the direction of its axis and also capable of an oscillating movement about its axis, a gripper jaw which is connected with said rod and moved on the feed table by the reciprocating movement of said rod, and a gripper jaw also connected with said rod and moved on the feed table with the first mentioned jaw by the reciprocating movement of said rod and moved toward and from said first mentioned jaw by the oscillating movement of said rod, one of said jaws being provided with a side registering shoulder, substantially as set forth

7. The combination with the feed table, of an actuating rod, a gripper mounted on said rod, an actuating arm also mounted on said rod, an actuating lever pivotally connected with said arm, and a cam wheel provided with a face cam which is adapted to engage with said lever for moving the gripper transversely on the feed board, and with a peripheral cam which is adapted to engage against the said lever for opening and closing the gripper, substantially as set forth.

8. The combination with the feed table having the upper surface of its delivery portion depressed below the surface plane of its upper or receiving portion and separated therefrom by a transverse slot, of a movable gripper arranged to move in said slot, substantially as set forth.

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**529,085. ELECTROMAGNETIC MACHINE.** GORDON J. SCOTT, Philadelphia, Pa., assignor of one-half to Albert H. Henderson, same place. Filed June 12, 1894. Serial No. 514,326. (No model.)



*Claim.*—1. An electro magnetic machine having an armature provided with a closed ring conductor or conductors lying in the plane of rotation, field magnets, and collectors bearing upon such ring or rings at points displaced from the neutral plane to produce a distorted field, and connected up in a suitable circuit for the flow of currents in opposite directions along the circumferential length of the ring or rings, substantially as and for the purpose set forth.

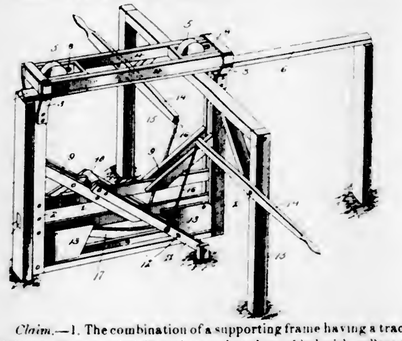
2. An alternating current electric motor having an armature provided with a closed ring conductor or conductors lying in the plane of rotation, field magnets to induce in said ring or rings opposed currents flowing along its or their circumferential length, and collectors bearing upon such ring conductor or conductors at points displaced from the neutral plane to produce a distorted field, and connected up in a suitable circuit, substantially as and for the purpose set forth.

3. An alternating current electric motor having an armature provided with a closed ring conductor or conductors and field magnets to induce in said ring or rings opposed currents in the direction of its or their circumferential length, and collectors bearing upon such ring or rings at different points, displaced from the neutral plane to produce a distorted field and connected up in closed circuit, substantially as described.

4. An alternating current electric motor having an armature provided with a laminated core and a closed ring conductor or conductors carried by but insulated from said core, and field magnets having laminated cores and coils wound thereon, to form magnetic fields inclosing said ring or rings to induce therein opposed currents along the circumferential length of the ring or rings and collectors bearing upon the latter, at points displaced from the neutral plane to produce a distorted field, substantially as and for the purpose set forth

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**529,086. GATE.** STANSBURY J. SMITH, Paris, Tex. Filed June 27, 1894. Serial No. 515,883. (No model.)



*Claim.*—1. The combination of a supporting frame having a track, a sliding gate suspended from the track and provided with rollers arranged on the track, the opposite inclined tracks arranged on the gate, the oscillating levers fulcrumed at their lower ends located at opposite sides of the gate and adapted to engage the inclined tracks, the opposite pivoted blocks mounted on the gate and arranged in advance and in rear of the oscillating levers, a transverse pin mounted on the oscillating levers and arranged to engage the pivoted blocks, substantially as described.

2. The combination of a supporting frame having a track, a gate provided with oppositely inclined track bars and suspended from the supporting frame and provided with rollers arranged on the track bar thereof, the oscillating levers located on opposite sides of the gate fulcrumed at their lower ends and provided at their upper ends with a roller arranged to engage the inclined tracks, the opposite pivoted blocks mounted on the gate and having their inner ends inclined, a transverse pin mounted on the oscillating levers and arranged to engage the blocks, and means for operating the oscillating levers, substantially as described.

3. The combination of a supporting frame having a track, a sliding gate suspended therefrom and having rollers arranged thereon and provided with oppositely inclined tracks, oscillating levers arranged at opposite sides of the gate, and adapted to engage the tracks thereof, the opposite pivoted blocks mounted on the gate, the bar pivotally mounted on the gate at the bottom thereof and having an upward extending portion arranged at the rear portion of the gate, and a transverse pin carried by the oscillating levers and adapted to engage the blocks in opening and closing the gate and to engage the rear portion of the pivoted bar when the gate is closed, substantially as described.

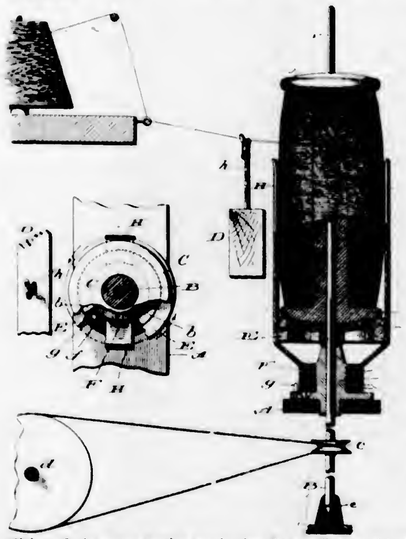
4. The combination of a sliding gate provided with oppositely inclined tracks arranged at the front and back of the gate, pivoted blocks mounted on the gate at the bottom thereof, oscillating levers arranged at opposite sides of the gate and provided at their upper ends with a roller and carrying a pin for engaging said blocks, and a pivoted latch mounted on the inclined track at the front of the gate and adapted to engage the roller when the gate is closed, substantially as described.

5. In a sliding gate, the combination with the superimposed track bar, the supporting posts, the hangers, and rollers mounted on the track bar, of the depending standards, a series of panel rails connecting the same and forming a gate, the opposite stops mounted on the gate, the inclined oppositely disposed track bars extending upward from the center of the gate to the standards, a stud below the gate, a pair of swinging levers pivoted to the stud and embracing the gate and arranged to engage said stops, a roller arranged between the upper ends of the levers and adapted to operate upon the inclined track bars, and operating levers at opposite sides of the gate connected with the swinging levers and fulcrumed at opposite sides of the gate, substantially as described.

6. In a sliding gate, the combination with opposite posts, the superimposed track, the rollers arranged thereon, and the depending hangers of the gate provided with oppositely inclined track bars, the opposite stops mounted on the gate, the swinging levers embracing the gate and pivoted below the same, a roller arranged near the upper ends of the swinging levers and adapted to operate against either of the inclined track bars, the operating levers fulcrumed between their ends, and connecting rods between the operating levers, and swinging levers, substantially as described.

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529,087. SPOOLING OR WINDING FRAME. BENJAMIN L. STOWE, Jersey City, N. J. Filed Aug. 16, 1894. Serial No. 520,494. (No model.)



*Claim.*—1. In a stop motion mechanism for spooling machines, the combination with the spooler spindle of a rotatable gage extending alongside of and at a predetermined distance from the spindle so as to contact with and be moved by the yarn on the spool when the windings on said spool reach a certain diameter, and a spool lifting device adapted to be operated by said gage, substantially as hereinbefore set forth.

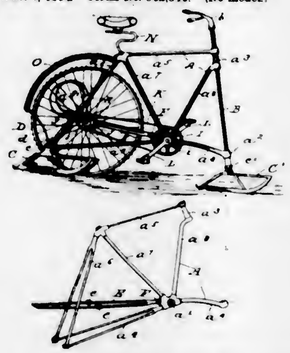
2. In a stop motion mechanism for spooling machines, the combination with the spooler spindle of a rotatable gage extending alongside of and at a predetermined distance from the spindle, so as to contact with and be moved by the yarn on the spool when the windings on said spool reach a certain diameter, a spool lifter adapted to be operated by said gage, and a stop for arresting the movement of the lifter at the desired point, substantially as hereinbefore set forth.

3. The combination with the spooler spindle and the spool, of the gage-arms, extending up on each side of the spindle, the lifting ring carried by said arms, the internally-screw-threaded collar to which said arms are secured, and the externally screw-threaded bearing for said collar, substantially as hereinbefore set forth.

4. In combination with the spooler spindle and spool, the gage arms extending up on each side of the spindle, the lifting ring carried by said arms, the screw threaded collar to which said arms are secured, the correspondingly screw-threaded bearing or support for said collar, the stop pin carried by and moving with the collar, and the fixed stop or shoulder *g* for engaging said stop pin, substantially as and for the purpose hereinbefore set forth.

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529,088. ICE-VELOCIPEDE. MALCOM SWENSON, Concord, N. H. Filed Mar. 6, 1894. Serial No. 502,519. (No model.)



*Claim.*—1. In an ice velocipede comprising a drive-wheel and runners, suitable means for preventing the machine from slipping sidewise, the same consisting of a metal plate attached to a runner, said plate provided with an ear having a threaded perforation, and a stop tongue, an adjustable blade pivoted to said plate and resting under the tongue thereof, and provided at its opposite end with a perforation threaded to receive the pivotal end of a thumb screw which is threaded to the ear of said plate.

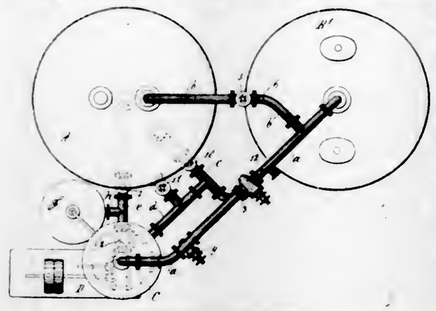
2. In an ice bicycle having forward and rear runners, driving wheel and propelling mechanism, a main frame comprising two substantially horizontal bars one above the other, their forward end forming bearing supports for a steering rod which carries the forward runner, and a forked portion made in the form of two sides of a triangle, the angles of which are adapted for pivotal connection with the rear runners and the diverging ends being connected one to the upper and one to the lower horizontal bar, oppositely inclined bars arranged in the form of a V, their converging ends being connected with the lower horizontal bar at the point of union of said bar and the lower portion of the forked frame and their upper ends being connected one to the union of the upper horizontal bar and the upper portion of said forked frame, and the other to the upper bearing of the steering bar, and a pivoted frame arranged within said fork and mounting the drive-wheel, its forward end being connected with the main frame at the point of union of the lower horizontal bar, the oppositely inclined bars, and the fork, and suitable springs made in form of a segment of a circle and connecting opposite sides of said pivoted frame with opposite sides of said fork, substantially for the purpose set forth.

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529,089. PROCESS OF BLEACHING. HEINRICH THIES, Laaken, and EMIL HERRIG, Mulhouse, Germany. Filed Mar. 18, 1892. Serial No. 426,476. (No specimens.)

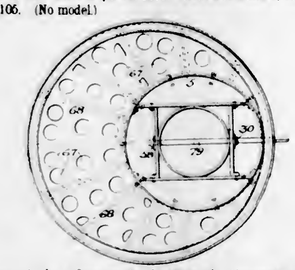
*Claim.*—The preparatory treatment of fibers prior to the bucking operation, consisting in exerting a pressure upon a body of water containing the fibers to be treated, and producing simultaneously therewith a vacuum over another body of water by drawing off part of the latter and forcing it to the said former body of water; letting escape from the first to the second body of water a quantity less than that forced independently to the former, and forcing at the same time a like quantity back from the second body of water to the first, this escaping and forcing back being maintained in a continuous course without interrupting the pressure exerted incipiently upon the water containing the fibers, substantially and for the purpose as described.





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529,090. AIR-HEATING FURNACE. S. LLOYD WIEGAND, Philadelphia, Pa. Filed Sept. 20, 1893. Renewed June 9, 1894. Serial No. 514,105. (No model.)



*Claim.*—1. In a furnace for heating air, the base plate 1, cylindric furnace body 5 located eccentrically on the base, the domes 22 and 63, frame 68 and casing 65 in combination with the pipe connections 29 and 30, return bends 39, 42 and 43, and pipes 37, 41 and 45 constructed and arranged substantially as shown and described.

2. In a furnace for heating air, the ash pit 6, furnace chamber 7 and combustion chamber 8, contained in a cylindric shell 5, the surrounding casing 65, frame 68, connections 29 and 30, return bends 39, 42 and 43 and pipes 37, 41 and 45 in combination with the damper 35, constructed and arranged substantially as shown and described.

3. In a furnace for heating air, the ash pit 6, ring 48 having perforations 50 therein, furnace chamber 7, refractory lining 52 having air channels therein communicating with the perforations 50, the perforated dome 63 and conical grate 54 in combination with the spherical perforated segment 78, arbor 79 and wrench 60 all constructed and arranged to operate substantially as set forth.

4. In a furnace for heating air, the ash pit 6, furnace chamber 7 and combustion chamber 8, contained in a cylindric shell 5, the shell 5, the frame 68, connections 29 and 30 return bends 39, 42 and 43 and pipes 37, 41, 45 and 46 in combination with the damper 47 constructed and arranged to operate substantially as shown and described.

5. In a furnace for heating air, the supporting frame 68, return bends 39, 42, 43 in combination with the pipes 37, 43 and 45 constructed and arranged substantially as shown and described.

6. In a furnace for heating air, the base plate 1, cylindric furnace body 5 located eccentrically thereon, the dome 22, frame 68, casing 65, cold air chamber 76, connections 29 and 30, return bends 39, 42 and 43, pipes 37, 41, 45 and 46 in combination with the dampers 35 and 47 all constructed and arranged to operate substantially as shown and set forth.

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529,091. BINDER FOR LEAVES. GEORGE H. WINSLOW, Pittsburg, Pa. Filed Oct. 10, 1893. Serial No. 487,756. (No model.)



*Claim.*—1. A binder for leaves having in combination sleeves and U-shaped pins having their opposite ends open, one arm of the pins being adapted to fit within the sleeves, the pins being movable toward each other to engage the leaves substantially as set forth.

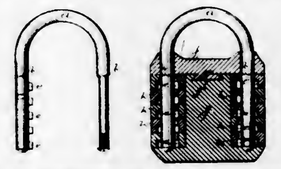
2. A binder for leaves having in combination sleeves, U-shaped pins having their opposite ends open, one arm of the pins being adapted to fit within the sleeves, the pins being movable toward each other to engage the leaves and a lock for holding the pin in position, substantially as set forth.

3. A binder for leaves having in combination a back piece, sleeves attached to the back piece, and U-shaped pins having their opposite ends open, one arm of said pins being adapted to fit within the sleeves, the pins being movable toward each other to engage the leaves substantially as set forth.

4. A binder for leaves having in combination a back piece, sleeves attached to said back piece, U-shaped pins having their opposite ends open, the arms of said pins being adapted to slide within the sleeves as the pin is moved toward the back piece, substantially as set forth.

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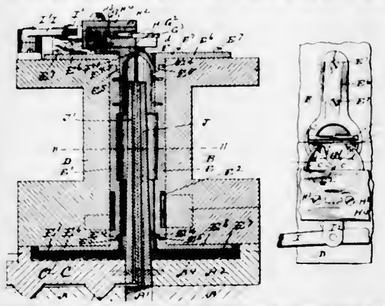
529,092. PERMUTATION-PADLOCK. CHARLES H. WOOD, Dayton, Ohio. Filed Jan. 6, 1894. Serial No. 496,017. (No model.)



*Claim.*—In a permutation pad-lock, the combination with the casing having chambers therein, of permutation wheels provided with openings of varying diameters, a staple provided with serrated shoulders (*b*), sleeves inclosing the ends of said staple, provided with serrations on their ends to engage with the shoulders on the staple, and teeth on the sides thereof, whereby the letters forming the combination may be changed and a new combination formed, as herein described.

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529,093. WIRE-NETTING MACHINE. GEORGE F. WRIGHT. Worcester, Mass. Filed Mar. 26, 1892. Serial No. 426,616. (No model.)



*Claim.*—1. In a wire-netting machine, the combination with a pair of rotating half cylinders, of a twisting plate carried by one of said half cylinders and capable of sliding in a plane at right angles with its axis of rotation, whereby the wires to be twisted are engaged and released by said twisting plate, substantially as described.

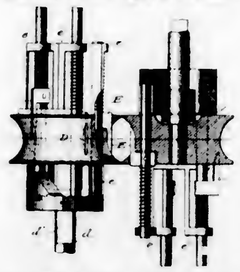
2. In a wire-netting machine, the combination of the half cylinders E and E', jaws F and F', the jaw F' being provided with ways, a twisting plate sliding in said ways and in a plane at right angles with its axis of rotation, whereby the wires to be twisted are engaged and released, substantially as described.

3. In a wire-netting machine, the combination of the rotating half cylinders E and E', a twisting plate carried upon one of said half cylinders and capable of sliding in ways in a plane at right angles with its axis of rotation, a concentric flange on said twisting plate and a sliding plate engaging said flange, substantially as described.

4. In a wire-netting machine, the combination of a pair of rotating half cylinders, a twisting plate carried by one of said cylinders and capable of sliding in ways in a plane at right angles with its axis of rotation, a concentric flange on said twisting plate and a sliding plate provided with a segmental flange H and a prong H' by which the flange of said twisting plate is engaged, substantially as described.

5. In a wire-netting machine, the combination of the half cylinders E and E', jaws F and F', a twisting plate carried in ways upon one of said jaws and capable of sliding in said ways in a plane at right angles with its axis of rotation, and connected means by which said twisting plate is moved in its ways to engage or release the wire to be twisted, substantially as described.

529,094. CORN-HUSKING MACHINE. McCLINTOCK YOUNG, Frederick, Md. Filed May 1, 1894. Serial No. 509,698. (No model.)



*Claim.*—1. In a corn husking machine carriers for positively feeding the ear endwise, in combination with reciprocating gripping devices sustained by the carriers and arranged to grasp the husks as the ear is advanced by said carriers and means for reciprocating the said gripping devices during the movement of the carriers.

2. In a corn husking machine coacting rotary carriers for positively feeding the ear endwise between them, in combination with gripping fingers sustained by said carriers and movable in the direction of the axes of said carriers and arranged to grasp the husk as the ear is advanced and means for operating said fingers.

3. In a corn husking machine two grooved coacting wheels, provided with gripping fingers or blades movable in a direction at right angles to the plane of rotation.

4. In a corn husking machine, rotary opposing wheels, gripping fingers or blades attached to said wheels, movable in an axial direction, and means for effecting the movement of such blades during the rotation of the wheels, substantially as described.

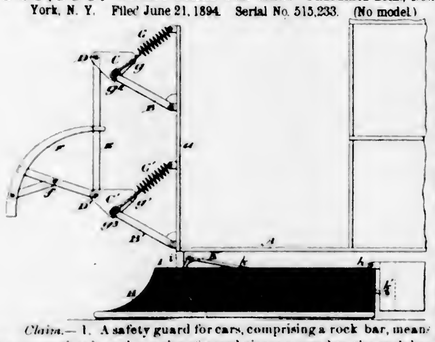
5. In a corn husking machine the combination of grooved cooperating wheels, axially movable blades or grippers therein, means for urging said blades in one direction and a cam acting to move them in the opposite direction.

6. In a corn husking machine and in combination with rotary carriers arranged in pairs and provided with movable gripping blades or fingers, supports for said carriers, adapted to move from and toward each other and connections for yieldingly pressing said supports and carriers together whereby they are caused to adapt themselves to varying sizes of ears.

7. In a corn husking machine the rotary grooved carriers, their movable blades or grippers, means for actuating said blades, swinging supports for the carriers, and means for urging said carriers together.

8. In a corn husking machine the combination of a series of carriers provided with gripping devices, said carriers arranged in opposing pairs disposed at intervals around a common center; whereby the removal of all portions of the husk is insured.

529,095. SAFETY-GUARD FOR CARS. FREDERICK ZORN, New York, N. Y. Filed June 21, 1894. Serial No. 515,233. (No model.)



*Claim.*—1. A safety guard for cars, comprising a rock bar, means for supporting it, and a series of guard pieces secured to the rock bar in yielding adjustment spaced apart and extending outward away from each other, the rock bar being constructed to draw the free ends of the guard pieces toward each other as it is rocked rearwardly, substantially as set forth.

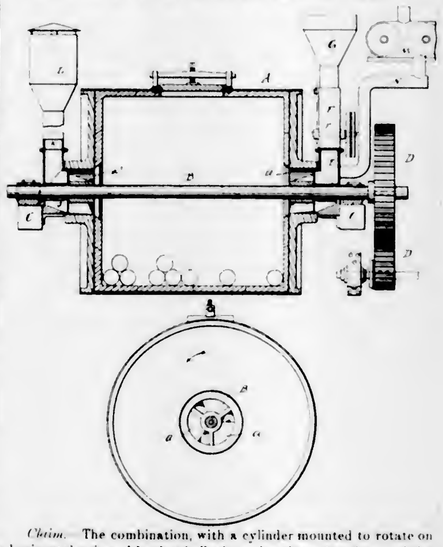
2. A safety guard for cars, comprising a rock bar curved outwardly when in its normal position, means for yieldingly holding the rock bar in its normal position, and a series of yielding guard pieces secured to the rock bar, the free ends of said guard pieces being spaced apart and extended outward away from each other when the bar is in its normal position, and drawn toward each other as the bar is rocked rearwardly, substantially as set forth.

3. A safety guard for cars, comprising a pair of arms secured at their inner ends to the car, supporting pieces pivoted to the outer ends of the said arms, a rock bar secured to the said supporting pieces, springs secured to the car and the supporting pieces for yieldingly holding the rock bar in its forward position, and a series of yielding guard pieces secured to the rock bar, substantially as set forth

4. A safety guard for cars, comprising a pair of rock bars one above the other, means for supporting the rock bars, a series of vertical rods, connecting the two rock bars, a series of yielding guard pieces, one for each rod, secured to the lower rock bar by jointed arms, the upper ends of the guard pieces having a sliding engagement with the vertical rods, substantially as set forth:

5. A safety guard for cars, comprising a rock bar, means for yieldingly holding the rock bar in its forward position, a series of rearwardly yielding guard pieces secured to the rock bar, and a fender secured to the car and extending beneath the guard pieces and rock bar, substantially as set forth.

529,096. GRINDING AND PULVERIZING CYLINDER. RICHARD F. ABBE, Brooklyn, assignor to the J. R. Alsing Company, New York, N. Y. Filed Nov. 21, 1893. Serial No. 491,545. (No model.)



*Claim.*—The combination, with a cylinder mounted to rotate on a horizontal axis and having helical openings in each end around the center, the openings in the two ends having the reverse pitch, and said openings in both ends serving to draw material into the cylinder, boxes placed against the ends of the rotating cylinder to which boxes the openings in the ends of the cylinder lead, a feed chute connected with the box at one end of the cylinder, an outlet duct connected with the box at the opposite end of the cylinder and means for conducting air under pressure into the cylinder, at that end of the cylinder at which the feed chute is located, substantially as set forth

529,097. COMBINED RAIL CHAIR AND TIE. JOHN ALBRECHT, Massillon, Ohio. Filed Oct. 1, 1894. Serial No. 524,566. (No model.)

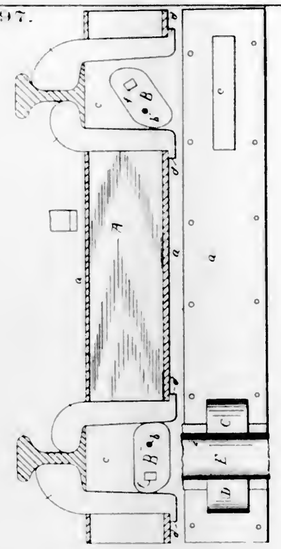
*Claim.*—1. The combination of the hollow tie A provided with intermediate slots formed in the top and bottom of the tie, the locking dogs extended above the tie to embrace the rails and extended below the tie to embrace the under side thereof, the locking blocks pivotally connected to the tie and provided with recesses *f*, and apertures located in the tie, substantially as and for the purpose specified.

2. The combination of a hollow tie provided with slots, locking dogs provided with flanged lower ends and with curved upper ends the locking blocks B located between the locking dogs, substantially as and for the purpose specified.

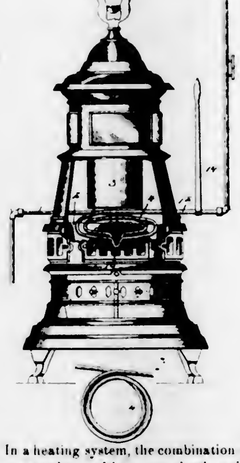
3. The combination of a hollow tie having located therein locking blocks, secured to shafts having angular extensions, and locking dogs, substantially as and for the purpose specified.



529,097.



529,098. HOT-WATER HEATING SYSTEM. LEVI G. ALLEN, Mannsville, N. Y.; Henrietta Allen administratrix of said Levi G. Allen, deceased. Filed Jan. 2, 1894. Serial No. 495,392. (No model.)

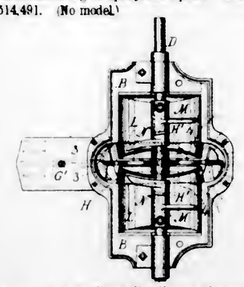


*Claim.*—1. In a heating system, the combination with a heating stove, of a coil connected to and in communication with the line pipe of the system, said coil being pivoted at one side within the stove whereby it may be vertically adjusted at the opposite side, and means to adjust the coil substantially as specified.

2. In a hot water heating system, the combination with a heating stove, of a coil arranged in the stove above the grate and having tangential terminals mounted in bearings in the stove casing and connected to and in communication with the line pipe of the system said coil being provided at the side opposite said terminals with a depending offset to lie in the bed of coals when the coil is depressed, substantially as specified.

3. In a hot-water heating system, the combination with a stove, of a coil consisting of a plurality of connected loops arranged in a common plane and having tangentially disposed axially aligned terminals mounted in bearings in the casing of the stove, and revolubly connected with the ends of the line pipe of said system, and means for adjusting the coil about said terminals as a center, substantially as specified

529,099. FERTILIZER ATTACHMENT FOR PLANTING-MACHINES. LEWIS A. ASPINWALL, Jackson, Mich., assignor to the Aspinwall Manufacturing Company, same place. Filed June 14, 1894. Serial No. 514,491. (No model.)



*Claim.*—1. In a fertilizer distributer, the combination with a hopper and hopper base, of a shaft supported by the hopper base, a feed wheel upon the shaft and having projecting buckets upon its periphery, a shell inclosing the feed wheel and having feed openings adjacent to the channel in the hopper base and within which the feed wheel is revolved, and a spout into which the fertilizing material is discharged by the buckets of the feed wheel, substantially as set forth.

2. The combination with the hopper and hopper base, of a revolving shaft, a feed wheel upon the shaft having buckets projecting in opposite directions at its periphery, a shell inclosing the feed wheel, and a spout having a central partition for the fertilizing material to be discharged at opposite sides of the partition, substantially as set forth.

3. The combination with the hopper and hopper base, of a revolving shaft, a feed wheel upon the shaft having buckets projecting in opposite directions at its periphery, a shell inclosing the feed wheel, a spout having a central partition with a lower end that diverges in opposite directions for the fertilizing material to be discharged at opposite sides of the partition, substantially as set forth.

4. The combination in a fertilizer distributer, of a hopper and hopper base with a channel in the bottom thereof, a revolving shaft, a feed wheel carried by the shaft and having buckets projecting at its edge, a shell inclosing the feed wheel and coinciding with the channel in the hopper base, there being an opening in the shell adjacent to the hopper base for the fertilizing material to pass into the channel, and a spout into which the material is discharged by the buckets of the feed wheel, substantially as set forth.

5. The combination in a fertilizer distributer, of a hopper and hopper base with a channel in the bottom thereof, a revolving shaft, a feed wheel carried by the shaft and having buckets projecting at its edge, a shell inclosing the feed wheel and coinciding with the channel in the hopper base, there being an opening in the shell adjacent to the hopper base for the fertilizing material to pass into the channel, a spout into which the material is discharged by the buckets of the feed wheel, and a regulator for varying the size of the feed openings, substantially as set forth

6. The combination in a fertilizer distributer, of a hopper and hopper base with a channel in the bottom thereof, a revolving shaft, a feed wheel carried by the shaft and having buckets projecting at its edge, a shell inclosing the feed wheel and coinciding with the channel in the hopper base, there being an opening in the shell adjacent to the hopper base for the fertilizing material to pass into the channel, a spout into which the material is discharged by the buckets of the feed wheel, a regulator formed of two open rings with upwardly extending flanges, and a lever for moving the regulator rings and varying the feed openings by partially or entirely covering such openings by the ends of the rings, substantially as set forth.

7. The combination in a fertilizer distributer, of a hopper and hopper base, a shaft supported by the base, a feed wheel, a shell inclosing the feed wheel and having feed openings, a spout into which the material is discharged by the feed wheel, breakers connected to and revolving with the shaft and acting to break up and disintegrate the fertilizing material in the base of the hopper and move the same toward the feed openings in the shell, substantially as set forth.

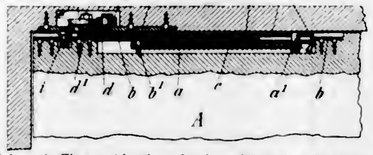
8. The combination in a fertilizer distributer, of a hopper, a hopper base having a central channel, a discharge spout with a central partition having a diverging lower end, a rotating shaft and a feed wheel upon the shaft having buckets that act within the channel of the hopper base to carry the fertilizing material up and deliver the same into the spout, a shell inclosing the feed wheel and having feed openings adjacent to the inner surface of the hopper bottom, a regulator for varying the size of the feed openings, breakers upon the shaft for agitating and separating the fertilizing material, and paddles with their ends revolving near the feed openings for agitating the material, substantially as set forth

529,100. MANUFACTURE OF ANHYDROUS STANNIC ACID. IVAR A. F. BANG and MARIE C. A. RUFFIN, Paris, France. Filed July 12, 1894. Serial No. 517,331. (No specimens.)

*Claim.*—1. A process of making metastannic acid which consists in adding a solution of an alkaline bicarbonate to a solution of an alkaline stannate to precipitate metastannic acid, substantially as herein described.

2. A process of preparation of anhydrous stannic acid which consists in calcining metastannic acid at a red-white heat in the presence of sulfuric acid essentially as hereinabove described.

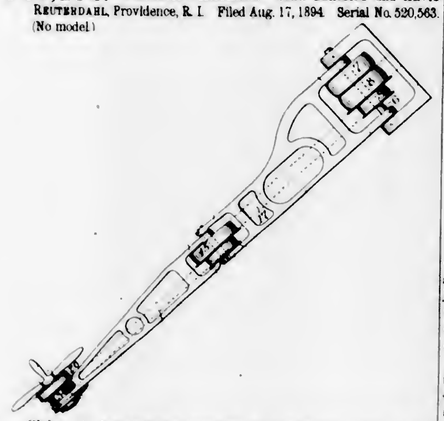
529,101. DOOR-CLOSER. FRIEDRICH R. BAUER, New York, N. Y., assignor to Gottfried Friedrich-Wilhelm Joseph Stemann, Hamburg, and Moritz Philipp Carl Friedrich August Seebold, Berlin, Germany. Filed Feb. 19, 1894. Serial No. 500,742. (No model.)




*Claim.*—1. The combination of a pivoted door, a spring actuated push-rod movably connected to the edge of said door, a draw rod connected at one end to said push-rod and provided at its opposite end with a pivot, said pivot being guided in a slot of a bar secured to the door-case, said pivot being disposed eccentrically to the pivot of the door, a cam adapted to bear against a pressing roller fastened to the door-case.

2. The combination of a door having a recess in the edge thereof, a bar secured to the door and forming a bridge over said recess, said bar having a slot therein, a spring actuated push rod disposed in said recess, one end thereof passing through an eye attached to said bar, a pin attached to the opposite end of said push-rod and extending up through said slot, a draw-rod having a slot in one end thereof adapted to engage the head of said pin, said draw-rod being provided at its opposite end with a pivot fitted to turn in a sliding piece attached to the door case, a cam disposed on said pivot, and a presser roller secured to the door case and adapted to engage said cam.

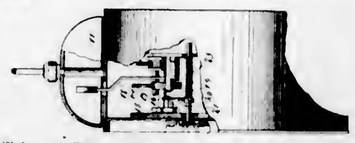
529,102. POLISHING-MACHINE. ERIK BERGLIND and ARVID REUTERDAHL, Providence, R. I. Filed Aug. 17, 1894. Serial No. 520,563. (No model.)



*Claim.*—1. In a polishing-machine, the combination with an arm formed by a series of members pivotally secured together, of a reservoir secured to the outer end of the arm, outlets in the lower portion of the reservoir, valves for governing said outlets, a sleeve journaled to rotate around the reservoir, a polishing device removably secured to the lower portion of the sleeve, a strainer secured within the sleeve, and means for imparting rotation to the sleeve.

2. The combination with the bracket 5, the shaft 6 secured therein, the pulleys 7, 8 and 9 rotatable on the shaft, the member 12 having the arms 11—11 pivoted on the shaft 10, and the arms 13—13 in which the shaft 14 is secured, the pulleys 15 and 16 rotatable on this shaft, the member 19 having the arms 18—18 pivoted on the shaft 14, and the bearing-rings 20 and 21 at the outer end of this member, of the compartmental reservoir 25 secured to the ring 20 and furnished with openings 26—26, the plug-valves 27—27 for closing these openings, the sleeve 30, journaled in the bearing rings, having a screw-thread on its inner surface, the finger 22 pivoted to the member 19 for engaging the sleeve, the strainer-cup 32, having the strainer 33, secured to the sleeve and surrounding the lower portion of the reservoir, the ring 34 adjustably secured in the lower portion of the sleeve and provided with the saw-blade 35, the polishing device removably secured to said saw blade, and belts for driving the sleeve 30 carried on the various pulleys, as described

529,103. ALARM-CLOCK. THEODORE BIEDINGER and THOMAS J. KANE, New York, N. Y. Filed Nov. 3, 1893. Serial No. 489,898. (No model.)

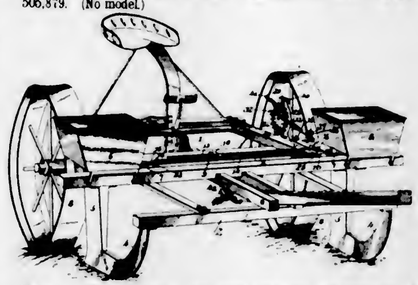


*Claim.*—1. The combination, with an alarm clock having the usual setting or controlling spindle adapted to move in and out in the clock case, and means for automatically pushing the spindle outward on the sounding of an alarm of an external fastening device on the back of the case arranged to hold in the spindle, substantially as described.

2. The combination, with the alarm clock and its regulating or controlling spindle and means for automatically pushing the spindle outward on the sounding of an alarm, of the swinging latch pivoted on the clock case and adapted to swing over the outer end of the spindle, substantially as described.

3. The combination, with the alarm clock and its controlling spindle and means for automatically pushing the spindle outward on the sounding of an alarm, of a latch pivoted on the clock case to swing opposite the spindle end, said latch having its free end turned up to form a thumb piece, substantially as described.

529,104. CHECK-ROW ATTACHMENT FOR CORN-PLANTERS. ARTHUR V. BIGGS, Franklin, Ky. Filed Mar. 31, 1894. Serial No. 505,879. (No model.)



*Claim.*—1. In a device of the class described, the combination with seed-slides, of a check-row wheel, connections between said wheel and the seed-slides, operating devices for said wheel, means for adjusting the wheel independently of the operating devices, and a marker-wheel having graduations indicating linear measurement, said check-row wheel having similar graduations indicating measurements corresponding with those on the marker-wheel, substantially as specified.

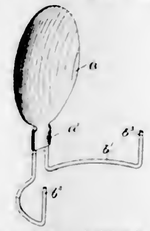
2. The combination with a frame-work, ground-wheels, and planting mechanism having seed slides, of a grooved frame rising from said framework adjacent to one of the ground-wheels, a slide mounted in the groove of said frame, a check-row wheel mounted on a stub-shaft carried by said slide, a gear fixed to the said adjacent ground wheel and meshing with peripheral teeth on the check-row wheel, a lever fulcrumed upon said frame and loosely connected to the slide, means for locking said lever in its adjusted positions, and extensible connections between the check-row wheel and the seed-slides, substantially as specified.

3. The combination with a framework, ground-wheels and planting-mechanism including seed-slides, of a bar connecting said seed-slides and provided with perforations 15, a horizontal bell-crank lever having one arm provided with perforations 17, an extensible connecting rod 11 having parallel, relatively-adjustable members connected by a clamping block, one of said members terminating in a pin 14 to engage one of the perforations 15, and the other member terminating in a loose pin 16 to engage one of the perforations 17, a check-row wheel meshing with a gear on one of the ground wheels, and connections between said check-row wheel and the other arm of the bell-crank lever, substantially as described.

4. In a device of the class described, the combination with a framework ground-wheels, and seed-slides, of a bell crank lever, an extensible connecting-rod between the seed-slides and one arm of the bell-crank lever, means for adjusting the connection between said rod and the arm of the lever to vary the throw of the seed-slides, a check-row wheel operatively connected with a ground-wheel, an extensible connecting rod between the said check row wheel and the other arm of the bell-crank lever, the end of said rod being slotted to engage a pin on the lever, and a pressure spring arranged upon said pin and bearing upon the end of the connecting rod and provided with tension adjusting devices, substantially as specified.

5. In a device of the class described, the combination with a framework, ground-wheels, and seed slides, of a frame or support secured to said framework, a shifting-plate or slide mounted in a slot or guide in the upper end of said frame or support, an operating-lever fulcrumed upon the frame or support and having a slotted terminal to engage a stud on the shifting-plate or slide, a spring-actuated locking-bolt carried by the operating lever to engage sockets in the edge of the frame or support, a gear fixed to the hub of the adjacent ground-wheel contiguous to the plane of the frame or support, a check-row wheel mounted upon a spindle on the shifting-plate or slide and adapted, when the latter is in its depressed position, to mesh with the gear on the ground-wheel, and connections between the check-row wheel and the seed-slides, substantially as specified.

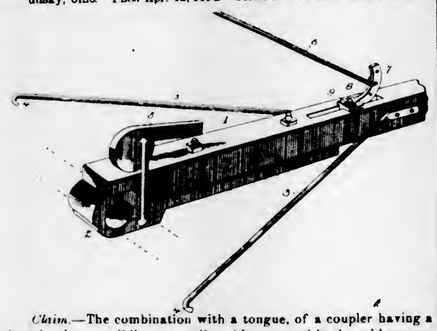
529,105. REFLECTOR AND SHADE FOR LAMPS. GEORGE H. BLISS, Pittsfield, Mass. Filed Feb. 3, 1890. Serial No. 338,993. (No model.)




*Claim.*—1. The disk *a* and frame holding it and a loop *a'* on said disk, said frame comprising the spring acting arms *b*, *b'*, and the central loop $b^3$, at right angles thereto, held frictionally in said loop *a'*, substantially as described.

2. The disk *a* and frame holding it, and a loop *a'* on said disk, said frame comprising the spring acting arms *b*, *b'*, adapted to fit the interior of a lamp chimney, the central loop $b^3$ longitudinally adjustable in the loop *a'* and the vertical end arms $b^3$, substantially as described.

529,106. VEHICLE-TONGUE. THOMAS F. BOWER, Upper Sandusky, Ohio. Filed Apr. 12, 1894. Serial No. 507,285. (No model.)



*Claim.*—The combination with a tongue, of a coupler having a clamping lever, a sliding arm adjustably mounted in the said tongue, and having a series of openings therein, means for securing the said sliding arm in its adjusted position, a rod adjustably engaging the openings in said sliding arm, and braces attached to the opposite side of the tongue, substantially as and for the purposes specified.

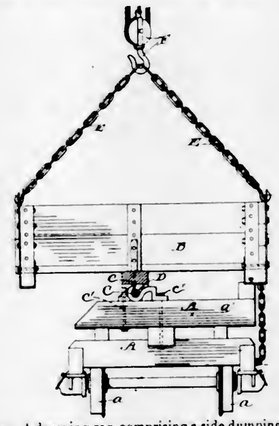
529,107. CANDLE-EXTINGUISHER. JAMES BOYLE, Ware, Mass. Filed Oct. 19, 1893. Serial No. 488,567. (No model.)



*Claim.*—The combination of a pole or rod provided with an air duct, of an extinguisher communicating with the air duct and provided with an orifice for projecting the air upon the candle, and a rest arranged upon the pole or rod near the extinguisher end for bearing against a candle, substantially as specified.

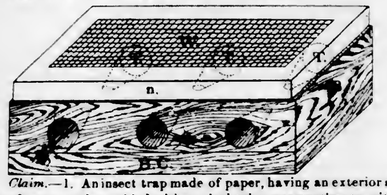



529,108. DUMPING-CAR. HENRY H. BROWN, New York, N. Y. Filed Apr. 4, 1894. Serial No. 506,309. (No model.)




*Claim.*—A dumping car, comprising a side dumping car body provided with attachments to which lifting means may be coupled and the body moved bodily off the truck frame, and with an axial shaft along its center, and a truck provided with hook shaped bearing blocks in which the axial shaft is always seated when the car body is on the truck, said blocks being adapted to hold the ends of the axial shaft against incidental upward and lateral displacement, but allow them to be withdrawn diagonally upward; said blocks being also mounted considerably to one side of the center of the truck so that the car body will project over one side of the truck at all times and will always be in position to automatically dump when released, and means for holding the car body in a horizontal position, substantially as described.

529,109. ROACH-TRAP. SILAS P. BURGESS, Springfield, Mass. Filed Dec. 30, 1893. Serial No. 495,255. (No model.)

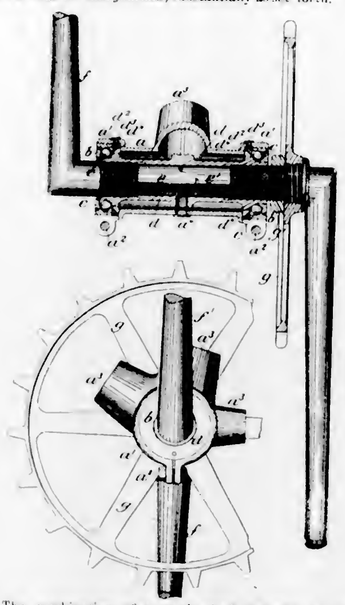



*Claim.*—1. An insect trap made of paper, having an exterior surface of paper, and provided with conical tubes penetrating to within said box, a transparent top, and a cover for said top, substantially as described.

2. As a new article of manufacture an insect trap comprising a paper box provided with a series of truncated conical tubes of the same material projecting within the said box.

529,110. CRANK-SHAFT AND BEARING FOR VELOCIPEDES. JAMES S. COPELAND, Hartford, Conn., assignor to the Pope Manufacturing Company, same place and Portland, Me. Filed July 17, 1894. Serial No. 517,790. (No model.)

*Claim.*—1. The combination of a crank shaft comprising two parts, and means for detachably holding together said parts of the crank shaft whereby the parts of the crank shaft may be brought together or separated by rotation relatively to said holding means, and journals for said crank shaft upon said holding means, and suitable bearings for said journals, substantially as set forth.



2. The combination of a crank shaft comprising two parts adapted to be locked so as to be held together rotatively, a power transmitting device upon said shaft, and means for holding together said parts of the crank shaft whereby the parts of the crank shaft may be brought together or separated by rotation relatively to said holding means, said holding means being connected to the crank shaft independently of the power transmitting device, and journals for said crank shaft upon said holding means, and suitable bearings for said journals, substantially as set forth.

3. The combination of a crank shaft comprising two parts, each of said parts having a crank arm integral therewith, and said parts adapted to be locked so as to be held together rotatively, and each of said parts containg a screw threaded portion, the screw thread of one part being in the reverse direction to that of the other part, and a holding device provided with reverse threads engaging with the threads of both parts of the crank shaft, and journals for the crank shaft upon said holding device, and suitable bearings for said journals, and a power transmitting device operated by said crank shaft independently of said holding device, substantially as set forth.

4. The combination of a crank shaft comprising two interlocking parts so shaped at their interlocking joint that the parts when interlocked are compelled to rotate together, each of said parts containing a screw threaded portion, the screw thread of one part being in the reverse direction to that of the other part, and a reversely threaded journal sleeve for the crank shaft engaging with the threads of both parts of the shaft, and suitable bearings for said sleeve, substantially as set forth.

5. The combination of a crank shaft comprising two interlocking parts so shaped at their interlocking joint that the parts when interlocked are compelled to rotate together, each of said parts containing a screw threaded portion, the screw thread of the right hand part being in a right hand direction, and that of the left part in a left hand direction, and a reversely threaded journal sleeve for the crank shaft engaging with the threads of both parts of the crank shaft, and suitable bearings for said sleeve, and a power transmitting device operated by said crank shaft independently of said journal sleeve, substantially as set forth.

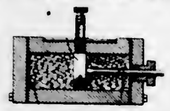
6. The combination of a crank shaft comprising two parts adapted to be locked so as to be held together rotatively, each of said parts containing a screw threaded portion, the screw thread of one part being in the reverse direction to that of the other part, a crank shaft bracket, removable bearing rings adjustably screwed into the ends of said bracket, a journal sleeve, and bearing balls located between said journal sleeve and the bearing rings, said journal sleeve being reversely threaded and engaging with the threads of both parts of the crank shaft, and a power transmitting device operated by said crank shaft independently of said journal sleeve, substantially as set forth.

7. The combination of the crank shaft comprising the two reversely threaded parts $c$ and $c'$ and crank arms integral therewith, the reversely threaded journal sleeve $d$, engaging with both parts of the crank shaft, a power transmitting wheel secured upon one of the parts of the crank shaft, the crank shaft bracket $a$ having split ends $a'$ and oiling openings $d^3$, the bearing rings $b$ adjustably screwed into the ends $a'$ of the crank shaft bracket, and clamping devices for tightening the ends $a'$ upon said bearing rings, the bearing balls $c$ between said bearing rings and the journals upon the sleeve $d$, and the washers $d^4$ located in recesses at the inner ends of the bearing rings $b$, substantially as set forth.

8. The combination of a crank shaft, the crank shaft bracket $a$ having split ends $a'$ and oiling openings $d^3$, the removable bearing rings $b$ adjustably screwed into the ends $a'$ of the crank shaft bracket, and clamping devices for tightening the ends $a'$ upon said bearing rings, journal cones upon said crank shaft, and bearing balls located between said journal cones and bearing rings, inclined conical surfaces or tables upon said journal cones sloping toward the bearings, and the washers $d^4$ located in recesses at the inner ends of the bearing rings $b$, substantially as set forth.

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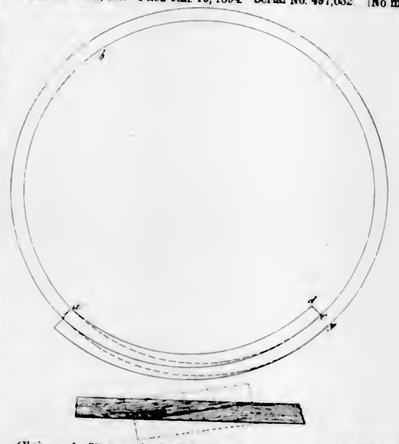
**529,111. FLUID-PRESSURE GOVERNOR.** LORRAIN L. CUTLER, Goodland, Ind., assignor of one-fourth to Sigel A. Royster, same place. Filed Sept. 30, 1893. Serial No. 486,888. (No model.)



*Claim.*—In a governor mechanism, the combination of a drive wheel, of fluid containing resistance cylinders placed at an angle to each other, valve controlling ducts or channels connecting opposite ends of each of said cylinders, pistons fitting in the cylinders, pitmen connecting the piston rods to a common crank pin on the drive wheel, and tubular chambers 23 communicating with the interior of the cylinders, said chambers being partially filled by the fluid in the cylinders, the remaining part of the chambers holding compressed air, substantially as specified.

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**529,112. WOODEN RIM, BAND, &c.** STERLING ELLIOTT, Newton, Mass., assignor to the Pope Manufacturing Company, Hartford, Conn., and Portland, Me. Filed Jan. 16, 1894. Serial No. 497,032. (No model.)



*Claim.*—1. The method of forming a lap joint of the ends of a strip or strips of wood having the grain running longitudinally therethrough which consists in bending the lapping portions so that their surfaces meet on a plane extending obliquely across the joint and uniting these surfaces by adhesive material, substantially as set forth.

2. The method of forming a lap joint of the ends of a strip or strips of wood having the grain running longitudinally therethrough which consists in bending the lapping portions so that their surfaces meet on a plane extending obliquely across the joint uniting these surfaces by adhesive material, and cutting or shaving the exterior surfaces of these lapping parts so as to form surfaces continuous with the adjacent portions of the strip or strips, substantially as set forth.

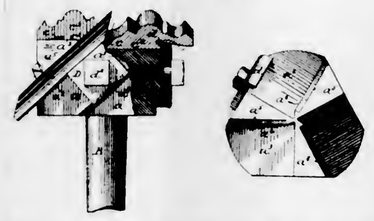
3. A wooden article having one or more lap joints with the surfaces meeting at said lap joints on a plane extending obliquely across the joint and united by adhesive material, in which article the grain of the wood extends longitudinally except at the lap joints where it is parallel to the oblique overlapping surfaces, substantially as set forth.

4. A circular wooden rim or band having a lap joint in which the surfaces meet in a spirally curved plane extending obliquely across the joint and in which the grain of the wood in the overlapping portions is parallel to said oblique curved plane and the inner and outer peripheries of the lapping parts are finished to circular form, substantially as set forth.



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**529,113. ROTARY CUTTER.** JOEL ETTINGER, Milton, Pa., assignor to the Joel B. Ettinger Machine Company, Limited, same place. Filed Mar. 15, 1894. Serial No. 503,788. (Model.)



*Claim.*—1. A cutter-head provided with one or more inclined seats for the bits or cutters and having walls at their inner ends provided with tongues engaging grooves in the bit or cutter, in combination with a bit or cutter mounted in said seat, and engaging said tongue, and a clip or clamp secured to the side of the cutter and engaging a groove in the bit and an inclined edge on the side of the cutter head.

2. The combination of a cutter-head provided with inclined converging bit-seats, and two or more bits secured therein, each bit having straight molding and a plane flat beveled end, substantially as described.

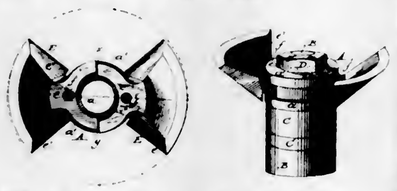
3. A cutter head formed with bit-seats, provided with straight walls at their inner ends, against which the side edges of the bits or cutters rest, and which converge toward and meet at the axis of the cutter, in combination with bits having straight parallel grooves and ridges to form moldings on their outer sides, and having plane flat beveled ends to form cutting edges, substantially as described.

4. A cutter-head provided with open seats inclined relatively to the axis of the cutter, and having straight converging inner guide walls, in combination with bits formed with straight molding and plane flat straight beveled edges, and devices for securing the bits to the cutter-head, substantially as described.

5. A cutter head provided with a series of bit-seats formed with straight converging inner guide walls against which the straight inner edges of the bits rest, in combination with devices for independently securing the bits to the cutter-head, and which permit of their independent adjustment and removal.

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**529,114. ROTARY CUTTER.** JOEL ETTINGER, Milton, Pa., assignor to the Joel B. Ettinger Machine Company, Limited, same place. Filed Mar. 15, 1894. Serial No. 503,789. (No model.)

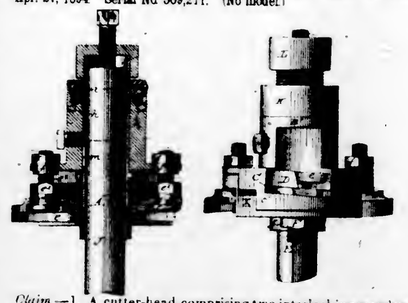


*Claim.*—1. A rotary cutter comprising one or more bits or cutters having shanks and a support having flanges held in fixed relation to each other, and between which the shanks of the bits project and with which they are pivotally connected.

2. A rotary cutter comprising a thimble provided with fixed, non-adjustable flanges and bits or cutters having shanks projecting between the flanges and pivoted thereto.

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**529,115. ROTARY CUTTER.** JOEL ETTINGER, Milton, Pa. Filed Apr. 27, 1894. Serial No. 509,211. (No model.)



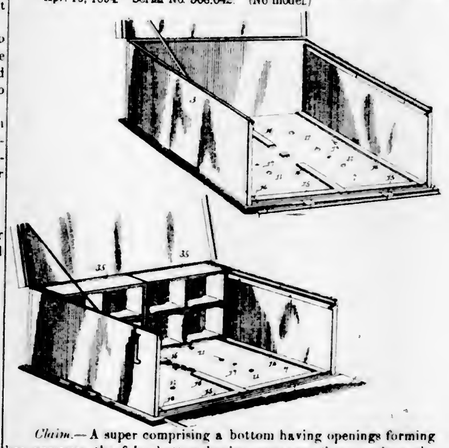
*Claim.*—1. A cutter-head comprising two interlocking members, each carrying one or more bits mounted in bit seats in the members, each bit being secured by a bolt having a square portion entering a square socket in one of the members, and having also a cylindrical portion extending through a circular opening in the bit, and a nut for each bolt provided with a cylindrical portion extending through a circular opening in a member of the cutter-head, substantially as and for the purpose set forth.

2. A cutter-head comprising two members having stepped or interlocking surfaces fitting closely, as described, to prevent rotary movement relatively to each other, but to admit of adjustment toward and from each other, in combination with adjustable circular cutters or bits mounted in seats in the cutter-head members, bolts extending through both members of the cutter-head and through the bits, which latter are adjustable on the bolts, devices for preventing the bolts from turning relatively to the cutter-heads, and means for adjusting the cutter-head members relatively to each other.

3. The combination of the two members of the cutter-head, one of which is provided with a hollow boss, and the other with a hollow or tubular spindle, a ring secured to a shoulder of the boss, a nut working on the screw-threaded end of the spindle, and a ring secured to the nut, extending below the first mentioned ring and moving relatively thereto, the arrangement being such that when the ring is turned the nut works on the spindle, and gives endwise movement thereto relatively to the boss.

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**529,116. SUPER FOR BEEHIVES.** GEORGE C. FERGUSON, Odell, Nebr., assignor of one-half to Mathias Oswald, Hanover, Kans. Filed Apr. 18, 1894. Serial No. 508,042. (No model.)

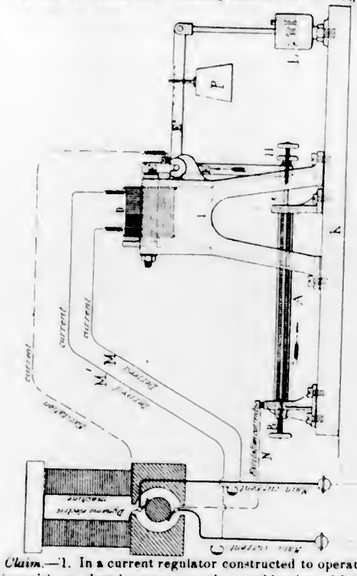


*Claim.*—A super comprising a bottom having openings forming bee passages, the false bottom having corresponding openings, the side walls 3 having rabbeted upper edges, and provided on their inner faces with horizontal cleats, the rear wall 4, the lid or cover hinged to the rear wall, the drop door hinged to the bottom at the front edge thereof, the slides concealed within the bottom and provided with perforations adapted to register with those of the bottom, the supporting strips located on the upper face of the false bottom adjacent to the edges thereof, the intermediate supporting strip 16 cut away to form central bee passages, the honey section trays sup-

ported by the strips above the false bottom, honey sections located within the said trays, the vertically disposed follower suspended from said cleats and provided at its inner face with a recess or cavity, and a covering board or plate supported by said cleats and having its upper face flush with the upper edges of the walls of the super, substantially as described.

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529,117. REGULATOR FOR DYNAMO-ELECTRIC MACHINES. JULES FERRAND, Darnetal, France. Filed July 3, 1891. Serial No. 398,336. (No model.) Patented in France Dec. 29, 1890, No. 210,436; in Belgium June 25, 1891, No. 95,420; in England June 25, 1891, No. 10,843; in Italy June 25, 1891, No. 29,979/499; in Switzerland June 25, 1891, No. 3,699, and in Germany June 26, 1891, No. 62,433.



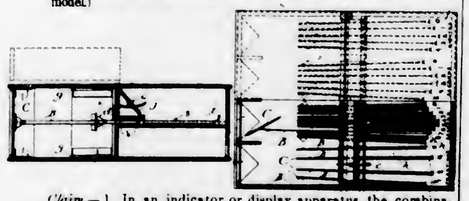
*Claim.*—1. In a current regulator constructed to operate in connection with an electric generator, the combination with the wire carrying the field magnet exciting current, and carbon column A interposed in said wire and through which the exciting current passes, of means for automatically regulating the pressure upon the carbon column, consisting of a shunt circuit, electro-magnet D therein and adapted to be energized by a derived current, armature arm E', pressure arm $E^2$, made integral with said arm E', adjusting rod H r at one end of said arm $E^2$ adapted to bear against one end of the carbon column, and weighted lever arm $E^3$ made integral with arms E' $E^2$, all substantially as described and for the purposes set forth.

2. The combination in a regulator of a standard I, magnet D supported thereby, a three armed pivoted lever E' $E^2$ $E^3$, arm E' serving as an armature for said magnet, a weight on the arm $E^3$, a pressure or contact device carried by arm $E^2$, and the carbon column A, all arranged, substantially as described.

3. The combination in a regulator of the standard I, magnet D supported thereby, a three armed pivoted lever E', $E^2$, $E^3$ serving as an armature for said magnet, a movable weight on the arm $E^3$, a pressure or contact device carried by arm $E^2$, the carbon column A, and the dash-pot, all arranged substantially as described.

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529,118. GAME-COUNTER. ARTHUR FOLGER and WILL H. WINDER, Cincinnati, Ohio. Filed July 24, 1893. Serial No. 481,367. (No model.)



*Claim.*—1. In an indicator or display apparatus, the combination, with a frame, of a series of longitudinally movable rods therein, each of which rods is provided with a shield or plate pivotally secured to one end thereof, and adapted to be displayed within the frame when the rod is moved in one direction and to be concealed when the rod is moved in the opposite direction, said plate being adapted to stand at right angles to the rod when exposed and lie parallel therewith when hidden, and means for causing the plate to turn as the rod is being moved back and forth, substantially as set forth.

2. In an indicator or display apparatus, the combination, with a frame, of a series of longitudinally movable rods therein, a spring actuated display shield or plate pivotally connected with one end of each rod, and adapted to normally lie parallel with the rod, and means for moving the shield to a position at right angles to the rod when the rod is moved in one direction, substantially as set forth.

3. In an apparatus for displaying time, points, or other information desirable in races, games, and other purposes, the combination of a suitable frame or casing having one or more fore openings or sights, one or more display shields or plates, provided with projections and adapted to said sight or sights, one or more operating rods or bars each pivotally connected at one end to a display shield intermediate the ends thereof and projecting rearwardly to a key-board from whence the operator may conveniently reciprocate said display-shield to and from its display-opening, and one or more switch blocks in said frame or casing at the rear of each of said fore-openings, substantially as herein set forth.

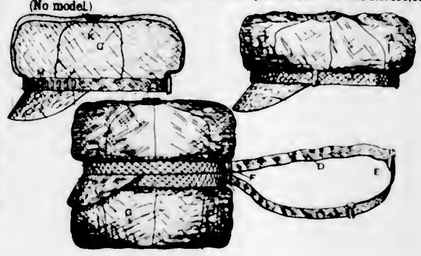
4. In an apparatus of the kind described, the combination of a suitable casing or frame having a series of fore openings or sights therein, a number of display shields or plates adapted to said fore-sights, longitudinal rods or bars, each pivotally connected or hinged at one end to each of said shields and projecting rearwardly to and along a suitably grooved and numbered or lettered key-board, flat switch-blocks or guide-wedges within said casing at the rear of the top and bottom of each of said fore-sights, and projections at top and bottom of said display-shields engaging or impinging against the said switch-blocks in the reciprocations of the operating-rods and said shields, whereby the latter are directed into place in their respective display-openings, and mechanism on the back of the shields for automatically returning said shields to their normal positions in line with their reciprocating-rods for their backward movement into the casing after an indication, substantially as herein set forth.

5. In an apparatus of the kind described, the combination of a suitable casing or frame having a series of fore openings or sights therein, a number of display shields or plates adapted to said fore-sights, longitudinal rods or bars each pivotally connected or hinged at one end to each of said shields and projecting rearwardly to and along a suitably grooved and numbered or lettered key-board, latch-devices on the frame engaging notches in said rods, tapering switch-blocks or guide-wedges within said casing at the rear of the top and bottom of each of said fore sights, and projections at top and bottom of said display-shields engaging or impigning against the said switch-blocks in the reciprocations of the operating-rods and said shields, whereby the latter are directed into place in their respective display-openings, and mechanism on the back of the shields for automatically returning said shields to their normal positions in line with their reciprocating-rods for their backward movement into the casing after an indication, substantially as herein set forth.

6. In an apparatus of the kind described, the combination with a display shield or plate having a vertical projection at one or more of its corners, and one or more switch-blocks or guide-wedges mounted in a suitable casing provided with a display-opening for accommodating said shield, of a reciprocating key-rod or pull and push bar pivotally connected or hinged at one end to the back of said shield, and mechanism also on the back of said shield, forming part of said hinge-connection and automatically returning said shield to its normal position folded back against its operating-rod, after an indicating-operation, in contact with said switch or guide-wedge, substantially as herein set forth.

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529,119. COMBINED CAP, PILLOW, AND LIFE-PRESERVER. FRANÇOIS FRANK, Chicago, Ill. Filed Sept. 28, 1893. Serial No. 486,659. (No model.)





*Claim.*—1. An article of wearing apparel in the form of a cap, which is adapted to conversion into a pillow and life preserver, consisting of an outer crown section, and an inner lining section which is adapted to fold into and out of said crown section, said sections connected to form an air tight bag with a circumferential depression midway the length thereof, substantially as shown and described.

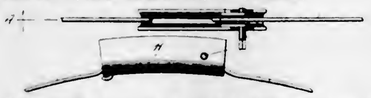
2. In an article of wearing apparel in the form of a cap, which is adapted to be converted into a pillow and life preserver, the guard strap D attached to the rear portion of said cap and serving the double purpose of a guard strap for the cap and as a means of attaching the article as a life preserver to the body of the wearer, substantially as described.

3. In an article of wearing apparel in the form of a cap, which is adapted to conversion into a pillow and life preserver, consisting of an outer crown section, and an inner lining section which is adapted to fold into and out of said crown section, said sections connected to form an air tight bag by means of circumferential bands, the inner one of said bands having corrugations projecting inwardly, which are formed in the manner and for the purpose described.

4. In an article of wearing apparel in the form of a cap, which is adapted to conversion into a pillow and life preserver, and consisting of an outer crown section, and an inner lining section adapted to fold into and out of said crown section, said sections connected to form an air tight bag, the combination therewith of a means for the inlet and outlet of air consisting of a hollow cylindrical casing removably attached to said bag, an air passageway into said bag through one end of said cylinder, an inwardly opening disk valve guarding said passageway, a stem of the valve projecting outward through the air passageway and terminating in a perforated disk fitted to move loosely within the casing, and a helical spring between the perforated disk and the bottom of the cylinder serving for the purpose described.

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529,120. BICYCLE-TIRE. EDWARD S. FRAZIER, Aurora, Ill. Filed Feb. 24, 1894. Serial No. 501,444. (No model.)

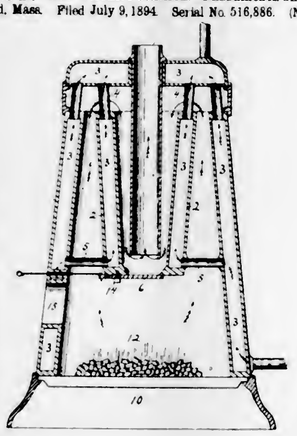


*Claim.*—1. The combination with a wheel-rim, a tire, and a tire-retaining wire, of a U-shaped plate 11 arranged within a part of the tire and connected with one end of the wire, a swinging U-shaped plate 12 connected with the other end of the wire, and an axially rotatable pivot-pin connected with the said swinging-plate and projecting through the wheel-rim, substantially as and for the purposes described.

2. The combination with a wheel-rim, a tire, and a tire-retaining wire, of a U-shaped or channeled plate 11 arranged within a part of the tire and connected with one end of the wire, an axially rotatable pivot 13 journaled in the said plate and having one end extending through the wheel-rim and provided with means for the application of a key for turning the pivot, and a U-shaped plate 12 secured to the pivot-pin between the sides of the plate 11, and connected with the wire, substantially as and for the purposes described.

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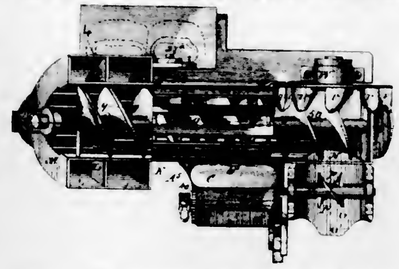
529,121. HOT-WATER FURNACE. FREDERICK A. GARDNER, New Bedford, Mass. Filed July 9, 1894. Serial No. 516,886. (No model.)



*Claim.*—In a hot water furnace, the combination of the annular tapering outer shell 1, having inlet pipe 9, and opening 15 the rim *a*, having inwardly projecting flanges *a'*, resting on the top of said outer shell; the water cap 11, having outlet pipe 8, and an opening in its center for the passage of the smoke pipe 7, adapted to rest on said rim *a*; the annular tapering inner shell 2, suspended with its smaller end downward, from the cap 11, by the tubes 4, and its bottom connected with the outer shell by the tubes 5, and provided with the damper 6; the smoke pipe 7, extending downward through the cap 11, and within the inner shell 2, to near the bottom thereof; and the base 10; when constructed and operating as shown and described.

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529,122. POTATO-DIGGER. CHARLES H. HALL, Glidden, Wis., assignor of one-half to Almond D. Hall, John V. Kinney, and Joseph K. Roy, St. Louis, Mo. Filed May 24, 1894. Serial No. 512,261. (No model.)



*Claim.*—1. The combination, with the main frame, the supporting axle and main drive wheel and the caster wheel supports, of a conveyer and digging mechanism, pivotally supported on the main frame, having at its digger end a forwardly projecting member, a rock shaft journaled parallel with but in advance of the axle, said shaft having a crank member, having a pivotal connection with the aforesaid projecting member, and an operating lever, all arranged substantially as shown and described.

2. In a potato digging machine, the combination with the frame and supporting means, of a conveyer frame disposed transversely at an angle, pivotally connected to such main frame, having at its lower end a forwardly projecting digger or plow portion, and a screw conveyer journaled in such frame, having a drive pulley held to run on the ground, all arranged substantially as shown and for the purposes described.

3. In a potato digging machine having a digging plow portion and a screw conveyer projected upward at right angles thereto, of a combined retarding and screw clearing mechanism having portions fitting between the spiral ways of the receiving end of the said screw conveyer, as and for the purposes described.

4. In a potato digging machine, the combination with the main frame, the digger plow portion, the conveyer or receiving chamber and the screw conveyer, having a drive or ground engaging wheel at its lower end, of a rotary clearing disk journaled on the conveyer or frame, having outwardly projecting studs or fingers projected to enter the rear spiral way portions of the feed end of the screw and adapted to be rotated in the direction of the feed of such screw by the rotation of the said screw, all arranged substantially as shown and described.

5. The combination with the main frame, the diagonally and transversely disposed conveyer frame having bearing portions at each end, a forwardly projecting digger trough and feed opening at the lower end, and a conveyer screw journaled in such conveyer bearings, having a projecting stud or axle portion at the lower end, and a driver or ground wheel secured thereon, of the rotary clearer disk, journaled at the rear of the feed opening of the conveyer frame having outwardly projecting finger portions, the lower ones of which are held to engage the rear spiral portions of the feed end of the screw and be thereby moved successively in engagement therewith, all substantially as shown and for the purposes described.

6. In a potato digging machine, substantially as described, the combination with the main frame, having a main and caster wheel support, and draft pole projected forward at a point about centrally of such wheel supports, of a diagonally and transversely disposed conveyer frame having a slatted bottom, with its lower end extended to a point at one side of the draft pole, and formed with a digger plow, its upper end having separating portions, and receiving chambers connected therewith, and a screw conveyer journaled longitudinally in such frame, and having at its lower end a drive or ground wheel, whereby it is rotated, all substantially as shown and described.

7. In a potato digging machine a conveyer or receiver, arranged to elevate the potatoes as they are dug, having a slatted bottom, and

a receiving opening at the plow end, of a screw conveyer journaled therein, having its blade portion at the receiving end formed blunt, and sharp at the slatted or elevating portion, as and for the purposes described.

8. The combination in a potato digging machine, with the digging plow and a diagonally disposed conveyer frame held transversely to the plow, said frame having a central portion, formed longitudinally slatted, connected at intervals by transverse members, of a screw conveyer journaled in such frame, having such of its blade portions as operate in such central portion formed with sharp peripheral edges, as and for the purposes described.

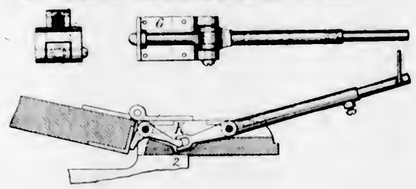
9. In a potato digging machine substantially as described, the combination with the digger plow, the conveyer frame projected upward therefrom at right angles, said frame having a feed opening at one side of the lower end, a substantially circular and longitudinally slatted central portion, and separating portions at the upper end, of a screw conveyer, having the end portions of its spiral blades made with blunt peripheral edges and its central portion made with such edges sharpened, all substantially as shown and described.

10. The combination of the conveyer frame, the screw conveyer operating therein, said frame having a longitudinally slatted bottom, the upper end of which terminates in reduced finger portions, whereby passages are formed, said passages terminating in upwardly inclined guide members, arranged between the fingers, such fingers tapering to a point from the inner edge of the guides upward, and independent trough or receiving chambers held, one to receive the smaller potatoes which pass through the passages, and the other the larger ones which are carried up over the guides.

11. In a potato digger substantially as described, the combination with a screw conveyer, retarding and clearing members projected in the rear spiral way portions, and held to be engaged thereby and moved successively downward into such ways, substantially as shown and for the purposes described.

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**529,123.** CLOSET-PULL ATTACHMENT. LOUIS M. HOOPER, Rutherford, N. J., assignor to The J. L. Mott Iron Works, New York, N. Y. Filed Feb 8, 1894. Serial No. 499,435. (No model.)



*Claim.*—1. The combination with the wire or chain extending to the cistern and by which the valve is actuated, of a lever, to the long end of which such wire or chain is connected, a pivot for the lever and a support for the same upon the water closet, the closet seat and a connection therefrom to the short end of the lever whereby the long back end of the lever is drawn down as the closet seat is pressed down upon the closet substantially as specified.

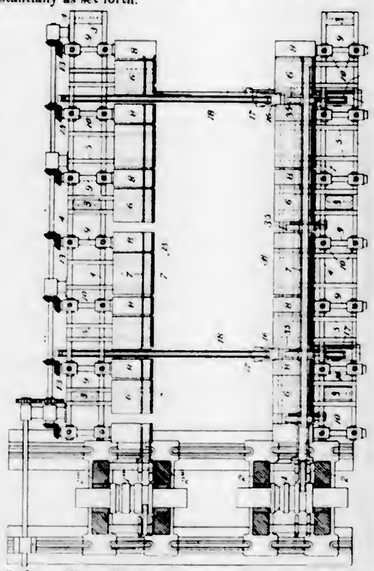
2. The combination with the wire or chain extending to the cistern and by which the valve is actuated, of a bent lever, to the long end of which such wire or chain is connected, a pivot for the lever and a support for the same upon the water closet the closet seat and a bolt connected at one end to the short arm of the lever and acted upon at the other end by the seat whereby the long back end of the lever is drawn down as the closet seat is pressed down upon the closet, substantially as specified.

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**529,124.** ROLLING-MILL. SIGMUND V. HUBER, Pittsburg, Pa. Filed May 1, 1894. Serial No. 509,629. (No model.)

*Claim.*—1. In a rolling mill, the combination of rolls having two passes in different vertical planes and adapted for simultaneous operation on articles moving in opposite directions, a receiving mechanism arranged in line with one pass, a feed or delivery mechanism arranged in line with the other pass mechanism for transferring the article being rolled from the receiving to the feed mechanism means whereby the transfer mechanism is movable into operative position with relation to the feed and receiving mechanisms, while articles are being fed and received by said mechanisms, thereby permitting of the simultaneous reduction in both passes and the movement of the transfer mechanism from the receiving to the feed mechanism and return during such reduction, substantially as set forth.

2. In a rolling mill, the combination of rolls having two passes in different vertical planes and adapted for simultaneous operation on articles moving in opposite directions, a receiving mechanism arranged in line with one pass, and a feed or delivery mechanism arranged in line with the other pass, mechanism for transferring the article from the receiving to the feed mechanism and rotating the article axially during such transfer, and means whereby the transfer mechanism is shifted into operative relation to the feed and receiving mechanisms, while articles are being fed and received by said mechanisms substantially as set forth.



3. In a rolling mill, the combination of two stands of rolls, a receiving table arranged in line of feed of one stand of rolls, and a feed or delivery table arranged in line of feed of the other stand of rolls, mechanism for laterally transferring the article being rolled from one table to the other and axially rotating the article during such transfer, and means whereby the transfer mechanism is shifted into operative relation to the feed and receiving mechanisms, while articles are being fed and received by said mechanisms substantially as set forth.

4. In a rolling mill, the combination of two stands of rolls, a receiving table arranged in the line of feed of one stand of rolls, a feed or delivery table arranged in line of feed of the other stand of rolls, said tables being provided with overhanging rollers on their inner or adjacent sides, and a transfer carriage operative between the tables, substantially as set forth.

5. In a rolling mill the combination of a stand of rolls, a table arranged in the line of feed of said rolls, and provided with overhanging rollers and a transfer table movable under the overhanging rollers, substantially as set forth.

6. In a rolling mill, the combination of two lines of feed mechanisms for delivering and receiving articles to be rolled to and from the reducing rolls, vertically movable rails or tracks arranged between the feed mechanisms, a carriage provided with means for supporting the articles being rolled and means for moving the carriage along said rails or tracks, into operative position with relation to the feed and receiving mechanisms while articles are being fed and received by said mechanisms, substantially as set forth.

7. In a rolling mill, the combination of two lines of feed mechanisms for delivering and receiving articles to be rolled to and from the reducing rolls, vertically movable rails or tracks arranged between the feed mechanisms, a carriage movable along said rails or tracks and provided with means for supporting the article to be rolled and means operated by the carriage during its movement for axially rotating the article, substantially as set forth.

8. A transfer carriage for rolling mills having in combination a longitudinal beam, two or more posts or standards arranged on said beam, and supporting brackets secured on to the sides of the beam, substantially as set forth.

9. In a rolling mill, the combination of two lines of feed mechanisms for delivering and receiving articles to be rolled to and from the reducing rolls, a carriage movable between such feed mechanisms, heads for supporting the article to be rolled pivotally mounted on the carriage and means for turning said heads, substantially as set forth.

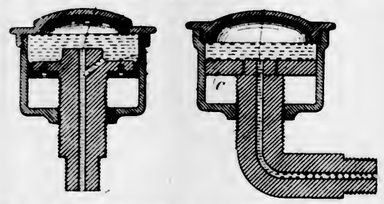
10. A transfer mechanism for rolling mills having in combination a pair of rails, a carriage movable along the rails, heads for supporting the article to be rolled, pivotally mounted on the carriage, a ledge or guide provided with a curved groove at one end thereof, and a lever pivoted to the carriage, one end of the lever connected to the heads and the opposite end bearing upon the ledge or guide, substantially as set forth.

11. A transfer mechanism for rolling mills having in combination a pair of rails, a carriage movable along the rails, heads for supporting the article to be rolled, pivotally mounted on the carriage, a ledge or guide having an adjustable section provided with a curved groove and a lever pivoted to the carriage, one end of the lever connected to the heads, and the opposite end bearing upon the ledge or guide, substantially as set forth.

12. The combination of a movable carriage, heads pivotally mounted on the carriage, means for turning said heads, and stops for preventing any axial movement of articles supported by the heads, independent thereof, substantially as set forth.

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**529,125.** LUBRICATOR. CHARLES W. HUNT, West New Brighton, N. Y. Filed Feb. 20, 1894. Serial No. 500,832. (No model.)



*Claim.*—1. The combination in a lubricator, of a cup 2, having a smooth interior surface and adapted to receive and contain lubricant, a removable cap screwed upon the upper end of the cup, a piston within the smooth cup, a stem to the piston passing off through the opposite end of the cup to the cap and screw-threaded upon its exterior surface, the hole in the end of the cup being correspondingly screw threaded, and a passage for the discharge of the lubricant, substantially as set forth.

2. The combination in a lubricator, of a cylindrical cup with a smooth interior surface, a cap screwed upon the upper end of the cup, a piston and packing within the cylinder, a screw-threaded stem to the piston passing through a screw-threaded hole at the opposite end of the cup to the cap, and a passage for the discharge of the lubricant, substantially as set forth.

3. The combination in a lubricator, of a cylindrical cup 2, a piston within the cup, a stem to the piston screw-threaded on the exterior surface and passing through a screw-threaded hole at one end of the cup, a cap screwed upon the other end of the cup and having a hole passing off from the cap for the discharge of the lubricating material, substantially as set forth.

4 The combination in a lubricator, of a cylindrical cup 2, a piston and packing within the cup, a stem to the piston screw-threaded on the exterior surface and passing through a screw-threaded hole at one end of the cup, a cap screwed upon the other end of the cup and having a hole passing off from the cap for the discharge of the lubricating material, substantially as set forth.

5. The combination in a lubricator, of a cylindrical cup 2, a piston and packing within the cup, a stem to the piston screw-threaded on the exterior surface and passing through a screw threaded hole at one end of the cup, a cap screwed upon the other end of the cup and having a hole passing off from the cap for the discharge of the lubricating material, and a head by which the screw threaded stem and piston are rotated, substantially as set forth.

6. The combination in a lubricator, of a cup, a piston therein and means for moving the piston in relation to the cup, a cap removable from the upper end of the cup and having an air space in its under side and adapted to be tightly secured to the upper end of the cup after the oil has been placed in the cup so that the air above the lubricant will be compressed in the cap by the action of the piston on the lubricant, substantially as specified.

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**529,126.** RAILROAD-SWITCH. BENJAMIN F. LOUGHMILLER, Aspen, Colo., assignor of one-half to A. S. Lamb and A. J. Robinson, same place. Filed May 16, 1894. Serial No. 511,469. (No model.)

*Claim.*—1. In a railroad switch, the combination with the movable switch-rails, of a sectional switch-bar, one section of which is attached to the switch-rails, a hand-operated switch-lever connected to the other section of the switch-bar, means for locking said switch-lever, a coupling between the sections of the switch-bar consisting of a plate and securing-pins engaging perforations in said plate and the adjacent ends of the sections of the switch-bar, a switch-plate connected to the switch-bar, train-operated switch-levers connected respectively to opposite ends of the switch-plate, unlocking-levers connected respectively to the securing-pins, and means for locking the train-operated switch-levers and the unlocking-levers, substantially as specified.



2. In a railroad switch, the combination with movable switch-rails, of a sectional switch-bar one member of which is secured to the switch-rails, a switch-plate connected to said member of the switch-bar, a hand-operated switch-lever connected to the other member of the switch-bar, means for locking said switch lever, a coupling connecting the members of the switch-bar, unlocking-levers connected to said coupling, train-operated switch-levers connected to the switch-plate, and locking devices for the unlocking and train-operated switch levers, consisting of guide-bars, yokes provided with pins or studs arranged upon opposite sides of said levers, the yokes being supported by the guide-bars, and means for locking the yokes in place, substantially as specified.

3. In a railroad switch, the combination with switch rails, a switch-bar, a switch-plate connected to the switch-bar, and switch-levers connected to said switch-plate, of locking devices for said levers having yokes provided with depending pins or studs arranged in the path of the levers, and means for supporting the yokes, substantially as specified.

4. In a railroad switch, the combination with switch rails, a switch-bar, a switch-plate connected to the switch-bar, and switch-levers connected to the switch-plate, of locking devices for the levers consisting of guide-bars extending over the levers, eyes fixed to the said bars, yokes provided with slots to receive said eyes and depending pins or studs fitting in perforations in the guide-bars and arranged in the paths of the levers, and a lock engaging the eyes to prevent detachment of the yokes, substantially as specified.

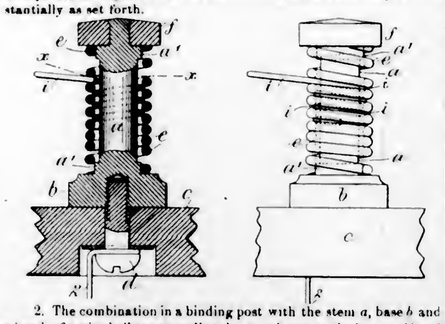
5. In a railroad switch, the combination with switch rails, a switch-bar, a switch-plate connected to the switch-bar, switch levers and means for locking the same in their adjusted positions, of rods interposed between the levers and the switch-plates, said rods being sectional, and compensating couplings between the sections of the rods, substantially as specified.

6. In a railroad switch, the combination with switch rails, a switch-bar, a switch-plate connected to the switch bar, and switch-levers connected to said switch-plate, of locking devices for said levers having pins depending in the path of the levers, and retaining springs arranged to hold the levers in their adjusted positions from vibration, substantially as specified.

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**529,127.** BINDING-POST FOR ELECTRIC INSTRUMENTS. ERNEST A. LOWE, New York, N. Y., assignor to himself and James Jones, Jr., same place. Filed Feb. 9, 1894. Serial No. 499,586. (No model.)

*Claim.*—1. In a binding post, a spring wire helix surrounding and larger than the stem of the post and adapted to receive a connecting wire passed through between its convolutions and around the post, substantially as set forth.



2. The combination in a binding post with the stem *a*, base *b* and a head, of a wire helix surrounding the stem between the base and head and adapted to receive a conductor wire passed through between its convolutions and around the post, substantially as and for the purposes set forth.

3. The combination in a binding post with the support *c* and the attaching screw *d*, of the stem *a* and its base *b*, the wire helix *e* surrounding the stem *a*, the head *f* securely fastened upon the reduced end of the stem *a* and between which head *f* and base *b* the wire helix extends and is adapted to receive a conductor wire passed through between its convolutions and around the post, substantially as and for the purposes set forth.

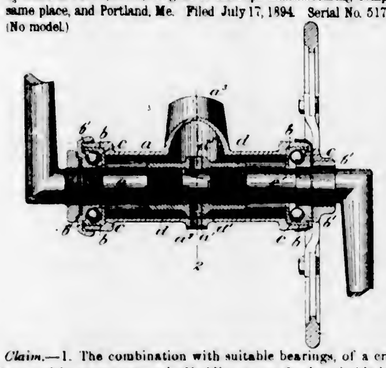
4. The combination in a binding post with the support *c*, the stem *a*, the base *b* and a head at the opposite end of the stem, of a wire helix surrounding the stem between the base and head and of larger diameter than said stem so as to provide a space between the helix and stem for the electric conductor, substantially as and for the purposes set forth.

5. The combination in a binding post with the support *c*, the stem *a*, the base *b* and the head *f*, of a wire helix surrounding the stem between the base and head and of larger diameter than said stem so as to provide a space between the helix and stem, with the central convolutions of the helix close together and the convolutions near one or both ends separated, substantially as and for the purposes set forth.

6. The combination in a binding post with the support *c*, of the base *b*, the stem *a*, the shoulders *a'* at the respective ends of the stem and the head *f* secured upon the end of the stem, the helix *e* surrounding and larger than the stem with its respective ends surrounding and engaging the said shoulders, substantially as and for the purposes set forth.

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529,128. **CRANK-SHAFT FOR VELOCIPEDES.** FLAVEL S. LUTHER, Hartford, Conn., assignor to the Pope Manufacturing Company, same place, and Portland, Me. Filed July 17, 1894. Serial No. 517,779. (No model.)



*Claim.*—1. The combination with suitable bearings, of a crank shaft comprising two parts, and of holding means for detachably holding together said parts of the crank shaft, said parts of the crank shaft and holding means being so constructed that the parts of the crank shaft may be brought together or separated by rotation relatively to said holding means, and a power transmitting device operated by said shaft, said holding means being connected to said shaft independently of said power transmitting device, substantially as set forth.

2. The combination of a crank shaft comprising two parts adapted to be locked so as to be held together rotatively, a power transmitting device upon said shaft, means for holding together said parts of the crank shaft whereby the parts of the crank shaft may be brought together or separated by rotation relatively to said holding means, said holding means being connected to said parts of the crank shaft independently of the power transmitting device, substantially as set forth.

3. The combination of a crank shaft comprising two parts, each of said parts having a crank arm integral therewith, and said parts adapted to be locked so as to be held together rotatively, and each of said parts containing a screw threaded portion, the screw thread of one part being in the reverse direction to that of the other part, and a holding device provided with reverse threads engaging with the threads of both parts of the crank shaft, and a power transmitting device operated by said crank shaft independently of said holding device, substantially as set forth.

4. The combination of a crank shaft comprising two interlocking parts so shaped at their interlocking joint that the parts when interlocked are compelled to rotate together, each of said parts containing a screw threaded portion, the screw thread of one part being in the reverse direction to that of the other part, and suitable bearings for said crank shaft and a holding sleeve provided with reverse threads engaging with the threads of both parts of said shaft, and a power transmitting device operated by said crank shaft independently of said reversely threaded holding sleeve, substantially as set forth.

5. The combination of a crank shaft comprising two interlocking parts so shaped at their interlocking joint that the two parts when interlocked are compelled to rotate together, each of said parts of the crank shaft having a crank arm, integral therewith, and each of said parts containing a screw threaded portion, the screw thread of one part being in the reverse direction to that of the other part, and suitable bearings for said crank shaft and a bracket supporting the same, and a holding sleeve provided with reverse threads engaging with the threads of both said parts of the crank shaft, said sleeve being located within said bracket and provided with means whereby it may be grasped by a tool inserted through an opening in said bracket, and a power transmitting device operated by said crank shaft independently of said reversely threaded holding sleeve, substantially as set forth.

6. The combination of a crank shaft comprising two parts adapted to be locked so as to be held together rotatively, each of said parts containing a screw threaded portion, the screw thread of one part being in the reverse direction to that of the other part, and suitable bearings for said crank shaft and a bracket supporting the same and a holding sleeve provided with reverse threads engaging with the threads of both of said parts of the crank shaft, said sleeve being located within said crank shaft bracket and provided with one or more sockets whereby it may be held from rotation by a pin inserted through an opening in said bracket and bearing against the sides of said opening in the bracket, substantially as set forth.

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529,129. **ANIMAL-TRAP.** CHARLES R. MEAD, Oneida, N. Y. Filed Mar. 5, 1894. Serial No. 502,317. (No model.)



*Claim.*—1. In combination with the base, spring-actuated jaws, a bait-pan pivoted on said base, a latch connected to the bait-pan, to be moved longitudinally thereby, and a post back of the heel of the bait-pan holding the latch in engagement with one of the jaws as set forth.

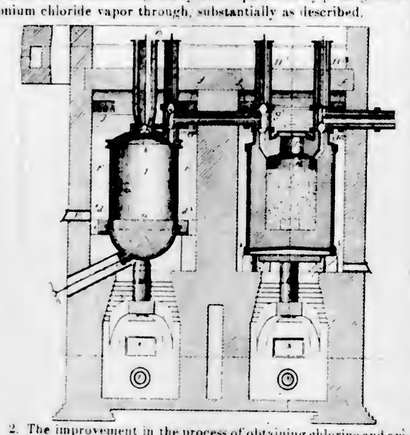
2. In combination with the base, bait-pan pivoted thereon and spring-actuated jaws, a post rising from the base and provided with an aperture, and a latch pivoted to the shank of the bait-pan and passing through said aperture and retaining the adjacent jaw in its open position substantially as set forth and shown.

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529,130. **PROCESS OF OBTAINING CHLORIN.** LUDWIG MOND, Northwich, England. Filed July 6, 1893. Serial No. 479,716. (No specimens.) Patented in England Feb. 13, 1889, No. 2,575.

*Claim.*—1. The process of obtaining chlorine from ammonium chloride which consists in heating to 350° centigrade balls or pills or fragments of oxide capable of decomposing the said ammonium chloride and of absorbing chlorine in place of oxygen, vaporizing the ammonium chloride in molten zinc chloride, protected from contamination with foreign matter by antimony, passing the ammonium chloride vapor through said balls, pills or fragments previously cleared of air and raised to about 350° centigrade by the passage of hot inert gases, till the power of said balls or fragments to take up chlorine is sufficiently spent, collecting the ammonia given off, then raising and regulating the heat of the pills by passing through them hot inert gas and saving what ammonia and afterward hydrochloric acid are given off, then passing dry hot air through and thus liberating the chlorine previously absorbed, utilizing the chlorine so obtained by passing it into bleaching powder chambers or otherwise and when the gases become too weak for this process utilizing them in a previous step of the process, then again lowering the temperature of the pills by passing through cold air or cold inert gas and when the requisite temperature has arrived, recommencing the cycle of operations by passing the ammonium chloride vapor through, substantially as described.





2. The improvement in the process of obtaining chlorine and ammonia from ammonium chloride which consists in vaporizing ammonium chloride by contact with fused chloride of zinc whereby vessels incapable of being safely heated to a high degree of heat can be used and the heat more quickly given to the ammonium chloride and all chances of dis-associating the component atoms of the ammonia are avoided

3. The improvement in the way of manufacturing chlorine from ammonium chloride which consists in inclosing or insulating the same by antimony and subjecting the same while thus insulated to a heat sufficient to cause evaporation, whereby ammonium chloride is prevented from contamination or decomposition.

4. The improvement of the manufacture of chlorine which consists in passing the vapor of ammonium chloride through heated balls or fragments formed of magnesia, clay, lime and potassium chloride substantially as described.

5. The improvement in the process of obtaining chlorine from ammonium chloride by means of repeated chloridation and oxidation of certain mineral matters by their alternate exposure when heated to the vapor of ammonium chloride and to air, heating to about 900° centigrade the air which is only weakly charged with chlorine, (near the end of the process) and passing it through another bath of chloridized salts, whereby the very diluted chlorine otherwise useless is saved and goes to enrich a subsequent process.

6. The improvement in the process of obtaining chlorine which consists in charging a suitable mineral absorbent with chloride, of ammonium vapor, and then exposing the charged absorbent to air, heated to say 900° to 1,000° centigrade whereby the formation of the chlorine is effected without the use of external heat.

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529,131. **WHEEL-FELLY JOINT.** WILLIAM F. MORTON, New Haven, Conn. Filed Mar. 19, 1894. Serial No. 504,212. (No model.)

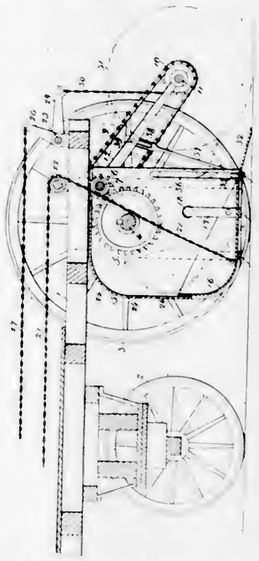


*Claim.*—1. A felly joint having the felly ends abutted squarely together, and constructed with a radial bore, and two shallow circular recesses, respectively concentric with the ends of the said bore, and each having an inwardly extending cut formed at their outer edges, the said bore and recesses being divided equally in the respective abutting ends of the felly, a bolt extending through the said bore, and provided at one end with a fixed circular coupling head corresponding in depth to the depth of the recess which receives it, and having an inwardly extending flange having a straight outer and a beveled inner face, a removable coupling head having a central opening adapted to be passed over the opposite end of the bolt, and corresponding in thickness to the depth of its recess, and having an inwardly extending flange, the outer face of which is straight and the inner face beveled; and a nut applied to the threaded end of the bolt and bearing upon the removable coupling head, substantially as set forth.

2. A felly joint having the felly ends abutted squarely together, and constructed with a radial bore, and two shallow circular recesses respectively concentric with the ends of the said bore, and each having an inwardly extending cut formed at their outer edges the said bore and recesses being divided equally in the respective abutting ends of the felly, a bolt extending through the said bore, and two coupling heads located at the opposite ends of the bolt, corresponding in thickness to the depth of the said recesses, and each having an inwardly extending flange the outer face of which is straight and the inner face beveled for taking into the cuts formed at the edges of the recesses, substantially as set forth.

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529,132. **STREET-SWEEPER.** HENRY MUELLER, Jr., St. Louis, Mo. Filed July 2, 1894. Serial No. 516,265. (No model.)



*Claim.*—1. In a street sweeping machine, a suitable frame a shield having an open bottom depending therefrom, a dumping receptacle pivotally mounted within the same, its rear end adapted to be elevated for dumping the receptacle, means located at the bottom of the open end of the shield for supporting the rear end of the receptacle when the latter is in its normal position, means for dumping the receptacle, a brush located adjacent to the open end of the same, and suitable running gear for said brush, substantially as set forth.

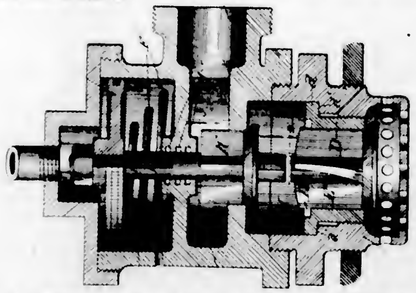
2. In a street sweeping machine, a suitable shield depending from the frame of the machine, a U shaped hanger for the shield having vertical members and a horizontal member, said shield having an open bottom and a suitable cut-away portion in the rear wall thereof, a dumping receptacle having supporting arms secured to the sides thereof and their free ends pivoted to the inside lateral walls of the shield, the lower edge of the rear wall of the shield, and the horizontal member of the U shaped hanger serving as supports for the dumping receptacle when in its normal position, and suitable means for dumping or rotating said receptacle about the pivotal points of its supporting arms, substantially as set forth.

3. In a street sweeping machine a suitable frame, a perforated shield carried thereby, said shield being open along the front, bottom and portion of its rear wall, vertical slots along the edges of the side walls thereof, guide blocks within said slots, a guard plate rigidly secured between said guide blocks, broom supporting arms having a swinging motion, pivoted links secured or extending from the guide blocks, said links having slots at their free ends, and suitable pins carried by the broom supporting arms operating within the slots carried by the links, substantially as set forth.

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529,133. **BLOW-OFF COCK.** WILLIAM MCINTOSH, Winona, Minn. Filed June 23, 1894. Serial No. 515,463. (No model.)

*Claim.*—1. In combination with a boiler, a blow-off cock consisting of a valve-casing secured in the blow-off port, a valve arranged therein and automatically seated by the boiler-pressure to close said port and independent fluid controlled mechanism adapted to open the valve against the boiler pressure, whereby the boiler may be blown off whenever desired



2. In combination with a boiler, a blow-off cock consisting of a valve normally closing the blow-off port and automatically seated by the pressure within the boiler and fluid controlled mechanism independent of that pressure seating said valve and adapted to open the same against the boiler pressure.

3. In combination with a boiler, a blow-off cock consisting of a valve-casing, a valve arranged therein and normally closing the blow-off port, means for operating the valve and a strainer secured to the valve-casing within the boiler and below the valve whereby the fluid passing through the valve is strained and a cage formed for the valve, substantially as described.

4. In combination with a boiler, a blow-off cock consisting of a valve-casing, an inner valve arranged therein and normally closing the blow-off port, a supplemental valve arranged within the valve-casing and fluid-controlled mechanism adapted to operate the supplemental valve and thereby open the inner valve against the boiler pressure.

5. In combination with a boiler, a blow-off cock consisting of a valve-casing, an inner valve arranged therein and normally closing an opening through the boiler-shell, a supplemental valve arranged within the valve-casing and provided with a depending stem adapted to contact the inner valve when the supplemental valve is forced from its seat and means for actuating the supplemental valve by fluid pressure, substantially as described.

6. In combination with a boiler, a blow-off cock consisting of a valve-casing, an inner valve automatically seated by the pressure within the boiler and normally closing the blow-off port thereof and an independent valve operated by fluid pressure and adapted to contact said inner valve to blow off the boiler, substantially as described.

7. In combination with a boiler, a blow-off cock consisting of a plug secured in the opening through the boiler shell, an inner valve arranged therein and automatically seated by pressure within the boiler to close said opening, a valve-casing removably secured to the plug, a supplemental valve arranged therein and having an elongated stem adjacent to the inner valve and means for operating the supplemental valve whereby the inner valve will be forced from its seat by the contact of the valve-stem and the boiler relieved of pressure, substantially as described.

8. In combination with a boiler, a blow-off cock consisting of a plug secured in the blow-off port, an inner valve arranged therein and automatically seated by the boiler pressure, an outer valve-casing removably secured to the plug, a supplemental valve within said outer casing having a stem elongated in both directions of its body and means for reciprocating said valve stem whereby the inner valve may be unseated and the boiler blown off, whenever desired, substantially as described.

9. In combination with a boiler, a blow-off cock, consisting of a plug secured in the blow-off port, a valve arranged therein and normally closing said port, a valve seat adjacent to the valve and removably secured within the plug and mechanism adapted to open the valve against the boiler-pressure, substantially as described.

10. In combination with a boiler, a blow-off cock consisting of a plug secured in the opening through the boiler shell, an inner valve arranged therein and automatically seated by pressure within the boiler to close said opening, a valve-casing removably secured to the plug and provided with a valve-chamber, an outlet chamber and a piston-chamber, a supplemental valve arranged within said casing between the valve-chamber and the outlet chamber and having its stem elongated in both directions of its body, a piston-head arranged upon the valve-stem within the piston-chamber, whereby as fluid-pressure is introduced into the piston-chamber, the supplemental valve will be depressed, opening communication between the valve-chamber and the outlet-chamber and the inner valve will be opened by contact of the projecting stem thereagainst and the boiler thereby relieved of pressure, substantially as described.

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529,134. WINDOW. JACOB ORT, Wahoo, Nebr. Filed June 9, 1894. Serial No. 514,040. (No model.)

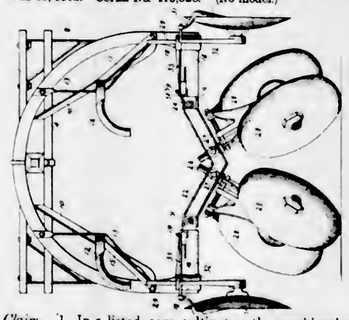


*Claim.*—1. In a window, a sash-frame having window-stops, metallic weather-strips F, on the stops, provided with tongues $q$ formed with inclined faces $q^3$, grooves $s$, in the faces of the sash side rails, into which the said tongues extend, and retaining-strips $p$ in said grooves having inclined faces to engage the faces $q^3$ of the tongues, substantially as described.

2. In a window, a sash-frame having stops E and parting-stops D, upper and lower vertically sliding sashes provided on the inner faces of their side-rails with grooves $s$, metallic weather-strips F on the stops D and E, provided with tongues $q$, having inclined faces $q^3$, and which extend into the sash-grooves $s$, and retaining-strips $p$ in the grooves $s$ having inclined faces to engage the faces $q^3$ of the tongues, substantially as described.

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529,135. CULTIVATOR. JOHN F. PACKER, La Grange, Ill. Filed Jan. 18, 1892. Serial No. 418,528. (No model.)



*Claim.*—1. In a listed corn cultivator, the combination with an arch and inclined disks, of lateral disk guides connected with the arch and adapted to run in the ridges at each side of the plant-containing trench, to guide the cultivator, substantially as described.

2. In a disk cultivator, the combination with a supporting frame, of inclined disks carried by said frame, and outer lateral disk guides, substantially as described.

3. In a disk cultivator, the combination with a supporting frame, and oppositely inclined cultivating disks, of convex disks mounted at the outer sides of said cultivating disks, to serve as guides, the convex surface of the disks being next to said cultivating disks, substantially as described.

4. The combination with a cultivator arch, of oppositely inclined cultivating disks carried thereunder, and disks mounted at the ends of said arch, said disks having convex inner surfaces, substantially as described.

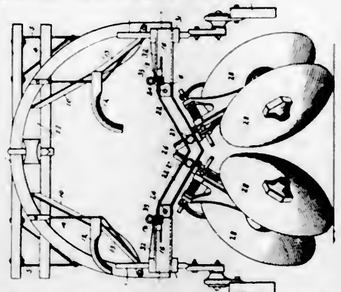
5. The combination with a cultivator arch, of an intermediate bar connected with the arch, bearings in said bar, shanks adapted to fit in said bearings, and disks carried by said shanks, substantially as described.

6. The combination with a cultivator arch, and inward projections on the ends thereof, of an intermediate bar connecting said projections, bearings in said bar, shanks adapted to fit in said bearings, and disks carried by said shanks, substantially as described.

7. The combination with an arch 8, projections 9 on the ends thereof, and brackets 15 mounted upon said projections, said brackets having bosses 18, of disks 30, shanks 29, and inclined cultivating disks 28, substantially as specified.



529,136. CULTIVATOR. JOHN F. PACKER, La Grange, Ill. Filed Jan. 18, 1892. Serial No. 418,529. (No model.)



*Claim.*—1. In a listed corn-cultivator, the combination with an arch and cultivating disks of lateral runner guides arranged at the sides of the disks and adapted to run on the ridges at each side of the plant containing trench, to guide the cultivator, substantially as described.

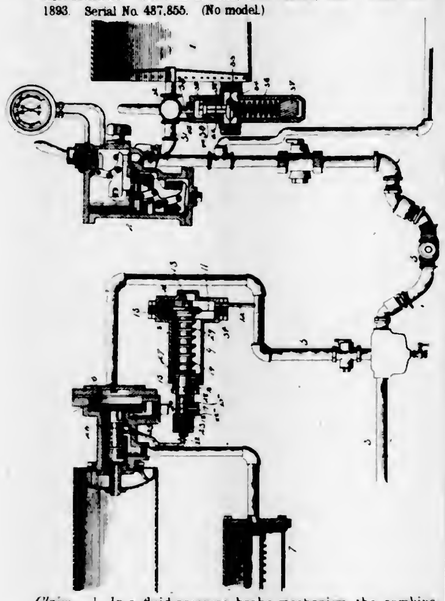
2. In a listed corn-cultivator, the combination with an arch and inclined cultivating disks, of lateral runner guides arranged at the sides of the disks and connected with the arch, said runner guides adapted to run in the ridges at each side of the plant-containing trench to guide the cultivator, substantially as described.

3. In a disk cultivator, the combination with an arch, and cultivating-disks, of vertically adjustable lateral runner guides 30, arranged at the sides of the disks and adapted to run in the ridges at each side of the plant-containing trench, to guide the cultivator, substantially as described.

4. In a disk cultivator, the combination with an arch, and rotary concavo-convex disks, of vertically adjustable lateral runner guides arranged at the sides of the disks and adapted to run on the surface of the soil between the rows of the plants, to guide the cultivator, substantially as described.

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529,137. AUTOMATIC PRESSURE-RETAINING VALVE FOR AIR-BRAKES. ORVILLE S. PIKE, New Lisbon, Ohio. Filed Oct. 11, 1893. Serial No. 487,855. (No model.)



*Claim.*—1. In a fluid-pressure brake mechanism, the combination with a main-reservoir, brake-pipe, engineer's valve, an auxiliary reservoir, a triple-valve forming the connection between the brake-pipe and the auxiliary reservoir, a brake-cylinder connected to exhaust through the triple valve, and a retaining-valve having a chamber in communication with the brake-pipe between the engineer's valve and the triple-valve, a sensitive diaphragm forming one side of said chamber and exposed to the brake-pipe pressure, an outlet in communication with the brake-cylinder-exhaust of the triple-valve, a check-valve arranged to control said outlet, and means for communicating the motion of the diaphragm to the check-valve to unseat the latter and open the outlet, of a three-way cock arranged in the brake-pipe between the main-reservoir and the engineer's valve, a limiting-valve having a chamber in communication with the three-way cock, a second chamber in communication with the first chamber, a diaphragm in the second chamber, a check-valve controlling the communication between the chambers, means carried by the diaphragm for normally unseating the check-valve, and a passage connecting said second chamber with the brake-pipe between the three-way cock and the engineer's valve, substantially as specified.

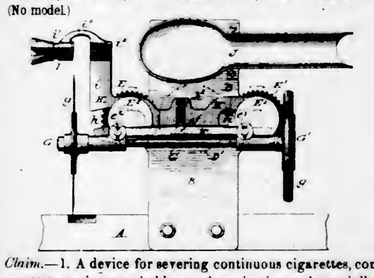
2. In a fluid-pressure brake mechanism, the combination with a main-reservoir, a brake-pipe an engineer's valve, an auxiliary reservoir, a triple-valve forming the connection between the brake-pipe and the auxiliary reservoir, a brake-cylinder connected to exhaust through the triple-valve, and a retaining-valve communicating with the brake-pipe and the brake-cylinder-exhaust of the triple-valve and having means for controlling said exhaust by opening the same when the pressure in the brake-pipe exceeds a certain limit and closing the same when the brake-pipe pressure falls below such limit, of a limiting-valve tapping the brake-pipe between the main-reservoir and the engineer's valve and having communicating chambers connected independently with the brake-pipe, and pressure-operated means for controlling the passage connecting the chambers, and a three-way cock arranged in the brake pipe in operative relation with the inlet pipe of the limiting-valve, and adapted to direct the flow of the fluid through the limiting-valve or cut it out of the same, substantially as specified.

3. In a fluid-pressure brake mechanism, the combination with a brake-pipe, an auxiliary reservoir, an intermediate triple valve, and a brake cylinder connected to exhaust through said triple valve, of a retaining valve having a receiving chamber of large diameter in communication with the brake pipe, a diaphragm forming one side of said receiving chamber, a check-valve casing in communication with the exhaust of the triple valve and provided with an exhaust opening, a spring-actuated check-valve fitted in said casing and normally held in position to close the exhaust opening therein, a stem connected to the center of the diaphragm, connections between said stem and the check-valve, a retaining spring coiled upon the stem, and adapted to have a resistance in excess of the required pressure in the auxiliary reservoir and adjusting devices connected to one end of the spring whereby the tension of the latter and hence the margin of excess over the required pressure in the auxiliary reservoir may be adjusted, substantially as specified.

4. A fluid pressure retaining valve having a casing 9, a receiving chamber 10, a sensitive diaphragm arranged to form one wall of said receiving chamber, a valve-casing having valve seats 17 and 20, a check-valve 18 arranged to engage the seat 20 and having a stem $18^a$, a valve 15 arranged to engage the seat 17 and provided with a stem $15^a$ to bear normally against the stem $18^a$, means for connecting the valve-casing with the outlet of a triple-valve of a brake-mechanism, and means for connecting the receiving chamber 10 with the air supply-pipe of a brake-mechanism, said diaphragm having a stem bearing at its extremity against the valve 15, substantially as specified.

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529,138. CUTTER FOR CIGARETTE-MACHINES. EDWARD T. POLLARD, New York, N. Y. Filed Mar. 16, 1894. Serial No. 503,908. (No model.)



*Claim.*—1. A device for severing continuous cigarettes, comprising a cutter, a cigarette-holder, and mechanism, substantially such as described, which causes both the cutter and holder alternately to approach and recede from each other, in paths intersecting the normal line of movement of the continuous cigarette, for the purposes specified.

2. A device for severing continuous cigarettes comprising a cutter, a shaft on which it is mounted, bearings in which the shaft turns,

cranks moving in similar paths connected with the bearings and means for rotating the cutter-shaft and cranks, substantially as and for the purpose specified

3. A device for severing continuous cigarettes, comprising two crank disks, parallel shafts on which they are mounted, a pitman connecting the cranks of these disks, a slide frame actuated by the pitman, a tubular cigarette holder carried by this slide frame, and means for operating the holder laterally, the organization being such that the holder is reciprocated both longitudinally and laterally across the normal path of the continuous cigarette alternately toward and from the cutter, substantially as and for the purpose specified

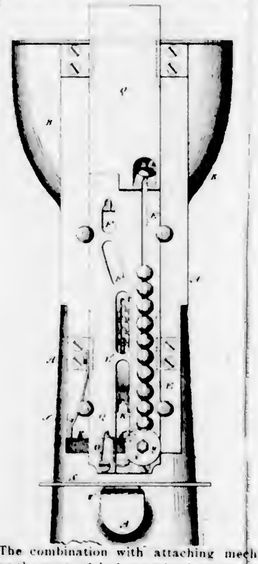
4. A device for severing continuous cigarettes comprising a rotary cutter, a shaft on which it is mounted, bearings in which the shaft turns, cranks mounted on parallel shafts and connected with the bearings, a pitman connecting the cranks, a slide frame provided with forks or guides embracing the crank-shafts, a cigarette holder carried by the slide frame, and means for operating the holder laterally, the organization being such that the cutter and holder alternately approach and recede from each other, substantially as and for the purpose specified.

5. A device for severing continuous cigarettes, comprising parallel crank-shafts, a pitman connecting them, a shaft rotating in bearings carried by the cranks, a cutter on the shaft, a slide frame actuated by the pitman, guide slots in the frame embracing the crank shafts, a cigarette holder carried by the slide-frame, means for reciprocating the slide frame and rotating the cutter at different speeds, and means for operating the cigarette holder laterally, substantially as and for the purpose specified.

6. The combination with a cigarette-holder, of a device for cutting a continuous cigarette, passing through the holder, comprising a rotary cutting blade, a shaft to which it is secured, a bearing in which the shaft is mounted, and a crank-shaft operatively connected with said bearing to cause it to move both longitudinally with reference to the axis of the holder and also laterally relatively thereto, substantially as hereinbefore set forth.

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529,139. AUTOMATIC BUTTON-FASTENING MACHINE. IRA J SAUNDERS, New York, N. Y. Filed Dec. 5, 1892. Serial No. 454,075. (No model.)



*Claim.*—1. The combination with attaching mechanism, and means of operating the same, of the hopper having two compartments, for the buttons and fasteners respectively, a reciprocating channel-bar arranged in ways on the front of the hopper, and provided with two channels, respectively adapted to receive buttons and fasteners, and direct them to each other and to the attaching mechanism, vibrating levers for supplying said channel-bar with buttons and fasteners from the hopper, and means of reciprocating the channel-bar.

2. The combination with attaching mechanism comprising a hammer and anvil, of the two take-levers C, D, arranged adjacent to each other, the drive-lever G, connecting means between lever G, and the take-levers, and a treadle-rod or pitman attached to the drive-lever whereby all the said parts are actuated in unison.

3. The combination with the two take-levers arranged adjacent to each other, of the drive lever having an extension piece passing up between the take-levers, and connecting therewith by means of studs $g'$, $g''$, each entering slots formed to receive them in the respective take-levers.

4. The combination with the treadle-rod or pitman of the drive-lever G pivoted thereto, and the two take-levers operatively connected with the drive-lever.

5. The combination with the channel-bar, and the fastener channel therein, of the vibrating feed-lever L, slotted at its midlength to receive a fulcrum-pin $r$, and the channel-bar provided with a bracket, $s$, carrying an operative pin or stud entering said feed lever, whereby this lever is vibrated by the motion of the channel-bar.

6. In combination, the vertical reciprocating channel bar and means of operating the same, such bar provided with separate channels for both buttons and fasteners and forming a junction at their lower ends, means for delivering buttons one by one, by gravity and presenting them in position for receiving the fasteners in the eye thereof, and a feeder in the fastener channel serving to feed the fasteners one by one to the buttons as presented the feeding and delivering devices being operated by the motion of the channel-bar.

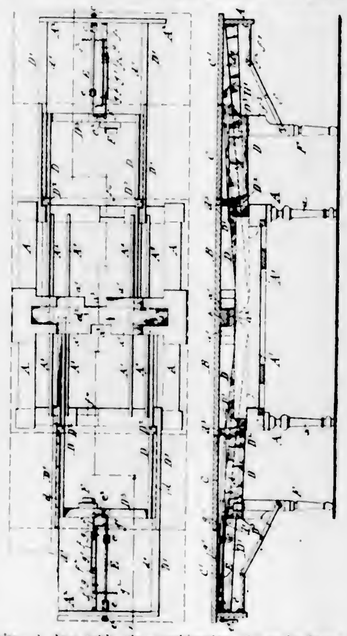
7. The combination with the reciprocating channel-bar having button and fastener channels therein, and adapted to direct them to each other, of a cam M at the junction of the two channels co-operating with a hold-bar, R, to control the button while receiving the fasteners, and a check spring, as O, to check the fall of the button when released by said cam and hold-bar, and retain the united button and fastener until struck by the hammer K.

8. The combination with the movable channel-bar and means of operating the same an arbor $x$ journaled in the lower end of the channel-bar, which arbor carries at the front or outer end, a crescent shaped cam M, and at the inner end a hub having a slit in one side which is engaged by a stationary pin $u$ whereby the cam M is oscillated by the motion of the channel-bar.

9. The combination with the channel-bar and the hammer K, of the cam M, and holder-bar R for holding the button momentarily while receiving the fastener, and a check spring O which detains the united button and fastener until struck by the hammer K, substantially as set forth

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529,140. EXTENSION-TABLE. HENRY G. SCHNARR, New York, N. Y. Filed June 13, 1894. Serial No. 514,385. (No model.)



*Claim.*—1. In a table, the combination of a main frame, a top supported loosely thereon, an intermediate extension leaf having inclined slide pieces, flexible straps for connecting the inner end of said leaf with the slide pieces, an outer leaf also provided with inclined slide pieces guided in the slide pieces of the intermediate leaf, and a crank rod supported in ears at the under side of the outer leaf and provided with a crank arm at its inner end, said crank rod being adapted for use both in extending or returning the leaves, substantially as described.

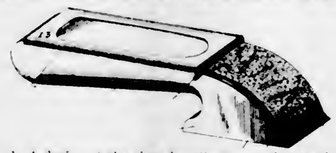
2. In a table, the combination of a main frame, a top supported loosely thereon, an intermediate and an outer leaf arranged under the end of the top, slide pieces attached to said intermediate leaf and provided with a connecting transverse bar, slide pieces attached to the outer leaf, an auxiliary leg provided with a projection near its upper end said leg being hinged to said transverse bar, a bracket arm connected to said outer leaf and provided with a wedge-shaped inner end for sliding along said projection on the leg, and a pivoted strap connecting said bracket and leg.

3. The combination with a main-frame, of a top supported loosely on the same, an intermediate leaf, and an outer leaf arranged under each end of the top, inclined slide-pieces attached to the intermediate and outer leaves, means for guiding the said slide-pieces alongside of each other and in the main-frame, an auxiliary leg hinged to the transverse connecting-piece of the slides of the intermediate leaf, a bracket-arm attached to a transverse end-piece of the outer leaf, said bracket-arm having a wedge-shaped inner end, a pivoted connecting strap between the bracket-arm and the auxiliary leg, and a projection at the upper end of the auxiliary leg, substantially as set forth.



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529,141. STAMP STICKING OR SEALING MACHINE. JAMES T. SHAW, Waco, Tex. Filed Feb. 20, 1894. Serial No. 500,923. (No model.)



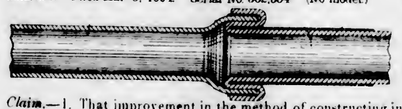
*Claim.*—1. A device of the class described comprising a body having a flat lower face and consisting of a bottom portion and opposite sides, and forming a recess or receptacle open at the front and top, a moistening pad located in the recess or receptacle and presenting an outwardly and downwardly inclined exterior face, a handle extending rearward from the top of the body and upwardly offset from the lower face of the latter, and a stamp guide mounted on the upper face of the handle and extending rearward from the top of the moistening pad, substantially as described

2. A device of the class described comprising a body portion, having a handle and provided in advance of the handle with a downwardly offset recess and having slots at the terminals of the latter, a moistening pad arranged in said recess, a sheet of fabric covering the moistening pad, key-plates at each end of the said sheet and having the ends wrapped around them and arranged in said slots in the offset portion, whereby the sheet is held in place, and a guide for the stamps at the upper side of the handle, substantially as described.

3. A device of the class described, comprising a body having a handle, and provided in advance thereof with a downwardly offset recess, and having its front edge beveled, a moistening pad arranged in the recess, and a stamp guide located on the handle in rear of the moistening pad, substantially as described.

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529,142. METHOD OF MAKING BICYCLE-TIRES. ALBERT B. SHAW, Medford, Mass., assignor to the Self-Sealing Bicycle Tire Company, Portland, Me. Filed Mar. 5, 1894. Serial No. 502,354. (No model.)

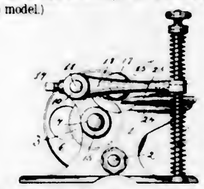


*Claim.*—1. That improvement in the method of constructing inflatable tubing for bicycle tires, which comprises inclosing one end of the tube in a detachable cylinder of sufficient rigidity to hold the shape turning the end of said tube inside out and backward over said cylinder, inserting a portion of the end thus folded into the companion end of the tube, again turning said folded end outward over said companion end and cementing these parts together, the plies thus formed being outside said cylinder, then withdrawing the plies or folds from said cylinder and removing the cylinder, substantially as described

2. That improvement in forming the joint between the ends of a flexible tubing for pneumatic tires which comprises turning one end of the tube inside out over a form, drawing the companion end of the tube over said folded portion; again turning the folded end of the tube over the companion end and cementing the parts together.

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529,143. COLLAR OR CUFF SHAPING MACHINE. ERNST G. SMITH, Columbia, Lancaster county, Pa. Filed May 2, 1892. Serial No. 431,607. (No model.)

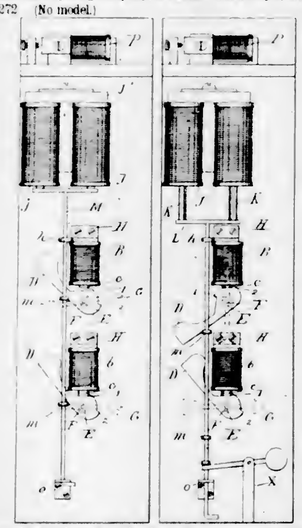


*Claim.*—1. In a machine for shaping collars and cuffs, the combination of parallel rollers, one of which is journaled in movable bearings whereby it is capable of oscillating toward and from the other roller, means for pressing the movable roller toward the other, and means for communicating motion from one roller to the other, the same consisting of flanges on one of the rollers bearing against the surface of the other, whereby the body of one of the rollers is held from engagement with the other roller, substantially as specified.

2. In a collar and cuff shaping machine, the driving roller 3, provided with the flanges 9, the partially revolving shaft 11, provided with the arms 12 and 13 and the companion roller 17, journaled in the said arms and operated only by the flanges 9, combined with the arm 18, secured to one end of the shaft 11, the rod which passes through the end of the arm and is provided with a nut 23, and the springs applied to the rod upon opposite sides of the arm, substantially as set forth.

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529,144. AUTOMATIC SET-BACK ANNUNCIATOR. HENRY C. THOMSON and GEORGE J. GALBRAITH, Boston, Mass., assignors to the Electric Gas Lighting Company, of Maine. Filed July 2, 1894. Serial No. 516,272. (No model.)



*Claim.*—1. An electric set-back annunciator composed of one or more magnets having each a sliding armature core normally retained beyond said helix, an unequally balanced tripping lever, one of its ends having a ratchet, an index-spindle properly supported upon the face plate one end carrying said lever, an index-finger upon the opposite end of said index-spindle, a sleeve or support therefor, a lifting rod provided with catches adapted to gear with said tripping lever, a lifting electromagnet in circuit with the aforesaid magnet or magnets, and an armature therefor having a lever connection with said lifting rod, substantially as described and shown.

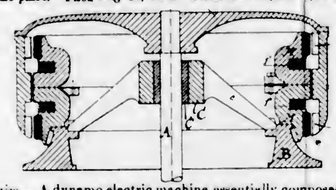
2. In combination with an annunciator composed of one or more magnets, each having a sliding armature core adapted to act as a detent, a weighted lever adapted to gear with said detent, a sleeved spindle carrying said lever, and an index-finger upon the opposite end of said spindle, a lifting rod having catches adapted to elevate said weighted lever and an electromagnet, in circuit with the aforesaid magnets, an armature therefor, a lever operated by said armature and operating said lifting rod, substantially as described and shown.

3. In an electric annunciator the combination of one or more magnets B, having each a sliding core c, a weighted lever D having the ratchets 1, 2, a spindle F, a sleeve E supporting the spindle, an index-finger G upon the opposite end of said spindle, a lifting rod M having the catches *m*, a lifting eletromagnet in circuit with the aforesaid magnets and an armature therefor provided with a lever-extension connecting with said lifting rod M, all substantially as described.

4. An electric set back annunciator, composed of pointer-magnet B, standard H, sliding core c, weighted lever D, spindle F, sleeve E, index-finger G, lift M having catches *m*, an electromagnet with its armature S, pivoted upon the ears T and the armature-lever U, arranged to operate the lifting rod M, all substantially as described.

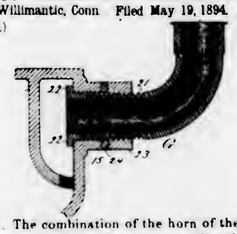
5. In an electric set-back annunciator, the combination of magnet B, standard H, sliding core c, weighted lever D, spindle F, sleeve E, index finger G, lift M, having catches *m*, an electromagnet with its armature S pivoted upon the ears T, armature-lever U, arranged to operate the lifting rod M, and the wire V, with the sliding weight W and adjusting screw *w*, substantially as described.

**529,145. DYNAMO-ELECTRIC MACHINE.** REES THURY, Geneva, Switzerland, assignor to the Compagnie de L'Industrie Electrique, same place. Filed Aug. 18, 1894. Serial No. 520,680. (No model.)



*Claim.*—A dynamo electric machine essentially composed of two superposed horizontal and fixed rings M of U-shaped section, each provided with a coil *f* and with a circular pole-piece *e* on which are disposed suitable wires *e'* in combination with a vertical axis A bearing a bell $A^1$ the inner wall of which is provided with suitable ranges of teeth *d* disposed in front of the wires *e'*, substantially as shown and described.

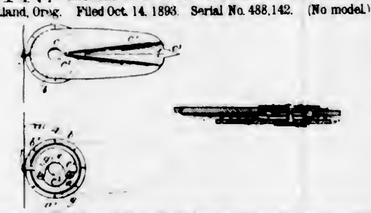
**529,146. COUPLING FOR WATER-CLOSETS.** WILLIAM VANDERMAN, Willimantic, Conn. Filed May 19, 1894. Serial No. 511,806. (No model.)



*Claim.*—1. The combination of the horn of the bowl having an outer and inner seat, and the flexible connecting pipe having elastic threads, the inner holding flange upon the inside of the horn, and a nut on the threaded portion for screwing up against the outer side of the horn, substantially as described and for the purpose specified.

2. In a coupling for water closets, the combination of the horn of the bowl, with a flexible connection having an elastic flange for resting against one end of said horn and elastic screw threads for holding said flange in engagement, substantially as described and for the purpose specified.

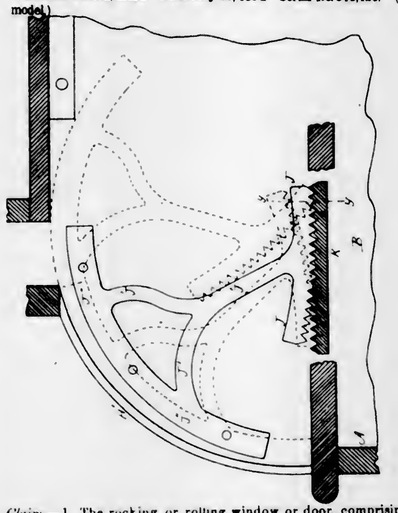
**529,147. GARMENT-SECURING DEVICE.** OTTE VAN OOSTRUM, Portland, Oreg. Filed Oct. 14, 1893. Serial No. 488,142. (No model.)



*Claim.*—1. The herein described fastener, comprising separable members one of which consists of a stud and the other of a clutch piece, the clutch piece comprising a base piece having a flange projected perpendicular thereto at a distance from the edge of the base piece, so as to leave a marginal flange exteriorly of the said perpendicular flange, and produce a central recess or chamber interiorly of the perpendicular flange, both flanges being adapted for engagement with the material to which the clutch piece is attached, a spring-pressed pivoted latch located in the said central chamber interiorly of the perpendicular flange of the base piece, and a perforated cap plate held on the said perpendicular flange of the base piece and adapted to engage the material on the opposite side from the base piece, substantially as described.

2. The herein described garment fastening device, comprising a series of separable members adapted to be secured to a garment, of which one member consists of a stud and the other of a clutch piece, the latter comprising a base piece having a flange projected perpendicular thereto, a perforated cap plate which rests on the said flange and is adapted to form, with the base piece, a clamp for the garment, a pintle held between the base piece and the cap plate interiorly of the flange of the base piece on which the cap plate rests, a spring pressed latch pivoted on the said pintle and provided with a lateral limb that projects to the outside of the said flange, and a releasing device connecting the limbs of the several latches of the series, substantially as described.

**529,148. REFRIGERATOR OR BUTTER-COOLER.** ORRIN M. WHITMAN, Boston, Mass. Filed July 20, 1894. Serial No. 518,126. (No model.)



*Claim.*—1. The rocking or rolling window or door, comprising a frame formed on an arc of a circle, the racks K, the segmental gears J engaging in and rolling on said racks, and the supporting standards J' rigid with said gears and extending to and secured to said window or door, substantially as set forth.

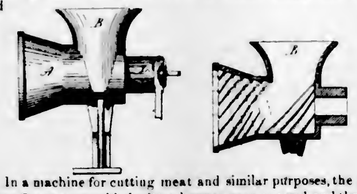
2. The chest provided with the flange or bead H' formed on an arc of a circle, the window frame I formed on a similar arc, the rack K, and the standards J' supporting said window frame and provided with segmental gears J at their lower ends engaging with said racks, substantially as described.

3. The chest provided with the flange or bead H' formed on an arc of a circle, the window frame I formed on a similar arc, the rack K, and the standards J' supporting said window frame and provided with segmental gears J at their lower ends engaging with said racks, said standards inclining forward on a non-radial line from the gears, substantially as set forth.

4. The chest provided with the flange or bead H' formed on an arc of a circle, the window frame I formed on a similar arc, the segments J'' secured to said frame, the racks, K, segmental gears J engaging with said racks, and the standards J' connecting said gears and segments, substantially as described.

**529,149. MEAT-CUTTER.** OLIVER D. WOODRUFF, Southington, Conn. Filed Oct. 24, 1892. Renewed June 29, 1894. Serial No. 516,071. (No model.)

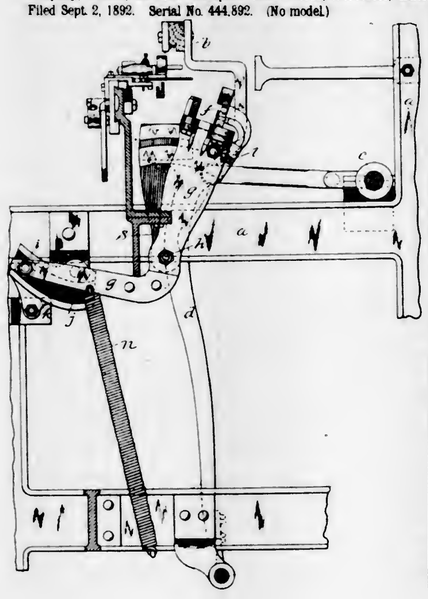
*Claim.*—1. In a rotary meat-cutter, the combination with a case, of a longitudinally adjustable feed-screw or forcer located therein and provided at one end with a journal having bearing in the case from which the said journal projects, a crank-handle applied to the projecting end of the said journal, and having the inner face of its hub constructed to have rocking engagement with the bearing of the case, and an adjusting screw entering the said projecting end of the journal, and taking a bearing upon the outer face of the hub of the crank-handle, substantially as set forth, and whereby space is formed between the adjacent faces of the bearing of the case and the hub of the crank handle, in which space the said hub may have rocking movement to relieve the feed-screw from tension, substantially as described



2. In a machine for cutting meat and similar purposes, the combination of a case provided with a hopper near one end and through which the meat may be supplied to the case, a longitudinally adjustable revolving forcer within the case, and the case and forcer adapted to cut the meat and discharge it through the delivery end, the end of the forcer opposite the delivery end constructed as a shaft, projecting through a bearing in that end of the case, the projecting end of the shaft of non-cylindrical shape, a crank having a head adapted to set upon the said non-cylindrical end of the shaft, the face of the crank next the end of the bearing constructed with a diametrical projection across it at right angles to the line of the crank, with an adjusting-screw at the end of the shaft, adapted to bear against the outer face of the crank-head, substantially as and for the purpose described.

3. In a machine for cutting meat and similar purposes, the combination of a case provided with a hopper at one end, and through which the meat may be supplied to the case, a longitudinally adjustable revolving forcer within the case, and the case and forcer adapted to cut the meat and discharge it through the delivery end, the end of the forcer opposite the delivery end constructed as a shaft projecting through a bearing in that end of the case, the projecting end of the shaft of non-cylindrical shape, a crank having a head adapted to set upon said non-cylindrical end of the shaft, an adjusting-screw at the end of the shaft adapted to bear against the outer face of the crank-head, the two faces of the crank-head constructed with a projection diametrically across them at right angles to the line of the crank, substantially as and for the purpose described.

**529,150. PILE-FABRIC LOOM.** HORACE WYMAN, Worcester, and GEORGE POOLE, Lowell, assignors to the Massachusetts Mohair Plush Company, Boston, and the Crompton Loom Works, Worcester, Mass. Filed Sept. 2, 1892. Serial No. 444,892. (No model.)

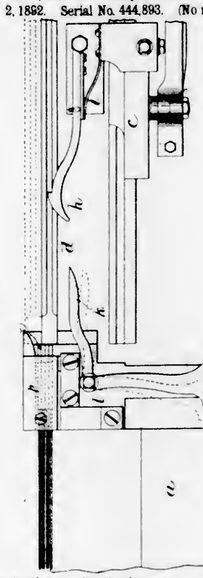


*Claim.*—1. In a loom for weaving pile fabrics, in combination, a lay having a depending arm, (*s*,) provided with a curved slot, a shuttle-box, an angular lever pivoted on the arm, (*s*,) one arm of said lever being connected with the shuttle box and provided with a stud entering into said slot, the other arm of said lever being provided with an anti-friction roller, and a bracket provided with a curved groove into which said roller extends, substantially as and for the purpose described.

2. In a loom for weaving pile fabrics, in combination, a lay having a depending arm, (*s*,) whose upper portion is broadened and provided with a curved slot, a shuttle-box, an angular lever pivoted on the arm, (*s*,) one arm of said lever being connected with the shuttle-box and broadened to correspond with the broad portion of the arm, (*s*,) and provided with a stud entering the slot in the arm, (*s*,) the other arm of said lever being provided with an anti-friction roller, and a bracket provided with a curved groove into which said roller extends, substantially as and for the purpose described.

3. In a loom for weaving pile fabrics, in combination, a shaft, (*s'*,) a lever, (*r*,) the crank-arm, (*t*,) a block, (*u*,) grooved to receive the lever, (*r*,) the plate, (*v*,) a round shank, (*x*,) on said block (*u*) and the strap, (*z*,) formed with a bearing at one end to engage the said shank, and at its other end joined to the said crank-arm, substantially as and for the purpose described.

**529,151. PILE-FABRIC LOOM.** HORACE WYMAN, Worcester, and GEORGE POOLE, Lowell, assignors to the Massachusetts Mohair Plush Company, Boston, and the Crompton Loom Works, Worcester, Mass. Filed Sept. 2, 1892. Serial No. 444,893. (No model.)



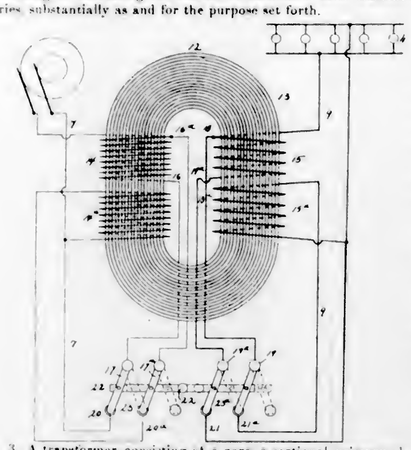
*Claim.*—1. A wire motion for looms comprising in its construction a movable wire-withdrawing hook provided with a pin or projection, a switch lever, and means including an eccentric for throwing the end of said lever into and out of the path of movement of said pin or projection, substantially as and for the purpose described.

2. A wire-motion for looms comprising in its construction, a movable wire-withdrawing hook provided with a pin or projection, a movable switch lever adapted to be moved into and out of the path of movement of said pin or projection, and an arm connected with said switch lever for moving the same, as set forth.

**529,152. ELECTRICAL TRANSFORMER.** FRITZ ZICKERMANN, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Dec. 9, 1892. Serial No. 454,652. (No model.) Patented in Germany Oct. 7, 1892, No. 73,200; in France Oct. 31, 1892, No. 225,299; in Switzerland Oct. 31, 1892, No. 5,934; in England Nov. 3, 1892, No. 19,821; in Belgium Nov. 7, 1892, No. 102,009, and in Italy Apr. 28, 1893, No. 34,011.

*Claim.*—1. A transformer consisting of the core, a primary element, a secondary element, and means for simultaneously increasing or decreasing the number of the turns in series of the coils which form the primary and secondary elements substantially as and for the purpose set forth.

2. A transformer consisting of a core, a sectional primary element, a sectional secondary element, and means for simultaneously increasing or decreasing the number of sections of each element in series, substantially as and for the purpose set forth.



3. A transformer consisting of a core, a sectional primary element, a sectional secondary element, and means for simultaneously connecting the sections of the primary element in parallel of the primary conductors, and the sections of the secondary element in parallel of the secondary conductors, or the sections of the primary element in series and across the primary conductors and the sections of the secondary element in series and across the secondary conductors, substantially as and for the purposes set forth.

4. A transformer consisting of a core, a sectional primary element, a sectional secondary element, and means for simultaneously altering the number of sections of the primary element in a single circuit across the primary conductors, and the number of sections of the secondary element in a single circuit across the secondary conductors, and in such a manner as not to alter the translative relation of said elements.

5. In a system of electrical distribution, the combination with a generator of electricity, a feeder circuit and a distributing circuit of a transformer interposed between the two, said transformer comprising a core, sectional primary and secondary coils thereon, and means for simultaneously altering the relation of said coil sections to the feeder and distributing circuits while maintaining their translative relation to each other.

6. In a system of electrical distribution, the combination with a generator of electricity, a feeder circuit and a distributing circuit, of a transformer interposed between the two, said transformer comprising a core, sectional primary and secondary coils thereon, and means for simultaneously altering the relation of said coil sections to the feeder and distributing circuits without altering the absolute number of turns of said coils and their translative relations to each other.

7. The combination in a transformer of a core, a primary element, a secondary element, and a device, for varying the resistance of said elements by simultaneously increasing or decreasing the number of ampere-turns of the respective elements.

8. The herein described method of varying the energy required to magnetize the core of a transformer which consists in simultaneously varying the number of ampere-turns of the primary and secondary elements of said transformer.

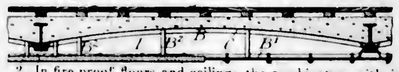
9. The herein described method of regulating the capacity of a transformer, which consists in varying the number of lines of force threading the core while maintaining the potential of the primary and secondary elements and their translative relations constant.

10. The herein-described method of regulating the capacity of a transformer, which consists in varying the number of lines of force threading the core by varying the current in the primary element of said transformer while maintaining constant the potential of the primary and secondary elements, the number of coil sections forming said elements, and the translative relations of said elements.

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**529,153. FIREPROOF FLOOR, CEILING, &c. THOMAS L. BANKS, London, England. Filed July 24, 1894. Serial No. 518,442. (No model.) Patented in England May 19, 1893, No. 10,044, and June 21, 1893, No. 12,227.**

*Claim.*—1. In fire-proof floors and ceilings, the combination with joists or girders of arched metal supports, a metal covering for carrying the concrete, rods such as G suspended from bars of the supports and metal lathing carried by the said rods for supporting the plaster ceiling, substantially as described.



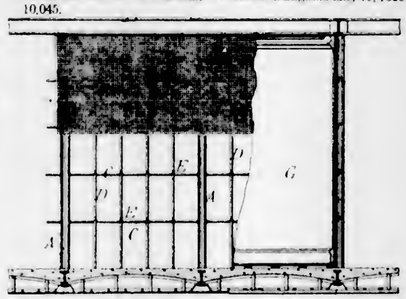
2. In fire proof floors and ceilings, the combination with joists or girders of arched metal supports, each composed of an arched bar, a horizontal bar and shiftable suspension bars, a metal covering for carrying the concrete, and means for suspending the plaster ceiling from the horizontal bar, substantially as described.

3. In fire-proof floors and ceilings, the combination with joists or girders of arched metal supports, a metal covering for carrying the concrete, eyes or loops suspended by hooked stems from the arched metal support, rods passed through the said eyes or loops, and metal lathing laid upon the said rods for supporting the plaster ceiling, substantially as described.

4. An arched support for a fire-proof floor or ceiling composed of an arched bar adapted to be supported at its ends on joists or girders, a horizontal bar connected to the arched bar by shiftable suspending bars, eyes or loops suspended by hooked stems from the horizontal bar, and rods passing through the said eyes or loops for supporting the metal lathing of the ceiling, substantially as described.

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**529,154. FIREPROOF FRAMING FOR PARTITION OR OTHER WALLS. THOMAS L. BANKS, London, England. Filed July 24, 1894. Serial No. 518,443. (No model.) Patented in England May 19, 1893, No. 10,045.**

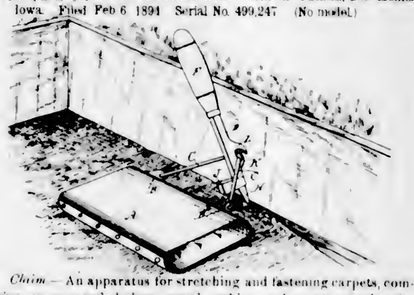


*Claim.*—1. A fire-proof framing for partition and other walls consisting of the combination of metal standards, such as A, fixed to the floor supports, horizontal metal bars, such as C, secured to the standards, vertical metal rods, such as D, on opposite sides of the horizontal bars for attachment of metal lathing and plaster, and metal clips, such as E, serving to secure the said rods to the horizontal bars, substantially as described.

2. Metal clips E for securing vertical rods or horizontal bars of a partition, having parts $E'$ adapted to be bent round the horizontal bars, and parts $E^2$ adapted to be bent round the vertical rods, substantially as described.

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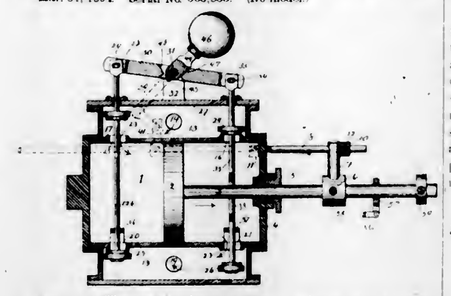
**529,155. CARPET-STRETCHER. JOHN E. BARNES, Des Moines, Iowa. Filed Feb. 6, 1894. Serial No. 499,247. (No model.)**



*Claim.*—An apparatus for stretching and fastening carpets, comprising an open-ended sheet metal cushion and carpet-gripping device made of a single piece of sheet metal having integral teeth on its under side and a bail or frame attached thereto for the purposes stated, a lever having a handle at its top end and its lower end pointed to engage the floor, a hook and tack puller projecting from the lever to engage the said bail or frame, and a hammer poll near the pointed end of the lever, to operate in the manner set forth.



**529,156. WATER-METER. CHARLES W. BECK, Chicago, Ill. Filed Mar. 31, 1894. Serial No. 505,835. (No model.)**



*Claim.*—1. The combination of a piston, a cylinder having at each end two oppositely located ports, one for the induction and the other for the eduction of the fluid, a valve for each of said ports, a pair of valve-stems one rigidly connecting the valves at one end of the cylinder and the other rigidly connecting the valves at the other end of the cylinder, a walking beam to which the valve stems are connected upon opposite sides of its center, and suitable connections between the piston and walking beam whereby the latter is operated, substantially as set forth.

2. The combination with a cylinder having suitable ports, a piston, and valves for controlling said ports, of a walking beam, means connecting said beam with the valves, a weight capable of a limited movement relatively to the beam and adapted to engage it during its falling movement, and connections between the weight and piston whereby movement is transmitted from the piston to the weight and said weight set in position to fall by gravity and operate upon the beam, substantially as set forth.

3. The combination of a cylinder, an induction chamber having two ports communicating with the cylinder, and an eduction chamber having two ports communicating with the cylinder, valves for controlling said ports, a pair of valve stems each extending directly from one induction valve to one eduction valve and connecting them, a walking beam to which said stems are connected, a lever capable of a limited movement independent of the beam, a weight on said lever, and means operated by the piston for moving said weight past the center of movement of the lever, the lever being adapted to engage the walking beam during the falling movement of the weight, substantially as set forth.

4. The combination of a cylinder, an induction chamber having two ports communicating directly with the cylinder, an eduction chamber having two ports communicating directly with the cylinder, the ports of the induction chamber being located opposite the ports of the eduction chamber, valves for controlling said ports, a pair of valve-stems passing through said ports and through the cylinder and each rigidly connecting one eduction valve with one induction valve, a walking beam to which said stems are connected, and connections between the piston and beam whereby the movement of the piston is transmitted to the beam, substantially as set forth.

5. The combination of a cylinder, an induction chamber having two ports communicating with opposite ends of the cylinder, an eduction chamber having two ports communicating with opposite ends of the cylinder, valves controlling said ports, a pair of valve stems each rigidly connecting one induction with one eduction valve, a single walking beam to which said valve-stems are connected on opposite sides of its center of movement, and connections between the piston and beam whereby the movement of the piston is transmitted to the beam, the parts being so constructed and arranged that at each oscillation of the beam the induction port at one end of the cylinder and the eduction port at the other end of the cylinder are open and the other ports closed, substantially as set forth.

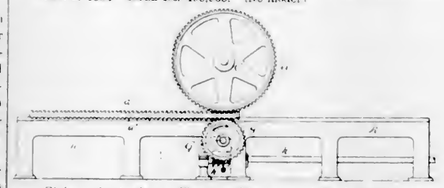
6. The combination with a cylinder having suitable ports, a piston, and valves for controlling said ports, of a walking beam, a shaft upon which it is adapted to oscillate, a weighted lever secured to said shaft, shoulders formed upon the walking beam and adapted to be engaged by said lever, said shoulders being sufficient distance apart to permit a limited movement of the lever independently of the beam, and connections between said shaft and the piston, substantially as set forth.

7. The combination with a cylinder having suitable ports, a piston, and valves for controlling said ports, of a walking beam, a shaft upon which it is adapted to oscillate, a weighted lever secured to said shaft, shoulders formed upon the beam and adapted to be engaged by said lever, said shoulders being sufficient distance apart to permit a limited movement of the lever independently of the beam, an endwise movable rod, connections between said rod and shaft, and a tappet carried by the piston-rod and adapted to operate the endwise movable rod aforesaid, substantially as set forth.

8. The combination with a cylinder having suitable ports, a piston, and valves for controlling said ports, of a walking beam, connections between said beam and valves, a shaft upon which said beam is adapted to oscillate, a weighted lever fixed to said shaft, shoulders carried by the beam and adapted to be engaged by the lever, said shoulders being sufficient distance apart to permit a limited movement of the lever independently of the beam, an arm rigid with said shaft, an endwise movable rod, an arm carried thereby, a link pivotally connecting the two arms aforesaid, and a tappet carried by the piston-rod and adapted to engage and operate the endwise movable rod aforesaid, substantially as set forth.

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**529,157. APPARATUS FOR THE MANUFACTURE OF ORNAMENTAL SHEETS OR PLATES OF GLASS. JAMES W. BONTA, Wayne, Pa., assignor to The Bonta Plate Glass Company, of West Virginia. Filed Feb. 2, 1894. Serial No. 498,903. (No model.)**



*Claim.*—1. A glass rolling machine comprising in combination, a frame, a horizontally movable table guided thereon, upper and lower racks provided on the opposite edges of said table, a roll, gear wheels on the opposite ends of said roll adapted to intermesh with the upper table racks, a lower shaft extending transversely across the machine, gear wheels mounted on said shaft and intermeshing with the lower table racks, and mechanism for rotating said shaft alternately in opposite directions, substantially as specified.

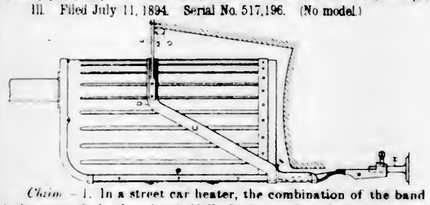
2. A glass rolling machine comprising in combination a frame, a horizontally movable table mounted thereon, upper and lower racks provided on the opposite edges of said table, a roll mounted above the table, vertically adjustable journal boxes in which said roll is carried, gear wheels on the opposite ends of said roll adapted to intermesh with the upper table racks, a lower shaft extending transversely across the machine, gear wheels mounted on said shaft and intermeshing with the lower table racks, and mechanism for rotating said shaft alternately in opposite directions, substantially as specified.

3. A glass rolling machine comprising in combination a frame, a horizontally movable table guided thereon, rack teeth forming upper and lower racks on the opposite edges of each table, a glass pressing roller mounted in journals above the table, said roller having a surface area equal to or greater than that of the table, and provided on said surface with an engraved or cast design to be reproduced on the glass, gear wheels on the opposite ends of said roll adapted to intermesh with the upper table racks, a lower shaft extending transversely across the machine, gear wheels mounted on said shaft and intermeshing with the lower table racks, and mechanism for rotating said shaft alternately in opposite directions, substantially as specified.

4. The combination in a glass rolling machine, of the frame A, the table B, racks $a$, $a'$, provided on each edge of said table, a glass pressing roller D adjustably mounted above said table, gear wheels $d$ on opposite ends of said roll and intermeshing with the racks $a$, a shaft G extending transversely across the frame under said table, gear wheels $g$ mounted on said shaft, and intermeshing with the racks $a'$, a worm gear H secured to said shaft, a worm $h$ intermeshing with said worm gear, a power driven shaft $h'$ on which said worm is secured, substantially as specified.

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**529,158. STREET-CAR HEATER. MENARD K. BOWEN, Chicago, Ill. Filed July 11, 1894. Serial No. 517,196. (No model.)**

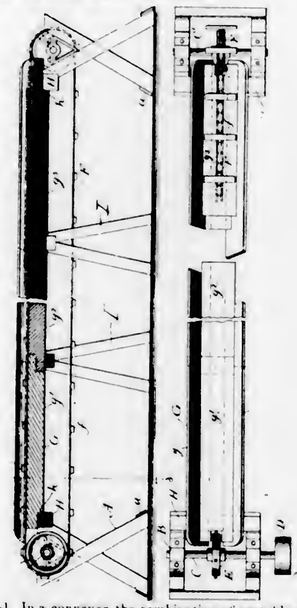


*Claim.*—1. In a street car heater, the combination of the band C, the apron E, having the shelf F, the braces L, and the adjustable legs G—H, substantially as and for the purpose set forth.

2. In street car heaters a combination of a casing having a circular back and the saddle like suspension consisting of the band C which passes around the circular back and down to the apron E, the shelf F, adjustable legs G—H, and braces L, all substantially as and for the purpose set forth.

3. A stove casing for street car heaters formed of vertical slats so arranged that there is alternately a slat and an opening and having a metal sheet lining substantially as set forth.

529,159. CONVEYER. JAMES BULGER, Chicago, Ill. Filed Jan. 12, 1894. Serial No. 496,603. (No model.)



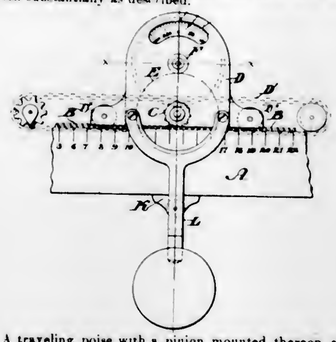
*Claim.*—1. In a conveyer, the combination of portable supports, wheels carried thereby, an endless carrier embracing said wheels, said carrier comprising a number of separable links of such construction that any desired number of them may be inserted in or removed from the carrier for the purpose of making it of the desired length, a strut arranged between and engaging said supports, said strut being constructed of a number of separable sections the meeting ends of which are provided with complementary tongues and grooves for preventing the lateral movement of one section relatively to the other, and portable supports arranged beneath the joints of the strut the construction being such that the several sections of the strut may be readily separated for changing the position of the conveyer, substantially as set forth.

2. In a conveyer, the combination of portable supports, wheels supported thereby, an endless carrier embracing said wheels, said carrier comprising a number of separable links of such construction that any desired number of them may be inserted in or removed from the carrier for the purpose of making it of the desired length, a strut arranged between the supports and having shoulders engaging them for preventing their relative movement toward each other, said strut and supports being otherwise unsecured to each other, said strut being formed of a number of separable sections placed end to end and being unsecured to each other, and portable supports arranged beneath the joints of the strut, substantially as set forth.

529,160. SCALE BEAM AND POISE FOR TESTING-MACHINES. CHARLES R. BUREY, Philadelphia, Pa., assignor to Frederick A. Richie, same place. Filed July 12, 1893. Serial No. 480,206. (No model.)

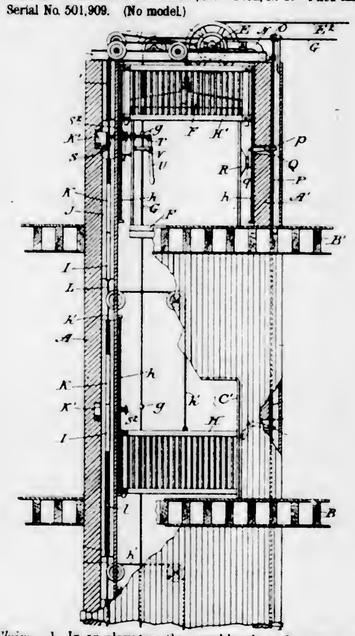
*Claim.*—1. A traveling poise or carriage for a scale beam, consisting of a casing having a shaft mounted thereon, a pinion on said shaft meshing with a rack on said scale, a rotatable dial in said casing, connecting gearing for said pinion and dial, a weighted hanger connected with the corners of said casing, rollers on said casing bearing on said scale beam, and a gib on the hanger bearing against the under side of said scale beam, said parts being combined substantially as described.

2. A traveling poise or carriage for a scale beam having a casing with a shaft mounted thereon, and carrying a pinion meshing with a rack on said scale, a rotatable shaft carrying a dial plate, a meshing gear wheel and pinion on said respective shafts outside of said casing, a weighted hanger connected with said casing, and a gib bearing against the under side of the scale beam, said parts being combined substantially as described.



3. A traveling poise with a pinion mounted thereon, and provided with rollers at its ends, a depending yoke having limbs connected with the corners of the casing of said poise, a gib in said yoke, and a scale beam with a rack thereon, said pinion meshing with said rack, and said gib being in contact with said scale beam from front to rear thereof, said parts being combined substantially as described.

529,161. DEVICE FOR OPERATING GATES FOR ELEVATOR-WELLS. CHARLES F. DE ARDEN, New York, N. Y. Filed Mar. 1, 1894. Serial No. 501,909. (No model.)



*Claim.*—1. In an elevator, the combination of a gate, a weight to move the same when released, hoisting mechanism for the elevator car, devices intermediate said hoisting mechanism and weight to lift the latter, and means to disengage said weight lifting devices from said hoisting mechanism, substantially as shown and described.

2. In an elevator, the combination of a gate, a weight to move the same when released, a car, hoisting mechanism for said car, devices intermediate said hoisting mechanism and weight to lift the latter, and means operated by the car in its movement to disengage said weight-lifting devices from said hoisting mechanism, substantially as shown and described.



3. In an elevator, the combination of a gate, a weight to move the same when released, a drum, means to rotate said drum, a cord connected to said drum to lift said weight and means to disengage said drum from its operating devices, substantially as shown and described.

4. In an elevator, the combination of a gate, a weight to move the same when released, a drum, means to rotate said drum, a cord connected to said drum to lift the weight, a car and hoisting mechanism therefor, and means operated by the car in its movement to disengage said drum from its operating means, substantially as shown and described.

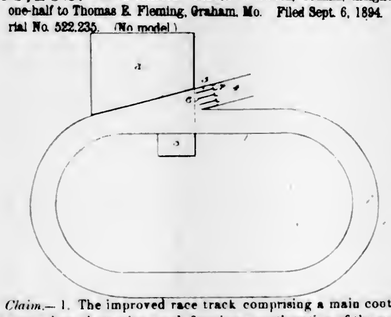
5. In an elevator, the combination of a gate, a counterbalance weight therefor, a second weight adapted to rest upon said first named weight to raise the gate, means independent of the first weight to lift the second weight from the first to allow the gate to close, a latch to retain said second weight in its elevated position and means to release said second weight, substantially as shown and described.

6. In an elevator, the combination of a gate, a weight to remove the same when released, hoisting mechanism for the elevator car, a drum loosely mounted upon a shaft of said hoisting mechanism, a cord connected to said drum and adapted to lift the weight, a clutch to which said drum may be connected to its shaft and means to disengage said clutch, substantially as shown and described.

7. In an elevator, the combination of hoisting mechanism, a car, a starting rope for said hoisting mechanism, said rope having a stop fixed thereon, a slide supported on said car and having a key-hole slot through which said starting rope is passed, whereby said slide may pass through said stop weight actuating the starting rope or may be moved to engage said stop, substantially as shown and described.

8. In an elevator, the combination of a gate normally held closed, a weight adapted to open said gate when released, a detent to hold said gate from action, an elevator car, hoisting mechanism therefor, a starting rope for said hoisting mechanism, and means carried by said car and adapted by a single movement to engage said starting rope and to release said latch as the car comes to rest, substantially as shown and described.

529,162. RACE-TRACK. JOSIAH B. DODGE, Sedalia, assignor of one-half to Thomas E. Fleming, Graham, Mo. Filed Sept. 6, 1894. Serial No. 522,235. (No model.)



*Claim.*—1. The improved race track comprising a main continuous way, a branch starting track forming a continuation of the same and a starting device located on the branch track substantially as specified.

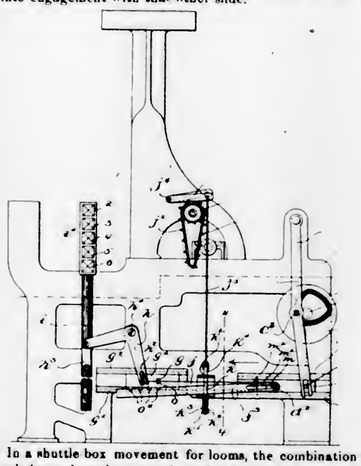
2. In a race track the combination of a main continuous track, a judges' stand, a branch starting track joining the main track adjacent to the judges' stand and forming a continuation of the main track substantially as specified.

3. In a race track the combination of a main continuous way, a branch track forming a continuation of the same and a series of stalls separated by partitions and located on the branch track, said stalls provided at their rear with openings for the entrance of the horses and communicating at their front with the track substantially as specified.

529,163. SHUTTLE-BOX-OPERATING MECHANISM FOR LOOMS. LEVERETT H. DOWNING, North Andover, Mass. Filed May 31, 1894. Serial No. 512,971. (No model.)

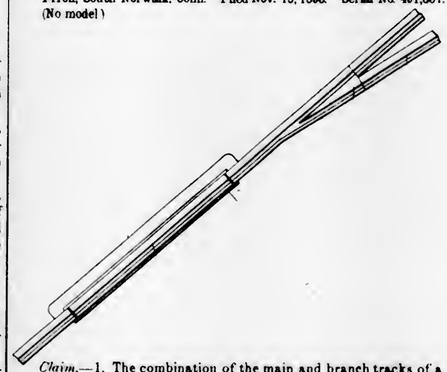
*Claim.*—1. In a shuttle-box movement for looms, the combination with the shuttle-box adapted to contain a plurality of shuttles and movable to bring them severally to position for use, of a pair of normally disconnected slides one being operatively connected with the shuttle-box and the other with reciprocating means, a number of push-bars or links for connecting the two slides, said bars being pivotally connected to the reciprocating slide with provisions for differential lost motion in all but one of them, and also constructed for separate engagement with the other slide, and pattern devices for moving the bars separately into such engagement.

2. In a shuttle-box movement for looms, the combination with the shuttle-box adapted to contain a plurality of shuttles and movable to bring them severally to position for use, of a pair of normally disconnected slides one being operatively connected with the shuttle-box and the other with reciprocating means, and each carrying a projecting pin or lug, a number of push-bars pivotally mounted at one end on the pin of the reciprocating slide and all but one of the bars being provided with slots graduating in length, the said bars being also formed with notches graduating in number for engagement with the pin on the other slide; and pattern-devices for bringing the bars separately into engagement with that other slide.



3. In a shuttle box movement for looms, the combination with the shuttle-box adapted to contain a plurality of shuttles and movable to bring them severally to position for use, of a pair of normally disconnected slides one being operatively connected with the shuttle-box and the other with reciprocating means, and each carrying a projecting pin or lug, a number of push-bars pivotally mounted at one end on the pin of the reciprocating slide and all but one of the bars being provided with slots graduating in length, the said bars being also formed with notches graduating in number for engagement with the pin on the other slide, spring-held guides for the bars, and pattern-devices connected with said guides and operating to move the bars separately into engagement with the last-named slide.

529,164. ELECTRIC SWITCH FOR RAILWAYS. CHARLES M. FITCH, South Norwalk, Conn. Filed Nov. 18, 1893. Serial No. 491,337. (No model.)



*Claim.*—1. The combination of the main and branch tracks of a railway, the metal box sunken at the point of one of the frogs of the switch, the rotary disk journaled in said box to revolve in a horizontal plane flush with said tracks and provided with cross grooves in its face adapted to alternately register and align with said main and branch tracks when the disk is revolved continuously in the same direction, and instrumentalities permanently located in said box and operated through suitable electrical connections whereby said disk is revolved at predetermined times and throughout certain arcs and always in the same direction, substantially as set forth.

2. The combination with the main and branch tracks of a railway, a box sunken at the point where the branch tracks diverge and having its face flush with said tracks, the disk journaled within said box and having in its face grooves which extend across said disk from side to side and are capable of successfully aligning with the main and branch tracks alternately when the disk is continuously turned in one direction, a ratchet wheel moving in harmony with said disk, and a pawl adapted to engage with said wheel and carried by the armature of an electro-magnet, and means electrically controlled by the contact of the railway car wheels with the rails for operating said pawl and ratchet, substantially as set forth.

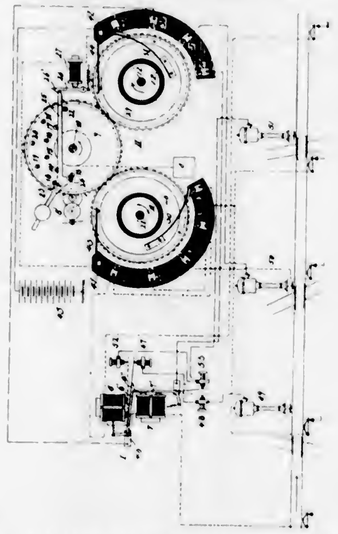
3. The combination of the main rails and branch rails, the box sunken in the road bed at the point where the branch rails diverge, the disk journaled in said box and having grooves which extend across the face of said disk from side to side and are adapted to successively align with said main and branch rails alternately when said disk is turned in one direction, the ratchet disk secured to the shaft of the disk S and having on its face teeth which are alternately long and short, according to the location of the grooves in the disk S, the armature pivoted loose around said shaft and carrying the gravity pawl adapted to engage with said teeth, the magnets mounted within said box, and electric connections between said magnets and tracks for controlling the vitalizing of the magnets whereby said armature may be attracted at pre-determined times, substantially as set forth.

4. The combination of the main and branch rails, the rotary disk having in its face grooves adapted to register with said rails, a ratchet disk moving in harmony with the first mentioned disk, devices electrically controlled and operated for revolving said ratchet disk, and automatically operated appliances electrically controlled for locking and unlocking the ratchet disk, substantially as set forth.

5. The combination of the main and branch rails of a railway, the rotary disk having in its face grooves adapted to alternately register with said main and branch rails when the disk is revolved continuously in the same direction, means independent of the railway car and operated through suitable electrical connections between the rails and the wheels of the car for automatically revolving said disk at predetermined times and throughout certain arcs and always in the same direction, and automatically operated appliances electrically controlled for locking the disk in position and for releasing the same, substantially as set forth.

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**529,165. TRAIN-OPERATED SIGNALING SYSTEM.** JOHANN H. FRISCHEN, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Nov. 28, 1893. Serial No. 492,250. (No model.)



*Claim.*—1. In a train-operated signaling system a series of track contacts; a series of circuits controlled thereby; a switching device adapted to successively close said circuits synchronously with the actuations of the track contacts; a series of signal devices; a series of circuits thereto; and means for controlling the closing of said circuits successively synchronously with the actuations of the track contacts.

2. In a train operated signaling system, a series of simplex track contacts; a series of single circuits controlled thereby; a series of signal devices; means controlled by said track contacts for actuating a signal device upon each closing of a circuit; and automatic circuit-selecting means also controlled by said contacts for closing a circuit to the advance signal corresponding with the position and direction of movement of the train.

3. In a train-operated signaling system, a series of simplex track contacts, a series of single circuits controlled thereby, a common switching device for all of said circuits adapted to successively break a circuit after the closing thereof by the corresponding track contact and make the subsequent circuit and signal devices corresponding to the track contacts and controlled respectively from the preceding contacts.

4. In a train-operated signal system, a series of simplex track contacts, a series of single circuits controlled thereby; an electro-magnet, a common switching device for all of said circuits actuated by said electro magnet and adapted to break and make the circuits of said series successively and signal devices corresponding to the track contacts and controlled respectively from the preceding contacts.

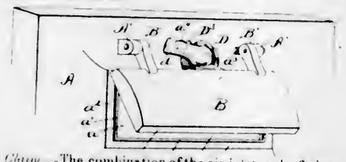
5. In a train operated signal system, a series of track contacts; a series of circuits controlled thereby; an electro magnet; a switching device actuated by said electro-magnet and adapted to break and make the circuits of said series successively; a series of signal devices; a series of circuits controlling the same; and a second switching device controlled by the first switching device and adapted to switch said signal devices into circuit successively synchronously with the closing of the track contacts.

6. In a train-operated signal system, a series of simplex track contacts, a series of single circuits controlled thereby; an electro-magnet; a switching device actuated by said electro magnet and adapted to break and make the circuits of said series successively; a series of signal devices; a series of circuits controlling the same, and a pair of electro-magnets, controlled by the terminal track contacts, and adapted to make circuit with the signal devices in the order corresponding to the direction of movement of the train.

7. In a train-operated signal system, a series of track-contacts; a series of circuits controlled thereby; an electro-magnet; a switching device actuated by said electro-magnet and adapted to break and make the circuits of said series successively; a series of signal devices, a series of circuits controlling the same, a second switching device controlled by the first switching device and adapted to switch said signal devices into circuit successively synchronously with the closing of the track contacts; and a pair of electro magnets, controlled by the terminal track-contacts, and adapted to make circuit with the signal devices in the order corresponding to the direction of movement of the train.

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**529,166. MEANS FOR OPENING OR CLOSING AIR-INLET OR DRAFT DOORS.** CHARLES A. GIFFORD, Akron, Ohio, assignor to the Taplin, Rice & Company, same place. Filed Mar 19, 1894. Serial No. 504,192. (No model.)



*Claim.*—The combination of the air inlet or draft door or damper having hinged lugs or ears B' at two points located a suitable interval apart, the part provided with the draft or air inlet opening, raised portions or lugs $a^4$ at the rear or inner side of lugs or ears B', and means for forcing the door closed, the size of said lugs or members $a^3$ being such that they, in the closed position of the door or damper, shall afford bearing for ears B' and avoid any strain upon the axial pin of the hinges, substantially as set forth.

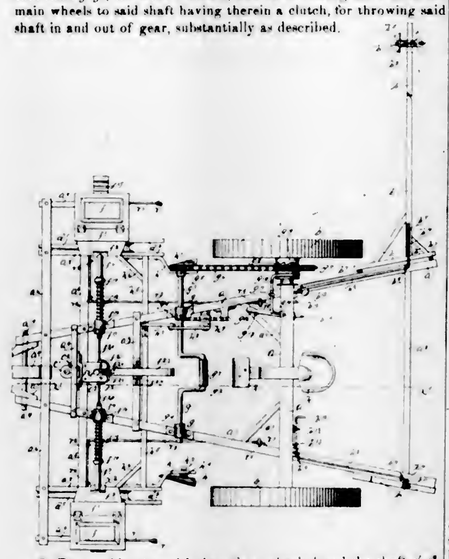
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**529,167. CORN-PLANTER.** HENRY H. GUNNER and FRANK O. SHIRLEY, Northfield, Minn. Filed Apr. 24, 1894. Serial No. 508,816. (No model.)

*Claim.*—1. In a two-row planter, the combination with the pair of seed-boxes, of the pair of feed-slides $f^7$, arranged in line with each other, and reciprocating toward and from each other, the springs $f^{15}$ on the said slides, tending to throw the same into their outermost or closed position the pivoted lever $f^{23}$ with the flexible connections $f^{20}$, passing over the guide-sheaves $f^{21}$, for moving the said slides inward to their dropping position against the resistance of said springs, and the constantly running shaft $g'$ with crank $g^3$, for cooperation with said lever $f^{23}$, to produce the dropping action, substantially as described.



2. In a two-row planter, the combination with a pair of seed boxes, and the pair of feed slides, of the means for operating said slides, comprising the springs $f^{15}$, the pivoted lever $f^{23}$, the flexible connections $f^{20}$, the guide sheaves $f^{21}$, the constantly running crank cam shaft $g'$ $g^2$, the main wheels $b$, and an increasing drive from the main wheels to said shaft having therein a clutch, for throwing said shaft in and out of gear, substantially as described.

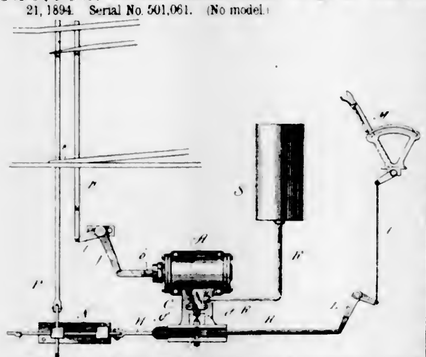


3. The combination with the axle $a$, wheels $b$ and the shaft $g'$ $g^2$, of the sprocket $g^5$ on said shaft, the chain $g^6$, the sprocket $g^7$ loose and slidable on said axle, the half clutch member $g^8$ and $g^9$, the shipper-fork $g^{10}$ and the hand lever $g^{11}$, all arranged and operating substantially as described.

4. The combination with the two-row planter, of the markers pivoted to the planter frame, the lock-plates $p^{13}$ and the yielding spring holders $p^8$ $p^{10}$ $p^{12}$ connecting the marker arms with the frame, for yieldingly holding and manipulating the same, substantially as described.

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**529,168. SWITCH.** CHARLES HASSEL, Chicago, Ill. Filed Feb. 21, 1894. Serial No. 501,061. (No model.)



*Claim.*—1. In switches, the combination of a cylinder provided with a reciprocating piston therein adapted to be operated by fluid pressure, a bell crank lever connected with the switch points and piston, a slide valve upon such cylinder to govern the admission of fluid pressure to the same and provided with a valve rod, a recessed cam plate to actuate said valve rod, and a system of rods and levers to operate the cam plate, substantially as described.

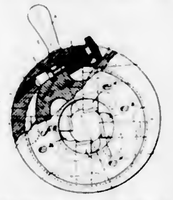
2. In combination with a switch, an operating cylinder provided with a reciprocating piston, for operating the switch, and with an air chest, a slide valve in such chest, a valve rod connected with such slide valve, a cross head on such rod, a cam plate for contacting and operating such cross head and valve and a system of rods and levers for actuating said plate, substantially as described.

3. A switch system comprising, a switch rod for moving the switch points, an operating cylinder adjacent to such rod, and having a reciprocating piston, mechanism connecting the piston with such rod, a chest on such cylinder having a slide valve and valve-rod, a cam plate coutacting and operating such valve rod, an actuating lever, and a system of rods and levers connecting the cam plate and actuating lever together for imparting its movements to such plate, substantially as described.

4. A switch system comprising a switch rod for moving switch points, an operating cylinder adjacent to such rod and having a reciprocating piston, mechanism connecting the piston with such rod, an air chest on such cylinder having a slide valve and a valve rod, a cam plate contacting and operating such valve rod, and actuating lever, a system of rods and levers connecting the cam plate and actuating lever together for imparting its movements to such plate, a locking bolt connected with the actuating lever for holding the locking rod in its position, and a locking rod connected with the switch points, substantially as described.

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**529,169. SCREW-CUTTING DIE.** JAMES HARTNESS, Springfield, Vt. Filed Jan 9, 1894. Serial No. 496,260. (No model.)



*Claim.*—1. A screw-cutting die comprising a support or holder, a cutter-carrying body held thereby, and connections between the support and body with provisions rendering the latter capable of lateral movement bodily in the support to adjust itself axially with respect to the work without necessarily changing the angular relation of its axis and that of the work.

2. A screw-cutting die comprising a support or holder, a cutter-carrying body held thereby, connections between the support and body with provisions rendering the latter capable of lateral movement bodily in the support to adjust itself axially with respect to the work without necessarily changing the angular relation of its axis and that of the work, and means for yieldingly supporting the said body.

3. A screw-cutting die comprising a support or holder, a cutter-carrying body held thereby, and connections between the support and body with provisions rendering the latter capable of lateral movement bodily in the support to adjust itself axially with respect to the work without necessarily changing the angular relation of its axis and that of the work, while rigidly holding the die against rotary cutting strains.

4. An automatically-opening die, comprising a holder, a body therein, connections between the holder and body with provisions whereby the latter is yieldingly held against lateral strains, rigidly held against rotary cutting strains, and rendered capable of a longitudinal movement; adjustable cutters normally held in their open adjustment in said body; means for holding said cutters in their closed adjustment; and means operated by a longitudinal movement of the body for releasing the cutters and allowing them to assume their normal adjustment.

5. An automatically-opening die, comprising a holder or support, a die-body therein, connections between the holder and die-body with provisions whereby the latter is yieldingly held against lateral strains and rigidly held against rotary strains, and rendered capable of longitudinal movement, radially-movable cutters, automatic means for moving said cutters to their open adjustment, and locking-mechanism that holds the cutters in their closed adjustment and is released by a relative longitudinal motion of the die-body to its holder.

6. An opening-die, comprising a holder, a die-body, connections between the holder and die body with provisions for permitting a slight lateral motion of the latter, cam-operated cutters or chasers fitting in radial slots in the face of said body, and means for resisting cutting strains on the cutters and die-body.

7. A threading-die, comprising a holder having a face approximately perpendicular to the axis of the work, a die-body yieldingly held against said face, and connections between the holder and die-body with provisions permitting an independent lateral movement of the latter while rigidly holding the die against rotary cutting strains.

8. An opening die comprising a holder, a spring-supported die-body, and means of connection between the holder and die-body with provision for rigidly resisting cutting strains and for bodily movement

of the die-body to adjust itself to the work without changing the relative angularity of the axes of the die-body and work.

9. An adjustable screw-cutting die, with provisions to permit its taking the axial position of the work, without affecting the angular relation of its axis and that of the work and provided with means for resisting the cutting strains.

10. An opening die, provided with cam-operated cutters or chasers fitting in radial slots in the face of the die body, a cam-holder engaged with said cam, and a spring-pressed locking collar having means for engagement with said cam-holder.

11. An automatically-opening screw-cutting die, comprising in its construction a support or holder, a cutter-carrying body, connections betweeo the holder and body with provisions rendering the latter capable of limited lateral play and also capable of independent longitudinal movement, while rigidity in the direction of the cutting strain is maintained, means for yieldingly resisting longitudinal movement of said body, and means controlled by the iudependent longitudinal adjnstment of the body for simultaneously retracting or opening the cutters.

12. An automatically-opening die, comprising a holder, a die-body, cutters carried thereby, a rotative cam for opening and closing the cutters, a cam-holder engaged with the cam, a collar rotatable on the die-body and adapted to engage the cam-holder, a spring actuating the said collar and therethrough tending to move the cam and its holder to open the die, and a detent for holding the cam in position to close the die.

13. An automatically-opening die, comprising in its construction a holder, a die-body supported therein, connections between the holder and body with provisions rendering the latter capable of independent longitudinal movement, radial cutters supported by said body, a rotative cam controlling said cutters, a spring tending to throw the cam to position to open the die, a detent for holding the cam against said spring, a pin engaged with the holder and held thereby from longitudinal movement and having a sliding engagement with the body said pin having a tapered part, and a tappet-rod adapted to ride on said tapered part under longitudinal movement of the body and disengage the detent.

14. A screw-cutting die, comprising a die-body having radial slots, cutters or chasers movable in said slots, a rotatable cam adapted to move the cutters to their open and closed adjustments, a cam-holder rotatable on the die-body, and an adjustable connection between said holder and cam whereby the latter may be minutely adjusted, the holder being adapted to be moved with the cam to effect a quick adjustment.

15. A screw-cutting die, comprising a die body having radial slots, cutters or chasers movable in said slots, a rotatable cam adapted to move the cutters to their open and closed adjustments, a cam-holder rotatable on the die-body, an adjusting-screw engaged as described with the cam holder and cam whereby the latter may be independently rotated, said screw constituting a connection between the holder and cam so that the two may be rotated together to effect a quick adjustment.

16. A screw-cutting die, comprising a die-body having radial slots, cutters or chasers movable in said slots, a rotatable cam adapted to move the cutters to their open and closed adjustments, a cam holder rotatable on the die-body, an adjustable connection between said holder and cam whereby the latter may be minutely adjusted, the holder and cam being movable together to effect a quick adjustment of the cam, and a spring-pressed collar adapted to partially rotate said cam-holder.

17. A screw-cutting die, comprising a die-body having radial slots, cutters or chasers movable in said slots, a rotatable cam adapted to move the cutters to their open and closed adjustments, a cam-holder rotatable on the die body, an adjustable connection between said holder and cam whereby the latter may be minutely adjusted, the holder and cam being movable together to effect a quick adjustment of the cam, a spring pressed collar adapted to partially rotate said cam-holder, a detent adapted to hold the cam holder against the action of said collar, and means operated by a longitudinal movement of the die-body for displacing said detent.

18. A screw-cutting die comprising a holder, a two-part die-body, connections between one member thereof and the holder, connections between the two members of said body with provisions for independent longitudinal movement of one without disconnection of the two members, radially-movable cutters or chasers in the longitudinally-movable member, means for automatically moving said cutters outwardly to their open adjustment, a detent adapted to hold the cutters in their closed adjustment, and detent displacing devices operated by a longitudinal movement of the cutter carrying member

19. A screw-cutting die comprising a holder, a two part die-body, connections between one member thereof and the holder, connections between the two members of said body with provisions for independent longitudinal movement of one without disconnection of the two members, radially-movable cutters or chasers in the longitudinally-movable member, and a spring-pressed collar engaged with the cam-holder and adapted to turn the same in one direction.

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529,170. FOLDING UMBRELLA. RICHARD H. HATFIELD, Chicago, Ill. Filed Nov. 1, 1893. Serial No. 489,733. (No model.)



*Claim.*—In a folding umbrella, a tubular staff composed of several sections provided with slip joint devices at their ends whereby they are connected together lengthwise, in combination with a connecting link rod, B, composed of sections corresponding in number with the sections of the staff and joined together by hinges which coincide with the joints of the staff sections, arranged within the tubular staff and at one end connected to the handle-section thereof, a tubular plug, C, fitted in the outer end of the outer staff-section, in which it is free to slide, provided with a side opening, *c'*, and connected at its inner end with the outer section of the link rod, and a spring catch, D, secured within said tubular plug, C, and arranged to project through the said opening therein to pass over the outer end of the staff section, when the plug is pulled out sufficiently far to close the sections of the staff together, and thereby fasten them in this position, substantially as described.

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529,171. LOCK-HINGE. WILHELM HEGENSCHEIDT, Ratibor, Germany. Filed Apr. 26, 1893. Serial No. 471,847. (No model.)

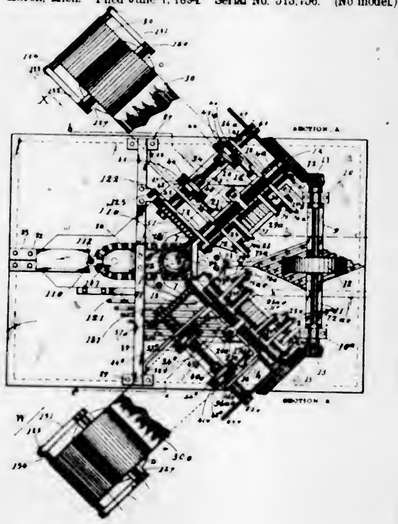


*Claim.*—1. In a device of the character specified, the combination of two plates arranged opposite to each other, the one being provided with a pivot pin and an auxiliary pin, and the other with a slot receiving the pivot pin, and permitting travel of the same, and a curved slot receiving the auxiliary pin, the latter slot having a deflected termination, substantially as described

2. In a device of the character specified, the combination of two plates arranged opposite to each other, the one being provided with a pivot pin and an auxiliary pin, and the other with two concentric slots adapted to receive the pins, the outer slot having a deflected termination, substantially as described.

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529,172. MACHINE FOR MAKING EGG-FILLERS. HARVEY E. HERR, Dayton, Ohio, assignor to the American Egg Case Company, Port Huron, Mich. Filed June 7, 1894. Serial No. 513,756. (No model.)





*Claim.*—1. In a machine for making egg fillers, the combination with a supporting base or table, of two vertical supporting frames each set at an angle of forty five degrees, or thereabout, to a line drawn longitudinally through the supporting base or table, or substantially at right angles to each other, mechanism for receiving and feeding the female strip of paper, means for punching it, and cutting it off from the main strip, rubber faced rollers for receiving and feeding the strip after being cut, a receiving form, and beaters that force the strip therein, means for moving the form after receiving the female strip to a position to receive the male strip, mechanism for receiving and feeding the male strip of paper, punching it, cutting it off from a main strip, delivering it to the rubber faced rollers and to a series of beaters that force it down cross-wise and into the female strip openings while located in said form, substantially as described.

2 In a machine for making egg-fillers, a supporting base or table provided with a vertical supporting frame set at an angle of forty-five degrees or thereabout; to a line drawn longitudinally through the base or table, in combination with a receiving form, means for operating it, mechanism for receiving and feeding the female strip of paper, and for punching, cutting and delivering the same to the receiving form, means for moving said form and presenting it to a second vertical supporting frame located at right angles to the first supporting frame to receive the male strip, means for receiving, feeding, punching, cutting and delivering the male strip of paper, and beaters that force it down cross-wise and into the opening of the female strips after they have been deposited in said form, substantially as described.

3. In a machine for making egg fillers, a supporting frame, means for feeding, punching and cutting a filler strip and dropping it, and rubber faced rollers for carrying it down to the beaters, in combination with a series of beater fingers connected to a cross bar adapted to move in vertical slideways and pivoted to a connecting rod pivoted to an arm on the rocker shaft for the purposes described.

4 A machine for making egg-fillers consisting of the following elements, a base or table upon which the supporting frames are secured, two vertical supporting frames, set so their delivering sides are at right angles facing toward each other, mechanism located on one frame for receiving, feeding, punching, cutting and delivering a strip of paper, a horizontally movable receiving form, means substantially as above described for moving said receiving form step by step in a horizontal plane until filled with the first series of egg filler strips, means for moving it with its series of parallel strips to the second supporting frame for receiving the completing series of strips obliquely across the first series of strips, mechanism located on the second supporting frame for feeding, punching, cutting and thus delivering the strips to the form, means for moving the form step by step until filled, means for relieving the form from the now completed filler and then swinging the empty form downward and carrying it across under its operating mechanism in a horizontal plane and raising it to the starting point in a position to repeat the operation, substantially as described.

5. In a machine for making egg-fillers, the combination with a mutilated gear wheel mounted on a vertical shaft and consisting of a series of pairs of gear teeth, having a plain peripheral space intervening between the gear teeth, a series of vertically pivoted friction rollers equal in number to the pairs of gear teeth, a mutilated gear pinion mounted on a vertical shaft and having two series of three gear teeth, one directly opposite the other, each series of teeth adapted to gear in with the teeth in the large mutilated gear wheel, a disk mounted directly above the mutilated pinion rigidly secured to the same shaft and provided with two depressions on its periphery directly opposite each other and large enough to allow the friction rollers to pass by as the mutilated gear wheels operate in their engagement with each other, and a sprocket chain mounted on pinions, the driving pinion of which is mounted on the same shaft with the large mutilated gear wheel, a grooved cam track located lengthwise below the sprocket gear chain, and an even number of egg filler or tray forms pivoted at equal distances apart on said chain and having at each of their rear ends a friction roller in said cam track, whereby an intermittent step by step movement is given to the form substantially as described.

6. In a machine for making egg-fillers, the combination with an oblong inverted grooved cam track, of a horizontal sprocket chain mounted on sprocket wheels on vertical shafts, one of which is the driving shaft, a series of egg-filler or tray forms having their arms pivoted at equal distances apart on said sprocket chain and the rear ends of said arms pivoted to friction wheels in engagement with the grooved cam, and means substantially as above described for giving the sprocket chain an equal step by step movement, for the purposes described.

7. In a machine for making egg-fillers, a diamond shaped filler form rigidly secured to a forked arm having its opposite end pivoted horizontally to a vertically pivoted arm 113, means for giving it a horizoutal swinging movement consisting of a stationary oblong grooved cam, in combination with a horizontal sprocket chain mounted on sprocket gear wheels to which chain the arm 113 is pivoted by a vertical shaft 112, means for operating said chain, a tripping mechanism carried by the forked arm 115, a stationary bar 121, for operating it as the arm moves under it as it is carried around by the sprocket chain for dropping the egg filler form every time it comes around to that point, substantially as described.

8. In a machine for making egg fillers, the combination of a diamond shaped filler form, a forked arm to which it is secured having its opposite end pivoted horizontally to a vertically pivoted arm 113, having a friction roller at its opposite end and an oblong grooved cam in which the friction roller operates, so as to give the form a horizontal swinging movement, means substantially as above described, for dropping the form, a vertical pivoted bar 112, secured to the arm 113, a horizontal sprocket chain to which the pivot bar is connected, means for operating the sprocket chain, the forked bars 137, over which a completed filler passes as the form passes under and drops, leaving the filler thereon, substantially as described.

9. In a machine for making egg fillers, the combination of a diamond shaped filler form, a forked arm to which it is secured having its opposite end pivoted horizontally to a vertically pivoted arm 113, having a friction roller at its opposite end and an oblong grooved cam in which the friction roller operates so as to give the form a horizontal swinging movement, means substantially as above described for dropping the form, a vertical pivoted bar 112, secured to the arm 113, a horizontal sprocket chain to which the pivot bar is connected, means for operating the sprocket chain, a foot 128, connected with a plunger rod and means for operating the same the moment the filler form passes over on to the foot, for lifting said form up to its normal height for receiving filler strips, substantially as described.

10. In a machine for making egg fillers, the combination of the strip delivery mechanism carrid by the two supporting frames, with a series of vertically pivoted arms, a diamond shaped strip receiving form secured to one end of each of said arms and a friction roller at each opposite end, an oblong grooved cam in which said rollers operate, and mechanism substantially as above described for giving the said forms their horizontal swinging movements, whereby one side of each of the diamond shaped strip receiving forms is successively presented to the delivery mechanism located on one supporting frame until filled with a parallel series of strips, then the other side of said form diverging from the same point is carried horizontally over to the other supporting frame in position to receive a series of cross strips deposited obliquely thereon, substantially as described.

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529,173. EGG-CASE. HENRY C. HERR, Williamsville, N. Y., assignor to the American Egg Case Company, Port Huron, Mich. Filed June 18, 1894. Serial No. 514,839. (No model.)



*Claim.*—1. In an egg case, a partition or male strip 1, having a flaring inlet opening which terminates in a narrow opening extending into and partly around a hook portion, in combination with a female strip provided with a flaring inlet opening terminating in a long narrow opening, and an inclosed opening having two projecting tongues their ends facing each other, in which the hook portion engages, for the purposes described.

2. In an egg case, the combination with a series of male strips arranged parallel with each other, each having inlet openings extending from the edges of the strips inward and partly surrounding the hook portions, of a series of female strips, arranged at right angles to the male strips; each having inlet openings extending inward, and openings in which the hook portions engage, each having two tongues projecting toward each other but leaving room enough for the hooks to enter, substantially as described.

3. The within described mode of making egg cases, which consists in first, arranging a series of female strips parallel with each other each strip being provided with a series of entering openings, and a series of substantially H shaped openings having yielding tongues extending toward each other with an opening between them, then placing in and diagonally across said entering openings a parallel series of male strips each provided with a series of entering openings inclosing hook portion and forcing them together until the hooks rest sidewise against the sides of the yielding tongues in the female strips, then causing said hooks to yield and spring by the ends of the yielding tongues into the opening between them, by extending the narrow portion of the egg case so as to bring the male and female strips at right angles to each other or nearly so and thereby permanently interlock them, substantially as described.

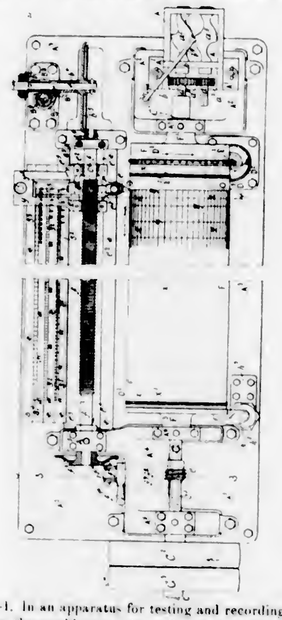
**529,174. MAGNETIC TELEPHONE.** OLIVER HIGGINS, Napoleon, Ohio. Filed July 16, 1894. Serial No. 517,743. (No model.)



*Claim.*—1. In a magnetic telephone, a magnet having spools upon each end of the same, a case covering the magnet, diaphragms at each end of the same, and caps secured at each end of the case holding the diaphragm in place.

2. In a magnetic telephone, a permanent magnet, a case covering the same, a receiver and transmitter mechanism in opposite ends of the case, set screws for adjusting the magnet relative to the case for regulating the field of the same.

**529,175. MECHANISM FOR TESTING AND RECORDING PROPERTIES OF FLOUR.** JAMES HOGARTH, Kirkcaldy, Scotland. Filed June 30, 1892. Serial No. 438,518. (No model.) Patented in England Apr. 20, 1891, No. 6,784, and in Belgium Mar. 16, 1892, No. 98,851.



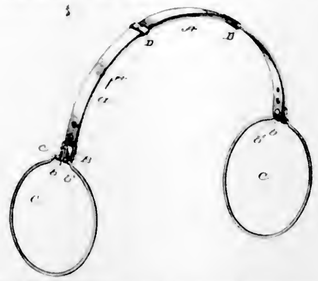
*Claim.*—1. In an apparatus for testing and recording the properties of flour, the combination of a cylinder adapted to have a diagram paper mounted on its circumference and a dynamometer formed in one with the cylinder, with a traveling pencil to mark on the paper mounted on the circumference of the cylinder, substantially as and for the purposes set forth.

2. In an apparatus for testing and recording the properties of flour, the combination of a dynamometer and a dough mixer, with a water tube, a rod for varying the volume of liquid in the same, a pipe connection from the water tube to the mixer and means for delivering the water from the tube to the dough mixer at a uniform rate, substantially as and for the purposes set forth.

3. In an apparatus for testing and recording the properties of flour, the combination of a dynamometer, a dough mixer and inverted siphon or U-shaped water tube and devices for raising and lowering one arm of said tube, said devices being operated from the prime moving shaft of the apparatus, substantially as and for the purposes set forth.

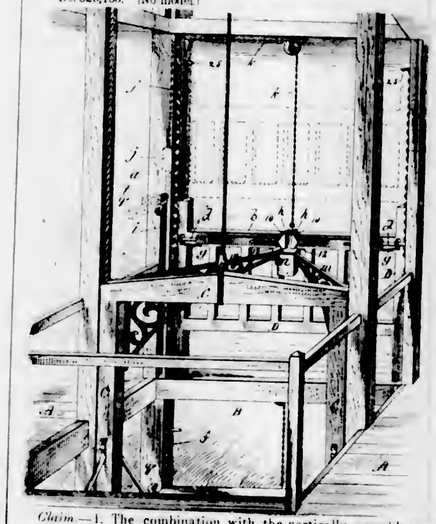
4. In an apparatus for testing and recording the properties of flour, the combination of a dough mixer with a dynamometer, a variably acting quadrant lever and means for transmitting motion from the dynamometer cylinder to the circumference of and actuating said weighted quadrant lever, substantially as and for the purposes set forth.

**529,176. EAR MUFF.** ISAAC B. KLEINERT, New York, N. Y., assignor to the I. B. Kleinert Company, same place. Filed Aug. 2, 1894. Serial No. 519,293. (No model.)



*Claim.*—The combination with an ear muff head-frame having knuckles *b b* on its ends, of ear-muff frames, each pivotally connected to said head-frame by having the wire forming said ear frame passing through said knuckles, and an arm or loop extending from each of said ear-frames between said knuckles, and adapted to limit the movement of said ear frame, substantially as described.

**529,177. AUTOMATIC SAFETY-GUARD FOR ELEVATOR-WAYS.** JACOB KOBOS, Chicopee, Mass. Filed Aug. 13, 1894. Serial No. 520,135. (No model.)



*Claim.*—1. The combination with the vertically movable gate having the outwardly movable bars *d d* with the transverse projections *h h* at their adjacent inner ends, the springs *g g* for forcing the bars outwardly and the vertical rack bars with which the outer extremities of said bars engage, of the elevator car having the trough-like member or shoe *n* with the inclined opposite sides substantially as and for the purposes described.

2. The combination with the elevator car having the member *q* and the tubular post with the slot *i* and rib *u* having the recess at a suitable point in its height of the gate, the counterweight in said tubular post and having a cord and sheave guided connection with the gate, the foot *l* having a hinge connection with the weight and having the articulated toe $l^2$ substantially as described, which projects through said slot into the path of travel of the said member of the car substantially as described.

3. The combination with the elevator car having the member *q*, the tubular post with the slot *i* and having the rib with the recess at a suitable point in its height, and the spring applied in the said tubular post at said recess, of the gate, the counterweight playing in said tubular post, the hinged foot connected to the weight and sliding alongside said rib and having the articulated toe substantially as described which projects through said slot into the path of travel of said member of the car, substantially as described.



4. The vertically movable gate having the outwardly movable members *h h* and springs for maintaining them in their outward dispositions, the tubular post provided with the slot *i*, the counterweight cord connected with the gate and playing in said tubular post and having the hinged foot *l* with the articulated toe $l^2$ in combination with the elevator car having supported at an upper portion thereof the trough-like member *n* with the inwardly and downwardly convergent opposite sides, and also having the member *q* to coact with said toe, all substantially for the purposes set forth.

**529,178. WATCHMAKER'S POISING-TOOL.** CARL H. LANDGRAF, New York, N. Y., assignor to Henry Zimmern & Co., same place. Filed June 1, 1894. Serial No. 513,119. (No model.)

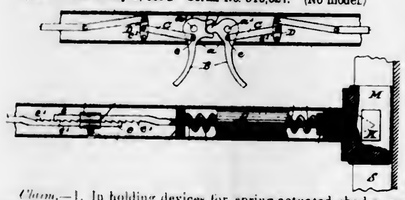


*Claim.*—1. In a poising tool the combination with the table or support A, of the adjustable supports C adapted to move toward or from each other in parallel planes, a disk D provided with a handle or lever and indirectly connected with said supports C, substantially as described.

2. In a poising tool the combination with the disk A, of the arms B pivoted to said disk A and upon opposite sides and equally distant from the center thereof, supports C secured to said arms B and a disk D pivoted to said disk A and adapted to simultaneously adjust said supports toward or away from each other in parallel planes, substantially as described.

3. In a poising tool the combination with the disk A, of the arms B provided with support and pivoted from opposite sides of and at points equally distant from the center of said disk, a disk D provided with a handle or lever and pins passing through said arms B and through slots formed in said disks A and B, substantially as described.

**529,179. HOLDING DEVICE FOR SPRING-ACTUATED SHADES.** JOHN A. LIDBACK, Portland, Me., assignor to Edward T. Burrowes, same place. Filed July 5, 1894. Serial No. 516,627. (No model.)



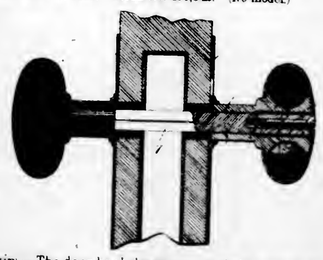
*Claim.*—1. In holding devices for spring-actuated shades, comprising a hollow shade stick, spring-actuated rods therein, and presser-pendants for operating the rods, suitable conical or wedge shaped expanders attached one to the outer end of each of said rods, and holding devices formed in two parts and separable horizontally, each part being grooved for the reception of the expander whereby the said holding devices may be forced against the sides of the groove in the window-casing.

2. In holding devices for spring-actuated shades, comprising a hollow shade stick, spring-actuated rods therein, and presser-pendants for operating the rods, suitable conical or wedge-shaped expanders attached one to the outer end of each of said rods, holding devices formed in two parts and separable horizontally, said parts being grooved in their adjacent surfaces for the reception of the expander, and provided upon their outer surface with a suitable elastic friction plug, and a shell or cap inclosing devices, provided with an opening in each side for the accommodation of the friction plugs of said holding devices, substantially for the purpose set forth.

3. In holding devices for spring-actuated shades the combination of a hollow shade stick, spring-actuated rods therein each being formed of two parts, one part overlapping the other and their contacting surfaces being serrated, and provided with a removable sleeve or collar capable of holding the serrated interlocking parts firmly together, presser-pendants attached to the adjacent ends of said rods and conical or wedge shaped expanders attached to their outer ends, and holding devices fitting over said expanders and separable horizontally, whereby said holding devices may be forced against the sides of the groove in the window-casing.

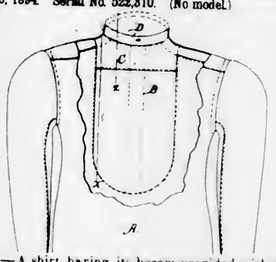
4. In holding mechanism for spring-actuated shades comprising a hollow shade stick, spring-actuated rods therein, having holding devices at their outer ends adapted for contact with the window-casing, suitable presser pendants attached to their adjacent ends for operating the said rods, said presser-pendants being connected and adapted for movement in unison, and equal one with the other.

**529,180. DOOR-KNOB.** CHARLES A. LINDHOLM, Brooklyn, N. Y. Filed Nov. 18, 1893. Serial No. 491,342. (No model.)



*Claim.*—The door knob described, consisting essentially of a metallic core with a rounded end and an annular flange projecting from the side, and an oblate spheroidal metallic shell inclosing and resting on the rounded end and turned in over the flange, said core projecting beyond the flange and forming a shank, substantially as described.

**529,181. SHIRT.** THOMAS H. MACDONALD, Philadelphia, Pa. Filed Sept. 6, 1894. Serial No. 522,310. (No model.)



*Claim.*—A shirt having its bosom provided with a reinforce at its juncture with the neck band, said reinforce being permanently secured to the bosom and extending to and out beyond the juncture of the bosom and neck-band, whereby the bosom at the reinforced portion is thicker than the remainder thereof.

**529,182. PROCESS OF MAKING SALICYLIC ACID.** SIEGFRIED MARASSE, Berlin, Germany. Filed Apr. 25, 1894. Serial No. 508,985. (No specimens.) Patented in Germany Feb. 20, 1893, No. 73,279; in France Aug. 23, 1893, No. 232,352, and in England Sept. 9, 1893, No. 17,002.

*Claim.*—1. The process herein-described of making salicylic acid, which consists in subjecting a dry mixture of phenol and potassium carbonate in excess to the action of heat and carbonic acid gas under pressure until the reaction is completed and potassium salicylate obtained, and then producing salicylic acid from the potassium salicylate in the well-known manner, substantially as set forth.

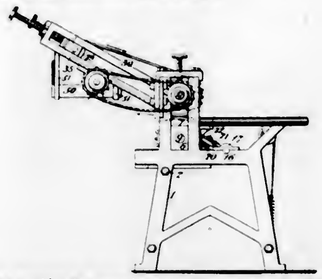
2. In the process of making salicylic acid, the step of producing potassium salicylate by subjecting a dry mixture of phenol and potassium carbonate in excess to the action of heat and carbonic acid gas under pressure, substantially as set forth.

**529,183. MACHINE FOR MOUNTING PHOTOGRAPHIC PRINTS.** JAMES W. MCCABE, New York, N. Y. Filed Apr. 19, 1894. Serial No. 508,068. (No model.)

*Claim.*—1. In a machine for mounting prints or the like, the combination of a lower carrier, a washing receptacle therefor, a scraper for removing the paste from said carrier after the washing operation, and an upper carrier co-operating with the lower carrier to feed the print and its mount and to cause the print to adhere to the mount, substantially as set forth.

2. In a machine for mounting prints or the like, the combination of a lower carrier, a washing receptacle therefor, a self-adjusting scraper for removing the paste from said carrier, and an upper carrier co-operating with the lower carrier to feed the print and its mount and to cause the print to adhere to the mount, substantially as set forth.

3. In a machine for mounting prints or the like, the combination of a lower carrier, a washing receptacle therefor, a scraper composed of a pivoted supporting frame, scraping bars and an intermediate rubber strip to bear against said carrier, means for pressing said strip against said carrier, and an upper carrier co-operating with the lower carrier to feed the print and its mount and to cause the print to adhere to the mount, substantially as set forth.



4. In a machine for mounting prints or the like, the combination with an upper traveling member, of a lower roll, a washing receptacle in which said roll revolves, a pivoted scraper for said roll, the cord and pulley, and the spring.

5. In a machine for mounting prints or the like, the combination of a lower carrier, a washing receptacle therefor, a scraper composed of a pivoted frame, scraping bars, securing bolts and an intermediate rubber strip slotted for widthwise adjustments, and an upper carrier co operating with the lower carrier to feed the print and its mount and to cause the print to adhere to the mount, substantially as set forth.

6. In a machine for mounting prints or the like, the combination of the upper apron, rolls for said apron to travel about, a washing roll for said apron, a receptacle in which said washing roll revolves, and a scraper for said apron, substantially as set forth.

7. In a machine for mounting prints or the like, the combination with an upper traveling apron, of a lower roll, a washing receptacle in which said roll revolves, a scraper for said roll, a washing receptacle for said apron in which said roll revolves, and a scraper for said apron.

8. In a machine for mounting prints or the like, the combination of a pair of rolls arranged one over the other, an apron passing around the upper roll and around a supplemental roll, a washing receptacle beneath the lower roll and in which said roll revolves, a scraper for said roll, a washing roll for said apron, a receptacle in which said last mentioned washing roll revolves, and a second scraper for said apron.

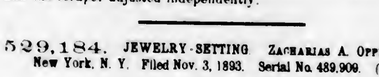
9. In a machine for mounting prints or the like, the combination of the apron, the rolls about which it travels, the roll 7, the washing receptacle therefor, the scraper therefor, the washing roll for the apron, the receptacle for said roll, the sprocket wheel on the shaft of said roll, the sprocket wheel on the shaft of one of the apron rolls, the drive chain, and the scraper for said apron.

10. In a machine for mounting prints or the like, the combination with the roll 7, of the apron, the apron roll 29 hung in movable blocks or slides, a scraper for said apron, means for adjusting said roll 29 and the scraper simultaneously, and means for adjusting said scraper independently of said roll.

11. In a machine for mounting prints or the like, the combination with the roll 7, of the apron, the roll 29 mounted in the blocks or slides, the screws 36 for adjusting said slides or blocks, the brackets 48, the screws 46, and the scraper for said apron connected to said screws; whereby the roll 29 and the scraper may be adjusted together, and the scraper adjusted independently.

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**529,184. JEWELRY-SETTING.** ZACHARIAS A. OPPENHEIMER, New York, N. Y. Filed Nov. 3, 1893. Serial No. 489,909. (No model.)

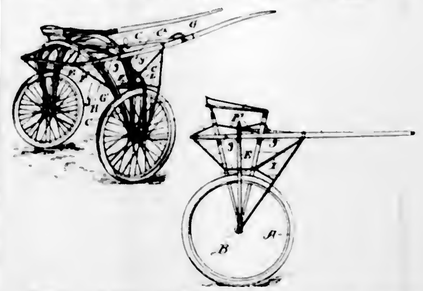


*Claim.*—1. A setting for precious stones, &c., consisting of two half-sections adapted to fit together and provided each with a shank section and with prongs bent over to embrace the stone; combined with a base forming an article of jewelry and provided with a socket adapted to receive the shank and to hold the sections together upon the stone, and means as described for securing the shank within the base, substantially as described.

2. A setting for precious stones, &c., consisting of two sections provided with a short divided screw shank having a hinged joint, and with prongs bent over at their ends to embrace the stone when the sections are brought together, combined with a base forming an article of jewelry provided with a threaded socket adapted to receive the shank for holding the sections together, and to the base substantially as described.

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**529,185. TROTTING-SULKY.** HORACE A. PENNOCK, Minerva, Ohio. Filed Apr. 9, 1894. Serial No. 506,877. (No model.)



*Claim.*—1. A trotting-sulky having its wheels mounted upon stub-axles, its seat supported by arch-shaped frames connected with the inner ends of the axles, its shafts secured to said frames, suitable means supporting the outer ends of the axles, the aforesaid frames trussed between the ends and central portion of the same by splitting the trussed portions of the frames and spreading apart the split portions and suitably securing the latter in their spread condition, substantially as set forth.

2. A trotting-sulky having its wheels mounted upon stub-axles, its seat supported by arch shaped frames connected with the inner ends of the axles, its shafts secured to said frames and also to another arch shaped frame that is connected with the outer ends of the axle, and all of said frames tied together and braced apart, substantially as set forth.

3. A trotting sulky having its wheels mounted upon stub-axles, its seat supported by arch shaped frames connected with the inner ends of said axles, its shafts secured to said frames and also secured to another arch-shaped frame that is connected with the outer ends of the axles, the shafts suitably connected with each other at the rear of the vehicle-seat and connected with the outer ends of the axles, and all of the aforesaid frames suitably tied together and braced apart, substantially as set forth.

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**529,186. HOLDER FOR NAPKINS, &c.** JOSHUA H. PIERREPONT, Trenton, N. J. Filed July 10, 1894. Serial No. 517,040. (No model.)



*Claim.*—A holder formed of a single wire, comprising an attaching hook, combining two series of loops formed at right angles, each series extending in an opposite direction; and spring clamps, formed by coiling the wire adjacent the ends of the attaching hook, and turning the extremities inward upon the legs of the hook, as specified.

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**529,187. ORE WASHER OR CONCENTRATOR.** CHARLES F. PIKE, Philadelphia, Pa. Filed Sept. 23, 1893. Serial No. 486,336. (No model.)

*Claim.*—1. The combination of tubular casings having edge flanges, and a catch pocket, bolted to said flanges, and common to a series of plates in said casings, substantially as set forth.

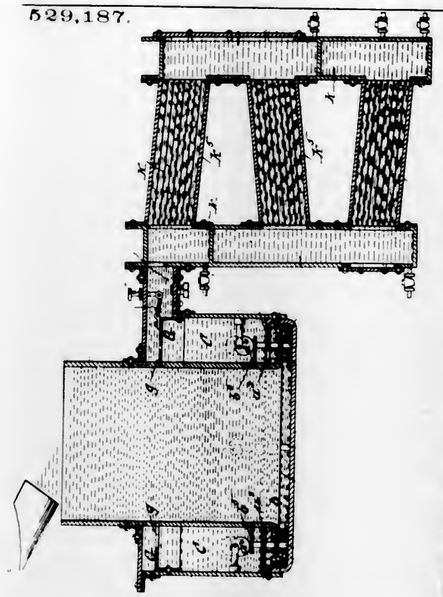
2. The combination of the sectional tubular uprights, *k*, *k*, having inlet and outlet ports, and the tubular casings, $k^3$, $k^3$, having their opposite ends respectively connected with the inlet and outlet ports of said uprights, and a cross partition below one of the inlet ports of each upright, substantially as set forth.

3. In an ore washer and amalgamator, the combination of sectional tubular ends *k*, *k*, having draw-off cocks, removable caps or covers, and inlet and outlet ports, tubular casings $k^3$ joining said ends, and gangs of catch-plates K in casings $k^3$ substantially as set forth.

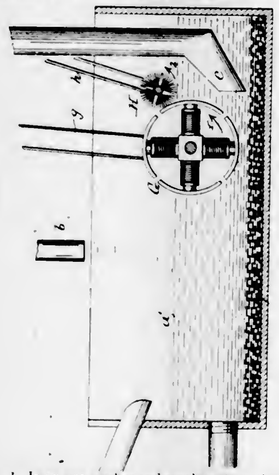
4. In an ore washer and amalgamator, the combination of sectional tubular ends *k*, *k*, having draw-off cocks, removable caps or covers, and inlet and outlet ports, tubular casings $k^3$, joining said ends, and gangs of textile catch-plates K in casings $k^3$ substantially as set forth.



**529,187.**



**529,188. ORE WASHER OR CONCENTRATOR.** CHARLES F. PIKE, Philadelphia, Pa. Filed July 26, 1894. Serial No. 518,629. (No model.)



*Claim.*—1. In an ore washer and amalgamator, the combination with a receiving vessel containing an amalgamating surface, and a superposed body of water, a feed device, a suction-discharge distant from said feed device, and means for moving the ore from the feed device to said suction-discharge of an auxiliary suction discharge located between the feed and main suction-discharge, for the purpose set forth.

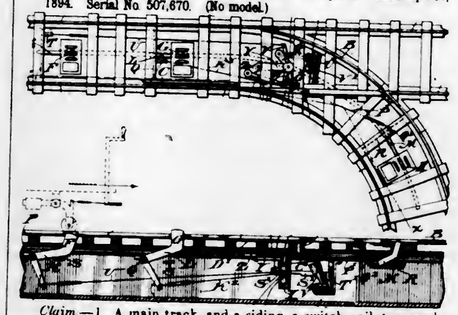
2. In an ore washer or amalgamator, the combination with a receiving vessel containing a body of water, a feed device, a suction-discharge distant from said feed device, and a movable amalgamating surface immersed in the water, said surface adapted to convey the ore fed thereto to the suction-discharge, of revoluble magnets between the feed and suction-discharge and adjacent to the inlet of the latter and to the amalgamating surface, and means for clearing the said magnets of magnetic material adhering thereto, substantially as and for the purpose set forth.

3. In an ore washer or concentrator, the combination of a receiving-vessel, a feed-device, a rotating or traveling amalgam surface, a suction-discharge and a magnetic discharge-device, substantially as set forth.

4. In the art of working placer gravel, the method, which consists in feeding the material through a body of water onto an amalgamating surface and removing the magnetic and non-magnetic constituents of said material separately from said surface, substantially as and for the purpose set forth.

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**529,189. RAILWAY-SWITCH.** HORACE POLIS, Philadelphia, Pa., assignor of one-half to Lawrence F. Mooney, same place. Filed Apr. 16, 1894. Serial No. 507,670. (No model.)



*Claim.*—1. A main track and a siding, a switch rail, two rock shafts journaled below said main track and having arms provided with heads adapted to be engaged by a pendent roller on a car on said track, a vertical post suitably journaled and having an arm connected with an arm on one of said shafts, an upright having a pivot at one end connected with said switch rail, a rod attached to said upright, a link connected with said rod and to an arm on said post, and a connection between said post and the other shaft, said parts being combined substantially as described.

2. A main track with a siding, a switch rail, rock shafts below said tracks having arms with heads, a vertical post suitably journaled and having an arm connected with one of said shafts, an upright suitably journaled and connected with said post and with said switch rail, a plate having a stop limiting the movements of said switch rail, connections between said post and said rock shafts, stops limiting the movement of said rock shafts, a rocking shaft below the siding having an arm with a head, and connections for said shaft and vertical post, said parts being combined substantially as described.

3. The rock shafts P and Q, suitably mounted below a main track, the arms K and L attached to said shafts, and having the heads F and G, the arm T projecting from the rock shaft P, the post W suitably journaled, the arm V attached to said post W, the connection U for said arms T and Y, the switch F', the upright B' having the pivot E secured to said switch, the arm Y attached to said post W and connections between said arm Y and upright B', said parts being combined substantially as described.

4. A main track with a siding, a switch rail, rock shafts journaled below said tracks having arms with heads thereon, a rotatable post having connections with two of said shafts, a rotatable upright having connections with said post, a stationary plate with a stop thereon, and a pivot in said plate connected with said upright and switch, said parts being combined substantially as described.

5. A switch for a main line and turn off, attached to the post or upright B', said post being suitably supported and having connections A', Z and V to a second post W, and connections therefrom to the heads F, G, and H, whereby a depression of said heads will move the switch, said parts being combined substantially as described.

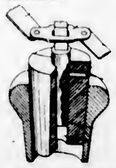
6. A main track with a siding, a switch rail, rock shafts below said track and siding having arms with heads thereon, a rotatable post connected with each of said rock shafts, a rotatable upright connected with said post and switch rail, and a rock shaft carrying a counter balance and having an arm, connected with an arm on said post, said parts being combined substantially as described.

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**529,190. STERILIZING APPARATUS.** GEORG POPP and HEINRICH BECKER, Frankfort-on-the-Main, Germany. Filed May 11, 1894. Serial No. 510,863. (No model.) Patented in Germany July 29, 1892, No. 69,824; in Switzerland Mar. 18, 1893, No. 6,543; in Norway Mar. 20, 1893, No. 3,441; in England Mar. 20, 1893, No. 5,957; in Belgium Mar. 21, 1893, No. 103,981; in Italy Mar. 31, 1893, XXVII, 33,816, LXVII, 192; in France June 20, 1893, No. 228,817, and in Austria-Hungary Aug. 29, 1893, No. 14,575 and No. 39,099.

*Claim.*—1. In an apparatus of the character specified, the combination of a heating chamber with means for holding a series of

receptacles stationary, mechanism in operative connection with the closures of the receptacles for turning the same to open or close and to maintain the receptacles in an open or closed condition; and a suitable handle extending outside of the chamber and arranged to engage and actuate the closure operating mechanism in opposite directions, substantially as described.



2. In an apparatus of the character specified, the combination of a heating chamber provided with a lateral door, a removable rack for holding the receptacles, mechanism containing oscillatory members in operative connection with the closures of the receptacles for turning the same to open and close the receptacles, and a suitable handle extending outside of the chamber and arranged to engage and actuate the closure operating mechanism in opposite directions, substantially as described.

3. In an apparatus of the character specified, the combination of a heating chamber with means for holding the receptacles, a parallel movement having links provided with means for engaging the closures of the receptacles, and a member passing through the wall of the chamber for operating the parallel movement, substantially as described.

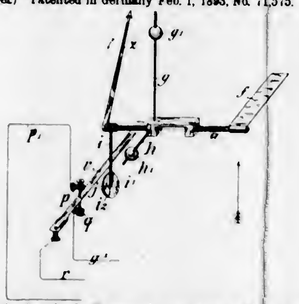
4. In an apparatus of the character specified, the combination of a heating chamber with means for holding the receptacles, and a closure mechanism provided with oscillatory members containing sockets adapted to receive the posts of the closures for the receptacles, substantially as described.

5. In an apparatus of the character specified, the combination of a heating chamber, a removable rack constructed to hold the receptacles, a parallel movement connected to said rack and provided with oscillatory members adapted to engage the closures of the receptacles, and members projecting into the interior of the chamber and arranged to engage the parallel movement, substantially as described.

6. The combination with a heating chamber with means for holding the receptacles, of a closure operating mechanism consisting of two parallel bars connected by links provided with means for engaging the closures, and with a centrally pivoted end link, or links; and means for imparting a longitudinal movement to the bars, substantially as described

7. The combination with a heating chamber, of a removable rack for holding the receptacles, a closure operating mechanism consisting of two parallel bars connected by links provided with means for engaging the closures and with end links adapted to oscillate about pivots carried by the rack, and means for imparting longitudinal movement to the bars, substantially as described.

**529,191. AIR-DRAFT-CONTROL APPARATUS.** HERMANN RECKNAGEL, Winterthur, Switzerland. Filed Feb. 6, 1894. Serial No. 499,295. (No model.) Patented in Germany Feb. 1, 1893, No. 71,575.



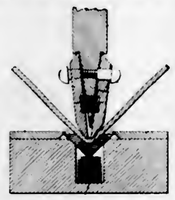
*Claim.*—1. An air draft control apparatus having a spindle *a* mounted on antifriction bearings, and having at one end a plate or blade *f* actuated by the air draft and at the opposite end a pointer *z*, suitable weights on said spindle to counterbalance the said plate and pointer and increase the moment of inertia of the movable part and an adjustable weight $i^3$ to adjust the apparatus to any required draft substantially as described.

2. An air draft control apparatus having a spindle *a* mounted on points *s s'*, a standard *b* to carry said spindle, a plate or blade *f* at one end of said spindle to extend into the air passage, a pointer *z* at the opposite end of said spindle, an arm *A* with adjustable weight *h'* to counterbalance the plate *f*, an arm *i* with weighted disk *i'* and adjustable weight $i^3$, an arm *g* with adjustable weight *g'* and a suitable dial D in the manner and for the purpose substantially as described.

3. In the combination with an air draft control apparatus having a spindle *a* mounted on antifriction bearings and having at one end a plate *f* and at the other a pointer *z*, suitable weights on said spindle to counterbalance the said plate and pointer and increase the moment of inertia of the movable parts and an adjustable weight $i^3$, a flexible spring *v* to extend horizontally over the adjustable weight $i^3$ and having a conductor *r* and contacts *p* and *q* above and below said spring in the manner and for the purpose substantially as described.

4. An air draft control apparatus having a spindle *a* mounted on points *s s'*, a standard *b* to carry said spindle, a plate or blade *f* at one end of said spindle to extend into the air passage, a pointer *z* at the opposite end of said spindle, an arm *A* with adjustable weight *h'* to counterbalance the plate or blade *f*, an arm *i* with weighted disk *i'* and adjustable weight $i^3$, an arm *g* with adjustable weight *g'* and suitable dial D for the said pointer, a flat spring *v* mounted in the casing and extending horizontally over the disk *i'*, contacts *p* and *q* above and below said spring and suitable electric connection substantially as described and shown and for the purpose specified.

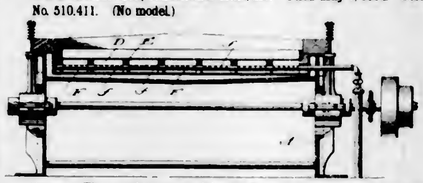
**529,192. APPARATUS FOR BENDING STRAWBOARD.** THEODOR REMUS, Dresden, Germany. Filed July 16, 1892. Serial No. 440,279. (No model.) Patented in Switzerland June 22, 1892, No. 5,251; in Germany June 28, 1892, No. 67,121; in France Oct. 11, 1892, No. 222,590. in Austria-Hungary Dec. 5, 1892, No. 33,589 and No. 65,649; in England Dec. 23, 1892, No 23,735, and in Belgium Jan. 21. 1893, No. 100,247.



*Claim.*—1. An apparatus for bending boards, comprising in combination a bed-plate having a groove *a'*, two plates *b b* hinged together and located on the bed-plate across said groove with their pivot or hinge above said groove, a spring *d* within said groove and below said plates, cheek pieces *c c* upon the bed-plate on either side of the plates *b b* to guide the same, a plunger *e* which moves relatively to said bed-plate to and from said groove *a'*, plates *f f* pivotally connected to said plunger, and a spring *g* which holds the lower edges of said plates normally separated and on opposite sides of the joint between said plates *b b*, substantially as set forth.

2. In an apparatus for bending boards, the combination of a bed-plate or platen on which is placed the material to be bent, and a bender for bending the same, said bed plate and said bender being relatively movable, said bed plate including two plates or leaves *b b* capable of turning at an angle to each other, and said bender having two "gathering" plates *f f* with their operative edges nearest to the plates *b b* normally separated, said plates *b b* and *f f* being so located relatively to each other that the operative edges of the plates *f f* are on opposite sides of the joint between the plates *b b*, substantially as set forth.

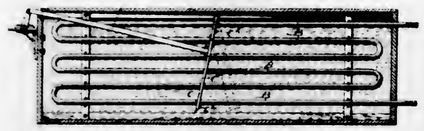
**529,193. CLEANING ATTACHMENT FOR PULP-SCREENS.** EDWIN A. RICHARDSON, Cumberland Mills, Me. Filed May 7, 1894. Serial No. 510,411. (No model.)



*Claim.*—The combination with the frame-work and the shaking screen, of the cross-beams E, E, on the upper edges of which said screen rests, said beams having perforations, and the perforated pipes passed through said perforations in the beams and arranged lengthwise of and parallel to the screen and in close proximity thereto upon the under side thereof with their perforations nearest the screen, substantially as and for the purpose described.



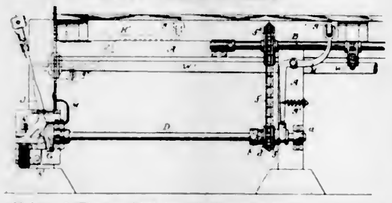
**529,194. MEANS FOR PREVENTING AIR-BUBBLES IN ICE.** ERNEST W. RICHTER, Washington, D. C. Filed Nov. 11, 1893. Serial No. 490,660. (No model.)



*Claim.*—1. In a means for agitating the water in the freezing tank of an ice making apparatus, a pivotally supported swinging paddle, designed to be located in said tank and constructed in two parts hinged together at their adjacent edges, substantially as shown and for the purposes specified.

2. The herein described means for agitating the water in the freezing tank of an ice making apparatus consisting of a shaft having cranks, rock-shaft, paddles, secured at their ends to said rock-shafts, and each divided longitudinally into two parts hinged together at their adjacent edges, and pivoted arms connecting said cranks and paddles together, substantially as described and for the purposes specified

**529,195. LUMBER-STAMPING ATTACHMENT FOR SAWING OR TRIMMING MACHINES.** JOHN P. RIEDY, Williamsport, Pa. Filed Jan. 14, 1892. Serial No. 418,046 (No model.)



*Claim.*—1. The combination of a lumber sawing or trimming machine, with an impact stamp located so as to swing in a plane at right angles to the line of feed of the planks and with mechanism for effecting a rapid vibration of said stamp whereby the marking of the ends of the successive planks can be effected without any stoppage in their forward movement, substantially as specified.

2. The combination of a lumber sawing or trimming machine, with an impact stamp located so as to swing in a plane at right angles to the line of feed of the plank, power actuated mechanism for effecting a quick vibration of said stamp and a controlling device for said mechanism having a portion projecting into the path of the forwardly moving plank, substantially as specified.

3. The combination of a lumber sawing or trimming machine, with a lever carrying an impact stamp and located so as to swing in a plane at right angles to the line of feed of the plank, a cam acting upon said lever so as to carry its stamp away from the end of the plank, a spring acting upon the lever so as to bring the stamp into contact with the end of the plank when said lever is released from the control of the cam and means for rotating said cam, substantially as specified.

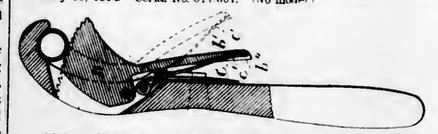
4 The combination of a lumber sawiug or trimming machine, an impact stamp located so as to swing in a plane at right angles to the line of feed of the planks, mechanism for moving said stamp away from the end of the plank, a spriug for bringing the stamp forcibly into contact with the end of the plank on its release and a recoil spring whereby the stamp is slightly retracted after giving its blow, substantially as specified.

5. The combination of a lumber sawing or trimming machine, a lever carrying an impact stamp and located so as to swing in a plane at right angles to the line of feed of the plank, a shaft having a cam which acts upon said lever so as to carry its stamp away from the end of the plank, a spring acting upon the lever to bring the stamp into contact with the end of the plank when said lever is released from the control of the cam, a driving clutch for the shaft and a clutch controlling lever having a portion projecting into the path of the plank as the latter moves forward, substantially as specified

6. The combination of a lumber sawing or trimming machine, with a lever carrying an impact stamp and located so as to swing in a plane at right angles to the line of feed of the plank, a shaft having a cam for moving said lever so as to carry its stamp away from the end of the plank, a spring acting upon the lever to bring its stamp into contact with the end of the plank when said lever is released from the control of the cam, a recoil spring acting upon the lever so as to effect a slight withdrawal of the stamp after it has delivered its blow, a driving clutch for the cam shaft and a clutch controlling lever having a portion projecting into the path of the forwardly moving planks, substantially as specified.

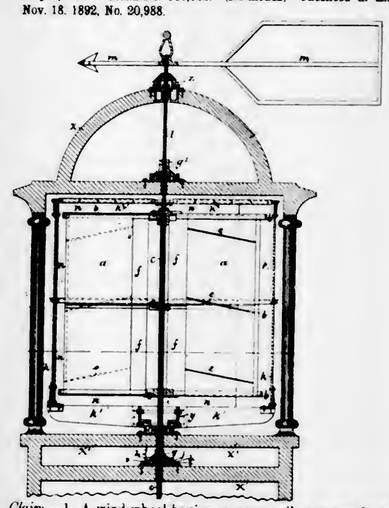
7 The combination of a lumber sawing or trimming machine with a lever carrying an impact stamp and located so as to swing in a plane at right angles to the line of feed of the plank, a cam acting upon said lever so as to move the stamp away from the end of the plank, means for operating said cam and a structure carrying said lever and adjustable from and toward the face of the cam so as to vary the extent of movement imparted by the latter to the stamp lever, substantially as specified.

**529,196. PIPE-WRENCH.** MIKE H. RIZA, Centre Mill, Tex. Filed May 18, 1894. Serial No. 511,687. (No model.)



*Claim.*—In pipe-wrenches, the handle carrying the integral curved jaw and the lever jaw having front serrations in the arc of a circle, combined with an intermediate V-spring having the vertex of its angle near the fulcrum of the lever jaw and the two arms diverging outwardly therefrom, the lower arm being held by two side-flanges on the fixed jaw; whereby a double spring is thus formed of great strength, which cannot suffer lateral displacement, and is not liable to get out of order.

**529,197. WINDMILL OR WIND-MOTOR.** SARAH J. ROLLASON, London, England, assignor to Westley Henry Fletcher, same place. Filed July 2, 1894. Serial No. 516,362. (No model.) Patented in England Nov. 18. 1892, No. 20,988.



*Claim.*—1. A wind-wheel having concave sails *a* to the faces of which are secured the ridges *e*, subetantially as described.

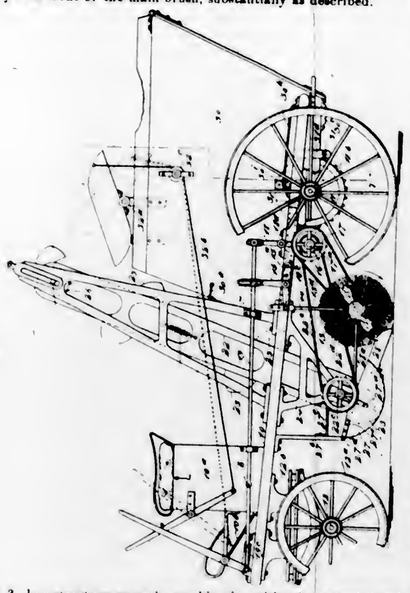
2. A wind-wheel having a vertical spindle or shaft, and the concave sails *a* carried thereby and provided with the ridges *e*, there being a considerable space *f*, left between the sails and the spindle or shaft, subetantially as hereinbefore set forth.

**529,198. STREET-SWEEPER.** AUGUST G. ROSENHAUER and RICHARD BRUSSEL, New York, N. Y. Filed Jan. 10, 1894. Serial No. 496,387. (No model.)

*Claim.*—1. In a street sweeper, the combination with a main frame, two aligned transverse rotatable brushes hung therefrom one brush extending at the side beyond the main frame, and means to rotate the brushes, of an inwardly inclined dirt deflecting plate hung in front of the brush extension, substantially as described.

2. In a street sweeper, the combination with a four wheeled main frame, a cylindrical brush transversely hung below said frame, a shorter brush on the same shaft with the main brush, and means to rotate said brushes, of a dirt scoop, an elevating device for the main brush, and an inwardly and forwardly inclined dirt deflector plate

hung in front of the short brush and adapted to project the dirt swept by it in front of the main brush, substantially as described.



3. In a street sweeper, the combination with a four wheeled main frame, a transverse cylindrical brush hung from this frame and arranged to be rocked upwardly, and means to rotate, and means to raise the brush, of an upright elevator at the front of the brush and elastically supported to yield upwardly, a dirt scoop below the elevator buckets that are pressed thereon, and an apron on the scoop that is hinged thereto by one edge and hung from the brush supports so as to be raised with said brush from the ground, substantially as described.

4. In a street sweeper, the combination with a four wheeled frame, a sweeping brush transversely hung therefrom, and means to rotate said brush, of an elevator, a dirt receptacle on the frame rearward of the elevator, a dirt spreading chute supported to rock on the upper part of the dirt receptacle, and arranged to receive dirt from the elevator and discharge it by a rocking movement, a flexible connection fast by one end on the rear of the chute trending down to engage a pivoted pulley on the dirt receptacle, and thence forwardly to a vibratile lever whereon the other end of said connection is secured, substantially as described.

5. The combination with a dirt receptacle on the main frame of a street sweeper, and a gate hinged at the top edge to hang pendent and open by its gravity when released of a latching device for said gate, comprising the hook ended pieces 30ª secured at intervals on the lower end of the gate 30, the laterally vibratile hook bars 30ᵇ pivoted intermediately of their ends and located on the bottom of the receptacle 30, the transverse bar 30ᶜ held to slide on the bottom of said receptacle by its loose engagement with the clip plates 30ᵈ that are affixed to said bottom and the retractile spiral spring 30ᵉ which is attached by one end to one hook bar, and at its other end to the bottom of the receptacle so as to simultaneously actuate the hook bars, substantially as described.

6. In a street sweeper the combination with a wheeled main frame, a transverse sweeping brush, and an elevator above said brush, of a dirt receptacle on the main frame at the rear of the elevator, a rocking chute on the upper part of the receptacle, and a tilting device for the chute, comprising a flexible connection forwardly extended from the rear of the chute, and an upright lever pivoted at the front of the main frame and connected with the flexible piece, substantially as described.

7. In a street sweeper the combination with a wheeled main frame, a transverse brush hung therefrom, two upright housing frames on the main frame above the brush, an elevator frame, and springs supporting the elevator frame on the housing frames, of an endless chain and transverse bucket elevator device, anti-friction rollers on the bucket-engaging flanges on the elevator frame, and a dirt scoop hung below the buckets and engaged therewith, substantially as described.

8. In a street sweeper, the combination with a wheeled main frame, brushes of differing length, supported on the same central shaft, hanger rods, and bell-crank levers pivoted to the upper ends of the hanger rods and adjustably pivoted to the main frame at its sides, of a counter-shaft rotatably hung by rock arms from the main frame, sprocket gearing on said shaft, arranged to rotate a sprocket wheel on the brush shaft, a spur gear wheel on the counter shaft, adapted to engage with or move from a spur gear wheel on the rear axle of the machine as the rock arms are vibrated, and means to rock the bell cranks and the rock arms from the front of the machine, substantially as described.

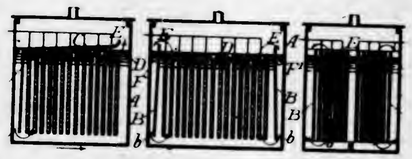
9. In a street sweeper, the elevator device, comprising the two upright housing frames on the wheeled main frame, two elevator frame pieces spaced apart by rotatable bucket shafts, the upper bucket shaft being slidably engaged with slots in the housing frames, springs supporting the elevator frames on the housing frames, sprocket wheels on the bucket shafts, endless chains thereon, a series of scoop-like buckets transversely fixed in sequence on the chains, anti friction wheels on the ends of said buckets, bearing on flanges of the elevator frames, and a dirt-receiving scoop hung below and near the buckets of the elevator, substantially as described.

10. In a street sweeper, the combination with a wheeled main frame, a rotatable main cylindrical brush hung from said frame, and a shorter cylindrical brush on the same shaft with the main brush and projected at one side of the main frame, of a triangular frame secured upon the outer side of the main frame in advance of the short brush, and a depending deflector plate inwardly-inclined from the outer diagonal side of the triangular frame, substantially as described.

11. In a street sweeper, the combination with a main frame, and a spring supported elevator thereon of the endless chain and bucket type, and slidable on its supports above and below the main frame, of a dirt scoop having a downwardly-curved bottom wall hung near its center on the lower shaft of the elevator, depending arms on the main frame, hinged to the front edge of the scoop, an apron hinged to the rear edge of said scoop and auxiliary supports for the apron adapted to elevate or lower it when actuated from the front of the main frame, substantially as described.

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**529,199. METHOD OF AND APPARATUS FOR CIRCULATING LIQUID ELECTROLYTES.** PAUL SCHOOP, Zurich, Switzerland. Filed Dec. 29, 1893. Serial No. 495,077. (No model.)

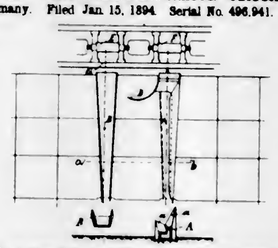


*Claim.*—1. The method of producing the circulation of the liquid electrolyte in an electrolytic vessel, by causing a portion of the upper layer of the liquid to be propelled at intervals laterally out of the vessel by a lateral motion imparted to the vessel, and reintroducing such portion of the liquid into the vessel at the bottom, substantially as described.

2. The combination with an electrolytic vessel for containing a liquid electrolyte, electrodes and connections of a passage formed on the inner side of the vessel, and establishing a communication between the upper and lower parts of the vessel, substantially as described.

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**529,200. WIRE-ROLLING APPARATUS.** PAUL SCHRADER, Witten, Germany. Filed Jan. 15, 1894. Serial No. 496,941. (No model.)



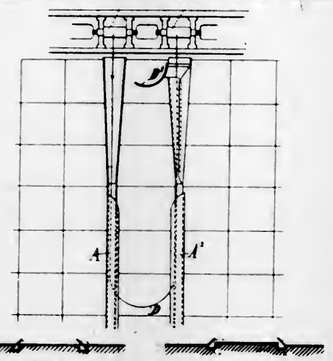
*Claim.*—1. A guard for use in connection with wire-rolling apparatus the said guard consisting of two straight overhanging flap-like leaves practically at right angles to the rolls with an opening between the said leaves, the two leaves converging inward to guide the wire thrown onto them, through the opening into the guard, substantially as and for the purposes set forth.



2. A guard for use in connection with wire rolling apparatus, in which two flap-like leaves overhang one another, an opening being left between them for the admission of the wire, and the upper flap or leaf being provided with one or more catches for the purpose set forth.

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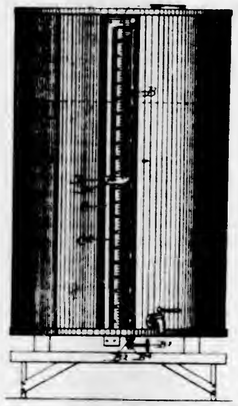
**529,201. WIRE-ROLLING APPARATUS.** PAUL SCHRADER, Witten, Germany. Filed Jan. 15, 1894. Serial No. 496,942. (No model.)



*Claim.*—A guide for use in connection with wire rolling apparatus, the said guide being straight and at right angles to the rolls, the outer side or wall of the guide being inclined inward, whereby the rear end of the wire to be rolled and which strikes against this side or wall is forced down into the guide substantially as and for the purpose hereinbefore described.

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**529,202. MEASURING DEVICE.** CHARLES W. SCHRAMM, Des Moines, Iowa. Filed Jan. 8, 1894. Serial No. 496,212. (No model.)



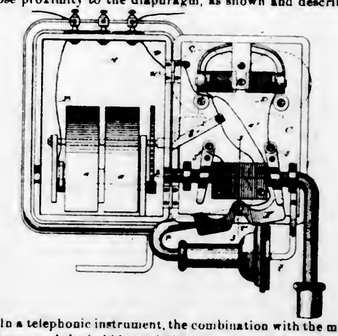
*Claim.*—1. The combination with a suitable tank having a vertical recess in its front, of an upright having a slot in its central portion, in said recess and having a graduated scale thereon, a glass tube also in said recess in proximity to the upright, an indicator passed around said upright and partially around the tube, and a set screw extended through the indicator and the slot in the said upright, substantially as and for the purposes stated.

2. The combination with a suitable tank, having means for admitting and discharging fluids, of a glass tube communicating therewith and an upright having a graduated scale thereon and a vertical slot as set forth, placed in a position parallel with said tube, and the indicator passed around said upright and partially around the tube, a block slidingly mounted in said slot and a set screw passed through said indicator and block substantially as, and for the purposes, stated.

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**529,203. TELEPHONE.** JOHN SERDINKO, San Antonio, Tex., assignor to the National Union Telephone Company, same place. Filed Apr. 28, 1894. Serial No. 508,868. (No model.)

*Claim.*—1. In a telephonic instrument, the combination with the magnets of the magneto-call, the bobbin, and the diaphragm fixed in front of the latter, of an iron disk fixed in proximity to the said magnets, and a core fixed to said disk and extending through the bobbin, into close proximity to the diaphragm, as shown and described.

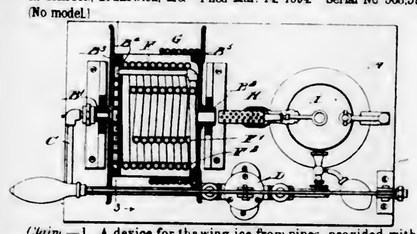


2. In a telephonic instrument, the combination with the magneto-call magnets, and the bobbin, and diaphragm, of a soft-iron induction piece fixed between the said magnets and diaphragm, a portion of the said piece projecting into proximity to the diaphragm, as shown and described.

3. The combination with the magneto transmitting and receiving telephonic instrument, of two contact springs, a switch lever pivoted intermediately of said springs and having a central notch, a rod for supporting the ear-piece of the instrument, the same being arranged horizontally below the said lever, in the same plane with the springs and lever, as shown and described, whereby when the ear-piece is slid on the rod it forces the switch lever beneath one spring, and supports it there, while the instrument is out of use, and, when withdrawn, horizontally, from the rod, it breaks the circuit and forms another, as set forth.

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**529,204. DEVICE FOR THAWING ICE FROM PIPES.** ISAIAH H. SIMPSON, Brunswick, Me. Filed Mar. 14, 1894. Serial No. 503,593. (No model.)

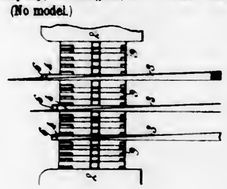


*Claim.*—1. A device for thawing ice from pipes, provided with a revoluble boiler having hollow trunnions, of which one is connected with a water supply, and the other forms an inlet for the heat, the said boiler being formed at one of its heads with water-ways connected with the trunnion having a water supply, and a pipe coiled within the said boiler and also connected with the said water ways, substantially as shown and described

2. A device for thawing ice from pipes, provided with a revoluble boiler having hollow trunnions, of which one is connected with a water supply, and the other forms an inlet for the heat, the said boiler being formed at one of its heads with water-ways connected with the trunnion having a water supply, a pipe coiled within the said boiler and also connected with the said water-ways, and a thawing pipe adapted to be coiled on the rim of the said boiler and connected with the pipe coiled in the boiler, substantially as shown and described.

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**529,205. MACHINE FOR PRODUCING CAST TYPE-BARS.** COLLESTIN SKATULLA, Brooklyn, N. Y., assignor of one-half to the Monoline Composing Company, Washington, D. C. Filed June 16, 1894. Serial No. 514,787. (No model.)



*Claim.*—1. The combination with a yoke or frame in which aligned matrices are sustained, and space-bars each composed of a main plate and a secondary plate having devices to support it in the yoke or frame, of means whereby the secondary plates of the space bars move in sliding contact with the sides of the matrices when the main-plates of the space-bars are forced or moved between the matrices to justify the line, substantially as described.

2. The combination with a yoke or frame in which aligned matrices are suspended and sustained in juxtaposition to a mold, and space-bars each composed of a main-plate and a secondary plate having devices to suspend it from the yoke or frame, of means whereby the secondary plates of the space bars move in sliding contact with the sides of the matrices when the main plates of the space-bars are forced or driven upward between the matrices to justify the line, substantially as described.

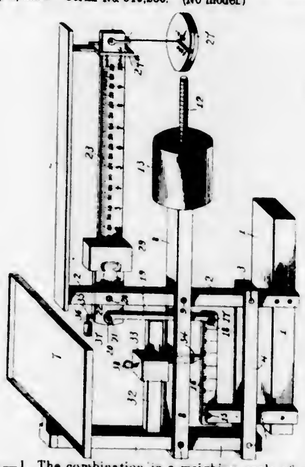
3. The combination with a yoke or frame in which aligned matrices are suspended and sustained in juxtaposition to a mold, and space bars each composed of a main plate and a secondary-plate having sustaining lugs or shoulders to suspend it from the yoke or frame, of means whereby the secondary-plates of the space bars move in sliding contact with the sides of the matrices when the main-plates of the space-bars are forced or driven upward between the matrices to justify the line, substantially as described.

4. The combination with a yoke or frame in which aligned matrices are supported, and space-bars each composed of a main plate and a secondary-plate having devices to support it in the yoke or frame, of a yielding abutment against which the secondary wedge-plates bear and by which said secondary wedge-plates are adapted to move or yield in sliding contact with the matrices when the main wedge plates are operated to justify the line, substantially as described.

5. The combination with a yoke or frame in which aligned matrices are suspended, and space-bars each composed of a main-plate and a secondary plate having sustaining lugs or shoulders to suspend it from the yoke or frame, of a yielding abutment against which some of the sustaining lugs or shoulders bear and by which said secondary wedge-plates are adapted to move or yield in sliding contact with the matrices when the main wedge-plates are operated to justify the line, substantially as described.

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**529,206. PRICE-SCALE. CHARLES W. SMITH, Pelzer, S. C. Filed Aug. 2, 1894. Serial No. 519,286. (No model.)**



*Claim.*—1. The combination in a weighing scale of a balanced support, provided with a slide carrier, a scale-pan or platform connected with said support, a price-slide, having a pointer, a scale beam, having a sliding weight, and a price beam arranged in operative relation to the pointer of the price slide, and having one end pivoted to a fixed support and the opposite end coupled to one extremity of the scale beam, substantially as described.

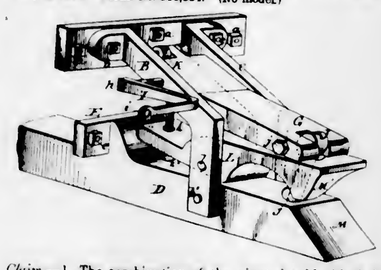
2. The combination in a weighing scale, of a balanced lever, a vertically movable support pivoted to said lever, a slide carrier, secured to said support, and provided with a price-slide having a pointer, a scale-pan or platform connected with the movable support, a scale-beam having graduations indicating values and pounds, an adjustable weight mounted on the scale beam, a price beam pivotally supported at one end, and arranged in operative relation to the pointer of the price-slide, and a link or coupling connecting the other end of the price-beam with the inner end of the scale-beam, substantially as described.

3. The combination in a weighing scale, of a stationary standard, a yoke or frame pivoted thereto, a vertically movable bar pivoted to the yoke or frame, a balanced lever pivoted to the standard and to the movable bar, a slide carrier connected with said bar, a price slide adjustable on the slide carrier, and having a pointer, a pivoted scale-beam having graduations indicating values and pounds, an adjustable weight mounted on the scale-beam, and a price-beam pivotally mounted at one end and having its opposite end linked or coupled to the inner end of the scale-beam, substantially as described.

4. The combination in a weighing scale, of a balanced vertically movable bar or support having a horizontally arranged slide carrier, a scale-pan or platform connected with said bar or support, a price-slide adjustable on the slide carrier, a price-beam arranged in operative relation to the price-slide, a balanced scale-beam, and a link connecting the scale beam with the price beam, substantially as described.

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**529,207. CAR-COUPLING. GEORGE SOUER, Rice's, Minn. Filed July 2, 1894. Serial No. 516,331. (No model.)**



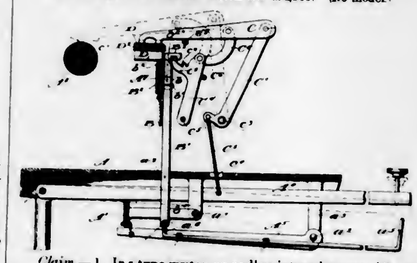
*Claim.*—1. The combination of the pivoted guide block L and longitudinal beam having converging front ends, the guide block being provided with a guide way for a coupling pin, the pin-lever, G, the coupliug-pin pivoted in the front end thereof and moving in said guide-way, and the rigidly secured bridge-pieces between which the guide block and pin lever are pivoted thereto substantially as set forth.

2. The combination of the cross beams A and E secured to the car, the longitudinal beam D, the bridge-pieces secured to cross-beam A and to the longitudinal beam D, the guide block L pivoted to the bridge-pieces and having guide-ways *j* and *k*, the pin lever G pivoted to the bridge pieces above the guide block, and the coupling pin J and block K pivoted to the opposite ends of the pin lever, the block K terminating in guide-pin *k* and the coupling pin and guide pin passing through the guide-ways in the guide block as set forth.

3. The combination of the beam D having its front end beveled and two bridge pieces secured to its sides, the guide block L pivoted to said bridge pieces, the lever G also pivoted to the bridge-pieces above the block L, a crank lever I on the pivot of said lever G and a coupling pin pivoted to the lever G substantially as described.

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**529,208. TYPE-WRITING MACHINE. CHARLES SPIRO, New York, N. Y. Filed Dec. 7, 1892. Serial No. 454,365. (No model.)**



*Claim.*—1. In a type writer, an endless ink pad mounted for movement vertically and in a straight horizontal plane upon relatively-fixed supports combined with a spacer carrying said pad and supports and a fixed detent, as set forth.

2. In a type writer, the combination with the spacer, of an endless ink pad mounted directly upon said spacer and means on the spacer engaging a ratchet on the pad spool, substantially as specified.

3. In a type writer, the combination with a spacer and a pawl mounted on the frame to engage the pad spools, of an ink pad mounted



for movement in a straight, horizontal plane upon relatively-fixed supports on the spacer, substantially as specified.

4. In a type writer, the combination with a spacer, and relatively fixed rollers thereon of an endless movable ink pad mounted upon the relatively-fixed rollers on the spacer to move in a horizontal plane and a detent on said spacer, substantially as specified.

5. In a type writer, the combination with a spacer, of a table carried thereby and an endless ink pad mounted on the table for straight, horizontal and for vertical movement and designed to be given such movement by the actuation of the spacer, substantially as specified.

6. The combination with the spacer and spools and a detent mounted thereon, of an endless ink pad mounted on said spools and devices for rotating the spools by the depression of the spacer, as set forth.

7. The combination with the spacer and the frame, of a pawl on the frame, a detent on the spacer and an endless ink pad mounted on rollers on the spacer and one of which is provided with a ratchet, as set forth.

8. In a type writer, a resilient curved paper guide having integral resilient attaching portions extending from substantially mid length of the guide and separate therefrom, substantially as specified.

9. In a type writer, a pivotally mounted paper table having its journals removably and adjustably mounted, and provided with springs, as set forth.

10. In a type writer a paper table having lugs and rotatably mounted polygonal journals with springs, detachably held in said lugs, substantially as specified.

11. In a type writer, a paper table having lugs combined with journals for said table mounted in bearings in the frame with their inner ends polygonal in form and detachably held in said lugs and springs around said journals with means for adjusting the same, as set forth.

12. The combination with a pivotally mounted paper table, of a gravity pawl for holding the same in its elevated position, substantially as specified.

13. The combination with a pivotally mounted paper table having a journal with a notch, of a gravity pawl having portions to automatically engage said notch to hold the paper table elevated, substantially as specified

14. The combination with a pivotally mounted spriog-actuated paper table having a journal with notch, of a gravity pawl having portions to automatically engage said notch to hold the paper table elevated, substantially as specified

15. The combination with the pivotally mounted paper-table and its spring actuated journals, one of which has a collar with a notch, of a pivotally mounted gravity pawl having a portion to automatically enter said notch to hold the table in its elevated position, as set forth.

16. In a type writer, the combination with the paper platen and its ratchet, of a detent, a pawl, means mounted on the detent for throwing said detent and means for throwing both the pawl and detent out of engagement with the ratchet, substantially as specified.

17. In a type writer, the combination with a paper platen and its ratchet, of a pawl, a detent and means mounted on the detent for endwise movement, means for throwing said detent and means for holding both the pawl and detent out of engagement with the ratchet, as set forth.

18. The combination with the paper roller and its ratchet, detent and pawl, of means carried by and endwise movable on the detent for holding the detent and pawl supported by said detent out of engagement with the ratchet, as set forth.

19. The combination of a paper roller and its ratchet and detent and pawl, with a spring actuated pin, carried by the detent, substantially as specified.

20. The combination with the paper roller and its ratchet, detent and pawl, of a spring actuated pin carried by the detent and a lever mounted to actuate said detent, as set forth.

21. The combination with the paper roller and its ratchet, of a detent having a shoulder and a lever having a depending portion with a lug and a pin to engage said shoulder, substantially as specified.

22. The combination with the paper roller and its ratchet, the detent having a shoulder, a lever, a notched portion extended below its pivot and having a lug with pin to engage said shoulder and a spring on the detent to engage the notches thereof, as set forth.

23. The combination with the paper roller and its ratchet, of a pawl, a pivoted arm carrying said pawl and provided with offset having steps, a lever having a lug adapted to be thrown into the path of said steps and a pin and a detent having a shoulder for engagement with said pin as set forth.

24. The combination with the paper roller and its ratchet, of a pawl pivotally mounted on an arm having steps, a detent and a lever having a lug to be thrown into the path of the steps and a portion projecting laterally therefrom to engage said detent, substantially as specified.

25. In a type writer, the combination with the detent, of a lever mounted for movement independent of the detent, a laterally projecting endwise movable portion and a laterally projecting pin movable and the lever to engage the detent whereby they may be both moved together, substantially as specified.

26. The combination with the detent and a lever mounted to move therewith or independently thereof, a spring actuated endwise movable pin on the detent and a spring on the detent engaging said lever, substantially as specified.

27. The combination with the type bar carrying a plurality of type and mounted for substantial horizontal movement and a relatively fixed platen, a vertically sliding abutment and intermediate pivoted means between the abutment and type bar and connected with the latter for limiting the throw of said type bar, substantially as specified.

28. The combination with a type bar carrying a plurality of characters, of a relatively fixed platen, a sliding abutment, and a lock carried by the type bar for engagement with said abutment, substantially as specified.

29. The combination with a type bar and a relatively fixed platen and universal bail, of an abutment arranged to be actuated by the universal bail, substantially as specified.

30. The combination with a type bar and a relatively fixed platen, of a sliding abutment having overhanging toothed flange and designed to be moved by the depression of a key lever, substantially as specified

31. The combination with a type bar, key lever and universal bail and a relatively fixed platen, of a movable abutment mounted for operation by the conjoint action of a key lever and universal bail, substantially as specified.

32 The combination with a substantially horizontal type bar and a relatively fixed platen, of a movable abutment, the universal bail and a connection between the bail and abutment as set forth.

33. The combination with a substantially horizontal type bar and a relatively fixed platen, of a movable abutment, the universal bail and a detachable connection between the bail and abutment, as set forth.

34. The combination with a type bar and platen, of a movable abutment, universal bail, and a pivoted part actuated by the bail and having connection with the abutment, substantially as specified.

35. The combination with a type bar and platen, of a movable abutment, the universal bail and a pivoted part, connected with and actuated by the bail and having partially rotatable and detachable connection with the abutment, substantially as specified.

36. The combination with a type bar and a relatively fixed platen, of a movable abutment, universal bail, a pivoted arm connected with the bail and a partially rotatable rod on said arm and mounted for detachable connection with the abutment, substantially as specified.

37. The combination with a key-lever and a type-bar pivotally connected therewith and having independent pivotal connection with a movable part and a sliding abutment for cooperation with said part, of a relatively-fixed platen, means for engaging the abutment and an ink-pad interposed between the platen and abutment, substantially as specified.

38 The combination with a key-lever and a type bar, of a movable abutment and connections between the same and the bar an interposed bell crank lever pivotally connected with the type bar and with the key lever, the universal bail, a pivoted bar and a connection between said bail and bar substantially as specified.

39. The combination with a key lever and a type bar, of interposed pivotal connections and an independent pivotal connection between the type bar and an independently pivoted arm and a vertically movable abutment for cooperation with said arm substantially as specified.

40. The combination with a key lever and a type bar, of interposed pivotal connections, an independently pivoted arm and an independent pivotal connection between the type bar and independently pivoted arm and the movable abutment for said arm, substantially as specified.

41. The combination with a key lever, a type bar and a pivoted arm having a notch with inclined wall and connected with the type bar, of a movable abutment having a tooth for cooperation with said notch, substantially as specified.

42. The combination with a key lever, a type bar and a movable abutment having an overhanging portion with a depending tooth, of pivotal connections between the type bar and key lever and an independent pivoted connection with the type bar, including a pivoted arm with a notch for cooperation with said tooth, substantially as specified.

43. The combination with a key lever and a type bar pivotally connected therewith, of a pivoted arm, a movable abutment for cooperation with said arm and a curved link connecting said arm and type bar, substantially as specified.

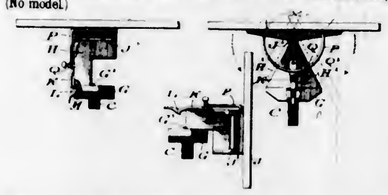
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**529,209. DEEP-WELL PUMP. DAVID B STEVENSON, Petrolia, Pa. Filed Feb. 4, 1893. Serial No. 460,992. (No model.)**

*Claim.*—In a deep well pump, the combination with the pump barrel or tube, of the vertically reciprocating hollow piston, screw threaded at its upper end and pointed and formed with openings at its lower end and with a peripheral flange above said openings, the superimposed packing cups and rings, the screw threaded follower, the interiorly and exteriorly screw threaded coupling fitting on the upper end of the hollow piston, the interiorly screw threaded apertured cage having an interior annular flange intermediate its ends, the packing ring confined between said flange and the upper end of the coupling, and the ball valve located in said cage, substantially as described.



## 529,210. TABLE. CHRISTIAN STORZ, FERDINAND SORG, and FREDRIK HENNL, Philadelphia, Pa. Filed May 3, 1894. Serial No. 509,968. (No model.)



*Claim.*—1. A table formed of a support having a horizontal head, an angular shaped block hinged to said head, a tray pivoted to the apex of said block, means for locking said tray on said block, and means for locking said block to said head, the axes of said tray and block being at right angles to each other; said parts being combined substantially as described.

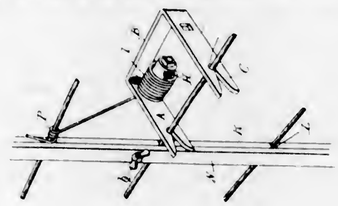
2. A table having a support with a horizontal head, a block having inclined sides hinged to said head, a tray pivoted to the top of said block, a segment depending from said tray, and means for locking said segment to said block, the axis of said block and tray being at right angles to each other, said parts being combined substantially as described.

3. A tray, an angular block having inclined sides to the apex of which the same is hinged, a horizontal head to which said block is hinged, and a supporting standard for said head, in combination with a catch connecting said block and head, the axes of said tray and block being at a right angle to each other, all substantially as described.

4. A table consisting of a tray a block with inclined sides to the apex of which the same is hinged, a horizontal head to which said block is hinged, and a supporting standard for said head, the axes of said block and head being at a right angle to each other, in combination with a segment which depends from said tray, an eye secured to said block and having the segment pass freely through the same, a set screw in the eye engaging said segment, and a catch connecting said block and head, all substantially as described.

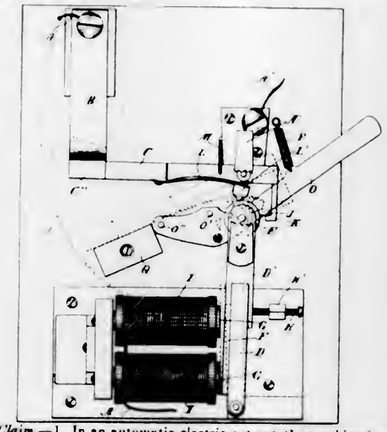
5. A horizontal head, a supporting standard therefor a tray and a segment depending from said tray, in combination with an angular block having inclined sides and being intermediate of said head and tray, an eye on said block through which said segment freely passes, a set screw on said eye for said segment, and a catch connecting said block and head, the tray being hinged to the apex of said block, and the latter being hinged to said head, the axes of the block and head being at a right angle to each other, and the sides of the block being inclined, all substantially as described.

## 529,211. WIRE-STAY-WEAVING DEVICE. ELMER H. STOWELL, Drayton Plains, and GEORGE W. TERRY, Pontiac, Mich. Filed Aug. 23, 1894. Serial No. 521,060. (No model.)



*Claim.*—In a wire stay weaving device, the combination with the U-shaped frame having elongated tapering notches in its ends to engage and slide across the line wire, of a spool mounted in the frame parallel with the cross bar thereof and located at a point adjacent to the angle of the frame, substantially as described.

## 529,212. AUTOMATIC ELECTRIC CUT-OUT. DANIEL F. SWEET, Grand Rapids, Mich. Filed Apr. 23, 1894. Serial No. 508,574. (No model.)



*Claim.*—1. In an automatic electric cut-out, the combination of an electro magnet in the circuit, an armature carrying an arm, a roller journaled in said arm, a spring-pressed bearing-edge normally bearing on the periphery of said roller, means for adjusting said roller so as to cause said bearing edge to bear on the roller nearer to or farther from a line through the pivotal centers of the roller and armature, a bar carrying one of the contacts, a latch holding the contacts in engagement and means for disengaging said latch by the movement of the armature, substantially as described.

2. In an automatic electric cut-out, the combination of an electro magnet in the circuit, contact plates, a swinging bar carrying one of the contact plates, a spring pressed bearing block carried by said swinging bar a latch holding said bar in its closed position, an armature carrying a roller upon whose periphery said bearing-block normally presses, means for adjusting the armature and roller, substantially as described.

3. In an automatic electric cut out, the combination of an electro magnet and an armature therefor, a roller journaled in an arm carried by the armature, means for adjusting said arm and roller, a swinging bar carrying one of the contact plates, a spring pressed bearing block adapted to bear upon the roller, a latch engaging the swinging bar and holding it closed, and means for disengaging the latch and striking the swinging bar the instant the bearing edge passes over the center of the roller, substantially as described.

4. In combination with an electric circuit, spring clamps in said circuit, a pivoted bar having at one end a wedge and stop engaging said clamps, and a hook at the other end, a pivoted lever actuated by magnets excited by coils in said circuit, a projection on said lever engaging said hook, an arm on said bar, and an arm on said lever engaging the same, a roll on said lever, and a spring on said bar having inclined faces engaging said roll, substantially as described.

## 529,213. ELECTRICAL CUT-OUT. DANIEL F. SWEET, Grand Rapids, Mich. Filed June 9, 1894. Serial No. 514,080. (No model.)

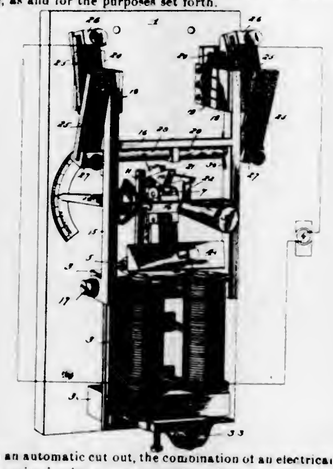
*Claim.*—1. A circuit interrupting device consisting of an electrical magnet responding to the action of an abnormal current, main contact plates and an armature adapted to separate said main contact plates, and a pair of high-resistance supplemental contact plates adapted to overlap at their free ends and slide upon each other endwise and thereby increase the resistance gradually until they separate and break the contact, which is after the separation of the main contact plates, substantially as and for the purpose described.

2. The combination in an automatic electric cut-out, and an electrical magnet in the circuit, an armature therefor adapted to be actuated by the presence of an abnormal current, main contact plates adapted to be separated by the action of the armature, and a pair of supplemental carbon contact-plates adapted to receive and retard the current after the separation of the main contact-plates, said carbon plates overlapping each other at their free ends and being normally



pressed against each other and adapted to slide apart endwise to gradually increase the length of the resistance medium before separation, substantially as described.

3. The combination, in an electric cut-out, of the main contact-plates, a movable part carrying one of the contact plates, a pair of supplemental high-resistance contact-plates, one of said supplemental plates being carried by said movable part and having its free end overlapping the free end of the other supplemental contact, and means for normally pressing the overlapped ends of said supplemental contact plates together and holding them together as they are slid apart endwise, as and for the purposes set forth.



4. In an automatic cut out, the combination of an electrical magnet in the main circuit, an armature adapted to respond to any predetermined abnormal current, main contact plates in the circuit and adapted to be separated by the action of the armature, and supplemental carbon contact-plates, adapted to be separated subsequently to the main contact plates, one of said carbon plates being stationarily supported and the other being movably supported at an angle to the stationary plate and normally pressed against the free end of the same, substantially as described.

5. The combination of an electrical magnet in the main circuit, an armature adapted to be actuated by the presence of an abnormal current, a swinging frame adapted to be actuated by said armature, main contact-plates carried by said swinging-frame, supplemental carbon contact-plates, one of the carbon plates being supported stationarily and having one end free and the other carbon plate being carried by a shaft journaled in the frame, a spring for actuating said shaft and keeping the movable carbon normally pressed against the stationary carbon, substantially as described.

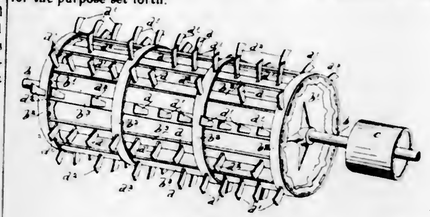
6 In an electric cut-out, the combination of an electro magnet, an armature carrying an arm and pivotally supported, a roller journaled in said arm, a spring pressed arm carrying a knife-edge bearing on the periphery of said roller, a cam for adjusting said armature, an indicating finger carried by said cam, a swinging frame carrying the contact-plates, a latch engaging said frame and means for disengaging said latch by the action of the armature, substantially as described.

7 In an electric cut-out, the combination of an electro magnet, an armature carrying a roller and pivotally supported, a spring-pressed arm normally bearing on said roller, means for adjusting said armature and roller, a vertical frame pivoted at its lower end and carrying contact-plates at its upper end and adapted to be thrown down and released, a latch engaging said frame and holding it up, an arm carried by the armature and adapted to disengage said latch upon the passage of an abnormal current, substantially as herein shown and described.

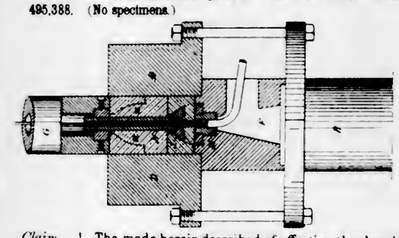
8. In an automatic electric cut out, the combination of a electro-magnet in the main circuit, an armature adapted to be influenced by the magnet, a movable frame or part carrying a high resistance contact-plate, and adapted to be operated by the magnet, another high-resistance contact-plate adapted to lie on the movable contact-plate, and means for holding these plates in contact and sliding them apart as the contact is broken, whereby the resistance medium is lengthened while the contact is being broken, substantially as described.

## 529,214. THRASHING-CYLINDER. PAUL SWENSON, Minneapolis, Minn. Filed Aug. 9, 1894. Serial No. 519,848. (No model.)

*Claim.*—A thrashing cylinder having its teeth distributed into adjacent thick and thin groups in each transverse or longitudinal row and having said thick and thin groups arranged in staggered relation to each other circumferentially of the cylinder, substantially as and for the purpose set forth.



## 529,215. METHOD OF SHEATHING ELECTRICAL CONDUCTORS. JAMES TATHAM, Philadelphia, Pa. Filed Jan. 2, 1894. Serial No. 495,388. (No specimens.)



*Claim.*—1. The mode herein described of effecting the sheathing of an electrical conductor or conductor casing in a lead pipe press, said mode consisting in providing the cylinder of the press with a charge consisting of two or more solid segmental slugs of lead, and then imparting pressure to these solid slugs so as to drive the lead through the die and around the conductor or casing, and simultaneously join the segments together, substantially as specified.

2. The mode herein described of sheathing an electrical conductor or conductor casing in a lead pipe press, said mode consisting in filling the lower portion of the cylinder with lead, inserting on the top of this mass a charge consisting of two or more solid segmental slugs of lead, imparting pressure to the charge so as to force the lead through the die and around the conductor, and limiting the extent of each discharge so as to continually maintain a mass of lead in the bottom of the cylinder, substantially as specified.

## 529,216. CONDUIT FOR ELECTRIC CONDUCTORS. JAMES TATHAM, Philadelphia, Pa. Filed Mar. 17, 1894. Serial No. 504,002. (No model.)



*Claim.*—1. The mode herein described of making a flexible conduit for electric conductors, said mode consisting in first making a tube of lead or other ductile metal, then applying an insulating covering thereto, and then forming an outer tube of lead or other ductile metal around said insulating covering, substantially as specified.

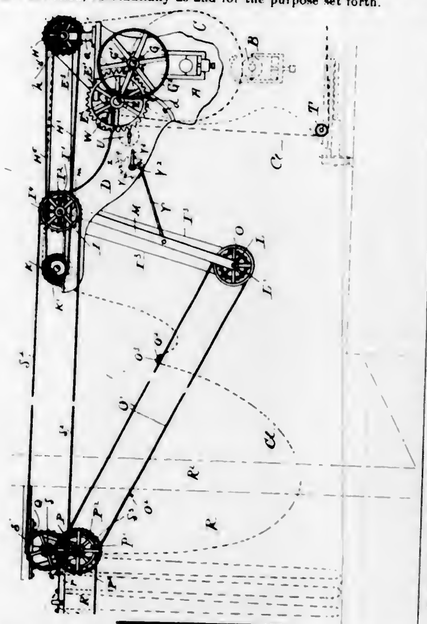
2. The within described conduit for electric conductors, the same consisting of inner and outer tubes of lead or other ductile metal, and an interposed tube of insulating material rigidly confined between said inner and outer tubes, substantially as specified.

## 529,217. PLANT FOR THE MANUFACTURE OF OIL-CLOTH. CHARLES TEMPLETON, Akron, Ohio. Filed June 16, 1892. Serial No. 436,906. (No model.)

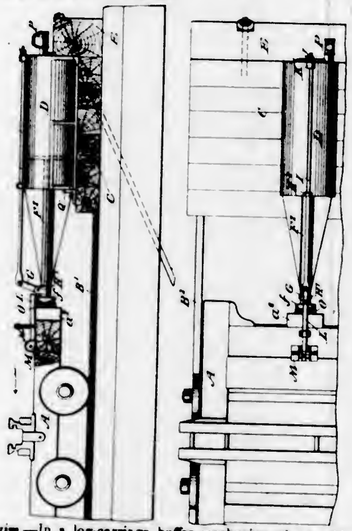
*Claim.*—1. The combination with the supporting-frame of a printing-machine of the variety indicated, of a pair of rearwardly-extending arms or brackets D rigid with said frame, a pair of bars, M, pivoted to said arms or brackets, a shaft, L, supported at or near the lower end of said bars, a pair of sprocket-wheels operatively mounted upon said shaft, cloth-bearing chains O' operatively connected with the aforesaid shaft, and means for adjusting the aforesaid bars as required to tighten said chains, mechanism substantially as described, for communicating motion to said sprocket-wheels, substantially as set forth.

2. The combination with the supporting-frame of a printing-

machine of the variety indicated, of a pair of rearwardly extending arms or brackets D rigid with said supporting-frame a pair of bars M, pivoted to said rearwardly-extending arms or brackets, a shaft L supported by said pair of pivoted bars, a pair of sprocket-wheels operatively mounted on said shaft and operated substantially as described, cloth-bearing-chains O operatively connected with said shaft, and mechanism substantially as indicated for simultaneously moving said pivoted bars on their fulcrum in the one direction or the other and for locking the same in position against movement in the opposite direction, substantially as and for the purpose set forth.

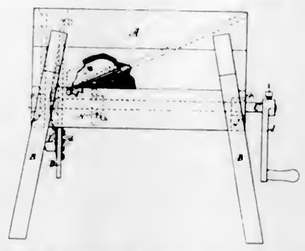


529,218. SAWMILL-BUFFER. EDWIN E. THOMAS, Bay City, Mich., assignor to Michael Garland, same place. Filed Apr. 20, 1894. Serial No. 508,321. (No model.)



*Claim.*—In a log-carriage buffer mechanism, the combination with the carriage; an air cylinder; a piston working in said cylinder; and a piston-rod which projects outwardly from said piston, and is contacted by the end of said carriage, of means operating automatically to lock the buffing end of the carriage to the outer end of said piston-rod, when these parts come into contact, and to release said parts whenever the piston may have been drawn out by the return movement of the carriage, to the proper position for a repetition of the buffing operation; substantially as set forth.

529,219. ROOT-CUTTER. OLIVER E. THOMPSON, Ypsilanti, Mich. Filed Feb. 27, 1894. Serial No. 501,681. (No model.)

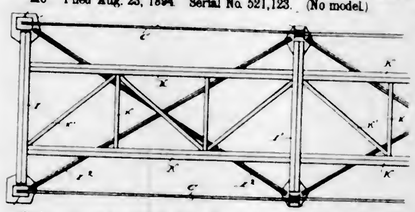


*Claim.*—1. In a root cutter, the combination with the casing A open at the top and at one end, of a rotary cutter mounted on a rotary shaft journaled in said casing, a pivoted inclined grate arranged in front of said cutter, a rearwardly and downwardly inclined lug *f* on the bottom of said grate, and a cam H adjustably mounted on said shaft and rotating against said lug, substantially as and for the purpose described.

2. In a root-cutter, the combination with the casing A open at the top and at one end, of a rotary cutter D, a fixed inclined imperforate shelf G, an inclined grate F arranged in front of said cutter, said grate being pivoted at its lower end to the casing and supported at its upper end in the same plane with the shelf G, and a rotary cam disconnected from and intermittently striking against the bottom of said grate, substantially as described.

3. In a root-cutter, the combination of the casing A, the rotary cutter D, the pivoted inclined grate F provided at one side with a vertical plate M gradually inclined from its top toward the center of the lower edge of the grate and a cam for vibrating the said grate and its attached vertical plate, as and for the purpose specified.

529,220. TRUSS-BRIDGE. JOHN A. L. WADDELL, Kansas City, Mo. Filed Aug. 23, 1894. Serial No. 521,123. (No model.)



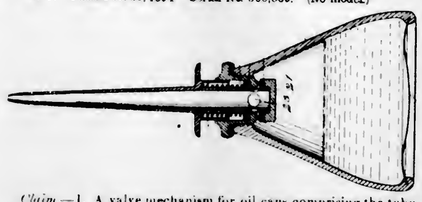
*Claim.*—1. In a truss bridge, the combination, of four inclined batter-posts connected at their upper ends by a cross-strut E, diagonal brace bars F and intermediate cross-struts E'; vertical posts D and G connected at their upper ends to the batter-posts and to each other at their lower ends by transverse beams I', transverse beams I connecting the lower ends of the batter-posts, and chord-bars which extend longitudinally from batter-post to batter-post, together with longitudinal beams K K attached to the transverse beams I and I' and braced by diagonal brace bars $I^2$, substantially as shown and for the purpose set forth.

2. A truss bridge comprising four similarly inclined batter-posts, each pair abutting at their upper ends, a transverse strut which extends from the upper end of one pair of posts to the other pair, transverse struts connecting the posts at a point between their upper and lower ends, plates connected to the posts and to the struts, diagonal brace-bars connected to said plates, longitudinal chords and transverse beams connecting the lower ends of the batter-posts, vertical posts D and G connected to the batter-posts, longitudinal chords and transverse floor supporting beams, the parts being organized substantially as shown and for the purpose set forth.

3. In a truss bridge, the combination with the batter-posts and cross-struts E, angle-plates *e* secured to the inner sides of the batter-posts and to the cross strut, and plates $e^2$ secured to the angle plates *e* and to the batter-posts by means of angle-bars *e'* and $e^3$, substantially as shown and for the purpose set forth.



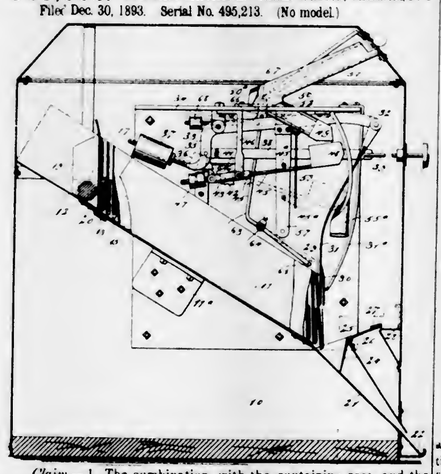
529,221. VALVE FOR OIL-CANS. CHARLES WAGNER, New York, N. Y. Filed Feb. 20, 1894. Serial No. 500,889. (No model.)



*Claim.*—1. A valve mechanism for oil cans comprising the tubular externally threaded cap 12 having an internal flange 14 grooved in its lower face and containing a packing ring 15 to engage the upper edge of a can neck, the bottom of the cap 12 having a central opening, a packing ring 20 in the bottom of the cap concentric with said opening, a nozzle 16 of less diameter than the bore of the cap 12 and extending down through and closely fitting the opening in the bottom thereof, lateral openings 23 being formed in the lower portion of the nozzle, a cap 21 screwed upon and closing the lower end of the nozzle, a flange 17 on the nozzle above the cap 12, and having on its under side a depending tubular flange 18 extending at its lower end into the upper open end of the cap 12 and closely fitting it, the cap 21 preventing the flange 17 from rising out of the cap 12, and a spiral spring in the annular space within the flange 18, substantially as described.

2. An oil can comprising the body provided with an internally threaded upper end, a threaded tubular cap 12 screwed therein and having an external flange 14 provided with an annular groove in its under side containing a packing ring engaging the upper edge of the body, the bottom of the cap being provided with a central opening and a packing ring 20 thereround, said cap being provided on its under face with an external annular seat, the nozzle 16 of less diameter than the interior of the cap 12, extending down through the opening in the bottom thereof, and provided with lateral openings in its lower portion, a screw cap 21 closing the lower open end of the nozzle and provided in the upper side of its flange with an annular recess containing a packing ring 22 seating upwardly against the annular seat on the lower end of the cap 12, a flange 17 on the nozzle above the cap 12 and having a depending tubular flange 18 extending at its lower end into and closely fitting the upper end of the bore of said cap 12 and a spring 19 in the annular space within said flange 18, substantially as described.

529,222. VENDING-MACHINE. JAMES WALTON, Phœnicia, N. Y. Filed Dec. 30, 1893. Serial No. 495,213. (No model.)



*Claim.*—1. The combination, with the containing case, and the paper receptacle therein, of a sliding rod whose end projects exteriorly of the case, a tilting lever fulcrumed on the case and extending longitudinally above the paper receptacle, said tilting lever having a pivotal connection with the said sliding rod, and a fork pivotally connected with the said tilting lever and provided with tines located in two different planes to engage a paper on both of its sides, substantially as described.

2. In a vending machine, the combination, with the operating rod for effecting the delivery of the articles, a coin lever, and a locking mechanism to prevent the movement of the operating rod when the coin lever is in its normal position, of a latch to engage the coin lever and hold it in a fixed position after it has been depressed by the insertion of a coin, and means connected with the said operating rod, for releasing the coin lever latch when the said operating rod is actuated, substantially as described.

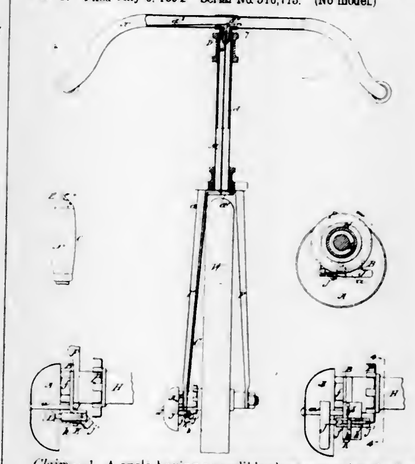
3. A vending machine, comprising a containing case, an inclined paper holder arranged in the case, a chute leading from the paper holder through the wall of the case, an ejecting fork movable opposite the lower end of the holder, a tilting counterbalanced lever for working the fork, a push rod connected with the lever to operate the same, a lock or latch carried by the lever, a stop arm arranged in the path of the lock or latch, and coin-controlled mechanism for moving the stop arm from the path of the lock or latch, substantially as described.

4. A vending machine, comprising a containing case, an inclined paper holder arranged therein, a chute leading from the lower end of the holder through the wall of the case, an ejecting fork arranged to move opposite the lower end of the holder, a tilting counterbalanced lever connected with the fork, a push rod to tilt the lever, a swinging latch or lock carried by the lever, a coin lever adjacent to the main lever, a stop arm on the coin lever to engage the lock, and means for tilting the coin lever and moving the arm by the dropping of a coin, substantially as described.

5. A vending machine, comprising a containing case, an inclined paper holder arranged therein, a chute leading from the paper holder through the wall of the case, a fork arranged to move across the end of the paper holder, a tilting counterbalanced lever pivoted to the fork, a push rod for operating the lever, a swinging lock connected with the lever, a tilting coin lever, an arm on the coin lever arranged to swing into the path of the lock or latch, a latch to engage one end of the coin lever and hold it in a fixed position, and means for releasing the coin lever latch by the swinging of the main lever, substantially as described.

6. The combination, of the paper carrying mechanism, the tilting lever connected therewith to discharge the papers, the coin lever held to normally lock the main lever and adapted to be moved by a coin to release the main lever, and a swinging latch adapted to engage and lock the coin lever, the latch having an inclined releasing arm extending into the path of the main lever, substantially as described.

529,223. BICYCLE-ALARM. JOSEPH A. WEAVER, Jr., New York, N. Y. Filed July 6, 1894. Serial No. 516,713. (No model.)



*Claim.*—1. A cycle having an audible alarm secured to the frame adjacent to the hub of the wheel, projections on the hub and connections from the alarm to the handle-bar under the control of the rider for throwing the operative part of the alarm into the path of said projections, substantially as described.

2. A bicycle, having an audible alarm secured to the fork adja-

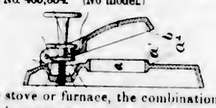
cent to the hub of the wheel, projections on the wheel and means under the control of the rider for throwing the operative part of the alarm into the path of the said projections, substantially as described.

3. A bicycle having a hollow head and handle bar, and an audible alarm secured to the frame adjacent to the wheel with connections from the alarm to the handle-bar under the control of the rider, said connections passing through the hollow head and handle bar substantially as described.

4. The combination of the hollow handle bar of a cycle, with connecting cords or wires passing therethrough to control an alarm, with an inserted spring stirrup in the handle bar carrying a bell-crank lever for the wires or cords, substantially as described.

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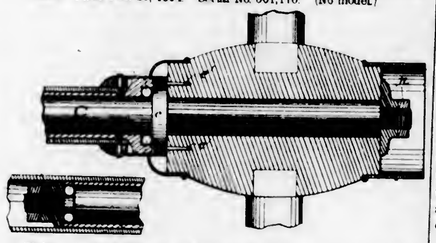
**529,224. STOVE-DAMPER, &c.** NATHAN D. WHITE, Akron, Ohio, assignor to the Taplin, Rice & Company, same place. Filed Sept. 19, 1893. Serial No. 485,834. (No model.)



*Claim.*—In a stove or furnace, the combination with the casing or member A having a draft-opening $a$; draft-door or damper for regulating or controlling the ingress of air at said opening, said draft-door or damper being hinged to the supporting-casing or member, and suitable means for actuating the draft-door or damper to open or close, of raised portions $a^3$ upon the supporting-casing or member and one or more flanges or projecting members $B^3$ upon the draft-door or damper and having bearing upon the aforesaid raised portions $a^3$ in the closed position of the draft door or damper, substantially as set forth.

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**529,225. WHEELED VEHICLE.** CHARLES E. WNUCK, Cincinnati, Ohio. Filed Feb. 23, 1894. Serial No. 501,170. (No model.)



*Claim.*—1. In a vehicle the combination with a tubular axle, of a wheel, a spindle projecting rigidly therefrom, an open-ended spindle casing through which the spindle extends, roller bearings surrounding the spindles at both ends of the casing and a holding nut at the rear projecting end of the spindle—the spindle casing adapted to removably fit the tubular axle and be inserted in or removed therefrom without detaching the wheel from its spindle, substantially as set forth.

2. The combination of a cylindrical tubular axle, a removable tubular spindle-casing fitting therein; a wheel spindle having a rotating fit in said spindle-casing; a wheel rigidly attached to the end of said spindle, a series of friction rolls surrounding the spindle within the forward end of the casing; a second series of friction rolls surrounding a reduced end of the spindle within the rear end of the casing, a collar on the spindle abutting against the forward end of the casing and a removable nut upon the rear projecting end of the spindle abutting against the casing, substantially as set forth.

3. The combination of the tubular axle, the spindle-casing, the spindle (with wheel attached) the collar, E, and set screws, $s$, passing through the collar, tubular axle, and spindle-casing to secure these parts rigidly together substantially as set forth.

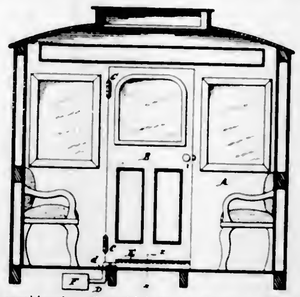
4. The combination of the spindle (with wheel attached) the casing, the roller bearings, and the nuts, $n'$, constituting a structure adapted to be inserted in the tubular axle and removably held by the set screws, $s$, substantially as set forth.

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**529,226. VEHICLE-DOOR.** CHARLES A. WRIGHT, Philadelphia, Pa. Filed Oct. 26, 1893. Serial No. 489,173. (No model.)

*Claim.*—1. The combination of a vehicle frame having a doorway or opening, with a movable door proper adapted to open or close the said passage or doorway, and a weighted device independent of the door proper operating by its inertia to oppose all movement of the door relatively to the vehicle frame occasioned by movements of said vehicle.

2. The combination of a vehicle frame having a doorway or opening, with a movable door adapted to open or close the said passage or doorway, and a weighted device operating by its inertia to oppose all movement of the door relatively to the vehicle frame occasioned by movements of said vehicle and consisting of a weighted arm mechanically connected to the door and movable about a vertical axis.



3. The combination of a vehicle frame having a doorway, a door pivoted thereto and movable about a vertical axis, and a weighted arm mechanically connected with the door and operating under the influence of its inertia to hold the door upon the vehicle frame in any position in which it may be placed, irrespective of the jarring or sudden change of motion to which the said vehicle frame may be subjected.

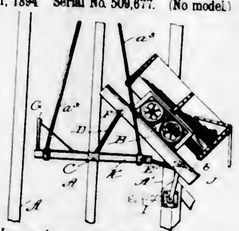
4. The combination of a vehicle frame having a doorway, a door pivoted thereto and movable about a vertical axis, and a weighted arm having a vertical part mechanically connected with the door and extending downwardly through the floor of the vehicle so as to support the weighted arm to one side of the door pivot and beneath the floor, whereby the said weighted arm operates under the influence of its inertia to hold the door upon the vehicle frame in any position in which it may be placed irrespective of the jarring or sudden changes of motion to which the said vehicle frame may be subjected.

5. The combination of a car or vehicle having a doorway, with a hinged door to open or close the doorway, and a movable counter weight located outside of the doorway and having a connection with the door, whereby the counter weight is adapted to operate under the action of inertia and the tendency of the door and counter weight to move relatively to the vehicle frame counteract one another and all of the parts thereby move with and in the direction of movement of the vehicle frame.

6. The combination of a car or vehicle having a doorway, a door secured to a vertical shaft pivoted in bearings secured to the vehicle frame, and a laterally projecting weighted arm secured to the said vertical shaft in a horizontal plane different from that occupied of the door whereby the inertia of the weighted arm overcomes the inertia of the door and causes all of the parts to move with the vehicle body under excessive jarring or sudden change of motion.

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**529,227. DUMPING-CAGE.** JAMES N. WRIGHT, Quincy, Ill. Filed May 1, 1894. Serial No. 509,677. (No model.)



*Claim.*—1. In an elevating and dumping apparatus, the combination with the main platform, of the supplemental platform, vertical and inclined links pivotally connecting opposite sides of the supplemental platform with the main platform, projections J, J, from the movable platform adjacent to the vertical links, and loosely pivoted hooks on the mine shaft for engaging said projections to move the cage laterally, substantially as described.

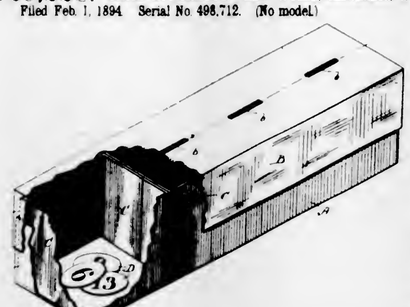
2. In combination, the main platform, the supplemental platform pivotally mounted thereon, vertical and inclined links, the rigid standard for normally supporting the portion of the supplemental platform connected by the inclined links, the projections from the opposite sides of said platform, and hooks loosely pivoted on the mine shaft for engaging said projections to move the cage laterally whereby the rear links are caused to assume a vertical position and the front ones inclined to dump the load, substantially as described.

3. In combination, the main platform, the tilting platform thereon, the projections from said tilting platform, and hooks on the mine shaft for engaging said projections said hooks having sliding bars or latches automatically movable thereon to close the mouth of the hook and retain the projection therein as the hook is lifted, substantially as described.



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**529,228. GAME APPARATUS.** LEW WYLER, Milwaukee, Wis. Filed Feb. 1, 1894. Serial No. 498,712. (No model.)



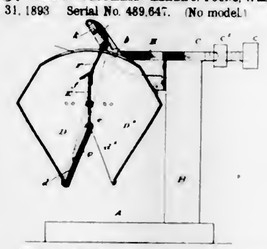
*Claim.*—1. A game apparatus comprising a suitable box or casing provided with a plurality of receptacles or compartments, a lid movably engaged with the top of said box or casing and provided with a plurality of apertures corresponding in number and each communicating with one of said receptacles or compartments, and a plurality of disks or chips provided with numbers or characters and arranged in sets or series, there being as many of said sets or series as there are receptacles or compartments in said box or casing, substantially as described.

2. A game apparatus comprising a suitable box or casing a plurality of smaller boxes or compartments arranged to fit within the same and removable therefrom, a removable cover or lid for the main box or casing, provided with a plurality of slots or apertures corresponding in number to the smaller boxes or compartments, and each arranged to communicate with one of the latter, and a plurality of disks or chips divided into as many sets or series as there are boxes or compartments within the main box or casing, and the disks or chips of each series being provided with consecutive numbers or characters corresponding with the numbers or characters upon the disks or chips of the other set or series, substantially as described.

3. A game apparatus comprising a suitable box or casing divided into a plurality of receptacles or compartments a suitable cover movably engaged with one side of the box, a plurality of slots or apertures communicating with the several receptacles or compartments, and a plurality of suitable disks or chips divided into as many sets or series as there are receptacles or compartments, and the disks or chips of each set or series, being provided with distinguishing characteristics corresponding with the characteristics of the disks or chips of the other sets or series, substantially as described.

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**529,229. GRAIN-WEIGHER.** ELMER C. YOUNG, Washington, Iowa. Filed Oct. 31, 1893. Serial No. 489,647. (No model.)



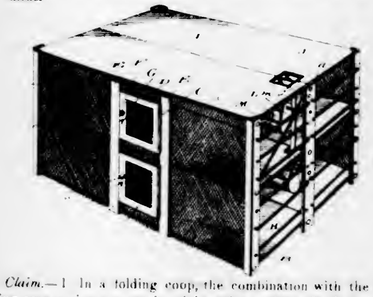
*Claim.*—1. In a weighing meter, the combination of the main frame having upwardly extending parallel arms, the horizontal rectangular frame having two of its parallel sides pivotally supported on the aforesaid arms, said rectangular frame being provided with the rearwardly-extending weighted scale bar, the main receptacle of the meter having two interior compartments a partition for separating these compartments consisting of a central rigid section and an upper and lower movable section, said upper section controlling the inlet into the chambers and said lower section controlling the discharge through the lower mouths of said chambers, the upright arms at each end of the main receptacle, the upper ends of said arms being pivotally connected to the aforesaid rectangular frame, while the lower portions of the arms connect with the main frame by means of angular rods serving as brace rods, substantially as described.

2. In a weighing meter, the combination of the frame J having upwardly extending parallel arms $j$, the horizontal rectangular frame H having two of its sides pivotally supported on the arms $j$, said frame being provided with a rearwardly-extending scale bar, the main weighing receptacle divided into two compartments, a centrally-located partition for so dividing the receptacle, consisting essentially of three sections, the middle one E being a rigidly secured vertical plate, the lower one G an oscillating plate and the upper one F an oscillating plate, said plate F being connected by links $k$ $k$ with the upper ends of the arms $j$, an inclined connecting bar on each side of the main receptacle which is attached at its upper end pivotally to the lower end of the links $k$, while at its lower end it is attached to the opposite end of the vibratory cover G, the upright arms I at each end of the weighing receptacle, having their upper ends pivotally connected to the rectangular frame H and the angular rods $h$ connecting the lower portions of the arms I with the frames J, substantially as described.

3. In a weighing meter, the combination of the frame J, having parallel vertical arms $j$, the horizontal rectangular frame H having its sides pivotally supported on the arms $j$ at $b$, said frame having a rearwardly extending scale bar, the main receptacle having two chambers D and D', a partition for separating these chambers consisting of a central rigid section E, an oscillating upper section F, having V-shaped $f$ on its lower edge which fits over the plate E and a lower movable section G whose upper edge fits into a V shaped $e$ on the lower edge of the section E, and the side connecting rods pivotally attached to the upper and lower sections, together with the rigid arms I on the ends of the receptacle which arms are pivoted to the frame H, substantially as described.

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**529,230. METAL FOLDING CHICKEN-COOP.** ISRAEL ZIMMERMAN, St. Louis, Mo. Filed Sept. 4, 1893. Serial No. 484,754. (No model.)



*Claim.*—1. In a folding coop, the combination with the sides having corner pieces, central upright strips at the ends, tie rods connecting these strips, and top and bottom plates hinged on these rods and to the sides; of rods connecting each corner piece with the adjacent edge of the end strip, said rods alternating on the inner and outer faces of the strip and having their ends bent at right angles to their bodies and passing loosely through said strips and headed at their extremities, as and for the purpose set forth.

2. In a folding coop, the combination with the sides having corner pieces, central upright strips at the ends, tie rods connecting these strips, and top and bottom plates hinged on these rods and to the sides, of an upright rod standing inside each end strip near its upper end with the extremities of the rod secured to the strip, an eye sliding on this rod, two plates journaled on the shank of the eye and forming a crotch normally supporting the uppermost tie rod connecting the end strips, and oblique brace rods extending from these plates to and pivoted to the corner pieces, as and for the purpose set forth.

3. In a folding coop, the combination with upright central end strips connected in pairs by horizontal tie rods, coop sides having corner posts connected by similar tie rods, and rods pivotally connecting said posts and strips to form the coop ends; of a coop top in two parts having eyes at their inner edges mounted on the upper tie rod between the strips and eyes at their outer edges mounted on the upper tie rod between the corner pieces, a bottom flooring consisting of two plates connected and supported in the same manner, an intermediate flooring midway between said top and the bottom flooring and also consisting of two plates connected and supported in the same

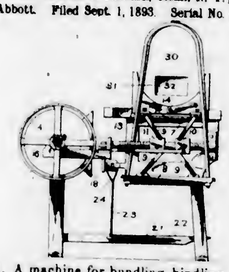
manner, doors in one side above and below said intermediate flooring, and a feed box in each compartment thus formed, substantially as described.

4. In a folding coop, the combination with upright central end strips connected in pairs by horizontal tie rods, coop sides having corner posts connected by similar tie rods, and rods pivotally connecting said posts and strips to form the coop ends; of a coop top, bottom, and intermediate flooring, each formed of two plates pivoted to the intermediate and outer tie rods and forming two compartments, a feed box having upright ends provided with eyes journaled on the intermediate tie rod in each compartment, and supply tubes leading from the coop top to the different feed boxes, substantially as described

5. In a folding coop, the combination with upright central end strips connected in pairs by horizontal tie rods, coop sides having corner posts connected by similar tie rods, and rods pivotally connecting said posts and strips to form the coop ends; of a top and bottom each in two plates pivoted at their edges on the intermediate and outer tie rods, a feed box having upright ends provided with eyes mounted on an intermediate tie rod, downwardly converging plates connecting the ends of the feed box and standing just above said bottom, and a supply pipe leading from the coop top to and delivering between said plates, as and for the purpose set forth

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529,231. **MACHINE FOR BUNDLING KINDLING-WOOD.** DAVID S. ABBOTT and GEORGE G. PARKER, Olean, N. Y.; said Parker assignor to said Abbott. Filed Sept. 1, 1893. Serial No. 484,572. (No model.)



*Claim.*—1. A machine for bundling kindling wood, comprising the upper and lower cross-heads, an upright bow rigid with the lower cross-head, a jaw situated within the bow and carried by the upper cross-head, a power shaft having spaced bevel gears, a horizontal, laterally-movable, screw-shaft between the upper and lower cross heads and mounted in a sliding bearing, mechanism for moving said screw-shaft laterally to shift the bevel gear thereon into engagement with either of said bevel gears on the power shaft or to a neutral position between the same, the nuts fitted on said screw-shaft and the toggle joints connected to the nuts and the cross-heads, substantially as described.

2. In a machine for bundling kindling wood, the combination with a bow and jaw arranged relatively to each other to receive the work, of cross heads by which said bow and jaw are carried, the screw shaft mounted on a sliding bearing, the power shaft having the driving gears, follower nuts on said screw shaft and connected by toggle joint with said cross heads, and detents carried by said follower-nuts and arranged to impinge against abutments in their path to automatically shift the screw shaft out of gear with either of the driving gears as the bow and jaw reach their limit of adjustment respectively to each other, substantially as described.

3. In a machine for bundling kindling wood, the combination of the cross heads, the bow carried by one cross head, the jaw carried by the other cross head, a screw shaft between said cross heads and journaled at one end in a sliding bearing confined between fixed guides, the follower nuts fitted on said screw shaft and carrying detents arranged to impinge against said guides, a toggle-joint connected with the follower nuts and cross heads, a power shaft having the driving gears between which is fitted a gear on the screw shaft, a bell crank lever connected to said sliding bearing, the treadles, and a chain connected to said treadles and the bell crank lever, substantially as described.

4. In a machine for bundling kindling wood, the combination with the cross heads and a bow carried by one of said cross heads, of a sectional jaw carried by the other cross head, a spring for normally holding the members of said jaw away from each other and mechanism for actuating said cross heads, substantially as and for the purpose described.

5. In a machine for bundling kindling wood, the upper cross head, the sectional curved jaw carried by said cross head and having its members pivotally connected together, and a spring normally bearing against said pivoted ends of the jaw members, combined with a lower cross head carrying a bow, and mechanism for actuating said cross heads, substantially as and for the purpose described.

6. In a machine for bundling kindling wood, the combination with a bow, of a sectional jointed jaw coacting with the bow, and mechanism for operating the bow and jaw, whereby the bundle is prevented from adhering to the jaw when the pressure on the bundle is released, substantially as and for the purposes described.

7. In a machine for bundling kindling wood, the combination with cross-heads, a bow movable with one of said cross-heads, a sectional jaw carried by the other cross-head, means for normally holding the members of the jaw toward each other and permitting said members to have a limited movement away from each other under the pressure of the buodle thereon, and operating mechanism for the cross-head, substantially as and for the purposes described.

8. In a machine for bundling wood, the combination, with cross heads, of a bow movable, with one of said cross-heads, a sectional jointed jaw carried by the other cross-head, yielding pressure devices associated with said jaw to permit the members thereof to have limited movement with respect to each other under the pressure of the bundle thereon, and operating mechanism for the crosshead, substantially as and for the purposes described.

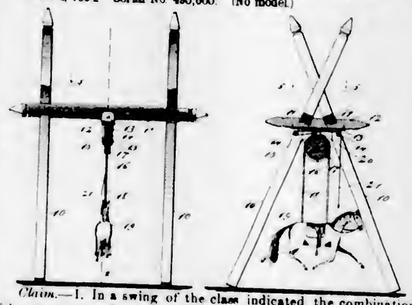
9. In a machine for bundling kindling wood, the combination with cross heads, of a bow movable with one of said cross heads, a jaw carried by the other cross head and constructed in sections adapted to yield under pressure of the bundle, means for moving the jaw sections relative to each other as the pressure of the bundle is released, and mechanism for operating the cross-heads, substantially as and for the purposes described.

10. In a machine for bundling kindling wood, the combination with a power shaft, and a screw shaft, of the diagonal crossheads extending across said screw shaft on opposite sides of the same, the nuts fitted on the screw shaft, the links pivoted to said nuts and to the cross-heads, a bow attached to the lower cross-head, and a jaw carried by the upper cross head and arranged within the jaw to coact therewith, for the purposes described, substantially as set forth.

11. In a machine for bundling kindling wood, the combination with a table, a power shaft, and a screw shaft parallel to the table and at right angles to the power shaft, of the diagonal broad crossheads extending across said screw shaft, the links connected to the nuts and having the opposite broad ends pivoted firmly to crossheads near the ends of the latter, the upright bow fastened to the lower cross head close to the broad joints of the lower links, and a jaw carried by the upper cross head and arranged with the bow to coact therewith, substantially as and for the purposes described.

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529,232. **SWING.** SAMUEL L. ALSTON, Galveston, Tex. Filed Jan. 4, 1894. Serial No. 495,605. (No model.)



*Claim.*—1. In a swing of the class indicated, the combination, with a supporting frame, and a seat for a rider, of the inverted, U-shape hanger whose members are attached to the seat in the front and rear, the pulley-like rocker journaled in the frame, a bolt securing said hanger to the upper side of the rocker, a cord connected with such bolt, and pulleys arranged in front and rear, over which the cord passes, as shown and described

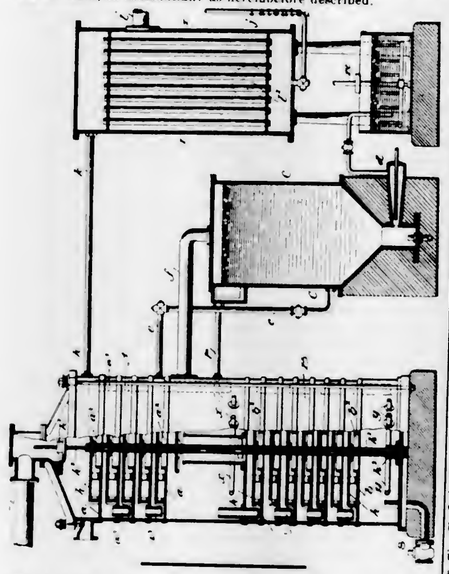
2. The improved separable swing-supporting frame composed of two pairs of inclined notches and interlocked legs, two parallel horizontal cross bars which are fitted in the outer notches of said legs, and a swing hanger bar arranged at a right angle to the said cross bars and having dovetail notches which receive the latter and secure it to them, as shown and described.

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529,233. **APPARATUS FOR DRIVING OFF VOLATILE CONSTITUENTS FROM LIQUIDS.** MARCELLUS BAILEY, Washington, D. C., administrator of William Thomas Walker, deceased. Filed Dec. 21, 1893. Serial No. 494,309. (No model.) Patented in England Dec. 6, 1887, No. 16,806.

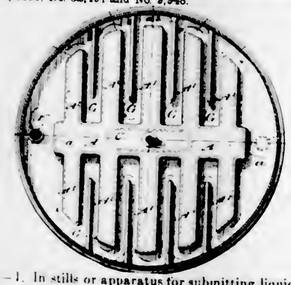


*Claim.*—Apparatus for the purpose described consisting of the combination of a column superposed upon another column each column being divided into chambers and provided with short pipes or passages and hoods so that there is a continuous vertical passage for volatile constituents or vapors and gases up through both columns and through the liquid contained therein, a heater for the liquid and a communication therefrom to the first column and a tank or vessel for lime or other agent and a communication thereto for liquid from the lower part of the first column and a communication for lime treated liquid therefrom to the upper part of the second column and also a passage for vapors and gases from the said tank or vessel to one of the columns, all substantially as hereinbefore described.



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529,234. **APPARATUS FOR DRIVING OFF VOLATILE CONSTITUENTS FROM LIQUIDS.** MARCELLUS BAILEY, Washington, D. C., administrator of William Thomas Walker, deceased. Filed Dec. 21, 1893. Serial No. 494,310. (No model.) Patented in England Nov. 19, 1889, No. 18,529; in France Dec. 5, 1889, No. 202,409; in Belgium Dec. 6, 1889, No. 88,745; in Germany Dec. 6, 1889, No. 52,652, and in Austria-Hungary Mar. 20, 1890, No. 52,491 and No. 9,948.



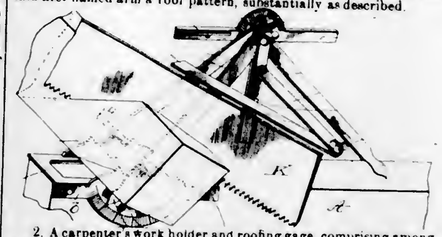
*Claim.*—1. In stills or apparatus for submitting liquids to the action of vapors or gases an inverted oblong or trough-like chamber with right angled (or approximately right angled) branches with serrations or perforations or passage ways at their lower parts, substantially as hereinbefore described.

2. In stills or apparatus for submitting liquids to the action of vapors or gases an inverted oblong or trough like chamber with right angled (or approximately right angled) branches with serrations, perforations or passage ways at their lower parts and with walls or plates for directing the liquids along the said branches, substantially as hereinbefore described.

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529,235. **CARPENTER'S WORK-HOLDER AND GUIDE.** CHARLES BAINBRIDGE, Philadelphia, Pa. Filed June 1, 1894. Serial No. 513,156. (No model.)

*Claim.*—1. A carpenter's work holder and roof gage comprising among its members, a base plate adapted to be placed on the work trestle or bench, a pattern arm pivoted to said base plate and adapted to be moved to any angle on either side of its point of pivoting and a second pattern arm pivoted to the end of said first named arm and adapted to engage the trestle or bench at its other end, to form with said first named arm a roof pattern, substantially as described.



2. A carpenter's work holder and roofing gage, comprising among its members a base plate adapted to be placed on a work trestle or bench and provided with a protractor, a pattern arm pivoted to said base plate in operative relation to said protractor and having a portion adapted to travel over said protractor and a second pattern arm pivoted to the outer end of said first named arm, and having its free end provided with a point for engaging the trestle or bench, said second arm being of the same length as the length of the first named arm from its point of pivoting to its pivotal connection with said second arm, whereby said arms may be placed at any desired angle to form a roof pattern on either side of their pivotal connection with the base plate, substantially as described

3. A carpenter's work holder and roofing gage, comprising among its members a base plate adapted to be placed on a trestle or work bench and provided with a protractor, a pattern arm pivoted to said plate in operative relation with said protractor, the second pattern arm pivoted to the outer end of said first named arm and having a point for engaging the trestle or bench to form with said first named arm a roof pattern, at either side of pivotal connection with said base plate, a protractor adjacent to the pivotal connection of said arms, and a plumb-indicating arm pivoted to said pattern arms at their pivotal point of union, said plumb-indicating arm having a part for engaging said protractor, substantially as described

4. A carpenter's work holder and roofing gage comprising among its members a base adapted to be placed on a work trestle or bench, a jointed arm pivoted thereto, a leveling arm pivoted to the joint of the arm and a plumb indicating arm, substantially as described.

5. A carpenter's work holder and roofing gage comprising among its members a base adapted to be placed on a work trestle or bench, a jointed arm pivoted to said base, a leveling arm provided with a protractor, and a plumb indicating arm having a pointer to traverse the said protractor, the leveling arm and the plumb indicating arm being pivoted upon the pivot of the jointed arm, substantially as described.

6. A carpenter's work holder and roofing gage comprising among its members, a base plate adapted to be placed upon a trestle or work bench, a pattern arm pivoted to said base plate, said plate being provided with spurs at either side of said pivotal connection, a second pattern arm pivoted to the outer end of said first named arm, and provided with a point for engaging the trestle or bench whereby said pattern arms may be set at different angles to form a roof pattern, and also to support work, and a saw guiding arm detachably secured to said pattern arms and adjustable to different angles, substantially as described.

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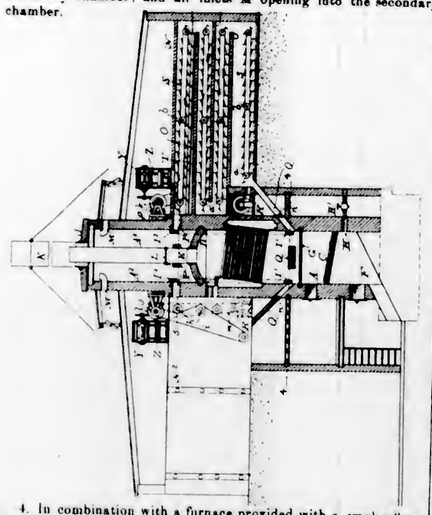
529,236. **APPARATUS FOR TREATING GARBAGE.** CHARLES A. BALL, Washington, D. C. Filed Apr. 27, 1894. Serial No. 509,175. (No model.)

*Claim.*—1. In an apparatus for treating garbage, the combination with a furnace having a main combustion chamber, and a secondary chamber; of a pipe K extending from the top of the secondary chamber; a pipe E leading from the main combustion chamber to the lower end of pipe K; flue I opening at opposite ends into the main and secondary combustion chambers; and a drying chamber N communicatiog with the secondary combustion chamber.

2. In an apparatus for burning garbage, the combination with a furnace, having a main combustion chamber and a secondary combustion chamber: of flue I connecting the two chambers; a pipe F opening from the top of the main combustion chamber into the secondary chamber; a stack or pipe K extending from the top of the secondary chamber; and a drying chamber N connected with the main and secondary chambers.

3. In an apparatus for burning garbage, the combination with a furnace having main and secondary combustion chambers of the flue

I connecting said chambers; a drying chamber N connected with the secondary chamber; and air inlets M opening into the secondary chamber.



4. In combination with a furnace provided with a smoke flue, an independent chamber to receive the garbage and in which the garbage is dried; a pipe independent of the smoke flue connecting the said chamber with the furnace; and means within said chamber for continuously moving and feeding the garbage to the furnace; whereby the products given off by the burning garbage are utilized to assist in drying the garbage.

5. In combination with a furnace provided with a main combustion chamber and a secondary combustion chamber; a garbage-drying chamber opening at its upper end into the secondary combustion chamber; a pipe for delivering the dried garbage into the main combustion chamber; a flue I for conveying a portion of the products of combustion to the secondary chamber; and means for forcing a current of air through the drier into the secondary chamber; whereby the drying of the garbage is facilitated, and the dust and gases carried to the secondary chamber where they are consumed.

6. In combination with a garbage drying chamber N; a furnace or chamber A in which the garbage is burned; a pipe or flue Q for delivering the dried garbage to the furnace; and a fan or blower R discharging air into chamber N across the mouth of flue Q.

7. In combination with a garbage drying chamber N; a furnace or chamber A in which the garbage is burned, and which is provided with main and secondary combustion chambers; a flue or pipe Q for delivering the dried garbage into the main combustion chamber; and a flue or opening I' for delivering the vapors from the chamber N into the secondary chamber.

8. In combination with a garbage burning furnace provided with main and secondary combustion chambers; flues I for delivering a portion or the whole of the products of combustion into the said secondary chamber; a drying chamber N communicating at its lower end with the main combustion and at its upper end with the secondary combustion chamber.

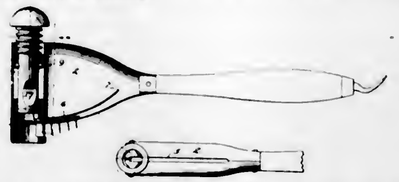
9. In a garbage-burning apparatus, the combination with a furnace provided with main and secondary combustion chambers; of a drying chamber; and means whereby the products of combustion of the main combustion chamber are divided,—a part passing through the drying chamber to the secondary combustion chamber, and the remainder passing directly to the secondary combustion chamber.

10. In a garbage-burning apparatus, the combination with a furnace provided with main and secondary combustion chambers; of a drier; flue I' connecting the drier with the secondary combustion chamber; flue Q connecting the drier with the main combustion chamber; a valve *n* in the pipe Q; flue I connecting the main and secondary chambers and provided with valve *o*; and stack E applied to the main combustion chamber and provided with valve L, whereby the products of combustion from the main combustion chamber may be divided and controlled.

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**529,237. MAGAZINE TACK-HAMMER.** FRANK R. BISCHOFF, Morris, Ind., assignor to Scott C. Bone and John D. O'Connor, same place. Filed Feb. 15, 1894. Serial No. 500,358. (No model.)

*Claim.*—1. In a magazine tack hammer the combination with the hollow head, the handle and the tack magazine connected together, of a driving plunger adapted to reciprocate relatively to the head and operating by its inertia to drive the tacks, and a guide-way for conducting tacks from the magazine to the lower end of the plunger, substantially as described.



2. In a magazine tack hammer the combination with the hollow head and a handle, of a driving plunger adapted to reciprocate in the head and operating by its inertia, a tack magazine connected to said head and having a tack channel or guide slot leading to the lower part thereof, and pawls for receiving and holding the tacks beneath the plunger, substantially as described.

3. In a magazine tack hammer the combination with the handle and the tack magazine having a guide or slot therein, of a hollow head to which the magazine is attached, a driving plunger adapted to reciprocate in said head and operating by its inertia, said plunger being provided with recesses near its lower end and a retracting spring, a pair of pawls pivoted in the sides of the head, the lower edges of said pawls being opposite to and forming a continuation of the tack channel of the magazine, and the upper ends of said pawls being normally separated by the lower end of the plunger and adapted to pass into the recesses of the plunger when the latter is lowered, substantially as described.

4. In a magazine tack hammer the combination with the hollow head, the driving plunger and the tack magazine having a guide slot in its lower side leading to the said head, of a pair of pawls pivoted in the inside of the head beneath the driving plunger, said pawls having offset edges normally separated at one end and in line with the guide slot, the offsets or shoulders being normally in contact and forming a stop for the tacks whereby the tacks may be guided to and centered under the plunger, substantially as described.

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**529,238. COFFEE-POT.** NATHAN O. BOND, Fairfax Court-House, Va. Filed Aug. 29, 1894. Serial No. 521,623. (No model.)



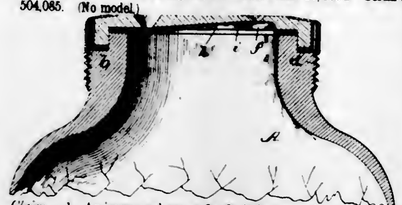
*Claim.*—1. In a coffee pot of the kind described the combination of a pot and a cylinder adapted to slide therein, said cylinder having a shoulder adapted to lock upon the upper edge of the pot when the cylinder is raised and tilted, substantially as described.

2. In a coffee pot of the kind described, the combination of the pot proper, a cylinder adapted to slide in the top thereof, a handle whereby the cylinder may be moved, a reduced section at the lower end of the cylinder whereby a shoulder is formed upon the cylinder, a ring fitting upon such reduced section, a screen secured by said ring, said shoulder forming a lock when the cylinder is raised and tilted as described.

3. The combination with a coffee pot provided with trunnions, of a stand upon which said trunnions revolve, said stand being composed of two U-shaped sections of wire, the center sections of which are joined by a strip of sheet metal the upper ends of the U-shaped sections being soldered together to form bearings for the trunnions as and for the purpose as described.



**529,239. COVER FOR FRUIT-JARS OR OTHER VESSELS.** CHARLES N. BRADY, Washington, Pa. Filed Mar. 17, 1894. Serial No. 504,085. (No model.)



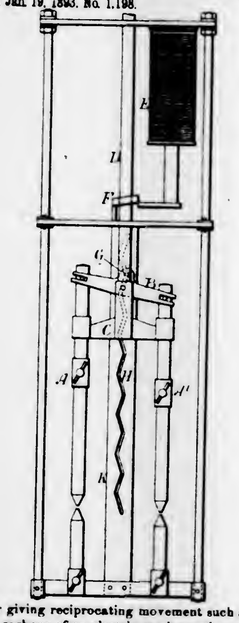
*Claim.*—1. An improved cover for fruit jars or other vessels, provided with a flared opening *e* for the entrance of a liquid within the jar or other vessel, with a depression or recess *f*, in the bottom of the cover, with an opening *g*, extending up from said recess or depression for the exit of air from within the jar or other vessel, and with a channel *h*, extending from the opening *e*, into the said recess or depression, for the purpose mentioned, substantially as described.

2. An improved cover for fruit jars or other vessels, made of glass with a depending annular flange *d*, with the opening *e*, with the depression or recess *f*, with the opening *g*, extending up from said recess or depression, and with the channel *h*, connecting the opening *e* with said recess or depression, substantially as described.

3. An improved cover for fruit jars or other vessels, provided with a flared opening *e*, for the entrance of a liquid within the jar or other vessel, with a depression or recess *f*, in the bottom of the cover, with an opening *g*, extending up from said recess or depression for the exit of air from within the jar or other vessel, and with a channel *h*, extending from the opening *e*, in the cover to the said recess or depression, said channel gradually increasing in depth from the opening *e*, to the said recess or depression for the purpose mentioned, substantially as described.

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**529,240. ELECTRIC-ARC LAMP.** JAMES BROCKIE, London, England. Filed June 19, 1894. Serial No. 515,035. (No model.) Patented in England Jan. 19, 1893. No. 1,198.



*Claim.*—For giving reciprocating movement such as is above referred to, to the carbons of an electric arc lamp, the combination of the carbon holders, the rocking lever and undulating groove, substantially as herein described.

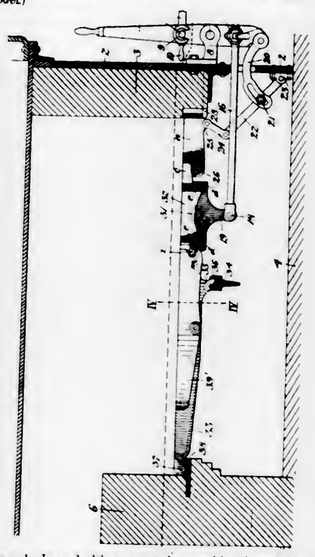
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**529,241. COMPOSITION OF MATTER FOR PAINT.** CARL L. C. DE BRUYCKER, MAX W. H. DE BRUYCKER, and AUGUST M. H. DE BRUYCKER, Brooklyn, N. Y. Filed July 27, 1894. Serial No. 518,755. (No specimens.)

*Claim.*—The herein described enamel paint consisting in Venice turpentine, linseed oil and litharge mixed and boiled, and to which is added turpentine, benzine, white lead, zinc white and plaster, the whole then being ground together, substantially as described.

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**529,242. GRATE.** ANDREW BRYCE, Allegheny, assignor, by direct and mesne assignments, to the Bryce Universal Fuel Firing Apparatus Company, Pittsburg, Pa. Filed Jan. 28, 1893. Serial No. 459,778. (No model.)



*Claim.*—1. In a shaking grate the combination of shaking bars with enlarged slotted heads, and stationary bars curved outwardly to receive said heads, substantially as described.

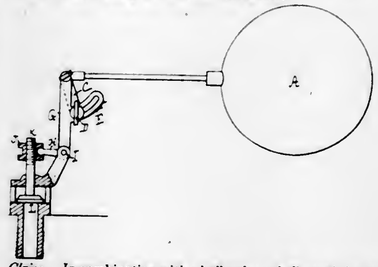
2. In a shaking grate the combination of a shaking bar provided with a distance piece and stationary bars connected thereto by jam bolts threaded where they pass through said distance piece, substantially as described.

3. In a shaking grate the combination of shaking bars with enlarged heads and stationary bars curved outwardly to receive said heads, substantially as described.

4. In a shaking grate the combination of shaking bars of alternate lengths and enlarged heads and stationary bars curved outwardly opposite to said heads, to receive the same, substantially as described

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**529,243. FLOAT-VALVE.** DAVID D. BUICK, Detroit, Mich. Filed Apr. 15, 1893. Serial No. 470,475. (No model.)

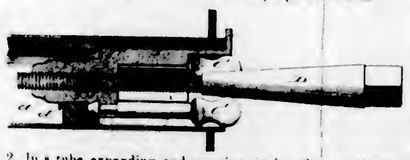


*Claim.*—In combination with a ball valve a bell crank lever G H pivoted on the valve and having its arm H connected with the valve stem, a curved slot E formed on arm G; a float A, a float rod B having its end L shaped as shown at C, and set screws F and D, substantially as shown and described.

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**529,244. TUBE-EXPANDER.** WILLIAM M. BULLOCK, Lakeville, Ind. Filed Aug. 30, 1894. Serial No. 521,743. (No model.)

*Claim.*—1. In a tube expanding and swaging device, the combination, of a head having a threaded central aperture and longitudinal recesses as shown, swaging rollers C pivotally and rotatably mounted in the longitudinal recesses and having on the ends beyond the recesses centrally grooved heads C', a mandrel threaded for engagement with the aperture in the head and provided with a tapered portion which engages with the swaging heads, so as to spread the same, and a ring held upon the head for retaining the pivoted rollers in place, substantially as shown and for the purpose set forth

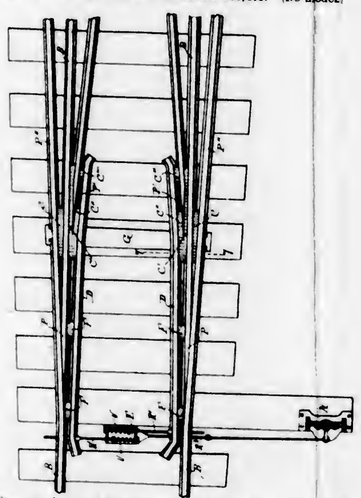


2. In a tube expanding and swaging device, the combination, of a head having at one end a reduced portion with a threaded central aperture and longitudinal recesses A' $a'$, swaging rollers C having heads C' and reduced spindles beyond which are conical heads, a guide or strip $a^2$ carried by the head, and a mandrel D for engagement with the head and swaging rollers, substantially as shown and for the purpose set forth.

3. In a tube expanding and swaging device, the combination, of a head having a guide $a^2$, a threaded central aperture and longitudinal recesses as shown, swaging rollers C rotatably mounted in the longitudinal recesses and having reduced shanks with conical ends $c'$ which bear in recesses in the head, a ring B held against the conical ends by a locking key $d$, the heads of the swaging rollers being centrally grooved, together with a mandrel D having a screw-threaded end which engages the threaded recess in the head and a conical portion which engages the swaging rollers which expand the tube on each side of the flue-sheet, substantially as shown and described.

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529,245. **RAILWAY-SWITCH.** JASPER N. BUTCHER, Mulvane, Kans. Filed July 23, 1894. Serial No. 518,413. (No model.)



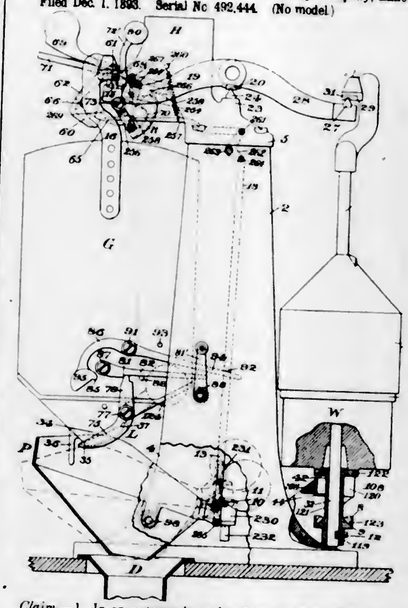
*Claim.*—1. In combination with the main track rails B—B'; the switch track rails P' and P'', placed as shown, the single movable point rail P, the filling blocks C—C'—C'' and F the guard rails D and D' and the means for moving said point rail in the manner substantially as and for the purpose set forth.

2. In the double rail-way switch described, the combination with the main track rails B, B, and the switch track-rails P'', P''; the stationary point switch track-rails P', P', placed adjacent said main track rails; the movable point switch rails P, P; the filling blocks C—C and C'—C' and the means, substantially as described, for moving said point switch rails, in the manner specified.

3. In the double rail-way switch described, the combination with the main track-rails B, B, and the switch track-rails P''—P''; the stationary point switch track rails P', P'; the movable point switch rails P—P; the filling blocks C—C, C'—C', C''—C'', C'''—C''' and F—F, the guard rails D—D, and the means for moving said point switch rails in the manner substantially as set forth and specified.

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529,246. **AUTOMATIC GRAIN-SCALE.** CHARLES H. COOLEY, Hartford, Conn., assignor to The Pratt & Whitney Company, same place. Filed Dec. 1, 1893. Serial No. 492,444. (No model.)



*Claim.*—1. In an automatic scale of the class specified, the combination with the supply-chute, a bucket located below said chute, a scale-beam carrying said bucket, and with the hopper located below said bucket, of one or more chute closing valves movable underneath said chute and operable by the scale-beam, a supplemental valve movable below said chute-closing valve or valves and adapted for being closed by its own gravity, means in connection with the hopper for engaging and operating the supplemental valve to open the same, and means for disengaging the supplemental valve from its operating devices to allow the same to close, substantially as described and for the purpose set forth.

2. In a grain-weigher, the combination with the supply-chute, the scale-beam, and one or more chute-closing valves operable by said scale-beam, of a supplemental valve constructed to extend below the said valve or valves and having catches thereon, a horizontally-reciprocating supplemental-valve-actuating lever having a detent-catch adapted, during its rearward movement, for engagement with the catch upon said valve to open said valve, a latch adapted for engagement with and supporting the supplemental valve in an open position, means for disengaging said latch during the downward movement of the scale-beam, and mechanism, substantially as described, for actuating said supplemental valve lever, substantially as and for the purpose set forth.

3. In a grain-weigher, the combination with the counter weighted scale-beam carrying the bucket, of the reducing and cut-off valves operated directly from said scale-beam, substantially as described, an independently movable supplemental gravity-valve having remotely-disposed catches thereon, a spring-actuated latch located in position to engage one of the catches upon and support the supplemental valve in an open position, means for disengaging said latch during the descent of the scale-beam to allow the said valve to automatically close, and supplemental-valve-actuating mechanism consisting of a spring-supported actuating-lever having a detent-catch to engage the catch upon the supplemental valve and open the valve during the backward movement of said lever, a bell-crank pivoted in the frame of the machine and at one end to the valve-actuating lever, and a rod pivoted at its upper end to the opposite end of said bell-crank, and at its lower end to the counter-weighted hopper of the machine, substantially as described and for the purpose set forth.

4. In a grain-weigher, the combination with the scale-beam, and with the reducing-valve having a cam operable by means of an arm secured directly to the forward end of said scale-beam, of the cut-off valve having the upwardly-extended weighted-arm with the cam 76 thereon, an actuator consisting of a roller pivotally supported upon the beam in position to engage the cam to actuate said cut-off valve, and a supplemental valve pivotally supported concentric to said cut-off valve, a latch pivotally supported upon an extension of the side-arm of the cut-off valve and having a detent-catch in position to engage a catch upon the supplemental valve when said valve is in an open position, means for automatically releasing said latch, a hopper, and mechanism, substantially as described, connected with, and operable by, said hopper to open said supplemental valve, substantially as described and for the purpose set forth.



5. In a grain-weigher, the combination with the supply-chute and with the counter-weighted scale-beam carrying the bucket, of the reducing valve pivoted to said chute and having the cam 69, the beam-arm 71 secured to the beam at one end and in position to act upon the cam 69 to open and close said valve, the cut-off valve pivoted to said chute and having the upwardly-extending weighted actuating-arm 72' and cam 76, a roller pivotally supported upon the actuator-arm in position to act upon said cam to open the cut-off valve and regulate its closing movement, and an independently-operable supplemental valve pivoted above and intermediate to the ends of the reducing and cut off valves, a counter-weighted hopper, and mechanism, substantially as described, in connection therewith to open said supplemental valve upon the ascent of the hopper, and latch-mechanism located intermediate to the supplemental valve and actuating arm of the cut-off valve and adapted for engaging and supporting said supplemental valve in an open position, and means for automatically releasing said latch upon the descent of the bucket, substantially as and for the purpose described.

6. In a grain-weigher, the combination with the frame of the machine, the counter-weighted scale beam, and the vertically-reciprocating bucket provided with the latch 82 having a catch, 81, of the counter-weighted bucket-closer 75 held in a closed position by said latch, and a cranked stop-pin journaled in the frame in position to be engaged by the end of the latch 82 to unlock the closer, and means for shifting said pin from an operative to an inoperative position, substantially as described and for the purpose set forth.

7. In a grain-weigher, the combination with the frame, the rising and falling bucket-mechanism and the vertically-reciprocating bucket, of the counter-weighted closer 75, the pivoted latch 82 having a catch to engage and lock the closer in its closed position, the cranked stop-pin journaled in the frame in position to unlock the latch 82 from the closer, a crank-arm secured to the end of said crank-pin outside the frame and adapted for shifting said crank-pin from an operative to an inoperative position, and having a detent-catch thereon to engage alternately in notches in the frame located above and below the axis of the crank-pin, and a pivoted latch, 86, having a weighted catch end to engage and lock the closer in its open position, and means for disengaging said latch, substantially as and for the purpose described.

8. In an automatic scale of the class specified, the combination with the supply-chute and scale-beam, of one or more chute-closing valves movable underneath the chute and operable by the scale-beam, the bucket carried by the scale-beam and provided with means for closing and opening the discharge-outlet thereof, a vertically-movable hopper in position below the bucket to receive the load discharged therefrom, means for normally elevating the hopper, a supplemental valve movable below said chute-closing valve or valves, and valve-actuating connections intermediate to said hopper and supplemental valve and adapted for retracting and locking-open said valve on the upward movement of the hopper, and means for unlocking the supplemental valve on the downward movement of the bucket, substantially as described.

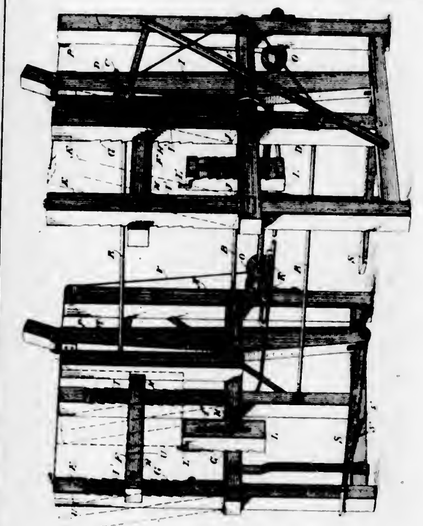
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529,247. **BOX WIRING OR HOOPING MACHINE.** EDWARD A. COOLEY, Cloverdale, Cal. Filed Mar. 16, 1894. Serial No. 503,933. (No model.)

*Claim.*—1. A box wiring or banding machine, consisting of end frames A adjustable toward and from each other, and having their upper portions adapted to swing outwardly, adjustable supports carried by said upper portions, upon which the box rests, means for supplying the banding material, a lever carrying a clamping device at its upper end for grasping the banding material, and a foot lever connected with the lower portion of said lever whereby the banding material is drawn to the proper tension when being secured upon the box.

2. In a box banding machine, the end frames with mechanism whereby they are adjusted to or from each other, supplemental frames hinged to the end frames and adapted to tilt outwardly about their hinges, adjustable supports attached to the main frame below the supplemental frames and adapted to receive and support the ends of the box in position to receive the band, and mechanism for holding the box and for straining the band across it while being fastened, substantially as herein described.

3. A box banding machine consisting of end frames with mechanism whereby they are adjusted to or from each other, supplemental frames hinged to the end frames and mechanism whereby they may be opened outwardly or drawn into a vertical position, transverse bars adjustably attached to the supplemental frames adapted to support the box when it has been turned into one position, whereby the band extends across the part of the box which is uppermost, and the tightening and straining mechanism for holding the band while it is being secured, substantially as herein described

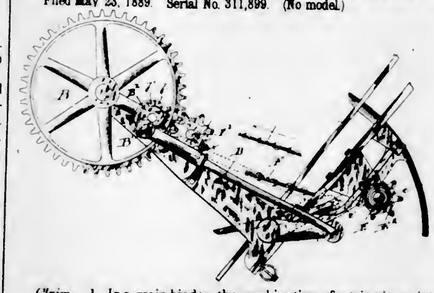


4. In a box banding machine, the end frames with mechanism whereby they are adjusted to and from each other, supplemental frames hinged to the front portion and opening outwardly about their hinges, bars linked together in the center and having their outer ends fixed to the hinge frames whereby a movement of one of the frames is communicated to the other and acts to open or close the frames with relation to each other as described.

5. In box banding machine, the vertical main frames, supplemental frames hinged to said main frames and adapted to tilt outwardly about the hinges, mechanism by which said main frames are moved to or from each other, main and supplemental supports for the boxes in different positions between these main and supplemental frames, reels upon which the banding material is coiled from which it passes over the guide pulleys, swinging levers and treadles whereby they are actuated, clamps upon said levers adapted to grasp the banding material and to strain it across the box while it is being nailed thereon, substantially as herein described.

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529,248. **GRAIN-BINDER.** EUGENE E. DAVIS, Rockford, Ill. Filed May 23, 1889. Serial No. 311,899. (No model.)



*Claim.*—1. In a grain binder, the combination of a trip piece pivoted to the needle arm above the shaft, the free end extending upward above the binder deck and backward over the needle shaft whereby it shall engage the incoming grain to rock the needle shaft, a driving sprocket, a clutch to operate said sprocket, a guide lever to op-

erate the clutch, and an arm secured to the needle shaft to operate said lever whereby the driving mechanism is brought to rest and continues so until a sufficient amount of grain is brought upon the trip to start it again in motion, substantially as set forth.

2. The combination of a trip pivoted to the needle above the needle shaft its free end extending upward above the binder deck and backward over the needle shaft to engage the incoming grain and to rock the needle shaft by the pressure of the grain, with means for driving and for locking the binding mechanism, and a releasing mechanism actuated by the rocking of the needle shaft, whereby the needle is operated and the needle trip is brought against the side of the gavel next to the deck whereby the gavel is compressed while being tied, substantially as set forth.

3 The combination of a trip pivoted to the binder needle above the needle shaft extending upward and backward over the needle shaft to engage the incoming grain, and to rock the needle shaft by the pressure thereof, a driving sprocket to operate the binding mechanism, a clutch to engage the driving sprocket, a guide lever to operate the clutch, an arm secured to the needle shaft to engage said lever, a pitman connecting the arm of the needle shaft with the wrist pin or its equivalent having a connection with the binder gear which permits a slight longitudinal movement of the pitman, substantially as set forth.

4. The combination of a needle trip pivoted to the binder needle above the needle shaft, extending upward and backward over the needle shaft above the binder deck to engage the incoming grain and to rock the needle shaft by the pressure thereof, a driving sprocket to operate the driving mechanism, a clutch to engage the driving sprocket, a guide lever to release the clutch, an arm extending from the needle shaft to operate the releasing lever, a pitman to operate the needle, having a stop lug to engage with a stop catch secured to the binder frame, operating substantially as and for the purpose set forth.

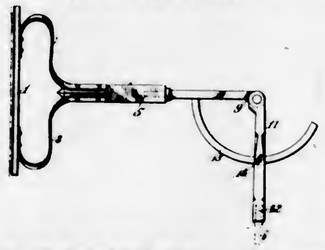
5. The combination of a binder gear provided with a wrist pin mounted on a crank pivoted to said gear, and having a limited movement on its pivot, a pitman provided with a lug to engage a fixed stop secured to the binder frame, adapted to be released from the same by an endwise movement of the pitman, and a driving mechanism for a binder operating substantially as and for the purpose set forth.

6. The combination of a needle trip connected with the binder needle by a downwardly yielding fastening and extending over the needle shaft adapted to rock the needle shaft by the pressure of the incoming grain, the free end of the trip sustained by a spring, with a driving mechanism, a clutch to engage the same, and a releasing mechanism whereby the binder is started into operation by the pressure of the grain and the compression of the gavel assisted by the trip, operating on the under side of the same substantially as set forth.

7. The combination of a needle trip pivoted to the needle near the needle shaft, its free end extending upward and over the needle shaft and the binder deck, whereby the grain is arrested by the said trip and the binding mechanism started into operation substantially as set forth.

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**529,249. PAPER-HANGING APPARATUS.** WILLIAM W. DAVIS, Woodford, assignor of one-half to Cornelius E. Frey, Sango, Tenn. Filed July 19, 1894. Serial No. 517,993. (No model.)



*Claim.*—1. In a paper hanging apparatus, a frame composed of parallel bars, spring arms attached to the under sides of said bars, a socketed head to which the lower converging ends of said spring arms are secured, and a handle inserted in the socketed head, substantially as described.

2. In a paper hanging apparatus, a paper supporting frame having spring arms, a centrally located head to which the lower converging ends of the said spring arms are secured, a handle for said head, and adjustable arcs carried on the frame and adapted to conform to varying curvatures of arched ceilings, substantially as described.

3. In a paper hanging apparatus, a frame having curved surfaces to support the paper, spring arms attached to said frame, a centrally located head to which the lower converging ends of the spring arms are secured and a handle for said head and frame.

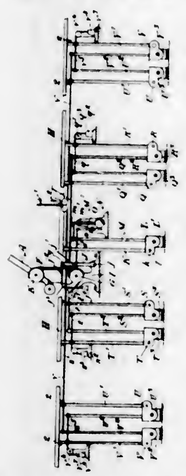
4. In a paper hanging apparatus, the combination with a paper supporting frame having spring arms on its under side and a centrally located head to which the converging lower ends of said spring arms are secured, of an adjustable elbow detachably connected with said head and a handle detachably connected with the elbow, substantially as described.

5. In a paper hanging apparatus, the combination of a paper supporting frame, spring arms attached to said frame, a socketed head to which the converging ends of the spring arms are secured, an adjustable elbow detachably connected to the said head and composed of jointed arms, means for adjusting the said jointed arms to required angles, and a handle detachably connected to one of the arms of said elbow, substantially as described.

6. In a paper hanging apparatus, the combination of a paper supporting frame having its under side provided with converging spring arms, a centrally located head to which the lower converging ends of said spring arms are secured, a handle or rod detachably connected with said head and a pedestal or stand in which the said rod or handle may be secured, substantially as described.

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**529,250. AUTOMATIC RAILWAY GATE AND SIGNAL.** EDWARD DEATH, Toronto, Canada, assignor of two-thirds to Edward Woods Wyatt, same place. Filed June 9, 1894. Serial No. 514,063. (No model.)



*Claim.*—1. In an automatic gate and signal, in combination a weighted gate journaled on the shaft carried by a vertical standard, a wheel secured to said gate journaled on said shaft, a corresponding wheel below the gate connections between said wheels whereby the rotation of one rotates the other, a bell crank pivoted below the track, a plunger abutting on the under side of said track carried by one arm of said bell crank, an upright extending vertically from the other arm of the bell crank, the connections therefrom to the lower wheel whereby the depression of said plunger by the subsidence of the track will swing the bell crank with its upright, partially rotate said wheel and the wheel carried by the gate and lower said gate, and means for locking said gate in its lowered position, substantially as described.

2. In combination with a normally raised gate carried by a standard, and a signal bell, the bell cranks pivoted beneath the rail and having vertical arms supporting the said rail and adapted to be depressed on the passing of a train, the arms rigidly connected with said bell cranks, and connections from said rigid arms to the gate and bell whereby subsidence of the rail rings the bell and raises the gate, substantially as described.

3. In combination with the gate A having a weighted end, the wheel E connected thereto, the wheel G having operating connection to wheel E, the rocking bell crank lever having a plunger operated by the track rail, the rigid arm $R^3$ on the bell crank lever, the cord connection from said arm to the wheel G whereby the depression of the rail operates to raise the gate, the pivoted bar J having a projection engaging the wheel G to hold the gate in a raised position, means for holding the bar J normally toward said wheel G, and means for moving said bar in the opposite direction to unlock the wheel G and permit the gate to be lowered, substantially as described.

4. The combination with the gate A, provided with a wheel E journaled on the pivot stud, of the belt F connecting the wheel E to the wheel G, the cord $r$ connected to the uprights $R^2$ of the bell cranks R, and the plungers R′ pivoted in the end of the bell cranks and abutting on the rail at the top, the bar J having a tooth $j'$, designed to lock the wheel G by means of the tooth $g$ and the said tooth $j'$, and having connected to its upper end a cord $j^3$ which passes over a pulley $j^4$ and is provided with a weight $j^5$, and the bell cranks L provided with plungers K, uprights M connected by a cord $m$ to the weighted lever M′, the lever O connected by the cord $o'$ to the pivoted bar J, the said plungers K being adapted to be depressed by the subsidence of the rail as the train is passing over them to tilt their respective bell cranks and raise the weighted lever M′ and upon the train having passed to allow the lever M′ to swing downwardly and strike the lower end of the lever O to draw upon the bar J, and free the tooth $g$, of the wheel G from engagement with the tooth $j'$ of the bar J, substantially as described.

5. The combination with the gate A, belt F, and wheel G of the bell cranks R provided with plungers R′ and uprights $R^3$, the uprights $R^3$ being connected by the cord $r$ to the wheel G and the bell crank Q, plunger Q′, upright $Q^2$ connected to the said plungers R′ by the cord $q$ which passes over the pulley $q'$ and is provided with a weight $q^3$ all arranged to one side of the crossing, and corresponding bell crank S, plunger S′, upright $S^2$, cord $s$, pulley $s'$, weight $s^3$, bell cranks T, plungers T′, uprights $T^2$, and cord $t$, connected to the uprights $T^2$ at one end and to the wheel G at the opposite side of said crossing all arranged to coact, substantially as described.

6. The combination with the bell crank U, the plunger U′ and upright $U^2$, cord $v^3$, pulley $v^4$ and weight $v^5$ and bell crank V, plunger V′ and upright $V^2$ connected to the end of the cord $v$, the opposite end of the said cord $v$, passing round the pulleys $v^3$ and connected to the cord $o'$ connected to the arm by which the bell is swung, the said plungers and uprights being connected together substantially as described.

7. The combination with the bell cranks, plungers and uprights all arranged to operate as specified upon the subsidence of the rail, of the stop blocks 2, arranged to abut against each plunger when in its normal position as and for the purpose specified.

8. In combination, the gate, the wheel on the axis thereof, the wheel G below the track having a tooth, the connection between the wheels, the locking means arranged to engage the said tooth, the plunger below the said track arranged to be operated by the depression of the rail, the connection between the same and the wheel G and a second plunger arranged to be operated by the train and connected with the locking means for releasing the gate as the train passes the crossing, substantially as described.

9. In combination, the pivoted gate, the wheel on the axis thereof, the wheel G having a belt connection therewith the said wheel G having a tooth, the toothed locking bar J to engage the toothed wheel, the lever $o$, connected with the locking bar, the weighted lever M arranged to operate the lever $o$, the plunger arranged to be operated by the passing train, and the connection from said plunger to the weighted lever, substantially as described.

10. A railway gate to be operated by the subsidence of the track rail comprising the pivoted gate, a series of plungers arranged at different points along the said track to be operated in succession by the subsidence of said track rail under the weight of the train, and a connection leading to the gate to operate the same, said connection being common to all the plungers whereby they will act in succession to give the gate a closing movement, substantially as described.

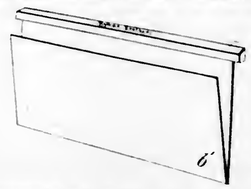
11. In combination, the pivoted gate, the plunger R′ arranged beneath the track to be depressed, the bell crank lever, the upright, the cord $r$ extending from the upright $R^2$ and connected with the gate, a second plunger arranged to be operated by the passage of the train having a bell crank and upright connected with the upright $R^2$ the said second plunger being connected with the first whereby when either plunger is first operated the other will be thrown out of operative position, substantially as described.

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**529,251. CABINET AND INDEX-FILE.** ISAIAH R. EDGAR, Brooklyn, N. Y. Filed July 25, 1894. Serial No. 518,531. (No model.)

*Claim.*—1. The combination of a drawer, case or box, upon which the projecting strips of a series of pockets are adapted to rest, and along which said strips are adapted to be moved, and a series of pockets, provided with such projecting strips, and so arranged that the respective pockets will be supported by such projecting strips, when not resting on the bottom of the drawer, case or box, substantially as described.

2. The combination of a drawer, case, or box, upon which the projecting strips of a series of pockets are adapted to rest, and a series of pockets, each having two leaves, adapted to be folded together, means, removable locking caps also provided with a portion of the the said projecting strips being upon one of said leaves, substantially as described.



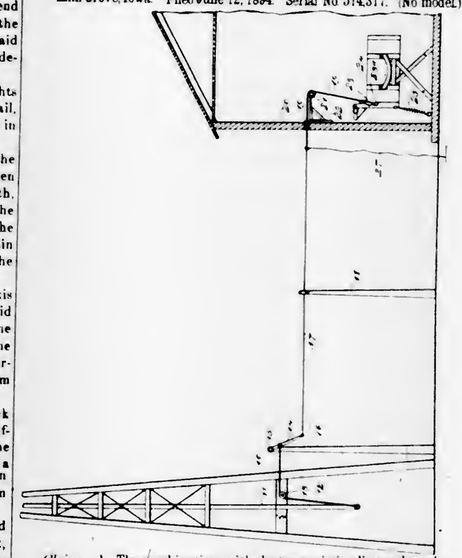
3. The combination of a drawer, case, or box, upon which the projecting strips of a series of pockets are adapted to rest, and a series of pockets, each pocket being composed of two leaves of unequal width, adapted to be folded together, and having a projecting strip upon the wider of the two leaves, substantially as described.

4. A pocket adapted for use in a drawer, case, or box, having two leaves adapted to be folded together, one of said leaves being provided with a projecting strip, upon which the pocket may be supported, substantially as described.

5 A pocket adapted for use in a drawer, case, or box having two leaves of unequal width, adapted to be folded together, the wider of said leaves being provided with a projecting strip, upon which the pocket may be supported, and the narrower of said leaves being adapted to fold in under said strip, substantially as described.

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**529,252. DEVICE FOR TRANSMITTING POWER.** JAMES EVANS, Linn Grove, Iowa. Filed June 12, 1894. Serial No. 514,317. (No model.)



*Claim.*—1. The combination, with the transmitting line and mechanism for imparting thereto a longitudinal movement in one direction, of a spring secured to a stationary support and operatively connected with the line to move it in the opposite direction from the driving mechanism, substantially as described.

2. The combination, with an oscillating device and a spring secured thereto and to a stationary support, of a transmitting line secured to the said oscillating device, and means for imparting to the said line a longitudinal movement in one direction, substantially as described.

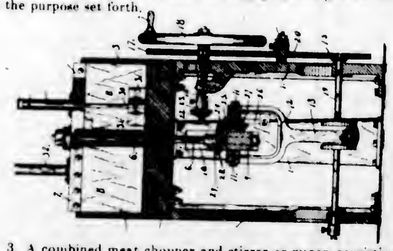
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**529,253. MEAT-CHOPPING MACHINE.** JAY W. FARNOFF, Buffalo, N. Y. Filed June 9, 1894. Serial No. 514,003. (No model.)

*Claim.*—1. A combined meat chopper and stirrer or mixer, consisting of a stationary cutting block or table, a vertically reciprocating and intermittently rotating frame carrying cutters, and one or more rotating stirrers or mixers secured to and simultaneously operated by the frame carrying the cutters, as and for the purpose set forth.

2. A combined meat chopper and stirrer or mixer, consisting of

a stationary cutting block or table, a vertically reciprocating and intermittently rotating frame carrying cutters, one or more reciprocatory rotating stirrers or mixers secured to and simultaneously operated by the frame carrying the cutters, each stirrer or mixer consisting of an upright case mounted on the frame and having an internal spiral groove, a vertical rod sliding through the frame and having stirring blades at its lower end, the upper end of the rod moving within said case, and a pin in said upper end engaging said groove, as and for the purpose set forth.



3. A combined meat chopper and stirrer or mixer, consisting of a cutting block or table, a vertically reciprocating frame carrying the cutters, means for causing an intermittent rotation between the block and frame, and a stirrer or mixer comprising an upright case mounted on the frame and having an internal spiral groove, a rod sliding through the frame and having stirring blades at its lower end, the upper end of the rod moving within said case, and a pin in said upper end engaging said groove, as and for the purpose set forth.

4. In a device of the character described, the combination with a stationary cutting block or table surrounded by a curb to form a cutting receptacle, a central vertical shaft journaled at one end in a beam opposite said receptacle, and a frame connected to the other end of the shaft and carrying the blades, of a horizontal power shaft carrying an adjustable gear wheel, a horizontal crank shaft, detachable connections between these shafts, a yoke pivotally connecting the crank and beam, a gear wheel mounted on the beam, pawl and ratchet mechanism for intermittently rotating this gear, and a gear adjustably mounted on the vertical shaft and adapted for engagement at will with said intermittently-rotated gear or with that on the power shaft, as and for the purpose set forth.

5. In a device of the character described, the combination with a stationary cutting block or table surrounded by a curb to form a cutting receptacle, a central vertical shaft journaled at one end in a beam opposite said receptacle, and a frame connected to the other end of the shaft and carrying the blades: of a horizontal power shaft carrying an adjustable gear wheel, a horizontal crank shaft, detachable connections between these shafts, a yoke pivotally connecting the crank and beam, an upright gear wheel journaled on the pivot between the yoke and beam, a ratchet connected with this gear, an operating pawl carried by the yoke, a retaining pawl carried by the beam, and a gear adjustably mounted on the vertical shaft and adapted for engagement at will with said intermittently-rotated gear or with that on the power shaft, as and for the purpose set forth.

6. In a device of the character described, the combination with a stationary cutting block or table surrounded by a curb to form a cutting receptacle, a central vertical shaft journaled at one end in a beam opposite said receptacle, and a frame connected to the other end of the shaft and carrying the blades: of a horizontal crank shaft, a yoke connected to the crank and pivoted to the beam, a gear journaled on the pivot between the yoke and beam and meshing with another gear on the vertical shaft, and pawl and ratchet mechanism substantially as described operated by the swinging of the yoke to turn said gears and intermittently rotate the vertical shaft, as and for the purpose set forth.

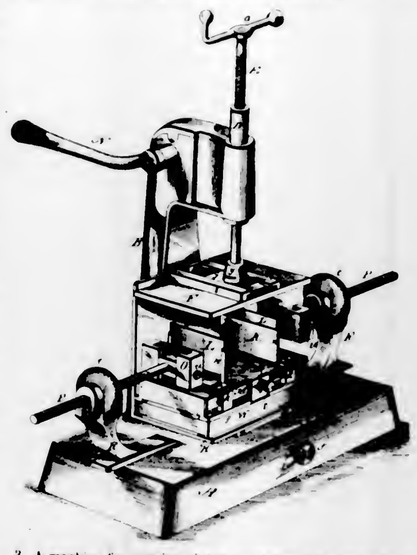
7 In a device of the character described, the combination with a stationary cutting block or table surrounded by a curb to form a cutting receptacle, a central vertical shaft journaled at one end in a beam opposite said receptacle, and a frame connected to the other end of the shaft and carrying the blades; of a horizontal crank shaft, a yoke connected to the crank and pivoted to the beam, a gear journaled on the pivot between the yoke and beam and meshing with another gear on the vertical shaft, a ratchet rigidly connected with the upright gear, an operating pawl carried by the yoke, and a retaining pawl carried by the beam, as and for the purpose set forth.

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529,254. **CIGAR-PRESS.** EDGAR J. FINK, Hanover, Pa. Filed July 10, 1894. Serial No. 517,062. (No model.)

*Claim.*—1. A machine for pressing cigars, consisting of means for holding the cigars a vertically movable shaft having independent means of vertical adjustment, and a presser-head adjustably connected to the shaft, substantially as and for the purpose specified.

2. In a machine for pressing cigars, a vertically movable presser head, horizontally adjustable shafts, bracing-heads adjustably connected to the shafts, and intermediate mechanism connecting the presser-head with the bracing-heads whereby they will act simultaneously, substantially as and for the purpose set forth.



3. A machine for pressing cigars, consisting of a vertically operating shaft, a presser head adjustably connected thereto, horizontal shafts and bracing-heads adjustable on said shafts, and a means for holding the cigars and an adjustable support therefor, substantially as and for the purpose set forth.

4. A machine for pressing cigars, provided with a presser-head and means for operating it, and a bundling device provided with laterally adjustable sides and extensible sections connecting with the sides, substantially as and for the purpose set forth.

5. In a machine for pressing cigars, a vertically movable presser-head, horizontally movable bracing-heads operatively connected thereto whereby they will act simultaneously, a bundling device and a support therefor having a slotted back and a guide plate upon the presser-head engaging with the slot to guide the head in its vertical movement, substantially as and for the purpose described.

6. In a machine for pressing cigars and a bundling device therefor, said device having laterally adjustable sides and means for holding them in their adjusted position, consisting of a friction bar, and a thumb-screw for operating it, substantially as and for the purpose set forth.

7. In a machine for pressing cigars, a vertically movable shaft having a presser head suitably connected thereto, and horizontal shafts provided with bracing-heads adjustably connected thereto, and a bundling device and a support therefor, and means for moving the support across the base of the machine, substantially as and for the purpose specified.

8. In a machine for pressing cigars a vertically movable shaft, an adjustable presser-head secured to the shaft by a swivel connection, means for adjusting the shaft independently of its vertical movement, movable brackets and shafts adjustably connected thereto, bracing-heads adjustably connected to the shafts, and a bundling device having adjustable sides and extensible sections connected thereto, substantially as and for the purpose specified.

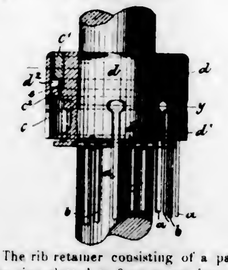
9. In a machine for pressing cigars, a vertically movable and adjustable shaft, a presser-head secured thereto by a swivel connection, said head being movable independently of the shaft, movable brackets having longitudinally adjustable shafts, bracing heads adjustably connected to the shafts, and means for imparting to the presser-head and the bracing-heads a simultaneous movement, substantially as and for the purpose set forth.

10. A machine for pressing cigars, consisting of a hollow base, a suitable standard thereon, a vertically movable lever located within the standard, a presser-head and shaft connecting with the lever, brackets and horizontal shafts thereon, bracing-heads upon the ends of the shafts, means for connecting the brackets with the lever whereby a simultaneous movement is imparted to the presser head and the bracing-heads, an adjustable support and a bundling device resting thereon, substantially as and for the purpose set forth.



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529,255. **UMBRELLA-RIB RETAINER.** JOHN FORBES, London, England. Filed Sept. 4, 1893. Serial No. 484,693. (No model.) Patented in England Nov. 24, 1892, No. 21,449.

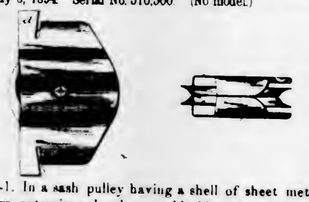


*Claim.*—1. The rib retainer consisting of a partially rotatable tubular casing or ring slotted to form spaces into which the upper parts of the ribs enter when the umbrella is closed, and provided with a slotted internal collar or projecting rib, in combination with the runner placed inside the rib retainer, and radially notched to receive the points of the ribs, and provided with two collars $c'$ and $c^2$, and an upwardly projecting pin $e$ extending into the slot in the said internal collar or projection, substantially as set forth.

2. In an umbrella or similar article, the rib retainer consisting of a rotable tubular case or ring slotted to form spaces into which the upper parts of the ribs enter when the umbrella is closed up, and provided with an internal collar or projecting rib, in combination with the runner arranged inside the rib retainer and to which the stretchers are secured, and radially notched to receive the points of the ribs, and provided with the collars $c'$ and $c^2$ arranged on opposite sides of the said collar or rib in the rib retainer, whereby the runner and rib retainer are prevented from separating, substantially as described.

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529,256. **SASH-PULLEY.** WILLIAM R. FOX, Grand Rapids, Mich. Filed May 8, 1894. Serial No. 510,500. (No model.)



*Claim.*—1. In a sash pulley having a shell of sheet metal and sides or wings, extensions $d$ and c on said sides formed by inclined slits leaving advanced points 2 to enter the wood, the lower part of said extensions being bent to meet at the edges, substantially as described.

2. A sash pulley having a body portion of sheet metal and extensions of the sides, a portion of said side extension being bent inwardly to abut and the remainder extending in the same plane with the main part of the side of the shell, substantially as described.

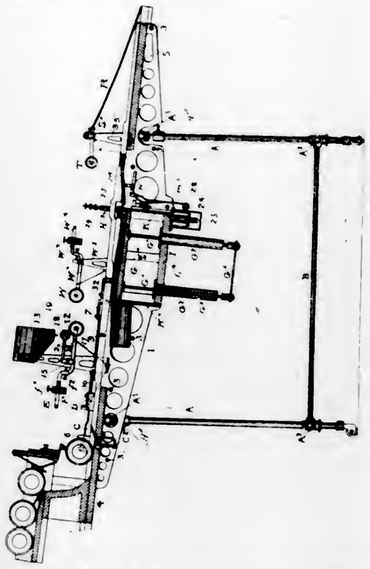
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529,257. **CAN-LABELING MACHINE.** CHARLES R. FRAZER, San Francisco, Cal., assignor to the Pacific Labeling Company, of California. Filed Apr. 27, 1892. Renewed July 31, 1894. Serial No. 519,077. (No model.) Patented in England May 11, 1892, No. 8,976.

*Claim.*—1. In a can-labeling machine, the combination with an inclined run-way for the cans of the head-stops 6 6, the releasing finger 7 7 and the intermediate stops D, D, the rods 9 10 connecting the said stops with the releasing fingers, and the spring check-plate C in the bottom of the run-way having an upwardly bent portion, substantially as described for operation as set forth.

2 In a can-labeling machine, the combination with an inclined run-way for the cans of the can controlling stops, the paste trough, paste-supply roller 18, pasting roller 12, the roller frame 16, in which said roller is mounted, the arm E, adjustable counter-weight F, stop-screw $f^2$, and spring 17 applied for operation as set forth.

3. In a can labeling machine, the combination with an inclined run way, and a can-pasting apparatus; of the label bed G moving within and slightly smaller than the label box, rods $G^5$, long rigid tubular guides $G^3$ having reduced perforations in their lower ends through which said rods pass, springs $G^3$ within the guides, collars $G^4$ secured to the rods above the springs and sliding closely within said guides, and the cross-bar $G^6$ connecting the rods entirely below the tubular guides, substantially as described

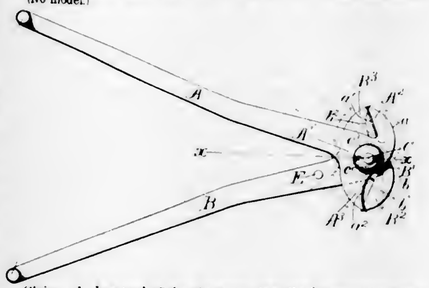


4. In a can-labeling machine, the combination with an inclined run-way for the cans, a label-box or receptacle and a label-bed mounted on springs therein to present the labels flat-wise in a pile to the rolling cans, of the lap-pasting belt 21, rollers 22 22, paste trough 24, pulley 25, pawl and ratchet mechanism, and the compound levers comprising the members M M pivoted to the frame at one end and their other ends connected by a cross-bar $M^\times$ setting in the path of the rolling can, the members N, N, pivoted to the frame at one end and having a cross-bar at their other ends connected with the pawl-carrying lever 28 and the links connecting said members together between their pivoted ends and their cross-bars, substantially as specified.

5. In a can-labeling machine of the kind having an inclined run-way for the cans, the combination, of the side-plates 1 1 having tracks for the cans and supporting the can-pasting and labeling devices, and the adjustable standards formed of telescopic uprights A $A^\times$, the cross-bars $A^7$ $A^8$, brace B and set screws $A^9$ substantially as described for operation as set forth.

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529,258. **COTTON-BAND CUTTER.** LEVI S. GARDNER, GUSTAVE COOK, and AUGUST O. TANNENBERG, New Orleans, La., assignors to William H. Bofinger, same place. Filed Aug. 16, 1894. Serial No. 520,475. (No model.)



*Claim.*—1. In a tool of the character described, the combination of two members pivoted together and each having a hook provided with a straight cutting edge, and an extension provided with a curved cutting edge, on opposite sides of said pivot and oppositely disposed so that the curved cutting edge of the one member will close across the straight cutting edge of the other member, substantially as and for the purposes described.

2. In a tool of the character described, the combination of two

members pivoted together and each having a hook on one side and an extension on the other side, of said pivot; cutting edges detachably secured to said hooks and extensions, and oppositely disposed so that the cutting edges of the one member will close across the cutting edges of the other member substantially as and for the purposes described.

3. In a tool of the character described, the combination of two members pivoted together and each having a hook with a straight inner edge, and an extension with a curved outer edge on opposite sides of said pivot; detachable blades having straight cutting edges for the inner edges of the hooks, and curved cutting edges for the curved outer edges of the extensions, the said members being oppositely disposed so that the curved cutting edge of one will close over the straight cutting edge of the other, from the points toward the base, and a stop attached to one of said members and adapted to limit the movement of the other of said members, substantially as and for the purposes described.

529,259. SHIPPING-COOP FOR POULTRY. JAMES A. GILLILAND, Warrensburg, Mo. Filed July 18, 1894. Serial No. 517,877. (No model.)



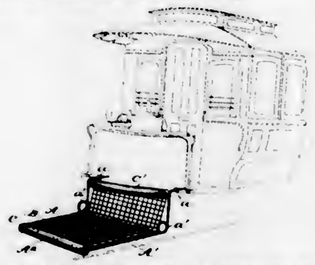
*Claim.*—1. In a shipping coop for poultry, the combination with a bottom, and a series of posts rising from the bottom, of a series of cross rails secured to the posts, and a series of trough rails also secured to the posts at a short distance from the cross rails and forming a trough, substantially as described.

2. In a shipping coop for poultry, the combination with a bottom, and a series of posts rising from the bottom, and a series of cross rails secured to the posts, of a series of rods passing through the said posts, said rods being screw threaded at their ends and adapted to receive nuts on each side of each end post, strips of wire netting forming the sides and ends of said coop, and covering each door thereof, substantially as described.

3. In a shipping coop for poultry, the combination with a bottom, a series of posts rising from the bottom, and having a pair of rods passing through the upper ends thereof, and a series of cross rails secured to the posts, of a pair of doors pivotally hung on a rod passing through the rear posts and arranged to swing outward from the bottom thereof, said doors being held in their closed position by a catch or button, substantially as described.

4. In a shipping coop for poultry, the combination with a bottom, a series of posts rising from the bottom, and a series of cross rails secured to the posts, of a pair of strips of wire netting secured to the top of the coop and having their inner longitudinal edges some distance apart, a sliding door arranged in the space between the wire netting, and a thumb screw device passing through the central cross strip door and into the central cross rail, substantially as described.

529,260. CAR-FENDER. ELIE B. GRAFF, Baltimore, Md. Filed June 25, 1894. Serial No. 515,687. (No model.)



*Claim.*—1. A car fender composed of a frame work having two side bars each made in one piece, one portion of each side bar being bent to a vertical position, and the other portion to a horizontal position, the vertical portion having its lower end connected to and continuous with the rear end of the horizontal portion and coiled at this point into one or more elastic convolutions to form springs, substantially as and for the purpose described.

2. A car fender composed of a frame work having two side bars each made in one piece, one portion of each side bar being bent to a vertical position, and the other portion to a horizontal position, the vertical portion having its lower end connected to and continuous with the rear end of the horizontal portion and coiled at this point into one or more convolutions to form springs, a cross bar at the front end of the horizontal portion provided with a hollow elastic cushion, and another hollow elastic cushion arranged at the top of the vertical portion substantially as shown and described.

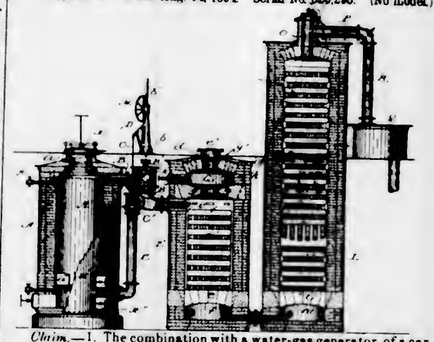
529,261. BICYCLE-TIRE. EDGAR GRAUERT, New York, N. Y. Filed Oct. 16, 1893. Serial No. 488,291. (No model.)



*Claim.*—1. The rim C curved outwardly as shown to receive the ends of the spokes and to form a seat for the cylindrical tire covering, in combination with the inflatable tube G, covering or shoe D with enlarged edges or beads E, clamping segments F, with edges turned toward the axis of the rim, and provided with scales or bridges H, and means for securing the segments in position, substantially as described.

2. The rim C and covering D constructed as described in combination with the covering D, segments F, screw threaded pins I, securing nuts K, and releasing springs M, substantially as and for the purpose set forth.

529,262. WATER-GAS APPARATUS. OLAF N. GULDLIN, Fort Wayne, Ind. Filed Aug. 14, 1894. Serial No. 520,295. (No model.)



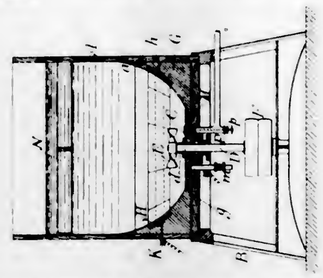
*Claim.*—1. The combination with a water-gas generator, of a carbureting and fixing chamber, having a separate oil vaporizing chamber at the top, free from checker brick and provided with a lateral oil atomizing or spraying device and a solid annular floor or hearth having a central opening, communicating with the fixing chamber below, a combustion chamber below said vaporizing chamber and above the fixing chamber, a pipe for gas leading from the generator, and a separate air inlet pipe,—both connecting with said combustion chamber, whereby the atomizing device will be protected from excessive heat and whereby the oil vapor or gas passing down through said central opening will be enveloped by the current of inflowing water-gas and intimately mixed therewith, thereby preventing the hydrocarbon vapors from being destructively decomposed by excessive heat of the brick work, substantially as described.

2. In a water gas apparatus, the carbureting and fixing chamber constructed with a separate oil vaporizing and heating chamber having an inclined floor or hearth and an opening into the fixing chamber below, and one or more oil supply pipes or injectors in the circumferential wall, in combination with a gas inlet pipe connecting with the fixing chamber below said vaporizing chamber, substantially as described.

3. The combination with a water gas generator, of a carbureting and fixing chamber containing a separate oil vaporizing chamber at the top, free from checker brick, and provided with a lateral atomizer or supply pipe and a solid annular hearth having a central opening communicating with the fixing chamber below, a combustion chamber below said vaporizing chamber and above the fixing chamber, a pipe for gas leading from the generator, and a separate air inlet pipe,—both connecting with said combustion chamber, a separate superheater, as L, and a pipe connecting the base of the carbureting and fixing chamber, with the base of said superheater, substantially as described

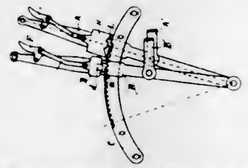


529,263. APPARATUS FOR EXTRACTING GOLD. JAMES B. HANNAY, Loch Long, Scotland. Filed Nov. 15, 1893. Serial No. 491,015. (No model.)



*Claim.*—An apparatus for extracting gold comprising a vessel A provided at its bottom with an insulating lining G, a carbon zone H embedded in said lining and connected with the positive terminal of an electric generator, a mercury cup in the bottom of said vessel connected with negative terminal of said generator, a rotary agitator E, journaled in bearings in the bottom of the vessel, and the valved outlet pipes P, *m*, arranged at different levels, substantially as described.

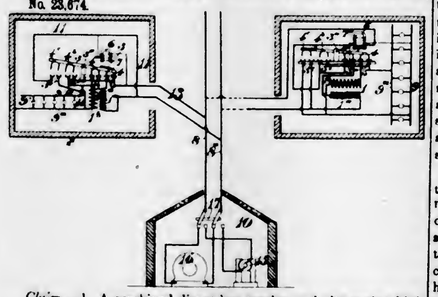
529,264. VALVE-SETTING LEVER. EDWARD W. HARDEN, Cincinnati, Ohio, assignor to F. C. Weir, same place. Filed Mar. 20, 1894. Serial No. 504,451. (No model.)



*Claim.*—1. The combination, with a segment, of the levers A, B, adapted to operate the main and cut-off valves of an engine and provided with locking mechanisms, one of said locking mechanisms having a device to release the other locking mechanism, substantially as specified

2. The combination, with the segment C, of the levers A, B, adapted to operate the main and cut-off valves of an engine, and locking devices attached to said levers and provided with engaging parts constructed so that the movement of one lever will automatically engage with and release the locking devices and carry the other lever, substantially as specified.

529,265. MEANS AND APPARATUS FOR DISTRIBUTING ELECTRICITY. HAYDN T. HARRISON, London, England. Filed Jan. 19, 1894. Serial No. 497,452. (No model.) Patented in England Dec. 22, 1893, No. 23,674.



*Claim.*—1. A combined direct low tension and alternating high tension transformer system of electrical distribution, comprising primary and secondary mains, a transformer, direct low tension and alternating high tension current generators, a switching device for throwing said generators alternately in and out of circuit with said primary mains, and an automatically operating switch and circuit connections whereby said transformer will be rendered inoperative on said secondary mains and the primary and secondary mains will be connected together, when the primary mains are connected with said direct current generator, and will be thrown into action and be maintained in action when said primary mains are disconnected from said direct current generator and connected with said alternating current generator.

2. In a combined direct low tension and alternating high tension transformer system of distributing electricity, the combination with the primary and secondary mains and transformers, of switches adapted to automatically throw the respective transformers into circuit directly the low tension current is switched off and before the high tension alternating current is switched on, and to cut out the transformers and connect the consumers' or secondary mains direct onto the service or primary mains directly the high tension current is switched off and the low tension current switched on.

3. In a combined direct low tension and alternating high tension transformer system of distributing electricity, the combination with the primary and secondary mains and transformers, of circuit connections whereby said transformers can be thrown in and out of action, and electro-magnetic contact making devices for controlling said connections, said devices being each operative electrically when traversed by direct low tension current and inoperative electrically when traversed by an alternating current substantially as herein described for the purposes specified.

4. In a combined direct low tension and alternating high tension transformer system of distributing electricity, the combination with the primary and secondary mains and transformers, of switches each comprising a loaded lever controlling circuit connections and adapted to normally place the corresponding transformer in circuit, and an electro magnet adapted to actuate said switch lever to cut said transformer out of circuit when its winding is traversed by a continuous current and to be inoperative on said switch lever when its winding is traversed by an alternating current and to then permit said lever to place said transformer in circuit substantially as herein described.

5. In a combined direct low tension and alternating high tension transformer system of distributing electricity, the combination with the primary and secondary mains, transformers, and circuit connections, of automatic switches each comprising a switch device controlling said circuit connections and adapted when in one position to throw the corresponding transformer or bank of transformers into circuit, and an electro magnet adapted to move said switching device into its opposite position and throw said transformer or bank of transformers out of circuit, said electro magnet being provided with a winding having a large self induction and connected across one of said pairs of mains, substantially as herein described.

6. In a combined direct low tension and alternating high tension transformer system of distributing electricity, the combination with the primary and secondary mains and transformers, of automatically operating switches each comprising a loaded switch lever, circuit connections controlled thereby and by means of which the corresponding transformer can be thrown in and out of action, and an electro magnet adapted to actuate said switch lever in one direction, said electro magnet being wound with two windings one of which is connected across the primary mains, and the other across the secondary mains substantially as herein described for the purpose specified.

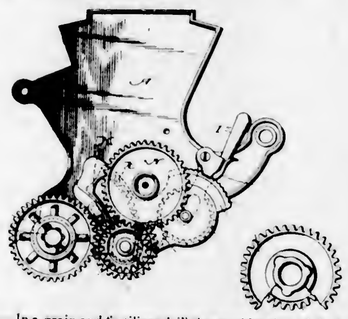
7. A combined direct low tension and alternating high tension transformer system of distributing electricity, comprising three primary mains, a transformer having its primary connected across two of these mains which are to serve as the alternating high tension mains, secondary mains connected across one of said two primary mains and the third primary main, direct low tension and alternating high tension current generators, means for alternately connecting the pair of high tension mains to the alternating current generator, and one of these mains and the third main to the direct current generator, and an automatic switch adapted to place the secondary of said transformer in circuit directly the low tension current is switched off and to put it out of circuit directly the high tension alternating current is switched off and the low tension current switched on substantially as herein described.

8. A combined direct low tension and alternating high tension transformer system of distributing electricity, comprising three primary mains, a transformer having its primary connected across two of these mains which are to serve as the alternating high tension mains, secondary mains connected across one of said two primary mains and the third primary main, direct low tension and alternating high tension current generators, means for alternately connecting the pair of high tension mains to the alternating current generator, and one of these mains and the third main to one pole of the direct current generator and the other of the two high tension mains to the other pole of said direct current generator and an automatic switch adapted to

place the secondary of said transformer in circuit directly the low tension current is switched off and to put it out of circuit directly the high tension alternating current is switched off and the low tension current switched on substantially as herein described.

9. A combined direct low tension and alternating high tension transformer system of distributing electricty, comprising three primary mains, a transformer having its primary connected across two of these mains which are to serve as the alternating high tension mains, secondary mains connected across one of said two primary mains and the third primary main, direct low tension and alternating high tension current generators, means for alternately connecting the pair of high tension mains to the alternating current generator and one of these mains on the third main to the direct current generator, circuit connections whereby said transformer can be thrown in and out of action, a loaded switch lever controlling said connections and normally connecting the secondary winding of said transformer across the secondary mains, and an electro magnet adapted to actuate said switch lever and disconnect said transformer from said secondary mains, said electro magnet having two windings, one of low resistance connected across the pair of primary mains that serve as the low tension mains, and the other of high resistance connected across the secondary mains, substantially as herein described.

529,266. **CHANGING-GEAR FOR GRAIN-DRILL HEADS.** TRUMAN A. HILL, Mount Morris, N. Y. Filed Sept. 4, 1893. Serial No. 484,784. (No model.)



*Claim.* In a grain and fertilizer drill the combination of the hopper end having an arm, a lever G mounted on the said arm, a second lever H having engagement at its upper end with the lever G, and having its lower end slotted, a hanger E having a tubular extension to project through the upper end and enter the slot in the lower end of the lever H, a spring *h* confined between the said tubular extension and the inner slotted ends of the said lever H, a toothed lever I mounted on the tubular extension of the hanger and provided with a pawl to engage with a ratchet portion of the said hanger, a casting K having teeth *k*, a pinion to mesh with the said toothed lever I and the teeth *k* of the said casting K the gear wheels D and N, housing P protecting the operating parts, and interchangeable gearing L and M carried by the said casting K and adapted to mesh with the gear wheels D and N, substantially as and for the purpose set forth.

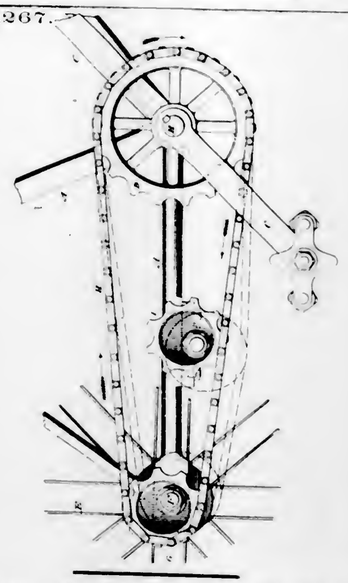
529,267. **BICYCLE.** EUGENE HOMAN, New York, N. Y. Filed Apr. 15, 1893. Serial No. 470,447. (No model.)

*Claim.*—1. In a bicycle or analogous vehicle the eccentric sprocket wheel on the rear axle, and the sprocket wheel on the pedal-shaft, combined with the pedal-cranks and the chain connecting said sprocket wheels, the said eccentric sprocket wheel being one-half the size of the pedal-shaft sprocket wheel and arranged with respect to said cranks so that the longer axis of the eccentric comes to its working position as each pedal reaches its initial position to receive power substantially as and for the purposes set forth.

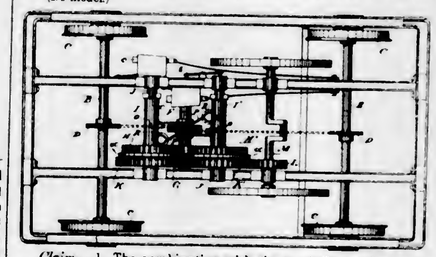
2. In a bicycle or analogous vehicle the eccentric sprocket wheel on the rear axle, and the sprocket wheel on the pedal-shaft, the latter sprocket wheel being double the size of the eccentric sprocket wheel, combined with the pedal-cranks, the chain connecting said sprocket wheels, and the intermediate eccentric sprocket wheel engaging said chain; substantially as and for the purposes set forth.

3. In a bicycle or other like vehicle, the combination with the driving chain, an eccentric sprocket wheel on either the pedal shaft or the rear axle and a sprocket wheel upon the other, of an eccentrically arranged sprocket wheel connected with the frame of the vehicle and its sprockets meshing with the links of the driving chain; substantially as set forth.

529,267.



529,268. **REVERSIBLE DRIVING-GEAR FOR CARS.** JAMES HOPKIRK, San Francisco, Cal. Filed Feb. 12, 1894. Serial No. 499,941. (No model.)



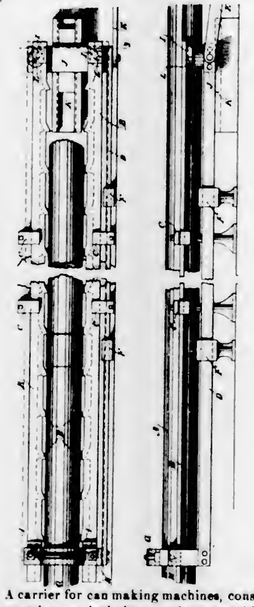
*Claim.*—1. The combination with the truck frame, the traction wheels thereof, and a motor shaft mounted upon the car and adapted to rotate continuously in one direction, of a mechanism consisting of gear wheels meshed together and mounted upon shafts journaled across the frame, a gear fixed upon the motor shaft and engaging one of said gears whereby the two are rotated in opposite directions, sleeves slidable upon the shafts of said gear wheels carrying clutch or friction plates which are adapted to engage the corresponding plates upon the faces of the gear wheels, and mechanism whereby either of the clutches may be engaged with the oppositely revolving gears, other gear wheels attached to the backs of the friction clutch plates upon the sleeves, an independent gear shaft journaled across the frame and having a gear wheel which is engaged by both of these loose gears whereby its movement is reversed by engaging one or other of the clutches, pulleys fixed upon the independent shaft and other pulleys fixed upon the traction wheel axles and ropes extending around said pulleys with tension devices as described.

2. The combination, with a car truck frame having traction wheels and an engine shaft adapted to rotate continuously in one direction, gear wheels meshed together and fixed upon shafts journaled upon the frame, and a gear upon the engine shaft engaging one of these gears so that they are rotated in opposite directions, sleeves turning loosely upon the gear shafts and friction clutches upon the shafts and sleeves, one of said clutches being engaged to rotate the sleeves in one direction, and the other clutch engaged to rotate said sleeves in an opposite direction, a shaft carrying a gear which engages the gears upon the sleeves and is rotated in opposite directions by the engagement of the clutches, pulleys upon this shaft and upon the wheel axles with endless flexible bands connecting them, and rollers journaled to fulcrumed levers, the opposite ends of which are subjected to a constant spring pressure whereby the pulleys are pressed against the driving bands to maintain their tension as described.



3. The tension device for flexible driving bands consisting of the lever through which the driving pulley shaft turns loosely, rollers journaled in the levers at one end to press upon opposite parts of the driving band, a casing containing a spiral spring standing between the ends of the levers opposite to the rollers, and an adjusting screw by which the pressure of the spring upon the lever is regulated as described.

529,269. **CARRIER FOR CAN-MAKING MACHINES.** ROBERT D. HUNK, Gold Beach, Oreg. Filed July 30, 1894. Serial No. 518,985. (No model.)



*Claim.*—1. A carrier for can making machines, consisting of longitudinally reciprocating toothed plates or bars movable upon each side of the horn upon which the can bodies are to be advanced, mechanism by which said plates are alternately moved in transverse planes toward each other so that the teeth engage the can bodies to be advanced and then are moved forward to complete the stroke, then separated from each other so that the teeth are clear of the can bodies and returned to their first position.

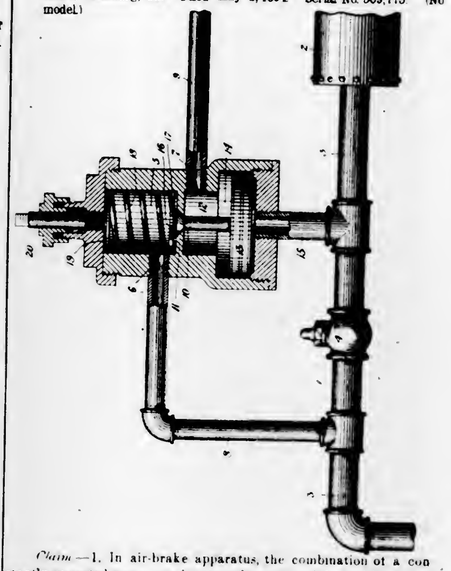
2. A can making machine, carriers for advancing the can bodies, consisting of parallel toothed bars located upon each side of the horn upon which the can bodies are to be advanced, mechanism by which said bars are reciprocated longitudinally, and by which they are first caused to approach each other in transverse planes until the points of the teeth engage the can body, and longitudinal reciprocation is completed, the carriers then being separated and disengaged from the can body, and returned to the original position.

3. In a can making machine, horizontal parallel toothed carriers movable upon each side of the horn upon which the can bodies are to be advanced, diagonal grooves or slots made in opposite ends of the carriers, transverse bars or yokes having pins engaging the diagonal slots at the opposite end of the carriers, and a longitudinally moving slide connected with the pin carrying bars or yokes whereby the latter are reciprocated and the carrier bars alternately caused to approach each other so that the points or teeth engage the can bodies upon the horn, advance the required distance along the horn, and then separate from each other to clear the can bodies and return to the original position.

4. The combination, with a horn upon which the can bodies are placed, of a means for advancing the can bodies thereon comprising a bar adapted to reciprocate upon each side of the horn, and a means for causing the bars to approach each other and engage the can bodies simultaneously with their reciprocation in one direction and to recede from each other and disengage the said bodies simultaneously with their reciprocation in the opposite direction.

5. In a can making machine having a horn upon which the can bodies are placed, a means for advancing the said can bodies comprising bars upon each side of the horn and adapted to reciprocate longitudinally in unison and a means whereby said reciprocating movement causes the bars to approach each other in one direction of reciprocation to engage and advance the can bodies, and to recede from each other and disengage the can bodies in the reverse direction of reciprocation.

529,270. **AIR-BRAKE-REGULATING APPARATUS.** HERBERT E. HUNT, Pittsburg, Pa. Filed May 2, 1894. Serial No. 509,775. (No model.)

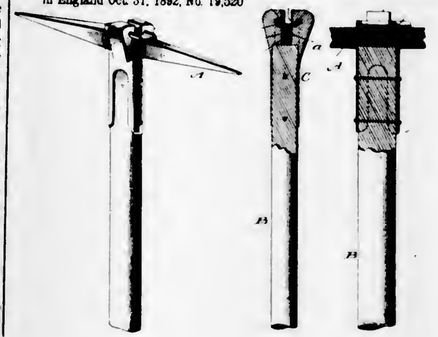


*Claim.*—1. In air-brake apparatus, the combination of a constantly operated pump, an air-reservoir connected therewith, a regulating valve adapted to connect the pump with a by-port, communicating with the atmosphere and means whereby said valve is operated automatically by the pressure of air in the reservoir, substantially as described.

2. In air-brake apparatus, the combination of a constantly operated pump, an air-reservoir connected therewith, a regulating valve adapted to connect the pump with a by-port, communicating with the atmosphere means whereby said valve is operated automatically by the pressure of air in the reservoir, and a check-valve between the pump and reservoir; substantially as described.

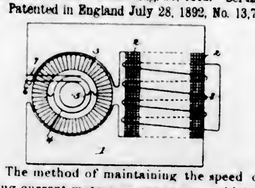
3. In air-brake apparatus, the combination of a constantly operated pump, an air-reservoir connected therewith, a check valve in the connection between the pump and reservoir, a regulating valve controlling a by-port leading to the atmosphere and a port communicating with the pump at a point between the check-valve and the pump, and a piston or diaphragm which operates the regulating valve, and is subjected to pressure from the air reservoir; substantially as described.

529,271. **MINER'S PICK.** FRANK J. S. HUTH, Pendlebury, England. Filed Apr. 23, 1894. Serial No. 508,754. (No model.) Patented in England Oct. 31, 1892, No. 19,520.



*Claim.*—In a miner's pick hammer or the like, the use and employment of a head portion slotted as described, the bifurcated socket having arms whose inner faces are beveled, and their upper ends curved downward in combination with a handle, and a channeled wedge engaging with the downwardly curved ends *D* to securely retain the pick in the said socket, all substantially as shown and described.

529,272. ALTERNATING-CURRENT ELECTRODYNAMIC MACHINE. MAURICE HUTIN, Paris, and MAURICE LEBLANC, Le Raincy, assignors to the Société Anonyme pour la Transmission de la Force par l'Electricité, Paris, France. Filed Aug. 20, 1892. Serial No. 443,565. (No model.) Patented in England July 28, 1892, No. 13,765.



*Claim.*—1. The method of maintaining the speed of synchronism in alternating current motors or generators, which consists in counterbalancing the variations of the speed of the same by a couple or couples of forces operating upon the rotating element of the motor in opposition to the variations, and produced by independent currents generated by and in accordance with said variations, substantially as described.

2. The method of maintaining the speed of synchronism in alternating current motors or generators, which consists in generating independent currents by and in accordance with the variations from synchronism, and thereby producing upon the rotating element a couple or couples of forces opposed to said variations, substantially as described.

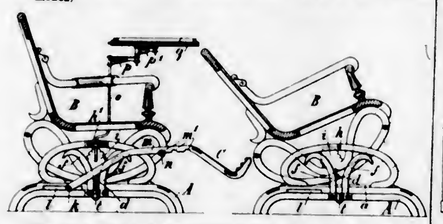
3. In an alternating current motor, the combination of a field magnet or magnets having constant polarity, and an armature charged with alternating currents from an extraneous source, with an independent, closed circuit or circuits of low resistance, in the path of the magnetic flux of the machine, for maintaining the speed of synchronism, substantially as described.

4. In an alternating current motor, the combination of a field magnet or magnets having constant polarity, and an armature charged with alternating currents from an extraneous source, with a deadening circuit or circuits for counteracting the tendency of variations from synchronism, consisting of paths of low electrical resistance located within the path of the magnetic flux of the machine, at the margin of the interpolar space, substantially as described.

5. An alternating current motor or generator having field magnets in which the magnetism is constant, and provided with a deadening circuit or circuits for maintaining the speed of synchronism consisting of two metallic rings of low resistance, one on each side of the field magnet poles and electrically joined by cross connections of low resistance insulated from the pole pieces, substantially as described.

6. An alternating current motor or generator having field magnets in which the magnetism is constant, and provided with a deadening circuit or circuits for maintaining the speed of synchronism, the same consisting of two metallic rings, one on each side of the field magnet poles and joined by metal rods passing through perforations in the pole pieces, but insulated therefrom, substantially as described.

529,273. ROCKING-CHAIR. GEORG C. H. KALTWASSER, Oderfeld, near Barbis, Germany. Filed Mar. 23, 1893. Serial No. 467,345. (No model.)

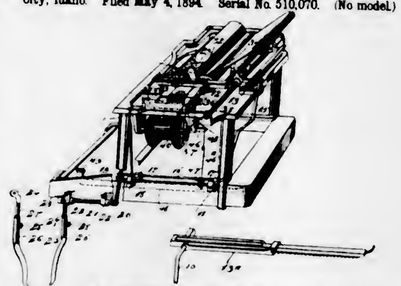


*Claim.*—1. In a platform rocking chair, the combination with the base or support, and a chair proper rocking on said base, of two upwardly and oppositely extending guides connected to each side of the base, projections on the chair proper adapted to slide along said guides, bow-pieces connected to the base and spanning said guides, lateral projections on the bow-pieces, and notched abutments on the chair proper adapted to engage with the projections on the bow-pieces, substantially as and for the purpose described.

2. In a platform rocking-chair, the combination with the base or support A having bow pieces *g* secured thereto, laterally projecting pins A secured to said bow-pieces, of a chair proper rocking on said base and means for retaining said chair thereon during its rocking movement, ornamental abutments *i* formed integral with the rockers of the chair, and notches in the upper portion of said abutments, said notches being adapted to engage with the projections on the bow-pieces when the chair proper is raised, substantially as described.

3. In a platform rocking chair, the combination with the base or support having a path, a chair proper adapted to rock on said path, of an adjustable foot rest C, one portion of which is freely mounted in longitudinal guides in the base or support, while the opposite portion thereof is adjustably secured to the rocker proper, whereby the said rest is given a sliding and rocking movement during the rocking of the chair, substantially as described.

529,274. TYPE-WRITING MACHINE. WALTER F. KASSON, Boise City, Idaho. Filed May 4, 1894. Serial No. 510,070. (No model.)

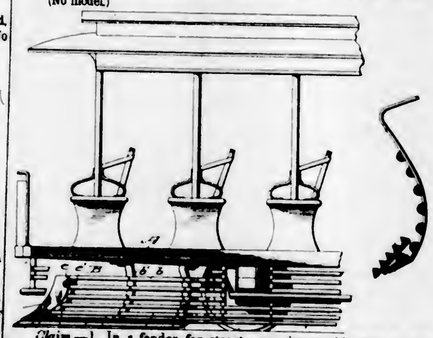


*Claim.*—1. The combination, with the typewriting machine and the sliding carriage having the usual revoluble platen and tilting arm to turn the platen, of the slide lever pivoted on the carriage and connected with the tilting arm, the trip rod parallel with the platen and opposite one end of the slide lever, and an inclined tripping device on said rod to engage and move the slide lever, substantially as described.

2. The combination, with the typewriting machine and the sliding carriage having the usual platen and tilting lever to turn it, of the tilting bell crank and key connected with the bell crank, the trip rod secured to the bell crank, the inclined tripping device on said rod, and the tilting slide lever pivoted on the carriage and connected with the platen arm, one end of the slide lever being arranged to slide on the trip rod, substantially as described.

3. The combination, with the typewriting machine, the sliding carriage having the usual platen and the tilting bell crank operatively connected with the platen to turn it, of the case shifting lever, and an arm connecting the case shifting lever with the tilting bell crank, substantially as described.

529,275. STREET-CAR FENDER. HENRY C. KENNEDY and GEORGE W. ROLETTER, Philadelphia, Pa. Filed July 10, 1894. Serial No. 517,162. (No model.)

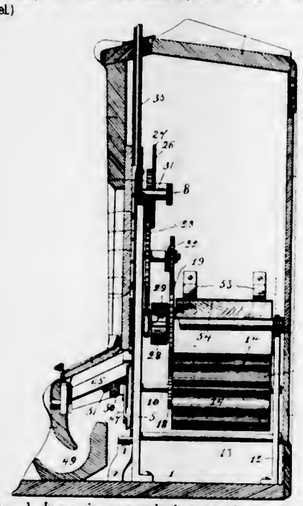


*Claim.*—1. In a fender for street cars, the combination of the V-shaped track cleaner composed of the metallic bars *b* held by vertical posts to the under side of a truck platform, and having the concaved pieces $c^3$, of the corrugated elastic strips C secured thereto and overlapping the said concaved edges and conforming thereto in shape, substantially as shown and described.

2. In combination with a street car fender substantially V-shaped having its lower ends concaved, and an elastic strip secured thereto, an elastic member held to the apex of the fender and curved to conform to the shape of the post $b^3$, the bars *b* of the fender designed to be fastened at their ends to the ends of the bars of the side fenders, all substantially as shown and described.



529,276. CIGAR-VENDING MACHINE. HARRY L. KIRTLEY, Huntington, W. Va., assignor, by direct and mesne assignments, to Robert E. Vickers and Frank L. Doolittle, same place, and John F. Kirtley, Searey, W. Va. Filed June 19, 1894. Serial No. 515,050. (No model.)



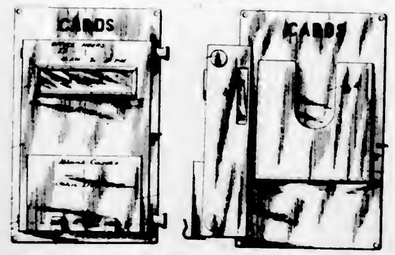
*Claim.*—1. In a coin operated, cigar vending machine, the combination with one or more coin chutes of a series of pivoted coin-receptacles, independent, coin-tripped levers holding the receptacles when overbalanced by the coins deposited, a coin-distributing plate rising vertically at the rear-ends of said receptacles and having pins projecting at intervals from its face toward a transparent plate, a series of rigid guides between the adjacent receptacles, and pivoted trapping-fingers between the guides, each receptacle being provided with a trapping chute at its end, over the coin-tripped lever holding said receptacle, substantially as described.

2. In a coin-operated, cigar-vending machine, the combination with one or more coin-chutes, of a series of independently pivoted, coin-trays having weights which normally support them, when empty, in position to receive the coin, coin-tripped levers supporting said trays when loaded, a coin-distributing plate rising in rear of said trays and having pins projecting from it toward a transparent plate removed a distance slightly in excess of the thickness of the coins, a series of guide-ribs mounted on said plate between the trays rising above the latter and trapping fingers pivoted between the ribs and having curved ends extended in opposite directions, one being over a trapping chute which conducts the coin descending at that point upon the lever supporting the coin-tray, substantially as described.

3. In a coin operated, cigar-vending machine, the combination with a delivery-drum having pockets for the cigars and provided with a shaft having a pinion toothed, in proportion to the number of pockets, as three to two, of a gear meshing said pinion and toothed in the proportion of eight to three, relatively to said pinion, a pinion meshing the gear and toothed relatively thereto as two to eight, a second and similar gear on the pinion shaft, a pinion on a separate shaft having a ratio to the gear, with which it meshes, of two to eight, an interchangeable stop-disk on the shaft of the latter pinion having equidistant stops the number of which is double the number of coins to be deposited, and coin-operated tripping-levers to release the disks, substantially as described.

529,277. OFFICE-INDICATOR. HENRY O. KLENKE, Great Falls, Mont. Filed June 25, 1894. Serial No. 515,675. (No model.)

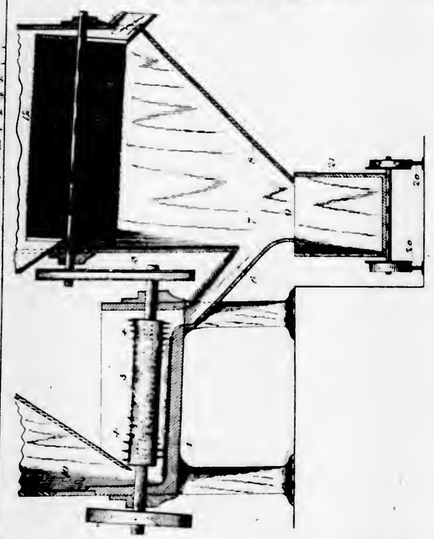
*Claim.*—1. The herein-described improved indicator comprising the base-plate having a card receptacle secured thereto, the box or frame hinged or pivoted to said base-plate for covering said card receptacle and having an upper slot therein designed to coincide with said card-receptacle when said box or frame is closed, and means for locking said box or frame, substantially as set forth.




2. The herein-described improved indicator comprising the base-plate having a card-receptacle secured thereto, the same being open at its top and a portion of one side, and the box or frame hinged or pivoted to said base-plate and having a slot in its top and a sight-opening in one side, said slot and sight-opening being designed to coincide, respectively, with the top and open side of said card-receptacle when the latter is covered by the box or frame, substantially as set forth.

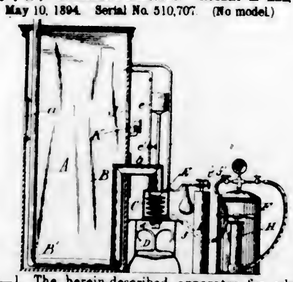
3. As an improved article of manufacture, the indicator herein-described comprising the base-plate having a card receptacle secured thereto open at its upper end and one side, the box or frame hinged to said base plate and having a front sight-opening, a slot in its top and a sight-opening in its side, a cross-bar in rear of said front sight-opening, the card-holder attached to the front of said box or frame, the curved arms extending therefrom, upper and lower rollers, the indicating ribbon wound on said rollers, and the catch for holding said box or frame to said base-plate, substantially as set forth.

529,278. APPARATUS FOR MANUFACTURING ARTIFICIAL FUEL. LUDWIG KONOW, Bergen, Norway. Filed Mar. 13, 1894. Serial No. 503,495. (No model.) Patented in England Apr. 21, 1880, No. 1,627, and in Norway Jan. 13, 1892, No. 2,406.



*Claim.*—In a mixer for manufacturing artificial fuel, the combination with the coal receiver provided with a hopper and an inclined chute, and the rotatable cylinder provided with a series of knives arranged in spiral rows, of the saw dust receiver having an inclined side and an outlet at the bottom, the open ended wire gauze cylinder connected with said knife cylinder, the inclined chute, sliding board or gate and the hopper: substantially as described.

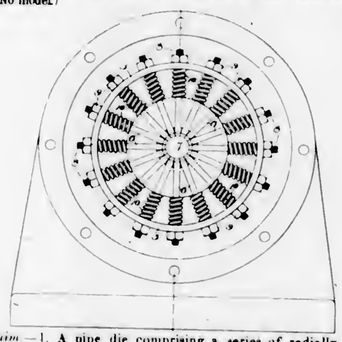
**529,279. INHALING-CABINET.** ROBERT E. LEE, Boswell, Ind. Filed May 10, 1894. Serial No. 510,707. (No model.)



*Claim.*—1. The herein-described apparatus for administering medicaments by inhalation and absorption, comprising the air-tight cabinet A, in combination with the heater D having the drum C provided with an interior worm E; receiver G connected with said worm; compressed-air receiver F; air-pump H; oxygen-reservoir I; connecting-pipes *e*, *f*, *g*, *h* and *i*, provided with suitable regulating-valves; and hot-air flue B, B', B", when constructed and combined to operate substantially in the manner and for the purpose shown and set forth.

2. In apparatus for administering medicaments by inhalation and absorption, the combination with the air-tight cabinet A and heating-apparatus D, of the worm E, medicine receiver G connected to the worm by pipe *g*; discharge-pipe *e*; and compressed-air receiver F connected to the lower end of the worm; substantially as and for the purpose shown and set forth.

**529,280. PIPE-WELDING APPARATUS.** SAMUEL LEEK and JOHN NORTON, McKeesport, Pa. Filed May 24, 1894. Serial No. 512,295. (No model.)



*Claim.*—1. A pipe die comprising a series of radially sliding spring-backed sections, whose inner edges are arranged in a circle, substantially as described.

2. A pipe die comprising a series of radially arranged sliding metal plates, whose inner edges are arranged in a circle, and springs by which they are held inwardly; substantially as described.

3. A pipe die comprising a series of outwardly movable sections, whose inner edges are arranged in a circle, in combination with a die block having a surrounding support through which guide stems on the sections extend, and springs; substantially as described.

4. A pipe die comprising a series of radially sliding sections, whose inner edges are arranged in a circle, and a cover plate by which the sections are confined; substantially as described.

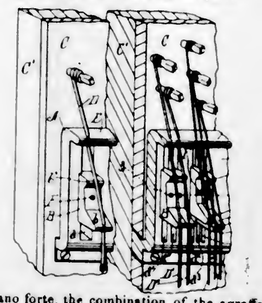
**529,281. CLEANING AND POLISHING COMPOUND.** ORIELLA I. LITTELL, Washington, D. C. Filed Feb. 26, 1894. Serial No. 501,594. (Specimens.)

*Claim.*—1. A cleansing or polishing compound, consisting of zinc white, French chalk magnesia, linseed oil, alcohol, and water, in substantially the proportions stated.

2. A cleaning and polishing compound, comprising zinc white, French chalk, oil, alcohol and water, substantially as set forth.

**529,282. PIANOFORTE AND AGRAFFE THEREFOR.** FRANK B. LOSE, Los Angeles, Cal. Filed June 29, 1893. Serial No. 479,136. (No model.)

*Claim.*—1. The combination of the agraffe plate having the rear bridge, the movable agraffe provided with the perforated bridge, and means for clamping the agraffe to the agraffe plate.

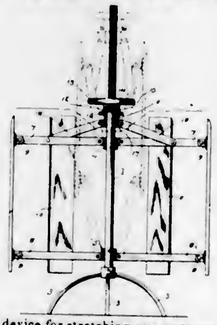


2. In a piano forte, the combination of the agraffe plate; the string, the hammer, and the movable agraffe provided with the front perforated bridge and the rear bridge, arranged to form a bearing for the string and adapted to be adjusted longitudinal of the string after the string is tuned, and suitable means for clamping the agraffe to the agraffe plate.

3. The combination of the agraffe plate having the rear bridge, the movable agraffe provided with the front perforated bridge and the rear bridge and means for clamping the agraffe to the agraffe plate.

4. In a piano forte, the combination of the agraffe plate, the several unison strings; the hammer arranged to strike such strings, and the movable agraffes arranged, one to form a bearing for each string of the several unison strings, and each adapted to slide longitudinal of its string independent of the other agraffes to thereby bring the exact striking point of each string directly beneath the hammer, and suitable means for clamping each agraffe to the agraffe plate.

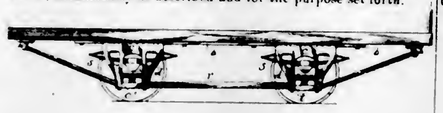
**529,283. GARMENT-STRETCHER.** LUCILLA MALLORY, Bridgeport, Conn. Filed June 13, 1894. Serial No. 514,399. (No model.)



*Claim.*—A device for stretching garments consisting of a central rod having an upper threaded portion, an upper and a lower block rigidly secured thereto, sets of arms pivoted to said upper and lower blocks, stretching devices pivotally secured to the outer ends of said arms, a sliding block 11, located above the upper fixed block, links pivoted to said sliding block and to one of the sets of arms, and a hand wheel having a hub threaded to engage the threaded portion of the rod and secured to the sliding block in such a manner as to permit the free rotation of the hub, whereby the stretching devices are caused to move upward and inward, or vice versa, as may be required to effect the intended purpose.

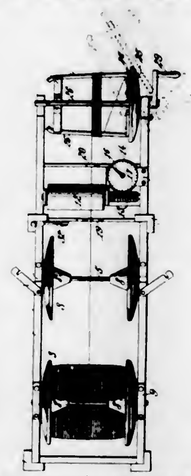
**529,284. CAR-TRUCK.** BENJAMIN F. MANIER, Jr., Providence, R. I. Filed Apr. 11, 1894. Serial No. 507,152. (No model.)

*Claim.*—In a street car, a hollow pedestal *c* rigidly secured to the car-frame or base, oppositely arranged inclined braces *p*, fastened to the lower portion of the pedestal and to the car frame, a tie brace *r* uniting the pedestals and a bottom tie or cap *c'* uniting the two sides of the pedestal, all adapted to move vertically in unison with the car, in combination with an axle-carrying box *d* loosely mounted in the pedestal, a light spring or cushion *t* interposed between and in contact with said box and tie *c'* and a full elliptic spring *s*, arranged longitudinally of the car, said spring *s* being interposed between and in contact with the upper side of the box and the under side of the pedestal base *c*, substantially as described and for the purpose set forth.





**529,285. ROPE-MEASURING MACHINE.** CHESTER E. MATHERS, York Station, Ala. Filed May 24, 1894. Serial No. 512,330. (No model.)



*Claim.*—1. In a rope measuring machine, the combination of a frame, a number of transversely arranged spools detachably journaled in said frame and each comprising a spool shaft having a fixed head and a removable head and a pair of reversely arranged cones placed loosely on the spool shaft adjacent to but separate from the heads, a measuring device, guides mounted on opposite sides of said measuring device, and a spooler hinged to the end of the frame to receive the rope or cord from the measuring device and permit its quick removal when measured and severed, substantially as described.

2. In a rope measuring machine, the combination of a frame, a number of transversely arranged spools detachably journaled in said frame, a measuring device, the triple looped guide between the spools and measuring device, the single looped guide on the other side of the measuring device, and a spooler mounted at one end of the frame and having one end of its shaft detachably journaled in a fixed bearing and its other end journaled in a bearing hinged to the frame, substantially as described.

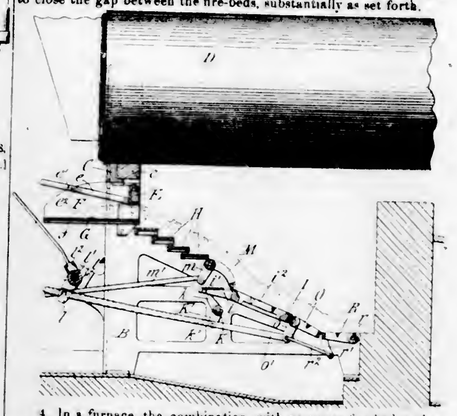
3. In a rope measuring machine, the combination of a rectangular frame, the superposed tiers of transversely arranged spools detachably journaled in said frame, a measuring device, the looped guides mounted on opposite sides of said measuring device to conduct the rope to and from the same, a cutter adjacent to the measuring device, and a rotary spooler having at one end a bearing hinged to the exit end of the frame and its other end detachably journaled and adapted to be swung around to permit quick removal of the measured and severed rope, substantially as described.

**529,286. FURNACE-GRATE.** JULIUS H. MEISSNER, Pittsburg, Pa. Filed Feb. 6, 1891. Serial No. 380,548. (No model.)

*Claim.*—1. In a furnace, the combination, with an upper fire-bed and a lower fire-bed having its forward end substantially in a vertical plane beneath the rear end of the upper fire-bed, of an upward-swinging door normally closing the gap between the fire-beds, substantially as set forth.

2. In a furnace, the combination, with an upper sloping fire-bed and a lower sloping fire-bed arranged so as to leave a gap between them, of an upward-swinging door normally closing the interval between the fire-beds hinged at its upper end and sloping at an angle greater than that of the fire-beds, substantially as set forth.

3. In a furnace, the combination, with an upper and a lower fire-bed, the latter being provided at its forward end with a projecting portion which extends beneath the rear end of the upper fire-bed, of a shelf mounted on said projecting portion, and an inward-swinging door hinged beneath the rear end of the upper fire-bed and arranged to close the gap between the fire-beds, substantially as set forth.



4. In a furnace, the combination, with an upper fire-bed and a lower fire-bed having its forward end substantially in a vertical plane beneath the rear end of the upper fire-bed, the said lower fire-bed being movable up and down, of a door normally closing the gap between the fire-beds, a rock-bar provided with a rocker engaging the lower fire-bed near its front end, and means for rotating the rock-bar, whereby the said lower fire-bed may be lowered, substantially as set forth.

5. In a furnace, the combination, with a sloping fire-bed, of an upward-swinging grate and a downward-swinging grate, the upward-swinging grate being pivoted at the foot of the fire-bed and normally projecting toward the downward-swinging grate, the latter grate being pivoted at its rear end, and means for operating both grates, substantially as set forth.

6. In a furnace, the combination, with a sloping fire-bed, of an upward-swinging grate provided with a downward extending crank-arm, a downward-swinging grate pivoted at its rear end, and having a downward-extending arm at its front end, a coupling rod attached to the downward extending crank-arm and extending to the front of the furnace, a lever at the front of the furnace to which the coupling rod is attached, and a link connecting the crank-arm to the downward-extending arm of the downward-swinging grate, substantially as set forth.

7. In a furnace, the combination, with a sloping fire-bed pivoted at its rear end, of a rock-bar provided with a rocker on which the front end of the fire-bed rests, a crank arm attached to the rock-bar, an upward-swinging grate at the rear of the fire-bed and provided with a downward-extending arm, a coupling rod attached to the said arm, a coupling rod attached to the arm of the rock-bar, and a lever to which both coupling rods are removably attached, substantially as set forth.

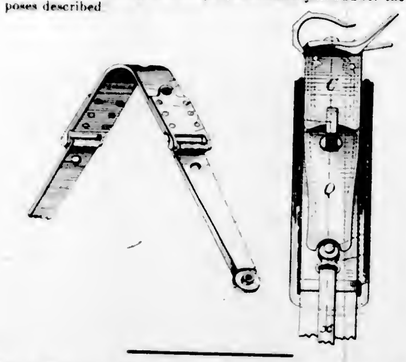
8. In a furnace, the combination, with a sloping fire-bed pivoted at its rear end, of a rock-bar provided with a rocker on which the front end of the fire-bed rests, a crank arm attached to the rack-bar, an upward-swinging grate at the rear of the fire-bed and provided with a downward-extending arm, a downward swinging grate in the rear of the upward swinging grate and provided with an arm, a link connecting the arm of the downward-swinging grate with the arm of the upward-swinging grate, a coupling rod attached to arm of the latter grate, a coupling rod attached to the arm of the rock-bar, and a lever to which both coupling rods are removably attached, substantially as set forth.

**529,287. HARNESS-SADDLE.** JOHN A. MILLER and JAMES H. WARMOTH, Austin, Tex. Filed July 30, 1894. Serial No. 519,031. (No model.)

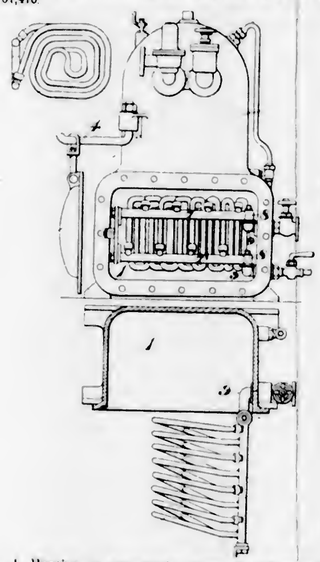
*Claim.*—1. In a harness saddle, the combination with a metallic frame hinged as shown, of straps S depending from said hinged portions, and pads $T^2$ connected together by a strap T, and the guide straps *t* secured to said pads and adapted to slide along said straps S, substantially as and for the purposes described.

2. In a harness saddle, the combination with a metallic frame composed of the curved plates B, the plates F connected thereto, the plates H pivotally connected to said plates F, and provided with the flat circular ends $A^3$, with the perforated cylindrical lugs $A^2$, the supporter loops K having cylindrical apertures $k^2$ adapted to slip over said cylindrical lugs $A^2$, bolts passing through said perforated lugs and holding said supporter loops and said plates H together, the straps S

depending from said hinged portions, the pads T', the strap T connecting said pads, and the guide straps *t* secured to said pads and adapted to slide along said straps S, substantially as and for the purposes described.



529,288. APPARATUS FOR HEATING LIQUIDS BY MEANS OF STEAM. DONALD R. MORISON, Hartlepool, England. Filed Jan. 2, 1894. Serial No. 495,409. (No model.) Patented in France Nov. 11, 1893, No. 234,006; in Norway Nov. 30, 1893, No. 3,516, and in Belgium Dec. 4, 1893, No. 107,470.



*Claim.*—1. Heating or evaporating apparatus provided with heating coils hinged or jointed to a fixed support or supports within the evaporating apparatus and capable of being readily swung about said support or supports into or out of the evaporating apparatus through a suitable opening normally closed by a door that is independent of said heating coils substantially as herein described for the purpose specified.

2. Heating or evaporating apparatus comprising a vessel formed with an opening normally closed by a door and provided with a steam pipe, one or more heating coils normally located within said vessel independently of said door, and a movable plug and socket joint also located within said vessel and connecting said heating coil or coils with said steam pipe and about which said coil or coils can be moved as a center so as to pass through the opening in said vessel without breaking the steam connection between said coil or coils and said steam pipe, substantially as herein described.

3. Heating or evaporating apparatus provided with heating coils carried by a hinged or jointed tubular support adapted to serve as an inlet for steam and as an outlet for water of condensation, and arranged to move into or out of the evaporating vessel as desired, when turned about its center of motion, substantially as herein described for the purpose specified.

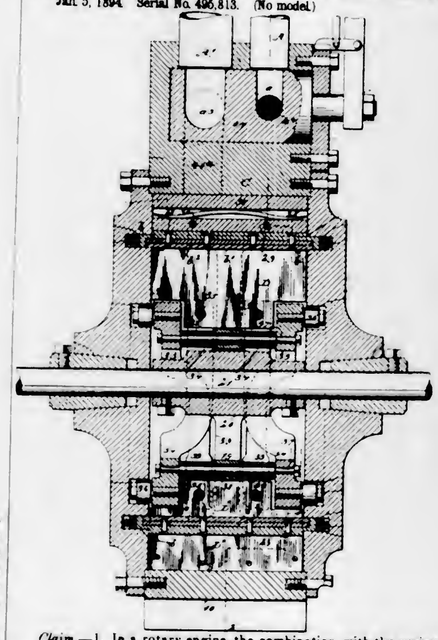
4. In heating or evaporating apparatus, the combination with the evaporating vessel, of heating coils, tubular supports to which the ends of said coils are connected, and fixed steam inlet and water outlet pipes to which said tubular supports are hinged or jointed substantially as herein described for the purpose specified.

5. In heating or evaporating apparatus, the combination with an evaporating apparatus provided with a lateral opening normally closed by a removable door, of heating coils, one or more pairs of tubes to which the ends of said coils are connected and fixed steam and water plugs to which the said tubes are detachably hinged or jointed substantially as herein described.

6. In heating or evaporating apparatus, the combination with an evaporating apparatus provided with a lateral opening normally closed by a door, of a series of heating coils, tubes arranged horizontally and in proximity to the opening in said evaporating vessel and to which the ends of said heating coils are connected, and fixed vertical hollow plugs carried by said evaporating vessel and on which said tubes are detachably mounted and so as to be capable of turning thereon substantially as herein described for the purpose specified.

7. In a heating or evaporating apparatus, the combination with an evaporating vessel having a lateral opening provided with a detachable cover, of pairs of connected heating coils 6, tubes 7, 7' to which the ends of said coils are detachably connected, each of said tubes being closed at one end and provided at the other end with a cap 8, tubular plugs 9 adapted to fit the caps on said tubes and each having a screw threaded stem, provided with a tightening nut, and valves for controlling the passage of steam and water to and from said tubes and coils, substantially as herein described for the purposes specified.

529,289. ROTARY ENGINE. OSCAR R. MORSE, Dillon, Mont. Filed Jan. 5, 1894. Serial No. 496,813. (No model.)



*Claim.*—1. In a rotary engine, the combination, with the casing having cam races, and the rotary cylinder arranged within the casing, of pistons having sliding movement in the said cylinder, links connected to the pistons and extending therefrom beyond the center of the cylinder, and projections carried by the links on the opposite side of the center of the cylinder from the respective pistons connected to the said links, said projections having guided movement in the cam races, substantially as described.

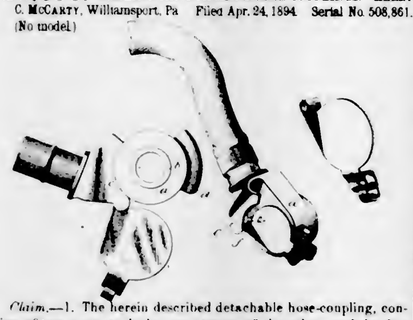
2. The combination, with the casing having a steam chamber and an inlet thereto, the casing being provided with oval cam races whose longitudinal axes extend essentially in the direction of the inlet, of a rotary cylinder arranged in the casing, pistons held to slide in the cylinder, friction rollers connected to the pistons and engaging the cam races on the opposite side of the center of the cylinder from the pistons to which they are connected, substantially as described.



3. The combination, with the casing, the rotary cylinder arranged therein, the shaft located in the axis of the cylinder and the web connecting the cylinder to the shaft, said web being provided with radial slots, of pistons having sliding movement in the cylinder, links connected to the pistons—one at each side thereof—said links encircling the shaft rollers connected to the links belonging to the same piston, said rollers extending through the slots of the said web, and means for imparting a reciprocating motion to the pistons during the rotation of the cylinder, substantially as described.

4. In a rotary engine, the combination, with a steam chamber, inlet and exhaust ports connected therewith, and an abutment extending within the said chamber, opposite walls of the steam chamber being each provided with a cam race, of a cylinder held to revolve in the said steam chamber in contact with the abutment, a drive shaft connected with the cylinder, interlocking links arranged in pairs within the cylinder, corresponding links of each pair being connected and held to turn with the said shaft, opposing pistons having sliding movement in the cylinder, each piston being connected with one end of a set of links, and the opposite ends of the links being provided with friction rollers traveling in the said cam races, as and for the purpose specified.

529,290. SEALING-CAP FOR AIR-BRAKE COUPLINGS. HARRY C. MCCARTY, Williamsport, Pa. Filed Apr. 24, 1894. Serial No. 508,861. (No model.)



*Claim.*—1. The herein described detachable hose-coupling, consisting of two parts, each the counterpart of the other, each having a side opening provided with a sealing gasket, and a sealing cap pivoted to said coupling part in such relation to said opening as to seal and to unseal the same by a movement swinging edgewise across the sealing face of the said gasket, the said cap being so mounted that it will exert a sealing pressure, in closing upon the gasket, at right angles to its line of movement, for the purpose stated.

2. In a detachable hose coupling, a sealing-cap hinged upon the stop-pin of the coupling-part and secured when closed to the segmental lug of said coupling-part.

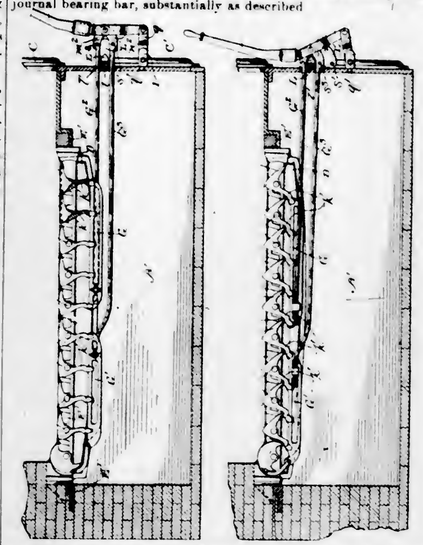
3. In a detachable hose-coupling, a sealing-cap formed with a pintle-eye adapted to be applied to the stop pin of the coupling-part, and a thumb piece adapted to engage the end lug of said coupling-part whereby said cap is both hinged and locked to parts of the coupling-section.

4. In a detachable hose coupling for air-brakes, the combination, with the coupling-part having a yielding sealing gasket for the fluid opening, of a spring-cap pivoted upon said coupling part at the side of said gasket, and adapted at its free end to engage said coupling-part and by its spring function to close upon said gasket and seal the fluid opening when the hose are uncoupled.

529,291. GRATE FOR BOILER OR OTHER FURNACES. WILLIAM MCCLAVE, Scranton, Pa. Filed May 25, 1894. Serial No. 512,459. (No model.)

*Claim.*—1. In a grate for boiler and other furnaces the combination with locking journal bearing bars provided with notches, in pairs, which are separated for only a portion of their depth, of locking caps and key plugs; one notch of each pair of each bar serving for receiving the journal end of a grate bar and a portion of one of the locking caps, and the other for receiving another portion of said cap and one of the key plugs; and each of the said bearing bars being provided with one portion of the locking means, and the said caps with the other portion of the locking means; and the construction of the several parts of the combination being such that the horizontal portions of the locking caps serve for covering the journal ends of the grate bars and, with the key plugs, completing the upper portion of the bearing bars and keeping the grate bars properly in place, substantially as described.

2. In a grate the combination of rocking grate bars having journal ends, journal bearing bars provided with the portion of the locking means, removable locking caps also provided with a portion of the locking means, and key plugs for holding the caps locked; said plugs being constructed and arranged with respect to the journal bearing bars so as to be free with the cap to expand independently of the journal bearing bar, substantially as described.



3. In a grate, twin stub levers having angular bends, and placed side by side and having an oblong space between them, and connected respectively to devices for operating grate bars, at points above their fulcrum straps, by means of pitmen arranged in a plane or on a line with the fulcrum strap support, and having curved flattened ends formed by cutting away about half of the diameter of each pitman at the outer end, and provided with separate pivots, substantially as described.

4. In a grate, twin stub levers each having angular bends, placed side by side and forming an oblong space between them for the flattened ends of the pitmen to play in, substantially as described.

5. In a grate, the combination of the pitmen having flattened ends and separate pivots, twin stub levers having angular bends and forming an oblong space between them for the flattened ends of the pitmen to play in, and a pair of fulcrum straps to which the levers are connected, respectively, by separate pivots, said straps having angular bends, and forming a bifurcation for the lower ends of the levers to play in, and a bifurcated fulcrum strap-support, substantially as described.

6. In a grate the combination of a sliding and swinging stop latch provided with locking pins, and a pair of pitmen provided respectively with locking holes to receive the said pins and connected to devices for operating grate bars, substantially as described.

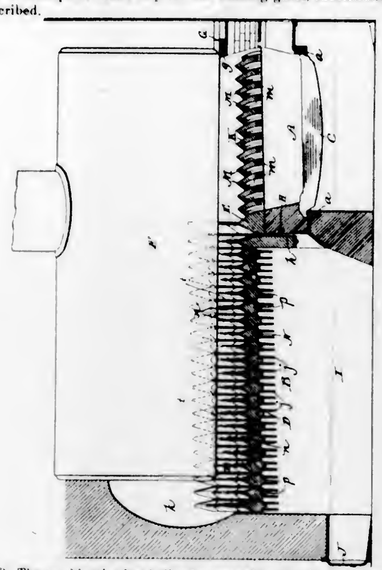
7. The combination with a rocking grate bar formed of fingers and a pendent solid portion, the upper edge of which is cut down below its top edge, between the fingers, ties between the fingers of at their front ends, said ties being applied so as to leave spaces between different series of fingers of the same bar, substantially as described.

529,292. BOILER-FURNACE. WILLIAM MCCLAVE, Scranton, Pa. Filed June 29, 1894. Serial No. 516,043. (No model.)

*Claim.*—1. In a boiler furnace, one or more series of heat-deflecting, readily removable tiles, bricks, or plates of about uniform size and shape, made of a refractory material, placed on suitable supports, and spanning the fuel bed, and located at a suitable distance above the same, and at such distance below the boiler as to form an adequate combustion chamber between their top edges and the boiler, said tiles, bricks or plates, having suitable flame spaces between them, and placed on their edges, and at such an angle as to practically overhang and cover the said flame spaces, but not to seriously obstruct or close the flame ways, and also so formed that their upper edges will shed the soot and fine ashes, and thus allow the same to descend through the spaces, instead of resting and accumulating on the tiles, bricks or plates, substantially as described.

2. In a boiler furnace, a brick flame bed under the boiler, between the bridge wall and rear end of the boiler, constructed of

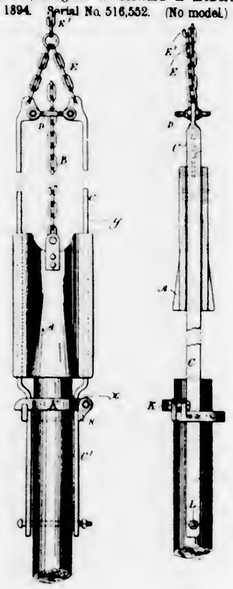
readily removable bricks having hipped upper surfaces of a sufficient angle to prevent soot and fine ashes from resting and accumulating thereon, and placed in rows on suitable supports, and spanning a soot pit beneath them, and said rows of bricks having spaces between them of sufficient width to allow the soot and fine ashes to pass and fall into the soot pit below, and having their apex lines substantially concentric with the boiler, and at a suitable distance below the same to form an adequate flame way for the burning gases, substantially as described.



3. The combination in a boiler furnace, of the partition K, formed of spaced tiles, set to overhang the spaces which are between them, and the partition B formed of spaced brick which constitute the flame bed, said flame bed having a soot or ash pit beneath it, substantially as described.

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529,293. PILE-DRIVING APPARATUS. CHARLES MCDERMOTT, New York, N. Y., assignor to Steward & McDermott, same place. Filed July 5, 1894. Serial No. 516,552. (No model.)



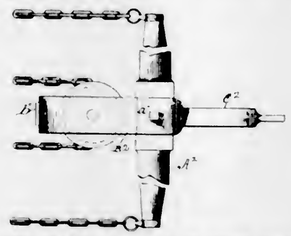
*Claim.*—1. The combination with the hammer in a pile driving apparatus and its hoisting rope, or chain, of slides for the hammer, having downward extensions and means for connecting the pile and slides for movement thereof together both horizontally and laterally, substantially as set forth.

2. The combination with a hammer and its actuating chain or rope, of slides for guiding the hammer, straps extending downwardly from the slides and perforated and a bolt passing through the perforations and through the pile to be driven for connecting the pile driving apparatus to the pile previous to transferring the pile to the place where it is to be driven and a sling and its chain or rope extending upwardly from the top ends of the slides, substantially as set forth.

3. In a pile driving apparatus, a hammer grooved on its edges, slides in the grooves of the hammer united at their upper ends and a sling and chain, an actuating chain or rope for the hammer, downwardly extending straps from the lower ends of the slides, a bolt or pin passing through the straps and through the pile to be driven, a band connecting the slides near the upper end of the pile, and a movable latch or retaining bar for closing around the pile at the band, substantially as set forth.

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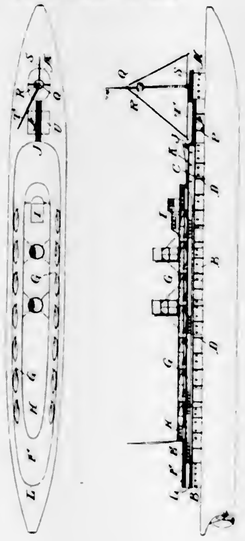
529,294. DRAFT-EQUALIZER. ANGUS MCDONALD, Quincy, Ill., assignor of two-thirds to Henry Leitch, same place. Filed Dec. 8, 1893. Serial No. 493,165. (No model.)



*Claim.*—In a draft equalizer, the combination with a cross tree, of a main clip formed in sections and hinged together with its free ends extending rearwardly, an equalizer pulley mounted between said hinged sections of the clip, of a supplemental clip extending rearwardly and a hook attached thereto and a bolt passing through the coincident openings of the free ends of said clips and the cross tree as and for the purpose specified.

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529,295. STEAM FREIGHT AND PASSENGER VESSEL. ALEXANDER MCDOUGALL, Duluth, Minn., assignor to the American Steel Barge Company, New York, N. Y., and West Superior, Wis. Filed May 29, 1893. Serial No. 475,925. (No model.)





*Claim.*—1. An improved steam freight and passenger vessel, provided with a hull, having a curved top or deck; cabins mounted above said hull on turrets; and a bulwark in front of said cabins, for breaking, dividing and deflecting to both sides the combings or crests of any waves which may strike the same, to protect the cabins from such waves, substantially as set forth.

2. An improved steam freight and passenger vessel, provided with a hull having a curved top or deck; a middle deck supported above said hull on turrets, lower cabins, carried upon and by said middle deck; a hurricane deck above said lower cabins carrying upper cabins; and a bulwark, extending up from said middle deck, to a point above said hurricane deck so as to support said hurricane deck at its forward end, and for breaking, dividing and deflecting to both sides the combings or crests of any waves which may strike the same, to protect the cabins from such waves, substantially as set forth.

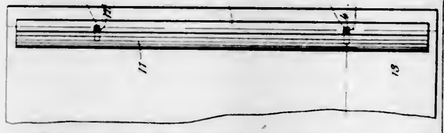
3. An improved steam freight and passenger vessel, provided with a hull having a curved top or deck; a middle deck supported above said hull on turrets, lower cabins supported upon and by said middle deck; a hurricane deck above said lower cabins carrying upper cabins; a bulwark extending up from said middle deck to a point above said hurricane deck, so as to support said hurricane deck at its forward end, and for breaking, dividing and deflecting to both sides, the combings or crests of any waves which may strike the same, to protect the cabins from such waves; and bull's eyes in said bulwark for lighting the space between said decks in front of the cabins, substantially as set forth.

4. An improved steam freight and passenger vessel, provided with a curved top or deck; cabins supported above said deck on turrets; a separate isolated turret; mounted on said curved top or deck, for breaking, dividing and deflecting to both sides any waves which may come over the bow of the vessel; and a bulwark mounted in front of said cabins for breaking, dividing and deflecting to both sides any waves which may flow over such separate turret, substantially as set forth.

5. An improved freight and passenger vessel, provided with a hull, having a curved top or deck; cabins supported above said hull on turrets, a separate isolated turret, mounted upon said curved top or deck, in front of said cabins, so as to break, divide and deflect to both sides any waves which may come over the bow of the vessel; a bulwark mounted in front of said cabins for breaking, dividing and deflecting the combings or crests of any waves which may break over said separate turret; a platform or walk, connecting said separate isolated turret with said cabins, a mast extending up from said separate turret, carrying a crow's nest for the look-out; a derrick arm, swinging from said mast, over said platform; and a hatch or hatches in said curved top or deck of the hull, beneath said platform, for the purpose mentioned, substantially as set forth.

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529,296. PAPER-FILE. JOSEPH B. MCENALLY, Clearfield, Pa. Filed July 17, 1894. Serial No. 517,789. (No model.)



*Claim.*—1. The combination with two clamping strips, one strip having two transverse slots, and a laterally opening longitudinal slot, and the other strip provided with holes spaced to conform with the transverse slots, of a binding wire bent to produce two limbs that engage the spaced holes, pass through the transverse slots, and when folded enter the longitudinal slot, substantially as described.

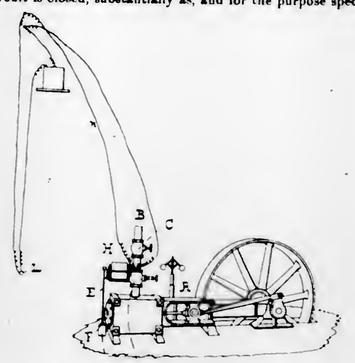
2. The combination, with two clamping strips, one strip having two spaced transverse slots and a laterally open longitudinal slot or recess, of a binding wire intermediately attached to one clamping strip, and having its spaced end portions adapted to enter the transverse slots of the other strip and when folded enter the longitudinal slot or recess, substantially as described

3. The combination, with two clamping strips, one strip having two spaced transverse slots and a laterally open longitudinal recess or slot, of a binding wire intermediately attached to one of the clamping strips, and having projecting end portions spaced to enter the transverse slots and two cover pieces held by the strips and binding wire when said wire has its ends folded and entered within the longitudinal recess or slot, substantially as described.

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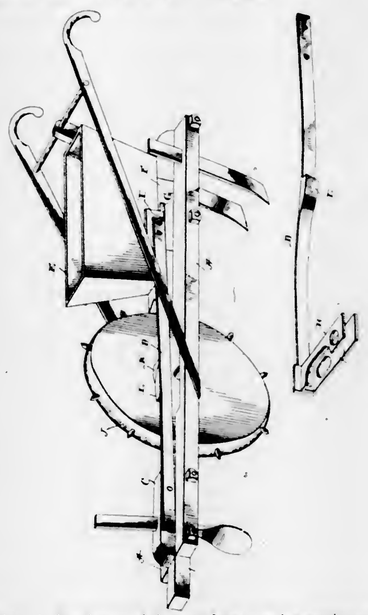
529,297. STOPPING APPARATUS FOR ENGINES. NATHAN R. NASH, Westerly, R. I., assignor, by direct and mesne assignments, to the Nash-Eddy Company, of Ohio. Filed Apr. 25, 1894. Serial No. 509,014. (No model.)

*Claim.*—In a safety stopping apparatus for steam engines, the combination with the steam pipe of an engine, of a rotary valve in the said pipe having an operating stem, an arm secured to the stem, a rod attached by means of a pin to the end of the said arm, a weight hinged to the lower end of the rod, a receiving box for the weight, a pair of electro magnets in an open electric circuit, a circuit closer in the said circuit, and a hinged armature carrying a pin adapted to enter a recess or hole in the arm and thereby sustain the same until the circuit is closed, substantially as, and for the purpose specified.



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529,298. PLANTER. JAMES R. NORCOTT, Barling, Ark. Filed May 29, 1894. Serial No. 512,920. (No model.)



*Claim.*—1. In an improved planter, a frame, a spring metal arm secured at one end thereto, a dropping device on the opposite end of the arm, and a means for vibrating said arm, substantially as shown and described.

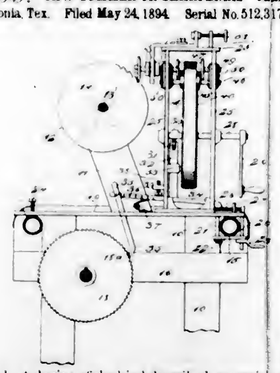
2. An improved planter comprising a frame, a hopper, a seed discharger therefor, a wheel, a series of wedges secured thereto, a longitudinal spring arm to the free end of which the discharger is secured, and a wedge on said arm adapted to be engaged by said first named wedges, for the purpose, substantially as shown and described.

3. An improved planter comprising the parallel bars A, a head block between their forward ends which is projected vertically, a spring arm secured to said projected portion and extended rearward parallel with but over said bars, a walking wheel, a series of wedges secured to the side thereof, a wedge for engaging the same carried

by the spring arm, a hopper, and a seed slide therefor carried by the free end of the said arm, substantially as shown and described.

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529,299. SAW GUMMER OR SHARPENER. JERROLD E. OGLESBY, Ladonia, Tex. Filed May 24, 1894. Serial No. 512,317. (No model.)



*Claim.*—1. A device of the kind described, comprising a supporting frame having means for carrying a gang of gin saws, a revoluble feed shaft journaled on the frame, a driving connection between the feed shaft and the saws, a ratchet wheel on the feed shaft, a carriage held to slide on the frame, a revoluble driving shaft on the carriage, means for turning the ratchet wheel by the movement of the driving shaft, a revoluble and vertically movable grinder carried by the carriage, a driving wheel on the driving shaft, and means for revolving and reciprocating the grinder by the movement of the driving wheel, substantially as described.

2. In a machine of the kind described, the combination with a carriage, and a frame on the carriage, of a shaft mounted in sliding bearings in the said frame, a grinding wheel on the shaft, a cam driving wheel for imparting a quick upward movement to the grinder shaft and a slow downward movement to the same, and means for rotating the grinder from the said cam driving wheel, substantially as described.

3. In a machine of the kind described, the combination, with the carriage and a frame on the carriage, of the cam driving wheel journaled in the said frame, the vertically movable and revoluble grinder shaft above the driving wheel, the grinder on the grinder shaft, the friction pulley between the grinder shaft and the driving wheel, and an elastic belt connecting the driving wheel and grinder shaft, substantially as described.

4. The combination, with the supporting frame, the feed shaft thereon, and the ratchet wheel carried by the feed shaft, of the carriage on the frame, the revoluble driving shaft on the carriage, grinding mechanism driven by the shaft, a vertically swinging lever below the shaft, a pawl carried by the lever and engaging the ratchet wheel, a slide connected with the lever and operated by the cam on the driving shaft, and means for regulating the throw of the lever, substantially as described.

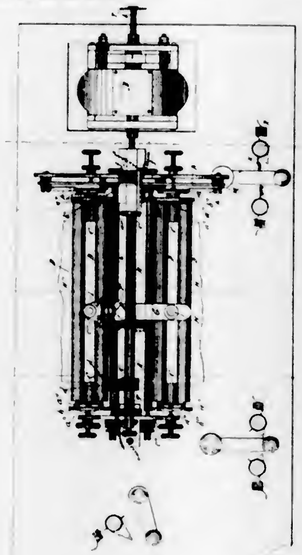
5. In a machine of the kind described, the combination with the grinding mechanism, and the driving shaft therefor, of a feed shaft, a ratchet wheel on the feed shaft, a pivoted and spring pressed lever, a pawl carried by the lever and engaging the ratchet wheel, a slide connected with said lever, and a cam on the driving shaft and engaging the said slide, substantially as described.

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529,300. AUTOGRAPHIC TELEGRAPH. JOHN O'NEIL, New York, N. Y. Filed Nov. 27, 1893. Renewed Oct. 13, 1894. Serial No. 525,819. (No model.)

*Claim.*—1. In an autographic telegraph apparatus, the combination of the following elements, to wit:—a feed-roll for carrying a conducting transmitting sheet, means for giving to said roll at intervals a feeding or fractionally rotative movement, a screw revoluble in opposite directions and placed parallel or substantially so with said feed roll, a traveling nut placed upon and operated from said screw, a stylus carried by said nut, and an electric motor revoluble in opposite directions to communicate a like motion to the screw, substantially as and for the purpose herein set forth.

2. In an autographic telegraph apparatus, the combination of the following elements, to wit:—a feed-roll for carrying a conducting transmitting sheet, means for giving to said roll at intervals a feeding or fractionally rotative movement, a screw revoluble in opposite directions and placed parallel or substantially so with said feed-roll, a traveling nut placed upon and operated from said screw, a stylus carried by said nut, and an electric motor revoluble in opposite directions and placed parallel or substantially so with said feed roll, a traveling nut which meshes with the thread of said screw, a stylus carried by said nut, an electric motor provided to operate the said screw, duplicate batteries of opposite polarity adapted for electric connection with the motor to operate the same, and means for shifting the electrical connection of the motor alternately from one to the other of said batteries to reverse the direction of the rotary motion of the motor and consequently that of the screw and of the rectilinear movement of the nut and stylus, substantially as and for the purpose herein set forth.



3. In an autographic telegraph apparatus, the combination of the following elements, to wit:—a feed-roll for carrying a conducting transmitting sheet, means for giving to said roll at intervals a feeding intermittent or fractionally rotative movement, a screw revoluble in opposite directions and placed parallel or substantially so with said roll, a traveling nut which meshes with the thread of said screw, a stylus carried by said nut, an electric motor provided to operate the said screw, duplicate batteries of opposite polarity adapted for electric connection with the motor to operate the same, and mechanism adapted to be operated by the nut at each limit of its rectilinear movement to shift the electrical connection of the motor alternately from one to the other of said batteries to reverse the direction of the rotary motion of the motor and the screw and of the rectilinear movements of the nut and stylus, substantially as and for the purpose herein set forth.

4. In an autographic telegraph apparatus the combination of the following elements, to wit:—a feed roll for carrying a conducting transmitting sheet, means for giving to said roll at intervals a feeding intermittent or fractionally rotative movement, a screw revoluble in opposite directions and placed parallel or substantially so with said roll, a traveling nut which meshes with the thread of said screw, a stylus carried by said nut, an electric motor provided to operate the said screw, duplicate batteries of opposite polarity adapted for electric connection with the motor to operate the same, and mechanism adapted to be operated by the nut at each limit of its rectilinear movement to shift the electrical connection of the motor alternately from one to the other of said batteries to reverse the direction of the rotary motion of the motor and the screw and of the rectilinear movements of the nut and stylus, substantially as and for the purpose herein set forth.

5. In an autographic telegraph apparatus, the combination of the following elements, to wit:—a feed-roll for carrying a receiving sheet, means for giving to said roll a feeding, intermittent or fractionally rotative movement, a screw revoluble in opposite directions, and placed parallel or substantially so with said feed-roll, a traveling nut which meshes with the thread of said screw an armature carried by said nut, an electric motor arranged to give motion to said screw, duplicate batteries of opposite polarity adapted for electrical connection with said motor to operate the same, and means for shifting the electrical connection of the motor alternately from one to the other of said batteries to reverse the direction of motion of said motor, a pen carried by the armature, an electro-magnet carried by the nut and adapted to actuate the armature to bring the pen to the receiving sheet, and a battery adapted to form part of an electric circuit through said electro-magnet to operate the armature, substantially as and for the purpose herein set forth.



6. In an autographic telegraph apparatus, the combination of the following elements, to wit:—a feed-roll for carrying a receiving sheet, means for giving to said roll a feeding, intermittent or fractionally rotative movement, a screw revoluble in opposite directions and placed parallel or substantially so with said feed-roll, a traveling nut which meshes with the thread of said screw, an armature carried by said nut, an electric motor arranged to give motion to said screw, duplicate batteries of opposite polarity adapted for electrical connection with said motor to operate the same, mechanism adapted to be operated by the nut at each limit of its rectilinear movement to shift the electrical connection of the motor alternately from one to the other of said batteries to reverse the direction of motion of said motor, a pen carried by the armature, an electro-magnet carried by the nut and adapted to actuate the armature to bring the pen to the receiving sheet, and a battery adapted to form part of an electric circuit through said electro-magnet to operate the armature, substantially as and for the purpose herein set forth.

7. In an autographic telegraph apparatus, the combination of the following elements, to wit:—a feed-roll for carrying a conducting transmitting sheet, a feed-roll for carrying a receiving sheet, means for giving to each of said rolls a feeding intermittent or fractionally rotative movement, a screw revoluble in opposite directions and placed parallel or substantially so with the feed rolls, a traveling nut which meshes with the thread of the screw, a stylus and a pen carried by said nut and adapted to move over or upon, respectively, the transmitting and receiving sheets, an armature connecting the pen with the nut and movable with respect to the latter, an electro-magnet also carried by the said nut and adapted to actuate the armature to bring the pen to the receiving sheet, duplicate batteries of opposite polarity adapted the one for electrical connection with the main line through the stylus the other for like connection through the electro-magnet, and means for making and breaking the connections of said batteries with the stylus and electro-magnet according as the instrument is required for use in transmitting or receiving, substantially as and for the purpose herein set forth.

8. In an autographic telegraph apparatus, the combination of the following elements, to wit:—a feed-roll for carrying the conducting transmitting sheet, means for giving to said roll at intervals a feeding or fractionally rotative movement, rollers placed parallel with said feed-roll to retain the transmitting sheet smoothly upon the same and arranged to move in unison with said rolls, a screw revoluble in opposite directions and placed parallel or substantially so with said feed roll, a traveling nut which meshes with the thread of said screw, a stylus carried by said nut, an electric motor provided to operate the said screw, duplicate batteries of opposite polarity capable of electric connection with the motor to operate the same, and means for shifting the electrical connection of the motor alternately from one to the other of said batteries to reverse the direction of the rotary motion of the motor and screw and of the rectilinear movement of the nut and stylus, substantially as and for the purpose herein set forth.

9. In an autographic telegraph apparatus, the combination of the following elements, to wit:—a feed-roll for carrying a conducting transmitting sheet, means for giving to said roll at intervals a feeding intermittent or fractionally rotative movement, swinging arms arranged at or near the ends of said roll, and rollers journaled in said arms parallel with said roll and arranged to hold the transmitting sheet to said roll to move in unison therewith, a screw revoluble in opposite directions and placed parallel or substantially so with said roll, a traveling nut which meshes with the thread of said screw, a stylus carried by said nut, an electric motor provided to operate the said screw, duplicate batteries of opposite polarity capable of electric connection with the motor to operate the same, and means for shifting the electrical connection of the motor alternately from one to the other of said batteries to reverse the direction of the rotary motion of the motor and screw and of the rectilinear movement of the nut and stylus, substantially as and for the purpose herein set forth.

10. In an autographic telegraph apparatus, the combination of the following elements, to wit:—a feed-roll for carrying a conducting transmitting sheet, means for giving to said roll at intervals a feeding intermittent or fractionally rotative movement, rollers placed parallel with said feed roll to retain the transmitting sheet smoothly upon the same and arranged to move in unison with said rolls, a screw revoluble in opposite directions and placed parallel or substantially so with said roll, a traveling nut which meshes with the thread of said screw, a stylus carried by said nut, an electric motor provided to operate the said screw, duplicate batteries of opposite polarity capable of electric connection with the motor to operate the same, and mechanism adapted to be operated by the nut at each limit of its rectilinear movement to shift the electrical connection of the motor alternately from one to the other of said batteries to reverse the direction of the rotary motion of the motor and the screw and of the rectilinear movements of the nut and stylus, substantially as and for the purpose herein set forth.

11. In an autographic telegraph apparatus, the combination of the following elements, to wit:—a feed-roll for carrying a conducting transmitting sheet, means for giving to said roll at intervals a feeding intermittent or fractionally rotative movement, swinging arms arranged at or near the ends of said roll, and rollers journaled in said arms parallel with said roll and arranged to hold the transmitting sheet to said roll to move in unison therewith, a screw revoluble in opposite directions and placed parallel or substantially so with said roll, a traveling nut which meshes with the thread of said screw, a stylus carried by said nut, an electric motor provided to operate the said screw, duplicate batteries of opposite polarity capable of electric connection with the motor to operate the same, and mechanism adapted to be operated by the nut at each limit of its rectilinear movement to shift the electrical connection of the motor alternately from one to the other of said batteries to reverse the direction of the rotary motion of the motor and the screw and of the rectilinear movements of the nut and stylus, substantially as and for the purpose herein set forth.

12. In an autographic telegraph apparatus, the combination of the following elements, to wit:—a feed-roll for carrying a receiving sheet, means for giving to said roll a feeding, intermittent or fractionally rotative movement, rollers placed parallel with said feed roll to retain the transmitting sheet smoothly upon the same, and arranged to move in unison with said rolls, a screw revoluble in opposite directions, and placed parallel or substantially so with said feed roll, a traveling nut which meshes with the thread of said screw, an armature carried by said nut, an electric motor arranged to give motion to said screw, duplicate batteries of opposite polarity adapted for electrical connection with said motor to operate the same, and means for shifting the electrical connection of the motor alternately from one to the other of said batteries to reverse the direction of said motor, a pen carried by said armature, an electro-magnet carried by the nut and adapted to actuate the armature to bring the pen to the receiving sheet, and a battery adapted to form part of an electric circuit through said electro magnet, substantially as and for the purpose herein set forth.

13. In an autographic telegraph apparatus, the combination of the following elements, to wit:—a feed-roll for carrying a receiving sheet, means for giving to said roll a feeding, intermittent or fractionally rotative movement, swinging arms arranged at or near the ends of said roll, and rollers journaled in said arms parallel with said roll and arranged to hold the transmitting sheet to said roll to move in unison therewith, a screw revoluble in opposite directions, and placed parallel or substantially so with said feed roll, a traveling nut which meshes with the thread of said screw, an armature carried by said nut, an electric motor arranged to give motion to said screw, duplicate batteries of opposite polarity adapted for electrical connection with said motor to operate the same, and means for shifting the electrical connection of the motor alternately from one to the other of said batteries to reverse the direction of motion of said motor, a pen carried by said armature, an electro-magnet carried by the nut and adapted to actuate the armature to bring the pen to the receiving sheet, and a battery adapted to form part of an electric circuit through said electro-magnet, substantially as and for the purpose herein set forth.

14. In an autographic telegraph apparatus, the combination of the following elements, to wit: a feed-roll for carrying a receiving sheet, means for giving to said roll a feeding, intermittent or fractionally rotative movement, rollers placed parallel with said feed roll to retain the transmitting sheet smoothly upon the same, and arranged to move in unison with said rolls, a screw revoluble in opposite directions and placed parallel or substantially so with said feed roll, a traveling nut which meshes with the thread of said screw, an armature carried by said nut, an electric motor arranged to give motion to said screw, duplicate batteries of opposite polarity adapted for electrical connection with said motor to operate the same, mechanism adapted to be operated by the nut at each limit of its rectilinear movement to shift the electrical connection of the motor alternately from one to the other of said batteries to reverse the direction of motion of said motor, a pen carried by said armature, an electro-magnet carried by the nut and adapted to actuate the armature to bring the pen to the receiving sheet, and a battery adapted to form part of an electric circuit through said electro magnet, substantially as and for the purpose herein set forth.

15. In an autographic telegraph apparatus, the combination of the following elements, to wit: a feed-roll for carrying a transmitting sheet of the character described, a feed-roll for carrying a receiving sheet, means for giving to each of said rolls a feeding, intermittent or fractionally rotative movement, swinging arms arranged at or near the ends of said rolls, and rollers journaled in said arms parallel with said roll and arranged to hold the transmitting sheet to said roll to move in unison therewith, a screw revoluble in opposite directions and placed parallel or substantially so with the feed rolls, a traveling nut which meshes with the thread of the screw, a stylus and a pen

carried by said nut and adapted to move over or upon, respectively the transmitting and receiving sheets, an armature connecting the pen with the nut and movable with respect to the latter, an electro-magnet also carried by the said nut and adapted to, on occasion, actuate the armature to bring the pen to the receiving sheet, duplicate batteries of opposite polarity and adapted, the one for electrical connection with the main line through the stylus, the other for like connection through the electro-magnet, and means for making and breaking the connections of said batteries with the stylus and electro-magnet, according as the instrument is required for use in transmitting or receiving, substantially as and for the purpose herein set forth.

16. In an autographic telegraph apparatus, the combination of the following elements, to wit: a feed-roll for carrying a transmitting sheet of the character described, a feed-roll for carrying a receiving sheet, means for giving to each of said rolls a feeding, intermittent or fractionally rotative movement, rollers placed parallel with said feed roll to retain the transmitting sheet smoothly upon the same, and arranged to move in unison with said rolls, a screw revoluble in opposite directions and placed parallel or substantially so with the feed-rolls, a traveling nut which meshes with the thread of the screw, a stylus and a pen carried by said nut and adapted to move over or upon, respectively, the transmitting and receiving sheets, an armature connecting the pen with the nut and movable with respect to the latter, an electro-magnet also carried by the said nut and adapted to actuate the armature to bring the pen to the receiving sheet, duplicate batteries of opposite polarity and adapted, the one for electrical connection with the main line through the stylus, the other for like connection through the electro-magnet, and means for making and breaking the connections of said batteries with the stylus and electro-magnet, according as the instrument is required for use in transmitting or receiving, substantially as and for the purpose herein set forth.

17. In an autographic telegraph apparatus, the combination of the feed screw, A, adapted to rotate in opposite directions without longitudinal movement of its own, means for affording such movement to said screw, feed rolls, C, placed at opposite sides of said screw, means for affording a fractional and intermittent rotative movement to said feed rolls, clamping rolls, D, placed parallel with the feed rolls and movable with reference thereto, the saddle E, constructed with a nut for the passage and operation of the feed-screw to give motion to the saddle, the electro-magnet, F, carried by the saddle, the armature, G, also carried by said saddle and adapted to be actuated from said electro-magnet, the pen, H, carried by the free end of the armature, the arm, I, also carried by said saddle and extended therefrom in a direction opposite that of the armature, the conducting stylus, J, carried by said arm and insulated from the pen, a source or sources of electric energy and connections for, on occasions, transmitting currents from such source to and through the stylus, and to and through the electro-magnet to actuate the pen, the whole arranged for use and operation, substantially as and for the purpose herein set forth.

18. In an autographic telegraph apparatus, the combination of the feed screw, A, adapted to rotate in opposite directions without longitudinal movement of its own, an electric motor constructed and arranged to rotate alternately in opposite directions, mechanism connecting the shaft of said motor with the said feeding screw to transmit corresponding motion thereto, feed rolls, C, placed at opposite sides of said screw, means for affording a fractional and intermittent rotative movement to said feed rolls, clamping rolls, D, placed parallel with the feed rolls and movable with reference thereto, the saddle, E, constructed with a nut for the passage and operation of the feed-screw to give motion to the saddle, batteries of opposite polarity for operating the motor and mechanism for automatically shifting the motor from the current of one battery to that of the other to reverse the motion of the latter as the saddle reaches the limit of its movement in each direction along the feed screw, the electro-magnet, F, carried by the saddle, the armature, G, also carried by said saddle and adapted to be actuated from said electro-magnet, the pen, H, carried by the free end of the armature, the arm, I, also carried by said saddle and extended therefrom in a direction opposite that of the armature, the conducting stylus, J, carried by said arm and insulated from the pen, a source or sources of electric energy and connections for, on occasion, transmitting currents from such source to and through the stylus, and to and through the electro-magnet to actuate the pen, the whole arranged for use and operation, substantially as and for the purpose herein set forth.

20. In an autographic telegraph apparatus, the combination of the feed screw, A, adapted to rotate alternately in opposite directions without longitudinal movement of its own, the feed rolls, C, and clamping rolls, D, placed parallel with said screw, the sadule, E, constructed with a nut for the passage and operation of the feed screw to give movement to the saddle, the electro-magnet, F, carried by the saddle, the armature, G, also carried by the saddle and adapted to be actuated from said electro-magnet, the pen, H, carried by the free end of the armature, the arm, I, also carried by the saddle and extended therefrom in a direction opposite that of the armature, the conducting stylus, J, carried by said arm and insulated from the pen, batteries of opposite polarity to operate said motor, two separate circuit closing and breaking devices, placed one at each end of the feeding screw, a main line looped or extended to said two devices, and mechanism for actuating said devices to open the one circuit and close the other simultaneously with the limit of motion in either direction of the saddle and parts carried thereby along the feeding screw the whole arranged for joint use and operation, substantially as herein set forth.

21. In an autographic telegraph apparatus, the combination of the feed screw, A, adapted to rotate alternately in opposite directions without longitudinal movement of its own, the feed rolls, C, and clamping rolls, D, placed parallel with said screw, the saddle, E, constructed with a nut for the passage and operation of the feed screw to give movement to the saddle, the electro-magnet, F, carried by the saddle, the armature, G, also carried by the saddle and adapted to be actuated from said electro magnet, the pen, H, carried by the free end of the armature, the arm, I, also carried by the saddle and extended therefrom in a direction opposite that of the armature, the conducting stylus, J, carried by said arm and insulated from the pen, batteries of opposite polarity to operate said motor, two separate circuit closing and breaking devices placed one at each end of the feeding screw, contact blocks, $g'$, placed at opposite ends of the feeding screw, contact pieces, $g''$, placed to cooperate with said contact blocks to open and close the circuits to operate the motor in the one direction and the other, a main line looped or extended to said contact blocks and contact pieces and devices actuated from the feeding screw to operate contact blocks as the saddle and the parts carried thereby approach or reach the limit of their movement in each direction along the screw, the whole arranged for joint use and operation, substantially as herein set forth.

22. In an autographic telegraph apparatus, the combination of the feed screw, A, adapted to rotate alternately in opposite directions without longitudinal movement of its own, the feed rolls, C, and clamping rolls, D, placed parallel with said screw, the saddle, E, constructed with a nut for the passage and operation of the feed screw to give movement to the saddle, the electro-magnet, F, carried by the saddle, the armature, G, also carried by the saddle and adapted to be actuated from said electro-magnet, the pin, H, carried by the free end of the armature, the arm I, also carried by the saddle and extended therefrom in a direction opposite that of the armature, the conducting stylus, J, carried by said arm and insulated from the pen, batteries of opposite polarity to operate said motor, two separate circuit closing and breaking devices placed one at each end of the feeding screw, contact blocks, $g'$, placed at opposite ends of the feeding screw, contact pieces, $g''$, placed to cooperate with said contact blocks, the sliding bar, R, having studs, $d$ and $e$, and adapted to alternately operate the contact blocks by its longitudinal movement in opposite directions and provided with stops, $c'$, arranged to receive the impact of the arch of the saddle as the latter with the parts carried thereby approaches or reaches the limit of its movement in each direction along the screw, the whole arranged for joint use and operation, substantially as herein set forth.

23. In an autographic telegraph apparatus, the combination of a feeding screw, A, revoluble in opposite directions, means for thus operating the said screw, feed rolls, C, adapted to carry, respectively, a conducting transmitting sheet and a receiving sheet and each provided with a ratchet wheel, $m$, the pivoted swinging bars, M, carrying pawls, $r$, and $s$, at their opposite ends, the slotted transverse bar, N, connecting said swinging bars, the bar, R, extended through the slot of said bar, N, and constructed with opposing inclined planes, $f$, bearing against the ends of said slot, a traveling nut placed upon and actuated by the feeding screw, a stylus carried by said nut and adapted to traverse the surface of the transmitting sheet, a pen also carried by said nut and adapted to be brought into contact with the receiving sheet while passing over the same, and mechanism for transmitting motion from the feeding screw to the bar, R, when the nut approaches the limit of its movement in either direction upon said screw, separate circuit closing and breaking devices placed at opposite ends of the feeding screw, a main line looped or extended to said circuit closing devices, and mechanism for operating said devices alternately from the traveling nut as the latter reaches or approaches the limit in either direction of its movement upon the screw, substantially as herein set forth.



24. In an autographic telegraph apparatus, the combination of a feeding screw, A, revoluble in opposite directions, an electric motor constructed and arranged to rotate alternately in like opposite directions, means for transmitting the motion of the said motor to the said screw duplicate batteries of opposite polarity, means for shifting the said motor from the current of one of said batteries to that of the other to alternate the motion of the motor in opposite directions, feed rolls, C, adapted to carry respectively, a conducting transmitting sheet and a receiving sheet and each provided with a ratchet wheel, $m$, the pivoted swinging bars, M, carrying pawls, $r$, and $s$, at their opposite ends, the slotted transverse bar, N, connecting said swinging bars, the bar, R, extended through the slot of said bar, N, and constructed with opposing inclined planes, $f$, bearing against the ends of said slot, a traveling nut placed upon and actuated by the feeding screw, a stylus carried by said nut and adapted to traverse the surface of the transmitting sheet, a pen also carried by said nut and adapted to be brought into contact with the receiving sheet while passing over the same, and mechanism for transmitting motion from the feeding screw to the bar, R, when the nut approaches the limit of its movement in either direction upon said screw, the whole arranged for joint use and operation, substantially as herein set forth.

25. In an autographic telegraph apparatus, the combination of a feeding screw, A, revoluble in opposite directions, an electric motor constructed and arranged to rotate alternately in like opposite directions, means for transmitting the motion of the said motor to the said screw duplicate batteries of opposite polarity, means for shifting the said motor from the current of one of said batteries to that of the other to alternate the motion of the motor in opposite directions, feed rolls, C, adapted to carry, respectively, a conducting transmitting sheet and a receiving sheet and each provided with a ratchet wheel, $m$, the pivoted swinging bars, M, carrying pawls, $r$, and $s$, at their opposite ends, the slotted transverse bar, N, connecting said swinging bars, the bar, R, extended through the slot of said bar, N, and constructed with opposing incline planes, $f$, bearing against the ends of said slot, a traveling nut placed upon and actuated by the feeding screw, a stylus carried by said nut and adapted to traverse the surface of the transmitting sheet, a pen also carried by said nut and adapted to be brought into contact with the receiving sheet while passing over the same, and mechanism for transmitting motion from the feeding screw to the bar, R, when the nut approaches the limit of its movement in either direction upon said screw, separate circuit closing and breaking devices placed at opposite ends of the feeding screw, a main line looped or extended to said circuit closing devices, and mechanism for operating said devices alternately from the traveling nut as the latter reaches or approaches the limit in either direction of its movement upon the screw, substantially as herein set forth.

26. In an autographic telegraph apparatus, the combination of a feed roll for carrying a conducting transmitting sheet, means for giving to said roll at intervals a feeding or fractional rotative movement, a screw revoluble in opposite directions and placed parallel or substantially so with said feed roll, a traveling nut placed upon and operative from said screw, an electric motor revoluble in opposite directions, means for transmitting such alternating movements to the screw, a stylus carried by said nut and an escapement arranged in cooperative relation with the shaft of the motor to synchronize the revolutions of the latter, substantially as and for the purpose herein set forth.

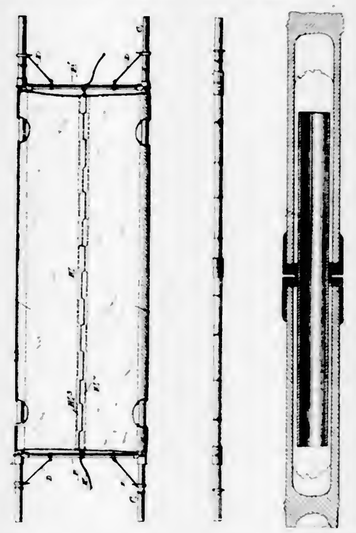
27. In an autographic telegraph apparatus, the combination of a feed roll for carrying a conducting transmitting sheet, means for giving to said roll at intervals a feeding or fractional rotative movement, a screw revoluble in opposite directions and placed parallel or substantially so with said feed roll, a traveling nut placed upon and operative from said screw, a stylus carried by said nut, an electric motor revoluble in opposite directions to operate the screw, duplicate batteries of opposite polarity, means for shifting the motor alternately from the current of one battery to that of the other to reverse the motion of the motor and consequently of the screw, and an escapement arranged in cooperative relation with the motor to synchronize the revolutions of the latter, substantially as and for the purpose herein set forth.

28. In an autographic telegraph apparatus, the combination of a feed roll for carrying a conducting transmitting sheet, means for giving to said roll at intervals a feeding or fractional rotative movement, a screw revoluble in opposite directions and placed parallel or substantially so with said feed roll, a traveling nut placed upon and operative from said screw, an electric motor revoluble in opposite directions, means for transmitting such alternating movements to the screw, a traveling nut placed upon and actuated from said screw, an escapement wheel, T, fast on the shaft of the motor, T', having a stem $p^3$, and arranged to cooperate with said wheel, an electro-magnet, G', an armature $r$, having a conducting arm, $r^2$, a rod, G'', to connect the stem of the pallet with the arm of the armature, a conducting stud, H'', and a spring, $t'$, for throwing the armature from the electro magnet, the whole arranged for joint use and operation, substantially as and for the purpose herein set forth.

29. In an autographic telegraph apparatus, the combination of a feed roll for carrying a conducting transmitting sheet, means for giving to said roll at intervals a feeding or fractional rotative movement, a screw revoluble in opposite directions and placed parallel or substantially so with said feed roll, a traveling nut placed upon and operative from said screw, a stylus carried by said nut, an electric motor revoluble in opposite directions to operate the screw, duplicate batteries of opposite polarity, means for shifting the motor alternately from the current of one battery to that of the other to reverse the motion of the motor and consequently of the screw, an escapement wheel, T, fast on the shaft of the motor, a pallet, T', having a stem, $p^3$, and arranged to cooperate with said wheel, an electro-magnet, G', an armature, $r$, having a conducting arm, $r^2$, a rod, G'', to connect the stem of the pallet with the arm of the armature, a conducting stud, H'', and a spring, $t'$, for throwing the armature from the electro-magnet, the whole arranged for joint use and operation, substantially as and for the purpose herein set forth.

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529,301. LITTER. RICARDO ORTEGA, Ciudad Porfirio Diaz, Mexico. Filed July 3, 1894. Serial No. 516,446. (No model.)

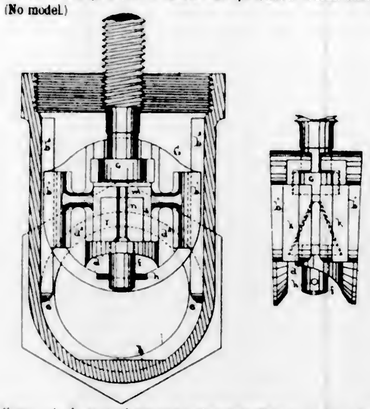


*Claim.*—1. In a litter, a frame, the side bars of which are tubular and sectional, threaded tubular ferrules uniting the sections, and the inner concealed tube G extending across the joint thus formed, substantially as described.

2. A litter comprising a frame formed of the sectional side bars, having threaded ends, handles having caps C on their inner ends provided with longitudinal and transverse threaded openings $C^3$ to connect them longitudinally to the side bars or at right angles thereto, cross bars B B' connecting the ends removably with the ends of the side bars, the brace hooks D and the removable fabric cover having its outer edges removably receiving the side bars, substantially as described.

3. A litter comprising the sectional separable frame, having side and end bars, the longitudinally divided fabric cover E having side pockets along its outer edges and provided at the adjacent edges of its two sections with interlocking loops $E^3$ $E^4$ and a flexible cord F passed through the loops and tied at its ends to the middle portions of the respective cross bars, whereby the middle of the cover will be rendered flexible or yielding to the body laid thereon, substantially as described.

**529,302. STRAIGHTWAY-VALVE.** JOSEPH T. PAGET, Boston, Mass. Filed Apr. 27, 1891. Renewed Sept. 7, 1894. Serial No. 522,342. (No model.)



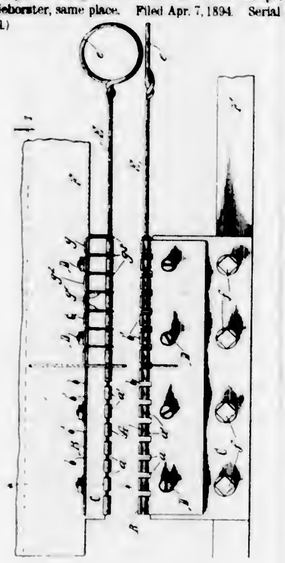
*Claim.*—1. In a straight way valve the disks —C, D—, having groove —*m*— in their inclined surfaces —*s*— the wedge —*r*— grooved as shown at —*n*— and located between said disks as shown, and held in position by means of collar —*d*—, spindle *f* and ears —*h*— substantially as described, &c.

2. In a straight way valve the combination of the disks "C—D," with a spreading device located between them, consisting of wedge shaped head "*r*" grooved as shown at "*n*," to which is attached spindle "*f*," all being operated by means of hoisting spindle "C," substantially as described.

3. In a straight-way valve the combination of the disks —C—D— grooved on their inclined surfaces as shown at —*m*— the spreading device located between them, consisting of wedge shaped head —*r*— with spindle —*f*— attached thereto, all operated by means of hoisting spindle —C— substantially as described.

4. In a straight way valve the combination of the casing —A— having the guides —$b^2$—$b^2$— with the disks —C—D— having the ears —*h*—*h*— the spreading device —*r*— having the groove —*n*— the spindle —*f*— having the ears —*h*— the said spreading device —*r*— being attached to one of said disks by means of collar —*d*— spindle —*f*— and ears —*h*— substantially as described.

**529,303. DEVICE FOR CRIMPING WIRE LACING.** EDWARD PARO, Chicago, Ill., assignor of two thirds to Carl C. Knapstein and William L. Nieborster, same place. Filed Apr. 7, 1894. Serial No. 506,718. (No model.)



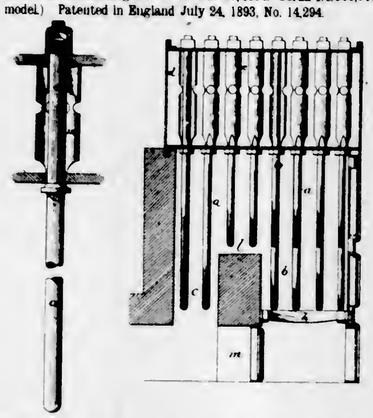
*Claim.*—1. In a wire-lacing crimper, a front plate provided with a series of notches in its upper edge and a series of apertures on the edge sections thus produced, in combination with a back plate provided with a series of notches in one edge corresponding to those in the front plate, and a pattern rod adapted to be thrust through the said apertures in the front plate, substantially as described.

2. In a wire-lacing crimper, a block or strip C, in combination with a front plate A provided with a series of notches *a* and circular apertures $a^3$ at the upper edge thereof and secured to one side of the block, a back plate B provided with a series of corresponding notches *b* at its upper edge and secured to the opposite side of said block, and a pattern rod E adapted to slide back and forth in the said apertures in the front plate, substantially as described.

3. In a wire-lacing crimper, a block or strip C, in combination with a front plate A secured to one side thereof, notched at its upper edge, and with the sections of said edge bent to form circular apertures $a^3$, a back plate B provided with edge notches *b*, and a sliding pattern rod E, substantially as described.

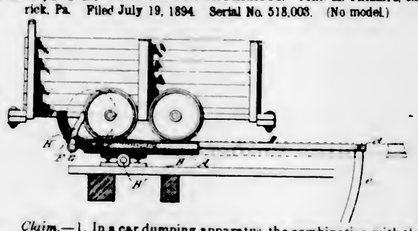
4. In a wire-lacing crimper, a supporting block or strip, in combination with a front plate secured to one side thereof and provided at its upper edge with a series of notches and a series of apertures, and a back plate B provided with a corresponding series of edge notches and with transverse slots $b^3$, whereby said plate may be secured to the opposite side of the support in different vertical positions, substantially as described.

**529,304. STEAM OR OTHER FLUID BOILER.** LUDLOW P. PERKINS, Manchester, England. Filed Feb. 20, 1894. Serial No. 500,919. (No model.) Patented in England July 24, 1893, No. 14,294.



*Claim.*—A steam generator, consisting of a vessel *d*, tubes *a*, partially filled with liquid and hermetically sealed, said tubes extending diametrically across and engaging opposite walls of the vessel so as to strengthen the same, a portion of said tubes being above the line of liquid therein, whereby the generated steam will be superheated a circulating tube *m*, extending entirely across and engaging with opposite walls of the vessel so as to strengthen the same, and having apertures *n*, surrounding the portion of each tube *a*, within the vessel *d* and a furnace *b*, for heating the portions of the tubes *a*, outside of said vessel, substantially as set forth.

**529,305. CAR-DUMPING APPARATUS.** JOHN M. PHILLIPS, Carrick, Pa. Filed July 19, 1894. Serial No. 518,003. (No model.)



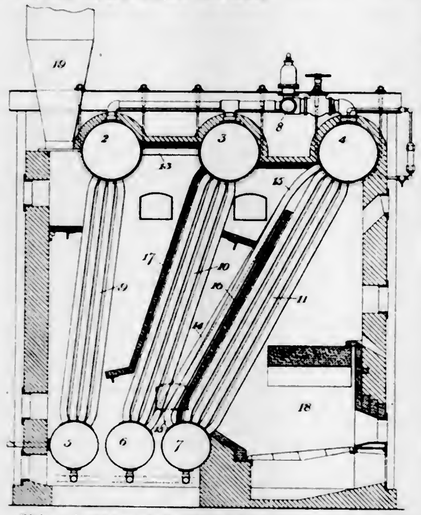
*Claim.*—1. In a car dumping apparatus, the combination with the tilting track section, of automatic car pushing or propelling mechanism located thereon, and comprising a rotary shaft having upright arms arranged and adapted to be moved forwardly by a loaded car, springs connected to said shaft and expansible by the turning of the same, and a ratchet detent and releasing device, by which said shaft is held in position when the springs are expanded and released to allow the springs to contract and effect a propulsion of the car.

2. In a car dumping apparatus, the combination with the tilting track section and the horn rails mounted thereon, of an automatic spring controlled car pushing or propelling mechanism, comprising upright arms or pushing levers H, H, a transverse shaft G upon the ends of which said levers are mounted, a ratchet wheel O keyed on said shaft, retractile springs L, L connected at one end to lugs on said shaft and at the other end to the base plate of the tilting track section, a pawl or dog S engaging with said ratchet wheel, a transverse shaft connected to said dog, and a tread lever mounted on said rails, all being arranged and adapted to operate substantially as described.

3. In a car dumping apparatus having mounted thereon an automatic spring controlled car pushing mechanism, the combination with the horn rails having their outer flanges cut away, of the upright pushing levers H, H and the rotary spring actuated shaft C said levers being adapted to lie close to the horn rails and within the recessed portions thereof when pushed forward, substantially as described.



**529,306. BOILER.** JAMES PIERPOINT, Pittsburg, Pa. Filed July 12, 1894. Serial No. 517,342. (No model.)



*Claim.*—1. A steam boiler having upper steam and water drums and lower water drums, direct tubes connecting the front upper and lower drums, circulating tubes arranged in a cooler part of the furnace, also connecting said front upper and lower drums, a feed water inlet entering one of the rear drums, and tubes or pipes connecting serially the feed water inlet and intermediate drums, with the circuit constituted by the front drums and their tubes; substantially as described

2. A steam boiler comprising lower water drums, and three upper steam and water drums, direct tubes connecting the front upper and lower drums, circulating tubes also connecting said front upper and lower drums, said circulating tubes being arranged in a cooler part of the furnace, and tubes or pipes connecting serially the other drums with each other and with the circuit constituted by said front drums and their tubes; substantially as described.

3. A steam boiler comprising lower water drums, and upper steam and water drums, direct tubes connecting the front upper and lower drums, circulating tubes also connecting said front upper and lower drums, and set in a cooler part of the furnace, tubes or pipes serially connecting the remaining drums with each other, and a pipe or pipes extending from one of the front drums to one of the hinder drums, whereby is formed a connection between the circuit constituted by the front drums and their tubes, and the remaining drums; substantially as described.

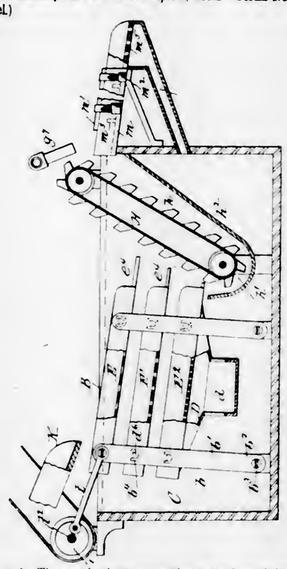
4. A steam boiler comprising water drums, and upper steam and water drums, direct tubes connecting the front upper and lower drums, circulating tubes also connecting said front upper and lower drums, and set in a cooler part of the furnace, tubes or pipes serially connecting the remaining drums with each other, and a pipe or pipes extending diagonally from one of the front drums to one of the hinder drums, whereby is formed a connection between the circuit constituted by the front drums and their tubes, and the remaining drums substantially as described.

5. A steam boiler comprising water drums, and upper steam and water drums, direct tubes connecting the front upper and lower drums, circulating tubes also connecting said front upper and lower drums, and set in a cooler part of the furnace, tubes or pipes serially connecting the remaining drums with each other, and a pipe or pipes extending diagonally from one of the front drums to one of the hinder drums, whereby is formed a connection between the circuit constituted by the front drums and their tubes, and the remaining drums, said diagonal pipe or pipes being of small area relative to the conjoined area of the tubes of any of the banks; substantially as described.

6. A boiler comprising upper steam and water drums, 2, 3, 4, lower water drums, 5, 6, 7, tubes 9 connecting the drums 2, 5, pipes 13 connecting the drums 2, 3, tubes 10 connecting the drums 3, 6, tubes 11 connecting the drums 4, 7, circulating tubes 15 also connecting the drums 4, 7, and a feed-pipe or pipes 14 connecting the drums 6 and 4; substantially as described.

7. In a steam boiler and in combination with the upper and lower drums, a bank of direct tubes connecting the front upper and lower drums, a fire wall or partition as 16, and a bank of circulating tubes arranged in rear of said partition, but connecting the front upper and lower drums, with means for connecting the remaining drums with each other, and with the circuit constituted by the front drums and their tubes, substantially as described.

**529,307. ORE WASHER OR CONCENTRATOR.** CHARLES F. PIKE, Philadelphia, Pa. Filed Apr. 6, 1894. Serial No. 506,647. (No model.)



*Claim.*—1. The method of separating metal particles from placer gravel, which consists in imparting to the material repeated short advancing movements over a non foraminous surface immersed in a body of substantially quiescent water, throwing up and scattering or keeping said material alive in the water at the termination of each such movement by interposing obstructions in and at different points of the path of the material, and catching or collecting the heavier metal particles by means of such obstructions, substantially as set forth.

2. In a machine for separating metal particles from black sand in working placer gravel, the combination of a stationary vessel containing a body of water, a riffle plate immersed in said body of water having its riffles at right angles to the plane of motion of such plate, mechanism for reciprocating the plate, and feed and discharge devices, substantially as set forth.

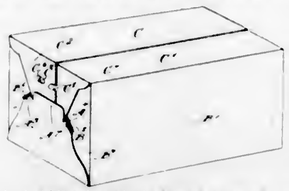
3. In a machine for working placer gravel, the combination of a stationary vessel containing a body of water, a series of screens, one above the other, inclining downwardly from their feed to their discharge ends and having different mesh, mechanism for reciprocating said screens bodily in the direction of their length, a correspondingly

inclined riffle plate below the lowest screen and moving with the latter, a discharge device in said vessel for the waste matters from the screens, and a separate discharge device in said vessel for removing the black sand escaping from the said riffle, substantially as set forth.

4. In a machine for working placer gravel, the combination of a vessel containing a body of water, a series of screens one above the other inclining downwardly from their feed to their discharge ends and having different mesh, mechanism for reciprocating said screens, a discharge device common to all of said screens, an inclined receiving trough outside of said vessel for said discharge device, riffles at the upper end of said trough, a screen at its lower end and a reverse inclined trough below said screen leading back to the receiving vessel, substantially as set forth.

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529,308. **PAPER BOX.** EDWARD E PINKERTON, Sioux City, Iowa. Filed Mar. 21, 1894. Serial No. 504,548. (No model.)

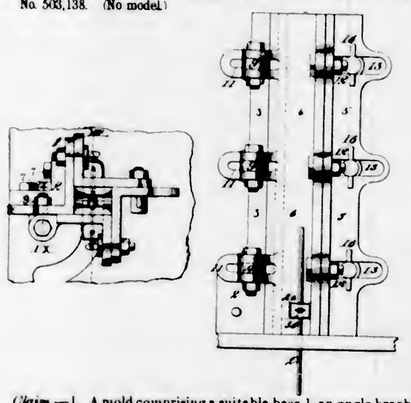


*Claim.*—1. A folding box blank formed, integrally, of the center or bottom piece having folding heads provided with lateral locking tongues, two side pieces having heads provided with slots to receive said tongues, and two end portions having head pieces with tongues on their inner sides, which, when the blank is folded, project laterally and thus engage with the aforesaid locking tongues, as shown and described.

2. An improved knock-down box made from a single blank having a central portion, two side portions, and end or outer side portions, all arranged parallel and having folding ends or heads, the central heads and adjacent side heads interlocking, and the heads of the exterior portions or sides having projections that lock with the other engaging parts of the central and inner side heads, when the blank is folded, as shown and described.

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529,309. **MOLD.** JOHN RANNING, St. Louis, Mo., assignor to the National Lead Company, Jersey City, N. J. Filed Mar. 10, 1894. Serial No. 503,138. (No model.)

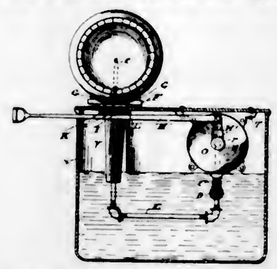


*Claim.*—1. A mold comprising a suitable base 1, an angle bracket 2 secured to the base, the angle member 3 bolted to the bracket, the angle member 4 having one wing adjustably secured by bolt and slot connection with one wing of the member 3, the eye-bolt 9 adjustably secured to the other wing of the member 3, the angle member 6, the pintle-bolts 10 by which one wing of the member 6 is hinged to the eye-bolts, the angle member 5 having one wing adjustably secured by bolt and slot connection with the other wing of the member 6, key-bolt and slot connection between the other wing of the member 4, and the other wing of the member 5, and a die adjustable in the mold; substantially as described.

2. A mold comprising a suitable slotted base 1, and angle bracket 2, the angle members 3 and 5, the angle members 4 and 6 having perforated lugs 29, means for connecting the angle members, the die 20 having two members 21, 22, means for inter-locking the members, the U-shaped supporting rods 28 for the members of the die, and the set-screws for securing the rods to their adjustment in the perforated lugs; substantially as described

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529,310. **CASK-PITCHING APPARATUS.** THOMAS J. REINHARD, Cleveland, Ohio, assignor to Philip Sherrer and Joseph Schmidt, same place. Filed Feb. 16, 1894. Serial No. 500,403. (No model.)



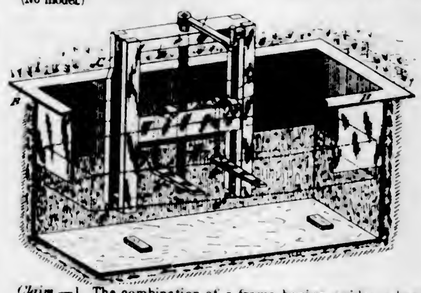
*Claim.*—1. In a device for coating the inner surface of barrels, the combination with a kettle, of a cover therefor, a pump, inlet and outlet pipes therefor, a rotary barrel support mounted upon said cover, and below the extremity of the outlet pipe, and means of operating the pump and rotating the barrel support in unison, substantially as set forth.

2. In a device for coating the interior of barrels, the combination with a heating kettle, of a metallic cover therefor, an oscillating pump mounted upon the cover within the kettle, inlet and outlet pipes for the pumps, located within the kettle, the said outlet pipe being bent to descend into the kettle and discharging vertically with a terminal spray nozzle, and a rotary barrel support upon said cover encircling said nozzle, all parts being arranged substantially as and for the purpose set forth.

3. In a device for coating the interior of barrels, the combination with a heating kettle, of a metallic cover therefor, an oscillating pump and a rotary barrel support mounted thereon, an inlet pipe to the pump provided with a strainer, an outlet pipe bent downwardly into the kettle and terminating upwardly through the barrel support, a funnel extending into the kettle through the barrel support, and means for rotating the barrel support and for oscillating the pump piston consisting in a crank lever on the segmental piston shaft, a pawl and actuating lever pivoted upon the plate, a ratchet upon the cylindrical base of the barrel support, and an operating bar pivotally secured to both said levers, substantially as described.

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529,311. **CASKET-LOWERING DEVICE.** ALBERT C. RICHARDSON, South Frankfort, Mich. Filed May 12, 1894. Serial No. 511,023. (No model.)



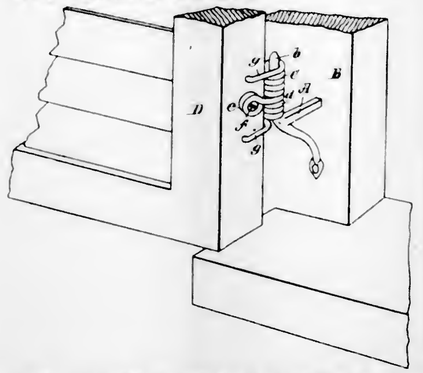
*Claim.*—1. The combination of a frame having guides, a head movable in the guides, a traveling screw carried by the frame and connected to the head to move the same, rods carried by the head having enlargements to engage notches in the head and casket supporting arms connected to the rods.

2. The combination of a shield adapted to fit the grave, a frame secured to the shield and having guides, a head movable in said guides, rods carried by the head and having casket supporting arms, and a traveling screw engaging the head for moving the same.

3. The combination of a shield or casing to fit the grave, a frame secured to the casing and having guides, a head arranged in the guides, rods carried by the head having the casket supporting arms at their lower ends and the locking enlargements at their upper ends, and devices for moving the head.



529,312. **HINGE.** ALBERTA RILEY, Boston, Mass., assignor of one-half to William Jordan and Louis W. Jordan, same place. Filed Aug. 9, 1894. Serial No. 519,873. (No model.)

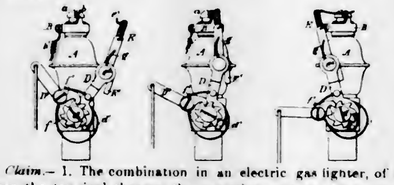


*Claim.*—1. A hinge leaf constructed of a single length of wire provided between its ends with a transverse attaching eye, and the tubular knuckle or pintle receiving socket at right angles to the said eye and formed by coiling the two members of the wire above and below the eye into tubular form; the extremities of the wire terminating at opposite ends of the knuckle in attaching devices, substantially as set forth.

2. A hinge leaf constructed of a single length of wire pointed at both ends, formed between its ends with a transverse attaching eye, and the tubular pintle receiving knuckle or socket at right angles to the eye and formed by coiling the two members of the wire above and below the eye into tubular form; the wire at the ends of said knuckle being bent laterally with the pointed extremities projecting parallel with the axis or bore of the eye, substantially as set forth.

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529,313. **ELECTRIC GAS-LIGHTER.** CHARLES G. SAVAGE, Philadelphia, Pa., assignor of two-thirds to John L. Ricketts and Grant C. Osborne, same place. Filed June 13, 1894. Serial No. 514,397. (No model.)



*Claim.*—1. The combination in an electric gas lighter, of the burner, the terminal thereon, the operating part, an arm actuated thereby, but insulated therefrom, and means tending to keep the arm out of contact with the operating part, said arm on its forward movement forming a contact with the terminal of the burner simultaneously with the contact of the arm and the operating part, substantially as described.

2. The combination in an electric gas lighter, of the operating lever, an arm pivoted thereto but insulated therefrom, said arm adapted to come in contact with the lever on its forward stroke, substantially as described.

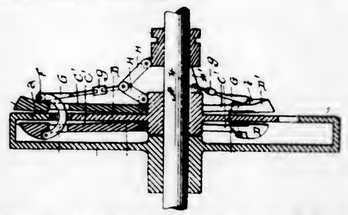
3. The combination in an electric gas lighter, of the pivoted lever, an arm pivoted thereto but insulated therefrom, an extension of said arm forming a contact at the one-point only of the stroke, substantially as described.

4. The combination in an electric gas lighter, of the burner A, the contact *b* thereon, a pivoted lever D, means for operating said lever, an arm E pivoted to said lever, and having a contact brush *c'*, insulating material between the lever and the arm, a contact point E' on the arm adapted to come into contact with the lever on the forward stroke, and a spring tending to keep the arm away from the lever, substantially as described.

5. The combination in an electric gas lighter, of the burner A, a band thereon having a contact, a pivoted lever D, an arm E having an extension E' adapted to bear against the lever on the forward movement, a bolt *c*, its nut, insulating material between the arm and bolt and the lever, a spring on the arm attached to the nut tending to keep the extension E' away from the lever, a spring contact on the end of the arm adapted to come in engagement with the contact *b* on the burner, substantially as described.

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529,314. **FRICTION-CLUTCH.** WILSON R. SMITH, Beloit, assignor of one-half to James B. Hatch, Milwaukee, Wis. Filed July 3, 1894. Serial No. 516,472. (No model.)

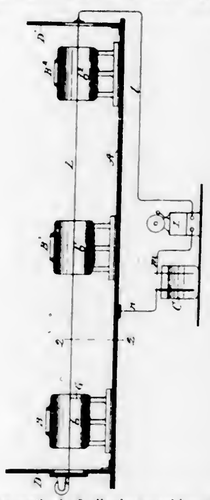


*Claim.*—1. In a friction clutch, the grip jaws D, D', the jaw D having the incline *d* one or more curved draw-bars pivoted to the jaw D, the roller carried by said draw bars, and working against said incline, the link or lever connected to said draw-bars, the sliding collar on the driving shaft, and the toggles connecting said link and lever with said collar and with the driver wheel, substantially as specified.

2. A friction clutch, having the grip jaws D, D', the curved draw-bar E, the incline *b*, the roller F carried by said draw-bar and working against said incline, the link or lever G, formed in two parts, the right and left threaded sleeve nut connecting said parts, the toggles H, H', connected to said lever, and the sliding collar to which the toggle H is connected, substantially as specified.

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529,315. **METHOD OF AND APPARATUS FOR ALIGNING MACHINERY.** ROBERT J. SNYDER, Bethlehem, Pa., assignor to Grace Marion Snyder, same place. Filed Jan. 30, 1894. Serial No. 498,438. (No model.)



*Claim.*—1. The method of aligning machinery which consists in forming an open electric circuit through said machinery and the adjustment line, and completing the circuit in adjusting said machinery to the line, substantially as set forth.

2. An electrical aligning mechanism consisting of an adjustment line arranged in circuit with the machinery to be adjusted thereto and a gage adapted to open and close the circuit, substantially as set forth.

3. An electrical aligning mechanism consisting of an adjustment line arranged in circuit with the machinery to be adjusted thereto and with an indicator and a gage adapted to open and close the circuit, substantially as set forth.

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529,316. **LEER OR ANNEALING-OVEN FOR SHEET OR PLATE GLASS.** JAMES W. BONTA, Wayne, Pa., assignor to The Bonta Plate Glass Company, of West Virginia. Filed Feb. 2, 1894. Serial No. 498,902. (No model.)

*Claim.*—1. A leer or oven for annealing plate glass, comprising in combination, a bed or table on which the sheet or plate of glass is laid, a conducting flue or flues for the products of combustion extending under said table, an inclosing roof structure having gas inlets,

escape ducts leading from the interior of the oven to said flue or flues, and an escape flue or chimney with which said conducting flue or flues communicate, substantially as specified.



2. The combination in a leer or oven for annealing sheet or plate glass, of the bed or table on which the sheet or plate of glass is laid, a flue or flues extending under said table and communicating at one end with an escape flue or chimney, and at the opposite end with the interior of the oven, and an air passage or passages formed in the upper portion of the foundation, below the heat conducting flues and opening at one end to the atmosphere, and at their opposite ends communicating with the escape flue or chimney, substantially as specified.

3. The combination in a leer or oven for annealing sheet or plate glass, of the bed or table on which the sheet or plate of glass is laid, a series of heat conducting flues extending under said table, for the passage of the products of combustion and communicating at one end with an escape flue or chimney, a chamber at the front of the oven with which all of said heat conducting flues communicate, and ducts or passages extending from said chamber to the interior of the oven, substantially as specified.

4. The combination in a leer or oven for annealing sheet or plate glass, of the bed or table on which the sheet or plate of glass is laid, a series of arched fire brick forming heating conducting passages or flues, extending under said bed or table and supporting the same, a chamber at the front of the oven having an area equal to the combined area of all the heat conducting passages or flues, passages provided in the walls of the oven, and extending from said chamber to the interior of the oven, and an escape flue or chimney with which all of said heat conducting flues communicate, substantially as specified.

5. The combination in a leer or oven for annealing sheet or plate glass, of the bed or table on which the sheet or plate of glass is laid, a series of arched fire brick forming a support for the bed or table, and having passages or flues for the passage of the products of combustion, a chamber at the front of the oven with which all of said passages or flues communicate, said chamber communicating with the oven, a chamber formed at the rear of the oven, and with which said passages or flues communicate, a series of air passages formed in the upper portion of the foundation, and also communicating with such rear chamber, and an escape flue or chimney through which the mixed air and gas may escape, substantially as specified.

6. The combination in a leer or oven for annealing sheet or plate glass, of the bed or table on which the sheet or plate of glass is laid, a series of arched fire brick F forming continuous passages $f^2$ extending from end to end of the oven, a chamber G at the front of the oven and with which said passages $f^2$ communicate, ducts $g$ at the opposite end of said chamber leading into the interior of the oven, a chamber H at the rear of the oven, and with which said passages $f^2$ also communicate, a foundation structure having passages $e$ open to the air at the front of the furnace, and at the rear communicating with said chamber H, layers $f$, $f'$ of fire brick on top of the foundation, and immediately beneath the fire brick, and an escape duct or chimney with which the chamber H communicates, substantially as specified.

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529,317. BOTTLE-GUARD. CHARLES M. BOSCOWITZ, New York, N. Y. Filed Sept. 30, 1893. Renewed July 16, 1894. Serial No. 517,751. (No model.)



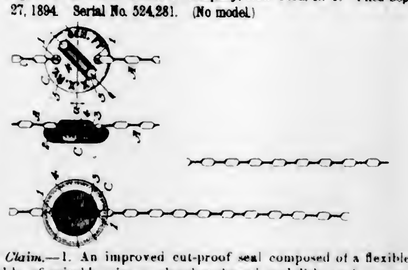
*Claim.*—1. A guard for bottles containing dangerous drugs, comprising a spring clamp for embracing the neck of the bottle, a tablet bearing a cautionary word or symbol designed to rest normally over the cork in the bottle and adapted to swing to clear the cork, and means uniting the clamp and tablet for automatically returning the latter to its normal position.

2. A bottle-guard comprising a spring clamp for embracing the neck of the bottle, a tablet bearing a cautionary word or symbol designed to rest normally over the cork in the bottle and adapted to swing to clear the cork, and spring arms connecting the clamp and the tablet, for the purposes set forth.

3. A bottle-guard comprising a spring clamp for embracing the neck of the bottle, a tablet bearing a cautionary word or symbol designed to rest normally over the cork in the bottle, and spring arms connecting the clamp and tablet, said arms being each formed with a coil intermediate the clamp and tablet, all substantially as described and for the purposes set forth.

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529,318. SEAL. EDWARD J. BROOKS, East Orange, N. J., assignor to the E. J. Brooks & Company, New York, N. Y. Filed Sept. 27, 1894. Serial No. 524,281. (No model.)

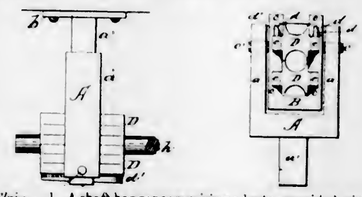


*Claim.*—1. An improved cut-proof seal composed of a flexible shackle of suitable wire, a planchet-shaped seal-disk, and a compressible sheet-metal shell; the latter being preliminarily fastened on one end of the shackle and upon the seal-disk to unite the parts, and constructed with a pair of holes connected by an external archway through which to thread the free end of the shackle preparatory to pressing the seal, substantially as hereinbefore specified.

2. The combination, in a cut-proof seal, of a flexible shackle of suitable wire, a planchet-shaped seal-disk of sheet-lead, and a cup-shaped compressible shell of sheet-metal; the latter having a pair of holes through which one end of the shackle is preliminarily threaded, an inturned rim which preliminarily fastens the seal-disk within it, and a second pair of holes connected by an external archway which crosses the preliminarily threaded shackle-end, substantially as hereinbefore specified.

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529,319. SHAFT-HANGER. WILLIAM BYNON, Olyphant, Pa., assignor of two-thirds to Joseph A. Dolphin and Thomas F. Jordan, same place. Filed Jan. 22, 1894. Serial No. 497,595. (No model.)



*Claim.*—1. A shaft hanger comprising a body, provided with parallel legs, a swinging box-support having parallel arms, trunnions thereon journaled in said legs, box-sections fitting between said arms and carried by said support and a key inserted through said arms and engaging with one of the box-sections.

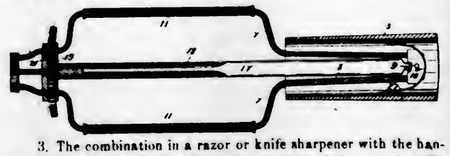
2. A shaft hanger comprising a body provided with parallel legs, a box-support having parallel arms, trunnions thereon journaled in said legs and upon which said support oscillates, box-sections fitting between said arms and provided with lateral lugs engaging with them, and a key inserted through said arms and engaging with the outer box-sections, in combination with a shaft.

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529,320. DEVICE FOR SHARPENING RAZORS. PETER J. CAESAR, Fergus Falls, Minn., assignor of five-eighths to Andrew B. Peterson and Charles Elg, same place. Filed Oct. 23, 1888. Renewed Oct. 4, 1894. Serial No. 524,927. (No model.)

*Claim.*—1. In a razor sharpening device, the combination of an automatically reversing razor holder, a handle, means for engaging a strop for operating the holder, and a spring acting on the holder, substantially as and for the purpose set forth.

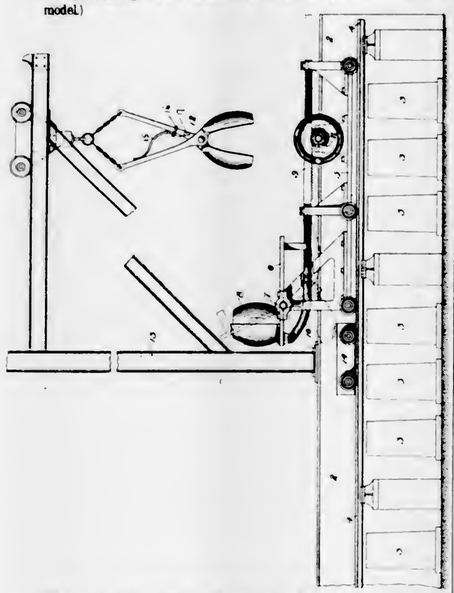
2. In a razor or knife sharpener, the combination of a suitable handle, an automatically reversing holder for the razor or knife a frame controlling the holder and the spring 27 inserted between said frame and handle and adapted to hold the former centrally in the latter, substantially as described.



3. The combination in a razor or knife sharpener with the handle 3 provided with the longitudinal slot 5 of the holder 17 pivotally supported within said handle and provided with the razor holding portion having the slot 18, substantially as described.

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529,321. APPARATUS FOR CASTING CRUCIBLE-STEEL. CHARLES CAPPER, Wilkinsburg, assignor of one-half to William D. Corcoran, Pittsburg, Pa. Filed Oct. 31, 1893. Serial No. 489,636. (No model.)



*Claim.*—1. In an apparatus for the manufacture of crucible steel, a movable car provided with a platform permanently pivoted to the car, and forming a part thereof, with plates or arms on the forward end of said platform for grasping the crucible and holding it rigid during the movement of the platform; substantially as described.

2. For the manufacture of crucible steel, a tipping table having a holder adapted to fit and hold the forward side and top of a crucible, and open at the back to permit easy insertion of the crucible; substantially as described.

3. In an apparatus for the manufacture of crucible steel, a movable car provided with a table journaled in bearings on the car, and provided with means for holding the crucible on said table, with mechanism for tipping said table, comprising a reciprocating rack bar set in bearlugs on the car and connected with the table by a pivoted link, and means for operating said rack bar.

4. In an apparatus for the manufacture of crucible steel a furnace, a crucible to be inserted therein, a holder for said crucible, means for removing said crucible from the furnace to the holder, said holder comprising a tilting platform with plates or arms for grasping said crucible, and means for tilting the holder; substantially as described.

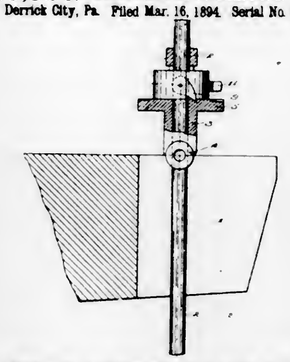
5. In an apparatus for the manufacture of steel, a furnace, and crucible holder with means for transferring the crucible to the holder, said holder being independent of the furnace and adapted to receive and hold the crucible when taken from the furnace, and means for tipping the crucible holder.

6. In an apparatus for the manufacture of steel, a movable car, a platform pivoted on said car and having upwardly projecting curved guard plates embracing the crucibles at the front and conforming to the shape thereof, and having lips fitting over the rims of the crucibles upon opposite sides thereof, and mechanism mounted on the car for tipping the platform; substantially as described.

7. For the manufacture of crucible steel, a tipping holder adapted to hold at least two crucibles and movable to carry the same over the molds to be filled, in combination with a pan or funnel movable with the holder in the same plane and adapted to receive the contents of the crucibles when the same are tipped; substantially as described.

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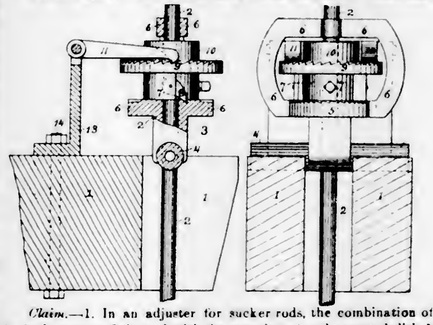
529,322. ADJUSTER FOR SUCKER-RODS. DAVID M. EDMONDS, Derrick City, Pa. Filed Mar. 16, 1894. Serial No. 503,947. (No model.)



*Claim.*—In an adjuster for sucker-rods, the combination of the body formed with the trunnions, serrated disk and yoke, a central opening through the said body, disk and yoke, for the passage of the rod, and a collar formed with a central opening through which the said rod passes, provided with a pair of pawls which engage the serrated disk, and suitable means for adjustably securing the rod within said collar, substantially as and for the purpose set forth.

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529,323. ADJUSTER FOR SUCKER-RODS. DAVID M. EDMONDS, Derrick City, Pa. Filed June 21, 1894. Serial No. 515,297. (No model.)



*Claim.*—1. In an adjuster for sucker rods, the combination of the body portion 3 formed with the trunnions 4 and serrated disk 5 carried by a walking beam, a collar carrying a pair of dogs for engagement with the disk 5 and a serrated disk 9, and a pair of pivoted dogs carried by the walking beam for engagement with the disk 9 substantially as and for the purpose set forth.

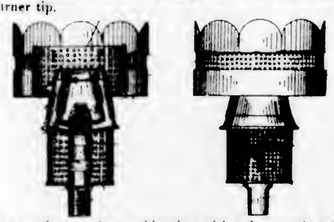
2. In an adjuster for sucker rods, the combination of a body portion 3 formed with the trunnions 4 and serrated disk 5 and carried by a walking beam, a collar carrying a pair of dogs for engagement with the disk 5 and a serrated disk 9 and collar 10, and a pair of dogs for engagement with the disk 9 pivoted on a standard 13 secured to the walking beam substantially as and for the purpose set forth.

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529,324. GAS-BURNER. SAMUEL P. ESSEX, Zionsville, Ind., assignor of one-half to James O. Hurst, same place. Filed May 4, 1894. Serial No. 510,121. (No model.)

*Claim.*—1. In a gas burner, the combination with a hollow cylindrical burner tip, of a casing forming an extension below the same whose bottom is closed, and a casing with a closed bottom extending around the burner tip with perforations in its sides on a level with the top of the burner tip, substantially as shown and described.

2. In a gas burner the combination with a burner tip, of a chimney holder surrounding the same and having its bottom closed and its side perforated below the chimney ledge and on a level with the top of the burner tip.

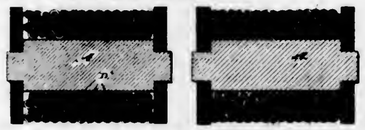


3. In a gas burner the combination with a burner tip, of a cylindrical perforated casing surrounding the burner, and a chimney holder surrounding such perforated casing and having its sides and bottom closed excepting a portion of the side on a level with the burner tip, which portion is perforated.

4. In a gas burner the combination with a hollow cylindrical burner tip, of a perforated cylindrical casing extending below such burner and having a closed bottom, a perforated cylindrical casing surrounding the upper part of such burner, and a chimney holder surrounding such upper perforated casing and having its bottom and sides closed excepting a portion of the side on a level with the burner tip, which portion is perforated.

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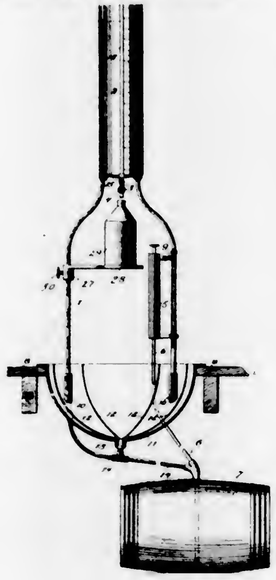
529,325. **ELECTROMAGNET.** CARL C. GERLACH, Cleveland, Ohio, assignor of one-half to Rudolph P. Gerlach, same place. Filed Dec. 9, 1893. Serial No. 493,242. (No model.)



*Claim.*—A magnet coil consisting in a series of coils of wire the surface of which is partially wound with flexible non-conducting material, in such a manner as to present alternately the covered and bare wire, and to admit an insulating medium between the strands, substantially as set forth.

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529,326. **MEASURING-TANK.** JAMES HALL, Chicago, Ill. Filed June 21, 1894. Serial No. 515,253. (No model.)



*Claim.*—1. In an apparatus of the character described, the combination of the tank with a glass indicator tube located outside of said tank and connected therewith through an opening in the bottom of said tank, and an adjustable index plate, and means for drawing off the contents of said tank, substantially as and for the purpose set forth.

2. In an apparatus of the character described, the combination of the tank, with the two hollow legs upon which it is mounted, each resting in a drip pan, one of said legs having a pump mounted thereon and serving as a supply pipe for the tank, and the other serving as an overflow pipe for conveying the overflow to the source of supply, substantially as and for the purpose set forth.

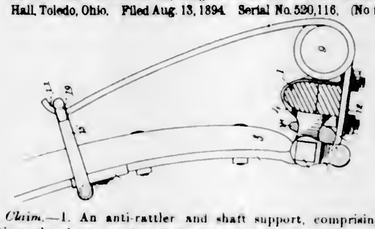
3. In an apparatus of the character described, the combination of the tank mounted upon the hollow legs, one of said legs projecting through the drip pan and terminating in a pipe adapted to convey the overflow to the source of supply, with the drip pan having an outlet in its bottom adapted to discharge its contents into said pipe and thence to the source of supply, substantially as and for the purpose set forth.

4. An apparatus of the character described, comprising the tank mounted upon a drip pan by means of two hollow legs one of said legs having a pump mounted thereon and connected therewith and with the source of supply, and the other having an adjustable platform mounted thereon adapted to receive the vessel into which the contents of the tank are drawn, substantially as set forth.

5. In an apparatus of the character described, the combination of the measuring tank mounted upon two hollow legs, each communicating with the source of supply, one serving as a supply pipe and the other as an overflow pipe, with an auxiliary supply tank mounted upon said hollow legs and communicating with the measuring tank, substantially as set forth.

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529,327. **COMBINED ANTIRATTLER AND SHAFT-SUPPORT.** EDGAR C. HALL, Decatur, Ill., assignor of one-half to Alice Shellabarger Hall, Toledo, Ohio. Filed Aug. 13, 1894. Serial No. 520,116. (No model.)



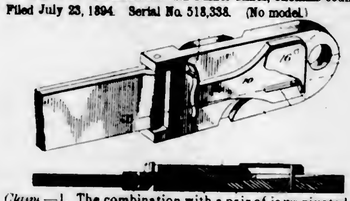
*Claim.*—1. An anti-rattler and shaft support, comprising an elastic wedge between the shaft eye and clip wall, a bail swung on the shaft bolt and adapted to bear against the anti-rattler, and a shaft supporting spring, or springs, connected with the bail and adapted to hold the bail in contact with the anti rattler, substantially as set forth.

2. In anti-rattlers and shaft supports, the combination with the shaft eye and axle clip, of anti rattler 14 adapted to be inserted between the eye and a wall of the clip, the bail 6 swung on bolt 5 of the shaft eye and adapted to bear against the anti rattler, and the shaft supporting springs connected at 8 with the bail and having coils 9 adapted to bear against the side of the axle opposite the bail and hold the bail in contact with the anti-rattler, substantially as set forth.

3. In shaft supports, the combination of shaft supporting springs, a slide adapted to the shaft iron, a plate connected pivotally with the slide, and a clip connected pivotally with the plate and adapted to connect with the supporting springs, substantially as set forth.

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529,328. **TRACE-HOOK.** JUDSON W. HIBBS, Elma, assignor of one-half to J. Will Anderson and Daniel Gillies, Chehalis county, Wash. Filed July 23, 1894. Serial No. 518,338. (No model.)



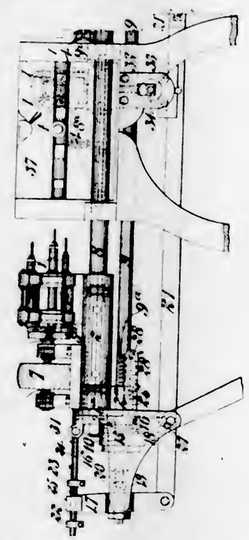
*Claim.*—1. The combination with a pair of jaws pivoted together at one end and adapted to separate at their free ends, of a lever pivoted eccentrically to one of the said jaws and having a longitudinal slot near the opposite edge, a pin projecting laterally from the jaw opposite that to which the said lever is pivoted and passing through the slot in the lever and a spring transversely disposed near the pivotal end of the jaws and adapted to engage with the end of the said lever to hold the latter in the required position, substantially as and for the purposes set forth.

2. The herein described trace hook, comprising two jaws pivoted together at one end, one of the jaws having a loop to receive the trace and each jaw having its forward end notched in co-incident relation on the meeting edge and widened on curved lines, a cam shaped lever pivoted to one of the jaws and having a longitudinal slot 12, a pin 13, projecting from the opposite jaw and working in the slot 12 and a transversely disposed spring 15 adapted to engage with the end of the said lever and hold the latter in the required position, substantially as and for the purposes set forth.

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529,329. **DRILLING-MACHINE.** DANIEL JONES, Birmingham, England, assignor to the Two-Reel Lock-Stitch Sewing Machine Company, Limited, same place. Filed May 31, 1893. Serial No. 476,156. (No model.) Patented in England Apr. 13, 1892, No. 7,143; in Belgium Mar. 9, 1893, No. 103,774, and in Italy Mar. 13, 1893, XXVII, 33,696, LXVII, 352.



*Claim.*—1. In a multiple drilling machine, the combination with separate drill carrying heads arranged to move to and from each other and each carrying a screw threaded nut, of a rotary shaft with right and left handed screw threads directly engaging said screw threaded nuts, separate sets of driving mechanism adapted to rotate said shaft in opposite directions, and means for bringing said sets of driving mechanism alternately into action substantially as herein described.

2. In a multiple drilling machine, the combination of drill carrying heads arranged to move relatively to each other and each carrying a screw threaded nut, a rotary shaft with right and left handed screw threads engaging the correspondingly screw threaded nuts on said heads and driving mechanism for rotating said shaft alternately in opposite directions, a spring adapted to reverse the action of said driving mechanism when the said drill carrying heads have been moved to a predetermined extent, and tripping mechanism adapted to release said spring at the required times, substantially as herein described for the purpose specified.

3. In a multiple drilling machine, the combination of drill carrying heads arranged to move relatively to each other and each carrying a screw threaded nut, a rotary shaft with right and left handed screw threads engaging the correspondingly screw threaded nuts on said heads and driving mechanism for rotating said shaft alternately in opposite directions, a spring adapted to reverse the action of said driving mechanism when the said drill carrying heads have been moved to a predetermined extent, tripping mechanism adapted to release said spring at the required times, and a stopping device operated by one of said drill carrying heads and arranged to automatically throw said driving mechanism out of action when the said heads have returned to a predetermined extent substantially as herein described.

4. In a multiple drilling machine, the combination of drill carrying heads arranged to move relatively to each other a shaft for reciprocating said heads, driving wheels loosely mounted on said shaft and arranged to be driven in opposite directions the one to the other, clutches for connecting said driving wheels to said shaft, toggle mechanism for fixing said clutches, and means for operating said toggle mechanism to bring said driving wheels alternately into action substantially as described.

5. In a multiple drilling machine the combination of parallel drill spindles, cranks with crank pins on said spindles and a wrist plate in which said crank pins are journaled, movable heads for carrying said drill spindles, a rotary shaft with right and left handed screw threads engaging correspondingly screw threaded parts carried by said movable heads, driving wheels mounted loosely on said shaft, and means for causing them to engage alternately therewith substantially as described.

6. In a multiple drilling machine, the combination of drill carrying heads arranged to move relatively to each other, driving mechanism for operating the same alternately in opposite directions toggle and clutch mechanism for throwing said mechanism in and out of action, a spring adapted to actuate said toggle and clutch mechanism so as to reverse the direction of movement of said drill carrying heads, said spring being arranged to have energy stored therein by a moving part of the machine during the advancing movement of said drill carrying heads, and a retaining device carried by one of said drill carrying heads and acting to restrain the action of said spring until the said heads have completed their forward movement and to then release said toggle and clutch mechanism and permit it to be acted upon by said spring substantially as herein described for the purpose specified.

7. In a multiple drilling machine, the combination of two drill carrying heads arranged to reciprocate to and from each other, a shaft for reciprocating said heads, means for driving said shaft alternately in opposite directions, a drill carrying head arranged to move at an angle to the other two heads and means for reciprocating it from one of said other heads substantially as herein described.

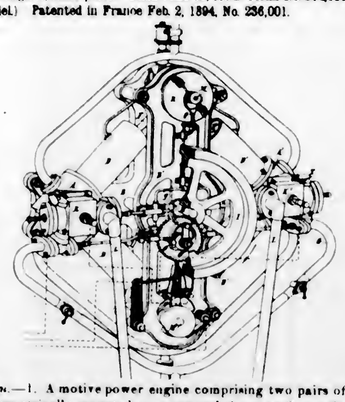
8. In a multiple drilling machine the combination of drill spindles 1, drill carrying heads 2, 3 and 4, right and left handed screw threaded nuts carried by the heads 2 and 3 respectively a screw threaded shaft 9 engaging said nuts, a slotted lever 11 adapted to transmit motion from one of the heads 2, 3, to the other head 4 arranged to move at an angle to them, pulleys 15 loosely mounted on the said shaft 9 and driven in opposite directions, clutch plates 16, 16ª keyed on said shaft and arranged one on each side of each of said pulleys, toggle arms 19 and 20, for operating one of the clutch plates of each pair, levers 17 for operating said toggles and means for simultaneously operating said levers substantially as herein described.

9. In a multiple drilling machine the combination of drill carrying heads 2, 3, a right and left handed screw threaded shaft 9, for operating said heads, pulleys 15 loosely mounted on said shaft and driven in opposite directions, clutches 16, 16ª and toggles 19 and 20, for locking each of said pulleys in turn to said shaft, levers 17 to which said toggles are connected, a bar 21 connecting said levers, and stops 22 23 between which an end of one of said levers is arranged to work, substantially as herein described for the purpose specified.

10. In a multiple drilling machine the combination of drill carrying heads 2, 3, a right and left handed screw threaded shaft 9, for operating said heads, pulleys 15 loosely mounted on said shaft and driven in opposite directions, clutches 16, 16ª and toggles 19 and 20, for locking each of said pulleys in turn to said shaft, levers 17 to which said toggles are connected, a bar 21 connecting said levers, a spring 29 arranged to act against said bar and effect the return movement thereof, a projection carried by one of said heads and arranged to compress said spring when said head is moved in one direction and trip mechanism for preventing said bar returning until the drill carrying heads have completed their operative movement substantially as described.

11. In a multiple drilling machine the combination of drill carrying heads 2, 3, a right and left handed screw threaded shaft 9, for operating said heads, pulleys 15 loosely mounted on said shaft and driven in opposite directions, clutches 16, 16ª and toggles 19 and 20, for locking each of said pulleys in turn to said shaft, levers 17 to which said toggles are connected, a bar 21 connecting said levers, a spring 29 arranged to act against said bar and effect the return movement thereof, a projection carried by one of said heads and arranged to compress said spring when said head is moved in one direction, a tripping device comprising a bell crank lever 26 connected at one end to said lever 21 and provided at the other with a pin or roller 28, and a ledge or support 28ª carried by one of said heads and wherein said pin or roller is supported during the forward movement of the heads, and a rod 31 carried by one of said heads and arranged to act against one of said levers and move the driving mechanism into its inoperative position when said heads have returned to a predetermined extent substantially as herein described.

**529,330. MOTOR-POWER ENGINE.** JUSTIN LANDRY and GABRIEL BEYROUX, Paris, France, assignors of one-third to Renaud, Marquis De Montaignac, same place. Filed June 18, 1894. Serial No. 514,958. (No model.) Patented in France Feb. 2, 1894, No. 236,001.

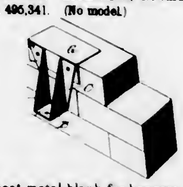


*Claim.*—1. A motive power engine comprising two pairs of cylinders symmetrically mounted upon one and the same frame the cylinders of each pair placed at angle one to the other and having a common explosion chamber in such manner that their pistons are driven outward simultaneously and complete in succession all the periods of a motor with four cycles or epochs for the purpose of transmitting the common movement to a fly-wheel located between the four cylinders in the axial line of symmetry of the engine the periods of inspiration compression explosion and exhaust of the two cylinders at one side of that axial line alternating with the same periods of the two cylinders at the other side thereof so as to obtain an explosion for each revolution of the said fly-wheel.

2. In a motive power engine the combination with a central fly wheel or driving shaft of two pairs of cylinders each cylinder at an angle to its companion and one explosion chamber common to both cylinders of each pair the cylinders and explosion chambers being arranged symmetrically in relation to the driving shaft.

3. In a motive-power engine the combination of two pairs of cylinders each cylinder at an angle to its companion an explosion chamber and set of valve apparatus for each pair of cylinders two cranks on the driving shaft two auxiliary shafts each with four cranks two connected with two of the cylinder pistons and the other two with the two driving shaft cranks.

**529,331. HANGER.** LOUIS LANE, Newark, Ohio. Filed Jan. 2, 1894. Serial No. 495,341. (No model.)



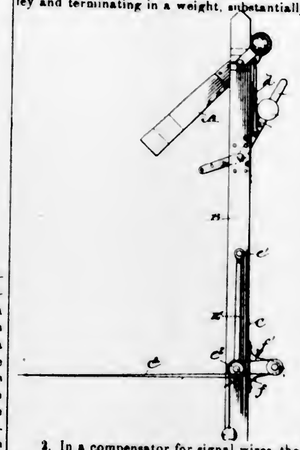
*Claim.*—1. A sheet metal blank for hangers, consisting of a central portion adapted to form the seat of the hanger, and side wings set at an angle to the said central portion, the longitudinal edges of the blank being essentially parallel to each other, and the corresponding inner portions of the said edges being of substantially equal lengths, as set forth.

2. A hanger comprising an essentially horizontal seat, essentially vertical wings extending at the sides of the seat from the front to the rear thereof, and essentially vertical flanges extending outwardly from the rear ends of the said wings and substantially at right angles thereto, to produce a broad bearing and attaching surface for the hanger, as set forth.

3. A hanger formed of sheet metal and having a horizontal seat, triangular wings extending vertically from the said seat, triangular flanges extending sidewise from and at right angles to the said wings, and a bearing iron on which the said triangular flanges are fastened, substantially as shown and described.

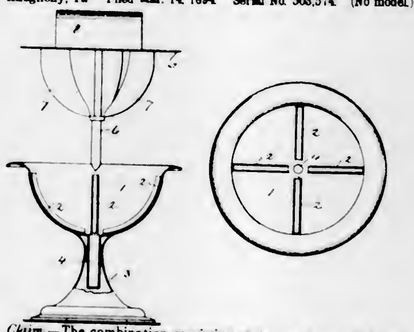
**529,332. COMPENSATOR FOR SIGNAL-OPERATING WIRES.** JOHN S. LYMAN, Winchester, Mass., and GEORGE F. ADAMS, Nashua, N. H. Filed Mar. 22, 1894. Serial No. 504,684. (No model.)

*Claim.*—1. In a compensator for signal wires, the combination of a supporting post, a signal operating lever pivoted on the same and provided with a counterbalance weight; the pivotal point of said lever being so located that the operative force of the said weight may be increased or decreased, a stationary pulley on said post, movable pulleys, means for supporting the movable pulleys on the post, a line wire having two branches, one of the same passing over one of the movable pulleys and being attached to the semaphore and the other passing over the stationary pulley and the other movable pulley and terminating in a weight, substantially as described.



2. In a compensator for signal wires, the combination of a supporting post, a signal operating lever pivoted on the same and provided with a counterbalance weight, the pivotal point of said lever being so located that the operative force of the said weight may be decreased or increased, a stationary pulley on said post, a guideway secured to said post and provided with a fixed pulley at its outer end, movable pulleys operating in said guideway and a main line wire having two branches, one of which branches being passed over one of the movable pulleys and connected at its upper end to the signal lever and the other provided at its outer end with a weight and passed around the stationary pulley and over the other movable pulley, substantially as described.

**529,333. ORANGE CUP AND PULP-REMOVER.** HENRY MAIER, Allegheny, Pa. Filed Mar. 14, 1894. Serial No. 503,574. (No model.)



*Claim.*—The combination consisting of the cup 1 provided with a suitable base 3, the tube 4 centrally located in said base, the radial arranged U shaped holders 2 arranged in the interior of the said cup, and a device for reaming the pulpy substance free from the rind of the orange, consisting of the disk 5 provided with cutters 7, central pin 6, and the handle 8, all arranged and combined for service substantially as and for the purpose described.

**529,334. FULMINATING COMPOUND.** HUDSON MAXIM, New York, N. Y. Filed Oct. 2, 1893. Serial No. 486,978. (No specimens.)

*Claim.*—1. The herein described pliable, yielding or elastic explosive, consisting of a fulminate with its particles agglutinated by a dissolved organic nitro-compound.

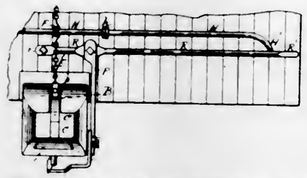


2. The herein described pliable, yielding or elastic explosive consisting of an admixture of a fulminate with a dissolved nitrated carbohydrate.

3. The herein described yielding or elastic explosive consisting of an admixture of a fulminate with a dissolved nitrated carbohydrate and nitro-glycerin subsequently dried.

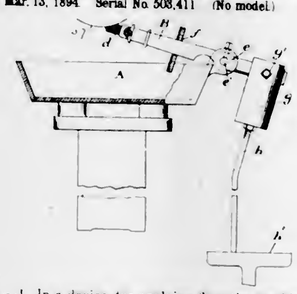
4. The herein described yielding or elastic explosive consisting of a fulminate agglutinated by means of an organic nitro compound in conjunction with nitro-glycerin and a deterring agent for lessening its sensitiveness to detonation.

**529,335. CAR-COUPLING.** MORRIS MILLS, Lynn, assignor of one-half to Walter Mellson, Malden, Mass. Filed July 5, 1894. Serial No. 516,533. (No model.)



*Claim.*—The hereinbefore described improved car coupling, consisting essentially of the draw-head A, the upper wall thereof being provided with the longitudinal slot B within which is the pivot B', and the lower wall of said draw-head being provided with the recess A' having the shoulder A'', the latch or tongue composed of the two parts C and C' bolted together as shown, the dividing line between said parts intersecting the pivot B', the parts C of the tongue or latch being provided with a recess D from which extends an upright D' and the portion C' of said tongue being provided with the hook shaped extension C'', the bolt E extending rearwardly from the tongue and connected with a rocking bar secured to the car; the post L' playing vertically in the perforation K in the lower wall of the draw-head, the platform or lift L integral with said post; the lever N N' bent as shown and pivotally secured to the side of the draw-head, and a lever connected with said lever N N' and pivoted to the car, substantially as and for the purposes set forth.

**529,336. DEVICE FOR APPLYING SOLDERING-FLUX.** DAVID M. MONROE, Baltimore, Md., assignor to R. Tynes Smith, same place. Filed Mar. 13, 1894. Serial No. 503,411. (No model.)



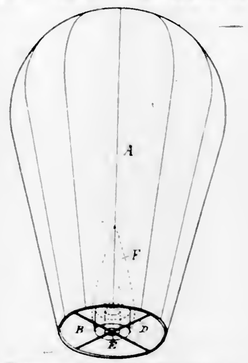
*Claim.*—1. In a device for applying flux, the combination of a pan to contain flux, a movable holder above the flux pan and adapted to carry the vessel that is to be fluxed; an arm having at one end a brush or swab and pivoted to tilt in a vertical plane and dip the brush or swab in the flux and then raise and apply said brush or swab to the vessel in the holder; and an adjustable stop device attached to the pivoted arm and adapted to limit the extent of the dip of the brush or swab into the flux.

2. In a device for applying flux to vessels which are to be soldered, the combination of a flux-pan; a pivoted brush or swab to dip into the flux and then apply to the vessel; and an adjustable counterbalance on the pivoted brush.

3. In a device for applying flux, the combination of a pan to contain flux; a movable holder above the flux-pan and adapted to carry the vessel that is to be fluxed; an arm having at one end a brush or swab and pivoted to tilt in a vertical plane and dip the brush or swab in the flux and then raise and apply said brush or swab to the vessel in the holder; and an adjustable pendent stop device attached to the pivoted arm and adapted to limit the raise or up-tilt of said arm.

4. In a machine for fluxing and soldering the end seams of cylindrical vessels, the combination of a device for applying solder to the end seams of a vessel; a stationary pan to contain flux; an arm having at one end a brush or swab and pivoted to tilt in a vertical plane and dip the brush or swab into the flux and then raise and apply the flux to the seams of the vessel; a revoluble holder adapted to carry the vessel that is to be fluxed and soldered; and means to impart to said holder movement in a horizontal plane and thereby carry the vessel from the flux brush to the said soldering device.

**529,337. TOY-BALLOON INFLATOR.** JAMES S. MOORE, Port Richmond, N. Y. Filed Apr. 18, 1894. Serial No. 508,034. (No model.)



*Claim.*—1. The combination of a balloon having an open mouth, an open ended tube of non-inflammable material, centrally located in said mouth, a wick saturated with inflammable material surrounding said tube, with a covering of slowly combustible absorbent material wrapped about said wick, substantially as described.

2. An inflator for balloons consisting of an open-ended tube of suitable cross section; in combination with a wick surrounding said tube, said wick being composed of a strip of combustible fabric saturated with an inflammable substance and a strip of slowly combustible absorbent material wrapped together so as to form alternate layers, substantially as described.

3. The combination of a balloon having an open mouth; a frame for distending said mouth; cross bars in said frame, with an inflating cartridge centrally supported on said bars in said mouth, said cartridge consisting of an open-ended tube of paste-board or like material, wrapped with alternate layers of a combustible fabric as cloth saturated with inflammable material, as paraffine; and layers of a slowly combustible absorbent material, soft as card board, substantially as described.

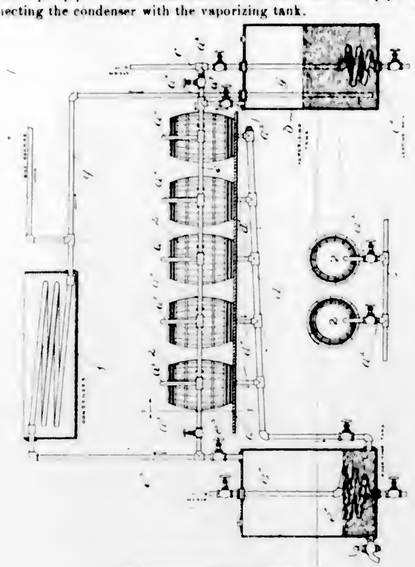
**529,338. APPARATUS FOR EXTRACTING RESIDUAL SUBSTANCES FROM CASKS.** EDWARD E. MURPHY, Boston, Mass., assignor of one-half to Glembard S. Foster, same place. Filed Feb 8, 1894. Serial No. 499,500. (No model.)

*Claim.*—1. An apparatus for recovering residual substances from casks and other receptacles, comprising in its construction a vaporizer, a vapor pipe leading therefrom and having branches adapted to communicate with a series of casks, a liquid discharge-pipe, having branches adapted to communicate with said casks, provisions being made for interchanging of casks a receiving-tank into which said discharge pipe leads, means for heating the contents of said tank, and a condenser in communication with the said receiving-tank, and with the vaporizer.

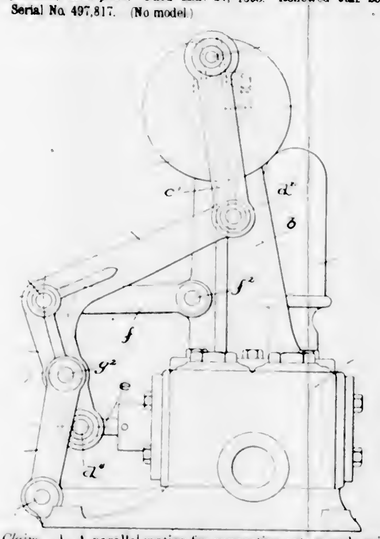
2. An apparatus for recovering residual substances from casks and other receptacles, comprising in its construction a vaporizing tank, a steam-pipe extending therethrough, a pipe adapted to communicate with the casks, a valved connection between said pipe and the vaporizing tank, a valved connection between said pipe and the steam-pipe, a discharge-pipe adapted to communicate with said casks, a receiving tank into which said discharge pipe leads, a heater for said tank, and a condenser in communication with the said receiving tank and with the vaporizing tank.

3. An apparatus for recovering residual substances from casks and other receptacles comprising in its construction a vaporizing tank, a steam-pipe extending therethrough, a vapor conducting pipe adapted to communicate with the casks, a valved connection between said pipe and the vaporizing tank, a valved connection between said pipe and the steam pipe, a discharge-pipe adapted to communicate with said casks, a receiving tank into which said discharge pipe leads, a heater for said tank, a condenser and valved pipe connecting the receiving tank and said condenser, a valved connection between said pipe and

the vapor pipe which communicates with the casks, and a pipe connecting the condenser with the vaporizing tank.



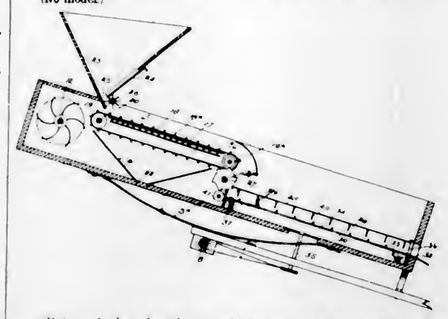
529,339. PARALLEL MOTION. FLORENTINE L. STONE, Brockton, Mass., assignor of two-thirds to the Bouvé, Crawford & Company Corporation, same place. Filed Mar. 27, 1893. Renewed Jan. 23, 1894. Serial No. 497,817. (No model.)



*Claim.*—1. A parallel motion for connecting rotary and reciprocating machine elements, the same comprising a pitman connected with the rotary elements, a bell-crank lever connecting said pitman with the reciprocating element, a link pivoted to a stationary support, and to the bell-crank lever at the junction of its arms, and a link pivoted to a stationary support and to one arm of the bell-crank lever.

2. A parallel motion for connecting rotary and reciprocating machine elements, the same comprising a pitman connected with the rotary elements, a bell-crank lever having a long arm pivoted to the said pitman and a short arm pivoted to the reciprocating element, a link pivoted to a stationary support and to the bell-crank lever at the junction of its two arms, and a link pivoted to a stationary support and to the short arm of the bell-crank lever.

529,340. DRY PLACER MACHINE. HENRY W. WATSON and MINNIE WATSON, Denver, Colo. Filed May 21, 1894. Serial No. 511,911. (No model.)



*Claim.*—1. In a dry placer and concentrating machine, the combination of the movable endless apron, the air blast, the magnetic plate, means for imparting a vibratory movement to the apron in addition to the separating movement, a screen located below the apron and having depending riffles, a pan located below the screen and having upwardly projecting riffles and a porous bottom, and an air blast located in suitable proximity to the bottom of the pan, substantially as described.

2. In a dry placer and concentrating machine, the combination with the screen having a varying mesh and depending riffles, a vibrating pan located below the screen having a porous bottom and upwardly projecting riffles, and an air blast located below the bottom of the pan, as and for the purpose set forth.

3. In a dry placer and concentrating machine, the combination of the separating pan having a screen provided with depending riffles supported above the bottom of the pan, said bottom being composed of cloth or fibrous material attached to a suitable support and provided with upwardly projecting riffles, and air blast mechanism so located that the induced current shall pass upward and engage the bottom of the pan, substantially as described.

4. In a dry placer and concentrating machine, the combination with the framework, of the axle journaled therein, the wheels made fast thereon, one wheel being provided with pulleys, a movable endless apron supported on rollers, one of which is provided with a pulley, a magnetic plate surrounded by the movable apron, one side of which passes sufficiently close to the plate to allow the magnetism to act through the apron, a shaft carrying suitable air blast mechanism so located that the current engages the top of the apron and moves in a direction opposite to that of the apron's movement, and means for connecting the pulleys on the wheel with other pulleys on the air blast shaft and the apron roller, substantially as described.

5. In a dry placer machine, the combination with the framework, of a movable endless apron provided with projections, air blast mechanism located in suitable proximity to the apron and so arranged that the air current strikes the upper side of the apron and moves in a direction opposite the apron's movement, the magnetic plate located in suitable proximity to the upper side of the moving apron, and means for discharging the material to be treated upon the upper side of the apron, substantially as described.

6. In a dry placer machine, the combination with the framework, of the endless apron having projections, air blast mechanism located in suitable proximity to the apron and so arranged that the induced air current takes a direction opposite that of the apron's movement and strikes the upper surface of the apron, and suitable means for discharging the material to be treated upon the upper side of the apron, substantially as described.

7. In a dry placer machine, the combination with the frame, of the axle journaled therein, the wheels engaging the axle, means for raising and supporting the frame so that the wheels clear the ground, means for securing the wheels on the axle whereby they rotate therewith, said means consisting of washers engaging the threaded extremities of the axle and nuts screwed tightly thereagainst, a hand crank applied to one of the wheels, pulleys formed on one of the wheels, suitable separating mechanism mounted upon the frame, and means for connecting the pulleys on the wheel with other pulleys on the operating shafts of the separating mechanism, substantially as described.

529,341. ICE-MACHINE. WILLIAM L. CHURCH, Newton, and SIDNEY A. REEVE, Boston, Mass., assignors to the Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Filed Jan. 17, 1894. Serial No. 497,126. (No model.)

*Claim.*—1. An artificial ice-making apparatus comprising a tank



for the water to be frozen and ice-shaping surfaces in said tank, composed in part of a conducting metal exposed to the action of a refrigerating agent and in part of a waterproof material of low conductivity to which ice does not adhere, said material presenting to the water a non conducting surface which is non-adhesive to ice and gives form to portions of the cake without adhering thereto.



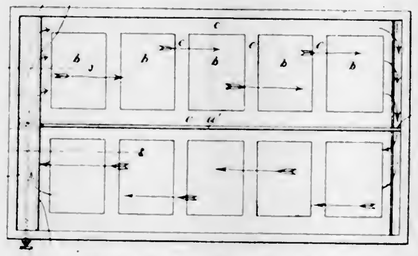
2. An artificial ice making apparatus comprising a tank for the water to be frozen, and ice-shaping surfaces in said tank composed in part of a conducting metal exposed to the action of a refrigerating agent and in part of a water-proof material of low conductivity, said material extending from the acting surface of the bed beyond the limit to which ice formed on the bed extends, whereby the ice is prevented from coming in contact with surfaces to which it is adhesive.

3. An artificial ice making apparatus comprising a tank for the water to be frozen, a horizontal ice-forming or generating bed at the bottom of said tank, and a mass of non-conducting and waterproof material in which the freezing bed is embedded, said material being non-adhesive to ice and covering the bottom and edges but not the top of the freezing bed.

4. A shaping bed or plate for artificial ice making, comprising a main or central section of conducting metal exposed to the action of a refrigerating agent, an outer section or area of conducting metal exposed to contact with the unfrozen water, and an intermediate section of non-conducting material to which ice does not adhere, said intermediate section insulating the outer section from the said main section and from the refrigerating agent.

5. An ice shaping bed or plate composed of a series of tubes or conduits of conducting metal adapted to contain a refrigerating agent, and intermediate fillings of non conducting material to which ice does not adhere, said fillings preventing the locking of the ice around the tubes, and co-operating with the exposed surfaces of the conduits in shaping one side of a cake of ice which is generated upon said conduits.

529,342. ICE-MAKING APPARATUS. WILLIAM L. CHURCH, Newton, and SIDNEY A. REEVE, Boston, Mass., assignors to the Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Filed Jan. 30, 1894. Serial No. 498,427. (No model.)



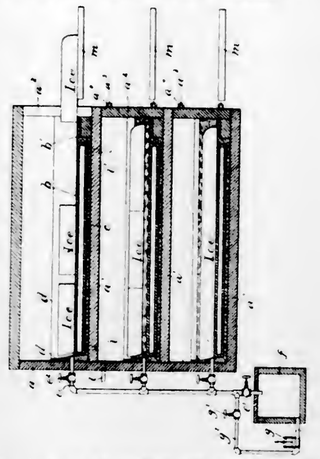
*Claim.*—1. An ice making tank having a water space the bottom of which is composed of a series of ice forming or generating beds and bed-separating ice-limiting strips or sections substantially flush with the beds, said sections limiting the horizontal extension of ice from the beds, so that a series of independent cakes or a continuous cake having grooves in its top surface may be formed on the bottom of the tank.

2. An ice making tank having a water space, the bottom of which is composed of a series of ice forming or generating beds and bed-surrounding ice-limiting sections substantially flush with said beds, combined with means for moving or circulating water in said tank, substantially as and for the purposes specified.

3. An ice making tank having a water space centrally divided into two compartments communicating with each other at the ends of the tank, the bottom of each compartment being composed of a series of ice forming or generating beds and bed-surrounding ice-limiting sections, combined with a propeller located in a transverse passage at one end of the tank and adapted to circulate the water in the tank, as set forth.

4. An ice making tank having at one end a passage or casing containing a water circulating device, said casing communicating with the tank through openings close to the bottom of the tank.

529,343. ICE-MAKING APPARATUS. WILLIAM L. CHURCH, Newton, and SIDNEY A. REEVE, Boston, Mass., assignors to the Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Filed Jan. 30, 1894. Serial No. 498,448. (No model.)

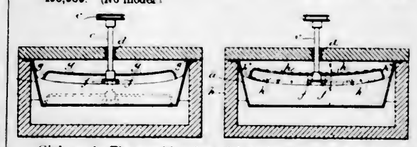


*Claim.*—1. An ice making apparatus comprising a sweet-water tank or receptacle having a removable end section, a freezing bed at the bottom of said section and a non-conducting limiting bed which is nonadhesive to ice interposed between the freezing bed and the removable end section, whereby the extension of the ice to the end section is prevented.

2. An ice making apparatus comprising a tank having a freezing bed at its bottom, approximately vertical walls of non conducting material, which is nonadhesive to ice extending along three sides of the freezing bed, a removable end section completing an inclosure around the freezing bed, and a substantially horizontal ice limiting bed interposed between said end section and the freezing bed, whereby the extension of the ice to the end section is prevented.

3. An ice making apparatus comprising a sweet water tank having a removable end section, a freezing bed, and a water outlet pipe, a water receiver communicating with the said outlet pipe and located below the tank, and a pump connected with the said receiver and with the tank, whereby water may be returned from the receiver to the tank.

529,344. APPARATUS FOR MAKING ICE. WILLIAM L. CHURCH, Newton, Mass., assignor to the Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Filed Dec. 18, 1893. Serial No. 493,989. (No model.)



*Claim.*—1. The combination with an ice-forming pan, and means below the pan for freezing water therein wholly or mainly from the bottom of the pan, of a rotary brushing or water-circulating device having a substantially vertical axis of rotation and extended laterally from said axis over the bottom of the pan, said device being vertically displaceable by the accumulation of ice.

2. The combination with an ice-forming pan, and means below the pan for freezing water therein wholly or mainly from the bottom of the pan, of a vertically-movable rotary shaft having arms or wings adapted to move through the water in the pan, said shaft and its wings being vertically displaceable by the ice forming in the pan.

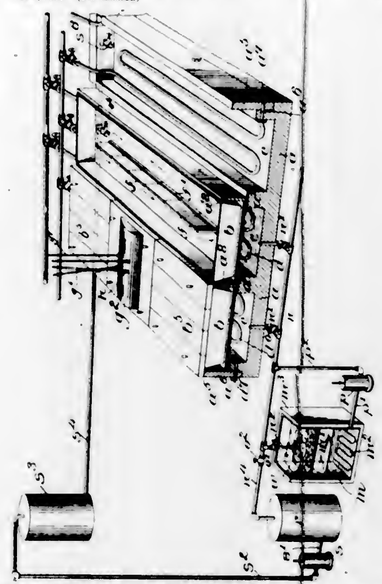
3. The combination with an ice-forming pan, of a vertically-movable rotary shaft, having flexible blades or wings adapted to move over and conform to the surface of an accumulation of ice in said pan.

4. The combination with an ice-forming pan, and means below the pan for freezing water therein wholly or mainly from the bottom of the pan, of a rotary water-circulating device having runners adapted to be moved over the forming surface of the ice by the rotation of the said device, and also to be raised by the ice.

5. The combination with an ice-forming pan, and means below the

pan for freezing water therein wholly or mainly from the bottom of the pan, of a vertically-movable rotary shaft having runners formed to bear on and rise with an accumulation of ice in said pan, and blades or wings adapted to move the water in said pan.

529,345. APPARATUS FOR MAKING ICE. WILLIAM L. CHURCH, Newton, Mass., assignor to the Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Filed Jan. 23, 1894. Serial No. 497,765. (No model.)



*Claim.*—1. An ice machine, comprising in its construction a substantially horizontal water-supporting bed, water confining sides or walls having a water tight connection with said bed but insulated therefrom against the conduction of heat, and means for applying a freezing agent to the bottom only of said bed and thereby freezing from the bottom upwardly, the insulation preventing the ice from forming more rapidly along the side walls than elsewhere, and thereby keeping the top surface of the cake substantially parallel with the bed.

2. In an ice machine, the combination of a tank, a water-supporting bed separated from the bottom of the tank by a space, water confining walls above said bed separated from said space and insulated from the bed, and means for introducing a refrigerating agent into said space, as set forth.

3. In an ice machine, the combination of a brine tank, an insulated brine holder having a perforated partition supporting a mass of salt, and means for transferring brine from the tank to the holder and back from the holder to the tank.

4. An ice forming pan provided with a partition partially subdividing it along its longitudinal center and forming a continuous water way or course, and with a water impelling device adapted to cause a movement of the water along said course during the freezing operation.

5. An ice forming pan having a removable partition forming a continuous water way or course, and a water impelling device adapted to cause a movement of the water along said course, the partition being removable from the pan with the cake of ice.

6. An ice forming pan having a removable partition composed of independent sections collectively forming a continuous water way or course, and a water impelling device adapted to cause a movement of the water along said course, the sections of the partition permitting the subdivision of the cake of ice into smaller cakes containing the sections.

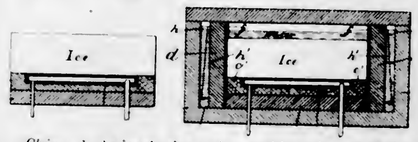
7. The combination of an ice-forming pan, a removable top piece or cover thereon, and a water-impelling wheel journaled in bearings in said cover.

8. The combination of an ice-forming pan, a removable top piece or cover thereon, two independent water impelling wheels journaled in bearings in said cover, and means for rotating said wheels simultaneously in opposite directions.

9. The combination of an ice-forming pan, a removable top-piece or cover, a rotary water-impelling device journaled in said cover and provided with a pulley, a driving belt engaged with said pulley and passing through orifices in said cover, and flexible packing bushings surrounding said orifices and adapted to exclude air from the pan and to prevent scattering of water.

10. In an ice machine the combination of a tank having walls or supports such as *a'*, ice-forming pans resting on said walls, removable side pieces adapted to cover the outer sides of the pans, and covers co-operating with the side pieces in excluding outside air from the said sides, the removability of the side pieces enabling the sides of the tanks to be exposed as set forth.

529,346. ICE-MAKING APPARATUS. WILLIAM L. CHURCH, Newton, Mass., assignor to the Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Filed Jan. 30, 1894. Serial No. 498,429. (No model.)




*Claim.*—1. An ice-shaping tank comprising a bottom section or base, a freezing bed or plate attached thereto, and adapted to contain an artificial refrigerating agent, and rigid or self-supporting side sections provided with non-conducting, waterproof inner surfaces which are non adhesive to ice and shape the vertical sides of the cake without adhering thereto, so that the side sections may readily cleave from a cake of ice, one or more of said side sections being separable from the base.

2. An ice-shaping tank comprising a bottom section or base, a freezing bed or plate and adapted to contain an artificial refrigerating agent attached thereto, and rigid or self-supporting side sections detachably connected to said base, the said sections being provided with packings which maintain substantially water-tight joints when the sections are assembled, said sections being made of a non-conducting, waterproof material which is non-adhesive to ice, and cleaves readily from the ice when the sections are disconnected.

3. A sectional ice-shaping tank comprising a bottom section or base, a freezing bed or plate attached thereto, and adapted to contain an artificial refrigerating agent, one or more rigid or self-supporting side sections separable from said base and made of non-conducting, waterproof material which is non-adhesive to ice, compressible packings at the joints of said sections, and means for detachably connecting said sections and compressing said packings.

4. A sectional ice-shaping tank comprising a bottom section or base having a freezing bed or plate adapted to contain an artificial refrigerating agent, and an ice-limiting border which is non-adhesive to ice surrounding said bed, and rigid or self-supporting side sections detachably secured to said base and made of non-conducting, waterproof material which is also non-adhesive to ice, said side sections joining the said border around the bed.

5. A sectional ice-shaping tank composed of a bottom section having a freezing bed adapted to contain an artificial refrigerating agent, and rigid or self supporting side sections made of non-conducting, waterproof material which is non-adhesive to ice, said sections being separable, combined with a water-tight inclosing tank surrounding said sectional tank.

6. A sectional ice-shaping tank comprising a bottom section having a freezing bed adapted to contain an artificial refrigerating agent, rigid or self supporting side sections separable from the base and made of non conducting, waterproof material which is non-adhesive to ice, and removable partitions which are also made of non-conducting and waterproof material which is non-adhesive to ice, and are formed to sub-divide the tank.

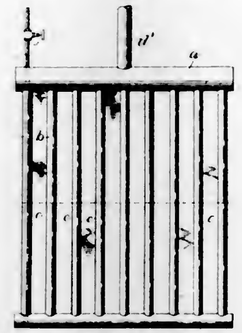
7. An ice-shaping tank combined with a rigid or self-supporting removable partition made of non-conducting, waterproof material which is non-adhesive to ice and is formed to subdivide the tank.

529,347. ICE-MAKING APPARATUS. WILLIAM L. CHURCH, Newton, Mass., assignor to the Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Filed Jan. 30, 1894. Serial No. 498,430. (No model.)

*Claim.*—1. A freezing plate comprising two headers constituting opposite ends of the plate, a series of tubes rigidly attached at their ends to said headers, and filling pieces between said tubes composed of a material or mixture of low conductivity, to which ice does not adhere, said filling pieces presenting ice limiting surfaces which are non-adhesive to ice, between the generating surfaces of the tubes.

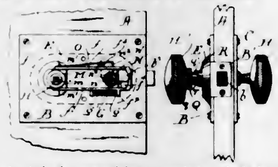


2. A freezing plate comprising two headers constituting opposite ends of the plate, a series of tubes rigidly attached at their ends to said headers, and filling pieces between said tubes composed of a fibrous material treated with a non-conducting substance which is non-adhesive to ice, such as paraffine, compressed and molded into blocks.



3. A freezing plate comprising a substantially horizontal liquid equalizing header constituting the lower end of the plate, a substantially horizontal gas receiving header constituting the upper end of the plate, a series of substantially vertical tubes attached at their ends to said headers, a liquid supply pipe entering the gas receiving header at the upper edge of the plate, and passing through one of said tubes to the equalizing header at the lower portion of the plate, and a gas outlet pipe communicating with the gas receiving header.

529,348. LOCK. CHARLES H. LA BELLE, Salt Lake City, Utah. Filed May 24, 1894. Serial No. 512,334. (No model.)



*Claim.*—1. A lock comprising a casing, a bolt having a frame comprising a front and sides, a dog pivoted between said sides to lie against the front of the frame and thus secure the bolt against movement, a shoulder upon said frame with which the dog is adapted to engage to move the bolt, and means for turning said dog upon its pivot; substantially as described.

2. A lock comprising a casing, a bolt having a frame comprising a front and sides, a dog pivoted between said sides to lie against the front of the frame and thus secure the bolt against movement, a spring normally holding said dog in this securing position, a shoulder upon said frame with which the dog is adapted to engage to move the bolt, and means for turning said dog upon its pivot; substantially as described.

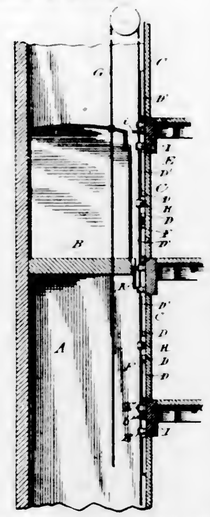
# REISSUES.

11,452. SAFETY DEVICE FOR ELEVATORS. WELLINGTON P. KIDDER, Boston, Mass. Filed Oct. 20, 1894. Serial No. 526,523. Original No. 525,420, dated Sept. 4, 1894.

*Claim.*—1. The combination in an elevator and with the car and the controller thereof, of stops connected to and moving with said controller, and sliding doors closing the entrance to the well, provided with vertical stops constructed to engage with the stops on the controller for the major part of the length of said doors, said stops having a substantially central opening between them to allow the door stops to pass the controller stop, as set forth.

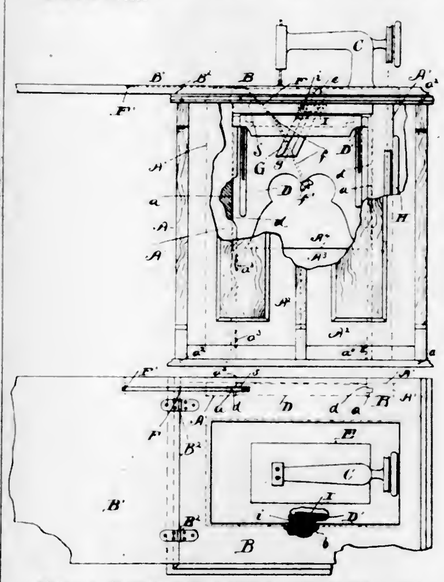
2. The combination in an elevator and with the car and the controller thereof, of a stop connected to and moving with said controller, and a sliding door closing the entrance to the well and provided with a horizontal stop engaging with the stop on the controller to prevent the full motion of the same when said door is open, substantially as described.

3. The combination in an elevator and with the car and the controller thereof, of a stop connected to and moving with said controller, and a sliding door closing the entrance to the well provided with a vertical stop engaging with the stop on the controller and constructed and arranged to prevent the opening of the door when the car is in motion, substantially as described.



4. The combination in an elevator and with the car and the controller thereof, of a stop mounted on said controller, a sliding door closing the entrance to the well, the vertical stops D and the horizontal stops D', both vertical and horizontal stops being secured to the door, substantially as shown and described.

11,453. SEWING-MACHINE TABLE. THEODOR KUNDTZ, Cleveland, Ohio. Filed June 20, 1894. Serial No. 515,208. Original No. 491,856, dated Feb. 14, 1893.



*Claim.*—1. In combination, a cabinet sewing machine table or cabinet having a carrier movable up and down the cabinet, a horizontally-sliding-frame borne by the carrier and designed to bear the sewing-machine-head, a stationary inclined way or guide, and a member on the aforesaid sliding frame adapted to engage said way or guide.

the arrangement of parts being such that the aforesaid sliding-frame and load shall be moved horizontally during the up-and-down movement of the aforesaid carrier, substantially as and for the purpose set forth.

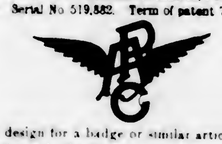
2. In combination, a cabinet sewing-machine table having a vertically reciprocating carrier, a horizontally-sliding frame mounted on the carrier, such frame bearing the head, a stationary inclined way or guide, an attachment of the frame adapted to engage such way or guide, for shifting the frame and load horizontally by means of the vertical movement of the carrier, substantially as and for the purpose set forth.

3. In combination, a sewing-machine table or cabinet having a carrier, folding leaf operatively connected with the carrier for raising and lowering the latter, a sliding frame borne by and movable endwise of the aforesaid carrier, a stationary block provided with an inclined groove, and a member on the aforesaid sliding-frame and adapted to operate in said inclined groove, the arrangement of parts being substantially as set forth.

4. In combination, a sewing-machine-table having a carrier, and folding-leaf operatively connected with the carrier, for raising and lowering the latter, a frame mounted on and movable endwise of the carrier, a pendent stationary block attached to the table and having an inclined groove, a member of the frame adapted to operate in such inclined groove, the arrangement being substantially as described.

# DESIGNS.

23,788. BADGE. CHARLES FRED DORRANCE, Portland, Oreg. Filed Aug. 9, 1894. Serial No. 519,882. Term of patent 7 years.



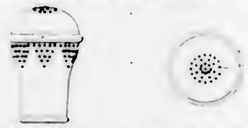
*Claim.*—The design for a badge or similar article of jewelry for personal wear as shown in the accompanying drawing.

23,789. BADGE. ISAAC BEDICHIMER, Philadelphia, Pa. Filed Oct. 11, 1894. Serial No. 525,636. Term of patent 7 years.



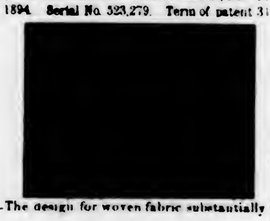
*Claim.*—The design for a badge as herein shown and described.

23,790. UMBRELLA OR CANE HEAD. ADDISON COWLING, Plainfield, N. J. Filed Oct. 15, 1894. Serial No. 525,991. Term of patent 7 years.



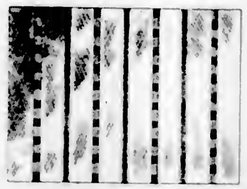
*Claim.*—The design for a cane or umbrella head or handle, substantially as shown and described.

23,791. WOVEN FABRIC. LOUIS A. MARKS, New York, N. Y. Filed Sept. 17, 1894. Serial No. 523,279. Term of patent 3½ years.



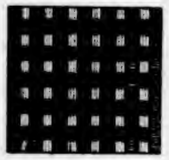
*Claim.*—The design for woven fabric substantially as shown and described.

23,792. WOVEN FABRIC. LOUIS A. MARKS, New York, N. Y. Filed Sept. 20, 1894. Serial No. 523,532. Term of patent 3½ years.



*Claim.*—The design for woven fabric substantially as shown and described.

23,793. WOVEN FABRIC. LOUIS A. MARKS, New York, N. Y. Filed Sept. 20, 1894. Serial No. 523,533. Term of patent 3½ years.



*Claim.*—The design for woven fabric, substantially as shown and described.

23,794. WOVEN FABRIC. LOUIS A. MARKS, New York, N. Y. Filed Sept. 20, 1894. Serial No. 523,536. Term of patent 3½ years.



*Claim.*—The design for woven fabric substantially as shown and described.

23,795. WOVEN FABRIC. LOUIS A. MARKS, New York, N. Y. Filed Sept. 20, 1894. Serial No. 523,534. Term of patent 3½ years.



*Claim.*—The design for a woven fabric, substantially as shown and described.

23,796. WOVEN FABRIC. LOUIS A. MARKS, New York, N. Y. Filed Sept. 20, 1894. Serial No. 523,535. Term of patent 3½ years.



*Claim.*—The design for woven fabric substantially as shown and described.

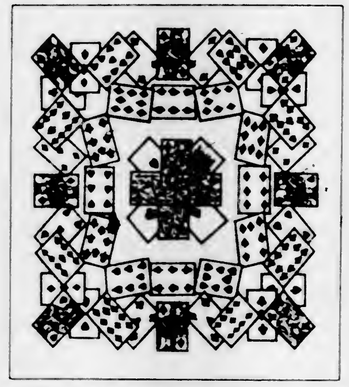


23,797. WOVEN FABRIC. LOUIS A. MARKS, New York, N. Y. Filed Sept. 17, 1894. Serial No. 523,278. Term of patent 3½ years.



*Claim.*—The design for woven fabric substantially as shown and described.

23,798. HANDKERCHIEF. THOMAS B. PODBURY, Hyde Park, Mass. Filed Mar. 30, 1894. Serial No. 505,775. Term of patent 3½ years.



*Claim.*—The design for handkerchiefs and the like herein shown and described.

23,799. JUNCTION-PLATE. CHARLES W. STIMSON, New York, N. Y. Filed Sept. 20, 1894. Serial No. 523,647. Term of patent 14 years.



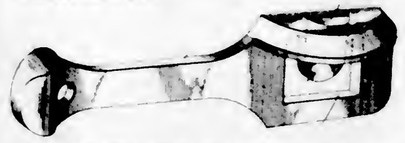
*Claim.*—The design for a junction plate herein shown and described.

23,800. METALLIC PATTERN-STRIP. FREDERIC L. THOMPSON, New Bedford, Mass., assignor to the Fairpoint Manufacturing Company, same place. Filed Jan. 18, 1893. Serial No. 458,867. Term of patent 7 years.



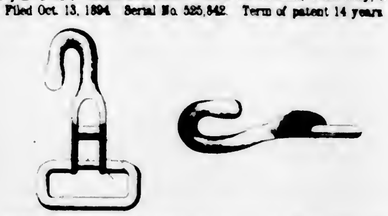
*Claim.*—The design for a metallic pattern-strip herein shown and described.

23,801. SEAL-LOCK HASP. DAVID D. HOLLEY, Wilson, assignor to Benjamin H. Tyson, Raleigh, N. C. Filed Oct. 4, 1894. Serial No. 524,926. Term of patent 14 years.



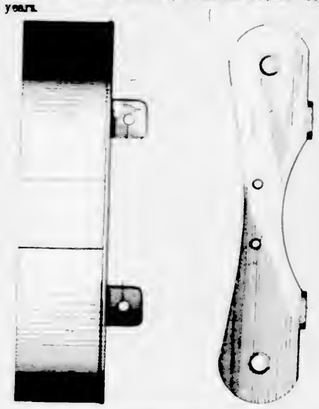
*Claim.*—The design for seal lock hasps substantially as herein shown and described.

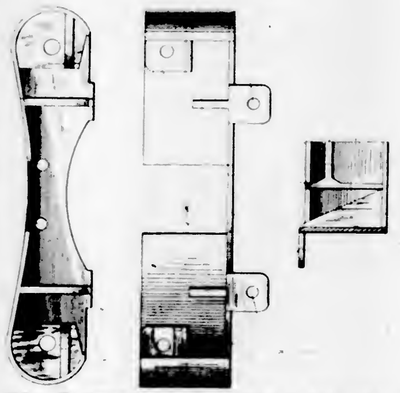
23,802. HARNESS-HOOK. JAMES C. COVERT, West Troy, N. Y. Filed Oct. 13, 1894. Serial No. 525,842. Term of patent 14 years.



*Claim.*—The design for a hook substantially as shown and described.

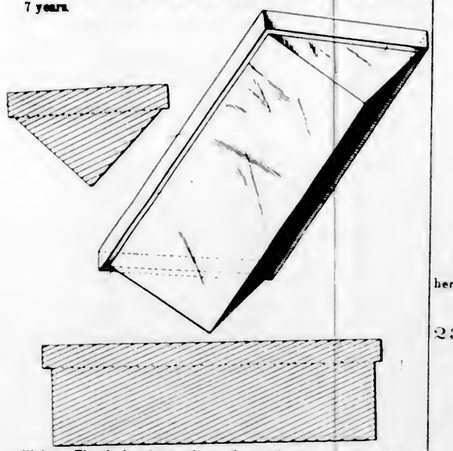
23,803. SEAT END FOR CAR-SEATS. GEORGE MARTIN BRILL, Philadelphia, Pa. Filed Oct. 9, 1894. Serial No. 525,432. Term of patent 14 years.





*Claim.*—The design for a seat end for car seats, substantially as herein shown and described.

23,804. PRISM-REFLECTOR FOR AREA-GRATINGS. GEO. EVANS, Detroit, Mich. Filed July 20, 1894. Serial No. 518,491. Term of patent 7 years.



*Claim.*—The design for a prism reflector for area gratings shown and described.

23,805. WASHBOWL AND SLAB. JOHN H. GAVIN, Chicago, Ill., assignor to the L. Wolff Manufacturing Company, same place. Filed Sept. 4, 1894. Serial No. 522,138. Term of patent 14 years.



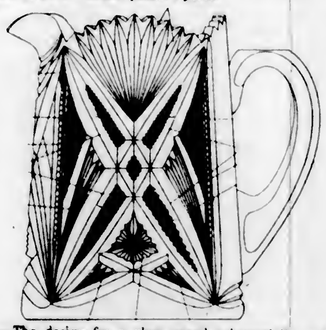
*Claim.*—The design for a wash bowl and slab herein shown and described.

23,806. WASHBOWL AND SLAB. JOHN H. GAVIN, Chicago, Ill., assignor to the L. Wolff Manufacturing Company, same place. Filed Sept. 4, 1894. Serial No. 522,140. Term of patent 14 years.



*Claim.*—The design for a wash bowl and slab herein shown and described.

23,807. GLASS VESSEL. JAMES J. O'CONNOR, White Mills, Pa., assignor to C. Dorflinger & Sons, same place. Filed Sept. 13, 1894. Serial No. 522,946. Term of patent 7 years.



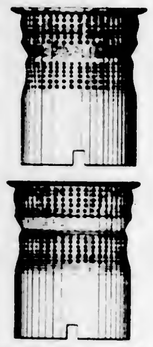
*Claim.*—The design for a glass vessel, substantially as herein shown and described.

23,808. SHADE FOR LAMPS OR LAMP-STOVES. WILLIAM H. WILDER, Northampton, Mass. Filed Sept. 12, 1894. Serial No. 522,850. Term of patent 14 years.



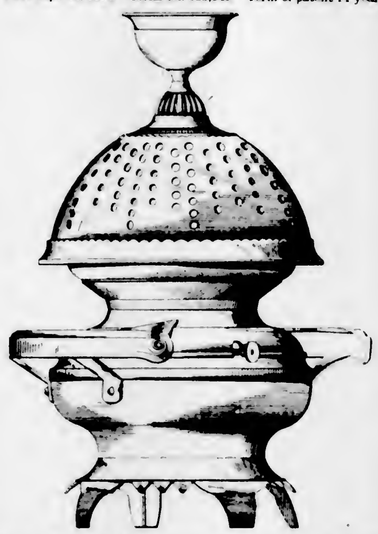
*Claim.*—The design for a shade or cover for lamps or lamp-stoves herein shown and described.

23,809. FLAME-SPREADER FOR LAMPS. HIRAM W. HAYDEN, Waterbury, Conn., assignor to the Holmes, Booth & Haydens, same place. Filed Dec. 21, 1892. Serial No. 455,946. Term of patent 7 years.



*Claim.*—The design for a thimble or flame spreader for lamps substantially as shown and described.

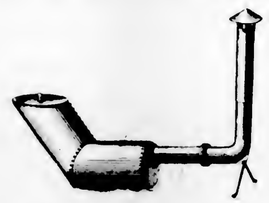
23,810. LAMP-STOVE. WILLIAM H. WILDER, Northampton, Mass. Filed Sept. 12, 1894. Serial No. 522,849. Term of patent 14 years.



*Claim.*—The design for a lamp stove herein shown and described.

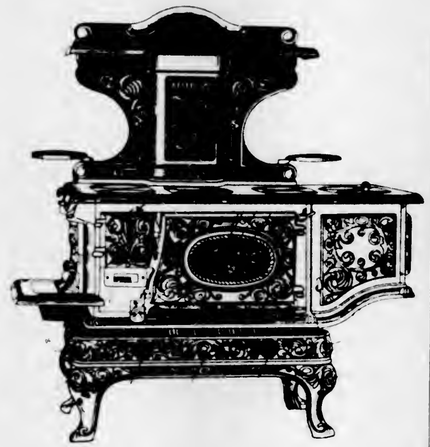


23,811. TANK HEATING-STOVE. HENRY L. FERRIS, Harvard, Ill. Filed June 21, 1894. Serial No. 515,312. Term of patent 7 years.



*Claim.*—The design for a tank heating stove herein shown and described.

23,812. COOKING STOVE OR RANGE. GEORGE E. WILBUR, Taunton, Mass., assignor to the Weir Stove Company, same place. Filed June 22, 1893. Serial No. 478,517. Term of patent 14 years.



*Claim.*—1. In a design for a stove, the design for the stove leg, as herein shown and described.

2. In a design for a stove, the design for the stove base, as herein shown and described.

3. In a design for a stove, the design for the oven door, as herein shown and described.

4. In a design for a stove, the design for a name plate, as herein shown and described.

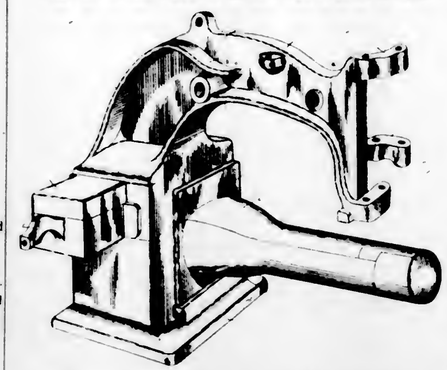
5. In a stove, the design for the front plate of a water heater, as herein shown and described.

6. In a stove, the design for the central panel of a back plate or bracket, as herein shown and described.

7. In a stove the design for a support for the elevated shelf as herein shown and described.

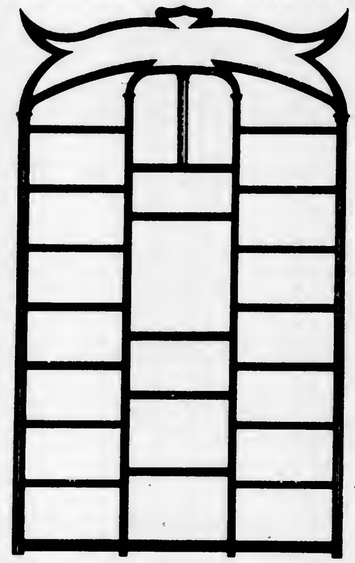
8. The design for a stove, as herein shown and described.

23,813. SEWING-MACHINE FRAME. LORENZ MUTHER, Oak Park, RUSSEL G. WOODWARD, Waukegan, and ELIAS C. HOLLAND, Austin, assignors to The Union Special Sewing Machine Company, Chicago, Ill. Filed July 12, 1894. Serial No. 517,364. Term of patent 14 years.



*Claim.*—The design for a sewing machine frame substantially as shown and described.

23,814. DISPLAY-BOARD. JAMES H. DEXTER, Boston, Mo. Filed Sept. 25, 1894. Serial No. 524,111. Term of patent 7 years.



*Claim.*—The design for a display board, substantially as herein shown and described.

# TRADE-MARKS

## REGISTERED NOVEMBER 13, 1894.

25,482. CORSETS AND CORSET-CLASPS. EMIL SCHWEISBURG, New York, N. Y. Filed Oct. 18, 1894.

ZZ

*Essential feature.*—The capital letters "Z Z" Used since February 1, 1887.

25,483. SILK THREADS. THE NEW LONDON WASH SILK COMPANY, New London, Conn. Filed Oct. 1, 1894.



*Essential feature.*—A representation of the flower fleur-de-lis. Used since March 15, 1894.

25,484. VELVETS, RIBBONS, AND BLACK-VELVET RIBBONS. E. S. JAFFRAY & Co., New York, N. Y. Filed Oct. 10, 1894.

AC

*Essential feature.*—The letters "AC." Used since September 15, 1884.

25,485. CHILDREN'S CLOTHING OTHER THAN SHIRT-WAISTS AND UNDER-CLOTHING. BENJAMIN M. HOLSMAN, New York, N. Y. Filed Sept. 11, 1894.

THE MRS HOPKIN'S STAR

*Essential feature.*—The words "MRS. HOPKIN'S STAR." Used since December 3, 1893.

25,486. FELT FOOTWEAR. WILBUR H. DAVIS & Co., Boston, Mass. Filed Aug. 2, 1894.

GOLDEN FLEECE

*Essential feature.*—The words "GOLDEN FLEECE." Used since June 1, 1894.

25,487. RUBBER BOOTS, SHOES, COATS, AND OTHER CLOTHING OF RUBBER OR RUBBER COMPOUNDS. LAMBERTVILLE RUBBER COMPANY, Lambertville, N. J. Filed Oct. 18, 1894.

SNAG

*Essential feature.*—The word "SNAG." Used since December 16, 1886.

25,488. RUBBER BOOTS, SHOES, COATS, AND OTHER CLOTHING OF RUBBER OR RUBBER COMPOUNDS. LAMBERTVILLE RUBBER COMPANY, Lambertville, N. J. Filed Oct. 18, 1894.

SNAGS

*Essential feature.*—The word "SNAGS." Used since December 16, 1886.

25,489. MECHANICAL RUBBER GOODS. REVERE RUBBER COMPANY, Boston, Mass. Filed Oct. 11, 1894.



*Essential feature.*—The representation of a man upon horseback. Used since September, 1894.

25,490. MECHANICAL RUBBER GOODS. REVERE RUBBER COMPANY, Boston, Mass. Filed Oct. 11, 1894.

BEACON

*Essential feature.*—The word "BEACON." Used since February, 1892.

25,491. FLOOR OIL-CLOTHS. THE MACDONALD-HAGELE MANUFACTURING COMPANY, Vineland, N. J. Filed Oct. 15, 1894.

LEAVOLEUM.

*Essential feature.*—The word "LEAVOLEUM." Used since October, 12, 1894.



25,492. FLOOR OIL-CLOTHS. THE MACDONALD-HAGELE MANUFACTURING COMPANY, Vineland, N. J. Filed Oct. 15, 1894.

LEAFOLEUM.

*Essential feature.*—The word "LEAFOLEUM." Used since October 12, 1894.

25,493. OINTMENTS. DR. KILMER & Co., Binghamton, N. Y. Filed Oct. 10, 1894.

U.&O

*Essential feature.*—The letters and character "U. & O." Used since July 20, 1881.

25,494. CERTAIN NAMED REMEDIES. DR. KILMER & Co., Binghamton, N. Y. Filed Oct. 10, 1894.

S. Andral Kilmer M.D.

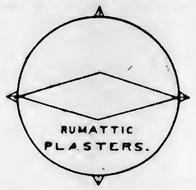
*Essential feature.*—The fac-simile signature "S. ANDRAL KILMER, M. D." Used since July 20, 1881.

25,495. DRY POWDERED SOAP. G. J. MOULTON & COMPANY, LIMITED, Macclesfield, England. Filed June 19, 1894.

MUSK PARAFFIN

*Essential feature.*—The representation of a barrel supporting a musk plant, and the words "MUSK PARAFFIN." Used since March, 1889.

25,496. MEDICINAL PLASTERS FOR RHEUMATISM. CORNELIUS DEEPHOUSE, Le Mars, Iowa. Filed July 23, 1894.




*Essential feature.*—A symbol comprising a circle with a diamond therein and the words "RUMATTIC PLASTERS." Used since January 8, 1894.

25,497. CHEMICALS. BIDTEL CHEMICAL WORKS, Milwaukee, Wis. Filed Aug. 4, 1894.



*Essential feature.*—A pictorial sectional representation of an autoclave comprising essentially an outline of a digesting vessel with a flanged top provided with vertical tubes and a steam-gage. Used since March 1, 1894.

25,498. PREPARED COLORS. A. SARTORIUS & Co., New York, N. Y. Filed Oct. 12, 1894.

OLEO

*Essential feature.*—The word "OLEO." Used since May 19, 1894.

25,499. DRESSING FOR RUSSET LEATHER. JAS. S. MASON COMPANY, Philadelphia, Pa. Filed Oct. 17, 1894.




*Essential feature.*—The words "MASON'S CHALLENGE RUSSET POLISH" arranged on a scroll forming nearly a circle, and around a round panel bearing a picture. Used since June 1, 1894.

25,500. COSMETICS, HAIR-OILS, AND PERFUMES. WINKELMANN & BROWN DRUG COMPANY, Baltimore, Md. Filed Aug. 17, 1894.



*Essential feature.*—The representation of a bee with outspread wings, and the end of a fluttering ribbon flying from each side, one wing bearing "W" and the other "H." Used since May, 1883.

25,501. LOZENGES OR TABLETS FOR DYSPEPSIA AND DISORDERS OF DIGESTION. FRANK ALFRED STUART, Marshall, Mich. Filed Aug. 8, 1894.

F. A. Stuart

*Essential feature.*—The fac simile signature "F. A. STUART." Used since December, 1891.

25,502. CERTAIN NAMED MEDICINES. RED SEAL REMEDY COMPANY, Rockland, Me. Filed Aug. 24, 1894.



*Essential feature.*—The representation of a red seal. Used since September 15, 1893.

25,503. COUGH DROPS. WALTER E. HAMBLIN, Manchester, N. H. Filed Sept. 29, 1894.

L.M.

*Essential feature.*—The letters "L. M." Used since December 10, 1893.

25,504. CERTAIN NAMED MEDICINE. HANNAH M. DEER, Jersey City, N. J. Filed Oct. 13, 1894.



*Essential feature.*—A portrait of Madam Deer. Used since August 1, 1894.

25,505. CERTAIN NAMED TOILET PREPARATIONS AND ARTICLES. LAKELL, DALLEY & COMPANY, New York, N. Y. Filed Oct. 18, 1894.

Coronaria

*Essential feature.*—The word "CORONARIA." Used since October 1, 1894.

25,506. POLISH FOR STOVES AND LIKE ARTICLES. J. L. PRESCOTT & Co., North Berwick, Me., and New York, N. Y. Filed Oct. 19, 1894.

DAZZLE

*Essential feature.*—The word "DAZZLE." Used since July 1, 1894.

25,507. CUTLERY AND EDGE-TOOLS. THOMAS ELLIN & Co., Sheffield, England. Filed Oct. 17, 1894.




*Essential feature.*—The representation of a cutter and the word "CUTTER." Used since 1850

25,508. CERTAIN NAMED METAL ARTICLES. THOMAS CARLYLE and JOHN MARK CARLYLE, Birmingham, England. Filed Oct. 17, 1894.



*Essential feature.*—A representation of two crossed swords. Used since 1893.

25,509. CUTLERY AND EDGE-TOOLS. THOMAS ELLIN & Co., Sheffield, England. Filed Oct. 17, 1894

VULCAN.

*Essential feature.*—The word "VULCAN." Used since 1846.

25,510. BASE-BALL BATS. J. F. HILLERICH & SON, Louisville, Ky. Filed Oct. 12, 1894.

SLUGGER

*Essential feature.*—The word "SLUGGER." Used since November 1, 1893.

25,511. CRUSHED MICA SCHIST FOR FOOD FOR POULTRY AND BIRDS. JOHN A. WHITE, Concord, N. H. Filed Sept. 11, 1894.

MICA-CRYSTAL GRIT

*Essential feature.*—The compound word "MICA-CRYSTAL" followed by the word "GRIT." Used since July 1, 1891.

25,512. DECORATIVE GLASS. TIFFANY GLASS AND DECORATING COMPANY, Jersey City, N. J., and New York, N. Y. Filed Sept. 26, 1894.

FAVRILE




*Essential feature.*—A monogram of the letters "T G D Co" and the word "FAVRILE." Used since February, 1892.

25,513. CEREAL FOOD PRODUCTS. MINKOTA MILLING COMPANY, Duluth, Minn. Filed Oct. 9, 1894.

ATHLETE

*Essential feature.*—The word "ATHLETE." Used since August 15, 1894.

25,514. CANNED MEATS, LARD, AND SUBSTITUTES FOR LARD. SHIPTON GREEN, New York, N. Y. Filed Oct. 8, 1894.

Tropical

*Essential feature.*—The word "TROPICAL." Used since May 1, 1893.

25,515. CANDIED FRUITS AND CONFECTIONERY. CRYSTAL CONFECTIONERY COMPANY, Burlington, Vt. Filed Apr. 10, 1894.



*Essential feature.*—Three "C's." Used since January 1, 1892.



25,516. WHEAT-FLOUR. DULUTH IMPERIAL MILL COMPANY, Duluth, Minn. Filed Mar. 6, 1893.

DULUTH IMPERIAL

*Essential feature.*—The words "DULUTH IMPERIAL." Used since September 20, 1889.

25,517. WHEAT-FLOUR. DAVID STOTT, Detroit, Mich. Filed Oct. 18, 1894.




*Essential feature.*—The word "COLUMBUS" and the representation of a bust of Columbus. Used since October, 1892.

25,518. WHEAT-FLOUR. KUNHARDT & Co., New York, N. Y. Filed Oct. 1, 1894.

METROPOLITAN

*Essential feature.*—The word "METROPOLITAN." Used since May, 1879.

25,519. CAKES. THE NEW YORK BISCUIT COMPANY, New York, N. Y. Filed Oct. 10, 1894

UTOPIA

*Essential feature.*—The word "UTOPIA." Used since July 1, 1884.

25,520. BREAD, CRACKERS, BISCUITS, CAKES, AND LIKE ARTICLES. WM. SCHMIDT BAKING COMPANY, Chicago, Ill. Filed Oct. 13, 1894.




*Essential feature.*—The words "OLD PURITAN" under the bust picture of a man. Used since September 22, 1894

25,521. WHEAT-FLOUR. WASHBURN, CROSBY COMPANY, Minneapolis, Minn. Filed Oct. 5, 1894.

GREEN HOOP

*Essential feature.*—The words "GREEN HOOP." Used since September 1, 1894.

25,522. ROLLED WHEAT. WILLIAM H. FRUEH, Minneapolis, Minn. Filed Oct. 17, 1894.

PETTIJOHN'S WHEAT WAFERS



*Essential feature.*—The words "PETTIJOHN'S WHEAT WAFERS" in connection with a pictorial representation of a sheaf of wheat. Used since September 1, 1894.

25,523. WHEAT-FLOUR. WHITNEY & WILSON, Rochester, N. Y. Filed Sept. 24, 1894.



*Essential feature.*—Two concentric circles with a representation of a French baker holding loaf of bread in left hand and pointing to sack of flour with the right hand. Used since April 1, 1893.

25,524. MALT COFFEE AND OTHER COFFEE SUBSTITUTES. KATHREINER'S MALZKAFFEE-FABRIKEN, MIT BESCHRÄNKTER HAFTUNG, Munich and Basel, Germany. Filed Mar. 2, 1894.

Kathreiner's
Kneipp-Malzkaffee

*Essential feature.*—The words "KATHREINER'S KNEIPP-MALZKAFFEE." Used since October 1, 1890

25,525. DRIED FRUITS. LEO ROSENSTEIN, New York, N. Y. Filed Oct. 22, 1894.

CUPID

*Essential feature.*—The word "CUPID." Used since October 18, 1894.

25,526. CARBONATED TONIC BEVERAGE. FRED GILL, Grand Rapids, Mich. Filed Aug. 9, 1894.

PO-MO-NA.

*Essential feature.*—The word "PO-MO-NA," a female head in profile, and a tinted ground in the form of a cross. Used since March 1, 1894.

25,527. CIGARS, CIGARETTES, AND SMOKING AND CHEWING TOBACCO AND SNUFF. ADOLPH GOODMAN, Pocahontas, Va. Filed Oct. 13, 1894.



*Essential feature.*—A representation of Louis Kossuth. Used since September 1, 1894.

25,528. SMOKING-TOBACCO. THE CURRIE FERTILIZER COMPANY, Louisville, Ky. Filed July 20, 1894.

OLD KENTUCK

*Essential feature.*—The words "OLD KENTUCK." Used since June 1, 1894.

25,529. WHISKIES. CARSTAIRS, MCCALL & CO., Philadelphia, Pa. Filed Oct. 5, 1894.



*Essential feature.*—The representation of a griffin standing in an erect position and holding in the left claw a sheaf of rye and in the right grasping a sword or scimeter. Used since September 24, 1894.

25,530. CIGARS. F. R. RICK MERCANTILE CIGAR COMPANY, St. Louis, Mo. Filed Oct. 18, 1894.

AIR-TIGHT

*Essential feature.*—The word "AIR-TIGHT." Used since October 1, 1894.

THE NORRIS PETERS CO. PHOTO-LITHO. WASHINGTON D.C.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court of Appeals—Second Circuit.

WESTINGHOUSE AIR BRAKE COMPANY *v.* NEW YORK AIR BRAKE COMPANY *et al.* WESTINGHOUSE *et al. v.* NEW YORK AIR BRAKE COMPANY *et al.*

*Decided October —, 1894.*

1. WESTINGHOUSE, JR.—PATENT NO. 376,847—FLUID-PRESSURE RAILROAD BRAKES—INFRINGEMENT.

Claims 1, 2, and 3 of Patent No 376,837, issued January 24, 1888, to George Westinghouse, Jr., for improvements in fluid-pressure rail-oad-brakes, which consists in actuating the emergency devices by a piston independent of and unconnected with the triple-valve piston and actuated by auxiliary-reservoir pressure, *Held* to be infringed by a device which uses two pistons, one of which is forced down by auxiliary-reservoir pressure, but does not act directly upon the emergency-valve, and claims 1 and 3, not embracing an additional-valve, as claim 2 does, are also infringed by a device in which the initially check-operating piston actuates the emergency-valve directly.

2. SAME—PATENT NO. 448,827—SAME—VOID—AS BEING FOR THE SAME INVENTION IN PATENT NO. 376,837 TO PATENTEE.

Claims 1 and 2 in Patent No. 448,827, issued March 24, 1891, to George Westinghouse, Jr., for improvements in fluid-pressure brakes, *Held* to be void, on the ground that, in view of the state of the art, there was no patentable invention in their subject-matter apart from the invention shown in Patent No. 376,837, issued to the same patentee.

3. SAME—PATENT NO. 172,064—SAME—NOT INFRINGED.

Claim 3 in Patent No. 172,064, issued February 11, 1876, to George Westinghouse, Jr., for improvements in fluid-pressure brakes, which must include a port through the center of the piston, *Held* not infringed by a combination of old elements which employs a piston with a side port.

4. SAME—PATENT NO. 222,803—ENGINEER'S VALVE—PIONEER INVENTION—INFRINGED.

Claims 2, 3, and 4 of Patent No. 222,803, issued December 23, 1879, to George Westinghouse, Jr., for improvements in engineer's valves, which provides for operating both the supply and exhaust valves by a single stem, that only one can be opened at once, that either may be opened separately and both closed simultaneously and automatically, *Held* to cover a pioneer invention and infringed by a device which accomplishes the same result, though it is specifically different from that shown in the patent.

5. PARK—BRAKE MECHANISM—INFRINGED.

Claims 1 and 2 in Patent No. 393,784, issued December 4, 1888, to Harvey S. Park, for improvements in brake mechanism, which include an emergency piston and valve, the latter being mechanically opened and closed by connection with the piston, *Held* not to be infringed by a device the piston of which does not hold the valve to its seat nor restore it to its place.

*Messrs. Kerr & Curtis, Mr. George H. Christy, Mr. Frederic H. Betts,* and *Mr. J. Snowden Bell* for the complainants.

*Mr. J. E. Maynadier, Mr. Fredk. P. Fish, Mr. Esek Cowen,* and *Mr. Edward C. James* for the defendants.

Before WALLACE, LACOMBE, and SHIPMAN, Judges.

SHIPMAN, *J.:*

The various appeals in these three cases are from decrees of the Circuit Court for the Southern District of New York upon three bills in equity for the alleged infringement of Letters Patent.

No. 4,977 was founded upon Letters Patent No. 376,837, dated January 24, 1888, and Letters Patent No. 172,064, dated February 11, 1876, each issued to George Westinghouse, Jr. The circuit court decreed that the defendants should be enjoined against their infringement of the first, second, and third claims of No. 376,837 and that the bill should be dismissed as to No. 172,064.

No. 5,315 was founded upon Letters Patent No. 448,827 to George Westinghouse, Jr., dated March 24, 1891. The circuit court decreed that the defendants should be enjoined against the infringement of the first and second claims of this patent.

No. 4,976 was founded upon Letters Patent No. 393,784, dated December 4, 1888, to Harvey S. Park, and No. 222,803, dated December 23, 1879, to George Westinghouse, Jr. The circuit court dismissed the bill as to No. 393,784 and decreed that an injunction should issue against the infringment by the defendants of the second, third, and fourth claims of No. 222,803.

The complainants and defendants have respectively appealed from the decrees which were respectively adverse to them.

These patents are for improvements in railroad-brakes by fluid-pressure, and will be better understood if they are considered in the order of their relation to each other rather than as they are grouped in the bills in equity, and therefore Nos. 376,837 and 448,827, which was originally applied for in the application which resulted in No. 376,837, naturally take precedence.

It is necessary to give the history of the development by the patentee of the automatic "quick-action" air-brake system, because the construction of the important claims of the two patents now under consideration and of the patent to Park—No. 393,784—depends to a great degree upon a knowledge of this history, which was accurately condensed by Judge Townsend as follows:

The first practical air-brake is known as the "plain brake," and is described in Patent No. 88,929, granted to George Westinghouse, Jr., April 13, 1869.

It consisted of a pump, operated by steam from the locomotive-boiler, which compressed air into a reservoir located under the locomotive-cab, which reservoir communicated by a pipe with a cock or valve in said cab called the "engineer's valve,"

which was so located as to be readily manipulated by the engineer.

From this valve a pipe extended back under the tender and was connected to a similar pipe under the entire length of the first car by a flexible hose. Each of the succeeding cars had a similar pipe similarly connected. This pipe was called the "train-pipe." From the train-pipe of each car a branch pipe communicated with the forward end of a cylinder called the "brake-cylinder." This cylinder was provided with a piston, the stem of which was connected with the brake-levers on the car. When the engineer wished to apply the brakes, he opened the engineer's valve and the compressed air from the main reservoir flowed back through the train-pipe and branch pipes into the brake-cylinder on each car, pushing the pistons backward, causing the piston stems to operate the brake-levers and force the brake-shoes against the wheels.

When he wished to release the brakes, he so shifted the valve as to shut off the flow of compressed air from the main reservoir, and to open a port or vent leading from the train-pipe to the open air. Thereupon the compressed air in the brake cylinders escaped into the open air, the pressure of the pistons was removed, and the pistons were forced forward again by means of springs, thus moving the brake shoes away from the wheels.

The validity of this patent was sustained in *Westinghouse* v. *Gardner & Ransom Air Brake Company*, (9 O. G., 538.)

The operation of this plain brake was open to certain objections. It was too slow, and was attended by danger of collision in case one part of the train became detached from the other part.

The brake next to be considered is known as the "automatic brake," which appears to have been patented by George Westinghouse, Jr., about 1872 or 1873.

It embodied the addition of an auxiliary reservoir and a triple-valve device to each car. Each reservoir was of sufficient capacity to operate its brakes once, thus to provide for automatic action in case of accident. The triple-valve device was located at the junction of connections between pipes leading to the train-pipe, the brake-cylinder, and the auxiliary reservoir. In addition to these three ports, there was a fourth port leading to the open air.

The operation of this brake was radically different from that of the "plain brake." In the former, the compressed air was stored in the main reservoir until required for the application of brakes. In the latter, the main and auxiliary reservoirs and train-pipe were always charged with compressed air at working pressure, to prevent the application of the brakes. When the engineer wished to apply the automatic brake, he shifted the engineer's valve so as to cut off the flow of compressed air from the main reservoir and open a port from the train-pipe to the open air. The effect of this was to reduce the air-pressure in the train-pipe, and cause a back-pressure from each auxiliary reservoir through the triple valve, which shifted it so as to close the port from the branch pipe to the train-pipe, and stop the escape of air from the auxiliary reservoir, to close the port leading from the brake-cylinder to the open air, and to open the port leading from the auxiliary reservoir, and connect it with the port leading to the brake-cylinder. Thereupon the compressed air in the auxiliary reservoir flowed into the brake-cylinder and applied the brakes.

It will thus be seen that, while the former system was operated by pressure from the main reservoir, the latter was operated by withdrawal of pressure. The result was automatic action in case of accidents, whereby air was caused to escape from the train-pipe, as by bursting of hose or the train breaking in two. In such cases the release of pressure operated the triple valve and automatically applied the brakes.

It is necessary here to consider "train-brake graduation" or "service-stops," as distinguished from "emergency-stops." While for the latter it may be necessary to admit to the brake-cylinder the full pressure of compressed air, say seventy or eighty pounds, yet where it is desired merely to slow up without stopping, it may be necessary to admit only, say, ten or twenty pounds, graduating the amount of flow according to the character of service desired. It is important to bear this distinction in mind, because the appliances hereafter to be considered have been so devised as to provide therefor, and that such graduation shall be under the control of the engineer.

The chief objection to this automatic brake lay in the fact that it was not capable of successful operation on long trains of freight-cars. The time consumed by the progressive operation of the brakes between the grip on the first and last car allowed of so much slack motion between them as to cause violent shocks.

This automatic brake was publicly tested near Burlington, Iowa, in 1886.

The growing importance of the subject of automatic freight graduation, the inadequacy of existing systems to protect the lives of railroad employés, and the disastrous results therefrom, had become so evident that, in 1885, the Railway Master Car Builders' Association arranged for series of experiments, known as the "Burlington trials."

The Westinghouse Company and several other companies engaged in the manufacture of brake apparatus, competed at these trials.

None of the competitors succeeded in stopping long trains of freight-cars without violent and disastrous shocks.

In 1887 the trials were renewed. There were five competing parties, including one of the leading experts for the defendants, and the complainant company. The latter then presented an improved apparatus, covered by Patent No. 360,070, granted to George Westinghouse, Jr., March 29, 1887.

The report of the committee of the Car Builders' Association shows that they considered "the field for improvement open as wide as in 1886," and concluded that air-brakes actuated by electricity were the only ones likely to be capable of successful operation on long trains of freight-cars. The improved Westinghouse apparatus, while it reduced the length of time between the application of the first and last brakes, produced greater shocks than did the automatic apparatus of the preceding year.

In this condition of affairs, George Westinghouse, Jr., set himself to work to obviate these difficulties. Upon the conclusion of the 1887 trials, he renewed his investigations and experiments, and, by certain changes and improvements in the old apparatus and the introduction of new elements, he succeeded, in the latter part of the year 1887, in constructing a quick-action automatic brake, capable of being successfully applied to a train of fifty freight-cars, and operative under all conditions of practical railway service.

On October 1, 1887, he applied for a patent for this apparatus, and, on January 24, 1888, the patent was granted. Said patent, No. 376,837, is the first of the patents in suit.

Before proceeding to consider in detail the claims of this patent, it should be stated that the following were among the requirements for the practical operation of air-brakes:

First. The regulation of the force to be applied to the brake-shoes so as to secure all necessary graduations, from the mere slackening of speed to the service-stop, and from the service-stop to the emergency-stop.

Second. The automatic operation of the brakes in case of accident.

Third. The practically simultaneous operation of the brakes on each car so that, in long trains of freight cars, shocks might be avoided.

Fourth. The control of all these operations by the engineer.

Fifth. Certainty of operation under all conditions.

The automatic-brake system constructed in general accordance with the invention described in No. 376,837 complies with all these essential conditions. It was unquestionably the first system which practically solved the problem of immediate stoppage of a long freight-train in time of danger, in connection with and supplemental to "train-brake graduation," and so promptly was its success recognized that 125,000 of this kind of brakes were bought and used by the railroad companies of this country within a period of little more than three years. It is, therefore, important to understand the nature of the improvement which created success.

The promptness with which an automatic air-brake system could be made effectual depended upon the promptness with which air-pressure in the train-pipe could be reduced and the equalization of pressure could be changed. Before the series of inventions originated by the Burlington trials this reduction had been effected in passenger-trains of ordinary length by "venting" the train-pipe or opening a port from the train-pipe to the open air, which was initiated by a turn of the engineer's valve on the locomotive. Westinghouse, in his attempt to create efficient and immediate service upon each car of a long train, enlarged the venting system, so that when the reduction of train-pipe pressure had commenced by the turn of the engineer's valve the triple valve under each car should also vent the train-pipe of that car. Each car therefore contained its own venting mechanism, and as the mechanism did its work upon its own car it hastened the work upon the car next in the rear. Westinghouse also sought to save, and did save, power by compelling the compressed air thus vented to pass into the brake-cylinder instead of into the open air; but sudden and large reduction of pressure is only to be used in a case of emergency, and therefore means for such reduction must be made supplementary to the means for the ordinary service of the brakes, so that ordinary and extraordinary use of the brakes can each be made available as necessity arises.

The method in No. 360,070 was to make the ordinary range of motion of the triple-valve piston, which was produced by a reduction of train-pipe pressure of a few pounds, do the ordinary work of "braking" a train and to make an extraordinary range of mo-





tion throughout the entire length of its capacity for travel, which was produced by a reduction of fifteen or twenty pounds, do the extraordinary work which gave to the brake the name of "quick-action." When the piston of the triple valve moved through the entire length which it could travel, the stem of the piston came in contact with the stem of the emergency-valve, opened it, which uncovered a port, and thereby the train-pipe pressure was vented into the brake-cylinder. The claims of the patent call the first or ordinary range of motion of the piston "a preliminary traverse," which admits air from the auxiliary reservoir to the brake-cylinder, and the second range of motion "a further traverse," which enables the piston to admit air directly from the main pipe to the brake-cylinder.

This invention palpably and confessedly lacked success in the Burlington trials. The reason of its failure and its remedy in No. 376,837 are described by Mr. Massey, a competent expert for the defendants and the patentee of the infringing valve, whose testimony upon this subject is admitted to be correct. He said, upon direction examination, in reply to the question:

What is the practical objection, if any, to the quick-action triple valve of No. 360,070, and how is that remedied by the apparatus of No. 376,837? Before answering, state what is meant by the "Westinghouse quick-action automatic brake." Ans. The term "Westinghouse quick-action automatic brake," as used by Mr. Stone, undoubtedly refers to the quick-action triple valve described in Patent No. 376,837, and illustrated on Sheet 2 of that patent. It is also the quick-action triple valve which is illustrated in the Westinghouse catalogue of 1890. In the quick-action triple valve described in No. 360,070, in addition to the triple valve, the stem of the piston came in contact with an emergency-valve, and the extreme motion of the triple-valve piston caused the emergency-valve to open a small passage between the train pipe and the brake-cylinder, thus causing a local exhaust of the air from the train-pipe, and, therefore, reducing the pressure in the train-pipe quicker than would be done by the vent through the engineer's valve. The port which was opened by the emergency-valve was necessarily restricted in size, as, in order to be effective, the piston of the triple valve must be able to open it within a moderate reduction of train-pipe pressure, and, therefore, with but little force in addition to that consumed by the piston in moving the ordinary triple valve mechanism. If the emergency-valve had been arranged to open a very large port, the time required to exhaust the train-pipe through the engineer's valve, sufficiently to allow the piston to open the emergency-valve, would be materially increased. This defect in the emergency-valve of No. 360,070 would not be serious in trains of moderate length, as under, say, twenty-five cars; but in the fifty car train used at Burlington in May, 1887, the effect was disastrous. This defect is remedied in No. 376,837, by using a supplemental piston to open the emergency-valve and actuating that piston by fluid-pressure from the reservoir through a passage controlled by a valve which is actuated by the triple-valve piston. In this case the triple-valve system has only to open a comparatively small port, in addition to its regular function, and fluid pressure in the auxiliary reservoir then causes the supplemental piston to open the emergency-valve.

The length of time required in the use of the single valve of Patent No. 360,070 to open a sufficiently large port, above referred to, appears to have been in the mind of Westinghouse in providing a separate piston of the patent in suit to open the emergency-valve, for in the description of this improved invention, it will be remembered, he states that—

its object is to facilitate the application of brakes with great rapidity and full or approximately full force, as from time to time required, by the provision of means whereby the admission of air from the brake-pipe to the brake-cylinders may be effected as directly as practicable and through passages of as large capacity as may be desired.

No. 376,837 abandoned reliance upon the piston of the triple valve as the means of opening the emergency-valve and used a supplementary piston contained in a supplementary chamber and actuated by pressure from the auxiliary reservoir. The port through which, when uncovered, this pressure passes is, in the mechanism shown in the specification, uncovered by the excess stroke of the triple-valve piston. The description of the mechanism which is contained in the next paragraph is in the language of the opinion in the circuit court, and inasmuch as the intricate mechanisms of the various devices which are the subject of discussion in the three cases now grouped together were accurately described by Judge Townsend his language will be used instead of attempting to formulate independent descriptions of the same series of devices:

This emergency action is secured in the patent in suit by means of a separate supplemental piston and valve in a supplemental valve-chamber below the main slide-valve of the triple-valve device. This chamber connects the train-pipe with the brake-cylinder, communication between them being regulated by the supplemental valve, opening outwardly or downward, and a check-valve opening inwardly or upward. These valves are held upon the seats, under ordinary conditions, by a spring bearing upon their stems. In the bushing which forms the valve-face of the main slide-valve are four ports governed by said slide-valve. One of these ports leads to the brake-cylinder, two lead to the supplemental-valve-chamber on the upper or inner side of the supplemental piston, and one leads to an exhaust-port.

When an emergency-stop is to be made, the engineer throws his engineer's valve wide open, thereby causing a sudden and material reduction of pressure. The excess of auxiliary-reservoir pressure then forces the main-piston stem against said other stem, overcoming the tension of its spring, drives the main piston to the extreme limit of its stroke, and thereby uncovers the ports leading from the auxiliary reservoir to the supplemental valve-chamber. This pressure drives the supplemental piston outwardly, or downward, against the stem of the supplemental valve, and forces it from its seat. Thereupon the preponderance of train-pipe pressure in the brake-pipe opens the check-valve, and the air from the train-pipe rushes directly from the brake-pipe to the brake-cylinder. The result of this operation is twofold. It hastens the application of the brakes on the car on which it is operated, and, by venting the train-pipe, it hastens a similar reduction of pressure and consequent similar operation in the next succeeding triple-valve device on the next car. The release of the brakes is accomplished by the admission of air from the main reservoir.

The three claims which were found to have been infringed are as follows:

1. In a brake mechanism, the combination of a chamber or casing having direct connections to a brake-cylinder and to a brake-pipe, respectively, a valve controlling communication between said connections, and a piston or diaphragm which is independent of and unconnected with a triple-valve piston and is actuated by pressure from an auxiliary reservoir in direction to impart opening movement to said valve, substantially as set forth.

The second claim includes—

a check or non-return valve controlling communication between said valve and the brake-pipe passage of the chamber, substantially as set forth.

3. In a brake mechanism, the combination, with a triple valve, of a supplemental chamber or casing having passages leading to a brake-cylinder and to a brake-pipe, respectively, a supplemental valve controlling communication between said passages, a supplemental piston operating independently of the triple-valve piston and adapted to impart opening movement to said supplemental valve, and a passage establishing communication between said supplemental piston and an auxiliary reservoir, substantially as set forth.

The vital parts of this mechanism are the supplemental chamber having direct connections to the brake-cylinder and the brake-pipe, the valve 41, which controls communication between these connections and the emergency-piston 63, independent and unconnected with the triple-valve piston and actuated by pressure from the auxiliary reservoir in a direction to impart opening movement to the valve. To these essential parts the defendants would add another—the particular means by which, in the specification, the emergency-piston is actuated—viz., the excess stroke of the triple-valve piston which uncovers the port 61, through which the auxiliary-reservoir pressure passes. Upon the scope of the invention the question of infringement depends. The defendants insist that the only invention—

resides in the use of an emergency-piston, which is open to the exhaust-port on one side and to the brake-cylinder on the other side, and which is not subject to operative pressure from the reservoir, except by the extreme stroke of the triple-valve piston.

The assignments of error are confined to this question, and the consequent construction of the first three claims, and to the question of infringement.

The defendants' theory mistakes the character and scope of the invention, which was another and successful way to accomplish the work designed to be accomplished by No. 360,070 and to be effected upon the same general plan of instantaneous brake-pipe venting by the new means contained in the supplemental chamber, which have been named.

In No. 360,070 the stem of the triple-valve piston directly engaged with the stem of the emergency-valve, and consequently its action directly depended upon the movement of the piston. The invention in No. 376,837 radically departed from this method of actuating the emergency devices by making a new piston independent of and unconnected with the triple-valve piston. It was to be actuated by auxiliary-reservoir pressure; but the particular means by which this pressure was to be permitted to exert itself, whether continuously or only when a port should be opened, do not constitute an essential part of the invention. Means must necessarily be shown in the specification; but the identical means or the special devices were not, in the language of *Morley Machine Co.* v. *Lancaster*, (129 U. S., 263,) "necessary constituents" of the invention, either in the specification or in the claim.

The skill and mechanical ingenuity of constructors of locomotives can, as will be seen hereafter in the examination of other patents and of the infringing devices, arrange different details of mechanical construction, by means of pistons, valves, ports, and springs, which, adopting the supplemental-chamber system first conceived and embodied by the patentee and a kindred, but not precisely the same, mechanical method for the movement of the piston, will accomplish the same result. The patentee was a pioneer in that he designed in No. 376,837 a new way to accomplish a desired result, but upon the same general idea which he had unsuccessfully tried to work out in the earlier patent. His later patent was the bridge, and not a mere step, which carried railroad-car builders from failure to success. It is not important now to determine the grade of its pioneership and whether it may be classed in the list of those inventions which are of the highest rank; but it was an invention created to achieve great necessities and overcome great hinderances, and was one of wide breadth. A court would not be justified in adopting "a narrow or astute construction" which should minimize the character of the invention, leave its real scope open to trespassers, and thus "be fatal to the grant." The claims of the patent do not contract the grant to narrower limits than those which the invention as made by the patentee actually covered, and the claims therefore are not limited to the precise mechanical means described in the specification by which the supplementary piston is actuated. They compel it to be disconnected with and to be independent of a triple-valve piston and to be actuated by pressure from an auxiliary reservoir by some means equivalent to the means which are described in the specification. The rule which permits and, indeed, compels courts to give a wide range to the equivalents which a broad or pioneer patent can include is thus expressed in *Miller* v. *Eagle Mfg. Co.*, (151 U. S., 186:)

> If the invention is broad or primary in its character, the range of equivalents will be correspondingly broad, under the liberal construction which the courts give to such inventions.

The defendants use two forms of devices, known, respectively, in the case as "Defendant's quick-action triple valve" and "Defendant's modified quick-action triple valve." Each has the supplementary chamber, with its contents, and in each the various elements conform to the general phraseology of the claims; but in neither does the movement of an emergency-piston have any relation to the extreme movement of the triple-valve piston, and herein is contained what is claimed to be the essential difference between the patented device and the defendant's valve. In the defendant's "modified valve" the pressure upon opposite sides of the emergency-piston, numbered 13, which corresponds in function with emergency-piston 63 of the patent, is always counterbalanced when quick action is not desired, whereas emergency-piston 63 of the Westinghouse valve is not subjected to auxiliary pressure until its action is required, when port 61 is uncovered.

In the defendant's modified valve train-pipe pressure is reduced when quick action is wanted; the auxiliary-reservoir pressure becomes controlling, forces down emergency-valve 20, which corresponds in function with the Westinghouse emergency-valve 41 and which when unseated opens direct communication between the train-pipe and the brake-cylinder. This difference between the means which are used to actuate the pistons is not of a patentable importance. The operative features of the invention which are described in the three claims are the same, whether auxiliary pressure is permitted to exert itself continuously or intermittently when a port is opened.

The defendant's earlier device uses two pistons. The first—No. 13—is forced down by auxiliary-reservoir pressure, but does not act directly upon the emergency-valve. When forced down—

> it opens a port, whereby train-pressure is admitted to the upper side of the other piston (No. 17), which, being thereby forced down, imparts opening movement to an emergency-valve leading to the brake-cylinder.

It is true that piston 13, which is the one actuated by auxiliary-reservoir pressure, does not directly and of itself impart opening movement to the emergency-valve, but uncovers a port which admits train-pipe pressure to the brake-cylinder, and it is true that piston No. 17 is actuated by the train-pipe pressure thus admitted. These two pistons do the work of the one piston of the defendant's modified valve. Auxiliary-reservoir pressure moves the piston, which, through the intervention of piston 17, imparts opening movement to the emergency-valve. Mr. Massey states the difference between the two valves of the defendant to be that in the "quick-action triple valve" the initially-operating piston 13 actuates the emergency-valve indirectly—that is to say, through the intermediation of the piston 17—while in the other valve the initially-operating piston 13 actuates the emergency-valve directly, as in Patent No. 376,837. This is not a material difference of a patentable character when considered with reference to this patent, and the result





is that each of the defendant's valves is an infringement. The "quick-action valve" infringes the first three claims, while the second form, not having the additional check-valve of the second claim, infringes the first and third claims.

No. 448,827 will next be considered. The form of automatic air-brake apparatus shown in this patent was originally included in the application for No. 376,837, which also included the form which has been already described, in which port 61 was uncovered by the excess stroke of the triple-valve piston; but the applicant was precluded by a rule of the Patent Office from adding to his generic claims a specific claim for the form which is now described in No. 448,827, and therefore a subordinate patent was applied for.

The details of the device are described by Judge Townsend as follows:

> The alleged invention consists of a valve, controlling communication between a supply-passage from the train-pipe and a delivery-passage to the open air or a brake-cylinder. This valve is held in position by a spring, so as to close ports leading to the delivery-passage, and not to be moved from its seat by ordinary reductions of pressure for service-stops. There is also a diaphragm and valve-stem interposed between the supply-passage and a passage to a special reservoir or an auxiliary reservoir. Said controlling valve is connected to said valve-stem. Train-pipe pressure passes through a small passage in said diaphragm into said reservoir, thus equalizing pressure on the opposite sides of said diaphragm.
>
> Upon a sudden reduction of pressure, sufficient for an emergency stop, the excess pressure on one side of said diaphragm moves it and its valve-stem and the said controlling-valve downwardly, so as to open said ports and allow the compressed air to pass through the delivery-passage to the open air or brake-cylinder.

The two claims of the patent which are said to have been infringed by the defendant's two valves, which have been before described, are as follows:

> 1. In a fluid-pressure-brake apparatus normally operated by a triple-valve device, the combination, with such an apparatus, of a valvular appliance having a casing provided with supply and discharge passages or connections and a valve controlling an exhaust-port from the supply-passage to the discharge-passage for quickly releasing pressure in the supply-passage, said valve being actuated to open the exhaust-port by a greater than normal reduction of pressure in the supply-passage, independently of the action of the triple-valve device, substantially as set forth.
>
> 2. The combination, with a triple-valve mechanism, of a discharge valve controlling an exhaust-port from a supply passage to a discharge-passage for quickly releasing the pressure in the supply-passage, said valve being actuated to open the exhaust-port by fluid pressure in an auxiliary reservoir on reduction of pressure in the supply-passage below the normal degree in whatever position the slide-valve of the triple-valve mechanism may be brought by such reduction, substantially as set forth.

Infringement of these claims is admitted, and the only question is in regard to their validity.

The distinctive feature of the alleged invention is that the emergency-valve is actuated to open the exhaust-port "independently of the action of the triple-valve device."

The theory of the complainants is that whereas the leading characteristic of novelty in Patent No. 376,837 is the—

> utilization of auxiliary-reservoir pressure operating a supplemental piston in proper direction to impart opening movement to the emergency-valve,

the invention of No. 448,827 was the means of imparting movement to the valve by—

> auxiliary pressure, so applied that the action or non-action of the triple-valve piston shall be eliminated as an element of control,

and that its distinctive feature was—

> the removal from the apparatus of all obstructive mechanical connection between the triple piston and emergency-valve, whereby the latter may be impeded in its movements by the former.

This theory omits an important characteristic of the novelty of No. 376,837, which is the independency and disconnection of the supplemental piston from the triple-valve piston. In the form left in the application for the patent, after the divisional application was made, there was no mechanical connection between the two pistons, but the stroke of the triple-valve piston exercised a control over the movement of the supplemental piston by uncovering the port which admitted auxiliary-reservoir pressure. The form in No. 448,827 permits, as do the defendant's valves, auxiliary-reservoir pressure to be present at all times and to act upon the piston, but counterbalanced during ordinary service-stops. It was included in the generic claims of No. 376,837, and in view of those claims no invention could consist in the mere fact of the elimination of the action of the triple-valve piston as an element of control. When the patentee obtained the broad claims of No. 376,837, he exhausted his power to obtain additional patents for mere modifications of means by which the piston should be made independent of the triple-valve piston, unless the modification contained a patentable improvement upon the form disclosed in that patent. For any new and useful improvement which contained also the element of invention, or for a separate invention, a subordinate patent could be obtained.

Were the changes made in No. 448,827, after the idea of No. 376,837 had been embodied in its original form, the work of invention? So far as the first two claims are concerned, the changes consisted in a port from the auxiliary reservoir to one side of the emergency-piston, which port was always open, and the counterbalance to reservoir-pressure by a spring on the opposite side of the piston, so that ordinary variations of pressure would not destroy the equilibrium necessary to be maintained until excessive reduction of pressure should take place. In view of the various forms and modifications and improvements of automatic brakes and brake mechanism which had been made known before the date of this invention, and which are a part of the record in these three cases, there was no patentable invention in this modified form apart from the invention shown in No. 376,837. It was simply what the patentee first deemed it to be—a form of the invention of that patent and covered by it. The first two claims of No. 448,827 contain no patentable improvement upon the form specifically described in the claims of its predecessor and are void.

We omit any description of the other grounds upon which the invalidity of these claims is placed by the defendant.

No. 393,784. This patent is subordinate to No. 376,837. The device which it describes has the supplemental chamber with the emergency-piston and valve and the important elements of the Westinghouse patent, except that the emergency-valve is moved by train-pipe pressure instead of by auxiliary-reservoir pressure. This result was accomplished by providing a separate emergency piston and valve ordinarily exposed to train-pipe pressure above said piston, which pressure served to hold the valve on its seat and was not affected by ordinary reductions of pressure for service-stops; but the considerable reduction of pressure necessary for an emergency-stop caused air from the train-pipe to be vented into the space below said piston, equalizing the pressure on

both sides and, acting on the under side of said valve, causing it to be unseated and to thus allow the train-pipe pressure to be vented directly into the brake-pipe cylinder.

The claims said to be infringed are as follows:

1. In a brake mechanism, the combination of a valve controlling the direct passage of pressure from a train-pipe to a brake-cylinder, a piston connected to said valve and actuated wholly by train-pipe pressure, and a valve controlling the train-pipe pressure on the piston for opening and closing the communication between a train-pipe and a brake cylinder through the direct action of train-pipe pressure, substantially as specified.

2. In a brake mechanism, the combination of a train-pipe, a brake-cylinder, an interposed chamber communicating with the train-pipe and brake-cylinder, a piston in said chamber, a piston-stem, a valve on the piston stem controlling the passage from the interposed chamber to the brake-cylinder, and a controlling-valve and passages for the admission of pressure from the train-pipe to move the piston and open the valve, substantially as and for the purposes specified.

The emergency-piston 13 in the defendant's "modified valve" is actuated wholly by reservoir-pressure, and this valve is, therefore, not claimed to be an infringement. The emergency-piston 13 in defendant's "quick-action valve" is forced down by reservoir-pressure; but when it is pressed down it causes train-pipe pressure to be admitted, which acts upon and presses down piston 17, whose spindle presses upon and unseats the emergency-valve. Inasmuch as the valve is disconnected from piston 17, it is returned to its seat when train-pipe pressure is removed from the upper side of the piston mainly by the elastic force of a spring.

This patent is a subordinate one and must receive a narrow construction. It is not permissible to give to the terms of a patent of that class so wide a sweep as to include the various devices which may actuate an emergency-valve in a supplemental chamber by train-pipe pressure, and the range of its monopoly is a limited one. The language of each claim indicates that a connected valve and piston were to be employed, and Park's method of opening and closing the valve required that they should be mechanically connected. A mechanical connection would not be indispensable unless there was a necessity for it or unless a mechanical separation created a difference in the means by which the result was accomplished, which, in view of the narrowness of the invention, was a radical difference. The Park piston holds the valve to its seat in the normal condition of pressure. It is lifted up when the valve is lifted by train-pipe pressure, and when extraordinary pressure is removed it restores the valve to its seat. It does not unseat the valve. The defendant's piston does not hold the valve to its seat and does not restore it to its place. When train-pipe pressure comes upon the upper side of the piston and forces it down, it unseats the valve, and after pressure has been removed the spring, as it resumes its shape, returns the valve to its seat. The difference in the way in which the two pistons accomplish the general result would not be a substantial one in a primary patent. It is substantial with respect to an invention which merely substitutes train-pipe pressure for the auxiliary-reservoir pressure which Westinghouse used. The circuit court properly held that neither claim was infringed.

No. 172,064. The invention of this patent was an improvement upon the improvement patented to Mr. Westinghouse by Patent No. 168,359 and was a part of the brake apparatus used before the invention of the quick-action brake. It related to the direct admission of air from the brake-pipe to the brake-cylinder. The defense that the defendant uses the original and not the later improvement was satisfactorily sustained. The peculiarity of the patented invention and of the device used by the defendant is shown in Judge Townsend's description, as follows:

Patent No. 168,359 provides for a piston and slide-valve, so arranged that air-pressure transmitted through the train-pipe shall pass on the under side of the piston, and hold it in an upward position, and thence pass through a side port in the piston-valve case, and certain other ports and passages, into the auxiliary reservoir.

The effect of this pressure is to hold the slide-valve in position above two connected ports, one leading to the brake-cylinder, the other to the open air, so that any pressure in the brake-cylinder will escape to the open air and the brakes will be off. When the pressure is reduced, in order to apply the brakes, the back-pressure from the auxiliary reservoir depresses said piston so that it passes down and closes the supply-ports and shifts the slide-valve, so as to open the port leading to the brake-cylinder and exposes it to auxiliary-reservoir pressure, and so as to close the port leading to the open air.

In Patent No. 172,064 the inventor dispensed with said side port in the valve-case and substituted therefor a port through the piston itself. The piston was so arranged, in connection with this port, that said port could be opened or closed without moving the slide-valve. This was accomplished by having the stem of the piston fitted to the port in the piston, so that it would close the port when moved into it and open it when removed, and by further providing that the slide-valve should be made shorter than the distance between the collars on its stem, thus insuring the necessary slack motion for closing the supply-port before the slide-valve begins to move.

Claim 3 is as follows:

3. The slide-valve H, made shorter than the distance between its end bearings, in combination with the port *s* and stem *c'*, relatively arranged with reference to the operation of the valve H, while the port *s* is closed, substantially as set forth.

Defendant's device, as illustrated by "Defendant's plain triple valve," contains the slide-valve, made shorter than the distance between its end bearings, on the piston-stem. It is also provided with two ports, one of which leads from the train pipe, through the piston chamber and by other passages to the auxiliary reservoir. The other port leads from the auxiliary reservoir to the brake cylinder. This port is closed by having the end of the piston-stem slide on to it and cover it, like a valve upon its seat.

There is no port through defendant's piston, and, consequently, no piston-stem fitted to enter such port.

The claim is for the valve made shorter than the distance between its bearings, with the specified improvements upon No. 168,359—viz., the air-port through the piston, which is opened and closed by the stem. The effect of this arrangement is stated in the specification as follows:

The port *s* will be closed before the valve H begins to move for applying the brakes, and will be kept closed until the valve H shall have been brought back to the proper position for a full release of the brakes. Consequently the valve H can be operated as may be desired in applying and releasing the brakes, and in graduating the brake pressure, without leakage or loss at the air-supply port *s*, and with such port always closed.

It is undoubtedly true that the two devices accomplish the same result and close the supply-port before the valve begins to move; but infringement can only be found by giving a construction to the third claim, which disregards the fact that No. 172,064 substitutes the air-port *s*, with its plug *c*, for the side port of No. 168,359.

The conclusion which the circuit court reached was the correct one. It was stated as follows:

Inasmuch as complainants claim a combination which contains a port through the center of a piston, described as substituted for a side port, with which said improvement dispenses, and as defendant's device depends upon the use of a side port, and has no port through the piston, but is made up by a combination of different elements, which are admitted in Patent No. 172,064 to be a part of the prior art, the combination claimed in claim 3 of said patent is not infringed. A correct construction of the claim must include the port through the center of the piston, substituted for the side port of Patent No. 168,359.

The invention of No. 222,803 was an engineer's valve, which, speaking in very general terms should, by the movements of a single stem or lever admit and automatically stop admitting fluid-pressure to the brake-





pipes by means of a charging-valve, automatically retain such pressure, and permit its escape by an exhaust-valve, with means for automatically closing either valve when the desired pressure had been charged into or withdrawn from the train-pipe to which the device was connected.

The patentee summarized in his specification his invention as follows:

It will now be seen that I provide for operating both the supply and the exhaust valves by a single stem, that only one can be opened at once, that either may be opened separately, (much or little,) and that both may be closed simultaneously and automatically, and kept closed whether the brakes are on or off.

This automatic closing of the charging and exhaust valves was a very important part of the invention.

The patented valve, so far as the second, third, and fourth claims are concerned—

consists of piston-case, containing a piston, governing a charging-valve held up to its seat, partly by fluid-pressure and partly by a spring, and an escape-valve held down to its seat, partly by gravity and partly by a preponderance of fluid-pressure on its upper end.

This governing-piston is exposed on its under side to fluid-pressure and on the upper side to pressure from a spring. A screw stem worked by a crank-arm is so arranged in connection with said spring that by the revolution of the crank-arm the downward pressure of said spring upon said piston is increased or lessened. The effect of such change of pressure is to cause the piston to be moved upward or downward, according as it is acted upon by an excess of fluid or of spring pressure, and to open or close the charging and escape valves.

Beneath the lower end of the escape-valve provision is made for a certain amount of slack motion, so that the governing-piston may be moved up or down for a short distance without unseating the escape-valve. The effect of this arrangement is to prevent the possibility of both valves being open at the same time.

The operation of said apparatus is as follows: In order to apply the brakes or to open the charging-valve, the crank-arm is screwed down, and this increase of pressure, transmitted through the stem of the piston-head to the charging-valve, unseats it and permits fluid-pressure to pass from the boiler or storage-reservoir to the train-pipe and brake cylinders. The fluid-pressure also passes upward to the space below the piston-head and exerts the same pressure upon it as in the train-pipe or brake-cylinders. The engineer knows from his engineer's gage just how far to screw down his crank, so that when the necessary amount of pressure has passed through to the train-pipe or brake-cylinder the same pressure will automatically lift the piston and close the charging-valve. The crank-arm is screwed up in order to open the escape-valve, and after the proper amount has been discharged the escape-valve automatically closes in the same way as already shown in the case of the charging-valve.

The three claims which the circuit court found were infringed are as follows:

2. As a means for automatically cutting off the fluid-pressure supply when the desired pressure has been charged into the brake-cylinders, a piston-head, P, movable by the operative brake-pressure or any excess thereof, in combination with the charging-valve and a connection from one to the other, substantially as set forth, whereby such movement of the piston-head will result in the automatic closing of the charging-valve, substantially as set forth.

3. The combination of piston-head, charging-valve, interposed stem, and escape-valve, substantially as set forth with reference to the opening and closing of the charging-valve, without necessarily opening the escape-valve, substantially as set forth.

4. The combination of piston-head, charging-valve, interposed stem, escape-valve, and a single operating-stem, adapted by independent connections with both valves to shift both by independent successive motions, substantially as set forth.

The defendant's valve has a single lever, which is moved from side to side by a single handle having a reciprocating motion. The valve has also a piston exposed to fluid-pressure on both sides, which controls a charging and an escape valve, which perform the same functions as in the patented valve. The main lever, which is fastened to said handle, carries an eccentric-pin, which passes through said lever and which moves in the arc of a circle. The right end of the lever is held stationary by a jaw and fulcrum-pin. The left end, when said handle is moved to the right, is lifted by the rock-shaft motion imparted by said pin and strikes against another pin attached to the escape-valve and raises and opens said escape-valve. This lever has also an upper jaw, which moves in a pin attached to a bell-crank lever, the arm of which is directly beneath the charging-valve. In order to open this valve, the handle is moved to the left, which causes the main lever and pin to move to the left and to raise the arm of the bell-crank lever and open the charging-valve. Provision is made for slack motion by a space between the top of the escape-valve and said pin attached thereto, whereby the left end of the main lever is permitted to have a certain amount of play before it strikes said pin.

In addition to fluid-pressure, the piston is—

acted upon from below by a bell-crank lever, or bent lever with vertical arms, connected by links to the piston, and to a second lever, which second lever is connected with a light spring.

An attempt was made in the testimony to claim that the patented valve lacked novelty or that its descent could be traced from Patents No. 129,015, dated July 16, 1872, issued to Fay and Cairns, and No. 141,685, dated August 12, 1873, issued to George Westinghouse, Jr. The Fay and Cairns patent was for an apparatus for regulating the flow of water in houses and shutting it off when there is an excess of pressure, so as to prevent the bursting of pipes. The Westinghouse patent was for a triple valve, and it was admitted in the course of the testimony that the patent described nothing designed for or capable of performing the functions of the engineer's valve. The Fay and Cairns invention was a pressure-regulator, contained no exhaust-valve, and could not be an engineer's valve. The idea that either of these patents anticipated or restricted the patentable character of the whole invention is not now entertained. The defendant is, however, of opinion that No. 141,685 is an anticipation of the second claim. The importance of this suggestion will be considered hereafter.

The invention as a whole is thus conceded to be without a predecessor, and the importance of an invention by which both valves could be automatically closed upon the desired amount of pressure being charged into or exhausted from the train-pipe is manifest.

The object of the defendant's valve is by the movement of a single handle to accomplish the same results which the patented valve attains, and it is conceded that the valve has a piston-head movable by op-

erative brake-pressure or any excess thereof, a charging-valve, an escape-valve, and interposed connections so arranged that the charging-valve may be opened and closed without necessarily opening the escape-valve, a connection between the piston-head and charging-valve consisting of a bell-crank lever, a pin and lever, and a projection on the piston-head, and that by reason of this connection a movement of the piston-head under the operative pressure or any excess thereof will result in the automatic closing of the charging-valve.

But it is contended that the second claim of the patent is void by reason of the Fay and Cairns patent; that the defendant's valve has not the interposed stem of the third and fourth claims, because the motion of the complainants' piston always acts through the stem to open the valve: that the defendant's piston does not open the charging-valve, as required in the third claim, and does not open either valve, except only that the pin carried by its piston is the fulcrum of the lever when the escape-valve is opened, whereas neither of the valves in No. 282,803 can be opened except by moving its piston, and therefore that the true construction of the third and fourth claims is as follows:

In regard to the third claim:

The combination of a piston for opening and closing two valves by reverse motions of the piston; those valves; and a part interposed, whereby the motion of the piston in one direction, from its position with both valves closed, opens one of the valves, and its return motion allows that valve to close, while its motion in the opposite direction opens the other valve and its return motion allows that valve to close.

In regard to the fourth claim:

The above combination, with the addition of a single handle by means of which the engineer can vary the pressure on one side of the piston.

The second claim of the patent contained the case provided with a piston-chamber and valve-chamber in addition to the three elements which are specifically named.

The Fay and Cairns patent was a water-pressure regulator. The specification says that it consisted of a hollow cylinder attached to a valve and communicating at one end with the water-pipe, into which the water flows through the valve. In the cylinder is a piston, whose rod is connected to the valve. A coiled spring is behind the piston under such tension as to hold the valve open until the pressure becomes too great for the pipe beyond the valve, when the water-pressure on the piston closes the valve and keeps it closed until the pressure on the piston and in the pipes falls below the power of the spring, when it will open the valve-cylinder. There is no exhaust-valve, but claim 2 does not include an exhaust-valve, and the valve is connected with the piston, whereas in No. 222,803 the charging-valve is closed by a separate spring; but this is thought by the defendants to be immaterial in a structure not having an exhaust-valve,

the purpose of separation being to permit a further upward movement of the piston so as to open the exhaust-valve after the charging-valve has been seated.

The needs of a water-pressure regulator to be attached to a water-pipe which conveys water into a house and an engineer's valve in which there must be a charging and an escape valve are very different.

In an engineer's valve opened by a single stem the charging-valve must be separated from the piston or the device would be useless, and it is no answer to the validity of the claim to say that some other fluid-regulating device was operated by a different arrangement of valve and piston, which, though it might come within the general terms of that claim, would be useless in the device which was the subject of the patent.

The great dissimilarity in form and appearance between the patented valve and the defendant's valve tends to confuse the mind when the question of the infringement of the third and fourth claims is first looked at. The defendant's valves and pistons are not arranged in the same axial line. Motion is not communicated to the piston in an endwise direction, but through a series of bell-crank levers, which at first seem to be operating upon a different system from that of the patent. A closer examination shows that the series of operations in the patented valve is substantially reproduced in the defendant's valve by like instrumentalities. It is not denied that the defendant's valve has a series of levers and pins, which may be called an interposed stem and which communicate motion somehow; but it is said that its piston and its stem do not correspond with these elements in the third and fourth claims, mainly because in the Westinghouse device the motion of the piston acts through the stem to push the valve open, and the defendant's piston does nothing to open either valve.

It is true that in the Westinghouse valve there is a direct connection between the piston and the charging-valve and that the movement of the piston opens the valve and that in the defendant's valve the charging-valve is opened by the manual movement of the handle and lever 49 and the piston at the time remains stationary.

By the subsequent movement of the piston, when sufficient train-pipe pressure has been admitted, the charging-valve is closed automatically.

It is also said that the defendant's piston does not open the escape-valve, except that the pin carried by the piston is the fulcrum of the lever when the escape-valve is opened. This may also be considered as true; but it should also be said that there is an upward movement of the piston before the valve is opened.

As explained by Mr. Barnes for the complainant, the movement of the handle to the right raises the fulcrum of the lever, which imposes upward pressure upon the piston. It moves upward until the elastic resistance below the piston is reduced so much that the train-pipe pressure on top of the piston can lift the escape-valve by means of the lever known as "43."

If the third and fourth claims require that one or both valves must be both opened and closed by the motion of the piston and that the interposed stem must move with the piston to open one or both valves, then there is no infringement. The third claim, for example, is for the combination of piston-head, charging-valve, interposed stem, and escape-valve with reference to the opening and closing of the charging-valve. As the invention did not consist in the particular way in which the elements of this combination co-operated in reference to the mere opening of the valve and as the language of the claim is not





limited to anything more narrow than the actual invention, the construction which the defendant seeks is not necessary. The only question is whether the differences which have been stated, and which are, in substance, the difference between the direct action, in the patented device, of the piston, through the interposed stem, in opening the valves and the action of the bell-crank lever, pin, and lever, which are the interposed stem of the defendant's device, constitute such a departure from the means which the patentee used and described as to constitute new and different means which escape a just charge of infringement.

The question of infringement is controlled by the principles restated in *Morley Machine Co.* v. *Lancaster* (129 U. S., 263) and confirmed in subsequent and recent cases, (*Miller* v. *Eagle Mfg. Co.*, *supra*,) and which makes these actual differences, which would be important in a subordinate patent, unessential when a patent for a pioneer invention is under examination. If such differences should be regarded by courts as essential when the claims do not make the specific devices essential patents for pioneer inventions would ordinarily have but little value.

All the decrees of the circuit court in case No. 4,976 and in case No. 4,977 which have been appealed from are affirmed, with costs of this court. The interlocutory decree of the circuit court in case No. 5,315 is reversed, with costs of this court, and the cause is remanded to that court, with instructions to dismiss the bill, with costs of that court.

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## U. S. Circuit Court of Appeals—Seventh Circuit.

FASSETT *v.* EWART MANUFACTURING COMPANY.

*Decided May* 31, 1894.

1. FASSETT—MACHINE FOR COUPLING CHAIN-LINKS—SECOND PATENT FOR SAME INVENTION—VOID.
   Patent No. 377,376, issued February 7, 1888, to N. B. Fassett, for a machine for coupling chain-links by a sidewise motion and also by an endwise motion, examined and *Held* to be for substantially a combination of the same machines respectively secured to him by Patent No. 347,338, dated August 17, 1886, and applied for by him in an application rejected in the Patent Office in an interference between his application and Patent No. 317,790, dated May 12, 1885, issued to E. L. Howe, and void, as being only a second patent to the same patentee for the same invention.
2. SAME—SAME—EFFECT OF ACQUIESCING IN A DECISION OF THE PATENT OFFICE IN AN INTERFERENCE.
   Where in a defense to a suit it is shown that more than two years before the suit was brought the complainant acquiesced in a decision adverse to him in an interference in the Patent Office in favor of a patent issued to the defendant, *Held* that his acquiescence in the decision for such length of time worked an abandonment of any claim he might have made to the invention.

APPEAL from the Circuit Court of the United States for the Northern District of Illinois.

STATEMENT OF THE CASE.

This was a suit by Nelson B. Fassett against the Ewart Manufacturing Company for infringement of a patent. The circuit court dismissed the bill. (64 O. G., 439; 58 Fed Rep., 360.) Complainant appealed.

The appellant filed his bill in the court below to restrain the infringement of Letters Patent No. 377,376, issued February 7, 1888, for a "machine for coupling chain-links." Prior to 1874, outdoor machinery was operated by leather or rubber belting. In that year William B. Ewart invented an attachable link metal belt to overcome the objections found to obtain with respect to leather and rubber belting.

The novelty of the invention consisted in the form of the link, it being capable of being made into a chain of any desirable length by assembling or coupling the necessary number of links together by a side motion, the end bar of one link being forced into the hook of a companion link by forcing the link sidewise while standing at an acute angle to the link with which it is being coupled. This invention was patented on September 1, 1874, and its validity sustained in *Ewart Manufg. Co.* v. *Bridgeport Malleable Iron Co.*, (31 Fed. Rep., 151.)

About 1881 the complainant invented a detachable chain-link, which differed from the Ewart link in that it was so constructed that it could not be coupled with another link by a sidewise motion, but only by an endwise motion. A patent therefor seems to have been issued to him February 22, 1881, No. 237,967. Prior to 1882 these links were assembled or coupled by hand.

During the winter of 1882–3 Mr. Fassett invented and constructed a machine for assembling the links together and operated the same experimentally in the first half of the year 1883. This machine assembled the links of the drive-chain together by an endwise thrust of the links.

In January, 1884, one Eugene L. Howe constructed and on the 6th day of October, 1884, applied for a patent for a machine for assembling the links of a drive-chain together by a sidewise thrust suitable to assemble the Ewart chain-links, which machine was put in operation and publicly used by the appellee in January, 1884, and has been continued to the present time.

On the 8th of April, 1884, the complainant, Mr. Fassett, filed a caveat in the Patent Office, which he renewed on April 4, 1885, for the term of one year. On the 6th of October, 1884, Mr. Howe filed his application in the Patent Office for a patent upon his machine, which resulted in the issuance to him, as assignor to the Ewart Manufacturing Company, the appellee, of Letters Patent No. 317,790, dated May 12, 1885. On the 21st of August, 1885, the complainant, Fassett, filed in the Patent Office an application, Serial No. 174,961, which resulted in the issuance to him of the Patent No. 347,338, dated August 17, 1886. This patent is known as "Case A." On the 21st of August, 1885, Mr. Fassett also filed in the Patent Office his application Serial No. 174,962, which is known as "Case B."

On the 7th of September, 1886, an interference in the Patent Office was declared between the Howe patent, No. 317,790, and the Fassett application, Case B, which resulted in a decision by the Examiner of Interferences on February 21, 1889, in favor of Howe, which decision was affirmed by the Examiners-in-Chief on October 1, 1889, and by the Commissioner of Patents, upon a further appeal, on February 21, 1890. By this decision the Commissioner awarded to Howe priority of invention of the subject-matter covered by the four claims of the Howe patent and the first five claims of the Fassett, Case B. This decision has been acquiesced in by the complainant.

Case A was an application for a machine for coupling chain-links by an endwise motion. It was an exact reproduction of Fassett's first machine, as shown by his model, with the exception that it is provided with a thrust-bar, as in the Howe machine, instead of a sprocket-wheel, for pushing or drawing the chain through the chain-channel. This change was made in May or June, 1885, after the issuance of the patent to Howe, and its character is thus stated by Mr. Fassett:

The sprocket-wheel and ratchet-wheel attached together for feeding the assembled links forward through the machine were taken off, and a thrust-bar substituted in their place for pushing the links forward in the machine after they were coupled.

The further facts touching the character of the invention and claims asserted are sufficiently stated in the report of the decision of this cause by the court

below, (*Fassett* v. *Manufacturing Co.*, 64 O. G., 439; 58 Fed. Rep., 360,) to which reference may be made.

*Messrs. Banning & Banning* for the appellant.

*Messrs. Kerr & Curtis* and *Mr. L. Hill* (*Mr. L. Hill*, of counsel) for the appellee.

Before JENKINS and BAKER, Judges.

JENKINS, *J.*:

We are of opinion that this case is ruled by the case of *Miller* v. *Manufacturing Co.*, (66 O.G., 845; 151 U. S., 186; 14 Sup. Ct., 310.) There the patentee filed an application for an improvement in cultivators, consisting of a double-acting spring, the function of which was to depress the cultivators when inserted in the ground and to lift them when raised above the dead-point, the lifting power of the spring increasing as the plow-beam rose. Two claims were made, one for the double action of the spring and the other for the increasing lifting power of the spring as it rose.

In anticipation of interference with other pending applications the application was divided, with a view to obtain one patent for the lifting and depressing effect of the spring and another for the lifting power of the spring increasing as the beams rise, the latter being sought upon the original application and the former based upon a divisional application subsequently filed. The drawings and descriptions of the two applications were alike. The patent was allowed on the divisional application during the time that the original application remained in interference, and a patent was thereafter granted on the latter for the single effect of increasing the lifting power. The Court, upon a review of the authorities, announced the conclusion reached upon the question of law involved in the following language, (151 U. S., 198; 14 Sup. Ct., 310:)

> The result of the foregoing and other authorities is that no patent can issue for an invention actually covered by a former patent, especially to the same patentee, although the terms of the claims may differ; that the second patent, although containing a broader claim, more generical in its character than the specific claims contained in the prior patent, is also void; but that, where the second patent covers matter described in the prior patent, essentially distinct and separable from the invention covered thereby and claims made thereunder, its validity may be sustained.
>
> In the last class of cases, it must distinctly appear that the invention covered by the later patent was a separate invention, distinctly different and independent from that covered by the first patent; in other words, it must be something substantially different from that comprehended in the first patent. It must consist in something more than a mere distinction of the breadth or scope of the claims of each patent. If the case comes within the first or second of the above classes, the patent is absolutely void.

The Court then observed (151 U. S., 199; 14 Sup. Ct., 310) with respect to the patent there involved:

> It clearly appears from a comparison of the two patents, and their respective specifications and drawings, that the first function or object of the patent of 1879, relating to the lifting power of the spring, is identical with the sole object or function covered by the patent of 1881, and that the improved device and combination for the accomplishment of the lifting operation are identical in both patents.
>
> The invention covered by the first patent, as stated in the specification, consists in a spring which serves the double purpose of *lifting* or *holding* down the plows at will; and it is further stated that one spring may be adapted to serve all, or either one, or more, of the offices above enumerated.
>
> The patent of 1879 thus embraces both the lifting and the depressing effects or operations of the spring device, while that of 1881 seeks to cover only the increased lifting effect of the same device. The first patent clearly includes the second. No substantial distinction can be drawn between the two, which have the same element in combination, and the same spring arrangement and adjustment to accomplish precisely the same lifting effect, increasing as the beams are raised from their operative positions. The matter sought to be covered by the second patent is inseparably involved in the matter embraced in the former patent, and this, under the authorities, renders the second patent void.
>
> If the two patents in question had been granted to different parties, it admits of no question that the last would have been held an infringement of the first, for the reason that the patent of 1879 just as clearly includes as a part of the invention the increased lifting effect of the spring device, increasing as the beams are raised, as that disclosed in the patent of 1881.

And with respect to the claimed reservation in the first patent the Court said, (151 U. S., 201; 14 Sup. Ct., 310:)

> This conclusion is in no way affected by the reservation, attempted to be made in the 1879 patent, of the "broad idea of a lifting-spring which acts with increasing force as the beam rises," for the reason that the broad idea sought to be reserved is embodied in identically the same mechanical device constituting the invention and covered by the first patent, which completely occupies all the ground that was reserved. The spring and its connecting apparatus is the same in each patent, and the claims of the first covered the double automatic action—*upward* or *downward*. There is nothing in the specification or claims to indicate that in the first patent the lifting action is in any degree slighter or weaker, as the beam rises, than in the second patent. On the contrary, both specifications clearly indicate that the spring device acts with increasing force in each patent as the beam rises.
>
> In addition to this, it distinctly appears that every claim of the 1881 patent could have been properly included and made a part of the claims of the 1879 patent. With the exception of the first broad claim of the 1881 patent, each of the other claims includes the spring device with the limiting and qualifying words, "substantially as described," and by virtue of its reference to the specification, the lifting element of the spring device is shown to be the same in each patent. There is nothing in either patent, or the specification or claims thereof, to indicate that there is any greater or stronger lifting action in the one than in the other. It is thus shown that one and the same mechanical device, which covers the entire invention, is described in each of the patents; and the effort to secure a second patent on one part thereof, or on its function, after such part or its action had been clearly described and covered by a prior patent, cannot be sustained.
>
> To hold under these circumstances that the first and second patents, in respect to the lifting effect of the same spring device, present distinct inventions, or that both are valid for the same invention, would involve the drawing of distinctions too refined for the practical administration of the patent law.

Applying the principles thus authoritatively announced to the case in hand, we are unable to avoid the conclusion that the result reached by the court below was correct.

So far as respects the Howe patent and the machines made and used by the defendant thereunder, it is clear that the decisions of the Patent Office in favor of the Howe patent have been acquiesced in by the complainant for such length of time as to work an abandonment of any claim to the invention therein involved. (*Gandy* v. *Marble*, 59 O. G.; 1106; 122 U. S., 432; 7 Sup. Ct., 1290.)

It is clear that the facts of this case bring it fully within the principle announced in *Miller* v. *Manufacturing Co.*, above referred to. Case C described the same machine as was involved in Case A. It contained an exact reproduction of the ten figures of Case A and a literal copy of the descriptive part of the specification, and, in addition, two figures (11 and 12) taken from Case B, illustrating the operation of the side-thrust motion. In other words, Case A describes a machine for coupling chain-links by an endwise motion, Case B describes a machine for coupling the links by a sidewise motion, and Case C—being the patent here involved—covers machines for assembling chain-links by an endwise motion, and also by a sidewise motion. It is substantially the combination of Case A and of Case B. The most that can be said for it is that—as asserted by Mr. Fassett himself—the claims in Case C are broader in their purport than those of Case A; but it is only a second patent, and a broader patent, upon the principal subject-matter of Case A. We are unable to distinguish this from the Miller case. As was well asserted by the learned counsel for the appellee, in both cases there is a prior patent for the same machine, but with more limited claims. In both all the claims of the second or broader patent might have been predicated upon the earlier patent. In both the validity of the second patent was contested because of a reservation in the earlier patent, and in both the second patent, if valid, would have the effect of prolonging the term of monopoly of the machine for which the earlier patent was granted. We think the matter so clear that further consideration of the subject is not required.

The decree will be affirmed.



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[BY AUTHORITY OF CONGRESS.]

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## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $10; single copies, 10 cents, if mailed to foreign countries 10 cents additional for postage; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

## Order in Relation to Drawings.

NOTICE.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January 25, 1894.*

Order No. 980, respecting the alteration of drawings, was published in the OFFICIAL GAZETTE of December 19, 1893, (65 O. G., 1771,) by mistake, and was never in force. The following is the only order in force upon that subject:

(ORDER No. 986.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January 25, 1894.*

Erasures or other alterations of drawings will not be made or permitted, except in compliance with this order.

Applicants are requested to furnish, with their originals, a blue print or other photographic copy of all drawings forming part of an application, and where this is done, the original drawings may be taken to the Attorneys' room, but not otherwise.

Before making a requirement to alter an original drawing the Examiner will formally make the blue print or other copy a part of the files, and in case no such copy has been furnished by the applicant, the Office will make such copy without charge, and thereupon the required alteration may be made by the applicant, under the direction of the Examiner and subject to his approval or, upon request, it will be made by the Office at the expense of the applicant.

The requirement to make alterations in original drawings will be made in writing, and the applicant's response must also be in writing, and in such case the copy of the drawing, the requirement to alter, and the applicant's response will form part of the record.

Action by the Office on the merits will not be suspended pending the change of a drawing, if the invention claimed may be understood by the Examiner.

For the purposes of this order the Office, upon the request of applicants, will make blue prints at the charge of five cents a sheet.

In appeal cases and upon the declaration of an interference a blue print or other copy will be sent forward with the files, the Examiner retaining the original drawings in his room until the hearing.

Except as herein required such blue print or other copy will not be made a part of the file, and may not be preserved after an application passes into a patent.

JOHN S. SEYMOUR,
*Commissioner.*

PHOTOGRAPHIC COPIES OF DRAWINGS.

A photographic outfit has been added to the equipment of the Patent Office, and positive photographic copies of any drawing, foreign or domestic, in the possession of the Office, will be furnished upon application to parties entitled thereto, at the following rates:

Size 10x15 inches. ..... 25 cents per sheet.
Size 7x11 inches. ..... 15 cents per sheet.
Size 5x8 inches. ..... 5 cents per sheet.

If a copy of the drawings in a pending application of the size 5x8 inches be ordered sent to any address, two copies must be ordered, as one copy is always retained by the Office and placed in the file for the purposes specified in the above Order No. 986, of January 25, 1894.

In ordering copies of foreign drawings, the examining division, the class, and sub-class where such drawings may be found, must be given.

Coupons will be received in payment of the above fees.

## DISCLAIMER.

262,761.—*Joseph F. Gent*. Columbus, Ind., assignor to himself and *Gaff, Gent & Thomas*, same place. IMPROVEMENT IN THE ART OF BREWING MALT LIQUORS. Patent dated August 15, 1882. Disclaimer filed November 15, 1894, by the present assignee, the *Cerealine Manufacturing Company*.

Enters its disclaimer to that part of the printed specification included between lines 49, 50, and 51, which is in the following words:

"Hops having been added to the mash and steeped with it according to the ordinary method."

Also to the words "and hops" in line 80 of the printed specification.

## Protection of Industrial Property.

The accession of Denmark to the International Union for the Protection of Industrial Property is officially announced. This accession, which took place October 1, 1894, includes the Färöe Islands, but neither Iceland, Greenland, nor the Danish West Indies.

JOHN S. SEYMOUR,
*Commissioner of Patents.*

## PRINTS.

6.—Title: "LOOK FOR THIS LABEL." *Isaac H. Feinberg*, Boston, Mass. Application filed September 28, 1894.

## Issue of November 20, 1894.

| | |
|---|---|
| Patents | 339—No. 529,349 to No. 529,687, inclusive. |
| Designs | 1—No. 23,815. |
| Trade-Marks | 20—No. 25,531 to No. 25,550, inclusive. |
| Labels | None. |
| Prints | 1—No. 6. |
| Reissues | 1—No. 11,454. |
| Total issue | 362 |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | 1 | .... | Nevada | .... | .... |
| Arizona Territory | .... | .... | New Hampshire | 3 | .... |
| Arkansas | .... | .... | New Jersey | 17 | .... |
| California | 10 | 1 | New Mexico Territ'y | .... | .... |
| Colorado | 4 | .... | New York | 62 | 6 |
| Connecticut | 6 | 1 | North Carolina | 1 | .... |
| Delaware | 2 | .... | North Dakota | 2 | .... |
| District of Columbia | 4 | .... | Ohio | 18 | .... |
| Florida | 1 | .... | Oregon | .... | .... |
| Georgia | 1 | .... | Pennsylvania | 36 | 2 |
| Idaho | .... | .... | Rhode Island | 3 | .... |
| Illinois | 14 | 1 | South Carolina | .... | .... |
| Indiana | 24 | .... | South Dakota | .... | .... |
| Indian Territory | 12 | .... | Tennessee | 2 | .... |
| Iowa | .... | .... | Texas | 6 | .... |
| Kansas | 6 | .... | Utah Territory | .... | .... |
| Kentucky | 5 | .... | Vermont | 1 | .... |
| Louisiana | 2 | .... | Virginia | 4 | .... |
| Maine | 5 | .... | Washington | 1 | .... |
| Maryland | 4 | .... | West Virginia | 4 | .... |
| Massachusetts | 29 | 4 | Wisconsin | 11 | 1 |
| Michigan | 11 | 3 | Wyoming | .... | .... |
| Minnesota | 5 | .... | U. S. Army | .... | .... |
| Mississippi | .... | .... | U. S. Navy | 1 | .... |
| Missouri | 7 | .... | | | |
| Montana | .... | .... | Total to citizens of the United States | 315 | 20 |
| Nebraska | 3 | 1 | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Argentine Republic | .... | .... | Mexico | .... | .... |
| Austria-Hungary | 1 | .... | Netherlands | .... | .... |
| Belgium | .... | .... | Newfoundland | .... | .... |
| Bermuda | .... | .... | New South Wales | .... | .... |
| Brazil | .... | .... | New Zealand | 1 | .... |
| British Guiana | .... | .... | Norway | .... | .... |
| Canada | 3 | .... | Queensland | .... | .... |
| Chile, Republic of | .... | .... | Russia | .... | .... |
| Cape Colony | .... | .... | Scotland | 3 | .... |
| Colombia | .... | .... | South Australia | 1 | .... |
| Cuba | .... | .... | Spain | .... | .... |
| Denmark | .... | .... | Sweden | .... | .... |
| Ecuador | .... | .... | Switzerland | 1 | .... |
| England | 5 | .... | Victoria | .... | .... |
| Finland | .... | .... | West Australia | .... | .... |
| France | 3 | 1 | | | |
| Germany | 7 | .... | Total to citizens of foreign countries | 25 | 1 |
| India | .... | .... | | | |

## APPLICATIONS UNDER EXAMINATION.

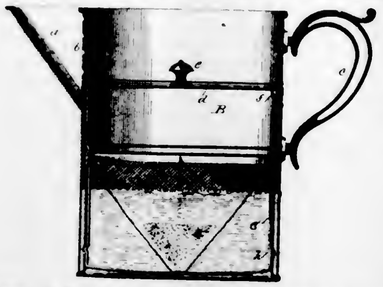
*Condition at Close of Business November 13, 1894.*

| Division No. | Subjects of Invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | Oct. 15 | Nov. 8 | 81 |
| 2 | Farm Stock, Products, etc | Oct. 15 | Nov. 7 | 107 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire-Escapes and Ladders, etc. | Nov. 5 | Nov. 6 | 39 |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Oct. 15 | Nov. 6 | 85 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | Oct. 15 | Nov. 5 | 89 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Oct. 15 | Nov. 5 | 123 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | Oct. 17 | Nov. 1 | 262 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | Oct. 16 | Nov. 1 | 85 |
| 3 | Metallurgy, Metal-Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | Oct. 18 | Oct. 29 | 67 |
| 19 | Stoves and Furnaces | Oct. 15 | Oct. 19 | 224 |
| 37 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Oct. 15 | Oct. 17 | 171 |
| | *Between one and two months.* | | | |
| 20 | Builders' Hardware, Safes, Dentistry, Undertaking, Artificial Limbs, etc. | Oct. 4 | Nov. 10 | 129 |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Sept. 14 | Nov. 9 | 100 |
| 36 | Electricity, Generation, Distribution, Motive Power, Electric Railways, etc. | Oct. 4 | Nov. 5 | 82 |
| 21 | Textiles, etc | Sept. 15 | Nov. 5 | 121 |
| 8 | Furniture, Beds, Store Furniture, etc. | Oct. 10 | Nov. 1 | 223 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, Surgery. | Sept. 27 | Nov. 1 | 170 |
| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Sept. 20 | Oct. 31 | 142 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | Sept. 27 | Oct. 29 | 89 |
| 10 | Carriages and Wagons | Sept. 13 | Oct. 29 | 184 |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Sept. 15 | Oct. 26 | 176 |
| 23 | Instruments of Precision, Acoustics, etc. | Sept. 14 | Oct. 25 | 169 |
| 18 | Steam-Engineering, etc | Sept. 14 | Oct. 19 | 211 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, Cutlery, etc. | Sept. 17 | Oct. 18 | 142 |
| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting, and Leather-Working Machinery. | Sept. 18 | Oct. 15 | 223 |
| 12 | Mechanical Engineering, Store-Service, etc. | Oct. 9 | Oct. 9 | 168 |
| 30 | Lamps, Gas-Fittings, Linotyping, Type-Writing Machines, Optics. | Sept. 14 | Oct. 9 | 222 |
| | *Between two and three months.* | | | |
| 34 | Railway-Cars and Fluid-Pressure Railway-Brakes. | Sept. 6 | Nov. 1 | 250 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | Aug. 28 | Nov. 1 | 350 |
| 17 | Paper-Manufactures and Printing | Aug. 30 | Oct. 29 | 171 |
| 1 | Tillage and Fences | Sept. 7 | Oct. 26 | 279 |
| | *Between three and four months.* | | | |
| 24 | Sewing-Machines, Crinoline and Corsets, Apparel, and Toilet. | July 30 | Nov. 3 | 134 |
| 29 | Wood-Working Machines, Carpentry, Coopering and Roofing, etc. | Aug. 7 | Oct. 18 | 218 |
| | Total number of applications awaiting action | | | 5,296 |
| | *Under one month in arrears.* | | | |
| | Designs | Oct. 29 | Oct. 29 | 126 |
| | Trade-Marks | Oct. 29 | Nov. 6 | 122 |

# PATENTS

## GRANTED NOVEMBER 20, 1894.

529,349. ATTACHMENT FOR COFFEE-POTS. HORACE B. ADAMS, Owego, N. Y. Filed May 28, 1894. Serial No. 512,745. (No model.)



*Claim*—1. An attachment for a coffee-pot, consisting of a bottomless cylinder having a closed top permanently connected thereto and an opening for the escape of air and steam, and a receptacle for ground coffee removably secured within the cylinder, substantially as and for the purpose set forth.

2. An attachment for coffee pots, consisting of a bottomless cylinder, having a closed top and an opening for the escape of air and steam, and a wire frame removably held within the cylinder and having a receptacle for the ground coffee connected thereto, substantially as and for the purpose specified

529,350. CARPET-FASTENER. LEWIS F. AMBROSE, Center Point Ind. Filed Mar 28, 1894. Serial No. 505,471. (No model.)



*Claim.*—A carpet fastener, comprising a strip constructed of sheet metal folded centrally longitudinally, and having the bend located at its inner side so as to lie adjacent to a wall, and provided at the bend with series of perforations and having transversely disposed sockets communicating with the perforations and terminating short of the outer edge of the strip in enlargements or recesses, and the headed fastening devices arranged in the sockets and projecting through the perforations from the inner edge of the strip and extending at a slight inclination in the direction of the wall, in order to receive the selvage of a carpet and to lie out of the way, the heads of the said fastening devices being located in the recesses or enlargements and holding the fastening devices against turning, substantially as described.

529,351. TONGUE-SUPPORT FOR SLEIGHS. ERWIN W. ANDERSON, Rhinelander, Wis. Filed Mar. 5, 1894. Serial No. 502,378. (No model.)



*Claim.*—1. The combination, with a sleigh, and its tongue and crosspiece pivoted to the upwardly projecting ends of the sleigh runners; of the supporting spring provided with the loop C secured to the tongue, the straight laterally-diverging portions D secured to the crossbar, and the two longitudinal arms E arranged over the runners; and the eyebolts and chains adjustably connecting the rear ends of the said arms with the runners, substantially as set forth.

2. The combination, with a sleigh, and its tongue and crosspiece pivoted to the sleigh runners; of an adjustable tongue support formed of a single piece of spring steel and provided with a central loop, diverging middle portions, and rearwardly projecting arms having hooks at their ends; the hook bolts securing the said support to the tongue and its crosspiece; and the eye-bolts and chains secured to the runners and engaging the said hooks, substantially as set forth.

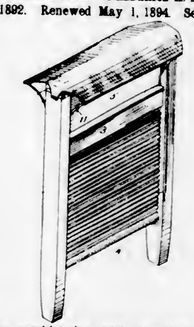
529,352. RAIN BOOT OR LEGGIN FOR LADIES OR CHILDREN. ELLENE A. BAILEY, New York, N. Y. Filed Mar. 5, 1894. Serial No. 502,375. (No model.)



*Claim.*—1. In a rain boot and overgaiter consisting of a glove fitting portion for the back of the leg, a gathered portion for the front of the leg, a glove fitting overgaiter for the foot attached to said front and back portion for the leg, said overgaiter provided with an opening adapted to be closed by means of suitable fastenings, in combination with the strap K attached to the inside of the parts of said opening said strap adapted to hold the selvages of the opening in close relationship to each other, as herein shown and described.

2. In a rain boot and overgaiter having a perforated glove fitting top portion for the back, a perforated gathered portion for the from of the leg, a glove fitting overgaiter attached to said front and back leg portions provided with an opening adapted to be closed by means of suitable fastenings in combination with strap K attached to the inside of the parts of said opening said strap adapted to hold the selvages of said opening in close relationship to each other, and stirrup D adapted to held said gaiter in position as herein shown and described.

529,353. WASHBOARD. FREDERICK A. BALCH, Neillsville, Wis. Filed Dec. 9, 1892. Renewed May 1, 1894. Serial No. 509,718. (No model.)



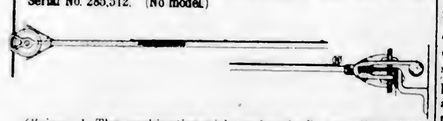
*Claim.*—1. The combination with the wash board having the rubbing plate, of spring frames attached to the board near its upper end and standing out therefrom, and the flexible protector held dia-

tended across the upper end of the board by said frames, substantially as set forth.

2. The combination with the washboard, of the springs 11 having lateral projections 10 seated in the washboard frame, the transverse rods 12, connecting the outer ends of said springs, and the flexible protector attached to and held distended by said rods, substantially as set forth.

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**529,354. CONTACT DEVICE FOR OVERHEAD ELECTRIC RAILWAYS.** JOSIAH L. BLACKWELL, New York, N. Y., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Sept. 15, 1888. Serial No. 285,512. (No model.)



*Claim.*—1. The combination with an electrically propelled vehicle and a transverse guide thereon of an overhead supply wire and an intermediate contact device, bearing on the under side of the wire consisting of a rod having a transversely traveling movement along said guide, and provided at its upper end with the contact device adapted to be held in contact with a supply wire, and guided thereby.

2. The combination with an electrically propelled vehicle of an overhead supply wire and an intermediate contact device consisting of a rod, having a transversely traveling connection with the vehicle at its lower end and provided at its upper end with a contact piece and a spring therefor pressing it upward against the under side of the supply wire.

3. The combination with an electrically propelled vehicle of an overhead supply wire and an intermediate contact device, consisting of a rod held in a vertical position and provided with a transversely traveling connection with the vehicle at its lower end and having at its upper end an extensible contact piece, held by spring pressure against the under side of the supply wire.

4. The combination in a contact device for an overhead supply wire, of a rod and contact piece, thereon, movable relatively to the rod, a spring for holding the contact piece against the supply wire, and a cord leading from the said contact piece to a fixed point on the vehicle whereby the contact piece may be pulled down relatively to the rod against the spring.

5. The combination in a contact device for two overhead supply wires of a rod, two contact pieces supported thereby and held by spring pressure against the two supply wires respectively, and a flexible wire forming part of the circuit and attached to one of said contact pieces, and leading to a fixed point of the vehicle so as to be employed for manipulating the contact device.

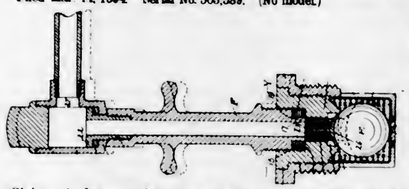
6. The combination in a contact device for an overhead supply wire, of a rod having a hollow end, a piston-carrying the contact piece and forced by spring pressure against the supply wire, and a cord attached to the said piston leading to a fixed point of the vehicle.

7. The combination in a contact device for an overhead supply wire of a vertical rod attached to a vehicle, a vertically moving contact piece at the end of said rod adapted to be held by spring pressure against the supply wire, and a cord leading from the said contact piece to a fixed point of the vehicle.

8. The combination with an electric railway car, of a hollow support rising from its roof, a rod sliding in the support and carrying a trolley for making underneath contact with a conductor, means for forcing the rod upward and a cord for drawing it down.

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**529,355. TAP FOR DRAWING LIQUIDS FROM CASKS, BARRELS, &c.** JAMES H. BLESSING and THOMAS E. MURRAY, Albany, N. Y. Filed Mar. 14, 1894. Serial No. 503,589. (No model.)



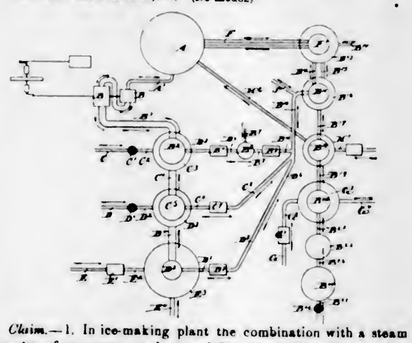
*Claim.*—1. In a tap for drawing liquids, the combination of a valve-section provided with a central discharge-opening and having a valve-seat which surrounds the inner end of said opening; said valve-section being removable from the exterior of the vessel in which the liquid is contained, a solid valve of resilient and compressible material fitted to normally press against said valve-seat and form a water-tight closure for said discharge-opening, and a valve-chamber that is shorter than said valve—so as to normally press the valve against the valve-seat of the valve section and thereby close its discharge-opening; whereby said valve will be normally retained against the valve-seat in a slightly compressed condition, and the opening movement of the valve will be effected by distorting it out of its normal form, as and for the purpose specified.

2. In a tap for drawing liquids, the combination of a valve-section having a skeleton cage extending from its inner end, a removable valve-seat section provided with a central opening and with a valve-seat, a removable perforated inner cage or strainer contained in said skeleton cage, a compressible valve of resilient material contained in said strainer and fitted to close said central opening; the opening movement of said valve being effected by compressing it out of its normal form, a push-bar or compressor fitted to bear against said valve, and a tubular connection fitted to take against said compressor; said valve-seat, compressor, valve, and strainer being removable through the outer end of said valve-section without removing the latter from its place, as and for the purpose specified

3. In a tap for drawing liquids, the combination of a valve-section provided with a central opening and with a valve-seat; said valve-section having a skeleton cage extending from its inner extremity, a perforated inner cage removably inserted in said skeleton cage, a compressible valve of resilient material contained in the inner cage; the latter forming a valve-chamber shorter than said valve which is normally slightly compressed against said valve-seat to form a water-tight closure for the central opening, a removable tubular-section fitted to screw into the outer extremity of the valve-section, and a push bar which is separable from said tubular-section; said push-bar being a permanent attachment to the valve-section and arranged to receive the pressure from said tubular-section; whereby the operation of screwing the tubular-section into the valve-section will effect the opening movement of the valve by compressing the latter out of its normal form, as and for the purpose specified.

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**529,356. APPARATUS FOR PREPARING WATER FOR THE MANUFACTURE OF ICE.** LOUIS BLOCK, New York, N. Y. Filed Apr. 13, 1894. Serial No. 507,377. (No model.)



*Claim.*—1. In ice-making plant the combination with a steam generator of apparatus as the vessel $C^3$ and coil $B^3$ performing the double function of a condenser and an evaporator, an air pump for removing the condensed water therefrom at the exhaust pressure, a pipe for removing the vapor generated from the condensing water at a lower pressure than that of the exhaust steam, a condenser in which such secondary vapor is condensed, and a second air pump distinct from the first, operating to remove the resulting water against a stronger vacuum than obtains in the first, and provisions as the pipe $C^3$ $B^{10}$ for adding together the water from both sources to be subsequently treated to produce the ice, all substantially as herein specified.

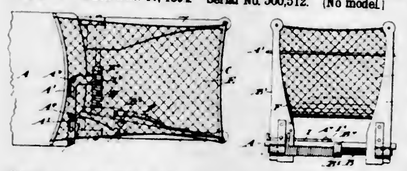
2. In ice making plant the combination with a steam generator of apparatus as the vessel $C^3$ and coil $B^3$, performing the double function of a condenser and an evaporator, an air pump for removing the condensed water therefrom at the exhaust pressure, a pipe for removing the vapor generated from the condensing water at a lower pressure than that of the exhaust steam, a condenser in which such secondary vapor is condensed, and a second air pump distinct from the first, operating to remove the resulting water against a stronger vacuum than obtains in the first, and provisions as the pipe $C^3$ $B^{10}$ for adding together the water from both sources and subsequently passing all the distilled water from these and any other sources available through a single set of apparatus comprising a heat exchanger, reboiler, feed heater, cooler and deodorizer, ready for introduction into the refrigeratory apparatus for the production of pure ice at moderate cost, all substantially as herein specified.



3. In ice making plant the combination with a steam generator of apparatus as the vessel $C^3$ and coil $B^3$ performing the double function of a condenser and an evaporator, an air pump for removing the condensed water therefrom at a low pressure, and an intermediate pipe for removing the vapor generated from the condensing water at a lower pressure, another apparatus performing also the double function of a condenser and evaporator in which such secondary vapor is condensed, a second air pump operating to remove the resulting water, and provisions as the pipe $C^3$ for conducting away such water, a condenser proper in which the third vapor is condensed, and a final air pump operating to remove the resulting water and any remaining thin vapor and air at the lowest pressure, and provisions as the pipe $D^3$ for conducting it away, and provisions for adding the water due to such condensation of the third vapor to that produced from the condensation of the secondary vapor and of the original steam and also that obtainable from the condensation of other steam available and thus obtaining distilled water from all these sources to be subsequently treated to produce ice, all substantially as herein specified.

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**529,357. STREET-CAR FENDER.** ALPHONSO F. BOARDMAN, Brooklyn, N. Y. Filed Feb. 17, 1894. Serial No. 500,512. (No model.)



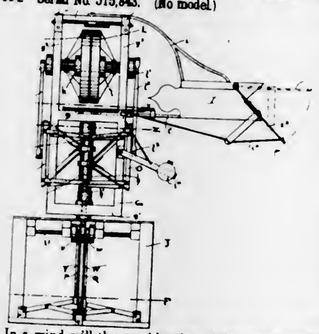
*Claim.*—1. In a street car fender, a turning shaft extended across the car provided with arms and yielding material as a net extended between said arms and the car, in combination with a sprung arranged to aid in lifting such arms and yielding material and a lever as D adapted to turn to a limited extent laterally, and a flexible band as C connecting such lever to the opposite arm arranged as shown so that the act of striking a person or object tends to turn such lever and allow the flexible material to partially collapse laterally, and also tends to turn the shaft and allow such material to also collapse longitudinally of the car, all substantially as herein specified.

2. In a street car fender a cross shaft B, having arms B', $B^3$, a lever D pivoted on one of said arms, a stop $A^3$ engaging such lever and holding it and the connected parts down, a band C extending from the extremity of the arm B to the outer extremity of the lever D, a flexible material as the net E attached to such band, and a stop as the stud $B^4$ inclosed loosely in the notch *d* adapted to limit the lateral turning of the lever, all arranged for joint operation substantially as herein specified.

3. In a car fender the net E carried at the front with provisions as the spring H and the cross shaft B and arms carried thereon, for holding such net extended and allowing it to be lifted when a person or object is struck, in combination with the slide I, movable at will by the attendant, arranged to serve as a stop to limit the rise of the net and its operating means when the device is in use, and to allow it to rise higher and occupy less room longitudinally when the cars are to be packed together, all substantially as herein specified.

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**529,358. WINDMILL.** JOHN BOISCLAIR, Montreal, Canada. Filed June 27, 1894. Serial No. 515,843. (No model.)



*Claim.*—1. In a wind mill the combination of the two wheels K and L secured to hubs *k* and *l*, turning with and on shaft M and having the disk cranks $k^3$ and $l^3$ joined to the connecting rods $k^4$ and $l^4$, cross heads N and O having the pieces *n*, *n'*, *o* and *o'* joined to the collars $n^3$ and $o^3$, rings *p* and *q* having projections $p^3$ and secured to connecting rods P and Q, levers T and S connecting rods V and W and shaft U, with the rectangular frame G, hollow column H having the four vertical slots *h*, frame J and vane I substantially as described and for the purposes set forth.

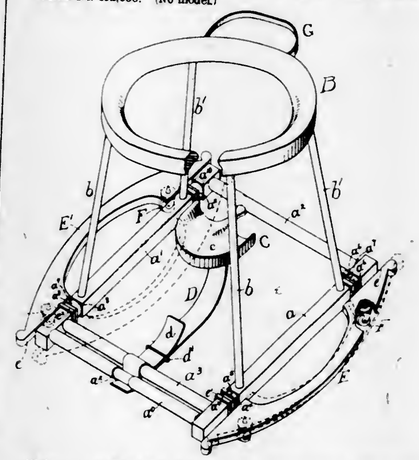
2. In a wind mill the combination of the mechanism of the wind mill with a stopping device composed of a vane I supported by the pieces *i* and *i'* and having the deflector $i^2$ automatically locking the mill through the cord $i^4$ levers $i^7$ and $i^8$ pieces $i^{10}$ and the uprights $g^2$ substantially as described and for the purposes set forth.

3. In a wind mill the combination of the mechanism of the wind mill with a hand stopping device composed of the cord $i^{12}$ sector $i^{14}$, levers $i^{15}$ and $i^{17}$, pieces *i* and *i'* vane I levers $i^7$ and $i^8$, pieces $i^9$ and $i^{10}$ and the uprights $g^2$ substantially as described and for the purposes set forth.

4. In a wind mill the combination of a hand and an automatic stopping device with an automatic starting one composed of the weight $i^{11}$ cord $i^{13}$ piece *i'* vane I piece *i* levers $i^7$ and $i^8$, pieces $i^9$ and $i^{10}$ and the uprights $g^2$, substantially as described and for the purposes set forth

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**529,359. BABY-WALKER.** NELSON P. BRADISH, Kansas City, Mo., assignor of one-half to James H. Wilcox, same place. Filed Dec. 6, 1893. Serial No. 492,953. (No model.)



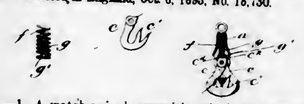
*Claim.*—1. In a baby walker, the combination with a base frame having side bars provided with shoulders and grooves in said side bars near said shoulders of rockers, having collars movably connected with said side bars, and adjustably connected with said shoulders substantially as and for the purpose described.

2. In a baby walker the combination with the base frame of a seat supporting spring, plate having the end portion secured to the base frame provided with a leaf extending lengthwise and outwardly from the spring plate and a sliding clasp adapted to draw the said parts together and thereby increase the tension of the spring plate at different points as described.

3. In a baby walker, a base frame having separate transverse revoluble and supporting strips, in juxtaposition, and a spring support for the seat, extending between said strips and a cam on said revoluble strip substantially as and for the purpose described.

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**529,360. WATCH-PROTECTOR SWIVEL.** WILLIAM T. BRAHAM, Manchester, England. Filed Apr. 16, 1894. Serial No. 507,728. (No model.) Patented in England, Oct. 6, 1893, No. 18,730.



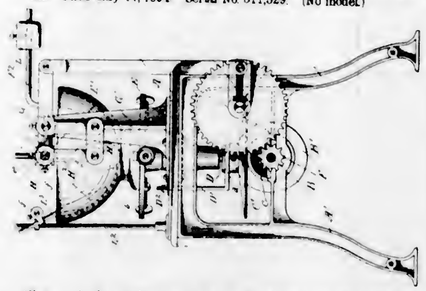
*Claim.*—1. A watch swivel comprising the body *a* provided with a joint *b*, hooks c oppositely pivoted to the body at said joint and provided with adjacent oppositely inclined surfaces and prongs *c'*, and a spring *f* engaging said hooks to hold them in normal position, combined and arranged substantially as described, so that when the body is pulled upon in a direction away from the hooks the resistance

of the watch bow or ring upon the adjacent oppositely inclined surfaces of such hooks will cause said hooks to move across one another and more securely bind themselves about the bow and thereby project their prongs outwardly to engage the pocket or other adjacent receptacle containing the watch, as set forth.

2. A watch swivel comprising the body *a* provided with a joint *b*, hooks *c* oppositely pivoted to the body at such joint and provided with adjacent oppositely inclined surfaces and prongs *c'*, a spring *f* and pin *g* engaging said hooks to hold them in normal position, combined and arranged substantially as described, so that when the body is pulled upon in a direction away from the hooks the resistance of the watch bow or ring upon the adjacent oppositely inclined surfaces of the hooks will cause said hooks to move across one another and more securely bind themselves about the bow and thereby project their prongs outwardly to engage the pocket or other adjacent receptacle containing the watch, as set forth.

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529,361. **TRITURATOR.** LOUIS A. BUCHANAN, Stanford University, Cal. Filed May 17, 1894. Serial No. 511,529. (No model.)



*Claim.*—1. In a triturator, the combination with the frame, of a vertical shaft mounted therein, a mortar secured on the upper end of said shaft, a friction plate on the lower end of said shaft, a driving shaft below the vertical shaft carrying a friction pinion in contact with the friction plate, a pestle, and mechanism for vibrating the pestle

2 In a triturator, the combination of the mortar, mechanism rotating the same, an oscillatory cross rod above the level of the mortar provided with a lateral arm carrying an adjustable weight, a rock shaft mounted in straps projecting from the cross rod and carrying the pestle, and mechanism for operating the rock shaft.

3. In a triturator, the combination with the frame, of the mortar, the drive shaft having a friction wheel thereon, the vertical shaft for driving the mortar, the friction plate secured to the lower end of the shaft, which plate engages with the friction wheel, device for moving the plate in or out of contact with the said friction wheel, a pinion loosely secured to the outer end of the drive shaft, gear wheel which intermeshes with the pinion, the pitman connected with the gear at its lower end, the crank lever to which the upper end is connected, said lever being secured to a cross shaft working within bearing in the side standards, the pestle held by a second cross shaft which is connected to the former cross shaft by straps, the downwardly extending arm connected to the crank lever by a link connection, and the clutch mechanism for imparting the rotation of the drive shaft to the pestle driving mechanism.

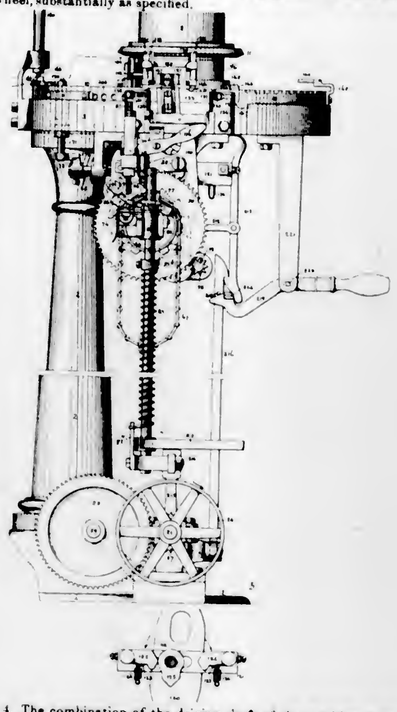
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529,362. **AUTOMATIC KNITTING-MACHINE.** WALTER D. BUTZ, Norristown, Pa. Filed Apr. 3, 1893. Serial No. 468,882. (No model.)

*Claim.*—1. The combination of the cam cylinder, a shaft geared thereto and having two pulleys, one rotated in one direction and the other in the opposite direction, a duplex clutch whereby either of said pulleys may be clutched to the shaft simultaneously with the release of the other pulley, a clutch shifting rod or bar, a wheel having cams on its opposite sides, movable toes on the clutch shifter, and means for moving one of said toes into the path of one of the cams of the cam wheel simultaneously with the movement of the other toe out of the path of the other cam, substantially as specified.

2. The combination of the driving shaft of the machine having two belt pulleys, one connected directly to said shaft, a system of reducing gears whereby the other pulley is geared to the shaft, a belt shipper, a lever for moving the same in one direction, a spring for moving it in the opposite direction, a catch for retaining the lever in one of its positions, a pattern chain having two cams, means for actuating said chain, and devices whereby one of the cams is caused to operate the lever to the belt shipper and the other to trip the retaining catch, substantially as specified.

3. The combination of the driving shaft of the machine having two pulleys, one secured to said shaft and the other loose thereon, a ratchet wheel secured to the shaft, and a system of reducing gears, that at one end of the system being secured to the loose pulley and that at the other end having a pawl for engagement with the ratchet wheel, substantially as specified.



4. The combination of the driving shaft of the machine, a pair of belt pulleys, one secured to said shaft, and the other loose thereon, a ratchet wheel secured to the shaft, a system of reducing gears, that at one end of the system being secured to the loose pulley, and that at the other end having a pawl for engagement with the ratchet wheel, a sliding cone for throwing said pawls out of engagement with the ratchet wheel, and means for operating said cone, substantially as specified.

5. The combination of the driving shaft of the machine, a belt pulley secured to said shaft, a loose pulley connected to the shaft by a system of reducing gears, a pulley disconnected from the shaft, a belt shipper free to turn in a swinging block, means for turning said belt shipper so as to shift the belt from one to the other of the two driving pulleys, and mechanism for causing the swinging of the belt shipper on its pivots in order to transfer the belt to the disconnected pulley, substantially as specified.

6. The combination of the cam box of the machine, the ring having a cam for shifting certain of the needles into and out of operative position, a projection on the cam box, a clutch arm on the shifter cam ring, a pattern chain and means whereby said chain is caused to operate said clutch arm at intervals so as to clutch the shifter cam ring to the cam box and cause simultaneous rotation of the two, substantially as specified.

7. The combination of the cam box of the machine, the cam ring having a shifter cam for moving certain of the needles into and out of operative position, a projection on the cam box, a clutch arm on the cam ring for engaging with said projection, a fixed and recessed support serving as a bearing for said clutch arm during the time that it is in engagement with the projection on the cam box, a block acting upon the free end of the arm and working in the recess in said support, a pattern chain, and means whereby said chain is caused to operate the block so as to lift the arm or permit it to drop into the recess in the support, substantially as specified.

8. The combination of the cam box, the ring having a cam for shifting certain of the needles into and out of operative position, a projection on the cam box, a clutch arm on the shifter cam ring adapted to engage with said projection, a support serving as a bearing for said arm during the time that it is rotated with the cam ring,



mechanism for lifting said clutch arm into operative connection with the cam box, a catch for retaining said mechanism in such position, and a projection on the shifter cam ring for tripping said catch, substantially as specified.

9. The combination of the cam box, a ring having a cam for shifting certain of the needles into and out of operative position, a projection on the cam box, a clutch arm on the ring for engaging with said projection, a reversing device for the needle shifting cam of the cam ring whereby said cam is moved into position either to raise or lower the needles, and means for operating said clutch arm and reversing device, substantially as specified.

10. The combination of the cam box of the machine, a ring having a cam for shifting certain needles of the machine into and out of operative position, a projection on the cam box, a clutch arm on the shifter cam ring for engaging with said projection, a reversing device for the needle shifting cam having as one of its elements a ratchet wheel, mechanism for operating the clutch arm, and means whereby the movement of one of the arms of said mechanism is imparted to the ratchet wheel, substantially as specified.

11. The combination of the needle cylinder and its needles, the cam box, the radiating levers for operating the needles, the cam slides for actuating said levers, a reciprocated pawl carrier having two pairs of pawls, one pair for each cam slide, and pawl tripping plates whereby one pawl of each pair is thrown out of action simultaneously with the throwing into action of the other pawl of the pair, substantially as specified.

12 The combination of the needle cylinder of the machine, and its needles, the cam box, the radiating levers, cam slides for actuating the same, a reciprocated pawl carrier having two pairs of pawls, one pair for each cam slide, pawl tripping plates, projections on the cam slides for moving these tripping plates positively in one direction, and trip catches whereby the cam slides move the pawl tripping plates in the other direction and then release the same, substantially as specified.

13. The combination of the cam slides having racks, the reciprocated pawl carrier having two pairs of pawls, one pair for each cam slide, pawl tripping plates, and means for operating the same, one of the teeth in the rack of one cam slide being beveled and the others abrupt, substantially as specified.

14. The combination of the needle cylinder of the machine and its needles, the radiating levers acting on said needles, the cam slides for actuating said levers, the pawl carrier having two pairs of pawls one pair for each cam slide, a lever connected to said pawl carrier, pawls carried by said lever, and each free to yield in one direction, and a cam for acting upon said pawls so as to vibrate the lever, substantially as specified.

15. The combination of the cam slides of the machine, means for moving the same, nipping jaws for the supplementary knitting thread, an operating rod for said nippers, a lifter for said rod carried by one of the cam slides, an arm for acting upon said lifter, and a cam with intermediate mechanism for moving said arm when the lifter is in position to be acted upon thereby to raise the operating rod, and means for moving said lifter to drop said rod, substantially as described.

16. The combination of the tube through which the thread passes, absorbent material carried by said tube and projecting into contact with the thread, means for rotating the tube, and means for supplying oil to said absorbent material, substantially as specified.

17. The combination of an oil reservoir, a tube mounted above the same and serving as a thread passage, means for rotating said tube, a grooved wheel or flange formed on the tube and having a lining of absorbent material with portions projecting inwardly into contact with the thread and a chain adapted to said grooved wheel or flange, and depending into the oil reservoir, substantially as specified.

18. The combination of the nipper for the supplementary knitting thread, a rod for operating said nipper, a lever having a guide for the threads at its outer end, a spring acting upon said lever so as to lift the outer end of the same, and a connection between the spring-actuated lever and the nipper operating rod, whereby the outer end of the lever is raised by the spring on the opening of the nippers, but is lowered on the closing of the same.

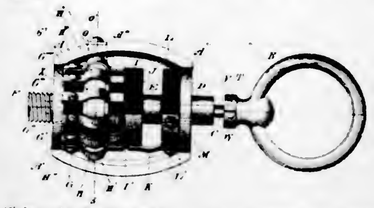
19. The combination of the nippers for engaging with the supplementary knitting thread, a rod for operating said nippers, a lever having a guide for the threads, means for raising and lowering said lever, and a lever having a bearing for the threads and a projection for engagement with the thread guiding lever, whereby tension upon the threads is changed as said lever rises and falls, substantially as specified.

20. The combination of the nippers for the supplementary knitting thread, a rod for operating said nippers, a lever having a guide for the knitting threads, and a spring acting on said lever and connected to the nipper operating rod, substantially as specified.

21. The combination of the needle cylinder and its needles the levers for moving said needles into and out of operative position, cam slides for acting upon said levers, a slide carried by the end lever of one set and adapted to engage the first needle of the inactive set, and cams carried by the cam slides and serving to move this slide into and out of operative position, substantially as specified.

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529,363. **ELECTRIC SWITCH OR CUT-OUT.** JOHN C. CASSIDY, East Orange, N. J. Filed Aug. 11, 1894. Serial No. 520,007. (No model.)



*Claim.*—An electric switch or cut-out, consisting of a frame A, having a bar A', to which is rigidly fixed an insulated block X; said block X carrying contact springs H, H', H'', H''', $H^4$ and $H^5$ fastened thereto, by means of the screws G, G', G'', G''', $G^4$ and $G^5$, said contact springs H, H', H'', H''', $H^4$ and $H^5$ being conducting material, in combination with a wheel R, having a smooth surface R' and corrugated surface S, upon which bears a spring P, depressed at Q, and connected with the frame A on its arm A''', all in combination with an insulated block I, one-half the periphery of said insulated block I carrying a contact piece J, all in combination with a collar E and insulated block L, carrying a spring M, said spring M having an arm K, and being attached to said block L by means of screws L', said block L being fastened to the arm A'' of frame A, said frame A carrying a neck D, in combination with a rotary shaft C, carrying a finger piece B, so arranged that the said rotary shaft C will cause the wheel R and block I to revolve, so as to present the insulated surface I' of the block I, or the contact piece J of said block I to the connecting springs H, H', H'', H''', $H^4$ and $H^5$, substantially as herein set forth and described

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529,364. **BELT-FASTENER.** CHRISTIAN CLAUDY and JOHN KLUSMEYER, Birmingham, Ala., said Claudy assignor to Augusta L. Poe, same place. Filed Jan. 30, 1894. Renewed Oct. 13, 1894. Serial No. 525,847. (No model.)



*Claim.*—1. In a belt fastener, a metallic frame having a cross bar with a series of one or more rows of pins, two end bars journaled in the frame, the bars having a series of pins on one side, stops formed on the side frames to prevent the pins on the end bars from turning past a vertical position, substantially as described.

2. In a belt fastener, a metallic frame having a cross bar with a series of pins, end bars journaled in the frame the bars provided with a series of pins, one end of a belt engaging the pins on a cross bar the other end of the belt engaging the pins on the end bars, all combined as set forth for the purpose described.

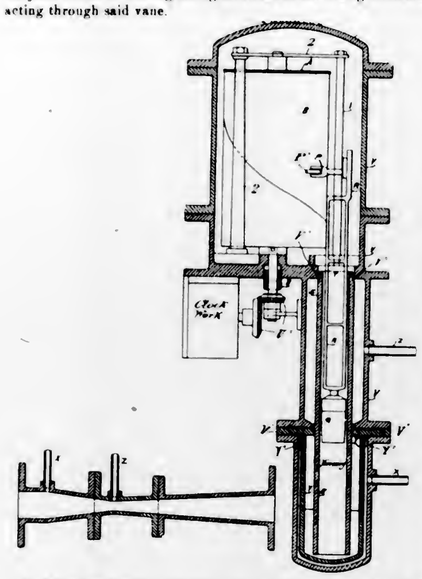
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529,365. **INTEGRATING APPARATUS.** FREDERICK N. CONNET and WALTER W. JACKSON, Providence, R. I. Filed Feb. 2, 1894. Serial No. 498,859. (No model.)

*Claim.*—1. In an integrating apparatus, the combination of regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism by means of intermediate mechanical elements.

2. In an integrating apparatus, the combination of regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a vane extending the length of said surfaces, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism acting through said vane.

3. In an integrating apparatus, the combination of regulating surfaces, as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, a vane extending the length of said surfaces, a spring, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by said spring when and as permitted by the joint action of said regulating surfaces and traversing mechanism acting through said vane.



4. In an integrating apparatus, the combination of regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism by means of intermediate mechanical elements, and the various parts being so proportioned and arranged that when opposite the depressed surface the traversing mechanism is free to assume any position under the influence of variations in intensity without pressure from the other elements.

5. In an integrating apparatus the combination of regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a vane extending the length of said surfaces, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism acting through said vane, and the various parts being so proportioned and arranged that when opposite the depressed surface the traversing mechanism is free to assume any position under the influence of variations in intensity without pressure from the other elements.

6. The combination of a float, floating in the mercury of a Venturi meter, with an integrating apparatus having regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism by means of intermediate mechanical elements.

7. The combination of a float, floating in the mercury of a Venturi meter, with an integrating apparatus having regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a vane extending the length of said surfaces, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism acting through said vane.

8. The combination of a float, floating in the mercury of a Venturi meter, with an integrating apparatus having regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, a vane exteading the length of said surfaces, a spring, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by said spring when and as permitted by the joint action of said regulating surfaces and traversing mechanism acting through said vane.

9. The combination of a float, floating in the mercury of a Venturi meter, with an integrating apparatus having regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism by means of intermediate mechanical elements, and the various parts being so proportioned and arranged that when opposite the depressed surface the traversing mechanism is free to assume any position under the influence of variations in intensity without pressure from the other elements.

10. The combination of a float, floating in the mercury of a Venturi meter, with an integrating apparatus having regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a vane extending the length of said surfaces, a gear operated with said surfaces and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism acting through said vane, and the various parts being so proportioned and arranged that when opposite the depressed surface the traversing mechanism is free to assume any position under the influence of variations in intensity without pressure from the other elements.

11. The combination of a Venturi meter with an integrating apparatus having regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism by means of intermediate mechanical elements.

12. The combination of a Venturi meter with an integrating apparatus having regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a vane extending the length of said surfaces, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism acting through said vane.

13. The combination of a Venturi meter with an integrating apparatus having regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, a vane extending the length of said surfaces, a spring, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by said spring when and as permitted by the joint action of said regulating surfaces and traversing mechanism acting through said vane.

14. The combination of a Venturi meter with an integrating apparatus having regulating surfaces as described to which motion is is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated,



means for keeping these surfaces and traversing mechanism in contact, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism by means of intermediate mechanical elements and the various parts being so proportioned and arranged that when opposite the depressed surface the traversing mechanism is free to assume any position under the influence of variations in intensity without pressure from the other elements.

15. The combination of a Venturi meter with an integrating apparatus having regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a vane extending the length of said surfaces, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism acting through said vane and the various parts being so proportioned and arranged that when opposite the depressed surface the traversing mechanism is free to assume any position under the influence of variations in intensity without pressure from the other elements.

16. The combination consisting of an integrating apparatus, a water-tight casing surrounding said apparatus, and one of the tubes of a Venturi meter, said tube being connected with said casing so that the water in the tube may flow into and fill the casing substantially as described

17. The combination of a Venturi meter with an integrating apparatus having regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism by means of intermediate mechanical elements, and said integrating apparatus being incased in a water-tight casing forming a part of one of the tubes of said meter.

18. The combination of a Venturi meter with an integrating apparatus having regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a vane extending the length of said surfaces, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism by means of intermediate mechanical elements and the various parts being so proportioned and arranged that when opposite the depressed surface the traversing mechanism is free to assume any position under the influence of variations in intensity without pressure from the other elements, and said integrating apparatus being incased in a water-tight casing forming a part of one of the tubes of said meter.

19. The combination of a Venturi meter with an integrating apparatus having regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, a vane extending the length of said surfaces, a spring, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by said spring when and as permitted by the joint action of said regulating surfaces and traversing mechanism acting through said vane, and said integrating apparatus being incased in a water-tight casing forming a part of one of the tubes of said meter.

20. The combination of a Venturi meter with an integrating apparatus having regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism by means of intermediate mechanical elements and the various parts being so proportioned and arranged that when opposite the depressed surface the traversing mechanism is free to assume any position under the influence of variations in intensity without pressure from the other elements, and said integrating apparatus being incased in a water-tight casing forming a part of one of the tubes of said meter.

21. The combination of a Venturi meter with an integrating apparatus having regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a vane extending the length of said surfaces, a gear operated with said surfaces, and a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism acting through said vane and the various parts being so proportioned and arranged that when opposite the depressed surface the traversing mechanism is free to assume any position under the influence of variations in intensity without pressure from the other elements, and said integrating apparatus being incased in a water-tight casing forming a part of one of the tubes of said meter.

22. The combination of a Venturi meter having a vessel containing the mercury thereof, said vessel beiug surrounded by the water of the meter under pressure, with an integrating apparatus.

23. The combination of an integrating apparatus with a float floating in the mercury of a Venturi meter, said mercury being contained in a vessel surrounded by the water of the meter under pressure.

24. The combination of a Venturi meter having a vessel containing the mercury thereof, said vessel being surrounded by the water of the meter under pressure, and an integrating apparatus, said apparatus being incased in a water-tight casing forming a part of one of the tubes of said meter.

25. The combination of an integrating apparatus with a float floating in the mercury of a Venturi meter, said mercury being contained in a vessel surrounded by the water of the meter under pressure, and said integrating apparatus being incased in a water-tight casing forming a part of one of the tubes of said meter.

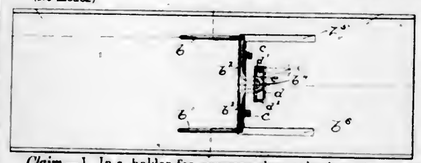
26. In an integrating apparatus, the combination of regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a gear operated with said surfaces, a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism, and the mechanism actuated by the indicating intensity of the force or matter integrated; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces traversing mechanism by means of intermediate mechanical elements, and said traversing mechanism and the mechanism actuated by said intensity being rigidly connected together.

27. In an integrating apparatus, the combination of regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surfaces is varied by the force or matter integrated, means for keeping these surfaces and traversing mechanism in contact, a vane extending the length of said surfaces, a gear operated with said surfaces, a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism, and the mechanism actuated by the indicating intensity of the force or mater integrated; the meshing of said pinion with said gear being controlled by the joint action of said regulating surfaces and traversing mechanism acting through said vane, and said traversing mechanism and the mechanism actuated by said intensity being rigidly connected together

28. In an integrating apparatus, the combination of regulating surfaces as described to which motion is imparted, mechanism to traverse these surfaces and whose position relative to said surface is varied by the force or matter integrated, a vane extending the length of these surfaces, a spring, a gear operated with said surfaces, a pinion so arranged that it may mesh with said gear and when in mesh operate registering mechanism, and the mechanism actuated by the indicating intensity of the force or matter integrated; the meshing of said pinion with said gear being controlled by said spring as and when permitted by the joint action of said regulating surfaces and traversing mechanism acting through said vane, and said traversing mechanisms and the mechanism actuated by said intensity being rigidly connected together.

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**529,366. HOLDER FOR MEMORANDUM-CALENDARS.** RICHARD L. CRAMPTON, Oak Park, Ill. Filed Sept. 20, 1894. Serial No. 523,549. (No model.)



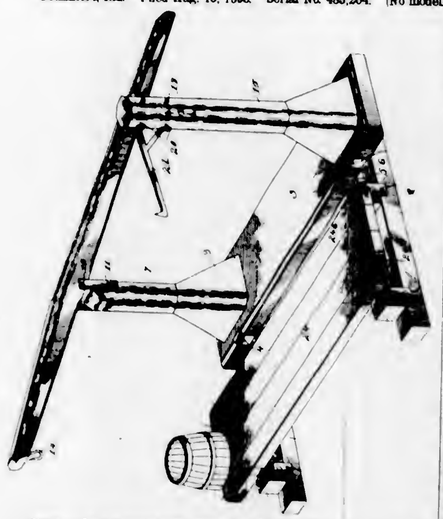
*Claim.*—1. In a holder for memorandum calendars the combination with a pair of bed plates placed end to end; of a pair of U-shaped loops joined by a cross piece, said cross piece being journaled

to rotate upon one of said bed plates, whereby the calendar may be removed or replaced and a lock for maintaining said loops in position to hold the calendar in place substantially as described.

2. In a holder for memorandum calendars the combination with the plates *a a'* placed end to end, of the U-shaped loops *d d'* joined by cross piece $b^3$, said cross piece $b^3$ fitting in a groove $b^5$ provided in said plate *a'*, said cross piece $b^3$ carrying a tongue or loop $b^4$ adapted to rest against the under side of said plate *a'*, lugs $d^2$ $d^3$ provided upon the under side of said plate *a'* and locking strip *c* pivoted to lug $d^2$ and adapted to pass beneath the loop $b^4$ and rest by its free end upon lug $d^3$ to lock said cross piece $b^3$ against rotation substantially as described.

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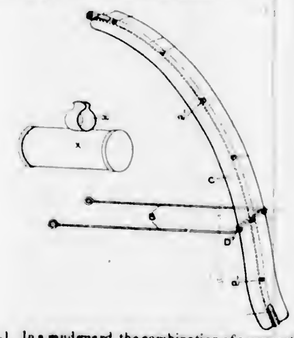
**529,367. BUTCHERING APPARATUS.** PINKNEY A. DAVIS, Frankfort, Ind. Filed Aug. 15, 1893. Serial No. 483,204. (No model.)



*Claim.*—In a knockdown portable hog handling apparatus, the combination of opposite parallel sills, separate pairs of Z-shaped brackets adjustably fitted on said sills, a supporting platform adapted to be detachably clamped on the sills by means of said brackets, table rests secured on the sills at one side of the pairs of brackets, oppositely located angle irons permanently secured on said table rests, and a sectional cleaning table adapted to be removably supported on said table rests and comprising a series of parallel planks closely abutted together, the outer of said planks being provided in their outer edges with notches to receive the vertical portions of said angle irons to obviate displacement and to hold the several planks together, substantially as set forth.

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**529,368. MUD-GUARD FOR VEHICLES.** ROBERT A. DAY, Harrogate, England. Filed June 7, 1894. Serial No. 513,724. (No model.) Patented in England Nov. 4, 1893, No. 20,964.



*Claim.*—1. In a mudguard, the combination of a supporting frame consisting of a single strip A having a flexible end A' adapted to lie over the center of the periphery of the wheel and having clips D, D, formed at its ends and studs *a'*, *a'*, on its outer face, of a fork B and of a transverse strip or bar B' carried by the fork B and having clips D'', D'', at its ends, and of a flexible but self-supporting cover C as set forth.

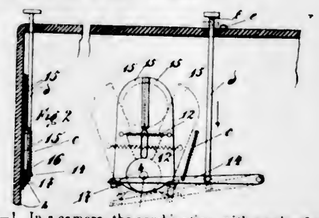
2. In a mudguard, the combination of the strip A having clips D and studs *a'*, of the fork B, and of the cover C having holes *c* in it to engage with the studs *a'* on the strip A, all combined, arranged, and adapted to operate as set forth.

3. In a mudguard, the combination of the strip A having clips D and studs *a'*, of the fork B, of the transverse strip or bar B', having clips D'' at its ends, and of the cover C having holes *c* in it to engage with the studs *a'* on the strip A, all combined, arranged, and adapted to operate as set forth.

4. A mud guard for a velocipede, consisting of a curved support A, and fastening devices permanently securing the said support vertically over the backbone of the velocipede; in combination with a detachable cover of flexible, self-supporting material, such as celluloid; and fastening devices attaching the central portion of the cover to the said support with its edges projecting on each side thereof and permitting the cover to be removed and rolled up in dry weather, substantially as set forth.

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**529,369. CAMERA.** ALOIS DELUG, Munich, Germany. Filed Feb. 20, 1894. Serial No. 500,892. (No model.)



*Claim.*—1. In a camera, the combination, with a pair of pivoted shutter-slides, each having a lug below the pivotal point, of a spring connecting both slides and tending to hold them in their closed position, a lever provided with ears arranged to engage the lugs on the shutter-slides, a spring-held push-rod bearing against one end of the lever, a spring attached to the same end of the lever, a band secured to the said spring and provided with a series of holes, and a leaf-spring provided with a pin adapted to enter any desired hole in the band, said leaf spring being arranged so as to be forced shut by the closing of the camera, substantially as set forth

2. In a camera, the combination, with a pair of pivoted shutter-slides, each having a lug below the pivotal point, said lugs being beveled on their under sides, of a lever provided with ears arranged to engage said lugs, a spring connecting the two slides, a notched rod for time-exposure provided with a plate resting between the two shutters, a spring on the said rod, and a catch arranged to enter the notch in said rod, substantially as set forth.

3. In a camera, the combination, with a film-roller having a tapering slot, of a fastening device conical in form and having ledges, the conical portion of the fastening device entering the tapered slot and the ledges resting on the outside of the roller, substantially as set forth.

4. In a camera, the combination, with a finder-glass, of a spring-actuated frame around the said glass, a shade-cloth attached to the frame and to the camera, and a movable section of the camera arranged to slide over the frame and depress it, substantially as set forth.

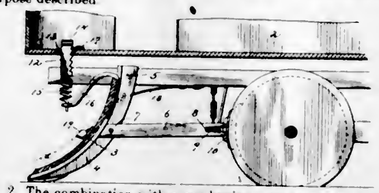
5. In a camera, the combination, with a shutter device, and a notched push-rod for operating the same, of a catch arranged to enter the notch, and a movable camera section arranged to disengage the catch from the push rod, substantially as set forth.

6. In a camera, the combination, with a shutter device, and a spring for operating the same, of a strap provided with a series of holes and attached to the spring, a leaf spring having a pin arranged to enter any one of the holes in the strap, and a movable camera section arranged to depress the leaf spring and force its pin from the strap, substantially as set forth.

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**529,370. CAR-FENDER.** WILLIAM F. DUNCKER, Steelton, Pa., assignor to Jacob Shaar, same place. Filed Mar. 6, 1894. Serial No. 502,563. (No model.)

*Claim.*—1. The combination with a car having a transverse brake beam carrying brake shoes, of a fender hingedly connected with and suspended from the car and located in advance of the brake beam, and a bar extending from the fender to the brake beam, and having its front end movably connected with the former and loosely connected at its rear end to the brake beam, substantially as and for the purpose described



2. The combination with a car having a transverse brake-beam carrying brake-shoes, of a fender hingedly connected with and suspended from the car, and located in advance of the brake beam, and a connecting bar having its front end pivotally attached to the fender and provided at its rear end with an opening loosely receiving the brake-beam, substantially as described.

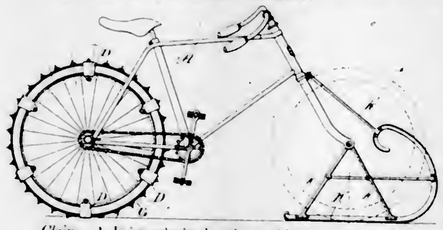
3. The combination with a car, of a fender hingedly connected therewith, a vertically movable ratchet bar mounted on the car means for engaging the ratchet bar and locking the same against upward movement, and a spring forming a yielding connection between the ratchet bar and the fender to permit the latter to yield to any inequalities of a track or the like, substantially as described.

4. The combination with a car, of a fender suspended therefrom and hingedly connected therewith, and provided with a forwardly extending arm, a ratchet bar mounted on the car means for engaging the ratchet bar to lock the same against upward movement, and provided at its upper end with a foot plate, and a spiral spring interposed between the lower end of the ratchet bar and said arm and forming a yielding connection, substantially as and for the purpose described.

5. The combination with a car having a transverse brake-beam carrying brake-shoes, of a fender hingedly connected with the car and located in advance of the brake-beam, connecting bars having their front ends pivotally attached to the fender and having their rear ends loosely connected with the brake beam, brake-shoes arranged at the bottom of the fender, and a yielding connection between the fender and the car for holding the former depressed, substantially as described.

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**529,371. ICE-VELOCIPEDE.** WILLIAM FAHRIG, Chicago, Ill. Filed Jan. 23, 1894. Serial No. 497,751. (No model.)



*Claim.*—1. In ice velocipedes, the combination of a bicycle frame, a driving wheel provided with a cushioned tire, a sheet metal outer covering for such tire, a series of independent cushioned spikes attached to such covering, a set of spring metal clips for securing such covering and wheel rim together, and a set of runners secured to the front fork of the bicycle frame, substantially as described.

2. In ice velocipedes, the combination of a driving wheel adapted to be attached to a bicycle frame, a sheet metal strip forming an outer covering for the cushioned tire, and a series of independent cushioned spikes attached to such covering consisting of a headed spike on the inner side, a metal washer rigidly attached to the outside, and a cushioned washer interposed between such outer washer and the metallic covering, substantially as described.

3. In ice velocipedes, the combination of a driving wheel adapted to be attached to a bicycle frame, a sheet metal strip forming an outer covering for the cushioned tire, a series of independent cushioned spikes attached to such covering consisting of a headed spike on the inner side, a metal washer rigidly attached to the outside, and a cushioned washer interposed between such outer washer and the metallic covering, and a set of spring metal clips for securing such wheel and covering together, substantially as described.

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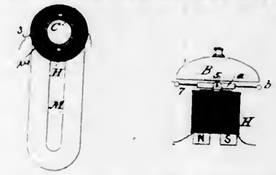
**529,372. BRAKE-SHOE.** ARTHUR W. FIELD, Boston, Mass. Filed Mar. 7, 1894. Serial No. 502,607. (No model.)

*Claim.*—The above described car brake shoe, which consists of a body provided with a series of cavities larger at the base than at the mouth, the mouths of said cavities being arranged at an angle across the face of the shoe, a filling channel connecting said cavities near the bottom, and a mass of glass filling said cavities flush with the face of said shoe and constituting a series of friction surfaces adapted to come in contact with the surface of the car wheel, substantially as shown and described.



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**529,373. ELECTROMAGNETIC APPARATUS.** STEPHEN D. FIELD, Stockbridge, assignor to the American Bell Telephone Company, Boston, Mass. Filed July 24, 1894. Serial No. 518,480. (No model.)



*Claim.*—1. A polarized electro-magnet possessing high electrostatic capacity between its terminals, and consisting of a horse shoe permanent magnet with superficially large pole pieces, and a single main circuit coil, or helix surrounding both of the said pole pieces; in combination with means, substantially as indicated, for reducing the self inductive reactance, and aiding the working efficiency of said main line coil.

2. In an electro-magnet and in combination with the poles thereof, a helix or magnetizing coil adapted to form a portion of an electric circuit, surrounding both of the said poles; and an auxiliary electric circuit closed on itself and located entirely between the said maguet poles; substantially as described.

3. The combination, substantially as described, in an electromagnetic instrument, of a primary helix adapted for inclusion in an electric circuit; an auxiliary, or secondary circuit, of relatively low resistance closed on itself and placed in inductive relation to the said primary helix; and a magnet having its poles surrounded by the said helix and interposed between the said helix and the closed auxiliary circuit.

4. In an electro-magnetic instrument the combination of a permanent magnet; semi-annular pole pieces, or polar projections therefor; an electro-magnetic helix or winding adapted for inclusion in an electric circuit surrounding both polar projections; and an inductive electric circuit closed on itself placed between the said polar projections, substantially as described

5. In an electro-magnetic instrument, the combination with a permanent magnet; semi-annular polar projections secured thereto; and an electro-magnetic or inducing coil, or winding, adapted for inclusion in an electric circuit surrounding the said polar projections; of a metal cylinder or sleeve constituting a closed reactionary or secondary circuit placed between the semi annular polar projections in inductive relation to the said inducing coil, substantially as specified.

6. The combination with an electro-magnet of high electrostatic capacity comprising two semi-annular polar projections, secured respectively to the two poles of a permanent magnet and surrounded by single magnetizing or inducing helix of insulated wire, of a secondary inductive or reactionary circuit, consisting of a cylinder or hoop of metal placed between the said polar projections in inductive relation to the said inducing helix as described herein.

7. An electro magnetic instrument, comprising a permanent horse shoe magnet; semi-annular pole pieces therefor secured thereto; a magnetizing or inducing coil adapted for inclusion in an electric circuit wound round, or placed over both of the said pole pieces; and a ring armature suitably supported in front of the said pole pieces, and adapted to be responsive to the magnetic variations thereof; substantially as described.

8. In an electro magnetic instrument, a permanent magnet provided with semi-annular polar projections of large external surface; and an inducing coil or winding adapted for connection in an electric circuit, wound, or placed over both polar projections so as to produce between its terminals a high electrostatic capacity; combined

with a closed reactionary or induction circuit placed wholly between the said semi-annular polar projections; substantially as and for the purposes specified

9. An electro magnetic instrument of low self induction and high efficiency consisting of a permanent magnet having semi-annular polar projections, one secured to each pole; a magnetizing or inducing coil surrounding both polar projections and arranged to form part of the working circuit; a ring armature suitably hung in pivots in front of the said polar projections and adapted to be actuated thereby, and a secondary electric circuit closed on itself and placed wholly between and embraced by the said polar projections, substantially as specified

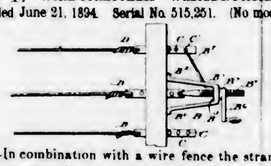
10. An electro magnetic instrument, comprising a permanent horse shoe magnet, having a semi-annular pole piece projecting from each pole: an inducing coil adapted to form part of a working circuit surrounding both pole pieces; a ring armature plated with copper or similar highly conducting metal hung within operative range of the said pole pieces; and a secondary circuit closed on itself placed in the recess formed between the said semi-annular pole pieces, substantially as described.

11. The combination in an electro magnetic instrument of a permanent magnet; semi annular polar projections secured to the poles thereof; a suitable annular armature mounted in front of the said polar projections; a helix of insulated wire adapted for inclusion in an external circuit surrounding both polar projections; an electrical connection between the said helix and the said polar projections; and a metallic cylinder, ring or sleeve, constituting an independent or secondary circuit closed on itself, and fitted between the semi annular magnet poles, substantially as described herein.

12 A polarized induction coil having both poles of the inducing medium inclosed within the primary and placed outside of the secondary circuit.

13. A polarized electric bell comprising in a single organization a horse-shoe permanent magnet, with semi-annular polar projections, both surrounded by a single electro magnetic helix adapted for connection in a main electric circuit; a secondary or induction circuit closed on itself and placed wholly between, and in close proximity to the said pole pieces; a ring armature mounted in pivots in front of the said annular pole pieces, and adapted to oscillate in response to alternating currents passing in the main circuit helix; a bell hammer secured to the said armature; and a bell adapted to be struck by the said hammer, substantially as described.

**529,374. WIRE-STRETCHER.** WALTER S. FITZGERALD, Danville, Ky. Filed June 21, 1894. Serial No. 515,251. (No model.)



*Claim.*—In combination with a wire fence the stranda of which are provided at one end with perforated draw-bars, a stretching device for said strands consisting of the bracket B', provided with feet $B^2$, and recessed head $B^3$, a threaded draw-bolt $B^4$ having a rigid hook $B^5$, said draw bolt passing through the recessed head of the bracket, a handle $B^6$, provided with a threaded recess adapted to engage with the threaded draw bolt, and a supporting arm $B^8$, having one of its ends connected to the bracket and its other end being adapted to engage with a perforation in one of the draw bars and support the stretcher in a horizontal position when in use, substantially as described.

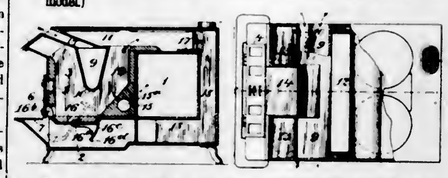
**529,375. GEARING FOR GRAIN-DRILLS.** ROBERT GALLOWAY, Macedon, N. Y., assignor to the Bickford & Hoffman Company, of New York. Filed June 9, 1894. Serial No. 514,066. (No model.)



*Claim.*—1. The combination with a continuously rotating driving pinion formed at intervals with teeth, between the teeth with smooth surfaces below the pitch line, and provided adjacent to the teeth with radial stop or recoil pins, of a driven pinion in position to be engaged by the teeth of the driving pinion; whereby the driven pinion will receive an intermittent motion and "pointing" will be prevented.

2. The combination with a continuously rotating driving pinion formed at intervals with teeth, between the teeth with smooth surfaces below the pitch line, and provided on opposite sides of the teeth with radial recoil pins and baby teeth, of a driven pinion in position to be engaged by the teeth of the driving pinion; whereby the driven pinion will receive an intermittent motion, "pointing" will be prevented, and the proper engagement of the teeth of the two pinions insured.

**529,376. STOVE OR RANGE FOR BURNING BITUMINOUS COAL.** WILLIAM A. GREENE, Ocean Grove, assignor of one-half to Edwin R. Cahoone, Newark, N. J. Filed Dec. 21, 1893. Serial No. 494,246. (No model.)



*Claim.*—1. A stove for burning bituminous coal having a fuel-chamber with a non-apertured bottom or bed and apertures at the front for lateral draft, a perforated air-duct 9, extending across the fuel-chamber and open to the air at its ends, an air-duct 14, opening into the crown of the transverse duct at its middle, a gas chamber 11 over the duct 9, and fuel-chamber and separated from the latter, and a gas flue 12, at the back of said duct, all arranged substantially as set forth.

2. A stove for burning bituminous coal, having a fuel chamber 3, a gas flue 12, a tranverse air duct between said fuel chamber and gas-flue, an inclined bed 15, and an imperforate rocking bed 16, forming the bottom of the fuel-chamber, said bed being arranged to tilt forward and discharge ashes into the ash-box of the stove, substantially as set forth.

3. A stove for burning bituminous coal, having a front, fuel-chamber 3, a gas-chamber 12, a pendent air-duct 9, betwen said chambers, an inclined bed 15, at the bottom of the chamber 12, and a rocking bottom 16, beneath the fuel-chamber, said bottom having a pendent apron $16^c$ on its rear edge adjacent to the sloping back, whereby, when the said bottom is rocked to dump ashes from the fuel-chamber the apron thereon substantially closes the passage under the duct 9, as set forth.

4. The combination with a stove having a fuel-chamber 3, a gas-flue 12, and a transverse, perforated air-duct 9, in the chamber in the stove and open to the air at its ends, and a charging door in the front of the stove, of an inclined roof-plate 13, extending from the upper edge of the transverse duct to the front of the stove and over the fuel-chamber, and an air-duct 14, extending from the middle part of the duct 9, to the front of the stove above the charging door, substantially as set forth.

5. A stove for burning bituminous coal having a metal cross bar at the lower part of its front and a rocking bed 16, pivotally mounted at the bottom of the fuel-chamber, said bed having upwardly projecting serrations or teeth $16^b$, on its front edge which take under said metal bar, substantially as and for the purposes set forth.

6. A stove for burning bituminous coal having an oven with a passage for gases over the same, a combustion chamber in front of said oven, a perforated transverse air-duct which divides said chamber into a fuel-chamber and gas passage, said duct having its top on abont the same level as the oven whereby a gas-chamber 11, is formed above the transverse air-duct, a roof-plate over the fuel-chamber and connecting the transverse air-duct with the stove-front, and a duct for admitting air to the top of said transverse duct, substantially as set forth.

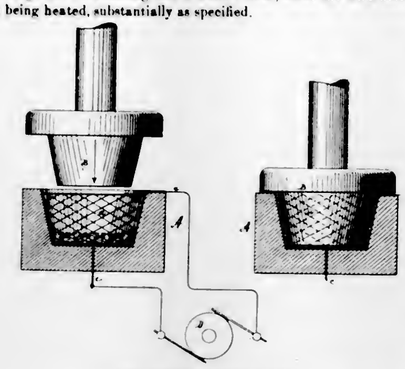
7. A stove for burning bituminous coal having a pendent air-duct 9, perforated at its lower part only for the escape of air therefrom and extending transversely across the combustion and fuel-chamber, and a supply air duct arranged above and forming a roof over the fuel-chamber of the stove, said supply duct receiving air from an opening in the stove front above the charging door and delivering it to the transverse duct 9 at the top of the latter, substantially as set forth, whereby the duct 9 is supplied with air at its middle part as well as at its ends.

8. The combination with a stove having a fuel-chamber 3, a gas-chamber 12, and a perforated, hollow, pendent transverse duct 9, of the rocking bottom 16, and the inclined back 15, having an air-duct $15^a$, to supply air for combustion, as set forth.

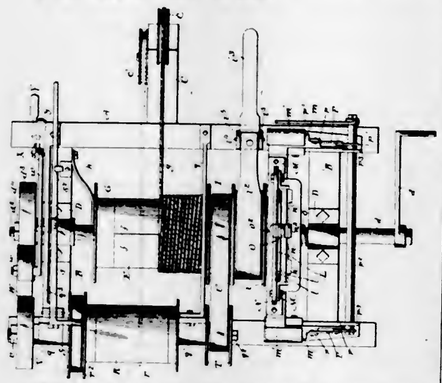
**529,377. HOLLOW GLASSWARE.** HENRY GUINARD, New York, N. Y. Filed June 21, 1894. Serial No. 515,241. (No model.)



*Claim.*—The process of manufacturing hollow glassware which consists in centering an endless core of wire netting within a mold, partially filling the mold with glass and pressing the molten glass through the wire netting into a hollow form, while the wire netting is being heated, substantially as specified.



**529,378. HOISTING AND DRILLING MACHINE.** THOMAS B. HACKMAN, LEONARD RUPPEL, and ALBERT RUPPEL, Aurora, Mo. Filed Apr. 2, 1894. Serial No. 506,068. (No model.)



*Claim.*—1. In a machine of the class described, the combination of a hoisting shaft having spaced gear lugs, a hoisting drum mounted loosely for longitudinal adjustment on said shaft and provided with spaced interior circular recesses, said drum being sectional and consisting of duplicate superposed sections a suitably arranged spring to normally hold the drum in a position with the recesses thereof out of alignment with the lugs on said shaft, and means for automatically moving the longitudinally movable drum out of gear with said gear lugs, substantially as set forth.

2. In a machine of the class described, the frame, a hoisting shaft journaled on said frame and having separated gear lugs, a hoisting drum loosely journaled on said shaft and provided with a longitudinal bore to accommodate the shaft and gear lugs, interior circular recesses separated from each other, and a longitudinally disposed metallic wear plate having notches agreeing with said circular recesses, a suitably arranged spring at one end of the frame to normally hold the drum in a position with the circular recesses out of alignment with the gear lugs on said shaft, and means for automatically moving the drum out of gear with said gear lugs, substantially as set forth.

3. In a machine of the class described, the combination with the frame having a derrick arm or mast; of the rotating hoisting shaft journaled on said frame, a longitudinally movable hoisting drum loosely mounted on said shaft, interior gear devices within the drum to connect the same with the shaft, a flanged brake wheel attached to one end of said drum, a spring for normally holding the drum in gear with the shaft, a band brake embracing said brake wheel, and the brake lever connected with said band brake and mounted pivotally in a swiveled support, whereby the said lever can be manipulated to move the drum against the tension of the spring to disengage the drum from its gear devices substantially as set forth.

4. In a machine of the class described, the combination with the hoisting shaft; of a hoisting drum loosely mounted on said shaft and having a brake wheel and a belt drum, a band brake encircling said brake wheel, a flexible stop belt adjustably supported at one end and detachably connected to said belt drum, interior gear devices within the hoisting drum to connect the same with the shaft, and means for automatically disengaging the drum from its gear devices, substantially as set forth.

5. In a machine of the class described, the combination with a frame having a derrick arm or mast; of the rotating hoisting shaft journaled on said frame, a hoisting drum loosely mounted on said shaft and provided with a flanged belt disk or drum having a series of peripheral openings, interior gear devices within the drum, the reel shaft carrying a belt wheel provided with a recess in its base and a catch pin over said recess, means for holding the reel shaft stationary, a flexible stop belt having hook plates at both ends adapted to respectively engage with the catch pin of the reel shaft belt wheel and the peripheral openings of the belt disk or drum, and means for automatically disengaging the drum from its gear devices, substantially as set forth.

6. In a machine of the class described, the combination with the frame and the hoisting shaft journaled thereon; of a hoisting drum loosely mounted on the shaft and provided with a flanged belt disk or drum, interior gear devices arranged within the hoisting drum, the reel shaft carrying a belt wheel, means for holding the reel shaft stationary, a flexible stop belt detachably connected at one end to the belt wheel of the reel shaft, and detachably and adjustably connected at its other end to the belt disk or drum of the hoisting drum, and means for automatically disengaging the drum from its gear devices, substantially as set forth.

7. In a machine of the class described, the combination with the hoisting shaft, the hoisting drum and the gear devices between the two; of a cam ring fitted to one end of the hoisting drum and provided with an outwardly projecting beveled cam lug, a sliding head-block frame arranged for support beyond one end of the drum a head block loosely mounted on the hoisting shaft at one end of the drum within said sliding frame, said block being provided at one side with a cam ring having a beveled cam lug adapted to be engaged by that carried by the hoisting drum, and with an adjustment flange or ring, means for circularly adjusting the head block frame, a catch for said flange or ring, and separate means for moving the head block to and away from the hoisting drum, substantially as set forth.

8. In a machine of the class described, the combination with the hoisting shaft, the hoisting drum having a projected cam lug at one end, and gear devices between the shaft and drum, of a sliding head block frame arranged beyond one end of the drum and consistiug of superposed reversely disposed bowed frame plates having longitudinally disposed guide slots, a head block loosely mounted on the hoisting shaft and provided at one side with a beveled cam lug, and with an adjustment flange or ring working in the guide slots of the frame plates and having a peripheral series of notches, a curved bracket attached to the upper one of said frame plates and having an offstanding curved notched catch bar, an adjusting lever pivoted on the hoisting shaft at one end and working between the catch bar and said bracket, a spring latch lever attached to one side of the adjusting lever to normally engage the notches of the catch bar, a sliding catch plate attached to the opposite side of the adjusting lever and adapted to engage the notches of said adjustment flange or ring, and means for adjusting the head block frame, substantially as set forth

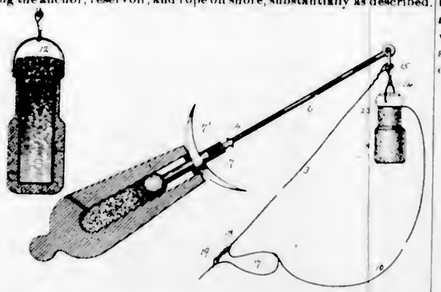
9. In a machine of the class described, the combination with the hoisting shaft having a projected cam lug at one end, and normally engaged gear devices between the shaft and drum; of oppositely arranged flanged guide plates, a sliding head block frame having the opposite ends thereof sliding in said guide plates, a circularly adjustable head block mounted in said frame and having at one side a cam lug, an adjusting rock shaft journaled at one end of said guide plate and provided at its opposite ends with rock arms, and links pivotally connected to the extremities of said rock arm and to the opposite ends of the head block frame, substantially as set forth.

**529,379. APPARATUS FOR FACILITATING LAUNCHING LIFE-BOATS.** HERVEY H. HALLETT, Rockland, Mass. Filed Jan. 20, 1894 Serial No. 497,490. (No model.)

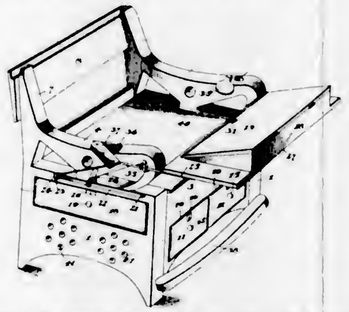
*Claim.*—1. In apparatus for facilitating the launching of boats, the combination with an anchor and a line connecting said anchor to the shore, of an oil reservoir connected to said line, between the in shore end of the latter and said anchor, and means for projecting the anchor, the oil reservoir, and one end of said line off shore to a point outside the breakers, subetantially as specified.

2. In combination, with an anchor, of a rope secured thereto, means for creating a bight thereon, an oil dispensing reservoir temporarily secured to the anchor, and a fastening line from said reservoir to the bight in the rope, all operating substantially as set forth

3. The combination, with an anchor, of a rope secured thereto, devices upon said rope to create a temporary bight, an oil reservoir, means for detachably securing said reservoir to the anchor, a fastening line from the reservoir to the bight, and mechanism for projecting the anchor, reservoir, and rope off shore, substantially as described.



529,380. CHAIR. MARTIN J. HALLIBURTON, Portageville, Mo. Filed June 14, 1894. Serial No. 514,572. (No model.)



*Claim.*—1. The combination with a chair, of a rod 22 pivotally connected to each side thereof and extending rearwardly from the pivotal point, two additional rods 25 respectively pivoted to the free ends of the rods 22, and a desk of a width equal to that of the chair and fixed directly to the free ends of the rods 25 at the sides of the desk, and capable of swinging on all the rods so as to occupy a position in front of the chair or at the back thereof, substantially as described.

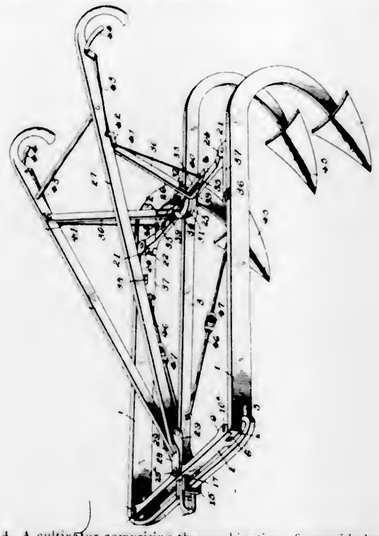
2. In a chair, the combination with its body-portion, of a pair of rods or links pivoted one to each forward side of the body, a pair of arms pivotally connected one to each of the rods or links, a desk rigidly secured to the free ends of the arms and capable of swinging therewith, and a back on the body portion, said back being provided with a horizontal rabbet-groove in which one edge of the desk may be seated when said desk is thrown back out of operative position, substantially as described.

529,381. CULTIVATOR. ADDISON HAMILTON and WILLIAM E. MORRISON, Ravenswood, W. Va. Filed Apr. 16, 1894. Serial No. 507,732. (No model.)

*Claim.*—1. A cultivator comprising the combination of a front connecting bar, a side beam pivoted to each end thereof and provided with cultivator blades, a brace at the rear ends of the side beams and extending from one to the other and pivotally connected to each, and a removable central beam rigidly connected to the middle of the front bar and to the middle of the brace, whereby upon removing the central beam the side beams may be swung on their pivotal connection with the front bar and thereby moved out of transverse alignment, substantially as described.

2. A cultivator comprising the combination of two side beams, a bar extending from one to another, a central beam removably secured to the cultivator and operating to hold the parts rigidly, a pawl secured to the bar and adapted to engage one of the side beams, and cultivator plows or blades secured to the central beam and to the side beams, the central beam being adapted to be removed so as to allow the side beams to swing out of lateral alignment, and the pawl being adapted to engage with one of the side beams when in this position, whereby they are held rigidly, substantially as described.

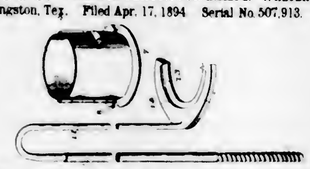
3. A cultivator comprising the combination of two side beams, a front bar pivotally connected to their front ends and having a guide extending parallel with the bar and adapted for the reception of the draft appliance, a brace pivotally connected to the side beams, a central beam extending from the brace to the bar and operating to hold the parts rigid, and cultivator plows connected to the central beam and to the side beams the central beam being capable of removal, whereby the side beams may be moved out of vertical alignment, and whereby the draft apparatus may adjust itself along the length of the guide, substantially as described.



4. A cultivator comprising the combination of two side beams, a front bar pivotally connected thereto, and having a guide extending parallel therewith, the guide being adapted to receive the draft apparatus, a brace pivotally connected to the side beams, a central beam extending longitudinally from the bar to the brace and connected thereto so as to hold the parts rigid, the forward end of the central beam being slotted so as to embrace the draft apparatus and hold it stationary on the guide, and cultivator plows or blades secured to the side beams and to the central beam, the central beam being capable of removal, whereby the side beams are allowed to swing out of transverse alignment, substantially as described.

5. A cultivator comprising the combination of two side beams, a bar pivotally connected to the side beams, a brace pivotally connected to the side beams and extending from one to the other, a central beam extending from the bar to the brace and secured to each and operating to hold the parts rigid, the central beam being capable of removal, whereby the side beams may be moved out of transverse alignment, a pawl-plate secured to the brace and having two ends capable of engaging respectively the side beams when they are moved out of transverse alignment, whereby the side beams are held rigid when so moved, and cultivator plows or blades secured to the central and side beams, substantially as described.

529,382. WICK-REGULATOR FOR LAMPS. WALTER L. HARDING, Livingston, Tex. Filed Apr. 17, 1894. Serial No. 507,913. (No model.)



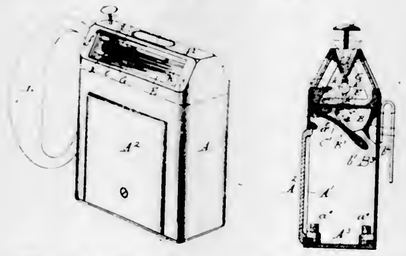
*Claim.*—1. In a lamp, the combination of a central draft-tube, a sleeve slidably mounted thereon and adapted to have the wick passed over it, a clamp adapted to embrace the wick and sleeve and to secure itself and the wick and sleeve in rigid connection, the clamp having formed thereon an annular and notched flange, a rod capable of vertical movement and for raising or lowering the clamp, and a semi-circular rim secured to the rod and having thereon a rabbet-groove and two studs, the latter being located above the plane of the rabbet-groove and adapted to pass through the notches in the flange, and thereby admit the flange to pass into the rabbet groove and to hold said flange in the rabbet-groove by moving the notches and studs out of vertical alignment, substantially as described.

2. In a lamp, the combination of a central draft-tube, a sleeve slidably mounted thereon and adapted to be secured to the wick, the sleeve having a notched flange formed thereon, a rod capable of vertical movement and for raising and lowering the sleeve, and a semi-circular rim secured to the rod and having a rabbet-groove thereon adapted to receive the flange of the sleeve, and a stud on the rim and arranged above the plane of the rabbet groove, the stud being adapted to pass through the notch in the flange on the sleeve so as to permit the flange to enter the rabbet-groove, and to hold said flange therein by moving the stud and notch out of vertical alignment, substantially as described.

3. In a lamp, the combination of a central draft-tube, a sleeve slidably mounted thereon, a second sleeve formed in two vertical sections hinged to each other and adapted to embrace the first sleeve and clamp the wick between the two, each section of the second sleeve having a flange formed thereon and provided with beveled contiguous ends, whereby the sections are allowed to swing on their hinge, and two notches formed in the otherwise continuous flange, a vertically-reciprocating rod for operating the sleeve, and a rim secured to the rod, the rim having a rabbet-groove, and two studs formed thereon, the studs being located above the plane of the rabbet-groove, and adapted to pass through the notches in the flange on the sectional sleeve, so as to allow the flange to lie in the rabbet-groove, and to hold the flange in place by moving the notches and studs out of vertical alignment, substantially as described



529,383. FARE-BOX. GEORGE B. M. HARVEY, New York, N. Y. Filed Sept. 17, 1894. Serial No. 523,258. (No model.)



*Claim.*—1. In a fare box, the combination with the body, of a trap section removably seated in the upper end thereof comprising a curved base having its edge terminating at a point in proximity to the side of the box, an outwardly extending marginal flange at the top, a side extending down to a point above and adjacent to the edge of the base and forming in conjunction therewith a delivery throat or mouth at a point in close proximity to the sides of the body, a top having an opening therein, a dumping plate supported on the trap section and means for actuating the dumping plate, substantially as described.

2. In a portable fare box, the combination with the body having projections on its upper inner face, an independent trap section seated on the projections and located within the plane of the sides of the body, a separate top section, and means located within the box for securing the top trap section and body together, substantially as described.

3. In a fare box, the combination with the body, of a top seated thereon, a detachable frame in the top, lugs on the inside of the body, a trap section between the lugs and frame, screws passing through the lugs, trap section and frame and a dumping plate, substantially as described.

4. In a fare box, the combination with the body, having a flange on its upper edge, of a top section having a frame at its base formed with a groove therein in which the flange is fitted, a removable trap section between the body and top and means for securing the body and top together passing through the trap section, substantially as described.

5. In a fare box, the combination with the body, of a detachable top section, an interposed trap section, means inside of the body for securing the trap and top sections thereto, a handle rigidly secured on the body and a sliding connection between the top and upper end of the handle, substantially as described.

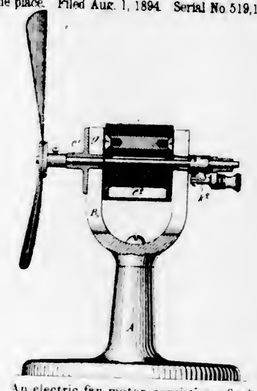
6. In a fare box, the combination with the body, of a detachable top section thereon having open sides, glass panels for the openings and a securing frame for the glass comprising a base frame and upwardly converging arms at the ends of the base resting against the glass and having inwardly extending securing lugs at their upper ends, substantially as described.

529,384. COMBINED HAMMER AND NAIL-PULLER. JOHN H. HEBBLETHWAITE, Rock Falls, Ill. Filed Jan. 17, 1894. Serial No. 497,135. (No model.)



*Claim.*—A hammer, the outer surface of the head of which is curved and provided with an open ended socket, the bottom of which intersects the surface of the head at the open end and the side walls are undercut and approach each other toward the pole of the head, substantially as set forth.

529,385. ELECTRIC-FAN MOTOR. FRANK X. HOFBAUER, Newark, N. J., assignor, by mesne assignments, to the Armature Bell Company, same place. Filed Aug. 1, 1894. Serial No. 519,186. (No model.)



*Claim.*—1. An electric fan motor, consisting of a handle or support terminating in four field magnet poles, an armature mounted therein and consisting of electro magnets, having poles presented to the respective ends of the field magnet poles, and bearings for the armature shaft carried by the field magnet poles, substantially as described.

2. A fan motor consisting of an upright handle or support, having four vertically projecting poles formed in U shaped pairs, a cylindrical armature within said field magnet having opposite poles at its respective ends presented to the field magnet poles, suitable circuit connections for completing the electrical connections through the coils of the armature in succession and a fan mounted upon the armature shaft.

3. In an electric fan motor the combination of the permanent field magnet constituting an extension of the support, the plate $a^2$ carried upon the field magnet and forming a bearing for the armature shaft, and the switch or circuit controller $n$ carried by said plate, substantially as described.

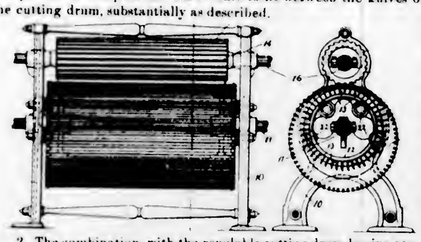
4. In an electric fan motor, a field magnet consisting of a permanent magnet having upwardly extending poles and constituting an extension of the standard or support.

5. An electric fan motor, consisting of a handle or support, a permanent field magnet secured to the upper end thereof, an armature mounted therein and consisting of electro magnets, having radiating poles and bearings for the armature shaft carried by the field magnet poles, one of said bearings being formed in a circular plate, and the other in a bar secured to projections extending from the field magnet beyond the commutator.

529,386. WOOD-CUTTING MACHINE. WILLIAM F. HUTCHINSON, Passaic, N. J. Filed Oct. 3, 1893. Serial No. 487,121. (No model.)

*Claim.*—1. The combination, with a wood cutting machine, having a revolving cutting drum with projecting knives and a bearing

drum for the knives, of an ejecting cylinder hung on the cutting drum and provided with parallel rods or bars to lie between the knives of the cutting drum, substantially as described.



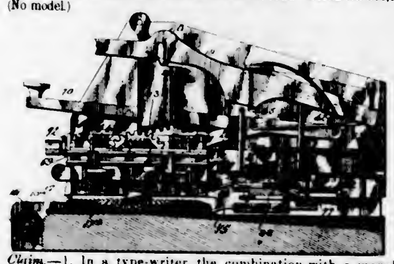
2. The combination, with the revoluble cutting drum having projecting peripheral knives and the bearing drum against which the knives revolve, of an ejecting cylinder hung on the cutting drum and provided with parallel peripheral rods to lie between the knives, and steadying devices for the ejecting cylinder, substantially as described.

3. The combination, with the revoluble cutting drum having projecting peripheral knives and a bearing drum for the knives, of the ejecting cylinder hung on the cutting drum and provided with parallel rods or bars to lie between the knives, and bearing rollers arranged within the cylinder to steady the same, substantially as described.

4. The combination, with the machine frame, the revoluble cutting drum having projecting peripheral knives and the bearing drum for the knives, of the ejecting cylinder having parallel peripheral rods to lie between the knives and open circular ends, and the bearing rollers journaled on the machine frame and turning against the inner edges of the cylinder ends, substantially as described.

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529,387. **TYPE-WRITING MACHINE.** JOHN JACKSON, Clinton Iowa. Filed Nov. 9, 1892. Renewed Feb 17, 1894. Serial No. 500,579 (No model.)



*Claim.*—1. In a type-writer, the combination with a movable type-carriage, of two independent ratchet-plates, one rigid the other movable, two spring-pressed pawls having independent action and engaging said ratchet-plates and means for operating the movable ratchet, substantially as specified.

2. In a type-writer, the combination with a movable type-carriage of two independent ratchet-plates, one movable the other rigid, two spring-pressed pawls, having independent action, a reciprocating frame, vibrated by the key-levers and a connection between said frame and the movable ratchet-plate substantially as specified.

3. In a type-writer, the combination with the movable type carriage, of a type-disk, a system of gears, a segment gear, a selection-bar, substantially parallel with the line of movement of the carriage, and a series of key-levers acting upon the selection-bar to give differential movement thereto, substantially as specified.

4. In a type-writer, the combination, with a movable type-carriage, of a type-disk, a system of gears, a segment gear, a selection-bar parallel or substantially so with the line of movement of the type-carriage, and a series of similar key levers having slots to receive the selection bar and having such arrangement that the cam-edges adjacent to said slots upon one side shall have a differential range of action upon the selection-bar, substantially as specified.

5. In a type-writer, the combination, with a movable type-carriage, of a type disk, a system of gears, a segment gear, a selection-bar parallel, or substantially so, with the line of movement of the type-carriage, and having arms at its ends pivoted in rigid supports, and a series of similar key-levers having slots which receive the selection-bar at its different limits of movement and provided with cam edges having differential action upon said selection-bar, substantially as specified.

6. In a type-writer, the combination, with a movable type-carriage, of a fixed ratchet-plate, a movable ratchet-plate, independently-acting pawls automatically meshed with said ratchet-plates, a series of key-levers, and means intermediate of said levers and the movable ratchet-plate, whereby movement is given intermittently to the latter in a line parallel with the line of movement of the type carriage, substantially as specified.

7. In a type writer, an inking-ribbon, a stretching frame, to which the ends of said ribbon are clamped, and automatic means for giving an intermittent movement to said ribbon-stretching frame to expose a different longitudinal portion thereof to the line of type-impressions said movement being imparted at one end of the line, substantially as specified.

8. In a type-writer, an inking-ribbon, a ribbon-stretching frame to which the ends of said ribbon are clamped, automatic means for giving an intermittent feed-movement to said ribbon-stretching frame at one end of the line of type-impressions and at an angle to said line, a movable type-carriage carrying a series of type and means for impressing said type upon the inking ribbon and paper, substantially as specified.

9. In a type-writer, a movable type-carriage, a rotary type-disk upon said carriage, a system of gears imparting rotary movement to the type disk, means for imparting differential rotary movement to said gears, and a clutch to lock one or the other of two gears to the shaft of the type-disk, substantially as specified.

10. In a type-writer, the combination with a movable type-carriage, of a rotary type-disk, a single gear imparting rotation to said disk, and a clutch to lock either of two gears to the shaft of said disk, substantially as specified.

11. In a type-writer, the combination, with a movable type-carriage, of a type-disk mounted upon said carriage, a series of key-levers, an actuating-gear, a single segment gear having a gear-face of a width substantially equal to the length of the line of movement of the type carriage, said segment-gear being intermediate between said key-levers and the actuating-gear, a clutch and clutch-lever and two opposite bevel-gears meshing with the actuating-gear and loose upon the shaft of said type disk on opposite sides of the axis of the actuating-gear, substantially as specified.

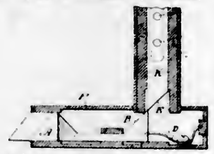
12. In a type-writer, the combination, with a type-impressing mechanism capable of bodily movement, of a page-holder composed of two upper and two lower bars rigidly connected in parallelism, the upper members being united to the lower by hinged connections to give a parallel adjustment in either direction without longitudinal movement, substantially as specified.

13. In a type-writer, the combination with a movable type-carriage, of two independent ratchet plates one movable and the other fixed, or rigid, each having two separate, parallel toothed members, one arranged in or near the front and the other in or near the rear of the said type-carriage, independent pawls engaging said toothed members and means for operating the movable ratchet-plate, substantially as described.

14. In a type-writer, the combination with a movable type-carriage of two independent ratchet-plates, one movable and the other fixed or rigid, each of said ratchet-plates consisting of two parallel toothed portions, or members, one of which lies in front and the other in rear of the central line of said type-carriage four independent, spring-pressed pawls pivoted upon the type-carriage and meshing with said ratchet-plates, a device vibrated by the depression of any one of the key-levers, and a connection between said device and the movable ratchet plate, substantially as described.

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529,388. **LOCK.** THOMAS J. JOHNSTON, Washington, D. C. Filed June 3, 1887. Serial No. 240,152. (No model.)



*Claim.*—1. A lock or latch having a casing, a part mounted therein, movable in the line of the insertion of the key, and provided with a seat orrecess for the latter; a tumbler mounted in said part, adapted to engage the casing, projecting into said recess and radially movable in its bearings in said part toward or from the recess; the bolt, and means substantially as described for imparting the movement of said part to the bolt; in combination with a key consisting of a body symmetrically formed about an axis and having a peripheral surface for holding the tumbler out of engagement, whereby the key may be inserted in various positions, the tumbler disengaged, and the bolt withdrawn, by its direct movement, substantially as described.

2. In a lock, the combination of a part provided with a key-seat and movable in the direction of the insertion of the key, a radial tumbler movable in said part toward and from the key seat, a bolt or latch operated by the longitudinal movement of said part, and a key adapted to engage said seat and thus operate the tumbler and draw the bolt by its direct longitudinal movement, substantially as described.



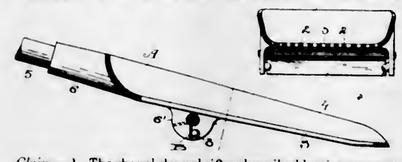
3. In a lock or latch the combination, with the casing, of a part mounted in said casing, movable in the line of the insertion of the key and having a circular seat or recess for the latter, a tumbler mounted in a lateral bearing in the said part and adapted to move in straight lines toward and from said circular recess, a bolt, and means substantially as described whereby the simple and direct insertion of the key will both disengage the tumbler and withdraw the bolt, as set forth.

4. In a lock or latch the combination, with the casing, of a part movable in the line of the insertion of the key and having a circular seat or recess for the latter, a tumbler mounted in a lateral bearing in the said part and adapted to move in straight lines toward and from said circular recess, a bolt, and a link whereby the movement of said part is imparted to the bolt, substantially as set forth.

5. In a lock, the combination of a longitudinally movable part having a key-seat, a bolt or latch connected therewith, a tumbler mounted therein adapted to secure said part and radially movable therein, and a key adapted to operate said tumbler by its direct insertion in said seat and by its continued longitudinal movement to operate said movable part, substantially as described and set forth herein.

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529,389. **FURNACE ASH-SIFTER.** JACOB KELLER, Cleveland, Ohio, assignor to Hallie J. Keller, Corinne Keller, and Lillian K. Heisley, same place. Filed May 16, 1894. Serial No. 511,496. (No model.)



*Claim.*—1. The shovel shaped sifter described having supports on its bottom on which the sifter rests, and a handle at one end, substantially as set forth.

2. A shovel shaped ash sifter having an open work bottom, a handle, and projections back of its center and at its sides and bottom, said projections serving to lift the sifter from the floor and as bearings on which the sifter is reciprocated back and forth, substantially as set forth.

3. A sifter for ashes constructed with a longitudinally slotted bottom, supports for the sifter on each side thereof extending below said bottom, a handle and a swinging ash scraper across beneath said bottom, substantially as set forth.

4. The sifter described provided with an open work bottom, supports for the sifter at its sides and rear extending below said bottom and an ash scraping plate across beneath the bottom of the sifter, substantially as set forth.

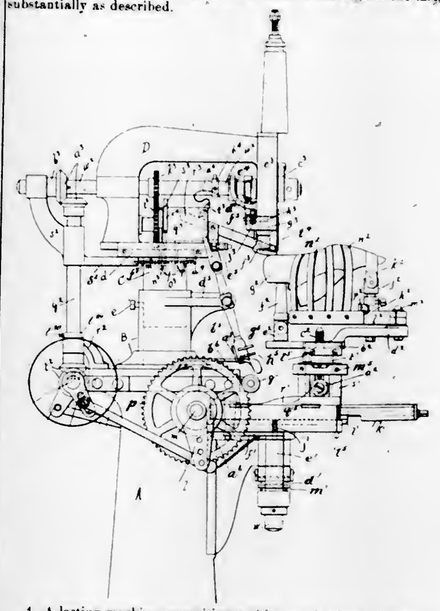
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529,390. **LASTING-MACHINE.** CHARLES H. KELLEY, Revere, Mass. Filed Aug. 31, 1893. Serial No. 484,449. (No model.)

*Claim.*—1. A lasting machine comprising tacking mechanism, a last support for holding a last carrying a shoe, means for automatically feeding said last-support past the tacking mechanism lengthwise of the last, means for moving the last-support vertically as it is fed horizontally to compensate for the vertical curvature of the sole, and means for moving the tacking mechanism horizontally nearer to or farther from the middle of the last, to drive the tacks at different distances from the said middle in a line following the contour of the edge of the last, substantially as described.

2. A lasting machine comprising tacking mechanism, a last-support for holding a last carrying a shoe, means for automatically feeding said last support past the taking mechanism lengthwise of the last, a templet corresponding to the horizontal curvature of the side of the sole, and an engaging device co-operating with said templet whereby the movement of the last-support along the line of feed occasions movement of the tacking mechanism horizontally nearer to or farther from the middle of the last, to drive the tacks at different distances from the said middle in a line following the contour of the edge of the last, substantially as described.

3. A lasting machine comprising tacking mechanism, a last-support for holding a last carrying a shoe, means for automatically feeding said last-support lengthwise of the last, a templet having a surface corresponding to the horizontal curvature of the side of the last and engaged by a part moving with the last-support, and a movable support for said templet having operative connection with the tacking mechanism, whereby, as the last-support is fed and acts against the templet to move the latter and its support, the tacking mechanism is shifted horizontally nearer to or farther from the middle of the last to cause the tacks to be driven at different distances from the said middle in a line following the contour of the edge of the last, substantially as described.



4. A lasting machine comprising tacking mechanism, a last-support for holding a last carrying a shoe, means for automatically feeding said last support lengthwise of the last, templets respectively having surfaces corresponding to the horizontal curvatures of the opposite sides of the last, and alternately acted against by parts moving with the last-support according as the respective sides of the last are presented to the tacking mechanism, and a movable support for the said templets having operative connection with the tacking mechanism, whereby the tacking mechanism is shifted horizontally nearer to or farther from the middle of the last to cause the tacks to be driven at different distances from the said middle in a line following the contour of the edge of the last, substantially as described

5. A lasting machine comprising tacking mechanism, a last-support for holding a last carrying a shoe means for automatically feeding said last-support lengthwise of the last, templets respectively having surfaces corresponding to the horizontal curvatures of the opposite sides of the last and alternately acted against by parts moving with the last-support according as the respective sides of the last are presented to the tacking mechanism, a movable support for the said templets having operative connection with the tacking mechanism, whereby the tacking mechanism is shifted horizontally nearer to or farther from the middle of the last to cause the tacks to be driven at different distances from the said middle in a line following the contour of the edge of the last, and means for partially rotating said last-support on the arrival of the ends of the last at the tacking mechanism, whereby the sides and ends of the last are presented and fed to the tacking mechanism successively, substantially as described.

6. A lasting machine comprising tacking mechanism, a jack-device for supporting a last carrying a shoe, a support for said jack-device, means for automatically feeding said jack-device along its support past the tacking mechanism, the said jack-device and its support having combined therewith a templet corresponding to the vertical curvature of the sole, whereby as the jack device is fed along the support the jack and last are moved vertically on the said support to properly present the successive portions of the sole to the tacking mechanism, and means for shifting said support to present the ends and sides of the last in succession to the tacking mechanism, substantially as described.

7. A lasting machine comprising tacking mechanism, a jack device for supporting a last carrying a shoe, a rotatable support for said jack-device, means for automatically feeding said jack-device along its rotatable support past the tacking mechanism, the said jack-

device and its rotatable support having combined therewith a templet corresponding to the vertical curvature of the sole, whereby as the jack-device is fed along its support the jack and last are moved vertically on the said rotatable support to properly present the successive portions of the sole to the tacking mechanism, and means for partially rotating said support on the arrival of the ends of the last at the tacking mechanism, whereby the sides and ends of the last are presented and fed to the tacking mechanism successively, substantially as described.

8. A lasting machine comprising tacking mechanism, a jack-device for supporting a last carrying a shoe, a rotatable support for said jack-device, means for automatically moving said jack-device along the said rotatable support past the tacking mechanism a templet affixed to said rotatable support corresponding to the vertical curvature of the sole and acting to move the jack vertically on the said rotatable support as the jack-device is fed along the support, and means for partially rotating said support on the arrival of the ends of the last at the tacking mechanism, whereby the sides and ends of the last are presented and fed to the tacking mechanism successively, substantially as described.

9. A lasting machine comprising tacking mechanism, a jack-device for supporting a last carrying a shoe, a support for the said jack-device, means for automatically feeding said jack device along the support past the tacking-mechanism, means for partially rotating said support on the arrival of the ends of the last at the tacking mechanism, whereby the sides and ends of the last are fed to the tacking mechanism successively, projections on the opposite sides of the jack-device, templets respectively corresponding to the horizontal curvatures of the opposite sides of the last and alternately acted upon by the said projections respectively as the jack-device is fed along its support, and a movable frame supporting said templets and engaging with the tacking mechanism to move the same horizontally toward and from the middle of the last, substantially as described.

10. A lasting machine comprising tacking mechanism, a jack device provided with a vertically movable jack for the support of a last carrying a shoe, a support for said jack-device, means for automatically moving said jack-device horizontally along said support, a templet mounted on said support corresponding to the vertical curvature of the sole and acting to move the jack vertically as the jack-device is fed along the support, means for partially rotating said support on the arrival of the ends of the last at the tacking mechanism, whereby the sides and ends of the last are presented and fed to the tacking mechanism successively, projections on the opposite sides of the last-carrying devices, templets respectively corresponding to the horizontal curvatures of the opposite sides of the last and alternately acted upon by the said projections, respectively, as the last-carrying devices are fed along their support, and a movable frame supporting said templets and engaging with the tacking mechanism to move the same horizontally toward and from the middle of the last, substantially as described.

11. The combination with shoe holding and tacking mechanism of the presser foot to press and hold the upper over the edge of the last, means for actuating said presser foot comprising a shaft on which the foot is mounted, a gear on said shaft, a rack engaging said gear and a cam actuated lever engaging the rack, substantially as set forth.

12. A tack driving mechanism consisting of a driver, a raceway for delivering the tacks, and a hopper and means for supplying the raceway with tacks from the hopper, comprising a vertically movable plunger, adjacent the upper end of the raceway, a movable wiper arranged to sweep laterally across the upper end of the plunger and means for actuating the same, whereby when the plunger has reached the highest point of its movement the tacks thereon will be swept therefrom by the wiper onto the upper end of the raceway, substantially as set forth.

13. The combination with tacking mechanism of jack mechanism mounted upon a pivoted bed, means for feeding said jack mechanism along said bed, past the tacking mechanism a sleeve on the pivot of said bed, a ratchet clutch, one member of said clutch being on said pivot and the other on said sleeve, a reciprocating lever secured to said sleeve and suitable mechanism for actuating said lever whereby at each reciprocation of the lever the bed is swung on its pivot, substantially as set forth.

14. The combination with a jack mounted on a sliding carrier set in a pivoted support, means for actuating said sliding carrier relatively to said support, a ratchet clutch mechanism for swinging said jack mechanism on its pivot and mechanism intermediate said sliding carrier and said ratchet clutch whereby when the carrier is moved a given distance to present the sides of a shoe to the tacking mechanism, the ratchet clutch will be thrown into engagement to turn the jack mechanism on its pivoted support, to present the heel or toe of the shoe to the tacking mechanism, substantially as set forth.

15. The combination with the tacking mechanism of the sliding jack carrier a bed for said carrier having a shaft or pivot, means for sliding said carrier on said bed past the tacking mechanism a sleeve on said shaft, a ratchet clutch, one member of which is mounted on said sleeve and is free to move vertically thereon into or out of engagement with the other member, springs for holding the vertically movable clutch member normally in engagement with the other member of the clutch, means for actuating said sleeve whereby to turn the bed on its pivot and present the heel or toe of the shoe to the tacking mechanism and a latch engaging an annular groove in said vertically movable clutch member to hold the same out of engagement with the other member of the clutch device, substantially as set forth.

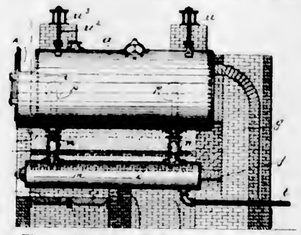
16. The combination with the tacking mechanism of the jack mechanism a pivoted bed $z$ upon which said jack mechanism is supported, means for sliding said jack mechanism on said bed past the tacking mechanism the pivot $w$ of said bed, a sleeve $w^2$ on said pivot, a ratchet clutch, one member $b'$ of said clutch being fast on the said pivot and the other member $a'$ being splined on said sleeve and having a spring seat whereby it is normally held in engagement with the member $b'$, means for actuating said sleeve whereby to turn the bed on its pivot and present the heel or toe of the shoe to the tacking mechanism a latch pivoted on said member $b'$ and provided with a beveled end and a pin on the member $a'$ whereby at predetermined points in the revolution of the pivot $w$ the clutch members will be disengaged and the revolution of the pivot $w$ stopped, substantially as set forth.

17. The combination with jack mechanism mounted on a pivoted bed $z$, and means for turning said mechanism on its pivot, of projections at either end of said bed and spring impelled latches or arms $f''$ $r^3$ for engaging said projections, whereby at the end of each half revolution of said bed, the bed is steadied and recoil prevented, substantially as set forth.

18. The combination with the tacking mechanism of a jack mechanism mounted upon a sliding carrier set on a pivoted bed, means for moving said carrier relatively to said bed, a ratchet clutch mechanism for moving said bed on its pivot, to present the heel or toe of the shoe to the tacking mechanism a latch for holding said clutch mechanism out of engagement while the sides of the shoe are being fed past the tacking mechanism, a spring for actuating said latch in one direction and a pin on said latch in the path of the jack carrier whereby when the jack carrier has reached the end of its movement on said bed the said latch will be tripped and the clutch mechanism thrown into engagement to rotate the bed on its pivot, substantially as set forth.

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529,391. STEAM-GENERATOR. JAMES H. KENDALL, Cambridge, Mass. Filed Feb. 19, 1894. Serial No. 500,690. (No model.)



*Claim.*—The combination of a horizontal return flue boiler with a drum at one side of the fire box or of a portion thereof connected with the lower part of the boiler; a manifold at the other side of the fire box, connected with the boiler at a higher point than the drum, and a series of circulating pipes extending from said drum to said manifold across the top of the fire box, between the same and the boiler shell, and a covering supported thereon and constituting therewith a screen which prevents the heated products from coming in contact with the boiler shell, substantially as and for the purpose described.

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529,392. BOWLING-ALLEY. MAX KNOLLMÜLLER, Milwaukee, Wis. Filed Apr. 18, 1894. Serial No. 507,988. (No model.)



*Claim.*—1. A bowling alley, comprising a base having a gradual declination from the front to the rear, a channel running along one side of the base into which side the balls to be propelled are placed, said channel then extending around the rear end of the frame, the bottom of this rear portion of the channel provided with an opening,

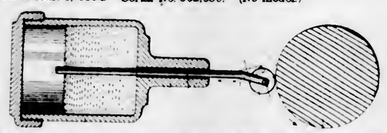


and the channel finally extending along the opposite side of the frame, a central depression or recess between the channels, into which the last-named side of the channel opens, said depression or recess provided with an opening leading to a channel beneath, the opening in the bottom of the rear portion of the first-named channel also opening into this last-mentioned channel, said last-named channel leading back to and opening into the forward end of the side of the channel into which the balls are placed for propulsion and a spring-plate extending over the opening in the rear upper channel, said plate permitting the balls to freely pass over the same in traveling around in one direction, and to pass under the same, and through the opening, in traveling around the channel in the opposite direction, substantially as set forth.

2. A bowling alley, comprising a base having a gradual declination from the front to the rear, a channel running along one side of the base, into which the balls to be propelled are placed, said channel then extending around the rear end of the frame, the bottom of this rear portion of the channel provided with an opening, and the channel finally extending along the opposite side of the frame and a central depression or recess between the channels, into which the last named side of the channel opens, said depression or recess provided with an opening leading to a channel beneath, the opening in the bottom of the rear portion of the first-named channel also opening into this last-mentioned channel, said last-named channel leading back to and opening into the forward end of the side of the channel into which the balls are placed for propulsion, substantially as set forth.

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529,393. LUBRICATOR. NICOLAUS LEIDGEN, Milwaukee, Wis. Filed Mar. 8, 1894. Serial No. 502,858. (No model.)

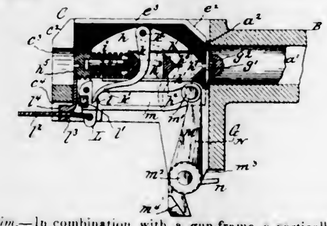


*Claim.*—1. In a lubricator having a feed rod working in the lubricant chamber, an eccentric located at the lower end of said rod and adapted to be operated by contact of a moving part with the eccentric whereby a positive throw or movement in the direction of the length of the rod is imparted to the rod for feeding the lubricant along said rod to the part to be lubricated, substantially as and for the purposes described.

2. In a lubricator, the combination with the lubricant cup, of a feed rod having its lower portion deflected out of line with the other portion of the rod, and provided with an eccentrically mounted roller at its lower end whereby said rod is reciprocated in the direction of its length by contact of the eccentric with the object to be lubricated and the eccentric shifted from one point of contact to another point of contact with the object to be lubricated when the direction of movement of the object to be lubricated is changed, substantially as and for the purposes described.

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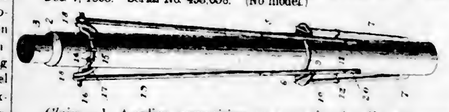
529,394. BREECH MECHANISM FOR ORDNANCE. SVEN O. LELONSTEIN, Philadelphia, Pa. Filed May 18, 1893. Serial No. 474,727. (No model.)



*Claim.*—In combination with a gun-frame, a vertically sliding breech-block E having slot $m$, shaft $m^2$ transversely mounted in said gun-frame, lever M on shaft $m^2$ having a lower cam-end $m^4$ and an upper end engaging with the slot $m'$ of block E, a sliding firing-pin $h^2$ having a striker-end $h^4$ and slot $h^3$, a tubular-plug $h^5$ in one end of the block E for the reception of the firing-pin striker-end $h^4$, a spring $i$ interposed between the head of plug $h^5$ and firing-pin $h^2$, a pivoted lever $k$ passing through slot $h^3$ of firing-pin $h^2$ and having its free end $k'$ in the path of movement of lever M in slot $m$, pivoted trigger L for engagement with the free end $k'$ of lever $k$, a spring $l'$ for trigger L, a lanyard for said trigger, and cartridge-extractors G loosely mounted on shaft $M^2$ and having tail-pieces $n$ actuated by the lower cam-end $m^4$ of levers M, substantially as set forth.

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529,395. WOOD-SPLICE. WILLIAM H. LEWIS, Rome, N. Y. Filed Dec. 7, 1893. Serial No. 493,058. (No model.)



*Claim.*—1. A splice, comprising an extension handle, an upper clamping portion and a lower holding portion, each consisting of a bearing tie adapted to embrace one side of the handle, and a loop arranged at the opposite side of the handle fulcrumed on the ends of the bearing tie and provided with resilient extensions, and means for securing the extensions to the handle, substantially as described.

2. The splice consisting of an extension handle, the tie wire 9 having its ends bent, as at 10, the holding-wire bent at its middle to form the holding-loop 4, the sides 5 at an angle to the loop, coiled about the bent ends 10 and extended therebelow to form the securing extensions 7, and a spring-clamp above the loop, substantially as specified.

3. The combination with the section 1, having the groove 2 near its outer end, the bearing-wire 15 having the opposite bearing-16 at the sides of the groove, the clamping loop arranged over the groove and coiled about the bearings and provided with opposite longitudinal extensions 19, of the tie-wire 9 below the wire 15 and having bent ends 10 for engaging the extensions 19, the spring-loop 4 having the sides 5 coiled about the bent ends 10 and beyond the same forming extensions 7 secured to the section 1, and the tie-wire 11 below the groove and having its ends engaging the terminals 7, substantially as specified.

4. The combination with two sections to be spliced, of the lower holding portion comprising a wire tie terminating in hooks and embracing the lower section, a resilient clamping loop fulcrumed on the ends of said tie and embracing the upper section and terminating in depending resilient portions 7 secured to the lower section, and the upper clamping portion comprising a tie embracing the lower section, and a resilient clamping loop fulcrumed on the ends of the upper tie and embracing the upper section and having depending extended terminals interlocked with said hooks, substantially as described.

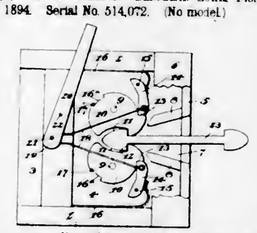
5. In a wood splice, the combination with the two sections to be spliced, of the upper clamping portion made up of a bearing wire, clamping loop and spring extensions, and the lower holding portion composed of the spring extensions, clamping loop, and a tie wire shaped at its ends to form guards to receive and retain the extensions of the upper clamping portion, substantially as specified.

6. A splice, comprising an extension handle, a lower holding portion mounted on the handle, an upper clamping portion separate from and independent of the lower holding portion, and consisting of a fulcrumed clamping loop, and opposite longitudinal arms, and means for securing the arms to the handle, substantially as described.

7. A splice, comprising an extension handle, a lower holding portion mounted thereon and provided with opposite hooks, and a separate and independent upper clamping portion comprising a fulcrumed clamping loop and longitudinal arms arranged to engage said hooks, substantially as described.

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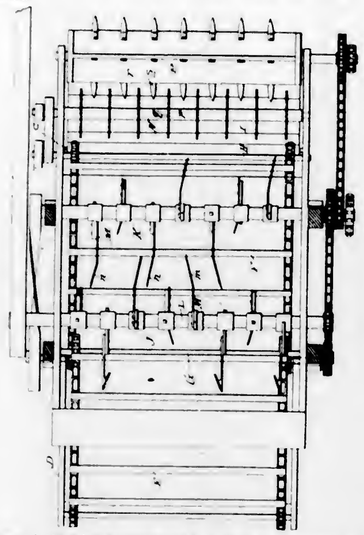
529,396. CAR-COUPLING. BENJAMIN LOHR, Fishertown, Pa. Filed June 9, 1894. Serial No. 514,072. (No model.)



*Claim.*—In a car coupling, the combination with a draw-head or box, of two disks revolubly mounted on independent axes and transversely aligned with each other, each of said disks having a peripheral notch, two pins rigid on the draw-head or box and respectively seated in the slots, whereby the movements of the disks are limited, the disks also having matching peripheral recesses capable, when immediately adjacent to each other, of receiving and retaining the head of a link, two spring-pressed pawls pivotally mounted directly adjacent to the respective disks and capable of engaging shoulders thereon, whereby to hold the disks with the recesses thereof directly adjacent to each other, a rod pivotally connected to the free end of each pawl and extending rearwardly therefrom, and a lever fulcrumed adjacent to the draw head or box and pivotally connected to the

rods, the said lever and rods being capable of furnishing means for disengaging the pawls and their respective disks so as to release the link of the car coupling, substantially as described.

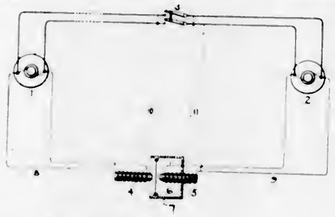
529,397. BAND-CUTTER AND FEEDER. HARRISON D. MAY, Larchwood, Iowa. Filed Apr. 20, 1894. Serial No. 508,372. (No model.)



*Claim.*—1. In a band cutter and feeder, the combination of an endless apron or carrier, the primary rotary cutter arranged above said apron and having a series of curvilinear cutting blades, the outer portions of which are pitched inwardly at an angle to their inner portions, and the secondary rotary cutter arranged above the apron or carrier and in advance of the primary cutter and having a series of curvilinear cutting blades, the outer portions of which are pitched outwardly at an angle to their inner portions, substantially as specified.

2. The herein described band cutter and feeder comprising an endless carrier, an endless apron or secondary carrier adapted to receive from the endless carrier, a primary, rotary cutter arranged above the apron or carrier and having a series of curvilinear cutting blades; the outer portions of which are pitched inwardly at an angle to their inner portions, a secondary, rotary cutter arranged above the apron or carrier and having a series of curvilinear cutting blades, the outer portions of which are pitched outwardly at an angle to their inner portions, a rotary detainer arranged in advance of and slightly below the forward end of the apron or carrier and having teeth as *q*, and a rotary whipper arranged above and in advance of the detainer and having teeth as *s*, substantially as and for the purpose set forth.

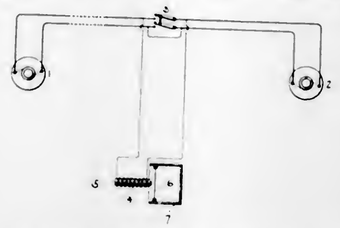
529,398. AUDIBLE SYNCHRONISM-INDICATOR. RALPH D. MERSHON, Pittsburg, Pa. Filed Apr. 27, 1894. Serial No. 509,222. (No model.)



*Claim.*—1. The method of indicating the occurrence of synchronism between two circuits which consists in converting the electric vibrations in the two circuits into corresponding magnetic vibrations, thereby producing two distinct magnetic poles and subjecting a polarized body, capable of vibration, to the action of said poles, substantially as described.

2. In a synchronism indicator, a polarized diaphragm, a magnetic core or cores presenting two poles thereto and two coils connected with the terminals of the machines to be synchronized, each of said coils producing one of the actuating poles, substantially as described.

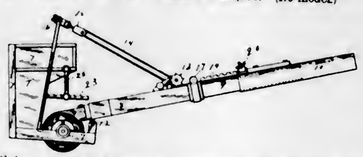
529,399. AUDIBLE SYNCHRONISM-INDICATOR. RALPH D. MERSHON, Pittsburg, Pa. Filed Apr. 27, 1894. Serial No. 509,223. (No model.)



1. The method of indicating the occurrence of synchronism between two machines, which consists in producing a varying magnetic field due to the resultant action of the superposed electromotive forces of the two machines, and causing this field to act upon a body capable of vibration under the influence of magnetism.

2. In an audible synchronizer a coil in series with the two machines to be synchronized and a vibrating body actuated by the magnetic field produced by said coil.

529,400. STRAW-STACKER. JOHN MCCOLLOUGH, Crawfordsville, Ind. Filed Sept. 25, 1893. Serial No. 486,500. (No model.)



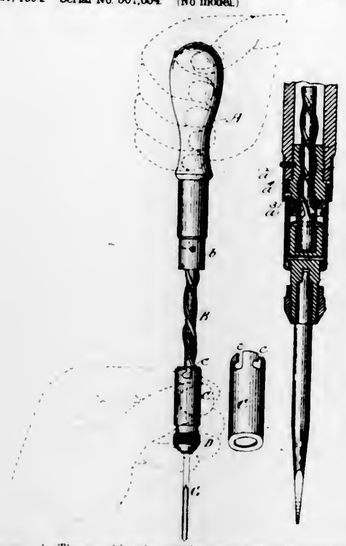
*Claim.*—1. A straw-stacker adapted to be attached at the delivery end of a thrashing machine, the same comprising a revoluble shaft having a center bearing, a blast-fan mounted upon each end of said shaft, a suitable housing inclosing the blast-fans, and wind shifting boards hinged and pivoted at their inner ends at the blast openings of said housing and set at their free ends in slotted standards rigidly mounted upon the chute-like lower section of the blast-pipe for directing the blast parallel with the movement of said pipe, and an ovoid metallic blast-pipe, substantially as specified.

2. A straw-stacker adapted to be attached at the delivery end of a thrashing machine, the same comprising a vibrating rack, a grooved rectangular tail board hinged to the vibrating rack, a revoluble shaft having a center-bearing, a blast-fan mounted upon each end of said shaft, a suitable housing at the rear end of the thrasher-frame inclosing the revoluble shaft and blast-fans securely mounted therein, and hinged and pivoted wind shifting boards at the blast-openings, substantially as specified.

3. The combination of an ovoid metallic blast-pipe embracing three sections, a chute-like lower section forming a receptacle for the reception of the straw and chaff as it falls from the delivery end of the thrasher, pivoted at its inner end upon a pivotal roller journaled securely in the rear end of the thrasher frame, a middle section hinged to said lower section so as to be folded over against the top of the thrasher when traveling, and an outer telescoping section fitting snugly over the middle section and adapted to be adjusted longitudinally thereon for being set at the desired point of delivery, a cog-geared appliance made in the manner and for the purpose set forth, and a windlass like mechanism comprising a revoluble roller mounted in a suitable frame at the outer end of the chute-like lower section, a rope or cable having one end securely mounted upon the revoluble roller and passing around a suspended sheave of the linked pair of sheaves adapted to travel longitudinally upon the rod mounted securely above the thrasher frame and securely fastened at the other end to the chute-like lower section, a pair of linked sheaves mounted movably upon a horizontal rod above the rear end of the thrasher frame for allowing the blast pipe to be operated horizontally, and an ordinary ratchet wheel and pawl for catching the revoluble shaft after being manipulated to set the blast-pipe vertically at the desired point of delivery, substantially as specified.



529,401. SPIRAL SCREW-DRIVER AND DRILL. WILLIAM H. MCCOY, Miller's Falls, Mass., and HENRY L. PRATT, Brooklyn, N. Y., assignors to the Miller's Falls Company, Miller's Falls, Mass. Filed Feb. 21, 1894. Serial No. 501,034. (No model.)



*Claim.*—1. The combination of the nut *a*, suitably secured to the handle A, and provided with the stud $a^3$; the ferrule *b*, also suitably secured to said handle A, and arranged to overlap the lower end of nut *a*; and to form the recess $a^4$; the spiral shank connecting said handle and the chuck holding part; the loose sleeve C, secured to the lower part of the tool and provided with a suitable recess or slot, adapted to engage the stud $a^3$, substantially as and for the purposes set forth

2. In a spiral screw driver and drill, having a suitable handle and spiral shank, the combination of the nut *a*, the stud $a^3$, the loose sleeve C, provided with the interlocking slot *c*, the spring *d*, and the chuck holding part E, arranged and adapted to hold the lower part of the tool closely to the lower end of the handle, substantially as and for the purposes set forth.

3. In a spiral screw driver and drill having a suitable handle and spiral shank, a chuck holding part, a loose sleeve, secured to said chuck holding part and suitable means for securing said loose sleeve to the lower part of the handle, and adapt the whole to operate as a rigid screw driver, all combined substantially as and for the purposes set forth.

529,402. DEVICE FOR SECURING EYEGLASSES. HUGH MCDOUGALL, Brooklyn, N. Y. Filed Apr. 9, 1894. Serial No. 506,901. (No model.)

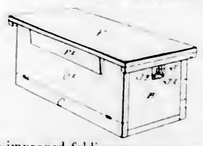


*Claim.*—1. In a device for securing eye glasses, the combination of the casing 1, 2, post 6 fixed to said casing and having a central stud 9 and an annular chamber surrounding said stud, a reel, a sleeve 8 fastened to said reel and having bearing on said stud 9 in said chamber, and means of retaining said sleeve upon said stud, substantially as set forth.

2. In a device for securing eye glasses, the combination of a casing 1, 2, a spring actuated reel having a central bearing in said casing, a stop plate and a roller-formed pawl and means for attaching one end of said pawl near the periphery of said reel and allowing no endwise movement while permitting it to vibrate and to rotate, substantially as set forth.

3. The combination in a device for securing eye glasses of the post having fixed stop or plate 13, the spring reel 4 having-plate or disk 10 provided with lip 17 and the roller pawl 16 having a neck engaging said lip and arranged to operate, substantially as set forth.

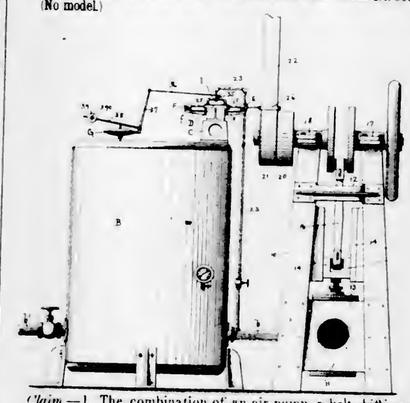
529,403. FOLDING EGG-CASE. HENRY E. MCKINNEY, Liberty Centre, Iowa. Filed May 17, 1894. Serial No. 511,619. (No model.)



*Claim.*—1. An improved folding egg case, comprising a suitable bottom, two end pieces hinged thereto to swing inwardly, pins fixed to and projecting outwardly from the edges of the end pieces, a side piece of a height corresponding to the thickness of the end piece secured to the bottom, a part hinged thereto of a height to reach the level of the end pieces and having bores therein to receive the pins on said end pieces, a side piece secured to the bottom on the opposite side and of a height corresponding to the combined thickness of one of the end pieces and the side piece, a section hinged thereto to reach the level of the end piece, and a top having strips secured to its edges to overlap the sides and ends of the box, for the purposes stated.

2. An improved folding egg case comprising a suitable bottom, two end pieces hinged thereto to swing inwardly pins fixed to and projecting outwardly from the edges of the end pieces, a side piece of a height corresponding to the thickness of the end piece secured to the bottom, a part hinged thereto of a height to reach the level of the end pieces having bores therein to receive the pins on said end pieces, a side piece secured to the bottom on the opposite side and of a height corresponding to the combined thickness of one of the end pieces and the side piece, a section hinged thereto to reach the level of the end piece and a top having strips secured to its edges to overlap the sides and ends of the box, and two spring catches fixed to the top to overlap the said pieces and engage the under surface of the lower side piece when folded up, and two plates having notches therein fixed to the end pieces to receive said catches when the case is set up, all arranged and combined substantially as and for the purposes stated.

529,404. BELT-SHIFTING DEVICE FOR AIR-PUMPS. CARLETON W. NASON, New York, N. Y. Filed Feb 19, 1894. Serial No. 500,665. (No model.)



*Claim.*—1. The combination of an air pump, a belt-shifting device for starting and stopping the air pump, a main cylinder and piston for operating the belt shifting device in either direction, and an automatically controlled valve actuated by variations in the air pressure for admitting pressure to either end of the main cylinder, substantially as described.

2. In a belt shifting device, the combination of a main cylinder and piston for shifting the belt, dash-pots for retarding the motion of the piston near the end of its stroke, and an automatically controlled valve actuated by variations in the air pressure for admitting pressure to either end of the main cylinder, substantially as described.

3. In a belt-shifting device, the combination of a main cylinder, a piston-rod, a main piston, supplemental pistons mounted on the piston-rod fitting into cylinders at each end of the main cylinder, and forming dash pots for retarding the piston at each end of its stroke, and an automatically controlled valve for admitting pressure to either end of the main cylinder, substantially as described.

4. The combination of an air pump, a belt-shifting device, a main cylinder and piston for actuating said belt-shifting device, a valve for admitting pressure to either end of the main cylinder and adapted to be moved in one direction by the air pressure and in the opposite direction by a weight, substantially as described.

5. The combination in a belt-shifting device of a main cylinder and piston, a controlling valve for admitting pressure to either end of said main cylinder, a bell-crank lever having an adjustable weight mounted on one arm, and having its other arm connected to the controlling valve, substantially as described.

6. The combination of an air pump, a belt-shifting device, a cylinder and piston actuating said belt-shifting device in either direction, a valve for admitting pressure to either end of said cylinder, a flexible diaphragm actuated by pressure from the air pump, and connected to operate the valve, substantially as described.

7. The combination of an air pump, a main cylinder and piston actuating a belt shifting device, a valve for admitting pressure to either end of said cylinder, a bell-crank lever having one arm connected to the valve, and having its other arm provided with an adjustable weight and connected to a flexible diaphragm actuated by pressure from the air pump, substantially as described.

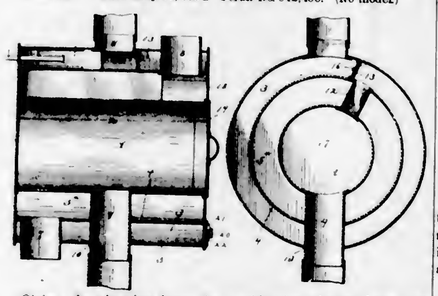
8. The combination of an air pump, a belt-shifting device controlling said air pump, a cylinder and piston for actuating said belt-shifting device in either direction, dash-pots for retarding the piston at each end of its stroke, said dash-pots being carried by extended brackets leaving free access to the stuffing boxes of said cylinder, a flexible diaphragm controlled by variations of the air pressure, and adapted to actuate a valve for admitting pressure to either end of said cylinder, substantially as described.

9. The combination of an air pump, a belt-shifting device, a cylinder and piston actuating said belt-shifting device in either direction, dash-pots for retarding the piston, rubber washers for preventing the piston from hammering at the end of its stroke, a valve for admitting pressure to either end of said cylinder, said valve being actuated in one direction by the air pressure, and in the other direction by an adjustable weight, substantially as described.

10. In a belt shifting device, the combination of the main cylinder and piston for actuating the belt, a controlling valve actuated by variations in the air pressure for admitting pressure to the main cylinder, supplemental pistons mounted on the main piston rod and engaging dash-pots carried by extended brackets, leaving free access to the stuffing boxes at each end of the cylinder, and flexible washers mounted on the piston-rod at each side of the main piston, and adapted to alternately engage the opposite ends of the cylinder as the main piston moves back and forth, substantially as described.

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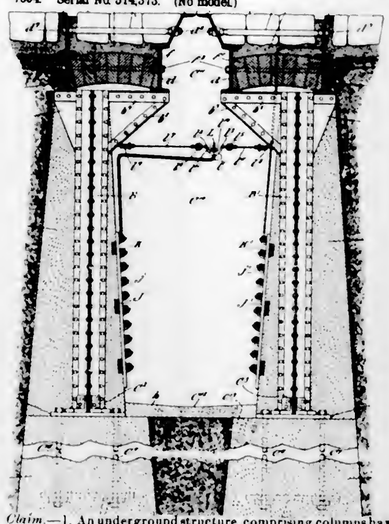
## 529,405. HEATING-DRUM. JOHN E. NEWHOUSE, Magnetic Springs, assignor of two-thirds to Smith N. McCloud and Charles F. Lents, Marysville, Ohio. Filed May 25, 1894. Serial No. 512,458. (No model.)



*Claim.*—In a heating-drum, the combination of outer, inner and intermediate concentric cylinders arranged with their common axis in a horizontal position, and having their ends closed, a smoke-inlet collar communicating with the central or axial space inclosed by the inner cylinder, a smoke-outlet collar communicating with the space between the outer and intermediate cylinders, and axially aligned with said smoke-inlet collar, a connecting flue between the outer and inner spaces, and deflected slightly from alignment with said inlet and outlet collars, a damper intersecting the outer space between the planes of the connecting flue and the outlet collar, and air inlet and air outlet thimbles arranged respectively at the lower and upper sides of the drum, at the opposite ends thereof, and communicating with the space between the inner and intermediate cylinder, substantially as specified.

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## 529,406. UNDERGROUND ELECTRIC RAILWAY. HENRY B. NICHOLS and FREDERICK H. LINCOLN, Philadelphia, Pa. Filed June 13, 1894. Serial No. 514,373. (No model.)

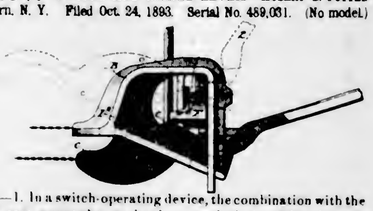


*Claim.*—1. An underground structure, comprising columns having brackets and struts, cross-beams mounted thereon, I-beams mounted on said cross-beams and supporting track-rails to position and inclined Z bars or frames bound together by tie rods, the construction being such that two chambers of different diameters are formed, whereof one is provided with a slot and the other with a conductor arranged out of alignment with said slot, supported by hangers suspended from insulated cross-guys attached to said structure, substantially as described.

2. An underground structure, comprising columns supporting a road-bed, track-rails and frames, the latter reversely arranged to constitute a slotted contracted chamber communicating with an enlarged lower chamber, racks supporting supply or feeder wires and an electric conductor in said lower chamber supported by insulated cross guys to said structure out of alignment with the slot of said contracted chamber, substantially as described.

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## 529,407. SWITCH AND SIGNAL LEVER. HOBART B. POTTER Hillburn, N. Y. Filed Oct. 24, 1893. Serial No. 489,031. (No model.)



*Claim.*—1. In a switch-operating device, the combination with the frame, of a cam mounted to swing in a vertical plane therein, connections between the cam and the switch rails, and a lever mounted in the frame and arranged to impinge upon the cam to move the rails and to hold the cam in position, substantially as described.

2. In a switch-operating device, the combination with the frame, of a cam mounted to swing in a vertical plane therein, connections between the cam and the switch rails, and a lever pivotally mounted in the frame parallel to the track and arranged to impinge upon the cam and lock it in position, substantially as described.

3. In a switch-operating device, the combination with the frame, of a cam mounted therein, connections between the cam and switch rails, and a lever impinging upon the cam, the lever being provided with an extension for holding the cam, substantially as described.

4. In a switch-operating device, the combination with the frame, of a cam mounted therein, connections between the cam and switch rails, and a lever mounted in the frame, the lever being provided with a bearing surface to impinge upon the cam and with an extension for holding the cam in position, substantially as described.



5. In a switch-operating frame, the combination with the frame, of a cam made in two parts adjustable with relation to each other, connections between the cam and the rails, and a lever for operating the cam, substantially as described.

6. In a switch-operating device, the combination with the frame, of a housing, a cam mounted to swing in a vertical frame in the housing, connections between the cam and switch rails, and a lever arranged at right angles to the cam impinging upon and controlling the same, substantially as described.

7. In a switch-operating device, the combination with the frame, of a cam mounted therein, connections between the cam and switch rails, a lever mounted in the frame at right-angles to the cam and arranged to directly engage and hold the same, and means for locking the lever in its various positions, substantially as described.

8. In a switch-operating device, the combination with the frame, of a housing, a cam mounted in the housing, the frame having an opening, a lever mounted in the opening for operating the cam, and a flange on the frame adjacent to the opening for securing the lever substantially as described.

9. In a switch-operating device, the combination with the frame, of a cam, mounted to swing in a vertical plane in the frame a moving rod connected to the cam, a lever for operating the cam, a target on the frame, and connections between the moving rod and target, substantially as described

10. In a switch-operating and locking device, the combination with the frame, of a cam, connections between the cam and rails, a locking bar, a locking rod and dog for said bar, and a lever arranged to operate the locking rod and dog and the cam, substantially as described.

11. In a switch-operating and locking device the combination with the frame, of a cam mounted thereon, connections between the cam and rails, a locking bar adjustably connected to the rails, a locking rod and dog, and a lever mounted on the locking rod and arranged to operate said rod, and the cam, substantially as described.

12. In a switch-operating and locking device, the combination with the frame, of a cam mounted thereon, connections between the cam and rails, a locking bar adjustably connected to the rails, a chair supporting said locking bar, a locking rod and dog mounted in the chair and connected to the frame, and a lever mounted on the locking rod and arranged to operate the same and the cam, substantially as described

13. In a switch-operating and locking device, the combination with the frame, of a cam mounted thereon, connections between the cam and rails, a target mounted on the frame and connected to be operated from the cam, a locking bar connected to the rails, a locking rod and dog, and a lever connected to the locking-rod and arranged to operate the same and the cam and target at a single movement, substantially as described.

14. In a switch- and signal-operating device, the combination with the frame, of a cam and connections between the cam and rails, a lever mounted in the frame for operating the cam, the lever being provided with an extension, and the signal chains connected to said extension, substantially as described.

15. In a switch and signal-operating device, the combination with the frame, of a cam mounted thereon and connected to the rails, a lever for operating the cam and provided with an extension to which the signal chains are connected, and means for locking the lever in different positions, the arrangement being such that the cam may be operated to open and close the switch by a partial movement of the lever, while the cam is locked and the signal operated on a complete movement of the lever, substantially as described.

16. In a switch- and signal-operating device, the combination with the frame, of a cam and connections with the rails, a locking bar, a locking rod and dog for the bar, and a lever connected with the locking rod, the said lever having an extension to which the chains of the signal are attached, the arrangement being such that the cam may be operated to open and close the switch by a partial movement of the lever and the switch will be locked and the signal operated with a complete movement of the lever, substantially as described.

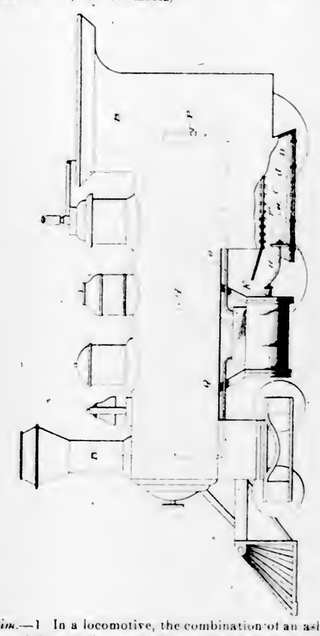
17. In a switch- and signal-operating device, the combination with the frame, of a switch-operating device, a switch-locking device, and a lever, said lever being arranged to operate the switch to open and close the same by a partial movement, and to operate the switch, lock the same and operate the signal with a complete movement, substantially as described.

18. In a switch-operating and locking device the combination with the frame, of a cam and connections to operate the switch, a chair, a locking bar connected to the switch and mounted in the chair, a locking rod and dog also mounted in the chair and arranged to engage the locking bar, and a lever connected to the locking rod to operate the locking dog and having a bearing surface for operating the cam, the arrangement being such that the dog engages the locking bar only when the switch has been completely moved, substantially as described.

19. In a switch-operating and locking device, a chair having an extension supporting the main rail, a locking bar connected to the switch and mounted in the chair, a locking rod and dog also mounted in the chair, and means for operating the dog, substantially as described

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## 529,408. DEVICE FOR REMOVING ASHES FROM LOCOMOTIVE ASH-PANS. ANDREW REYNOLDS, Seattle, Wash. Filed July 6, 1894. Serial No. 516,710. (No model.)

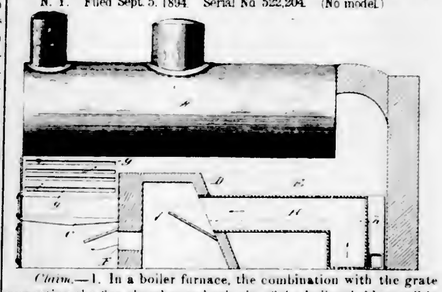


*Claim.*—1. In a locomotive, the combination of an ash pan having arranged therein a longitudinal guide rod, a scraper fitted to slide on said rod, and means for reciprocating the scraper, substantially as shown and described.

2. In a locomotive, the combination of a longitudinal guide rod, provided at its upper end with an enlarged head and at its lower end with laterally extending flanges, adapted to be secured to the bottom of the ash pan of the locomotive, a scraper provided in one edge with a notch adapted to receive the enlarged head on the guide rod in the ash pan, an engine supported below and adapted to receive steam from the boiler of the locomotive, and connections between the piston of said engine and the scraper, substantially as shown and described, for the purpose specified

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## 529,409. BOILER-FURNACE. DWIGHT S. RICHARDSON, Brooklyn, N. Y. Filed Sept. 5, 1894. Serial No. 522,204. (No model.)



*Claim.*—1. In a boiler furnace, the combination with the grate separating the fire chamber and ash pit, of the hollow bridge wall in rear of the grate having independent internal compartments, air sup-

ply passages leading to said compartments from the external air, an air exit from one of said compartments into the ash pit and exit ducts leading from the compartments not open to the ash pit, and discharging into the fire chamber above the grate; substantially as described.

2. In a boiler furnace, the combination with the grate separating the fire chamber and ash pit, of the hollow bridge wall in rear of the grate having an air exit into the ash pit, of a fresh air duct extending forward from the rear of the furnace setting and opening into the bridge wall, and fresh air ducts independent of said first mentioned duct extending forward of the bridge wall and opening into the fire chamber above the grate; substantially as described.

3. In a boiler furnace, the combination with the grate separating the fire chamber and ash pit and the hollow bridge wall having independent internal compartments and an air exit from one of said compartments into the ash pit, of independent fresh air ducts extending forward from the rear of the furnace setting and opening into the respective compartments in the bridge wall, and ducts leading from the compartments not open to the ash pit, forward and discharging into the fire chamber above the grate with dampers for controlling the supply of air above and below the grate respectively, substantially as described.

4. In a boiler furnace, the combination with the grate, and hollow bridge wall in rear of the same having an air exit opening into the ash pit below the grate, of a series of independent fresh air ducts passing through the combustion chamber in rear of the hollow bridge wall, said ducts supplying air respectively to the hollow bridge wall and to the fire chamber above the grate and means for independently controlling the passage of air through the ducts; substantially as described.

5. In a boiler furnace, the combination with the grate and hollow bridge wall in rear of the same having the independent internal compartments with an opening from the central compartment into the ash pit below the grate, of ducts extending from the end compartments forward above the level of the grate and having exit openings into the fire chamber, the series of independent fresh air supply ducts passing forward through the chamber in rear of the bridge wall and opening into the compartments respectively and dampers for independently controlling the flow of air through the ducts; substantially as described.

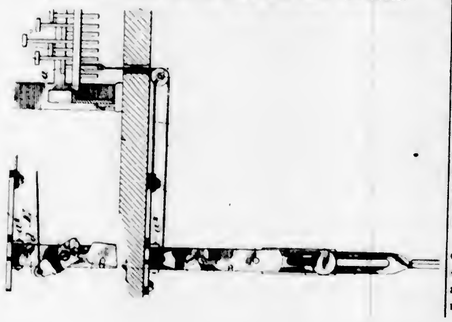
6. In a boiler furnace, the combination with the grate, hollow bridge wall in rear of the same and a fresh air duct opening into said bridge wall, of hot air ducts leading from the bridge wall along each side of the fire chamber above the grate, said ducts having exit openings into the said fire chamber arranged alternately at different levels; substantially as described.

7. In a boiler furnace, the combination with the grate, and the hollow bridge wall in rear of the same separated into independent compartments and having a hot air exit opening leading from the center compartment into the ash pit below the grate, of ducts leading from the end compartments within the walls of the setting forward and discharging into the fire chamber above the grate and independently controlled air supply ducts leading to the compartments in the hollow wall respectively; substantially as described.

8. In a boiler furnace, the combination with the grate and the hollow bridge wall in rear of the same separated into independent compartments and having a hot air exit from the center compartment into the ash pit below the grate, of ducts leading from the end compartments laterally into the setting wall and forward with exit openings into the fire chamber, above the grate, and independently controlled fresh air ducts leading forward through the chamber in rear of the bridge wall and opening into the bridge wall compartments respectively; substantially as described.

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529,410. **TYPE-WRITING MACHINE.** RICHARD W. ROBERTS, Chicago, Ill. Filed May 25, 1894. Serial No. 512,423. (No model.)



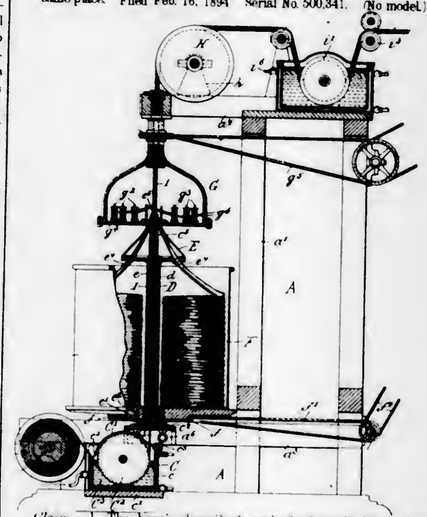
*Claim.*—1. In attachments for typewriting machines, the combination of a supporting plate adapted to be secured to a typewriter table, an extensible bar adjustably secured thereto and provided with a grooved pulley near its outer end, a bell crank lever pivoted to such supporting plate, a cord connected with the bell crank passing around the grooved pulley and adapted to be secured to the case bar of a machine and actuate the same, and an actuating lever arranged to contact and actuate the bell crank lever, substantially as described.

2. In attachments for typewriting machines, the combination of a supporting plate adapted to be secured to a typewriter table, an extensible bar adjustably secured thereto and provided with a grooved pulley near its outer end, a bell crank lever pivoted to such supporting plate, a cord connected with the bell crank passing around the grooved pulley and adapted to be secured to the case bar of a machine and actuate the same, an actuating lever arranged to contact and actuate the bell crank lever and provided with an adjustable extensible portion and knee plate, substantially as described.

3. In attachments for typewriting machines, the combination of a supporting plate adapted to be secured to a typewriter table and provided with a depending foldable bar, a grooved pulley pivotally secured to such supporting plate, a bell crank lever pivotally secured to the foldable portion of such supporting plate, a cord connected with such bell crank lever passing around the grooved pulley adapted to be connected with an actuating case bar of a machine, and means for actuating the bell crank lever, substantially as described.

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529,411. **MANUFACTURE OF ELECTRIC CONDUCTORS.** JOHN ROBINSON, Philadelphia, Pa., assignor of one-half to William J. Chantinel, same place. Filed Feb. 16, 1894. Serial No. 500,341. (No model.)



*Claim.*—1. The herein described method of producing an insulated electric conductor, which consists in continuously drawing a wire through a bath of insulating material and successively feeding under required tension and applying in regulated quantity cotton or the like to said wire while said insulating material is still wet so as to firmly adhere thereto and present a smooth and uniform surface, laying threads or cords over the fibrous covering of said wire and conducting said wire through a bath of insulating material so as to thoroughly saturate the entire body of the conductor, substantially as and for the purposes set forth.

2. An apparatus for producing an insulated electric conductor, comprising a reel, a jacketed tank provided with a rotatable roll with a removable cover having openings therein, means, as described, for feeding under required tension and applying in regulated quantity fibrous material to a wire adapted to be moved continuously in the path thereof and so as to firmly adhere thereto and so as to present a smooth exterior surface, a whirler or flier, a traveler drum, a jacketed tank provided with an internal roll, a reel, and means for actuating said movable parts of the apparatus, substantially as and for the purposes set forth.

3. An apparatus for producing an insulated electric conductor, comprising a carding-engine with a wiper or roll, a rotatable cone-shaped drum, a reel, a jacketed tank provided with a revoluble roll, a nozzle, a rotatable whirler, a tank for containing insulating material, and a winding-reel, substantially as and for the purposes set forth.



4. An apparatus for producing an insulated electric conductor, comprising a carding engine, a rotatable cone located adjacent thereto and provided with a hollow spindle, a funnel shaped feeding device, a whirler, tanks adapted to contain insulating material and rotatable reels adapted to contain the wire and resultant product, substantially as and for the purposes set forth.

5. An apparatus for producing an insulated electric conductor, comprising a carding engine having a delivery roll or rolls, a rotatable cone located adjacent thereto, a funnel shaped nozzle partially surrounding one portion of said cone, a rotatable whirler, a reel, tanks adapted to contain insulating material and a rotatable reel, substantially as and for the purposes set forth.

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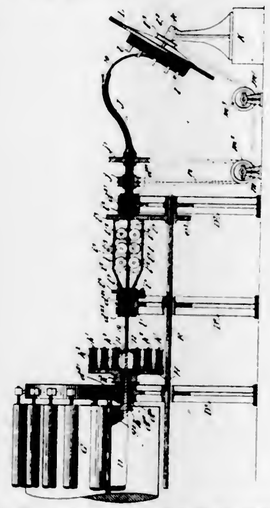
529,412. **INSULATED ELECTRIC CONDUCTOR.** JOHN ROBINSON, Philadelphia, Pa., assignor of one-half to William J. Chantinel, same place. Filed Feb. 17, 1894. Serial No. 500,477. (No specimens.)



*Claim.*—The herein described insulated electric conductor composed of a wire provided with a coating of insulating material having a smooth surfaced covering of cotton thereon, a binder of cords or threads in regular sequence wound around the same, and a coating of insulating material permeating the body of said covered and corded wire, as shown and for the purposes set forth.

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529,413. **MANUFACTURE OF ELECTRIC CONDUCTORS.** JOHN ROBINSON, Philadelphia, Pa., assignor of one-half to William J. Chantinel, same place. Filed Mar. 6, 1894. Serial No. 502,487. (No model.)



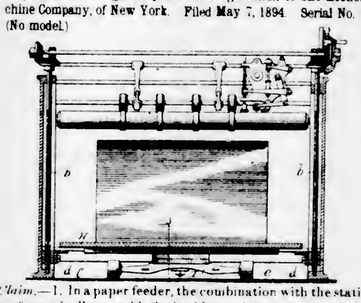
*Claim.*—1. The herein described mode of producing an electric conductor, which consists in continuously rotating and drawing a wire through a bath of insulating material, feeding and while the coated wire is still moist applying and compacting cotton or the like under required tension and in regulated quantity to said continuously rotated and drawn wire and applying threads to said covered wire to form a binder therefor, substantially as and for the purposes set forth.

2. An apparatus for producing an electric conductor, comprising a reel adapted to contain wire, means controlled from a main driving shaft for rotating said wire, a jacketed appliance adapted to contain fluid insulating material, a carding engine adapted to present fibrous material in the path of the moving wire, a whirler or flier and a device connected therewith for compacting said material to said wire and said whirler or flier adapted to lay a cord or thread in regular sequence onto said covered wire, mechanism for drawing said wire and actuated by means of gearing from said driving shaft, a delivery nozzle or tube, a rotatable laying up reel, and means for actuating said moving members, substantially as and for the purposes set forth.

3. An apparatus for producing an electric conductor, comprising a rotatable reel adapted to support wire, a main driving shaft, means for actuating said reel and controlled from said shaft, a wire rotating device, a tank adapted to contain material for application to said wire and provided with entrance and exit nozzles of different forms, a carding engine with delivery appliances, a whirler or flier with a funnel-shaped nozzle for compacting fibrous material to said wire and prior to cording of the same by means of said flier or whirler, a wire drawing mechanism controlled by means connected with said driving shaft, a delivery nozzle and winding up reel, substantially as and for the purposes set forth.

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529,414. **PAPER-FEEDING MACHINE.** GEORGE SAGUE, Poughkeepsie, N. Y., assignor, by mesne assignments, to The Economic Machine Company, of New York. Filed May 7, 1894. Serial No. 510,270. (No model.)

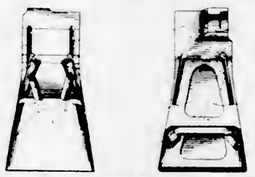


*Claim.*—1. In a paper feeder, the combination with the stationary frame, of a vertically movable feed table consisting of an open horizontal supporting frame composed of side bars, a rear cross bar and a removable front cross bar, substantially as set forth.

2. The combination with the side frames and the upright feed screws of a paper feeder, of a feed table composed of side bars provided with screw nuts with which said feed screws engage, a rear cross bar connecting the rear portions of said side bars, and a front cross bar removably connected with the front portions of said side bars, substantially as set forth.

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529,415. **CORDING ATTACHMENT FOR SEWING-MACHINES.** PAUL SCHOEN, Glens Falls, N. Y., assignor to The Singer Manufacturing Company of New Jersey. Filed Mar. 13, 1894. Serial No. 503,461. (No model.)



*Claim.*—1. A double cording attachment for use with two needle sewing machines consisting essentially of upper and lower, rearwardly-tapering strip guides made in the form of flattened tubes, the said lower strip-guide being somewhat wider than the said upper strip-guide, and both of said guides having toward their rear or narrow parts edge-turning portions to form hems or in-turned edges for two strips of material passing through them, combined with two cord-guides arranged between the said strip-guides and so placed as to deliver two cords within the folded edges of the strip passing through the said lower strip guide.

ply passages leading to said compartments from the external air, an air exit from one of said compartments into the ash pit and exit ducts leading from the compartments not open to the ash pit, and discharging into the fire chamber above the grate; substantially as described.

2. In a boiler furnace, the combination with the grate separating the fire chamber and ash pit, of the hollow bridge wall in rear of the grate having an air exit into the ash pit, of a fresh air duct extending forward from the rear of the furnace setting and opening into the bridge wall, and fresh air ducts independent of said first mentioned duct extending forward of the bridge wall and opening into the fire chamber above the grate, substantially as described.

3. In a boiler furnace, the combination with the grate separating the fire chamber and ash pit and the hollow bridge wall having independent internal compartments and an air exit from one of said compartments into the ash pit, of independent fresh air ducts extending forward from the rear of the furnace setting and opening into the respective compartments in the bridge wall, and ducts leading from the compartments not open to the ash pit, forward and discharging into the fire chamber above the grate with dampers for controlling the supply of air above and below the grate respectively, substantially as described.

4. In a boiler furnace, the combination with the grate, and hollow bridge wall in rear of the same having an air exit opening into the ash pit below the grate, of a series of independent fresh air ducts passing through the combustion chamber in rear of the hollow bridge wall, said ducts supplying air respectively to the hollow bridge wall and to the fire chamber above the grate and means for independently controlling the passage of air through the ducts; substantially as described.

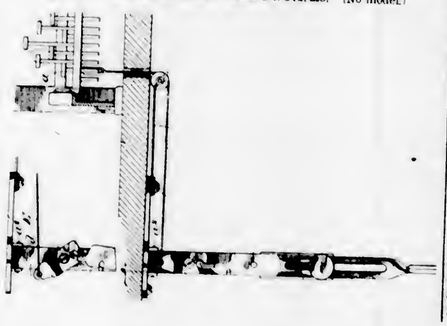
5. In a boiler furnace, the combination with the grate and hollow bridge wall in rear of the same having the independent internal compartments with an opening from the central compartment into the ash pit below the grate, of ducts extending from the end compartments forward above the level of the grate and having exit openings into the fire chamber, the series of independent fresh air supply ducts passing forward through the chamber in rear of the bridge wall and opening into the compartments respectively and dampers for independently controlling the flow of air through the ducts; substantially as described.

6. In a boiler furnace, the combination with the grate, hollow bridge wall in rear of the same and a fresh air duct opening into said bridge wall, of hot air ducts leading from the bridge wall along each side of the fire chamber above the grate, said ducts having exit openings into the said fire chamber arranged alternately at different levels, substantially as described.

7. In a boiler furnace, the combination with the grate, and the hollow bridge wall in rear of the same separated into independent compartments and having a hot air exit opening leading from the center compartment into the ash pit below the grate, of ducts leading from the end compartments within the walls of the setting forward and discharging into the fire chamber above the grate and independently controlled air supply ducts leading to the compartments in the hollow wall respectively; substantially as described.

8. In a boiler furnace, the combination with the grate and the hollow bridge wall in rear of the same separated into independent compartments and having a hot air exit from the center compartment into the ash pit below the grate, of ducts leading from the end compartments laterally into the setting wall and forward with exit openings into the fire chamber above the grate, and independently controlled fresh air ducts leading forward through the chamber in rear of the bridge wall and opening into the bridge wall compartments respectively; substantially as described

529,410. TYPE-WRITING MACHINE. RICHARD W. ROBERTS, Chicago, Ill. Filed May 25, 1894. Serial No. 512,423. (No model.)

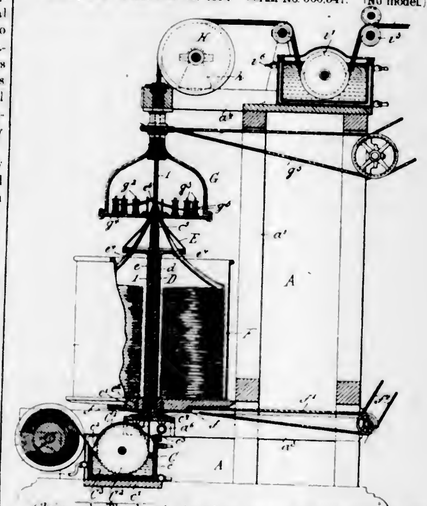


*Claim.*—1. In attachments for typewriting machines, the combination of a supporting plate adapted to be secured to a typewriter table, an extensible bar adjustably secured thereto and provided with a grooved pulley near its outer end, a bell crank lever pivoted to such supporting plate, a cord connected with the bell crank passing around the grooved pulley and adapted to be secured to the case bar of a machine and actuate the same, and an actuating lever arranged to contact and actuate the bell crank lever, substantially as described.

2. In attachments for typewriting machines the combination of a supporting plate adapted to be secured to a typewriter table, an extensible bar adjustably secured thereto and provided with a grooved pulley near its outer end, a bell crank lever pivoted to such supporting plate, a cord connected with the bell crank passing around the grooved pulley and adapted to be secured to the case bar of a machine and actuate the same, an actuating lever arranged to contact and actuate the bell crank lever and provided with an adjustable extensible portion and knee plate, substantially as described.

3. In attachments for typewriting machines, the combination of a supporting plate adapted to be secured to a typewriter table and provided with a depending foldable bar, a grooved pulley pivotally secured to such supporting plate, a bell crank lever pivotally secured to the foldable portion of such supporting plate, a cord connected with such bell crank lever passing aronnd the grooved pulley adapted to be connected with an actuating case bar of a machine, and means for actuating the bell crank lever, substantially as described.

529,411. MANUFACTURE OF ELECTRIC CONDUCTORS. JOHN ROBINSON, Philadelphia, Pa., assignor of one-half to William J. Chantinel, same place. Filed Feb. 16, 1894. Serial No. 500,341. (No model.)



*Claim.*—1. The herein described method of producing an insulated electric conductor, which consists in continuously drawing a wire through a bath of insulating material and successively feeding under required tension and applying in regulated quantity cotton or the like to said wire while said insulating material is still wet so as to firmly adhere thereto and present a smooth and uniform surface, laying threads or cords over the fibrous covering of said wire and conducting said wire through a bath of insulating material so as to thoroughly saturate the entire body of the conductor, substantially as and for the purposes set forth

2. An apparatus for producing an insulated electric conductor, comprising a reel, a jacketed tank provided with a rotatable roll with a removable cover having openings therein, means, as described, for feeding under required tension and applying in regulated quantity fibrous material to a wire adapted to be moved continuously in the path thereof and so as to firmly adhere thereto and so as to present a smooth exterior surface, a whirler or flier, a traveler drum, a jacketed tank provided with an internal roll, a reel, and means for actuating said movable parts of the apparatus, substantially as and for the purposes set forth.

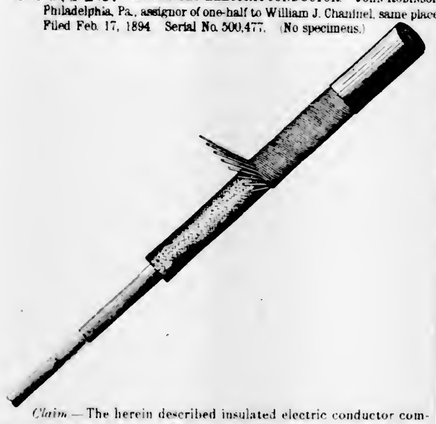
3. An apparatus for producing an insulated electric conductor, comprising a carding-engine with a wiper or roll, a rotatable cone-shaped drum, a reel, a jacketed tank provided with a revoluble roll, a nozzle, a rotatable whirler, a tank for containing insulating material, and a winding-reel, substantially as and for the purposes set forth.



4. An apparatus for producing an insulated electric conductor, comprising a carding engine, a rotatable cone located adjacent thereto and provided with a hollow spindle, a funnel shaped feeding device, a whirler, tanks adapted to contain insulating material and rotatable reels adapted to contain the wire and resultant product, substantially as and for the purposes set forth

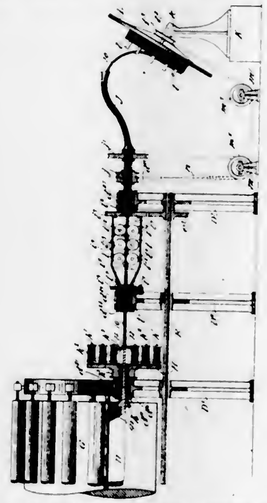
5. An apparatus for producing an insulated electric conductor, comprising a carding engine having a delivery roll or rolls, a rotatable cone located adjacent thereto, a funnel shaped nozzle partially surrounding one portion of said cone, a rotatable whirler, a reel, tanks adapted to contain insulating material and a rotatable reel, substantially as and for the purposes set forth

529,412. INSULATED ELECTRIC CONDUCTOR. JOHN ROBINSON, Philadelphia, Pa., assignor of one-half to William J. Chantinel, same place. Filed Feb. 17, 1894. Serial No. 500,477. (No specimens.)



*Claim.*—The herein described insulated electric conductor composed of a wire provided with a coating of insulating material having a smooth surfaced covering of cotton thereon, a binder of cords or threads in regular sequence wound around the same, and a coating of insulating material permeating the body of said covered and corded wire, as shown and for the purposes set forth.

529,413. MANUFACTURE OF ELECTRIC CONDUCTORS. JOHN ROBINSON, Philadelphia, Pa., assignor of one-half to William J. Channel, same place. Filed Mar. 6, 1894. Serial No. 502,487. (No model.)

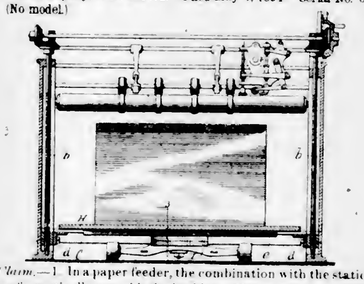


*Claim.*—1. The herein described mode of producing an electric conductor, which consists in continuously rotating and drawing a wire through a bath of insulating material, feeding and while the coated wire is still moist applying and compacting cotton or the like under required tension and in regulated quantity to said continuously rotated and drawn wire and applying threads to said covered wire to form a binder therefor, substantially as and for the purposes set forth

2. An apparatus for producing an electric conductor, comprising a reel adapted to contain wire, means controlled from a main driving shaft for rotating said wire, a jacketed appliance adapted to contain fluid insulating material, a carding engine adapted to present fibrous material in the path of the moving wire, a whirler or flier and a device connected therewith for compacting said material to said wire and said whirler or flier adapted to lay a cord or thread in regular sequence onto said covered wire, mechanism for drawing said wire and actuated by means of gearing from said driving shaft, a delivery nozzle or tube, a rotatable laying up reel, and means for actuating said moving members, substantially as and for the purposes set forth

3. An apparatus for producing an electric conductor, comprising a rotatable reel adapted to support wire, a main driving shaft, means for actuating said reel and controlled from said shaft, a wire rotating device, a tank adapted to contain material for application to said wire and provided with entrance and exit nozzles of different forms, a carding engine with delivery appliances, a whirler or flier with a funnel-shaped nozzle for compacting fibrous material to said wire and prior to cording of the same by means of said flier or whirler, a wire drawing mechanism controlled by means connected with said driving shaft, a delivery nozzle and winding up reel, substantially as and for the purposes set forth.

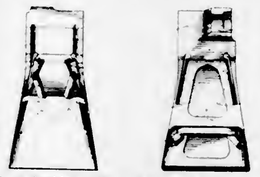
529,414. PAPER-FEEDING MACHINE. GEORGE SAGUE, Poughkeepsie, N. Y., assignor, by mesne assignments, to The Economic Machine Company, of New York. Filed May 7, 1894. Serial No. 510,270. (No model.)



*Claim.*—1. In a paper feeder, the combination with the stationary frame, of a vertically movable feed table consisting of an open horizontal supporting frame composed of side bars a rear cross bar and a removable front cross bar, substantially as set forth.

2. The combination with the side frames and the upright feed screws of a paper feeder, of a feed table composed of side bars provided with screw nuts with which said feed screws engage, a rear cross bar connecting the rear portions of said side bars, and a front cross bar removably connected with the front portions of said side bars, substantially as set forth.

529,415. CORDING ATTACHMENT FOR SEWING-MACHINES. PAUL SCHOEN, Glens Falls, N. Y., assignor to The Singer Manufacturing Company of New Jersey. Filed Mar. 13, 1894. Serial No. 503,461. (No model.)



*Claim.*—1. A double cording attachment for use with two needle sewing machines consisting essentially of upper and lower, rearwardly-tapering strip guides made in the form of flattened tubes, the said lower strip-guide being somewhat wider than the said upper strip-guide, and both of said guides having toward their rear or narrow parts edge-turning portions to form hems or in-turned edges for two strips of material passing through them, combined with two cord guides arranged between the said strip-guides and so placed as to deliver two cords within the folded edges of the strip passing through the said lower strip guide.

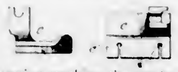
2. A double cording attachment for use with two needle sewing machines consisting essentially of a presser foot and upper and lower, rearwardly-tapering strip-guides secured to the toe portion of the said presser-foot and made in the form of flattened tubes, the said lower strip-guide being somewhat wider than the said upper strip guide, and both of said guides having toward their rear or narrow parts edge turning portions to form hems or in-turned edges for two strips of material passing through them, combined with two cord guides arranged between the said strip-guides, and so placed as to deliver two cords within the folded edges of the strip passing through the said lower strip-guide.

3. A double cording attachment for use with two needle sewing machines consisting essentially of a presser foot and upper and lower, rearwardly-tapering strip-guides secured to the toe portion of the said presser foot and made in the form of flattened tubes, the said lower strip-guide being somewhat wider than the said upper strip-guide, and both of said guides having toward their rear or narrow parts edge-turning portions to form hems or in-turned edges for two strips of material passing through them, combined with two rearwardly diverging cord guides arranged between the said strip guides, and partly within the edge turning portions of the said lower strip-guide, so as to deliver two cords within the folded edges of the strip passing through the said lower strip-guide.

4. The combination with the presser foot A provided with the two needle holes $a$ and having the grooves $a^2$ in its bottom, of the upper strip-guide $b$ having the edge-turning portions $b'$, the lower strip guide $c$ having the edge turning portions $c'$, the rearwardly diverging cord-guiding tubes $d$ arranged between said strip guides and partly within said edge-turning portions $c'$ of the lower strip, the latter being provided near its forward end with the cord leading-in eyes $d'$.

## 529,415. GUIDE FOR TWO-NEEDLE SEWING-MACHINES.

PAUL SCHORN, Glens Falls, N. Y., assignor to The Singer Manufacturing Company of New Jersey. Filed Mar. 13, 1894. Serial No. 503,462. (No model.)



*Claim.*—1. In a sewing machine, the combination with two needles and two complemental stitch-forming devices co-operating therewith, to form two independent seams, of a presser-foot and a work-plate, one of which is provided with a dividing guide arranged in a line between said needles, and the other of which has a slot into which said guide projects.

2. In a sewing machine, the combination with two needles and two complemental stitch-forming devices co-operating therewith, to form two independent seams, of a presser-foot and a work-plate one of which is provided with a dividing guide arranged between and extending both forward and backward of said needles and in the line of the feed of the work, and the other of which has a slot into which said guide projects.

3. In a sewing machine, the combination with two needles and two complemental stitch forming devices co-operating therewith, to form two independent seams, of the presser foot $c$ provided with the dividing guide $c^4$ arranged between and extending both forward and backward of the said needles, and the throat-plate $b$ having the slot $b^4$ into which said guide extends.

## 529,417. GUIDE FOR SEWING-MACHINES.

PAUL SCHORN, Glens Falls, N. Y., assignor to The Singer Manufacturing Company of New Jersey. Filed Mar. 16, 1894. Serial No. 503,910. (No model.)

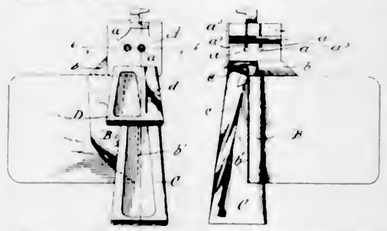


*Claim.*—1. The combination with a two-needle sewing machine provided with a presser-foot scroll hemmer, of a guide, for use in making lap seams, said guide comprising a vertical rib or flange having its forward or inner part turned over into a downwardly and forwardly sloping scroll, and the said vertical rib or flange being arranged in a line about midway between the two needles of the machine.

2. The combination with a two needle sewing machine provided with a presser-foot scroll hemmer, of a guide consisting of the base $f$ having the vertical flange $g$ turned over to form the forwardly and downwardly sloping scroll $h$, said base having also the rib $i$ in front of said scroll and extending beneath said scroll hemmer, said flange being placed in a line about midway between the two needles of the machine.

## 529,418. HEMSTITCHING ATTACHMENT FOR SEWING-MACHINES.

PAUL SCHORN, Glens Falls, N. Y., assignor to The Singer Manufacturing Company of New Jersey. Filed Mar. 16, 1894. Serial No. 503,911. (No model.)

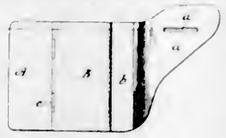


*Claim.*—1. A double hemstitching attachment for sewing machines consisting of the combination with a presser-foot having two needle-holes and having also a strip-guiding passage above its bottom, leaving a wall of metal between the bottom of the foot and said passage with rearwardly opening slots in said wall extending to said needle holes, of a hem-turning fabric-guide constructed and arranged to deliver material, having a down-turned edge, beneath said presser-foot, a strip guide having a hem-turning scroll, to form a double fold in a strip of fabric and also constructed and arranged to deliver the latter beneath said presser foot, and a second strip guide having a hem-turning edge and a guiding passage communicating or registering with the said strip-guiding passage in the said presser foot, to operate substantially as described.

2. A double hemstitching attachment for sewing machines consisting of the combination with the presser-foot A having the needle holes $a$, the transverse groove $a'$ in its bottom, the strip-guiding passage $a^3$ above its bottom and the stitch-passage slots $a^2$ extending from said needle-holes to said groove in the wall $a^4$ between said passage and the bottom of said foot, of the hem turning work guide B and the hem-turning strip-guide C, the latter having the scroll $c$ and both of said guides being arranged to deliver material beneath said presser foot, and the strip-guide D having the hem-turning or folding portion $d$, the passage of said guide communicating or registering with the said strip passage $a^3$ of the presser-foot to operate substantially as set forth.

## 529,419. SEWING-MACHINE HEMMER.

PAUL SCHOEN, Glens Falls, N. Y., assignor to The Singer Manufacturing Company of New Jersey. Filed Mar. 22, 1894. Serial No. 504,702. (No model.)



*Claim.*—1. A sewing machine hemmer or hemming guide consisting of a base plate, a plate or leaf hinged directly and permanently to said base plate, and a second leaf hinged to the first-named leaf and of a width equal to the width of the hem or plait to be formed, said second leaf having a straight free or inner edge parallel with the hinges of the two leaves, and said second leaf having also an overhanging lip or portion provided with a diagonal or inclined edge.

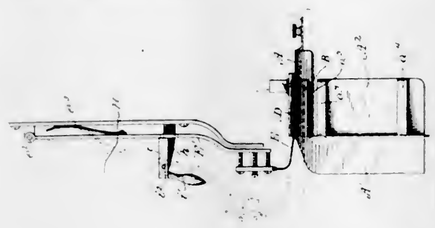
2. The combination with the base plate A having the arm $a$ provided with the slot $a'$, of the plate or leaf B hinged directly and permanently at $b$ to the said base plate, and the plate or leaf C hinged at $c$ to the said plate B and of a width equal to the width of the hem or plate to be formed, said leaf C having a straight free or inner edge which is parallel to the hinges $b$ and $c$ and having also the overhanging lip or portion $c'$ provided with the inclined or diagonal edge $c^2$.

## 529,420. PLAITING ATTACHMENT FOR SEWING-MACHINES.

PAUL SCHORN, Glens Falls, N. Y., assignor to The Singer Manufacturing Company of New Jersey. Filed Mar. 22, 1894. Serial No. 504,703. (No model.)



*Claim.*—1. A plaiting attachment for sewing machines consisting essentially of a base-plate to be secured to the work-plate of a sewing machine and having an offset, forward extension, as A', a tongue, B, of metal overhanging said base plate in front of the stitch forming mechanism of the machine, and of the width of the fold or hem to be formed, said tongue being attached at its forward end at one side to said offset, forward extension and extending longitudinally in the direction in which the goods are to be fed, and a plaiting blade supported above the work-plate of the machine and arranged to extend between the said base plate and tongue.



2. A plaiting attachment for sewing machines, consisting essentially of a base-plate to be secured to the work-plate of a sewing machine, a tongue of metal supported above said base-plate and of the width of the plait or hem to be formed, said tongue extending longitudinally in the direction in which the goods are to be fed, and a plaiting blade supported above the work-plate of the machine and arranged to extend between the said base plate and tongue, said base-plate being provided with a forward extension having on its under side a guiding rib or flange for the edge of the goods and which rib or flange is in line with one edge of said tongue.

3. A plaiting attachment for sewing machines, consisting essentially of a base-plate to be secured to the work-plate of a sewing machine, a tongue of metal supported above said base-plate and of the width of the plait or hem to be formed, and a plaiting blade supported above the work-plate of the machine and arranged to extend between the said base plate and tongue, said base-plate being provided with an extension having on its under side a guiding rib or flange for the edge of the goods, and which rib or flange is in line with one edge of said tongue, and said extension having also a strip guide which is in front of said tongue and which is separated from the body of the base-plate by a slot or opening.

4. A plaiting attachment for sewing machines, consisting of the combination of the base-plate A having the extension A' provided on its under side with a guiding rib or flange $a^3$, said extension having also the strip guiding portion $A^3$ having loops $a^4$ and separated from the body of said base-plate by the slot or opening $a^5$, the tongue B attached to said extension and supported above the said base-plate, and the plaiting blade E arranged to extend, when in operation, between said tongue and base-plate and having an inclined guiding edge.

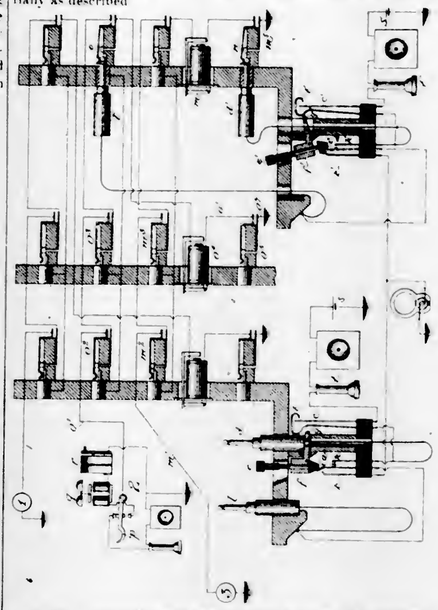
## 529,421. MULTIPLE-SWITCHBOARD SYSTEM.

CHARLES E SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed May 1, 1890. Serial No. 342,279. (No model.)

*Claim.*—1. The combination with a pair of plugs and cords, of a cord switch consisting of a frame having a socket for one of the plugs, a pair of springs in a branch from said cords through a telephone and battery to ground and a plunger mounted in a pivoted guide provided with an arm and contract springs operated by forcing down the plunger, substantially as and for the purpose specified.

2. The combination with a pair of plugs and cords, of a cord switch consisting of a plug socket, a contact point connected through the operator's telephone, a spring connected with the cord and adapted to make contact with said contact point but held out of contact therewith while the plug is in the socket, a plunger mounted in a pivoted guide, a spring actuated by the depression of the plunger to connect the generator in circuit, said pivoted guide carrying an arm adapted to engage said first mentioned spring to move the same out of contact with its contact point during the time the plug does not rest in the socket, substantially as described.

3. The combination with a pair of plugs and a single strand cord, of a cord switch comprising a contact point connected through the operator's apparatus to ground, a spring connected with the cord adapted to make contact with said contact point but held out of contact therewith while the plug is in the socket, a plunger mounted in a pivoted guide, a contact point connected through the generator to ground, a spring connected with the cord normally out of contact therewith but moved into contact therewith by the depression of said plunger, said pivoted guide carrying an arm adapted to move said first mentioned spring out of contact with its contact point, substantially as described.

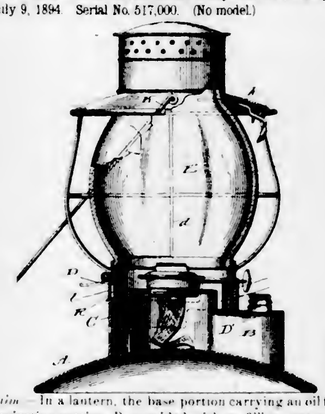


4. The combination with two connecting plugs, of a conductor uniting the two plugs, a cord switch for one of the plugs adapted to connect the operator's telephone with said conductor when the plug is removed from its socket, a lever controlling the switch springs of the cord switch independently of the plug, a plunger operating a calling key adapted to disconnect one of said plugs from the other and to connect it with a source of calling current, and a handle controlling both the lever and the plunger, substantially as described.

5. The combination with two connecting plugs, of a cord switch for one of the plugs controlling the connection of a telephone with the plugs, a calling key controlling the connection of a generator of signaling current with the plug, a lever capable of two different movements adapted to operate the cord switch independently of the plug and of the calling key in one of its movements, and to operate the calling key in the other movement, substantially as described.

## 529,422. LANTERN.

JAMES W. SENIOR, Reading, Pa., assignor of two-thirds to John J. Martin and Harry C. Shultz, same place. Filed July 9, 1894. Serial No. 517,000. (No model.)

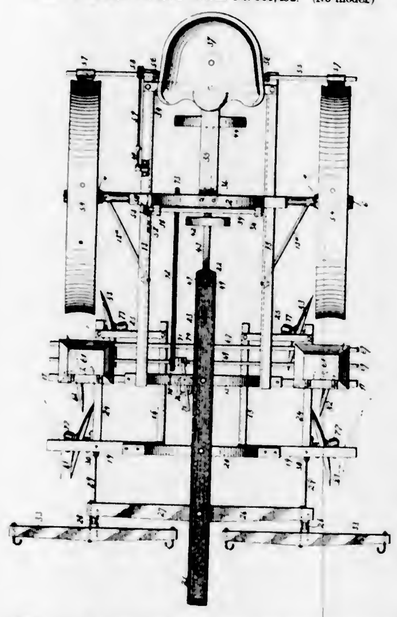


*Claim.*—In a lantern, the base portion carrying an oil fount having a projecting portion B provided with a filling aperture, and a

raised portion J integral therewith its ends connected to and forming with the part C, a continuous band about the burner, combined with the globe carrying band having a recess D', designed to fit over the said projecting portion and held thereto, when the parts of the lantern are locked together, substantially as shown and described.

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529,423. COMBINED CORN PLANTER, SEED-DRILL, AND CULTIVATOR. MATTHEW P. SIMPSON and ELI P. WILLIAMS, McPherson, Kans. Filed Apr. 30, 1894. Serial No. 509,452. (No model.)



*Claim.*—1. In a combined corn planter, seed-drill and cultivator, the combination with a front framework suitably mounted, and a tongue rigidly carried by said framework, and having vertical apertures or openings, of a rear wheel-supported framework, a rock-shaft carried thereby, a lever projecting from said rock-shaft, a rod pivoted to said lever and projecting upwardly through one of the openings of the tongue, and having a fixed collar bearing against the under side of the tongue, a nut engaging the upper end of said rod, a spring spirally encircling said rod and interposed between said nut and the upper side of said tongue, and a hand-lever mounted upon said rock-shaft, substantially as set forth.

2. In a combined corn planter, seed-drill and cultivator, the combination with a front framework suitably mounted, and a tongue rigidly carried thereby and having openings, of a rear wheel-supported framework carrying a seat, a rock-shaft supported in bearings secured to said framework, a foot-lever projecting upwardly and forwardly from and secured to said rock-shaft, a lever secured near its middle to the first-mentioned lever and having a foot-portion at its rear end adjacent to the seat, a rod pivoted to the front end of said lever and projecting through one of the openings of the tongue, a collar upon said rod bearing against the under side of the tongue, a nut at the upper end of said rod, a spring spirally encircling said rod and interposed between said nut and the upper side of the tongue, and means to secure said rock-shaft at any desired point in its adjustment, substantially as set forth.

3. In a combined corn-planter, seed-drill and cultivator, the combination with an arched axle, wheels mounted thereon, and longitudinally extending angle irons or bars supported by said axle, of an arch arranged in longitudinal alignment with and forward of the axle-arch and pivotally connected to the longitudinal angle-irons, a second or front arch also longitudinally aligned with the axle-arch, transverse and horizontal bars or angle-irons carried by and projecting outwardly from said arches, short longitudinal angle-irons connecting said transverse bars near their outer ends, longitudinal angle-irons connecting the same and arranged a suitable distance inward of the first-mentioned short longitudinal angle-irons, and rotatable cutting-disks operatively connected to and supporting the front portion of the machine, substantially as set forth.

4. In a combined corn-planter, seed-drill and cultivator, the combination with a front disk-supported framework, of an arched axle having tubular and horizontal sections, wheels mounted loosely upon said tubular sections of the axle, a shaft mounted in one of said tubular sections, and rigidly connected to the hub of the adjacent drive or supporting wheel, and a sprocket-wheel mounted upon said shaft substantially as set forth.

5. In a disk-supported framework, the combination with yoke-castings depending from said framework and terminating in internally screw-threaded sleeves at their lower ends, of a shaft journaled in said sleeves, a disk mounted upon said shaft, and screw-plugs engaging the screw-threads and closing the outer ends of said sleeves, substantially as set forth.

6. In a disk-supported framework, the combination with yoke-frames depending from said framework, and terminating at their lower ends in sleeves having a circular bore, of a tubular shaft journaled within said sleeves, removable plugs closing the outer ends of the bore of said sleeves, and washers fitting snugly within said sleeves and interposed between the plugs and the adjacent ends of the shaft, substantially as set forth.

7. In a disk-supported framework, the combination with a yoke-casting depending from said framework, terminating at its lower end in sleeves, of cylindrical bearing rings fitting snugly within said sleeves, and plugs closing the outer ends of the bore of said sleeves, substantially as set forth.

8. In a disk-supported framework, the combination with a yoke-casting depending from said framework and terminating in sleeves at its lower end, and removable plugs closing the outer ends of the bore of said sleeves, of bearing rings fitting snugly within said sleeves, a shaft journaled within said bearing rings, and washers interposed between the screw-plugs and the adjacent ends of the shaft and the bearing rings substantially as set forth.

9. In a disk-supported framework, the combination with a yoke-frame depending from said framework, and terminating in sleeves at its lower end, and removable plugs closing the outer ends of the bore of said sleeves, of bearing rings fitted within said sleeves, a shaft journaled in said bearing rings, annular flanges projecting inwardly from the inner ends of said sleeves, washers surrounding said shaft within said sleeves and bearing against said flanges, adjacent to the external surface of the shaft, and packings fitting in said sleeves and surrounding said shaft and interposed between the bearing rings and the washers bearing against said annular flanges, substantially as set forth.

10. In a disk-supported framework, the combination with a yoke frame depending from said framework and terminating in sleeves at its lower end, of a shaft journaled within said sleeves and having an annular and external shoulder, and also externally screw-threaded, a collar mounted upon said shaft and bearing against said shoulder, a second collar, a disk mounted upon said shaft and between said collars, and a nut engaging the threaded portion of said shaft and holding the collars and the disk firmly in position, substantially as set forth.

11. In a disk-supported framework, the combination with yoke-castings depending from said framework and terminating in sleeves at its outer end, and plugs closing the outer ends of the bore of said sleeves, of a hollow reservoir shaft for lubricating material and a disk mounted rigidly upon said shaft, substantially as set forth.

12. In a disk-supported framework, the combination with yoke-castings depending from said framework and terminating in sleeves at its lower end, of a shaft journaled within said sleeves, plugs closing the outer ends of the bore of said sleeves, and a tie-rod extending axially through said shaft and centrally through said plugs, and a retaining nut engaging the threaded projecting end of said tie-rod, substantially as set forth.

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529,424. ILLUMINATED GUN-SIGHT. EMIL R. VON SKODA, Pilsen, Austria-Hungary. Filed Oct. 10, 1893. Serial No. 487,737. (No model.) Patented in England Oct. 4, 1892, No. 17,672; in Germany Oct. 4, 1892, No. 69,368; in Switzerland Oct. 4, 1892, No. 5,920; in France Oct. 4, 1892, No. 222,716; in Belgium Oct. 4, 1892, No. 101,598, and in Italy Dec. 31, 1892. XXVII, 32,844. LXIX, 330.



*Claim.*—1. A front sight for guns comprising a hollow body of an opaque material, as metal exclusively, and of a substantially conical or pyramidal form provided with an opening facing the breech and extending from the apex or sight point downwardly, and an illuminating device within the sight below the aforesaid opening, whereby the apex of the sight is adapted for use by day and to be illuminated for use by night.

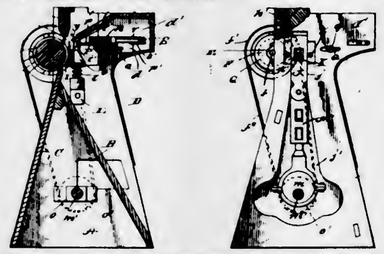
2. A front sight for guns, comprising a hollow body of an opaque material, as metal exclusively, and of a substantially conical or pyramidal form provided with an opening facing the breech and extending from the apex or sight point downwardly, and an incandescent electric lamp provided with a stained glass bulb within the sight below the aforesaid opening, for the purpose set forth.

3. A front sight for guns, comprising a hollow body of an opaque material, as metal exclusively, and of a substantially conical or pyramidal form, a portion thereof being removed by cutting along the minor to the major axis, and thence through the apex, whereby an opening extending from the apex downwardly is formed, and said apex preserved for sighting by day, and an illuminating device within the sight below said opening, whereby said apex is adapted to be illuminated for sighting by night.



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529,425. ROLLER COTTON-GIN. JAMES STAPLETON, Ray's Mills, Ga., assignor of one-half to Lewis Clements, same place. Filed Feb. 21, 1894. Serial No. 501,019. (No model.)



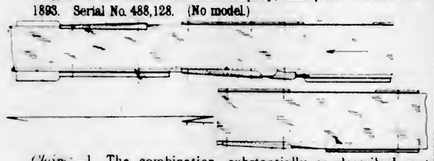
*Claim.*—1. In a cotton gin, the combination with the frame; of the ginning roller, the stationary retaining blade disposed at one side of said roller, a vertically reciprocating stripper blade working at one side of the roller, gearing for reciprocating the stripper blade, and supporting springs mounted within the frame and arranged under the stripper blade to assist the upward movement of the same, substantially as set forth.

2. In a cotton gin, the combination with the opposite frame sides having inclosed vertical guide grooves and side slots opening therein, of the ginning roller mounted on the frame, a stationary retaining blade adjustably mounted at one side of the ginning roller, a vertically reciprocating stripper bar carrying a blade working at one side of the retaining blade and having its extremities projecting through and working in the side slots of the frame sides, vertically reciprocating slide blocks moving in the guide grooves of the frame sides and provided with widened adjustment openings to loosely receive the ends of the stripper bar, adjustment screws mounted in opposite sides of the slide blocks and working against the opposite side of the ends of said stripper bar; and devices mounted in the opposite frame sides and connected with the slide blocks to reciprocate the same, substantially as set forth.

3. In a cotton gin, the combination with the frame having an inclosed seed chute inner side grooves, and slots communicating with said grooves, the ginning roller mounted at one side of the frame, and the stripping device located at one side of said roller of a horizontal stationary seed plate mounted at its ends in said grooves at one side of the stripping device, adjustment screws passing through said slots and engaging the ends of said plates a horizontally reciprocating feed bar mounted to slide on top of said seed plate, a horizontally moving rod suitably connected with said feed bar and having its extremities projected through slots in and working outside of the frame, eccentric connections from the ginning roller shaft to the extremities of said rod, and a feed or hopper board arranged over the seed plate and the bar sliding thereon, substantially as set forth.

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529,426. TUBE-MACHINE. DEMETRIUS B. STROUSE, Salem, Va., assignor to the Bonsack Machine Company, same place. Filed Oct. 14, 1893. Serial No. 488,128. (No model.)



*Claim.*—1. The combination, substantially as described and shown, in a strip-folding device, of a channel or passage through which the strip can be passed and curved guides *e*, *h* and *f* arranged upon one edge of the channel and adapted to fold one edge of the strip in the following manner: guide *e* to gradually fold the edge of the strip into a single lap or fold, guide *h* to gradually fold the single lap in an opposite direction, and guide *f* to continue the folding in the opposite direction and complete the double lap or fold.

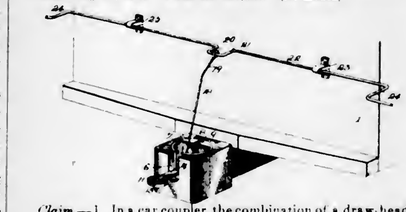
2. In a strip-folding device, a channel for the passage of the strip curved guides *e*, *h* and *f* arranged upon one edge of the channel and adapted to fold one edge of the strip in the following manner: guide *e* to gradually fold the edge of the strip into a single lap or fold, guide *h* to gradually fold the single lap in an opposite direction, and guide *f* to continue the folding in the opposite direction and complete the double lap or fold, in combination with a guide *g* arranged upon the opposite edge of the channel and adapted to fold the opposite edge of the strip into a single fold or lap lying upon the same side of the strip as the said double fold or lap.

3. In a strip folding device a channel for the passage of the strip, curved guides arranged upon one edge of the channel and adapted to fold one edge of the strip into a double fold or lap, in combination with a curved guide located upon the opposite edge of the channel constructed and arranged to fold the opposite edge of the strip into a single fold, whose edge flap *s* is of less width than the width of the edge flap *t* of the double fold on the opposite edge of the strip.

4. A device for folding a strip of paper or similar flexible material into a double fold or lap upon one of its edges and a single fold or lap upon its opposite edge, consisting of two plates A and B arranged relatively to each other to form a channel *b* between them for the passage of the strip, folding guides *e* and *f* secured to one edge of the plate A, and guide *h* secured to the corresponding edge of plate B and located between guides *e* and *f*, to form one edge of the strip into a double fold, and a folding guide *g* secured to the opposite edge of the plate A to form the opposite edge of the strip into a single fold, substantially as and for the purpose described.

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529,427. CAR-COUPLING. HIRAM W. TAYLOR, Ramsey, Ill. Filed Aug. 31, 1894. Serial No. 521,847. (No model.)



*Claim.*—1. In a car coupler, the combination of a draw-head provided with a vertical annular passage, a ring revolubly seated therein, and a link connected to the ring and adapted to engage with the companion coupler, substantially as described.

2. In a car coupler, the combination of a draw-head provided with a vertical and annular passage, a slot in the front side of the draw-head and communicating with said passage, a ring revolubly seated in the passage of the draw-head and having a slot in its side, said slot being narrower than the slot in the draw-head, and a link connected to the ring and projecting through the slots in the draw-head and ring, substantially as described.

3. In a car coupler, the combination of a draw head having an annular vertical passage therein, said passage having a shoulder at a point below its upper end, a ring revolubly mounted within the passage and having its lower end resting upon the shoulder thereof, whereby the ring is supported, and a link connected to the ring, substantially as described.

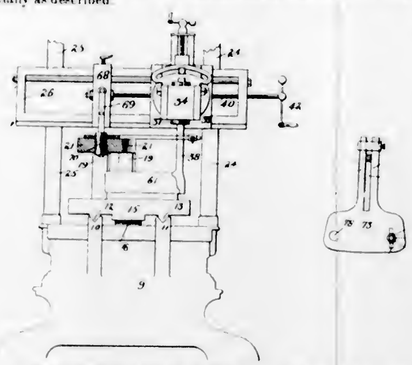
4. In a car coupler, the combination of a draw-head provided with an annular and vertical passage and having a slot in its front end, said slot being in communication with the passage, a ring revolubly seated within the passage of the draw-head and having a block rigidly fixed to its interior, said block being slotted vertically, and a link having one end pivoted within the slot of the said block, the ring having in its side, opposite the block, a slot narrower than the slot in the draw-head, substantially as described.

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529,428. PLANING-MACHINE. JOHN THOMLINSON, Jr., and EMIL L. KASTHOLM, Chicago, Ill. Filed May 19, 1893. Serial No. 474,837. (No model.)

*Claim.*—1. The combination of a longitudinally movable platen or work support, a guide carried by said platen and elevated above the work, a cross-head supported transversely to and independent of the platen, a movable frame mounted on said cross-head and carrying a roller engaged with the elevated guide on the platen, a tool

stock also mounted on said cross-head, a screw-shaft adjustably connecting said movable frame and tool stock, and means for holding the cutting edge of the tool at a constant angle with the work, substantially as described.



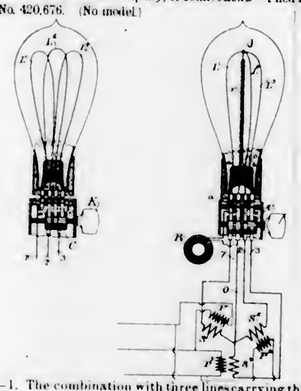
2. The combination of a movable platen, the guide-bars 21 carried by said platen, the cross-head 26 supported transversely of the platen and independent thereof, a movable frame mounted on said cross-head, a tool stock also mounted upon said cross head and connected to said frame, the roller 70 carried by said frame and engaged with the guide-bars on the platen, a plate 73 having a hole 78 to receive the roller 70 and arms 74 and 75 to embrace the tool shaft, means for connecting said arms together, and a roller 79 carried by said plate and engaged with the guide-bars on the platen, substantially as described.

3. The combination with supporting devices, and a cross head 26 supported thereby, of a movable frame mounted upon said cross head, a tool support also mounted upon said cross head and connected to said frame, guide bars 21, roller 70 supported by said frame, a plate, having a hole 78 adapted to receive said roller, a roller carried by said plate, and means for connecting the tool to said plate, whereby the cutting edge of the tool will be held at a constant angle to the work, substantially as described.

4. The combination with supporting devices, and a cross head 26 supported thereby, of a movable frame mounted upon said cross head, a tool support also mounted upon said cross head and connected to said frame, guide bars 21, roller 70 supported by said frame, a plate, having a hole 78 adapted to receive said roller, a roller carried by said plate, means for connecting the tool to said plate, whereby the cutting edge of the tool will be held at a constant angle to the work, and means for adjusting the position of said plate, substantially as specified.

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529,429. ELECTRIC INCANDESCENT LAMP. ELIHU THOMSON, Swampscott, and EDWIN W. RICE, Jr., Lynn, Mass., assignors to the Thomson-Houston Electric Company, of Connecticut. Filed Feb. 8, 1892. Serial No. 420,676. (No model.)

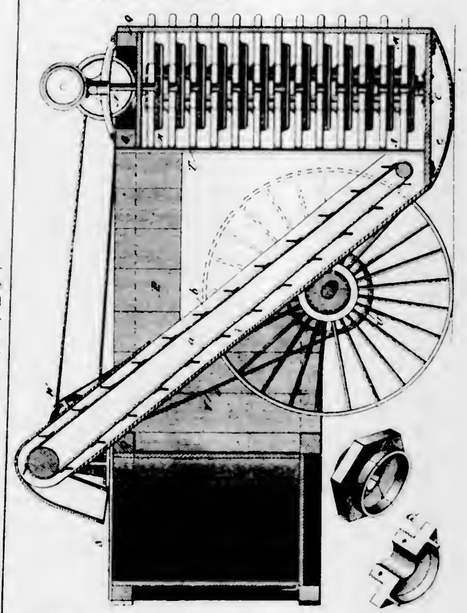


*Claim.*—1. The combination with three lines carrying three phase currents, three transforming devices having their primaries respectively connected to said lines and their secondaries connected to three connections and a common return, and three incandescent lamp filaments connected respectively to such connections, and all connected to said common return.

2. The combination with a plurality of circuits carrying multiphase currents, of a plurality of incandescent lamp filaments having separate connections to said circuits and to a common return, a reactive coil in said return, and circuit controlling devices for all said connections.

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529,430. COTTON-HARVESTER. GEORGE N. TODD, Chicago, Ill., assignor to the Todd Cotton Harvester Company. Filed Jan. 18, 1887. Serial No. 224,684. (No model.)



*Claim.*—1. In a cotton harvester a supporting frame consisting of two sections connected together at the top only, having an open central passage way and mounted upon a single pair of ground wheels, and each of said sections being provided with a middle and two end compartments, the former for reception of the drive wheels, and the latter, front and rear respectively, constituting cotton receptacles, and chambers for containing the picker stem operating mechanisms, in combination with inclined elevators or carriers working through said central compartments and extending from the lower end of the picker stem chambers to the upper ends of the cotton receptacles, substantially as described.

2. In a cotton harvester a supporting frame consisting of two sections connected together at the top only and mounted upon a single pair of ground wheels and each of said sections being provided with a middle and two end compartments and the latter, front and rear respectively, constituting cotton receptacles, and chambers for containing the picker stem operating mechanism, in combination with inclined elevators or carriers working through said central compartments and extending from the lower end of the picker stem chambers to the upper end of the cotton receptacles, and shoes or runners secured to the under side of each of said sections and underlying the picker stem chambers, substantially as decribed.

3. In a cotton harvester a supporting frame consisting of two sections connected together at the top only and each of them provided with a middle and two end compartments, the forward one of which constitutes a cotton receptacle, in combination with rotatable picker stem supports journaled in said rear compartments, picker stems projecting radially therefrom, a series of rotatable disk-like cleaner brushes in the path of travel of said stems, elevators or carriers extending from the bottoms of said rear compartments to the top of the cotton receptacle, ground wheels located in said middle compartments and gear connections between said wheels and the elevator, picker stem supports and cleaner brushes, substantially as described.

4. In a cotton harvester a rotatable shell or hollow picker stem support, picker stems projecting radially therefrom and means for rotating said support, in combination with a rotatable shaft passing axially through said support, annular racks or gears mounted thereon and gears on the picker stems for engaging said annular racks, and



means for rotating said shaft continuously in the direction opposite that of the support, substantially as described.

5. In a cotton harvester a rotatable picker stem support, picker stems projecting radially therefrom, a gear rigidly secured to said support, and bearings for said support, in combination with a hollow rotatable shaft passing axially through said support, annular racks or gears secured thereto, gears on the picker stems for engaging said racks, a gear secured to one end of said shaft for rotating the same continuously in the direction opposite that of the support and a fixed shaft or rod passing axially through said shaft and secured to the supporting frame, substantially as described.

6. In a cotton harvester, a picker stem support consisting of a hollow shell or casting having a polygonal outline in cross section and provided with longitudinal series of screw threaded openings in the straight sides thereof, in combination with a picker stem bearing having screw threaded ends fitting said openings, substantially as described.

7. In a cotton harvester a detachable picker stem bearing cast in halves or sections having a screw threaded end and provided with a square or straight sided head, substantially as described.

8. A picker stem support consisting of a hollow shell or casting having a series of openings in the sides thereof, in combination with picker stems projecting radially therefrom, gears on said stems of less diameters than said openings and removable bearings for said stems, fitting in said openings, substantially as described.

9. In a cotton harvester, a detachable picker stem bearing having a hood or guard projecting partially over the stem whereby cotton is prevented from lodging upon the bearing surfaces of said bearing, substantially as described.

10. In a cotton harvester, the combination with a rotatable drum, or horizontal series of picker stems journaled in and projecting radially from said drum, gears secured to said stems, and series of rotatable gears corresponding in number with the series of stems and meshing with the gears on said stem for driving the same substantially as described.

11. In a cotton harvester, the combination with a rotatable drum and horizontal series of picker stems journaled therein, of gears on the ends of said stems, a series of rotatable gears corresponding in number with the series of stems and meshing with the gears on said stems, and means for imparting an axial rotation to said series of gears continuously in one direction, substantially as described.

12. In a cotton harvester, the combination with a rotatable drum horizontal series of picker stems journaled therein, gears on the ends of said stems, a series of rotatable gears corresponding in number with the series of stems and meshing with the gears on said stems and means for imparting an axial rotation to said series of gears continuously in one direction, of a traveling cleaner located in the path of movement of said stems, substantially as described.

13. In a cotton harvester, a rotatable drum, and a series of picker stems projecting radially therefrom, in combination with gears on the ends of said stems and internal annular rotatable gear meshing with the gears on said stems, and means for rotating said internal gear continuously in one direction, substantially as described.

14. In a cotton harvester, the combination with a rotatable drum, picker stems journaled therein, having pinions on their inner ends, and means for rotating said drum, of a series of internal annular gears meshing with the pinions on said stems, and means independent of the rotation of said support for imparting to said annular gears an axial rotation, substantially as described.

15. In a cotton harvester, the combination with a rotatable drum, means for rotating the same, and picker stems journaled in and projecting radially from said drum, having pinions on the inner ends thereof, of an internal shaft upon which said drum freely rotates, and a series of annular gears on said shaft meshing with the pinions upon the picker stems, and a gear connection for imparting an axial rotation to said shaft in a direction opposite to that of the drum, substantially as described.

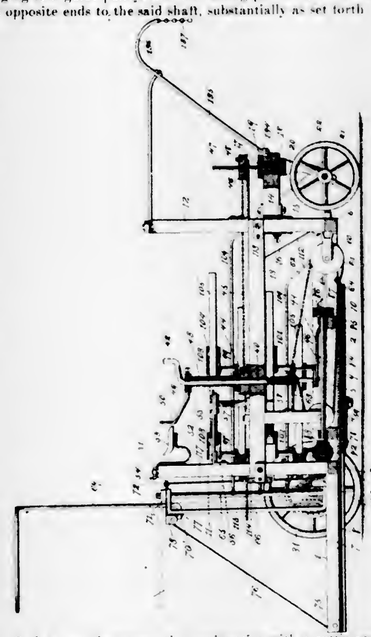
16. In a cotton harvester, the combination with a fixed tie rod, a rotatable drum journaled thereon, means for rotating the same, and picker stems journaled in and projecting radially from said drum having pinions on the inner ends thereof, of an internal hollow shaft sleeved upon said tie rod, a series of annular gears on said shaft meshing with the pinions upon the picker stems, and a gear connection for imparting an axial rotation to said shaft, substantially as described.

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529,431. CORN-HARVESTER. GEORGE L. VAN BUREN and THOMAS C. DAVIS, Benedict, Kans. Filed Mar. 17, 1894. Serial No. 503,993. (No model.)

*Claim.*—1. In a corn harvester, the combination with a cutting and feeding mechanism, of a sliding platform at the rear or discharge end of the feeding mechanism, a gate also carried at the rear or discharge end of the feeding mechanism, and means to simultaneously slide the platform forward and elevate or raise said gate, substantially as set forth.

2. In a corn harvester, the combination with a suitable wheel-supported framework, comprising parallel side-beams provided with longitudinal grooves, and a platform connecting the front portions of the side-beams, of a feeding mechanism mounted upon the said platform, a cutting mechanism mounted at the front end of the platform, a second platform mounted slidingly in the grooves of the said side-beams and at the rear end of the first-mentioned or stationary platform, a shaft having a crank-handle, and mounted over the stationary platform, guide-pulleys mounted in the framework, and a cable engaging said guide-pulleys and the sliding platform, and attached at its opposite ends to the said shaft, substantially as set forth.



3. In a corn harvester, the combination with a cutting and feeding mechanism, and a platform located at the rear or discharge end of said feeding mechanism, of a movable shocking gate, guide-pulleys, flexible connections extending around said guide-pulleys and attached at their opposite ends to the lower end of the shocking gate and to the rear end of the platform, and means to move said platform forward so as to elevate the shocking-gate, substantially as set forth.

4. In a corn harvester, the combination with a slidable platform, and vertically slotted standards carried by the framework of the machine and at each side of said platform, and having guide openings in their upper ends, of a shocking-gate having depending arms extending vertically through the guide openings of said standards, and having horizontally-turned lower ends engaging said guide-slots, guide pulleys carried at the upper ends of said standards, and guide pulleys carried at the rear end of the frame-work of the machine, flexible connections passing around said guide pulleys and connecting the lower horizontal portion of said gate and the rear end of the slidable platform, means to move the said platform and cause the elevation of the shocking-gate, the horizontal portions of which are guided vertically in the slotted standards, and means to cause the platform and the shocking-gate to resume their original positions, substantially as set forth.

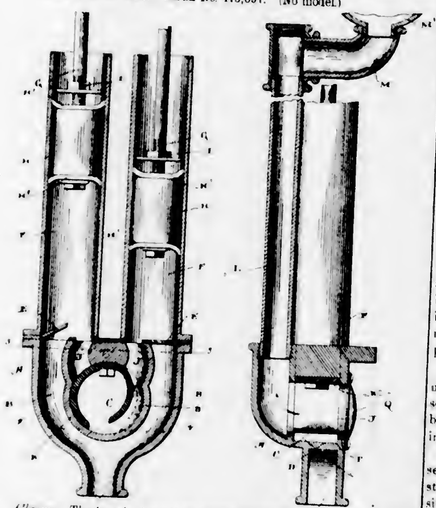
5. In a corn harvester, the combination with a suitable frame-work, supported upon drive-wheels near its rear end, a beam carried at the front end of the machine, a casting rotatably mounted in said beam, and carrying the front guide and supporting wheel of the machine, and a rod projecting vertically from said casting, of a pulley mounted upon said rod so as to slide thereon and rotate therewith, a second pulley rotatably mounted adjacent to the driver, a chain passing around said pulleys, and a handle connected to the pulley adjacent to the driver so that the same may be rotatably operated to turn the guide-wheel in one direction or the other, substantially as set forth.

6. In a corn harvester, the combination with a cutting and feeding mechanism, of a platform located at the rear end of the cutting

and feeding mechanism, and a shocking-gate located above the said platform, twine extending transversely of the machine and interposed between the discharge end of the feeding mechanism and the receiving end of the shocking-gate, a knife located about midway and forward of the transversely extending twine, a seat, and a spring supporting said seat and supported by a standard of the machine, and bent to form the depending U-shaped portion between its connection with said standard and said seat, substantially as and for the purpose set forth

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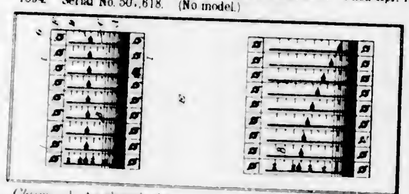
529,432. FORCE-PUMP. JOHN K. VAN PELT, Memphis, Tenn. Filed May 22, 1893. Serial No. 475,097. (No model.)



*Claim.*—The herein described pump composed of the main chamber A, having the lower end inlet, and the central transversed discharge chamber extending completely through the upper portion of the main chamber and having the rounded inner surface, the two pump cylinders on the main chamber having valved openings, respectively, into said chamber, the two ducts J, J, from the pump cylinders, respectively, into opposite sides of the upper portion of said discharge chamber, the flap valves formed of a single piece secured between its ends, in said discharge chamber between the ducts J, J, to fit the inner surface of said chamber and control the ducts, and the uptake from one end of said discharge chamber.

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529,433. ELECTRICAL MEASURING-INSTRUMENT FOR SWITCHBOARDS. JOHN VAN VLECK, New York, N. Y. Filed Apr. 14, 1894. Serial No. 507,618. (No model.)



*Claim.*—1. An electrical measuring or indicating instrument having an elongated scale-plate and a pointer or index moving over said scale; the said instrument being constructed and arranged so that no part thereof protrudes laterally beyond parallel planes including the longitudinal edges of said scale-plate.

2. An electrical measuring or indicating instrument having an elongated scale-plate and a pointer or index extending through a slot in said plate and moving over said scale; the said instrument being constructed and arranged so that no part thereof protrudes laterally beyond parallel planes including the longitudinal edges of said scale-plate.

3. An electrical measuring or indicating instrument having an inclosing case provided with an external periphery of less width than the sides of said case, a scale on said periphery and a pointer or index moving over said scale.

4. The combination of a wall, switchboard, or other plane surface, an elongated scale-plate supported thereon and at a distance therefrom, an index moving over said scale-plate, and, interposed between said scale-plate and said wall, the operating mechanism of an electrical measuring or indicating instrument, whereby said index is actuated, the said parts being constructed and arranged so that no part of said operating mechanism protrudes laterally beyond parallel planes at right angles to said wall and including the longitudinal edges of said scale-plate.

5. The combination of a wall, switchboard, or other plane surface, two or more elongated scale-plates supported thereon, at a distance therefrom and disposed in the same plane, an index moving over each scale plate, and interposed between each scale-plate and said wall the operating mechanism of an electrical measuring or indicating instrument, whereby said index is actuated; the said scale-plate and associated mechanism of each instrument being constructed and arranged so that no part of said operating mechanism protrudes laterally beyond parallel planes at right angles to said wall and including the longitudinal edges of said scale-plate.

6. The combination of a wall, switchboard, or other plane surface, two or more electrical measuring or indicating instruments each provided with an inclosing case having a periphery narrower than its sides or faces, a scale on said periphery and an index or pointer moving over said scale, the said instruments being disposed with their broad faces in juxtaposition secured to said wall with their scales outward.

7. A vertical support and, disposed thereon, a series of electrical measuring or indicating instruments each provided with an elongated scale-plate and an index moving over said scale, the said scale-plates being disposed in juxtaposition in the same plane, the said scales being similarly marked and the indications thereon increasing in magnitude from down, up, and the said indexes moving in parallel vertical paths.

8. A support, and, disposed thereon, a series of electrical measuring or indicating instruments each provided with an elongated scale-plate and an index moving over said scale; the said scale plates being disposed in juxtaposition in the same plane, the said scales being similarly marked and the said indexes moving in parallel paths.

9. In combination with an electric distributing system having several branches or feeders, an electrical measuring or indicating instrument in circuit with each branch, the said instruments having similarly marked elongated scale-plates disposed in the same plane with their longitudinal edges in juxtaposition, and indexes moving in parallel paths over said scales.

10. An apparatus for determining visually the relative distribution of load or pressure in the several branches of an electric distributing system, which consists in a number of electrical measuring or indicating instruments disposed one in each branch of the system provided with similarly-marked, elongated scale plates disposed in the same plane with their longitudinal edges in juxtaposition and indexes moving over said scales in parallel paths; the said indexes, when at corresponding marks on their several scales, being disposed in a substantially straight horizontal line; whereby variations in distribution of load or pressure in the system are shown by relative changes in position of said indexes and consequent alterations in the configuration of said line.

11. In an electrical measuring or indicating instrument a case having two sides or faces, A, flat and parallel and a portion, B, of its periphery rounded or disposed at an angle to the remainder of said periphery, a scale on said part B, and an index or pointer moving over said scale

12. In combination with a vertical wall, switchboard, or other plane surface, an electrical measuring or indicating instrument supported thereon, having its parallel sides, A, at right angles to said wall, a rounded periphery, B, having a slot or opening, a scale on said periphery, and an index or pointer extending through said slot and moving over said scale.

13. In combination with a vertical wall, switchboard, or other plane surface, an electrical measuring or indicating instrument having a flat part of its periphery in contact with and supported upon said wall and another part, B, disposed at an angle to said first part and provided with a slot or opening, a scale on said part B and an index or pointer extending through said slot and moving over said scale.

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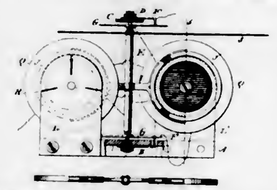
529,434. ELECTRICAL MEASURING-INSTRUMENT. EDWARD WESTON, Newark, N. J. Filed Oct. 3, 1892. Serial No. 447,673. (No model.)

*Claim.*—1. In an electrical measuring instrument, a fixed coil, a movable coil in inductive proximity to said fixed coil and a spring opposing the movement of said movable coil; the aforesaid parts being constructed and arranged substantially as hereinbefore set forth whereby the moving coil, through the mutual reaction of its field with that of the fixed coil, will be caused to travel over substantially



equal distances for equal applied force increments throughout its range of motion.

2. In an electrical measuring instrument, a fixed coil, a movable coil in inductive proximity to said fixed coil, a spring opposing the movement of said movable coil, an index actuated by said movable coil and a scale; the aforesaid parts being constructed and arranged substantially as hereinbefore set forth whereby the said index, at the beginning of its movement over the scale, will traverse intervals on said scale substantially equal to those traversed at the end of said movement



3. In an electrical measuring instrument, a vibrating lever, a coil supported on one arm thereof, a means of equilibrating said coil and a fixed coil disposed in a plane parallel to that of the movable coil when said movable coil is in normal position and a spring opposing the vibratory movement of said lever.

4. In an electrical measuring instrument, a vibrating lever, a spring opposing the vibration of said lever, two coils supported in equilibrium on opposite arms of said lever and two fixed coils, each in inductive proximity to one of said movable coils; the said fixed coils being located in planes parallel to those of the movable coils when said movable coils are in normal position and disposed with reference to said movable coils so that the reaction of the fields due to a current traversing said coils shall cause a couple tending to vibrate said lever.

5. In an electrical measuring instrument, a pivot shaft, two counterbalancing coils supported on opposite sides of said shaft, two fixed coils each in inductive proximity to one of said movable coils and in parallel plane thereto and a spring opposing the vibration of said pivot shaft.

6. In an electrical measuring instrument, a pivot shaft, two counterbalancing coils supported on opposite sides of said shaft, two fixed coils each in inductive proximity to one of said movable coils and respectively located on opposite sides of a plane passing through said fixed coils and parallel to said plane and a spring opposing the vibration of said pivot shaft.

7. In an electrical measuring instrument, a pivot shaft, two counterbalancing coils supported on opposite sides of said shaft, two fixed coils each in inductive proximity to one of said movable coils and respectively located on opposite sides of a plane passing through said fixed coils and parallel to said plane and a spring opposing the vibration of said pivot shaft, the said coils being relatively so disposed that the reaction of their fields when traversed by a current shall cause the movable coils to be repelled from the fixed coils.

8. In an electrical measuring instrument, the combination of the plate B, pivot shaft E thereon, spring G connected to said pivot shaft and to an abutment, counterbalancing coils, J J', supported on said shaft E, standards L and fixed coils, Q Q', supported on said standards on opposite sides of the plane of coils J J' and in inductive proximity thereto.

9. In an electrical measuring instrument, the combination of the plate B, pivot shaft E thereon, spring G connected to said pivot shaft and to an abutment, counterbalancing coils, J J', supported on said shaft E, standards L and fixed coils, Q Q', detachably secured to said standards on opposite sides of and parallel to the plane of coils J J' and in inductive proximity thereto.

10. In an electrical measuring instrument, the combination of a fixed annular coil, Q, a plate or standard, I, plug or pin, O, entering said coil and having a longitudinal opening and a flanged head and a bolt, N, passing through said longitudinal opening and securing said plug to said standard.

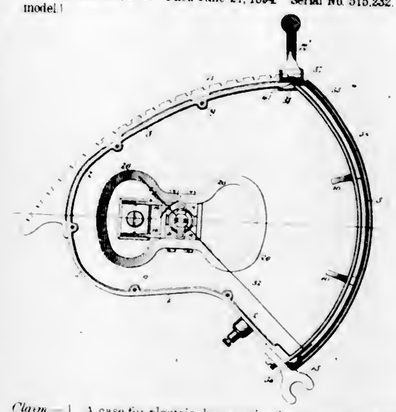
11. In an electrical measuring instrument in combination with an annular coil supported and moving to and from its face, a fixed coil having upon said face a fixed central projection or guide adapted to enter the said annular coil.

12. In an electrical measuring instrument, in combination with the movable annular coil J, the fixed coil Q, the standard L' supporting said coil Q and plug O entering said fixed coil and secured to said standard, the said plug O having a projecting portion constructed to be received within said annular coil

13. In an electrical measuring instrument, a flat metal plate or standard and a coil supported on one face thereof, the said plate being provided with one or more slits or openings substantially in the direction of a radius or radii of said coil.

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529,435. ELECTRICAL MEASURING-INSTRUMENT. EDWARD WESTON, Newark, N. J. Filed June 21, 1894. Serial No. 515,232. (No model.)



*Claim.*—1. A case for electrical measuring instruments formed of two separable parts, each part consisting of a side plate and a flange the said parts being constructed substantially as set forth, so that, when placed together, the said flanges shall form a portion of the periphery of the case, and so that between said flanges shall be left a slot or opening, substantially as described

2. A case for electrical measuring instruments formed of two separate parts, one part consisting of the side plate 1 and flanges 2 and 4, and the other part consisting of the side plate 5 and flange 6, the said parts being constructed substantially as set forth, so that, when placed together, said flanges shall form the periphery of the case and so that, between said flanges 4 and 6 shall be left a slot or opening, 7, substantially as described.

3. A case for electrical measuring instruments formed of two separable metal parts, one part consisting of the side plate 5 and flange 6 and the other part consisting of the side plate 1 and flanges 2 and 4, the flange 2 having integrally formed upon the edge the rib 8, the said parts being constructed substantially as set forth, so that, when placed together, said flanges shall form the periphery of the case, and so that, between said flanges 4 and 6, shall be left a slot or opening, 7, substantially as described

4. A case for electrical measuring instruments formed of two separable metal parts, one part consisting of the side plate 5 and flange 6, and the other part consisting of the side plate 1 and flanges 2 and 4, the flange 2 having integrally formed upon its edge the rib 8 and transversely across its inner periphery projections, as 9, the said parts being constructed substantially as set forth, so that, when placed together, said flanges shall form the periphery of the case, and so that, between said flanges 4 and 6, shall be left a slot or opening, 7, substantially as described.

5. A case for electrical measuring instruments formed of two separable metal parts, one part consisting of the side plate 5 and flange 6, and the other part consisting of the side plate 1 and flanges 2 and 4, the said flanges 4 and 6 having integrally formed strengthening ribs, 10, the said parts being constructed substantially as set forth, so that, when placed together, said flanges shall form the periphery of the case, and so that, between said flanges 4 and 6, shall be left a slot or opening, 7, substantially as described

6. In combination with the working mechanism of an electrical measuring instrument, a case inclosing said mechanism and having a portion of its periphery curved or convex, and a slot or opening in the median or central longitudinal line of said periphery, through which slot the index needle of said instrument passes.

7. In combination with the working mechanism of an electrical measuring instrument, a case inclosing said mechanism and having a portion of its periphery curved or convex, a longitudinal slot or opening in said periphery, through which slot the index needle of said instrument passes, a scale-marking on said portion on one side of said slot and scale numbers corresponding to said marking on the other side of said slot.

8. In an electrical measuring instrument, the combination of a case formed of two separable parts, each part consisting of a side plate and a flange, (the said parts being constructed substantially as set forth, so that, when placed together, the said flanges shall form a portion of the periphery of the case and so that, between said flanges, shall be left a slot or opening,) working mechanism supported upon the inner side of one of said plates, and an index needle actuated by said mechanism extending through said slot.

9. In an electrical measuring instrument, the combination of a case formed of two separable parts, each part consisting of a side plate and a flange, (the said parts being constructed substantially as set forth so that, when placed together, the said flanges shall form a portion of the periphery of the case and so that between said flanges shall be left a slot or opening,) a bracket supported upon the inner side of one of said plates, working mechanism supported upon said bracket and an index needle actuated by said mechanism and extending through said slot.

10. In an electrical measuring instrument the combination of a case formed of two separable parts, each part consisting of a side plate and a flange having a curved or convex portion, (the said parts being constructed so that, when placed together, the said curved flanges shall form a portion of the case periphery and so that between said flanges shall be left a slot or opening along the median or central line of said periphery,) working mechanism supported upon the inner side of one of said side plates and an index needle actuated by said mechanism extending through said slot.

11. In an electrical measuring instrument the combination of a case formed of two separable parts, one part having the side plate 1 and the flanges 2 and 4, the other part having the side plate 5 and flange 6, (the said parts being constructed substantially as set forth so that, when placed together, said flanges shall form the periphery of the case and so that between said flanges 4 and 6 shall be left a slot or opening, 7,) a bracket, 16, secured upon the inner side of plate 1, working mechanism supported by said bracket and an index needle actuated by said mechanism and extending through said slot.

12. The combination, in an electrical measuring instrument, of two permanent magnets having like poles in contact, concave pole pieces common to both magnets and disposed opposite to one another, a fixed cylindrical body of magnetic material supported between said pole pieces, a coil surrounding said cylindrical body and rotating in the annular space between said body and said pole pieces, and an index needle actuated by said coil.

13. The combination with the inclosing case of an electrical measuring instrument containing a permanent magnet, a coil supported thereon and vibrating in the field thereof and an index needle carried by said coil, of a bracket secured to the inner side of said case and to said magnet and supporting said magnet and coil.

14. The combination, in an electrical measuring instrument, of the magnets 20, pole pieces 19, cylinder 24 supported in the space between said pole pieces, pivoted coil 31, and index 32 carried by said coil, with the bar 17 secured to said pole pieces and bracket 16 carrying said bar.

15. The combination of a case for an electrical measuring instrument having a convex face, 3, the frame 34 conforming in shape to said face and received at one extremity in a recess in said case and provided at the opposite end with a flange, 41, and the bar 39; the said flange being confined between said bar 39 and the periphery of said case.

16. A case for electrical measuring instruments formed of two separable metal parts, one part consisting of the side plate 5 and flange 6, and the other part consisting of the side plate 1 and flanges 2 and 4 in combination with the rack or toothed bar 11 secured on the exterior of flange 2.

17. The combination of a case for an electrical measuring instrument having a convex face, 3, the frame 34 conforming in shape to said face and received at one extremity in a recess in said case and provided at the opposite end with a flange, 41, and the rack or toothed bar 11 secured to the exterior periphery of said case, the said flange 41 being received and held between one end of said bar 11 and said case periphery.

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529,436. CASH-REGISTER. JOHN A. WILLIAMS, Brooklyn, N. Y. Filed May 19, 1894. Serial No. 511,852. (No model.)

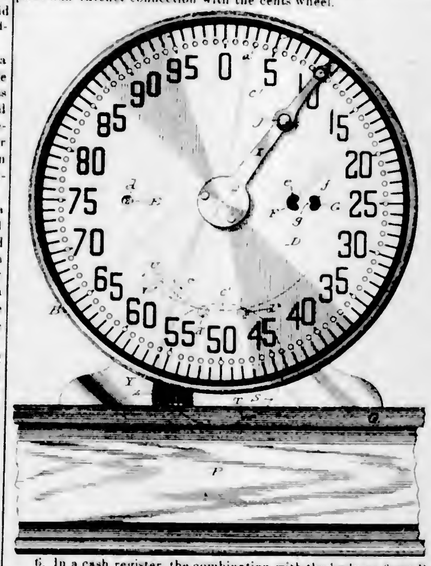
*Claim.*—1. A cents-wheel comprising a sheet metal disk L having its edge flanged and toothed, and a ring G with its edge toothed, and secured to the front face of the disk, substantially as shown and described.

2. In a cash register, the combination with disk L provided with the flanged and toothed edge and countersunk at the center; of the toothed ring G secured to the flat front face of the disk, and constituting a cents-wheel; the dollar wheel in front of the cents-wheel; the gears J K situated between the cents and dollar wheels; and the pinion *a* journaled in the countersunk portion of the disk L.

3. In a cash register, the combination with the fixed gear J and the movable gear K having a different number of teeth; of the cents wheel provided with pinion *a*; and a dollar wheel secured to the movable gear; and means for turning the cents wheel.

4. In a cash register, the combination with the body or front B; of a ring *o* secured thereto; a gear J secured to the ring, a gear K having a different number of teeth from gear J and encircling the ring *o*; a dollar wheel secured to gear K; a cents wheel provided with pinion *a* to engage the gears J K; and means for turning the cents wheel.

5. In a cash register, the combination with the body or front B, of a ring *o* secured thereto; a gear J secured to the ring; a gear K having a different number of teeth from gear J and encircling the ring *o*; a dollar wheel secured to gear K; a cents wheel provided with pinion *a* to engage the gears J K; and a hand or pointer having a pawl and ratchet connection with the cents wheel.



6. In a cash register, the combination with the body or front B of a ring *o* secured thereto; a gear J secured to the ring; a gear K having a different number of teeth from gear J and encircling the ring *o*; a dollar wheel secured to gear K; a cents wheel provided with pinion *a* to engage the gears J K; a hand or pointer having a pawl and ratchet connection with the cents wheel; and a pawl to prevent backward rotation of the cents wheel.

7. In a cash register, the combination with the cents wheel and dollar wheel; of the hand or pointer, the arm M secured to the shaft of the pointer, and provided with a pawl to engage the cents wheel a bell carried by the arm, and means for ringing the bell.

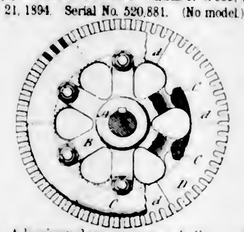
8. In a cash register, the combination with the actuating arm M notched as at *a'*, of the bell N carried thereby, the pivoted striker O and the pawl *z* to limit the movement of the arm.

9. In combination with the dial and pointer, the disk U movable with the pointer and provided with notch V and pawl *c'*; the disk S provided with pin *d'*, lug *c'*, and notch T, and the drawer P provided with latch R.

10. In combination with the dial and pointer, the disk U movable with the pointer and provided with notch V and pawl *c'*; the disk S provided with pin *d'*, lug *c'*, and notch T, box Q provided with slit *b'* to receive the disk S, and the drawer P provided with latch R.

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529,437. ARMATURE-CORE. JAMES J. WOOD, Fort Wayne, Ind. Filed Aug. 21, 1894. Serial No. 520,881. (No model.)



*Claim.*—1. A laminated armature core built up of alternated segmental blanks having hooks for overhanging the fastening bolts of the spider, the hooks of alternate laminæ embracing said bolts from opposite sides.

2. In an armature the combination with a spider and a series of parallel fastening bolts, of the laminated core built up of alternated segmental blanks having each two hooks curved toward each other and overhanging two bolts by embracing their relatively remote sides, the blanks of alternated layers embracing different pairs of bolts, whereby the bolts are tied together by the blanks.

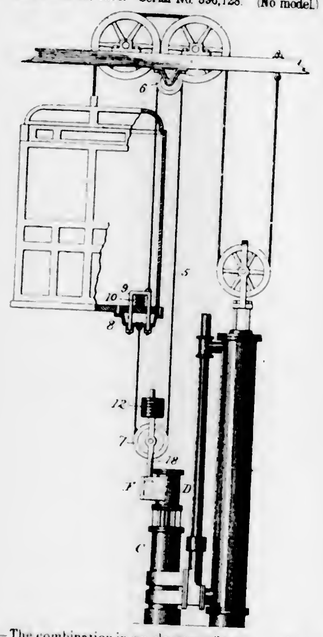
3. A sheet-iron blank for an armature core, consisting of a segment of the core having on its inner side overhanging hooks for embracing the fastening bolts.

4. A sheet-iron blank for an armature core, consisting of a segment of the core having on its inner side two opposed hooks curved toward each other, adapted to overhang two fastening bolts by embracing their relatively remote sides.



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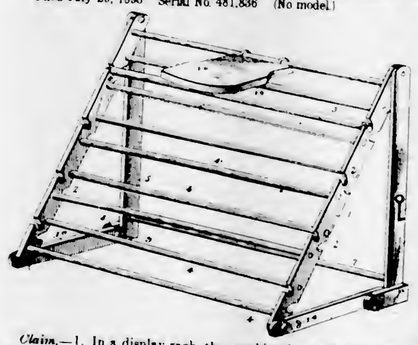
529,438. CONTROLLING DEVICE FOR ELEVATORS. CYRUS W. BALDWIN, Yonkers, N. Y., assignor to the National Company, Chicago, Ill. Filed June 13, 1891. Serial No. 396,128. (No model.)



*Claim.*—The combination in an elevator of a car, a cable passing over pulleys above and below the travel of the car, one end being attached to the car, the other end terminating in the car and connected in the car with the operating appliance, and a controlling device connected to be operated by said cable, substantially as set forth.

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529,439. DISPLAY-RACK. FRED F. BENT, Lake Geneva, Wis. Filed July 29, 1893. Serial No. 481,836. (No model.)



*Claim.*—1. In a display rack, the combination with the inclined display frame comprising the opposite side-bars and intermediate supporting-rungs, and headed locking-pins extending outwardly from the lower ends of the side-bars, of a pair of vertical bars pivoted to the upper ends of the side-bars of the display frame, blocks or ears applied to the outer faces at the lower ends of the vertical supporting bars, a pair of base bars pivoted to the inner sides of the blocks or ears in line with the vertical bars and provided upon their upper sides with notches for the reception of the headed pins, substantially as specified.

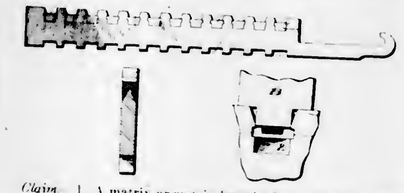
2. In a display-rack, the combination with the inclined display-frame comprising opposite side-bars provided at their lower ends and upon their outer sides with headed pins, of vertical supporting bars pivoted to the upper ends of the side-bars, blocks at the lower ends and outer sides of the vertical bars, base-bars pivoted to the blocks in line with the supporting-bars, notches in the upper sides of the base-bars for engaging the pins, pivoted hooks on the supporting bars, and eyes for engaging the same on the base bars, substantially as specified.

3. In a display rack, the combination with a supporting frame comprising opposite side bars provided at their front and rear sides with alternating pairs of notches and with staggered rungs permanently securing the side-bars together and arranged opposite to the front and rear notches, of a support for the frame, and a series of removable rungs arranged in the notches, substantially as specified.

4. In a display rack, the combination of inclined side bars provided at their front and rear edges with notches, the staggered transverse permanent rungs connecting the side bars and arranged adjacent to the notches, a series of removable rungs detachably arranged in the notches and co-operating with the permanent rungs to form a broad support for articles displayed, the vertical supporting bars pivoted at their upper sides to the side bars, a transverse rung connecting the lower ends of the supporting bars and arranged to fit in the adjacent notches when the parts are folded, and means for holding the side bars and the supporting bar when in use to prevent them from collapsing, substantially as described.

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529,440. MATRIX-BAR AND METHOD OF MAKING SAME. ALEXANDER S. CAPEHART, Bismarck, N. D. Filed Mar. 9, 1894. Serial No. 503,023. (No model.)



*Claim.*—1. A matrix or matrix bar, the body of which is formed with a recess open at the front and on the two sides, and containing a filling of metal electro-deposited therein and having in its front the desired intaglio character, as set forth.

2. A matrix or matrix bar, the body of which is formed with an undercut recess open at the front and on the two sides and containing a filling of metal electro-deposited therein and bearing on its front the desired intaglio character, as set forth.

3. A matrix bar the body of which has in one edge a plurality of separate and independent recesses, each open at the front and on the two sides of the bar and containing a filling of metal electro-deposited therein and having in its front the desired intaglio character, as set forth.

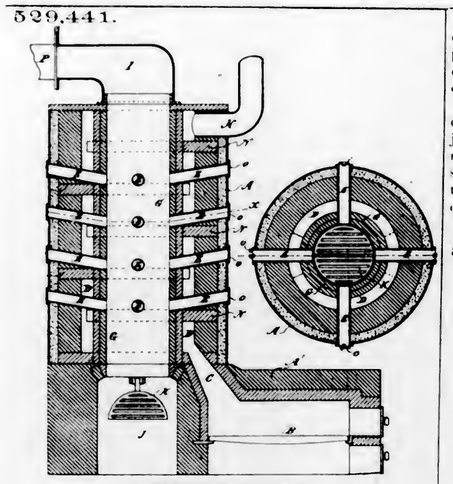
4. The method herein described of manufacturing matrices or matrix bars, which consists in forming in the body of the matrix or matrix bar a recess open at the front and on the two sides, inserting into the open mouth of the recess the male type or character so that its cameo face shall project a suitable distance into the recess and toward the rear wall thereof, protecting the type and bar by insulating material except at the points where the electro deposit is to be made, and then electro-depositing a suitable metal so as to fill the recess and produce in intaglio the type character, substantially as and for the purposes hereinbefore set forth.

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529,441. METHOD OF TREATING ORES. HENRY H. EAMES, Detroit, Mich., assignor to John M. Nicol, trustee, same place. Filed Oct. 9, 1893. Serial No. 487,682. (No specimens.)

*Claim.*—The herein described method of treating ores of the class described, consisting in heating the ore in a chamber closed against the entrance of products of combustion, admitting air to the bottom of said chamber and as the process progresses gradually admitting air at points in different zones in regular succession from bottom to top, and leading off and condensing the resulting oxide, substantially as set forth.

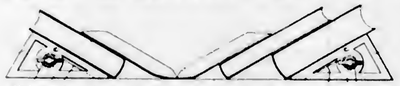
529,441.



2. In a car coupling, the combination with a draw head and a coupling pin, of a rock shaft designed to be mounted on a car and provided with an outward extending arm having its outer end bifurcated, said bifurcation tapering toward its inner end, whereby the coupling pin is clamped, substantially as described.

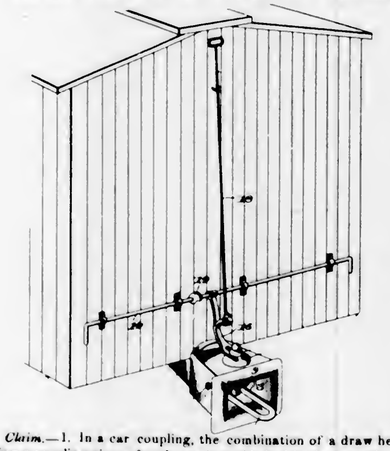
3. In a car coupling, the combination of a car, a draw-head and a coupling pin, of a rock-shaft arranged transversely of the car and journaled thereon, and provided with an outward extending arm connected with the coupling-pin, and an eccentric mounted on the rock-shaft and arranged to engage frictionally and to bind the car, whereby the coupling pin is held elevated, substantially as and for the purpose described.

529,442. BOOK-HOLDER. BENJAMIN I. GILMAN, Brookline, Mass. Filed June 21, 1894. Serial No. 515,214. (No model.)



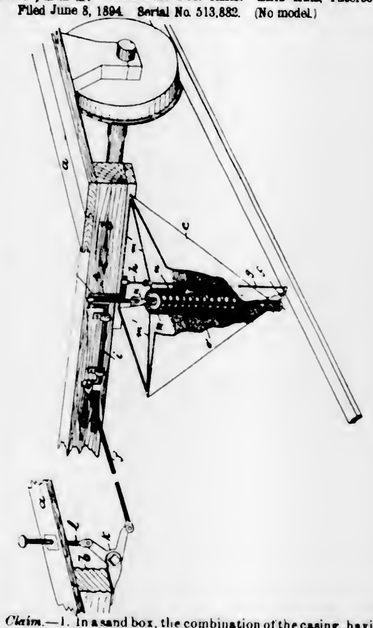
*Claim.*—In a book holder, the combination with two triangular frames, and a flexible connection between said frames, of means for connecting one or both ends of said connection to said frames, to vary the length of the holder, consisting of a rod journaled in one of the frames, and provided with a longitudinal slot therein, adapted to receive one end of said connection, and means for turning said rod to wind or unwind said connection, and means for preventing said rod from turning, substantially as set forth.

529,443. CAR-COUPLING. JOHN S. HEATON, Shelbyville, Ky., assignor of one-half to William A. McGrath and Moses L. S. Buckener, same place. Filed Feb. 16, 1894. Serial No. 500,375. (No model.)



*Claim.*—1. In a car coupling, the combination of a draw head having a coupling-pin perforation and provided with a horizontal way intersecting the coupling-pin perforation and having a recess at the outer terminus of the way, a pin-supporting plate arranged in said way and adapted to project into the coupling-pin perforation to hold a coupling-pin elevated, and a swinging plate hingedly mounted in the draw-head and provided at its top with an upward extending pintle loop arranged in said recess and hingedly connected with the pin-supporting plate, substantially as described.

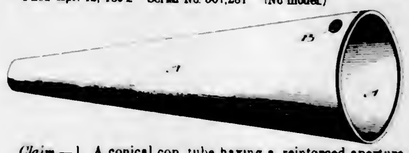
529,444. SAND-BOX FOR CARS. EMIL HEIZ, Paterson, N. J. Filed June 8, 1894. Serial No. 513,882. (No model.)



*Claim.*—1. In a sand box, the combination of the casing, having an outlet therefrom, a cylinder supported above said outlet and within the casing, an agitating and discharging rod, traversing said cylinder and a spring surrounding said rod and controlling the same, means for depressing said rod a valve controlling the outlet and means for opening said valve while the agitating rod is being depressed to discharge the sand from the outlet substantially as described.

2. The combination of the box *c*, outlet pipe *d*, valve *e*, rod *g*, link *h* and crank shaft *i*, with the cylinder *m*, rod *n* traversing said cylinder and controlled by the spring *o*, link *r* and crank *s* on said shaft *i* to which said link *r* is secured, and with means for operating said crank shaft *i*, whereby the rod *n* is depressed when the rod *g* is raised and vice versa, substantially as described and for the purposes set forth.

529,445. COP-TUBE. THOMAS HENRY, Jr., Philadelphia, Pa. Filed Apr. 12, 1894. Serial No. 507,281. (No model.)

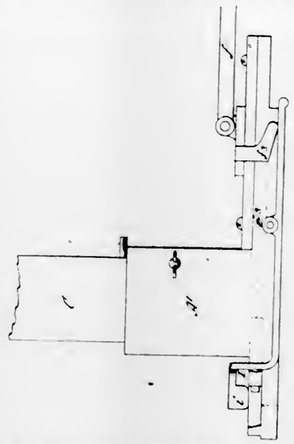


*Claim.*—1. A conical cop tube having a reinforced aperture in its wall in proximity to its larger end and beyond the yarn-receiving portion thereof, substantially as specified.

2. A conical cop tube having an aperture in its wall in proximity to its larger end and beyond the yarn-receiving portion thereof, said aperture being reinforced to receive the projections of the retaining device of a spindle, combined with a spindle and its retaining device substantially as specified.



529,446. TYPE-SETTING APPARATUS. LOUIS K. JOHNSON and ABBOT A. LOW, Brooklyn, assignors to The Alden Type Machine Company, New York, N. Y. Filed Mar. 28, 1894. Serial No. 505,399. (No model.)



*Claim.*—1. In type setting apparatus, the combination of one or more type containing channels, a type platform, a type forwarding plate resting upon said platform and formed with a latch, a constantly reciprocating bar, formed with an arm or projection which passes over and prevents the raising of the inner end of the controlling bar during the forward stroke of the said reciprocating bar, and said controlling lever arranged to couple the type forwarding plate and reciprocating bar together by means of the aforesaid latch, substantially in the manner and for the purpose set forth.

2. In type setting apparatus, the combination of one or more type containing channels, a type platform, a type forwarding plate resting upon said platform and formed with a latch, a constantly reciprocating bar, and a controlling lever counterweighted at its forward end to throw the said latch into engagement with the reciprocating bar, substantially in the manner and for the purpose set forth.

3. In type setting apparatus, the combination of one or more type containing channels, a type platform, a reciprocating bar, a type forwarding plate resting upon said platform formed with a latch for engagement with the reciprocating bar, and a controlling lever formed with a weighted bearing at its forward end for the purpose of steadying and holding down the types when in position upon the front of the type platform, substantially in the manner and for the purpose set forth.

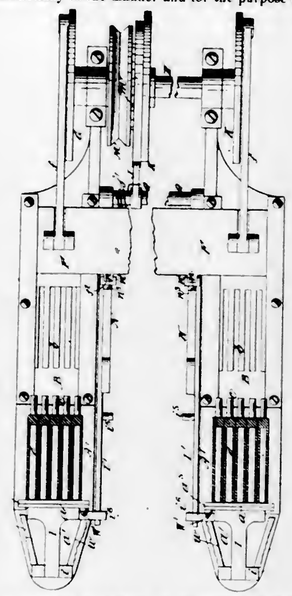
529,447. TYPE-SETTING APPARATUS. LOUIS K. JOHNSON and ABBOT A. LOW, Brooklyn, assignors to The Alden Type Machine Company, New York, N. Y. Filed Apr. 9, 1894. Serial No. 506,876. (No model.)

*Claim.*—1. In type setting apparatus the combination of one or more type containing channels, a type platform, a type forwarding plate resting upon said platform and formed with a latch, a reciprocating pusher bar, means for reciprocating said pusher bar, and a controlling lever for simultaneously releasing the reciprocating mechanism and throwing the latch of the type forwarding plate into engagement with the reciprocating bar, substantially in the manner and for the purpose described.

2. In type setting apparatus the combination of one or more type containing channels, a type platform, a type forwarding plate resting upon said platform and formed with a latch, a reciprocating pusher bar, means for reciprocating said pusher bar, a controlling lever for simultaneously releasing the reciprocating mechanism and throwing the latch of the type forwarding plate into engagement with the reciprocating bar, and a sliding weight resting against the forward end of the said controlling lever, for the purpose and substantially in the manner described.

3. In type setting apparatus the combination of one or more type containing channels, a type platform, a type forwarding plate resting upon said platform and formed with a latch, a reciprocating pusher bar, means for reciprocating said pusher bar, a controlling lever for simultaneously releasing the reciprocating mechanism and throwing the latch or the type forwarding plate into engagement with the reciprocating bar, and a sliding weight resting against the forward end of the said controlling lever the said weight being formed with a type bearing arm, substantially in the manner and for the purpose described.

4. In type setting apparatus substantially such as described, the combination of the type platform formed with converging side walls for centralizing the types as forwarded by the pusher, and a type holder bearing against the types beyond the said converging side walls, substantially in the manner and for the purpose described



5. In type setting apparatus, the combination of a series of type platforms and holders each provided with a type forwarding plate and controlling lever, a reciprocating bar common to all, means for reciprocating said type bar, a rock shaft common to all formed with a lever for locking and unlocking the reciprocating mechanism and with arms which are in contact with the several controlling levers, for the purpose and substantially in the manner described.

6. In type setting apparatus such as described the combination with the reciprocating forwarding bar, and with the controlling lever, of a vertically adjustable lifter upon the reciprocating bar, arranged and operating substantially in the manner and for the purpose set forth.

7. In type setting apparatus such as described, the combination with the type platform, and with the channel holder, of a face plate formed with a shoulder at its lower edge, and of a sliding type holder, arranged and operating substantially in the manner and for the purpose described.

8. In type setting apparatus such as described, the combination of a type platform, the channel holder formed with vertical grooves, the face plate, the vertically sliding type holder, and a device for holding the said type holder and face plate in a raised position, for the purpose and substantially in the manner described.

9. In type setting apparatus such as described, the combination of a type platform, the channel holder, a type forwarding plate, and converging side walls raised above the type platform to allow the forward end of the type forwarding plate to pass under them, substantially in the manner and for the purpose described.

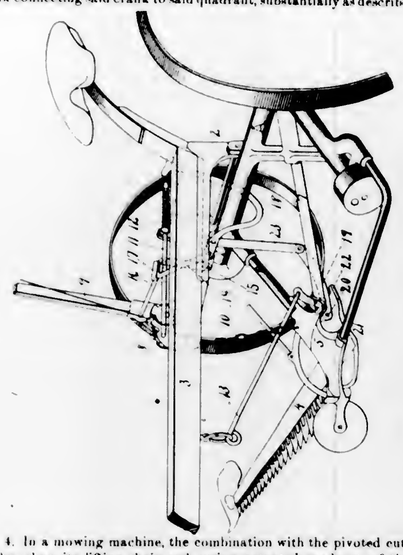
529,448. MOWING-MACHINE. SAMUEL V. KENNEDY, St. Paul, Minn. Filed Dec. 4, 1893. Serial No. 492,727. (No model.)

*Claim.*—1. In a mowing machine, the combination with the pivoted cutter bar shoe and the lifting quadrant and chain, of the lever bearing upon said shoe, and the treadle engaging said lever and said quadrant and operative to first lift the cutter bar horizontally and then to throw its outer end higher than the inner end.

2. In a mowing machine, the combination with the cutter bar shoe and its lifting quadrant, of the lever bearing upon the inner side of said shoe, and the treadle mounted upon the frame of the machine and linked to said quadrant and said lever so as to operate them simultaneously, by the initial movement lifting the cutter bar horizontally and by the further movement tilting its outer end upward.

3. In a mowing machine, the combination with the cutter bar hanger, and its lifting quadrant and chain, of the cutter bar shoe

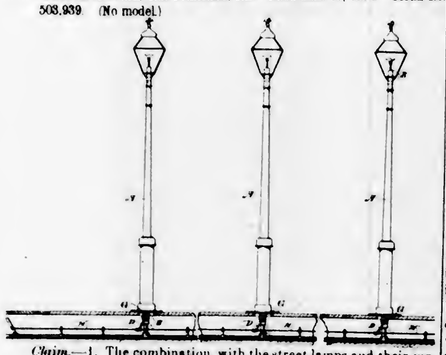
pivoted to the hanger, the lever pivoted to the hanger and bearing upon the shoe on the opposite side of its pivot from the cutter bar, the treadle pivoted to the frame of the machine, the link connecting it to said lever, the crank rigidly connected to said treadle and the link connecting said crank to said quadrant, substantially as described.



4. In a mowing machine, the combination with the pivoted cutter bar shoe, its lifting chain and spring actuated quadrant, of the compound treadle pivoted to the frame of the machine, the crank rigidly connected to said treadle and linked to said quadrant, the lever engaging said shoe and operative to rock it on its pivot to raise the outer end of the cutter bar, and the link connecting said lever with said compound treadle, whereby by the depressing of one of the treadles, the cutter bar is lifted from the ground, and its outer end raised higher than its inner end, and by depressing the other treadle the lifting tension of the quadrant spring is counteracted, substantially as described.

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**529,449. LIGHTING OR EXTINGUISHING STREET-LAMPS.** CHARLES KEWELL, San Francisco, Cal. Filed Mar. 16, 1894. Serial No. 503,939. (No model.)



*Claim.*—1. The combination, with the street lamps and their supply pipes connected with the gas main, an underground conduit into which said pipes extend cocks on the pipes within the main and each provided with a crank arm D, a sliding rod H extending longitudinally through the conduit and pivoted to all of the said cranks, and a pivoted lever in the conduit and pivoted to the sliding rod to move it positively in both directions, the conduit having a covered opening over the said lever to permit access thereto, substantially as set forth.

2. The combination, with the series of street lamps, a conduit therebelow, a gas main C in the conduit and provided with a series of bearings, pipes connecting the main with the lamps, and provided with cocks within the conduit, each of said cocks being provided with a crank arm D, a sliding rod mounted in the said bearings and pivotally connected with the said cranks, and an operating device connected with the said rod and adapted to positively throw the rod in both directions, substantially as set forth.

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**529,450. COMPOSITION FOR FURNACE WALLS.** JOSEF KIRCHMANN and KASPAR SCHWINGHAMMER, Munich, Germany. Filed Oct. 18, 1892. Serial No. 449,253. (No specimens.)

*Claim.*—1. The method of producing fire-proof compositions for furnace walls, which consists in adding acetic acid to iron filings or forge-scales, and then adding the cementing medium thus produced to a compound containing fire-clay or chamotte, together with graphite and asbestos, substantially as set forth.

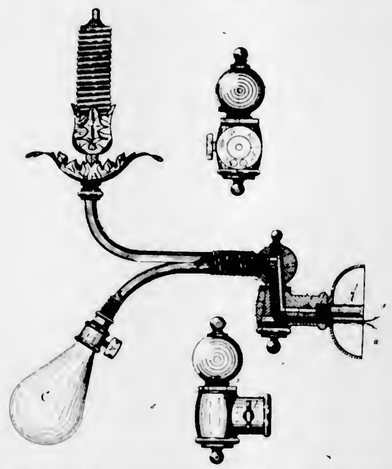
2. A fire-proof composition for furnace walls, containing fire-clay or chamotte, graphite and asbestos, in combination with a cementing medium containing acetate of iron, substantially as set forth.

3. A fire-proof composition for furnace walls, consisting of the following ingredients, in the proportions substantially as specified: dag-powder or coal-ashes, fire-clay or chamotte, graphite, asbestos, magnesia, quartz-sand, fluor-spar, hepatite and cryolite, in combination with a binding or cementing medium, substantially as set forth.

4. A fire-proof composition for furnace walls, consisting of the following ingredients, in the proportions substantially as specified: dag-powder or coal-ashes, fire-clay or chamotte, graphite, asbestos, magnesia, quartz-sand, fluor-spar, hepatite and cryolite, in combination with a binding or cementing medium containing acetate of iron, substantially as set forth.

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**529,451. COMBINATION GAS AND ELECTRIC LIGHT FIXTURE.** GUSTAV A. LOEBER, Philadelphia, Pa., assignor of two-thirds to Charles Falkenstein and George Falkenstein, same place. Filed June 7, 1894. Serial No. 513,733. (No model.)

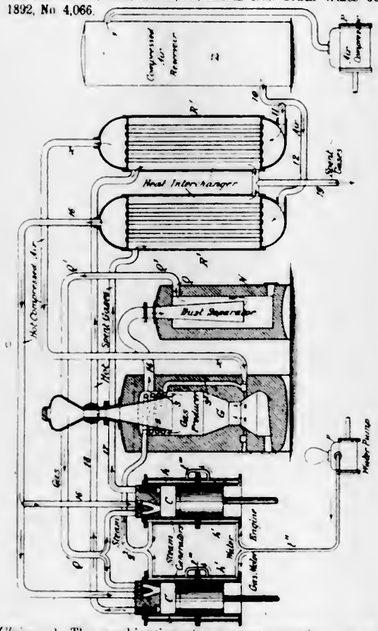


*Claim.*—1. A gas and electric light fixture, or bracket, comprising in its construction the combination of a swinging joint, formed with the upper portion or joint D, provided with the tapering opening E, and clamping screws M and T the said screws securely attaching the portion D, to the tapered key F, and having the tapered key F adjustably secured in the tapered opening H', of the lower portion of the joint H, by nut P, washer V, and secured by nut P, engaging with the threaded portion O of the key F, the portion H having a passage *g* for the gas, and passages *b*, *b*, for electric conductors, and provided with the chamber *i* below the base of the key F, and the opening of chamber *i* closed with the screw threaded plug W, all or their equivalents operating substantially as shown, and described, and for the purpose set forth.

2. A gas and electric light fixture or electrolier, comprising in its construction the combination of a tapered key or plug F having the internally threaded opening N, and arranged to be secured to the upper portion D of the joint by the clamping screw M, and provided with the bored out vertical, and transverse passages L and K, and groove *m*, and having the externally threaded portion O near its middle all substantially as shown and described, and for the purpose specified.



**529,452. GAS-MOTOR.** MAURICE LOBOIS, Nantes, France, assignor to the Societe Anonyme des Moteurs Thermiques Gardie, same place. Filed Apr. 25, 1893. Serial No. 471,754. (No model.) Patented in France July 30, 1892, No. 223,360; in Spain Sept. 7, 1892, No. 13,850; in India Sept. 9, 1892, No. 257; in England Sept. 13, 1892, No. 16,413; in Belgium Sept. 26, 1892, No. 101,511; in Switzerland Sept. 26, 1892, No. 5,877; in Luxemburg Sept. 27, 1892, No. 1,696; in Italy Sept. 27, 1892, XXVII, 32,757; in Cape of Good Hope Oct. 11, 1892, No. 268; in Victoria Oct. 21, 1892, No. 10,073, and in New South Wales Oct. 24, 1892, No. 4,066.




*Claim.*—1. The combination of a gas motor engine, a gas producer for containing carbonaceous fuel, constructed with thick walls of refractory non-conducting material to enable it to retain a high degree of heat, an air compressor, a steam generator, and connecting pipes leading from said air compressor to said gas producer and from said steam generator to said gas producer, whereby gas is made in the latter under pressure and at high temperature so that the resulting gas is so pure as to be adapted for immediate use, a pipe leading from the gas producer to the engine to conduct hot gas thereto, and a pipe leading from a source of compressed air to the engine, whereby the latter is fed simultaneously with hot compressed combustible gas and compressed air.

2. The combination of a gas motor engine, a gas producer for containing carbonaceous fuel, constructed with thick walls of refractory non-conducting material to enable it to retain a high degree of heat, an air compressor, an air heater for heating the compressed air, a steam generator, and connecting pipes leading from said air compressor to said air heater and thence to said gas producer, and from said steam generator to said gas producer, whereby gas is made under pressure and at high temperature so that the resulting gas is so pure as to be adapted for immediate use, a pipe leading from the gas producer to the engine to conduct hot gas thereto, and a pipe leading from a source of compressed air to the engine, whereby the latter is fed simultaneously with hot, compressed, combustible gas and compressed air.

3. The combination of a gas motor engine, a gas producer for containing carbonaceous fuel, an air compressor, a steam generator, and a heat-interchanger receiving the hot gases from said engine, with connecting pipes leading from said air compressor to said heat interchanger to heat the compressed air and thence to said gas producer to conduct hot, compressed air to the latter, and from said steam generator to said gas producer to conduct steam to the latter, whereby gas is made under pressure and at high temperature so that the resulting gas is so pure as to be adapted for immediate use, a pipe leading from the gas producer to the engine to conduct the hot gas thereto, and a pipe leading from a source of compressed air to the engine, whereby the latter is fed simultaneously with hot, compressed combustible gas and compressed air.

4. The combination of a gas motor engine, a gas producer lined with non-conducting refractory material for containing carbonaceous fuel, an air compressor, a steam generator, and a heat interchanger receiving the hot gases from said engine, with connecting pipes leading from said air compressor to said heat interchanger to heat the compressed air, thence to said gas producer to conduct hot compressed air to the latter, from said steam generator to said gas producer to conduct steam to the latter, whereby gas is made under pressure and at high temperature, so that the resulting gas is so pure as to be adapted for immediate use, a pipe leading from the gas producer to the engine to conduct the hot gases thereto, and a pipe leading from a source of compressed air to the engine, whereby the latter is fed simultaneously with hot compressed combustible gas and compressed air.

5. The combination of a gas motor engine a gas producer lined with non-conducting refractory material for containing carbonaceous fuel, an air compressor, a steam generator, and a heat interchanger receiving the hot gases from said engine, with connecting pipes leading from said air compressor to said heat interchanger to heat the compressed air, pipes leading thence to said gas producer and to the engine to conduct hot compressed air thereto respectively, a pipe leading from the steam generator to said gas producer to conduct steam to the latter, whereby in the latter gas is made from heated compressed air and steam under pressure and at high temperature, and a pipe leading from the gas producer to the engine to conduct the hot gas thereto, whereby the engine is fed simultaneously with heated compressed air and hot compressed combustible gas.

6. The combination of a gas motor engine, a gas producer lined with non-conducting refractory meterial for containing carbonaceous fuel, an air compressor, a steam generator, and a heat interchanger receiving the hot gases from said engine, with connecting pipes leading from said air compressor to said heat interchanger to heat the compressed air, pipes leading thence to said gas producer and to the engine to conduct hot compressed air thereto respectively, a pipe leading from the steam generator to said gas producer to conduct steam to the latter, a superheater arranged to superheat the steam before it is liberated in the gas producer, whereby in the latter gas is made from heated compressed air and superheated steam under pressure and at high temperature, the resulting gas being so pure as to be adapted for immediate use, and a pipe leading from the gas producer to the engine, whereby the engine is fed simultaneously with heated compressed air and hot compressed combustible gas.

7. The combination of a gas motor engine, a gas producer lined with non-conducting refractory material, a steam superheater arranged to be heated by the hot gases generated in said producer, a steam generator, an air compressor, and a heat interchanger receiving the hot gases from said engine, with connecting pipes leading from said air compressor to said heat interchanger to heat the compressed air, pipes leading thence to said gas producer and to the engine to conduct hot compressed air thereto respectively, a pipe leading from said steam generator through said superheater and discharging superheated steam therefrom into the gas producer, whereby in the latter gas is made from heated compressed air and superheated steam under pressure and at high temperature, the resulting gas being so pure as to be adapted for immediate use, and a pipe leading from the gas producer to the engine to conduct the hot gas thereto, whereby the latter is fed simultaneously with hot combustible gas under pressure and heated compressed air.

8. The combination of a gas motor engine having its working cylinders formed with water jackets to constitute a steam generator, a gas producer lined with non-conducting refractory material, an air compressor, a water pump, and a heat interchanger receiving the hot gases from said engine, with connecting pipes leading from said air compressor to said heat interchanger to heat the compressed air, pipes leading thence to said gas producer and to the engine to conduct hot compressed air thereto respectively, a pipe leading from said water pump to said steam generating water jackets for circulating water therethrough, a pipe leading from the latter to said gas producer to conduct steam thereto, whereby in the gas producer gas is made from steam and heated compressed air under pressure and at high temperature, the resulting gas being so pure as to be adapted for immediate use, and a pipe leading from the gas producer to the engine to conduct the hot gas thereto, whereby the engine is fed simultaneously with hot combustible gas under pressure and heated compressed air.

9. The combination of a gas motor engine, a gas producer lined with non-conducting refractory material, a steam generator, and an air compressor, said compressor and generator adapted to supply compressed air and steam at a pressure of three kilograms and upward per square centimeter, a heat interchanger receiving the hot gases from said engine, with connecting pipes leading from said compressor to said heat interchanger to heat the compressed air, pipes leading thence to said gas producer and to the engine to conduct hot compressed air thereto respectively, a pipe leading from said steam generator to said gas producer to conduct steam to the latter so that the

heated air and steam are supplied to said producer at a pressure of three kilograms or upward, and a pipe leading from the gas producer to the engine to conduct the hot gas thereto, whereby combustible gas is generated and fed to the engine with heated compressed air under an equal pressure of three kilograms or upward.

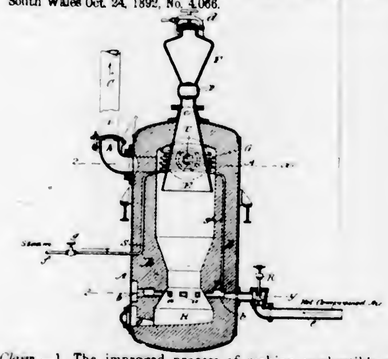
10. The combination of a gas motor engine having its power cylinders formed with water jackets constituting steam generators, a gas producer lined with non-conducting refractory material, a superheating coil in said gas producer to receive heat from the newly generated gas, a dust separator for freeing the gas from dust or ashes, a heat interchanger receiving the hot gases from said engine, an air compressor, and a water pump with connecting pipes leading from said compressor to said heat interchanger, thence to said gas producer and to the engine to conduct hot compressed air thereto respectively, a pipe leading from said water pump to said steam generating water jackets, a pipe leading from the steam space of the latter to said superheating coil and thence into the gas producer, and a pipe leading from the gas producer to the dust separator and thence to the engine, whereby the latter is fed simultaneously with hot combustible gas under pressure and with heated compressed air.

11. The combination of a gas motor engine having power cylinders provided with heat-retaining plates for igniting the combustible mixture as it enters, a gas producer wherein gas is generated under pressure, a source of heated compressed air, and pipes leading from said gas producer and said source of heated compressed air to the power cylinders of said engine.

12. A gas motor engine having power cylinders provided with heat-retaining plates for igniting the combustible mixture as it enters, and constructed in two sections, the lower and cooler section being of smaller internal diameter than the upper section within which the combustion occurs, elongated pistons working in said cylinders fitting loosely in and guided by the lower sections and formed with packing rings rubbing against the cooled surfaces thereof, combined with a gas producer wherein gas is generated under pressure, a pipe leading therefrom to conduct the hot gas therefrom directly to the engine, a heat interchanger receiving the hot gases exhausted from the engine, an air compressor arranged to force compressed air into said heat interchanger, and a pipe for conducting the heated compressed air therefrom to the engine, whereby heated compressed air and hot combustible gas under pressure are fed simultaneously to the cylinders of the engine and are ignited therein by contact with said heat-retaining plates.

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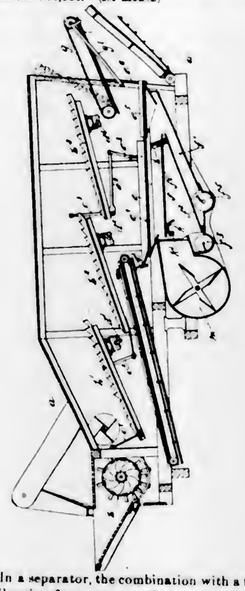
**529,453.** PROCESS OF MANUFACTURING GAS. MAURICE LOBOIS, Nantes, France, assignor to the Société Anonyme des Moteurs Thermiques Gardie, same place. Filed May 23, 1894. Serial No. 512,219. (No specimens.) Patented in France July 30, 1892, No. 223,360; in Spain Sept. 7, 1892, No. 13,850; in India Sept. 9, 1892, No. 257; in England Sept. 13, 1892, No. 16,413; in Belgium Sept. 26, 1892, No. 101,511; in Switzerland Sept. 26, 1892, No. 5,877; in Luxemburg Sept. 27, 1892, No. 1,696; in Italy Sept. 27, 1892, XXVII, 32,757; in Cape of Good Hope Oct. 11, 1892, No. 268; in Victoria Oct. 21, 1892, No. 10,073, and in New South Wales Oct. 24, 1892, No. 4,066.



*Claim.*—1. The improved process of making combustible gas which consists in passing superheated air in contact with carbonaceous fuel at an exceedingly high temperature, and while maintained under a pressure of three kilograms or upward per square centimeter, substantially as and to the effect specified.

2. The improved process of making combustible gas which consists in passing superheated air and superheated steam together in contact with ignited carbonaceous fuel at an exceedingly high temperature, and while maintained under a pressure of three kilograms or upward per square centimeter, substantially as and to the effect specified.

**529,454.** SEPARATOR. JAMES H. MAGGARD, Iowa City, Iowa, assignor to the O. S. Kelly Company, Springfield, Ohio. Filed Apr. 16, 1894. Serial No. 507,801. (No model.)



*Claim.*—1. In a separator, the combination with a thrashing cylinder, of three vibrating frames arranged in series, as described, and each supported on pivoted hangers at one end and carried at the other by a suitable crank shaft, the cranks which support the end frames being arranged respectively sixty degrees in front and behind the cranks which support the middle frame, and a driving connection between said crank shafts which causes them to maintain the same relative position, substantially as specified.

2. In a separator, a riddle support consisting essentially of inclined grooved plates each having a longitudinal way and supporting slots or openings connected to said longitudinal way at an angle thereto said slots or openings being arranged in series with each slot or opening below and to the rear of the next preceding slot, substantially as specified.

3. The combination with a vibrating support, a rock shaft therein having cam-shaped fingers, a screen resting on said cam-shaped fingers, projecting pins on said screen adapted to engage in inclined slotted plates having a series of openings extending from a longitudinal slot therein, a pivoted arm secured to the outer casing, and a connection between said arm and rock shaft whereby said rock shaft may be moved to adjust said screen, substantially as specified.

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**529,455.** DETACHABLY SECURING GUN-BARRELS TO STOCKS. JOHN M. MARLIN, New Haven, Conn. Filed Oct. 14, 1893. Serial No. 488,151. (No model.)



*Claim.*—1. The combination in a gun, of a barrel, a band secured to the barrel, an oscillatory sleeve provided with an interrupted screw thread and mounted on the barrel, and a receiver provided with a hole for the reception of the rear end of the barrel and its sleeve and having a corresponding interrupted screw thread, said band and receiver being provided on their abutting faces with an interlocking projection and recess, all arranged to operate substantially as shown and described.

2. In combination, the receiver provided with a hole for the reception of the rear end of the barrel and its sleeve, said hole having an interrupted screw thread on its walls, an oscillatory sleeve having an interrupted screw thread on its exterior and a continuous screw thread on its interior, and a barrel provided with a continuous screw thread to engage with that of the sleeve, the thread on the barrel



running in the reverse direction from the interrupted thread, substantially as and for the purpose set forth.

3. The combination in a gun, of a receiver provided with a hole having an interrupted screw thread, a barrel with a sleeve mounted thereon and provided with a corresponding interrupted screw thread and a handle or lever, with the band provided with the recess *o* for the lever to rest in when the parts are locked together, substantially as shown and described.

4. The combination in a gun, of the band provided with a shoulder, and the oscillatory sleeve provided with a corresponding shoulder, said shoulders being arranged in relation to the sections of the interrupted screw threads of the receiver and the sleeve as shown and described, whereby the movement of the sleeve is so limited as to cause not only the sections and intervening spaces of said threads, but also the interlocking projection and recess of the band and receiver to register, so the parts can be slipped into place preparatory to locking them as described.

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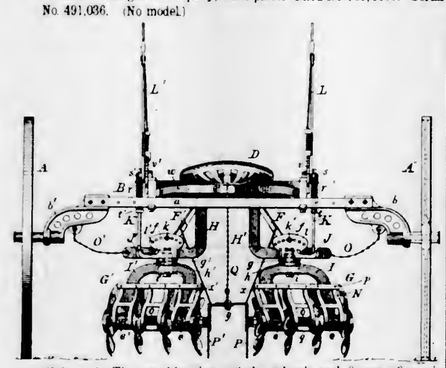
**529,456.** BURIAL APPARATUS. TAYLOR MARTIN, Fairmont, W. Va. Filed July 11, 1894. Serial No. 517,234. (No model.)



*Claim.*—In a burial apparatus, the two straps combined with couplings R and S connected to their inner ends, and the L-shaped locking bolt or pin W, the coupling R having a perforated tongue on its inner end, and the coupling S a recess in its inner end to receive the tongue, an opening V through which the lower end of the locking pin is passed so as to project down below the plane of the coupling, and an opening V extending down through only the upper portion or jaw of recess, so that the lower part or jaw forms a stop to the movement of the pin and prevents it from dropping through, substantially as shown and described.

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**529,457.** CULTIVATOR. CHRIS MAUL, Brockport, N. Y., assignor to the D. S. Morgan & Company, same place. Filed Nov. 15, 1893. Serial No. 491,036. (No model.)



*Claim.*—1. The combination, of the wheels and frame of a cultivator, of the pair of laterally movable reversible rotating sections of gangs of radial curved spading teeth, the yoke H, the lifting rods K K', levers L L', and pivoted sockets *s s'*, said sockets having rounded or beveled openings to receive the rods, substantially as set forth.

2. The combination, with the wheels and frame of a cultivator, of a yoke, gangs of teeth mediately connected by the yoke, foot rests J, gang suspending rods loosely connected to the yoke supporting springs *r r'*, sockets *s s'* and levers L L' said sockets having a rounded or beveled opening to receive the rod and having a pivoted connection with the levers, substantially as set forth whereby movements of the gangs in various directions under the influence of the driver's foot or otherwise are permitted.

3. The devices for adjustably supporting gangs of cultivator teeth comprising the spring suspended yokes, the plates *f f'* having holes *l l'* and heads *g g'*, said plates being secured together by transverse bolts, arches I I' having heads *h h'*, securing bolts *i i'* passing axially through the heads, said heads *g* being offset from the plates *f* and the foot rests J J' secured upon the top of the offset heads by the bolts that hold the heads together, whereby the gangs can be adjusted on either a vertical or horizontal axis and whereby they can be independently pushed in lateral direction, substantially as set forth.

4. The devices for adjustably supporting gangs of cultivator teeth comprising the spring suspended yokes, the plates *f f'* having holes *l l'* and heads *g g'*, said plates being secured together by transverse bolts, arches I I' having heads *h h'*, securing bolts *i i'* passing axially through the heads, said heads *g* being offset from the plates *f* and the foot rests J J' secured upon the top of the offset heads by the bolts that hold the heads together, whereby the gangs can be adjusted on either a vertical or horizontal axis and whereby they can be independently pushed in lateral direction, and drawbars F F' pivotally connected to the pole and to the yoke clamping plates, substantially as set forth.

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**529,458.** PROCESS OF MANUFACTURING SPIEGELEISEN. GIDEON E. MOORE, New York, N. Y. Filed Mar. 21, 1894. Serial No. 504,515. (No specimens.)

*Claim.*—The process of manufacturing spiegeleisen from ores containing franklinite and contained in a limestone gangue, which consists in calcining the ore and gangue in an atmosphere of reducing gases causing the calcined gangue to slake or disintegrate by hydration, separating the decomposed franklinite from the calcined and disintegrated gangue and the siliceous minerals of the ore, and smelting it in the blast furnace for spiegeleisen substantially as hereinbefore described and set forth.

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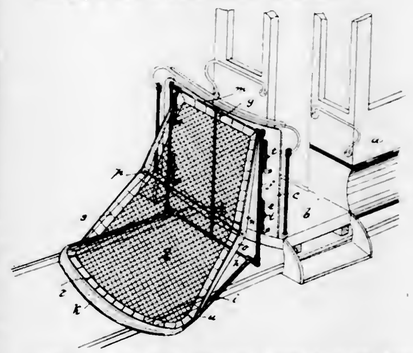
**529,459.** FOLDING UMBRELLA. CLEMENT NEIDIG, Bourbon, Ind. Filed May 21, 1894. Serial No. 512,001. (No model.)



*Claim.*—The herein described folding umbrella comprising a stick or handle made in two hinged sections and carrying a slide ring or band, a top-notch, a runner, and a stop for the runner, braces connected to the runner and the ribs G, consisting of the inner sections *f*, pivotally connected at their inner ends to the top notches and provided at their outer ends with recesses *g*, the outer sections *e*, pivotally connected at an intermediate point of their length to the outer ends of the sections *f*, and having their inner portions pivotally connected to the outer ends of the braces, slide bands *j*, adapted to confine the inner ends of the sections *e*, in the recesses *g*, of the inner sections *f*, and the spring catches adapted to engage and hold the slide bands, all substantially as and for the purpose set forth.

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**529,460.** CAR-FENDER. GEORGE W. OAKLEY, Manchester, N. J. Filed May 4, 1894. Serial No. 510,032. (No model.)



*Claim.*—1. A car fender combining therein a vertical frame, a substantially U-shaped frame pivoted to and extending forward from the lower portion of said vertical frame folding links extending between the forward portion of the U-shaped frame and the upper portion of the vertical frame, a netting arranged between said U-shaped frame, the links and the upper portion of the vertical frame, springs connecting the netting with the vertical frame and the U-shaped frame, short cables connecting the netting with the links, and means for removably securing the vertical frame to either end of a car, all said parts substantially as and for the purposes described.

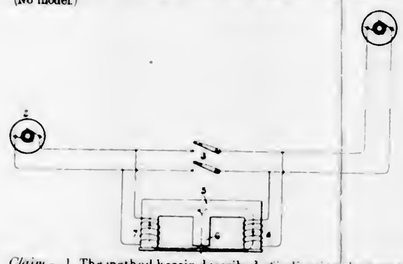
2. The combination with the dashboard having vertically disposed hooks on its front side, of a fender provided on its rear side with horizontally disposed eyes adapted to engage over the hooks on the dashboard, and means for raising and lowering the fender.

3. The combination with the car platform, and the dashboard, of a fender removably mounted on the dashboard and having a central brace provided with a grooved collar near its lower end, a lever pivoted on the platform and having a forked end engaging said collar, and a latch mounted on the platform and engaging the rear end of the lever to hold the same normally depressed.

4. A fender comprising a vertical frame adapted to be raised and lowered, a U-shaped frame pivoted to and extending forward from the lower portion of the vertical frame and having its front portion padded, folding links extending between the upper end of the vertical frame and the front end of the U-shaped frame, a brace connecting said links, and a yielding netting connected to the links, the vertical frame and the U-shaped frame.

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529,461. **METHOD OF AND MEANS FOR SYNCHRONIZING ALTERNATING-CURRENT MOTORS OR GENERATORS.** HENRY N. POTTER, Allegheny, assignor to the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Filed May 3, 1894. Serial No. 509,867. (No model.)

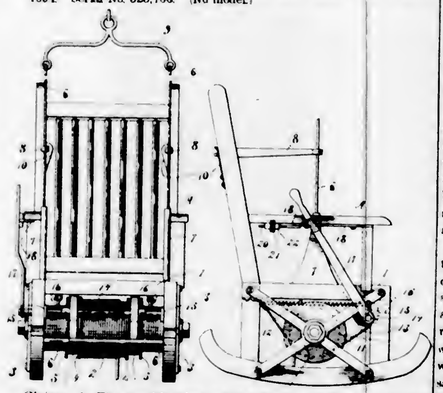


*Claim.*—1. The method herein described of indicating the moment of synchronism between two machines, which consists in producing two magnetic circuits by the action of two electric circuits due to the respective electromotive forces of the two machines, said circuits having a common motor-pole as described, and subjecting a single body capable of vibration by magnetism to the influence of said motor pole, substantially as described.

2. In a synchronism indicator, a diaphragm, a magnetic core or cores presenting a single motor pole thereto, and two coils connected to the terminals of the machines to be synchronized, said coils being so wound on said core or cores as to produce a resultant effect at said motor-pole, substantially as described.

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529,462. **FIRE-ESCAPE.** ERDMANN RANK, Chicago, Ill., assignor, by mesne assignments, to Auna Humann, same place. Filed Sept. 15, 1894. Serial No. 523,160. (No model.)



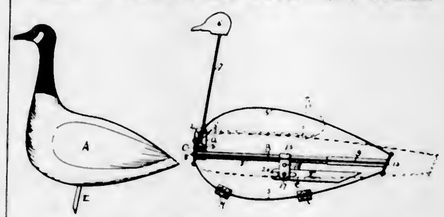
*Claim.*—1. The combination with a chair, of a drum journaled underneath the seat of the same, ropes wound upon said drum and adapted to be secured to a supporting device, a hoisting rope oppositely wound upon said drum, brakes secured to said chair and bearing upon said drum, said brakes consisting of straps secured at one end to the rear end portion of the chair and at their other ends to cams or eccentrics secured to a shaft journaled in bearings upon said chair, means for applying and releasing said brakes consisting of springs secured to upwardly extending arms upon said shaft and at their other ends to the rear end portions of the chair, and a hand lever secured to said shaft, and a plate 18 secured to one arm of the chair adapted to engage the said hand lever and hold same against the action of the springs, thus releasing the brakes, substantially as described.

2. The combination with a chair, of a revoluble drum mounted thereon and provided with ropes or strands for hoisting and allowing the same to descend, a brake for said drum controlled by a hand lever, and an adjustable notched plate 18 upon said chair for engagement with said hand lever, substantially as described.

3. The combination with a chair, of a revoluble drum mounted thereon and provided with ropes or strands for hoisting and allowing the same to descend, a brake for said drum controlled by a hand lever, a slotted plate 18 secured to the arm of the chair by pins passing through said slots, a screw-threaded rod 20 upon said plate 18, a thumb screw upon said rod 20, a bifurcated plate 22 upon the arm of the chair holding said thumb screw, and notches in said plate 18 for engagement with said hand lever, substantially as described.

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529,463. **COLLAPSIBLE DECOY.** WILLIAM W. ROBERTS, North Bend, Nebr. Filed Mar. 26, 1894. Serial No. 505,171. (No model.)



*Claim.*—1. In a decoy, the combination, with a suitable supporting frame, of an outer casing or covering resembling a bird, said frame being adapted to be distended or folded, all substantially as and for the purpose set forth.

2. In a decoy the combination with a suitable supporting staff of a wire frame work secured to said staff, said frame work being adapted to be distended or folded, and covered by a fabric in imitation of a bird, of a bar movably secured to said staff and adapted to be extended or folded and adapted to be used as a leg or supporting bar, all substantially as and for the purpose set forth.

3. In a decoy the combination with a suitable staff of a permanent plate at one end, an adjustable plate secured by means of a sleeve to said bar at the remaining end, of a series of wire bars connecting said permanent and adjustable plates, said sleeve being adapted to lock said adjustable plate when said wire frame is distended, and the fabric covering said wire frame in imitation of a bird, and the folding leg bar secured to said staff, all substantially as and for the purpose set forth.

4. In a decoy the combination with a suitable staff of a fixed plate secured to said staff at one end, provided with a series of openings and two slotted upwardly extending ears, of a neck rod adapted to be adjustably held within said slotted ears, a sliding sleeve provided with a slot and loosely working upon said staff, a pin working within said slot, said sleeve being provided with a disk having suitable openings, of a system of wire rods extending from said sleeve disk to said fixed disk, of a clasp secured to said staff and movably and adjustably supporting a leg bar, a fabric covering said wire frame and neck rod in imitation of a bird, said neck rod being adapted to be held upright within said supporting ears, while said wire bars are adapted to be distended and locked by means of said sleeve and pin, all arranged substantially as and for the purpose set forth.

5. In a decoy the combination of the following instrumentalities, to-wit: the bar, B, the plate, C, provided with the slotted ears, *a*, secured to said staff, B, a neck rod, 7, working within said slotted ears and provided at its lower end with a bifurcation adapted to work over a pin, 3, secured to said slotted ears, a sleeve, 9, working upon said rod, B, and provided with the angular slots, 10 and 11, and provided with the terminal plate, 13, having suitable perforations, the pin, 12, working within said slots, 10 and 11, the wire bars, 5, extending from said disk, C, to 13, the clip, 15, provided with the pin, 16, and the folding slotted leg, E, secured to said clip, 15, said wire frame being adapted to be folded and distended, all substantially as and for the purpose set forth.

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529,464. **STENCIL.** GEORGE W. ROBINSON, Albany, N. Y. Filed July 24, 1894. Serial No. 518,472. (No model.)

*Claim.*—1. A stencil letter or character, provided at its edge with an adhesive connection for a succeeding letter, said connection projecting beyond the edge to which it is attached; substantially as described.

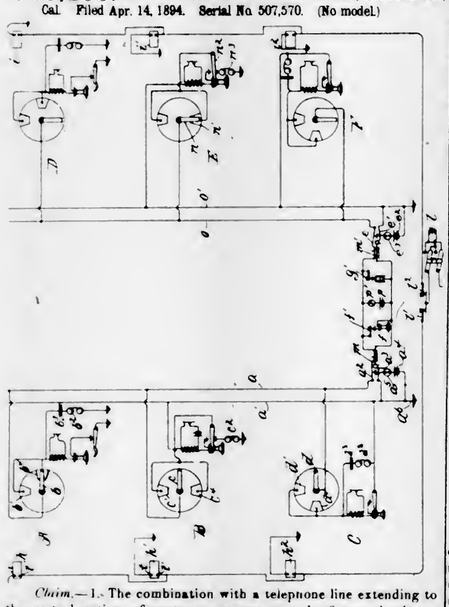


2. A stencil letter or character, provided above and below the cut-out portion of the letter with adhesive connections projecting beyond the edge to which they are attached; substantially as described




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529,465. **TELEPHONE SYSTEM.** JOHN I. SABIN, San Francisco, Cal. Filed Apr. 14, 1894. Serial No. 507,570. (No model.)



*Claim.*—1. The combination with a telephone line extending to the central station, of contact arms, one at each of several sub-stations, connected with one side of said line, contact terminals against which said contact arms normally rest connected respectively through the sub-station apparatus with the opposite side of the line, means under the control of the operator at the central station for rotating said contact arms in unison, and a second or individual contact terminal at each of said sub stations connected through the sub station apparatus with the opposite side of the line, said individual terminals being so situated that as the arms are rotated circuit is closed through but one at a time, substantially as described.

2. The combination with a telephone line extending to the central station, of contact arms, one at each sub-station, connected with one side of said line, contact terminals normally in contact with said arms, sub-station telephone sets connected in normally open circuits between said contact terminals and the opposite side of the line, a battery and an indicator connected between the two sides of the line at the central station, means at each sub-station for closing the telephone circuit to operate said indicator, and means under the control of the operator at the central station for rotating said contact arms to close one of the sub-stations individually in circuit with the telephone line, substantially as described.

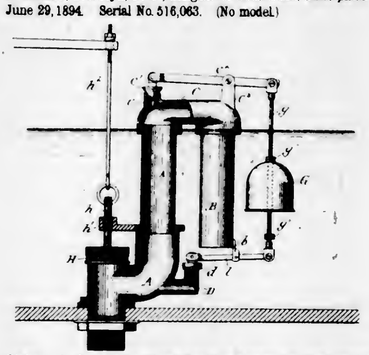
3. The combination with a telephone line extending to the central station, of contact arms, one at each sub-station, connected with one side of said line, contact terminals normally in contact with said arms, sub station telephone sets in normally open circuits between said terminals and the opposite side of the line, a battery and indicator connected between the two sides of the line at the central station, a call device at one of said sub-stations in a shunt circuit about the telephone set, a condenser, or equivalent device, to prevent the operative closing of said battery circuit, in circuit with said call device, and means under the control of the operator at the central station for moving said contact arms to close one of the sub-stations individually in circuit, substantially as described.

4. The combination with a telephone line extending to the central station, of contact terminals, one at each substation, connected with one side of said line, contact terminals normally in contact with said arms, substation telephone sets in normally open circuits between said terminals and the opposite side of the line, one of said telephone sets being thus connected between two metallic limbs extending to the central station, a call device between said limb and ground, a battery and indicator connected between the two sides of the line at the central station, a call device at one of the substations included with a condenser, or equivalent device in a shunt circuit about the telephone set, and means, under the control of the operator at the central station, for moving said contact arms to close the apparatus of one of the substations individually in circuit, substantially as described.

5. The combination with a contact arm adapted to be moved over a series of terminals of an electro-magnet adapted to be successively actuated to rotate said contact arm, a disk rotatable with said contact arm and carrying an eccentrically situated pin, a spring carried upon the polarized armature of an electro-magnet, and normally out of the path of said pin, and means for reversing the direction of the current through said electro-magnet to cause the same to attract said armature and move said spring into contact with said pin to shunt said first mentioned electro-magnet, substantially as described.

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529,466. **SIPHON MECHANISM FOR WATER-CLOSETS.** JOHN N. SANGER, Brooklyn, N. Y., assignor to Fred Adee, same place. Filed June 29, 1894. Serial No. 516,063. (No model.)



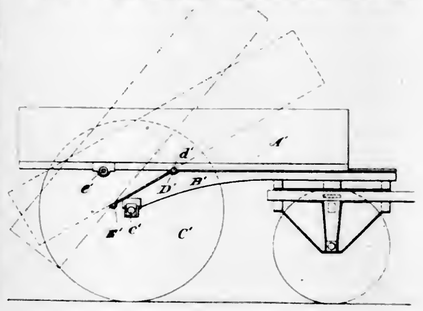
*Claim.*—1. In a water closet flushing apparatus, the combination of a siphon provided with a refilling valve, an air inlet valve, a connection between the refilling valve and the air inlet valve, the said connection being provided with a float for operating the same and movable respectively to the connection.

2. In a water closet flushing apparatus, the combination of a siphon provided with a refilling valve and an air inlet valve, operating mechanism for each of said valves, and a rod connecting the operating mechanisms of the valves, and a sliding float on the rod, substantially as described.

3. In a water closet flushing apparatus, the combination of a siphon provided with a refilling valve and an air inlet valve, operating mechanism for each of said valves, and a rod connecting the operating mechanisms of the valves, a sliding float on the rod, and adjustable stops upon the rod against which the sliding float acts, substantially as described.

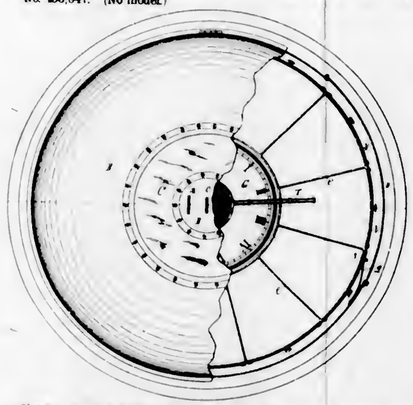
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529,467. **DUMPING-WAGON.** MARTIN L. SENDERLING, Jersey City, N. J. Filed June 16, 1892. Serial No. 436,910. (No model.)



*Claim.*—A dumping wagon, the body of which is provided with a primary pivot and a secondary pivot, a bearing for the primary pivot located forward of the rear axle and a bearing for the secondary pivot located to the rear of the rear axle, the said body being arranged to tilt during the beginning of its tilting movement on the primary pivot and after an interval on the secondary pivot, substantially as set forth.

529,468. TIME-CHECK RECEIVER. GEORGE R. SHEPARDSON and BYRON W. SHEPARDSON, Kalamazoo, Mich. Filed Dec. 20, 1892. Serial No. 455,847. (No model.)



*Claim.*—1. In a time-register, the check-conveyers consisting of the channeled base, the upper separated parallel wires, and the loops attached to said base at the lower end and attached to the parallel wires at the upper end; substantially as set forth.

2. The combination of hour and minute-conveyers, check-receiving funnels terminating the receiving ends of said conveyers, the funnel of the minute-conveyer surrounding the funnel of the hour-conveyer, said funnel of the hour conveyer being provided with a small rod or the like extending at a downward, outward and laterally oblique angle above the receiving end of the minute-conveyer, whereby the checks are sheared to one side; substantially as set forth.

3. In a time-register, check-conveyers representing the hour and minute hands of a clock, and a bar supporting the hour conveyer, said bar being provided with an apex at a point where the delivery end of the minute conveyer passes over it during the transit of said conveyers around the clock; substantially as set forth.

4. In a time-register, a revoluble check-receptacle, comprising as a whole the series of receptacles and inclined base integral therewith; substantially as set forth.

5. The combination of a base support, a clock, an upright stud attached to said base, a shelf attached to the upper end of the stud and supporting the clock, the check-receptacle as an integral whole, a plate having a central hole through which said stud is loosely passed, said plate having a series of holes equi-distant from each other, and balls in said holes, upon which balls the base is mounted; substantially as set forth.

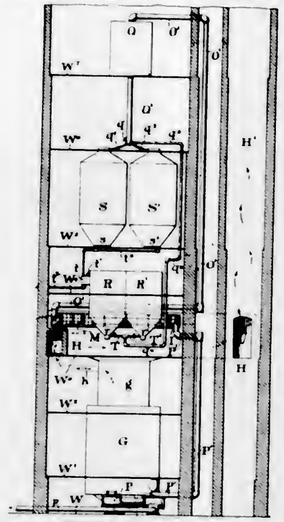
6. The combination of a suitable base, an outer case having a door, a clock, check-conveyers and funnels, integrally connected check-receptacles surrounding the clock and revolubly mounted upon said base, each individual receptacle being provided with a door; substantially as set forth.

7. The combination of a suitable base, an outer case having a door, a clock, check-conveyers and funnels, integrally connected check-receptacles surrounding the clock and revolubly mounted upon said base, each individual receptacle being provided with a door, and a catch to lock the revoluble receptacle; substantially as set forth.

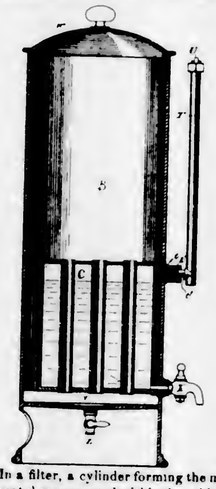
8. The combination of a base, an outer case, a clock, a stud attached to the base, a shelf attached to the upper end of the stud and supporting the clock, the receptacles with inclined bottoms, all integral with each other and surrounding the clock, a plate at the base of the central circular opening beneath the clock, a check-nut on the stud above said plate and ball bearings between said plate and base; substantially as set forth.

529,469. APPARATUS FOR HEATING WATER IN SUGAR-REFINERIES. CLAUS SPRECKELS, Philadelphia, Pa. Filed Feb. 10, 1892. Serial No. 421,088. (No model.)

*Claim.*—The hereinbefore described system of apparatus for heating the wash water for the char-wash tanks, &c., and of utilizing the waste heat from the char kilns, which consists of the following devices arranged in combination: a char kiln; a flue connected therewith; a water circulating channel arranged in said flue; a water forcing device communicating with said channel: a filter; a subjacent char wash tank; pipes whereby said heated wash water may be led into said filter and tank; and an overflow outlet pipe, substantially as set forth.



529,470. FILTER. DAVID C. WILLIAMSON and JAMES E. WILLIAMSON, Bridgeport, Conn. Filed Apr. 24, 1893. Serial No. 471,690. (No model.)

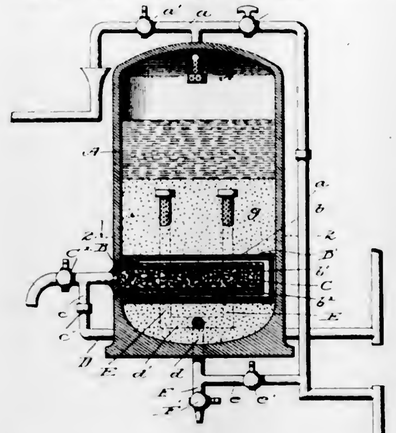


*Claim.*—1. In a filter, a cylinder forming the main body thereof, one or more porous tubes supported within the said cylinder and communicating with a reservoir, the space around the said tubes within the cylinder communicating with an outlet which is normally closed, all in combination with an air-chamber in the said reservoir, the air in which is adapted to exert a pressure in an opposite direction to the normal, and also in combination with a four-way cock which is adapted to alternately direct the incoming water through the normal inlet for filtration, and into the cylinder, and in the opposite direction into the cylinder through the normal outlet, as and for the purpose set forth.

2. In a filter, a cylinder forming the main body thereof, one or more porous tubes supported within the said cylinder, the space around the said tube or tubes within the cylinder communicating with an outlet which is normally closed, all in combination with a four-way cock adapted alternately to direct the incoming water through the normal inlet for filtration into the cylinder, and in the opposite direction into the cylinder through the normal outlet as and for the purpose set forth.



529,471. FILTER. FALCONER B. ARENDELL, Salisbury, N. C. Filed Jan. 11, 1894. Serial No. 496,517. (No model.)

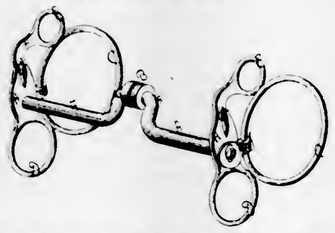


*Claim.*—1. A filter comprising a body having an outlet opening, a perforated tube permanently located within and attached to the filter body and surrounding the said outlet opening, a second perforated tube removably inserted in the first tube through the said outlet opening and normally closing the latter and provided at its outer end with a faucet, a filtering medium within and exterior to the said inner perforated tube, substantially as described.

2. A filter comprising a body having an outlet opening provided with a boss which is internally threaded, a perforated tube carried by and supported upon the boss, a second perforated tube having a faucet and provided with a threaded portion by means of which it is removably attached to the said boss, filtering material within the second perforated tube and a surrounding filtering medium of sheet material, substantially as set forth.

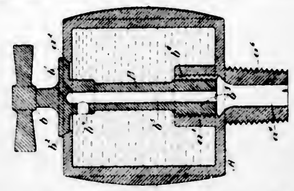
3. A filter comprising a body, an inlet opening at the upper portion, a waste pipe communicating with the lower portion, a second waste pipe connected with the inlet opening, a supply pipe connected with the said inlet opening and with the two waste pipes, a perforated tube having a discharge nozzle disposed in the lower portion of the body, a vertical series of perforated tubes arranged among the filtering material in the body and extending from the bottom to within a short distance from the top of the said filtering material, and having connection with the supply pipe, and controlling valves for the several pipes, substantially as described.

529,472. BRIDLE-BIT. MELVIN F. BIGELOW, Alden, Iowa. Filed Feb. 3, 1894. Serial No. 499,042. (No model.)



*Claim.*—A bit comprising a mouth piece provided with a depressed central portion said central portion being covered with a ball of non abrading material, cheek pieces secured to said mouth piece and provided with means at one end for securing to them driving lines, and having means at the other end for securing an overdraw check thereto, a chin strap slot on each check piece, and an auxiliary driving ring loosely connected to each check piece.

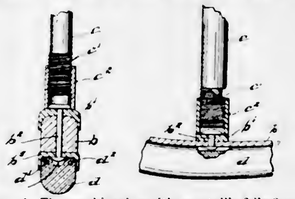
529,473. LUBRICATOR. GOTTLOB BINDER, Philadelphia, Pa. Filed May 21, 1894. Serial No. 512,033. (No model.)



*Claim.*—1. A lubricator, comprising a shell having an opening in the top and an internally threaded socket or bearing and an externally threaded depending nozzle, and a hollow stem with an inlet, tapering cap seat, handle and threaded nipple or end, substantially as and for the purposes set forth.

2. A lubricator, comprising a shell provided with exterior flaring ribs and having an opening in the top thereof and an internally threaded socket or bearing with an integral depending threaded nozzle and a hollow stem provided with an inlet, a handle with an integral plug-cap or seat with a tapering body and a threaded nipple or end with a vertical slit provided therein, substantially as and for the purposes set forth.

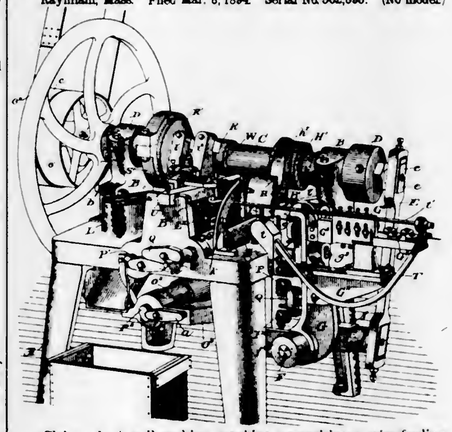
529,474. VEHICLE-WHEEL. THEODORE B. BLOSSER and JOHN P. KUNKLE, Springfield, Ohio, assignors of one-half to Alphonzo Ferrell, same place. Filed July 23, 1894. Serial No. 518,406. (No model.)



*Claim.*—1. The combination with a metallic felly formed of channel iron as described, a saddle riveted to said felly and having a seat or projection, a spoke having a screwthreaded thimble, and an internally screwthreaded sleeve to fit on said thimble, said sleeve being adapted to fit over said projection on said saddle, substantially as specified.

2. The combination with the hub and felly of a vehicle, of a screwthreaded spoke, a screwthreaded sleeve on said spoke, a seat or saddle on said felly having a projection to fit said sleeve, and a sprig within said sleeve adapted to bear against said saddle and spoke, substantially as specified.

529,475. WIRE-NAIL-MAKING MACHINE. GEORGE W. BOND, Raynham, Mass. Filed Mar. 8, 1894. Serial No. 502,895. (No model.)



*Claim.*—1. A nail making machine, comprising a wire feeding device, a detent clamp, two pairs of gripping dies, a pair of cutters

adjacent to and moving with one pair of dies, and means for causing said latter pair of dies to approach the other pair, substantially as described.

2. In a wire nail-making machine, the combination with a stationary die, of a die movable transverse to the wire to co-act with the stationary die in gripping it, a third die movable both transverse and lengthwise of the wire, and a fourth die movable lengthwise of the wire only, the third die co-acting with the fourth to grip the wire, and the two pairs of gripping dies co-acting to upset the wire between them, substantially as described.

3. In a wire nail-making machine, the combination with a pair of gripping dies set at an acute angle to the line of the wire, of a second pair of gripping dies and a pair of pointing cutters adjacent thereto, all set at an acute angle to the wire, the apex of the angle formed by one pair of dies pointing toward the apex of the angle formed by the other pair, substantially as described

4. In a wire-nail-making machine, the combination with a stationary die-socket, of a die socket lever fulcrumed on an axis parallel with the line of the wire, a die socket lever fulcrumed on an axis transverse to the line of the wire, a die-socket lever fulcrumed on a universal joint so as to have motion both transverse and lengthwise of the wire, and means for actuating these levers, substantially as described.

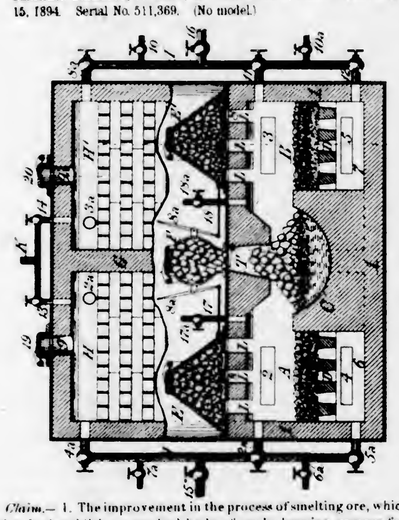
5. In a wire-nail-making machine, the combination with the stationary die-socket, of three movable die sockets each mounted on a lever, a driving shaft carrying cams for moving the first and second of said levers, and a cam shaft actuated from said driving shaft, for moving the second and third of said levers, substantially as described

6. The combination with the stationary die-socket $L$, of the movable sockets $L'$, $L^2$, $L^3$, the rock shafts $O$, $O'$, $O^2$ supporting said sockets, the yoke $O^3$ supporting the shaft $O^2$, the driving shaft C carrying the cams R, R, the cam shaft S having a rock arm $s'$, and the pitman $S^2$ connecting said arm with the cam $R'$, substantially as described.

7. In a nail making machine, the combination with the cross bar U, of the plate W adjustably secured thereto, the block $v$ journaled on the plate W, and provided with an arm, a coiled spring $v^3$ acting against said arm, and the guide V depending from said block, substantially as described.

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**529,476.** PROCESS OF AND APPARATUS FOR SMELTING ORES. BENJAMIN BRAZELLE, St. Louis, Mo. Filed Oct. 6, 1892. Renewed May 15, 1894. Serial No. 511,369. (No model.)



*Claim.*— 1. The improvement in the process of smelting ore, which consists in deoxidizing a smelted body of ore by burning gaseous fuel with air in a chamber, forcing the hot resultant products through a body of heated fire-brick, then through a body of incandescent carbon, forcing the resultant non-oxidizing gases onto the body of hot slag or gangue, then through a second body of incandescent carbon, then through a body of hot fire brick, and thence into a condenser, and delivering the gas to a holder, substantially as set forth.

2. The improvement in the processes of smelting ore which consists in chloridizing a body of smelted ore by forcing chlorine gas onto a hot body of slag gangue, and forcing the volatile chlorides through a body of incandescent carbon, then through a body of hot fire brick, and thence into a condenser, substantially as set forth.

3. The improvement in the process of smelting ores, which consists in burning gaseous fuel with air in a chamber, forcing the hot products of combustion through a body of hot fire-brick, then through a body of incandescent carbon, burning the gases with air and heating and smelting a body of ore, mingling the hot products of combustion and vaporized values with non oxidizing gases, and together forcing them through a second body of incandescent carbon, then through a body of hot fire-brick, and thence into a condenser, substantially as set forth.

4. The improvement in the process of smelting ore, which consists in forcing a blast of non-oxidizing gas through a hot body of fire-brick, then through a body of incandescent carbon, then onto a body of smelted ore, then through a second body of incandescent carbon, then through a body of hot fire-brick, and thence to a condenser and holder, substantially as set forth.

5. The improvement in the process of smelting ore, which consists in burning gaseous fuel with air in a chamber with or without the admission of steam, forcing the hot products through a body of fire-brick to heat it, forcing an air blast through a body of carbonaceous fuel, burning the evolved gases with air, mingling the hot products with the products of the said gaseous fuel from said first chamber, heating a body of ore to eliminate impurities, forcing the hot products through a body of fire-brick, to heat it, and thereafter increasing the heat and smelting the body of ore, mingling the hot products of combustion and vaporizing metallic values with non-oxidizing gases, and together forcing them through a body of hot fire-brick, thence to a condenser, and the gas to a holder, substantially as set forth.

6. The improvement in the process of smelting ore, which consists in forcing steam through a body of hot fire-brick, then onto a hot body of smelted ore to convert the silica to "mineral wool" in order to free metallic values, substantially as set forth.

7. The improvement in the process of smelting ore, which consists in forcing a non-oxidizing gas through a hot body of fire-brick, then onto a hot body of smelted ore, then through a second body of hot fire-brick, and thence to a condenser and gas holder, substantially as set forth.

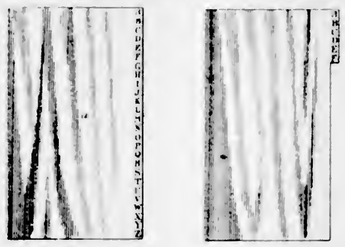
8. The improvement in the process of smelting ore which consists in forcing chlorine gas onto a hot body of smelted ore, in order to eliminate therefrom contained base metals or elements, as iron, zinc, lead, copper, sulphur, and arsenic, by forming volatile chlorides therewith, mingling the evolved volatile chlorides with a non oxidizing gas, as hydrogen, and together forcing them through a body of hot fire-brick, in order to deoxidize the base metals, and delivering the base metals into a condenser, substantially as set forth.

9. In an apparatus for smelting ore, the combination, substantially as set forth, of a furnace having two fuel chambers, grates located in each of said chambers, ash pits located under each of said grates, fuel charging hoppers, having at their bases, valves controlling a series of throats leading into said fuel chambers, an ore supporting hearth located between said fuel chambers and ash pits, an ore charging hopper located above said hearth, and ports leading from said fuel chambers and ash pits into a pair of heat storage chambers.

10. In an apparatus for smelting ore, the combination, substantially as set forth, of a furnace having two fuel chambers, a lower ash pit and an upper fuel charging hopper for each fuel chamber, an ore smelting hearth interposed between and communicating with the fuel chambers, an ore charging hopper above the ore smelting hearth, a pair of heat storage chambers filled with firebrick and provided with top outlets, each of said chambers communicating with one of the fuel chambers, a pair of condensers, pipes leading from said heat storage chambers to said condensers, gas delivery pipes and water discharge pipes leading out of said condensers, air, gas, and steam supply pipes leading into each of the fuel chambers, ash pits, and heat storage chambers, and chlorine gas supply pipes leading into the fuel chambers.

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**529,477.** METHOD OF MANUFACTURING INDEXES. REUBEN L. BROWN, Chicago, Ill., assignor to Brown & Beely, Incorporated, same place. Filed Sept. 22, 1890. Serial No. 365,778. (No model.)

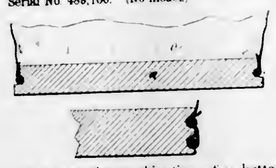




*Claim.*—The herein described method of manufacturing indexes, consisting of the following steps, to wit: first, printing the entire series of letters or characters to be used upon the margin of each leaf or page of the index, second, removing a portion of said printed margin so as to leave thereon one or more of said letters or characters, and third, arranging said printed and cut leaves or pages in proper order to form the index, substantially as described

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**529,478.** BAG. JEREMIAH N. BULL, Springfield, Mass. Filed Oct. 25, 1893. Serial No. 489,106. (No model.)



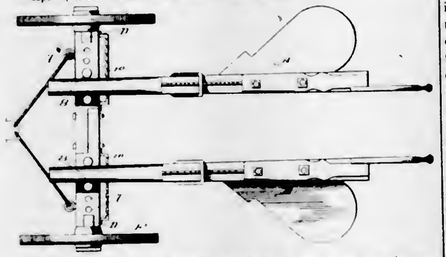
*Claim.*—1. In a bag, the combination of a bottom having a grooved edge a wire adapted to lie in said groove, and flexible side walls having the end turned over the wire, the portion turned over lying within the walls and about the bottom above the groove, the wire beng tightened in the groove to retain the walls in position, substantially as described.

2. In a bag, the combination of flexible side walls, a wire about which the end of the side wall is turned, and a bottom having its edge grooved to receive the wire, which being tightened retains the walls in position, the portion of the bottom below the groove projecting horizontally or radially beyond the walls to serve as a fender for the same, substantially as described.

3. The combination of flexible side walls and the disk bottom the latter being formed of two or more separate pieces of wood arranged with the grain of one crossing the grain of the other and secured together substantially as and for the purposes stated

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**529,479.** WHEEL-PLOW. FREDERICK BUNJES, Shiner, Tex. Filed Apr 5, 1894. Serial No. 506,412. (No model.)

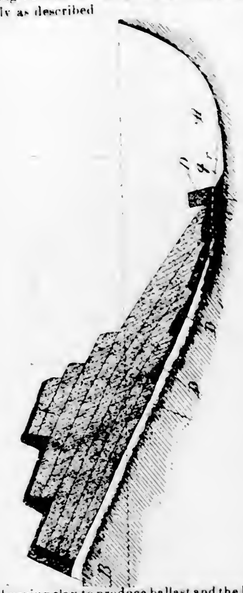


*Claim.*—The herein specified wheel plow comprising an axle composed of two parts which have their inner ends halved and adjustably secured together, and provided at their outer ends with ground wheels, standards rising vertically from the ends of the axle and having a vertical series of openings, a beam disposed above the axle and having its ends notched to receive the said standards and composed of two parts which have their inner ends halved and adjustably secured together, each part being provided with a series of openings extending inward a short distance from each end, pins attached to the ends of the beam and adapted to be passed through corresponding openings in the standards to support said beam at the desired elevation, pairs of pins removably inserted in the openings provided in the beam, a pair of plow beams having their forward ends resting upon the vertically adjustable beam and held between the aforesaid pairs of pins and provided with notched bars, notched bars 10 secured to the axle and draft chains having a link at their rear ends to embrace the plow beams and engage with the notched bars carried thereby, the front ends of the said draft chains being adjustably connected to the notched bars 10, substantially as described, for the purpose specified.

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**529,480.** METHOD OF BURNING CLAY TO MAKE BALLAST, &c. HENRY O. BUTLER, Kenosha, Wis. Filed Jan. 27, 1894. Serial No. 498,304. (No specimens.)

*Claim.*—1. In kiln burning clay to produce ballast and the like, the method of constructing and operating the kiln, which consists in building walls inclosing the mass of the material to be burned and burning said material, continuing building said walls as the increment and burning of said mass proceed, building another kiln in front of the first with a front wall and merging it with the first kiln by precipitating the front wall of the latter and piling material to be burned in layers extending between the original rear wall and the new front wall, substantially as described



2. In kiln-burning clay to produce ballast and the like, the method of constructing and operating the kiln, which consists in building walls inclosing the mass of material to be burned on a slope and burning said material, continuing building said walls as the increment and burning of said mass proceed, building another kiln on the slope in front of the first with a front wall and merging it with the first kiln by precipitating the front wall of the latter down the slope and piling material to be burned in sloping layers extending from the original rear wall to the new front wall, substantially as described.

3. In kiln-burning clay to produce ballast and the like, the method of constructing and operating the kiln, which consists in building walls for inclosing the mass of material to be burned on a slope and burning said material, continuing building said walls as the increment and burning of said mass proceed, building successively at intervals down the slope additional walls and piling the material to be burned in sloping layers to extend between the original rear wall and the lower front wall, building a second rear wall at a suitable distance from the first upon the mass of material in the kiln and continuing the piling of material to be burned between such second rear wall and the final front wall, substantially as described.

4. In kiln-burning clay to produce ballast and the like, the method of constructing and operating the kiln, which consists in building walls for inclosing the mass of the material to be burned on a slope and burning said material, continuing building said walls as the increment and burning of said mass proceed, building successively at intervals down the slope additional front walls and piling the material to be burned in sloping layers to extend between the original rear wall and the lower front wall, precipitating a front wall down the slope preparatory to building the next front wall, building a second rear wall at a suitable distance from the first upon the mass of material in the kiln, and continuing the piling of material to be burned between such second rear wall and the final front wall, substantially as described.

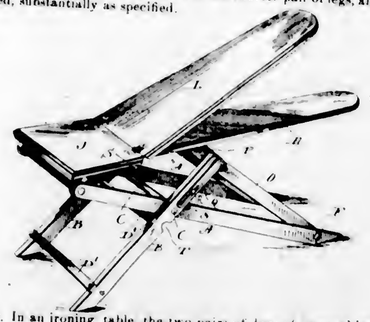
5. In kiln-burning clay to make ballast and the like, by progressively widening and increasing the height of the kiln and its contents in burning the latter, the method of preventing the growth of the kiln from extending, beyond the reach of the feeding apparatus, the exposed surface of the bed of material on which to pile further material to be burned, which consists in building on the said bed, in succession as required, and at suitable intervals from the original rear kiln wall and from each other, secondary kiln walls C, substantially as described.

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**529,481.** IRONING-TABLE. ROBERT F. COLEMAN, Overton, Tex Filed Aug. 29, 1894. Serial No. 521,613. (No model.)

*Claim.*—1. In a folding ironing table, the two sets of legs of un-

equal length, an ironing board pivoted to the longer pair of legs, a pivoted support for the board, and slotted plates connected both to the support and to the upper end of the shorter pair of legs, all combined, substantially as specified.



2. In an ironing table, the two pairs of legs of unequal length suitably connected and pivoted together, combined with the pivoted ironing board, the support pivoted between the longer pair of legs, the cross bar secured to its end, and the slotted plates loosely connected both to the ends of the cross bar and to the shorter pair of legs, substantially as shown and described

529,482. TRUNK. NATHAN DRUCKER, Cincinnati, Ohio. Filed Feb. 24, 1894. Serial No. 501,330. (No model.)



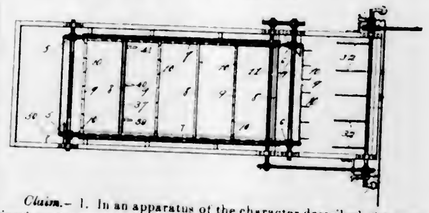
*Claim.*—1. The combination of the trunk body, having upwardly extended rear wall to meet the top of the trunk, the top having open back and closed sides and front, the hinge uniting the rear edge of the top and upward extended end of the rear wall of the body, the swinging tray, uprights secured to the trunk ends the tray carriers or links coupling said tray to said uprights, fastenings secured to the back of the tray and inside of the top to support the back of the tray when thrown up, the toggle brace to support the top in the open position, and the stud projecting from said brace to be engaged by one of the tray carriers to lock the top in the open position, substantially as shown and described.

2. The combination of the trunk body having upwardly extending rear wall, the top open at the back and resting upon the top edge of said upward extension when the trunk is closed, the hinges uniting the rear wall of the body and rear edge of the top, the rear corner irons reinforcing the end and back of the body, extending up above the ends of the body and having the end portion projecting outwardly to form a recess between part of the trunk end and end of the top when the trunk is closed, to receive the valance, the valance secured to and extending below the end and front walls of the top, substantially as shown and described.

3. The combination of the trunk body having upwardly extending rear wall a reinforcing strip upon the rear wall, extending below the top edge of the trunk body proper, above it and against the upward extension of the rear wall, the corner iron secured to the end and rear wall of the trunk and having an overlapping tongue to bear upon the reinforcing strip, whereby the end of the reinforcing strip is held between the main portion of the corner iron and the overlapping tongue substantially as shown and described.

4. In a trunk of the character described, the combination of the body having an upwardly extending rear wall, the angle irons for the rear upper corners of the trunk secured to the rear wall and the end walls, extending up above said end walls and having recess between the end walls of the trunk and the ends of the top, when the trunk is closed, to pass the valance, an upwardly extending plate at the rear wall of the top ends and having also an outwardly projecting lug for the back, a reinforcing strip held in position by the said tongue of the corner irons, the top open at its rear end and having downwardly extending ends and front, the valance surrounding the front and end walls of said top, the reinforcing strip for the rear edge of the top, the corner irons secured over the rear end of the top and reinforcing strip, the end portions of said irons being counter to the bevel of the body irons and forming a close joint when the trunk is closed.

529,483. HOG-CONVEYER AND THROW-OUT FOR SCALDING-VATS. ROBERT M. EAGLE and JOHN EAGLE, Kansas City, Kans. Filed Sept. 29, 1893. Serial No. 486,765. (No model.)



*Claim.*—1. In an apparatus of the character described, the combination with an endless conveyer provided with teeth or fingers and a rock-shaft provided with lift-arms, and operatively connected to the endless conveyer, and wheels mounted loosely upon said shaft, and provided with clutch faces, of a pair of clutches keyed to slide upon and revolve with said shaft, and means to move said slidable clutches into engagement with the said wheels, substantially as and for the purpose set forth.

2. In an apparatus of the character described, the combination with an endless conveyer provided with teeth or fingers and a rock-shaft provided with lift arms, and operatively connected to the endless conveyer, and wheels mounted loosely upon said shaft, and provided with clutch faces, and arms projecting from said slidable clutches, of a pair of brackets secured to the tank and provided with cam or beveled faces against which the clutch arms are adapted to contact, substantially as and for the purpose set forth.

3. In an apparatus of the character described, the combination with a tank or vat, and an endless conveyer, consisting of a pair of chains suitably guided, and a number of toothed or fingered bars or rods connecting said chains, of a pair of chain-guards carried by the said tank and embracing the upper and lower sides of the lower portion of said chains, substantially as set forth.

4. In an apparatus of the character described, the combination with a tank or vat, and an endless conveyer carried thereby, of a drag attachment carried by said conveyer, consisting of a rock-shaft provided with arms, and means to automatically rock said drag attachment when it reaches the discharge end of the conveyer, substantially as and for the purpose set forth.

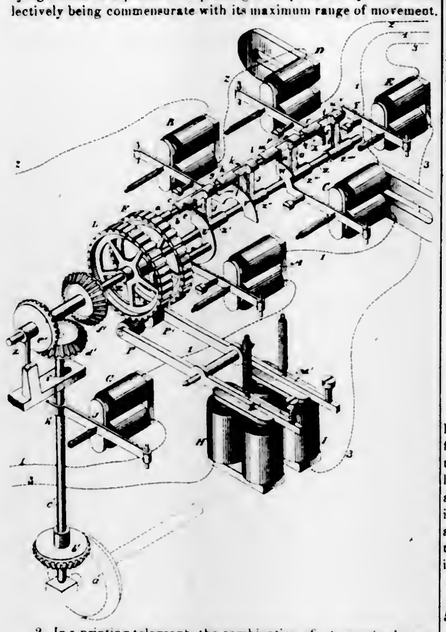
5. In an apparatus of the character described, the combination with a tank or vat, an endless conveyer carried by said tank or vat, and means to intermittently operate said conveyer, and a rod or bar bearing caps carried by said rod or bar, and certain of said caps provided with recesses or notches, of a rock-shaft journaled between said rod or bar and said caps, and provided with drag-arms, and a spring actuating said shaft so that the said arms shall normally engage said recesses or notches, and means to longitudinally and revolubly operate the said rock-shaft when it reaches the discharge end of the conveyer, substantially as set forth.

6. In an apparatus of the character described, the combination with a tank or vat, an endless conveyer carried thereby, and means to intermittently operate said conveyer, a rod or bar, bearing caps carried by said rod or bar, a shaft provided with drag-arms, and journaled between said rod or bar and said caps, and a spring normally holding said shaft so that said arms shall engage the notches of said bearing-caps, of a bracket carried near the discharge end of the tank and provided with a cam or inclined face, and adapted to overcome the resistance of said spring and longitudinally and revolubly operate the rock-shaft and a bracket carried at the front end of the tank, and provided with a cam or beveled or inclined face which is also adapted to rock the said shaft until the arms are opposite the notches of the bearing caps, substantially as and for the purpose set forth.

529,484. PRINTING-TELEGRAPH. BRADLEY A. FISKE, U. S. Navy, assignor to The Western Union Telegraph Company, New York, N. Y. Filed Oct. 13, 1888. Serial No. 287,998. (No model.)



*Claim.*—1. In a printing telegraph, the combination of a type carrying device, a series of adjusters each of which independently of the others and independently of the press mechanism, moves said type carrying device to a position for printing, said spaces of adjustment collectively being commensurate with its maximum range of movement.



2. In a printing telegraph, the combination of a type-wheel, a series of independently rotating adjusters whose limits of action collectively are commensurate with the maximum movement of said type-wheel.

3. In a printing telegraph, the combination of a type-wheel and a series of independently rotating adjusters having movable limits of action for giving the type-wheel movements represented respectively by the terms of the series 1, 2, 4, 8, 16 &c., the sum of which equals the maximum movement of the wheel.

4. In a printing telegraph, the combination of a type-wheel, a series of independently rotating adjusters, having rotating or movable limits of different lengths of action which are capable of operating singly, all together or in any desired combination, and which collectively are commensurate with the maximum range of type-wheel rotation, and a corresponding series of adjuster electro-magnets.

5. In a printing telegraph, the combination of a type-wheel, a series of interlocking adjusters engaging with one another and the type-wheel, the last of the series holding the type-wheel in an initial position, while it is in turn held by a second, and the second by a third, and the third by a fourth, and so on throughout the series, and a series of adjuster magnets substantially as described.

6. In a printing telegraph, the combination of a type wheel, a series of independent adjusters whose combined limits of action are commensurate with the maximum movement of the wheel and which are normally locked together forming a rigid connection throughout the series between the first adjuster and the type wheel, and a series of adjuster electro magnets for operating the adjusters one at a time or all together.

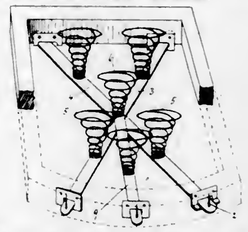
7. In a printing telegraph, the combination of a type-wheel F, shaft *z*, radial adjuster arms *f*, *e*, loosely mounted upon said shaft, latching devices *a*, *b*, electro-magnet A, adjuster arms *j*, *k*, loosely mounted upon shaft *z*, latching device *z* for releasing *f* and arresting *e*, electro-magnet B for operating said latching device, arms *o*, *p* loosely mounted upon said shaft, latching device *l* for releasing arm *j* and arresting arm *k*, and electro-magnet C for operating the same, and other similar devices going to make up the series of adjusters for determining the type-wheel rotation.

8. The combination of shaft *z*, a type-wheel connected thereto, arms *e*, *f* loosely mounted upon said shaft, latch *b*, adjuster magnet A and curved extension U of its armature lever.

9. In a printing telegraph, adjusters and press mechanism in combination with two type-wheels, three main lines, the first, which is normally closed, including a magnet to determine the direction of rotation of the type wheel, and two adjuster magnets, the second, also normally closed, two adjuster magnets, and magnets at the transmitter operating to close the third line as a condition precedent to printing, and the third, which is normally open, two press magnets, and one adjuster magnet.

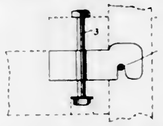
10. In a printing telegraph, a series of adjusters operative singly or together to rotate a type wheel to any desired position by the single action of each, and press mechanism in combination with a type wheel, and three main lines, the first and second each including two adjuster magnets, and the third both adjuster and press magnets.

529,485. CHAIR-SEAT. OSCAR S. FOSTER, Utica, N. Y. Filed Nov. 19, 1892. Serial No. 452,478. (No model.)



*Claim.*—The combination of a seat frame, intersecting spring-holding strips rigidly secured at each end on the under side of the frame, rigid plate hangers engaging the strips at the points where they leave the frame-bars and secured on the inner faces of the frame-bars, springs having contiguous gripping convolutions at their ends, and central upwardly extending projecting ends adapted to engage in registering holes in the intersecting strips, and a half strip secured at one end to the frame and at the other end to the other strips at the intersection by the gripping convolutions of the central spring and its central end, substantially as set forth.

529,486. BEDSTEAD-FASTENING. OSCAR S. FOSTER, Utica, N. Y. Filed Dec. 14, 1892. Serial No. 455,108. (No model.)



*Claim.*—1. The combination with the frame of a bed bottom of a leg engaging hook having a shank received in a slot or recess in the end of the side rail of the frame and secured in place by the cross-bar bound onto the edge of the hook shank and side rail by a bolt passing through both, as set forth.

2. The combination of cross-bars and side rails forming a rigid bed frame, a bed post and a hook adapted to engage the leg having a shank adapted to be received in a recess in the end of the side rail, the shank having a transverse semi-cylindrical sleeve and a bolt passing through the side rail and cross bars and the sleeve, substantially as set forth.

3. The combination of cross bars and side rails forming a bed frame, a leg, and a leg engaging hook having a plate-like shank adapted to be received in a slot in the end of the side rail, the shank having a transverse sleeve adapted to engage in depressions at the side of the slot, and a bolt passing through the cross bar and side rail and through the sleeve, substantially as set forth.

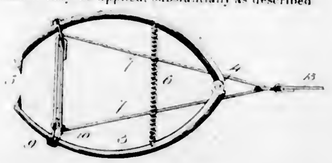
4. The combination of cross-bars and side rails forming a frame, a leg having a vertical hanger slot and a transverse pin therein, a hanger hook having a plate-like shank with a transverse half sleeve adapted to enter a corresponding shaped recess in the end of the side rail, an independent half sleeve and a bolt passing through the cross-bar and side rail, and the sleeve formed by the two half sleeves, substantially as set forth.

5. The combination of a leg, a side rail and a hanger hook having a plate-like shank adapted to be received in a recess in the side rail, the shank having a transverse half sleeve, substantially as set forth.

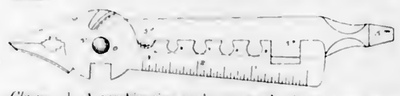
529,487. HORSE-HITCHING DEVICE. CHARLES GENGNAGEL, Wabasha, Minn. Filed Sept. 17, 1894. Serial No. 523,299. (No model.)

*Claim.*—The herein shown and described hitching device composed of two outwardly deflected bars pivotally connected at one end

and having engaging spurs at the opposite end, a spring attached at its ends to the sides of said bars to normally hold the free ends of the bars closed, and a strap having one end secured to a loop in one of the said bars, passing loosely through a similar loop on the other bar, back through a loop on the first bar and secured firmly at its other end to a loop on the second bar, whereby the pull upon the said strap will close and clamp the free ends of the bars upon the structure or device to which it may be applied, substantially as described.



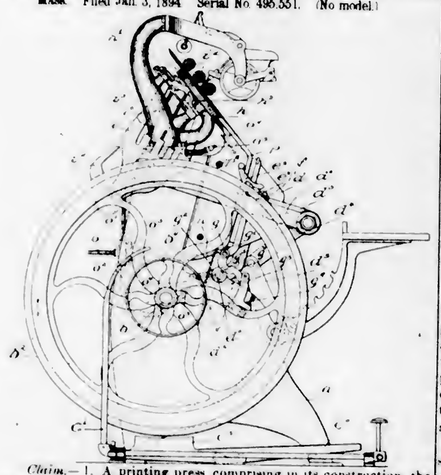
529,488. ELECTRICIAN'S COMBINATION-TOOL. JACOB M. GILE, Denver, Colo. Filed Mar. 20, 1894. Serial No. 504,371. (No model.)



*Claim.*—1. A combination tool composed of two arms pivoted together, the pivoted parts being recessed to form wire cutters and a wrench, plier-jaws formed at one extremity and recessed for wire connecting purposes, the outer faces of the jaws having oppositely disposed cutting edges, the arms below the pivot being adapted to overlap, and provided with wire gage recesses formed on their inner edges, and having a graduated scale adjacent to their outer edges, one arm being provided with a wrench socket near its lower extremity, while the other is longer and formed into a screw driver, above which, exterior cutting edges are formed on opposite sides of the arm, substantially as described.

2. A combination tool composed of two lever arms, 5 and $5^a$, pivoted together at 6, the pivoted parts recessed at $5^a$ to form wire cutters, plier-jaws located above the pivot and recessed for wire connecting purposes, the outer faces of the jaws having cutting edges, the arms below the pivot being adapted to overlap, and oppositely recessed to form cutting edges, the inner edges of the arms being provided with wire gage recesses, substantially as described.

529,489. PRINTING-PRESS. WILLIAM H. GOLDING, Newton, Mass. Filed Jan. 3, 1894. Serial No. 496,551. (No model.)



*Claim.*—1. A printing press comprising in its construction, the oscillatory platen having a curved flange, means for actuating said platen, a rotatively adjustable shaft connecting the platen with said means that part of said shaft which engages the latter being eccentric with respect to that part which engages the platen, an arm affixed to said shaft, a handle pivotally connected with the said arm and having a projection arranged to traverse the upper and under sides of the curved flange on the platen under reverse movements of the arm and to establish operative and inoperative adjustments of the platen, by abutting the ends of said flange.

2. In a printing press, the combination of an oscillating platen having a curved flange on one side, a pivoted arm controlling adjustment of said platen, a handle pivoted to said arm and having a lug arranged to traverse both the upper and under sides of the curved flange and to abut the ends of the same, and means for yieldingly holding said handle in an intermediate position in alignment with the arm.

3. A printing press comprising in its construction, the oscillatory platen having a curved flange, means for actuating said platen, a rotatively adjustable shaft connecting the platen with said means that part of said shaft which engages the latter being eccentric with respect to that part which engages the platen, an arm affixed to said shaft, a handle pivotally connected with the said arm and having a projection adapted to abut the ends of the curved flange on the platen and to traverse the upper and under sides of said flange under reverse movement of the arm, and a spring-pressed latch which resists movement of the handle on its pivot.

4. In a printing press, the combination of an oscillating platen; a draw-bar for actuating the same and arranged to move transversely of one end thereof; a throw-off device which establishes an inoperative adjustment of the platen; a register on the said draw-bar having a projecting actuating arm extending longitudinally of the draw-bar and provided with a lateral finger; and an arm standing out from the end of the platen and having a lateral finger extending transversely to the lateral finger of the register-arm and adapted to co-act with the same in operating the register and to be moved out of operative relation therewith by the action of the throw-off device.

5. A printing press comprising in its construction an oscillatory platen, an actuating mechanism connected therewith and including a bar moving cross-wise of one end of the platen, a register on said bar, and a spring-pressed pivotal arm on the platen and capable of assuming an adjustment for co-action with the register, and an inoperative adjustment.

6. In a printing press, bed or platen adjusting means comprising universally adjustable blocks engaging sockets in the bed-support, wedges interposed between the said blocks and the bed, one of said wedges being formed with T-shaped slots, and screws having heads engaging said slots, one of said screws threaded into the other wedge and the other screw engaging a nut on the bed.

7. In a printing press, bed or platen adjusting means comprising universally adjustable blocks engaging sockets in the bed-support, wedges interposed between the said blocks and the bed, one of said wedges having a split clamping nut, a screw connecting the wedges and engaging said nut, and a screw connecting the wedges with the bed and engaging a split nut on the latter.

8. In a printing press, bed or platen adjusting means comprising universally movable blocks engaging sockets in the bed-support, wedges interposed between the said blocks and the bed, adjustable connections between said wedges, and adjustable connections between the wedges and the bed.

9. In a printing-press, means for imparting to the distributing plate or disk either a step-by-step progressive movement or a step-by-step vibratory movement, said means comprising a member pivotally supported concentric with the disk and adapted for driving engagement therewith, a vibrating member, a fastening for connecting said two members so that they move together as one, and devices for connecting the said members so that the vibrating member imparts a step-by-step movement to the disk engaging member.

10. A printing press comprising in its construction a rotatively supported distributing disk, a slotted arm pivoted concentrically with said disk and adapted to be locked thereto, a ratchet-wheel having a crank-pin adapted for engagement with the slot in said arm, and means for turning said ratchet step-by-step.

11. A printing press comprising in its construction a distributing disk, a pivotal arm having means co-acting with the said disk to progressively turn the same step-by-step under vibration of said arm, and also having means whereby it may be locked to the disk, a ratchet-wheel having a crank-pin for engagement with said arm, an arm pivoted concentric with said ratchet-wheel and carrying a pawl for engagement with the latter, and actuating devices adapted for operative connection with either the first-named arm, or the last named arm.

12. A printing press comprising in its construction a rotatively supported distributing disk, a pivotal arm having means co-acting with said disk to intermittently turn the same and means for locking it to the disk, a second arm pivoted concentrically with the first-named arm, fastenings for rigidly connecting the two arms, means applied to the second arm for vibrating the same, a ratchet wheel having a crank pin for engagement with the first named arm, an arm pivoted concentric with said ratchet-wheel and carrying a pawl for engagement therewith, and a link connecting said last-named arm with the second-named arm.

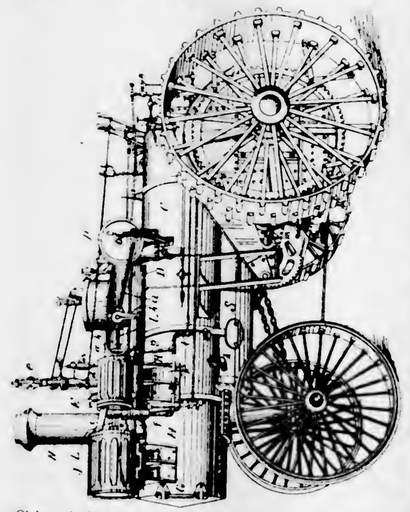


13. In a printing press, bed or platen adjusting means comprising universally adjustable blocks engaging sockets in the bed-support and wedges interposed between said blocks and the bed.

14. In a printing press, bed or platen adjusting means comprising adjustable wedges inserted between the bed and its support and having T-shaped slots, and adjusting screws having similarly shaped heads engaging said slots.

15. In a printing press, bed or platen adjusting means comprising adjustable wedges having split clamping nuts, and adjusting screws engaging said nuts.

529,490. TRACTION-ENGINE. CHARLES O. HEGGEM, Massillon, Ohio, assignor to the Russell & Co., same place. Filed June 18, 1894. Serial No. 514,859. (No model.)



*Claim.*—1. In a compound traction engine, the combination with the boiler, the bracket secured thereto, the cinder box and bracket, said brackets being located above the front supporting wheels, the cylinders secured to said brackets and located respectively in front and in rear of the smoke stack, and the bars connecting said cylinders together, of the pump secured to the rear bracket, the water tank secured to the under side of the boiler intermediate the front and rear wheels, the pipe connecting said pump and tank, the piston rod and cross head, the arm secured to the cross head and the pump rod connected therewith, substantially as described.

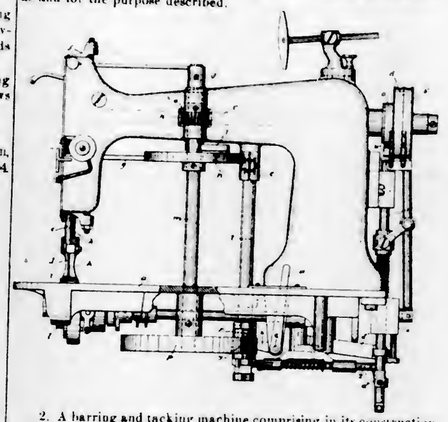
2. In a traction engine, the combination with the plates secured to the front of the boiler and provided with lugs, of the frame removably pivoted thereto, the foot board pivoted at its front end to the frame, the sockets formed in said frame, the sockets secured to the foot board and the coiled springs, substantially as described.

3. In a traction engine, the combination with the plates secured to the front of the boiler and provided with lugs, of the frame removably pivoted to said lugs, the foot board pivoted or hinged at its outer end to said frame, the sockets formed in said frame, the sockets secured to the lower ends of said plates and the coiled springs located therein, substantially as described.

4. The combination with a steam boiler for traction engine, of a foot board comprising the hinge pieces T, having lugs *m*, socket *n*, foot board frame U, pivotally secured to the hinge piece T, having sockets *o* and *r*, and trunnions *s*, foot board V, hinged thereto, and the springs *p* and *r*, substantially as described and for the purpose set forth.

529,491. SEWING-MACHINE FOR BARRING AND TACKING. GEORGE S. HILL, Bradford, assignor of one-half to James H. Murray, Haverhill, Mass. Filed Feb. 27, 1894. Serial No. 501,700. (No model.)

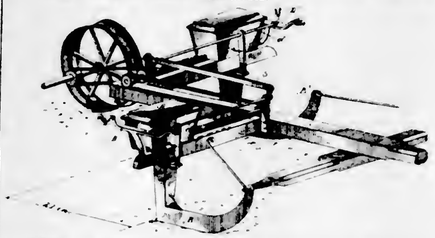
*Claim.*—1. A barring and tacking machine comprising in its construction a sewing mechanism, a work holder, a path cam, and connections between the latter and the work holder for first moving the work holder so as to produce long bar stitches, and then moving it step by step from one of the extreme limits of its movements to the other, a vibratory needle, a path cam and connections between the same and the vibratory needle for holding the latter against vibratory movement while the bar stitches are being made, and vibrating it during the last mentioned movement of the work holder, substantially as and for the purpose described.



2. A barring and tacking machine comprising in its construction a sewing mechanism, a work holder, a double path cam and connections between the latter and the work holder for first moving the work, so as to produce long bar stitches and then moving it step by step from one of the extreme limits of its movements to the other, a vibratory needle, a path cam and connections between the same and the vibratory needle for holding the latter against vibratory movement while the bar stitches are being made and vibrating it during the last mentioned movement of the work holder, connections between the work-holder and the said double path cam, a lever and intermediate mechanism for operating said connections, whereby either path in said cam may be used for moving the work holder, substantially as and for the purpose described.

3. In a sewing machine for barring and tacking in combination, a main shaft, a vibratory needle, a work holder and complemental stitch forming mechanism, a vertical shaft connected to said main shaft, two wheels *p* and *n'*, fast upon said vertical shaft, and provided with path cams, lever connections between the cam and the wheel *p* and the work holder for first moving the work holder so as to produce long bar stitches and then moving it step by step from one of the extreme limits of its movements to the other, and lever connections between the cam in the wheel *n'*, and the vibratory needle for holding the latter against vibratory movement while the bar stitches are being made, and vibrating it during the last mentioned movement of the work holder, substantially as and for the purposes described.

529,492. METHOD OF AND MEANS FOR PLANTING CORN. JOHN W. HILL, Chicago, and LORENZO D. BENNER, Peoria, Ill. Filed June 1, 1894. Serial No. 513,216. (No model.)



*Claim.*—1. In a seed-planter of the corn-planter type, the runner frame, the seed boxes supported thereon, and mechanism for discharging the seed from the boxes, in combination with means for depositing the seed on one side of the machine in advance of that on the other side, whereby the hills are located in a quincunx order, substantially as set forth.

2. In a seed-planting machine of the corn-planter type, the runner frame, and the seed boxes supported thereon and arranged one in advance of the other, in combination with mechanism for releasing the seed from the boxes simultaneously, whereby the planted hills are located in a quincunx order, substantially as described.

3. In a seed-planting machine of the corn-planter type, the runner-frame, the seed boxes supported thereon, and mechanism for re

leasing the seed from the boxes simultaneously, in combination with seed-channels arranged to conduct the seed on one side of the machine to the ground in advance of that on the other side, whereby the planted hills are located in quincunx order, substantially as set forth.

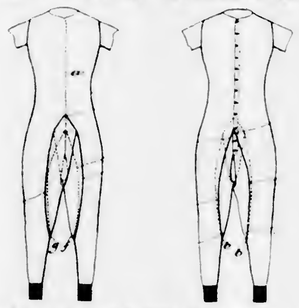
4. A machine of the corn-planter type for planting corn and similar seeds, consisting of the runners, the covering device, the seed-receptacle, means for releasing the seed from the receptacles and depositing the same in hills, and means for depositing at will the seed upon one side either directly opposite the hills deposited on the other side, or in quincunx order, substantially as and for the purposes set forth.

5. A corn-planter, in combination with a check-row device, consisting of two independent parts both adapted to be operated from either side of the machine, each of which parts governs the discharge of the seed upon one side of the machine only, whereby the tappets on the check-line operate one part before the other and the seed is deposited in quincunx order, substantially as described.

6. A check rower for corn planters, consisting of two independent parts both adapted to be operated from either side of the machine, each of which parts governs the discharge of the seed upon one side of the machine only, whereby the tappets on the check-line operate one part before the other and the seed is deposited in quincunx order, substantially as described.

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529,493. **COMBINATION-UNDERGARMENT.** JOHN HOLMES, Boston, Mass. Filed July 27, 1894. Serial No. 518,688. (No model.)



*Claim.*—1. A combination garment composed of two halves A B, and a W-shaped gore set into the crotch portion of the garment, said gore having lateral wings C', D', and central portions C, D, one overlapping the other at the back of the garment, the upper ends of said lateral wings being secured to the front of the legs adjacent the crotch, substantially as described.

2. A combination garment composed of two halves A, B, and a W-shaped gore set into the crotch portion of the garment, said gore having lateral wings C', D', and central portions C, D, one overlapping the other at the back of the garment, the upper ends of said lateral wings being secured to the front of the legs adjacent the crotch, and the lower ends of the wings being secured to the inner sides of the legs between the waist and the knee, substantially as described.

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529,494. **COASTING-SLED.** JAMES H. HOLT, Fairfield Centre, Me. Filed Mar. 30, 1894. Serial No. 505,792. (No model.)

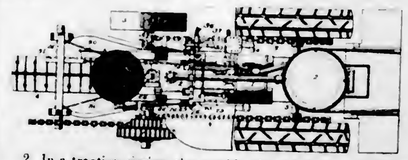


*Claim.*—The connected runners, *b*, *b*, in combination with the rock-bar, *g*; the seat, B, mounted on said bar and projecting in front of said runners; a bolt pendent centrally from the forward end of said seat; the hanger, C, fitted to rotate on said bolt and provided with arms, *r*; a steering runner pivoted adjacent its rear end to rock vertically in said arms; and the handle, *w*, on said runner all being arranged to operate substantially as described.

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529,495. **STEERING MECHANISM FOR TRACTION-ENGINES.** BYRON JACKSON, San Francisco, Cal. Filed July 8, 1893. Serial No. 479,939. (No model.)

*Claim.*—1. In a traction engine, the combination of the boiler, the forwardly-extending frames attached thereto, the axle journaled in said frames, the front wheel mounted on the axle by a gimbal bearing, the yoke connected to the wheel hub, the bow-frame on which the yoke is pivotally supported, said bow-frame being supported on the aforesaid axle, and a hydraulic piston whose piston-rod is connected to the bow frame and also to the yoke, substantially as described.



2. In a traction engine, the combination of the boiler, the forwardly-extending frames attached thereto, the axle journaled in said frames, the front wheel mounted on the axle by a gimbal bearing, the yoke connected to the wheel hub, the bow-frame on which the yoke is pivotally supported, said bow frame being supported on the axle, the hydraulic steering apparatus consisting of the hydraulic cylinder, its governing valve, the piston and piston-rod which is connected to the bow-frame and also to the yoke, and the connections whereby the attendant controls said valves, substantially as described.

3. In a traction engine, the combination of the boiler, a frame at the forward end thereof, the axle journaled in said frame, the front wheel mounted on the axle by a gimbal bearing, said wheel consisting of the shell-like hub, a rim, spokes fastened to the rim and to the hub, the interior bosses on the hub receiving the pins that connect the hub to the rings surrounding the axle and the pivot passing through the axle and said ring, the yoke connected to the hub, the bow-frame on which the yoke is pivotally supported, said bow-frame being supported on the aforesaid axle, and the hydraulic steering apparatus consisting of the hydraulic cylinder, its governing valve, its piston and piston-rod which is connected to the bow-frame and to the yoke, and connections whereby the attendant controls said valve, substantially as described.

4. In a traction engine, the combination of the boiler, the axle journaled in a frame at the forward end thereof, the front bearing and steering wheel mounted on the axle by a universal joint, the yoke connected to the hub of said wheel, the bow-frame on which the yoke is pivotally supported, said bow-frame being journaled on the aforesaid axle, the hydraulic steering apparatus consisting of the hydraulic cylinder, its governing valve, a piston and piston-rod which is connected to the bow-frame and also to the yoke, and connections whereby the attendant controls said valve, which consist of a valve-rod a vertical guide shaft, the link extending therefrom to the crank which operates an eccentric pin for moving a lever, and the valve-rod, said lever having no fixed fulcrum but supported by a crank in the end of the shaft operated by connection with the hydraulic piston-rod, substantially as described.

5. In a traction engine, the combination with the boiler and the forwardly-extending frames attached thereto, of the axle journaled in said frames, the front wheel mounted movably on said axle by a gimbal bearing, said wheel consisting of the shell-like hub, a rim, spokes fastened to the rim and the hub, interior bosses on the hub receiving the pins that connect the hub to the ring surrounding the axle, and the pivot passing through the axle and said ring and the hydraulic piston connected to the wheel in such a manner as to move it in a horizontal plane and thus direct the course in which the engine is to move, substantially as described.

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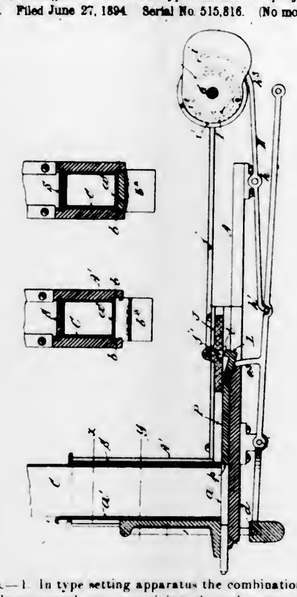
529,496. **AIR-DISTRIBUTER FOR CENTRAL-DRAFT LAMPS.** JOSEPH JAUCH, Meriden, Conn., assignor to The Bradley & Hubbard Manufacturing Company, same place. Filed Jan. 16, 1893. Serial No. 458,449. (No model.)



*Claim.*—The herein described air-distributer for central-draft lamps, having its upper end closed and constructed with two exterior horizontal shoulders formed near but below its said closed upper end in the midst of its perforations, and provided with a single exterior annular deflector confined by its inner edge between the said shoulders, located in a horizontal plane and consisting of a flat sheet-metal ring, the diameter of the entire portion of the distributer above the said deflector being smaller than the diameter of the deflector, and the diameter of that portion of the distributer immediately below the deflector being also smaller than the diameter of the deflector, and the lower end of the distributer being adapted to be supported within the central draft tube of a lamp, and to take the major part of the air passing through the same, substantially as described.



529,497. **TYPE-SETTING APPARATUS.** LOUIS K. JOHNSON, Brooklyn, assignor to The Alden Type Machine Company, New York, N. Y. Filed June 27, 1894. Serial No. 515,816. (No model.)



*Claim.*—1. In type setting apparatus the combination of an independently supported type containing channel, a type platform, a type forwarder resting upon said platform, means for reciprocating said type forwarder, a type holder and suspended counterweight, and a controlling lever operated by said type holder and counterweight to release the reciprocating mechanism, substantially in the manner and for the purpose described.

2. In type setting apparatus, the combination of an independently supported type containing channel, a type platform, a type forwarder resting upon said platform, means for reciprocating said type forwarder, a type holder and suspended counterweight, a controlling lever operated by said type-holder and counterweight, and an intermediate lever for engaging and disengaging the reciprocating mechanism, substantially in the manner and for the purpose described.

3. In type setting apparatus, the combination of an independently supported type containing channel, a type platform, a type forwarder resting on said platform, means for reciprocating said type forwarder, a type holder, and suspended counterweight, a controlling lever operated by said type holder and counterweight to release the reciprocating mechanism, and a cam rotating with said reciprocating mechanism which acts upon the controlling lever to raise the counterweight and holder to allow the types to pass under the latter, substantially in the manner and for the purpose described.

4. In type setting apparatus, the combination of an independently supported type containing channel, a type supporting platform, a type forwarder resting upon said platform, means for reciprocating said type forwarder, a type holder and a counterweight united by swinging arms, the counterweight being detachably secured to the controlling lever so that the counterweight may be swung out beyond the end of the type platform, and said controlling lever operated by said type holder and counterweight to release the reciprocating mechanism, substantially in the manner and for the purpose described.

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529,498. **DYEING ANILIN-BLACK.** FERDINAND V. KALLAB, Offenbach, Germany, assignor to the Firm of K. Oehler, same place. Filed Oct. 16, 1891. Serial No. 408,949. (No specimens.) Patented in Germany Sept. 28, 1891, No. 68,887; in Belgium Oct. 3, 1891, No. 96,660, Apr. 11, 1892, No. 99,184, and June 14, 1892, No. 100,119; in England Oct. 7, 1891, No. 17,082, and Apr. 22, 1892, No. 7,638; in Italy Nov. 6, 1891, XXV, 30,563, LX, 79, Jan. 14, 1892, XXVI, 31,123, LXII, 257, and Jan. 29, 1892, XXVI, 31,193, LXII, 321; in Spain Nov. 16, 1891, No. 12,599, and July 14, 1892, No. 13,172; in France Dec. 12, 1891, No. 218,013; in Norway Apr. 9, 1892, No. 2,760, and in Austria-Hungary Aug. 31, 1893, No. 48,007 and No. 22,018.

*Claim.*—1. The process herein described of producing anilin black on wool, hair and other animal substances or mixed textile fabrics containing either of these substances and consisting in first oxidizing the goods, second padding or printing with a mixture suitable for producing steam anilin black on cotton, and finally developing the black by steaming.

2. The process herein described of producing anilin black on wool, hair and other animal substances or mixed textile fabrics containing either of these substances and consisting in first subjecting the goods to such a feeble oxidation that the white of the wool is but little affected, second padding or printing with a mixture suitable for producing steam anilin black on cotton, and finally developing the black by steaming.

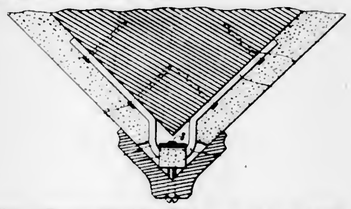
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529,499. **PRODUCING FIGURES ON ANILIN-BLACK.** FERDINAND V. KALLAB, Offenbach, Germany, assignor to the Firm of K. Oehler, same place. Filed Nov. 24, 1893. Serial No. 491,865. (No specimens.) Patented in France Dec. 12, 1891, No. 218,013; in Italy Jan. 29, 1892, XXVI, 31,193, LXII, 321; in Spain Apr. 8, 1892, No. 13,172; in Norway Apr. 8, 1892, No. 2,760; in Belgium Apr. 11, 1892, No. 99,184 and June 14, 1892, No. 100,119, and in England Apr. 22, 1892, No. 7,638.

*Claim.*—The process herein described of producing white or colored figures on aniline black on fabrics of wool, hair or other animal substances or mixed fabrics containing such substances, consisting in first subjecting the goods to such a feeble oxidation that the white of the wool is but little affected, second padding or printing them with mixtures suitable for producing steam aniline black on cotton and for producing discharging white or colors, and finally subjecting them to a steaming operation by which the developing of the black and the fixing of the discharge colors are simultaneously effected.

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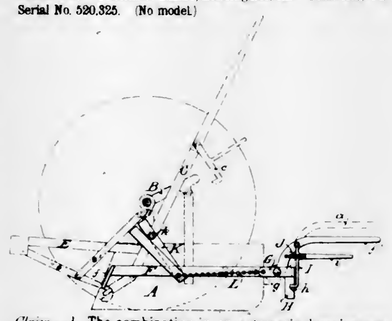
529,500. **CORNER-STRIP.** FREDERICK KEES, Minneapolis, Minn., assignor of one-half to Frank B. Long, same place. Filed Mar. 16, 1894. Serial No. 503,834. (No model.)



*Claim.*—The combination, with a corner to be plastered, and a device providing an exposed loop, of a corner-strip provided with a hook or tongue, and means for drawing the latter against the loop to bind the strip against the plastering surfaces, substantially as set forth.

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529,501. **AUTOMATIC DUMPING-GEAR FOR WHEELED SCRAPERS.** THOMAS J. KELLY, Los Angeles, Cal. Filed Aug. 14, 1894. Serial No. 520,325. (No model.)



*Claim.*—1. The combination in an automatic dumping gear for wheel scrapers of a dumping lever having a broad flat end set at an angle for penetrating the ground and opposing resistance to it and its other end terminating with a handle, with a suitable bracket to which the said lever is pivoted attached to the scraper pan, at or near its rear portion, for the purpose of partially inverting the pan and discharging the load, substantially as specified.

2. The combination in an automatic dumping gear for wheel scrapers of a dumping lever pivoted to a suitable bracket attached to the scraper pan at or near its rear portion with a retaining hook or pawl engaging in a notch in a lug or quadrant attached to the said bracket by which the lever is held in place or released as desired, substantially as specified.

3. The combination in an automatic dumping gear for wheel scrapers of a dumping lever pivoted to a suitable bracket attached to the scraper pan at or near its rear portion with a retaining hook or pawl engaging in a notch in a lug or quadrant having a spring for keeping the hook so engaged and means for releasing the same, substantially as specified

4. The combination in an automatic dumping gear for wheel scrapers of a dumping lever pivoted to a suitable bracket attached to the scraper pan at or near its rear portion with a pivoted guide having two jaws between which the lever works for the purpose of steadying the same and preventing its deflection sidewise, substantially as specified

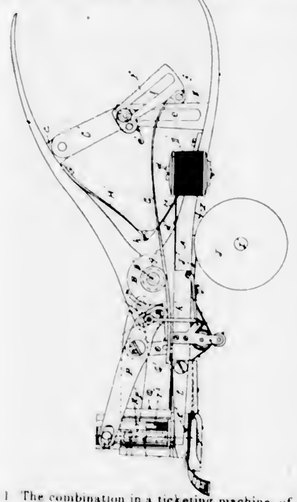
5. The combination in an automatic dumping gear for wheel scrapers of a dumping lever pivoted to a suitable bracket attached to the scraper pan with a guide having jaws between which the lever works pivoted to some convenient fixed or movable point on the scraper pan, or its levers, and having a chain or other flexible connection from its lower end to some convenient movable or fixed point on the machine, whereby its forward motion is limited, and it may be drawn backward and upward out of the way of obstructions by the motion of lowering the pan for loading, substantially as specified.

6. The combination in an automatic dumping gear for wheel scrapers of a dumping lever on each side of the pan pivoted to suitable brackets attached to the scraper pan at or near its rear portion with a shaft connecting the two levers to which they are firmly attached and by which simultaneous action of the levers is secured, substantially as specified.

7. The combination in a wheel scraper of an automatic dumping gear with a dumping lever or levers, pivoted to suitable brackets attached to the pan of the scraper having a retaining hook or pawl with releasing mechanism and working in a pivoted guide or guides all so arranged as to apply the strain of inverting the scraper in a gradual manner, and to automatically withdraw the levers from the ground as the dumping is accomplished, substantially as specified

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529,502. TICKETING-MACHINE. RAY F. LIVERMORE, Corry, Pa. Filed Aug. 9, 1893. Serial No. 482,740. (No model.)



*Claims.*—1. The combination in a ticketing machine, of a frame A having a rigid handle A' thereon and an operating handle C pivoted thereto, a lever P' coupled to and operated by said handle C, and a vertically moving plate R pivoted to and operated by said lever P', a lever P coupled to and operated by said handle C, and a vertically moving plate S' pivoted to and operated by said lever P, a movable anvil T' and a fixed anvil N', a wire spool mounted on said frame, and a dog G for feeding wire from said spool forward under said vertically movable plates R and S', a spool on said frame for supporting a ribbon of paper, a type and an impression roller between which said ribbon of paper passes, an inking roller for inking said type roller, and a guide N through which said ribbon of paper passes from said type and impression rollers to and over the fixed anvil N', substantially as and for the purpose set forth

2. The combination in a ticketing machine, of a frame A provided with a rigid handle A' and a pivoted operating handle C, a lever P' coupled to said pivoted handle C, a vertically movable plate R pivoted to and operated by the lever P', and another lever P coupled to the handle C, a vertically movable plate S' pivoted to and operated by said lever P, a laterally movable anvil T', a fixed anvil N', a wire spool mounted on said frame A, and a dog G operated by lever mechanism between the handles A' and C, for feeding wire from said spool forward under the vertically moving plates R and S', substantially as and for the purpose set forth

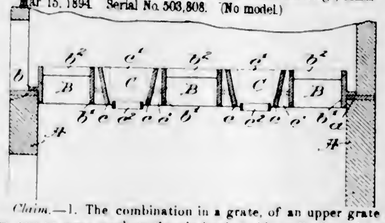
3. The combination in a ticketing machine, of a frame A having a rigid handle A' thereon, and an operating handle C pivoted thereto, a wire spool mounted on said frame and a dog for feeding the wire forward, a spool mounted on said frame, and a ribbon of paper leading therefrom through guides to and over a fixed anvil N' at the forward end of the frame A a lever P' pivoted to said handle C, and a vertically movable plate R coupled to said lever and operated thereby, and the lever P pivoted to said handle C and a vertically movable plate S' coupled to said lever and operated thereby, and a laterally movable anvil T' operated by the downward movement of the plate R substantially as and for the purpose set forth.

4. The combination in a ticketing machine, of a frame A having a handle A' thereon, a handle C hinged thereto, lever mechanism between said handles operating a reciprocating dog G, a spool of wire said wire being intermittently fed forward by said dog, staple forming and driving mechanism R, S' T' on said frame, and levers P, P' connecting the handle C with the parts R, S' of said staple forming and driving mechanism, and a spool of paper ribbon operated by hand said paper being moved forward under said staple making and driving mechanism, substantially as and for the purpose set forth.

5. The combination in a ticketing machine, of the frame A having a handle A' thereon, a handle C pivoted to the frame A, spring mechanism and lever mechanism between said handles, a reciprocating spring dog G operated by said lever mechanism, and a spring plate 1 under which a pin 3 on said dog passes during its forward traverse, and over which it passes on its return traverse, substantially as and for the purpose set forth.

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529,503. GRATE. HENRY R. LUTHER, Cambridge, Mass. Filed Mar. 15, 1894. Serial No. 503,808. (No model.)



*Claim.*—1. The combination in a grate, of an upper grate surface, one or more pockets therein having side walls diverging from the bottoms of the pockets to the top thereof, and a lower grate surface at the bottom of each of said pockets whereby the air entering the pockets through said lower grate surfaces rises vertically away from and out of contact with said side walls, substantially as described.

2. The combination in a grate, of an upper grate surface, one or more pockets therein open both top and bottom, the openings at the top being wider than the openings at the bottom, and a lower grate surface arranged in the bottom opening of each of said pockets whereby the air entering the pockets through said lower grate surfaces rises vertically away from and out of contact with said side walls, substantially as described.

3. The combination in a grate, of two or more upper grate sections having substantially vertical sides, and grate bars connecting the tops thereof, pocket sections arranged between said upper grate sections and having diverging side walls, and lower grate surfaces at the bottoms of said pockets, whereby inverted V-shaped openings are left between the diverging sides of the said pockets and the adjacent sides of the upper grate sections to cool the sides of said pockets, substantially as described.

4. In a grate the combination with a pocket section having diverging side walls, and a lower grate surface at the bottom of said pocket, of a substantially vertical wall outside said pocket section and separated therefrom to leave a A-shaped opening between it and the said diverging side walls of said pocket to cool the latter walls, and an upper grate surface at the top of said substantially vertical wall and outside the said pocket, substantially as described.

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529,504. GRATE. HENRY R. LUTHER, Cambridge, Mass. Filed Mar. 15, 1894. Serial No. 503,809. (No model.)

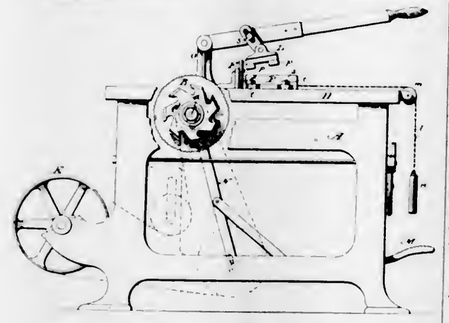
*Claim.*—1. In a grate of the type described, the combination with the upper and lower grate surfaces, the latter arranged in pockets in the former, of a baffled surface projecting from the outside of the pocket wall to restrict the area opening through which air may pass to the upper grate surface above it without restricting the area of such upper grate surfaces, substantially as described.



2. In a grate of the class described, the combination with upper and lower grate surfaces, the latter arranged in pockets in the former, of baffle surfaces arranged beneath the said upper grate surface and projecting inwardly toward each other from the adjacent side walls of the pockets to thereby restrict the opening through which air may pass to the upper grate surface above, substantially as and for the purpose specified.

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529,505. MACHINE FOR SHAPING WOOD ARTICLES. CHARLES F. OVERHISER, Williamsport, Pa. Filed Mar. 15, 1893. Serial No. 466,064. (No model.)



*Claim.*—1. In a machine for shaping wood articles, a rotatable circular saw, suitable cutters upon each side thereof, a gage having a compound adjustment, a presser-arm pivotally and adjustably connected to the table-top, a pivoted hand-lever, a presser-foot pivotally and adjustably connected with the lever, an adjustable fender and opening through which the wood blocks fall, a chute to receive the blocks, substantially as and for the purpose set forth.

2. A machine for shaping wood articles, consisting of a suitable table, a rotatable saw and cutters adjustably connected thereto, a gage having a compound adjustment, a pivoted hand-lever, a slotted plate adjustably connected thereto, a presser-foot pivoted to the plate, a presser-arm pivotally and adjustably connected to the table top, and means for rendering it automatic in its action, consisting of a cord or chain connected to the arm and extending over a grooved pulley, and a weight connected to the end of said cord or chain, substantially as and for the purpose specified

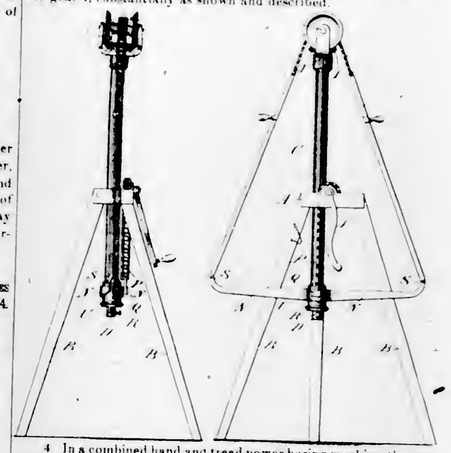
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529,506. BORING-MACHINE. NEWTON N. RIDDELL, Raymond, Nebr. Filed Aug. 25, 1893. Serial No. 484,072. (No model.)

*Claim.*—1. In a combined hand and tread power boring machine, the combination with a frame supporting a vertical hollow sliding drill stock containing a drill shaft provided at its upper end with a pinion (I), and at its lower end with a collar (U), a walking beam pivotally attached to lower end of said drill stock, draw bars connected to walking beam and chain belt connected to said draw bars, passing over a chain wheel at the upper end of drill stock substantially as set forth.

2. In a combined hand and tread power boring machine, the combination with a frame supporting a vertically sliding, hollow drill stock provided at its upper end with a head supporting a horizontal shaft on which there is a chain wheel, and at its lower end with a walking beam, draw bars connecting with said walking beam and attached to a chain belt that passes over said chain wheel.

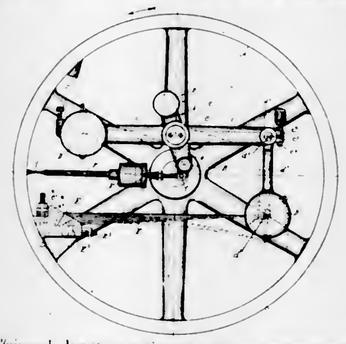
3. In a combined hand and tread power boring machine, the combination with a frame supporting a vertical, sliding, hollow, drill stock, provided at the top with a head supporting a horizontal shaft, on which there is a rocking chain wheel, said wheel being provided with a ratchet on each side; of two bevel gears placed opposite each other and provided on their inner side, with a pawl which reciprocates with ratchets on the chain wheel, and a pinion I, said bevel gear reciprocating and idling alternately with pinion 1, whereby the rocking motion of chain wheel H, produces a continuous rotation of the gear I, substantially as shown and described.



4. In a combined hand and tread power boring machine, the combination with a frame supporting a vertical, sliding, hollow drill stock containing a drill-shaft, with pinion and receptacle; of a walking beam, draw bars and belt chain, a head consisting of double ratchet bevel gearing and chain wheel, on a horizontal shaft, for reducing a rocking motion to a continuous rotary motion, a windlass composed of a chain attached to drill stock, a shaft in frame head, and a handle, substantially as shown and described and for the purpose specified

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529,507. STEAM-ENGINE GOVERNOR. WILLIAM G. SHEPHERD, Erie, Pa. Filed May 21, 1894. Serial No. 511,934. (No model.)



*Claim.*—1. In a steam engine governor, the combination with the governor wheel, of a pin to which is attached the valve gear; an arm carrying said pin; a pivot on the governor wheel and away from its center, on which said pin carrying arm is pivoted; a weight arm rigidly attached to said pin carrying arm and extending at an angle thereto; a centrifugal weight attached to said weight arm; and a spring arranged to operate centripetally and attached to a moving part of said mechanism to counterbalance the centrifugal force exerted by the weight.

2. In a steam engine governor, the combination with the governor wheel; of a pin to which is attached the valve gear; an arm carrying said pin; a pivot on the governor wheel and away from its center, on which said pin carrying arm is pivoted; a weight arm rigidly attached to said pin carrying arm and extending at an angle thereto; a centrifugal weight rigidly attached to said weight arm; and a spring arranged to operate centripetally and attached to a moving part of said mechanism, to counterbalance the centrifugal force exerted by the weight.

3. In a steam engine governor, the combination with the governor wheel; of a pin to which is attached the valve gear; an arm carrying said pin; a pivot on the governor wheel and away from its center on which said pin carrying arm is pivoted, a weight arm rigidly attached to said pin carrying arm and extending both sides

thereof at an angle thereto; a weight rigidly attached to one end of said weight arm; an auxiliary weight attached to the opposite end of said weight arm; and a spring arranged to operate centripetally and attached to a moving part of said mechanism to counterbalance the force of the weights.

4. In a steam engine governor, the combination with the governor wheel, of the pin to which is attached the valve gear, an arm carrying said pin; a pivot on the governor wheel on which said pin carrying arm is pivoted, a weight arm rigidly attached to said pin carrying arm and extending both sides thereof, a weight rigidly attached to one end of said weight arm, an auxiliary weight hung by a pivoted link to the other end of said weight arm; and a spring arranged to operate centripetally and attached to a moving part of said mechanism to counterbalance the centrifugal force exerted by the weights.

5. In a steam engine governor, the combination with the governor wheel, of a pin to which is attached the valve gear; an arm carrying said pin; a pivot on the governor wheel on which said pin carrying arm is pivoted, a counter weight, B', for a gravity balance for said pin and attached parts; a weight arm rigidly attached to said pin carrying arm and extending both sides thereof; a weight rigidly attached to one end of said weight arm; an auxiliary weight hung by a pivoted link to the other end of said weight arm, and a spring arranged to operate centripetally and attached to a moving part of said mechanism to counterbalance the centrifugal force exerted by the weights.

6. In a steam engine governor, the combination with a centrifugally acting governor weight therein, of a spring connected therewith and arranged to operate laterally, and means of varying the "strength" of said spring.

7. In a steam engine governor, the combination with a centrifugally acting governor weight therein, of a spring connected therewith and arranged to operate laterally; means for varying the tension of said spring, and means of varying the "strength" of said spring.

8. In a steam engine governor, the combination with a swinging centrifugally acting governor weight therein, of a spring link connected with said weight which controls the direction of the movement of said weight and is arranged centripetally against the movement of said weight, and means of varying the strength of said spring.

9. In a steam engine governor, the combination with the governor wheel and a swinging centrifugally acting governor weight; of a laterally tensioned longitudinally inextensible spring attached to the governor wheel and connected with the governor weight, the direction of said spring being such as to properly control the direction of the movement of the governor weight and so arranged as to centripetally restrain the movement of said weight, and an adjustable fulcrum for said spring.

10. In a steam engine governor, the combination with the governor wheel; of the pin to which is attached the valve gear; an arm carrying said pin, a pivot on the governor wheel on which said pin carrying arm is pivoted, a weight arm rigidly attached to said pin carrying arm and extending both sides thereof; a weight rigidly attached to one end of said weight arm; an auxiliary weight hung by a pivoted link to the other end of said weight arm; and a laterally tensioned longitudinally inextensible spring attached to the governor wheel and connected with said auxiliary weight and so directioned as to give to said weight the desired direction of movement and tensioned to restrain it centripetally.

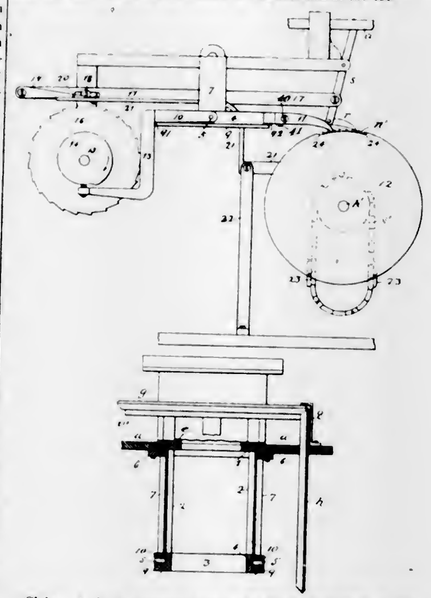
11. In a steam engine governor, the combination with the governor wheel, of the pin to which is attached the valve gear; an arm carrying said pin, a pivot on the governor wheel on which said pin carrying arm is pivoted; a weight arm rigidly attached to said pin carrying arm and extending both sides thereof; a weight rigidly attached to one end of said weight arm; an auxiliary weight hung by a pivoted link to the other end of said weight arm; and a spring link attached to said governor wheel and connected with said weight which controls the direction of movement of said auxiliary weight and is tensioned centripetally against the movement of said weight.

12. In a steam engine governor, the combination with the governor wheel; of a pin to which is attached the valve gear, an arm carrying said pin; a pivot on the governor wheel on which said pin carrying arm is pivoted, a weight arm rigidly attached to said pin carrying arm; a weight hung by a pivoted link to the end of said weight arm; and a spring link attached to said governor wheel and connected with said weight which controls the direction of the movement of said weight and is tensioned centripetally against the movement of said weight.

13. In a steam engine governor, the combination with the governor wheel and the relatively moving parts of said governor; of a dash pot connected with said moving parts; and a spring rod rigidly attached to said dash pot and the governor wheel

## 529,508. AUTOMATIC STITCH-REGULATING MECHANISM FOR KNITTING-MACHINES. WALTER H. STEWART, Franklin, N. H. Filed Oct. 5, 1891. Serial No. 407,688. (No model.)

*Brief.*—The needle cylinder is gradually lowered during the knitting of the leg and abruptly raised and lowered at the beginning and end, respectively, of the formation of the heel and of the toe.



*Claim.*—1. In an automatic stitch-tightening mechanism, in combination, a vertically movable needle cylinder, a support, a lever mounted upon said support, connections between said lever and needle cylinder, and cams, 12 and 14 to act upon opposite ends of said lever to move it to raise and lower the needle cylinder, substantially as and for the purpose described.

2. In an automatic stitch tightening mechanism, for leg or straight knitting, in combination, a vertically movable needle cylinder, a horizontal ring suspended from the machine frame and having the flange 9, a lever mounted upon said flange, connections between said cylinder and lever, and a cam having a gradual incline arranged to act upon said lever to lower said cylinder gradually, substantially as and for the purpose described.

3. In an automatic stitch-tightening mechanism for heel and toe work, in combination, a vertically movable needle cylinder, a support, a lever mounted upon said support, connections between said cylinder and lever, and a cam having steep inclines to act upon said lever to raise and lower said cylinder suddenly, substantially as and for the purpose described.

4. In an automatic stitch-tightening mechanism, in combination, a vertically movable needle cylinder, a support, a lever mounted upon said support, connections between the lever and the needle cylinder, a cam having sharp inclines to act upon one end of said lever and a cam having a gradual incline to act upon the other end of said lever, said cams being arranged to act upon said lever alternately, substantially as and for the purpose described.

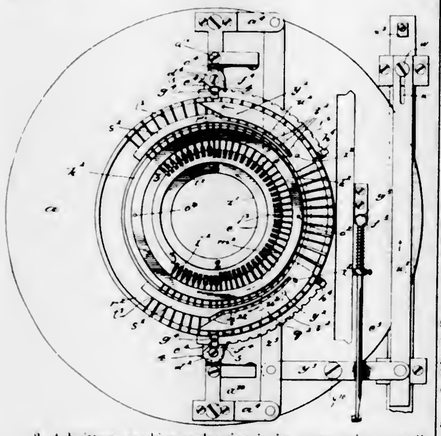
## 529,509. AUTOMATIC CIRCULAR-KNITTING MACHINE. WALTER H. STEWART, Franklin, N. H. Filed Apr 25, 1894. Serial No. 508,968. (No model.)

*Brief.*—The ring $k^3$ engages the shifters connected to the instep-needles and is eccentrically located as to the center of the cam-cylinder. When the knitting-cams are opposite the instep-needles, the portion of the ring adjacent to said cams is moved inward (to the right in Fig. 8) at the beginning of back-and-forth work and in the opposite direction at the beginning of circular work, the position of the portion of the ring adjacent to the cams as it follows them around determining the engagement or otherwise of the instep-needles.

*Claim.*—1. A knitting machine embracing in its construction a needle cylinder provided with deepened grooves, needles provided with extended tails in said grooves, a grooved needle-shifter bed, needle shifters arranged to slide in the grooves of the said bed and



engaging the tails of certain of the needles to move the latter in their grooves, and the slides engaging the needle shifters to actuate the same, notched segmental plates connected to said slides, the bar $w^3$, levers $a^4$ having double pawls engaging said plates, and connections between the said bars and levers, whereby the needles may be gradually retired and brought into operation to narrow and widen, as set forth.



2. A knitting machine embracing in its construction a needle cylinder, provided with deepened grooves, needles provided with extended tails in the said grooves, a grooved bed, $a^3$, needle shifters, $j^3$, engaging the tails of certain of the needles and a ring, $k^3$, adapted to be moved horizontally engaging the said shifters, whereby a predetermined number of needles may be rendered inoperative in the knitting of heel and toe work, as set forth.

3. A knitting machine embracing in its construction a needle cylinder provided with deepened grooves, needles provided with extended tails in said grooves, a grooved bed, $a^3$, needle shifters, $i^3$, engaging the tails of certain of the needles to move the latter in their grooves and the slides, $q^3$, engaging the needle shifters to actuate the same, combined with the needle shifters, $j^3$, engaging certain other of the needles, and a movable ring, $k^3$, engaging the said needle shifters, $j^3$, and means for actuating the said ring and said slides, $q^3$, whereby a portion of the needles may be rendered inoperative, and the remaining needles gradually retired and brought into operation to narrow and widen, as set forth.

4. A knitting machine comprising in its construction a needle cylinder provided with deepened needle grooves, the needles therein, the ring or cylinder, $c'$, provided with the slotted and grooved flange bed, $a^3$, the needle shifters, $i^3$, in the grooves of the flange bed engaging the needles, the slotted slides, $q^3$, on the upper face of the flange bed to engage the needle shifters, the segmental slides, $v^3$, on the under face of the flange bed, pins, $x^3$, extending through slots of the flange bed connecting the slides, $q^3$, and $v^3$, and means to actuate the slides, $v^3$, as set forth.

5. The needle cylinder and needles, and cam ring, combined with the needle shifters, $j^3$, and the ring, $k^3$, engaging the said shifters, said ring being adapted to move laterally so as be eccentric or concentric with the needle cylinder, as set forth.

6. The needle cylinder and needles, the cam ring, and needle shifters, $j^3$, provided with the heels, $m^3$ $n^3$, combined with the laterally movable ring, $k^3$, arranged between the said heels, whereby by the movement of the said ring, the needle shifters may be moved, as set forth.

7. The needle cylinder and needles, and the needle shifters, $j^3$, combined with the ring, $k^3$, engaging the said shifters, the flanged cam ring or bed provided with a slot pin, $o^3$, connected with the said ring and extending through the said slot, lever, $h^3$, the ratchet wheel, $l^3$, a pawl connected with lever, $h^3$, to actuate the ratchet wheel, a cam, $n^3$, connected with the ratchet wheel and adapted to act on the pin, $o^3$, to move it in one direction, a spring to move it in the opposite direction, and means to actuate the lever, as set forth.

8. The needle cylinder and needles, the cam ring, and the slotted flanged bed, $a^3$, combined with the needle shifters, $i^3$, the slides, $q^3$, provided with the slots, $u^3$, to engage the heels of the shifters, the notched segmental slides, $v^3$, means extending through the slots of the flanged bed connecting the slides, and means for actuating the slides, $v^3$, as set forth.

9. A knitting machine adapted for knitting heel-and-toe work comprising in its construction a needle cylinder and needles and cam ring, slotted slides ($q^3$) for rendering the narrowing needles operative and inoperative, a rack bar, $a'$, and connections with the cam ring for reciprocating the latter, and connections between the rack bar and slotted slides ($q^3$) for rendering the narrowing needles operative and inoperative, whereby the said slotted slides ($q^3$) may be actuated and controlled by the rack bar in exact time with the reciprocating movements of the cam ring, as set forth.

10. Means for introducing a thickening yarn consisting of the combination, with the cam ring, of the open-eye yarn guide, a pivoted yarn carrier, spring, $p^3$, the shifting ring, $k^3$, and pin, $o^4$, operatively connected with the pivoted yarn carrier as set forth.

11. Means for introducing a thickening yarn consisting of the combination, with the cam ring, of the open-eye yarn guide, a pivoted yarn carrier constructed as an angle-lever, the spring ($p^3$), a lever for operating upon one arm of the said angle-lever, the shifting ring, $k^3$, and pin, $o^4$, for acting upon the last-mentioned lever as set forth.

12. In an automatic circular knittiug machine, in combination, a needle cylinder, knitting needles, knitting cams and complemental stitch-forming mechanism, a laterally sliding ring, connections between the instep needles and said ring, and automatic means connected therewith for sliding said ring to throw the instep needles into and out of operation as set forth.

13. In an automatic circular knitting machine, in combination, a needle cylinder, knitting needles, knitting cams and complemental stitch-forming mechanism, a yarn device, a laterally sliding ring, connections between the instep needles and said ring and betweeo the yarn device and said ring, and automatic means connected therewith for sliding said ring to throw the instep needles into and out of operation and to operate said yarn device as set forth.

14. In an automatic circular knitting machine, in combination, a needle cylinder, knitting needles, knitting cams, and complemental stitch-forming mechanism, a yarn device, a sliding ring, connections between the instep needles and said ring automatic means connected with one side of said ring for sliding the latter, and means connected with the opposite side of said ring arranged to operate the yarn device upon the sliding of said ring as set forth.

15. In an automatic circular knitting machine, in combination, a needle cylinder, knitting needles, knitting cams, and complemental stitch-forming mechanism, a yarn device, a sliding ring to control said yarn device and the instep needles, connections between the instep needles and said ring and between the yarn device and said ring, slotted slides to control the narrowing needles, a reciprocating bar $a'$, devices between said bar and ring for actuating and controlling said slides and ring as set forth.

16. In an automatic circular knitting machine, in combination, a needle cylinder, knitting needles, knitting cams, and complemental stitch-forming mechanism, a yarn device, a sliding ring to control said yarn device and the instep needles, connections between the instep needles and said ring and between the yarn device and said ring, slotted slides to control the narrowing needles, means including a clutch mechanism and the bar $a'$ for changing the motion of the machine from rotary to reciprocatory and vice versa, and devices between said bar and slides and ring and clutch in virtue of which said bar controls and times said slides and ring and clutch.

17. In an automatic circular knitting machine, in combination, a needle cylinder, knitting needles, knitting cams, and complemental stitch-forming mechanism, a yarn device, a horizontally sliding ring arranged to throw the instep needles into and out of operation and to operate the yarn device, connections between the instep needles and said ring and between the yarn device and said ring oscillatory slides for throwing the narrowing needles into and out of operation, a main driving shaft, means including a clutch mechanism and a bar $a'$ for changing the motion of the machine from rotary to reciprocatory and vice versa and devices between said bar and ring and between said bar and clutch in virtue of which said ring is shifted before the motion of the knitting cams is changed from rotary to reciprocatory and vice versa.

18. In an automatic circular knitting machine, in combination, a needle cylinder, knitting needles, knitting cams, and complemental stitch-forming mechanism, a horizontally sliding ring arranged to throw the instep needles into and out of operation, connections between the instep needles and said ring, oscillatory slides for throwing the narrowing needles into and out of operation, means including a clutch mechanism and the bar $a'$ for changing the motion of the machine from rotary to reciprocatory, and vice versa, and devices between said bar and ring, and between said bar and clutch, and between said bar and slides in virtue of which said ring is shifted before the motion of the knitting cams is changed from rotary to reciprocatory and vice versa, and before said slides are put into operation.

19. In an automatic circular knitting machine, in combination, a needle cylinder, knitting needles, knitting cams and complemental

stitch-forming mechanism, an automatically operated laterally movable ring arranged to throw the instep needles into and out of operation, and connections between the instep needles and said ring as set forth.

20. In an automatic circular knitting machine, in combination, a needle cylinder, knitting needles, knitting cams and complemental stitch-forming mechanism, needle shifters, an automatically operated laterally movable ring, and suitable connections between said shifters and said ring as set forth.

21. In an automatic circular knitting machine, in combination, a needle cylinder, knitting needles, knitting cams and complemental stitch forming mechanism, needle shifters connected to the instep and narrowing needles, an automatically operated laterally movable ring and oscillatory slides arranged to engage the shifters upon the instep and narrowing and widening needles, respectively, a main driving shaft, a reciprocatory bar and devices between said shaft and bar and between said bar and ring and between said bar and slides, in virtue of which said ring and slides are actuated and controlled from said bar.

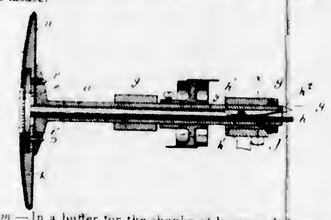
22. In an automatic circular knitting machine, in combination, an open-eye yarn guide, a pivoted yarn carrier, a laterally movable ring and automatic means for moving said ring, and connections between said ring and carrier as set forth.

23. In a knitting machine, in combination, a main driving shaft (*i*), a pulley loose on said shaft, a gear (*l*) also loose on said shaft and connected with the pulley, a gear (*m*) loose on the shaft, a collar (*o*) fast on said shaft adjacent to the gear (*m*), a clutch roll between the gear (*l*) and collar (*o*), a rack bar (*a'*) engaging the gear (*m*), and gearing intermediate of the gear (*l*) and a rack-bar, substantially as and for the purpose described, as set forth.

24. In a knitting machine, in combination, a main driving shaft, a sliding clutch part on said shaft, a rock-shaft (*b'*) having means arranged to engage said clutch part, the cam-wheel (*g'*,) the gears (*l*) and (*m*), the rack bar (*a'*),* and actuating devices between said bar and gear *l* and between said bar and cam wheel.

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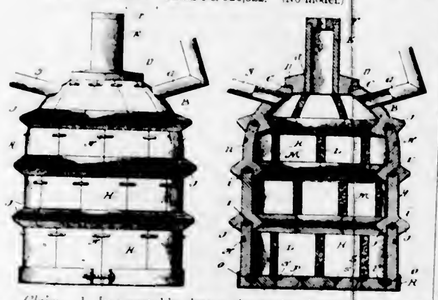
**529,510. BUFFER FOR SHANKS OF BOOTS OR SHOES.** GABRIEL THERRIEN, Brockton, Mass. Filed Jan. 12, 1894. Serial No. 496,698. (No model.)



*Claim.*—In a buffer for the shanks of boots and shoes, the combination of the tubular shaft *a* having the perforated disk *e*, the flanged disk *k* having perforations corresponding with those in the disk *e*, and the rod *h* having the spring *h'* at one end and the disk *i* at the other end, said disk *i* having pins *p* adapted to engage the perforations in the disks *e* and *k*, all as and for the purposes set forth.

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**529,511. PORTABLE CISTERN.** ORLANDO O. WALKER and ROBERT G. MOON, Bedford, Iowa, assignors, by direct and mesne assignments, to said Moon and C. S. McCloud, same place. Filed Nov. 17, 1893. Renewed Oct. 18, 1894. Serial No. 526,322. (No model.)



*Claim.*—1. In a portable cistern, the sectional cylindrical cistern body having a rounded or tapered top provided with a central opening, a flanged cistern cap adapted to be removably fitted in said central opening, a manhole pipe having its lower end fitted into said cistern cap, a removable pump platform fitted in the upper end of the manhole pipe, and filling and overflow pipes leading into the upper end of the cistern body, substantially as set forth.

2. In a cistern, the combination of a sectional body, the bottom removably fitted into the lower end of said body, and a detachable clamp band encircling the outer lower edge of the cistern body, substantially as set forth.

3. A cistern body consisting of superposed tiers of registering segmental blocks breaking joints and having registering cement grooves at their top, bottom, and inner side meeting edges, substantially as set forth.

4. In a cistern, the sectional body consisting of registering segmental blocks having registering cement grooves at their top and bottom edges, and joint pins joining said top and bottom edges of the blocks and cemented in position by the filling of said grooves, substantially as set forth.

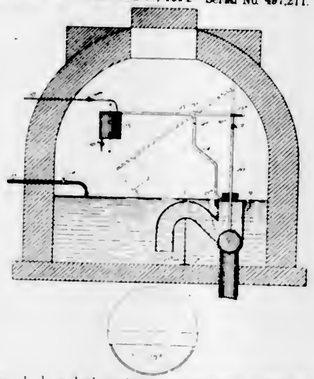
5. A cistern body consisting of superposed tiers of registering segmental blocks having cement grooves at their meeting edges, the blocks above the lower tier being further provided at both sides of their lower edges with parallel depending spaced joint lugs overlapping and embracing there-between the upper edges of the blocks immediately there-below, substantially as set forth.

6. In a cistern, the combination of the cylindrical sectional body consisting of registering segmental blocks having registering cement grooves at their top and bottom edges and their inner side edges, the blocks above the upper tier being provided with depending joint lugs embracing the upper edges of the blocks immediately there-below, cement fillings for the registering grooves, joint pins joining the top and bottom edges of the blocks, and joint hooks bridging the joint at the outer side edges of the blocks, substantially as set forth.

7. The combination with a cistern body having an annular bottom groove near its lower inner edge, of a sectional bottom having a shouldered edge adapted to receive a cement filling also placed in said annular bottom groove, said sectional bottom consisting of a series of registering flat sections or blocks provided at their top meeting edges with registering cement grooves, substantially as set forth.

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**529,512. FLUSH-TANK.** TIMOTHY WALSH and DENNIS KEOGH, Highlands, Colo. Filed Jan. 17, 1894. Serial No. 497,211. (No model.)



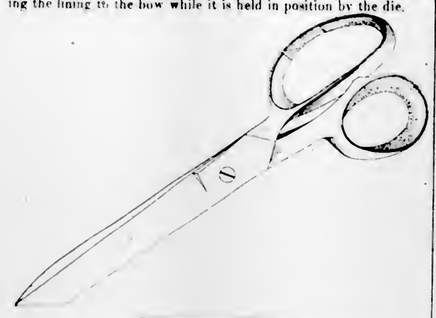
*Claim.*—1. In a flush tank, the combination with the casing provided with the discharge siphon, a valve located in a suitable casing connected with the siphon, a vented air pipe leading from said chamber, a stuffing box attached to the top of the valve chamber, the valve stem passing through said stuffing box, the lever attached to said stem, and the siphoning receptacle attached to the lever, substantially as described.

2. In a flushing tank, the combination with the casing having a suitable discharge opening, the hollow valve, the hollow perforated stem having the pet cock, the lever connected with the stem, and the receptacle attached to the lever, substantially as described.

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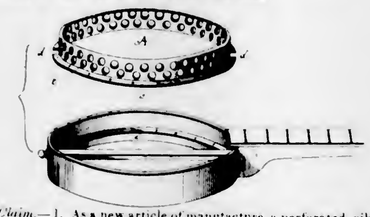
**529,513. SHEAR-BOW.** DWIGHT WHEELER and DAVID C. WHEELER, Bridgeport, Conn. Filed Mar. 31, 1894. Serial No. 506,855. (No model.)

*Claim.*—The method of lining shear bows herein described the same consisting in applying a solution of adhesive gums to the rough inner side of the bow, preparing the lining in the form of a ring, then placing the bow and the ring over an expanding die, then expanding the die so that the lining will conform to the outline of the bow in which position it is retained in any suitable manner, and finally baking the lining to the bow while it is held in position by the die.



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**529,514. BANJO.** FREDERICK H. ANDRES, New York, N. Y. Filed June 15, 1894. Serial No. 514,636. (No model.)

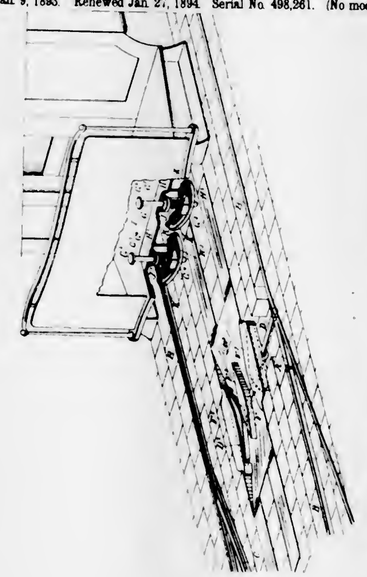


*Claim.*—1. As a new article of manufacture, a perforated, vibrating ring or rim for a banjo of less diameter than the head of the instrument, with its bottom edge flanged, and mortised to receive the head bar, secured to the interior hoop by vertical threaded bolts, as and for the purpose specified.

2. The combination, with the head of a banjo, of a perforated ring or rim spun up from one piece of metal, of a less diameter than the head of the instrument, with its bottom edge flanged, and mortised to fit over the head bar, secured to the interior hoop by vertical threaded bolts, substantially as set forth and described.

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**529,515. SWITCH MECHANISM.** SUMTER B. BATTEY, New York, N. Y., assignor to himself and Joseph W. Hartley, same place. Filed Jan. 9, 1893. Renewed Jan. 27, 1894. Serial No. 498,261. (No model.)



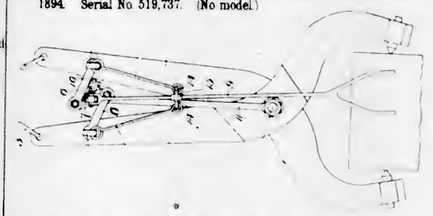
*Claim.*—1. In a switch mechanism the combination with a track plate having its ends inclined upward and formed with extensions at each end, of a switch bar pivotally connected with the switch rail, rounded off blocks held on the said bar, and spring pressed rods fitted to slide on the platform of the car and each adapted to engage one of the said blocks to shift it transversely with the said bar, and to open or close the switch rail, substantially as shown and described.

2. A switch mechanism provided with a track plate having its ends bent upwardly and formed with extensions, and housings formed on the said track plate near the sides thereof, substantially as shown and described.

3. A switch mechanism provided with a track plate having its ends bent upwardly and formed with extensions, housings formed on the said track plate near the sides thereof, and a pointed tongue arranged on the said track plate between the said housings, substantially as shown and described.

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**529,516. TONGS.** GEORGE D. BULMER, Duquesne, Pa. Filed Aug. 8, 1894. Serial No. 519,737. (No model.)



*Claim.*—1. The combination with tong levers, of a link, rods pivotally connecting the levers and the link, and a rigid handle connected to the central portion of the link and arranged to rotate the link when the handle is turned; substantially as described.

2. The combination with tong-levers, of a link, rods pivotally connecting the levers and the link, a rigid handle connected to the central portion of the link and arranged to rotate the link when the handle is turned, and links connecting the levers to a slide upon the handle, substantially as described.

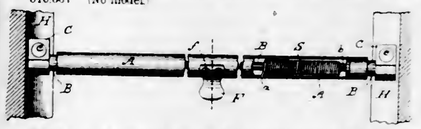
3. The combination with tong-levers, of a link, rods pivotally connecting the levers and the link, and an operating handle having a universal joint connection with the link, substantially as described.

4. The combination with tong-levers, of a link, rods pivotally connected to the pivot pin of the tong levers, and supporting the link, and a handle arranged to turn the link and operate the tongs, substantially as described.

5. The combination with tong-levers, of a link, rods pivotally connecting the levers and link, an operating rod arranged to turn the link, and links connecting the levers to a slide upon the operating rod, substantially as described.

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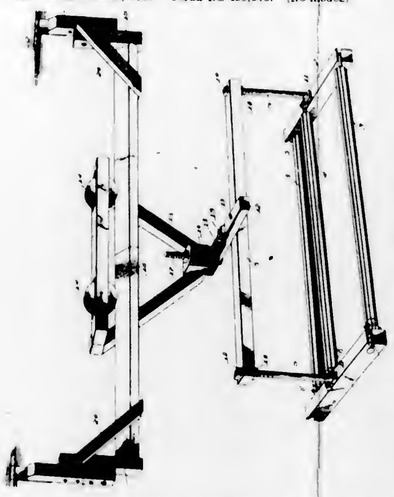
**529,517. HOLDING DEVICE FOR SPRING-ACTUATED SHADES.** EDWARD T. BURROWES, Portland, Me. Filed July 5, 1894. Serial No. 516,537. (No model.)



*Claim.*—1. In holding devices for spring-actuated shades, operating in grooves in the window-frame, a hollow shade stick having a single slot located about midway from its ends, a spring actuated rod mounted, and capable of rotation, therein, rocker-arms mounted one on each end of said rod and their free ends adapted to bear upon one side of the said groove in the window-frame, and a stationary and movable presser-pendant, the former secured to shade stick at a point near said slot, and the latter entering said slot and secured to said spring actuated rod, and adapted to rotate the same.

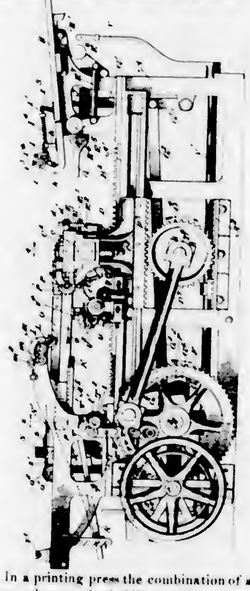
2. In holding devices for spring actuated shades operating in grooves in the window-frame, a hollow shade stick having a single perforation located about midway from its ends, a spring actuated rod somewhat longer than said shade stick, and mounted in the latter and having at each end an upturned crank or rocker-arm resting within said groove its free end adapted to bear normally against one side of the same, suitable elastic tips,—one for each of the cranks or rocker-arms,—and a stationary and movable presser-pendant, the former secured to the shade stick at a point near said perforation, and the latter entering said perforation and secured to said spring actuated rod, and adapted to rotate the same.

529,518. QUILTING-MACHINE. WASHINGTON B. CLICK and ISAAC A. CLICK, Sherman, assignors of one-half to James N. Touchstone, Ida, Tex. Filed Oct. 23, 1893. Serial No. 488,913. (No model.)



*Claim.*—In a quilting attachment for sewing machines, the combination of a laterally swinging track, a depending hanger provided at its top with rollers and having at its bottom the block 16, a horizontally disposed laterally extended bar projecting from the bottom of the block and provided with a series of perforations, a quilting frame, and vertical bolts passing through perforations of the bar and adjustably pivoting the latter to the block and to the quilting frame, whereby the latter is permitted a pivotal and a curvilinear movement, substantially as described.

529,519. SINGLE-ACTING SHEET-PRINTING PRESS. JOSEPH L. COX, Battle Creek, Mich., assignor to the Duplex Printing Press Company, same place. Filed July 25, 1893. Serial No. 481,429. (No model.)



*Claim.*—1. In a printing press the combination of a bed, a reciprocating cylinder, and means for holding said cylinder off impression during its return stroke; with inclined portions or planes at one end of the cylinder bed-bearers for raising said cylinders off impression, and means for holding said cylinder in impression on the forward stroke, substantially as described.

2. In a printing press the combination of a stationary bed, and a reciprocating cylinder and springs for holding said cylinder off impression during its return stroke; with inclined portions or planes at one end of the cylinder, bed bearers for lifting said cylinder off impression, and means for alternately compressing and releasing said springs, substantially as described.

3. The combination of the reciprocating gripper cylinder, the gripper actuating sector pivoted to one end thereof and the tappet bars at opposite ends of the press, with a rotating wheel, the swinging cam levers arranged near the said wheel and adapted to be alternately shifted by a pin on said wheel, and the connections substantially as described between the respective cam levers, and the tappet bars at opposite ends of the press, substantially as and for the purpose described.

4. The combination of the reciprocating gripper cylinder and the gripper actuating segment pivoted to the end thereof, substantially as described, with the tappet bar G lever $G^2$ rod $G^3$, and swinging cam lever $G^4$, and a rotating wheel adapted to operate said cam lever, substantially as and for the purpose herein specified.

5. The combination of the reciprocating gripper cylinder and the gripper actuating segment pivoted on the end thereof, substantially as described; with the tappet K, lever $K^2$ and cam lever $K^3$, and a rotating wheel adapted to operate said cam lever, substantially as described.

6. The combination of the reciprocating cylinder, its gripper mechanism substantially as described, the opposite tappet bars G and K for shifting said grippers, and the crank wheels and connections substantially as described for reciprocating said cylinder; with the swinging cam carrying levers $G^6$ and $K^3$, suspended about diametrically opposite each other beside one cam wheel, the wrist-pin on said wheel adapted to alternately engage and operate the said cam levers, and the connections substantially as described between the lever $G^6$ and bar G, and between lever $K^3$ and bar K, all substantially as and for the purpose set forth.

7. In a printing press the combination with the bed and cylinder of a swinging lever, an adjustable cam block attached to said lever, springs for forcing said lever in one direction, and a pin on a rotating wheel adapted to intermittently engage said cam block and shift the lever in the opposite direction and a gripper mechanism operated from said lever, substantially as described.

8. In a printing press the combination of a stationary bed, a reciprocating gripper cylinder, springs for lifting said cylinder off impression, devices for alternately compressing and releasing said springs, a main shaft and connections for reciprocating said cylinder, and the gripper shifting tappet bars at opposite ends of the press, and the swinging cam levers and connections for alternately operating said tappet bars, said cam levers being alternately operated by a pin on a crank wheel of the main shaft, substantially as described.

9. The combination of the reciprocating carriers, the cylinder journal boxes thereon, the springs for upholding said boxes, the longitudinally movable wedge keys over said boxes, devices for locking the wedges when shifted and the cylinder journaled in said boxes, and the tappets for alternately contacting and shifting said keys, substantially as described.

10. The combination of the cylinder, its journal boxes, the springs for lifting said boxes, the longitudinally movable wedge keys for depressing said boxes, and the spring actuated bolts for locking said keys when shifted, substantially as described.

11. The combination of the reciprocating gripper cylinder, with the grippers mounted on rock shafts journaled in fixed bearings on the frame; the mechanism substantially as described whereby said grippers are automatically closed upon the sheet when the cylinder finishes its forward stroke and draws the sheet from the cylinder as it travels backward to the feed end of press and means for subsequently carrying the sheet behind the grippers and dropping it upon the delivery table, substantially as described.

12. The combination of the reciprocating gripper cylinder, the delivery carriage reciprocated with said cylinder, the delivery grippers mounted on the main frame above the carriage and adapted to grip the sheet when the cylinder reaches the end of its forward stroke and draw it from the cylinder onto the delivery carriage as the cylinder and carriage move backward, and means for removing the sheet from the carriage during the next backward movement of the cylinder, substantially as described.

13. The combination of the reciprocating cylinders, and delivery carriage moving therewith, an endless belt on said carriage, and means substantially as described whereby said belt is traveled only during the backward movement of the cylinder; with grippers adapted to pull the imprinted sheet from the cylinder and drop it onto the endless belt as the cylinder moves backward, substantially as described.



14. The combination of the grippers L, M, their rock shaft *l*, *m*, the intermeshing pinions on said shafts, the crank arm $m^2$, spring-controlled rod $m^3$, bell crank lever $m^4$, cam lever $m^5$, and a cam in a wheel adapted to intermittently engage said lever, substantially as and for the purpose specified.

15. The combination of the reciprocating gripper cylinder, the delivery carriage reciprocated with said cylinder, the delivery grippers mounted on the main frame above the carriage and adapted to grip the sheet when the cylinder reaches the end of its forward stroke and draw it from the cylinder onto the delivery carriage, as the cylinder and carriage move backward, and the rock shaft on said carriage carrying tongues adapted to whip the sheet from the stationary grippers and hold it upon the carriage until the latter has reached the forward end of its travel, substantially as specified.

16. The combination of the reciprocating cylinder, and delivery carriage moving therewith, an endless belt on said carriage, and means substantially as described whereby said belt is traveled only during the backward movement of the cylinder; with stationary grippers adapted to pull the imprinted sheet from the cylinder and drop it onto the endless belt as the cylinder moves backward, and the rock shaft on said carriage carrying tongues adapted to whip the sheet from the stationary grippers and hold it upon the endless belt until the carriage has reached the end of its forward travel, substantially as described.

17. The combination of the reciprocating cylinder and the reciprocating delivery carriage movable therewith, the endless belt running over shafts journaled in said carriage the gearing between the cylinder and the adjoining one of said shafts, and clutch devices substantially as described whereby the shaft is rotated only when the cylinder moves backward, and stationary grippers for transferring the sheet from the cylinder to the belt substantially as described.

18. The combination of the bed, a reciprocating cylinder and a throw off mechanism; with a sheet delivery carriage connected to and moving with said cylinder, endless carrying tapes mounted on said carriage, and mechanism whereby the tapes are traveled in but one direction, and only during the non-printing stroke of the cylinder, and means for transferring the sheet from the cylinder to the carrying tapes substantially as set forth.

19. In a sheet printing press the combination of a reciprocating gripper cylinder, a throw off mechanism, a sheet delivery carriage reciprocating with said cylinder, endless carrier tapes mounted on said carriage and mechanism whereby said tapes are traveled only during one stroke of the cylinder, and means for transferring the sheet from the cylinder to the tapes, whereby the sheet is first transferred from the cylinder to the carriage and upon one stroke of cylinder, and then transferred from carriage to table upon the next similar stroke of the cylinder, substantially as and for the purpose set forth.

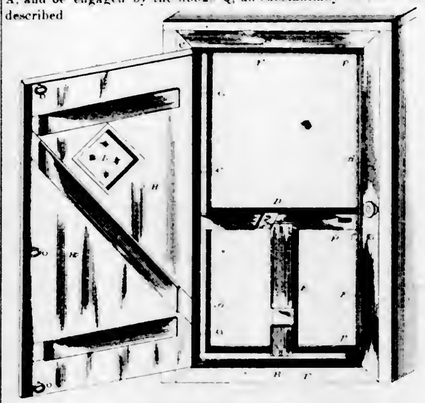
20. The combination of the cylinder, the carriage beside the cylinder, the shaft journaled on said carriage, the sheet carrying devices operated by said shaft, the ratchet fixed on the shaft, the pinion and collar at opposite sides of said ratchet loosely mounted on the shaft, the dog pivoted on said collar, and the link pivotally connected to one end of said dog and to the face of the pinion, and means for rotating the pinion as it travels with the cylinder, substantially as described.

21. The combination of the cylinder, the carriage beside the cylinder, the shaft journaled on said carriage, the sheet carrying devices operated by said shaft, the ratchet fixed on the shaft, the pinion and collar at opposite sides of said ratchet loosely mounted on the shaft, the dog pivoted on said collar, and the link pivotally connected to one end of said dog and to the face of the pinion, and means for rotating the pinion as it travels with the cylinder, and the friction rubber for retarding the rotation of said shaft, substantially as specified.

22. The combination of a stationary bed, reciprocating carriers, a main shaft, crank wheels thereon, and connections for reciprocating said carriers; a gripper cylinder and form inking mechanism mounted on said carriers; the feed board and paper stops thereon; the delivery grippers and ink fountains; and the separate sets of cam levers and connections substantially as described, for respectively operating the gripper segments,—paper stops,—and the delivery grippers, by cams upon one of the crank wheels, and the lever and connections for rotating the fountain roller, operated by a cam on the other crank wheel, all constructed and arranged to operate substantially as and for the purpose set forth.

529,520. INTERCHANGEABLE STORM AND SCREEN DOOR. JOSEPH DERITIS, Detroit, Mich. Filed Aug. 28, 1894. Serial No. 521,545. (No model.)

*Claim.*—As an improved article of manufacture, an interchangeable storm and screen door comprising in combination with a skeleton A, designed to hold a screen, a solid panel H hinged to the said skeleton, and provided with the braces B and J, which, when the said solid panel is closed, are adapted to be seated in the recesses in the bars D and E, and the upper brace I, between the sides C of the skeleton frame, thus securely bracing the latter, and the fastening eyes O which are designed to register with the perforations P in the frame A, and be engaged by the hooks Q, all substantially as shown and described.



529,521. SELF-ACTING BREECH-LOADING GUN. ALBERT G. DOUGHERTY, Chambersburg, assignor of two-thirds to Thomas B. Buskirk, Paoli, Ind. Filed Dec. 7, 1893. Serial No. 493,006. (No model.)



*Claim.*—1. The herein-described improved self-acting breech loading rifle, comprising a spring-pressed pivoted breech-block, a spring-pressed hammer, and a trigger having pivoted and rigid projections engaging respectively, said breech block and hammer whereby they will both be operated by the movement of said trigger, substantially as set forth.

2. The herein-described improved self-acting breech loading rifle, comprising a pivoted breech-block, a carrier for positioning the cartridges pivotally connected to said breech block, and a trigger having a pivoted spring-pressed cam engaging said breech-block whereby the latter will be operated by the movement of the former, as set forth.

3. The herein-described improved self-acting breech-loading rifle, comprising a pivoted breech-block, a carrier pivotally connected to said breech-block, a hammer, and a trigger having pivoted and projecting portions engaging, respectively said breech-block and said hammer whereby the latter will be operated by the movement of said trigger, substantially as set forth.

4. The herein-described self-acting breech loading rifle, compris-

ing a pivoted breech block, a carrier pivotally connected thereto, a longitudinally movable guide or holder designed to engage the cartridge and position the same, said guide or holder being pivotally connected to said breech-block which latter is designed to force the cartridge home in its operation, and an operating trigger, having a pivoted cam in engagement with said breech-block said guide or holder being moved longitudinally with the cartridge, substantially as set forth.

5. In a self acting breech-loading rifle, a pivoted breech block, a vertically movable carrier pivotally connected thereto, a longitudinally movable extractor connected to said breech-block, and a trigger for operating said breech-block, substantially as set forth.

6. In a self acting breech-loading rifle, a pivoted breech block, a vertically movable carrier pivotally connected thereto, an extractor pivotally connected to said breech-block and having two arms provided with overlapping flanged ends a narrow space or opening being left between said flanged ends to receive the rim of a cartridge shell, and an operating trigger, said breech block being designed to force the cartridge in the chamber of the rifle, substantially as set forth.

7. In a self acting breech-loading rifle, a pivoted breech-block having a lower right angular portion, a spring held cam pivoted on said right-angular portion and engaging a shoulder thereof, the trigger, and a spring held cam pivoted on said trigger and engaging the cam on said right angular portion of the breech block, whereby the latter is operated by said trigger, substantially as set forth.

8. In a self-acting breech-loading rifle, a pivoted breech-block having a lower right-angular portion and an upper enlarged portion, a spring-held carrier pivotally connected to said right angular portion, a spring-held cam also pivoted on said right-angular portion, the trigger, and a spring-held cam pivoted to said trigger and designed to engage the cam of said right angular portion, whereby the breech block and carrier may be operated by the trigger, as set forth.

9. In a self acting breech-loading rifle, a pivoted breech-block having a lower right angular portion and an upper enlarged portion, an extractor pivotally connected to said enlarged portion and comprising two arms having flanged ends, a spring-held carrier pivotally connected to the right angular portion of said breech-block, a spring-held cam also pivoted to said right-angular portion, the trigger having a spring held cam pivoted thereon and designed to engage the cam on the right angular portion of said breech block, whereby the parts may be operated by said trigger, substantially as set forth.

10. In a self-acting breech-loading rifle, a pivoted breech-block having a spring held cam pivoted on its lower portion, a hammer also having a spring-held cam pivoted thereto, and the trigger having cams for engaging said cams of the breech-block and hammer, whereby said breech-block and hammer may be operated by the movement of the trigger, substantially as set forth.

11. In a self-acting breech-loading rifle, a pivoted breech-block having a lower right angular portion, a spring-held carrier pivotally connected to said right-angular portion, a spring-held cam also pivoted to said right angular portion, a hammer having a spring-held cam pivoted thereon, a trigger having a rigid cam, and a spring-held cam pivoted to said trigger, said rigid cam and spring-held cam being designed to respectively engage the cams of the hammer and breech-block, whereby the parts may be operated by pulling the trigger.

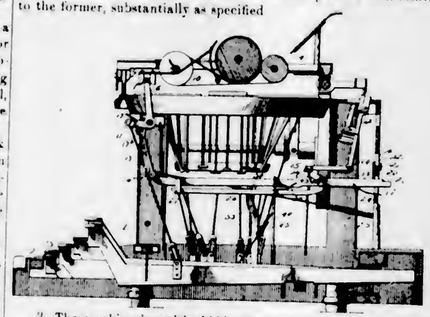
12. The herein-described improvement in self acting breech-loading rifles, comprising a pivoted breech-block having a lower right-angular portion and an upper enlarged portion carrying the firing pin, the extractor pivotally connected to said enlarged portion, the spring-held carrier pivotally connected to said right-angular portion, a spring held cam also pivoted on said right-angular portion, the hammer, a spring-held cam pivoted thereon, a trigger having a rigid cam designed to engage the cam of said hammer, and a spring-held cam pivoted on said trigger and designed to engage the cam on said breech-block, whereby all the parts are operated by pulling the trigger, substantially as set forth.

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529,522. TYPE-WRITING MACHINE. THOMAS J. DOWNING, Lincoln, Ill. Filed July 22, 1893. Serial No. 481,204. (No model.)

*Claim.*—1. In a machine of the class described, the combination with shifting mechanism for controlling the position of the carriage, automatic locking devices to secure said shifting mechanism temporarily in the upper-case position, tripping mechanism connected to the key-levers and arranged in operative relation with said locking devices, and an adjustable part or member adapted, when in its normal position, to coact with the tripping mechanism to disengage the members of the locking devices and release the shifting mechanism to enable the latter to return to the lower-case position, of shifting levers connected to said adjustable part or member and adapted respectively to move the same out of its normal position to enable the shifting mechanism to be locked permanently in the upper-case position and into said normal position to enable the shifting mechanism to be locked temporarily in the upper-case position, said shifting levers being provided with key bearing terminals, substantially as specified.

2. In a machine of the class described, the combination with shifting mechanism for controlling the carriage, a slide-bar connected to said shifting mechanism and provided with automatic locking devices, and a trip-slide slidably mounted upon the slide-bar, of a simple upper-case shifting-lever operatively connected to the trip-slide, the latter being capable of limited movement upon the slide-bar, and a compound lower-case shifting-lever operatively connected to the slide-bar and trip-slide whereby the former is disengaged from the locking devices and the latter is returned to its normal position with relation to the former, substantially as specified



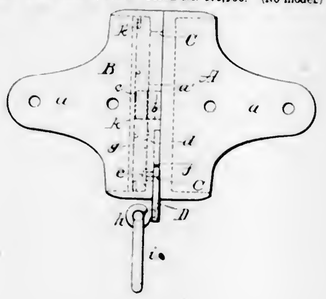
3. The combination with shifting mechanism, of a slide-bar connected to the shifting mechanism and provided with automatic locking devices, and an elongated notch having depressed terminals a trip-slide carried by the slide bar and provided with a yoke which operates in a notch of the slide-bar, said depressible bar operatively connected to the key levers and adapted to engage said yoke when the latter is in its normal position, an upper-case shifting lever operatively connected to the trip-slide, a spring for returning the slide-bar to its normal position when released, and a lower-case shifting-lever having a tripping member connected to the slide-bar and a trip-slide to disengage the former and return the latter to its normal position with relation thereto, substantially as specified.

4. The combination with shifting mechanism, of a slide bar connected to the shifting mechanism and provided with a notch 29 and a shoulder 45, a retraction spring to return the slide-bar to its normal position, a locking device to engage the slide-bar in its upper position, a trip-slide carried by the slide-bar and having a loop or yoke fitting in said notch 29, the slide-bar being provided with a pressure spring 30, an upper-case shifting-lever operatively connected to the trip-slide, and a lower case shifting-lever provided with a tripping member having a slot which embraces the slide-bar and trip-slide, said tripping member being adapted when operated to engage the shoulder 45, and a trip-pin carried by the trip slide to return the parts to their normal positions, substantially as specified.

5. The combination with shifting mechanism, a slide-bar provided with automatic locking devices, a trip-slide carried by the slide-bar and capable of limited movement thereupon, and tripping mechanism, of an upper-case shifting-lever operatively connected to the trip-slide, and a lower-case shifting-lever comprising a tripping member provided with means to engage said slide-bar and trip-slide, a key-bearing member provided with an extension which engages an arm of said tripping member, and a retraction spring connecting said members, substantially as specified.

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529,523. HORSE COLLAR FASTENER. OWEN DRAKE, Armada Mich. Filed June 6, 1893. Serial No. 476,766. (No model.)



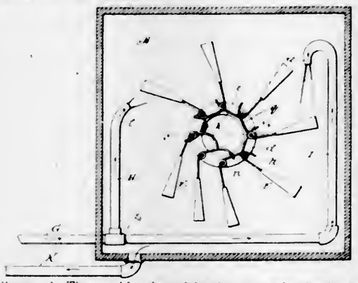


*Claim.*—1. In a horse collar fastener, the combination with two socket pieces having substantially flat inner faces adapted to engage each other, one socket piece provided with a tongue enlarged at its outer end and the other furnished with an elongated slot extending approximately the length of the socket piece, one end of this slot enlarged, and the face of the socket piece recessed adjacent to the enlarged end of the slot, and a pivoted latch located in the recess in position to normally cover the enlargement in the slot whereby to confine the tongue within the slot and permit a free sliding movement from one end of the slot to the other without permitting the tongue to accidentally escape therefrom, substantially as set forth.

2. In a horse collar fastener, the combination with two socket pieces, one having an elongated slot, and a pin having an enlarged end adapted to operate in said slot, of pins or lugs projecting inwardly from the walls of the slotted socket-piece, and a plate on said pins or lugs adapted to prevent the conflict of the collar proper with said first-mentioned pins, substantially as set forth.

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529,524. WATER-MOTOR. FRANK FENLEY, New Orleans, La., assignor to Edgar B. Kemp, same place. Filed Jan. 24, 1894. Serial No. 497,927. (No model.)

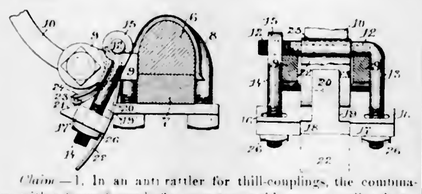


*Claim.*—1. The combination with a box or casing having a draw off or discharge pipe, and the supply pipe leading into the casing and having the discharge nozzles H, and I; of the wheel comprising the rings arranged at intervals and connected by the cross pins or rods, the blades having their stems curved so as to bring each blade in the same rotatable plane and journaled upon the cross pins or rods alternately in the outer spaces between the rings; said stems being also provided with projected and curved arms, and a support having the stop extending into the wheel and adapted to engage said curved arms, substantially as specified.

2. The wheel comprising the rings arranged at intervals and connected by the cross pins or rods, in combination with the blades having their stems curved so as to bring each blade in the same rotatable plane, and journaled upon the cross pins or rods alternately in the outer spaces between the rings, said stems being also provided with projected and curved arms and a support having the stop extending into the wheel and adapted to engage said curved arms, the whole adapted to operate in a box or casing, substantially as specified.

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529,525. ANTIRATTLER FOR THILL-COUPLINGS. ALLAN FRASER, Providence, R. I. Filed Sept. 17, 1894. Serial No. 523,185. (No model.)



*Claim.*—1. In an anti rattler for thill-couplings, the combination with a frame formed of a cross-arm, a side-arm extending downward therefrom, a second side arm adjustably secured to the cross-arm, and a device for connecting the lower ends of the side arms, of a spring secured to the cross-arm and depending therefrom.

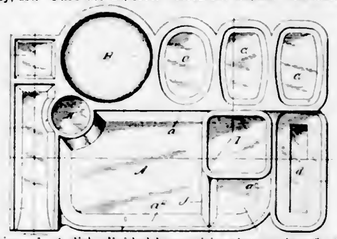
2. In an anti-rattler for thill-couplings, the combination with a bent spring having leaves adapted to be spread outward, of a frame to which the spring is secured, a wedge located between two of the leaves of the spring, and mechanism for drawing the wedge into place to separate the leaves.

3. The combination with a frame composed of the arms 12 and 13 screw-threaded at their ends, the side arm 14 having the screw-threaded collar 15 adjustable on the end of the arm 12, and a cross-bar connecting the ends of the arms 13 and 14, of a spring secured to the arm 13 and depending therefrom

4. The combination with a frame consisting of the arms 12 and 13 screw-threaded at their ends, the arm 14 screw-threaded at its lower end and having the screw-threaded collar 15 for engaging the end of the arm 12, the cross-bar 17 having the slots 16—16 through which the lower ends of the arms 13 and 14 extend, the recess 18 and the wedge 19, and the nuts 26—26 on the ends of the arms 13 and 14, of a spring, consisting of the leaves 22 and 23 connected by the tubular portion 25, embracing the arm 12, and the leaf 24 bent upward from the leaf 23, the leaf 22 being considerably longer than those marked 23 and 24 and being seated in the recess 18 of the cross-bar, as described.

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529,526. PLATE OR PLATTER. WILLIAM C. GASKILL, Kansas City, Mo. Filed Oct. 24, 1893. Serial No. 489,022. (No model.)



*Claim.*—1. A dish, divided by partitions into various food receptacles, and a receptacle for napkin, spoons, knife and fork, which is open at its front end, and has the bottom at its front end extending obliquely upward as at *g*, substantially as and for the purpose set forth.

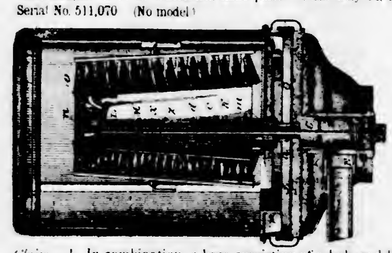
2. A dish, divided by partitions into various food receptacles, in combination with a soup-bowl resting in one of said receptacles, and having an arm extending to the front wall of the dish, and subdividing the said receptacle to form a cracker-receptacle, substantially as set forth.

3. A dish, comprising a receptacle having an annular wall notched at two points in its side, and a soup-bowl within said receptacle, having a projection engaging one of said notches, and an arm projecting from the soup bowl having a projection engaging the other notch, substantially as set forth.

4. A dish, divided by partitions into various food-receptacles, a receptacle opening at the rim of the dish and having its bottom at this point inclined, and a receptacle for a glass and a cup, having a drain cavity in its bottom in combination with a soup-bowl removably occupying one end of one of the receptacles, substantially as set forth.

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529,527. TUMBLER-WASHER. SILAS S. C. GASKELL, Canton, Ohio, assignor to F. M. Whiteman, same place. Filed May 14, 1894. Serial No. 511,070. (No model.)



*Claim.*—1. In combination, a base consisting of a hub, and hollow arms radiating therefrom, a rim having return pipes in communication with said hollow arms and terminating above the same, a frame mounted upon the base, said frame comprising a hollow hub, hollow arms radiating therefrom and communicating therewith, a water wheel carried by said arms, tubes extending upward from the wheel and communicating with the last named hollow arms, a circular perforated tube to which the vertical tubes are attached, a central vertical tube for supplying water to the inside of the tumbler, a tube surrounding the central tube, brushes carried by the surrounding tube and the tubes connected with the wheel and a valve for controlling the water supply, substantially as herein described.

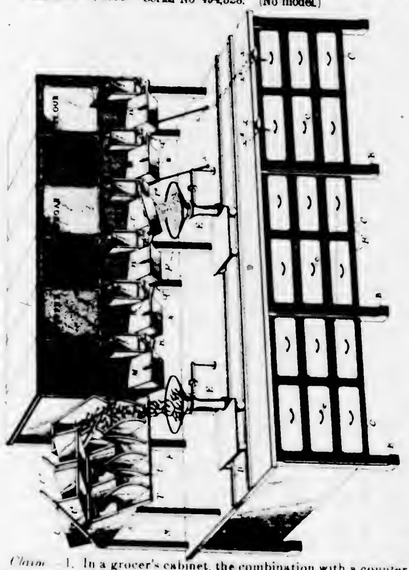
2. The combination in a tumbler washer of the motor wheel G, having tubular arms *f* of a tubular frame, erected on the wheel, the

tubes of the frame to register with the tubes in the arms of the wheel, brushes pivotally secured to the tubular frame, a central tube c adapted to conduct water from the place of supply to the inside of the tumbler, and to the tubular arms of the motor wheel, thence through the vertical tubes H, to the annular tube J, from which it is discharged upon the outside of the tumbler, tube K as a support for the brush L, and brushes N, tubes B and F adapted to conduct water from the place of supply to the motor wheel, whereby the wheel and brushes, inside and outside of the tumbler are rotated to scrub or wash simultaneously the two sides of the tumbler, the inclosing case and a valve to regulate the supply of water, substantially as described.

3. In a tumbler washer, a rotary circular frame, vertical tubes rising from its periphery, brushes pivoted thereto, the upper ends of which swing inward, a vertical tube rising from the hub of the frame, carrying inner opposing pivotally attached brushes having their lower ends held outward by springs, and means for rotating said circular frame, substantially as set forth

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529,528. GROCER'S CABINET. JOSEPH M. GOFF, Ruston, La. Filed Dec. 21, 1893. Serial No. 494,328. (No model.)



*Claim.*—1. In a grocer's cabinet, the combination with a counter having a track, and the wheeled scales; of a compartment box supported above the counter at one side of the track and having short off-standing inclosed discharge chutes projected from the front lower end thereof and disposed directly above said track, said chutes being provided at their lower outer edges with downwardly yielding flexible flanges, pivoted gates inclosing the outer ends of said chutes beyond the flanges thereof, and latches to lock the gates in their closed position

2. In a grocer's cabinet, the combination with a counter having a track, and the wheeled scales; of a compartment box supported above the counter at one side of and away from the track and provided with an inclined bottom and a short front feed slope declining downwardly and sharply from the inclined bottom as a front continuation thereof, short rectangular side-inclosed discharge chutes projected from the front lower side of the compartment box with their bottoms in alignment with the short feed slope, and gates arranged at the outer ends of said discharge chutes, substantially as set forth.

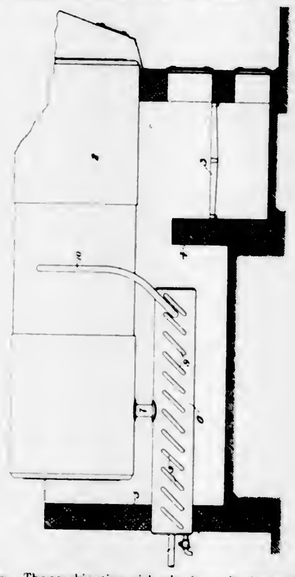
3. In a grocer's cabinet, the combination with the compartment box having front lower discharges, of a series of supplemental glass covered boxes or receptacles mounted on the front wall of said compartment box and having lower beveled ends provided with discharge openings, and front locking notches, gates pivoted to the lower beveled ends of said boxes or receptacles and having slotted handles, and drop latches mounted on the handles of said gates and provided with finger flanges moving in the slots thereof, substantially as set forth.

4. In a grocer's cabinet, the combination with the counter having a track and the wheeled scales; of a supporting frame arising from the counter and having a transverse series of parallel bearing bars, and separate pairs of converging chute boards disposed at an angle over the track, and tilting boxes or receptacles having axles journaled on top of said supporting frame, substantially as set forth.

5. In a grocer's cabinet, the combination with the counter having a track and wheeled scales, of a frame arising above the counter at one side of the track and having a transverse series of parallel bearing bars, a front inclined chute rail and a rear rest rail, said bearing bars being inclined both ways from the center, separate pairs of converging chute boards attached to said chute rail, and normally overbalanced tilting boxes or receptacles having axles journaled on said bearing bars, handles, and front discharge openings adapted to be lowered between the chute boards, substantially as set forth

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529,529. STEAM-BOILER. THOMAS GUNNING, Pittsburg, Pa. Filed July 12, 1893. Serial No. 480,234. (No model.)



*Claim.*—The combination with a horizontal boiler, of a horizontal drum located beneath the same in the rear of the bridge-wall return-tubes extending laterally from the sides of the drum, the connections of the tubes being out of vertical alignment, a water-leg connecting the drum and boiler, a pipe leading from one side of the drum to the boiler below its water line, and another pipe leading from the other side of the drum to the boiler above its water line; substantially as described

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529,530. CABLE-SWITCH. GEORGE C. ORMEROD, Asbury Park, N. J. Filed Feb. 9, 1894. Serial No. 499,662. (No model.)

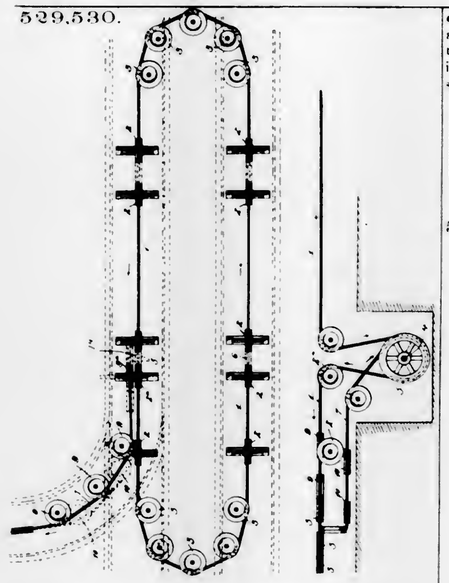
*Claim.*—1. In a cable railway system, the combination with main and branch line cables, of an interposed switch-cable, a portion of the switch-cable and a contiguous portion of the main-line cable being capable of lateral deflection to cause the alignment of either with the main portion of the main line cable, substantially as specified.

2. In a cable railway system, the combination with main and branch line cables, of an interposed switch cable, and twin switch-pulleys arranged to carry contiguous surface-portions of the main-line and switch-cables and capable of lateral movement whereby said portion of either cable may be aligned with a main portion of the main-line cable, substantially as specified.

3. In a cable railway system, the combination with main and branch line cables, a driving drum encircled by one side of the main-line cable to be actuated thereby, and surface and loop pulleys carrying said cable, of an independent switch-cable carried by surface and direction or return pulleys and having one end thereof encircling said driving-drum, and contiguous surface pulleys of the main-line and switch-cables adjacent to the said drum being connected for uniform rotation, and being capable of movement laterally to cause alignment of either of the portions of the cables carried by said pulleys with an adjacent portion of the main-line cable on the opposite side of the driving drum, substantially as specified.

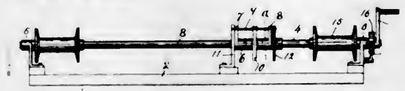


529,530.



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529,531. WINDLASS. MARSHAL T. REEVES, Columbus, Ind., assignor to Reeves & Co., same place. Filed Aug. 29, 1894. Serial No. 521,586. (No model.)



*Claim.*—1. In a windlass, the combination of a shaft formed of two sections arranged axially in line and each carrying a winding-drum secured thereto so as to turn therewith, a sleeve secured to one of said shaft-sections so as to turn therewith and forming a bearing for the end of the other shaft-section, a fixed bracket arranged adjacent to that end of the sleeve which is secured to the shaft section, a face-plate secured to the other shaft-section adjacent to the opposite end of the sleeve, and mechanism carried by the sleeve and adapted to engage said bracket or said face-plate, whereby the two shaft-sections may be turned together as one shaft, or one section be locked in position and the other section be turned independently thereof, substantially as and for the purpose set forth.

2. In a windlass, the combination of the shaft formed of two sections arranged axially in line and each carrying a winding-drum secured thereto so as to turn therewith, the sleeve secured to one of said shaft-sections so as to turn therewith and forming a bearing for the end of the other shaft-section, the bolt mounted so as to slide in lugs projecting from said sleeve, the fixed bracket arranged adjacent to one of said lugs and provided with a perforation adapted to register with the end of the bolt carried by said lug, and the face plate secured to the shaft-section adjacent to the other end of the sleeve and provided with a series of perforations adapted to register with the said bolt, all arranged to co-operate substantially as and for the purpose set forth.

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529,532. SWITCHING APPARATUS FOR INCANDESCENT ELECTRIC LAMPS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Apr. 23, 1889. Serial No. 308,270. (No model.)

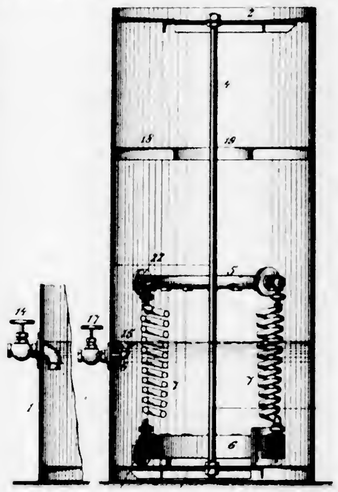
*Claim.*—1. The combination with the positive and negative mains of an electric light system, of a branch from one of the mains including an incandescent lamp, the said branch being permanently connected to the lever of a three point switch, a branch from the other main permanently connected to the lever of a second three point switch, contact points, two for each switch, the contact points of the two switches being connected together in pairs.

2. The combination with a translating device and a source of electricity permanently connected together, of a pair of switches, each provided with two contact points united by circuit connections and with movable contact making members adapted to close circuit through said contact points, said members being connected, respectively, directly to the opposite mains of said source of electricity, substantially as described



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529,533. EVAPORATING APPARATUS. HORACE SEE, New York, N. Y. Filed Jan. 10, 1894. Serial No. 496,362. (No model.)



*Claim.*—1. In an apparatus substantially as hereinbefore set forth, the combination of a receptacle for material to be acted upon, two chambers arranged within said receptacle, one of the chambers being of larger cross-sectional area than the other, a coiled tapering fluid conduit connecting said chambers, the part of said coil of least diameter being connected to the chamber of greater cross sectional area, an inlet pipe connected with the smaller chamber, and an outlet leading from the larger chamber; substantially as described

2. In an apparatus substantially as hereinbefore set forth, the combination of a vertical receptacle for material to be acted upon, two chambers disposed one above the other in said receptacle, the lower of said chambers being of larger cross-sectional area than the other, a coiled tapering tubular fluid conduit connecting said chambers, the part of said coil of greatest diameter being connected to the upper chamber, an inlet pipe connected with the upper chamber, and an outlet leading from the lower chamber; substantially as described.

3. In an apparatus substantially as hereinbefore set forth, the combination of a vertical receptacle for material to be acted upon, two tubular chambers located in said receptacle one above the other, the lower chamber being of larger cross sectional area than the upper one, a plurality of coiled tapering fluid conduits connecting said chamber, the part of said conduits of least diameter being connected to the lower chamber an inlet pipe connected with the upper chamber, and an outlet leading from the lower chamber; substantially as described.

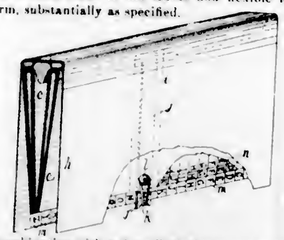
4. In an apparatus substantially as hereinbefore set forth, the combination of a receptacle for material to be acted upon, two tubular chambers arranged in said receptacle one above the other, and a plurality of tubular fluid conduits connecting said chambers, the ends of said conduits being connected to the chambers on the median line of said chambers and the bodies of the conduits being staggered or protruding on opposite sides of said line; substantially as described.

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529,534. PAPER-FILE. EDWARD A. SHARP, Rogers Park, Ill. Filed Jan. 13, 1894. Serial No. 496,828. (No model.)

*Claim.*—1. The combination with a three limbed backpiece with concaved corners and arm from central limb thereof, of a book in

each of said corners, studs to the leaves and flexible lock on said studs and arm, substantially as specified.

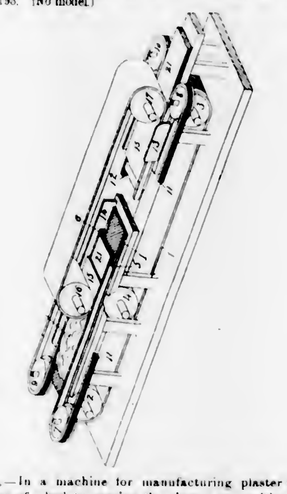


2. The combination with a three-limbed back-piece with central arm, of index-notched books on each side of said arm, reinforced outer book-leaves with studs and flexible lock over studs and arm, substantially as specified.

3. The combination with a three-limbed back-piece with concave corners, said parts forming a single and rigidly connected piece of books in said corners and an outer cover attached to said back, substantially as specified.

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**529,535. MACHINE FOR MANUFACTURING PLASTER-BOARDS.** EUGENE C. SMITH, New York, N. Y. Filed May 22, 1893. Serial No. 475,193. (No model.)



*Claim.*—In a machine for manufacturing plaster boards, the combination of a bed to receive the plaster composition, an imperforate endless flexible traveling mold 1 adapted to carry forward and work the plaster composition, endless imperforate traveling side molds 5 and 6, traveling at the same speed as mold 1 and adapted to shape the sides of the board, and rollers, 2, 3, 7, 8, 9, 10, adapted to actuate said molds and transmit pressure to the plaster composition, substantially as described.

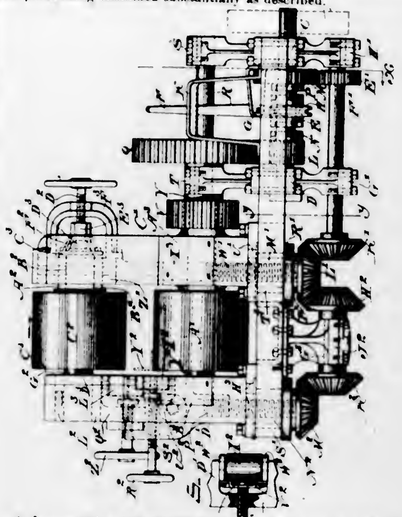
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**529,536. MACHINE FOR BENDING SPECIAL SHAPES OF IRON, STEEL, OR OTHER METAL.** FREDERICK SOTTER, Coatesville, Pa. Filed May 14, 1894. Serial No. 511,117. (No model.)

*Claim.*—1. A machine for bending metal, a frame, a main shaft A, a vertically adjustable roll, two horizontal rolls below the latter, mechanism connected with said shaft for rotating said latter rolls, and mechanism for laterally adjusting the journal of said first roll, and vertical rolls adjustable relatively to said horizontal rolls said parts being combined substantially as described.

2. In a machine for bending metal, horizontal rolls another horizontal roll located adjacent thereto and adjustable vertically and longitudinally, vertical rolls located in proximity thereto, one of said vertical rolls being adjustable vertically and horizontally, the others being adjustable horizontally, said parts being combined substantially as described.

3. In a machine for bending metals, a base with a driving shaft journaled therein, a roll having journals at each end thereof, the same being provided with box bearings, rods under each journal of said roll supporting said boxes and having threaded lower ends, sleeves swiveled in said base and having screw threads engaging said rods, and mechanism connected with sleeves, and two rolls in substantially the same plane, and below said first roll and shaft for rotating said sleeves, said parts being combined substantially as described.



4. In a machine for bending metals, a base, a driving shaft having clutch mechanism thereon, a roll having its journal bearing laterally adjustable, rods supportiog said journal bearings, mechanism connected with said rods and shaft for vertically adjusting said bearings, two rolls adjacent to said first roll, and mechanism connected with said two rolls and shaft for rotating the said two rolls, said parts being combined substantially as described.

5. In a machine for bending metals, a base, a driving shaft, with a clutch mechanism thereon, a roll with laterally adjustable bearings, rods supporting said bearings, mechanism connected with said shaft and rods for vertically adjusting the latter, two rolls journaled in attachments to said base, and gears on the journals of said two rolls meshing with a pinion on said shaft for rotating said rolls, said parts being combined substantially as described.

6. In a machine for bending metals, a frame a main shaft A, a roll vertically adjustable by mechanism from said main shaft, two horizontal rolls, mechanism connected with said shaft for rotating said latter rolls, and mechanism for laterally adjusting said first roll, from the exterior when the machine is in operation, substantially as described.

7. In a machine for bending metal, the herein described device for laterally adjusting a roll and its journal, the same consisting of the box $A^3$ and the journal $B^3$ adapted to carry a roll $C^3$, said journal having the head $G^3$ thereon and the yoke $F^3$ attached to said box and means for imparting motion to said yoke, consisting of the threaded stem $I^3$ secured thereto, and provided with the yoke $F^4$ and the hand wheel $E^3$ substantially as described.

8. In a machine for bending metals, an upper and two lower horizontal rolls, mechanisms for laterally and vertically adjusting the bearings of said upper roll, mechanism for simultaneously rotating said lower rolls, vertical rolls adjacent to the ends of said horizontal rolls, and mechanism for horizontally adjusting said vertical rolls, said parts being combined substantially as described.

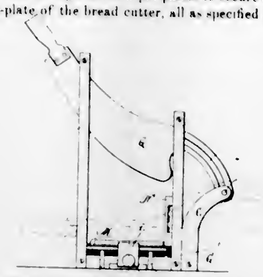
9. In a machine for bending metal, the roll $C^3$ adjustable horizontally and vertically, whereby the distance between the adjacent rolls or the space between the end of said roll $C^3$ and the edge $D^3$ can be varied said roll being journaled in boxes supported on the stems $I^3$ and X' the stem $I^3$ being provided with a knuckle as shown, means for actuating said stems, rolls A', B' and means for actuating the same, said parts being combined substantially as described.

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**529,537. BREAD-CUTTER.** SIVERT STRANDE, Chicago, Ill. Filed June 22, 1894. Serial No. 515,374. (No model.)

*Claim.*—1. In a bread cutter, a base-plate on which the loaf to be sliced is placed; upright slotted guide-posts in which the knife is vertically guided; a swinging board hinged to one of the uprights which guide the knife, and provided with a bracket and a set-screw by which the swinging board is secured to the base-plate at any desired angle to the knife; and a convex knife with a reversely curved slot in its shank through which a pin passes to secure it to a bracket on the base-plate of the bread cutter, all as specified and shown.

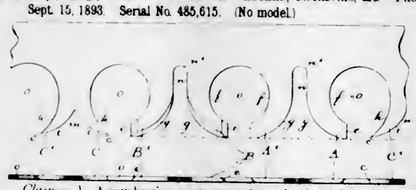




2. In a bread cutter, a block secured to the under side of the base-plate of the bread cutter, and provided with an internal screw-thread to receive an adjusting bolt and a recess in which the slice-gage slides, a screw-bolt passing through the slice-gage and into the block attached to the under side of the base-plate; a slice-gage, the upper portion of which rests on a ledge at one end of the base plate, the lower portion sliding in the block under the base-plate, a ledge located at the end of the base plate with a space between it and the end of the base plate in which the edge of the knife passes as the slice is cut, as specified.

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**529,538. SAW.** WILLIAM B. VAUGHAN, Owensville, Mo. Filed Sept. 15, 1893. Serial No. 485,615. (No model.)



*Claim.*—1. A saw having cutting teeth, each of which has a short cutting edge $e$ substantially perpendicular to the line of cutting, and back of said cutting edge the smooth concave front edge $f$ and smooth convex rear edge $g$ which start backward in approximately parallel curves from the extremities of said cutting edge, substantially as set forth.

2. A saw having oppositely-beveled cutting teeth with short vertical cutting edges $e$, and interposed clearing teeth with short transverse clearing blades $e$, each of said cutting and clearing teeth having a concave front edge and a convex rear edge which extend smoothly backward from the cutting edge or blade to the meeting edges of the adjacent teeth, substantially as set forth.

3. A cross-cut saw having the pairs A, A', and B, B', of oppositely-cutting teeth arranged back to back and having short vertical cutting edges, the front of each tooth being concave inward from its cutting edge so as to form the circular cavities $o$ between the pairs, and each tooth having a long convex rear edge forming the deep slot $n$ between the paired teeth, the walls of said cavities $o$ and slots $n$ extending in unbroken lines from one cutting edge to the next cutting edge, substantially as set forth.

4. In a saw, cutting teeth each having a short vertical cutting blade at its forward extremity, a smooth concave front edge extending inward from said cutting blade, and a long convex rear edge beveled from point to base, substantially as set forth.

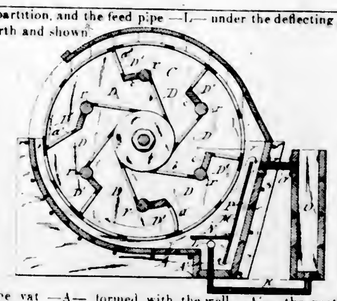
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**529,539. MACHINE FOR DYEING.** LEONARD WELDON, Amsterdam, N. Y., assignor to the Klauder-Weldon Dyeing Machine Company, same place. Filed Mar. 21, 1893. Serial No. 467,070. (No model.)

*Claim.*—1. In combination with the vat, an axially horizontal dipping-wheel formed with partitions extending from end to end of said wheel and in zig-zag directions across the radius of the same, and having at the intermediate corners of the partitions rollers extending lengthwise thereof as set forth.

2. The improved dipping-wheel divided into compartments D, D, formed with recesses, D', D', in the outer portions of said compartments and with benches $c$, $c$, at the junction of the recesses and inner portions of the compartments, and having rollers, $r$, $r$, extending lengthwise of the benches adjacent to the inner portions of the compartments substantially as and for the purpose specified.

3. The combination with the dye liquor vat, of the partition —M— extending along one side of the vat, the deflecting plate —N— on said partition, and the feed pipe —L— under the deflecting plate, as set forth and shown.

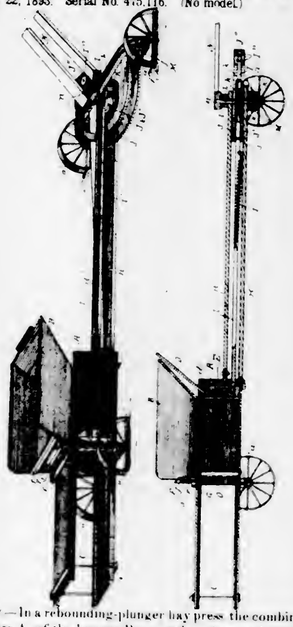


4. The vat —A— formed with the well —A'—, the partition —M— extending into said well, and the deflecting plate —N— over the well, in combination with the perforated pipe —L—, feed pipe —R— connected to the perforated pipe, and the steam pipe communicating with the perforated pipe at its junction with the feed pipe as set forth and shown.

5. The combination of the vat —A— formed with the well —A'— the partition —M— extending into said well, the deflecting plate —N— extending from the partition over the well, the supply tank —O—, overflow pipe —U'—, the feed pipes —R—R— extending from the bottom of the supply tank beneath the well —A'— and into the same, and the perforated pipe —L— extending lengthwise of the well and connected to the pipes —R—R—, substantially as described and shown.

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**529,540. HAY-PRESS.** NORMAN B. WILDER, Kansas City, Mo., assignor to the Kansas City Hay Press Company, of Missouri. Filed May 22, 1893. Serial No. 475,116. (No model.)

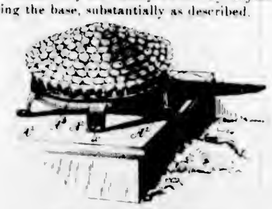


*Claim.*—In a rebounding-plunger hay press the combination with the chamber A, of the hopper B, cross bar $f$ secured at the rear end of said hopper, the tucker F forming the rear end of said hopper, the tucker bar F' secured to said tucker F, the coil springs $f''$ secured to said cross bar $f$ and to said tucker bar, and studs inclosed by said coil springs secured to said cross bar $f$, and working in sockets in said tucker bar, substantially as and for the purposes described.

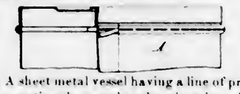
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**529,541. COMBINED BRUSH AND SCRAPER FOR CLEANING BOOTS OR SHOES.** JAMES C. WOOD, Indianapolis, Ind., assignor of one-half to Edwin L. Brown, same place. Filed July 9, 1894. Serial No. 516,899. (No model.)

*Claim.*—In a device of the character specified, the combination with a base, and means for firmly securing the same to a platform or doorstep, said base having an upwardly extending circular ring or flange, and a lug extending inwardly from said ring, of a brush having a circular body portion fitting within said circular ring, and provided with a number of notches for engagement with said lug, whereby said brush may be readily rotatively adjusted for wear, without moving the base, substantially as described.



529,542. **KEY-OPENING SHEET-METAL VESSEL AND METHOD OF MAKING SAME.** JOHN ZIMMERMAN, Chicago, Ill., assignor to the National Key-Opening Can Company, same place. Filed Jan. 30, 1892. Serial No. 419,754. (No model.)



*Claim.*—1. A sheet metal vessel having a line of proximate punctures partially separating the metal, and an interior wire or its equivalent secured beneath said punctures with an end thereof protruding, the punctures being closed by solder.

2. A sheet metal vessel provided with a continuous groove in its inner surface, a series of proximate punctures through the metal along the groove, a wire or its equivalent in said groove having a protruding end, and solder applied to prevent leakage at the punctures.

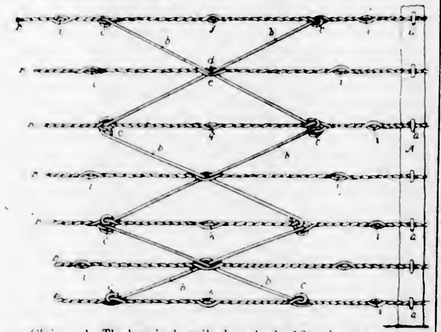
3. A sheet metal vessel having a continuous groove in its inner surface, and a series of punctures through the metal of the groove, combined with a wire or its equivalent in said groove having a protruding end, and solder closing the punctures and securing the wire.

4. A closed sheet metal vessel provided with an inner groove and a wire or equivalent metal filament arranged within said groove and protruding at one end to the exterior of the vessel, said groove being of proper depth and conformation to closely embrace said wire for more than half its circumference, whereby the latter is held therein independent of other retaining devices, and the metal of the groove being partially separated exterior to the wire.

5. The method of making sheet metal key opening cans or vessels which embraces the steps of forming a line of proximate punctures in the sheet-metal, placing a key wire or equivalent metal filament against the sheet along said line of punctures and applying solder to close the punctures and fasten the wire.

6. The method of making sheet metal key-opening vessels which embraces the steps of forming a groove in the sheet with a line of proximate punctures along its bottom, placing a key wire in said groove and applying solder to secure the wire, and prevent leakage at the punctures.

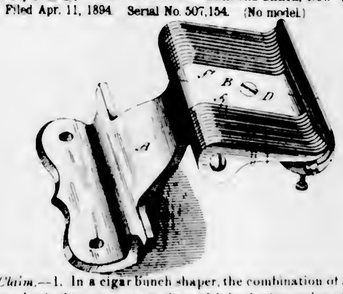
529,543. **WIRE FENCE.** JAMES W. ALVERSON, Brighton, N. Y., assignor to Emma A. Alverson, same place. Filed Feb. 26, 1894. Serial No. 501,537. (No model.)



*Claim.*—1. The herein described method of forming a fence, consisting in securing wire cables to posts, then hooking the ends of cross-braces upon one strand of each alternate cable to form vertical series of braces, the central portions of the braces crossing each other between the strands of the intermediate cables, and then twisting the strands of the cables together by reverse twists between the braces and between the braces and the posts, substantially as set forth.

2. A fence consisting of a series of wire cables secured at intervals to posts, the strands of each cable being twisted together by reverse twists in sections between the posts, vertical series of cross-braces hooked at their ends to one strand each of the alternate cables and having their central portions crossed between the strands of the intermediate cables, substantially as set forth.

529,544. **BUNCH-SHAPER.** EMANUEL BARTH, New York, N. Y. Filed Apr. 11, 1894. Serial No. 507,154. (No model.)



*Claim.*—1. In a cigar bunch shaper, the combination of a curved plate and a body to cooperate therewith in the formation of a mold, said body being composed of a series of independently adjustable sections, substantially as shown and described.

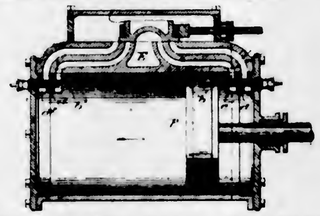
2. In a cigar bunch shaper, the combination of a standard, a curved plate supported by said standard, and a series of independently adjustable sections supported by said standard and forming a body to cooperate with said plate, substantially as shown and described.

3. In a cigar bunch shaper, the combination of a standard having a forwardly projecting tongue, a curved plate disposed at the end of said tongue, and a series of sections adjustably secured at one side of said tongue and forming a body to cooperate with said curved plate, and means to adjust said sections, substantially as shown and described.

4. In a cigar bunch shaper, the combination of a standard, a curved plate supported by said standard, a series of independently movable sections forming a body to cooperate with said curved plate, a pliable strip supported by said standard and upon which said movable sections rest, and means to determine the curvature of said strip, substantially as shown and described.

5. In a cigar bunch shaper, the combination of a standard, a curved plate supported by said standard, a pliable strip also supported at one end by said standard and parallel with said plate, and an adjusting screw upon which the free end of said strip rests, substantially as shown and described.

529,545. **DIRECT-ACTING ENGINE.** CHARLES P. DEANE, Springfield, assignor to the Deane Steam Pump Company, Holyoke, Mass. Filed July 9, 1894. Serial No. 516,911. (No model.)

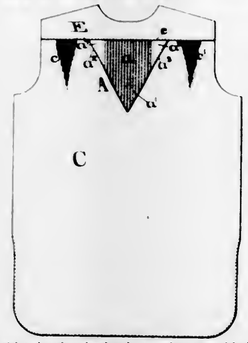


*Claim.*—1. In a direct acting engine, wherein the power is applied directly to the load, the main steam cylinder having induction and eduction ports, a piston in said main cylinder adapted to close the eduction ports at fixed points in its stroke, and an auxiliary eduction port communicating with the main eduction port and adapted to be completely closed by the piston at a determinate point in its stroke, combined with means to regulate such point of closure by altering the position of its cut-off edge, substantially as described.

2. In a steam cylinder having induction and eduction ports, an independent eduction port having a movable cut offedge and adapted to be absolutely closed by the piston in its stroke, and the piston movable in the cylinder, combined with means to vary the position of the cut-off edge of said eduction port, so as to regulate the amount of cushion steam imprisoned in the ends of the cylinder, substantially as described.

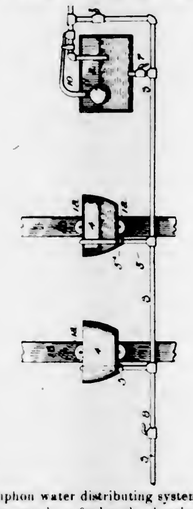


529,546. **SHIRT.** SIGMUND DEUTSCH, Philadelphia, Pa. Filed Apr. 17, 1894. Serial No. 507,826. (No model.)



*Claim.*—A shirt having its back portion provided with a centrally located, V shaped, vertically tucked reinforce the folds of which are stitched longitudinally, the same extending part way down and across the inner side of the back portion and being sewed the length of its side edges thereto and at its upper edge interposed between the plies of the neck-yoke and sewed its whole length to the lower edge of the latter coincidently with said back portion, for the purpose specified.

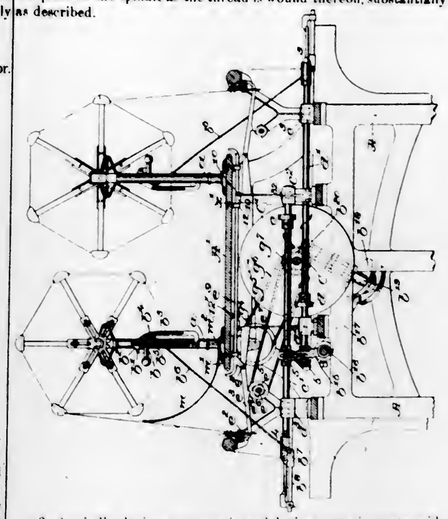
529,547. **SIPHON WATER-DISTRIBUTING SYSTEM.** JOHN C. EBERLEY, Whitesborough, N. Y. Filed Jan. 22, 1894. Serial No. 497,668. (No model.)



*Claim.*—In a siphon water distributing system, the combination with a tank or water supply, a feed tank wherein the level of water is controlled by a float valve, a series of reservoir basins, a series of pipe connections between said feed tank and said reservoir basins, such pipe connections being siphons, a series of stop cocks in said pipes, and a head pipe for the purpose of filling said siphons for use, substantially as described.

529,548. **THREAD-WINDING MACHINE.** JOHN W. FOSTER, Westfield, Mass., assignor to the Foster Machine Company, same place. Filed Nov. 22, 1893. Serial No. 491,658. (No model.)

*Claim.*—1. A spindle, and devices to rotate it at a variable speed while winding each layer of thread and to reciprocate it during its rotation; combined with a thread-guide, and a pattern device or surface, and connections between said thread-guide and said pattern device, whereby the latter gradually moves said thread-guide toward the point of the spindle as the thread is wound thereon, substantially as described.



2. A spindle, devices to rotate it, and devices to reciprocate said spindle during its rotation to wind the thread helically thereon, combined with a thread guide; a pattern device; and connections between said thread guide and said pattern device, whereby the latter gradually moves said thread guide toward the point of the spindle as layer after layer of thread is wound thereon, substantially as described.

3. A spindle, devices to both rotate and to reciprocate the same; a thread guide; a pattern device; a stand; a screw shaft mounted therein; a sleeve having a threaded nut to engage said screw, and connections between said sleeve and said thread guide, said connections being controlled by said pattern device as the sleeve is moved by the screw shaft, combined with a reel, its shaft, and devices between said reel shaft and said screw shaft to rotate the latter, and move said nut and cause the connections between the nut and thread guide to follow the pattern device, to operate substantially, as described.

4. In a machine for winding thread into cop form, a spindle, devices to reciprocate it and also to rotate it at a variable speed as the thread is being wound from a larger to a smaller diameter, and vice versa, a screw, a pattern device having a portion thereof shaped to build the heel of the thread mass to be wound, and a thread guide, combined with connections between said thread guide and said pattern device, and between said pattern device and said screw whereby said thread guide may be moved more or less rapidly toward the point of the spindle as one layer after another of thread is added to the spindle, the speed of movement of the thread guide being controlled by said pattern device, substantially as described.

5. A spindle, a thread guide, devices to reciprocate said spindle and means to rotate it at a variable speed, devices to move the said thread-guide toward the point end of said spindle; a reel; its shaft, and devices to engage and rotate said reel-shaft whereby the thread carried by the said reel is unwound without straining the thread, substantially as described.

6. A spindle, a thread guide, devices to reciprocate said spindle, and devices to rotate it at a variable speed; devices to move the said thread guide toward the point end of said spindle; a reel, its shaft, a gear thereon; the rotatable laterally movable shaft $g^3$ provided with a gear and a friction wheel, the rotating disk $g^4$, a feeler to bear on the thread between said reel and said spindle, combined with intermediate devices between said feeler and said shaft, whereby the rotation of the latter is arrested on the occurrence of slack thread, to thus stop the rotation of the reel, substantially as described.

7. In a machine for winding thread the following instrumentalities, viz:—a rotating shaft provided with a friction disk; and a thread guide; combined with a spindle extended across said shaft and having a friction wheel secured to it behind said shaft, said wheel being adapted to bear against and be rotated by said disk; a movable bearing on which said spindle is mounted; devices to move said bearing to remove said friction wheel from driving contact with said friction disk; and devices to reciprocate said spindle longitudinally, substantially as described.

8. A rotating driving shaft provided with a friction disk; a rotatable and reciprocating spindle having a friction wheel secured thereto and adapted to be rotated by the contact of its edge with the side of said disk; a movable bearing for said spindle; a drop wire, a lever adapted to be turned by the drop wire when not supported properly by a thread, a support for said lever, and connections between said support and said bearing, whereby upon the movement of said lever the said bearing may be moved to carry the friction wheel of the spindle laterally away from the side of the friction wheel on the rotating shaft and effect the stopping of the rotation of the spindle substantially as described.

9. In a thread winding machine the following instrumentalities, viz —a rotating shaft provided with an attached friction disk, two spindles having their inner ends extended across said shaft from opposite directions, each spindle having a friction wheel and adapted to be rotated by said disk; a coupling to connect said spindles, a heart cam, and devices between said heart cam and said coupling to reciprocate said spindles substantially in unison in the direction of their length and enable them at the same time to be rotated at a variable speed in opposite directions, substantially as described.

10. A thread winding machine containing the following instrumentalities, viz —a shaft having a friction disk; a spindle having a friction wheel and adapted to be rotated by said disk; a heart cam, devices between it and said spindle to reciprocate the latter across said shaft whereby said spindle is rotated at a variable speed during its reciprocations, a thread guide; a pattern device, connections between said pattern device and said thread guide to gradually move the same longitudinally with relation to the spindle as the cop is being wound; and a reel to supply said thread guide with thread, substantially as described.

11. A thread winding machine containing the following instrumentalities, viz —a shaft having a friction disk; a spindle having a friction wheel and adapted to be rotated by said disk; a heart cam, devices between it and said spindle to reciprocate the latter across said shaft whereby said spindle is rotated at a variable speed during its reciprocations; a thread guide, a pattern device; connections between said pattern device and said thread guide to gradually move the same longitudinally with relation to the spindle as the cop is being wound, and a reel, and devices to rotate said reel to cause it to feed off the thread at the desired speed, substantially as described

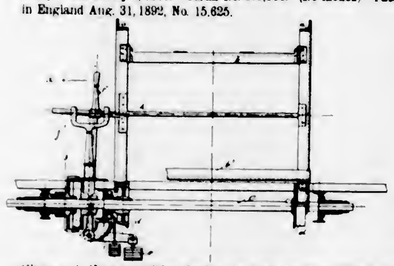
12. In a thread winding machine, a rotating shaft having a friction disk, two spindles crossing said shaft substantially at right angles and provided each with a friction wheel to co-operate with said friction disk, a coupling to connect said spindles, and a heart cam, combined with intermediate devices located between said heart cam and said coupling, said devices being adjustable to provide for greater or less reciprocations of the said spindles, substantially as described

13. In a thread winding machine, a spindle, devices to rotate and reciprocate the same, a thread guide, a pattern device, and intermediate connections to control the movement of said thread guide; and a thread cutter to cut the thread going to the spindle when the yarn mass been wound to the desired size, substantially as described

14. A spindle, and devices to rotate and to reciprocate the same, a reel, a screw shaft, and gearing between it and the shaft of the reel to rotate the screw shaft, a sleeve having a threaded nut and embracing said screw shaft, a thread guide, and connections between said nut and said thread guide, combined with a pattern surface co-operating with the connections between the screw and the thread guide to move the said thread guide according to the requirements of the pattern device to gradually provide for building the nose of the cop or thread mass, substantially as described.

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529,549. CAR-TILTING DEVICE. ULRICH FRANTZ, Zabtze, Germany. Filed May 6, 1893. Serial No. 473,306. (No model.) Patented in England Aug. 31, 1892, No. 15,625.

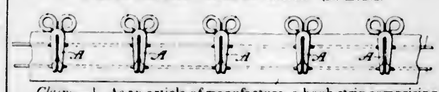


*Claim.*—1. In a car tilting device, the combination, with a rotary-frame for receiving the car to be tilted, rollers on which said frame rests, the three armed lever *m*, the stops *p*, *p'* adjacent to one of said arms, a pin on the rotating frame on which the second arm of the lever *m* can act, a weight on the third arm of said lever, and a lever by means of which the rotating-frame can be locked in place or released, substantially as set forth.

2. In a device for tilting cars, the combination, with a rotary-frame, of wheels on which said frame rests, a shaft carrying two of said wheels, a clutch-device for engaging said shaft with a driving mechanism, a lever for operating said clutch-device, a sliding-bolt, a weight acting on the same, a beveled lug on the rotating frame, which lug can be engaged by the sliding-bolt, and an arm connected with the lever for operating the clutch device, which arm acts on said sliding-bolt to withdraw the same and release the rotary-frame, substantially as set forth.

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529,550. HOOK OR EYE STRIP. JOHN H. GOODBODY, Brooklyn, N. Y. Filed Nov. 28, 1893. Serial No. 492,196. (No model.)

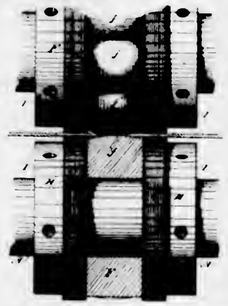


*Claim.*—1. As an article of manufacture, a hook strip comprising a base strip, a series of hooks upon said base strip at intervals, the thread-eyes of said hooks projecting beyond the edge of said base strip in a plane substantially parallel with the plane of the base strip, and means carried by said base strip for removably attaching said hooks to said base strip, whereby said hooks may be secured in permanent position upon a garment and said base strip removed, substantially as described.

2. As an article of manufacture, a hook strip comprising a base strip, a series of hooks upon said base strip at intervals, the thread-eyes of said hooks projecting beyond the edge of said base strip, and a removable strip attaching said hooks to said base strip, whereby said hooks may be secured in permanent position upon a garment and said base strip removed, substantially as described.

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529,551. MACHINE FOR STRETCHING BAND-SAWS. WILLIAM HOLLINGSWORTH and JOSEPH KORBEL, San Francisco, Cal. Filed June 11, 1894. Serial No. 514,234. (No model.)



*Claim.*—1. A band saw stretching device consisting of rollers adapted to rotate in contact upon opposite sides of the saw blade when the latter is passed between them, said rollers being crowned in the center with the crowning surface depressed at intervals.

2. A device for stretching band saws consisting of rollers mounted upon arbors and having alternate crowned and depressed surfaces which meet each other upon opposite sides of the saw blade when the latter is passed between them, mechanism whereby said rollers are rotated in opposition to each other and elastic feed disks fixed upon the arbors adjacent to the rollers and adapted to grasp the saw blade

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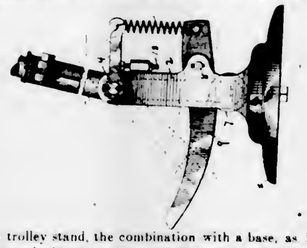
529,552. TROLLEY-STAND. FRANK N. KELSEY, New Haven, Conn., assignor of one-half to Charles L. Wright, same place. Filed Aug. 29, 1894. Serial No. 521,601. (No model.)

*Claim.*—1. In a trolley stand, the combination with a pivotally supported socket piece for receiving the trolley arm, of a spring actuated controlling device which engages a portion of said socket piece and is eccentric to the path of movement of the part which it engages substantially as and for the purpose set forth.

2. In a trolley stand, the combination with a pivotally supported socket piece adapted to receive one end of the trolley arm, of a rocker lever engaging a portion of said socket piece and having its contacting edge eccentric to the path of movement of the part which it engages, and a spring pressing said rocker lever into engagement with said socket piece, substantially as described.



3. In a trolley stand, the combination with a suitable base adapted to be secured to a car roof, of a frame revolubly mounted upon said base, a trolley arm socket piece pivotally mounted upon said frame and having its lower end extended beyond its pivot, an eccentrically disposed controlling device engaging said extended end of said socket piece, and a spring pressing said socket piece and controlling device into engagement with each other, substantially as described



4. In a trolley stand, the combination with a base, as 1, and a frame, as 2, revolubly mounted upon said base, a socket piece, as 5, pivotally mounted upon said frame and carrying at its lower end an anti-friction roll, a rocker lever, as 9, pivotally supported on said frame and engaging the roll on said socket piece, and a spring pressing said roll and lever together, substantially as set forth.

5. In a trolley stand, the combination with the frame 2, of the socket piece 5 carrying roll 7, rocker lever 9, hooks 12, adjusting screws 13, and springs 10, arranged and operating substantially as described.

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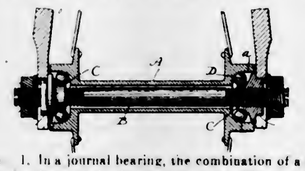
529,553. MUSTACHE-GUARD. MARTIN V. KINGSBURY, Dover, Del. Filed Oct. 6, 1894. Serial No. 525,143. (No model.)



*Claim.*—A mustache guard consisting of a cover, a groove in the lower portion thereof, a spring having teeth mounted therein, said spring resting in said groove, means for retaining the spring in the groove, and means for operating the spring to cause the ends of the teeth to be moved toward or from each other, as set forth and described.

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529,554. JOURNAL-BEARING. ALBERT W. KIRSCH-KING, Chicago, Ill., assignor of one half to the Frazier Cycle Company, same place. Filed May 27, 1893. Serial No. 475,746. (No model.)



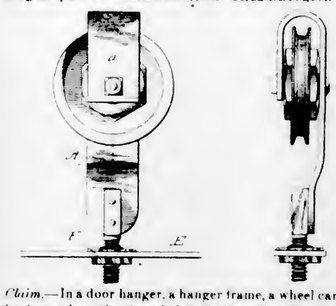
*Claim* 1. In a journal bearing, the combination of a hub having a pair of sockets, a pair of cones occupying said sockets and having openings through them, an axle extending through the openings of the cones and being capable of turning therein, said axle having features which engage the cones and prevent them from sliding endwise upon it, and which features, when the axle is revolved, move the cones toward or from each other, and a fork separable from the cones, the fork and cones having engaging features whereby when in use the cones are absolutely prevented from turning and whereby when the parts are separated the cones may be turned to bring different portions of them in position to receive the greatest wear, substantially as set forth.

2. In a journal bearing the combination with a hub having a pair of sockets, of a pair of cones each occupying one of said sockets, means for absolutely preventing both of said cones from rotating, and an axle having right and left threads on which said cones fit, so that by turning the axle the cones are moved relatively to each other, substantially as set forth.

3. In a journal bearing the combination with a hub having a pair of sockets, of a pair of cones C having the non circular portions *c*, one of said cones occupying each of said sockets, the fork E having non-circular openings in which the non-circular portions of the cones fit, and the revoluble axle B having right and left threads *b* on which said cones are screwed, whereby the cones may be moved toward or from each other by rotating the axle, substantially as set forth.

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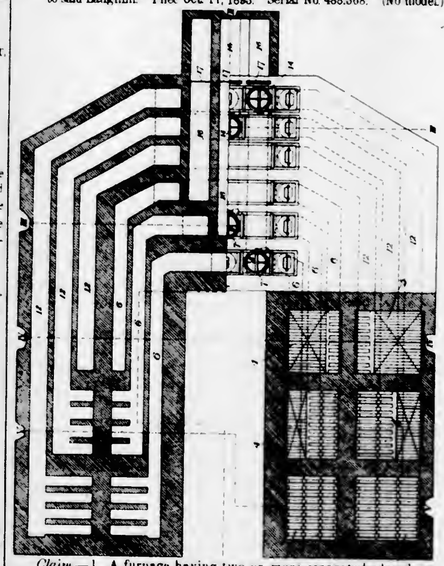
529,555. DOOR-HANGER. JOHN G. LANE and GEORGE LANE, Poughkeepsie, N. Y. Filed June 9, 1894. Serial No. 514,071. (No model.)



*Claim.*—In a door hanger, a hanger frame, a wheel carried thereby the base plate, the threaded stud depending from said hanger frame and the nut engaging said stud, said nut extending through an opening in the base plate, the upper end of said nut extending laterally above the base plate and having notches or serrations for turning the same, substantially as described.

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529,556. REGENERATIVE FURNACE. ALEXANDER LAUGHLIN, Sewickley, and JOSEF REULEAUX, Pittsburg, Pa.; said Reuleaux assignor to said Laughlin. Filed Oct. 17, 1893. Serial No. 488,368. (No model.)



*Claim.*—1. A furnace having two or more separated chambers therein, regenerators for said chambers, a single stack common to all the chambers, and means for reversing the direction of the gas and air through one chamber independently of the other chambers; substantially as described.

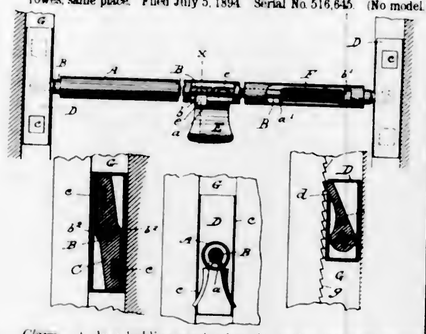
2. A furnace having two or more separated chambers therein, independent regenerators for said chambers, a single stack common to all the chambers, and means for regulating the draft of the outgoing gases passing from one chamber independently of the other chambers; substantially as described.

3. A furnace having two or more separated chambers therein, independent regenerators for said chambers, a single stack common to all the chambers, means for regulating the supply of gas and air to each chamber independently of the other chambers, and separate means for regulating the velocity of the gases passing from one chamber independently of the other chambers; substantially as described.

4. A furnace having two or more separated chambers therein, regenerators for said chambers, a single stack common to all the chambers, and means for regulating the velocity, and reversing the direction, of gases passing through one chamber independently of the other chambers; substantially as described.

5. A furnace having two or more separated chambers, independent regenerators for said chambers, a single stack common to all the chambers, and a separate valve controlled flue leading from each regenerator to the stack substantially as described.

529,557. HOLDING MECHANISM FOR SPRING-ACTUATED SHADES. JOHN A. LIDBACK, Portland, Me., assignor to Edward T. Burrowes, same place. Filed July 5, 1894. Serial No. 516,645. (No model.)



*Claim.*—1. In a holding mechanism for spring actuated shades employing a tubular shade stick provided with the two perforations shown, a pair of rotatively movable spring-actuated rods mounted in the tubular shade stick, having rocking holding devices pivoted to their projecting ends, adapted to bear against one side of either groove in opposite sides of the window-casing, and suitable presser-pendants, having each a stem which passes through either perforation in said shade stick and is attached to either spring-actuated rod near their adjacent ends, said presser-pendants being adapted to relax said holding devices by rotating said rods in opposite directions.

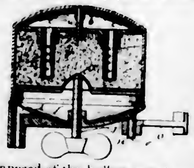
2. In holding mechanism for spring actuated shades, employing a tubular shade stick provided with the two perforations shown, a pair of rotatively movable spring-actuated rods mounted in the tubular shade stick, having rocking holding devices pivoted to their projecting ends and adapted to bear against the sides of the grooves in the window-casing, and presser-pendants having each a stem which passes through either perforation in said shade stick and is attached to either spring-actuated rod near their adjacent ends for the purpose of rotating said rods and relaxing said holding devices, said presser-pendants having their movement within said shade stick limited by means of said perforations.

3. In holding mechanism for spring-actuated shades, employing grooves in the side of a window-casing and a tubular shade stick having the perforations shown, a pair of rotatively movable spring-actuated rods mounted in the tubular shade-stick, having rocking holding devices pivoted to their projecting ends and incased in a shell or cap which loosely fits said grooves in the window-casing, said shells or caps having perforations through which the holding devices normally protrude and bear against the sides of the grooves in the window-casing, and suitable presser-pendants having each a stem which passes through either perforation in said shade stick and is attached to either spring-actuated rod, near their adjacent ends, substantially for the purpose set forth.

4. In holding mechanism for spring-actuated shades employing grooves in the side of a window-casing and a tubular shade stick having the perforations shown, serrated facings for the sides of said grooves applied, one, to one side of one groove, and the other to the opposite side of the other groove, a pair of rotatively movable spring-actuated rods mounted in the tubular shade stick, having each a holding device secured to its projecting end and adapted to enter and engage with the serrations of one of said grooves in the window-casing, and suitable presser-pendants, attached to the adjacent ends of said spring-actuated rods and adapted to rotate them in opposite directions, substantially for the purpose set forth.

529,558. FILTER. WILLIAM LOREY, Philadelphia, Pa., assignor to John Braun, William P. M. Braun, and John F. Braun, same place. Filed July 28, 1893. Serial No. 481,693. (No model.)

*Claim.*—1. A filter composed of the hollow case having a closed top provided with an inlet for water under pressure, a closed diaphragm within the case below the top provided with one or more perforated tubes opening through the diaphragm and extending down a distance within the case below the diaphragm, a filtrant of fibrous material closely packed about the said tube or tubes, a movable perforated plate located below the diaphragm and supporting the fibrous filtrant, a cap provided with an outlet carried by the hollow case and forming the base of the filter, and means carried by said cap to adjust the movable plate and compress the fibrous filtrant about the perforated tube or tubes, whereby the water issuing from the perforations of the tubes in the form of small jets under high pressure will cut its way into the body of closely packed filtering material.



2. A filter composed of the hollow case A provided with the inlet I, and hose M, the detachable cap H provided with an outlet and adapted for attachment to the base of the case A, the diaphragm B and perforated plate E within the case A forming the compartments C, F, and I, a perforated pipe or pipes leading from the compartment C to the compartment F, and a filtrant located in the compartment F between the diaphragm B and plate E and closely packed about the pipe therein.

3. A filter composed of the hollow case A provided with an inlet, the cap H provided with an outlet and adapted for attachment to the base of the case A, the diaphragm B and movable perforated plate E within the case A forming the compartments C, F, and I, a perforated pipe or pipes leading from the compartment C to the compartment F, a filtrant located in the compartment F between the diaphragm B and plate E and closely packed about the pipe therein, and means to adjust the plate E to force it upon the filtrant and compress it about the pipes.

4. A filter composed of the hollow case A provided with the inlet, the cap H provided with an outlet adapted for attachment to the base of the case A, the diaphragm B and movable perforated plate E within the case A forming the compartments C, F, and I, a perforated pipe or pipes leading from the compartment C to the compartment F, a filtrant located in the compartment F between the diaphragm B and plate E and closely packed about the pipes therein, and the adjusting screw J carried by the cap H and bearing upon the plate E.

5. A filter composed of a hollow case A provided with an inlet, an internal diaphragm B forming the upper compartment C and having one or more openings for the passage of water and the lower movable perforated plate E having the central protuberance *a* upon its upper face.

6. A filter composed of a hollow case A provided with an inlet, an internal diaphragm B forming the upper compartment C and having one or more openings for the passage of water the perforated tubes D carried by the diaphragm B, and the lower movable perforated plate E having the central protuberance *a* upon its upper face.

7. A filter composed of a hollow case provided with an internal stationary diaphragm, a perforated tube leading from said stationary diaphragm, a movable perforated diaphragm located below the perforated tube having a protuberance upon its upper face, whereby when the diaphragm is moved toward the upper stationary diaphragm intermediate filtering material may be compressed and forced by the protuberance upon the movable diaphragm tightly against the perforated tube.

529,559. ELECTRIC CIRCUIT. JOSEPH W. MARSH, Pittsburg, Pa. Filed Apr 10, 1894. Serial No. 507,020. (No model.)



*Claim.*—1. An insulated anti-induction electric circuit consisting of a pair of spirally twisted conductors separated by a water proof insulation and by a non water proof insulation of lower specific inductive capacity, said water proof insulation consisting of a covering of one conductor, and said non-water proof insulation consisting of a covering of the other conductor, substantially as described.

2. An insulated electric circuit consisting of a pair of conductors, one conductor having a water proof insulation and the other conductor a non-water proof insulation of lower specific inductive capacity, said separately insulated conductors lying side by side, whereby the conductors are separated by both insulations, substantially as described.

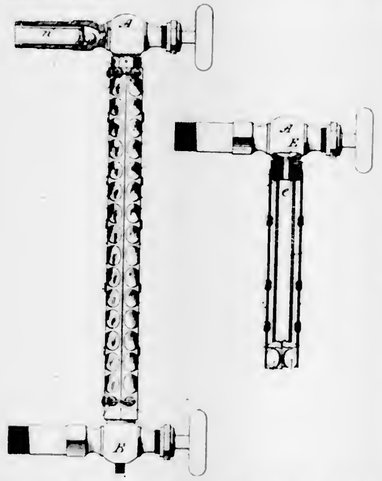
3. An anti induction electric cable consisting of a bunch of circuits, each circuit consisting of a pair of spirally twisted conductors separated by a water proof insulation and by a non-water proof insulation of lower specific inductive capacity, said water proof insulation consisting of a covering of one conductor, and said non water proof insulation consisting of a covering of the other conductor, substantially as described.



4. An anti-induction electric cable consisting of a bunch of circuits and a water proof covering for said bunch, each circuit consisting of a pair of conductors, one conductor having a water proof insulation and the other conductor a non-water proof insulation of lower specific inductive capacity, said separately insulated conductors of each circuit lying side by side, whereby the conductors of each circuit are separated by both insulations, substantially as described.

5. An electric cable consisting of a bunch of circuits and a water proof covering for said bunch, each circuit consisting of a pair of conductors, one conductor having a water proof insulation and the other conductor having a non-water proof insulation, said separately insulated conductors of each circuit lying side by side, whereby the conductors of each circuit are separated by both insulations, substantially as described.

529,560. WATER-GAGE. JOHN A. MILLIKEN, Brooklyn, assignor to Anna M. McLewee, New York, N. Y. Filed Jan. 15, 1894. Serial No. 496,856. (No model.)



*Claim.*—1. The combination with a stuffing box and a stem upon which it is adjustable against the end of a tube, of a gasket to bear against the end of the tube, a ring of relatively soft packing material and a division plate separating said ring and gasket and movable upon the stem whereby the movement of the stuffing-box against the end of the tube makes a tight joint between the gasket and the tube and at the same time packs the softer material about the stem, substantially as shown and described.

2. In a water-gage, the combination of a seat for one end of the gage tube, a screw-threaded nipple, oppositely disposed supports for said seat and nipple, a cup adjustable on said nipple, and a packing ring, a division plate, a washer, and a gasket carried by said cup to form a packing for the other end of said tube, substantially as shown and described.

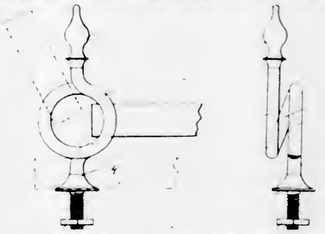
3. In a water-gage, the combination of a seat for one end of the gage-tube, a screw-threaded nipple having a flattened side, oppositely disposed supports for said seat and nipple, a cup adjustable on said nipple, a washer fitted upon the flattened nipple within the cup and having teeth, and a gasket engaged by the teeth of the washer, whereby the gasket is held from turning as the cup is turned down upon the end of the gage-tube, substantially as shown and described.

4. In a water-gage, the combination of upper and lower globe valves, a seat for the lower end of the gage-tube, a cup to receive the upper end of said tube, and a protecting shell divided longitudinally to form separate parts, said parts being hinged together along one edge and being adapted to be clamped to each end around said cup and said seat, and latches apptied to the other edges of said parts to hold them together, substantially as shown and described.

5. In a water-gage, the combination of upper and lower globe valves, a seat for the lower end of the gage-tube, a cup to receive the upper end of said tube, and a protecting shell divided longitudinally to form separate parts, said parts being hinged together along one edge and being adapted to be clamped to each end around said cup and said seat, and latches applied to the other edges of said parts to hold them together, each of said latches being composed of a rod pivoted to one part of the shell and having a nut screw-threaded upon its other end and a slotted stud fixed to the other part of the gage, substantially as shown and described.

6. In a water gage, the combination of a valve-stem, a ball-valve disposed within said stem and a holder for said ball composed of a wire bent to form a head and arms, the latter being adapted to engage said valve-stem near its extremity, substantially as shown and described.

529,561. CHECK-HOOK. JOHN N. MOHN, Milwaukee, Wis., assignor of one-half to Jacob Katz, Adolph Mahler, and George De Grasse, same place. Filed July 5, 1894. Serial No. 516,582. (No model.)



*Claim.*—1. A check-hook, consisting of a wire having a lower base portion for attachment to the gig saddle, a terminal portion, and a spiral intermediate the base and terminal portions, the two parallel strands of said spiral being disposed at the front to take the bearing of the loop of the check rein, substantially as set forth.

2. A check hook consisting of a wire having a lower base portion for attachment to the gig saddle, a terminal straight portion on a vertical line with the base portion, and a spiral intermediate the base and terminal portions, the two parallel strands of said spiral being disposed at the front to take the bearing of the loop of the check-rein, substantially as set forth.

529,562. GARDEN IMPLEMENT. CHARLES G. MORTENSON, Lorin, Cal. Filed July 30, 1894. Serial No. 518,989. (No model.)



*Claim.*—1. A garden implement consisting of the flat blade having square and pointed edges at opposite ends, a fulcrum plate secured to one side between said edges to which the handle is pivoted and about which it is turnable, semi-circular arcs projecting from said plate having the pivot points as their center, and a latch adapted to engage notches upon one of the arcs and having lugs which clasp opposite sides of the arcs so as to form a brace for the handle which extends between them.

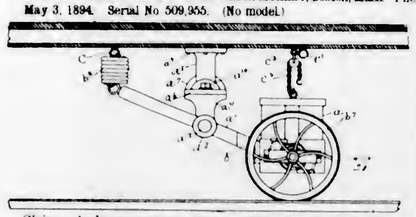
2. A garden implement consisting of a flat blade having one end made with a square edge and the other pointed, a handle pivoted to the center of the blade upon one side, semi-circular arcs fixed to the blade standing upon either side of the handle which passes between them, a spring-actuated latch connected with the handle and adapted to drop into notches in one of the arcs, said latch having lugs or clasps exterior to the arcs and adapted to engage their outer sides so as to form a brace for the handle in its connection with the blade.

3. A garden implement consisting of a flat blade having a handle fulcrumed to the center so that the blade is turnable to take different angles about its fulcrum point, and a latch and locking mechanism to hold it in its position, an attachment consisting of a bifurcated point adapted to fit the pointed end of the plate having a curved elastic arm extending toward the center and adapted to enter a hole in the central portion of the plate whereby the supplemental point is secured in place.

4. A garden implement consisting of a handle, a flat blade pointed at one end pivoted to the handle and turnable about its pivot points to occupy different positions with relation to the handle a bracing and locking latch whereby the handle and blade are retained in position with relation to each other and a supplemental removable weed pulling attachment consisting of a bifurcated point adapted to fit the point of the implement having a curved arm extending from its in-

ner edge and latching in a hole in the plate, said arm forming a fulcrum to rest upon the ground when the bifurcated point has been engaged with the weed or root to be extracted whereby the handle may be employed as a lever for that purpose.

## 529,563. APPARATUS FOR GENERATING ELECTRICITY FOR LIGHTING RAILWAY-CARS. THOMAS A. MURRAY, Boston, Mass. Filed May 3, 1894. Serial No. 509,955. (No model.)



*Claim.*—1. In an apparatus for generating electricity for lighting railway cars, the combination with a dynamo or generator located below the car body, of a support for said dynamo located below and outside of the car body and mounted to swing in a substantially horizontal plane independent of the car body and its trucks substantially as described.

2. In an apparatus for generating electricity for lighting railway cars, the combination with a dynamo or generator having its armature shaft driven from the track independent of the car axles, of a supporting frame for said dynamo located outside of the car body and mounted to swing in a substantially horizontal plane between the car trucks, for the purpose specified.

3. In an apparatus for generating electricity for lighting railway cars, the combination with a dynamo or generator having its armature shaft driven from the track independent of the car axles, of a supporting frame for said dynamo located outside of the car body and pivotally mounted to swing in a substantially horizontal plane, and having a movement in a substantially vertical plane, substantially as described.

4. In an apparatus for generating electricity for lighting railway cars, the combination with a dynamo or generator having its armature shaft driven from the track independent of the car axles, of a supporting frame for said dynamo pivotally mounted beneath the car body to swing in a circle in a substantially horizontal plane and to move bodily in a lateral direction, substantially as described.

5. The combination with a railway car having the usual trucks, of a dynamo or generator located below and outside of the car, and a supporting frame to which said generator is firmly secured, the said frame being located below and outside of the car body and constructed to be turned in a substantially horizontal plane to permit the armature of the said dynamo to be rotated in the same direction, when the car is moving in opposite directions, and a driving wheel for the armature of said dynamo independent of the usual car wheels and sustained on the track by said supporting frame substantially as described.

6. The combination with a railway car having the usual trucks, of a dynamo or generator located below the car between the car trucks, and having its armature driven from the track independent of the axles of the said trucks, and a supporting frame for said dynamo located below the car body and mounted to swing in a substantially horizontal plane, for the purpose specified.

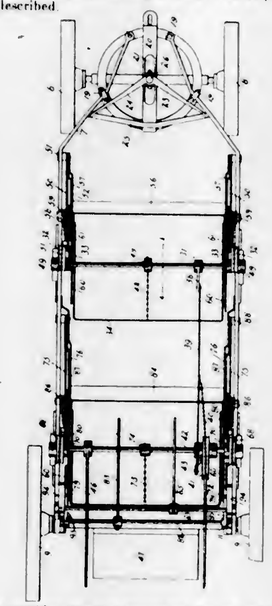
7. The combination with a railway car having the usual trucks, of a dynamo or generator located below the car between the car trucks, and having its armature driven from the track independent of the axles of the said trucks, and a supporting frame for said dynamo consisting of a lever pivoted on a shaft, stud or pin, to move in a substantially vertical plane, a bracket for said shaft or pin pivoted to a bracket or arm attached to the car body so as to permit the said lever to move in a substantially horizontal plane, substantially as described.

8. In an apparatus for generating electricity for lighting railway cars, the combination with a dynamo or generator located below the car body, of a support for said dynamo located below and separated from the car body and mounted to be turned in a substantially vertical plane for the purpose specified.

## 529,564. WHEELED SCRAPER. THOMAS R. MCKNIGHT, Aurora, Ill., assignor to The Western Wheeled Scraper Company, same place. Filed Jan. 22, 1894. Serial No. 497,666. (No model.)

*Claim.*—1. The combination with supporting devices, and pivotally mounted segments, as 32, carried thereby, of bars, as 35, pivotally connected to said segments, a scraper bowl pivotally connected to said bars, and flexible connections, as 37, connected to said segments at a point nearer to the axis of said segments than the point of connection of the bars 35 to said segments, substantially as described.

2. The combination with supporting devices, of a shaft 31, an arm 49 projecting therefrom, a flexible connection 48 connected at its upper end to said arm, a scraper bowl connected at its rear end to the lower end of said flexible connection, means for raising and lowering the forward portion of said scraper bowl by rocking said shaft 31, and for rigidly holding it in its lowered position, substantially as described.



3. The combination with supporting devices, of a shaft 31, segments 32 mounted thereupon, a scraper bowl, bars 35 connecting said segments to said scraper bowl, hooks 52, hooks 53 carried by said scraper bowl and adapted to be engaged by said hooks 52, and bars 54 connected to said hooks 52 and to the upper end of said bars 35, substantially as described.

4. The combination with a carriage, of a scraper bowl 34, means for raising and lowering said scraper bowl, an end gate 56 pivotally supported by said carriage, pulleys 59, and a chain 58 connected to said scraper bowl and to the lower portion of said end gate, substantially as described.

5. The combination with a circle 18, of a plate 13, rollers 15—16 mounted thereupon, a sleeve 22, and a king bolt pivotally connected to said plate 13 and adapted to fit in said sleeve, substantially as described.

6. The combination with a carriage frame and a circle plate 18, rigidly secured thereto, of a plate 13 arranged above and secured to the axle, and forming a support for the circle plate 18, and a king-bolt pivotally connected to said plate and connecting said circle-plate thereto, substantially as described.

7. The combination with a carriage frame and a circle plate rigidly secured thereto, of a support secured to the axle, and a king-bolt pivoted to said support above the axle and connecting said support to said circle plate, substantially as described.

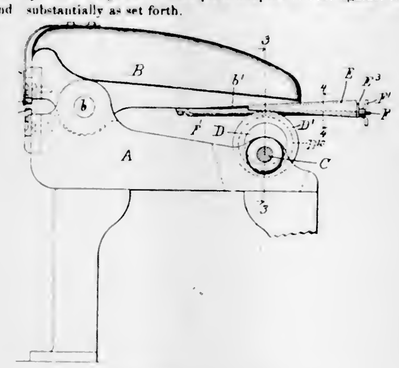
## 529,565. PRESS FOR RIVETING, &c., METAL. LA VERNE W. NOYES, Chicago, Ill. Filed Apr. 2, 1894. Serial No. 506,034. (No model.)

*Claim.*—1. In a power press, in combination with a fixed and movable member, the power shaft journaled on one of them; an eccentric rotated thereby and an annulus encircling the eccentric and at its outer periphery bearing and adapted to roll against the other member, substantially as set forth.

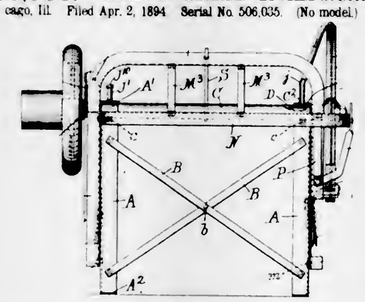
2. In combination with the pivoted member of a lever press, a power shaft journaled in the other member, an eccentric thereon and an annulus encircling such eccentric and at its outer periphery bearing and adapted to roll against the other member as the shaft revolves, substantially as set forth.

3. In combination with the fixed and the oscillating member of a lever press, the power shaft journaled in the fixed member, the eccentric thereon, the annular band encircling the eccentric; the wedge-shaped plate E having guide bearings in which it is longitudinally movable on the oscillating member toward and from the pivot of the latter; the rod F secured at one end to the oscillating member and extending from such connection between the annulus and the plate E, the annulus having in its periphery, and the plate having in its under side, a groove to accommodate the rod, and a nut on the rod beyond the larger end of the plate adapted to bear against that end, substantially as set forth.





## 529,566. POLE-SAWING MACHINE. LA VERNE W. NOYES, Chicago, Ill. Filed Apr. 2, 1894. Serial No. 506,035. (No model.)



*Claim.*—1. The frame comprising standards made of angle-iron-bar having the two lips or flanges flattened together face to face for a part of the length, and bent or folded at that part to form a loop; and the pipe having the shaft bearings clasped and clamped in the loops of the standards; substantially as set forth.

2. In combination with the standards each made of a bar folded to form a loop between the ends, and a pipe having shaft bearings and rifted at one side at and for a distance from such bearings, and clasped and clamped in the loops of the standards at such rifted part; substantially as set forth.

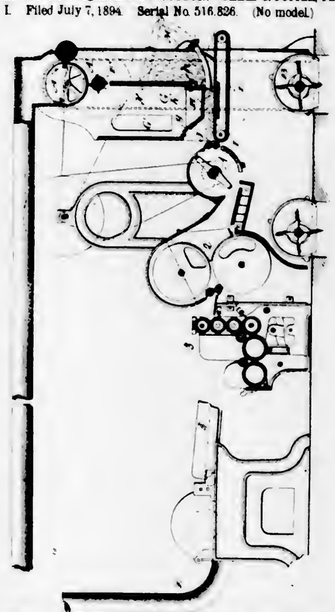
3. In combination with the standards each made of bar folded to form a loop, and a pipe having bushings constituting shaft-bearings, said pipe being rifted at one side at and for a distance from such bearings, and the bushings being likewise rifted, the pipe being clasped and clamped in the loops of the standards at such rifted parts; substantially as set forth.

4. In combination with the frame, the saw journaled therein; the saw guard H; the pipe J, which constitutes the upper brace of the guard extending therefrom into the oil-hole of the shaft-bearing, and pierced above its lower end to adapt it to serve as an oil cup; substantially as set forth.

5. In combination with the frame and the saw journaled thereto, the rocking carriage pivoted thereto and having the shelf and the rear upright guard M M' M' inside the saw, and the guard Q outside the saw in the vertical plane of the said upright guard, and extending downward to brace the shelf; substantially as set forth.

6. In combination with the standards, each made of bar folded to form a loop, and a pipe having shaft bearings clasped in the loops of the standards; tubes J J' which penetrate the loops and the pipe at the bearing to prevent the pipe from turning, and serve as oil-cups for the bearing; substantially as set forth.

## 529,567. FEED-REGULATING DEVICE FOR MACHINES FOR OPENING AND PREPARING COTTON. JAMES C. POTTER, Pawtucket, R. I. Filed July 7, 1894. Serial No. 516,826. (No model.)

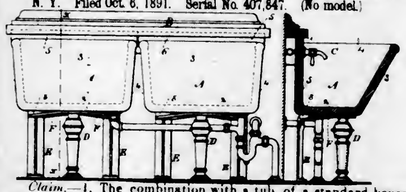


*Claim.*—1. The combination with the feed chamber, and the feed-throat leading out from said chamber and formed in part of a feed-apron, of the feed-fingers and their supporting arms, the rock shaft to which the same are fixed, the vibratory elbow-lever mounted loosely on the rock-shaft, and provided with a projection to engage in its rearward movement, the finger carrying-frame or arms, a spring yielding connection between the elbow lever and the rock shaft, and means for vibrating said elbow lever, as hereinbefore set forth.

2. The combination with the feed fingers, their supporting arms or frame and the rock-shaft, to which the same are secured, of the vibratory elbow-lever mounted loosely on the shaft, and provided with a lateral projection *b* extending in front of the finger-carrying frame, and the spiral spring encircling the rock shaft, having one of its ends attached to the elbow lever and its opposite end attached to a collar adjustably secured on said shaft, as shown and described.

3. The combination with the cage and the feed chamber, of the overflow chamber, or chamber for receiving surplus cotton from the feed chamber, and the clearer roll, acting at once as a stripper for the cage, and as a conveyer for the surplus cotton from the feed chamber into the overflow chamber, substantially as set forth.

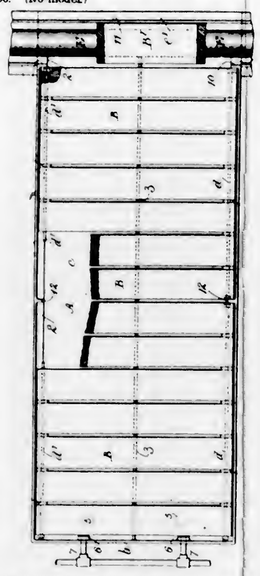
## 529,568. WASHTUB. JOHN REID, Yonkers, and EDWARD HAMANN, Brooklyn, assignors to The J. L. Mott Iron Works, New York N. Y. Filed Oct. 6, 1891. Serial No. 407,847. (No model.)



*Claim.*—1. The combination with a tub, of a standard beneath the front part of the tub, back legs that are shorter than the standard and inclined diverging bars that connect the standard and the back legs for supporting the tub and allowing the same to be properly adjusted and wedges introduced between the bars and the bottom of the tub, substantially as set forth.

2. The support for the wash tub formed of a standard D, with a flanged base, the back legs E, that are shorter than the standard, and the inclined diverging bars F, connecting the standard and the back legs, substantially as set forth.

529,569. **STALL-FLOOR.** HENRY W. THAYER, Brooklyn, and WILLIAM J. WALLACE, Whitestone, N. Y. Filed Dec. 18, 1893. Serial No. 493,986. (No model.)



*Claim.*—1. The combination in a stall floor with the removable slats, of a metal pan having an open, flat and longitudinally inclined bottom and side flanges that deepen to correspond to the inclination of the bottom and are adapted to be set level as to their upper edges, substantially as specified

2. The combination in a stall floor with the removable slats, of a metal pan having an open, flat and longitudinally inclined bottom, and side flanges extending above and below the inclined bottom and whose respective edes are parallel and adapted to be set level, substantially as specified.

3. The combination in a stall floor with a metal pan having an inclined bottom and upwardly projecting flanges at the sides thereof with upper edges adapted to be set level, of transverse slats resting at their respective ends upon the edge flanges above the bottom of the pan, whereby the bottom of the pan is left unobstructed from end to end, substantially as specified

4. The combination in a stall floor with a metal pan having a longitudinally inclined bottom and upwardly projecting edge flanges at the sides thereof with offset shoulders, the upper surfaces of which are adapted to be set level, of transverse slats resting at their respective ends upon the top of the offset shoulders, whereby the pan is free and open between the bottom and slats, substantially as specified.

5. The combination in a stall floor, of a metal pan having upwardly projecting side flanges whose upper edges are adapted to be ter level, a bottom transversely horizontal between the sides and longitudinally inclined from end to end, and transverse slats resting at their respective ends upon the edges of the flanges above and free from the bottom, substantially as specified.

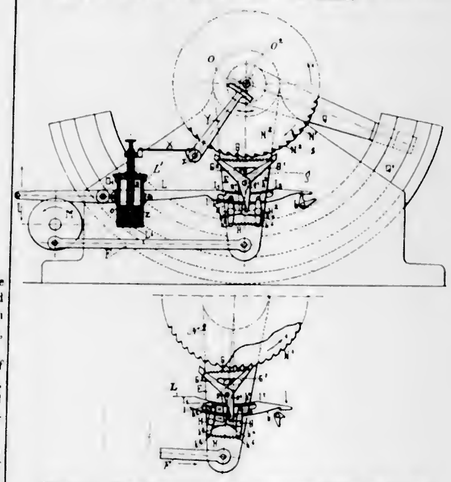
6. The combination in a stall floor with the removable transverse slats, and separating devices between said slats to form openings, of a metal pan having flanges at the sides and at one end whose top and bottom edges are parallel, offset shoulders in the said side flanges adapted to be set level and to receive the respective ends of the transverse slats and support the same, a longitudinally inclined bottom between the aforesaid side flanges and below the level of the slats, whereby the pan is free and open below the slats to receive and discharge the liquid, substantially as specified.

7. The combination in a stall floor with the removable transverse slats and separating devices between said slats to form openings of a metal pan having flanges at the sides and at one end whose top and bottom edges are parallel, offset shoulders in the said side flanges adapted to be set level and to receive the respective ends of the transverse slats and support the same, a longitudinally inclined bottom between the aforesaid side flanges and below the level of the slats, and a longitudinal rib rising from the bottom to and on which the slats rest and the pan is free and open below the slats to receive and discharge the liquid, substantially as specified.

8. The combination in a stall floor with the transverse removable slats, and the tie rods and intermediate washers for connecting the slats in one or more sections, of the metal pan having the shouldered sides 1, 2 adapted to be set level, the downward flange *b'*, an inclined bottom *c* extending from end to end thereof, one or more longitudinal ribs 3, lugs 4 on the under side, and the lugs 10 at one end, and the gutter E having an edge flange *e* to receive the flange *b'* and a supporting flange *e'*, substantially as set forth.

9. The combination in a stall floor with the removable slats and the tie rods and intermediate washers therefor, of the pan having sides *a a'* with shoulders or offsets 1, 2 adapted to be set level, the downward flange *b'* at one end, the inclined bottom *c* extending from end to end of the pan, and longitudinal ribs one extending from the bottom of the pan up to the under side of the slats and the other from the bottom down to the level of the bottom edge of the sides, substantially as specified.

529,570. **REGULATING DEVICE.** RENÉ THURY, Geneva, Switzerland, assignor to the Compagnie de l'Industrie Électrique, same place. Filed Aug. 18, 1894. Serial No. 520,679. (No model.)



*Claim.*—1. The combination in a regulating device of pawls, a lever for moving the pawls, ratchet wheels on which the pawls act in one direction or the other, mechanism for holding the pawls out of action, a lever for bringing the pawls into action in one direction or the other, a cylinder and piston with a passage for the liquid and a regulating valve, and mechanism acting to move the piston or cylinder and the lever and control the action of the pawls substantially as specified

2. The combination in a regulating device of spring pawls, a lever for moving the pawls, ratchet wheels on which the pawls act in one direction or the other, latch levers for holding the pawls out of action, a lever for bringing the pawls into action in one direction or the other a cylinder and piston with a passage for the liquid to pass from one side of the piston to the other and a pinion, rack and lever connected with the piston or cylinder and acting upon the lever to control the action of the pawls, substantially as specified.

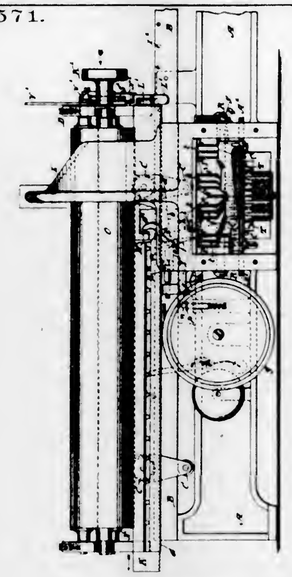
529,571. **WRITING-MACHINE.** WILLIAM B. WAIT, New York, N. Y. Filed April 12, 1894. Serial No. 507,290. (No model.)

*Claim.*—1. A paper carriage provided with a feed rack, combined with an actuator for the carriage, a dog made to alternately engage and release the rack, an actuating lever for said dog, a fixed pivot or fulcrum for said lever, a lever frame linked to said lever for actuating the latter, independent keys made to loosely rest on the lever frame for independently actuating the latter with the lever and dog, a movable pivot mounted independently of the fixed pivot, and a second dog mounted on said movable pivot to alternately release and engage and to move laterally along the rack, substantially as described.

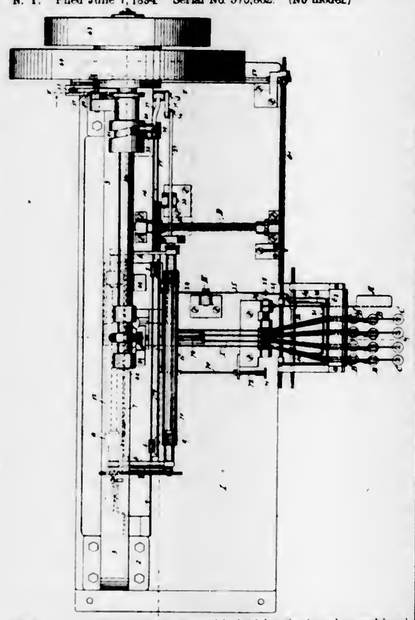
2. A paper carriage provided with feed mechanism, substantially as described, combined with keys made to actuate said feed mechanism, and yoke keys placed intermediate the first named keys, each yoke key having a stud fixed directly to the stem or shank of such yoke key and made to extend into direct contact upon the shanks of two adjacent keys, substantially as described



529,571.



529,572. **WRITING-MACHINE.** WILLIAM B. WAIT, New York, N. Y. Filed June 7, 1894. Serial No. 513,602. (No model.)



*Claim.*—1 A sheet carriage provided with a feed rack, combined with feed and stop pawls, a movable arm or support for the feed pawl, a lever and key for moving the support in one direction, and a second lever and cam movement actuated independently of the key for returning the support, an actuating cam for the second lever, a driving wheel, and a clutch actuated by the key for causing the wheel to actuate the cam substantially as described.

3. A sheet carriage and feed mechanism substantially as described therefor, combined with a movable block or anvil for acting on the sheet or paper carried by the carriage, a type bar or stylus made movable in the direction of motion of the anvil so as to be normally moved to its inoperative position by said anvil and a lock for securing the type bar against motion by the anvil substantially as described

4. A sheet carriage and feeding mechanism substantially as described therefor, combined with a suitably actuated movable block or anvil for acting on the sheet or paper carried by the carriage, a movable type bar or stylus, a movable or yielding plate or table for the sheet, and a lock for securing the type bar against motion by the anvil substantially as described.

5 A sheet carriage and feeding mechanism substantially as described therefor, combined with a movable block or anvil, a driving mechanism substantially as described for said anvil and provided with a clutch, a movable type bar or stylus against which the anvil acts, a lock for said stylus, and a key for actuating said lock and for bringing the clutch into action for imparting motion to the anvil substantially as described.

6 A sheet carriage and feeding mechanism substantially as described therefor, combined with a movable block or anvil for acting on the sheet or paper carried by the carriage, movable type bars or styluses, and locks for securing the type bars against motion by the anvil, said locks consisting of oppositely placed slides adapted to engage the styluses substantially as described.

7. A sheet carriage and feeding mechanism substantially as described therefor, combined with a movable block or anvil for acting on the sheet or paper carried by the carriage, movable type bars or styluses, locks consisting of oppositely placed slides adapted to engage the styluses, and keys respectively provided with oppositely extending arms H H' connected respectively to oppositely located locking slides substantially as described

8. A sheet carriage and feeding mechanism substantially as described therefor, combined with a movable block or anvil for acting on the sheet or paper carried by the carriage, a movable type bar or stylus, a lock for securing the type bar against motion by the anvil, said lock consisting of a slide provided with a recess, and a key provided with an arm and a link connected to said arm, and a lever actuated by said link and provided with a nose made to engage into the recess in the slide for actuating the latter substantially as described.

9. A sheet carriage provided with a feed rack combined with a feed and a stop pawl for the rack, levers 24, 25 and 26, 27 for actuating the feed pawl, a stylus or type bar, an anvil for acting against the type bar, a driving wheel, a clutch for conveying motion from the driving wheel to the anvil and to one of the feed pawl actuating levers, and a key for bringing the clutch into action and for actuating the other feed pawl actuating lever substantially as described.

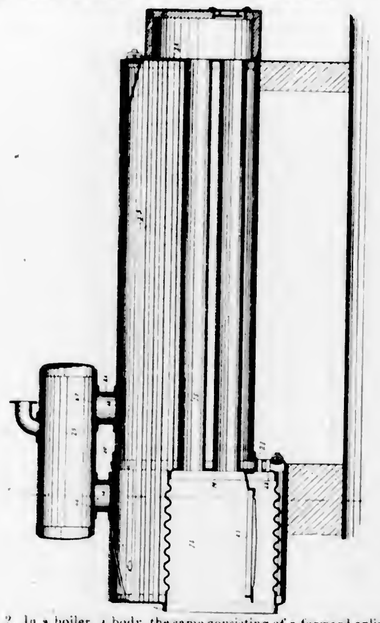
10. A sheet carriage provided with a feed rack combined with a feed and a stop pawl for the rack, levers 24, 25 and 26, 27, for actuating the feed pawl, a stylus or type bar, an anvil for acting against the type bar, a driving wheel, a clutch for conveying motion from the driving wheel to the anvil and to one of the feed pawl actuating levers, a key for bringing the clutch into action, and a yoke actuated by the key and provided with an arm 29 connected to the other feed pawl actuating lever substantially as described.

11. A sheet carriage provided with a feed rack combined with a feed and a stop pawl for the rack, levers 24, 25, and 26, 27, for actuating the feed pawl, a movable stylus or type bar, a lock for said type bar, an anvil for acting against the type bar, a driving wheel, a clutch for conveying motion from the driving wheel to the anvil and to one of the feed pawl actuating levers, a key, a yoke actuated by the key and provided with an arm 60 and connections for releasing the clutch and a second yoke provided with an arm 29 connected to the other feed pawl actuating lever, said key being provided with an arm connected to the type bar lock for actuating the latter, substantially as described.

12. A sheet carriage comprising a frame and two pairs of feed rollers located respectively at the front and rear of the frame, each pair being adapted to grasp and feed a sheet, said frame being provided with fixed bearings for the shaft of one roller of each pair, a movable or slotted bearing for the shaft of the other roller of each pair, springs for forcing the movable rollers toward the fixed rollers, studs fixed to the frame, cams or eccentrics mounted on the shafts of the movable rollers and adapted to act against the studs for moving said last named shafts, and a link for uniting the cams, substantially as described.

529,573. **BOILER.** GEORGE H WALTZ and LUCIUS E. PATTON, Memphis, Tenn. Filed July 31, 1894. Serial No. 519,067. (No model.)

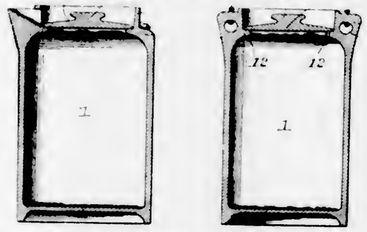
*Claim.*—1. In a boiler a forward shell, circular fire boxes or furnaces located therein, a cylindrical barrel constituting the rear of the boiler and connected with said shell, a smoke box located at the rear of the barrel exterior thereto and having a firebrick lining, fire tubes leading from the fire boxes or furnaces in the smoke box, and return tubes leading from the smoke box to the front of the boiler over the fire boxes or furnaces, as and for the purpose specified



2. In a boiler, a body, the same consisting of a forward cylindrical shell, a barrel of smaller diameter projected rearward from the shell, a cylindrical fire box or furnace located within the shell, a throat connecting the shell and barrel and closing the space between their outer and contiguous surfaces, and tubular stay bolts extending through the throat into the rear wall of the fire box or furnace below the rear end of the grate, the said bolts serving as supports and likewise for the introduction of air to the fire, as and for the purpose specified

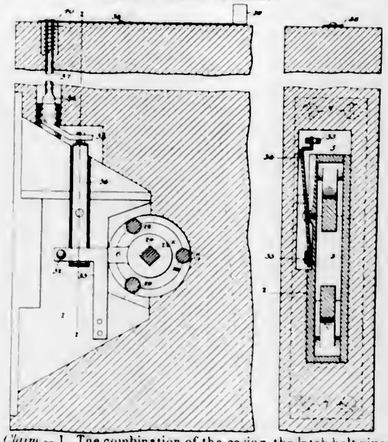
3. In the construction of a boiler, a shell, a barrel of smaller diameter projected rearward from the shell, connected with a tubular furnace located within the shell, direct fire tubes leading from the said furnace into the barrel the barrel being provided with return flues, and tubular braces located in the water spans between the shell and furnace, taking up the surplus water space and serving as stays for the boiler, substantially as shown and described

529,574. JUG OR JAR. PARLEE P. WILBUR, Zanesville, Ohio. Filed June 4, 1894. Serial No. 513,436. (No model.)



*Claim.*—As an improved article, an earthenware jug or jar of the character described comprising the cylindrical body having a contracted upper end forming a shoulder, an upwardly extending concentric flange, the lugs on the outside of said flange, the annular rib at the lower inner end of said flange, and the spout located outside of said flange, all made integral with each other, the cover seated on said rib and the bail connected with said lugs and adapted to fold down outside said flange and rest upon said shoulder, substantially as described.

529,575. LATCH. EDWARD S. WINCHESTER, Boston, Mass. Filed Mar. 19, 1894. Serial No. 504,226. (No model.)



*Claim.*—1. The combination of the casing, the latch bolt pivoted therein, two swinging plates in position to engage the latch bolt and formed with adjacent straight edges, the spindle mounted in bearings disconnected from the casing, and the rocker arm connected at one end to the spindle and having its opposite end extended between the two adjacent edges of the swinging plates in position to engage the same.

2. The combination of the casing, the latch bolt mounted therein, the two oppositely disposed lever plates pivoted respectively at opposite sides of the latch bolt and having their free ends arranged to engage and move the latch bolt when swung outward, the spindle, and the rocker arm there on having its free end extended between the free ends of the swinging lever-plates; whereby the movement of the rocker arm in either direction will swing one or the other of the plates outward and act to retract the latch bolt.

3. The combination of the latch bolt, a spring detent for temporarily holding the bolt in retracted position, a lever fulcrumed at the side of the case for throwing the detent out of action, a rock shaft extending to the top of the door and having an arm in engagement with said lever for actuating the latter and an arm to engage the door frame and rock the shaft when the door is closed.

4. The combination of the casing, the latch bolt therein, a spring detent for temporarily holding the latch bolt in a retracted position, a vertical rock shaft arranged to be operated by the closing movement of the door and adapted to retract the detent and release the bolt

5. The combination of the casing, the latch bolt therein, the laterally movable detent for temporarily holding the same in a retracted position, the vertical rock shaft, the arm on the lower end of the shaft, the lever between said arm and the detent, and the arm on the upper end of the shaft arranged to be moved by the closing movement of the door and to operate the detent and release the latch bolt.

6. The combination of the casing, the latch bolt therein, the spring arm fixed to the outer side of the casing, the pin on the end of the arm extending through the casing in position to engage the latch bolt when the same is retracted, the lever pivoted to the casing and having its lower end in engagement with the spring arm, the rocking arm connected to the upper end of the lever, the vertical rock shaft connected to the arm, the horizontal lever at the upper end of the door in position to be engaged by the frame, and the rod connecting said lever with the rock shaft.

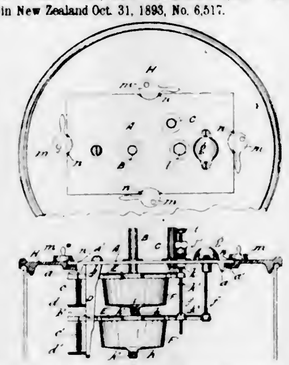
7 The combination with the casing, of the latch bolt pivoted near its end therein, the frame pivoted near the opposite end of the latch bolt, means for retracting the bolt, the spring detent in position to extend in advance of and engage the pivoted frame when the latch bolt is retracted, and means for retracting the detent to release the bolt

8 The combination of the swinging latch bolt, a frame pivoted thereto and provided with lateral ears, a plate pivoted at one end and formed in its free end with a recess corresponding in length to the throw of the latch, a spindle, a rocker arm connected to the spindle with its free end in position to engage the free end of the plate and swing the same outward on its pivot and retract the bolt,



a detent arranged to engage said pivoted frame and hold the bolt temporarily in a retracted position, and means adapted to be actuated by the door frame to release the bolt when the door is closed.

529,576. MILKING-MACHINE. REUBEN WITHELL, Brookside, New Zealand. Filed Feb. 26, 1894. Serial No. 501,605. (No model.) Patented in New Zealand Oct. 31, 1893, No. 6,517.

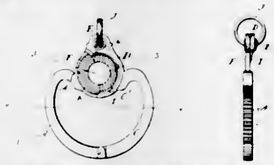


*Claim.*—1. The combination of a vacuum chamber having a milk and a suction tube, an inclosed relief valve, a bracket within the chamber, upper and lower bars pivotally supported by the bracket, and each holding a bucket or vessel, an arm projecting from one bar and working beneath the suction tube, and a rod projecting from the other bar and operating the relief valve, substantially as described.

2. In an apparatus such as described, the combination of the vessel having the milk and suction tubes, the bracket within the vessel, the pivoted bars supported by said bracket and the springs connected at one end with the bars and at their other ends with the bracket, the buckets supported by the bars, the relief valve and the arm *e* and rod *f*, substantially as described.

3 The combination of the vacuum chamber and its appurtenances the suction pipe C, the bracket formed within said chamber, the pivoted bars supported by the bracket, the buckets supported by the bars, and the rod on one bar and arm on the other the flexible pad, and the relief valve, the starting rods attached to said bars and working air tight through the top of the chamber, said last named rod being provided with the adjusting nuts, substantially as described.

529,577. COMBINED KEY-RING AND CIGAR-CUTTER. EDWARD B. AIGUIER, Newark, N. J., assignor of one-half to the Richardson Manufacturing Company, same place. Filed Aug. 21, 1894. Serial No. 520,890. (No model.)



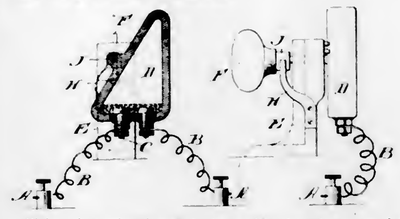
*Claim.*—1. A combined ring and cigar cutter, comprising a ring having its ends spaced apart and formed of two hinged sections, and a cutter formed of a fixed and a movable section, said cutter being secured to one end of the ring and having its movable section engaging the other end of the ring and adapted to be operated thereby, substantially as described.

2. A combined key ring and cigar cutter, comprising a fixed ring head, a movable ring head pivoted to the fixed head, a stationary cutter secured to the fixed head, and a movable cutter pivoted to the stationary cutter and engaging the free end of the movable ring head, and adapted to be operated thereby, substantially as described.

3 A key ring and cigar cutter, comprising a fixed ring head, a movable ring head pivoted on the fixed ring head, a frame secured to the fixed head and carrying a cutter, a second frame pivoted on the said first named frame and likewise carrying a cutter, the said second pivoted frame engaging the free end of the said pivoted ring head and adapted to be operated thereby substantially as shown and described,

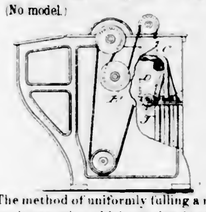
4. A key ring and cigar cutter, comprising a fixed ring head, a movable ring head pivoted on the fixed ring head, a frame secured to the fixed ring head and carrying a cutter, a second frame pivoted on the said first named frame and likewise carrying a cutter, the said second frame engaging the free end of the said pivoted ring head and adapted to be operated thereby, and a spring pressing on the said frames to hold their cutters in open position and the ring closed, substantially as shown and described.

529,578. SWITCH. FRANCIS B. BADT, Chicago, Ill. Filed Oct. 14, 1892. Serial No. 448,877. (No model.)



*Claim.*—In an electric switch, the combination of an eccentrically pivoted, air tight chamber, terminals passing through the walls thereof, a quantity of conducting fluid in such chamber, a standard by which the switch is supported, a thumb piece provided with an end that passes through a hole in the standard and is rigidly attached to the air tight chamber so that said chamber can be rotated, a square shank attached to said thumb piece, a spring having one end attached to the standard and the other end bearing against the square shank on the thumb piece, said chamber being of such a shape and the terminals so located that said terminals are both immersed in the liquid or simultaneously free thereof.

529,579. METHOD OF AND MACHINE FOR FULLING CLOTH. HENRY BALBIAN, North Vassalborough, Me. Filed Dec. 7, 1893. Serial No. 493,018. (No model.)



*Claim.*—1. The method of uniformly fulling a number of separate pieces of cloth simultaneously, which consists in twisting together a plurality of separate pieces of cloth, and then simultaneously fulling the several pieces of cloth in their twisted condition, substantially as described.

2. In a fulling machine, the combination, with the fulling rollers, of a revoluble carrier provided with guide holes for the passage of the pieces of cloth and a guide rod located intermediate the fulling rollers and the carrier substantially as described.

3. In a fulling machine, the combination, with the fulling rollers, of a revoluble carrier provided with holes for the passage of the pieces of cloth, and a guide rod located intermediate the fulling rollers and the carrier, and arranged transversely of the axis of rotation of the carrier, substantially as described

4. A fulling machine provided with an actuating mechanism and a device for twisting the pieces of cloth, said device comprising a table, bearings held on the said table, a carrier having a series of guide holes and mounted to rotate in the said bearings, a worm wheel on the said carrier, and a worm in mesh with the said worm wheel and driven from the actuating mechanism of the machine, substantially as shown and described.

529,580. APPARATUS FOR HOLDING ENDS OF AND CLOSING CREVASSES. WILLIAM BAPTIST, New Orleans, La. Filed July 18, 1894. Serial No. 517,915. (No model.)

*Claim.*—1. In an apparatus of the character described, the combination with a flexible screen or matting, of a chain secured along the edge thereof, and means for placing said screen so weighted over the broken end of the levee, and of holding it in position, substantially as and for the purposes described.

2. In an apparatus of the character described, the combination with a flexible screen or matting, of a chain secured along the edge thereof, and heavy wedges also secured to the said edge of the screen, and means for placing said screen so weighted over the broken end of the levee and holding it in position, substantially as and for the purposes described.

3. In an apparatus of the character described, the combination with a flexible screen or matting, of a chain secured along the edge thereof, and a beam sharpened at one end and attached near said sharpened end to said chain or to the screen, with means for pushing said beam and the screen connected thereto over the broken end of the levee, and then tilting said beam, substantially as and for the purposes described.



4. In an apparatus of the character described, the combination with a flexible screen or matting of a chain secured along the edge thereof, and heavy wedges also secured to the said edge of the screen, and a beam sharpened at one end and attached near said sharpened end to said chain or the screen, with means for pushing said beam and the screen connected thereto over the broken end of the levee, and then tilting said beam, substantially as and for the purposes described.

5. In an apparatus of the character described, the combination with a flexible screen or matting, of a chain secured along the edge thereof, a beam connected to said screen or matting near one edge thereof, guides for said beam secured to the levee, and means for pushing said beam outward through said guides, and then tilting said beam, substantially as and for the purposes described.

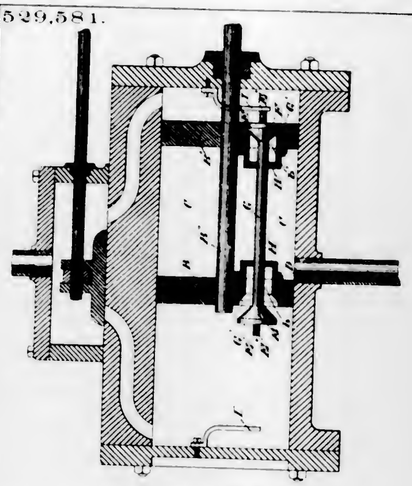
6. In an apparatus for holding the broken ends of levees or closing crevasses the combination with a plurality of bags filled with heavy solid material, of a rope or chain secured to said bags, and means for holding the outer end of said rope or chain, substantially as described.

7. In an apparatus for holding the broken ends of levees or closing crevasses, the combination with a pluralty of bags filled with earth, of a rope hitched about said bags and holding same firmly, and means for holding the outer end of said rope, substantially as described.

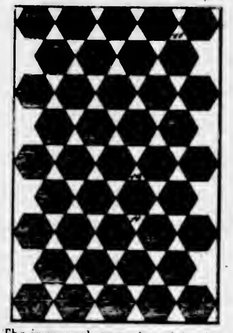
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**529,581.** STEAM-ENGINE. NATHAN W. BARNETT, Monaca, Pa., assignor of one-half to Augusta H. Lindsay, same place. Filed Aug. 15, 1894. Serial No. 520,379. (No model.)

*Claim.*—The combination in an engine, of a cylinder having springs secured to the inner surfaces of its heads, a piston rod, two piston heads secured on said rod, a chamber between said heads, valves in the piston heads, a rod connecting said valves, open framed guide-ways for the latter rod on the inner surfaces of the piston heads, an exhaust pipe in the cylinder in communication with said chamber, projections on the valves to contact with the springs in the cylinder to operate the valves when steam is admitted to the cylinder, as and for the purposes set forth.



**529,582.** GAME-BOARD. JAY F. BEAMAN, Antwerp, N. Y. Filed Mar. 7, 1894. Serial No. 502,653. (No model.)



*Claim.*—1. The improved game board having rows of substantially hexagonal blocks or playing spaces and having substantially triangular blank spaces included between them and forming a connected series of playing spaces, as shown and described, the opposite corners of the playing field or surface being symmetrical or similar, as specified.

2. A game-board having a central six-pointed star space, a series of rows of playing blocks or spaces arranged around it and including triangular blank spaces between them, which are also in rows, the arrangement of said playing spaces being symmetrical or similar at each corner of the playing surface, as shown and described.

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**529,583.** DUMPING-CAR AND ATTACHMENTS. SAMUEL W. BEATTY, Bayou Goula, La. Filed May 25, 1894. Serial No. 512,409. (No model.)

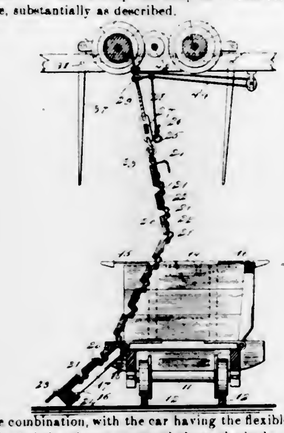
*Claim.*—1. A railway dumping car comprising the bed mounted on the truck, provided with stationary ends and having both of its sides hinged to swing outward and downward, and a separate and independent flexible bed having suspension hooks or clips at its longitudinal edges adapted to detachably engage the upper edges of the said hinged sides, and catches for securing the sides to the ends, substantially as described.

2. The herein described dumping car, comprising a suitable bed mounted on trucks and provided with stationary ends, catches on the said ends, swinging side frames hinged to the bed and adapted to engage the catches, and a flexible body comprising a series of hinged slats adapted to connect with the rails of the said frames, substantially as described.

3. The combination, with the car having stationary ends and the catches on the said ends, of the swinging side frames hinged to the bed of the car and provided with rails to engage the catches, the flexible body comprising a series of hinged slats, the hooks on the



body to engage the rails of the said frames, and engaging devices, as the rings, secured to the body and adapted to connect with a hoisting device, substantially as described.



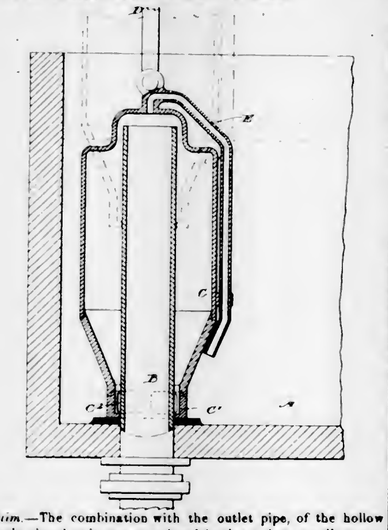
4. The combination, with the car having the flexible detachable body, of the hoisting drums arranged above the body, a connection between the said drums and the body, and mechanism for throwing either of said drums into and out of gear, substantially as described.

5. The combination, with the car having the detachable body, of the spreader having hooks to engage the body, the hoisting drums adapted to connect with the spreader, a driving shaft adjacent to the said drums, and a lever controlled gear connection between the driving shaft and the drums, substantially as described.

6. The combination of the spreader, the hoisting drums, the connection between the drums and spreader, and a cable connected with the spreader and extending over a guide pulley, and a hand hold and hook secured to the cable, substantially as described.

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**529,584.** SIPHON-VALVE. FREDERICK BOOTH, Concord, N. H. Filed Feb. 13, 1894. Serial No. 500,024. (No model.)

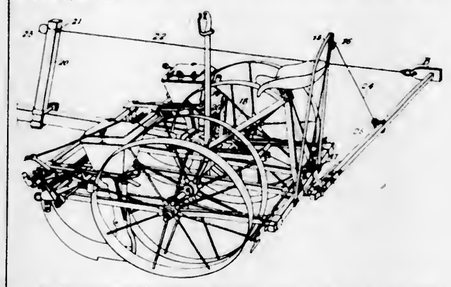


*Claim.*—The combination with the outlet pipe, of the hollow valve body closed at its upper end and having a downwardly tapering lower end fitting the said pipe as shown at C and there provided with lateral inlet openings $C^2$, and the pipe E leading from the top of the said valve body down along the outer side thereof and terminating a suitable distance above the openings $C^2$, substantially as described.

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**529,585.** LAND-MARKER. HENRY BOWERS, Milton, Wis. Filed Sept. 1, 1894. Serial No. 521,916. (No model.)

*Claim.*—1. A marking device for planters, the same consisting of a marker arm adapted for pivotal attachment to a planter and provided with a regulating block at its pivoted end, whereby it may be moved rearward and will be prevented from slipping forward on the machine when elevated the marker arm being provided at its outer end with the customary shoe, a standard adapted for attachment to the pole of the planter, a draft rope connected with the shoe, passed through the standard and provided with a weight at that end, and a device, substantially as described, for hoisting the arm, as and for the purpose specified.



2. The combination, with a planter, a standard secured upon the forward portion of the planter, a keeper located adjacent to the seat of the planter, and pulleys located upon the planter at the rear of the seat and forward thereof, of a marker arm pivoted to the rear of the planter, and provided with a regulating block adjustably attached thereto, adapted for engagement with the pivot of the arm, a hoist rope attached to the arm, passed over the pulleys on the planter and adapted for engagement with the keeper, and a draft rope attached to the marking shoe of the arm and passed through the forward standard on the planter, being provided at its forward end with a weight, as and for the purpose set forth.

3. The combination, with a planter, a standard secured to its forward portion, having an opening near its top, a standard secured to the rear end of the planter at the rear of the driver's seat, a pulley secured at the top of the rear standard, a second pulley secured at the base of the same, and a keeper secured upon the planter in front of the driver's seat, comprising a bar having a V-groove in its upper end, of a marker the arm of which is pivotally attached to the rear of the planter, a regulating block located upon the arm, and adapted for engagement with the pivot thereof, a hoist rope attached to the arm, passed over the said pulleys, entering the V-groove of the keeper and terminating in a handle, and a draft rope attached to the shoe of the planter and passed through the opening in the forward standard, being provided with a weight at its forward end, as and for the purpose specified.

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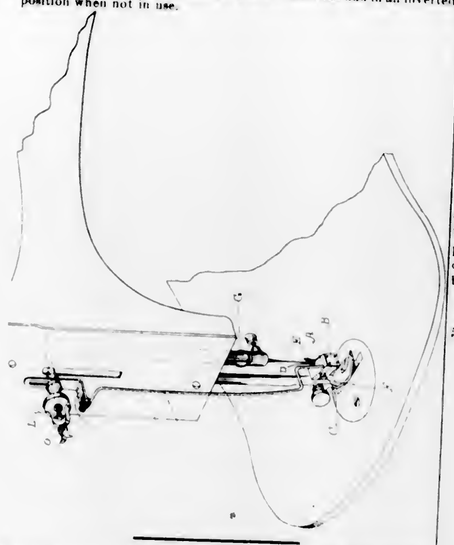
**529,586.** SEWING-MACHINE-NEEDLE THREADER. PATRICK BEALLEY, Oakland, Cal. Filed May 1, 1894. Serial No. 509,689. (No model.)

*Claim.*—1. A threading device for sewing machine needles consisting of a block having a hole or perforation adapted to coincide with the eye of the needle, an arm, to the lower end of which the block is secured, and means for adjustably securing said arm and block to the needle bar consisting of a slotted plate fitted to the arm of the machine and having its lower end connected by a hinged joint with the upper end of the arm which carries the block, a screw projecting from the needle bar through a slot in the arm of the machine, and through the slot in said plate, and a locking nut for adjustably securing said plate, and provided with means for maintaining the block elevated when not in use.

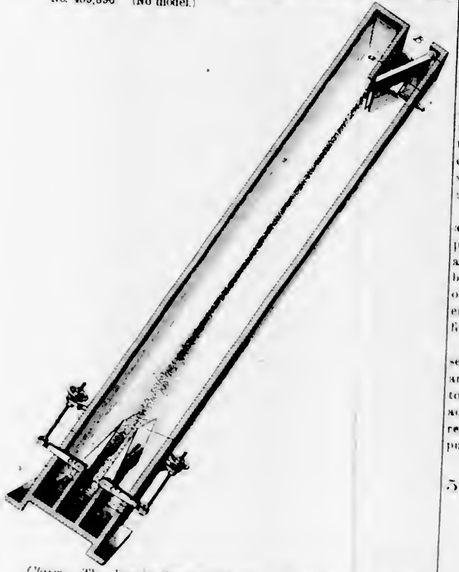
2. A needle threading device for sewing machines consisting of a block having a hole or perforation adapted to coincide with the eye of the needle and direct the thread therethrough, an arm carrying the block at its lower end, a slotted plate fitted against the arm of the machine having its lower end bent outwardly and hinged to the upper end of the arm which carries the block, about which hinge the device may be turned down for use and up out of the way when not in use, a screw pin from the needle bar passing through a slot in the arm of the machine and through the slot in the plate, and a nut engaging said pin and adjustably securing the slotted plate, said nut being provided with a clamp into which the block carrying arm may be placed and maintained in an elevated position.

3. A device for threading sewing machine needles consisting of a two part block, a spring plate at one end of the block by which the two parts are normally held together, a tapered opening or hole made partially in each block between the meeting faces thereof, a vertical channel into which the smaller part of the hole opens upon the oppo

site side, said channel being adapted to fit the needle, and a spring plate between which and the block, the needle passes, whereby it is retained in the channel with the eye in line with the hole of the threading block and means for holding the device elevated and in an inverted position when not in use.

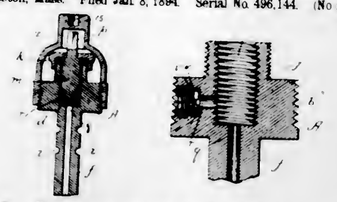


529,587. METHOD OF GRADING ORES OR SIMILAR MATERIALS. DANIEL BRENNAN, Jr., Bayonne, N. J. Filed Nov. 3, 1893. Serial No. 489,896. (No model.)



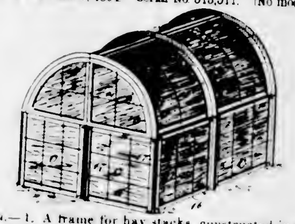
*Claim.*—The herein described method of grading comminuted ores and similar materials, consisting in causing the material to fall, in response to gravity, in a stream of unscattered particles, in a fluid medium, while maintaining the medium undisturbed except as movement thereof is induced by the particles responding to the force of gravity, permitting the stream to thus progress downward, unobstructed, and to expand until a self grading of the stream is effected and the particles range themselves to a practical degree, increasingly coarser from the exterior toward the line of initial vertical fall, and then separating the expanded stream into grades by dividing the same, substantially as described

529,588. VALVE FOR PNEUMATIC TIRES. MICHAEL BRIDGES, Boston, Mass. Filed Jan. 8, 1894. Serial No. 496,144. (No model.)



*Claim.*—The combination with the valve body, A, provided with the stem, *f*, having the port, *g*, and seat, *q*; of the conical screw-valve, *m*, for engaging said seat; the laterally opening enlarged port, *r*; the interiorly and exteriorly screw-threaded nipple *t*, turned into said port; the check valve, *x*, having the grooved face engaging a shoulder, *w*, in said port, and the screw cap, *z*, having the sink, 15, all being arranged to operate substantially as described

529,589. FRAME FOR HAYSTACKS. JOHN P. BROWN, Walcott, Ind. Filed June 5, 1894. Serial No. 513,511. (No model.)



*Claim.*—1. A frame for hay stacks, constructed in sections, the said sections being removably connected and each formed of an open frame having a netting, as and for the purpose set forth

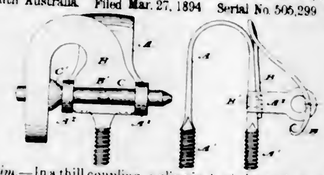
2. A frame for hay stacks, constructed in sections, comprising upper arched sections and side sections, each formed of an open frame provided with a netting and means for suspending the side sections from the arched sections, substantially as shown and described.

3. A frame for hay stacks, the same consisting of upper arched sections adapted to cover the top of the stack, square sections adapted to cover the sides and ends of the stack, and quadrant sections adapted to assist in closing the ends, each of the said sections comprising an open frame provided with a netting and means, substantially as shown and described, for detachably connecting the several sections with each other, as and for the purpose specified.

4. A frame for hay stacks, the same consisting of arched sections, adapted to cover the upper portions of the stack, said sections comprising side bars, top and bottom bars and an intervening netting, and substantially straight sections, comprising side, top and bottom bars and an intervening netting, adapted to cover the sides and ends of the stack, hooks secured to sundry of the sections and adapted to enter eyes secured upon other of the sections, substantially as and for the purpose set forth.

5. A frame for hay stacks, the same consisting of arched upper sections, comprising side, end and top bars and an intervening netting, and lower sections substantially straight, comprising side, top and bottom bars and an intervening netting, pins carried by the sections, adapted to enter the stack and means, substantially as described, for removably connecting the sections with each other, as and for the purpose set forth.

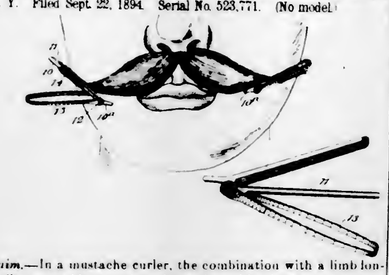
529,590. THILL-COUPLING. GEORGE BROWNLEES, Naracoorte, South Australia. Filed Mar. 27, 1894. Serial No. 505,299. (No model.)



*Claim.*—In a thill coupling, a clip pin A, pin lugs $A^2$, a bolt adapted to enter said lugs, a conical projection on said bolt, and a spring B formed of a distorted U shape, one end being secured to the clip, and the other end forming a spring extending forwardly and laterally in line with the opening in the lugs and adapted to engage the bolt head, substantially as described

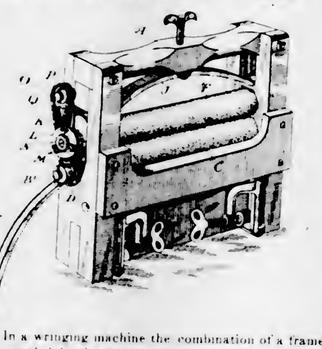


529,591. MUSTACHE-CURLER. CHARLES C. BURGIO, Brooklyn, N. Y. Filed Sept. 22, 1894. Serial No. 523,771. (No model.)



*Claim.*—In a mustache curler, the combination with a limb longitudinally grooved in a portion of its body and having a handle piece projected from the grooved portion of said body, of a cylindrical limb adapted to loosely engage the grooved portion of the other limb, and pivoted thereto at the junction of the handle-piece with the grooved portion thereof, and a bent keeper piece having two equal integral limbs, the inner edges of which are rounded, said limbs being pivoted at ends on the same pintle that joins the grooved and cylindrical limbs and extending throughout the length thereof, so as to closely embrace all the hair wrapped on the folded grooved and cylindrical limbs when the keeper is pressed over the hair and projects beyond the ends of the folded limbs, substantially as described.

529,592. WRINGING-MACHINE. ALFRED BURKHOLDER, Toronto, Canada. Filed Feb. 15, 1894. Serial No. 500,315. (No model.)

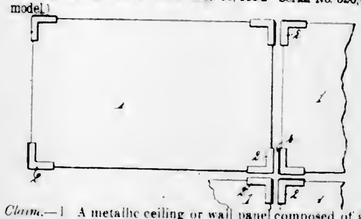


*Claim.*—1. In a wringing machine the combination of a framework a roll C journaled in the framework, means for transmitting motion to this roll, a sprocket wheel mounted upon the roll C, a roll F driven normally by friction from the roll C, a sprocket wheel mounted on the roll F, a spindle connected to the framework, a sprocket wheel loosely mounted on said spindle, a drive chain passing around the sprocket wheels on the roll C and said spindle meshing continuously with the sprocket wheel on the roll F, and means for driving the roll F in the event of the stoppage of the frictional revolution of the said roll, substantially as specified.

2. In a wringing machine the combination of the framework, a roll C journaled in the framework, a sprocket wheel mounted on the spindle of the roll C, means for transmitting a rotary motion to the roll C, a roll F mounted on the top of the roll C, a sprocket wheel K loosely mounted on the spindle G' of the roll F, dogs M pivotally connected to the side face of the sprocket wheel K, a ratchet wheel N rigidly mounted upon the spindle G', a sprocket wheel P mounted upon a spindle O connected to the framework, a sprocket chain Q passing around the sprocket wheels D and P, and engaging with the teeth of the sprocket wheel K, substantially as specified.

3. In a wringing machine the combination of the framework, a roll C journaled in the framework, a sprocket wheel D mounted on the spindle B' of the roll C, a roll F mounted on the top of the roll C, a sprocket wheel K loosely mounted on the spindle G' of the roll F, a disk L rigidly connected to the side face of the sprocket wheel K, dogs M pivotally connected to the side face of the disk L, a ratchet wheel N rigidly mounted on the spindle G', a spindle O connected to the framework A, a sprocket wheel P loosely mounted on the spindle O, a sprocket chain Q passing around the sprocket wheels D and P and engaging with the teeth of the sprocket wheel K, the roll F driven by friction from the roll C during the free passage of the articles between the said rolls, and driven by the sprocket chain Q engaging with the teeth of the sprocket wheel K during the stoppage of the roll F by the articles becoming blocked, substantially as specified.

529,593. METALLIC PANEL FOR CEILINGS. FRANK G. CALDWELL, Wheeling, W. Va. Filed Aug. 16, 1894. Serial No. 520,469. (No model.)



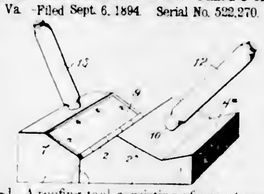
*Claim.*—1. A metallic ceiling or wall panel composed of a metal sheet or plate provided at its corners with wooden angle pieces, spaced apart or separated from each other, for the passage of fastenings to secure the panel in place and for attachment of moldings or caps between contiguous panels, substantially as described.

2. A metallic ceiling or wall panel composed of a metal sheet or plate provided at its corners with tongued and grooved angle pieces of wood, whereby the angle pieces on contiguous panels are adapted to closely interlock with each other, the said angle pieces of each panel being adapted for passage of fastenings to secure the panel in place and for attachment of moldings or caps between contiguous panels, substantially as described.

3. The combination of sheet metal plates, wooden angle pieces fastened to the corner edges of said plates and spaced apart or separated from each other for passage of fastenings to secure each plate or panel in position, and sheet metal moldings or caps secured to and covering said angle pieces and concealing the joints between contiguous panels, substantially as described

4. The combination of a series of metal sheets or plates, wooden angle pieces attached to the corners of each plate or sheet for passage of fastenings to secure the plate or panel in position, the edges of each sheet or plate being turned outward between the said corner angle pieces, and sheet metal moldings or caps secured to and covering said angle pieces and in close binding contact with the outwardly turned portions of the metal sheets to conceal the joints between contiguous panels and form a practically continuous surface, substantially as described.

529,594. ROOFING IMPLEMENT. FRANK G CALDWELL, Wheeling, W. Va. Filed Sept. 6, 1894. Serial No. 522,270. (No model.)



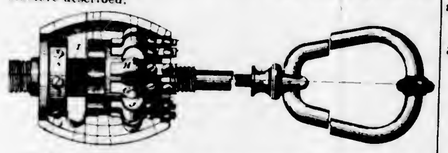
*Claim*—1. A roofing-tool, consisting of a cap former, and double-seamer, composed of two blocks having handles 12 and 13 and provided respectively with vertical faces 3 and 8 hinged directly together at their top portions, one of the blocks constructed with a cap-former projecting laterally and provided with a vertical face and an upper face inclined downwardly in a direction toward the hinged parts of the blocks substantially as described.

2. A roofing-tool consisting of two blocks hinged together along the line of intersection of an upper inclined face and a vertical face in each block, a cap-former integral with one of said blocks and having a vertical face and an upper face meeting the vertical face at an angle of less than ninety degrees, and levers removably secured in and removable from said blocks, one of the latter having seats in its upper and lower faces, substantially as described

3. A roofing-tool comprising a block having two similar downwardly inclined upper faces and a cap-former projecting from the side of one of said inclined faces, a block hinged thereto along the line of an obtuse angle formed by the intersection of a vertical and an inclined upper face in each block, and levers removably secured in seats in the latter, one of said levers having a seat in the upper and in the lower and parallel face of one of said blocks, substantially as described.

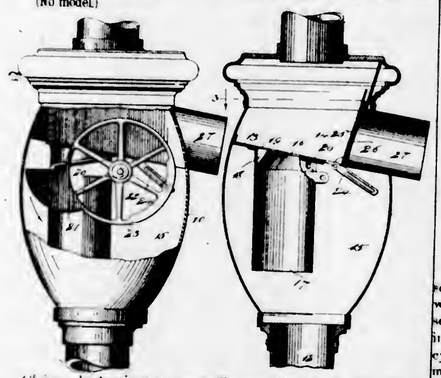
529,595. ELECTRIC SWITCH AND CUT-OUT. JOHN C. CASSIDY, East Orange, N. J. Filed Sept. 24, 1894. Serial No. 523,869. (No model.)

*Claim.*—1. An electric switch and cut-out, consisting of a frame A, having a bar A', to which is rigidly fixed an insulated block X, said block X carrying a contact surface X' fastened thereto by means of screws 1, 2, 3 and 4, said screws 1 and 2 also holding in place a connecting spring L, said connecting spring L being of conducting material, all in combination with an insulated collar I and wheel R, having an insulated surface R" and a contact surface S, one-half of which contact surface is corrugated and the other half smooth, said corrugated surface S' and smooth surface R' being of one piece, in combination with a collar J and an insulated block E, carrying contact pieces H, H', H", H³, H⁴ and H⁵, said contact pieces H, H', H", H³, H⁴ and H⁵ being fastened to said block E by means of the screws G, G', G", G³, G⁴ and G⁵, said block E being fastened to the arm A" of the frame A, said arm A" carrying a neck D in combination with a rotary shaft C, and a finger piece B, so arranged, that said rotary shaft C will cause the wheel R to revolve, so as to present the insulated surface R" of the wheel R, or the contact surface S of the wheel R to the connecting springs H H, H', H", H³, H⁴ and H⁵ substantially as hereinbefore described.



2. An electric switch and cut-out, consisting of a frame A, having a bar A' to which is rigidly fixed, an insulated block X, said block X carrying a contact surface X' fastened thereto, by means of the screws 1, 2, 3, and 4, said screws 1 and 2 also holding in place a connecting spring L, said connecting spring L being of conducting material, all in combination with a wheel R, having an insulated surface R" and a contact surface S, one-half of which contact surface is corrugated and the other half smooth, said corrugated surface S' and smooth surface R' being of one piece, said block X and wheel R having inserted between them, a spring L' in combination with an insulated block E, said wheel R and block E having inserted between them, a spring L", and said block E carrying contact pieces H, H', H", H³, H⁴ and H⁵, which contact pieces are fastened to said block E by means of the screws G, G', G", G³, G⁴ and G⁵, said block E being fastened to the arm A" of the frame A, said arm A" carrying a neck D, in combination with a rotary shaft C and a finger piece B, so arranged that said rotary shaft C will cause the wheel R to revolve, so as to present the insulated surface R" of the wheel R, or the contact surface S of the wheel R to the connecting springs L, H, H', H", H³, H⁴ and H⁵ substantially as hereinbefore described.

## 529,596. RAIN-WATER CUT-OFF. JEAN M. CASTAING and JEAN B. DOHIN, New Orleans, La. Filed Apr. 30, 1894. Serial No. 509,536. (No model.)

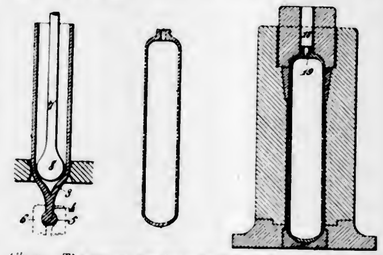


*Claim.*—1. A rain water cut-off, comprising a case having an inlet pipe at the top and a discharge pipe at the bottom, an inclined partition extending across the case and provided with a central hole, a second discharge pipe leading from the upper compartment of the case, a valve adapted to alternately close the hole in the partition and the second discharge pipe, a wheel in the case, a bucket on the wheel, the wheel and its bucket both lying out of the path of the water through the casing, a small pipe leading from the partition to the bucket, and means for operating the valve by the movement of the wheel, substantially as described.

2. A rain water cut-off, comprising a case having an inlet pipe at the top and a discharge pipe at the bottom, an inclined partition with a hole in it, extending across the case, a second discharge pipe opening from the case at the foot of the inclined partition, a valve to close the hole in the partition and the second discharge pipe, a cup encircling the hole in the partition and having perforations in the top, a wheel journaled in the case and provided with a peripheral bucket, a pipe leading from the cup to the bucket, and means for operating the valve by the movement of the wheel, substantially as described.

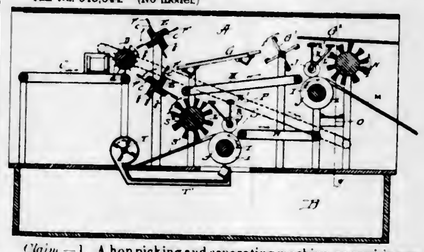
3. A rain water cut-off, comprising a case having an inlet at the top and a discharge at the bottom, a transverse partition in the case provided with a hole in it, a second discharge pipe opening from the case above the partition, a valve having a slotted arm and arranged to close alternately the second discharge pipe and the hole in the partition, a wheel journaled in the case and provided with a wrist pin engaging the slot in the arm and having a bucket out of the path of the water through the casing, and a small pipe leading from above the partition and discharging slowly into the bucket, substantially as described.

## 529,597. METHOD OF MAKING TUBULAR ARTICLES. CLAUD T. CAYLEY and REUBEN S. COURTMAN, London, England, assignors to the United States Projectile Company, Brooklyn, N. Y. Filed Aug. 25, 1892. Serial No. 444,140. (No specimens.) Patented in England Nov. 23, 1891, No. 20,364; in France Nov. 26, 1891, No. 217,684, and in Belgium Nov. 30, 1891, No. 97,399.



*Claim.*—The process herein set forth for the manufacture of tubular vessels, consisting in hollowing out or initiating a tubular formation in a block of metal, hot drawing the said block of metal through dies of successively diminishing size while in a suitably plastic condition, pickling and then cold drawing the same, closing one end of the blank, and shaping and partially closing the other end of the blank to form a neck having a valve opening, substantially as described.

## 529,598. MACHINE FOR PICKING AND SEPARATING HOPS. WARREN H. CLARK, West Burlington, N. Y. Filed June 27, 1894. Serial No. 515,844. (No model.)



*Claim.*—1. A hop picking and separating machine, comprising essentially, feeding mechanism, a pair of rotating pickers between which the hops and vines are delivered by the feeding mechanism, separator fingers which receive the vines from said pickers, a traveling carrier below said fingers, a circumferentially flanged separator cylinder, disks in contact with the flanges of said cylinder, and means for removing the leaves at the rear of said cylinder, substantially as specified.

2. A hop picking and separating machine, comprising essentially, feeding mechanism, a pair of rotating pickers between which the hops and vines are delivered by the said feeding mechanism, vibrating separator fingers which receive the vines from said pickers, an endless traveling carrier below said fingers, a circumferentially flanged cylinder having deep spaces between its flanges, friction disks resting upon said flanges slightly forward of the center of said cylinder, a tail board supported with its upper edge in close relation to the said flanges, and somewhat back of the center of said cylinder, said board having cut-away portions corresponding to the spaces between said flanges, and a leaf discharging brush, substantially as specified.



3. A hop picking and separating machine, having feeding mechanism, a pair of rotating picker drums, a series of separator fingers to the rear of said drums, a traveling carrier under said fingers, a circumferentially flanged separator cylinder having deep spaces between its flanges, friction disks in contact with said flanges, a tail board supported in close relation to said flanges and having cut away portions corresponding to the spaces between said flanges, a traveling carrier below said cylinder, and a second separator similar to the first at the opposite end of said carrier, substantially as specified.

4. A hop picking and separating machine, having feeding mechanism, a pair of rotating picker drums, a series of separator fingers to the rear of said drums, a flanged separator shaft having deep circumferential grooves between its flanges, friction disks in close relation to said flanges, a tail board having cut-away portions corresponding to said grooves, a laterally inclined chute board under the upper portion of said tail board, and an endless conveyer onto which said chute board discharges and which itself discharges upon the feeding mechanism of the machine, substantially as specified.

5. A hop picking and a separating machine, comprising essentially a frame, the feed apron C, the spiked cylinder D, the rotating picker drums E, E, the vibratory separating fingers G, the traveling carrier H below said fingers, the vine reel G', the circumferentially flanged separator cylinder I, the friction disks J, the tail board M, having cut-away portions at its upper end, the brush N, the chute board O, the return conveyer P, the lower carrier R and the second set of separating devices in connection with said carrier R, substantially as specified.

6. In a hop picking machine, a pair of picker drums having longitudinal ribs or flanges therein, and arranged to rotate at different speeds, knife carrying arms secured to said drums and abutting against said ribs or flanges, and picker knives on said arms, substantially as specified

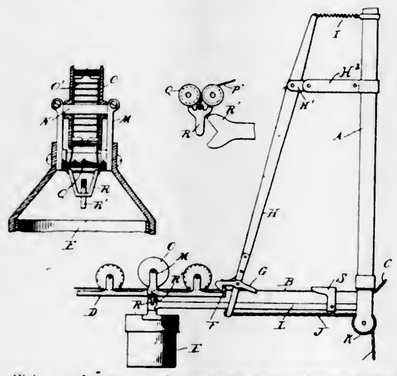
7. In a hop picking machine, a picker, comprising a rotary drum having longitudinal ribs or flanges thereon, a series of yielding knife-carrying arms attached to said drum and abutting said ribs or flanges, and picker knives carried by said arms, substantially as specified.

8. In a hop machine, the combination of a cylinder having a series of circumferential flanges thereon, separated from each other by deep spaces, and having comparatively broad peripheries, and a series of friction disks, one of said disks resting upon each of said flanges slightly forward of the center thereof, substantially as specified

9. In a hop machine, the combination of a cylinder having a series of circumferential flanges thereon formed with comparatively broad peripheries, a series of independent and vertically yieldable friction disks resting one upon each of said flanges, slightly forward of the center thereof and supporting and guard forks for said disks, substantially as specified.

10. In a hop machine, the combination of a circumferentially flanged cylinder, having deep spaces separating its flanges, a series of friction disks, and a tail board having its upper portion in close relation to said flanges, and formed with cut away portions corresponding to the spaces between said flanges, substantially as specified.

## 529,599. STORE-SERVICE APPARATUS. WILLIAM R. COLE, Detroit, Mich. Filed July 6, 1894. Serial No. 516,750. (No model.)

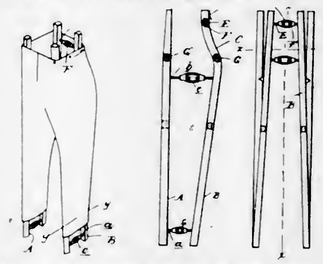


*Claim.*—1. In a store service apparatus, the combination with the standard and the track, of a wheeled carriage on the track, a spring actuated drum secured on the carriage, a flexible cord around the drum, a hook or loop on the end of this cord projecting beside the carriage, a stationary abutment at the station with which such hook is adapted to engage and means for drawing the carriage beside the stationary abutment to withdraw the cord from the drum, and a tripping device to release the carriage from the station, substantially as described

2. The combination of the standard, the way, the wheeled carriage on the way, a latch to retain the carriage at the station, and a tripping device for the latch, of a spiral spring on the carriage, a flexible cord actuated by the spring passing between stationary bearings on the carriage, a hoop or loop on the end of the cord, a stationary abutment beside the track with which said loop is adapted to engage, and devices for moving the carriage to wind up the spring, substantially as described.

3. In a store service apparatus, the combination of the carriage, the drum journaled thereon, a spiral spring for actuating the drum, the cord P around the drum, the rollers Q on the carriage between which said cord passes, the loop R at the end of the cord, the arm L beside the track having engaging devices at its end for the loop, and the cord and lever for drawing the carriage away from the end of the arm L, substantially as and for the purpose described.

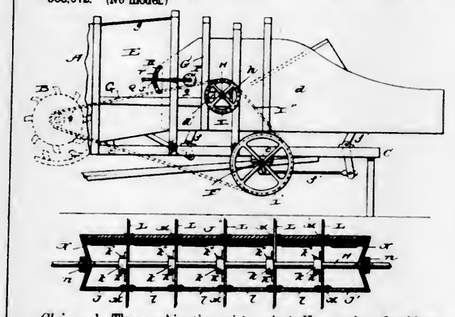
## 529,600. TROUSERS-STRETCHER. JOHN R. COOK, Lansing, Mich. Filed Feb. 10, 1894. Serial No. 499,736. (No model.)



*Claim.*—1. In a trousers stretcher, the combination of two leg stretchers, each comprising a front and rear bar, the rear bar having the straight lower portion and the curved upper portion forming the seat bend, a turn-buckle connecting the lower portions of the respective front and rear bars, a turn-buckle connecting the respective front and rear bars at or near the curved seat portion of the rear bar, adjustable connections G—I between the pair of leg stretchers, and the brace E—F between the pair of leg stretchers and above the connections G—I, substantially as described.

2. In a trousers stretcher, the combination of two leg stretchers, each comprising a front and rear bar and consisting of two sections detachably connected together, independent creasing ribs detachably secured to the bars, consisting of two sections, and the overlapping strip *i* secured on the inner end of one section and adapted to project beneath the adjoining section, substantially as described.

## 529,601. BAND-CUTTING ATTACHMENT FOR THRASHING-MACHINES. ROBERT L. COOLEY, Abilene, Kans., assignor of one-half to John T. Prendergast, same place. Filed Apr. 23, 1894. Serial No. 508,672. (No model.)



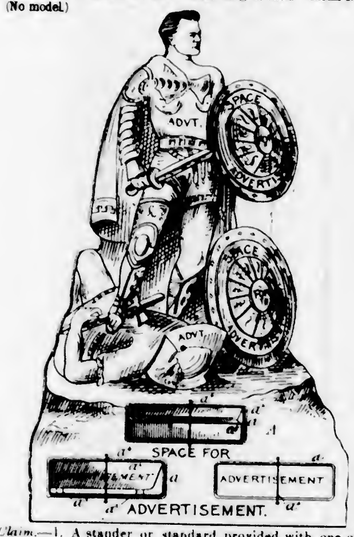
*Claim.*—1. The combination with a shaft H, a series of spiders K clamped to the shaft at suitable intervals thereon, and the knives L fastened to the spiders, of the cylinder J fitted on the shaft and

inclosing the same and the spiders and composed of a series of sections, *j*, *j'*, which are arranged to abut against each other at their meeting flush edges, said abutting edges of the cylinder sections being provided with notches *m* through which are passed the knives L, the connectors M spanning the abutting edges of the sections *j*, *j'*, on the inside of the cylinder, and heads N bearing against the ends of the cylinder and held on the shaft by the nuts *n*, substantially as described.

2. The combination with a thrashing machine, of the horizontal frames G, C, fastened to said machine and extending beyond the front end thereof, the frame G arranged above the frame C, a primary shaker D supported upon the frame C and having its vertical side walls *d* provided with the coincident longitudinal slots *d'*, the band-cutter shaft H passing through the coincident slots in the walls *d* of said shaker and journaled in bearings *h* fastened to the upper frame G, whereby the shaker is sustained by one frame, C, and the band-cutter shaft H is sustained by the frame G in the same relation at all times to the shaker, and means for operating the shaker and band-cutter shaft, substantially as and for the purposes described.

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529,602. **ADVERTISING OR DISPLAY DEVICE.** ALFRED VON COTZHAUSEN, Milwaukee, Wis. Filed Aug. 3, 1894. Serial No. 519,361. (No model.)




*Claim.*—1. A stander or standard provided with one or more apertures for the display of goods, having doors or valves capable of being held open by the object under display in the aperture, and of closing when the same is removed, substantially as described.

2. A standard provided with one or more apertures for the display of goods, each aperture having a door or valve, the said door or valve being hinged at the upper part of the aperture and provided with connections between its lower edge and the standard, acting to limit the extent of opening of the door or valve, to present a base for the support of goods when the door or valve is open, and to permit the valve to close or be closed when the goods are removed, substantially as set forth.

3. A standard provided with one or more apertures for the display of goods, each aperture having a door or valve hinged to the upper part of the aperture and provided, at its lower edge, with flexible connections fixed, at one end, to the lower edge of the device, and, at the other, to an opposite part of the standard, and one or more cords or straps crossing the front of the aperture to act as guards, or to retain the goods being displayed in position, substantially as described.

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529,603. **KNOCKDOWN DISPLAY DEVICE.** ALFRED VON COTZHAUSEN, Milwaukee, Wis. Filed Aug. 3, 1894. Serial No. 519,362. (No model.)

*Claim.*—1. A knock-down display device, comprising a base, a standard, provided with a perforation adapted to receive an object for display, and hinged or flexibly attached to the base at its lower edge, and a hinged or flexibly attached back, substantially as described.

2. A knock-down display device comprising a base, a standard provided with a perforation adapted to receive an object for display, and hinged or flexibly attached to the base at its lower edge, and a hinged or flexibly attached back, the back being provided with means for holding it in proper upright position in relation to the standard, substantially as set forth.

3. A knock-down display device, comprising a base, a standard, provided with a perforation adapted to receive an object for display, and hinged or flexibly attached to the base at its lower edge, and a hinged or flexibly attached back, the standard having fixed to it a fastening capable of attachment to the object to be displayed, substantially as described.




4. A knock-down display device, comprising a base, a perforated standard hinged or flexibly attached thereto at its lower edge, and a frame or box in the rear of the standard consisting of a back hinged or flexibly attached to the base or the standard, sides beveled upward at their edges and hinged or flexibly attached to the back, and a connecting-piece hinged or flexibly attached to the lower front edges of the sides, substantially as described.

5. A knock-down display device, comprising a base, a perforated standard hinged or flexibly attached thereto at its lower edge, a frame or box in the rear having a hinged or flexibly attached back, sides beveled upward at their edges and hinged or flexibly attached to the back, a connecting-piece hinged or flexibly attached to the lower front edges of the sides, and a flap extending from and flexibly attached to the lower edge of the connecting-piece, forming a bottom to the box when the same is in upright position, substantially as described.

6. A knock-down display device, comprising a base, a perforated standard flexibly attached to the base, a frame or box in the rear having a hinged back, sides beveled upward at their edges and flexibly attached to the back, a connecting-piece flexibly attached to the sides, and flaps extending from and flexibly attached to a side, forming a bottom to the box when the same is upright in position, substantially as described.

7. A knock-down display device consisting of a base, a perforated standard flexibly attached thereto, a frame or box in the rear, having a hinged or flexibly attached back and sides beveled upward at their edges and hinged or flexibly attached to the back, a connecting-piece hinged or flexibly attached to the front edges of the sides, and flaps extending from and attached to the lower edges of the connecting-piece and the sides, forming a bottom to the box when the same is upright in position, substantially as described.

8. A knock down display device consisting of a base, a perforated standard hinged or flexibly attached thereto at its lower edge, and having a lug at its upper rear part, a frame or box upon the standard having a back hinged or flexibly attached to the base and provided with a loop or slot at its upper front part, sides beveled upward at their edges and hinged or flexibly attached to the back, a connecting-piece hinged or flexibly attached to the front edges of the sides, and flaps extending from the lower edges of the connecting-piece and the sides, the lug on the standard to take into the loop or slot in the back to hold standard and frame together, all substantially as described.

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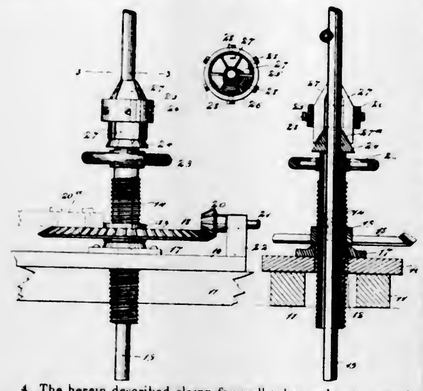
529,604. **WELL-PIPE PULLER.** JEROME S. COUSINS, Williamsville, Mich. Filed Jan. 10, 1894. Serial No. 496,370. (No model.)

*Claim.*—1. A well pipe puller comprising a base or support provided with a non-threaded aperture, an externally threaded tubular screw extending freely through said aperture, a wheel nut upon the said screw supporting it and resting on the upper side of the base or support, and a clamp or stop adapted to be secured on the well pipe for the upper end of the screw to bear upon as it is raised by the nut, substantially as shown and described.

2. A well pipe puller, comprising an apertured base or support, an externally threaded tubular screw extending freely through said aperture, a wheel nut upon the screw and resting on the upper side of the base or screw, and a hand wheel on the upper end of the screw for lowering it while the wheeled nut remains stationary, substantially as shown and described.



3. A well pipe puller, consisting in the apertured base or support, said aperture being non-threaded, the externally threaded tubular screw extending freely through said aperture, a wheel nut upon the screw, resting on the upper side of the base and provided at its periphery with gear teeth, a drive shaft geared thereto, and a bearing adapted to be secured to the well tube to receive the upward thrust of said screw as it is moved upwardly by the rotation of the wheel nut, substantially as shown and described.



4. The herein described clamp for well tubes and rods comprising the endless or unbroken ring provided with a series of apertures extending through it from face to face, a series of dogs within the ring and provided with beveled lower ends, and the headed pins or screws extending freely through said apertures into the dogs and permitting them to rock, substantially as set forth.

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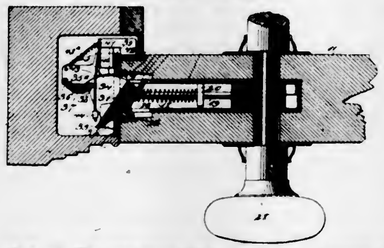
529,605. **SCREEN.** GEORGE W. CROSS, Pittston, Pa. Filed May 7, 1894. Serial No. 510,340. (No model.)



*Claim.*—The combination, with the spiders of a screen frame, of a screen segment having ribs produced upon one of its perforated faces, the ribs being made to abut against the inner faces of the spiders, the end margins of the segment being carried over the outer face of the spiders and attached thereto, the said marginal surface being provided with recesses opposite the ends of the ribs, as and for the purpose set forth.

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529,606. **LOCK.** WILLIAM W. DAVIS, East Orange, N. J. Filed Aug. 15, 1894. Serial No. 520,381. (No model.)



*Claim.*—1. The combination, with the keeper plate having projections at its inner side, the swinging latch held in an opening of the keeper plate, and the wings on the back of the latch, of the striking block projecting in front of the keeper plate, a spring tongue carried by the striking block and engaging the backs of the said wings to force the latch outwardly, and a spring 43ª, substantially as described.

2. In a door lock, the combination with the case having an opening and pivot lugs at opposite sides thereof of the reversible fly adapted to be pivoted to either of the lugs, the lock spindle and means for actuating the reversible fly from the spindle, substantially as described.

3. In a door lock, the combination with the lock case having an opening in the face plate, and the fly pivoted in the case and adapted to normally close the opening, of the lock spindle, the follower thereon, the spring-pressed slide plate held against the follower, the guide rod carried by the slide plate and adapted to strike the fly, and a spring on the guide rod to press the fly, substantially as described.

4. A door lock, comprising the usual case having an opening in the face plate, a fly hinged in the said opening, the usual lock spindle, means for closing the fly by the movement of the spindle, a keeper plate adapted to be secured in the door frame, a swinging latch held in the keeper plate and adapted to swing into the lock case against the fly, and a spring secured to the latch and to an adjacent support and arranged to hold the latch in either an open or closed position, substantially as described.

5. In a lock, the combination with the apertured keeper plate, of the spring-pressed latch hung in the plate and adapted to close the aperture, the latch having a cam surface on its back, the movable striking block projecting adjacent to the keeper plate, and a cross-bar carried by the striking block and adapted to engage the cam surface on the back of the latch, substantially as described.

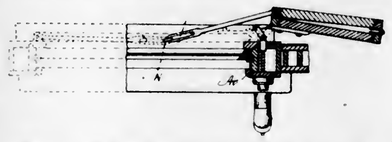
6. The combination, with the keeper plate, the swinging latch held in an opening of the keeper plate and the curved wings on the back of the latch, of the striking block projecting in front of the keeper plate, a tongue carried by the striking block, and a cross bar carried by the tongue and adapted to engage the back of the wings, substantially as described.

7. In a lock, the combination, with the keeper plate having an opening therein, the latch adapted to close the opening and provided with curved wings on its back, the spring arranged to hold the latch in either an open or closed position, the striking block projecting in front of the keeper plate, a guide plate secured to the striking block and held to move in a slideway, a tongue carried by the striking block, and a cross bar carried by the tongue and adapted to engage the wings on the latch back, substantially as described.

8. The combination with the door and frame, the lock case fastened in the door and provided with an aperture and a fly held to close the aperture, an apertured keeper plate secured in the door frame, a latch adapted to close the aperture in the keeper plate and to swing inward against the fly in the lock case, a spring arranged to hold the latch in either an open or closed position, a striking block projecting into the path of the door, and means for forcing out the latch by the movement of the striking block, substantially as described.

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529,607. **SHUTTER-WORKER.** OBED DE CHAMP, Everett, Mass. Filed Mar. 28, 1894. Serial No. 505,442. (No model.)



*Claim.*—1. The herein described improved shutter-worker, comprising the plate C provided with the screw-threaded flange C', the hollow knob D provided with the screw-threaded tubular extension D', the spindle E engaging with the knob at its outer end and extending through it and the casing, a spring holding the knob and spindle normally inward, the bar I secured to the shutter and provided with the outwardly-bent end I', and the link H connecting said bar and spindle, substantially as set forth.

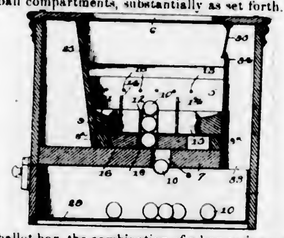
2. The herein described improved shutter worker, comprising the plate C provided with the screw-threaded flange C', the hollow knob D provided with the screw threaded tubular extension D', the spindle E engaging with the knob at its outer end and extending through it and the casing, a spring holding the knob and spindle normally inward, the bar I secured to the shutter B and provided with the outwardly bent end I', the link H, connecting said bar and spindle, the blind B' hinged to the blind B, and the link L connecting said blind B with the window sill and accommodating the swing of the blind by a slot L', substantially as described.

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529,608. **BALLOT-BOX.** WILLIAM M. DEMOTT, Brookville, Pa. Filed July 25, 1894. Serial No. 518,579. (No model.)

*Claim.*—1. In a ballot box, the combination of the box casing provided with separate ball compartments, a ball drawer arranged to work within the casing below the compartments thereof, a key operated ball dropping device for each ball compartment, and means for introducing the balls into the compartments from the drawer without removing the latter, substantially as set forth.

2. In a ballot box, the combination of a box casing provided with a central partition forming central ball compartments, and a main and false bottom for each ball compartment, said bottoms having openings out of vertical alignment, pivoted shifting blocks supported to work between the two bottoms and provided with ball openings adapted to be held normally in alignment with the openings in the false bottoms, said shifting blocks being also provided with upright spaced shifting pins, key operating devices connected with said pivoted shifting blocks, and a ball drawer working within the casing below the ball compartments, substantially as set forth.



3. In a ballot box, the combination of a box casing provided with separate ball compartments and a main and false bottom for each ball compartment, provided with openings out of vertical alignment, said ball compartments having front walls spaced in from the front wall of the box casing to leave a key space, a ball shifting device working between the two bottoms of each ball compartment, pivoted shifting blocks working between the two bottoms, bell crank key levers pivoted in the front wall of said ball compartments and carrying on one arm operating keys, links connecting the other arms of said key levers with said pivoted blocks, and the ball drawer, substantially as set forth.

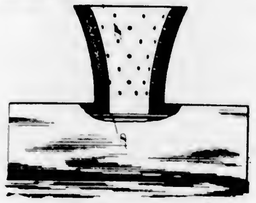
4. In a ballot box, the combination of the box casing provided in its front wall with a hand opening, a central partition forming separate ball compartments, and a main and false bottom for each ball compartment, said bottoms having openings out of vertical alignment, and the compartments being provided with inside front walls spaced in from the main front wall of the box casing to leave a key space, a ball shifting device working between the two bottoms of each compartment, key operated levers connected with said shifting devices and working in said key space between the two front walls, the box cover provided with sight holes above each ball compartment and at the top of the key space, a fixed cover flange projected outwardly from the front wall of the casing and surrounding the upper edge of said hand hole, and the ball drawer, substantially as set forth.

5. In a ballot box, the combination of the box casing provided with separate ball compartments and a main and false bottom having openings out of vertical alignment, the false bottom of each compartment being provided with a concaved top face declining laterally toward the ball opening, and a segmental slot intersecting the ball opening, a series of guard pins projected inwardly from one side of each ball compartment over the opening in the false bottom thereof, a key operated shifting block working between the two bottoms of each compartment and provided with a ball opening therein, and upright shifting pins at both sides of the ball opening and working in the segmental slots of the false bottoms, and the ball drawer, substantially as set forth.

6. In a ballot box, the combination of a box casing provided with separate ball compartments having short rear walls forming rear separated ball passages within the box casing at the rear thereof, a separate ball dropping device for each compartment, the partitioned ball drawer of a greater length than the length of the ball compartments, valve plates pivotally suspended from the cover of the casing and working within each ball compartment at one side of the rear wall thereof, and turning knobs arranged on opposite sides of the box casing, substantially as set forth.

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529,609. **ANTISEPTIC MOUTHPIECE FOR TELEPHONES.** RIAL N. DENISON and FRANK M. GEARY, Brooklyn N. Y. Filed Apr. 25, 1894. Serial No. 508,961. (No model.)

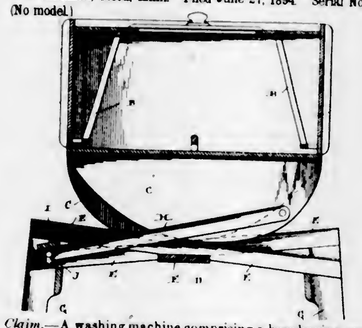


*Claim.*—1. A mouthpiece for telephones and speaking tubes, containing an antiseptic material and provided with vents leading from the material to the interior of the mouthpiece, substantially as shown and described.

2. A mouthpiece, the same consisting of an inner and an outer shell united to form an intervening chamber, the inner shell being perforated, and an antiseptic material located within said chamber, as and for the purpose set forth.

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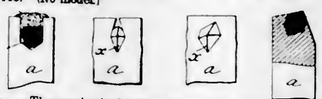
529,610. **WASHING-MACHINE.** ENOCH DICKERMAN and ERNEST L. DICKERMAN, Corra, Minn. Filed June 27, 1894. Serial No. 515,875. (No model.)



*Claim.*—A washing machine comprising a base having oppositely inclined tracks lying in intersecting planes, and a rocking body having rockers with the lines of their peripheries intersecting and resting and rocking upon said tracks, substantially as described.

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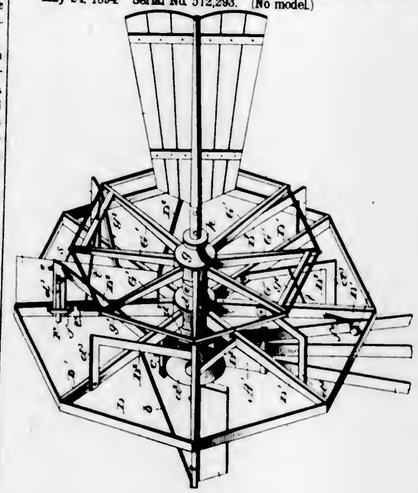
529,611. **METHOD OF SETTING DIAMONDS IN CUTTING-TOOLS.** ALBERT DITTMER, Berlin, Germany. Filed Aug. 15, 1893. Serial No. 483,165. (No model.)



*Claim.*—The method of setting diamonds consisting in placing the diamond in a hole or socket in the tool, placing over the diamond when seated a piece of material to hold it in position said material being capable of being crushed or forced out of the opening when the metal is forced about the diamond and finally heating the material and hammering it about the diamond to hold the same and at the same time crush out the holding material.

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529,612. **WINDMILL.** PETER ERIKSON, Houston, Minn. Filed May 24, 1894. Serial No. 512,293. (No model.)





*Claim.*—1. In a windmill, the combination, of a wind-wheel consisting of spokes or arms to which the blades are hinged, angle braces extending from each arm or spoke to the adjoining one, catches attached to two or more of the blades and adapted to engage with the angle braces, and levers pivoted to the angle braces and adapted to disengage the catches, substantially as shown and for the purpose set forth.

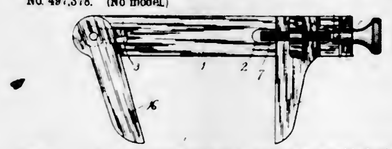
2. In a windmill, the combination, of a wind-wheel consisting of spokes or arms to which the blades are hinged, angle braces extending from each arm or spoke to an adjoining one, catches attached to two or more of the blades and adapted to engage with the angle braces, levers pivoted to the angle braces and connected to springs for holding them normally away from the catches and means for moving the levers against the action of the springs, substantially as shown and for the purpose set forth.

3. In a windmill, the combination, of a wind wheel consisting of spokes or arms to which the blades are hinged, angle braces extending from each arm or spoke to an adjoining one, catches attached to two or more of the blades and adapted to engage with the angle braces, means for operating the levers to disengage the catches, together with a supplemental wheel G connected to the blades of the wind-wheel by rods and to the spokes of the wind-wheel by spring rods, substantially as shown and for the purpose set forth.

4. In a windmill, the combination, of a wind-wheel and supplemental wheel both being mounted loosely on the same supporting shaft, rods connecting the supplemental wheel to the edges of the blades of the wind-wheel and spring rods extending from the spokes of the wind-wheel and engaging the supplemental wheel, catches carried by the blades of the wind-wheel and adapted to engage with braces connected to the spokes, and means for operating the catches consisting of levers connected to flexible connections extending to a weighted sliding lever, substantially as shown and for the purpose set forth.

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529,613. **GAGE.** THOMAS FRANCIS, Stevens' Point, Wis., assignor of one-half to John S. Seeley, Chicago, Ill. Filed Jan. 19, 1894. Serial No. 497,378. (No model.)



*Claim.*—1. A gage consisting of a main bar provided with an elongated slot, a cross bar having upon one side a lug engaging the slot and guided thereby, and upon its opposite side another lug having a screw threaded aperture therein, a clamping screw engaging the guiding lug, and an adjusting screw held against longitudinal movement, and engaging the threaded aperture of the other lug of the cross bar, substantially as set forth.

2. A gage, consisting of a main bar provided with a slot, a foot piece, and a clamping screw passing through the slot and engaging the foot piece, said screw provided medially with a stop finger or lug fitting loosely in the slot of the main bar, said finger or lug adapted to limit the degree of adjustment of the foot, substantially as set forth.

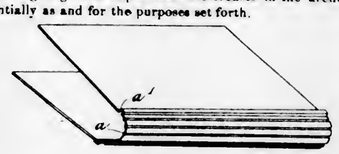
3. A gage, consisting of a main bar provided with a slot, said slot having a circular enlargement at one end, a foot piece, a clamping screw passing through the slot and engaging the foot piece, said screw carrying medially a stop finger or lug, one end of said finger or lug being of circular form to fit and register with the circular enlargement of the slot and the straight portion of said finger being of less width than the corresponding portion of the slot, a cross bar, and means for adjusting said cross bar on the main bar, substantially as set forth.

4. A gage consisting of a main bar provided with slots at opposite ends, one of said slots having a circular enlargement, a cross bar provided with a lug fitting in and guided by one of the slots, a clamping screw engaging the lug, an adjusting screw held against longitudinal movement, and engaging a threaded opening of the cross bar, a foot piece, and a clamping screw passing through the other slot and engaging the foot piece, said screw carrying medially a stop finger or lug, one end of said finger or lug being of circular form to fit and register with the circular enlargement of the slot, and the straight portion of said finger or lug being of less width than the corresponding portion of the slot, substantially as set forth.

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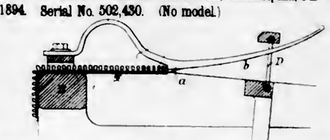
529,614. **BOOK BACK OR COVER.** EUSTACE FRITH, London, England. Filed July 16, 1894. Serial No. 517,702. (No model.) Patented in France Mar. 20, 1894, No. 237,177, and in Belgium Mar. 21, 1894, No. 109,091.

*Claim.*—As a new article of manufacture, the herein described case or cover, consisting of a continuous sheet of leather-board or like rigid material provided with a hinged and flexible corrugated arched back integral with the said sheet having longitudinally arranged grooves or creases in the back and hinges, the said creases in the hinges being of greater depth than the creases in the arched back, substantially as and for the purposes set forth.



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529,615. **WIRE-RETAINING DEVICE FOR LOOMS FOR WEAVING PILE FABRICS.** HARRY HARDWICK, Philadelphia, Pa. Filed Mar. 5, 1894. Serial No. 502,430. (No model.)



*Claim.*—1. A pile loom, having a pile wire retainer secured to a support above the fabric which is being woven, and located between the opposite selvages of the same so as to engage the body of the last inserted pile wire to retain the same in upright position, substantially as and for the purpose set forth.

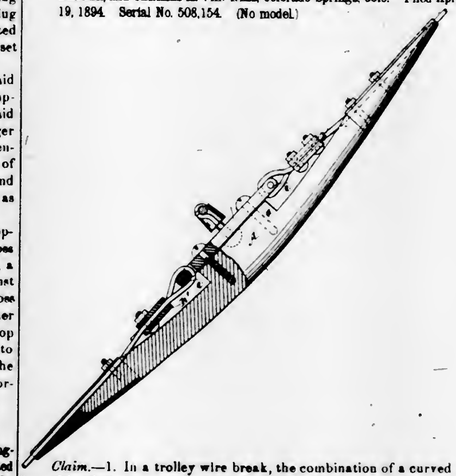
2. A pile loom having a pile wire retainer located between the opposite selvages of the fabric which is being woven, said retainer being hooked to engage with the last inserted pile wire in order to hold the same in upright position and having a projecting tongue passing through one of the spaces of the reed whereby the retainer is held in proper lateral position, substantially as specified.

3. A pile loom, having a bar extending across the loom above the fabric which is being woven, and a pile wire retainer carried by said bar and occupying a position between the opposite selvages of the fabric, said retainer being hooked to engage with the last inserted pile wire in order to hold the same in upright position, substantially as specified.

4. A pile loom, having a bar extending across the loom above the fabric and carrying a pile wire retainer occupying a position between the opposite selvages of the fabric which is being woven, said retainer having an arched elastic shank and a hook for engaging with the last inserted pile wire in order to hold the same in upright position, substantially as specified.

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529,616. **SECTION-INSULATOR.** ALBERT HENNEFELD, CHRIST. DEHNER, and CHARLES H. VAN NESS, Colorado Springs, Colo. Filed Apr. 19, 1894. Serial No. 508,154. (No model.)

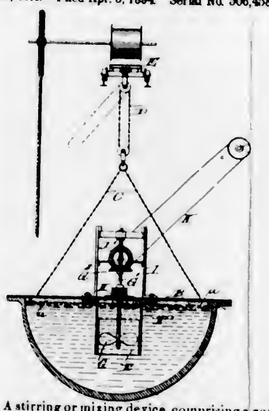


*Claim.*—1. In a trolley wire break, the combination of a curved bar of insulating material provided with metallic tips, a perforated insulating bar secured to the main bar and adapted to receive loops

formed on the ends of the trolley wire, clamping plates for holding the trolley wire in its place in the bar, and clamps for fastening the loops at the end of the trolley wire, substantially as specified.

2. In a trolley wire break, the combination of a curved bar of insulating material provided with metallic tips, a perforated insulating bar secured to the main bar and adapted to receive loops formed on the ends of the trolley wire, clamping plates for holding the trolley wire in its place in the bar, clamps for fastening the loops at the ends of the trolley wire, and a double hook adapted to receive the span wire and support the break, substantially as specified.

529,617. STIRRING-IN OR MIXING DEVICE. WILLIAM H. HOWARD, Pueblo, Colo. Filed Apr. 5, 1894. Serial No. 506,458. (No model.)



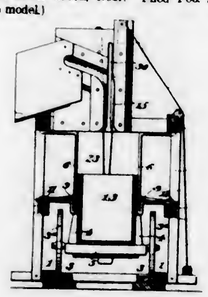
*Claim.*—1. A stirring or mixing device, comprising a cover formed on its under side with an annular flange adapted to pass into molten argentiferous lead contained in a pot upon which the cover fits, and a stirring device held on the under side of the cover and arranged to pass into the lead, substantially as described.

2. A stirring or mixing device, comprising a cover formed on its under side with an annular flange adapted to pass into molten argentiferous lead contained in a pot upon which a cover fits, and a stirring device held on the under side of the cover and arranged to pass into the lead, the said stirring device comprising a cylinder open at the top and bottom and supported by brackets from the under side of the said cover, a propeller wheel mounted to rotate in the said cylinder and means for imparting a rotary motion to the shaft, of the said propeller wheel, substantially as herein shown and described.

3. In a stirring or mixing device of the character described, the combination with a traveling carriage, of a cover for the pot containing the material to be stirred or mixed, a stirring device carried by the cover, and a hoisting device connected with the cover and carriage, substantially as and for the purpose set forth.

4. In a stirring or mixing device of the character described, the combination with a pot, and a traveling carriage arranged above the pot, of a flanged cover for the pot, a cylinder open at top and bottom and suspended from the cover, a stirrer in the cylinder having its shaft mounted in the cover, means for operating the stirrer, and a hoisting device connected with the cover and carriage, substantially as described

529,618. CAR ELEVATOR AND DUMPER. LOUIS E. HOY and HARMAN HOY, Silver Creek, Nebr. Filed Feb. 26, 1894. Serial No. 501,546. (No model.)



*Claim.*—1. The combination with a frame, track, obstruction thereon, and elevating mechanism, of a car provided with a detachable box and a horizontally swinging frame adapted to be swung above the car and prevent its rising over the obstruction and to act as a guide for the box when the same is elevated, substantially as specified.

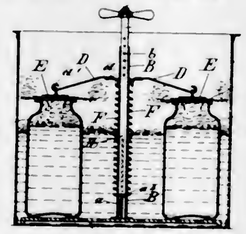
2. The combination with a frame, track, obstruction and elevating mechanism, of a car provided with stanchions and a detachable box, and a horizontally swinging frame adapted to be swung above the stanchions of the car and stop mechanism adapted to retain the frame and stanchions in line whereby the stanchions and frame act as continuous guides for the box when the same is elevated, substantially as specified.

3. The combination with a frame, of a car having centrally located terminal pulleys and studs secured to and below said pulleys, hoisting mechanism pivotally secured to the studs, pulley guide-ways deflected, as shown, and vertical stud guides, substantially as specified.

4. The combination with a frame, of a box provided with terminal studs, pulley blocks provided with plates having jaws and apertures communicating therewith and block elevating mechanism, substantially as specified.

5. The combination with a frame, track, obstruction thereon and a plurality of swinging frames, of pulley ways deflected, as shown, stud guides, a car provided with terminal pulleys and studs adapted to engage the pulley-ways to stud guides, respectively, pulley blocks adapted to engage the terminal studs and a means for elevating the pulley blocks, substantially as specified.

529,619. APPARATUS FOR USE IN STERILIZATION OF MATERIALS IN BOTTLES, JARS, &c. ALBERT HÜBENER, Gelsenkirchen, Germany. Filed Apr. 28, 1894. Serial No. 509,369. (No model.) Patented in Germany Apr. 23, 1892, No. 66,898; in France Aug. 17, 1892, No. 223,722; in Belgium Sept. 21, 1892, No. 101,439, and in Austria-Hungary Mar. 25, 1893, No. 48,474 and No. 72,024.



*Claim.*—1. In an apparatus for use in retaining the covers on jars or other vessels in the sterilization of materials, and for other purposes, the same comprising a suitable support, holders for retaining in place the covers of the jars or other vessels, and a spring engaging the holders for causing the holders to exert a pressure on the covers, the holders and that end of the spring that acts on the holders being free to move in a direction opposite to the direction in which the pressive action of the holders is exerted, whereby the tension of the spring will be relaxed by heat during the sterilizing process and relieve the pressive action of the holders to permit escape of steam and air from the jars or like vessels, substantially as described

2. The combination with a standard, of holders for retaining in place the covers of jars or other vessels, a spring arranged in connection with the standard and supporting the holders, and means for securing the opposite end of the spring, the holders and the end of the spring adjacent thereto being free to rise on the standard when the spring is distended, substantially as described.

3. The combination with a base adapted to receive jars or the like and a standard thereon, of holders for retaining the covers on the jars or the like, the holders being vertically movable on the standard and carrying disks at their outer ends, and a spiral spring on the standard, the spring engaging at its upper end with the holders, substantially as described.

529,620. COMPOSITION OF METAL AND METHOD OF MAKING SAME. PHILIP INCH, Washington, D. C., assignor of eight-fifteenths to Bernard N. Baker, Baltimore, Md. Filed June 20, 1894. Serial No. 515,142. (No specimens.)

*Claim.*—1. The herein described composition of matter consisting of tin and zinc in the proportions of two parts of tin to one of zinc.

2. The herein described composition of matter consisting of tin, zinc and aluminum in the proportions of about two parts of tin, one of zinc and a pennyweight of aluminum to three pounds of the tin and zinc.



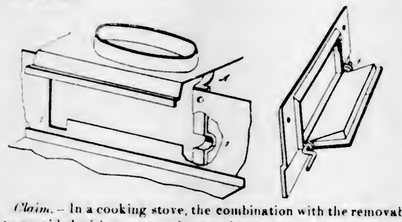
3. The method herein described consisting in melting one part of zinc, pouring into the molten zinc, two parts of molten tin, adding thereto a proportion of sal ammoniac and stirring the mass, substantially as described

529,621. SHUTTER-FASTENER. JOSEPH W. JOHNSON, Point Pleasant, N. J. Filed Mar. 7, 1894. Serial No. 502,657. (No model.)



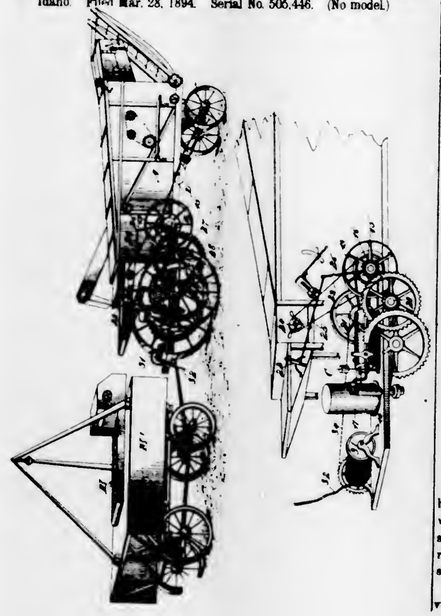
*Claim.*—The improved shutter-bower, composed of two curved bars, each having a pivot hole, and an end extension which serves as a handle and, on the convex side, two notches, or transverse grooves, and the locking device, having at one end a transverse perforation to receive a fastening screw, the other end being reduced and adapted to engage any of the aforesaid grooves, as shown and described.

529,622. DAMPER FOR COOKING STOVES OR RANGES. FRANZ V. KNAUSS, Portsmouth, Ohio. Filed Feb 23, 1894. Serial No. 501,241. (No model.)



*Claim.*—In a cooking stove, the combination with the removable plate provided with a rectangular opening and formed with an apertured lug, and the rear plate of the oven formed with a notch to receive said lug, of the damper formed with a counterbalancing recessed portion, and having a trunnion at one end journaled in said lug, a trunnion at the other end journaled in a bearing formed in the outer wall of the smoke box, and the crank and connections for operating the damper, substantially as described.

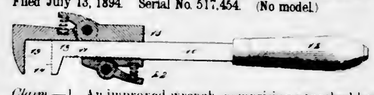
529,623. THRASHING-MACHINE. RILEY KNIGHT, Moscow, Idaho. Filed Mar. 28, 1894. Serial No. 505,446. (No model.)



*Claim.*—1. The combination, with the thrashing machine, of an engine carried thereby, a drive shaft journaled in the frame and operated by the said engine independent clutch wheels loosely mounted on the said shaft, a clutch adapted to engage each of the clutch wheels and mounted to rotate with the shaft, a driving connection between one of the clutch wheels and the thrashing mechanism, a driving connection between the other clutch wheel and the supporting wheels of the thrashing machine, and means for shifting the clutches on the driving shaft to engage the clutch wheels thereon, substantially as described.

2. In a thrashing machine, the combination, with a table located over one of the axles, an engine carried by said table, a driving shaft driven by said engine, and a hoisting drum located upon the table, of a gear connection between the driving shaft and the supporting wheels of the machine, and also a driving connection between the driving shaft, the thrashing mechanism of the thrasher and the hoisting drum, and shifting devices whereby the power may be directed either to the thrashing mechanism, the supporting wheels or the hoisting drum, and a derrick table carrying a high feeder, the lifting forks of which are operated from the said hoisting drum, as and for the purpose specified

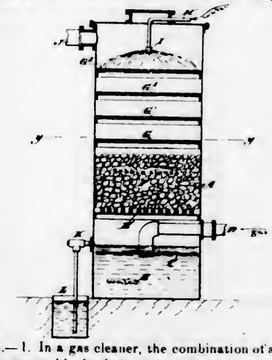
529,624. WRENCH. WILLIAM C. LAWRENCE, Casselton, N. D. Filed July 13, 1894. Serial No. 517,454. (No model.)



*Claim.*—1. An improved wrench, comprising a toothed body bar having a fixed jaw at its toothed end, a sleeve held to slide upon the body bar, an upper jaw pivoted to the said sleeve, such sleeve having a portion projected over the pivoted end of the pivoted jaw adapted to limit the rearward swing thereof, a spring interposed between such projecting portion and the back of the pivoted jaw and a spring controlled pawl connected with the sleeve normally held in engagement with the tooth surface of the bar, all arranged substantially as shown and described.

2. In a wrench, the combination, with a body bar having a handle at one end, teeth upon its outer face, and a jaw formed upon its outer end, of a sleeve held to slide upon the body bar, provided with a post projected outwardly from its upper rear corner and at the rear of the body bar, a dog pivoted in the forward portion of the sleeve, provided with a series of teeth adapted for engagement with the teeth of the body bar, and a spring normally holding said teeth in engagement an upper jaw normally located parallel with the lower jaw or jaw upon the body bar, a shank connected with the upper jaw and pivoted upon the post of the sleeve, and a spring having bearing against said post and against the shank of the upper jaw, whereby said shank is held normally in engagement with the rear of the body bar and the upper jaw over the lower one, as and for the purpose set forth

529,625. GAS-CLEANER. THADDEUS S. C. LOWE, Norristown, assignor to the Guarantee Trust and Safe Deposit Company, trustee, Philadelphia, Pa. Filed Nov. 28, 1888. Serial No. 292,113. (No model.)

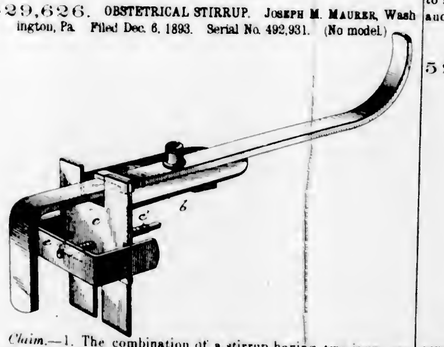


*Claim.*—1. In a gas cleaner, the combination of an upright shell having a water seal in its lower part, a gas inlet pipe entering said water seal, scrubbing material supported in said shell above the water seal, a series of fine mesh screens located above the scrubbing material, and a water inlet pipe and a gas exit pipe connected with the shell above said screens, substantially as described.

2. In a gas cleaner, the combination of the upright shell A, provided below with a gas inlet pipe D, water seal B, and overflow pipe

K, the diaphragm C, located on the gas inlet pipe D, above its inner end and below the surface of the water seal, the grate E, condensing and scrubbing material F, and fine mesh sieves G, G', G², G³, all arranged above the water seal, the gas exit pipe J, leading from the upper part of the shell, and the water inlet pipe H, entering the upper end of the shell and provided with a spraying nozzle I, above the upper sieve, substantially as described.

529,626. OBSTETRICAL STIRRUP. JOSEPH M. MAURER, Washington, Pa. Filed Dec. 6, 1893. Serial No. 492,931. (No model.)



*Claim.*—1. The combination of a stirrup having two jaws, one being horizontally movable on the stirrup bar, a vertically adjustable plate clamped to said movable jaw, a horizontally adjustable screw carried by said plate and adapted to clamp the plate in its adjusted positions, means for locking the screw and a bearing plate carried by the end of the screw and adapted to move vertically with the screw and plate, substantially as described.

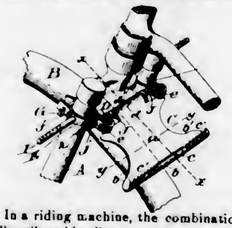
2. The combination of a stirrup having a fixed and a movable jaw, a plate carried by said movable jaw, means for adjusting this plate vertically, a horizontally-adjustable bearing-plate, having outwardly-projecting arms engaging said vertically adjustable plate, substantially as described.

3. The combination of a stirrup having a fixed and a movable jaw, a horizontal screw carried by said movable jaw, a bearing plate on the inner end of said screw, this plate being provided with outwardly-extending arms, and means for engaging these arms and guiding them, substantially as described.

4. The combination of a stirrup having a pair of jaws one of which is movable, said movable jaw being vertically slotted, a vertically movable plate clamped to the inner side of said jaw, a screw passed through the slot in a movable jaw and a threaded opening in the plate, a bearing on the inner end of the screw and a nut screwed over the outer end of the screw and adapted to bear against the outer side of the movable jaw, substantially as described.

5. The combination of a stirrup having a pair of jaws one being movable and vertically slotted, a vertical plate clamped to the inner side of the movable jaw and bifurcated to embrace the main bar of the stirrup, an adjusting screw passed through the slot in the adjustable jaw and tapped through the adjustable plate, a clamping nut on the screw and a bearing plate on the inner end of the screw, said bearing plate having outwardly extending arms working in notches in the vertical plate, substantially as described.

529,627. FOOT-BRAKE FOR BICYCLES. CHARLES F. PORTER, Brockton, Mass. Filed Mar. 28, 1894. Serial No. 505,403. (No model.)



*Claim.*—1. In a riding machine, the combination with the fork and the vertically adjustable clips connected therewith, of the pintle secured to said clips, the shoe or plate having a sleeve at its inner end through which said pintle passes, the coiled springs interposed between said sleeve and clips, the upwardly extending flange at the outer end of the shoe or plate and the laterally extending wings, substantially as described.

2. In a riding machine, the combination with the fork, the vertically adjustable clips having apertures therein, and the outwardly extending pins forming foot rests, passing through said apertures and engaging with corresponding apertures in the fork, of the spring actuated shoe or plate and the pintle, substantially as described.

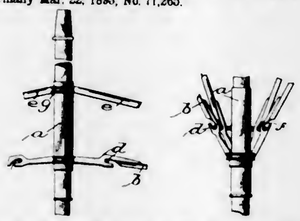
3. The combination, in a riding-machine, with the front-fork of the machine, of the side clips E E, forming loops *e* and *f*, and provided with the adjusting-dogs G having binding-screws F; the pintle secured to said clips, and the spring actuated shoe or plate substantially as and for the purpose shown and set forth.

529,628. CLOTHES-DRIER. JAMES REILLY, Calgary, Canada. Filed Mar. 13, 1894. Serial No. 503,410. (No model.)



*Claim.*—In a clothes-drying apparatus, the combination with a supporting spindle having at its lower end a catch pivoted as shown, whereby its upper end normally projects outward, of a carrier composed of a tube having an expanded funnel-shaped upper portion provided with a cap which serves as a stop for the catch, as shown and described.

529,629. UMBRELLA. WILLIAM ROSS, Edinburgh, Scotland. Filed Jan. 12, 1894. Serial No. 496,660. (No model.) Patented in England Feb. 14, 1893, No. 3,254; in France Mar. 22, 1893, No. 228,837, and in Germany Mar. 22, 1893, No. 71,265.



*Claim.*—In an umbrella, the stick, the runner the stretchers and the elastic ring, said stretchers having open mouthed hooks formed in their body portions intermediate of their ends the said ring being seated in said hooked portions and removable therefrom, and arranged to place a tension on the stretchers tending to hold them open or closed—substantially as described.

529,630. PRINTING-TELEGRAPH. GEORGE A. SCOTT, London, England, assignor, by direct and mesne assignments, to The Western Union Telegraph Company, of New York. Filed Sept. 6, 1887. Serial No. 248,961. (No model.) Patented in England June 28, 1887, No. 9,191.

*Claim.*—1. The improvements herein described in receiving and printing instruments of type printing telegraphs, consisting in the combination of a type wheel, a flexible connection connected to operate the type wheel, and a series of magnets the armatures or cores of which operate upon the flexible connection to control the movements of the type wheel, substantially as described.

2. In a printing telegraph, the combination of a type wheel, a flexible connection connected to the type wheel to operate the same, a securing device for one end of the flexible connection, and a series of magnets the armatures or cores of which operate upon the flexible connection to move the type wheel, substantially as described.

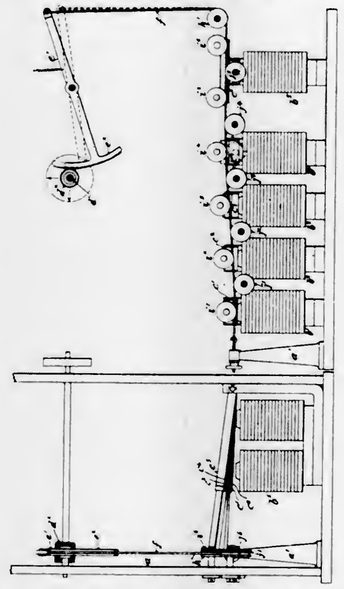
3. In a printing telegraph, the combination of a type wheel, a lever provided with a rack for moving the type wheel, a flexible connection connected with the lever at one end and to a standard at the other end, and a series of magnets the armatures or cores of which operate upon the flexible connection to move the type wheel, substantially as described.

4. In a printing telegraph, the combination with the type wheel, of a flexible connection connected to move the type wheel, a standard having means for adjustably supporting one end of the flexible connection, a series of stationary pulleys over which the connection



passes and a series of movable pulleys, each operated by its separate magnet for controlling the connection, substantially as described.

5. In arrangements for producing or permitting various extents of motion of the type wheel of the receiving or printing instruments of printing telegraphs the combination of a flexible or pliant connection with the armatures of a series of magnets or the cores of a series of solenoids by which portions of the said connections are normally kept in a state of flexure and by the motion of which various degrees of reduction of the extent of flexure are produced.



6. In a printing telegraph, the combination of the type wheel, a flexible connection connected to operate the type wheel, a series of magnets the armatures or cores of which operate upon the flexible connection, a series of keys, a circuit distributer and circuits therefrom having contacts arranged in juxta-position to the keys whereby on the depression of a key any one or any combination of the magnets may be operated according to the arrangement of the contacts with respect to the particular key, substantially as described.

7. In transmitting instruments of type printing telegraphs for use with synchronous multiplex systems the combination of a separate key for each letter or character on a type wheel and the separate connection for the segments of the distributer with contacts arranged in groups relatively to certain of the keys whereby the separate depression of one or other of them causes the main battery to be connected to any required combination of thsaid segmeents.

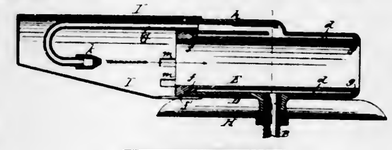
8. In transmitting instruments of type printing telegraphs for use with synchronous multiplex systems the combination of the main battery with the transmitting apparatus connected through the contacts of a relay placed in the circuit of a battery or in the circuits of batteries connected to contacts on the distributer the action of which relay is governed by the depression of any one of the keys of the transmitter.

9. In transmitting instruments of type printing telegraphs for use with synchronous multiplex systems the combination with the transmitting keys, segments, and trailer; of means substantially as described by which the transmitting keys are locked in either their normal position or their depressed position said means actuated by the current from a battery the circuit of which is either opened or closed while the trailer is passing over the main line segments.

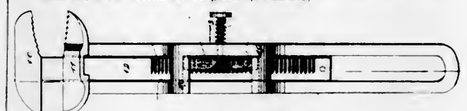
10. In receiving apparatus of type printing telegraphs for use with synchronous multiplex systems the combination with the press lever, relays, and tongues; of means substantially as described actuated by the press lever and causing the tongues of the main relays to be thrown to their normal position each time the press lever is actuated to take an impression from the type wheel.

529,631. TORCH. JOHN SHERRY, Rochester, N. Y. Filed June 16, 1894. Serial No. 514,822. (No model.)

*Claim.*—In a vapor burner, the combination with a horizontal outer tube having one end reduced and interiorly screw-threaded, an oil supply pipe opening through the bottom of said tube near its center, and a conduit formed upon the top of said tube and extending from one end thereof to the center where it opens into said tube; of a second tube removably inserted within said outer tube and engaging the threads at one end, the exterior diameter of said inner tube being smaller than the interior diameter of the outer tube so as to form an annular space between the tubes, a shoulder on the inner tube closing the end of the annular space opposite from the threads, a second shoulder on the inner tube abutting against the end of the outer tube, a pipe screwed into the end of said conduit with its body recurved and carrying a nozzle directed through the inner tube, and a hood inclosing the pipe and nozzle and shaped so as to fit close around and slide longitudinally over the inlet end of the outer tube and conduit, said hood having air inlets at its inner end, as and for the purpose set forth.



529,632. WRENCH. WILLIAM N. SMITH, Santa Cruz, Cal. Filed June 29, 1894. Serial No. 516,137. (No model.)

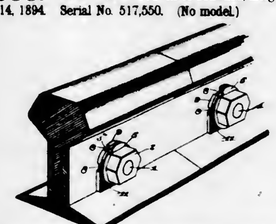


*Claim.*—1. In a wrench, a framing having side bars and cross bars connecting the same, such cross bars being provided with guides for the locking block, the bar or shank sliding within said frame between the side bars thereof and provided adjacent to the cross bars with a series of teeth and the locking block movable in the guides of said cross bars and engaging the teeth of the shank or bar, all substantially as and for the purposes set forth.

2. In a wrench, the combination, with a frame provided with transverse slide-ways, and a spring controlled toothed block held to travel in the said ways, the frame being provided with a jaw at one end, of a bar held to slide in the said frame, terminating at one end in a jaw and provided with a series of teeth formed upon one side, adapted for normal engagement with the teeth of the said spring-controlled block, the block being capable of movement over the frame clear of the said teeth, as and for the purpose specified.

3. In a wrench, the combination, with a frame, transverse slide-ways formed upon one side of the frame, a toothed block having movement in said slide-ways, and a jaw formed at one end of the frame, of a bar having sliding movement in the frame, terminating at one end in a jaw and provided upon one of its faces with series of teeth adapted normally for engagement with the teeth of the said block, the teeth of the sliding bar being of less length than the width of the surface upon which they are located, whereby a blank space is formed upon the sliding bar at one side of said series of teeth, over which surface the said block is carried when the sliding bar is to be adjusted, as and for the purpose specified.

529,633. NUT-LOCK. SYLVANUS STEVENS, Holgate, Ohio. Filed July 14, 1894. Serial No. 517,550. (No model.)

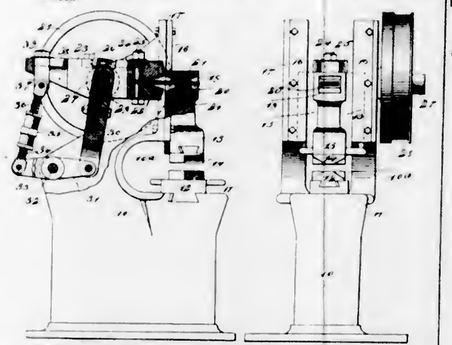


*Claim.*—In a nut lock, the combination of a ratchet piece having a lower straight edge and provided at its upper edge with a series of recesses, a nut provided on its inner face with a series of integral radial lugs extending outward from the bolt openings, and a locking washer having a bolt opening and provided with a series of slots dis-

posed radially and agreeing in number with the lugs and extending outward from the bolt openings and receiving the lugs, said locking washer being provided at its periphery with a resilient tooth formed by a radial cut and set at an angle and providing a square shoulder for engaging the recesses, whereby the nut is adapted to be rotated forward to carry the tooth from one recess to another to tighten the parts, substantially as described.

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529,634. POWER-HAMMER. JAMES B. SWEENEY and ROBERT W. LAIRD, St. Johnsbury, Vt., assignors to the Laird & Sweeney Manufacturing Company, same place. Filed Mar. 3, 1894. Serial No. 502,220. (No model.)



*Claim.*—1. A power hammer, comprising a tilting helve split at its front end, a reciprocating head arranged adjacent to the helve and provided with a recess having curved upper and lower walls, a pair of binding blocks in the recess, and a spring held in the split end of the helve and projecting between the binding blocks, substantially as described.

2. A power hammer comprising a tilting helve, a reciprocating head arranged adjacent to the helve and provided with a recess having curved upper and lower walls, a pair of yielding binding blocks in the recess and a spring secured to the helve and projecting between the binding blocks, substantially as described.

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529,635. MOQUETTE FABRIC. EUGENE TYMESON, Yonkers, N. Y., assignor to Warren B Smith, same place. Filed July 26, 1893. Serial No. 481,494. (No model.)

*Claim.*—1. A Moquette fabric having a suitable body of warp strands, and rows of tufts inserted therein, and having two wefts for each row of tufts, one of said two wefts for each row of tufts passing through the row and forming a holding weft, and the other lying against the row of tufts upon said holding weft and forming a binding weft, substantially as described

2. A Moquette fabric having a row of tufts for each two wefts, one of said two wefts for each row of tufts passing through the row and forming a holding weft, the other lying against the row of tufts upon said holding weft and forming a binding weft, and having a body of warps a portion of said warps passing alternately above and below the wefts and forming binding warps, and a portion of the warps passing between the wefts and forming dividing warps, substantially as described.

3. A Moquette fabric having a body of warp strands arranged in groups at suitable distances apart and rows of tufts inserted between said groups of warp strands, and having two wefts for each row of tufts, one of said two wefts for each row of tufts passing through the row and forming a holding weft, and the other lying against the row of tufts against said holding weft and forming a binding weft, substantially as described.

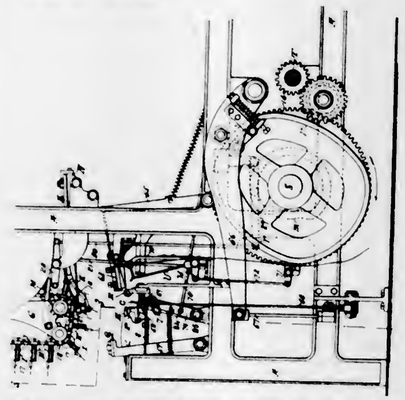
4. A Moquette fabric having a row of tufts for each two wefts, one of said two wefts for each row of tufts passing through the row and forming a holding weft, and the other lying against the row of tufts upon said holding weft and forming a binding weft, and having a body of warps arranged in groups at suitable distances apart between which the tufts are inserted, a portion of said warps passing alternately above and below the wefts and forming binding warps, and a portion of the warps passing between the wefts and forming dividing warps, substantially as described

5. A Moquette fabric having a suitable body of warp strands and rows of tufts inserted between said warp strands and projecting through the body at the back of the fabric, and having two wefts for each row of tufts, one of said two wefts for each row of tufts passing through the row and forming a holding weft, and the other lying against the row of tufts against said holding weft and forming a binding weft, substantially as described.

6. A Moquette fabric consisting of a suitable body of warp strands, rows of tufts, said rows being inserted separately and independently of each other, and two wefts for each row of tufts, one of said two wefts for each row of tufts passing through the row and forming a holding weft, and the other lying against the row of tufts upon said holding weft and forming a binding weft, substantially as described.

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529,636. MOQUETTE-LOOM. EUGENE TYMESON, Yonkers, N. Y., assignor to Warren B. Smith, same place. Filed July 26, 1893. Serial No. 481,495. (No model.)



*Claim.*—1. The combination with the warp heddles and means for inserting the tufts, of a weft carrier and means for actuating said heddles and weft carrier to insert two shots of filling to each row of tufts, substantially as described.

2. The combination with dividing warp and binding warp heddles, and means for actuating said heddles to open the warp in the manner described, of means for inserting the tufts, a weft carrier, and means for actuating the weft carrier to insert a tuft holding and a tuft binding shot of filling to each row of tufts, substantially as described.

3. The combination with a tuft spool carrier, carrier support, and means for transferring the spools for the insertion of the tufts, of means for advancing the carrier and spools therein while a spool is out of the carrier, and means for varying the relative positions of the spool carrier support and transferring means for the return of the spool by the said transferring means, substantially as described.

4. The combination with the tuft spool carrier, carrier support, and means for transferring the spools, of means for advancing the carrier and spools therein while a spool is out of the carrier, and means for moving the spool carrier support for the return of the spool by the transferring means, substantially as described.

5. The combination with the tuft spool carrier, carrier support, and means for transferring the spools, of means for advancing the carrier and spools therein while a spool is out of the carrier, and means for moving the spool carrier support for the return of the spool by the transferring means and returning the support to normal position while the transferring means are in position to take a spool, substantially as described.

6. The combination with the tuft spools, carrier chains and transferring arms, of a movable support for the end of the carrier chains next the transferring arms, means for advancing the carrier chains and spools therein while a spool is out of the carrier, and means for reciprocating the chain support for the return of the spool by the transferring arms, substantially as described.

7. The combination with the warp heddles, weft carrier, tuft spool carrier, carrier support, and means for transferring the spools for the insertion of the tufts, of means for advancing the carrier and spools therein while a spool is out of the carrier and for varying the relative positions of the spool carrier support and transferring means for the return of the spool by said transferring means, and means for actuating said heddles and weft carrier to insert two shots of filling to each row of tufts, substantially as described.



8. The combination with dividing warp and binding warp heddles and means for actuating said heddles to open the warp in the manner described, of a tuft spool carrier and carrier support, and means for transferring the spools for the insertion of the tufts, means for advancing the carrier and spools therein while a spool is out of the carrier and for varying the relative positions of the spool carrier support and transferring means for the return of the spool by the said transferring means, a weft carrier, and means for actuating the weft carrier to insert a tuft holding and a binding shot of filling to each row of tufts, substantially as described.

9. The combination with dividing warp and binding warp heddles and means for actuating said heddles to open the warp in the manner described, of a tuft spool carrier and means for transferring the spools for the insertion of the tufts, means for advancing the carrier and spools therein while a spool is out of the carrier and for reciprocating the carrier for the return of the spool by the transferring means, a weft carrier, and means for actuating the weft carrier to insert a holding and binding shot of filling to each row of tufts, substantially as described.

10. The combination with the warp heddles, weft carrier spool carrier chains and spool transferring arms, of means for actuating said heddles and weft carrier to insert two shots of filling to each row of tufts, a movable support for the end of the carrier chains next the transferring arms, means for advancing the chains and spools therein while a spool is out of the chains, and means for reciprocating the chain support for the return of the spool by the transferring arms, substantially as described.

11. The combination with a spool carrier, transferring arms and grips carried thereby, of a member carried by the transferring arms for holding the spool in position to be seized by the grips, and coacting with the grips in releasing the spool from and returning it to the carrier, substantially as decribed.

12. The combination with a spool carrier, transferring arms and grips carried thereby, said arms having a movement toward and from each other in seizing and releasing the spool, of a member carried by the transferring arm but stationary relatively thereto during the gripping and releasing movement and actuated by said movement of the arms to hold the spool in position to be seized by the grips, and to coact with the grips in releasing the spool from and returning it to the carrier, substantially as described.

13. The combination with a spool carrier, carrier support, transferring arms, and grips carried thereby, of means for shifting the spool carrier support for the return of the spool and returning said support to normal position for the transfer of the next spool, and a member holding the spool in position during the return of the carrier and coacting with the grips in releasing the spool from and returning it to the carrier, substantially as described

14. The combination with spool carriages I and carrier chains J, of the transferring arms K, means for advancing the chains while a spool is out, and swinging chain support G, substantially as described.

15 The combination with spool carriages I and carrier chains J, of the transferring arms K, means for advancing the chains while a spool is out, two sets of wheels 18 by which the lower end of the chains is carried, and swinging chain support G in which said wheels are mounted, substantially as described.

16. The combination with spool carriages I and carrier chains J, of the transferring arms K, means for advancing the chains while a spool is out, swinging chain support G, and a stop holding the chain against movement during the swinging of the support and released for the advance of the chains, substantially as described.

17. The combination with spool carriages I and carrier chains J, of the transferring arms K, springs 40 carried by the transferring arms but stationary relatively thereto during the spool gripping and releasing movements, cams 5 for raising and lowering the springs by the movement of the transferring arms, means for advancing the chains while a spool is out, and swinging chain support G, substantially as described.

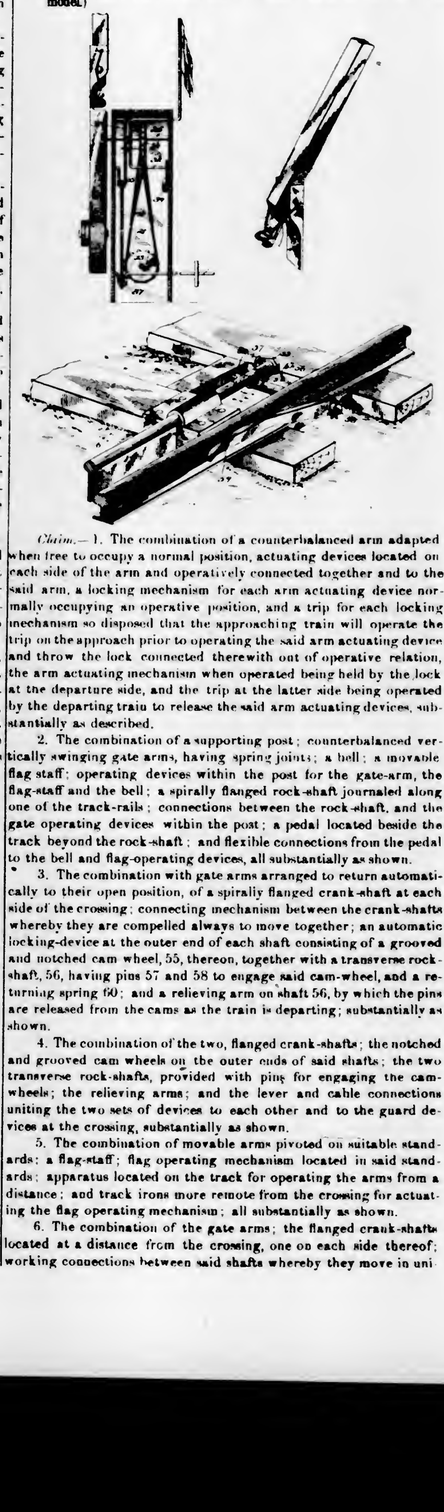
18. The combination with spool carriages I and carrier chains J, of the transferring arms K, carrying grips by which the spool carriages are released from the chains, springs 40 carried by the transferring arms but stationary relatively thereto during the spool gripping and releasing movements, and cams 5 for raising and lowering the springs by the movement of the transferring arms, substantially as described.

19. The combination with spool carriages I and carrier chains J, of the transferring arms K, means for rocking the spool carriages for the insertion of the tufts, springs 40 carried by the transferring arms but stationary relatively thereto during the spool gripping and releasing movements, and cams 5 for raising and lowering the springs by the movement of the transferring arms, substantially as described.

20. The combination with spool carriages I having catch springs 3 and arms 4, and carrier chains J, of the transferring arms K having grips by which the springs are released and provided with arms between which the carriage is held and moving toward and from each other for gripping and releasing the spools, and springs 40 carried by the arms in their transferring movement and having cams 5 engaged by the arms on their movement from each other whereby the springs are raised against the spool carriages, substantially as described.

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529,637. AUTOMATIC RAILROAD-GATE. WILLIAM T. CRAWFORD, Tampa, Fla. Filed Nov. 11, 1892. Serial No. 451,707. (No model.)



*Claim.*—1. The combination of a counterbalanced arm adapted when free to occupy a normal position, actuating devices located on each side of the arm and operatively connected together and to the said arm, a locking mechanism for each arm actuating device normally occupying an operative position, and a trip for each locking mechanism so disposed that the approaching train will operate the trip on the approach prior to operating the said arm actuating device and throw the lock connected therewith out of operative relation, the arm actuating mechanism when operated being held by the lock at the departure side, and the trip at the latter side being operated by the departing train to release the said arm actuating devices, substantially as described.

2. The combination of a supporting post; counterbalanced vertically swinging gate arms, having spring joints; a bell; a movable flag staff; operating devices within the post for the gate-arm, the flag-staff and the bell; a spirally flanged rock-shaft journaled along one of the track-rails; connections between the rock-shaft, and the gate operating devices within the post; a pedal located beside the track beyond the rock-shaft; and flexible connections from the pedal to the bell and flag-operating devices, all substantially as shown.

3. The combination with gate arms arranged to return automatically to their open position, of a spirally flanged crank-shaft at each side of the crossing; connecting mechanism between the crank-shafts whereby they are compelled always to move together; an automatic locking-device at the outer end of each shaft consisting of a grooved and notched cam wheel, 55, thereon, together with a transverse rock-shaft, 56, having pins 57 and 58 to engage said cam-wheel, and a returning spring 60; and a relieving arm on shaft 56, by which the pins are released from the cams as the train is departing; substantially as shown.

4. The combination of the two, flanged crank-shafts; the notched and grooved cam wheels on the outer ends of said shafts; the two transverse rock-shafts, provided with pins for engaging the cam-wheels; the relieving arms; and the lever and cable connections uniting the two sets of devices to each other and to the guard devices at the crossing, substantially as shown.

5. The combination of movable arms pivoted on suitable standards; a flag-staff; flag operating mechanism located in said standards; apparatus located on the track for operating the arms from a distance; and track irons more remote from the crossing for actuating the flag operating mechanism; all substantially as shown.

6. The combination of the gate arms; the flanged crank-shafts located at a distance from the crossing, one on each side thereof; working connections between said shafts whereby they move in uni-

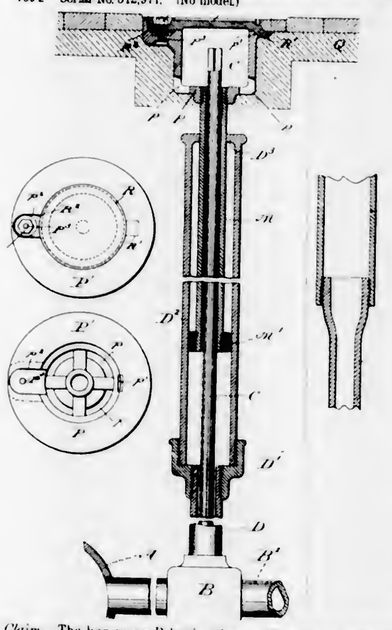
son; cams on the outer ends of said shafts; rock-shafts located transversely between the rails, having pins for engaging the cams; springs on the latter shafts; and bearings therefor; all substantially as shown.

7. The combination of the pedal 47; the crank-shaft 36 oscillated thereby, the flag shaft 30 the double crank shaft 32; the connections between the cranks of the said three shafts whereby the oscillations of shaft 36 are transmitted to the flag; the arm $30^a$ projecting from the flag-shaft; the wheel on the gate shaft and the two pins $26^a$ and $26^b$ projecting therefrom all substantially as shown.

8. A gate arm, consisting of an inner pivoted and weighted section 40, having ears at its outer end, an outer section 42, pivoted between said ears; and a spring loop 43, bearing against the inner end of arm 42, and having its ends coiled around the ends of pivot 41 whereby the two arms are normally held in line with each other, all substantially as shown.

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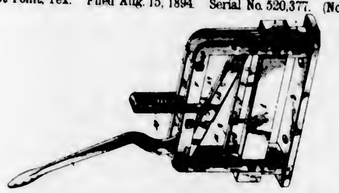
529,638. STOP-COCK BOX. BENJAMIN C. ANDERSON, Brooklyn, N. Y., assignor to Melleney H. Anderson, same place. Filed May 31, 1894. Serial No. 512,977. (No model.)



*Claim.*—The box cover R having the arm R', adapted to serve as a hinge, and the arm $R^3$ on the opposite edge recessed and perforated as shown, in combination with the box P having the flange $P^c$, with provisions as the aperture $p'$ for receiving the arm R' and thus engaging one side of the cover with liberty for the cover to turn thereon as a hinge, the lug or depression having a suitable aperture to receive a bolt and binding nut, and the bolt $P^4$ with its head $P^4$ and binding nut adapted for holding such bolt strongly, rigidly and permanently in the depression without necessity for tapping the box, and with the removable nut T for confining and releasing the arm $R^3$ of the cover, all arranged for joint operation substantially as herein specified.

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529,639. METAL-CUTTING SHEARS. BENJAMIN P. AUTREY, Pilot Point, Tex. Filed Aug. 15, 1894. Serial No. 520,377. (No model.)



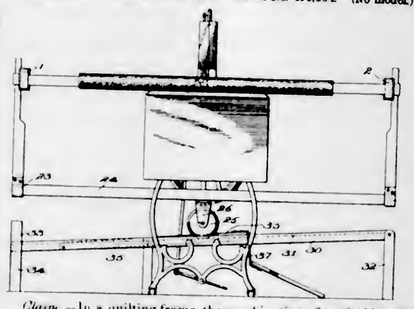
*Claim.*—1. In a metal-cutting device, the combination of a bed, the parallel vertically disposed rectangular frames rising from the bed and each consisting of similar vertical sides, and a horizontal top bar, a lower stationary jaw having its terminals secured between the adjacent sides of the rectangular frames, a movable upper jaw having one end pivoted between the adjacent sides of the frames and having its other end guided by the other sides of the frame, a cam lever pivoted intermediate of the terminals of the top bars of the frames and located between them and guided by the frames and engaging the pivoted jaw, and a spring connected with the tops of the frames and to the pivoted jaw, substantially as described.

2. In a metal cutting device, the combination of a base, posts mounted on the same, a horizontal bed supported by the posts, the parallel vertically disposed rectangular frames having the lower terminals of their sides secured to the opposite faces of the bed and the post, a rectangular support mounted centrally on the frames and extending upward from the same and having the lower terminals of its sides secured to the frame, a lower stationary jaw mounted on the bed, an upper cutting jaw pivoted at one end between the frames and guided by the same, a cam lever fulcrumed between the frames and engaging the upper jaw, and a spiral spring mounted in the support and depending from the top thereof and connected with the pivoted jaw, substantially as described.

3. In a metal cutting device, the combination of a bed, the vertical frames secured to opposite sides thereof and extending upward therefrom, the lower stationary bars 9 and 10 arranged edgewise on the bed and supported by the frames, the inner one of said bars being provided with a recess, the upper pivoted bars 13 and 14 mounted in the frames, one of these bars being recessed similar to the lower bars, the upper and lower blades secured in the recesses of said bars and forming cutting jaws, a lever arranged to depress the upper jaw, and a spring for raising the same, substantially as described.

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529,640. QUILTING-FRAME. THOMAS W. BROADFOOT, Honey Grove, Tex. Filed Nov. 13, 1893. Serial No. 490,804. (No model.)



*Claim.*—In a quilting frame, the combination of a suitable roller-carrying frame and the frame pieces attached thereto, the supporting roller secured to said frame, suitable track supporting standards, a track piece pivotally attached at one end to one of said standards and loosely supported in the other standard, a pivoted lever, and a treadle engaging said lever and adapted to raise the track piece on its pivot, substantially as set forth.

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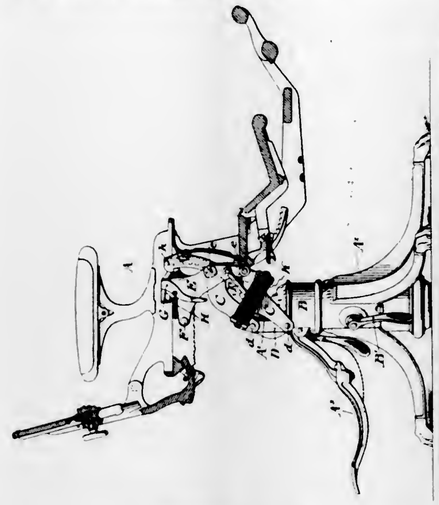
529,641. DENTAL CHAIR. ARTHUR W. BROWNE, Prince's Bay, N. Y., assignor to the S. S. White Dental Manufacturing Company, Philadelphia, Pa. Filed Dec. 26, 1893. Serial No. 494,803. (No model.)

*Claim.*—1. The combination of the pedestal or base, the main elevating and lowering support, the bracket rigid with the upper end of said support and having the pendent portion, the upper and lower parallel arms jointed respectively to the upper and pendent portions of the bracket at their inner ends, the chair-body carrier to which said arms are jointed at their outer ends, means for maintaining the parallel arms in their position of adjustment, and the chair body supported by said carrier, substantially as set forth.

2. The combination of the pedestal or base, the main elevating and lowering support, the bracket rigid with the upper end of said support and having the pendent portion, the upper and lower spring-counterbalanced parallel arms jointed respectively to the upper and pendent portions of the bracket at their inner ends, the chair-body carrier to which said arms are jointed at their outer ends, means for maintaining the parallel arms in their position of adjustment, and the tilting chair-body supported by said carrier, substantially as set forth.

3. The combination of the pedestal or base, the main elevating and lowering support, the forked bracket rigid with the upper end of the support, the spring-counterbalanced parallel arms having jointed connection at their inner ends with said bracket, the chair-body carrier to which said arms are jointed at their outer ends, means for maintaining the parallel arms in their position of adjustment, the chair-body having jointed supported connection with said carrier, and means for tilting the chair body upon its carrier and for securing it in its tilted position, substantially as set forth.





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529,642. DOOR-HANGER. CHARLES W. BULLARD, Chicago, Ill., assignor to the Bullard & Gormley Company, same place. Filed Aug. 30, 1894. Serial No. 521,737. (No model.)



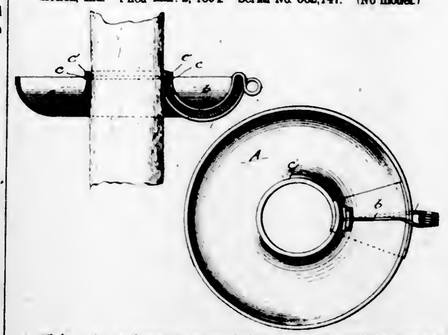
*Claim.*—1. A door hanger, comprising in combination, the crossed levers 1 and 2, pivoted together at their points of intersection, with their ends attached to the jamb and to the sliding door, attaching means for the same that is adapted to permit a movement of the upper and lower lever ends to and from each other, and the pair of suspension bars, attached to the door jamb, the door, and the levers 1 and 2, substantially as set forth.

2. A door hanger, comprising in combination, the crossed levers 1 and 2, pivoted together at their points of intersection, with their ends attached to the door jamb and to the sliding door, attaching means for the same consisting of the radius links 4, 5, 9, and 10, and means for restricting the movement of the pair of levers 1 and 2, so that their central pivot will move in a horizontal rectilineal direction, substantially as set forth.

3. A door hanger, comprising in combination, the crossed levers 1 and 2, pivoted together at their points of intersection, with their ends attached to the door jamb, and to the sliding door, attaching means for the same consisting of the radius links 4, 5, 9 and 10, and the pair of suspension bars 13 and 15, attached to the door jamb, the door, and the levers 1 and 2, substantially as set forth.

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529,643. INSECT-TRAP FOR TREES, &c. ADOLPH F. CARLSON, Attica, Ind. Filed Mar. 2, 1894. Serial No. 502,147. (No model.)

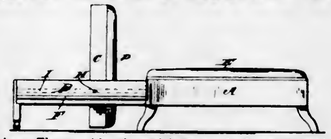


*Claim.*—1. An insect trap consisting of a circular pliable trough having its ends overlapped, and a removable clamp consisting of a pair of spring arms, one fitting within the trough and the other against the under side of the same, and a spring coil connecting said arms and adapted to normally press them toward each other, substantially as described.

2. An insect trap consisting of a circular trough having its ends overlapped, and a clamp consisting of a pair of spring arms normally pressing toward each other, one of the arms fitting within the trough and conforming thereto and the other passing under the trough and conforming thereto, and a connection connecting the outer ends of the arms beyond the trough, substantially as described.

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529,644. COMBINED BED AND COUCH. ERWIN B. CLARK, Grand Rapids, Mich. Filed Oct. 8, 1891. Serial No. 408,155. (No model.)



*Claim.*—The combination with the main frame A having a seat cushion E, of a horizontally sliding frame B having its end walls provided at the inner sides with horizontal grooves I, and the revolving frame C provided with a cushion D and having eccentrically arranged trunnions H adapted to slide longitudinally along grooves in the sliding frame, substantially as and for the purposes described.

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529,645. FOLDING CHAIR. WALTER N. CLARK, Warren, Ohio. Filed Feb. 7, 1894. Serial No. 499,358. (No model.)



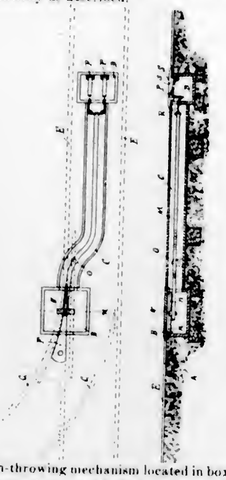
*Claim.*—A folding chair having its back and fore legs formed from continuous boards having lower recesses and reduced edges, and upper recesses and offsets or shoulders, a pivoted seat fitted at its inner end in said upper recesses and designed to rest on said offsets or shoulders and rear legs having knuckle-like ends fitted in said lower recesses and provided with notches with which said edges are designed to engage, substantially as set forth.

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529,646. STREET-RAILWAY SWITCH. CORNELIUS COUGHLIN, Cincinnati, Ohio. Filed Feb. 15, 1894. Serial No. 500,291. (No model.)

*Claim.*—1. A switch-throwing device, consisting substantially of a tongue switch F, a slide N, a pivoted switching lever M, tripping le-

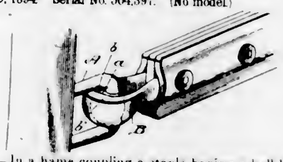
vers P P, and cord R connecting the tripping levers with the switching-lever, substantially as described.



2 The switch-throwing mechanism located in boxes beneath the surface of the street and composed substantially of the tripping levers P P, the cord R, the switching-lever M, the slide N, and the tongue-switch F connected with the slide and pivoted to the switching-lever, substantially as described.

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529,647. **HAME-COUPLING.** AUGUST T. DOEKR, Harvel, Ill. Filed Mar. 20, 1894. Serial No. 504,397. (No model.)



*Claim.*—In a hame coupling a staple having a ball like enlargement and a clip having the upper and lower edges of its connecting member flattened and extended, and the interior face of said member flattened to provide a bearing surface for the ball like enlargement, substantially as shown and described.

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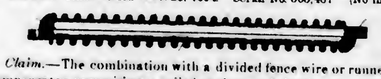
529,648. **WIRE-STRETCHER.** WILLIAM E. GREEN Tiffin, assignor of two-thirds to J. G. Walter and Homer Day, Maple Grove, Ohio. Filed Mar. 23, 1894. Serial No. 504,837. (No model.)



*Claim.*—In a wire stretcher, the combination of a grooved shaft provided with means for engaging the wire at one end and at its other end with means for the reception of the wrench, and a disk slidably mounted on said shaft carrying a lug, working in the grooves therein, and a series of lateral hooks $b^3$, said hooks being turned or bent in the same direction and beveled on their outer sides, as at $b^4$, substantially as herein shown and described.

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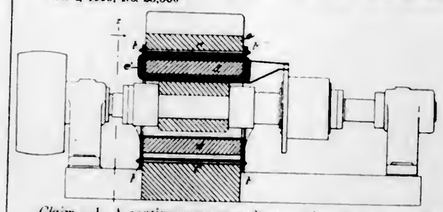
529,649. **COMPENSATOR FOR WIRE FENCES.** PETER HERMAN, Norwalk, Ohio. Filed Mar. 28, 1894. Serial No. 505,481. (No model.)



*Claim.*—The combination with a divided fence wire or runner, of a compensator comprising a coiled spring, and duplicate oppositely disposed half round bars arranged, with their flat surfaces in contact, within and passing through said spring, each bar being provided at one end with a stop to engage the contiguous end of the spring and at the other end with an eye for engagement with the contiguous end of the fence wire section, the combined diameters of said bars being approximately equal to the inner circumference of the coils in the spring to prevent looseness and deflection of the intermediate portion of the latter, substantially as specified.

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529,650. **CONTINUOUS-CURRENT DYNAMO-ELECTRIC MACHINE.** MAURICE HUTIN and MAURICE LEBLANC, Paris, France, assignors to the Societé Anonyme pour la Transmission de la Force par l'Électricité, same place. Filed Feb. 12, 1894. Serial No. 499,850. (No model.) Patented in France June 21, 1893, No. 231,027, and in England Dec. 4, 1893, No. 23,309.



*Claim.*—1. A continuous current dynamo electric machine, provided with one or more electrical circuits of low resistance, closed upon themselves and threading through the polar extensions of the field magnets, substantially as described.

2. In a continuous current dynamo electric machine, a deadening circuit for the consumption or obliteration of variations of magnetic flux, consisting of two metallic rings of low resistance, one on each side of the field magnet poles and electrically joined by cross connections of low resistance, insulated from the pole pieces, substantially as described.

3. In a continuous current dynamo electric machine, a deadening circuit for the consumption or obliteration of variations of magnetic flux, consisting of two metallic rings of low resistance, one on each side of the field magnet poles and joined by metallic rods of low resistance passing through perforations in the pole pieces, but insulated therefrom, substantially as described.

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529,651. **SHEATHING FOR SHIPS' BOTTOMS.** PHILIP INCH, Washington, D. C., assignor of eight-fifteenths to B. N. Baker, Baltimore, Md. Original application filed June 20, 1894, Serial No. 515,142. Divided and this application filed Oct. 19, 1894. Serial No. 526,387. (No specimens.)



*Claim.*—1. In combination with the bottom of a ship or other craft a covering consisting of a composite metal composed of tin and zinc prepared with sal ammoniac, substantially as described.

2. In combination with the bottom of a ship or other craft, a covering consisting of a composite metal composed of tin and zinc prepared with sal ammoniac, and with aluminum added thereto, substantially as described.

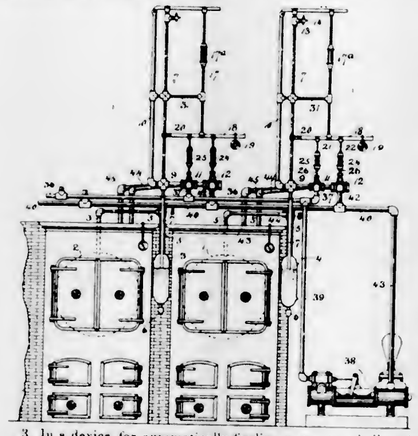
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529,652. **AUTOMATIC WATER-FEEDER FOR STEAM-BOILERS.** JOSEPH H. JOHNSON, Bradford, Pa. Filed Jan. 15, 1894. Serial No. 496,938. (No model.)

*Claim.*—1. In an automatic water feeder for steam boilers, the combination of the water supply, the boiler, the water column in connection therewith, a thermostatic pipe in connection with the steam boiler and water column, a steam and water valve for controlling respectively the steam to the water supply and the water to the boiler; a standard supported by the thermostatic pipe and having a lever pivoted thereto at its upper end and connected with the thermostatic pipe, a weighted lever pivoted on the thermostatic pipe and connected with the steam and water valves, and a rod connecting the weighted lever with the pivoted lever on the standard, substantially as shown and described.



2. In an automatic water feeder for steam boilers, the combination of the water supply, the boiler, the water column in connection therewith, a thermostatic pipe in connection with the steam boiler and water column, a steam and water valve for controlling respectively the steam to the water supply, and the water to the boiler; a standard supported by the thermostatic pipe and having a lever pivoted thereto at its upper end and connected with the thermostatic pipe, a weighted lever pivoted on the thermostatic pipe and connected with the steam and water valves, a rod connected with the weighted lever, and a swivel connecting the rod with the pivoted lever on the standard, for regulating the lift of the weighted lever, substantially as shown and described.



3. In a device for automatically feeding water to a boiler, the combination of the boiler, the water and steam valves the thermostatic pipe having connection with the boiler the standard 10 supported by the thermostatic pipe a lever pivoted on the standard at its upper end, and connected to the thermostatic pipe, a weighted lever secured to the thermostatic pipe, a rod connecting the weighted lever with the lever pivoted on the standard, and an adjustable connection between the weighted lever and the water and steam valves, substantially as shown and described.

4. In a device for automatically feeding water to a boiler, the combination of the boiler, the water and steam valves, the thermostatic pipe in communication with the boiler a standard supported by the thermostatic pipe, a lever pivoted on the standard and having connection with the thermostatic pipe, a weighted lever pivoted on the thermostatic pipe a rod connecting the weighted lever with the lever pivoted on the standard, and an adjustable connection consisting of the rod 23, reducers 29 and 30, short pipe 28 and rod 29 between the weighted lever and the water and steam valves, so that the said valves can be adjusted on their seats, substantially as shown and described.

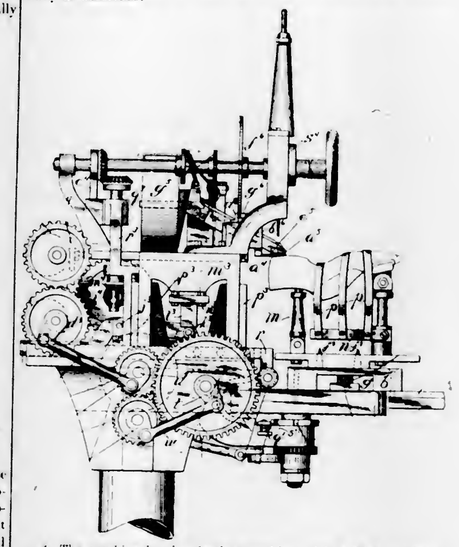
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529,653. **LASTING-MACHINE.** CHARLES H. KELLEY, Revere, Mass. Filed Dec. 20, 1892. Serial No. 455,780. (No model.)

*Claim.*—1. A lasting machine embracing a jack-device for supporting a last having a shoe applied thereto, a support for said jack device, devices for laying the edge of the shoe-upper over the sole of the last into position for being tacked down, tacking mechanism, a train of actuating devices engaging with the jack device and operating to move the latter upon the support therefor in a direction lengthwise of the last, and a separate train of actuating devices having independent operative connection with the said support and constructed to turn the same in rounding the heel and toe of the shoe, substantially as described.

2. A lasting machine embracing a jack-device for supporting a last having a shoe applied thereto, a support for said jack device, devices for laying the edge of the shoe upper over the sole of the last into position for being tacked down, tacking mechanism, a train of actuating devices engaging with the jack device, operating to move the latter upon the support therefor in a direction lengthwise of the last, and having a capacity for adjustment to enable the length of the feed movements to be varied as desired, and a separate train of actuating devices having independent operating connection with the said support and constructed to turn the same in rounding the heel and toe of the shoe the feed movement occasioned thereby being unaffected by the adjustment of the actuating devices first mentioned, substantially as described.

3. The combination with tacking mechanism, of a jack for supporting the shoe, a jack supporting block having oppositely positioned teeth fitted to engage alternately with the head of a feed screw according as the parts are shifted to present opposite edges of the last to the tacking mechanism, a support on which the block is fitted to slide past the tacking mechanism, independent actuating means connected with the said support and adapted to rotate the same, and means for bringing said independent actuating means into action on the arrival of the end of the last at the tacking mechanism, substantially as described.



4. The combination, in a lasting machine, with tacking mechanism, of jack-mechanism, a bed on which said jack-mechanism is mounted to slide, means for sliding said jack-mechanism along said bed, a ratchet connected with said bed, a pawl for engaging with said ratchet, means for reciprocating said pawl, and means for rendering said pawl inoperative to move the ratchet during the sliding movement of the jack-mechanism, and rendering it operative when an end of the last has been presented to the tacking-mechanism to produce at such time a rotatory movement of the bed and jack-mechanism, substantially as described.

5. In a lasting machine embracing tack-delivering and driving mechanism, the combination therewith of a jack mounted on a sliding block set in a pivoted support, means for actuating said sliding block relatively to said support, a pawl and ratchet mechanism for swinging said jack mechanism on its pivot means for preventing the pawl from engaging the ratchet while the side of the last is being presented to the tacking mechanism and mechanism intermediate said sliding block and said pawl and ratchet mechanism whereby when the sliding block is moved a given distance to present the side of a shoe to the tacking mechanism, the pawl of the pawl and ratchet mechanism will be thrown into engagement with the ratchet to turn the jack mechanism on its pivoted support to present the heel or toe of the shoe to the tack-mechanism, substantially set forth.

6. The combination in a lasting machine with jack mechanism mounted on a pivot or vertical shaft $e$ of the notched disk $r'$, a projection for engaging the notches on said disk, actuated by a spring-impelled arm, a pawl and ratchet mechanism for rotating said shaft or pivot $e$, and a pin intermediate said arm and said pawl whereby when the said arm is thrown forward by its spring the pawl is held out of engagement with the ratchet, substantially as set forth.

7. The combination in a lasting machine with jack mechanism mounted upon a sliding block set on a pivoted support, means for moving said block relatively to said support, mechanism for rotating the jack mechanism on its pivot, and a downwardly projecting movable arm secured on said sliding block and operating to throw said jack rotating mechanism into or out of engagement, whereby by adjusting the downwardly projecting arm on the sliding block the jack mechanism may be caused to rotate at any point in the movement of the sliding block to accommodate shoes of various lengths, substantially as set forth.

8. The combination in a lasting machine with a vertical shaft which supports the jack mechanism of a ratchet on said shaft, a re-

ciprocating arm carrying a pawl normally engaging said ratchet, means for reciprocating said arm, and a spring-actuated pin and mechanism for operating the same whereby the pawl is held out of engagement with the ratchet when the jack mechanism is moving in a right line, substantially as set forth

9. In a lasting machine the combination with a vertically movable supporting frame carrying a tacking mechanism, of a cam-actuated lifting-lever and adjustable blocks $l^3$ intermediate said lifting lever and the vertically movable supporting frame whereby said frame may be adjusted relatively to said lever, substantially as set forth.

10. In a lasting machine in which the tacking mechanism is movable vertically and horizontally in right lines, the combination therewith of intermittently operated cams for moving said tacking mechanism vertically and horizontally, the shafts of said cams being geared together and operated by means of a reciprocating arm carrying a pawl engaging a ratchet on one of said cam shafts, said arm being actuated by means of a connecting rod, connecting said arm with a revolving crank arm, substantially as set forth.

11. In a lasting machine in which the tacking mechanism is movable vertically in a right line, the combination therewith of an intermittently actuated cam for moving said tacking mechanism in one direction and a reciprocating foot engaging the upper on the last which operates to move the tacking mechanism in the opposite direction, substantially as set forth

12. A tack driving mechanism comprising a hopper and a race way for delivering the tacks, a spring actuated pivoted holder to receive a tack from the end of the race-way, and a driver having the rear portion of its driving end beveled, whereby as the driver passes downward between the holder and the lowermost tack in the race-way it will operate to separate the lowermost tack in the race way from the tack in the holder, substantially as set forth.

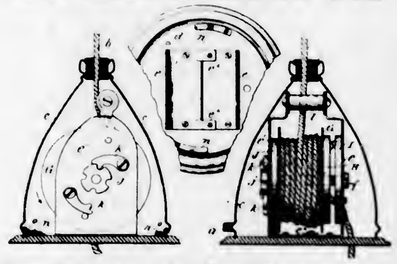
13. A tacking mechanism comprising a race-way for delivering the tacks, a pivoted holder mounted at the lower end thereof and grooved to receive a tack from the race way, and on the opposite side to accommodate the driver, and a driver located rearwardly of the axis of the pivoted holder whereby when a tack is driven the driver may pass downwardly behind the axis of the holder, substantially as set forth

14. A tacking mechanism embracing a driver, an inclined race-way for delivering the tacks, and a holder pivoted at right angles to the line of delivery of the tacks, having its upper surface normally standing in line with the race-way and having a recess or groove therein formed to hold a tack at right angles to the line in an inclined position preparatory to its being driven, said holder being shaped as shown whereby when it is swung through a portion of its movement the tack will engage with and be driven straight into the material, substantially as set forth.

15. In a lasting machine the combination with the shoe holding mechanism and with tack delivering and driving mechanism of the smoothing and holding foot $a^6$, the sliding plate $b^5$ having projections $c^6$ $d^6$ and the co-operating disk $f^6$ having projections $g^6$ and means for rotating said disk, substantially as set forth

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529,654. ELECTRIC-LIGHT FIXTURE JOHN R. KONETSHNY, Brooklyn, assignor to the E. P. Gleason Manufacturing Company, New York, N. Y. Filed Feb. 21, 1894. Serial No. 500,945. (No model.)



*Claim.*—1. In an electric light fixture, the combination with a lamp of a base, an automatic reel secured within said base, flexible conductors passing around the reel and through an aperture in the base, and connected at their free ends with the lamp, together with a lamp-holder attached to the lamp, said lamp holder being separable from the base and arranged to fit over and embrace the base carrying the reel, substantially as described.

2. In an electric light fixture, the combination of a suitable base, a reel contained therein, flexible conductors wound upon the reel, a removable lamp-holder arranged to fit over and embrace the base, a fastening device for removably securing the lamp-holder to the base, and a lamp carried by the lamp-holder and connected directly with the free ends of the flexible conductors wound upon the reel, substantially as described.

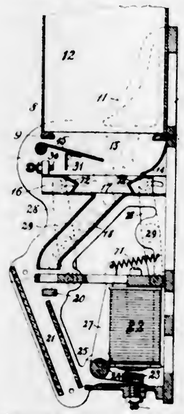
3. In an electric light fixture, the combination of a base F, an automatic reel contained therein, a lamp-holder D fitting over and embracing the base and removable therefrom, a lamp carried by the lamp-holder, and flexible conductors connected directly to the lamp and passing around the reel in the base, and a source of electrical supply connected to the conductors, substantially as described.

4. In an electric light fixture, the combination of suitable standards, a reel carried thereby, a disk of insulating material carried by one of the standards, and conducting rings in electrical connection with a source of electrical supply, brushes carried by the reel, and in electrical connection with a lamp-cord wound upon the reel, said brushes bearing upon the conducting rings, a convolute spring for propelling the reel, and pawl and ratchet devices for stopping the movement of the reel, substantially as described.

5. In an electric light fixture, the combination of standards *e e*, a shaft *f* journaled in said standards, a reel G mounted upon the said shaft, a disk H of insulating material mounted upon the reel provided with brushes *g g* severally connected with the wires of the lamp cord wound upon the reel, a disk I of insulating material secured to the standard *e*, conducting rings *h h* carried thereby and severally connected with the wires of the source of supply, the said brushes bearing upon the conducting rings and taking current therefrom, a convolute spring connected to the shaft *f* and to a fixed part of the standards, a ratchet *j* carried by the shaft and pawls *k* carried by one of the standards for engaging therewith, together with a roller *l* mounted in the free ends of the standards, substantially as described

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529,655. VENDING-MACHINE. FREDERICK LAMPLOUGH, New York, N. Y. Filed Apr. 13, 1894. Serial No. 507,429. (No model.)



*Claim.*—1. In the coin receiving mechanism of a vending machine, a vertical wheel adapted to turn on a horizontal axis and having a coin pocket, and a guide and lever below said pocket for maintaining and receiving the coin on edge, substantially as set forth.

2. In a coin mechanism a wheel having a coin-pocket, having a cutting edge lying at an angle across the coin opening and an oscillatory guard in front of said pocket, substantially as set forth.

3. The combination of a casing 33, a wheel 35 having a coin pocket, an arm pivoted on said casing and having a guard 39, with sharp edges 40, arranged at an angle to each other and a spring 43, substantially as set forth.

4. The combination with a casing having a coin orifice, of a coin chute, to guide the coin on edge a vertical wheel having a coin pocket and acting to transfer a coin from the orifice to the chute, and a lever having a coin holder with an opening through its bottom to receive the coin on edge from the chute, substantially as set forth.

5. The combination with a casing having a coin orifice, of a coin chute, a vertical wheel operating as described, and a lever having a coin holder, for receiving the coin on edge a portion of which holder is movable to hold or release the coin, substantially as set forth.

6. In a coin mechanism a lever provided with a coin holder having a space open at its bottom to receive the coin on edge, and at one end of said space adapted to be engaged by the edge of the coin a portion movable to release the coin, and means for moving said portion by the oscillation of the lever, substantially as set forth.

7. The combination with a lever having a coin holder with a space to receive the coin on edge and comprising the support 56 at



one end of said space, of the link 58, and adjustable pivot 59, substantially as set forth.

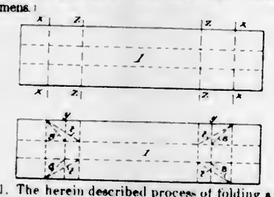
8. In a vending machine the combination of a delivery slide, a lever connected therewith, a retracting spring, an armature on said lever, a magnet for actuating the armature, and a coin mechanism controlling the electric circuit of the magnet, substantially as set forth

9. In the delivery mechanism of a vending machine, the combination of a transverse slide having the adjustable projection 30 and an oscillating agitator 15, operated by the said projection, substantially as set forth.

10. The combination with the delivery slide, of an agitating slide above the former, levers mounted on intermediate pivots and connected with the said slides, an armature connected with one of said slides, and a magnet for actuating the armature and slides substantially as set forth

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529,656. PROCESS OF MAKING PAPER BAGS. WILLIAM A. LORENZ and EDWARD E. CLAUSSEN, Hartford, Conn., assignors to Albert H. Walker, trustee, same place. Filed May 5, 1894. Serial No. 510,185. (No specimens.)

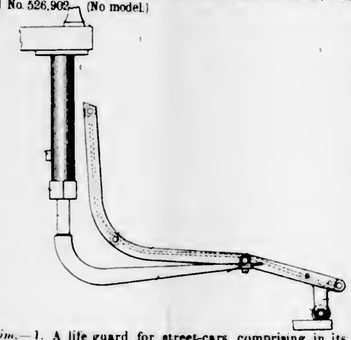


*Claim.*—1. The herein described process of folding a square bottomed paper bag from bellows sided tubing, which consists in expanding one end of the tubing to a distance beyond the intended plane of the bag bottom substantially greater than the depth of the bellows tucks of the tubing, turning down the side walls at the above mentioned plane to form the diamond fold, pasting and crossfolding the end flaps of the diamond, collapsing the bag by closing the bellows side plies and forming the right angled triangular folds therein, substantially as described.

2. That process of converting a bellows sided blank into two square bottomed paper bags, which consists in turning up the ends of the blank upon the lines *z—z* located beyond the intended planes *x—x* of the respective bag bottoms a distance substantially greater than the depth of the bellows side tucks of the blank and expanding the ends of the blank into rectangular form at the lines *x—x* thus producing the acute angled triangular folds 6, folding down the side walls 4 and 5 into the diamond form, pasting and cross-folding the end flaps of the diamonds, collapsing the blank by re-closing the side tucks as far as the lines *y—y*, thus reducing the acute angled triangular folds to right angled proportions and collapsing the blank, separating the two bags by cutting them apart, all substantially as described.

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529,657. LIFE GUARD FOR STREET-CARS. MARTIN W. LYDON, North Andover, Mass. Filed Dec. 4, 1893. Renewed Oct. 24, 1894. Serial No. 526,902. (No model.)



*Claim.*—1. A life guard for street-cars comprising in its construction side-supporting arms separately pivoted to the car so as to swing horizontally, and a cradle pivotally connected with said arms.

2. A life-guard for street-cars comprising in its construction horizontally swinging supports on the car, and a cradle pivotally and separably connected with said supports.

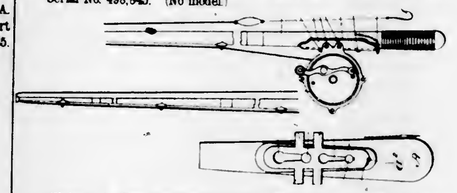
3. A life-guard for street-cars comprising in its construction side supporting arms pivotally connected with the car and having sockets, and a cradle having a bar with downturned ends to engage said sockets.

4. A life-guard for street cars, comprising in its construction a pair of side arms pivotally supported in sockets depending from the car, and a cradle supported by said side-arms and pivotally connected therewith, said cradle carrying flanged rollers adapted to engage the track-rails.

5. A life-guard for street-cars, comprising in its construction a pair of side-arms pivotally supported in sockets depending from the car, a cross-bar or rod pivotally connected with said arms, and a cradle pivotally mounted on said cross-bar intermediate of its ends and its forward end spring-actuated downward and carrying rollers adapted to engage the track-rails

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529,658. FISHING-REEL. PETER J. MABYE, Brooklyn, N. Y., assignor of one-half to William H. Ogilvie, same place. Filed Feb. 2, 1894. Serial No. 498,845. (No model.)



*Claim.*—1. The combination with a fish line reel, of a plate secured thereto and having longitudinally tapered slots provided with enlarged openings at their broadest end, a plate adapted to be secured to a rod, and headed lugs extended from said plate to engage with the slotted plate, substantially as specified.

2. The combination with a reel of a plate secured thereto and provided with slots having enlarged openings at one end, an auxiliary locking pin for engaging with said plate and a rod, a plate secured to a rod and the lugs extended from said rod plate for engaging the reel plate.

3. The combination with a reel of the slotted plate secured thereto and having the notch in its end, the pin adapted to engage with the rod and in said notch, a plate adapted to be secured to a section of a rod and the locking lugs on said plate, substantially as specified.

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529,659. CRUTCH. GEORGE B. MAIN, Glasgow, Scotland. Filed Aug. 15, 1894. Serial No. 520,388. (No model.)



*Claim.*—1. A crutch comprising a head having a stationary upper part and a laterally slidable lower part; substantially as described.

2. A crutch comprising a head having a stationary upper part and a laterally slidable lower part connected together by a longitudinal tongue and groove joint substantially as described

3. A crutch comprising a head having a stationary upper part, and a laterally slidable lower part and stops located on the upper part for limiting the movement of the lower part upon the upper part; substantially as described.

4. A crutch comprising a head having a corrugated surface for permitting the circulation of the air thereabove; substantially as described.

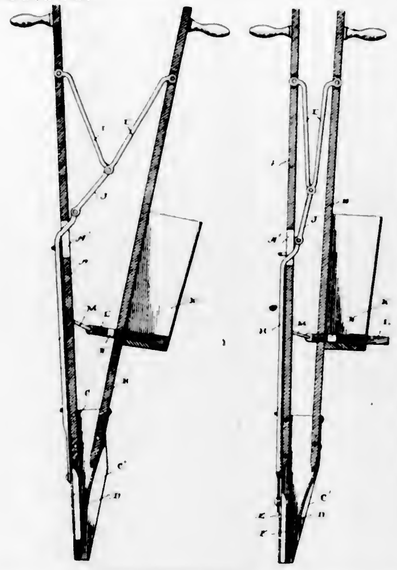
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529,660. PLANTER. ZENO H. MILLER, Sherwood, Ohio. Filed Aug. 6, 1894. Serial No. 519,578. (No model.)

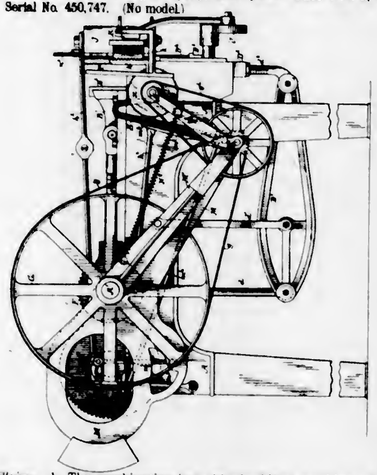
*Claim.*—1. In a planter the combination of a mouth piece, the levers, one of the same being fixed in the upper end of the piece and the other pivoted therein and adapted to close the same, a plunger extensible from the mouth piece and movable beneath and in line with the fixed lever, and a means for opening the mouth piece to drop the seed and independently but simultaneously moving downward the plunger to embed the seed in the earth, substantially as shown and described.

2. In a planter the combination of a seed dropper slotted vertically, the extensible plunger therein, a rod on the outer side of the dropper and connected to the plunger through the slot, levers adapted to be contracted for operating the dropper, and a connection between the upper ends of the levers and the said rod for moving the latter and the plunger downward when the seeds are dropped, substantially as shown and described.

529,660.



529,661. MANUFACTURE OF SHINGLE SIDING AND MACHINERY THEREFOR. LEVI H. MONTROSS, Camden, N. J., assignor to the Montross Manufacturing Company, same place. Filed Nov. 2, 1892. Serial No. 450,747. (No model.)



*Claim.*—1. The combination in a shingle siding machine, of an incising knife and a chip cutting knife working at right angles to each other, a work carrying head, means for intermittently feeding the strip along said head, and means for causing movement of the head toward the cutting knives between successive feeding movements of the strip, so as to provide for the cutting of successive chips from the same portion of the strip, substantially as specified.

2. The combination in a shingle siding machine, of means for supporting and intermittently feeding the siding strip, with the incising and chip cutting knives, the circular saw, means for rotating and reciprocating the latter, and a guide bar for limiting the depth of cut of the saw, substantially as specified.

3. The combination in a shingle siding machine, of the fixed frame, the carrying head, the reciprocating cutters, the operating shaft therefor, and tension rods extending from the carrying head to a point beyond the bearings for the knife operating shaft, substantially as specified.

4. The combination in a shingle siding machine, of the fixed frame, the reciprocating knives, a shaft for operating the same, the carrying head mounted upon the frame, boxes connected to said carrying head by means of rods, and a shaft having cams for acting upon said boxes so as to impart movement to the head, substantially as specified.

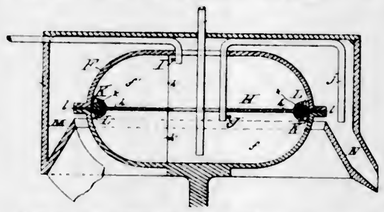
5. The combination in a shingle siding machine, of the main frame, cutting knives guided on said frame in directions at right angles to each other, a shaft having a pair of eccentrics, a rod whereby the strap of one eccentric is connected directly to one knife slide and a pair of rods and an interposed lever whereby the other eccentric is connected to the other knife slide, substantially as specified.

6. The combination in a shingle siding machine, of the fixed frame, means for supporting and intermittently feeding the siding strip, a circular saw, arms carrying the spindles of said saw, a frame to which said arms are movably hung, and means for vibrating said frame, substantially as specified.

7. The combination in a shiugle siding machine, of the fixed frame, means for supporting and for intermittently feeding the siding strip, a circular saw, a guide for limiting the depth of cut of said saw, arms carrying the saw spindle, a swinging frame to which said arms are movably hung, and means for vibrating said frame and for imparting forward movement to the upper ends of the saw carrying arms, substantially as specified.

8. The combination of the scoring saw, arms carrying the spindle of the same, a gage bar for limiting the forward movement of the saw, a vibrating frame to which the saw carrying arms are movably hung, an arm having a spring leg for pressing the saw forward, and means for vibrating said arm, substantially as specified.

529,662. SIRUP-PURIFIER. JAMES NAYLOR, Jr., Boston, Mass., assignor of three-fourths to George Thomas McLauthlin, same place. Filed Nov. 14, 1891. Serial No. 411,887. (No model.)



*Claim.*—1. In a centrifugal sirup purifier the combination with a supported arbor and bowl, said bowl divided into equal compartments by the horizontal partition H; of means for maintaining an inflow of crude sirup thereto, a discharge for refined sirup, a discharge for the light impurities and a discharge directly outward from and through the openings in the periphery for the heavy impurities as herein shown and described.

2. In a centrifugal sirup purifier the combination with the supported arbor and bowl, said bowl provided with automatic means of discharge and the partition H at its greatest internal diameter; of the skimmers I and J placed above and below said partition and means whereby an inflow is maintained to said bowl as herein set forth.

3. In a centrifugal sirup purifier the combination with the supported arbor and bowl, said bowl having an upper and lower compartment and provided with valves at its periphery to serve both compartments; of means for inflow of the crude sirup and discharge of the refined as herein set forth.

4. The combination with the mounted bowl having equal upper and lower compartments with communicating openings; of the inlet pipe E, skimmers J and I, pipes *j* and *i* and the automatic check valves K K as shown and described.

5. In a sirup purifier the combination with a centrifugal separating mechanism provided with automatic discharge valves K K for heavy impurities, a discharge for light impurities consisting of the skimmer J set below the partition H and the pipe *j* leading therefrom; of means for conducting the said discharged impurities consisting of the annular trough M and outlet spout N as herein set forth.

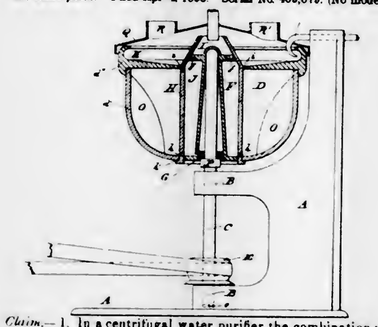
6. In a sirup purifier the combination with a mounted arbor and bowl provided with a horizontal partition H having projections *k k* extending therefrom; of the automatic discharge valves K K substantially as shown and described.

7. The combination with a mounted bowl; of the skimmer I having its external diameter uniform along its length and the bevel to form the skimming edge upon the inside thereof, and its supporting and conducting pipe *i* secured to the case G as constituting the means of discharge for refined sirup as herein shown and described.



8. In a centrifugal sirup purifier the combination with a supported arbor and bowl, said bowl provided with the partition H and the valves K K both in the same horizontal plane, said partition dividing said bowl into two equal separating compartments; of means for inflow thereto and separate discharges therefrom of the light and heavy impurities and the refined sirup as herein set forth.

529,663. CENTRIFUGAL WATER-PURIFIER. JAMES NAYLOR, Jr., Boston, Mass., assignor of three-fourths to George Thomas McLauthlin, same place. Filed Apr 4, 1893. Serial No. 469,079. (No model.)



*Claim.*—1. In a centrifugal water purifier the combination with a mounted arbor and bowl, said bowl composed of a semi-spherical shell and a flanged disk; of the core piece H fitted to said shell and disk and provided with a shoulder *h* to support the same; substantially as shown and described.

2. In a centrifugal water purifier the combination with the supported core piece H provided with a shoulder *h* and the shell *d* fitted thereto and resting thereon; of the disk *d'* provided with the annular gutter *i* and water-ways *i'* and fitted to said core-piece as shown and described.

3. In a centrifugal water purifier the disk *d'* provided with a gutter K above its upper surface which is diametrically larger than any internal diameter of the bowl, and an internally screw threaded flange below its lower surface, the semi spherical shell *d* having a corresponding screw thread and means of support to the arbor, and said arbor; in combination with the skimmer secured to the frame and means for inflow as herein shown and described.

4. In a centrifugal water purifier the bowl D provided with the blades O, the core-piece H having openings *h* to said bowl; in combination with the center-piece F having water-ways *f* and said center-piece mounted upon the arbor as herein set forth.

5. In a centrifugal water purifier the combination with a mounted bowl and arbor, said bowl composed of a semi spherical shell provided with external screw threads upon its outermost periphery, and a flanged disk provided with corresponding internal screw threads, the core-piece H fitted thereto and supporting same; of means for inflow and discharge as herein set forth.

6. In a centrifugal machine the combination with the arbor mounted in its bearings and the bowl; said bowl being composed of the shell *d* and the flanged disk *d'* of the core-piece H made to fit said bowl at its upper and lower extremities, and the center-piece F to likewise fit said core-piece as constituting the means of support of the bowl to the arbor as herein set forth.

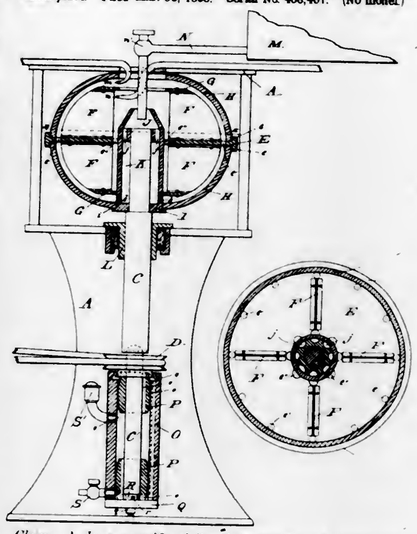
7. In a centrifugal water purifier the combination with a mounted arbor and bowl, said bowl provided with the gutter K and a separating chamber capable of carrying an immovable body of water therein contained, said gutter being diametrically larger than said separating chamber; of means for inflow to said chamber and discharge from said gutter as herein shown and described.

8. In a centrifugal machine the combination with the cover of the bowl *d'*, an annular gutter *i* and water-ways *i'*, formed by cutting into its inner face and in close contact with the core piece H; of said core piece as constituting the means of limited annular discharge from the closed chamber of the bowl as herein set forth.

9. In a centrifugal water purifier the combination with a mounted and closed bowl provided with gutters *i* and K on its outer upper surface; of a stationary close fitting cover provided with inlet and outlet openings for air blast for the purpose of exposing the thin discharging film of water to the influence of the blast as herein set forth.

10. In a centrifugal machine, the combination with a mounted arbor having a semispherical seat for the bowl; of said bowl mounted thereon and provided with the gutter K and a closed separating chamber; said chamber being suspended below said seat and said gutter being in the same horizontal plane with said seat and with the skimmer L as herein set forth.

529,664. CENTRIFUGAL MACHINE. JAMES NAYLOR, Jr., Boston, Mass., assignor of three-fourths to George Thomas McLauthlin, same place. Filed Mar. 30, 1893. Serial No. 468,407. (No model.)



*Claim.*—1. In a centrifugal liquid separator, the combination with a supported arbor, and a bushing mounted thereon, of the bowl composed of the disk E, upper and lower shells H, wings F and rings G; and means for inflow to said bowl and discharge therefrom, as herein set forth.

2. In a centrifugal liquid separator, the combination with the shells H provided with the external screw threads, the disk E having passages through it and provided with flanges, said flanges having internal screw threads, rings G and wings F; of the bushing I mounted upon a supported arbor, as herein set forth.

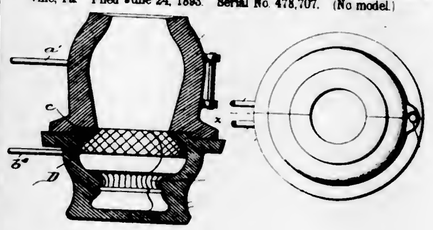
3. In a centrifugal liquid separator the combination with a supported arbor and a bushing mounted thereon, of a bowl composed of the flanged disk E shells H, rings G and wings F, said disks, shells and rings being bored all the same size and to fit said bushing, as and for the purpose herein set forth.

4. In a centrifugal liquid separator the combination with a supported arbor and a bushing mounted thereon, said bushing integrally forming and having the cavity J downward passages *j* chamber K openings *k* and the shoulder *i*; of the bowl fitted to said bushing and resting upon said shoulder and provided with wings F, means for inflow to said cavity and for separate discharges through and from said bowl as herein set forth.

5. In a centrifugal liquid separator the combination with a supported arbor, the bowl B provided with the rings G G, wings F and flanged disk E and means whereby said bowl is secured to said arbor; of the skimmers *m*—*n* secured to the frame and located one above and the other below one of the said rings G and of the other when said bowl is reversed as herein set forth.

6. In a centrifugal liquid separator a supported arbor and a bushing mounted thereon provided with the shoulder *i*, the bowl resting thereon and composed of upper and lower shells, flanged disk, wings and rings; in combination with means for inflow to said bowl and discharge therefrom as herein set forth.

529,665. MOLD FOR BLOWING GLASS. ASA G. NEVILLE, Blairsville, Pa. Filed June 24, 1893. Serial No. 478,707. (No model.)

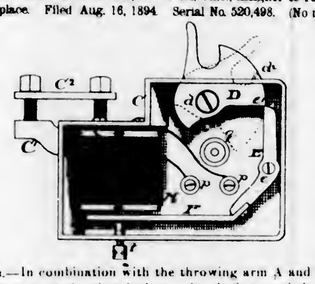


*Claim.*—1. In a mold for making hollow glassware, the combination with the upper revoluble portion A, made in two sections, and having a dovetailed annular recess at the bottom of the lower portion B closed at the bottom, composed of two or more sections and provided with a dovetailed projection at the top to engage the recess of the top portion, the top portion being adapted for revolution on the bottom portion and the handles $a'$ and $b^3$ for opening, closing and revolving the portions, substantially as shown and described.

2. In a mold for making hollow glassware, the combination with an upper revoluble portion made in two sections and having a dovetailed recess in its bottom, of an intermediate portion made also in sections, and having a dovetailed projection at the top and a dovetailed recess in its bottom and a removable bottom portion having a dovetail projection and a series of projections extending upward into the mold, substantially as shown and described

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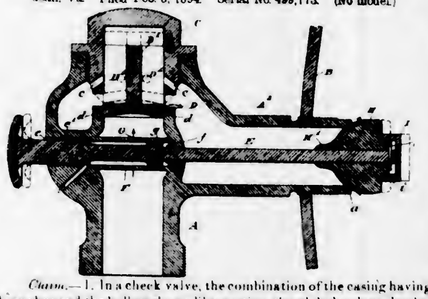
529,666. ELECTRICAL RELEASING DEVICE FOR TARGET-TRAPS. CHARLES H. NORTH, Cleveland, Ohio, assignor to Paul North, same place. Filed Aug. 16, 1894. Serial No. 520,498. (No model.)



*Claim.*—In combination with the throwing arm A and frame B of a target trap, of the electrical releasing device, consisting of box C provided with arm $C^2$ and clamp $C^3$; a hook plate D pivoted in a slot in the top of the box, and adapted to engage and hold the throwing arm A; a lever E, fulcrumed in the side of the box, its upper end engaging with the point $c'$ of the hook plate D, the electric magnet M secured in the top of the box and the armature bar F attached to the lower end of lever E, and adapted to be actuated by the magnet for disengaging the hook-plate and releasing the throwing arm A substantially as described.

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529,667. CHECK-VALVE. NATHANIEL J. PRITCHARD, Shenandoah, Va. Filed Feb. 5, 1894. Serial No. 499,173. (No model.)



*Claim.*—1. In a check valve, the combination of the casing having branches and the hollow sleeve-like portion, the globular-shaped valve and its operating stem, said stem passing through said sleeve and having a valve thereon within the sleeve, a drip opening for said sleeve, and the check valve which is seated within the casing at a point between the two branches, substantially as described

2. In a check valve the combination of the casing having branches, a valve controlling the communication between said branches, an integral hollow sleeve-like portion F located transversely across one of the branches, the globular shaped valve located at the extremity of one of the branches and having an operating stem which passes through the aforesaid sleeve and a valve G on said stem within the sleeve, together with a drip opening for said sleeve, substantially as described.

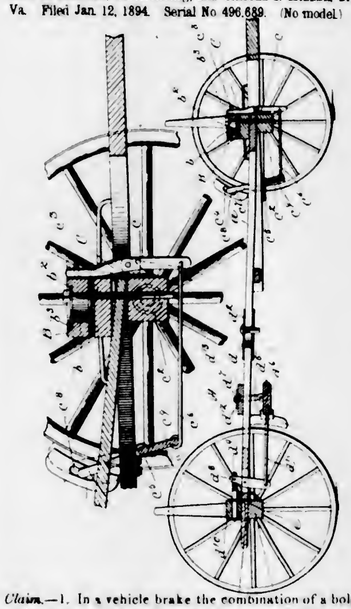
3. The herein-described automatically-operating check-valve consisting in the combination with the main casing having branches attached to the boiler and coupled to the water supply, of the globular shaped valve H, having extension H' and cap I, and stem E attached to valve H, said stem E having a screw threaded part engaging a screw-threaded part of the casing and having an adjusting handle E'.

4. In a check valve, the combination of casing A, having branches $A'$ $A^2$, said branch $A^2$ having seat $a$, the valve D arranged between branches $A'$ and $A^2$, the sleeve F made integral with the casing A and crossing branch $A'$ and having seat $f$, and the globular shaped valve H operating on seat $a$ with stem E connected to valve H, passing through sleeve F and having valve G thereon which operates in connection with seat $f$, said stem having also a screw threaded section by which it is adjusted, substantially as described.

5. In a check valve, the combination of the casing having branches and the hollow sleeve-like portion F, the globular shaped valve and its operating stem, said stem passing through sleeve F and having valve G thereon which operates in connection with its seat and said stem having also a screw-threaded section by which it is adjusted, together with the drip opening substantially as described.

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529,668. VEHICLE-BRAKE. BENJAMIN F. RICKARD and WILLIAM H. RICKARD, Harrisonburg, and SAMUEL S. MILLER, Bridgewater, Va. Filed Jan. 12, 1894. Serial No. 496,689. (No model.)



*Claim.*—1. In a vehicle brake the combination of a bolster having an elongated opening, a main bolt engaging the bolster, and a lever pivoted with its end bearing against the front of the bolster and its opposite end connected with the rocking shaft on which the brake shoes are mounted as and for the purpose specified.

2. In a vehicle brake, the combination with a bolster having an elongated opening, of a lever pivoted in suitable supports attached to the front axle, the end of said beam bearing against the front of the bolster, its opposite end connected by a rod to the shaft of terminal cranks on the shaft working in slots of the brake shoe as and for the purpose described.

3. In a vehicle brake the combination with a bolster having an elongated opening, a lever pivoted in suitable supports attached to the front axle, the end of the lever engaged by the front of the bolster, its opposite end connected to the rocking shaft on which the brake shoes are mounted, a reach pole having a slot for the purpose of allowing the rear trucks to approach the front trucks, for the purpose described.

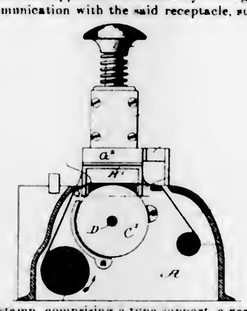
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529,669. TICKET-STAMP. CALVIN N. SOUTHER, Chicago, Ill., assignor to Poole Brothers, same place. Filed Sept. 22, 1893. Serial No. 486,182. (No model.)

*Claim.*—1. A ticket stamp, comprising a type support, a vertically movable plunger, a platen attached to the lower end of the plunger and normally separated from the type support by a free uninclosed space, a stationary horizontal cutting blade adjacent to the type support, a movable cutting blade rigidly attached to the platen and adapted to co-operate with the stationary blade in the descent of the plunger, and a receptacle for stubs provided with an inlet opening, adjacent to the stationary cutting blade, through which the cut off stubs may enter the receptacle, substantially as described.



2 A ticket stamp, comprising a type support, a vertically movable plunger, a platen attached to the lower end of the plunger and normally separated from the type support by a free uninclosed space, a standard for supporting the plunger located at one side of the type support and platen, a horizontal cutting blade rigidly attached to the type support at the side of the latter adjacent to said standard, a movable cutting blade rigidly attached to the platen and adapted to coact with the stationary blade in the descent of the plunger, and a receptacle for detached stubs, said standard being provided with a recess in its side face opposite the stationary cutting blade, which recess is in communication with the said receptacle, substantially as described.



3. A ticket stamp, comprising a type support, a vertically movable plunger, a platen attached to the lower end of the plunger and normally separated from the type support by a free, uninclosed space, a stationary blade having a horizontal cutting edge and secured to the type support, and a movable cutting blade rigidly attached to the platen and provided at its ends with depending arms which are constantly engaged with the stationary cutting blade, substantially as described.

4. A ticket stamp, comprising a type support, a vertically movable plunger, a platen attached to the lower end of the plunger and normally separated from the type support by a free, uninclosed space, a standard for supporting the plunger located at one side of the type support and platen, a stationary blade having a horizontal cutting edge secured to the type support in approximately the same plane therewith, a movable cutting blade rigidly attached to the platen and provided at its ends with depending arms which are constantly engaged with the stationary cutting blade, a recess in the supporting standard extending above and immediately adjacent to the cutting blade and open at the side adjacent to the type support to receive the end of the ticket, and a receptacle for detached stubs in communication with the said recess, substantially as described.

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529,670. PROCESS OF ENAMELING. WILLIAM C. STEWART, Bellaire, Ohio. Filed May 13, 1862. Serial No. 432,874. (Specimens.)

*Claim.*—1. An improved process of enameling articles, which consists in applying a thin coating so as to cover so much of the article as is desired to be enameled, then, while the thin coating is wet, in applying a second partial coating of a contrasting color in the form of spots or blotches, then in drying the article and finally in firing it, substantially as and for the purposes set forth.

2. An improved process of enameling articles, which consists in applying a thin coating so as to cover so much of the article as is desired to be enameled, then, while the thin coating is still wet, in applying a second partial coating of a contrasting color in the form of spots or blotches, said partial coating being thicker and heavier than the thin coating, whereby said spots or blotches will displace the thin coating, then in drying the article, and finally in firing it, substantially as and for the purposes set forth.

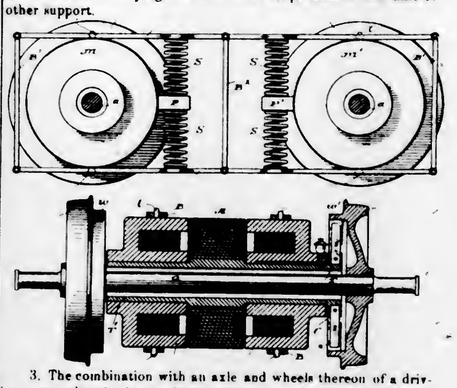
3. An improved process of enameling articles, which consists in applying a thin coating so as to cover so much of the article as is desired to be enameled, then, while the thin coating is still wet, in applying in spots or blotches a second partial coating of a contrasting color, made especially thick and pasty by the addition of clay and calcium carbonate, so as to displace the thin coating, then in drying the article, and finally in firing it, substantially as and for the purposes set forth.

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529,671. GEARLESS ELECTRIC LOCOMOTIVE. CHARLES J. VAN DEPOELE, Lynn, Mass.; C. A. Coffin and Albert Wahl, administrators of said Van Depoele, deceased, assignors to the Thomson-Houston Electric Company, Boston, Mass. Filed June 3, 1891. Renewed Sept. 17, 1894. Serial No. 523,268. (No model.)

*Claim.*—1. An electric motor for cars mounted upon a sleeve surrounding the axle and sustained by springs secured to the wheels.

2. The combination with an axle and wheels thereon, of a driving motor therefor having its armature suspended from said wheels and a spring driving connection extending between the armature and the wheels and carrying the armature independent of the axle or other support.



3. The combination with an axle and wheels thereon of a driving motor therefor having its armature suspended from said wheels and a spring driving connection extending between the armature and the wheels and carrying the armature independent of the axle or other support.

4. The combination in an electric locomotive with an axle and wheels thereon, of a sleeve surrounding said axle, a motor carried by said sleeve, and resilient power transmitting devices connecting the said sleeve directly to the driven wheels and supporting it therefrom.

5. The combination in an electric locomotive, of an axle and wheels thereon, a sleeve surrounding said axle, a driving motor secured upon and carried by said sleeve and a resilient driving and supporting connection extending between the sleeve and the wheels to be driven and affording a yielding support for the sleeve and motor.

6. The combination in an electric locomotive with an axle and wheels thereon, of a sleeve surrounding said axle and independent thereof, a motor thereon, radial arms near the ends of said sleeve, and springs sustaining said arms and connecting them to the driven wheels.

7. The combination in an electric locomotive with the wheels and axles thereof, of motors concentric with the axles, a flexible frame surrounding and secured to the non rotating parts of the motors, nose plates extending from the stationary or non-rotating parts of the motors, and retaining springs between the nose plates and the flexible frame.

8. In an electric locomotive, an axle, driven wheels fixed thereon, said wheels formed with suitable treads and provided also with extensions on their inner sides, a sleeve concentric with the axle, resilient connections between the ends of the sleeve and the extensions of the wheels, a driving motor carried upon and rotating the sleeve and wheels, said resilient connections also supporting the sleeve and motor.

9. In an electric locomotive in combination with an axle and wheels thereon to be driven, said wheels provided with flanges on their inner faces, of a sleeve surrounding said axle but wholly independent thereof, a driving motor carried upon said sleeve, and resilient driving connections between the ends of the sleeve and the inner flanges of the wheels to be driven, said connections supporting the sleeve and motor.

10. In an electric locomotive the combination of driving wheels fixed upon the axle or axles, flanges upon the inner faces of said driving wheels and formed with sockets or recesses to receive power connections, a sleeve or sleeves concentric with but independent of the axle or axles, an electric motor or motors mounted upon the sleeve or sleeves for driving said wheels and resilient supporting and driving connections between the ends of the sleeve or sleeves and the recesses in said flanges.

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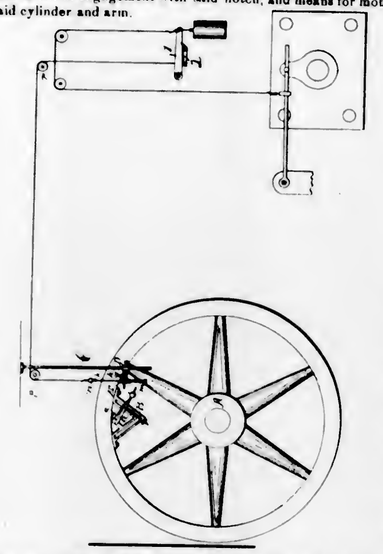
529,672. SAFETY DEVICE FOR ENGINES. WILLIAM M. WOOD, Elmira, N. Y. Filed Jan. 25, 1894. Serial No. 498,087. (No model.)

*Claim.*—1. A safety device for an engine comprising a bracket adapted to be secured to the fly-wheel and having an arm pivoted thereto, means for yieldingly limiting its outward travel, and an index arm adapted to engage with the outer face of said arm.

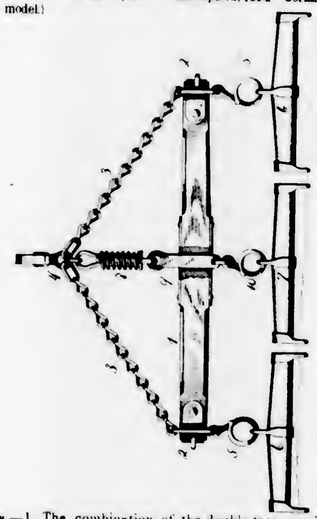
2. A trip mechanism comprising a cylinder, having a transverse slot-way therein, a rod having a groove adapted to pass through said cylinder, an arm adapted to engage yieldingly with said groove, and means for mounting said cylinder and arm.

3. A trip mechanism comprising a cylinder having a transverse slot way therein, a rod having a notch or groove therein, an arm

adapted to yieldingly engage with said slot-way and groove, and means for forcing said rod downwardly through said cylinder, when the arm is out of engagement with said notch, and means for mounting said cylinder and arm.



529,673. WHIFFLETREE. DAVID ABLE and ELI GROSS, Manchester, Pa., assignors, by direct and mesne assignments, of one-half to William S. Schroll, same place. Filed Sept. 12, 1894. Serial No. 522,811. (No model.)



*Claim.*—1. The combination of the double tree provided with means for the attachment of a single tree to each end thereof, the draft chains extending from the end of the double tree and connecting with coupling means, a spring device intermediate of said draft chains and said double tree and having connection at one end with the coupling means and adapted to have a single tree attached to its other end, substantially as and for the purposes described.

2. The combination of the double tree, provided with means for the attachment of a single tree to each end thereof, draft chains connected at one end with the double tree and provided at the other end with means for coupling to the object to be drawn, the plate or rod passing loosely through the double tree and provided at one end with means for attachment of a middle tree, and the spring connected at one end to said plate or rod and at the other end with said coupling means, substantially as and for the purposes described.

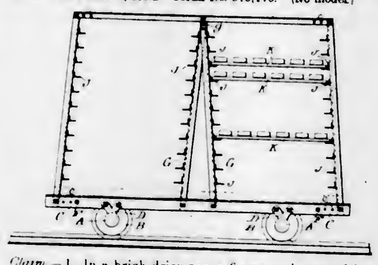
529,674. CHECKREIN-HOOK. GORDON W. BEGOLE, Stony Creek, Mich. Filed Aug. 23, 1894. Serial No. 521,067. (No model.)



*Claim.*—1. In a check rein hook, the combination of the hook shaped standard a finger pivoted to the lower end of the standard and adapted to close the hook, a curved locking lever pivoted to the top of the standard and bifurcated to embrace the standard and the lower end of the finger, a notched bearing on the finger, and a cross bar or bearing at the end of the bifurcation on the lever adapted to engage said bearing, substantially as described.

2. In a check rein hook, the combination of the hook shaped standard, the finger pivoted to the lower end of the standard and adapted to close the hook, a curved locking lever pivoted to the upper end of the standard and bifurcated to embrace the standard and the lower end of the finger, the head I on the finger C, and the cross bar J, below the notch *b* substantially as described

529,675. BRICK-DRIER CAR. ALBERT T. BEMIS, Indianapolis, Ind. Filed June 1, 1894. Serial No. 513,178. (No model.)



*Claim.*—1. In a brick-drier car, a framework comprising longitudinal sills, cross connections therefor, two central standards secured at their lower ends to each sill at a suitable distance apart and inclining longitudinally toward each other, end standards secured at their lower ends to the sills and each inclined toward the longitudinal center at an angle coincident with the incline of the central standard facing it, longitudinal tie bars connecting the standards at the top, and pallet brackets carried by the standards.

2. In a brick-drier car, a framework comprising longitudinal sills, cross connections therefor, two central standards secured at their lower ends to each sill at a suitable distance apart and meeting at their upper ends and secured together, end standards secured at their lower ends to the sills and each inclined toward the longitudinal center at an angle coincident with the incline of the central standard facing it, longitudinal tie-bars connecting the standards at the top, and pallet brackets carried by the standards.

3. In a brick-drier car, a framework comprising longitudinal sills, cross connections therefor, two central standards secured at their lower ends to each sill at a suitable distance apart and meeting at their upper ends and secured together, end standards adjustably secured at their lower ends to the sills and each inclined toward the longitudinal center at an angle coincident with the incline of the central standard facing it, longitudinal tie bars adjustably connecting the end standards with the central standards, and pallet-brackets carried by the standards.

529,676. TUG-HOLDER. GEORGE G. F. BOSWELL, Indianapolis, Ind., assignor of one-half to Frank B. Davenport, same place. Filed Apr. 2, 1894. Serial No. 506,100. (No model.)

*Claim.*—A tug holder comprising a casing secured to the thill whose outer face is curved and slotted, a lever pivoted at its inner end to the casing and extending through the slot and provided with a tug hook on its outer end, a spring within such casing adapted to resist a pull on the lever, and a guard finger secured to such casing and adapted to prevent the tug from slipping up over such casing, substantially as shown and described.

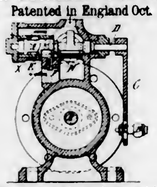


529,677. CAN OR VESSEL. GEORGE BRISTOW, Harrisburg, Pa., assignor of one-half to James B. Bailey, same place. Filed Apr. 4, 1893. Renewed Sept. 10, 1894. Serial No. 522,597. (No model.)



*Claim.*—As an improved article of manufacture, the herein described sealable can or vessel, the same consisting of a cover of uniform exterior diameter and devoid of beads or projections, a body of thin material the upper end of which is contracted to form a reduced belt, the cover fitted over said belt with its entire exterior flush with the entire exterior of the body, the lower end of the body being turned inward and a bottom proper fitted within the body and upon such turned-in portion, and a label-wrapper covering the can and cover on their uniform outside or exterior surface, the label being devoid of creases and exterior unevenness by the absence of beads or projections at the lower end of the can and at the top of the cover and the absence of inequalities at the joint of the cover and can.

529,678. PUMPING-ENGINE. JOHN COCHRANE, Barrhead, near Glasgow, Scotland, and WILLIAM WALKER, Salford, Manchester, England; said Walker assignor to said Cochrane. Filed Oct. 13, 1893. Serial No. 488,022. (No model.) Patented in England Oct. 17, 1891, No. 17,805.



*Claim.*—In a reciprocating engine, the combination of the main cylinder and piston, an auxiliary steam cylinder located above the main cylinder, a reciprocating cylindrical valve and an auxiliary distributing valve, located at right angles to the reciprocating valve working in said auxiliary cylinder, a rock-shaft journaled in said auxiliary cylinder in line with the distributing valve and having a projection for engagement with the said valve, and a second projection for engagement with the reciprocating cylindrical valve, and a suitable connection between the rock-shaft and piston substantially as and for the purpose set forth.

529,679. METALLIC CROSS-TIE FOR RAILWAYS. CLARENCE COLEMAN and RENÉ DE SAUSSURE, Roanoke, assignor of one-third to Herman Jean von Hemert and Etienne Muller, Norfolk, Va. Filed Aug. 13, 1894. Serial No. 520,173. (No model.)



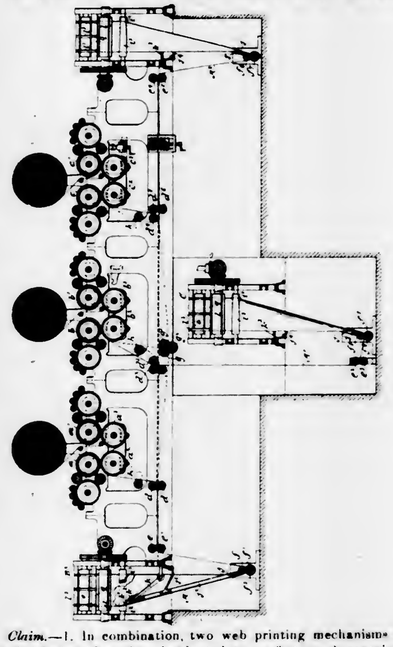
*Claim.*—1. A metallic cross-tie for railways having one or more boxes in the course of its length formed of upper and lower straps and to or by means of which rails may be secured in position, the lower straps being below the plane of the body of the tie, substantially as described.

2. A metallic cross tie for railways having one or more boxes formed of upper and lower straps integral with the body of the tie, and the lower straps below the plane of the same, substantially as and for the purpose set forth.

3. A metallic cross-tie for railways, having one or more boxes formed of upper and lower straps in combination with a piece or pieces of wood driven into the box or boxes, that is, between the straps, substantially as and for the purpose described.

4. The combination with a metallic cross-tie having boxes or receptacles in the course of its length, formed of upper and lower straps, of wooden blocks or stringers fitting in the boxes or receptacles, the upper strap covering and protecting the wood at the rail-seat, substantially as and for the purpose set forth.

529,680. PRINTING-MACHINE. JOSEPH L. FIRM, Jersey City, N. J., assignor to the Goss Printing Press Company, Chicago, Ill. Filed Nov. 9, 1889. Renewed Sept. 1, 1893. Serial No. 484,597. (No model.)



*Claim.*—1. In combination, two web printing mechanisms arranged side by side and each adapted to perfect a web containing four pages abreast, a pair of guides below each printing mechanism from which either web may be turned to the right or to the left, two guides *f* and $f^3$ located one to the right and the other to the left of said first named guides, a longitudinally splitting knife co-operating with each of said guides *f* and $f^3$, two pairs of guiding frames each pair having their bases adjacent to one of said guides, four pairs of longitudinally folding rollers each pair adjacent to the apex of one of said guiding frames and a transversely severing mechanism arranged in the path of each part of the web as it passes from said longitudinally folding rollers, substantially as described.

2. In combination three web printing mechanisms arranged side by side and each adapted to perfect a web containing four pages abreast, a pair of guides below each printing mechanism from which either web may be turned to the right or to the left, a longitudinally splitting knife co-operating with one of said pairs of guides, two guides *f* and $f^3$ located one to the right and the other to the left of said first named guides, a longitudinally splitting knife co-operating with each of said guides *f* and $f^3$, two pairs of guiding frames each pair having their bases adjacent to one of said guides, four pairs of longitudinally folding rollers each pair adjacent to the apex of one of said guiding frames and a transversely severing mechanism arranged in the path of each part of the web as passes it from said longitudinally folding rollers, substantially as described.

3. In combination two web printing mechanisms arranged side by side and each adapted to perfect a web containing four pages

abreast a pair of guides below each printing mechanism from which either web may be turned to the right or to the left, two guides *f* and *f*⁴ located one to the right and the other to the left of said first named guides, a longitudinally splitting knife co-operating with each of said guides *f* and *f*⁴, two pairs of guiding frames each pair having their bases adjacent to one of said guides, four pairs of longitudinally folding rollers each pair adjacent to the apex of one of said guiding frames and a transversely severing mechanism arranged in the path of each part of the web as it passes from said longitudinally folding rollers and mechanism whereby that part of the web coming from one of said transversely severing mechanisms may be superposed upon that part coming from another, substantially as described.

4. In combination two web printing mechanisms arranged side by side and each adapted to perfect a web containing four pages abreast, a pair of guides below each printing mechanism from which either web may be turned to the right or to the left, two guides *f* and *f*⁴ located one to the right and the other to the left of said first named guides, a longitudinally splitting knife with each of said guides *f* and *f*⁴, four pairs of longitudinally folding rollers at right angles with said guides *f* and *f*⁴, one pair being arranged in the path of every division of the split webs, means for guiding the webs to said rollers and a transversely severing knife arranged in the path of every division of the split webs as it leaves said folding rollers, substantially as described.

5. In combination two longitudinal folding mechanisms each adapted for folding a strip of paper, two transversely cutting knives arranged one in the path of each folded strip, paste applying mechanism arranged in the path of one folded strip, mechanism for superposing the cuts from the folded strips one upon the other and mechanism whereby said cuts are folded together, substantially as described; whereby the two halves of the web may be folded longitudinally, then cut transversely, then supplied with the paste necessary for uniting the two, then the cuts brought together, then folded together, substantially as described.

6. In combination, a transversely perforating knife, the tapes *l*⁵ whereby the web is, after perforating, received and carried forward, the retarder *m*, the oscillating lever upon which the same is mounted and the cam whereby said retarder is brought against the web just after each line of perforations, to tear the web apart, substantially as described.

7. In a paste applying device in combination a paste supply pipe, a disk, means for supporting and holding said disk stationary, a second disk, means for revolubly supporting said second disk face to face with the first disk, the said first disk being provided with a channel to convey the paste from a pipe to a crevice between the disks.

8. In a paste applying device, the combination of a paste supply pipe, two disks connected therewith, a yielding tire, and a channel communicating between the tire and the pipe, substantially as described.

9. In a paste applying device, in combination a paste supply pipe, a disk fixed upon the same, a rod extending longitudinally through said pipe, a second disk revolubly mounted on the same and means of adjustment whereby the size of the crevice between the disks may be varied, substantially as described.

10. In combination, the folding rollers and a guiding frame arranged in the path of the web to the folding roller, said frame being provided with a slot at its apex, and a finger arranged to bear on the paper through said slot at or near the apex, substanially as described.

11. In combination, a web printing mechanism adapted to perfect a web containing four pages abreast, a guide *f* substantially parallel with the cylinders of said printing mechanism, two pairs of longitudinally folding rollers substantially at right angles with guide *f*, one pair being arranged in the path of each division of the split web, means for guiding the web to said folding rollers, transversely cutting mechanism substantially parallel with said folding rollers, guides substantially parallel with said folding rollers whereby one folded strip is brought over the other folded strip and mechanism whereby the cuts are folded together; whereby the web may be split, then each half folded longitudinally, then cut transversely, and brought together, then folded together, while moving substantially parallel with one plane before longitudinal folding and parallel with a plane substantially at right angles therewith after longitudinal folding, substantially as described.

12. A web printing mechanism adapted to perfect a web containing four pages abreast, a guide *f* substantially parallel with the cylinders of said printing mechanism, two pairs of longitudinally folding rollers substantially at right angles with guide *f*, one pair being arranged in the path of each division of the split web, means for guiding the web to said folding rollers, transversely perforating mechanism substantially parallel with said folding rollers, guides substantially parallel with said folding rollers whereby one folded strip is brought over the other folded strip, retarding mechanism whereby the strips are torn apart on the transverse perforations and mechanisms whereby the cuts are folded together, substantially as described, whereby the two halves of the web may be folded longitudinally, perforated transversely, and brought together and torn apart, then folded together, while moving substantially parallel with one plane before longitudinal folding and parallel with a plane substantially at right angles therewith after longitudinal folding, substantially as described.

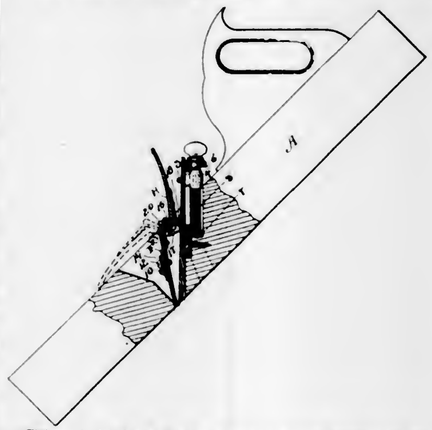
13. In combination a web printing mechanism adapted to perfect a web containing a plurality of pages abreast, longitudinally splitting mechanism, a plurality of frames for folding longitudinally, a folding roll at the apex of each frame, guides whereby the paper from one frame is caused to travel in the same direction with and associated with the paper coming from the other frame and mechanism whereby said associated papers are folded inside of each other, substantially as described; whereby the two parts of said web receive their primary fold separately and their final fold inside of each other.

14. In combination, three printing mechanisms each adapted to print a plurality of pages abreast upon a separate web, a plurality of longitudinally splitting knives in the path of the web from the middle printing mechanism and guides whereby the alternate strips from the middle web are associated with opposite end webs, substantially as described.

15. In combination, the folding roller, a guiding frame having an apex arranged in the path of the web to the folding roller, an articulate finger arranged to bear upon the inside of the paper at or near said apex and substantially in the plane of contact between the paper and said guiding frame whereby the paper is pressed by the finger on the line of fold while the line of fold is still traveling substantially in the plane of the guiding frame, substantially as described.

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**529,681. CARPENTER'S PLANE.** HENRI FOUCAULT, Canton, assignor of one-half to E. Block & Co., Cleveland, Ohio. Filed July 28, 1894. Serial No. 518,831. (No model.)



*Claim.*—1. In planes, the plane stock, a pivoted support for the brake iron having sockets in its sides and pins through the sides of the stock in said sockets and serving as pivot points, a brake iron adjustably attached to said support, a locking lever for the bit pivoted at the top of said brake iron, and the bit held by said lever, substantially as set forth.

2. A plane stock and a bit supported adjustably therein, a pivoted brake iron and a pivoted locking lever on the top end of said iron having an adjustable cam shaped heel to engage the bit and a set screw to adjust said heel, substantially as set forth.

3. The stock and the bit and a support for the bit at its rear having a pin through which the bit is held, in combination with the brake iron, a pivoted support therefor having trunnions —10— and a slot, and a set screw —12— engaging the brake iron through said slot whereby said iron is adjusted, and a lever E pivoted to the top of said iron and provided with a heel —15— to bear against the face of the bit above the pivot point of the brake iron, substantially as set forth.

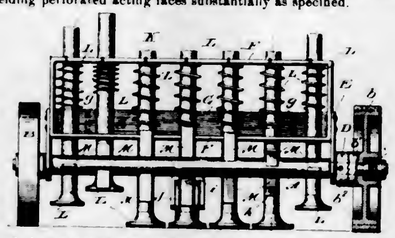
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**529,682. CARPET-BEATER.** FLOYD T. FROST, Washington, D. C., assignor of one-fourth to Cornelia A. Voris, Chicago, Ill. Filed Aug. 16, 1894. Serial No. 520,438. (No model.)

*Claim.*—1. In a carpet beater, the combination with the frame, of a plurality of reciprocatory beaters mounted therein for independent movement, and having convex elastic faces as set forth.



2. In a carpet beater, the combination with the frame and the axle, of the arms on the axle arranged to be brought into active position successively, and the reciprocatory beaters mounted for independent vertical reciprocatory movement having projections adapted to be engaged by said arms in rapid succession, and having convex yielding perforated acting faces substantially as specified.



3. In a carpet beater, a beater comprising a shank and a convex yielding perforated acting face secured thereto, as set forth.

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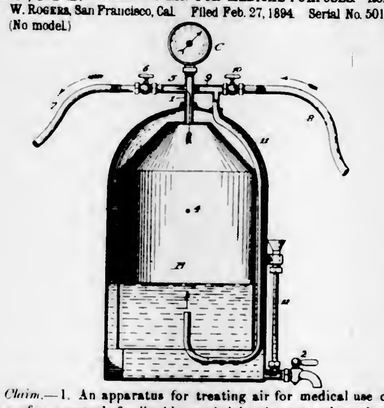
**529,683. HUB-ATTACHING DEVICE.** FRANK J. HERMAN, Norwalk, Ohio. Filed July 15, 1893. Renewed Sept. 29, 1894. Serial No. 524,479. (No model.)



*Claim.*—In a hub attaching device, the combination of a sleeve interiorly and exteriorly threaded, a collar loosely arranged on the inner end of the sleeve and capable of adjustment longitudinally of the same and incapable of independent rotation, said collar having an exterior wrench seat, and a cap nut engaging the exterior threads of the sleeve and covering the outer extremity thereof, and having an outer polygonal surface, conforming to the configuration of the collar, and forming a continuation of the same whereby both parts are adapted to be turned simultaneously by a wrench in applying the nut to an axle, and independently to adjust the nut, substantially as described.

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**529,684. TREATING AIR FOR MEDICAL PURPOSES.** ROBERT W. ROGERS, San Francisco, Cal. Filed Feb. 27, 1894. Serial No. 501,630. (No model.)



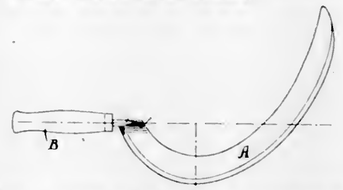
*Claim.*—1. An apparatus for treating air for medical use consisting of a receptacle for liquids, an air inlet thereto, and an air outlet therefrom, inlet and discharge pipes for liquid, and valves for controlling the admission and discharge of air to and from said receptacle.

2. An apparatus for treating air for medical use, consisting of a tank or vessel, an interior bottomless vessel inclosed thereby, an air discharge pipe from the interior vessel, an air inlet pipe entering the outer vessel and extending into the inner vessel, and independent pipes for the admission and discharge of liquid, substantially as set forth.

3. The combination with the vessels A and B, adapted to contain a body of liquid, of an air inlet pipe entering the vessel A and extending into the vessel B, an air discharge pipe from the vessel B extending through the vessel A, a valved branch adapted to communicate with an atomizer or other apparatus, and liquid filling and discharge pipes, substantially as set forth.

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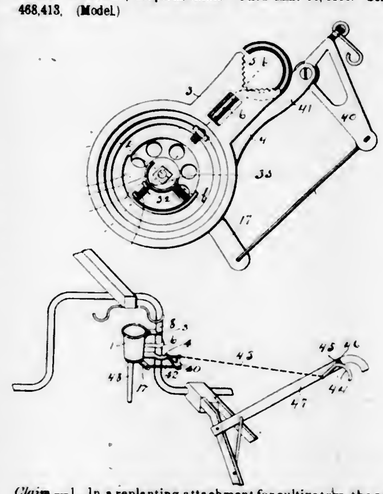
**529,685. GRASS-HOOK.** WILLIAM SELLERS, Haverhill, Mass. Filed Nov. 13, 1893. Serial No. 490,780. (No model.)



*Claim.*—In a grass hook a handle raised above the level of the blade whereby when the blade is on the ground the hand of the operator will be free from same the said blade being balanced in the manner and for the purpose set forth.

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**529,686. REPLANTING ATTACHMENT FOR CULTIVATORS.** AUGUST WEHRMAN, Emporia, Kans. Filed Mar. 31, 1893. Serial No. 468,413. (Model.)



*Claim.*—1. In a replanting attachment for cultivators, the combination with a seed holder provided with a seed dropping mechanism, of a jaw or jaws connected with the seed holder for engaging one of the legs of the arch of the cultivator, and means for fastening the jaw or jaws in such engagement, substantially as described.

2. In a replanting attachment for cultivators, the combination with a seed holder provided with a seed dropping mechanism, of a jaw or jaws connected with the seed holder for engagement with one of the legs of the cultivator arch, of a hook connected with the said leg of said arch and the seed holder, and means connected with the seed holder and said hook for drawing the said jaw or jaws rigidly in contact with the cultivator arch, substantially as described.

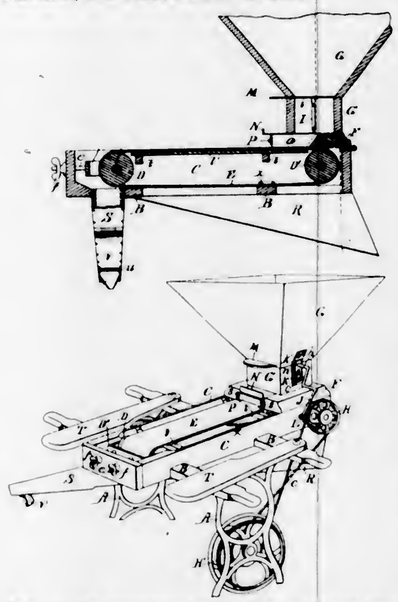
3. In a replanting attachment for cultivators, the combination with a seed holder provided with a seed dropping mechanism, of a jaw or jaws provided with teeth adapted to engage with one of the legs of the cultivator arch, a screw-threaded bolt having a hook at one end for engaging the opposite side of the said leg of the cultivator arch and having the screw-threaded end of said bolt passing through the wall of the seed holder, and a nut mounted upon the screw-threaded end of said bolt within the seed holder, substantially as described.

4. In a replanting attachment for cultivators, the combination with a seed holder provided with a seed dropping mechanism, of an upper and lower jaw connected respectively with the top and bottom of said seed holder, said jaws partially encircling one of the legs of the arch of the cultivator, means connected with the said holder and said leg of the arch for rigidly securing the jaws in engagement with the said leg of the arch, and an operating device mounted upon the handle of the cultivator near the hand hold and connected with the seed dropping mechanism, substantially as described.

5. In a replanting attachment for cultivators, the combination with a seed holder provided with a seed dropping mechanism, of a pair of jaws connected with the seed holder for engaging one of the legs of the arch of the cultivator, means for rigidly locking the said jaws in such engagement, a bell crank lever mounted upon the cultivator handle near the hand hold, and a bell crank lever pivoted upon one of said jaws, and connected with the seed dropping mechanism and one of the arms of the other bell crank lever, substantially as described.

6. In a replanting attachment for cultivators, the combination with a seed holder provided with a seed dropping mechanism, a spring retracted lever pivoted to the seed holder for operating the seed dropping mechanism, a pair of jaws connected with the seed holder for engaging the arch of the cultivator, a screw-threaded bolt having a hooked end partially encircling the said arch, and having the other end passed through the seed holder between the two jaws, a nut mounted upon the screw-threaded end inside the seed holder, an operating lever pivoted upon the cultivator handle, and connected with the said spring retracted lever, substantially as described.

**529,687. BEAN-PICKER.** MERRITT M. NYE, Rochester, Mich. Filed Jan. 29, 1894. Serial No. 498,373. (No model.)



*Claim.*—1. The combination with the frame, of the cap having the feed opening therein, the hopper having the rectangular throat supported on said cap over said opening, the agitator consisting of a rectangular bail depending within said throat and adapted to reciprocate over said feed opening, the journals of said agitator being supported in a vertically adjustable plate.

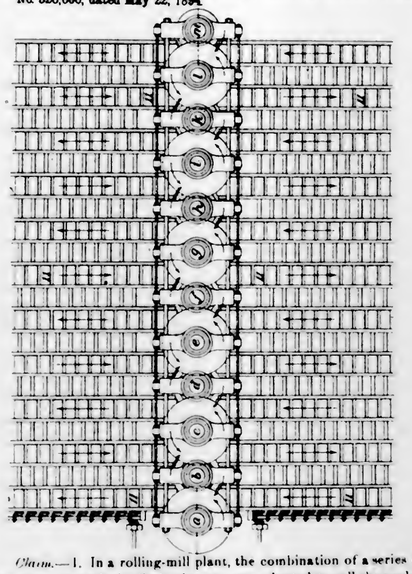
2. The combination with the frame, the endless apron mounted therein, the cap over a portion of said apron, said cap having a feed opening therethrough, the plate crossing the front of said opening and depending close to the surface of said apron, said plate being secured to the face of said cap by screws passing through vertical slots therein, whereby it is made vertically adjustable.

3. The combination of the frame, the rollers journaled therein carrying the endless apron, the hopper having vertical slots in the sides thereof, the agitator in said hopper having horizontal bearings that pass through said slots and are journaled in vertically adjustable plates secured to the hopper, the crank of said agitator, the puller on the shaft of one of said rollers, and the pitman coupling said crank to said pulley.

4. The combination of the frame, the movable endless apron mounted therein, the table over which the upper portion of said apron passes, and on which said apron lies the cap over a portion of said apron and table, said cap having a feed opening so located therein as to discharge onto said apron at a point where it is supported by said table, the vertically adjustable rigid plate crossing the front of said opening and depending close to the surface of said apron over the supporting table.

# REISSUES.

**11,454. APPARATUS FOR ROLLING BEAMS.** FREDERICK H. KINDL, Pittsburg, Pa. Filed Oct. 19, 1894. Serial No. 526,419. Original No. 520,060, dated May 22, 1894.



*Claim.*—1. In a rolling-mill plant, the combination of a series of three or more vertical rolls, having grooves adapted to roll channeled beams, the groove of the intermediate rolls being adapted to coact with the grooves on the rolls on each side of it, the faces of the rolls being arranged at a successively less distance apart; substantially as described.

2. In a rolling-mill plant, the combination of a series of three or more vertical rolls, having grooves adapted to reduce channeled beams from their first shape to the finished beam, and a series of horizontal feeding tables having feed rollers arranged to feed the beams through the passes of the rolls, substantially as described.

3. The combination of a series of vertical rolls, and a series of feed-tables, all of which tables are situate in the same horizontal plane, substantially as described.

# DESIGNS.

**23,815. WALL-PAPER.** KATHARINE PYLE, Wilmington, Del., assignor to M. H. Birge & Sons, Buffalo, N. Y. Filed Sept. 25, 1894. Serial No. 524,112. Term of patent 3½ years.



*Claim.*—The design for wall paper herein shown and described.

# TRADE-MARKS

## REGISTERED NOVEMBER 20, 1894.

**25,531. BOYS' SUITS.** SYKES BROS. & CO., New York, N. Y. Filed Oct. 24, 1894.

BROWNIE

*Essential feature.*—The word "BROWNIE." Used since May 1, 1894.

**25,532. MEN'S PANTS AND OVERALLS.** TAYLOR, SON & CO., Pittsburg, Pa. Filed Oct. 29, 1894.

AJAX

*Essential feature.*—The word "AJAX." Used since July, 1892.

**25,533. SILK FLOSS OR EMBROIDERY-SILK.** THE NEW LONDON WASH SILK COMPANY, INCORPORATED, New London, Conn., and New York, N. Y. Filed Oct. 17, 1894.

QUINEBAUG.

*Essential feature.*—The word "QUINEBAUG." Used since October 15, 1894.

**25,534. PLUMBERS' SUPPLIES, COMPRISING CLOSETS, SEATS, AND TANKS.** WILLIAM HEAP, Muskegon, Mich. Filed Apr. 26, 1893.

GLOBE

*Essential feature.*—The word "GLOBE." Used since January 1, 1893.

**25,535. WIRE-CLOTH.** CLINTON WIRE CLOTH COMPANY, Clinton, Mass. Filed Oct. 24, 1894.



*Essential feature.*—The representation of a fly on a piece of wire netting. Used since January, 1885.

**25,536. WASHING-POWDERS.** JAMES C. DAVIS & SON, Boston, Mass. Filed Jan. 8, 1894.

TUXEDO



*Essential feature.*—The representation of a standing clock provided with a base and the word "TUXEDO" imprinted above said representation. Used since July 1, 1891.

**25,537. PERFUMED AMMONIA.** LASKER BROS., New York, N. Y. Filed Oct. 29, 1894.

ROYAL

*Essential feature.*—The word "ROYAL." Used since October 18, 1894.

**25,538. VETERINARY LINIMENT.** JAMES P. MILTIMORE, Hastings, Nebr. Filed May 9, 1894.

THE PRIDE OF THE LIVERYMAN

*Essential feature.*—The words "THE PRIDE OF THE LIVERYMAN." Used since April, 1893.

**25,539. TASTELESS CASTOR-OIL.** BLAIR & DOWNEY, Corry, Pa. Filed July 12, 1894.



*Essential feature.*—The representation of a shield bearing a crescent and having behind it two lances crossed in the form of the letter "X." Used since September 1, 1893.

25,540. STOMACH BITTERS. JOHN P. FIXMER, Springfield, Ill. Filed Aug. 16, 1894.



*Essential feature.*—The initials "J P F" in the form of a monogram. Used since 1884.

25,541. CARBONATED BEVERAGE CONTAINING THE EXTRACT OF SARSAPARILLA AND IRON. WALTER B. STARBIRD, San Francisco, Cal. Filed Mar. 20, 1894.

SARSAFERINE

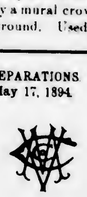
*Essential feature.*—The word "SARSAFERINE." Used since April 1, 1894.

25,542. CURAÇOA. MARNIER LAPOSTOLLE, Neauphle-le-Château, France. Filed Oct. 26, 1894.



*Essential feature.*—The representation of a shield supported by two lions and surmounted by a mural crown, the whole appearing on a white stippling on black ground. Used since January 1, 1860.

25,543. COFFEE PREPARATIONS. VIENNA MALT COFFEE CO., Milwaukee, Wis. Filed May 17, 1894.



*Essential feature.*—A monogram comprising the letters "V M C Co." Used since October 15, 1893.

25,544. WHEAT-FLOUR. MARK MILLER and CHARLES D. MILLER, Vassar, Mich. Filed Oct. 18, 1894.

BLUE RIBBON

*Essential feature.*—The words "BLUE RIBBON." Used since July, 1889.

25,545. WHEAT-FLOUR. MARK MILLER and CHARLES D. MILLER, Vassar, Mich. Filed Oct. 18, 1894.

GOLDBAND

*Essential feature.*—The words "GOLD BAND" upon the representation of an ornamental band. Used since June, 1889.

25,546. WHEAT-FLOUR. WILLIAM HEWER, New York, N. Y. Filed Oct. 5, 1894.

ENDEAVOR

*Essential feature.*—The word "ENDEAVOR." Used since March 3, 1894.

25,547. PREPARED CODFISH. WILLIAM HENRY LORD, Dedham, Mass. Filed Sept. 13, 1894.

"Hatcheled"

*Essential feature.*—The word "HATCHELED" inclosed in quotation marks. Used since August 20, 1893.

25,548. CANNED FISH. J. H. MOELMAN COMPANY, New York, N. Y. Filed June 7, 1894.

*Bride of America*

*Essential feature.*—The words "BRIDE OF AMERICA." Used since May 5, 1894.

25,549. CANNED AND CURED MEATS AND LARD AND TALLOW. ROHE & BROTHER, New York, N. Y. Filed Oct. 5, 1894.




*Essential feature.*—The representation of an imperial crown, crossed by the word "REGAL." Used since October 1, 1882.

25,550. STEAM-BOILERS. THE BABCOCK & WILCOX COMPANY, New York and Buffalo, N. Y., Boston, Mass., Philadelphia and Pittsburg, Pa.; Chicago, Ill., Cincinnati and Cleveland, Ohio, St. Louis, Mo.; Minneapolis, Minn., San Francisco, Cal., New Orleans, La., Montreal and Deseronto, Canada, Havana, Cuba, London, England, and Glasgow, Scotland. Filed Aug. 18, 1894.

BABCOCK & WILCOX

*Essential feature.*—The words "BABCOCK & WILCOX." Used since January, 1865.

THE SOUDER-PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court—Northern District of New York.

BEACH *v.* AMERICAN BOX MACHINE COMPANY, HORACE INMAN, *et al.*

*Decided October 15, 1894.*

1. BEACH—MACHINE FOR ATTACHING STAYS TO THE CORNERS OF PAPER OR STRAWBOARD BOXES—VALID.

Claims 1, 2, 3, 4, 5, and 7 of Reissue Patent No. 11,167, reissued May 26, 1891, to A. H. Beach, for a machine for attaching stays to the corners of paper or strawboard boxes, examined and *Held* to be valid.

2. SAME—SAME—REISSUE TO CORRECT A MISTAKE IN THE DRAWINGS—PROPER.

Where there was a mistake in the drawings, which, however, did not render the patent wholly inoperative and probably would have been discovered by a mechanic, but was of such a character that a machine constructed from the drawings would have been inoperative for some purposes which the patentee was entitled to cover by his claims, *Held* that a reissue to correct the drawings was proper and lawful.

3. SAME—AMENDMENT WITHIN THE SCOPE OF THE ORIGINAL INVENTION—EXPANSION OF CLAIMS—NO NEW OATH.

Where the amendment of the application as first filed is within the scope of the original invention, no charge of undue expansion can be sustained and no new oath is necessary because the amendment introduces no new invention. The rule of law in *Railway Co.* v. *Sayles* (97 U. S., 554) that an amendment seeking to introduce a material variation in the original application cannot be allowed is not applicable where it introduces no new matter.

4. SAME—PRIMARY INVENTION—DOCTRINE OF EQUIVALENTS—INFRINGEMENT.

Where the patented machine never before existed, it will not be carrying the doctrine of equivalents too far to hold a device an infringement which does the same work as the patented machine, if not by the same, certainly by equivalent means.

*Mr. John Dane, Jr.*, and *Mr. Benjamin F. Lee* for the complainant.

*Mr. William A. Redding* and *Mr. Edmund Wetmore* for the defendants.

COXE, *J.*:

This action is founded upon Reissued Letters Patent No. 11,167, granted to the complainant May 26, 1891, for a machine for attaching stays to the corners of paper or strawboard boxes. The application for the original was filed June 10, 1885. The original—No. 447,225—was dated February 24, 1891. The application for the reissue was filed April 9, 1891. Prior to the invention it had been customary, says the patentee, to apply the fastening-strips over the joints at the corners of the boxes and paste them there by hand. This work is now done by the patented machine. The claims involved are as follows:

1. The combination, with opposing clamping-dies having diverging working-faces, of a feeding mechanism constructed to deliver stay-strips between said clamping-dies, and a pasting mechanism for rendering adhesive the stay-strips, said clamping-dies being constructed to co-operate in pressing upon interposed box-corners the adhesive stay-strips, substantially as described.

2. The combination, with opposing clamping-dies having diverging working-faces, said clamping-dies being arranged to co-operate in pressing adhesive fastening-strips upon interposed box-corners, a feeding mechanism constructed to feed forward a continuous fastening-strip, and a cutter for severing the said continuous strip into stay-strips of suitable lengths, substantially as described.

3. The combination, with opposing clamping-dies having diverging working-faces, said clamping-dies being arranged to co-operate in pressing an adhesive fastening-strip upon the corner of an interposed box, a feeding mechanism constructed to feed between the dies a continuous fastening-strip, a pasting mechanism for applying adhesive substance to the strip, and a cutter for severing the strip into stay-strips of suitable lengths, substantially as described.

4. The combination, with opposing clamping-dies having diverging working-faces, said clamping-dies being constructed to co-operate in pressing an adhesive fastening-strip upon an interposed box-corner, of a movable plunger or strip-bender constructed to bend downwardly or inwardly a projecting end of the stay-strip, that one of the clamping-dies which engages the inner surface of the box-corner being movable into and out of its usual working position, whereby it may engage and carry inside of the box-corner the said projecting end of the stay-strip, substantially as described.

5. The combination, with opposing clamping-dies having diverging working-faces, said clamping-dies being constructed to co-operate in pressing an adhesive fastening-strip upon an interposed box corner, of a movable plunger or strip-bender constructed to bend downwardly or inwardly a projecting end of the stay-strip, that one of said clamping-dies which engages the inner surface of the box corner having a reciprocatory motion in a direction parallel with the box-corner, so as to carry inward and press against the inside of the box corner the said projecting end of the stay-strip, substantially as described.

7. The combination, with opposing clamping-dies having diverging working-faces, said clamping-dies being arranged to co-operate in pressing an adhesive fastening-strip upon an interposed box-corner, of a feeding mechanism constructed to feed forward a continuous fastening-strip, a cutter for severing the strip into suitable lengths, and a movable part or plunger which bends downwardly or inwardly the projecting end of the fastening-strip, that one of the clamping-dies which engages the inside of the box corner being constructed to reciprocate in a direction parallel with the box-corner, substantially as described.

It will be observed that the first, second, and third claims cover combinations designed only to fasten a stay-strip over the joints on the outside corner of the box, while the fourth, fifth, and seventh claims cover the additional feature whereby the stay-strip is folded over the edge of the box and pasted on the inside as well as on the outside of the corner.

The elements of the combination of the first claim are, first, opposing clamping-dies having diverging working faces and constructed to co-operate in pressing adhesive stay-strips upon an interposed box-corner; second, a feeding mechanism to deliver the stay-strips between said clamping-dies, and, third, a pasting mechanism for rendering adhesive the stay-strips.

The second claim omits the pasting mechanism of the first claim, repeats substantially the remaining elements of the first claim, and adds thereto a cutter for severing the continuous strip into stay-strips of suitable length to be applied to the box-corner to be stayed.

The third claim is in substance a combination of all the elements of the two preceding claims.

The elements of the combination of the fourth claim are, first, the opposing clamping-dies of the preceding claims; second, a movable plunger or strip-bender to bend downwardly or inwardly the projecting end of the stay-strip, and, third, the anvil-die movable out of and into its usual working position, so that it may engage and carry inside of the box-corner the projecting end of the stay-strip.

The fifth claim is substantially the same as the fourth, the only difference being that the anvil-die is described as having—

a reciprocatory motion in a direction parallel with the box-corner.

The seventh claim adds to the combination of the fourth and fifth claims the feeding mechanism of the first three claims and the cutter of the second and third claims.

The defenses are lack of novelty and invention, non infringement of the fourth, fifth, and seventh claims, unlawful expansion of claims in the Patent Office by amendment, invalidity of the reissue as such, it being the same in all important respects as the original, and failure to prove infringement, except as to the defendant Horace Inman.

The application was nearly six years in the Patent Office. Although placed in interference with five different claimants, who contested the complainant's right with unusual pertinacity, he was successful over them all at every stage of the controversy.

Not content with the adverse decision of the Patent Office officials, two of the contestants, one of them a defendant here, sought to have the complainant's patent canceled and awarded to them through the instrumentality of a court of equity. They were again defeated.

What the machine of the patent does is this: An ordinary pasteboard blank is inserted between the clamping-dies and it emerges a completed box, its corners being stayed by strips which have been firmly pasted to the box on the outside, the projecting end being then neatly folded over and attached to the inside also. The corners of the box are adjusted in the dies by the operator. All else is automatic.

The box thus made is properly shaped, its corners are reinforced and made strong, and much heavier material is used, owing to the greater force which is applied, than is possible in a hand stayed box.

The machine is much more rapid than the hand process; it increases the production from four to ten fold; it does cheaper, cleaner, stronger, straighter, and smoother work than that done by hand; less material is used; the boxes are more uniform, artistic, and symmetrical and are delivered from the machine ready for immediate use.

The Beach machine, or one embodying the principle of his invention, with some minor improvements added, at once became popular and ousted the hand process and the wire-stapling method in many of the larger establishments. It has taken the market, become almost indispensable to the trade, and, according to the weight of testimony, has made successful competition well-nigh impossible.

This evidence is objected to because it is said that the machine to which the witnesses chiefly referred was the Knowlton and Beach machine, which contains several patented improvements made by Knowlton. I am convinced that, though this machine is an improvement upon the original, it contains the basic idea of the Beach structure, and it is this, and not the subsequent changes which make it popular. It would be illogical in such cases to attribute success to the non-essential and not to the essential features. (*Cochrane* v. *Deener*, 11 O. G., 687; 94 U. S., 780, 787; *Mergenthaler Co.* v. *Press Co.*, 65 O. G., 2062; 57 Fed. Rep., 502, 505-6.)

But without the proof of the popularity of the machine there is ample evidence in the record to sustain the invention.

The inventor does not pretend to be the first who attached stays of paper or muslin to the corners of paper boxes. The patent expressly admits that this had previously been done by hand. He does insist that he was the first to do this by machinery and asks only for a construction broad enough to prevent others from using his machine or its equivalent. He asks nothing more. This statement of the complainant's position disposes of a large number of the exhibits offered by the defendants. These would be of value if a construction were sought covering the entire art of box-making; but such is not the case.

The defendants have introduced forty-seven patents showing improvements in machines for making boxes, for inserting wire staples, for flanging boiler-plates, for sticking labels and revenue-stamps, for bending stiffeners for the heels of shoes, and for applying shoe-button fasteners. It is conceded by the defendants' expert that none of these anticipates, and, as the counsel for the complainant admitted at the argument that the elements of the combinations, considered separately, were all old, the discussion is narrowed down to the consideration of two or three prior patents only.

As I understand the defendants' position, the infringement of the first three claims is not denied. The defense as to these claims is that they are void for lack of patentability.

In approaching this subject it should be remembered at the outset that no one before Beach had attached adhesive staying-strips to box-corners by machinery. No machines in the box-making art or any other art would do this work. Beach was the first to accomplish this result. His was not a broad invention. His operations were confined to the improvement of a single step in the art of making paper boxes. He succeeded, and in that limited sense is a pioneer.

The question is whether, in view of what is shown, it required more than mechanical skill to produce the machine of the first three claims. The patent—No. 303,992—granted to Dennis and York August 19, 1884, for improvements in addressing-machines, is unquestionably the defendants' best reference. The improvements relate to machines—

in which a strip of paper with the addresses printed thereon is run through the machine, the addresses being cut off in slips and automatically affixed to the newspapers, envelopes, or other articles by a descending knife and platen.

The machine has a feeding and pasting mechanism, a vertically-reciprocating gate provided at its lower





end with a knife to cut off the addresses, and a platen by which they are carried down and fastened to the newspapers or envelopes. The bed on which the papers rest, and which is the only part of the machine which bears the slightest resemblance to the lower die of the Beach patent, is called a "follower." Instead of being rigid this "follower," as the name implies, is supported upon light coiled springs and by lever action, so that it will move up and down freely and produce—

just enough pressure under all circumstances to receive the pasted slip upon the upper sheet.

The impact of the platen and plunger resembles the pat given to a freshly-applied postage-stamp. Being designed to do this light work, the machine is lightly constructed and differs in many minor particulars from the Beach machine.

The defendants insist that a mere mechanic could construct the Beach machine from the Dennis and York machine, and to illustrate this contention they have produced a model of the Dennis and York structure so altered that, experimentally, it will, in a crude and awkward way, attach stay-strips to boxes. The principal alteration is the removal of the platen and follower and the substitution therefor of the clamping-dies of the Beach patent, and the lower die being firmly fixed, or comparatively so. It is argued that a mechanic could do this. Possibly he might after having seen the Beach machine. But is this a fair criterion? There is hardly a patent that could stand such a test. The question is not whether a mechanic, having seen a box-staying machine, could alter the Dennis and York device into such a machine; not whether a mechanic, if he were told that such a box-staying machine was needed, could construct such a machine, although he had never seen one, from the Dennis and York device.

The question is whether a mechanic, before any one had thought of pasting stay-strips to the corners of boxes by machinery, would construct the Beach machine after seeing the labeling-machine. Would the latter suggest the idea and the embodiment of the idea? Would the thought enter the mind of the skilled mechanic with the Dennis and York device before him on his work-bench, and, if it did, would it not be a creative thought whose presence would convert the mechanic into an inventor?

The language of Mr. Justice Brown in *Topliff* v. *Topliff* (59 O. G., 1257; 145 U. S., 156) is applicable to the present situation. At page 161 he says:

While it is possible that the Stringfellow and Surles patent might, by a slight modification, be made to perform the function of equalizing the springs, which it was the object of the Augur patent to secure, that was evidently not in the mind of the patentees, and the patent is inoperative for that purpose. Their device evidently approached very near the idea of an equalizer; but this idea did not apparently dawn upon them, nor was there anything in their patent which would have suggested it to a mechanic of ordinary intelligence, unless he were examining it for that purpose. It is not sufficient to constitute an anticipation that the device relied upon might, by modification be made to accomplish the function performed by the patent in question, if it were not designed by its maker, nor adapted, nor actually used, for the performance of such functions.

The ability to conceive and carry out such changes as were here necessary is not found in the mere routine plodder, no matter how skillfully he may handle his tools. Mechanics by the hundred had seen the Dennis and York and kindred structures; workmen by the hundred had for years been sticking stay-strips to box-corners with their hands, and yet no one of them all had hit upon the Beach device. The advantages of a change from hand labor to machinery are obvious, and yet the idea, which is now said to be self-evident, never entered the mind of a single one of this large army of mechanics.

Suppose Beach's machine had never been built. The art, unless some of those who claimed to be prior inventors in the Patent Office had supplied the want, would be in the primitive state that it was before 1885. No other machine could take its place. The fingers of women and children would still be doing the work of the "opposing clamping-dies." Has not the art been materially advanced by the contribution of Beach? The proposition cannot be maintained that the ingenious mechanism which has revolutionized this branch of the trade is only the product of mechanical skill.

In the defendants' brief the proposition is bluntly stated as follows:

Surely it cannot be contended that the substitution of angular dies for the flat dies of the Dennis and York machine amounts to invention.

Of course this is not the question presented by the record; but if it were the court is by no means certain that the change suggested, considering all that it has accomplished, would not involve invention, even if this were all. Infinitely less were the changes required in substituting a wire barb for one cut from an iron plate; in placing a rubber back upon the packing for stuffing-boxes; in substituting a torsional spring for coiled or flat springs in a telegraph-key, and in substituting hard rubber in lieu of materials previously used for a plate for holding artificial teeth, and yet the Supreme Court has decided that to do these things required invention. (*Barbed Wire Case*, 58 O. G., 1555; 143 U. S., 275; *Magowan* v. *Belting Co.*, 57 O. G., 845; 141 U. S., 332; *Electric Co.* v. *La Rue*, 55 O. G., 571; 139 U. S., 601; *Smith* v. *Goodyear*, 11 O. G., 246; 93 U.S., 486.)

A very slight alteration in an existing structure will often yield the most astonishing results. If the product of the change is a new combination and a beneficial result never attained before, it is safe to assume that its author is an inventor.

The five applicants, including the active defendant, Horace Inman, who disputes in the Patent Office so vigorously with the complainant for the honor of being the inventor of the patented machine, evidently at that time thought something more than mechanical skill was involved. Indeed, the court might almost adopt as its own the language of the defendants in describing the genius and ability necessary to advance the art to its present condition.

A catalogue issued by one of the defendants, the American Box Machine Company, contains the following:

The Inman Manufacturing Company, of Amsterdam, N. Y., recommends to the paper box manufacturers of this country their new No. 6 corner stay machine, for staying the corners of boxes and turning the stay in at the same time. The demand for just such a machine is now met. First the wire-stitcher came in and answered the purpose because nothing better could be had. Afterward we got out the cloth-stay machine, which put the stay on the flat surface of the corner. This was a great improvement, but did not meet the full wants and demands of the

box-making public. They wanted a machine that would put the stay on the corner, and turn it under same as the old hand method. This was a very difficult thing to do, but we have fully accomplished all—and more—than we anticipated.

It is not necessary to examine the other patents introduced by the defendants. If the Dennis and York patent does not invalidate the Beach patent, none of the others does. The Orr and Wright patents, Nos. 58,466 and 67,669, and the Munroe patents, Nos. 244,919 and 298,879, relate to the covering of boxes by winding paper around them. There is nothing in the machines described and shown to suggest the Beach machine. The other patents are still further remote.

The foregoing applies with even greater force to the combinations of the fourth, fifth, and seventh claims. I am not quite convinced, after reading the defendants' brief, whether it is contended that these claims are void for lack of invention. The defendants' expert expressly concedes patentability, as I understand his deposition. However, it is unnecessary to discuss the matter, as it is manifest that if the first three claims are valid these claims are also valid.

The patent was reissued three months after the original to correct a mistake in one of the drawings. The defendants contend that the law does not permit a reissue to correct inconsequential mistakes. The defense is wholly technical. No one but the patentee was in any way harmed by the reissue. The defense is without merits and does not appeal to a court of equity, which should hesitate long before destroying a valuable patent upon a mere abstraction.

No authority is cited to sustain the defendants' theory, and it is thought that no tribunal will ever take the harsh and narrow view contended for. Certainly this court will not be the first to do so.

It appears from the original patent, assuming it to be properly in evidence, that there was a clear mistake in the drawings. Though this mistake did not render the patent wholly inoperative, it was of such a character that a machine constructed in accordance with the drawings would have been inoperative for some purposes which the inventor was entitled to cover by his claims. It is doubtful whether a mechanic following the drawings would have made the machine which the inventor intended to describe. By the terms of the statute (sec. 4916) it is not necessary that the patent should be wholly inoperative. If inoperative in part, it is sufficient. (*Hartshorn* v. *Roller Co.*, 25 O. G., 1191; 18 Fed. Rep., 90.) This question was submitted to the Commissioner, and his decision is entitled to weight and will not be reviewed unless error is manifest from the record. (*Sewing-Machine Co.* v. *Frame*, 28 O. G., 96; 24 Fed. Rep., 596; *Topliff* v. *Topliff*, 59 O. G., 1257; 145 U. S., 156, 171.)

There is nothing in the record to overcome the presumption of validity arising from the patent itself.

As I understand the defendants' position regarding the unlawful expansion of the claims, it is that the amendment, dated November 7, 1890, was unauthorized and unlawful, for the reason that the first three claims were broadened and no new oath was required. The new description and claims are undoubtedly more full and complete than the original; but I cannot find that a new invention is claimed or that the old invention is materially broadened. The only paragraph which introduced new matter was corrected by order of the Examiner.

It should be remembered that for years the patentee was powerless to act by reason of the persistent manner in which his right to the invention was contested by others. When at last he had triumphed over all adversaries, it is safe to assume that he was a wiser man. He had learned some things during the long controversy. That he was entitled to a patent which fully protected his invention there can be no doubt. If the invention as patented is different from the invention as described in 1885, the court has been unable to discover it.

There can be no dispute that an inventor is entitled so to amend his specification that it will employ perspicuous and artistic language and enable him to hold all that he has invented. This specification does nothing more. In the language of the attorneys who filed the amendment—

> care has been used to include nothing in the drawings or specification which was not contained in the same originally filed.

Is there one of the claims that could not have been engrafted on the original description? If so, which one? General accusations are made, but no feature is pointed out which is not found in the original specification. Grant that the description is not so clear, the fact cannot be disputed that every element of the combinations in dispute is found in the first description filed.

There is no doubt about the rule of law laid down in *Chicago & N. W. Railway Co.* v. *Sayles* (15 O. G., 243; 97 U. S., 554) and the numerous authorities which follow it. The difficulty here is with the facts. If it could be shown that the scope of the original had been enlarged so as to enable Beach to appropriate other inventions, the rule would apply; but this has not been shown.

A new oath was not necessary because the amendments introduced no new invention. Nothing in the rules of practice of the Patent Office or the law required it. The grant of the patent is *prima facie* evidence that the necessary conditions precedent were complied with. (*Crompton* v. *Mills*, 3 Fish., 536; *Whittemore* v. *Cutter*, 1 Gal., 429; *Hartshorn* v. *Roller Co.*, 25 O. G., 1191; 18 Fed. Rep., 90, and cases cited; Walk. on Pats., sec. 122.)

Infringement of the first three claims is practically conceded. The complainant's expert says regarding these claims that the defendants' machine is a copy of the Beach machine. I do not find this statement anywhere contradicted, except, perhaps, in a qualified way in the testimony taken September 11, 1894, and from the examination which I have given the two machines it certainly seems to be borne out by the facts. The combinations of these claims have unquestionably been appropriated.

The rule applicable to the infringement of the other claims is clearly stated by Mr. Justice Blatchford. He says:

> Where an invention is one of a primary character, and the mechanical functions performed by the machine are, as a whole, entirely new, all subsequent machines which employ substantially the same means to accomplish the same result are infringements, although the subsequent machine may contain improvements in the separate mechanisms which go to make up the machine. (*Morley Machine Co.* v. *Lancaster*, 47 O. G., 267; 129 U. S., 263, 273, and cases cited.)





In *Proctor* v. *Bennis* (36 Ch. Div., 740) Lord Justice Bowen said:

> The mere fact that there is an addition, or the mere fact that there is an omission, does not enable you to take the substance of the plaintiff's patent. The question is not whether the addition is material, or whether the omission is material, but whether what has been taken is the substance and essence of the invention.

There is no doubt that the defendants' machine operates to paste the stay on the outside of the box, turn it downwardly and inwardly, and paste it on the inside of the corner also. In other words, it does the precise work that the Beach machine does, and it does it by parts so nearly identical that even the experts find it difficult to state not the differences of form, for these undoubtedly exist, but the differences in function and principle.

The chief points of dissimilarity are, first, the alleged absence of the strip-bender, and, second, the absence from the lower clamping-die of the feature of "being movable into and out of its usual working position." There is a part in the infringing machine which corresponds exactly to the strip-bender and is capable of performing the identical work.

The defendants maintain that when the machine is properly adjusted the strip-bender only operates to press the strip down upon the outer surface of the box-corner and that it does not descend below the plane of that surface. The complainant insists, on the contrary, that, though the machine may be so adjusted, this is not the proper adjustment; not the one which the defendants intended; not the one which a sensible mechanic would adopt; that when the machine is properly adjusted its action in this respect is identical with the Beach machine.

In confirmation of the latter contention it may be said that if this part performs no function additional to the pressing action of the upper die it is not easy to understand why it was placed in the machine at all; but even if the defendants are right upon this point there can be no doubt that the part in question forces or bends the projecting end of the stay-strip downwardly. It can bend it in no other direction. True it does not bend it down as far as the Beach strip bender; but it does bend it far enough, so that it is caught by the reciprocating lower die or tucking-finger and carried inside of the box-corner.

The defendants' strip-bender may do less work and their tucking-finger more work than the complainant's; but it is perfectly plain that the two parts together perform the identical work that the corresponding parts perform in the Beach machine. Their action may not be synchronal; there may be structural differences; the defendants may have introduced improvements, and yet the fact stands out clear and indisputable that the defendants' machine does the same work as the complainant's machine, if not by the same, certainly by equivalent means.

Assuming that the complainant needs to invoke the doctrine of equivalents, surely it is not carrying that doctrine too far to hold the defendants' device an infringement when it is remembered that no one pretends that the machine of the fourth, fifth, and seventh claims ever existed before.

**The range of equivalents depends upon the extent and nature** of the invention. (*Miller* v. *Eagle Co.*, 66 O. G., 845; 151 U. S., 186–207.)

As to the other point, it is true that the lower clamping-die, as a whole, does not, in the defendants' structure, move out of and into its usual working position. The lower die is divided. About half thereof remains stationary, and the other half moves into and out of its usual position or reciprocates in a direction parallel with the box-corner, accomplishing the same result as the lower die in the Beach machine. The operation of the two is somewhat different. The Beach tucker moves on right lines, while the defendants' tucker swings for a time in the arc of a circle; but when it does its work it moves in the same way, substantially, as the Beach tucker. The differences are immaterial. The defendants' mechanism performs the same labor and accomplishes the same result in substantially the same way as the complainant's mechanism. The former is the equivalent of the latter. Patents would be of little value if they can be avoided by such changes. (*Union Paper Bag Machine Co.* v. *Murphy*, 13 O. G., 366; 97 U. S., 120, 125; *Cantrell* v. *Wallick*, 35 O. G., 871; 117 U. S., 689; *Winans* v. *Denmead*, 15 How., 330; *Sargent* v. *Larned*, 2 Curt., 340.)

The law does not intend that one who has taken the invention in its entirety, who has appropriated the inventor's idea and the broad principle on which the structure operates which embodies that idea, shall escape infringement because he practices the invention in a slightly different form from that shown in the patent. The law in such cases deals with substance and not with form. It tears the disguise from the infringer and exhibits him in his true light. To adopt the language of Mr. Justice Grier in *Blanchard* v. *Reeves*, 1 Fish., 103:

> It is true that the complainant's specification describes a machine, which effects its result by a combination of lateral and rotary motion, to form a helical course or track in the operation of the machine; but is that of the essence or substance of the invention? or is it not merely an accident of that particular form of the machine described? * * * We cannot shut our eyes to the fact that the defendants have pirated the invention of the complainant in all its essential parts.

As there is no proof of infringement by the American Box Machine Company, the bill must be dismissed as to it.

The other defendants are sued as copartners, trading under the name of the Inman Manufacturing Company, and as this copartnership is admitted in the answer and as a sale by one of the partners is established it would seem that the proof as to them and the copartnership is sufficient.

It follows that the complainant is entitled to the usual decree as to all the defendants, except the American Box Machine Company. The question of costs can be determined upon the settlement of the decree.

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U. S. Circuit Court—District of Vermont.

TRAVER *v.* BROWN.

*Decided July* 31, 1894.

1. TRAVER—STITCH-BREAKING AND RAVELING ATTACHMENT—VALID.

Patent No. 431,957, dated July 8, 1890, to A. L. Traver, for a stitch-breaking and raveling attachment for machines for sewing looped fabrics, examined and *Held* to be valid.

2. SAME—IMPROVEMENT ON A PATENTED MACHINE GIVES NO RIGHT TO USE PRIMARY MACHINE—INFRINGEMENT.

The fact that a person has made an improvement on a patented machine does not give him the right to use such machine with his improvement nor absolve such use from being an infringement of it.

3. SAME—MARKING ARTICLES "PATENTED"—SECTION 4900—DAMAGES.

Where a thing is marked "Patented," as of a date not of its patent, but of the date of an earlier patent to the same patentee, upon which it is an improvement, *Held* not to be a compliance with section 4900 of the United States Revised Statutes and to secure to him no right to damages on proof of infringement of the improvement.

THIS was a bill by Adelbert Lee Traver against Eugene H. Brown for infringement of a patent.

*Mr. Odin B. Roberts* for the orator.

*Mr. Franklin Scott* for the defendant.

WHEELER, *J.*:

This suit is brought for infringement of Patent No. 431,957, dated July 8, 1890, and granted to the orator, with three claims for a "stitch-breaking and raveling attachment for machines for sewing looped fabrics." The first claim is for:

1. A fabric stitch-breaking and raveling attachment combining with the pin-plate of a turning-off machine a bar having a wedge-shaped end consisting of two parallel sides, a lower edge lying close to and parallel with the pins on said pin-plate, and an inclined upper edge of sufficient length and inclination to give to the wedge-shaped part near its rear end sufficient dimension to draw out or break the loops of the fabric, a guide-plate lying against and supporting the opposite side of said fabric from said bar and wedge and having a slot opposite said wedge, mechanism whereby said bar may be reciprocated in the direction of the lower edge of its wedge-shaped end through said slot in said guide-plate, and a frame for supporting and guiding said bar, for supporting said guide-plate and carrying said mechanism, substantially as and for the purpose set forth.

The third claim is for substantially the same elements, with a jaw for clearing away the surplus material of the fabric.

These attachments are for preparing the uneven edges of knit fabrics for sewing to others. At first the edges were sheared, which was objectionable, breaking the stitches in line being better. The orator took out Patent No. 410,720, dated September 10, 1889, for a trimmer for this purpose, which pierced the loops from opposite sides and raised them to break the stitches, and made one machine under it, which did not work well. This prior patent and proceedings in the Patent Office by which a claim for a single stitch-breaker was dropped are relied upon to defeat the novelty and validity of the patent in suit. The claim dropped was for a combination, with other devices, of one or more—and the patent was for the combination of several—levers with points for piercing the fabric positioned on them for breaking the stitches by lifting the points while in the fabric. The patent in suit is for a combination, with other devices, of a bar shaped—

to give to the wedge-shaped part near its rear end sufficient dimension to draw out or break the loops of the fabric.

The former pulled on the fabric and the latter forced the sides of the loop apart to break the stitch. They did the same thing, but in different ways, and mechanically were different things. Neither the claim dropped nor the patent was for any combination of such wedge-shaped bar with any devices, and the dropping of the claim was not any abandonment of nor the former patent any anticipation of the invention patented in this patent. That the orator is really the first inventor of this machine is not much questioned. He does not appear to have lost his right to any part of the invention, and this patent, not the former, seems to cover it.

The defendant makes such attachments having such a bar with its rear end of—

sufficient dimensions to draw out or break the loop of the fabric, operating horizontally to spread the loops and break the stitches instead of perpendicularly and in combination with different-shaped guide-plates and propelling contrivances, but breaking the stitches and clearing away the surplus material in substantially the same manner. In doing this he appears to have taken and used a part of the orator's patented invention, and to that extent to infringe. He may have improved upon it; but using it in an improvement is none the less because of that purpose an infringement.

The orator makes and sells these patented attachments and marks them "Patented September 10, 1889," the date of the former patent, and not as patented at the date of this patent. The statute (section 4900) requires a patentee making or selling the patented articles to give notice of the patent by fixing thereon or on the packages the word "Patented," with the day and year of the grant, and provides that on failure in this no damages shall be recovered except on proof that the defendant was duly notified of the infringement and continued it afterward. This statute prevents a manufacturing patentee from recoving any damages without alleging and proving either the marking of the articles or packages as patented with the day and year of the patent or actual notice to defendants of the patent and the infringement as a part of the case. (*Dunlap* v. *Schofield*, 152 U. S., 244; 14 Sup. Ct., 576; 67 O. G., 139.) In this case the orator has alleged marking the articles "Patented," "according to the statute," without alleging actual notice of the patent or of the infringement. The answer neither admits nor denies this, but puts the orator to proof of it. The proofs do not show marking with the day and year of this patent, and therefore the orator has failed to show any right to recover damages for the infringement of this patent. Upon these considerations the orator seems to be entitled to an injunction only.

Let a decree be entered for the orator for an injunction, with costs.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 69.—No. 9. TUESDAY, NOVEMBER 27, 1894. PRICE—$5 per year.

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## Order in Relation to Drawings.

NOTICE.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January 25, 1894.*

Order No. 980, respecting the alteration of drawings, was published in the OFFICIAL GAZETTE of December 19, 1893, (65 O. G., 1771,) by mistake, and was never in force. The following is the only order in force upon that subject:

(ORDER NO. 986.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January 25, 1894.*

Erasures or other alterations of drawings will not be made or permitted, except in compliance with this order.

Applicants are requested to furnish, with their originals, a blue print or other photographic copy of all drawings forming part of an application, and where this is done, the original drawings may be taken to the Attorneys' room, but not otherwise.

Before making a requirement to alter an original drawing the Examiner will formally make the blue print or other copy a part of the files, and in case no such copy has been furnished by the applicant, the Office will make such copy without charge, and thereupon the required alteration may be made by the applicant, under the direction of the Examiner and subject to his approval or, upon request, it will be made by the Office at the expense of the applicant.

The requirement to make alterations in original drawings will be made in writing, and the applicant's response must also be in writing, and in such case the copy of the drawing, the requirement to alter, and the applicant's response will form part of the record.

Action by the Office on the merits will not be suspended pending the change of a drawing, if the invention claimed may be understood by the Examiner.

For the purposes of this order the Office, upon the request of applicants, will make blue prints at the charge of five cents a sheet.

In appeal cases and upon the declaration of an interference a blue print or other copy will be sent forward with the files, the Examiner retaining the original drawings in his room until the hearing.

Except as herein required such blue print or other copy will not be made a part of the file, and may not be preserved after an application passes into a patent.

JOHN S. SEYMOUR,
*Commissioner.*

PHOTOGRAPHIC COPIES OF DRAWINGS.

A photographic outfit has been added to the equipment of the Patent Office, and positive photographic copies of any drawing, foreign or domestic, in the possession of the Office, will be furnished upon application to parties entitled thereto, at the following rates:

Size 10x15 inches. ..... 25 cents per sheet.
Size 7x11 inches. ..... 15 cents per sheet.
Size 5x8 inches. ..... 5 cents per sheet.

If a copy of the drawings in a pending application of the size 5x8 inches be ordered sent to any address, two copies must be ordered, as one copy is always retained by the Office and placed in the file for the purposes specified in the above Order No. 986, of January 25, 1894.

In ordering copies of foreign drawings, the examining division, the class, and sub-class where such drawings may be found, must be given.

Coupons will be received in payment of the above fees.

## Indexes to Periodicals.

The following journals containing indexes to periodical literature may be found on file in the reading room of the scientific library:

*Engineering Review*, London, a monthly synoptical index of periodical literature in the English, French, and German languages, including hydraulic, railway, mechanical, electrical, mining, metallurgical, marine, military, and gas engineering.

*Electrical Engineering*, Chicago, a monthly synoptical index of electrical literature.

*Electrical World*, New York, a weekly digest of electrical articles.

*Journal of the Association of Engineering Societies*, Chicago, a monthly synoptical index of civil-engineering literature, mostly American.

*Engineering Magazine*, New York, a monthly title-index of engineering articles in the English language only.

## Protection of Industrial Property.

The accession of Denmark to the International Union for the Protection of Industrial Property is officially announced. This accession, which took place October 1, 1894, includes the Färöe Islands, but neither Iceland, Greenland, nor the Danish West Indies.

JOHN S. SEYMOUR,
*Commissioner of Patents.*

## DISCLAIMERS

516,280.—*Edward E. Piper*, Portland, Me. IMPROVEMENT IN CURTAIN-HOLDING DEVICES. Patent dated March 13, 1894. Disclaimer filed November 20, 1894, by the patentee.

Enters his disclaimer "to that portion of the specification which is included in claim 1."

503,562.—*John W. Clark*, Menands, assignor of one-half to *Samuel J. Haight*, Albany, N. Y. IMPROVEMENT IN ELECTRIC TROLLEY-WHEELS. Patent dated August 15, 1893. Disclaimer filed November 19, 1894, by the patentee and assignee.

Enter their disclaimer "to that part of the specification and claim which is in the following words, to wit: the words 'and each having an ice-breaking shoulder, H, formed on its inner face,' on the thirty-fifth, thirty-sixth, and thirty-seventh lines of the second page of the printed specification."

## Issue of November 27, 1894.

| | | |
|---|---|---|
| Patents | 388 | No. 529,688 to No. 530,075, inclusive. |
| Designs | 11 | No. 23,816 to No. 23,826, inclusive. |
| Trade-Marks | 6 | No. 25,551 to No. 25,556, inclusive. |
| Labels | None. | |
| Prints | None. | |
| Reissues | 1 | No. 11,455. |
| Total issue | 406 | |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | 1 | | New Hampshire | 2 | |
| Arizona Territory | | | New Jersey | 23 | |
| Arkansas | 1 | | New Mexico Ter. | 1 | |
| California | 8 | | New York | 63 | 2 |
| Colorado | 4 | | North Carolina | 6 | |
| Connecticut | 6 | | North Dakota | 2 | |
| Delaware | 1 | | Ohio | 31 | |
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| Florida | 1 | | Oregon | | |
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| Indian Territory | | | Tennessee | 4 | |
| Iowa | 4 | | Texas | 8 | |
| Kansas | 3 | | Utah Territory | | |
| Kentucky | 5 | | Vermont | 2 | 1 |
| Louisiana | | | Virginia | 6 | 1 |
| Maine | 1 | | Washington | 1 | |
| Maryland | 7 | | West Virginia | | |
| Massachusetts | 35 | | Wisconsin | 6 | |
| Michigan | 19 | | Wyoming | 1 | |
| Minnesota | 4 | | U. S. Army | 1 | |
| Mississippi | | | U. S. Navy | | |
| Missouri | 23 | | | | |
| Montana | | | Total to citizens of the United States | 355 | 4 |
| Nebraska | 2 | | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Argentine Republic | | | Italy | 1 | |
| Austria-Hungary | 1 | | Mexico | | |
| Belgium | | | Netherlands | | |
| Bermuda | | | New South Wales | | |
| Brazil | | | New Zealand | | |
| Canada | 10 | 1 | Norway | | |
| Chile, Republic of | | | Queensland | | |
| Colombia | | | Russia | | |
| Cuba | | | Scotland | | |
| Denmark | 1 | | South Australia | | |
| Ecuador | | | Spain | | |
| England | 13 | 1 | Sweden | 1 | |
| France | 3 | | Switzerland | 3 | |
| Germany | 9 | | Victoria | 1 | |
| Guatemala | 1 | | | | |
| India | | | Total to citizens of foreign countries | 44 | 2 |
| Ireland | | | | | |

## APPLICATIONS UNDER EXAMINATION.

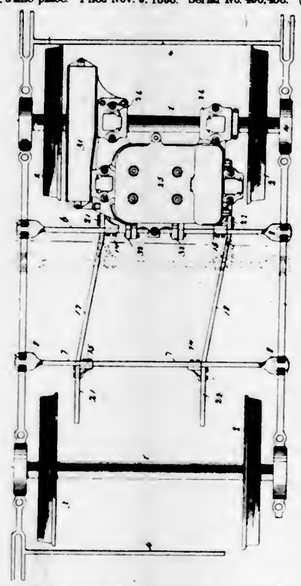
*Condition at Close of Business November 20, 1894.*

| Division No. | Subjects of Invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 26 | Electricity, Generation, Distribution, Motive Power, Electric Railways, etc. | Oct. 20 | Nov. 15 | 50 |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | Oct. 22 | Nov. 14 | 92 |
| 8 | Furniture, Beds, Store Furniture, etc. | Oct. 20 | Nov. 13 | 194 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire-Escapes and Ladders, etc. | Nov. 10 | Nov. 12 | 47 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | Oct. 22 | Nov. 12 | 100 |
| 20 | Builders' Hardware, Safes, Dentistry, Undertaking, Artificial Limbs, etc. | Oct. 21 | Nov. 12 | 126 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | Oct. 20 | Nov. 12 | 73 |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Oct. 20 | Nov. 12 | 74 |
| 2 | Farm Stock, Products, etc | Oct. 20 | Nov. 12 | 122 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | Oct. 22 | Nov. 5 | 226 |
| 3 | Metallurgy, Metal-Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | Oct. 20 | Nov. 2 | 88 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | Oct. 22 | Oct. 29 | 90 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Oct. 22 | Oct. 29 | 158 |
| | *Between one and two months.* | | | |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Sept. 24 | Nov. 15 | 97 |
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| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Oct. 16 | Nov. 12 | 125 |
| 12 | Mechanical Engineering, Stores-Service, etc. | Oct. 15 | Nov. 10 | 136 |
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| 1 | Tillage and Fences | Sept 20 | Nov. 9 | 261 |
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| 34 | Railway-Cars and Fluid-Pressure Railway-Brakes. | Sept. 24 | Nov. 1 | 293 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, Cutlery, etc. | Sept. 25 | Oct. 29 | 148 |
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| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting, and Leather Working Machinery. | Sept. 25 | Oct. 26 | 289 |
| 19 | Stoves and Furnaces | Oct. 15 | Oct. 22 | 214 |
| 30 | Lamps, Gas-Fittings, Linotyping, Type-Writing Machines, Optics. | Sept. 20 | Oct 9 | 233 |
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| 9 | Hydraulics, Fire-Extinguishers, etc. | Sept. 14 | Nov. 10 | 327 |
| 17 | Paper-Manufactures and Printing | Sept. 5 | Nov. 9 | 157 |
| 29 | Wood-Working Machines, Carpentry, Coopering and Roofing, etc. | Aug. 20 | Oct. 29 | 194 |
| | *Between three and four months.* | | | |
| 24 | Sewing-Machines, Crinoline and Corsets, Apparel, and Toilet. | Aug. 7 | Nov. 13 | 125 |
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| | Designs | Nov. 7 | Nov. 10 | 95 |
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# PATENTS

## GRANTED NOVEMBER 27, 1894

**529,688. MEANS FOR SUPPORTING MOTORS IN ELECTRIC LOCOMOTIVES.** WALTER S. ADAMS, Philadelphia, Pa., assignor to John A. Brill, same place. Filed Nov. 9, 1893. Serial No. 490,438. (No model.)



*Claim.*—1. The combination, in a truck, of a truck frame, a separate motor suspension frame, longitudinal bars included in said frame, said frame being suspended between the side bars and wheels of the truck, extending longitudinally of the truck, and having its sole support on said side bars, a motor supported at one end by one of the axles of the truck, the motor and its separate frame being connected at a point within the outer limit of the motor or its casing, whereby the major portion of the weight may be taken upon the ends of said longitudinal bars, and the truck axle relieved therefrom, substantially as described.

2. An electric motor sustained beneath the body of a car or vehicle by a pair of longitudinally extending bars, cross bars secured to the side bars of the truck between the wheels, hangers depending from the cross bars, the longitudinal bars having a support upon said hangers, the motor being detachably secured to said longitudinal bars at their ends, the end of the motor opposing such connection being geared to and carried upon one of the axles of the car or truck wheels, substantially as described.

3. In a motor truck having a frame and a cross bar included therein the combination, with one of the truck axles, of a motor geared thereto, a longitudinal motor frame, the frame being suspended from the cross bar below the mutual central line of the truck axles, the motor and its supporting frame being connected at a point within the outer limits of the motor or its casing, and below its armature shaft, longitudinally, substantially as described.

4. The combination, with a truck, of the truck side bars, a motor partly supported on one of its axles, the cross bars, longitudinal bars, and hangers for supporting the longitudinal bars below the cross bars, the motor engaging the proximate ends of the longitudinal bars, substantially as described.

5. In a motor truck, the combination, with a truck frame, of the hangers 10, the cross bars, and the longitudinal bars hung from said cross bars by the said hangers, the ends of said longitudinal bars extending beyond the cross bars and adapted to be detachably secured to a motor, substantially as described.

6. The combination, with the truck side bars, of the cross bars 6, one or more reverse faced hangers 10 having flanges extending from the upper part thereof in opposite directions, one or more longitudinal bars 21, the cross and longitudinal bars abutting against the faces of said hanger, the said flanges abutting against the upper and lower portions of the cross and longitudinal bars, and means for securing the hanger to said bars, substantially as described.

7. The combination, in a motor truck, of the side bars, the cross bars, the longitudinal bars suspended below the side bars, and means for adjustably suspending said longitudinal bars to the cross bars, substantially as described.

8. The combination, with the cross bar and longitudinal bars, of the hangers 10 having their bodies twisted centrally to form the reversed faces, the flanges extending from the top and bottom of the hangers, each being disposed at right angles to the other, the said faces being provided with apertures, the longitudinal bars lying below the cross bar, all of said bars being placed on edge, the flanges resting against the top and bottom edges of both sets of bars, and bolts for securing the cross bar to the upper face of the hangers, and like means for securing the lower faces of the hangers to the longitudinal bars, substantially as described.

9. In a motor support, the combination with a single elastic cushion, and a motor supporting bar resting thereon, of a suitable support for said cushion, connections between the top of the cushion and said support, and between the motor bar and the bottom of said cushion, whereby motion of said bar up and down can be resiliently resisted by said cushion, substantially as described.

10. The combination, in a motor truck, of a single elastic cushion, a cross-bar resting on the cushion, and a support for said cushion on the truck, means for connecting the cross bar and the bottom of the cushion, and a bolt connecting said truck frame with the top of the cushion, the support for the cushion resisting downward movement of the cross bar and allowing the cushion to become compressed, the bolt restricting the upward movement of the cross bar and compressing the cushion, substantially as described.

11. In a motor support, the combination, with a single cushion, of a cross bar adapted to be connected with a motor, means for supporting and securing said cushion on an appropriate part of a truck, and devices connected with the top of the cushion and the truck, and the bottom of said cushion and the cross bar whereby the movement of the cross bar, either upwardly or downwardly, will be resiliently resisted by such single cushion, substantially as described.

12. The combination with the cushion 36, the bar 3, the upwardly movable spring cup 35, the spring cap 43, the cushion extending between the cap and cup, the bolt 39 uniting the spring cap 43 with the bar 3, the plate 8, and means for securing said plate to the spring cup 35, substantially as described.

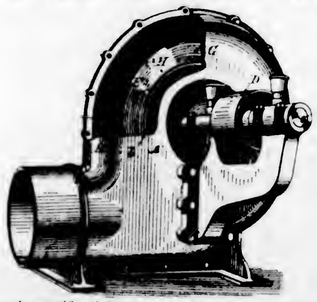
13. The combination, with the cushion 36, and bar 3, of the spring cup and cap 35, 43, the connecting bolt 39 passing through the cup, cap, cushion and bar, the plate 8, and the bolts 48 connecting the plate 8 with the spring cup, substantially as described.

14. The combination, with the plate 8 and bar 3, of the spring cup, the elastic cushion and spring cap, the spring cap having the rise 46 and recess 45 therein, and the headed bolt 39 extending between said recess and the bar 3, and connections between the plate 8 and spring cup, substantially as described.

15. The combination, with the plate 8 and bar 3, of the spring cup, the cushion seated therein, the spring cap 43 on top of the cushion having peripheral recesses, the bolt 39 extending between the spring cup and the bar 3, and the bolts 48 extending between the plate 8 and the spring cup and lying wholly or partly within the peripheral recesses of the spring cap, substantially as described.

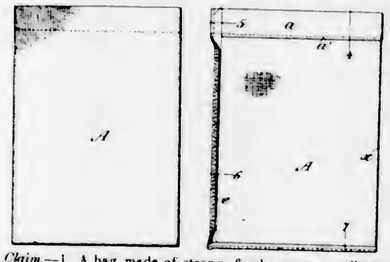
16. The combination, with the bar 3 and plate 8, of the cup 35, cap 43, cushion 36, the plate 8 and cup 35 being connected, and a bolt 39 passing through an aperture in the bar cap, cushion, and cap, the parts being arranged to allow a movement thereof on said bar, substantially as described.

529,689. CENTRIFUGAL FAN. VALERIUS D. ANDERSON, Cleveland, Ohio. Filed May 12, 1894. Serial No. 511,000. (No model.)



*Claim.*—A centrifugal fan wheel composed of a cast iron spider and blades, cast iron stiffening disks, and independent connecting pieces formed of yielding metal or alloy and firmly united to the blades and disks, substantially as and for the purpose explained.

529,690. PACKING-BAG. BARTLETT ARKELL and CHARLES A. BLOWERS, Canajoharie, N. Y.; said Blowers assignor to Frank O. Matthiessen, New York, N. Y. Filed May 28, 1894. Serial No. 512,617. (No model.)



*Claim.*—1. A bag made of strong, firmly woven textile fabric adapted to securely hold a fine granular or powdered substance, having its side closed by a seam provided with a row of stitching through four thicknesses of fabric and a row of stitching through eight thicknesses of fabric, and having its bottom closed by a seam provided with one or more rows of stitching through four or more thicknesses of fabric, substantially as set forth.

2. A bag made of a strong, firmly woven textile fabric adapted to securely hold a fine granular or powdered substance, provided with a reinforcing strip of textile material stitched about its open end and made by folding over the fabric of the bag, adapted together with the body of the bag to receive and securely hold a row of needle stitches when the bag is closed, and having its bottom closed by a seam having one or more rows of stitching through four or more thicknesses of fabric, and one side closed by a seam having a row of stitching through four thicknesses of fabric and a row of stitching through eight thicknesses of fabric, substantially as set forth.

529,691. COLORING-MATTER FROM LOGWOOD AND PROCESS OF MAKING SAME. PETER T. AUSTEN, Brooklyn, assignor to William J. Matheson & Co., Limited, New York, N. Y. Filed Aug. 30, 1894. Serial No. 521,658. (No specimens.)

*Claim.*—1. In the art of making coloring matter the improvement which consists in evaporating a solution of logwood extract and borax at a low temperature until a dry, friable and practically non-deliquescent product not affected by atmospheric heat is obtained as and for the purpose described.

2. In the art of making coloring matter the improvement which consists in subjecting comminuted logwood to the extractive action of a dilute solution of borax and subsequently evaporating the solution until a dry and friable product is obtained as and for the purpose described.

3. A new coloring matter consisting of a desiccated mixture of logwood extract and borax, being a dry friable and practically non-deliquescent solid not affected by atmospheric heat, as described.

529,692. VALVE. CHARLES S. BAVIER, New York, N. Y. Filed Jan. 22, 1892. Serial No. 418,908. (No model.)

*Claim.*—1. A valve disk having a mortise to admit the end of the spindles, an upper chamber opening into said mortise and of less diameter in one direction than said mortise, and a slot from said chamber up through the substance of said disk, substantially as described.

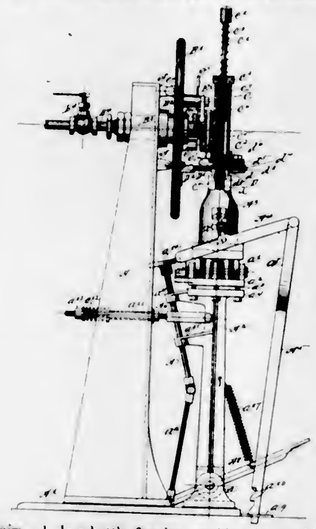


2. The combination of a flanged spindle, a disk, a mortise in said disk adapted to admit said flange, an upper chamber communicating with said mortise but of lesser dimensions in one direction and adapted to receive and retain said flange, and a key adapted to fit said mortise below said flange, substantially as described.

3. The combination with a disk and a flanged spindle adapted to a movable fit therein, of a key adapted to fit in the disk below the spindle and provided with a depression and a rocking washer adapted to fit in said depression beneath said spindle, substantially as described.

4 The combination with a flanged valve spindle, of a disk provided with a mortise *g*, chamber *h* communicating therewith, shoulders *k* at one side of said chamber, slot *m* leading up from said chamber, recessed key N and rocking washer S, substantially as described.

529,693. BOTTLE-FORMING MACHINE. RICHARD T. BECKETT, Woodbury, N. J. Filed Dec. 22, 1892. Serial No. 456,008. (No model.) Patented in Belgium Feb. 15, 1893, No. 103,197; in England Mar. 11, 1893, No. 1,687, and in France Apr. 26, 1893, No. 227,525.



*Claim.*—1. In a bottle forming machine the combination with mold sections of the bottom former movable upward by direct engagement with said mold sections, substantially as specified.

2. In a bottle forming machine the combination with mold sections having inclined or cam surfaces, of a bottom former having the inclined or cam surface coacting with the inclined or cam surfaces of the mold sections to raise the bottom former, substantially as specified.

3. In a bottle forming machine, the combination with a carrier, a casing forming an air chamber and means for admitting air thereto, of the blow tube having the interior mouth former at its end, the pivoted tongs supporting formers for the exterior of the mouth, and a cam plate between the outer ends of said tongs for separating them, substantially as specified.

4. In a bottle forming machine the combination with a carrier and a casing forming an air chamber, of the blow tube movable longitudinally in said casing a movable sleeve in which said tube is movable and having a mouth former at its end, and means for moving said tube and also the sleeve, the tube in advance of the sleeve, substantially as specified.

5. In a bottle forming machine the exterior mouth former consisting of sections, pivoted arms to which said sections are secured and a cam plate for separating said sections located between the ends of the arms opposite their pivot, substantially as specified.



6. In a bottle forming machine the combination with a fixed standard, of a movable standard, a mold thereon consisting of separable sections and having a bottom former and means for moving the movable standard and automatically separating the mold and bottom former from a formed bottle, substantially as specified.

7. In a bottle-forming machine, the combination with means for blowing and supporting a bottle, of a mold consisting of separable sections, a movable bottom former, a movable standard carrying said mold and former, and a brace for securing the standard, mold and formers in operative position by engaging a recess in the floor at its free end, substantially as described.

8. In a bottle forming machine the combination with means for blowing and supporting a bottle, of a mold consisting of separable sections, a movable bottom former unattached to the said mold sections, a movable standard carrying said mold and former and a brace for securing the standard, mold and former in operative position, substantially as specified.

9. In a bottle forming machine, the combination with separable mold sections, of a movable standard carrying said mold sections, levers pivoted to said standard, connections between said levers and the mold sections and a brace bar for securing said standard in operative position and holding said levers in their upward position, substantially as specified

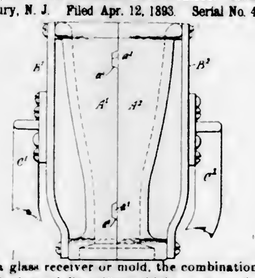
10. In a bottle forming machine, the combination with a carrier of arms pivotally connected thereto an exterior mouth former, consisting of sections removably secured to said arms, springs for closing and a cam lever for opening said former by engagement with said arms, substantially as specified.

11. In a bottle forming machine, the combination of a movable standard, a plate attached to said standard having an adjustable connection therewith and a mold made in sections supported by said plate, substantially as specified.

12. In a bottle forming machine, the combination of a carrier, a casing forming an air chamber, arms pivoted to said carrier and engaging with said casing and an exterior mouth former secured to said arms substantially as specified.

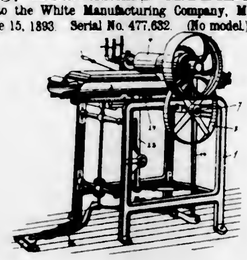
13 In a bottle forming machine, the combination of a carrier, arms pivoted to said carrier, a receiver for glass secured to said arms and a lever pivoted to said carrier for moving said arms, substantially as specified.

529,694. MACHINE FOR MOLDING GLASS. RICHARD T. BECKETT, Woodbury, N. J. Filed Apr. 12, 1893. Serial No. 470,025. (No model.)



*Claim.*—In a glass receiver or mold, the combination of a number of sections of substantially uniform thickness throughout, having lateral extensions near their extremities and provided with dowel pins and corresponding recesses upon their superimposed faces, rods or plates attached to said lateral extensions and spanning the intermediate portions of the sections, and supporting or operating bars or links attached to said rods or plates, substantially as specified.

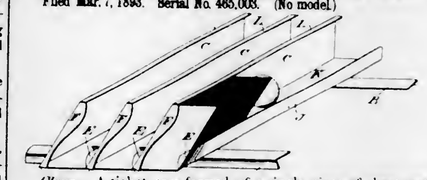
529,695. IRONING-MACHINE. DANA H. BENJAMIN, Utica, N. Y., assignor to the White Manufacturing Company, Minneapolis, Minn. Filed June 15, 1893. Serial No. 477,632. (No model.)



*Claim.*—1. The combination in an ironing machine of a reciprocating ironing bed, an ironing roller, a friction pulley operating to move the table in one direction, a second friction pulley operating to move the table in the opposite direction, a driving pulley with which the friction pulleys are adapted to be brought alternately into contact, a movable hanger on which the two friction pulleys are mounted, a spring connected with the hanger and operating to move the parts into position to bring the friction pulley for moving the table backward into operation, a lever connected with the hanger and operating in unison therewith and standing in position to be engaged by the table in its backward movement, whereby the table in its backward movement is checked by throwing the returning friction pulley out of operation and the forwardly moving friction pulley temporarily into operation, substantially as set forth.

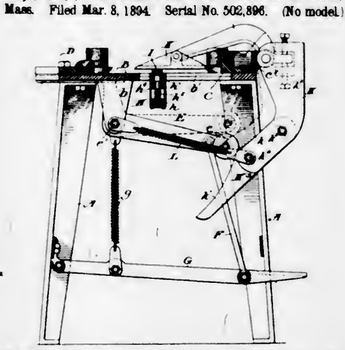
2. The combination in an ironing machine of an ironing board having a series of pins or pegs projecting laterally from the edges thereof, a fabric or covering stretched on the surface thereof and engaged on the pins, and a removable frame embracing the board and binding the covering against the edges of the board and having a series of notches in its under edges for receiving the pins, the frame being of greater thickness laterally from the edge of the board than the length of the projecting portion of the pins, substantially as set forth.

529,696. TICKET-HOLDER. LEONARD J. BLADES, Chicago, Ill. Filed Mar. 7, 1893. Serial No. 465,003. (No model.)



*Claim.*—A ticket case formed of a single piece of sheet metal from the blank shown, the lower end portion E bent at right angles to the low side portion J, the portion J bent at right angles to the bottom K, the lower end portion F bent at right angles to the wider side portion C, and the top portion L bent at right angles to the wide side, and the case combined with suitable supports as and for the purpose specified.

529,697. DOWELING-MACHINE. GEORGE W. BOND, Raynham, Mass. Filed Mar. 8, 1894. Serial No. 502,896. (No model.)



*Claim.*—1. A doweling machine, comprising means for forcing together the pieces to be united, and one or more dowel carriers loosely mounted, whereby said carriers are free to adjust themselves to the proper position between the pieces when the latter are forced together, substantially as described.

2. A doweling machine, comprising a table having one or more longitudinal slots, dowel carriers loosely mounted in said slots, and means for forcing together the pieces to be united, in a line parallel with said slots, substantially as described.

3. In a doweling machine, the combination with means for forcing together the pieces to be united, of a dowel carrier consisting of a vertically yielding head to support the dowel, said head having beveled or rounded edges to be engaged by said pieces, which thereby automatically force the carrier down out of their way; substantially as described.

4. In a doweling machine, the combination with means for forcing together the pieces to be united of a dowel carrier consisting of a frame A, a head $A'$, a spring $A^3$ supporting said head, and interoperat-

ing shoulders on the frame and head to limit the upward movement of said head, substantially as described

5. In a doweling machine, the combination with the table having a longitudinal slot provided with ledges, of a dowel carrier loosely supported on said ledges, and provided with a vertically yielding head, substantially as described.

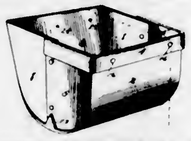
6. In a doweling machine the combination with one or both of the elements for forcing the pieces together, of beveled anti-friction wheels, substantially as described.

7. In a doweling machine, the combination with means for forcing together the parts to be united, of a lever fulcrumed near the plane of the pieces and composed of two or more parts angularly adjustable, a pressure plate hinged to the lever, and movable thereby transverse to the motion of the pieces, and a single operating lever having one end engaged with the forcing device and the other end adapted to engage with the pressure plate lever, substantially as described.

8. In a doweling machine, the combination with the reciprocating driver D, of a lever E for actuating the same, a pressure plate K, a lever carrying said plate, composed of the parts K', K², K³, the latter part having the cam surfaces K, K' with which the end of the lever E engages, and means for actuating the lever E; substantially as described.

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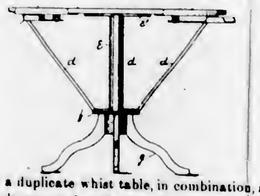
529,698. ELEVATOR-CUP. WILLIAM F. BOSWELL, Joplin, Mo. Filed July 30, 1894. Serial No. 518,960. (No model.)



*Claim.*—An elevator cup, constructed of a single piece of sheet metal comprising the body 1, sides formed by wings 5 and 8, triangular portions 13 on the sides of the body portion 1 overlapping the side wings 5 and 8, and an end strip 4 formed integral with the body 1 and wings 5, and said strip 4 doubled back and riveted to the body portion, substantially as shown and described.

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529,699. DUPLICATE-WHIST TABLE. GEORGE S. BOUTWELL, New Bedford, Mass. Filed Mar. 16, 1894. Serial No. 503,863. (No model.)



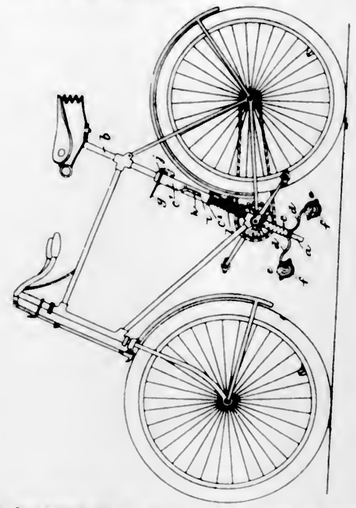
*Claim.*—In a duplicate whist table, in combination, a stationary central disk firmly mounted at the top of a central post or standard and rabbeted for the purpose of steadying a revolving top, index counters surmounting said stationary central disk, a revolving top revolving freely about said stationary central disk, top pockets in said revolving top, swinging receivers under said revolving top when open projecting slightly beyond the edge of same, a lower revolving disk attached to said revolving top by means of braces and resting on shoulders contrived on the standard for that purpose, all substantially as set forth above for the specific purpose of the particular game of duplicate whist.

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529,700. BICYCLE. SIDNEY BRAMALL, London, England. Filed Dec. 27, 1893. Serial No. 494,837. (No model.) Patented in Belgium Dec. 30, 1893, No. 107,606, and in France Feb. 16, 1894, No. 234,321.

*Claim.*—1. In combination with the wheels and treadles of a bicycle, the upright rods *a b* attached to the treadle boss, the sleeves *c c'* sliding on them respectively, a device connecting the said sleeves in order that they may move together, a replacing spring bearing against one of the said sleeves, and a support attached to the lower sleeve and arranged to press against the ground when the said sleeve is lowered, for the purpose set forth.

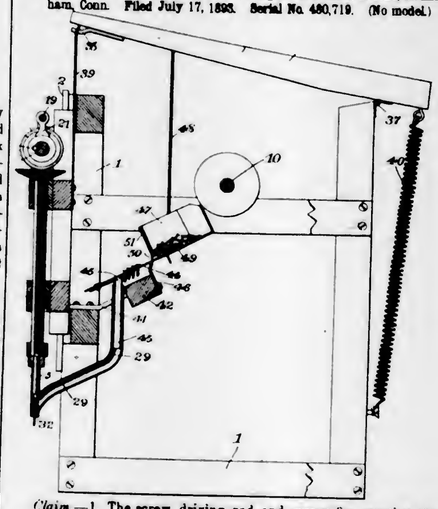
2. In combination with the wheels and frame of a bicycle, upright rods *a b* attached to the treadle boss, sleeves *c c'* capable of longitudinal and axial motion on the said rods respectively, a replacing spring bearing against one of the said sleeves, a cross-bar *d* carried by the lower sleeve *c*, wheels *f* mounted in the said cross bar and normally in line with the direction of motion, and a device connecting the said sleeves to move together, one of the said sleeves being provided with a slot *h* which is partly longitudinal partly oblique and receives a stud on the rod over which the said sleeve moves in order that the depression of the said sleeve may cause the wheels *f* to turn across the line of motion of the machine as they approach the ground and act as a support substantially as set forth.



3. In a bicycle the combination of the wheels and frame with the upright rods *a b*, the sleeves *c c'* moving longitudinally and axially thereon, the bolt or rod *k* connecting the said sleeves, the handle *g* on the upper sleeve, the rings or bands $c^1$ $c^1$ on the said sleeves respectively, the pin *i* of the rod *b* received in the slot *h* of rod *b*, the pin *j* attached to the said sleeve and fitting into a recess, the said rod above it, the replacing spring *l*, a cross-bar *d* carried by the lower sleeve *c*, and wheels *f* mounted in the said cross-bar and arranged to press against the ground when said sleeve is lowered, substantially as set forth.

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529,701. MACHINE FOR DRIVING SCREWS INTO WOOD. CHARLES L. BRIGGS, Norton, Mass., assignor to Isaac J. Boothe, Birmingham, Conn. Filed July 17, 1893. Serial No. 480,719. (No model.)



*Claim.*—1. The screw driving rod and means for rotating the same, the yoke connected to the rod, the jaws pivoted to the yoke and extending near to the axial line of the rod, and the guiding chute terminating in proximity to the jaws, all combined and relatively arranged substantially as described.



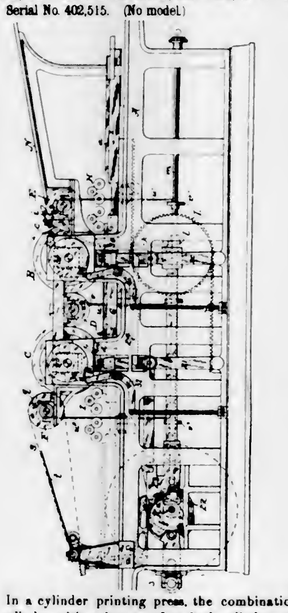
2. The vertically movable gate and the rotatable screw-driving rod carried thereby, the screw holding jaws, and the guiding chute, having a terminal section connected to said gate, a hopper, and a telescopic chute section leading from the hopper to the chute section connected to the gate, all combined substantially as described.

3. The vertically movable gate, the power driven screw driver carried thereby, the yoke surrounding and moving with said screw driver, and the telescopic chute connected to a hopper and to said yoke, all combined substantially as described.

4. The combination of the rotatory and vertically reciprocatory driving rod, the yoke loosely supported around the same and confined as to independent vertical movements between prescribed limits, the head at the lower end of said yoke and having a central passage, the resilient clamping jaws pivoted to said yoke and meeting at their lower ends immediately beneath said head, the chute rigid with said head and leading into said passage, and screw delivery devices having depending therefrom a chute which telescopes within the first mentioned chute, whereby a continuous passage for the screws is afforded during the vertical movements of the driving rod and the parts carried thereby, and also all axial movement of the yoke prevented, substantially as set forth

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529,702. CYLINDER PRINTING-MACHINE. JOHN BROOKS, Plainfield, N. J., assignor to Charles Potter, Jr., Horace W. Fish, Joseph M. Titsworth, and David E. Titsworth, New York, N. Y. Filed Aug. 13, 1891. Serial No. 402,515. (No model.)



*Claim.*—1. In a cylinder printing press, the combination with the impression cylinder with grippers, of a feed cylinder adjacent thereto one half the diameter of the impression cylinder and having grippers inoperative every alternate revolution, said impression cylinder having an impression surface greater than the circumference of the feed cylinder, substantially as described.

2. In a cylinder printing press, the combination with two impression cylinders with grippers and a feed cylinder with grippers inoperative every alternate revolution adjacent one of the impression cylinders and one-half the diameter of said impression cylinders, of a transfer cylinder coacting with said impression cylinders, and a cooperating bed with two forms, each of said two impression cylinders having an impression surface greater than the circumference of the feed and transfer cylinders, substantially as described.

3. In a cylinder printing press, the combination with two impression cylinders with grippers, and a feed cylinder adjacent one of the impression cylinders one-half the diameter of said impression cylinder, and having grippers inoperative every alternate revolution, of a transfer cylinder coacting with said impression cylinder having grippers operative every alternate revolution, and a cooperating bed with two forms, each of said impression cylinders having an impression surface greater than the circumference of said feed and transfer cylinders, substantially as described.

4. In a stop cylinder printing press, the combination with an impression cylinder having grippers and with an impression surface greater than one-half of its circumference, of a feed cylinder adjacent thereto, one-half the diameter of the impression cylinder and having grippers with means for rendering said grippers inoperative every alternate revolution, substantially as described.

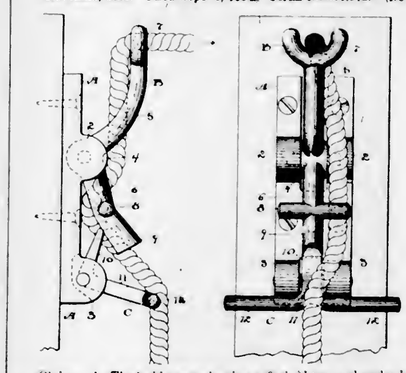
5. In a stop cylinder printing press, the combination with two impression cylinders with grippers, and each having an impression surface greater than one-half its circumference, and a cooperating bed with two forms, of feed, transfer and delivery cylinders, each one-half the diameter of the impression cylinders, and coacting with said impression cylinders, and each having grippers with means for rendering said grippers inoperative every alternate revolution, substantially as described.

6. In a stop cylinder printing press, the combination with an impression cylinder with grippers and having an impression surface greater than one-half its circumference, and a cooperating form bed, of a feed cylinder with grippers and one-half the diameter of the impression cylinder, a gripper cam and a cam and connections for moving said gripper cam out of operative position each alternate revolution of the feed cylinder, substantially as described.

7. In a stop cylinder printing press, the combination with two impression cylinders with grippers and each having an impression surface greater than one-half its circumference and a cooperating bed with two forms, of a transfer cylinder with grippers one-half the diameter of said impression cylinders, a gripper cam and a cam and connections for moving said gripper cam out of operative position each alternate revolution of the transfer cylinder, substantially as described.

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529,703. CLOTHES-LINE FASTENER. CHARLES J. BROWN, Cleveland, Ohio. Filed Sept. 1, 1894. Serial No. 521,912. (No model.)

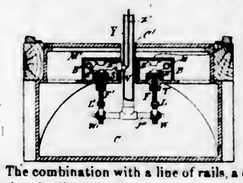


*Claim.*—1. The holder arm having a forked top end and a lateral projection on its lower end and pivoted near its center, in combination with an operating lever pivoted to engage beneath the lower end of the said arm and having a lateral projection at its free end to serve as a bearing for the line when it is released, substantially as set forth.

2. In clothes line holders, a bracket, a holder arm pivoted at about its middle to the bracket and having its top end constructed to engage the line and a lateral projection near its lower end to engage over the free end of the line, in combination with a lever pivoted on said bracket beneath said arm and having a tongue at substantially right angles to its free end and bearing against the lower extremity of said arm below the lateral projection thereon and a lateral projection on said lever corresponding to the lateral projection on said arm, substantially as set forth.

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529,704. CLOSED-CONDUIT ELECTRIC RAILWAY. CHARLES G. BURKE, Brooklyn, N. Y. Filed Feb. 10, 1894. Serial No. 499,697. (No model.)



*Claim.*—1. The combination with a line of rails, a conduit having upper and lower longitudinal chambers or compartments and an in-

sulated supply conductor, of a series of circuit-controlling levers in the lower compartment of the conduit adapted to establish connections between the rails and supply conductors, an exposed return conductor, an arm extending from the car into the lower compartment and an insulated trolley carried thereby and running in engagement with the circuit-controlling levers and a conducting trolley connected with the car motor and running in contact with the return conductor.

2. The combination with a line of rails from which the car motors are arranged to receive current, and contact terminals in a conduit beneath the track connected at intervals with said rails, of an insulated supply conductor in said conduit, insulated movable terminals connected therewith at intervals, and extending through openings into a lower chamber in said conduit, an arm extending from a car into said lower compartment, a series of levers in the lower compartment with which the said arm engages and adapted to raise the terminals successively upward into contact with those connected with the rails, and a spring acting on said arm and tending to raise it from the conduit, as set forth.

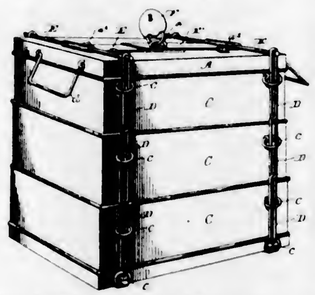
3. The combination with a line of rails, a conduit and an insulated supply conductor of a series of circuit controlling levers in said conduit adapted to establish electrical connections between the supply conductor and line of rails, a bared or exposed return conductor also in the conduit, an arm extending from a car into the conduit and having two trolleys, one adapted to engage with and operate the circuit controlling levers, the other connected with the motor and adapted to run in contact with the return conductor, as set forth.

4. The combination with a line of rails, a conduit beneath the same provided with a longitudinal slot, and an insulated box or series of boxes above the conduit and provided with passages opening into the same, of a series of stationary and a corresponding series of movable terminals located in the box and connected at intervals with the rails and an insulated supply conductor respectively, insulating rods supporting the movable terminals and extending through the passages into the conduit, a series of levers each carrying one of said rods, an arm carried by a car and extending into the conduit and adapted to raise said lever successively, as set forth.

5. The combination with a line of rails and a conduit beneath the same, of an arm or rod carried by a car and extending through a slot into said conduit, two trolleys carried by said arm, a supply conductor, a series of nominally open branch connections between the rails and said conductor, means for closing said branches successively, adapted to be operated by one of said trolleys, a return conductor with which the other trolley is constantly in engagement, and circuit connections between the car motor and said trolley as set forth.

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529,705. **PACKING-CASE.** JOHN BURT, Iron River, Mich. Filed Sept. 4, 1894. Serial No. 522,045. (No model.)



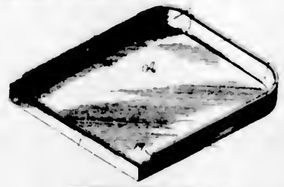
*Claim.*—1. A packing case composed of compartments supported one upon the other and arranged between a relatively flat top and bottom cover both common to each compartment, and means for clamping said covers and the intermediate compartments together.

2. In a packing case composed of compartments supported one upon the other and provided with a cover common to all, the combination of the links, the binding rods having the hasps and means for locking said hasps to the cover, substantially as shown and described.

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529,706. **MIXING-BOARD.** ELMER E. CARPENTER, Worcester, Mass. Filed Apr. 10, 1894. Serial No. 507,025. (No model.)

*Claim.*—In a mixing board, the combination of the base or body portion A, the side molding strips 12 and 14 having cut away portions 18 and 19, a narrow front molding strip 10, the rear molding strip 15, and the turned corner pieces 16 and 17 the moldings being rabbeted or cut away to fit into the rabbeted or cut away portion of the board A, and having the angle between said molding strips and the surface of the board filled in or rounded, to allow the device to be easily cleansed, substantially as described.



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529,707. **COMBINATION-WRENCH.** WILLIAM S. CLAY, Harrisburg, assignor of two-thirds to Miller I. Kast, Mechanicsburg, and David R. Miller, Harrisburg, Pa. Filed Apr. 26, 1893. Serial No. 471,964. (No model.)



*Claim.*—1. In a tool of the character described, the combination with the main or body portion provided at one end with a jaw having recesses adapted to receive different sizes of nuts, of a supplementary jaw adapted to detachably fit within the said recesses, and provided with a tapered recess or opening, the latter being serrated or toothed and adapted to receive different sizes of pipes, as and for the purpose specified.

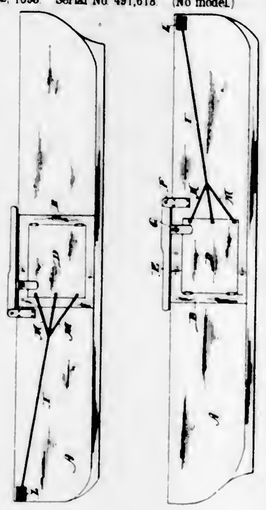
2. In a tool of the character described, the main or body portion provided at one end with a jaw having recesses adapted to receive different sizes of the nuts, and its opposite end being reduced to form cylindrical portions of different diameters, each of said portions being provided with oppositely located notches, for the purposes specified.

3. In a tool of the character described, the combination with the main or body portion provided at one end with a jaw having recesses of different sizes and the opposite bearing shoulders intermediate said recesses or a supplementary jaw adapted to detachably fit within said recesses and provided with opposite bearing shoulders adapted to seat against the shoulders first mentioned, and said supplementary jaw being also provided with a tapered opening or recess, which latter is serrated or toothed and adapted to receive different sizes of pipes, for the purpose specified.

4. In a tool of the character described the combination with the main or body portion provided at one end with a jaw having recesses adapted to receive different sizes of nuts, of a supplementary jaw adapted to detachably fit within said recesses, as and for the purpose specified.

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529,708. **BRAKE FOR VESSELS.** ANDREW B. COMBS, Eureka Springs, Ark., assignor of one-half to James O. Walker, same place. Filed Nov. 22, 1893. Serial No. 491,618. (No model.)

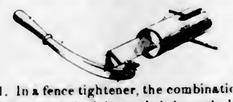




*Claim.*—The combination with a boat, of a rectangular frame secured to the sides of the boat, a plate hinged or pivoted to each of said frames and adapted to lie within the same, a lever pivotally connected to each side of the boat near the upper edge of the same and having a depending portion adapted to engage over the outer face of each plate and confine the latter within its frame, a rope connected to each of the plates and pulleys mounted in the bow of the boat over which pulleys said ropes pass, as and for the purpose specified.

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529,709. **FENCE-WIRE TIGHTENER.** FRANCIS R. CONNER, Buffington, Ky. Filed Feb. 19, 1894. Serial No. 500,651. (No model.)



*Claim.*—1. In a fence tightener, the combination with a post having an upright slot; of a shaft journaled through the post and across the slot and having a notch extending from its rear end inward to the center of the slot, means for locking the shaft against rotation, an angular end at the front of the shaft, a pin projecting radially from one of the angles thereof, and a tool comprising a handle with a ring in one end adapted to pass over said pin, as and for the purpose set forth.

2. In a fence tightener, the combination with a post having an upright slot; of a shaft journaled through the post and across the slot and having a notch extending from its rear end inward to the center of the slot, means for locking the shaft against rotation, a triangular end at the front of the shaft, a pin projecting radially from one of the angles thereof, and a tool having a ring loosely connected with one end thereof and adapted to take over said pin, as and for the purpose set forth.

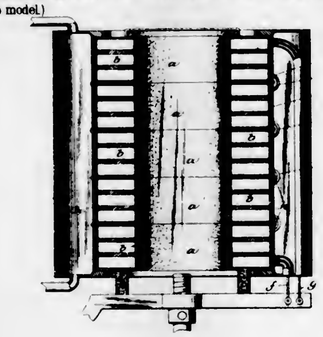
3. In a fence tightener, the combination with a post having an upright slot; of a shaft journaled through the post and across the slot and having a notch extending from its rear end inward to the center of the slot, the other end of the shaft being reduced to form a shoulder and angular in front of said shoulder for the reception of a wrench, a block secured to the face of the post at an angle to a vertical, and a wedge removably inserted between the block and one of the flat faces of the angular portion, as and for the purpose set forth.

4. In a fence tightener, the combination with a post having an upright slot; of a shaft journaled through the post and across the slot and having a notch extending from its rear end inward to the center of the slot, the other end of the shaft being reduced to form a shoulder and angular in front of said shoulder for the reception of a wrench, a block secured to the face of the post and having a notch adjacent said face standing at an angle to a vertical, and a wedge removably inserted in the notch and standing against one of the flat faces of the angular portion and against said shoulder, as and for the purpose set forth.

5. In a fence tightener, the combination with a windlass journaled in and removable longitudinally from a suitable support, reduced at the front face of the support to form a shoulder, and angular in front of said shoulder, a fence wire, and means for connecting it with the windlass; of a block secured to and having a notch adjacent the face of the support and standing at an angle to a vertical, and a wedge removably inserted in said notch and between the block and one flat face of said angular portion and standing against said shoulder, as and for the purpose set forth.

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529,710. **SECTIONAL THERMO-ELECTRIC GENERATOR.** HARRY B. COX, Hartford, Conn. Filed Jan. 31, 1894. Serial No. 498,658. (No model.)



*Claim.*—1. A thermo-electric generator built up of interchangeable sections each section exteriorly coated and complete within itself, as set forth.

2. The thermo-electric generator built up of sections, each section complete in itself, and having a hard permanent coating with electric terminals thereof projecting through the coating, substantially as described.

3. The thermo-electric generator built up of sections, each section complete in itself and covered exteriorly with suitable refractory material.

4. The thermo-electric generator built up of interchangeable sections secured together by a surrounding metal jacket each section being suitably coated and provided with its own metal jacket, the jackets of the various sections being united.

5. As an article of manufacture an interchangeable section of a thermo electric generator complete in itself by having a hard permanent covering.

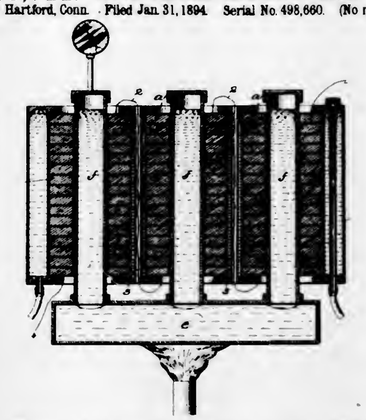
6. As an article of manufacture a section of the thermo-electric generator complete in itself and coated exteriorly with the refractory material and having exterior metal covering on its outer side.

7. The thermo-electric generator built up of interchangeable sections suitably coated and each provided on its exterior with the metal coating, the coatings of the sections being suitably united at their edges.

8. The thermo-electric generator built up of sections each complete in itself and each provided with a covering and the outer metal plate; the plates of the various sections being united at their edges and the insulated electrical connections between the various sections.

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529,711. **THERMO-ELECTRIC GENERATOR.** HARRY B COX, Hartford, Conn. Filed Jan. 31, 1894. Serial No. 498,660. (No model.)



*Claim.*—1. A thermo-electric generator having a confined body of liquid inclosed within its interior and means, substantially as described, for heating said body of liquid, substantially as set forth.

2. A thermo-electric generator having an exterior cooling jacket and an interior liquid body and means for heating said body of liquid.

3. A thermo-electric generator having a surrounding water jacket, a liquid tank beneath the same provided with heating means and having a stand pipe extending upwardly through the center of the electric generator so that the heat stored in said tank will be conveyed to the inner surface of the generator.

4. A series of electric generators suitably coupled together electrically, a single water jacket inclosing said generators to cool the outer surfaces thereof, a liquid tank located beneath the generator provided with the stand pipe extending upwardly through the center thereof, as and for the purpose set forth, and means to heat said tank, substantially as described.

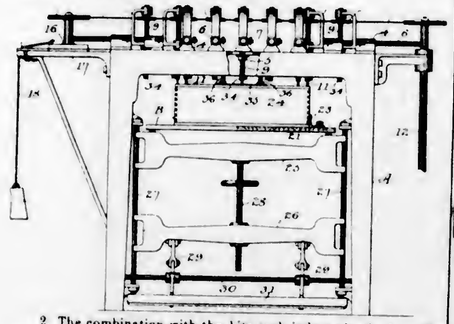
5. A thermo-electric generator having a stationary confined body of liquid within the same to heat the inner face of the pile, substantially as described.

6. A thermo-electric generator having a cooling agency for the cool junctions of the thermo-couples and a confined body of liquid against the heated junctions of the couples, and heating means for said confined body, whereby heat is stored therein as set forth

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529,712. **MULTIPLE BORING-MACHINE.** CHARLES CRISTADORO, St. Paul, Minn. Filed Apr. 30, 1892. Serial No. 431,331. (No model.)

*Claim.*—1. The combination of the bits, each independently, laterally adjustable in all directions, the stock holder adjustable to different sizes of stock, and means for moving one of said parts a predetermined distance toward the other.



2. The combination with the bits each independently, laterally adjustable in all directions, of the table movable to and from the same, substantially as described.

3. The combination of bits each independently, laterally adjustable in all directions, the support adjustably movable to and from said bits, and the laterally adjustable stops upon said support, substantially as described.

4. The combination of bits, each independently, laterally adjustable in all directions, means for operating them simultaneously, and means adjustable to different sizes of stock, for carrying the stock against said bits, substantially as described.

5. The combination of bits, each independently, laterally adjustable, means for simultaneously operating the same, adjustable stock holding devices, and means for driving said bits into said stock to a limited depth, substantially as described.

6. The combination of parallel bits, each independently, laterally adjustable in all directions, common means for simultaneously operating the same, the stock support adjustable to various sizes of stock, means for adjusting the normal distance between said support and said bits, and means for moving one toward and from the other, substantially as described.

7. The combination of the stock support, devices carried thereby for holding different sizes of stock, the gang of bits independently, universally adjustable in a horizontal plane, means for driving them simultaneously, means for bringing the stock and bits together, and means for limiting the depth of cut of the bits, substantially as described.

8. In a device of the class described, the combination with the rectangular frame, of the horizontal, vertically movable table arranged therein, the laterally adjustable stops upon the surface of said table, the bit chucks mounted in bearings above said table, means for laterally adjusting the position of each of the same independently in any direction, and means for simultaneously rotating the same, substantially as described.

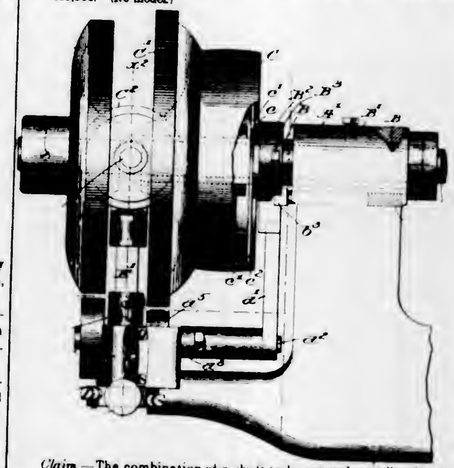
9. The combination with a suitable support, of the horizontal, vertically movable table, the series of vertical bits supported above said table, means for laterally adjusting the position of each of said bits in any direction, and means for simultaneously rotating the same, substantially as described.

10. In a device of the class described, the combination with the horizontal, rectangular frame, of the guides parallel with the respective sides thereof, the horizontal vertically movable table arranged within said frame, the laterally adjustable stops upon said table, the clamping blocks independently adjustable along said guides, the bit carrying arm adjustable in each of said blocks, the bit chucks carried by said arms and means for simultaneously rotating said chucks, substantially as described.

11. The combination with the frame, having a horizontal, rectangular bed, of the guides parallel with the sides of said bed, the table arranged centrally in said bed and movable upon vertical guides, the treadle levers for operating said table, the laterally adjustable stops upon said table, the series of independently laterally adjustable, vertical bits above said table, and means for simultaneously operating the same, substantially as described.

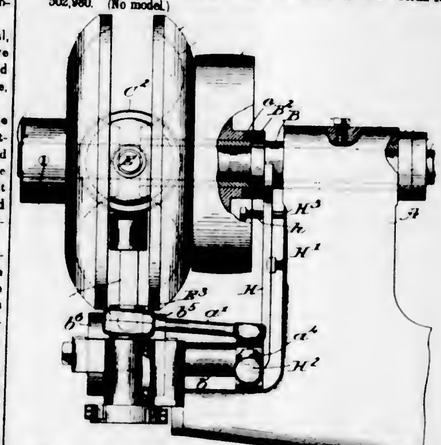
12. In a device of the class described, the combination with the rectangular, horizontal frame, the guides upon the sides of said frame and parallel therewith, the horizontal table vertically movable within said frame, the clamps independently adjustable along said guides, the arm adjustably secured in each of said clamps at right angles with said guides, the bit chucks mounted in bearings upon the inner ends of said arms, the sheaves upon the spindles of said chucks, the belt running upon said sheaves and provided with a belt tightener, and a driving pulley therefor connected to a suitable source of power, substantially as described

529,713. SPEED-CHANGING AND REVERSING MECHANISM. HENRY H. CUMMINGS, Malden, Mass. Filed Oct. 30, 1893. Serial No. 489,508. (No model.)



*Claim.*—The combination of a shaft to be rotated, a pulley fixed thereon and having a concave groove in one side, a sleeve surrounding said shaft loosely, a friction pulley having a concave face adjacent to the grooved face of the fixed pulley mounted loosely upon said sleeve and adapted to be rotated continuously, a friction wheel interposed between said pulleys and within their grooves, means to move said friction wheel within said grooves toward and from the axes of the pulleys to change speed, a pressure collar surrounding said sleeve and movable toward the loose pulley to move said loose pulley toward the fixed pulley and thereby cause the pinching of the friction wheel by and between the loose and fixed pulleys to communicate rotary motion to said fixed pulley and its shaft, an adjustable and unyielding abutment against which the pressure collar is moved, reversing friction wheels, and means to bring such friction wheels into contact with the peripheries of the pulleys simultaneously with the releasing of the pressure collar and vice versa, substantially as described.

529,714. SPEED-CHANGING AND REVERSING MECHANISM. HENRY H CUMMINGS, Malden, Mass. Filed Mar. 9, 1894. Serial No. 502,980. (No model.)



*Claim.*—1 The combination of a shaft to be rotated, a pulley fixed thereon and having a concaved groove at one side; a friction

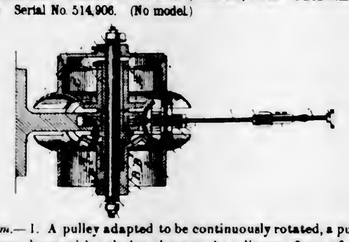


pulley loose with relation to said shaft and having a concaved face adjacent to the grooved face of the fixed pulley, and adapted to be rotated continuously, a friction wheel interposed between said friction pulleys; a rocking support for said friction wheel, whereby diametrically opposite points of the periphery of said friction wheel may be made to contact with portions of the said grooved pulleys simultaneously at different distances from their centers of rotation; a device to force the grooved pulley loose with relation to said shaft against said friction wheel; and a lever adapted to act on said device, and connections between said lever and said rocking support for the said friction wheel, whereby by movement of one and the same lever the grooved pulley loose with relation to said shaft may be forced against the said friction wheel, and at the same time the said rocker be turned to gain the desired speed for the shaft, substantially as described.

2. The combination of a shaft, a pulley fixed thereon and having a concaved groove in one face; a pulley loose with relation to said shaft and adapted to be rotated continuously, said loose pulley having a concaved groove in its face adjacent the said fixed pulley; a friction wheel interposed between said grooved pulleys and means to pinch the said friction wheel between the said pulleys to cause the said friction wheel to be rotated by one of said pulleys, and thereby to rotate the other of said pulleys, and also to render the said friction wheel inactive as the driver, frictional reversing devices and means to move them into and out of engagement with the said pulleys to effect the reversal of movement of said shaft when the interposed friction wheel is inactive as the driver for the said shaft, substantially as described.

3. The shaft D, the pulley D' fixed thereon and grooved at its face; the pulley C loose with relation to said shaft and also grooved at its face; a friction wheel located between the grooved faces of said pulleys and adapted to be pinched between them to enable one pulley to rotate the other and its connected shaft; a rocker to support said friction wheel; a device to force the gronved pulley loose with relation to said shaft toward and against the periphery of said friction wheel; a lever to act against said device; a link connecting said lever and said rocker; and a yoke having reversing wheels and also under the control of the same lever, whereby by one and the same lever, according to its direction of movement, the loose pulley may be made to drive the fast pulley at any desired speed, or to reverse the said shaft according to the desire of the operator, substantially as described.

529,715. SPEED-CHANGING, REVERSING, AND STOPPING MECHANISM. HENRY H. CUMMINGS, Malden, Mass. Filed June 18, 1894. Serial No. 514,906. (No model.)



*Claim.*—1. A pulley adapted to be continuously rotated, a pulley to be driven, loose with relation thereto, the adjacent faces of said pulleys having annular grooves therein; a friction wheel interposed between the grooved faces of said pulleys, and a rocking support for said wheel, combined with means connected to one of said pulleys to cause positive movement thereof toward the other pulley to effect the eogagement of the friction wheel and both the grooved pulley faces, to thereby rotate the loose pulley, or to positively withdraw said connected pulley from such engagement with the friction wheel to stop the rotation of the loose pulley, and a device independent of the position or of the means for actuating said pulleys, to turn the rocking support to attain the desired relative speed of the pulleys, substantially as described.

2. A pulley adapted to be continuously rotated, a pulley to be driven, loose with relation thereto, the adjacent faces of said pulleys having annular grooves therein, a rocking support, and a friction wheel mounted thereon in a yielding manner between the grooved faces of said pulleys, combined with means to cause positive relative lateral movement of the pulleys and thereby bring the friction wheel into joint engagement with the grooved faces of said pulleys, to rotate the loose one, reverse relative movement of the pulleys by said means permitting the yielding of and thereby withdrawing the friction wheel from said joint engagement and stopping the rotation of the loose pulley, substantially as described.

3. A pulley adapted to be continuously rotated, a pulley to be driven, loose with relation thereto, and axially in alignment therewith, said pulleys being relatively movable laterally and having annular grooves in their opposite adjacent faces, a rocking support having fixed bearings, and a friction wheel mounted thereon between the grooved faces of the said pulleys, combined with means to move said pulleys relatively to bring their grooved faces into engagement with opposite portions of the friction wheel, whereby the loose pulley is rotated by but oppositely to the continuously rotated pulley, a device to turn the rocking support and thereby alter the angle of the friction wheel to attain the desired relative speed of the pulleys, and a common actuator, to operate either the support turning device or the means for relatively moving the pulleys, substantially as described.

4. A pulley adapted to be continuously rotated, a pulley to be driven, loose with relation thereto, and axially in alignment therewith, the adjacent opposite faces having annular grooves therein, a series of rocking supports, a friction wheel mounted in each support and interposed between the grooved faces of the pulleys, and connections between and to rock said support in unison, combined with means independent of either of said pulleys to actuate said connections and turn the rocking supports to attain the desired relative speed of the pulleys, and independent mechanism connected to one of said pulleys to cause positive movement thereof toward or from the other pulley, and thereby engagement or disengagement of the friction wheels and the grooved faces of the pulleys, to thereby rotate, or to stop the rotation of the loose pulley, substantially as described

5. A pulley adapted to be continuously rotated, a pulley loose with relation thereto, and to be driven in either direction, the adjacent opposite faces of said pulleys having annular grooves therein, a clutch member concentric to and rotatable with the loose pulley and adapted to be directly engaged at times with the continuously rotating pulley, to thereby rotate the loose pulley at the same speed and in the same direction, and a friction wheel interposed between the grooved faces of the pulleys, combined with means to cause relative movement of the clutch member and continuously rotated pulley, and also to cause engagement or disengagement of the friction wheel and grooved pulley faces, to thereby rotate the loose pulley oppositely the continuously rotated pulley, or to stop the said loose pulley, as desired, substantially as described.

529,716. SPOKE-SOCKET. HENRY J. DAVIS and JOHN C. MCDANIEL, Iron City, Ala. Filed Feb. 7, 1894. Serial No. 499,372. (No model.)



*Claim.*—A device for repairing vehicle wheels, consisting of a spoke-socket or thimble open at one end to receive the tenon of a spoke and having its other end extending inwardly to engage a small button, together with a larger button arranged below the smaller button and within the socket or thimble, a flat oblong plate arranged above the small button and the inwardly extending portion of the thimble, and means for securing the thimble, buttons and oblong plate rigidly together; the said oblong plate having pointed lateral projections or extensions at either side thereof on opposite sides of the thimble or socket, said plate being of a width between said lateral extensions corresponding with the width of the felly about the tenon socket, whereby it is adapted to afford an extended bearing or seat for the felly without rounding off or cutting away the latter at this point, while said lateral extensions are turned upward and driven into the sides of the felly, substantially as described.

529,717. BICYCLE. PERCY J. DRAGON, Toronto, Canada. Filed Apr. 14, 1894. Serial No. 507,538. (No model.)

*Claim.*—1. In a bicycle, in combination with the rods *e* and lower reach G connected by the spindle *g* the upright seat standard *h'* pivoted to the end of the spindle and the means connected to the seat standard for propelling the bicycle, the springs I having one of their ends secured to the under side of the rods *e* back of the seat standard, curved around beneath and in front of said seat standard and projections on the seat standard for engaging the free ends of said springs whereby the said standard is pressed forward, substantially as described.

2. In a bicycle, in combination with the front standard C, the upper reach E, secured thereto, and extending rearwardly and having forked ends connected to the rear axle, the bottom reach G secured to the standard C at one end, the rods *e* connected to the reach G, the spindle *g* journaled at the junction of the rods and reach, the seat standard *h'* having its lower portion formed of the rods *h* pivoted on the spindle *g*, said rods straddling the frame and part of the rear wheel.

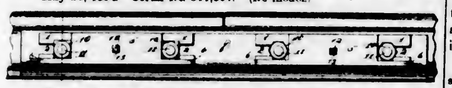
and the pitman K pivoted to said standard above the pivotal point of the standard and extending at right angles thereto, and driving connections between the pitman and axle to propel the bicycle when the standard is rocked substantially as described.



3. In combination with the front standard having its lower portion forked, of the foot rests secured adjustably to said forked portion by brackets having openings therein for the admission of a set screw, said foot rests being pivoted at their center to an arm extending at right angles to said branches, substantially as described.

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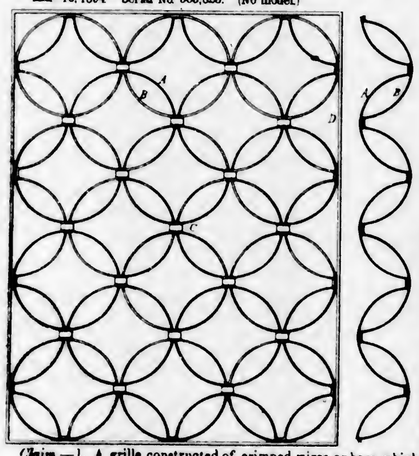
529,718. NUT-LOCK. JACOB DITTMANN, St. Louis, Mo. Filed May 21, 1894. Serial No. 511,897. (No model.)



*Claim.*—In a nut lock, the combination of a rectangular base-plate having longitudinal slots therein adapted to engage around the bolts on which the nuts are located, a locking-plate 5 rectangular in form and provided with the extending portions 6 on the lower corners of the body portion, the outer edges of said body portion and the upper edges of said extending portions adapted to engage the inner and under sides of the nuts that are positioned upon the bolts, and a locking-bolt 12 passing through the plate 5, the base-plate, the fish-plates and the web of the rail, thus rigidly securing the plate 5 and the base-plate in the desired positions.

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529,719. GRILLE. BETTE E. J. ELLS, New York, N. Y. Filed Mar. 16, 1894. Serial No. 503,823. (No model.)



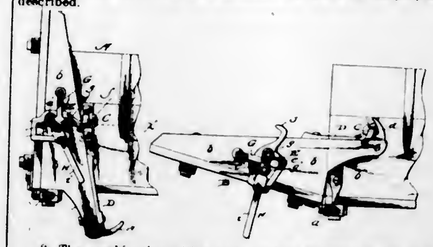
*Claim.*—1. A grille constructed of crimped wires or bars which interlock in pairs, substantially as before set forth.

2. A grille composed of assembled pairs of interlocking crimped wires or bars fastened together at the touching points substantially as before set forth.

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529,720. LATCH FOR END-GATES. JOHN C. ELGIN, Amboy, Ill., administrator of Samuel T. Elgin, deceased. Filed Jan. 30, 1894. Serial No. 498,503. (No model.)

*Claim.*—1. The combination with a body and an end gate, of a keeper fixed to said body, a latch pivoted to the end gate and having the slotted heel, and a lever having its inner end arranged to engage with the slotted heel of the latch, substantially as and for the purposes described.



2. The combination with a body, and an end gate or board, of the support fixed to the gate or board and having one end held in place by the pivot bolts, $g$, $g'$, the latch pivoted on one of said bolts and having the slotted heel, and a lever pivoted on the other bolt and fitted to engage with the slotted heel of the latch, substantially as and for the purposes described.

3. A pivoted latch having a slotted heel on one side of its pivot, a support for the bolts, $g$, $g'$ on one of which the latch is pivoted, and a lever fitted in the slotted heel of the latch and fulcrumed on the other bolt, substantially as and for the purposes described.

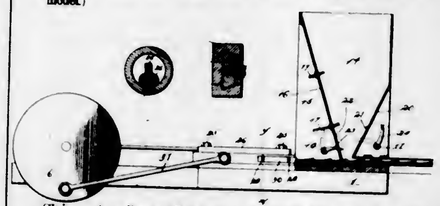
4. A pivoted latch having the slotted heel, combined with a lever fulcrumed within the slotted heel of said latch and constructed to ride against the heel to turn the latch on its pivot and to lock or confine it in place, substantially as and for the purposes described.

5. The combination with a keeper, of a pivoted latch having a slotted heel, and a lever fulcrumed within said heel of the latch and having the lug or shoulder arranged to bear against the latch to lock it in place when the lever is at right angles to the longer axis of the latch, substantially as and for the purposes described.

6. The combination with a keeper, of the support having the spaced pivotal bolts, a latch pivoted on one of said bolts and provided with a hook or beak at one end and with the slotted heel at the opposite end, and a lever pivoted on the other bolt within the slotted heel of the latch and formed with the shoulder, $h'$, which rides against the edges of said latch-heel, substantially as and for the purposes described.

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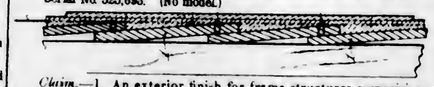
529,721. HORSE-COLLAR-STUFFING MACHINE. JOHN GRAUER, St. Louis, Mo. Filed June 12, 1894. Serial No. 514,353. (No model.)



*Claim.*—A collar stuffing machine, comprising a base, driving mechanism mounted thereon, a driving rod operated by said driving mechanism, a hopper, feed mechanism mounted in said hopper and adapted to be operated by said driving rod, a stuffing tube provided with a longitudinal slit or opening, and a stuffing rod provided on its opposite sides with longitudinal beads or strengthening ribs, and on its under side with a rib adapted to reciprocate in the slot in the stuffing tube, thereby acting as a guide for the stuffing rod.

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529,722. EXTERIOR FINISH FOR FRAME STRUCTURES. THEOPHILE GIROUARD, St. Catharine's, Canada. Filed Oct. 12, 1894. Serial No. 525,693. (No model.)



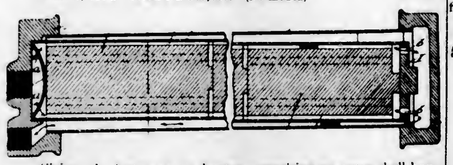
*Claim.*—1. An exterior finish for frame structures comprising a wire netting secured to the overlapping clap-boards or shingles forming the exterior of the structure, and an outer layer of plastic material applied to said netting and forced through the meshes thereof, substantially as described.

2. An exterior finish for frame structures consisting of a wire netting secured to the overlapping clap-boards or shingles forming the exterior of the structure, an outer layer of plastic material applied to said netting and forced through the meshes thereof, and a final coating of colored plastic material applied to said plastic layer and scored in imitation of brick or tile work, substantially as described.



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529,723. CAR-HEATER. ROBERT H. GOLD, Chicago, Ill. Filed June 1, 1894. Serial No. 513,161. (No model.)



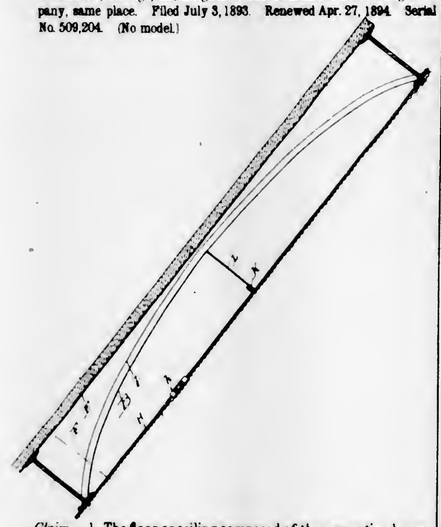
*Claim.*—1. A storage car heater comprising an outer shell having a steam inlet and an outlet, an internal storage tube and a filling of clay or terra cotta for said internal tube, substantially as and for the purpose described.

2. A storage car heater comprising an outer shell or casing having a steam inlet and an outlet, an internal storage tube, a filling of clay or terra cotta for said internal tube, said filling being exposed to the action of the steam let into said heater, substantially as and for the purpose described.

3. In a storage car heater, the combination with an outer shell or casing, having a steam inlet and an outlet, an internal storage tube of less dimensions than said outer shell, the space between which tube and shell constitutes a steam chamber, a filling of clay or terra cotta for said internal tube, said tube and filling having openings and passages therein whereby the steam let into said heater comes in contact with said filling, substantially as described

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529,724. CONSTRUCTION OF FLOORS AND CEILINGS. JOHN F. GOLDING, Chicago, Ill., assignor to the Standard Fire Proofing Company, same place. Filed July 3, 1893. Renewed Apr. 27, 1894. Serial No. 509,204. (No model.)



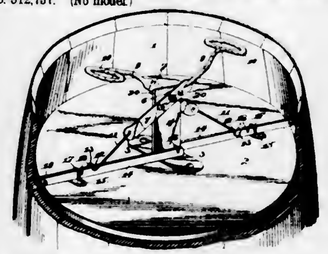
*Claim.*—1. The floor or ceiling composed of the supporting beams A, a series of narrow arches each consisting of a curved metal beam resting at its ends upon the flanges of beams A, and a superimposed body of concrete, concrete spans connecting the arches and covering the spaces between them, and a binding web of open work metal consisting of continuous sheets extending across the series of arches and embedded in the concrete of the arches and spans, substantially as specified.

2. The floor or ceiling composed of the supporting beams A, a series of narrow arches each consisting of a curved channel iron resting at its ends upon the flanges of beams A, and a superimposed body of concrete, concrete spans connecting the arches and covering the spaces between them, and a binding web of open work metal consisting of continuous sheets extending across the series of arches and embedded in the concrete of the arches and spans substantially as specified.

3. The improvement in the method of building the concrete floors and ceilings herein described, consisting in first positioning bent metal bars adapted to form the under portions of the arches in the completed structure, then temporarily inclosing the arches by means of side planking set edgewise, then temporarily flooring the intervening spaces by centering boards supported upon the top edges of said arch inclosing planking, and then completing the structure by laying the binding sheets of open work metal across the arches and spans and filling in the concrete, substantially as specified.

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529,725. DEVICE FOR SECURING BARREL-HEADS IN PLACE. ORA P. GORDON, Hopkins Station, Mich. Filed May 28, 1894. Serial No. 512,737. (No model.)



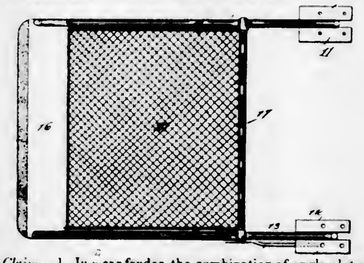
*Claim.*—1. The combination with a head or cover arranged therein, of a post or standard secured to the head or cover, spur rods slidingly mounted on the head or cover and arranged to engage a barrel at opposite sides thereof, the oppositely disposed levers arranged at an inclination and crossing each other and fulcrumed on the post or standard, and the link rods connecting the levers with the spur rods and pivotally attached to both parts, substantially as described.

2. The combination with a head or cover, of a standard rising centrally therefrom, spur rods slidingly mounted on the head or cover and provided with notches, the oppositely disposed levers crossing each other and fulcrumed on the standard, and the link rods pivotally attached to the lower ends of the levers and detachably engaging the notches of the spur rods, substantially as described.

3. The combination with a head or cover, of a post rising therefrom, spur rods slidingly mounted on the head or cover, the oppositely disposed inclined levers fulcrumed on the post, the link rods extending from the lower ends of the levers to the spur rods and pivotally connected to them, and stops arranged on the post and limiting the swing of the levers and adapted to hold the latter and the link rods in alignment to form straight braces for locking the spur rods, substantially as described.

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529,726. STREET-CAR FENDER. HENRY GRIESEL, St. Louis, Mo., assignor of two-thirds to Charles L. Hood and Charles B. Tomlinson, same place. Filed Apr. 4, 1894. Serial No. 506,239. (No model.)



*Claim.*—1. In a car fender, the combination of angle-plates fixed to, and extending downwardly from, a car platform, angle-arms fulcrumed in said angle-plates, an apron hinged to the forward ends of said angle arms, yielding pressure devices interposed between said angle-arms and apron, a ratchet-bar pivotally connected to said apron and adapted for engagement with one of said angle-plates, and a chain fixed to said apron and adapted for attachment to one of the remaining said angle-plates.

2. In a device of the class described, a plurality of angle-plates arranged in pairs and fixed to, and depending from, a car platform, angle-arms fulcrumed within the respective pairs of angle-plates, an apron hinged upon the forward end portions of the angle-arms, leaf springs interposed between the angle-arms and the apron, a ratchet-bar fulcrumed on the apron and extended through a slot in one of said angle plates and adapted for engagement with said angle-plate, and

a chain fixed to one of the remaining angle-plates and adapted for detachable connection with the said apron.

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529,727. VULCANIZABLE COMPOUND. WILLIAM GRISCOM, Jr., Bound Brook, N. J., assignor to the Standard Paint Company, New York, N. Y. Filed Mar. 11, 1891. Serial No. 384,643. (No specimens.)

*Claim.*—1. A vulcanizable compound composed of animal fat candle tar and sulphur, substantially as described.

2. An elastic compound consisting of animal fat candle tar and sulphur hardened by vulcanization substantially as described.

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529,728. VULCANIZABLE COMPOUND. WILLIAM GRISCOM, Jr., Bound Brook, N. J., assignor to the Standard Paint Company, New York, N. Y. Filed Mar. 11, 1891. Serial No. 384,644. (No specimens.)

*Claim.*—1. A vulcanizable compound, substantially as hereinbefore described, consisting of such plastic matter as the residual products from the distillation of petroleum, and animal fat candle tar, in proportions which will secure desired strength, and elasticity in the compound after vulcanization, and sulphur in such proportions as will insure vulcanization.

2. The vulcanizable compound hereinbefore described, composed of substantially equal parts of animal fat candle tar, and a residual product from petroleum distillation, and sulphur, in proportions of from two to eight per cent. of the mass.

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529,729. PAINTING COMPOUND. WILLIAM GRISCOM, Jr., Bound Brook, N. J., assignor to the Standard Paint Company, New York, N. Y. Filed Mar. 11, 1891. Serial No. 384,648. (No specimens.)

*Claim.*—1. A painting compound, composed of an elastic vulcanized compound of animal fat candle tar and sulphur, and a suitable solvent or vehicle.

2. In a painting compound, elastic vulcanized animal fat candle tar, as an essential element, combined with such plastic matter as the residual products from petroleum distillation, and a suitable solvent or vehicle.

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529,730. HARD VULCANIZED COMPOUND. WILLIAM GRISCOM, Jr., Bound Brook, N. J., assignor to the Standard Paint Company, New York, N. Y. Filed Mar. 12, 1891. Serial No. 384,825. (No specimens.)

*Claim.*—1. A hard vulcanized compound, containing candle tar as a vulcanizable adhesive element, sulphur, and finely divided solid matter, substantially as and for the purposes specified.

2. A hard vulcanized compound, composed of candle tar, sulphur, petroleum residuum, and finely divided solid matter substantially as described.

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529,731. BILLIARD-CUE. GEORG GSCHWENDTNER, Cincinnati, Ohio. Filed Dec. 26, 1893. Serial No. 494,662. (No model.)



*Claim.*—1. An improved billiard-cue, having a loose but closely fitting sleeve on its front or guiding part adjustable thereon, adapted to rest on the hand so as to form a support for the cue which slides on and through this sleeve during manipulation, and a tip at the front and projecting all around slightly beyond the cue to prevent the sleeve from becoming disengaged.

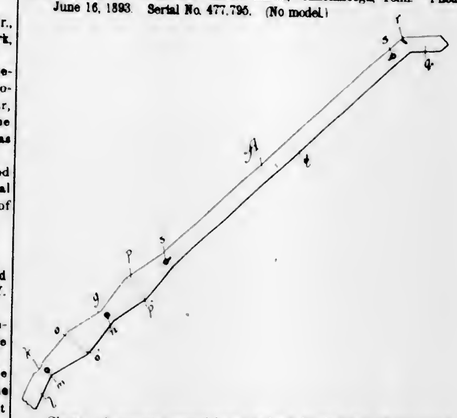
2. An improved billiard cue, consisting of two parts, one, a thicker one, whereby it is held, and a thinner one, or guiding part rigidly secured to the first or thicker part and of even thickness throughout its length, a loose but closely fitting sleeve adjustably secured to such guiding part which latter slides on and through it during manipulation and a rubber ring 14 secured near the inner end of the front part of the cue against and partly over which, one end of the sleeve may be pressed to hold the same back when not in use.

3. An improved billiard cue, having a loose but closely fitting sleeve confined on its front-or guiding part, which latter is rigidly secured to the cue, said sleeve being of a length to cover the hand and adjustable on the front-part of the cue to any position which the supporting hand may assume for a particular thrust.

4. An improved billiard cue, the front part of which from the tip back is of uniform thickness and rigidly secured to the cue and provided with a loose but closely fitting sleeve, intended to rest on or between the fingers of the supporting hand, while with the other hand the cue is thrust through said sleeve.

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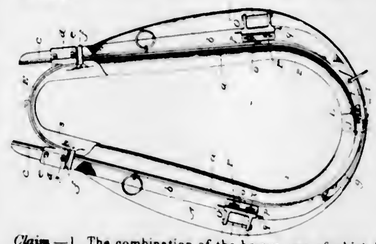
529,732. CRAVAT. ALBIN HAJOS, Chattanooga, Tenn. Filed June 16, 1893. Serial No. 477,795. (No model.)



*Claim.*—A cravat, comprising a strip A having the plain part *t* and one end formed with the double tapers *o* and *p*, deflected portion *l* and cut-away part *k* and the opposite end with the deflected portion *q* and slit *r*, perforations suitably located therein, in combination with a retaining button adapted to enter the perforations, as and for the purposes set forth.

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529,733. COMBINED HORSE-COLLAR AND HAMES. GEORGE C. HALE, Kansas City, Mo. Filed Nov. 2, 1893. Serial No. 489,854. (No model.)



*Claim.*—1. The combination of the hames, one of which is constructed with a socket having a flared mouth, and the other having a spring locking arm adapted to enter the socket, the adjustable keeper fitted to said socket in the path of the locking arm, and a clamp for rigidly holding the keeper at the desired point of adjustment on said socket, substantially as described.

2. The combination with the hames, one of which is provided with a socket, open at one side thereof, and the other having a yielding locking arm, of a keeper fitted to the open side of the socket and adjustable toward or from the mouth thereof, and a clamp carried by the keeper to hold the latter in a fixed position at the desired point of adjustment on the socket, substantially as described.

3. The combination with the hames, and a spring locking arm on one of said hames, of the open socket H on the other hame, and a keeper I clamped to the open side of the socket and adjustable thereon toward or from its open flaring mouth, substantially as and for the purposes described.

4. The combination with the hames, and a spring locking arm on one of the hames, of the socket on the other hame provided with a flaring mouth and an opening in the side thereof, the keeper I fitted over the open side of the socket, and a clamp for holding the keeper at the desired point of adjustment on the socket, substantially as and for the purposes described



5. The combination with a collar and hames, of a locking arm, a socket, an adjustable keeper clamped to said socket, and a cap adjustable with the keeper, substantially as and for the purposes described.

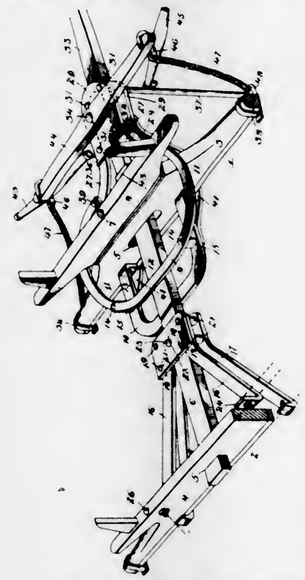
6. The socket having a flared mouth and open side, a keeper fitted over said open side of, and connected to, the socket by interlocking flanges, and a fastening device, combined with the hames, a collar, and a spring locking arm, substantially as and for the purposes described.

7. The combination with a collar and hames, of a spring locking arm, a socket, an adjustable keeper clamped or fixed to said socket, and an adjustable cap fitted on one end of the collar and connected to the keeper to be adjustable therewith, substantially as and for the purposes described.

8. The combination with a collar and hames, of a spring locking arm on one of the hames, a socket on the other hame, a keeper clamped to the socket and adjustable thereon toward or from the mouth of the same, and a cap having the opening and fastened to the keeper to be adjustable therewith, substantially as and for the purposes described.

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529,734. WAGON RUNNING-GEAR. EDWARD E. HENDERSON, Sanford, Fla. Filed Mar. 19, 1894. Serial No. 504,274. (No model.)



*Claim.*—1. In a vehicle running gear, the combination with the front axle having an opening therein, and the reach bar pivoted at its front end in said opening, of a draft or tongue supporting frame extended from the front side of the front axle, parallel upper and lower reach supporting frames extended from the inner side of the front axle, the upper of said frames being connected to the lower frame at a point in from the outer end of the latter by the bolts 14 and being provided with integral opposite brace ends extended over opposite top portions of and to the front of the front axle and bolted to the top of said draft or tongue supporting frame, and opposite under brace irons arranged under the front axle and connected at their extremities respectively to the lower of said reach supporting frames by the bolts 14 and to the draft or tongue supporting frame, substantially as set forth.

2. In a vehicle running gear, the combination with the axle and the reach bar; of the draft or tongue supporting frame extended from the front side of the axle, upper and lower parallel U-shaped reach supporting frames extended from the inner side of the axle, and the upper of which frames is provided with opposite integral curved or bowed brace ends curved over opposite top portions of the axle and bolted at their extremities to the draft or tongue supporting frame, spacing bolts connecting the upper and lower reach supporting frames at a point in from the outer end of the lower frame, and opposite brace irons or straps bolted at intermediate points to the under side of the axle and having opposite inclined portions connected respectively to the under side of the draft or tongue supporting frame and to the lower of said rear supporting frames, substantially as set forth.

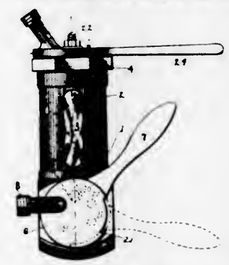
3. In a vehicle running gear, the combination with the front axle, of the upper and lower parallel V-shaped tongue or draft supporting frame having inner flanged ends bolted to the front side of said axle, spacing connections between the two frames, a perforated top plate bolted to the outer end of the upper one of said frames, a transverse socket bar connected at its extremities to the opposite side of the lower of said frames in front of the axle and having a central upwardly disposed socket loop, the draft tongue adapted to be arranged between said frames and received at its inner end in the socket of said socket bar, and a removable pin adapted to engage the perforation of said top plate and a similar perforation in the draft tongue, substantially as set forth.

4. In a vehicle running gear, the combination with a front axle, of the skeleton draft or tongue supporting frame extended from the front side of said axle, the opposite inclined brace rods connected at their outer ends to the outer end of said frame and at their inner ends connected to the axle near its opposite ends and provided with hooks at such inner ends, the double-tree pivotally supported on the outer end of said draft or tongue supporting frame and having hooks at its ends, the limiting chains adapted to engage the hooks of the double tree and those of the brace rods, and the tongue removably secured at one end in said draft or tongue supporting frame, substantially as set forth.

5. In a vehicle running gear, the combination with the axle; of a pair of parallel connected horizontal V-shaped reach supporting frames, the upper of which frames is provided at its inner ends with flanges bolted to one side of the axle, and the lower of which frames is provided with flanged ends bolted to the under side of the axle, substantially as set forth.

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529,735. SIRUP-CUP FOR BOTTLERS. GEORGE HOUSE, Sr., Rochester, N. Y. Filed Sept. 21, 1894. Serial No. 523,722. (No model.)



*Claim.*—1. In a siruping device, the combination with a chamber or receptacle having a sirup inlet and outlet, and a liquid inlet and vent orifice, of a valve for simultaneously closing the vent and opening the liquid inlet and vice versa, and an independent valve for simultaneously opening the sirup inlet and closing the outlet and vice versa, substantially as described.

2. In a siruping device, the combination with a chamber or receptacle having a sirup inlet and outlet, and a liquid inlet and vent orifice, of a valve for simultaneously closing the vent opening and opening the liquid inlet and vice versa, an independent valve for simultaneously opening the sirup inlet and closing the outlet and vice versa, and a check valve opening inwardly in the vent orifice, substantially as described.

3. In a siruping device, the combination with a transparent chamber or receptacle having a sirup inlet and outlet at one end and a liquid inlet and vent opening at the other, of a valve for simultaneously closing the vent and opening the liquid inlet, and vice versa, and an independent valve for simultaneously opening the sirup inlet and vice versa, and also capable of closing both said sirup inlet and outlet, substantially as described.

4. In a siruping device, the combination with the body having the sirup inlet and outlet, and a single valve for controlling them, of a transparent cylinder, a cap engaging the body and securing the cylinder in place having liquid inlet and vent apertures and the valve mounted on said cap controlling both said apertures, substantially as described.

5. In a siruping device, the combination with the chamber or receptacle having the inlet and outlet passages therein, and the exit passage 20, of the valve 6 having the pipe therein, and the ports 9 and 10 and 11, the latter two being connected by a passage, the ports 28 and 29 leading to the chamber, the check valve 30 in the latter, and the valve 23 having the pipe 25, and the port 26, substantially as described.

6. The combination with the body and the glass cylinder therein forming a receptacle, of the cap secured to the body and confining the cylinder, having the central extension, and the ports or apertures 28 and 29, of the valve 23 rotatable on the extension of the cap, and having the pipe 25 and the aperture 26, substantially as described.

529,736. PNEUMATIC TIRE. EDWIN J. JENNER, Chicago, Ill. Filed Oct. 31, 1891. Serial No. 410,491. (No model.)

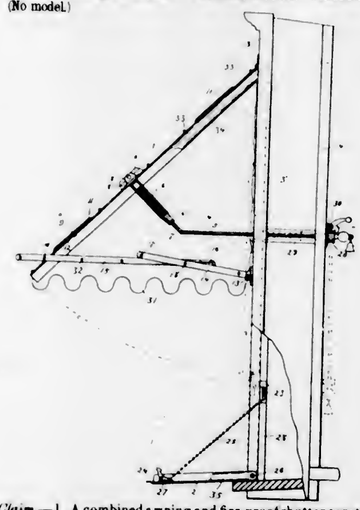


*Claim.*—1. The combination in a pneumatic tire, of an air-tube, an air-tube cover attached to the wheel-rim, and a protecting cover surrounding the air-tube and its covering and having embedded therein a series of overlapping transverse strips of steel or other resistant material, substantially as described.

2. The combination in a pneumatic tire, of a series of transverse overlapping strips of steel or like material, embedded in the tire covering, substantially as described.

3. The combination in a pneumatic tire, of a series of transverse overlapping strips of steel, or like material, embedded in the outer covering, said strips being connected by links surrounding their overlapping edges, substantially as described.

529,737. COMBINED AWNING AND FIRE AND BURGLAR PROOF SHUTTER. WILLIAM LASH, Avilla, Ind., assignor of one-half to Dominic Duehmig, same place. Filed Aug. 31, 1894. Serial No. 521,796. (No model.)

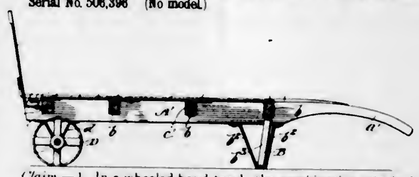


*Claim.*—1. A combined awning and fire-proof shutter constructed in two sections pivotally mounted on the window frame as shown, the upper section having the operating rods 5 which pass through the said frame and are secured to the said shutter by the rod 7 and the buckles 6, having their outer ends rigidly fixed on the pivoted cross rod 8, the said rods having upon their inner ends suitable knobs 20 adapted for engagement with proper locking latches 21, and having the perforated pivotally connected and upwardly folding awning rods 14 and 15 for the side curtains 31, and the lower pivoted section 2 having operating chains 25 as shown and the locking latches 24, all substantially as described.

2. A combined awning and fire-proof shutter constructed in two sections, the upper section being pivotally mounted on the window frame, as shown, having the operating rods 5 passing through the said frame 3 and being secured to the shutter section 1 by the rods 7 and the buckles 6 which have their outer ends rigidly fixed on the pivoted cross-rod 8, the said rods having upon their inner ends the knobs 20, adapted for engagement with proper locking latches 21, and the lower slidable section 2 adapted to be lowered when the shutter is closed, all substantially as described.

3. In combination with a window frame, a combined awning and fire proof shutter, in two sections, hinged or pivoted on the window frame, the upper section 1 having the operating rods 5 which pass through the said frame and are secured to the said shutter section by the rods 7 and the adjusting buckles 6, having their outer ends rigidly fixed on the pivoted cross rod 8, the said rods 5 having upon their inner ends the knobs 20 adapted for a locking engagement with proper locking latches 21, and having the upwardly folding awning rods 14 and 15 for the side curtains 31, and the lower pivoted section 2 having operating chains 25 and locking latches 24, for the purpose described, all substantially as described.

529,738. HAND-TRUCK. CHARLES LEPAGE, Duluth, Minn., assignor of one-half to Charles Blais, Superior, Wis. Filed Apr. 5, 1894. Serial No. 506,396. (No model.)



*Claim.*—1. In a wheeled hand truck, the combination of a body portion formed at its rear end with handles and provided at its forward end with stationary nose, and having an open space between the nose and the forward cross beam of the truck, a rod secured at the forward end of the truck and below its top surface, forward of the wheels and in rear of the said nose, an auxiliary apron formed with an angular horizontal extension and pivoted to the said rod, and a right angular shaped spring catch having a beveled nose, one end of the catch being secured to one of the side beams of the truck, and its beveled end passed through a transverse passage formed therein and extending slightly outside of the inner face of the said side beam, whereby the apron is adapted to be automatically locked when lowered and to be automatically released in the act of raising the same, substantially as described.

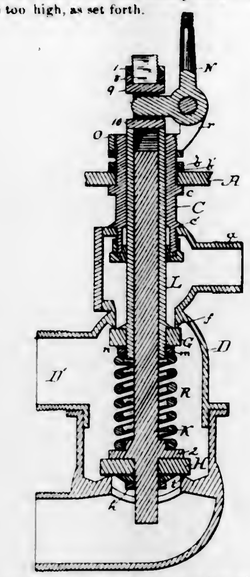
2. In a wheeled hand truck, the combination of a body portion formed at its rear end with handles and at its forward end with a stationary nose, and having an open space between the nose and the forward cross beam of the truck, a rod secured at the forward end of the truck below its top surface and in rear of the said nose and extending entirely across the truck, an auxiliary apron formed of vertical bars and horizontal cross bars, and having an angular horizontal extension and pivoted to the said rod at several points along its length, and a right angular shaped spring catch having a beveled nose, being secured by one of its ends to one of the side beams of the truck while its beveled end passes through a transverse passage formed in said beam and extends slightly outward beyond the inner face of the same, whereby the apron is adapted to be automatically locked when lowered and to be automatically released in the act of raising the same, substantially as described.

529,739. REGULATING-VALVE FOR TANKS. EBEN W. LONG, Chicago, Ill. Filed July 16, 1894. Serial No. 517,672. (No model.)

*Claim.*—1. The combination with a water tank, and a pipe discharging into the same, of a suitable float on the end of an arm, a lever to which said arm is connected, a valve closing the inlet leading to the pipe which discharges into said tank, and a valve closing a drain outlet out through which the backrush of water from the tank can drain, said inlet valve being above the drain valve and having a hollow stem arising therefrom, and said drain valve having a vertical spindle arising therefrom to and above the hollow stem of the inlet valve, said valves moving in opposite directions when closing and moved toward each other according to the movement of said lever in order to open.

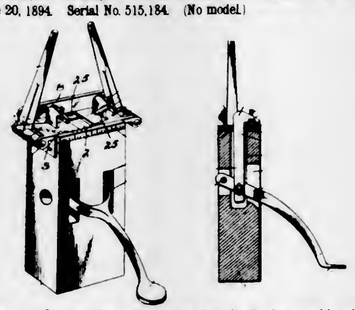
2. The combination with a tank, and a pipe discharging into the same, of a float, a lever to which the said float is connected by a suitable arm, a valve G closing the inlet to said pipe, a sleeve stem arising therefrom, a valve H closing said drain pipe, a spindle arising therefrom and passing through said sleeve stem and an expansion spring placed between and bearing against said valves, and a suitable hollow casting having an inlet above valve G, a drain outlet below valve H and an outlet between said valves which connects with the pipe discharging into the tank; said lever depressing valve G when the water in the tank is low, and raising valve H when the water in the tank is too high, as set forth.





3. The combination with a tank, and an inlet pipe or supply pipe, of a float, an arm depending therefrom, an L-shaped lever to which the said arm is connected, a valve G closing the inlet passage a sleeve arising therefrom, a valve H closing a drain outlet, a spindle arising therefrom which passes through and to a point above the said stem and having its upper end slit longitudinally and nut screwed onto the upper end of the same, an expansion spring placed between and pressing in opposite directions against said valves, and a suitable vertical hollow casting within which said valves are housed having a lateral inlet above the valve G, a lateral outlet connected to the supply leading to and discharging into the tank coming between said valves, and a drain outlet below valve H, said lever being L-shaped and having its horizontal arm entering the slit in the upper end of the spindle and lifting said spindle when said lever is moved in one direction and depressing said sleeve stem when moved in the opposite direction.

529,740. TIRE SHRINKING OR UPSETTING DEVICE. OSBORNE T. LYTTEN, Lowell, assignor to G. M. McAden, McAdensville, N. C. Filed June 20, 1894. Serial No. 515,184. (No model.)



*Claim.*—1. In a device of the class described, the combination with a standard provided at its upper end with a transverse guide, of anvil-plates slidably mounted in said guide, hand operated means for moving the anvil-plates toward and from each other, clamping-jaws carried by the anvil-plates and capable of movement in planes perpendicular thereto, and means consisting of a foot-lever and connections for depressing the clamping-jaws to engage a tire, substantially as specified.

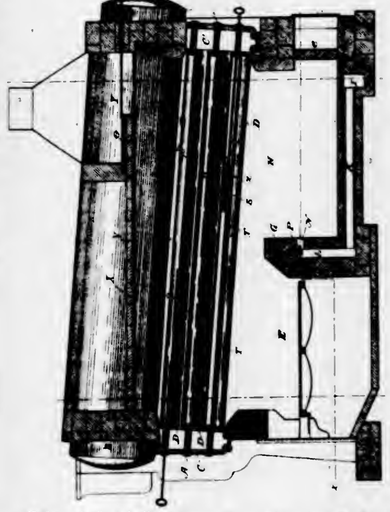
2. In a device of the class described, the combination with a standard provided at its upper end with a transverse guide, of anvil-plates slidably mounted upon the guide, operating levers fulcrumed to the anvil-plates respectively, a link connecting intermediate points of the operating levers, vertically movable clamping jaws having their shanks fitted in guides in the anvil-plates, and a foot-lever connected with the shanks of the clamping-jaws, substantially as specified.

3. In a device of the class described, the combination with a standard provided at its upper end with a guide, of anvil-plates slidably mounted in said guide and capable of movement toward and from each other, levers operatively connected with the anvil-plates respectively, clamping-jaws carried by the anvil-plates, means for operating the clamping-jaws in planes perpendicular to the plane of the anvil plate, and pressure-plates detachably secured to the jaws and extending inward to the adjacent edges of the anvil-plates, substantially as specified.

4. In a device of the class described the combination with a standard, of a guide-plate secured to the upper end thereof and provided with a dovetailed way, dovetailed anvil-plates fitting slidably in said way, operating-levers fulcrumed to the outer ends of the anvil-plates, a link connecting the operating levers, clamping-jaws overhanging the anvil-plates and provided with shanks extending through guide-openings therein and through elongated openings in the guide-plate, pressure-plates carried by the clamping-jaws, and a bifurcated foot-treadle having its arms pivotally connected with the lower ends of the shanks of the clamping jaws, substantially as specified.

5. In a device of the class described, the combination with a standard, of a guide-plate secured thereto and provided with a graduated scale, anvil-plates slidably mounted upon the guide-plate and capable of movement toward and from each other, levers operatively connected with the anvil-plates, clamping-jaws carried by the anvil-plates and capable of movement in planes perpendicular to that of the plates, pressure-plates carried by the clamping-jaws and terminating flush with the inner ends of the anvil-plates, and a foot treadle operatively connected with the clamping-jaws, substantially as specified.

529,741. STEAM-BOILER FURNACE AND BOILER. EDWARD D. MEIER, St. Louis, Mo. Filed Jan. 26, 1892. Serial No. 419,302. (No model.)



*Claim.*—1. In a boiler furnace, the combination of a fire box, a nest of staggered tubes arranged above said fire box and tiles or blocks grooved substantially as described so that they may be inserted and removed from below the tubes to facilitate construction and repairs of the furnace and boiler, substantially as described.

2. In a boiler furnace, the combination of a nest of staggered water tubes, and tiles or blocks longitudinally grooved to facilitate adjustment and transversely grooved to provide for anchoring them in place in the furnace, substantially as described.

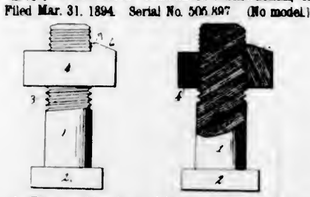
3. In a boiler furnace, the combination of a fire box, a combustion chamber, a nest of staggered water tubes above the same, the lower row of tubes containing one more tube than that above it and tiles or blocks arranged between the lower row of tubes to form the roof of the fire box independent of the side walls of the furnace, substantially as described.

4. In a boiler-furnace, the combination of a combustion chamber, a nest of water tubes above said chamber, a row or rows of tiles arranged between and supported by said tubes, and a series of slides arranged and operating as described.

5. In a boiler furnace, the combination of a combustion chamber, a nest of staggered water tubes above said chamber, a row of tiles arranged between and supported by said tubes, a series of slides arranged as described, and detachable handles for operating the slides, substantially as described.

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529,742. NUT-LOCK. CHARLES N. MERIWETHER, Clarksville, Tenn. Filed Mar. 31, 1894. Serial No. 506,897. (No model.)



*Claim.*—1. The combination with a screw-bolt, of a screw-nut at one end of the threaded orifice an unthreaded portion at one side and a vacant space at the side opposite the unthreaded portion for the purpose of permitting the nut to tilt while screwing it on the bolt, said unthreaded portion pressing against and abrading a portion of the thread of the bolt when the nut is tightened, substantially as described.

2. The combination with a screw-bolt, of a screw-nut having an elevated rib-portion lying tangential to one side of the threaded orifice in the nut, and a vacant space at the opposite side to permit the nut to tilt while screwing it on the bolt, said rib-portion pressing against and abrading a portion of the thread of the bolt when the nut is tightened, substantially as described.

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529,743. BROOCH-PIN. DAVID METZGER, New York, N. Y. Filed May 9, 1893. Serial No. 473,507. (No model.)



*Claim.*—The combination with an ornament, of guides secured to said ornament, two pins each having a longitudinal movement in the same plane relatively to the guides and outside the plane of the guides, each of said pins having a shank portion extended from it through a guide and prolonged to form a handle and stop and an independent spring for each of the pins substantially as specified.

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529,744. DRAWING-PIN. CARL MÜLLER, Eberswalde, Germany. Filed Sept. 29, 1893. Serial No. 486,902. (No model.)



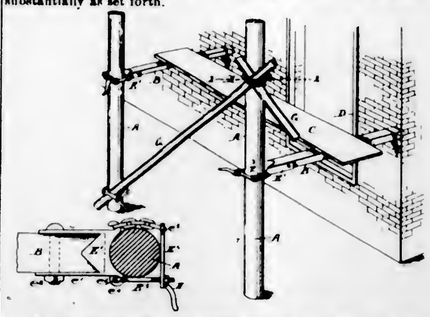
*Claim.*—A drawing-pin, consisting of the loose pin proper *a* having an inverted hemispherical head *a'*, and of the biconvex loose head-plate *b* having in each side a hemispherical cavity *b'*, said pin being adapted to hold said plate in proper working-position exactly parallel to the drawing-board, when the pin is driven home into the board in a vertical or inclined direction, said plate being adapted to be used on either side, plate and pin being separable when removed from the board, for the purpose as described.

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529,745. SCAFFOLD AND SCAFFOLD-CLAMP. JAMES MCINTYRE and JOHN G. MCINTYRE, Detroit, Mich. Filed Aug. 14, 1893. Serial No. 483,130. (No model.)

*Claim.*—1. A scaffold having in combination a putlog, consisting of a single piece of timber, an upright, and a clamp uniting the putlog with the upright, said clamp consisting of a metal body permanently engaged with the end of a putlog provided with a contractible clamping collar to embrace the upright, and a tightening bolt arranged to contract the collar and tighten it upon the upright, substantially as set forth.

2. A scaffold having in combination a putlog, an upright lying against the end face of the putlog, a clamp having a body permanently engaged with the putlog and intervening between the end of the putlog and the side of the upright, said clamp provided with a contractible clamping collar embracing the upright, and a tightening bolt arranged to contract the collar and tighten it about the upright, substantially as set forth.



3. The combination with a putlog of a scaffold clamp consisting of a body permanently engaged with the end of the putlog, forming a seat on the end face thereof for the upright of the scaffold, said body provided with a contractible clamping collar to embrace an upright, and means to contract the collar and compress it against the surfaces of the upright, substantially as set forth.

4. The combination with a putlog of a scaffold clamp consisting of a body permanently engaged with the putlog and provided with a contractible clamping collar to embrace an upright, and with a tightening bolt to contract the collar and tighten it upon the upright, said body formed with fastening devices at its outer edge to engage the collar, and with a seat for the upright between said fastening devices, said collar having a detachable engagement with one of said fasteging devices, substantially as set forth.

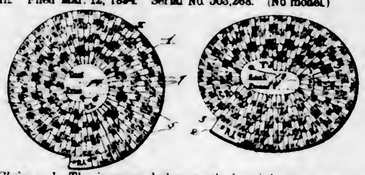
5. A scaffold having in combination a putlog consisting of a single piece of timber, an upright resting against the end face of the putlog, a clamp consisting of a body permanently engaged with the putlog and intervening between the end of the putlog and the upright, said body provided with a contractible collar consisting of a chain engaged with said body, a bar connected with said chain, a bolt connecting said bar with said body, and a nut upon said bolt to contract the bolt bar, and chain upon the upright, said body forming a seat for the upright between said bolt and chain, substantially as set forth.

6. In a scaffold the combination of an upright, a put-log, a clamp engaged with the put-log provided with a clamping collar, and a bolt to tighten the collar upon the upright, braces engaged with the upright, and a clamping collar provided with a tightening bolt embracing said upright and braces, substantially as described.

7. In a scaffold, the combination with a put-log, of a clamp consisting of a body, a clamping collar and bolt to tighten the collar upon the upright of the scaffold, and a hook-bolt $F^2$ engaged with the opposite end of said put-log, substantially as described.

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529,746. PRICE AND COST TAG. JAMES D. PARROTT, Litchfield, Ill. Filed Mar. 12, 1894. Serial No. 503,268. (No model.)



*Claim.*—1. The improved dry-goods invoicing tag, constructed of a portion of card-board 1 having a series of indentations therein extending in a continuous line, beginning at the margin of the card and extending substantially parallel thereto and then within itself to a point adjacent the center of the card, spaces between adjacent lines thus formed being intersected and divided by cross lines of perforations or indentations, to form a plurality of small contiguous squares or spaces on the single piece of card-board, and the squares remote from the edge being surrounded by adjacent squares, and the spaces between said cross-lines numbered consecutively, and said tag having a perforation for the passage of a cord, and marks to identify the specific piece of fabric to which the tag may be attached, substantially as shown and specified.

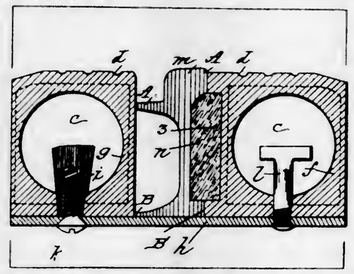
2. The improved invoicing tag, constructed of a circular disk of card-board perforated at its center for attaching it to a bolt of cloth



and having the peripheral off-set 2, a continuous convolute line of indentations 4 extending to the center of said tag, a series of equidistant cross-lines of indentations 5 connecting the adjacent curved lines of said convolute line of perforations and dividing the surface of the card into small spaces which are numbered consecutively, and an additional series of cross-lines 7 in each of said small spaces to divide them each into sections and which are each numbered, substantially as shown and specified.

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529,747. METALLIC PAVEMENT. EMPRIT PERRODY, Geneva, Switzerland. Filed Mar. 16, 1894. Serial No. 503,921. (No model.) Patented in Belgium Nov. 24, 1893, No. 107,332; in England Dec. 2, 1893, No. 23,180; in Italy Dec. 13, 1893, LXIX, 216, and in France Jan. 29, 1894, No. 239,740.

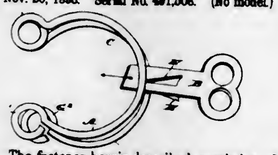


*Claim.*—1. In combination, the metallic block *g*, the block *f*, having a recess 3 in its side, the plate *h* to which the blocks are attached, the rail fitted between the blocks and having the bearings A B, A' B' against the same and the wedge *n* driven in the recess 3 and against the rail, substantially as described.

2. In combination, the paving blocks having the hollow interior, the plate *h*, the fastening means for said blocks extending into the hollow interiors and the rail fitted between the blocks, substantially as described.

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529,748. GARMENT-FASTENER. ARCHIBALD PICKEN, Roanoke, Va. Filed Nov. 20, 1893. Serial No. 491,508. (No model.)



*Claim.*—1. The fastener herein described, consisting of the hook composed of a flat body portion with one or more inclined and rearwardly pointing prongs or spurs projecting away from the plane of the body portion, and the catch or holder consisting of two parallel bowed parts held together by spring tension, substantially as and for the purpose described.

2. The combination with a hook consisting of a flat body portion and one or more inclined rearwardly projecting prongs or spurs, of a catch or holder composed of two parallel bowed portions made in one piece and bent at one side into a spring loop or eye, and having at the other side a terminal eye substantially as and for the purpose described.

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529,749. ELEVATED RAILWAY. ALBERT ST. J. PICKETT, Delaware, Ohio. Filed Nov. 15, 1893. Serial No. 491,026. (No model.)

*Claim.*—1. In an elevated railway the upright frame towers, a longitudinal suspension cable passing over the top of said towers and sagging there-between, a track suspended from said cable, and side bracing cables passing around the outer sides of said towers and connected between the towers to the central point of each span of said cable, substantially as set forth.

2. In an elevated railway, the upright frame towers arranged in longitudinal alignment, a main longitudinal suspension cable passing over the top of said towers and sagging there-between, the longitudinally arranged track, hangers suspended from the suspension cable and connected to the track, a longitudinal rod or rope connecting the upper ends of the hangers, auxiliary suspension cables passing over the top of each tower and connected at their extremities to the longitudinal rod or rope, and side bracing cables passing around the outer sides of said towers and connected between the towers to the central point of each span of said cable, substantially as set forth.

3. In an elevated railway, the upright frame towers in alignment, a main suspension cable arranged longitudinally over the top of said towers, a longitudinally arranged track, hangers suspended from the suspension cable and carrying the track, a longitudinal connecting rod or rope connecting said hangers, auxiliary suspension cables passing over the top of each tower and connected at proper distances to said connecting rod or rope, the side bracing cables passing around the towers and connected at an intermediate point to each span of said suspension cable, and the bracing guy ropes attached to the side cables and to said connecting rod or rope, substantially as set forth.

4. In an elevated railway, a main suspension cable sustained in an elevated position, a series of hanger loops suspended from said cable, a stringer plate attached to the lower ends of said hanger loops and having aligned rail chairs, and the track rails secured on said rail chairs, substantially as set forth.

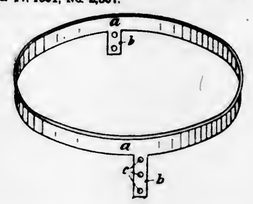


5. In an elevated railway, the main suspension cable sustained in an elevated position, a series of hanger loops suspended from said cable, parallel stringer plates secured to the lower ends of said hanger loops and having at their lower ends right angularly disposed rail chairs, and the opposite rails clamped in position in the rail chairs upon the outside of each stringer plate, substantially as set forth.

6. In an elevated railway, a main suspension cable sustained in an elevated position, a series of hanger loops suspended from said cable and provided with lower off-standing shouldered ends, parallel stringer plates secured to said lower shouldered ends of the hanger loops and each of which is provided at its lower end with a spaced series of right-angularly disposed off-standing chair flanges underlapping the other stringer plate and terminating in upturned clamp ends, the opposite rails fitted on the chair flanges at one side of each stringer plate and provided at their upper inner edges with beveled projections, longitudinal clamp strips secured to the opposite stringer plates under the lower extremities of the hanger loops and provided with lower beveled ends fitting the beveled projections of the rails, and diagonal brace rods secured at their lower ends between the stringer plates and at their upper ends to the hanger loops, substantially as set forth.

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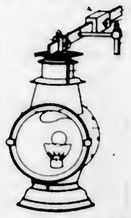
529,750. SUSPENSORY BELT. EMMA J. PIKE, London, England. Filed Sept. 17, 1891. Serial No. 405,040. (No model.) Patented in England Feb. 17, 1891, No. 2,867.



*Claim.*—The waist belt *a* made of elastic material and provided with a pendent tab *b* both at front and back made of a strip of india rubber each having two or more small holes *c* punched in it at intervals in its length substantially as set forth.

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529,751. **BRACKET FOR VEHICLE-LAMPS.** SOLOMON L. REEPY, Edinburg, Ill. Filed Feb. 17, 1894. Serial No. 500,528. (No model.)



*Claim.*—1. In a bracket for vehicle lamps, the combination of the angle arm attachable to the vehicle, the vibrating arm pivotally supported on the angle arm, the block adjustable on the vibrating arm and adapted to be connected with the lamp, and the gravitating counterpoise on the vibrating arm adapted to counterbalance the weight of the lamp, as set forth.

2. In a bracket for vehicle lamps the combination of the socket plate attachable to the vehicle the angle arm adapted to fit in the socket plate and adapted to support the vibrating arm, the vibrating arm pivotally supported on the angle arm, the cap adapted to be connected with the lamp and having a block adapted to be longitudinally adjusted on the vibrating arm, and the counterpoise adjustable on the vibrating arm, and adapted to counterbalance the weight of the lamp, as set forth.

3. In a bracket for vehicle lamps the socket plate having an elongated oval body with an integral socket, and a segmental strap detachably connected with said body; in combination with an angle arm having a vertical member adapted to fit in said socket, a vibrating arm pivotally supported on the angle arm, the cap attachable to the lamp and adjustably connected with the vibrating arm and the adjustable counterpoise adapted to counterbalance the lamp, as set forth.

4. In a bracket for vehicle lamps a cap having a perforated block adapted to receive a supporting arm and provided with bolts adapted to connect said cap with a lamp; in combination with an angle bar attachable to a vehicle, a vibrating arm pivotally supported on said angle arm and fitting in said block and a counterpoise adjustable on said vibrating arm, as set forth and for the purpose stated.

5. In a bracket for vehicle lamps, a socket plate attachable to the inclined side or end of a vehicle body, consisting of a base having holes adapted to receive bolts or screws, also having a socket in an inclined position relative to said base and having a set screw adapted to clamp the angle arm in said socket; in combination with an angle arm, a vibrating arm pivotally supported on said angle arm, a cap attachable to a lamp and adjustable on said vibrating arm and a counter poise adjustable on said vibrating arm, as set forth.

6. In a bracket for vehicle lamps, the combination of a socket plate, an angle arm adapted to fit in said socket plate, a vibrating arm pivotally supported on said angle arm, a counterpoise adapted to slide on the vibrating arm, the set screw on the counterpoise, the cap attachable to the lamp and a block on the cap adapted to slide on the vibrating arm, and the set screw on the block, as set forth and for the purpose stated.

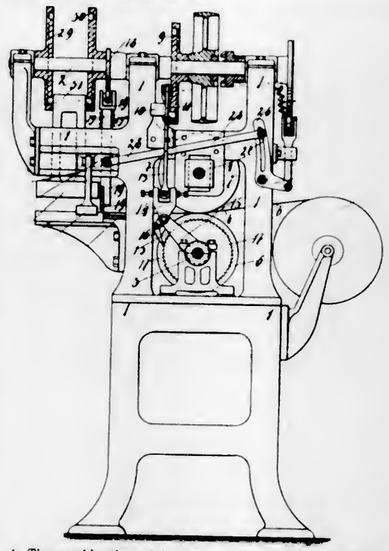
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529,752. **MACHINE FOR FASTENING METAL STRIPS ON PASTEBOARD, &c.** EMIL SALTZHORN and LUDWIG NICOLAI, Dresden, Germany. Filed Nov. 26, 1893. Serial No. 491,962. (No model.)

*Claim.*—1. The combination of the frame, the strip feeding devices, a cutting knife, a table, a die adapted to co-act with said table, pivoted holding claws adapted to convey the severed portions of the strip from the cutting knife to a point beneath the die and mechanism for effecting the reciprocation of said holding claws, substantially as specified.

2. The combination with the frame, the strip carrying spool, mechanism for feeding such strip intermittingly, a work-table, a die adapted to co act therewith, a cutting knife adapted to sever from the strip that portion of the latter fed beyond its cutting edge, and opposite holding claws adapted to engage with the edges of the strip and to convey the severed portion of the latter from the knife to a position beneath the die, substantially as specified.

3. The combination of the frame, the strip holding spool, feed rollers, mechanism for positively rotating one of said feed rollers, a cutting knife, holding claws adapted to engage with the edges of the strip and convey the severed portion of the latter from the cutting knife to a point where it is to be acted upon, a die adapted to act upon the said strip, the opposite faces of such die being inclined and adapted to separate the holding claws and to effect the release of the strip, substantially as specified.



4. The combination of the frame, the strip holding spool, mechanism for feeding the strip intermittingly, a cutting knife, a depressing cam therefor, a worktable, a vertically guided die adapted to co-act with the table, actuating cams for said die slides 21, adapted to guideways in the frame, strip carrying claws 22 and 23 fulcrumed to said slides and adapted to engage with the opposite edges of the strip and to convey the latter to a point beneath the die, and counterweights 32, 33, normally tending to keep such holding claws in engagement with the edges of the strip, substantially as specified.

5. The combination of the frame, a strip holding spool, mechanism for intermittingly feeding and severing portions from the same, a die, holding claws adapted to convey the severed strip from the knife to a point beneath the die, horizontally moving slides to which said claws are pivoted, slotted bell crank levers fulcrumed to the frame, a connecting rod extending therefrom to the slides, a vertically guided bar, 25, connected to said bell crank lever, and a cam 24, adapted to act upon said bar, substantially as specified.

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529,753. **APPARATUS FOR PRESSING OR STAMPING ARTICLES FROM WOOD-PULP, &c.** EMIL SALTZHORN and LUDWIG NICOLAI, Dresden, Germany. Filed Dec. 13, 1893. Serial No. 493,558. (No model.)



*Claim.*—1. In a stamping machine, a mold, an inner vertically adjustable die, a flexible protective material provided over the upper face of the mold and over the vertically adjustable die, a vertically adjustable plunger of an area in cross section slightly less than the area of the mold chamber and means for operating said plunger and inner die and for carrying and dragging down the flexible material between the plunger and inner die and between the outer walls of the plunger and the inner walls of the mold, substantially as described.

2. In a forming machine in combination with the mold and plunger, a flexible fabric provided upon the upper face of the mold and an inner vertically adjustable die operating as a support for that portion of the flexible fabric between the lower face of the plunger and the upper face of the inner die in the descent of the plunger and retaining ring provided upon the upper face of the mold above the fabric and upon the material to be shaped, substantially as described.

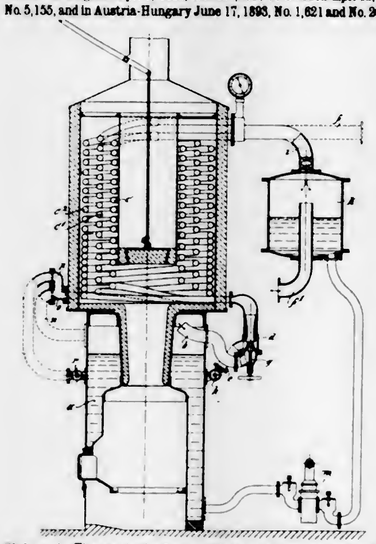
3. In a forming machine the combination of a die or plunger, a mold, a counteracting stamp or inner die adjustably provided within said mold and strips of flexible fabric secured to said inner die, said flexible strips constructed to cling to the walls of the mold and to conform to the lines of the walls of the mold as the plunger is depressed and to form a yielding body for the material to be compressed between the walls of the plunger and the inner walls of the mold during the compressing operation, substantially as described.

4. The combination of the die, mold, counteracting stamp therein, a series of radiating flexible strips secured to such counteracting stamp and adapted in the pressing operation to conform to the lines of the walls of the mold, said strips being of such width that when in the mold the opposite edges of each strip will be in contact, or nearly in contact, with the next adjoining strip.



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529,754. **GENERATION OF STEAM.** WILHELM SCHMIDT, Wilhelmshöhe, near Cassel, Germany. Filed May 27, 1893. Serial No. 475,726. (No model.) Patented in Germany Dec. 21, 1892, No. 73,396; in England Jan. 16, 1893, No. 564; in Switzerland Mar. 21, 1893, No. 6,791; in France Mar. 24, 1893, No. 228,888; in Italy Apr. 3, 1893, No. 33,825; in Belgium Apr. 5, 1893, No. 104,181; in Sweden Apr. 12, 1893, No. 5,155, and in Austria-Hungary June 17, 1893, No. 1,621 and No. 20,904.



*Claim.*—1. The method of generating steam, consisting in heating water, producing a continuous stream of the steam evolved, distributing within said stream as much water as the steam is capable of carrying with it without being condensed thereby, and evaporating said distributed water by exposing the mixture to furnace-gases, for the purpose as described.

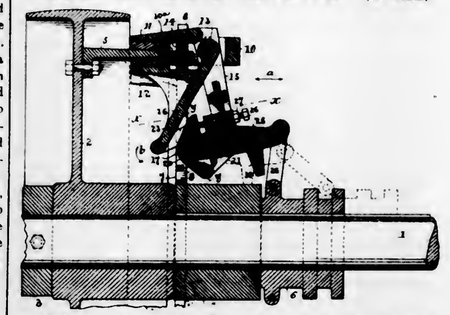
2. The method of generating steam, consisting in heating water, producing a continuous stream of the steam evolved, distributing within said stream by jets of the steam itself as much water as the steam is capable of carrying with it without being condensed thereby, and evaporating said distributed water by exposing the mixture to furnace-gases, for the purpose as described.

3. The method of generating steam, consisting in heating water, producing a continuous stream of the steam evolved, distributing within said stream by jets of the steam itself as much of the heated water as the steam is capable of carrying with it without being condensed thereby, and evaporating said distributed water by exposing the mixture to furnace-gases, for the purpose as described.

4. The method of generating steam, consisting in heating water, producing a continuous stream from the steam evolved, distributing within said stream by jets of the steam itself as much of the heated water as the steam is capable of carrying with it without being condensed thereby, and evaporating said distributed water by exposing the mixture to the same furnace gases as used for heating the water, for the purpose as described.

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529,755. **FRICTION-CLUTCH.** EDWARD D. SCHMIDT, Cuyahoga Falls, Ohio. Filed June 20, 1894. Serial No. 515,204. (No model.)



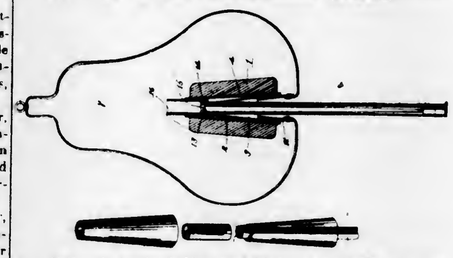
*Claim.*—1. In a clutch mechanism in combination two inversely operating clutch jaws arranged circumferentially with respect to the shaft, a clutch arm, a pivot substantially at right angles to the shaft upon which said jaws are collectively pivoted to the clutch arm, a rocker, a pivot whereon said rocker is pivoted to the clutch arm between the pivot of the jaws and the shaft, arms secured respectively to said jaws and extending inwardly on opposite sides of said rocker, means whereby said jaw arms are connected respectively with said rocker on opposite sides of its center of motion and mechanism whereby said rocker is connected with the shifting sleeve, substantially as described.

2. In a clutch mechanism in combination two inversely operating clutch jaws arranged circumferentially at right angles to the shaft a clutch arm, a pivot substantially at right angles to the shaft upon which said jaws are collectively pivoted to the clutch arm, a rocker, a pivot whereon said rocker is pivoted to the clutch arm between the pivot of the jaws and the shaft, arms secured respectively to said jaws and extending inwardly on opposite sides of said rocker links whereby said jaws are connected respectively with said rocker on opposite sides of its center of motion and mechanism whereby said rocker is connected with the shifting sleeve, substantially as described.

3. In a clutch mechanism in combination two inversely operating clutch jaws arranged circumferentially with respect to the shaft, a clutch arm, a pivot substantially at right angles to the shaft upon which said jaws are collectively pivoted to the clutch arm, a rocker, a pivot whereon said rocker is pivoted to the clutch arm between the pivot of the jaws and the shaft, arms secured respectively to said jaws and extending inwardly on opposite sides of said rocker, means whereby said jaw arms are connected respectively with said rocker on opposite sides of its center of motion and mechanism whereby said lever is pivotally connected to the shifting sleeve, substantially as described.

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529,756. **TWINE-HOLDER.** AUGUST H. SCHWAN, Moundridge, Kans. Filed May 14, 1894. Serial No. 511,148. (No model.)



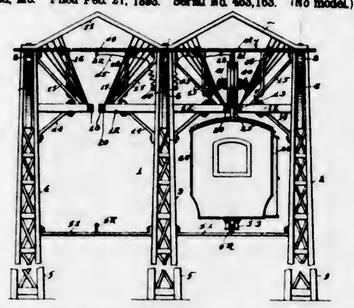
*Claim.*—1. A twine-holder, comprising a suspension frame having a segmental supporting-plate, a frusto-conical and tubular shell fitting upon said plate, and a tube inclosed and carried by said shell, and having a tension-rod, and a longitudinal groove in its outer side, a conical tube upon which the twine or cord is wound, fitting upon the frusto-conical shell, a short tube surrounding the upper end of the tube having the longitudinal groove, and surrounded by the upper end of the conical tube of the ball of twine, a sliding weight carried by the tube having the longitudinal groove and having an eye at its upper end, all arranged substantially as set forth.

2. In a twine-holder, the combination with a vertical tube carrying a tabular and frusto-conical shell, a weight within said tube, an eye carried at the lower end and outer side of said tube, and a bracket suspended from the ceiling having a segmental plate upon which the lower end of the frusto conical shell rests, and having a passage or opening in its side through which the vertical tube is inserted, of a conical tube upon which the twine is wound, which fits upon the frusto-conical shell, and a tube carried upon the upper end of the vertical tube through which the cord is adapted to be guided, and also through the eye of the weight located in the vertical tube, and through the longitudinal groove of an eye carried by said tube, substantially as set forth.

3. In a twine-holder, the combination with a supporting bracket, a vertical and externally grooved tube having notches in its upper margin, a tension-rod extending transversely of one of said notches to form an aperture, a frusto-conical shell surrounding and secured to the tube near its upper end, and having an opening opposite the external groove of the vertical tube; said shell being carried by the supporting bracket, a short tube fitting upon the upper end of the vertical tube and closing the notches thereof, and a weight having an eye, fitting reciprocally within the vertical tube, of a twine-carrying tube fitting upon the shell and inclosing the lower end of the short tube, the strand from the twine wound upon said tube extending down through the short tube, around the tension-rod, through the eye of the weight, through the opposite notch, and pendently downward, substantially as set forth.

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529,757. **ELEVATED RAILWAY.** THOMAS J. SHORB, Cape Girardeau, Mo. Filed Feb. 21, 1893. Serial No. 463,163. (No model.)

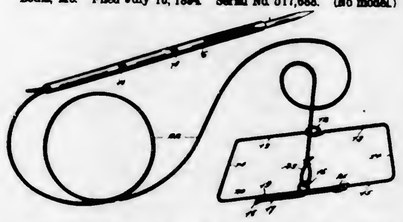


*Claim.*—1. An improved elevated railway having a super-structure comprising a number of upright columns supported by cross braces, said braces securing aligned track-rails, traction rollers having a central annular flange adapted to travel between said rails, the outer tread surfaces of said traction-rollers adapted to engage upon the tops of said adjoining rails, said traction-rollers located relatively above the center of the car, said rollers connected by truck beams, and depending hangers connecting said truck with the car and adapted to depend the same below the center of gravity, substantially as set forth.

2. An improved elevated railway having a super-structure comprising a number of upright columns connected in rows by arch braces, connected in parallel by cross-braces, the track rails held above the surface and between said rows of upright columns, traction-rollers adapted to be operated upon said rail, said traction rollers having two outer tread surfaces, an intermediate annular flange adapted to operate between said track rails, and two of said rollers connected in longitudinal alignment by truck-beams, substantially as set forth.

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529,758. **DEVICE FOR STRINGING FISH.** ALVIN H. SIPPY, St. Louis, Mo. Filed July 16, 1894. Serial No. 517,668. (No model.)



*Claim.*—1. A device for stringing fish, comprising a needle telescoping within a tube or sleeve, a cord, one end of which is carried by said needle, and a frame formed of a single piece of wire carried by the free end of said cord.

2. In a device for stringing fish, a needle telescoping within a sleeve or tube, stops for limiting the movement of said needle in said tube both longitudinally and axially and means for securing one end of a cord to said needle without making a knot too large to pass into said tube.

3. In a device for stringing fish, the combination of a rod having an attenuated forward end, a flattened rear end in which is located a wedge-shaped eye, a lug carried by said rod, and a sleeve or tube adapted to receive said rod and having a longitudinal slot therein, said longitudinal slot adapted to guide the movement of the lug upon the rod.

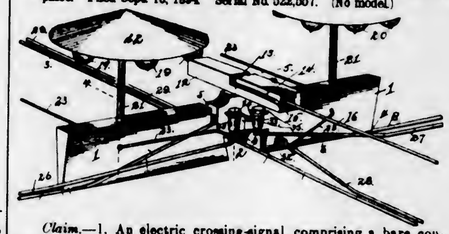
4. In a device for stringing fish, a frame composed of a single length of wire having a loop or eye in the center thereof and bent into rectangular form and having a loop or eye formed near one of the ends of the length of wire in combination with a needle and cord connected with said wire.

5. In a device for stringing fish, a tube or sleeve having a longitudinal slot therein, and lateral locking slots connected to the ends of said longitudinal slot in combination with a needle, a lateral projection on said needle engaging said slots, and a cord connected to the needle.

6. In a device for stringing fish, the combination of a sleeve or tube having a longitudinal slot therein, locking slots connected to said longitudinal slot, a needle adapted to telescope within said tube, a lug carried by said needle and adapted to slide within the slots in the tube, a wedge-shaped eye in the flattened end of said needle, a cord, one end of which passes through said wedge-shaped eye, and a rectangular spring wire frame having therein loops by which said frame is carried by the free end of the cord.

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529,759. **ELECTRIC SIGNAL FOR RAILWAY-CROSSINGS.** DANIEL W. SMITH, St. Louis, Mo., assignor, by direct and mesne assignments, of two-thirds to Alfred Bevis and Charles H. Longstreth, same place. Filed Sept. 10, 1894. Serial No. 522,557. (No model.)



*Claim.*—1. An electric crossing-signal, comprising a bare conductor to be engaged by the trolley of a moving vehicle, a crossing bare conductor arranged at an angle with respect to said first mentioned conductor, signal wires located parallel and adjacent to said conductors but electrically separated therefrom and extending a distance on each side of the crossing point, so that a trolley approaching the crossing in either direction on either of said conductors may operate a signal, a signal connected to said signal-wires, and a crossing-clamp having locking grooves or recesses secured to one of said conductors solely by frictional contact and detachable therefrom by revoluble movement, substantially as herein specified.

2. The combination, with a crossing-clamp, of a supply conductor, an electric lamp mounted upon and supported by said clamp, and a supply conductor for said lamp, substantially as herein specified.

3. The combination, with a crossing-clamp, of two supply conductors arranged at an angle, two separate electric signals mounted and supported by said clamp, one at each side of one of said supply conductors, and signal-wires located parallel with but normally separated from said supply conductors and connected to said electric signals to illuminate one or both of the same when a car approaches the crossing point from either direction, substantially as herein specified.

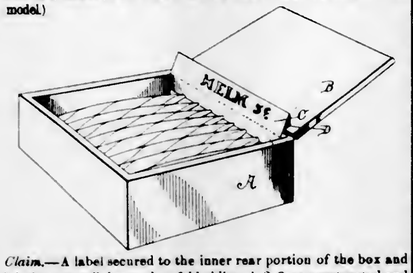
4. As an article of manufacture, a crossing-clamp provided at a point about midway of its length on one edge with a lateral recess or depression to be engaged by an electric conductor and with another recess in its opposite edge about opposite said first mentioned recess, a locking projection at or near each end of said clamp for retaining the supply conductor in position without the use of bolts or screws, and oblique grooves or depressions formed in opposite sides of said clamp, one of which grooves extends on one side from the locking device at one end to one of the recesses at one edge of the clamp, and the other groove extending obliquely from the locking device at the opposite end of the clamp on the opposite side thereof to the same recess at which the other groove terminates, whereby the clamp may be attached and detached by revoluble movement without the use of bolts or screws, substantially as herein specified



5. The combination, with a crossing-clamp constructed with a lateral recess in its edge and grooves in its sides whereby it may be attached or detached by revoluble movement, of a guy-wire clamp constructed with a lateral recess and side grooves, whereby it may be attached to or detached from a guy-wire, and means which pivotally connect said guy-wire clamp to said crossing-clamp, substantially as herein specified.

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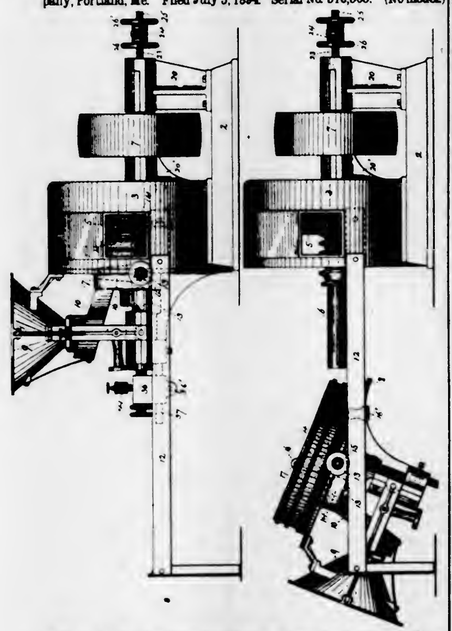
529,760. **COMBINED LABEL AND PRICE-CARD.** WILLIAM P. STEVENS, Muncie, Ind. Filed Mar. 24, 1894. Serial No. 504,905. (No model.)




*Claim.*—A label secured to the inner rear portion of the box and box lid, three parallel scored or folded lines 1, 2, 3, so constructed and arranged as to allow the label to fold and unfold by the opening and closing of the box lid, as and for the purpose set forth.

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529,761. **GRINDING-MILL.** THOMAS L. STURTEVANT and THOMAS J. STURTEVANT, Quincy, Mass., assignors to the Sturtevant Mill Company, Portland, Me. Filed July 5, 1894. Serial No. 516,565. (No model.)



*Claim.*—1. In combination with a main tubular driving shaft, an interior shaft equipped with a mill stone, and adapted to slide in and out of the driving shaft, and mechanism to cause the two shafts to rotate in unison, substantially as explained.

2. In combination with a mill stone, an inner rotary shaft which carries the same, a tubular outer shaft which incloses said inner shaft in part and in which said inner shaft slides, one or more bearings common to both shafts, a thrust bearing adapted to compel the interior shaft to move longitudinally within the said tubular outer shaft, and means for rotating said shafts in unison, substantially as described.

3. The combination with a hollow shaft, a secondary shaft telescoping therein, and mechanism to provide for telescoping and to compel rotation of the shafts together, of suitable bearings to support the hollow shaft, and an end thrust bearing comprising a fixed fulcrum plate, a spring adapted to bear against the secondary shaft, and a screw threaded rod which moves in the hollow shaft, substantially as specified.

4. The combination with a stationary stone, a runner stone, its shaft, and a tubular main shaft adapted to revolve the runner stone shaft, of a cylindrical cup in the bore of the main shaft, a spring also therewithin, its confining bolt, a piston for positive adjustment likewise within the main shaft, and balls interposed between the confining bolt and the piston, all operating substantially as stated.

5 In a grinding mill, the combination with a tubular driving shaft, of an inner shaft splined therein and having a sliding movement in and out of the same, a runner stone carried by said inner shaft, a stationary bearing, two parallel rods mounted therein and provided with an adjustable fulcrum-plate, a screw threaded rod carried by said plate and provided at its inner end with a piston, and means interposed between said piston and shaft, whereby said piston exerts a yielding end thrust against said shaft, substantially as described.

6. In grinding mills, a main driving shaft, a secondary shaft carrying a mill stone and telescoping within the main driving shaft, and means for supporting and rotating said shafts, combined with a thrust bearing adapted to permit endwise movement of the secondary shaft, and a stop bearing to limit the endwise travel of said shaft in one direction, as described and stated.

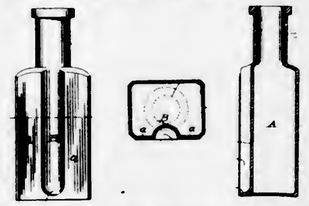
7. In a grinding mill, the combination with a tubular driving shaft, of a rotary shaft partially inclosed thereby and sliding therein, a runner stone carried by said rotary shaft, means for rotating said shafts in unison, and an end-thrust bearing contained in one end of the said tubular driving shaft and comprising a spring adapted to bear against the shaft end, an adjusting rod provided with a piston, anti-friction balls between said spring and piston, means for moving said rod endwise, and means for preventing the rotation of said rod, substantially as described.

8. In a grinding mill the combination with a runner stone, a revoluble shaft, and an inclosing casing, a bed-stone secured to one end of the casing, wheel-equipped trunnion plates to support said end casing, guides on which said end travels, and means for interlocking the trunnion plates to the end casing, substantially as set forth.

9. In a grinding mill, the combination with a bearing, of a rotary shaft mounted therein, a rod adjustably mounted in said bearing, a thrust block adjustable on said rod, and a bearing pin sliding in said block and impinging against the end of the said rotary shaft and means for controlling the travel of said pin, substantially as described.

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529,762. **BOTTLE.** CHARLES H. VAN WIE, Albany, N. Y. Filed Mar. 10, 1894. Serial No. 503,177. (No model.)



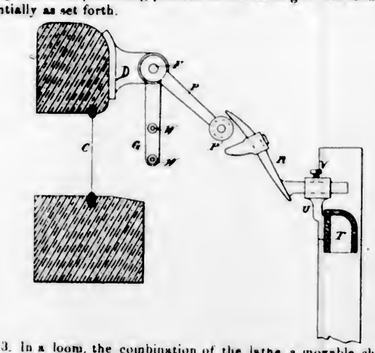
*Claim.*—The combination with a bottle, or an analogous vessel, having in a side portion thereof the receptive groove B, extended from its bottom *b* to the upper end of the body of the said bottle and provided with adjoining extended plain surfaces, of the flexible piece C, described applied to the bottle and over said groove and secured by cement to the extended surfaces of the portions of the wall adjoining the said groove, thereby forming with said groove the receptacle D, substantially as and for the purposes set forth.

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529,763. **SHUTTLE-GUARD FOR LOOMS.** ALFRED WADDINGTON, Bradford, England, assignor to the S. Bottomley & Brothers, Limited, same place. Filed May 2, 1893. Serial No. 472,740. (No model.) Patented in Germany Mar. 5, 1892, No. 64,600; in Belgium Mar. 10, 1892, No. 96,739; in France Mar. 11, 1892, No. 220,053, and in England May 18, 1892, No. 9,420.

*Claim.*—1. In a loom, the combination of the lathe, a shuttle guard and a clutch box, one half of which is carried by the guard and the other half by the lathe, the said clutch box adapted to lock the guard in either its raised or protecting position, with means for automatically placing the guard in its protecting position at the starting of the loom, substantially as set forth.

2. In a loom, the combination of the lathe, a shuttle guard, a clutch box, one half of which is carried by the guard and the other half by the lathe, and a two way spring tension, the tension in one way tending to close the clutch box to lock the guard in either its raised or protecting position, and the other way tending to move the guard into its protecting position, with means for automatically placing the guard in its protecting position at the starting of the loom, substantially as set forth.



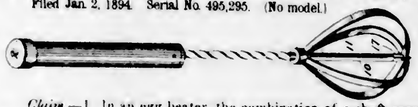
3. In a loom, the combination of the lathe, a movable shuttle guard, and a spring to normally hold the guard in its protecting position with an adjustable bar carried by a stationary part of the loom and disconnected from but adapted to act upon the said guard to press it toward the lathe at each beat up, substantially as and for the purpose set forth.

4. In a loom, the combination of the lathe, a shuttle guard, a clutch box, one half of which is carried by the guard and the other half by the lathe, and a two-way spring tension, the tension in one way tending to close the clutch box to lock the guard in either its raised or protecting position, and in the other way tending to move the guard into its protecting position with an inclined projection carried by a stationary part of the loom and adapted to act on the said guard to unlock the clutch box, all substantially as and for the purposes set forth.

5. A shuttle guard comprising a rotatable and longitudinally moving shaft F provided with arms G, H and P, wires W carried by the arms G and H, a clutch box one half of which is carried by the arm H and the other half adapted to be secured to the loom, a spring constantly tending to close the clutch box to place the guard in its protecting position, in combination with an adjustable bar R carried by a stationary part of the loom, and an inclined projection R' the said arm R and projection R' adapted to act upon the arm P of the guard, substantially as and for the purposes set forth.

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529,764. EGG-BEATER. CHARLES D. WEEKS, St. Louis, Mo. Filed Jan. 2, 1894. Serial No. 495,295. (No model.)



*Claim.*—1. In an egg beater, the combination of a shaft carrying an integral screw, a handle acting upon and rotating the said screw, a series of strips of metal engaged adjacent their centers by the free end of said shaft, said strips of metal constructed to be bent back so that their ends will be adjacent each other, and a catch 15 located on the shaft and having a downwardly projecting annular flange and an inwardly extending annular projection 16 formed on said flange, and a pin limiting the movement of the catch, thus providing means for retaining said ends in said position, substantially as set forth.

2. An egg beater, comprising a hollow handle 1 having a removable cap 2 on its upper end and a nut 3 on its lower end forming a screw-seat, an Archimedean screw 4 mounted in said nut 3 and having an apexed end portion 6, a block 8 mounted for reciprocation within the handle 1 and having a central depression 7, within which depression 7 the apexed upper end 6 of the Archimedean screw 4 is seated and adapted for rotation, an expansive spiral spring 9 fixed to said block 8 and to the cap 2 of the handle 1, a shaft 10 integrally formed with the lower end of the Archimedean screw 4 and extending downwardly therefrom, a catch 15 adjustably seated on the said shaft 10, and a plurality of beating strips 12 formed of looped strips of metal mounted at their centers on the lower end of said shaft 10 and having their ends confined by the said catch 15, substantially as described.

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529,765. COMBINED CLAMP AND VISE. CHARLES F. WEYER, St. Paul, Minn. Filed June 13, 1892. Serial No. 436,495. (No model.)



*Claim.*—1. In a clamp, the combination with the relatively fixed jaw and its connected rack bar, of the movable jaw slidable along said rack bar, the lever operated means having a sliding pivotal connection with said block for engaging the teeth of the rack bar to move said block thereon, and the projection upon said lever adapted to engage said rack to lock the clamp in adjusted positions.

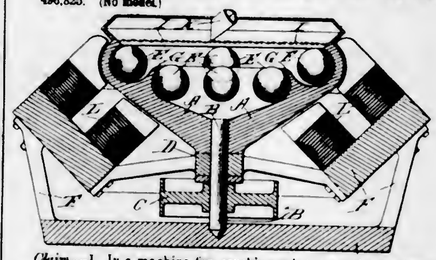
2. In a clamp, the combination with the relatively fixed jaw and its connected rack bar, of the movable jaw slidable along said rack bar, the lever operated means having a sliding pivotal connection with said block for engaging the teeth of the rack bar to move said block thereon, the dog carried by said block and adapted to engage said rack bar and the projection upon said lever adapted to engage said rack to lock the clamp in adjusted positions.

3. In a clamp, the combination with the rack bar, and the rigidly connected jaw, of the block sliding upon said rack and serving as a movable jaw, the gear for engaging said rack arranged in said block and having a slidably pivotal connection therewith whereby it may be thrown into and out of gear with the rack, the lever for operating the gear, and the locking device carried by said lever for engaging said rack to hold said clamp in adjusted positions.

4. In a clamp, the combination with the rack bar and its fixed jaw, of the movable jaw slidably arranged on said bar, the lever pivoted in said movable jaw with a slidable connection by means of which it may be raised and lowered therein, the teeth carried by said lever adapted to engage said rack, and the projection upon said lever adapted to engage said rack when the lever is depressed so as to lock the clamp in adjusted positions.

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529,766. MACHINE FOR CRUSHING ORE, &c. FRED A. WHEELER, Chicago, Ill., assignor, by direct and mesne assignments, of twenty-three twenty-fourths to Allen E. Wheeler, Eugene T. Specht, Frederick Weinhagen, William Hinrichs, and Charles A. Rohde, Milwaukee, Wis., and Rose V. Wagner, Chicago, Ill. Filed Jan. 13, 1894. Serial No. 496,825. (No model.)



*Claim.*—1. In a machine for crushing substances, the combination of a revolving hopper, pestles, and magnets acting upon such pestles; substantially as and for the purpose set forth.

2. In a machine for crushing substances, the combination of a revolving hopper or mortar, a series of loose pestles, a foraminated cover to such mortar and a series of magnets the poles of which are arranged in close proximity to the walls of the mortar; substantially as and for the purpose set forth.

3. In a machine for crushing substances, the combination of a revolving mortar or hopper a series of loose pestles, a foraminated cover for the mortar or hopper, a trough, and a series of magnets having their poles in close proximity to the walls of the mortar; substantially as and for the purpose set forth.

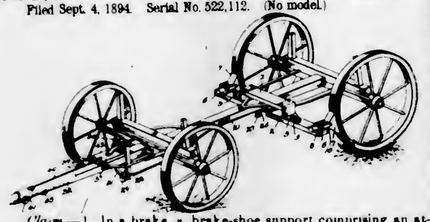


4. In a machine for crushing substances, the combination of a revolving mortar or hopper provided with an interior circular division, a series of loose metal balls, and a series of magnets with their poles arranged in close proximity to the walls of the hopper so as to attract such balls; substantially as and for the purpose set forth.

5. In a machine for crushing substances, the combination of a revolving hopper or mortar provided with a circular interior partition, a series of metal balls within such mortar, a trough surmounting such mortar and provided with a foraminated bottom which serves as a cover for the hopper; a scoop or spout projecting into such trough and a series of magnets having their poles supported close to the walls of the hopper and opposite the path of the balls; substantially as and for the purpose set forth.

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529,767. VEHICLE-BRAKE. BENAJAH WILCOX, Gibson, N. Y. Filed Sept. 4, 1894. Serial No. 522,112. (No model.)



*Claim.*—1. In a brake, a brake-shoe support comprising an attachment plate provided with upward-extending ears, a swinging frame hinged to the ears and provided with rearward-extending arms adapted to receive between them a brake-shoe, and a spring connected with the swinging frame and arranged to hold the same in operative position and also when swung forward, substantially as described.

2. In a brake, a brake-shoe support comprising an attachment plate having a depending flange provided with an inclined rear face, a swinging frame arranged on the upper face of the attachment plate and terminating above the said inclined face of the flange and arranged to swing forward to rest upon the front portion of the attachment plate, a spring connecting the swinging frame with the attachment plate and arranged to hold the former in either of its positions, combined with a brake-shoe pivotally connected to the swinging frame and having an inclined front face resting upon the inclined face of the flange, substantially as and for the purpose described.

3. In a brake, a brake-shoe support comprising an attachment plate provided at its rear end with a depending flange, and having at its front a longitudinally-disposed housing and provided at opposite sides with upward-extending ears, a swinging frame consisting of a transverse portion having a forward-projecting tongue and opposite sides projecting in advance and in rear of the transverse portion and forming forward-extending ears and rearward-extending arms, said forward extending ears being pivoted to those of the attachment plate, and a spring arranged in the housing of the attachment plate and connected with the tongue of the swinging frame, combined with a brake-shoe pivoted between the rearward-extending arms of the swinging frame, substantially as described.

4. In a brake, the combination with the running-gear, of a transverse bar mounted upon the rear portion thereof and located above the rear hounds, depending drop brackets mounted on the ends of the transverse bar and having horizontal portions at their bottoms, brake-levers fulcrumed on the lower faces of the horizontal portions of the brackets, brake-shoes mounted on the brake levers, and means for automatically operating the brake-levers, substantially as described.

5. In a brake, the combination with a running-gear, of brake-levers fulcrumed thereon and carrying brake-shoes, a longitudinally-disposed connecting rod, a transverse connecting bar pivotally attached to the ends of the brake-levers and provided with a horizontal opening and receiving the connecting rod, and a collar journaled on the transverse connecting bar and provided with a clamping screw and receiving the connecting rod, substantially as and for the purpose described.

6. In a brake, the combination with a running-gear, of brake-levers fulcrumed thereon and having their inner ends bifurcated, brake-shoes mounted on the outer ends of the levers, a transverse connecting bar having slotted ends pivoted in the bifurcations of the levers, said connecting bar having a horizontal opening and provided with upper and lower portions forming the same, a longitudinal connecting rod passing through the horizontal opening of the connecting bar, a collar journaled on the upper and lower portions of the connecting bar and receiving the connecting rod, and a clamping screw mounted on the collar and engaging the connecting rod, substantially as described.

7. In a brake, the combination with a running-gear, of brake-levers fulcrumed thereon, a slide mounted on the tongue and provided with upward-extending slotted ears, an approximately vertically-disposed lever having opposite sides fulcrumed on the tongue and extending above the same and provided with a transverse connecting pin arranged in the slots of said ears, connections between the vertically-disposed lever and the brake-levers, and means for operating the slide, substantially as described.

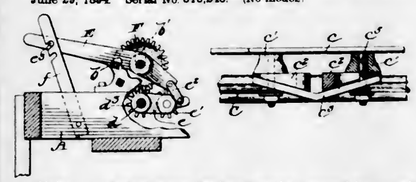
8. In a brake, the combination with a running-gear, of brake levers fulcrumed thereon, a lever fulcrumed on the tongue and having opposite sides extended above the tongue and provided with a transverse connecting pin, connections between said levers, a slide mounted on the tongue and provided with upward-extending slotted ears receiving the transverse connecting pin and provided with shouldered notches for engaging the same, and means for operating the slide, substantially as described.

9. In a brake, the combination with a running-gear, of brake-levers fulcrumed thereon, an upward-extending lever fulcrumed on the tongue and having opposite sides extending above the same, connections between said levers, a guide mounted on the tongue and having flanges forming rear shoulders, a slide arranged on the guide and having a rear depending portion for engaging said shoulders, slotted ears projecting upward from the slide, a pin connecting the sides of the upward-extending lever and arranged in the slots of said ears, and means for operating the slide, substantially as described.

10. The combination with a brake shoe, of a brake-shoe support comprising an attachment plate adapted to be secured to any ordinary brake-bar or lever and having a housing, a swinging frame connecting the brake-shoe with the attachment plate, and a spring mounted in the housing and connected with the swinging frame, and adapted to hold the latter in operative position, and also when the same is swung forward for maintaining the brake-shoe out of engagement, substantially as described.

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529,768. FEED-CUTTER. JOHN K. WILDER, Monroe, Mich. Filed June 29, 1894. Serial No. 516,240. (No model.)



*Claim.*—1. A feed cutter feed mechanism comprising a pair of rolls whose peripheries are revolved at different speeds, the lower feed roller being supported in a suitable frame and having on the outer end of its shaft a gear, which, with the roller and the shaft, remains at all times in the same position, and the upper feed roller and shaft being suitably mounted and guided at its ends on said frame and having a gear on the outer end of its shaft which, with the roller and shaft is movable up and down and is adapted to be revolved either forward or backward, and an adjusting lever, means for holding it in a fixed position, said lever having the outer end of the shaft rotatably connected to it, and an intermediate adjustable gear suitably located and supported in relation to the gears of the two feed rollers so as to be always engaged with the gear of the lower feed roller, and is connected to the lever so as to be operated by it to effect either the forward or backward feed of the machine.

2 In a feed cutter, the combination of a suitable supporting frame and feed box, feed rollers, one of said rollers being capable of vertical movement and having a gear wheel mounted on its shaft, a pivoted lever carrying one end of said shaft and adapted to move the same vertically, a pivoted arm, a link connecting said arm to said lever two pinion gears one of said gears mounted on said pivoted arm, and adapted respectively to engage the gear wheel on the shaft according to the position of the pivoted lever and the gear wheel on said shaft and thereby turn the roller having the gear wheel either backward or forward, a fly wheel provided with cutting knives, and means for actuating said rollers and fly wheel, substantially as described.

3. A feed cutter comprising a differentiating feed, and reversing mechanism and having a balance wheel, cutting knives mounted thereon, a pair of independent wedges $c^8$ provided with longitudinal slots, reversely inclined supports $c^9$, a pair of blocks $c'$ and bolts $c^{10}$, whereby the knives can be adjusted inward and outward without interference with the cutting bar of the machine, substantially as described.

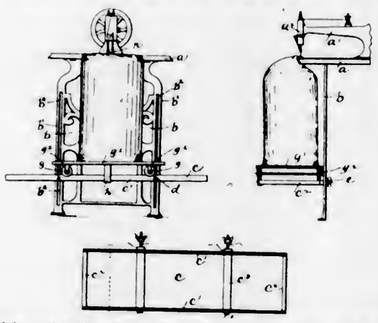
4. In a feed cutter the combination with a suitable supporting frame and feed box, of an operating shaft $d'$ carrying an upper ribbed feed roller at one of its ends and provided with a gear wheel F, a

shaft *d* carrying a feed roller of less diameter than that of the upper feed roller and provided at one of its ends with a spur gear wheel $d^3$, a pivoted lever adapted to move the shaft *d* vertically and carrying at its outer end a link $c^3$, a link *c* loosely mounted on shaft *d*, connected to the link $c^3$ and carrying the spur gear wheel *c'*, a balance wheel carrying cutting blades, and means for operating the feed rollers and the balance wheel simultaneously, whereby a short cut can be made and one of the rollers can be stopped entirely or reversed without interfering with the driving mechanism of the machine, substantially as described.

5. In a feed cutter the combination with a suitable supporting frame and feed box, of an upper feed roller mounted on a shaft, said shaft carrying a gear wheel at its outer end, a lower roller and shaft the latter carrying a gear wheel at its outer end which is adapted to mesh with the gear on the upper shaft whereby the rollers are revolved at different speeds, a balance wheel, cutting knives mounted thereon, a pair of independent wedges $c^3$ provided with longitudinal slots, reversely inclined supports $c^3$, a pair of blocks *c'* and bolts $c^5$, whereby the knives can be adjusted inward and outward with respect to the cutting bar of the machine, substantially as described.

6. In a feed cutter the combination of an upper feed roller mounted on a shaft, said shaft carrying a gear wheel at its outer end, a lower feed roller and shaft, the latter carrying at its outer end a fixed gear wheel which is adapted to mesh with the gear on the upper shaft by having the latter brought into mesh with it, a pivoted lever secured to the upper shaft and adapted to adjust an interposed gear, an interposed gear which is at all times in permanent mesh with the gear on the lower shaft, means for supporting the interposed gear, and means for connecting it with the operating lever, the construction and operation being such, that the upper shaft and the gear carried thereby and the interposed gear are raised and lowered by the operating lever, while the gear on the lower shaft always remains fixed.

## 529,769. SACK-SEWING MACHINE. CHARLES E. WILLIAMS, Columbus, Ohio. Filed Sept. 22, 1893. Serial No. 486,234. (No model.)



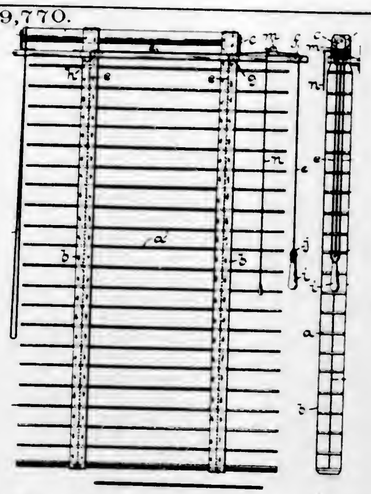
*Claim.*—A sack sewing machine comprising a sewing mechanism and frame upon which said mechanism is supported, the main arm of said mechanism being adjacent to the end of the top of said frame, vertical openings in the leg of said frame, a track supporting frame, bolts projecting from one side of the track supporting frame through said vertical openings, means for adjustably supporting said bolts in said openings, stops arranged on the opposite side of the track supporting frame near the ends thereof, and a car or truck to run on said track supporting frame and having an arm to subserve the two fold purpose of limiting the travel of the car by contacting with the stops, and holding the car on the track.

## 529,770. VENETIAN BLIND. JAMES G. WILSON, New York, N. Y. Filed Mar. 6, 1893. Serial No. 464,864. (No model.)

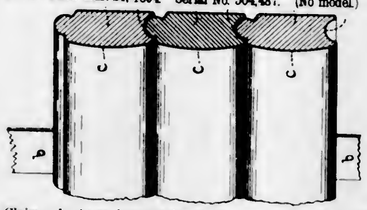
*Claim.*—1. A Venetian blind having its slats strung upon a single cord passing twice through the slats in vertical lines and made fast at its ends to the bottom bar; the middle of the cord forming a laterally overhanging loop or bight, combined with a handle mounted loosely in said loop or bight, substantially as and for the purpose specified.

2. A Venetian blind having its slats strung upon a single cord passing twice through the slats in vertical lines and made fast at its ends to the bottom bar, the middle of the cord forming a laterally overhanging loop or bight after passing through the pulleys in the top bar, combined with a pulley fall operating in the loop or bight and having attached thereto a pendent operating cord, substantially as and for the purpose set forth.

## 529,770.



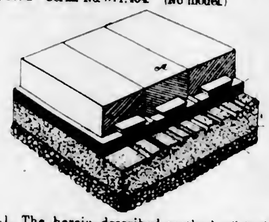
## 529,771. ROLLING SHUTTER, &c. JAMES G. WILSON, New York, N. Y. Filed Mar. 21, 1894. Serial No. 504,487. (No model.)



*Claim.*—1. As an improved article of manufacture, a rolling or flexible shutter formed of slats having a core of wood or the like and a sheathing of metal, substantially as specified.

2. As an improved article of manufacture, a rolling or flexible shutter formed of slats having a core of wood or the like, a sheathing of metal, and an interposition of refractory material, substantially as specified.

## 529,772. FLOORING. JAMES G. WILSON, New York, N. Y. Filed May 16, 1894. Serial No. 511,404. (No model.)

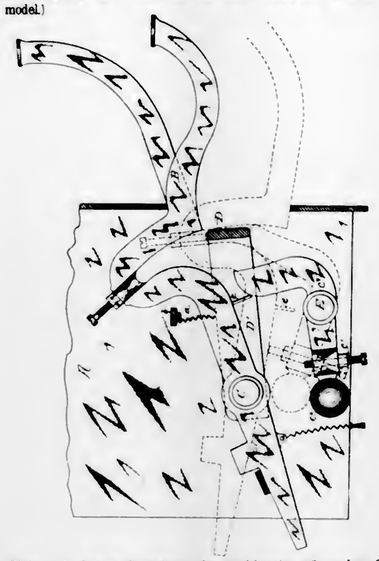


*Claim.*—1. The herein described method of laying composite flooring consisting in first laying a hydraulic cement foundation, then forming dovetail grooves or channels in the upper surface thereof, then allowing said foundation to set, then covering the upper surface and the channels of the foundation with a bituminous compound or other cementitious material and finally placing blocks or strips of wood into the bituminous compound, so that the interposition of bituminous material or mastic will bond the blocks to the cement foundation without other mechanical agencies.

2. A composite flooring made up of strips or blocks of wood having dovetail channels on their under sides and laid upon a hydraulic cement foundation, having dovetail channels or grooves on its upper side, and a bituminous compound or mastic interposed between the blocks or strips and cement foundation; the said interposition being placed while hot so as to take into the dovetail grooves of the blocks and those of the cement foundation, respectively, and secure the two together without the agency of other mechanical means, substantially as specified.



## 529,773. CASH REGISTER AND INDICATOR. JOHN B. AUFUL-DISH, Dayton, Ohio. Filed Oct. 23, 1893. Serial No. 488,882. (No model.)

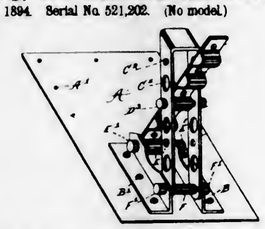


*Claim.*—1. In a cash register, the combination of a series of key-levers provided with graduated curves, a transverse adding bar fulcrumed on the shaft of said key-levers and adapted to be vibrated by the curved portion thereof; a series of individual stops of graduated lengths fulcrumed below said key-levers and adjacent to the curved portion thereof, each of said stops being subjected to movement by its respective key-lever, so that, when said key-lever is depressed to its lowest limit, one arm of the stop will lock against the key-lever while the other arm of said stop will lock against the adding bar to maintain the same from unnecessary vibrations, as herein set forth.

2. In a cash register, the combination of a series of key-levers having graduated slots therein, and pins projecting from their lower surface, an adding bar fulcrumed on the shaft of the key-levers, and vibrated by said key-levers, a series of individual graduated stops fulcrumed below said key-levers, so that when one of the key-levers is depressed, its respective stop will be vibrated in contact with the under side of the key-lever, and the adding bar, to maintain the latter in a fixed position, and means for adjusting each stop with reference to the contact with its respective key-lever, substantially as described.

3. The combination of a series of key-levers provided with graduated curves, and pins projecting from their lower sides, a transverse adding bar with arms fulcrumed on the shaft of the key-levers, a series of individual stops fulcrumed below said key-levers and adding bar, said stops being graduated in size to correspond with the graduations of the key-levers, and resting normally against said pins, and against the under side of the arms of the adding bar, and means for adjusting said stops with reference to their contact with the key-levers and adding bar, as described.

## 529,774. SNOW-GUARD. JOHN BAIRD, Paterson, N. J. Filed Aug. 24, 1894. Serial No. 521,202. (No model.)

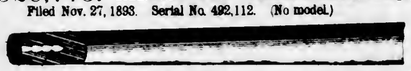


*Claim.*—1. A snow guard consisting of a metal base plate, angle iron side plates secured to said base plate, an adjustable brace or bracket pivotally secured to said angle iron plates an inverted metal U shaped standard pivotally secured to the other ends of said angle iron side plates, the said adjustable brace having loops and the free end of said adjustable brace passing through said standard, said standard being provided with openings for an adjusting bolt and an adjusting bolt adapted to pass through openings in standard and loop in adjusting bracket, all constructed substantially as shown and described and for the purpose specified.

2. In a snow guard a base plate in combination with a standard pivotally secured thereto and a brace or bracket pivotally secured thereto and means for securing said brace and standard for the purpose specified.

3. In a snow guard an inverted U shaped metal standard, a metal base plate which is secured to the roof, said metal standard being pivotally connected at its lower end to said base plate, openings through sides of standard for guard pipes or rods, pipes or rods passing through said openings in standard and a brace pivotally secured to the above mentioned base plate and adapted to be secured to said standard at different points throughout its length for the purpose of holding said standard (when secured to the roof) in a perpendicular position and at a greater or less angle with said base plate (according to the pitch of the roof), as shown and specified

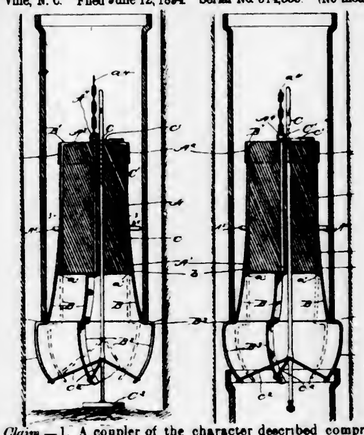
## 529,775. BILLIARD-CUE TIP. CHARLES N. BRIGGS, Chicago, Ill. Filed Nov. 27, 1893. Serial No. 492,112. (No model.)



*Claim.*—1. In a billiard cue, the combination with a cue provided upon its end with the centrally located projection *b'* provided with slightly tapering sides, of the butt piece *c'* carrying the flange $c^3$ provided with internal tapering walls adapted to engage and compress the material of said projection, said butt piece being provided with a tapped hole, a screw thread extending from the end of said projection *b'* and adapted to enter said tapped hole, and the tip *d* secured to the face of said butt piece, whereby the strength of the material of the end of the cue is reinforced, substantially as described.

2. The combination with a billiard cue provided upon its end with a central projection *b'* formed integral with the material of the cue and provided with slightly tapering sides, of a metallic pin *a'* driven in the end of the cue and provided with a surface adapted to engage the wood of the cue to prevent the turning of the pin, the end of said pin projecting from the end of said central projection and provided with a thread, a butt piece *c'* of non-metallic material provided with a tapped hole adapted to engage the screw threaded end of said pin, said butt piece carrying a flange $c^3$ provided with interior tapering walls adapted to engage the tapering sides of said central projection when the butt piece is screwed into position, and a tip *d* secured to the face of said butt piece, whereby the material of the end of the cue is compressed and reinforced and the tendency of said pin to split out is prevented, while the wedging of said flange against said central projection prevents the working loose of the butt piece, substantially as described.

## 529,776. WELL-TILING COUPLER. JOSEPH H. BROWN, Mooresville, N. C. Filed June 12, 1894. Serial No. 514,333. (No model.)



*Claim.*—1. A coupler of the character described comprising a body having a suspension device secured to its upper end, a series of depending outwardly inclined spring arms secured fixedly at their upper ends to the body and provided near their lower ends on their

outer sides with integral shoulders to support a tiling section and extending downwardly and inwardly toward each other from the said shoulders for the purpose described, and an operating rod separate and independent of the said suspension device and linked to the lower ends of said springs to draw them toward each other but allowing them normally to spring apart, substantially as herein described.

2. A coupler for the purpose described comprising a body having a suspension device secured to its upper end, a series of spring arms extending through the grooves and below the body and secured at their upper ends to said body, shoulders on the lower diverging ends of the arms, the said arms extending downwardly and inwardly toward each other from the said shoulders, an operating rod separate and independent of the said suspension device and extending down through the body and linked to the lower extremities of the spring arms, and provided therebelow with a disk or head, by which it is automatically operated to move the arms inwardly to release the tile and a catch on the body to lock the rod when moved upwardly, substantially as herein described.

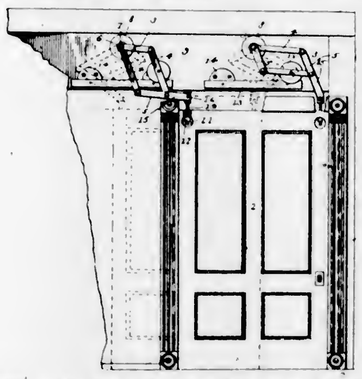
3. A coupler comprising the body having external longitudinal grooves, the spring arms extending through the said grooves and having their upper ends bent over the upper face of the body, a band encircling the upper end of the body, and binding the arms thereto the said spring arms diverging below the lower end of the body and then extending downwardly and inwardly; shoulders for the tiling being formed where the arms have their greatest divergence, an operating rod extending down through the body and linked to the lower extremities of the said spring arms, substantially as herein described.

4. A well tiling coupler, comprising a cylindrical body block A, having a suspension device on its upper end, a series of spring arms secured fixedly at their upper ends to the said block and bent outwardly below the block to form the tile supporting shoulders and curved or inclined downwardly and inwardly therefrom, an operating rod extending down through the block and separate and independent of its suspension device, links connecting the rod and spring arms below the block, and pins projecting from the outer side of the block intermediate of the said spring arms, substantially as set forth.

5. A coupler for tiling consisting in the tapering cylindrical block having external longitudinal grooves deeper at their lower portions, a series of spring arms secured to the block at their upper ends and extending through said grooves about flush with the outer face of the block, the lower ends of the arms being provided with shoulders and curved or inclined inwardly therebelow, a toothed operating rod extending down through the block and connected between its ends with the lower extremities of the spring arms, and having a disk or head therebelow, substantially as herein described.

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529,777. DOOR-HANGER. GEORGE T. BUDDLE, Chicago, Ill., assignor of one-half to Edward S. Harvey, same place. Filed Apr. 19, 1894. Serial No. 508,194. (No model.)

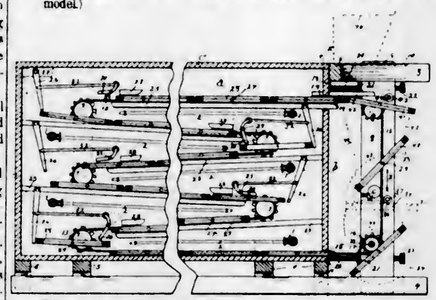


*Claim.*—1. In a door hanger, the combination of a suitably arranged track, a loosely jointed hanger frame pivotally supported at one of its joints and consisting of a quadrangularly arranged series of jointed long and short links, one of the short links of the frame being provided with an arm extension adapted to connect with the top of a sliding door, and a supporting wheel journaled directly at the center and one side of one of the long links of the frame, substantially as set forth.

2. In a door hanger, the combination of a fixed supporting bracket, a loosely jointed frame attached to said bracket and consisting of a quadrangularly arranged series of jointed links, one of which is provided with an arm extension, a stationary track, a supporting wheel journaled directly at the center of one of the hanger links, a U-shaped hanger bracket 17, pivotally connected to the outer extremity of said arm extension and having upper and lower perforated parallel flanges, and a hanger bolt arranged to loosely work in the perforations of said flanges and adapted to be adjustably connected to the top of a sliding door, the connection of said bolt to said hanger bracket admitting of a slight vertical play for the door, substantially as set forth.

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529,778. DRIER. HERMAN BULLOCK, Crosby, and CHARLES E. WARD, Penn Yan, N. Y. Filed Apr. 24, 1894. Serial No. 508,904. (No model.)



*Claim.*—1. In a drier an endless carrier passing through the drying chamber in a zigzag direction and provided with pivoted sections, of controlling devices at the ends or turns in the carrier disposed to act positively on both ends of the sections to hold them in a horizontal position during their passage from one level to another, substantially as described.

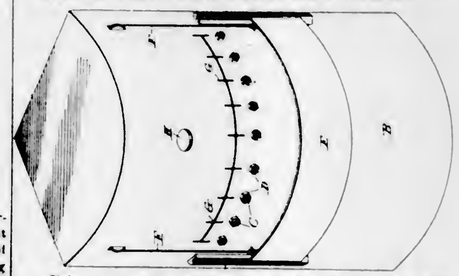
2. In a drier an endless carrier passing through a drying chamber in a zigzag direction and provided with pivoted sections, of a shaft journaled above the carrier a short distance from its fold or turn having a laterally projecting portion, a pivoted arm arranged a short distance from the said turn and adapted to be engaged by the advancing edges of the sections, and a connection between the arm and the said shaft, substantially as described.

3. In combination with a drying chamber having egress and ingress openings, respectively, near its top and bottom, of an endless carrier adapted to traverse the drying chamber and comprising pivoted sections, supports for the said carrier exterior to the drying chamber nearly opposite to the said openings, and means intermediate the said supports to engage with the pivoted sections and turn them on their pivotal supports, substantially as described.

4. In combination with a drying chamber having ingress and egress openings, respectively, near its top and bottom, of an endless carrier operated to traverse the drying chamber, a relatively movable upright exterior to the drying chamber, supports on the upright about opposite the said ingress and egress openings, and tappet devices mounted on the upright and adapted to engage with the said sections and turn them on their pivots, substantially as described.

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529,779. EXPRESS-MESSENGER'S SAFE. JAMES CAMPBELL, Gibson, Mich. Filed Feb. 7, 1894. Serial No. 499,396. (No model.)



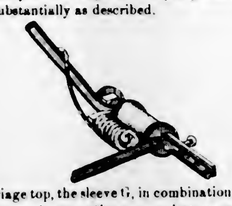
*Claim.*—In a safe, the castings or revolver tubes C C, the jam nuts D, the set screws X and the revolvers Y in combination, substantially as described.

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529,780. CARRIAGE-TOP SPRING. DANIEL CONROY, Toronto, Ontario, Canada. Filed Feb. 26, 1894. Serial No. 501,535. (No model.) Patented in Canada Feb. 5, 1894, No. 45,241.



*Claim.*—1. The combination in a carriage top and with the pivot thereof, of a coiled spring situated in front of said pivot and so arranged that its acting end will swing behind said pivot when said top is lowered, whereby the leverage of said spring decreases as its tension increases, substantially as described.

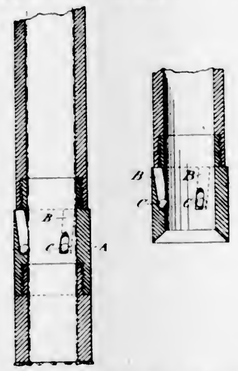


2. In a carriage top, the sleeve G, in combination with the spring D, composed of a torsion part (*b*) connected at one end to the sleeve G, and extending through the same and of a coiled part arranged outside the said sleeve and terminating at or near the point of connection of the part *b*, substantially as and for the purpose specified.

3. In a carriage top, the sleeve G, connected with the rail, in combination with the spring D, composed of a torsion part (*b*) connected at one end to the sleeve G, and extending through the same, and of a coiled part arranged outside the said sleeve and terminating at or near the point of connection of the part *b*, in an arm engaging with the vertical brace C, substantially as and for the purpose specified.

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529,781. GRAB FOR LIFTING CORES FORMED BY TUBULAR ROCK-DRILLS OR BROKEN OR DETACHED DRILL-RODS, &c., FROM BORE-HOLES. PER A. CRAELIUS, Smedjebacken, Sweden. Filed June 16, 1894. Serial No. 514,761. (No model.)



*Claim.*—1. A grab for lifting cores or the like, consisting of a socket or tube having one or more channels inclining downwardly and inwardly to the interior bore thereof and the balls or rollers arranged to move freely in said channels toward and from the lower ends thereof, substantially as described.

2. In combination with the socket having the screw threaded reduced extension, the inclined passages extending from the interior of the socket through the shoulder and the boring rod secured to the reduced extension and closing the inclined openings, substantially as described.

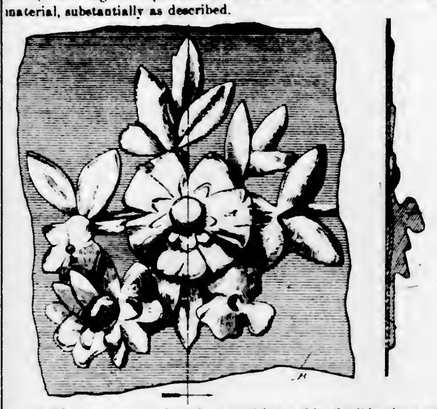
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529,782. ORNAMENTAL WORK AND PROCESS OF MAKING SAME. EDWARD CRISPIN, Chicago, Ill. Filed Jan. 16, 1893. Serial No. 458,603. (No model.)

*Claim.*—1. The process of producing sheets of ornamental work, consisting in spreading the molding material in a semi-fluid or proximately semi-fluid condition upon a matrix, applying thereon a backing sheet of open mesh fabric, incorporating the molding material within such sheet, and removing the molding material from the surface of the ground portions of such backing sheet, substantially as described.

2. The process of producing sheets of ornamental work, consisting in spreading the molding material in a semi-fluid or proximately semi-fluid condition upon a matrix, applying thereon a backing sheet of open mesh fabric, incorporating the molding material within such sheet, removing the molding material from the surface of the ground portions of the sheet and after the material has set, making a second application of molding material to the back of the sheet in quantity sufficient to fill such openings or interstices as may be present as a result of the setting of the first application and thereby fix the same, substantially as described.

3. The process of producing ornamental work, consisting in spreading the molding material upon a matrix, applying thereon a sheet of open mesh material, incorporating the molding material within the sheet, tamping or depressing the sheet in the relief portions of the work, and filling the depressions thus made in the sheet with molding material, substantially as described.

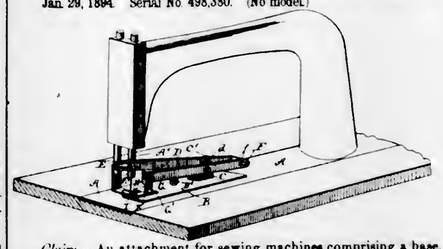


4. Sheet ornamental work comprising a thin flexible sheet of open mesh material provided with and constituting a backing for the relief portions of the work, the ground-portions of the sheet being saturated with the molding material but having such material removed from the surface portions thereof, substantially as described.

5. Sheet ornamental work comprising a thin flexible sheet of open mesh material provided with and constituting a backing for the relief portions of the work, the ground-portions of the sheet being saturated with the molding material and portions of the sheet backing the relief being tamped or depressed therein and having the depressions thus formed in the sheet filled with molding material, substantially as described.

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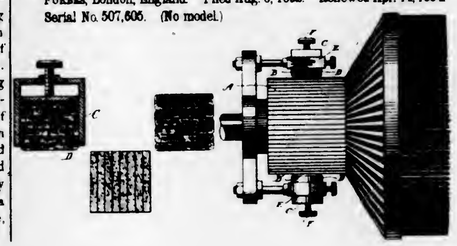
529,783. TRIMMING ATTACHMENT FOR SEWING-MACHINES. WILLIAM G. CUMMINS and EMMA A. MUNRO, McMinnville, Tenn. Filed Jan. 29, 1894. Serial No. 498,380. (No model.)



*Claim.*—An attachment for sewing machines comprising a base, a cutter block attached thereto, a cutter bar fulcrumed on said base and adapted to cooperate with said cutter block, a lever fulcrumed to said base and extending parallel to said cutter bar and connected thereto at its extremity by a pin and slot connection, the other extremity of said lever being suitably connected with the needle bar so as to be operated thereby and thus operate the cutter bar, substantially as described.

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529,784. COMMUTATOR-BRUSH FOR DYNAMOS. GEORGE FORBES, London, England. Filed Aug. 8, 1892. Renewed Apr. 14, 1894. Serial No. 507,605. (No model.)



*Claim.*—1. A brush for electro-motor and dynamo electric machines, the same consisting of conducting fibrous or textile material.

2. A brush for electric motors and dynamo electric machines, consisting of flexible carbonized material.

3. A brush for electric motors and dynamo electric machines, consisting of a mass of flexible carbonized material, and a metal box serving as a holder therefor, as and for the purpose set forth.

4. The combination with a circuit terminal, of a mass of flexible carbonized material, which forms a cooperating terminal, as and for the purpose set forth.

5. The combination with a circuit terminal of a mass of flexible carbonized material, and a metal box, serving both as a holder for the flexible material, and as a cooperating terminal.

6. The combination with a mass of flexible carbonized material, of a metal box, serving both as a holder for the said flexible material, and as a terminal for an electric circuit.

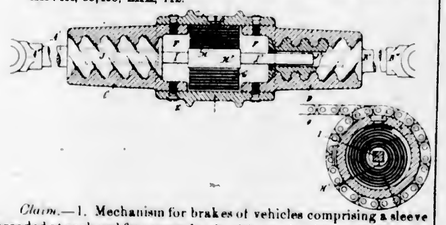
7. The combination with a mass of flexible carbonized material, and a metal box, serving as a holder therefor, the said flexible material forming one terminal of an electric circuit, of a corresponding terminal, and a thumb-screw for pressing the flexible material against the corresponding terminal, as and for the purpose set forth.

8. The combination with a mass of flexible carbonized material, and a metal box, serving as a holder therefor, the said flexible material forming one terminal of an electric circuit, of a corresponding terminal, and means for pressing the flexible material against the said corresponding terminal, as and for the purpose set forth.

9. A brush for electric motors and dynamo electric machines, consisting of flexible or fibrous material, such as cloth, made into an electrical conductor.

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**529,785. BRAKE FOR VEHICLES.** JULES DES GEORGES, Paris, France. Filed July 21, 1894. Serial No. 518,290. (No model.) Patented in France Nov. 23, 1892, No. 225,877; in England Mar. 4, 1893, No. 4,763; in Spain Feb. 27, 1894, No. 15,317, and in Italy Mar. 2, 1894, XXVIII, 35,495, LXX, 112.



*Claim.*—1. Mechanism for brakes of vehicles comprising a sleeve threaded at each end for screwed rods with equal and opposite threads, one rod being fixed and the other movable in the longitudinal direction, and working within the sleeve which moves it while it is itself similarly movable and moved longitudinally by turning upon the fixed screw, the combination having for its effect to double the rapidity of action of the fixed screw and consequently also of the parts operated by it.

2. In a brake apparatus the combination with the oppositely screw threaded rods, one fixed and the other longitudinally movable, of nuts engaging said rods, the sleeve secured to said nuts, a non-cylindrical bar engaging said rods and a spring connected with the bar and sleeve; substantially as described.

3. In brake apparatus the combination of fixed and non-revoluble and longitudinally movable right and left handed screwed rods, right and left handed nut or sleeve, non-cylindrical bar engaging with the rods, spring connected with the bar and sleeve, pulley on the nut, chain or cord secured to the pulley, spring controlled lever mechanism for pulling and releasing the chain and brake shoe, and brake-shoe lever.

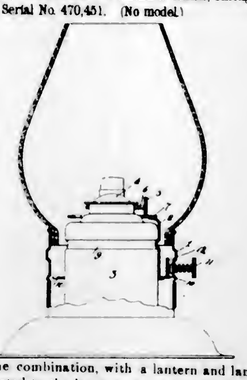
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**529,786. BOAT.** GEORGE L. GODFREY, Old Town, Me. Filed June 22, 1894. Serial No. 515,354. (No model.)



*Claim.*—The herein specified boat, comprising a frame incased by planking having its edges halved together, the projecting edge portions of a plank being disposed on opposite sides, whereby a break joint is produced canvas incasing the planking and folded over the edge of the boat, holes provided along the edge of the boat, and metal plates reinforcing the said holes and having their outer portions clamped against the canvas to secure the same and the planking together, substantially in the manner set forth.

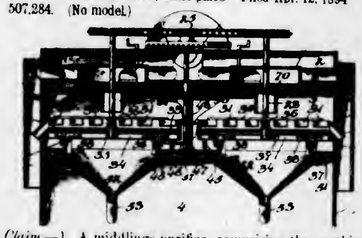
**529,787. LANTERN.** WILLIAM S. HAMM, Chicago, Ill. Filed Apr. 15, 1893. Serial No. 470,451. (No model.)



*Claim.*—The combination, with a lantern and lamp, of a lower gear ring connected to the lamp, an upper gear ring adapted to engage a toothed wick wheel, rods connecting the two gear rings, and a thumb wheel outside the lantern and provided with a stem and a toothed wheel inside the body of the lantern, said wheel engaging the lower gear ring in such manner as to allow detachment therefrom when the lamp is taken out of the lantern, substantially as set forth.

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**529,788. COMBINED PURIFIER AND SEPARATOR.** EDWARD HARDS and WILLIAM A. WOODARD, Superior, Nebr., assignors of one-third to William P. Bates, same place. Filed Apr. 12, 1894. Serial No. 507,284. (No model.)



*Claim.*—1. A middlings purifier, comprising the combination of a hopper, a sieve frame arranged above the same, a platform surrounding the sieve frame and snugly engaging the edges of the same, and an exhausting apparatus arranged above the sieve and operating to draw air from below and through the same, openings being formed in the machine-casing and below the platform, through which the air enters the machine, substantially as described.

2. A middlings purifier, comprising the combination of two sieves, a vertical shaft arranged above each of the sieves, agitator-arms on the shafts, sprocket-wheels on the upper ends of the shafts, a horizontal drive-shaft, an exhaust-fan thereon, a sprocket-wheel operated by the drive-shaft and connected with the chain of the vertical shafts and air ducts leading from the sieves to the fan, substantially as described.

3. A middlings purifier, consisting of a closed casing, a horizontally-extending floor or partition therein and formed with a circular opening therein, a hopper arranged with its upper end in said opening and with its remainder below said floor or partition, a series of carrying-wheels arranged on horizontal axes at the upper end of the hopper, a circular sieve-frame mounted on said carrying-wheels, means for imparting to the sieve-frame an oscillatory movement, a continuously-revolving shaft located above the sieve-frame and axially coincident therewith, and an arm secured to the shaft at a point directly above the sieve-frame and capable of sweeping over the upper surface thereof, substantially as described.

4. A middlings purifier, comprising the combination with an enveloping casing, of a hopper arranged therein, a sieve frame arranged above the hopper and adapted to primarily receive the matter to be treated and to discharge the finer particles thereof into the hopper, the frame being adapted to have an oscillatory movement on its mountings, a chute on the periphery of the sieve-frame and projecting into a horizontally-elongated slot in the machine casing, a passage or duct on the exterior of the casing, and communicating with the slot therein and adapted to receive the matter discharged by the chute, a second duct communicating with the upper end of the first and extending horizontally across the top of the casing, and an air-exhausting apparatus for creating a draft in the passage or duct and

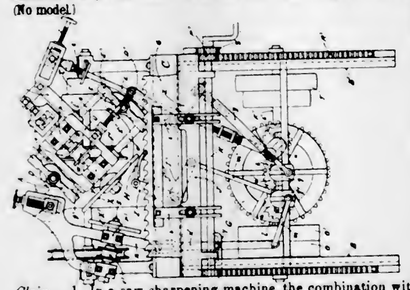


in direct communication with the horizontally extending or second duct whereby the lighter portions of its contents are separated from the heavier, substantially as described.

5. A middlings purifier comprising the combination of an enveloping casing, a horizontal floor or partition extending across the interior of the same and formed with two circular openings therein, two hoppers arranged with their respective upper ends in each opening, a vertically-extending driven shaft axially coincident with each hopper, an oscillatory sieve-frame mounted on each shaft and directly above the upper ends of the hoppers, an agitator-arm on each shaft whereby the contents of the sieve-frame are agitated, a vertical shaft arranged between the two sieve-frames and adapted to be revolved continuously, an arm fixed to the shaft and capable of revolving with the shaft so as to alternately engage each sieve-frame and so as to impart thereto a fragmentary or partial revolution, and a spring on each sieve-frame whereby they are returned to their respective normal positions, substantially as described.

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**529,789. MACHINE FOR SHARPENING SAW-TEETH.** DEXTER HAZARD, Marquette, Mich. Filed May 28, 1894. Serial No. 512,825. (No model.)



*Claim.*—1. In a saw sharpening machine, the combination with supporting bracket A, and guide-rods *o* and *o'* mounted thereon; of frame U slidably mounted upon said rods; arbor 3 journaled in said frame U; connecting rod Z'; elbow Z; rod *y* connected to crank *g*; set-collar 2; set-screw M'; collar M, provided with upright extension; connecting link N'; rocking bar F'; standard N; box F; rod L'; rod L; crank *e*; elliptical gears *b* and *b'*; gear wheel G; pinion *h* and shaft K'; all substantially as shown and described.

2. In a saw sharpening machine, the combination with pawl H; upright arm I; pawl H'; upright arm I'; shaft 1 arm I'; connecting rod *m'*; crank *e'*; elliptical gears *a* and *a'*; gear wheel G; pinion *h* and shaft K'; all substantially as shown and described.

3. In a saw sharpening machine, the combination with supporting bracket A; and guide-rods *o* and *o'* mounted thereon; of frame U slidably mounted upon said guides; arbor 3 journaled in frame U; set-collar 2; set-screw M'; collar M provided with upright projection, connected to arbor 3; link N'; rocking bar F'; standard N; sliding box F; threaded rod L'; rod L; crank *e* and gear wheels *b* and *b'*; gear wheel G; pinion *h* and shaft K'; all substantially as shown and described.

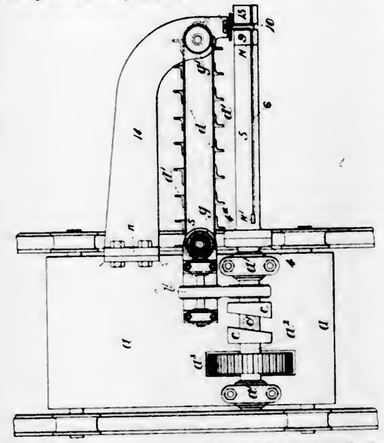
4. In a saw sharpening machine, the combination with supporting bracket A; and guide rods *o* and *o'* mounted thereon; of frame U slidably mounted upon said guides; arbor 3 journaled in frame U; threaded rod Z'; elbow Z; connecting rod *y*; crank *g*; set collar 2; set-screw M'; collar M provided with upright extension, connected to arbor 3; connecting link N'; rocking bar F'; sliding box F; threaded rod L'; standard N; connecting rod L; crank *e*; elliptical gears *b* and *b'*; swinging frame A'; box 4; threaded rod *l*; arbor 5 journaled in frame A'; bar *n*; connecting rod *m*; crank *g'*; pawl H; upright arm I; pawl H'; upright arm I'; shaft 1; arm I'; connecting rod *m*; crank *e'*; elliptical gear wheels *a* and *a'*; gear wheels G; pinion *h*; and shaft K'; all substantially as shown and described.

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**529,790. MACHINERY FOR CUTTING COAL, STONE, OR OTHER HARD SUBSTANCES.** THOMAS HEPPELL, Birtley, and JOHN G. PATTERSON and WILLIAM PATTERSON, Tynemouth, England. Filed July 20, 1892. Serial No. 440,609. (No model.) Patented in England July 31, 1891, No. 12,997.

*Claim.*—1. In machines for cutting coal stone and similar hard substances the combination with a rotary and reciprocatory cutter bar 5 having a reduced portion 8 thereon of the sleeves 9 and 13 and collar 10 with arm 11 and slotted headpiece 12 connected to a pin on the back stay 14, the several parts being arranged so as to provide a bearing to the outer end of the cutter bar while it is being rotated or rotated and reciprocated simultaneously, substantially as herein set forth.

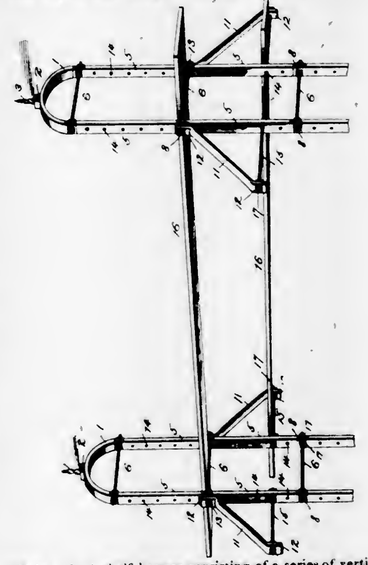
2. In machines for cutting coal stone and similar hard substances the combination with a rotary cutter bar 5 having a reduced portion 8 thereon and shaft $a^2$ adapted to simultaneously reciprocate by the contact of the inclined cams *c* with the roller *c'* fitted on the spindle $c^4$ of the sleeves 9 and 13 and collar 10 with arm 11 and slotted headpiece 12 connected to a pin on the backstay 14 the several parts being arranged so as to provide a bearing to the outer end of the cutter bar while it is being rotated or rotated and reciprocated simultaneously, substantially as herein set forth.



3. In machines for cutting coal stone and similar hard substances the combination with a rotary and reciprocatory cutter bar 5 having a reduced portion 8 thereon, sleeves 9 and 13, collar 10 with arm 11 and slotted headpiece 12 connected to a pin on the backstay 14 of the scraper band *d* with scrapers *d'* adapted to remove the débris from the cutters of the bar 5 the several parts being arranged and adapted to operate substantially as herein set forth.

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**529,791. SHELF-HANGER.** DAVID M. HERMAN, Lewisberry, Pa. Filed Aug. 22, 1894. Serial No. 520,990. (No model.)



*Claim.*—1. A shelf hanger consisting of a series of vertical bars having rabbeted ends tongued and grooved upon their contacting faces, an arched hanger having a seat for a central lag-screw, and tie-rods extending from side to side of the structure, their threaded ends lying in openings in the rabbeted, lapped ends and having nuts turned

thereon on both sides of the joints, substantially as and for the purposes described.

2. A shelf-hanger comprising an arched hanger, a series of vertical extension pieces connected thereto and to each other, a series of tie-rods passing through the lapped ends of said pieces and having nuts turned upon their threaded ends on both sides of each joint, a lag-screw lying in a central seat in the arched hanger, and a series of shelves resting upon the tie-rods, substantially as and for the purposes described.

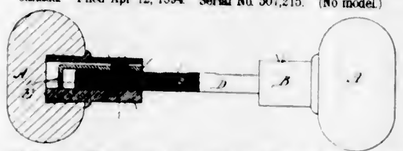
3. A shelf hanger comprising an arched hanger having a seat for a central screw, a series of vertical extension pieces having their tongued and grooved ends lapped upon each other and on the ends of the arched hanger, a tie rod passed through the overlapped ends at each joint and having nuts turned on its threaded portions against opposite faces of the joints, one or more rods lying in openings in the extension pieces between the joints and shelves supported by said rods and tie-rods, substantially as and for the purposes described.

4. The combination with a shelf-hanger consisting of a series of jointed, vertical extension pieces, of inclined braces connected at one end to said pieces, tie-rods lying in openings in the other ends and extending to and through the vertical part of the frame with nuts turned thereon against opposite faces of the ends of the braces and shelves resting on said rods between, and on the sides of the vertical parts, substantially as and for the purposes described.

5. A shelf hanger consisting of a frame composed of vertical pieces lapped one upon the other and provided with openings through the lapped ends and in the intermediate parts, braces having oppositely angular ends provided with openings, their ends being bolted to the outer faces of the vertical pieces, and tie-rods lying in the openings in their other ends and having nuts turned on both sides of the braces, said rods extending to the vertical pieces and forming supports for shelves, substantially as and for the purposes described.

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529,792. KNOB ATTACHMENT. THOMAS A HODGSON, Ottawa, Canada. Filed Apr 12, 1894. Serial No. 507,215. (No model.)

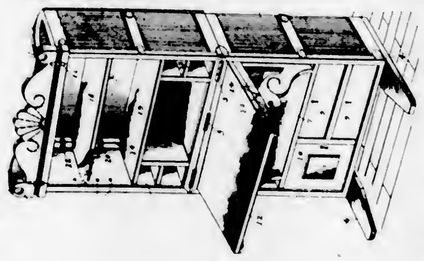


*Claim.*—1. The combination with a knob having a tubular shank provided with a radial hole, and a lock spindle provided with a serrated face matching the serrations of a locking plate, of a clamping screw larger than said hole and screwing into said plate, said screw rounded or reduced at the end to partially enter said hole and engage the interior of the shank around the circumference of the hole, whereby unscrewing the screw causes the screw to clamp the spindle and plate in the tubular shank and said shank covers the screw partially, when the knob is attached to the spindle, as set forth.

2. The combination of a knob having a tubular shank provided with a radial hole, a lock spindle and locking plate inserted in said shank, said plate having a bent end or leg to keep the plate parallel with the spindle when short-connected, and a screw screwing into said plate and inserted with said spindle into said shank, said screw having near one end an enlargement or shoulder to engage the inside of said shank around the radial hole, and a rounded or reduced end entering said hole when the screw is unscrewed by a tool inserted in said hole, whereby unscrewing the screw causes the thrust of the screw to clamp the plate and spindle together for attachment of the knob, as set forth.

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529,793. COMBINATION TRUNK, BOOKCASE, AND WRITING-DESK. JOHN J HOLM, Madison, Wis. Filed Jan. 31, 1894. Serial No. 498,649. (No model.)



*Claim.*—1. In a device of the class described, the combination with the upper and lower hinged sections, the latter having upon its upper side dowel-openings, of a transversely disposed crown piece hinged to the upper wall of the upper section and adapted to fold within the latter, wings hinged to the ends of said crown-piece and adapted to fold over the edges of said section, notches formed in the upper edges of the wings, and locking cleats having heads at their front ends for engaging the notches, and dowel-pins in their under sides for engaging the dowel-openings in the sections, substantially as specified.

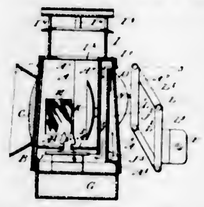
2. In a device of the class described, the combination with the upper and lower rectangular sections, hinged together at the upper front edge of the lower section the latter being subdivided forming an upper compartment, of a desk top hinged to the upper edge of said section, adapted to fold within the compactment, and having opposite cleats at its edges upon its under side, the vertically disposed swiveled brackets arranged within the compartments and set some distance from the side-walls thereof so as to combine to form spaces for the cleats, said brackets being adapted to fold inward into the compartments or outward against the cleats under the desk-top, substantially as specified.

3. In a device of the class described, the combination with the upper and lower hinged sections, of the rigid transverse cleats 4 arranged on the under side of the bottom section and extending forward from the rear edge and projecting beyond the front edge so as to embrace or overlap the lower sections when the two sections are folded, and to provide a broad base when the sections are extended to form a book case and the casters arranged in the under sides of the cleats 4, at the ends thereof substantially as specified.

4. In a device of the class described, the combination with the folding sections, of the textile curtain connected to the upper edge of the upper section and adapted to fold over the same and form a tight joint between said sections when they are folded, substantially as specified.

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529,794. LANTERN. DAVID JACKSON, and JOHN OSTERLOH, New York, N. Y. Filed Oct. 11, 1893. Serial No. 487,847. (No model.)



*Claim.*—1. In a lantern, the combination with a body provided with an apertured bottom and having its sides extending down below the said bottom, of a fount secured in the lower open end of the body and provided with a burner projecting through the aperture of the bottom, the top of the fount and the bottom of the body forming an air chamber, substantially as described.

2. In a lantern, the comoination with a body provided with an apertured bottom and having its sides extending below the bottom, of a fount secured in the lower open end of the body and provided with a burner projecting through the aperture of the bottom, the space between the top of the fount and bottom of the body forming an air chamber, and an air channel in the rear of the body and leading from the lower part of the body to within a short distance of the top and down to the said air chamber, the said channel communicating with the outer air, substantially as described.

3. In a lantern, the combination with a body provided with openings in the lower portion of the rear side and with an apertured bottom, the sides of the body projecting below the bottom, of a fount secured in the lower open end of the body and forming with the bottom thereof a chamber and two vertically disposed partitions arranged in the rear portion of the body, one of the partitions extending from the top of the body down to the bottom and the other partition extending from below the bottom up between the first named partition and the body and terminating short of the top of the said body, the said partitions forming an air channel leading to the said chamber, substantially as described.

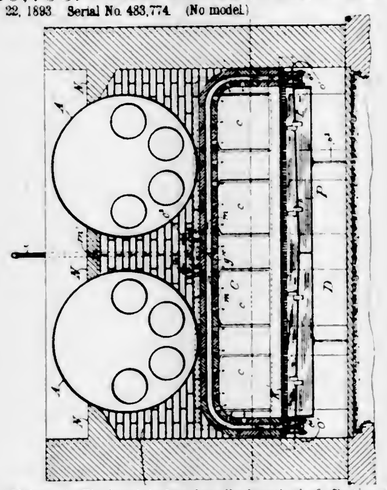
4. A lantern, comprising a body having two transverse partitions, and an apertured bottom arranged between part of the sides, the front and the innermost partition, the said bottom being located a suitable distance above the lower ends of the sides and ends of the body, a fount adapted to be attached to the said body below the bottom thereof, to form with the latter an air chamber connecting with the innermost channel formed by the said partitions and the back of the lantern body, the said channel connecting at its upper end with a second channel into which open air inlet apertures formed in the back and sides of the lantern body, and a cap held on the upper end of the said lantern body, and formed with an opening leading to the interior of the body and having a partial bottom forming the top for the space at the upper ends of the channels, substantially as shown and described.

5. A lantern, comprising a body having two transverse partitions, and an apertured bottom arranged between part of the sides, the front and the innermost partition, the said bottom being located a suitable distance above the lower ends of the sides and ends of the body, a fount adapted to be attached to the said body below the bottom thereof, to form with the latter an air chamber connecting with the innermost channel formed by the said partitions and the back of the lantern body, the said channel connecting at its upper end with a second channel into which open air inlet apertures formed in the back and sides of the lantern body, a cap held on the upper end of said lantern body and formed with an opening leading to the interior of the body, and having a partial bottom forming the top for the space at the upper ends of the channels, and a hood supported above the top of the said cap, substantially as shown and described.



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529,795. FURNACE. NILS JOHNSON, St. Louis, Mo. Filed Aug. 22, 1893. Serial No. 483,774. (No model.)



*Claim.*—1. The hereinbefore described method of effecting an increased consumption of fuel and the prevention of smoke in furnaces, the same consisting in obstructing and breaking up the outgoing current of unconsumed products of combustion by projecting a transverse sheet or curtain of air downwardly upon the fuel from the rear upper part of the fire-box at a point in front of the bridge-wall.

2. In a furnace, the combination of the fire box, the bridge-wall in rear thereof, an air passage or passages extending across the upper rear part of the fire-box in front of the vertical plane of the bridge-wall, and jet orifices leading from said passage into the fire box at a point above the bed of the fuel; substantially as described.

3. In a furnace, the combination of the fire-box, the bridge wall in rear thereof, an air passage or passages extending up the sides and across the top of the rear part of the fire-box in front of the vertical plane of the bridge-wall, and jet orifices leading from said passage into the fire-box at a point above the bed of the fuel; substantially as described.

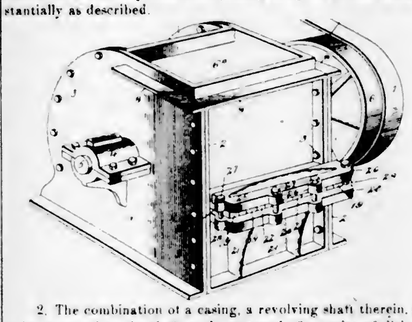
4. The combination, in a furnace, of an air passage extending crosswise in the furnace forward of the bridge-wall and receiving and delivering air as described, with means for diminishing the air supply from beneath the furnace in the vertical plane of said air-passage; substantially as described.

5. The combination, in a furnace, of the pipes and the tiles, said pipes having said tiles strung thereon and arranged to form an arch over the fire-box having a passage through which air and steam are delivered downward into the furnace; substantially as described.

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529,796. MACHINE FOR PULVERIZING BARK FOR LEACHING. LORENZO R. JOHNSON, Harrison Valley, Pa. Filed May 15, 1894. Serial No. 511,373. (No model.)

*Claim.*—1. The combination of a casing, a cylinder revolving therein, a series of stationary cutting tools secured to the interior of the casing and projecting inwardly on a line radial from the axis of the cylinder, each of said cutting tools having one side formed with a groove curved in cross section, so that each adjacent edge of said side is formed into a cutting edge, the said grooved side of the tool being one of the sides which are located in a line at right angles to the axis of the cylinder, and the opposite sides of the stationary tool adjacent to the grooved side being perpendicular from the line of said grooved side, and a series of movable tools fixed to the cylinder and revolving therewith, the said moving tools being respectively adapted to pass between the spaces between the stationary tools, each of the moving tools being constructed similar to the construction of the stationary tools, and of a comparative size which will cause its perpendicular sides to lie snugly against the corresponding perpendicular sides of the stationary tools when passing along side of the same, substantially as described.

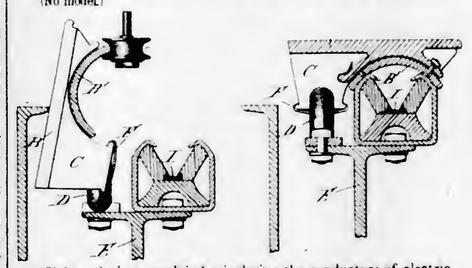


2. The combination of a casing, a revolving shaft therein, a cylinder mounted on the shaft, and composed of a series of disks, one portion of which being formed with a radial groove a circular concentric groove therein, and the remaining of the disks having a circular concentric projection thereon, a tool adapted to be seated in each of the radial grooves in the first disks and having a notch adapted to receive the projections of the second disks, whereby the tools are rigidly secured to the cylinder, means for holding the disks in place, and stationary tools co-operating with the tools of the cylinder, substantially as described.

3. The combination of a casing the component parts of which are rigidly and permanently joined to each other, said casing having a perpendicular side formed with a horizontal slot extending throughout the width thereof and having at the lower edge of said slot a horizontal table or ledge projecting outwardly therefrom and having a plain and unbroken upper surface, a series of cutting tools having their shanks arranged upon the said table or ledge and having their cutting portions projected into the casing, a series of spacing blocks arranged between the cutting tools, the spacing blocks and cutting tools being formed with aligned grooves in their upper sides, a securing plate separate from the casing and having a rib fitting within said aligned grooves and rigidly secured upon the shanks of the knives and upon the spacing blocks, a revoluble cylinder within the casing, and cutting knives thereon and operating with the stationary knives, substantially as described.

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529,797. CLOSED CONDUIT FOR ELECTRIC RAILWAYS. FREDERICK L. KING, Chicago, Ill. Filed Jan. 15, 1894. Serial No. 496,949. (No model.)



*Claim.*—1. In a conduit for inclosing the conductors of electric railways, a support having journals and a cover removably pivoted to said journals; as and for the purpose set forth.

2. In a conduit for inclosing the conductors of electric railways, a hinged cover provided with journal boxes open on one side, in combination with the journals suitably supported and adapted to such boxes, substantially as and for the purpose set forth.

3. In a conduit for inclosing the conductors for electric railways, the combination of a cover provided with open journal boxes, and a

journal suitably supported and adapted to such boxes, and a detachable fastening device for securing such journals in the boxes; substantially as and for the purpose set forth.

4. In a conduit for inclosing the conductors of electric railways, the combination of a cover provided with open journal boxes and with exterior ledges formed thereon, journals suitably supported and adapted to such boxes and a metal clip having bent ends adapted to slide upon the ledges and pass underneath the journals and thereby retain them in place; substantially as and for the purpose set forth

5. In a conduit for inclosing the conductors of electric railways, the combination of journals suitably supported, with a cover for the conduit, provided with open journal boxes, adapted to such journals, and with vertical lubricating recesses communicating with the journal boxes; substantially as and for the purpose set forth

6. In an electric railway the combination of a conductor, a chamber inclosing the same having a movable cover, gearing connected to said cover and means carried by the vehicle for operating said gearing, to open said cover and to retain it in open position while the vehicle is passing; substantially as and for the purpose set forth.

7. In an electric railway the combination of a conductor, a chamber for inclosing the same, a movable cover, gearing connected thereto for moving the same and means for automatically operating said gearing; as and for the purpose specified.

8. In an electric railway the combination of a conductor, a chamber inclosing the same having a movable cover, gearing connected to such cover and to a pivoted arm, which latter is in the path of a device depending from the vehicle; substantially as and for the purpose set forth.

9. In an electric railway the combination of a conductor, a chamber inclosing the same, and a pivoted cover for such chamber, a pivoted arm and gearing between such pivoted arm and the movable cover; substantially as and for the purpose set forth.

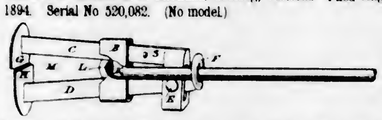
10. In an electric railway the combination of a conductor, a chamber inclosing the same, a pivoted cover for such chamber, a hinged arm a toothed lever upon which said arm is supported toward its free end, and gearing connecting the toothed lever with the pivoted arm; substantially as and for the purpose set forth.

11. In an electric railway the combination of a conductor, a chamber inclosing the same, pivoted covers for such chamber, gearing connected with such covers and connected together, and a pivoted mechanism for actuating such gearing, and thereby operating the covers simultaneously; substantially as and for the purpose set forth.

12. In an electric railway the combination of a conductor, a chamber inclosing the same pivoted covers for such chamber, segmental gears rigidly secured to such covers, other segmental gears meshing with the former and arranged upon the same shaft, and connections between the same and a pivoted arm which latter is arranged in the path of a device upon the moving vehicle, whereby the covers are operated automatically and simultaneously; substantially as and for the purpose set forth.

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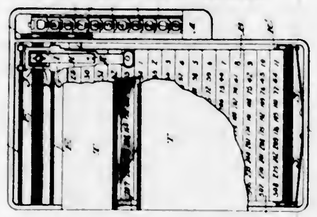
529,798. BOILER-TUBE OR PIPE-CLEANER. HENRY J. LAWRENCE and ALFRED E. G. BROMELL, Geelong, Victoria. Filed Aug. 11, 1894. Serial No 520,082. (No model.)



*Claim.*—In a tube or flue scraper, an arm C having an angular extension at one end provided with an opening, an arm D pivotally supported in said opening and having a rearwardly extended end provided with an eye offset to one side thereof, scraper plates attached to the forward ends of the arms, and a stem or handle sliding freely in the eye and an expander for the arms carried by the stem, substantially as described.

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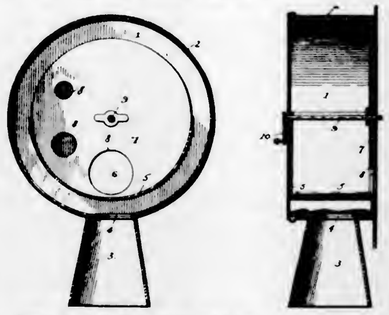
529,799. ADDING-MACHINE. HORACE B. MARTIN, Chino, Cal. Filed Dec. 4, 1893. Serial No. 492,678. (No model.)



*Claim.*—The combination in an adding machine with a supporting frame provided with a semi flexible endless belt containing a table of consecutive numbers helically arranged of a driving chain O, with sprockets P, P' to carry the same; the transverse screw F to give lateral motion, the index O,—and the gears D D' to transmit motion to the belt and index—substantially as shown.

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529,800. DRAFT ATTACHMENT. CHARLES MATTHEWS, Columbia, Mo. Filed May 22, 1894. Serial No. 512,103. (No model.)



*Claim.*—1. A draft regulator for heating apparatus comprising a casing provided at its inner end with an opening designed to communicate with the fire-pot or combustion chamber, said casing being provided with a supply opening, and a damper consisting of a flat plate arranged on the inner end of the casing adjacent to the opening thereof and provided with a series of openings varying in size and adapted to register with the opening of the inner end of the casing, substantially as described.

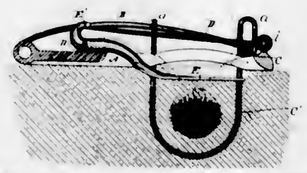
2. A draft regulator for heating apparatus, comprising a casing having a discharge opening designed to communicate with the fire pot or combustion chamber, said casing being provided with a supply opening for the admission of air, a damper arranged adjacent to the discharge opening and provided with a series of openings varying in size, and a deflecting flange disposed opposite the supply opening, substantially as described.

3. A draft regulator for heating apparatus, comprising a cylindrical casing provided at its inner end with a discharge opening designed to communicate with the fire pot or combustion chamber, a supply tube communicating with the interior of the casing for the admission of air, a curved deflecting flange mounted within the casing and concentric therewith and located opposite the supply tube, a damper arranged adjacent to the discharge opening and provided with a series of openings varying in size, and means for operating the damper, substantially as described.

4. A draft regulator, comprising a surrounding flange designed to be mounted on a furnace or stove, a depending supply tube mounted on the flange at an opening thereof, a casing removably arranged in the flange and provided at its inner end with a discharge opening and having at its lower side an opening registering with the upper end of the supply tube, a curved deflecting flange mounted in the drum and arranged above the supply tube, and a damper arranged adjacent to the discharge opening and provided with a series of openings varying in size, substantially as and for the purpose described.

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529,801. MOLE-TRAP. MYRON H. NASH, Kalamazoo, Mich. Filed Apr. 5, 1894. Serial No. 506,423. (No model.)



*Claim.*—1 In a trap, the combination of the main frame, A, with a rectangular portion having a central opening, and the cross-portion, A'; loops, C, C, to each side of the rectangular portion, the ends of which pass through guiding openings, r, r, in the main frame: a spring wire, B, coiled on the cross-portions, A', at B', B', with a cross-portion, B'', connecting the forward ends of said spring elongated loops, a, at the ends of the large loop, C, to the upper side of the frame, A, for the passage of the cross-wire, B''; a loop, a', at the opposite ends of the large loops, C, to engage the spring wires, B; a pan or trip, E, to be moved or tripped by the motion of the soil caused by the burrowing animal centrally located in the opening of the rectangular portion of the frame, and pivoted at n to the main frame; and a lever, D, pivoted at i to the front part of the frame and adapted to engage the catch, E', on the pedal or pan, E, all substantially as described and for the purpose specified.

2. In a mole trap, the combination of the main frame consisting of a substantially rectangular portion open at its center with a shank-like portion projecting to one side; large spring loops projecting below said main frame, and in suitable guides therein; a spring attached to the shank portion of the main frame to actuate said loops; a catch to retain said loops, depressed; and a suitable pan or trip toward the center of the rectangular opening to be operated by the motion of the soil caused by the animal passing to release the trap, for the purpose specified.

3. In a mole trap, the combination of a main frame, the loops projecting below said frame and adapted to be forced into the ground below the burrow of the animal; a spring to actuate said loops and pull them tight toward the main frame; suitable means for holding said spring depressed; and a trip to rest upon the ground between the loops to be actuated by the movement of the soil caused by the animal from beneath, to release the trap, for the purpose specified.

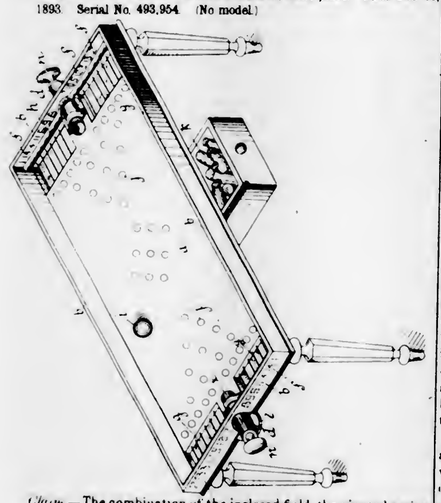
4. In a mole trap, the combination of the main frame, loops projecting below said frame and adapted to be forced into the ground below the trail of the mole; suitable means of actuating said loops; a pedal between said loops resting on the ground above, adapted, when the ground is disturbed, by the movement of an animal beneath, to release the operating mechanism to throw the loops up against the main frame, for the purpose specified.

5. In a mole trap, the combination of the main frame; a loop projecting below said frame; a spring to actuate said loop and draw it toward the main frame; a retaining device to hold said loop depressed, a release; a pedal connected to said release and resting on the ground so that it shall release the trap when the ground is disturbed, by the movement of an animal below, for the purpose specified.

6. In a mole trap, the combination of the main frame; a loop projecting below said frame, and adapted to be forced into the ground below the trail of the mole; suitable means of actuating said loop, a detaining device on said loop, and a pedal resting on the ground to release said detaining device, when the ground is disturbed by an animal passing below, to throw the loop up against the main frame, for the purpose specified

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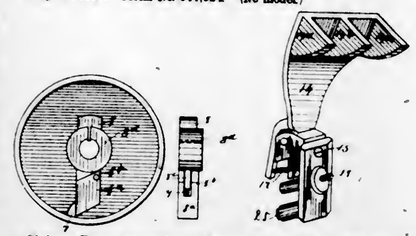
529,802. GAME APPARATUS. OLAUS OLSSON, Brooklyn, N. Y., assignor of one-half to Johan A. Johanson, same place. Filed Dec. 18, 1893. Serial No. 493,954. (No model.)



*Claim.*—The combination of the inclosed field, the pivoted sprung guns at the ends of the fields, the grids at said ends the cushions on the guards back of and projecting over the grids at a suitable height for receiving the balls under them and retaining them on the grids by pressure on the balls, and the target numbers on the grids, said grids being in advance of the guards having the target numbers substantially as described.

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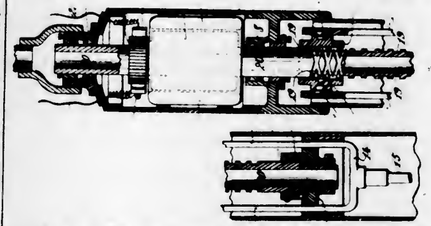
529,803. FARE-REGISTER. ALBERT PFAFF, Dayton, Ohio. Filed May 21, 1894. Serial No. 511,924. (No model.)



*Claim.*—The combination of the trip registering wheels provided each with a tooth on its inner rim, ratchet wheels fixed to the face of said trip registering wheels, a series of pawls composed of two members, adapted to rotate the trip registering wheels in one direction, and to yield when said wheels are rotated to indicate the fares; a pawl provided with a plurality of teeth adapted to engage with the ratchet wheels on the trip registering wheels; a slide to which said pawl is immediately pivoted; a spring between the shank of said pawl, and the slide, whereby pressure is exerted to maintain the pawl in normal engagement with the ratchet wheels, and a bell-crank for actuating said slide, substantially as described

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529,804. PUMPING MECHANISM FOR OIL-WELLS, &c. HARRY W. PICKETT, Warren, Pa. Filed Dec. 7, 1893. Serial No. 493,060. (No model.)



*Claim.*—1. The combination of a well-tubing having a motor-housing interposed between sections of the tubing to lie in the well, a reciprocating piston-rod working in a part of the tubing below the housing, a rotary tubular shaft held against lengthwise movements and provided with right and left hand intersecting screw-threads, a shoe or device engaging the screw-threaded part of the shaft, a connection between the shoe or device and the pump-piston for reciprocating the latter by the rotation of the shaft, an electric motor arranged within said motor-housing in operative connection with the right and left hand screw-threaded shaft, a stuffing-box which cuts off communication between the motor-housing and that part of the well tubing lying below the same and through which the shaft extends, and a bearing supporting the lower end of the shaft and on which said shaft rotates, substantially as described.

2. The combination of a well-tubing having a motor housing inserted between sections thereof to lie in the well, a reciprocating pump-piston, a piston-rod, a rotary-shaft provided with right and left intersecting screw-threads, a ring or collar encircling the said shaft and having a pivoted shoe which engages the screw-threads a yoke having its lower end connected with the pump-piston and the upper ends of its arms attached to the said ring or collar, a guide arranged in the well-tubing and through which the yoke extends and by which it is guided, an electric-motor arranged in said motor-housing in operative connection with the right and left hand screw-threaded shaft, and a stuffing-box which cuts off communication between the motor-housing and that part of the well-tubing lying below the same and through which the shaft extends, substantially as described.

3. The combination of a well-tubing, a pump-piston, a piston-rod, a rotary tubular shaft held against lengthwise movements and provided with right and left hand intersecting screw-threads, a shoe or device for engaging the screw threads, a connection between the shoe or device and the piston rod, a housing or casing constituting a part of the well-tubing, and an electric-motor housed in the said casing or housing in the well and in operative connection with the said tubular right and left hand screw-threaded shaft, substantially as described.

4. The combination of a well tubing, a piston, a piston rod, a rotary tubular shaft held against lengthwise movement, provided with right and left hand screw threads and having its axis parallel or coincident with the axis of the well-tubing, means for rotating the shaft, a shoe or device for engaging the screw-threads of the shaft, and a connection between the shoe or device and the piston-rod for reciprocating the latter by the rotation of the shaft, substantially as described.

5. The combination of a well tubing, a casing or housing forming a part of the tubing within the well, a tubular rotary-shaft provided with right and left hand screw-threads and having its axis parallel or coincident with the axis of the well-tubing, an electric-motor housed within the said casing or housing in the well and in operative connection with the rotary-shaft, a shoe or device for engaging the screw-threads of the shaft, and a connection between the shoe or device and the piston-rod, substantially as described.

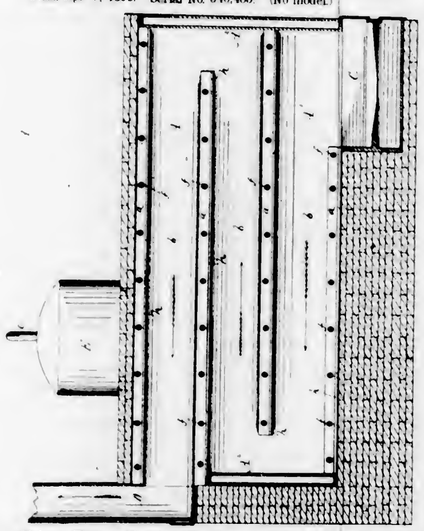
6. The combination of a well-tubing, a casing or housing forming a part of the tubing within the well and composed of detachably connected sections, a rotary-shaft provided with right and left hand screw-threads and extending through the said casing or housing, an electric-motor housed in the said casing or housing and in operative connection with the rotary-shaft, a shoe or device for engaging the screw-threads of the shaft, a pump-piston, a piston-rod, and a connection between the piston rod and the said shoe or device, substantially as described

7. The combination of a well-tubing, a reciprocating pump-piston, a piston-rod, a rotary tubular shaft provided with an attached armature and having right and left hand intersecting screw threads, a shoe or device for engaging the screw threads, a connection between the shoe or device and the piston rod, and an electric-motor located in a part of the well-tubing and through which extends the rotary tubular shaft to which the armature of the motor is attached, substantially as described.

8. The combination of a well-tubing having a motor-housing inserted between sections thereof to lie in the well, a pump piston, a piston-rod, a block arranged in the well-tubing below said housing, a rotary tubular shaft having right and left hand screw threads a ball-bearing sustained by the said block and supporting the weight of the shaft and on which the latter rotates, a shoe or device engaging the screw-threads of the shaft, a connection between the piston-rod and the said shoe or device, an electric-motor arranged in said motor-housing in operative connection with the tubular shaft, and a stuffing-box cutting off communication between the motor-housing and that part of the well-tubing lying below the same and through which the shaft extends, substantially as described

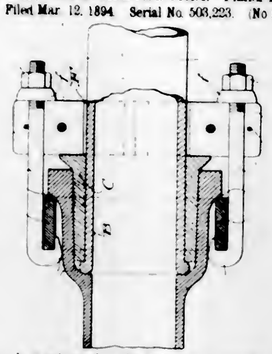
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**529,805. STEAM-BOILER.** AUGUST POGGENDORF, Rochester, N. Y. Filed Apr. 3, 1890. Serial No. 346,485. (No model.)



*Claim.*—The combination, with the abutting water sections, of the longitudinal flanges *h h* resting one upon another, and the nipples *f f* of one section entering holes *d d* of the next, as shown and described and for the purpose specified.

**529,806. SUBMARINE-PIPE JOINT.** FRANK RANN, Milwaukee, Wis. Filed Mar. 12, 1894. Serial No. 503,223. (No model.)

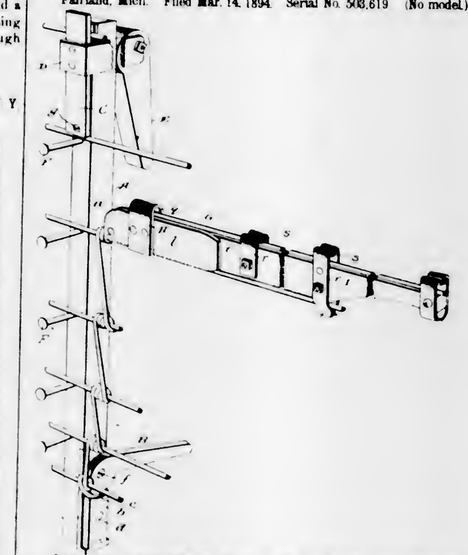


*Claim.*—1. A sub-marine pipe-joint that comprises a packing-collar on the spigot end of a pipe-section fitting in the bell-end of an opposing pipe section, rings arranged on the bell and spigot, hook-bolts that pass through peripheral extensions of the spigot-ring and engage the bell ring, washers on the bolts opposing the spigot-ring extensions, and nuts on said bolts in opposition to the washers, substantially as set forth.

2. A sub-marine pipe-joint that comprises a packing collar on the spigot-end of a pipe-section fitting the bell end of an opposing pipe-section, a series of segments that have out-turned ends and are bolted together to form a ring around the spigot against the packing collar, a ring on the bell, bolts arranged between opposing ends of the spigot-ring segments and terminated at one end in hooks engaging the bell ring, stay-pins arranged to oppose outward spring of the bolts, washers on said bolts in opposition to said ends of the spigot-ring sections, and nuts on the aforesaid bolts against the washers, substantially as set forth

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**529,807. WIRE SPACER AND TWISTER.** JOHN H. ROGERS, Fairland, Mich. Filed Mar. 14, 1894. Serial No. 503,619. (No model.)



*Claim.*—1. A spacer for the runners of wire fences, comprising an upright bar, having clamps at opposite ends to receive a runner, and a stay wire respectively and stops at intermediate points, substantially as specified.

2. A spacer for wire fences, comprising a bar or upright having clamps for a runner and stay wire respectively arranged at opposite ends of said bar and relatively at right angles to each other, substantially as specified.

3. A spacer for the runners of wire fences, comprising a bar having a clamp at its upper end, a series of stops arranged below said clamp at pre-determined intervals, and a clamping device at the lower end of the bar relatively at right angles to the upper clamp, substantially as specified.

4. An upright bar, having a clamp at its upper end adapted to engage a runner of a wire fence, and a clamp at its lower end adapted to receive and hold one end of a stay wire to be secured to the runners, substantially as specified.

5. A stay wire twister for wire fences comprising a bar or arm having a head provided with grooves or recesses in its opposite sides to receive a runner and a stay wire respectively, and adapted to twist the stay wire around the runner

6. A device for applying stay wires to the runners of wire fences, comprising a bar or arm, having a grooved or recessed head to receive the stay wire and runner, respectively, and also having guide clamps to receive the respective wires on opposite sides of said arm, substantially as specified.

7. The arm carrying the twisting head comprising the intermediate plate, and the two outer plates arranged to form seats or receivers for the runners and stay wires, and one of the plates having a projecting lip or flange to hold the wire while being wrapped or twisted, substantially as specified.

8. The bar or handle I, having the intermediate plate *i*, the outer plate *k*, and the opposite outer plate *l*, secured thereto so as to receive a runner and a stay wire respectively, and also having the guard H, and the guide clamps for the runner and stay wire, substantially as specified

9. The combination of a stay wire twister having grooves or recesses for a stay wire on one side and a runner on the other and adapted to carry the stay wire in a position parallel with the runner, with a spacing device adapted to hold the lower end of a stay wire while the same is being applied, substantially as specified

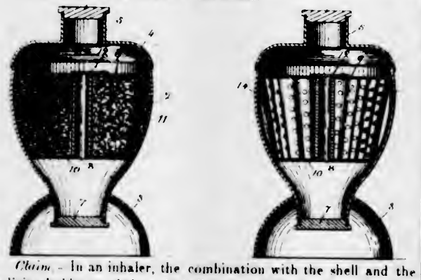
10. The combination of a spacer for the runners of wire fences comprising a bar having a clamp at its upper end, a series of stops arranged below said clamp at predetermined intervals, and a clamping device at the lower end of the bar to receive and hold one end of a stay wire, with a twisting device adapted to wind or twist the same around the runners while its lower end is held in or by the spacer, substantially as specified.

11. The combination of a twisting device adapted to wind or twist the stay wires of a wire fence around the horizontal wires or runners, with a spacing device having stops to hold the said runners at a predetermined distance apart, a device to engage with one or more of said runners, and a clamp to receive and hold the lower end of a stay wire while the same is being applied, substantially as specified

12. The combination of a spacer for the runners of wire fences adapted to hold the same by means of stops at predetermined distances apart and to engage with one of said runners and also to receive and hold one end of a stay wire, with a twisting device adapted to wind or twist the same around the runners while its lower end is held in or by the spacer, substantially as specified

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**529,808. INHALER.** SOLON D. ROSS, Manhattan, Kans. Filed July 26, 1894. Serial No. 518,662. (No model.)



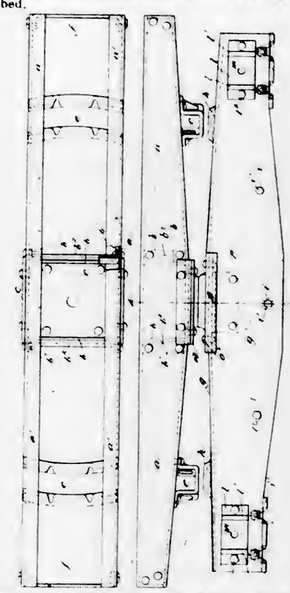
*Claim.*—In an inhaler, the combination with the shell and the medicine holder consisting of a hollow central standard and a pair of perforated plates secured to its opposite ends, of the swinging valve pivoted to one of said plates and adapted to close the opening in the standard, as set forth

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**529,809. BOLSTER FOR RAILWAY-CARS.** CHARLES T. SCHOEN, Allegheny, Pa. Filed June 9, 1894. Serial No. 514,078. (No model.)

*Claim.*—1. A body or truck bolster composed of two channel-like beams, transverse tie-plates to connect them, and side-bearings also connecting them, the channels or channel beams being deepest midway between their ends, substantially as described.

2. A body or truck bolster composed of two channels or channel beams *a, a*, connected by the transverse tie-pieces *b, b*, arranged upright centrally within the channel beams, and the end tie-pieces *f*, whereby a bolster may be constructed of any desired width by varying lengths of tie-pieces without alteration of the channels, combined with an applied center-bearing-plate and side-bearings, substantially as described.



3. A body or truck bolster comprising two channels or channel beams, and tie-pieces *b, b*, consisting of longitudinally corrugated plates arranged between said channels at about their midway portion, and having flanged ends by which they are secured to the beams, substantially as described

4. A body bolster composed of channel beams whose sides are deepest in the center and narrowing thence toward the ends, central tie-pieces *b, b*, end ties *f*, side-bearings *e*, plate *c*, and center-bearing plate *d*, substantially as described

5. A truck bolster, combined with interchangeable bolster column guide plates having seats of different elevation, substantially as described

6. A truck bolster column guide plate having an inwardly projecting teat adapted to be fitted to a bolster to take off the shearing strain from the fastening, substantially as described

7. A bolster column guide plate having an elevated column seat and adjacent ribs or beads therefor, whereby a bolster of minimum or deficient width may be increased in width to adapt it to interchange with a bolster of greater width, substantially as described

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**529,810. TYPE-WRITING MACHINE.** JACOBS W. SCHUCKERS, Belleville, N. J. Filed Sept. 15, 1890. Renewed Dec. 7, 1891. Serial No. 414,282. (No model.)

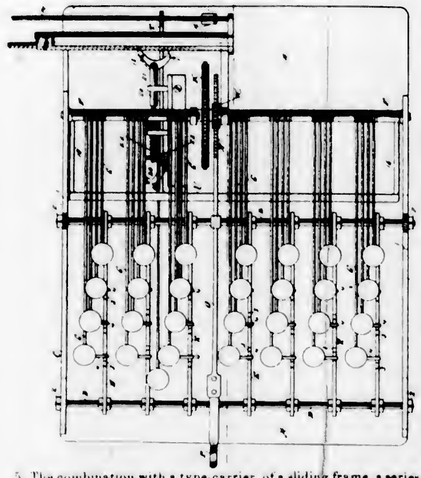
*Claim.*—1. The combination with a type carrier, of a sliding frame, a series of lever keys engaging and actuating said frame by cam surfaces and pivoted to swing in a plane parallel with the line of movement of the frame, and connections between said frame and means for locking the type carrier in position when positioned by the movement of the frame and type carrier for positioning the latter by the movement of the frame, substantially as described.

2. The combination with a type carrier, of a sliding frame, a series of lever keys engaging and actuating said frame by cam surfaces and pivoted to swing in a plane parallel with the line of movement of the frame, connections between said frame and type-carrier for positioning the latter by the movement of the frame, and an impression mechanism actuated by the keys, substantially as described.

3. The combination with a type carrier, of a sliding frame, a series of lever keys engaging and actuating said frame by cam surfaces and pivoted to swing in a plane parallel with the line of movement of the frame, connections between said frame and type-carrier for positioning the latter by the movement of the frame, and impression and feeding mechanisms actuated by the keys, substantially as described

4. The combination with a type-carrier, of a sliding frame, a series

of lever keys engaging and actuating said frame by cam surfaces having straight extensions and pivoted to swing in a plane parallel with the line of movement of the frame, connections between said frame and type-carrier for positioning the latter by the movement of the frame, and an impression mechanism operated by the further movement of a key after the type carrier is positioned by the movement of the frame while the frame is held in position by the straight extension of the cam surface, substantially as described.



5. The combination with a type-carrier, of a sliding frame, a series of lever keys engaging and actuating said frame by cam surfaces having straight extensions and pivoted to swing in a plane parallel with the line of movement of the frame, connections between said frame and type-carrier for positioning the latter by the movement of the frame, an impression mechanism operated by the further movement of a key after the type carrier is positioned by the movement of the frame while the frame is held in position by the straight extension of the cam surface, and a feeding mechanism actuated by the keys, substantially as described.

6. The combination with a type carrier, of a sliding frame provided with a series of cam surfaces, a series of lever keys moving said frame by engagement with said cam surfaces and pivoted to swing in a plane parallel with the line of movement of the frame, and connections between said frame and type carrier for positioning the latter by the movement of the frame, substantially as described.

7. The combination with a type carrier, of a plate sliding in the direction of its own length and provided with one or more cam surfaces, one or more lever keys engaging said cam surfaces and pivoted to swing in a plane parallel with the line of movement of the plate, and connections between said plate and type carrier for positioning the latter by the movements of the plate, substantially as described.

8. The combination with a type carrier, of a plate sliding in the direction of its own length and provided with a cam surface, a series of keys engaging said cam surface at different points lengthwise of the plate, and acting upon the same portion of the cam surface during a part of their movement and connections between said plate and type carrier for positioning the latter by the movements of the plate, substantially as described.

9. The combination with a type carrier, of a sliding frame provided with a series of plates extending in the line of movement of the frame and each provided with one or more cam surfaces, a series of lever keys moving said frame by engagement with said cam surfaces and pivoted to swing in a plane parallel with the line of movement of the frame, and connections between said frame and type carrier for positioning the latter by the movement of the frame, substantially as described.

10. The combination with a type carrier, of a sliding frame provided with a series of plates extending in the line of movement of the frame, and each provided with one or more cam surfaces having straight extensions, a series of lever keys moving said frame by engagement with said cam surfaces and pivoted to swing in a plane parallel with the line of movement of the frame, connections between said frame and type carrier for positioning the latter by the movements of the frame, and an impression mechanism operated by the further movement of a key over the straight extension of a cam surface after the type carrier is positioned by the movement of the frame, substantially as described.

11. The combination with a type carrier, of a sliding frame provided with a series of plates extending in the line of movement of the frame, and each provided with one or more cam surfaces having straight extensions, a series of lever keys moving said frame by engagement with said cam surfaces and pivoted to swing in a plane parallel with the line of movement of the frame, connections between said frame and type carrier for positioning the latter by the movements of the frame, and impression and feeding mechanisms operated by the further movement of a key over the straight extension of a cam surface after the type carrier is positioned by the movement of the frame, substantially as described.

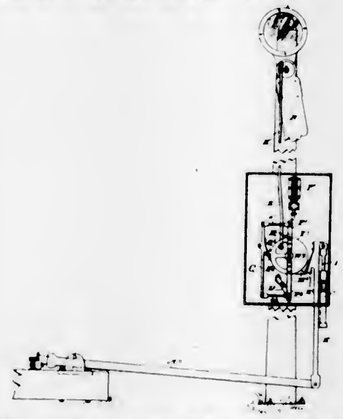
12. The combination with a type carrier, of side frames, B, C, cross bars D sliding in said frames, plates E supported by said cross bars and each provided with one or more cam slots, connections between the plates and type carrier, and a series of lever keys engaging the cam slots and pivoted to swing in a plane parallel with the line of movement of the frame, substantially as described.

13. The combination with a type wheel or segment having a plurality of fonts of type arranged in different arcs, of side frames B, C, cross bars D sliding in said frames, plates E supported by said cross bars and provided with cam slots, connections between the plates and type carrier, a series of keys engaging the cam slots, bar O carried by said cross bars and having a limited movement thereon, connections between said bar and type wheel or segment for shifting the latter, and means for locking said bar in different positions relatively to the cross bars, substantially as described.

14. The combination with a type wheel or segment having a plurality of fonts of type arranged in different arcs, of side frames B, C, cross bars D sliding in said frames, plates E supported by said cross bars and provided with cam slots, connections between said plates and type wheel or segment, a series of keys engaging said cam slots, bar O carried by said cross bars and having a limited movement thereon, connections between said bar and type wheel or segment for shifting the latter, and spring shifting key P for locking the bar in different positions relatively to the cross bars, substantially as described.

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529,811. RAILROAD-SIGNAL. CHARLES SELDEN and FRANK P. J. PATENALL, Baltimore, Md., said Patenall assignor to said Selden. Filed Dec. 18, 1893. Serial No. 493,957. (No model.)



*Claim.*—1. The combination, substantially as described, with a mechanically operated railroad signal, an auxiliary or "dwarf" signal operated by power stored from the main signal mechanism, and means for controlling said auxiliary or "dwarf" signal from switch points or devices within the block controlled by the main signal.

2. The combination, substantially as described, of a railroad signal biased to take the danger position, an overbalancing weight tending to throw the same into safety position, means for lifting the said weight by the action of a passing train, an auxiliary or dwarf signal, an operating power therefor, and winding mechanism actuated from the main signal mechanism, as and for the purpose described.

3. The combination, substantially as described, of the main signal and its actuating or controlling disk 1, a train operated overbalancing weight engaging with said disk, an auxiliary signal, an actuating wheel therefor, an operating spring or its equivalent, as described, connected with the latter, and a winding device for said spring actuated by the main signal apparatus.

4. The combination, substantially as described, of the main signal, its actuating disk I, the overbalancing weight connected with the track lever, the "dwarf" signal, and a power winding ratchet upon the disk I, for the dwart signal.



5. The combination, substantially as described, of the main signal and its operating disk, the overbalancing weight actuated by the train, the "dwarf" signal, an operating wheel therefor, a spring for actuating said wheel, an electro-magnetically controlled catch governing the movement of said wheel, and a winding device actuated by the disk of the main signal.

6. The combination, substantially as described, of the main signal or semaphore, the disk I, connected therewith, a "dwarf" signal, an actuating wheel for the latter, a spring connected to said wheel, and a winding device for said spring actuated by the wheel I.

7. The combination, substantially as decribed, with a main and auxiliary or "dwarf" signal, of the concentric actuating disks or wheels, and an intermediate actuating device for the "dwarf" signal in which power is stored by the movements of the disk of the main signal, and a magnet for intermittently releasing said power to cause the operation of the "dwarf" signal.

8. The combination, substantially as described, of the disk I, connected with the main signal, a "dwarf" or auxiliary signal, an actuating spring for the latter having a projecting lug or tooth engaging with an interior winding ratchet on the main disk, as and for the purpose described.

9. The combination with a semaphore, and a controlling or actuating disk therefor, of a lever carrying a catch or detent for engagement therewith, an auxiliary power wheel coaxial with said controlling disk, an electro-magnetically governed catch for said auxiliary power wheel, and links connecting said power wheel with the lever carrying the catch for said controlling disk.

10. The combination, substantially as described, of a semaphore, the coaxially and concentrically mounted disks I, I', a rod E, sustained by one of said disks and tending to rotate the same, a catch G', engaging with the same disk, a magnet and catch controlling the operation of the other disk, and arms or projections from the latter connecting with the catch for the first named disk.

11. The combination, substantially as described, of the main rotating disk and signal, of the auxiliary weighted disk I', mounted coaxially and concentrically with the first, a catch for the signal disk, links connecting the catch lever with the weighted disk, and a restoring lever also connected with said weighted disk, and adapted to be moved by the latter into the path of the signal disk, as and for the purpose described.

12. The combination, substantially as described, of a disk I, actuated by the passing train and connected with the semaphore, the disk I', having one or more arms P', P³, connected with the catch lever G, a catch carried by said lever and engaging with the disk I, a lever L', connected with one of the arms P', P³, and a projection carried by the disk I, and adapted to engage with the lever L', to restore the disk I', to normal position during the operation of the signal by its actuating power.

13. The combination with a railroad signal and its operating power, of a winding mechanism for the latter, an actuating weight for said winding mechanism, a track lever connected to said weight and operated by a passing train for lifting the weight independently of the part upon which it normally rests, and means for moving said part into a position to support the elevated weight.

14. In a railroad signal apparatus, an operating power such as a spring, a detached reciprocating actuating weight for winding up said power, means connected to said weight for lifting it independently of the part with which it is normally engaged, means for moving said part into a position to support the lifted weight, and a catch for normally holding the signal apparatus from action by its operating power.

15. The combination, substantially as described, of a disk I, weight rod E, connected to and lifted by a track lever and engaging with projections on said disk, a spring C, intermediate winding mechanism between the spring C and disk I, a wheel I³, mounted concentrically with said disk and connected with said spring, a catch or detent for normally holding the said wheel stationary, and a signal connected to said wheel.

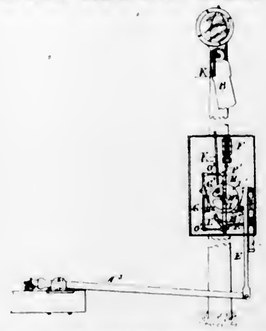
16. The combination, substantially as described of the signal operating disk or wheel I, mechanism for winding up a spring or weight thereby, a second signal operated by said spring, a detached actuating weight for the disk I, and means for lifting said actuating weight by the action of a passing train.

17. The combination of two associated signals, an actuating device for one of them controlled by a spring, an actuating device for the other controlled by a train-operated weight, means for connecting the two actuating devices in a manner such that the operation of the latter shall wind the spring of the former.

18. The combination, substantially as described, in a railroad signal, of an operating power for one signal, a catch for normally holding the latter out of action, a winding mechanism for said operating power, an actuating disk for said operating power and for a second signal, an actuating weight sustained by said disk, and means for lifting the weight by the action of a passing train, as and for the purpose described.

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529,812. RAILROAD-SIGNAL. CHARLES SELDEN, Baltimore, Md. Filed Jan. 4, 1894. Serial No. 495,649. (No model.)

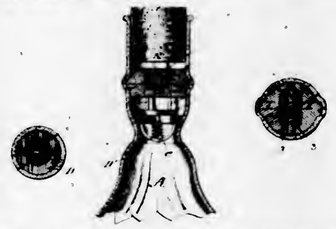


*Claim.*—1. In a railroad signal apparatus, the combination with the signal releasing magnet, of a signal which is set into positions of safety and danger by successive operations of the magnet, a relay magnet, circuit controlling devices therefor governed by a passing train, and means for producing a double change of circuit condition in the signal magnet by a single change in the electrical condition of the relay magnet.

2. In a railroad signal apparatus, the combination substantially as described, of a signal magnet requiring momentary action, a relay, a circuit closer and breaker in the circuit thereof, a circuit controller for the signal magnet, and means for producing a double change of position in said controller on movement of the relay armature in one direction only.

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529,813. BOTTLE-STOPPER. CEVEDRA B. SHELDON, Brooklyn, N. Y., assignor to Levi W. Case, Montclair, N. J. Filed Feb. 2, 1894. Serial No. 498,919. (No model.)



*Claim.*—1. A bottle having its neck drawn inward forming a seat for the valve seat, the valve seat fitted and connected to said inwardly drawn portion of the bottle neck, the valve and its actuating spring located on the inner side of the valve, substantially as set forth.

2. A non refilling bottle stopper, having a valve opening to permit the discharge of liquid from and closing against the pouring of liquid into said bottle, the seat for said valve having an upwardly projected valve guide and the valve guard arranged to rest on said guide when inserted in the bottle neck and means by which to secure the said guard in the bottle neck, substantially as set forth.

3. In a non-refilling bottle stopper, a valve guard divided longitudinally into sections having each section provided on its outer side with protuberances to enter sockets in the bottle neck and provided in the inner faces of said sections with circuitous passages and a spreader fitting between and forcing said sections outward, substantially as set forth.

4. The combination, with the bottle having its neck provided internally with sockets of the valve guard formed in sections having projections to enter said sockets and a spreader to force said sections apart to cause their projections to enter said sockets, such guard being provided with a circuitous, passage or passages, substantially as set forth.

5. The improvement in bottle closures herein described, consisting of the bottle having its neck provided internally with sockets, the valve opening outward and closing inward, a spring by which to hold said valve closed, said spring being arranged on the inner side of the valve, whereby it is protected, as described and a guard formed in sections having protuberances to enter the sockets and formed in sec-

tions and provides with circuitous passages, as and for the purposes set forth.

6. A bottle having its neck provided with a valve opening outward to permit the discharge of liquid from and closing against the pouring of liquid into said bottle a spring for actuating said valve arranged on the inner side thereof and a valve guard arranged between said valve and the mouth of the bottle and having a circuitous passage all substantially as described whereby the spring is protected by the valve from the action of acids and the guard will protect the valve from mechanical interference substantially as set forth.

7. An improved non refilling bottle having its neck provided with a valve guard having a circuitous passage whereby to prevent the introduction past it of a valve manipulating tool, the valve located on the inner side of said guard and the valve actuating spring located on the inner side of the valve all substantially as described whereby the valve is protected against mechanical displacement and the destruction of its spring by acids substantially as and for the purposes set forth.

8. In a non-refilling bottle stopper a valve guard divided longitudinally into sections having circuitous passages formed in the inner faces of said sections and a spreader interposed between said sections substantially as set forth.

9. In a non-refilling bottle stopper a valve guard formed with a circuitous passage, and made in longitudinal sections and having a spreader interposed between said sections substantially as set forth.

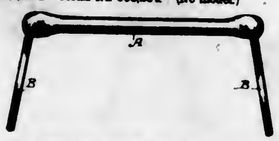
10. The combination of the bottle having its neck provided with internal sockets the valve guard formed in sections and provided on the said sections with protuberances entering said sockets and a spreader interposed between said sections and adapted to seat the projections thereof in the sockets of the bottle neck substantially as set forth.

11. A bottle provided with a valve opening to permit the discharge of liquid from and closing against the pouring of liquid into said bottle, a spring actuating said valve and arranged on the inner side thereof, and a valve guard arranged between said valve and the mouth of the bottle all substantially as described whereby the valve is protected by the guard from mechanical interference and the spring is protected by the valve from the action of acids all substantially as and for the purposes set forth.

12. In a non-refilling bottle stopper, the bottle having its neck provided with internal laterally projected sockets and the valve guard formed in sections and having fixed protuberances to fit said sockets and means by which to adjust said valve guard to set its fixed protuberances in said sockets substantially as and for the purposes set forth

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529,814. BRIDLE-BIT. RICHARD A. SHUTE, San Diego, Cal. Filed Feb. 15, 1894. Serial No. 500,284. (No model.)




*Claim.*—An improved driving bit consisting of a mouth bar the outer ends of which are enlarged, rings upon said ends and held against movement so as to be rigid with the mouth bar, said rings diverging and provided with means for the attachment of the driving reins, the upper sides of said rings also being provided with slotted openings for the reception of the head-stall strap.

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529,815. MACHINE FOR MAKING CAN-BODIES, &c. WILLIAM H. SMYTH, Berkeley, Cal. Filed June 1, 1893. Serial No. 476,275. (No model.)

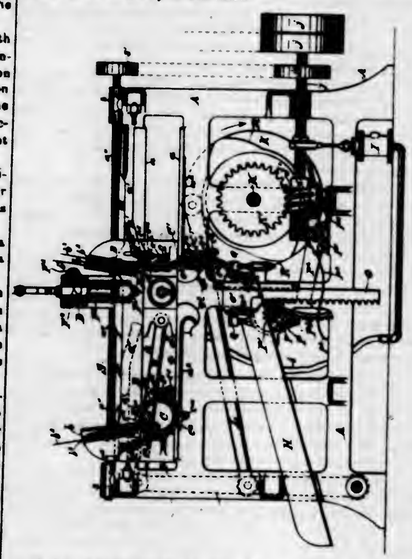
*Claim.*—1. In a machine for making the bodies of cans and other packing vessels, the combination of a folder, a mandrel around which the folder bends the sheet, means for effecting the movement of the mandrel in the line of its axis, and means for effecting its travel in a line at an angle to its axis, substantially as described.

2. In a machine for making the bodies of cans and other packing vessels, the combination of a folder and a mandrel around which the sheets are bent by the folder, said mandrel being divided into two independent parts across its length substantially as described.

3. In a machine for making the bodies of cans and other packing vessels, the combination of a folder and a mandrel around which the folder bends the sheet, said mandrel being divided into two parts across its length and means for withdrawing each part of the mandrel from the encircling sheet and folder, substantially as described.

4. In a machine for making the bodies of cans and other packing vessels, the combination of oppositely located folders, aligned mandrels about which the sheet is bent by the folders, means for moving the mandrels to and from the folders successively, and means for projecting and retracting said mandrels to and from each other, to permit the folders to bend the sheets around them and to withdraw them from the encircling sheets and folders, substantially as described.

5. In a machine for making the bodies of cans and other packing vessels, the combination of a plurality of folders, with a mandrel common to all and about which a sheet is bent by each folder successively, substantially as described.



6. In a machine for making the bodies of cans and other packing vessels, the combination of oppositely located folders, with a mandrel about which a sheet is bent by the folders, said mandrel being adapted to approach to and recede from each folder successively, substantially as described.

7. In a machine for making the bodies of cans and other packing vessels, the combination of a plurality of folders, a mandrel common to all and about which a sheet is bent by each folder successively and means for retracting the mandrel from each encircling sheet, substantially as described.

8. In a machine for making the bodies of cans and other packing vessels, the combination of oppositely located folders, a mandrel about which a sheet is bent by the folders, means for moving the mandrel to and from the folders successively, and means for retracting the mandrel from the encircling sheet and folder, substantially as described.

9. In a machine for making the bodies of cans and other packing vessels, the combination of oppositely located folders, aligned mandrels about which a sheet is bent by the folders, means for moving the mandrels to and from the folders successively, and means for projecting and retracting said mandrels to and from each other, to permit the folders to bend the sheets around them and to withdraw them from the encircling sheets and folders, substantially as described.

10. In a machine for making the bodies of cans and other packing vessels, the combination of a folder, a frame movable to and from the folder, a mandrel carried by the frame and adapted to receive the sheet bent around by the folder, and a power device carried by the frame for withdrawing the mandrel from the encircling sheet and folder and projecting it again, substantially as described.

11. In a machine for making the bodies of cans and other packing vessels, the combination of a folder, a frame movable to and from the folder, a mandrel carried by the frame and adapted to receive the sheet bent around it by the folder and an engine with power connections carried by the frame for withdrawing the mandrel from the encircling sheet and folders and projecting it again, substantially as described.

12. In a machine for making the bodies of cans and other packing vessels, the combination of oppositely located folders, a frame movable to and from said folders successively, a mandrel carried by the frame and adapted to receive the sheets bent around it by each folder successively and a power device on the frame for withdrawing said mandrel from the encircling sheets and folders and projecting it again, substantially as described.



13. In a machine for making the bodies of cans and other packing vessels, the combination of a folder, a frame movable to and from the folder, aligned mandrels carried by the frame and adapted to receive the sheet bent around them by the folder, and power devices on the frame for simultaneously moving the mandrels to and from each other to permit them to receive the sheet and folder and to withdraw them therefrom, substantially as described.

14. In a machine for making the bodies of cans and other packing vessels, the combination of oppositely located folders, a frame movable to and from said folders successively, aligned mandrels carried by the frame and adapted to receive the sheet bent around them by each folder successively, and power devices on the frame for simultaneously moving the mandrels to and from each other, to permit them to receive the sheet and folder and to withdraw them therefrom, substantially as described.

15. In a machine for making the bodies of cans and other packing vessels, the combination of a forming mandrel, a folding device, means for horizontally reciprocating both mandrel and folding device, and means for effecting the functional operations of both during their reciprocation, substantially as herein described.

16. A machine for making the bodies of cans and other packing vessels, having forming and folding devices so arranged that the forming device is adapted to withdraw from the surrounding body while the latter is in traveling motion, substantially as described.

17. A machine for making the bodies of cans and other packing vessels, having a folding device and a mandrel adapted to withdraw from the encircling folder while the latter is in traveling motion, substantially as described.

18. In a machine for making the bodies of cans and other packing vessels, the combination of a movable carriage, a folder carried thereby, means operated by the movement of the carriage to open and close the folder and a traveling mandrel adapted to approach said folder and to receive the sheet of material bent around it, substantially as described.

19. In a machine for making the bodies of cans and other packing vessels, the combination of a folder, a mandrel about which the sheets are bent by the folder and a feeding device adapted to feed sheets alternately upon each side of the mandrel, substantially as described.

20. In a machine for making the bodies of cans and other packing vessels, the combination of a movable carriage, a folder carried thereby, means operated by the movement of the carriage to open and close the folder, means for feeding a sheet of material to the open folder and a traveling mandrel adapted to press the sheet against the folder, and to receive said sheet bent around it by the closing folder, substantially as described.

21. In a machine for making the bodies of cans and other packing vessels, the combination with suitable forming and folding devices of duplicate feeding devices adapted to feed sheets alternately to the forming device, substantially as described.

22. In a machine for making the bodies of cans and other packing vessels, the combination of a movable carriage a folder carried thereby, means operated by the movement of the carriage to open and close the folder, a traveling mandrel adapted to approach the folder to receive the sheet of material around it by the closing of the folder, and means for retracting said mandrel from the encircling body and folder, substantially as described.

23. In a machine for making the bodies of cans and other packing vessels, the combination of a folding device, a mandrel about which the sheets are bent by the folder, and a suitable feeding device adapted to feed the sheet between the mandrel and folder, in a direction tangential to the periphery and in a direction parallel to a diameter of the mandrel, substantially as described.

24. In a machine for making the bodies of cans and other packing vessels, the combination of a movable carriage, a folder carried thereby, means operated by the movement of the carriage to open and close the folder, means for feeding a sheet of material to the open folder, a traveling mandrel adapted to approach the sheet and folder, and to receive said sheet around it by the closing of the folder and means for retracting said mandrel from the encircling body and folder, substantially as described.

25. A machine for making the bodies of cans and other packing vessels, having a folder and a mandrel around which the sheets are bent by the folder, said mandrel being adapted to withdraw from the surrounding sheet when the latter is formed into a body, and the folder being adapted to retain the formed body after the mandrel has withdrawn, substantially as described.

26. A machine for making the bodies of cans and other packing vessels, having a mandrel around which sheets are bent by a folder and adapted to withdraw therefrom, and a moving folder which folds the sheets around said mandrel, and carries the formed bodies after the mandrel has withdrawn, substantially as described.

27. In a machine for making the bodies of cans and other packing vessels, the combination of a reciprocating retractible mandrel and a folder adapted to fold sheets around the mandrel and to carry and return the formed body after the withdrawal of the mandrel, to the feeding point of the sheet, substantially as described.

28. In a machine for making the bodies of cans and other packing vessels, the combination of body forming and joint securing mechanisms, means for effecting their bodily travel and means for effecting their functional operation while traveling, substantially as herein described.

29. In a machine for making the bodies of cans and other packing vessels, the combination of forming and folding devices and a device for securing the joint of the body formed thereby, means for effecting the bodily travel of said forming and folding devices, and said joint securing device, and means for effecting their functional operation while traveling, substantially as herein described.

30. In a machine for making the bodies of cans and other packing vessels, the combination of a forming mandrel, a folding device and a soldering iron, means for effecting the bodily travel of said mandrel, folding device and soldering iron and means for effecting their functional operation while traveling, substantially as herein described

31. In a machine for making the bodies of cans and other packing vessels having folding devices, a former and a soldering iron contained in the same moving frame, substantially as herein described.

32. In a machine for making the bodies of cans and other packing vessels, the combination of folding devices, a traveling mandrel around which the sheets are bent by the folding devices and a soldering iron adapted to travel with and be carried by the mandrel, substantially as herein described.

33. In a machine for making the bodies of cans and other packing vessels, the combination of a continuously traveling soldering device and an intermittently traveling device for folding the bodies, substantially as described.

34. In a machine for making the bodies of cans and other packing vessels, the combination of a soldering device and a former, traveling together continuously, with an intermittently traveling folding device with which the soldering device and former act in conjunction to make the bodies, substantially as herein described.

35. In a machine for making the bodies of cans and other packing vessels, the combination of a traveling soldering device and duplicate folding devices with which the soldering device acts to secure the joint of the folded bodies, substantially as herein described.

36. In a machine for making the bodies of cans and other packing vessels, the combination of a traveling soldering device and a series of folding devices with which the soldering device acts successively to secure the joint of the folded bodies, substantially as described.

37. In a machine for making the bodies of cans and other packing vessels, the combination of a traveling soldering device and traveling duplicate folding devices with which the soldering device acts while the parts are traveling to secure the joint of the folded bodies, substantially as herein described.

38. In a machine for making the bodies of cans and other packing vessels, the combination of a traveling soldering device and a series of traveling folding devices with which the soldering device acts successively and while the parts are traveling to secure the joint of the folded bodies, substantially as herein described.

39. In a machine for making the bodies of cans and other packing vessels, the combination of a traveling soldering device and a traveling retractible mandrel, with duplicate folding devices with which the soldering device and the mandrel act in conjunction to form the bodies, substantially as herein described.

40. In a machine for making the bodies of cans and other packing vessels, having a frame with tracks, a traveling soldering iron having a hood supported by said tracks during a portion of the travel of the iron, substantially as herein described.

41. In a machine for making the bodies of cans and other packing vessels, having a frame with cam tracks, a traveling soldering iron having a hood supported by said tracks during a portion of the travel of the iron and adapted to be directed and relieved thereby to allow the iron to press upon the joint of the body during the other portion of its travel, substantially as herein described.

42. In a machine for making the bodies of cans and other packing vessels, the combination of a movable carriage a folder carried thereby, means operated by the movement of the carriage to open and close the folder, a traveling mandrel adapted to approach the folder to receive the sheet of material formed around it by the folder, and a traveling device adapted to descend upon the folded body and to secure its joint while held upon the mandrel by the folder, substantially as described.

43. In a machine for making the bodies of cans and other packing vessels, the combination of a movable carriage, a folder carried thereby, means operated by the movement of the carriage to open and close the folder, a traveling mandrel adapted to approach the folder to receive the sheet of material formed around it by the folder, a traveling device adapted to descend upon the folded body to se-

cure its joint while held upon the mandrel by the folder, and means for retracting said mandrel from the encircling body and folder, substantially as described.

44. In a machine for making the bodies of cans and other packing vessels, the combination of a reciprocating carriage having a folder at each end, and means for opening and closing them, a reciprocating cross-head with a mandrel adapted to approach and recede from the folders successively whereby said mandrel receives the sheets successively bent around it by the folders, and means for retracting the mandrel from the encircling sheets and folders, substantially as described.

45. In a machine for making the bodies of cans and other packing vessels, the combination of a freely movable carriage having a folder at each end with means for operating them, a reciprocating cross-head with a mandrel lying between the folders and adapted by successive contact therewith to reciprocate the carriage, and means for projecting the mandrel to receive the sheets successively bent around it by the folders, and to withdraw it from the encircling sheets and folders, substantially as described.

46. In a machine for making the bodies of cans and other packing vessels, the combination of a freely movable carriage having a folder at each end with means for opening and closing them, means for feeding the sheets in front of the open folders successively, a reciprocating cross-head with a mandrel lying between the folders and adapted by successive contact with the sheets of material pressed thereby against the folders, to reciprocate the carriage and means for projecting the mandrel to receive the sheets successively bent around it by the folders and to withdraw it from the encircling sheet and folders, substantially as described.

47. In a machine for making the bodies of cans and other packing vessels, the combination of a main frame, a freely movable carriage mounted thereon, a folder at each end of the carriage, devices on the folders engaging others on the main frame whereby the folders are opened and closed by the movement of the carriage, means for feeding the sheets in front of the open folders successively, a reciprocating cross-head with a mandrel lying between the folders and adapted by successive contact with the sheets of material pressed thereby against the folders to reciprocate the carriage, and means for projecting the mandrel to receive the sheets successively bent around it by the folders, and to withdraw it from the encircling sheet and folders, substantially as described.

48. In a machine for making the bodies of cans and other packing vessels, the combination of a freely movable carriage having a folder at each end, means operated by the movement of the carriage to open the folders at the inner limits of their carriage movement, and to close them while moving to and from said inner limits, means for feeding sheets of material in front of the open folders successively, a reciprocating cross-head with a mandrel lying between the folders and adapted by successive contact with the sheets of material pressed thereby against the folders to reciprocate the carriage, and means for projecting the mandrel to receive the sheets successively bent around it by the folders, and to withdraw it from the encircling sheet and folders, substantially as described.

49. In a machine for making the bodies of cans and other packing vessels, the combination of a freely movable carriage having a folder at each end, adapted to be opened and closed by the movement of the carriage, means for feeding sheets of material in front of the open folders, a reciprocating cross-head carrying aligned mandrels which when projected lie between the folders and are adapted by contact therewith through the intervening sheet of material to reciprocate the carriage, and a power device carried by the cross-head for projecting said mandrels toward each other to receive the sheets of material successively bent around them by the folders, and to withdraw them from the encircling sheets and folders, substantially as described.

50. In a machine for making the bodies of cans and other packing vessels, the combination of a freely movable carriage having at each end a folder, and means for opening and closing the folders by the movement of the carriage, means for feeding a sheet of material to each folder successively, a reciprocating cross-head having a projectible and retractible mandrel lying and operating between the folders and adapted by contact therewith through the intervening sheets of material to reciprocate the carriage and an overlying iron carried by the cross-head and having means for lowering it upon and raising it from the joint of the folded body within the folder, substantially as described.

51. In a machine for making the bodies of cans and other packing vessels, the combination of a freely movable carriage having at each end a folder and means for opening and closing the folders by the movement of the carriage, means for feeding a sheet of material to each folder successively, a reciprocating cross-head having a projectible and retractible mandrel lying and operating between the folders and adapted by contact therewith through the intervening sheets of material to reciprocate the carriage, and an overlying iron carried by the cross-head and having means for lowering it upon and raising it from the joint of the folded body within the folder, and means for reciprocating said iron longitudinally over the joint, substantially as described.

52. In a machine for making the bodies of cans and other packing vessels, the combination of a main frame, a freely movable carriage thereon having a folder at each end, with means engaging the frame whereby by the movement of the carriage the folders are opened and closed, means for feeding sheets of material in front of the open folder, a reciprocating cross-head having a projectible and retractible mandrel adapted to impart movement to the carriage and to receive and withdraw from the bent sheets of material, an overlying fastening iron carried by the cross-head, and means connected therewith and engaging the main frame for vertically moving said iron to and from the joint of the folded sheet, substantially as described.

53. In a machine for making the bodies of cans and other packing vessels, the combination of a main frame, a freely movable carriage thereon having a folder at each end, with means engaging the frame whereby by the movement of the carriage the folders are opened and closed, means for feeding sheets of material in front of the open folder, a reciprocating cross-head having a projectible and retractible mandrel adapted to impart movement to the carriage and to receive and withdraw from the bent sheets of material, an overlying fastening iron carried by the cross-head, and means connected therewith and engaging the main frame for vertically moving said iron to and from the joint of the folded sheet, and means for reciprocating said iron longitudinally over the joint, substantially as described.

54. In a machine for making the bodies of cans and other packing vessels, the combination of a main frame, a freely movable carriage thereon having a folder at each end, with means engaging the frame whereby by the movement of the carriage the folders are opened and closed, means for feeding sheets of material in front of the open folder, a reciprocating cross-head having a projectible and retractible mandrel adapted to impart movement to the carriage and to receive and withdraw from the bent sheets of material, an overlying fastening soldering iron carried by the cross-head, and means connected therewith and engaging the main frame for vertically moving said soldering iron to and from the joint of the folded sheet, means for reciprocating said soldering iron longitudinally over the joint, and a burner carried by the cross-head for heating the soldering iron, substantially as described.

55. A machine for making the bodies of cans and other packing vessels, consisting of a main frame having a central discharge way, a freely movable carriage thereon having a folder at each end with means operated by the movement of the carriage for opening the folders at the inner limit of their carriage movement whereby they alternately receive a sheet of material and discharge a finished body into the discharge way, and for closing them while moving to and from the inner limits, means for feeding a sheet of material to each open folder successively, a reciprocating cross-head carrying a projectible and retractible mandrel adapted when projected to move the carriage by contact with the sheets of material pressed against the folders and to withdraw from the encircling sheets and folders, and a vertically movable longitudinally reciprocating fastening iron carried by the cross head and operating upon the joint of the folded sheet while on the mandrel, substantially as described.

56. In a machine for making the bodies of cans and other packing vessels, a sectional folder, the upper section of which has a front lip projecting within the circle of the closed folder, substantially as described.

57. In a machine for making the bodies of cans and other packing vessels, a sectional folder having an adjustable plate on one section with a front lip projecting within the circle of the closed folder, substantially as described.

58. In a machine for making the bodies of cans and other packing vessels, and in combination with a folder, a channel for the sheet of material, means for temporarily supporting the sheet and a vertically movable nippers adapted to seize the sheet and to feed it down in front of the folder, substantially as described.

59. In a machine for making the bodies of cans and other packing vessels, and in combination with a folder, a channel for the sheet above, and a fixed stop below, a hinged supporting arm under the lower edge of the sheet to temporarily support it in the channel, and a vertically movable nippers, adapted on its upward movement to press back the supporting arm and to receive and grasp the falling sheet, and to carry said sheet down in front of the open folder and rest it upon the stop below, substantially as described.

60. A machine for making the bodies of cans and other packing vessels, consisting of a main frame with central discharge way, the freely movable carriage with its end folders, a reciprocating cross-head with its projectible and retractible mandrels adapted to impart movement to the carriage, the soldering iron on the cross head adapted to operate upon the joint of the folded body, the channels in the carriage ends for the sheets of material, the temporary hinged supports for said sheets, the stops below and the vertically reciprocating nippers adapted to successively feed a sheet of material in front of each folder, substantially as described.



61. In a machine for making the bodies of cans and other packing vessels, the combination of a reciprocating cross-head frame, the mandrel therein, and the engine carried by the cross-head frame and adapted to project and retract the mandrel, substantially as described.

62. In a machine for making the bodies of cans and other packing vessels, the combination of a reciprocating cross-head frame, the mandrel therein, the engine carried by the cross-head frame, for projecting and withdrawing the mandrel, a source of power fluid operated by the driving mechanism of the machine and connections for supplying said fluid to the engine, substantially as described.

63. In a machine for making the bodies of cans and other packing vessels, the combination of a sectional folder adapted to bend the sheet into a body, said folder having a cutting plate, and a channel for a sheet of solder arranged to direct said sheet to rest upon the folder in front of its cutting plate whereby the folder in closing will cause its plate to cut off a piece of solder and deliver it upon the joint of the body, substantially as described.

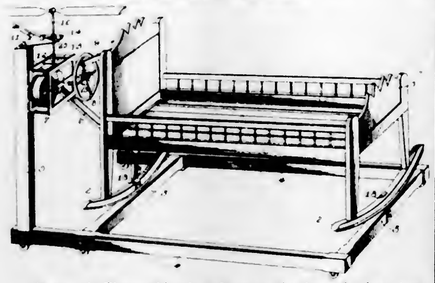
64. In a machine for making the bodies of cans and other packing vessels, the sectional folders having the adjustable closing and opening connections whereby the diameter of said folders when closed may be regulated, substantially as described.

65. In a machine for soldering the seams of the bodies of cans and other packing vessels, the combination of a soldering iron adapted to press upon the joint or seam, a metallic soldering strip under said joint or seam, and a strip of non conducting material separating said strip from the part in which it is seated, substantially as described.

66. In a machine for making the bodies of cans and other packing vessels, the combination of traveling folding and forming devices, a traveling soldering iron, a hood over said iron forming a combustion chamber and flexible connections between said chamber and a suitable combustible fluid supply whereby flames are projected into said chamber, substantially as herein described.

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529,816. CRADLE. MATHEW C. SORRELL, Raleigh, N. C. Filed Apr. 30, 1894. Serial No. 509,557. (No model.)



*Claim.*—1. The combination of a supporting frame having a base, a motor mounted on the frame and having a train of gears, a cradle supported on the base and connected with the motor, and an adjustable fan-carrying shaft provided with a pinion adapted to mesh with a gear wheel of the motor, substantially as described.

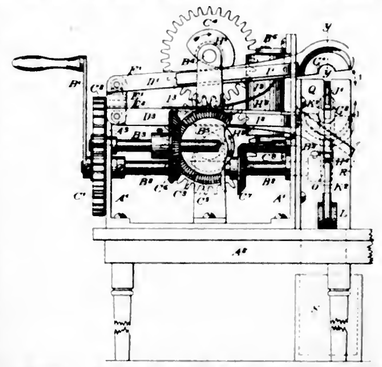
2. The combination of a frame provided with a base, a cradle mounted on the base, a motor supported by the frame and connected with the cradle and having a train of gears, a cross-bar provided with perforations, a guide-arm arranged above the cross-bar and having corresponding perforations, and a fan-carrying shaft adapted to fit in the said perforations and provided at its lower end with a pinion and capable of adjustment to cause the pinion to mesh with the desired gear-wheel whereby the speed of the cradle may be regulated, substantially as described.

3. The combination of a supporting frame having a base, a motor mounted on the frame and having a train of gears, a cradle supported on the base and connected with the motor, a fan shaft provided with a pinion adapted to mesh with a gear wheel of the motor, a lever fulcrumed between its ends and having its inner end engaging the shaft and adapted to have its outer end depressed to lift the shaft, and a fastening device for locking the outer portion of the lever when depressed, substantially as described.

4. The combination of a supporting frame having a base, a cradle supported on the base, a motor mounted on the frame and having a train of gears and having a drive shaft, a disk fixed to the shaft and provided with an opening, a crank wheel loosely mounted on the shaft and provided with an opening, a pitman connecting the crank wheel with the cradle, a key adapted to be arranged in said openings for locking the crank wheel rigid with the shaft, a vertically movable fan shaft provided at its lower end with a pinion meshing with one of the gear wheels of the motor, a lever engaging the fan shaft and adapted to raise the same, and means for holding the lever to maintain the fan shaft in an elevated position, substantially as described.

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529,817. FRUIT-PITTING MACHINE. SYRANUS STANDISH, Gridley, Cal. Filed May 21, 1894. Serial No. 511,974. (No model.)



*Claim.*—1. In a fruit pitting machine, the combination of two pairs of independent knives or cutters having both a vertical and a horizontal movement, a universal joint which permits said movement, and a vertical revoluble double cam between the cutters which operates to laterally expand the members of the pairs, substantially as described.

2. In a fruit pitting machine, two pairs of cutters or knives to score the fruit around the center; hinged levers to support the cutters or knives, a double cam between the levers to produce lateral movement thereof, and strip the pulp off the fruit each way from the seed or pit, in the manner substantially as described and the cams acting upon the upper pair of levers and also upon the lower pair of levers for the purpose of bringing them and the cutters together.

3. In a fruit-pitting machine, four scoring knives or cutters to sever the pulp of the fruit into two parts, mounted on hinged levers that move in both a vertical and horizontal plane; revoluble cams between and operating all the levers and the knives thereon simultaneously to sever and strip the pulp from the pit or seed, in the manner and for the purposes substantially as specified.

4. In a fruit-pitting machine, the combination of pairs of movable levers and cutting knives thereon, hinged to move vertically and horizontally so as to score and strip the pulp from the pit or seed of the fruit; revoluble cams to move the levers and knives intermittently, vertically and horizontally scoring, and then stripping the pulp from the pit or seed of the fruit, in the manner and for the purposes substantially as described and shown.

5. In a fruit-pitting machine, the combination of scoring and stripping knives or cutters operating intermittently by cams, in the manner described; spurs to penetrate the pulp, seize and hold the pit or seed, operated by a cam whose shaft has a gear engaged by a segmental tooth wheel, permitting a pause and relative movement of the spurs in respect to the scoring and stripping knives or cutters, in the manner and for the purposes substantially as described and shown.

6. In a fruit-pitting machine, the combination of hinged levers and knives or cutters to score and strip the pulp from the fruit in the manner described; two pivoted brackets turning on a common center and the levers hinged thereto, so as to permit free movement of the levers and knives in two planes, and thus score and then strip the pulp from the pit or seed of the fruit, in the manner substantially and for the purposes specified.

7. In a fruit pitting machine, the combination of an upper pair of scoring and stripping knives or cutters, a lower pair of similar knives or cutters, spurs to seize and hold the pit or seed, a revoluble cam between the knives for causing their lateral expansion, cams acting to bring the knives together vertically, and gearing connections to produce coincident motion of the several parts of the mechanism, substantially as described.

8. In a fruit pitting machine, the combination of pairs of knives or cutters capable of both a vertical and a horizontal movement, a

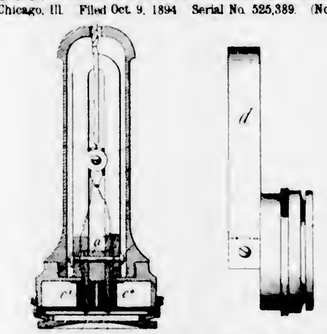
vertical cam device which is revoluble for the purpose of causing lateral movement of the cutters, a cam device for actuating the upper pair of cutters, a cam device for actuating the lower pair of cutters, and a gearing mechanism whereby the several cams operate simultaneously to produce the proper movement of the cutters, substantially as described.

9. In a fruit pitting machine, the combination of pairs of knives or cutters, the hinged levers for supporting them, a universal joint which permits a vertical and a horizontal movement of the levers and cutters, a double cam between the levers for causing a lateral movement thereof, a cam device for actuating the upper pair of cutters, and a cam device for actuating the lower pair, and springs for restoring the cutters to their normal position, substantially as described

10. In a fruit pitting machine, the combination of knives or cutters having both a vertical and a horizontal movement, a revoluble cam between and operating said knives, a cam device for actuating the upper pair of cutters, a cam device for operating the lower pair of cutters, springs for restoring them to their normal position, spurs which penetrate the pulp and hold the seed, mechanism for operating said spurs, and gearing connections whereby the several mechanical parts operate in unison as specified.

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529,818. TELEPHONE. ALFRED STROMBERG and ANDROV CARLSON, Chicago, Ill. Filed Oct. 9, 1894. Serial No. 525,389. (No model.)



*Claim.*—1. In a hand telephone, the combination with a casing inclosing the telephone coils, of a diaphragm support adjustably mounted upon said casing, a permanent magnet, rigidly mounted upon the rear of said casing, and a casing inclosing said magnet, but independent thereof, removably secured to the rear of said first mentioned casing, substantially as described.

2. In a hand telephone, the combination with a casing *a*, of a diaphragm support *b* adapted to be adjustably screwed upon said casing, the casing *a* being provided upon the rear with a projection *a'*, the cores $c'$ $c^2$ and the permanent magnet *d* secured to said projection, said cores $c'$ $c^2$ extending through the bottom of said casing and carrying upon their ends the telephone coils $c^3$ $c^4$, substantially as described

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529,819. WAGON END-GATE. LARNTINE C. SWEET, Loami, Ill. Filed Oct. 30, 1893. Serial No. 489,525. (No model.)

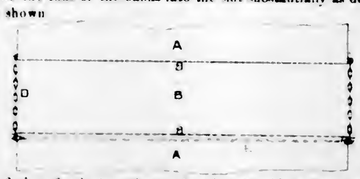


*Claim.*—In an end gate the means adapted to retain the lower edge of the end gate in contact with the bottom of the wagon bed, to wit a spring cross-bar adapted to press the end gate downward by the resilient action of said cross bar; in combination with the board or main structure of the end gate, means adapted to connect said spring cross bar with said board or structure and means adapted to detachably connect the ends of said cross bar with the sides of the wagon bed, as set forth

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529,820. FOCAL-PLANE SHUTTER. JOHN K. THORNTON and EDGAR PICKARD, Altrincham, England. Filed Jan. 18, 1894. Serial No. 497,336. (No model.) Patented in England Feb. 24, 1893, No. 4,061.

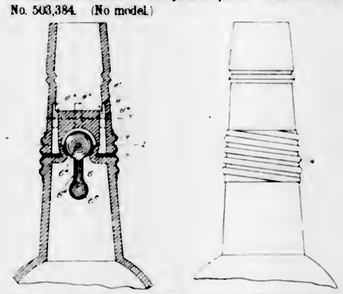
*Claim.*—1. In a focal plane shutter for photographic cameras the combination with the blind of struts placed in slots therein which form the edges of the slit, the bands which connect the two parts together, the projections at the sides of the blind with which the bands engage to adjust the width of the slit and the spring which draws the ends of the bands into the slot substantially as described and shown




2. In a focal plane shutter for photographic cameras the combination of the blind A provided with slots *a* in the edges, the struts C C' placed therein which form the edges of the slit B, the chains D which connect the two parts of the blind together, the projections *c'* on the strut C at the sides of the blind with which the links of the chains D engage to adjust the width of the slit F and the spring E which draws the slack ends of the chains D into the slot *a* substantially as described

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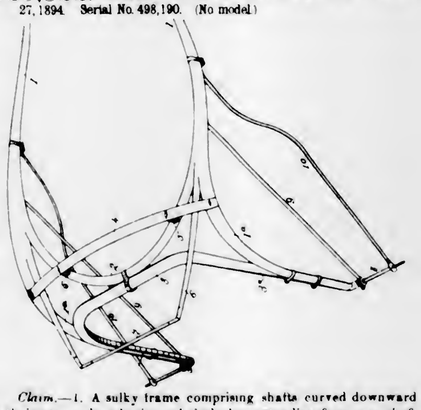
529,821. BOTTLE. WILLIAM VON BOKERN, Denver, Colo., assignor of one-half to Herbert Heatley, same place. Filed Mar 12, 1894. Serial No. 503,384. (No model.)



*Claim.*—In a bottle, the combination of the body part having a valve seat formed integral with its neck extremity, and the valve engaging said seat, of the nozzle having a safety cap formed integral therewith and covering the valve, the cap and nozzle being so constructed that there is a space around the lower part of the cap, a passage way from the opening in the neck to said space, and another passage way from said space to the space in the nozzle above the cap, and suitable means for connecting the neck and nozzle, substantially as described.

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529,822. SULKY. WILLIAM J. WAYNE, Decatur, Ill. Filed Jan. 27, 1894. Serial No. 498,190. (No model.)



*Claim.*—1. A sulky frame comprising shafts curved downward at their rear ends, a horizontal circle bar extending from one shaft to the other, an arched axle bar connected at its center with the circle bar and at its ends with the curved ends of the shafts, and a transverse brace bar sprung over the circle bar, connected therewith and connected, at its ends, with the shafts, substantially as set forth.

2. A sulky frame comprising shafts curved downward at their rear ends, a horizontal circle bar extending from one shaft to the other, an arched axle bar connected at its center with the circle bar and at its ends with the curved ends of the shafts, truss blocks on the circle bar, and a transverse brace bar sprung over the truss blocks, secured thereto, and secured at its ends to the shafts, substantially as set forth

3. A sulky frame comprising shafts curved downward at their rear ends, a horizontal circle bar extending from one shaft to the other, an arched axle bar connected at its center with the circle bar and at its ends with the curved ends of the shafts, a transverse brace bar sprung over the circle bar secured thereto and secured at its ends to the shafts, and a tail frame extending from the shafts rearward beyond the axle bar, substantially as set forth.

4. A sulky frame consisting in the combination of shafts curved downward at their rear ends, a horizontal circle bar extending from one shaft to the other, an arched axle bar connected at its center with the circle bar and at its ends with the curved ends of the shafts, spindles at the conjoint terminations of the axle bar and the shafts, brace rods extending from opposite ends of the spindles and connecting with the shafts one in advance of the other, and a transverse brace bar sprung over the circle bar, connected therewith, and connected at its ends to the shafts, substantially as set forth



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529,823. BOTTLE-WASHER. ADOLPH R. WIENS, Milwaukee, Wis. Filed Apr. 16, 1894. Serial No. 507,644. (No model.)



*Claim.*—1. A brush for bottle-washing machines, the same consisting of bristles or analogous material twisted with a plurality of wire strands to form a circular mass parted by at least one of the strands bent across said mass to form a gap and bound with some of the bristle like material to form a tip, the remaining strands being spread apart at their ends farthest from said tip to engage with openings in a water-pipe nozzle having its outlet facing said gap in the brush, substantially as set forth

2. A nozzle provided with a series of longitudinal openings for engagement with stem strands of a wire and bristle-brush, a screw-threaded shank and a recess surrounding the shank in combination with a sleeve attachable to a water pipe in a bottle-washing machine and having a threaded bore that engages the nozzle shank, as well as a shoulder that fits the recess surrounding said shank, substantially as set forth

3. A radially gapped wire and bristle-like brush having wire-strands thereof spread apart at one end, a nozzle having a series of longitudinal openings for engagement of said strands, a screw-threaded shank, a recess surrounding the shank and an inclined outlet-port that faces the brush-gap; in combination with a sleeve that is attachable to a water-pipe in a bottle-washing machine and has a threaded bore that engages the nozzle-shank as well as a shoulder that fits the recess surrounding said shank against clinched ends of said brush strands, substantially as set forth.

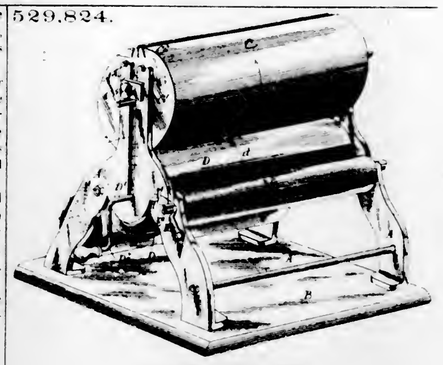
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529,824. MULTIPLE COPYING APPARATUS. WILLIAM M. WILLIAMS, Kenilworth, England. Filed Feb. 24, 1894. Serial No. 501,401. (No model.)

*Claim.*—In a multiple copying apparatus, the combination with the slotted standards, a driving roll, provided with a central shaft, projecting at both ends and taking a bearing upon the bottom of the slots, said shaft at one end being bent to form a crank handle, the impression roller above said driving roll provided with a central spindle projecting at each end and passing through the slotted standards, said roll provided with grooves in which are received the ends of the impression strip, the severing knife carried by said roll, the clamps working in the slots of the standards, and capable of being secured in adjusted position, bearing upon the ends of the shaft of the impression roller, and the roller E; substantially as described

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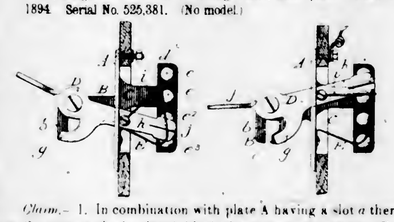
529,825. THILL-COUPLING. ISAAC N. BOWEN and THOMAS TROXEL, Charlton, Iowa. Filed May 10, 1894. Serial No. 510,711. (No model.)



*Claim.*—In a thill coupling the combination of the projecting arms provided with grooves beginning at the under side of the projection slanting upward and inward, then forward and then downward, a thill having a pin which rests in the forward downward extension of the groove, and a spring for holding the thill against rattling

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529,826. TELEPHONE-SWITCH. EDGAR S. COMBS, Rochester, N. Y., assignor of one-half to Irving Paine, same place. Filed Oct. 9, 1894. Serial No. 525,381. (No model.)



*Claim.*—1. In combination with plate A having a slot *a* therein arm C carrying the insulated block *d* and contacts an arm B projecting from the front of the plate and slotted or cut away to receive the eye of the telephone receiver; and a lever pivoted to the arm B and provided with contact plate *h* and hook *g*

2. In combination with plate A having a slot *a* therein arm C provided with the insulated block *d* and contacts, arm B provided with two separated members *b c*, lever D pivoted to arm B and projecting through slot *a* contact plate *h* and a hook *g* carried by the lever

3. In combination with plate A, arms B and C, lever D, and contacts; the leaf spring E secured at one end to the plate, and the link *i* connected at its ends to the spring and the lever.

4. In combination with plate A, and the arms B and C, the latter having block *d* and contacts; the lever D having at its end the plate *h* which is slit as at *j*, and working over the contacts

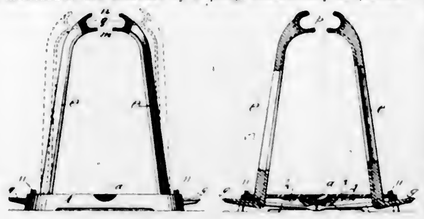
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529,827. BICYCLE-STAND. ISAAC I. FONDA, Boston, Mass. Filed May 23, 1894. Serial No. 512,211. (No model.)

*Claim.*—1. In a bicycle support, the combination of a suitable base, a pair of pivoted arms adapted to grasp the bicycle, rising above said base, a spring to force said arms inward or toward each other and a device arranged to be actuated by the foot of the user to force said arms asunder, all substantially as specified.

2. In a bicycle holder the combination of a base, as A, a pair of pivotal arms as *e*, a treadle or treadles *g*, arranged to force said arms apart, and a spring as *j* to force said arms toward each other, substantially as specified.

3. In a bicycle holder, the combination of bed A, arms *c* formed to grasp the bicycle and provided with pivoted rods *d*, treadles *g* and arms *h* interlocked and actuated by a spring, substantially as specified.



529,828. DRESS-SKIRT. MARTHA C. GELDOWSKY, St. Louis, Mo. Filed Aug. 23, 1894. Serial No. 521,069. (No model.)



*Claim.*—1. A skirt adapted for both a bicycle costume and a dress skirt, having its back breadth wider than the front to throw the side slits nearer the front, said back breadth being provided with darts graduated in length from the center in opposite directions and the front breadth having darts with the sides nearest the center on a slant, said skirt having vertical slits at the front, rear, and sides and extending from the bottom edge upward, whereby it will fall equally upon either side of a bicycle wheel, substantially as described.

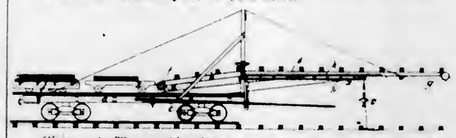
2. A bicycle skirt provided with front and rear slits extending from the bottom edge of the skirt upward, and straps attached to the inner face of the skirt at the lines of division of the front and back slits and means for detachably securing these straps to the opposite face of the garment, substantially as specified.

529,829. TROLLEY-WHEEL. FREDERICK LEPPER and WILLIAM WIGHTON, Toronto, Canada. Filed Sept. 22, 1893. Serial No. 486,171. (No model.)



*Claim.*—A trolley-wheel comprising the body portion having an exterior wire receiving groove, and a chamber divided by integral radial walls or ridges 4 into a plurality of segments, said walls extending from the interior projection of said groove and tapered upon opposite sides toward the center of the wheel and said tapers extending upon both sides from the peripheral edge of the walls to the central point and at right angles to the axis of the wheel, a hollow bushing in the center of the wheel with radial openings opposite the points of said walls and in the same radial line, said points extending into close proximity to the said openings, a tube seated in an opening in the side of the wheel and having a plurality of openings near its rear end, a rubber ball valve arranged in said tube and adapted to be seated against the partially closed outer end thereof and the spring bearing against the ball and at its inner end supported by one of the ridges 4 against which also said tube rests at its inner end, substantially as shown and described.

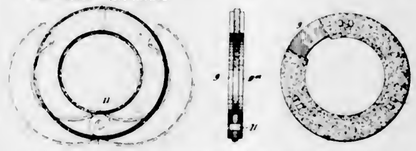
529,830. TRACK-LAYING MACHINE. THOMAS W. PATERSON, Victoria, Canada. Filed July 2, 1894. Serial No. 516,281. (No model.) Patented in Canada July 16, 1894, No. 46,593.



*Claim.*—1. The combination in a track laying machine of the sprocket wheel *b*; "Ewart" chain C, wheels *d*, *f*, *f*; chains *g*, *g*; beds *h*, *h*; cars *j*, R, R; for laying the ties all substantially as set forth.

2. The combination with the rollers *u*, *v*; tongs *r*; brackets *t*, of the traveler *w*, track *x*, for laying the rails, substantially as described.

529,831. WASHER FOR VEHICLE-AXLES. MALCOLM D. PECKHAM, New York, and CHARLES E. SWAN, Rome, assignors to the Columbia Washer Company, New York, N. Y. Filed Feb. 19, 1894. Serial No. 500,616. (No model.)



*Claim.*—1. A washer consisting of two metallic rings made in sections and hinged together, and an elastic, sectional packing of felt or the like held between the sectional rings, one metallic portion of each section extending circumferentially beyond its companion sectional portion, substantially as set forth.

2. A washer consisting of two metallic rings made in sections and hinged together and a sectional, elastic packing of felt or the like held between the sectional rings, substantially as set forth.

3. In a washer, the combination with an elastic packing or cushion of elastic sheet fabric such as felt, or the like, capable of absorbing oil from and releasing the same onto the axle, of two metallic rings between which said packing is interposed, the said packing projecting slightly beyond the inner circumferences of the said metallic rings, substantially as set forth.

4. In a washer, the combination with an elastic packing or cushion of felt, or the like, capable of absorbing oil from and releasing the same onto the axle, of two metallic rings between which said packing is interposed, the said interposed packing projecting slightly beyond the inner and outer circumferences of the said metallic rings, substantially as set forth.

5. In a washer, the combination with an elastic packing or cushion made of sheet fabric and provided with a bearing surface to cooperate with an axle and capable of absorbing oil from and releasing the same onto the axle, of two metallic rings between which said packing is interposed and projections extending from the metallic rings into such sheet fabric for securing the several parts of the washer together, substantially as set forth.

6. In a washer, the combination with an elastic packing or cushion capable of absorbing oil and of releasing the same, and provided with a proper bearing surface, of two rings between which such cushion is interposed, and isolated projections attached to the surfaces of rings facing each other and having free ends extending into such cushion, for the purpose of holding together the packing and the rings, substantially as set forth.

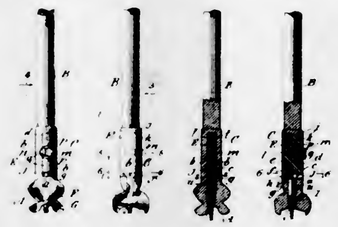
7. In an elastic washer, the combination of two metallic rings, an elastic layer of felt, leather, asbestos, or the like, of uniform thickness, interposed between such rings, its bearing surface extending slightly beyond the inner circumferences of the rings, and isolated projections on the rings extending into such interior layer and made integral with such rings, substantially as set forth.

8. In an elastic washer, the combination with two flangeless metallic rings provided with burrs or pins integral therewith on their respective inner faces, of an elastic cushion of felt, leather, asbestos or the like, held between said flangeless rings by the penetrating burrs or pins, substantially as set forth.

9. In an elastic washer, the combination with two metallic rings provided with burrs or pins integral therewith on their respective inner faces, of an elastic cushion of felt, leather, asbestos, or the like, held between said rings by the penetrating burrs or pins, said rings being provided with proper bearing surfaces, their respective inner faces adjoining the bearing surfaces being flangeless, substantially as set forth.



529,832. AUGER-BIT. ELWOOD C. PHILLIPS, Chicago, Ill., assignor to Frank F. Spencer, Montclair, N. J. Filed June 9, 1894. Serial No. 514,041. (No model.)



*Claim.*—1. In an auger bit, the head, shank, and a removable point, the head having a socket receiving said point, and a lateral slot extending entirely through the auger above said socket, and a block in said slot engaging the point and retaining it in place.

2. In a boring bit, the head, shank, and a removable point, the head having an axial socket receiving said point, and the shank having a lateral mortise extending entirely through it above and communicating with the upper end of said socket through which said point may be inserted into said socket, said mortise of the same width as said socket, and a block fitting and seating in said mortise and when therein bearing against said point and preventing its displacement, and means for holding said block in said mortise.

3. In a boring bit, the head, shank, and a removable point, the head having an axial socket receiving said point, and the shank having a mortise extending diametrically through it above and communicating with said socket, and a block fitting said mortise and when therein engaging the head of said point and retaining it in position in said socket, and a rotative lock engaging said block and shank, carried by one of said parts and fastening them together.

4. In a boring bit, the head, shank, and a removable point, the head having a socket receiving said point, and the shank having a mortise extending entirely through it above and communicating with said socket, through which mortise said point is inserted, and a block entering and fitting said mortise and when therein engaging said point and retaining it in position in said socket, said mortise and block constructed with interengaging parts forcing said block against said point when the block is seated in the mortise.

5. In a boring bit, the head, shank, and a removable point, the head and shank consisting of a single integral piece of metal having a diametrical mortise above said socket, a block entering and fitting said mortise and when therein engaging said point and retaining it in place in said socket, and a screw having a shank engaging said block, and a head bearing on said bit and fastening said block in said mortise.

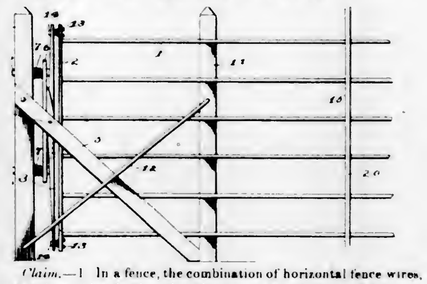
6. In a boring bit, the head, shank, and a removable point, the head having a socket receiving said point, and the shank having a mortise extending diametrically through it, a block fitting said mortise and when therein engaging said point and locking it in place, said mortise and block having interengaging faces limiting the movement of the latter through the former, and a fastening for said block holding the latter in said mortise with said faces in engagement.

7. In a boring bit, the head A, shank B, and removable point D, the head having a socket I receiving said point, and the shank having a neck C traversed by a diametric mortise J of uniform width above and communicating with said socket, and having uprights *b* at the sides of said mortise, and a block E fitting said mortise, entering therein, and holding said point in position in said socket.

8. In a boring bit, a head A and a shank B, said head having an axial socket, a removable point D in said socket, said shank having a lateral mortise above and communicating with said socket, and a block E fitting and entering said socket and having a bottom face *c* bearing on the head of said point, and a shoulder *h* engaging the side of said point when said block is in said mortise, as and for the purpose set forth.

9. In a boring bit, the head A, shank B, and removable point D, the head having a socket I for said point, the shank having a mortise J above said socket, and block E fitting said mortise, and having a screw-threaded hole *l*, a screw *m* having a screw-threaded shank screwing in said hole *l*, and a projecting head of greater length than its width at the edge of said block, engaging said shank and thereby locking said block in position in said mortise.

529,833. WIRE FENCE. CHARLES R. PICKETT, Delaware, Ohio. Filed May 24, 1894. Serial No. 512,355. (No model.)



*Claim.*—1. In a fence, the combination of horizontal fence wires, an attachment bar having the wires secured to it, levers fulcrumed intermediate of their ends arranged vertically and having their outer ends connected with the attachment bar, a support for the levers a post, a bar engaging the inner ends of the levers, and springs interposed between the post and the last mentioned bar, substantially as described.

2. In a fence, the combination of horizontal fence wires, an attachment bar having the wires secured to it, levers fulcrumed intermediate of their ends and having their outer terminals connected with the attachment bar, a support for the levers, a post, and springs mounted on the post for cushioning the inner ends of the levers, substantially as described.

3. In a fence, a post composed of a cylindrical base provided at its top with an annular shoulder and having a cement filling, side bars arranged in the base and having their lower ends bent outward and engaging the lower edges thereof, said side bars having their upper ends connected and angularly bent at the top of the base and fitting in the shoulder thereof, and a perforated bar arranged between the side bars and secured at its upper end to them and having its lower end embedded in the filling of the base, substantially as described.

4. In a fence, a post comprising a cylindrical base having a plastic filling, the side bars arranged within the base and converging above the same and connected at their upper ends, and the depending perforated bar secured at its upper end within the side bars, and having its lower end embedded in the filling, substantially as described.

5. A post provided with a base comprising a cylinder provided at its top with an annular shoulder, the converging side bars formed integral at their upper ends and arranged in the cylinder and having their lower ends bent outward and engaging the lower edges of the cylinder, said side bars being outwardly offset to fit the shoulder of the cylinder, and a plastic filling arranged within the cylinder, substantially as described.

529,834. WOOD-PRESERVING COMPOUND. AMELIA D. POLSGROVE, Lewistown, Pa. Filed Sept. 4, 1894. Serial No. 522,108. (No specimens.)

*Claim.*—1. The herein described antiseptic compound consisting of the following ingredients, namely crude petroleum, linseed oil, naphthaline and carbonaceous material, substantially as set forth.

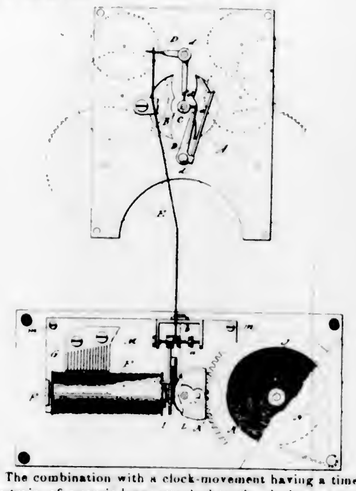
2. The herein described antiseptic compound consisting of the following ingredients, namely, crude petroleum, one gallon; boiled linseed oil, three quarts; naphthaline, one pound; pulverized charcoal, four quarts, and a sufficient quantity of chrome yellow, substantially as set forth.

529,835. MUSICAL CLOCK. HENRY W. PORTER, Forestville, Conn., assignor of one-half to Frederick N. Manross, same place. Filed Mar. 7, 1893. Renewed Feb. 14, 1894. Serial No. 500,177. (No model.)

*Claim.*—1. The combination with a clock-movement having a time- and a strike-train, of a music-lever having two short arms, pivoted to the back of the clock-movement, an independently organized music-box mechanism located directly below the said movement, and including releasing and stopping devices constructed on the "warn" principle, a long lifting wire connected at its upper end with one arm of the said music lever, and at its lower end with the said devices, and a rotary lift mounted upon the center-arbor of the movement, and constructed to co-operate with the other arm of the said music-lever to lift the same, and hence the said wire to release the music-box mechanism, substantially as described.

2. The combination with a clock-movement having a time- and a strike-train, of a music-lever having two short arms, pivoted to the back of the clock movement, independently organized music-box mechanism located below the said movement, and including releasing and stopping devices, a long lifting-wire connected at its upper end

with one arm of the said music-lever, and at its lower end with the said devices, and a rotary lift mounted upon the center-arbor of the movement, and constructed to co-operate with the other arm of the said music-lever to lift the same, and hence the said wire to release the music-box mechanism, the said lift and music-lever being constructed and arranged to permit the center arbor to be reversely rotated or turned back, substantially as described.



3. The combination with a clock-movement having a time and a strike-train, of a music-lever attached to the clock movement, an independently organized music-box mechanism, including releasing and stopping devices comprising a lifting-arm, a warning arm and a stop-arm, a long lifting wire connected at its upper end with the said music lever, and at its lower end with the said lifting-arm, and a rotary lift mounted upon the center arbor of the clock movement, and constructed to co-operate with the music lever to lift the same, and hence the wire to start the music-box mechanism, substantially as set forth.

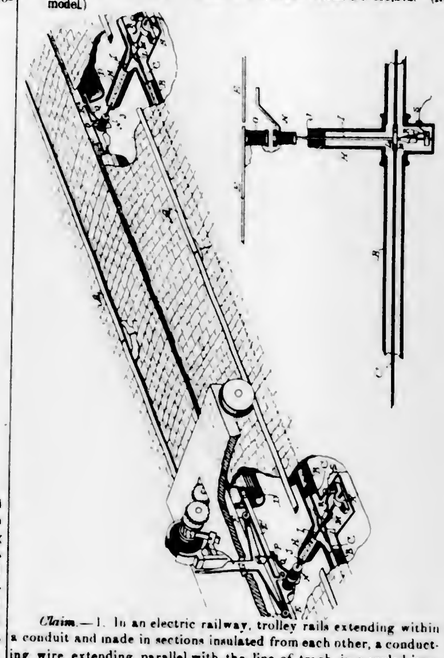
4. The combination with a clock-movement having a time and a strike-train, of a music-lever attached to the said movement, an independently organized music-box mechanism, comprising a drum, releasing and stopping devices, an actuating spring, a train connecting the said spring with the drum, and two heavy plates between which the said parts of the music-box mechanism are mounted, a rotary lift actuated by the clock movement, and co-operating with the said music lever, and a lifting-wire connected at its upper end with said lever and at its lower end with the releasing and stopping devices of the music-box mechanism, substantially as described.

5. The combination with a clock-movement having a time and a strike train, of a music-lever attached to the said movement, a rotary lift actuated by the movement, and co-operating with the said lever, an independently organized music-box mechanism containing releasing and stopping devices, including a drum-stop arm adapted to enter a hole formed to receive it and rotating with the drum, and a spring-guard attached to the said arm, adapted to cover the said hole and to engage with the lower end of the said arm, and normally under tension which tends to move it between the said arm and the drum, and a pin carried by the drum for engaging with the lower end of the said guard for positively moving the same away from the said hole after it has done its work; and a lifting-wire connecting the music-lever with the said releasing and stopping devices, substantially as described.

6. In an independently organized music-box mechanism designed to be set off by an independent starting instrumentality, the combination with two heavy movement-plates secured together by pillars interposed between them; of a music-box mechanism including a base, a drum journaled thereupon, a comb connected with the base for co-action with the drum, and a train connected with the drum for driving the same, the said mechanism being located between the two plates in position to be protected thereby, and secured by its base to the inner face of one of them; a spring-arbor interposed between and journaled in the two plates, a heavy spring secured at one end to the said arbor, and connected at the other end with the plates, a gear-wheel mounted upon said arbor, rotated by the said spring, and meshing into a member of the music-box train, and stopping and starting mechanism organized independently of the music-box mechanism and connected to one of the said plates, but co-acting with the train of the said mechanism for releasing and stopping the same, substantially as set forth.

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529,836. CONDUIT ELECTRIC RAILWAY. LEONIDAS C. PRESSLEY, San Francisco, Cal. Filed Feb. 6, 1894. Serial No. 499,272. (No model.)



*Claim.*—1. In an electric railway, trolley rails extending within a conduit and made in sections insulated from each other, a conducting wire extending parallel with the line of track in a sealed insulated channel, and means comprising electro-magnets one of which is fixed to the trolley rail and the other to the rod whereby the sections of trolley rail are charged successively from said wire while the car is passing and the current cut off therefrom after the car has passed.

2. In an electric railway, a continuous trolley rail made in independent insulated sections and extending within an underground conduit, a sealed tube parallel with the line of track within which the electrical conducting wire extends, transverse tubular passages connecting said tube with the trolley rail conduit at the junction of each of the sections of trolley rail, a rod movable in said tube and means comprising electro-magnets interposed between the trolley rail and rod whereby contact is formed between said rod and the conducting wire and with the section of rail adjacent thereto whereby said section is charged with electricity.

3. In an electric railway, a trolley rail extending continuously in an underground conduit and made in independent insulated sections, a sealed tube, an electrical conducting wire extending through said tube, transverse passages connecting said tube with the conduit at points opposite the junction of the trolley rails, a rod slidable in said passage passing through an insulated and water-tight packing joint at the junction with the conduit and having a means for connecting and disconnecting it with the conducting wire, electro-magnets, one of which is fixed to the trolley rail and the other to the sliding rod so that when energized they will be drawn together and the rod moved so as to form contact between the conducting wire and the rail section and when de-energized the rod may be moved back so as to break said contact.

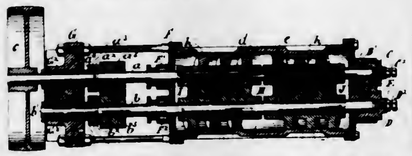
4. In an electric railway, a trolley rail extending in an underground conduit and made in independent insulated sections, an electrical conducting wire extending in a hermetically sealed tube parallel with the line of track, passages connecting said tube with the conduit at the junction of each two sections of the trolley rail, a rod slidable in said passage having at one end an electro magnet which when charged acts to draw the rod into contact with the rail and at the other end a device whereby contact is made between the rod and the conducting wire so that the trolley rail may be charged therefrom, a mechanism by which the magnets are disengaged and the rod moved backward, consisting of a lever engaging the magnet or sliding rod, and a lug upon the trolley shank which engages the lever as the trolley passes from one section of rail to the next whereby the rod is disconnected from the conducting wire and rail and the current cut off from the preceding section of the rail, substantially as herein described.

5. In an electric railway, trolley rails extending in an underground conduit and made in independent insulated sections, an electrical conducting wire extending parallel with the line of track and within a sealed and insulated containing tube, transverse passages extending from said tube to the conduit, insulated rods slidable therein having magnets which when energized act to move the rods into contact with the rails and devices whereby said movement forms contact simultaneously with the conducting wire, disengaging mechanism by which the rod is moved backward as the trolley passes the joint between two meeting rail sections, and a brush or contact piece with which the rod makes contact when thus moved backward whereby any electricity with which the trolley rail and rod may be charged is grounded substantially as herein described.

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529,837. SCREW-PUMP. WILLIAM E. QUIMBY, Orange, N. J. Filed Aug. 26, 1892. Serial No. 444,229. (Model.)



*Claim.*—1. In a screw pump substantially as shown and described, intermeshing right and left hand screws provided with external threads of equal depth, each of which threads is of the same width at its face and at its base and has in its sides recesses which increase gradually in depth from the perimeter to a point near the base of the thread, and then decrease rapidly in depth from said point to said base.

2. In a screw pump substantially as shown and described interneshing right and left hand screws of like radius and pitch provided with external threads, each of which threads is of the same width at its face and at its base, and has in its sides recesses which increase gradually in depth from the perimeter to a point near the base of the thread, and then decrease rapidly in depth from said point to said base.

3. In a screw pump substantially as shown and described inter meshing right and left hand screws of like radius and pitch and provided with external threads of the same width of face, each of which threads is of the same width at its face and at its base, and has in its sides recesses which increase gradually in depth from the perimeter to a point near the base of the thread, and then decrease rapidly in depth from said point to said base.

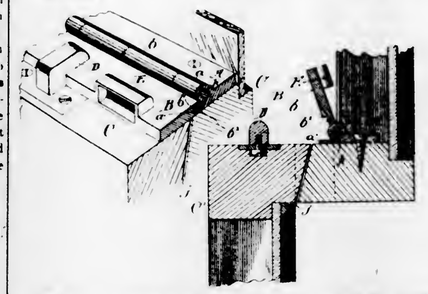
4. The combination in a screw pump of two pairs of intermeshing right and left hand screws provided with external threads, each of which threads is of the same width at its face and at its base, and has in its sides recesses which increase gradually in depth from the perimeter to a point near the base of the thread, and then decrease rapidly in depth from said point to said base, the said screws being mounted on parallel shafts rotating within a shell having interiorly the shape of two intermeshing hollow cylinders with their intersecting portions removed and having a central opening for affording communication with the space within the shell between the opposed ends of the screws, and having openings at its opposite ends as and for the purposes set forth.

5. The combination in a screw pump of two pairs of intermeshing right and left hand screws provided with external threads, each of which threads is of the same width at its face and at its base, and has in its sides recesses which increase gradually in depth from the perimeter to a point near the base of the thread, and then decrease rapidly in depth from said point to said base, the said screws being mounted on parallel shafts rotating within a shell shaped to fit the perimeters of the unintermeshed portions of said screws, an opening in said shell communicating with a chamber situated between the opposed ends of said screws and channels connecting the opposite ends of said shell with a common chamber.

6. The combination in a screw pump of two pairs of intermeshing right and left hand screws provided with hollow cores and with external threads each of which threads is of the same width at its face and at its base, and has in its sides recesses which increase gradually in depth from the perimeter to a point near the base of the thread, and then decrease rapidly in depth from said point to said base, two parallel shafts upon which said screws are mounted, means for rotating said shafts in opposite directions, a pump shell shaped to fit the perimeters of the unintermeshed portions of the threads of said screws, and means for detachably fastening said screws upon said shafts.

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529,838. DEVICE FOR PROTECTING JOINTS OF WINDOWS. EDWIN O. READ, New York, N. Y. Filed Dec. 7, 1893. Serial No. 492,985. (No model.)



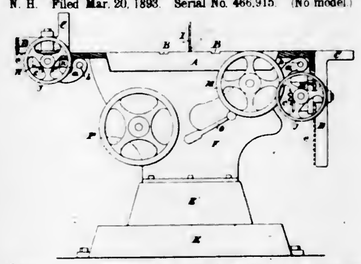
*Claim.*—1. A protector for windows, doors and similar appliances, consisting of two leaves united by a continuous hinge, and one of said leaves being provided with a continuous tongue which projects beneath the extent of said hinge and the other of said leaves being provided with a continuous rabbet adapted to receive said tongue and with a continuous shoulder adapted to abut against said tongue when the leaves are in the locked position, substantially as described.

2. A protector for windows, doors and similar appliances, consisting of a leaf A provided with a continuous series of knuckles and with a continuous tongue *a* which projects beneath the extent of said knuckles, and said leaf A adapted to be screwed to one member of the window, door or similar appliance, a leaf B, also provided with a corresponding continuous series of knuckles and with a continuous rabbet $b^2$ and a continuous shoulder *b'* adapted to abut against the aforesaid tongue, and finger pieces on said leaf B and a catch to engage on said leaf, substantially as described.

3. A protector for windows, doors and similar appliances, consisting of a leaf adapted to extend parallel to the entire length of the joint and a little back therefrom and provided with a tongue which projects beneath the hinge of the protector, and of another leaf hinged to the first-named leaf and being provided with a rabbet adapted to receive said tongue and with a shoulder to abut against the tongue, whereby the metal of said last named leaf covers the aforesaid joint throughout its extent when the leaves are locked, substantially as described.

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529,839. SAWING-MACHINE. AARON J. ROBINSON, Fremont, N. H. Filed Mar. 20, 1893. Serial No. 466,915. (No model.)



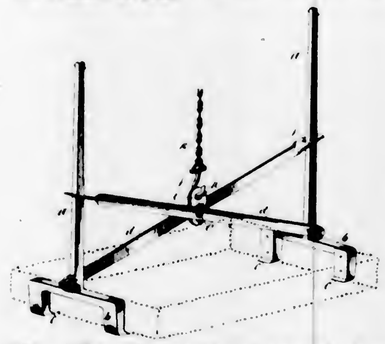
*Claim.*—1. In combination with the table of a sawing machine, a saw-arbor mounted on a block, a slide providing ways for said block, a curved guide for said slide, a screw having bearings supported by said slide, a nut fixed to said block and to move on said screw, and two bevel gears in engagement with each other, one of which is fastened on said screw and the other on a shaft having bearings fixed to said slide, substantially as and for the purpose set forth.

2. In combination with the table of a sawing machine, a saw-arbor mounted on a block and provided with a pulley having several grooves, a slide providing ways for said block, a curved guide for said slide, a screw having bearings supported by said slide, a nut fixed to said block and to move on said screw, two bevel gears in engagement with each other, one of which is fastened on said screw and the other on a shaft having bearings fixed to said slide, a counter-shaft provided with a pulley having several groovee, bearings for said counter shaft

which permit endwise movement of the pulley thereon, and an endless belt or rope extending around said pulleys, substantially as specified.

3. In combination with the table of a sawing machine, a saw-arbor mounted on a block, a slide providing ways for said block, a curved guide for said slide, a screw having bearings supported by said slide, a nut fixed to said block and to move on said screw, two bevel gears in engagement with each other, one of which is fastened on said screw and the other on a shaft having bearings fixed on said slide, a rack fastened to said slide, and a gear to engage with said rack on a shaft having stationary bearings, substantially as specified.

529,840. CLAMPING DEVICE FOR LITHOGRAPHIC STONES. OSCAR ROSBEN, New York, N. Y., assignor to Robert Hoe, Theodore H. Mead, and Charles W. Carpenter, same place. Filed June 4, 1894. Serial No. 513,346. (No model.)



*Claim.*—1. The combination with a hoisting mechanism for stones or other similar bodies, of a pair of vertical levers provided with clamping jaws at their lower ends for engaging opposite sides of the stone and with wedge shaped toes below the clamping jaws for engaging the under side of the stone, a pair of tie rods pivotally connected together and to said levers, and connections between the tie rods and hoisting mechanisms, substantially as described.

2. The combination with a hoisting mechanism for stones or other similar bodies, of a pair of vertical levers provided with clamping jaws at their lower ends projecting outwardly on both sides of said levers, for engaging opposite sides of the stone, and each provided with a pair of wedge shaped toes below the clamping jaws for engaging the under side of the stone on opposite sides of the lever, a pair of tie rods pivotally connected together and to said levers, and connections between the tie rods and hoisting mechanism, substantially as described.

3. The combination with a hoisting mechanism for stones or other similar bodies, of a pair of vertical levers provided with clamping jaws at their lower ends for engaging opposite sides of the stone and with wedge shaped toes below the clamping jaws for engaging the under side of the stone, a pair of tie rods pivotally connected together at their centers and each connected pivotally at one end to one of said levers and having a sliding connection to the opposite lever, and connections between the tie rods and hoisting mechanism, substantially as described.

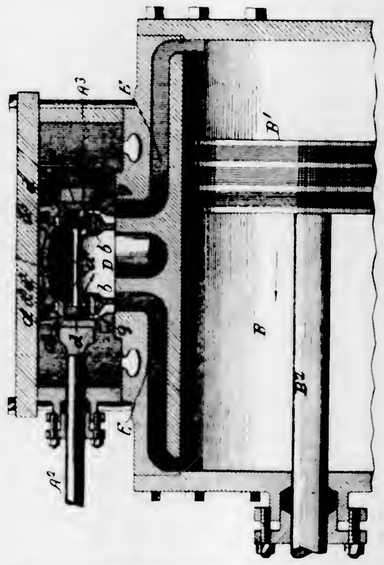
4. The combination with a hoisting mechanism for stones or other similar bodies, of a pair of vertical levers provided with clamping jaws at their lower ends projecting outward laterally on both sides of said levers, for engaging opposite sides of the stone, and each provided with a pair of wedge shaped toes below the clamping jaw for engaging the under side of the stone on opposite sides of the lever, a pair of tie rods pivotally connected together at their centers and each connected pivotally at one end to one of said levers and having a sliding connection to the opposite lever, and connections between the tie rods and hoisting mechanism, substantially as described.

5. The combination with a hoisting mechanism for stones or other similar bodies, of a pair of vertical levers *a*, clamping jaws *b* carried by said levers at their lower ends and provided with wedge shaped toes *c*, a pair of tie rods *d* pivotally connected together at their centers, and each at one end pivotally connected to one of said levers, and provided with a slot *f* embracing the opposite lever, and connections between said tie rods and hoisting mechanism, substantially as described.

6. The combination with a hoisting mechanism for stones or other similar bodies, of a pair of vertical levers *a*, clamping jaws *b* carried by said levers at their lower ends and provided with wedge shaped toes *c*, a pair of tie rods *d* pivotally connected together at their centers, and each at one end pivotally connected to one of said levers, and provided with a slot *f* embracing the opposite lever, stops *g* for limiting the upward movement of the slotted ends of the tie rods, and connections between said tie rods and hoisting mechanism, substantially as described.

7. The combination of vertical levers *a* provided with clamping jaws *b* and wedge shaped toes *c*, tie rods *d* pivotally connected at their centers and each at one end pivotally connected to one of said levers and provided with a slot *f* embracing the opposite lever, plate *h*, and chain *k* detachably connected to said plate, substantially as described.

529,841. STEAM-ENGINE VALVE. EMIL L. SAUER, Chicago, Ill. Filed Mar. 28, 1894. Serial No. 505,431. (No model.)



*Claim.*—1. A steam-engine-valve, provided in its respective sides with a number of apertures, bushings, seated in said apertures and open at one end and closed at the other and having exhaust-ports in the sides, piston-valves, inserted in and having a reciprocating movement in said bushings and connected by rods extending across the exhaust-chamber, and steam-ports or passages, starting in from the bottom of the main valve and communicating with said bushings, substantially as set forth.

2. A steam engine-valve, having steam and exhaust passages starting in from the bottom and stopping short in the respective side walls, bushings seated in the side walls and provided with exhaust openings, piston-valves, adapted to have a reciprocating movement in said bushings, in accordance with the movement of the main valve, substantially as set forth.

3. The combination with the bushings, having an annular exterior groove, the main valve, having a corresponding groove in the adjacent surface, and a spring-ring inserted in said grooved parts and locking said bushings in place, substantially as set forth.

529,842. MALTING-MACHINE. ADAM SCHULTZ, Cincinnati, Ohio, assignor of one-half to John Deck, same place. Filed Aug. 7, 1893. Serial No. 482,599. (No model.)

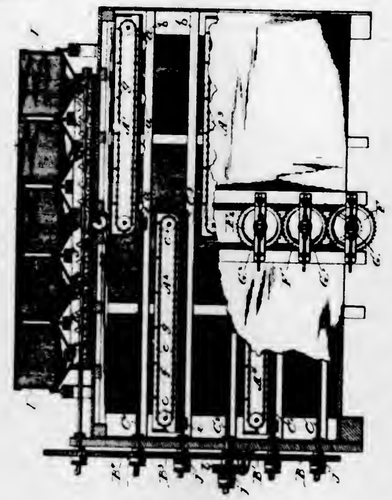
*Claim.*—1. In a malting machine, the combination of a series of horizontally movable troughs, means for operating the same, and a horizontally revoluble discharge rake for each trough carried thereby and arranged to discharge its contents into the next lower trough as the latter moves under its open end, substantially as described.

2. In a malting machine, the combination of a series of vats or bins, a double conveyer extending longitudinally of the same, a transverse conveyer at the middle of the former, a series of horizontal movable troughs beneath said conveyers, means for operating the same, and a discharge rake for each trough, substantially as described.

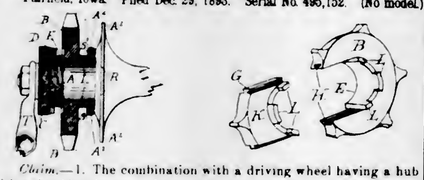
3. In a malting machine, the combination of a series of horizontal movable troughs, rotary discharging rakes for each trough each provided with one part of a clutch, and a series of sliding clutches



any one of which is adapted to be engaged with the clutch of its adjacent rake when the trough is in proper position, substantially as described.



529,843. INTERCHANGEABLE SPROCKET. ARTHUR M. SNYDER, Fairfield, Iowa. Filed Dec. 29, 1893. Serial No. 495,152. (No model.)



*Claim.*—1. The combination with a driving wheel having a hub with a shoulder thereon, of a sprocket wheel constructed of two separable parts adapted to fit over said hub and catch against said shoulder, and a collar to hold the parts of the sprocket together and in rigid engagement with the hub, substantially as and for the purpose set forth.

2. The combination with a driving wheel having a hub with a shoulder thereon, of a sprocket wheel constructed of two separable parts adapted to fit over said hub and having means adapted to catch under said shoulder, and a collar adapted to screw on said hub and hold the sprocket in rigid engagement with the shoulder thereon, substantially as set forth.

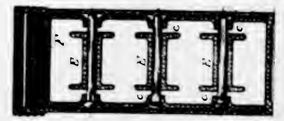
3. The combination with a driving wheel having a hub with a shoulder thereon, of a sprocket wheel constructed of two separable parts adapted to fit over said hub and catch against said shoulder, and a collar adapted to screw on said hub and hold the sprocket in rigid engagement with the shoulder thereon, the sprocket being fitted with a flange on the side adjoining the collar, and the collar being provided with an annular lip to catch over said flange.

4. The combination with a driving wheel having a hub with a shoulder thereon, of a collar adapted to screw on said hub, and a sprocket wheel constructed of two separable parts, adapted to fit over said hub between said shoulder and collar, and to be removed from said hub by the separation of the parts, composing the sprocket in the same plane occupied by the sprocket itself.

5. The combination with a driving wheel having a hub with a recessed shoulder, of a sprocket wheel constructed of two separable parts adapted to fit over said hub and having lugs on the parts adapted to enter the recess in the shoulder of the hub, and a collar adapted to screw on the hub and hold the sprocket in engagement with the shoulder of the hub.

6. The combination of a driving wheel having a hub with a shoulder thereon and recesses in said shoulder, a cup shaped collar adapted to screw on said hub, and a sprocket wheel composed of separable parts adapted to fit over said hub between said shoulder and collar, said sprocket having on one side lugs adapted to fit into the recesses in the shoulder of the hub, and on the other side an annular flange or lip, the cupped shaped collar being adapted to fit over the said annular flange and hold the parts of the sprocket wheel together and in engagement with the hub, substantially as shown and described.

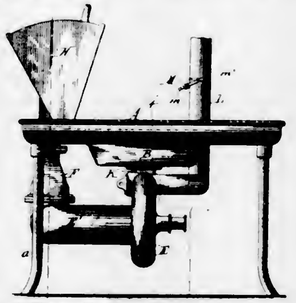
529,844. LIGATURE-RECEPTACLE. GEORGE M. STRATTON, Conshohocken, Pa. Filed July 26, 1894. Serial No. 518,639. (No model.)



*Claim.*—1. The combination in a ligature holder of a cylindrical glass vessel, an inner removable cylindrical tube having an exterior diameter slightly less than the interior diameter of the said cylindrical vessel and adapted to fit snugly within the exterior vessel of a length approximately equal to the length of the cylindrical vessel, inwardly projecting flanges provided diametrically opposite each other in said removable casing in a longitudinal series, removable headed glass axes provided in said flanges, a glass ligature holding spool mounted upon each axis, said flanges having sufficient inward projection to prevent contact between the end disks of the spools and the inner wall of the cylinder, and tightly fitting cover provided in the upper portion of the glass vessel having small orifices for the passage of the ligature, substantially as described.

2. In a ligature holder the combination of the cylindrical glass vessel, A, inner removable glass cylinder, C, of a diameter approximately equal to the inner diameter of the vessel A, and of a length slightly less than the length of said vessel, inwardly projecting circular flanges, *c*, provided in said casing opposite each other and in longitudinal series, orifices provided through said casing within said flanges, removable axes, D, provided in said orifices, heads, *d*, provided on said axes, and depressions provided in said casing at the mouth of the orifices for the reception of said heads, *d*, when the axes are in position, glass spools, E, mounted upon each axis in a longitudinal series, soft rubber disk, F, provided in the upper portion of the vessel having small orifices vertically disposed through the same for the passage of the various ligatures, and metallic cap, B, having center rubber disk, *b*, mounted upon said vessel, substantially as described.

529,845. FORGE. HENRY W. WENDT, Buffalo, N. Y., assignor to the Buffalo Forge Company, same place. Filed June 11, 1894. Serial No. 514,133. (No model.)



*Claim.*—1. The combination with the hearth, of an upright smoke funnel located on one side of the hearth, leaving the space over the hearth entirely free, the said smoke fuunel having a lateral opening or inlet at the hearth, and a fan whereby the products of combustion rising from the hearth are drawn into said smoke funnel, substantially as set forth.

2. The combination with the hearth, of a smoke funnel having its inlet arranged above the hearth and its outlet extending downwardly, and a partition dividing the funnel into a main passage and a secondary passage, substantially as set forth.

3. The combination with the hearth and the cylindrical suction pipe arranged below the hearth, of a smoke funnel having its inlet arranged above the hearth and having an elongated outlet, and a coupling pipe having an elongated inlet which connects with the elongated outlet of the funnel, and a cylindrical outlet which connects with the cylindrical suction pipe, substantially as set forth.

4. The combination with the hearth, of an upright smoke funnel arranged at one side of the hearth and having its inlet arranged to open laterally toward the hearth, and a pivoted hood forming an extension of said funnel and capable of swinging toward and from

the hearth for lengthening and shortening said funnel, substantially as set forth.

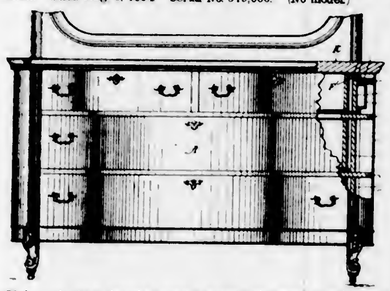
5. The combination with the hearth, of a smoke funnel having its inlet arranged above the hearth, and a movable hood adapted to form an extension of the funnel and consisting of a segment arranged over the top of the funnel and side pieces arranged on opposite sides of the funnel and pivoted at their lower ends to the sides of the funnel, substantially as set forth.

6. The combination with the hearth and a smoke catcher arranged adjacent thereto, of a fan or blower having its blast spout connected with the hearth, a suction pipe leading from the smoke catcher to the eye of said fan, and a smoke pipe leading from the blast spout of the fan, substantially as set forth.

7. The combination with the hearth and a smoke catcher arranged adjacent thereto, of a fan or blower having its blast spout connected with the hearth, a suction pipe leading from the smoke catcher to the eye of said fan, and a smoke pipe leading from the blast spout of the fan and having an automatic damper, substantially as set forth.

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529,846. DRESSING-CASE. HARRY WIDDICOMB, Grand Rapids, Mich. Filed Aug. 6, 1894. Serial No. 519,606. (No model.)



*Claim.*—1. In a dressing case a detachable secret panel having a hidden receptacle attached and secured by engagement at one end with a groove in the frame and at the other end by a wire having right angle bends, forming two arms in horizontal and vertical planes, one of said arms engaging an opening in the edge of the panel and the other of said arms adapted to be close to the under surface of the top, substantially as described.

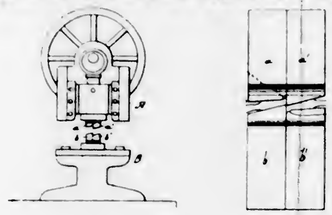
2. In a dressing case, a convex end, a detachable panel having a pocket or receptacle attached, a groove in the rear corner post, engaged by said panel, a strip on the under side of the top of said case above said panel, a wire rotative in said strip and bent at right angles forming arms near each end of the same, and openings in said strip and panel engaged by one arm of said wire substantially as described.

3. In a dressing case, a groove in the rear corner post, a removable panel engaging said groove, a pocket attached to said panel, a spring engaging said panel at the inner side, a strip above said panel having a transverse groove and a vertical opening, a wire rotatively secured in said groove, said wire having right angle bends near each end forming laterally projecting arms arranged relatively in vertical and horizontal plane substantially as described.

4. In a dressing case in combination with a detachable panel having a pocket or receptacle attached and an opening in its upper edge, a strip above said panel having a transverse groove and a vertical opening, a wire rotatively secured in said transverse groove, said wire having a right angle bend, forming an arm traversing said openings in the strip and panel, and a second right angle bend forming an arm moving on the outside of said strip substantially as described.

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529,847. DIE FOR MAKING LOCK-NUTS. STEPHEN D. BARNETT, Newark, N. J. Filed Mar. 9, 1894. Serial No. 502,962. (No model.)



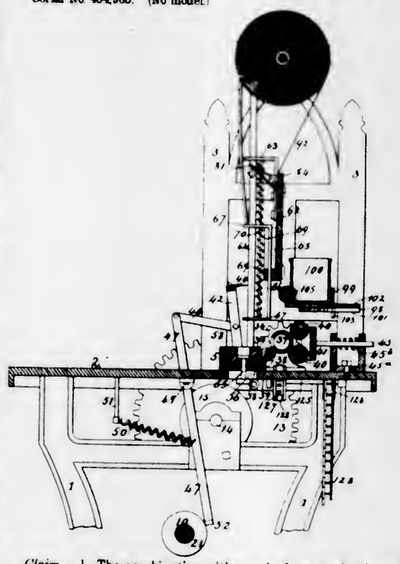
*Claim.*—1. The improved washer forming press or machine herein described in which is combined with a pressing mechanism, adjustable pairs of die sections *a*, *a'*, *b*, *b'*, each having an inclined surface or bearing, as $a^3$, $a^3$, $b^3$, $b^3$, of which the inclinations of surfaces $a^3$, $b^3$, differ in degree from the inclinations $a^4$, $b^4$, the inclination of the surface or bearing, $a^4$, being greater than that of the bearing $a^3$, and, similarly, the surface or bearing $b^4$, being of a greater inclination than the bearing $b^3$, the bearing or surface $a^3$, of greater inclination, of one pair of sections, lying opposite the bearing or surface, $b^3$, of less inclination in the other pair and, similarly, the surface or bearing, $b^4$, lying opposite the surface or bearing $a^3$, the section *a*, of one pair being separable from or jointed in its relation to the section *a'*, and the section, *b*, of the opposite pair being likewise separable from its adjacent section *b'*, the joints of separation being substantially in line in opposite pairs, and between the variously inclined surfaces or bearings of adjacent pairs, substantially as shown and described.

2. The improved lock washer machine herein described in which is combined with a press, die sections *a*, *a'*, *b*, *b'*, arranged in adjustable pairs, having inclined surfaces or bearings $a^3$, $a^3$, $b^3$, $b^3$, the inclined surfaces $a^3$, $b^3$, terminating at their inner edges in short bevels or inclined bearings, $a^4$, $b^4$ adapted for forming the biting teeth of the washers, and the lines of separation between said sections being between the respective short bevels and the shoulders adjacent thereto, substantially as set forth.

3. The improved dies for making lock-washers with tapering beveled extremities, consisting of upper and lower sections having the inclined bearings $a^3$, $b^3$, to form the said tapering or beveled opposite extremities, substantially as set forth.

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529,848. PAPER-WRAPPING MACHINE. CASSIUS M. BARTHOLOMEW and HENRY D. BARTHOLOMEW, Newark, Ohio. Filed Sept. 7, 1893. Serial No. 484,985. (No model.)



*Claim.*—1. The combination with a main frame and a slotted rotary mandrel adapted to receive the edge of a paper to be wrapped, of a wrapping paper roll mounted on said main frame, a vertical reciprocating frame, guide plates carried thereby between which said wrapping paper passes, a roller carrying shaft mounted in a reciprocating frame 65, rollers 84 carried thereby, the latter rotating in but one direction and bearing against said wrapping paper and means for automatically separating said wrapping paper into lengths, substantially as specified.

2. The combination with the main frame, a rotary slotted mandrel mounted therein and adapted to receive the edge of a paper, a wrapping paper roll mounted in said main frame and means for feeding the same into folds of a paper on said mandrel, of an endless belt or chain traveling adjacent to said mandrel, and a lug carried on said belt adapted to move the rolled and wrapped paper off said mandrel longitudinally by contact with one end thereof substantially as specified.

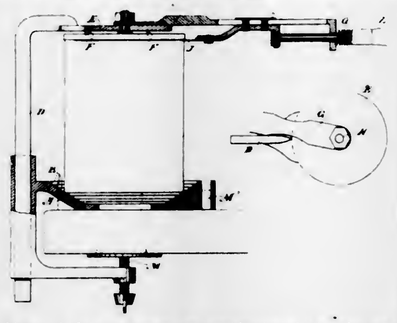
3. The combination with a main frame, a rotary slotted mandrel



mounted therein and mechanism for stopping the rotation of said mandrel at regular intervals, of a wrapping paper roll mounted in said main frame, means for feeding said wrapping paper on to said mandrel, an endless belt traveling adjacent to said mandrel and a lug on said belt adapted to force a rolled paper off said mandrel, substantially as specified.

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529,849. CAN-OPENER. JOSEPH BIEN, San Francisco, Cal. Filed Jan. 30, 1894. Serial No. 498,507. (No model.)



*Claim.*—1. In a can opener, the combination of a base having a socket at one side, a standard mounted to slide in said socket having its upper end turned inward and provided with a plate or head adapted to engage the top of the can, and provided with means for centering and holding the can, a swiveled arm movable about the common center of the can and the holder, and a cutter slidable radially upon said arm and carried thereby so that when the arm is moved around in a circle, the cutter will act to sever the metal of the can slide as described.

2. In a can opener, a base having a series of offsets of varying diameters, a socket at one side, a standard slidable vertically in said socket having a head or plate supported from its upper end and adapted to clamp the top of the can and secure it between itself and the base, a radially slotted arm fulcrumed to the center of said plate projecting radially therefrom, a sliding guide traveling upon the radially slotted arm having a cutter fixed to the inner end, and a handle by which the cutter is moved and held in contact with the side of the can so as to cut through it when the arm is rotated, substantially as herein described.

3. A device for opening cans consisting of a holder for the can, a top plate having a channel formed around its periphery, an arm fulcrumed centrally to said plate projecting beyond its periphery and having a radial slot formed in it, a second arm having a pin or antifriction roller projecting upwardly into the slot of said arm and downwardly to enter the channel around the periphery of the top plate whereby it is caused to follow the said channel when the arm is moved about its center, and a cutter fixed to a radially sliding guide and carried by said arm, substantially as herein described.

4. In a can opener, a plate adapted to be fixed in contact with the can head, an arm pivoted to said plate extending radially outward and serving as a guide to a radially sliding cutter carrier, a handle by which the cutter is advanced into contact with the side of the can, and a spring by which it is retracted away from the can, when released, as described.

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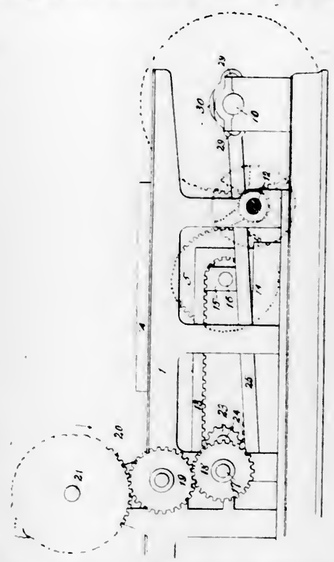
529,850. BED AND CYLINDER PRINTING-MACHINE. JOHN BROOKS, Plainfield, N. J., assignor to the Potter Printing Press Company, same place. Filed Apr. 13, 1894. Serial No. 507,421. (No model.)

*Claim.*—1. In a bed and cylinder printing machine, the combination with a reciprocating bed and impression cylinder, of mechanism for reciprocating the bed, a continuous endless cylinder-driving rack reciprocated by said mechanism in a constant plane, and connections whereby the rack drives the impression cylinder continuously, as set forth.

2. The combination with the impression cylinder and reciprocating bed, of a continuous endless internal cylinder-driving rack moving in a constant plane, and connections whereby the rack drives the cylinder continuously, as set forth.

3. The combination with the impression cylinder and reciprocating bed, of a continuous internal cylinder-driving rack moving in a constant plane, a pinion constantly engaging the same, and connections between the pinion and said cylinder for continuously rotating the latter, as set forth.

4. The combination with the impression cylinder, and reciprocating bed, of mechanism for actuating the latter, a double internal rack driven with said mechanism in a constant horizontal plane, a pinion, means for shifting the latter from one side to the other of the rack, and connections between said pinion and the impression cylinder, for rotating the latter continuously substantially as set forth



5. The combination with the impression cylinder and bed, of reciprocating mechanism for the latter, a double internal rack connected with said mechanism and driven in a constant horizontal plane, a pinion, a movable support for the same, power transmitting devices between said pinion and impression cylinder, for rotating the latter continuously and a cam driven with said mechanism and connected with the support, substantially as set forth.

6. The combination of the impression cylinder, a double reciprocating rack, a pinion for engaging the latter, a second pinion engaging the first, an angle lever connecting the axes of the pinions, a reciprocating rod connected with the lever, a cam for actuating the rod, and connections between said second pinion and the impression cylinder for rotating the latter, substantially as set forth

7. The combination with the impression cylinder and bed, of the traveling gear for driving the latter, a double internal rack connected with the axis of said gear to move in a constant horizontal plane, and connections between said rack and the impression cylinder, for rotating the latter continuously substantially as set forth.

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529,851. ENGRAVING-MACHINE. CHARLES C. BRUCKNER, Chicago, Ill., assignor to the National Engraving Machine Company, same place. Filed Oct. 23, 1893. Serial No. 488,860. (No model.)

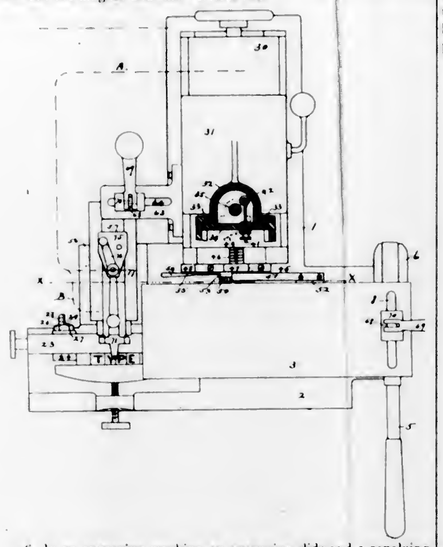
*Claim.*—1. In an engraving machine adapted to reproduce on a work table a copy held on a copy slide, a movable copy slide provided with a copyholding clamp having projections on the jaws thereof, and a stop located between and in the path of said projections.

2. In an engraving machine, a copy holding clamp consisting of jaws operated by a right and left hand screw, projections on said jaws the distance between which is determined by the length of the copy, and an abutment located between said projections and serving as a stop therefor, whereby the length of the movement of the slide carrying said copy is determined by the length of the copy held in said clamp, substantially as set forth.

3. In an electrically operated engraving machine, a copy slide having adjustable stops thereon, a circuit breaker adapted to act as an abutment for one of said stops, and a circuit maker adapted to act as an abutment for the other stop, whereby an electric circuit is alternately made and broken by the stopping of said slide

4. In an electrically controlled engraving machine the engraving tool of which is held from cutting when the electric circuit is closed, a circuit opening and closing device operated by the movement of a copy carrying slide, and means whereby the opening and closing of said device take place alternately at the extremes of the slide movement.

5. In an electrical engraving machine, a vertical standard adapted to carry a vertically adjustable tool carrying head, a magnet supported in said tool carrying head, a vertical rod supported in said vertical standard and serving as part of the electric circuit, and a sliding contact carried by the tool carrying head and serving as a connection between the magnet and said vertical rod.



6. In an engraving machine, an engraving slide and a revolving chuck supported on a bed, a rack secured to said slide, an idle gear supported by the bed and in mesh with the rack, a gear on the body of said chuck, and means for holding said chuck so that the gear thereon will be in mesh with either said rack or said idle gear.

7. In an engraving machine, a revolving chuck operated by a moving slide, and means for shifting said chuck in its support so that it will be rotated either directly by said slide or through an intermediate gear, substantially as set forth.

8. In an engraving machine, a copy holding slide the length of whose movements are automatically determined by the length of the copy held thereon, a revolving chuck for holding circular work upon which said copy is to be reproduced, and means for shifting the position of said chuck so as to cause it to rotate in the right direction for either inside or outside engraving, substantially as described

9. In an engraving machine, a copy slide and a work table having parallel and synchronous movements in the same direction of an adjustable ratio, a work holding chuck rotated by one of said slides, and means for shifting the connection of said slide to an intermediate gear whereby the direction of rotation of said chuck may be reversed in respect to the movement of said slide, substantially as, and for the purpose set forth.

10. In an engraving machine, an engraving tool and a hammer for striking it, and means for controlling the movements of said tool and said hammer by electrical connections made by the vibrations of a tracing point in passing over a copy.

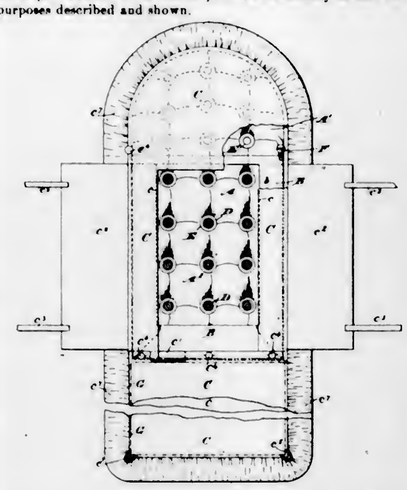
11. In an engraving machine, an engraving tool, a maguet for raising said tool from and dropping it into a cutting position, an electrically operated hammer mounted above and adapted to strike upon said tool, a tracing point adapted to vibrate in passing over a copy, and electrical connections betweeo said tracing point and said tool and also between said tracing point and said hammer.

12. In an engraving machine, an electrically controlled engraving tool, an electrically operated hammer arranged to strike upon said tool, electrical connections for said tool and said hammer, and a vibrating lever for making and breaking the connections for said tool and said hammer, said vibrating lever being controlled by a tracing point in passing over a copy.

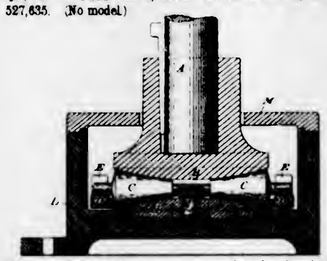
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**529,852. CUSHION OR MATTRESS.** HEINRICH BRUPBACHER and ERNST BRUPBACHER, Zurich, Switzerland. Filed Feb. 12, 1894. Serial No. 499,919. (No model.)

*Claim.*—As bedding, the combination of an air or water filled mattress made of pure inda rubber with its two faces fastened together in several places as shown, rubber tubes inserted at said fastening places to carry off urine and for ventilating purposes, a receptacle partially enveloping said mattress to receive urine passed through the rubber tubes aforesaid, provided with a rim whose upper end can be tightly fastened around said mattress to prevent the urine from flowing under the head-rest of the mattress, the whole being inserted in a pocket or case having a rectangular opening and two side flaps, the upper part of said case serving to hold the mattress and the lower part of said case a feather pillow, substantially as and for the purposes described and shown.



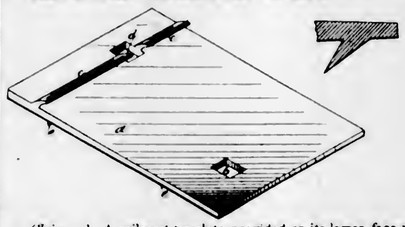
**529,853. ROLLER THRUST-BEARING.** JOHN R. BURDICK, Brooklyn, N. Y. Filed Jan. 6, 1894. Renewed Nov. 1, 1894. Serial No. 527,635. (No model.)



*Claim.*—The combination, with the bearing head of a shaft or axle convexed on a sphere described from a center on the axis of the shaft or axle, of a nest of bearing rollers radiating from said axis and concaved longitudinally on the same sphere, whereby spreading of the bearing rollers is counteracted, and flexure of the shaft or axle accommodated, substantially as herein described.

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**529,854. TIE-PLATE.** SIDNEY F. CLARK, Elizabeth, N. J. Filed Jan. 17, 1894. Serial No. 497,133. (No model.)



*Claim.*—1. A railroad tie-plate provided on its lower face with spurs adapted to pass into and beneath a portion of the tie, and prevent lateral and perpendicular displacement, substantially as described.

2. A railroad tie-plate, thicker at one end than at the other, formed on its upper face with an inwardly curving divided shoulder, and on its lower face with a suitable number of spurs adapted to pass into and beneath a portion of the tie, substantially as described.

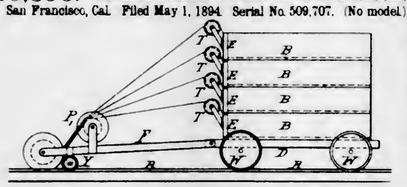
3. A railroad tie-plate tapering or wedge shaped in longitudinal section, formed on its upper face with an inwardly curving shoulder, and on its lower face with a suitable number of spurs; a spike-hole located at one side of the center of the plate, dividing the shoulder and extending beyond the inner side thereof, and a diagonally opposite elongated spike-hole, substantially as described.

4. A railroad tie-plate tapering or wedge shaped in longitudinal section, formed with an inwardly curving transverse rib on its upper face and at its thicker end; a spike-hole located at one side of the center of the plate, dividing the shoulder and extending beyond the inner edge thereof; an elongated spike-hole, arranged diagonally opposite thereto, and spurs formed on the bottom of the plate, adapted to pass into and beneath a portion of the tie, substantially as described.



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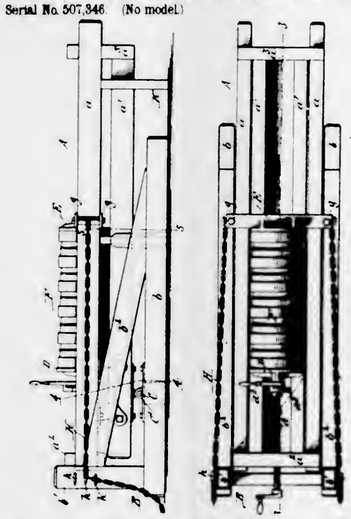
**529,855. MACHINE FOR LAYING CLOTH.** ARTHUR ELOESSER, San Francisco, Cal. Filed May 1, 1894. Serial No. 509,707. (No model.)



*Claim.*—The combination with a cloth cutting table of the carriage, adapted to travel thereon and provided with cloth holding devices, and a swinging frame pivoted to the carriage and provided with guiding wheels, the flanged roller P, located at the end of said frame for smoothing and guiding the cloth, and a second flanged roller P' located on said frame above said smoothing and guiding roller, for guiding the cloth thereto, whereby the cloth is guided, laid and smoothed in its proper position, substantially as set forth.

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**529,856. CHEESE-PRESS.** HARVEY FELDMEIER, Little Falls, N. Y., assignor to D. H. Burrell & Co., same place. Filed Apr. 13, 1894. Serial No. 507,846. (No model.)



*Claim.*—1. The combination with a press frame pivoted near its head end to be capable at its foot end of vertical movement and provided with a head block, of an automatic pressure block arranged in the press frame, and a connection extending from said automatic block to a stationary support which is arranged near the head end eccentrically with reference to the pivot of the press frame, substantially as set forth.

2. The combination with a stationary supporting frame, of a movable press frame supported near its head on the stationary frame by a horizontal pivot, a head block and an automatic pressure block arranged in the movable frame, and a connection extending from the automatic block to the stationary frame and attached thereto outside of the pivot line on which the movable frame swings, substantially as set forth.

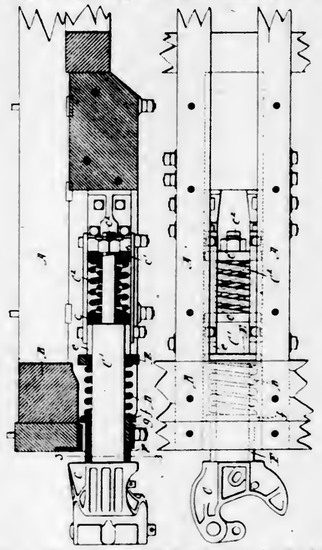
3. The combination with a stationary supporting frame, of a movable press frame supported near its head on the stationary frame by a horizontal pivot, a head block and an automatic pressure block arranged in the movable frame, a connection extending from the automatic block to the stationary frame, and means whereby the points of attachment of said connection to the stationary frame can be raised or lowered, substantially as set forth.

4. The combination with a stationary supporting frame, of a movable press frame supported near its head on the stationary frame by a horizontal pivot, a head block arranged in the movable frame and provided with mechanism whereby it can be operated by hand, an automatic pressure block also arranged in the movable frame, and a connection extending from the automatic block to the stationary frame and attached thereto outside of the pivot line of the movable frame, substantially as set forth.

5. The combination with a supporting frame provided with transverse sockets, of a movable press frame provided near its head with transverse journals seated in said sockets, a head block and an automatic pressure block arranged in the movable frame, and a connection extending from the automatic block to the stationary frame and attached thereto outside of the pivot line of the movable frame, substantially as set forth.

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**529,857. CAR-BUFFER.** CHARLES A. GOULD, Bay Side, N. Y. Filed May 26, 1894. Serial No. 512,505. (No model.)



*Claim.*—1. The combination with the car body, the drawhead, the drawbar and the carry-iron of the draw bar, of a sleeve surrounding the draw bar and extending rearwardly from the draw head and resting upon said carry-iron, a stop or abutment arranged in rear of said sleeve, and a buffer spring surrounding the draw bar and bearing at its rear end against said stop or abutment, substantially as set forth.

2. The combination with the car body, the drawhead, the drawbar and the carry iron of the drawbar, of a sleeve loosely surrounding the front portion of the drawbar and arranged to slide upon the carry iron, a lug or abutment arranged in rear of said sleeve or bushing, and a supplemental buffer spring surrounding the drawbar and bearing at its rear end against said abutment and at its front end against said sleeve or bushing, substantially as set forth.

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**529,858. WOVEN PILE FABRIC.** HARRY HARDWICK, Philadelphia, Pa. Filed Apr. 28, 1893. Serial No. 472,198. (No model.)

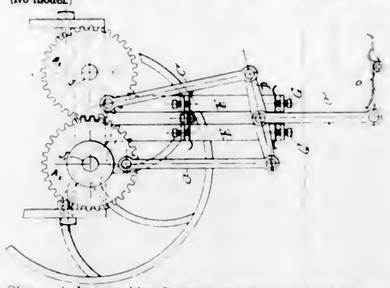


*Claim.*—1. A new and improved pile fabric in which the heading is formed of pile lower than the pile of the contiguous body of fabric.

2. A new and improved pile fabric in which the main portion of the fabric is formed of cut and uncut pile contiguous to each other, and the heading of pile of less height than the pile of the main portion of the fabric

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529,859. **CONVERTING RECIPROCATORY INTO ROTARY MOTION.** DEXTER HAZARD, Marquette, Mich., assignor of one-half to Frederick O. Clark, same place. Filed Jan. 22, 1894. Serial No. 497,726. (No model.)

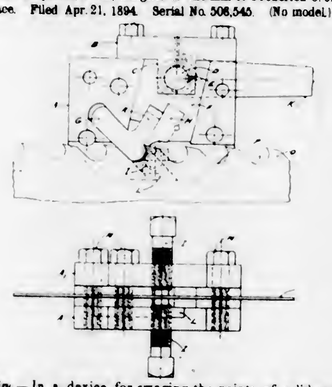


*Claim.*—1. In a machine for converting reciprocatory into rotary motion, the combination with the driving shaft and a short shaft, and the gear wheels $A^3$ and $B^3$ mounted on said shafts respectively, the wheel $A^3$ comprising the hub L, having notches at one side and the collar M at the other, and the rim A'; dogs N N fastened to said rim, and the springs X X bearing on said dogs; of the guideways E E, the rocking bar D provided with a cross-head, moving in said guideways, the springs F F, the lugs K and set-screws G, arm C C, connecting the ends of the rocking bar to the wheels $A^3$, $B^3$; the treadle O, and the pitman C connecting said treadle to said rocking bar; substantially as shown and described

2. In a machine for converting reciprocatory into rotary motion, the combination with the driving shaft and a short shaft, and the gear wheels $A^3$ and $B^3$ mounted on said shafts respectively, of the guideways E E, the rocking bar D provided with a cross head, moving in said guideways; the springs F F; the lugs K and set-screws G; arm C C connecting the ends of the rocking bar D to the wheels $A^3$, $B^3$, the treadle O and the pitman C connecting said treadle to said rocking bar substantially as shown and described.

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529,860. **DEVICE FOR SWAGING SAW-TEETH.** DEXTER HAZARD, Marquette, Mich., assignor of one-half to Frederick O. Clark, same place. Filed Apr. 21, 1894. Serial No. 508,545. (No model.)

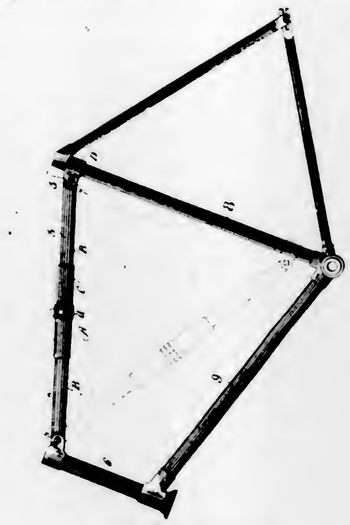


*Claim.*—In a device for swaging the points of solid saw teeth and for regulating the distance between the backs and points of said teeth, the combination with inclosing side pieces A and A', provided with set screws I; inclosing anvil G, having projection R; punch H; slide F; and pin D, provided with eccentric E, in connection with boxes B and lever K, all substantially as shown and described.

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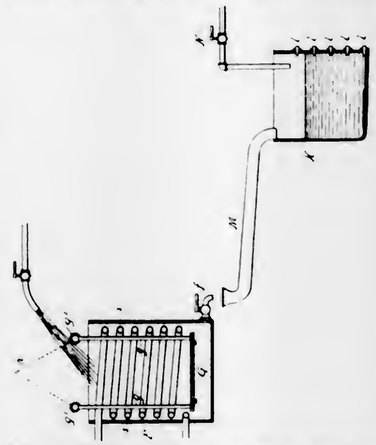
529,861. **CYCLE-FRAME.** EDGAR E. HERSH, Allentown, Pa., assignor to himself and Harvey E. Hersh, same place. Filed Jan. 3, 1894. Serial No. 495,521. (No model.)

*Claim.*—The combination with the front and rear uprights of a diamond frame for cycles, of an extensible brace pivotally connected with said front upright and adjustable along the rear upright, whereby said brace can be dropped down out of the way, for the purposes set forth



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529,862. **PROCESS OF REMOVING AND RECOVERING METAL COATINGS FROM METALLIC BASES.** THOMAS G. HUNTER, Philadelphia, Pa. Filed Jan. 30, 1894. Serial No. 498,453. (No specimens.)



*Claim.*—1. The process of separating coating metal from the coated article the coating metal of which is more electro positive than the base of the soluble compound to be employed in the process and the metallic base metal is more electro positive than its coating, said process consisting in subjecting the coating metal to the action of a neutral haloid salt of copper precipitating the metal originally held in solution, the coating metal taking its place in the solution, substantially as herein described.

2. The process herein described of recovering metal coating from a metallic base, wherein the metal coating to be treated is more electro positive than the base of the soluble compound to be employed and metallic base metal is more electro positive than its coating, consisting in immersing the coated article to be treated and precipitating the metal of the neutral haloid salt of copper in which the combined metals to be treated are immersed by the greater affinity of the coating metal for the acid radical of the haloid salt of copper dissolving the coating metal and holding the same in solution, subsequently precipitating the said coating metal by the greater affinity of the metal base for the said acid radical.

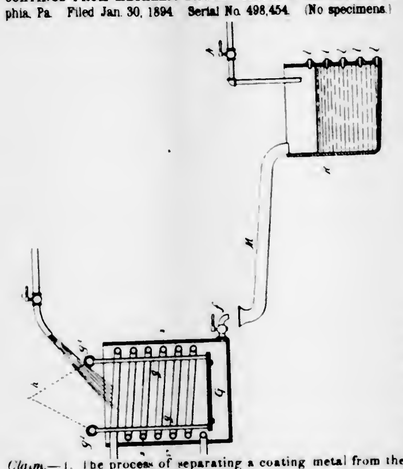
3. The herein described process of removing metal coating from its base, wherein the metal coating to be treated is more electro positive than the base of the soluble compound to be employed and the metallic base is more electro positive than its coating, consisting in subjecting the coating to the action of a neutral solution of chloride of copper and permitting such action to continue until the copper and coating metal have been precipitated in metallic form.

4. The herein described process of treating "tin scrap" consisting in subjecting the tin to the action of a neutral solution of chloride of copper and permitting such action to continue until the copper and tin have been precipitated in metallic form

5. The process of treating "tin scrap" said process consisting in subjecting the "tin scrap" to the action of a neutral solution of chloride of copper, permitting such action to continue until the copper and tin have been precipitated and chloride of iron formed, then removing the precipitate with the chloride of iron, flushing the remaining iron and finally removing said iron

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529,863. **PROCESS OF REMOVING AND RECOVERING METAL COATINGS FROM METALLIC BASES.** THOMAS G. HUNTER, Philadelphia, Pa. Filed Jan. 30, 1894. Serial No. 498,454. (No specimens.)



*Claim.*—1. The process of separating a coating metal from the coated article, the coating metal of which is more electro-positive than the base of the soluble compound employed in the process and the metallic base metal is more electro-positive than its coating, said process consisting in subjecting the coating metal to the action of a neutral salt of copper of the nitroxyl group, precipitating the metal originally held in solution, the coating metal taking its place in the solution, substantially as herein described.

2. The process herein described of removing metal coating from a metallic base wherein the metal coating to be treated is more electro positive than the base of the soluble compound employed and the metallic base metal is more electro-positive than its coating, said process consisting in immersing the coated metal in a neutral soluble salt of copper of the nitroxyl group, thereby producing a precipitation of the metal of the salt of copper in which the combined metals to be treated are immersed by the greater affinity of the coating metal for the acid radical of the said salt of copper, and dissolving the coating metal and holding the same in solution, subsequently precipitating the said coating metal by the greater affinity of the base metal for the acid radical.

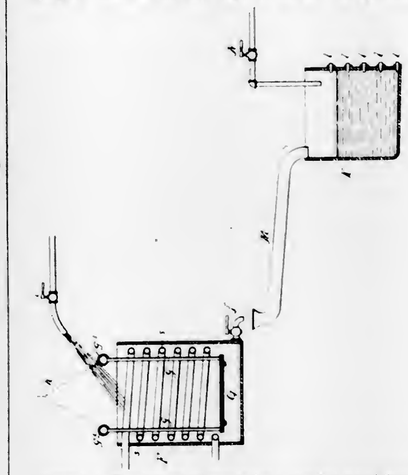
3. The herein described process of removing metal coating from its base wherein the metal coating to be treated is more electro positive than the base of the soluble compound to be employed and the metallic base is more electro positive than its coating, said process consisting in subjecting the coating to the action of a neutral solution of nitrate of copper and permitting such action to continue until the copper and coating metal have been precipitated in metallic form.

4. The herein described process of treating "tin scrap" consisting in subjecting the tin to the action of a neutral solution of a salt of copper of the nitroxyl group and permitting such action to continue until the copper and tin have been precipitated in metallic form.

5. The herein described process of treating "tin scrap" consisting in subjecting the tin to the action of a neutral solution of nitrate of copper and permitting such action to continue until the copper and tin have been precipitated and nitrate of iron formed, then removing the precipitate with the nitrate of iron, flushing the remaining iron and finally removing said iron

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529,864. **PROCESS OF REMOVING AND RECOVERING METAL COATINGS FROM METALLIC BASES.** THOMAS G. HUNTER, Philadelphia, Pa. Filed Jan. 30, 1894. Serial No. 498,455. (No specimens.)



*Claim.*—1. The process of separating a coating metal from the coated article, the coating metal of which is more electro-positive than the base of the soluble compound employed in the process and the metallic base metal is more electro-positive than its coating, said process consisting in subjecting the coating metal to the action of a salt of copper, the acid radical of which having a greater affinity for the coating metal than for its base, thereby percipitating the metal originally held in solution, the coating metal taking its place in the solution as herein described

2. The process herein described of recoveriug metal coatings from a metallic base wherein the metal coating to be treated is more electro-positive than the base of the soluble compound employed in the process and the metallic base metal is more electro-positive than its coating, said process consisting in immersing the coated metal in a soluble salt of copper radical, thereby percipitating the metal of the compound in which the combined metals to be treated are immersed by the greater affinity of the coating metal for the acid radical of said compound, dissolving the coating metal and holding the same in solution, subsequently percipitating the said coating metal by the greater affinity of the metal base for the acid radical

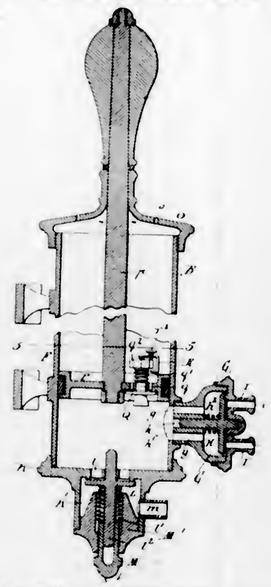
3. The herein described process of removing metal coating from its base wherein the metal coating to be treated is more electro-positive than the base of the soluble compound employed in the process and the metallic base is more electro-positive than its coating, said process consisting in subjecting the coating to the action of a neutral solution of acetate of copper, and permitting such action to continue until the copper and the coating metal have been precipitated in metallic form.

4 The herein described process of treating "tin scrap" consisting in subjecting the tin to the action of a neutral solution of a compound salt of copper having an organic acid radical and permitting such action to continue until the metal of the solution and the tin have been precipitated in metallic form.

5. The herein described process of treating "tin scrap" consisting in subjecting the tin to the action of a neutral solution of acetate of copper and permitting such action to continue until the copper and tin have been precipitated in metallic form.

6. The process of treating "tin scrap" said process consisting in subjecting the "tin scrap" to the action of a neutral solution of acetate of copper, permitting such action to continue until the copper and tin have been precipitated and nitrate of iron formed, then removing the precipitate with the acetate of iron, flushing the remaining iron and finally removing said iron.

529,865. SUCTION-PUMP FOR COW-MILKING MACHINES. JENS S. JENSEN, Thisted, Denmark, assignor to Johan D. Frederiksen, Little Falls, N. Y. Filed Jan. 26, 1893. Serial No. 459,848. (No model.)



*Claim.*—1. In a cow milker, the combination with a suction pump, having appliances for connecting with the teats, induction and eduction valves, and a passage establishing a communication between the space below the piston and the external air, of an automatic relief valve controlling said passage and opening into the space below the piston, whereby the external air is admitted to the space below the piston when a pre-determined partial vacuum has been produced and excessive suction on the teat appliances is prevented, substantially as set forth.

2. The combination with a suction pump, of an automatic relief valve, means whereby the load on the valve can be adjusted, and a stop whereby the adjustment of the load is limited, substantially as set forth.

3. The combination with a suction pump, of a relief valve, a spring bearing upon the same, a screw nut whereby the spring is adjusted, and a stop whereby the tightening movement of the nut is limited, substantially as set forth.

4. The combination with the suction pump, of a relief valve, a spring bearing upon the same, a screw nut whereby the spring is adjusted, and a stop whereby the releasing movement of the nut is limited, substantially as set forth.

5. The combination with the suction pump, of a relief valve, a spring bearing upon the same, a screw nut whereby the spring is adjusted, and stops on both sides of the nut whereby the movement of the nut in either direction is limited, substantially as set forth.

529,866. ORNAMENT FOR LIGHTNING RODS. CHARLES F. KEYS, Washington, D. C. Filed Mar. 22, 1894. Serial No. 504,657. (No model.)

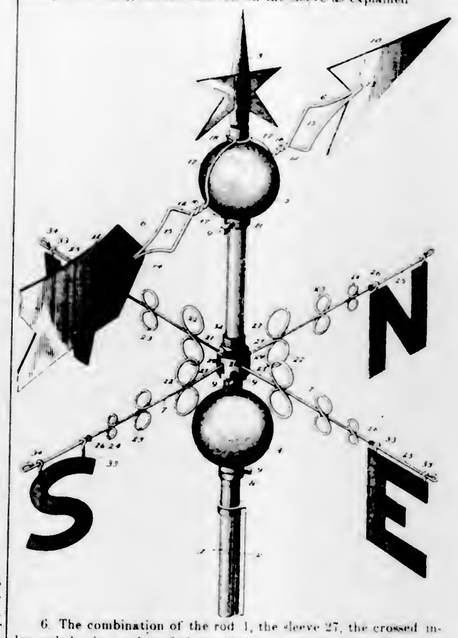
*Claim.*—1. In a device of the character specified the combination of the vertical rod and the arrow formed substantially as described with the head and tail and the connecting shaft of wire bent to form the sockets 18 for the reception of the shaft as and for the purpose set forth.

2. In a device of the character specified the combination of the vertical rod 1 and the arrow 6 having the head 10 and the tail 11 connected by the shaft 12 formed of bent wire as explained with the sockets 18 and the band 17 for spacing the sockets apart as explained.

3. In combination with the rod 1 and the sphere 5 the arrow 6 having the shaft 12 constructed of wire as explained bent to form the band 17 surrounding the sphere 5 and the sockets 18 at top and bottom of said sphere substantially for the purpose explained.

4. The combination of the rod 1 and the index 7 constructed of the two crossed arms each formed of an integral piece with the central socket and having a suitable clamp for holding them upon the rod as explained.

5. In combination with the rod 1, the index consisting of the crossed integral rods 7 formed with the central sockets, the sleeve for attachment to the rod and upon which the sockets fit and the clamp for holding the said sockets on the sleeve as explained.




6. The combination of the rod 1, the sleeve 27, the crossed index rods having sockets fitting said sleeve, and the notched spacing collar 28 having means for securing it in place as explained.

7. The combination of the rod 1, the collar 8, having set-screw 9 and sleeve 27, the crossed arms having sockets fitting said sleeve, and the spacing collar 28 having notches for receiving the crossed arms and holding them in proper relation and also having a notch for receiving the set-screw 9 for keeping the index from turning on the sleeve 27 substantially as explained.

8. The combination of the rod 1, and the index formed of two crossed integral wire arms bent to form the central sockets and terminating in the spindle ends 25 for the reception of the letters as explained.

9. An index for weather vanes consisting of the crossed integral wire arms having the spindle ends 25, and the letters provided with eyelets through which said spindle ends pass and said ends 25 being turned up as at 24 to retain the letters in place as explained.

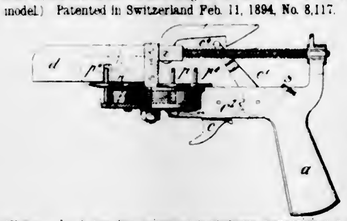
529,867. NOISELESS SLATE. CAREY F. KIZER and SAMUEL N. MURDOCK, Columbus, Ohio. Filed Sept. 1, 1894. Serial No. 521,922. (No model.)





*Claim.*—In a noiseless slate the combination with the slate body formed of paper or its equivalent and being provided with a waterproof writing surface, of a frame therefor consisting of oppositely arranged frame strips which project beyond the edges of the slate body, said frame strips being formed of paper or its equivalent and a pliable cord surrounding said frame and bearing partially within the channels between said frame strips, substantially as and for the purpose specified.

529,868. GAME APPARATUS. VICTOR KOBLER-STAUDER, Rorschach, Switzerland. Filed Aug. 9, 1894. Serial No. 519,866. (No model.) Patented in Switzerland Feb. 11, 1894, No. 8,117.



*Claim.*—1. A toy for spinning teetotums comprising a revoluble disk provided with peripheral slots or notches for the lower half of the pin or spindle of the teetotums, a support for said disk provided with a suitable handle, spinning devices consisting of parallel plates of unequal length between which the upper half of a teetotum fits, the longer plate provided with a vertical slot in the plane of rotation of the disk notches when said plate is in a normal position, and means for imparting a rapid rectilinear motion to the longer plate whereby a teetotum is revolved about its axis on and along the shorter fixed plate and released after having cleared the latter plate, and whereby another teetotum is automatically fed to the spinning devices as soon as the movable plate is returned to its normal position.

2. A toy for spinning teetotums, comprising a revoluble disk provided with peripheral slots or notches for the lower half of the spindle or pin of the teetotums, a support for said disk provided with a suitable handle, spinning devices consisting of parallel plates of unequal length between which the upper half of the teetotum pin fits, the longer plate provided with a vertical slot in the plane of rotation of the notches in the disk when said plate is in a normal position, a spring for imparting motion to said longer plate, a detent pivotally connected with the last named plate, a lever adapted to engage the detent and move the same against the stress of the spring, a trigger adapted to impart motion to said lever, and a releasing device for releasing the detent from engagement with the lever, for the purpose set forth.

3. A toy for spinning teetotums constructed in the form of a revolver provided with a barrel composed of a fixed and a movable section having flat proximate parallel faces and adapted to receive between them the upper half of a teetotum pin, and with a cylinder adapted to hold a number of teetotums in an upright position and feed them successively to the barrel, in combination with a trigger controlled spring adapted to project the movable section of the barrel outwardly, for the purpose set forth.

4. A toy for spinning teetotums, constructed in the form of a revolver provided with a vertical cylinder having a vertical peripheral slot $q$ and a revoluble head having peripheral notches for the reception of the lower half of the teetotum pins, the barrel of said revolver constructed of a fixed and a movable section of unequal length having proximate parallel faces adapted to receive between them the upper half of a teetotum pin, the longer movable section provided with a slot in line with the circle described by the peripheral notches of the cylinder head when said section is in a normal position, in combination with a trigger controlled spring adapted to project the longer movable section of the barrel outwardly, for the purpose set forth.

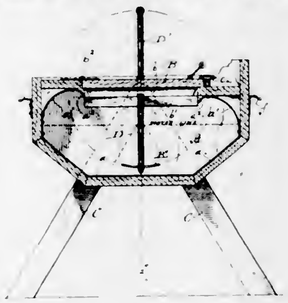
5. A toy for spinning teetotums, comprising a stock, a cylinder secured thereto and having a revoluble head provided with peripheral notches for the reception of the lower portion of the teetotum pins, said cylinder provided with a vertical slot $q$, spinning devices comprising parallel plates of unequal length between which the upper portion of the teetotum pin fits, the longer plate provided with a vertical slot in the plane of rotation of the notches in the cylinder head when said plate is in a normal position, and with a rearwardly projecting pin having bearing in an arm of the stock, a coiled spring on said pin, a detent pivotally connected with said longer plate, a lever and a trigger pivotally connected with the stock, said lever adapted to engage the detent, and said trigger adapted to vibrate the lever, and a releasing device adapted to disengage the detent from the lever, for the purpose set forth.

6. In combination the revoluble disk $k$ provided with peripheral notches, the movable plate $d$ provided with a vertical slot $d'$, and the fixed plate $w$ provided with the stop or abutment block $w'$, substantially as and for the purpose set forth.

7. In combination, the barrel $b$ provided with the vertical slot $f$, the spring-actuated revoluble head $k$ of said barrel, provided with peripheral notches $n$, the fixed plate $w$ provided with a stop or abutment block $w'$, and the spring actuated movable plate $d$ provided with a vertical slot in the plane of rotation of the notches in the barrel head when said plate is in a normal position, substantially as and for the purpose set forth.

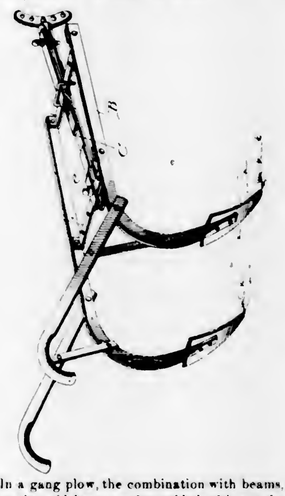
8. In combination, the stock A, the barrel $b$ provided with a revoluble head, the fixed and movable plates $d$ and $w$, and the axial bolt or pin $e$ of said barrel having its upper end $e'$ slotted to form a guide for the plate $d$, and a support for the plate $w$, said bolt serving as an axis of rotation for the revoluble barrel head and as a means for securing the barrel to the stock, substantially as described.

529,869. WASHING-MACHINE. MILDRED M. LORD, Milwaukee, Wis. Filed July 27, 1893. Serial No. 481,677. (No model.)



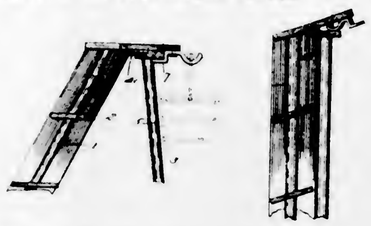
*Claim.*—In a washing machine, the swinging carrier D composed of a metallic rod, bent to fit the suds-box, as shown, and forming the vertical loop aforesaid, and the journals $d$ and $d'$ and the crank $D'$, and the handle as shown, and having the lateral side loops E. E., all substantially as herein set forth.

529,870. PLOW. GEORGE MARTIN, Rock Rapids, Iowa. Filed Jan. 15, 1894. Serial No. 496,946. (No model.)



*Claim.*—In a gang plow, the combination with beams, and cross bars connecting the said beams and provided with a series of openings, of a draft beam constructed to embrace the top and bottom sides of the said cross bars, a pin adjustably connecting the rear end of the cross bar with the rear cross bar, and a U-shaped fastening adapted to straddle the forward end of the said draft bar and enter openings on either side thereof to adjustably connect the same with the front cross bar, substantially as set forth for the purpose described.

529,871. STEP-LADDER. MAXWELL MINIER, Elmira, N. Y. Filed Sept. 24, 1894. Serial No. 523,932. (No model.)

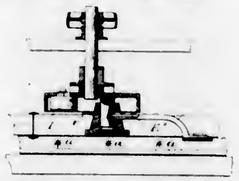


*Claim.*—1. A step ladder consisting of the standards, steps secured thereon, said standards passing through the steps near the ends thereof and at an oblique angle to the upper surface thereof, guard rails secured to the outer projecting ends of the steps and adapted to cover said ends, and a rear portion or support, substantially as described.

2. A step ladder consisting of standards, steps secured thereon, a hinged rear portion or support formed with a cross-bar at its upper end, said bar adapted to bear against the under side of the top step of the ladder to limit the outward movement of the support, and a clamp 7 pivoted to the under side of the top step and adapted to swing around under the cross-bar and lock the support in its closed position, substantially as described.

3. A step ladder consisting of standards, steps secured thereon, said standards passing through the steps near their ends, guard rails secured to the outer ends of the steps and adapted to cover said ends a folding rear portion or support formed with the cross bar 6 and hinged to the under side of the top step as described, the upper surface of said cross bar adapted to bear against the under side of the top step, and a pivoted clamp 7 formed with hook 8 and adapted to lock the support in either its open or closed position, substantially as described.

529,872. SEPARATOR. ORVILLE M. MORSE, Jackson, Mich. Filed Apr. 12, 1894. Serial No. 507,322. (No model.)



*Claim.*—1. In a separator, the combination with a frame, of a screen loosely mounted therein, actuating means for the frame, and a connection between said actuating means and the screen for jarring the same, substantially as described.

2. The combination with a frame box, a screen movably held therein, means for gyrating the frame box and an extension on the screen engaged by said means for independently jarring the screen, substantially as described.

3. The combination with the screen and frame, a shaft, a crank thereon engaging said frame to impart a gyrating motion thereto, a fly wheel or disk on the shaft, having a radial slot opposite the crank, a counterbalance weight and a securing bolt therefor adjustably engaging in said slot, substantially as described.

4. The combination with a frame containing a horizontal sieve of a feed device for the material comprising rotary gates, adapted to rotate only toward the discharge end of the screen, substantially as described.

5. The combination with a frame containing a horizontal sieve of a feed device for the material comprising rotary gates adapted to be turned by the movement of the material toward the discharge end of the device, and means for preventing a reverse movement, substantially as described.

6. The combination with a frame containing a sieve of a feed device for the material on the sieve, comprising a series of rotary gates, each gate having a number of sections adapted to be brought successively into operative relation to the sieve, substantially as described.

7. The combination with the frame and sieve, of a feed device for the material on the sieve comprising a shaft and a spirally arranged series of blades thereon adapted to be brought successively into operative relation to the sieve, substantially as described.

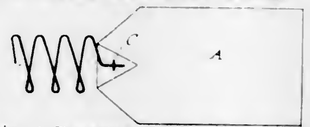
8. The combination with the gyrating frame and sieve, of rotary gates forming feed devices for the material, of a brake adapted to be applied to said gates only in the forward movement of the device substantially as described.

9. The combination with the gyrating frame, and sieve of a series of rotary gates forming feed devices for the material trunnions upon which the gates are supported in the frame, a long strip through which the trunnions pass, and a spring against which the strip presses in the forward movement of the screen only, substantially as described.

10. The combination with the frame box, the screen frame slidingly supported therein, means for gyrating the frame box, and the jarring device for the screen, carried by said gyrating means and arranged to engage the screen adapted to impart a movement to the screen in relation to the frame box at a point in its movement, substantially as described.

11. The combination with the suspended frame box, a crank pin for gyrating the frame box, a spring backed screen frame slidingly supported therein, and an arm on the screw frame engaging a bearing in the crank pin, and the cam bearing on the crank pin the parts constructed and operating as and for the purpose described.

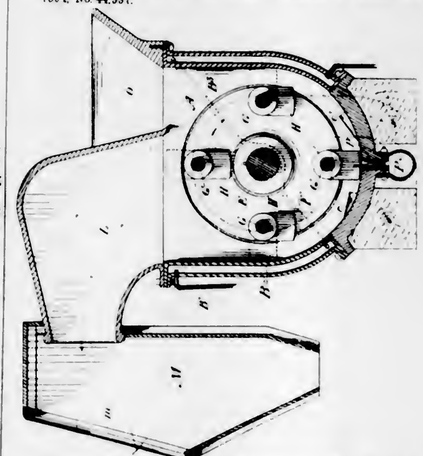
529,873. TAG-HOLDER. WHITNEY B. MCDERMUT, Omaha, Nebr. Filed July 10, 1894. Serial No. 517,146. (No model.)




*Claim.*—1. The combination with a tag, of a flexible zigzag wire secured thereto by one end and having its bends all in substantially the same plane, substantially as set forth.

2. The combination with a tag, of a wire secured thereto said wire having the resilient loops *b* on one side and bent as shown at *c* on the opposite side, whereby the wire will be at all times on a plane with the tag substantially as shown and described.

529,874. PULVERIZER. THOMAS PARKER, Toronto, Canada, assignor of three-fourths to John Douglas Wright, Francis Farquharson Stuart, and Alexander Maxwell Colquhoun, same place. Filed Dec. 8, 1893. Serial No. 493,097. (No model.) Patented in Canada Jan. 4, 1894, No. 44,997.



*Claim.*—1. In a pulverizer the combination with the chamber to receive the material and a shaft journaled in the ends of the chamber and provided with disks, and rods extending between the disks secured in them near their periphery and parallel to the shaft, of a series of beaters having hubs wider than the beaters abutting each other in their supporting rods, such beaters being arranged when the shaft is in motion to extend entirely outside the circle of the disks and rotate in close proximity to the bottom of the chamber and the two series of rounded tapered projections *c*, *c'*, similarly formed and having the broad end of the projections adapted to co-act with the striking side of the beaters, which pass between them as they rotate as and for the purpose specified.

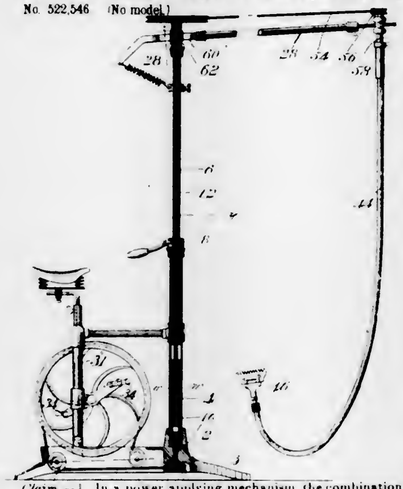


2. In combination with the chamber, the shaft journaled therein, disks on the shaft and rods extending between the disks, beaters journaled on such rods and abutting each other, the hopper and exit duct in juxta-position at the top of said chamber, a board situated between the duct and hopper and forming part of each, said duct and hopper extending down in proximity to the beaters, substantially as described.

3. The combination with the chamber, shaft journaled therein, disks on the shaft and rods extending between the end disks and beaters loosely journaled on such rods as specified, of a fan secured on the outer end of the shaft and fan casing having a duct leading from it beneath the pulverized chamber, such duct having a series of vertical passage-ways extending up into the chamber as and for the purpose specified.

4. The combination with the chamber, shaft journaled therein, disks on the shaft and rods extending between the end disks and beaters loosely journaled on such rods as specified, of the fan, J, provided with the casing, I, and duct I', leading from the casing to beneath the bottom of the pulverizing chamber and provided with vertical passage-ways *p*, leading into the pulverizing chamber, the duct, L, secured at the top of the pulverizing chamber and leading into the separator, M, which is provided with an opening covered by the bolting cloth, *m*, as and for the purpose specified.

529,875. POWER-APPLYING MECHANISM. HENRY F. PARKER and MOTT G. GILLETTE, New York, N. Y. Filed Sept. 10, 1894. Serial No. 522,546. (No model.)



*Claim.*—1. In a power applying mechanism, the combination of a suitable base, a stationary standard upon the base, a rotary standard mounted on a stationary standard, a handle bar for guiding the rotary standard, a driving shaft extending through the stationary and rotary standards connected to the mechanism to be driven, a driving wheel removed from the standard, and a suitable support therefor mounted on the said base, a treadle for operating the driving wheel, a seat above the treadle, and mechanism for transmitting motion from said driving wheel to said driving shaft.

2. In a power applying mechanism, the combination of a stationary standard, a rotary standard, a movable staff mounted thereon supporting the mechanism to be driven, a guiding handle bar on said rotary standard for controlling the horizontal sweep of the staff, a driving wheel removed from the standard, a treadle, a saddle above the treadle opposite the handle bar, a driving shaft in the standard connected to the mechanism to be driven, and means for transmitting motion from the driving wheel to the said driving shaft.

3. In a power-applying mechanism, the combination with the stationary standard, the rotary standard mounted thereon, the driving shaft extending through said stationary and rotary standards, and means for actuating the said shaft, of a movable supporting staff, projected in a normally horizontal direction from said rotary standard, and means for counter-balancing it, and at the extremity of said staff a flexible shafting depending therefrom connected with the mechanism to be driven, a universally movable journal-box and spindle therein for rotating the said flexible depending shaft, mounted in a fork at the extremity of the staff, and a belt pulley upon the said driving shaft, a belt pulley upon the said driven shaft, a belt pulley upon said spindle, and a belt connecting said pulleys, and means for extending the said staff longitudinally to hold said belt taut.

4. The combination with the standard the driving shaft therein and the pulley on said shaft, of the herein-described supporting staff 28, provided with a fork 52, at its extremity, a spring for pushing the fork outward, and the supporting journal-box 50, circumferentially recessed to fit said fork and admit of universal oscillation, and a pulley journaled in said box 50, and a belt connecting said pulleys.

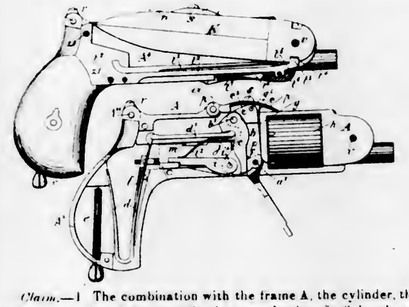
5. In a power-applying mechanism, the combination of a standard for supporting the mechanism to be driven, a driving shaft in the standard and, means for rotating it, a normally horizontal movable supporting staff mounted on the extremity of the standard, a flexible joint connecting the staff to the standard, means for counterbalancing said staff, a belt pulley journaled on the staff upon a separate section of said driving shaft connected to the main section by a flexible shafting, and at the extremity of said shaft another belt pulley journaled therein adapted to operate the mechanism to be driven, and a belt connecting said pulleys, substantially as described.

6. In a power-applying mechanism, the combination of a stationary standard, a rotary standard mounted therein, a driving shaft extending through the said stationary and rotary standards connected to the mechanism to be driven, and means for revolving said shaft; said standard and shaft being longitudinally extensible as set forth.

529,876. PLASTIC COMPOSITION. JOSEF PATTIGLER, Vienna, Austria-Hungary, assignor to Alfred Ritter von Pischof, same place. Filed June 30, 1894. Serial No. 516,217. (No specimens.)

*Claim.*—A plastic composition, composed of vegetable or mineral oil, Vienna white or caustic, lime, cement, plaster of paris sawdust and soluble glass, substantially as and for the purposes set forth.

529,877. REVOLVER WITH KNIFE ATTACHMENT. LOUIS L. PICARD, Paris, France. Filed Apr. 17, 1893. Serial No. 470,746. (No model.) Patented in France July 6, 1889, No. 199,422, and in Belgium July 6, 1889, No. 86,888.



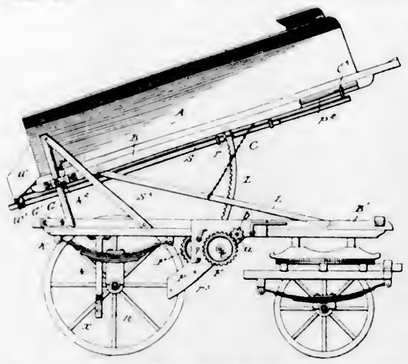
*Claim.*—1. The combination with the frame A, the cylinder, the main spring and the firing pin *f* having a projection *f'*, of the plate *b* having a projection $b^2$ on its lower part, the fork *c* embracing the said plate *b*, the said plate *b* and fork *c* being both pivoted at their upper parts to the frame A by a common pivot *b'* from which they are dependent within the said frame, the trigger *a* pivoted to the said pendent plate *b*, the sear *i* pivoted to the said plate *b* and furnished with a projection $i^2$ for engaging with the said projection $b^2$ and having a notch for engaging with the projection *f'* on the firing pin, the cylinder-rotating pawl *g* pivoted to the said plate *b*, and springs applied to said plate *b*, to the sear and to the cylinder rotating pawl all substantially as described whereby the cocking the rotation of the cylinder and the discharge are all performed by the movement of the trigger, as herein set forth.

2. The combination with the flange of the stock and cylinder, of the sliding firing-pin having a cavity in its under side and fitted to slide in guides in the frame, the main spring within the stock, and the connecting rod between the said pin and said spring arranged within the said cavity in the pin, substantially as herein set forth.

3. The combination with the pistol, of a folding knife blade, a spring applied to said blade and exerting a constant tendency to open it, a closing spring having a beak for engaging with a notch in the blade to hold it closed, and a lever or key for withdrawing said closing spring to permit the opening of the blade, all substantially as herein described.

529,878. DUMPING-WAGON. JOHN T. RICHARDSON, Harrisburg, assignor of one-half to Alexander H. Ege, Mechanicsburg, Pa. Filed May 2, 1894. Serial No. 509,825. (No model.)

*Claim.*—1. In a dumping wagon, the combination with the body, the truck supporting frame and oppositely engaging channel plates, of lifting levers or bars swiveled to the forward ends of the truck channel plates and the opposite free ends rolling upon the lower surfaces of the opposite body channels, and operating mechanism comprising lifting arcs with their upper ends impinging freely upon the body channels and means for raising and lifting arcs, substantially as described.



2. In a dumping wagon the combination with the supporting frame, the body and lifting arcs, of fixed stirrups for the reception and support of the lower free ends of the lifting arcs, substantially as described.

3. In a dumping wagon the combination with the body and truck frame, of a single pair of lifting levers pivoted to the forward ends of the truck frame with their free ends bearing on the under surface of the body sills, chains connecting said lifting levers and body directly without any intermediate means or agency, and means for raising the body, substantially as described.

4. In a dumping wagon the combination with the body and truck frame of lifting arcs with their upper ends rolling freely on the under surface of the body sills, and means for raising said lifting arcs, substantially as described.

5. In a dumping wagon the combination with the body and truck frame, of lifting arcs whose upper ends roll freely on the under surface of the body sills parallel therewith, by the engagement of said free ends with friction guides rigidly attached to said under surface, substantially as described.

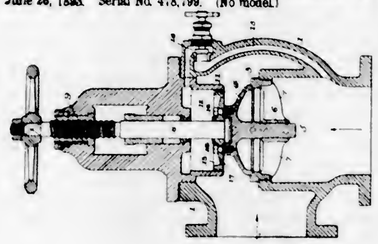
6. In a dumping wagon, the combination with the body and truck-frame, of vertically lifting arcs whose upper ends roll freely on the under surface of the body, friction guides attached to the under surface of the body, lifting levers pivoted to the truck-frame and bearing on the body, chains connecting the levers to the body, and means for securing the body when elevated, substantially as described.

7. In a dumping wagon, the combination with the body and truck-frame, of lifting arcs having their free ends bearing on the under surface of the body, levers pivoted to the truck, and bearing on the under surface of the body, chains connecting said levers to said body, guides controlling the movement of the body, and means for locking the rear end of the body at any point of its raised position, substantially as described.

8. In a dumping wagon, the combination with the body and truck frame, of vertically lifting arcs whose upper ends move freely on the under surface of the body, the arcs having upward and forward movement with relation to the body, and means for raising the arcs, substantially as described.

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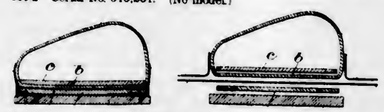
529,879. STOP-VALVE. LOUIS SCHUTTE, Philadelphia, Pa. Filed June 26, 1893. Serial No. 478,799. (No model.)



*Claim.*—In a balanced valve the combination of a casing having inlet and outlet ports, an annular valve seat between said ports, a pressure chamber opposite the valve seat, a valve fitted to said seat and movable in the direction of pressure, means for manually operating the valve, a piston or its described equivalent in the pressure chamber connected with, and adapted to be operated by, the valve operating means and substantially equal in area to the valve, a passage exterior to the valve seat and valve connecting the inlet port with the pressure chamber beyond the piston therein, said passage constituting the sole communication between the pressure chamber and inlet port and means for controlling said passage independent of the valve operating devices.

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529,880. WATERPROOF BOOT OR SHOE AND METHOD OF MAKING SAME. CHARLES W. SHIPPEE, Milford, Mass. Filed June 2, 1894. Serial No. 513,281. (No model.)



*Claim.*—1. A waterproof boot or shoe composed of an india rubber upper and integral sole, and having one edge of a stay strip vulcanized thereto, a filling or intermediate sole, and an outer sole of leather, the said stay strip being bent about the edges of the filling or intermediate sole and placed between said sole and the outer sole, the outer sole and the filling or intermediate sole being united by fastenings extended thereinto, substantially as described.

2. A waterproof boot or shoe composed essentially of an india rubber upper having a sole integral therewith, a layer of vulcanizable fabric vulcanized to the said rubber sole and extended outwardly for some distance beyond the edges thereof, a filling or intermediate sole, and an outer sole of leather, the edges of the layer of fabric being folded about the edges of the filling or intermediate sole and between the said sole and the outer sole, and fastenings extended into and uniting the filling or intermediate sole and the outer sole, substantially as described.

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529,881. WATERPROOF BOOT OR SHOE. CHARLES W. SHIPPEE, Milford, Mass. Filed June 2, 1894. Serial No. 513,282. (No model.)



*Claim.*—1. A water-proof boot or shoe composed of an india rubber upper and integral sole extended laterally beyond the upper to form a flange, an outer sole of leather, and a welt, as *c*, laid on the flanged portion of the rubber sole, the outer sole, flange and welt being united by means of fastenings at a point outside and independent of the upper, substantially as described.

2. A waterproof boot or shoe composed of an india-rubber upper and sole having a wide flange, a stay strip vulcanized into the space at the junction of the upper and flange of the sole, an outer sole of eather, and a welt, as *c*, laid on said flange, the outer sole flange and welt being united by means of fastenings at a point outside the upper, substantially as described.

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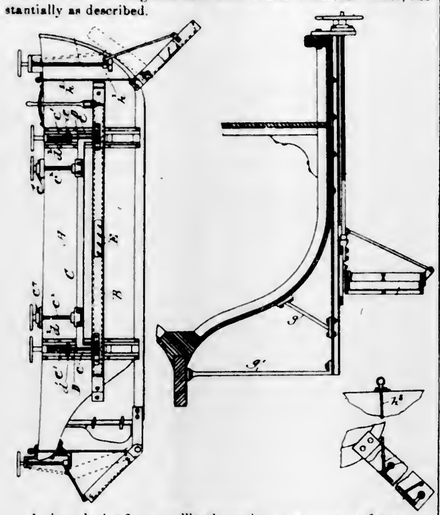
529,882. WAVE-POWER PROPELLER FOR BOATS. SIDNEY S. SMITH, Boston, Mass. Filed Dec. 11, 1893. Serial No. 493,386. (No model.)

*Claim.*—1. A device for propelling boats by wave power comprising horizontal frames attached to the sides of a vessel to project horizontally therefrom and carrying blades extending in a direction substantially at a right angle to the keel of the boat and arranged to present surfaces inclined to the movements of the waves, and means for vertically adjusting said frames upon the vessel's sides, as and for the purposes described.

2. In a device for propelling boats by wave power, frames attached to the sides of a vessel to project horizontally therefrom and carrying blades arranged to present surfaces inclined to the movements of the waves and means for turning said frames to a vertical position parallel with and adjacent to the sides of the vessel, as and for the purposes described.

3. In a device for propelling boats by wave power, slideways secured to the vessel's sides, slides or a sliding frame guided by said slideways and vertically movable by screws operated from the vessel's deck, frames carrying propelling blades hinged upon their inner sides to said vertically movable slides and combined bracing, adjusting and frame elevating devices comprising stay rods and screw shafts to engage nuts carried by the stay rods, which shafts are operated from the vessel's deck, substantially as described.

4. In a device for propelling boats by wave power, the combination with a frame carrying a series of pivoted or hinged blades, of the bars F F' above and below the said blades and connected together, and means for moving said bars toward and from each other, substantially as described.

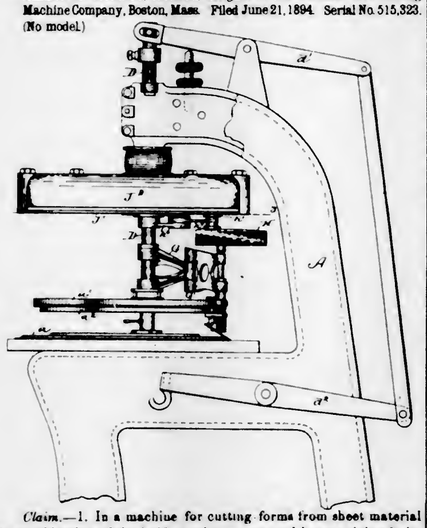


5. In a device for propelling boats by wave power, a frame carrying propelling blades and attached to the boat at either end thereof at or near its keel by a hinge or similar connection and means for swinging or moving the frame upon its hinge upward and downward and for holding it in any desired position, as and for the purposes described.

6. In a device for propelling boats by wave power, a frame hinged to either end of the boat at or near its keel to extend outward therefrom and carrying propelling blades, an adjusting screw connected with said frame by a stay link and means for varying the position or angle of the blades in the frame, as and for the purposes described.

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529,883. MACHINE FOR CUTTING SOLES OR OTHER FORMS. ALLISON M. STICKNEY, Medford, assignor to the Wellman Sole Cutting Machine Company, Boston, Mass. Filed June 21, 1894. Serial No. 515,323. (No model.)



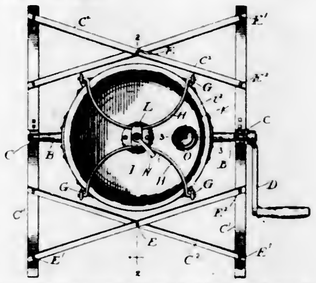
*Claim.*—1. In a machine for cutting forms from sheet material the combination of the knife carrier; a grooved bar receiving in its groove the spindle of the knife carrier; and means for moving that grooved bar bodily in its proper path, the motion of the grooved bar moving the knife carrier, all substantially as described.

2. The combination of the knife carrier; two forms; two bearings one co-operating with one form, and the other with the other form; a third bearing; and a spring co-operating with the third bearing to keep the two bearings each against its form, substantially as described.

3. The combination of the knife block; the knife carrier; a slide; ways for the slide on the knife carrier; and ways for the slide on the knife block crosswise of those on the knife carrier, substantially as described.

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529,884. CHURN. LEE STURGES, Chicago, Ill., assignor to the Chicago Stamping Company, same place. Filed June 28, 1894. Serial No. 515,968. (No model.)



*Claim.*—1. The combination with the body of a vessel and the cover thereof, of a hoop surrounding the body at top and suitable devices for holding the cover in place, said devices being suitably attached to said hoop and the body of the vessel being provided with a flange which extends outward over the hoop and forms a seat for the cover, substantially as set forth.

2. The combination with the body of a vessel and the cover thereof, of a hoop surrounding the body at top and suitable devices for holding the cover in place, said devices being suitably attached to said hoop and the body of the vessel being provided with a flange which extends outward and downward over the hoop and forms a seat for the cover, substantially as set forth.

3. The combination with the body of a vessel and the cover thereof, of a hoop surrounding the body at top, bails suitably attached to said hoop and adapted to extend inward over and engage the cover, and means attached to the cover for engaging the bails, and drawing them down on the cover, the body being provided with a flange which extends outward over the hoop and forms a seat for the cover, substantially as set forth.

4. The combination with the body of a vessel, of a cover therefor, said cover being formed of sheet metal and having a sunken portion, resulting in a shoulder surrounding the sunken portion and a flange extending outward from the shoulder, and a strengthening ring secured to the shoulder, substantially as set forth.

5. The body of a vessel and a cover therefor, said cover being formed of sheet metal and having a sunken portion, resulting in a shoulder surrounding the sunken portion and a flange extending outward from said shoulder, in combination with a strengthening ring bearing against the sunken portion and projecting above the shoulder, and devices for holding the cover in place, said devices engaging the strengthening ring, substantially as set forth.

6. The combination with the body of a vessel, of a cover therefor, formed of sheet metal and having a sunken portion, resulting in a shoulder surrounding said sunken portion and a flange extending outward from said shoulder, the outer margin of said flange being turned down to form a second flange, said flanges and shoulder resulting in an annular groove, and a packing ring fitting in said groove, one wall of the groove having a shoulder engaging the ring and holding it in place, substantially as set forth.

7. A plug for "peep-holes" having, in combination, an outer screw-threaded ring having internal and external flanges, an inner ring having internal and external flanges, and a pane of glass clamped between the said internal flanges, one of the external flanges being spun over the margin of the other, substantially as set forth.

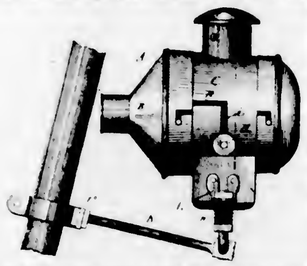
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529,885. CYCLE-LAMP AND SUPPORT. JOHN C. TUDOR, Baltimore, Md. Filed May 26, 1894. Serial No. 512,565. (No model.)

*Claim.*—1. A cycle lamp of cylindrical form, an oil cup shaped to the contour of the interior of said lamp, a burner hinged to said cup and means consisting of a bolt, or threaded rod projecting at right angles from the bottom of said cup, and a lateral arm or bar pro-

jecting from said burner and extending through the casing of said lamp for securely holding said cup in position substantially as described.

2. The combination with a cycle lamp of a supporting device, comprising a clamp adapted to engage the steering head of a cycle, rods or arms projecting oppositely from said clamp perforations $j^3$ in said arms, rods K projecting from said arms and secured thereto through said perforations, a flattened claw-shaped head $k'$ on the opposite end of said rod, angle shaped rods M adapted to support upon one end a spiral spring for directly supporting the lamp, and upon the other end screw-threaded to receive nuts, and the claw head $k'$ whereby when the nuts are screwed toward each other the head is clamped therebetween and the lamp rigidly secured substantially as described.



3. The combination with a cycle lamp, a supporting device therefor consisting of oppositely arranged angle-rods, adapted to project upon either side of said lamp, spiral springs placed thereon adapted to receive and cushion the lamp, the lower end of said rods being screw-threaded, a nut $m^4$ and a washer $m^5$ placed thereon, a bar K with a claw $k'$ containing a slot $k^2$ adapted to receive said threaded rod and a nut $m^4$ provided with a lug o screwed upon the exterior end of said threaded rod whereby when the nuts are screwed toward each other, the lug o engages the slot $k^2$ in the flattened head $k$ thereby locking said parts, a clamp consisting of two semi circular jaws adapted to embrace a steering head of a cycle and supporting at right angles therefrom the rod or bar K, whereby the lamp may be adjusted to different angles and rigidly locked thereat, substantially as described.

529,886. LOCKING DEVICE FOR SHOW-CASES. JOHN M. WADDEL, Greenfield, Ohio. Filed Aug. 25, 1894. Serial No. 521,283. (No model.)

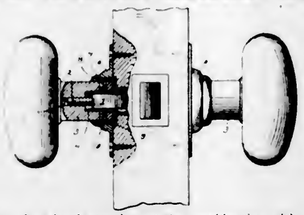


*Claim.*—1. In a sales case, the glass frames hinged to the top edge thereof and having locking plates on the swinging edge of said frames, the lever pivoted to the end of the case underneath the locking plates, and having its upper end hooked to engage with said locking plate and having a pin or projection on its lower end, and the sliding drawer having its top edge formed to actuate said lever to lock or unlock the top frames when the drawer is moved in or out, substantially as shown and described.

2. The combination of the sales case, having central partition, A, and glass frames, A', hinged to the opposite ends thereof, the free ends meeting upon said central partition, the locking plates, $a^3$, secured to the under side of the meeting edges of said frames, the bell crank lever, B, pivoted to said partition, A, and having hooked end, $b$, to engage over the locking plates of the frames and a pin, B', to ride over the top edge of the drawer, to throw said lever to the unlocked position, a spring, $b'$, to hold the lever in the locked position, the drawer, C, having its upper forward edge inclined at, c, to allow the spring to lock the case tops when the drawer is closed, and its inner portion elevated to throw the detent, $b$, of the lever out of engagement with the plates when the drawer is opened or partially opened substantially as shown and described.

3. The combination, substantially as hereinbefore set forth, of the case, the glass frames hinged to the top edge thereof and having the locking plates underneath the swinging edge, a central partition, A, dividing said case into two compartments, the angle lever, B, pivoted upon said partition and having a locking detent to engage the plates on the top frames and hold the same in the locked position, and a pin or stud on its lower end to project over one side of the cash drawer, the horizontal partition, $a^4$, dividing one side of said case into upper and lower compartments, the cash drawer fitted to slide in the lower compartment and having one of its sides cam shaped to actuate the locking lever to lock or unlock the top frames as it is moved in or out, and a central open compartment at its forward end to receive the combination lock, the front of said drawer being perforated to pass the lock actuating lever, the combination lock fitted within said compartment and having its actuating levers protruding through the drawer front, and the drawer handle, $c^4$, to cover the ends of said levers, substantially as shown and described.

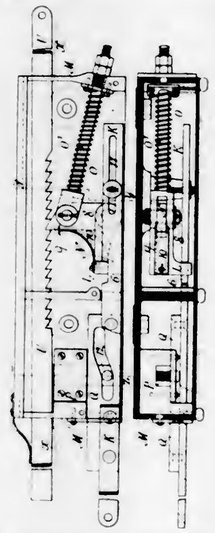
529,887. KNOB ATTACHMENT. THEODORE E. WARDWELL, Stafford, Conn. Filed Dec. 26, 1893. Serial No. 494,622. (No model.)



*Claim.*—In a knob attachment the combination with an angular spindle having a threaded end, and a knob shank having a central recess to receive the angular portion of the spindle freely and an opening threaded to receive the end thereof, of a wearing plate against which the knob shank bears, set screws in the shank which engage opposite sides of the angular portion of the spindle to center the knob shank and lock it in place after adjustment, a sleeve which covers the set screws and bears on the wearing plate and an escutcheon through which the knob shank passes and which covers the wearing plate and is provided with a recess to receive the sleeve so that wearing plate screws and sleeve are wholly concealed.

529,888. WITHDRAWN.

529,889. SIGNAL FOR RAILROADS. ROBERT BLACK and CORNELIUS M. HAVEY, New York, N. Y. Filed Mar. 30, 1894. Serial No. 505,686. (No model.)



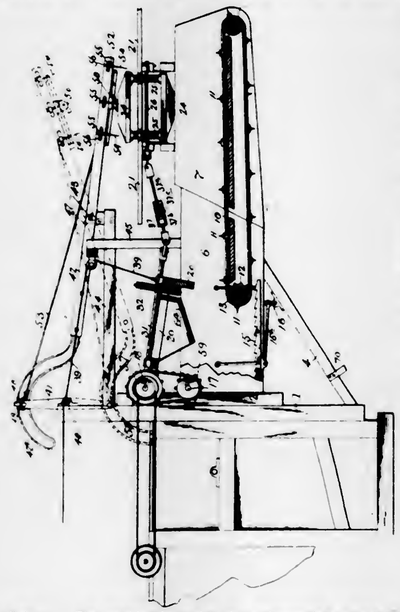
*Claim.*—1. The combination with a signal and mechanism for setting the same automatically by the passing train, of a latch bar receiving motion when the signal is set, a latch for holding the latch bar, a rack bar extending to a distance along the track and receiving an end motion by the passing train, a pawl engaging the teeth on the rack bar and acting to liberate the latch and allow the latch bar to be returned to a normal position and the signal changed, substantially as set forth.



2. The combination in a railway signal, of a latch bar receiving an end motion by the setting of a signal, a latch for holding such latch bar, a rack bar extending to a distance from which the signal is to be liberated, a pawl acted upon by the rack bar and moving the latch to liberate the latch bar, and a lifter for separating the rack bar from the pawl, substantially as set forth.

3. The combination in a system of railway signals, of mechanism for setting the signal by a passing train, a latch bar simultaneously receiving end motion from the passing train, a spring acting upon the latch bar and compressed by the end movement thereof, a latch for holding the latch bar in position, a rack bar acted upon automatically by the passing of the train at a distant place, a pawl lever engaging the teeth on the rack bar, a spring for acting upon the pawl lever, a latch receiving its motion from the pawl lever and acting to liberate the latch bar and allow the spring to return the signal to its normal position, a lifter and a connection therefrom to the latch bar for moving the rack bar and causing it to engage with or be separated from the pawl, substantially as set forth.

529,890. BAND-CUTTER AND FEEDER. CHARLES W. BOND, Ripyville, Ky. Filed July 26, 1893. Serial No. 481,558. (No model.)



*Claim.*—1. The combination, with the reciprocating cutters, of the bundle carriers traveling across the grain tables and formed with the cross bars having the elevated central part inclining down at each end to the level of the bar proper, and arranged at such distances apart as to receive and hold a bundle of grain between each two of said bars, substantially as set forth, for the purpose specified.

2. The combination, with the grain tables and the bundle carriers traveling across the same and having the cross bars arranged to receive and hold a bundle of grain between each two of said bars, of pivoted cutter bars 42 having the outer end frames, cutters mounted and sliding on said frames and means for reciprocating said cutters, and means for depressing and holding depressed the outer ends of said cutter bars while the cutters are sliding in one direction, and for raising said ends while the cutters are making their return stroke; substantially as set forth.

3. The combination, with the grain tables and the bundle carriers traveling across the same and having the cross bars arranged to receive and hold a bundle of grain between each two of said bars, of the revolving shaft having the end cranks, the centrally pivoted cutter bars having the outer end frames and the curved inner ends actuated by said end cranks, and the reciprocating cutters having the operating rods pivotally connected to them and to said crank-arms; substantially as set forth.

4. The combination, with the bundle carriers, of the revolving shaft having the end crank-arms, the journal boxes pivotally mounted on the crank pins of said arms, the centrally pivoted cutter bars having the outer end frames and having at their inner ends the curved guide rods, running through the journal boxes on the crank-pins, and the cutters mounted and sliding on said outer end frames and having the operating rods pivotally connected to them and to the crank pins; substantially as set forth.

5. The combination, with a bundle carrier having transverse bars between which the bundles are received and held, of a cutter bar having its outer end swinging vertically above said carrier and having at said outer end a reciprocating cutter, and the slotted guides, the teeth pivoted at their upper ends and passing down through said guides, and the springs contained in said slotted guides and bearing against the side of the pivoted teeth and means for oscillating said swinging cutter bar; substantially as and for the purpose set forth.

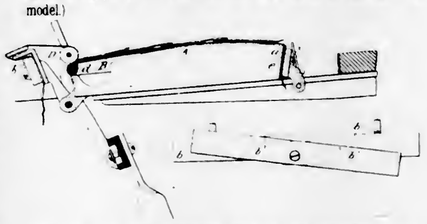
6. The combination, with the bundle carriers, of the revolving shaft having the end crank arms, the journal boxes pivotally mounted on the crank pins of said arms, the centrally pivoted cutter bars having at their outer ends the end-frames, the slotted guides, the teeth pivoted at their upper ends and passing down through said slotted guides, and the pressure springs engaging said teeth, the curved guide rods secured to the inner ends of the cutter bars and running through the journal boxes on the crank-pins, and the cutters mounted and sliding on the outer end frames of the cutter bars and having the operating rods pivotally connected to them and to the crank pins substantially as set forth.

7. In a band cutter and feeder, the combination with the main carrier, 10, of the spreading mechanism comprising the pairs of sprocket wheels mounted transversely above the inner end of said carrier, the sprocket chains passing around said wheels and having the spreading arms consisting of the straight members, secured at their inner ends to the chains, and the backwardly-inclined members having the free inner ends, seats 34ª formed on the chains to receive said free ends when the chain straightens, and means for revolving said sprocket-wheels; substantially as set forth.

8. The combination, with the main carrier 10, of the transverse main drive shaft, having the bevel gear wheels, the frame 20 hinged or pivotally secured at its inner end, the parallel shafts mounted in said frame and having bevel gear wheels at their inner ends, the sprocket wheels mounted on the outer part of said parallel shafts, the inner sprocket wheels, the chains passing around the sprocket wheels and having the spreader arms, and means for raising the outer end of the adjustable frame 20; substantially as and for the purpose set forth.

9. The combination, with the main carrier 10, of the bundle carriers passing at their inner ends around the shafts 26, the transverse main drive-shaft, having the bevel gear wheels, the frame 20 hinged or pivotally secured at its inner end, the parallel shafts 31 mounted in said frame and having the bevel gear wheels at their inner ends, the spreading mechanism mounted at the outer end of frame 20, as specified, the rods swiveled at their outer ends to the shafts 26 and 31, and connected by the sliding joint or connection, and means for raising the outer end of the adjustable frame 20, substantially as and for the purpose set forth.

529,891. CIGAR-BUNCHING MACHINE. NICHOLAS H. BORGFELDT, Brooklyn, N. Y. Filed Jan. 15, 1894. Serial No. 496,840. (No model.)



*Claim.*—1. In a cigar bunching machine, the combination of a flexible rolling board the forward end of which normally projects to a horizontal plane higher than that in which the board receives its support, an apron and a bunching roller co-operating therewith, substantially as described.

2. In a cigar bunching machine, the combination of a flexible rolling board the forward end of which normally projects to a horizontal plane higher than that in which the board receives its support, an apron and a bunching roller co-operating therewith, all of said parts being so arranged with relation to each other that the bunching roller will traverse a path gradually departing from the surface of said rolling board, the bunching roller being nearest at the beginning of its movement, substantially as described.

3. In a cigar bunching machine, the combination of a pivoted roller frame carrying a bunching roller, a flexible rolling board the

forward end of which normally projects to a horizontal plane higher than that in which the board receives its support and which is traversed by the bunching roller, said roller being nearest said rolling board at the beginning of its movement, and an apron co-operating with the rolling board and roller, substantially as described.

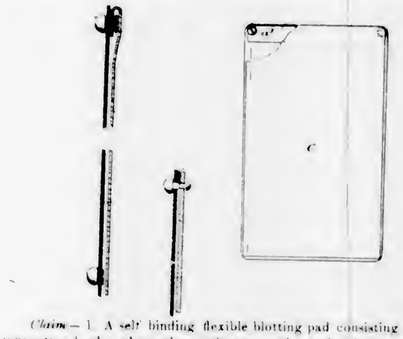
4. In a cigar bunching machine, the combination of a rolling board consisting of a suitably mounted flexible plate rigidly attached to a suitable support at one end the forward end of which normally projects to a horizontal plane higher than that in which the board receives its support, a bunching roller traversing said plate, and an apron co-operating with the plate and roller, substantially as described.

5. In a cigar bunching machine, the combination of a flexible plate secured at one end to form a rolling board the forward end of which normally projects to a horizontal plane higher than that in which the board receives its support, a bunching roller so located with relation to the plate as to bear upon one end thereof at the beginning of the movement of said roller and departing gradually from the plate as it continues to move to the middle, whereby the pressure between the plate and bunching roller gradually diminishes, together with an apron co operating with the plate and roller, substantially as described.

6. In a cigar bunching machine, the combination with an apron and means for holding the ends thereof, of mechanism for adjusting the tension of the same consisting of a centrally pivoted cross-bar, arranged transversely to and having its edge bearing against the apron, whereby the tension thereon may be made to accommodate itself to the shape of the bunch

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529,892. SELF-BINDING BLOTTER. ROBERT L. BOYD, New York, N. Y. Filed Aug. 9, 1893. Serial No. 482,787. (No model.)

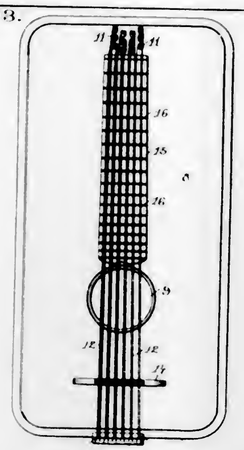


*Claim.*—1. A self binding flexible blotting pad consisting of a supporting back and translucent face secured together by engaging means consisting of perpendicular pins provided with heads, in combination with a sheet of resilient blotting paper also provided with engaging means consisting of recesses formed in the sides of the same, and constructed and arranged to be sprung into lateral interlocking engagement with and detached from the said support at will, and to be retained in said normal position solely by means of the resilience of the edges of said lateral recesses.

2. A self binding flexible blotting pad consisting of a supporting back provided with engaging means consisting of perpendicular pins provided with heads, in combination with a sheet of resilient blotting paper, longer than the said back one end of which paper is constructed and arranged to be folded over upon itself, and is provided with engaging means consisting of recesses formed in the sides of the same and constructed and arranged to be sprung into lateral interlocking engagement with and detached from the said support at will, and to be retained in said normal position solely by means of the resilience of the edges of said lateral recesses; the faces of the blotting paper and supporting back being made to mutually conform

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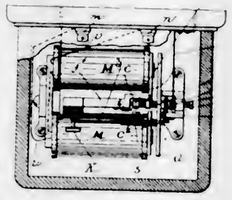
529,893. MUSICAL INSTRUMENT. WALTER BURKE, Providence, R. I. Filed Aug. 17, 1894. Serial No. 520,548. (No model.)



*Claim.*—The combination with a hollow, resonant casing having the ends 6 and 7 and the top 8, the bridge 14 mounted on the top, the finger-board 15 secured to the top, the pins 11—11 rotatably secured in the top at the end of the finger board, and the tail-piece 13 having the perforated-ledge 17 and bearing-plate 18 secured to the ends 6 of the case, of the strings 12—12, secured through the perforations in the ledge 17 of the tail piece, extending over the bridge and secured to the pins 11—11, as and for the purpose described

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529,894. SIGNALING APPARATUS FOR TELEPHONE-EXCHANGE SYSTEMS. JAMES H. CART, Malden, assignor of one-half to Luther P. Bryant, Northampton, Mass. Filed Mar. 17, 1894. Serial No. 504,047. (No model.)



*Claim.*—1. In a telephone signaling system, the combination of a plurality of relays connected with the line and adapted to be rendered operative to close a local circuit by currents of different character, a dynamo, a switchboard two of whose contacts are connected with the journals of the dynamo-armature and the others with a generator, which may be the dynamo or a battery, whereby currents of different polarity and character can be obtained by connecting different contacts, and a switch-piece designed to electrically connect different pairs of said contacts whereby such currents may be sent to line as desired.

2. In a telephone signaling system, the combination of a plurality of instruments whose signal-operating circuits are adapted to be closed by currents of varying character and different polarity sent to line, a dynamo, a switchboard having a series of contacts, electrical connections between a pair of said contacts and the journals of the dynamo-armature, electrical connections between other pairs of said contacts and the commutator of the dynamo, resistance interposed in one or more of said connections, and a switch composed of two arms or bars insulated from each other and separately connected with the line, said arms or bars adapted to connect different pairs of the switchboard contacts to obtain the current desired to send to line.

3. In a telephone signaling apparatus, the combination of a transmitter battery, a local circuit connected therewith, a call-bell in said circuit, and a relay controlling the local circuit and connected with the line.

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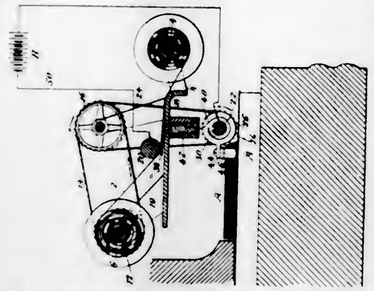
529,895. KEYBOARD ATTACHMENT FOR MUSICAL INSTRUMENTS. JOSEPH D. CASE, Plainfield, N. J. Filed Mar. 30, 1893. Serial No. 468,275. (No model.)

*Claim.*—1. The combination with a musical instrument and a source of electricity, of an electro-magnet and an armature co-acting therewith mounted on a rotary shaft; one of said parts being rigidly attached to the shaft, and the other of said parts being constructed to operate a sound-producing device of said musical instrument.

2. The combination with a musical instrument and a source of electricity, of a revolving armature and an electro-magnet co-acting therewith and adapted to operate a sound producing device of said musical instrument.



3. The combination with a musical instrument and a source of electricity, of a motor mounted on a rotary shaft and having operative connection with a sound producing device of the musical instrument, electrical connections between said source of electricity and motor and a music controller operating to make and break the electric current.



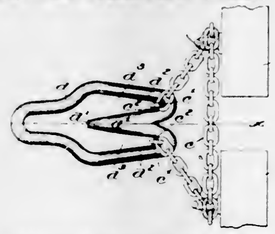
4. The combination with a source of electricity and a traveling music controller operating to make and break the electric current, of a rotary shaft, a motor consisting of an electro-magnet loosely mounted on said shaft, and an armature rotative with said shaft, a connection between said electro-magnet and a sound producing device of the musical instrument, and the electrical connections.

5. The combination with a source of electricity and a rotary shaft, of a motor comprising an armature connected to and rotating with said shaft, and an electro magnet loosely mounted on the shaft and adapted to co act with said armature when energized.

6. In a music player, the combination with the frame comprising a conduit for wires, arched toward its center, leveling screws therefor and adjustable devices adapted to abut against the cheek pieces of a musical instrument and secure the frame in position

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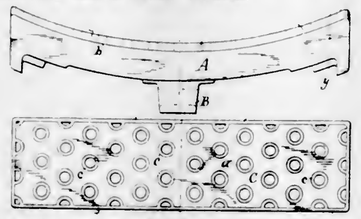
529,896. COUPLING-LINK. WILLIAM H. CASEY, Boston, Mass. Filed May 22, 1894. Serial No. 512,086. (No model.)



*Claim.*—A coupling link formed of substantially round metal, having an inturned tongue at one end tapering from base to tip, and located between the side walls of the link, to form therewith two slots converging toward the end of the link adjacent the base of the tongue, to receive and grip the free ends of a chain when passed therethrough and drawn toward the narrow end of the slot, the other end of the link being elongated and narrowed to enter a draw-head and be held therein by a coupling pin, substantially as described.

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529,897. BRAKE-SHOE. EDWARD CLIFF, Newark, N. J. Filed July 2, 1894. Serial No. 516,285. (No model.)

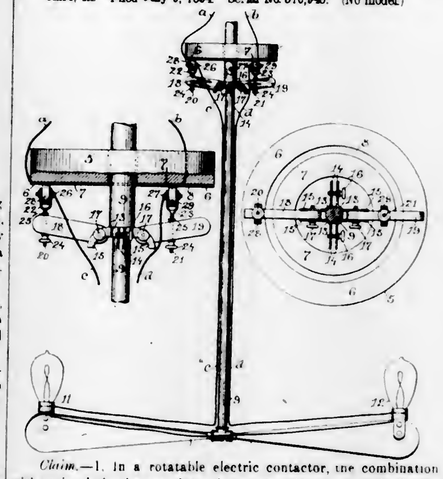


*Claim.*—1. A brake-shoe having a case formed integral with the fastening lug, projections extending from the inner side of the case toward and to the bearing surface of the shoe, perforations extending longitudinally through the projections, and a filling of metal differing from that of the case between the projections and extending to the bearing surface of the shoe, as set forth.

2. A brake shoe having its back formed integral with the fastening lug and a series of circular projections extending to and tapering toward the bearing surface of the shoe, holes extending through said projections and said back of the shoe, and a different metal between the projections and extending to the height of the latter as set forth.

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529,898. ROTATABLE ELECTRIC CONTACTOR. JOHN W. CURRY, Cairo, Ill. Filed July 9, 1894. Serial No. 516,945. (No model.)

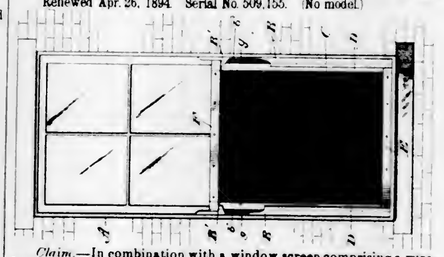


*Claim.*—1. In a rotatable electric contactor, the combination with an insulating base, and annular contact-plates concentrically disposed on said base and insulated from each other, of a shaft rotatable in the base, brackets removably secured to the shaft, insulating arms adjustably mounted in the brackets, wheel frames having shanks vertically adjustable in the insulating arms, shafts secured in these frames and connected in the local circuit, and contact-wheels journaled on said shafts with which they are in electrical contact and bearing on the annular contacts of the base, as described.

2. The combination with the base 5, and the annular contacts 6 and 7 mounted thereon, each connected with an arm of the main circuit, of the shaft 9 journaled in the base and carrying an electrically operated device, brackets having the arms 14—14 and 15—15 clamped to said shaft, the screws 16 and 17 for securing the arms together, the insulating-arms 18 and 19 pivoted on the screws 17 and secured between the arms 15, the shanks 20 and 21 extending through perforations in these arms and having the frames 22 and 23, the nuts 24 and 25 for securing the shanks in place, the shafts 26 and 27 mounted in the frames, the contact-wheels 28 and 29 journaled on said shafts and held in contact with the annular contacts 6 and 7, and a local circuit, in which the device carried by the shaft is included, connected with the shafts 26 and 27, as and for the purpose described.

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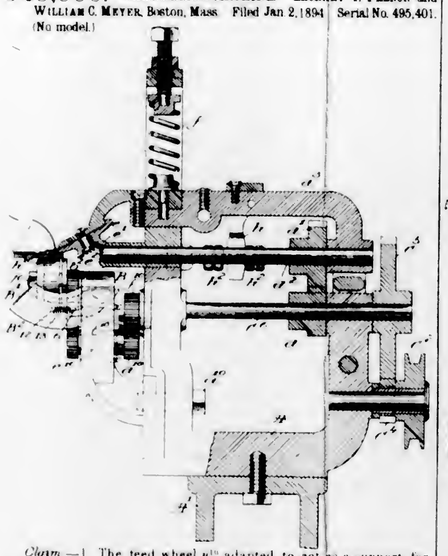
529,899. WINDOW-SCREEN. CHARLES H. DIXSON, Port Morris, N. J., assignor to Hugh H. Nickelson, same place. Filed June 18, 1892. Renewed Apr. 26, 1894. Serial No. 509,155. (No model.)



*Claim.*—In combination with a window screen comprising a wire-fabric the upper and lower edges of which are secured to strips E E and F F and the side edges rolled or bent upon themselves and reinforced by metallic strips D, of strips or guides F attached to the

window frame and having longitudinal grooves in which the side pieces of the screen slide, recesses to receive springs *g* and shoulders B' against which the strips F abut, together with springs *g* located in the recesses therefor and adapted to bear against the metallic side pieces of the screen, substantially as shown and described

529,900. CHANNELING-MACHINE. ZACHARY T. FRENCH and WILLIAM C. MEYER, Boston, Mass. Filed Jan 2, 1894. Serial No. 495,401. (No model.)



*Claim.*—1. The feed wheel $n^{10}$ adapted to act as a support for the bottom of the sole at its edge outside the channel, the knife $p^{10}$, a rotating feed shaft, and a second feeding and supporting wheel $h^{10}$ located at the other side of the knife shank and under the blade of the knife and having its center of rotation coincident with that of the wheel $n^{10}$, to operate, substantially as described

2. In a channeling machine, a presser to act on the welt of a welted shoe, and a knife to cut a channel in the outer sole of said shoe, combined with a wheel to support and feed the sole at a point between the center or median line of the said sole and the shank of said knife, the said wheel extending under the blade of said knife, substantially as described

3. The combination with a feed wheel chambered at one side, and the knife having a blade adapted to overhang said wheel, of a knife-holder covered and protected by said wheel, substantially as described

4. The combination with the shaft having the two feed wheels, of the stationary knife holder located between said wheels and having a bearing which sustains the said shaft in its line of greatest strain, to operate substantially as described

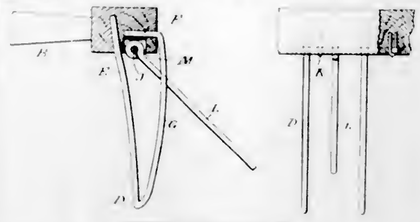
5. The feed wheel $n^{10}$ adapted to act as a support for the bottom of the sole at its edge outside the channel, the knife $p^{10}$, and the rotating shaft and its second attached feeding and supporting wheel $h^{10}$ located at the other side of the knife shank and under the blade of the knife, whereby the said wheel $h^{10}$ is made to not only act on the sole to feed it, but also to act on the lip of the channel after the latter has been formed, combined with gearing to rotate said wheels $e$, $n^{10}$, $h^{10}$, to feed the sole and shoe, substantially as described

6. In a channeling machine, a presser to act on the welt of a welted shoe, and a knife to cut a channel in the outer sole of said shoe, combined with a wheel to support and feed the sole at a point between the center or median line of the said sole and the shank of said knife, the said wheel extending under the blade of said knife, and a tipping support for the shaft carrying said wheel, to operate, substantially as described

529,901. LAWN-RAKE. THOMAS A GALT, Sterling, Ill. Filed July 18, 1894. Serial No. 517,882. (No model.)

*Claim.*—1. The combination of the rake head A, provided with the looped teeth D, and the pendants I, pivotally seated in said head between said teeth, respectively, and adapted to be forced between said teeth to dislodge the gathered material therefrom substantially as shown, and for the purpose described

2. The combination of the rake head A, looped teeth D seated therein, rod J seated in said head between the limbs of said rake teeth, and pendants I, pivotally suspended upon said rod between said teeth respectively, substantially as shown and for the purpose described



529,902. DENTAL OR SURGICAL CHAIR. AARON P GOULD, Canton, Ohio. Filed May 31, 1892. Serial No. 435,335. (No model.)



*Claim.*—1. The herein described chair consisting of a base A, having split tubular portion C provided with an annular screw thread *a*, a body supporting stem D, having a similar thread, adapted to turn in the thread of the tubular portion, a bolt to lock said stem against rotation by contracting the walls of said tubular portion against the threaded portion of the stem D, said stem having arms $a^2$ projected outwardly and upwardly to the upper portions of which is pivotally secured a circular body supporting frame E, having a dependent rack frame *d* a spring actuated pawl $a^3$ to engage said rack, a chair body frame F having a circular bottom portion G, adapted to rotate and rest upon frame E, a back and a seat section hinged to each other and to the arm portion H, of the frame F, and a leg rest hinged to said seat section connections between the back section and the seat and leg rest sections, which communicate the movements of the back section to the seat and leg rest sections.

2. In a chair the combination of a base having a vertically divided threaded socket piece, a chair body having a threaded stem fitting in said socket piece, an ear carried by the socket piece on each side of the division thereof, said ears being provided respectively with smooth bored and threaded openings, a headed bolt having a smooth and a threaded portion, said smooth and threaded portions fitting in the smooth bored and the threaded openings of the ears, and an operating lever secured to and adapted to rotate the bolt whereby the divided socket piece is clamped to the chair stem and the chair secured in desired position.

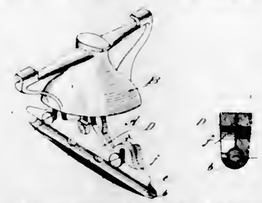
3. In a chair, a base a seat section connected thereto, arms having segmental portions each provided with a squared notch and ratchet teeth carried by the seat section, leg-rest sections, connections between the seat, back, and leg rest sections to secure simultaneous adjustment thereof, a cranked bar pivotally held in bearings in the leg rest sections, a spring bearing on the cranked portion of the bar, a pawl carried by the bar, projections $k^{10}$ $k^{11}$ formed on the pawl, the latter adapted to engage the squared notch in the segments to move the leg rest sections in unison with the back and the former adapted to ride over and engage the teeth of the segments to permit independent adjustment of the leg rest.

4. In a chair, a base a seat section, an arm having a segmental portion provided with a squared notch and ratchet teeth carried by the seat section, a leg-rest section, connections between the seat, back, and leg-rest section to secure simultaneous adjustment thereof, a pawl supported by the leg rest and provided with projections $k^{10}$ $k^{11}$, the latter adapted to engage the squared notch in the segment to move the leg-rest in unison with the back, and the former adapted to ride



over and engage the teeth of the segment to permit independent adjustment of the leg-rest.

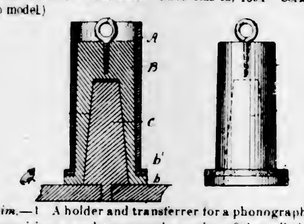
529,903. TROLLEY-WIRE SUPPORT AND COUPLING. AARON P GOULD, Canton, Ohio. Filed Mar 7, 1894. Serial No. 502,732. (No model.)



*Claim.*—1. The combination in a trolley wire support and coupling of the body portion A, having at its lower edge a ledge *b*, and perforations *c*, the bent end portions *b'*, of the trolley wire, and the slidable securing cap D, substantially as described and for the purpose set forth.

2. The combination in a trolley wire support, of the body portion A, having at its lower edge a projecting ledge *b*, a cap D, having elongated apertures, and the binding screws *g*, substantially as described and for the purpose set forth

529,904. HOLDER FOR PHONOGRAPH-CYLINDERS. LAWRENCE B GRAY, Boston, Mass. Filed Jan. 12, 1894. Serial No. 496,628. (No model.)



*Claim.*—1. A holder and transferrer for a phonograph record cylinder comprising a stud to enter the cavity of the cylinder having a rest at its lower end and a grasping device at its upper end, as and for the purposes described.

2. In a phonograph record cylinder holder and transferrer, a portable stud adapted to enter the bore of the cylinder having at its lower end a rest and provided with a cavity opening from its lower end to receive a holding pin

3. A portable holder and transferrer for a phonograph record cylinder, having a stud to enter the cavity of the cylinder but of a length less than the length of the cylinder, and a foot or rest for the cylinder attached to the stud to be movable therewith, as and for the purposes described.

4. As a means for holding phonograph record cylinders, a pin C, and a cylinder holder having a foot or rest against which one end of the cylinder abuts, a grasping device and a hole to receive the holding pin, substantially as described.

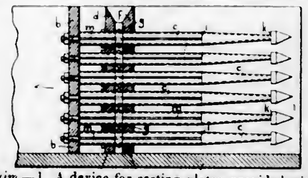
529,905. METHOD OF COMPOUNDING VULCANIZABLE COMPOUNDS AND VULCANIZING AND APPLYING SAME. WILLIAM GRISCOM, Jr., Bound Brook, N. J., assignor to the Standard Paint Company, New York, N. Y. Filed Mar. 11, 1891. Serial No. 384,645. (No specimens.)

*Claim.*—1. The method of compounding vulcanizable compounds containing such plastic matter as candle tar, which consists in heating the plastic matter to a melted or well liquefied condition, and separately melting sulphur in appropriate quantity, and then combining and mixing the melted masses.

2. The method of compounding vulcanizable compounds containing such plastic matter as candle tar, and applying the same to various fabricated materials, which consists in first separately heating the plastic matter and sulphur to a melted or well liquefied condition, then combining and mixing the same, and then applying the compound in permanent adherence to the fabricated materials.

3. The method of compounding vulcanizable compounds, vulcanizing the same and applying them in permanent adherence to fabricated materials, which consists in separately melting the plastic elements, and the sulphur, to a well liquefied condition; then uniting and mixing the melted materials; then developing the same into a vulcanized condition, by appropriately subjecting the same to suitable temperature, and then after vulcanization, and while still in a plastic condition, applying said compound to fabricated materials, and in permanent adherence therewith.

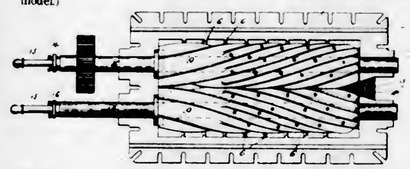
529,906. CASTING-MOLD. CARL A. R. HAMPEL, Leopoldshall, Germany. Filed June 18, 1894. Serial No. 514,908. (No model.)



*Claim.*—1. A device for casting plates provided with openings the side edges of which are beveled from the central plane of the plate outward to the two faces thereof composed of a casing, a sliding plate in the same, as many core bars projecting from said sliding plate as openings are to be provided in the cast plate, two plates in the casing and between which the metal is cast, and prismatical pieces placed on the sides of the core bars, between said two plates and provided with dovetailed lugs mounted to slide in dovetailed grooves of the said core bars which core bars are tapered substantially as herein shown and described.

2. In a device for casting plates having openings, the edges of which are tapered from the central plane of the plate to the two faces of the same, the combination with a casing of a plate mounted to slide in the same, two plates in said casing and between which the molten metal is poured as many core bars projecting from the sliding plate as there are to be openings in the cast plate, which core bars pass through openings in the other two plates said core bars having two opposite sides tapered toward a shoulder at about half the length of the core bar dovetailed longitudinal grooves in said tapered sides and extending to the shoulder, the other two opposite sides of the core bar being tapered from the shoulder to the end of the core pieces and having dovetailed longitudinal grooves throughout their entire length, a prismatical piece on each side of each core bar each prismatical piece having a dovetailed lug mounted to slide in one of the grooves of the core bar substantially as herein shown and described

529,907. MACHINE FOR GRINDING PULP-STOCK. FRANCIS HICKMAN, Bound Brook, N. J. Filed Jan. 30, 1894. Serial No. 498,498. (No model.)



*Claim.*—1. In a machine for grinding pulp, the combination of a casing and a pair of spirally ribbed rolls therein, internal chambers being formed in the rolls and radial passages extending from said chambers and terminating in the grooves between the ribs on the rolls, as and for the purpose set forth.

2. In a machine for grinding pulp &c., the combination of a casing provided with an exit opening at its rear end, a pair of reducing rolls journaled therein and provided with intermeshing spiral ribs and intermediate grooves, said grooves being extended or turned over upon the ends of the rolls at the exit end of the casing, substantially as described.

3. In a machine for grinding pulp, the combination of a casing provided with an exit opening at its rear end, a pair of reducing rolls journaled therein and provided with intermeshing spiral ribs and intermediate grooves, the adjacent ends of said ribs being beveled off at the rear or exit end of the machine adjacent to the exit opening, substantially as described.

4. In a machine for grinding pulp, the combination of a casing provided with an exit opening at its rear end, a pair of reducing rolls journaled therein and provided with intermeshiug spiral ribs and intermediate grooves, the rear ends of the ribs being beveled off and the rear ends of the grooves being enlarged adjacent to the exit opening, subetantially as and for the purposes described.

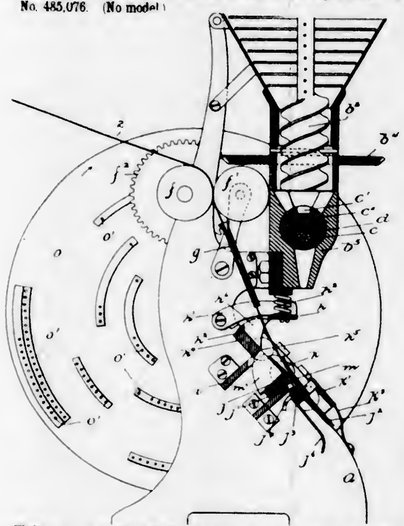
5. In a machine for grinding pulp, the combination of a casing provided with an exit opening at its rear end, a pair of hollow ribbed reducing rolls journaled in the casing, the rear ends of the grooves formed by said ribs being carried over on the ends of the rolls, and

fluid-passages extending from the interior of the rolls and terminating in the turned-over ends of the grooves, substantially as described.

6. A ribbed reducing roll, formed hollow and provided with threaded openings extending from the interior to the grooves between the ribs, and screw-plugs in said openings, these plugs being each provided with an opening extending to the interior of the roll and set eccentrically in the plug, substantially as described.

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529,908. **POWDER-FOLDING MACHINE.** WILFORD A. HILL, Waltham, Mass., assignor of two-thirds to Elmer E. Butman, same place, and George W. Lawrence, Cromwell, Conn. Filed Sept. 8, 1893. Serial No. 485,076. (No model.)



*Claim.*—1. A powder-folding machine comprising in its construction paper feeding mechanism, a pivotal folder for forming the fold which receives the powder, a cutter which severs the piece of paper and also constitutes a folder for making the fold which carries one edge of the paper over the other, a final folder and end-wiper, and means for actuating the above named parts in their proper order.

2. A machine of the character described comprising in its construction paper feeding mechanism, a primary pivoted folder for making the fold which receives the powder, a pivoted cutter for severing the piece of paper, said cutter constructed to serve as a folder to carry one edge of the paper over the other, and a final pivoted folder having wipers to turn the ends of the folded paper.

3. A machine of the character described comprising in its construction guides for holding the paper, a pivoted folder for making the fold which receives the powder, said folder having projections which act against the guides and move them free of the paper, a combined cutter and folder, and a final folder and end-wiper.

4. A machine of the character described, comprising in its construction a bed, a primary pivotal folder adapted to make the fold which receives the powder and carrying curved fingers, a pivotal folder adapted to make the fold which carries one edge of the paper over the other, and a final pivoted folder which carries the folded paper under the curved fingers on the primary folder and doubles the paper upon the bed.

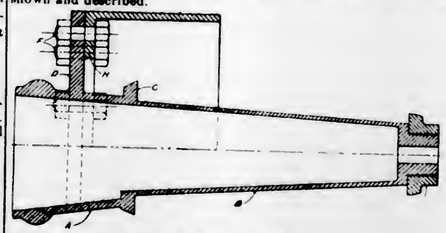
5. A machine of the character described, comprising in its construction a hopper; and a rotatable shaft therein, carrying stirring arms and a feed-screw below said stirring arms, mechanism for discharging a pre-determined quantity of powder from said hopper, mechanism for feeding intermittently a continuous strip of paper, a cutter for severing the paper, folders for turning the sides and ends of the severed paper, and means for intermittently operating the several parts.

6. In a powder-folding machine, the combination with feed-mechanism, pivotal folders, and a cutter, each having a gear or pinion on its journal of a disk having mutilated teeth for actuating the gears or pinions in their proper order.

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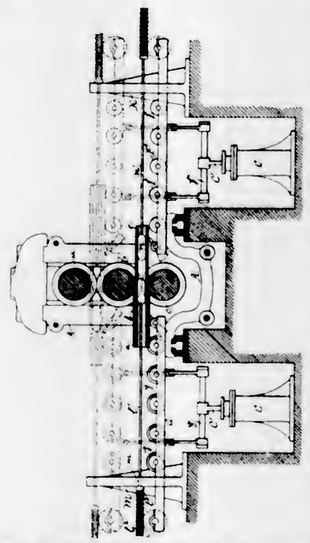
529,909. **HUB-PROTECTOR FOR WAGONS.** NELSON D. HOPKINS, Marquette, Mich., assignor of one-half to Frederick O. Clark, same place. Filed Apr. 21, 1894. Serial No. 508,544. (No model.)

*Claim.*—The combination of the skein B, provided with nut G, collar C and collar A, to which is cast semi-circular lug D, to which lug, shield E provided with shoulder H, is attached, by bolts F, as shown and described.



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529,910. **APPARATUS FOR THE MANUFACTURE OF TUBING.** ZDENKO HOROVSKY, Duquesne, Pa. Filed Oct. 24, 1893. Serial No. 489,082. (No model.)



*Claim.*—1. The combination with rolls having concave passes, of movable tables on each side thereof adapted to support and carry the two blanks between the roll passes, of mandrels supported on the table and longitudinally movable thereon, and mechanism for carrying the tables with mandrels from one roll pass to the next and for carrying the mandrel longitudinally into and out of the roll passes, each mandrel being adapted to enter the blank delivered onto the table, and when carried to the next roll passes to move longitudinally into the pass, substantially as and for the purpose set forth.

2. The combination with rolls having concave passes, of a movable table adapted to support and carry the tube blank from one pass to the other, a mandrel supported and mounted so as to be longitudinally movable on said table, and mechanism for moving said mandrel longitudinally on the table, whereby the mandrel may be held in front of and in line with one roll-pass and enter the blank as it is fed therefrom and be carried by the table to the next roll pass and moved longitudinally into said roll-pass, substantially as set forth.

3. The combination of rolls having concave roll-passes therein, movable tables mounted on each side of said rolls, longitudinally movable mandrels supported on each of said tables and adapted to be held in front of and in line with the roll-passes, and to enter the roll-passes, and movable supports for said mandrels at the forward end of the tables, substantially as set forth.

4. The combination of rolls having concave roll-passes therein, movable tables mounted on each side of said rolls, longitudinally movable mandrels supported on each of said tables and adapted to be held in front of and in line with the roll-passes, and to enter the roll-passes, said mandrels having geared faces at the ends of their mandrel bars meshing with power-driven pinions mounted on the tables, substantially as set forth.



5. The combination of a set of three-high rolls having concave roll-passes therein, a table on one side thereof having up and down movements and adapted to receive and support the tube blank, a longitudinally movable mandrel supported on said table, and a stationary guideway having a diagonal guiding slot with which the table engages to move it obliquely between the passes, substantially as set forth.

6. The combination of a set of three-high rolls having concave roll-passes therein, a table on one side thereof having up and down movements and adapted to receive and support the tube blank, a longitudinally movable mandrel supported on said table, a stationary guideway having a diagonal guiding slot with which the table engages to move it obliquely between the passes, and a stand or abutment having a slot therein corresponding to the guideway within which the mandrel bar fits, substantially as set forth.

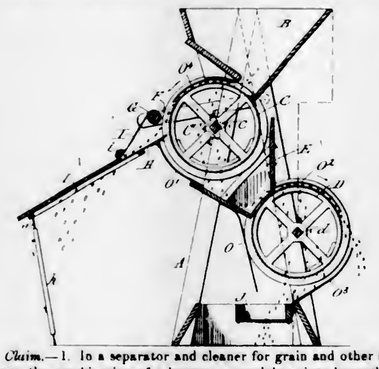
7. The combination of a set of three-high rolls having concave roll-passes therein, a table on one side thereof having up and down movements and adapted to receive and support the tube blank, a longitudinally movable mandrel supported on said table, a stationary guideway having a diagonal guiding slot with which the table engages to move it obliquely between the passes, and a stand or abutment having a slot therein corresponding to the guideway within which the mandrel bar fits, said mandrel bar having a shoulder adapted to contact with the abutment.

8. The comoination with rolls having roll-passes therein, of a movable table at one side of the rolls, said table carrying a series of power-driven rolls and a power-driven pinion and having at its forward end a movable mandrel support, and a longitudinally movable mandrel resting on such support and having a gear face at its rear end meshing with and supported on the power-driven pinion, substantially as set forth.

9. In tube rolling apparatus, the combination of rolls having roll-passes therein, a movable table on one side of said rolls, said table carrying a series of power-driven rollers and a power-driven pinion, and a longitudinally movable mandrel supported on the table and having a gear face at its rear end so as to hold the mandrel in line with one pass to receive the blank upon the rollers, and to feed the mandrel between another pass and by the pinion feed forward the mandrel, and by the power-driven rollers feed forward the blank into such pass, substantially as set forth.

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529,911. **GRAIN-SEPARATOR.** CLARENCE D. HOSELTON, Drayton, N. D. Filed June 21, 1894. Serial No. 515,276. (No model.)



*Claim.*—1. In a separator and cleaner for grain and other substances, the combination of a bopper, a revolving sieve beneath it, cams on each end of the shaft of said revolving sieve, pivoted arms which are oscillated by the said cams, a sieve which receives the grain from the external surface of the revolving sieve, and a press-cloth upon the latter sieve which is oscillated by the aforesaid arms, substantially as described.

2. In a separator and cleaner for grain and other substances, the combination of a hopper, a revolving sieve beneath it, a cam on each end of the shaft of said sieve, pivoted arms which are oscillated by said cams, a roller supported in said arms, a press cloth attached to the roller, a flat sieve beneath said press-cloth, and another revolving sieve geared with the first mentioned sieve, substantially as described.

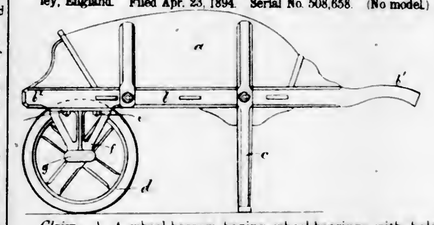
3. In a separator and cleaner for grain and other substances, the combination of a revolving cylindrical sieve, a cam on the end of its shaft, a horizontal sieve hinged at one end below the revolving sieve, a vertical arm pivoted to the other end of the horizontal sieve, said arm having a notch that engages the said cam, and having a slot which is entered by a pin on the main frame, substantially as described.

4. In a grain separator and cleaner, the combination with the hopper, of a revolving cylindrical sieve located below it and receiving the grain upon its external surface, a cam on each end of the shaft of said revolving sieve, pivoted horizontal arms which are oscillated by the said cams, a horizontal sieve receiving the grain from the external surface of the revolving sieve and a press cloth upon the said horizontal sieve which is connected to and oscillated by the aforesaid arms, substantially as described.

5. In a grain separator, the combination of the hopper, a revolving sieve beneath it receiving the grain upon its external surface from the hopper, a cam on each end of the shaft of the revolving sieve, pivoted horizontal arms engaged and oscillated by the said cams, an adjustable horizontal sieve which is adjacent to the revolving sieve, an adjustable support for said horizontal sieve, a press cloth resting upon the top of the sieve and attached to a roller which is loosely supported in the outer ends of the pivoted arms, substantially as described.

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529,912. **WHEELBARROW.** HENRY HOULDSWORTH, Jr., Keighley, England. Filed Apr. 23, 1894. Serial No. 508,658. (No model.)



*Claim.*—1. A wheel-barrow having wheel-bearings with holes which receive the journals of the wheel and whose bottoms prevent endwise movement of the wheel, there being provisions for varying the location of the wheel with respect to the length of the barrow.

2. A wheel-barrow having bearings for the wheel, each with a row of separated holes in its inner side for the reception of the wheel-journals, the bottoms of the holes preventing endwise movement of the journals, and there being provisions for disengaging the journals from one set of holes and inserting them in another.

3. A wheel-barrow having wheel-bearings each with a row of separated holes in the inner side to receive the journals of the wheel, one or both of said bearings being removable laterally.

4. A wheel-barrow having wheel-bearings, each with a row of holes in the inner side to receive the journals of the wheel, one of said bearings being hinged to swing laterally; and suitable means for locking said hinged bearing.

5. A wheel-barrow having wheel bearings curved upwardly toward the front, and each formed with a row of separated holes in the inner side of the curved portion, said holes adapted to receive the journals of the wheel, and there being provisions for disengagement of the journals from one set of holes and their insertion in another set of holes.

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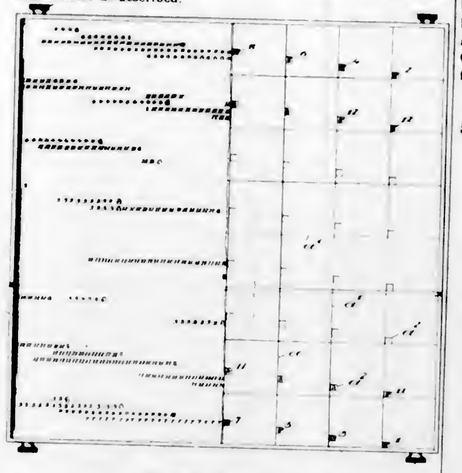
529,913. **GAME APPARATUS.** EDWIN C. HOWELL, Boston, Mass. Filed Feb. 19, 1894. Serial No. 500,684. (No model.)

*Claim.*—1. In a game apparatus of the class described, a game board divided into squares provided with a holder, in combination with a series of diagrams each composed of a plurality of characters and each showing a different arrangement of the characters, and one or more diagram carriers adapted to be supported by said holder, whereby the said diagrams may be displayed successively in playing position under said board, to illustrate successive moves of a game substantially as described.

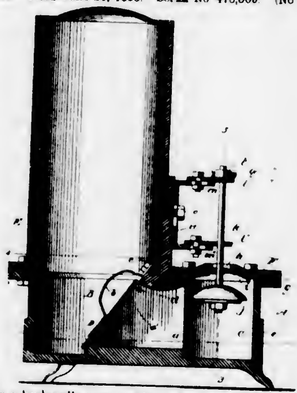
2. In a game apparatus of the class described, a game board provided with a series of openings, in combination with a series of character diagrams, each representing a different arrangement of characters, and one or more diagram carriers adapted to be supported by said holder, whereby said diagrams may be successively positioned under said board and visible in playing position through said openings, to illustrate successive moves of a game substantially as described.

3. In a game apparatus of the class described, a game board divided into squares arranged in longitudinal and cross series, each square having an opening through which diagram characters are visible, the openings in successive squares of each long series being laterally offset one from another, whereby each opening may co-operate with a different line of characters on the diagrams, combined with a carrier movable in a line substantially parallel with said longitudinal series of squares; and a plurality of character diagrams arranged on

said carrier, the characters of the several diagrams ranging in longitudinal series parallel with the direction of movement of said carrier, substantially as described.

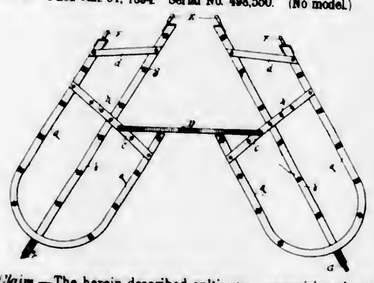


529,914. HYDRAULIC RAM. CHARLES B. JONES and JOHN S. WETMORE, Roanoke, Va.; said Wetmore assignor to Waller P. Huff, same place. Filed June 21, 1893. Serial No. 478,309. (No model.)



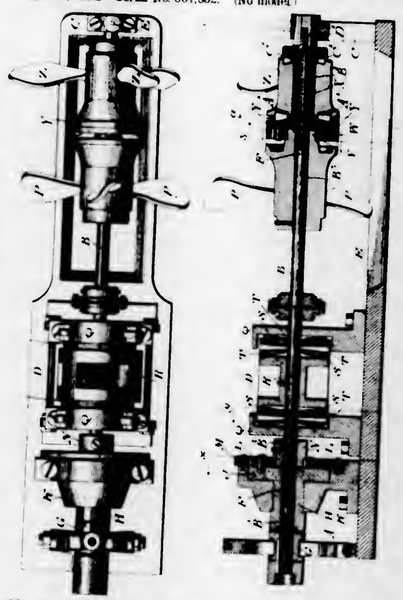
*Claim.*—In a hydraulic ram, the base A provided with the chambers B C and the passage *a* connecting the said chambers, the concave valve seat *i* having the overflow opening *k*, the convex valve *j* fitted to the concave valve seat *i* and furnished with the valve stem *k*, the adjustable guides *l l*, the spring supported valve D, the air induction pipe *d*, and the air chamber E, substantially as specified.

529,915. CORN-CULTIVATOR. EDWARD R. JONES, St. Lawrence, S. D. Filed Jan. 31, 1894. Serial No. 498,550. (No model.)



*Claim.*—The herein described cultivator, comprising the frames A, A', consisting each of two lateral bars, one of which is longer than the other, a center bar longer than either of said lateral bars, cross-bars connecting said lateral and center bars, teeth carried by the said bars, an arch connecting the frames A, A', about midway of their length and having its ends adjustably pivoted in said frames, said arch being formed in two sections loosely connected, a swiveled wheel G at the rear portion of each of said frames, and draft clevises at the forward portion of said frames, substantially as specified.

529,916. PROPELLER. JOSEPH B. JONES, Philadelphia, Pa. Filed Apr. 17, 1894. Serial No. 507,852. (No model.)



*Claim.*—1. A sectional shaft, a rotatable sleeve connected with one section, and a propeller secured to another section thereof pinions journaled on one side of said sleeve, a housing in which said sleeve is journaled, an internal gear rim connected with said housing, and a pinion on said propeller section, meshing with said sleeve pinions, said propeller section of the shaft being journaled in said sleeve, said parts being combined substantially as described.

2. A sectional shaft having on one of its sections the loose and fast member of a clutch mechanism, and on an adjacent section a propeller, said propeller section being journaled in the fast member of the said clutch mechanism, and intermediate gearing connecting said fast member and said propeller section, whereby greater speed is imparted to said propeller than to said first mentioned section, said parts being combined substantially as described.

3. A sectional shaft having on one of its sections a power mechanism, and on an adjacent section a propeller, mechanism connecting said sections for imparting a greater speed to the propeller section than to the other section, and a thrust-bearing for said propeller section, substantially as described.

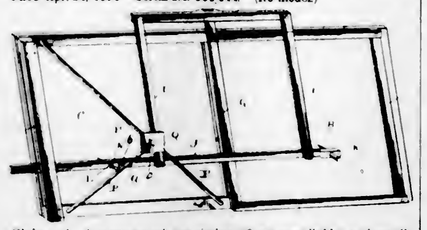
4. A sectional shaft, a propeller on one section which is rotatable, a boss on the other section which is stationary, a propeller on said boss, and intermediate gearing whereby one propeller operates the other in reverse directions, substantially as described.

5. A sectional shaft, a clutch mechanism on one of said sections, a propeller blade on an adjacent section, which is journaled at one end on the fast member of said clutch mechanism, a second propeller on a section adjacent to said second named section, mechanism substantially as described for operating said first propeller at a greater rate of speed than the first named section, and mechanism connecting said propeller sections for imparting motion to said second propeller in a reverse direction from that of the first named propeller, substantially as described.

6. A sectional shaft having two propellers, secured to different sections thereof, a pinion carried by the hub of one of said propellers, a stationary boss on the section having the other propeller, and a pinion on said boss engaging said first mentioned pinion, said latter propeller being mounted on said boss and having an internally geared rim, said parts being combined substantially as described.



529,917. PANTOGRAPH. HERSCHEL V. JOSEPH, Blue Ridge, Mo. Filed Apr. 24, 1894. Serial No. 508,844. (No model.)



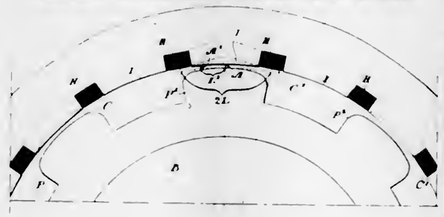
*Claim.*—1. A pantograph consisting of two parallel bars pivotally connected to a suitable support, one portion of a T shaped bar connecting the opposite ends of said parallel bars, the bars I having one of their ends connected loosely to the opposite ends of the other portion of the said T, and the bar J connecting the opposite ends of the said bars I, the bar J adapted to carry a point and a pencil substantially as described.

2. A pantograph, comprising two parallel bars connected to a suitable support, a T having one portion connected to the opposite ends of the said parallel bars, the bars I connected to the other portion of the said T, the bar J connecting the opposite ends of the bars I and adapted to carry a pointer and a marker, a guide extending in a plane in a line with the plane traveled by the bar J, and one end of the said bar extended outside of the parallel bars I and resting in said guide for the purpose described.

3. A pantograph comprising a board having a solid and an open end, a marker carrier extending over said solid and open ends, supporting arms extending away from said board and converging inward over the center of said opening, and a perforated plate supported by said arms or supports over the center of said opening, substantially as specified.

4. A pantograph comprising a board having a solid and an opening end, the marker carrier of said pantograph extending over the said solid and open portions of the board, a perforated plate supported away from the board but over the center of the said open portion, the said marker carrier provided with an opening over the said open portion of the board, and a pointer in said opening, substantially as specified.

529,918. ALTERNATING-CURRENT GENERATOR. JOHN F. KELLY, Pittsfield, Mass., assignor to the Stanley Laboratory Company, same place. Filed Aug. 18, 1894. Serial No. 520,664. (No model.)



*Claim.*—1. In an alternating current generator the combination of a field magnet and an armature having opposing faces, one of which bears to the other the relation expressed by the formula of an inverse sinusoidal curve, substantially as described.

2. An alternating current generator having a single exciting coil and a suitable armature, and two groups of unlike field pole pieces on opposite sides of the exciting coil, the faces of said pole pieces being so shaped that their curvature referred to the opposing armature surface may be expressed by the formula

$$A' = \frac{A}{\text{Cos.} \frac{1}{2}\pi \frac{L'}{L}}$$

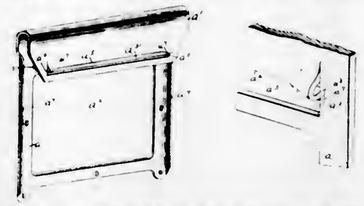
substantially as described.

3. In an alternating current generator the combination of an armature frame, having a cylindrical inner surface with a field magnet core mounted within said frame, and having pole pieces with curved surfaces, whose curve with relation to the opposing cylindrical surface may be expressed by the formula

$$A' = \frac{A}{\text{Cos.} \frac{1}{2}\pi \frac{L'}{L}}$$

substantially as described.

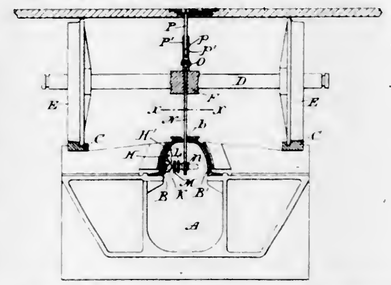
529,919. DOOR-HANGER. ALBA T. KINGSLEY, Millport, N. Y., assignor of two-thirds to Martin McCauley, same place, and John B. Stanchfield, Elmira, N. Y. Filed Jan. 16, 1894. Serial No. 497,065. (No model.)



*Claim.*—1. A door hanger traveling rail composed of sheet metal having portions at the ends of the bearing surfaces bent outward and under to form broad horizontal bearings on the side of the sheet metal and means for preventing the horizontal portions from being bent out of normal position, substantially as described.

2. A door hanger traveling rail composed of sheet metal and having stops provided with notches at the ends of its bearing surfaces, portions of the ends of the latter being bent outward and then horizontally and fitted to said notches, substantially as described.

529,920. SIGNAL FOR CABLE RAILWAYS. GOTTFRIED F. KLAPPEY and FRANK FALTINOWSKY, New York, N. Y. Filed May 8, 1894. Serial No. 510,466. (No model.)

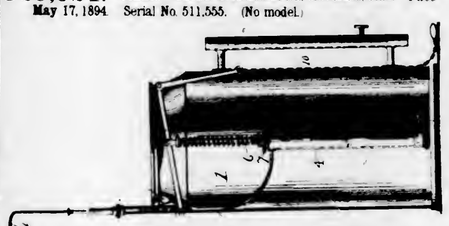


*Claim.*—1. In a railway, the combination with a conduit and an electric circuit including a signal and a circuit controller fixed within the circuit, of a flat spring covering said circuit controller, and means carried by the car and adapted to be set from the car to press upon said spring and operate said circuit controller, substantially as shown and described.

2. In a railway, the combination with a conduit and an electric circuit including a signal and a circuit controller fixed within the conduit, of a flat spring covering said circuit controller, a secondary spring between the first spring and the circuit controller and in contact with both, substantially as shown and described.

3. In a railway, the combination with a conduit, a car, and an electric circuit including a signal and a circuit controller, of a vertical shaft mounted in a bearing on the truck frame and having an arm to operate the circuit controller, and a second shaft having a bearing in the car body and coupled to the first shaft to permit oscillation of the car body without interference with the first shaft, substantially as shown and described.

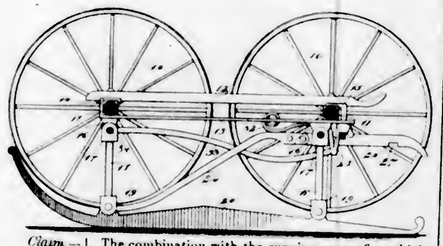
529,921. OILER. GEORGE J. KRANSHAAR, Cleveland, Ohio. Filed May 17, 1894. Serial No. 511,555. (No model.)



*Claim.*—In an oiler, the combination with the reservoir having an adjustable spout and a hollow handle to receive a supporting rod, a

valve in the spout, a drain leading from the spout above the valve and communicating with the reservoir, a stop cock in said drain, a pump secured to the exterior of the reservoir and communicating therewith by means of the pipe, a connecting pipe between the pump and spout, a spring encircling the sucker rod of the pump to hold the same normally elevated, a lever secured to the sucker rod, having a flexible connection by which it is operated, as and for the purpose described.

## 529,922. RUNNER ATTACHMENT FOR VEHICLES. WALTER J. LE BARRON, Barre, Vt. Filed Mar. 5, 1894. Serial No. 502,395. (No model.)



*Claim.*—1. The combination with the running gear of a vehicle, of reach rods or bars detachably secured to the opposite ends of the axles, hangers pivotally suspended from the supporting bars, runners pivotally connected to the hangers, a guide member secured to the rear axle, a slide bar pivotally connected at the front end to the front hanger and having a horizontally disposed handle portion longitudinally movable on the said guide, and means for holding such bar in a locked position on the guide, all substantially as shown and described.

2. The combination, with the running gear of a vehicle, of detachable reach rods or supporting bars secured to opposite ends of the axles, hangers suspended from the supporting bars near opposite ends, runners pivoted to the hangers, cross braces connecting the hangers, a pendent slotted clip on the rear axle, a slide bar held to move in the clip, connecting rods extending from the side bar to the runners, and a spring attached to the clip and projecting forward for locking the slide bar to the clip, substantially as described.

## 529,923. CEILING, ROOF, OR LIKE STRUCTURE. THOMAS A. LEE, New York, N. Y. Filed Apr. 27, 1893. Serial No. 472,117. (No model.)



*Claim.*—1. The method of constructing a ceiling, or like structure, by supporting a series of rods above a temporary support or platform, then pressing grooved or channeled tiles ready cemented down upon the said rods, thereby causing the rods to penetrate into the grooves or channels and become embedded in the cement; and thereafter removing the temporary support, substantially as, and for the purposes, set forth.

2. The method of laying ceiling or like tiles provided with grooves or channels for tension rods in their lower faces, by temporarily supporting the rods in position, filling the said grooves or channels with cement, and pressing the tiles onto the rods, whereby the tiles are forced into the cemented grooves or channels, substantially as, and for the purposes, set forth.

3. A ceiling, roof or like structure, containing courses of tiles provided with ribs *t* upon their upper faces and tension rods secured at or near the bases of the said tiles and continuous from end to end of the said courses, the said ribs forming the compression bearing member of the structure and the said rods forming the tension bearing member of the structure separated from but rigidly secured together by the intermediate portion of the structure, and thereby producing a self sustaining ceiling without end-thrusts, in distinction from an arched or suspending ceiling, substantially as and for the purposes set forth.

4. A ceiling, roof, or like structure, containing tiles provided with ribs *t* upon their upper faces, and tension supporting rods cemented in channels in the tiles and located near the lower face of the structure; the said ribs forming the compression-bearing member and the said rods the tension bearing member, separated but rigidly secured together by the intermediate portion of the structure, substantially as, and for the purposes, set forth.

5. For use in ceilings, roofs and like structures, a rod consisting of a wire or strand of undulating form throughout its length and possessing sufficient stiffness to preserve its form, whereby the deviations from the straight line may insure its more firm grip within cement substantially as described and for the purposes set forth.

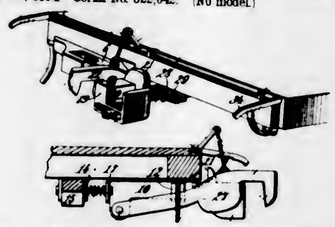
6. For use in ceilings, roofs and like structures a stiff non-shearing rod of undulating form and without spreaders, whereby the deviation from the straight line may insure the firm grip of the rod within cement or other embedding material substantially as described and for the purposes set forth.

7. In combination in a ceiling, roof, or like structure, tilework cemented together, and undulating tension rods cemented in or near the base of the said tilework, substantially as, and for the purposes, set forth.

8. In combination for the purposes set forth, an I-beam, a rod, R, and a clamp or hanger C formed to embrace the lower flanges of the said I-beam and permit the said rod to lie within the clamp and extend beneath the I-beam, substantially as described.

9. In combination in a ceiling, a pair of I-beams, one or more courses of tiles provided with ribs projecting over the flanges of the said I-beams and supporting the courses with the lower face of the tiles level with or below the lower flanges of the said I-beams, and tension rods cemented at the base of the said tiles and extending transversely between the said I-beams, substantially as, and for the purposes set forth.

## 529,924. CAR-COUPLING. JEREMIE LESSARD, Cohoes, N. Y. Filed Sept. 10, 1894. Serial No. 522,642. (No model.)



*Claim.*—1. A car coupler comprising a casting having a housing containing a spring, a keeper pressed toward the coupler by said spring, a draw-head to which the coupler is pivotally connected at one end, to lie between said drawhead and the keeper, and a spring plate rigidly attached at one end to the outer side of the drawhead and diverging from the latter to pass through a hanger in which the drawhead has lateral play, substantially as described.

2. In a car-coupler, the combination with a drawhead and a spring-pressed keeper, of a coupler pivoted to the side of the drawhead and lying between the latter and the keeper, a spring-plate having one end rigidly attached to the other side of the drawhead and its free end lying in a hanger in which the drawhead has lateral play, the end of said spring plate pressing against the outer side of said hanger, substantially as described.

3. In a car-coupler, the combination with a spring-pressed keeper and a drawhead, of a coupler lying between and pivotally attached at its rear end to the side of the drawhead, a spring-plate having its rear end rigidly secured to the opposite side of the drawhead and its free end lying and pressing against the other side of a hanger in which the drawhead has lateral play, and a supplemental spring interposed between said plate and the outer side of the hanger, substantially as described.

4. In a car coupler, the combination with a drawhead of a coupler having its end pivotally connected to the side of the drawhead, means for lifting the coupler to coupling position, and a lever sustaining it in such position and released by the impact and retrograde movement of the drawhead, substantially as described.

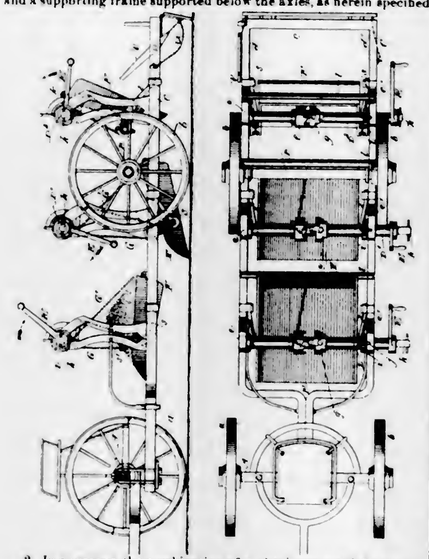
5. In a car-coupler, the combination with a drawhead of a coupler having its end pivotally connected to the side of the drawhead, a lever fulcrumed on the end of the car for lifting the same into coupling position, and a holding lever having a horizontal arm capable of being projected beyond the end of the car to engage a device on the lifting lever, said draw-head being provided with a rigid, laterally projecting arm the end of which lies in a loop on the holding lever, substantially as described.

6. In a car-coupler, the combination with a drawhead of a coupler pivotally connected to one side of said drawhead, a lifting lever fulcrumed on the end of the car and linked to the coupler and a holding lever fulcrumed beneath the end of the car and having a forwardly projecting horizontal arm and a rearwardly projecting loop receiving the end of a rigid arm on the drawhead, substantially as described.

## 529,925. SCRAPER. JOHN D. LIBEY, Lima, Ind. Filed May 31, 1894. Serial No. 513,087. (No model.)



*Claim.*—1. A scraper, supported on wheels, and provided with a movable link constituting an adjustable fulcrum, a fixed rear fulcrum for the scraper and hooks attached to the scraper, for engaging the same, mechanism for raising, lowering and tilting the scraper, and a supporting frame supported below the axles, as herein specified

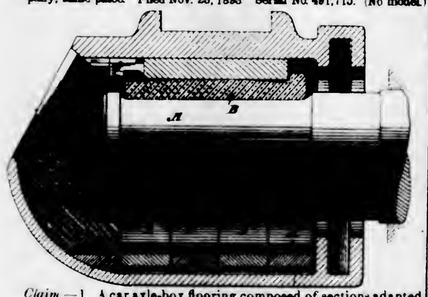


2. In a scraper, the combination of a wheel-supported frame provided with standards, a scraper pivotally connected with the frame, and a double windlass formed of two parts constructed for joint or separate action and constructed to raise the front or rear of the scraper, and a scraper-supporting-frame suspended below the axles substantially as specified.

3. In a scraper, the combination, of the wheel-supported frame C provided with the standards *c c'*, the shaft D journaled in the standards, the scraper F and links *s* connecting the same with the frame C, the loose collar *f* and means for connecting the collar with the shaft D, the chain G' connecting the collar *f* and the rear end of the scraper, and the chain G connecting the front of the scraper with the shaft D, substantially as specified.

4. The combination, with the frame C provided with adjustable scrapers F, of the hinged leveling board H, and lever *b* for operating the same, substantially as specified.

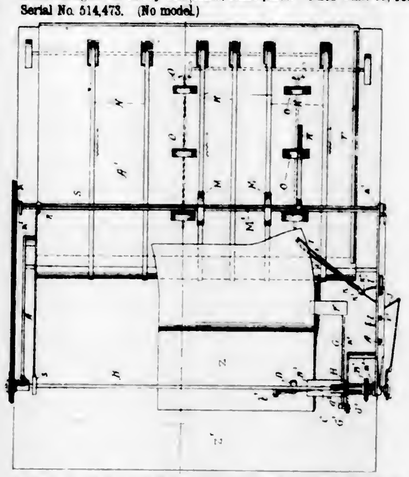
## 529,926. FLOOR FOR CAR-AXLE BOXES. ABRAHAM LICHTENHEIN, New York, N. Y., assignor to the Dreher Manufacturing Company, same place. Filed Nov. 23, 1893. Serial No. 491,715. (No model.)



*Claim.*—1. A car axle-box flooring composed of sections adapted to be inserted in the box beneath the car-axle journal, said sections being shaped to reduce space for packing and lubricant and prevent the packing from settling away from the journal, substantially as described.

2. A car axle box flooring adapted to be inserted into the box beneath the car axle journal, said flooring being provided with grooves or runways for the passage of the lubricating oil from the front to the rear of the car axle-box, substantially as described.

## 529,927. PAPER-FEEDING MACHINE. NICHOLAS LUX, Topeka, Kans., assignor to Harry Bradshaw, same place. Filed June 13, 1894. Serial No. 514,473. (No model.)



*Claim.*—1. In a paper feeding machine, the combination with a suitable frame and driving mechanism of a rotating sheet-detaching arm, an oscillating two-part grip fork and sheet-carrier, means for opening said fork as it approaches the limit of its movement in each direction, and for holding it closed at other times, the endless moving tapes, the revolving wheels over the rear portion of the feed board, the friction wheels or rollers turning at right angles to said tape, the edge guide and the oscillating finger for holding the sheet to said friction wheels or rollers, substantially as specified.

2. In a paper feeding machine, the combination with the loosely jointed frame, the shoe D' thereon, and the counterbalancing arm and weight, of the main driving shaft, the rotating sheet detaching arm actuated from said main shaft, the oscillating two part grip fork and its operating devices, the endless moving tapes, the revolving wheels or rollers over the rear portion of the feed board, the friction wheels turning at right angles to said tapes, and the edge guide, substantially as specified.

3. In a paper-feeding machine the combination with the jointed frame having the shoe D' and the main driving shaft of the shoe F, the rock-shaft carrying said shoe, the compound lever connected to the said rock-shaft and having an arm pivoted to the frame, a cam on said driving shaft traveling in contact with said arm, the rotating sheet detaching arm for withdrawing the sheets from the shoe D', and the oscillating grip fork and sheet carrier substantially as specified.

4. In a paper-feeding machine, the combination of a rotating sheet-detaching arm, an oscillating grip fork and sheet carrier, a stationary shoe, a rocking shoe, a feed board, a series of endless moving tapes, revolving wheels driven by contact with said tapes, a series of friction wheels or rollers turning at right angles to said tapes, an edge guide, and an oscillating finger for holding the sheet to said wheels, substantially as specified.

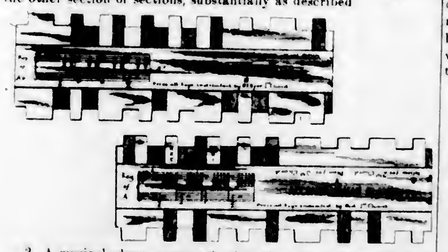
5. In a paper feeding attachment, the combination with the jointed shaft C, its sheet detaching arm and crank, of a rock shaft, a pitman connection between said crank and rock shaft, a sheet carrier and grip fork carried by the said rock shaft, said fork having a stationary arm or prong *k* provided with a loose sleeve which carries a pinion, and a movable prong attached to said sleeve, means for actuating said pinion at the proper times, and a spring for normally holding the prongs closed upon each other, substantially as specified.

6. In a paper feeding machine, the oscillating grip fork and sheet carrier, comprising a fixed prong *k*, a sleeve K loosely journaled thereon and carrying a pinion, a movable prong attached to said sleeve, a spring for normally holding said movable prong closed, and stationary racks arranged to be engaged by said pinion as the fork approaches each limit of its movement, substantially as specified.

## 529,928. ACCOMPANIMENT-PLAYER FOR MUSICAL INSTRUMENTS. ROBERT W. LYLE, Woodbridge, N. J. Filed Jan. 8, 1894. Serial No. 496,218. (No model.)

*Claim.*—1. A musical chart composed of sections hinged together and adapted to be folded back upon one another, said sections having notches on their upper and lower edges to fit over the upper keys

of a piano or organ and having, adjacent to said notches suitable index characters indicating the keys to be struck, the characters to be played by the right and left hands being on different sections, the notches in one section when the sections are folded, registering with the other section or sections, substantially as described



2. A musical chart composed of sections hinged togther and adapted to be folded back upon one another in both a horizontal and a vertical direction, and provided with characters indicating the keys to be struck by both hands, the characters to be played by the two hands being arranged upon separate sections, substantially as described

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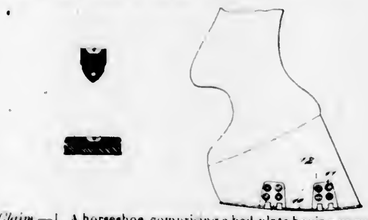
529,929. FLOOR-SET. NATHANIEL B. MARSTON, Lebanon, N. H. Filed Apr. 12, 1894. Serial No. 507,249. (No model.)



*Claim.*—The combination with the frame raised at the center, as shown, of the transverse pin passing through said elevated portion, a double spur attached to the outer ends of said pin and falling on both sides of the frame, a forked lever fulcrumed on said pin within the frame and having between its forks a loose pawl operated by a rod, a toothed wheel and a circular ratchet both mounted on said pin within said lever forks, a spring pawl engaging with said ratchet, and the hollow, sliding bar having a pivoted head at the outer end, a serrated portion on its upper surface gearing with the toothed wheel, and a retracting spring in the hollow portion, as set forth.

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529,930. HORSESHOE. JAMES MASLEN, New York, N. Y. Filed Mar. 17, 1894. Serial No. 503,986. (No model.)



*Claim.*—1. A horseshoe, comprising a bed-plate having upwardly-extending perforated flanges hinged thereon, substantially as specified.

2. The combination with the bed-plate, of a detachable sole thereon, removable calks, and fastening screws extending through the bed-plate and sole and into the calks, substantially as specified.

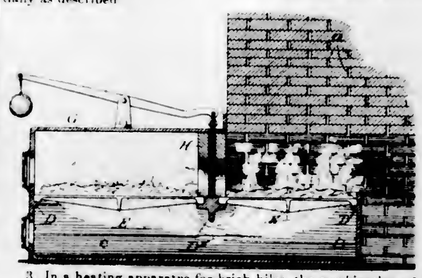
3. A horseshoe comprising the metallic bed plate to fit the hoof and provided with counter-sunk screw holes, the sole formed of yielding material having dovetail or undercut recesses in its upper face, dovetail nuts in the said recesses and flush with the upper face of the sole, and screws passed down through the apertures in the bed plate into the said nuts, substantially as shown and described.

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529,931. FURNACE FOR BRICK-KILNS. BENJAMIN W. MAY, Chicago, Ill., assignor of one-half to Charles Bonner, same place. Filed Feb. 1, 1894. Serial No. 498,704. (No model.)

*Claim.*—1. In a heating apparatus for brick kilns, the combination of a furnace having a primary chamber in which fuel is partially consumed a secondary chamber in which the combustion of the fuel is completed, a bridge wall separating such chambers, and a door in such bridge wall through which fuel may be pushed, substantially as described.

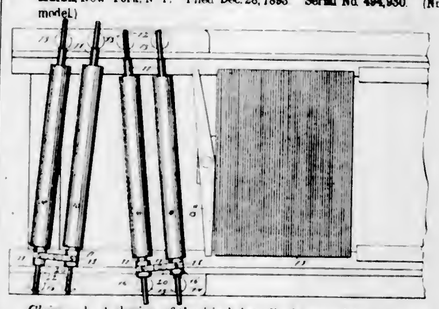
2. In a heating apparatus for brick kilns, the combination of a furnace having a primary combustion chamber for partially burning fuel provided with a door arranged above the point of burning fuel for the admission of air, &c., a secondary combustion chamber for completing the combustion of fuel and having its opening for the admission of air and products of combustion below the point of combustion, a bridge wall separating such chambers, and a door in said wall through which partially consumed fuel may be passed, substantially as described



3. In a heating apparatus for brick kilns, the combination of a furnace having a primary down-draft combustion chamber for partially burning the fuel, a door in such chamber for the admission of air and fuel, a second up-draft combustion chamber in which the combustion of the fuel is completed, a bridge wall separating such chambers, a door in such wall through which the partially burned fuel is passed, means for opening and closing such door, an ash pit beneath such chambers through which the first products of combustion pass, and a door in the wall of such pit for the admission of air or removal of ashes, substantially as described.

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529,932. BRAKE ATTACHMENT FOR INK-ROLLERS. EMIL MEIER, New York, N. Y. Filed Dec. 28, 1893. Serial No. 494,930. (No model.)



*Claim.*—1. A device of the kind described, comprising opposite plates a spring for pressing the plates together, and shoes longitudinally adjustable on the plates and adapted to clasp parallel shafts, substantially as described.

2. A device of the kind described, comprising an upper and lower plate, the upper plate having a depending middle bend, a spring-pressed bolt secured to the lower plate and slidable in the bend of the upper plate, and brake shoes carried near the ends of the two plates and adapted to clasp parallel shafts, substantially as described.

3. A device of the kind described, comprising opposite plates, a spring for pressing the plates together, and shoes carried by the plates and adapted to clasp parallel shafts, one shoe of each pair being longer than the other, substantially as described

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529,933. ROPE-CLAMP. GREGORY M. MULLEN, Baltimore, Md. Filed July 25, 1894. Serial No. 518,516. (No model.)



*Claim.*—1. In a rope clamp a clamping section provided with jaws, and having the space between said jaws tapered or flared laterally and a compressor substantially as set forth.



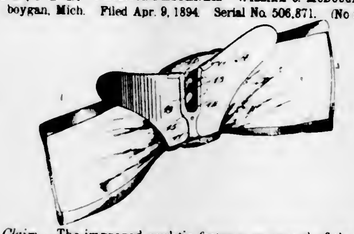
2. A rope clamp composed of a clamp section having integral jaws the inner faces of which are formed at angles inclining laterally whereby the space between said jaws is tapered laterally whereby the rope may be pressed laterally between said jaws, and a compressor upon said jaws, substantially as set forth.

3. In a rope clamp the combination of the clamping section having the jaws serrated or toothed on their inner sides and threaded on their outer sides and having the space between said jaws tapered or flared laterally and the case threaded on said jaws and made of such length as to inclose said jaws and the portion of the rope held therebetween substantially as set forth.

4. The improved rope clamp substantially as herein described consisting of the clamping section having the head, the jaws extended therefrom threaded externally and having the space between said jaws tapered or flared laterally and the case section having a longitudinal threaded bore and turning upon the clamping jaws one end of said case being arranged to abut the head of the clamping section and the other end being formed with a head and having an opening for the passage of the rope substantially as and for the purposes set forth

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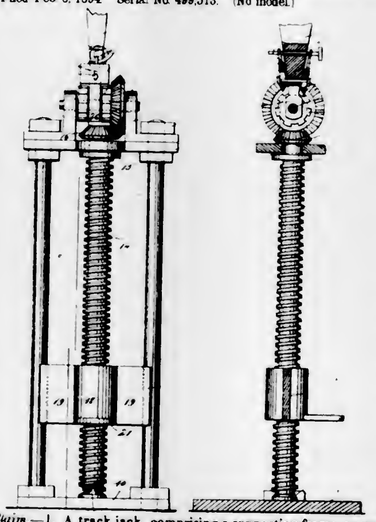
529,934. NECKTIE-FASTENER. WILLIAM C. MCDOUGALL, Cheboygan, Mich. Filed Apr. 9, 1894. Serial No. 506,871. (No model.)



*Claim.*—The improved necktie fastener composed of the slotted shield, the metal guard which is bent over the edges of the slot and secured by clips, the latch plate pivoted to both shield and guard, and the U shape spring attached to the guard and latch plate and lying flat upon the other, as shown and described.

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529,935. TRACK-JACK. JOSEPH MCMURRIN, Shoshone, Idaho. Filed Feb. 8, 1894. Serial No. 499,513. (No model.)



*Claim.*—1. A track jack, comprising a supporting frame, a revoluble screw arranged vertically therein, a lifting sleeve carried by the screw, and a vertically swinging lever mounted above the screw and operatively connected therewith to turn it, substantially as described.

2. A track jack, comprising a supporting frame, a vertical screw thereon, a lifting sleeve carried by the screw, gearing connecting with the screw, a ratchet arranged horizontally on a gear shaft, and a pawl lever fulcrumed on said shaft and adapted to oscillate vertically, to operate the ratchet, substantially as described.

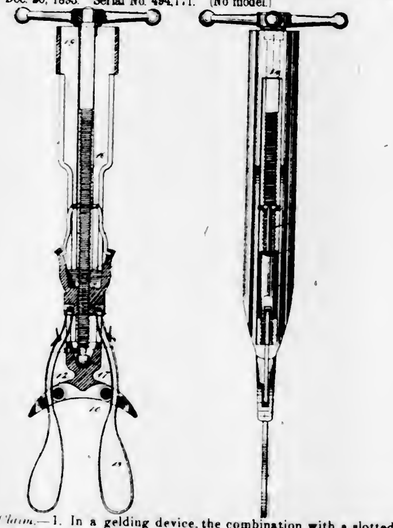
3. A track jack, comprising a suitable frame, a vertical screw therein having a pinion at its upper end, a lifting sleeve carried by the screw, a shaft journaled transversely to the screw, a ratchet and gear connection between the shaft and the pinion on the screw, and a lever fulcrumed on the shaft and adapted to turn the gear mechanism thereon, substantially as described.

4. A track jack, comprising a supporting frame, a screw shaft arranged vertically therein, a lifting sleeve carried by the shaft, a pinion on the upper end of the screw, a shaft journaled above the pinion, a gear wheel on the shaft to engage the pinion, a pair of ratchet wheels on the shaft, a lever fulcrumed on the shaft between the ratchet wheels, and pawls above and below the lever to alternately engage the ratchet wheels, substantially as described.

5. The combination, with the supporting frame, the lifting screw, the shaft journaled above the screw and geared thereto and the ratchet wheels on the shaft, of the lever fulcrumed on the shaft between the ratchet wheels, the pawls slidably mounted above and below the lever to engage the ratchet wheels, a revoluble bolt adjacent to the pawls, and means, as the spring cams, for oppositely sliding the pawls by the movement of the bolt, substantially as described

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529,936. ECRASEUR. MICHEAL MCNALLEY, St. Louis, Mo. Filed Dec. 20, 1893. Serial No. 494,171. (No model.)



*Claim.*—1. In a gelding device, the combination with a slotted casing, and a screw stem held to revolve in the casing, of two jaws pivoted together, each jaw consisting of a body section having its inner face threaded and a wing section projecting out through the slots of the casing, a spring encircling the screw stem and having its ends engaging the wings of the jaws, and ligatures, one attached to each jaw, substantially as described.

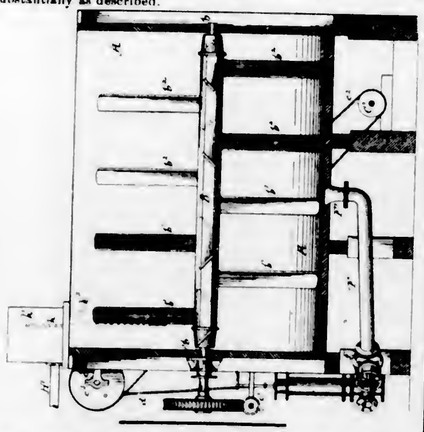
2. In a gelding device, the combination with a slotted casing provided at its lower end with a shoe projecting from opposite sides thereof and having openings therein, and a screw stem held to revolve in the casing, of two pivoted jaws held to slide in the casing, each jaw consisting of a body section having its inner face threaded and a wing section projecting through the slots of the casing, a spring for holding the body sections of the jaws in engagement with the screw stem, and ligatures, one secured to each jaw and projecting through the openings of the shoe, substantially as described.

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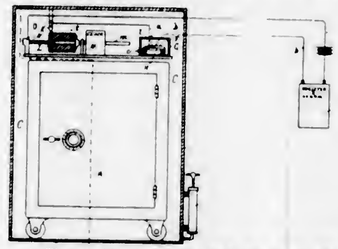
529,937. STUFF-CHEST AND BLEACHER. GEORGE M. NEWHALL, Philadelphia, Pa. Filed Nov. 6, 1893. Serial No. 490,140. (No model.)

*Claim.*—1. The combination of the chest, the shaft therein, blades on said shaft, the blades on one end of said shaft being inclined in one direction and the blades on the other end of the shaft being inclined in the opposite direction so as to carry the material from the ends of the chest toward the center, a discharge pipe communicating with the bottom of the chest, a pump, a receiving box above the chest, a partition in said receiving box to keep the pulp therein at the proper level, said receiving box having a discharge pipe and an overflow return to the chest, substantially as described.

2. The combination of the two chests situated side by side, a horizontal shaft in each chest, blades on each shaft, the blades on one end of each shaft being inclined in one direction, the blades on the other end of each shaft being inclined in the opposite direction, central discharge opening in each chest, discharge pipes, a pump and a receiving box mounted above the chest and communicating with the pump, substantially as described.



529,938. ELECTRICAL RECORDING DEVICE FOR SAFES. ROBERT A. NEWLYN, Cincinnati, Ohio, assignor of one-half to Geo. W. Hart and Agnes H. Boylan, same place. Filed Apr. 28, 1894. Serial No. 509,413. (No model.)



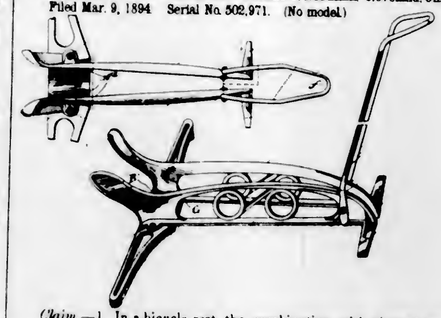
*Claim.*—1. The combination with a safe, and an air tight safe protecting compartment, of a pressure-gage located in said compartment and having a rotary pointer, a fixed terminal adjacent to but insulated from the gage and with which the pointer is adapted to come in contact, an electric circuit connected with said pointer and fixed terminal, a clock controlled circuit making and breaking mechanism located in the same circuit and within the safe compartment, an alarm located in said circuit outside the safe protecting compartment, and means for changing the normal pressure of air in said compartment, substantially as described.

2. The combination with a safe, an air tight safe protecting compartment, and an electric circuit, of a circuit making and breaking pressure-gage located in said compartment, the spring terminal K, the rotary and longitudinally movable drum I, actuated by clock-work mechanism and having teeth *t* adapted to make and break contact with said spring terminal, a register alarm located in the circuit outside the safe protecting compartment, and means for changing the normal pressure of air in said compartment, substantially as described.

3. The combination with a safe, and an air-tight safe protecting compartment, of a pressure gage located in said compartment and provided with a movable pointer, a fixed terminal with which the pointer is adapted to come in contact, an electric circuit established through the said pointer and terminal, clock-controlled circuit making and breaking mechanism located in the same circuit and within the safe protecting compartment, a register alarm located in the circuit outside said compartment, and means for changing the normal pressure of air in said compartment, substantially as described.

4. The combination with a safe, an air-tight compartment inclosing the safe, means for changing the pressure within said compartment, an electric circuit, and one or more register alarms located in said circuit outside the safe inclosing compartment, of a pressure-gage located in the electric circuit within said compartment and provided with a rotary circuit making and breaking pointer actuated by change of pressure, and an automatic clock-controlled circuit making and breaking mechanism located within the safe inclosing compartment and in the same circuit with the pressure gage and the register alarm, substantially as described.

529,939. BICYCLE-REST. ROBERT J. NODERER, Cleveland, Ohio. Filed Mar. 9, 1894. Serial No. 502,971. (No model.)



*Claim.*—1. In a bicycle rest, the combination with pivoted automatically adjustable jaws and floor plate of a spring back rest removably secured to said jaws, substantially as described.

2. In a bicycle rest, the combination with automatically adjustable jaws and a spring back rest removably secured thereto, of a floor plate to which said jaws are pivotally attached, substantially as described.

3. In a bicycle rest, the combination with a floor plate provided with transverse depressions, of jaws pivoted thereto intermediate of their length, and provided with projecting edges normally resting at the lowest part of said depressions in the floor plate, and a spring back rest removably secured to the rear extremities of said jaws substantially as described.

4. In a bicycle rest, the combination with a floor plate provided with transverse depressions H, and front incline B, of jaws pivotally secured to said floor plate intermediate of their length, provided with rounded bearing edges resting in said depressions and outwardly turned front extensions, and a spring back rest removably secured to the rear extensions of the jaws, adapted to automatically close said jaws when opened and to operate in connection with said depressions in the floor plate substantially as set forth.

529,940. LOOM. JAMES H. NORTHROP, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Dec. 12, 1891. Serial No. 414,331. (No model.)

*Brief.*—An improvement on the loom shown by Patent No. 454,810, June 23, 1891. A rotatable bobbin-feeder holding both ends of the bobbins is employed and the loose ends of the wefts on the bobbins are held on the projecting end of the bobbin-feeder shaft. A device engaging a notch in the side of the open shuttle insures the positioning of the shuttle to receive a fresh bobbin from the feeder. The pusher acts upon both ends of the fresh bobbin, and a deflector-plate insures the proper ejection of the spent bobbin. A weft-parter cuts the loose end of the weft between the weft-end holder and the selvage after the bobbin has been placed in the shuttle. The loom stops only upon the failure of the weft after two successive picks in the same direction, the absence of the weft upon the first pick causing the pusher to carry a fresh bobbin from the feeder into the shuttle, and also positioning devices which stop the loom upon the next pick in the same direction should the said fresh bobbin fail to leave a weft.

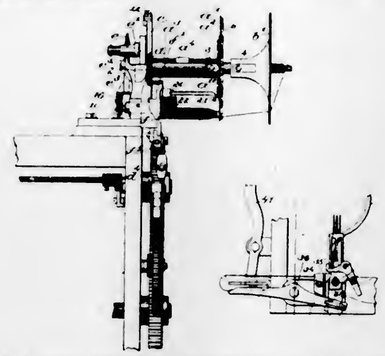
*Claim.*—1. A loom containing the following instrumentalities, viz.: a lay; a shuttle box; a shuttle slotted for the passage through it of a bobbin; a pusher; a bobbin feeder having means to engage and positively hold both ends of a series of bobbins arranged parallel each to the other; and actuating mechanism for both the said pusher and the said feeder, whereby the latter is moved intermittently to bring one bobbin after another of the series of bobbins into position between the pusher and the shuttle box and the pusher is made to transfer said bobbins one after another from said feeder into the shuttle in said shuttle box; substantially as described.

2. The lay; its shuttle-box, and pusher, combined with a rotatable bobbin-feeder; a ratchet mechanism; and means to actuate the ratchet mechanism to rotate the bobbin-feeder at the proper time in the direction to feed a bobbin into position with relation to the pusher, substantially as described.

3. A rotatable bobbin-feeder having pockets or notches for the heads of a series of bobbins, combined with a guard to prevent the escape of the bobbins from said feeder except at the proper point where the guard is omitted, substantially as described.

4. A rotatable bobbin-feeder having a series of pockets or notches to receive the heads of a series of bobbins, combined with a stop against which the bobbin next to be removed from said bobbin-feeder is held, substantially as described





5. A movable bobbin-feeder, consisting of a plate having a series of pockets or notches to receive the heads of a series of bobbins, and a plate having a series of holders for the tips of the bobbins, substantially as described.

6. A circularly-moving bobbin feeder adapted to receive the heads and tips of a series of bobbins, combined with a circularly-moving weft-end-support, to operate substantially as described.

7. A circularly-moving bobbin-feeder adapted to receive the heads and tips of a series of bobbins, combined with a pusher adapted to act on the head and on the tip of the bobbin to thus eject the bobbin from the bobbin-feeder, substantially as described.

8. A circularly moving bobbin-feeder, a pusher, and actuating means therefor, combined with a locking device for said feeder to restrain its rotation while the pusher is acting to eject a bobbin from the bobbin-feeder, substantially as described.

9. In a loom for automatically supplying a shuttle with a bobbin, a lay having a shuttle open for the passage of a bobbin through it, a circularly-movable bobbin-feeder having a ratchet, a pawl, a pawl carrier; the lay to move the pawl-carrier in one direction; a spring to move the pawl-carrier in the opposite direction; and a device to prevent retrograde motion of the bobbin-feeder, the combination being and operating substantially as described.

10. In a loom, a lay; its shuttle-box; a weft-parter carried by the lay; a rock shaft carried by the lay and having a finger to engage said weft parter; and means between said rock-shaft and the shuttle-box to open and close the said thread-parter, for the purpose set forth.

11. In a loom in which the shuttle is adapted to be supplied with a bobbin without stopping the loom the following instrumentalities, viz —a shuttle provided with a shoulder and open for the passage through it of a bobbin a lay having a shuttle-box slotted for the passage through it of a bobbin ejected from the shuttle and having one of its side walls slotted; a pusher; devices to actuate it; and a bobbin feeder: combined with a positioning device adapted to enter the slot in the shuttle-box and act against the shoulder of the shuttle and move the latter outwardly in the shuttle-box just prior to the action of the pusher, provided the shuttle is not in correct position under the pusher as it is about to remove a bobbin from said bobbin-feeder into the shuttle, substantially as described.

12. The lay; its shuttle-box; a shuttle provided at one side with a shoulder; a lever pivoted on the said lay; and a dagger to act on the said lever when the weft fails, combined with a finger or arm pivoted on the said lever, and adapted to extend into the shuttle-box and engage a shoulder in the said shuttle; and a spring to normally keep the said finger pressed toward the said shuttle-box and shuttle, substantially as described.

13. In a loom the following instrumentalities, viz:—a shipper handle; a holding device therefor; a weft fork; its carrying slide, a trigger mounted thereon; devices to reciprocate said carrying slide; a trigger actuating device to act against and position said trigger upon a first failure of weft at the weft fork, and a knock-off lever adapted to be acted upon by the positioned trigger on a second failure of weft at the weft fork, substantially as described.

14. In a loom the following instrumentalities, viz:—a shipper handle; a holding device therefor; a weft fork having a tail-piece, a weft fork carrying slide; a trigger movable therewith; a trigger actuating device to act against and position the trigger upon a first failure of weft at the weft fork; a knock off lever adapted to be turned by the action of the positioned trigger on a second failure of weft at the weft fork; and a weft hammer adapted to engage the weft-fork tail-piece when not tilted to thus move the weft-fork-carrying slide and to also act to restore the trigger into its first normal position when the weft-fork is tilted by weft as the weft-hammer is being moved toward the breast-beam, substantially as described.

15. In a loom for automatically supplying a shuttle with a bobbin while in the shuttle-box, the following instrumentalities, viz:—a knock-off lever; a lay having a shuttle-box; a pusher to act upon and put a bobbin into the shuttle in the shuttle-box, and a weft-fork and co operating devices adapted at one backward movement of the weft-fork toward the front of the loom to insure the action of the pusher, and at the next movement of the lay in case the weft fails to lift the weft fork to move the knock-off lever preparatory to stopping the loom, substantially as described.

16. In a loom adapted to automatically supply a shuttle with a bobbin, the following instrumentalities, viz:—a lay having a shuttle-box provided with an opening for the discharge of a bobbin from the shuttle therein; a shuttle slotted to permit a bobbin to be passed through it while in the shuttle-box; a pusher to push a bobbin into the shuttle; a trip co-operating with the pusher and adapted to be engaged to actuate the pusher by or through the movement of the lay toward the breast beam, a rock shaft; a weft fork; a weft fork slide, means to move said slide; a trigger co-operating with said slide; a trigger moving device; and connecting devices between said weft fork slide and said rock-shaft, and between said rock-shaft and said trip, whereby at the first outward movement of the weft fork slide after the failure of weft to tilt the weft fork, the said catch will be lifted and the said rock-shaft will be turned to put the trip in position to be struck and actuate the pusher, substantially as described.

17. In a loom adapted to automatically supply a shuttle with a bobbin, the following instrumentalities, viz:—a lay having a shuttle-box provided with an opening for the discharge of a bobbin from the shuttle therein; a shuttle slotted to permit a bobbin to be pushed through it while in the shuttle box; a pusher to push a bobbin into the shuttle, a trip co-operating with said pusher and adapted to be moved by or through the movement of the lay toward the breast-beam, a knock-off lever; a weft fork, its carrying slide, means to move said slide, a trigger mounted on said slide and movable therewith toward and from said knock-off lever, a device to positively move said trigger on said slide; a rock-shaft, connecting devices between said slide and said rock-shaft, and between said rock-shaft and said trip, whereby at the first outward movement of the weft fork slide after the failure of the weft to tilt the weft fork, the said trigger will be turned without causing the knock-off lever to be moved to stop the loom, the said slide in its said movement effecting the rocking of the said rock-shaft sufficiently to cause it by its connections with said trip to put it in operative position to be struck a blow to move the pusher, and whereby at a second outward movement of said weft fork slide by the absence of the weft as stated, the said trigger is made to act and move the knock off lever to effect the release of the knock-off lever and the stopping of the loom, substantially as described.

18. In a loom, a pusher adapted to push a bobbin into a shuttle and cause the incoming bobbin to eject the spent bobbin from the shuttle; a lay; and its shuttle box slotted for the discharge through it of the spent bobbin; and a connected deflector to insure the ejection of the spent bobbin point first, substantially as described.

19. In a loom the following instrumentalities, viz:—a lay its shuttle box, a shuttle, a circularly-moving feeder having a series of bobbin supports therein for the opposite ends of the bobbins, leaving the bobbins between their ends exposed to be acted upon by a pusher; and a pusher arranged between the axis of rotation of the said bobbin-feeder and the said shuttle in the shuttle-box of the lay, whereby the bobbins are removed radially from the bobbin-feeder and into a shuttle, substantially as described.

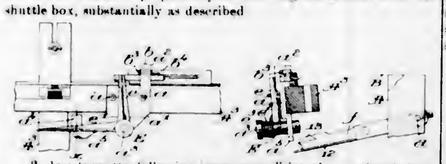
20. A rotatable bobbin feeder provided with means to hold in place independent one of another a series of bobbins, and a rotatable weft end support, combined with a weft end holder located near the center of rotation of said feeder, substantially as described.

529,941. LOOM. JAMES H. NORTHROP, Hopedale, Mass., assignor to the Northrop Loom Company, same place and Saco, Me. Filed Oct. 19, 1893. Serial No. 488,639. (No model.)

*Brief.*—The invention relates to the continuously-operating loom shown by Patent No. 454,810, June 23, 1891, and resides in devices for retaining the open shuttle in position to receive a new filling carrier. The shuttle is released from the retaining devices just before being picked out of the box.

*Claim.*—1. A shuttle provided with a notch; a lay having a shuttle box to receive said shuttle and having also a slot at its side; and an arresting device attached to the lay and adapted to be thrust into the slot in the side of the shuttle box to engage the notch of the shut-

tle, prevent its rebound and insure proper position of the shuttle; combined with a spring to actuate said arresting device and cause it to enter the notch in the shuttle as the latter fully enters the shuttle box, and devices to remove the end of said arresting device from the notch in the shuttle preparatory to throwing the shuttle from the shuttle box, substantially as described



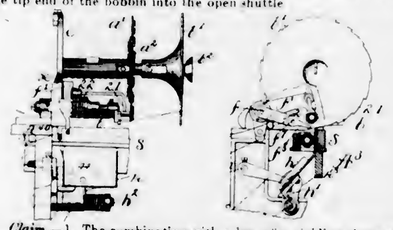
2. In a loom the following instrumentalities, viz.:—a shuttle having a notch in its side, the lay, a pivoted shuttle-arresting device carried thereby and adapted to enter the shuttle-box and engage said notch when the filling is absent from the shed, a lever also carried by the lay and co-operating with one end of the arresting device to permit the latter to turn about its pivot and enter the shuttle-box, and a dagger to move said lever, substantially as described.

3. The lay having a stand provided with a wedge piece, a pivoted shuttle-arresting lever, and a lever carried by the lay and having its end arranged adjacent to the wedge piece and beveled to bear against the arresting lever, combined with a dagger having a wedge block to pass over and then under the wedge piece, as and for the purposes set forth.

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529,942. LOOM. JAMES H. NORTHROP, Hopedale, Mass., assignor to the Northrop Loom Company, same place and Saco, Me. Filed Oct. 24, 1893. Serial No. 489,009. (No model.)

*Brief.*—The invention relates to the continuously-operating loom shown by Patent No. 454,810, June 23, 1891, and resides in a yielding chute adapted to conduct a spent bobbin away from the shuttle-box when ejected by a full bobbin under the action of the pusher. The pusher is provided with a yielding finger, which properly guides the tip end of the bobbin into the open shuttle



*Claim.*—1. The combination with a lay, of a yielding chute, and a support therefor entirely independent of said lay, and devices to put said chute in position with relation to the lay to conduct a bobbin away from the shuttle-box, substantially as described.

2. The combination with a lay having an open shuttle-box for the discharge through it of a bobbin, of a rod under the control of a weft fork, a chute, and connecting devices between it and said rod, whereby when the weft fails the said chute will be put into position to conduct a bobbin away from the said shuttle-box, substantially as described.

3. The combination with the lay having an open shuttle box for the discharge of a bobbin, and mechanism under the control of a weft fork, of a movable chute supported independently of the lay, and devices between said chute and said mechanism to automatically put the said chute into position to conduct a bobbin away from the lay, substantially as described.

4. The lay having an open shuttle-box for the discharge of a bobbin combined with a pivoted chute, a cam slotted arm, and devices co-operating with said arm to turn said chute about its pivot, substantially as described.

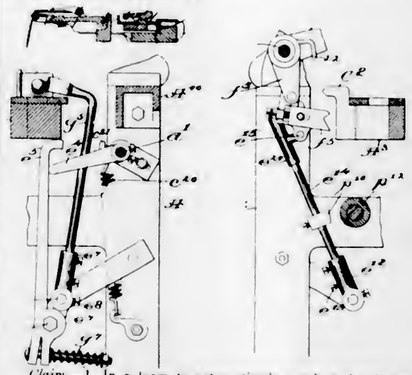
5. The combination with a lay having a shuttle-box open for the discharge of a bobbin of a yielding chute supported independently of the lay and adapted to be moved by the lay for a part only of its forward stroke, substantially as described.

6. The combination with a bobbin holder, and a co-operating pusher to transfer a bobbin from the holder into a shuttle, of a yielding support or finger adapted to enter the shuttle chamber and lie under and guide the tip end of the bobbin into position in the said shuttle chamber, substantially as described.

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529,943. LOOM. JAMES H. NORTHROP, Hopedale, Mass., assignor to the Northrop Loom Company, same place and Saco, Me. Filed Nov. 6, 1893. Serial No. 490,078. (No model.)

*Brief.*—An improvement on the loom shown and described in Patent No. 454,810, June 23, 1891. The first failure of weft actuates devices which cause the pusher to carry a fresh bobbin from the bobbin-holder into the open shuttle, and also positions devices which operate to stop the loom should the next pick of the shuttle, in the same direction fail to leave a weft. A feeler co-operating with the shuttle renders the pusher inoperative when the shuttle is not in position to receive a fresh bobbin.



*Claim.*—1. In a loom to automatically supply a shuttle with a bobbin while the shuttle is in the shuttle-box, the following instrumentalities, viz:—a lay having its shuttle-box slotted for the passage through it of a bobbin, a shuttle slotted for the passage through it of a bobbin, a bobbin pusher, a hunter, a co-operating dog, and stop motion devices co-operating with said shuttle to put the dog into its inoperative position when the shuttle to be supplied with a bobbin is not in proper position in the shuttle-box, substantially as described.

2. In a loom for automatically supplying a shuttle with filling while the latter is in the shuttle-box, the following instrumentalities, viz:—a weft fork; its slide; a bobbin-pusher; a lay having a shuttle-box provided with a slot for the passage outwardly therethrough of a bobbin; a bunter; a dog interposed between said pusher and bunter; connecting devices between said dog and said slide to insure a movement of the pusher when the shuttle is in proper position in the shuttle-box and weft is not presented to the weft fork, substantially as described

3. The rock-shaft $d^7$, its arm $c^4$, the lay having a shuttle box slotted for the outward passage of a bobbin or cop; a shuttle likewise slotted; a pusher to put a bobbin into said shuttle when in said shuttle-box; a dog co-operating with said pusher, a rock-shaft $c^3$, and connections between it and said dog, combined with an arm or shuttle-feeler yieldingly mounted with relation to said rock shaft $c^3$ and actuated in one direction by said arm $c^4$ and adapted to meet a shuttle whereby the operation of the pusher is suspended in case the shuttle is not in proper position in the shuttle-box to receive within it a bobbin, substantially as described.

4. The weft fork slide, its pivoted weft fork, the pivoted catch, a shipper handle adapted to be operated thereby the movable wedge-bar to turn the catch, and a stand in which said slide is reciprocated, combined with a weft hammer having a connected hook, the combination being and operating substantially as described.

5. A weft fork, a weft fork slide, its guiding stand, a check co-operating with said fork, and a weft hammer having a connected hook; combined with a support for said hook to operate, substantially as described.

6. In a loom adapted to automatically supply a shuttle with weft, the following instrumentalities, viz;—a lay having a shuttle box slotted for the discharge of a bobbin or cop, a shuttle slotted for the discharge through it of a bobbin, and a pusher to push a bobbin or cop into said shuttle, and a detector mechanism operating in connection with the pusher to render the latter inoperative when the shuttle is not in proper position to receive a supply of weft, substantially as described

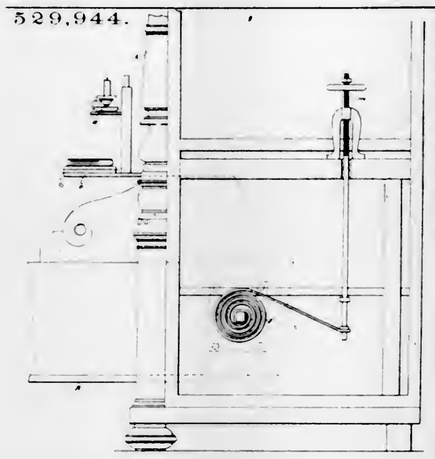
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529,944. FOLDING BED. TRAUGOTT OPEL, Halle-on-the-Saale, Germany. Filed May 13, 1892. Serial No. 432,918. (No model.)

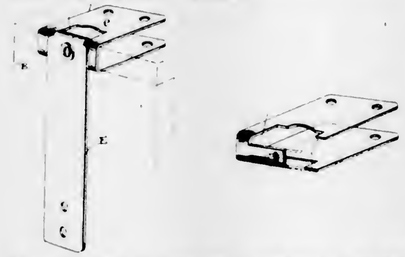
*Claim.*—In a combined wardrobe and bedstead, the wardrobe casing and a bedstead journaled therein upon an axis, on which it is adapted to be swung into and out of the casing, a spring coiled on the axis and rigidly attached thereto at one end, and a vertically movable spindle having a seat provided at its lower end in which rests the free end of the spring, and a hand wheel on said spindle for regulating the tension of said spring, substantially as described.



529,944.



529,945. SEAL-LOCK. WILLIAM ORR, Columbus, Ohio. Filed June 5, 1894. Serial No. 513,552. (No model.)

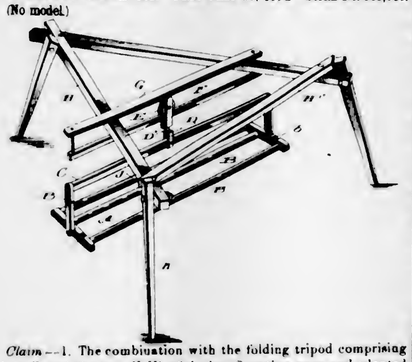


*Claim.*—1. A seal lock comprising a plate secured to one member of the box or similar receptacle, the said plate having an opening for the jaw of a compressing instrument, a clasp adapted to engage the said plate, the plate and clasp having registering openings, and a rivet passing through the said registering openings, substantially as described.

2. A seal lock comprising a plate doubled upon itself in cross section and secured to one member of the box, one doubled portion of the said plate having an opening, a clasp secured to another member of the box and adapted to engage the edge of the said opening in the plate, a clasp and plate having registering openings, and a seal passing through the said registering openings, substantially as described.

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529,946. QUILTING-FRAME FOR SEWING-MACHINES. JAMES A. PARSONS, Quanah, Tex. Filed June 25, 1894. Serial No. 515,689. (No model.)

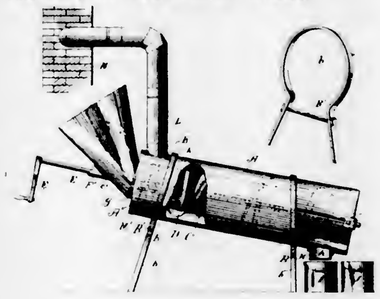


*Claim.*—1. The combination with the folding tripod comprising the legs K and the bars H H', of the bar G resting upon and adapted to slide upon the bars H and H', the track bar F connected to and parallel with the bar G, the roller E and the swivel connection D D', for supporting the quilt holding frame, as set forth.

2. A folding tripod for supporting a quilting frame for sewing machines, comprising in combination the strip H'' with beveled ends J, pivoted to an end of each of the strips H and H', the other ends of the strips H and H' adapted by means of recesses provided therein to engage each other so that their upper edges will be, when thus engaged, in the same horizontal plane, the button A, and the tripod legs K, two of which bear against the beveled ends of the strip H, substantially as shown and described.

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529,947. ASH SIFTER. FILLMORE A. PEARSONS, Rutland, Vt. Filed Feb. 19, 1894. Serial No. 500,763. (No model.)



*Claim.*—1. An improved ash sifter, comprising the inclined shell or casing having the open lower end and the opening *h*, legs or supports B B, the inclined rotary screen mounted in the casing and provided with the worm D and the longitudinal shaft E having the projecting operating end *e'*, and the hopper G provided with the neck or extension *g* entering the upper end of the screen, substantially as set forth.

2. An improved ash sifter, comprising the inclined casing or shell having the open lower end and the closed upper end and provided with the opening *k*, the inclined rotary screen mounted in the casing and provided with the spiral worm D and the longitudinal operating shaft, the hopper entering the front end of the casing and the upper end of the rotary screen, and the dust pipe L connected with the opening *k* and extending to a chimney or other suitable point, substantially as set forth

3. The herein described ash sifter, consisting of the inclined casing or shell A having the open lower end and the closed upper end and provided with the cross piece F and the openings *k* and *k*, from which respectively extend the pipe H and K; the leg pieces B B formed in a single piece comprising the central portion *b* and the divergent legs *b' b'* and provided with the securing rod or bolt B', the inclined rotary screen C mounted in the casing and provided with the spiral worm D and the longitudinal shaft E having the projecting ends *e* and *e'*, the hopper G having the neck or extension *g* entering the front end of the casing and the upper end of the screen, substantially as set forth.

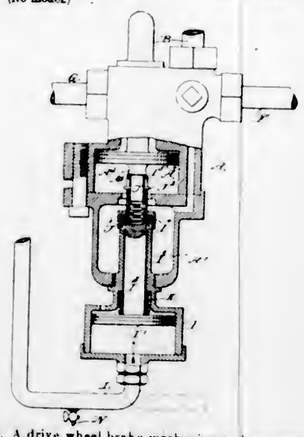
4. In an ash sifter of the class described, comprising the inclined casing or shell having an open lower end and a closed upper end, and an inclined rotary screen mounted in the casing,—a dust pipe L extending from the top of the upper closed end of the inclined casing to a chimney or other suitable point, substantially as set forth.

5. The combination, with the casing or shell, of the leg pieces B B formed in one piece and comprising a central portion *b* corresponding to and embracing the casing, divergent legs *b' b'*, and a transverse rod or bolt passing through the divergent legs at a point below the central portion, substantially as and for the purpose set forth.

6. In an ash sifter, comprising the inclined casing or shell having an open lower end and closed upper end, the inclined rotary screen mounted in the casing and provided with a longitudinal operating shaft, and the hopper having a neck or extension entering the closed front end of the casing and the upper end of the screen,—the dust pipe L extending from the top of the upper closed end of the inclined casing to a chimney or other suitable point, substantially as set forth.

7. An ash sifter having an inclined casing or shell provided with an open lower end, an inclined rotary screen mounted in longitudinal position within the casing and of less diameter than the latter and provided with an exteriorly-arranged spiral worm or fin occupying the space between the screen and the casing, and a hopper entering the upper end of the screen, substantially as set forth.

**529,948. RELEASING DEVICE FOR BRAKES OF LOCOMOTIVE DRIVE-WHEELS.** WALTER O. PELHAM, Taylor, Tex., assignor of one-half to John W. Parker, same place. Filed Apr. 17, 1894. Serial No. 507,833. (No model.)



*Claim.*—1. A drive wheel brake mechanism and connections establishing communication between the steam chest oil pipe of the locomotive engine and the triple valve of the said brake mechanism whereby the back pressure in the steam chest will actuate the said triple valve to release the brakes.

2. In a drive wheel brake mechanism the combination with a triple valve for actuating the brake mechanism of an auxiliary piston connected with the triple valve piston and the steam chest oil pipe connecting the steam chest with the said auxiliary piston to actuate the triple valve for releasing the brake mechanism substantially as shown and described.

3. An automatic drive wheel brake release provided with an auxiliary piston connected with the triple valve for the drive wheel brake mechanism, and controlled by back pressure in the steam chest of the locomotive.

4. An automatic brake-release, composed of the following parts combined substantially as shown and described; to wit, the triple-valve piston, an auxiliary cylinder and piston, the latter being arranged for acting mechanically on the triple valve piston, the locomotive steam-chest and oil-supply pipe, and a pipe connecting the latter with the auxiliary cylinder, as specified.

5. The combination with a locomotive steam-chest, triple-valve piston, and brake mechanism, of an auxiliary cylinder connected with the valve, pipes connecting the cylinder and steam-chest, and an auxiliary piston in the cylinder having a stem adapted to act on the triple valve piston, substantially as shown and described.

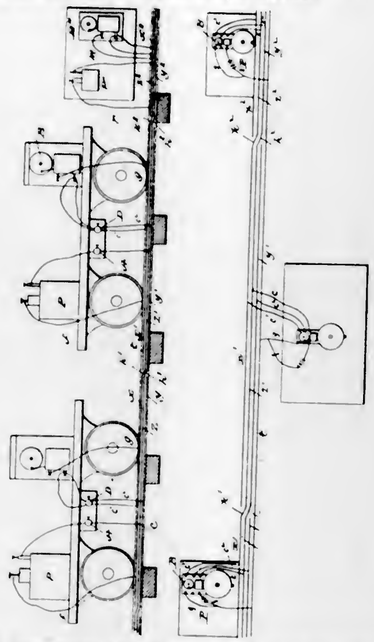
6. The combination with the locomotive triple-valve piston, the steam-chest, the oil supply pipe, and brake mechanism, of an auxiliary cylinder, an auxiliary piston arranged in the latter to act on said valve piston, and a spring acting on the auxiliary piston to return it to normal position, and a pipe connecting the auxiliary cylinder and oil-supply pipe, substantially as shown and described.

7. The combination with the locomotive triple-valve piston, the steam-chest and brake mechanism, of the auxiliary cylinder attached to and pendent from the triple valve, a pipe connection between such auxiliary cylinder and steam-chest, the auxiliary piston and its spring arranged in the auxiliary cylinder, a rod projecting from the auxiliary piston, and a spring-supported, slidable plug arranged at the upper end of said rod, for contact with the triple-valve piston, as shown and described.

**529,949. ELECTRICAL DANGER-SIGNALING SYSTEM.** WILLIAM A. PHILLIPS, U. S. Army. Filed May 29, 1893. Serial No. 475,914. (No model.)

*Claim.*—1. In an electrical signaling device for block system railways, the combination with the three parallel track conductors for each block, the central one of each block being electrically connected with one of the conductors of each adjacent block at opposite sides of said central conductor, of the conductors carried by a car, one of which is connected with a battery on the car and said central track conductor and the others connected with a bell in said car and with said side track conductors, substantially as and for the purpose specified.

2. In an electrical signaling device for block system railways, the combination with the three parallel track conductors for each block, the central one of each block being electrically connected with one of the conductors of each adjacent block at opposite sides of said central conductor, of the conductors carried by a car, one of which is connected with a battery on the car and said central track conductor and the others connected with a bell in said car and with said side track conductors, the switch board interposed between and in circuit with said battery and bell, substantially as described.



3. In an electrical signaling device for block system railways, the combination with the three parallel track conductors for each block, the central one of each block being electrically connected with one of the conductors of each adjacent block at opposite sides of said central conductor, of the conductors carried by a car, one of which is connected with a battery on the car and said central track conductor and the others connected with a bell in said car and with said side track conductors, the switch board interposed between and in circuit with said battery and bell, the conductors connected with said track conductors and leading to a station and the battery and bell connected with said station conductors, substantially as described.

4. In an electrical signaling device for block system railways, the combination with the three parallel track conductors for each block, the central one of each block being electrically connected with one of the conductors of each adjacent block at opposite sides of said central conductor, of the conductors carried by a car, one of which is connected with a battery on the car and said central track conductor and the others connected with a bell in said car and with said side track conductors, the switch board interposed between and in circuit with said battery and bell, the conductors connected with said track conductors and leading to a station, the battery and bell connected with said station conductors and a switch board interposed between and in circuit with said station battery and bell, substantially as described.

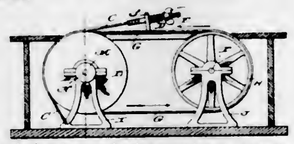
5. The combination with the electrical track conductors, of the electrical brushes carried by a car and comprising a series of pins strung upon pivoted links connected with pendent side plates, the rods pivoted to said side plates and their inner ends connected together by a swivel or turn buckle, to permit the brush to readily free itself from obstructions, substantially as described.

6. In an electrical signaling device for block system railways, the combination with the three parallel track conductors for each block, the central one of each block being electrically connected with one of the conductors of each adjacent block at opposite sides of the central conductor, the brushes carried by a car, one of which is connected with a battery on the car and with said central track conductor and the others connected with a bell in said car and with said side track conductors, of the three short conductors, electrically connected to each other, and interposed at certain points where the said track conductors are deflected for such purpose, and so arranged that when the brushes of a car pass over the same, a circuit will be established, substantially as described.

7. In an electrical signaling device for block system railways, the combination with the three parallel track conductors for each block, the central one of each block being electrically connected with one of the conductors of each adjacent block at opposite sides of the central conductor, the brushes carried by a car, one of which is connected with a battery on the car and with said central track conductor and the others connected with a bell in said car and with said side track conductors, and with a switch board interposed between and in circuit with said track conductors and thus electrically connecting them when the switch is opened to connect the main line rails to the side track rails, substantially as described.



**529,950. MACHINE FOR FORMING BUTTON-BLANKS.** EDWARD J. POPE, Eau Claire, Wis., assignor of three-fourths to the Badger Pearl Button Company, same place. Filed June 9, 1894. Serial No. 514,024. (No model.)



*Claim.*—1. In a button shaping machine, the abrading disks having their peripheral working surfaces substantially concentric, in combination with means for rotating said disks in opposite directions, and a feed mechanism which presents button-blanks to the peripheral working surfaces of both disks, substantially as and for the purposes described.

2. In a button shaping machine, the combination of abrading disks having their peripheral working surfaces substantially concentric, a feed mechanism arranged to successively present button-blanks to the peripheral working surfaces of both disks, and a pressure device to force the button blanks upon said peripheral working surfaces of the disks and arranged to recede from the disks, to permit said button blanks to be discharged after they have been operated upon by the disks, as and for the purposes described.

3. In a button shaping machine, the combination of a pair of oppositely rotating abrading disks arranged in close juxtaposition to each other and having their peripheral working surfaces substantially concentric, a feed mechanism for presenting button blanks to the peripheral working surfaces of both disks at the same time, and a pressure device for pressing the button-blanks against the working surfaces of the disks, substantially as and for the purposes described.

4. In a button shaping machine, the combination of a pair of abrading disks arranged close together and with their peripheral working surfaces substantially concentric with each other, means for driving the disks in opposite directions, and an endless feed apron or belt passing around the peripheral working surfaces of the two abrading disks and provided with button-blank pockets which are arranged to present each blank to the working surfaces of both disks at one time, substantially as described.

5. In a button shaping machine, the combination of an idler drum, a pair of oppositely rotating abrading-disks within said idler drum, and an endless feed apron which passes around said idler drum and adapted to carry button blanks to the edges of the abrading-disks, substantially as and for the purposes described.

6. In a button-shaping machine, the combination of an idler drum, abrading-disks within the same, a feed apron passing around said idler drum, and a pressure device acting against the feed apron to press the button-blanks thereon upon the edges of the abrading-disks, substantially as and for the purposes described.

7. In a button-shaping machine, the combination of an idler drum, a driving drum, an endless feed-apron passing around said driving and idler drums and provided with apertures to receive button-blanks, a set of abrading-disks arranged to act upon the button-blanks within the apertures of the feed-apron, and a pressure-band bearing against the feed-apron to press the latter and the button-blanks therein upon the abrading-disks, substantially as and for the purposes described.

8. In a button-shaping machine, the combination of the hollow-spindles carrying the members of a sectional drum, the arbors passing through the hollow spindles and each provided with a driving pulley, abrading-disks rigid with the inner ends of the arbors and arranged between the members of the idler drum, a driving drum, and an endless apron passing around the driving drum and upon the members of the sectional idler drum, substantially as and for the purposes described.

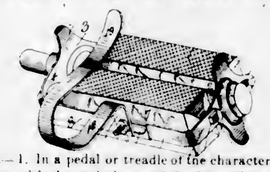
9. In a button-shaping machine, the combination with a driving drum, and the hollow spindles or bushings, of a sectional idler drum, the members of which are rigid with the inner ends of the hollow spindles and constructed with annular ribs or flanges, the arbors fitted in the spindles, the abrading-disks between the members of the idler drum and rigid with the inner ends of said arbors, and an endless apertured feed apron fitted around the driving drum and upon the flanges or ribs of the sectional idler drum, substantially as and for the purposes described.

10. In a button shaping machine, the combination of an idler drum, a driving drum, an endless apertured feed-apron fitted upon said driving and idler drums, abrading-disks within the idler drum, means for rapidly revolving the abrading disks in opposite directions, and an adjustable pressure band fitted upon the feed apron to press the button blanks thereon into contact with the abrading disks, substantially as and for the purposes described.

11. In a button shaping machine, the combination with the idler and driving drums, of a feed apron fitted thereon, a pair of oppositely-revolving abrading-disks within the idler drum to act upon the button-blanks carried by the feed-apron, and a pressure band having its fixed end arranged to recede from the idler drum and feed apron and connected at its other end to an adjustable tension device, for the purposes described, substantially as set forth.

12. In a button shaping machine, the combination of the oppositely rotating arbors, the abrading-disks rigid with the inner ends of said arbors and arranged closely adjacent to each other and substantially concentric at their edges, the hollow spindles in which the arbors are fitted, the idler drum having its members rigid with the inner ends of the hollow spindles and provided with annular ledges which are concentric with the abrading disks, an endless apertured feed apron fitted upon the annular ledges of the idler drum, a pressure band bearing upon the feed-apron, and means for slowly moving the feed apron around the idler drum, substantially as set forth.

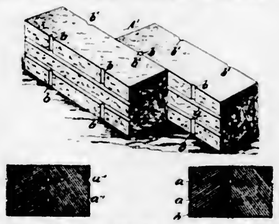
**529,951. TOE-CLIP FOR BICYCLE-PEDALS.** CHARLES F. PORTER, Brockton, Mass. Filed May 7, 1894. Serial No. 510,367. (No model.)



*Claim.*—1. In a pedal or treadle of the character described, the combination with the end-pieces, of the inwardly extending plates, the inner ends of which overlap each other and are formed with registering elongated slots, and their outer ends bent at a right angle and connected with the pedal, the curved toe clip, formed with an aperture, the screw bolt passing through said aperture and slots and the clamping nut, substantially as described.

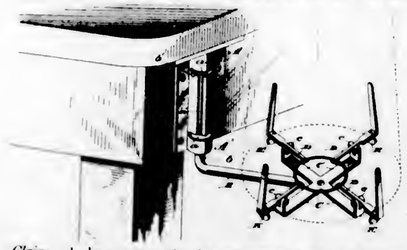
2. In a pedal or treadle of the character described, the combination with the end pieces, the shafts or rods connected therewith having angular ends and the rubber foot pieces, of the plates having their outer ends bent at a right angle and formed with angular apertures engaging with the ends of said shafts, and the opposite ends bent inwardly and overlapping each other and formed with elongated slots, the curved toe clip having a hole or aperture in one end, the bolt passing through and through the slots in said plates and the clamping nut, substantially as described.

**529,952. PAVING-BLOCK.** IRVIN G. POSTON, Veedersburg, Ind. Filed Aug. 27, 1894. Serial No. 521,440. (No model.)



*Claim.*—A paving block having both vertical faces constructed exactly alike, each with two parallel grooves dividing the block into three equal parts, and each side with vertical grooves running respectively from the upper and lower edges of the block into the horizontal grooves at points one fourth the length of the block from the ends thereof substantially as and for the purpose described.

**529,953.** COFFEE-POT HOLDER. CHARLES E. PRESSELL, Sedgewickville, Mo. Filed May 12, 1894. Serial No. 511,020. (No model.)

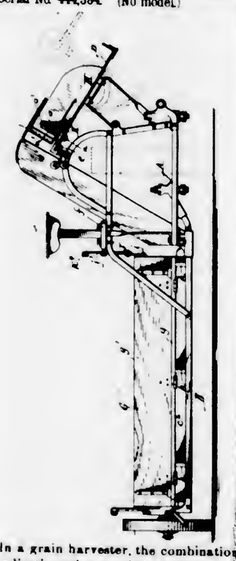


*Claim.*—1. In a support for the purpose set forth, the combination, of a supporting-arm, a plurality of fingers, said fingers having upwardly projecting portions at their outer ends which overbalance the inner ends, a ring connecting the inner ends of the fingers to each other, the fingers being pivotally attached to cross-bars carried by the supporting arm and to the ring, substantially as shown and for the purpose set forth.

2. In combination with a pivotally-supported supporting-arm having cross bars with upturned and bifurcated ends, of fingers having slotted portions through which pivot pins carried by the ends of the cross-bars pass, of a ring with which the inner ends of the fingers engage, substantially as shown whereby the depression of the inner ends of the fingers will cause the grasping portions thereof to move toward a common center for the purpose set forth.

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**529,954.** HARVESTER. EDWARD PRIDMORE, Batavia, N. Y., assignor to the Johnston Harvester Company, same place. Filed Aug. 29, 1892. Serial No. 444,384. (No model.)



*Claim.*—1. In a grain harvester, the combination with the platform, of a grain adjusting wing consisting of a lower section hinged to the platform and an upper section hinged to the lower section, substantially as set forth.

2. In a grain harvester, the combination with the frame and the platform, of a grain adjusting wing, consisting of a lower section hinged to the platform and an upper section hinged to the lower section, and an adjusting and supporting bar connecting said upper section with a support on the harvester frame, substantially as set forth.

3. In a grain harvester, the combination with the platform, and a stationary support on the harvester frame provided with a pin, of a grain adjusting wing consisting of a lower section hinged to the platform and an upper section hinged to the lower section, and an adjusting bar composed of a lower arm pivoted to the upper section of the wing and an upper arm hinged to the lower arm and provided with a series of openings adapted to engage with said pin, substantially as set forth.

4. The combination with the binder deck and the butter board, of a head adjusting board arranged upon the binder deck, a pivot on which said head adjusting board is mounted, a pivot support capable of adjustment toward and from the butter board, and a spring carried by said pivot support and holding the head adjusting board yieldingly, whereby the head adjusting board can be adjusted bodily toward and from the butter board and is capable of a limited oscillatory movement on its pivot in its adjusted position, substantially as set forth.

5. The combination with the binder deck and the butter board, of a supporting plate arranged upon the deck and capable of adjustment toward and from the butter board, a grain adjusting board pivoted upon said plate, and a spring bearing with its ends against said plate and adjusting board, substantially as set forth.

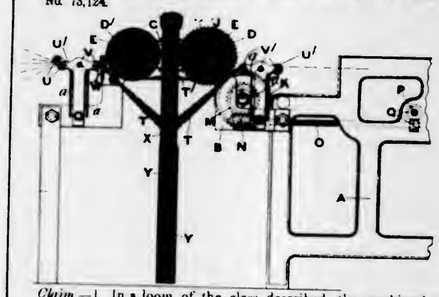
6. The combination with the binder deck and the butter board, of a supporting plate capable of adjustment on the deck toward and from the butter board and provided with an upright post, a grain adjusting board provided with perforated ears engaging with said post and a spring surrounding said post and bearing with its ends against the supporting plate and the adjusting board, substantially as set forth.

7. The combination with the binder deck provided with a longitudinal row of openings, of a grain-adjusting board provided with a supporting plate to which the board is pivoted, and an attaching bolt arranged in one of said openings and securing said plate to the binder deck, substantially as set forth.

8. The combination with the binder deck, of a grain adjusting board a supporting plate secured to the deck and provided with an upright post to which said board is pivoted, and a shield secured to the pivoted end of the board and extending inwardly and rearwardly therefrom substantially as set forth.

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**529,955.** LOOM FOR WEAVING DOUBLE PILE FABRICS. GEORGE PRIESTLEY and FREDERICK PRIESTLEY, Bradford, England. Filed Mar. 25, 1893. Serial No. 467,652. (No model.) Patented in England Feb. 25, 1892, No. 3,678; in France Mar. 13, 1893, No. 228,587; in Belgium Mar. 13, 1893, No. 103,810, and in Germany Mar. 14, 1893, No. 73,124.



*Claim.*—1. In a loom of the class described, the combination with a feed roller and means for operating the same, of a Jacquard apparatus, and a harness operated thereby and adapted to bring certain of the pile warp threads into contact with said roller, for the purpose specified.

2. In a loom of the class described, the combination of feed rollers and means for operating the same, a harness arranged and operating between said rollers, a Jacquard apparatus adapted to operate said harness as described, and guide bars for the pile warp threads, the said harness being adapted to bring certain of the said threads into contact with the feed rollers, for the purpose specified.

3. In a loom of the class described, the combination of feed rollers, means for operating the same, a harness arranged between said rollers and extending above the same a jacquard to which said harness is connected and by which it is operated to cause certain of the pile warp threads to be brought in contact with the feed rollers, guide bars for the warp threads arranged in advance of the feed rollers, and weights adapted to be suspended from the warp threads intermediate of the said guide bars, in the manner described.

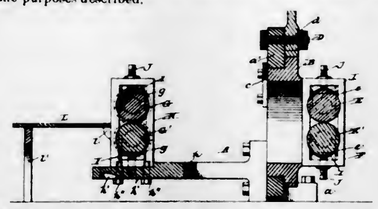
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**529,956.** METAL-STRAIGHTENING MACHINE. WILLIAM S. RALYA and ROBERT COYLE, Indianapolis, Ind. Filed Jan. 30, 1894. Serial No. 498,505. (No model.)

*Claim.*—1. In a metal straightening machine, the combination with a frame having an annular support, and a set of positively rotated feed rolls, of a tiltable disk fitted to said annular support and movable freely thereon, a set of rolls carried by said tiltable disk, and manually operated devices for turning said tiltable disk and its rolls at right angles to the line of feed of the metallic strip or plate through the two sets of rolls, substantially as and for the purposes described.

2. In a metal straightening machine, the combination with a feed mechanism, and a main frame provided with a fixed annular support, of a tiltable disk fitted and movable freely in said annular support, means for holding said tiltable disk in said support and permitting it to turn therein, a set of rolls carried by said tiltable disk, and a manually operative device for turning said disk and its set of rolls in a plane at right angles to the line of feed of the metal strip or plate through the feed mechanism and the set of rolls substantially as and for the purposes described.





3. In a metal straightening machine, the combination of a main frame having a fixed annular support, a feed mechanism, a tiltable disk fitted to turn freely in said annular support and held against displacement by a guide plate, a lever connected with said disk to move the same, and a set of rolls carried by the tiltable disk, substantially as described.

4. In a metal straightening machine, the combination of a main frame provided with a fixed annular support, a tiltable disk fitted to and movable freely on said annular support, a set of rolls mounted in said tiltable disk with their axes parallel to each other, means for moving said tiltable support in a plane at right angles to the line of feed of the metallic strip through the machine, a longitudinally-adjustable frame supported on the main frame at one side of the tiltable support, and a set of feed rolls journaled in the said adjustable frame, substantially as and for the purposes described.

5. In a metal straightening machine, the combination with a set of feed rolls, of an axially movable disk supported at one side of the feed rolls, a second set of rolls journaled in said axially movable disk with their axes parallel to each other and said rolls movable with said disk in its adjustments, and manually operated devices connected to said tiltable support to move the latter and its rolls at will in a plane at right angles to the line of feed through the feed rolls and the straining rolls, substantially as described.

6. In a machine for straightening metal, the combination of a main frame provided with a fixed annular support, a tiltable disk fitted to and movable freely in said annular support, a set of rolls journaled on the tiltable disk, means for moving the tiltable disk and its rolls at will in a plane at right angles to the line of feed through the machine, a feed mechanism, and a leveling table supported on the main frame adjacent to the feed mechanisms and in substantially the plane of feed of the work to said feed mechanisms, substantially as described.

7. In a metal straightening machine, the combination of a main frame having a fixed annular support, a tiltable disk fitted to said annular support and movable therein, a set of rolls journaled on said tiltable disk, means for moving the disk and its rolls in a plane at right angles to the line of feed through the machine, a set of feed rolls supported on the main frame, and a removable leveling table supported on the main frame adjacent to the set of feed rolls, substantially as described.

8. In a machine for straightening metal, the combination with a set of coacting pressure rolls, and a suitable main frame, of a tiltable disk fitted in suitable guides on said main frame and having its lever provided with a pin which works in a segmental way on said frame-guides, a frame rigid with said tiltable disk, and a second set of rolls journaled within said frame, for the purposes described, substantially as set forth.

9. In a machine for straightening metal, the combination with a main frame, of an upright frame fixed thereon and supporting a set of pressure rolls, a tiltable support guided on the main frame to turn at right angles to the line of feed of the work through the machine, another upright frame carried by the tiltable support, and a second set of pressure rolls journaled in the frame which is carried by said tiltable support, the rolls of the two sets being adjustable and yieldingly held together and each roll being constructed of yielding material in the manner and for the purposes described.

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**529,957.** GLAZIER'S TOOL. GEORGE A. ROGERS, Allegheny, Pa., assignor of one-fourth to William J. Helwig, same place. Filed Feb. 13, 1894. Serial No. 500,046. (No model.)

*Claim.*—1. A combined glass cutter and breaker comprising the cutter head, the body to which the head is secured, the handle connected with the opposite end of the body, screws *h h* extending through said body, a breaker having its body portion clamped to the cutter body by said screws and provided with a longitudinal slideway *s* a fixed jaw at the outer end of the slideway, a movable jaw having a guide working in said slideway and provided with a threaded opening and the adjusting screw swiveled in the rear end of the breaker body and engaging said threaded aperture, substantially as shown and described

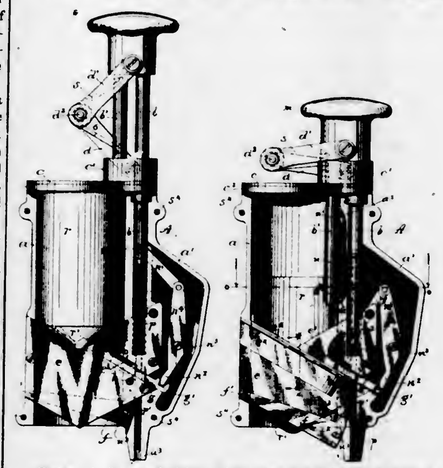


2. A glass breaker for glass cutters comprising a body portion having a longitudinal slideway, a fixed jaw at one end, and a longitudinally extending swiveled screw in its opposite end, and a movable jaw provided at its rear face with a removable guide sliding in the said slideway and having a screw threaded bore in its outer end in which said screw works for operating the jaw, substantially as set forth.

3. A glass breaker for glazier's tools comprising a body provided with attaching screws *h h* to pass through the tool and secure the breaker thereon, a longitudinal slideway in the body of the tool, fixed jaw at the outer end thereof a movable jaw having a guide working in the slideway, and provided with the screw threaded opening, and the screw G swiveled in the rear end of the said body and entering the rear end of the said threaded aperture to operate the movable jaw, substantially as set forth.

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**529,958.** TACK-DRIVING IMPLEMENT. CHARLES D. ROGERS, Providence, R. I. Filed July 20, 1894. Serial No. 518,128. (No model.)



*Claim.*—1. In a tack-driver of the class hereinbefore described, the combination of a stationary inclined runway or chute for the tacks and communicating with a vertical plunger-chamber, a tack-agitating device located in said runway near its delivery end, a vertically reciprocating tack holding reservoir communicating with the upper end of the runway, a cut-off device for separating the advance or forward tack from the row of tacks on the runway after it has passed said agitating device, a secondary cut-off device located below and working at substantially right angles to the first named cut-off arranged to engage the point portion of the advanced tack and deflect it into the plunger-chamber, and a vertical driving-plunger arranged to work substantially parallel with the said reservoir, all constructed, connected and arranged with respect to each other, whereby the movement of the plunger, as in driving the tack, brings the several parts into action, substantially as described and for the purpose set forth.

2. In a tack-driving implement provided with a vertically reciprocating tack-holding reservoir and a stationary inclined runway leading therefrom, the combination therewith of a vertically movable driving-plunger arranged to be reciprocated back and forth past the lower or delivery end of said runway, an initial cut-off device, as A, arranged to be worked in a horizontal plane with respect to said plunger for separating the advance or foremost tack from the row of tacks on the runway, and a secondary cut-off device located below

and working at substantially right angles to the initial cut off, arranged to supplement the work of the latter by engaging the point portion of said advance tack and deflect it into the path of the plunger, substantially as described and for the purpose set forth.

3. In a tack-driving implement, a vertically movable tack-carrying reservoir and a stationary runway or chute communicating therewith, in combination with a vertically movable driving-plunger arranged to reciprocate to and fro past the end of said runway, a tack-agitating device located in the path of said runway provided with a downwardly extending tongue arranged to engage the heads of the tacks and means for feeding the advance or forward tack directly from the runway into the path of the plunger, said tack then to be operated upon by the plunger without intermediate mechanism, substantially as hereinbefore described.

4. In a tack-driving machine, a casing or housing, as *a*, and a runway or chute secured thereto provided with a tack-agitating device, in combination with a vertically movable tack-holding reservoir, as *r*, inclosed by said casing and in continuous communication with said runway and mechanisms for feeding the tacks singly from the runway and driving them, substantially as described.

5. In a tack-driving machine, provided with a stationary inclined tack-supporting runway or chute arranged to receive the tacks from a suitable source and a driving plunger, as *p*, arranged to be reciprocated past the lower end of the runway, the combination therewith of the pivotally mounted cut off lever or blade *f* located between the sides of the runway, having a wedge-shaped portion $f^2$ on its upper side arranged in moving upwardly to engage the lower portion of the foremost tack supported on the runway and deflect it into the path of the plunger to be acted upon by the latter and a suitably mounted movable connection, as *u*, for intermittingly actuating blade *f*, substantially as described.

6. In a tack-driving machine, a fixed runway for the tacks consisting essentially of a pair of laterally separated inclined plates, as *e*, having beveled upper edges arranged to receive and support the tacks, an oppositely inclined member $e^3$ and a movable tack-agitating device interposed between the adjacent faces or edges of said parts *e*, $e^3$, substantially as shown and described.

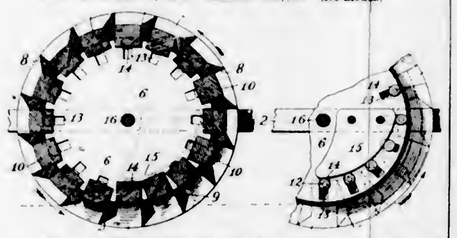
7. In a tack-driving machine, the combination with a runway or chute for feeding the tacks to the driver singly, of the endwise movable serrated bar *g* mounted in the runway, an agitator plate *o* in engagement with said bar having a tongue extending downwardly therefrom adapted to engage the heads of the tacks, and means for reciprocating the bar to and fro, substantially as described and for the purpose set forth.

8. In a tack-driving machine, the combination with the guided driving-plunger and movable handle-member, as *m*, secured thereto, of the spring resisted lever connection jointed to said handle-member and to the shell or casing, substantially as described.

9. In a tack-driving implement, a tack-agitating device arranged at an angle with respect to the driving-plunger, consisting in the combination with a fixed runway for the tacks composed of upper and lower portions or sections, $e^2$, *e*, of a mechanically reciprocating notched or serrated bar, as *g*, interposed between the said runway sections, and an agitator plate, as *o* let into the upper section $e^2$ and in engagement with the notched portion of the bar *g*, provided with a downwardly extending tongue adapted to contact with the heads of the tacks, arranged whereby the endwise movement of the notched bar vibrates the agitator-plate for the purpose hereinbefore set forth.

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529,959. SOIL-BREAKING MACHINE. WILLIAM H. ROSS, Waco, Tex. Filed Apr. 25, 1894. Serial No. 508,990. (No model.)



*Claim.*—1. The combination of a drum composed of heads, and knives or cutters connecting the heads, soil-ejector bars or blocks adapted to limit the depth of cutting, and slidable radially between the knives or cutters for ejecting the soil or dirt therefrom as the drum rotates, and stationary cams rigidly fixed to the opposite sides of the main frame for moving the ejector-bars or blocks radially outward, substantially as described.

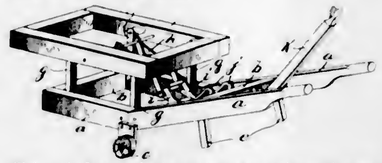
2. The combination of a drum composed of disk-heads, and knives or cutters rigidly secured to the disk-heads, cutters arranged at the ends of the said knives for cutting the soil in the line of draft, ejector-bars or blocks slidable radially between the said knives or cutters for ejecting the soil or dirt therefrom as the drum rotates, and stationary cams rigidly fixed to the opposite sides of the main frame for moving the ejector-bars or blocks radially outward, substantially as described.

3. The combination of a main frame, stationary cams rigidly fixed to the opposite sides of the main frame, a drum journaled in the main frame and composed of disk-heads having radiating slots, annular cutters secured to the disk heads, and knives or cutters rigidly attached to the disk-heads each pair having parallel adjacent surfaces, soil ejector bars or blocks having parallel surfaces to fit the parallel surfaces of the said knives or cutters, and each bar or block having shafts extending through the radiating slots of the disk-heads, and bearings mounted on the said shafts and acted upon by the said stationary cams for moving the ejector-bars or blocks outward, substantially as described.

4. The combination of a main frame having cams rigidly fixed to its inner sides, a drum rotatable in the main frame and composed of heads, and knives or cutters rigidly connected with the heads, soil-ejector bars or blocks having end shafts projecting through the said heads and provided with bearings acted on by said rigidly fixed cams for sliding the ejector bars or blocks radially outward, and cutters for cutting the soil in the line of draft, substantially as described.

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529,960. TRUCK. ROBERT S. RUST, Delaplane, Va., assignor of one-fourth to George W. Chanceller, same place. Filed Apr. 7, 1894. Serial No. 506,755. (No model.)

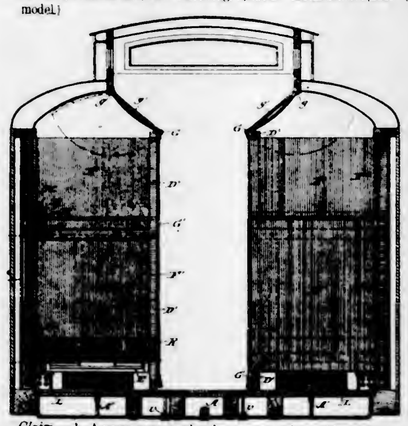


*Claim.*—1. In a truck, the combination of the truck proper, the vertically movable platform thereon, links supporting said platform, the lazy tongs pivotally joined to the platform and the truck frame and having their lower levers provided with lateral arms having grooved slots and the operating levers fulcrumed to the truck frame and provided with the pawl and ratchet holding mechanism and having the nose provided with the rod extending into said slot, substantially as described.

2. A truck having the lazy tongs for raising and lowering its vertically movable platform and a controlling lever fulcrumed to the truck frame, the lazy tongs having grooved guides, substantially as set forth and the lever having means extending into said guides and whereby the movements of the lever will expand and contract the lazy tongs through the medium of said guides, substantially as described.

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529,961. COMBINED SLEEPING AND PARLOR CAR. LINFORD F. RUTH, Connellsville, Pa. Filed Aug. 2, 1894. Serial No. 519,283. (No model.)



*Claim.*—1. A passenger car having pneumatic cushions combined with and permanently connected to the compressed air pipes of the car, and valves for directing the air to any one of said cushions, or cutting it off from the same, substantially as shown and described.

2. In a passenger car, the combination of pneumatic berth cushions made with accordion folds extensible in the plane of the cushion, and permanently connected compressed air pipes and valves to both inflate and extend the berth cushion by the power of the compressed air, substantially as and for the purpose described.

3. In a passenger car, the combination of pneumatic berth cushions constructed as described to fold, permanently connected compressed air pipes with valves, flexible strips attached to the ends of the berth cushions, transverse guides for holding the berth cushion strips, and coil springs for drawing back the berth cushion into a collapsed and folded condition, substantially as and for the purpose described.

4. In a passenger car, the combination of pneumatic berth cushions constructed to fold as described, permanently connected compressed air pipes with valves, flexible strips attached to the ends of the berth cushions, coil springs for winding up the same, and folding transverse berth supports having guides for the flexible strips substantially as and for the purpose described.

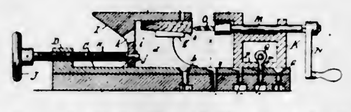
5. A combined parlor and sleeping car, having swiveling chairs with air cushions and pipes entering said cushions through the swiveling connection, and extensible pneumatic berths above the chairs, air pipes and valves connecting with the same, the said chair cushions and berth cushions being arranged to be, the one extended and inflated, and the other collapsed and folded, and vice versa as set forth.

6. In a sleeping car, the combination of an air mattress and an outer panel rail connected thereto at the bottom only substantially as and for the purpose described.



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529,962. COMBINATION-TOOL. CHRISTIAN A. SALZMAN, Hamilton, Ohio, assignor of two-thirds to Emil P. Kennel, same place, and John A. Robbins, Indianapolis, Ind. Filed Oct. 20, 1894. Serial No. 526,439. (No model.)

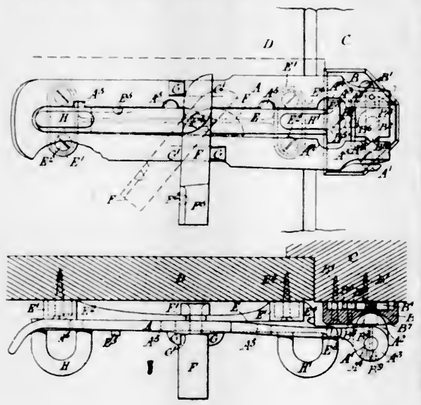


*Claim.*—1. The combination with a base, a T shaped track secured thereon, an anvil mounted on the base and movably engaging with the track and a hand screw engaging with a boss formed on one end of the track and with the anvil of a bracket movably engaging with the track and being reversible thereon a vise jaw formed on the bracket in a line with the heel of the anvil and means to automatically secure the bracket immovable and in different positions along the track.

2. The combination with a base, a T shaped track thereon, an anvil movable on the base and engaging with the track, and a hand screw engaging with the track and with the anvil of a reversible bracket movable on the base and along the track, a drill spindle reversibly journaled therein and means to secure the bracket immovably to the track.

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529,963. FASTENER FOR DOORS. HORATIO SAQUI, London, England. Filed Nov. 8, 1893. Serial No. 490,373. (No model.)



*Claim.*—1 The combination with a pivoted slotted yoke having a swinging movement in both a vertical and a horizontal plane, of a plate adapted to engage said yoke, a locking lever or button adapted to pass through the slot of the yoke, and stops carried by the yoke on opposite sides of its slot with which stops the lever or button is adapted to engage as and for the purpose specified.

2. The combination with a pivoted yoke having a swinging movement in both a vertical and a horizontal plane, of a plate provided with a stud or projection and adapted to engage with the yoke, a locking lever or button for the yoke and plate and carried by the latter and having upon its under side a recess adapted to be engaged by said stud, as and for the purpose specified.

3. The combination with a bracket comprising a fixed and a pivoted portion, of a yoke pivoted to the bracket and having a swinging movement in both a vertical and a horizontal plane, a pin carried by the pivoted portion of the bracket and passing through the fixed portion, a plate secured to said pin and having projecting points, and a pin carried by the fixed portion of the bracket and adapted to be engaged by said points, as and for the purpose specified.

4. The combination with a bracket comprising a fixed and a pivoted portion, of a yoke pivoted to the bracket, and having a swinging movement in both a vertical and a horizontal plane, a pin carried by the said pivoted portion and passing through the fixed portion, a plate secured to said pin and having projecting points, a pin carried by the fixed portion and adapted to be engaged by the said points, a lug on the yoke, and slots in the bracket with which slots the said lug is adapted to engage as and for the purpose specified.

5. The combination with a bracket comprising a fixed and a pivoted portion, of a yoke pivoted to the bracket and having a swinging movement in both a vertical and a horizontal plane, a pin carried by the pivoted portion of the bracket and passing through the fixed portion, a plate secured to said pin and having projecting points, a pin carried by the fixed portion of the bracket and adapted to be engaged by said points, a projection on the pivoted portion of the bracket and a corresponding recess in the yoke adapted to engage said projection, as and for the purpose specified

6. The combination with a door frame, a bracket carried thereby, a rotatable portion $B^2$ of said bracket adapted to turn on the fixed part thereof, a spindle $B^4$ projecting from the portion $B^2$ and carrying a plate $B^4$, points or spurs on said plate, a pin $B^6$ secured to the bracket, and adapted to engage said spurs and a slotted yoke pivoted to the rotatable portion of the bracket and adapted to swing in both a vertical and a horizontal plane, of a plate carried by a door and adapted to engage within the slot of the yoke, as described.

7. The combination with a door frame, a bracket carried thereby, a rotatable portion $B^2$ of said bracket adapted to turn on the fixed part thereof, a spindle $B^2$ projecting from portion $B^2$ and carrying a plate $B^4$, points or spurs on said plate, a pin $B^6$ secured to the bracket, and adapted to engage said spurs, and a slotted yoke pivoted to the rotatable portion of the bracket and adapted to swing in both a vertical and a horizontal plane, a projection $A^4$ on one of the jaws of the yoke, and the bracket being provided with slots $B^7$ $B^8$, with which said projection $A^2$ is adapted to engage when in its vertical or horizontal position, of a plate carried by the door, and adapted to engage within the slot of the yoke as described.

8. The combination with a bracket carried thereby, a rotatable portion $B^2$ of said bracket adapted to turn on the fixed part thereof, a spindle $B^2$ projecting from portion $B^2$ and carrying a plate $B^4$, points or spurs on said plate, a pin $B^6$ secured to the bracket, and adapted to engage said spurs, and a slotted yoke pivoted to the rotatable portion of the bracket and adapted to swing in both a vertical and a horizontal plane, a projection $B^9$ on the face of portion $B^2$ of the bracket adapted to engage within a recess $A^4$ in the yoke, of a plate carried by a door and adapted to engage within the slot of the yoke as described.

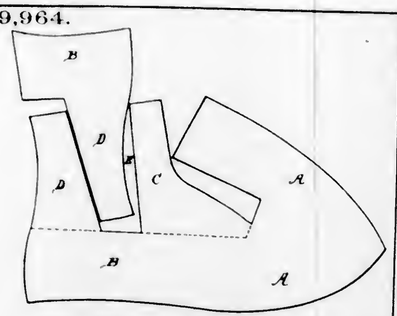
9. The combination with a door frame, a bracket carried thereby, a rotatable portion $B^2$ of said bracket adapted to turn on the fixed part thereof, and a slotted yoke pivotally connected with the portion $B^2$ and adapted to swing in both a vertical and a horizontal plane, of a plate carried by a door and adapted to engage with the slot of the yoke, and a stop carried by the said plate, and adapted to engage within recesses $A^5$ in the yoke, as described.

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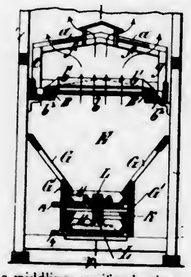
529,964. SHOE. BENIAMINO SCARINCI, Philadelphia, Pa. Filed Nov. 17, 1893. Serial No. 491,260. (No model.)

*Claim.*—The herein described shoe upper made from a blank having the vamp, A, the back, front and counter of one side integral therewith, with the back and counter of the other side in a separate piece with the main body of the back cut from front and back of the opposite side thereby forming the gore opening for that side, and having the corresponding front of an independent piece similarly shaped to the front, C, substantially as described.

529,964.




529,965. MIDDLINGS-PURIFIER. HEINRICH SEICK, Dresden, Germany. Filed Apr. 24, 1894. Serial No. 508,872. (No model.) Patented in France May 20, 1893, No. 230,233, and in England June 6, 1893, No. 11,100.



*Claim.*—1. In a middlings purifier having a dust-collector combined therewith, a casing, a sieve therein having a number of transverse gutters above its sifting surface and longitudinal gutters on its sides, supports rigidly secured to the said sieve, a roof-like deflector mounted on the said supports above the said sieve, means for imparting motion to the said sieve and connected parts, a lower bottom to the said casing having removable sections, an upper bottom within the said casing also having removable sections, a number of scrapers adapted to be moved along the upper surface of the upper bottom from one end thereof to the other in one direction and along the upper surface of the lower bottom in the opposite direction, driving connections and means, such as sprocket wheels and an endless chain, for moving the said scrapers over the said bottoms in opposite directions, substantially as and for the purpose described.

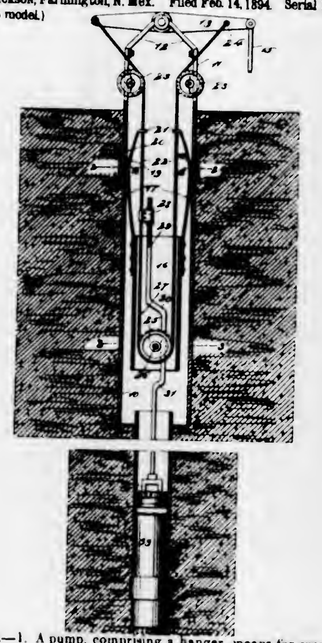
2. In a middlings-purifier, the combination with a casing of a movable sieve, a series of transverse gutters arranged above the same, longitudinal gutters arranged laterally with regard to said sieve, and oppositely inclined deflectors arranged above the transverse gutters and having their highest points at or near the central longitudinal line, spaces for circulation of air being provided between the said deflectors and the casing, descending impurities being carried by the upper surfaces of the deflectors into the longitudinal gutters and lighter, rising impurities being deflected by their lower surfaces to the same points, substantially as described.

3. In a middlings-purifier, the combination with a casing of a movable sieve, a series of transverse gutters arranged above the same, longitudinal gutters arranged beside said sieve, oppositely inclined deflectors mounted on supports moving with the sieve and arranged above the transverse gutters, and a roof-shaped deflector arranged longitudinally above an open space between said oppositely inclined deflectors and between the same and the transverse gutters, its ends supported by the casing and its lowest, or outer edges overhanging the deflectors below, substantially as described.

4. In a middlings purifier a casing, a sieve therein, means for imparting motion to the said sieve, a lower bottom having removable sections to the said casing, an upper bottom within the said casing also having removable sections, a number of scrapers adapted to be moved along the upper surface of the upper bottom from one end thereof to the other in one direction and along the upper surface of the lower bottom in the opposite direction, driving connections and means, such as sprocket wheels and an endless chain, for moving the said scrapers over the said bottoms in opposite directions, substantially as and for the purpose described.

5. In a middlings-purifier, the combination with a movable sieve B, arranged in a casing A, of oppositely inclined deflectors mounted on rigid frames *e*, *f*, *g*, moving with the sieve, a roof-shaped deflector *d'* arranged above an opening between said deflectors, its ends rigidly supported on the casing, transverse gutters arranged below said roof shaped deflector, and longitudinal gutters arranged beside the sieve, substantially as described.

529,966. PUMP. ARTIMUS W. SHIDLER and WILLIAM P. HENDRICKSON, Farmington, N. Mex. Filed Feb. 14, 1894. Serial No. 500,119. (No model.)



*Claim.*—1. A pump, comprising a hanger, means for suspending the hanger in a well, a pulley journaled in the hanger, a tilting lever adapted to be arranged above the well, a cable carried by the lever and extending around the pulley in the hanger, and a sucker rod carried by the cable and provided with the usual pump piston, substantially as described.

2. The combination, with the well pipe, of a hanger therein, a detachable fastening device to support the hanger in the pipe, a tilting lever mounted above the well pipe, a pulley in the hanger, a cable extending around the pulley and having its ends secured to the lever on opposite sides of the fulcrum of the lever, and a sucker rod carried by the cable and provided with the usual pump piston, substantially as described.

3. The combination, with the well pipe having recesses therein, of the hanger, the spring arms attached to the hanger and provided with lugs to enter the recesses in the well pipe, a tilting lever above the well pipe, a pulley in the hanger, a cable extending around the pulley and secured to the lever on opposite sides of its fulcrum, and a sucker rod clamped to the cable and provided with the usual pump piston, substantially as described.

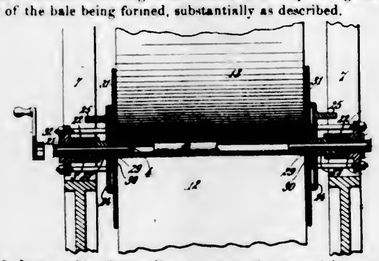
4. The combination, with the well pipe and the hanger therein, of the suspending arms of the hanger fastened to the well pipe and provided with guide eyes, the pulley in the hanger, the tilting lever above the well pipe, the cable running around the pulley and attached to the lever on opposite sides of its fulcrum, and the sucker rod clamped to the cable and provided with the usual pump piston, substantially as described.

529,967. CORE-HOLDING MECHANISM FOR COTTON-BALING MACHINES. HAMILTON E. SMITH, New York, N. Y., and BENJAMIN A. DARE, Jersey City, N. J., assignors to the Bessonette Cotton Compress Manufacturing Company, Waco, Tex. Filed Feb. 17, 1894. Serial No. 500,556. (No model.)

*Claim.*—1. The combination with a rotary bale-support, a rotary compressor-roller, and a core which rises as the material winds thereupon and is rotated by the action of the bale-support and compressor-roller in winding the material on said core, of rising and falling boxings, guides for said boxings in their rising and falling movements,



devices carried by the boxings and movable into and out of engagement with the core, guide-plates or disks which rise and fall with the boxings and overlap the ends of the bale-support and compressor-roller for evening or building up the ends of the bale, and non-rotary pressure-plates adjustably connected with the rising and falling boxings and movable toward or from each other for adjusting the guide-plates or disks and causing them to more or less press against the ends of the bale being formed, substantially as described.



2. In a machine for winding cotton or other material into a bale or package, the combination with a core and pressing devices, of rising and falling boxings, normally non-rotary spindles carried by the boxings and on which the core rotates, devices for moving the spindles into and out of engagement with the core, and guide-plates or disks rising and falling with the boxings for evening or building up the ends of the bale or package being formed, substantially as described.

3. The combination with a suitable bale-support, a compressor-roller, and a core rotated by the bale-support and compressor-roller as they wind the material on said core, of vertically movable boxings, spindles carried by the boxings and on which said core rotates as the material winds thereon, devices carried by the boxings and adapted to move the spindles into and out of engagement with the core, and loosely mounted guide plates or disks rotatable independent of the core and overlapping the ends of the bale-support and compressor-roller for evening or building up the ends of the bale or package being formed, substantially as described.

4. The combination with a rotatable core, and pressing devices acting to wind the material on the core and to rotate the latter as the material winds thereupon, of vertically movable boxings provided with spindles which are movable into and out of engagement with the core and on which spindles said core rotates as the material winds thereon, devices carried by the boxings for moving the spindles into and out of engagement with the core, and loosely mounted guide plates or disks rotatable independent of the core and adapted to even or build up the ends of the bale or package being formed, substantially as described.

5. The combination with a suitable bale-support, a compressor-roller, and a core rotated by the action of the bale support and compressor-roller in winding the material on said core, of vertically movable boxings provided with adjustable spindles for engaging and disengaging the core, devices carried by the boxings and adapted to move the spindle into and out of engagement with the core, and loosely mounted guide-plates or disks rotatable independent of the core, rising and falling with the said boxings and overlapping the ends of the bale-support and compressor-roller to even or build up the ends of the bale or package being formed, substantially as described.

6. The combination with a bale-support, a compressor-roller, and a core, of vertically movable boxings, spindles movable into and out of engagement with the core, screw-shafts mounted in the boxings and connected with the spindles, rotatable guide-plates or disks for evening or uniformly building up the ends of the bale or package being formed, and pressure plates acted on by the screw-shafts for holding the guide-plates or disks against the ends of the bale or package, substantially as described.

7. The combination with a core, and pressing devices for forming a bale or package, of vertically movable boxings, pressure plates having a telescopic connection with the boxings, guide-plates or disks acted upon by the pressure plates and adapted to even or uniformly build up the ends of a bale or package, spindles for engaging the core, and devices for operating the spindles and pressure plates, substantially as described.

8. In a machine for winding cotton or other material into bales or packages, the combination with a rotary bale support, a rotary compressor-roller, and a core rotated by the action of the bale-support and compressor-roller in winding the material on said core, of rising and falling boxings, and loosely mounted guide-plates or disks rising and falling with the boxings, rotatable independent of said bore and overlapping the ends of the bale-support and compressor-roller, substantially as and for the purposes described.

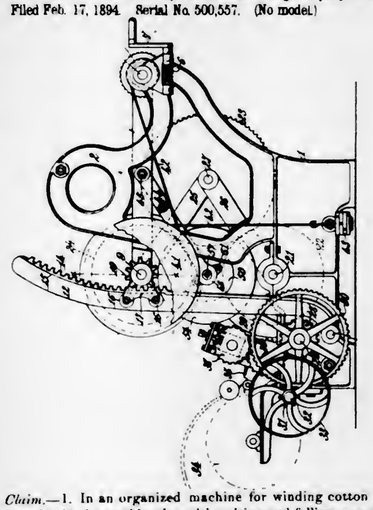
9. In a machine for winding cotton or other material into bales or packages, the combination with a core, and pressing devices, of normally non-rotary core-holding spindles on which the core rotates as the material winds thereon, devices for moving the spindles lengthwise into or out of engagement with the core, and loosely mounted guides rotatable independent of the core and acting to guide the material thereto and to even or build up the ends of the bale or package being formed, substantially as described.

10. The combination with pressing devices, and a core which rises as the material is wound thereupon, of vertically movable boxings provided with adjustable spindles for engaging and disengaging the core and on which said core rotates, and loosely mounted guide-plates or disks which rise and fall with the boxings and are rotatable independent of the said core, substantially as described.

11. The combination with a bale-support, a compressor-roller, and a core, of suitable boxings, spindles movable into and out of engagement with the core, screw-shafts mounted in the boxings and connected with the spindles, rotatable guide-plates or disks for evening or uniformly building up the ends of the bale or package being formed, and pressure plates acted on by the screw-shafts for holding the guide plates or disks against the ends of the bale or package, substantially as described.

12. The combination with a core, and pressing devices for forming a bale or package, of suitable boxings, pressure plates having a telescopic connection with the boxings, guide-plates or disks acted upon by the pressure-plates and adapted to even or uniformly build up the ends of a bale or package, spindles for engaging the core, and devices for operating the spindles and pressure plates, substantially as described.

529,968. COTTON-BALING MACHINE. HAMILTON E. SMITH, New York, N. Y., and BENJAMIN A. DARE, Jersey City, N. J., assignors to the Bessonette Cotton Compress Manufacturing Company, Waco, Tex. Filed Feb. 17, 1894. Serial No. 500,557. (No model.)



*Claim.*—1. In an organized machine for winding cotton into a cylindrical bale, the combination with a rising and falling compressor-roller, a core, and a rotary bale-support, of compressing and feeding rollers, the upper one of which is arranged to compress the cotton directly upon the periphery of the bale-support, and the other arranged to press the cotton against the said upper roller, substantially as described.

2. In a machine for winding cotton into bales, the combination with a compressor roller, a core, and a rotary bale-support, of upper and lower compressing rollers, the upper one of which is arranged to press the cotton directly upon the bale-support, and the other to press the cotton against said upper roller, and upper and lower sets of rollers rotating at different speed for stretching and compressing the cotton between said upper and lower sets of rollers in transit to said compressing rollers, substantially as described.

3. In a machine for winding cotton into bales, the combination with a bale-support, and a core, of a swinging frame, a compressor-roller carried by said frame, and a core carrying frame or support pivoted to and radiating from said swinging frame, substantially as described.

4. In a machine for winding cotton into bales, the combination with a bale-support, a core, and a rising and falling compressor-roller, of a pivoted swinging frame carrying the compressor-roller, radiat-

ing links pivotally connected with the swinging frame and provided with means for engaging the core, and mechanism for raising the swinging frame in a vertical plane, substantially as described.

5. In a machine for winding cotton into bales, the combination with a bale-support, a core, and a compressor-roller, of a pivoted swinging frame carrying the compressor-roller, means for raising and lowering the frame in a vertical plane, and radiating links pivoted to the swinging frame, and provided with adjustable core-engaging spindles for holding or releasing the core, substantially as described.

6. In a machine for winding cotton into bales, the combination with a bale support, a core, and a compressor-roller, of a spindle having pinions, pivoted rack-bars with which the pinions engage, a vertically movable frame carrying the spindle, and devices for holding the rack-bars in engagement with the pinions, substantially as described.

7. In a machine for winding cotton into bales, the combination with a bale support, a core, and a compressor-roller, of a pivoted swinging core carrying frame having a boxing or hub-like portion provided with a screw-socket, a screw-shaft engaging the screw-socket and having a spindle adapted to engage and disengage the core, and means for operating the screw-shaft to move the spindle into or out of engagement with the core, substantially as described.

8. In a machine for winding cotton into bales, the combination with a bale-support, a core, and a compressor-roller, of pivoted links having boxings or hub-like portions provided with screw-sockets, screw-shafts engaging the screw sockets and having spindles for engaging and disengaging the core, pressure plates carried by the boxings or hub-like portions of the links, and guide disks or plates for evening up the ends of the cotton-bale, substantially as described.

9. In a machine for winding cotton into bales, the combination with a bale support, a core, and a compressor-roller, of pivoted links having boxings or hub-like portions provided with screw-sockets, screw-shafts engaging the screw-threaded sockets and having spindles for engaging and disengaging the core, pressure plates adjustably connected with the boxings or hub-like portions of the links, and guide disks mounted on the said pressure plates and arranged to even up the ends of the cotton bale substantially as described.

10. In a machine for winding cotton into bales, the combination with a bale-support, a core, and a compressor-roller, of pivoted rack-bars, a swinging frame having a spindle provided with pinions engaging the rack-bars, guides for holding the rack-bars in engagement with the pinions, a cable-drum mounted on the spindle, a cable winding drum, and a cable wound in courses upon the drum of the spindle, and having one end connected with the said winding-drum, and the opposite end provided with a suspended weight, substantially as described.

11. In a machine for winding cotton into bales, the combination of a bale-support, a core, and a compressor roller, of a pivoted swinging frame having a spindle provided with pinions and on which the compressor-roller is mounted, rack-bars engaging the pinions, a cable-drum mounted on the spindle, a shaft carrying a worm-wheel and cable winding-drum, a worm for rotating the worm-wheel, and a cable extending around the drum on the spindle and having one end secured to said winding-drum and the other end provided with a suspended weight, substantially as described.

12. In a machine for winding cotton into bales, the combination with a bale-support, a core, and a compressor-roller, of a swinging frame having a spindle provided with pinions and on which the compressor-roller is mounted, pivoted rack-bars engaging the pinions, guide rollers which hold the rack-bars in gear with the pinions, radiating links pivoted to the swinging frame and provided with devices for engaging and disengaging the core, and mechanism for raising and lowering the said swinging frame in a vertical plane, substantially as described.

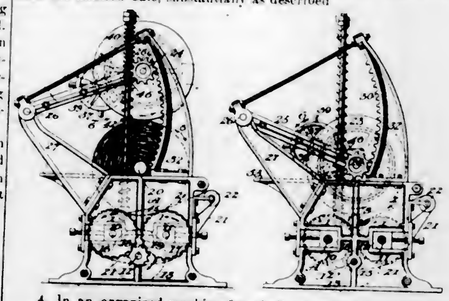
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529,969. BALING-PRESS. HAMILTON E. SMITH, Philadelphia, Pa., assignor to the Bessonette Cotton Compress Manufacturing Company, Waco, Tex. Filed Nov. 6, 1894. Serial No. 528,004. (No model.)

*Claim.*—1. The combination of a vertically movable core which rises as the material winds thereupon, supporting drums, an endless feed apron passing around the supporting drums and acting to deliver the material to the core, and a vertically movable pivoted swinging frame carrying a rotary compression roller acting on the uppermost side of the bale being formed for pressing the same downwardly upon the belt, substantially as described.

2. The combination of a vertically movable core which rises as the material winds thereupon, supporting drums geared together, an endless feed apron passing around the supporting drums and upon which the core normally rests at a point between the supporting drums, a rotary gravitating compression roller acting on the uppermost side of the bale being formed to press the bale downwardly upon the belt, and a pivoted swinging frame in which the compression roller is journaled, substantially as described.

3. The combination in a machine for winding cotton into bales, of a vertically movable core which rises as the material winds thereupon, a suitable bale support, a rotatable gravitating compression roller acting on the uppermost side of the bale being formed, a pivoted swinging frame in which the compression roller is journaled, and mechanism for lifting the vertically movable frame and compression roller to release the finished bale, substantially as described



4. In an organized machine for winding cotton into bales, the combination of the following elements, to wit—a core on which the cotton is wound into a bale, a suitable bale support, a compression roller moved vertically by the increasing diameter of the bale, a rack-and-pinion mechanism for positively raising the compression roller to release the finished bale, and gear mechanism for rotating the pinion in engagement with the rack to elevate the compression roller, substantially as described.

5. In an organized machine for winding cotton into bales, the combination of the following elements, to wit—a core on which the cotton is wound into a bale, a suitable bale support, a vertically movable frame, a compression roller carried by said frame and moved vertically by the increasing diameter of the bale, a rack-and-pinion mechanism for positively raising the said frame and compression roller to release the finished bale, and gear mechanism for rotating the pinion in engagement with the rack to elevate the vertically movable frame and compression roller, substantially as described.

6. In an organized machine for winding cotton into bales, the combination of the following elements, to wit—a core on which the cotton is wound into a bale, a suitable bale support, a vertically movable frame, a compression roller carried by said frame and moved vertically by the increasing diameter of the bale, a rack and pinion mechanism for positively raising the compression roller and frame, and a rotatable wheel geared to the shaft of the pinion for turning the latter in engagement with the rack to elevate the compression roller and frame, substantially as described.

7. The combination of a vertically movable core which rises as the material winds thereupon, supporting drums geared together, a vertically movable frame carrying a compression roller acting on the uppermost side of the bale being formed to press the same downward, and gear mechanism in operative connection with the compression roller for elevating the latter out of contact with the finished bale, substantially as described.

8. The combination of a vertically movable core which rises as the material winds thereupon, supporting drums, a vertically movable frame carrying a compression roller acting on the uppermost side of the bale being formed to press the same downward, a pinion on the shaft of the compression roller, and a rack with which the pinion engages for elevating the compression roller out of contact with the finished bale, substantially as described.

9. The combination with a core on which the bale is wound, supporting drums geared together, and a compression roller, of compensating mechanism which partly sustains the compression roller when at its lowest position and permits the full weight of the roller to act on the bale, when said roller is raised a certain distance, substantially as described.

10. The combination of a vertically movable core on which the material is wound, supporting drums rotated in the same direction, a feed apron passing around the supporting drums and adapted to support and rotate the core and also to feed the material thereto, a compression roller which rises as the bale is formed, and spring compensating-mechanism which partly sustains the compression roller when at its lowest position and permits the full weight of the roller to act on the bale when said roller is raised a certain distance, substantially as described.

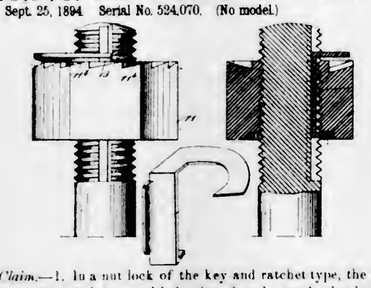
11. The combination with the core, the supporting drums and the compression roller of swinging arms 25 which form the bearings for the arbor 24 of the compression roller, rack-bars 30, 31, formed on standards secured to the frame, and pinions 28, 29, mounted on the arbor 24 and geared with the rack bars substantially as described.



12. The combination of a vertically movable core which rises as the material winds thereupon, supporting drums geared together, an endless feed apron passing around the supporting drums and upon which the core is adapted to rest, a compression roller, and rails 53 located above the supporting drums for removing the bale after the core rises above the rails during the formation of a bale, substantially as described

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529,970. NUT-LOCK. GEORGE E. SMOUSE, Everett, Pa. Filed Sept. 25, 1894. Serial No. 524,070. (No model.)



*Claim.*—1. In a nut lock of the key and ratchet type, the combination, with a bolt grooved in its thread, and a nut having locking projections on top, of a spring pawl having an integral depending key, and a key flange formed at right angles on said key along one edge, substantially as described.

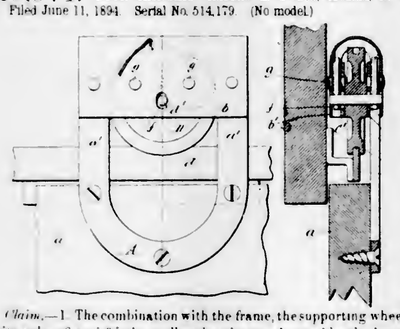
2. In a nut lock of the key and ratchet type, the combination with a threaded bolt longitudinally grooved producing a flat bottomed shallow key-way and a narrow deeper key-way at one side in the shallow key-way, and a threaded nut having ratchet teeth on one end, of a locking pawl having a laterally flanged depending key, which key and its flange are adapted to engage with the key-ways in the bolt, and hold the toe of the pawl engaged with the ratchet teeth, substantially as described.

3. In a nut lock of the key and ratchet type, the combination with a threaded bolt longitudinally grooved, producing a key-way, and a nut having a series of ratchet teeth formed in one end deepening toward their inner terminals, and an integral collar into which said teeth merge at their inner ends, of a spring pawl bent to engage its toe with the ratchet teeth, and having a depending key loosely secured in the nut and engaging the key-way to hold the pawl toe in contact with the ratchet teeth, substantially as described.

4. In a nut lock of the key and ratchet type, the nut having a continuous series of tangential ratchet teeth formed in one end, said teeth being sloped in intervening cavities to gradually deepen them toward their inner terminals which merge in an annular collar encircling the threaded aperture of the nut substantially as described.

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529,971. DOOR-HANGER. ALBERT L. SWETT, Medina, N. Y. Filed June 11, 1894. Serial No. 514,179. (No model.)

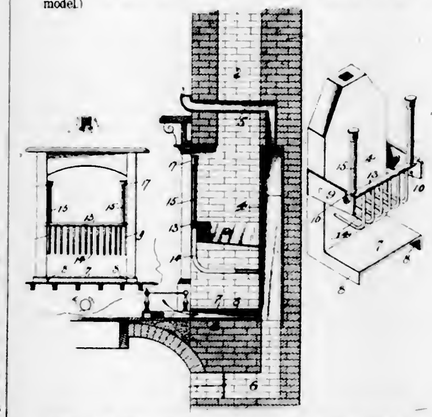


*Claim.*—1. The combination with the frame, the supporting wheel and its axle, of anti-friction rollers bearing against said axle, inner carrier plates arranged on opposite sides of said supporting wheel, independent arbors for said anti-friction rollers arranged on opposite sides of said supporting wheel and supported at their inner ends in said inner carrier plates, and carrier plates arranged on the outer sides of said anti-friction rollers and supporting the outer ends of said arbors, substantially as set forth.

2. The combination with the frame having upwardly projecting arms provided with downwardly projecting hangers, of inner carrier plates secured to the inner sides of said hangers and arms, a hood or cover forming outer carrier plates which are secured to the outer sides of said hangers and arms, a supporting wheel arranged between the inner carrier plates and provided with an axle having its end arranged in slots formed in the inner and outer carrier plates, anti-friction rollers arranged between the inner and outer carrier plates and bearing upon said axle and arbors supporting said rollers and secured with opposite ends to the inner and outer carrier plates, substantially as set forth.

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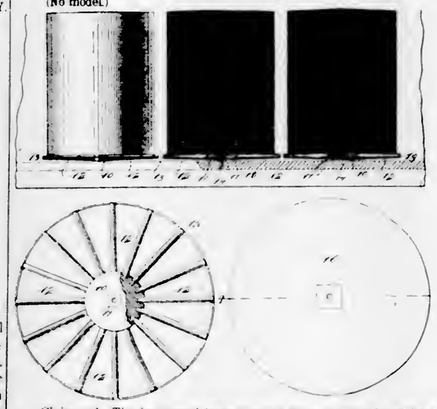
529,972. COMBINED FIREPLACE AND VENTILATOR. JAMES W. TATEM, Durham, N. C., assignor of one-half to W. H. Rowland and W. R. Cooper, same place. Filed Mar. 13, 1894. Serial No. 503,499. (No model.)



*Claim.*—The combination with the hollow fire back having a flue at its upper end adapted to communicate with the interior of a room and an opening at its lower end adapted to communicate with the exterior of the room, the arms formed with said fire back and the lugs at the ends thereof and the horizontal ash plate having downwardly extending flanges forming a ventilating flue, communicating with the fire back, of the hollow grate bars the lower ends of which communicate with the fire back above the ventilating flue, the hollow transverse tube connected with the upper ends of said grate bars, the upwardly extending pipes at each end of said tube having openings at their upper ends, and the rotatable sleeves having openings therein corresponding with the openings in said pipes, substantially as described.

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529,973. MEANS FOR SUPPORTING CARPET-ROLLS. CHARLES L. TAYLOR, Louisville, Ky. Filed Apr. 21, 1894. Serial No. 508,420. (No model.)



*Claim.*—1. The improved base support for carpet rolls, which is double-convex, that is to say, has a convex upper and under surface, and provided with a socket in each side, as shown and described.

2. The improved base support for carpet rolls comprising a central disk-like hub having a central socket in its under side to receive a pivot stud, and a series of radial bars projecting from said hub, as shown and described

3. A base support for carpet rolls, comprising a central disk-like hub, radial spaced bars thereon, a binding band on the outer edges of said bars, and a central perforation in the hub, adapted to loosely receive an upright stationary journal stud, substantially as described.

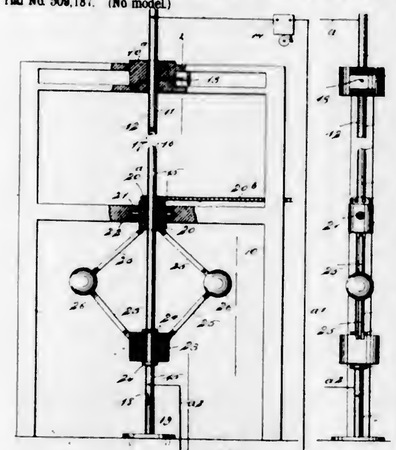
4. The improved stand for carpet rolls, which consists of a horizontal platform, having short vertical studs fixed in its upper side, and circular base supports for carpet rolls, having a slightly convex face, and provided with sockets on the under side, to receive said studs, upon which they are adapted to revolve, as shown and described.

## 529,974. BUTTON-FASTENER. HERMANN THIER, Königstein Germany. Filed May 31, 1894. Serial No. 513,057. (No model.)



*Claim.*—The herein described fastener comprising the clincher *a*, having prongs adapted to pass through the openings of a button, a plate *d*, having a slot through which the said prongs are adapted to pass, the wings or branches *c*, of a U-shape and provided with bearing portions *c'* seated upon the upper edge of the plate *d*, and said wings or branches being arranged to occupy a position between the prongs of clincher *a*, and adapted to be bent away from each other to cause the said prongs to be likewise bent and secured in a clinched position, as described.

## 529,975. SPEED INDICATOR AND ALARM. GEORGE A. THOMPSON and JOHN F. SCHMADEKE, Brooklyn, N. Y. Filed Apr. 27, 1894. Serial No. 509,187. (No model.)

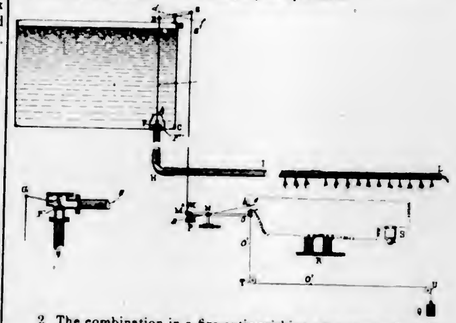


*Claim.*—1. A device of the kind described, comprising a longitudinally adjustable contact rod forming one terminus of an electric circuit which includes an alarm, a longitudinally movable circuit closing rod to touch the contact rod, the circuit closing rod forming the other terminus of the circuit, a revoluble insulated block held in stationary bearings and mounted on the circuit closing rod, driving mechanism to revolve the block, a weight fastened to the circuit closing rod but adapted to revolve thereon, pivoted arms connected with the revoluble block and weight, and weight balls carried by the arms, substantially as described.

2. A device of the kind described, comprising a longitudinally adjustable contact rod held in a support and forming one terminus of an electric circuit which includes a signal, a longitudinally movable circuit closing rod forming the other terminus of the circuit, a supporting post for the circuit closing rod, a revoluble weight carried by the rod, a revoluble insulated block held in stationary bearings and revolving on the rod, pivoted arms connecting the block and weight, and weight balls carried by the arms, substantially as described.

## 529,976. FIRE-EXTINGUISHING APPARATUS. RAFFAELE TRANQUILLI, Rome, Italy. Filed July 24, 1894. Serial No. 518,488. (No model.)

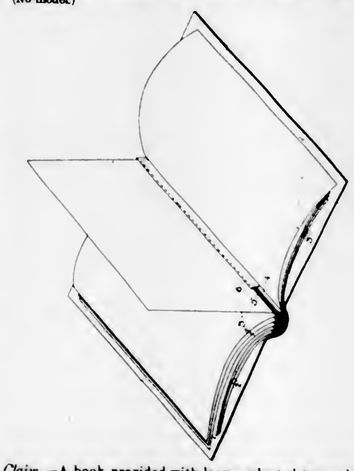
*Claim.*—1. The combination in a fire-extinguishing apparatus, of a suitable supply of water, a discharge pipe communicating therewith a valve adapted to control said communication, a lever connected with said valve, a normally balanced lever, a connection between the latter and the first lever, and a combustible cord connected with said balanced lever and adapted when severed to permit the parts to operate the valve to open communication between the water supply and the discharge pipe, as and for the purpose specified.



2. The combination in a fire-extinguishing apparatus, of a suitable supply of water, a discharge pipe communicating therewith, a valve adapted to control said communication, a pivoted lever connected with said valve at one end, a wire or rod connected with the opposite end of said lever, a pivoted normally balanced lever carrying a weight and connected at one end with said wire or rod, a combustible cord connected with the opposite end of said balanced lever, guide-pulleys around which said cord passes, and a casing carried by the said cord and containing a readily melted substance, all as and for the purpose specified.

3. The combination in a fire-extinguishing apparatus, of a suitable supply of water, a discharge pipe communicating therewith, a valve adapted to control said communication, a pivoted lever connected with said valve at one end, a wire or rod connected with the opposite end of said lever, a pivoted normally balanced lever carrying a weight and connected at one end with said wire or rod, a combustible cord connected with the opposite end of said balanced lever, guide-pulleys around which said cord passes, a casing carried by the said cord and containing a readily melted substance, an electrical circuit containing an alarm and adapted to be closed when the said core is severed, in the manner and for the purpose specified.

## 529,977. COPYING-BOOK. ALONZO B. TURNER and HUGH A. McMULLEN, Mount Savage, Md. Filed Oct. 3, 1893. Serial No. 487,106. (No model.)



*Claim.*—A book provided with leaves adapted to receive transfer copies alternately arranged with gummed strips and having calendered strips interposed between said leaves of copying paper and the gummed strips, the gum of said latter strips being on the side toward the end of the book and a calendered strip interposed between the adhesive surface of the gummed strip and the succeeding page, substantially as set forth whereby the gummed strip may receive the



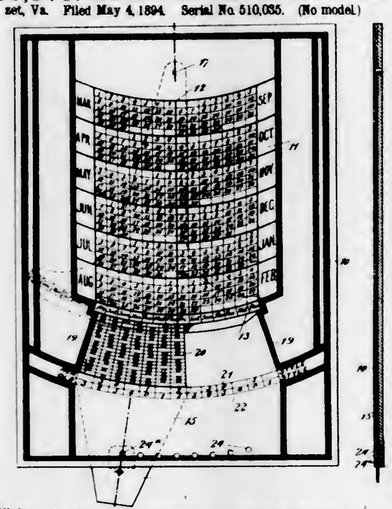
back of the original and be arranged in natural order with respect to the answer and on an opposite adjacent page and the accidental sticking of strips avoided.

## 529,978. DRENCHING-BOTTLE. JOHN T. TURNER, Jamestown, N. D. Filed June 13, 1894. Serial No. 514,405. (No model.)



*Claim.*—A drenching bottle having an enlarged bottom and contracted outlet, a protecting covering closely fitting and inclosing the bottle and open at its larger end, and an annular cap D removably fitting the said larger end and having a funnel D' adapted to enter the smaller end of the bottle when said cap is removed, substantially as described.

## 529,979. PERPETUAL CALENDAR. CHARLES E. VAWTER, Crozet, Va. Filed May 4, 1894. Serial No. 510,035. (No model.)



*Claim.*—1. A perpetual calendar, having on its face the months and the dates thereof opposite the names of the months, a double row of figures representing old and new style remainders, as specified, and a movable table arranged between the date groups and the remainder numbers, the table having at the top the days of the week, and on it in columns the two final figures of the years of a century, substantially as described.

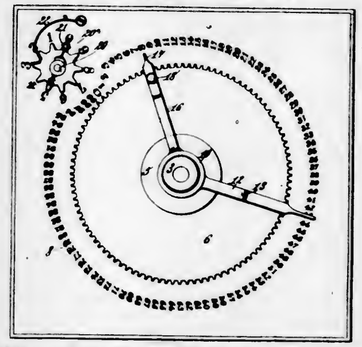
2. A perpetual calendar, having on its face the names of the months arranged in double rows and the dates opposite the names, a double row of spaces to mark the remainders of old and new style dates after division, as specified, an opening between the date numbers and the remainder numbers, and a table movable across the opening, the table having at the top the days of the week, and in columns thereon the two final figures of the years of a century, substantially as described.

3. A perpetual calendar, comprising a front plate and back plate, the front plate having thereon the names of the months, the dates of the months arranged opposite the names, an opening beneath the date numbers, and a double row of figures representing old and new style of remainders, as specified, beneath the opening, and a swinging piece arranged behind the front plate and protruding below the said plate, the movable piece having thereon a table, bearing in columns, the two final figures of the years of a century, and adjacent to these figures the days of the week, substantially as described.

4. The combination, with the calendar, having its face lettered and numbered as specified and provided with apertures, of the movable piece bearing the names of the days of the week and the terminal figures of a century's years and having an aperture to register with any one of the first named apertures, and an indicating device movable under and visible through the registering apertures to indicate when the calendar is arranged for the current year, substantially as described.

5. The combination, with the calendar, having its face numbered and lettered as described, and the movable piece also lettered and numbered as specified, of the holes in the face of the calendar, the colored clip adapted to be arranged behind the holes, and the perforated and marked lower end of the movable piece arranged to swing between the colored clip and the perforations in the face of the calendar, substantially as described.

## 529,980. CASH-REGISTER. JOSEPH H. VOSS, Cincinnati, Ohio. Filed July 26, 1894. Serial No. 518,668. (No model.)



*Claim.*—1. In a mechanism of the type described, the combination with a housed or inclosed registering mechanism, of a gear arranged on the exterior to indicate consecutively a number of cents less than one dollar, an independent gear to indicate dollars, and two independent arms loosely mounted on the axis of the cents-gear each adapted to engage and disengage the teeth of the gear and one of said arms being of such length as to engage the dollar-gear in passing and advance it a single space, substantially as described.

2. The combination with a gear having one hundred teeth and adapted to indicate by its revolution, any number of cents less than one dollar, an independent gear to indicate dollars, and two independent arms loosely mounted on the axis of the cents-gear, said arms being provided with recesses adapted to engage and disengage the teeth of the cents-gear, and one of said arms being of such length as to advance the dollar-gear a single space at each complete revolution of the cents-gear, substantially as described.

3. The combination with a gear having one hundred teeth and surrounded by an equal number of divisions containing numbers to and including ninety-nine, and a zero, of two independent arms mounted on rings fitted loosely on the axis of said gear, each having in its lower face, near the free end, a recess to admit a tooth of the gear, said arms being adapted to pass each other without interference, so that one can remain in engagement and automatically add the separate sums indicated by the other, substantially as described.

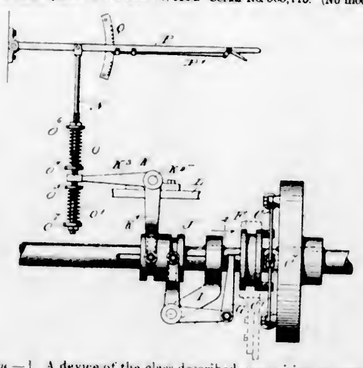
4. The combination with a gear indicating from one to ninety-nine cents, of two independent arms mounted on rings loosely fitting the axis of said gear, each arm being adapted to engage and disengage said gear and turn in either direction, when disengaged, of a dollar indicating wheel carried by a separate shaft and advanced at each revolution of the cents-wheel by the prolonged end of one of said arms, a cent-indicating gear moving in unison with the cents-gear and inclosed in a housing, a dollar-indicating gear on a separate, concentric axis, a tappet on the cent-indicating gear, and a pinion engaging the dollar-indicating gear and itself engaged by said tappet, the gears last named carrying disks displaying the dollars and cents on their edges through a sight opening, substantially as described.

5. The combination with the exposed cents-gear and an independent dollars-gear, of two independent arms turning loosely on the axis of the former and adapted to engage and disengage the same, and a separate, inclosed registering mechanism operated by the cents-gear and comprising disks displaying the successive amounts on their edges through a sight-opening, substantially as described.

6. The combination with a gear carried by a sleeve and indicating from one to ninety-nine cents, of two independent arms having rings loosely fitting said sleeve and provided with recesses adapted to engage and disengage the teeth of the gear, of a dollar gear on an independent shaft, two gears carrying disks and inclosed in a housing, one gear carried by the sleeve and the other by a shaft within the

sleeve, a pinion meshing with the latter, and a tappet on the other gear engaging said pinion in passing the disks having consecutive numbers on their edges which appear in a sight-opening in the casing, substantially as described.

529,981. REVERSING-GEAR AND GOVERNOR. THOMAS T. WAGGONER, St. Louis, Mo., assignor of one-half to Benjamin F. Waggoner, same place. Filed Mar. 30, 1894. Serial No. 505,715. (No model.)



*Claim.*—1. A device of the class described, comprising an eccentric through which the driving shaft passes, provided with an arm pivoted to a support carried by the shaft, and weighted levers pivoted together and pivotally connected to the body of the eccentric, substantially as described.

2. A device of the class described, comprising a ring shaped eccentric through which the driving shaft passes, the eccentric being provided with an arm pivoted to a support carried by the shaft, weighted levers pivoted to a support carried by the said shaft and pivotally connected together, and links pivoted to the levers and to the body of the eccentric, substantially as described.

3. A device of the class described, comprising a wheel secured on the main driving shaft of the engine, a ring-shaped eccentric having an arm pivoted on the said wheel, the main driving shaft passing through the center opening of the said eccentric and eccentric thereto, weighted levers pivoted on the said wheel and pivotally-connected with each other and with the said eccentric, and slotted links pivotally-connecting the said levers with the said eccentric, substantially as shown and described.

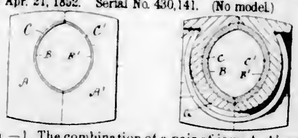
4. A device of the class described, comprising a wheel secured on the main driving shaft of the engine, a ring-shaped eccentric having an arm pivoted on said wheel, the said shaft passing through the center opening of the said eccentric and eccentric thereto, weighted levers pivoted on the said wheel and pivotally-connected with each other and with the said eccentric, and a reversing lever connected with the said pivoted eccentric to change the position of the latter relative to the driving shaft, substantially as shown and described.

5. A device of the class described, comprising a wheel secured on the main driving shaft of the engine, a ring-shaped eccentric having an arm pivoted to said wheel, said shaft passing through the center opening of the said eccentric and eccentric thereto, weighted levers pivoted on the said wheel and pivotally-connected with each other and with the said eccentric, a bell crank lever supported from the said driving shaft and rotated with the same, a link pivotally-connecting the said bell crank lever with the said eccentric, a collar mounted to slide on the said driving shaft, and controlling the movement of the said bell crank lever, substantially as shown and described.

6. A device of the class described, comprising a wheel secured on the main driving shaft, a ring-shaped eccentric having an arm pivoted on said wheel, said shaft passing through the center opening in the said eccentric and eccentric thereto, weighted levers pivoted on the said wheel and pivotally-connected with each other and with the said eccentric, a bell crank lever supported from the said driving shaft and rotated with the same, a link pivotally connecting the said bell crank lever with the said eccentric, a collar mounted to slide on said driving shaft and controlling the movement of the said bell crank lever, and means, substantially as described, for controlling the sliding movement of the said collar on the said shaft, as and for the purpose specified.

7. A device of the class described, comprising a wheel secured on the main driving shaft, a ring-shaped eccentric having an arm pivoted on said wheel, said shaft passing through the center opening of the said eccentric and eccentric thereto, weighted levers pivoted on the said wheel and pivotally-connected with each other and with the said eccentric, a bell crank lever supported from the said driving shaft and rotated with the same, a link pivotally-connecting the said bell crank lever with the said eccentric, a collar mounted to slide on the said driving shaft and controlling the movement of the said bell crank lever, a second bell crank lever connected with the said collar, a rod engaging said second bell crank lever, springs pressing on opposite sides of the said bell crank lever, and coiled on the said rod, and a reversing lever pivotally-connected with the said rod, substantially as shown and described.

529,982. PIPE-WRENCH. JOHN E. WAKEFIELD, Worcester, Mass. Filed Apr. 21, 1892. Serial No. 430,141. (No model.)



*Claim.*—1 The combination of a pair of jaws A, A' provided with internal concave faces B, B' adapted to inclose the side of a circular pipe and having the outer sides of said jaws provided with the plane surfaces D, D' adapted to receive a wrench and a spring H with its tension applied to close said jaws, substantially as described.

2. The combination of jaws A, A' provided with concave faces B, B' and parallel sides D, D' and having a recessed groove, or channel and a spring held in said groove to hold said jaws together, substantially as described.

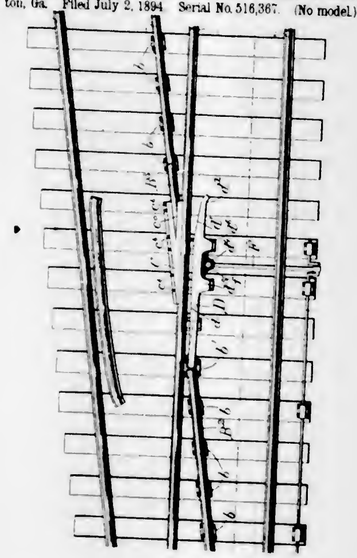
3. The combination with a pair of jaws having concave faces to inclose a pipe and having their opposite edges parallel to receive a wrench and provided with a groove, or recess having a curved bottom G, of a curved spring H with the distance between the ends of said spring less than the diameter of the curved bottom G, whereby said spring is held in position with its tension applied to hold said jaws together, substantially as described.

4 The combination of jaws A, A' provided with concave faces B, B' and with mortises J, J' and a bar K held in said mortises, whereby the angular motion of said jaws is limited, substantially as described.

5. The combination of a pair of jaws adapted to inclose a circular pipe, a spring with its tension applied to said jaws to hold them together, and a bar held in one of said jaws and entering a recess in the opposite jaw, whereby the motion of the jaws is limited, substantially as described.

6. The combination of a pair of jaws A, A', adapted to inclose a circular pipe and provided with grooves, or channels E, E', and walls F, F' of springs H, H, held in said grooves with the ends resting against the walls F, F', substantially as described.

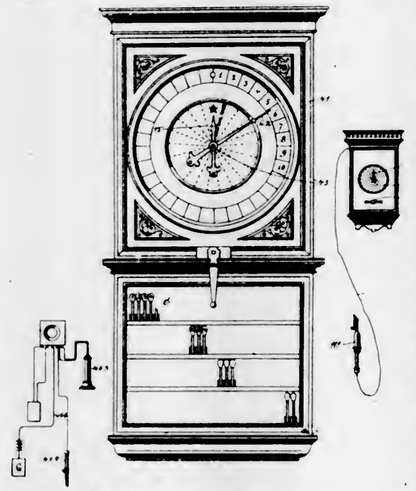
529,983. RAILWAY-SWITCH FROG. RUSSEL T. WALDREP, Tifton, Ga. Filed July 2, 1894. Serial No. 516,367. (No model.)





*Claim.*—In an apparatus of the character described, the combination with one of the main line rails and the blocks E and E' of a pivoted frog rail adapted to swing partly over said main line rail, and provided with a straight edge $d$ sloping outward as at $d'$, curved outward as at $d^3$, and provided with flat lugs $d^2$ and $d^4$ adapted to rest on said blocks and give an enlarged supporting surface; a siding rail cut away at an angle and projecting above the level of said main line rail; and adapted to bear against said sloping edge $d'$ of the frog rail; and a chair plate C approximately triangular in form having the projection $c^2$ fitting snugly against the web of the main line rail, with a groove $c$ dovetailed at $c'$ adapted to receive the flange of the cut away siding rail; a vertical face $c^3$ adapted to support the cut away side of the siding rail, and a flange $c^4$ with bolt holes $c_5$ therein for securing said chair plate to the cross ties, substantially as and for the purposes described.

529,984. ELECTRIC SIGNAL APPARATUS. HORACE E. WALTER, Richfield Springs, N. Y. Filed Jan. 9, 1893. Serial No. 457,759. (No model.)



*Claim.*—1. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station, each containing a signal transmitter and a resistance, and a switch for removing the resistance during the transmission of the box signal, a resistance coil in each line at the central station, a commutator for successively shunting said resistances, an electro-magnet controlling the operation of said commutator, operated from the sub-station, a battery in said shunt circuit too feeble to overcome the resistances at the boxes, a make-and-break wheel also in said shunt circuit, a normally wound motor therefor, and an electro-magnet in said shunt circuit for releasing said motor, and locking the commutator arm when it closes on that line in which the resistance at the box has been removed, a signal receiver, and an electro-magnet for operating it, responsive to the action of said make-and-break wheel, substantially as described.

2. In an electric signaling apparatus, the combination of a series of radial lines connecting substations or boxes, with a central station, each containing a signal transmitter and a resistance, and a switch connected with a cooperative part of the transmitter for removing the resistance during the transmission of the box signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator, operated from the substation, a battery in said shunt circuit too feeble to overcome the resistance at the boxes, a locking device operated by said battery current for locking the commutator arm when it closes on that line in which the resistance at the box has been removed, and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therefor, and a releasing device for said motor operated by said battery current, a signal receiver and an electro-magnet operating it responsive to the action of said make-and-break wheel, substantially as described.

3. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station, each containing a signal transmitter, and a resistance, the latter being normally included in the line, and a shunt switch connected with a co-operative part of the transmitter forclosing a short circuit around said resistance during the transmission of the box signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator operated from the sub-station, a battery in said shunt circuit too feeble to overcome the resistances at the boxes, a locking device operated by said battery current for locking the commutator arm when it closes on that line in which the resistance at the box has been removed, and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therefor, and a releasing device for said motor operated in said battery current, a signal receiver, and an electro-magnet operating it responsive to the action of said make-and-break wheel, substantially as described.

4. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station, each containing a signal transmitter, and a resistance, and a switch for removing it during the transmission of the box signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator, a magneto generator at each box for operating said electro-magnet, a battery in the shunt circuit with the commutator too feeble to overcome the resistances at the boxes, a locking device operated by said battery current for locking the commutator arm when it closes on that line in which the resistance at the box has been removed, and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therefor, and a releasing device for said motor operated by said battery current, a signal receiver, and an electro-magnet operating it responsive to the action of said make-and-break wheel, substantially as described.

5. In an electric signaling apparatus the combination of a series of radial lines connecting sub-stations or boxes with a central station, each containing a multiple signal transmitter comprising a signal indicator, and step-by-step restoring electro-magnet therefor, a resistance coil also at each box, normally included in the line, a switch for removing it during the transmission of the box signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator, operated from the sub-station, a battery in said shunt circuit too feeble to overcome the resistances at the boxes, a locking device operated by said battery current, for locking the commutator arm when it closes on that line in which the resistance at the box has been removed and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therefor, and a releasing device for said motor operated by said battery current, a signal receiver, and an electro-magnet controlling its operation responsive to the action of said make-and-brake wheel, substantially as described.

6. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station each containing a multiple signal transmitter comprising a signal indicator, and step-by-step restoring electro-magnet therefor, a resistance coil also at each box, normally included in the line, a switch for removing it during the transmission of its signal, a resistancecoil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator, a magneto generator at each sub-station for operating said electro-magnet, a switch connected with a cooperative part of said magneto generator for temporarily rendering inoperative the restoring electro-magnet of the transmitter, a battery in the shunt circuit which includes the commutator too feeble to overcome the resistance at the box, a locking device operated by said battery current, for locking the commutator arm when it closes on that line in which the resistance at the box has been removed and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therefor, and a releasing device for said motor operated by said battery current, a signal receiver, and an electro magnet controlling its operation responsive to the action of said make-and-break wheel, substantially as described.

7. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station and containing a signal transmitter and a resistance, the latter being normally included in the line, a switch for removing it during the transmission of the box signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator, local circuit therefor, a relay controlling said local circuit, operated from the sub-station, a battery in said shunt circuit too feeble to overcome the resistances at the boxes, a locking device operated by said battery current for locking the commutator arm when it closes on that line in which the resistance at the box has been re-

moved, and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therefor, and a releasing device for said motor operated by said battery current, a signal receiver and an electro-magnet operating it responsive to the action of said make-and-break wheel, and a circuit breaker for said local circuit operated by the commutator arm, breaking said circuit immediately after said arm is released, substantially as described.

8. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station, a multiple signal transmitter at each box comprising a signal indicator, and step-by step-restoring electro magnet therefor, a resistance coil also at each box, normally included in the line, a switch for removing it during the transmission of its signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator, operated from the sub-station, a battery in said shunt circuit too feeble to overcome the resistances at the boxes, a locking device operated by said battery current for locking the commutator arm when it closes on that line in which the resistance at the box has been removed and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor operated by said battery current, a signal receiver, and an electro magnet controlling its operation responsive to the action of said make-and-break wheel, and a restoring device for said signal receiver, substantially as described.

9. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station, a multiple signal transmitter at each box comprising a signal indicator, and step-by-step restoring electro-magnet therefor, a resistance coil also at each box, normally included in the line, a switch for removing it during the transmission of its signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator, operated from the sub-station, a battery in said shunt circuit too feeble to overcome the resistances at the boxes, a locking device operated by said battery current, for locking the commutator arm when it closes on that line in which the resistance at the box has been removed, and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therefor, and a releasing device for said motor operated by said battery current, a signal receiver, and an electro-magnet controlling its operation responsive to the action of said make-and-break wheel, and restoring devices for simultaneously restoring the signal receiver and commutator to their normal positions, and for winding the motor which drives the make-and-break wheel, substantially as described.

10. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station, a multiple signal transmitter at each box comprising a signal indicator, and step-by-step restoring electro-magnet therefor, a resistance coil at each box, normally included in the line, a switch for removing it during the transmission of its signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator operated from the sub-station, a battery in said shunt circuit too feeble to overcome the resistances at the boxes, a locking device operated by said battery current, for locking the commutator arm when it closes on that line in which the resistance at the box has been removed, and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therefor, and a releasing device for said motor operated by said battery current, a signal receiver, and an electro-magnet controlling its operation responsive to the action of said make-and-break wheel, and restoring devices for simultaneously restoring the signal receiver and commutator to their normal positions upon winding the motor, and a circuit breaker in said shunt circuit controlled by said restoring devices, substantially as described.

11. The step-by-step signal receiver herein described consisting of the combination of a dial indicator, train, weighted sector engaging and driving said train, an electro-magnet for letting off said train step-by-step, and circuit therefor, and make-and-break wheel for said circuit operated from a distant point, and restoring device for restoring the cooperative parts of said receiver to their normal position and raising the weighted sector, substantially as described.

12. The box-locating device herein described consisting of the combination of the commutator having a rotatable commutator arm, a train with which it is connected by a pawl and ratchet connection, a weighted sector for driving said train, a locking device for said train, a series of radial lines including resistances at the boxes, and also resistances at the receiving station, means for removing the resistances at the boxes during the transmission of the signal, and shunt circuit for the resistances at the receiving station, shunting them successively through the commutator, and a battery in said shunt circuit and an electro-magnet also included in said shunt circuit which operates said locking device, substantially as described.

13. In an electric signaling apparatus the combination of a series of radial lines connecting sub-stations or boxes with a central station, a multiple signal transmitter at each box comprising a signal indicator, and step-by-step restoring electro-magnet therefor, a resistance coil also at each box, normally included in the line, a switch for removing it during the transmission of the box signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator operated from the sub-stations, a battery in said shunt circuit too feeble to overcome the resistances at the boxes, a locking device operated by said battery current for locking the commutator arm when it closes on that line in which the resistance at the box has been removed, and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therefor, and a releasing device for said motor operated by said battery current, a signal receiver, and an electro-magnet controlling its operation responsive to the action of said make-and-break wheel, and variable resistances in said radial lines to equalize their total resistance and permit the use of the same battery, substantially as described.

14. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station, a multiple signal transmitter at each box comprising a signal indicator, and step-by-step restoring electro-magnet therefor, a resistance coil also at each box, normally included in the line, a switch for removing it during the transmission of its signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator operated from the sub-station, a battery in said shunt circuit too feeble to overcome the resistances at the boxes, a locking device operated by said battery current, for locking the commutator arm when it closes on that line in which the resistance at the box has been removed, and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therefor, and a releasing device for said motor operated by said battery current, a signal receiver, and an electro-magnet controlling its operation responsive to the action of said make-and break wheel, and restoring devices for simultaneously restoring the signal receiver and commutator to their normal positions, and for winding the motor which drives the make-and-break wheel, substantially as described.

15. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station, a multiple signal transmitter at each box comprising a signal indicator, and step-by-step restoring electro-magnet therefor, a resistance coil also at each box, normally included in the line, a switch for removing it during the transmission of its signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator operated from the sub-stations, a battery in said shunt circuit too feeble to overcome the resistances at the boxes, a locking device operated by said battery current, for locking the commutator arm when it closes on that line in which the resistance at the box has been removed, and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therefor, and a releasing device for said motor operated by said battery current, a signal receiver, and an electro-magnet controlling its operation responsive to the action of said make-and-break wheel, and restoring devices for simultaneously restoring the signal receiver and commutator to their normal positions upon winding the motor, and a circuit breaker in said shunt circuit controlled by said restoring devices, substantially as described.

16. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station, a multiple signal transmitter at each box comprising a signal indicator, and step-by-step restoring electro-magnet therefor, a resistance coil also at each box, normally included in the line, a switch operated by the transmitter for removing it during the transmission of its signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator, a magneto-generator at each sub-station for operating said electro-magnet, a switch connected with a cooperative part of said magneto-generator for temporarily short-circuiting the resistances at the boxes and opening the branch containing the restoring electro-magnet of the transmitter, a battery in the shunt circuit which includes the commutator too feeble to overcome the resistances at the boxes, a locking device operated by said battery current, for locking the commutator arm when it closes on that line in which the resistance at the box has been removed, and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therefor and a releasing device for said motor operated by said battery current, a signal receiver, and an electro-maguet controlling its operation responsive to the action of said make-and-break wheel, substantially as described.

17. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station, a signal transmitter at each box, a resistance coil also at each box normally included in the line, and a switch for removing it during the transmission of the box signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator, a battery at the central station which controls the operation of said electro-magnet included in a normally open branch wire, and a searching device consisting of a series of contacts connected to the radial lines, a wiper carrying contacts and means for moving it, said searching device connecting said branch wire in the radial lines as the wiper is moved, the aforesaid battery being too feeble to overcome the resistances at the boxes, but sufficiently strong to be effective if one of said resistances is removed, thereby controlling the operation of the commutator, a battery in shunt circuit with said commutator likewise too feeble to overcome the resistance at the box, a locking device operated by said battery current for locking the commutator arm when it closes on that line in which the resistance at the box has been removed and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therein, and a releasing device of said motor operated by said battery current, a signal receiver and electro-magnet operating it responsive to the action of said make-and-break wheel, substantially as described.

18. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes, with a central station, a signal transmitter at each box, a resistance coil also at each box normally included in the line, and a switch for removing it during the transmission of its signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator operated from the sub-station, a battery in said shunt circuit too feeble to overcome the resistance at the box, a locking device operated by said battery current for locking the commutator arm when it closes on that line in which the resistance at the box has been removed, and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therefor, and a releasing device for said motor operated by said battery current, a signal receiver and an electro-magnet operating it responsive to the action of said make-and-break wheel, another battery at the said central station which controls an electro-magnet common to all the lines for controlling the operation of said commutator, a normally open branch wire including it, and a searching device which connects said normally open branch wire with radial lines, said battery likewise being too feeble to overcome the resistance at the box, but sufficiently strong to be effective if one of said resistances is removed, thereby controlling the operation of said commutator, substantially as described.

19. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station, a multiple signal transmitter at each box comprising a signal indicator, and step-by-step restoring electro-magnet therefor, a resistance coil also at each box, normally included in the line, a switch for removing it during the transmission of its signal, a resistance coil in each line at the central station, a commutator for successively shunting the resistances at the central station, an electro-magnet controlling the operation of said commutator operated from the sub station, a battery in said shunt circuit too feeble to overcome the resistances at the boxes, a locking device operated by said battery current, for locking the commutator arm when it closes on that line in which the resistance at the box has been removed, and the battery thereby rendered effective, a make-and-break wheel in said shunt circuit, a normally wound motor therefor, and a releasing device for said motor operated by said battery current, a signal receiver and electro-magnet operating it responsive to the action of said make-and-break wheel, and a circuit breaker for said local circuit operated by the commutator arm, breaking said circuit immediately after said arm is released, substantially as described.

21. In an electric signaliug apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station, and a combined signal transmitter and receiver at the box consisting of an indicator 4 adapted to be moved in one direction to set a signal and a restoring electro-magnet for restoring it to zero, and a receiving electro-magnet of higher resistance for moving it in the opposite direction from zero, indicating a signal transmitted from the central station, a switch for rendering inoperative the receiving electro-magnet during the transmission of the box signal, an automatically operated commutator at the central station for locating the lines, a signal receiver and an electro-magnet for operating it, a make-and-break wheel and motor therefor, and actuating electro-magnet, and a battery wire which includes said electro-magnets adapted to be connected with any one of the lines by the commutator, a signal transmitter also at the said central station included in a removable branch wire containing a battery sufficiently strong to operate the receiving electro-magnet at the box, substantially as described.

22. In an electric signaling apparatus, the combination of a series of radial lines connecting sub-stations or boxes with a central station, and a combined signal transmitter and receiver at the box consisting of an indicator 4 adapted to be moved in one direction to set a signal and a restoring electro-magnet for restoring it to zero, and receiving electro-magnet of higher resistance for moving it in the opposite direction from zero indicating a signal transmitted from the central station, a switch for removing the receiving electro-magnet and including the restoring electro-magnet during the transmission of the box signal, a light signal comprising a light and colored globe, operating mechanism therefor restored by said receiving electro-magnet, an automatically operated commutator at the central station for locating the lines, a signal receiver and electro magnet for operating it a make-and-break wheel and motor therefor, an actuating electro-magnet and battery circuit which includes said electro-magnets adapted to be connected with any one of the lines by the commutator, a signal transmitter also at the said central station included in a removable branch wire containing a battery sufficiently strong to operate the receiving electro-magnets at the box, substantially as described.

23. The light-signal herein described comprising a lantern mounted upon a post, a light such as a gas jet therein, a colored globe 22, suspended above said light by a cord or chain, and adapted, when released to descend by gravity and inclose the light, one or more pulleys over which said cord passes, a main pulley around which said cord passes, and hand crank for turning said main pulley in one direction, a catch for holding said pulley in position with the globe in its elevated position and an electro-magnetic let-off for said catch, adapted to be operated from a distant point, substantially as described.

24. The light-signal herein described comprising a lantern mounted upon a post, having a transparent lower part, opaque top part or hood, a light, such as a gas jet therein, a colored globe 22 suspended above said light by a cord or chain, and adapted when released to descend by gravity and inclose the light, one or more pulleys over which said cord passes, a main pulley around which said cord passes, and hand crank for turning said main pulley in one direction, a catch for holding said pulley in position with the globe in its elevated position, and an electro-magnetic let-off for said catch, adapted to be operated from a distant point, substantially as described.

25. The light-signal herein described comprising a lantern mounted upon a post, a light, such as a gas jet therein, a colored globe 22 suspended above said light by a cord or chain, and adapted, when released to descend by gravity and inclose the light, one or more pulleys in said lantern over and around which said cord passes, a hand crank connected with said pulley arm 16, catch 15, engaging said arm, and electro-magnetic let-off consisting of an arm projecting from said catch, let off lever 13, engaging said arm, electro-magnet 24 for moving said lever 13, and circuit for said electro-magnet operated from a distant point, substantially as described.

26. In a combined signal transmitting and receiving instrument, a dial, a signal indicator, a wheel and pallet for operating the indicator continuously in one direction, two electro-magnets of different

resistances for operating the pallet, one in each branch of the line, a contact piece connected with the signal indicator, a spring in one of the branches adapted to engage the contact piece during a half revolution of the indicator in one direction and complete the circuit through one branch and the low resistance magnet, and break the circuit through the low retistance magnet, when the indicator is moved on the other half of the dial, substantially as described.

27. In a combined signal transmitting and receiving apparatus, a signal dial having upon one side of a divisional point a set of transmitting signals, and upon the other side thereof a set of receiving signals, a signal-indicator moving over said dial, being manually operated in one direction over the set of transmitting signals, means for restoring it to the divisional point, when so moved, controlled by an electro-magnet, the circuit of which is operated from a distant point, and means for moving it over the set of receiving signals which is controlled by another electro-magnet, the circuit of which is operated from a distant point, said indicator when so moved being restored by hand, substantially as described.

28. The combination of several radial circuits, a common receiver for the several circuits, a transmitting and receiving instrument for each of the several circuits having a signal indicator, an electro-magnet in one branch of each circuit for operating a signal indicator in transmitting a signal and an electro-magnet of high resistance in a branch of each circuit for operating a signal indicator in receiving a message, substantially as described.

29. In a signal transmitting and receiving instrument, the combination with a dial having the transmitting signals arranged at one side of a divisional point and the receiving signals arranged at the other side of the divisional point, an indicator moving on the dial over the signals, an escapement for automatically operating the indicator, a magnet for operating the escapement, and a spring for automatically assisting the movement of the indicator in one direction over the signals, substantially as described.

30. In a signal transmitting and receiving instrument, a dial having the transmitting signals arranged on one side of a divisional point on the dial and the receiving signals arranged on the other side of the dial, a signal indicator adapted to move over the transmitting and receiving signals, a pallet for operating the indicator in one direction over the signals, a magnet for operating the pallet while the indicator is moving over the transmitting signals, means connected with the indicator for breaking the circuit through the magnet which operates the indicator in a retrograde movement over the transmitting signals when the indicator has reached the divisional point between the transmitting and receiving signals, and a magnet of higher resistance for operating the pallet and indicator to pass the same over the receiving signals, substantially as described.

31. In a combined signal transmitting and receiving instrument, the combination of a dial, a signal indicator and two electro-magnets of different resistances for operating said signal indicator, one of which is normally included in the line, and a switch for removing it and including the other electro magnet, and a light signal comprising a light, and a colored globe and actuator therefor, and releasing mechanism for said actuator controlled by the aforesaid electro-magnet, which is normally included in the line, substantially as described.

32. The combination of a signal box having a dial with transmitting signals thereon, an indicator to move over the dial, a door to the box concealing said indicator, and an opening in the door having a smaller door, and plate on the main door cut away to expose the indicator and a part of the transmitting signals on the dial, whereby a person having access to the instrument through the smaller door can operate the indicator on a limited number of signals substantially as described.

33. In an electric signaling apparatus, the combination of a series of radial lines connected at a central station with a common terminal, a resistance in each radial line at said central station, a signal transmitter included in each line at a remote point and a box containing it, and a signal receiver included in a branch wire at the central station, and a commutator for connecting said branch wire with the radial lines successively, shunting the resistances, an electro-magnet for starting said commutator, a magneto-generator at each box controlling the operation of said electro-magnet, and an electro-magnet for stopping said commutator, connected with the branch wire containing the signal receiver, substantially as described.

34. In an electric signaling apparatus, the combination of a series of radial lines connected at a central station with a common terminal, a signal transmitter and receiver in each line at the box, a signal receiver included in a branch wire with a battery at the central station, and a commutator for connecting said branch wire with the radial lines successively, an electro-magnet for operating said commutator, and means at the box for operating said electro-magnet, and a signal transmitter at the said central station included in a branch wire with a battery, and switches by means of which said branch wire may be connected with any one of the said radial lines, substantially as described.

35. In an electric signaling apparatus, the combination of a series of radial lines connected at a central station with a common terminal, a signal transmitter included in each line adapted to be set to transmit its signal, a signal receiver at the central station, and commutator for successively connecting said receiver with the radial lines, a spring jack included in each radial line at the central station, a signal transmitter at the central station having as a cooperative part of it a make and break wheel included in a branch wire containing a battery, and having a plug switch to engage any one of said spring jacks, and a signal receiver included in each radial line at the box, the operating electro-magnet of which is responsive to the action of the make-and-break wheel of said signal transmitter, substantially as described.

36. In an electric signaling apparatus, the combination of a series of radial lines connected at a central station with a common terminal, a signal transmitter and resistance connected with each line at the box, a switch for removing the resistance during the transmission of the box signal, and a signal receiver included in a branch wire with a battery at the central station, said battery being too feeble to overcome the resistance at the box, and an electro-magnetically operated commutator for connecting said branch wire with the radial lines successively thereby establishing electric circuits with said lines, substantially as described.

37. In an electric signaling apparatus, the combination of a series of radial lines connected at a central station with a common terminal, each radial line having a resistance at the central office a signal transmitter and resistance connected with each line at the box, and a signal receiver included in a branch wire with a battery at the central station, said battery being too feeble to overcome the resistances at the box, and an electro-magnetically operated commutator for connecting said branch wire with the radial lines successively, shunting the resistances at the central station and establishing electric circuits with said lines, substantially as described.

38. In an electric signaling apparatus, the combination of a series of radial lines connected at a central station with a common terminal, a signal transmitter and resistance connected with each line at the box, a switch for removing the resistances during the transmission of the box signal, a variable resistance permanently included in each line which equalizes the total resistance of the several lines, and a signal receiver included in a branch wire with a battery at the central station, said battery being too feeble to overcome the resistance at the box, and an electro-magnetically operated commutator for connecting said branch wire with the radial lines successively, establishing an electric circuit when the commutator closes upon that line wherein the resistance at the box has been removed, substantially as described.

39. In an electric signaling apparatus, the combination of a series of radial lines connected at a central station with a common terminal, a signal transmitter and a resistance included in each line at the box, a switch for removing the resistance during the transmission of the box signal, a variable resistance permanently included in each line to equalize the total resistance of the several lines, and other resistances included in each line at the central station, and a signal receiver included in a branch wire with a battery at the central station, said battery being too feeble to overcome the resistance at the box, and an electro-magnetically operated commutator for connecting said branch wire with the radial lines successively, shunting the resistances at the central station and establishing an electric circuit when the commutator arm closes upon that line wherein the resistance at the box has been removed, substantially as described.

40. In an electric signal apparatus, the combination of a series of radial lines connected at a central station with a common terminal, and each having at said central station a resistance, a magneto-generator connected in each radial line at the box, a battery wire at the central station, a commutator started by an electro magnet operated by said magneto-generator for successively connecting said battery wire with the radial lines, shunting the resistances, a searching device consisting of a series of contact pieces, connected respectively with the radial lines, a movable member bearing a contact piece adapted to successively engage the said contact pieces, thereby successively connecting the battery wire with said radial lines to establish electrical connection with any line wherein a signal has been set, in order that said signal may be received, substantially as described.

41. In an electric signal apparatus, the combination of a series of radial lines connected at a central station with a common terminal, and each having at said central station a resistance, a magneto-generator connected in each radial line at the box, a battery wire at the central station, a commutator started by an electro-magnet operated by said magneto generator for successively connecting said battery wire with the radial lines, shunting the resistances, a manual restoring device for said commutator, and a searching device operated by said restoring device, consisting of a series of contact pieces, connected respectively with the radial lines, a movable member bearing a contact piece adapted to successively engage the said contact pieces, thereby successively connecting the battery wire with said radial lines to establish electrical connection with any line wherein a signal has been set, in order that said signal may be received, substantially as described.

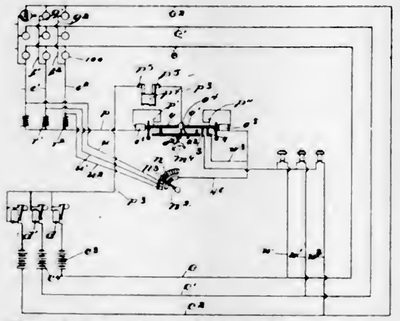
42. In an electric signal apparatus, the combination of a series of radial lines connected at a central station with a common terminal, and each having a resistance included therein near said common terminal, a signal transmitter for each line, a signal receiver at the central station, a commutator consisting of a series of contact pieces connected by wires with the radial lines at points outside of said resistances, and a movable member having a contact whereby the circuit of said signal receiver is successively connected with the radial lines, shunting the resistances, and an electro-magnetic device included in the aforesaid common terminal, which controls the operation of said commutator, substantially as described.

43. In an electric signal apparatus the combination of a series of radial lines connected at a central station with a common terminal, and each having a resistance included therein near said common terminal, a battery wire at said central station, a commutator at said central station consisting of a series of contact pieces connected by wires with the radial lines at points outside of said resistances, and a movable member bearing a contact, for successively connecting said battery wire with the radial lines, shunting the resistances a circuit controller for each radial line, an electro-magnet common to all the radial lines, and operated by means of the circuit controllers therein for starting said commutator, and an electro-magnet connected with said battery wire for stopping said commutator, substantially as described.

44. In an electric signal apparatus, the combination of a series of radial lines connected at a central station with a common terminal, and each having at said central station a resistance, a magneto generator connected in each radial line at the box, a battery wire at the central station, a commutator started by an electro-magnet operated by said magneto generator for successively connecting said battery wire with the radial lines shunting the resistances, and a stopping electro-magnet for said commutator connected with said battery wire, substantially as described.

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529,985. ELECTRIC SIGNALING APPARATUS. HORACE E. WALTER, Richfield Springs, N. Y. Filed Mar. 26, 1894. Serial No. 505,064. (No model.)



*Claim.*—1. In an electric signaling apparatus, the combination of several normally open branch lines radiating from a central office, and having a common return including a battery, a circuit closer for each branch line at a distant point, and a commutator at the central office comprising a series of terminals connected with said open branch lines, and a circuit closing device adapted to successively engage said terminals, a motor for rotating said device, an electro-magnet for releasing said motor operated by a closure of any one of said branch lines an electro-magnet in electrical connection with said commutator which operates to stop said motor when the circuit-closing arm engages that terminal connected with the closed branch line, a telephone in each branch line at the distant point, and a telephone at the central office in a normally open shunt circuit around the battery, and a switch for closing said shunt circuit to include the telephone and short circuit of the battery, substantially as described.

2. In an electric signaling apparatus, the combination of several normally open branch lines radiating from a central office and having a common return including a battery, a circuit closer for each branch line at a distant point and a commutator at the central office comprising a series of terminals connected with said open branch lines, and a circuit closing device adapted to successively engage said terminals, a motor for rotating said device, an electro-magnet for releasing said motor operated by a closure of any one of said branch lines, an electro-magnet in electrical connection with said commutator which operates to stop said motor when the circuit closing device engages that terminal connected with a closed branch line, a telephone in each branch line at the distant point, a telephone at the central office, and an automatic switch for including it in circuit operated by the stopping electro-magnet, substantially as described.

3. In an electric signaling apparatus, the combination of several normally open branch lines radiating from a central office and having a common return including a battery, a circuit closer for each branch line at a distant point, and a commutator at the central office comprising a series of terminals connected with said open branch lines, and a circuit closing arm adapted to successively engage said terminals, a motor for rotating said arm, an electro-magnet for releasing said motor operated by a closure of any one of said branch lines, an electro-magnet in electrical connection with said commutator which operates to stop said motor when the circuit closing arm engages that terminal connected with a closed branch line, an interrupting device for said electrical connection operated by said electro-magnet, a telephone in each branch line at the distant point, and a telephone at the central office adapted to be included in the circuit, substantially as described.

4. In an electric signaling apparatus, the combination of several normally open branch lines radiating from a central office, and having a common return including a battery, a circuit closer for each branch line at a distant point, and a commutator at the central office comprising a series of terminals connected with said open branch line, and a circuit closing arm adapted to successively engage said terminals, a motor for rotating said arm, an electro-magnet included in a branch wire common to all the open branch lines for releasing said motor, and a circuit breaker for said branch wire operated by said electro-magnet an electro magnet in electrical connection with said commutator which operates to stop said motor when said circuit closing arm engages that terminal connected with a closed branch line, and a restoring device for restoring said circuit breaker and for also winding the actuator of the commutator, a telephone in each branch line at a distant point, and a telephone at the central office, adapted to be included in the circuit, substantially as described.

5. In an electric signaling apparatus, the combination of several normally open branch lines radiating from a central office and having a common return including a battery, a circuit closer for each branch line at a distant point, and a resistance for each branch line at the central office, a commutator at the central office comprising a series of terminals connected with said open branch lines, and a circuit closing arm adapted to successively engage said terminals and thereby successively shunt the resistances, a motor for rotating said arm, an electro magnet for releasing said motor operated by a closure of any one of said branch lines, an electro-magnet in electrical connection with said circuit-closing arm which operates to stop said motor when the circuit-closing arm engages that terminal connected with a closed branch line, a telephone in each branch line at the distant point, and a telephone at the central office adapted to be connected with the circuit, substantially as described.

6. In an electrical signaling apparatus, the combination of several battery wires leading from a central office to the different floors of a building each including an annunciator, normally open branch lines returning from said battery wires by way of the different rooms to the central office, substantially as shown, a circuit closer for each branch line at each room, and a resistance included in each branch line at the central office, a commutator at the central office comprising a series of terminals connected with said open branch lines, and a circuit closing arm adapted to successively engage said terminals and thereby successively shunt the resistances, a motor for rotating said arm, an electro-magnet included in a branch wire common to all said open branch lines for releasing said motor, an electro-magnet in electrical connection with said circuit-closing arm which operates to stop said motor when the circuit-closing arm engages that terminal connected with a closed branch line, telephones in the branch lines at each room, and one or more telephones at the central office, and switches for including them in circuit, substantially as described.

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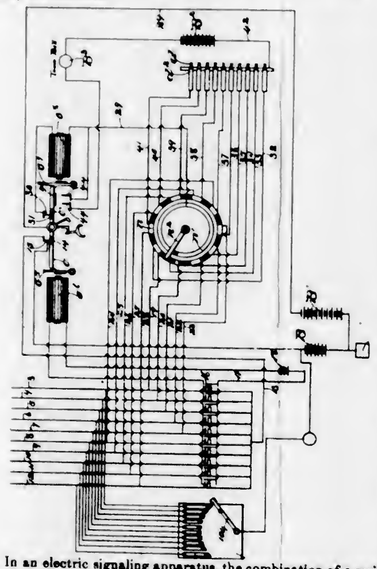
529,986. ELECTRIC SIGNALING APPARATUS. HORACE E. WALTER, Richfield Springs, N. Y. Filed Apr. 26, 1894. Serial No. 509,059. (No model.)

*Claim.*—1. In an electric signaling apparatus, the combination of a series of signal boxes, independent wires connecting them with a central station, a box selecting device at said central station set in motion by the operation of any one of the signal boxes and stopped when the particular box operated has been selected, a re-transmitting apparatus set in motion upon the stopping of the box selecting device, comprising a series of circuit controllers, one for each signal box, a circuit operated by said re-transmitting apparatus, and indicating apparatus operated by said circuit, substantially as described.

2. In an electric signaling apparatus, the combination of a series

of signal boxes, independent wires connecting them with a central station, a box-selecting device at said central station, and its actuating motor, and an electro-magnet operated by any one of said signal boxes for releasing said motor, a stopping electro-magnet controlled by said selecting device, operating to stop said motor when the selecting device has selected the box which has been operated to start the box-selecting device, a motor-driven re-transmitting device at said central office controlled by said box-selecting device, comprising a series of circuit controllers, one for each signal box, and a circuit operated by said re-transmitting apparatus, and indicating apparatus operated by said circuit, substantially as described.

3. In an electric signaling apparatus, the combination of a series of signal boxes each adapted to effect a single change in the condition of the circuit by "pulling" the box, independent wires connecting them with a central office, a box selecting device set in motion by the operation of any one of the signal boxes and stopped when the particular box operated has been selected, and a re-transmitting apparatus set in motion upon the stopping of said box-selecting device, comprising a series of box-number wheels and contact pens, and a motor, a circuit operated by the said re-transmitting apparatus, and indicating apparatus contained in and operated by said circuit, substantially as described.



4. In an electric signaling apparatus, the combination of a series of signal boxes, each adapted to effect a single change in the condition in the circuit by "pulling" the box, independent wires connecting them with a central office, a box-selecting device at said central office, its actuating motor, a releasing electro-magnet for said motor operated by any of the signal boxes, and a stopping electro-magnet for said motor in electrical connection with and controlled by said box-selecting device, operating to stop the motor when the box which has been operated is selected, a re-transmitting device, a motor for operating it, released by the stopping electro-magnet of said box-selecting device, a circuit operated by said re-transmitting device, and indicating devices operated thereby, substantially as described.

5. In an electric signaling apparatus, the combination of a series of signal boxes, independent wires connecting them with a central station, a box-selecting device at said central station, set in motion by the operation of any one of the signal boxes and stopped when the particular box operated has been selected, a re-transmitting apparatus set in motion upon the stopping of the box-selecting device, a circuit operated thereby, and indicating apparatus contained in and operated by said circuit and restoring devices for the cooperating parts of said box-selecting device operated by the motor of said re-transmitting apparatus, substantially as described.

6. In an electric signaling apparatus, the combination of a series of signal boxes each adapted to be set in its abnormal position to effect a single change in the condition of the circuit by "pulling" the box, a latch for holding the parts thereof in their abnormal position, independent wires connecting said signal boxes with the central office, a box-selecting device at the central office set in motion by the operation of any one of the signal boxes, and stopped when the particular box operated has been selected, and an electro-magnet in each box operated when the box-selecting device has stopped, to release the latch and thereby permit the parts to resume their normal positions, substantially as described.

7. In an electric signaling apparatus, the combination of a series of signal boxes, each adapted to effect a single change in the condition of the circuit by "pulling" the box, independent wires connecting them with a central office, a box selecting device at said central office, its actuating motor, a releasing electro-magnet for said motor, operated by any one of the signal boxes and a stopping electro-magnet for said motor in electrical connection with and controlled by said box-selecting device, operating to stop the motor when the box which has been operated is selected, and a restoring electro-magnet in each box, operating simultaneously with said stopping electro-magnet that the parts of the box may resume their normal position, substantially as described.

8. In an electric signaling apparatus, the combination of several signal boxes, independent wires connecting them with a central office, a box-selecting device at said central office comprising a series of terminals for said independent wires, a switch arm contacting successively with said terminals, a motor for rotating it, a releasing electro-magnet for said motor operated by any one of the boxes, a stopping electro-magnet for said motor, electrically connected with and controlled by said box-selecting device, and an automatically operated re-transmitting apparatus comprising a series of box-number wheels, and contact pens electrically connected with the terminals of said box-selecting device, a circuit operated thereby, and indicating devices operated by said circuit, substantially as described.

9. In an electric signaling apparatus, the combination of several signal boxes, independent wires connecting them with a central office, a relay included in each wire at said central office, wound to offer a high resistance, said independent wires being joined at a common point beyond said relays a box-selecting device at said central office, its actuating motor, a releasing electro-magnet for said motor, the circuit of which is operated by any one of the aforesaid relays, an electro-magnet for stopping said box-selecting device, included in a branch wire shunting the high resistance relays, substantially as described.

10. In an electric signaling apparatus, the combination of a series of signal boxes, each adapted to be set to produce a change in the normal condition of the circuit by "pulling" the box and to remain set until the parts thereof have been restored by means controlled from the central office, independent wires connecting them with the central office, a box selecting device at said central office, the actuating motor of which is set in motion by the change in the condition of the circuit produced by any one of said signal boxes, an electro-magnetically operated stopping device for said box-selecting device, which is connected successively with said independent wires as the box-selecting device operates, and operating to stop said box-selecting device upon connecting it with one of the independent wires wherein its normal condition has been changed, and a restoring electro-magnet in each box for the parts thereof, and means for operating them when their circuits are connected with the box-selecting device, substantially as described.

11. In an electric signaling apparatus, a circuit controlling device consisting of a circuit closer comprising a contact pen $a^{13}$, a stud $a^{13}$ projecting from a rotatable hub, which is adapted to be brought into engagement with said contact pen, a hand lever independent of but adapted to turn said hub, a latch for holding the hub with its stud $a^{13}$ in engagement with said contact pen, and an electro-magnet for releasing said latch which is controlled from the central office, substantially as described.

12. In an electric signaling apparatus, a circuit controlling device consisting of a circuit closer, comprising the contact pen $a^{13}$, and stud $a^{13}$, projecting from a rotatable hub $a^4$, the latter being adapted to be brought into engagement with the former to close the circuit, the spring pressed hand lever $a^4$ secured to a hub $a^4$, the arm $a^5$ projecting from said hub $a^4$, and having an offset end adapted to engage a projection on the hub $a^3$, to turn said hub $a^3$, when the lever is pulled, but returning independently thereof, a latch for holding the hub $a^3$, with its stud $a^{13}$ in engagement with said contact pen, and an electro-magnet for releasing said latch which is controlled from the central office, substantially as described.

13. In an electric signaling apparatus, a circuit controlling device consisting of a circuit closer, comprising the contact pen $a^{13}$, and stud $a^{13}$, projecting from a rotatable hub $a^4$, the latter being adapted to be brought into engagement with the former to close the circuit, the spring pressed hand lever $a^4$, secured to a hub $a^4$, the arm $a^5$ projecting from said hub $a^4$, and having an offset end adapted to engage a projection on the hub $a^3$, to turn said hub $a^3$, when the lever is pulled, but returning independently thereof, a latch for holding the hub $a^3$ with its stud $a^{13}$ in engagement with said contact pen, and an electro-magnet for releasing said latch which is controlled from the central office, a high resistance coil, and short circuit around it closed by said circuit closer $a^{13}$, substantially as described.



14. In an electric signaling apparatus, the combination of a series of signal boxes, each adapted to be set to produce a change in the normal condition of the circuit by "pulling" the box and to remain set until the parts thereof have been restored by means controlled from the central office, independent wires connecting them with the central office, a box-selecting device at said central office, a releasing electro-magnet therefor common to all said independent wires, a circuit breaker also common to all said independent wires operated by said releasing electro-magnet, means for stopping said box-selecting device upon electrically connecting it with one of the independent wires wherein its normal condition has been changed, a restoring electro-magnet in each box, and means for operating said restoring electro-magnets, when their circuits have been electrically connected with the box-selecting device, and a restoring device for said common circuit breaker, whereby the box-selecting device is again placed in electrical connection with the independent wires, to be operated by a change in the normal condition of any one of them, substantially as described.

15. In an electric signaling apparatus, the combination of a series of independent wires, a box-selecting device successively making operative electric connection with said wires, starting mechanism for said box-selecting device operated by a change in the normal condition of any wire, a stopping mechanism therefor operated when one of the wires having its normal condition changed becomes operatively connected with said box-selecting device, a signal box connected in each wire, having a circuit controlling device with a pull for setting it in its abnormal position, to effect a change in the condition of the circuit, a latch for holding it so set, and an electro-magnet for releasing said latch when its wire becomes operatively connected with the box-selecting device, substantially as described

16. In an electric signaling apparatus, the combination of a series of independent wires, a box-selecting device successively making operative electric connection with said wires, starting mechanism for said box-selecting device operated by a change in the normal condition of any wire, a stopping mechanism therefor operated when one of the wires having its normal condition changed becomes operatively connected with said box-selecting device, a signal box connected in each wire, having a circuit controlling device, with means for operating it, and also an electro-magnet for retaining the circuit-controlling device in its abnormal condition with the signal set, until its wire becomes operatively connected with the box selecting device, a normally wound re-transmitting device set in motion by the box selecting device when one of the independent wires becomes operatively connected therewith, a circuit operated by it, and indicating devices operated by said circuit, substantially as described.

17. In an electric signaling apparatus, the combination of a series of independent wires, a box-selecting device successively making operative electric connection with said wires, starting mechanism for said box-selecting device operated by a change in the normal condition of any wire, a stopping mechanism therefor operated when one of the wires having its normal condition changed becomes operatively connected with said box-selecting device, a signal box connected in each wire, having a circuit controlling device, with means for operating it, and also an electro-magnet for retaining the circuit controlling device in its abnormal condition with the signal set, until its wire becomes operatively connected with the box-selecting device, a circuit breaker common to all said independent wires operated in conjunction with the starting mechanism of said box-selecting device, and a restoring device therefor, substantially as described.

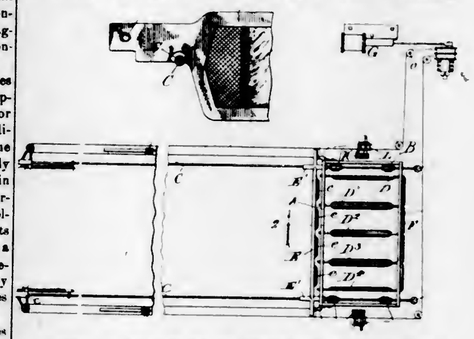
18. In an electric signaling apparatus, the combination of a series of independent wires, a box-selecting device successively making operative electric connection with said wires, starting mechanism for said box-selecting device operated by a change in the normal condition of any wire, a stopping mechanism therefor operated when one of the wires having its normal condition changed becomes operatively connected with said box-selecting device, a signal box connected in each wire, having a circuit controlling device, with means for operating it, and also an electro-magnet for retaining the circuit controlling device in its abnormal condition with the signal set, until its wire becomes operatively connected with the box-selecting device, a circuit breaker common to all said independent wires, operated in conjunction with the starting mechanism of said box-selecting device, and a restoring device therefor, a normally wound motor for operating it, set in motion by the box-selecting device when one of the independent wires becomes operatively connected therewith, box-number circuit controllers operated by said motor, a circuit operated by them, and indicating devices operated by said circuit, substantially as described.

19. In an electric signaling apparatus, the combination of a series of independent wires, a box-selecting device successively making operative electric connection with said wires, starting mechanism for said box-selecting device operated by a change in the normal condition of any wire, a stopping mechanism therefor operated when one of the wires having its normal condition changed becomes operatively connected with said box selecting device, a signal box connected in each wire, having a circuit controlling device, with means for operating it, and also an electro-magnet for retaining the circuit controlling device in its abnormal condition with the signal set, until its wire becomes operatively connected with the box-selecting device, a normally wound re-transmitting device set in motion by the box-selecting device when one of the independent wires becomes operatively connected with a circuit operated by it and indicating devices operated by said circuit, a winding device for said box-selecting device operated by said re-transmitting motor, substantially as described.

20. In an electric signaling apparatus, the combination of a series of terminals at a central office and independent wires leading therefrom, a motor-driven switch arm for successively engaging said terminals, an electro-magnetically operated stopping mechanism for said switch arm, adapted to be electrically connected with said terminals by said switch arm, a releasing magnet for said motor, and a circuit breaker, both common to all the independent wires, and restoring device therefor, operating after a signal has been received, a series of signal boxes, one for each indepeudent wire, a circuit controlling device in each box, means for operating it to "set" the signal, and an electro-magnet in each box for retaining the circuit controlling device in its abnormal position until operated from the central office, substantially as described.

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529,987. TRAINING APPARATUS. SAMUEL B. WHITEHEAD, San Francisco, Cal. Filed June 28, 1894. Serial No. 516,028. (No model.)



*Claim.*—1. In a horse starting machine, the combination of a track upon which the machine is moved and mounted, and a frame portion mounted on and adapted to be moved on such track and provided with two or more individual stalls, substantially as described.

2. In a horse starting machine, the combination of a track, a frame mounted and adapted to move on such track, and several partitions secured to such frame to form two or more individual stalls, substantially as described.

3. In a horse starting machine, the combination of a track upon which the mechanism is moved, a frame portion provided with two or more individual stalls mounted on and adapted to be moved on such track, and means for propelling the machine, substantially as described.

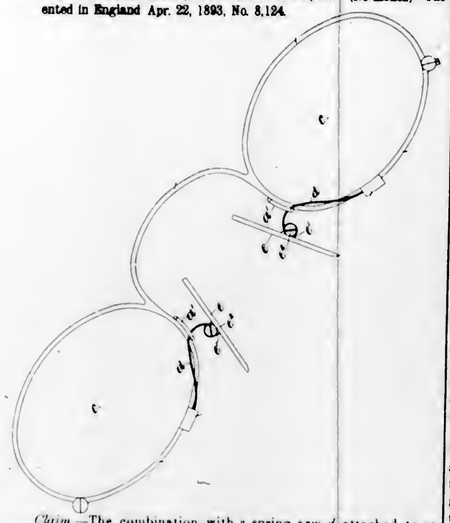
4. In a horse starting machine, the combination of a track upon which the machine is moved and mounted, a frame portion mounted on and adapted to be moved on such track, several partitions secured to such frame to form one or more stalls, a removable gate in front of the stalls, means for removing such gate at a desired position, and means for propelling the machine on its track, substantially as described.

5. In a horse starting machine, the combination of a track upon which the machine is moved and mounted, a frame portion mounted on and adapted to be moved on such track, several partitions secured to such frame to form one or more stalls, a removable gate in front of the stalls, means for removing such gate or gates simultaneously at a desired position, means for closing the rear of the stalls to force the horses along, and means for propelling the machine, substantially as described.

6. A horse starting machine, comprising a track upon which the machine is moved and mounted, a frame portion mounted on and adapted to be moved on such track and provided with several stalls, and means for raising such frame portion with its stalls up and out of the way, substantially as described.

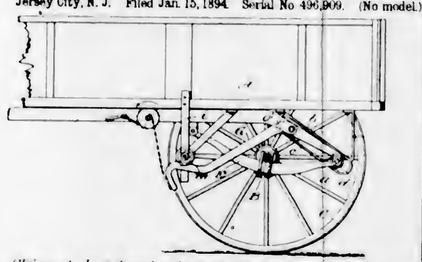
7. A horse starting machine, comprising a track upon which the machine is moved and mounted, a frame portion mounted on and adapted to be moved on such track and provided with one or more stalls, means for propelling the frame along its track, and a cushion stop for such frame, substantially as described.

529,988. DOUBLE EYEGLASSES. JOHN J. WOOD, Liverpool, England. Filed June 25, 1894. Serial No. 515,636. (No model.) Patented in England Apr. 22, 1893, No. 8,124.



*Claim.*—The combination with a spring arm *d* attached to an eye glass or its frame and adapted to press outward, and a gripping bearer *e* mounted on said spring arm, of a bar extended from the frame or glass and around the outside of said spring arm to shield and protect the arm, substantially as described

529,989. DUMPING DEVICE FOR WAGONS. THOMAS WRIGHT, Jersey City, N. J. Filed Jan. 15, 1894. Serial No 496,909. (No model.)



*Claim.*—1. In a dumping device for wagons, parallel frame bars bent downwardly near their rear ends, dumping bars pivoted by ends on the frame bars and means for supporting and sliding the wagon body on said dumping bars, substantially as described.

2. In a dumping device for wagons, the combination with the wagon body, of parallel frame bars bent downwardly near their rear ends, two dumping bars pivoted near one end of each on the frame bars, a body supporting device slidable on the dumping bars and elliptical springs loosely connected at their ends to the frame bars, and intermediately affixed upon the rear axle of the wagon, substantially as described.

3. The combination, with a wagon body and its rear axle and rear wheels, of bent parallel frame bars, dumping bars pivoted to said frame bars, rollers supported on the wagon body and engaging the dumping bars, and means for elevating the front ends of said dumping bars, substantially as described.

4. The combination, with a wagon body, its rear axle and rear wheels, and two springs on said axle, of bent parallel frame bars, dumping bars pivoted at their rear ends on the frame bars, a roller supported on a depending bracket on each side of the wagon body and engaging the dumping bars, and a device for raising and sustaining the front ends of the dumping bars, substantially as described.

5. The combination, with a wagon body, its rear axle, rear wheels, and two elliptical springs on said axle, of two parallel frame bars bent to incline rearward and downward near their rear ends, which ends are clipped upon the rear ends of the springs, two bracket frames on the wagon body, pendent between the springs and having guide bars on their lower inclined sides, a transverse stay bar connecting the bracket frames, rollers on said bar engaging the guide bars, two dumping bars pivoted near their rear ends on the frame bars and inclined forwardly and downwardly, two braced arms on the sides of the body, bearing rollers that engage the dumping bars, a transverse rotatable shaft on the frame bars, flexible connections between said shaft and the dumping bars, and a ratchet and pawl device on said shaft, substantially as described.

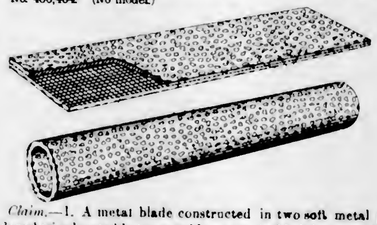
6. The combination, with the wagon frame and the body having depending side brackets carrying friction rollers at their lower ends, of pivoted dumping arms movable upwardly against the said rollers and forming a track therefor in the tilting movements of the body, substantially as described.

7. The combination, with the dumping wagon body and the wagon frame, the one having a guideway inclined to the longitudinal direction of the body and the other having permanent engagement with said guideway, the engagement permitting a tilting of the body and a sliding thereof, of lifting arms pivoted to the frame near the rear end, the body having parts in advance of the inclined guideway that are normally in the path of the lifting arms, substantially as described, whereby when the body is tilted by the arms it will slide rearwardly, as set forth.

8. The combination of the wagon frame, the dumping body having a sliding movement on the frame, and lifting arms pivoted to the frame near the rear end thereof and extending forwardly, the arms near the forward ends having upwardly and forwardly ranging inclines, and the body in the normal position having parts resting on said inclines of the lifting arms, substantially as described.

9. The combination, with the wagon frame and the wagon body thereon, of a guideway secured to the body and arranged at an acute angle to the longitudinal direction thereof, a guiding part on the frame having a permanent sliding engagement with the said inclined guideway, and a device for tilting the body and causing it to slide on the said guide, the guideway having an inclined wall both above and below the guiding part on the frame, whereby either one of such walls will contact with the guiding part in tilting the body both in dumping and in lifting the same, substantially as described.

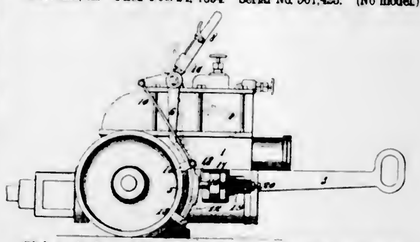
529,990. METAL FOR BLADES, PIPES, &c. JAMES W. WYCKOFF and JOHN M. WETTON, Jacobsville, Mich. Filed July 14, 1893. Serial No. 480,484. (No model.)



*Claim.*—1. A metal blade constructed in two soft metal parts, hardened wire located between said parts embedded therein, said soft metal parts with the intervening wire formed into a single integral piece, substantially as described.

2. A metal blade formed of two soft metal parts having hardened fragments or particles embedded therein, and a wire netting embedded therebetween, one series of wires in said netting being hardened and running transversely across the metal plate, substantially as described.

529,991. BRAKE FOR MINING-ENGINES. BERNHARD YOCH, Belleville, Ill. Filed Feb. 24, 1894. Serial No. 501,423. (No model.)



*Claim.*—1. In a mining machine, a shoe adapted to operate as a friction brake against a wheel of the machine, or as a wedge brake between the wheel and the support of the machine, in combination with means for raising and lowering the shoe, and means for applying pressure to the shoe, substantially as set forth.



2. In a mining machine, a shoe adapted to operate as a friction brake against a wheel of the machine, or as a wedge brake between the wheel and the support of the machine, in combination with means for applying pressure to the shoe, and means for raising and lowering the shoe, consisting of a shaft, a lever on the shaft, and a rod and arm connection between the shoe and the lever; substantially as set forth.

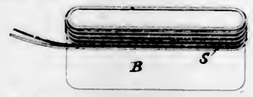
3. In a mining machine, having wheels resting upon a support, a fixed and a movable brake shoe connected to the lower ends of hangers, a shaft to which the hangers are secured, a lever on the shaft, provided with a pawl adapted to engage with a lug on one of said hangers, an arm connecting with said lever, a rod connecting the arm to said movable shoe, and means for applying pressure to the shoes; substantially as set forth.

4. In a mining machine, having wheels and a brake shoe, an auxiliary cylinder and piston for applying pressure to said shoe to cause the shoe to bear on one of said wheels; said auxiliary cylinder communicating with the main cylinder of the machine, or its supply port so that as the tool advances the brake shoes will be applied, substantially as set forth.

5. In a mining machine, having wheels and a brake shoe, an auxiliary cylinder, and piston for applying pressure to said shoe to cause the shoe to bear on one of said wheels, and a spring located behind said piston; substantially as and for the purpose set forth

6. In a mining machine, having wheels resting on a support, a fixed and a movable brake shoe supported on hangers connected together by a shaft or rod, means for raising and lowering said movable shoe, and an auxiliary cylinder, and piston for applying pressure to said shoes; said piston bearing against said movable shoe; substantially as and for the purpose set forth.

529,992. CONDUCTOR-COIL FOR ARMATURES AND FIELD MAGNETS AND METHOD OF MAKING SAME. EMRA W. ALEXANDER and HENRY GROSWITH, Philadelphia, Pa. Filed Sept. 22, 1893. Serial No. 486,190. (No model.)



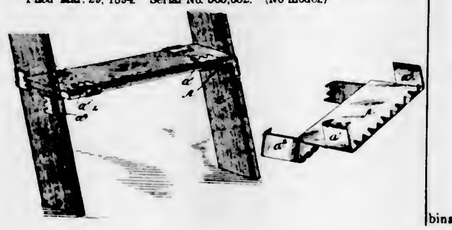

*Claim.*—1. The herein described improvement in the art of manufacturing conductor coils, which consists of winding the conductor upon the core or spool, covering the layer of conductor so formed with enamel, depressing the enameled surface into grooves for receiving the second layer of winding, winding a second layer of conductor in such depressions or grooves, covering the second layer of conductor so formed with enamel, and thereafter, when the required number of layers have been wound, subjecting the enameled coil to heat, substantially as and for the purposes set forth.

2. The herein described improvement in the art of manufacturing conductor coils which consists in winding a conductor with a spacing cord and thereafter removing the cord and covering the winding with enamel, substantially as and for the purposes set forth.

3. As an article of manufacture a conductor coil formed of wire embedded in enamel and fitted to the core for which it may be designed, whereby it may be applied or removed complete, and may be secured in place by fusing either directly or with additional enamel, substantially as and for the purposes set forth.

4. The improved armature of field magnet construction, consisting of complete coils of conductor embedded in enamel, and a core or cores, the said coils being secured in place by the enamel or other fused cement, forming a rigid waterproof construction from which the coils may be removed and replaced without unwinding, substantially as and for the purposes set forth.

529,993. COMBINED BRACE, CLAMP, STEP FASTENING AND SUPPORT FOR STEP-LADDERS. SYDNEY E. ALLEN, Winston, N. C. Filed Mar. 29, 1894. Serial No. 505,652. (No model.)



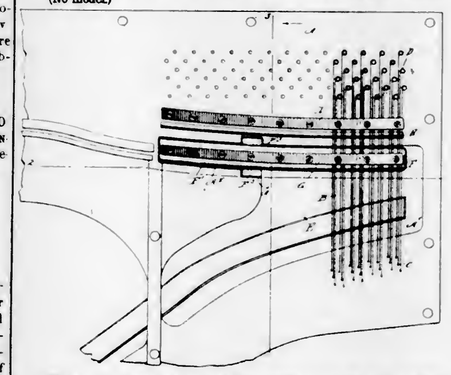
*Claim.*—1. An improved device for the purposes specified, which consists of a metal body formed of two flat portions arranged at a right angle to each other, and having flexible claws or arms projecting from its ends, substantially as shown and described.

2. The improved device for the purposes specified, formed of sheet metal and consisting of a body having a right-angular shape, and provided on its side edges with teeth which are at an angle to the adjacent flat surfaces, and with two sets of flexible claws, or toothed arms, which project from the ends of the respective flat portions of said body, as shown and described.

3. A blank for a step-ladder brace and clamp, which consists of a sheet-metal plate having toothed side edges and toothed arms or claws projecting from its ends at the angles specified.

4. The combination with a leg, or standard, and a step or cross piece arranged at an angle to the former, of a connecting device composed of an angular body, provided with teeth at each side edge, and at the ends with claws or toothed arms, the same being applied with the flat portions of said body in contact with the inner side of a standard and the under side of the step, respectively, and said claws or arms being clasped around the leg and step, substantially as shown and described.

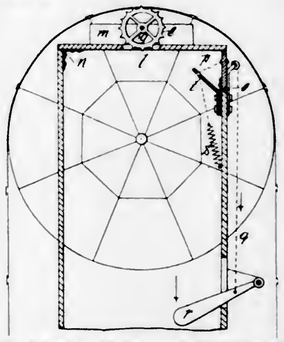
529,994. TREBLE-BRIDGE FOR PIANOS. CHRISTIAN L. O. ALTENBURG, New York, N. Y. Filed Sept. 25, 1894. Serial No. 524,056. (No model.)



*Claim.*—1. A stringed musical instrument, provided with a treble bridge supported at one end, and having the treble strings passing over its free vibratile end, substantially as shown and described.

2. A stringed musical instrument, provided with a string frame for carrying the strings, and a treble bridge adapted to be fastened at one end on the said frame and extending with its free end into a recess in the frame, the said free end forming a resting place for the treble strings as the latter pass from the sounding board bridge to the frame bridge, substantially as shown and described.

529,995. TUNE-SHEET FOR AUTOMATIC MUSICAL INSTRUMENTS. AUGUST ARTHUR, Waltershausen, Germany. Filed July 12, 1894. Serial No. 517,307. (No model.)

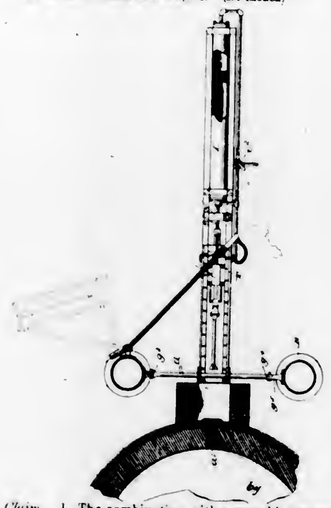


*Claim.*—1. A tune sheet *a* composed of separate plates in combination with small toothed wheels *e* on axles *g*, which are rotated by

a clock-movement *m* arranged on a plate *l*, pivoted at one end in the barrel-casing *k* and adapted to be raised and depressed at the other end substantially as described.

2. An automatic musical instrument provided with a music sheet *a*, in combination with toothed wheels *c*, a clock movement mounted on plate *l*, which is pivoted at one end to the casing *k* and supported at the opposite end by a flap *p*, the spring *s* arranged to turn the flap in one direction and the cord *g* operated by lever *r* for turning the flap in the opposite direction, substantially as described.

529,996. DRILL. DAVID BAKER, Sparrow's Point, Md. Filed Apr. 3, 1893. Serial No. 469,571. (No model.)



*Claim.*—1. The combination with a movable support, of a frame adjustably suspended from the support and having one of its ends detachably and adjustably mounted on a separate support, and a drill movable upon the frame, substantially as described.

2. In an apparatus for adjustably supporting a drill for penetrating tapping holes of blast-furnaces, a movable support and a frame carrying a drill attached to the support, the frame being provided with a bar and means for securing the bar in place adjacent to the tapping-holes, substantially as described.

3 In an apparatus for adjustably supporting a drill for penetrating tapping holes of blast-furnaces, comprising a movable support, a frame carrying a drill tool, the frame being provided on the end which in use, is adjacent to the furnace, with a bar, the bar being provided at one end with a fork and at the other, with an opening, a rod engaging the forked end, and a projection from the stationary part of the furnace engaging the other end, and a pin for securing the bar in position, substantially as described.

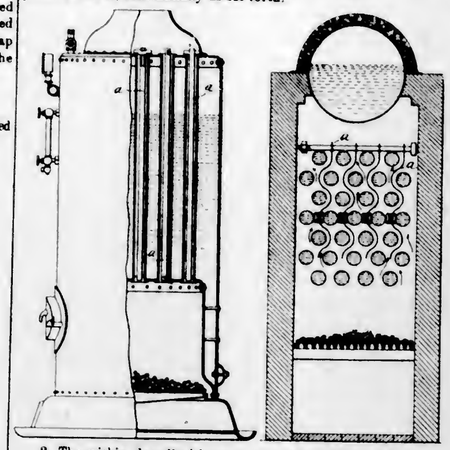
4. The combination with a swinging support, of a frame carrying a drill-tool and suitably attached to the support, means for raising and lowering either end of the frame, a feed cylinder attached to the frame and having its piston connected with the drill-tool, a source of steam or air supply and a flexible connection leading from the supply to the feed-cylinder, substantially as described.

5. The combination with a swinging support, of a frame suspended from the support and having its ends independently adjustable whereby it may be tilted to any angle, a drill mounted to slide upon the frame, a feed-cylinder having a hollow piston-rod attached to the drill, a source of steam or air supply, and a flexible connection between such supply and the feed-cylinder, substantially as described.

6. The combination with a swinging support, of a frame suspended from the support and means for raising and lowering either end of the frame whereby it may be made to assume any angle, a drill slidingly mounted upon the frame, a feed-cylinder also mounted on the frame and attached to the drill, means for operating the feed-cylinder, and a clamp engaging the piston of the feed-cylinder, substantially as described.

529,997. GENERATION OF STEAM. CHARLES W. BAKER, Montclair, N. J. Filed Feb. 17, 1894. Serial No. 500,536. (No model.)

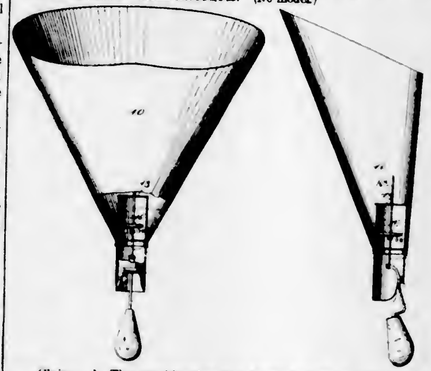
*Claim.*—1. The within described improvement in increasing the efficiency of steam generators, the same consisting in carrying the heated gases that are not in direct contact with the boiler plates or tubes in contact with plates arranged in proximity to the tubes throughout the generator in position to radiate the heat to said boiler plates or tubes, substantially as set forth.



2. The within described improvement in generating steam the same consisting in passing the gaseous products of combustion in contact with tubes containing or surrounded by the water to be heated, and in radiating the heat of said gases from radiators heated by said gases and arranged adjacent to said tubes throughout the generator, substantially as set forth.

3. The combination with the tubes of a boiler, of radiating plates corresponding in outline with said tubes, and arranged throughout the generator adjacent thereto but out of contact therewith within the fire spaces or channels, substantially as and for the purpose set forth.

529,998. FUNNEL. CHARLES W. BRALL, Saratoga, Wyo. Filed June 15, 1894. Serial No. 514,645. (No model.)



*Claim.*—1. The combination of a funnel having an outlet, a float carrying lever, a rod connected at one end to said lever and a valve controlling the funnel outlet, said valve being connected directly to and supported by the said rod, substantially as and for the purpose set forth.

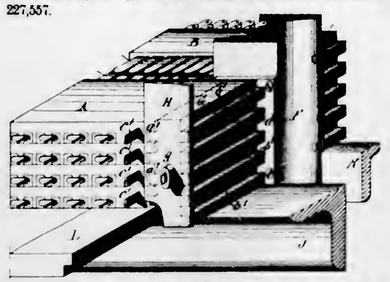
2. The combination, with the funnel, having a suitable discharge pipe closed at the top and provided with side openings, of the valve seat beneath the side openings, a valve arranged to move up and down above the seat, a float suspended from the lower end of the spout, and means for positively actuating the valve in both directions by the movement of the float, substantially as described.

3. The combination, with the funnel having a discharge spout closed at the top and provided with side openings, of the seat in the funnel spout below the openings, a lever fulcrumed below the seat, a valve an operative connection between the lever and valve, and a float on the free end of the lever, substantially as described.

4. A funnel provided with an outlet, a valve controlling such outlet, a lever pivoted to the funnel and connected at one end with the valve and arranged to be turned approximately into line with the outlet or out at an angle to and to a point at one side of such outlet and a float on the said lever, all substantially as and for the purposes set forth.



529,999. SWITCHBOARD. LOUIS A. BERTHON, Paris, France, assignor to the Société Générale des Téléphones, (Réseaux Téléphoniques et Constructions Électriques,) same place. Filed Oct. 17, 1893. Serial No. 488,400. (No model.) Patented in France Jan. 31, 1893, No. 227,557.



*Claim.*—1. In a multiple switch-board for telephonic systems, a plurality of spring jacks having springs C, a band carrying said spring jacks, and a frame carrying said band, said band movably mounted in said frame, in combination with a plurality of connecting springs D corresponding to said springs C and with which the latter make frictional contact, whereby said band and its springs C can be entirely removed from said frame to give access to the springs C of said spring jacks.

2. In a multiple switch-board for telephonic systems, a plurality of spring jacks, connecting springs C therefor, a band carrying said springs C, and a frame carrying said band, in combination with a plurality of connecting springs D corresponding to and making frictional contact with said springs C, and a band B carrying said connecting springs D and movably mounted in said frame, whereby said band B and its spring D can be entirely removed from said frame to give access to said spring D.

3. In multiple switch-boards for telephonic systems, rows of movable spring jacks having springs C, in combination with rows of connecting springs D with which the springs of said spring jacks make frictional contact, and an insulating piece E, holding said spring C in frictional engagement with said connecting springs.

4. In multiple switch-boards for telephonic systems, movable spring jacks having springs C, in combination with connecting springs D between which said springs C pass and with which they make frictional contact, and an insulating piece E between said springs C.

5. In multiple switch-boards for telephonic systems, the combination with a frame having tracks, of a plurality of spring jacks, and a band carrying said spring jacks and having interengaging provisions entering and sliding in said tracks, as and for the purpose set forth.

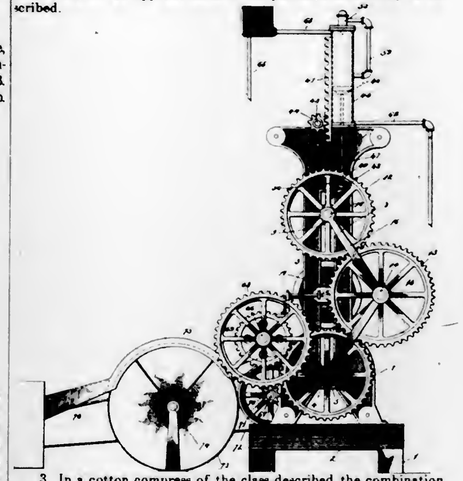
6. In multiple switch-boards for telephonic systems, a frame having tracks, in combination with a plurality of spring jacks, a band carrying said spring jacks and having tracks engaging and sliding in those of said frame, and a lock securing said band in position in said frame.

7. In multiple switch-boards for telephonic systems, a plurality of spring jacks, and a frame carrying said spring jacks and having tracks, in combination with a plurality of connecting springs, and a band carrying said connecting springs and engaging and sliding in the tracks of said frame, substantially as and for the purpose set forth.

530,000. COTTON-BALING MACHINE. CHARLES L. BESSONETTE, Temple, assignor to the Bessonette Cotton Compress Manufacturing Company, Waco, Tex. Filed Jan. 31, 1894. Serial No. 498,589. (No model.)

*Claim.*—1. In a cotton-compress of the class described, the combination with the movable core roll, of a movable shaft and a pressure roll mounted on said shaft and means for driving the same, rack-bars extending from said shaft, pinions gearing in said rack-bars, and rigidly attached to each other whereby uniform motion of the opposite rack bars is obtained, hydraulic cylinders, pistons in the cylinders with piston rods connecting to said rack-bars, and means for admitting fluid under pressure to either side of the said pistons, substantially as described.

2. In a cotton-compress of the class described, the combination with the opposite slotted frames, and the core-roll arranged movably in the slots, of a movable shaft, a pressure roll mounted thereon, and means for driving the same, rack-bars extending from said shaft, pinions gearing in said rack-bars, and rigidly attached to each other whereby uniform motion of the opposite rack bars is obtained, hydraulic cylinders, pistons mounted in the said cylinders, and piston rods connected with the rack bars, and means for admitting water under pressure at opposite sides of the pistons, substantially as described.



3. In a cotton compress of the class described, the combination with the movable core roll, of a movable shaft and a pressure roll mounted on said shaft and means for driving the same, rack-bars extending from said shaft, pinions gearing in said rack-bars, and rigidly attached to each other whereby uniform motion of the opposite rack bars is obtained, hydraulic cylinders, pistons in the cylinders with piston rods connected to said rack bars, the upper and lower connecting pipes 51 and 52, the safety valve 60, the three-way cock 54, and the pipes 59 and 61, substantially as described.

4. In a cotton compress of the class described, the combination with the opposite slotted frames, and the core roll arranged movably in the slots, of a movable shaft, a pressure roll mounted thereon, and means for driving the same, rack-bars extending from said shaft, pinions gearing in said rack-bars, and rigidly attached to each other whereby uniform motion of the opposite rack bars is obtained, hydraulic cylinders, pistons mounted in the said cylinders, piston rods connected with the rack bars, the upper and lower connecting pipes 51 and 52, the safety valve 60, and the three-way cock 54, and pipes 59 and 61, substantially as described.

5. In a cotton-compress of the class described, the combination with a movable core roll, of a movable shaft, a pressure roll mounted on said shaft, hydraulic cylinders, pistons in the said cylinders with piston rods bearing on the said shaft, the upper and lower connection pipes 51 and 52, the safety valve 60, the three-way cock 54, the pipes 59 and 61, the overflow pipe 63 extending from the safety valve 60, the tank connected to the lower end of the pipe 63, and the return pipe 65, substantially as described.

6. In a cotton-compress of the class described, the combination with the movable core roll, of a movable shaft and a pressure roll mounted on said shaft and means for driving the same, rack-bars extending from said shaft, pinions gearing in said rack bars, hydraulic cylinders, pistons in the cylinders with piston rods connected to said rack-bars, the upper and lower connection pipes 51 and 52, the safety valve 60, the three-way cock 54, the pipes 59 and 61, the overflow pipe 63 extending from the safety valve 60, the tank 64 connected to the lower end of the pipe 63, and the return pipe 65, substantially as described.

7. In a cotton-compress of the class described the combination with the opposite slotted frames, and the core-roll arranged movably in the slots, of a movable shaft, a pressure roll mounted thereon, and means for driving the same, rack-bars extending from said shaft, pinions gearing in said rack-bars, hydraulic cylinders, pistons mounted in the said cylinders, and piston rods connected with the rack bars, upper and lower connection pipes 51 and 52, the safety valve 60, the three-way cock 54, the pipes 59 and 61, the overflow pipe 63 extending from the safety-valve 60, the tank connected to the lower end of the pipe 63, and the return pipe 65, substantially as described.

8. In a cotton-compress of the class described, the combination with the opposite frames having guides therein, and compressing rollers, mounted in said frames, of opposite sliding boxes for the core roll mounted in said guides, a core-shaft removably arranged in one of said boxes and terminating short of the opposite box, a reciprocating bolt terminating at its inner end in a bearing-pin arranged in the op-

posite box, and adapted to engage removably with the core-roll, a transverse shaft supported in bearings at the side of the frame and having end and intermediate cranks, means for locking the shaft, there being a loose connection between the intermediate crank thereof and the outer end of the bolt, substantially as described.

9. In a cotton-compress of the class described, the combination with the opposite frames, and the upper and lower compressing rollers, said frames having slots, of opposite sliding boxes located in the slots, a core-shaft removably arranged in one of said boxes and terminating short of the opposite box, said shaft having a heading disk, a reciprocating bolt terminating at its inner end in a bearing-pin arranged in the opposite box and adapted to engage removably with the core-roll, means for reciprocating said bolt, and a heading-disk carried by the bolt to correspond with that on the shaft substantially as specified.

10. In a cotton-compress of the class described, the combination with the opposite frames, and the upper and lower compressing rollers, said frames having slots, of opposite sliding boxes located in the slots, a core shaft removably arranged in one of said boxes and terminating short of the opposite box, a reciprocating bolt terminating at its inner end in a bearing pin arranged in the opposite box and adapted to engage removably with the core-roller, a transverse shaft supported in bearings at the side of the frame and having end and intermediate cranks, means for locking the shaft, there being a loose connection between the intermediate crank thereof and the outer end of the bolt, substantially as specified.

11. In a cotton-compress, the combination with the opposite slotted frames, the upper and lower compressing rollers, the boxes arranged in the slots, and the core-shaft arranged removably in one of the boxes and terminating short of the opposite box, of the reciprocating bolt located in said opposite box and having an opening at its outer end, and a bearing-pin at its inner end and grooved in rear of the latter, a flanged plate arranged on the inner end of the bolt and perforated to agree with the groove, pins extending from the perforations into the groove, a disk loosely mounted on the bearing pin and bolted to the flange plate, a transverse cranked shaft, means for locking said shaft, and connections between the bolt and the crank of the shaft, substantially as described.

12. In a cotton-compress, the combination with opposite slotted frames, upper and lower compressing rollers, bearing-boxes arranged in the slots of the frames and a core-shaft arranged removably in one of the boxes and terminating short of the opposite box, of a reciprocating bolt located in said opposite box and carrying a terminal bearing pin to engage a socket in the adjacent end of the core-shaft, said bolt being provided in its outer end with a transverse perforation, a transverse yoke-bar carried by the outer end of the box in which said bolt is mounted and having guide flanges provided with bearings, a shaft having an intermediate crank engaging the perforation in the outer end of the bolt, a crank handle for operating the shaft and provided with bearings at its outer side, a thumb-lever pivoted between the bearings, and a locking rod connected to the inner end of the thumb-lever and adapted to engage one of a series of openings formed in the yoke-bar, substantially as described.

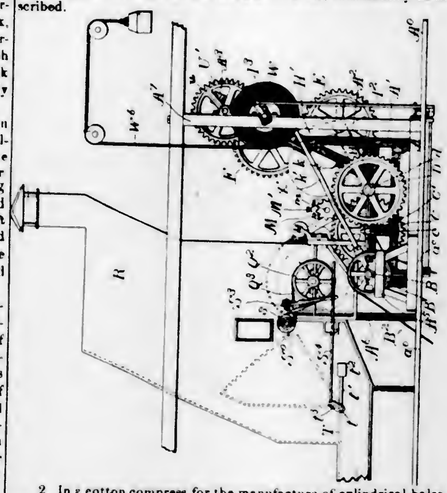
13. In a device for detaching the core roll shaft, in a cotton compress, the combination with journal boxes for the ends of the shaft of the core-shaft arranged removably in one of the boxes and terminating short of the opposite box, the reciprocating bolt located in said opposite box and having an opening at its outer end, and a bearing-pin at its inner end and grooved in rear of the latter, a flanged plate arranged on the inner end of the bolt and perforated to agree with the groove, pins extending from the perforations into the groove, a disk loosely mounted on the bearing pin and bolted to the flanged plate, a transverse cranked shaft, means for locking said shaft, and connections between the bolt and the crank of the shaft, substantially as described.

14. In a device for detaching the core roll shaft in a cotton compress, the combination with journal boxes for the ends of the shaft, of the core-shaft arranged removably in one of the boxes and terminating short of the opposite box, a reciprocating bolt located in said opposite box and carrying a terminal-bearing pin to engage a socket in the adjacent end of the core-shaft, said bolt being provided in its outer end with a transverse perforation, a transverse yoke-bar carried by the outer end of the box in which said bolt is mounted and having aligning flanges provided with bearings, a shaft having an intermediate crank engaging the perforation in the outer end of the bolt, a crank handle for operating the shaft and provided with bearings at its outer side, a thumb-lever pivoted between the bearings, and a locking-rod connected to the inner end of the thumb lever and adapted to engage one of a series of openings formed in the yoke-bar, substantially as described

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530,001. COTTON-COMPRESS. CHARLES L BESSONETTE and WILLIAM T. BESSONETTE, Temple, assignors to the Bessonette Cotton Compress Manufacturing Company, Waco, Tex. Filed June 5, 1894. Serial No. 513,569. (No model.)

*Claim.*—1. In a cotton compress for the manufacture of cylindrical bales, the combination with a lower compressing roll; of a core roll journaled in movable bearings above the same; an upper compressing roll mounted on a movable shaft above said core roll; a conical drum, a rope winding on said drum, a suspended weight connected to the said rope; and gearing connecting said shaft and said drum for lifting said weight, and so increasing the pressure on said upper roll, as the diameter of the bale increases, substantially as described.



2. In a cotton compress for the manufacture of cylindrical bales, the combination with a lower compressing roll; of a core roll journaled in movable bearings above the same; an upper compressing roll mounted on a movable shaft above said core roll; a corrugated conical drum, a rope winding on said drum, a suspended weight connected to said rope; gearing connecting said shaft and said drum and clutch mechanism for throwing said drum into and out of action, substantially as and for the purposes described.

3. In a cotton compress for the manufacture of cylindrical bales, the combination with a lower compressing roll; of a core roll journaled in movable bearings above the same; an upper compressing roll mounted on a shaft above said core roll, movable journal bearings for said shaft, rack bars connected to said journal bearings, pinions meshing in said rack bars, a conical drum; a rope winding on said drum, a suspended weight connected to the said rope; and gearing connecting said pinions and said drum for lifting said weight, and so increasing the pressure on said upper roll, as the diameter of the bale increases, substantially as described.

4. In a cotton compress for the manufacture of cylindrical bales, the combination with a lower compressing roll; of a core roll journaled in movable bearings above the same; an upper compressing roll mounted on a shaft above said core roll; movable journal bearings for said shaft, rack bars connected to said journal bearings; pinions meshing in said rack bars; a conical drum; a rope winding on said drum; a suspended weight connected to the said rope; gearing connecting said pinions and said drum; and clutch mechanism for putting said drum into and out of action, substantially as and for the purposes described.

5. In a cotton compress for the manufacture of cylindrical bales, the combination with a lower compressing roll; of a core roll journaled in movable bearings above the same; an upper compressing roll mounted on a movable shaft above said core roll; movable journal bearings for said shaft; rack bars connected to said journal bearings; pinions meshing in said rack bars; a conical drum; a rope winding on said drum; a suspended weight connected to the said rope; and gearing connecting said pinions and said drum for lifting said weight; clutch mechanism for putting said drum into and out of action; and means for unwinding said drum; when the bale is removed from the compress, substantially as and for the purposes described.

6. In a cotton compress for the manufacture of cylindrical bales, the combination with a lower compressing roll; of a core roll journaled in movable bearings above the same; an upper compressing roll mounted on a movable shaft above said core roll; movable journal bearings for said shaft; racks connected to said journal bearings; pinions meshing in said rack bars, a conical drum; a rope winding on said drum; a suspended weight connected to the said rope; gearing connecting said pinions and said drum for lifting said weight; clutch mechanism for putting said drum into and out of action; and



gearing and clutch mechanism adapted to revolve said drum in either direction independent of said upper roll, substantially as and for the purposes described.

7. In a cotton compress for the manufacture of cylindrical bales, the combination with a frame, and a lower compressing roll journaled in bearings in said frame; of a core roll journaled in movable bearings above the same; an upper compressing roll mounted in movable journal bearings above said core roll, adjustable connections between said bearings for the upper roll and the core roll and means for lifting the upper roll and simultaneously detaching the core roll from its bearings, substantially as and for the purposes described.

8. In a cotton compress for the manufacture of cylindrical bales, the combination with a frame, and a lower compressing roll journaled in bearings in said frame; of a core roll, bearings for the core roll movable upward and horizontally; an upper compressing roll mounted in movable journal bearings above said core roll; slotted links connecting the bearings of said upper roll; and the bearings of said core roll and provided with cam grooves therein; pins projecting from the core roll bearings into said cam grooves, and means for simultaneously lifting said upper roll and forcing apart said pins, substantially as and for the purposes described.

9. In a cotton compress for the manufacture of cylindrical bales, the combination with a frame, and a lower compressing roll journaled in fixed bearings in said frame; of a core roll; bearings for the same movable upward and horizontally; an upper compressing roll mounted in movable journal bearings above said core roll; slotted links held against lateral motion connecting the bearings of said upper roll and the bearings of said core roll, and provided with cam grooves therein; pins projecting from said movable core roll bearings into said cam grooves; means for lifting said upper roll and causing said cam grooves to force said movable core roll bearings apart and detach the bale, and means for lowering said upper roll and causing said movable core roll bearings to return to the holding position, substantially as and for the purposes described.

10. In a cotton compress for the manufacture of cylindrical bales, the combination with a frame, and a lower compressing roll journaled in fixed bearings in said frame; of a core roll; bearings for the same movable upward and horizontally; an upper compressing roll mounted in movable journal bearings above said core roll; slotted links held against lateral motion connecting the bearings of said upper roll and the bearings of said core roll, and provided with cam grooves therein, pins projecting from said movable core roll bearings into said cam grooves; gearing for lifting and lowering said upper roll, and the link connected thereto, and so moving said core roll bearings apart and together again; and a clutch coupling for operating said gearing in either direction, substantially as and for the purposes described.

11. In a cotton compress for the manufacture of cylindrical bales, the combination with a frame, and a lower compressing roll journaled in fixed bearings in said frame; of a core roll; bearings for the same movable upward and horizontally; an upper compressing roll mounted in movable journal bearings above said core roll; slotted links held against lateral motion, connecting the bearings of said upper roll and the bearings of said core roll, and provided with cam grooves therein; pins projecting from said movable core roll bearings into said cam groove; racks attached to said upper roll bearings, pinions, meshing in said racks, and means for revolving said pinions in either direction and so raising and lowering said upper roll, and thereby regulating the position of said core roll bearings, substantially as and for the purposes described.

12. In a cotton compress for the manufacture of cylindrical bales, the combination with a frame, and a lower compressing roll journaled in fixed bearings in said frame; of a core roll; bearings for the same, movable upward and horizontally; an upper compressing roll mounted in movable journal bearings above said core roll; slotted links held against lateral motion, connecting the bearings of said upper roll and the bearings of said core roll, and provided with cam grooves therein; pins projecting from said movable core roll bearings into said cam grooves, racks attached to said upper roll bearings, pinions meshing in said racks, gearing for driving said pinions, and clutch mechanism for putting said gearing into action in either direction and so raising or lowering said upper roll, substantially as and for the purposes described.

13. In a cotton compress of the character described, the combination with a core roll and journal bearings for the same, of a cam adapted to move one of said journal bearings longitudinally along the axis of the core roll, and means for operating said cam, substantially as and for the purposes described.

14. In a cotton compress of the character described, the combination with a core roll and journal bearings for the same, of a stud or pin projecting from one of said bearings, a cam groove adapted to engage said stud or pin and to move the same in the direction of the axis of the core roll, and means for operating said cam, substantially as and for the purposes described.

15. In a cotton compress of the character described, the combination with a core roll, of journal bearings for the same adapted to be moved longitudinally along the axis of the core roll, and to release the said core roll, cams adapted to move said journal bearings longitudinally, and means for operating said cams, substantially as and for the purposes described.

16. In a cotton compress of the character described, the combination with a core roll, of journal bearings for the same adapted to move longitudinally along the axis of the core roll, and to release the said core roll, studs or pins projecting from said journal bearings, cam grooves engaging said studs or pins, and moving said journal bearings in the direction of the axis of the core roll, and means for operating said cams, substantially as and for the purposes described.

17. In a cotton compress for the manufacture of cylindrical bales, the combination with a frame, and a lower compressing roll journaled in bearings in said frame; of a core roll journaled in movable bearings above said frame; an upper compressing roll mounted in movable journal bearings above said core roll; a suspended weight connected to the upper roll; means operated by said upper roll for lifting said weight and so increasing the pressure on the upper roll as the diameter of the bale increases; adjustable connections between the bearings for the upper roll and the core roll, and means for lifting the upper roll and simultaneously detaching the core roll from its bearings, substantially as and for the purposes described.

18. In a cotton compress for the manufacture of cylindrical bales, the combination with a frame, and a lower compressing roll journaled in bearings in said frame; of a core roll; bearings for the core roll movable upward and horizontally; an upper compressing roll mounted in movable journal bearings above said core roll; a suspended weight connected to the upper roll; means operated by said upper roll for lifting said weight and so increasing the pressure on the upper roll as the diameter of the bale increases; slotted links connecting the bearings of said upper roll, and the bearings of said core roll and provided with cam grooves therein; pins projecting from the core roll bearings into said cam grooves, and means for simultaneously lifting said upper roll and forcing apart said pins, substantially as and for the purposes described.

19. In a cotton compress for the manufacture of cylindrical bales, the combination with a frame, and a lower compressing roll journaled in fixed bearings in said frame; of a core roll; bearings for the same movable upward and horizontally; an upper compressing roll mounted in movable journal bearings above said core roll; a suspended weight connected to the upper roll; means operated by said upper roll for lifting said weight and so increasing the pressure on the upper roll as the diameter of the bale increases; slotted links held against lateral motion connecting the bearings of said upper roll and the bearings of said core roll, and provided with cam grooves therein; pins projecting from said movable core roll bearings into said cam grooves, means for lifting said upper roll and causing said cam grooves to force said movable core roll bearings apart and detach the bale, and means for lowering said upper roll and causing said movable core roll bearings to return to the holding position, substantially as and for the purposes described.

20. In a cotton compress for the manufacture of cylindrical bales, the combination with a frame, and a lower compressing roll journaled in fixed bearings in said frame; of a core roll; bearings for the same movable upward and horizontally; an upper compressing roll mounted in movable journal bearings above said core roll; a suspended weight connected to the upper roll; means operated by said upper roll for lifting said weight and so increasing the pressure on the upper roll as the diameter of the bale increases; slotted links held against lateral motion connecting the bearings of said upper roll and the bearings of said core roll, and provided with cam grooves therein, pins projecting from said movable core roll bearings into said cam grooves; gearing for lifting and lowering said upper roll, and the link connected thereto, and so moving said core roll bearings apart and together again; and a clutch coupling for operating said gearing in either direction, substantially as and for the purposes described.

21 In a cotton compress for the manufacture of cylindrical bales, the combination with a frame, and a lowering compressing roll journaled in fixed bearings in said frame; of a core roll; bearings for the same movable upward and horizontally; an upper compressing roll mounted in movable journal bearings above said core roll; a suspended weight connected to the upper roll; means operated by said upper roll for lifting said weight and so increasing the pressure on the upper roll as the diameter of the bale increases; slotted links held against lateral motion, connecting the bearings of said upper roll and the bearings of said core roll, and provided with cam grooves therein; pins projecting from said movable core roll bearings into said cam grooves; racks attached to said upper roll bearings; pinions meshing in said racks, and means for revolving said pinions in either direction, and so raising and lowering said upper roll, and thereby regulating the position of said core roll bearings, substantially as and for the purposes described

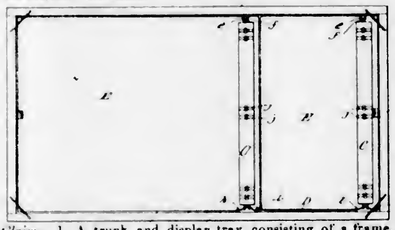
22. In a cotton compress for the manufacture of cylindrical bales, the combination with a frame, and a lower compressing roll journaled

in fixed bearings in said frame; of a core roll; bearings for the same movable upward and horizontally; an upper compressing roll mounted in movable journal bearings above said core roll; a suspended weight connected to the upper roll; means operated by said upper roll for lifting said weight and so increasing the pressure on the upper roll as the diameter of the bale increases; slotted links held against lateral motion, connecting the bearings of said upper roll and the bearings of said core roll, and provided with cam grooves therein; pins projecting from said movable core roll bearings into said cam grooves; racks attached to said upper roll bearings, pinions meshing in said racks, gearing for driving said pinions, and clutch mechanism for putting said gearing into action in either direction and so raising or lowering said upper roll, substantially as and for the purposes described.

23. In a cotton compress of the character described, the combination with a condenser and a flue leading from the gin to the condenser, a reservoir connected to said flue and to said condenser, and a damper for deflecting the cotton blown from the gin into said reservoir when desired, substantially as and for the purposes described.

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530,002. TRUNK AND DISPLAY TRAY. WILLIAM P. BINGHAM and DAVID R. JONES, Jr., Dubuque, Iowa. Filed Mar. 2, 1894. Serial No. 502,151. (No model.)



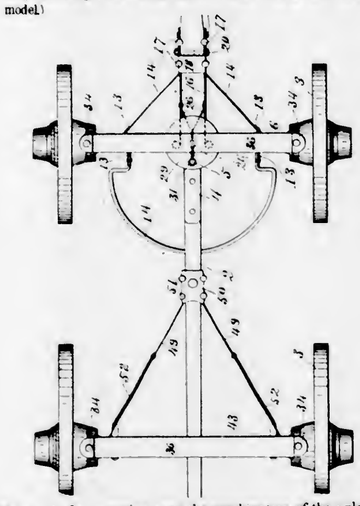
*Claim.*—1. A trunk and display tray, consisting of a frame, a yielding cord attached to one side of said tray and a yielding strap attached to said cord and to the opposite side of the tray on which the articles to be displayed are removably secured, for the purposes shown.

2. A trunk and display tray, consisting of a frame, with yielding straps, to which the articles to be displayed are attached, secured to the sides of the tray and colored backgrounds attached to said straps on which the articles are displayed, as and for the purposes shown.

3. A trunk and display tray, consisting of a frame A, a strap C, secured to one side of the frame by hooks *e*, and eye bolts *f*, and to the other side by an elastic cord D passing through the eye-bolts *g* and *h* and rings *i*, *i*, substantially as described.

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530,003. RUNNING-GEAR FOR WAGONS. JOHN L. BLAKE, Waynesborough, Va. Filed Mar. 19, 1894. Serial No. 504,262. (No model.)



*Claim.*—1. In a running gear the combination of the axles having solid ends, the irons connecting the ends, the bolsters having their main portions bent at right angles to form uprights, the ears having an aperture, and made integral with the said uprights, and the bolts inclosed by sleeves, with which the said irons are held in place, substantially as set forth.

2. In a running gear the combination of the axles having solid ends, upon which the spindles are formed in the same place, the angle irons connecting the ends, one of the said irons having a set off, the bolts with which the axles are provided, the sleeves surrounding the bolts and separating the said irons, and the bolster plate having two apertures one for the bed bolt and the other for the linch pin, and secured upon the top of one of the said axles, substantially as set forth.

3. The combination in a running gear, of the play bolster having uprights formed in the same piece with the main portion of it, the ears, having an aperture, and formed at right-angles to the uprights, the angle iron having a similar aperture in its ends, and secured to the under side of the said main portion, the bolts connecting this portion with the angle iron, and the sleeves surrounding the bolts and separating the said portion from the angle iron, substantially as and for the purpose set forth.

4. The combination in a running gear, of the play bolster having uprights formed in the same piece with the main portion of it, the ears, having an aperture, formed at right angles to the uprights, the angle iron having a similar aperture in its ends, and secured to the under side of the said main portion, the bolts connecting this portion with the angle iron, the sleeves surrounding the bolts and separating the said portion from the angle iron, and the metallic strip secured upon the under side of the angle iron to protect the latter, substantially as set forth.

5. In a wagon axle, the top axle iron folded upon itself at the ends to form a support, the said ends projecting outward and having an aperture, substantially as shown and described and for the purpose set forth.

6. The combination in a running gear, of the rear bolster, and axle, the middle axle iron having a set off, the top axle iron folded at its ends to form an upright and a support for the said bolster, and the rear hounds secured to the said uprights between the axle and bolster, as set forth.

7. The combination in a running gear, of the rear bolster and axle, the middle axle iron having a set off, the top axle iron folded at its ends to form an upright and a support for said bolster, the rear hounds secured to the said uprights between the axle and bolster, the braces, for these hounds, and the brace clips surrounding the said folded ends and axle, substantially as shown and described.

8. The combination with the front axle, of the angle plates with which the sides of the solid portions of the axle are provided, the hounds secured to the angle plates, the top axle irons, and the bolster plate having two apertures and secured upon the said axle iron to protect the latter.

9. The combination in a running gear, of the front axle, the tongue hounds, the bar having a circular aperture and an elongated opening, and secured to the tongue hounds, the said opening adapted to receive the bed bolt, and the aperture to receive the linch pin to couple the pole to the said bar independent of the axle, substantially as shown and described.

10. The combination with the tongue hounds having curled inner ends, of the brace bar having a circular aperture, and an elongated opening, substantially as shown and described, and for the purpose set forth.

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530,004. ELECTRICAL-CONTACT MECHANISM. JOHN F. BLAKE, New Haven, Conn. Filed June 21, 1894. Serial No. 515,272. (No model.)



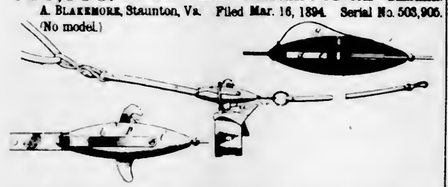
*Claim.*—1. A base or support and a pressure actuated index, combined with a circuit closer actuated by said index, an electro magnet, an armature actuated by the electro magnet, and a second circuit closer composed of an arm or shaft carried by the armature, an eccentric disk rotatably mounted on said shaft, and contacts placed within reach of the eccentric disk and serving to turn the latter and cause it to make accurate contact with both contacts, substantially as described.



2. A circuit closer comprising a suitably actuated arm or shaft, a rotatable disk eccentrically mounted on the shaft, and contacts placed within reach of the eccentric disk and adapted to be rotated by one of the contacts for causing it to make accurate contact with both contacts, substantially as described.

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530,005. CHECKING AND UNCHECKING DEVICE. BENJAMIN A. BLAKEMORE, Staunton, Va. Filed Mar. 16, 1894. Serial No. 503,905. (No model.)



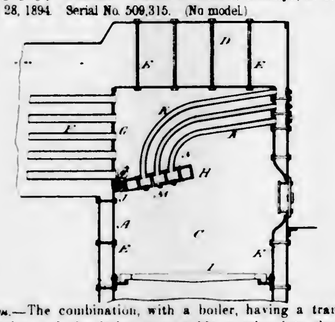
*Claim.*—1. A device for checking and unchecking horses, comprising a circular casing tapered at its ends and having a transverse slot, a latch centrally pivoted within the slot, a spring for turning said latch at right angles to the casing, and a line passed through the end of the casing and connected to one end of said latch, and adapted to turn the latch within the slot, substantially as and for the purposes set forth.

2. A device for checking and unchecking horses, comprising a circular casing tapered at its ends, and having a transverse slot, a latch centrally pivoted within the slot and carrying at one end a lateral finger as described, a spring for turning said latch at right angles to the casing, a line passed through the end of the casing and connected to said finger, in combination with a terret on the saddle, substantially as set forth.

3. In a device for checking and unchecking horses, and in combination with a terret on the saddle, and a casing having a spring controlled pivoted latch adapted to engage the terret, an anti-rattling leaf spring secured at one end to the outer side of the casing and having its other end adapted to contact with the inner side of the terret, substantially as set forth.

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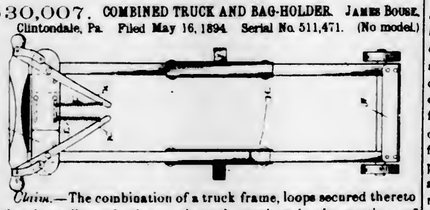
530,006. BOILER. JOSEPH J. BOHNER, Brooklyn, N. Y. Filed Apr. 28, 1894. Serial No. 509,315. (No model.)



*Claim.*—The combination, with a boiler, having a transverse water-heating and circulating water-table, opening into the water legs, projecting forward from the water-back over the grate and terminating a distance from the water-front, of a supplementary gang of water-heating and circulating tubes having their ends in circulating connection with the top of said water-table, and rising therefrom substantially parallel with the flue sheet, to or near the crown sheet, and bent and extending thence forward into circulating communication with the upper part of the water-front, substantially as shown and described.

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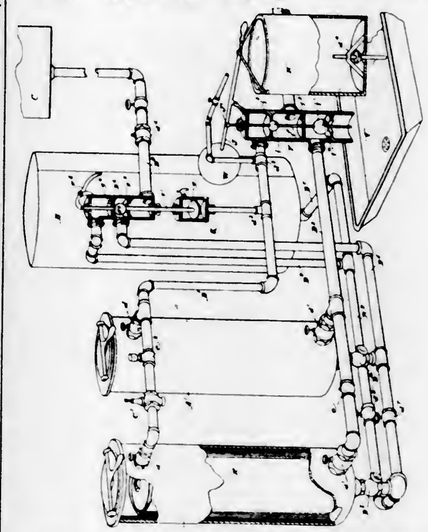
530,007. COMBINED TRUCK AND BAG-HOLDER. JAMES BOUSE, Clintondale, Pa. Filed May 16, 1894. Serial No. 511,471. (No model.)



*Claim.*—The combination of a truck frame, loops secured thereto having laterally projecting pockets, depressions in the portions of the frame beneath the loops, spring pressed blocks in said depressions and in the said pockets, a bag holding device and arms E extended therefrom which are movable in the loops and which are held in the desired adjustment by said pressure blocks, substantially as shown and described.

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530,008. FILTER. JUNIUS A. BOWDEN, Detroit, Mich. Filed May 21, 1894. Serial No. 511,900. (No model.)



*Claim.*—1. In a filtering machine, the combination of a series of filters, a supply pipe connecting therewith, a discharge for filtered water, a storage tank adapted to receive filtered water for the purposes of washing the filters separate from the usual discharge thereof, a filter in the line of communication between the filtered water supply and said storage tank, and means whereby the same is adapted to exclusively filter into the storage tank to furnish filtered water for reverse washing through all the filters, substantially as described.

2. In a filtering machine, the combination of a series of filters, a supply pipe connecting therewith, a discharge for filtered water, a storage tank adapted to receive filtered water for the purposes of washing the filters separate from the usual discharge thereof, a filter in the line of communication between the filtered water supply and said storage tank, means whereby the same is adapted to exclusively filter into the storage tank to furnish filtered water for reverse washing through the filters, and means whereby the current of filtered water is established in the reverse direction from the storage tank through the filters to a waste, substantially as described.

3. In a filtering machine, the combination of two or more filters arranged in a battery, means whereby a reverse current of filtered water can be established through the same, an air valve located in the supply pipe adjacent to the filters, whereby, on the release of the pressure from the service pipe, the air may be permitted to enter the filtering chambers and facilitate the washing by reverse currents, substantially as described.

4. In a filtering machine, the combination of two or more filters arranged in a battery, means whereby one of them may be used to store water for reversing through the other, a storage tank therefor, and means whereby the filter may be restored to the battery and be disconnected from delivery into the storage tank.

5. In a filtering machine, a self-cleansing apparatus, consisting of the combination of an automatic discharge tank, means connected therewith for discharging and periodically filling the same, valve chests with valves therein, whereby the waste is alternately opened and closed, a secondary valve chest located in the line of the discharge pipe, valves located therein, means whereby the same are operated by the initial pressure or the withdrawal of the initial pressure from the service pipe, said means being located upon the filter side of the first named valve chest, connections from filter to a storage of filtered water through said secondary valve chest for washing purposes, and means whereby the main filtered water supply is cut off and a current established from said storage of filtered water in a reverse direction through the filtering cylinders, and from thence through a waste discharge, substantially as described.

6. In combination with a filter, a suitable inlet pipe, an outlet pipe for waste water, an outlet pipe for filtered water branching to two storage tanks, one being for wash water and one for service water, a valve in the inlet pipe and a valve in the waste pipe, means automatically actuated by a slow filling balance tank for throwing said valves, a valve adapted to direct the flow of filtered water to one or the other of the two storage tanks, means actuated by the relative pressure of the water in the feed pipe and the water in the wash water tank and adapted to throw said last mentioned valve, substantially as specified.

7. The process of alternate filtering and cleansing, consisting of dividing the feed water into parts, utilizing one part for filtering, and utilizing another part for automatically and periodically tripping the valves which direct the flow of water through the various pipes,—dividing the filtered water into parts, utilizing one part for consumption, and storing another part under pressure to be subsequently used for reversing back through the filtering material, utilizing the filtered water so stored by forcing it back by the pressure against which it was stored through the filtering material, and allowing the water to escape, substantially as specified.

8. In a filtering apparatus, the combination of two or more filters, one of which is arranged to discharge its filtered water into a tank independent of the discharge from the main supply filter, means for closing the discharge from the main filter and opening the supply from the tank and causing a reverse action through all the filters into the waste outlet, substantially as described.

9. In a filtering apparatus, the combination of two or more filters, one of which is arranged to discharge its filtered water into a tank independent of the discharge from the main supply filter, means for simultaneously closing the discharge from the main filter and opening the supply from the tank and causing a reverse action through all the filters into the waste outlet, substantially as described.

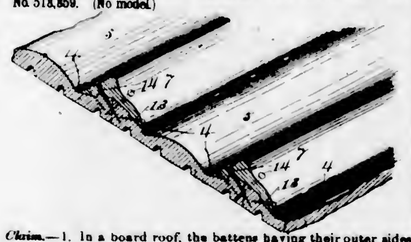
10. In a filtering apparatus, the combination of two or more filters, one of which is arranged to discharge its filtered water into a tank independent of the discharge from the main supply filter, means for automatically closing the discharge from the main filter and opening the supply from the tank and causing a reverse action through all the filters into the waste outlet, substantially as described.

11. In a self cleansing filter, the combination with the main service pipe of a storage tank, independent thereof in which water is stored under compressed air, and means whereby filtered water is periodically and automatically admitted into and released from said tank, the admission being simultaneous with the filtering of feed water into the filter, and the release being simultaneous with the closing off of the flow of feed water, substantially as described.

12. In a self cleansing filter, the combination with the main service pipe of a tank of water independent thereof and containing an air cushion, means whereby the filtered water outlet from the filter is periodically and automatically closed simultaneously with the opening of the supply from said tank, causing the water from the tank to pass through the filtering material in a reverse direction to that it had when filtering, and to discharge into the waste, substantially as described.

13. In a self cleansing filter, the combination of a tank of water independent of the main service and means whereby the filtered water outlet from the filter is periodically and automatically closed simultaneously with the opening of the supply of said tank, causing the water from said tank to pass through the filtering material in a reverse direction to filtering, and discharge into the waste, substantially as described.

530,009. BOARD ROOF. JOSEPH P. BROWNLEE, Galva, Ill., assignor to Marian H. Brownlee, same place. Filed July 28, 1894. Serial No. 518,859. (No model.)



*Claim.*—1. In a board roof, the battens having their outer sides alternately convexed and concaved, their inner sides formed of parallel shoulders with an interval or space between them, and parallel angle surfaces also with a space between them, combined with the boards having ventilating grooves on the under side, their tops having a series of water channels, and slightly convex surfaces merging into the said channels, each board having near its side edges angle surfaces divided by a shoulder, the latter with the former adapted to be engaged by said similar parts of the battens, substantially as set forth.

2. The combination in a board roof, of the boards having ventilating grooves on the under side, provided on the top with water channels connected by a slight convex board surface, and having near their side edges angle surfaces divided by a slanting shoulder, one surface being upon a different angle from the other, the batten having like angle surfaces and shoulders with a space between the shoulders and a space between the surfaces, in which spaces the side edges of the boards fit and are drawn together, substantially as set forth.

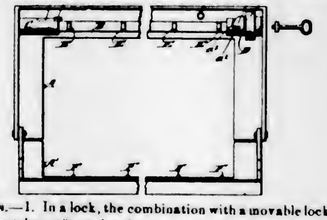
3. The combination in a board roof, of the battens having the inner side formed of parallel shoulders and parallel angle surfaces, the former dividing the latter and all extending throughout the length of the batten, and the roof boards having like shoulders and angle surfaces to those of the battens and adapted to be engaged by the latter to hold the boards together, substantially as shown and described.

4. A roof batten comprising a strip of uniform thickness throughout, the inner side formed of parallel shoulders, and parallel angle surfaces, the former dividing the latter, and all extending throughout the length of the strip, the outer side of the strip being alternately concaved and convexed longitudinally, substantially as and for the purpose set forth.

530,010. INSECTICIDE. LUDWIG BRUMLEU and ERNEST BRUMLEU, Cuero, Tex. Filed Oct. 14, 1893. Serial No. 488,197. (No specimens.)

*Claim.*—The compound herein described consisting of ferric oxid, arsenious acid, and sulfate of lime combined in about the proportions described.

530,011. BAG-LOCK. JESSE B. BUNDREN and JOHN W. HEDGES, Danville, Ky. Filed May 10, 1894. Serial No. 510,776. (No model.)



*Claim.*—1. In a lock, the combination with a movable locking bar carrying catches, of a spring for moving said bar in one direction, a rotatable cam cylinder abutting against the end of the locking bar and operating to move it in the opposite direction, and a series of hasps or staples for engaging said catches, substantially as described.

2. In a lock, the combination with a movable locking bar carrying catches, a spring for moving said bar in one direction, a rotatable cam cylinder abutting against the end of the locking bar and operating to move it in the opposite direction, a series of hasps or staples for engaging said catches, and a spring for forcing said hasps or staples out of engagement with the catches, substantially as described.

3. In a lock, the combination with a movable locking bar carrying catches, and provided at one end with a cam $a^4$, a rotatable cylinder D provided with a cam face $d'$ engaging the cam $a^4$ for moving said bar in one direction, a spring for moving said bar in the opposite direction, and hasps or staples for engaging said catches, substantially as described.

4. In a lock, the combination with a movable locking bar carrying catches, and provided at one end with a cam $a^3$ having upon its face a notch or recess $a^5$, a rotatable cylinder D provided with a cam face $d'$ engaging the cam $a^3$ for moving said bar in one direction, a spring for moving said bar in the opposite direction, and hasps or staples for engaging said catches, substantially as and for the purpose specified.

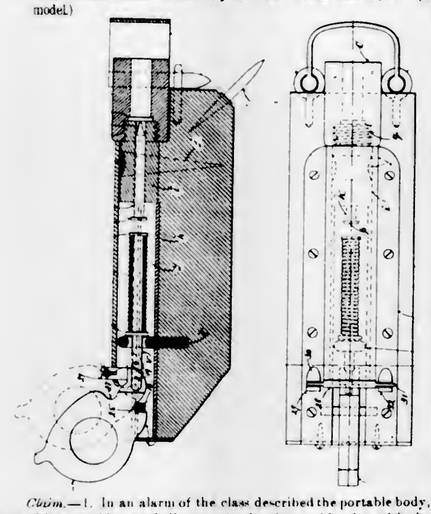
5. In a lock, the combination with a movable locking bar carrying catches and provided at one end with a cam $a^3$, a rotatable cylinder D having a key-seat $d^3$ in its outer end and provided at its other end with a cam face $d'$ engaging the cam $a^3$ to move said bar in one direction, a spring for moving said bar in the opposite direction, and hasps or staples for engaging said catches, substantially as described.

6. In a lock, the combination with the movable locking bar B carrying beveled hooked catches E, and journaled at one end in a barrel C, a coiled spring $b$ arranged in said barrel and bearing against said bar, the other end of said bar being provided with a double cam faced shoulder $a^2$ and journaled in a rotatable cylinder D provided with a double cam face $d'$ engaging the cam $a^2$, means for turning said cylinder, and hasps or staples for engaging said catches, substantially as described.



7. In a lock, the combination with the movable locking bar B carrying beveled hooked catches E, and journaled at one end in a slotted barrel C, said locking bar being provided with a pin $a'$ sliding in the slot of the barrel C, a coiled spring $b$ arranged in said barrel and bearing said bar, the other end of said bar being provided with a double cam-faced shoulder $a^2$ and journaled in a rotatable cylinder D provided with a double cam face $d'$ engaging the cam $a^2$, means for turning said cylinder, and hasps or staples for engaging said catches, substantially as described.

530,012. DETONATING BURGLAR-ALARM. LEMUEL R. BURRELL, Cambridge, assignor of forty-nine one-hundredths to Robert H. Gray, Boston, Mass. Filed May 25, 1894. Serial No. 512,440. (No model.)



*Claim.*—1. In an alarm of the class described the portable body, A, and its cartridge exploding mechanism in combination with the barrel: the U-shaped guard, 41, and devices for detachably securing said guard to said body across the line of fire of said barrel, substantially as set forth.

2. In an alarm of the class described, the portable body, A, in combination with the pin-block, $i$, the barrel, C, detachably secured to said block; the loose horizontal firing pin in said block; the spring-pushed rod, $r$, for actuating said pin; the trigger, D, pivoted to said rod and projecting beyond the end of the body when set; and the catch-bar, 16, for locking said trigger.

3. In an alarm of the class described, the portable body, A, in combination with the spring-pushed rod, $r$, the trigger, D, pivoted to said rod; the catch-bar, 16; and the latch, 28, all being arranged to operate substantially as described.

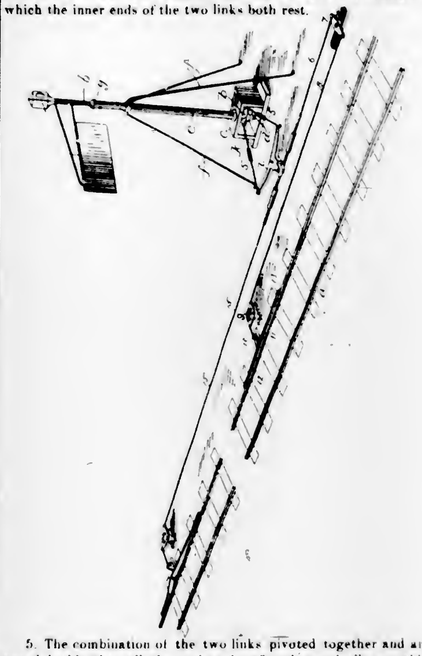
530,013. AUTOMATIC RAILROAD-SIGNAL. JOHN T. CARTER, Brookland, assignor of one-fourth to Samuel J. Haislett, Washington, D. C. Filed July 2, 1894. Serial No. 516,347. (No model.)

*Claim.*—1. The block system comprising the vertical semaphore shaft having the horizontal arm, the vertical tube in which said shaft is arranged, a casing at the lower end of the tube, the lateral arms on the shaft in the casing the semaphore loosely hung from said arm, the trips at opposite portions of the block respectively connected to said arms to swing said shaft in opposite directions.

2. The combination of the vertical semaphore shaft passing into a box, and a vertical tube at its lower end secured to the box and extending upwardly around the shaft, a suitable support, a shaft provided with a rigid collar inclosing the upper end of the tube, a horizontal arm from the upper portion of the shaft and a semaphore hung loosely from said arm.

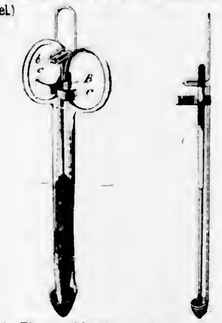
3. In a railroad block signal system, the combination of the semaphore shaft having lateral arms, the three armed lever arranged opposite the same with its two opposite arms connected respectively with said arms of the shaft, a trip at the entrance to the block, a vertically movable bell crank lever connected with and operated by the same, a horizontal bell crank lever connected with said trip lever, the short lever fulcrumed between its ends and having one end connected to said second bell crank lever and its opposite end connected to the third arm of said three armed lever, the trip at the rear end of the block, and the bell crank levers and connections therefrom to the said third arm of the three armed lever.

4. The trip comprising the two links pivoted together a support on which their inner ends slide and are confined, a guard flange or rail at the outer sides of said links, and a vertical movable head or which the inner ends of the two links both rest.



5. The combination of the two links pivoted together and arranged beside the rail, the casing therefor, the vertically movable head on which the ends of said links rest and the vertically movable bell crank lever having its horizontal arm passed loosely through the same, substantially as described.

530,014. SCISSORS-HOLDER AND POINT-GUARD. WILLIAM CHANDLER, North Bend, Canada. Filed Oct. 12, 1893. Serial No. 487,934. (No model.)

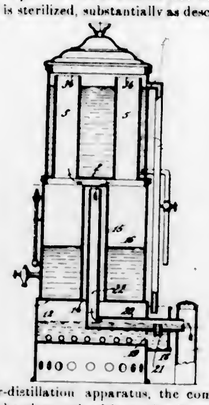


*Claim.*—1. The combination, with an elongated frame having two limbs projected from its face near the upper end, and also adapted for suspension, of an elastic keeper clip attached on the frame directly below the limbs, and having its ends outcurved in opposite directions substantially as described.

2. The combination with a wire frame, a ring on one end of said frame, and two limbs outwardly projected below the ring, of an elastic loop-shaped keeper clip on the frame below the limbs, and a point receiving cup at the other end of the frame, substantially as described.

530,015. APPARATUS FOR DISTILLING WATER. ANDREW J. CRASK, Boston, Mass. Filed July 11, 1894. Serial No. 517,222. (No model.)

*Claim.*—1. In a water distillation apparatus, the combination with a water and steam chamber of a pipe carrying off the surplus hot water and admitting air, said pipe entering at the normal water level and provided with an outlet opening for the waste hot water, which also serves as an inlet for air, which enters at the external end of the pipe at the point where the waste hot water is discharged whereby said air is sterilized, substantially as described.



2. In a water-distillation apparatus, the combination with a water and steam chamber and with condensing surfaces arranged above the same, of a hot water outlet and air inlet pipe receiving the entering air and discharging the waste water at its external end, whereby the air is sterilized, substantially as described.

3. In a water-distillation apparatus, the combination with an upper supplying reservoir, the walls of which form interior condensing surfaces, of a lower water and steam chamber, an air inlet and hot water outlet pipe, entering said chamber from without and having a partial submergence, its inner end provided with an air opening and an opening for the waste hot water and its outer end having a strainer through which the hot waste water escapes and external air enters, a feed-water pipe entering the upper reservoir, and an overflow pipe discharging the excess of water from the upper reservoir to the lower, substantially as described.

4. In a water-distillation apparatus, an upper cold water chamber having passages therethrough, a lower water and steam chamber, means for feeding water in suitable quantities to the upper chamber and supplying it therefrom to the lower chamber, a steam cooking chamber arranged above the upper chamber, and a hot water outlet and air inlet pipe entering the water and steam-chamber for introducing sterilized air within the space between the upper and lower chambers, substantially as described.

5. In a water-distillation apparatus, the combination with an upper chamber provided with means whereby water may be suitably supplied thereto, of a lower water and steam chamber, an air-inlet and waste water outlet-pipe, entering the lower chamber horizontally and provided with a strainer upon its outer end and at its inner end with a vertical branch and with an open nipple for the waste-water, an overflow pipe carrying the surplus water from the upper to the lower chamber, and a receptacle for the water of condensation between the said chambers, substantially as described.

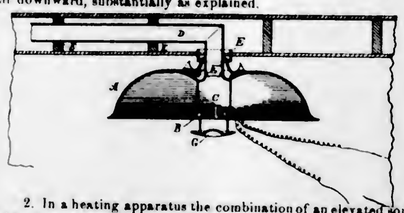
6. In a water-distillation apparatus, the combination with an upper cold water chamber, of a feed-water pipe supplying the lower interior portion of the upper chamber, a lower water and steam chamber having a cup on its outer face communicating with the chamber, an over-flow pipe carrying the surplus water from the upper chamber to said cup, an air inlet and hot water outlet traversing the cup, and entering the lower reservoir and having a strainer upon its outer end, a steam cooking chamber above the upper reservoir, and a chamber for the water of condensation between the upper and lower chambers, substantially as described.

7. In a water distillation apparatus, the combination with a water steam chamber and with condensing surfaces above it, of means for maintaining a substantially uniform water-level in said chamber, an air inlet and hot water outlet pipe, having an external end provided with a strainer, said pipe passing through the water and steam chamber and through a cup on the wall of said chamber and discharging the entering air above the water-level, and a chamber for the water of condensation between the upper and lower chambers, substantially as described.

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**530,016. DEVICE FOR HEATING AND VENTILATING ROOMS.** JOHN CINNAMON, New Brighton, N. Y. Filed July 17, 1894. Serial No. 517,796. (No model.)

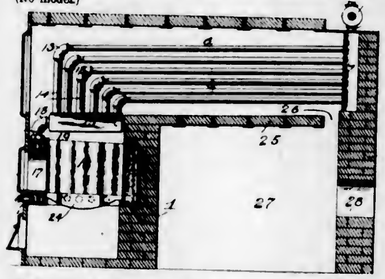
*Claim.*—1. In a heating apparatus the combination of an elevated source of heat, a reflector mounted adjacent to said source of heat and constructed to direct heat rays downward past the same, an outlet for the escape of heated air from the reflector and a screen located below the source of heat with a space between them and constructed to intercept direct radiation and prevent escape of heated air downward, substantially as explained.



2. In a heating apparatus the combination of an elevated source of heat, a reflector located adjacent thereto, to direct heat rays downward past the source, a passage for the escape of heated air from the reflector and automatically acting check-valves in the passage to prevent influx of cold air, and the screen located below the source of heat with a space between them to prevent direct radiation and the escape of hot air downward, as explained.

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**530,017. SECTIONAL STEAM-GENERATOR.** JOSEPH A. L. CLAUDON, Glenwood Springs, Colo. Filed Apr. 19, 1894. Serial No. 508,170. (No model.)

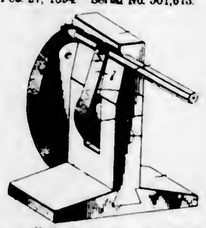


*Claim.*—1. In a sectional steam generator or water-heater, the combination with the inclined horizontal water-tubes, the rear vertical manifolds connected therewith, the vertical water-tubes connected with the front ends of said inclined tubes and the inclined manifolds with which said vertical tubes are connected, of the water-jacket forming the sides of the fire-box, having openings in its sides at the lower end, the return tubes connected therewith, the removable screw-plugs, and the nipples connecting the front manifolds with the water-jacket, substantially as described.

2. In a sectional steam boiler or water heater, the combination with the water-tubes, the upper and lower manifolds, and the water-jacket connected with said lower manifolds, having corrugated inner walls, of the casing, the fire box, the horizontal wall extending from the fire box to near the rear end of the casing forming a flue at said end, the chamber below said wall and the exit flue at the rear end of the casing below said horizontal wall, substantially as described.

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**530,018. PENCIL-SHARPENER.** RICHARD D. CODY, Winona, Minn. Filed Feb. 27, 1894. Serial No. 501,673. (No model.)



*Claim.*—1. A pencil sharpening machine having a pencil holder, rotary grinding or sharpening means, and a pulley driven therefrom having an elastic belt to surround the pencil and rotate and move the same longitudinally, the axes of the pulley and the pencil being in different planes substantially as described.



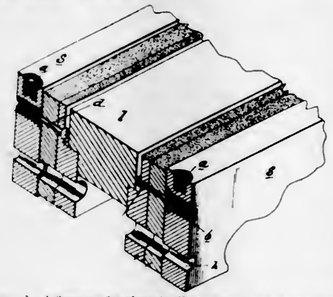
2. A pencil sharpener comprising the upright, the rotary disk having the beveled grinding edge, the upright having an inclined pencil holder opposite the edge of the disk, and a pulley driven from the disk, and having an endless elastic belt arranged to surround the pencil and yieldingly hold the same against said grinding edge and rotate and feed the same longitudinally, the axes of the pulley and pencil being in different planes substantially as described.

3. A pencil sharpener comprising a grinding means, the inclined stationary pencil holder arranged to support the pencil in an inclined position against the grinding means and to permit the pencil to freely rotate and move longitudinally therein, a rotary pulley, and an elastic belt driven thereby and arranged to directly surround and rotate and feed the pencil longitudinally, the axes of the pencil and pulley being in different planes, substantially as described.

4. The combination of the vertical upright having a support and the vertical opening, the transverse shaft in said upright having a pulley in said opening, a disk on the shaft having the beveled grinding edge, said upright having the pencil holding notches in its side opposite said beveled grinding edge so that the pencil rests and rotates therein, and the endless elastic band in said opening and passing around said pulley and arranged to directly surround and rotate the pencil the notches being inclined so that the axes of the pencil and shaft are in different planes, substantially as described.

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**530,019. BOX OR FURNACE FOR ELECTRIC HEATING APPARATUS.** CHARLES L. COFFIN, Detroit, Mich. Filed Mar. 9, 1893. Serial No. 465,323. (No model.)



*Claim.*—1. A furnace for electrically heating metals, consisting of a box composed of separable parts secured together by bolts, having its sides and ends lined with double slabs of carbon, the lining of the sides and ends being insulated from each other, and having its top or bottom, as the case may be, lined with a refractory slab, such as lime, magnesia or graphite, substantially as shown and described.

2. A furnace for electrically heating or welding metal, consisting of a box formed of the refractory insulating slabs *s* provided with threaded sockets *a*, secured together by bolts *c* and lined with the carbon slabs *c* secured in position by the bolts *d* and threaded sockets *b*, and the lime or magnesia top or bottom, substantially as shown and described.

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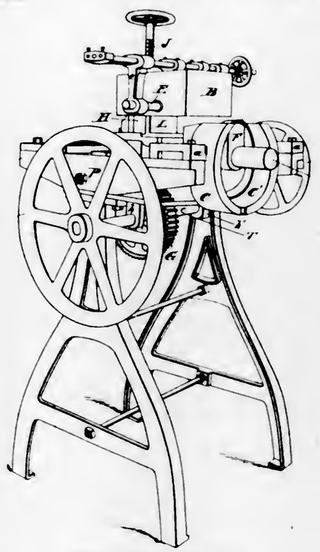
**530,020. APPARATUS FOR WELDING RINGS.** CHARLES L. COFFIN, Detroit, Mich. Filed Mar. 13, 1894. Serial No. 503,482. (No model.)

*Claim.*—1. In an apparatus for electrically heating metal, the combination of a separable clamp for holding the article to be welded, means for opening and closing the clamp, a movable furnace, a movable anvil, and connecting mechanism for moving the furnace toward the clamp, and moving the anvil in proper relation to the clamped article, substantially as described.

2. In an apparatus for electrically heating metal, the combination of a separable clamp approximately conforming to the article to be held, and composed of two independent parts, with guiding ways for the independent parts, and a right and left threaded shaft, engaging with lugs on the parts of the clamp for moving the said parts with a movable furnace, and an anvil, which is moved toward and from the clamp as the furnace moves, substantially as described.

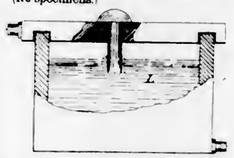
3. In an apparatus for heating metals electrically, the combination of a support, a separable clamp approximately conforming to the article to be held, and composed of two independent parts, means for opening and closing the parts of the clamps, a furnace movable toward and from the clamp, and an anvil placed in proper relation to the clamp as the furnace moves away from said clamp, substantially as described.

4. In an apparatus for heating metals electrically, the combination of a support, a separable clamp approximately conforming to the article to be held, an anvil, and a movable furnace adapted to subject the clamped article to heat and place said article in proper relation to the anvil as the furnace moves away from the clamp, substantially as described.



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**530,021. METHOD OF ELECTRICALLY HEATING METAL.** CHARLES L. COFFIN, Detroit, Mich. Filed July 10, 1894. Serial No. 517,120. (No specimens.)



*Claim.*—1. The herein described method of electrically heating metal consisting in bringing the metal in circuit with a liquid electrode containing a substance more volatile or vaporizable than water.

2. The herein described method of electrically heating metal consisting in springing an electric arc between the electrode to be heated and a liquid electrode or electrolyte containing a substance more volatile or vaporizable than water.

3. The herein described method of electrically heating consisting in putting the electrode in circuit with a liquid electrode containing a substance more volatile or vaporizable than water, and whose volatile constituent is inflammable.

4. The herein described method of electrically heating consisting in springing an electric arc between an electrode and a liquid electrode or electrolyte containing a substance more volatile or vaporizable than water, and whose volatile constituent is inflammable.

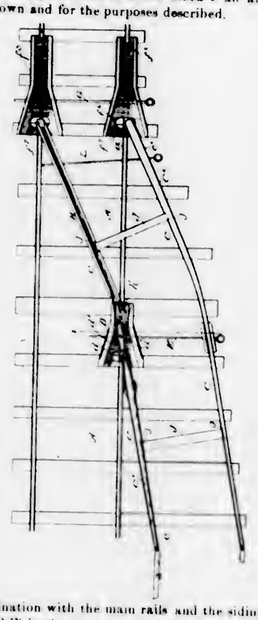
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**530,022. COMBINED RAILWAY-SWITCH AND CAR-REPLACING MECHANISM.** ALBERT S. DEBOER, Cuero, Tex. Filed July 14, 1894. Serial No. 517,582. (No model.)

*Claim.*—1. In a mechanism as described, the combination with the main rails and detachable switch or replacing members having pivot lugs and undercut recesses at their front end, of guide blocks adapted to be detachably connected with the rails, their rear ends tapering and terminating with the upper face of the rails, their front ends having socket $f^4$ and recessed portions $f^5$ adapted to receive the lug ends of switch or replacing members all arranged substantially as shown and described.

2. In a mechanism as described the combination with the main rails, the blocks F and F', the connecting block D, and the siding rails, of a switch section having its short rail detachably connected with the block D, its long rail bent inward and detachably connected with the block F, and having a detachable member H, connected at one end to the block F' and the other with the block D all arranged substantially as shown and for the purposes described.

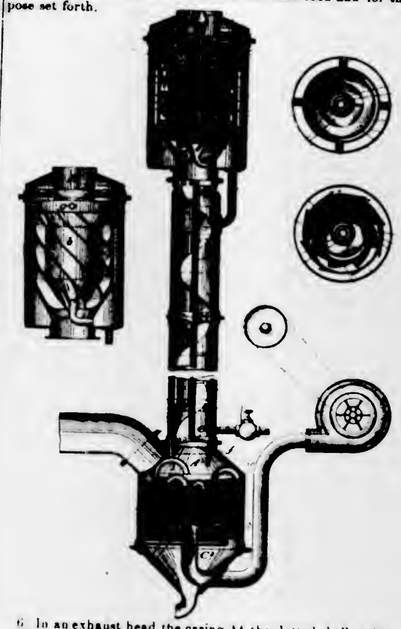
3. The combination in a mechanism as described, with the main and siding rails, the block D detachably connected with one of the main rails, the blocks F F' detachably connected with such main rails, said blocks D, F, F', having one end formed practically triangular shaped, and the opposite end straight and tapered toward the rail, said angular end having socket and recess portions, of the switch section having the ends of its short and long member formed with an undercut portion and a lug the end of the short rail fitting the socket and recess in the block D and the long rail the block F' and the detachable rail section H having a tapered portion h fitting against the main rail and a portion h' fitting the block D, and having a lug and cut out portion fitting the socket in the block F all arranged substantially as shown and for the purposes described.



4. The combination with the main rails and the siding rails, of the blocks D, F and F', having central longitudinal recesses fitting the main rails and staples on the under face, and the switch rails connected with the said blocks as shown, said rails having staples or eyes on their under face, of transverse rods projected under the main rails and through the staples on the switch rails and the block and all arranged substantially as shown and for the purposes described.

5. The combination with the main rails and the blocks F F' detachably connected thereto, having triangular portions at the front end, terminating at the rear in straight portions downwardly inclined said front portions having socket $f^6$ and recesses $f^7$ of the members K having each a recess and a lug at the front end, adapted to fit the socket $f^6$ and recess $f^7$ on the blocks F F' their upper faces having a guide groove and inclined downward, and the tie rod I, all arranged substantially as shown and described

5. The combination of the exhaust steam pipe $A^2$, suitably connected with the exhaust of the steam engine as by pipe A, with exhaust head $A^3$, having air pipes *g*, air jacket *i*, and central vertical pipe *j*, substantially as herein shown and described and for the purpose set forth.



6. In an exhaust head the casing $A^4$, the slotted shell *a*, the cone *b*, the inwardly and downwardly projecting pipe K, and the pipe *l* depending therefrom substantially as herein shown and described and for the purpose set forth.

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530,023. CONDENSER AND EXHAUST-PIPE HEAD. JULES J J. DE RYCKE, Brooklyn, N. Y. Filed June 12, 1894. Serial No. 514,342 (No model.)

*Claim.*—1. The combination of the exhaust steam pipe A, the casing or chamber $A'$ having the water outlet pipe *c*, the air pipe C and the coiled pipes C, arranged in the path of the incoming exhaust steam, and having outlets *c*, the air blower B forcing air into said coils and chamber and the pipe $A^2$ in which the air and uncondensed steam are intimately mingled and a further condensation attained, substantially as herein specified.

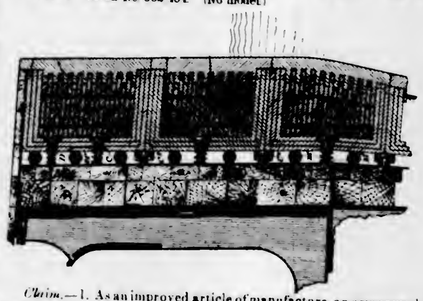
2. In an exhaust steam pipe, the spiral plates D and water troughs E in combination with each other and with the air blower B pipe C and exhaust steam inlet pipe A, all substantially as herein specified.

3. In an exhaust steam pipe, the spiral plates D, in combination with air blower B and pipe C, substantially as shown and described herein, and for the purposes set forth.

4. In an exhaust steam pipe, the spiral plates D, and water troughs E, with pipes *f*, substantially as herein shown and described and for the purpose set forth.

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530,024. ARMOR-PLATE. PAUL R. DE F. D'HUMY, Chicago, Ill., assignor of seven-tenths to Andrew S. Wort, same place. Filed Mar. 6, 1894. Serial No. 502,484. (No model.)



*Claim.*—1. As an improved article of manufacture, an armor made in sections each consisting of a group of slabs secured together and standing edgewise to the impact, a frame surrounding the sides and rear of each group and consisting of a set of nested boxes, and means for securing the frame to the slabs.

2. As an improved article of manufacture, an armor made in sections each consisting of a group of slabs secured together and standing edgewise to the impact, a frame surrounding the sides and rear of each group, and an exterior plate secured to the outer edges of the slabs.

3. As an improved article of manufacture, an armor made in sections each consisting of a group of alternately wider and narrower slabs secured together edgewise to the impact, and an exterior plate of the size of the group having alternate projections and grooves on its inner face engaging the outer edges of the slabs, and bars passing through aligned holes in the projections of the plate and the wider of the slabs.



4. As an improved article of manufacture, an armor made in sections each consisting of a group of slabs secured together edgewise to the impact, an exterior plate of the size of the group secured to their outer edges, and an interior plate of the size of the group secured to their inner edges.

5. As an improved article of manufacture, an armor made in sections each consisting of a group of slabs secured together edgewise to the impact, an exterior plate of the size of the group secured to their outer edges, an interior plate of the size of the group secured to their inner edges, a frame surrounding the sides and rear of the entire section, and means for securing it to the slabs.

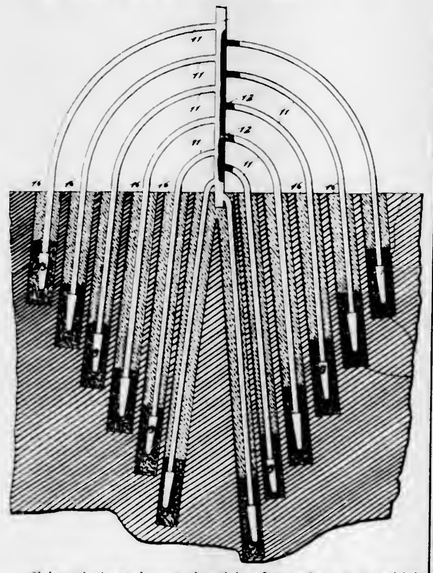
6. As an improved article of manufacture, an armor made in sections each consisting of a group of slabs secured together edgewise to the impact, an exterior plate composed of a number of slabs also secured together edgewise to the impact and standing in planes at right angles to the planes occupied by the slabs, and means for connecting the exterior plate with the group.

7. As an improved article of manufacture, an armor made in sections each consisting of a group of slabs secured together edgewise to the impact, an exterior plate composed of a number of slabs also secured together edgewise to the impact and standing in planes at right angles to the planes occupied by the slabs, means for connecting the exterior plate with the group, a frame surrounding the sides and rear of the group, and bars passing through the sides of the frame and transversely through the slabs in the group.

8. As an improved article of manufacture, an armor section consisting of a group of alternately wider and narrower slabs set edgewise to the impact and secured together, an exterior cap consisting of a number of plates also set edgewise to the impact and standing in planes at right angles to the planes of the slabs, the rear edges of the plates being formed with projections and grooves to engage the front edges of the slabs, said plates and slabs being formed with transverse openings through their interlocking portions, and bars passed through the aligned openings.

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530,025. MULTIPLE BLASTING-FUSE. WILLIAM J. C. DOYLE, Aspen, Colo., assignor of one-half to Timothy Beckley, same place. Filed Feb. 13, 1894. Serial No. 500,044. (No model.)



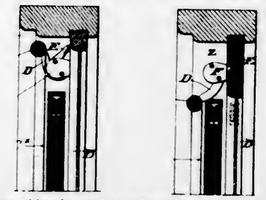
*Claim.*—1. As an improved article of manufacture, a multiple blasting fuse, comprising a common or main fuse, and a series of branch fuses leading from different parts of the main fuse, each branch fuse terminating at its free end in a blasting cap, substantially as described.

2. In a blasting fuse comprising the main fuse 10, and a series of branch fuses 11 leading from different parts of the main fuse, substantially as described.

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530,026. ADJUSTABLE WINDOW-SHADE HOLDER. GEORGE W. EVERETT, New York, N. Y., assignor of one-fourth to Joseph J. Little, same place. Filed July 7, 1894. Serial No. 516,791. (No model.)

*Claim.*—1. A shade supporting attachment for windows comprising a roller supporting bracket pivotally mounted to move from a plane above its pivot to a plane below it, and an arm or projection operatively connected with the bracket, turning on a fixed pivot on the window frame, and engaging the window sash to hold the bracket in an elevated position and movable with the sash as it is raised and lowered to correspondingly raise and lower the roller.



2. The combination, substantially as set forth, of the vertically movable roller supporting bracket mounted on the window frame, an arm turning on a fixed support on the window frame, operatively connected with the roller bracket, and engaging the window sash to effect the lowering and raising of the roller as the sash is correspondingly moved.

3. The combination of a shade supporting bracket mounted to move from a plane above its support to a plane below it, and an arm or projection engaging with the bracket and having a sliding connection with the window sash.

4. The combination of a vertically movable shade supporting bracket mounted on the window frame, and an arm or projection connected with the bracket and having a sliding connection with the window sash.

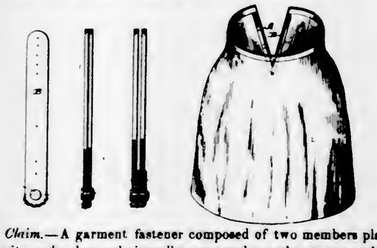
5. A shade supporting attachment for windows, consisting of the combination of a bracket having a shade supporting portion at one end, a piroted arm engaging the window sash and operatively connected with the bracket at its opposite end and a pivot for the bracket between its shade supporting end and the end connected with the operating arm.

6. A shade supporting attachment for windows consisting of a plate or support adapted to be attached to the inner face of a window frame, two operatively connected arms respectively pivoted on said plate, one projecting inwardly and formed to receive the shade roller and the other projecting toward the sash and adapted to be operated thereby.

7. A shade supporting attachment for windows consisting of the combination of the plate F, the roller supporting bracket D, pivotally secured thereto and the arm E, secured by a separate pivot to the plate and gearing or interlocking with that end of the bracket between which and its roller supporting portion the pivot of the bracket is arranged.

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530,027. PLACKET-GUARD. PHILIP FABISCH, Baltimore, Md. Filed Sept. 12, 1894. Serial No. 522,817. (No model.)



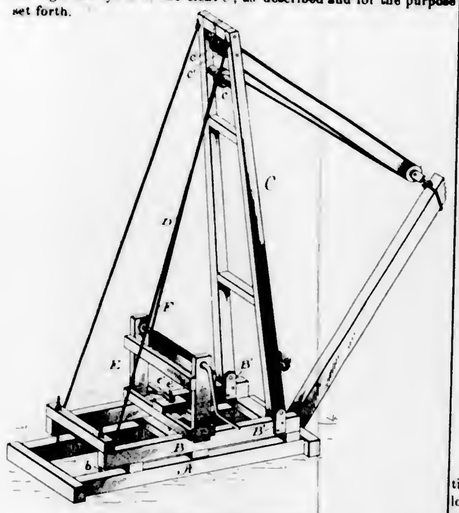
*Claim.*—A garment fastener composed of two members placed opposite each other and pivotally connected together at one end, the pivotal end of a member being round or formed on the arc of a circle whose center is concentric with the said pivot, and the corresponding end of the other member having a flange to overlap the curved end of the first mentioned member, the opposing faces of the flange and curved end being provided with meshing corrugations, substantially as and for the purpose specified.

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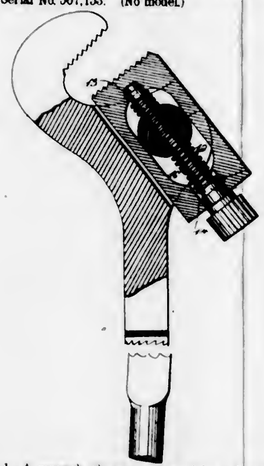
530,028. MACHINE FOR ERECTING FRAME STRUCTURES. JOSIAH FAIRBANK, Helena, Ohio. Filed Sept. 13, 1894. Serial No. 522,911 (No model.)

*Claim.*—In a machine for use in erecting the frames of buildings the combination, of a base frame A and frame B connected thereto, an upright C pivotally connected to the frame B and having pulleys

c and $c^4$ $c^4$ journaled in the upper end thereof, brace rods D connected to the frame B and upright and having extensions D', an eye $c^3$ and a cleat $c^4$ secured to one of the side pieces of the upright, together with a windlass E mounted on the frame B and means for adjusting said windlass lengthwise of the frame, and a rope F which extends from the windlass around the pulleys c and $c'$ and around a sheave through the eye $c^3$ to the cleat $c^4$, as described and for the purpose set forth.



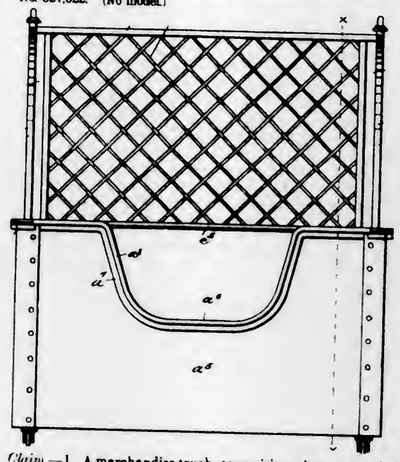
530,029. WRENCH. JAMES FATKIN, Aspen, Colo. Filed Apr. 11, 1894. Serial No. 507,153. (No model.)



*Claim.*—1. A wrench, the same comprising a handle, a fixed jaw securely attached to the handle and located at an angle thereto, a slide-way formed upon the inner face of the shank of the fixed jaw, a sliding and slotted block fitting in said slide-way, its upper end comprising the inner or movable jaw of the wrench, a pivot nut passed through the slot in the said block and pivoting the same in the slide-way, and an adjusting screw loosely carried by the block and having threaded connection with the pivot nut, as and for the purpose specified.

2. In a wrench, the combination, with a handle, a shank at an angle to the handle, a fixed jaw projecting from the end of the shank, and apertured lugs formed upon the inner face of the said shank, of a block provided with a longitudinal slot, and having sliding movement between the said lugs, a pivot nut journaled in the lugs and passing through the slot in the block, pivoting the same, the upper end of the block constituting the lower or inner jaw of the wrench, and an adjusting screw held to turn loosely in the block, being capable of manipulation at one end of the block, the said adjusting screw being passed through an aperture in the pivot nut, the wall of which is threaded to receive the thread of the adjusting screw, as and for the purpose specified.

530,030. MERCHANDISE-TRUCK. THOMAS B. FITZPATRICK, Newton, Mass. Filed Dec. 23, 1893. Renewed Oct. 29, 1894. Serial No. 527,322. (No model.)



*Claim.*—1. A merchandise truck, comprising a lower or main section A and an upper section E, vertically movable in relation to the lower section, as and for the purposes described.

2. A merchandise truck comprising the two sections A and E, one of which constantly occupies the same position, and the other of which is adapted to occupy practically the position of the first, or to be lifted to a position above it, as and for the purposes described.

3. In a merchandise truck, the main section A provided with guides for a vertically movable section E, and said vertically movable section E movable in said guides from a position of the same level as that of the section A to a position above it, whereby the capacity of the truck is increased, as and for the purposes described.

4. In a merchandise truck, a section E bearing a telescopic relation to the main section, in a vertical direction, as and for the purposes described.

5. A merchandise truck, having the main section A, vertically movable section E, and a roller shaft attached to the lower edge of the movable section, and movable with it from a vertical to a horizontal position, as and for the purposes described.

6. In a merchandise truck, a movable section E provided with a roller shelf $E^2$, as and for the purposes described.

7. A merchandise truck, provided with a roller shelf $E^2$, substantially as described.

8. In a merchandise truck, the main section A having supports for holding in a horizontal position a roller shelf and a vertically movable frame E, as and for the purposes described.

9. A merchandise truck A, having vertical guides for a vertically movable section E, and horizontal supports for a roller shelf, in combination with the movable section E, and the said roller shelf, as and for the purposes described.

10. A merchandise truck having a vertically movable section E, the back and ends of which are made of strands of wire or strands of other suitable material, as and for the purposes described.

11. A merchandise truck A having the vertically movable extension E, provided with open work ends and back, as and for the purposes described.

12. A merchandise truck, having the guides for the section E, a roller shelf $E^2$ with said section, and anti-friction rolls F F', as and for the purposes described.

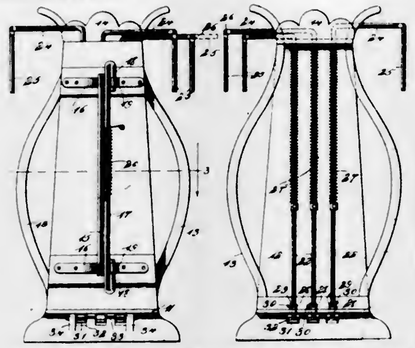
13. A merchandise truck, having the end walls $a^2$ $a^2$, the rear wall $a^4$, the front wall $a^4$, and the bottom $a$, the angle pieces B B' $b$ $b'$ united together as specified, and forming the recesses C C' $C^3$, the guiding rails D D', the vertically movable section E, having the ends $c^3$ $c^3$ and the back $c'$, the roller shelf $E^2$ fastened at its lower end to the back $c'$, and the rolls F F', as and for the purposes described.

530,031. MUSIC-LEAF TURNER. JAMES FLEMMING, Buffalo, N. Y. Filed Apr. 3, 1894. Serial No. 506,182. (No model.)

*Claim.*—1. A music leaf turner, comprising a supporting frame, a holder on the front of the frame, spring pressed arms journaled on



the back of the frame near the top and bottom thereof, and extending over the top and front of the frame, a projection on each of said arms arranged near the lower end thereof, means for engaging the said projection, and a releasing key for each arm fulcrumed in the frame, the rear ends of the said keys being adapted to engage the lower ends of the arms and lift the same to disengage the projection, substantially as described.



2. The combination, with the frame and the vertically movable and spring-turned rods thereon having at their upper ends depending fingers to engage the music leaves, of the fixed bushings encircling the rods and provided with shoulders, pins on the rods to engage the shoulders of the bushings, and keys fulcrumed beneath the rods and adapted to engage the lower ends thereof, substantially as described

3. The combination with the frame and the leaf turning mechanism thereon, of the holder comprising a longitudinally extending rod supported in front of the body of the frame, and a second swinging spring pressed rod arranged parallel with the first rod and having its ends doubled to form cranks, the crank ends being journaled on the front of the frame, substantially as shown and described.

4. The combination with the frame and the leaf turning mechanism thereon, of the holder comprising springs secured to the front of the frame near the top and bottom thereof, a rod arranged on the front of the frame and supported on the free ends of the said springs, brackets secured on the front of the frame opposite the said springs, and a second swinging spring-pressed rod journaled in the said brackets and held parallel with the first rod, substantially as described.

5. The combination, with the frame and the leaf-turning mechanism thereon, of the holder comprising a rod held on the face of the frame in spring supports, a second rod doubled at its ends to form cranks, the second rod being parallel with the first, brackets secured to the frame to support the cranks, and a spring on the second rod secured to the rod and to the frame, substantially as described.

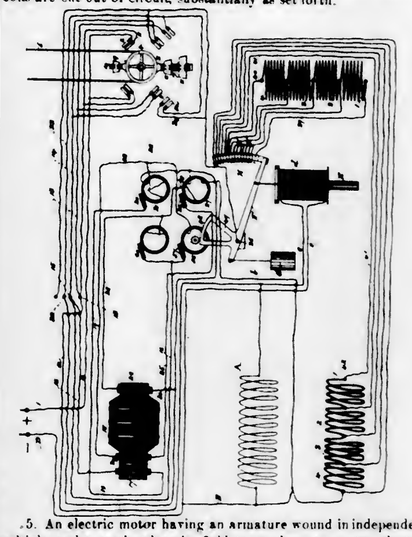
530,032. ELECTRIC ELEVATOR-MOTOR. WENDELL C. FLETCHER, St. Louis, Mo., assignor of one-half to Edward W. Moon, same place. Filed June 14, 1894. Serial No. 514,531. (No model.)

*Claim.*—1. An electric motor, a system for controlling same, said system consisting in an independently multiple wound armature, in combination with a sectional series field, and a shunt field, said combination producing a counter electro-motive force equal to the normal when first starting the motor, suitable wires and switches and means for operating them to constantly maintain the counter electro-motive force as the speed of the motor increases, substantially as set forth.

2. In an electric motor, the combination of an armature wound in independent multiple, a sectional field, a shunt field, suitable receiving and distributing wires, a throw switch for admitting the electric current to the system, a magnet, a core within the magnet, to which core a switch arm is secured, a switch board over which the arm passes to complete the circuit, substantially as set forth.

3. In an electric motor, the combination of an armature wound in independent multiple, a sectional field, a shunt field, suitable receiving and distributing current wires, a movable switch mechanism for opening and closing the circuit to reverse the armature current, a magnet, a core within the magnet, a switch arm secured to the core, a starting switch, contact blocks on the switch, over which the arm passes, thereby equalizing the armature circuits, substantially as set forth.

4. In a mechanism for operating elevators, an electric motor having an armature wound in independent multiple, and a sectional series field to strengthen the shunt field to produce a counter electro-motive force, a movable switch for opening and closing the circuit to reverse the armature current, suitable means for operating the switch in either direction, a magnet, a core within the magnet, a starting switch-arm, contact blocks over which the arm passes producing various changes in its movement, by which the resistance coils are cut out of circuit, substantially as set forth.



5. An electric motor having an armature wound in independent multiple, and a sectional series field to produce a counter electro-motive force which will equal that of the normal speed when first starting the motor, and suitable means for constantly maintaining said counter electro-motive force, substantially as and for the purpose set forth.

530,033. SUPPLY SYSTEM FOR ELECTRIC RAILWAYS. ZEBULON FOSTER, Chicago, Ill. Filed Mar. 7, 1894. Serial No. 502,647. (No model.)



*Claim.*—1. An electric railway, comprising a line conductor having a series of branches, a conductor comprising independent sections arranged opposite the terminals of the branches, the contact blocks, springs for holding the sections and branches normally separated and a trolley mechanism for producing the required engagement substantially as described.

2. An electric railway comprising a line conductor having a series of branches, a conductor made up of independent sections arranged adjacent to the terminals of the branches, springs arranged as specified, the contact blocks, fastening devices to automatically lock the sections in circuit, and an automatic means for releasing the locking mechanism, substantially as described.

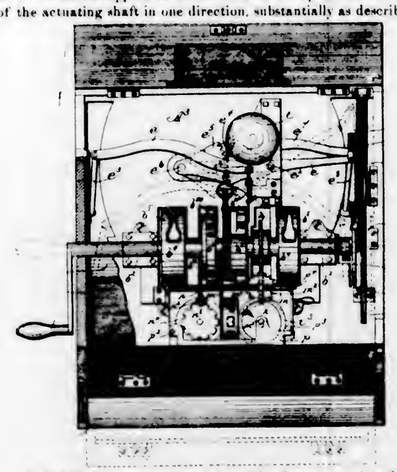
3. In an electric railway, the combination, with the line wire and its branch, of the hollow post, the sections of the trolley conductor arranged adjacent to the post, the blocks slidably mounted in the post and adapted to make connection with the branch and with the sectional conductor, a spring catch to lock the block in circuit, and means, as a trolley arm, for releasing the catch, substantially as described.

4. In an electric railway, the combination with line wire and branches, of an air-tight casing inclosing the free ends of the latter spring-retracted pins adapted to slide, to come in contact with said branches, bushings or guides for the pins, and cups and rubber diaphragms applied to the pins, to exclude water, substantially as shown and described.

530,034. REGISTERING BALLOT-BOX. LUCIAN M. FOSTER, Boston, assignor to Benjamin Poole, Topsfield, Mass. Filed May 7, 1894. Serial No. 510,369. (No model.)

*Claim.*—1. The combination of the counting mechanism, and ballot carrier and yieldingly movable ballot support therein, and the actuator for the said carrier and counting mechanism, and a stop for said carrier, and a ballot feeler or detector whereby the said ballot support is prevented from being engaged and arrested by its stop when the ballot is present thereon, substantially as described.

2. The combination of the counting mechanism, and the ballot carrier and yieldingly movable ballot support therein, with the actuating shaft for said ballot carrier and counting mechanism; a stop for said ballot carrier; and a ballot feeler or detector cooperating with the ballot support as set forth; and a stop to arrest rotation of the actuating shaft in one direction, substantially as described.



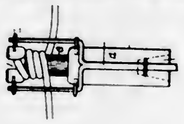
3. In a counting mechanism the comoination of a numbered drum and a toothed wheel connected to rotate therewith, with an actuating disk the plane of rotation of which intersects that of said toothed wheel and the periphery of which is of uniform diameter and engages with said toothed wheel in the notches or spaces between the teeth thereof, said disk having at a portion of its periphery cam wings inclined to its plane of rotation to rotate said toothed wheel and numbered drum, one of said cam wings entering a corresponding notch in the toothed wheel before the other leaves the same in the rotation of the wheel, substantially as and for the purpose described.

4. The counting mechanism comprising a series of numbered drums and toothed wheels connected to rotate therewith, a cam-disk connected to rotate in unison with each of said numbered drums, in a plane intersecting that of the toothed wheel moving in unison with the next drum of the series, said disk having cam portions inclined to its plane of rotation cooperating with the corresponding toothed wheel to rotate the latter a fraction of a turn during a portion of each complete rotation of the cam disk the periphery of which remains in engagement with said toothed wheel during the entire rotary movement of the former, substantially as described

5. The counting mechanism comprising a series of numbered drums having their bearings in a movable supplementary frame, and a shaft having its bearings in a relatively stationary frame transmitting movement from one to the next of the said series of numbered drums, the movement of the said supplementary frame disconnecting the said numbered drums from said transmitting shaft and permitting them to be turned independently of one another, substantially as and for the purpose described.

6. In a ballot box, a counting mechanism comprising a series of numbered drums having their bearings in a movable supplementary frame and a shaft having its bearings in a relatively stationary frame transmitting movement from one to the next of the said series of numbered drums, the movement of the said supplementary frame disconnecting the said numbered drums and permitting them to be turned independently of one another, combined with a cover for said counting mechanism cooperating with said movable supplemental frame as set forth, whereby said cover can be closed only when said supplemental frame is in normal position with the transmitting gearing of the counting mechanism in engagement, substantially as and for the purpose described.

530,035. **LINE-TIGHTENER.** ALFRED B. FRACK, Girard, Ohio. Filed Dec. 30, 1893. Serial No. 495,271. (No model.)



*Claim.*—1. A line tightener comprising a handle having a transversely grooved head and a drum, and a key held in guides on the handle and adapted to be slid in said guides across the drum, to retain the line in the required position, substantially as described.

2. A line tightener comprising a handle having a transversely grooved head and a drum, rings on the head and handle constituting keepers, and a key adapted to be positively engaged with the said keepers near the ends of the drum, substantially as specified.

3. The herein specified line tightener, comprising a handle constructed to be adjusted to a pole, and having a transversely grooved head and a drum contiguous to and between the head and handle, rings on diametrically opposite sides of the head and handle, and a key formed of a rod held to the handle and having its end bifurcated, the branches adapted to slide in the said rings and supported when in use near the ends of the drum, substantially as set forth.

530,036. **VENTILATOR OR CHIMNEY-CAP.** CHARLES FRANZ and ROBERT T. MERRILL, Beloit, Wis. Filed June 27, 1894. Serial No. 515,837. (No model.)



*Claim.*—1. A chimney cap or ventilator comprising a lower cone deflector having an opening therein, a series of radial ribs supported upon said deflector, an upper and larger cone supported on said ribs, the spaces between said ribs forming a series of radial and upward passages, an opening in the truncated apex of said upper cone, and a cap covering said opening and formed into a series of radial ridges and depressions, forming a series of air passages, substantially as specified.

2. The combination with the draft tube or pipe A, of the collar supported on the upper end of said tube or pipe, the lower truncated cone B, the radial ribs supported on said cone, the upper truncated cone supported on said ribs, upward and radial passages between said ribs, the cap over the opening in the upper cone and bent to form a series of angular radial ridges, forming air passages, substantially as specified.

530,037. **UMBRELLA-RUNNER RETAINER.** SAMUEL S. FRETZ and JOHN R. JESSON, Philadelphia, Pa.; said Jesson assignor to said Fretz. Filed Dec. 19, 1893. Serial No. 494,106. (No model.)



*Claim.*—A fastening for an umbrella runner, consisting of a plate, having an edge bent over to form a channel, said plate having a slot in the channel, and a lip on one of its limbs, and a finger piece, projecting through said slot, and having an arm and tongue bearing against the bottom wall of the channel in said plate, at each end of the slot therein, and an arm directly in the rear of said tongue having a shoulder engaging said lip, said parts being combined substantially as described.

530,038. **BACK-BRACE.** JOSÉ GALLEGOS, Ocós, Guatemala. Filed Jan. 13, 1894. Serial No. 496,754. (No model.)

*Claim.*—1. A support for the purpose described, comprising a bar composed of longitudionally aligning comparatively rigid sections, links loosely connecting the adjacent ends of said sections with one another so that the sections are capable of a limited free sliding movement in relation to each other, and flexible portions secured to the said bar and extending longitudinally on each side thereof, said flexible portions being adapted to encircle the wearer's body, substantially as described.

2. A back support, provided with a spine bar, side bars essentially parallel therewith, a waist bar uniting the spine bar with the side bars each of the said bars being composed of longitudinally aligning sections loosely connected with one another, and flexible portions connected with the said bars and adapted to be detachably fastened to each other, substantially as set forth.





3. A back support, comprising a spine bar, side bars, means for adjustably connecting the upper ends of all the said bars, a waist bar uniting the lower ends of the spine bar and the side bars respectively each of the said bars being composed of longitudinally aligning sections loosely connected with one another, and elastic portions connected with the said bars and adapted to be adjustably and detachably fastened to each other, substantially as described.

4. A back support, comprising a spine bar, side bars, means for adjustably connecting the upper ends of all the said bars, a waist bar secured to the lower end of the spine bar and extending transversely therefrom, each of the said bars being composed of longitudinally aligning sections loosely connected with one another flexible links uniting the lower ends of the side bars with the said waist bar, and elastic portions connected with the said bars and adapted to be adjustably and detachably fastened to each other, substantially as described.

530,039. **MANUFACTURE OF CANDY WHISTLES.** CLEMENT E. GARDINER, Hempstead, N. Y. Filed Sept. 13, 1894. Serial No. 522,916. (No model.)



*Claim.*—1. The described process of making whistles, by forming a tube of plastic material, such as confectioners' paste, dividing the plastic tube into sections and at the same time closing the edges of the sections, and finally forming holes in opposite sides of the hollow sections, substantially as set forth.

2. As an article of manufacture, a whistle in the form of a hollow lozenge made from one piece of plastic material, having holes or passages in opposite sides, substantially as described.

530,040. **MATTRESS-FILLING MACHINE.** ELIJAH T. GASKILL, New Berne, N. C., assignor of one-half to Caroline D. Patterson, same place. Filed June 26, 1894. Serial No. 515,785. (No model.)



*Claim.*—1. A mattress filling machine, comprising a table frame, having tick holding devices, a filler holding carriage or box held to reciprocate on the table, having filler compressing devices and means for reciprocating the carriage into and out of the ticking substantially as shown and described

2. In a mattress filling machine the combination with the supporting frame or table, the reciprocating carriage and means for holding the upper front end of the tick, of a plate held on the bed having its front end movable upward and adapted to fit over the bottom of the tick and means for reciprocating the carriage substantially as shown and described.

3. A mattress filling machine comprising a main frame, having a table or bed portion, a box or filling holding carriage held to be reciprocated longitudinally, having an open front end, means for reciprocating the said carriage, a strain cord passed over the front, and a removable tail piece adapted to close such front, held from outward movement by such strain cord all substantially as shown and for the purposes described

4. In a mattress filling machine the combination with the main frame, having tick holding and securing portions and a fixed post at one end, of a reciprocating carriage or filler holding box, having an open front end and having its rear end formed with an opening, means for reciprocating such carriage and a detachable presser bar having one end adapted to fit through such opening and the other to fit against the fixed post, when the said box is moved forward into the ticking all substantially as shown and described.

5. In a mattress filling machine in combination with the tick holding and supporting devices of a reciprocating carriage having an open front end, its rear end having an opening, and a follower or presser board of a detachable presser bar adapted to be fitted with its front end projected through the rear end of the box against the filler and fixedly held, and means for reciprocating the box all substantially as shown and described.

6. In a mattress filling machine the combination with the main frame and tick holding devices, of a reciprocating filler holding carriage or box, having an open front end a detachable cord held over such front end, presser levers fulcrumed at the rear end of the box adapted to swing down against the filler, and to extend under and engage the said cord, and means for reciprocating the carriage all substantially as shown and described.

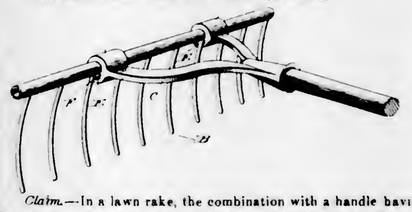
7. In a mattress filling machine substantially as described, a reciprocating filler carriage having an open front end, a strain cord detachably connected therewith passed over such end, presser levers having fulcrum members adjustably connected with the rear end of the box, and having notched front ends adapted to engage the strain cord and means for reciprocating the carriage all arranged substantially as shown and described.

8. The combination with the main frame, the reciprocating carriage, and the metal sheet M loosely held on the frame, of the rod K held transversely over the front end of the carriage when at its rearmost position said rod having clamp members L and means for reciprocating the carriage all arranged substantially as shown and described.

9. The combination with the main frame, the apertured post H the reciprocating carriage having an open front end, its rear wall having an aperture, and the detachable presser board R, of the presser bar S having a head portion adapted to extend through the rear wall of the carriage, and bear against the board R, and having tenon portion adapted to seat in the apertured post H, and means for reciprocating the carriage all arranged substantially as shown and described.

10. The combination with the main frame, the shaft F the standards E E and post H having pulleys *e* and *h* respectively of the carriage B having an open front end, and provided with clamp levers, and having a transverse strip C formed with a central extension *c* and end projections *c' c'* the cords D secured to the end projections *c* passed over pulleys *e* and secured to shaft F and the cord G secured to the extension *c* passed over pulley *h* and secured to the shaft F all arranged substantially as shown and described.

530,041. **LAWN-RAKE.** MARTIN S. GIFFORD, Lockport, N. Y. Filed Jan. 18, 1894. Serial No. 497,232. (No model.)



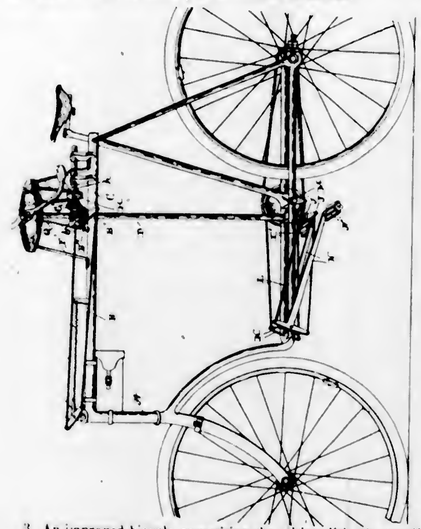
*Claim.*—In a lawn rake, the combination with a handle having diverging arms terminating in sockets, semi-circular recesses formed in the bottom of the sockets, a cylindrical rake head carrying teeth, lugs under the head between the teeth adapted to fit into the recesses of the sockets, substantially as and for the purpose specified.

530,042. **BICYCLE.** JOHN GILLINGHAM, Wilmington, Del., assignor of one-third to James Deakyne, same place. Filed July 23, 1894. Serial No. 518,403. (No model.)

*Claim.*—1. An improved bicycle comprising a propelling mechanism, handle bars adapted to vibrate horizontally for actuating the propelling mechanism, a steering mechanism and a disk pivotally mounted on the frame for operating the steering mechanism, said disk being operated by the handle bars while they are furnishing impetus to the propelling mechanism, substantially as shown and described.

2. An improved bicycle comprising a propelling mechanism, handle bars adapted to vibrate horizontally for the purpose of actuating

said propelling mechanism, a steering mechanism, a disk pivotally mounted on the frame for operating the steering mechanism and which is arranged immediately beneath the handle bars so as to be tilted by the latter while they are furnishing impetus to the propelling mechanism, substantially as shown and described.

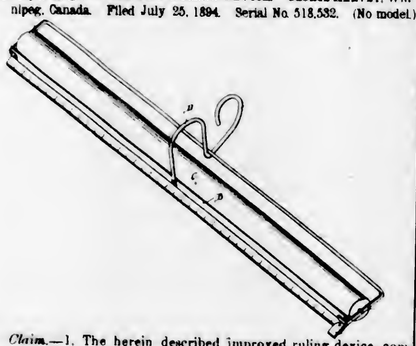


3. An improved bicycle comprising the tilting disk, the handle bars for operating it, the chain depending from the tilting disk, the sprocket carrying shaft which is actuated by said chain, the steering mechanism and gears interposed between the same and the said shaft for operating it, and a driving mechanism, substantially as shown and described.

4. An improved bicycle comprising a frame, a vertical revoluble shaft in the frame, handle bars adapted to vibrate vertically on the upper end of the shaft, standards on the frame, a disk having bearing on the standards and which is adapted to be tilted by the handle bars, a steering mechanism adapted to be operated by the disk when tilted and a driving mechanism actuated by said shaft, substantially as shown and described.

5. An improved bicycle comprising a vertical revoluble shaft, the handle bars for vibrating the same, the cross arm at the lower end of the shaft, levers K, long pedal arms N projecting therefrom, rods connecting the ends of the cross arms with the said levers K, a sprocket driving shaft, and rods L connecting said levers with the sprocket shaft, substantially as shown and described.

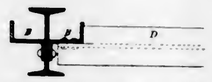
530,043. **RULE AND RULING DEVICE.** GEORGE HARVEY, Winnipeg, Canada. Filed July 25, 1894. Serial No. 518,532. (No model.)



*Claim.*—1. The herein described improved ruling device, comprising the frame composed of the bar A having its end portions bent at right angles thereto, a rule B secured to said end portions, an elongated roller journaled in said end portions between the bar and rule, and parallel therewith, and a gage device carried by said rule, substantially as specified.

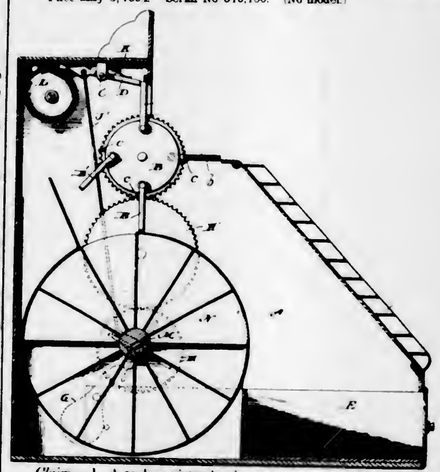
2. The herein described improved ruling device, comprising a bar having its end portions bent at substantially right angles thereto, the rule B secured to said end portions and consisting of a thin bar of metal of L-shape in cross-section, the upwardly curved brace-arm D connecting said bar and rule, one or more handles attached to the central portion of said bar, and a gage device F, consisting of a small piece of metal pivoted to the horizontal flange of the rule, and having a beveled inner end which permits said gage when not in use to be turned back onto the flange and out of the way, and which, when the gage is in use, engages with the vertical flange of the rule, substantially as specified.

530,044. **COLUMN FOR STRUCTURAL METAL WORK.** EDWARD HAUPT, Phœnixville, Pa. Filed May 3, 1894. Serial No. 509,875. (No model.)



*Claim.*—A column for structural iron work consisting of an I-beam and two Z-bars secured to the web thereof, the securing flanges of the Z-bars being arranged in line with each other and attached to the web of the I-beam by a single line of rivets, and the webs of said bars being at right angles to the webs of the I-beam, while the outer flanges of the said bars are turned in the same direction, parallel to the web of the I-beam, substantially as described.

530,045. **CASH-REGISTER.** JOHN M. HEATH, Talbotton, Ga. Filed May 5, 1894. Serial No. 510,180. (No model.)



*Claim.*—1. A cash register having a rotary cylinder carrying a series of pivoted indicating boards provided with receptacles for holding checks representing amounts purchased, and means for rotating same and connection with a drawer for rotating said cylinder, substantially as shown and described.

2. A cash register having mounted in suitable bearings between its walls a cylinder having indicating boards for the reception of a series of checks, and pivoted to the ends of the said cylinder and adapted to swing in one direction and connections with a drawer for rotating said cylinder, substantially as shown and described.

3. A cash register having mounted in suitable bearings a rotary cylinder having pivoted to its ends a series of swinging indicator boards with slots for the reception of checks, lugs to admit of the indicators being swung in but one direction, and a geared wheel keyed to the end of its shaft, whereby a rotary motion is imparted through mechanism connected with the drawer, substantially as shown and described.

4. In a cash register, the combination of a rotary cylinder carrying a series of indicating boards as described, a drawer connected therewith to impart rotary movement thereto a lock lever disposed in the path of the indicating boards, means for raising the said lever to allow the said cylinder to be rotated backward, to allow the swinging boards to be inverted, and the checks carried thereby, to be dropped out by gravity, substantially as shown and described.



5. A cash register comprising in combination the indicating board carrying cylinder, lock lever pivoted to a shaft supported by the side walls of the register case, and disposed in the path of the indicating boards, of a second shaft journaled in the rear of the money drawer, carrying at one end a lever, one end of which has connection with the lock lever, the other free end adapted to engage with an attachment of the money drawer, whereby when the said drawer is pulled out, the lock lever is thrown out of the path of the revolving indicator boards, substantially as shown and described.

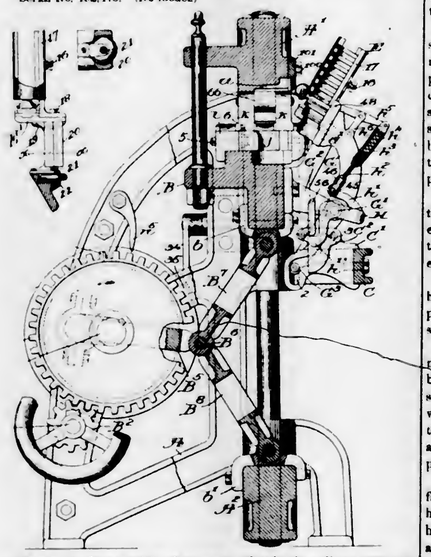
6. A cash register having in combination with a rotary check carrying cylinder a lock lever disposed in the path of the indicator boards thereon, a spring secured to the end of the lock lever and to the rear wall of the register case, a rod connecting the lock lever to one end of a substantially V-shaped lever which is pivoted to the end of a shaft, so that its free end will lie in the path of a pivoted lever secured to a part of the money drawer, whereby when the drawer is pulled out, the pivoted lever secured to the drawer will trip the V-shaped lever and raise the lock lever, substantially as shown and described.

7. In a cash register, the combination of the rotary check carrying cylinder, provided with pivoted indicating boards, a geared wheel carried thereby, of a shaft journaled beneath the said rotary cylinder, and carrying a series of pins or lugs disposed at right angles to one another which are adapted to be successively turned into the path of the money drawer as it is pulled from the case, means as a pivoted lever secured to the drawer for engagement with the said lugs to cause a partial rotation to the indicating cylinder, through intermediate geared mechanism, whenever the drawer is pulled out, substantially as shown and described.

8. A cash register having in combination rotary indicating cylinder with its swinging boards shaft as described having a series of pins or lugs at right angles to one another in rows, a money drawer having pivoted to a portion thereof a lever which is adapted, when the drawer is pulled out, to simultaneously raise a lock lever and cause a partial rotation of the indicator bearing board cylinder, substantially as shown and described.

9. In combination with a rotary cylinder carrying a series of swinging check receptacle slits, a bell and a lock lever disposed in its path, a spring hammer secured to a portion of the said lock lever, adapted to strike said bell each time the lever is tilted, means for operating the said lever and cylinder, and a compartment cylinder carried beneath the indicator board cylinder, for the reception of the checks as they drop from their slits, substantially as shown and described.

530,046. **HEEL-PRESSING MACHINE.** JOHN J. HEYS, Lynn, assignor to James W. Brooks, Petersham, trustee for the McKay & Bigelow Heeling Machine Association, Boston, Mass. Filed Dec. 1, 1893. Serial No. 492,475. (No model.)



*Claim.*—1. In a machine for compressing heels, a die to compress a heel edgewise, and a tread plate, combined with a breast gage having a cutting edge to co-operate with the breast end of the tread plate, substantially as described.

2. In a machine for compressing heels, a die to compress a heel edgewise, a carrier having a tread plate to receive a heel blank to be compressed and put into the space between the edge compressing dies, and a heel seat die connected to and movable with said carrier, substantially as described.

3. The carrier having a tread plate to receive the heel blank to be compressed edgewise, and a heel seat die to co-operate with said carrier and hold the heel blank while being put into compressing position, combined with devices to support said heel seat die in a yielding manner to thus enable the heel blank to be held frictionally while the carrier is being moved with the heel blank, substantially as described.

4. The heel blank carrier having a tread plate, the heel seat die, a lever to which it is connected, and a yielding link, combined with a cam, and devices between said cam and link to control the effective force of the said yielding link, substantially as described.

5. The heel blank carrier having a tread plate, a heel seat die, devices to support said heel seat die on said carrier, and a breast gage, combined with devices to actuate the heel seat supporting devices to temporarily release a heel blank, substantially as described, to enable the breast of said blank then between the tread plate and heel seat die to move against said breast gage, substantially as described.

6. A cross-head, a second cross-head, a pair of die carriers mounted on one of said cross heads, edge compressing dies sustained by said die carriers, a heel blank carrier mounted on one of said cross heads, and provided with a tread plate, a heel seat die, devices to support it on said heel blank carrier, and devices to move said heel seat die vertically on or with relation to the tread plate of said carrier, and devices to change the relative positions of said cross heads whereby the heel blank while being compressed edgewise is also compressed in its thickness, substantially as described.

7. The die-carriers and the edge compressing dies located in spaces in said carriers, combined with longitudinally adjustable eye-bolts removably attached to said die-carriers, and pivotally connected to said dies to hold the latter firmly in place in said carriers, substantially as described.

8. A heel blank carrier having a tread plate, and a connected heel seat die combined with a spring and intermediate devices to normally keep the said heel seat die pressed toward said tread plate to pinch the heel blank frictionally, substantially as described.

9. A heel blank carrier having a tread plate, a heel seat die, a spring, and intermediate connections between it and said die to normally press the heel seat die onto a heel blank resting on the tread plate, a pair of die carriers, and edge compressing dies mounted thereon, combined with devices to move said heel blank carrier and heel seat die with a heel blank between them into position between the said edge compressing dies, for the purposes set forth.

10. A heel blank carrier having a tread plate, a heel seat die, a spring, and intermediate connections between it and said die to normally press the heel seat die onto a heel blank resting on the tread plate, a pair of die carriers, and edge compressing dies mounted thereon, combined with devices to move said heel blank carrier and heel seat die with a heel blank between them into position between the said edge compressing dies, and to then remove the compressed heel blank from between said edge compressing dies; and with a device to thereafter eject the compressed heel blank from between said tread plate and heel seat die, substantially as described.

11. In a heel compressing machine, the following instrumentalities, viz;—a breast gage, a connected heel seat die moving therewith; edge compressing dies; and mechanism for effecting change of relative positions between said breast gage and heel seat die, and said edge compressing die, for the purposes set forth.

12. The heel blank carrier and its tread plate, combined with a heel seat die having a connected breast gage extended therefrom and passing below the acting face of the tread plate, substantially as described.

13. A pair of die carriers, a pair of edge compressing dies mounted thereon and having their breast corners uncovered, a heel-blank carrier having a tread plate, and a connected yielding heel seat die having an attached breast gage, combined with actuating devices to move said heel blank carrier,—it clamping a heel blank,—in the direction to put a heel blank between said edge compressing dies and cause said breast gage to close the space between said edge compressing dies at their breast corners, substantially as described.

14. A pair of die carriers having strong ears 8, 8, with hardened faces, a pair of edge compressing dies mounted on said die carriers; a heel blank carrier having a tread plate, a heel blank feeder a cross head on which said heel blank carrier is mounted; and a heel seat die and attached breast gage loosely mounted on said heel blank carrier, combined with devices to actuate said cross head and said heel blank feeder, the lugs 8, 8, of the die carriers acting against the outer side

of the breast gage and serving to hold the same firmly at the breast end of the edge compressing jaws, and hold the latter from springing, substantially as described.

15. A heel blank carrier, a tread plate mounted thereon, a heel seat die, devices to support said heel seat die, and connect it with said carrier, and a spring to effect the approach of the heel seat die toward the tread plate, combined with means to actuate the devices supporting the heel seat die to lift the said die away from the tread plate and thus release the heel blank, substantially as described.

16. A pair of die carriers, edge compressing dies mounted thereon, a heel blank carrier having a detachable tread plate, heel blank feeding mechanism, a table on which said feeding mechanism is mounted, combined with devices to adjust said table and feeding mechanism vertically to correspond with the thickness of the tread plate and of the heel blank to be compressed, substantially as described.

17. A heel blank carrier having a detachable tread plate, a table, and means to adjust the said table vertically, combined with a heel blank feeder, and a hopper to guide heel blanks into position to be acted upon by said feeder, substantially as described.

18. A heel blank carrier and its tread plate; and a heel blank feeder, combined with a link, a compound lever, means to adjust one part of said lever on the other part, and actuating means for said lever, the combination being and operating substantially as described to provide for feeding heels of different sizes.

19. A heel blank carrier, its tread plate; a heel seat die, its connected lever, and devices to move said lever, combined with a stationary cross head, and its attached guide behind which the heel seat die is raised, said guide also embracing and steadying said lever, substantially as described.

20. In a machine for pressing heel blanks, heel feeding mechanism, a table on which said feeding mechanism is free to slide, said table being provided with an inclined guide arm adapted to serve as a guide for the breasts of the heel blanks in their descent, combined with a hopper case or shell adjustable on said guide arm to adapt the hopper to the thickness of the blank to be fed therefrom by said feeding mechanism, substantially as described.

21. A heel blank carrier having a tread plate to receive a heel blank to be compressed edgewise, and a heel seat die to co-operate with the tread plate of said carrier and hold a heel blank while being put into compressed position, combined with a heel blank feeder, a connected link, a compound lever, means to adjust one part of said lever on the other part, and actuating means for said lever, the combination being and operating substantially as described to provide for feeding heels of different sizes.

22. In a heel compressing machine, a heel blank support, and a pusher frictionally connected therewith by means of a stud 25, frictional washers, and a suitable nut on said stud, substantially as described.

23. In a heel compressing machine, a pusher, devices to actuate it, a heel blank support frictionally connected thereto, and devices to temporarily connect said pusher and support in a positive manner as they are being retracted, substantially as described.

24. In a heel compressing machine, a pusher, devices to actuate it, a heel blank support frictionally connected thereto, a pawl and ratchet to temporarily connect said pusher and support in a positive manner as they are being retracted, and a device to automatically release said pawl and ratchet, substantially as described.

25. In a machine for compressing heel blanks, an edge compressing die, a carrier to supply said die with heel blanks, a pusher, and blank support, to supply said carrier with a heel blank, combined with a gage to indicate when the cam-shaft of the machine is in a defined position, and with adjustable actuating mechanism between a cam on said cam-shaft and the said pusher whereby the acting end of the pusher may be adjusted with relation to the blank carrier to insure the correct placing of a blank upon the carrier through the movement of the pusher, substantially as described.

26. In a heel compressing machine, a heel blank carrier and a pusher to provide it with a heel blank, a main shaft and adjustable connections between it and said pusher to actuate the latter, and a hand wheel by which said shaft may be turned, combined with a gage adjacent to the hand wheel to indicate the position the parts should occupy when said adjustment is effected, substantially as described.

27. A heel blank carrier, its tread plate; a heel seat die, combined with a stationary cross head, and its attached guide behiud which the heel seat die is raised, substantially as described.

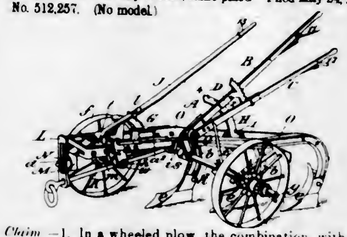
28. In a heel compressing machine, a movable cross head, die carriers mounted thereon and attached dies, and links connected to said carriers, combined with devices to adjustably connect said links with said stationary part of the machine, substantially as described.

29. A heel blank carrier having a tread plate, and also a connected heel seat die; a spring, and devices between said heel seat die and said heel blank carrier to normally keep the said heel seat die pressed toward said tread plate to thus pinch and hold the blank frictionally, and means to move said carrier, combined with devices to act on said carrier and heel seat die and force them together positively to compress the heel blank vertically or in the direction of its height, substantially as described.

30. A heel blank carrier having a tread plate, a heel seat die, means to normally press the heel seat die onto a heel blank supported on the tread plate, and a pair of edge compressing dies, combined with devices to move said heel blank carrier and heel seat die, with a heel blank, into position between the said edge compressing dies, and with other devices to then remove the compressed heel blank from between said edge compressing dies, substantially as described.

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**530,047. GANG PLOW.** WILFORD H. HOLSCLAW, Louisville, Ky., assignor to B. F. Avery & Sons, same place. Filed May 24, 1894. Serial No. 512,257. (No model.)



*Claim.*—1. In a wheeled plow, the combination, with the main-frame, or beam; the land and furrow wheels; and the crank-axles on which said wheels are, respectively, mounted, of a mechanism operating (by the manipulation of a hand lever) to properly set the furrow-wheel, either for the turning of a first furrow, or for the subsequent plowing operations; and a lever mechanism which may, at pleasure, be either worked independently of said furrow-wheel setting-mechanism (to raise and lower the land-wheel), or be locked to and controlled by said first named mechanism; all substantially as and for the purposes set forth.

2. In a wheeled plow, the combination, with the main frame, or beam; the draft-bar; and the landing, or draft, lever, of a draft-bar plate which supports the forward end of said draft bar, and has an elongated perforation; a toothed, or serrated, adjusting, dial-like device one part of which is secured to the forward end of the said landing lever, and the other part of which is adjustably connected with said draft-bar plate; and a securing bolt and nut, operating to clamp together the said plate and the said parts of the dial-like device after their relative adjustment, in any desired positions; all substantially as and for the purposes set forth.

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**530,048. BASKET-MAKING MACHINE.** EMMET HORTON, Dundee, N. Y., assignor of one-half to Rhesa G. Du Bois, Washington, D. C. Filed Sept. 14, 1893. Serial No. 485,528. (No model.)

*Claim.*—1. In a basket making machine a form provided with mechanism for giving it an intermittent movement and rotating it alternately on two separate centers.

2. In a basket or receptacle making machine, a form in combination with a bottom feeding and a band feeding mechanism, and mechanism for assembling and uniting the sides and bands at the top and the bottom of the receptacle, substantially as described.

3. In a basket machine, a form which revolves successively on two separate centers, in combination with mechanism for assembling and uniting the parts composing the basket, substantially as described.

4. In a basket machine a rotatable form and mechanism for giving it a step-by-step movement, in combination with guide bars or plates between which the centers of the form move, and are rotated during the operation of uniting the assembled parts of the basket, substantially as described.

5. In a basket or receptacle making machine, a form in combination with a bottom feeding and a band feeding mechanism, and mechanism for assembling and uniting the sides and bands of the receptacle, substantially as described.

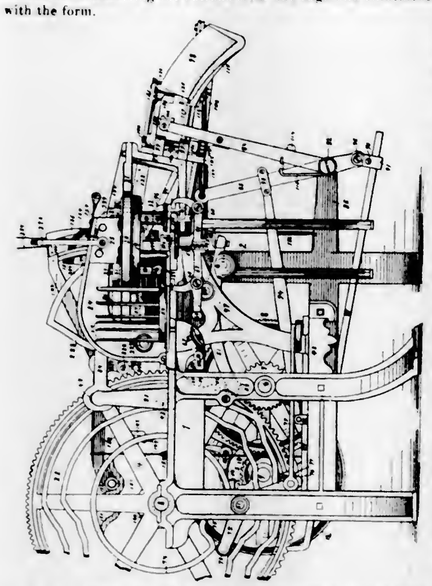
6. In a machine for making baskets with bottom, sides and bands complete, the combination with a form, a mechanism for feeding the bottom and sides to the form, a band feeding mechanism arranged and adapted to automatically and separately pass the bands to the inner and outer edges of the basket sides, and mechanism for uniting the bands and side pieces, substantially as described.

7. In a basket making machine the form and its operating mechanism, in combination with a semi-circular plate and a straight surface plate forming part of the machine, said plate having a passage between them to receive the centers of the form, as set forth.

8. The combination of the form having two centers, with a semi-circular plate and a straight-edge bar-plate for guiding said form in its rotary and rectilinear movement, substantially as described.



9. In a machine for making baskets, the combination of a cage or hopper for holding the basket bottoms, a form having an alternate rotary and rectilinear movement, and means, substantially as described, for transferring the bottoms from the cage into coincidence with the form.



10. In a basket making machine the combination of a form and hopper, a crane carrying a table and provided with bottom gripping jaws one of which has an extended arm, and a spring cam or arm for actuating the jaws through the medium of said arm, substantially as described.

11. In a basket making machine the combination of a rotatable form and mechanism for assembling blanks about the form, a bottom deliverer provided with a support for the bottom grippers which automatically grasp and adjust the bottom on the support, as and for the purpose set forth.

12. In a basket making machine, the combination of a form revolving successively on two centers, an ejector over the form, a movable table below the form, and mechanism connecting the table and the ejector, whereby on completion of a basket the moving of the table causes the ejector to pass through the form and eject the basket therefrom, substantially as described.

13. The herein described bottom delivering crane having a laterally projecting arm, in combination with a pitman connected to the arm, a lever fulcrumed on the frame and connected to the pitman, and a cam wheel provided with cams for rocking the lever, whereby the crane is oscillated, in the manner and for the purpose set forth.

14. A bottom deliverer comprising the combination of a crane having a vertical axis, a rotary bottom supported on the free end of the crane, a pair of bell-crank levers provided with double pronged grippers and carried by the crane, the grippers being adapted to grip the opposite ends of the bottom, the lower arm of the levers being provided with intermeshing teeth, a laterally extending arm upon one of the levers, and a cam upon the machine frame adapted to engage the arm during the backward and forward oscillations of the crane, whereby the grippers are opened and closed, in the manner and for the purpose set forth.

15. In a basket machine, and in combination with a form, a band feeder and separator, mechanism for feeding the basket sides to the form, said separator being arranged to automatically pass the bands upon the opposite edges of the basket sides, and uniting mechanism, substantially as described.

16. In a basket making machine the combination with a form, of a band feeding chute, and a separating device adapted to separate and pass the bands upon the opposite edges of the parts composing the basket sides, substantially as described.

17. In combination with the rotary form, and mechanism for assembling and uniting the stock, of a guide or way for holding the ends of the bands, a resisting plate across the guide, a follower to press the bands against said resisting plate, and a plunger operating across the guide to deliver the bands therefrom to the form, substantially as described.

18. In a basket making machine, the combination with a rotary form, of a guide or way for holding the bands, a follower operating therein, a plunger traveling before the mouth of the guide to deliver the bands therefrom, a movable separating chute at the mouth of the guide to receive a single band, and adapted to separate and direct said band as it is delivered to the form by the plunger, substantially as described.

19. In a basket making machine, the combination of a form, a guide or way for holding the bands, a chute and plunger at the mouth of the guide, said chute having an inclined plane to receive the end of a band and move the band in an endwise direction as it is forced downward by the plunger to the form, substantially as described.

20. In a basket making machine, a band feeding mechanism consisting of a guide or way for holding the bands, in combination with a plunger and an oscillating chute located at the mouth of the way for separating the bands, substantially as described.

21. In combination with the straight bar-plate 21, the vertical flange extending upwardly from the bar plate to form a wall, the chute for separating and conducting the bands, and being located alongside the wall, so as to leave a passage between the wall and chute for conducting the bands to the form, substantially as described.

22. In combination with a bottom deliverer provided with a rotary support for the bottom, a form having feet provided with points, and an automatic lifting device so timed that when the rotary support has passed beneath the feet, it will force the bottom against the feet and cause the points to enter the bottom and hold it during the nailing operation, substantially as described.

23. In a basket making machine and in combination with a pivoted bender, a hammer rod, a nailing block provided with a longitudinal hole having communicating grooves, and a bender receiving slot, and having reciprocation in a line passing through the pivot of the bender, in combination with a knife adapted to move in unison with the block during a part of its stroke, as set forth.

24. The combination in a basket machine, of a nailing block having a partially grooved hole extending longitudinally through it, a hammer rod extending through the block, and having flanges plying in the groove of the hole, and a coil spring upon the hammer rod for actuating the nailing block, substantially as described.

25. The combination in a basket machine, of a bender, a nailing block having a longitudinally grooved hole, and a bender receiving slot, and a hammer rod extending through the nailing block and provided with flanges plying in the grooves of the hole, a spring on the hammer rod for actuating the nailing block while setting and driving the staple, a reciprocating lever carrying a pawl for actuating the nailing block when not actuated by the spring, and a knife adapted to move in unison with the block while cutting and bending the staples, substantially as described

26. In a basket making machine, a nail or staple applying mechanism, having a lever adapted to actuate the nailing hammer and having a pawl adapted to engage the nail making mechanism, in combination with a yielding secondary lever fulcrumed on and carried by the main lever, and adapted to directly engage the nailing hammer, in the manner and for the purpose substantially as described.

27. The combination in a basket making machine, of a nail making mechanism provided with a lever carrying a pawl, a reciprocating knife bar and nailing block moving in unison therewith, the knife bar being engaged and actuated by the pawl, the nailing block being engaged and actuated by the knife bar, and a cam adapted to come in contact with the pawl and release it from the knife bar upon the cutting and forming of the nails, substantially as described.

28. In a basket making machine, a nailing mechanism comprising a reciprocating block provided with a longitudinal hole having grooves in the inner walls of the hole, a spring-retracted nailing hammer movable within the hole, a frame normally across the path of said block, a wire feeder adapted to introduce the wire across the chamber in which the block operates, and at a point between it and the bender, a side slot communicating with the longitudinal hole and adapted to receive the bender when the block is advanced, a knife-bar adapted to cut the wire, and means, substantially as described, for withdrawing the bender from the side slot as the nailing hammer advances, all arranged and adapted to operate in the manner and for the purpose substantially as described.

29. In a basket making machine, the combination with a cam wheel, a lever actuated thereby, a pair of yielding secondary levers fulcrumed on and carried by said lever, and a pair of nailing hammers actuated by the secondary levers through the medium of the main lever, whereby the top and bottom bands of the basket are simultaneously nailed, in the manner and for the purpose substantially as described.

30. In a basket making machine, the combination with a feeding chute leading to the basket form, of a lever fulcrumed in the frame of the machine, below the chute, a rod connected to the upper end of the lever, a pair of gripping jaws attached to said rod and actuated thereby, said jaws being adapted to pass astride the stock in

the chute, and to engage and advance it to form, substantially as described.

31. In a feeding mechanism for a basket making machine, the combination with a form and the reciprocating pinchers arranged to carry and adjust the side pieces of the basket, of an adjuster located near the path of the advancing side pieces, and adapted to automatically engage and justify the pieces as they pass to the form, in the manner and for the purpose set forth.

32. In a basket making machine and in combination with the assembling mechanism, a hopper having a passage way in one side, in combination with an oscillating lifting arm having its free end movable in said way to engage and lift the stock from the hopper, in the manner and for the purpose set forth.

33. In a basket making machine and in combination with the form a hopper for holding the sides of the basket, in combination with a guideway or chute, an oscillating arm having needles in its free end which enter and lift the stock out of the hopper and present it to the guideway, as and for the purpose set forth.

34. In a basket making machine, a hopper for holding the sides and a movable arm provided with needle points which enter the hopper and engage and lift the sides, one by one, therefrom, in combination with a form, and assembling and uniting mechanism, substantially as described.

35. In a basket machine a rotatable form having larger diametrical dimensions than the basket bottom to be operated upon, in combination with a bottom feeding and a band feeding mechanism, and mechanism for assembling and simultaneously uniting the sides and bands at the top and bottom of the basket, substantially as described.

36. A basket machine comprising the combination of a form, mechanism substantially as described, for feeding the sides to the form, a bottom feeding device, a band feeding mechanism, a nailing mechanism, a cam wheel and intermediate mechanism, substantially as described, for actuating all of said mechanisms, in the manner and for the purpose substantially as described.

37. In a basket making machine, the combination of a form revolving successively on two centers, an ejector over the form, a movable table below the form, and mechanism connecting the table and the ejector, whereby on the completion of a basket the moving of the table causes the ejector to pass through the form and eject the basket therefrom.

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530,049. LANTERN. GEORGE W. JARMIN, Corpus Christi, Tex. Filed Aug. 29, 1894. Serial No. 521,627. (No model.)



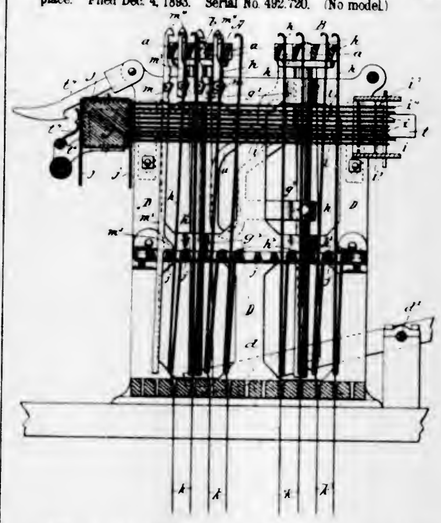
*Claim.*—1. In a lantern the combination of a base adapted to support a chimney thereon, a bail attached to said base and extending above the chimney, and a spring actuated bar adapted to slide vertically on opposite arms of said bail and extending transversely across the top of the chimney, serving to automatically clamp said chimney and leave its top open, substantially as described.

2. In a lantern, the combination of a base adapted to support a chimney thereon, a bail attached to said base and extending above the chimney, a cross bar extending across the chimney and provided with eyes adapted to slide on said bail, and spiral springs interposed between the top of said bail and said cross bar for pressing the latter on the chimney top.

3. In a lantern, the combination of a base adapted to support a chimney thereon, a bail hinged to said base and provided at its upper ends with a cross piece having loops at its ends, a cross bar extending across the chimney top and provided with eyes adapted to slide on said bail, spiral springs interposed between said cross piece of the bail and the cross bar for pressing the latter on the chimney top, and a handle attached to said loops.

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530,050. JACQUARD MECHANISM FOR LOOMS. JERRY C. LIBERTY, Easthampton, Mass., assignor of one-third to Oscar W. Miller, same place. Filed Dec. 4, 1893. Serial No. 492,720. (No model.)



*Claim.*—1. In a Jacquard loom, the combination with the main griff, A, and means for imparting thereto a vertically reciprocatory movement, of the vertical bars, $m^3$, supporting a horizontal individual blade, *m*, below, and parallel with, the main griff, and having hooked upper ends which stand higher than the blades of the main griff, pattern-controlled needles which engage the said upright bars to place them free from, or by their hooked ends across the paths of the blades of the main griff, vertical rods having hooks at their upper ends which rods are supported for lateral swinging movements and with their upper hooked ends above the blades of the main griff, and pattern-controlled needles which govern the lateral positions of said hook-rods whereby the latter may be either taken up by the blades of the main griff, or, after such main griff has had part of its upward movement, taken up by the lower individually operated blade only partially as far, substantially as described.

2. In a Jacquard loom, a main griff, A, and means for imparting vertically reciprocatory movements thereto, an individual griff blade below the main griff, a movable pattern controlled device for coupling the main and individual griffs whereby the latter may partake of the movement of the main griff, vertical rods, having hooks at their upper ends, which are supported for lateral swinging movements, and with their hooked ends above the blades of the main griff, and pattern-controlled needles which govern the lateral positions of said hook-rods whereby the latter may be either taken up by the blades of the main griff, or after such main griff has had part of its upward movement taken up by the lower pattern and needle operated individual blade, substantially as described.

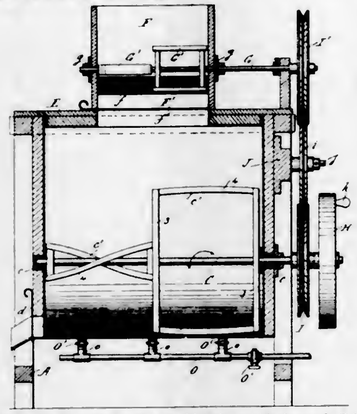
3. In a Jacquard loom a main griff, A, and means for imparting vertically reciprocatory movements thereto, individual griff-blades below the main griff and movable pattern-controlled devices for coupling the main with one or more of the individual griffs, whereby the latter may partake of the vertical movements of the main griff, vertical rods having hooks at their upper ends which are supported for lateral swinging movements and with their hooked ends above the blades of the main griffs, and pattern-controlled needles which govern the lateral positions of said hook-rods whereby they may be taken up by the main or individual griffs, or by neither, thereof the griff, B, and pattern-controlled hook-rods which carry devices for supporting warps normally at a higher point than the warp supporting devices which are carried by the hook-rods operating in conjunction with the griff, A, and means for imparting vertical movements to said griff, B, half as high as those imparted to the griff, A, substantially as described.

4. The combination with the main griff frame, of one or more individual griff blades, *m*, having the angularly turned end ear-pieces, $m^7$, the upright-rods, $m^3$, $m^5$, having hooks at their upper ends which are adapted to engage the blades of the main griff frame, and having the notches, $m^6$, in which rest the edges of said blades, *m*, and the set screws, $m^8$, passing through the ear-pieces and upright-rods for confining the blade immovably upon the rods, substantially as described.



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530,051. MIXER. ULRICK R. MOHR, Rock Island, Ill., assignor of one-half to James B. Morgan, Davenport, Iowa. Filed June 11, 1894. Serial No. 514,162. (No model.)

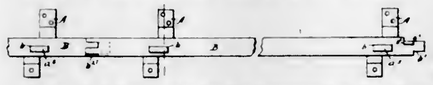


*Claim.*—1. In a mixer, the combination, with the tank B having a semi-cylindrical bottom, and the two beaters journaled inside the tank and arranged at right angles to each other, each beater consisting of two spirally-arranged crosspieces, operating to scrape the bottom of the tank, and arms supporting the said crosspieces, of the hopper secured to the lid of the tank, the agitators journaled in the hopper, driving mechanism for revolving the beaters and agitators simultaneously, a sieve forming the bottom of the hopper, a regulating slide under the sieve and between it and the tank, and steam pipe connections for cooking the contents of the tank, substantially as set forth.

2. In a mixer, the combination, with the tank provided with a hinged lid, and the beaters journaled in the tank; of the hopper secured to the said lid and provided with agitators, the friction wheels I and I' secured to the beater and agitator shafts, the sliding bracket and the friction wheel *i*, and the pivoted lever M and the rod N for operating the said bracket and placing the friction wheels in contact, substantially as set forth.

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530,052. DOOR-HANGER TRACK-RAIL, TRACK-RAIL JOINT, AND TRACK-RAIL BRACKET. MARTIN MCCAWLEY and ALBA T. KINGSLEY, Millport, assignors of one-third to John B Stanchfield, Elmira, N. Y. Filed Jan. 16, 1894. Serial No. 497,071. (No model.)



*Claim.*—1. A door hanger track-rail composed of flanged sections having a portion of their meeting ends off-set and overlapping each other, with the ends of the flanges and the remaining portions of the rail ends abutting against each other and bringing the tread surfaces of adjoining sections in line, substantially as described.

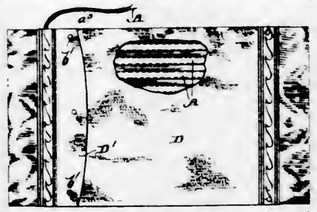
2. A door hanger rail section adapted to form one section of a track and having a vertical portion and a flange at an angle thereto, one end of the section being partially cut away and having the projecting portion offset laterally from the line of tread so as to overlap the opposite end of another section, and means for interlocking with the overlapping end of said other section, the portions which are cut away permitting two sections to be interlocked with the treads in alignment, substantially as described.

3. A door hanger track rail section having one end provided with the two upwardly-extending lips $b^4$, $b^5$, offset in reverse directions, and the other end provided with the downwardly-extending offset lip $b^3$, substantially as described.

4. A rivetless jointed track rail and bracket for door hangers, comprising the flanged sections of rail having a portion of their meeting ends off set and overlapping each other, with the ends of the flanges and the remaining portions of the rail ends abutting against each other and bringing the tread surfaces of adjoining sections in line, each section being provided with one or more horizontal slots or openings, and the supporting brackets each of which has a tongue or lip passed through one of said rail openings and bent up on one side of the rail and two side lips bent up on the other side of said rail, whereby the rail is clinched securely between said lips, substantially as described.

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530,053. ELECTRIC ROBE, TOWEL, &c., FOR HEATING. HENRY O. O'NEILL, Boston, Mass., assignor of one-half to Edward Jewell same place. Filed Apr. 9, 1894. Serial No. 506,878. (No model.)



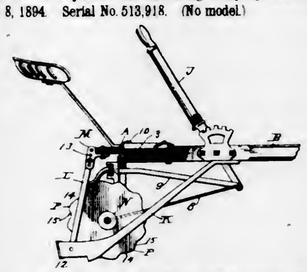
*Claim.*—1. A towel, robe, or other article of flexible fabric provided with a flexible resistance contained within the same, the said resistance having water-proof and fire-proof coatings and being adapted to connect with the conductors of an electrical circuit substantially as set forth.

2. In a towel, robe, or other article of flexible fabric an exterior bag or casing in combination with a sheet adapted to be inserted within and removed from the same and a flexible resistance attached to the said sheet and removable therewith, the said resistance being provided with water-proof and fire-proof coatings and adapted to connect with the conductors of an electric circuit substantially as set forth.

3. In combination with the resistance and flexible fabric of an electrically heated towel or other article adapted to be applied to the human form, a branch conductor by which more or less of the said resistance may be cut out of circuit at will substantially as set forth.

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530,054. DISK HARROW. GEORGE W. PACKER, Rock Falls, assignor to the Keystone Manufacturing Company, Sterling, Ill. Filed June 8, 1894. Serial No. 513,918. (No model.)



*Claim.*—1. In a disk harrow, the concavo-convex disks N, provided with a continuous cutting periphery, formed into radial, curved projections P, having a rear, longer side 14, and a front, shorter side 15, substantially as shown and for the purpose described.

2. In a disk harrow, the combination of the cutter K, attached at its front end to the frame of the machine, and formed at its rear end into outwardly diverging blades 12, adapted to be held in the earth, and the vertical bar L, seated at its lower end, on the rear end of said cutter, and adjustably attached at its upper end to the frame of the machine, whereby the strip of earth between the disk gangs is split and thrown outwardly each way from the center at any desired depth, substantially as and for the purpose described.

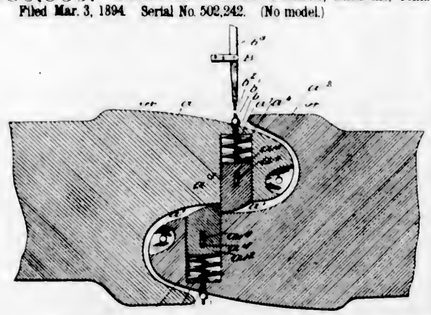
3. In a disk harrow, the combination of the frame A provided with dependent ends 2, and openings 4 therein, bracket D seated on frame A, and provided with the transverse slot 7, box C provided with trunnion 5 inserted in opening 4, and trunnion 6 inserted in slot 7, and the tongue B suitably attached to the center of the frame A, and suitable means of changing the angles of said disk gangs substantially as shown and for the purpose specified.

4. In a disk harrow, the combination of the frame A, sleeve H adjustably seated thereon, bracket G pivotally attached to said sleeve, clip F pivotally seated on said bracket and a scraper bar E adapted to reciprocate in clip F transversely of the machine substantially as shown and for the purpose described.

5. In a disk harrow, the combination of the frame A disk gangs seated thereon, standards J, constructed of two parts *a*, *b*, and seated

on said gangs, bolt 16 adjustably connecting parts *a* and *b*, adjustable bracket H and the scraper bar E carried by said bracket and said part *b*, substantially as shown and for the purpose described.

530,055. CAR-COUPLING. HENRY RAYMOND, Knoxville, Tenn. Filed Mar. 3, 1894. Serial No. 502,242. (No model.)

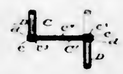


*Claim.*—1. In a car coupler of the kind described, the combination of a jaw having a recess, a pawl projecting from said recess and having a slot, a pin passing through said slot to limit the in and out movement of the pawl, a coiled spring in said recess between the inner end of the pawl and the inner end of the recess, a chain connected with said pawl and passing through the space between the pawl and inner end of the recess and having a button to limit its inward movement and mechanism for drawing the pawl into the recess by withdrawing the chain from the recess and not operated by the pawl when the said pawl is moved by the pawl upon the other jaw.

2. In a car coupler of the kind described, the combination of a jaw having a recess, a pawl projecting from said recess and having a slot, a pin passing through said slot to limit the in and out movement of the pawl, a coiled spring in said recess between the inner end of the pawl and the inner end of the recess, a chain connected with said pawl and passing through the space between the inner end of the pawl and the inner end of the recess in which it is coiled when the pawl to which it is attached is moved into said recess and having a button to limit its inward movement, and a lever secured to the car body and having a taut chain connecting it with the button end of the chain in the recess.

530,056. STRAP-LOOP. JAY REED, Butler, Mo. Filed Mar. 9, 1894. Serial No. 503,005. (No model.)





*Claim.*—1. A strap loop consisting in a carrier plate formed of a strip of sheet metal folded upon itself and provided with a notched end, and an intermediate rivet aperture, and a stationary loop having a flattened or non-cylindrical inner cross bar rigidly clamped in the said fold, substantially as herein described.

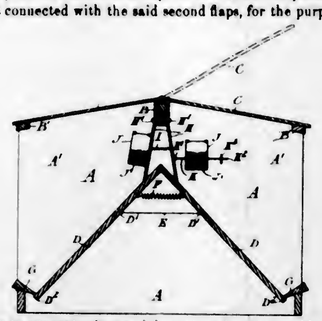
2. A strap loop comprising the carrier plate formed of a sheet metal strip folded upon itself at both ends forming three superposed layers; the ends of said plate being notched, and its middle apertured for a rivet, and the stationary end loops having non-cylindrical or flattened cross bars clamped rigidly in the folds or bends of said plate, substantially as herein described.

3. In a strap loop, the loop carrier formed of a strip of sheet metal provided with offsets or bends $c'$ at opposite sides of its middle, and apertured as at $c^4$ through said offsets; the said strip or blank being folded upon itself at both ends across said apertures producing the eyes $c^4$ and notches c and the rivet aperture through the middle of the carrier plate, substantially as herein described.

4. The herein described strap loop consisting in the carrier plate formed of a strip of sheet metal bent upon itself at both ends forming three superposed layers, and having notches in its bends or folds, and a rivet aperture through the middle and the stationary end loops having non cylindrical cross bars clamped rigidly in the end folds of the plate, and having notches registering with the ends of the carrier plate, substantially as herein described.

530,057. DUST-BIN, DUST-CART, &c. FREDERICK S. SALBERG, London, England. Filed Aug. 14, 1894. Serial No. 520,298. (No model.)

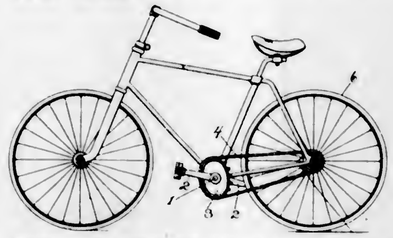
*Claim.*—1. In apparatus for receiving refuse, &c., the combination with a receptacle or receiver, of doors or flaps adapted to have a swinging or oscillating motion, and flaps or doors adapted to be oscillated by the first mentioned flaps or doors, and receptacles for disinfectant connected with the said second flaps, for the purpose specified.



2. In an apparatus for receiving refuse, &c., the combination with a receptacle or receiver, of doors or flaps adapted to have a swinging or oscillating motion, a spring adapted to maintain said doors with their upper ends in contact with each other, flaps or doors adapted to be oscillated by the first-mentioned doors, a spring adapted to maintain said second flaps or doors in position to be operated by the first doors, and receptacles or receivers for disinfectant connected with the said second doors, as and for the purpose specified.

3. In an apparatus for receiving refuse, &c., the combination with a receptacle or receiver, of doors or flaps pivoted intermediate their ends, a stop or abutment against which said doors are adapted to strike at their lower ends, a spring connecting said doors toward their upper ends, doors or flaps pivoted at one end, a spring connected therewith and adapted to maintain the lower ends of said second doors in contact with the first doors, receptacles or receivers for disinfectant connected with said second doors, and lids for the main receptacle, as described.

530,058. DRIVING-GEAR FOR BICYCLES. OTTO W. SCHAUM, and CLINTON ALVORD, Philadelphia, Pa. Filed June 20, 1893. Serial No. 478,284. (No model.)



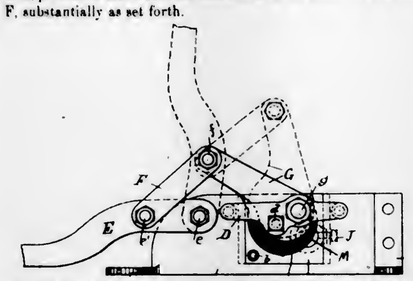
*Claim.*—1. The combination with the large driving elliptical sprocket-wheel or gear, and the sprocket-chain, of the small driven eccentric sprocket-wheel or gear, whereby the varying action of the elliptical wheel or gear upon the sprocket-chain is compensated and the chain is maintained under uniform tension, substantially as described.

2. The combination with the crank-shaft, the large driving elliptical sprocket-wheel or gear thereon, and the sprocket-chain, of the small driven eccentric sprocket-wheel or gear, whereby the varying action of the elliptical wheel or gear upon the sprocket chain is compensated and the chain is maintained under uniform tension, and the propelling or driving wheel with which the eccentric wheel or gear is connected to turn, substantially as described.

530,059. METAL SHEARS. ROBERT J. THOMPSON, Grandin, Mo. Filed Mar. 24, 1894. Serial No. 505,025. (No model.)

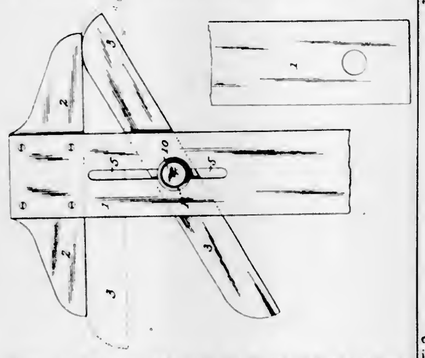
*Claim.*—1. A shears for metals, consisting of a main frame or body having suitable lugs to bolt the same to the table, and provided with an insertible die dove-tailed into said frame, an eccentric cutter fulcrumed to said frame and die, a guard secured to said frame and provided with a set screw to press said cutter against said die, a suitable operating lever pivoted to the main frame and connected to the cutter by means of links or hangers, substantially as set forth,

2. A shears for metals consisting of the main frame A, having the lug *a* and bracket C, to secure to the table, said frame provided with the insertible die B, dove-tailed into said frame, and provided with suitable openings for different shapes and sizes of metals, the projection H integral with the frame A, the insertible bushing I set screw J to hold said bushing in place, the eccentric steel cutter G, fulcrumed at *g*, and held against the die by means of the guard D and set screw *d*, said guard secured to the main frame, the operating lever E, pivoted to said frame and connected to the cutter by the links F, F, substantially as set forth.



3. In a shears for metals, the combination of a main frame or body having suitable projections to bolt the same to the floor or table, and provided with an insertible die dove-tailed into said frame, said die provided with suitable openings for different size metals and secured to said frame by means of a bolt, an eccentric cutter fulcrumed to said frame and die and provided with an insertible blade dove-tailed on the upper edge, and secured by means of pins, a guard secured to said frame and provided with a set screw to press the blade against the face of the die, an operating lever pivoted to said frame and connected to the cutter by means of links or hangers, substantially as described.

530,060. T-SQUARE ATTACHMENT. GEORGE W. AMOS, Chicago, Ill. Filed Feb. 9, 1891. Serial No. 380,823. (No model.)



*Claim.*—1. The combination with the blade and fixed head of a drafting square, of a transverse bar having pivotal movement midway of its length and that of the fixed head, and on the under side of the blade, with either of its free ends adapted to come to a stop against the fixed head in the use of the square, substantially as described.

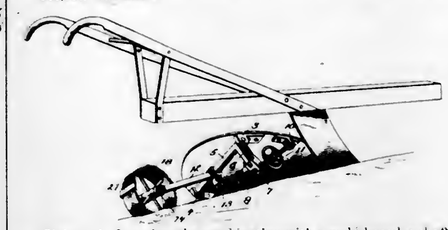
2. The combination with the blade and fixed head of a drafting square, of a transverse bar having pivotal movement midway of its length and that of the fixed head, and on the under side of the blade, with either of its free ends adapted to come to a stop against the fixed head in the use of the square and means for effecting an adjustment of the pivot point, in a direction to and from the fixed head, substantially as set forth.

3. The combination with the blade and fixed head of a drafting square, of a transverse bar having free pivotal movement midway of its length and that of the fixed head, and on the under side of the blade, with either of its free ends adapted to come to a stop against the fixed head in the use of the square and made adjustable to and from the fixed head by means of an elongated slot 5, in the blade, and a clamping screw and nut, substantially as set forth.

4. The combination with the blade and fixed head of a drafting square, of a transverse bar having free pivotal movement on the under side of the blade, and made adjustable to and from the fixed head by means of an elongated slot 5, in the blade, and a clamping screw and nut, the screw consisting of a headed circular portion 6, a squared shank 7, and an intermediate washer 8, having a spine 9, on top, substantially as set forth.



530,061. PLOW. WILLIAM A. ARMSTRONG, Elkton, Ohio, assignor of one-half to Orlan Dickey, same place. Filed Apr. 9, 1894. Serial No. 506,860. (No model.)

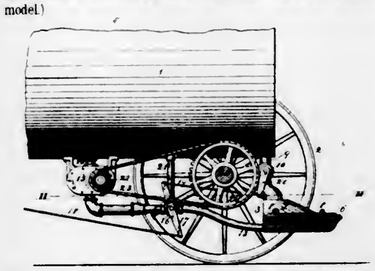


*Claim.*—1. In a plow the combination with a mold-board, a shaft extending transversely of the moldboard and journaled at its ends in bearings provided near the top and bottom edges of the moldboard, and having an integral arm, a nut pivotally connected with the said arm, and adjusting screws for turning the shaft into its bearings, and an arm adjustable along the said shaft and carrying a furrow wheel at its rear end, substantially as described.

2. The combination with a mold-board, of a rock shaft means for turning the rock shaft on its journals, an arm adjustable on the rock shaft and terminating in an eye, a spindle held in the eye of the arm, a cam faced washer to secure the proper inclination or set of the spindle, and a furrow wheel mounted on the spindle.

3. The combination with a mold-board, of a rock shaft journaled thereto and carrying a furrow wheel, and having an arm, a nut pivotally attached to the arm, and an adjusting shaft held in bearings against longitudinal movement, and having a threaded portion to enter the said nut and provided with a hand wheel, substantially as described and for the purpose specified.

530,062. STREET-SPRINKLER. LA MOTTE C. ATWOOD and WILLIAM T. TREADWAY, St. Louis, Mo., assignors of one-third to Margery Woodson, same place. Filed Dec. 1, 1893. Serial No. 492,450. (No model.)



*Claim.*—1. In a sprinkler, the combination with a tank, a spray chamber connected with the tank, and a supplemental chamber having a forced spray, injected into the main spray, substantially as set forth.

2. In a sprinkler, the combination with a tank, a spray chamber connected with the tank, a supplemental chamber also connected with the tank, and a pump driven by the ground wheel and connected with the tank and supplemental chamber for forcing a spray through the same and into the main spray substantially as and for the purpose set forth.

3. The combination, in a sprinkler, of the chamber 3ª connected with the reservoir 1 by a pipe 9 having a cock 10, and the forced jet supplied by a pipe 13 having a cock 16 connected with the cock 10, so that the cocks close and open simultaneously for the purpose set forth.

530,063. HIGH-POWER EXPLOSIVE. JONAS E. BLOMÉN, Stanhope, N. J., assignor, by mesne assignments, to the Jovelte Manufacturing Company. Filed Mar. 12, 1894. Serial No. 503,340. (No specimens.)

*Claim.*—1. A high power explosive consisting of an oxidizing agent, a mixture of phenol-derivatives and other hydrocarbon derivatives, charcoal, and sulfur, substantially as described.

2. A high power explosive consisting of a mixture of nitro-naphthalenes, an oxidizing agent and a mixture of nitro-phenols.

3. A high power explosive consisting of a mixture of nitro-naphthalenes, nitrate of soda, and a mixture of nitro-phenols, substantially as described.

4. A high-power explosive consisting of a mixture a nitro naphthalenes, an oxidizing agent, a mixture of nitro-phenols, and charcoal, substantially as described.

5. A high-power explosive consisting of a mixture of nitro-naphthalenes, an oxidizing agent, a mixture of nitro-phenols, sulphur and charcoal, substantially as described.

530,064. CEILING OR FLOOR. SEBASTIAN G. BRINKMAN, New York, N. Y., assignor to Richard H. Bigelow, same place. Filed Jan. 31, 1894. Serial No. 498,552. (No model.)



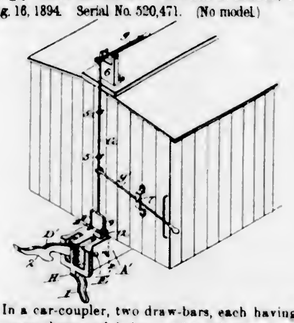
*Claim.*—1. A ceiling composed of a sheet metal plate having flutes that project downwardly from the body of the plate, fasteners connected to the flutes, and a hanging ceiling engaged by the fasteners, substantially as specified.

2. The combination of a sheet of metal having flattened flutes with a wire fabric attached to the flutes, substantially as specified.

3. The combination of a sheet of fluted metal having punched out tongues with a wire fabric secured to the flutes by such tongues, substantially as specified.

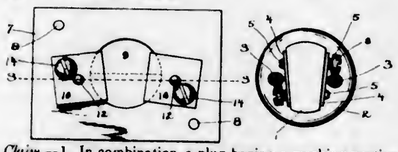
4. The combination of a beam with a sheet of fluted metal, hooks for securing the sheet to the beam and a wire fabric secured to the flutes, substantially as specified.

530,065. CAR-COUPLING. EDWARD R. BURDEN, Sidney, Ohio. Filed Aug. 16, 1894. Serial No. 520,471. (No model.)



*Claim.*—In a car-coupler, two draw-bars, each having two parallel recesses, open above and below, and an abutment at the lower forward end of each recess, a coupling-pin passed through both recesses, a gravity dog pivoted in one of the recesses so that its forward end rests normally on the abutment, a hook pivoted on the coupling-pin in the other recess, said hook having an inclined face projecting above its upper edge and rearwardly-extending arm, and a bifurcated rod bearing loosely on the rear end of the dog and on the arm of the hook, substantially as described and for the purposes stated.

530,066. PLUG AND RECEPTACLE FOR ELECTRICAL PURPOSES. DAVID J. CARTWRIGHT, Boston, Mass. Filed Jan. 24, 1894. Serial No. 497,945. (No model.)

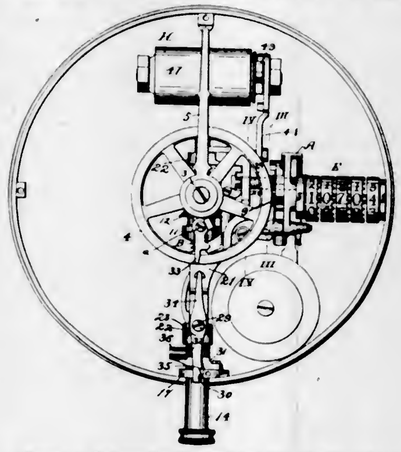


*Claim.*—1. In combination, a plug having a working portion or body which tapers in cross-section, and electrodes applied to the converging sides thereof, a block formed with a cavity therein constituting a socket for the reception of said working portion or body of the plug and electrodes secured to said block and occupying positions in the cavity at opposite sides thereof at an angle to each other corresponding with that of the sides of the body of the block to receive between them the latter and its electrodes, substantially as described

2. In combination, the plug having a working portion or body tapering in cross-section, electrodes applied to the converging sides thereof, a block having the circular hole therethrough, and the L-shaped strips 10, 10 having the outer arms thereof attached to one face of the said block and the other arms extended into the said hole, the surfaces of the latter arms standing at an angle to each other corresponding with that of the sides of the plug and the free ends of such arms converging toward each other, substantially as described.

3. In combination, the plug having the working portion or body thereof formed tapering in cross-section, with electrodes applied to the converging sides thereof and with the intermediate portions of the same curved as described, the block having the circular hole formed therethrough, and the L-shaped strips 10, 10 having the outer arms thereof attached to one face of the said block and the other arms extended into the said hole, the surfaces of the latter arms standing at an angle to each other corresponding with that of the sides of the plug and the free ends of such arms converging toward each other, substantially as described.

530,067. STREET-CAR REGISTER. EPHRON CATLIN and GUSTAVUS REIN, St. Louis, Mo., assignor to the St. Louis Register Company, same place. Filed Dec. 14, 1893. Serial No. 493,653. (No model.)



*Claim.*—1. The combination with the trip register, and a resetting mechanism comprising rotary devices for turning the trip register, of a catch independent of said rotary devices, and acting to lock said mechanism against retraction, substantially as described.

2. The combination with the trip register, the permanent register, and means for disengaging them from each other, of a resetting mechanism comprising rotary devices for turning the trip register, and a catch independent of the said rotary devices, and acting to lock the said mechanism against retraction, substantially as described.

3. The combination with the trip register, and a resetting mechanism comprising rotary devices for turning the trip register, of a catch independent of said rotary devices, and acting to lock the said mechanism against retraction, and a tripping projection operated by the resetting mechanism for moving and releasing said catch, substantially as described.

4. The combination with the trip register, and a resetting mechanism, of a catch consisting of a pivoted pawl having a shoulder or notch, and a stop adapted to co-operate with said pawl to lock the resetting mechanism, said pawl and stop being independent of the rotary parts of the trip register, substantially as described

5. The combination with a trip register comprising a rotary register wheel, and a resetting mechanism, of a pawl and stop both independent of the said wheel and acting to lock the resetting mechanism against retraction, substantially as described.

6. The combination with a trip register, and a resetting mechanism, of a catch independent of the rotary parts of the trip register and acting to lock the said mechanism against retraction, and a rotary tripping device operated by the resetting mechanism for releasing said catch, substantially as described.

7. The combination with the trip register and a reciprocating resetting mechanism comprising rotary devices for turning the trip register, of a catch independent of said rotary devices and acting between said resetting mechanism and a fixed stop or point such as a portion of the register case or frame to lock said mechanism against retraction, substantially as described.

8. The combination with a trip register, and a resetting mechanism, of a catch independent of the rotary parts of the trip register and acting to lock the said mechanism against retraction, and a tripping projection or stop on the register wheel for releasing said catch, substantially as described.

9. The combination with a trip register, and a resetting mechanism, of a catch independent of the rotary parts of the trip register and acting to lock the said mechanism against retraction, and a rotary tripping and deflecting projection or stop operated by the resetting mechanism for releasing and deflecting said catch, as described.



530,068. PORTABLE SECTIONAL FENCE. ADOLPHUS H. COOK, Almira, Canada, assignor of one-half to Abraham Hisey, same place. Filed Apr. 5, 1894. Serial No. 506,373. (No model.)



*Claim.*—1. In a sectional fence, a section comprising the following elements:—the upright posts A, A, with bolt holes *f*, *f*, the upper rails G, G'; one of said rails overlapping the said posts, the lower rails H, H', of both said rails overlapping the posts, the intermediate uprights D, stringers I, attached to the uprights, the links C, C, pivotally attached to the uprights A, A, by bolts F, and to the side stakes B, B, by the bolts J, the said side stakes being provided with a series of bolt holes *e*, substantially as and for the purpose specified.

2. In a sectional fence, the combination of two sections, each comprising the uprights A, upper rails G, G', with overlaps *g'*, lower rails H, H', with overlaps *h*, *h'*, and adjustable side stakes B, pivotally connected with the lower part of the uprights A, and the connecting bolt E, adapted to pass through the uprights A, and side stakes B, of both sections, substantially as and for the purpose specified.

3. In a sectional fence, the combination with the uprights A, of the side stakes B provided with a series of holes *e* and connected together and to said uprights A, and links C independently connecting said side stakes B to said uprights A, whereby said links may be adjusted independently of each other, substantially as described.

4. A sectional fence, comprising the uprights A A forming the sides of a section, one or more uprights D placed intermediate of said uprights A A, and rails G G' connected to the uprights A A and intermediate upright D, and curved outwardly from each other and formed with a camber, substantially as and for the purpose specified.

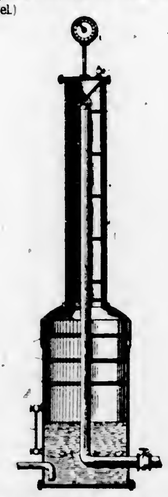
5. A sectional fence, comprising the uprights A A, forming the sides of a section, one or more uprights D placed intermediate of said uprights A A, upper rails G G', one on each side of said uprights and curved outwardly from each other, and lower rails H H', also one on each side of the uprights and outwardly curved, said rails G G' and H H' being formed with cambers, the cambers on the upper rails being opposite to the cambers on the lower rails, thus forming a truss in the fence, substantially as and for the purpose specified.

530,069. WIRE-FENCE STAY. AARON F. DICKEY, Friedens, Pa. Filed July 13, 1894. Serial No. 517,461. (No model.)

*Claim.*—In a stay the combination of a series of links arranged in chain fashion, the links being coupled together or connected by means of snap hook eyes—one on each link, said eyes being also adapted to embrace the fence strands, substantially as shown and described.



530,070. METHOD OF AND MEANS FOR CARBONATING LIQUIDS. HARVEY S. FERRY, Mount Vernon, assignor to the Ferry Manufacturing Company, New York, N. Y. Filed Oct. 25, 1893. Serial No. 489,129. (No model.)



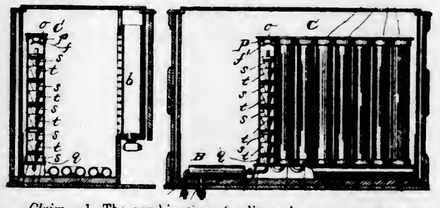
*Claim.*—1. The method of carbonating liquids, which consists in charging a body or column of liquid with carbonic acid gas, conducting the liquid into a vessel and separating the liquid into thin sheets or films and recarbonating the liquid by causing it to fall through a volume of gas derived from the original carbonization.

2. The combination of a vessel, a series of separated and truncated spreading devices, a liquid receptacle below said devices from which liberated gas rises and through which gas the liquid passes in its descent, and supply and discharge pipes.

3. The combination of a vessel, a supply pipe entering the vessel at its lower end, a series of spreading devices surrounding the supply pipe, a liquid receptacle below said devices and a discharge pipe.

4. The combination of a vessel provided with suitable supply and discharge pipes, and diaphragms having truncated conical passages, the supply pipe discharging at the upper end of the vessel and the discharge pipe communicating with the lower end of the vessel.

530,071. APPARATUS FOR CARBONATING LIQUIDS. HARVEY S. FERRY, Mount Vernon, assignor to the Ferry Manufacturing Company, New York, N. Y. Filed Sept. 1, 1894. Serial No. 521,952. (No model.)



*Claim.*—1. The combination of a dispensing apparatus a carbonator consisting of one or more connected vessels provided with means for separating the liquid into sheets or films and a cooler connected to the carbonator and supported within said apparatus and exposed to the cooling medium.

2. The combination of a dispensing apparatus, the carbonator consisting of a primary horizontal mixing chamber and a plurality of supplemental vertical carbonating vessels and a cooler connected to the carbonators and contained within said apparatus.

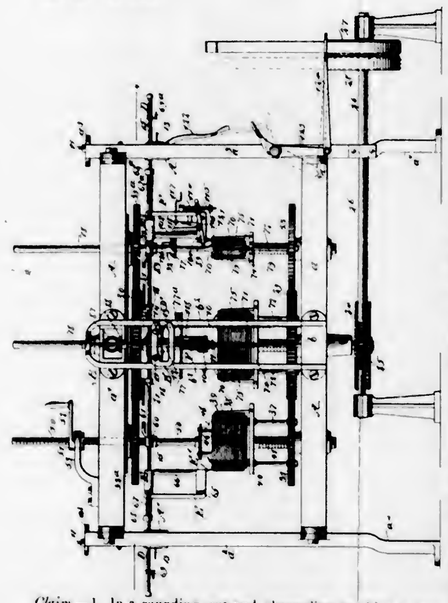
3. A carbonating vessel provided with a plurality of conical vessels, each alternate vessel having circumferential perforations and a vertical skirt below said perforations near the vertical median line of the vessels.

4. A carbonating vessel provided with a plurality of conical vessels part of which vessels are provided with circumferential perforations, a vertical skirt below said perforations near the vertical median line of the vessels and leak holes in the bottom of the vessels.

5. A carbonating vessel provided with a central liquid supply pipe, a concentric gas supply pipe, a series of conical vessels and branch gas pipes exten ing into said vessels.

## 530,072. SOLE CHANNELING AND ROUNDING-OUT MACHINE.

GEORGE F. FISCHER, Rochester, N. Y. Filed Oct. 4, 1893. Serial No. 487,160. (No model.)



*Claim.*—1. In a rounding out and channeling machine, a revoluble table adapted to carry manifold sheets, a pattern held over the table, reciprocating knives located in the path of rotation of the table, and means for periodically decreasing the distance between the knives and table to permit the knives to successively operate on the several sheets, substantially as shown and described.

2. In a rounding out and channeling machine, a revoluble table adapted to carry manifold sheets, a pattern held above and turning with the table, a knife carriage the knives of which are held in the path of rotation of the table and pattern, and means for automatically lowering the carriage to permit the knives to successively operate on the several sheets, substantially as shown and described.

3. In a rounding out and channeling machine, a revoluble table adapted to carry manifold sheets, a pattern rotating with the table, knives located in the path of rotation of the table and pattern, a reciprocating carriage supporting the knives, a feed device for the knives connected with the carriage, and a trip mechanism located upon the carriage, whereby the direction of travel of the carriage is changed, substantially as described.

4. In a rounding out and channeling machine, a revoluble table adapted to carry manifold sheets, a pattern located over the table, knives guided by the pattern and adapted to operate upon the said sheets, a reciprocating carriage carrying the knives, and a feed device for the knives connected with the carriage, as and for the purpose set forth.

5. In a rounding out and channeling machine, a revoluble table adapted to carry manifold sheets, a pattern located over the table and turning therewith, knives guided by the pattern, a reciprocating carriage laterally operating the knives, a feed device vertically adjusting the knives, and a driving mechanism having timed driving connection with the carriage, the feed device, the table and the pattern, whereby the knives act automatically and successively upon the sheets, as and for the purpose specified.

6. In a rounding out and channeling machine, a revoluble table adapted to carry manifold sheets, a pattern turning with the table, knives guided by the pattern, a reciprocating carriage supporting the knives, a feed device vertically adjusting the knives, a driving mechanism having timed connection with the carriage, the feed device, the table and pattern, a shifter connected with the source of power, and a trip located upon the carriage, adapted to engage with the shifter, substantially as shown and described.

7. In a rounding out and channeling machine, a revoluble table carrying the sheets to be cut, a pattern held above and revolving with the table, knives guided by the pattern, a lifting device connected with the knives, and a discharge device having engagement with the uppermost sheet and operated from the lifting device, substantially as described.

8. In a rounding out and channeling machine, a revoluble table adapted to carry manifold sheets, a pattern rotating with the table, knives located in the path of rotation of the table and guided by the pattern, a reciprocating support for the knives imparting lateral movement thereto, a vertical feed connected with the support, and a discharge device operating upon the upper sheet, and means for operating said discharge device upon the completion of a sole, substantially as described.

9. In a rounding out and channeling machine, a revoluble table adapted to carry manifold sheets, a second table having independent and progressive vertical movement and a rotary movement with the sheet carrying table, and a series of guide arms carried by the second table, which arms serve to hold the sheets in compact shape and recede as the sheets are acted upon, substantially as shown and described.

10. In a rounding out and channeling machine, a revoluble table adapted to carry manifold sheets, a second table turning with the sheet table and having likewise progressive vertical movement, and a series of guard arms normally engaging with the side of the sheets, said arms having pivotal and locking engagement with the said second table, as and for the purpose specified.

11. In a rounding out and channeling machine, a revoluble table adapted to carry manifold sheets, a second table turning with the sheet table and having progressive vertical movement, and a series of guide arms normally engaging with the sides of the sheets, said arms having adjustable and pivotal engagement with the second table, and a knife carried by one of the arms, adapted to cut the border trimmed from the sole, substantially as specified.

12. In a rounding out and sole-channeling machine, the combination, with a revoluble table adapted to carry manifold sheets, a carriage, and a driving mechanism imparting reciprocating movement to the carriage, of a knife holder, the knife of which is adapted for engagement with the sheets, the said holder being supported from the carriage, and a feed device, the same consisting of racks, boxes in which the carriage has support, capable of sliding movement in the presence of the racks, feed shafts extending through the boxes, and spiral blades held to revolve in the boxes and engage with the racks, the blades being made in two planes and provided with an abrupt run from the lower to the upper plane, as and for the purpose set forth.

13. In a sole-channeling and rounding out machine, the combination, with revoluble tables adapted to carry the sheets to be acted upon, and a carriage located above the table, consisting of two parallel bars, sliding boxes in which the bars are mounted, each bar being provided with a rack surface upon different faces, and pattern shafts provided with trip arms, of a driving shaft, guards carried by the driving shaft and adapted for engagement with the rack surfaces of the carriage rods, shifting devices located upon the rods, whereby the rods will be turned upon engagement with the trip arms of the pattern shafts and the direction of travel of the carriage reversed, and a feed device connected with the carriage, substantially as shown and described.

14. In a rounding out and channeling machine, the combination with rotary tables adapted to carry the sheets to be operated upon, and patterns having rotary movement with the tables, and a carriage having reciprocating movement above the patterns, of knife carriers suspended from the carriage, feed devices connected with the carriage, and tension devices connected with the knife holders or carriers, whereby the knives are kept constantly in working position while the machine is in operation, substantially as shown and described.

15. In a rounding out and channeling machine, the combination with a pattern, of a knife holder, a roller mounted in the holder above the knife, and means for adjusting the roller forward or rearward of the knife, substantially as and for the purpose set forth.

16. In a rounding out and channeling machine, the combination, with a pattern having a raised cam surface at its heel section, of a tool holder provided with a fixed rounding out knife at its lower end and adjustable channeling and grooving knives located in advance of the rounding out knife, and a lifting arm connected with the support of the channeling and grooving knives, said knives being provided with a roller traveling upon the pattern, which roller when it reaches the cam surface of the pattern elevates the channeling and grooving knives from engagement with the material being operated upon, without affecting the position of the rounding out knife, substantially as shown and described.

17. In a rounding out and channeling machine, the combination with a pattern, of a knife holder provided with an adjustable roller engaging with the pattern and regulating the size of the article to be cut, a rounding out knife securely fastened to the holder below the guide roller, pivoted, spring-controlled arms located upon the lower portions of the holder, channeling and grooving knives carried by the said arms, and a lifting mechanism connected with the arms and operated by the pattern, substantially as and for the purpose specified.

18. In a rounding out and channeling machine, the combination, with a pattern, presser feet carried by the pattern, a lift mechanism carried by the pattern, and a discharge shaft loosely mounted in one of the presser feet and adapted for engagement with the sole being acted upon, the shaft being spring-controlled and provided with an upper head, of a knife-holder, a rounding-out knife fixed to the holder, and cushioned channeling and grooving knives pivotally connected with the holder, a lift arm connected with the support for the channeling and grooving knives and operated by the pattern, and a trip carried by the operating arm and adapted for time engagement with the head of the discharge shaft, as and for the purpose specified.

19. In a rounding out and channeling machine, the combination of a revoluble table adapted to carry manifold sheets, a pattern above the table, a knife holder adjacent to the table and having progressive downward movement to permit the several sheets to be successively operated upon, and means for automatically stopping the machine when the last sheet has been operated upon, substantially as described.

20. In a rounding out and channeling machine, the combination of a revoluble table adapted to carry manifold sheets, a pattern above the table, knives adjacent to the table and having progressive downward movement to permit the knives to operate successively on the several sheets, a discharge device for discharging the sheets after they have been operated upon, and means for stopping the machine when the last sheet has been operated upon, substantially as described.

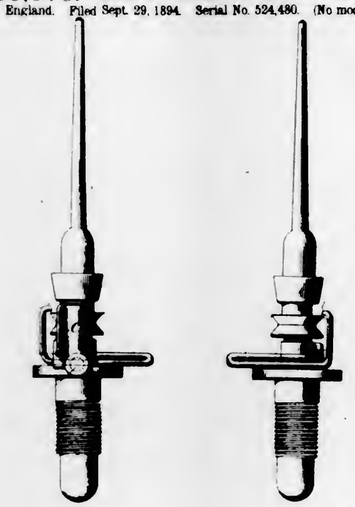
21. In a rounding out and channeling machine, a rounding out knife provided with a diamond point having cutting edges upon both sides and with ribs upon one of its faces, substantially as and for the purpose set forth.

22. In a sole rounding-out and channeling machine, a rounding out knife provided with a diamond point and inclined cutting surfaces at each side of the point, the body of the knife being provided with a concaved face and projections upon its opposite face, as and for the purpose specified.

23. In a sole rounding-out and channeling machine, a combined grooving and channeling knife, the same comprising a shank, a cutting section adapted for grooving located at an angle to the shank, and a cutting channeling section of substantially loop formation emanating from the grooving section, as and for the purpose specified.

## 530,073. SPINDLE-SUPPORT.

EDWIN HITCHON, Accrington, England. Filed Sept. 29, 1894. Serial No. 524,480. (No model.)

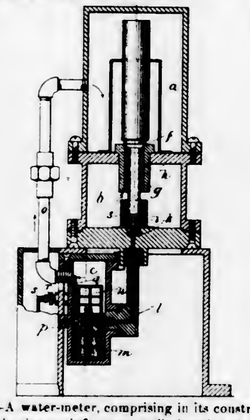




*Claim.*—The combination with the bolster, the spindle and the oil tube, of the rock-shaft mounted in a cross-bearing on the bolster base or flange tangential to the bolster, an upright carrier on one end of said shaft, a cover for the oil-tube affixed to said carrier, a second carrier on the opposite end of said shaft, a spindle holder on the upper end of said second carrier, and a counterweight for holding the said carriers in position, under the arrangement and for joint operation, as shown and set forth.

## 530,074. PROPORTIONAL WATER-METER.

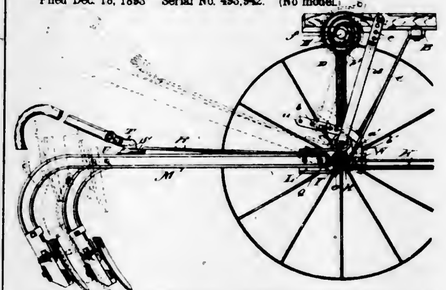
CHARLES H. BACON, Boston, Mass.; Sarah A. Bacon administratrix of said Charles H. Bacon deceased, assignors, by direct and mesne assignments, to William H. Allen and William H. Allen, trustee, Melrose, Mass. Filed Jan. 13, 1893. Serial No. 458,213. (No model.)



*Claim.*—A water-meter, comprising in its construction a receiving-chamber having an influx-port, a discharging-chamber having an efflux-port, a measuring-chamber, ports affording communication between the receiving and discharging chambers and the receiving and measuring chambers, valves controlling said ports, a meter-wheel in the measuring-chamber provided with buckets, said chamber containing mercury to a line above the axis of the wheel, a duct communicating from the receiving-chamber to the interior of the wheel, and an always open passage affording communication between the measuring-chamber and the discharge chamber.

## 530,075. CULTIVATOR.

ADDISON W. BUTT, Springfield, Ohio. Filed Dec. 18, 1893. Serial No. 493,942. (No model.)



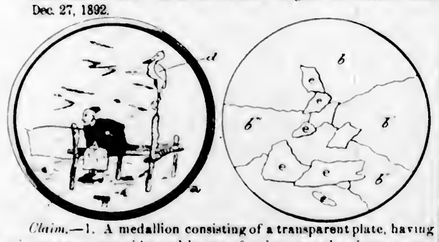
*Claim.*—1. In a cultivator, the combination with its axle, a beam coupling thereon, a beam pivoted to the coupling in the rear of the axle on a vertical pivot, a track secured to the coupling forward of the axle, running rearward and diverging upward from the beam a wheel traveling on the track, a pitman or link connected to the wheel, a spring encircling a part of the axle, a crank on the axle with which the spring connects, and a connection between the crank and the link or pitman.

2. In a cultivator, the combination with its axle, a beam coupling on the axle, a beam pivoted to the coupling in the rear of the axle on a vertical pivot, a track secured to the coupling forward of the axle, running rearward and diverging upward from the beam, a wheel traveling on the track, a link or pitman connected to the wheel, and a spring drawing upward on the link or pitman and supported by the axle.

3. In a cultivator, the combination with its axle, a coupling on the axle, a beam pivoted to the coupling in the rear of the axle on a vertical pivot, a track secured to the coupling forward of the axle, running rearward and diverging upward from the beam, the track having a bend in its forward end and a series of holes in its rear portion, and a spring actuated wheel running on the track and adapted to enter such bend so as to pull forward of the axle, and pins adapted to fit either of the holes to limit the rear movement of the wheel.

# REISSUES.

11,455. SOUVENIR MEDALLION. SIMON MAY and LESSAR M. ARON, Brooklyn, assignor to Israel H. Hamburger, New York, N. Y. Filed June 7, 1894. Serial No. 513,834. Original No. 488,826, dated Dec. 27, 1892.




*Claim.*—1. A medallion consisting of a transparent plate, having a picture upon one side, and layers of paint upon the picture, combined with scales of pearl attached to the said side of the medallion, substantially as shown.

2. The combination in a medallion, of the following elements arranged and held together in the order named: a glass plate, a photographic picture, layers of paint, scales of pearl, cloth or paper, and metal foil, substantially as described.

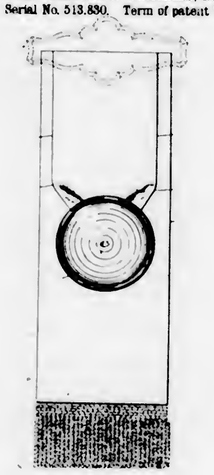
# DESIGNS.

23,816. BADGE. FRANKLIN ELLIS, Troy, assignor to the Pettibone Manufacturing Company, Cincinnati, Ohio. Filed July 23, 1894. Serial No. 518,396. Term of patent 7 years.



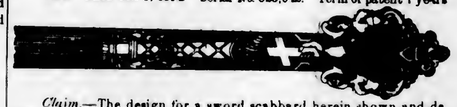
*Claim.*—The design for a badge substantially as herein shown and described.

23,817. BADGE. BENJAMIN S. WHITEHEAD, Newark, N. J. Filed June 7, 1894. Serial No. 513,830. Term of patent 7 years.



*Claim.*—The design for a badge, substantially as described and shown.

23,818. SWORD-SCABBARD. CHARLES H. LINDENBERG, Columbus, Ohio. Filed Oct. 5, 1894. Serial No. 525,042. Term of patent 7 years.



*Claim.*—The design for a sword scabbard herein shown and described.

23,819. SWORD-SCABBARD. CHARLES H. LINDENBERG, Columbus, Ohio. Filed Oct. 5, 1894. Serial No. 525,041. Term of patent 7 years.



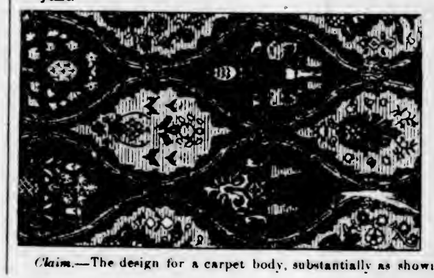
*Claim.*—The design for a sword scabbard, substantially as herein shown and described.

23,820. SWORD-HILT. HENRY W. FIELD, Columbus, Ohio. Filed Oct. 5, 1894. Serial No. 525,040. Term of patent 7 years.



*Claim.*—The design for a sword hilt herein shown and described.

23,821. CARPET-BODY. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to the Worcester Carpet Company, of Massachusetts. Original application filed Aug. 22, 1894. Serial No. 521,035. Divided and this application filed Oct. 12, 1894. Serial No. 525,730. Term of patent 3½ years.



*Claim.*—The design for a carpet body, substantially as shown.



23,822. CARPET-BORDER. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to the Worcester Carpet Company, of Massachusetts. Original application filed Aug. 22, 1894, Serial No. 521,035. Divided and this application filed Oct. 12, 1894. Serial No. 525,731. Term of patent 3½ years.



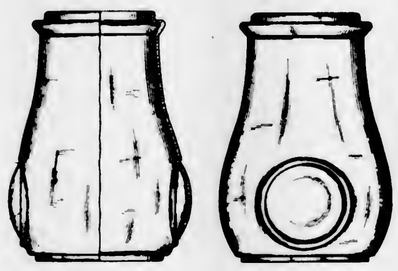
*Claim.*—The design for a carpet border, substantially as shown.

23,823. CARPET. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to the Worcester Carpet Company, of Massachusetts. Filed Aug. 22, 1894. Serial No. 521,035. Term of patent 3½ years.




*Claim.*—The design for carpets consisting of the body A and border B, substantially as shown.

23,824. LANTERN-GLOBE. WILLIAM SOMERVILLE, St. Louis, Mo. Filed Aug. 27, 1894. Serial No. 521,461. Term of patent 14 years.



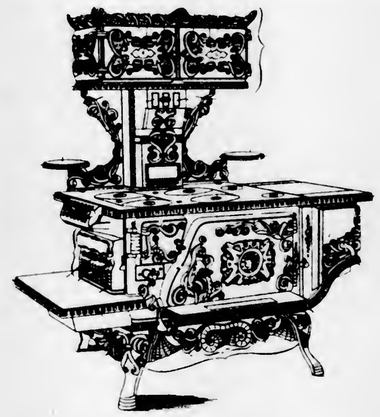
*Claim.*—The design for a lantern globe, substantially as shown and described.

23,825. TRANSMITTER-POST FOR TELEPHONES. WM. GRAY, Hartford, Conn. Filed Aug. 30, 1894. Serial No. 521,753. Term of patent 14 years.



*Claim.*—The design for a transmitter post substantially as herein shown and described.

23,826. COOK-STOVE. JOSEPH LEON GOBEILLE, Cleveland, Ohio, assignor to Isaac A. Sheppard, Franklin L. Sheppard, and Howard R. Sheppard, Philadelphia, Pa. Filed Oct. 3, 1894. Serial No. 524,837. Term of patent 14 years.



*Claim.*—1. The design for a cook stove, substantially as described and shown.

2. In a design for a cook stove, the design for the leg, substantially as described and shown.

3. In a design for a cook stove, the design for the apron around the bottom of the stove, substantially as described and shown.

4. In a design for a cook stove, the design for the front fire door, substantially as described and shown.

5. In a design for a cook stove, the design for the side fire door, substantially as described and shown.

6. In a design for a cook stove, the design for the oven door, substantially as described and shown.

7. In a design for a cook stove, the design for the end plate of the water reservoir, substantially as described and shown.

8. In a design for a cook stove, the design for the back plate, substantially as described and shown.

9. In a design for a cook stove, the design for the smoke flue, substantially as described and shown.

10. In a design for a cook stove, the design for the end plate of the warming oven, substantially as described and shown.

11. In a design for a cook stove, the design for the front doors of the warming oven, substantially as described and shown.

# TRADE-MARKS

## REGISTERED NOVEMBER 27, 1894.

25,551. SOAP AND CERTAIN NAMED TOILET PREPARATIONS. THOMAS LEEMING & Co., Montreal, Canada. Filed Oct. 29, 1894.

VELROSE

*Essential feature.*—The word "VELROSE." Used since March, 1894.

25,552. SARSAPARILLA LIQUID COMPOUND. GOLD MEDAL SARSAPARILLA COMPANY, Montpelier, Vt. Filed Apr. 10, 1893.




*Essential feature.*—The representation of the obverse side of a medal bearing a helmeted head surrounded by a wreath and the words "GOLD MEDAL SARSAPARILLA." Used since June 1, 1891.

25,553. CIGARS, CIGARETTES, SMOKING AND CHEWING TOBACCO, AND SNUFF. ADOLPH GOODMAN, Pocahontas, Va. Filed Oct. 23, 1894.

KOSSUTH

*Essential feature.*—The word "KOSSUTH." Used since September 1, 1894.

25,554. LEATHER GLOVES AND FABRIC AND WOOLEN GLOVES, CUFFS, AND MITTENS. FOWNES BROTHERS & Co., London, England. Filed Sept. 17, 1894.



*Essential feature.*—The representation of a glover's annular paring knife. Used since July, 1894.

25,555. BREWERS' VARNISH AND SHELLAC. MAYNE & Co., New York, N. Y. Filed Sept. 28, 1894.

MANNHEIMER HOLZGLASUR.

*Essential feature.*—The letters "M" and "H" and the words "MANNHEIMER HOLZGLASUR." Used since January, 1890.

25,556. LARD. FOWLER BROTHERS, LIMITED, New York, N. Y., and Chicago, Ill. Filed Oct. 29, 1894.




*Essential feature.*—The words "CORNE D'ABONDANCE" and the picture of a cornucopia. Used since December 29, 1893.

PHOTO-LITH. THE NORRIS PETERS CO. WASHINGTON, D.C.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court—Eastern District of Wisconsin.

THOMSON ELECTRIC WELDING COMPANY v. TWO RIVERS MANUFACTURING COMPANY *et al.*

*Decided September 7, 1894.*

1. THOMSON—ELECTRIC WELDING—VALID.
Patents Nos. 347,140 and 347,141, to Elihu Thomson, for improvements in electric welding. *Held* valid and infringed on motion for preliminary injunction and injunction granted.
2. SAME—PRELIMINARY INJUNCTION—PUBLIC ACQUIESCENCE—ELECTRIC WELDING.
Where a new art and apparatus, such as that of electric welding, is widely accepted by the scientific world and the public generally as novel and important, and is speedily put in operation, and the machines and rights under the patent are eagerly sought for by manufacturers, thus supplanting to a large extent the older methods—all with no question as to the validity of the patent, except in the case of the defendant—this is sufficient evidence of acquiescence to justify the issuance of a preliminary injunction, unless defendant can clearly show that the patent is invalid.

STATEMENT OF THE CASE.

This was a bill in equity by the Thomson Electric Welding Company against the Two Rivers Manufacturing Company and others for infringement of certain patents for electric welding. Complainant moved for a preliminary injunction.

*Messrs. Isham, Lincoln & Beale* and *Messrs. Fish, Richardson & Storrow* for the complainant.

*Messrs. Miller, Noyes & Miller* for the defendants.

SEAMAN, *J.*:

This hearing is on an order to show cause why preliminary injunction should not issue to restrain defendants from infringing Letters Patent granted to Elihu Thomson and owned by complainant, as follows: No. 347,140, issued August 10, 1886, relating to the art of electric welding, alleged to have been invented by the patentee, and apparatus used therein; No. 347,141, dated August 10, 1886, and No. 385,022, dated June 26, 1888, each for apparatus employed in carrying out this alleged new art. It is conceded by defendants that they have had ample time to present and that they have probably shown here all the defense they can make by affidavits and proof of the prior art. The complainant objects to the reception of two affidavits—one by George A. Johnson and one by Leo Daft—because they were brought in shortly before the hearing and long after the time stipulated for closing their proofs; but the delay seems to have been excusable and left opportunity (which was well improved by complainant) for rebutting affidavits. There being no request for further time to meet them, I deem it proper to let in these affidavits under the circumstances, and they are therefore taken into consideration for the purposes of the motion.

Since the argument, in which the points upon each side were well and clearly presented, I have taken such time as I could spare to consideration of the record and briefs and have read with care all that has been introduced upon the part of the defense, and the impressions which came to me from the argument have not been changed. The invention is employed by the defendants in welding hoops for pails and tubs, and the infringement is unquestioned, and, upon the conceded facts, is deliberate and flagrant if the patents are valid. All defense rests upon the ground of anticipation or want of invention in the patents. This issue is frankly and squarely presented upon the part of the defendants, and I do not find any denial of complainant's showing that the patents were of great utility; that the alleged new art and apparatus were received and recognized by the world at large and by electricians and scientists as novel and important and the process immediately entered into wide use and revolutionized the methods of welding metals, especially where different metals were to be welded together; that manufacturers throughout the country have acquiesced in the validity of the patents continuously since their issue; that the great list of those who have operated under them embraces some of the largest in the country, reaches into all the manufacturing States, and there are apparently no contestants other than these defendants; that the defendants entered upon infringement after this general acquiescence and recognition and after obtaining full information from complainant of the process and apparatus and after refusal to accept license upon terms accorded to other licensees, which appear reasonable on their face and are not attacked as unreasonable; that the equities of complainant entitle it to an injunction *pendente lite* for protection of its rights and business with licensees if the patents are valid or are to be considered valid for the purposes of this motion; that the issuance of an injunction would not close the works of defendants, but would simply turn them back to their former method of welding hoops for their manufactured wares. It is an established rule, for this circuit at least, that the injunctive powers of the court should not be exercised *pendente lite* against infringement of Letters Patent without some prior final adjudication of the validity of the patent or—

such continued public acquiescence in the exclusive right asserted as raises a presumption of validity; a presumption not arising from the Letters Patent, unless accompanied by public acquiescence.

(*Standard Elevator Co.* v. *Crane Elevator Co.*, 6 C. C. A., 100; 56 Fed. Rep., 718; *Electric Manufg. Co.* v. *Edison Electric Light Co.*, 61 Fed. Rep., 834.)

There has been no adjudication of the validity of these patents, and, so far as appears, no opportunity has arisen heretofore for testing their validity. Has there been public acquiescence in the claims here asserted of sufficient definiteness and duration to afford presumption of validity? This inquiry must depend in each case upon all the circumstances shown. Here was clearly an assertion of a new art and apparatus for welding. Its discovery was widely published and accepted by the scientific world in Europe and America and by the public generally as novel and important. It was speedily put into operation by the complainant, and its machines and rights for their use were at once sought by manufacturers and metal-workers, and it is unquestioned that the process had extended to an important share of the welding of metals throughout the country when the defendants entered upon its use. With an asserted invention of this character and utility and operation under it firmly established since 1888 and to a considerable extent supplanting the older methods I am satisfied that there is a sufficient showing of public acquiescence and that—

there arises such presumption of the validity of the patent as to entitle them to a preliminary injunction to restrain its infringement unless the party sought to be restrained can clearly show its invalidity. (*Blondel* v. *Société Anonyme*, 3 C. C. A., 455; 53 Fed. Rep., 98; *Sargent* v. *Seagrave*, 2 Curt., 553; Fed Cas., No. 12,365; *Sessions* v. *Gould*, 49 Fed. Rep., 855; 3 Rob. Pat., secs. 1185–1188.)

The remaining question is whether the defense have given a clear and convincing showing, first, that the invention was merely the double use or analogous use in the art of a process previously known, or, second, that it was fully disclosed in previous publications or patents and actually practiced as a welding operation prior to these patents, which should be held to overcome these presumptions and the reinforcing affidavits produced by complainants. Great research and ingenuity appear in this defense; but I am constrained to the opinion that neither proposition is maintained to the degree required for preventing an injunction and that their determination must be postponed to final hearing. They present the story frequently interposed against valuable patents of laboratory experiments, of announcements, and of patents which may have come to the verge of this discovery; but the demonstrations are not clear and the important fact stands in their way that they do not appear to have accomplished the electric weld which is shown by Thomson.

The employment of heat and pressure for the operation of welding metals is old, and it was long known that heat could be obtained by the application of an electric current. These were not Thomson's discoveries; but he found a method for employing the electric current, localizing the heat at the joint to be welded, and applying simultaneously the requisite pressure, so that the separate pieces of metal could be properly united. I am not satisfied, for the purposes of this motion, that he was anticipated in this by Despritz, Joule, Planté, Cruto, or any of the patents shown, or by any experiments of Daft or Johnson.

In this view the complainant is entitled to an injunction *pendente lite* against infringement of Letters Patent Nos. 347,140 and 347,141, and injunction will issue thereupon. With reference to Letters Patent No. 385,022, all determination will be postponed to final hearing.

## U. S. Circuit Court—Eastern District of Wisconsin.

RUSSELL v. KERN.

*Decided September* 13, 1894.

1. SMITH—MACHINES FOR MIDDLINGS-PURIFIER—DEMURRER TO BILL OF COMPLAINT SETTING UP IDENTITY OF PATENTS TO PATENTEE SUED ON WITH EXPIRED PATENTS TO SAME PATENTEE SUSTAINED.

Patents Nos. 187,923, 191,539, 208,936, 236,101, and 258,142, issued to George T. Smith, for machines for middlings purifier, examined in view of expired patents issued to him disclosed in the bill and *Held* to be substantially identical therewith and *Held*, further, to be invalid for that reason. (*Miller* v. *Eagle Mnfg Co.*, 151 U. S., 186; 66 O. G., 845; *Oval Wood Dish Co.* v. *Sandy Creek Co.*, 60 Fed. Rep., 285; 66 O. G., 1895.) and demurrer sustained.

2. SAME—DEMURRER TO BILL OF COMPLAINT—IDENTITY OF THE PATENTS DISCLOSED ON THE FACE OF THE BILL—PRACTICE.

While ordinarily the determination of a demurrer setting up the identity of the patents to the same patentee in the bill of complaint would be left to final hearing, *Held* that, as the question of indentity is one of law, to be ascertained solely from the face of the patents, exception may well be made in favor of disposing of the demurrer without waiting for the final hearing.

*Mr. George E. Sutherland* for the complainant.

*Mr. N. C. Gridley* and *Mr. Samuel Howard* for the defendant.

SEAMAN, *J.*:

On demurrer to amended bill alleging ownership in complainant and infringement by defendant of ten several Letters Patent, issued to George T. Smith, for machines for middlings-purifying and flour dressing and for process, asserted as constituting one compact machine.

Copies of the patents are annexed to and made part of the bill of complaint, and are numbered and dated as follows: First, No. 133,898, issued December 10, 1872, on application filed October 21, 1872, for machine for dressing flour; second, No. 137,495, issued April 1, 1873, on application filed October 12, 1872, for process of manufacturing flour; third, No. 154,770, issued September 8, 1874, on application filed August 17, 1874, for flour-dressing machine; fourth, No. 158,992, issued January 19, 1875, on application filed May 20, 1872, for middlings-purifying machine; fifth, No. 164,050, issued June 1, 1875, on application filed July 12, 1871, for machine for dressing flour and middlings; sixth, No. 187,923, issued February 27, 1877, on application filed December 28, 1876, for middlings-purifier; seventh, No. 191,539, issued August 28, 1877, on application filed September 8, 1874, for middlings-purifier; eighth, No. 208,936, issued October 15, 1878, on application filed August 29, 1878, for middlings-purifier; ninth, No. 236,101, issued December 28, 1880, on application filed November 2, 1880, for middlings-purifier; tenth, No. 258,142, issued May 16, 1882, on application filed January 4, 1873, for middlings-purifier.

This case was before the court upon demurrer to the original amended bill, and demurrer overruled, (58 Fed. Rep., 382.) The bill of complaint has been further amended and new points are now raised by demurrer. The following allegation in the original bill is now, among other changes, omitted, viz:

The complainant further shows upon information and belief, and charges the fact to be, that it is impossible to assess damages or estimate profits arising singly from the use of one of the devices covered by the George T. Smith's patents above mentioned, or any combination thereof less than the whole of them, and that damages cannot be assessed or profits determined in any other way than by taking the George T. Smith's middlings-purifying machine as a whole, as the same has been used by the defendant, and assessing damages or estimating profits for the use of said machine as a whole, and damages cannot be assessed or determined in parts or for parts thereof.

This allegation was deemed material at the former hearing to save for consideration the earlier and expired patents as entering into the asserted compact machine.

The original bill was filed May 31, 1892, after the following of the patents in suit had expired, viz: No. 133,898, of December 10, 1872; No. 137,495, of April 1, 1873; No. 154,770, of September 8, 1874; No. 158,992, of May 20, 1872, and No. 164,050, which was dated June 1, 1875, expired immediately thereafter and before return of subpœna and appears fully anticipated by No. 133,898. No claim to relief in equity could be based upon either of these expired patents. The objections which are now raised to the remaining and unexpired patents are serious, and, if well taken, are fatal to any relief here.

First. The objection which will be first considered is that the invention shown and described in the later and unexpired patents is the same invention shown and described in one or the other of the prior and expired patents issued to the same inventor. These prior patents are each fully disclosed by the bill as entering into a cause of action. Comparing their specifications and drawings with those of the later patents and in the light of the summary of mechanical elements claimed for each, as set out in the brief for complainants, I can find no escape from the conclusion that these later patents are covered by those of earlier issue and are invalid under the rules clearly stated in the recent case of *Miller* v. *Eagle Manufacturing Co.*, (66 O. G., 845; 151 U. S., 186;) also in *Oval Wood Dish Co.* v. *Sandy Creek Co.*, (66 O. G., 1895; 60 Fed. Rep., 285.) The differences seem to be in phraseology and not in device. Their allowance would—

operate to extend or prolong the monopoly beyond the period allowed by law.

For this comparison it does not seem that aid could be afforded by extrinsic evidence; but the question of identity is one of law, which can be determined solely from the face of the patents. (*Heald* v. *Rice*, 104 U. S., 737; *Miller* v. *Eagle Manufacturing Co.*, *supra*.)

It is not a question of patentable invention in the general sense or of inquiry into the prior state of the art, but only whether or not the subsequent patents are mere duplications or aggregations of the prior patented devices of the same inventor set out in the same bill. While this determination would ordinarily be left to final hearing, it seems so squarely presented on the face of this bill that exception may well be made in favor of the preliminary ruling here called for.

Second. The further point is urged that it appears from the face of the bill that the complainant is the assignee only of rights here under Letters Patent No. 133,898 and another patent not in suit. This involves a construction of the instruments of assignment, and beyond any consideration deemed necessary at the former hearing, if it be assumed that the amended bill excludes the granting of any relief under No. 133,898 as an expired patent. This point impresses me as well presented by demurrer, because the bill distinctly pleads these sources of title as allegations of title in complainant, and I think there is much force in the objection that the assignment may not be held applicable to the later patents, but in the view reached upon the preceding point do not find a decision necessary.

The questions here raised are fundamental, and if they can be decided at the threshold and I am right in my views it will prove a great saving to all parties to have them now determined. If I am mistaken, the correction can be had by an appeal before the large expense in preparation for final hearing shall be incurred, and in anticipation of that course I have not deemed it necessary to extend this opinion beyond a statement of my conclusions, especially as there are so many demands upon my time.

The demurrer will be sustained and the bill dismissed for want of equity.

## U. S. Circuit Court—Northern District of Ohio, Eastern Division.

THE PITTSBURGH REDUCTION COMPANY v. THE COWLES ELECTRIC SMELTING AND ALUMINUM COMPANY.

*Decided November* 9, 1894.

HALL—REDUCING ALUMINUM—REHEARING—FORMER DECISION AFFIRMED.

The decree in the above-entitled case (69 O. G., 789) sustaining Patent No. 400,766, issued April 2, 1889, to Charles M. Hall, for process of reducing aluminum, re-examined on motion for rehearing and affirmed, and motion refused.

SUR-MOTION to reopen.

*Mr. T. W. Bakewell*, *Mr. W. Bakewell*, and *Mr. George H. Christy* for the complainant.

*Mr. Loren Prentiss* for the defendant.

TAFT, *J.*:

This is a bill to enjoin the infringement of a patent for a process of making aluminum by electrolysis and to recover damages. The case has been heard on its merits and a decree rendered sustaining the patent, finding that the defendant has infringed it, and referring to a special master the question of damages. The opinion of the court is reported in 55 *Federal Reporter*, 301, (69 O. G., 789.)

A motion is now made by the defendant to reopen the case for leave to introduce new evidence and for a rehearing. The opinion on the merits was filed on January 20, 1893, and a decree entered in accordance therewith shortly afterward. Defendant then took an appeal to the Circuit Court of Appeals under the seventh section of the court of appeals act providing for an appeal from an interlocutory order granting an injunction. When the appeal was called in the Circuit Court of Appeals in June, 1893, it was dismissed by the appellant. The master then proceeded with the hearing of evidence on the question of damages. Pending this hearing both the counsel for the defendant company who had argued the cause on the

merits in this court died. Thereafter the present counsel for the defendant offered evidence before the master which the master correctly ruled to be irrelevant on the issue of damages and only relevant with respect to the merits of the controversy already decided by the court. Counsel for the defendant, by agreement with opposing counsel, brought the question of the admissibility of this evidence before the court and the action of the master was sustained. On June 21, 1894, the motion for rehearing now to be decided was filed in the words following:

And now comes the defendant and files this, his amended motion for a rehearing in this case, and for grounds for granting the same the defendant states as follows, namely:

First. That upon the original hearing of this cause upon the questions as to character and validity of the patent in suit, it was claimed and represented by the complainant that there was an important difference between the solution of the alumina in the fused cryolite bath under the patent in suit, and the fusion of alumina with cryolite as a flux in electric smelting, and that the patent in suit was for the solution of alumina in the fused cryolite bath, and not for the fusion of alumina with cryolite as a flux in electric smelting, which representation and claim the defendant believed to be true, and was thereby led into the trying of the case on its part upon that basis, and to rely upon its right, in case it should become necessary, to set up the process of electric smelting with the use of cryolite as a flux under electric smelting patents belonging to the defendant, as a standard of the comparison as to the cost of so manufacturing aluminum, as compared with the process under the patent in suit. That upon the hearing in damages the complainant objected to the introduction of evidence as to such comparative cost of manufacturing aluminum, upon the ground that the use of cryolite as a flux in electric smelting was the same as the solution in a fused cryolite bath under the patent in suit, and that all such testimony was thereupon stricken out by the court, and all further testimony on the subject was disallowed. That by the means above set forth the defendant was entirely deprived of the benefit of such testimony in any way, in law and justice, and he is now entitled to the use of the same upon the questions as to the validity or scope of the patent in suit, and the infringement of the same by the defendant.

Second. That the court erred in finding and holding that the testimony in the case showed that alumina was not dissolved in the cryolite bath of the soluble anode process to any appreciable amount, and also in finding and holding that the defendant operated said soluble anode process improperly and unfairly in respect to the soluble anodes being partly above and partly within the bath and holding that the same should have been entirely immersed in the fused bath, whereas in truth and in fact it is the uniform custom in using anodes, whether soluble or otherwise, to place them partly in and partly above the bath, as shown in the drawings attached to the Hall and Bradley patents, and whereas also in fact the alumina is or may be dissolved in ample amounts in said soluble anode process in such fused bath of cryolite, all of which the defendant can fully establish as clear and positive facts, and will do so, if allowed the opportunity, and that the defendant will also fully prove that as much alumina will be and is dissolved in such fused bath in such soluble anode process whether anodes are entirely immersed as when used in the manner which the defendant used them.

The defendant asks that upon the granting of such rehearing the parties may be allowed to introduce all such further testimony as may be relevant in such rehearing, and that the defendant may have leave to amend its answer accordingly.

The ground of the first paragraph of the motion, as elucidated in the oral presentation of it, is peculiar. It is, in effect, that complainant's counsel by their argument misled the defendant and its counsel into taking a wrong view as to the issue of the cause, and now, having discovered the real issue to be something other than it was supposed to be, defendant wishes to adduce more evidence and make further argument on the new issue, heretofore successfully obscured and concealed from the defendant, its counsel, and the court by the ingenuity of complainant's counsel. Defendant's present counsel expressly disclaims the slightest intention to impeach the good faith or professional skill of defendant's former counsel, but merely contends that in this case the arguments on behalf of complainant were so persistently sophistical and calculated to mislead that a serious mistake was made by the solicitors for the defendant.

The ground for the second paragraph of the motion is, in effect, that the court made an error in holding that the De Ville process for making aluminum by electrolysis was not an anticipation of the complainant's process, which error it is proposed to show more fully by subsequent experiments made by the defendant and now offered in evidence.

The rules which govern the court in granting a rehearing in a case like this after a full hearing and decree on the merits are well settled. In *Baker* v. *Whiting* (1 Story, 218, Case No. 786; 2 Fed. Cas., 486) Mr. Justice Story, in a full discussion of the subject, holds that a rehearing for the purpose of admitting new evidence can only be granted when it would be granted on a bill of review after final decree. In *Purcell* v. *Miner* (4 Wall., 519) the Supreme Court quote and follow Lord Chancellor Bacon's rule with reference to a bill of review.

No bill of review shall be admitted except it contain either error in law appearing in the body of the decree without further examination of matters in fact or some new matter which hath arisen any time after the decree and not on any new proof which might have been used in the decree so made. Nevertheless upon new proof that is come to light after the decree was made which could not possibly have been used at the time when the decree passed a bill of review may be granted by the special license of the court and not otherwise.

See also *City of Omaha* v. *Rettig*, (63 Fed. Rep., 1-6.)

It is not claimed by counsel for the defendant that the new evidence sought to be put in is evidence which could not have been brought before the court by due diligence at the original hearing. By the rule quoted, therefore, the motion fails to present a case for the action of the court. It is expressly held by Mr. Justice Story in *Baker* v. *Whiting*, *supra*, that the error of judgment or mistake of law by counsel as to the pertinency or force of evidence furnishes no ground for a rehearing. This rule has been followed in a number of cases. Among them may be noted decisions by Judge Woodruff in *Ruggles* v. *Eddy* (11 Blatchf., 524) and by Mr. Justice Blatchford in *De Florez* v. *Raynolds*, (16 Blatchf., 397.) See also Beach's Modern Equity Practice, sec. 835, and cases cited.

A rehearing is never granted to present cumulative evidence or for the reiteration of old arguments. (*Dunham* v. *Wynans*, 2 Page, 24; *Pfauschmidt* v. *Kelly Mercantile Co.*, 32 Fed. Rep., 667; Beach's Modern Equity Jurisprudence, sec. 836, and cases cited.)

It results from the foregoing principles that on the face of the motion no cause is made for a rehearing. In order that no injustice may be done to the defendant, however, the court has examined fully all the evidence submitted and read with care the arguments of counsel and is clearly of the opinion that even if all the evidence proposed now to be submitted to the court had been before the court at the time of the original hearing the same result would have been reached.

A full description of Hall's process is given in the opinion of the court already filed. To state it shortly the double fluoride of sodium and aluminum is placed in a crucible lined with carbon and heated to a state of fusion. The poles of an electric dynamo are connected with this bath. The negative pole connects with the carbon lining of the crucible and makes that the cathode, while the positive pole is connected with a piece of carbon suspended over and extending down into the fused mass forming the anode. Alumina—that is, the oxide of aluminum—is added to the double





fluoride after fusion and freely dissolves in it. An electric current of from four to six or seven volts is passed through the mass, causing the electrolysis or chemical disruption of the alumina into its constituents—oxygen and the metal aluminum. The oxygen gathers at the anode, while the aluminum is deposited on the carbon lining of the crucible, or the cathode, and is dipped out of the bath. The claim of the patent which was held to be infringed was as follows:

As an improvement in the art of manufacturing aluminum, the herein-described process, which consists in dissolving alumina in a fused bath composed of the fluorides of alumina and sodium and then passing an electric current by means of a carbonaceous anode through the fused mass, substantially as set forth.

In this patent Hall expressly disclaims any intention to make a claim for the apparatus. He seeks a monopoly only for the process. He maintains that his process was novel in two respects: first, in that he dissolved alumina in the fused double fluoride of sodium and aluminum as freely as sugar dissolves in water; that until he discovered that alumina would thus freely dissolve in this bath it had never been known; and, secondly, that no one had ever before succeeded in disrupting the constituent elements of alumina by an electric current. The defendant in the original hearing attempted to show by quotations from the works of a famous French chemist named De Ville that it was well known as far back as 1859, twenty-seven years before Hall made his alleged discovery, that cryolite, which is a common form of the double fluoride of sodium and aluminum found in Greenland, would dissolve alumina. Quotations from other authors who followed De Ville were also relied on for the same purpose. These quotations are set forth in the opinion of the court referred to and are there commented on.

De Ville described in his work a process for making aluminum by electrolysis. One of the alternative methods suggested by him was a fused bath of cryolite with an anode of compacted alumina and carbon. The current disrupted the fluoride of aluminum in the cryolite, sending the aluminum to the cathode and the fluorine gas, its other constituent, to the anode, where it united with the aluminum of the alumina in the anode to make fluoride of aluminum and regenerated the bath. The oxygen of the alumina thus released united with the carbon to form carbonic-acid gas. In this way aluminum was continually deposited at the anode and the fluoride of aluminum in the bath was kept constant. It was held by this court, first, that the quotations from De Ville and subsequent authors did not show that cryolite would dissolve any more than a very small per cent. of its own volume and weight of alumina, and, secondly, that the De Ville process for making aluminum by electrolysis was wholly different from the Hall process (the one in suit) in that the Hall process electrolyzed alumina, while the De Ville process electrolyzed cryolite; that in the Hall process alumina was freely dissolved without the electric current, while in the De Ville process the alumina was solid and hard until it was subjected to the electro-chemical treatment above described; that the former was a success, while the latter was an entire failure as a practical mode of making aluminum.

There were many other questions in the case than the two above stated; but these are the points upon which it is sought to introduce new evidence and to make a new argument. The evidence which the defendant now seeks to bring to the court's attention consists of certain patents issued to the Cowles Brothers and to Bradley for the reduction of refractory metallic ores by electric currents of great intensity, of quotations from books on chemistry to show that cryolite was known to the art for many years before Hall's alleged discovery as a suitable flux for the reduction of alumina, and of subsequent experiments with the De Ville electrolytic process. Cowles's patents describe an electric furnace, into which he introduces the aluminum compound mixed with small granular particles of carbon. An intense electric current is passed through the furnace and is carried by the granulated carbon. A degree of heat is thereby produced which is intended to smelt the aluminum compound and to permit an alloy with some other metal, as copper.

The Bradley invention contemplates the introduction of the refractory ore into a furnace in which are a movable carbon anode and a cathode. These are placed so near together at the beginning of the operation that when the current is applied an electric arc is formed between them. The arc generates enough heat to melt the ore near the anode and cathode, and this melted portion of the ore thereafter carries the current and gradually effects the melting of the entire mass of ore in the furnace. As soon as any part of the ore is melted electrolysis is intended to take place. The gist of the invention is the use of the electric current first to fuse the refractory ore and subsequently to electrolyze it and disrupt it into its constituent parts.

A fuller description of the Cowles and Bradley patents is contained in the opinion of this court in *Lowery* v. *Cowles Electric Smelting and Aluminum Company*, (56 Fed. Rep., 488.) The Cowles patents here relied on were in evidence at the original hearing. The Bradley patents were not introduced in evidence, though well known to defendant and its counsel. The present claim of the defendant is that, as cryolite was a well-known flux for alumina it was mere mechanical skill and involved no discovery or invention to use alumina in the Cowles and Bradley furnace (which were patented some years before the patent in suit) with cryolite as a flux; that this must result in the electrolysis of the alumina and the deposit of the aluminum at the cathode and would be the patent process claimed by complainant.

It is pressed upon the court by the present counsel for the defendant that the use of cryolite as a flux is the same as its use as a dissolvent for alumina and that the mistake made by the former counsel for the defendant and by the court was in supposing that the use of a flux in the smelting operation was different from the use of the same material as a fused dissolvent. No such distinction, even if it is maintainable, was conceded by the former counsel for the defendant or taken by the court. In a very elaborate argument by defendant's counsel at the original hearing great stress was laid by them on De Ville's use of cryolite in his chemical process for the manufacture of aluminum to free the globules of the metal from a film of alumina which prevented the union of the globules into a button and which was formed by the attraction of the aluminum and the oxygen in the moisture developed in the process for each other. This was, speaking strictly and technically, the use of cryolite as a flux with which to attract and draw to itself the obstructing alumina. It was treated by all the counsel

in the case and by the court as showing that to the extent to which it removed the alumina from the globules of aluminum the cryolite was a dissolvent of the alumina; but it was held by the court that the experiment only showed that the cryolite would dissolve a small per cent. of its own volume and quantity of alumina and gave no indication that alumina would dissolve as freely as sugar in water in fused cryolite or any other double fluoride of sodium and aluminum. It may be conceded, therefore, for the purpose of this argument, that if cryolite had been shown to be a free flux for alumina in the reduction of aluminum it would not be a new discovery to melt aluminum in fused cryolite. The decision of the court rested on the degree of the fusibility of alumina in cryolite, which De Ville's description of his process and that of those who follow him show to be a very small per cent., and did not suggest the very large per cent. of fusibility which Hall discovered and which his process requires.

It is utterly immaterial, therefore, whether the cryolite be called a flux or a dissolvent of the alumina because in either case the extent to which De Ville's experiments showed that it could dissolve or flux alumina was very small. As stated in the original opinion in this case—

> if cryolite only dissolved one per cent. of its weight in alumina, Hall's process would never have been heard of. The difference between what Hall discovered and what was known before him in this regard is the difference between complete knowledge on a subject and so little as to be wholly useless and not to suggest further inquiry. It is impossible, if De Ville had any knowledge that alumina could be dissolved in cryolite, as Hall found, that he should not have made a note of it, for all the experts agree that he observed most carefully, and noted exactly all that he observed.

But it is said that the court reached its conclusion as to the small per cent. of alumina which De Ville found cryolite would dissolve by inferring from De Ville's writings and those of subsequent chemists that cryolite would dissolve about as much alumina as the fluoride of calcium (commonly called fluor-spar) and by assuming that fluor-spar would not dissolve more than one per cent. of alumina. It was in evidence at the hearing by one of defendant's experts that fluor-spar would not dissolve more than one per cent. or one and one-half per cent. of alumina.

Evidence is now sought to be adduced to show that by actual experiment fluor-spar will dissolve twenty-five per cent. in its own weight of alumina. The person making the experiment was not submitted to cross-examination, and yet from his own statement it appears that the result was only obtained after the application of a very high degree of heat and was a surprise to the operator, in whose first experiment but four and one-half per cent. was dissolved. The statement of the defendant's expert in the evidence at the hearing showed what was then known concerning the solubility of alumina in fluor-spar. The matter was only important in the construction of De Ville's language, and as in the art it was supposed that fluor-spar dissolved but a small per cent. of alumina, even down to the time when defendant's witness testified, it is entirely irrelevant and immaterial what subsequent experiments have developed.

Another standard of comparison suggested by De Ville's description of his experiment was the solubility of alumina in fluoride of sodium, which he used often for the same purpose as the cryolite. That will dissolve even less than one per cent., as defendant's witness testified, and it is not now proposed to show this to be a mistake. The evidence which has been introduced by the defendant consists of the deposition of another expert and further quotations from De Ville's works and from subsequent chemists. Everything which has been shown is carried back to the process for making aluminum by chemical reactions discovered by De Ville, and which was the only practical process until Hall's process by electrolysis was discovered to the world. The evidence is simply cumulative and does not at all change the conclusion of the court with reference to its effect. Neither the Bradley nor the Cowles patents contain the slightest suggestion that cryolite should be used as a flux for the refractory alumina and no evidence is sought to be introduced that any one ever actually used cryolite in furnaces for that purpose.

The question presented by the defendant therefore is exactly the same as that which the court originally passed upon and which was fully argued to the court by able, industrious, and faithful counsel on elaborate briefs and evidence and was fully considered by the court. There was no mistake of counsel, there is no issue which was obscured by the arguments of complainant's counsel, and this is only an attempt to introduce evidence of a cumulative character to same point decided against the defendant, with no showing that such cumulative evidence was not within the control of the defendant or could not have been produced by reasonable diligence. The fact is that the strongest quotation upon which the expert called by the defendant relies is that which was quoted in the opinion of the court in full in the opinion already delivered.

It is said that the court made an error in supposing that the globules of aluminum produced by De Ville's chemical process, which refused to unite because of a film of alumina on their surface, were washed off by the cryolite which De Ville introduced into the process for the purpose of facilitating union of the metal globules. The expression "washed off" may not have been the most fortunate one. The court did not suppose that the cryolite was introduced into the process after the globules had been formed, because De Ville expressly states that the cryolite was put into the original mixture. But De Ville says that the action of the cryolite was to remove and dissolve the film of alumina which formed on the surface of the globules of the aluminum as soon as they were exposed to the moisture, and in the sense of dissolving off of the surface of the globules this thin, slight, and imperceptible film of alumina the action of the cryolite may properly be described as washing off the alumina.

It is to be observed that in De Ville's process no alumina was used at all; that its presence in the process and its obstruction to a union of the metal particles were matters of conjecture by De Ville, supported, it is true, by his finding a slight amount of alumina in the slag or refuse after the metal was removed. There was but a trace of alumina in this slag, and yet in order to accomplish De Ville's purpose of dissolving the alumina he found it necessary to introduce five parts of cryolite to ten parts of fluoride of aluminum and two parts of sodium. This shows conclusively that the amount of alumina which the cryolite dissolved in this experiment was a very small percentage of the cryolite used. It should be remarked, moreover, that the Hall process would still be a patentable process and the only one known for practically making aluminum by electrolysis even if it had been well known that alumina would freely dissolve in fused cryolite, for it was conclusively shown by the evidence that never before Hall did it had alumina been disrupted by electrolysis into its constituent parts. It therefore follows, even if the conclusion already reached is not well founded as to the effect of the evidence touching the solubility of alumina in fused cryolite, that Hall's patent would still be a valid one.

This brings us to the second ground of the motion—namely, that the court erred in the view which it took of De Ville's process of making aluminum by electrolysis. The argument on this head is a mere restatement of the old arguments made on the original hearing and deserves no further notice. The difference between the De Ville process and the Hall process for electrolyzing aluminum is made as plain as the court can make it in the opinion filed on the merits, and nothing that has been said on the argument of this motion in the slightest degree shakes the court's views on that point. The experiments reported do not make the case different in any respect.

The motion for a rehearing is denied.



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[BY AUTHORITY OF CONGRESS.]

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## Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., November 23, 1894.*

SIR: The Secretary of the Interior has ordered that Charles Cowley, of Lowell, Mass., be not recognized after this date as attorney or agent in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,

JOSEPHUS DANIELS,
*Chief Clerk.*

The Commissioner of Patents.

## Changes in Classification.

(ORDER No. 1026.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., November 23, 1894.*

The following changes in classification are hereby directed:

In Division III, Class 204, Electro Chemistry, sub class 23, Ozone, is abolished and the following sub-classes are established:

31. Synthesis—
32. Ozone.

In Division IV, Class 183, Fireproof Buildings, the following sub-classes are abolished:

1. Ceilings, floors, and partitions. Non-metallic
3. Cornices
6. Floor arches.
7. Sidings and partitions. Metallic

Sub-classes are established in the same class, as follows:

10. Ceilings and floors. Concrete
11. Concrete and metal.
12. Metal
13. Protected wood.
14. Tile.
15. Tile and metal.
16. Sidings and partitions. Concrete
17. Tile.

Sub-class 4, Metallic ceilings, in Class 189, Iron Structures, is abolished, and sub class 11, Metal sheathing, established.

The following sub-classes are established in Class 104, Railways:

Compensators—
148. Intermittent-grip,
149. Slot.
150. Weight.

Signals, Automatic—
151 Stops.
Switches—
152. Slip.

In Division V, Class 11, Book-Binding, the following sub-classes are established:

16. Binding.
17. Books and binding.
18. Covers.
19. Leaves.
20. Leaves and Covers.

Indexing—
21. Card-catalogues.
Writing-tablets—
22. Continuous.
23. Manifolding.

In Class 84, Music, sub-classes are established are follows:

82. Auto-harps.
Harmonic dampers—
83. Violin.
Self-playing instruments—
84. Note-sheets,
85. Charts.
86. Harmony and transposition.
87. Finger-boards,
88. Harmonica-supports,
89. Musical blocks,
90. Pedal bass organs.
Exercising devices—
91. Hand attachments,
92. Keyboard,
93. Keyboard attachments,
94. Vocal
Organ-actions—
95. Electro-pneumatic.
Keys and keyboards—
96. Touch-regulators.
Pedals—
97. Auxiliary,
98. Guards,
99. Locks.

Piano actions—
100. Dampers,
101. Flanges,
102. Frames,
103. Hammers,
104. Plectrum.
Piano tuning-pins—
105. Coupling-clamp,
106. Direct-pull,
107. Lever.
108. Presser-deflectors,
109. Push-rod and carrier,
110. Worm-gear.
Reed organs—
111. Folding.
112. With pipes.
Self-playing instruments—
113. Electro-pneumatic,
114. Spurs and picks.
Violins—
115. Supports.
Zithers—
116. Keyed,
117. Picks.

In Class 120, Stationery, sub-classes are established as follows:

Bill-files—
40. Boxes,
41. Separators,
42. Continuous-web,
43. Division leaves and pockets.
44. Followers,
45. Impaling pins,

Bill-files—
46. Packet-holders,
47. Pins and followers.
Calendars—
48. Continuous-web,
49. Disk,
50. Roller.

In Division VI the sub-classes under Class 95, Photography, are abolished and the following substituted therefor:

95. Photography—
1. Actinometers,
2. Baths.
3. Burnishing,
4. Cameras,
5. Magazine,
6. Panoramic,
7. Camera-stands,
8. Coloring,
9. Daguerreotypy,
10. Dark rooms,
11. Embossing,
12. Finders,
13. Focusing devices,
14. Heaters and driers,
15. Mechanical printing,
16. Mounting,
17. Photo-sculpture,

95. Photography—
18. Pictures.
19. Plate holders,
20. Magazine,
21. Printing and vignetting,
22. Processes,
23. Retouching,
24. Roll holders,
25. Shutters,
26. Curtain,
27. Diaphragm,
28. Pivoted,
29. Sliding,
30 Studios,
31. Accessories,
32. Surfaces,
33. Sensitive,
34. Trays and tanks.

Sub-class 41, Corn Appliances, in Class 128, Surgery, is abolished; also sub-class 48, Scalpels.

In Division VII, Class 56, Harvesters, sub-classes 10, Grain-bands, and 101, Hay-racks, are abolished, and also sub-class 44, Masks, in Class 46, Games and Toys.

In Division XII, Class 57, Hoisting, the following sub-classes are established:

Lifting-jacks—
97. Bar and cam-lever,
98. Lever, bar, and clutch-loop,
99. Lever, bar, and double-acting pawls,
100. Lever, bar, and pawl,
101. Lever and lifting-bar,
102. Rack and pinion.
Stump-extractors—
103. Drum,
104. Lever,
Stump-extractors—
105. Lever and drum,
106. Screw,
107. Bale and box hooks,
108. Lewises.
Lifters—
109. Barrel and box,
110. Picture,
111. Spittoon,
112. Spool,
113. Store-goods.

In Class 64, Journal-Boxes, Pulleys, and Shafting, sub-classes are established as follows:

Journal-boxes—
Lubricating—
31. Band applying,
32. Centrifugal
33. Roller-applying—
34. Elastically-supported
35. Yieldingly-supported pads.
Roller-bearings—
36. Ball,
37. Ball and cylinder,
38. Cylinder—
39. Circular series.
Pulleys—
40. Grip.

The following sub-classes are established in Class 74, Machine Elements:

Cranks and levers—
33. Handles.
Gearing—
34. Planetary,
35. Eccentric,
Gearing—
36. Screw.
Machine brakes—
37. Strap.

In Division XXXI, Class 87, Oils, Fats, and Glue, the following sub-classes are abolished:

2. Bleaching.
3. Candles and apparatus.
10. Lubricating. Treating oils for
14. Soap.
20. Wood-oils.

The following sub-classes are established in the same class:

21. Candles.
22. Candle apparatus.
23. Soap articles.
24. Soap-frames.
25. Soap-presses.
26. Suint.

In Division XXXIV a new class is established, to be numbered and entitled 213, Railway Draft Appliances. The sub-classes under Couplings, Class 105, Railway Rolling Stock, are transferred thereto, and a new sub-class is established in the same class, to be known as 1, Draft-cables.

JOHN S. SEYMOUR,
*Commissioner.*

## Indexes to Periodicals.

The following journals containing indexes to periodical literature may be found on file in the reading room of the scientific library:

***Engineering Review***, London, a monthly synoptical index of periodical literature in the English, French, and German languages, including hydraulic, railway, mechanical, electrical, mining, metallurgical, marine, military, and gas engineering.

***Electrical Engineering***, Chicago, a monthly synoptical index of electrical literature.

***Electrical World***, New York, a weekly digest of electrical articles.

***Journal of the Association of Engineering Societies***, Chicago, a monthly synoptical index of civil-engineering literature, mostly American.

***Engineering Magazine***, New York, a monthly title-index of engineering articles in the English language only.

## Issue of December 4, 1894.

| | | |
|---|---|---|
| **Patents** | 420— | No. 530,076 to No. 530,495, inclusive |
| **Designs** | 30— | No. 23,827 to No. 23,856, inclusive. |
| **Trade-Marks** | 62— | No. 25,557 to No. 25,618, inclusive. |
| **Labels** | None. | |
| **Prints** | None. | |
| **Reissues** | None. | |
| **Total issue** | 512 | |

To citizens of the United States: Patents and Designs—401; Trade-Marks and Labels—57.

To citizens of foreign countries: Patents and Designs—49; Trade-Marks and Labels—5.

# APPLICATIONS UNDER EXAMINATION.

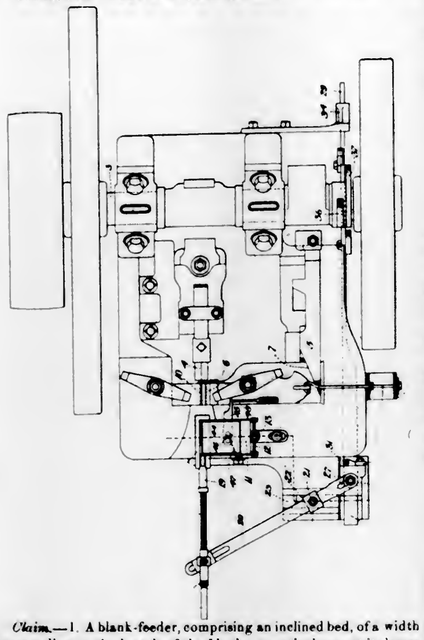
*Condition at Close of Business November 27, 1894.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | Oct. 29 | Nov. 24 | 92 |
| 18 | Steam-Engineering, etc. | Oct. 28 | Nov. 22 | 201 |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Oct. 29 | Nov. 21 | 59 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | Nov. 1 | Nov. 20 | 116 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire-Escapes and Ladders, etc. | Nov. 14 | Nov. 19 | 71 |
| 26 | Electricity, Generation, Distribution, Motive Power, Electric Railways, etc. | Oct. 29 | Nov. 20 | 58 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | Oct. 29 | Nov. 19 | 86 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Oct. 29 | Nov. 19 | 112 |
| 8 | Furniture, Beds, Store Furniture, etc. | Oct. 29 | Nov. 17 | 183 |
| 2 | Farm Stock, Products, etc. | Oct. 29 | Nov. 15 | 130 |
| 12 | Mechanical Engineering, Store-Service, etc. | Oct. 29 | Nov. 15 | 134 |
| 20 | Builders' Hardware, Safes, Dentistry, Undertaking, Artificial Limbs, etc. | Oct. 28 | Nov. 14 | 132 |
| 3 | Metallurgy, Metal-Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | Oct. 29 | Nov. 10 | 70 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | Oct. 29 | Nov. 5 | 100 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Oct. 29 | Nov. 5 | 139 |
| | *Between one and two months.* | | | |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Sept. 28 | Nov. 22 | 93 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | Oct. 1 | Nov. 19 | 310 |
| 21 | Textiles, etc. | Sept. 21 | Nov. 19 | 128 |
| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Oct. 3 | Nov. 13 | 171 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, Surgery. | Oct. 15 | Nov. 12 | 220 |
| 23 | Instruments of Precision, Acoustics, etc. | Oct. 6 | Nov. 12 | 154 |
| 34 | Railway-Cars and Fluid-Pressure Railway-Brakes. | Oct. 5 | Nov. 12 | 214 |
| 17 | Paper-Manufactures and Printing | Sept. 27 | Nov. 12 | 171 |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Oct. 17 | Nov. 10 | 149 |
| 10 | Carriages and Wagons | Oct. 15 | Nov. 10 | 163 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, Cutlery, etc. | Oct. 1 | Nov. 9 | 158 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | Oct. 22 | Nov. 5 | 272 |
| 19 | Stoves and Furnaces | Oct. 18 | Nov. 3 | 239 |
| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting, and Leather Working Machinery. | Sept. 29 | Nov. 1 | 324 |
| 30 | Lamps, Gas-Fittings, Linotyping, Type-Writing Machines, Optics. | Sept. 29 | Oct 9 | 251 |
| | *Between two and three months.* | | | |
| 29 | Wood-Working Machines, Carpentry, Coopering and Roofing, etc. | Aug. 28 | Nov. 17 | 166 |
| 1 | Tillage and Fences | Sept. 30 | Nov. 10 | 269 |
| | *Between three and four months.* | | | |
| 24 | Sewing-Machines, Crinoline and Corsets, Apparel, and Toilet. | Aug. 14 | Nov. 15 | 126 |
| | **Total number of applications awaiting action** | | | 5,261 |
| | *Under one month in arrears.* | | | |
| | **Designs** | Nov. 14 | Nov. 20 | 77 |
| | **Trade-Marks** | Nov. 23 | Nov. 24 | 39 |

# PATENTS

## GRANTED DECEMBER 4, 1894.

530,076. **BOLT-HEADING MACHINE.** JOHN H. ALKER, Pittsburg, Pa., assignor to the Oliver Iron and Steel Company, same place. Filed Dec. 29, 1891. Serial No. 416,466. (No model.)



*Claim.*—1. A blank-feeder, comprising an inclined bed, of a width corresponding to the length of the blanks, a vertical case at its lower end, a grooved casting beneath the case, and a rod arranged to reciprocate in the groove of said castings; substantially as described.

2. A blank-feeder, comprising an inclined bed, of a width corresponding to the length of the blanks, a rod arranged to reciprocate in the lower part of said feeder, a pin upon the outer end of the rod located in the slot of a lever, and means for actuating said lever; substantially as described.

3. A blank-feeder, comprising an inclined bed or bopper, of a width corresponding to the length of the blanks, a reciprocating rod in the lower part of the feeder, a lever arranged to actuate the rod, and an adjustable fulcrum for said lever; substantially as described.

4. A blank-feeding mechanism comprising an inclined feeder, a reciprocatory rod in the lower part thereof, a lever arranged to actuate the rod, a post at the outer end of the lever, and a reciprocating rod passing through the post and secured thereto by a removable pin; substantially as described.

5. As a connection between a lever and its actuating rod, a post upon the lever through which the rod passes, a handle pivoted to the post and carrying a pin, and an aperture in the rod arranged to receive the pin; substantially as described.

6. A blank feeding mechanism comprising an inclined feeder, a rod arranged to reciprocate in its lower portion, a pin upon the rod about which a slotted lever bears, and an actuating bar having a pin engaging a slot in the other end of the lever; substantially as described.

7. In a blank-feeder, a feeding-rod, a lever having a slot at each end and a movable fulcrum, an actuating rod having a pin entering one of said slots, and a pin upon the feeding-rod engaging the other slot; substantially as described.

8. A blank-feeder, comprising an inclined bed, having a slide therein, and a lower upright case or guide, a lever arranged to actuate said slide, and a tappet upon a movable part and engaging the lever; substantially as described

9. A blank-feeder, comprising a hopper containing a reciprocating rod, a lever carrying a perforated post, a stem upon the rod passing through the post, and a spring between the post and rod; substantially as described.

530,077. **PAVEMENT OF PLASTIC COMPOSITION.** JOSEPH H. AMIES, Philadelphia, Pa., assignor to the Amies Pavement Company, Camden, N. J. Filed May 8, 1893. Serial No. 473,431. (No specimens.)

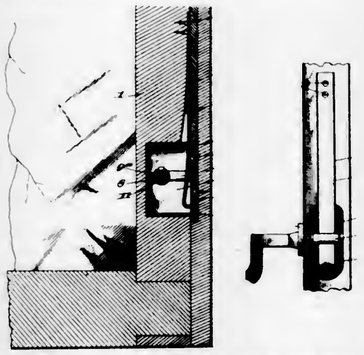


*Claim.*—1. In the manufacture of pavements, composed in part of vegetable substances, a gummy composition, having the qualities of a fixed or non-drying oil, consisting of soft-pitch, kidney-oil, and rosin, in about the proportions specified herein, and treated in the manner substantially as described.

2. A plastic pavement composed of vegetable fibers saturated with a composition of soft-pitch, kidney-oil, and rosin, and filled with powdered peat, cement, and mineral matter ground fine, the whole being compacted together under suitable pressure, substantially as described.

3. Paving blocks composed of the plastic composition herein described, having for its ingredients soft pitch, kidney oil, rosin, and vegetable fiber, each block consisting of three distinct layers of different densities, arranged and compressed together, to combine durability, elasticity, and a proper surface finish, substantially as described.

530,078. **SASH HOLDER AND FASTENER.** CHARLES W. AMMERMAN, Greenwood, Del. Filed Dec. 29, 1893. Serial No. 495,116. (No model.)



*Claim.*—The combination with a vertical notched plate permanently secured to a window frame, of a spring latch secured at its upper end to the outer edge of the side bar of a sash and provided at its lower end with a perpendicularly disposed outwardly bent locking end or catch to engage one of the notches in said plate, a spindle arranged perpendicular to the plane of the sash, and mounted in bearings therein, said spindle terminating beyond the inner surface of the sash in a depending handle, a bridle having a sleeve to receive said spindle within a cavity in the side bar of the sash and having a cross-bar to bear against the outer surface of the spring latch, and a pin engaging registering perforations in said sleeve and spindle, whereby when the lower end of the handle carried by the spindle is swung inwardly, the cross-bar at the outer end of the bridle is swung downwardly and disengages the locking end or catch of the spring latch from the notched plate, substantially as specified.

530,079. CURTAIN-FIXTURE. STEWART L. BERGSTRESSER and CHARLES F. MIGHOT, Smethport, Pa. Filed Jan. 12, 1894. Serial No. 496,644. (No model.)



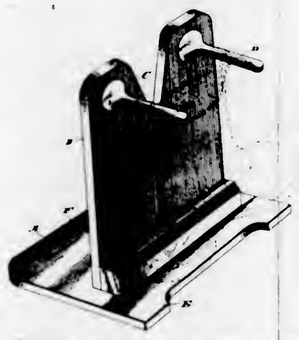
*Claim.*—1. The combination of a cylindrical casing having a curtain slot and a roll head at both edges of said slot, an ordinary pawlless spring-actuated shade roller mounted for rotation inside of said casing and provided at one end with a series of projections, and a sliding stop arm mounted to slide on the casing beneath the edge of one of the roll beads and adapted to engage with the stop projections at one end of the roller, substantially as set forth.

2. In a curtain fixture, the cylindrical casing having a top slot, roll beads at both edges of the top slot and opposite open ends, removable flanged barrel caps fitted over the open ends of the casing and having openings, an ordinary spring-actuated shade roller mounted for rotation within the casing and having its spindles engaging the openings in said caps, the shade secured fast at its upper end and winding and unwinding on the roller, and a sliding stop device mounted on the casing and adapted to engage the roller, substantially as set forth.

3. In a curtain fixture, the suspended spring-actuated shade roller having stop lugs near one end, the slotted casing barrel inclosing the roller therein and provided with roll beads and a slot at one end, and a grooved stop arm adapted to slide on the casing below the lower edge of one of said roll beads and having a stop end working in the slot at one end of the casing and in the path of the stop lugs on the roller, substantially as set forth.

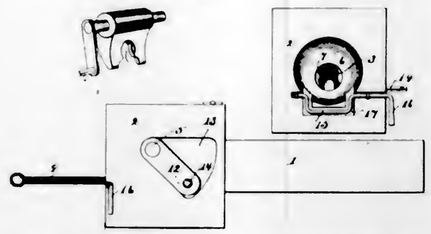
4. In a curtain fixture, the combination of the suspended roller having a radial series of projecting stop lugs at one end, the cylindrical casing inclosing the roller therein, and a sliding stop arm mounted on the casing and having a flanged stop end adapted to be thrown in and out of the path of the stop lugs on the roller, substantially as set forth.

530,080. BOOTJACK. CHARLES BISANZ, Red Lodge, Mont. Filed July 6, 1892. Serial No. 439,112. (No model.)



*Claim.*—In a boot-jack, the combination with a base-plate, of a perpendicular plate, B, attached at one end to the base-plate at an intermediate point of the latter, and provided at the opposite end with a heel-notch and parallel perpendicular pins, the portion of the base plate upon one side of the plate B being equal in projection with said pins, and the portion upon the other side thereof being designed as a foot-rest when the plate B is in its vertical position, substantially as specified.

530,081. CAR-COUPLING. JAMES C. BISHOP, Marble Falls, Tex., assignor of two-thirds to S. H. Ussery and R. L. Harrell, same place. Filed Dec. 19, 1893. Serial No. 494,042. (No model.)



*Claim.*—1. The combination with a coupling head having a front orifice, a pivoted gate provided with a link retaining aperture and a guide recess having concave converging sides, a rectangular supporting lever adapted to rest normally in a correlatively shaped recess in the front of the coupler head, mechanism to one side of the coupler head operatively connected with the gate and with the supporting lever respectively, whereby they may be raised or lowered independently of each other, substantially as specified.

2. The combination with a coupling head provided with a funnel shaped orifice 6 and an angular recess 17, of a pivoted gate 3 provided with a central aperture 7 and a guide recess 8, of a supporting lever 15 adapted to rest normally within the recess 17 in the face of the coupler, a gate actuating lever 12, and an actuating lever 16, substantially as specified.

3. The combination with a hollow coupling head provided with a funnel shaped front orifice 6, a rectangular recess 17 in its face and a recess 13 in its side of the gate 3 provided with a central aperture 7 and guide recess 8, a lever 12 movable in the recess 13, a supporting lever adapted normally to rest in the recess 17, and an actuating lever 16 secured thereto and to one side of the coupling head, substantially as specified.

4. The combination in a car coupling, of a draw-head having a mouth or orifice and provided in its front face below the same with a recess, and a pin support or lever arranged in said recess and journaled at opposite sides of the draw-head and provided with a downward bend lying below the mouth or orifice of the draw-head, whereby during the operation of coupling it is safely housed out of contact with the link or the approaching draw-head, substantially as described.

530,082. TELEGRAPH-KEY. LOUIS D. BLISS, Washington, D. C., assignor to Charles W. Needham, same place. Filed Mar. 7, 1894. Serial No. 502,760. (No model.)



*Claim.*—1. A noiseless transmitting key, comprising a non-resonant support and a contact mounted on the support, substantially as described.

2. A noiseless transmitting key, comprising a non-resonant contact-support, a contact mounted on the support, and a non-resonant contact-stop, substantially as described.

3. A noiseless transmitting key, provided with a non-resonant contact support, comprising superposed layers of fabric with a conductor interposed between the layers, and a contact mounted on the support, substantially as described.

4. A noiseless transmitting key, comprising a non-resident contact support consisting of superposed layers of fabric, a conductor spirally arranged between the superposed layers, and a contact mounted on the support connected to the conductor, substantially as described.

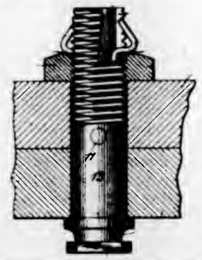
5. The combination with an electric circuit, of a noiseless transmitting key comprising a non-resonant support and a contact mounted on the support and a practically noiseless receiver, both the key and receiver being connected in said electric circuit, substantially as described.

6. The combination with an electric circuit, of a noiseless transmitting key, comprising a non-resonant contact support and a contact mounted on the support, a non resonant receiver included in the circuit, and a retarding signal device also included in the circuit, substantially as described.

7. The combination with an electric circuit, of a noiseless transmitting key, comprising a non-resonant contact support and a contact mounted on the support, a non-resonant receiver included in the circuit, a magnet also included in the circuit, an armature for the magnet, and retarding devices connected to the armature, substantially as described.



530,083. NUT OR BOLT LOCK. FRANK B. BRADLEY, Chicago, Ill., assignor to the Ajax Forge Company, same place. Filed Mar. 26, 1894. Serial No. 505,106. (No model.)



*Claim.*—1. The combination with a bolt, pin or similar device longitudinally socketed, of a locking attachment consisting of a resilient body-portion having a plurality of outwardly-pressing arms and shoulders, said attachment having its body inclosed within the socketed body of a bolt, or pin or similar device, so that its shoulders shall be external thereto, substantially as set forth.

2. A locking-attachment for bolts, pins, &c., consisting of a resilient body-portion having a plurality of outwardly pressing arms and provided with outwardly extending shoulders and also with inwardly inclined portions; said attachment being designed for application to a bolt or pin, or similar device, so that the shoulders and inclines shall be external thereto, substantially as set forth.

3. The combination with a bolt, pin or similar device longitudinally socketed, of a locking attachment consisting of a resilient body-portion having a plurality of outwardly pressing arms and shoulders located at the free end portions of said arms, said attachment having its body inclosed within the socketed body of a bolt, pin or similar device so that its shouldered portions shall be external thereto, substantially as set forth.

4. The combination with a bolt, pin, or similar device, of a locking attachment consisting of a bent resilient body-portion having a plurality of outwardly pressing arms and provided at the free end-portions with shoulders external to the pin or bolt and also with inwardly inclined portions terminating at a point within the exterior of said pin or bolt, substantially as set forth.

5. The combination with a pin, bolt, or similar device having a longitudinal socket opening at one of its ends, of a locking attachment consisting of a resilient body-portion inserted into said socket and having one or more shoulders and one or more inclines external to the socket and adapted to engage a nut upon the bolt, substantially as set forth.

6. The combination with a pin, bolt or similar device having a longitudinal socket opening at one of its ends and longitudinal slits at said open end, of a locking-device consisting of a resilient body-portion inserted into said socket and having one or more shoulders and one or more inclines working through said slits and constructed to engage a nut upon the bolt, substantially as set forth.

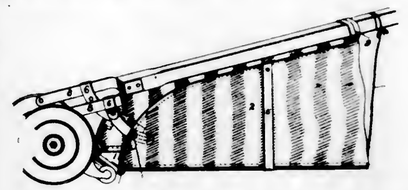
7. The combination with a pin, bolt or similar device having a longitudinal socket opening at one of its ends, of a locking-attachment consisting of a resilient body-portion inserted into said socket and having shoulders and inclines external thereto, adapted to engage a nut upon the bolt and a removable retaining-device for preventing displacement of the locking-device from the socket, substantially as set forth.

8. The combination with a bolt, pin or similar device longitudinally socketed, of a locking-attachment consisting of a resilient body-portion inclosed within said longitudinal socket in the body-portion of the bolt or pin and having an arm provided with a shoulder exposed from a bolt or pin, and an inclined portion terminating within the socket, substantially as set forth.

530,084. GRASS-CATCHER FOR LAWN-MOWERS. JOSEPH A. BUBIER, Boston, Mass. Filed Apr. 25, 1894. Serial No. 508,977. (No model.)

*Claim.*—1. The combination with a lawn mower of a receptacle for grass adjustably attached thereto, said receptacle consisting of a stationary bottom and an inclosing curtain separable therefrom.

2. The combination with a lawn mower of a receptacle for grass adjustably attached thereto, said receptacle consisting of a stationary bottom, an upper frame fixed with reference to said bottom, a lower frame capable of being lifted from said bottom and an inclosing curtain supported by said upper and lower frames.

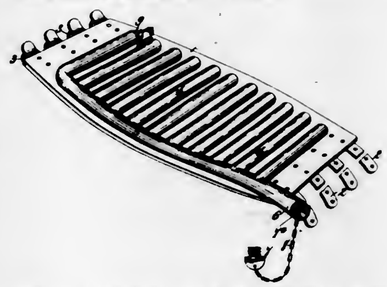


3. A grass catcher for lawn mowers consisting of a stationary bottom, a U-shaped upper frame connected at its free ends with said bottom means for holding said upper frame in other respects at a distance above said bottom, a U-shaped lower frame having its free ends hinged to said bottom, an inclosing curtain supported by said upper and lower frames, means for detachably holding said lower frame in close relation to said bottom and means for adjustably attaching said grass catcher to a lawn mower.

4. A grass catcher for lawn mowers consisting of a stationary bottom, an upper frame supported at a fixed height therefrom, a lower frame capable of being lifted from said bottom, an inclosing curtain supported by said upper and lower frames surrounding three sides of said bottom, the free sides of said inclosing curtain having lateral movement independent of said bottom, and means for adjustably attaching said catcher to a lawn mower.

5. A grass catcher for lawn mowers consisting of a stationary bottom, having a wire 12 along each side, fixed about midway of its length but left free at its forward end for lateral movement within a guide 13, a U-shaped upper frame 3 having its downwardly curving free ends connected with the free ends of said side wires 12 and fixed in other respects at a distance above said bottom by supports 5, clips 6 adapted to engage the braces 8 of the mower handle and slotted at their opposite ends to allow adjustable connection with the frame 3 by means of the bolt 7, an inclosing curtain supported by said upper and lower frames, a catch 10 for retaining said lower frame in close relation to said bottom, a controlling cord 11 for releasing said catch and a strap 9 for adjustably attaching the upper frame 3 to the handle of the mower, substantially as described.

530,085. HOT-WATER BANDAGE FOR TREATING HORSES. ROBERT BUSTIN, Boston, Mass., assignor of two-thirds to John R. McConnell and James A. Van Wart, St. Mary's, Fredericton, Canada. Filed June 4, 1894. Serial No. 513,422. (No model.)

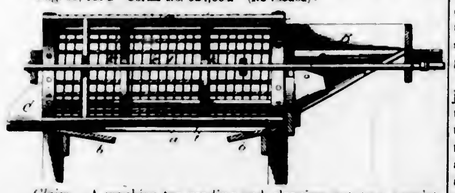


*Claim.*—1. An abdominal pad for the treatment of diseases in animals, consisting of a sheet of flexible material having straps and buckles at its ends provided upon one side with a series of tubes all closed at one end and formed or united in one piece with said pad transversely to the length of the latter and a pipe extending along one of the longer sides of the pad and having communication with all of said tubes, at one end of the latter the end of the pipe being bent into parallelism with said tubes at one end of the series and provided with a plug to close the opening in its end, substantially as described.

2. An abdominal pad for the purposes described, consisting of a sheet of rubber having straps and buckles at its ends, a series of tubes arranged transversely to the length of said pad and formed or united in one piece with the latter, a filling pipe arranged along one longitudinal margin of the pad and communicating with one end of all the tubes their other ends being closed, said filling-pipe being integral with the communicating pipes and having its end turned into parallelism with the series of tubes and provided with a plug to close

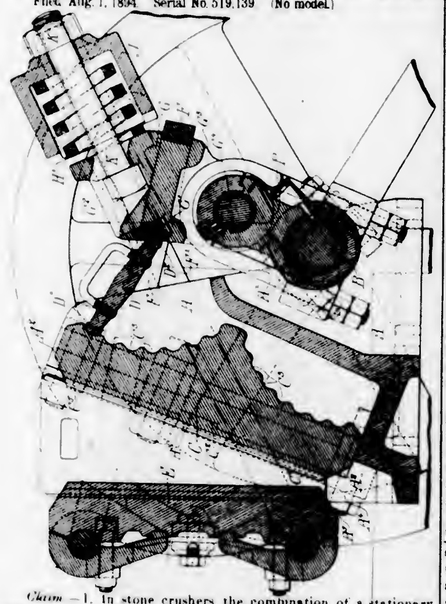
its extremity, the other end of the filling-pipe having an extension closed by a plug, substantially as described

530,086. MACHINE FOR SEPARATING AND CLEANING POTATOES. IRA C. BUTLER and GARRETT S. SHEPARD, Lincsville, Pa. Filed Aug. 23, 1894. Serial No. 521,084. (No model.)



*Claim.*—A machine for grading and cleaning potatoes, consisting of a suitable frame and a rotatable screen, consisting of hoops at its ends arranged in pairs, grooved blocks located between the hoops and longitudinal braces connected thereto and provided with grooved seats, and fibrous cords extending longitudinally of the screen and their ends secured in position around the grooved blocks by a knot and wedge, and cords extending spirally around the screen and engaging with the grooved seats in the braces, substantially as and for the purpose specified

530,087. STONE-CRUSHER. CHARLES L. CARMAN and PHILETUS W. GATES, Chicago, Ill., assignors to the Gates Iron Works, same place. Filed Aug. 1, 1894. Serial No. 519,139. (No model.)



*Claim.*—1. In stone crushers, the combination of a stationary crushing jaw, a reciprocating crushing jaw opposite the stationary crushing jaw arranged to have an equal or variable motion at each end thereof, means for actuating the reciprocating jaw, and means for adjusting the actuating mechanism to impart an equal or variable motion to each end of the reciprocating jaw so that the position of the imaginary pivot upon which the reciprocating jaw swings is changed with each adjustment of the actuating mechanism, substantially as described.

2. In stone crushers, the combination of a stationary crushing jaw, a reciprocating crushing jaw opposite the stationary jaw arranged to have an equal or variable motion at each end thereof, toggle lever mechanism arranged to actuate the reciprocating jaw, and means for adjusting the position of the toggle to impart an equal or variable motion to each end of the reciprocating jaw so that the position of the imaginary pivot upon which the reciprocating jaw swings is changed with each adjustment of the toggle, substantially as described.

3. In stone crushers, the combination of a stationary crushing jaw provided with a series of toggle bearing grooves arranged on the arc of a circle for the reception of one end of a toggle plate, a reciprocating crushing jaw arranged to have an equal or variable motion at each end thereof, means for actuating the reciprocating crushing jaw, and a toggle plate adapted to have one end seated in any one of the series of toggle bearing grooves and its opposite end engaging with the actuating mechanism of the reciprocating jaw to impart an equal or variable motion to each end of the reciprocating jaw so that the position of the imaginary pivot upon which the reciprocating jaw swings is changed as the toggle is changed from one toggle bearing groove to another, substantially as described.

4. In stone crushers, the combination of a stationary crushing jaw, a reciprocating crushing jaw arranged to have an equal or variable motion at each end thereof, a frame portion to support the mechanism and provided with a series of toggle bearing grooves arranged on the arc of a circle for the reception of one bearing end of a toggle plate, means for actuating the reciprocating crushing jaw, and a toggle plate arranged to have one end seated in one of the series of toggle bearing grooves and its other end engaging with the actuating mechanism on the reciprocating jaw to impart an equal or variable motion to each end of the reciprocating jaw and regulate the position of the imaginary pivot upon which the reciprocating jaw swings, so that such position is changed as the toggle is changed from one toggle bearing groove to another, substantially as described.

5. In stone crushers, the combination of a reciprocating crushing jaw adapted to have equal or variable motions at each end thereof, an invertible crushing plate provided with series or sets of toggle bearing grooves so arranged that the position of one series will exactly coincide with the other when the position of the crushing plate is inverted, a toggle plate adapted to be seated in any one of the series of toggle bearing grooves and connected with the reciprocating jaw to impart an equal or variable motion to each end of the reciprocating jaw, and means for vibrating the toggle plate, substantially as described.

6. In stone crushers, the combination of a stationary crushing jaw, a reciprocating crushing jaw opposite the stationary jaw so that between such jaws material may be crushed, means for actuating the reciprocating jaw, tension bars connected with the lower end of the reciprocating crushing jaw and its actuating mechanism to impart a reciprocating motion to the crushing jaw, and a series of springs interposed between the actuating mechanism and the tension bar to which may be given an initial compression permitting yielding to strains beyond a predetermined amount, substantially as described.

7. In stone crushers, the combination of a stationary jaw, a reciprocating crushing jaw opposite the stationary jaw and between which material may be crushed, a pivot for the reciprocating jaw upon which it may be vibrated and reciprocated and which prevents a motion in the plane of the face, and means for actuating the reciprocating jaw, substantially as described

8. In stone crushers, the combination of a stationary crushing jaw, a reciprocating crushing jaw mounted upon a laterally movable pivot and arranged to have an equal or variable motion at each end of the reciprocating jaw, and means for actuating the reciprocating crushing jaw, substantially as described.

9. In stone crushers, the combination of a stationary crushing jaw, a reciprocating jaw opposite thereto and between which and the stationary jaw material may be crushed, tension members connected with the upper and lower ends of the reciprocating jaw and the actuating mechanism to impart motion to such reciprocating jaw, and actuating mechanism to operate such tension members, substantially as described.

10. In stone crushers, the combination of a stationary crushing jaw, a reciprocating jaw opposite thereto and between which and the stationary jaw material may be crushed, tension rods connecting the upper end of the reciprocating crushing jaw with the actuating mechanism, adjustable tension bars connected with the lower end of the reciprocating jaw and the elastic yielding member, an elastic yielding member adapted to receive an initial compression and connected with the actuating mechanism, and actuating mechanism to operate such tension bars and thereby the reciprocating crushing jaw, substantially as described.

11. In stone crushers, the combination of a reciprocating crushing jaw adapted to have a variable reciprocating motion, a stationary crushing jaw between which and the reciprocating jaw material may be crushed, a series of toggle bearing grooves in the rear of the stationary jaw, a toggle plate having one end engaging with the actuating mechanism of the crusher and the opposite end engaging with one of the series of toggle bearing grooves and adapted to be seated in any of the others to impart a desired variable motion to the reciprocating jaw, tension members connected with the reciprocating crushing jaw and the cross head, a cross head, a pitman connecting the cross head and mounted upon a crank shaft, and a crank shaft for actuating the machine, substantially as described.

12. In stone crushers, the combination of a reciprocating crushing jaw adapted to receive a variable reciprocating motion, a stationary crushing jaw opposite thereto and between which and the reciprocating jaw material may be crushed a pitman provided with a cross head mounted upon and adapted to be actuated by a rotating crank shaft, two sets of tension bars connecting the upper and lower ends of the reciprocating jaw with the cross head, a yielding member interposed between one set of the tension bars and the cross head to provide an initial yielding pressure, and a crank shaft upon which the pitman is mounted for actuating the crushers, substantially as described.

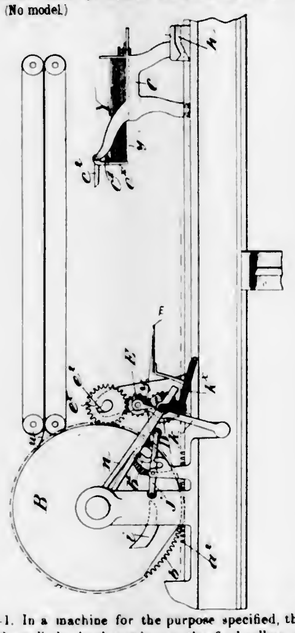


530,088. BRUSH FOR DYNAMO-ELECTRIC MACHINES. PIERRE J. C. CARBON, Pont-de-Claix-Isère, France. Filed Feb. 10, 1894. Serial No. 499,732. (No model.) Patented in France Apr. 22, 1893, No. 229,554, and in England Jan. 16, 1894. No. 993.



*Claim.*—A brush for an electrical machine comprising a sheet of wire gauze, *a*, coated and impregnated with a paint *b*, composed of plumbago and an adhesive substance, the said coated sheet having its main portion arranged in zig-zag folds and its outer portion wrapped about the folded portion and its free end secured, substantially as set forth.

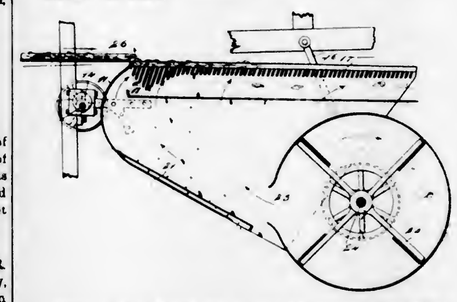
530,089. FEEDER FOR PRINTING-MACHINES. GEORGE R. CLARKE, Montel, Tex., assignor to the Danbury Printing Press Company, Danbury, Conn. Filed Apr. 15, 1893. Renewed May 3, 1894. Serial No. 509,993. (No model.)



*Claim.*—1. In a machine for the purpose specified, the combination with the cylinder having grippers, the reciprocating bed which drives the cylinder, and the support for the sheets mounted on and moving with said bed, of the feed-rollers, rotating in unison with the cylinder, means for exhausting the air from the main feed-roller at the moment the advancing end of the pile of sheets is over the holes in the roller, whereby the latter is caused to seize the bottom sheet, and means substantially as described for holding back the sheets of the pile while the lowermost sheet is being drawn out by the rollers, as set forth.

3. In a machine for the purpose specified, the combination with the cylinder having grippers, the feed-rollers revolving in unison therewith, means substantially as described for raising and lowering the exhaust feed-roller whereby the direction of movement of the sheet is changed, means for exhausting air from said roller, and a reciprocating support for the pile of sheets arranged to move in unison with the said rollers and to advance the forward end of the pile of sheets over the exhaust sheet-roller, as set forth.

530,090. SHOE ATTACHMENT FOR THRASHING-MACHINES. GEORGE F. CONNER, Watertown, S. D. Filed Mar. 9, 1894. Serial No. 502,995. (No model.)



*Claim.*—1. In a fanning mill or shoe attachment to thrashing machines, the combination, with a shoe, a driving mechanism imparting to the forward end thereof a rotary movement, the rear portion of the shoe being link supported, and a fan, the casing of which has an outlet into the rear lower portion of the shoe, of an upper riddle adapted to receive the material to be cleaned, the said riddle at its receiving point having its under face carried downward in substantially angular form, a second riddle located beneath the upper riddle and extending beneath the forward portion of the upper riddle but terminating short of the forward end of the shoe frame, whereby a blast of air while passing through both riddles throughout substantially their entire length, will be directed with great force through the forward portion of the upper riddle, as and for the purpose set forth.

2. In a fanning mill or shoe attachment to thrashing machines, the combination, with a shoe, a driving mechanism imparting to the forward end thereof a rotary movement, the rear portion of the shoe being link supported, and a fan, the casing of which has an outlet into the rear lower portion of the shoe, of an upper riddle adapted to receive the material to be cleaned, said riddle at its receiving point having its under face carried downward in substantially angular form, a second riddle located beneath the upper riddle, extending beneath the forward portion of the upper riddle and terminating short of the forward end of the shoe frame, a screen located in the bottom portion of the shoe in such manner as to form a space between the screen and bottom, said space being provided with an outlet forward of the lower end of the said screen, and the outlet for the cleaned grain being rearward of the lower end of said screen, as specified.

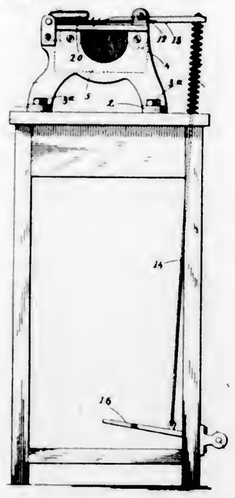
530,091. MACHINE FOR TURNING OVER TIPS OF STAND-UP-COLLARS. ADELBERT W. CUMMINGS, Dunkirk, N. Y. Filed Apr. 4, 1894. Serial No. 506,298. (No model.)

*Claim.*—1. In a machine for turning over the tips of stand up collars, the combination of a supporting frame having a chamber at its under side with a gas burner located in said chamber, a flat plate pivoted to supports on the top of the machine bed and provided with an arm extending back of its pivots, a connecting-rod secured to said arm and pivoted to a treadle for tipping said plate upward, a spiral spring interposed between said arm and the table top, for holding the pivoted plate downward to the machine bed with a yielding force, and a pivoted folding plate covered with cloth for turning over the collar tips, substantially as described.

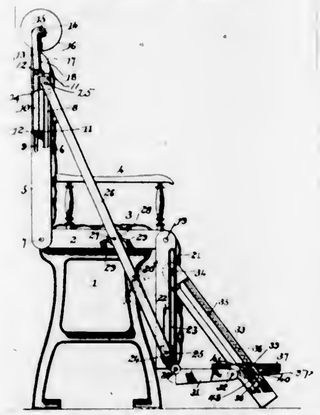
2. In a machine for turning over the tips of stand up collars, the combination with the supporting frame of the machine, of a flat pivoted plate, a spring for holding said plate down to the bed of the machine with yielding force, a connecting rod connected with an arm at the rear of the pivoted plate and with a treadle at its lower end, for tipping the plate upward, a cloth covered folding plate pivoted at the front of the machine, and means for heating the bed plate, substantially as and for the purposes described.

3. In a machine for turning over the tips of stand up collars, the combination with the supporting frame and table, of a flat plate piv-

oted to the top of the machine and having its rear end extending beyond its pivotal centers and a connecting-rod and treadle, for tipping it up, a spring for forcing it down against the bed of the machine, with a yielding force, and a folding plate for turning the collar over the end of the pivoted plate and thereby folding the collar tip, substantially as described



530,092. CHAIR. WALLEN DANIELS, Fort Smith, Ark. Filed Aug. 19, 1893. Serial No. 483,541. (No model.)



*Claim.*—1. The combination with a stationary seat section and foot and back sections hinged respectively to the front and rear edges of the seat sections, of side bars pivotally mounted at intermediate points upon the sides of the seat section and slidably connected at their extremities respectively to the back and foot sections, means for locking said side bars at the desired inclination, plates slidably mounted upon the sides of the back section adjacent to its upper edge, arms pivotally connected to said plates, a head rest journaled in the outer extremities of said arms, and connections between the sliding plates and the upper ends of the side-bars, whereby the foot and back sections and the head-rest are adjustable simultaneously and proportionately by the adjustment of the side bars, substantially as specified.

2. In a reclining chair, the combination with the standards, the stationary seat frame and the front and rear pivoted sections, the side bars of which are provided with slots, intermediate connecting rods pivoted to the sides of the seat section, blocks mounted for sliding in the slots and pivoted to the ends of the rods, and means for locking the rods at any inclination, of sliding plates arranged at the opposite sides of the back section, shoulders formed upon the plates at opposite sides of the upper blocks and in the path thereof, and a rotatable headrest supported by said plates on the upper end of the back, said back being rounded, substantially as specified.

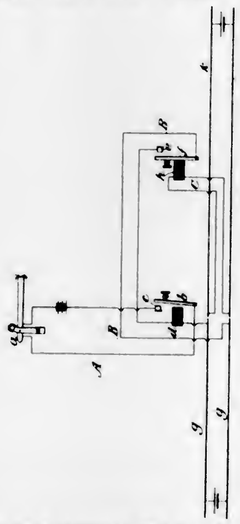
3. In a reclining chair, the combination with the standards, the stationary seat section, the back and foot sections pivoted thereto, the side bars thereof being provided with slots, the opposite connecting rods pivoted to the seat section between their ends and loosely connected at their ends with the slots, of means for locking the rods at any inclination, slots in the bars of the back section in rear of the slots to which the connecting rods are connected, plates arranged at the sides of the last named slots, bolts extending through the plates and into the slots, shoulders at the upper and lower ends of the plates, arms pivoted on the upper bolts, a rotatable headrest having its axle journaled in the bars and mounted for rotation over the upper rounded ends of the bars of the back, and springs secured to the plates and bearing on the arms, substantially as specified.

4. In a reclining-chair, the combination with the opposite inclined bars, slotted and grooved and having at one side of the latter cog-teeth, of the foot-rest having depending ends, a transverse shaft and fixed studs or pins passing through said ends and extending into the slots, anti-friction rollers on the ends of the shaft, cog-wheels at the inner sides of the rollers and engaging the cog-teeth, knob carrying shafts pivoted in the studs or pins, latches located thereon and at their outer ends engaging the cog-wheels, and springs and washers located on the studs or pins and interposed between the latches and the ends of foot-rest, substantially as specified.

5. In a reclining chair, the combination with the stationary seat section and its supporting standards, of the hinged section 31 having the bars 20 provided with slots 23, the extension 31 hinged as at 30 thereto, slotted inclined bars hinged as at 32 to the extensions and having the bolts 34 passing through their upper ends, and the slots 23, the foot-rest, projections extending from the foot-rest into the slots of the inclined bars, and means for securing the foot-rest at any point within the slots, substantially as specified.

6. In a reclining chair, the combination with a seat and its standards, of the bars 20 pivoted thereto, extensions 31 pivoted as at 30 to the bars 20, the slots 23 formed in the bars 20, the inclined bars 33 slotted as at 35 and loosely pivoted to the outer ends of the extensions, the bolts 34 passing through the upper ends of the inclined bars and through the slots 23, the rack-teeth formed on the bars 33, the foot-rest 37, the shaft extending from the foot-rest into the slots of the inclined bars, the cog wheels on the shaft, and the pivoted latches arranged under the foot-rest and engaging the teeth of the cog-wheels, substantially as specified.

530,093. ELECTRIC RAILWAY SIGNALING. WILLIAM DAVES, Jersey City, N. J., assignor to the Hall Signal Company, of Maine. Filed May 24, 1894. Serial No. 512,267. (No model.)



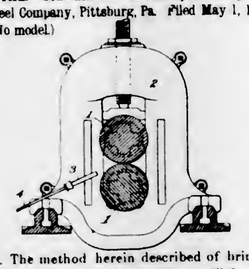
*Claim.*—1. In an electric signaling system for railways, the combination of a signal circuit, a normally de-energized track circuit controlling the signal circuit and including the rails of a section of the track, a second normally closed track circuit controlling the first mentioned track circuit and including the rails of a separate section of the track, substantially as set forth.

2. In an electrical signaling system, the combination of a signal, a signal circuit therefor, a normally de-energized track circuit extending in advance of the signal and provided with means for operating the signal circuit, a second track circuit extending in the rear of the signal and operating to energize the first mentioned track circuit, by the presence of a train at the rear of the signal, said first mentioned track circuit being arranged to be de energized by the presence of a train in advance of the signal, substantially as set forth.

3. In an electrical signaling system for railways, the combination of a signal normally at danger, a normally open signal circuit, a normally open track circuit inclucing the rails of a section of the track extending in advance of the signal and also including a magnet controlling the signal circuit, a second track circuit including the rails of a separate section of the track extending in the rear of the signal and also including a normally energized magnet operatiog to hold the first mentioned track circuit open, substantially as set forth.



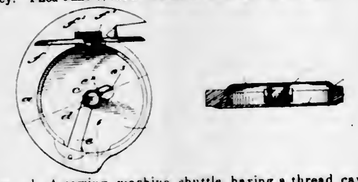
530,094. METHOD OF AND APPARATUS FOR ROLLING SHEET METAL. STEWART A. DAVIS, Apollo, assignor to the Apollo Iron and Steel Company, Pittsburg, Pa. Filed May 1, 1894. Serial No. 509,660. (No model.)



*Claim.*—1. The method herein described of bringing the ordinary mounted metal rolls of a sheet rolling mill from the concave condition in which they normally are when cold, to or approximately to, the cylindrical condition required in first class sheet rolling, by applying a high heat to the surface of such rolls proportional to the concavity thereof while being driven and while rotating in contact with each other, for a considerable length of time, whereby to remove, so far as practicable or desirable, the concavity normally existing in the rolls when cold, and to bring them into condition for use in the rolling of first class stock, substantially as set forth.

2. The combination of a pair of rolls for rolling sheet metal one of which is concave longitudinally, and means for applying a regulated heat to the rolls at the point of greatest concavity, whereby said rolls are brought into substantial parallelism with each other, substantially as set forth.

530,095. SHUTTLE FOR SEWING-MACHINES. PHILIP DIEHL, Elizabeth, N. J., assignor to The Singer Manufacturing Company of New Jersey. Filed June 9, 1894. Serial No. 514,029. (No model.)



*Claim.*—1. A sewing machine shuttle having a thread cavity which is provided with a stud or post having a thread delivery hole through it from front to rear, combined with a tension spring recessed into the rear wall of the said shuttle and arranged to press on the rear end of the said stud or post, said spring having a thread delivery opening which is out of register with the outer end of said thread delivery hole of the said stud or post, to afford a proper friction surface between the rear end of said stud or post and the inner face of said spring.

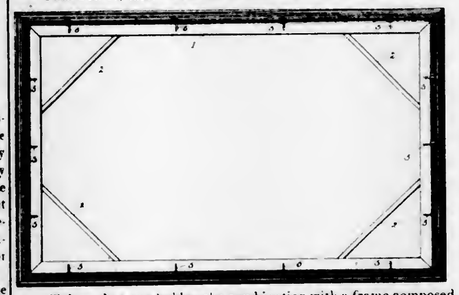
2. A sewing machine shuttle having a thread cavity which is provided with a stud or post having a thread delivery hole through it from front to rear, combined with a tension spring recessed into the rear wall of said shuttle and arranged to press on the rear end of the said stud or post, said tension spring having a thread delivery aperture, the said thread delivery hole through the said stud or post being inclined so as to bring its delivery end at the rear side of said shuttle as far as possible from the said thread delivery aperture of said tension spring.

3. A sewing machine shuttle having a thread cavity which is provided with a stud or post having a thread delivery hole through it from front to rear, combined with a tension spriog recessed into the rear wall of the said shuttle, and arranged to press on the rear end of the said stud or post, and the latter having a roughened surface to afford a strong frictional hold on a cop of thread to be placed thereon.

4. A sewing machine shuttle provided with a thread cavity which is recessed to form an annular shoulder around the same, inside of the outer face of the body thereof, combined with a cover hinged to the body of the said shuttle and provided with an annular, inturned lip to fit against the said annular shoulder, said lip being of a thickness which is substantially equal to the width of said shoulder so that the inner face of said lip is flush with the wall of the thread cavity, thus forming a smooth, inclosed chamber within said shuttle.

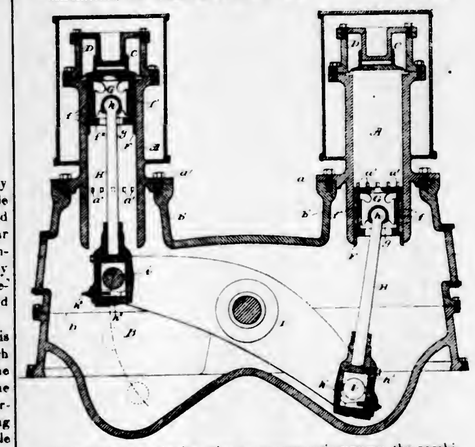
5. A sewing machine shuttle provided with a thread cavity which is recessed to form an annular shoulder around the same, inside of the outer face of the body thereof, combined with a cover hinged to the body of the said shuttle and provided with an annular, inturned lip adapted to fit against the said annular shoulder, said lip being of a thickness which is substantially equal to the width of said shoulder so that the inner face of said lip is flush with the wall of the thread cavity, thus forming a smooth, inclosed chamber within said shuttle, said cover also having a spring finger, extending from said lip, and the wall of the said cavity being provided with a recess to be engaged by the said spring finger to hold the said cover closed.

530,096. CARPET-FASTENER. PETER ECKMAN, Syracuse, Kans. Filed Dec. 19, 1893. Serial No. 494,041. (No model.)



*Claim.*—In a rug holder, the combination with a frame composed of strips consisting of a base plate and an elevated guard plate gradually downwardly curved to the floor, of spring clips secured to the guard plates adapted to clamp the rug to the base plates and to be protected by said guard plates, substantially as specified.

530,097. GAS-COMPRESSING PUMP. THOMAS FARNSWORTH, San Antonio, Tex. Filed Feb. 26, 1894. Serial No. 501,484. (No model.)



*Claim.*—1. In a single acting gas-compressing pump, the combination with two parallel cylinders, and their pistons, of a rocker, and

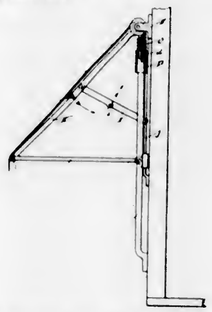
rods connecting the ends of said rocker with the pistons, said rocker being pivoted between the axes of said cylinders and at a point nearer to the pistons than a horizontal plane intersecting the wrist pins on the ends of the rockers, said rods co-inciding with the axes of the cylinders when the pins stand in said horizontal plane substantially as described.

2. In a single acting gas compressing pump, the combination with a pump cylinder, of a piston, a connecting rod, and a rocker arm for actuating said rod pivoted on an axis so located that the line joining the end of the rod and said axis is at right angles to the axis of the cylinder when the piston has completed the greater part of its stroke, substantially as described

3. In a gas compressing pump, the combination with a pump cylinder, of a piston, a connecting rod, and a rocker pivoted at one side of the cylinder, so that at the middle and completion of the stroke the connecting rod co-incides with the axis of the cylinder, substantially as described.

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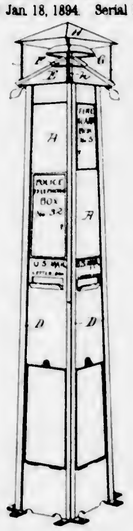
530,098. **AWNING.** EDOUARD FAUTEUX, Montreal, Canada. Filed Mar. 31, 1894. Serial No. 505,966. (No model.) Patented in Canada Feb. 24, 1894. No. 45,416.



*Claim.*—The combination, with the stationary bearing brackets F, the roller journaled therein, the canvas wound on the said roller, and the pulleys secured on the ends of the roller; of the flexible bands wound on the said pulleys and provided with weights operating to wind the canvas on the roller; vertical guides for the said weights; and the two folding frames for holding the canvas extended, each frame consisting of the jointed bar K under the canvas, the bar N pivoted to the lower end of the bar K and serving to hold it extended, and the jointed diagonally-arranged bar I pivoted to the upper part of the bar K, substantially as described and shown

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530,099. **DIRECTORY-POST AND CALL-BOX.** JOHN T FIELD, St. Louis, Mo. Filed Jan. 18, 1894. Serial No. 497,275. (No model.)



*Claim.*—1. In a directory post, the combination with panels having transverse ribs on their faces, of angle irons which secure the panels together, said angle irons fitting over the corners of the ribs, plates which are spaced by the ribs and secured by the angle irons in place, and a hinged angle iron which swings horizontally to permit the insertion or removal of the plates from two sides, substantially as described.

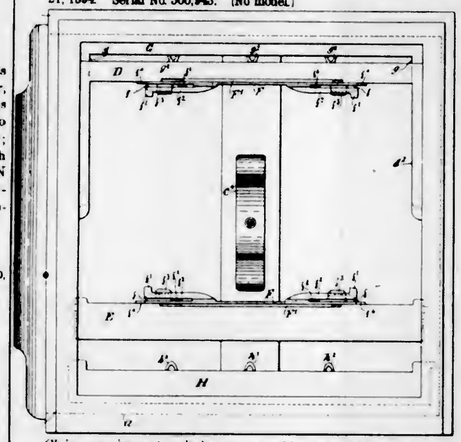
2. In a directory post, the combination with panels having ribs arranged transversely their faces, angle irons arranged at the corners of the panels, one of which is hinged to swing horizontally, a lock for the hinged iron, tongued projections extending obliquely from the tops of the panels, and a cap or cover formed with ways which engage the tongues to hold the cap or cover in position, substantially as described.

3. In a directory post, the combination with the panels, two of which are provided with ribs across their faces, the others being formed with openings leading to the interior, and provided with doors for the openings, angle irons for holding the panels together, said irons where they connect with the ribbed panels being arranged on the outer faces of the ribs so as to leave a space, plates which are arranged between the ribs and received in the spaces formed by the angle irons at the corners, and an angle iron hinged at its top and bottom at the junction of the two ribbed panels and adapted to swing horizontally, said hinged angle iron holding the plates against displacement on each side, substantially as described.

4. In a directory post, the combination with the panels, of name plates or sign boards which are adapted to be secured to some of said panels, angle irons for retaining said sign boards in position and holding the panels together, one or more of said panels being formed with openings giving access to the interior, doors for closing said openings, a cap piece for the post, and a bell mounted upon the cap piece, substantially as described.

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530,100. **PLATE-HOLDER.** MATHIAS FLAMMANG, Newark, N. J., assignor to the Scovill & Adams Company, of Connecticut. Filed Feb. 21, 1894. Serial No. 500,943. (No model.)



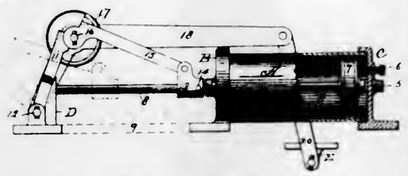
*Claim.*—1. In a plate holder, the combination of a frame, a dark slide or shutter for the front thereof, two sets of adjustable bars, one set being arranged rearward of the other, sliding plates supported upon one set of said adjustable bars, means carried by said sliding plates for holding a ray negative, and mechanism for causing said plates to move to and from the front of the plate holder, substantially as specified.

2. In a plate holder, the combination of two sets of adjustable bars, plates supported upon one set of adjustable bars and movable toward and away from the other set of adjustable bars, means consisting of adjustable fingers or clamps and corresponding ledges, carried by said plates for supporting a ray negative, bars or plates carrying studs or pins which work in slots arranged in the first mentioned plates to move the same toward and away from one set of adjustable bars, substantially as specified.

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530,101. **DOOR-CHECK.** SAMUEL FRISBIE, Unionville, Conn. Filed Dec. 27, 1893. Serial No. 495,022. (No model.)

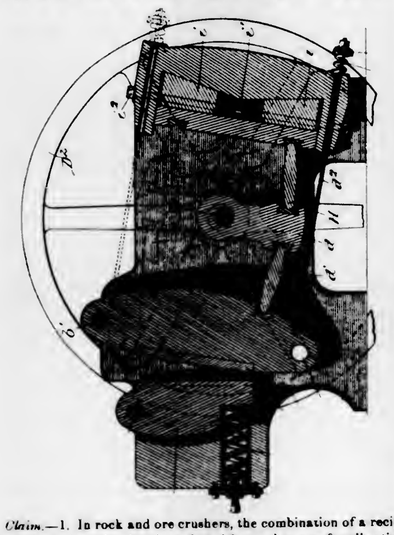
*Claim.*—The combination of the stationary cylinder and its bracket heads with the third bracket having a perforation in axial alignment with said cylinder, the piston, the piston rod extending through one of the cylinder heads and through the perforation in said third bracket by which it is guided, the toggle frames and their spring, said frames being pivoted respectively to the third bracket and to the block of the piston rod between said bracket and piston head, and operating mechanism, substantially as described and for the purpose specified





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530,102. **ROCK OR ORE CRUSHER.** EVERSON D. GATES and PHILETUS W. GATES, Chicago, Ill., assignors to the Gates Iron Works, same place. Filed Oct. 24, 1893. Serial No. 488,992. (No model.)



*Claim.*—1. In rock and ore crushers, the combination of a reciprocating jaw adapted to be pivoted at either end, means for vibrating such jaw, and a jaw opposite the reciprocating jaw so arranged that the material is crushed between the jaws during the vibration of the reciprocating jaw, substantially as described.

2. In rock and ore crushers, the combination of a reciprocating jaw adapted to be pivoted at either end, a frame upon which such jaw is pivoted, means for actuating such jaw, so constructed that it may be connected to such jaw at either end for converting the machine into a fine or coarse crusher as desired, and a second jaw opposite the reciprocating jaw so arranged that the material is crushed between the jaws during the vibration of the reciprocating jaw, substantially as described.

3. In a rock and ore crusher, the combination of a reciprocating jaw adapted to be advanced and retracted and a pivoted crushing jaw whose pivotal point is stationary or fixed and the opposite end yielding, substantially as described.

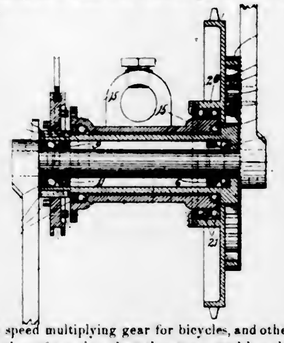
4. In a rock and ore crusher, the combination of a reciprocating jaw adapted to be advanced and retracted, means for advancing and retracting the reciprocating jaw, and a crushing jaw pivoted at the top and having its lower end yielding, substantially as described.

5. In a rock and ore crusher, the combination of a reciprocating jaw adapted to be advanced and retracted, means for actuating such jaw, a crushing jaw pivoted at the top and yielding at the bottom having a stop to prevent its following the reciprocating jaw beyond a given point, and means for giving the desired tension to the lower end of such crushing jaw, substantially as described.

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530,103. **SPEED-MULTIPLYING GEARING FOR BICYCLES OR OTHER MACHINES.** JOHN B. GRUETTER and OSWALD JACKSON, Carrollton, Ill. Filed Mar. 3, 1894. Serial No. 502,165. (No model.)

*Claim.*—1. In a speed multiplying gearing for bicycles, and other machines, the combination, of a main axle, a sleeve loosely mounted thereon, a gear rigidly mounted upon the sleeve, a rigid frame, means for holding the sleeve into locked engagement with the frame, a wheel mounted loosely upon the frame, said wheel provided with rigid teeth, a crank upon the end of the axle, and a pinion carried by the crank, said pinion adapted to mesh with the two gear wheels, substantially as set forth.



2. In a speed multiplying gear for bicycles, and other machines, the combination, of a main axle, a sleeve mounted loosely thereon, a gear rigidly mounted upon the sleeve, a rigid frame a wheel loosely surrounding the frame, said wheel provided with rigid teeth, cranks at opposite ends of the main axle, a pinion carried by one of the cranks, and adapted to mesh with the two gear wheels, and a clutch slidable longitudinally on the sleeve, and rotatable therewith, said clutch adapted to be thrown into engagement with the continuous crank, or into engagement with the rigid frame, or to occupy an intermediate position between the two, substantially as set forth.

3. In a speed multiplying gear for bicycles, and other machines, the combination, of a main axle, a sleeve loosely mounted thereon, a gear rigidly mounted upon the sleeve, a rigid frame having opposite upward curved ends a wheel loosely surrounding the frame, said wheel provided with rigid teeth, cranks at opposite ends of the main axle, a pinion carried by one of the cranks, said pinion adapted to mesh with the gear wheels, anti-friction balls resting on the loose sleeve, and confined between one of the upward curved ends of the frame and the shoulder or collar on sleeve, anti-friction balls between the opposite end of the sleeve and the adjacent upward curved end of the frame, a set collar bearing against the balls, and a clutch slidable longitudinally on the sleeve, and rotatable therewith, said clutch adapted to be thrown into engagement with the continuous crank, into engagement with the rigid frame, or to occupy an intermediate position between the two, substantially as set forth.

4. In a speed multiplying gearing for bicycles, and other machines, the combination, of a main axle, a sleeve loosely mounted thereon, a gear rigidly mounted upon the sleeve, a rigid frame, means for holding the sleeve into locked engagement with the frame, a wheel mounted loosely upon the frame, said wheel provided with rigid teeth, a crank upon the end of the axle, said crank provided with a laterally-extending stud, a pinion mounted upon the stud, said pinion adapted to mesh with the two gear wheels, and anti-friction balls between the hub of the pinion and the stud, substantially as set forth.

5. In a speed multiplying gear for bicycles, and other machines, the combination, of a main axle, a sleeve loosely mounted thereon, a gear rigidly mounted upon the sleeve, a rigid frame, means for throwing the sleeve into and out of locked engagement with the frame, a wheel mounted loosely upon the frame, said wheel provided upon one face with annularly arranged outstanding teeth, and upon its opposite face with an annular flange, anti-friction balls between the annular flange and the outside of the upward curved end of the rigid frame, an adjusting collar having threaded connection inside said annular flange for taking up wear of the balls, a crank upon the end of the axle, and a pinion carried by the crank, said pinion meshing with the gear wheels, substantially as set forth.

6. In a speed multiplying gear for bicycles, and other machines, the combination, of a main axle, a sleeve loosely mounted thereon, a gear rigidly mounted upon the sleeve, anti-friction balls between the sleeve and shaft, set collars, a threaded collar for adjusting said balls, a rigid frame, means for throwing the sleeve into and out of locked engagement with the rigid frame, a wheel mounted loosely upon the frame, said wheel provided with annularly arranged outstanding teeth, a crank upon the end of the axle, and a pinion carried by the crank, said pinion meshing with the gear wheels, substantially as set forth.

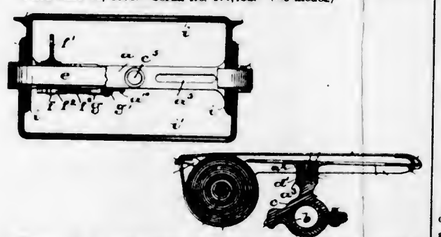
7. In a speed multiplying gearing for bicycles, and other machines, the combination, of a main axle, a sleeve loosely surrounding the axle, said sleeve provided with a rigid gear wheel, a rigid frame a sprocket or driving wheel loosely surrounding the frame, said wheel formed with a rigid gear wheel, cranks upon opposite ends of the axle, a pin-

ion carried by one of the cranks, said pinion meshing with the gear wheels, and a clutch slidable longitudinally upon the sleeve, and rotatable therewith, said clutch adapted to be thrown into engagement with the contiguous crank arm, or into engagement with the rigid frame, or to occupy an intermediate position between the two, and means for actuating said clutch, substantially as set forth.

8. In a speed multiplying gearing for bicycles, and other machines, the combination, of a main axle, a sleeve loosely surrounding said axle, said sleeve provided with a rigid gear wheel, a rigid frame provided at one end with apertures a sprocket or driving wheel loosely surrounding the frame, said sprocket or driving wheel formed with a rigid gear wheel, cranks rigidly connected to opposite ends of the axle, a pinion carried by one of the cranks, said pinion meshing with the gear wheels, a clutch collar sliding on splines or feathers on the sleeve, said collar provided on opposite faces with projecting pins, and means for actuating the clutch collar whereby the pins upon one face thereof are adapted to embrace opposite edges of the contiguous crank, when the collar is slid in one direction, and the pins upon the opposite face of the clutch adapted to engage the apertures of the frame, when the clutch is slid in the opposite direction, substantially as set forth.

## 530,104. LUGGAGE-CARRIER. GEORGE F. HALL, Newark, N. J.

Filed June 10, 1893. Serial No. 477,152. (No model.)



*Claim.*—1. In combination, with the main frame of a luggage carrier for velocipedes, having a tubular post $a'$ provided with an annular recess $a^3$, of a clamp provided with a suitable post or arm $c^3$, having a small post $c^4$, a plate on said post, and a spring encircling said post $c^4$, substantially as and for the purposes set forth.

2. In combination, with the main frame of a luggage carrier for velocipedes, having a tubular post $a'$ provided with an annular recess $a^3$, of a clamp provided with a suitable post or arm $c^3$, having a small post $c^4$, a plate on said post, a spring encircling said post $c^4$, and means for allowing the rotation of said main frame on said post or arm $c^3$, and locking the parts at intervals, substantially as and for the purposes set forth.

3. In combination, with the main frame of a luggage carrier for velocipedes, having a tubular post $a'$ provided with an annular recess $a^3$, of a clamp provided with a suitable post or arm $c^3$, having a small post $c^4$, a plate on said post, a spring encircling said post $c^4$, and means for allowing the rotation of said main frame on said post or arm $c^3$, and locking the parts at intervals, consisting of a pin $d'$ projecting from the opposite sides of said post $c^4$, and recesses $a^3$ and $a^4$ in said post $a'$ in the carrier frame, substantially as and for the purposes set forth.

4. A luggage carrier for velocipedes, consisting of a single bar, a strap running from end to end thereof, and a folding frame on each side of said bar, substantially as and for the purposes set forth.

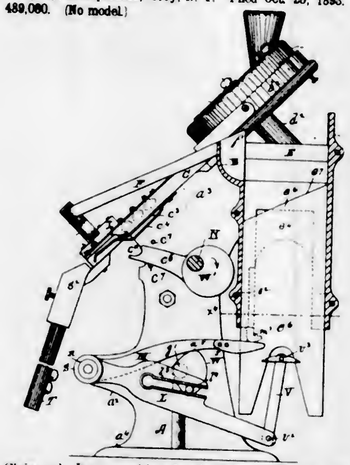
5. A luggage carrier for velocipedes, consisting of a single bar, having a strap attached to one end thereof, a reel at the other end of said bar to which the other end of said strap is attached, and a folding frame on each side of said single bar, substantially as and for the purposes set forth.

6. A luggage carrier for velocipedes, consisting of a main frame, having a strap attached at one end thereof, and a reel at the opposite end on which said strap is reeled, consisting of a pin or axle rotatively arranged in said main frame or single bar, a finger-piece or thumb-nut on said pin or axle, a ratchet wheel thereon, and a spring-actuated lever adapted to engage with said ratchet wheel, and arms $h$ projecting in pairs from the opposite sides of said main frame, and folding frames $i$ and $i'$ pivotally arranged on said arms $h$, substantially as and for the purposes set forth.

7. A luggage carrier for velocipedes, consisting of a single bar, provided with a strap running from end to end of said bar, arms $h$ projecting in pairs from the opposite sides of said single bar, and folding frames $i$ and $i'$ pivotally arranged on said arms $h$, substantially as and for the purposes set forth.

8. A luggage carrier for velocipedes, consisting of a single bar, and provided with a strap running from end to end of said bar, arms $h$ projecting in pairs from the opposite sides of said bar, folding frames $i$ and $i'$ pivotally arranged on said arms $h$, and hook-shaped ends $h'$ on said arms $h$, with which said folding frames engage to support them in their open position, substantially as and for the purposes set forth.

## 530,105. TUBE-LOADER FOR BUTTON-SETTING MACHINES. ALBERT W. HAM, Lansingburg, assignor to the Trojan Button Fastener Company, Incorporated, Troy, N. Y. Filed Oct. 25, 1893. Serial No. 489,080. (No model.)



*Claim.*—1. In a machine for threading fasteners into the eyes of buttons the combination with a hopper constructed with brushes adapted to be oscillated therein, substantially as described, of a downwardly inclined button-chute having a slot in its upper face, and adapted to receive buttons from said hopper with their eyes projected upwardly in said slot; a slotted spring arranged on the under side of said chute adapted to arrest the descent of buttons therein; an arm operated by an eccentric and constructed to enter the slot of said detaining spring and to engage with buttons to move them downwardly one at a time; and another spring made with a slot and also attached to the under side of said button chute, adapted to engage with and hold each button while being operated upon by said arm after having passed said detaining spring and while a fastener is being threaded into the eye thereof, substantially in the manner as and for the purposes set forth.

2. In a machine for threading fasteners into the eyes of buttons the combination with a button-chute made with a slot in its upper face and constructed to have buttons supplied thereto with their eyes projected upwardly through said chute-slot, of a detaining slotted spring arranged on the under side of said button-chute; an arm projected from an eccentric wheel, and operated to enter the slot of said detaining spring to move one of the buttons downwardly in said chute at each revolution of said wheel, and a holding spring made with a slot for the passage of said arm, and arranged to engage with said button while being moved by said arm substantially in the manner, as and for the purposes set forth.

3. The combination with the eccentric wheel W', made with the arm $c^6$, adapted to move between the guide-pins $c^7$, $c^7$, of the button-chute C, having the slot $c^5$, and the slotted springs $c^8$, $c^8$, arranged on the bottom of said button-chute, constructed and arranged to operate substantially in the manner as and for the purposes set forth.

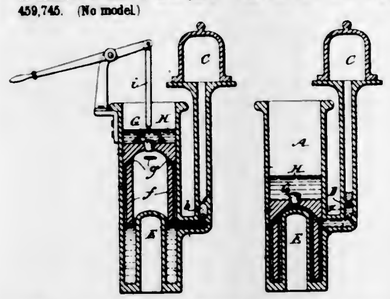
4. The combination with the arm $c^6$, arranged to turn eccentrically at its inner end on the shaft N, and made with the concavely recessed face $c^{11}$, on its outer end, and adapted to move between the guide-pins $c^7$, $c^7$; of the wheel W', arranged to turn with the shaft N, and the button chute C, made with the slot $c^5$ in its upper face, and the slotted springs $c^8$, $c^8$, upon its under surface and having the socket $8^9$ on the lower end; and the tube-form chute T, made with a closed lower end, and a slot on its under side connecting with the slot $c^5$, constructed and arranged to operate substantially in the manner as and for the purposes set forth.

5. The combination with the downwardly inclined button-chute made with a slot in its upper face, and arranged to receive buttons with the eyes thereof projected upwardly through said slot, of a downwardly inclined fastener slide-blade, constructed to receive fasteners straddling the latter, and made with a bend in its lower end by which the end edge of the slide-blade becomes parallel to said button chute; a guide-passage beneath the lower end of the slide-blade; a pivoted spring finger provided with a cam at its upper end; a threading finger constructed to engage with the spring finger and move the latter outwardly at its lower end when the digital end of the threading finger is being moved to enter said guide passage; and a tube having a closed lower end and made with a slot in its under side connecting with the slot in the button chute, substantially in the manner as and for the purposes set forth.

6. The combination with the inclined fastener slide-blade F, having the bottom curve $f^3$, of the button-chute C, arranged in the plate I, and provided with the slot $c^5$; the cover-plate $N^3$, made with the recessed passage $f^4$, on its under side where over the plate I; the threading finger K, having the cam surface $k^3$, the digital inturned lower end $k^4$, and arranged on the plate I; and the spring-finger O, pivoted to the plate I, and provided with the leaf-spring $o^4$, cam $o^3$, and an inturned digital lower end, constructed and arranged to be operated substantially in the manner as and for the purposes set forth.



## 530,106. AIR-PUMP. ADOLF HELLER, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Jan. 25, 1893. Serial No. 459,745. (No model.)



*Claim.*—1. An air pump consisting of a barrel, a suction tube communicating therewith and provided with an inwardly opening valve; a liquid in said barrel; and a bell-shaped pump piston having an externally opening valve and provided with lateral passages and arranged to communicate to the said liquid a reciprocatory movement, substantially as described.

2. An air pump consisting of a barrel having a re-entrant base forming an annular passage; a suction tube, an inverted bell-shaped piston adapted to fit loosely over the re-entrant base, and having its upper portion arranged to fit the pump barrel snugly, and provided with an outwardly opening valve; and lateral passages in the sides of the piston and affording means of communication between the suction tube and the piston valve whereby, in the descent of the piston, the air included between the narrowed portions thereof and the pump barrel may be forced upwardly and outwardly through the piston valve, substantially as described.

3. An air pump consisting of a barrel having a partial filling of suitable liquid; and a reciprocating valved piston, provided with a suction tube having an apertured chamber therein, a float valve controlling the openings in said chamber and means for connection with the cavity to be exhausted, substantially as described.

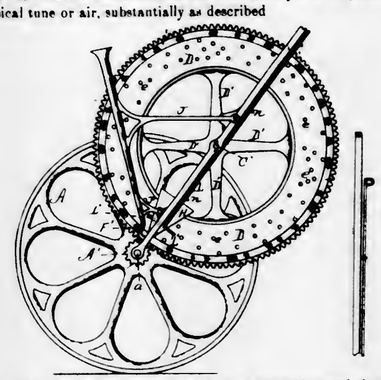
4. An air pump consisting of a barrel having a partial filling of suitable liquid; and a reciprocating valved piston, provided with an adjustable suction tube having a suitable valve and means for connection with the cavity to be exhausted, substantially as described.

5. An air pump consisting of a barrel; a suction tube therefor having connections with a cavity to be exhausted; a liquid in said barrel; and a bell-shaped pump piston having an externally opening valve, and provided with lateral openings, whereby the level of the liquid may be mechanically shifted to exhaust the air from said cavity, substantially as described.

## 530,107. TOY. WILFORD A. HILL, Waltham, assignor of one-half to John C. Miller, Melrose, Mass. Filed Mar. 12, 1894. Serial No. 503,243. (No model.)

*Claim.*—1. In a toy of the character described, a wheel provided with an annular row of protuberances, a bellows secured to a stationary portion of the device and held normally against said protuberances and adapted to be operated thereby, and a musical wind instrument connecting with said bellows and supplied thereby with air, said wind instrument being provided with perforations and set next an annular row of perforations in the music wheel, whereby as the said wheel rotates the perforations therein and in the wind instrument will coincide, substantially as set forth.

2. In a toy of the character described, a wheel provided with an annular series of protuberances arranged on a preconceived plan, a bellows secured to a stationary portion of the device and held normally against said protuberances and adapted to be operated thereby, and a musical wind instrument connecting with said bellows and provided with perforations at different points corresponding to the notes of a musical scale and set next an annular series of perforations in the music wheel, whereby as said wheel rotates the perforations therein and in the wind instrument will coincide successively so as to produce a musical tune or air, substantially as described

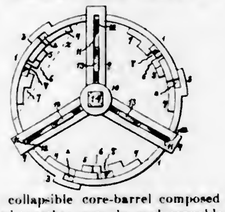


3. In a toy, the combination of the music wheel C provided with the perforated annular portion D and the annular series of protuberances E, the bellows H having one of its walls secured to the stationary portion of the machine and the other free, the finger I extending from said bellows into engagement with said protuberances, means for holding the bellows normally closed and the wind instrument F provided with perforations $F^w$ and set next the music wheel so that the said perforations $F^w$ and those in the music wheel may move in and out of coincidence, substantially as set forth.

4. In a toy of the character described, the combination of the handle B, the bellows H having one of its walls secured thereto and the other free, and the slide rod L provided at its lower end with the bent portion L' extending around against the free wall of the bellows, substantially as described.

5. In combination, the driving wheel A provided with the pinion A', the gear music wheel C provided with the perforations e and protuberances E, frame or handle B, the bellows H secured to said frame and provided with the finger I, and the wind instrument F connecting with said bellows and perforated at $F^w$, substantially as set forth.

## 530,108. COLLAPSIBLE CORE-BARREL. JOHN W. HOLMES, Louisville, Ky. Filed July 25, 1893. Serial No. 481,456. (No model.)



*Claim.*—1. A collapsible core-barrel composed of a series of staves so articulated together as to be each movable without disassociation from barrel form, such barrel having an unobstructed central opening its entire length, and each stave having movable therewith and secured thereto adjacent to a longitudinal edge thereof a suitable number of strips each extending beyond said edge and projecting over an adjoining stave, and each stave being also provided with a corresponding number of caps movable therewith and secured thereto for loosely confining the said strips of an adjoining stave, said strips and said caps being adapted, for sliding engagement the one with the other to permit movement of the staves, and for holding in barrel shape, and preventing longitudinal displacement of the staves, substantially as described.

2. A collapsible core-barrel composed of a series of staves so inter-locked as to be each movable without dispersal from barrel form, such barrel having an unobstructed central orifice the entire length thereof, and each stave having movable therewith and secured thereto adjacent to a longitudinal edge thereof a suitable number of shouldered strips each extending beyond said edge and projecting over an adjoining stave, and each stave being also provided with a corresponding number of cap projections movable therewith and secured thereto for loosely confining and engaging the said shouldered strips

of an adjoining stave, said shouldered strips and said cap projections being adapted for sliding engagement the one with the other to allow movement of the staves, for retaining in barrel shape, and preventing longitudinal displacement of, the staves, and for limiting the expansibility of the barrel, substantially as described.

3. In a collapsible core barrel composed of any desirable number of staves so connected together as to be each movable without displacement from barrel form, a stave having movable therewith and secured thereto adjacent to a longitudinal edge thereof a suitable number of strips each extending beyond said edge and projecting over an adjoining stave that is provided with a corresponding number of caps movable therewith and secured thereto for loosely confining said strips, those strips and said caps being adapted for sliding engagement with each other to permit movement of the stays and acting to prevent longitudinal movement of, and retain in barrel shape, the staves, that adjoining stave being also provided with a corresponding number of lugs movable therewith and secured thereto and a longitudinally movable wedge bar for engagement with its lugs and said strips to expand the barrel, substantially as described.

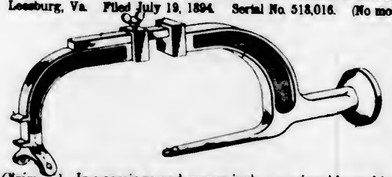
4. In a collapsible core-barrel composed of any desirable number of staves so united as to be each movable without removal from barrel form, a stave having movable therewith and secured thereto adjacent to a longitudinal edge thereof a suitable number of shouldered strips each extending beyond said edge and projecting over an adjoining stave that is provided with a corresponding number of projections movable therewith and secured thereto for engagement with the said shouldered strips, those strips and said projections being adapted to limit the expansibility of the barrel, that adjoining stave being also provided with a corresponding number of lugs movable therewith and secured thereto and a longitudinally movable wedge-bar for engagement with its lugs and said strips and used in connection therewith and with said projections to expand the barrel and keep it thus, substantially as described.

5. In a collapsible core-barrel composed of any desirable number of staves so articulated together as to be each movable without dissociation from barrel form, a stave having movable therewith and secured thereto adjacent to a longitudinal edge thereof a suitable number of shouldered strips each extending beyond said edge and projecting over an adjoining stave that is provided with a corresponding number of cap projections movable therewith and secured thereto for loosely confining and engaging the said shouldered strips, those strips and said cap projections being adapted for sliding engagement with each other to permit movement of the staves and acting to prevent longitudinal displacement of, and retain in barrel shape, the staves, and to also limit the expansibility of the barrel, that adjoining stave being also provided with a corresponding number of lugs movable therewith and secured thereto and a longitudinally movable wedge-bar for engaging its lugs and said strips and used in connection therewith and with said projections to expand the barrel and retain the same in that condition, substantially as described.

6. The combination with a contractile core-barrel, of apparatus applicable to an end of such barrel whereby the same may be revolved, consisting, essentially, in framework having an axial spindle and provided with a series of pivotal jaws and a series of cam levers in connection with such jaws, each cam lever being adapted to bear against the tail of a jaw for forcing that jaw against the barrel to couple the framework therewith, said cam levers being so shaped that they lock said jaws in contact with the barrel, independently of other mechanism, substantially as shown and described.

7. A core-barrel composed of movable staves each stave having secured thereto lugs, shouldered strips, and projections, and each stave being also provided with a wedge bar for use in connection with said lugs, strips, and projections, to expand the barrel and lock it in that condition, this core-barrel having an unobstructed central orifice its entire length, in combination with apparatus applicable to an end of said barrel whereby the same may be revolved, consisting, essentially, in framework having an axial spindle and provided with a succession of pivotal jaws and a succession of cam levers for forcing said jaws against the barrel to couple the framework therewith, substantially as described.

## 530,109. CARRIAGE OR WAGON JACK. SAMUEL J. JOHNSTON, Leesburg, Va. Filed July 19, 1894. Serial No. 518,016. (No model.)



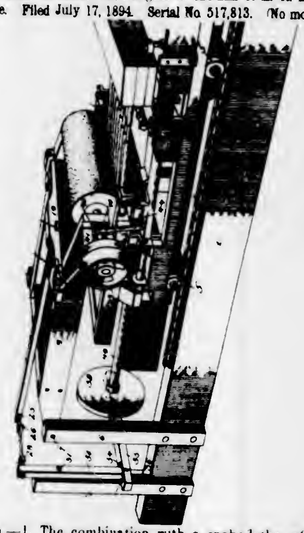
*Claim.*—1. In a carriage and wagon jack, a sectional bowed jack arm consisting of separate curved members, and an adjustable connection between the inner ends of said members, substantially as set forth.

2. In a jack of the class described, a sectional bowed jack arm consisting of separate curved members, one of which is provided at its inner end with a connecting bar projected from one side, and the other of said members being provided at its inner end with a slide loop loosely receiving said connecting bar, and a set screw mounted in said slide loop and impinging on said connecting bar, substantially as set forth.

3. In a jack of the class described, the combination of a sectional bowed jack arm consisting of separate curved members adjustably connected together and one of which is provided at its outer end with a fulcrum fork and an adjacent notched rest lug, and the other of which arms is provided at its outer end with an inwardly disposed jack spindle and an outwardly disposed handle and foot arm having a flat rest base at its outer extremity, substantially as set forth.

4. A carriage or wagon jack made of two sections or members adjustably connected together and comprising a bowed jack arm provided at one end with a fulcrum rest and a rest lug, and at the opposite end with an inwardly disposed jack spindle, and a handle and foot arm having a rest base, substantially as set forth.

## 530,110. POLISHING DEVICE FOR SPOKE-LATHES. WILLIAM H. JOSLIN, Jamaica, Vt., assignor of one-half to H. A. McLean, same place. Filed July 17, 1894. Serial No. 517,813. (No model.)



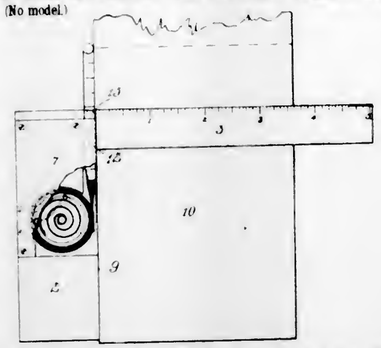
*Claim.*—1. The combination with a spoke lathe, of a pivotal frame, a polishing roll carried by said frame and mounted for rotary and reciprocatory movements, means for imparting a rotary movement to the roll, a slidable bar, connections between said bar and the roller, whereby the longitudinal reciprocation of the former is communicated to the latter, a lever fulcrumed upon the pivotal frame and loosely connected at one end to the slidable bar, a second lever fulcrumed upon a standard rising from the frame of the spoke-lathe, an adjustable connection between the contiguous arms of said levers, and means for operating the second lever, substantially as specified.

2. The combination with a spoke-lathe, of a pivotal frame, a sanding or polishing roll mounted thereon and capable of longitudinal reciprocation, means for imparting a rotary motion to the roll, an intermediately pivoted lever 22 fulcrumed upon the pivotal frame, connections between one arm of said lever and the roll whereby the oscillation of the lever causes a reciprocation of the roll, a connecting lever 30 fulcrumed upon a standard rising from the frame of the lathe, a flexible connection between the levers 22 and 30 comprising a bolt carried by one of the levers, an eye fixed to the other lever, and a link connecting said bolt and eye, and means for imparting motion to the lever 30, substantially as specified.

3. The combination with a spoke-lathe, of a pivotal frame, a sanding or polishing roll mounted upon said frame and capable of longitudinal reciprocation, means for imparting rotary motion to the roll, a reciprocating bar operatively connected with the roll to communicate reciprocatory movement thereto, means for operating said bar, and supporting devices for the free end of the pivotal frame consisting of rods attached thereto and provided with feet adapted to bear upon the bed or carriage of the lathe, substantially as specified.

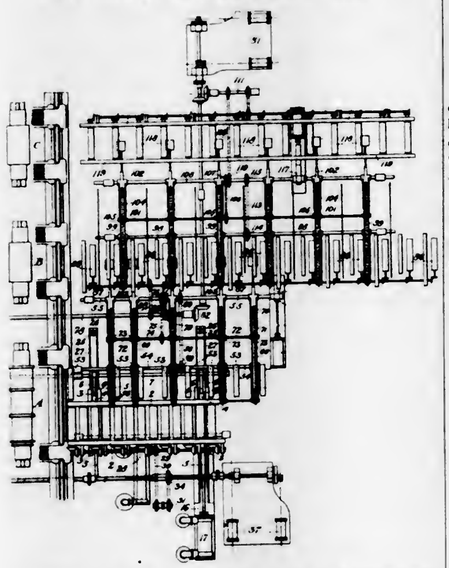


## 530,111. COMBINED TAPE-MEASURE AND SQUARE. AUGUST E. KREIS, St. Paul, Minn. Filed Feb. 13, 1894. Serial No. 499,995. (No model.)



*Claim.*—A combined try square and measure consisting of the square, a reel carrying a tape located in the handle of the square with the periphery of the reel situated to bring the tape parallel with the edge of the object to be measured and at right angles with the square blade, and a guide located in the handle and adapted to change the plane of the tape after leaving the reel to bring it into the same plane as the square blade, substantially as and for the purposes described.

## 530,112. PLATE-ROLLING MILL. WILLIAM H. MADDOCK, Pittsburg, Pa., assignor to the Wheeling Steel and Iron Company, Wheeling, W. Va. Filed Aug. 3, 1892. Serial No. 442,014. (No model.)



*Claim.*—1 A three-high mill having a swinging feed-table, counterweighted levers mounted upon a rock-shaft beneath the table, levers projecting from said shaft, and carrying links connected to the feed-table, and a universal joint between said shaft and the actuating shaft; substantially as described.

2. A mill-plant comprising two three-high sets of rolls in line with each other, a laterally movable truck carrying feed-rollers on one side of the first set, means for moving the same vertically in parallel planes an oscillating feed- able upon the other side, and transfer mechanism arranged to move between the feed tables on one side of the sets; substantially as and for the purposes described.

3. A three-high set of rolls, having on one side a vertically and laterally movable truck carrying feed-rollers, and a set of stationary friction rollers on the same side in line with the last pass: substantially as and for the purposes described.

4. A set of rolls, having on one side a vertically and laterally movable truck carrying feed-rollers, a set of stationary friction-rollers on the same side in line with the last pass, and an oscillating feed-table upon the opposite side; substantially as and for the purposes described.

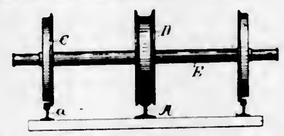
5. A set of rolls, having on one side a vertically and laterally movable truck carrying feed rollers, a set of stationary friction-rollers on the same side in line with the last pass, and lateral transfer devices operating between the friction rollers and an oscillating feed-table upon the opposite side; substantially as and for the purposes described.

6. The combination with the two three-high sets of rolls and the two-high set in line with each other, of a vertically and laterally movable truck carrying the feed-rollers of the first set, suitable feed-rollers for the other sets, and transfer mechanism between the feed-tables upon one side; substantially as and for the purposes described.

7. The combination with the two three-high sets of rolls and the two high set in line with each other, of a vertically and laterally movable truck carrying the feed-rollers of the first set, an oscillating feed-table on the opposite side of the first set, suitable feed-rollers for the other sets, and transfer mechanism between the feed-tables upon one side; substantially as and for the purposes described.

8. The combination with the two three-high sets of rolls and the two high set in line with each other, of a vertically and laterally movable truck carrying the feed-rollers of the first set, a set of friction rollers in front of the last pass of said set, transfer mechanism working between these friction-rollers, an oscillating feed-table on the opposite side of the first set, suitable feed-rollers for the other sets, and transfer mechanism between the feed-tables upon one side; substantially as and for the purposes described.

## 530,113. RAILROAD-TRACK. ALONZO C. MATHER, Chicago, Ill. Filed Jan. 23, 1893. Serial No. 459,376. (No model.)



*Claim.*—1. A railroad track consisting of three rails, the center one of which is made heavier and with its traction surface slightly higher than that of the two side rails, while the feet or lower heads of said rails are all on the same general level, in combination with three wheels to run on said rails, said wheels being the same diameter and fixed to one and the same axle, all as shown and described

2. The combination of the railroad ties "B," the three rails resting thereon, the traction surface of the side rails being slightly lower than that of the center rail, and three wheels to run thereon on said rails, said wheels being the same diameter and fixed to one and the same axle, all as set forth and described.

## 530,114. METHOD OF AND MEANS FOR OPERATING AND CONTROLLING ELECTROMOTORS. CARL MODEREGGER, Vienna, Austria-Hungary, assignor to Siemens & Halske, Berlin, Germany. Filed Dec. 16, 1893. Serial No. 493,827. (No model.) Patented in Germany Sept. 6, 1891, No. 68,722; in Austria-Hungary Jan. 29, 1892, No. 42,613 and No. 76,773; in Belgium Nov. 11, 1892, No. 102,331; in France Nov. 22, 1892, No. 225,853; in Switzerland Nov. 24, 1892, No. 6,232; in Italy Dec. 1, 1892, No. 33,076, and in England Mar. 3, 1893, No. 4,976.



*Claim.*—1. The method of operating and controlling an electromotor which consists in passing a current through the motor; and automatically switching a current neutralizing resistance into circuit after a determined period of operation.

2. The method of operating and controlling an electro-motor which consists in passing a current through the motor in either direc-

tion; and automatically reversing the current and varying the resistance of the circuit simultaneously after a determined period of operation.

3. The method of operating and controlling an electro-motor, which consists in passing a current through the motor; controlling the direction of the current through the motor; and causing the armature of said motor to automatically switch a current-neutralizing resistance into circuit after a determined period of rotation.

4. The method of operating railway switches, which consists in passing a working current through an electro-motor and thereby throwing the switch; controlling the direction of the current through the armature of said motor, without affecting the field thereof, and thereby correspondingly controlling the direction of throw of the switch; and controlling the flow of current through said armature by a resistance device in a normal return conductor alternately common to both circuits.

5. The combination with an electro-motor of a switch actuated thereby and adapted to reverse the motor and vary the resistance of the circuit after a determined period of operation.

6. The combination with an electro-motor of a switch actuated by the rotation of the armature thereof and adapted to reverse the motor and vary the resistance of the circuit after a determined period of operation.

7. In a railway switching system, a generator; an electro-motor connected therewith; independent sets of commutator brushes for said motor adapted to cause a flow of current through the armature thereof in either direction; a switch for simultaneously throwing either set of brushes into circuit and the other out of circuit; and means for actuating the railway switch in either direction in obedience to the flow of the motor current.

8. In a railway switching system, a generator; an electro-motor connected therewith; independent sets of commutator brushes for said motor adapted to cause a flow of current through the armature thereof in either direction; an oscillatory commutator-brush-controlling-switch loosely mounted upon the armature shaft; an automatic locking device for preventing movement of said switch during the rotation of the armature shaft; stops for limiting the normal movements of said switch, and means for actuating the railway switch in either direction in obedience to the flow of the motor current.

9. In a railway switching system, a generator; an electro-motor connected therewith; independent sets of commutator brushes for said motor adapted to cause a flow of current through the armature thereof in either direction and correspondingly operate the railway switch; a normal return conductor alternately common to both of said circuits; a resistance device in said return conductor; a switch for cutting out said normal return conductor and its resistance and causing a working current to traverse the armature shaft; an oscillatory commutator-brush-controlling-switch loosely mounted upon the armature shaft; an armature for the pole-pieces of the motor, adapted to electro-magnetically lock said switch upon the cutting out of the normal return conductor and its resistance and unlock said switch upon the restoration thereof; and means operated by the throwing of the railway switch for oscillating the commutator-brush-controlling-switch, and simultaneously reversing the positions of the commutator brushes, reversing the circuit and restoring to the reversed circuit the return conductor and resistance of the original circuit.

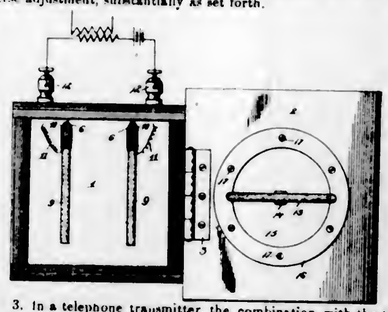
10. In a railway switching system, the combination with a generator, an electro-motor and switch-actuating mechanism operated by said motor; of two sets of armature brushes for said motor; an oscillatory switch for throwing the respective sets of brushes into and out of circuit alternately; devices operated by the railway switch for reversing the positions of the oscillatory switch and the commutator brushes upon the normal throwing of said railway switch, and for breaking connection between the commutator and one of the circuit making brushes upon the running through of the switch; stops for limiting the normal movements of the oscillatory switch; and fixed stops for limiting the abnormal movement of said switch.

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**530,115. TELEPHONE-TRANSMITTER.** MILES A. MORRHOUSE, Wevertown, N. Y. Filed Mar. 28, 1894. Serial No. 505,457. (No model.)

*Claim.*—1. In a telephone transmitter, the combination with the transmitter box and the vibrating diaphragm; of an electrode bar rigidly connected with one side of the diaphragm, parallel supporting wires arranged horizontally within the top of the transmitter box, and pendent electrodes adjustably connected at their upper ends to said wires and arranged to rest on said electrode bar at an angle, substantially as set forth.

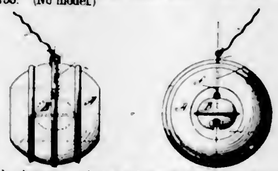
2. In a telephone transmitter, the combination with the transmitter box and the vibrating diaphragm; of a transverse electrode bar rigidly connected with the inner side of the diaphragm, pendent electrodes arranged to rest on said transverse electrode bar at an angle, and a flexible connection loosely suspending the upper ends of the pendent electrodes at the top of the transmitter box for transverse adjustment, substantially as set forth.



3. In a telephone transmitter, the combination with the transmitter box and the diaphragm; of an offstanding supporting arm or stud secured to the inner side of the diaphragm, a transverse electrode bar attached to the inner end of said supporting arm or stud, parallel supporting wires arranged horizontally within the top of the transmitter box and connected at one end to the box, loosely suspended or pendent electrodes arranged to rest on the transverse electrode bar at an angle, flexible suspending cords connected to the upper ends of the pendent electrodes and loosely engaging over said supporting wires, and suitable electrical connections with said loosely suspended or pendent electrodes, substantially as set forth

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**530,116. TOY.** JAMES A. MURPHY, Holyoke, Mass., assignor of one-half to George Nightingale, same place. Filed Dec. 4, 1893. Serial No. 492,755. (No model.)



*Claim.*—1. A toy consisting of a sphere of wood with an axial hole therethrough, having a wire extended through the thickness of the wood and terminating in internally and externally located eyes, and a bell hung on one of said eyes within said hole, substantially as described.

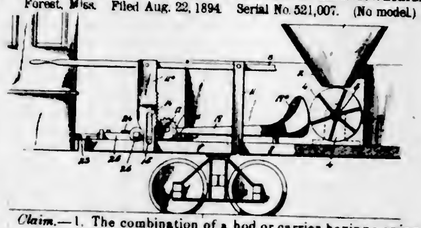
2. A toy consisting of a sphere of wood with an axial hole therethrough and a wire extended through the wood and having its terminals formed into eyes internally and externally of the ball, a bell hung upon one of said eyes within said hole and an elastic cord connected to the other eye, substantially as described.

3. A toy consisting of a sphere with an axial hole therethrough and with a series of circumferential grooves and bands of elastic rubber lying in said grooves and as to a portion of their bulk protruding beyond the surface of the sphere, and a wire having its terminals formed into eyes internally and externally of the sphere, a bell hung upon one of said eyes within said hole and an elastic cord connected to the other eye, substantially as described.

4. A toy consisting of a sphere of wood with a hole axially therethrough, and a wire penetrating the thickness of the wood of the sphere at the upper portion thereof, a bell hung loosely within said hole, and having an eye which is engaged for the support of the bell within the hole by said wire, substantially as described.

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**530,117. STOKER FOR ENGINE-FURNACES.** ELI T. MCWHORTER, Forest, Miss. Filed Aug. 22, 1894. Serial No. 521,007. (No model.)



*Claim.*—1. The combination of a hod or carrier having a swinging arm, an operating lever or handle, connections between said lever or handle and the arm of the hod or carrier, and means for filling the hod or carrier, substantially as specified.

2. The combination of a rock-shaft, a hod or carrier provided with an arm affixed to said rock-shaft, an operating lever, connections between the operating lever and said rock-shaft, and means for filling the hod or carrier, substantially as specified.

3. The combination with a swinging arm, a hod or carrier connected thereto, an operating lever, and connections between said operating lever and the swinging arm, of a rotary drum provided with spaced pockets, a receptacle arranged to discharge into the pockets of said drum, and connections between the operating lever and the drum, whereby the latter is rotated to discharge the contents of its pockets into the hod or carrier, substantially as specified.

4. The combination with a hod or carrier having a swing arm, an operating lever, and connections between said operating lever and the swinging arm, of a rotary drum provided with spaced pockets, a receptacle adapted to discharge its contents into said pockets, a ratchet-wheel affixed to the spindle of said drum, and an operating pawl carried by the lever and arranged in operative relation with said ratchet wheel, substantially as specified.

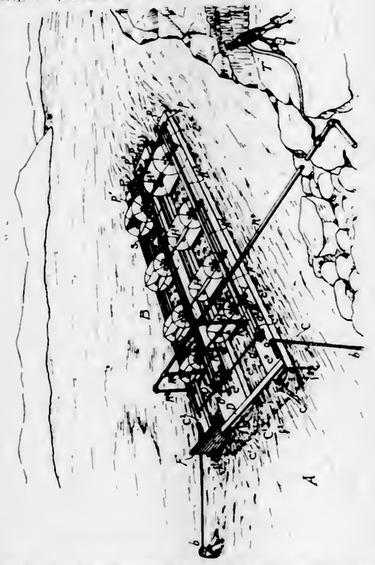
5. The combination with a hod or carrier having a swinging arm, and a rock-shaft carrying said arm, of an operating lever, a gear fixed to one end of the rock-shaft, a plunger connected to the operating lever and provided with a rack to mesh with said gear, and means operated by the lever to fill said hod or carrier, substantially as specified.

6. The combination with a hod or carrier having a swinging arm, an operating lever, connections between said operating lever and the swinging arm, and means connected with the operating lever for filling the hod or carrier, of a furnace door, and connections between the operating lever and the furnace door, whereby the latter is opened when the lever is moved in one direction and is closed when it is moved in the opposite direction, substantially as specified.

7. The combination with a hod or carrier having a swinging arm, an operating lever, connections between the operating lever and the swinging arm, and means operated by the lever for filling said hod or carrier, of a rocking lever, a plunger having a cam arranged in operative relation with one end of said rocking lever, a spring for returning said rocking lever to its normal position, and connections between the rocking lever and a furnace door, substantially as specified.

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**530,118. APPARATUS FOR GENERATING COMPRESSED AIR.** EDWIN C. NICHOLS, Kansas City, Mo. Filed July 19, 1893. Serial No. 480,966. (No model.)

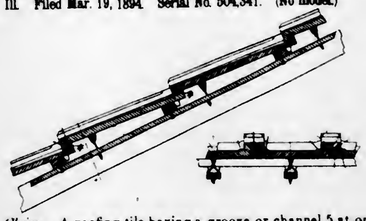


*Claim.*—1. An apparatus for generating compressed air, consisting of an air receiver, having an opening for the admission of the compressed air and a self closing valve and a revoluble air forcing compartment wheel having separate compartments and separate openings to each compartment registering with the opening to said receiver for the purpose described.

2. In an air compressing apparatus a receiver for the compressed air and a water sluice, a revoluble air forcing compartment wheel having an axis mounted upon the sides of and extending within said sluice and actuated by the flowing stream and having a registering valvular conductor for the compressed air from each compartment to the receiver as and for the purpose described.

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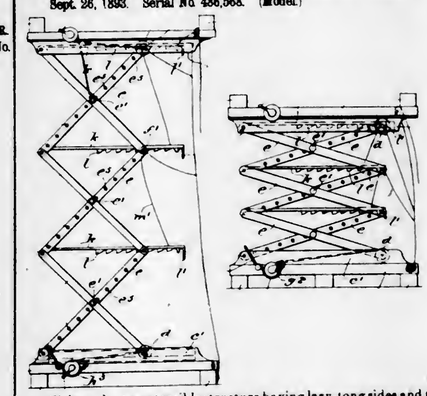
**530,119. ROOFING-TILE.** HEINRICH NIEDERLAENDER, Chicago, Ill. Filed Mar. 19, 1894. Serial No. 504,341. (No model.)



*Claim.*—A roofing tile having a groove or channel 5 at one side thereof, the bottom of which is below the upper face of the tile, and a rib or ridge 6 on the outer side of said groove or channel 5 rising above the upper face of the tile, a rib or ridge 4 at the upper end of the tile closing said groove or channel 5 and extending above the upper end of the tile, a groove or channel 8 in the lower end of the bottom face of said tile, and a depending rib or ridge 9 below said groove 8 extending below the lower face of the tile, and an overhanging flange at the side of the tile opposite said groove or channel 5 having a deep groove or channel 11 to receive said rib or ridge 6, the top of said groove or channel 11 extending above the upper face of the tile, and the rib or ridge 12 extending below the upper face of the tile, and an uprising lug 13 at the upper end of said overhanging flange, and a depending lug 14 at the lower end thereof, substantially as described.

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**530,120. EXTENSIBLE STRUCTURE FOR USE AS A BRIDGE, SCAFFOLD, TOWER, &c.** JAMES O. OAKLEY, Montreal, Canada. Filed Sept. 26, 1893. Serial No. 486,568. (Model.)



*Claim.*—1. An extensible structure having lazy-tong sides and two rows of cross rods with foot sections or platforms permanently connected at one end with the rods of one row, detachably connected with the rods of the opposite row and changeable from a position transversely of said structure to a position lengthwise of same for the purpose set forth.

2. An extensible lazy-tong structure having lazy-tong sides and two rows of cross rods with foot sections or platforms pivotally connected at one end with the rods of one row, detachably connected with the rods of the opposite row and changeable from a position transversely of said structure to a position lengthwise of same for the purpose set forth.

3. An extensible structure having lazy-tong sides, made up of sets or sections of pivoted bars and cross rods at the ends of each set of bars with independent foot sections or platforms permanently connected at one end of a section with a cross rod thereof and arranged and movable longitudinally of said structure to be connected with the cross rod at the end of the next section, with means for disconnecting such platforms from the last mentioned cross rod, for the purpose set forth.

4. An extensible lazy-tong structure having lazy-tong sides made up of sets or sections of pivoted bars and cross rods at the ends of each set of bars with independent foot sections or platforms pivotally connected at one end of a section with a cross rod thereof and arranged and movable longitudinally of said structure to be connected with the cross rod at the end of the next section, with suitable flexible line and connections for disconnecting the platforms from the last mentioned cross rod, for the purpose set forth.

5. An extensible structure having side frames formed of lazy-tong sections connected by two rows of cross rods as *f f'*, and foot sections or platforms pivotally connected at one end with the cross rods *f* and adapted, when the structure is extended in a vertical direction to rest with their opposite ends upon the rods *f'*, and when the structure is extended in a horizontal direction, each to rest with its opposite end upon the supporting cross rod *f* of another section or upon such section as set forth.

6. An extensible structure comprising side frames formed of lazy-tong sections connected by two rows of cross rods *f f''*, rigid end pieces or frames, one bar of each side section at both ends of the structure having a stationary pivotal connection with the end pieces and the other bar of such sections having a traveling pivotal connection therewith, foot sections or platforms pivotally connected at one end with the cross rods *f* and adapted when the structure is extended in a vertical direction, to rest with their opposite ends upon the rods *f''*, and, when the structure is extended in a horizontal direction, each to rest with its opposite end upon the supporting cross rod *f* of another section or upon such section as set forth.

7. An extensible structure having side frames formed of lazy-tong sections connected by two rows of cross rods as *f f''*, and foot sections or platforms, with locking teeth or projections on their under sides, and pivotally connected at one end with the cross rods *f* and adapted when the structure is extended in a vertical direction to rest with their opposite ends upon the rods *f''*, and when the structure is extended in a horizontal direction, each to rest with its opposite end upon the supporting cross rod *f* of another section and means for raising said opposite ends of such sections out of contact with said rods *f* for the purposes set forth.

8. An extensible structure comprising side frames formed of lazy-tong sections connected by two rows of cross rods as *f f''*, rigid end pieces or frames, one bar of each side section at both ends of the structure having a stationary pivotal connection with the end pieces, and the other bar of such sections having a traveling pivotal connection therewith; means for moving the bars having the traveling connection with the end pieces toward the ends of the bars having the stationary pivotal connection therewith, and suitable brake mechanism to prevent the too rapid return of such bars to their normal position; foot sections or platforms pivotally connected at one end with the cross rods *f* and adapted when the structure is extended in a vertical direction to rest with their opposite ends upon the rods *f''* and when the structure is extended in a horizontal direction each to rest with its opposite end upon the supporting cross rod *f* of another section or upon such section as set forth.

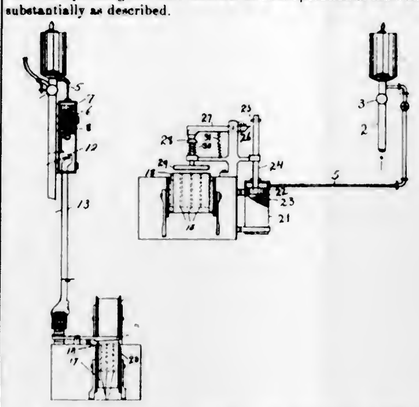
9. An extensible structure comprising side frames formed of centrally pivoted lazy-tong sections connected by two rows of cross rods as *f f''*, rigid end pieces or frames, one bar of each side section at both ends of the structure having a stationary pivotal connection with the end pieces, and the other bar of such sections having a traveling pivotal connection therewith; means at opposite ends of the structure, for respectively moving the bars having the traveling connections with the end pieces, toward and away from the ends of the bars having the stationary pivotal connection therewith, and suitable brake mechanism to prevent the too rapid return of such bars to their normal position, foot sections or platforms with ratchet teeth *l* and projection *l'* on their under sides and pivotally connected at one end with the cross rods *f* and adapted when the structure is extended in a vertical direction to rest with their opposite ends upon the rods *f''* and when the structure is extended in horizontal direction each to rest with said projections *l'* between another rod *f''* and the adjacent edge of the section pivoted to same or upon such section; and suitable guy ropes and connections for raising said foot sections, all substantially as and for the purposes set forth.

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**530,121. WHISTLE-SIGNAL RECORDER.** CHARLES E. ONGLEY, New York, N. Y., assignor to George J. Schoeffel, same place. Filed Jan. 2, 1894. Serial No. 496,343. (No model.)

*Claim.*—1. The combination of a whistle, a supply pipe therefor, a valve in said pipe for sounding the whistle, a time recorder, a steam operated circuit controller operated each time the whistle sounds, and electrical devices operated thereby for recording time at the time recorder, substantially as described.

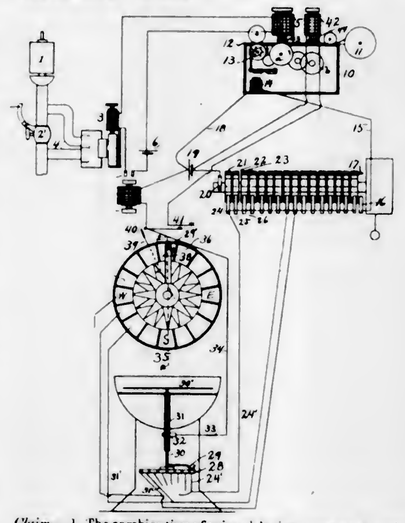
2. The combination of a whistle, a supply pipe therefor, a valve in said pipe, a time recorder, and means connected in advance of the valve for operating said time recorder at each operation of the whistle, substantially as described.



3. The combination of a whistle, a time recorder, a cylinder connected with the supply pipe of the whistle, a piston in the cylinder, and a circuit controller operated thereby, and in circuit with the time recorder.

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**530,122. SIGNAL APPARATUS.** CHARLES E. ONGLEY, New York, N. Y., assignor to George J. Schoeffel, same place. Filed Feb. 17, 1894. Serial No. 500,549. (No model.)



*Claim.*—1. The combination of a signal device, a compass, a switch operated thereby, and means thrown into operation by said switch for operating said signal device to indicate the points of the compass, substantially as described.

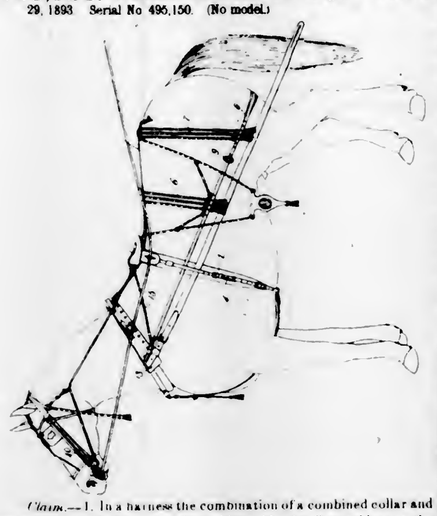
2. The combination of a whistle, a switch having terminals corresponding to the points of a compass, and automatic circuit making and breaking devices to give distinctive signals, and suitable circuit connections and devices for sounding the whistle, substantially as described.

3. The combination of a whistle, a magnet for sounding the same, a compass switch having contacts corresponding to the divisions of the compass, and a co-operating switch arm, automatic circuit making and breaking devices, and circuit connections, substantially as described.

4. The combination of a signal device, a magnet for operating it, a printing magnet of a recorder, connected so as to be operated with the valve magnet, and a separate printing magnet in a circuit with a hand key and with a magnet adapted to cause the signal to be sounded, whereby a special record will be made when the key is used, substantially as described.



**530,123. HARNESS.** JAN PASZKOWSKI, Chicago, Ill. Filed Dec. 29, 1893. Serial No. 495,150. (No model.)



*Claim.*—1. In a harness the combination of a combined collar and hames, a breeching connected to said combined collar and hames, the straps 6—7 adapted to pass over the animal's back for supporting said breeching, the strap 5 arranged to extend along the animal's back and being secured to the said straps 6—7, and the strap 10 secured to the upper part of said combined collar and hames and having connection with said strap 5, and the straps 15 connected to the strap 10 and having connection with the forward ends of said breeching, substantially as set forth.

2. The combination with a collar having the envelopes 17, of the hames having their upper ends hinged together inserted in said envelopes and their lower ends projecting therefrom, and means for detachably securing the lower ends of said hames together, substantially as set forth.

3. The combination with a collar, of a pair of hames having the enlargements 22 and a cup-shaped clasp adapted to fit over said enlargements for securing the hames together, substantially as set forth.

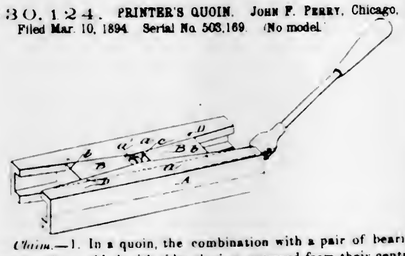
4. The combination with a collar, of a pair of hames having the enlargements 22 provided with outwardly beveled ends 23, and a clasp hinged to one of said hames and having an interior complementary in shape to said enlargements and adapted to fit over the same, substantially as set forth.

5. The combination with a collar, of the hames having the plate 25 and pin 26 projecting from their opposed ends and the socket 27 in the end of one of the hames for receiving said pin, and a clasp adapted to fit over the ends of said hames for securing them together, substantially as set forth.

6. The combination of a continuous flexible collar having the envelopes 17 extending from the upper part thereof downward and terminating at a considerable distance from the lower part thereof, the hames having their upper ends inserted in said envelopes respectively and their lower ends protruding therefrom and being free, the cap 18 fitting over the upper ends of said hames and collar and hinging the hames together and a latch arranged at the lower ends of said hames for securing them together, substantially as set forth.

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**530,124. PRINTER'S QUOIN.** JOHN F. PERRY, Chicago, Ill. Filed Mar. 10, 1894. Serial No. 503,169. (No model.)

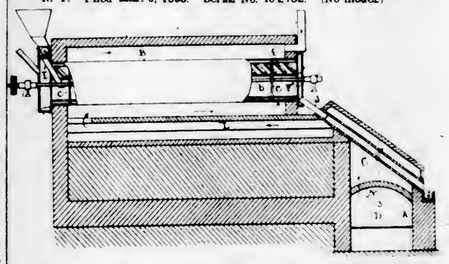


*Claim.*—1. In a quoin, the combination with a pair of bearing pieces, each provided with sides sloping outward from their central portions and with recesses in the inner central edges of their sides, of a pair of wedges having upward and downward projections provided on their sides with grooves parallel to the inclined faces of the wedges, said wedges being located between the bearing pieces with their wider ends outward, a series of pins projecting from the bearing pieces into the grooves in the wedges, a tightening rod provided with a collar rotatable in the recesses, said tightening rod being threaded into both wedges, the threads being respectively right and left handed, a ball secured to one end of the rod, and a transverse pin passing through the ball, substantially as and for the purpose set forth.

2. In a quoin, the combination, with a pair of bearing pieces, each provided with sides sloping outward from their central portions and with recesses in the inner central edges of their sides, of a pair of wedges located between the bearing pieces with their wider ends outward, a tightening rod provided with a collar rotatable in the recesses, the said tightening rod being threaded into both wedges, the threads being respectively right and left handed a ball on one end of the rod, and a pin passing transversely through the ball, substantially as and for the purpose set forth.

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**530,125. CALCINING APPARATUS.** WALTER S. PIERCE, New York, N. Y. Filed Mar. 6, 1893. Serial No. 464,732. (No model.)

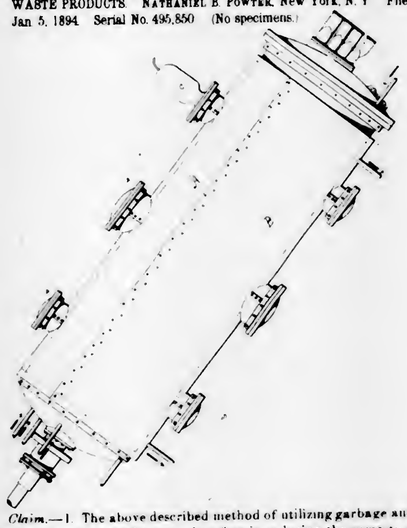


*Claim.*—1. In a calcining apparatus, an externally heated rotatable cylinder of metal with means for feeding material to and from the cylinder, and for heating the same, and a stationary retort of refractory material arranged in position to receive the material discharged from the cylinder, and means for heating the said retort to a high degree of heat, substantially as set forth.

2. The combination of the externally heated rotating cylinder of metal, and means for feeding the material to said cylinder, a stationary retort of refractory material arranged to receive the matter passing from the cylinder, a fire place for heating the retort and a flue extending from the said fire-place beneath the said cylinder, substantially as set forth.

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**530,126. PROCESS OF UTILIZING GARBAGE AND SIMILAR WASTE PRODUCTS.** NATHANIEL B. POWTER, New York, N. Y. Filed Jan. 5, 1894. Serial No. 495,850. (No specimens.)



*Claim.*—1. The above described method of utilizing garbage and other waste products, which consists, first in reducing the same to a

condition of sludge by steaming or boiling in the presence of sulfuric acid and removing the grease therefrom; second, mixing the sludge with a proper amount of insoluble alumina phosphate and lastly, subjecting the same to a simultaneous stirring and evaporation in vacuum, until the same is converted into a dry, granular mass, substantially as described and for the purposes specified.

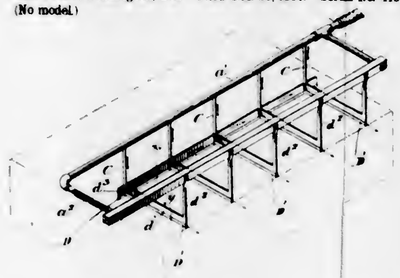
2. The above described method of utilising garbage and other waste products, which consists, first, in reducing the same to a condition of sludge by steaming or boiling and removing the grease therefrom; second, mixing the sludge with alumina phosphate; and lastly, subjecting the same to a simultaneous stirring and evaporation in vacuum until the same is converted into a dry, granular mass, substantially as described and for the purposes specified.

3. The above described method of utilising garbage and other waste products, which consists, first, in reducing the same to a condition of sludge by steaming or boiling in the presence of sulfuric acid and removing the grease therefrom; second, mixing the sludge with a proper amount of phosphate of lime or other suitable phosphate; and lastly, subjecting the same to a simultaneous stirring and evaporating in vacuum, until the same is converted into a dry, granular mass substantially as described and for the purposes specified.

4. The above described method of utilizing garbage and other waste products, which consists, first, in reducing the same to a condition of sludge by steaming or boiling and removing the grease therefrom; second, mixing the sludge with phosphate of lime or other suitable phosphate; and lastly, subjecting the same to a simultaneous stirring and evaporating in vacuum, until the same is converted into a dry, granular mass, substantially as described and for the purposes specified

## 530,127. APPARATUS FOR SUBDIVIDING BLOCKS OF ICE.

LEA PUSEY, Wilmington, Del. Filed Dec. 21, 1891. Serial No. 415,706. (No model.)



*Claim.*—1. The device for subdividing blocks of ice, consisting of the combination of a main longitudinal heat conductor pipe, or member, —as *a'*—and a series of small transverse L-shaped conductor members—as C, *d'*—communicating with said main conductor, substantially as and for the purpose set forth.

2. In a device for subdividing blocks of ice, the combination of a main longitudinal heat conductor pipe, or member, a small conductor parallel with and beneath said main conductor, and a series of small transverse L-shaped conductors communicating with said parallel conductors, substantially as and for the purpose set forth.

3. In a device for subdividing blocks of ice, the combination of a main longitudinal heat conductor pipe, or member, a series of small transverse L-shaped conductors communicating therewith, and a flexible or yielding conductor member attached to said main conductor, and adapted to be connected to the source of heat supply, substantially as and for the purpose set forth.

4. In a device for subdividing blocks of ice the combination of the supply pipe, the vertical pipes C communicating therewith, the horizontal pipes D, *d'*, the end pieces $a^1$, the supporting rods $d^2$, and the supporting bar *a*.

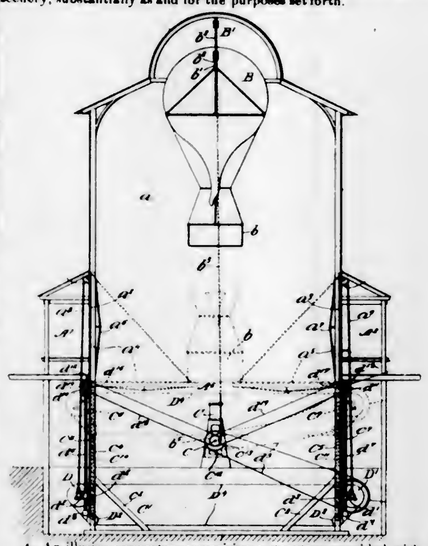
## 530,128. ILLUSION APPARATUS.

PAUL ROSENEWEY, Philadelphia, Pa. Filed Sept. 1, 1894. Serial No. 521,923. (No model.)

*Claim.*—1. An illusion apparatus, comprising a structure having a well or chamber, openings for exit and entrance, a baloon and its accessories, movable platforms adapted to engage said openings, movable scenery, motive power and mechanism controlled thereby for actuating said platforms, scenery and balloon, substantially as and for the purposes set forth.

2. An illusion apparatus, comprising a structure provided with a well or chamber, having movable platforms adapted to close openings in the wall of said structure, a balloon and block and tackle mechanism, scenery movable in several directions, an engine and means for controlling said balloon, scenery and platforms, substantially as and for the purposes set forth.

3. An illusion apparatus, comprising a structure provided with a well having platforms adapted to close openings in the wall thereof, entrance and exit pavilions communicating with said openings, a balloon provided with a basket, means adapted to elevate and lower said balloon, scenery and mechanism for controlling said platforms and scenery, substantially as and for the purposes set forth.

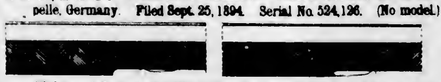


4. An illusion apparatus, comprising a structure provided with a well having painted stationary and movable scenery therein, movable platforms adapted to close the openings leading to entrance and exit pavilions, a balloon with a basket, mechanism for raising and lowering certain of said scenery with the raising and lowering of said balloon, substantially as and for the purposes set forth.

5. An illusion apparatus, comprising a structure provided with an internal chamber or well having a balloon suspended therein, canvas adapted to be raised and lowered and moved transversely of said well, motive power and means for controlling said balloon and scenery, substantially as and for the purposes set forth.

## 530,129. FIREPROOF CEILING.

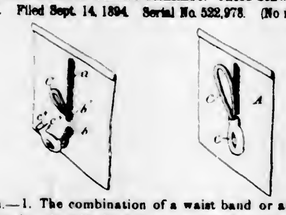
JOSEPH RUBBEN, Aix-la-Chapelle, Germany. Filed Sept. 25, 1894. Serial No. 524,126. (No model.)



*Claim.*—A fire proof ceiling consisting of small flat arches or strutted frames filling up the bays or compartments between the joists or beams and composed of two or three rows of bricks or stones set slantwise, which at the points where they lean against each other on the slope with their tops touching, abut against quadrangular or trapezoidal iron bars set on the broader edge with the narrower edge uppermost, substantially as described and for the purpose specified.

## 530,130. WAISTBAND FOR TROUSERS AND DEVICE FOR ATTACHING SHIRT-WAISTS THERETO.

JACOB SCHWARZ, New York, N. Y. Filed Sept. 14, 1894. Serial No. 522,978. (No model.)



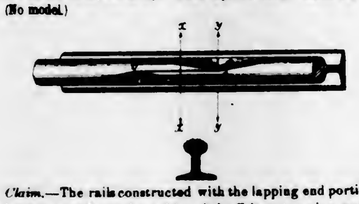
*Claim.*—1. The combination of a waist band or analogous article perforated as described, of a loop or cord passing through the apertures and having its ends and the bight which forms the fastening loop on the same side of the fabric, together with a clip secured to the loop or cord upon the same side of the fabric from which the ends and bight project, substantially as described.

2. The combination of a waist band or other analogous article having apertures as shown and described, of an elastic loop passing through the apertures and having its ends and the bight which forms the fastening loop on the same side of the fabric, the ends of said loop being entered into and secured in a clip and doubled upon itself at the point of entrance, the said clip being also provided with an arm or set of arms beneath which the loop is entered and secured where it emerges from the aperture through which it is last projected, substantially as described.



## 530,131. RAILWAY-RAIL.

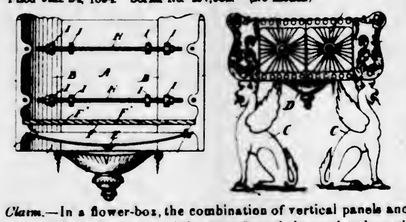
ALEXANDER SCHWARMKOHLD, Frankfort-on-the-Main, Germany. Filed Apr. 18, 1894. Serial No. 507,996. (No model.)



*Claim.*—The rails constructed with the lapping end portions having the upper surfaces thereof beveled off in a tapering manner on opposite sides, the said rails being also beveled in like manner at those portions which abut against the ends of the lapping portions, substantially as described.

## 530,132. FLOWER-BOX.

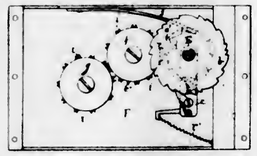
ALBERT SMITH, Grand Rapids, Mich. Filed Jan. 24, 1894. Serial No. 497,932. (No model.)



*Claim.*—In a flower-box, the combination of vertical panels and corner pieces, having lugs on their inner surfaces, bolts passing through said lugs, a bottom having perforations, flanges supporting said bottom, a concave sub bottom having a central opening and secured to said flanges, and a drip cup sustained below said central opening, substantially as described.

## 530,133. MECHANISM FOR DETECTING OPENING OF LOCKS.

CHARLES SMYTH, Dayton, Ohio. Filed Feb. 8, 1894. Serial No. 499,555. (No model.)



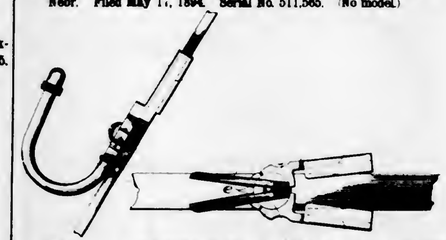
*Claim.*—1. The herein described mechanism for detecting the opening of the lids of cash registers or other apparatus, consisting of a shaft with a key-hole plate, and an arm rigidly attached thereto, said plate normally closing the key-hole of a lock, a wheel having irregularly disposed ratchet teeth on its periphery, and characters on its face, said characters being placed thereon in irregular order, a ratchet wheel of smaller diameter provided with characters on its face, both of said wheels being loosely mounted on said shaft, ratchet pawls pivoted on said arm whereby said wheels are rotated when the key-hole plate is moved from the key-hole, and different characters are thereby made to appear through slight openings beneath the lid, substantially as herein described.

2. The combination of the shaft with the key-hole plate, and the arm, rigidly mounted thereon, ratchet pawls pivoted on said arm, the wheel (*b*) provided with irregular teeth, and characters stamped in irregular order on its face, the ratchet wheel (*d*) bearing characters upon its face, both of said wheels being loosely mounted on the shaft, substantially as described.

3. The combination of the shaft with the key-hole plate, and the arm rigidly attached thereto, ratchet pawls pivoted to said arm, the wheel (*b*) provided with irregular peripheral ratchet teeth, and irregularly stamped characters on its face, and the toothed wheels (*f*) and (*g*) bearing characters upon their faces, the wheel (*f*) being actuated by the wheel (*d*) upon one revolution thereof, and the wheel (*g*) being actuated upon one revolution of the wheel (*f*), substantially as herein described.

## 530,134. REIN-SUPPORTER.

REDINGTON STANHOPE, Lincoln, Nebr. Filed May 17, 1894. Serial No. 511,565. (No model.)



*Claim.*—1. A rein supporter made in the form of a hook and comprising two parts hinged together at or near the center one end of said parts constituting a clamp adapted to receive and hold a strap between them whereby the supporter is fastened in place on the harness, and means on the hook portion for holding the supporter in its closed position, substantially as set forth.

2. In a rein supporter, the combination with a hook made in two parts hinged together, of a clamping jaw projecting from each part of the hook and adapted to receive a strap between them, and a collar adapted to be placed on said hook to retain the parts together and the clamps in clamped position on the strap, substantially as set forth.

3. In a rein supporter, the combination with a hook made in two sections hinged together, the inner end or shank of said hook being made slightly tapering, of a clamping jaw having a groove, projecting from each part of the hook and adapted to receive a strap between them, and an elongated collar placed on the tapering portion of the hook for retaining the hook closed and the clamps clamped to the strap, substantially as set forth

## 530,135. STAMP OR ENVELOPE MOISTENER.

ADOLPH STURBNER, Bennett, Pa. Filed Mar. 19, 1894. Serial No. 504,284. (No model.)



*Claim.*—1. In a device of the class described, the combination of the reservoir or bulb, and a looped tube in communication at its terminals with the interior of the reservoir or bulb and having a transverse perforated portion, and a discharge nozzle having a transversely elongated outlet, the same being constructed of sheet metal folded upon itself, at one edge, to form a tubular sleeve embracing the transverse perforated portion of the looped tube, and again folded upon itself laterally to form opposite parallel lips which converge toward their outer edges, substantially as specified.

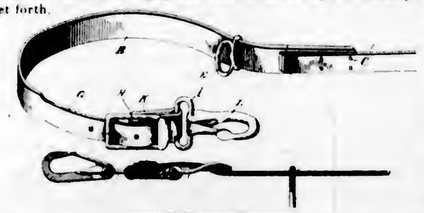
2. In a device of the class described, the combination with a reservoir or bulb, of a discharge nipple comprising a looped tube in communication at its ends with the interior of the reservoir or bulb and having a transversely disposed perforated portion forming a distributing tube, and an elongated nozzle or outlet communicating with the distributing tube, substantially as specified.

## 530,136. HITCHING-STRAP.

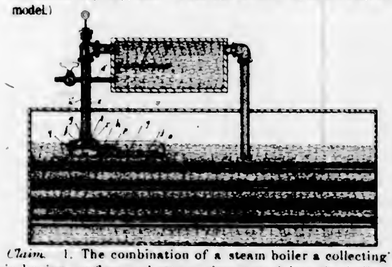
FRANK SWEETLAND, Angola, N. Y. Filed Jan. 31, 1894. Serial No. 498,669. (No model.)

*Claim.*—In a hitching device, the combination of the main hitching strap, of the noose strap joined at one end to the main hitching strap and providing a stop portion therewith at such joint, said noose

strap being wider than the main strap to compensate for wear, a slide or noose ring mounted to slide freely on said wide noose strap, a noose buckle adjustably secured to the free end of the noose strap, a short flexible connecting strap K, arranged at the inner side of said buckle and consisting of a short length of leather doubled upon itself to form opposite loop ends and having its terminals riveted together at an intermediate point, said connecting strap being connected at one end to the cross bar of said adjustable buckle, and a snap hook having an eye loosely engaging the other free end of said flexible connecting strap and adapted to engage said slide or noose ring, substantially as set forth.



530,137. SEDIMENT-EXTRACTOR FOR STEAM-BOILERS. JAMES E. THOMAS, Bay City, Mich. Filed Apr. 4, 1890. Serial No. 346,540. (No model.)



*Claim.* 1. The combination of a steam boiler a collecting reservoir having outflow and return pipes passed into the boiler and reaching below the water surface, and with an enlarged funnel end connected to the inner end of the outflow pipe and having its mouth presented to the bottom of the boiler, a sediment collector beneath said enlarged end, a steam chamber below the collector, and a passage for steam from the steam chamber to said enlarged end, substantially as set forth.

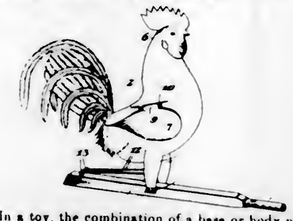
2. The combination in a steam boiler, of a collecting chamber outside of the boiler, and the out flow and return pipes having one end connected with opposite ends of the collecting chamber and with their opposite ends passed into the boiler and reaching below the water surface, of a sediment collector provided on its under side with a cavity to catch the steam made beneath, and provided with an opening for the egress of the steam, a funnel covering the opening and connected to the lower end of the said out-flow pipe and with a space between the collector and the edges of the funnel, substantially as set forth.

3. The combination with a steam boiler, a collecting reservoir outside of the boiler and provided with out-flow and return pipes passed into the boiler and with an enlarged end or funnel connected to the inner end of the out-flow pipe and having its open end beneath the water surface, of a sediment collector beneath the said enlarged end and provided on its under side with a cavity for catching the steam rising beneath, and having an opening for the steam to pass from the cavity through the funnel end and into the out-flow pipe for the purpose set forth, substantially as described.

4. In a sediment extractor the combination of a steam boiler a collecting reservoir having out-flow and return pipes passed into the boiler and an enlarged end or funnel connected to the inner end of the out-flow pipe and having its open end presented to the bottom of the boiler, a sediment collector beneath the said enlarged end, and provided on its under side with a cavity to catch the steam rising beneath, and provided with an opening beneath the said enlarged end for the egress of the steam into the pipe with a regulating plug $g'$, passed into and partly closing the said opening, and with a rod or stem $h'$, passed upwardly through the said inflow pipe and through a packing box $i'$, substantially as and for the purpose set forth

530,138. TOY. TIMOTHY S. THORN, Plainfield, N. J. Filed May 23, 1894. Serial No. 512,221. (No model.)

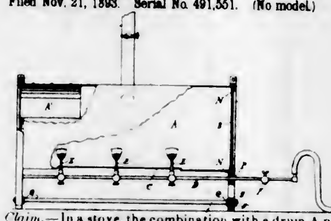
*Claim.*—1 In a toy, the combination of a base portion, the figure of a fowl mounted thereon, a wing pivotally mounted in each side of the figure and capable of swinging on their fulcrums, each of said wings having fixed thereto inwardly-projecting studs, and a spring-arm arranged within the figure and connected to the studs, said arm being extended out of the figure and secured to the base and having a normal tendency to cause the wings to lie against the sides of the figure, the arm being adapted to be depressed so as to raise the wings, substantially as described.



2. In a toy, the combination of a base or body portion, the figure of a fowl rigidly secured thereto, a wing pivotally mounted on each side of the figure and having fixed thereto an inwardly-projecting stud or arm, and a spring-rod pivotally connected to each of said arms and extending downwardly through the body of the figure and thence outwardly and horizontally where it is connected to the main or body portion, said rod being adapted to be depressed to operate the wings and to automatically return said wings to their normal position when the pressure is released, substantially as described.

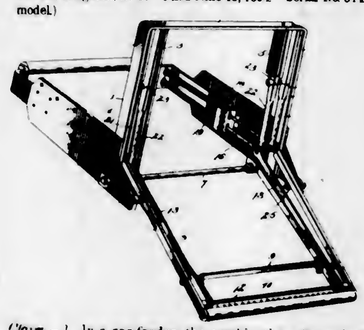
3. A toy comprising in its construction a base portion having a whistle thereon, the figure of a fowl mounted on the base portion, wings pivoted to the sides of the fowl, and a spring-arm passing into the body and connected to the wings, the remaining end of the arm being extended out beyond the fowl and secured to the base portion so as to be reached by the operator, substantially as described

530,139. GAS-STOVE. WILLIAM A. TODD, New York, N. Y. Filed Nov. 21, 1893. Serial No. 491,551. (No model.)



*Claim.*—In a stove, the combination with a drum A provided with an outlet pipe H, and a supply pipe, of the cast-iron wreath heads I and I' provided with an annular recess N adapted to receive the ends of a drum A, the perforated lugs C at the top of said heads adapted to receive the plate K and the rod Q passing through suitable openings in the heads below the drum A, for holding the parts together, substantially as described.

530,140. CAR-FENDER. EDGAR R. TOWNE and FRANKLIN S. TOWNE, Kingston, N. Y. Filed June 13, 1894. Serial No. 514,452. (No model.)



*Claim.*—1. In a car fender, the combination of a main frame, a hinged frame connected therewith and arranged at the bottom thereof and extending forward therefrom and provided with a hinged extension depending rearwardly-swinging bars arranged in pairs at opposite sides of the main frame, the rigid braces arranged at each side of the hinged frame and connected with the extension thereof at their front ends and with two of the depending bars at their rear ends, the folding braces arranged adjacent to the rigid braces and connected at their rear ends to the other depending bars and at their front ends with the extension of the hinged frame, and springs connected with the braces for cushioning the same, substantially as described.

2. In a car-fender, the combination of a main frame provided at each side with depending rearwardly-swinging bars arranged in pairs, rods movably mounted on the main frame and connected with the depending bars, springs disposed on the rods and cushioning the rearward swinging of the said bars, a forwardly extending hinged frame connected with the main frame, and a hinged extension of the last-mentioned frame connected with the rearwardly-swinging bars, substantially as and for the purpose described.

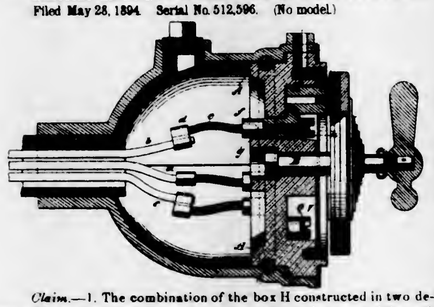
3. In a car-fender, the combination of a main frame provided at each side with depending rearwardly-swinging bars arranged in pairs, rods movably mounted on the main frame and connected with the depending bars, springs disposed on the rods and cushioning the rearward swinging of the said bars, a forwardly-extending frame hinged to the main frame and having at its outer end a hinged extension, and the rigid and folding braces arranged in pairs and connected at their front ends to the said extension and at their rear ends to the rearwardly-swinging bars, substantially as described.

4. In a car-fender, the combination of a main frame provided at each side with a pair of depending rearwardly-swinging bars, a forwardly-extending frame hinged at its inner end to the main frame and provided at its outer end with a hinged extension, the rigid and folding braces pivotally connected at their front ends to said extension and similarly connected at their rear ends to the depending bars, springs for cushioning the rearwardly-swinging bars, stops located beneath the folding braces and mounted on the main frame, and means for limiting the forward swinging of the depending bars, substantially as described.

5. In a car-fender, the combination of a main frame, a forwardly-extending frame hinged at its inner end to the main frame and provided at its outer end with a hinged extension, yielding braces connecting the extension with the main frame, a roller arranged in advance of the extension, a yielding netting connected at its lower end to the extension and at its upper end to the main frame, and a transverse strip located in advance of the roller, substantially as described.

6. In a car-fender, the combination of a main frame provided at each side with depending rearwardly-swinging bars arranged in pairs, rods movably mounted on the main frame and connected with the depending bars, springs disposed on the rods and cushioning the rearward swinging of said bars, adjustable nuts mounted on the rods for regulating the tension of the springs, a forwardly-extending frame hinged to the main frame and having at its outer end a hinged extension, and the rigid and folding braces arranged in pairs and connected at their front ends to the said extensions and at their rear ends to the rearwardly swinging bars, substantially as described.

530,141. SERVICE END, CUT-OUT, AND SWITCH-BOX FOR ELECTRIC-LIGHTING CIRCUITS. JOHN VAN VLECK, New York, N. Y. Filed May 28, 1894. Serial No. 512,596. (No model.)



*Claim.*—1. The combination of the box H constructed in two detachable portions, circuit conductors, as $a\ b\ c$, entering one end thereof, a base, A, of insulating material received in the opposite end, switch mechanism mounted on said base and having rigid conductors, as $g$, and flexible conductors, $e$, within said box, connecting said conductors $a\ b\ c$ with said rigid conductors $g$, substantially as described.

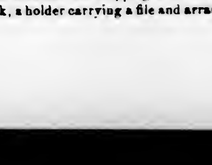
2. The combination of the box H, having a tubular projection, H', adapted to receive a tube, G, containing circuit conductors, as $a$, $b$, $c$, a base, A, of insulating material received in the opposite end of said box, a switch mechanism mounted on said base and provided with contact blocks, L, bolts, $g$, entering said blocks L and extending through said base, and flexible conductors, $e$, within said box connecting said blocks L and conductors $a$, $b$, $c$, substantially as described.

3. The combination, in a switch box, of the case H made in two detachable portions, one portion being provided with the tubular projections U, U', U'', and semi-tubular projections on both portions uniting to form the tubular projection H', a service conductor entering said box through said tubular projection H' and having circuit wires $a$, $b$, $c$, house mains entering through said projections U U' U'' and a switch mechanism received in said box H and interposed between said house mains and said circuit wires $a$, $b$, $c$.

4. The combination of house mains and a service cable having conductors, $a$, $b$, $c$, provided with flexible end portions, $e$, and, at their extremities, threaded bolts, $g$, a box, H, inclosing said end portions and bolts, and a switch mechanism secured to said box and connected with said house mains and said bolts $g$.

5. The combination, in a switch box, of the base A of insulating material, the conducting blocks L and M and O therein, safety catch Q interposed between blocks M and O, a switch mechanism supported on said base A and adapted to make and break circuit between blocks L and M, box H made in two detachable portions receiving base A, a circuit conductor, $b$, entering said box H, and means of connecting conductor $b$ and block L within said box H.

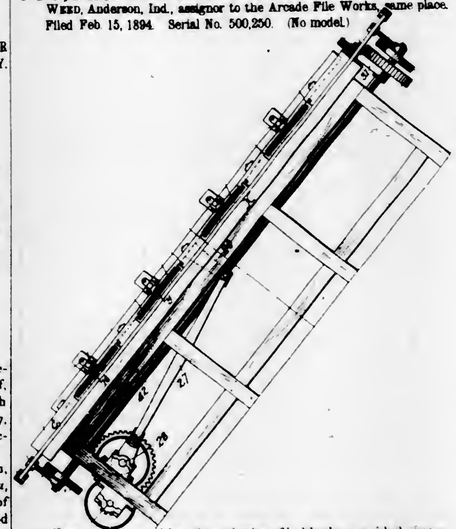
530,142. TOY. JOSEPH WALKER, Birmingham, England. Filed Mar. 7, 1894. Serial No. 502,742. (No model.)



*Claim.*—1. The construction and arrangement of a toy panoramic show in which the rollers containing or carrying the picture, sheet or screen are rotated by means of an operating handle and driving wheel carried upon a pivoted bracket plate, which is capable of being withdrawn beyond the case or cabinet, substantially as and for the purposes hereinbefore described, and as illustrated in the accompanying drawings.

2. In a toy panoramic show cabinet case or box the construction of a pivoted driving wheel bracket plate F, which is capable of entering into, or upon a catch plate, or retaining plate G, when the roller driving elastic band $e$, is to be tightened, and the wheel E, set in motion by the handle D, substantially as hereinbefore described and as illustrated in the accompanying drawings.

530,143. MACHINE FOR STRIPPING FILE-BLANKS. ALFRED WEED, Anderson, Ind., assignor to the Arcade File Works, same place. Filed Feb 15, 1894. Serial No. 500,250. (No model.)



*Claim.*—1. A machine for stripping file blanks provided with a holder for a blank, a holder carrying a file and arranged to permit the

file to be brought flat against the upper face of the blank, means for imparting an oscillating movement to the blank holder and means for reciprocating the two holders in opposite directions, substantially as set forth.

2. The combination in a machine for stripping file blanks, of a series of holders for the file blanks connected with one operating device, a series of file holders connected with another operating device, means for operating the said devices so as to move the blanks back and forth in one direction, and the files back and forth in a direction at right angles to that of the holders, and means for imparting a simultaneous oscillating movement of the blanks, substantially as set forth.

3. The combination in a machine for stripping file blanks, of holders for the files and blanks, and means for reciprocating them in directions at right angles to each other, and means for imparting a rocking or oscillating motion to the blank holders, substantially as and for the purpose set forth.

4. The combination in a machine for stripping file blanks, of holders and means for attaching the blanks thereto, arms having waved bearings or slots extending from the holders pins extending into said slots, and a bar to which the series of said holders is pivoted, substantially as and for the purpose set forth.

5. In a machine for stripping file blanks, the combination with a reciprocating file holder, of a blank holder, means for reciprocating the blank holder, and means for oscillating the same, substantially as described.

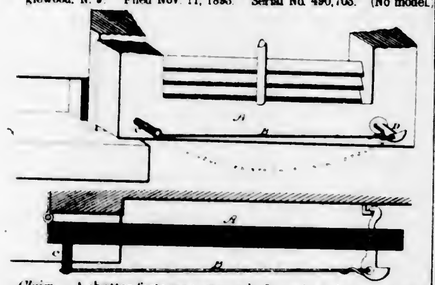
6. The combination with a series of blank holders, of a series of file holders connected to a slide E, means for reciprocating the said slide, and means for oscillating said blank holders, substantially as set forth.

7. The combination with a series of file holders of a series of blank holders, a bar C to which the blank holders are connected, and means for reciprocating the bar C in one direction, and the holders B in a direction at right angles to that of the bar, and means for simultaneously oscillating the blank holders, substantially as set forth.

8. The combination of the reciprocating slide E having an inclined edge, the bars C supporting the blank holders, an arm 31 with a projection arranged to make contact with the end of the slide E, a spring for moving the said arm in one direction, a pawl carried by said arm and engaging a ratchet upon the shaft 32, and crank wheels upon said shaft having their cranks connected with one of the bars C, substantially as set forth.

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530,144. SHUTTER-FASTENING. EDWARD WEGMANN, Jr., Englewood, N. J. Filed Nov. 11, 1893. Serial No. 490,703. (No model.)



*Claim.*—A shutter fastener composed of a spring wire or rod that is fastened to the shutter at its inner end, and to the catch or fastening at its outer end, the rod or wire serving both as a handle to operate the shutter and the fastening at the same time, and to normally hold the catch so as to automatically engage with its fastening on the wall, substantially as shown and described.

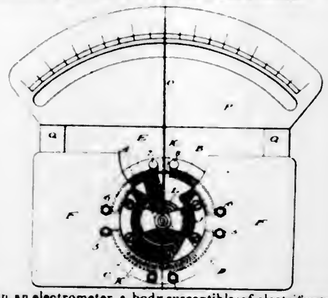
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530,145. ELECTROMETER. EDWARD WESTON, Newark, N. J. Filed Apr. 26, 1893. Serial No. 471,991. (No model.)

*Claim.*—1. In an electrometer, containing two fixed electrodes and a movable body susceptible of electrification and disposed in invariable inductive proximity to said electrodes, a resilient or elastic body communicating with said movable body and opposing and counterbalancing the movement thereof due to the electrical field.

2. In an electrometer, containing two fixed electrodes and a movable body susceptible of electrification and disposed in invariable inductive proximity to said electrodes, a resilient or elastic body communicating with said movable body and opposing and counterbalancing the movement thereof due to the electrical field, and circuit connections whereby the electrifying charge is communicated to said movable body through said resilient or elastic body.

3. In an electrometer, two fixed electrodes and disposed each with a surface in the same plane, a movable body susceptible of electrification and rigidly supported in close and invariable inductive proximity to said surfaces of said electrodes, and a resilient or elastic body communicating with said movable body and opposing and counterbalancing the movement thereof due to the electrical field in a direction substantially parallel to the plane of said surfaces.



4. In an electrometer, a body susceptible of electrification, a rotary or vibratory shaft disposed in fixed bearings supporting said body, two fixed electrodes disposed in inductive proximity to the path of rotary or vibratory movement of said movable body, and a resilient or elastic body opposing and counterbalancing the rotary or vibratory movement of said movable body due to the electrical field.

5. In an electrometer, a body susceptible of electrification, a rotary or vibratory shaft disposed in fixed bearings supporting said body, two fixed electrodes disposed in inductive proximity to the path of said movable body, and a coiled spring interposed between said rotary shaft and an abutment and opposing and counterbalancing the movement of said shaft.

6. In an electrometer, containing two fixed electrodes, a movable body susceptible of electrification and disposed in invariable inductive proximity to said electrodes and a resilient or elastic body communicating with said movable body and opposing and counterbalancing the movement thereof due to the electrical field, an indicating device controlled by said movable body and showing by direct reading the extent of movement of said body.

7. In an electrometer containing two fixed electrodes, a movable body susceptible of electrification and disposed in invariable inductive proximity to said electrodes, and a resilient or elastic body communicating with said movable body and opposing and counterbalancing the movement thereof due to the electrical field, an index or pointer controlled by said movable body and a scale graduated in electrical units, whereby the difference in potential existing between said electrodes may be directly read.

8. In an electrometer, two fixed, curved electrodes disposed on the circumference of a circle, a centrally pivoted body susceptible to electrification having its outer surface parallel to the surface of said electrodes and in close proximity thereto and a coiled spring connected to said body and to an abutment and opposing and counterbalancing the movement of said body, due to the electrical field, and circuit connections whereby the electrifying charge is communicated to said pivoted body through said spring.

9. In an electrometer, two fixed, curved-plate electrodes disposed on the circumference of a circle, a centrally pivoted shaft, a curved metal plate supported on said shaft having its surface parallel to the surface of said electrodes and in close proximity thereto, a coiled spring connected to said shaft and to an abutment and opposing and counterbalancing the rotary or vibratory movement of said shaft due to the electrical field, an index carried by said shaft and a fixed scale showing the extent of movement of said index.

10. In an electrometer, two fixed, curved electrodes, as A and B, each consisting of a plate substantially turned or folded back on itself, and disposed on the circumference of a circle, a centrally pivoted shaft, a radial arm on said shaft, a metal plate, as K, carried by said arm and entering the electrodes A and B, and circuit connections whereby said plate K may be electrified.

11. In an electrometer, the combination of the fixed, circularly-disposed electrodes, as A D and B C, the centrally-pivoted shaft H, the curved plates K K′ carried by said shaft and entering said electrodes, the coiled spring L counterbalancing and opposing the motion of said shaft and circuit connections, substantially as described.

12. In an electrometer, containing two fixed electrodes and a movable body susceptible of electrification and disposed in inductive proximity to said electrodes, a resilient or elastic body communicating with said movable body and opposing and counterbalancing the movement thereof due to the electrical field, and means for adjusting the elasticity or tension of said body.



13. In an electrometer, containing two fixed electrodes and a movable body susceptible of electrification and disposed in inductive proximity to said electrodes, a resilient or elastic body connected to said movable body and opposing and counterbalancing the movement thereof due to the electrical field and means for adjusting said movable body into normal or initial position by varying the elasticity or tension of said resilient body.

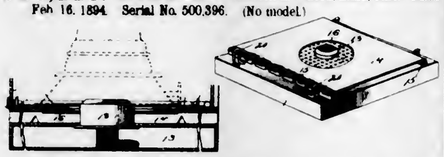
14. In an electrometer, a body susceptible of electrification, a rotary or vibratory shaft disposed in fixed bearings supporting said body, two fixed electrodes disposed in inductive proximity to the path of said movable body, an adjustable abutment and a coiled spring connected to said rotary shaft and to said abutment; whereby by the adjustment of said abutment the tension or elasticity of said spring may be varied.

15. In an electrometer containing a movable electrode and a fixed electrode relatively disposed in inductive proximity, an index actuated by said movable electrode and showing the extent of movement thereof; the said index being insulated, and thus not receiving charge, from the remainder of the apparatus.

16. In an electrometer containing two fixed electrodes and a movable body susceptible of electrification and disposed in inductive proximity to said electrodes, an index for showing the extent of movement of said movable body supported by said body and insulated therefrom.

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530,146. LUNCH-HEATER. AMELIA L. WHITE, Lima, Ohio. Filed Feb. 16, 1894. Serial No. 500,396. (No model.)



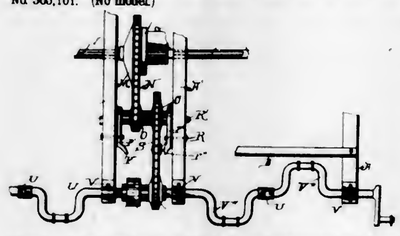
*Claim.*—1. The combination with the box or casing having a circular opening, of a lower hollow base or reservoir having a collar extending upwardly through the opening, an intermediate diaphragm arranged under the box or casing and perforated opposite the opening and having depending flanges secured to the base and provided with openings, a cap surrounding the opening in the base, and a burner cap fitted over the same and secured to the collar, substantially as specified.

2. The combination with the box or casing having the central opening in its bottom, of the rectangular oil-reservoir thereunder, the intermediate diaphragm spaced from and secured to the oil-reservoir and having a central perforated portion agreeing with the opening in the bottom, a collar passed through the perforation in the diaphragm and the top of the reservoir, a conical cap arranged upon the opening in the bottom of the casing, a burner-cap arranged upon said cap and secured to the collar, staples extending upwardly from the reservoir through openings in the bottom of the casing, and locking-rods passed removably through the staples within the casing, substantially as specified.

3. The combination with the box or casing having the central opening in its bottom, of the rectangular oil-reservoir thereunder, the intermediate diaphragm spaced from and secured to the oil-reservoir and having a central perforated portion agreeing with the opening in the bottom, a collar passed through the perforation in the diaphragm and the top of the reservoir, a conical cap arranged upon the opening in the bottom of the casing, a burner-cap arranged upon said cap and secured to the collar, and means for detachably securing the reservoir in place, substantially as specified.

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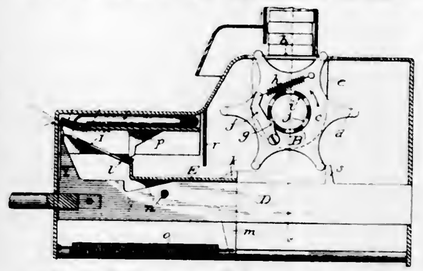
530,147. HAY-TEDDER. WILLIAM N. WHITELEY, Muncie, Ind., assignor to Charles A. Kitts, same place. Filed Mar. 26, 1894. Serial No. 505,101. (No model.)



*Claim.*—A hay tedder of the class described consisting of a main frame carrying a sectional crank shaft and a jointed and hinged sub frame, carrying a seat and the tilting mechanism, the driving gear located centrally in the main frame and consisting of wheel M mounted loosely on the main shaft, a clutch disk rigidly secured to the said shaft, intermediate chain wheels O O′ mounted on a sectional eccentric shaft P P, the said shaft having adjustable side plates one of which is provided with a clutch wheel Q, and the plates and shaft secured between the plates A′ A′ by bolts R R′, a chain-driving wheel M and O, and a chain-driving wheel O′ and T, all constructed and arranged as and for the purpose set forth.

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530,148. VENDING APPARATUS. JOHN A. WILLIAMS, Bath Beach, assignor to the Tutti-Frutti Automatic Vending Company, Brooklyn, N. Y. Filed Feb. 27, 1894. Serial No. 501,684. (No model.)



*Claim.*—1. In combination with frame A provided with a coin slot; the spring arm G having its down-turned end cut away on the arc of a circle and arranged behind the slot, and a supporting plate H arranged behind the down-turned end of the spring arm.

2. The frame A for a vending machine, comprising the long sheet having the openings *a* and F, and openings for the support of an actuating slide; and provided also with the perforated lateral wings *c c*.

3. In combination with an ejector having a series of bars *d* separated from each other as described, and means for rotating said ejector; of a package support provided with an opening through which the ejector works.

4. In a vending machine, the combination with a package-support; of an ejector provided with arms which are normally free from the weight of the articles to be delivered, and means normally independent of the ejector for rotating the latter intermittently to deliver the lowermost package to the purchaser.—whereby when the ejector is rotated the arms thereof shall ride beneath and raise the pile of packages up off the lowermost package.

5. In a vending machine, the combination with a rotary ejector and means for operating the same; of a pawl for giving to said ejector a sudden impulse or final movement.

6. In a vending machine, the combination with a rotary ejector and means for operating the same; of a pawl provided with a beveled spur, and adapted to enter a corresponding socket or opening, whereby the ejector is given a final impulse and then locked in position.

7. In a vending machine, the combination with the shaft B provided with openings *i* and bars *j*; the ejector mounted thereon and provided with a spurred spring pawl *f*; and means for rotating the ejector.

8. In a vending machine, the combination with an ejector, of an actuating slide; and a coin-holder carried by the slide to engage the ejector.

9. In a vending machine, the combination with an ejector, of an actuating slide; a coin-holder carried by the slide to engage the ejector; and a spring common to the slide and the coin-holder.

10. In a vending machine, the combination with an ejector; of an actuating slide; a coin holder carried by the slide to engage the ejector; and a stud to engage and hold the coin against the lever.

11. In a vending machine, the combination with an ejector; of an actuating slide; a coin-holding lever pivoted to the slide; and a stud to engage and hold the coin against the lever while the lever is carried from beneath the coin.

12. In a vending machine, the combination with an ejector; of a reciprocating slide; a lever pivoted to the slide and provided at one end with the coin holding arms *l l* and at the opposite end with the lugs *k* and *m*; a fixed stud *p* to engage the coin on the arms *l l*; and a spring secured to the lug *m*.

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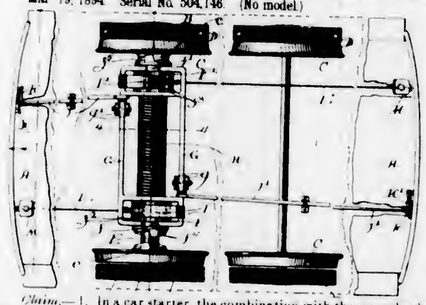
530,149. COFFEE-PERCOLATOR. HORACE WILSON, Indian Diggings, Cal. Filed Apr. 21, 1893. Serial No. 471,364. (No model.)

*Claim.*—In a coffee pot the combination of the cover provided with a depending slotted tube and a percolator provided with a han-

dle journaled therein and extending through and beyond the sides thereof, the ends of the handle engaging with the slot in the tube to sustain the percolator substantially as set forth



530,150. CAR-STARTER. THOMAS C. WRIGHT, Chicago, Ill. Filed Mar. 19, 1894. Serial No. 504,146. (No model.)



*Claim.*—1. In a car starter, the combination with the car, wheels, and axles of a loose inner collar upon one of the axles, two loose outer collars upon the opposite ends of the inner collar and spaced apart slightly less than the distance between the wheels, of a frame in which said outer collars turn, means for sliding said frame back and forth longitudinally of the axle, a coiled spring between the outer collars and attached thereto at its opposite ends, ratchet teeth upon said outer collars and pawls pivoted upon the frame in position to engage with said ratchet teeth, means for releasing said pawls, cam-shaped clutch teeth upon the outer ends of the outer collars and oppositely arranged teeth upon the axle adapted to engage with said cam-shaped teeth, the meeting surfaces of such teeth being sufficiently inclined to enable the turning of the axle to force the said teeth out of engagement when the tension of the spring offers a predetermined resistance; substantially as described.

2. The combination in a device of the class described and with a frame, G, containing the spring, E, tending when under tension to twist said frame, of the rollers, *g*, *g'*, adapted to rest upon the bottom of the car and thereby to resist such tendency of the spring to twist the frame substantially as described.

530,151. BRUSH-MACHINE. MCCLINTOCK YOUNG, Frederick, Md. Filed Nov. 30, 1891. Serial No. 413,521. (No model.)

*Claim.*—1. In a brush machine, a staple guide adapted to permit the insertion of a completed staple, and a reciprocating blade to drive the staple, in combination with a fiber support extending across the path of the driving blade and having an opening for the passage of the staple and fiber, and a support for the brush-block.

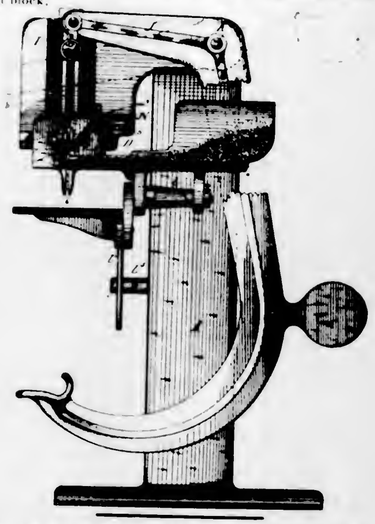
2. The grooved guide to receive the legs of a staple and provided with a lateral opening to admit the staple, in combination with the driving blade arranged to slide in said guide, and a fiber support extending across the path of the driving blade and having an opening for the passage of the doubled fiber and the staple therethrough.

3. In a brush machine, the combination of a guide to receive the legs of a staple, a reciprocating staple-driving blade, a staple support arranged to guide the staple's points forward beneath the blade, and an underlying fiber support having an opening for the passage of the fibers and staples therethrough.

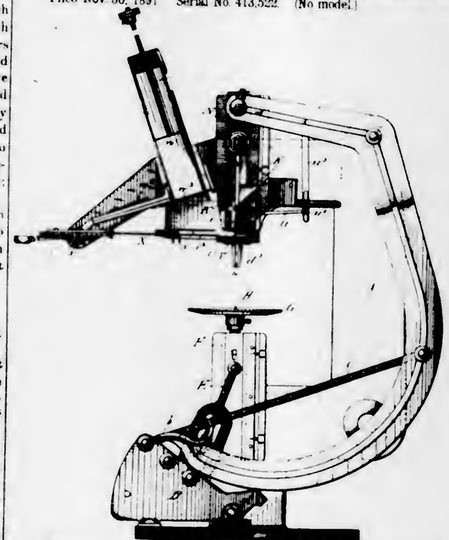
4. In a brush machine, the grooved staple guide, the reciprocating driving blade, the fiber support extending across the path of the blade and having an opening therethrough, and the staple-supporting arm hinged to turn away from its operative position.

5. In combination with a brush block support and an overlying fiber support, having an opening therethrough, a staple guide, a driving blade, and a pendulous lever, coupled with and adapted to operate the driving blade, substantially as shown.

6. In a brush machine, and in combination with a driving blade, a staple guide adapted for the introduction of the staple, points foremost, and a fiber support having a passage to permit the lateral introduction of the fiber beneath the descending staple, and with an opening therethrough for the passage of the staple and its contained fiber, whereby the staple is caused to separate the tuft from the remaining fiber, the tuft doubled, and the tuft and staple driven into the brush block.



530,152. BRUSH-MACHINE. MCCLINTOCK YOUNG, Frederick, Md. Filed Nov. 30, 1891. Serial No. 413,522. (No model.)



*Claim.*—1. In a brush machine the combination of a staple guide, a reciprocating staple driver therein, an automatic feed mechanism for delivering the staples successively in advance of the driver points forward, a fixed fiber support located a short distance from the end of the staple guide and provided with an opening for the passage of the tufts, and means for delivering a layer of fiber between the end of the staple guide and the fiber support, whereby on the advance of the staple its ends will separate from the layer of fiber the proper quantity to form a tuft and will carry the same downward to the brush box.

2. In a brush machine, the combination of a staple guide, a staple-driver, a laterally-extending support to direct the staples in series



to the guide, and a pressure device to urge the line of staples forward whereby the staples are carried forward successively to the driver and acted upon one at a time.

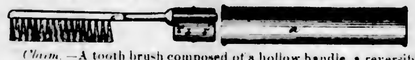
3. In a brush machine the combination of the staple guide, the reciprocating driver, the staple support, the pressure device acting to advance the staples along the support toward the driver, and the yielding slide whereby the premature descent of the forward staple is prevented.

4. In a brush machine the combination of a brush block support a horizontal fiber support thereover provided with an opening for the passage of the tuft, a vertical staple guide having its lower end terminating a short distance below the fiber support, a vertically moving staple driver in said guide, a support for holding the staples in series points downward, an automatic feeding device for carrying the staples transversely into the guide in advance of the driving blade, and mechanism for delivering a layer of fiber between the end of the staple guide and the fiber support; whereby on the descent of the driver the points of the staple will separate a tuft from the layer of fiber and carry the same downward into the brush body.

5. In a brush machine, the staple driver, the pendulous lever connected thereto, the weighted lever D, connected with the first named lever, the guided brush-block support and the pitman connecting the same with lever D.

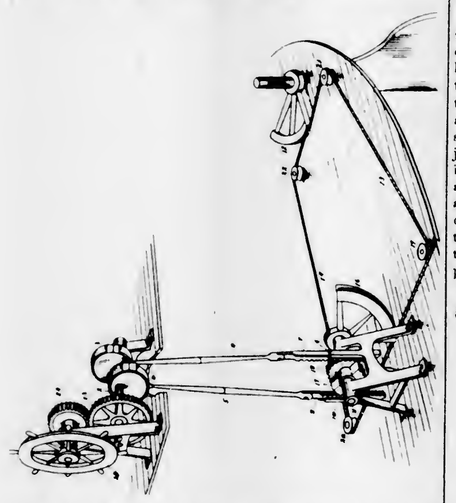
6. In a brush machine, the staple guide, staple driver and fiber support, in combination with the fiber reservoir, cut off finger or support at its base, and the vibratory carrier provided with its sliding fingers.

530,153. TOOTH-BRUSH. SAMUEL ZUCKER, New York, N. Y. Filed Sept. 29, 1894. Serial No. 524,469. (No model.)



*Claim.*—A tooth brush composed of a hollow handle, a reversible plug, and a brush having a stem which is eccentric to and revoluble within said plug, substantially as specified.

530,154. STEERING-GEAR. JOHN E. ALLEN, Detroit, Mich. Filed Mar. 22, 1894. Serial No. 504,605. (No model.)

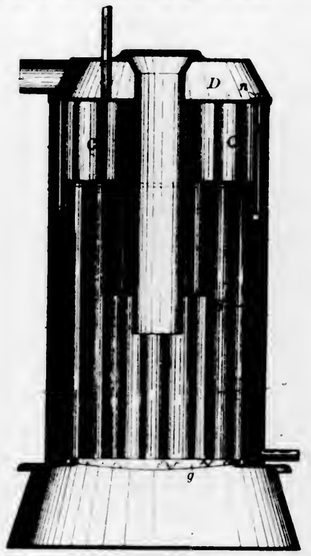


*Claim.*—1. In a steering gear, the combination of an axle and means for turning the axle, a pair of eccentrics, set with their centers to form an angle with the axis of the axle upon which they are set, racks actuated by the eccentrics, and pinions actuated by the racks, and means for transmitting the motion of the rack actuated pinions to the rudder post, substantially as described.

2. In a steering gear, in combination with an axle and means for actuating the same, a rudder and its tiller, a pitman connected eccentrically to the axle, a rack upon said pitman, and a pinion actuated thereby, and means for transmitting the motion of the pinion to the rudder post, substantially as described.

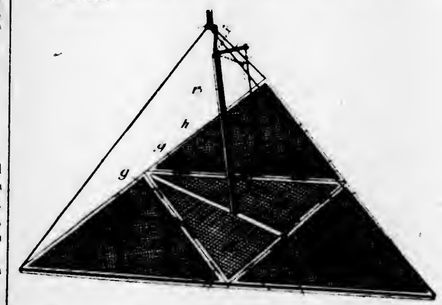
3. In a steering gear, the combination of a rudder post, tiller, leading lines, horizontal axle, quadrant to which the leading lines are attached, gear wheels on the horizontal axle, racks engaging the gear wheels, a second horizontal axle, and means for actuating it, eccentrics on said second horizontal axle connected with and adapted to actuate said racks, substantially as described.

530,155. HEATING-BOILER. SAMUEL BARTLEY, Bartley, N. J. Filed Jan. 15, 1894. Serial No. 496,895. (No model.)



*Claim.*—The steam boiler comprising the lower fire pot section formed with annular water space corrugated upon its inner periphery, a superposed shallow dome section provided with central annular water leg corrugated upon its outer periphery depending within the fire pot section and provided with smoke flues through such section leading from the fire pot, registering circulation apertures in the adjacent faces of the two sections, perforated bridges in the fire pot section extending between its inner and outer walls and disposed adjacent to and directly below the circulation apertures therein, holes in the upper side of the dome section directly above its circulation apertures and provided in their upper ends with conical seats, bolts applied at one end to the perforations in the said bridges and at the other end to the holes in the top of the dome section, and closed nuts tapered upon their under sides to fit the said conical seats applied to the upper ends of the bolts, as herein shown and described and for the purposes set forth.

530,156. FISH OR CRAB NET. MELCHIOR E. BECKER and RICHARD LIND, Wilmington, Del. Filed July 27, 1894. Serial No. 518,725. (No model.)



*Claim.*—1. A fish or crab net composed of a triangular body portion, and triangular sections hinged to the sides of the body portion, and lines connected with the outer points of the hinged sections, substantially as specified.

2. The combination with the body portion and a staff thereon, of a lever pivoted on the staff and folding sections hinged to the body portion and having lines, as set forth

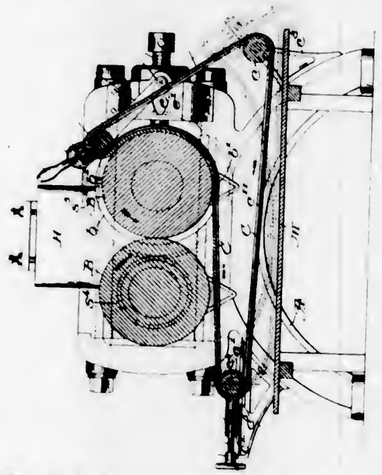
3. The combination with the body portion and the staff, of the lever pivoted on the upper end of the staff, the hinged sections, and the lines connected with the outer points thereof and passed through a loop on the lever, as set forth.

4. The combination with the triangular body portion, of the triangular sections hinged thereto, the lever pivoted on the upper end of a staff on the body portion and formed with a loop, a line connected with the lever and designed to carry the bait and the lines connected with the outer points of the hinged sections and passed loosely through the loop of the lever, substantially as specified

5. The combination with the body portion and the staff rising therefrom, of the sections hinged to the body portion, the springs on the said body portion and sections, the lever pivoted on the upper end of the staff and having a loop, and the lines connected with the outer points of the ingal sections and passed loosely through the loop of the lever, as set forth

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530,157. **MIXING-MILL FOR RUBBER.** EDWARD P. BRAGG, Boston, Mass. Filed Nov. 15 1893. Serial No. 490,974. (No model.)



*Claim.*—1. In a mixing mill for rubber and like material, two rolls, and means to rotate the same in opposite directions, one at a higher speed than the other whereby the material adheres to the latter, combined with an endless apron moving in contact with and in the same direction as the slow moving roll or the material thereon, to act upon said material, substantially as described.

2. In a mixing mill for rubber and the like, two rolls, and means to rotate the same, combined with an endless apron and movable and yielding rollers over which said apron is passed, the former movable toward and from one of said rolls and the latter yielding to permit such movement, substantially as described

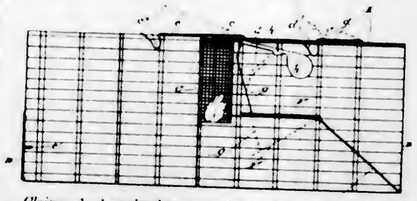
3. In a mixing mill for rubber and like material, two rolls, and means to rotate the same, combined with an endless apron adapted to travel in contact with one of said rolls or the layer of material thereupon, and two or more rollers over which said apron travels, and springs to retain one of said rollers in normal position whereby said roller may yield to accommodate changes in position of said apron, substantially as described.

4. In a mixing mill for rubber and the like, two rolls and means to rotate the same, combined with an endless apron, a yoke; a cam opening in which the fulcrum thereof is movable, a roller carried by said yoke and over which said apron is passed, and a yielding roller also for said apron whereby the said apron is enabled to change its position to permit said yoke to be moved from one to another side of its dead center line, substantially as described.

5. In a mixing mill for rubber and the like, a frame, two rolls and means to rotate the same, combined with an endless apron; a pivoted yoke; a roller carried thereby, and a roller on said frame, over which said apron is passed, and one or more brushes on and movable with said yoke to sweep said apron, substantially as described

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530,158. **ANIMAL-TRAP.** MATTHEW BURTON and LOUIS G. BEERS, Chicago, Ill. Filed Mar. 20, 1894. Serial No. 504,385. (No model.)



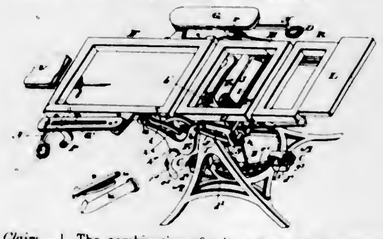
*Claim.*—1. An animal-trap consisting of a cage having an opening therein for the ingress of the animal, a trap-platform pivotally secured at said opening, a weighted lever fulcrumed above the platform and connected therewith and adapted to normally close the opening with the door, and a hand-piece or handle secured at the upper portion of the cage and adapted to engage said lever and hold it in a fixed position when the handle is raised, substantially as described

2. The combination in an animal-trap of a cage having an opening therein for the ingress of the animal, with a trap-platform pivotally secured at said opening a weighted lever fulcrumed above the platform and connected therewith, and adapted to normally close the opening with the door, a hand-piece or handle secured at the upper part of the cage and adapted to engage said lever and hold it in a fixed position, when the handle is raised, and a food-receptacle having an exterior opening, substantially as described.

3. The combination of the cage A, having the passage way or opening B, for the ingress of the animal, the platform F, pivoted in said opening, the lever G, fulcrumed above said platform and connected thereto, the handle H, secured to the upper part of the casing, and having the projection $h'$, to engage said lever, the food-receptacle C, located near the end of the platform F, and having an exterior opening, and the door c, provided with the catch $c'$, and hook $c^2$, and the door D, at the opening for the egress of the animal, all constructed, arranged and operating, substantially as and for the purpose set forth.

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530,159. **SURGICAL CHAIR.** FRANK E. CASE, Canton, Ohio. Filed Feb. 2 1887. Serial No. 226,217. (No model.)



*Claim.*—1. The combination of a base frame A, a rotary supporting frame E, thereon, a back F having a rigidly attached bracket c, a turn table a pivotally attached to the bracket, and a side arm pivoted to the turn table and having a pivoted block P, adapted to pivotally engage the supporting frame substantially as described

2. The combination in a chair of a supporting frame E, a block P' detachably pivoted thereto, a back F having a rigidly attached bracket c, a turn table a, pivotally attached to the bracket and a side arm pivotally attached to the turn table and to the block and composed of two sections, one having a perforation and the other having a stem to work in the perforation and adapted to swing at right angles to the other section, substantially as described.

3. The combination in a chair, of a supporting frame E, a chair back F connected to the frame, a seat H, and side arms G, G', each composed of two sections pivotally supported at their rear ends, the lower section detachably connected at its front end with the supporting frame to swing around beside the chair back and the upper section capable of swinging on a pivot to a position at right angles to the lower section, substantially as described.

4. The combination in a chair having a back, of a supporting frame and a side arm having a rear pivotal support and a detachable pivotal connection at the front end with the supporting frame and comprising two sections detachably connected at one end, both said sections being capable of swinging on the rear pivotal support to a position beside the chair back and the upper section movable on a pivot to a position at right angles to the lower section, substantially as described.



5. The combination in a chair, of a supporting frame, a swinging back pivotally connected to the frame and a side arm composed of two pivoted sections, one having a stem and the other a perforation through which the stem passes, and one of said sections being capable of swinging on a pivot to a position at an angle with the other section, substantially as described.

6. The combination in a chair, of a supporting frame, a side arm composed of two sections pivoted together and one adapted to swing on said pivot to a position at right angles to the other section, and a back pivotally connected with the supporting frame to swing down to a level with the side arm, substantially as described.

7. In a chair, the combination with a supporting frame of a swinging back and a side arm pivotally connected with the back and composed of two superposed sections pivoted together, the upper section adapted to swing on the lower section to a position at right angles thereto, substantially as described.

8. The combination in a chair, of a supporting frame, a chair back connected with the frame, a side arm pivotally supported at its rear and having a detachable pivotal connection at its front end with the supporting frame and capable of swinging around on its rear pivotal connection to a position beside the chair-back, and a stirrup supported by the front end of the side arm and adapted to engage with the chair back when the side arm is swung beside the latter, substantially as described.

9. The combination in a chair, of a supporting frame, a back connected with the frame, a seat connected with the frame, a side arm having a rear pivotal connection with a part of the chair and a hollow pin having a spring catch to pivotally connect the front end of the side arm with the supporting frame, substantially as described.

10. The combination with a support having on one side a toothed, segmental-shaped projection r, of a washer M, having a toothed cavity to receive the said segmental projection and provided with a flat side, a loop bolt O extending through the washer and the support and an axially turning stirrup carrying shank having a flat side and opposite rounded corners and made of less thickness in one direction than in the other, so that when turned axially in the loop-bolt the toothed washer will be forced into engagement with the toothed segment and the stirrup thereby locked at the inclination to which adjusted, substantially as described

11. The combination with a support having a segmental series of teeth, of a toothed washer having a flat under side and adjustable on the segmental teeth, a loop bolt loosely passing through the washer and support and a stirrup having a flat shank passing through the loop of the bolt and bearing against the flat under side of the washer for adjusting the outer end of the stirrup to different heights, substantially as described.

12. The combination with a support having a segmental series of teeth, of a toothed washer, a loop bolt passing through the washer and support and adapted to axially rotate in the latter and a stirrup having a shank passing through the loop of the bolt and made thinner in one direction than the other so that when the shank is turned with its thinner portion presented to the under side of the washer and the lower portion of the bolt loop the washer will fall from disengagement with the segmental series of teeth, substantially as described.

13. In a chair the combination with a head rest, of two stems, having devices connecting their upper ends together carrying the head rest said stems being movable in opposite directions to adjust the head rest to various positions, and a clamp for rigidly clamping the two stems one against the other in fixed relation to each other and also clamping and connecting them to the chair, substantially as described.

14. The combination with a chair body having a plate $x$, of a head rest U, the slide S, engaging the plate, a washer T, between the slide and the plate, a stem or support carrying the head rest and extending between the slide and washer and a clamping set screw V which binds the stem or support between the nut and slide and clamps the slide to the plate, substantially as described.

15. The combination with a chair body and a head rest of two semi cylindrical stems, the brace levers on the stems supporting the head rest, a set screw, and a slide on the chair back receiving the stems and by the set screw binding them rigidly together and to the chair body, substantially as described.

16. The combination with a chair body, of a head-rest, two stems movable in opposite directions, brace levers pivoted together intermediate their ends, connected to the head-rest and pivoted respectively to the stems, and a clamp for rigidly clamping the two stems one against the other in fixed relation to each other and also clamping and connecting them to the chair body, substantially as described.

17. The combination with a suitable support, of a head-rest, two stems adapted to slide in opposite directions, means for connecting the head rest with the stems, and a clamp which serves to clamp the stems to the support and to rigidly lock such stems in contact with each other, substantially as described.

18. The combination with a suitable support, of a head-rest, two stems adapted to axially rotate and to slide lengthwise one upon the other, means for pivotally connecting the head-rest with the two stems, and a clamp to lock the two stems together, substantially as described.

19. The combination with a chair body, of two stems movable one upon the other and carrying a head rest, a slide engaged with the chair body and a screw which rigidly clamps the stems one against the other and also clamps the slide in position on the chair, substantially as described.

20. In a surgical chair, the combination of a supporting frame, a back pivotally connected with the frame, a seat connected with said frame, a chair arm and a hinge or joint connecting the chair arm at or near its rear end to the pivoted back, said hinge or joint being adapted to allow the chair arm to be turned thereon horizontally and also in a vertical plane to a position beside and parallel with the side edge of the swinging chair back, substantially as described

21. The combination with a surgical chair, of a stirrup having a shank capable of being axially rotated and a locking mechanism actuated by the axial rotation of the stirrup shank to rigidly secure the stirrup at any desired angle of inclination.

22. In a chair, a side arm composed of two superposed sections connected by a vertical pivot adjacent to one end and the upper section adapted to swing in a horizontal plane at right angles to the lower section, and a support for the side arm on which the two superposed sections can be swung horizontally, substantially as described.

23. A chair, having a side arm composed of two superposed sections adapted to swing together in a horizontal plane and the upper section pivotally connected to swing in a horizontal plane on the lower section, substantially as described.

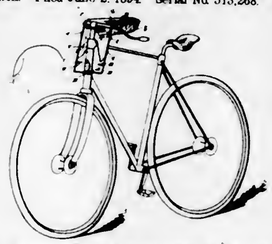
24. A chair having a side arm composed of two superposed sections one having a longitudinal slot and the other a stem passing through the slot, and the upper section adapted to swing in a horizontal plane on the lower section, substantially as described

25. A chair having a side arm composed of two superposed sections of substantially equal length and width, both sections capable of swinging in a horizontal plane and the upper section capable of swinging horizontally independent of the lower section.

26. A chair having a back adapted to be brought to a horizontal position, and a side arm composed of two sections pivotally connected with each other, and having a hinge-connection with the chair-back so that the upper section may be turned at right angles to the lower section and at right angles to the chair back when the latter is in the horizontal position

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530,160. **CHILD'S SEAT FOR BICYCLES.** FRED A. COULSON, Detroit, Mich. Filed June 2, 1894. Serial No. 513,268. (No model.)



*Claim.*—1. In combination with the steering post and handle bar of a bicycle, a seat frame comprising a bar having the bends F and G, the loop E, the downward extending branches C, D, terminating in hooks A and B, substantially as described.

2. The combination of a seat frame adapted to rest over the handle-bar of a bicycle, provided with a seat supporting loop behind the handle-bar and with depending hook terminated arms, a strap extending from one side of the frame to the other and provided with a centrally located buckle and strap end adapted to engage the post, substantially as described.

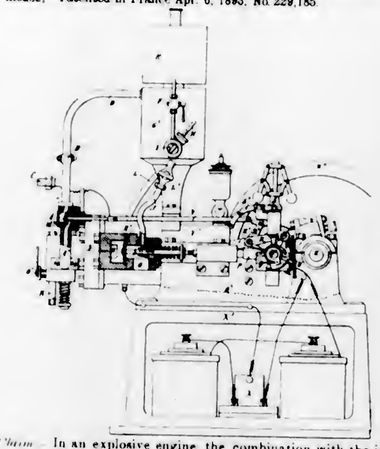
3. The combination of a seat-frame adapted to rest over the handle bar of a bicycle and provided with a backward extending seat supporting loop, and with depending hook terminated arms, a sagging seat and aprons dropping therefrom, substantially as described

4. The combination of a seat frame adapted to rest over the handle-bar of a bicycle, and provided with a backward extending seat supporting loop, and with depending hook terminated arms, a sagging seat and aprons dropping therefrom, and means for securing the aprons to the depending arms, substantially as described.

5. In a bicycle seat the combination of a frame adapted to rest over the handle-bar, and to be spread by the curve thereof, a strap adapted to prevent too great spread of the seat, the hook terminated

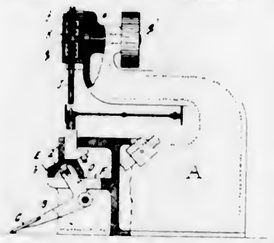
clasping arms, adapted to clasp the handle post and to be held in tight engagement therewith by the spreading action of the handle-bar, substantially as described

530,161. PETROLEUM, GAS, OR OIL ENGINE. LEONCE CRÉBESSAC, Paris, France, assignor to the Societe Française des Moteurs Crébessac, same place. Filed Aug. 24, 1893. Serial No. 483,940. (No model.) Patented in France Apr. 6, 1893, No. 229,185.



*Claim.*—In an explosive engine, the combination with the inlet and exhaust valves and the rods connected thereto, of the cam, having one rising part, carried by a shaft driven from the engine, co-operating directly with the rod of the exhaust valve, and the pivoted two armed lever one arm of which cooperates with the rod of the inlet valve and the other with the cam, said cam and pivoted lever being so arranged as that when the cam revolves its rising part will act successively on the rod of the exhaust valve and the cooperating arm of the lever, and thereby close the valves substantially as described.

530,162. RIVETING-MACHINE. PAUL A. CUENOT, Canton, Ohio. Filed Mar. 17, 1894. Serial No. 504,111. (No model.)

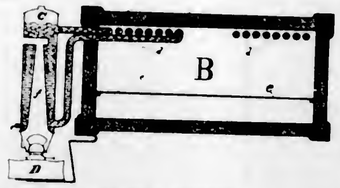


*Claim.*—1. In a riveting machine, the combination of a body provided with a vertically reciprocating hammer, and a vertically adjustable anvil, a foot lever provided with a slotted arm, a sliding block connected to the slotted arm, and provided with the inclined face or edge *d'*, the sliding block H, provided with the right angled portion *c*, having the inclined edge *d*, and a counter-weight, substantially as and for the purpose specified.

2. In a riveting machine, the combination of a body provided with a reciprocating hammer, the sliding block H, provided with the anvil I and the right angled portion *c*, having the inclined edge *d*, the sliding block E, provided with the inclined face or edge *d'*, the foot lever G, the slotted arm D, and a counter-balance, substantially as and for the purpose specified.

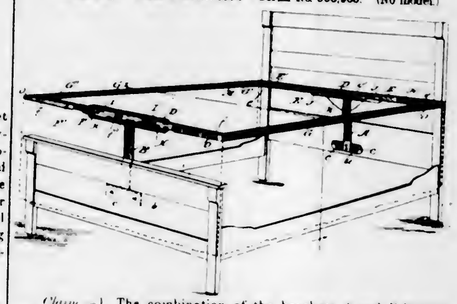
530,163. INCUBATOR. CHARLES A. CYPHERS, Somerville, Mass. Filed Jan. 22, 1894. Serial No. 497,699. (No model.)

*Claim.*—1. As an improved article of manufacture an incubator consisting of an egg receptacle or hatching chamber provided with suitable means for applying warmth to the interior thereof; the said hatching chamber having non-apertured or imperforate walls, one or more of which are formed of a porous material pervious to air and gases, and the pores or interstitial passages of said wall or walls connecting the interior of the chamber with the outer air to permit of a diffusive or molecular ventilation, the impure air and gases passing from the inside of the chamber outwardly through said pores, and the outer pure air inwardly therethrough, substantially as herein described.



2. As an improved article of manufacture an incubator consisting of an egg receptacle or hatching chamber having a non-apertured porous composite wall or walls formed of fiber-stock and pervious to air and gases to permit of a molecular or diffusive ventilation of said chamber through the said pores or interstices, and a means for applying warmth to the interior of the chamber or receptacle, substantially as herein described.

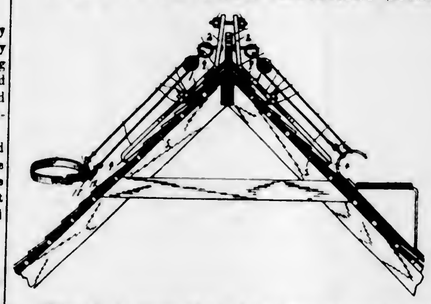
530,164. MOSQUITO-NET FRAME. CHARLES P. DIECO, Owensborough, Ky. Filed Feb. 21, 1894. Serial No. 500,983. (No model.)



*Claim.*—1. The combination of the brackets A and B having cross bars at their upper ends, the pivoted arms E and F, studs on such cross bars projected under the said arms at points outwardly from their pivots, the side bars G and the means for elevating the arms E and F, all substantially as shown and described.

2. In a mosquito net support, the combination with the brackets A having cross bars D, the pivoted arms E and F, and their connecting bars G, of the levers J pivoted to one of the bars D, having each a central or pivot portion, and oppositely extending arms, one of which projects under the arms E F and a cord having a loop portion connected at the ends to the adjacent inner ends of the levers J all arranged substantially as shown and described.

530,165. GRAPPLING DEVICE FOR ROOFS. DANIEL J. DONOVAN, Buffalo, N. Y. Filed Feb. 8, 1894. Serial No. 499,494. (No model.)



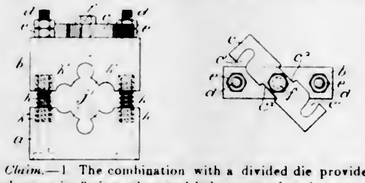
*Claim.*—1. A grappling device for use upon the roofs of buildings consisting of two metallic rods or strips each having its lower portion provided with a hook or hooks for engagement with the lower edges of the shingles or ridge and their upper portions bent at an angle to the lower portions and extending above the apex of the ridge or the ridge-piece and adapted to be secured together above and away from the same substantially as and for the purpose stated.

2. A grappling device for use upon the roofs of buildings, consisting of twin metallic rods or strips each having its lower portion provided with hooked wings for engagement with the lower edges of the shingles and their upper portions bent at an angle to the lower portions and extending above the apex of the ridge or the ridge-piece and adapted to be secured together, above and away from the same substantially as and for the purpose stated.

3. A grappling device for use upon the roofs of buildings consisting of twin metallic rods or strips each having its lower portion provided with hooked wings and a separate hook adjustable thereon, all for engagement with the lower edges of the shingles and their upper portions bent at an angle to the lower portions and extending above the apex of the ridge or the ridge-piece and adapted to be secured together above and away from the same substantially as and for the purpose stated.



530,166. SEPARABLE SCREW-CUTTING DIE. RUDOLF DOST, Chicago, Ill. Filed Aug. 18, 1894. Serial No. 520,686. (No model.)



*Claim.*—1. The combination with a divided die provided with chambers on its facing edges and bolts connecting the parts, fast in one and loose in the other block, of springs in said chambers, set-nuts on said bolts, and a centrally pivoted filling block between said nuts and loose block, substantially as specified.

2. The combination with a divided die provided with chambers on its facing edges and bolts connecting the parts, fast in one and loose in the other block, of springs in said chambers, set nuts on said bolts, and a pivoted filling-block with oppositely facing and curved end notches, to operate substantially as specified.

3. The combination with a divided die provided with chambers on its facing edges and bolts connecting the parts, fast in one and loose in the other block, of springs in said chambers, set-nuts on said bolts and a pivoted filling-block with oppositely facing and curved notches and oppositely facing central side notches, substantially as specified.

530,167. VALVE-FACING TOOL. TRONSON DRAPER, Petrolia, Canada. Filed Mar. 19, 1894. Serial No. 504,268. (No model.)



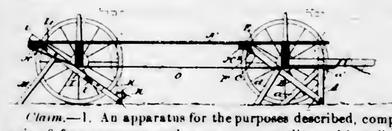
*Claim.*—1. A rotary valve facing tool, comprising a support and a steel cup at the end thereof provided with an annular cutting edge having its face set diagonally to the axis of motion of said support, substantially as described.

2. A rotary valve facing tool having a bent shank carrying annular cutting edges at one end and its other end having its surface diagonal to the face of the cutter and adapted to be held in a rotary tool, whereby the face of the cutter derives a swirling motion as the shank rotates, substantially as described.

3. A rotary valve facing tool comprising a steel cup set diagonally to the axis of motion of said tool, and annular cutting edges formed in said cup, the annular cutting edge nearest to the shank of the tool being formed on a circle of less diameter than that on which the outer cutting edge is formed, and so located with respect to each other as to give the required convexity to the valve disk when the tool is rotated, substantially as described.

4. A valve facing tool comprising the following elements: a shank A, with squared end C, a steel cup B set diagonally to the axis of motion of said tool and having beveled end F, and central or hollowed portion D, the outer annular cutting edge E, with recesses H, formed thereon and the inner circular cutting edge G, with recesses I, also formed thereon, substantially as and for the purpose specified.

530,168. WAGON-BED-LIFTING APPARATUS. ORLO H. DRINKWATER, Cedar Point, Kans. Filed Mar. 8, 1894. Serial No. 502,857. (No model.)



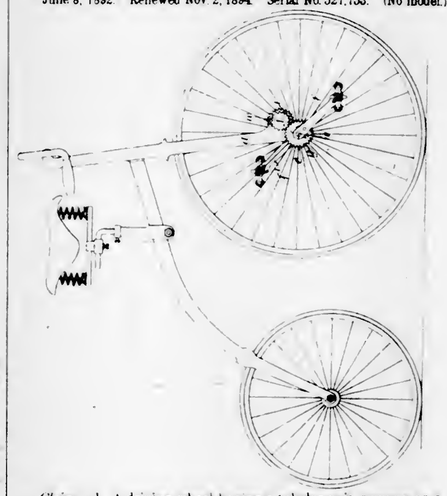
*Claim.*—1. An apparatus for the purposes described, comprising a pair of front supports, and a rear support disposed in a line centrally of the front supports, swinging lift members pivoted to such supports, the rear one having a swinging back brace, substantially as shown and for the purposes described.

2. A lifting apparatus for the purposes stated, comprising fixed front and rear supports having stops at one side, lifting arms provided each with a cross bar at their outer ends and pivotally connected with the supports at their inner ends and the swinging braces *d* and M adapted to automatically swing into position to hold the lifter arms to an elevated position when set to be engaged by the wagon body, as set forth.

3. A wagon body lifting means, comprising a pair of front swinging arms, a rear swinging member, disposed centrally of the front members said members adapted to swing normally to a horizontal position, their free ends having transverse bearing faces adapted to engage the front edges of the cross bars on the bottom of the wagon body and be swung forward as such body is moved forward and thereby elevate such body as set forth.

4. In a lifting machine substantially as described, the combination with a pair of supports or uprights, and the swinging arms pivoted to such uprights, said arms having staples in their upper ends, of a transverse lifting beam having its ends fitted in such staples, and the wedge devices for locking the ends in the said staples all arranged substantially as shown and described.

530,169. VELOCIPEDE. PERCIVAL EVERITT, London, England; Henry M. Woolf ancillary executor of said Everitt, deceased. Filed June 8, 1892. Renewed Nov. 2, 1894. Serial No. 527,753. (No model.)



*Claim.*—1. A driving wheel having a tubular axis running on a fixed cross-tube *b*, which directly connects the forks and is in immediate contact with the axle and by means of right and left hand

threads serves to draw the arms of the fork toward each other,—combined with the crank-shaft extended through said tube and in direct contact therewith and supported on ball bearings of which this tube forms a part, the balls being lodged in recesses in the outer ends of this tube and in similar recesses in the inner ends of nuts *n* on the shaft, the forks having screw-threaded holes to receive these tightening nuts, all as shown and described.

2. In combination with the shaft and with the fixed sleeve *b*, placed in immediate contact therewith and on which sleeve the driving wheel rotates, the nuts *n*, on the shaft and the balls *m*, between such nuts and the ends of said sleeve, —the nuts *l*, on the hub of the driving wheel, and the balls *k*, held by said nuts within the ends of the hub, all substantially as and for the purposes set forth

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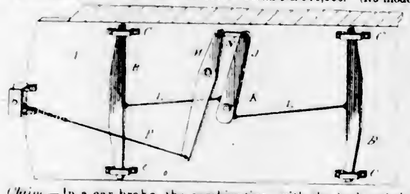
530,170. **WICK FOR OIL-STOVES OR LAMPS.** OTTO EWERT and HERMAN L. MARBACH, Cleveland, Ohio, assignors, by mesne assignments, to Frank R. Fennessy, New York, N. Y. Filed Feb. 25, 1892. Serial No. 422,811. (No model.)



*Claim.*—The herein described lamp or stove wick consisting of a number of independent bunches of laminated mica held together and exposed at their sides and edges, each bunch consisting of flat narrow strips held together with sufficient pressure to form capillary spaces between them.

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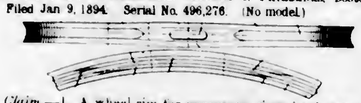
530,171. **BRAKE FOR RAILWAY-CARS.** ANDREW FAHENEY, Milledgeville, Ill. Filed May 21, 1894. Serial No. 511,966. (No model.)



*Claim.*—In a car brake, the combination, with the body of the car, of the bars B B movably secured to the under side thereof, levers J and M pivotally secured to the car substantially parallel with each other, the pivotal point of said levers being each nearer one end than the other and the short end of the lever M being connected with the longer end of the lever J by means of the link N, a shaft seated at one end of the car and adapted to be rotated, two arms, $l_1$, $l_1$ secured to the lever J, one upon each side of its pivotal point and each being connected at its opposite end with its respective bar B and a chain P connecting the longer end of the lever M with the brake shaft D, substantially as set forth

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530,172. **WHEEL-RIM.** ALBERT C. FAIRBANKS, Boston, Mass. Filed Jan. 9, 1894. Serial No. 496,276. (No model.)



*Claim.*—1. A wheel rim for pneumatic tires, having an opening therein for the tire valve, the cross-section of the rim being permanently increased in area at or adjacent the said opening, to maintain the strength and balance of the rim, substantially as described.

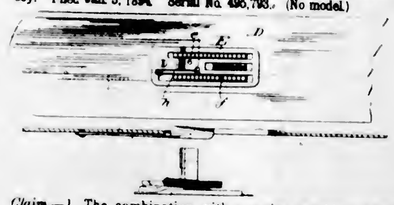
2. A wooden wheel rim for pneumatic tires, having an opening in the face thereof for the tire valve, the size of the rim having a gradual and permanent increase from the normal at each side of said opening up to the opening, whereby the strength and balance of the rim are maintained, substantially as described.

3. A wooden wheel rim for pneumatic tires, having an opening therein for the tire valve, the cross section of the tire increasing in area at or adjacent the said opening, and a stay piece inserted in the rim, the grain of the said piece crossing the grain of the rim, substantially as described

4. A wooden wheel rim composed of plies or lamina, an opening in said rim, and short stay pieces inserted at the opening between the plies forming the rim, the grain of the stay pieces crossing each other and the grain of the rim forming plies or lamina, whereby splitting of the latter at the opening is prevented, substantially as described.

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530,173. **SEWING-MACHINE GUIDE.** CHARLES H. FOSTER, New York, N. Y., assignor to The Singer Manufacturing Company of New Jersey. Filed Jan. 5, 1894. Serial No. 496,793. (No model.)



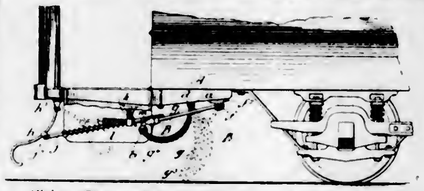
*Claim.*—1. The combination with a sewing machine provided with two needles, and a throat-plate, having two needle-holes, of a presser-foot provided with a hemmer, a guide placed closely adjacent to the line of the outer side of one of the said needle holes and extending beneath said presser-foot, and a spring co operating with the said guide and serving to prevent the folded edge of the goods from working laterally past said guide when, in the operation of the machine, the said presser-foot is lifted by the feed.

2. The combination with a sewing machine having two needles, and a throat-plate, having two needle-holes, of a presser-foot provided with a hemmer, a guide placed closely adjacent to the line of the outer side of one of the said needle-holes and extending beneath said presser-foot, and a spring shank by which said guide is carried.

3. The combination with a sewing machine having two needles, and a throat-plate having two needle-holes, of a presser-foot provided with a hemmer, a guide placed closely adjacent to the line of the outer side of one of the said needle holes and extending beneath said presser-foot, a spring shank by which said guide is carried, said spring shank being attached to the under side of the machine work-plate, and said throat-plate having a slot up through which said guide projects, and a stop to limit the downward movement of said guide when the latter is depressed by the presser foot.

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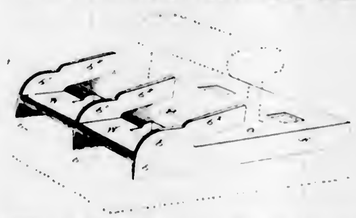
530,174. **SAFETY-GUARD FOR STREET-CARS.** DANIEL A. FREEMAN, Boston, Mass. Filed Nov. 23, 1893. Serial No. 491,726. (No model.)



*Claim.*—The combination with the car-body of the guard net having an upper part thereof mounted under the body for swinging movements, the rock-shaft with the spring and the arms, *g*, *g* which are connected to the free end of the guard, and which have the lugs, $g^4$, the pivotally-hung fender, in advance of the guard, and the longitudinally supported rods, *j*, *j*, connected to the fender and having the lateral lugs for the supporting engagements therewith of the lugs, $g^4$, and the forwardly pressing springs applied to said rods, substantially as described

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530,175. **COMBINED TIE-PLATE AND RAIL-BRACE.** THOMAS R. GABEL, Albuquerque, N. Mex., assignor to the Q. & C. Company, Chicago, Ill. Filed May 24, 1894. Serial No. 512,368. (No model.)



*Claim.*—1. A tie-plate, having a trussed web rail-brace, which conforms to the foot-flange of a rail with its free edge adapted to bear against the web of the rail substantially as and for the purposes specified

2. A tie-plate having a truss rib on its under surface, and provided on its upper surface with a trussed web rail-brace, which conforms to the foot-flange of the rail with its free edge adapted to bear against the web of the rail, substantially as and for the purposes specified.

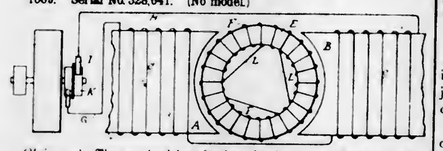
3. A combined tie plate and rail-brace, having a welded fold extending from the edge of the tie-plate to the foot of the rail-brace, substantially as and for the purposes specified

4. A tie-plate having a trussed web rail-brace, and a welded fold or reinforce which extends from the foot of the rail-brace to the edge of the tie-plate, substantially as and for the purposes specified.



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530,176. **ALTERNATING-CURRENT MOTOR AND METHOD OF OPERATING SAME.** LUDWIG GUTMANN, Pittsburg, Pa. Filed Oct. 30, 1889. Serial No. 328,641. (No model.)



*Claim.*—1. The method herein described of operating an alternating or pulsatory current motor which consists in magnetizing one of the elements (the field) by a single energizing circuit and producing a continuously progressive shifting of the magnetic polarities in the other motor element (the armature) by developing currents differing in phase and current quantity in different closed circuits of a winding of said element.

2. The herein described method of transforming electrical energy into mechanical, consisting in energizing one of the motor elements (the field) normally by a single phase alternating electric current, and progressively changing the position of the magnetic poles of the other element (the armature) by periodic currents differing in phase.

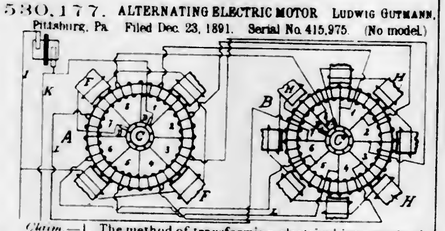
3. The method herein described of producing mechanical motion from electrical energy, consisting in establishing a field of rapidly varying intensity by a single phase alternating or pulsatory current, and producing in a motor element whose winding is exposed to said field of force polyphase currents in successive closed circuits of said winding.

4. The method herein described of producing mechanical motion from electrical energy, consisting in establishing by means of a single phase alternating current, a field of rapidly varying intensity for one of the elements of a motor, and producing polyphase currents in interconnected closed windings, and thereby developing a rotary magnetic field for the second element, as herein set forth.

5. The combination with a source of single phase alternating currents, of a motor provided with field magnet coils all of which are electrically connected in circuit with said source, and an armature provided with interconnected circuits the number thereof being different from the number of field poles or positions of maximum magnetic flux, whereby the motor may run harmoniously at more than one speed substantially as described

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530,177. **ALTERNATING ELECTRIC MOTOR.** LUDWIG GUTMANN, Pittsburg, Pa. Filed Dec. 23, 1891. Serial No. 415,975. (No model.)



*Claim.*—1. The method of transforming electrical into mechanical energy, which consists in bringing the rotatable element of a motor to the critical speed through the influence of a uniphase alternating current applied to one or both of the motor elements, and then maintain the rotation by producing in said movable element currents of displaced phase, and subjecting the conductors carrying said displaced currents to the influence of a magnetic field, substantially as described

2. The method of transforming electrical into mechanical energy which consists in bringing the rotatable element of a motor to the critical speed through the influence of a uniphase alternating current applied to one or both of the motor elements, establishing currents in a main armature winding, passing said currents periodically and successively through a supplemental winding to produce therein a rotating field, and subjecting said supplemental winding to the influence of a magnetic field, substantially as described

3. The herein described method of maintaining the rotation of the movable element of a motor under load, which consists in establishing in one of the motor elements, alternating currents, splitting said alternating currents sending said split currents periodically through sub circuits to establish in said element a biphase or polyphase system of currents, and reacting upon the conductors carrying said biphase or polyphase currents with a magnetic field of constant polarity, substantially as described.

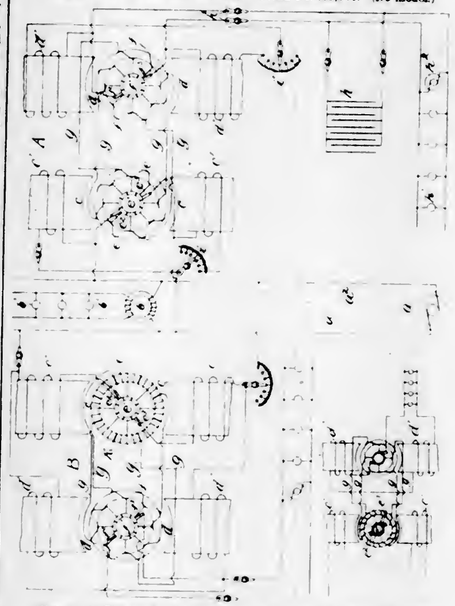
4. The method of transforming electrical into mechanical energy, which consists in subjecting the stationary and rotary elements of a motor to the influence of a uniphase alternating current, establishing in a supplemental winding bi-phase or polyphase currents, and subjecting said supplemental winding to the influence of a magnetic field, substantially as described.

5. The method of transforming electrical into mechanical energy, which consists in subjecting the stationary and rotary elements of a motor to the influence of a uniphase alternating current, establishing in a supplemental winding bi-phase or polyphase currents, and subjecting said supplemental winding to the influence of a magnetic field of constant polarity, substantially as described.

6. The combination with a source of single phase alternating currents, of a main armature winding adapted to be rotated through the influence of the current from said source, a supplemental armature winding, the coils thereof being connected in circuit with said main winding through which coils currents from said main winding are adapted to be successively and periodically passed to produce biphase or polyphase currents, a commutator for commutating said biphase or polyphase currents, a field magnet adapted to react upon the conductors carrying said biphase or polyphase currents, and coils for exciting said field magnet, said coils being included in circuit with said commutator, substantially as described.

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530,178. **ELECTRIC CONVERSION SYSTEM.** LUDWIG GUTMANN, Pittsburg, Pa. Filed Dec. 23, 1891. Serial No. 415,976. (No model.)



*Claim.*—1. The method of distributing electrical energy to translating devices, which consists in generating single phase alternating currents, transmitting the same to the point of consumption producing from said currents biphase or polyphase currents, commutating said biphase or polyphase currents, and passing the continuous current thus produced through translating devices in local consumption circuits.

2. The method of distributing electrical energy, which consists in generating single phase alternating currents, distributing the same as high tension currents to sub-stations, locally transforming the same into biphase or polyphase currents of lower voltage, commutating said biphase or polyphase currents, and distributing the same to the consumption circuits

3. The method of distributing electrical energy from an alternating current generator to both continuous current and alternating current translating devices, which consists in generating single phase alternating currents, transmitting the same to the points of consumption, passing a portion of said current through circuits adapted to feed alternating current translating devices, transforming another portion of said current into biphase or polyphase currents, and then into continuous currents, and passing said continuous currents through circuits adapted to feed continuous current translating devices, substantially as described.

4. The combination with a single phase alternating current generator, of a self starting synchronous motor-generator in circuit therewith, a commutator for commutating the currents from said motor-generator, and translating devices in local consumption circuits fed by said commutated current, substantially as described.

5. The combination with a single phase alternating current generator, of a self-starting synchronous motor-generator in circuit therewith, means for increasing or decreasing the voltage, a commutator for commutating the currents from said motor-generator, and translating devices in local consumption circuits fed by said commutated current, substantially as described.

6. The combination with a single phase alternating current generator, of a motor-generator comprising an armature winding adapted to be rotated through the influence of the current from said generator, supplemental circuits through which said alternating currents are adapted to be successively and periodically passed to produce biphase or polyphase currents, a field magnet adapted to react upon the conductors carrying said bi or polyphase currents, a commutator for commutating said bi or polyphase currents, and translating devices in local consumption circuits adapted to be traversed by said commutated currents.

7. The combination with a single phase alternating current generator, of a motor generator comprising an armature winding adapted to be rotated through the influence of the current from said generator, supplemental circuits through which said currents are adapted to successively and periodically pass to produce biphase or polyphase currents, a field magnet adapted to react upon the conductors carrying said biphase or polyphase currents, a commutator for commutating said biphase or polyphase currents, and translating devices in local consumption circuits adapted to be traversed by said commutated currents, the coils exciting said field magnet being included in series with said consumption circuits, substantially as described.

8. In a system of electrical distribution, the combination with continuous current translating devices and alterating current translating devices, of an alternating current generator supplying energy to both sets of translating devices, means interposed between the generator and the alternating current translating devices for adapting the potential of the current to the translating devices, and means interposed between the generator and said continuous current translating devices for adapting the potential of the current to the translating devices and changing the current from single phase to biphase or polyphase and then into continuous currents, whereby both alternating and continuous current translating devices may be supplied from the same current source, substantially as described.

9. The combination with a single phase alternating current generator, of a transformer adapted to convert said single phase currents into biphase or polyphase currents and then into continuous currents, a storage battery adapted to be traversed by said continuous current, and translating devices adapted to be connected in circuit with said storage battery.

10. The method of producing a continuous current from a single phase alternating current, which consists in establishing in an armature winding alternating currents, splitting said currents, and transmitting the split currents periodically through sub-circuits as biphase or polyphase currents, and commutating said biphase or polyphase currents, substantially as described

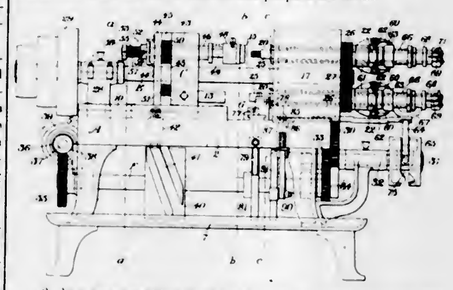
11. The method of producing a biphase or polyphase current from a single phase alternating current, which consists in establishing in an armature winding alternating currents, splitting said currents and transmitting the split currents periodically through successively arranged sub-circuits to form a system of biphase or polyphase currents, substantially as described.

12. The combination with a field magnet, of an armature adapted to be rotated in the field of said magnet, said armature being provided with a primary main winding and a secondary main winding in inductive relation thereto, and a supplemental winding, the coils of which are connected in circuit with said secondary main winding, substantially as described

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**530,179. SCREW-MAKING MACHINE.** REINHOLD HAKEWESSELL, Hartford, Conn., assignor, by mesne assignments, to himself and Horace S. Fuller, Nathan F. Miller, and William J. Gabb, same place, and Edwin C. Henn, Bloomfield, Conn. Filed Nov. 18, 1893. Serial No. 491,317. (No model.)

*Claim.*—1. In a screw-making machine, the combination with the frame-work, of the revoluble chuck-carrying head supported in a bearing at one end of the frame, the main shaft revolubly-supported at one end in said head and at its opposite end in a bearing upon the frame, a series of work-carrying spindles revolubly supported in tubular shafts in said head, means for intermittently rotating the head upon the shaft, means for simultaneously rotating the spindles upon their own axes, a tool-carrier constructed and adapted to be moved toward the work-carrying spindles alternately with each intermittent movement of the revoluble head, a die-carrying spindle revolubly supported and adapted for longitudinal movement in a tubular shaft journaled in the tool-carrier, mechanism for continuously rotating the die-carrier shaft, and two oppositely-operable clutch-devices located at opposite ends of the die-spindle and adapted for alternate operation whereby upon the advancing movement of the tool-carrier the die spindle is rotated with its shaft and upon the retractive movement of said tool-carrier the die-spindle is locked against rotation substantially as described and for the purpose set forth.



2. In a screw-making machine, in combination, a revoluble spindle-carrying head supported in a suitable bearing, a gear-wheel secured to, or formed a part of said head, a series of work-carrying spindles revolubly mounted in said head, mechanism for simultaneously rotating said spindles, a gear-segment meshing with the gear-wheel of said head and adapted for intermittently rotating the same to bring the spindles thereof successively into alignment with the screw-forming tools of the tool-carrier, mechanism for driving said gear-segment, a locking-device for intermittently locking and releasing said head between successive rotations, a sliding tool-carrier carrying a series of screw-forming tools in position for engagement with the work carried by the spindles, means for moving said tool-carrier toward and from the spindle-carrying head, and means for rotating one of said tools in the tool-carrier, substantially as described and for the purpose set forth.

3. In a screw-making machine, the combination with framework, of the revoluble chuck-carrying head D supported in a bearing at one end of the frame, the main shaft E revolubly supported at one end in said head and at its opposite end in a bearing upon the frame, work-carrying spindles revolubly supported in tubular shafts journaled in the work-carrying head; pinions secured to said shafts which mesh with a gear-wheel secured to the main shaft, means for intermittently rotating the work-supporting head about its axis, a locking device therefor, a sliding tool-carrying head intermediate to the two bearings of the main shaft, a die-carrying spindle revolubly supported in a tubular shaft journaled in said carrier, a pinion secured to said spindle-carrying shaft, a driving-wheel therefor secured to and adapted for longitudinal movement upon the main shaft, means for moving the tool-carrier toward and from the head D and for locking the die-carrying spindle against rotation during the backward movement of said carrier, substantially as and for the purpose set forth.

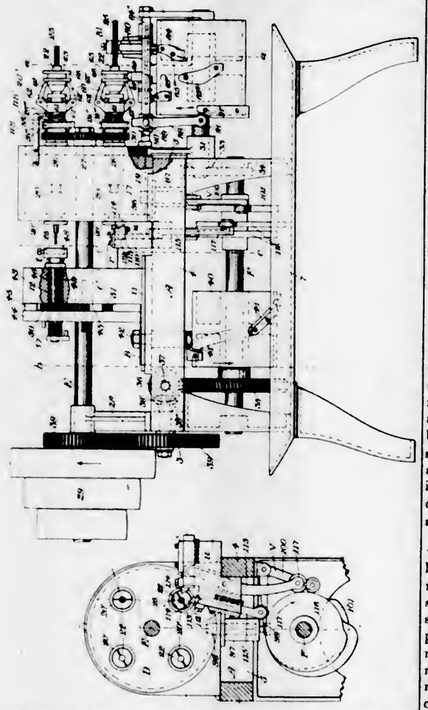
4. In a screw-making machine, the combination with the intermittently revoluble work-spindle head D having a series of work-carrying spindles revolubly supported therein and having a peripherally disposed gear-wheel and peripheral lock-notches, of the gear-segment 30 meshing with the gear-wheel of the said head and constructed for intermittently rotating said head about its axis, substantially as described, mechanism for rotating said gear-segment, and a spring-actuated lock-bolt adapted to engage the lock-notches in the said head to lock the same against rotation, and a cam for intermittently and automatically actuating said lock-bolt, substantially as and for the purpose set forth.

5. In a screw-making machine, the combination with the framework, of the main horizontal shaft E supported at its ends as described, the cam-shaft F, the sliding tool-carriage having the vertical tool-head, a series of tools carried by said tool-head, mechanism for imparting a forward and return movement to said tool-carriage, a revoluble work-carrying head having remotely disposed peripheral lock-notches therein, and having a gear-wheel fixed thereto or formed a part thereof, substantially as set forth, the gear-segment 30 in mesh with said gear-wheel and adapted for intermittently rotating said wheel, a lock-bolt adapted to engage the notches of the work-carrying head, a lock-bolt-actuator and a cam secured to the cam-shaft and engaging said actuator to operate the bolt, a series of work-carrying spindles revolubly supported in the work-carrying head, gearing connecting said spindles with the main shaft for rotating the same, and work feeding and holding devices in engagement with said spindles all constructed and arranged, substantially as and for the purpose set forth.

6. In a screw-making machine, the combination of a sliding tool-carrier head and a revoluble work-carrying head adjustable one with relation to the other, a longitudinally movable and intermittently revoluble die or tap-carrying spindle carried in a tubular shaft revolubly supported in said head, a main shaft, gearing connecting said main shaft with, and adapted for rotating said tubular shaft and spindle, a pin-clutch interposed between the spindle-head and tubular shaft, mechanism for sliding the tool carrying head toward and from the work-carrying head, a brake-device connected with the die-spindle operative to lock said spindle against rotation during the backward movement of the head, a series of work-carrying spindles revolubly supported in the work-carrying head, mechanism for rotating said spindles through the action of the main shaft, a gear-wheel connected with the work-carrying head, a gear-segment in mesh with said gear-wheel and adapted for intermittently rotating said head, a cam-actuated lock-bolt adapted to engage and lock the head in its successive positions, a lock-bolt actuator and a cam secured upon the cam-shaft journaled in the frame, which cam-shaft engages said bolt-actuator and intermittently retracts the bolt from its locked-engagement with the work-carrying head, substantially as and for the purpose described.

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**530,180. SCREW-MAKING MACHINE.** EDWIN C. HENN, Bloomfield, assignor, by mesne assignments, to himself, and Horace S. Fuller, Nathan F. Miller, William J. Gabb, and Reinhold Hakewessell, Hartford, Conn. Filed Apr. 19, 1894. Serial No. 508,073. (No model.)



*Claim.*—1. In a screw-making machine, the combination with a work-spindle carrier and a tool-carrier and mechanism for moving one of them toward the other, of a work-carrying spindle revolubly carried in said spindle-carrier, a threading-die having a spindle revolubly carried in the tool carrier, and automatic controlling-means organized and adapted for reciprocally and alternately rotating and stopping the work-carrying spindle and the threading-die respectively without alteriug the direction of rotation thereof, whereby after the cutting of the thread the work is released from the die without affection the direction of movement of said rotatable parts, substantially as described.

2. In a screw-making machine, the combination with an intermittently-revoluble work-spindle carrier and with a non-revoluble sliding tool-carrier, of a work-carrying spindle revolubly carried in said spindle-carrier, a threading-die having a spindle revolubly carried in the tool-carrier, and automatic controlling-means organized and adapted for reciprocally and alternately rotating and stopping the work-carrying spindle and the threading-die respectively without altering the direction of rotation thereof, whereby after the cutting of the thread the work is released from the die without affecting the direction of movement of said rotatable parts, substantially as described.

3. In a screw-making machine, the combination with a work-spindle carrier and a tool-carrier and mechanism for moving one of them toward the other, of a work-carrying spindle revolubly carried in said spindle-carrier, a threading-die having a spindle revolubly carried in the tool-carrier, and automatic controlling-means organized and adapted for stopping the rotation of the work-carrying spindle and simultaneously rotating the threading die to cut the thread upon the screw-rod and for reciprocally rotating the work-carrying spindle and simultaneously stopping the rotation of the screw-threading die to release said die from the work and all without altering the direction of rotation of said rotatable parts, substantially as described.

4. In a screw-making machine, the combination with an intermittently-revoluble work-spindle carrier and with a non-revoluble sliding tool-carrier, of a work-carrying spindle revolubly carried in said spindle-carrier, a threading-die having a spindle revolubly carried in the tool-carrier, and automatic controlling-means organized and adapted for stopping the rotation of the work carrying spindle and simultaneously rotating the threading-die to cut the thread upon the screw-rod and for reciprocally rotating the work carrying spindle and simultaneously stopping the rotation of the screw-threading die to release said die from the work and all without altering the direction of rotation of said rotatable parts, substantially as described.

5. In a screw-making machine, the combination with a work-spindle carrier and a tool-carrier and mechanism for moving one of them toward the other, of a work-carrying spindle revolubly carried in said spindle-carrier, a threading-die having a spindle supported for longitudinal and revoluble movement in the tool-carrier, driving-mechanism for rotating said threading-die, clutch members in position and adapted for operatively connecting the threading die spindle with the driving-mechanism, means for stopping the rotation of the threading-die when the clutch-mechanism is disengaged, driving-mechanism for the work-carrying spindle, a clutch connecting said work-spindle and its driving-mechanism, and means organized and adapted for automatically and alternately operating the work-spindle clutch and the die-spindle clutch, whereby the rotatable spindles may be reciprocally actuated and stopped and without affecting the direction of movement thereof, substantially as described.

6. In a screw-making machine, the combination with a revoluble work-spindle carrier, of means for imparting an intermittent rotary movement to said carrier, a non-revoluble sliding tool-carrier, means for moving said tool-carrier toward and from the work-spindle carrier, a threading-die spindle supported for longitudinal and rotary movements in and with a tubular shaft carried in the tool-carrier, means for rotating said shaft, a clutch in connection with said shaft and threading-die spindle, a work-carrying spindle revolubly carried by a tubular shaft carried by the spindle-carrier, means for rotating said spindle shaft a clutch connecting said work-spindle and shaft, and means for automatically, intermittently and reciprocally operating the clutch of the work-spindle and the clutch of the threading-die spindle to reciprocally stop and rotate said spindles alternately, as and for the purpose set forth.

7. In a screw-making machine, the combination with a revoluble work carrying head, of a plurality of work-carrying spindles revolubly supported on said head, means for imparting an intermittent rotatory movement to said head, means for locking said head in its successive positions, automatic controlling-means for rotating said spindles and for intermittently stopping the rotation thereof at given points in their travel about a common axis, a sliding tool-head carrying a revoluble threading-die, and automatic controlling-means for rotating said die and for intermittently stopping the rotation thereof reciprocally with the rotation and intermittent stopping of said work-carrying spindles and without affecting the direction of movement of said spindles and die, substantially as described and for the purpose set forth.

8. In a screw-making machine, the combination with a revoluble work-carrying head and with means for intermittently rotating said head and for locking the same in its successive positions, of a

chuck-spindle conically flanged peripherally at one end thereof and fitted for longitudinal movement in a tubular shaft conically tapered internally at one end to engage the conical flange of the spindle, driving the mechanism in connection with said shaft, mechanism for moving the spindle longitudinally of the shaft to engage or release the screw-rod, a clutch in connection with the shaft and adapted for engaging driving-mechanism to cause the spindle to rotate, and means for automatically shifting the clutch at equal intervals to intermittently stop the rotation of the spindle during the period of threading of the screw-rod, substantially as described.

9. In a screw-making machine, the combination with an intermittently revoluble work spindle carrier, of a non-revoluble sliding tool-carrier, means for intermittently rotating the spindle-carrier, means for locking said spindle-carrier in its successive positions, a plurality of work-carrying spindles revolubly carried by said spindle-carrier, means for rotating said spindles about their independent axes and means for stopping the rotation of each successive spindle at each revolution of the carrier, a threading-die revolubly carried by the tool-carrier, means for rotating said die, and means for stopping the rotation of said die intermittently at predetermined periods, the beginning of rotation and stopping of the die being substantially coincident, respectively, with the stopping and beginning of rotation of the successive adjacent work-carrying spindles, substantially as described.

10. In a screw-making machine, the combination with an intermittently revoluble work-spindle carrier and with means for intermittently rotating said carrier and for locking the same in its successive positions, of a plurality of chucks or spindles supported for longitudinal movement in tubular shafts journaled in sockets formed in the carrier, a gear-wheel loosely mounted upon each shaft and meshing with a driving-wheel carried upon the main shaft of the machine, a clutch connected with each shaft and adapted for automatically connecting said shaft with and disconnecting it from its gear-wheel at determined intervals, mechanism connected with each chuck and adapted for opening and closing said chucks, a lever in position and adapted for operating the chuck mechanism, and means for operating said lever to successively engage and actuate the successive chucks, substantially as described.

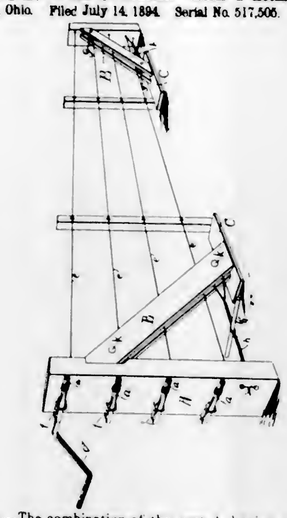
11. In a screw-making machine, the combination with an intermittently-revoluble work-spindle carrier, a plurality of work spindles revolubly carried in said carrier and adapted for carrying screw-rods, and with mechanism for intermittently rotating said carrier and for rotating the spindles, of screw-rod gripping and-feeding mechanism located in position and adapted for engaging the screw-rods successively at a given point in their travel around a common center, and comprising two gripping-members movably connected together and pivotally connected with the frame of the machine, and a cam for actuating said members to grip the rod and to move said members laterally to feed said rod, substantially as described.

12. In a screw-making machine, the combination with the intermittently-revoluble work-spindle carrier and with a plurality of work-spindles revolubly carried in said carrier, each of which spindles carries a screw-rod, of a swinging grip-device having shiftable gripping-jaws located in the plane of travel of the screw-rods about a common axis, and means for shifting said jaws to grip the screw-rod, moving said rod longitudinally, releasing said jaws, and shifting them laterally, substantially as described and for the purpose set forth.

13. In a screw making machine, the combination with an intermittently-revoluble work-spindle carrier carrying a plurality of work-spindles each of which carries a screw-rod, and with means for intermittently rotating said carrier and locking the same in its successive positions; of shaping and cutting-off mechanism connected to the frame of the machine contiguous to the work-spindle carrier and comprising a head having two sets of slide-ways, two independent cutter-carriers shiftably supported in said slide-ways and carrying cutters, and means substantially as described for independently shifting the two cutters alternately toward and from a common center, whereby the shaping and cutting-off actions are effected practically simultaneously while the screw-rod is maintained in a fixed position, as set forth.

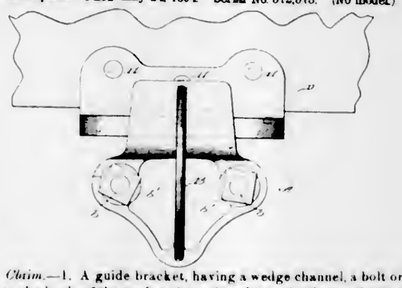
14. In a screw-making machine, the combination with the intermittently-revoluble work spindle carrier carrying a plurality of work spindles each of which carries a screw-rod, and with means for intermittently rotating said carrier and locking the same in its successive positions, of shaping and cutting-off mechanism comprising a head secured to the framework and having two differently-disposed slide-ways, two independent cutter-carriers mounted for movement in said slide-ways, cutters carried thereby, levers connected with said cutters and adapted for independently moving the cutters alternately toward and from a common center, retracting-springs for said cutters, and a cam having cam-faces adapted to engage and operate the cutter-actuating levers, substantially as described and for the purpose set forth.

## 530,181. WIRE-TIGHTENER. Moses I. Hoerstetler, Sugar Creek, Ohio. Filed July 14, 1894. Serial No. 517,506. (No model.)



*Claim.*—The combination of the post A, having square staples attached thereto, the winding bars *a*, provided with angular portions and flat keys or wedges, locking the angular portions of the winding bars within the said square staples, substantially as and for the purpose specified.

## 530,182. GUIDE-BRACKET AND WEDGE FOR SLIDING DOORS. William W. Holmes, Chicago, Ill., assignor to the Q. & C. Company, same place. Filed May 24, 1894. Serial No. 512,373. (No model.)



*Claim.*—1. A guide bracket, having a wedge channel, a bolt orifice at the back of the wedge channel, and a projection at the back of the bracket below the wedge channel, substantially as and for the purposes specified.

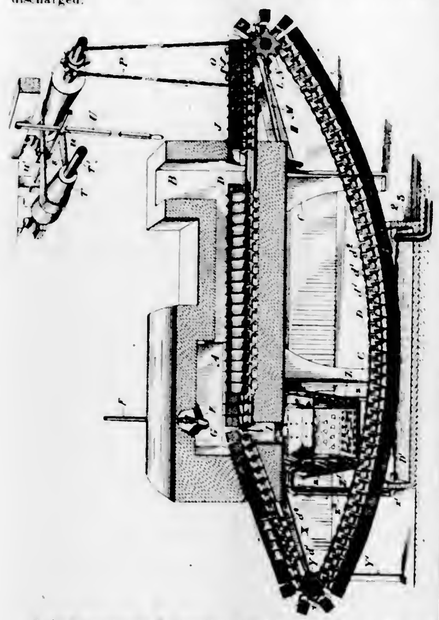
2. A guide bracket, having a wedge channel, a perforated ear at the back of the wedge channel, and a lag screw at the back of the bracket, substantially as and for the purposes specified.

3. A guide bracket wedge, having an angle plate base provided with a series of transverse ribs; substantially as and for the purposes specified.

## 530,183. APPARATUS FOR HARDENING KNIFE-SECTIONS OR OTHER ARTICLES. William F. Johnston and James Gray, Toronto, Canada, assignors to the Massey-Harris Company, same place. Filed Mar. 7, 1894. Serial No. 502,757. (No model.)

*Claim.*—1. In an apparatus for hardening the edges or desired portions of knife sections and similar articles, the combination with the fire chamber, of an endless chain passing therethrough consisting of a series of links suitably formed to receive the sections between the abutting faces of said links so as to cover the portions to be left soft and tough and expose the portions to be heated or hardened.

2. In an apparatus for hardening the edges or desired portions of knife sections and similar articles, the combination with a fire chamber of a furnace, of an endless chain passing therethrough consisting of a series of links suitably formed to receive the sections or pieces and expose the portions to be heated and hardened, means for supporting the sections or pieces within the links of the chain as they pass to and through the fire chamber and for opening the links of the chain to free each section or piece and discharge it after having passed through the fire, and a hardening tank adapted to receive the pieces discharged.



3. In an apparatus for hardening the edges or desired portions of knife sections and similar articles, the combination with the fire chamber of a furnace, of an endless chain passing through said fire chamber, consisting of a series of links suitably formed to receive the sections or pieces, between the abutting faces of said sections, so as to cover the portions to be left soft and tough, and expose the portions to be heated and hardened, and means for speeding the chain, substantially as described

4. The combination with the fire chamber of a furnace and an endless chain passing through the fire chamber consisting of a series of links with concavo-tapered outer portions and parallel ends between which the sections fit so that their edges project, of a channel iron H, in the fire chamber, and the chain teeth passing over said channel iron and supported thereby, substantially as described.

5. The combination with the fire chamber of a furnace and an endless chain passing therethrough consisting of a series of links suitably constructed to receive the sections or pieces and expose the desired portions of the same, of the channel iron H, in the furnace, the bearing bracket M secured to the bottom of the furnace and projecting therefrom, and the forked bracket L secured to the upper side of said bracket M and supporting the extending end of said channel iron H substantially as described.

6. The combination with the fire chamber of a furnace, the opening I therein near one end thereof, an endless chain passing through said fire chamber consisting of a series of links suitably constructed to receive the sections or pieces and expose the desired portions of the same, the channel iron H in the fire chamber the forwardly extending curved extension bars H', forming a continuation of the edges of the channel iron, and the means for carrying the lugs or edges of the chain over the opening I, whereby the chain will open in its passage above the opening I, substantially as described.

7. The combination with the fire chamber of a furnace having a discharge opening therein and an endless chain passing through said fire-chamber consisting of a series of links suitably constructed to receive the sections or pieces and expose the desired portions of the same, of the channel iron H, extending into the fire chamber, the forwardly extending curved extension bars H', forming a continuation of the edges of the channel iron, and the side bars W, bent above the opening and situated at greater distance apart than the width of the channel iron and suitably connected to the channel at one end, and the bearing brackets X extending outside to the rear of the furnace and supporting the opposite end of said bars W, substantially as described.

8. The combination with the fire chamber of a furnace having a discharge opening therein and an endless chain passing through said fire chamber consisting of a series of links suitably constructed to receive the sections or pieces and expose the desired portions of the same, of the channel iron H, extending into the fire chamber, the forwardly extending curved extension bars H', forming a continuation of the edges of the channel iron, the side bars W, secured to the rear end above the opening, the bar V, extending underneath the channel iron and the bearing brackets X, as and for the purpose specified.

9. The combination with the fire chamber, of an endless chain passing through said fire chamber consisting of a series of links with concavo-tapered outer portions and parallel ends between which the mower sections fit so that their side edges project, and having formed on them the lugs $d'$, and $d^2$, which are riveted together as specified, and central teeth $d^4$ situated between the forward pair of lugs, the channel bar H co-operating with the teeth $d^4$, and the sprocket wheels N, and Y, secured on the end shafts and having suitable bearings, as and for the purpose specified.

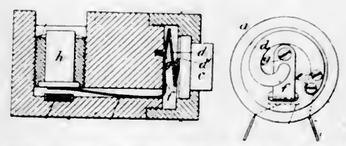
10. The combination with the fire chamber and endless chain passing through said chamber consisting of a series of links constructed to receive the sections or pieces between the abutting edges and expose the desired portions of said sections or pieces to the action of the fire chamber, of the sprocket wheels N and Y secured to the end shafts and having suitable bearings, the sprocket wheel O, on the end of shaft N', chain P, sprocket wheel Q, driving belt S, pulleys R and T encircled by said driving belt, the said pulleys being tapered to vary the speed of said driving belt in accordance with the position of the driving belt upon the pulleys, and means for adjusting the said belt thereon, whereby the speed of the endless chain may be controlled, substantially as described.

11. In combination with a fire chamber having the discharge opening I leading therefrom, the oil burner E for emitting the flame, the endless chain D passing through the fire chamber composed of links, the abutting faces of said links adapted to carry the sections to be heated, means for releasing said sections when directly above the discharge opening, and a hardening tank below the opening to catch the falling sections, substantially as described.

12. The combination with the fire chamber and oil burners E, for emitting the flame into it from opposite sides, of the endless chain D, passing through said fire chamber, suitably constructed and driven, the opening I, in the bottom of the fire chamber, through the furnace, means for opening the chain above such opening, and the tank 2, beneath said furnace into which the outer points of the sagging portion of the chain extend, the said tank being supplied with water and having an overflow pipe as and for the purpose specified.

13. The combination with the fire chamber, and oil burners E, for emitting the flame into it from opposite sides, of the endless chain D passing through said fire chamber, suitably constructed and driven, the opening I, in the bottom of the fire chamber, through the furnace, means for opening the chain above such opening, and the oil tank Z, beneath said opening and in line therewith, supplied with water from the main, the tank 2, below said tank Z having an over flow pipe 3, and the pipe $Z^2$ connecting said tanks as and for the purposes specified.

## 530,184. CIRCUIT-CLOSER. Herbert V. Keeson, London, England. Filed Sept. 17, 1894. Serial No. 523,286. (No model.)

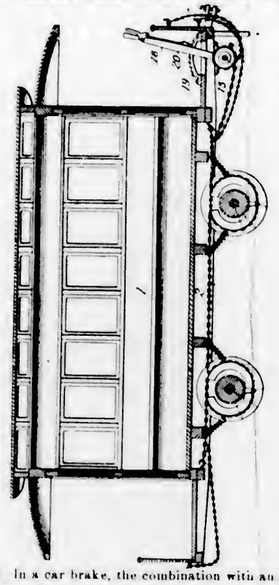


*Claim.*—1. The combination of a block or body, an electric circuit through conductors in it, two breaks in the circuit and two pushes carried by the block or body and acting at right angles or approximately at right angles to each other, each push closing one of the breaks.

2. The combination of a block or body, an electric circuit through conductors in it, a break in the circuit and two pushes carried by the block or body and acting at right angles or approximately at right angles to each other and closing the said circuit when both are operated simultaneously.

3. The combination of a block or body, a contact making push at its end, a spring connected to one of the circuit wires and fixed in the block or body so as to bear against the inner end of the push, a bent spring also fixed in the block or body in such a position that the first mentioned spring when compressed comes into contact with it, a second push at the side of the block or body with its inner end bearing against the bent spring and a contact connected with the other circuit wire and situated beneath the end of the bent spring.

530,185. **BRAKE FOR RAILWAY-CARS.** GEORGE H. KIPTER and GEORGE D. TELLER, Buffalo, N. Y., assignors of one-third to George Talt, same place. Filed Mar. 2, 1894. Serial No. 502,078. (No model.)



*Claim.*—1. In a car brake, the combination with an axle and a brake drum upon said axle, of contractile brake shoes suspended from the car frame and arranged around the drum, and a chain or cable, independent of the brake shoes, extending lengthwise of the car and having a loop or convolution surrounding said brake shoes, substantially as described.

2. In a car brake, the combination with a plurality of axles provided with brake drums, of brake shoes suspended from the car frame and arranged around the drums, and a chain or cable, independent of the brake shoes, extending lengthwise of the car and having loops or convolutions surrounding the brake shoes, substantially as described.

3. In a car brake, the combination with a plurality of axles provided with brake drums, of brake shoes arranged around the drums and suspended from the car frame by yielding connections, and a chain or cable extending lengthwise of the car and having loops or convolutions surrounding the brake shoes, substantially as described.

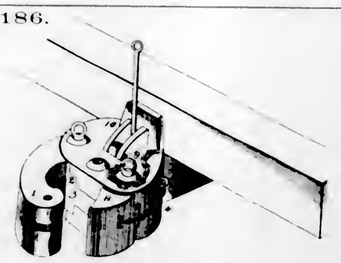
4. In a car brake, the combination with an axle and a brake drum upon said axle, of brake shoes surrounding the drum, a chain or cable extending lengthwise of the car and having a loop around the brake shoes, a winding-drum to which the chain is connected, a locking device for the winding-drum, and an extension of the chain from the winding-drum adapted to be connected to an adjoining car, whereby the brake is automatically set and the winding-drum locked when the cars become separated, substantially as described.

5. In a car brake, the combination with a plurality of axles provided with brake drums, of brake shoes suspended from the car and arranged around the drum, a main chain or cable extending lengthwise of the car and having loops or convolutions surrounding the brake shoes, operating chains and winding drums therefor for operating the brakes, and connecting chains for uniting the main chains of adjacent cars, substantially as described.

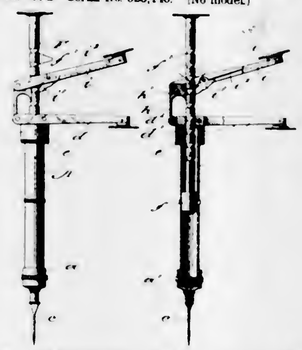
530,186. **CAR-COUPLING.** EDWARD R. KIRBY, Terre Haute, Ind. Filed Feb. 5, 1894. Serial No. 499,170. (No model.)

*Claim.*—The herein shown and described car coupling, composed of a draw head provided with a vertical opening to receive the ordinary coupling pin and having a vertically disposed guard 10, a knuckle pivoted at one corner of the draw head and having a laterally extended tongue which is provided with a recess on its inner edge, a guard arm pivoted to the opposite corner of the draw head and adapted to engage with the free end of the said tongue, and a vertically disposed gravitating dog mounted in a housing by the said guard 10, and adapted to engage at its lower end with the recessed edge of the said tongue, substantially as described for the purpose set forth, the knuckle and guard arm being removable so that the coupling is adapted for use with the common pin and link.

530,186.



530,187. **SYRINGE.** PHILIP B. LASKEY, Marblehead, Mass. Filed Sept. 15, 1894. Serial No. 523,140. (No model.)



*Claim.*—1. A hypodermic syringe provided at its upper end with a resistance handle and with an operating lever having means, between its fulcrum point and operating end, for connection with the piston rod of the syringe.

2. The combination with the body or barrel of a hypodermic syringe, of a resistance handle having a swiveled connection with said body, an operating lever provided between its fulcrum point and its operating end with a spring pressed pawl, and a piston-rod carrying a piston and provided with a series of annular ratchet notches to be engaged by said pawl to force the said piston forward in the syringe.

3. The combination with the syringe having the piston rod F provided with the piston *f*, of the handle *d*, the lever *i*, means for operatively connecting said lever with said piston rod, and one or more links *h* for connecting the fulcrum end of said lever with the portion $d^3$ of said handle.

4. The combination with the syringe barrel or body A, of the piston rod F provided with a series of ratchet notches, the resistance handle connected with said barrel or body, the link *h* having the bearing block or portion *h'* resting against said piston rod, and the lever *i* jointed to said link and provided with a spring-pressed pawl to engage the notches of said piston-rod.

5. The combination with the syringe body or barrel A, of the piston rod F provided with annular ratchet notches and carrying the piston *f*, of the collar $d^2$ swiveled to one end of said body A, the handle *d* secured to said collar, the lever *i* provided with a spring-pressed pawl for engagement with the notches of said rod, and the link *h* connecting the fulcrum end of said lever with the end $d^3$ of said handle.

6. The combination with the syringe body A provided at its needle end with a removable cap *a* carrying the hollow needle *c*, of a porous disk or filter within said cap and serving to prevent particles of solid matter from entering the said hollow needle.

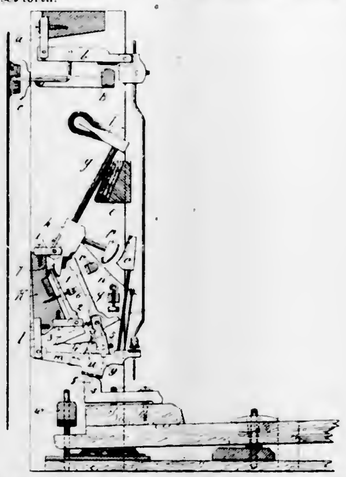
7. The combination with the syringe body or barrel A, of the removable cap *a*, the needle *c* removably attached to said cap, the packing ring *a'* inclosed in said cap, and the porous disk or plug *b* inserted in said ring.

530,188. **REPEATING MECHANISM FOR PIANOS.** FRANZ LINDNER, Dresden, Germany. Filed July 3, 1894. Serial No. 516,457. (No model.) Patented in Germany Sept. 27, 1892, No. 74,725, and Oct. 30, 1892, No. 72,928.

*Claim.*—1. In an upright piano, the combination with the hammer and its stem, of a hanger K, spring fly jack 1, 3, pivoted thereto, and knuckle *h* having projection 7, such fly jack adjusted to play within the space between said hanger and said projection, substantially as set forth.



2. In an upright piano, the combination with the hammer and its stem, of a hanger K, fly jack 1, 3, flat spring 4 attached to the jack standard and provided with adjusting screw 5, said spring adapted to press against the lower arm of the said fly jack, and knuckle *h* having projection 7, the upper arm of such fly jack adjusted to play within the space between said hanger and said projection, substantially as set forth.



3. In an upright piano the combination with the hammer, and its stem, of a hanger K, fly jack 1, 3, pivoted thereto, a spring 4 for actuating the same provided with adjusting screw 5, knuckle *h* having projection 7, the upper arm of the fly jack adjusted to play within the space between said hanger and said projection, and screw 6 for regulating the position of the upper shank of the fly jack, substantially as set forth.

4. In an upright piano, the combination with hanger K, of a spring fly jack 1, 3, knuckle *h* having projection 7, and regulating screw 6, the upper shank of the fly jack adjusted to play between said hanger and said projection, substantially as set forth.

5. In an upright piano, the combination with hanger K of a spring fly jack 1, 3, knuckle *h* having projection 7, the upper shank of the fly jack adjusted to play between said hanger and said projection, a jack *q* and a spring *u* adjusted to bear against the lower end of jack *q* near the pivot of the latter in the manner and for the purposes substantially as set forth.

6. In a piano, the combination with hanger K of a fly jack 1, 3, pivotally connected thereto, knuckle *h* having projection 7, the upper shank of the fly jack adjusted to play between said hanger and said projection, jack lever *m*, and a jack *q* mounted thereon, the distance between the pivot of the jack lever and its point of contact with the abstract being less than the distance between said pivot and the pivot of the jack, substantially as and for the purposes specified.

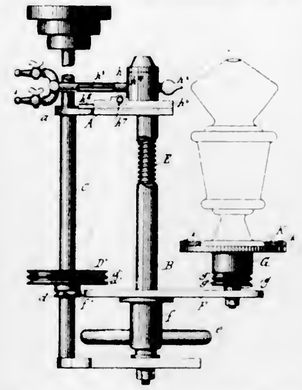
7. In a piano, the combination with the fly jack 1, 3, having spring 4 with adjusting screw 5 and a regulating screw 6 attached to the upper shank of said fly jack, jack *q*, and a spring *u* bearing against said jack near its pivot the distance between the pivot of the jack lever and its point of contact with the abstract being less than the distance between said pivot and the pivot of the jack, substantially as set forth.

530,189. **APPARATUS FOR CUTTING GLASSWARE.** JEAN LOBET, Flemalle-Grande, near Liege, Belgium. Filed Mar. 12, 1894. Serial No. 503,307. (No model.)

*Claim.*—1. In a machine for cutting glass ware, an intermediate movable platform guided in its vertical movement by sleeves attached to its under surface which sleeves are made to slide along the posts supporting the upper and lower platform, and a revolving disk mounted on said intermediate platform, and a blow pipe adjusted in proper relation thereto, substantially as set forth.

2. In a machine for cutting glass-ware, the driving spindle receiving motion from any suitable source of power with the aid of a fast running pulley or cone attached to its upper part, an adjustable platform, and a revolving disk mounted thereon, the driving spindle having underneath a pulley with double groove for transmitting power to the revolving disk, which pulley may assume a higher or lower position owing to a projection adjusted to slide within a groove provided on the spindle, substantially as set forth.

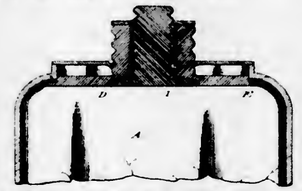
3. In a machine for cutting glass-ware, the combination of the double groove pulley sliding on the driving spindle, a grooved sleeve connected with the movable platform, revolving supports for the glass-ware on such platform, and means for raising and lowering the platform and for permitting the pulley to follow the platform in its upward and downward movements, substantially as set forth.



4. In a machine for cutting glass-ware, the arrangement of the revolving disks supported by pivots attached to the movable platform, the revolving disks comprising sleeves the inner surfaces of which conform with the pivots so as to permit of their revolving thereon with slight friction, their upper part forming platforms for receiving the articles which are to be cut, the lower parts of the sleeves being provided with double grooves for transmitting to them revolving motion from the grooved pulley on the driving spindle, substantially as set forth.

5. In a machine for cutting glass ware, the combination with a revolving support for the article to be cut, of a blow pipe, guides along which it may be moved toward such revolving support and a ratchet and pinion for adjusting its position, substantially as set forth

530,190. **JAR-CLOSURE.** CHARLES E. LONG, Verona, Pa. Filed Sept. 10, 1894. Serial No. 522,605. (No model.)



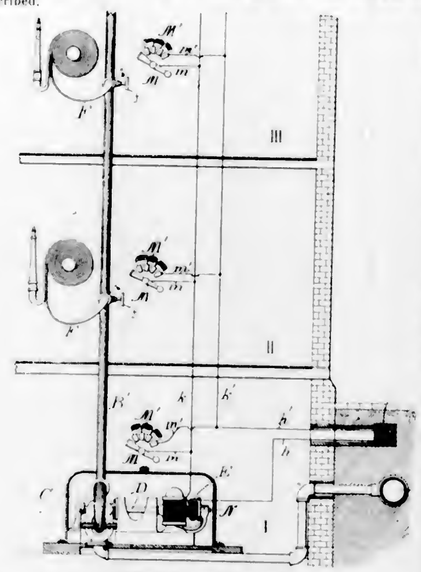
*Claim.*—The combination in a vessel closure, comprising the vessel having an irregularly-shaped opening, a stopper of corresponding shape adapted to be seated upwardly, having a central opening therethrough a threaded stud upon the upper portion of the stopper, a screw disk or clamp adapted to be screwed upon said stud down upon the top of the vessel or opening, a second stopper having a threaded stud adapted to be seated upwardly in the opening in the first stopper, and a screw disk for clamping same on the outer stopper stud.

530,191. **APPARATUS FOR EXTINGUISHING FIRES.** CHARLES E. MANNING, New York, N. Y., assignor to Addison Allen, same place. Filed Sept. 9, 1893. Renewed May 14, 1894. Serial No. 511,257. (No model.)

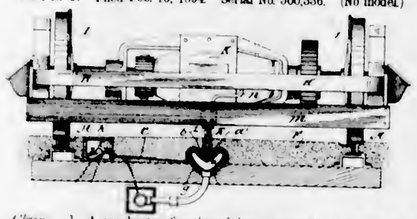
*Claim.*—1. An apparatus for extinguishing fires in buildings, comprising a source of water supply, and a source of electricity an electric motor, a pump driven thereby, electric wires connected to said source of electricity and to said motor, electric switches adapted to close the circuit through said wires and operate said motor, water pipes leading from said water supply to said pump, and from said pump through the building a plurality of branch pipes, and independent valves for each leading from said water pipes, and a hose connected to each of said branch pipes, substantially as and for the purposes described.

2. An apparatus for extinguishing fires in cities, comprising a water main and an electric main, an electric motor connected to said

electric main and means for operating said motor provided in a plurality of places in a building or buildings, a dust proof case over said electric motor, a system of water pipes, independent valves and hose, also provided in said building or buildings, and a pump operated by said electric motor connected to said water main and forcing water into said system of pipes, substantially as and for the purposes described.



530,192. ELECTRIC-RAILWAY SYSTEM. DAVID MASON, New York, N. Y. Filed Feb. 16, 1894. Serial No. 500,336. (No model.)



*Claim.*—1. A conductor for electricity composed of a series of independent sections arranged end to end, each section of which is constructed with a tubular body that is closed at its ends, and provided with a longitudinal groove extending throughout its length in which is arranged a rib or bar, substantially as described.

2. The combination, with a working conductor and a main conductor or lead of means whereby the working conductor may be both heated and electrically energized from the main conductor or lead, substantially as described.

3. The combination, with a working conductor, and a main conductor or lead, of means whereby the working conductor may be heated, and electrical connections between the main and working conductors, substantially as described.

4. The combination, with a working conductor composed of a series of independent tubular sections closed at their ends and arranged end to end, and a main conductor or lead of tubular form, of pipes for connecting the main conductor or lead with the sections of the working conductor of non-conducting material, and electrical connections between such main conductor and the sections of the working conductor, substantially as described.

5. The combination, with a working conductor composed of a series of independent tubular sections closed at their ends and arranged end to end, and a main conductor or lead of tubular form, of pipes for connnecting the main conductor or lead to the sections of the working conductor constructed of non-conducting material, electrical connections between such main conductor and the sections of the working conductor, and resistances interposed in such electrical connections whereby to regulate the tension of the current in the different sections, substantially as described.

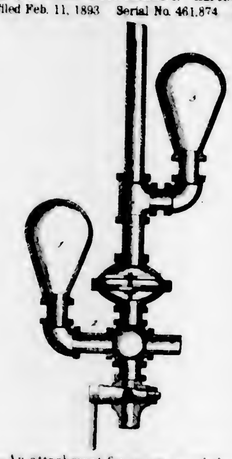
6. The combination, with the railway rails and a road bed, and a motor carried on such rails, of a working conductor arranged beneath the surface of such road bed, a main conductor or lead connected to such working conductor whereby to both heat and electrically energize the same, and a trolley arm connected to said motor and working down in a groove formed in the road bed with its lower end in contact with the working conductor, substantially as described.

7. The combination, with the railway rails and the road bed, and a motor carried on such rails, of a working conductor constructed in tubular form and arranged beneath the surface of the road bed, a main conductor or lead also constructed in tubular form, pipes and electrical connections by means of which the working conductor is connected to the main conductor or lead and thereby heated and electrically energized therefrom, and a trolley arm connected to such motor and working down in a groove formed in the road bed with its lower end in contact with the working conductor, substantially as described.

8. The combination, with the railway rails and the road bed, and a motor carried on such rails, of a working conductor constructed in tubular sections closed at their ends and arranged beneath the surface of the road bed, a main conductor or lead also constructed in tubular form, pipes and electric connections by means of which the several sections of the working conductors are connected to the main conductor to permit of their heating and electrical energization therefrom, resistances interposed in such electric connections, and a trolley arm connected with said motor and working in a groove formed in the road bed with its lower end in contact with the working conductor, substantially as described.

9. A tubular conductor for electricity provided with a longitudinal groove extending throughout its length, substantially as described.

530,193. PUMP ATTACHMENT. ALFONGS MEUSER, Longwood, Fla. Filed Feb. 11, 1893. Serial No. 461,874. (No model.)



*Claim.*—An attachment for pumps consisting of a pipe adapted to connect with the pump, primary and secondary air chambers connected to said pipe, a check valve located in said pipe between the connections of the said air chambers, substantially as set forth.

530,194. GRAIN-BINDING HARVESTER. LEWIS MILLER, Akron, Ohio. Filed June 16, 1883. Serial No. 98,310. (No model.)

*Claim.*—1. The combination of the frame of the machine with the open rim and the driving wheel, engaging therewith, the shaft on which said drive wheel is mounted, provided with a grooved sleeve, and a curved guiding standard on the main frame, adjustable in said sleeve, substantially as described.

2. The combination of the frame of the machine with the open rim and the drive wheel engaging therewith mounted upon a shaft carrying a sleeve in which is adjusted a standard on the frame of the machine, and means for adjusting said frame on said drive wheel, substantially as described.

3. The combination of the open rim, the segment standard secured to the frame, the sleeve in which said standard slides, the drive wheel supported on said sleeve, and adjusting mechanism connecting the segment and bracket to raise and lower the frame upon the drive wheel, substantially as described.

4. The open rim in combination with the driving wheel engaged therewith; the latter secured through a sleeve to a standard on the main frame, formed in the arc of a circle of which the secondary shaft actuated through said drive wheel is the center, whereby said frame is adapted to be adjusted relatively to said open wheel and driving wheel without disturbing the relation of the driving wheel to the secondary shaft, substantially as described.





5. The combination of the open rim, the segment standard secured to the frame, the axle sleeve secured on said standard, the drive wheel supported thereon, the chain shaft and its hand wheel shaft and chains connecting both the grain wheel and drive wheel brackets with the chain shaft, to be wound or unwound thereon to adjust the height of the finger bar and platform from the ground, substantially as described.

6. The combination with the open rim, of the curved standard on the frame of the machine, the driving and supporting, combined roller and gear wheel, relatively to which said standard is adjustable, and the bar l, provided with steadying rollers and connected with said standard, substantially as described.

7. The combination of the open rim, the drive wheel arranged to roll upon the inner surface of the rim, the roller frame, the segment standard, the main frame and standards secured thereon, upon which the ends of the roller frame are supported and allowed to move substantially as described.

8. The combination of the open rim, the roller bar or frame arranged within the rim, and the inclined binder frame and main frame adjustably connected with said roller bar or frame and a dumping-tray connected with the main and binder frame by brackets passing through the rim above the roller frame substantially as described.

9. The open rim through which the grain is carried to the stubble side thereof from the platform, in combination with the driver's seat arranged upon the stubble side of the open rim upon a support projecting through said open rim, substantially as described.

10. The driver's foot board arranged within the periphery of and projecting within or through the open drive wheel or rim, in combination with a steadying roller or roller bar secured thereto, substantially as described.

11. The combination of the open wheel or rim, the inclined binder table arranged upon the grain side of the rim, the driver's foot board projected through the rim and the driver's seat secured to said foot board upon the stubble side of the rim, substantially as described.

12. The open rim, in combination with the main frame arranged upon the grain side, and the driver's seat arranged upon the stubble side thereof, and the lever or levers projected through or partly through the rim, to be operated from the driver's seat, substantially as described.

13. The combination of the frame or foot board sill, a shaft for adjusting the height of the reel, secured parallel thereto, the hand levers secured to a shaft arranged obliquely to said reel adjusting shaft, the said shafts being coupled together by a universal joint, substantially as described.

14. The combination of the frame, the reel adjusting rock-shaft, the hand lever shaft for operating it, arranged at an angle thereto, the double segment rack and the tongue adjusting lever journaled to turn freely upon or independently of said hand lever shaft, substantially as described.

15. The combination of the main frame, a dumping tray hinged thereto, and dogs arranged to slide longitudinally with the tray, to engage with and be disengaged from the main supporting frame, substantially as described.

16. The combination of the main frame, a dumping tray hinged thereto, and arranged to slide longitudinally and be operated upon, substantially as and for the purpose described.

17. The combination of the main frame which supports the tray, a longitudinally sliding, dumping tray hinged thereto, and connected therewith by locking dogs, and a retracting spring, connecting the stationary supporting frame in the manner described so that the tray, when released, will be dumped by the weight of the bundles, and will be raised and have a longitudinal movement imparted to it by the spring upon the discharge of its load, substantially as described.

18. The combination of the tray supporting brackets on the binder frame, the longitudinal rail of the dumping tray hinged thereto, to slide longitudinally thereon, the retracting spring, the dogs secured to the rail to pass beneath the brackets, and the rod connecting the lever on the foot board and the end of the tray, substantially as described.

530,195. MOLD FOR FORMING TIRE-CASINGS. JOSEPH G. MOOMY and CHARLES WHITEHEAD, Erie, Pa. Filed Nov. 20, 1893. Serial No. 491,478. (No model.)

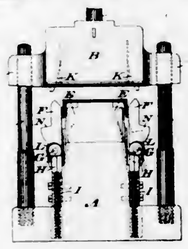


*Claim.*—1. In a mold for forming tire casings, the combination of the core; the casing forming ring having a passage forming annulus thereon over which the binder flap is turned in molding; and a binder flap forming ring for holding said flap in place and forming its outside.

2. In a mold for forming tire casings, the combination of the core, the casing forming ring having a passage forming annulus thereon on which is a recess forming rib, and over which the binder flap is folded in molding; and a binder flap forming ring that holds said flap in place and forms its outside.

3. In a mold for forming tire casings, the combination of the core; the casing forming ring having a passage forming annulus thereon over which the flap is turned in molding; and a flap forming ring for holding said flap in place and forming its outside; said casing forming and said flap forming ring having an overflow recess between them for the purposes set forth.

530,196. MACHINE FOR BENDING FLANGED METAL BARS. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Mar. 23, 1894. Serial No. 504,893. (No model.)



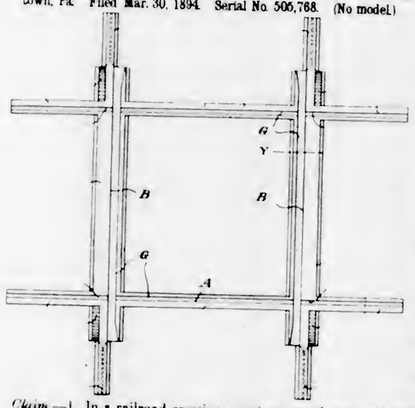
*Claim.*—1. A machine for bending flanged metal bars, consisting of a pair of dies between which the bar is bent, operating mechanism connected therewith and finger bars pivotally mounted in one die and operated by the other die, in such manner that they are adapted to engage the flanges of the bar and bend them in the manner set forth.

2. In a machine for bending flanged metal bars, in combination with a pair of dies between which the bar is bent, and operating mechanism therefor; finger bars adapted to engage and bend or fold, as described, flanges of the bar, said finger bars being so mounted that they may be withdrawn from the fold for the purpose set forth.

3. In a machine for bending flanged metal bars, in combination with a pair of dies between which the bar is bent, and operating mechanism connected therewith, pockets in one die adapted to receive flanges of the bar when bent; finger bars adapted to bend or fold said flanges into said pockets; and blocks in which the finger bars are pivoted, said blocks being so mounted on one of the dies that the finger bars may be withdrawn from the folds in the flanges before the bar is fully bent.

4. In a machine for bending flanged metal bars, in combination with a pair of dies between which the bar is bent, and operating mechanism; pockets in one die and finger bars normally out of said pockets, the finger bars being so connected and arranged that they are adapted to have a movement inward into said pockets and downward in said pockets.

## 530,197. RAILWAY-CROSSING. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Mar. 30, 1894. Serial No. 506,768. (No model.)




*Claim.*—1. In a railroad crossing a rail one portion of which is provided with a guard and a head widened on the outside while the end portions are adapted to mate with the abutting track rails.

2. In a railroad crossing a rail the central portion of which is provided with a head wider than the end portions, the ends of said widened portions being inclined as described.

3. In a railroad crossing a rail having in the central portion the head widened as described, the ends of said widened portion being inclined, said rail having the abutting rails of the crossing track united thereto.

4. In a railroad crossing a rail the central portion of which is devoid of web and is provided with a head wider than the abutting track rails, a longitudinal groove adjacent to the gage line of the head for the wheel flange, and a guard forming one wall of the groove, the ends of said rail being provided with a web and base flanges.

5. In a railroad crossing a rail separately constructed, the end of which is reinforced by cast metal secured thereto, the whole being integrally united to an abutting rail.

6. In a railroad crossing a rail the central portion of which is of substantially rectangular form and provided with flanges for securing to the tie, and a longitudinal groove for the wheel flange, while the end portions are provided with a web and base flanges.

7. An integral railroad crossing composed of rails having portions of their heads widened on the outside for the purpose set forth, inclines at the end of said widened portions, and end portions mating with the adjoining track rails.

8. A rail, the central portion of which is provided with a head of greater width than the end portions of said rail said end portions being provided with a web and base flanges.

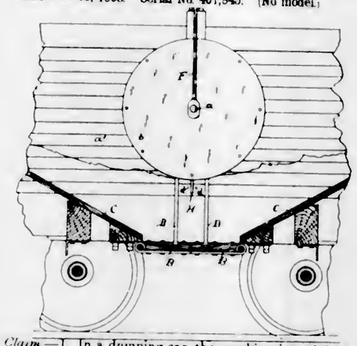
9. A rail, the central portion of which is provided with a head of greater width than the end portions, the ends of said widened portions being inclined.

10. A rail, the central portion of which is provided with a head of greater width than the end portions, the ends of said widened portion being inclined and tapered inward to the width of head at end portions of the rail.

11. A rail, the central portion of which is substantially rectangular in form and provided with flanges for securing to the tie, and a longitudinal groove for the wheel flange, the end portions being provided with a web and base flanges.

12. A rail, the central portion of which is substantially rectangular in form and provided with flanges for securing to the tie, and a longitudinal groove for the wheel flange, the end portions being provided with a web and base flanges, and the central portion being provided with a head of greater width than the end portions, the ends of said central portion being inclined.

## 530,198. DUMPING-CAR. WILLIAM MCMAHON, Rahway, N. J. Filed Feb. 10, 1893. Serial No. 461,845. (No model.)




*Claim.*—1. In a dumping car, the combination of the horizontal gates, hinged at the terminals of the fixed hopper and having their meeting and separating edges located centrally as regards the car body, eccentrics affixed to the sides of the car and connected by a shaft extending through the body of the car and arranged to support and lock the gates in their horizontal and closed position by means of rigid connecting rods, with said rods, all the parts being so arranged that upon the turning of the eccentrics the gates will be simultaneously thrust down and open, as shown and described.

2. In a dumping car, the combination of the gates hinged to the bottom of the car and opening in opposite directions, with a disk eccentric E for operating the same, and rigid connections extending between said eccentric and each of said gates, substantially as set forth.

3. In a dumping car, the combination of the pivoted gates or bottom, the eccentric hung on the car body, and rigid connections between said gates and eccentric, all the parts being so arranged as that the gates will be locked in their closed position when the eccentric is on its dead center, as set forth.

4. In a dumping-car, the combination of the pivoted gates or bottom, with an eccentric, a strap or collar connected therewith to be operated thereby, and rods extending from said strap to said gates, substantially as set forth.

5. In a dumping car, the combination of the pivoted gates or bottom, with a disk eccentric having its longest portions in line with its pivot when in the normal position, and connections between said gates and eccentric, whereby the gates will be automatically locked when the eccentric is in its normal position.

6. In a dumping car, the combination of the pivoted gates or bottom, with an eccentric, a strap or collar connected therewith, rods connecting said gates and collar and an abutment located in proximity to said collar to limit the motion of the latter in one direction, substantially as set forth.

7. In a dumping car, the combination of the pivoted gates or bottom, with an eccentric, a strap or collar therefor, rods connecting said gates and collar and a guide connected with said collar for regulating its movement, substantially as set forth.

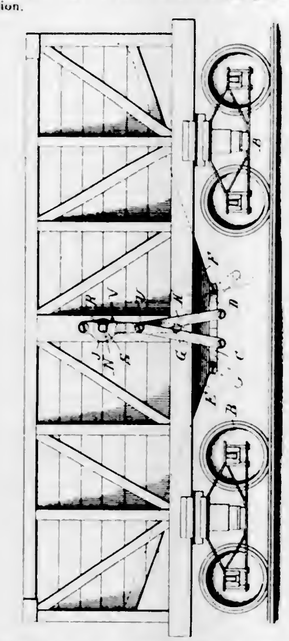
8. In a dumping car, the combination of the pivoted gates or bottom, an eccentric, a collar therefor, rods connecting said gates and collar, a rod or arm H, projecting from said strap, and guide to receive said rod, substantially as set forth.

9. In a dumping car, the combination of the pivoted gates or bottom, with an eccentric, rods connecting said gates and eccentric and means for guiding the rods and regulating their movement, substantially as set forth.

## 530,199. DUMPING-CAR. WILLIAM MCMAHON, Rahway, N. J. Filed June 1, 1893. Serial No. 476,220. (No model.)



*Claim.*—1. In a dumping car, the combination of the horizontal gates hinged at the terminals of the fixed hopper and having their meeting and separating edges located centrally as regards the car body, a crank lever fixed to a rock shaft hung in the car body, the hereinbefore described rock shaft extending transversely of the car body, rigid connections jointed to the swinging end of the aforesaid lever and extending to the gates near the meeting ends, and means substantially as shown and described for transferring the weight of the gates and their superimposed load from the aforesaid connecting joint directly to the rock shaft when the said gates are in their closed position.




2. In a dumping car, the combination of the pivoted gates or bottom, a crank lever pivotally hung in the car body, with a pitman arm swiveled to the lever and connected to the gates, the said pitman arm having an inset shoulder which rests upon the pivot of the lever when the gates are in a closed position and which forms a support for the gates, as set forth.

3. In a dumping car, the combination of the pivoted gates or bottom, a crank lever pivotally hung from the body of the car, a pitman swiveled to the lever, connections from said pitman to the swinging gates, the said pitman having an inset which registers with the pivot of the lever when the gates are closed, substantially as and for the purposes set forth.

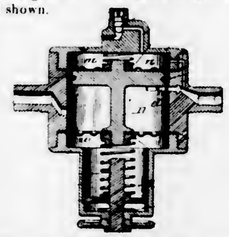
4. In a dumping car, the combination of the pivoted gates or bottom, crank levers mounted on a shaft hung in the car body, with said shaft, toggle levers extending to the gates and jointed to the swinging end of the lever, and means substantially as shown and described for removing the weight of the gates from the aforesaid joint and transferring it directly to the shaft of the crank lever when said crank lever has reached or has proceeded slightly beyond its dead center.

5. In a dumping car, the combination of the hinged gates C, D, toggle links G, H, pitman arm J having an inset S, connecting bolt K, guide L, crank lever R, having joint U, rock shaft M and operating handle O, all arranged and adapted to operate, substantially as and for the purposes set forth.

## 530,200. FLUID-PRESSURE REGULATOR. JOHN OLSON, Two Harbors, Minn. Filed Mar. 17, 1894. Serial No. 504,005. (No model.)

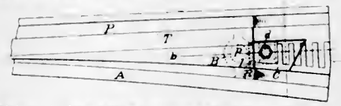
*Claim.*—1. In a fluid pressure regulating valve, the combination of a chambered casing provided with inlet and outlet ports, the outlet port being composed of a series of small passages, chambered caps screwed into said casing and diaphragms interposed between said casing and caps, a piston operating as a valve to open and close said ports mounted onto and between said diaphragms carrying a packing-ring having an annular rib on its inside; substantially as described and shown.

2. In a fluid pressure regulating valve the combination of a chambered casing provided with inlet and outlet ports, the outlet port being composed of a series of small passages, chambered caps screwed into said casing and diaphragms interposed between said casing and caps, a piston operating as a valve to open and close said ports, mounted onto and between said diaphragms carrying a packing-ring having an annular-rib on its inside, one of the chambered caps being provided with a pop valve and passages leading to and from the same into the chamber between the diaphragm and cap, a spring interposed in said chamber between said cap and diaphragm; the other cap being provided with an adjusting spring interposed between the diaphragm and a nut mounted on an adjusting stem passing through said cap and provided with a handle, said nut having a projecting lug traveling in a groove on the inside of said cap substantially as described and shown.



3. In a fluid pressure regulating valve; the combination of a chambered casing provided with outlet and inlet ports the outlet port being composed of a series of small passages, chambered caps screwed into said casing and diaphragms interposed between said caps and casing, a piston operating as a valve to open and close said ports, mounted onto and between said diaphragms, carrying a packing-ring one of the chambered caps provided with a pop valve and passages leading to and from the same into the chamber between the diaphragm and cap, a spring interposed in said chamber between said cap and diaphragm, the other cap provided with an adjusting spring interposed between the diaphragm and a nut mounted on an adjusting stem passing through said cap and provided with a handle said nut having a projecting lug traveling in a groove on the inside of said cap, a passage leading from the outlet port in the casing and to a port in the cap provided with the pop valve said passages may be set or adjusted so they will register or not to register as desired, substantially as described and shown.

## 530,201. TONGUE-SWITCH. HENRY O'SHEA, Johnstown, Pa., assignor to the Johnson Company, same place. Filed May 11, 1893. Serial No. 473,809. (No model.)




*Claim.*—1. In a railway tongue switch in combination with the main frame of the switch, a pivoted tongue having a track surface thereupon adapted to support the car wheel; a track surface formed on the frame of the switch and abutting the pivoted end of the tongue and forming a continuation of the surface thereupon, and a holding-down plate engaging the pivoted end of the tongue and lying in a pocket adjacent to the aforesaid track surface upon the switch frame, said plate being secured to the frame of the switch.

2. In a railway tongue switch, a switch frame having a pocket; a tongue pivoted in said pocket, said tongue having upon it a track surface; a track surface formed upon the switch frame, abutting and forming a continuation of that upon the tongue so that a car wheel may pass directly from one to the other, and a plate adapted to engage and hold down the pivoted end of the tongue, said plate being secured to the frame of the switch.

3. In a railway tongue switch, in combination with the frame of the switch, a tongue pivoted therein; a holding-down plate overlapping the pivoted end of the tongue; a socket in the frame; a nut in the socket, and a bolt passing through the holding-down plate, engaging the nut and adapted to secure the plate in place.

4. In a railway tongue switch, in combination with the frame of the switch, a tongue pivoted in said frame; a track surface upon the tongue throughout its length; a recess in the pivoted end adjacent to, but not extending into the track surface; a continuation of said track surface on the frame of the switch and abutting the tongue, and a plate entering the recess in the tongue and lying adjacent to the track surface on the frame, said plate being secured to the frame by a bolt passing through the plate and the frame.

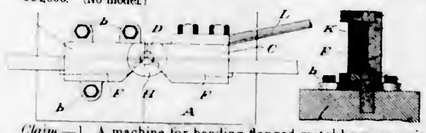
530,202. MORDANT. ROBERT H. PICKLES, Marple, England. Filed Nov. 9, 1892. Serial No. 451,437. (No specimens.)

*Claim.*—1. A new or improved mordant for use in the dyeing and printing of textile fabrics consisting of a solution of a salt of aluminium having a flaky crystalline appearance derived from sugar hydrated lime and a sulfate of alumina the sugar and the metal being combined in almost equal molecular porportions and having the formula $C_{12}H_{22}O_{11}Al_2(OH)_6$.

2. The process of preparing a metallic sucrate (of the metals aluminium, iron or chromium) which consists in adding to a solution of sucrate of an alkaline earth metal a sulfate of the metal which is required as the base of the mordant thereby percipitating a sulfate of the alkaline earth metal and then separating the solution of the metallic sucrate substantially as described.

3. The process of preparing a mordant for use in the dyeing and printing of textiles and fibers which consists in treating a sugar with fresh hydrate of lime of creamy consistency to form a sucrate of lime treating a metallic sulfate of the iron group with the compound so formed the reaction forming a sucrate of the metal and precipitating sulfate of lime and finally separating the solution of the sucrates from the precipitated sulfate substantially as described.

530,203. MACHINE FOR BENDING FLANGED METAL BARS. WARD RAYMOND, Johnstown, Pa. Filed Mar. 23, 1894. Serial No. 504,890. (No model.)



*Claim.*—1. A machine for bending flanged metal bars, comprising two abutting clamps pivoted together, both said clamps being adapted to receive a bar and so hold it as to prevent distortion therein, save at the bending point, the clamps being so constructed that when the bar is bent the flanges thereof are bent or folded together at the bending point as described.

2. In a machine for bending flanged metal bars in the manner described, in combination with a clamp adapted to receive and hold the bar; a clamp pivoted at the end of the first mentioned clamp and adapted to receive the bar, clamping members by which the bar is held in the clamps against distortion, the end of the clamps and clamping members being beveled for the purpose described; and operating mechanism.

3. In a machine for bending flanged metal bars in the manner described, in combination with a pair of clamps pivoted as described, said clamps having recesses to receive the bar; clamping members whereby the bar to be bent is firmly held in the clamps, said clamping members having their adjacent ends beveled and pockets in said ends so that, when the machine is operated to bend the bar, the faces of said beveled ends come together and a portion of a flange is folded into the pockets in said ends; and means for operating the machine.

4. In a machine for bending flanged metal bars in the manner described, in combination with a pair of clamps pivoted as described, said clamps having recesses to receive the bar; clamping members whereby the bar to be bent is firmly held in the clamps, and pockets in the ends of said clamping members so that, when the machine is operated to bend the bar, a portion of a flange is folded into the pockets in said ends; and means for operating the machine.

5. A machine for bending channel bars in the manner described, comprising a pair of clamps pivoted together, said clamps having a recess in which the channel fits and which supports the outside of the channel throughout the length of the clamps; chocks which fit the inside of the channel and secure it in the clamps, the adjacent ends of said chocks being beveled for the purpose set forth, and having in their beveled ends recesses into which the flanges of the channel fold, and which act to form the fold in the channel; and operating mechanism.

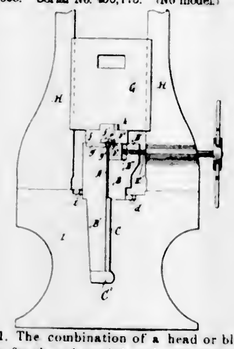
6. A machine for bending channel bars in the manner described, comprising a pair of clamps pivoted together, said clamps having a recess in which the channel fits and which supports the outside of the channel throughout the length of the clamps; chocks which fit the inside of the channel and secure it in the clamps, and having their adjacent ends provided with recesses into which the flanges of the channel fold and which act to form the fold in the channel; and operating mechanism.

7. A machine for bending channel bars in the manner described, comprising a pair of clamps pivoted together, said clamps having a recess in which the channel fits and which supports the outside of the channel throughout the length of the clamps; chocks which fit the inside of the channel and secure it in the clamps, the adjacent ends of said chocks being beveled for the purpose set forth; and operating mechanism.

8. In a machine for bending flanged metal bars as described, a chock or filler fitting between the flanges of the bar and engaging the web at or near the bending line, said chock having the end adjacent to the bending line beveled as and for the purpose set forth.

9. In a machine for bending flanged metal bars as described, a chock or filler fitting between the flanges of the bar and engaging the web at or near the bending line, said chock having its end adjacent to the bending line beveled, and pockets in said beveled end adapted to receive the folded portions of the flanges when bent.

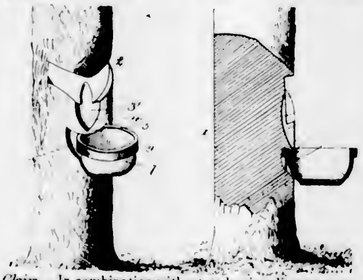
530,204. MECHANISM FOR SHAPING THE WELDING EDGES OF PLOW-POINTS. HENRY G. SAWYER, Carpentersville, Ill. Filed Jan. 12, 1893. Serial No. 458,175. (No model.)



*Claim.*—1. The combination of a head or block, a rest on the head or block for the edge of the plow point, an abutment on the head or block for the end of the plow point, a swinging head or jaw for clamping the plow point when set edgewise on the head or block, a die having a beveled acting edge, and a movable die having a double beveled recess for upsetting and swelling the welding edge of a plow point, substantially as specified.

2. The combination of a head or block a rest on the head or block for the edge of a plow-point, an abutment on the head or block for the end of the plow-point, a swinging head or jaw adapted to clamp the plow-point when set edgewise in the head or block, and a movable die and stationary die adapted to be forced together and upset and swell the welding edge of a plow-point, substantially as described.

530,205. THE ART OF EXTRACTING TURPENTINE. JAMES C. SCHULER, Lanier, Ga. Filed Mar. 23, 1894. Serial No. 504,801. (No specimens.)



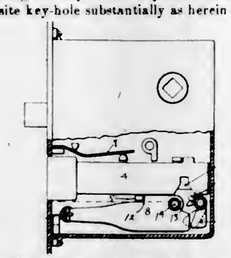
*Claim.*—In combination with a tree having divergent troughs cut therein with lower beveled walls leading to a gutter cut into said tree at the point of intersection of said divergent troughs, the latter terminating in a shoulder overhanging a recess cut into said tree, a porcelain cup having a dovetail extension fitting said recess with a hole on the under side of the rim, and a single vertically disposed supporting pin in the recess of the tree adapted to engage the hole in the rim of the cup, substantially as and for the purposes set forth.

530,206. KEYHOLE-GUARD. GUSTAVE W. SCHUMACHER, Portland, Me., assignor to George F. Gould, same place. Filed June 12, 1893. Serial No. 477,388. (No model.)

*Claim.*—1. The combination with the pivotally operating keyhole guard of the safety mechanism, consisting of a swivel blank and block loosely mounted on a proper carrying post, and a post torsion spring, substantially as herein set out.



2. In a door lock, a pivotally acting key-hole guard consisting of a thin metal blank, located between the side plates of the lock, extending from near the lock face inward so as to cover the key-hole, the end farthest from the key-hole, near the lock face, being convexed, with a flange in the center of said convexed end to prevent any lateral motion and loosely connected pivotally to two posts one standing in each of the side plates of said lock and about midway between, with concaved ends and a depression to receive the aforesaid flange, forming a loose joint or hinge, the end of the blank opposite the key-holes being movable to either side of said lock and having a concaved boss on each side of said blank on a straight line with the key-holes to hold the shank of the key that it may be readily rotated, the top edge of said blank being notched to engage with the lock-bolt guide, so that by inserting the key in one key-hole, the blank is made to cover the opposite key-hole substantially as herein described.



3. In a door lock, a key-hole guard, safety or locking mechanism consisting essentially of a pivot or carrying post, inserted between the side plates of the lock at the end nearest, and by the side of the key-hole having a metal blank attached thereto of a sufficient thickness to fill the space between the key-hole guard and the side plate of the lock, a swivel blank loosely connected to said carrying post, integrally engaging said metal blank and a post torsion spring for holding said metal blank and swivel blank in union, substantially as herein described.

4. In a door lock, the combination of a loosely pivotally acting key hole guard blank, and a safety or locking mechanism, consisting essentially of a carrying or pivot post, having a metal blank attached thereto, a swivel blank integrally engaging said metal blank, loosely carried on said pivot post and a torsion spring for holding said metal and swivel blank in union, substantially as is herein described.

530,207. OIL-CAN. FERNANDO B. SMITH, Canton, Ohio. Filed Nov. 13, 1893. Serial No. 490,753. (No model.)



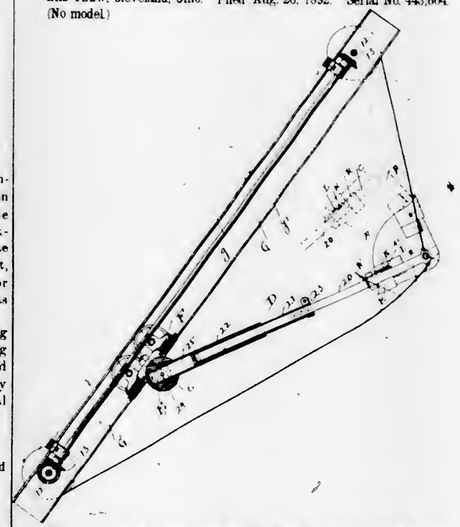
*Claim.*—The combination of the globe or jar A, provided with depressions or grooves *c*, located upon the periphery of the globe and at its ends, the bands B and C, located around the globe at the ends thereof, the vertical wires *d*, having their ends seated in the grooves *c*, and below the bands B and C, the depressions *f* located upon opposite sides of the globe, the handle D, provided with the hooked ends *d'*, the flange or rib *g* formed upon the top or upper end of the globe, the ribs A, formed upon the globe, and the band *k*, located between the bands B and C, and seated into the notches *k'*, all arranged substantially as and for the purpose specified.

530,208. TELEPHONE-SWITCH. ALFRED STROMBERG and ANDROV CARLSON, Chicago, Ill. Filed Oct. 9, 1894. Serial No. 525,388. (No model.)

*Claim.*—In a telephone switch, the combination with a support comprising a hook provided with two limbs between and from which the telephone is adapted to be suspended, of a pivoted lever, the end thereof occupying a position between said limbs, whereby said lever will be rotated when the telephone is hung up, and contact terminals controlled by the rotation of said lever for opening and closing the circuits through the telephone apparatus, substantially as described.



530,209. EXCAVATOR DIPPER, SCOOP, OR SHOVEL. RICHARD THEW, Cleveland, Ohio. Filed Aug. 20, 1892. Serial No. 443,604. (No model.)



*Claim.*—1. In a scoop or shovel of the variety indicated, the combination with the body thereof that, in the main, is composed of three sections, a central section, $A'$, and two side-sections, $A^3$, the latter being flanged inward, as at *a*, and riveted, as at *a'*, to the central section, of a plate, as at B, embracing the respective ends of the scoop or shovel and secured to the central and side sections of the body of the scoop or shovel substantially as indicated, said plates at their upper ends terminating, respectively, in a pointed lip, substantially as and for the purpose set forth.

2. A scoop or shovel trunnioned or pivoted to and between the ends of a bail that at its ends is provided with suitable means for attaching cables whereby the scoop or shovel may be swung in opposite directions, substantially as set forth.

3. The combination with a scoop or shovel, trunnioned or pivoted to and between the ends of a bail, the bail at opposite sides of its pivotal bearing being provided with ears, as at $C^2$, of clevises, as at H, secured to said ears, substantially as and for the purpose set forth.

4. The combination with a trolley or carriage provided with eyebolts, as at E, of a scoop or shovel trunnioned or pivoted to and between the ends of a bail provided with a handle, said handle, at its upper end, having lateral trunnions journaled in the eyes of the eyebolts aforesaid, substantially as shown and described.

5. The combination with a double-ended scoop or shovel provided with a bail, substantially as described, of means for locking the scoop or shovel to the bail in the extreme positions of the scoop or shovel, substantially as set forth.

6. The combination with a double-ended scoop or shovel provided with a bail, substantially as described, of means for locking the scoop or shovel to the bail in the extreme positions of the scoop or shovel, said means comprising a latch or bolt and a spring acting in the direction to retain said latch or bolt in its shot position, and a slot or hole in the body of the scoop or shovel at or near each end thereof for receiving said latch or bolt in the shot position of the same, substantially as set forth.

7. The combination with a scoop or shovel of the variety indicated, pivoted, as at C, to and between the ends of a bail, of a latch or bolt provided with a slot or depression *k*, a lever pivoted to the bail, one end of said lever engaging said slot or depression in the latch or bolt, and the opposite end of the lever having attached a cord, and a spring acting against the lever in the direction to retain the laten or bolt in its shot position, the body of the scoop or shovel at or near each end thereof being provided with a slot or hole for receiving said latch or bolt, substantially as and for the purpose set forth.

8. The combination with a scoop or shovel of the variety indicated, pivoted to and between the ends of the bail, one side of the scoop or shovel at or near each end thereof being slotted, as at $a^4$, of a slide, as at L, secured to the adjacent member of the bail, a latch or bolt, K, adapted to operate in said slide a lever, M, adapted to actuate said latch or bolt, and a spring Q acting against said lever, substantially as indicated, said latch or bolt being adapted to engage the respective slots, aforesaid, substantially as and for the purpose set forth.

9. The combination with a scoop or shovel of the variety indicated, pivoted to and between the ends of a bail, one side of the scoop or shovel, at or near either end, being slotted, as at $a^4$, of mechanism for locking the scoop or shovel to the bail in the extreme positions of the scoop or shovel, said mechanism comprising the following elements: a slide, L, secured to the bail; a latch or bolt, K, operating in said slot, and having a rounded slot, or depression, *k*; a vibrating-lever fulcrumed, as at *l*, and rounded at its lower end for engaging the corresponding slot or depression *k* in the latch or bolt, the opposite end of the lever terminating in an eye, *m'*, an eye, P, secured to the bail, an arm, O, pivoted to lever M and extending through eye P, substantially as indicated, a stop for limiting the outward movement of said arm, and a spring, Q, mounted on said arm and acting in the direction against lever M, the latch or bolt aforesaid being adapted to engage the respective slots $a^4$ in the sides of the scoop or shovel, substantially as and for the purpose set forth.

10. In a scoop or shovel of the variety indicated, a pair of stops, as at R, located at each end of the scoop, the stops of a pair being located at opposite sides of the scoop or shoval, respectively, and comprising, respectively, a plate pivoted, as at *r*, to the respective side of the scoop and provided at its outer end with a lateral flange, *r'*, the latter being larger at its lower end and thence gradually reduce to zero, substantially as shown and described.

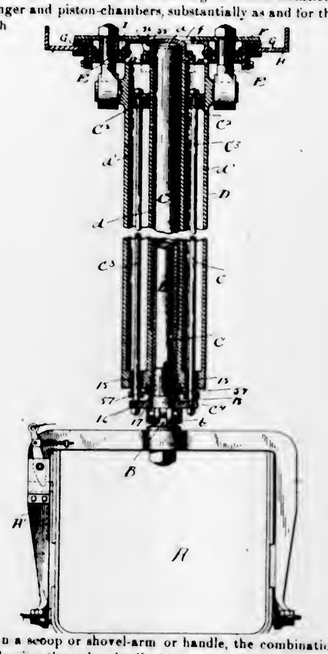
11. The combination with the scoop or shovel-handle, comprising two tubular sections closed at their upper ends and adapted to telescope the one within the other, the upper section having lateral trunnions and one of said trunnions being perforated longitudinally, of a valve for closing said perforation, substantially as and for the purpose set forth.

12. The combination with a trolley or carriage, of a scoop provided with a handle comprising two tubular sections adapted to be telescoped the one within the other, said sections being closed at their upper ends and the upper section being trunnioned to said trolley or carriage or an attachment of the same, one of the trunnions being perforated longitudinally, a tank or reservoir supported by said trolley or carriage, a pipe or tube for establishing open communication between said tank or reservoir and the chamber of the aforesaid perforated trunnion, and a valve for closing said perforation, substantially as set forth.

## 530,210. EXCAVATOR SHOVEL OR SCOOP. RICHARD THEW, Cleveland, Ohio. Filed Oct. 1, 1892. Renewed Oct. 29, 1894. Serial No. 527,321. (No model.)

*Claim.*—1. In a scoop or shovel handle, the combination with a section comprising a plunger and one or more pistons operatively connected with the plunger, and another section having a chamber for receiving the aforesaid plunger, and one or more chambers for receiving the aforesaid piston or pistons and having ports or passage-ways for establishing open communication between said chambers, the aforesaid chambers being adapted to receive and hold a liquid, and the arrangement of parts being such that the scoop or shovel-arm or handle is lengthened or shortened according as the aforesaid plunger and piston or pistons are moved in the one direction or the other, of a valve for cutting off communication between the piston and plunger-chambers, substantially as and for the purpose set forth.

2. In a scoop or shovel-arm or handle, the combination with a section having three longitudinal chambers adapted to receive and hold liquid and ports and passage-ways for establishing open communication between said chambers, and a section comprising a plunger extending into one of said chambers and a piston within each of the other chambers, said pistons and plunger being operatively connected with each other, and the arrangement of parts being such that the scoop or shovel-arm or handle is lengthened or shortened according as the aforesaid plunger and pistons are moved in the one direction or the other, of a valve for cutting off communication between the plunger and piston-chambers, substantially as and for the purpose set forth.



3. In a scoop or shovel-arm or handle, the combination with a section having three longitudinal chambers adapted to receive and hold liquids and ports and passage-ways for establishing open communication between said chambers, and a section comprising a plunger extending into one of said chambers and a piston within each of the other chambers, said pistons and plunger being operatively connected with each other, and the arrangement of parts being such that the scoop or shovel-arm or handle is lengthened or shortened according as the aforesaid plunger and pistons are moved in the one direction or the other, of a valve for cutting off communication between the plunger and piston-chamber, the aggregate transverse area of the piston-chambers relative to the transverse area of the plunger-chamber being such that the displacement of the plunger shall be equal to the aggregate displacement of the pistons, substantially as set forth.

4. In a scoop or shovel-arm or handle, in combination, a section having a longitudinal chamber *d* closed at the upper end and two chambers $d'$ $d'$ closed at their lower end, ports and passage-ways establishing open communication between the upper end of chamber *d* and the lower ends of chambers, $d'$ $d'$, a section comprising a plunger and pistons adapted to operate in unison endwise of chambers, *d* and $d'$ $d'$, respectively, and a valve for cutting off communication between the plunger and the piston-chambers, substantially as and for the purpose set forth.

5. In a scoop or shovel-arm or handle, in combination, a section having three chambers, $d$ $d'$ $d'$, adapted to receive and retain liquid and arranged substantially as indicated, ports and passage-ways for establishing open communication between said chambers, a section comprising a plunger, as at C, and two pistons, $C^3$, adapted to operate endwise of chambers *d* and $d'$ $d'$, respectively, and connected with each other to move in unison, and a valve for cutting off communication between the plunger and piston chambers, the aggregate transverse area of the piston-chambers being such relative to the transverse area of the plunger-chamber that the displacement of the plunger will equal the aggregate displacement of the pistons, substantially as and for the purpose set forth.

6. In a scoop or shovel-arm or handle, a section having three longitudinal chambers adapted to receive and hold liquid and ports and passage ways for establishing open communication between said chambers and having an aperture for permitting the escape of air from said chambers in the introduction of the liquid, in combination with a section comprising a plunger exteoding into one of said chambers and a piston within each of the remaining chambers, said pistons and plunger being operatively connected with each other, and a valve for cutting off communication between the plunger and piston-chambers, the arrangement of parts being substantially as and for the purpose set forth



7. In a scoop or shovel-arm or handle, a section, D, having a chamber *d*, closed at its upper end and a port, 21, in open relation with the upper end of said chamber, and having two chambers $d'$ $d'$ and ports 53 in open relation with the lower ends of said chambers, in combination with a section, C, comprising a plunger and pistons operatively connected with each other and adapted to operate endwise chambers *d* and $d'$ $d'$, respectively, of section D, a valve-casing secured to the upper end of section D and having a port, 24, in open relation with port 21 and a valve for closing said port, 24, and pipes, as at 45 and 47, connecting and adapted to conduct liquid from port 24 to ports 53, or vice versa, according as the aforesaid plunger and pistons are actuated to displace liquid from the plunger or piston-chambers to shorten or lengthen the arm or handle, substantially as set forth.

8. The combination with a scoop or shovel-arm or handle having a section comprising three longitudinal chambers adapted to receive and retain liquid, and having a section comprising a plunger extending into and adapted to operate endwise one of said chambers and a piston in each of the other chambers and operatively connected with the plunger, of a liquid-supply-tank or receptacle, pipes and passage-ways for establishing open communication between said supply-tank or receptacle and the aforesaid chambers and between the plunger and piston-chambers, and a suction valve for cutting off said communication between the plunger and piston-chambers, the arrangement of parts being substantially as and for the purpose set forth.

9. The combination with a scoop or shovel-arm or handle having a section comprising three longitudinal chambers adapted to receive and retain liquid, and having a section comprising a plunger extending into and adapted to operate endwise one of said chambers, and a piston in each of the other chambers and operatively connected with the plunger, of a liquid supply tank or receptacle, pipes and passage-ways for establishing open communication between said supply tank or receptacle and the aforesaid chambers and between the plunger and piston-chambers, a suction-valve for cutting off said communication, a spring having a tension substantially as described and acting in a direction to retain said valve in its seat, and a valve for closing communication between the plunger and piston-chambers, the arrangement of parts being substantially as and for the purpose set forth.

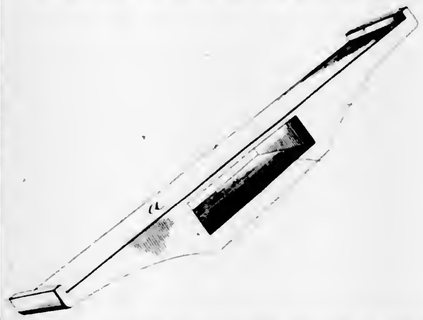
10. In a scoop or shovel-arm or handle, a section, D, having a chamber, *d*, closed at its upper end and a port, 21, in open relation with the upper end of said chamber, and having two chambers $d'$ $d'$ and ports 53 in open relation with the lower ends of said chambers, in combination with a section C, comprising a plunger and pistons operatively connected with each other and adapted to operate endwise chambers $d$ $d'$ $d'$, of section D, respectively, a valve-casing secured to the upper end of section D and having a port, 24, in open relation with port 21 and a valve for closing said port 24, and pipes, as at 45 and 47, connecting and adapted to conduct liquid from port 24 to ports 53 or vice versa, according as the aforesaid plunger and pistons are actuated to displace liquid from the plunger or piston-chambers to shorten or lengthen the arm or handle, a liquid-supply-tank or receptacle, a pipe, tube or passage-way for conducting liquid from said tank or receptacle to the aforesaid valve-casing, and a suction-valve, for cutting off the supply of liquid to the valve-casing, substantially as and for the purpose set forth.

11. In a scoop or shovel-arm or handle, a section, D, having a chamber *d* closed at its upper end and a port 21 in open relation with the upper end of said chamber, and having two chambers $d'$ $d'$ and ports 53 in open relation with the lower ends of said chambers, in combination with a section C comprising a plunger and pistons operatively connected with each other and adapted to operate endwise of chambers *d* and $d'$ $d'$, respectively, a valve casing secured to the upper end of section D and having a port 24 in open relation with port 21, a chamber, 37, and a hollow plug-valve in open relation with chamber 37 and provided with a lateral port adapted to register with port or passage-way 24, pipes, as at 45 and 47, connecting and establishing open communication between chamber 37 and port 53, a liquid supply-tank or reservoir, a pipe or tube for establishing open communication between said tank or reservoir and chamber 37, a suction-valve for cutting off said last-mentioned communication, and suitable means for retaining said valve in its seat when chambers $d$ $d'$ $d'$ of section C of the arm or handle are supplied with liquid, and to yield to the suction created by a vacuum formed in said chambers, substantially as and for the purpose set forth.

12. The combination with a trolley carrying a liquid-supply tank or reservoir, of a scoop having an arm or handle pivotally connected at its upper end with said trolley and comprising two sections adapted to telescope the one within the other and be blocked by a liquid both as against shortening and lengthening, and a pipe or tube for conducting liquid from said tank or reservoir to the arm or handle for the purpose indicated, substantially as set forth

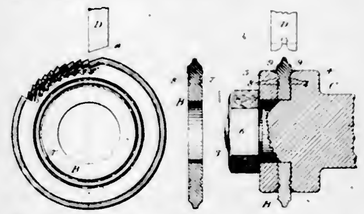
13. The combination with a trolley carrying a liquid supply tank or reservoir, of a scoop having an arm or handle pivotally connected at its upper end with said trolley and comprising two sections adapted to telescope the one within the other and be blocked by a liquid both as against shortening and lengthening, and a pipe or tube for conducting liquid from said tank or reservoir to the handle for the purpose indicated, said trolley having an opening at the central portion to accommodate the location and vibration or swinging movement of the upper end of the handle, substantially as set forth.

## 530,211. DRAFT-IRON FOR CAR-COUPLINGS. JAMES TIMMS, Columbus, Ohio, assignor to the Buckeye Automatic Car Coupler Company, same place. Filed Feb. 23, 1894. Serial No. 501,226. (No model.)



*Claim.*—A draft iron for car couplings constructed and adapted to be attached to the lower face of a draft timber and comprising a flat plate of metal having upwardly turned lips adapted to be let into the timber above, said plate provided with strengthening ribs at its edges, a web extending between these longitudinal side ribs and forming a slot for the ends of the followers, and ribs *h'* forward and rearward of and integral with the web whereby the latter is strengthened where the greatest strain comes, substantially as set forth.

## 530,212. METHOD OF AND APPARATUS FOR MAKING MILLING-CUTTERS. CHARLES C. TYLER, Hartford, Conn. Filed Apr. 11, 1894. Serial No. 507,135. (No model.)



*Claim.*—1. In an apparatus for forming teeth in cutter-blanks in combination, a cutter blank-carrier, two cutter-blank holding plates each having one or more circumferentially-disposed blank-engaging flanges or ribs having therein peripheral notches or recesses adapted for holding the cutter blank against circumferential movement, and a tooth-forming compressor-tool in position and adapted for operating upon and compressing successive peripheral portions of the blank held between said plates, in engagement with said flanges and notches, substantially as described.

2. In an apparatus for forming teeth in cutter blanks, a carrier for the cutter-blank, in combination, cutter-blank-holding plates each having circumferentially-disposed blank-engaging flanges upon the inner adjacent faces thereof, and each having shallow notches or recesses in the peripheries thereof, in position and adapted for engagement by the blank when the same is clamped between said holding plates, means for clamping said plates upon the blank, and a tooth-forming compressor-tool in position and adapted for operating upon and compressing successive peripheral portions of said blank, substantially as described.

3. In an apparatus for forming teeth in cutter-blanks, a cutter-blank-carrier comprising a spindle, two holding-plates having a series of remotely disposed shallow blank-holding notches or pockets formed in their peripheries at the inner adjacent edges thereof, and, having circumferentially and oppositely disposed concentric flanges upon

their adjacent side-faces, and a clamping-device for said plates, substantially as described and for the purpose set forth.

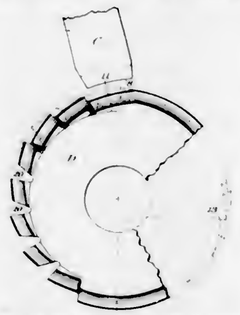
4. In an apparatus for forming teeth in cutter-blanks, in combination, a cutter-blank-carrier spindle having a fixed annular flange with one or more circumferentially disposed flanges upon the side-face thereof, and a series of shallow notches or grooves formed in one edge of its periphery, a washer or holding plate removably fitted to said spindle and having circumferentially disposed flanges and peripheral notches coinciding with the circumferential flanges and peripheral notches, respectively, of the spindle-flange, means for clamping said washer or plate upon a cutter-blank located between said plate and spindle-flange, and a tooth-forming compressor-tool in position and adapted for operating upon and compressing successive peripheral portions of said blank to form teeth therein, substantially as described.

5. In an apparatus for forming teeth in cutter-blanks, a carrier for the cutter-blanks embodying two cutter-blank-holding plates, each of which has one or more circumferentially-disposed blank-engaging flanges, and each of which has a series of peripheral recesses or blank-holding notches formed in the inner edges thereof, substantially as described and for the purpose set forth.

6. That improvement in the art of making milling-cutters of the class specified, which consists in first forming a discous blank with one or more circumferentially-disposed grooves or recesses in one or both faces thereof, second, clamping said discous blank between holding-plates having blank-engaging flanges to coincide with and engage in the grooves of said blank, third, compressing successive peripheral portions of said blank to form successive teeth and at the same time displacing the metal of the blank projecting beyond the peripheries of the holding-plates laterally to engage holding-notches or recesses formed in said plates and intercepting the inflow of the metal beyond a certain point within the peripheries of the holding-plates to prevent distortion of the body-portion of said blank, substantially as described.

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530,213. MANUFACTURE OF MILLING-CUTTERS. CHARLES C. TYLER, Hartford, Conn. Filed Apr. 11, 1894. Serial No. 507,136. (No model.)



*Claim.*—1. The herein-described process of making milling-cutters of the class specified, which consists in successively compressing successive peripheral portions of a blank into tooth-form and restricting the flow of the metal during compression so as to secure a uniform compression throughout the major portion of the tooth-surface and at the same time leave a non-compressed, or a relatively non-compressed portion contiguous to one end of said tooth, and subsequently cutting away said non-compressed intermediate portions of the blank together with a slight portion adjacent thereto of the compressed portion of the blank to form the cutting-edges of the teeth and to form clearance spaces or chip-spaces between successive teeth, substantially as described.

2. The herein-described process of making milling-cutters of the class specified, which consists in subjecting successive segments of predetermined length of a discous blank to compression crosswise of the length of said successive segments in such manner as to produce successive eccentric compressed tooth-arcs in the periphery of said blank with intervening non-compressed portions separating said tooth-arcs, and subsequently cutting away portions of the blank intermediate to said tooth-arcs to form the true cutting edges of the teeth and to form the clearance spaces between successive teeth, substantially as described.

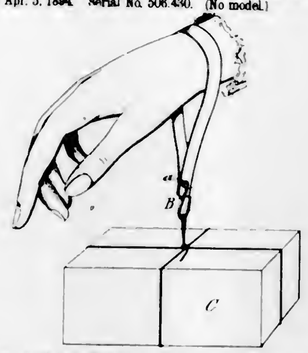
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530,214. INSULATING-COVERING FOR REFRIGERATIVE PURPOSES. GARDNER T. VOORHEES, Boston, Mass. Filed June 21, 1892. Serial No. 437,470. (No specimens.)

*Claim.*—The improved refrigerating covering above described composed of sheets of felted hair each saturated with resin, substantially as and for the purposes specified.

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530,215. PARCEL-CARRIER. LEOPOLD WEISS, New York, N. Y. Filed Apr. 5, 1894. Serial No. 506,430. (No model.)

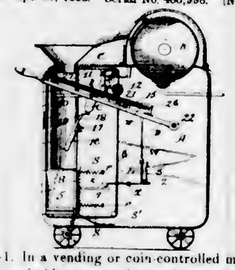


*Claim.*—1. A parcel-carrier, consisting of a loop provided with an eye, said loop being adapted to be slipped over the hand, and an S-hook, one end of which is inserted in said eye and the other end of which is free for engaging the tying-cord of a package, substantially as set forth.

2. A parcel-carrier, consisting of a doubled strap having its ends permanently attached by an eyelet, so as to form a loop, and an S-hook, one end of which is inserted in said eyelet, and the other end of which is adapted to engage with the tying-cord of a package, substantially as set forth.

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530,216. VENDING-MACHINE. THOMAS S. WHEATCROFT, Rush, Pa. Filed Sept. 20, 1893. Serial No. 485,998. (No model.)



*Claim.*—1. In a vending or coin-controlled machine, the combination, with a suitably supported coin-slotway, of a tube provided with a vertical slot in one end and rigidly mounted on a rock-shaft, said tube forming an extension to said coin slotway, and a pivoted lever provided with a hook adapted to operate in the slot in the tube when no coin is present and to engage the coin, when present, to rock said shaft and tube, substantially as specified.

2. In a vending-machine, the combination, with the supply compartment and a reciprocating gate, of a spring-actuated lever having one end connected to said gate, a coin-slotway, a rock-shaft carrying a slotway extension and provided with a curved arm engaging said lever, and means for turning said rock-shaft when a proper coin is present in said slotway extension, substantially as specified.

3. In a vending machine, the combination, with the supply-compartment, a reciprocating gate, and a spring-actuated lever moving said gate in one direction, of a slot-way, a slotway extension rigidly secured to a pivoted shaft, a connection between said shaft and said spring-actuated lever, and an operating-lever for moving the gate in another direction when a coin of proper denomination is present, substantially as specified.

4. In a coin-controlled vending machine, the combination, with a supply-compartment, a gate formed with double tines and adapted to reciprocate in said compartment, and a measure compartment having a gate arranged therein, of a spring actuated lever having one end connected to the reciprocating gate, a coin-slotway, a rock-shaft carrying a slot-way extension and provided with a curved arm engaging said lever, and a pivoted lever provided with means for engaging the gate in the measure-compartment and means for rocking said rock-shaft when a proper coin is present in the slotway extension, substantially as specified.



5. In a vending machine, the combination, of a supply compartment and a gate reciprocating therein, a measure compartment situated beneath the supply-compartment and having a gate arranged therein, and a movable package-compartment beneath the measure-compartment and a lever arranged to operate both gates, when a coin is present in the slot-way, and deliver a measured quantity of the contents into the package-compartment, substantially as specified.

6. In a vending machine, the combination, with a supply compartment, and a gate reciprocating therein, a measure-compartment and a gate arranged to operate therein, mechanism for operating both gates when a coin is present in the slot way, a package-compartment held in locked position by a pivoted catch and released by the operating-lever, substantially as specified.

7. In a vending machine, the combination, with a supply-compartment and a gate reciprocating therein, a measure compartment and a gate arranged therein, and a movable package-compartment, of a slot-way, a slot-way extension rigidly secured to a rock-shaft, and a spring-actuated operating-lever provided with a hook, whereby both gates are operated when a coin is present locking the slot-way extension and operating lever together, substantially as specified.

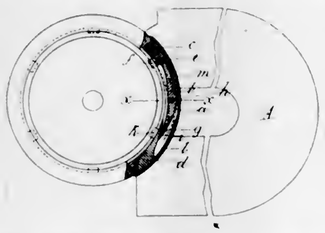
8. In a vending machine the combination, with the supply-compartment, a gate reciprocating therein and a coin slotway, of a rock-shaft carrying a slot-way extension and provided with a curved arm engaging said lever, a lever operating said rock-shaft when a coin is present in the slot way extension, and a sales indicating device, substantially as specified.

9. In a vending machine, the combination, with the supply-compartment, a gate reciprocating therein, and a coin-slot way, of a rock shaft carrying a slotway extension and provided with a curved arm engaging said lever, a lever operating said rock-shaft when a coin is present in the slot-way extension, and a display advertisement mechanism, substantially as specified.

10. A machine for vending irregular shaped articles, comprising a main receptacle, a supply compartment, a measure compartment, and a movable package-compartment contained in said main receptacle, mechanism substantially as described for delivering a specified quantity to the measure compartment, mechanism substantially as described for delivering the specified quantity to the package-compartment, and mechanism for delivering the said quantity in a package to the purchaser, substantially as specified.

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530,217. MINER'S SAFETY-LAMP. CARL WOLF, Zwickau, Germany. Filed June 9, 1894. Serial No. 514,036. (No model.)



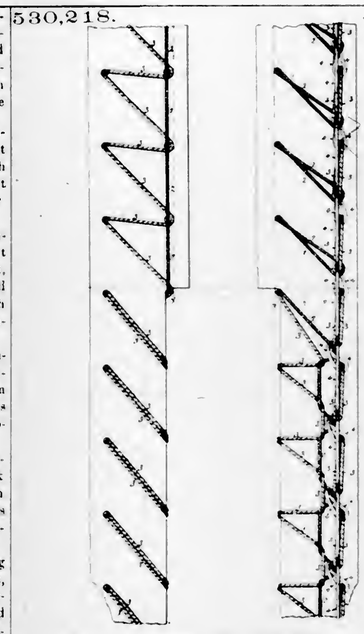
*Claim.*—A miner's safety lamp provided with a notched flange or rim and having core-pieces, a magnet, a pivotal catch, a protecting plate arranged around said flange or rim and having insulating material interposed between the same and said plate opposite one end of said catch to prevent said plate from being magnetized, substantially as and for the purposes set forth.

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530,218. SEAM FOR FABRICS. WILLIAM F. BEARDSLEE, New York, N. Y., assignor to Albert Poor, Boston, Mass. Filed Aug. 8, 1893. Serial No. 482,644. (No model.)

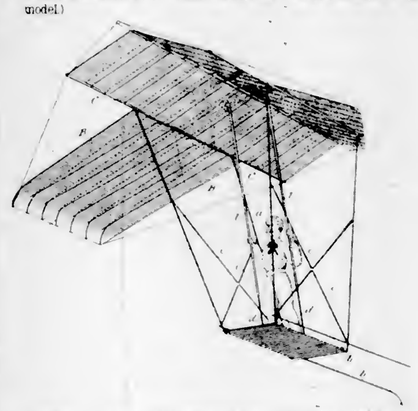
*Claim.*—The herein described seam consisting of the material or fabrics to be overseamed or joined and a series of stitches composed of two upper threads, 2 and 3, and a lower thread 4, the upper thread 3 having loops which pass through the material and laterally extended loops through which loops of the other upper thread 2 pass, while beneath or on the opposite side of the material the loops of both of said upper threads are concatenated by the lower thread 4 which is looped within the loops of both of the said threads 2 and 3 and then around outside of each loop of the upper thread 3 which passes through the material; whereby the enchained loops on the lower side of the material are located at one row of stitches and the interlooped threads above the material at the other or opposite row of stitches, substantially as set forth.

530,218.



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530,219. APPARATUS FOR AERIAL NAVIGATION. NICHOLAS H. BORGFELDT, Brooklyn, assignor of one-sixth to Charles Friedrich Zenker, New York, N. Y. Filed Jan. 27, 1894. Serial No. 498,168. (No model.)



*Claim.*—1. In an aerial apparatus, the combination of wings, each having an outer and an inner section, the inner sections of the wings being pivotally connected to each other and each wing being pivoted intermediate of its sections, together with mechanism for swinging the wings on their pivots, all arranged so that a movement of the operating mechanism will swing the sections of each wing in opposite directions as set forth.

2. In an aerial apparatus, the combination with a center shaft, of wing-rods pivoted thereto by one end connected to rock shaft intermediate of the end of the rods, each of said wing-rods having combined therewith a section of fabric, all arranged in such a manner that each wing-rod overlaps the section of fabrics attached to the next adjacent wing-rod, as set forth.

3. In an aerial apparatus, the combination of wings, each having an outer and inner section, each wing being pivoted intermediate of its sections, together with a center shaft to which the inner section of each wing is pivoted, as set forth.

4. The combination with a base A of wings provided with stiffening rods F F, of sliding tubes I I fastened to the stiffening rods F F

together with guide-rods *d d* co-operating with the tubes and mounted on the base, substantially as described.

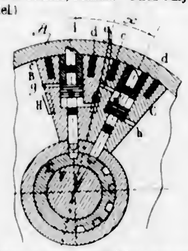
5. The combination with pivoted wings of a base A, suspending rods *a* attached thereto, said rods being also attached to the wing pivots, substantially as described.

6. The combination with a base A and suspending rods *a a* pivotally attached thereto and mechanism for operating wings, of wings carried by said rods and said wing operating mechanism, as specified.

7. In an aerial apparatus, a pair of double acting wings pivoted intermediate of their ends and to a center shaft and arranged to confine the air upon the down stroke and to allow free circulation upon the up stroke, in combination with operating mechanism by the wings connected to the wings by pivotal connections as set forth.

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**530,220. ROTARY MOTOR.** AUGUSTE DELATTRE and FIRMIN BRUCKERT, Ferriere-le-Grande, France. Filed July 7, 1893. Serial No. 479,814. (No model.)

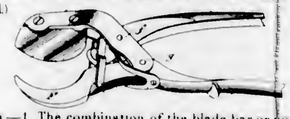


*Claim.*—1. A rotary engine comprising the rotary cylinder, the sleeve or shaft E having indentations, the inlet and exhaust ports G H, the paddles B C arranged to turn about the central shaft said paddles containing piston chambers and the pistons therein having stems or rods projecting inwardly and outwardly to engage alternately the indented shaft and the cylinder respectively said paddles having ports leading to the piston chambers, substantially as described.

2. In combination, the central shaft E, the rotary cylinder having inlet and exhaust ports G H, the paddles B C, each having a piston chamber with a piston therein having inwardly and outwardly extending rods, to engage the shaft and cylinder respectively the ports leading through the paddles to said piston chambers, the pivoted click Z carried by the cylinder to engage the outer piston rods and the fingers carried by the paddles for lifting the click, substantially as described.

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**530,221. PRUNING-SHEARS.** AUGUST EFFINGER and WILLIAM H. METZGER, Canton, Ohio. Filed Feb. 24, 1894. Serial No. 501,435. (No model.)



*Claim.*—1. The combination of the blade-bar or yoke A, having secured thereto the cutting blade C, the lever handle D, provided with the notch or recess *b*, the handle D' provided with the notch or recess *c*, and having the extension or jaw F provided with soft metal filling, the link E, and means for automatically opening the shears, substantially as and for the purpose specified.

2. The combination of the blade-bar or yoke pivotally connected to the handles D and D', the link E connected to the handles, a cutting blade and the springs G and H, substantially as and for the purpose specified.

3. The combination of the pivoted blade or yoke A, provided with a cutting blade, the handles D and D', the spring G provided with the curved extension $d^6$, the pin $d^5$ fixed to the bar A, the link E and the extension or jaw F, substantially as and for the purpose specified.

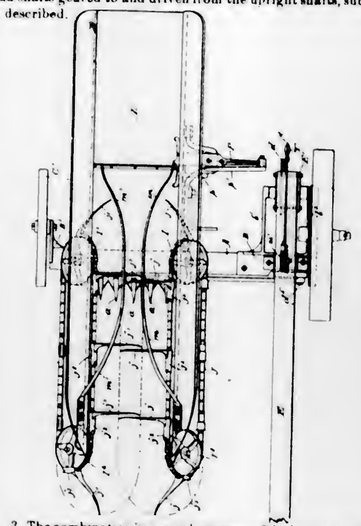
4. The combination of the pivoted bar or yoke A, provided with a cutting blade, the pivoted handles D and D', provided with the notches or recesses, the shoulder or stop $d^4$ the jaw F and the link E, substantially as and for the purpose specified.

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**530,222. CORN-HARVESTER.** AUGUSTUS E. ELLINWOOD, Akron, Ohio, assignor to Lewis Miller, same place. Filed May 10, 1890. Serial No. 351,222. (No model.)

*Claim.*—1. The combination in a corn harvester, of the finger bar, the flanged plates thereon, the divider boards secured to said flanged plates and the oppositely inclined, endless toothed chains crossing the planes of said dividing boards.

2. The combination of the divider boards, the upright shafts journaled in brackets on said boards, said brackets being provided with inclined stud shafts, and the inclined sprocket wheels on said stud shafts geared to and driven from the upright shafts, substantially as described.



3. The combination in a corn harvester of the inclined and toothed endless chains and actuating sprocket wheels, the divider boards underneath and fenders above said chains and the compressing and clearing rods operating in connection with said chains, substantially as described.

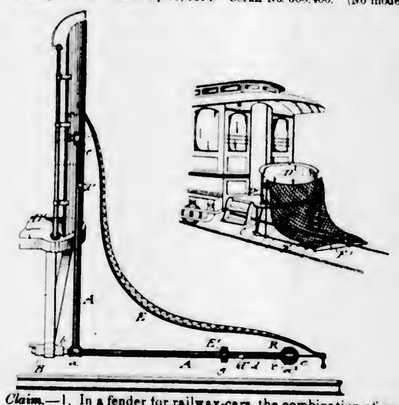
4. The side delivery fork or rake and the crank shaft for actuating it geared to and actuated from the upright shaft actuating one of the inclined and toothed endless gathering chains, substantially as described.

5. The combination with the grain receptacle, of the side delivery fork or rake having its stale pivoted as set forth, the actuating crank shaft therefor, the clutch for engaging said shaft with its actuating pinion, the cam for throwing said clutch out of and a lever for moving said clutch into engagement with said pinion, substantially as described.

6. The combination with the finger bar of the upright divider boards, fender boards secured thereto, the interposed inclined and toothed endless chains, the receptacle in rear of said finger bar and chains, and the intermittingly operating side delivery fork or rake operatiug in connection with said receptacle, substantially as and for the purpose specified.

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**530,223. FENDER FOR TROLLEY-CARS.** CHARLES F. HAUG, Brooklyn, N. Y. Filed Apr. 5, 1894. Serial No. 506,406. (No model.)



*Claim.*—1. In a fender for railway-cars, the combination of rectangular bracket-arms, T-pieces forming the apices of the rectangular bracket-arms, means for attaching the bracket-arms to the car, fender-supporting arms connecting the upper and lower ends of the bracket-arms, a transverse brace directly connecting the forward lower ends of the bracket-arms and removably applied thereto at the rear of their extreme forward ends and a fender-net attached to the fender-supporting arms, said arms and fender-net extending over the transverse brace, substantially as set forth..

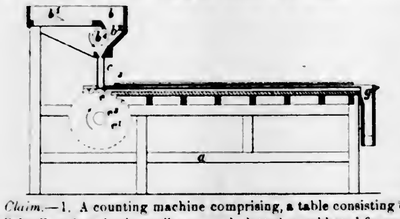
2. In a fender for railway-cars, the combination of hangers below the car platform, sockets supported by said hangers and opening toward the ends of the car, rectangular bracket-arms rigidly connected at their apices, rods projecting from the apices and adapted to be inserted into said sockets, means for connecting the upper ends of the bracket-arms to the dash-board fender-supporting arms connecting the upper and lower ends of the bracket-arms, a transverse brace connecting the lower ends of the bracket-arms, and a fender-net stretched between the supporting-arms, substantially as set forth.

3. In a fender for railway-cars, the combination with the car platform and the dash-board posts thereof provided with vertically movable locking-pins guided on the same, of rectangular bracket-arms rigidly connected at their apices and secured on the under side of the car platform, sockets at the upper ends of the bracket-arms adapted to receive said movable locking-pins, fender-supporting arms connecting the upper and lower bracket-arms and a fender-net stretched between the supporting-arms, substantially as set forth.

4. In a fender for railway-cars, the combination of rectangular bracket-arms, means for supporting the same at one end of the car, curved fender supporting-arms having inwardly-bent arms extending in the direction of the apices of the bracket-arms, said inwardly-bent arms being received in the open ends of the bracket-arms, cushioning-springs in the open ends of the bracket-arms for said fender supporting arms, a fender-net stretched transversely between the curved arms and a transverse brace applied to the lower ends of the bracket-arms, substantially as set forth.

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**530,224. COUNTING-MACHINE.** SEBASTIAN HEIM, Philadelphia, Pa. Filed July 9, 1894. Serial No. 516,888. (No model.)



*Claim.*—1. A counting machine comprising, a table consisting of parallel rails or bars horizontally grooved, slotted or rabbeted for supporting coins and the like, and rotating feed-fingers extending and working intermediate of said rails or bars for pushing the coins forward, substantially as described

2. A counting machine comprising, a table consisting of a series of parallel rails or bars horizontally grooved, slotted or rabbeted at their edges and adapted to support the coins, devices fixed in respect to the table for delivering coins and the like to said grooves and between said rails or bars, and fingers working and extending in the spaces between the rails or bars for feeding the coins and the like, substantially as described.

3. A counting machine comprising, a series of parallel grooved bars having spaces between them and adapted to support coins and the like, a hopper and tubes for delivering coins and the like in such manner that they extend across the spaces between said rails and are supported horizontally by said grooves, and fingers extending through the spaces between said rails for feeding the coins and the like, substantially as described.

4. The combination in a counting machine of, a series of parallel horizontally grooved bars having spaces between them, and a revoluble shaft provided with fingers working in the spaces intermediate of said bars, substantially as described.

5. In a counting machine, a hopper provided with a series of tubes, rails applied to the throat of the hopper and disposed intermediate of the tubes, and a roller provided with pins, studs or projections disposed in alignment with the rails, substantially as described.

6. In a counting machine, a hopper provided with a series of tubes, rails applied to the throat of the hopper and disposed intermediate of the tubes, and a roller provided with two series of pins whereof the pins of one series are disposed in alignment with the respective rails and serve to direct coins between them and to the tubes and whereof the pins of the other series are less in number and are disposed opposite the interval between the rails, substantially as described.

7. In combination, a series of parallel strips or bars having spaces or intervals between them and having their respective edges rabbeted, grooved or slotted and cut away at their upper flanges to permit coins to be dropped onto their lower flanges, and fingers extending through and working in the intervals between said bars, substantially as described.

8. In a counting machine, a table of runs comprising, bars rabbeted, grooved or slotted at their respective edges and having the upper portions thereof cut away and having the remaining portions pointed to guide the coins, substantially as described.

9. The combination in a counting machine of, a table of runs, means for feeding coins and the like in and through each of said runs, and a slider or traveler extending across said table and adapted to engage the coins and the like of each run and to be fed forward thereby, substantially as described.

10. The combination in a counting machine of, a table of runs, means for feeding coins in respect to said runs, a slider or traveler having depending wings engaged by the coins of each run, and ways adapted to said slider or traveler and having portions thereof cut away, substantially as described.

11. The combination in a counting machine of, a table of runs having portions thereof cut away to constitute entrances, a series of fixed tubes for delivering coins and the like to said entrances, and fingers carried by a revoluble shaft for feeding said coins in respect to the runs, substantially as described.

12. A counting machine comprising the combination of, a series of strips or bars rabbeted, grooved or slotted for the reception of coins or the like and cut away for the passage of the same; a hopper provided with co-operating baffling pins, studs or projections, rails or ribs, and tubes or deliverers; and fingers for feeding the coins or the like, substantially as described.

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**530,225. SELF-FASTENING BOX.** OSWALD HEINRICH, Mittelwalde, assignor of one-half to Michael Goldschmidt, Philipp Goldschmidt, and Siegfried Goldschmidt, Breslau, Germany. Filed May 31, 1893. Serial No. 476,073. (No model.)

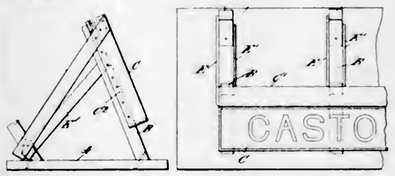


*Claim.*—1. A box comprising the bottom and sides, the latter having portions constructed to interlock with parts of the cover, said cover having side interlocking portions adapted to be spread in placing or removing the cover and the means for holding the interlocking sides of the cover in engagement with the interlocking portions of the box body, substantially as described.

2. In combination the corrugated body, the cover having the corrugated sides, said sides being arranged to be spread and folded against the sides of the box and the means for holding the sides of the cover in their folded position, substantially as described.

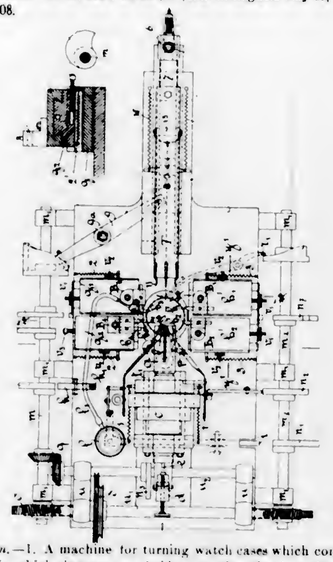
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**530,226. ADVERTISING OR OTHER SIGN.** ROBERT HENDERSON, New York, N. Y. Filed Aug. 9, 1894. Serial No. 519,822. (No model.)




*Claim.*—An inclined sign comprising a series of posts secured into a horizontal support and at an acute angle thereto, a board located against the posts and secured through the medium of a longitudinal flange resting on the upper ends of the posts and end flanges abutting the outermost posts throughout the width of the board a series of stakes similarly secured to the support, parallel with the posts and within the angle of their incline, a brace secured to each end stake and against the upper portion of its respective end of the board and forming an acute angle therewith, similar braces in a common plane secured each to one of the intermediate stakes and its respective post, and a final series of braces in a common plane secured to the posts below the first series and to the stakes, at acute angles to the former, whereby wind pressure against the rear of the board will tend to force the posts into the base and wind pressure on the face of the board will bear downwardly upon the posts and will pass over the board.

530,227. WATCHCASE-TURNING MACHINE. CHARLES E. HENRIOD-BACHMI, Bienne, Switzerland. Filed May 29, 1893. Serial No 475,911. (No model.) Patented in Switzerland Oct. 5, 1892, No. 5,840; in France Feb. 16, 1893, No. 227,977, and in England July 19, 1893, No. 14,008.



*Claim.*—1. A machine for turning watch cases which comprises a holder in which the cases are held, a rotating chuck, and a series of cutters, means for automatically feeding the cases from the holder to the chuck, means upon the said chuck for gripping the same, means whereby the cases are automatically brought successively in front of the several cutters, and forced in contact therewith when opposite the same, and means for releasing each case immediately upon its being completed, substantially as shown and described.

2. A machine for turning watch cases, which comprises in its construction the rotating chuck *a* having means thereon for holding the cases, a sliding headstock carrying the said chuck, a series of cutters in front of the said chuck, a plurality of cams as shown, mounted upon a slow-running countershaft, the said cams being so formed and arranged thereon as to engage with the headstock and reciprocate the same and bring the cases successively opposite and adjacent to the cutters, and slide-rests carrying the said cutters, a second countershaft having cams mounted thereon which engage with the slide-rests to force the same inwardly, and means whereby the said cams are brought into engagement with the rests immediately upon each case being fed forward by the chuck, substantially as shown and described.

3. In a watch case turning machine the combination, with a chuck having spring jaws adapted to grip the watch case, a sliding headstock carrying the said chuck, and means for intermittently reciprocating the headstock to force the cases forward successively, of a cone adapted to enter between the jaws of the chuck to open the same and release the case therefrom, a cam mounted upon a slow-running countershaft, and means whereby the said cam forces the cone against the jaws of the chuck, substantially as shown and described.

4. In a watch case turning machine, the combination, with a chuck, means for automatically causing the said chuck to grip a watch case and release the same after turning, and a series of cutters, of a bellows having its mouth opposite the chuck and the cutter, and a cam adjacent to the said bellows, mounted upon a slow-running shaft and so arranged as to intermittently actuate the bellows and force a blast upon the cutters and the chuck, substantially as shown and described.

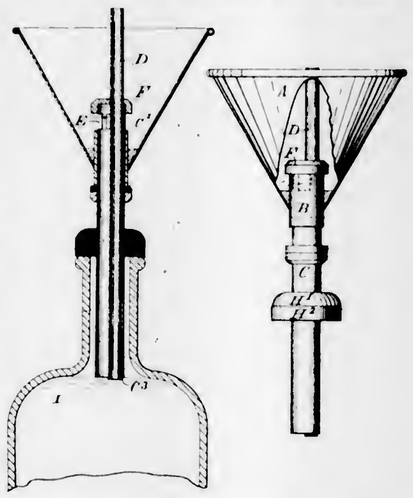
5. In a watch case turning machine, the combination, with a chuck adapted to automatically grip and release a watch case, of a bellows opposite the chuck, a brush adjacent thereto, a moist roll held against the case while being turned, and means whereby the said bellows, brush and roll are automatically brought to bear upon the chuck, and the watch case, respectively after and during each operation, substantially as shown and described.

6. In a watch case turning machine, the combination, with a chuck having spring jaws adapted to grip the watch case, of a tube provided with a stop arrangement at its end and adapted to receive the watch cases therein, a feeding device for forcing the cases toward the end of the tube, a cam mounted upon a slow running countershaft and engaging with the tube to intermittently force the same against the chuck and release the stop arrangement thereon, whereby a case may be inserted in the said chuck, and an attachment adapted to enter between the jaws of the chuck and release the case therefrom after the completion of the operation, substantially as shown and described.

7. In a watch case turning machine the combination, with a chuck, a sliding headstock carrying the same and intermittently reciprocated, a tube provided with spring jaws at its end adapted to carry the cases, means for forcing the cases toward the end of the tube, a cam mounted upon a slow running countershaft, and engaging with the tube to force the same against the chuck, whereby the jaws of the tube are opened and a case inserted in the chuck, and an automatic attachment for releasing the case from the jaws of the chuck after the operation is completed, substantially as shown and described.

8. In a watch-case turning machine, the combination with an automatic chuck, of a tube provided with spring jaws at its ends and adapted to carry the cases, of a means for forcing the cases toward the said end, of a sliding holder on which the tube is mounted, of a slide rest on which the sliding holder can slide, of a spring to retain the holder and rest in their relative positions and of an eccentric or cam on a slow running countershaft for operating the rest to force the tube against the chuck substantially as specified for the purpose set forth.

530,228. AUTOMATIC FUNNEL. HARVEY I. KEINER, Wilkes-Barré, Pa. Filed July 2, 1894. Serial No. 516,371. (No model.)



*Claim.*—1. A funnel consisting of a bowl, a tubular valve sliding therein and adapted to close the bottom of the bowl, an air tube secured within the tubular valve, and a flat elastic stopper frictionally and adjustably secured upon the outside of the said valve, substantially as shown and described.

2. A funnel consisting of a bowl, a tubular valve sliding therein and adapted to close the bottom of the bowl, an air tube within the valve, a flat elastic stopper upon the outside of the valve adapted to rest upon the neck of a bottle, and adjustable thereon, and a collar and gasket above the stopper to limit the movement of the valve, substantially as shown and described.

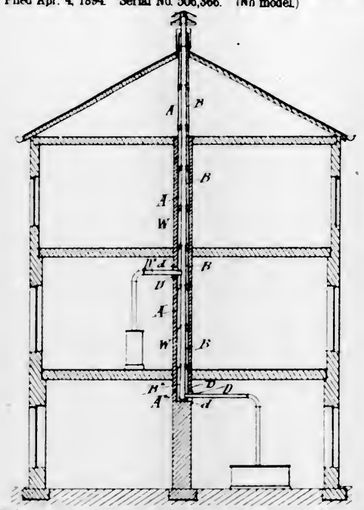
3. In combination with a funnel, a movable tube sliding vertically upon the body thereof, and having an elastic stopper with a flat under surface frictionally and adjustably secured thereon, and adapted to fit the mouth of a bottle, substantially as described.

4. In combination with a funnel, a tubular valve, having a collar and gasket thereon adapted to limit its movement, and a stopper beneath the same adapted to make an airtight connection between the funnel and a bottle, substantially as described.

5. A funnel consisting of a body having a sleeve, a tubular valve loosely fitted to the sleeve and provided with openings for the passage of the liquid, a collar and gasket upon the valve tube adapted to limit its movement within the sleeve, an air tube within the valve tube and extending therethrough, and an elastic stopper adjustably and frictionally fitted upon the tube, substantially as described.



530,229. VENTILATING-FLUE. FRITZ LANGE, Brenham, Tex. Filed Apr. 4, 1894. Serial No. 506,366. (No model.)



*Claim.*—1. A ventilating flue, composed of suitable flue-sections leading through the roof, a roof-plate provided with a sleeve extending above and below the roof-plate and placed tightly over the section projecting above the roof, said plate being seated on the roof so as to protect the joint between the flue and the roof, a finishing section placed over the main flue section, which extends above the roof and tightly over and in frictional engagement with said sleeve, and a storm-cap at the top of the flue, substantially as set forth.

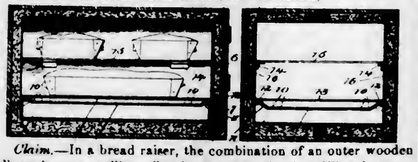
2. A ventilating-flue, composed of flue-sections, rings secured within the sections, arms extending inwardly from the rings, smoke-pipe sections arranged in the flue-sections, and rings on the exterior of the smoke-pipe sections connected with said arms whereby an exterior flue-section is rigidly attached to the complementary interior smoke-pipe section, said smoke-pipe sections each extending beyond one end of the flue-section, and the other end of the flue-section extending beyond the smoke-pipe section so that one end of each flue-section and smoke-pipe section abuts against the adjacent ring of the next flue-section and smoke pipe section, substantially as set forth.

530,230. DOOR SPRING AND CHECK. HENRY W. LARSSON, Springfield, Mass. Filed July 27, 1893. Serial No. 481,615. (No model.)



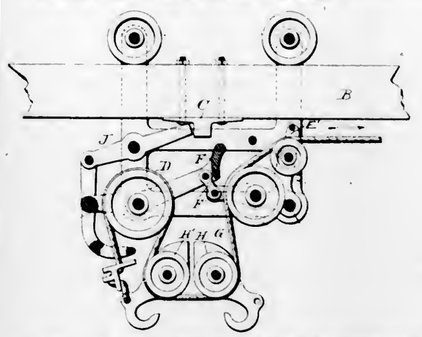
*Claim.*—In a door check, the combination of a bracket and a cylinder both adapted to be secured to the casing above the door, a toggle lever, one leg of which is pivoted to said bracket and the other to a piston rod working in said cylinder, a link from the joint of said toggle lever to a bracket adapted to be secured to the door, and a spring for operating the toggle lever, substantially as described.

530,231. BREAD-RAISER. LANGHORNE LEITCH, Boswell, Va. Filed Feb. 23, 1894. Serial No. 501,235. (No model.)



*Claim.*—In a bread raiser, the combination of an outer wooden wall, an inner metallic wall, a heat non-conducting filling between the said walls, a door of similar form provided with a packing of heat non-conducting material, a lower water reservoir, a perforate cover for the said reservoir, a discharge tube in the said reservoir, shelves above the reservoir and a spring hinge secured to the door and extending across the same and at one end having a nose thereon to engage a catch, substantially as and for the purposes specified.

530,232. HAY-ELEVATOR. WILLIAM LOUDEN, Fairfield, Iowa. Filed July 1, 1893. Serial No. 479,366. (No model.)



*Claim.*—1. The combination of a tilting frame pivoted in the frame of a carrier, a hoisting rope passed through the tilting frame so as to give it movement back and forth, and a brake shoe or clutch mounted in the carrier frame so as to have movement to and from the rope, said brake shoe or clutch being connected to the tilting frame so that the movement of said frame in one direction will effect the locking of the rope and its movement in the opposite direction will effect the release of the rope, substantially as set forth.

2. In hay elevators, a tilting frame carrying a sheave and a brake shoe or clutch pivotally connected to said tilting frame and adapted to automatically engage a rope passing over the sheave in said frame, substantially as set forth.

3. In hay elevators, a tilting frame carrying sheaves in its upper and lower ends and a brake shoe or clutch pivotally connected to said tilting frame and adapted to automatically engage a rope passing over the sheaves in said frame.

4. In hay elevators, a tilting frame, a rope passed through said frame, and a pivoted brake bar, the free end of which is connected to the tilting frame and carries a brake shoe adapted to engage the rope, substantially as and for the purpose set forth.

5. In hay elevators, an elevated track, a stop on said track to arrest the movement of the carrier thereon, a tilting frame, a rope passed through said frame, and a brake shoe connected to the lower end of said frame and adapted to engage the rope, the upper end of said tilting frame being adapted to engage the stop on the track and release the brake from the rope, substantially as shown and described.

6. In hay elevators, a tilting frame, carrying a sheave for the passage of the hoisting rope, a pivotally supported brake, and a link connecting said brake with said tilting frame, so as to communicate the movement of the tilting frame to the brake and automatically engage the release rope.

7. In hay elevators, the combination with the carrier frame, of a sheave mounted in one end thereof, a tilting frame mounted in the other end of the carrier frame, a sheave in each end of the tilting frame, a pivotally supported brake, a link connecting said brake with the tilting frame, a hoisting rope passing over all of said sheaves, and a stop on said rope to limit the elevation of the load, substantially as set forth.

8. In hay elevators, a track having a stop thereon, a carrier adapted to run on the track and having a pulley in one end thereof, a tilting frame in the other end thereof, a brake shoe pivotally connected with said frame, pulleys mounted in said frame, a latching device in the carrier adapted to engage the stop on the track, compressing pulleys, a rope passing over all of said pulleys and then passed down and connected to the frame of one of the compressing pulleys, and a stop on the rope between the carrier and said compressing pulley, said stop on the rope being adapted to limit the approach of the compressing pulleys to the carrier to ease off the change of movement from vertical to horizontal and to operate the latching device and release the carrier from the stop on the track, substantially as set forth.

9. In hay elevators, a track having a stop thereon, a carrier adapted to run thereon, pulleys mounted in said carrier, a rope passing over said pulleys so as to form a loop, compressing pulleys hung in said loop, and one end of the rope being connected to the frame of one of the compressing pulleys, a pivoted latch lever carried by the frame of the carrier and adapted to engage the stop on the track, a yoke connected to said latch lever and having a loop at its lower end for the passage of the rope, and an adjustable stop on said rope adapted to strike said yoke and release the latch lever from the stop on the track, said stop being attached to the rope in proximity to the pulley frame to which the rope is connected, substantially as set forth

10. In hay elevators, sheaves mounted in opposite ends of the carrier, a rope passed over said sheaves so as to form a loop between them, compressing pulleys hung in said loop, one end of the rope being secured to the frame of one of the pulleys hung in the loop, and a stop adjusted upon the rope secured to the pulley frame so as to regulate the approach of the pulleys to the carrier and ease off the change of movement, substantially as set forth.

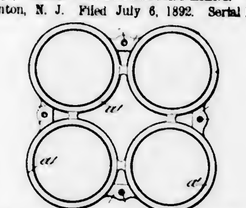
11. The combination with a track or rail having a stop thereon, a carrier adapted to travel on the track or rail, pulley block, and rope, of a sheave frame pivotally connected to the carrier frame and carrying a sheave and over which the rope passes, said sheave frame adapted to engage the stop on the rail when moved far enough in one direction, substantially as set forth.

12. The combination with a track or rail having a stop thereon, and a carrier adapted to travel on the track or rail, of a lever pivoted to the frame and adapted to engage the stop on the rail or track, a yoke connected with one end of the lever, said yoke having an opening in its free end, a pulley block, a rope secured at one end to the pulley block and having a stop thereon, said rope passed through the opening in the yoke, thence over a sheave in the carrier frame, through the pulley block and finally through the carrier frame, substantially as set forth.

13. In a hay elevator, a rope stop consisting of a plate or disk, having a hole therein for the passage of the hoisting rope, an arm projecting from the plate or disk having holes therein for the passage of the rope and prongs between which the rope is held, substantially as set forth.

14. The combination with a track, a stop on the track and a carrier adapted to run on said track, of an arm or yoke pivoted in said frame, pulleys mounted in said arm or yoke, a brake shoe pivotally connected with said arm or yoke, a locking device on the carrier and adapted to engage the stop on the track, an elevating pulley, a rope passing over all of said pulleys and connected to the frame of the elevating pulley and a stop on the rope between said elevating pulley block and the carrier, said stop being adapted to operate the locking device to release the carrier, substantially as set forth.

530,233. RACK FOR DECORATING-KILNS. CHARLES S. MADDOCK, Trenton, N. J. Filed July 6, 1892. Serial No. 439,171. (No model.)



*Claim.*—A rack or support for holding articles to be kilned, consisting of a plurality of skeleton frames of refractory material arranged adjacent to each other and each adapted to support an article to be kilned and connected by means of cross pieces to which are attached the supporting feet for the rack; substantially as described.

530,234. DRAWBRIDGE-JOINT AND OPERATING MECHANISM. WILLIAM R. MERSHON, Newark, N. J., assignor of one-half to Samuel Smith, same place. Filed Apr. 12, 1894. Serial No. 507,221. (No model.)

*Claim.*—1. In combination, the draw rail *b*, shoe-plates *c* and *c'*, arranged on opposite sides of the web of the rail and embracing the rail, stiffening ribs $c^3$ on said plates, and means for securing said plates to the rail, said plates being arranged to fit between two adjacent ties, to prevent any longitudinal movement of the rail, substantially as and for the purposes set forth.

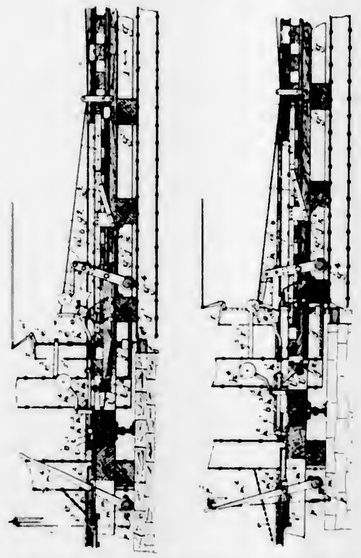
2. In combination, the draw rail *b*, shoe-plates *c* and *c'* arranged on opposite sides of the web of the rail and embracing the rail, means for securing said plates to the rail, and plates $c^4$ on the adjacent ties, said shoe-plates being arranged to fit between said plates $c^4$ to prevent any longitudinal movement of the rail, substantially as and for the purposes set forth.

3. In combination, the draw rail *b*, a plate *a* arranged on one side of the rail, and having a curved lip or flange $a^2$ in close contact with the head of the rail, and a plate *a'*, arranged on the opposite side of and of less height than said rail, substantially as and for the purposes set forth.

4. The combination, with the draw of a bridge, and the fixed portion of a bridge, of latch-plates *f* and *f''* on said fixed portion, a movable post $e^3$ on the draw, said post normally extending down between said plates *f* and *f''*, and mechaniam connected with said post or bar $e^3$, to raise the same clear of said plates, substantially as and for the purposes set forth.

5. The combination, with the draw and the fixed portion of a bridge, of latch-plates *f* and *f''* on said fixed portion, a movable post $e^3$ on the draw, said post normally extending down between said plates *f* and *f''*, and mechanism connected with said post or bar *e'*, to raise the same clear of said plates, consisting essentially of a bell-crank *e'* and cable connected therewith and operated from the power house on the draw, substantially as and for the purposes set forth.

6. In combination, the draw rails and the fixed or ground rails of a bridge, recessed plates *n*, having inclined planes $n^2$ tapering wedge-shaped openings in said plates *n*, a sliding wedge-shaped shoe or fork arranged and operating substantially as set forth, mechanism for operating said shoe or fork, latch-plates *f* and *f''* on the fixed portion of the bridge, a movable post $e^3$ on the draw, said post normally extending down between said plates *f* and *f''*, and mechanism connected with said post or bar $e^3$, to raise said post clear of said plates, substantially as and for the purposes set forth.



7. A plate *n*, having a recess *n'* therein, inclined planes $n^4$, and enlargements or projections $n^3$, the inner surfaces of which form wedge shaped openings and incline inwardly in the manner of a dove-tail substantially as and for the purposes set forth.

8. A plate *n*, having a recess *n'* therein, inclined planes $n^2$, and enlargements or projections $n^3$, the inner surfaces of which form wedge-shaped openings and incline inwardly in the manner of a dove-tail, and a sliding fork or shoe, arranged and operating, substantially as and for the purposes set forth.

9. In combination, the draw rails and fixed ground rails of a bridge, recessed plates *n*, having inclined planes $n^2$, and enlargements or projections $n^3$, the inner surfaces of which form wedge-shaped openings and incline inwardly in the manner of a dove-tail, a sliding shoe or fork, a rod *m*, crank $m^2$, and shaft *m'*, all operating, substantially as and for the purposes set forth.

10. In combination, the draw rails and fixed ground rails of a bridge, recessed plates *n*, having inclined planes $n^2$, and enlargements or projections $n^3$, the inner surfaces of which form wedge-shaped openings and incline inwardly in the manner of a dovetail, a sliding shoe or fork, an adjustable rod $m^3$, crank $m^2$, and shaft *m'*, all operating, substantially as and for the purposes set forth.

11. In combination, the draw rails and the fixed ground rails of a bridge, recessed plates *n*, having inclined planes $n^2$, and enlargements or projections $n^3$, the inner surfaces of which form wedge-shaped openings and incline inwardly in the manner of a dove-tail, a sliding shoe or fork in each plate *n*, a rod $m^3$, crank $m^2$ and shaft *m* for operating said shoes or forks, and cranks $l^3$ on a shaft *l* for raising the ends of said draw-rails out of said recessed plates *n*, substantially as and for the purposes set forth.

12. In combination, the shaft *m'* and lever *m* connected therewith, a rod *i* connected with said lever *m*, and mechanism detachably connected with the free end of said rod *i* for pushing said rod *i* forward and thereby operating said lever *m* and shaft *m'*, substantially as and for the purposes set forth.



13. In combination, the shaft *m'* and lever *m* connected therewith, a rod *i* connected with said lever *m*, and mechanism detachably connected with the free end of said rod *i* for pushing said rod *i* forward and thereby operating said lever *m* and shaft *m'*, consisting essentially, of a sliding rod *g*, a pivoted arm $g^3$ connected with said rod, and a slide bar *h* detachably connected with the free end of said rod *i*, substantially as and for the purposes set forth.

14. In combination, the draw rails and the fixed rails of a bridge, recessed plates *n*, enlargements or projections $n^3$ on said plates, forming wedge-shaped openings, a sliding fork or shoe in each plate *n*, a rod $m^3$, crank $m^2$, a shaft *m'* and a lever *m* connected therewith, a rod *i* connected with said lever *m*, and mechanism detachably connected with the free end of said rod *i* for pushing said rod *i* forward and thereby operating said lever *m* and shaft *m'*, substantially as and for the purposes set forth.

15. In combination, the draw rails and the fixed rails of a bridge, recessed plates *n*, enlargements or projections $n^3$ on said plates, forming wedge-shaped openings, a sliding fork or shoe in each plate *n*, a rod $m^3$, crank $m^2$, a shaft *m'* and a lever *m* connected therewith, a rod *i* connected with said lever *m*, and mechanism detachably connected with the free end of said rod *i* for pushing said rod *i* forward and thereby operating said lever *m* and shaft *m'*, consisting essentially of a sliding rod *g*, a pivoted arm $g^3$ connected with said rod, and a slide bar *h* detachably connected with said rod *i*, substantially as and for the purposes set forth.

16. In combination, the draw rails *b*, a forwardly moving bar *k*, having a push arm $k^2$, a slide rod *j*, a link $j^2$, a shaft *l* and cams on said shaft for raising the ends of said draw rails, substantially as and for the purposes set forth.

17. In combination, the draw rails and the fixed ground rails of a bridge, recessed plates *n*, enlargements or projections $n^3$ on said plates, forming wedge-shaped openings, a sliding fork or shoe in each plate *n*, a forwardly moving bar *k*, having a push arm $k^2$, a slide rod *j*, a link $j^2$, a shaft *l* and cams $l^2$ on said shaft for raising the ends of said draw rails out of said recessed plates *n*, substantially as and for the purposes set forth.

18. The herein described means for disengaging the arm $k^2$ from engagement with the slide rod *j*, consisting essentially of a post *o*, provided with a nose-portion *o'*, and a bar *k* on which said post is secured, substantially as and for the purposes set forth.

19. The herein described means for disengaging the arm $k^2$ from engagement with the slide rod *j*, consisting essentially of a post *o*, provided with a nose-portion *o'*, and a bar *k* on which said post is secured, in combination, with a vertically moving bar or rod $e^3$, having a cross-bar $e^5$, adapted to engage with said nose-portion *o'* on said post *o*, substantially as and for the purposes set forth.

20. In combination, the rod $e^3$, bell-crank *e'*, lever *r*, rod *r'*, and mechanism operated by said rod, when the draw is opened, for automatically releasing a drop board or signal, substantially as and for the purposes set forth.

21. In combination, the rod $e^3$, bell-crank *e'*, lever *r*, rod *r'*, and mechanism operated by said rod, when the draw is opened, for automatically releasing a drop board or signal, comprising therein, a rod *s*, connected with a stop *t*, a dog $r^3$ on said rod *r'* adapted to release said rod *s* from said stop *t*, and a signal board conne ted with said rod *s*, substantially as and for the purposes set forth.

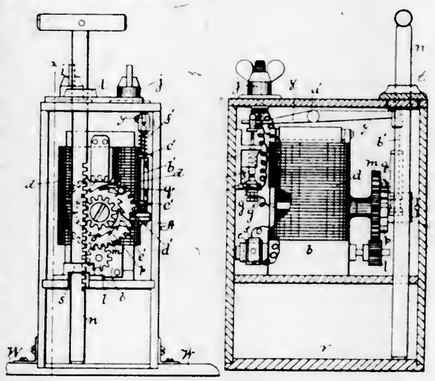
22. In combination, the rod $e^3$, bell-crank *e'*, lever *r*, rod *r'*, and mechanism operated by said rod, when the draw is opened, for automatically releasing a drop board or signal, comprising therein, a rod *s*, connected with a stop *t*, a dog $r^3$ on said rod *r'* adapted to release said rod *s* from said stop *t*, a signal board connected with said rod *s*, pins $s^5$ on said rod *s*, a lever $s^2$, a shaft $s^4$, and a system of levers $s^3$ and $s^1$, and a signal and signal rod $s^7$ operated thereby, all arranged, substantially as and for the purposes set forth.

23. In combination, the draw rails and fixed ground rails of a bridge, recessed plates *n* having inclined planes $n^2$ and enlargements or projections $n^3$, the inner surfaces of which form wedge-shaped openings and incline inwardly in the manner of a dove-tail, a sliding shoe or fork, a rod *m*, crank $m^2$ and shaft *m'*, an arm *p* on said shaft, a rod *p'*, and a semaphore mechanism connected with and operated by said rod *p'*, substantially as and for the purposes set forth.

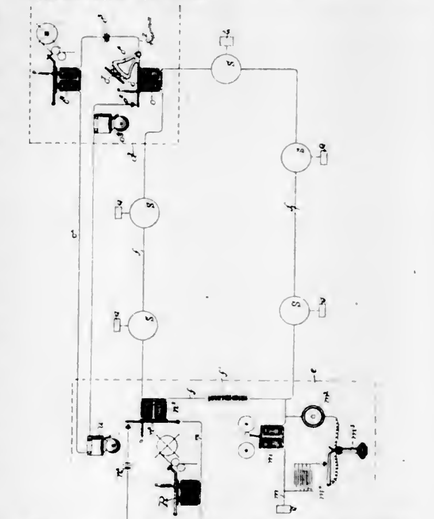
530,235. MAGNETO-ELECTRIC MACHINE. JOSEPH N. MCLEOD, Brooklyn, N. Y. Filed Apr. 2, 1894. Serial No. 506,107. (No model.)

*Claim.*—1. In a magneto electric machine, the combination with the rotary armature and the toothed rack bar and ratchet wheel for operating said armature, of a circuit breaker consisting of the stationary and movable parts normally in contact and connected in the local circuit and respectively connected with the line wires, the lever connected with the movable part of said circuit breaker, the collar connected with the lever and the tappet arm of the ratchet wheel adapted to have contact with the collar to break the circuit when the rack bar nearly reaches the end of its movement for operating the armature substantially as described.

2. In a magneto electric machine, the combination with the rotary armature of the vertically sliding toothed rack bar, the pinion geared with the said rack bar, the ratchet wheel connected with said pinion, the master wheel geared with the armature, the pawl connecting the master wheel and ratchet wheel, the tappet arm on the ratchet wheel, and the circuit breaker consisting of the stationary and movable parts normally in contact and connected in the local circuit, and respectively connected with the line wires, the lever connected with the movable part of said circuit breaker and the collar connected with the lever in the relation to the tappet arm for contact of said arm with said collar to break the circuit when the rack bar nearly reaches the end of its movement for operating the armature substantially as described.



530,236. SIGNALING APPARATUS. BERNICE J. NOYES, Boston, Mass., assignor to George W. Gregory, same place. Filed Feb 18, 1890. Serial No. 340,935. (No model.)



*Claim.*—1. In a police signal system, signal boxes, each containing a multiple signal transmitting apparatus, constructed and arranged to transmit different signals and to produce distinguishing impulses with some and not with others; a central station; a receiving apparatus thereat in circuit with and to receive all the signals transmitted by said signal transmitting apparatus; combined with a distant auxiliary station; a circuit changing device thereat controlled by said circuit and operated by said distinguishing impulses; a tell-tale local circuit controlled by said circuit changing device and leading from the said auxiliary to said distant central station; and an indicating device in said local circuit at said central station to indicate at the latter the reception of a signal at the distant former station; and a signal receiving instrument at said auxiliary station and responsive

to signals transmitted by said signal transmitting apparatus, substantially as described.

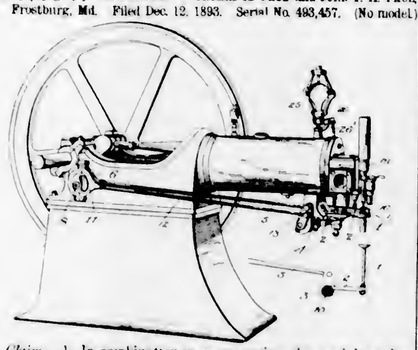
2. In a police signal system, signal boxes, each containing a multiple signal transmitting apparatus, constructed and arranged to transmit different signals and to produce distinguishing impulses with some and not with others; a central station; a signal receiving apparatus thereat in circuit with and to receive the signals transmitted by said signal transmitting apparatus; combined with a distant auxiliary station; a circuit changing device thereat controlled by said electric circuit and set in operation by said distinguishing impulses, and thereafter operated by and responsive to the regular impulses of signals transmitted; a tell-tale local circuit controlled by said circuit changing device and leading from said auxiliary to said distant central station; a signal receiving instrument at said auxiliary station and controlled by and responsive to changes in the condition of said local circuit; and a tap bell also in said local circuit but located at the said central station to tap the box number at the latter station simultaneously with its reception at the distant auxiliary station, to indicate at the former proper reception of the signal at the latter, substantially as described.

3. In a police signal apparatus, signal boxes, each containing a multiple signal transmitting apparatus, constructed and arranged to transmit different signals and to produce distinguishing impulses with some and not with others; a central station; a receiving apparatus thereat; a relay controlling the circuit of the said receiving apparatus and in circuit with said transmitting apparatus, combined with a distant auxiliary station, a circuit changing device thereat also in said circuit and responsive first to said distinguishing impulses only, and thereafter to the regular impulses of signals transmitted, a local circuit controlled by said circuit changing apparatus and containing a signal receiving instrument located at the auxiliary station; and an audible alarm device located at the distant central station, whereby only special signals distinguished by said distinguishing impulses are received at said auxiliary station and their reception made known by said audible alarm at the distant central station, substantially as described.

4. In a signaling apparatus, a main signaling circuit connecting street boxes, a central station, and a wagon house, a receiving instrument at the receiving station for receiving all signals, combined with a receiving relay at the wagon house, a retarded armature therefor, a local circuit controlled by said retarded armature, and two receiving instruments in said local circuit, one at the wagon house, and the other at the central station, substantially as described.

5. In a signaling apparatus, a main signaling circuit connecting street boxes, a central station, and a wagon house, and a receiving instrument at the central station for receiving all signals, combined with a receiving relay at the wagon house, an armature therefor, and a retarding device for the armature operative to retard its progress in both directions, a local circuit controlled by said armature, and two receiving instruments in said local circuit, one at the wagon house, and one at the central station, substantially as described.

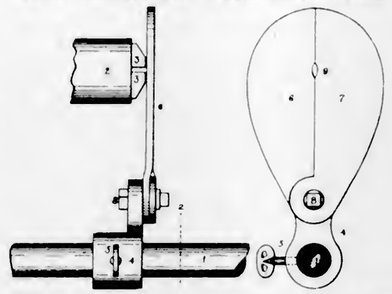
530,237. GAS-ENGINE. THOMAS H. PAUL and JOHN T. H. PAUL, Frostburg, Md. Filed Dec. 12, 1893. Serial No. 493,457. (No model.)



*Claim.*—1. In combination in a gas engine, the gas inlet valve, the ignition valve, the means for operating them and the latch for holding the ignition valve open in ignitible position, substantially as described.

2. In combination in a gas engine, the cylinder, the inlet, exhaust and ignition valves, the rocker shafting comprising the two shafts one of which passes through the other, the arms on said shafts one outside the other, the eccentric rods connected thereto, the arm on one of said shafts connected to the exhaust valve and the two cams on the other shaft reversed in position relatively to each other and the levers operated alternately by the said cams and connected to the inlet and ignition valves, substantially as described.

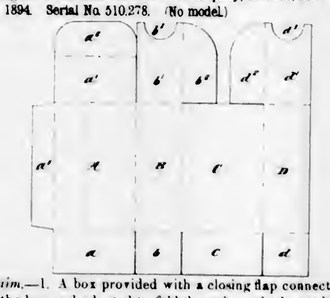
530,238. GUARD FOR LATHES. ROBERT S. PEABODY, Philadelphia, Pa. Filed May 11, 1894. Serial No. 510,849. (No model.)



*Claim.*—1. In combination, a lathe chuck, recessed or indented wings pivoted together and disposed in the same plane to present a flat surface to the tool and means for clamping said wings, substantially as described.

2. A guard for lathes comprising, the combination of, a carriage adjustable on the lathe bed, a pair of wings pivoted together and indented at their adjacent edges for the accommodation of work, and a set screw for clamping the wings to place on the carriage and in front of the head-stock jaws, substantially as described.

530,239. PAPER BOX. JONATHAN PETERSON, New York, N. Y., assignor to the American Tobacco Company, Newark, N. J. Filed May 7, 1894. Serial No. 510,278. (No model.)



*Claim.*—1. A box provided with a closing flap connected to one side of the box and adapted to fold down into the box with its free end in contact with the opposite side of the box, a finger opening in the free end of the flap, a downwardly extending wing in one of its side edges, a second similar closing flap also provided with a wing, and a cover flap adapted to fold down transversely across the closing flaps, substantially as described.

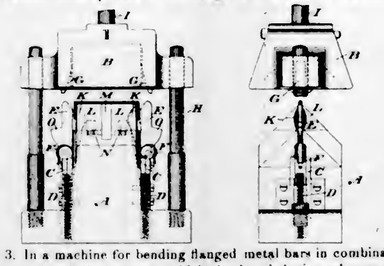
2. A box provided with a pair of closing flaps connected to opposite sides of the box and adapted to fold down one onto the other with their free ends in contact with opposite sides respectively of the box, each of said flaps being also provided with a downwardly extending wing at one of its side edges and with a finger opening in its free end, and a cover flap adapted to fold down transversely across the closing flaps, substantially as described.

3. A box provided with side sections, as A, B, C, D, and with closing devices consisting of closing flaps $b'$, $d'$, connected respectively to side sections B, D, wings $b^2$, $d^2$ connected to the edges of said closing flaps, cover flap $a'$, and finger opening or openings in said closing flaps, substantially as described.

530,240. MACHINE FOR BENDING FLANGED METAL BARS. WILHELM PFEFFERKORN, Johnstown Pa., assignor to the Johnson Company, same place. Filed Mar. 23, 1894. Serial No. 504,895. (No model.)

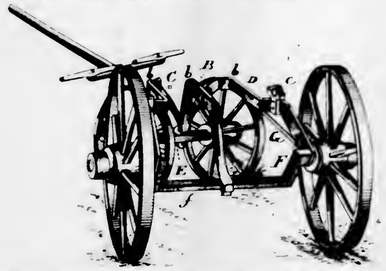
*Claim.*—1. In a machine for bending channel bars, in combination with a moving die and mechanism for operating same, finger bars for bending or folding, as described, the flanges of the channel, and a stationary die having loose and removable portions in which are pockets, said pockets being adapted to receive the bent or folded portions of the flanges.

2. In a machine for bending channel bars in the manner set forth, a die having loose and removable portions in which portions the bearing for the web extends beyond the pocket provided to receive the the bent or folded portion of the flange substantially as described.



3. In a machine for bending flanged metal bars in combination with a pair of dies between which the bar is bent, and operating mechanism; pockets in one die and finger bars normally out of said pockets and so connected and arranged that they are adapted to have a movement inward into, and downward in said pockets, the portions of the die containing the pockets being removable from the remainder of the die.

530,241. DUMPING-WAGON. JOHN C. PROCTOR, Dallas, Oreg. Filed Apr. 5, 1894. Serial No. 506,387. (No model.)

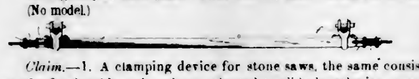


*Claim.*—1. In a dumping wagon, a reach consisting of three bars, the forward portions of which are arranged horizontally to support the forward part of the body, the two outer bars being bent outwardly to permit the body of the wagon when dumped to pass between them, and the central bar bent downwardly to permit the passage of the body between the outer bars, substantially as described.

2. In a dumping wagon, a rear axle having a depressed central portion inclined forwardly of the ends of said axle, combined with a reach consisting of three bars, the rear ends of the outer bars being arranged outside the body of the wagon, and the central bar bent downwardly and attached to the depressed and forwardly inclined portion of the rear axle, substantially as and for the purpose specified.

3. In a dumping wagon, the combination with a body wider at its rear than at its front end, of a reach consisting of three bars having horizontal portions on which the front portion of the body is supported, their forward ends being bent downwardly and convergently and attached to the front axle, the rear portions of the outer bars being bent outwardly to permit the rear end of the body to pass between them, and the rear portion of the central bar bent downwardly to permit the body to be dumped, the bars being attached to the rear axle at their rear ends, substantially as and for the purpose specified.

530,242. GUIDE-CLAMP FOR STONE-SAWING MACHINES. HOMER W. RIGHTMYER, Taughannock Falls, N. Y., assignor to Genevieve M. Rightmyer, same place. Filed Oct. 28, 1893. Serial No. 489,356. (No model.)

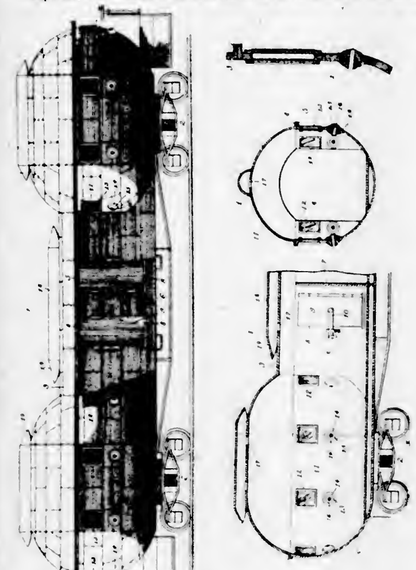


*Claim.*—1. A clamping device for stone saws, the same consisting of a fixed guide rod, a clamp adapted to slide lengthwise on and rock transversely of said rod, and means for securing the clamp to the rod in different positions of adjustment along the same, said clamp-securing means being adapted and constructed to permit the detachment of the clamp from the rod; substantially as described.

2. A clamping device for stone saws, the same consisting of a fixed guide rod, a forked or yoke-shaped clamp straddling the guide rod and having a slotted tang to receive the saw, said clamp being adapted to slide and rock on the guide rod, and a key or wedge adapted to be driven into apertures in the uprights of the clamp to secure the same in different positions of adjustment along the rod; substantially as described.

3. A clamping device for stone saws, the same consisting of a fixed guide rod having a flattened surface, a forked or yoke-shaped clamp straddling the guide-rod and having a slotted tang to receive the saw, said clamp being adapted to slide and rock on the guide rod, and a key or wedge adapted to be driven into apertures in the uprights of the clamp to secure the same in different positions of adjustment along the rod, the key or wedge co-operating with the flattened surface of the rod to bind the clamp to and prevent its turning on the rod; substantially as described.

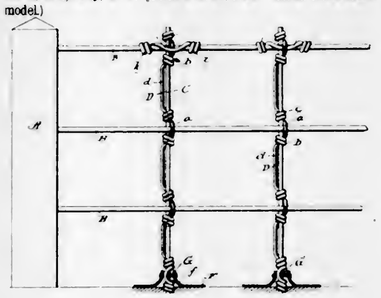
530,243. MAIL AND EXPRESS CAR. FRANK ROWLEY, West Superior, Wis. Filed July 19, 1894. Serial No. 518,023. (No model.)



*Claim.*—1. In a mail and express car, the metallic car body having a separate roof flanged thereto and provided with a partitioned intermediate squared portion and opposite enlarged cylindrical end portions leading off from both ends of the squared portion and having in the sides and ends thereof a series of grated windows and port holes immediately under the windows, substantially as set forth.

2. In a mail and express car, an elongated metallic car body provided at both ends with enlarged cylindrical end portions, having in the sides and ends thereof a series of windows and port holes immediately under the windows, exterior protective gratings fitted over said windows, and perforated fire arm supporting balls mounted for universal movement in the port holes under the windows, substantially as set forth.

530,244. WIRE FENCE. EDWARD S. SCOFIELD and JOHN J. JENNINGS, Ridgeway, N. Y. Filed Nov. 25, 1893. Serial No. 491,981. (No model.)



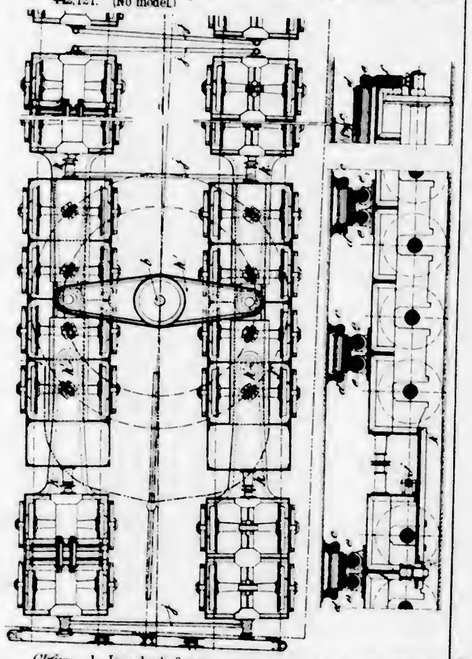
*Claim.*—1. The herein described stay for wire fences, comprising the main straight wire C, the binder wire wrapped upon the main wire and having loops or eyes at intervals in its length to receive the runners of a fence, and a shoe adapted to bear upon the ground and having a pin in engagement with the lower eye of the stay; the said shoe being adapted to prevent downward movement of the stay and a consequent sagging of the runners of a fence, substantially as and for the purpose set forth.

2. In a wire fence, the combination with a series of horizontal runners or line wires; of a stay comprising a vertical stout and straight main wire C, and the binder wire supported at its lower end and wrapped around the main wire at points above and below the runners or line wires so as to form loops *a*, adapted to receive and hold said runners or line wires, and having the straight portions *d*, between the coils or wraps forming the loops *a*; whereby all of the horizontal runners or wires will be supported and prevented from moving toward the ground or toward each other, substantially as specified.

3. The herein described stay for wire fences comprising the stout and straight main wire C, and the binder wire wrapped upon said wire C, so as to form loops or eyes *a*, at intervals in the length thereof, the shoe F, formed from a single piece of metal and having the struck up branches *f*, provided with aligned apertures, and a bolt extending through said apertures and the lowermost loop or eye *a*, of the binder wire, substantially as and for the purpose set forth.

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530,245. SHIP-RAILWAY. AMÉDÉE M. G. SÉBILLOT and FREDERIC WEIDENECHT, Paris, France. Filed Aug. 4, 1892. Serial No. 442,121. (No model.)



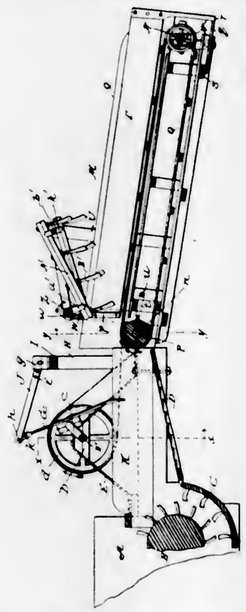
*Claim.*—1. In a dock for transporting ships and other vessels on railways, the combination with the dock or carrier of swiveling trucks and bogies connected transversely in parallel pairs by pivoted cross beams and connecting rods so as to be free to swivel beneath the dock and adapted for passing curves of relatively small radius as described.

2. In a dock for transporting ships and other vessels on railways the combination with the dock or carrier and with the swiveling trucks of intermediate sets of rollers placed at right angles to, and superposed the one set on the other with a plate interposed between them whereby to permit free longitudinal and transverse movements of the trucks as described and illustrated in the drawings.

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530,246. SELF-FEEDER FOR THRASHING-MACHINES. ADAM W. SEVERANCE, GEORGE JAMISON, and GEORGE W. BRAUCHT, Genesee, Idaho. Filed June 30, 1894. Serial No. 516,231. (No model.)

*Claim.*—The herein described grain feeder for thrashing machines consisting of the frame D, provided with the metallic bars E, having their rear ends extended beyond the frame D, and provided with seats or recesses *n*, the crank shaft F, journaled in bearings supported by the irons E, and carrying wheels *d*, *e*, at its opposite ends, the forks G, mounted on the cranks *c*, of said shaft, the arms J, adjustably connected at one end with the forks and connected at their opposite ends with the frame D, the trough M, having the metallic hanger arms R, arranged in the recesses or seats *n*, of the rearwardly extended portions of the irons E, the transverse shaft P, journaled in the arms R, at the forward end of the trough M, the transverse shaft N, journaled in movable bearings W', at the rear end of the trough, the endless carrier passing around the shafts N, P, racks V', fixed on opposite sides of the trough, levers X', connected to the bearings W', of the shaft N, and adapted to engage the racks V', the fixed uprights U, and the movable uprights W, arranged on opposite sides of the trough M, the crank shaft *b'*, journaled in the fixed uprights U, the rod *w*, arranged in the movable uprights W, and carrying a series of loose sleeves Z, having depending arms, the reciprocatory bars A', mounted at one end on the cranks of the shaft *b'*, and connected at their opposite ends to the arms of the sleeves Z; said bars being adapted to carry knives or fingers, the center board T, arranged longitudinally in the trough or frame, and having arms at opposite ends for attachment to the cross bar of the frame M, and the rod *w*, the transverse rock shaft *u*, journaled in the trough M, and having an angular branch at one end connected to one of the uprights W, a lever *v*, fixed on the opposite end of shaft *u*, and connected to the other upright W, and a rack fixed on the trough and adapted to hold the lever *v*, in its adjusted positions, all substantially as and for the purpose set forth.



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530,247. METHOD OF MANUFACTURING HYDRAULIC CEMENT. GUSTAV W. A. STEIN, Wetzlar, Germany. Filed Mar. 23, 1894. Serial No. 504,762. (No specimens.)

*Claim.*—In the manufacture of hydraulic cement, mixing with a raw mixture of cement, slag sand and hydrate of lime in about the proportions stated to prevent disintegration of the same before the burning thereof and so as to produce when the mass has been caused to assume the required form an article which will not be affected by atmospheric changes or conditions, substantially as described.

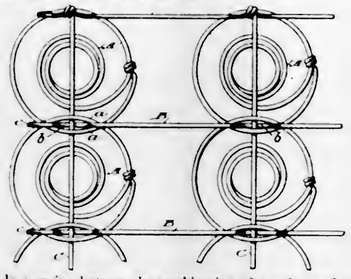
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530,248. SPRING BED-BOTTOM. THOMAS A. STOLL, Trenton, N. J. Filed Sept. 4, 1894. Serial No. 522,077. (No model.)

*Claim.*—1. A locking device, consisting of two overlapping coils, and two connecting members crossing each other in a plane within the lapped portion of said coils; substantially as shown and described.

2. In a spring bottom, a number of supporting springs, said springs lapping each other, in combination with connecting members crossing each other at said laps of said springs and forming locking junctions thereat; substantially as shown and described.

3. In a spring bottom, a number of supporting springs, each pair of said springs lapping each other, in combination with connecting members crossing each other at said laps of said springs, and forming locking joints with said springs at said laps, and having their ends attached to the spring bottom at or near its ends and sides respectively; substantially as shown and described.



4. In a spring bottom, the combination of a spring and a frame, portions of which spring and frame lap each other with two connecting members crossing each other in a plane within the lapped portions of said spring and frame and forming a locking junction at said point: substantially as shown and described.

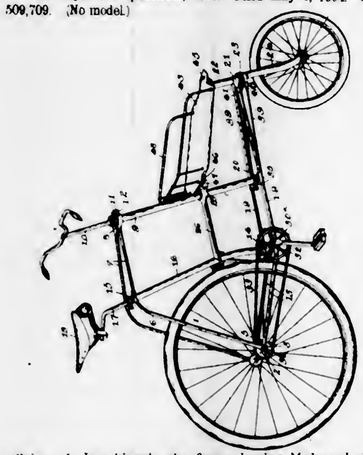
5. In a spring bottom, the combination of a spring and a frame, portions of which spring and frame lap each other, with two connecting members crossing each other in a plane within the lapped portions of said spring and frame, one of said connecting members being bent to receive and retain the other of said connecting members between said bend and the lapped portions of said spring and frame, and forming a locking junction thereat; substantially as shown and described.

6. In a spring bottom, a number of supporting springs, and frames intermediate said springs, said springs and frames lapping each other, in combination with connecting members crossing each other at said laps of said spring and frames and forming locking junctions thereat; substantially as shown and described.

7. In a spring bottom, a number of supporting springs, a number of frames placed intermediate said springs, said springs and said frames lapping each other, in combination with connecting members crossing each other at said laps of said springs and frames at said laps, and having their ends attached to the spring bottom at or near its ends or sides respectively; substantially as shown and described.

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530,249. BICYCLE. IGNATIUS L. UNTERBRINK, Fryburg, assignor to C. A. Layton, Wapakoneta, Ohio. Filed May 1, 1894. Serial No. 509,709. (No model.)



*Claim.*—1. In a bicycle, the frame having V-shaped side-bars, the lower arms of which incline downward to a point beyond the periphery of the driving-wheel and then incline upward and converge toward their front ends to a point of attachment on the steering-head, a brace and wheel-guard connecting the lower arms of the side-bars at a point adjacent to the front side of the driving-wheel with the upper arms of the side-bars, a seat-standard supported by said brace and guard, a steering-bar bearing-sleeve arranged in advance of said brace and secured at its lower end to the upwardly inclined portions of the side-bars, forwardly convergent braces extending from the upper arms of the side-bars to the said bearing-sleeve, a brace extending from an intermediate point of the bearing-sleeve to the upper end of the steering-head, and means for supporting a load in advance of the bearing-sleeve and between the same and the steering-head, substantially as specified.

2. The herein described bicycle framework having V-shaped side-bars provided at their apexes with means for attachment of the axle of the driving wheel, forwardly convergent brace-bars 7 connected respectively with the upper arms 6 of said side bars and united at their front extremities by a coupling 8, the lower arms 13 of the side bars being extended forward and inclined upward as at 19, a coupling 21 connecting the adjacent extremities of the lower arms of said side bars, a brace 16 connecting the lower and upper arms of the side bars in advance of the driving-wheel, means for attaching a seat-standard to said brace, a bearing-sleeve 9 connecting the lower arms of the side bars in advance of said brace with the forwardly convergent braces which are connected to the upper arms of the side bars, a bearing-sleeve 22 secured to the coupling at the front ends of the lower arms of the side bars, a strut brace connecting intermediate points of the brace 16 and the bearing-sleeve 9, and a brace 27 connecting an intermediate point of the said bearing-sleeve with the bearing-sleeve 22 at the front ends of the lower arms of the side bars, substantially as specified.

3. In a bicycle, the combination of a frame having a front portion comprising forwardly convergent upper and lower members connected at their front ends to the steering-head, said upper member being extended in advance of the steering-head to form parallel ears and being provided at its rear end with an angular forging, and a luggage carrier provided at its front end with a depending tongue connected to said ears and at its rear end with depending lugs to engage said forging, substantially as specified.

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530,250. WIRE FENCE. HENRY W. VAIL, Jr., Industry, Ill. Filed June 30, 1894. Serial No. 516,204. (No model.)



*Claim.*—In a fence, the combination of horizontal strands or runners, intersecting stays, said stays and runners being provided at their points of intersection with bends or bows, and ties arranged at these intersections and consisting of lashing-loops 8 engaged at their ends with the stays above and below the runners and crossing the latter and lashing-loops 9 engaged at their ends with the runners upon opposite sides of the stays and intersecting the latter, substantially as specified.

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530,251. SHAFT ATTACHMENT FOR BUGGIES. HIRAM G. VAUGHAN, San Francisco, Cal. Filed Nov. 18, 1893. Serial No. 491,333. (No model.)



*Claim.*—1. The combination with the shaft and the whiffletree, of a loop secured to the end of the whiffletree, a forked strap secured to the shaft and extending up to the loop, and a coiled spring carried by the strap and having its ends or arms projecting from the forked branches thereof and engaging the loop.

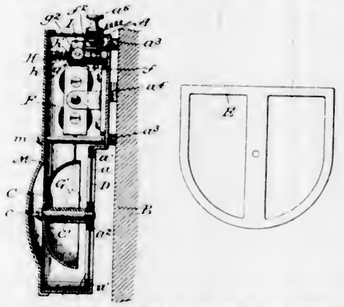
2. The combination with the shaft and the whiffletree, of a loop secured to the end of the whiffletree, a forked strap secured to the shaft and extending up to the loop, and a coiled spring secured within the strap and having its ends or arms extending through the forked branches of the same, engaging the loop and provided with balls or knobs at their extremities.

530,252. NAIL-SET. CHARLES G. WHITE, Woodland, Cal. Filed July 31, 1893. Serial No. 481,995. (No model.)



*Claim.*—A reversible nail set consisting of a continuous straight handle shank and tapered nail engaging heads integrally formed at the opposite extremities of said shank, said tapered heads being unparallel and reversely disposed to each other at an angle transverse of the length of the shank, substantially as set forth.

530,253. ELECTRIC BELL. EDWARD G. WORLEY, New York, N. Y. Filed June 13, 1894. Serial No. 514,418. (No model.)



*Claim.*—1. In an electric signaling device, the combination of an open casing having a main portion to inclose the hammer actuating devices and having an offset with its rear or bottom on a different plane from the rear or bottom of the main portion, the rear or bottom of said offset being open with a bar across the opening, a screen covering said opening, a gong supported on said bar, and a cover and means to secure it in place on said casing, substantially as shown and described.

2. In an electric signaling device, the combination of an open casing having a main portion to inclose the hammer actuating devices and having an offset with its rear or bottom on a different plane from the rear or bottom of the main portion, the rear or bottom of said offset being open with a bar across the opening, a screen covering said opening, and open frame laid over said screen, a gong, a screw passing through said gong, a bar and screen into said frame to bind all together, and a cover for the casing and means to secure it in place, substantially as shown and described.

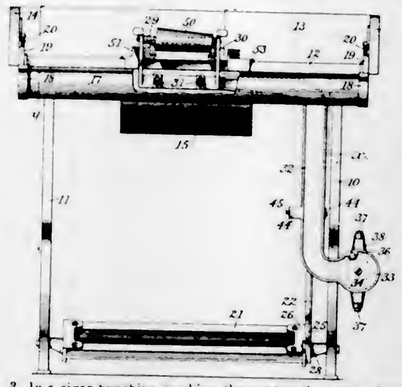
3. In an electric signaling device, the combination of a casing, a magnet, an armature and hammer, a back contact spring supported on said casing but insulated therefrom and connected with the coils of the magnet, an insulated stop supported on the casing in front of said spring, an adjusting screw mounted in the casing and having an insulated point to bear on the spring, and connections for the conductors, substantially as shown and described.

4. In an electric signaling device, the combination of a casing, means for connecting one of the conductors thereto, a magnet, means for connecting the other conductor to its coils, a headed post mounted on the casing, an armature and hammer having a sleeve bearing on said post, a spiral spring interposed between the head of the post and the sleeve to insure electrical contact, and a back contact insulated from the casing and connected to the coils of the magnet, substantially as shown and described.

530,254. CIGAR-BUNCHING MACHINE. EMANUEL BARTH, New York, N. Y. Filed Apr. 26, 1894. Serial No. 509,048. (No model.)

*Claim.*—1. In a cigar bunching machine, the combination with a bunching roller, of a supporting standard, a carrier for said bunching roller supported to oscillate upon said standard, and means whereby the position of the axis of oscillation may be varied with respect to the axis of the bunching roller and the latter be permitted to oscillate in a flat plane as a radius or in a curved plane.

2. In a cigar bunching machine, the combination with a bunching roller, of a standard, a carrier for said bunching roller supported to oscillate on said standard, means whereby the position of the axis of oscillation may be varied with respect to the axis of the bunching roller and the latter be permitted to oscillate in a flat plane as a radius or in a curved plane, and means for imparting movement to said carrier.



3. In a cigar bunching machine, the combination with a bunching roller, of a supporting standard, a carrier for said bunching roller supported to oscillate upon said standard, and means whereby the position of the axis of oscillation may be varied with respect to the axis of the bunching roller and the latter be permitted to oscillate in a flat plane as a radius or in a curved plane, a treadle and a connection intermediate said treadle and carrier whereby motion may be imparted to the latter.

4. In a cigar bunching machine, the combination with a bunching roller, of a standard, a carrier for said bunching roller supported to oscillate on said standard, means whereby the position of the axis of oscillation may be varied, and means for imparting movement to said carrier, a foot-board, an arm rigidly connected to said foot-board and a universal swivel coupling between said arm and said carrier.

5. In a cigar bunching machine, the combination with a bunching roller, of an arm to support the same, an axial bearing upon which said arm may oscillate, and means to support said bearing in different positions with respect to the axis of the bunching roller and the latter be permitted to oscillate in a flat plane as a radius or in a curved plane.

6. In a cigar bunching machine, the combination with a bunching roller, of an arm to support the same plate to which said arm is adjustably secured, a yoke in which said plate has its axis of oscillation, said yoke being adjustable about its own axis, and means to support and to retain said yoke in adjusted position.

7. In a cigar bunching machine, the combination with a bunching roller, of an arm to support the same a plate to which said arm is adjustably secured, a yoke in which said plate has a bearing for oscillation, a stud supporting said yoke, and a bearing for said stud in which the same is adjustable about its own axis.

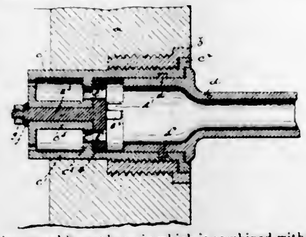
8. In a cigar bunching machine, the combination with a bunching roller, of an arm to support the same, a yoke in which said arm has a bearing for oscillation, a stud supporting said yoke, a sleeve bearing for said stud, said sleeve having an inclined slot, and a pin fixed in said stud and engaging said slot.

9. In a cigar bunching machine, the combination with a bunching roller, of an arm to support the same, an axial bearing upon which said arm may oscillate, means to support said bearing in different angular positions with respect to the axis of the bunching roller and the latter be permitted to oscillate in a flat plane as a radius or in a curved plane, a treadle and a connection from said treadle to said arm whereby movement may be imparted to the latter.

10. In a cigar bunching machine, the combination with the work-table having end-boards, of a trough-like pan, end-pieces having arms to rest upon said table adjacent to the end-boards, and latches secured to said end-boards to bear upon said arms.

530,255. FAUCET-BUNG. DILLON BERRE, Newark, N. J. Filed Feb. 5, 1894. Serial No. 499,434. (No model.)

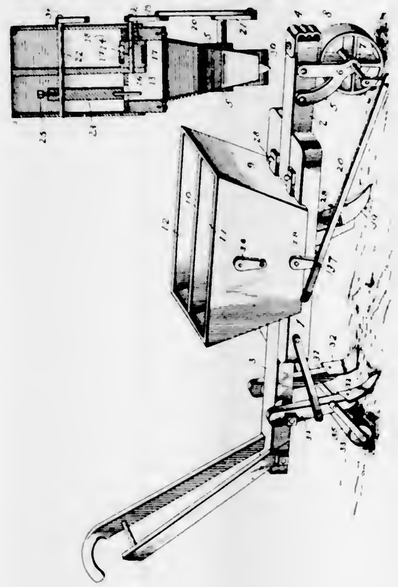
*Claim.*—1. The improved faucet bung in which is combined with the bung body having a perforated diaphragm, at the rear of which is a central tube formed integral with said diaphragm and body, and the disk valve having perforations coinciding with those of the diaphragm and having a central shank at the rear side which extends through the said tube and is held therein by a nut *g*, and at the forward side said disk valve being provided with lugs which hug the side walls of the said bung body and are adapted to receive the key end of the faucet, and said faucet having said key end, and having lugs adapted to engage suitable bearings of the bung and be held thereto thereby, substantially as herein set forth



2. The improved faucet bung in which is combined with the body *c*, having an integral diaphragm serving as a valve seat and provided with perforations at the sides and with an integral tube at the center which extends rearwardly through said bung body, and at its extremity provides a washer seat, the said bung body being interiorly grooved forward of said diaphragm to receive the lugs of the faucet, a disk valve rearwardly provided with a shank which extends through said tube, and which is, at its rearward extremity, threaded and provided with a washer and nut, and at its forward side toward its periphery having forwardly projecting lugs to receive the key end of the faucet, and said faucet having said key end, all substantially as set forth.

3. The combination with a bung, having formed in one integral piece with the body *c*, a diaphragm, having valve ports $c^4$, and having an integral closed end with straining perforations therethrough, the interior chamber being cored out; the said closed end and perforated diaphragm being centrally connected by a tubular extension which provides bearings for a disk valve shank and said disk valve shank extending through said tubular extension, and having at the rear extremity, a nut and washer, and at the forward end having a disk valve which engages the forward side of the diaphragm and is provided with means to receive the key end of the faucet, substantially as set forth

530,256. CORN OR COTTON PLANTER. MATHIAS BROWN, Madisonville, Tex. Filed May 8, 1894. Serial No. 510,515. (No model.)



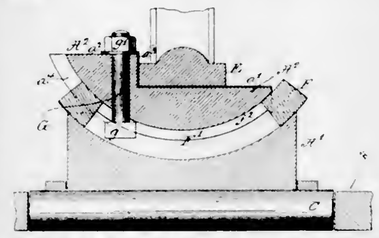


*Claim.*—In a planter, the combination with a supporting frame, a ground-wheel, and furrow opening and closing devices, of a hopper having twin compartments provided with independent outlet openings, seeding devices arranged in operative relation with said outlet openings, one of said seeding devices comprising a rocking roll provided with seed-cavities and having one of its trunnions fitted outside of the hopper with a crank arm, an agitator shaft mounted in bearings in the sides of the hopper, an agitator adjustably secured to said shaft, by means of a set-screw, a crank-arm fixed to the outer end of said shaft, a pitman pivotally connected to a crank arm on the trunnion of the ground-wheel, and an adjustable crank pin carried by the other end of the pitman and adapted to engage openings in the crank-arms of the seed-roll and agitator-shaft, substantially as specified.

530,257. PROCESS OF MANUFACTURING BILLIARD-BALLS FROM IRON OR STEEL. KNUT K. A. CHRISTIANSON, Stockholm, Sweden, assignor to Peter Adolf Ostberg, same place. Filed May 29, 1894. Serial No. 512,918. (No specimens.) Patented in England Aug. 24, 1893, No. 16,024.

*Claim.*—The process of manufacturing metallic billiard balls, consisting in first casting them hollow and with a small hole therein to aid in supporting the core during the casting, then removing the core and filling such hole with a metal plug, next adjusting them perfectly and turning them perfectly round, and finally hardening them to make them perfectly elastic, all substantially as set forth.

530,258. ADJUSTABLE WORK-SUPPORT. LLEWELLYN P. DAVIS, Chicago, Ill., assignor to the American Wood Decorating Machine Company, New York, N. Y. Filed Oct. 16, 1893. Serial No. 488,246. (No model.)



*Claim.*—1. An adjustable, traveling work support comprising a base member for engagement with the feed roller of a wood decorating machine or the like, a work supporting member resting upon said base member and adapted for angular adjustment with relation to the latter, and securing devices for retaining said member in adjusted relation, substantially as set forth.

2. An adjustable, traveling work support comprising a base member for engagement with the feed roller of a wood decorating machine or the like, a work supporting member superimposed upon said base member, the meeting faces of said members being respectively concave and convex in cross section, and devices for securing said members together in adjusted angular relation, substantially as set forth.

3. A system of traveling work supports for wood decorating machines, comprising a series of sections or lengths each composed of a lower part and an upper part, the latter of which has its upper surface adjustable to any desired angle, as set forth, the upper and lower parts being of equal length but placed in overhanging relation to each other, whereby the several sections of the system will overlap each other when placed end to end in the machine, substantially as described.

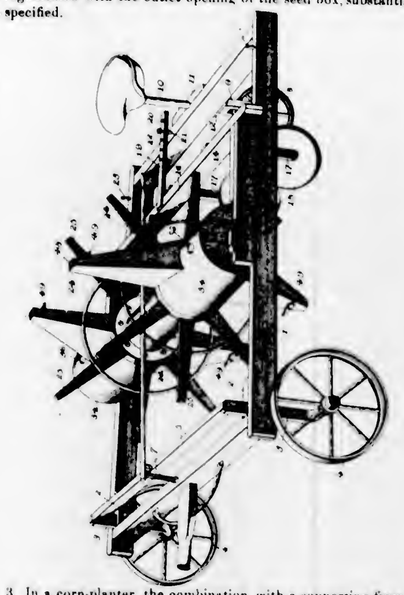
4. In combination with the lower part A′ of the traveling work support having its upper surface concave in cross-section and provided with a curved metal part F having a T-groove therein extending transversely of the support, the upper part $A^2$ of the support having a lower surface fitted to the concaved upper surface of said lower part A′ and provided with a clamping bolt G engaged with the said T-groove, substantially as described.

530,259. CHECK-ROW CORN-PLANTER. JAMES F. DE JARNATT, Lamar, Mo. Filed June 14, 1894. Serial No. 514,575. (No model.)

*Claim.*—1. In a corn planter, the combination with a supporting framework, of an operating wheel, a seed-chute carried by the operating-wheel, a stationary cylindrical seed-box arranged concentric with the axis of the operating-wheel, and a sleeve carried by the operating-wheel, arranged concentric with the said seed-box, and provided with a gage opening adapted to register with the outlet-opening in the seed-

box when the seed-chute reaches its operative or discharging position, substantially as specified.

2. In a corn-planter, the combination with a supporting frame-work, of an operating-wheel, a seed-chute carried by the operating wheel, a stationary cylindrical seed box provided in its lower side with an outlet-opening, a sleeve inclosing the seed-box and provided with a gage-opening opposite the inner end of the seed-chute, and a stationary shell inclosing said sleeve and provided with an outlet opening in registration with the outlet opening of the seed box, substantially as specified.



3. In a corn-planter, the combination with a supporting frame-work of an operating-wheel, a plurality of seed-chutes carried by said wheel, a stationary cylindrical seed-box provided in its lower side with an outlet opening, and a sleeve carried by the operating-wheel mounted rotatably upon the seed-box and provided opposite each seed-chute with a gage opening adapted to register with the outlet opening in the lower side of the seed-box, substantially as specified.

4. In a corn-planter, the combination with a supporting frame-work provided with opposite angular seats, of a transverse angular shaft fitting in said seats, an operating-wheel having a box fitted upon an intermediate portion of said shaft, seed-chutes carried by the operating wheel, a stationary cylindrical seed-box arranged concentric with the axis of the operating-wheel and provided at its opposite extremities with angular openings fitted upon said shaft, a sleeve carried by the operating-wheel and inclosing the seed-box, said sleeve being provided with gage-openings adapted to register with an outlet opening in the under side of the seed-box, and a shell inclosing the sleeve provided in its lower side with an outlet opening registering with the outlet opening in the seed-box and provided in its outer end with an angular opening fitted upon said shaft, substantially as specified.

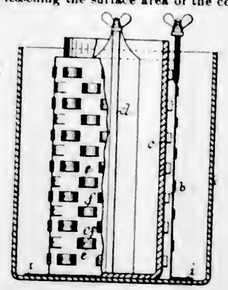
5. In a corn-planter, the combination with a main supporting frame, of an auxiliary adjustable frame mounted thereon, seed feeding devices carried by said auxiliary adjustable frame and adapted to be moved forward and rearward or parallel with the direction of movement of the machine, and means for adjusting said auxiliary adjustable frame, substantially as specified.

6 In a corn-planter, the combination with a main supporting frame provided at its rear end with a guide-wheel and planting mechanism mounted upon and carried by said framework, of standards slidably fitted in vertical guides at the front end of the supporting frame and connected at their upper ends by a cross-bar, ground-wheels mounted upon said standards, and a lever fulcrumed upon the cross-bar connecting said standards and flexibly connected to the supporting frame, substantially as specified.

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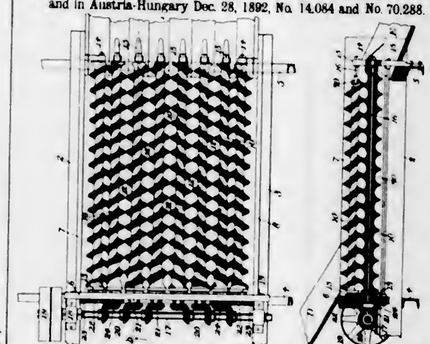
**530,260. PRIMARY BATTERY.** CHARLES W. DE MOTT, New York, N. Y. Filed Dec. 7, 1893. Serial No. 492,973. (No specimens.)

*Claim.*—The combination in a primary battery of the jar, the porous cup, the zinc electrode and a copper electrode having the parallel slits and the strips between the slits bent out of the plane of the rest of the tube whereby circulating passages are provided for the solution without lessening the surface area of the copper electrode.



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**530,261. SCREENING APPARATUS.** VICTOR DISTL and ADOLF SUSKY, Kladno, Austria-Hungary. Filed June 13, 1894. Serial No. 514,410. (No model.) Patented in Germany Nov. 22, 1891, No. 64,997, and in Austria-Hungary Dec. 28, 1892, No. 14,084 and No. 70,288.



*Claim.*—1. The herein-described screening apparatus, comprising a suitable frame or casing, two sets of obliquely-grooved rollers each set comprising a multiplicity of rollers supported side by side in said frame and adapted for rotation, and means in connection with said rollers and adapted for rotating the rollers of one set collectively in one direction and the rollers of the other set collectively in the opposite diection, whereby the mass of the material is caused to move forward and inward toward a central line from both sides of the screen simultaneously, substantially as described.

2. In a screening-apparatus, a frame or casing, a plurality of longitudinally-disposed rollers formed with non-meshing oblique ribs and grooves and so located with reference to one another as to form intermediate regular screen-spaces, in combination with driving mechanism for rotating said rollers, substantially as described.

3. In a screening-apparatus, a frame or casing, a multiplicity of longitudinally-disposed spirally-grooved rollers arranged in two sets and so located with reference to one another as to form intermediate screen-spaces; and driving-mechanism for said rollers said driving mechanism consisting of a series of gear-wheels secured one to each roller said series being divided into two sets the gear-wheels of one set being rotatable oppositely to those of the other set, and a series of gear-wheels carried upon a driving-shaft and meshing with the gear-wheels of said rollers, substantially as described.

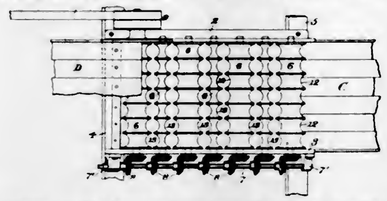
4. In a screening-apparatus, a pair of screening-rollers formed with oppositely-inclined non meshing spiral ribs and grooves and supported for revoluble movement side by side, in combination with means for simultaneously rotating said rollers in opposite directions, substantially as described and for the purpose set forth.

5. In a screening-apparatus, a screen-floor comprising a series of rollers having obliquely-disposed peripheral screen-space-forming non-meshing ribs and grooves, the grooves of some of the rollers lying in opposing planes to the grooves of others of said rollers, and means for rotating opposing rollers in opposite directions, substantially as described.

6. In a screening-apparatus, a screen-floor comprising a series of peripherally-grooved rollers set side by side in coinciding planes said grooves forming regular screen-spaces, and two correspondingly-grooved guard-rollers located adjacent to and above the two outside rollers of the series, and means for rotating said rollers, substantially as described and for the purpose set forth.



**530,262. SCREENING APPARATUS.** VICTOR DISTL and ADOLF SUSKY, Kladno, Austria-Hungary. Filed June 16, 1894. Serial No. 514,742. (No model.) Patented in Germany Nov. 22, 1891, No. 64,997, and in Austria-Hungary Dec. 28, 1892, No. 14,084 and No. 70,288.



*Claim.*—1. In a screening-apparatus of the class specified, the combination with a frame-work adapted for supporting rotary screen-bars, of a plurality of rotary screen-bars mounted upon said frame-work and having successive peripheral surfaces of non-cylindrical cross-sectional form oppositely disposed thereon and of proportionately advancing and retreating form, the alternate bars being set in advanced rotative positions, and means for simultaneously and synchronously rotating the screen-bars, whereby said peripheral surfaces have in the plane of the screen proportionate advancing and retreating movements, and whereby the areas of the screen-spaces are maintained substantially unchanged during the rotation of the screen-bars, substantially as described.

2. In a screening-apparatus of the class specified, the combination with a frame work adapted for supporting rotary screen-bars, of a plurality of rotary screen-bars mounted upon said frame-work with their longitudinal axes in parallelism and in the same plane and transversely-disposed with relation to the direction of movement of the material to be screened, and said bars having successive peripheral surfaces of non-cylindrical cross sectional form oppositely-disposed thereon and of proportionately advancing and retreating form, the alternate bars being set in advanced rotative positions, and means for simultaneously and synchronously rotating the screen bars, whereby said peripheral surfaces have in the plane of the screen proportionate advancing and retreating movements, and whereby the areas of said screen-spaces are maintained substantially unchanged during the rotation of the screen-bars, substantially as described.

3. In a screening-apparatus of the class specified, the combination with a frame-work adapted for supporting rotary screen-bars, of a plurality of peripherally-grooved non-cylindrical rotary screen-bars mounted upon said frame work and having their longitudinal axes substantially in parallelism and also having peripheral surfaces oppositely disposed thereon and of proportionately advancing and retreating form, the alternate bars being set in advanced rotative positions, and means for simultaneously and synchronously rotating the screen bars, whereby said peripheral surfaces have in the plane of the screen proportionate advancing and retreating movements, and whereby the areas of the screen spaces are maintained substantially unchanged during the rotation of the screen-bars, substantially as described.

4. In a screening-apparatus of the class specified, the combination with a frame-work adapted for supporting rotary screen-bars, of a plurality of non-cylindrical rotary screen bars mounted upon said frame-work and peripherally-grooved at right angles to their longitudinal axes and having said axes in the same plane and substantially in parallelism and transverse to the direction of movement of the material being screened, and also having peripheral surfaces oppositely disposed thereon and of proportionately advancing and retreating form, the alternate-bars being set in advanced rotative positions, and means for simultaneously and synchronously rotating the screen-bars, whereby said peripheral surfaces have in the plane of the screen proportionate advancing and retreating movements, and whereby the areas of the screen spaces are maintained substantially unchanged during the rotation of the screen-bars, substantially as described.

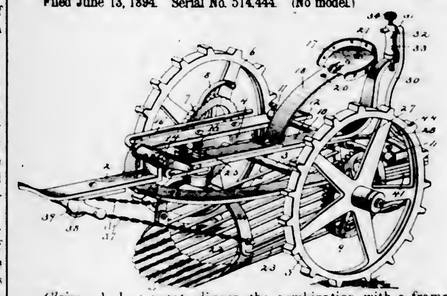
5. In a screening-apparatus of the class specified, the combination with a frame-work adapted for supporting rotary screen-bars, of a plurality of rotary screen-bars mounted upon said frame-work and each having a major and a minor transverse axis and said bars having also peripheral surfaces oppositely disposed thereon and of proportionately advancing and retreating form, adjacent bars having their like transverse axes substantially perpendicular to one another, the alternate bars being set in advanced rotative positions, and means for simultaneously and synchronously rotating the screen-bars, whereby said peripheral surfaces have in the plane of the screen proportionate advancing and retreating movements, and whereby the areas of the screen-spaces are maintained substantially unchanged during the rotation of the screen bars, substantially as described.

6. In a screening-apparatus of the class specified, the combination with a frame work adapted for supporting rotary screen-bars, of a plurality of rotary screen-bars mounted upon said frame-work and having successive peripheral surfaces of non-cylindrical cross-sectional form oppositely disposed thereon and of proportionate advancing and retreating and rising and falling form, the alternate-bars being set in advanced rotative positions, and means for simultaneously and synchronously rotating the screen-bars, whereby said peripheral surfaces have in the plane of the screen proportionately advancing and retreating movements and also have proportionate rising and falling movements transversely of said plane and whereby also the areas of the screen-spaces are maintained substantially unchanged during the rotation of the screen-bars, substantially as described.

7. In a screening-apparatus of the class specified, the combination with a frame-work adapted for supporting rotary screen-bars, of a plurality of rotary screen bars mounted upon said frame-work and having members thereon forming oppositely-disposed successive peripheral surfaces of non cylindrical cross-sectional form and of proportionately advancing and retreating and rising and falling form, the alternate bars being set in advanced rotative positions, and means for simultaneously rotating the screen-bars, whereby said peripheral surfaces have in the plane of the screen proportionate advancing and retreating movements and also have proportionate rising and falling movements transversely of said plane, and whereby the areas of the screen-spaces are maintained substantially unchanged during the rotation of the screen-bars, and whereby also the material supported upon said bars is positively carried forward with an undulating movement, substantially as described.

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**530,263. POTATO-DIGGER.** THOMAS DONOHO, Everett, Mass. Filed June 13, 1894. Serial No. 514,444. (No model.)



*Claim.*—1. In a potato-digger, the combination with a frame, and ground-wheels, of a central-bar pivotally mounted near its rear end upon the frame, means for adjusting the elevation of the front end of said bar, a sifting cage swiveled at its front end upon the central bar and loosely suspended at its rear end, a plow secured to and carried by the cage in advance of its pivotal point, and connections between the ground-wheels and the rear end of the cage for oscillating the latter laterally, substantially as specified.

2. In a potato digger, the combination with a frame and ground-wheels, of a central bar pivotally mounted near its rear end upon the frame, means for adjusting the elevation of the front end of said bar, a sifting cage swiveled at its front end upon the central bar and carrying a plow in advance of the point of swivel connection, a bracket arranged upon the rear extremity of the central bar and provided with a transverse bearing, a hanger provided at its upper end with a spindle mounted in said bearing and having a circumferential groove, a set-screw on the bracket engaging said groove, a loose connection between the lower end of the hanger and the rear end of the sifting-cage, and connections between the ground-wheels and the cage for oscillating the rear end of the latter, substantially as specified.

3. In a potato-digger, the combination with a frame, and draft tongue and ground-wheels, of a central-bar mounted upon the main frame, means for adjusting the elevation of the front end or said bar, a cage swiveled at its front end to the central bar, a pivotal hanger connecting the rear end of the cage with the rear end of the central bar, connections between the ground-wheels and the cage for reciprocating the same laterally, a plow carried by the front end of the cage, in advance of its swivel connection with the central-bar and draft-chains connected at their rear ends to the front end of the cage and at their front ends to a pivotal cross-head on the draft tongue, substantially as specified.

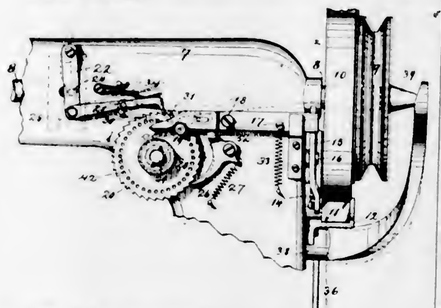
4. In a potato digger, the combination with a frame, and ground-wheels, of a central bar fulcrumed at an intermediate point upon the main frame, a sifting cage swiveled at its front end to the central bar, means for elevating and depressing the front end of said bar, a plow carried by the front end of the cage, a swinging hanger connecting the rear end of the cage portion of the central bar in rear of its fulcrum, connections between the ground-wheels and the cage for oscil

lating the same laterally, and a seat having its standard supported upon the central bar and adjustably connected to its standard, whereby it may be arranged either in advance or in rear of the fulcrum point of the central bar, substantially as specified.

5. In a potato-digger, the combination with a frame having parallel side arms, and ground-wheels carried by a shaft mounted in bearings supported by said side arms, of a rock-shaft mounted in bearings near the rear ends of the side arms, a central bar fixed at an intermediate point to said rock-shaft and provided at its front end with a guide or slot, a crank shaft having a looped crank-arm engaging said guide or slot, a hand lever connected to said crank-shaft, a sifting cage swiveled at its front end to the central bar and carrying a plow, means for suspending the rear end of the cage from the rear end of said central bar, and connections between the ground-wheels and the rear end of the cage, whereby said cage is laterally oscillated, substantially as specified.

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**530,264. AUTOMATIC STOP-ACTION FOR SEWING-MACHINES.** JOHN FAUST, Cincinnati, Ohio, assignor to The Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Filed June 17, 1893. Serial No. 477,936. (No model.)



*Claim.*—1. In an automatic stop-action for sewing machines, the combination of a brake-wheel provided with an eccentric portion 13 in its rim, a wedge shaped brake-shoe located opposite the face of this brake-wheel, a bracket 12 upon which the brake shoe is supported and guided in a manner to cause it to move tangentially to or from the brake-wheel, means to hold the brake-shoe out of contact with the rim of the brake-wheel while the machine is running, means controlled by the main shaft for the purpose of liberating the brake-shoe to permit it to move into the space between bracket 12 and the rim of the brake-wheel whereby the latter is positively stopped by the brake-shoe which is wedged between its face and bracket 12, the eccentric portion on the brake-wheel being so located as to come in contact with the brake-shoe at a time when the needle is elevated.

2. In an automatic stop-action for sewing-machines, the combination of a brake-wheel secured to the main shaft thereof, a spring actuated brake-shoe 11, a lever 15, which holds it out of engagement with the brake-wheel while the machine is sewing, and means actuated from the main shaft and acting upon lever 15, to cause the brake-shoe to become operative for the purpose of stopping the machine.

3. In an automatic stop action for sewing-machines, the combination of a brake-wheel secured to the main shaft thereof, a spring-actuated brake-shoe 11, a lever 15, connected to it, a lever 17, capable of engagement with lever 15, a spring actuated change-wheel 20, receiving its motion from the main-shaft of the sewing machine, an adjustable pin 19, on said wheel, capable of acting upon lever 17, and means causing wheel 20, to return to its starting point after each operation of the brake-shoe.

4. In an automatic stop-action for sewing-machines, the combination of a toothed change-wheel 20, a reciprocating pawl 21, to rotate it, a pawl 26, to hold it to its advanced position, a spiral spring to return it to its starting point, a pin 19, adjustable within a circular line on wheel 20, a lever 17, so located as to have one of its ends susceptible of engagement with pin 19, means actuated by this lever and whereby pawls 21, and 26 are disengaged from wheel 20, a lever 15, having connected to it a spring-actuated brake-shoe and a brake-wheel.

5. In an automatic stop-action for sewing-machines, the combination of a main shaft thereof, a brake-wheel fast therewith, a loose driving-pulley, mechanism to break and establish the operative connection between the latter and the main shaft, lever 15, having arm 35, connected to this mechanism, a spring-actuated brake-shoe connected to lever 15, a lever 17, capable of acting upon lever 15, in a manner to keep the brake shoe out of operative engagement with the brake wheel, and a change-wheel actuated from the main shaft and provided with an adjustable projection which is capable to act upon lever 17, in a manner which permits lever 15, to liberate the brake shoe.

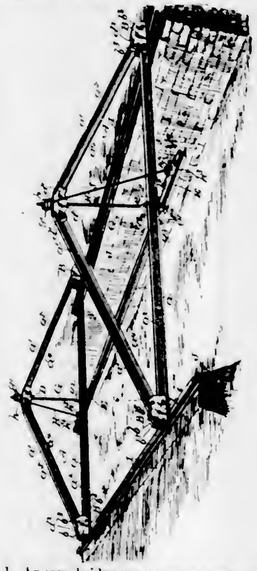
6. In an automatic stop-action for sewing-machines, the combination of a change-wheel 20, actuated from the main-shaft, a projection thereon, a lever 17, reaching within the path of said projection, a brake wheel fast on the main-shaft, a spring-actuated brake-shoe connected to a lever 15, and held normally off of the brake-wheel by the engagement of levers 17, and 15 until disengaged by the change-wheel, a loose driving-pulley 9, also on the main-shaft, a treadle-mechanism for shifting the driving pulley and an arm 35, on lever 15, also connected to the treadle-mechanism, whereby the brake-shoe becomes subject to the action of the change-wheel, as well as to the treadle-mechanism.

7. In an automatic stop-actiou for sewing machines, the combination of a change-wheel 20, actuated from the main-shaft, a projection 19, and a stop 40, thereon, a lever 17, reaching within the path of projection 19, a brakewheel loose on the main-shaft, a spring-actuated brake-shoe connected to a lever 15, and held normally off of the brake-wheel by the engagement of levers 17 and 15, until disengaged by the change-wheel, a stop 40, on the main-frame, and a spring whereby the change-wheel is carried back to this stop, after having released lever 15.

8. In an automatic stop-action for sewing-machines the combination of a spring-actuated change-wheel 20, a pawl 21, a link 22, to which it is connected and a cam 25, on the main shaft whereby pawl 21 is actuated in a manner to rotate wheel 20 in a direction opposite to the action of the spring on the latter, a pawl 26, to hold wheel 20 in its advanced position, a projection 19, on the latter, a lever 17, reaching within the path of this projection, a brake-wheel loose on the main-shaft, a spring-actuated brake-shoe connected to a lever 15, and held normally off of the brake-wheel by the engagement of levers 17, and 15, until disengaged by the change-wheel, a lever 30, pivoted to the main-frame and a heel 32, on pawl 26, both so located as to be subject to actuation by lever 17, when the latter is depressed by projection 19, whereby both pawls 21, and 26 are disengaged from wheel 20 to permit the spring on the latter to carry it back to its normal starting-point.

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**530,265. BRIDGE.** JASON C. FENN, Terryville, Conn., assignor of one-half to William E. Phelps, Elmwood, Ill. Filed Jan. 29, 1894. Serial No. 498,310. (No model.)



*Claim.*—1. An iron bridge truss, comprising in its structure and in combination, a tie beam, brace beams, and chairs each formed of two parts with confronting faces, each face conforming in contour to the tie beam and brace beam, and having a shoulder to receive the end of the brace beam, bolts securing said parts to each other and to the tie beam, and a key block having abutting shoulders and recessed ends for receiving the upper ends of the brace beams, substantially as described.

2. An iron bridge truss, comprising in its structure and in combination, a tie beam, brace beams, and chairs each formed of two parts with confronting faces, each face conforming in contour to the tie beam and brace beam, and having a shoulder to receive the end of the brace beam, bolts securing said parts to each other and to the tie beam, and a key block having abutting shoulders and recessed ends for receiving the upper ends of the brace beams, a girder, and a tie rod fixed to the key block and to the girder, substantially as described.



3. An iron bridge truss, comprising in its structure and in combination, a tie beam, brace beams, and chairs each formed of two parts with confronting faces, each face conforming in contour to the tie beam and brace beam, and having a shoulder to receive the end of the brace beam, bolts securing said parts to each other and to the tie beam, and a key block having abutting shoulders and recessed ends for receiving the upper ends of the brace beams, a girder, and a tie rod fixed to the key block and to the girder, a clip adjustably fixed to the girder, and a side brace fixed at its upper end to the key block and at its lower end to said clip, substantially as described.

4. A bridge truss comprising in its composite structure, a tie beam $a$ and brace beams $a'$ of railway T-rails; shoes B, fixing the feet of the brace beams to the tie beam; and a key block having projections $d'$ between which the upper ends of the brace beam T-rails are seated, and shoulders $d^2$ against which they abut, substantially as described.

5. A bridge truss comprising in its composite structure, a tie beam $a$, brace beam $a'$ and girder E of railway T-rails; shoes B fixing the feet of the brace beams to the tie beam; a key block connecting the upper ends of the brace beams; and a suspension rod connecting the key block and the girder, substantially as described.

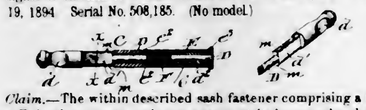
6. A bridge comprising in its composite structure, tie beams $a$, brace beams $a'$, and girder E of railway T-rails; shoes B fixing the feet of the brace beams to the tie beams; a key block connecting the upper ends of the brace beams; and a suspension rod adjustably fixed to the key block and to the girder E, substantially as described.

7. A bridge comprising in its composite structure, tie beams $a$ brace beams $a'$ and girder E of railway T-rails; shoes B, fixing the feet of the brace beams to the tie beams: a key block connecting the upper ends of the brace beams, a suspension rod connecting the key block and the girder; and a side brace, as H, fixed at its upper end to the key block, and at its lower end pivotally hinged to a clip which is adjustably fixed to the girder E, substantially as described.

8. A bridge comprising in its composite structure, tie beams $a$, brace beams $a'$ and girder E, of railway T-rails; shoes B formed in two parts $b$, $b$, with confronting faces having a conformity of surface with the adjacent faces of the tie beam and brace beams, and a shoulder $b^2$; through bolts $b^3$, $b^4$; a key block having plates $d'$ and shoulders $d^2$; a tie rod adjustably fixed to the key block and to the girder E; and a side brace fixed at its upper end to the key block, and at its lower end hinged to a clip which is adjustably fixed to the girder, substantially as described.

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**530,266. SASH-FASTENER.** JACOB G. FOX, Grayling, Mich., assignor of one-half to William F. Brenkelman, same place. Filed Apr. 19, 1894. Serial No. 508,185. (No model.)

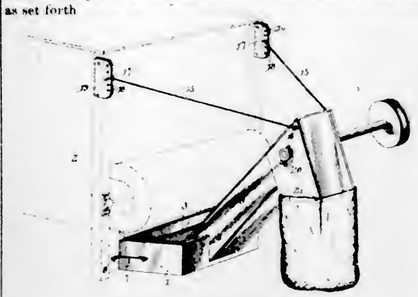


*Claim.*—The within described sash fastener comprising a tubular casing E, having a rectangular passage $c$, at its inner end and a cylindrical bore $c'$ at its forward end; a sliding and turning bolt D, constructed with a flattened portion $d'$, hold back shoulders $m$, and an enlarged sleeve-bolt end $d^3$, a handle $d$, and a spring F; the combination being such, that the bolt by simply being drawn out of its locked position and turned partly around, will be held out of its locked position, by its hold back shoulders $m$, resting on the solid or unslotted portions of the rear end of the casing, substantially as described.

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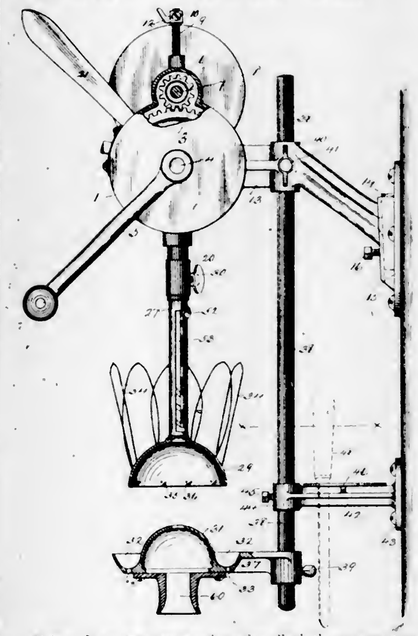
**530,267. GRAIN-ELEVATOR.** ARTHUR J. HENDRICKS and SENECA FORSYTHE, Sterling Valley, N. Y. Filed May 18, 1894. Serial No. 511,698. (No model.)

*Claim.*—In a grain elevator and bagger, the combination with the hopper box having a front side opening, attaching hooks loosely connected to opposite sides of said hopper box and adapted to engage suitable eyes on a separator machine to detachably and positively position the hopper box under the discharge thereof, an adjustable inclined elevator spout removably fitted at its lower open end in the front side opening of said hopper box, and provided at its upper end with a depending discharge spout, an elevator or conveyer within said elevator box, opposite attaching plates adapted to be fixedly secured to opposite top sides of the separating machine and provided with a vertical series of perforations or openings, and the hook supporting rods loosely connected at one end to opposite sides of the elevator box and adjustably engaging at their other ends the perforations of said supporting plates to provide for holding the elevator box adjusted at the desired inclination or pitch, substantially as set forth.



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**530,268. HOUSEHOLD OR KITCHEN IMPLEMENT.** OTTO A. HENKEL, Pittsburg, assignor of one-fourth to Homer Bowes, Allegheny, Pa. Filed Aug. 20, 1894. Serial No. 520,827. (No model.)



*Claim.*—In an apparatus such as described, the combination of the fruit press and cork drawing device, the press provided with a male and female portion constructed as described, the cork-screw 51 arranged within the shank of the fruit press, the bottle holder 60 attached beneath the male portion of the press, and means substantially as described for giving the said screw a rotary and vertical movement.

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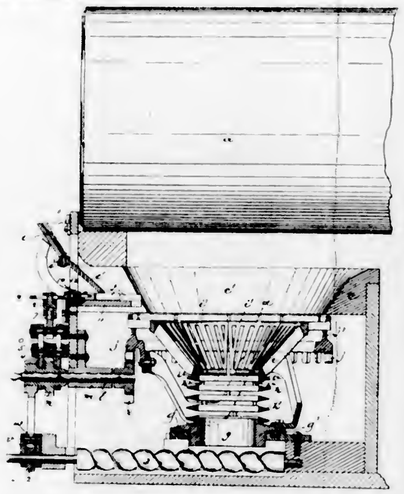
**530,269. BOILER-FURNACE.** PETER HODKINSON, Newark, N. J. Filed Aug. 24, 1893. Serial No. 483,892. (No model.)

*Claim.*—1. In a furnace, the combination with a rotary frame arranged on ball bearings and having gearing, $j$, at the top, a series of rings, $k'$, seated one on the other and forming a cage like structure seated on said frame, and a series of inclined wedge shaped grate sections seated on the top-most ring of said cage at their lower ends and resting on the top of the rotary frame at their upper ends, of means for rotating said gearing, substantially as set forth.

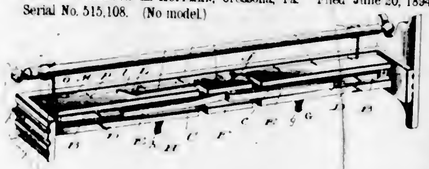
2. In combination with the rotary grate and gearing $j$, a shaft $l$, pinion $k$ ratchet $u$, pawl $o$, shaft $p$, cam or eccentric $q$, and means for operating the same, and arms, 4, arranged on said shaft and having slots, 6, bolts 5, and arm 7, an arm 8, having a sliding relation to arm

7, double-crank, 9, and stoking shovels *f*, the said train of gearing producing a simultaneous rotation and shoveling, as set forth.

3. In a furnace, the combination with the rotary frame and means for rotating the same of rings, *h'*, secured one upon the other and forming a vertical cage and a series of inclined and wedge shaped grate sections arranged above said rings and forming a funnel-shaped grate which empties its partially consumed coals into said cage, substantially as set forth.



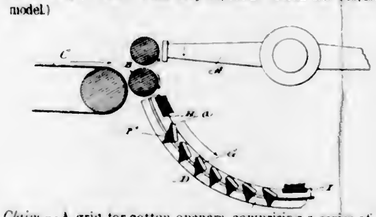
530,270. COMBINED WINDOW-CORNICE AND CURTAIN-SUPPORT. JEREMIAH M. HOFFMAN, Cressona, Pa. Filed June 20, 1894. Serial No. 515,108. (No model.)



*Claim.*—1. In combination with the cornice piece A, having the guides or metallic strips B and the clamps D, of the tape having an end connected each to an end of a block C, thence passing over the upturned ends of the clamps D and about a central winding post, whereby as the said tape is wound about the winding post, the two clamps are drawn together thus forming a greater leverage, substantially as shown and described.

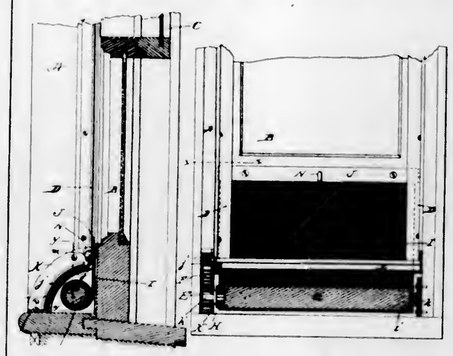
2. In combination with an adjustable curtain support and cornice, the cords connected to the sliding shade supports, and a stay pin having one end L-shaped to work in a recess in the block C, its other point straight and pointed to engage in the cornice, substantially as shown and described.

530,271. GRID FOR COTTON-OPENERS. HENRY S. HOUGHTON, Northbridge, Mass. Filed May 25, 1894. Serial No. 512,436. (No model.)



*Claim.*—A grid for cotton openers, comprising a series of transverse bars F, and the teeth G, arranged upon the said bars and extending lengthwise at right angles to the length of the bars and in the direction in which the cotton moves and having the long faces or sides and with the blunt and beveled or curved forward ends *a*, substantially as and for the purpose set forth.

530,272. WINDOW-SCREEN. EDWARD C. IRWIN and WILLIAM G. IRWIN, Winnipeg, Canada. Filed May 14, 1894. Serial No. 511,220. (No model.)



*Claim.*—1. The combination with a window casing and a slidable sash arranged therein; of the vertical guides secured to the inner sides of the uprights of the frame, the casing E, secured to the inner side of one of the uprights, the plate *k*, connected to the inner side of the other upright and having a socket, the roller G, having a stud at one end journaled in the socket of the plate *k*, and having a spindle at its opposite end, the coiled spring arranged in and connected at one end to the casing E, and connected at its opposite end to the spindle of the roller G, the plate K, covering the casing E, and having the parallel, curvilinear guides or flanges, the quadrant shaped cover resting at one end between the guides or flanges of the plate K, and having the base flange *l*, connected to the window sill, and the end flange M, connected to the inside of one of the uprights of the frame, and also having its upper edge curved or turned upwardly and outwardly, the bar J, connected to the sliding sash and having the hook or projection adapted to engage the quadrant shaped cover, and the screen connected to the roller G, and to the bar J, and adapted to slide together with said bar between the guides on the uprights of the casing, substantially as and for the purpose set forth.

2. The combination with a window casing, a slidable sash arranged in said casing and a screen connected to and adapted to move with said sash; of the vertical guides D, connected to the inner sides of the uprights of the casing and respectively formed of a single piece of sheet metal bent lengthwise so as to form a flange *e*, comprising two parallel branches and designed for the passage of attaching nails or screws and the parallel strips *e*, disposed at right angles to the flange *e*, and having their free ends *f*, bent inwardly upon themselves, the said ends *f*, being adapted to rest close against opposite sides of the screen, the edge of which rests loosely between the unbent portions of the strips *e*, substantially as and for the purpose set forth.

530,273. ELEVATOR. HANSON A. JOHNS, Philadelphia, Pa. Filed Aug. 24, 1894. Serial No. 521,190. (No model.)

*Claim.*—1. In an elevator, the combination with a guide or stile, a door, levers, a back-stop, an extensible link connecting said levers and connections between one of said levers and said door, of a car provided with rollers adapted to engage one of said levers, substantially as described.

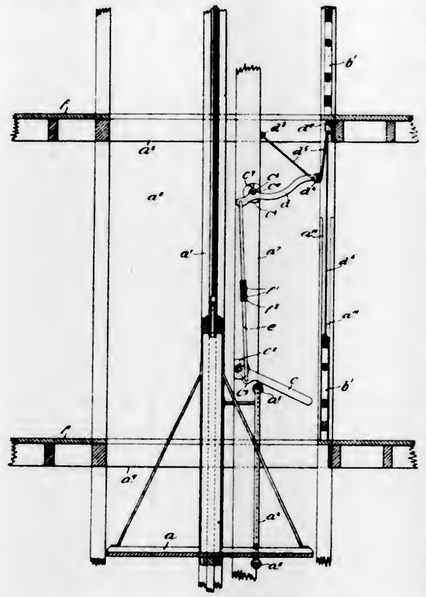
2. In an elevator, the combination with a guide or stile, a door, levers, a stud plate secured to said guide or stile, a back-stop, an extensible link connecting said levers, connections between one of said levers and said door, of a car and means on said car for engaging one of said levers, substantially as described.

3. In an elevator, the combination with a guide or stile and a door, of a lever pivotally connected at one extremity with said guide or stile, a link interposed between the other extremity of said lever and said door, a car, an extensible link, a lever pivoted intermediate of its ends to said guide or stile and having its rear end connected with said extensible link and its front end disposed in range of a roller on said car, and said lever reversely curved so as to impart differential motion to the car, substantially as described.

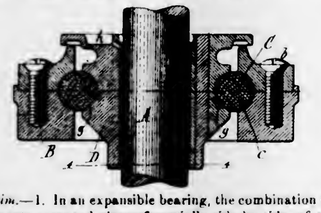
4. In an elevator, the combination with a door, levers, certain of said levers reversely curved, an extensible link connecting said levers with each other and connections between one of said levers and



said door, of a car and means on said car for engaging said reversely curved levers to impart a differential motion to said car, substantially as and for the purposes described.



530,274. JOURNAL-BEARING. JOHAN L. JÖNSSON, Stockholm, Sweden, assignor to the Aktiebolaget Separator, same place. Filed Nov. 11, 1893. Serial No. 490,668. (No model.)



*Claim.*—1. In an expansible bearing, the combination with bearing segments arranged circumferentially side by side, of an annular rigid supporting frame surrounding the bearing segments and an annular spring embracing the segments and arranged within the supporting frame, whereby the bearing is enabled to expand by the separation of the segments and also to yield bodily in any direction by compression of the embracing annular spring, substantially as set forth.

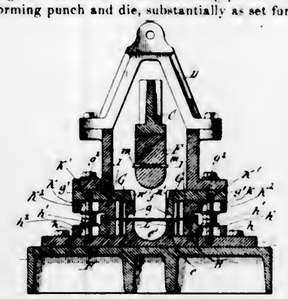
2. An expansible bearing composed of bearing segments arranged circumferentially side by side and having their contiguous sides provided with interlocking projections and depressions, a stationary frame surrounding the bearing segments, and a yielding support interposed between the segments and the frame whereby the segments are permitted to change their position with reference to each other as the bearing expands and are held in register with each other at their contiguous sides, substantially as set forth.

530,275. GUTTER-FORMING MACHINE. FREDERICK A. JURGENS, Buffalo, N. Y., assignor to the Niagara Stamping and Tool Company, same place. Filed May 18, 1894. Serial No. 511,657. (No model.)

*Claim.*—1. The combination with the forming die and punch whereby the body of the blank is stamped into form, of a curling punch arranged adjacent to the forming die and punch and provided with a concave face which engages with the edge of the blank and curls the same into cylindrical form, substantially as set forth.

2. The combination with the forming punch having a convex face, of a forming die having a concave face provided in its side wall with an undercut portion adapted to receive the side of the gutter body, and a curling or beading punch arranged adjacent to the forming die and punch and adapted to operate upon the edge of the body, substantially as set forth.

3. The combination with the forming punch provided with a stop, adapted to engage against the edge of the blank, of a forming die having an undercut face and a beading punch arranged adjacent to the forming punch and die, substantially as set forth.



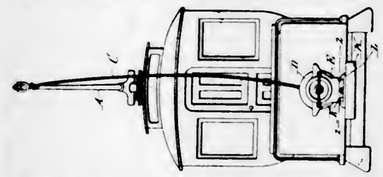
4. The combination with the forming die provided with an undercut face, of a forming punch having a socket in its side, a stop bolt arranged to slide in said socket, a spring arranged in said socket and adapted to project said bolt beyond the side of the forming punch, and a beading punch arranged adjacent to the forming punch, substantially as set forth.

5. The combination with the curling punch having a concave face which engages with the edge of the blank and curls the same into cylindrical form, of a forming die and punch arranged on one side of the curling punch and engaging with the body of the blank for stamping the same into form, and a preliminary bending die and punch arranged on the opposite side of the curling punch and engaging with the marginal portion of the blank for bending the same preparatory to curling it, substantially as set forth.

6. The combination with the forming die and punch, of a beading punch, a preliminary bending die having a convex face and a guide rib on one side of said face and a preliminary bending punch provided with a concave face, substantially as set forth.

7. The combination with the forming die and punch, of beading punches arranged on opposite sides of the forming punch preliminary bending dies arranged on opposite sides of the forming die and preliminary bending punches arranged on the outer sides of the beading punches, substantially as set forth.

530,276. TROLLEY-CATCHER. WILLIAM F. KENDT, Buffalo, N. Y., assignor of two-thirds to George M. Mitchell and Rod McLeod, same place. Filed May 26, 1894. Serial No. 512,509. (No model.)



*Claim.*—1. In a trolley catcher, the combination with a stationary frame or casing having a stop or shoulder and a rotary spring-drum journaled therein, of a detent pawl carried by the drum, adapted to be connected with the trolley rope and engaging with the stop or shoulder of the casing, substantially as set forth.

2. In a trolley catcher, the combination with a stationary frame or casing having a stop or shoulder and a rotary spring-drum journaled therein, of a detent pawl carried by said drum, capable of moving toward and from the axis of the drum for engaging and clearing the stop or shoulder of the casing, and adapted to be connected with the trolley rope, substantially as set forth.

3. In a trolley catcher, the combination with a stationary frame or casing having a stop or shoulder and a rotary spring-drum journaled therein, of a detent pawl carried by said drum and engaging with the stop or shoulder of the casing, and a link pivoted to said pawl and adapted to be connected with the trolley rope, substantially as set forth.

4. The combination with the stationary casing having stops or shoulders in its sides, of a spring-drum journaled in said casing and having a radial pocket or recess, a transverse detent pawl arranged to slide radially in said pocket or recess and adapted to engage with

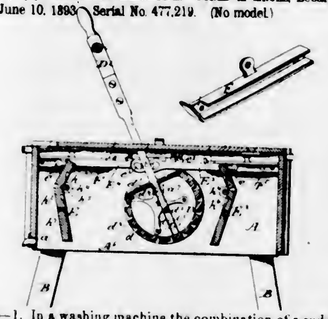
said stops or shoulders, and a spring whereby the detent pawl is moved into engagement with said stops or shoulders, substantially as set forth.

5. The combination with the stationary casing having openings in its sides, of a shaft arranged with its end portions in said openings and divided from end to end, a drum mounted on said shaft, and a spring secured at one end to the drum and having its other end confined between the sections of said divided shaft, substantially as set forth.

6. The combination with a base plate secured to the platform or other stationary part of the car and having undercut guides, of a removable trolley catcher having a tenon engaging with said guides and a spring catch whereby the trolley catcher is locked in said guides, substantially as set forth.

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530,277. WASHING-MACHINE. JONAS L. KNOLL, Lebanon, Pa. Filed June 10, 1893. Serial No. 477,219. (No model.)



*Claim.*—1. In a washing machine the combination of a suds-box, bearings $a^7$ centrally secured to the sides of said box and having a top opening to said bearing narrower than its interior, a cylindrical rubber D having slat-retaining cast ends provided with arms D', and pins $d^6$ outwardly projecting from said arms and having their sides flattened, their short diameter corresponding with the narrow opening of the bearing and their long diameter corresponding with the interior of said bearing substantially as described.

2. The combination of a suds-box, a cylindrical rubber pivoted in bearings secured to the sides of said box, the end castings of said rubber having arms D' provided with pins $d^7$, two racks having arms, each arm provided with a slot in its inner end adjustably connected with the pin $d^7$, and a pin $e$ outwardly projecting from its outer-end, with grooved guides F receiving the pins $e$ and secured to the sides of the suds box substantially as described.

3. The combination of a suds-box, a cylindrical rubber pivoted in bearings secured to the sides of said box, the end castings of said rubber having arms D' provided with pins $d^7$, a rack E having arms $E^4$ provided with a wavy-serrated slot in its inner end, a latch K pivoted to the extreme end of said arms and having notches separated by double beveled spear-head partitions between said notches with a rack $E^5$ having slotted arms $E^2$ adjustable upon the pins $d^7$ the slots in said arms having pockets $e^4$ substantially as described.

4. The combination of a suds-box, a cylindrical rubber pivoted in bearings secured to the sides of said box, the end castings of said rubber having arms D' provided with pins $d^7$, a rack $E^3$ having arms $E^4$ provided with a wavy-serrated slot in its inner end and teeth $e^5$ upon its top, a latch $g$ pivoted upon the pin $d^7$ and in engagement with one of said teeth, and a rack E having slotted arms adjustable upon the pins $d^7$ substantially as described.

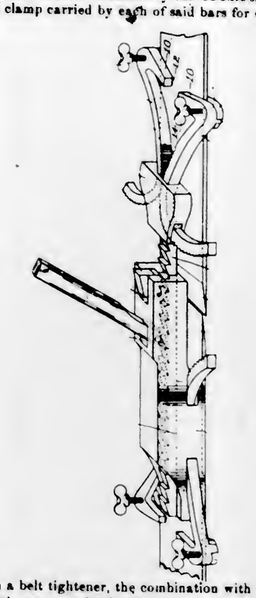
5. The combination of a suds-box, a cylindrical rubber pivoted in bearings secured to the sides of said box, the end castings of said rubber having arms D' provided with pins $d^7$, racks, and horizontal rack arms adjustably connected at one end with said pin $d^7$ and at the other with supporting pins $e$, with grooved guides F for said pins $e$ said guides being secured to the suds-box above said racks substantially as described.

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530,278. BELT-TIGHTENER. HERMAN P. D. KRUEGER, Blooming Prairie, Minn. Filed June 12, 1894. Serial No. 514,289. (No model.)

*Claim.*—1. In a belt tightener, the combination with the take-up mechanism, of the pair of clamps adapted to engage the opposite edges of the belt, the oppositely curved bars connected respectively to said clamps, and the guides for said bars connected to said take up mechanism, adapted to engage and hold said bars from longitudinal movement therein so long as the clamps are held from lateral movement.

2. In a belt tightener, the combination with the take up mechanism, of the block connected thereto having oppositely converging curved guides therein, the similarly curved bars slidable in said guides, and the clamp carried by each of said bars for engaging the belt.



3. In a belt tightener, the combination with the take-up mechanism, of the connected guide block, the pair of clamps for engaging the opposite edges of the belt, and the oppositely curved bars connected to said clamps and working in the guides in said block, whereby when the clamps are secured upon the belt the bars are held from movement through the block by the opposite thrust of the bars upon the walls of the guides.

4. In a belt tightener, the combination with the take-up mechanism, of the pair of clamps for engaging the opposite edges of the belt, the oppositely curved bars connected to said clamps and the guides for said bars automatically securing them and the take up mechanism in adjusted positions, determined by the spread of the clamps.

5. In a belt tightener, the combination with the take-up mechanism, of the clamps for engaging the opposite edges of the belt, the bars connected to said clamps and oppositely and similarly curved and provided with teeth upon their convex adjacent faces, and means connected to the take-up mechanism for holding said toothed surfaces in engagement.

6. In a belt clamp, the combination with the lever actuated rack-bar and the catch block adapted to automatically engage and prevent the backward movement of said bar, of the adjustable clamps secured to said block and bar, consisting of oppositely similarly curved bars having inner serrated meshing edges, said bars being located in diverging curved paths in the heads of the block and bar.

7. In a belt clamp, the combination with the lever actuated rack-bar and the catch block adapted to automatically engage and prevent the backward movement of said bar, of the adjustable clamps secured in diverging curved paths in the heads of the block and bar, and consisting of oppositely similarly curved bars having inner serrated meshing edges and having at their outer ends the inturned claws for engaging the belt.

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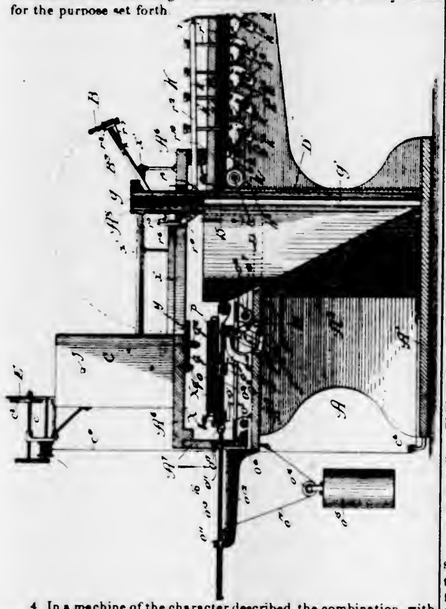
530,279. MATRIX-MAKING MACHINE. MARCUS LANE, Freeport, Ill. Filed Dec. 27, 1892. Renewed May 1, 1894. Serial No. 509,719. (No model.)

*Claim.*—1. In a machine of the character described, the combination, with the type carrying type-bars, of a traveling bed frame for the material to be impressed, feed mechanism tending normally to advance the said bed-frame across the field in which the type strike, a movable stop for the said bed-frame, a key-board containing a key for each type, spacing stop actuating mechanism operated by the said keys to move the said stop in the direction away from the bed-frame a distance according to the number of space units represented by the key struck, and bed-frame engaging mechanism, operated by the said keys to hold the bed-frame against movement under the pressure of its feed while a key is depressed and to disengage the said bed-frame when the key is released, whereby its feed may act substantially as and for the purpose set forth.



2. In a machine of the character described, the combination with the type-actuating key board and traveling bed for the material to be impressed, of a feed for advancing the said bed, a progressively movable cam-faced stop with which the said bed is caused by its feed normally to engage, and differentially operating spacer mechanism between the said stop and key-board serving when a key is depressed to move the said stop to retract its cam-face and cause the bed to be advanced by its feed, substantially as and for the purpose set forth.

3. In a machine of the character described, the combination, with the type carrying type-bars, key board containing a key for each type, movable bed-frame for the material to be impressed, and feed mechanism operating normally to advance the said bed-frame across the field in which the type strikes, of a movable stop having a cam surface $D^8$ which the said bed-frame is caused by its feed normally to engage, and spacer mechanism communicating with the said stop and actuated when a key is depressed to move said stop, whereby the bed-frame is moved along the said cam-surface, substantially as and for the purpose set forth.



4. In a machine of the character described, the combination, with the type-carrying type bars, key-board containing a key for each type, movable bed-frame for the material to be impressed, and feed-mechanism operating normally to advance the said bed-frame across the field in which the type strike, of a movable frame D having a cam-surface $D^8$ which the said bed-frame is caused by its feed normally to engage, a rack on the frame D, gear mechanism engaging the said rack and actuated, when a key is depressed, to raise the frame D to permit the bed-frame to be advanced by its feed-mechanism, substantially as and for the purpose set forth.

5. In a machine of the character described, the combination, with the type-carrying type-bars, bed-frame for the material to be impressed, and bed-frame feed-mechanism, of a movable stop having a cam surface $D^8$ which the said bed frame is caused by its feed normally to engage, operating-gear mechanism for the said stop, a key-board containing keys for the type, and having the keys of type of the same equivalence in units grouped together, and a movable spacing plate for each group communicating with the said gear-mechanism and actuated, by the depression of a key of its group, to move the said stop a predetermined distance, whereby, when a key is struck, the said stop is moved to permit the said bed-frame to be advanced upon the said cam-surface a distance according to the number of units represented by the key, substantially as and for the purpose set forth.

6. In a machine of the character described, the combination, with the type carrying type-bars, key-board, movable bed-frame for the material to be impressed, and bed-frame feed-mechanism, of a movable cam, affording a stop for the said bed-frame, spacing mechanism, between the key board and cam, operating when a key is struck to advance the said cam to permit the said bed-frame to be advanced by its feed mechanism, and means for disengaging the cam from the spacer mechanism, whereby it may be returned to its initial position, substantially as and for the purpose set forth.

7. In a machine of the character described, the combination, with the movable spacing cam-frame, and key board, in which keys of type of the same equivalence in units are grouped together, of operating mechanism for the cam-frame, comprising a rocking spacing-plate, below each group of keys, to be rocked by movement of any of the keys of its group, differential stop mechanisms for the said plates, a longitudinally reciprocating bar, advanced and returned with the rocking movement of said plates, and gear-mechanism, between the said bar and cam frame, operated by said bar to move said frame, substantially as and for the purpose set forth.

8. In a machine of the character described, the combination, with the type-actuating key-board and traveling bed for the material to be impressed, of a feed for advancing said bed, a progressively movable cam faced stop, a roller upon the bed normally engaging said cam faced stop, and differentially operating spacer mechanism between the said stop and key-board serving when a key is depressed to move the said stop to retract its cam-face from the roller and cause the bed to be advanced by its feed, substantially as and for the purpose set forth.

9. In a machine of the character described, the combination, with the bed-frame for the material to be impressed, of means for feeding the said frame in one direction, and means for advancing the said frame in a direction at right-angles to the first said direction, comprising a rod mounted in guides on the machine, means for advancing the rod, and a wheel upon the rod normally engaging the said bed-frame, substantially as and for the purpose set forth.

10. The combination with the type and type-bars, of holders, for the type, made in sections, one of which is axially adjustable with reference to the other, and means on the holder for securing the sections together, in adjusted position, substantially as described.

11. In a machine of the character described, the combination, with the swinging type-bars, type holders thereon, means for operating the type-bars to strike with the type in a certain fixed field, movable bed-frame for the material to be impressed, and means for feeding the said bed-frame intermittingly across the said field, of means for governing the depth of impressions made by the type in said material, comprising a depressing lever normally out of the path of the type holders operating mechanism for the depressing lever, a yielding stop, in the path of the type holders, operating when struck thereby to actuate the depressing lever operating mechanism to move the depressing lever and cause the latter to advance, engage, depress and then release the type holders, substantially as described.

12. In a matrix making machine, the combination with the movable type bars, type-holders thereon, operating keys for the type bars, and matrix material, of means for causing the type, when a key is actuated, to strike repeatedly and to successively increasing depths into the matrix material, whereby each intaglio is formed by repeated impacts of the type, substantially as and for the purpose set forth.

13. In a matrix making machine, the combination, with the swinging type bars, type-holders thereon, means for operating the type-bars to strike with the type in a certain fixed field, movable bed-frame for the matrix material, and means for feeding the said bed-frame intermittently across the said field, of stop-mechanism against which the type-holders strike operating to check the advance of the type-holders, when the type has entered the matrix a distance less than that necessary to form the completed intaglio, and type-holder depressing mechanism, actuated under the impact of the type-holders against said stop-mechanism, to engage, depress and then release the type holder, to complete the intaglio, substantially as and for the purpose set forth.

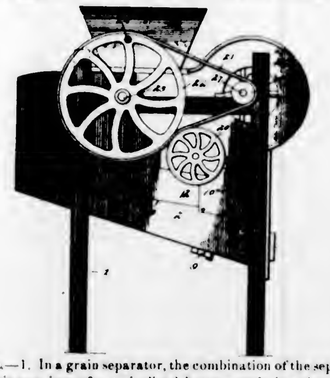
14. In a machine of the character described, the combination of the disk C and rotating means therefor, stops $n$ $n'$ thereon, swinging arm $n^2$, having the stop engaging cam $n^3$ and abrupt shoulder $n^4$, spring actuated depressing lever $n^7$, plunger $n^{14}$ having the stop engaging cam $n^{17}$ resilient receiving lever $q$, and rod $n^{18}$ connecting the plunger and lever $q$, constructed and arranged to operate substantially as and for the purpose set forth.

15 In a machine of the character described, the combination, with the movable bed-frame carrying the material to be impressed, spacing bar $i$, and means for actuating the same, of bed-frame engaging mechanism, comprising, in combination, the rod $d$ connected with the bar $i$ and having the shoulder $d^3$ and cam $d^4$, shaft $f^3$, eccentric stop $e^4$ on the shaft engaged by the rod $d$, bed-engaging plunger $f^6$ operated by movement of the shaft, and springs tending to maintain the rod $d$ and shaft $f^3$ in their normal positions, all constructed and arranged to operate substantially as and for the purpose set forth.

16. In a machine of the character described, the combination with the key board, bed frame for the material to be impressed and its feed mechanism, and movable spacing cam, of mechanism for moving the said cam, comprising a ratch, mechanism between the key-board and ratch, operating to move the said ratch a distance according to the number of units represented by the key struck, and gear

mechanism engaging the said cam and actuated by movement of said ratch to move the cam a distance governed by the distance of movement of the ratch, substantially as and for the purpose set forth.

530,280. GRAIN-SEPARATOR. PETER R. LANIER, Jackson Hill, N. C. Filed June 15, 1894. Serial No. 514,674. (No model.)



*Claim.*—1. In a grain separator, the combination of the separator casing having an imperforate inclined bottom grain board provided with a bottom discharge opening and a separate grain pocket at the lower rear end of said grain discharge opening, an inclined separating shoe carrying a screen or sieve and supported to reciprocate above the grain board with its lower open end working over said grain pocket, the fan casing having upper and lower side extensions forwardly converged within the separator casing to form a contracted blast opening and the upper of which side extensions forms an inclined feed board, the hopper arranged above said inclined feed board, the rotary fan arranged within the fan casing, a short cant board arranged below said blast opening and disposed over the upper end of said separating shoe, a deflecting board disposed slightly beyond the lower end of the cant board, and a grain dividing board arranged above the cant board above the blast opening and declining to a point above the upper end of said imperforate bottom grain board, substantially as set forth.

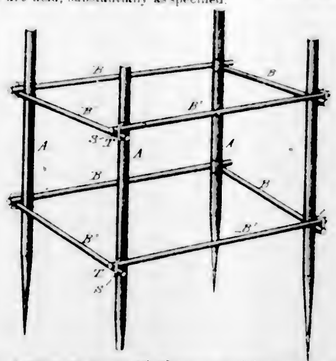
2. In a grain separator, the combination of the separator casing provided with a bottom inclined grain board, a separate grain pocket at the lower end of said board, opposite inclined guide grooves or ways arranged above the high front end of said bottom grain board, and inner vertical side grooves in front of said guide grooves or ways, the separating shoe arranged to reciprocate at an inclination over the inclined grain board, the fan casing having a contracted blast opening disposed at an intermediate point within the casing, a rotary fan, the hopper arranged above the upper side of the blast opening, the cant board arranged below the blast opening, an inclined grain dividing board adjustably mounted in said inclined guide grooves or ways and provided with a beveled inner end disposed above the cant board in front of the blast opening, and a front end board removably mounted in said inner vertical side grooves, substantially as set forth.

3. In a grain separator, the combination of the casing having a bottom grain board, a separate grain pocket at the lower end of said board, and longitudinally disposed inclined guide slots formed in the opposite sides thereof, exterior keeper plates arranged on the outside of the casing and partially covering each end of the guide slots, a reciprocating separating shoe having a removable screen or sieve and adapted to have the opposite sides thereof loosely slide in said opposite guide grooves, the grain feed devices the fan, and suitable operating mechanism connected with said fan and said separating shoe, substantially as set forth.

530,281. TIE-JOINT. WILLIAM LIVINGSTONE, Flushing, N. Y. Filed July 18, 1894. Serial No. 517,861. (No model.)

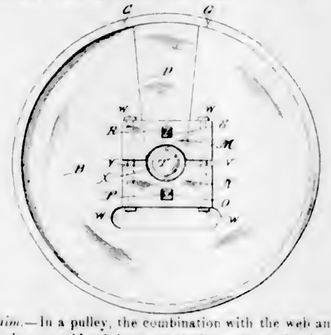
*Claim.*—1. A tie-joint for frames consisting of an upright provided with a staple projecting radially or diagonally therefrom, and horizontal members having their adjoining ends passed through the staples from opposite sides of the upright and crossing each other between the staple and upright and bearing against tangential parts of the uprights and the keeper side of the staple, thereby forming angles between which the staples and uprights are held, substantially as specified.

2. A tie-joint for frames consisting of an upright provided with a staple projecting radially or diagonally therefrom, and horizontal pieces having their adjoining ends, which are provided with recesses, passed through the staples at right angles to each other from opposite sides of the upright, and with the recesses embracing the upright, thereby forming angles between which the staples and uprights are held, substantially as specified.



3. A structure composed of corner uprights provided with radially or diagonally projecting staples and horizontal members having adjoining ends passed through the staples in the uprights from opposite sides of the upright and bearing against tangential points of the uprights and the keeper side of the staples, whereby the staples and uprights of each corner of the structure are held between the horizontal members and the several uprights are bound together by the horizontal members, substantially as specified.

530,282. PULLEY. MAHLON B. LORAH, Reading, Pa. Filed Jan. 22, 1894. Serial No. 497,635. (No model.)

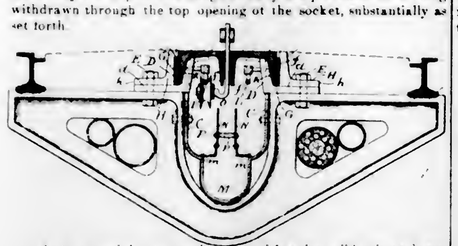


*Claim.*—In a pulley, the combination with the web and the rim secured thereto, said web having a shaft opening and being cut away at opposite sides as at Y Y to form shoulders, of a removable section D having a perforation L and having its lower end curved and provided at opposite sides with shoulders Z' Z', shaft bearings consisting of sections arranged on opposite sides of the web, the lower faces of the portions of the upper bearing and the upper faces of the portions of the lower bearing being provided with curved seats for the shafting, the sections of the lower bearing being provided with aligned openings and a screw rod passing through said openings to secure the bearing to the web and the upper bearing sections being provided with shoulders Z fitting against the shoulders Y Y and against which shoulders Z fit the shoulders Z' on section D, and said sections of the upper bearing being provided with horizontal perforations Q aligning with each other and with the perforation L in section D, a screw-rod E passing through said perforations Q and L and provided with a securing nut, and the sections of the lower and upper bearings being provided with vertical aligned perforations U, and screw-rods passing through said aligned perforations U and provided with securing nuts, all as and for the purpose specified.

530,283. CONDUIT FOR ELECTRIC RAILWAYS. MICHAEL I. MARTIN, Chicago, Ill. Filed Feb. 7, 1894. Serial No. 499,342. (No model.)

*Claim.*—1. In a conduit, the combination with a slot rail having a downturned flange, of a substructure having two upturned flanges forming a socket adapted to receive the flange, of the rail and a key inserted in the socket and engaging the flange, of the rail, said flange, key and socket having complementary engaging surfaces whereby when they are in place the flange and key are prevented from being withdrawn through the top opening of the socket, substantially as set forth.





2. In a conduit, the combination with a slot rail having a downturned flange, of a substructure therefor having two upturned flanges forming a socket adapted to receive the flange, of the rail and provided with a shoulder presented downward, and a key inserted in the socket and engaging said flange and shoulder, substantially as set forth.

3. In a conduit, the combination with a slot rail having a downturned flange provided with a shoulder presented upward, of a substructure therefor having two upturned flanges forming a socket adapted to receive the flange, of the rail and having a shoulder presented downward, and a key inserted between said shoulders, substantially as set forth.

4. In a conduit, the combination of a slot rail having a downturned flange of wedge shape in cross-section, a substructure having two upturned flanges forming a socket therefor, and a key inserted in the socket and engaging the flange, of the rail, said flange key and socket having complementary engaging surfaces whereby the flange and key are prevented from being withdrawn through the top opening in the socket, substantially as set forth.

5. In a conduit, the combination with a yoke, of a pair of angle irons having horizontal flanges secured to the yoke and having upturned flanges leaving between them a socket, the outer one of said upturned flanges having a shoulder presented downward, a slot rail having a downturned flange occupying said socket, and having a shoulder presented upward, and a key inserted between said shoulders, substantially as set forth.

6. In a conduit, the combination with a yoke, of a pair of angle irons having horizontal flanges secured thereto, and having upturned flanges which diverge leaving between them a tapering socket, the outer one of said upturned flanges having a shoulder presented downward, a slot rail having at its outer edge a downturned flange of wedge shape in cross section provided on its outer surface with a shoulder presented upward, and a key inserted between said shoulders, substantially as set forth.

7. As a new article of manufacture, a slot rail having two downturned flanges, and an upturned shoulder formed on one of said flanges, substantially as set forth.

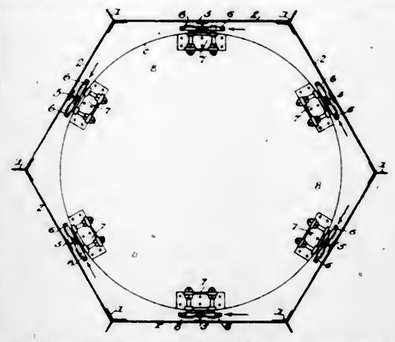
8. The combination, with a conduit having slot rails provided at their inner edges with downturned flanges, and conductors located behind said flanges of plates located within the conduit and extending upward toward said flanges, said plates being located so as to leave between them a space or opening directly beneath the slot, substantially as set forth.

9. The combination, with a conduit having a slot, of a drain, the angle irons *m* secured to the top of the drain, the plates N secured to said angle irons and extending upward therefrom, and means connecting said plates and bracing them against each other, said plates being located so as to leave between them an opening directly beneath the slot, substantially as set forth.

530,284. GAS-HOLDER. HEINRICH MÜLLER, Villencolonie Grüne wald, near Berlin, assignor to August Klonne, Dortmund, Germany. Filed May 12, 1894. Serial No. 511,003. (No model.)

*Claim.*—1. A gas holder, constructed with a frame-work comprising posts, braces connecting the posts, vertical guide rails arranged between the posts and connected to the braces at places in the vertical plane coincident or level with the points of connection of the braces with the posts and also at intermediate places, whereby the rails have a larger number of points of connection with the braces than the braces have with the posts, a vertically movable receiving tank located within the framework, and rollers on the tank engaging the guide rails, substantially as described.

2. A gas holder, constructed with a framework comprising posts, braces connecting the posts, vertical guide rails arranged between the posts and connected to the braces at places in the vertical plane coincident or level with the points of connection of the braces with the posts and also at intermediate places, whereby the rails have a larger number of points of connection with the braces than the braces have with the posts, a vertically movable receiving tank located within the framework, and rollers on the tank engaging the guide rails and rotating in the facial planes of the post braces, substantially as described.



3. A gas holder, constructed with a framework comprising posts, braces connecting the posts and consisting of horizontal and diagonal bars, vertical guide rails arranged between the posts and connected to both the horizontal and diagonal brace bars, a vertically movable receiving tank located within the framework, and rollers on the tank engaging the guide rails, substantially as described.

4. A gas holder, constructed with a framework comprising posts, braces connecting the posts and consisting of horizontal and diagonal bars, vertical guide rails arranged between the posts and connected to both the horizontal and diagonal brace bars, a vertically movable receiving tank located within the framework, and rollers on the tanks engaging the guide rails and rotating in the facial planes of the post braces, substantially as described.

530,285. DEVICE FOR SECURING CUTTERS OR OTHER ARTICLES TO ROTARY SHAFTS. WILLIAM D ORCUTT, Melrose, Mass. Filed July 26, 1894. Serial No. 518,676. (No model.)



*Claim.*—1. In combination with a rotary cutter or other tool, a shaft having its tool carrying end made tubular; a tubular bushing or bearing at one end of said shaft to receive said tool and having a frusto conical surface formed in its inner perimeter and provided with a plurality of longitudinal slits extending inward from its outer end; a mandrel fitted to and movable endwise within the bore of said shaft and bushing and connected to said shaft or bushing so as to be revoluble therewith and having formed upon its outer end a frusto-conical surface to engage the similar surface within said bushing to expand the same; a collar to bear against the outer end face of said tool; and a clamping bolt passing through said collar and screwed into said mandrel.

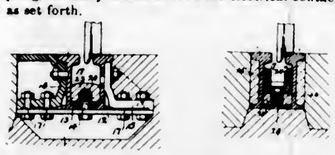
2. The combination of the shaft A having a central bore extending from its tool bearing end toward its opposite end and provided with a female thread therein; the bushing B provided with the shoulder *d* and the threaded extension B' and having a frusto conical surface at the outer end of its inner perimeter, and a plurality of longitudinal slits extending from its outer end inward, and the slots *i* formed in its inner end; the mandrel E provided with the frusto-conical surface *g* and the radially projecting pin; a cutter or other rotary tool fitted to said bushing to bear against the end of said shaft; a collar to bear against the outer face of said tool; and the bolt A all constructed arranged and operating substantially as described.

530,286. ELECTRIC TRAMWAY. HEINRICH SCHWIEGER, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Dec. 22, 1891. Serial No. 415,933. (No model.) Patented in Germany Dec. 30, 1885, No. 37,255; in Austria-Hungary Aug. 7, 1886, No. 31,294/36, and No. 2,759, and No. 63,587, XX, 2,733, and in England Aug. 20, 1886, No. 11,003.

*Claim.*—1. In an electrical railway, the combination with a channel or conduit, and means for conveying current from a source of electricity; of contacts arranged within the conduit and in electrical relation with said means; and a series of oppositely arranged yielding

guards or protectors within the conduit, between which a traveling device from the car is arranged to pass, substantially as described.

2. In an electrical railway, the combination with a traction rail and an adjacent guard rail, conjointly forming a channel between their respective webs; of means for conveying current from a source of electricity; electrical contacts located in the said channel and in electrical relation with the said means; the said contacts consisting of upwardly turned pieces of conducting material; and horizontally disposed springs normally insulated from the electrical contacts, substantially as set forth.



3. The combination with an electrically propelled car, of a channel in the roadway, provided at suitable intervals with electrical contacts in electrical relation with a source of electricity; an elongated device carried by the car, extending below the slot of the channel, for making contact with the said contacts in the channel; a carrying frame suspended on the journal boxes of the car provided with longitudinal extension flexibly jointed thereto the same being located above the slot in the roadway; and a laterally movable series of suspension rods depending through the slot, forming a mechanical and electrical connection between the said frame and contact making device, substantially as described.

4. In an electrical railway, the combination with a compound rail composed of a traction rail and an adjacent guard rail conjointly forming a channel between their respective webs; of insulated contacts arranged within said channel and in electrical relation with a source of electricity; and means carried by the car for making contact within the conduit; said means consisting of stationary plates depending from the car, laterally movable frames pivotally secured to said plates, arms depending from said frames, and yielding contact means secured to said arms, substantially as described.

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**530,287. STOVE-DOOR KNOB. WILLIAM W. SHOE, Wallingford, Pa. Filed Feb. 17, 1894. Serial No. 500,472. (No model.)**



*Claim.*—1. A knob for stove doors composed of the metal strips A, A', having their free ends joined together and the middle portions of said strips provided with the tubular extensions $a$, $a'$, that fit each other and form the base of the knob, substantially as shown and described.

2. In a knob for stove doors, the metal strip A, having the tubular extension $a$, in combination with the metal strip A', having the tubular extension $a'$, provided with the projecting lugs $a^3$, the said extensions fitting each other, and the strips being bent to the desired shape and the free ends joined together, as shown.

3. A knob for stove doors composed of the flat metal strips A, A', bent to shape and their free ends secured together, one of said strips having, midway between the ends thereof, the tubular extension $a$, integral therewith and the other strip having therein an opening that receives the tubular extension $a$, substantially as shown and described.

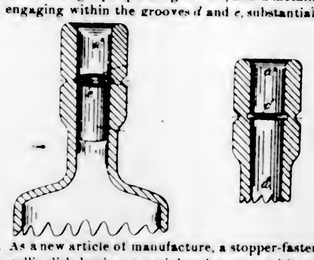
4. A knob for stove doors composed of metal strips having their free ends joined together, and the middle portions of said strips provided with tubular extensions that fit one into the other, one of the said extensions adapted to rest against the outer surface of the door, as set forth.

5. A knob for stove doors composed of the flat metal strips A, A' bent to shape and the free ends thereof secured together; one of said strips having midway between the ends thereof the tubular extensions $a$, and the other strip having midway between the ends thereof a bolt hole that registers with the opening through the extension $a$, so that the bolt securing the knob to the stove door will pass through the said strips, substantially as set forth.

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**530,288. BOTTLE. EUGENE C. SHUMARD, Milford, Ohio, assignor of one-half to Oliver P. Williams, same place. Filed July 27, 1894. Serial No. 518,762. (No model.)**

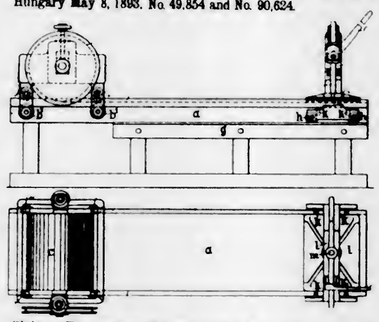
*Claim.*—1. In a bottle, the internal groove $d$ and external groove $b$ formed on the same plane in the neck of said bottle, in combination with a disk having a peripheral groove $c$, and a metallic cut-ring, the latter engaging within the grooves $d$ and $c$, substantially as set forth.



2. As a new article of manufacture, a stopper-fastener consisting of a metallic disk having a peripheral groove with a metallic cut-ring fitted in said groove, as set forth.

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**530,289. PROCESS OF PRODUCING FLAT OBJECTS OF GLASS. PAUL SIEVERT, Döhlen, near Dresden, Germany. Filed Nov. 1, 1892. Serial No. 450,674. (No model.) Patented in Germany May 3, 1892, No. 67,292; in France Sept. 29, 1892, No. 224,636; in Belgium Oct. 5 1892, No. 101,611; in England Oct. 6, 1892, No. 17,848, and in Austria-Hungary May 8, 1893, No. 49,854 and No. 90,624.**



*Claim.*—The process for producing flat articles or objects of glass, consisting in first pouring molten glass on a table, next rolling or pressing the so poured glass down to produce a sheet of proper thickness, next stamping into the said sheet while yet plastic the contours of the articles or objects to be produced, afterward annealing the said sheet and finally grinding the said sheet on one side to separate or sever the flat articles or objects out of the said sheet of glass, substantially as herein set forth.

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**530,290. NUT-LOCK. NELSON D. STANLEY, Essex Junction, Vt. Filed Oct. 3, 1894. Serial No. 525,212. (No model.)**



*Claim.*—1. A nut-lock comprising a rod to extend over a plurality of nuts and provided with supports adapted to be secured by said nuts, and a plurality of outwardly and upwardly swinging nut-locking arms or yokes, mounted on the said rod and movable longitudinally thereon, substantially as set forth.

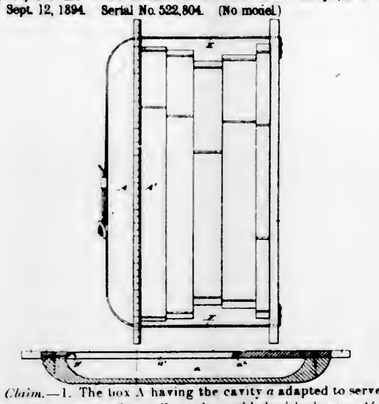
2. A nut-lock comprising a rod to extend over the nuts, and provided with supports adapted to be secured in place by the nuts; the rod being free to slide through one of the supports, and a plurality of nut engaging arms or yokes mounted to slide along the rod and swing upwardly and outwardly thereon, substantially as set forth.

3. A nut-lock comprising a rod to extend over a plurality of nuts, and having supports adapted to be secured in place by certain of the nuts, and a plurality of nut-locking arms, movable along the rod and adapted to engage the nuts and be in turn held from longitudinal movement on the rod thereby, substantially as set forth.

4. A nut-lock comprising the rod E having an integral arm at one end and provided with a bolt aperture or eye, a supporting arm E' having an eye $e^2$ at its upper end through which the rod freely passes, and provided with a bolt aperture $e^3$ at the lower end, and a series of locking arms or yokes F having eyes $f$ through which the said rod freely passes to permit the arms or yokes to slide and turn thereon, substantially as set forth.



**530,291. BOOK-CARRIER. HUGO TOLLNER, Brooklyn, N. Y. Filed Sept. 12, 1894. Serial No. 522,804. (No model.)**

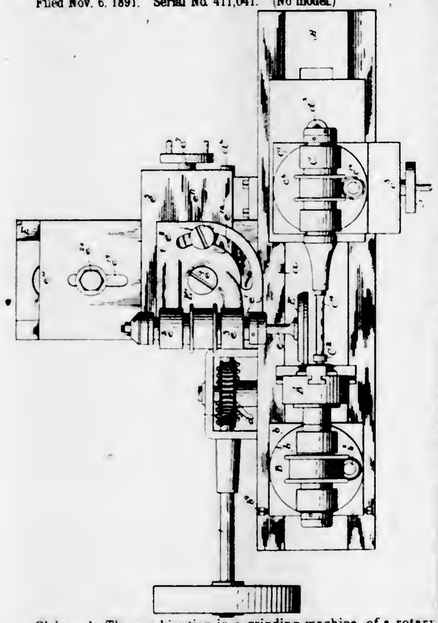


*Claim.*—1. The box A having the cavity $a$ adapted to serve as a receptacle for pens and pencils, and provided with the top A' overhanging as shown, and having the central aperture $a'$ nearly corresponding with the cavity $a$, the inclined grooves $m$, $m$, at the sides of the aperture $a'$, and the notches $a^3$ at the ends, in combination with the straps E, E, and buckle G, and with the thin metallic cover D, having a wing D' along each edge set at an inclination corresponding to said grooves, all arranged for joint operation substantially as herein specified.

2. The box A having the cavity $a$ adapted to serve as a receptacle, and provided with the top A' having the aperture $a'$ nearly corresponding to the cavity $a$ and having also the inclined grooves $m$, $m$, along the sides of such aperture, and the spring B having a rounded portion B' in combination with the thin sliding cover D having wings D' corresponding to the grooves $m$, $m$, and the turned down portion $D^2$, the latter arranged to engage said rounded portion of the spring and cause the cover to be retained thereby, all substantially as herein specified.

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**530,292. GRINDING-MACHINE. CHARLES H. TRASK, Lynn, Mass. Filed Nov. 6, 1891. Serial No. 411,041. (No model.)**



*Claim.*—1. The combination in a grinding machine, of a rotary chuck adapted to hold blanks and other articles to be ground, a grinding wheel having its axis in line with the axis of the chuck and movable in the line of its axis, and a second grinder movable in a direction at an angle to the axis of the chuck the supports for each wheel and the chuck being adjustable on an axis at a right angle to its line of movement, and means for reciprocating said grinders in their respective directions, substantially as described.

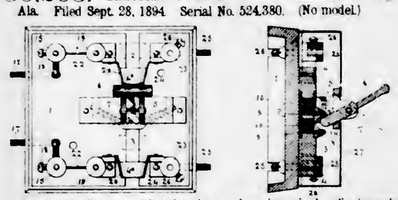
2. The combination in a grinding machine of the rotary chuck, the reciprocating and rotary grinding wheel, and a support or head for the chuck, said head being pivotally connected with a plate and adapted to be turned upon said plate to move the chuck out of operative relation to the grinding wheel, and independent means for adjusting said plate on its axis, whereby said plate and the head carried by it may be adjusted to suit different requirements, and the head may be turned independently of the plate, substantially as described.

3. The combination in a grinding machine of a rotary chuck, its supporting head mounted upon the bed of the machine, the carriage $c$, the head carried by and adjustable thereon, its shaft and the grinding wheel with the adjustable crank pin D, pitman $d$ adjustably connected to the carriage and connecting rod $d'$, as and for the purposes described.

4. The combination in a grinding machine of a rotary chuck, a rotary, reciprocating interior grinding wheel and means for varying the extent of its reciprocation and the place of its reciprocating, with a rotary, reciprocating face grinding wheel and means for varying the extent of its reciprocation and place of its reciprocation, as and for the purposes described.

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**530,293. ELECTRIC SWITCH. IKE W. ULLMAN, Birmingham, Ala. Filed Sept. 28, 1894. Serial No. 524,380. (No model.)**



*Claim.*—1. The combination in an electric switch, of a base having electric contact brushes attached to binding posts thereon, electric conducting wires attached to the posts, a metallic frame carrying a lever pivoted therein the frame attached to the base, an electrically insulated bolt operating in a groove formed in the base the bolt provided with tapering heads having electric contact tips, a metallic yoke embracing the bolt the yoke attached to the bolt by rivets operating in slots formed therein, two arms pivoted to the yoke the ends of the arms extending through apertures formed in the lever frame, coiled springs operating on the arms between the frame and the yoke, a concave recess formed on the upper side of the yoke, the lower end of the lever engaging the concave recess to operate the bolt to engage or disengage the bolt to the contacts on the binding posts, substantially as and for the purpose described.

2. The combination in an electric switch, of a base having electric contact brushes attached to binding posts thereon, a bolt electrically insulated adapted to slide in a groove formed in the base the bolt having heads provided with electric contact tips, a metallic yoke embracing the body of the bolt and attached thereto by rivets operating in slots formed therein, two arms carrying coiled springs pivoted in the yoke, a frame attached to the base the frame carrying a lever pivoted therein, the lever operating the bolt to engage or disengage the stationary contacts, substantially as and for the purpose set forth.

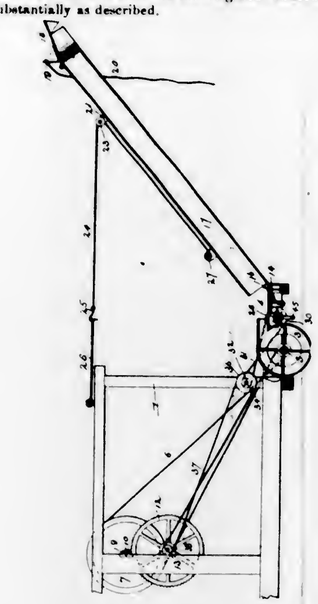
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**530,294. STRAW-STACKER. JOSIAH M. WELBOURN, Surprise, Ohio. Filed Feb. 24, 1894. Serial No. 501,405. (No model.)**

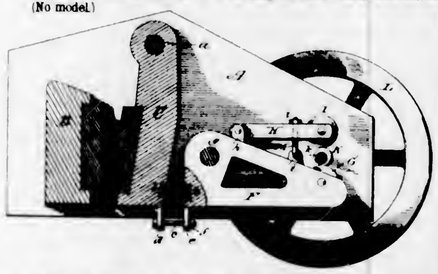
*Claim.*—1. In a straw stacker the combination with the blower, the rearwardly extending plate, the turn table pivoted to said plate and the conveyer tube pivotally connected with said turn table, of the laterally movable and rotatable shaft, the ropes wound thereon in opposite directions and secured to said turn table, the pins secured to said shaft, the oppositely rotating pulleys having pins on their inner faces; substantially as described.

2. In a straw stacker, the combination with the blower, the rearwardly extending plate, the turn table pivoted to said plate, the conveyer tube pivotally connected with the said turn table, of the outwardly extending rod pivoted to said turn table, the pins secured thereto, the crank with which said pins engage, the horizontal shaft, the laterally movable and rotatable shaft, the ropes wound thereon in opposite directions and secured to said turn table, the pins on the ends of said shaft, the oppositely rotating pulleys having pins on their inner faces engaging therewith, the groove collar secured to said shaft, the yoke engaging with said groove, the bent rod to which

said yoke is secured having shoulders near its outer end, the crank secured to said horizontal shaft and the weighted rod secured to said shaft; substantially as described.



530,295. MACHINE FOR CRUSHING STONE, ORE, &c. OTIS WILLIAMS, St. Johnsville, N. Y. Filed Aug. 20, 1894. Serial No. 520,802. (No model.)



*Claim.*—A mechanism for driving the movable jaw of a machine for crushing stone, ore and analogous material, consisting of a pivoted lever, an anti-friction roller connected therewith, an arm pivotally connected to the lever, and anti friction roller connected therewith, an arm pivotally connected to the lever, an anti-friction roller upon the end of the arm, means for adjusting the arm, and a rotary shaft provided with an eccentric which is located between the anti-friction rollers, said eccentric being also located above the anti-friction roller so as to depress the lever, substantially as and for the purpose set forth.

530,296. LOADING APPARATUS. HENRY AIKEN, Pittsburg, Pa. Filed Aug. 15, 1892. Serial No. 443,111. (No model.)

*Claim.*—1. A loading apparatus comprising a car, parallel frames supported pivotally on bearings on the car and adjustable thereon to vary their inclination, sprocket wheels at the ends of the frames, sprocket chains connecting them, and an adjustable end-frame or frames mounted pivotally on the axis of said sprocket wheels, and having sprocket-chains driven thereby; substantially as described.

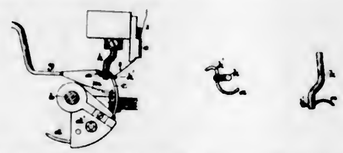
2. In a loading apparatus, the combination of sprocket-chain frames, a hollow shaft connecting them and rotary to vary their inclination, and a power shaft extending through said hollow shaft substantially as and for the purposes described.

3. In a loading apparatus, the combination of sprocket-chain frames, a hollow shaft connecting them and rotary to vary their inclination, and a power shaft extending through said hollow shaft, a car supporting said parts, a second motor car, and an intermediate power and draft shaft; substantially as and for the purposes described.

4. The combination of a car, sprocket chains mounted thereon, a second motor car, and an intermediate power and draft shaft: substantially as and for the purposes described.



530,297. SEWING-MACHINE. JOSEPH R. BERTRAND, Boston, assignor of one-half to Mellen Bray, Newton, Mass. Filed May 29, 1894. Serial No. 512,842. (No model.)



*Claim.*—1. In a sewing machine, the combination with a hooked or barbed needle, and a loop measuring finger, of an oscillating thread carrier shank having an open hook to engage the thread and carry it into engagement with the barb of the needle; and an auxiliary arm set in said shank, opposite said hook, and having its upper side curved or cam shaped with its outer or free end lower than its center portion, whereby said auxiliary arm is adapted to pass under and raise the upper strand of the loop, drawn out by the loop measuring finger, when said carrier is moved about its axis to throw the thread into the barb of the needle.

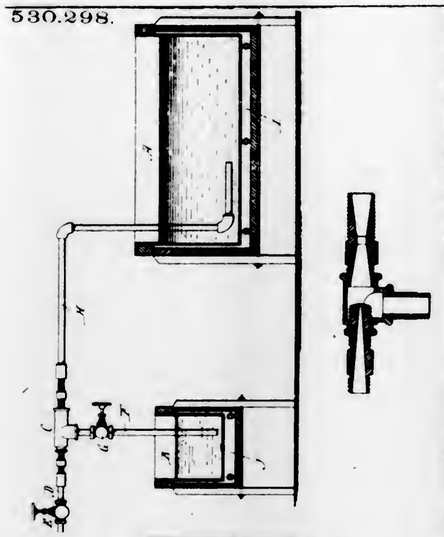
2. In a sewing machine, the combination with a barbed needle and a loop measuring finger, of a vertically arranged and intermittently oscillating thread carrier for carrying the thread into engagement with the barb of the needle; and an arm carried by, and projecting laterally from, said carrier, and having its upper side curved or cam shaped with its outer or free end lower than its center portion, whereby said arm is adapted to operate substantially as and for the purpose described.

530,298. METHOD OF MAKING EMULSIONS IN CHEESE MANUFACTURE. DAVID H. BURRELL, Little Falls, N. Y. Filed Mar. 5, 1894. Serial No. 502,380. (No specimens.)

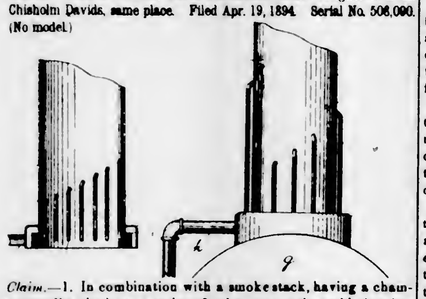
*Claim.*—The herein described method of producing an emulsion from skim milk or other lactic fluid and a suitable oleaginous material which consists in atomizing the oleaginous material by a jet of fluid under pressure and injecting such atomized material into the body of lactic fluid directly or without first converting it into an emulsion with lactic fluid, substantially as set forth.



530,298.



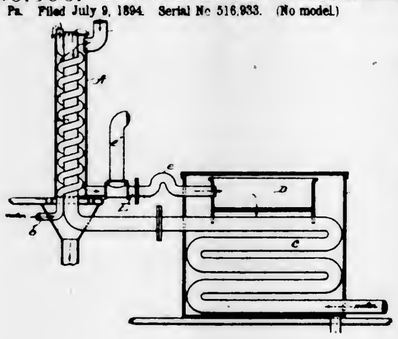
530,299. MEANS FOR PROMOTING COMBUSTION IN FURNACES. JOHN B. DAVIDS, North Dartmouth, Mass., assignor to E. M. Chisholm Davids, same place. Filed Apr. 19, 1894. Serial No. 508,090. (No model.)



*Claim.*—1. In combination with a smoke stack, having a chamber surrounding its base, a series of tubes connecting said chamber with the interior of said stack and extending upward, their tops terminating in a helical line, and inclining slightly toward the center of the stack and in the direction of their increasing length; and means for forcing air through said tubes, all as shown and for the purpose described.

2. In combination with a smoke stack, a series of tubes extending upward from a point near the base of said stack, their tops terminating in a helical line, and opening into said stack; and means for forcing air through said tubes, all as shown and for the purpose described.

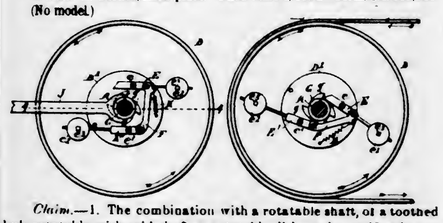
530,300. VAPOR-CONDENSER. ALLEN H. DUNKLE, East Berkley, Pa. Filed July 9, 1894. Serial No. 516,933. (No model.)



*Claim.*—1. The condensing chamber A provided with inlet and outlet openings, in combination with a central water pipe c and a coiled water pipe B the ends of said water pipes projecting through the closed top of the condensing chamber and discharging thereon so as to overflow the exterior of the chamber, substantially as and for the purpose set forth.

2. A condensing apparatus comprising a condensing chamber A with top inlet thereto, and a horizontal outlet pipe E from the lower end thereof, said pipe being provided with an upward bend e, a vent pipe d and a perforated receptacle D, in combination with a box C and cooling pipes in said box and in said condensing chamber all arranged and adapted to operate substantially as set forth.

530,301. AUTOMATIC PULLEY-CLUTCH AND SHAFT-COUPLING. LUCIUS W. ELLIOTT, Northville, Mich., assignor of one-half to William H. Yerkes, same place. Filed June 4, 1894. Serial No. 513,344. (No model.)



*Claim.*—1. The combination with a rotatable shaft, of a toothed hub rotatable with said shaft, a rotatable disk, and centrifugal arms pivotally connected with said disk, said arms engageable with the toothed hub when the disk is rotated, thereby rotating the shaft, substantially as set forth.

2. The combination with a rotatable shaft, of a toothed hub rotatable with said shaft, a disk rotatable independently of said hub, and centrifugal arms pivotally connected with said disk, said arms engageable with said hub when the disk is rotated thereby to effect the simultaneous rotation of the disk and a hub, substantially as set forth.

3. The combination with a rotatable shaft, of a toothed hub rotatable with said shaft and movable longitudinally thereupon, a disk rotatable independently of said hub, and centrifugal arms pivotally connected with said disk, said arms engageable with said hub when the disk is rotated thereby to effect the simultaneous rotation of the disk and hub, substantially as set forth.

4. The combination with a rotatable shaft, of a toothed hub rotatable with said shaft, a disk rotatable independently of said hub, and centrifugal arms pivotally connected with said disk, said arms engageable with said hub when the disk is rotated, thereby to effect the simultaneous rotation of the disk and hub, said arms connected the one with the other, substantially as set forth.

5. The combination with a rotatable shaft, of a toothed hub rotatable with the shaft, a disk rotatable independently of said hub, and centrifugal arms pivotally connected with said disk, said arms engageable with said hub when the disk is rotated, thereby to effect the simultaneous rotation of the disk and hub, said arms connected the one with the other, and springs to hold said arms out of engagement with the hub when the disk is inoperative, substantially as set forth.

6. The combination with the rotatable driving shaft, of a driving pulley C, a driving pulley D loosely mounted on said shaft, a toothed hub G rotatable with the shaft, and centrifugal arms E, E' connected with the pulley D to engage the toothed hub when the pulley D is rotated, substantially as set forth.

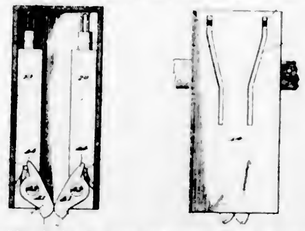
7. In combination, a driving shaft, two pulleys mounted thereupon to rotate said shaft in the same direction the one independently of the other, and centrifugally operated mechanism whereby either of said pulleys may be caused to rotate said shaft independently of the other and without stopping the rotation of the shaft to throw either pulley into operation, substantially as set forth.

8. The combination with a rotatable shaft, of a toothed hub rotatable with the shaft and movable longitudinally thereupon, independently rotatable centrifugal arms engageable with said hub to effect the simultaneous rotation of the hub therewith, and means to shift the hub out of engagement with said arms, substantially as set forth.

530,302. SWITCH-OPERATING DEVICE FOR TRAM-CARS. Augustin C. L. Engstfeld, Cleveland, Ohio, assignor of one-half to Lawrence Lamb, Memphis, Tenn. Filed Jan. 22, 1894. Serial No. 497,679. (No model.)

*Claim.*—1. A switching device for tram cars comprising a vertically movable casing, a rotatable switch-shifting blade supported in

said casing, a dog or guide pivoted to said casing and adapted to engage the lead groove of the switch frog when the casing is lowered so as to guide the blade into engagement with the switch tongue, and means for rotating the switching blade, substantially as set forth.



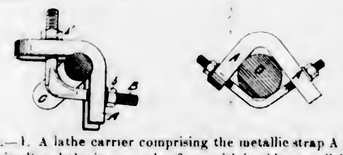
2. A switching device for tram cars, comprising a vertically movable casing mounted on the car and formed with a slanting or inclined slot, a vertically movable rotatable shifting bar working in said casing and provided with a lug which projects through and works in said slanting slot, means for moving said casing and bar vertically, a dog or guide pivotally supported upon the casing and adapted to engage the lead groove of a switch frog for guiding the bar into engagement with the switch tongue, and an arm projecting from the dog or guide which is adapted to be engaged by the lug of the rotatable shifting bar so as to hold the dog into engagement with the lead groove until the shifting bar is forced down into engagement with the switch tongue, substantially as set forth

3. A switching device for tram cars, comprising a suitable boxing mounted upon the car and formed with an inclined slot in its front wall, a vertically movable rotatable switch-shifting bar mounted in said casing, and an operating lever projecting through and working in the inclined slot of the front wall of the boxing and supporting and engaging the shifting bar, substantially as set forth.

4. In combination with a switch-shifting device, a pivoted lever engaging said device, a foot lever 33 pivoted to the car, and formed with a right-angled loop portion 38, and a chain connecting the two levers, substantially as set forth.

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530,303. LATHE-CARRIER. BERNARD C. ESMARCH, Selly Oak, England. Filed May 8, 1894. Serial No. 510,478. (No model.) Patented in England May 9, 1892, No. 8,744, and in Germany Feb. 11, 1893, No. 70,501.



*Claim.*—1. A lathe carrier comprising the metallic strap A bent back upon itself and also into angular form with its sides parallel and the angular bolt passing between the angular sides of the part A with nuts for securing the same in place.

2. A lathe carrier comprising the metallic strap bent back upon itself and also into angular form with its sides parallel and a lateral extension from one side of the strap, the angular bolt and the nuts for holding the same in position, substantially as described.

3. In a lathe carrier the combination of an angular frame, with an angular clamping bolt or stud, provided with nuts at each end having a concave lower surface, seating upon the convex upper surface of a washer lying or resting flat or evenly upon the carrier frame, for the purpose of securely clamping the carrier to tapering or other articles of work, substantially as described.

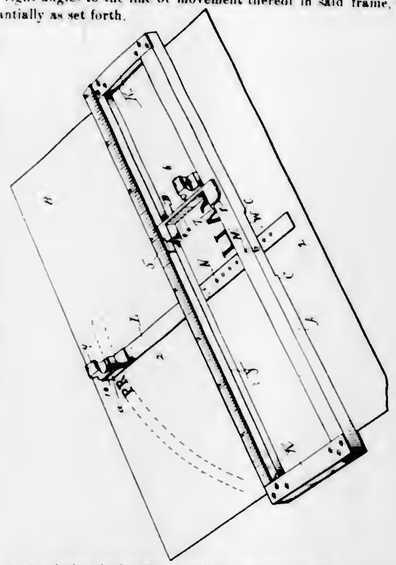
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530,304. HAND-PRINTING DEVICE. CHARLES M. FOWLER and WASHINGTON WHITNEY, Springfield, Mass. Filed July 19, 1894. Serial No. 517,963. (No model.)

*Claim.*—1. A printing device for use with hand printing types, consisting essentially of a rectangular frame, one of the side bars thereof being provided with an index, and a swinging type holder and spacer pivoted to the opposite bar and extending across the indexed bar, substantially as described.

2. A printing device for use with hand-printing type, consisting of a rectangular frame having side-bars, one of which normally rests upon the paper printed upon, while the opposite side-bar is elevated normally above the surface of said paper, combined with a type-guide and spacer having its sides at a right angle to the side bars of said frame extending between said side-bars and having a sliding movement therein whereby the types held thereagainst are spaced, the edge of said type-guide adjacent to the paper printed upon being normally above the surface thereof, substantially as set forth.

3. A printing device for use with hand-printing type, consisting of a rectangular frame, a graduated rule on the upper surface of one of the side-bars of said frame, having one of its bars normally above the plane of the paper on which it rests combined with a type-guide and spacer extending between the said side-bars, and having its sides at a right angle thereto having a sliding movement therein, whereby the types are spaced, and having spaces for supporting type which are at right angles to the line of movement thereof in said frame, substantially as set forth.



4. A printing device for use with hand-printing type, consisting of a rectangular frame having side-bars, one of which normally rests upon the paper printed upon, while the opposite side-bar is elevated normally above the surface of said paper and a guide-strip at the end of said frame to bear against the edge of said paper, combined with a type guide and spacer extending between said side-bars and having a sliding movement therein whereby the types held thereagainst are spaced, the edge of said type-guide adjacent to the paper printed upon being normally above the surface thereof, substantially as set forth

5. A printing device for use with hand printing type for printing parallel straight lines, consisting of a rectangular frame having side-bars, A and Y, the bar, A, normally resting upon the paper printed upon, while the opposite side bar, Y, is elevated normally above the surface of said paper, combined with a type-guide and spacer extending between said side-bars having a sliding movement therein whereby the type are guided in straight lines and spaced, and a swinging type-holder and spacer, L, for printing in curved lines, pivotally engaging with said frame and having on its free end a type-holding socket, 10, substantially as set forth.

6. A printing device for use with hand-printing type, consisting of a rectangular frame, a type-guide and spacer extending between the side-bars of said frame, having a sliding movement therein, whereby the type are spaced, and having faces for supporting type which are at right angles to the line of movement thereof in said frame, the end, 7, of said type-guide being beveled and extended beyond that of the opposite end of the guide, and having the letter-spacing lines, *x*, thereon, combined and operating substantially as set forth.

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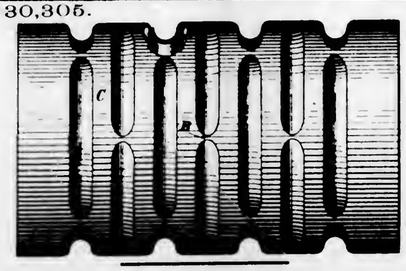
530,305. TUBE FOR USE IN EXPANSION-JOINTS. BICKNELL HALL, Taunton, Mass., assignor of one-third to Edward P. Coleman, same place. Filed Aug. 24, 1894. Serial No. 521,255. (No model.)

*Claim.*—1. The tube above described provided with a series of indentations lying in a line or lines across the axis of the tube, each indentation being less in length than the circumference of the tube, as set forth.

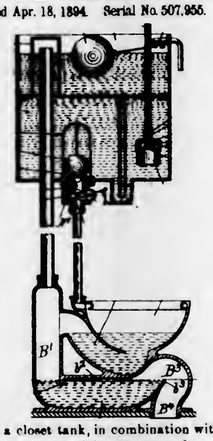
2. The tube above described provided with a series of indentations arranged in a line or in lines across the axis of the tube, each indentation being separated from the indentation at each end of it and breaking joints with the indentations at each side of it, as set forth.



530,305.



530,306. WATER-CLOSET AND TANK. PATRICK HARVEY, Chicago, Ill. Filed Apr. 18, 1894. Serial No. 507,955. (No model.)



*Claim.*—1. In a closet tank, in combination with an open water chamber, a closed chamber receiving the water from the first through the trap passage, and having an annex extending higher than the water level of the open chamber; the water closet bowl having two traps constituting a siphonic discharge passage; a pipe leading from the inter-trap space into the annex of the closed chamber of the tank and opening therein above the water level; an air vent pipe leading from the closed tank at a point therein above the discharge port, and a pocket into which the lower end of said air vent pipe dips to constitute a water seal therefor, the water surface of the pocket outside the pipe being several times the cross-areas of the pipe: substantially as and for the purpose set forth.

2. In combination with the open chamber and the closed chamber receiving water therefrom and having an annex extending above the water level of the open chamber, and the air exhaust pipe from the closet leading into said annex above said water level; the vent pipe H terminating in the closed chamber above the discharge port thereof, and the pocket J' in which said pipe opens connected to said pipe at the lower end and having a short range of vertical movement with respect thereto; and the float J connected to such pocket tending to uphold it against the end of the pipe to close the same when the float is submerged, and adapted to permit it to drop away from the pipe and constitute a trap thereabout when the water ceases to uphold the float, substantially as set forth.

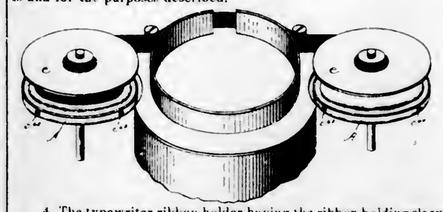
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530,307. RIBBON-CASE FOR TYPE-WRITING MACHINES. ROBERT G. HOPKINS, Somerville, assignor to the Carter, Dinsmore & Company, Boston, Mass, and New York, N. Y. Filed July 30, 1892. Serial No. 441,711. (No model.)

*Claim.*—1. A typewriter ribbon case or holder comprising the section A having an upward extending sleeve or bearing, and the cover A' having the top *c*, and cylindrical section $c^3$, the said section A having a groove or recess near its edge to receive the edge of the said cylindrical section $c^3$ as and for the purposes described.

2. The combination in a typewriter ribbon case or holder, of the section A, the bearing *a*, the slit sleeve $a^3$ and the downward cover holder section $a^2$ with the cover A', having the top *c* and flange $c^2$ adapted to be united with the flange $a^2$ of the section A, as and for the purposes described.

3. A typewriter ribbon holder comprising the section A having the bearing or sleeve *a* and the ribbon holding sleeve $a^3$, and flange $a^2$ below the bottom *a'* with the cover A' having the section $c^3$ to fit the sleeve $a^3$, and the flange $c^2$ adapted to be united to the flange $a^2$, as and for the purposes described.



4. The typewriter ribbon holder having the ribbon holding sleeve or hub provided with a shoulder $a^6$ and a recess or opening, combined with a crank to fit said sleeve and rest against the shoulder thereof and provided with a spur adapted to engage said recess, substantially as described.

5. The typewriter ribbon holder having the base or bottom *a'* and a ribbon holding hub or sleeve rising therefrom and having a vertical slit, combined with a crank consisting of an annular ring adapted to encircle the hub and having a projection to enter said slit therein, and the handle $b^2$, substantially as described.

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530,308. DEVICE FOR STEAMING COFFEE, TEA, &c. JOHN F. HORNBERGER, Lawrenceburg, Ind. Filed Apr. 14, 1892. Serial No. 429,167. (No model.)



*Claim.*—1. A device consisting of the elastic legs B, and ring A, connected thereto and straining bag D having ring C, at its upper end or mouth, the ring being formed of a strip or piece bent into form and having each of its meeting edges provided with an orifice through which one end of the bail is passed and bent, the other end of the bail E being connected to the other side of the ring, substantially as and for the purposes specified.

2. A device consisting of the elastic legs, B, and ring A, connected to the legs, the ends B' of the legs B projecting upwardly above the ring A, and the adjustable, removable ring C carrying bag D, and adapted to rest on ring A between the said guards B', substantially as and for the purposes specified.

3. A device consisting of the elastic legs B', and ring A, connected to the legs, the ends B' of the legs B projecting upwardly above the ring A, and the ring C carrying bag D, and adapted to rest on ring A between the said guards B', and bail E, substantially as and for the purposes specified.

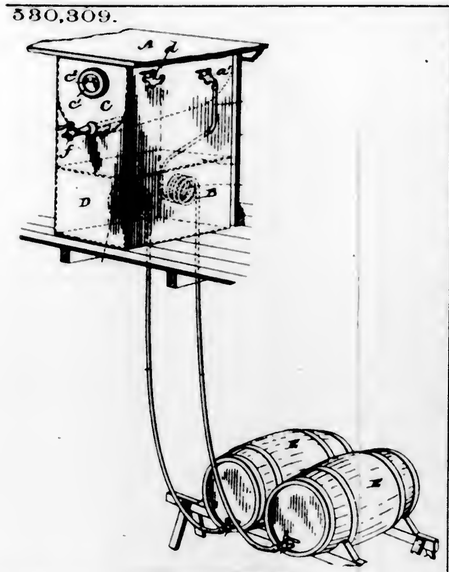
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530,309. ALE OR BEER CONDENSER AND COOLER. JOHN T. JONES, Scranton, Pa. Filed June 23, 1894. Serial No. 515,506. (No model.)

*Claim.*—1. In an ale or beer condenser, and cooler, the combination of a condensing and cooling tank, an ice chamber provided with a partition which forms a cold air space between the ice and the under side of the condensing chamber, a two-way faucet having one of its inlet passages connected with the condenser, and a conducting pipe having a coil located in the ice chamber below the partition and connecting the other passage of the faucet directly with the source of supply; the construction and operation being such that the ice is out of contact with the condenser and the beer in the same prevented from being unduly chilled substantially as described

2 In an ale or beer condenser and cooler, the combination of a sealed air-tight condensing and cooling tank mounted in the top of a casing and being connected with the source of supply and having an opening provided with a transparent cover, an air cock in said condenser, a partition dividing the casing into an air and ice space, a two way faucet having one of its inlet passages connected with the condenser, and a pipe having a coil, in the ice chamber below the partition and connecting the other passage of the faucet with the source of supply; the construction and operation being such that the ice is out of contact with the condenser and the beer in the condenser can be freed from gases and kept from being unduly chilled, substantially as described.

530,309.



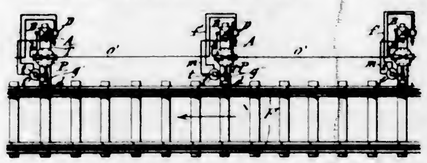
530,310. PRINTER'S MAKE-READY. CHARLES SEARS, Cleveland, Ohio. Filed Mar. 30, 1894. Serial No 505,723. (No model.)



*Claim.*—1. The herein described process of preparing a typographic make-ready which consists in first securing to the impression receiving part of a printing press (platen or cylinder) a base of plastic material; then securing tightly over this base a plurality of sheets of paper, thereby forming a tympan; then with the type form locked in the press, making an impression from the form in said tympan, and maintaining or repeating said impression until the plastic base is set; and finally removing one or more of the sheets of paper, substantially as and for the purpose specified.

2. A typographical make-ready, consisting of a hard base and one or more coverings of paper,—both base and paper having depressions formed therein which correspond in relative depth and position with the relative height and position of the character on the type form, substantially as and for the purpose specified.

530,311. RAILWAY BLOCK-SIGNAL. CHARLES H. SHERWOOD, Utica, assignor of one half to Henry C. Lyman, Sherburne, N. Y. Filed Aug. 8, 1894. Serial No. 519,734. (No model.)



*Claim.*—1. An automatic pneumatic railway signal system comprising a series of semaphores dividing the road into blocks, track-instruments operated by the passing trains, air-pumps operated by said instruments and generating pneumatic pressure, relief-valves operated by the track-instruments, cylinders with pistons at the respective semaphores to actuate the same, a pipe extending from the pump at each track-instrument to the semaphore-actuating cylinders at one end of the block and a pipe leading from the relief-valve at said track-instrument to the semaphore actuating cylinder at the opposite end of the block as set forth.

2. In combination with the horizontal shaft —*g*— provided with the crank —*g'*— to be operated by the passing engine or cars, an air-pump and a valve controlling the flow of compressed air, and a crank and lever both attached to the shaft —*g*— and operating respectively the aforesaid pump and valve as set forth.

3. In combination with the shaft —*g*— provided with the crank —*g'*—, the arm —*t*—, and two-armed lever —*p*— attached to said shaft the pump —P— and plate —G'— attached to the lower end of the piston-rod and riding on the lever —*p*—, and the valve —*f*— disposed with its valve-stem opposite the arm —*t*— as set forth and shown.

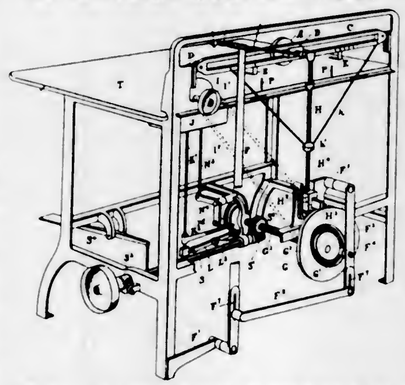
4. In combination with the shaft —*g*— provided with the crank —*g'*—, the arm —*t*— and two-armed lever —*p*— attached to said shaft the pump —P,— the plate —G',— attached to the piston-rod and riding on the lever —*p*—, the springs —S— interposed between said plate and pump cylinder, and the valve —*f*— having its valve-stem opposite the arm —*t*— as set forth.

5. In combination with the shaft —*g*— provided with the crank —*g'*—, the two-armed lever —*p*— attached to said shaft, the pump —P'— and the plate —G'— pivoted to the piston-rod and riding on the aforesaid lever as set forth.

6. In combination with the shaft —*g*— provided with the crank —*g'*—, the two-armed lever —*p*— attached to said shaft, rollers —*p'*— *p'*— pivoted to said lever, the pump —P— over the lever, and the plate —G'— connected to the piston-rod and extending over the aforesaid rollers as set forth.

7. In combination with the shaft —*g*— provided with the crank —*g'*—, the two-armed lever attached to said shaft, cushions —S'— secured to the top of said lever, rollers —*p'*—*p'*— pivoted to the ends of the lever, the pump —P— and the annular plate —*g'*— attached to the piston-rod and riding normally on the cushions and extending over the rollers as set forth and shown.

530,312. PASTING-MACHINE. GEORGE A. T. SPOONER, Boston, Mass. Filed Feb. 5, 1894. Serial No. 499,066. (No model.)



*Claim.*—1. In a pasting machine, the combination of the vertically reciprocated slotted frame C, the block B movable in said slot and carrying paste-wheel A, the L-shaped fingers E adjustably secured to said frame, the cam having cam-groove G', the lever $F^3$ having roll $F^4$ engaging said groove, the lever F, the rod $F^2$ adjustably connected to the levers F $F^3$ by means of slots $F^5$ in said levers, and the rod *f* joining the free end of the lever $F^3$ to the said block B, substantially as and for the purpose specified.

2. The combination with the vertically reciprocated frame, the horizontally movable paste-wheel carried thereby, and the paste supply wheel in the path of said paste-wheel, of the oscillating lever, the rod loosely held at the free end of said lever and joining the same to said paste-wheel, the collar at the outer end of said rod, and the spring between said collar and said lever end, substantially as and for the purpose set forth.

3. In a paste-applying machine, the combination of the vertically movable frame, the horizontally sliding block carried thereby, the paste-wheel A held by said block, and the paste-reservoir and paste-supply wheel I, said wheel I being so located that the said wheel A, when returned to the initial point of its stroke, contacts with the upper periphery of the wheel I, and then, when descending to the wrappers, rolls down and forward upon said wheel I, thus insuring a lengthened contact between the two and a more thorough applying of paste to the wheel A, substantially as set forth.

4. The combination with the vertically movable frame, of the reciprocating block carried thereby, the paste-wheel supported by said block, and the fingers rigidly connected to said frame and projecting into the path of said wheel, said wheel having a limited vertical play relative to its supporting block, substantially as set forth and for the purpose specified.

5. The combination with the vertically movable frame, and the pasting device carried thereby, of the post supporting said frame, the block penetrated freely by said post, the clamp-projection pivoted in said block and adapted to grip said post, and the cam engaging said clamp-projection, as and for the purpose specified.

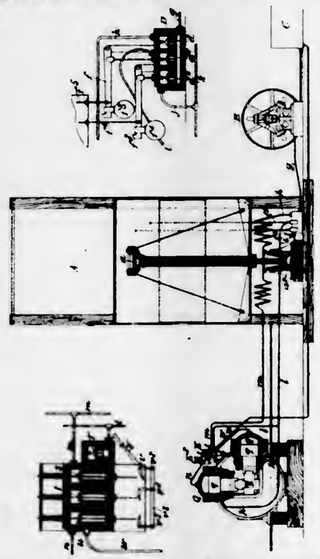
6. The combination with a fixed table top adapted to receive a pile of wrappers, of a vertical shaft, means for rocking the same, a radial arm fixed to the upper end of said shaft and sweeping over said pile of wrappers, a semi-adhesive plug affixed to the outer end of said arm and arranged to rest upon the wrappers and support said arm and shaft, and means for raising said shaft, it being allowed to descend by gravity, substantially as and for the purpose described.

7. The combination of the feed-arm, vertical shaft carrying the same, means for rocking the said shaft, the block loosely penetrated by said shaft, the pawl pivoted in said block and engaging notches in said shaft and the rocking-lever attached to said pawl, as and for the purpose specified.

8. The combination of the vertical shaft, feed arm carried thereby, the lever $K^2$ keyed thereto in order to rock the same independently of simultaneous vertical motion thereof, a clutch mechanism adapted to engage said shaft when raised, the lever, L, operating said clutch mechanism, and cams actuating said levers, substantially as set forth, for the purpose specified.



530,313. HYDRAULIC APPARATUS FOR FORGING METALS, &c. ALFRED H. TYLER and JOHN S. E. DE VESIAN, London, England. Filed May 11, 1894. Serial No. 510,919. (No model.) Patented in England Jan. 27, 1893, No 1,881.



*Claim.*—1. In hydraulic apparatus for forging metals, &c., the combination of an accumulator having differential spaces, a pump and a supply tank, with valved pipe connections between the pump and the low pressure space, between the pump and the high pressure space and from the pump back to the supply tank, and means for controlling the valves in the two last named connections to open them in succession or to close them to allow the other valve to open, all substantially as set forth.

2. In hydraulic apparatus for forging metals, &c., the combination of an accumulator having differential spaces, a pump, a supply tank and a forging press, with valved pipe connections from the pump to the high pressure space and from the high pressure space to the press, from the pump to the low pressure space and from the low pressure space to the press, and from the pump back to the supply tank whereby the one pump may supply either high pressure fluid or low pressure fluid or both to the press, substantially as set forth.

3. In hydraulic apparatus for forging metals, &c., the combination of an accumulator having differential spaces, a pump, a supply tank and a forging press, with pipe connections from the pump to the high pressure space and from the high pressure space to one side of the plunger of the press, from the pump to the low pressure space and from the low pressure space to both sides of the plunger of the press, and from the press back to the source of supply, and a system of valves to control the admission of either high or low pressure liquid to or exhaust from the press, all substantially as set forth.

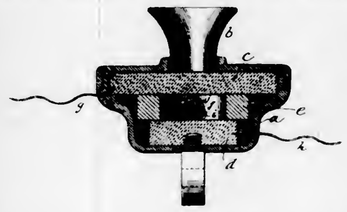
4. A hydraulic apparatus for forging crossing grooves in rails, provided with dies having diagonal projections to form the crossing groove, and recesses to receive the metal displaced by the projections, whereby the rail is practically of the same strength throughout, substantially as described.

530,314. MEANS FOR JOINING EDGES OF SHEET, STRIP, AND PLATE METAL. FRANK A. WILLIAMS, Albrighton, England. Filed Nov. 3, 1892. Serial No. 450,826. (No model.) Patented in England July 28, 1892, No. 13,760; in Germany Nov. 22, 1892, No. 73,201; in Belgium Aug. 17, 1893, No. 106,014; in Cape of Good Hope Aug. 19, 1893, No. 360; in New South Wales Sept. 4, 1893, No. 4,609; in South Australia Sept. 4, 1893, No. 2,556; in Victoria Sept. 6, 1893, No. 10,799; in New Zealand Sept. 11, 1893, No. 6,414, and in India Jan. 31, 1894, No. 7.



*Claim.*—A device for joining together the edges of sheets or plates of metal, consisting of a female member having a channel to receive the edges to be joined and those of a securing key, and the said key having a concave-convex, substantially arched contour when seen in transverse section, whereby, when said key is in place in the channel, it may be expanded laterally by flattening its relatively thin crown.

530,315. TELEPHONE-TRANSMITTER. JOHN T. WILLIAMS, Brooklyn, N. Y. Filed Aug. 8, 1894. Serial No. 519,732. (No model.)



*Claim.*—1. In a telephone transmitter, the combination of two fixed conducting blocks or bodies, both incapable of mechanical vibration from atmospheric sound waves, and a bridging piece between them, mounted upon a movable axis and subjected to a force tending to hold its extremities in contact with the respective blocks or bodies.

2. In a telephone transmitter, the combination of two conducting blocks or bodies, both incapable of mechanical vibration from atmospheric sound waves, and a swinging bridging piece between the two held in constant contact with both by a torsional strain.

3. In a telephone transmitter, two blocks of conducting material constructed and mounted to be incapable of mechanical vibration and separated from each other, in combination with a bridging piece of conducting material suspended upon a flexible axis and constantly under a torsional strain to maintain contact with both blocks, substantially as described.

4. In a telephone transmitter, two blocks of conducting material constructed and mounted to be incapable of mechanical vibration and separated from each other, in combination with a bridging piece of conducting material suspended upon two cords which pass through two perforations in the piece and are twisted together and under longitudinal tension for the purpose set forth.

5. A telephone transmitter consisting of two fixed circuit terminals, in combination with a conducting body forming an electrical bridge between them and mounted upon a movable axis whereby it may automatically adjust its position with relation to the terminals.

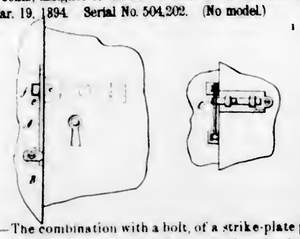
6. A telephone transmitter consisting of two circuit terminals, in combination with a conducting body forming an electrical bridge between them and mounted upon a movable axis whereby it may automatically adjust its position with relation to the terminals.

7. A telephone transmitter consisting of two fixed terminals of a circuit, a bridge piece of conducting material located between the terminals and mounted upon a pivot located between the extremities of the piece, the said piece being subjected to a force which tends to maintain its extremities in contact respectively with the said terminals, substantially as described.

8. In a telephone transmitter, a section of the circuit consisting of two terminals in combination with a flexibly suspended conducting body subjected to a torsional strain to hold it in contact with both of said terminals.

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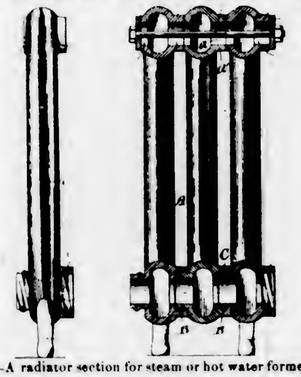
530,316. **STRIKE-PLATE FOR BOLTS.** SAMUEL B. YATES, New Britain, Conn., assignor of one-half to John W. W. Scarlett, same place. Filed Mar. 19, 1894. Serial No. 504,202. (No model.)



*Claim.*—The combination with a bolt, of a strike-plate pivoted at one end, and adapted to swing outward from the door-jamb, said plate longitudinally slotted to permit the head of the bolt to move longitudinally therein, and a catch adapted to engage with the other end of the strike plate to hold the same in the retired position substantially as described

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530,317. **STEAM OR HOT-WATER RADIATOR.** JAMES D. YOUNG, Duluth, Minn. Filed Mar. 12, 1894. Serial No. 503,347. (No model.)



*Claim.*—A radiator section for steam or hot water formed on one of its faces with an enlarged socket having an internal screw thread of such a pitch that by a quarter turn of said section upon another section it will be brought to a vertical position and be secured to the other section and said section also formed on its opposite face with a projecting stud or nipple having an external screw thread of similar pitch, whereby, by a quarter turn of said section upon another section it will be brought into a vertical position, and secured to said other section, and be held in such position without the use of other fastening means, substantially as described.

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530,318. **CAST-OFF FOR SUSPENDER-ENDS.** GEORGE E. ADAMS, New Britain, Conn. Filed May 10, 1893. Serial No. 473,703. (No model.)



*Claim.*—1. In a cast-off, the combination with the body portion having the open sided passage or guide way therethrough, with the sides bent or flared out at the top to form a wide mouth and the stop catches in said passage or guide way, of the co-operating member having the projection adapted to pass through said passage or guide way and co-operate with the stop catches therein to retain the two members in engagement, substantially as described.

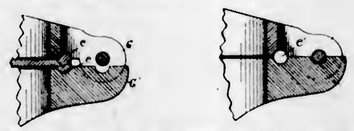
2. In a cast-off, the combination with the body portion having the open sided passage or guide way therethrough, formed by bending the sides of such body portion up over to form face plates, flared or bent out at the top for the entry of the co-operating member and the stop catches interposed in said passage or guide way, of the co-operating member or cast-off having the projection adapted to pass through said passage or guide way and co-operate with the stop catches therein to retain the members in engagement; substantially as described.

3. In a cast-off, the combination with the body having the open sided passage extending way through the same and at the bottom for the exit of said member, formed at the top for the admission of the co-operating member, the stop catches interposed in said passage, the spring and the shoulder for preventing retrograde movement of the co-operating member, of the co-operating member having the projection for co-operating with the stop catches and held in engagement therewith by the spring, substantially as described.

4. In a cast off, the combination with the body having the open sided passage extending way through the same and formed at the top for the admission of the co-operating member, the stop catches interposed in said passage and the spring, of the co-operating member or cast off having the round headed projection on the rear side adapted to enter the passage and co-operate with the stop projections therein to hold the parts in engagement, and whereby a swiveling movement of the parts on one another is permitted, substantially as described.

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530,319. **MOLDER'S APPARATUS.** ARTHUR K. BECKWITH, Dowagiac, Mich., assignor to Fred E. Lee, same place. Filed May 14, 1894. Serial No. 511,188. (No model.)



*Claim.*—1. In a molder's apparatus, the combination of a drag, A' containing depressions, $c'$; cope, A, containing depressions, $c'$, the cope and drag being hinged together at G, G'; a match-plate, B, between said parts having on its edge toward the hinged side of the flask, the half pins, $c$, $c$, parallel to the axis of the hinge of the flask and adapted to fit in half round depressions, $c'$, $c'$, on the cope and drag so that all of the parts act as though hinged together, the cope hinging on the match-plate and when partly raised hinging with the drag, and the match-plate hinging to the drag below so that the match-plate can be separated and handled similarly to the cope and not interfere with the registering of the hinge flask when the mold is made and the cope and drag are close together, all substantially as described for the purpose specified.

2. In a molder's device, apparatus consisting of a drag and the cope hinged together with notches therein to receive projections on the match plate; and a match-plate with projections thereon toward the hinged side of the flask to engage both the cope and the drag to cause them to register as in an ordinary match-plate, the projections on said match-plate engaging notches in the flask so that the match-plate can be lifted off as though it were hinged, for the purpose specified.

3. In a molder's apparatus, the combination with a molder's flask, of a match-plate having projections on its upper and under surface; and corresponding depressions on the drag and cope to engage said projections, the projections, the depressions being curved to hinge together so that the cope can be raised from the match-plate as on a hinge and the match-plate from the drag as on a hinge, substantially as described for the purpose specified.

4. In a molder's apparatus, the combination in a hinged flask, of the cope and drag with independent hinge bearings thereon between them; a match plate between the cope and drag of said flask with projections thereon toward the hinged side of the flask to engage the aforesaid hinge bearings so that in operation in raising the cope, it will hinge first upon the projections of the match-plate and by continuing this motion, carry the hinge of the flask together so that the hinge of the flask shall support the cope and the match plate can be lifted out as on a hinge, the projections of the match-plate engaging the cope and drag so that they will have the same relative position when closed as though they were resting upon the hinge of the flask, for the purpose specified.

5. In a molder's apparatus, the combination in a hinged flask, of a cope and drag, having lugs, $i$, $i$, fitted together so as to rest upon their hinges and on the said lugs, $i$, $i$, which are situated opposite each other on said cope and drag; a match plate between said cope and drag with a hinge connection on its upper and lower surface toward the hinge side of said flask, hinged together as described so that the cope will hinge upon the match plate and be supported upon the hinges and on its lugs, $i$, $i$, on said match plate so that the hinge of said cope when raised from the match plate shall engage the hinge of the drag below and so that the match plate shall rest upon the hinge between the match plate and drag on its under side and upon the lugs, $i$, $i$, upon the drag, substantially as described for the purpose specified.

6. In molders' apparatus, the combination of a drag with projecting lugs on its upper surface; a match plate adapted to rest upon the said lugs; a cope with downwardly projecting lugs which rest upon the match plate, the lugs on said cope being positioned exactly opposite the lugs on said drag so that when the match plate is removed and the cope and drag brought together they shall be supported by the lugs of the cope resting upon the lugs of the drag, as specified.

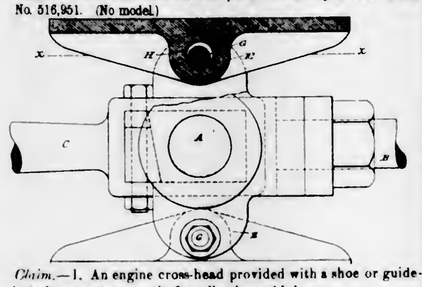
7. In a molder's device, the combination with a hinged flask, of a match plate between the cope and drag; a hinge connection on the upper surface of said match plate with the cope above, said connection situated toward the hinge side of the flask so that the cope can be raised from the match plate and its hinge be allowed to engage with the hinges of the drag and separate from the match plate so that the match plate can be removed without entirely separating the cope and drag, for the purpose specified.

8. In a molder's device, the combination of a drag, A', having the hinge portion, G', a depression, $c'$, toward its hinge side, pins, D', D', on the hinge side of said flask and opposite said hinges, lugs, $i$, opposite the hinge side of the flask; a match-plate, B, provided with a hinge portion, $c$, $c$, toward the hinge side of said flask slots, $n$, adapted to engage said pins, D,' D'; the cope, A, provided with a hinge portion, G, to engage the hinge portion, G', of the drag below; a depression, $c'$, to engage the hinges, $c$, of the match-plate below; lugs, $i$, $i$, opposite the similar lugs on the drag below; and slots, D, D, adapted to engage the pins, D', D', on the drag below, all united and co-acting together, substantially as described for the purpose specified.

9. In a molder's device, the combination of the drag and the cope having oppositely facing lugs, $i$, $i$, the said cope and drag being adapted to rest upon each other at the hinges and on the oppositely facing lugs, $i$, $i$, to leave an open space at other points around the flask; and a match plate to be introduced between the cope and drag of the flask to be engaged on its hinges and by the lugs, $i$, only, to leave a space at other points so as to insure a proper fitting of the parts of the mold, for the purpose specified.

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530,320. **ENGINE CROSS-HEAD.** JULIUS BROTRUP, Ridgway, Pa., assignor to James H. McEwen, same place. Filed July 9, 1894. Serial No. 516,951. (No model.)



*Claim.*—1. An engine cross-head provided with a shoe or guide-block and a rotary eccentric for adjusting said shoe.

2. An engine cross-head provided with a rotary eccentric and a shoe or guide-block having a rocking bearing and an adjustment by said eccentric.

3. In combination with an engine cross-head having a guide-block or shoe, a pin or bolt connecting the guide-block with the body of the cross-head, and on said pin or bolt two or more bearing surfaces having their axes parallel but not in line.

4. An engine cross-head having detachable guide-blocks or shoes held in position by bolts or pins, each bolt having two or more parts with axes not coincident with each other.

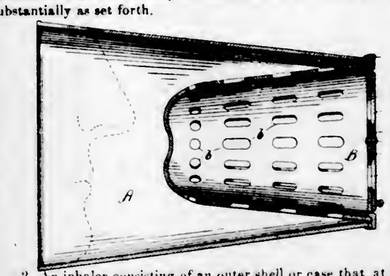
5. In combination with adjustable guide blocks, an adjusting bolt arranged parallel to the bearing surface of the guide, and the different parts of said bolt eccentric in relation to each other.

6. In an engine cross-head having adjustable guide-shoes, a bolt extending through the cross head and shoe, and parallel to the guide surface, that part of said bolt which extends into the adjustable shoe being eccentric to that part which extends into the cross-head.

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530,321. **INHALER.** MAX A. BOEGER and FREDERICK V. DOTTERWEICH, Cleveland, Ohio. Filed Feb. 23, 1894. Serial No. 501,128. (No model.)

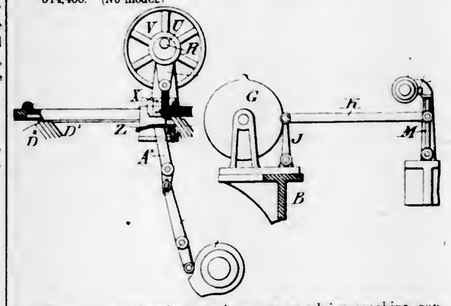
*Claim.*—1. An inhaler consisting of an outer shell or case that, at its inner end, is open and adapted to fit over the nose and mouth of the patient, a perforated cup or receptacle for receiving the substance or matter to be inhaled, said cup or receptacle extending into and being removably supported from the outer end of the surrounding-case or shell, and suitable means for regulating or controlling communication between said cup or receptacle and external atmosphere, substantially as set forth.



2. An inhaler consisting of an outer shell or case that, at its inner end, is open and adapted to fit over the nose and mouth of the patient, a perforated cup or receptacle for receiving the substance or matter to be inhaled, and extending into, and removably supported from the outer end of, the surrounding case or shell, said cup or receptacle having a perforated hinged lid or cover and a damper or valve for closing or regulating the size of the perforation or perforations in said lid or cover, substantially as set forth.

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530,322. **MACHINE FOR CUTTING SHEET-METAL PLATES.** SAMUEL Y. BUCKMAN, Pottstown, Pa. Filed June 13, 1894. Serial No. 514,408. (No model.)



*Claim.*—1. A trimming attachment to an edging machine, consisting of a rising and falling cutter connected with a rotatable shaft, a swinging bed plate, a stationary bed knife, mechaniam for imparting an intermittent motion to said shaft and cutter, and separate mechanism for imparting an intermittent motion to said bed plate, said parts being combined substantially as described.

2. A trimming attachment to an edging machine, consisting of a rising and falling cutter connected with a rotatable shaft, a loose driving pulley and a clutch mechaniam on said shaft, mechanism substantially as described for disengaging said clutch from said pulley, a spring for engaging said clutch and pulley, a stationary bed knife, and a swinging bed plate, said parts being combined substantially as described

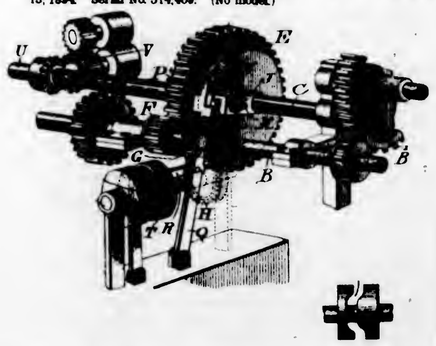
3. A trimming attachment to an edging machine, consisting of a rising and falling cutter, a rotatable shaft to which said cutter is attached, a driving pulley loosely mounted on said shaft, a clutch mechanism on said shaft, mechanism substantially as described for intermittently disengaging said clutch and pulley, a spring for engaging said clutch and pulley, a stationary bed knife, a bed plate mounted on a swinging arm and independent mechanism for intermittently operating said arm, said parts being combined substantially as described.

4. The shaft A, the gearing C, D, the shaft E, the wheel G with the projection H, the arm J and the link K with the stud L, the arm M with wedging head N, in combination with the clutch Q with the projection P, the loose pulley T, the shaft R which carries said clutch and pulley, the cutter head X and mechanism on said shaft for raising and lowering said head, substantially as described.

5. In a trimming attachment to an edging machine a clutch, a swinging arm with a head engaging said clutch, a rotatable shaft with a wheel having a lug thereon, an arm pivotally connected by a

rod with said swinging arm, the pivotal connection of said pivoted arm and rod being adapted to be engaged by said lug, said parts being combined substantially as described.

530,323. **FEEDING DEVICE FOR APPARATUS FOR COATING METAL PLATES.** SAMUEL Y. BUCKMAN, Pottstown, Pa. Filed June 13, 1894. Serial No. 514,409. (No model.)




*Claim.*—1. In a device for intermittently feeding sheet metal plates after being edged and connected, into a pot of a tinning or coating apparatus, a shaft having gearing adapted to mesh with gearing on the feed rolls of said apparatus, a driving shaft having a pinion meshing with a loose wheel on said first shaft, a clutch mechanism on said first shaft, a counter shaft geared with said driving shaft, a swinging arm operating a spring-controlled pin in said clutch mechanism, an arm pivoted to said swinging arm and carrying a roller, and a cam with grooves on said counter shaft, said parts being combined substantially as described.

2. A device for intermittently feeding sheet metal plates to an apparatus for tinning or coating the same, consisting of the driving shaft B, the counter shaft D, and the intermediate gearing G, H, the cam T on said shaft D, the arm R with the roller S engaging said cam, the swinging arm Q having the head P thereon, the counter shaft C, a clutch on said shaft which is adapted to be disengaged by said head, the loose gear wheel E on said shaft C and meshing with the pinion F on the shaft B, and the shafting U which is connected by gearing with the feed rolls of the aforesaid apparatus, said parts being combined substantially as described.

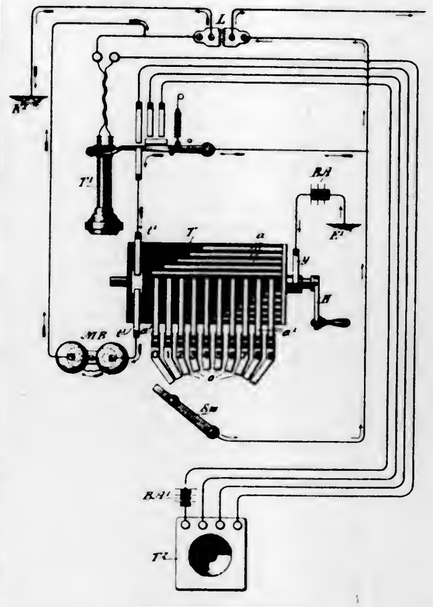
3. A driving shaft with a pinion thereon, a second shaft having a loose wheel thereon meshing with said pinion, a third shaft having gearing meshing with gearing on said driving shaft, a cam on said third shaft, a clutch mechanism on said second shaft, a swinging arm with head engaging said clutch mechanism, and a reciprocating arm pivoted to said swinging arm and operated by the rotations of said cam, said parts being combined substantially as described.

530,324. **TELEPHONE-EXCHANGE SYSTEM.** ROMAINE CALLENDER, Brantford, Canada. Original application filed Aug. 13, 1892, Serial No. 442,948. Divided and this application filed Dec. 18, 1893. Serial No. 494,003. (No model.) Patented in England Jan. 2, 1894, No. 139; in Austria Jan. 2, 1894, No. 2,347; in France Jan. 2, 1894, No. 235,225, and in Belgium Jan. 2, 1894, No. 107,937.

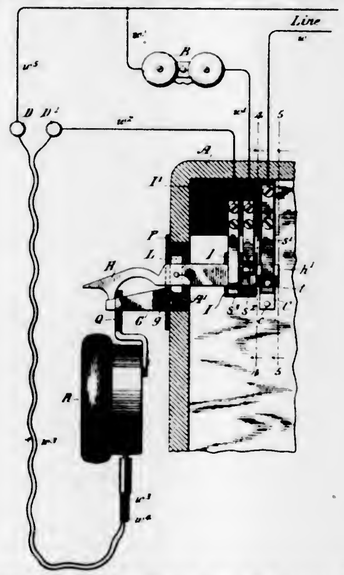
*Claim.*—1. An automatic telephone exchange system having means controlled by the subscriber for automatically connecting together any two of a series of independent outlying telephone lines, in combination with a time mechanism for automatically disconnecting at the central office the subscribers after a predetermined time, which time mechanism is in no way under the control of the subscriber after the expiration of said predetermined time.

2. An automatic telephone exchange system having means controlled by the subscriber for automatically connecting together any two of a series of independent outlying telephone lines, in combination with a time mechanism for automatically disconnecting at the central office the subscribers after a predetermined time and additional means for restoring the parts to a normal position, said time mechanism being in no way under the control of the subscriber after the expiration of the predetermined time.

3. In an automatic telephone exchange system, one or more switching devices controlled by electro-magnets; a series of subscribers' lines and circuit connections therefrom to the switching apparatus; transmitters for causing the switches to advance through their phases and time mechanism and releasing devices whereby the switches are all restored to normal condition after a predetermined length of time, said time mechanism being in no way under the control of the subscriber after the expiration of the predetermined time.




530,325. **TELEPHONE-SWITCH.** ROMAINE CALLENDER, Brantford, Canada. Filed Sept. 15, 1894. Serial No. 523,108. (No model.)



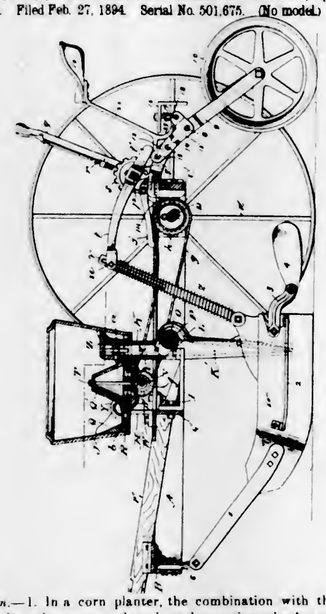

*Claim.*—1. A telephone sustaining device in the nature of an inclined bracket secured to a telephone box, in combination with a telephone receiver having a sustaining extension lug or ear adapted to rest upon the inclined bracket and a switch lever provided with circuit connections for shifting the circuit from the call bell to the receiver and vice versa and means for maintaining the telephone in suspended position upon the inclined bracket when the circuit is through the call bell.



2. A telephonic apparatus provided with a telephone sustaining device consisting of a permanent or rigid non-retaining support and a switch lever provided with means for retaining a telephone receiver upon said support through the united agency of the support and the retaining device, the arrangement being such that the receiver cannot be held by the support when the circuit is closed through it.

3. A sustaining device for a telephone receiver which fails to hold or sustain the receiver when it, the receiver, is being used, in combination with a switch and circuit connections to the call bell and receiver, said switch being provided with means acting conjointly with the support to hold or sustain the receiver only when the circuit is closed through the bell.

530,326. **CORN-PLANTER.** GEORGE W. CAMPBELL, Springfield, Ohio. Filed Feb. 27, 1894. Serial No. 501,675. (No model.)



*Claim.*—1. In a corn planter, the combination with the main frame, a pivoted runner, and a pivoted covering wheel carried by arms, of devices to hold down on the runner and lift up and hold up the runner and the wheel, consisting essentially of a lever, an arm operated thereby, a connection between one end of the arm and the runner, said connection being yielding in one direction, and an engagement between the other end of said arm and the wheel arms.

2. In a corn planter, the combination with the main frame, a pivoted runner, and a pivoted covering wheel carried by arms, of mechanism to lift both the runner and the wheel from the ground at about the same time, consisting essentially of a lever, an arm operated thereby, a connection between one end of the arm and the runner, and an engagement between the other end of the arm and the wheel arms.

3. In a corn planter, the combination with the main frame and pivoted runner, a covering wheel carried by pivoted arms, a lever, a rock-shaft operated thereby, an arm on the rock-shaft, a link connecting one end of the arm with the runner, a spring between said end of the arm and the runner to press down on the latter, and an engagement between the other end of the arm and the wheel arms when the lever is operated to lift the runner and wheel.

4. In a corn planter, the combination with the main frame, a pivoted runner, a covering wheel carried by pivoted arms, mechanism to hold down on the runner and wheel and to lift the same at or about the same time, said mechanism consisting of a lever, an arm operated thereby, one end of which is connected to the runner, an engagement between the other end of the arm and the wheel arms when the latter are being raised, the seat, a cross bar connected thereto and a connection between said bar and the wheel arms acting back of the pivot of the latter.

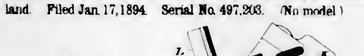
5. In a corn planter, the combination with the main frame, and a covering wheel carried by pivoted arms connected with said frame, a bell crank lever engaging with wheel arms, and cross-bar connected, substantially as described, with the said lever, and a seat connected with the cross-bar.

6. In a corn planter, the combination with a seat connected to the main frame, a cross-bar connected with the seat, and a covering wheel connected to the frame by pivoted arms, and a connection between the cross bar and the said wheel arms operating in the rear of the pivot thereof.

7. In a corn planter, the combination with a feeding plate having perforations, of a feeding wheel or ejector curved or dished so that its spokes or projections shall occupy a curve of substantially the same radius as the curve in which the perforations lie, whereby the same feeding wheel is adapted to work with plates of various sizes of perforations so that a change of wheel is not required for every change of plate for different sizes of grain.

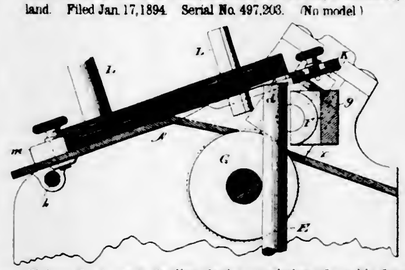
8. In a corn planter, the combination with the main axle, driving mechanism clutched thereto, a spring engaging said mechanism to keep it clutched, a rock-shaft, a lever therefor and a projection on the rock-shaft, and a horizontal trip lever pivotally supported by the main frame and having one end engaged by the said projection, and its other end engaging the side of the driving mechanism.

530,327. **TENSION-SPOOL FOR ROLL-HOLDERS.** THEODORE M. CLARK, Newton, Mass. Filed June 26, 1894. Serial No. 515,753. (Model.)



*Claim.*—A tension spool comprising a cylindrical shell having heads with circular holes through their centers, a spindle extending through the cylinder and fitting said holes leaving the cylinder free to rotate on said spindle, and a spiral retracting spring fastened to said spindle and surrounding the same and extending longitudinally within the cylinder in frictional engagement with the walls thereof.

530,328. **PAPER-FEEDING MACHINE.** HENRY B. COOLEY and JOHN M. NOBLE, Hartford, Conn., and JAMES E. TREVOR, Manchester, England. Filed Jan. 17, 1894. Serial No. 497,203. (No model.)




*Claim.*—1. A paper feeding device consisting of a table for supporting the pile of paper, feeding rolls journaled in bearings below said table, the upper roll recessed for the passage of the paper therethrough, and a reciprocating suction pipe passing between said rolls and adapted to separate the bottom sheet of the pile, and carry the same to the feeding rolls, and means for creating suction in said pipe, substantially as described.

2. In a paper feed device, the combination with the inclined table for supporting a pile of paper flat upon the surface thereof, of the reciprocating suction pipe, the air pump, the feeding rolls journaled in bearings below said table, the upper roll recessed for the passage of the paper therethrough, the edge of the recess adapted to "grip" the sheet and strip it from the pipe as the said pipe descends, substantially as described.

3. In a paper feed device the combination with the inclined table for supporting a pile of blanks, the feed rolls journaled in bearings on different vertical planes below the table, the upper roll recessed for the passage of the blanks, the suction pipe having its path of motion across the line of centers of said rolls, a shaft journaled below the table, connections between said shafts and pipe for reciprocating the same, substantially as described.

4. In a paper feed device, the combination with the inclined table supporting the pile, the feed rolls journaled in bearings below the same, the upper roll recessed for the passage of the blanks, with the suction pipe and means for reciprocating said pipe once while the feed rolls make two or more revolutions, substantially as described.

5. In a paper feed device the combination with the apertured table, for supporting a pile of blanks, with the separator at the front end thereof, of feed rolls journaled in bearings below the table, the upper roll recessed for the passage of the blanks, the vertically moving suction pipe, the rotating shaft below the table provided with a cam controlling the movements of said pipe, whereby the pipe is brought

in contact with the bottom sheet of the pile resting over the aperture in the table, substantially as described

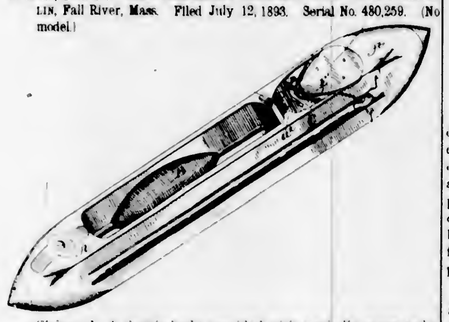
6. In a paper feed device, the combination with the table for supporting the pile of paper, of the feed rolls rotating in bearings below the same, the upper roll recessed for the passage of the paper, the suction pipe, the rotating shaft carrying a disk having a cam groove in its surface, a lever fulcrumed at one end to a fixed part of the device, and pivotally connected by links to said pipe at its other end, and a link attached to said lever with one end engaging the said cam groove, whereby said pipe is caused to reciprocate between said rolls, substantially as described

7. In a paper feed device, the combination with the apertured table for supporting the pile, provided with guides for said pile, one set of which projects through the aperture to guide the paper passing there-through, the reciprocating suction pipe, and the feed rolls journaled in bearings below the tables, adapted to strip the sheet from said pipe in its descent, substantially as described.

8. A paper feed device consisting of an inclined apertured table supporting a pile of blanks flatly upon the same and over the apertures, a separator projecting over the aperture and supporting the end of the pile, a reciprocating suction pipe adapted to pass by the separator and raise the pile in its ascent and successively detach therefrom the bottom blank as it descends, with feeding rolls journaled below the table, the upper one recessed for the passage of the blanks, substantially as described.

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530,329. SELF-THREADING LOOM-SHUTTLE. JEAN B. DAUDELIN, Fall River, Mass. Filed July 12, 1893. Serial No. 480,259. (No model.)

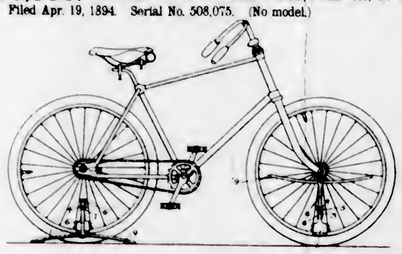


*Claim.*—1. A shuttle body provided with a spindle recess and a threading recess forward of the spindle recess, a plate having a part forming the front wall of the threading recess and provided with a thread opening, a thread delivery passage extending from said thread opening to the delivery eye of the shuttle, said plate having a part extending forward of the threading recess, the parts of the shuttle adjacent to said forwardly extending part of said plate being recessed to admit the passage of the thread from the said opening to the delivery passage, substantially as described.

2. A shuttle body provided with a spindle recess and a threading recess forward of the spindle recess, a plate having a portion forming the front wall of said threading recess and provided with a thread opening, a thread delivery passage extending from said thread opening to the delivery eye of the shuttle, a threading slit for the thread opening, a threading slit for the thread delivery passage, said plate having a forwardly extending portion and the shuttle body being recessed beneath said forwardly extending portion and adjacent to its edges to provide thread passages connecting the threading slit for the thread opening with the threading slit for the thread delivery passage, substantially as described.

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530,330. BICYCLE-SUPPORT. ADAM EISMAN, Rochester, N. Y. Filed Apr. 19, 1894. Serial No. 508,075. (No model.)

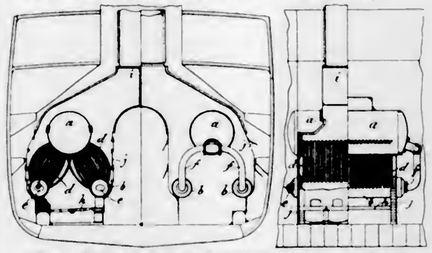


*Claim.*—1. In combination with a wheel of a bicycle or other like vehicle, a spring secured to the outer part of the wheel a reversible supporting arm pivoted to said spring and having a short extension beyond the pivot, and a device arranged in the path of said extension whereby the spring holds the arm in a yielding manner either in its operative or inoperative position, substantially as set forth.

2. In combination with a wheel of a bicycle or other like vehicle, a spring secured to the outer part of the wheel a reversible supporting arm pivoted to said spring and having a short extension beyond the pivot, and a device arranged in the path of said extension whereby the spring holds the arm in a yielding manner either in its operative or inoperative position, said device consisting of a similar arm and spring the extensions of the arms being pivoted together, substantially as set forth.

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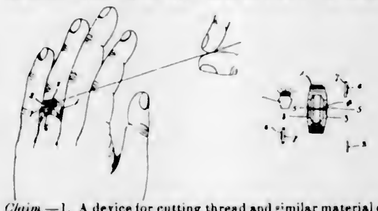
530,331. STEAM-BOILER. PETER FERGUSON and WILLIAM Y. FLEMING, Paisley, Scotland. Filed Aug. 24, 1894. Serial No. 521,207. (No model.) Patented in England Dec. 31, 1892, No. 24,141.



*Claim.*—In a steam boiler, the combination of two or more water drums *b* in proximity to the furnace, an independent steam and water drum *a* in the uptake, said drums *a* and *b* being independent of each other, a number of small water tubes *d* connecting the drums *b* and *a* and each adapted to be withdrawn into the main drum *a*, and independent circulating tubes *f* fitted outside of the furnace and smoke casing and connecting the lower drums with the upper drum and having a capacity sufficient to give a supply of water equal to that flowing through the small tubes *d*, substantially as and for the purposes described.

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530,332. THREAD-CUTTING RING. HENRY F. GANON, Indianapolis, Ind. Filed July 23, 1894. Serial No. 518,317. (No model.)



*Claim.*—1. A device for cutting thread and similar material comprising a finger ring, two oppositely posed lugs mounted thereon with slots in them, and a blade adapted to fit in the slots with its edge upward and below the upper surface of the lugs, substantially as shown and described.

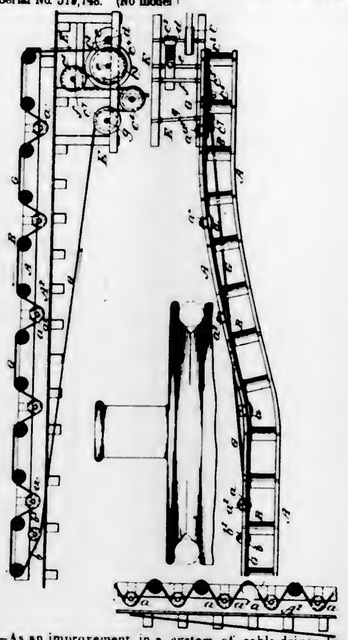
2. A device for cutting thread and similar material comprising a finger ring, two oppositely posed lugs mounted thereon with slots in them and a dove-tailed groove in the outer side of a lug, a blade adapted to fit in the slots, and a slide adapted to fit in the dove-tailed groove whereby the blade is held in place, substantially as shown and described.

3. A device for cutting thread and similar material comprising a finger ring, two oppositely posed lugs mounted thereon with slots in them and dove-tailed grooves in their outer sides, a blade adapted to fit in the slots, and slides adapted to fit in the grooves provided with beveled edges and overhanging tops, substantially as shown and described.

4. A device for cutting thread and similar material comprising a finger ring, two oppositely posed lugs mounted thereon with slots in them and dove-tailed grooves in their outer sides, a blade adapted to fit in the slots, a cap adapted to fit over the blade within and between such lugs provided with grooves in its upper edges, and slides adapted to fit in the dove-tailed grooves of the lugs and provided with overhanging tops adapted to fit in the grooves in the cap, substantially as shown and described.



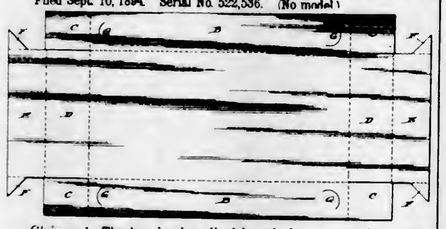
530,333. DRIVING LIVE-ROLLS. MICHAEL GARLAND, Bay City, Mich., assignor to the M. Garland Company, same place. Filed Aug. 8, 1894. Serial No. 519,748. (No model.)



*Claim.*—As an improvement in a system of cable-driven live-rolls, the combination, with a series of rolls, mounted in a suitable frame, and formed, or provided, with rope grooves, near one set of their ends; and a series of peripherally grooved idlers, arranged in said frame, but in a lower plane than that in which are located said rolls, of a driving-cable, passing over said rolls and beneath said idlers; a main driving rope-wheel; and a take-up rope-wheel; the whole arranged and operating as and for the purposes set forth.

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530,334. PAPER BOX. HERMAN GOETTSCH, Chicago, Ill., assignor of one-half to the J. W. Sefton Manufacturing Company, of Indiana. Filed Sept. 10, 1894. Serial No. 522,536. (No model.)



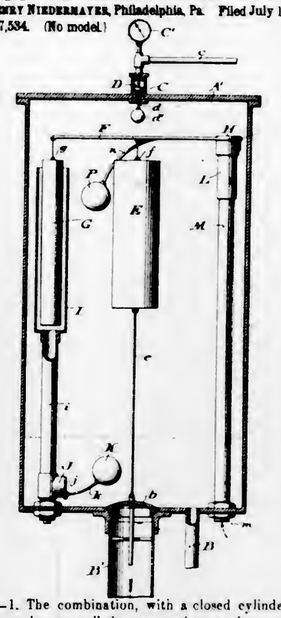
*Claim.*—1. The herein described knock-down paper box, composed of the central portion, the sides having the inturned extensions, the ends, and the end flaps bent downward over the inturned side extensioos and provided upon their downwardly bent ends with laterally projecting tongues co-operating with slits cut in the sides of the box.

2. The herein described knock-down paper box, composed of the central portion, the sides having the inturned extensions, the ends, and the end flap bent downward over the inturned side extensions and provided upon their downwardly bent ends with laterally projecting tongues co operating with catches formed by slits in the sides of the box, substantially as described.

3. The herein described knock-down paper box, composed of the central portion, the sides having the inturned extensions, the ends, and the end flaps bent downward over the inturned side extensions and provided upon their downwardly bent ends with the triangular-shaped laterally projecting tongues F F co-operating with the catches G G formed by the curved slits in the sides of the box, substantially as described.

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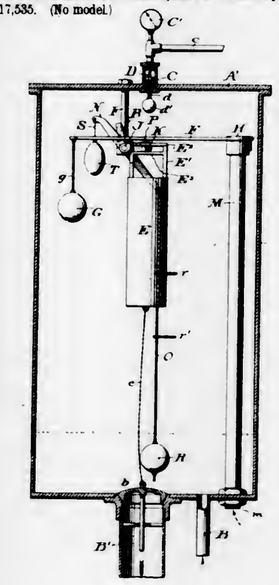
530,335. AIR-COMPRESSING DEVICE. WILLIAM U. GRIFFITHS and HENRY NIEDERMAYER, Philadelphia, Pa. Filed July 14, 1894. Serial No. 517,534. (No model.)



*Claim.*—1. The combination, with a closed cylinder having a water inlet, a valve-controlled water outlet, a valve-controlled air-inlet and a compressed air outlet; of an overflow chamber provided with a valve controlled escape orifice; a main float operatively connected with the water-outlet valve; a secondary float arranged within said overflow chamber and also operatively connected with the water-outlet valve, the combined buoyancy of said floats being sufficient to raise said water-outlet valve against the maximum pressure thereon; said secondary float being also operatively connected with the air-inlet valve, substantially as set forth.

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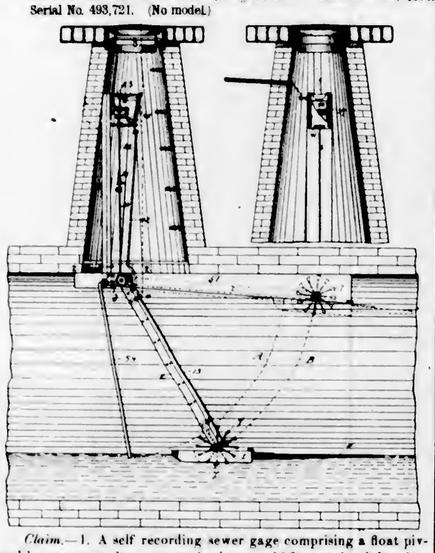
530,336. AIR-COMPRESSING DEVICE. WILLIAM U. GRIFFITHS and HENRY NIEDERMAYER, Philadelphia, Pa. Filed July 14, 1894. Serial No. 517,535. (No model.)



*Claim.*—The combination, substantially as set forth, with a closed cylinder having a water-inlet, a valve controlled water outlet, a valve-controlled air-inlet, and a compressed air-outlet; of a float, operatively connected with the water outlet valve; a rock-shaft and crank engaging with said float, a weight and a balance float operatively connected with said rock-shaft; a lever and float controlling the air-inlet valve; and means substantially as set forth whereby said lever is maintained in position to keep the air inlet open during the discharge of the water from the cylinder

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530,337. SELF-RECORDING CANAL, SEWER, AND RAIN GAGE OR METER. ALVA J. GROVER, Omaha, Nebr. Filed Dec. 15, 1893. Serial No. 493,721. (No model.)



*Claim.*—1. A self recording sewer gage comprising a float pivoted by an arm to the sewer, a wheel upon said float, a circuit breaker consisting of a revolving key, mechanism between said wheel and key for revolving the same, mechanism between the float and key for periodically lifting the key as it revolves, a contact device operated by said key as it lifts, a chronographic drum and a magnetically operated pen in contact with said drum, whereby as the circuit is broken the said pen may record a curve upon the drum from which the depth of sewage and the velocity of current are obtained, substantially as described.

2. In a self recording sewer gage, the combination of a pivoted float, a circuit breaker, a single electric circuit in which the circuit breaker is located, an electro magnet in circuit therewith, a pen attached to the armature of said magnet, and a chronographic drum, with means controlled by the float for operating the circuit breaker, whereby all the movements of the float may be recorded on the drum over a single circuit, substantially as described.

3. In a self recording gage, the combination with a pivoted float, carrying a current wheel, of a circuit breaker, an electro-magnet in circuit therewith, a chronographic drum, a pen held in contact with said drum, mechanism between the circuit breaker and wheel for operating said circuit breaker, whereby the pen records breaks in a line on said drum from which the depth and velocity of sewage may be determined, substantially as described.

4. In a self recording sewer gage the combination with the float carrying a current wheel, an arm pivoted to said float and to the sewer, a shaft upon said arm geared to the wheel, a second shaft geared with the first shaft, provided on its upper end with a key or finger, a key box in which said key is adapted to turn, a sliding plate on one side thereof provided with a series of steps, a rod connecting the arm of the float with said plate, a set of levers adapted to engage the steps of the sliding plate, a series of pins adapted to be raised by said levers, a contact device connected with the revolving key with means for recording the make and break of an electric circuit through the contact device, substantially as described.

5. In a self recording sewer gage, the combination with the gage mechanism, of a circuit breaker consisting of a key box having a revolving key, a contact device connected therewith, a sliding plate adapted to guides upon the box, and having a stepped opening therein, a series of pivoted dogs or levers adapted to engage said plate, and a series of pins engaging said dogs, whereby as the plate lifts the pins are raised and lift the key as it revolves, substantially as described.

6. The combination with a sewer gage mechanism, a chronographic drum, means for recording the movements of the gage mechanism upon said drum, a rain gage mechanism, a chronographic drum, with means for recording the movements of said rain gage upon the latter, and a clock having its hour shaft geared with and operating both drums simultaneously, substantially as described.

7. A storm shield for the float of a sewer gage consisting of two side boards attached to a block and secured to the arch of the sewer, an end board, and a hinged cover adapted to close the opening between the forward ends of the float and the shield, substantially as described.

8. The combination with a sewer gage float, an arm pivotally attached to the arch of the sewer and to the float, a storm shield having a pointed forward end with side and end boards secured to the arch of the sewer, and a cover hinged ahead of the said arm, and adapted to rest against the storm shield and close the opening between the float end and the nose of the shield, substantially as described.

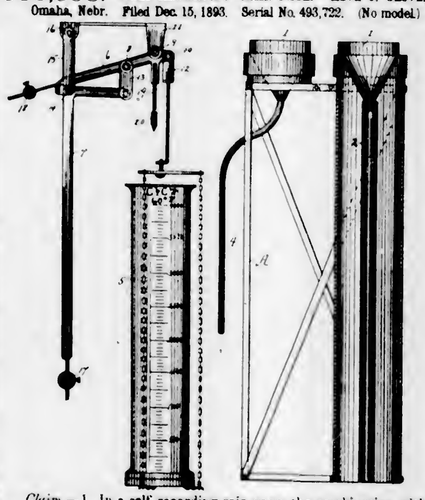
9. A float for sewer gages consisting of a metal boat having a pointed bow and provided with a tail or counterpoise, and having a well hole with a paddle wheel mounted upon said boat and adapted to turn in said well hole, substantially as described.

10. In a self recording sewer gage, the combination with the gage mechanism, of a circuit breaker consisting of a key box having a two part revolving key, one of said parts hinged to the other, a contact device connected therewith, a sliding plate adapted to guides upon the box, and having a stepped opening therein, a series of pivoted dogs or levers adapted to engage the plate, and a series of pins engaging said dogs, and adapted to engage the hinged part of the key as it revolves, substantially as described.

11. In a self recording sewer gage, the combination with a float carrying the wheel, the revolving shaft provided at its upper end with a key having two parts the upper part of which is hinged to the lower, connections between the wheel and shaft for rotating said shaft, a contact device connected to the key, with means for raising the hinged part thereof, to break the circuit, substantially as described.

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530,338. SELF-RECORDING RAIN-GAGE. ALVA J. GROVER, Omaha, Nebr. Filed Dec. 15, 1893. Serial No. 493,722. (No model.)

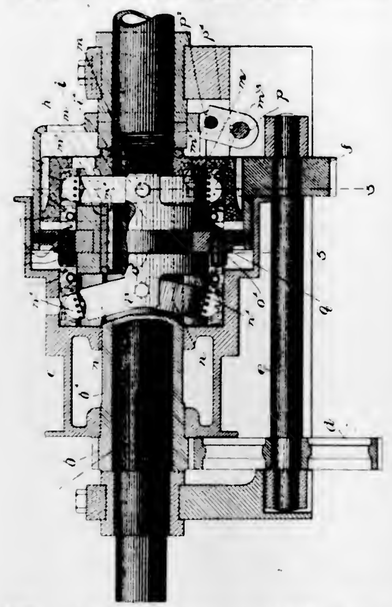


*Claim.*—1. In a self recording rain gage, the combination with the top having a tube extending therefrom to the jar suspended from the arm of a pair of scales, a pen attached directly to said arm, a chronographic cylinder with which said pen contacts, a gear connected to the shaft of said drum, and meshing with a gear upon the hour shaft of a clock, substantially as described.

2. In a self recording rain gage, the combination with the chronographic drum, of the pivoted scale arm having the graduated jar suspended from one end thereof, and provided with a counterpoise for said jar upon the opposite side of the pivot, a pen carried by said arm in contact with the drum, with a bell crank lever pivotally attached to a rigid support, having its short arm connected by a link to the scale arm and an adjustable weight upon its long arm, substantially as described.



530,339. FRICTION-CLUTCH. JAMES HARTNESS, Springfield, Vt. Filed Apr. 19, 1894. Serial No. 508,106. (No model.)



*Claim.*—1. A friction clutch for connecting a shaft or spindle and a rotary power transmitting device thereon, the same comprising an expanding ring for frictional engagement with the said rotary power-transmitting device, forked toggles embracing the shaft or a spindle and constructed to engage and expand the ring, and a sliding support for the central joint of said toggles rotatively engaged with the shaft or spindle.

2. A friction clutch for connecting a shaft or spindle and a rotary power-transmitting device thereon, the same comprising an expanding ring for frictional engagement with the said rotary power-transmitting device, semi-circular toggles straddling the shaft or spindle and having provisions for engaging and expanding the ring, and a sliding sleeve rotatively engaged with the shaft or spindle and having ears extending over the ends of the semi-circular toggles and carrying the pivot-pins which support the same.

3. A friction clutch for connecting a shaft or spindle and a rotary power-transmitting device thereon, the same comprising an expanding ring for frictional engagement with the said rotary power-transmitting device; forked toggles embracing the shaft, and each carrying a centrally located adjustable wedge for expanding the ring; and a sliding support for the central joint of said toggles rotatively engaged with the shaft

4. A friction clutch for connecting a shaft or spindle and a rotary power-transmitting device thereon, the same comprising a sectional expanding ring for frictional engagement with the said rotary power-transmitting device and yieldingly held together and having angular confronting end faces, forked toggles straddling the shaft or spindle and having adjustable screws with wedge-like heads to engage the angular faces of the ring-sections, and a sliding support for the central joint of said toggles rotatively engaged with the shaft or spindle.

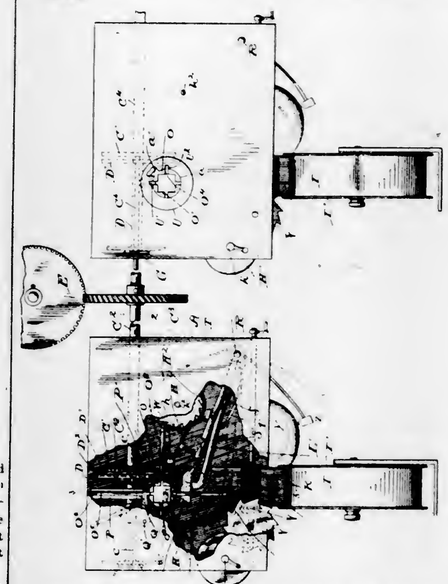
5. A friction clutch for connecting a shaft or spindle with a rotary power transmitting device thereon, the same comprising a sliding sleeve rotatively engaged with the shaft or spindle, a sectional expanding ring yieldingly held together over the sleeve and adapted for frictional engagement with the said rotary power-transmitting device, and forked toggles straddling the shaft or spindle and supported by the sleeve, said toggles having provisions for engaging and expanding the sectional ring.

6. The combination with a shaft or spindle and a pulley and gear thereon, of friction clutch mechanism comprising a sliding support rotatively engaged with the shaft or spindle, expanding rings for frictionally engaging the pulley and gear respectively, and two sets of forked toggles carried by the sliding support and embracing the shaft and adapted for engagement with the expanding rings respectively.

7. The combination with a shaft or spindle and a pulley and gear thereon, of friction clutch mechanism comprising a sliding sleeve rotatively engaged with the shaft or spindle, expanding rings embracing said sleeve and arranged for frictional engagement with the pulley and gear respectively, separating pins between the said rings and arranged in a suitable support, and two sets of toggles carried by the sleeve and engaging the expanding rings.

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530,340. EMPLOYE'S TIME-RECORDER. GEORGE W. HEENE, Brooklyn Village, Ohio, assignor to the Cleveland Time Register Company, Cleveland, Ohio. Filed Feb. 27, 1894. Serial No. 501,633. (No model.)



*Claim.*—1. In a machine of the variety indicated, hour and minute-recording-wheels suitably operated, a key having a typed or recording portion swiveled to the main or body-portion of the key, the typed or recording surface of said swiveled portion of the key being brought into alignment with the recording-surface of the hour and minute-recording wheels immediately upon the insertion of the key, a record-receiving-band or strip, an inking-ribbon, an impression-hammer, and mechanism adapted to be actuated by the body-portion of the key and adapted to operate the impression hammer, substantially as set forth.

2. In a machine of the variety indicated, the operating key M provided with a printing-surface at or near the free end of its shank or stem, said portion of the stem or shank being swiveled to the main or body-portion of the shank or stem, substantially as and for the purpose set forth.

3. In a machine of the variety indicated, the combination with hour and minute-recording-wheels suitably operated, an operating-key, a rotatable armed hub or spider adapted to be operatively engaged by said key, record-receiving-band or strip and inking-ribbon arranged substantially as indicated, of mechanism for pressing said strip and ribbon against the aforesaid recording-wheels and adapted to be operated by an arm of the aforesaid hub or spider, substantially as set forth.

4. In a machine of the variety indicated, the combination of hour and minute-recording-wheels suitably operated, operating key, an armed hub or spider rotatably supported and adapted to receive and be turned by the operating-key, a record-receiving-band or strip, inking ribbon, suitable mechanism for pressing said ribbon and record-receiving-strip against the aforesaid recording-wheels, said mechanism being adapted to be operated by an arm of the aforesaid hub or spider, suitable means for locking the hub or spider in its normal position, and suitable means connected with the operating-key for actuating said locking-means to unlock, the arrangement of parts being such that said hub or spider shall be unlocked preparatory to the turning of the key, substantially as set forth.

5. In a machine of the variety indicated, the combination with the hour and minute-recording-wheels suitably operated, record-receiving-band or strip, and inking-ribbon, of an oscillating-shaft, an

impression-hammer L operatively connected with said shaft, suitable means acting to retain said hammer in position pressing the record-receiving strip and inking-ribbon against the recording-wheels, an arm or lever for oscillating the shaft in the direction to swing the hammer away from the record-receiving-strip, a rotatable armed hub or spider having an arm adapted to engage and actuate the aforesaid shaft oscillating arm or lever, and a key for turning said hub or spider, substantially as set forth.

6. In a machine of the variety indicated, the combination with the hour and minute recording-wheels suitably operated, record-receiving-band or strip and inking-ribbon, of an oscillating shaft, R, an impression-hammer L operatively connected with said shaft, suitable means acting to retain said hammer in position pressing the record-receiving-strip and inking-ribbon against the recording-wheels, an arm or lever for oscillating the shaft in the direction to swing the hammer away from the record-receiving-strip, a rotatable armed hub or spider having an arm adapted to engage and actuate the aforesaid shaft-oscillating-arm or lever, and a key for turning said hub or spider, the aforesaid shaft oscillating-arm or lever being provided with a notch adapted, during the actuation of said arm or lever, to be engaged by the aforesaid arm of the hub or spider, and the arrangement of parts being such that when said arm of the hub or spider engages said notch, the operating-key and connected hub or spider shall be locked as against being turned backwardly, substantially as set forth.

7. In a machine of the variety indicated, the combination with the hour and minute-recording-wheels suitably operated, record-receiving-band or strip and mechanism for feeding said strip, inking-ribbon and mechanism for feeding said ribbon, and an impression-hammer and mechanism for operating said hammer, of a rotatable armed hub or spider adapted to engage and actuate all of the aforesaid mechanisms, and a key for turning said hub or spider, substantially as set forth.

8. In a machine of the variety indicated, the combination with the suitably operated hour and minute-recording-wheels, an operating-key, a rotatable armed hub or spider adapted to be operatively engaged by the key, record-receiving-band or strip, an inking-ribbon, of mechanism for pressing said strip and ribbon against the aforesaid recording-wheels and adapted to be operated by the aforesaid hub or spider, and mechanism for feeding the record-receiving-strip and inking-ribbon and adapted to be operated by the aforesaid hub or spider, the arrangement of parts being such that the record-receiving-strip shall be fed in advance of the printing operation, substantially as set forth.

9. In a machine of the variety indicated, the combination with suitably operated hour and minute-recording-wheels, an operating-key, a rotatable armed hub or spider adapted to be operatively engaged by the key, record-receiving-band or strip, and inking-ribbon, of mechanism for pressing said strip and ribbon against the aforesaid recording wheels and adapted to be operated by the spider, mechanism for feeding the record-receiving strip and comprising a ratchet-wheel adapted to be actuated by the aforesaid spider, mechanism for feeding the inking-ribbon and comprising a ratchet-wheel adapted to be engaged and operated by the spider, the arrangement of parts being substantially as shown, for the purpose specified.

10. In a machine of the variety indicated, the combination with suitably operated hour and minute-recording-wheels, record-receiving-strip and mechanism for feeding said strip, inking-ribbon and mechanism for feeding said ribbon and an impression-hammer and mechanism for operating said hammer, of a rotatable armed hub or spider adapted to engage and actuate all of the aforesaid mechanisms, a key for turning said hub or spider, suitable means for limiting the turning of said key in the direction to operate, and a stop to prevent the insertion of the key beyond the distance required, substantially as set forth.

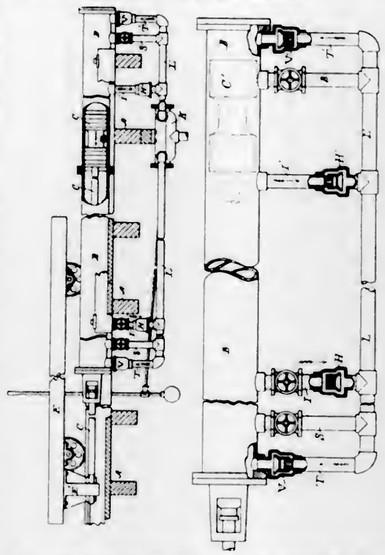
11. In a machine of the variety indicated, the combination with suitably operated hour and minute-recording-wheels, record-receiving-band or strip and mechanism for feeding said strip, inking-ribbon and mechanism for feeding said ribbon, and an impression-hammer and mechanism for actuating said hammer, of a rotatable armed hub, or spider, having arms adapted to engage and actuate the aforesaid mechanisms, a key for turning said hub or spider, a dog or pawl adapted to engage and lock the spider in its normal position, a spring acting to hold said dog or pawl in its locking position, and a rib or flange on the key adapted to actuate said dog or pawl to unlock preparatory to turning the spider, substantially as set forth.

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**530,341. DIRECT-ACTING STEAM-ENGINE.** WILLIAM E. HILL, Kalamazoo, Mich. Filed Feb. 25, 1893. Serial No. 463,759. (No model.)

*Claim.*—1. In a direct acting steam engine, an exhaust pipe containing a check valve opening into the steam cylinder more than the length of the piston head from the end of the cylinder in combination with an inlet pipe opening into the extreme end of the cylinder both being connected to the pipe that passes to the engine valve for the purpose specified.

2. In a direct acting steam engine a steam cylinder B containing the piston head C with the piston rod C in combination with the inlet pipe T containing the check valve V the exhaust pipe S and the exhaust pipe I at a distance more than the length of the piston head from the end of the cylinder and the check valve H all connected with valve K by pipe L for the purpose specified.



3. In a direct acting steam engine, a steam cylinder B containing the piston head C with the piston rod C passing through a stuffing box at the end in combination with the inlet pipe T containing the check valve V and the exhaust pipe I, containing the check valve H opening into the cylinder B at a point more than the length of the piston head from the end of the cylinder B both connected by pipe L to the engine valve K for the purpose specified.

4. In a direct acting steam engine a steam cylinder B, containing a piston head C with a piston rod C passing through a stuffing box at the end, and having inlet pipes at the end in combination with exhaust pipes containing check valves more than the length of the piston head from each end both the inlet and outlet pipe at each end joining a single pipe which connects with the engine valve, for the purpose specified.

5 The combination in a direct acting steam engine of a piston head and a piston rod of an inlet pipe at the end of the cylinder and an outlet pipe more than the length of the piston head from the end of the cylinder and check valves in both the pipes for the purpose specified

6. In a direct acting steam engine the combination with an inlet pipe at the end of the cylinder of an outlet pipe containing a check valve opening into the cylinder more than the length of the piston head from the end of the cylinder, both inlet and outlet pipe being connected by the same pipe to the engine valve, for the purpose specified.

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**530,342. METHOD OF FINISHING METALS IN IMITATION OF FAIENCE.** JOHN HOPSON, Jr., New London, assignor of one-half to the Waterbury Clock Company, Waterbury, Conn. Filed Sept. 7, 1894 Serial No. 522,330. (No specimens.)

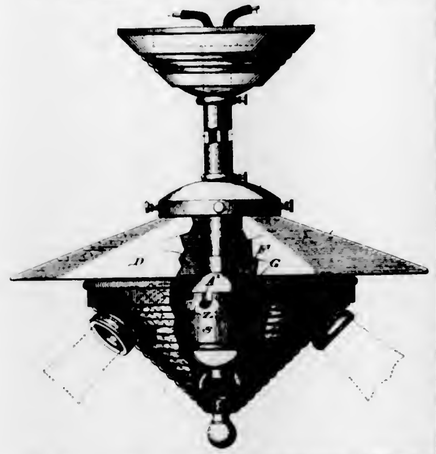
*Claim.*—1. The herein described method of finishing metal in imitation of that kind of pottery known as faience, the said method consisting in producing a body in the pattern required and with a granulated or roughened surface, then applying one or more primary color coats to the said body and then applying one or more secondary color coats of lake or transparent pigment contrasting in color or shade with the color or shade of the primary coat or coats, substantially as and for the purpose set forth.

2. The herein described method of finishing metal in imitation of that kind of pottery known as faience, the said method consisting in producing a body in the pattern required and with a granulated or roughened surface, then applying one or more primary color coats to the said body and baking on the said coat or coats, then applying one or more secondary color coats of lake or transparent pigment contrasting in color or shade of the primary coat or coats, then baking on the secondary color coat or coats, and finally applying a coating of varnish over the secondary coating, and baking on the varnish, substantially as and for the purpose set forth.



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**530,343. ELECTRIC-LIGHT FIXTURE.** HERMAN HORN, Philadelphia, Pa., assignor to the Horn & Brannen Manufacturing Company, of Pennsylvania. Filed May 24, 1894. Serial No. 512,264. (No model.)



*Claim.*—1. A stem, one end of which is adapted to be secured to some fixed point, the other end of which is detachably secured to a socket S the latter carrying a reflector which serves to support and conceal within itself the lamp sockets B' and the electrical connections therefrom to said socket S, the above parts being combined substantially as described.

2. A stem having a hollow head, a disk secured therein, contact plates secured thereto, said plates being adapted to engage other contact plates secured to a similar disk in a socket, the latter being separable from the stem and being adapted to support a reflector which also serves to support lamp sockets and electrical connections thereto, said parts being combined substantially as described.

3. A stem, a hollow head thereon, a disk secured therein, contact plates J suitably secured to said disk, said plates having studs or projections P, a socket S having also a disk and off-set contact plates, the latter having openings to receive said projections P, a reflector suitably attached to said socket, said reflector being adapted to serve as a support for electric lamps, and means for guiding and holding said socket in place, substantially as and for the purpose set forth.

4. A sectional electric light fixture having contact devices, and adapted to support several lamps, a removable socket portion having a reflector secured thereto, which is common to all of said lamps, and electric connections supported by said socket within said reflector, said parts being combined substantially as described.

5. An electric light fixture having a part adapted to be held stationary in position, and a shade connected with said part, and another part removably connected with the former the removable part being provided with an inverted cone shaped reflector, and one or more electric lamps attached to the latter, said parts being combined substantially as described.

6. A sectional electric light fixture having a supporting device, an open top reflector secured to said supporting device, lamp sockets attached to the interior of said reflector, and electrical connections thereto, concealed by said reflector, the latter also concealing said sockets, said parts being combined substantially as described.

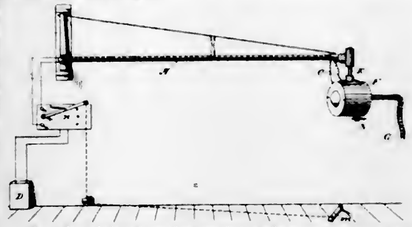
7. In a sectional electric light fixture, an immovable portion adapted to support a shade, and another portion removably connected with the former, said removable part being provided with an open top reflector, the latter being adapted to support and conceal lamp sockets, substantially as described.

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**530,344. ELECTRIC DENTAL ENGINE.** JOSEPH A. JEFFERY and BENJAMIN A. JEFFERY, San Francisco, Cal. Filed Apr. 5, 1894. Serial No. 506,465. (No model.)

*Claim.*—1. In a dental electric engine, consisting of a motor and a swiveled bracket support therefor, a case or shell swiveled upon the outer end of the bracket within which the motor armature rotates, a two part shaft, upon one part of which the motor armature rotates within the case while the other is journaled in a sleeve extending outwardly in line with the axis of the motor armature, and a clutch connection between the two parts of the shaft whereby they may be separated when the end of the case is removed.

2. A dental electric engine consisting of a case, a central shaft journaled within the case, an armature loosely revoluble upon the shaft between the poles of the field magnet formed within the casing, an electro magnet fixed to and turnable with the motor armature, a disk armature revoluble with and movable longitudinally upon a feather on the shaft of the motor, and adapted to connect the motor armature with the shaft when the electro magnet is energized to attract the clutch armature to itself.



3. A dental electric engine, consisting of a motor armature revoluble within its fields, an outer inclosing case forming a part thereof, a magnet fixed to and revoluble with the motor armature upon a shaft which is journaled within the casing, a disk armature revoluble with the shaft and slidable longitudinally thereon so as to be attracted and held by the poles of the magnet when the latter is energized, and an electric circuit adapted to energize the motor armature and the electro magnet simultaneously.

4. A dental electric engine consisting of a motor armature revoluble between its fields within an hermetically closed casing forming a part thereof, a revoluble shaft journaled within the casing and upon which shaft the motor armature is loosely revoluble, an electro magnet fixed to and revoluble with the motor armature, and a disk armature revoluble with the shaft and slidable longitudinally thereon so as to be drawn into contact with the poles of the magnet when the latter is energized, a commutator and brushes through which the electric circuit passes to the motor armature, a collar turning with the motor armature and commutator, having a brush forming contact with its surface, through which connection is made with the source of electrical supply, a wire leading from it through the motor armature to the electro magnet, and a connection between the other terminal of the magnet and the shaft to form a ground therefor.

5. A dental electric engine consisting of a motor armature revoluble between its fields within a closed casing, a central shaft journaled within the casing upon which the motor armature revolves loosely, a disengaging clutch between the shaft and the motor armature consisting of an electro magnet revoluble around the shaft with the motor armature, and an armature revoluble with the shaft independent of the motor armature and slidable upon the shaft to engage with or disengage from the poles of the electro magnet when the latter is energized or de-energized, whereby the shaft and motor armature are connected or disconnected, and a switch mechanism whereby the rotation of the motor armature is reversible.

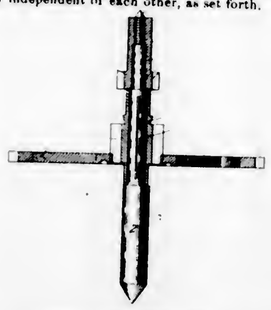
6. The reversing switch consisting of the switch levers connected respectively with the positive and negative poles of a source of electrical supply, insulated plates connected with opposite brushes of the motor, and over which the switch plates are movable to reverse the rotation of the motor, and insulated projections between the plates to prevent short circuiting when the levers are moved over them in reversing the motor.

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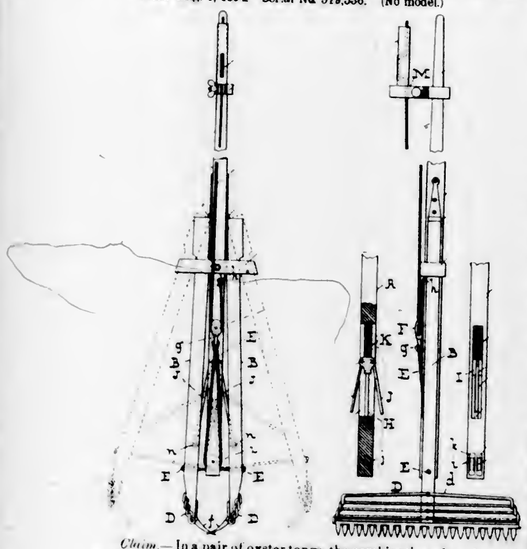
**530,345. CENTER-ARBOR FOR WATCHES.** WM. B. LEARNED and JAMES A. MOSHER, Boston, Mass., assignors of one-half to the E. Howard Watch and Clock Company, same place. Filed Aug. 31, 1893. Serial No. 484,436. (No model.)

*Claim.*—A center arbor comprising an enlarged end portion terminating in a shoulder, a centrally enlarged, slotted compressible bearing terminating in a shoulder, a reduced portion terminating in a shoulder, and a screw threaded end portion above the shoulder, combined with a center wheel and its pinion, having a hub or sleeve formed to receive said bearing and having its internal diameter slightly less than that of the largest part of the bearing, so that when said sleeve is forced upon the said compressible bearing it will compress the latter and thus cause a frictional connection between the sleeve and arbor, and a cannon pinion internally recessed and threaded to receive the reduced portion and threaded portion of the arbor, said pinion bear-

ing on the shoulder, the connection of the two pinions with the arbor being entirely independent of each other, as set forth.



530,346. OYSTER-TONGS. ELMER E. LEARY, Rock Hall, Md. Filed Aug. 6, 1894. Serial No. 519,536. (No model.)



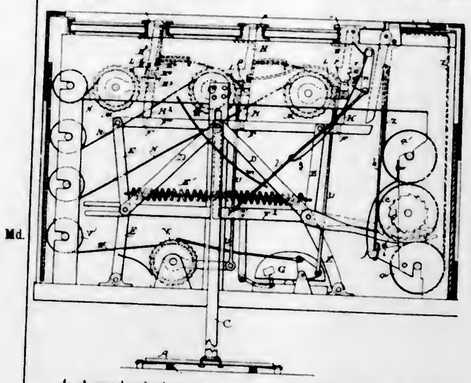
*Claim.*—In a pair of oyster tongs, the combination of a pole, a pair of hinged arms with scoops at their lower ends, rods and a spring to yieldingly retain the arms in a distended position, a cord attached to a block with its ends passed around sheaves and fastened to the said arms, a second cord reeved through the said block and leading to the upper end of the pole, and a cleat to hold the said cord when drawn tightly, substantially as specified.

530,347. VOTING-MACHINE. JULIEN MOUROT, Modesto, Cal. Filed Nov. 14, 1893. Serial No. 490,926. (No model.)

*Claim.*—1. A mechanical voting apparatus consisting of tapes or carriers having successive numbers imprinted upon them, drums about which they are coiled, depression levers or pitmen, and pawl and ratchet wheels whereby the depression of a lever acts to advance the numbered carrier a single figure and indicate an additional vote, and a locking mechanism to lock all of the levers and render them inactive and provided with means for a single actuation by each voter to retract it and render the said levers active substantially as herein described

2. A mechanical voting machine consisting of consecutively numbered tapes or carriers, drums upon which they are coiled, movable depression levers and intermediate mechanism whereby the tapes are advanced, a casing inclosing all of said parts and provided with apertures above and registering with the upper or free ends of said levers and through which an implement is introduced to depress either lever independently of any other, substantially as herein described.

3. A mechanical voting apparatus consisting of a series of consecutively numbered tapes, drums upon which they are coiled, depression levers and intermediate mechanism whereby the movement of any lever advances the tape which it controls, a locking mechanism whereby the lever is prevented from returning after the vote has been cast, a main locking mechanism for rendering all of the levers inactive and adapted to return the depressed lever to its normal position, and means for actuating the main locking mechanism a single time by the voter to render all of the levers active substantially as herein described.



4. A mechanical voting apparatus, consisting of a series of consecutively numbered tapes, depression levers or pitmen and intermediate mechanism whereby any tape is advanced a single number by the depression of a pitman, locking bars slidable with relation to the pitmen, inclined faces upon the pitmen whereby the sliding bars are advanced when the pitmen are depressed, and notches in the pitmen which are engaged by the sliding bars to retain the pitmen in their depressed position after a vote has been cast the pitmen being provided with other notches into which the locking bar is moved by the depressed pitman to, render said non-depressed pitmen inactive, and a main locking frame below all of the pitmen and adapted to lock them against depression until released a single time by each voter; the return movement of the locking frame restoring the depressed pitman and the locking bar to their normal positions, substantially as herein described.

5. A mechanical voting apparatus consisting of a series of consecutively numbered tapes with drums upon which they are coiled, a series of names indicating offices and candidates for each party, placed in line with each other, and each having its independent indicating tape, depression levers or pitmen and intervening mechanism whereby any tape is advanced a single number by the depression of a pitman, a locking bar extending through the apparatus and adapted to engage the pitmen controlling the tapes of all the candidates for any particular office, inclined faces upon opposite sides of the pitmen one of which inclined faces is adapted to engage said locking bar by the depression of any one of the pitmen, whereby the locking bar is moved to lock the depressed pitmen, and prevent its again rising, and also to lock all the other pitmen in the same line so that they cannot be depressed after the first one has been depressed and a vote indicated, the opposite inclined faces being adapted on the upward movement of the depressed pitman to retract the locking bar from the notches of all of the pitmen, a locking frame engaging all of the pitmen and rendering them inactive, and means by which the said locking frame is moved away from the said pitmen a single time by the voter to permit him to depress any desired pitman; the return movement of the locking frame restoring the depressed pitman to its normal position substantially as herein described.

6. A mechanical voting apparatus consisting of a series of consecutively numbered tapes, drums upon which they are coiled, depression levers or pitmen and intermediate mechanism whereby the tapes are advanced by the depression of the corresponding pitman, a booth in which the apparatus is contained, having a vertically movable floor, a rod connected with said floor extending therefrom to the machine, locking bars by which all the pitmen are normally locked until the floor of the booth has been depressed, and levers actuated by the connecting rod whereby the movement of the floor serves to disengage the locking levers and free the pitmen or depression levers for use, substantially as herein described.

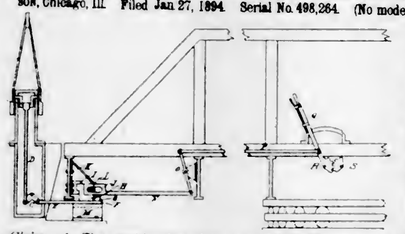
7. A mechanical voting apparatus consisting of a series of consecutively numbered tapes, drums upon which they are coiled, depression levers or pitmen and intermediate mechanism whereby the tapes are advanced by the movement of the corresponding pitmen, an inclosure within which the apparatus is contained having a vertically movable floor, locking bars by which the pitmen are normally locked and prevented from being depressed, mechanism connecting the floor therewith and disengaging the locking bars when the floor is depressed, transversely moving levers actuated by the depression of the floor, locking levers adapted to engage the pitmen when depressed and retain them in their depressed position, intermediate mechanism between the transversely moving levers and the locking bars whereby the latter are all retracted by the depression of the floor, so as to leave all the pitmen free to be actuated, substantially as herein described.

8. A mechanical voting apparatus consisting of a series of consecutively numbered tapes, drums upon which they are coiled, depression levers or pitmen and intermediate mechanism whereby the depression of any pitman actuates a corresponding tape, a transverse bar S, a rock-shaft with rocker-arms connected with said bar, and a lever R whereby the whole of the levers in any one series may be depressed by a single operation of the lever to vote a straight ticket, and locking bars actuated by the pitmen to lock the same in their depressed position, and to also lock all corresponding series of pitmen representing other candidates for the same offices so that they cannot be depressed, substantially as herein described.

9. A mechanical voting apparatus consisting of a series of consecutively numbered tapes, drums upon which they are coiled, depression levers or pitmen and intermediate mechanism whereby the tapes are advanced a single number by each movement of the pitman, a web of paper having the names of the offices printed upon it in lines corresponding with the same offices in conjunction with the various tickets, drums from one of which the roll of paper is uncoiled, and upon the other of which it is received, and an intermediate roll or mechanism whereby the drums are rotated simultaneously plates adapted to cover the writing spaces upon the web of paper, and mechanism whereby said plates are locked to prevent their being turned up to expose the paper, a lever or bail connected with the locking mechanism and adapted to disengage the same when it is turned up whereby the plates are released, substantially as herein described.

10. A mechanical voting apparatus, consisting of a series of consecutively numbered tapes and drums upon which they are coiled, depression levers or pitmen by the downward movement of which each corresponding tape is advanced a single number, a web of paper with drums from which it is uncoiled, and another upon which it is coiled, said web having printed upon it the names of the offices to be voted for, and in line with the corresponding names of regular tickets which are placed in the other parts of the machine, a pawl and ratchet mechanism whereby the web of paper is advanced a sufficient distance to expose a new surface to be written upon, covering plates and locking mechanism whereby these surfaces are protected, a bail or lever, the movement of which unlocks said plates to allow them to be turned up and expose the written surface beneath, and which also engages the pawl with the ratchet whereby the paper is advanced whenever the bail has been turned up, locking bars extending through the machine adapted to engage each of the pitmen representing the offices of the regular ticket, and also the plates which cover corresponding spaces upon the web of paper whereby when any office has once been voted for, the locking bars engage each of the other pitmen or corresponding plates and prevent any further voting for that office, substantially as herein described.

530,348. BRIDGE GATE. THOMAS J. O'BRIEN and EDGAR J. WILSON, Chicago, Ill. Filed Jan. 27, 1894. Serial No. 498,264. (No model.)

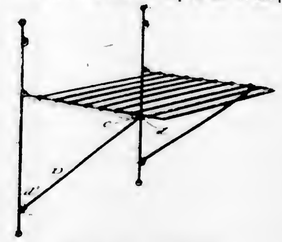


*Claim.*—1. The combination of the cam rails H, H, connected by a knuckle joint, forming a cam whose angle may be changed, working between the rolls G, G, upon slide F opening and closing the gate A by means of cranks B and C and connecting rods D and E.

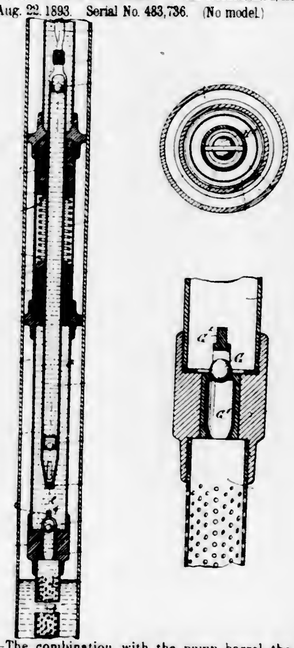
2. The combination of the carriage J connected with the jointed cam rails H, H, by pin T and having a reciprocating motion operating to change the angle of the rails thus opening and closing the gate A.

530,349. FOLDING SHELF. HELEN A. PAYNE, Elmira, N. Y. Filed Feb. 5, 1894. Serial No. 499,158. (No model.)

*Claim.*—The herein described folding shelf consisting of the rods with eyes at each end, eyes near each end and intermediate eyes, the shelf hinged to said intermediate eyes, and having its side bars formed with eyes, and the braces hinged in one set of eyes near the lower end of the said rods and having hooked ends to detachably engage the eyes on the side bars of the shelf and the eyes near the upper ends of the said rods, substantially as and for the purpose specified.

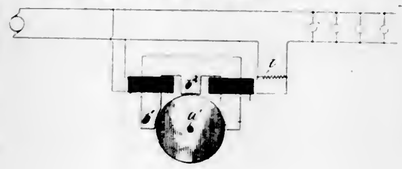


530,350. OIL-WELL PUMP. ADAM ROSENKRANZ, Allegheny, Pa. Filed Aug. 22, 1893. Serial No. 483,736. (No model.)



*Claim.*—The combination, with the pump barrel, the packing cylinder located at one end thereof, and the plunger adapted to reciprocate in the said barrel and packing cylinder, of a stuffing box located at each end of the packing cylinder and adapted to engage the plunger, said stuffing boxes projecting outwardly beyond the packing cylinder to engage the pump casing, a packing held in the said cylinder at each end thereof, and a spring coiled in the cylinder and arranged between the said packings to press them into contact with the plunger, substantially as described.

530,351. ELECTRIC METER. GUSTAVE A. SCHEEFFER, Peoria, Ill., assignor to the Diamond Electric Company, same place. Filed July 17, 1894. Serial No. 517,795. (No model.)



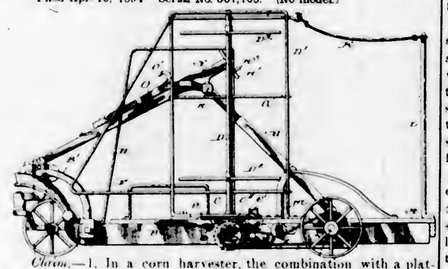
*Claim.*—1. In a meter the combination with an element mounted to rotate under the influence of two magnetic fields, of a coil in series with the working circuit for exciting one of said fields, a coil in parallel with the working circuit, and carrying a lagging current for exciting the second field, and a short circuit about the series coil to neutralize the effects of friction, substantially as described.

2. In a meter, the combination with a rotatable element adapted to be rotated under the influence of the current to be measured, of a coil connected in parallel with the working circuit, a second coil in inductive relation thereto, said coils being adapted to coact to neutralize the effects of friction, substantially as described.

3. In a meter, the combination with magnetic poles, of a drum of aluminum mounted upon a vertical shaft and adapted to rotate in front of said poles, a shunt coil and a series coil for producing two fields of displaced phase to effect the rotation of said drum, a retarding disk of aluminum mounted upon said shaft, a permanent magnet, past the poles of which said disk is adapted to be rotated, and a short circuit about said series coil, adjusted to neutralize the effects of friction, substantially as described.

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530,352. CORN-HARVESTER. CHARLES SCHEETZ, Hanover, Kans. Filed Apr. 16, 1894. Serial No. 507,768. (No model.)



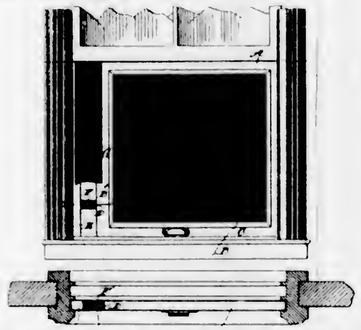
*Claim.*—1. In a corn harvester, the combination with a platform of the rotary cutter and gearing for driving the same, the ground wheels having clutches, the rod connected therewith having an enlargement, and the slotted plate adapted to engage and hold said rod, substantially as shown and described.

2. In a corn harvester the combination with a platform, of the rear standard having the compressing ropes attached thereto a central pivoted standard, a compressing lever connected therewith and a combined lifting and dropping lever connected also with said central standard, substantially as shown and described.

3. In a corn harvester, the combination with the platform and rear standard, of the compressing ropes, the central standard, compressing lever and lifting and dropping lever connected with said central standard, substantially as shown and described.

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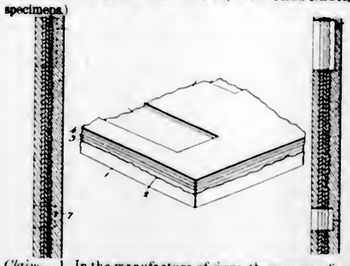
530,353. WINDOW-SCREEN. JOHN G. SCHILL, Jersey City, N. J. Filed Apr. 11, 1894. Serial No. 507,137. (No model.)



*Claim.*—A window screen provided at one edge with the auxiliary stile E, pins extending from the stile E through apertures in the adjacent side of the screen frame, springs on the pins pressing the stile E outwardly, and a strip of flexible fabric G closing the open space between the screen and stile E, and permanently secured at one edge to the said stile and at its other edge to the screen frame; whereby said strip will hold the auxiliary stile to the screen and will fold or unfold as the stile moves inward and outward, substantially as described.

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530,354. PROCESS OF MANUFACTURING SIGNS. ROBERT A. SCHLEGEL, St. Louis, Mo. Filed June 27, 1894. Serial No. 515,832. (No specimens.)



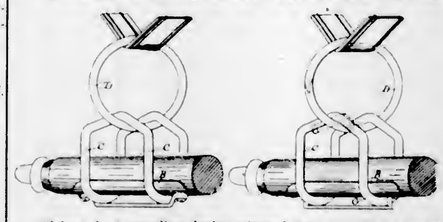
*Claim.*—1. In the manufacture of signs, the process of coating the rough side of a crystal plate glass with a precipitate of silver, delineating the outline of the design or letter on the back of said precipitate, and subjecting the portion so outlined to the action of the sand blast until the rough surface is penetrated, and a "ground" surface formed, then painting said "ground" surface, substantially as set forth.

2. In the manufacture of signs, the process of coating the rough side of a crystal plate glass with a precipitate of silver, next coating said precipitate with suitable varnish, next coating said varnish layer with a metallic powder suspended in a suitable vehicle and allowing the successive coatings to dry, then delineating the outline of the design or letter on the back of the final coating, and finally subjecting the portion so outlined to the action of the sand blast until the rough surface of the glass is penetrated, thus presenting a "ground" surface, then painting said "ground" surface, substantially as set forth.

3. The process of manufacturing signs which consists first in covering the rough side of a plate glass with a precipitate of silver, then covering the same with a coating of shellac varnish, then covering said last coating with a layer of bronze powder suspended in bronze liquid, pasting a suitable layer of glue paper on the last coating, cutting out the particular design or letters from the glue paper and thus delineating the character of the design on the last coating, subjecting that side of the sign to the action of a sand blast until the successive coatings thus exposed are penetrated and until the rough side of the glass is sufficiently penetrated to present a "ground" surface, then removing or peeling off the glue paper, and painting the rear of the letters upon the "ground" surface thus made, substantially as set forth.

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530,355. NECK-YOKE ATTACHMENT. CHRISTIAN C. SCHWANER, Winterset, Iowa. Filed Apr. 22, 1892. Serial No. 430,192. (No model.)



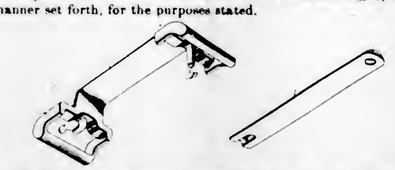
*Claim.*—1. A coupling device adapted for connecting a metal ring with a neck yoke, consisting of an elongated metal loop bent at its center and its end portions in parallel position, a metal ring connected with the end portions of the coupling to swing at right angles thereto, a neck yoke extended through the parallel parts of the coupling and a metal loop fixed to the neck yoke to secure the coupling device to the neck yoke so as to prevent it from sliding longitudinally relative to the yoke and to produce a hinged connection with the yoke, all arranged and combined as and for the purposes stated.

2. A neck yoke attachment comprising an elongated metal loop bent in its approximate central portion to partially encircle the end portion of a neck yoke substantially as set forth, a metal rod secured to the neck yoke and passing over the curved portion of the aforesaid loop and in contact with its outer edges, in the manner set forth, for the purposes stated, and a ring extended through the end portions of the aforesaid loop, all arranged and combined substantially as shown and described.

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530,356. TRACE-CARRIER. CHRISTIAN C. SCHWANER, Winterset, Iowa. Filed May 14, 1894. Serial No. 511,250. (No model.)

*Claim.*—1. A metal loop and trace carrier comprising two parts detachably connected and consisting of a main part that has integral auxiliary loops at its end portions, in right angled position thereto, and an integral hook at the base of the one loop and a straight tongue at the base of the other of said auxiliary loops, and a bar having a cavity and perforation at one end of the bar to admit the said hook and a perforation at the other end to admit the said tongue, in the manner set forth, for the purposes stated.

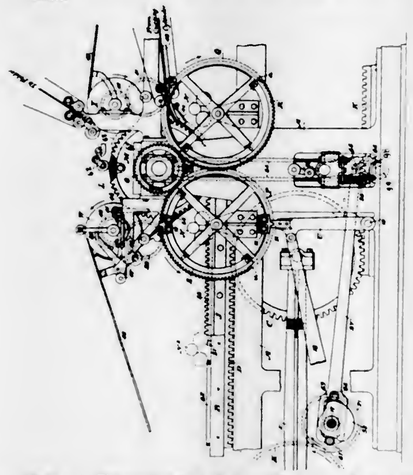


2. A metal trace support consisting of a main part A having a loop B and hook C at one end and a loop $B^1$ and tongue D at the other end, and a metal bar F having perforations at its ends to admit said hook and tongue in combination with a harness strap H having a fixed loop J at its lower end, and a leather strap K having perforations to admit the said tongue D for the purposes specified.

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530,357. BED AND CYLINDER PRINTING-MACHINE. WALTER SCOTT, Plainfield, N. J. Filed Jan. 22, 1891. Serial No. 378,717. (No model.)



*Claim.*—1. The combination of a to and fro moving driver, a follower coacting therewith, one of said driver and follower parts being single and the other double said follower moving only on its own axis or axes and said parts being disengaged when the driver stops, and means for causing them to re-engage when the driver starts up again, substantially as described.

2. The combination of an oscillating driver gear, rotary segmental gears alternately engaging said driver and being disengaged therefrom at the end of each movement thereof, and means for engaging them successively therewith one at a time as the driver starts up, substantially as described.

3. The combination of an oscillating driver gear, a double follower whose components have motion of rotation only and in opposite directions and are alternately driven by said driver, and gearing connecting said components of said follower, substantially as described.

4. The combination of an oscillating driver gear, a double follower whose components have motion of rotation only and in opposite directions and are alternately driven by said driver, gearing connecting said components, and means for meshing said components successively with said driver, substantially as and for the purposes described.

5. The combination of an oscillating driver gear, rotatory segmental gears alternately engaging said driver and being disengaged therefrom at the end of each movement thereof, a to-and-fro moving starter-bar, and teeth coacting with said bar to successively mesh said segmental gears with said driver, substantially as described.

6. The combination of an oscillating driver spur gear, segmental spur gears alternately engaging therewith and being disengaged therefrom at the end of each movement thereof, gearing connecting said segmental gears, a to-and-fro moving starter bar, and teeth for coaction therewith to cause said segmental gears to stop and to mesh successively with said driver, substantially as described.

7. In a printing machine, the combination of an oscillating impression cylinder, a driver gear thereon, two segmental gears with which the driver acts successively, one being driven by the driver as it oscillates one way, the two rolling out of mesh as or before the driver reverses, the driver and the second segmental gear being meshed as the driver oscillates the other way, a sheet-manipulating cylinder, and gearing connecting said cylinder and said segmental gears together, substantially as and for the purposes described.

8. In a printing machine, the combination of an oscillating impression cylinder having a driver gear, two segmental gears with which the driver successively acts, means substantially as described for controlling the segmental gears as each disconnects from the driver gear at or before the end of an oscillation of the driver and for connecting the driver gear to the other at or after the beginning of the next oscillation thereof, a sheet-manipulating cylinder, and gearing connecting said cylinder and said segmental gears together, substantially as and for the purposes described.

9. In a printing machine, the combination of an oscillating impression cylinder provided with a driver gear, rotatory segmental gears starter-means for causing them to mesh successively with the driver gear, and a sheet-manipulating cylinder connected with said segmental gears, substantially as described.

10. In a printing machine, the combination of an oscillating impression cylinder provided with a driver gear, rotatory segmental gears geared together, starter-means for causing them to mesh successively with said driver, and a sheet-manipulating cylinder geared to said segmental gears, substantially as described.

11. In a printing machine, the combination of an oscillating impression cylinder having a driver gear, rotatory segmental gears, starter-bar and teeth for successively meshing them with the said driver, and a rotatory sheet-manipulating cylinder connected with said segmental gears, substantially as described.

12. In a printing machine, the combination of an oscillating impression cylinder provided with a driver gear, rotatory segmental gears, a vibrating starter-bar, and teeth for successively meshing them with the driver, and a rotatory sheet-manipulating cylinder connected with said segmental gears, substantially as described.

13. In a printing machine, the combination of an oscillating impression cylinder having a driver gear, rotatory segmental gears, a vibrating starter-bar and teeth for meshing them successively with the driver, a cam for moving the starter-bar, and a rotatory sheet-manipulating cylinder connected with said segmental gears, substantially as described.

14. In a printing machine, the combination of an oscillating impression cylinder, having a driver gear, a rotatory sheet-manipulating cylinder, gearing between said rotatory cylinder and said driver, said gearing being clear of the driver at each reversing thereof, starter bar, and teeth co-acting therewith at times, whereby shock is prevented and the gearing meshed with the driver, substantially as described.

15. In a printing machine, the combination of an oscillating impression cylinder having a driver gear, a rotatory sheet-manipulating cylinder, gearing connecting said rotatory cylinder and said driver, said gearing and driver disconnecting at each stop of the driver and means for connecting them again as the driver starts, substantially as described.

16. In a printing machine; the combination of the oscillating impression cylinder having a driver gear O, segmental gears, R, S, meshing gears P, Q, on which segments S, R, are placed, starter-bar U, teeth 12, means for operating the starter-bar, a reversing or delivery cylinder and gearing connecting it with one of gears P Q substantially as described.

17. In a printing machine, the combination of a rotatory sheet-manipulating cylinder, an oscillating impression cylinder, a driver, a follower, and gearing connecting said follower and said sheet-manipulating cylinder, and one of said driver and follower parts being single and the other double, the components of the double part moving in opposite directions, one component meshing with the single part during the movement of the impression cylinder in one direction, and the other component meshing therewith during the other movement of said cylinder, substantially as described.

18. In a printing machine, the combination of an oscillating impression cylinder, its driver-gear, a rotatory reversing cylinder, having a gear thereon, gearing intermediate said gears, said driver and said intermediate gearing being clear of each other at each turn of the driver, starter-bar and teeth with which the bar engages at times to give an initial movement to parts to prevent shock, substantially as and for the purposes described.

19. In a printing machine, the combination of a reciprocating type-bed, an oscillating impression cylinder, sheet-reversing apparatus, a delivery-cylinder, means for raising and lowering the impression cylinder, and disconnectible devices for operating said means,

whereby complete copies of one or two signatures may be printed and delivered, substantially as described.

20. In a printing machine, the combination of a reciprocating type-bed, an oscillating impression cylinder, sheet-reversing apparatus, means for raising and lowering the cylinder and disconnectible devices for operating said means, and inking rollers placed adjacent the impression cylinder, whereby the form is inked twice when printing the full length of the bed and four times when printing the half length of the bed, substantially as described.

21. In a printing machine, the combination of an oscillating impression cylinder, a sheet-reversing cylinder at one side thereof, a sheet delivery cylinder at the other side thereof, both the reversing and delivery cylinders being constructed to deliver sheets to fliers or other receiver, gearing driving the delivery and reversing cylinders progressively each in its own direction, said gearing disengaging at or about the end of each oscillation of the impression cylinder, and means for causing it to re-engage at or about the beginning of said oscillations, substantially as described.

22. In a printing machine, the combination of an oscillating impression cylinder, a rotary delivery cylinder, sheet-fliers to which it delivers sheets, gearing driving said delivery-cylinder, said gearing disengaging at or about the end of each oscillation of the impression cylinder, and means for causing said gearing to re-engage at or about the beginning of said oscillations, substantially as described.

23. In a printing machine, the combination of a reciprocating type-bed, an oscillating impression cylinder, its driver-gear, a reversing cylinder rotating in but one direction, and segmental gears moving in opposite directions and geared together and to the reversing cylinder substantially as and for the purposes described.

24. In a printing machine, the combination of an oscillating impression cylinder, its driver-gear, a reversing cylinder, two segmental gears moving in opposite directions and gearing connecting them together and to the reversing cylinder, whereby the reversing cylinder is caused to rotate in one direction, substantially as and for the purposes described.

25. In a printing machine, the combination of an oscillating impression cylinder, its driver gear, a reversing cylinder, a delivery cylinder, segmental gears moving in opposite directions and gearing connecting them together and to the reversing and delivery cylinders, whereby these cylinders are caused to rotate, each in its own direction, substantially as and for the purposes described.

26. In a printing machine, the combination of an oscillating impression cylinder, its driver-gear, a reversing cylinder, two segmental gears, gearing connecting them and the reversing cylinder, and starter-means for moving the segment-gears successively into contact or mesh with the oscillating driver gear, one at each turn of the same, substantially as and for the purposes described.

27. In a printing machine, the combination of an oscillating impression cylinder, its driver-gear, a reversing cylinder, two segmental gears, gearing connecting them together and to the reversing cylinder and a rocking toothed starter-bar, and teeth, for moving the segments into mesh with the driver gear one at each turn of the same, substantially as and for the purposes described.

28. In a printing machine, the combination of an oscillating impression cylinder, its driver gear, a reversing cylinder, two segmental gears, gearing connecting them together and to the reversing cylinder, a rocking starter-bar, cams and connections for operating said bar, all substantially as and for the purposes described.

29. In a printing machine, the combination of an oscillating impression cylinder, M, its driver-gear, O, a reversing cylinder, W, two segmental gears, R, S, gears P, Q, connecting them, and gears 39, 40, connecting the gear P to the reversing cylinder, substantially as and for the purposes described.

30. In a printing machine, the combination of an oscillating impression cylinder, its driver gear, a reversing cylinder, a delivery cylinder, two segmental gears, gearing connecting them together and to the reversing and delivery cylinders, and starter-means for moving the segmental gears into mesh with driver gear one at each turn of the same, substantially as and for the purposes described.

31. In a printing machine, the combination of an oscillating impression cylinder, its driver gear, a reversing cylinder, a delivering cylinder, two segmental gears, gearing connecting them together and to the reversing and delivery cylinders, a rocking starter-bar, and teeth for moving the segments successively into mesh with the driver gear, one at each turn of the same, substantially as and for the purposes described.

32. In a printing machine, the combination of a reciprocating type bed, an oscillating impression cylinder, its driver gear, a reversing and a delivery cylinder, each rotating in its own direction, gearing substantially as described intermediate said driver gear and said rotating cylinders, and means for raising and lowering the impression cylinder, substantially as and for the purpose described.

33. In a printing machine, the combination of a reciprocating type-bed, an oscillating impression cylinder, its driver gear, a reversing and delivery cylinder, each rotating in its own direction, means for raising and lowering the impression cylinder, and disconnectable devices for operating said raising and lowering means, substantially as and for the purposes described.

34. In a printing machine, the combination with an oscillating impression cylinder, its driver gear, a reversing and delivery cylinder, two segmental gears, two intermeshing gear wheels each carrying one of the segmental gears, and each geared, the one to the reversing cylinder, the other to the delivery cylinder, and two teeth on one of the gear wheels, of a rocking toothed starter-bar for engaging the teeth, and causing the segments to mesh successively with the driver, one at each turn of the same, substantially as and for the purposes described.

35. In a printing machine, the combination with the reciprocating type bed, oscillating impression cylinder having a driver gear of one half its diameter, a reversing cylinder, of two segmental spur gears, (each equal to or approximately equal to a stroke of the bed) geared to the reversing cylinder whereby the surface speeds of the cylinders are equal, substantially as and for the purposes described.

36. In a printing machine, the combination of a reciprocating type-bed, an oscillating impression cylinder, sheet reversing cylinder, cam and connecting mechanism for raising and lowering the impression cylinder once for each movement of the bed, substantially as and for the purposes described.

37. In a printing machine, the combination of a reciprocating type-bed, an oscillating impression cylinder, mechanism substantially as described for raising and lowering the cylinder, oiling rollers, and a cam on the cylinder for raising the oiling rollers from that part of the cylinder which takes the first impression on the sheet, substantially as and for the purposes described.

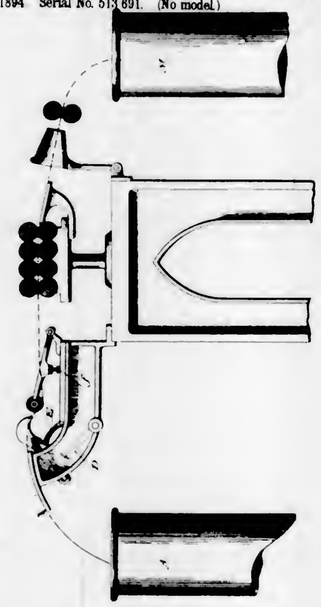
38. In a printing machine, the combination of a type-bed, an oscillating impression cylinder, mechanism substantially as described for raising and lowering the cylinder, oiling rollers and means for raising the oiling rollers from that part of the cylinder which takes the first impression, substantially as described.

39. In a printing machine, the combination of an oscillating driver, two gears connected together, moving in opposite directions, one of said gears meshing with the driver as it oscillates one way, the other as it oscillates the other way, and a sheet reversing cylinder connected with said gears, substantially as described.

40. In a printing machine, the combination of an oscillating impression cylinder, a rotatory sheet-manipulating cylinder, gearing driving said rotatory cylinder, said gearing disconnecting at the end of each movement of the impression cylinder, and means connecting said gearing at the beginning of each movement of said impression cylinder, substantially as described.

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**530,358. RAILWAY-HEAD AND DRAWING-FRAME.** WILLIAM E. SHARPLES and FERNANDO J. SHELL, Fall River, Mass. Filed June 6, 1894. Serial No. 513,691. (No model.)





*Claim.*—1. In a railway head or drawing frame, the combination with the drawing rolls and the stop motion controlling trumpet from which the sliver passes to said rolls, of a roller interposed between said trumpet and rolls and placed close to and a little below the nose of the trumpet, substantially as and for the purposes hereinbefore set forth.

2. In a railway head or drawing frame, the combination with the drawing roll and the stop-motion-controlling trumpet, from which the sliver passes to said rolls, of a pressure-roller interposed between said parts to bear upon the sliver as it issues from the trumpet, and a vibratory roller carrying frame, having its axis or hinge, at that end of it which is farthest from the trumpet, substantially as and for the purposes hereinbefore set forth.

3. In a railway head or drawing frame, the combination with the drawing rolls and the stop motion controlling trumpet, of a roller interposed between said parts, and means for determining the vertical adjustment of said roller so as to regulate its pressure upon the sliver which passes under it, substantially as set forth.

4. The combination with the drawing rolls and the stop-motion controlling trumpet, of the pressure roller F interposed between said parts, its vibratory supporting frame hinged at its front end to the machine, and the adjustable stop for said frame.

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**530,359. CAR ATTACHMENT.** CHARLES K. SHERWOOD, Brooklyn, N. Y. Filed Aug. 18, 1894. Serial No. 520,698. (No model.)



*Claim.*—1. In combination with the car the depending apron and the dust collecting and conveying conduit carried thereby, substantially as described.

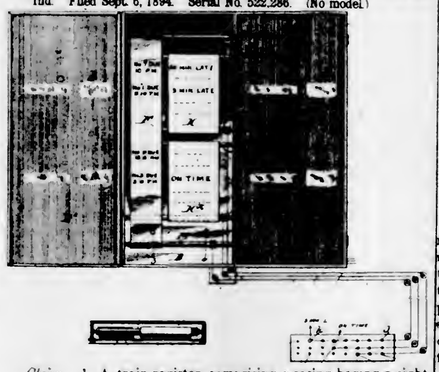
2. In combination with the car, the depending apron and the dust collecting and conveying conduit carried thereby and communicating with the space beneath the bar throughout its length.

3. In combination with the car, the depending apron and the dust collecting and conveying conduit carried thereby and the funnel at the front of the conduit, substantially as described.

4. In combination with the car the depending apron having the channel or conduit and the funnel consisting of the inclined plates depending from the car at the front end, substantially as described.

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**530,360. TRAIN-TIME INDICATOR.** WILLIAM M. SIX, Westfield, Ind. Filed Sept. 6, 1894. Serial No. 522,286. (No model.)



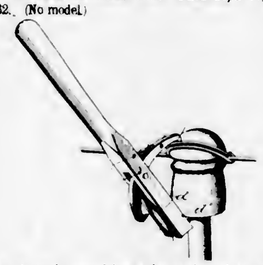
*Claim.*—1. A train register comprising a casing having a sight opening, a canvas or belt held therein having the "due time" indicator marks thereon and movable under such opening, said belt being spring drawn in one direction, a key board, having lock members arranged in harmony with the indicator marks on the belt, and a pull cord connected with one end of the belt, and having means for connecting it to the key board all arranged substantially as shown and for the purposes described.

2. In a train register, the combination with a casing having sight openings *b* and *c*, a main belt or indicator movable under the opening *b*, spring drawn in one direction, and one or more independent indicator belts movable under the openings *c* spring drawn in one direction, of a key board having a series of fastening means arranged to be in harmony with the indicator marks on the several belts, and pull cords connected at one end to such belts and having at the other ends fastening means whereby they can be adjustably connected with the key board substantially as shown and for the purposes described.

3. The combination with the casing A having a door provided with sight openings *b* and *c*, spring rollers D, G, G', and the guide rollers E $G^{\times}$ $G^{3}$, arranged substantially as shown, of the indicator belts F H and $H^{\times}$ secured to such rollers the cords K $K^{3}$ K' wound at one end about the rollers E $G^{\times}$ $G^{3}$, guides M for such cords, said cords having securing means at their ends, and a key board having a series of locking portions arranged in register with the indicator marks on the belts, arranged to receive the securing ends of the cords substantially as shown and for the purposes described.

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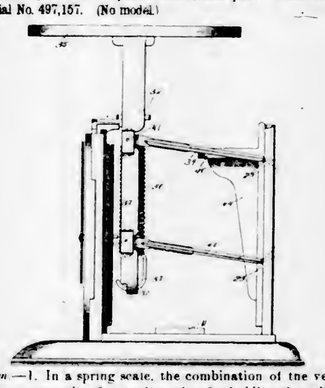
**530,361. TOOL FOR LINEMEN'S USE.** SOLOMON SMITH and MILTON B. MISHLER, Ravenna, Ohio. Filed Sept. 17, 1894. Serial No. 523,262. (No model.)



*Claim.*—A tool comprising a lever slotted at one end and cut away on one face and notched on the other, a double hook pivoted within the slot, and a spring bearing upon the hook, substantially as shown and described.

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**530,362. SPRING-SCALE.** CHRISTOPHER SPENCER, Guilford, Conn., assignor to I. S. Spencer's Sons, same place. Filed Jan. 17, 1894. Serial No. 497,157. (No model.)



*Claim.*—1. In a spring scale, the combination of the vertically movable pan-supporting frame, the spring for holding the said frame normally in elevated position, the toothed rack carried by said frame, the indicator, the actuating pinion which meshes with said rack, a stationary upright frame formed with angular cross grooves, and the parallel cross frames mortised into and pivotally attached to the pan-supporting frame, and formed with knife edges which bear in the cross grooves of the stationary upright frame, substantially as set forth.

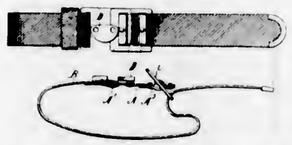
2. In a spring scale, the combination of the base formed with an inclosing flange for the back and sides, the rear upright frame rigidly secured to the base, the front dial-supporting plate also rigidly secured to the base and formed with inclosing flanges for the sides, the vertically movable pan supporting frame connected to the stationary upright frame by means of the parallel cross frames, the spring attached to the vertically movable frame, the indicator, the rack for actuating the indicator, the sides and back formed in a single piece of sheet metal and extending around the rear upright frame and fitting snugly within the inclosing flanges on the base and front plate.

the clamping plates secured to the base and front plate for engaging the sides, the removable top plate formed with an inclosing flange which fits around the sheet metal back and sides, and means for securing the top to the upright frame, substantially as set forth.

3. In a spring scale, the combination of the base, the rear upright frame rigidly supported upon the base and mortised and keyed thereto, the front dial-supporting plate also rigidly supported upon the base and mortised and keyed thereto, the vertically movable pan-supporting frame connected to the stationary upright frame by means of the parallel cross frames, the spring attached to the pan-supporting frame for holding it normally in elevated position and extending vertically in a line directly beneath the weighing pan, the indicator, the rack for actuating the indicator, the sheet metal sides and back, and the removable cover, substantially as set forth.

4. In a spring scale, the combination of the base, the front and rear frames rigidly supported upon the base, the angular grooves formed in the rear frames, the vertically movable pan-supporting frame, the lug formed integral with the front plate or frame the spring for supporting said pan-supporting frame extending directly below the weighing pan, and attached at one end to the integral lug of the front plate and at the other end to the movable pan-supporting frame, the parallel cross frames mortised into and pivotally connected to the pan-supporting frame at their front ends, and formed with curved bracing arms which curve around the spring and provide ample room for it to work in, and knife edges at the rear ends of the cross frames which work in the angular cross grooves of the rear frame, the indicator, the rack for actuating the indicator, substantially as set forth.

530,363. BUCKLE. ALFRED STEINER, New York, N. Y. Filed July 16, 1894. Serial No. 517,739. (No model.)



*Claim.*—1. A buckle comprising a buckle plate formed with a projecting fixed tongue, a clamping frame provided with a pivot journaled in the said tongue, the said frame pressing and clamping with its front end the strap on the front end of the said tongue and a locking device held on the said plate for engaging the rear end of the said clamping frame to lock the latter to the plate, substantially as described.

2. A buckle, comprising a plate formed at one end with a loop for connection with a strap, and at its other end with a tongue having a bearing, a clamping frame provided with a pivot journaled in the said bearing and also provided with a front and rear bar, of which the front bar serves to press the front end of the strap against the front end of the tongue, and a button mounted to turn on the said plate and adapted to engage the said rear bar of the frame to lock the latter to the plate, substantially as shown and described.

530,364. ROTARY BOLT. THOMAS STEVENS, Vigo, Ohio. Filed Feb. 3, 1894. Serial No. 499,003. (No model.)

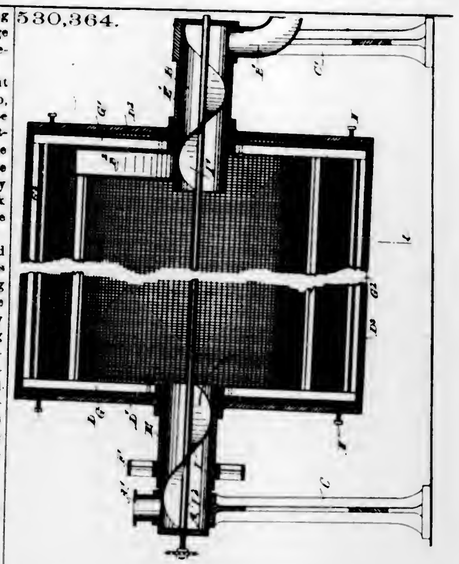
*Claim.*—1. In a rotary bolt, the combination with a feed cylinder, and a tailings discharge cylinder, of a bolt mounted to revolve on the said cylinders, and an elevating device comprising spiders revolving with the bolt and having their spokes connected by longitudinal bars, and an elevator bucket and pitch board secured to each bar, substantially as described.

2. In a rotary bolt, the combination with a feed cylinder, and a tailings discharge cylinder provided with an inlet spout, of a bol mounted to revolve on the said cylinders, conveyer screws in the said cylinders, and an elevating device comprising spiders revolving with the bolt, and having their spokes connected by longitudinal bars and an elevator bucket and pitch board secured to each bar, substantially as described.

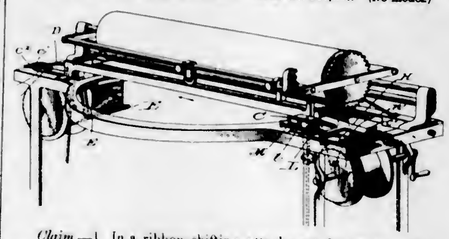
3. In a rotary bolt, the combination with a feed cylinder, and a tailings discharge cylinder, of sleeves mounted loosely on the said cylinders, a bolt mounted loosely on the sleeves, an elevator secured to the inner ends of the said sleeves, and means for connecting the bolt to the elevator, substantially as described.

4. In a rotary bolt, the combination with a feed cylinder, and a tailings discharge cylinder, of sleeves mounted loosely on the said cylinders, a bolt mounted loosely on the sleeves, an elevator having its supporting spokes secured to the inner ends of said sleeves, and bolts connecting the heads of the reel adjustably with the spokes of the elevator, substantially as described.

530,364.



530,365. AUTOMATIC RIBBON-REVERSE. FRED P. STILES, Sparta, Wis. Filed June 11, 1894. Serial No. 514,220. (No model.)



*Claim.*—1. In a ribbon shifting attachment for type-writers a spring actuated switch bar, provided at one end with means for locking the same, a tripping device for releasing said locking device, and a spring actuated shifting device arranged at the opposite end to shift it in a direction opposite to the tendency of the switch bar spring, substantially as shown and described.

2. In a ribbon shifting attachment for type-writers, a spring actuated switch bar provided at one end with means for locking the same and a tripping device for releasing said lock a spring actuated shifting device arranged at the opposite end, a locking device for holding the same, and a tripping device for releasing said lock, substantially as shown and described.

3. In a ribbon shifting device for typewriting machines the combination with a switch bar and springs for moving the same, of a locking device at each end and a tripping device at each end also for releasing the lock, and a spring actuated shifting device at one end adapted to operate the switch bar in a direction opposite to its own spring, substantially as shown and described.

4. The combination with the frame, of the hinged arms having projections and tripping devices, the spring actuated switch bar and plate and the locking connections between said arms, bar and plate all arranged substantially as shown and described.

5. The combination with a frame of the ribbon having one or more strips or stops thereon, the arms having tripping devices, the spring actuated switch bar, and sliding plate and means for connecting the plate, bar and arms, substantially as shown and described.

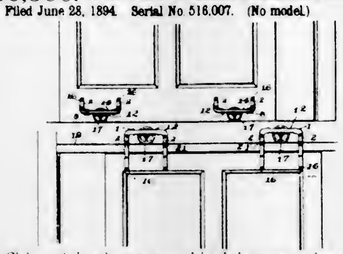
6. The combination with a frame of the arms hinged at each end and having lateral projections, and tripping devices, the spring actuated switch bar having a boss, the spring actuated sliding plate having a boss and means for connecting the said plate and switch bar at definite intervals, substantially as shown and described.

7. The combination with the frame of the arms hinged at each end and provided with projections and tripping devices, the switch bar having a boss at one end, a spring connected with the switch bar



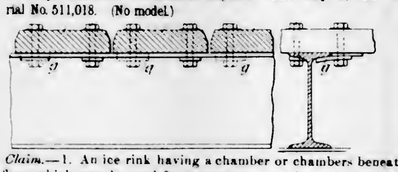
at said end, a sliding plate near the opposite end, said plate having an offset and a boss, the spring connected with said plate and frame, the lever pivoted between the plate and switch bar and the pins carried by said switch bar and plate, substantially as shown and described.

530,366. DOOR-HANGER. ALBERT O. THORNTON, Providence, R. I. Filed June 28, 1894. Serial No. 516,007. (No model.)



*Claim.*—A door hanger comprising in its construction a rear plate having vertically-aligned tracks in its upper and lower edges, said tracks terminating at each end in vertically-aligned shoulders, a plate formed integral with each end of the rear plate and provided with perforations by which it may be secured to the door, and a front plate extending parallel with the rear plate and having at its ends lateral sections proceeding toward and formed integral with the rear plate, the upper and lower edges of said front plate being formed with vertically-aligned tracks each terminating at its ends with similarly related shoulders, the shoulders of the tracks on the front plate being horizontally aligned with the corresponding shoulders on the rear plate, substantially as described.

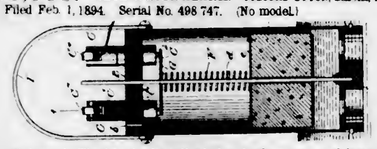
530,367. ICE-RINK. FELIX UNSOLD, Munich, Germany, assignor to Joseph Fishburn, Westminster, England. Filed May 12, 1894. Serial No. 511,018. (No model.)



*Claim.*—1. An ice rink having a chamber or chambers beneath the floor which may be used for storage purposes but which will insulate the ice from the earth and thereby prevent the conduction of the heat of the latter to the ice, the said floor being constructed of planks laid parallel with spaces between them and each rigidly secured to the supporting girders or joists at one edge only and loosely fastened thereto at the other edge so as to allow of expansion and contraction with variations of temperature, the spaces between the said planks being filled or calked with hemp, tow or pitch, or other resilient material which will allow of the expansion and contraction of the planks all substantially as, and for the purposes, described.

2. The combination, in an ice skating rink floor, of joists, planks supported upon the said joists and laid with spaces between them, the said planks being rigidly secured at one edge only and a filling of resilient material in the said spaces substantially as, and for the purposes, described.

530,368. BILGE WATER ALARM. COLCORD UPTON, Salem, Mass. Filed Feb. 1, 1894. Serial No. 498,747. (No model.)



*Claim.*—1. The herein-described circuit closer, comprising a case having terminals for the line wires, a guide rod extending vertically within the case, a float guided on said rod, a spiral spring seated on the float and ranging vertically in the case, and a contact plate yieldingly supported on the spring, substantially as described.

2. The combination, in a float-operated circuit closer, of a case, an insulating cap in the upper end of the case, binding posts supported on the cap and extending to the inner side thereof, forming terminals for the line wires, a base detachably secured to the bottom of the case, a guide rod extending upwardly from said base through the cap of the case, a float having guided movement on the rod, a spiral spring surrounding the rod and supported on the float, and a contact plate also having guided movement on the rod and supported on the spring, to tilt relatively to the axis of the case, and float, substantially as described.

3. The herein described circuit closer, comprising the following elements, to wit: a case having an insulating cap with a vent orifice and carrying binding posts extending to the inner side of the cap, a skeleton base fitting the lower end of the case and provided with lateral studs, L-shaped slots leading from the lower edge of the case for receiving said studs, seats communicating with said slots at the inner ends thereof and located below said inner ends of the slots, a vertical guide rod on the base, a float having guided movement on the rod, and a contact plate yieldingly supported from the float by an interposed spiral spring, substantially as described.

530,369. ATTACHMENT FOR MUSICAL INSTRUMENTS. LINCOLN UTT, Lexington, Mo. Filed July 9, 1894. Serial No. 516,964. (No model.)

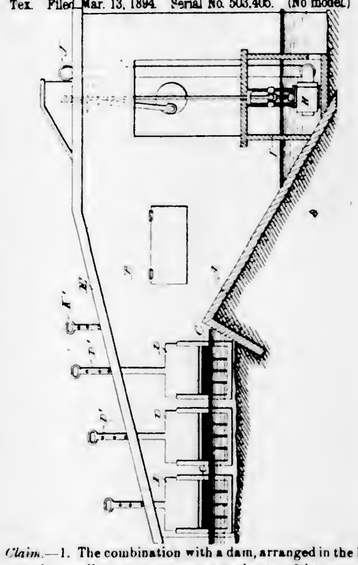


*Claim.*—1. In an attachment for musical instruments, the combination with a frame, and vertically sliding and spring pressed bars in the frame provided with spaced blocks, of horizontally yielding bars having longitudinally extending notches, and provided with blocks between the blocks of the vertically sliding bars, and cross bars secured to the vertically sliding bars and engaging the notches of the said horizontally sliding bars, substantially as described.

2. In an attachment for musical instruments, the combinaton with a frame, vertically sliding bars in the frame, and bars fitted to slide horizontally on the vertically sliding bars and provided with dampening blocks, of inclined arms on the horizontally sliding bars and springs having one end secured to the vertically sliding bars and provided at their other ends with projections having eyes engaging the inclined arms, substantially as described.

3. An attachment for musical instruments, consisting of the frame E, the vertically sliding and spring press bars F, $F'$ $F^2$ $F^3$ provided with spaced blocks H of felt or the like on their under sides, the bars I fitted to slide on the bars F $F'$ $F^2$ $F^3$ and provided with the blocks H′ of felt or the like, said blocks H′ being between the blocks H, the inclined arms $I^3$ on the bars I, and the springs $I^4$ secured to the bars F $F'$ $F^3$ $F^3$ and provided with the projections $I^5$ having eyes to receive the inclined arms, substantially as herein shown and described.

530,370. WATER-POWER. WILLIAM E. VERNON, San Angelo, Tex. Filed Mar. 13, 1894. Serial No. 503,405. (No model.)

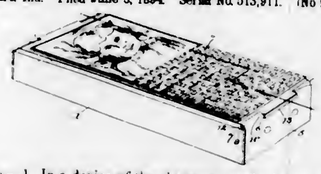


*Claim.*—1. The combination with a dam, arranged in the bed of a stream and extending part way across the latter, of the power-house,

and having its upper end closed, and its top inclined downward in the up-stream direction, as and for the purpose specified, gated inlet openings in the side of the power-house, which are located below the top of the dam, a downwardly-inclined water-way in the power-house, and a water-wheel located in the lower enlarged end of the power house, as shown and described.

2. A water power, comprising a power house set in the bank of a stream or river and formed in its side facing the stream or river with inlets, gates for opening and closing the said inlet openings, a race-way extending longitudinally in the said power house, and connecting at its upper end with the said inlets, a water wheel journaled in the lower part of the said power house and upon which discharges the said race-way, an apron arranged above said wheel on the bottom of the race-way, at an angle thereto to guide the water upon the wheel as shown and described.

530,371. PLATE AND BASE FOR PRINTING. ALBERT G. WADE, Elkhart, Ind. Filed June 8, 1894. Serial No. 513,911. (No model.)

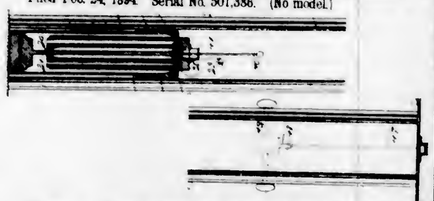


*Claim.*—1. In a device of the character set forth, the combination with a base having a smooth surface and plates at the opposite ends thereof, each of which is provided with a central recess and outer flanges having inner beveled faces, of a printing plate formed at each of its ends with a projecting tongue and with outer recesses having beveled edges, the said tongues fitting the recesses in the said plate, as and for the purpose described.

2. In a device of the character set forth, the combination with a base having a smooth surface and plates at the opposite ends thereof, one of which is rigidly secured to said base and the other loosely secured thereto, each of the said p ates being provided with a central recess and outer flanges having inner beveled faces, of a printing plate formed at each of its ends with a projecting tongue and with outer recesses having beveled edges, the said tongues fitting the recesses in the said plates, as and for the purpose described.

3. In a device of the character set forth, the combination with a base having a smooth surface and plates at the opposite ends thereof, one of which is rigidly secured to said base and the other secured thereto by means of bolts passing through a portion of the said base which give the said plate a limited movement away from said base, each of the said plates being provided with a central recess and outer flanges having inner beveled faces, of a printing plate formed at each of its ends with a projecting tongue and with outer recesses having beveled edges, the said tongues fitting the recesses in the said plates, as and for the purpose described.

530,372. SLIDING DOOR. LEANDER H. WEAVER, Hudson, N. Y. Filed Feb. 24, 1894. Serial No. 501,386. (No model.)



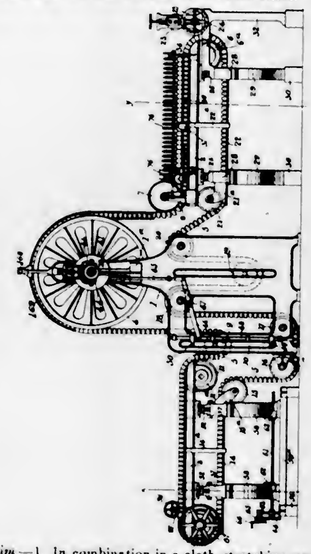
*Claim.*—1. The collapsible door herein described, the same being composed of a series of rectangular panels, which are adapted to slide vertically one on another, and have their vertical axes coincident, or aligned, as shown and described.

2. As an improved article of manufacture, a sliding door comprising an upper single section and a series of double sections below it and connected with it, the sections being arranged to slide one over the other, substantially as described.

3. The combination, with the counterbalanced telescoping door, comprising a series of sections as specified, of the bail secured to one of the sections above the lower section, and a cord secured to the bail and extending downward through the bottom of the lower section, substantially as described.

4. The sliding door, comprising an upper single section having a foot at its lower edge, a hollow section below it, having its upper end shaped to fit the foot of a second section, the second section having also a foot at its lower edge, and a third section closed at the bottom and having its top shaped to fit the foot of the section above it, substantially as described.

530,373. STRETCHING APPARATUS FOR CALICO BLOCK PRINTING MACHINES. WILLIAM WESTWELL, Accrington, England. Filed Apr. 3, 1894. Serial No. 506,215. (No model.) Patented in England May 2, 1891, No. 7,633, and Nov. 19, 1892, No. 20,998.



*Claim.*—1. In combination in a cloth stretching machine, a fitting table, a delivery table, endless chains carried by same, said chains provided with carrying devices for the material means for guiding the chains between and under said tables, means for adjusting the width of said tables, means for adjusting the delivery table longitudinally and laterally, means for releasing the material at the delivery end of the machine from the carrying devices, and means for driving the chains, substantially as and for the purpose described.

2. In combination in a cloth stretching machine a fitting table, a center framework, a delivery table, endless chains having slack portions carried by same, said chains provided with carrying devices for the material slots in the center frame, loose rollers supported in the slots for taking up the slack of the chain, means for adjusting the width of the fitting and delivery tables, adjustable pulleys 4 carried by the center framework, means for releasing the material at the delivery end of the machine from the carrying devices and means for driving the chains, substantially as and for the purpose described.

3. In combination a fitting table and a delivery table, means for adjusting the width of same, endless chains carried by the tables, means for guiding the chains between and under said tables, means for imparting a continuous motion to the chains when on the delivery table and an intermittent motion to the chains when on the fitting table, means for holding the material on the chains and means for causing the holding means to release the material at the delivery end of the machine, substantially as and for the purpose described.

4. The combination with the fitting and delivery tables of a center framework, a shaft 39 carried by same, pulleys on the shaft, endless chains having slack portions passing over the pulleys and over the tables, means for holding the material on the chains and means for causing the holding means to release the material at the delivery end of the machine, a driving pulley on the shaft 39, a clutch between the latter and the pulley, slots in the framework, rollers for taking up the slack of the chains, said rollers being carried in the slots, tappets operated by the rollers, a bar carrying the tappets, connections between the bar and the clutch for putting same in and out of gear, driving pulleys 12 on the delivery table, the whole operating to give a continuous motion to the chains when on the delivery table, and an intermittent motion to them, when on the fitting table, substantially as described.

5. In combination a table, frames 3 endless chains carried thereby and provided with means for holding the material, slotted under frames 52 supporting same, nuts carried by the frames 3, a right and left handed screw 54 engaging with the nuts for adjusting the width of the frames 3, a screw 55 in the frame 52, a second under frame 57, a nut 56 secured to same and engaging with the screw 55, said screw adapted to move the frame 52 laterally on the frame 57, means for guiding the frame 52, standards for supporting the frames, means for supporting and guiding the endless chain beneath the frame 52, a base 59 for the standards, slotted beams 59*, a screwed rod 61, nuts 62, means for operating the rod so as to give the standards a longitudinal movement on the base, means for guiding the standards, means for driving the chains and means for causing the material to be released at the delivery end of the machine, substantially as described.

6. The combination with a fitting and a delivery table, and endless chains composed of links each having a fixed and a movable jaw, of bars 36 carried by the fitting tabla for holding the material on the fixed jaws of the chains, means for forcing the material into the jaws, means for closing said movable jaws on the material, and means carried by the delivery table for opening said movable jaws to release the material, substantially as described.

7. In combination the fitting table, a rod 33, a bar 36, carried by same, uprights 76, carried by the bar, rods 79 carried by the uprights, having plates 85, springs on the rods, spring catches carried by the uprights, an endless chain composed of links each having a fixed and a movable jaw on the fixed jaws of which, the bar 36 is adapted to bear and means for raising the rods 79 and plates 85 and for closing the movable jaws of the links, substantially as described.

8. In combination the fitting table, a bar 89 having a rack, a block 90 sliding thereon having a pinion and operating handle, a disk 93, and an arm 94, having a head 95, carried by the block 90, an endless chain having fixed and movable jaws, said movable jaws adapted to be closed by the disk, a movable bar 36 adapted to bear on the fixed jaws of the links to hold the material, spring controlled plates 85, carried by the bar 36, adapted to force the material between the jaws of the links, rods attached to the plates, means carried by the rod with which the head 95 engages, so as to raise the plates from between the jaws, and means for holding the plates in their raised position, substantially as described.

9. The combination with a fitting and a delivery table, of endless chains composed of wedge-shaped links, each consisting of a fixed upright and straight jaw 69, a pivoted movable jaw 70, having a bent tail 72, a boss 73, in the shape of a jaw, and a projection 74, the latter adapted to fit into the boss 73 of the link next in order and a pin 71 passing through the boss 73 into the projection 74 whereby the pin is prevented from working loose when the chain is made up, substantially as described.

530,374. LADDER ATTACHMENT. THEODORE WILKINS, New York, N. Y. Filed Mar. 13, 1894. Serial No. 503,412. (No model.)



*Claim.*—1. The combination with a ladder, of a bail shaped anchor having the ends of its side members hinged to the inner faces of the side beams of the ladder near the lower end thereof, the said anchor being provided at or near the junction of the side members and the connecting bar with teeth or prongs to engage the ground or other fixed object when the anchor is swung downward, and a catch fastened to the inside of one of the beams of the ladder and adapted to engage said anchor when the latter is swung upward and hold the same between the side beams of the ladder, substantially as shown and described.

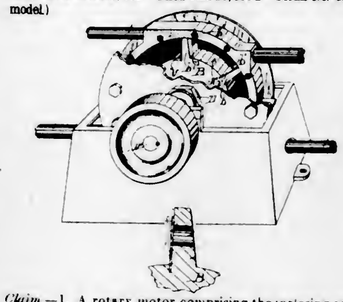
2. A ladder attachment, comprising sections adjustable upon each other to conform to ladders of different widths, the said sections having side arms adapted to be hinged on the lower end of a ladder, and teeth or prongs held on the said sections and adapted to engage the ground or other fixed object, substantially as shown and described.

3. A ladder attachment provided with an anchor comprising two L-shaped sections, a sleeve for connecting the adjacent arms of the sections with each other, the side arms of the said sections being pivoted on the lower end of the ladder, and prongs or teeth held on the said sections, substantially as shown and described.

4. A ladder attachment provided with an anchor comprising two L-shaped sections, a sleeve for connecting the adjacent arms of the sections with each other, the side arms of the said sections being pivoted on the lower end of the ladder, prongs or teeth held on the said sections, and a catch adapted to be fastened on the ladder and adapted to lock the anchor in place on the ladder, substantially as shown and described.

5. A ladder attachment provided with an anchor, comprising two L-shaped sections adapted to be pivoted on the lower end of the ladder, a sleeve connecting the horizontal arms of the sections with each other, the said sleeve being formed with a handle, and prongs or teeth held on the said sections and adapted to engage the ground or other fixed object, substantially as shown and described.

530,375. IMPACT ROTARY STEAM-MOTOR. WILLIAM H. WILLEY, Santa Monica, Cal. Filed Jan. 29, 1894. Serial No. 498,415. (No model.)



*Claim.*—1. A rotary motor comprising the inclosing case having the circular rotary piston chamber, a steam inlet arranged substantially tangential to the circular chamber to discharge steam thereinto, a steam outlet or exhaust arranged substantially in line with the inward discharge or jet from the steam inlet but deflected from such line to correspond with the deflection of the steam caused by the rotation of the piston within the chamber to allow, practically, the direct escape of the injected steam, and a rotary piston arranged in such chamber, provided with the wings arranged to fit closely in the case between the inlet and the exhaust, and provided with a relief escape passage leading backward from the inlet to the exhaust, substantially as and for the purpose set forth.

2. The rotary motor set forth comprising the case having the circular rotary piston chamber; two steam inlets arranged substantially tangential to the circular chamber to discharge steam thereinto in opposite directions and upon opposite sides thereof; two exhausts each arranged substantially in line with its respective inlet but deflected therefrom to correspond to the deflection of the steam caused by the rotation of the piston within the chamber to allow, practically, the direct escape of the steam; the rotary piston arranged in such chamber and provided with the wings arranged to fit closely within the chamber to intercept the passage of steam between each inlet and its respective exhaust, and suitable pressure relief passages leading backward from and communicating respectively between each inlet and the exhaust of the other inlet.

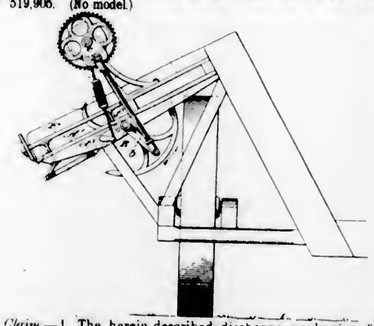
3. The rotary motor set forth comprising the case having the circular rotary piston chamber; two steam inlets arranged substantially tangential to the circular chamber to discharge steam thereinto in opposite directions and upon opposite sides thereof; two exhausts each arranged substantially in line with its respective inlets but deflected therefrom to correspond to the deflection of the steam caused by the rotation of the piston within the chamber to allow, practically, the direct escape of the steam; the rotary piston arranged in such chamber and provided with the wings arranged to fit closely within the chamber, each wing being provided with a port and with a valve arranged upon the impact face of the wing and adapted to close such port by the impact of steam thereagainst.

4. A rotary steam piston comprising a case provided with a circular chamber and with a steam inlet arranged to discharge tangentially into such chamber, and provided with a rotary piston having wings adapted to fit practically steam tight in such chamber, each of such wings being provided with a relief port and a valve arranged upon the impact face of such wing to receive the impact of the steam jet and to close such port.

5. The rotary motor set forth comprising the case provided with the circular rotary piston chamber, the steam inlet arranged substantially tangential to the circular chamber to discharge steam thereinto, a steam outlet or exhaust arranged substantially in line with the inward discharge or jet from the steam inlet; the rotary piston arranged in such chamber and provided with the wings, each of such wings having a discharge port arranged to pass through the path of the discharge jet, and a spring valve arranged to be operated upon by the impact of the steam jet to close such port during the impact of the steam jet thereupon.

## 530,376. ATTACHMENT FOR SELF-BINDING HARVESTERS.

WILLIAM A. WILSON, Niotaze, Kans. Filed Aug. 9, 1894. Serial No. 519,905. (No model.)



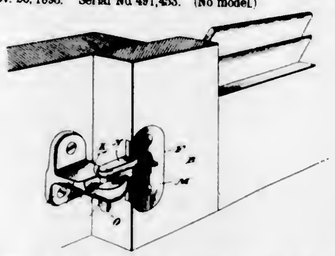
*Claim.*—1. The herein described discharge mechanism for the sheaves of self binder harvesters, comprising a movable grain receiving table carried by the platform of the harvester so that it will be when elevated on a line with the platform, bars *f* and *f'* pivotally connected to the grain receiving table and to the harvester platform, the bars *f* having bent ends which engage with the bars E' and the bars E' being connected to a rock-shaft which is actuated by the binding mechanism, substantially as shown.

2. The herein described discharge mechanism for harvesters, comprising a platform and binding mechanism, a grain receiving table F supported so as to have a downward movement in the direction in which the sheaf is discharged, the movement of the table being parallel with the face of the platform, substantially as shown and for the purpose set forth.

3. In a self binder harvester, the combination, of a movable grain receiving table or platform, its parallel supporting arms and operating mechanism, of a connection forming a part of the operating mechanism, said connection having a lock joint substantially as shown whereby the grain receiving table or platform can be moved independent of the operating mechanism which connects with the grain binding mechanism, for the purpose set forth.

4. In combination with the platforms A and A', the platform A' having boards $A^3$ hinged to the lower end thereof, of a movable grain receiving table or platform which is adapted to be brought on a line with the upper platform A, the movable grain receiving table having projections $f^3$ for engagement with the inner ends of the hinged boards $A^3$ so that they will be operated by the movement of the grain receiving table substantially as shown.

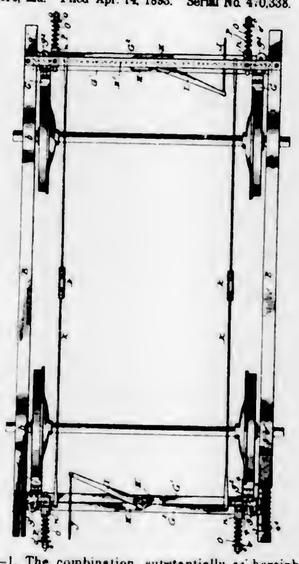
## 530,377. LOCK-HINGE. JOHN ASHTON, Lawrence, Mass. Filed Nov. 20, 1893. Serial No. 491,453. (No model.)



*Claim.*—1. In a lock hinge, the combination of the hinge leaf or member provided with a base plate and an integral horizontal leaf arm having a pintle opening near its outer end, a transverse lock groove formed in the top face thereof and extending from edge to edge, said lock groove intersecting the pintle opening at right angles to the disposition of the leaf arm, a vertical guide groove K, formed in one side of the pintle opening, and a flat top bearing lip L, projected beyond the outer edge of said transverse lock groove, and the other hinge leaf or member provided with an integral horizontal pintle arm provided at its under side with an integral narrowed lug or rib Q, adapted to ride freely on the flat top bearing lip L, and into engagement with the transverse lock groove at either side of the pintle opening, said pintle arm being also provided at its outer extremity with a right angularly disposed pintle turning in said pintle opening and having near its lower end a retaining stud P, adapted to pass through said vertical guide opening and to work under the leaf arm of the other member, said stud being disposed out of aligment with the vertical guide groove when the locking lug or rib is in either of its locked positions, substantially as set forth.

2. In a lock hinge the combination of the hinge leaf having a pintle opening near its outer end and a transverse lock groove, and the other hinge leaf having an integral pintle arm provided with an integral pintle engaging said pintle opening, an integral locking lug adapted to engage said locking groove, and an integral horizontal guard flange extended beyond the ends and sides of the pintle arm and of a length and width exceeding the length and width of the transverse locking groove to completely cover the same when the hinge leaves are locked together, substantially as set forth.

## 530,378. BRAKE FOR RAILWAY-CARS. WILLIAM S. G. BAKER, Baltimore, Md. Filed Apr. 14, 1893. Serial No. 470,338. (No model.)



*Claim.*—1. The combination, substantially as hereinbefore set forth, with the wheels, axles and axle boxes, of a truck frame supported on the axle boxes, brake beams above the plane of the axles arranged to slide in guides in the truck frame, rods extending over the axles and connecting the brake beams, being also arranged horizontally in the same plane with the brake beams and mechanism for operating the brake beams.

2. The combination, substantially as hereinbefore set forth, with the wheels, axles and axle boxes, of a truck frame mounted on the axle boxes, brake beams arranged above the plane of the axles and mounted in horizontal guides to slide in a horizontal plane toward and from the wheels, supplemental beams at each end of the truck parallel with the brake beams, connecting rods extending over the axles and connecting the supplemental beams at each end of the truck, and lever mechanism operating upon the brake beams and supplemental beams to apply the brakes, substantially as set forth.

3. The combination, substantially as hereinbefore set forth, with the wheels, axles and axle boxes, of a truck frame mounted on the axle boxes, brake beams at each end of the truck arranged above the plane of the axles, and having their ends arranged in guides in the truck frame, brake shoes secured to the brake beams and having their centers above the axles, supplemental beams parallel with and in the same horizontal plane with the brake beams, connecting rods extending over the axles for uniting the supplemental beams and lever mechanism operating upon the beams in a horizontal direction to apply the brakes.

4. The combination, substantially as hereinbefore set forth, with the wheels, axles and axle boxes, of side beams suitably connected together and extending over the axle boxes, saddles interposed between the axle boxes and the side beams, brake beams at each end of the truck arranged to slide horizontally in guides in the saddles toward and from the wheels, and mechanism for operating the brake beams.

5. The combination, substantially as hereinbefore set forth, with the wheels, axles and axle boxes, of brake shoes moving horizontally toward and from the wheels and having curved faces adjacent to the wheels with their centers arranged above the axles, brake beams connecting the shoes, guides for the ends of the brake beams, supplemental beams at each end of the truck parallel with and in the same horizontal plane with the brake beams, rods extending over the axles connecting the supplemental beams and removable bolts or devices arranged transversely below the axle boxes to connect them to the pedestals or truck frame, the organization being such that by removing said bolts or devices, the wheels, axles and axle boxes may be withdrawn from the truck without uncoupling or disconnecting the connecting rods and without removing the brake beams and brake shoes from their normal position.

6. The combination, substantially as hereinbefore set forth, with the wheels, axles and axle boxes, of a truck frame mounted on the axle boxes, a brake beam at each end of the truck arranged to slide in guides in the truck frame, a supplemental beam at each end of the truck arranged in the same plane with the brake beams and also having its ends arranged to slide in guides in the truck frame, connecting rods for the supplemental beams, and lever mechanism operating upon the beams to apply the brakes.

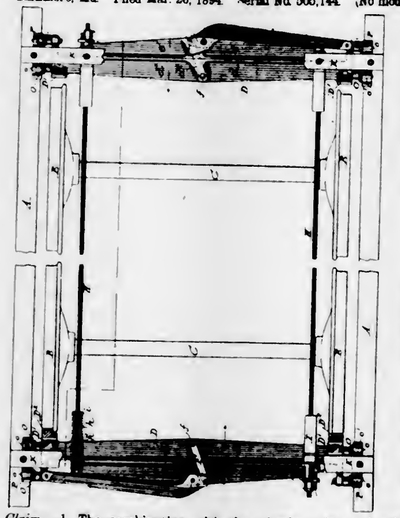
7. The combination, substantially as hereinbefore set forth with the wheels, axles and axle boxes, of a brake beam at each end of the truck, a supplemental beam parallel with and adjacent thereto, the castings on the beams, studs on the castings arranged diagonally opposite each other and an operating lever having sockets into which the stud projects.

8. The combination, substantially as hereinbefore set forth, with the wheels, axles and axle boxes, of the brake shoes, a brake beam by which the brake shoes are carried, another beam or lever arranged adjacent to the brake beam and guides in the side beams of the truck into which the ends of the brake beam and the lever project and by which they are guided to prevent their twisting.

9. The combination, substantially as hereinbefore set forth, with the wheels, axles and axle boxes, of the brake shoes, a brake beam by which the brake shoes are carried, operating levers acting upon the brake beam, the truck frame, and guides in the truck frame into which the ends of the brake beam and levers extend

10. The combination, substantially as hereinbefore set forth, with a pair of wheels, of a pair of brake shoes, a brake beam connecting them, a pair of levers pivotally connected with the brake shoes and having curved ends and guides in the truck frame into which the ends of the brake beam and the curved ends of the levers extend.

## 530,379. BRAKE FOR RAILWAY-CARS. WILLIAM S. G. BAKER, Baltimore, Md. Filed Mar. 26, 1894. Serial No. 505,144. (No model.)



*Claim.*—1. The combination with the wheels, axles and axle boxes, of a truck frame supported thereon, a brake beam, and an equalizing beam at each end of the truck, tie rods arranged above the axles and connecting the equalizing beams and extending through and supported on the brake beams, brake heads formed on the beams, and links pivotally connected to the side beams of the truck and to brake heads.

2. In brake mechanism for car trucks, a brake beam formed substantially as hereinbefore set forth integrally with a flat, flanged body portion *d d'*, and with an enlarged brake head at each end in combination with an equalizing beam formed with flanged body portion *e e'*, adapted to rest against the flat, flanged portion of the brake beam, substantially as described.

3. In brake mechanism for car trucks, the combination with the truck frame, of the wheels and axles, brake shoes on opposite sides of the truck for each pair of wheels, a brake beam connecting and supporting each pair of brake shoes, and a pair of links pivotally connected to each brake head and which are of equal lengths between the upper and lower pivots, the pivots of each link being held against movement lengthwise relatively to the link.

4. The combination of the truck frame comprising side beams, and cross connecting beams, brackets detachably secured to the side beams, and a brake beam suspended from the frame by a pair of links at each end, which are of equal lengths between the upper and lower pivots, the pivots of each link being held against movement lengthwise relatively to the link.

5. The combination of a truck frame, a brake beam having an enlarged brake head at each end, and a pair of links arranged inside the truck frame and pivotally connected with the brake heads at each end and also pivotally connected with the truck frame by pivots arranged one behind the other.

6. The combination of a truck frame, a brake beam at each end of the truck, an equalizing beam at each end, tie rods connecting the opposite brake beams and equalizing beams, an operating lever at each end of the truck pivotally connected with the corresponding equalizing beam, and a link pivotally connected with the operating lever and with the corresponding brake beam.

7. The combination of a truck frame, a brake beam at each end thereof, an equalizing beam adjacent to each brake beam, an operating lever for each brake beam, a link connecting each operating lever with each brake beam, and pivots for the operating lever and the link arranged in the central line of the truck, substantially as set forth.

8. The combination with a brake beam and an equalizing beam of an operating lever, a housing formed in the brake beam and the equalizing beam, into which the end of the operating lever projects, and a link connecting the operating lever with the brake beam also arranged in this housing.

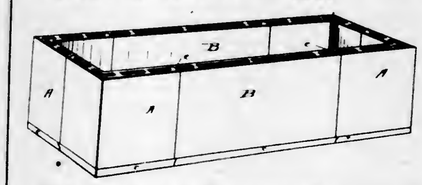
9. The combination of the truck frame having the cross bars K, the brake beams and equalizing beams at opposite ends of the truck, the tie rods connecting them, the springs arranged on the tie rods, the brackets secured to the cross bars of the truck, and connecting with the springs, and adjusting devices for varying the tension of the springs.

10. In a car truck, the combination of the brake beams, the tie rods, the springs, the nuts provided with radial slots or recesses and the pivoted spring levers adapted to engage said recesses.

11. The combination of the truck frame, a brake beam, an equalizing beam, an operating lever pivoted in the central line of the truck to the equalizing beam, and connected by a link to the brake beam which is pivoted in the central line of the truck, and a pair of links at each end of the brake beam connecting it to the truck frame.

12. The combination of a brake beam, means for operating it, a pair of links at each end of the brake beam connected thereto by detachable bolts, brackets detachably secured to the side beams of the truck, and studs formed on the links which enter bearings in these brackets.

## 530,380. GRAVE-VAULT. JOSEPH D. BARCUS, Shreve, Ohio. Filed Aug. 8, 1894. Serial No. 519,727. (No model.)

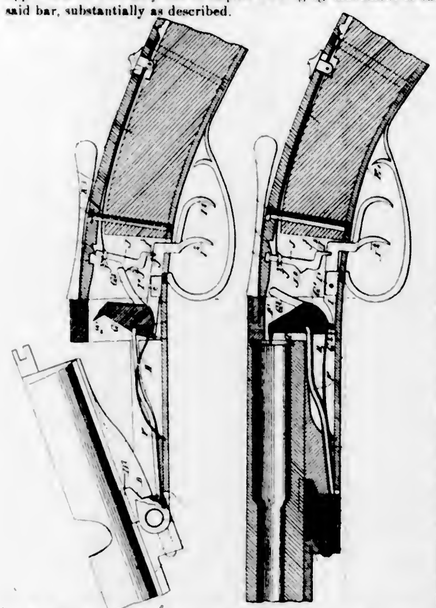


*Claim.*—In a grave vault, the combination of the corner sections A, formed hollow, the interposed sections B formed hollow, the top and bottom sections *a* and *c*, provided with the flanges to fit the inner edges of the vault sections A and B, and said sections tongued and grooved together, substantially as and for the purpose specified.

## 530,381. BREAKDOWN GUN. MILAN S. BARKER, Eugene, Oreg. Filed July 14, 1893. Serial No. 480,454. (No model.)

*Claim.*—1. A gun of the class described, comprising a sear and a hammer pivoted within the receiver, a projection on the hammer

to lock the sear in position when the hammer is down, a safety bar permanently engaging the sear and capable of swinging forward and backward in the receiver, a projection on the hammer to press the safety bar back when the barrel is opened, a top plate formed with a notch and an incline arranged in longitudinal alignment, the said notch and incline being adapted to be engaged by the upper end of the safety bar, and a longitudinally movable bar connected to the upper end of the safety bar to impart a swinging movement to the said bar, substantially as described.



2. A gun of the class described, comprising a pivoted hammer and a pivoted sear engaging one another, a safety bar permanently connected to the sear so as to be capable of swinging forward and backward, a longitudinally movable bar connected to the safety bar to swing the same into an active or inactive position and a projection on the hammer to swing the safety bar back into an active position when the hammer is cocked, substantially as described.

3. A gun, comprising a pivoted hammer and a pivoted sear engaging one another, a safety bar connected to the sear so as to be capable of swinging forward and backward, and a longitudinally movable spring connected to the safety bar for depressing the same and swinging it into an active or an inactive position and simultaneously forcing the sear into engagement with the hammer, substantially as described.

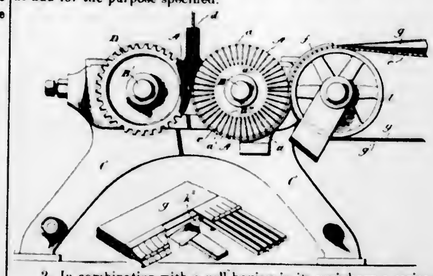
4. A gun, comprising a pivoted hammer and a pivoted sear engaging one another, a safety bar connected to the sear so as to be capable of swinging forward and backward, and a longitudinally movable spring whose rear end is adapted to temporarily engage a notch in the top plate, while the front end is connected to the said safety bar for depressing the same and swinging it into an active or an inactive position, substantially as described.

5. A gun of the class described, comprising two pivoted hammers arranged in transverse alignment and adjacent to each other, one of the hammers being provided with a rear extension projecting laterally into the central space between the hammers, pivoted sears engaging the hammers, a safety bar permanently engaging the sears and located in the path of travel of the said extension of the hammer, and means for actuating the locking bar, substantially as described.

6. The combination with the stock and the barrel having a hinge connection therewith, and provided at its rear end with a lug having a transverse notch, of a spring-pressed locking lever arranged on the top of the stock, said locking lever being pivoted to the stock laterally of its axis and adapted to swing transversely to the barrel and engage the said lug thereon directly, substantially as shown and described.

**530,382. MACHINE FOR MAKING SPLINTS FOR MATCHES, TOOTHPICKS, &c.** ELIJAH B. BENHAM and HOWARD E. BARLOW, Providence, R. I., assignors to the Diamond Match Company, Chicago, Ill. Filed Sept. 19, 1893. Serial No. 485,798. (No model.)

*Claim.*—1. In combination with a roll having in its periphery a series of longitudinal slots, a series of knives movably mounted in such slots, means for reciprocating the knives as the roll revolves, means for moving them outward, radially, on the roll as they move longitudinally in one direction, and surfaces eccentric to the axis of the roll to return the knives toward the axis of the roll, substantially as and for the purpose specified.



2. In combination with a roll having in its periphery a series of longitudinal slots, a series of knives movably mounted in such slots, cams engaging bearings on opposite ends of such knives so as to reciprocate the latter as the roll revolves, cams engaging the knives to move them outward radially on the roll as they move longitudinally in one direction, and surfaces eccentric to the axis of the roll engaging portions of the knives to return the latter toward the axis of the roll, substantially as and for the purpose shown

3. In combination with a roll having in its periphery, a series of radial longitudinally extending slots, knives movably mounted in the latter, having faces on their backs or inner sides engaging inclined faces on the roll which force the knives radially outward on the roll as they are moved longitudinally in one direction, cams at opposite ends of the roll eogaging bearings on the knives to reciprocate the latter longitudinally as the roll revolves, and eccentric surfaces adapted to engage bearings on the knives and carry the same radially inward toward the axis of the roller, substantially as and for the purpose specified.

4. The combination with a roll provided with a series of radially arranged slots, the bottoms of which are formed at an incline for a portion of their length, of a series of knives mounted in said slots the back of said knives being likewise formed at a corresponding incline for a portion of their length, whereby as said knives are moved lengthwise of said roll in one direction they will be forced outward from the axis of said roll and means for reciprocating the knives longitudinally, substantially as described.

5. The combination, with a roll provided with a series of radially arranged slots, the bottoms of which are formed at an incline for a portion of their length, and a series of knives mounted in said slots and with their backs formed at a corresponding incline, of a cam arranged to move said knives successively lengthwise of said roll in a direction to cause said knives to be also moved outward from the axis of said roll, substantially as described.

6. The combination with a roll provided with a series of radially arranged slots, the bottoms of which are formed at an incline for a portion of their length, and a series of knives mounted in said slots and with their backs formed at a corresponding incline, of journal bearings for said roll, each of said journal bearings being provided with an eccentric ring embracing the ends of said knives and with a cam face acting upon said knives, whereby as said roll revolves the knives mounted therein will first be moved lengthwise of said roll in one direction, and will be at the same time moved outward from the axis of said roll, and then as the roll continues to revolve will be returned to their normal position, substantially as described.

7. In combination with a splint cutting mechanism, a carrier consisting of a belt having along one edge series of couples of clamping springs projecting beyond such edge, and means for guiding such belt so that the splints as delivered from the cutting mechanism, have their ends passed is between the clamming springs, substantially as and for the purpose specified.

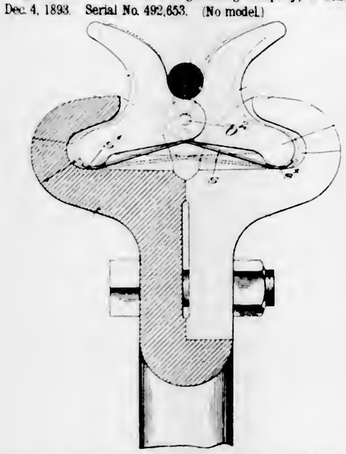
8. In combination with a splint cutting mechanism, a carrier consisting of a belt carrying a series of pairs of clamping springs, means for guiding such belt so as to bring such pairs of springs successively in position to receive the ends of the splints as they are delivered from the splint cutting mechanism, and an opener to spread apart the clamping springs, situated so as to spread the springs where the splints are fed to the same, substantially as and for the purpose shown.

9. In combination with a splint cutting mechanism and means for delivering the cut splints therefrom, a traveling belt guided at an angle to the line of travel of the splints from the cutting mechanism, so as to approach the side of such path while traveling in the same general direction as the splints, a series of pairs of splint-receiving clamps on the belt, and an opener to open such clamps at the point where they meet the path of the splints from the cutting mechanism, and then allow them to close on the splints between them, substantially as and for the purpose set forth.

10. In combination with a splint cutting mechanism, a splint carrier to which splints are delivered from said cutting mechanism, consisting of a belt that has splint clamps which are normally closed by spring pressure, and an opener comprising a relatively fixed part in the path of the carrier as it moves toward the place of delivery from the cutting mechanism, that engages and opens the clamps, as the carrier moves, substantially as and for the purpose specified.

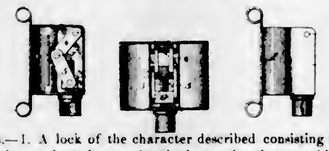


**530,383. GRIP-WHEEL.** AMBROSE J. B. BERGER, Hingham, Mass., assignor to the Steel Cable Engineering Company, of Maine. Filed Dec. 4, 1893. Serial No. 492,653. (No model.)



*Claim.*—A grip wheel having a rim provided with a series of lateral recesses, combined with jaws held in said recesses, each jaw consisting of toggle-like grips provided with laterally extended feet and adapted to receive and clamp a cable between them, and a flat spring in the bottom of each recess to act upon the joint of and normally maintain each pair of grips separated, the outer ends of the spring being concaved and receiving therein the laterally extended feet of the grips, substantially as described.

**530,384. LOCK FOR BICYCLE-LANTERNS.** WALLACE A. BLAKESLEE, Bridgeport, Conn., assignor to The Bridgeport Brass Company, same place. Filed June 18, 1894. Serial No. 514,937. (No model.)

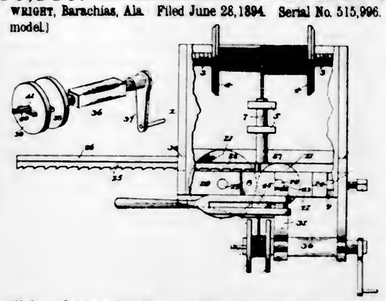


*Claim.*—1. A lock of the character described consisting essentially of a sleeve adapted to receive the lantern bracket on a bicycle, a plate within said sleeve adapted to clamp the bracket, toggle levers pivoted to said plate and suitable means for operating said levers to move the plate toward or from the bracket.

2. A lock of the character described consisting of a sleeve to receive the lantern bracket on a bicycle, a plate within said sleeve adapted to clamp the bracket, toggle levers 4 and 5 pivoted to said plate, a fixed pin to which the other ends of levers 4 are pivoted, block 9 to which the other ends of levers 5 are pivoted and a threaded rod engaging said block by which the latter is moved up or down to cause the plate to clamp or release the bracket.

3. A lock of the character described consisting of a sleeve to receive the lantern bracket on a bicycle, a plate within said sleeve adapted to clamp the bracket, toggle levers 4 and 5 pivoted to said plate, a fixed pin to which the other ends of levers 5 are pivoted, a threaded rod engaging said block and having a head provided with sockets to receive a key and a tube through which the key is passed and the metal of which is closed about the head to prevent other than rotary motion.

**530,385. CORDAGE-MEASURING MACHINE.** JEFFERSON D. BOATWRIGHT, Barachias, Ala. Filed June 28, 1894. Serial No. 515,996. (No model.)



*Claim.*—In a machine for measuring cordage, the combination of a reel for primarily receiving the cordage, a pair of horizontally extending and parallel beams, a vertical shaft journaled therein, a disk fixed to the shaft and located between the beams and by which the cordage passes on its way from the reel, a wheel located between the beams and capable of pressing the cordage into engagement with the periphery of the disk, the beams being slotted longitudinally so as to afford longitudinally-adjustable bearings for the trunnions of the wheel, a plate arranged at the outer side of each beam and bearing against the trunnions of the wheel, a vertically-extending beam projecting through the slots in the horizontal beam and engaged with the plates aforesaid, an expansive rubber block bearing against the vertically-extending beam, whereby it and consequently the wheel is given a tendency toward the disk, a pin fitting on the shaft and projecting radially therefrom, and an indicating plate provided with a rack-bar adapted to be engaged by the pin, whereby the indicating plate is moved a degree at each revolution of the shaft, substantially as described.

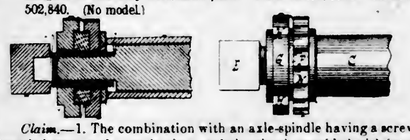
**530,386. BRIDLE FOR PAINT-BRUSHES.** CHARLES BOECKH, Jr., Toronto, Canada. Filed May 8, 1894. Serial No. 510,503. (No model.)



*Claim.*—1. The combination with a brush provided with fastening devices around it at or near the lower edge of its head, of a bridle formed of a flat strip encircling the brush below its head and provided with fastening devices at its upper edge to detachably engage those on the brush, the lower portion of the bridle being free from fastenings or projections to permit of its being cut away and narrowed as the bristles wear, substantially as described.

2. The combination with the brush having studs around it at or near the lower edge of its head, of a bridle formed of a flexible strip provided with apertures to receive said studs and also having a stud to pass through an aperture in the overlapping end of the said strip, whereby the bridle may be readily removed, cut away at its lower edge and be again quickly applied, substantially as described.

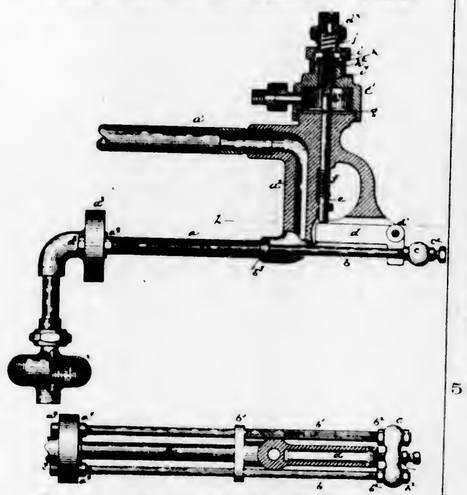
**530,387. VEHICLE AXLE NUT.** FRED E. BOSS, New York, N. Y., assignor to Ella May Boss, same place. Filed Mar. 8, 1894. Serial No. 502,840. (No model.)



*Claim.*—1. The combination with an axle-spindle having a screw-threaded stem, and a nut having a tubular shank provided with internal and external screw-threads, of a rotary and a non-rotary disk both mounted on the tubular shank, and a spring rigidly secured to one of the disks and engaged at its free extremity with the periphery of the other disk, substantially as described.

2. The combination with an axle spindle, of a nut secured to the spindle, a rotary disk on the nut, and a non-rotary disk for locking the rotary disks, said disks having beveled or inclined interlocking edges, and one of said disks having an attached spring, the free end of which engages the periphery of the other disk, substantially as described.

530,388. FEED-WATER REGULATOR. CHARLES B. BOSWORTH Everett, assignor to the Crosby Steam Gage and Valve Company, Boston, Mass. Filed Nov. 18, 1893. Serial No. 491,323. (No model.)



*Claim.*—1. The combination of the diaphragm: the valve above it having the guide resting on the diaphragm; the spindle above such valve and having a long pintle, the point of bearing upon the valve being at the bottom of the pintle and below the valve seat, and a spring about such spindle above the valve, as set forth.

2. The combination of the diaphragm, the valve above it; the spindle below it, the spring surrounding such spindle; the bell crank lever; the yoke; the two rods and the tubes and connecting pieces, as set forth.

3. The combination, in a thermostatic device, of a water chamber on the water side of the thermostat and below the water line, of the boiler with the two rods, *b b'*, located alongside of the tubular part of the thermostat, the yoke connected to such rods; the bell crank lever adjacent to such yoke; the spindle resting upon one end of the bell crank lever and having a spring surrounding it; the diaphragm above such spindle, and the valve above such diaphragm and resting thereon, as set forth.

4. The combination of the valve, *h*; the diaphragm, *g*, upon which the valve rests; the spindle, *e*, the upper end of which is against the diaphragm, *g*, and its lower end resting on a bell crank lever, *d*; the bell crank lever, *d*; the yoke, *c*, the two rods, *b b'*, secured at one end to the yoke, *c*, and the tubes, *a a'*, and their connecting piece, $a^2$, as set forth.

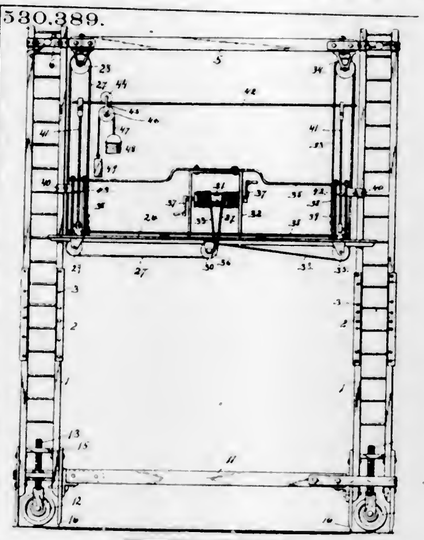
530,389. PAINTER'S SCAFFOLD. SEWELL A. BROOKS, Strykersville, N. Y. Filed May 5, 1894. Serial No. 510,161. (No model.)

*Claim.*—1. The herein described scaffold consisting of a supporting frame with adjustable carrying wheels at base of said frame, a vertically adjustable platform, having guards at the back and ends, a vertically adjustable horizontal way or track mounted on said platform a wheel running on said way and a pulley connected with said wheel.

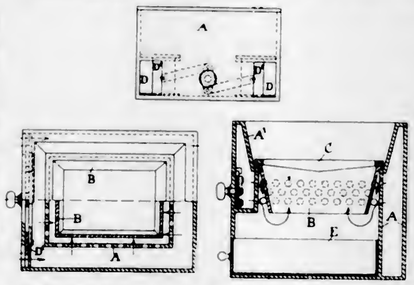
2. In a portable scaffold having a vertically adjustable platform, a supporting frame consisting of the single vertical end sections 1, the upper single connecting cross-beam 5, the lower single connecting cross-beam 11, the tie-rails 17, the diagonal braces 20 adjustably connecting the vertical end-sections 1 with the tie-rails 17, the wheels 12 mounted upon the main frame and the wheels 19 mounted upon the tie-rods 17 substantially as described.

3. In a painter's scaffold the combination with a supporting frame having adjustable supports of a vertically adjustable platform having guards at its back and end edges, a vertically adjustable horizontal rod, a wheel running on said rod a pulley connected with said wheel and a cord passing over said pulley and carrying a paint reservoir and counterweight.

530,389.



530,390. HEATING DEVICE. AUGUST BURKART-STALDER, Berne, Switzerland. Filed July 17, 1894. Serial No. 517,812. (No model.) Patented in Switzerland Jan. 17, 1893, No. 6,119; in England Jan. 17, 1893, No. 15,640; in Germany Jan. 23, 1893, No. 71,413, and in France July 10, 1893, No. 231,436.



*Claim.*—The herein described heating device, consisting of the open top rectangular casing provided at its front with air-inlets and regulating dampers, and at its base with an inward projection having a perforated upward extension, as described, in combination with an inner lining and a grate; the inner lining composed of two flared sections, the upper section having an outer flange at its top, and an inner ledge, at its bottom for resting, respectively, on the upper edges of the casing and its inner perforated extension; the lower section of the lining provided with a top flange for the support of said section and grate, substantially as and for the purpose specified.

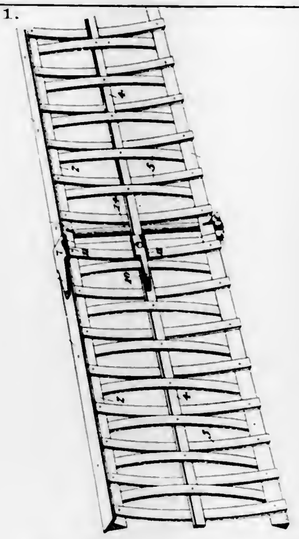
530,391. FENCE. RINMON J. CARR, Rothbury, Mich. Filed Feb. 16, 1894. Serial No. 500,370. (No model.)

*Claim.*—1. A fence comprising the upper and lower oppositely arranged wedge-shaped rails arranged at the top and bottom of the fence, the intermediate horizontally disposed rail, and the oppositely bowed pickets alternately arranged at opposite sides of the fence and extending over the intermediate rail and having their ends secured to corresponding faces or sides of the wedge shaped rails, substantially as described.

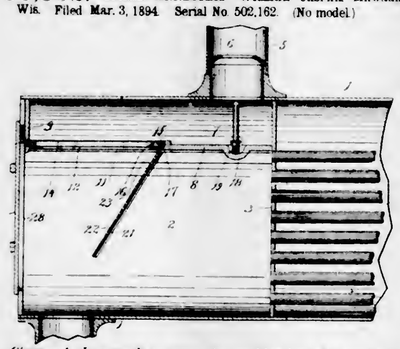
2. In a fence, the combination of panels comprising upper and lower wedge-shaped rails, the intermediate horizontal rail, the oppositely bowed pickets and the ridge boards arranged at the top of the panel, said panels having their horizontal rails and boards abutting, the coupling sleeves receiving the adjacent end of the ridge boards and the intermediate rails and provided with shanks, and a post provided with upper and lower supporting hooks receiving the wedge-shaped rails of one of the panels, substantially as described.



530,391.



530,392. SPARK-ARRESTER. WILLIAM CASPAR, Milwaukee Wis. Filed Mar. 3, 1894. Serial No. 502,162. (No model.)



*Claim.*—1. In a spark arrester, the combination, of a smoke-box with which the boiler flues communicate, said box provided with a lower discharge opening, and with a smoke stack, a horizontal partition forming an upper compartment leading to the smoke-stack, said partition provided with an opening in advance of the smoke-stack, a plate hinged to the under-side of the partition, and means for turning said plate upon its hinges, and holding the same in its adjusted positions, substantially as set forth.

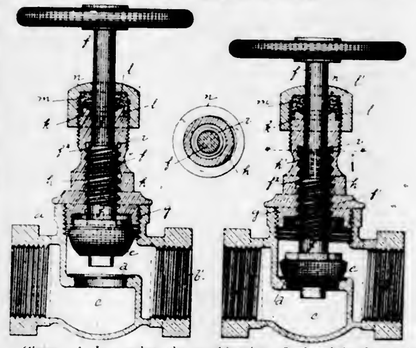
2. In a spark arrester, the combination, of a smoke-box with which the boiler flues communicate, a horizontal partition forming an upper compartment within the smoke-box, said partition provided with an opening having ways or grooves in the bordering edges thereof, and a removable screen sliding in the ways or grooves, substantially as set forth.

3. In a spark arrester, the combination, of a smoke-box with which the boiler flues communicate, said smoke-box provided with a smoke stack, a horizontal partition forming an upper compartment within the smoke-box, said partition provided with an opening, and also provided with a depression beneath the center of the smoke-stack, and an exhaust pipe extending through the smoke-box casing horizontally, and provided with a medial bend fitting the depression of the partition, and then extended upward to discharge into the smoke-stack, substantially as set forth.

4. In a spark arrester, the combination, of a smoke-box, a horizontal partition forming an upper compartment within the smoke-box, said partition provided with an opening having ways or grooves in the bordering edges thereof, and a removable screen sliding in the ways or grooves, said screen comprising two sections, the lower having an upward extending interior flange, and the upper section surrounding said flange, and clamping the screen, substantially as set forth.

5. In a spark arrester, the combination, of a smoke-box with which the boiler flues communicate, said box provided with a lower discharge opening, a horizontal partition forming an upper compartment within the smoke box, said partition provided with an opening having its bordering edges formed into ways or grooves, a perforated plate pivoted to the under side of the partition, means for adjusting the inclination of said plate, and a screen frame sliding in the ways or grooves of the partition, substantially as set forth.

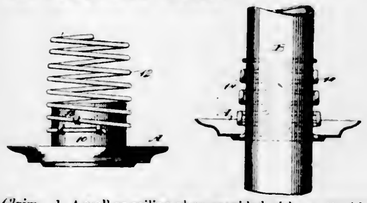
530,393. VALVE. LEWIS D. CASTLE, Greensburg, Pa., assignor to John T. Kelly, Brooklyn, N. Y., and George M. Jones, Pittsburg, Pa. Filed Mar. 9, 1894. Serial No. 502,963. (No model.)



*Claim.*—1. In a valve, the combination of a hood having at its upper end a shelf or ledge and beyond and integral with the same a polygonal bearing block of smaller diameter than the interior diameter of the screw threaded cap projecting therefrom, a traversing stem passing through the hood and carrying the valve, and a packing cap engaging with said hood, substantially as and for the purposes set forth.

2. In a valve, the combination of a hood having at its upper end a shelf or ledge and beyond and integral with the same a polygonal bearing block of smaller diameter than the interior diameter of the screw-threaded cap projecting therefrom, said bearing block being dished or countersunk, a traversing stem passing through the hood and carrying the valve, and a packing cap engaging with the hood, substantially as and for the purposes set forth.

530,394. CEILING-PLATE. JOSEPH W. CHAMBERLAIN, Bangor, Me., assignor to J. W. Chamberlain & Co., same place. Filed Apr. 6, 1894. Serial No. 506,576. (No model.)



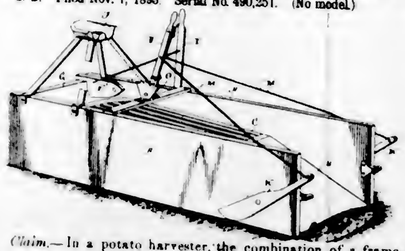
*Claim.*—1. A wall or ceiling plate provided with an attaching device adapted to receive and grip a pipe or like object passed through the said plate, the said gripping device being capable of both lateral and longitudinal expansion and contraction without releasing the pipe or article passed in contact with it, substantially as shown and described.

2. A wall or ceiling plate provided with a gripping device, consisting of a tapering spring attached to the plate, said spring being capable of lateral, longitudinal, or vertical expansion and contraction, conforming to the action of the pipe without affecting the position of the wall plate, or releasing itself from the pipe, as and for the purpose set forth.

3. The combination, with a wall plate, of a gripping device, consisting of a tapering spring in the shape of a coil attached to the said plate, the contracted end being free, the spring being adapted for clinging engagement with the pipe at its free end, whereby the spring may contract and expand laterally or longitudinally without affecting

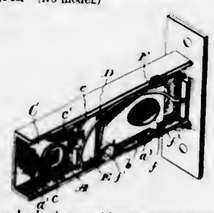
the position of the plate or releasing the pipe, the action of the spring corresponding to the action of the pipe, as specified.

530,395. POTATO-HARVESTER. CHARLES CHRISTIANSON, Vilas, S. D. Filed Nov. 7, 1893. Serial No. 490,251. (No model.)



*Claim.*—In a potato harvester, the combination of a frame, a digging mechanism depending therefrom, arms K pivoted to the frame as shown, converging rods M, and lever F to which they are connected arranged centrally on the frame, substantially as shown and described.

530,396. LOCK. ASA M. COAN, Algona, Iowa. Filed June 18, 1894. Serial No. 514,946. (No model.)



*Claim.*—1. In a lock the combination of a latch, the means for moving the same, a sliding plate, a tumbler carried by said plate, and a stop on the latch adapted for engagement by the tumbler to hold the latch against movement, substantially as and for the purpose specified.

2. In a lock, the combination of a latch, the rotary piece for moving the same, a sliding plate for locking said piece against rotation, a tumbler carried by said plate, and a stop to engage said tumbler to lock the plate against movement, substantially as and for the purpose set forth.

3. In a lock, the combination of a latch, the rotary piece for moving the same, a sliding plate for locking said piece, a tumbler to lock such plate at its limits of motion, and a stop on the latch adapted for engagement by the tumbler to hold the latch against movement, substantially as and for the purpose described.

4. In a lock, the combination of the sliding latch, the rotary sleeve to move the same, a lug on said sleeve, a sliding plate having a notch to engage such lug, a tumbler pivoted to said plate, and a lug on the latch to engage the tumbler, substantially as and for the purpose specified.

5. In a lock, the combination of a casing, a sliding latch whose shank engages and is guided by the upper and lower sides thereof, a rotary sleeve to move the latch, a sliding plate to lock said sleeve against rotation, also engaging and guided by the upper and lower sides of the casing, and a tumbler pivoted to such plate, substantially as and for the purpose shown.

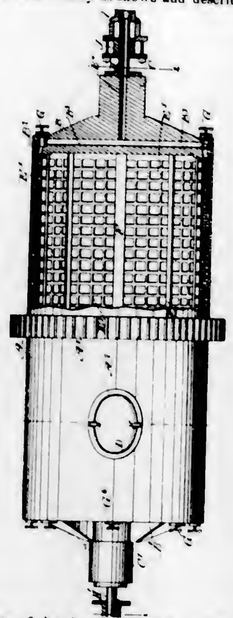
530,397. FILTER-BARREL. NORRIS H. COWE, Leadville, Colo. Filed Oct. 19, 1893. Serial No. 488,600. (No model.)

*Claim.*—1. An apparatus of the class described, provided with a revoluble cylinder having channeled heads, and ports leading therefrom into the interior of the cylinder, and a filter arranged in the said cylinder and made in sections each connected at one end with one of the said ports, substantially as shown and described.

2. An apparatus of the class described, provided with a revoluble cylinder having channeled heads, and ports leading therefrom into the interior of the cylinder, and a filter arranged in the said cylinder and made in sections each connected at one end with one of the said ports, and a valve for each of the said ports, to open or close the latter to its respective channel, substantially as shown and described.

3. The filter composed of a revoluble cylinder, a series of independent removable sections each comprising a filter bed, a filter cloth, and a grating placed upon said cloth for holding it in place on said bed, and a series of devices attached to the cylinder and arranged between adjacent filter sections and adapted for holding the latter in place on the inner surface of the cylinder, as shown and described.

4. In an apparatus of the class described, a filter made of independent sections divided by longitudinal bars, each section comprising a filter bed, a filter cloth and a grating for holding the cloth in place on the said bed, the said grating being held in place by flanges on the said bars, substantially as shown and described.



5. In a filter of the class described the cylindrical body and a filtering medium arranged within it, two like heads each having a hollow trunnion and also a series of channels radiating from said trunnion and leading into the spaces between the body of the filter and the filtering medium, and independent valves for controlling such channels as shown and described.

6. In an apparatus of the class described, the combination with a cylinder having channeled heads and ports leading from the channels to the interior of the cylinder near the periphery thereof, the said heads being also provided with recessed trunnions into which open the said channels, of a filter arranged within the said cylinder and made in sections, each comprising a segmental filter bed, a cloth on the inside thereof, a grating to hold the said cloth in place, and longitudinal bars attached to the cylinder and separating the filter sections and holding the same in place, substantially as shown and described.

7. In an apparatus of the class described, the combination with a revoluble cylinder having a hollow trunnion, and a head provided with radiating channels having independent valves, of a filter arranged in said cylinder and valves for opening or closing said channels independently of each other, as shown and described.

530,398. DIVING APPARATUS. JOHN D. COOPER, Cheboygan, Mich. Filed Apr. 24, 1894. Serial No. 508,775. (No model.)

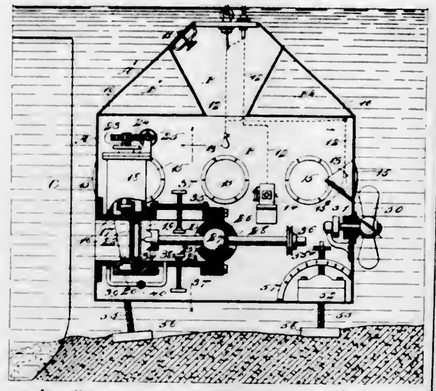
*Claim.*—1. In a diving apparatus, a bell or house adapted to be sunk beneath the surface of the water, a chest located within the said bell, capable of direct communication with the water surrounding the bell, a valve capable of closing the outer end of the chest, and a shaft adapted to carry a tool, capable of substantially universal motion within the chest, as and for the purpose set forth.

2. In a diving apparatus, a bell or house adapted to be sunk beneath the surface of the water, a chest located within the said bell, capable of direct communication with the water surrounding the bell, a valve capable of closing the outer end of the chest, a shaft adapted to carry a tool, capable of substantially universal motion within the chest, guide devices adjustably carried by the chest and adapted for guided contact with the said shaft, and means for controlling the valve and driving the shaft from within the bell, as and for the purpose specified.

3. In a diving apparatus, the combination, with a bell or house



having an opening in one of its sides surrounded by a collar, and a chest located within the bell at the rear of the collar, of a gate valve adapted to close communication between the said opening and the interior of the chest, a bearing located in the inner end of the chest, carrying a ball and provided with flaring openings at the front and rear of the ball, a shaft passed through the said ball and through the flaring openings into the chest, the said shaft being adapted to carry a drill head or other tool at its outer end, guide devices carried by the chest and adapted to maintain the shaft in predetermined position, and means, substantially as shown and described, for operating the said gate valve, as and for the purpose set forth.



4. In a diving apparatus, the combination, with a bell or house having an opening in one of its sides, a chest contained within the bell at the rear of the opening, a valve capable of closing communication between the opening and interior of the chest, and mechanism for raising and lowering the valve, and an equalizing tube extending from the opening within the chest, thereby equalizing the force of the water on opposite sides of the valve, of a bearing constituting the inner head of the chest, a ball located in said bearing, the bearing being provided with flaring openings at front and rear of the ball, the said ball being made in sections and provided with an interior packing, a shaft carried through the ball and packing and into the interior of the chest, the said shaft being adapted to carry a tool at its outer end, and means, substantially as shown and described, for operating the shaft, as and for the purpose set forth.

5. In a diving apparatus, the combination, with a bell or house having an opening in one of its sides, a chest contained within the bell at the rear of the opening, a valve capable of closing communication between the opening and interior of the chest, and mechanism for raising and lowering the valve, and an equalizing tube extending from the opening within the chest, thereby equalizing the force of the water on opposite sides of the valve, of a bearing constituting the inner head of the chest and provided with front and rear flaring openings, and a ball located between the openings, a shaft constructed in detachable sections passed through the ball and provided with a packing within the ball, a removable drill head or corresponding tool secured to the outer end of the shaft, and guide devices carried by the chest, operated from its exterior and adapted to surround the shaft, as and for the purpose specified.

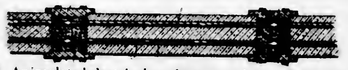
6. In a diving apparatus, the combination with a bell or house provided with an opening in one side, of a casing extending inwardly from said opening, a valve for closing the outer end of the casing, and a tool shaft mounted in the inner end of the casing, substantially as described.

7. In a diving apparatus, the combination with a bell or house, of shoes carried by vertically adjustable swiveled supports, substantially as and for the purpose set forth.

8. In a diving apparatus, the combination, with a bell or house, of adjusting devices located at the front and rear thereof, each adjusting apparatus consisting of a box contained within the house, provided with a ball, bearings and flaring openings at opposite sides of the said ball, the ball being provided with a threaded bore, and an adjusting screw shaft passed through the threaded bore of the ball and the flaring openings in the box, the shaft being provided with a shoe at its lower outer end and an adjusting device at its inner end, as and for the purpose specified.

530,399. INSULATOR FOR ELECTRIC CONDUCTORS. JOHN H. CROSKEY and JOSEPH LOCKE, Pittsburg, Pa. Filed Sept. 28, 1894. Serial No. 524,365. (No model.)

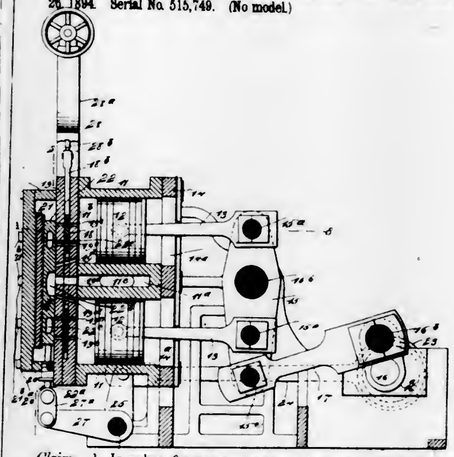
*Claim.*—1. An insulated conductor of electricity consisting of a metallic conductor covered with a non-metallic mineral and embedded in glass.



2. An insulated electrical conductor consisting of a metallic strand covered with asbestos and embedded in glass.

3. An electrical conductor consisting of lengths of glass having asbestos coated wires embedded therein, the adjacent ends of the wires being welded together and covered with a plastic non-conductor, substantially as described.

530,400. MAIN SLIDE-VALVE AND THROTTLE-VALVE FOR STEAM-ENGINES. JOHN P. DEVOISSAUD, Sherman, Tex. Filed June 26, 1894. Serial No. 515,749. (No model.)

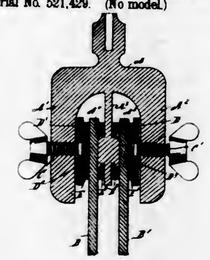


*Claim.*—1. In valves for a steam engine, the combination of a throttle valve in plate form between a main slide valve and two engine cylinders, said valve being provided with a central aperture and with live steam ports, and a governor connected with said valve, substantially as described.

2. In valves for a steam engine, the combination with two cylinders provided with a head having a projection thereon, said head having live steam and exaust ports therein, a steam chest on the head and a slide valve in said steam chest, of a throttle valve in plate form, said valve being arranged in the head and provided with a central aperture to receive the projection of the said head, and with live steam ports registering with the live steam ports of the head, substantially as described.

3. In valves for a steam engine, the combination with two cylinders provided with a head having a projection and provided with exhaust steam ports in said projection and with two live steam ports at each side of the exhaust ports, of a valve casing in the head, a valve in the casing and provided with live steam and exhaust ports, and a throttle valve in said head and having a central aperture to receive the said projection and with two live steam ports at each end, substantially as herein shown and described.

530,401. BATTERY CONNECTION. WALTER S. DOE, Brooklyn, N. Y., assignor of one-half to Henry Thompson, same place. Filed Aug. 27, 1894. Serial No. 521,429. (No model.)



*Claim.*—1. A battery connection, comprising an electrical contact disk surrounded by an elastic ring, for hermetically sealing the joint between the face of the disk and the lead plate, and a binding post or head in electrical connection with said disk substantially as shown and described.

2. A battery connection, comprising an electrical contact disk, and an elastic ring surrounding the said disk and of a thickness somewhat greater than the thickness of the disk, and projecting beyond the face or faces of the disk, and a binding post or head in electrical connection with said disk substantially as shown and described.

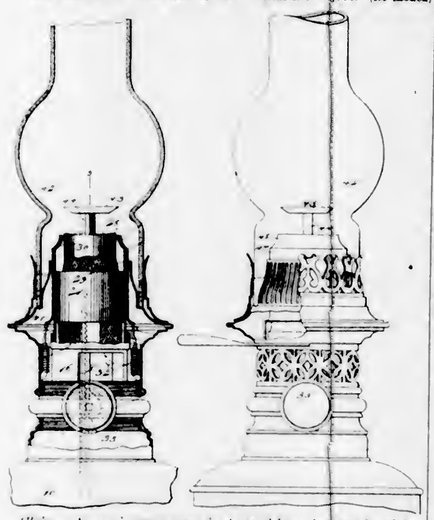
3. A battery connection, comprising an electrical contact disk, an elastic ring surrounding the said disk and of a thickness somewhat greater than the thickness of the disk, and projecting beyond the face or faces of the disk, and means, substantially as described, for moving the said contact disk into contact with the lead plate, and at the same time compressing the elastic ring to cause the latter to hermetically seal the joint between the face of the disk and the lead plate, and a binding post or head in electrical connection with said disk as set forth.

4. A battery connection, comprising a head having side arms, and a transverse partition provided with integral disks, movable disks adapted to engage the lead plates, to press the same in contact with the said fixed disks on the partition, and elastic rings surrounding the said disks and adapted to hermetically seal the joints between the faces of the said disks and the lead plates, substantially as shown and described.

5. A battery connection, comprising a head having side arms, and a transverse partition provided with integral disks, movable disks adapted to engage the lead plates, to press the same in contact with the said fixed disks on the partition, elastic rings surrounding the said disks and adapted to hermetically seal the joints between the faces of the said disks and the lead plates, and screws screwing in the side arms of the head and carrying the said movable disks, substantially as shown and described.

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530,402. LAMP. FERDINAND DOELLE and HENRY VON GLAHN, New York, N. Y. Filed Mar. 9, 1894. Serial No. 503,000. (No model.)

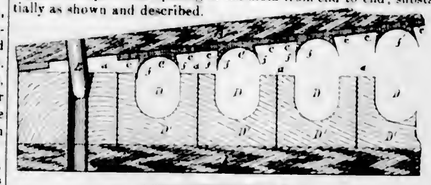


*Claim.*—As an improvement in Argand-lamp burners hereinbefore set forth, the combination, with guide, or wick-tube, and the slidable extinguisher tube, having a base flange, of two spring-supports for the extinguisher, which are arranged diametrically opposite, and consist of slidable rods having lateral projections, or shoulders, guide-tubes therefor which are fixed inside the burner, and springs arranged on the rods below said shoulders, two spring catches arranged oppositely, and the two releasing levers arranged and fulcrumed oppositely, and their free ends projecting laterally and parallel on one side of the burner, as shown and described, for the purposes specified.

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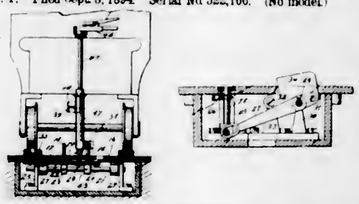
530,403. END-OPENING WOODEN CIGAR-MOLD. NAPOLEON DU BRUL, Cincinnati, Ohio. Filed Sept. 21, 1894. Serial No. 523,704. (No model.)

*Claim.*—An end opening wooden cigar mold comprising an upper member and a lower member, the lower member having saw-kerfs providing a series of wooden matrices formed with slightly yielding vertical sides, and the upper member having a series of wooden cups formed on the end of the grain of the wood, with concave faces, with attaching flanges, and with naked fin edges which taper upward and inward on each side toward the flanges leaving spaces or openings between the inclined sides of the cups and the vertical sides of the matrices to permit the cups to be varnished and to be turned in the yielding matrices without sticking or binding so as to avoid the breaking of the cups in the opening of the mold from end to end; substantially as shown and described.



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530,404. RAILWAY-SWITCH. CHARLES H. EIMKE, Brooklyn, N. Y. Filed Sept. 5, 1894. Serial No. 522,166. (No model.)



*Claim.*—1. The combination, with the track rails and switch rail, of the slide plate connected with the switch rail, the vertically movable pins held in the slide plate, the depressible contact block on the track, and a lever mechanism for raising the pins by the depression of the block, substantially as described.

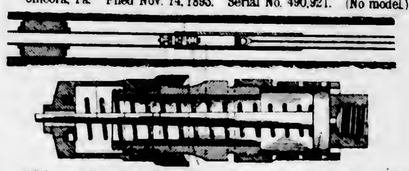
2. The combination, with the track rails and the switch rail, of the vertically movable shift pins connected with the switch rail, the vertically and longitudinally movable slide rod carrying the pins, the depressible contact block on the track, and a lever mechanism for raising the slide rod by the depression of the block, substantially as described.

3. The combination, with the track rails and switch rail, of the vertically movable shift pins connected with the switch rail to move it, the vertically and longitudinally movable slide rod carrying the shift pins, the rock shaft, the contact block arranged on the track and having a crank and lever connection with the rock shaft, and lifting arms connecting the rock shaft and slide rod, substantially as described.

4. The combination with the switch rail and the slide plate connected therewith and provided with a pin or lug, of the spring having a cam like projection between its ends engaging the said pin to lock the slide frictionally in its several positions, substantially as described.

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530,405. SHUT-OFF VALVE FOR OIL-WELLS. EVAN EVANS, Chicora, Pa. Filed Nov. 14, 1893. Serial No. 490,921. (No model.)



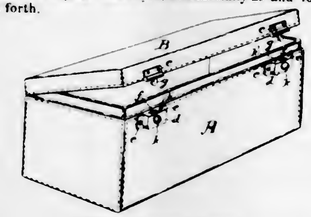
*Claim.*—As a new article of manufacture the shut off valve shown and described composed of the integral cylindrical perforated chamber D, on its upper end having the boss E, with the threaded socket in its top, the valve seat in the lower end of the chamber, the yoke G depending from said seat and in the upper side of its lower end having the annular groove, the valve in the chamber having the depending stem, and the tapered spring around the stem, having its small upper end bearing against the valve and its lower end fitted in said groove.

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530,406. TRUNK-FASTENER. ROBERT FLOCKE, Newark, N. J., assignor to Gustav Bernheim, New York, N. Y. Filed Aug. 25, 1894. Serial No. 521,261. (No model.)

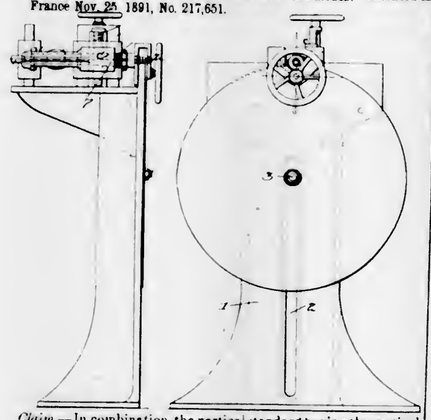


*Claim.*—A trunk catch composed of a member, as *c*, provided with a hook, as *g*, and a box-like structure or member, as *d*, provided with a lock plate working therein, and provided with an aperture to receive the hook, and a recess or notch in one end thereof, a spring as *j*, interposed between the rear end of said lock plate and the inner wall of said member, *d*, and a spring-actuated push bar, having a shoulder thereon, and adapted to engage with said recess in said lock plate, automatically, as described, substantially as and for the purposes set forth.



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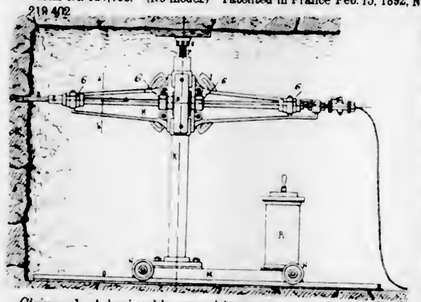
530,407. MACHINE FOR CUTTING TOOTH-RECESSES IN SAW-BLADES. FELIX J. G. FROMHOLT, Paris, France. Filed Jan. 15, 1894. Renewed Nov. 1, 1894. Serial No. 527,679. (No model.) Patented in France Nov. 25, 1891, No. 217,651.



*Claim.*—In combination, the vertical standard having the vertical slot therein, the bolt movable vertically in the slot and adapted to receive the saw blade to be toothed, the cutters at the upper end of the vertical standard, the carriage carrying the cutter shaft and the means for adjusting the said carriage vertically whereby both the said saw carrying bolt and the cutters may be adjusted in the same vertical plane toward and from each other, the said standard being surmounted by guide ways extending vertically with the cutter shaft extending horizontally across the top of the standard, substantially as described.

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530,408. ROTARY BORER WITH DIAMOND-BIT. FÉLIX J. G. FROMHOLT, Paris, France. Filed Sept. 8, 1893. Renewed Nov. 2, 1894. Serial No. 527,788. (No model.) Patented in France Feb. 15, 1892, No. 218,402.



*Claim.*—1. A boring bit comprising two concentric rings having sockets extending between them longitudinally and opening at the lower face of the rings and the diamond points carried by and between the rings in the longitudinal sockets, said points projecting out in the plane of the line of division between the rings, substantially as described.

2. In combination the two concentric rings, one of them having sockets formed therein extending longitudinally between the meeting faces and flaring radially and the diamond carrying pieces arranged in said sockets and held by the adjacent rings, substantially as described.

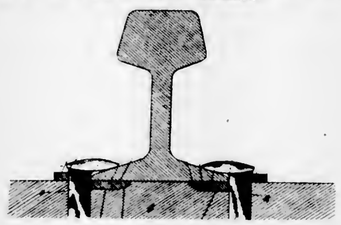
3. In combination, the outer tube A held against longitudinal movement, the bit, the carrier therefor arranged within the outer tube and having a piston head, said carrier being splined to the interior of the outer tube, the means for rotating the bit connected to the outer tube to rotate it and thus transmit rotary movement to its splined carrier and bit and the liquid supply leading to the outer tube whereby said outer tube will serve as the means of transmitting the rotary movement to the carrier and as the cylinder therefor, substantially as described.

4. In combination, the frame comprising the standard K, and the bearings 6, the tubular part A in said bearings, the motor D on the shaft to rotate the same, the said part A being held with the rotary driving means against longitudinal movement the drill, the part carrying the same sliding in the outer rotary part A and splined to the interior thereof to rotate with the same, the piston on the inner part, and the liquid supply fitting G at the end of the rotary tube A, substantially as described.

5. In combination, the post K, the split frame I embracing the same and having a pinion engaging a rack on the post, said frame I being made in two sections, the frame H carried by the split frame I and having bearings for supporting the rotary shaft the said frame being adjustable on the split frame by the screws L, the bit and the electric motor on the rotary shaft, substantially as described.

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530,409. EXTENSION TIE-PLATE. WILLIAM R. FUNK, McFarland, Kans., assignor of one-half to Arthur G. Henry, same place. Filed Sept. 21, 1894. Serial No. 523,717. (No model.)



*Claim.*—1. A tie-plate composed of two adjustable sections designed to be arranged at opposite sides of a rail, and each comprising a plate consisting of a downwardly offset inner portion designed to be located beneath a rail, and an upper outer portion forming an upper inner shoulder to engage the bottom flange of a rail and having a lower outer shoulder for engaging the cross tie, said plate being provided at its outer portion with a spike opening, whereby the said outer portion is adapted to support the neck of the spike and to bind the latter against a rail, substantially as described.

2. The combination with a rail, and a cross-tie provided below the rail with recesses, of a tie-plate composed of two sections located at opposite sides of the rail, and each consisting of a plate having a downwardly-offset inner portion located in a recess of the cross-tie and having a beveled lower face, and an upper outer portion arranged on the upper face of the cross-tie, said section being provided with a central spike-opening and having an upper inner shoulder to engage the bottom flange of the rail and a lower outer shoulder for engaging the cross-tie, and spikes passing through the openings of the sections and engaging the rails, substantially as described.

3. A tie-plate section or plate having a downwardly offset inner portion with a beveled lower face, and provided with an upper outer portion, and having an intervening vertical shoulder, the inner portion being designed to be placed beneath a rail, whereby the shoulder and the outer portion will form a support for the rail, substantially as described.

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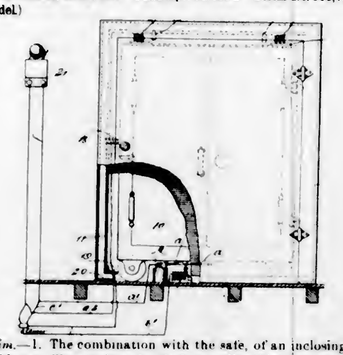
530,410. FIREPROOF DOOR OR SHUTTER. WILLIAM J. GIESSLER, St. Louis, Mo., assignor of one-half to Alexander Kilpatrick and Frank J. Hunleth, same place. Filed Dec. 11, 1893. Serial No. 493,388. (No model.)

*Claim.*—In a fire proof door or shutter, the combination with the U-shaped frame, the corrugated sheets having their marginal portions secured thereto and the filling of mineral wool or other analogous fire proof material, of the hangers consisting of metal straps ap-

plied to both sides of the shutter, secured together and to the marginal frame and having an eye at one end of the latter, substantially as described.



530,411. **BURGLAR-ALARM FOR SAFES.** JAMES W. GILSTRAP, Rolla, and WILLIAM D. GILSTRAP, Racine, assignors of one-third to Austin L. McRae, Rolla, Mo. Filed Apr. 24, 1894. Serial No. 508,797. (No model.)



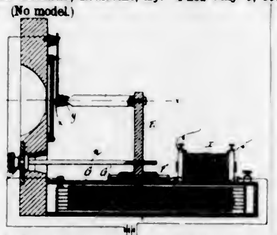
*Claim.*—1. The combination with the safe, of an inclosing, movable, rigid, metallic envelope, insulating media which separate them, means for making contact between them, and an electrical circuit, a circuit closer, and alarm, as shown and described, whereby the movement of the envelope, bodily, in any direction, closes said circuit and sounds the alarm, as specified.

2. The combination with the safe, of an inclosing, rigid, metallic envelope, a second envelope inclosing the first, both being movable bodily, means for insulating the inner envelope and making contact, an electrical circuit and connections between the safe and two envelopes, and an alarm included in said circuit, as shown and described.

3. The combination, with the safe, of the inner envelope inclosing the safe and provided with a door, the inner envelope being insulated from the safe, an outer envelope electrically connected with the safe and insulated from the inner envelope, in-turned flanges or contacts on the two envelopes, and electrical connections between a source of electricity and the safe and outer envelope and between such source and the inner envelope, substantially as described.

4. The combination, with the safe and the inner envelope, of insulated springs supporting the envelope on the safe, contacts carried by the envelope to touch the safe an electric alarm, and an electric circuit including the safe, the envelope and the alarm, substantially as described.

530,412. **TELEPHONE-TRANSMITTER.** JOHN GOODMAN and HENRY M. GOODMAN, Louisville, Ky. Filed July 3, 1894. Serial No. 516,490. (No model.)

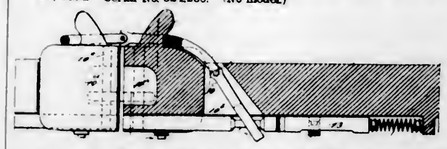


*Claim.*—1. In a telephonic instrument, the combination of a diaphragm, a vibratory magnet having contact with said diaphragm, a flexible or spring support for said magnet, a series of opposing magnets approximating said vibratory magnet and having their approximated poles of opposite polarity to that of the part of the vibratory magnet which they approximate, comminuted magnetic material interposed between the vibratory and the opposing magnets and adjusting devices whereby said opposing magnets may be adjusted with relation to the vibratory magnet, substantially as specified.

2. In a telephonic instrument, the combination with a diaphragm of a vibratory magnet having contact with said diaphragm, a series of opposing electrodes approximating said vibratory magnet and whose approximated poles are of opposite polarity to that part of the vibratory magnet which each approximates, and masses of magnetic material in a comminuted state constituting the electrical connection between the vibratory magnet and the opposing electrodes, substantially as specified.

3. In a telephonic instrument, the combination with a diaphragm, a spring supported vibratory magnet making contact with said diaphragm, a series of opposing electrodes approximating said vibratory magnet at right angles and having their approximated poles of opposite polarity to that part of said vibratory magnet which each approximates, and a variable resistance of granular magnetic material between each opposing electrode and the vibratory magnet, substantially as specified.

530,413. **CAR-COUPLING.** LUDWIG GRUNWALD, Toledo, assignor of one-half to Charles Long and Daniel Flath, Norwalk, Ohio. Filed Sept. 27, 1894. Serial No. 524,288. (No model.)



*Claim.*—1. The combination with a drawhead, having an integra draft lug on top near the front, of a drawbar adapted to rock in a slot of the drawhead and forked to embrace said draft lug, and a draft link pivoted on the forked limbs of the drawbar to engage a mating draft lug on another drawhead, substantially as described.

2. The combination with a drawhead, vertically slotted near the front end, and having a draft lug on top curved rearwardly in front of the slot, of a curved drawbar adapted to rock in the vertical slot and having its upper end forked to embrace the draft lug, a draft link pivoted on these forked limbs, and means to rock the drawbar from the front of the drawhead, substantially as described.

3. The combination with a drawhead, vertically slotted near the front end, and having a curved draft lug in front of said slot, of a curved drawbar forked on both ends and pivoted so as to rock and rise in the vertical slot, a draft link pivoted to the forked limbs on the upper end of the drawbar, and a longitudinally extending spring pressed pusher bar below on the drawhead and loosely engaged by the lower forked end of the drawbar, substantially as described.

4. The combination with a drawhead, vertically slotted near the front end, having a curved draft lug in front of said slot, of a curved drawbar slotted at the lower end, and pivoted so as to rock and rise in the slot, two forked limbs forming an open link on the upper end of the drawbar, a U-shaped draft link pivoted by its ends in laterally recessed ends of these forked limbs, a longitudinally slidable pusher bar on the lower side of the drawhead loosely engaged by the lower slotted end of the drawbar, a laterally projected spring pressed locking bar adapted to engage a notch in the pusher bar, and means to secure the locking bar in or out of said notch, substantially as described.

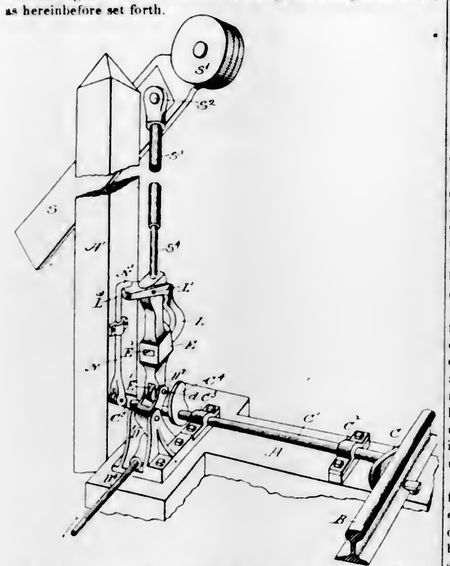
5. The combination with a drawhead, having an upwardly and rearwardly curved draft lug on top near the front end, and vertically slotted behind said lug, the slot having opposite channels in its sides extending from above downwardly and rearwardly, of a curved drawbar having trunnions which engage said channels, two forked limbs on the upper end of the drawbar, which limbs are each openly recessed on their ends at outer sides, a U-shaped draft link pivoted in said recesses a forked lower end on the drawbar, a forwardly spring pressed pusher bar having a reduced portion loosely engaged by said forked lower end, and a locking device adapted to retain the pusher bar retracted, substantially as described.

530,414. **MECHANICAL TRIP FOR RAILWAY-SIGNALS.** CHARLES A. HAMMOND, Boston, Mass. Filed Apr. 12, 1894. Serial No. 507,300. (No model.)

*Claim.*—1. In a railway signal device, the combination with the lower of two standards or parts of a rod operating the signal (the upper part sliding within the lower part), of a pivoted curved lever or catch and a curved transverse slot in said lower standard, within which slot one end of said lever or catch enters, in order to sustain the upper part of said operating rod when both upper and lower parts move together, or to allow the upper part, thus supported, to fall within the lower part when the upper end of said lever or catch is tilted so that its lower end is withdrawn from said transverse slot, said lever or catch being unequally balanced, whereby its lower end by force of gravity constantly tends to enter the said slot, substantially as and for the purpose set forth.

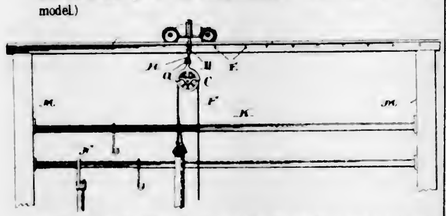
2. In a railway signal device, the combination of a telescopic lifting rod; a lever or catch for holding said rod in extended position, a horizontal shaft extending from the signal post to the railway track and having a track cam, and an operating cam for setting the apparatus in working position; a tripping rod connected to and operated by said shaft; a bell crank controlled by the signal man and connected to and adapted to operate the signal lifting rod; and a friction wheel carried by said bell crank at its point of connection with the signal rod, the combination being and acting substantially as hereinbefore set forth.





3. In a railway signal device, the combination with a telescopic standard E and rod $S^2$ $S^4$ $S^5$, adapted to support a semaphore, and a semaphore, of the curved lever L fitting the curved slot $E^2$, the tripping rod N, the operating mechanism connecting said tripping rod with the track-cam C, and the friction-wheel $E'$ and operating cam $C^4$ for setting said mechanism in working position when the semaphore is put to indicate danger, substantially as and for the purpose set forth.

530,415. **MEANS FOR SUSPENDING HOSE IN TOWERS.** LEMUEL W. HAYES, New Bedford, Mass., assignor of one-half to Charles S. Paisler, same place. Filed Sept. 11, 1894. Serial No. 522,728. (No model.)

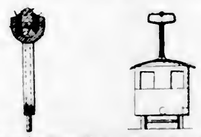


*Claim.*—1. The combination with a hose elevator of a track provided with a series of projections, a carriage for supporting said elevator, and a lever carried by the carriage adapted to engage the said pins or projections, substantially as shown.

2. The combination of the track, the truck movable thereon, the elevating device carried by the truck, and the lever D pivotally connected to the truck and adapted to engage at determined points the track and thus hold fixedly the truck thereon, substantially as shown and described.

530,416. **SELF-LUBRICATING CONTACT-BAR FOR ELECTRIC RAILWAYS.** FRIEDRICH W. N. E. HAYN, Berlin, Germany, assignor to Siemens & Halske, same place. Filed May 12, 1894. Serial No. 511,067. (No model.)

*Claim.*—1. A transversely extending contact bar for transmitting the working current from the stationary working conductor to the motor carried on an electro-motor vehicle of an electric railway, said bar having a hollow or tubular space along its whole length or a suitable part of its length, strips or layers of wick or felt or any other suitable spongy material connecting the said tubular space with the outer air, and a tube connecting the said tubular space with a vessel carried on the car and containing a suitable lubricant subjected by any suitable known means to a suitable pressure, substantially as described.



2. A transversely extending contact bar for transmitting the working current from the stationary working conductor to the motor carried on an electro-motor vehicle of an electric railway, said bar being freely movable transversely in contact with said stationary conductor and having a hollow or tubular space along its whole length or a suitable part of its length, strips or layers of wick or felt or any other suitable spongy material connecting the said tubular space with the outer air, and a tube connecting the said tubular space with a vessel carried on the car and containing a suitable lubricant subjected by any suitable known means to a suitable pressure, substantially as described.

3. A metallic contact bar for transmitting the working current from the stationary working conductor to the motor carried on an electro-motor vehicle of an electric railway, said bar having direct contact with the stationary conductor, and being provided with an adjacent receptacle for a suitable lubricant, suitable porous or spongy material, communicating with the receptacle, for conducting the lubricant to the working surface of the contact bar, and a tube connecting the receptacle with a vessel carried on the car and containing such lubricant subjected by any suitable means to a suitable pressure, substantially as described.

4. A metallic contact bar for transmitting the working current from the stationary working conductor to the motor carried on an electro-motor vehicle of an electric railway, said bar having direct contact with the stationary conductor a tube, leading to the contact bar, from a vessel carried on the car and containing such lubricant subjected by any suitable means to a suitable pressure, and means for distributing the lubricant therefrom over the working surface of the contact bar, substantially as described.

5. A metallic contact bar for transmitting the working current from the stationary working conductor to the motor carried on an electro-motor vehicle of an electric railway, having vertical sides and a beveled or inclined contact surface extending there-between, a receptacle for a lubricant adjacent to said bar, porous or spongy material against said sides for conveying the lubricant to the contact surface, extending from said receptacle, and a tube connecting the receptacle with a vessel carried on the car and containing such lubricant subjected by any suitable means to a suitable pressure, substantially as described.

6. A metallic contact bar for transmitting the working current from the stationary working conductor to the motor carried on an electro-motor vehicle of an electric railway, an open-topped receptacle for a lubricant, beneath said contact bar, porous or spongy material, which, with the contact bar, closes the top of the receptacle, and a tube connecting the receptacle with a vessel carried on the car and containing such lubricant subjected by any suitable means to a suitable pressure, substantially as described.

7. In a contact-bar for the purpose aforesaid consisting of a U-shaped rail *b* a contact-bar proper *a* adapted to fit loosely into the opening of the aforesaid rail and layers or strips of wick or felt adapted to fill up the chinks formed between the contact-bar proper and the edges of the U-shaped rail, the whole being held together by bolts or rivets and forming thereby a tubular space or hollow *d*, as described and drawn and for the purpose set forth.

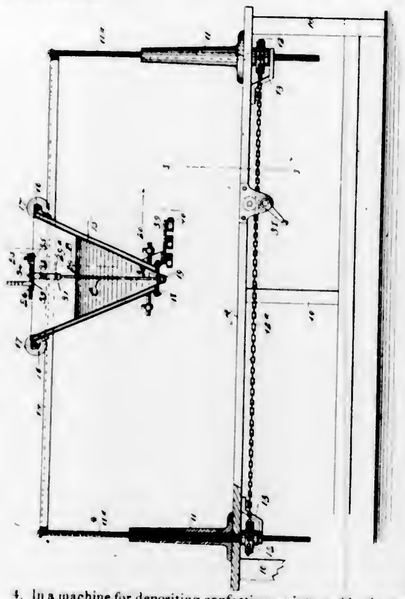
530,417. **MACHINE FOR DEPOSITING CONFECTIONERY INTO MOLDS.** LEO HIRSCHFELD, New York, N. Y., assignor of one half to Julius Stern and Jacob Saalberg, same place. Filed July 24, 1894. Serial No. 518,489. (No model.)

*Claim.*—1. A machine for depositing confectionery into molds, the same consisting of a table, a track located above the table, and adjustable vertically toward and from the table and a trough or tank held to travel upon the said track, the trough being provided with discharge valves and means for operating said valves, substantially as shown and described.

2. In a machine for depositing confectionery into molds, a table, a track adjustably held above the table, and a carriage adapted to carry the confectionery, held to travel upon the track over the table, valves located in the carriage, means for operating the said valves, substantially as shown and described, and a feed mechanism whereby

the carriage is made to travel a predetermined distance at each operation of the feed, as and for the purpose set forth.

3. In a machine for depositing confectionery into molds, a track, screw shafts supporting the track, nuts located upon the shafts, and an endless chain belt by means of which the nuts on the screw shafts are simultaneously operated, and a carriage provided with a receptacle adapted to contain confectionery, held to travel upon the track over the table, the said carriage being provided with valves, and means for simultaneously operating all of the valves, as and for the purpose specified.



4. In a machine for depositing confectionery into molds, the combination, with a table, a track located above the table, and supports for the track, vertically adjustable, of a carriage held to travel on said track, provided with a trough-like body having valve seats at its bottom portion, a valve-controlling rod, and valves adjustably carried by the said rod and entering the said seats, substantially as shown and described

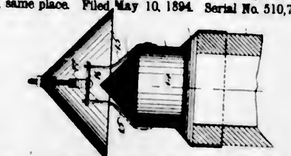
5. In a machine for depositing confectionery into molds, a table, a track adjustably supported above the table, a carriage provided with a receptacle adapted to contain confectionery and held to travel on the tracks, valves controlling the outlets in the carriage, and guides having outward inclination and located upon the forward face of the carriage, as and for the purpose specified.

6. The combination with the receptacle or trough provided in its bottom with threaded outlet nipples or sleeves and caps screwed upon the nipples or sleeves and having apertures in their bottoms, of valve stems extending down through the nipples or sleeves into the caps or receivers and there provided with valves having scrapers thereon to engage the interior of the said caps, said valves closing the nipples or sleeves and opening the caps in their upward movements and in their downward movement opening the nipples or sleeves and closing the caps or receivers.

7. In a machine for depositing confectionery into molds, a receptacle adapted to contain confectionery, provided with removable valve seats in its lower portion, a valve-manipulating rod journaled upon the said receptacle, having bars or plates adjustable thereon and located at intervals apart corresponding to the intervals between the valve seats, valve stems terminating in valves, the latter being adapted to enter the said seats, and the stems being adjustable upon the said plates or bars, substantially as shown and described.

8. In a machine for depositing confectionery into molds, a receptacle adapted to contain confectionery, provided with removable valve seats in its lower portion, a valve-manipulating rod journaled upon the said receptacle, having bars or plates adjustable thereon, and located at intervals apart corresponding to the intervals between the valve seats, and valve stems terminating in valves, the latter being adapted to enter said seats, the stems being adjustable upon the said plates or bars and made to terminate at their upper ends in two pivotally connected blocks, whereby the valve-manipulating bar may be raised or lowered, or shifted without disturbing the relation between the valves and their seats, as and for the purpose specified.

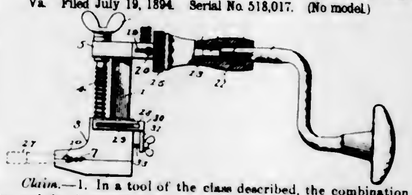
### 530,418. CHIMNEY COWL OR VENTILATOR. MILO H. INGALLS, North Granville, N. Y., assignor of three-eighths to John C. Shannon, same place. Filed May 10, 1894. Serial No. 510,745. (No model.)



*Claim.*—1. The combination with the flue having upwardly projecting arms 15, of a cruciform bracket 16 pivoted to rock vertically in said arms, a bow or fork 17 pivoted at its ends to the bracket 16 at right angles to the arms 15, a screw rod extending up from the bow 17, a conical cap 20 having a nut 19 in its apex screwing upon the rod to adjust the cap vertically and a set nut on the rod for securing the cap in its adjusted position.

2. As an improved article of manufacture, a cowl or ventilator comprising a flue 10, having a screen on its upper end and an internal band securing the screen in place, external vertical arms 15, a vertically adjustable conical cap provided with a supporting and adjusting screw, and a universal joint connecting the lower end of the screw with said arms, substantially as described.

### 530,419. COMBINATION-TOOL. SAMUEL J. JOHNSTON, Leesburg, Va. Filed July 19, 1894. Serial No. 518,017. (No model.)



*Claim.*—1. In a tool of the class described, the combination of the tool shank provided at one end with a stationary jaw, the sliding jaw mounted on said shank, both of said jaws being provided on their opposing faces with transverse gripping teeth or serrations, longitudinal tapered registering angular notches or grooves, and directly opposite head receiving recesses or pockets at the inner extremities of said angular notches or grooves, and said sliding jaw being further provided on its inner gripping face near its outer end with a transverse rounded nail groove, and a handle adjustably attached to one end of said shank, substantially as set forth.

2. In a tool of the class described, the combination with the tool shank carrying a fixed and an adjustable jaw; of a detachable handle, two fastening means for the handle on the shank, one at right angles thereto and the other parallel therewith, and a catch device for the handle adapted to lock the same in its attached position at right angles to the shank, substantially as set forth.

3. In a tool of the class described, the combination of the shank carrying a fixed and an adjustable jaw and provided at one end with a cross-arm having separate right-angularly disposed screw studs or posts, a handle spindle provided with an interiorly threaded end adapted to engage either of said studs or posts, a turning handle loosely mounted on said spindle, and a catch device for said spindle arranged in a line with one of said studs or posts, substantially as set forth.

4. In a tool of the class described, the combination of a shank carrying a fixed and an adjustable jaw and provided at one end with a cross arm having at one end separate right-angularly disposed screw studs or posts, a handle spindle provided with an interiorly threaded end adapted to engage either of said studs or posts and a finger collar at its threaded end provided in its outer face with a series of notches, and a spring actuated catch stud or pin mounted on said cross-arm in a line with one of said studs or posts and adapted to engage the notches in said collar, substantially as set forth.

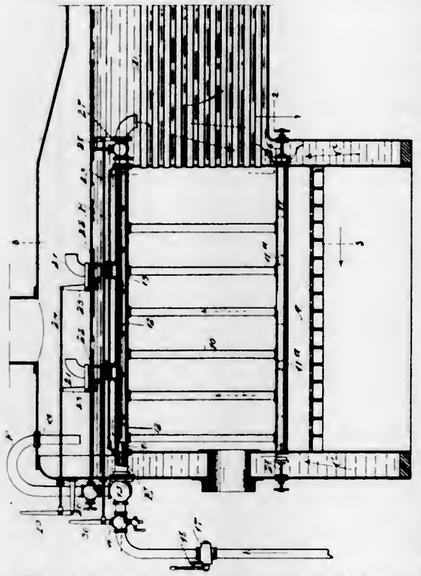
5. In a tool of the class described, the combination of a shank carrying a fixed and an adjustable jaw, and provided at one end with a cross arm, a tubular handle spindle adapted to be adjustably attached to said cross arm and provided in its outer end with a squared socket, and a brace arm provided with a squared end adapted to be fitted in the socket of said handle spindle, and having a threaded bit holding opening or socket, substantially as set forth.

6. In a tool of the class described, the combination with the tool shank carrying a fixed jaw and a sliding jaw working on said shank; of an adjustable U-shaped clamp fitted to said sliding jaw and adapted to engage the edge of a bench or table, substantially as set forth.

7. In a tool of the class described, the combination with a tool shank carrying a fixed jaw and a sliding jaw mounted on said shank and provided in one side with a threaded opening, a transverse guide plate or bar attached to one side of said sliding jaw, a U-shaped clamp yoke embracing said sliding jaw and provided with opposite slotted arms receiving the extremities of said guide plate or bar, and a clamp plate having a threaded opening, and a clamp screw mounted in the threaded opening of said clamp plate, substantially as set forth.



### 530,420. FEED-WATER HEATER AND CIRCULATOR FOR BOILERS. EDWARD JONES, New York, N. Y. Filed Mar. 24, 1894. Serial No. 504,945. (No model.)



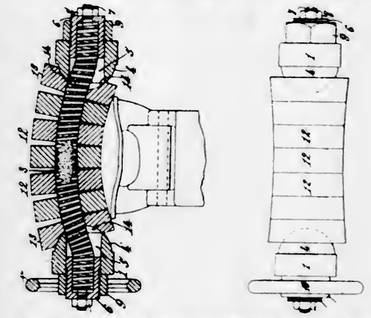
*Claim.*—1. In a boiler, the combination, with the fire box, of a feed pipe extending through from front to rear, circulating pipes located in the bottom portion of the fire box in communication with the water legs thereof, side heating tubes extending upward from the circulating tubes, and upper tubes connecting the side tubes with the feed pipe, the upper tubes being angular, inclining from the front in direction of the rear from a given point in their length, and a water supply pipe connected with the feed pipe, as and for the purpose set forth.

2. In a boiler, the combination, with a fire box, circulating pipes located in the same at the lower portion thereof and communicating with the water legs, and a feed pipe extending through the fire box at one end over the fire tubes and at the other end to the front exterior of the box, of side heating tubes connected with the circulating pipes, upper sets of tubes connecting the upper ends of the side tubes with the feed pipe, the arrangment of the upper tubes being staggered and their inner ends having an inclination in direction of the rear, and a water supply pipe connecting with the feed pipe at its outer ends, said water supply pipe being provided with a check and regulating valve, substantially as shown and described.

3. In a boiler, the combination, with a fire box, circulating pipes located in the same at the lower portion thereof and communicating with the water legs, and a feed pipe extending through the fire box at one end over the fire tubes and at the other end to the front exterior of the box, of side heating tubes connected with the circulating pipes, upper sets of tubes connecting the upper ends of the side tubes with the feed pipe, the arrangement of the upper tubes being staggered and their inner ends having an inclination in direction of the rear, a water supply pipe connected with the outer end of the feed pipe and extending into the latter, and a water regulating device consisting of a pipe communicating with the feed pipe around the inserted portion of the water supply pipe, the upper portion of the said regulating pipe being carried through the top of the boiler within the steam space to a predetermined extent, as and for the purpose set forth.

4. In a boiler, the combination, with the fire box, circulating pipes located in the sides of the fire box at the lower portion thereof and communicating with the water legs of the boiler, a feed pipe located in the upper portion of the fire box and extending through the rear thereof over the fire tubes, and at its forward end extending through to the front of the boiler, and valved release tubes connected with the feed pipe and extending through the crown sheet of the fire box into the steam space of the boiler, of side water heating tubes connected with the circulating pipes and extending upwardly therefrom, an upper set of angular tubes connecting the upper ends of the side tubes with the feed pipe, the upper tubes entering the feed pipe alternately at opposite sides, a water supply tube or pipe connected with the outer end of the feed pipe, provided with a regulating and a check valve, and a means, substantially as shown and described, for manipulating the valves in the release tubes from the exterior of the boiler, as and for the purpose set forth.

### 530,421. SOLE-LEVELING MACHINE. EDWARD C. JUDD, Boston, Mass. Filed Aug. 25, 1894. Serial No. 521,321. (No model.)



*Claim.*—1. A sole-leveling roll, consisting of a flexible axle or shaft and a plurality of rigid disks of varying diameter strung thereupon, said disks being arranged so that they decrease in diameter from the outermost disks to the central one, and said roll being adapted to yield and assume different curvatures longitudinally, substantially as and for the purposes described.

2. The combination with the carrier of a sole-leveling machine, of a sole-leveling-roll consisting of a flexible shaft mounted at its extremities in the carrier, and a plurality of disks rotatable on the said shaft, substantially as and for the purposes described.

3. The combination with the carrier of a sole-leveling machine, of a sole-leveling roll consisting of a flexible shaft mounted at its extremities in the carrier, and a plurality of disks of rigid material independently rotatable on the said shaft, substantially as and for the purposes described.

4. The combination with the reciprocating carrier of a sole-leveling machine, of a sole-leveling roll composed of a flexible shaft carrying a plurality of disks and mounted at its extremities in the reciprocating carrier, adjustable socket pieces or holders arranged in the carrier and engaging the ends of the shaft, and nuts for adjusting the socket pieces, substantially as and for the purposes described.

5. The combination with a reciprocating carrier, and a sole-leveling roll provided with a flexible axle or shaft and susceptible of assuming different curvatures longitudinally, of ball and socket connections between the roll and the carrier, substantially as and for the purposes described

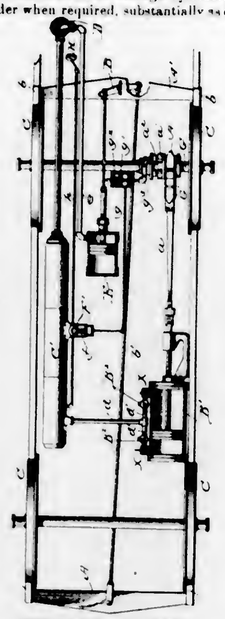
6. The combination with a roll-carrier, of a sole-leveling roll having a flexible axle or shaft susceptible of being lengthened or shortened, and devices connecting the ends of the axle or shaft with the carrier and adapted to lengthen or shorten said axle or shaft, substantially as described.

7. The combination with a roll-carrier, of a sole-leveling roll having an elastic axle or shaft and adapted to assume different curvatures, and tension adjusting socket pieces or holders connecting the axle or shaft with the carrier and serving to change or vary the tension of said axle or shaft, substantially as described.

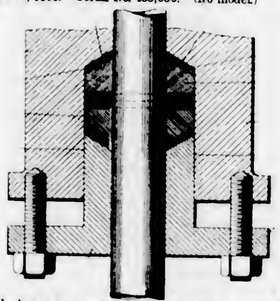
### 530,422. AIR-BRAKE FOR STREET-RAILWAY CARS. ROSWELL S. JUDSON and GILMAN D. HOLMES, Matteawan, N. Y. Filed Dec. 20, 1893. Serial No. 494,147. (No model.)

*Claim.*—The herein shown and described air brake system for street railway cars, consisting of a storage cylinder, a pump for charging the storage cylinder, an eccentric for operating the pump loosely mounted on an axle and having a half clutch, a corresponding half

clutch mounted on the said axle and held thereon by feather and spline connection, a clutch operating cylinder having its piston rod in connection with the movable half clutch, a spring to cause the parts of the clutch to mesh, a pipe connecting the said clutch cylinder with the storage cylinder whereby a superior air pressure in the said storage cylinder will move the clutch cylinder piston against the tension of the spring and ungear the clutch, a check valve in the said pipe, a brake cylinder for setting the brakes having communication with the said storage cylinder, and a three way cock to establish communication between the brake and storage cylinders and relieve the said brake cylinder when required, substantially as described.



**530,423. PISTON-ROD PACKING.** ALLAN B. KAY, New York, N. Y. Filed Sept. 16, 1893. Serial No. 485,656. (No model.)



*Claim.*—1. As an improvement in packing, in combination with the part to be packed, metal, and yielding or flexible rings, connections between the whole of the adjacent surfaces of said rings whereby they will be forced with like pressure upon said part, and means to subject the rings to lateral pressure, substantially as and for the purpose specified.

2. As an improvement in packing, in combination with the part to be packed, metal and yielding or flexible rings, the metal ring having its whole surface in engagement with the other roughened to connect them together so as to cause them to be forced with like pressure upon said part and means to subject each ring to lateral pressure, substantially as and for the purpose shown.

3. As an improvement in packing, in combination with a piston rod and stuffing box, the two metal rings having roughened faces, the yielding or flexible rings between and at the ends of said metal rings and engaging such roughened faces, substantially as and for the purpose set forth.

**530,424. SPAN OR ARCH.** EDWARD KEATING, Terre Haute, Ind. Filed Nov. 1, 1894. Serial No. 527,656. (No model.)

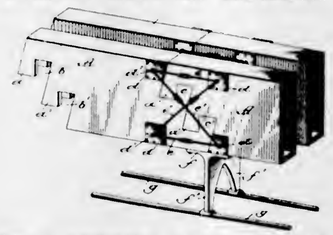


*Claim.*—1. A block having a rectangular body portion with a vertical recess and a projecting portion having an inclined side and bottom, substantially as shown and for the purpose set forth.

2. In combination with a plurality of blocks having recesses, of a key or center block having a rectangular body portion and projections which extend therefrom, the projections being inclined in opposite directions on their lower edges, the recesses in the adjoining blocks being of a corresponding configuration, substantially as shown and for the purpose set forth.

3. A building block for the construction of arches, having parallel upper and lower ends, vertical sides, one of the sides having a projecting portion with inclined end and bottom $a^3$ and $a^4$ and on the opposite side a correspondingly shaped recess, the blocks being adapted to interlock, substantially as shown and for the purpose set forth.

**530,425. GIRDER FOR TRUSS-BRIDGES.** EDWARD KEATING, Terre Haute, Ind. Filed Nov. 1, 1894. Serial No. 527,657. (No model.)



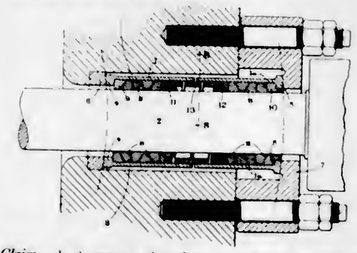
*Claim.*—1. A hollow block or girder section having dovetail projections and recesses on each end so as to interlock and prevent vertical displacement, and means for holding the blocks in engagement with each other against lateral displacement, substantially as shown and for the purpose set forth.

2. In combination with a plurality of blocks having interlocking ends, plates $d$ attached to the blocks and provided with means for securing tie-rods thereto, together with tie-rods $e$ and $e'$, substantially as shown

3. In combination with the blocks A which are secured to each other to prevent vertical and lateral displacement, of brackets $f$ secured to the under side of the blocks at the joints, said brackets having depending portions $f'$ with which truss-rods engage, substantially as shown and for the purpose set forth.

4. In combination with the blocks A having on one end depending dovetail portions $a$ and $a'$ the walls of which form dovetail recesses $b$ and $b'$, the other end of the block having upwardly-projecting dovetail portions $c$ and $c'$ forming dovetail recesses which receive the depending portions of a correspondingly shaped block, substantially as shown and for the purpose set forth.

**530,426. PACKING FOR PISTON-RODS.** TREVOR KEENE, Birkenhead, England. Filed Mar. 17, 1894. Serial No. 504,072. (No model.) Patented in England Nov. 29, 1892, No. 21,788.



*Claim.*—1. A piston rod packing, comprising a sleeve having a spherical bearing at each end struck from the same point approximately coincident with the mean position of the piston and packing rings within the sleeve, the convex surface of said bearings facing outwardly from the cylinder, substantially as described



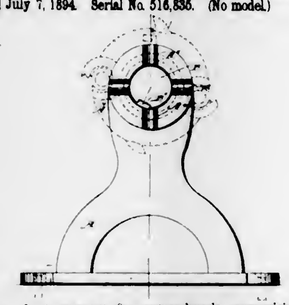
2. In metallic rod packing, in combination, a sleeve divided transversely into two parts and having a concentric spherical end bearing surfaces struck from a point approximately coincident with the mean position of the piston, flanges upon said parts, split neck rings bearing against said flanges and packing rings confined by said split neck rings, substantially as described.

3. In metallic rod packing, in combination, a sleeve divided transversely into two parts and having concentric spherical end bearing surfaces struck from a point approximately coincident with the mean position of the piston, internal flanges on the outer portions of the said parts, split neck rings bearing against the said flanges, packing rings confined by the said neck rings, and an interposed spring pressing the two parts of the sleeve asunder and against the end bearing surfaces; substantially as described.

4. In metallic rod packings, in combination, a sleeve divided transversely into two parts and having concentric spherical end bearing surfaces struck from a point approximately coincident with the mean position of the piston, internal flanges on the outer portions of the said parts, split neck rings bearing against the said flanges, two groups of packing rings confined by the said neck rings, and a spring interposed between the two groups of packing rings and adapted to transmit pressure, through the packing rings, to press the two parts of the sleeve asunder and against the end bearing surfaces; substantially as described.

5. In metallic rod packing in combination, a sleeve having concentric spherical end bearing surfaces and divided transversely into two parts, each part having at the end an internal flange adapted to engage with and hold the split neck rings but to pass over the swelled part of rod, and split neck rings and packing rings held within the said sleeve and an interposed spring pressing the two parts of the said sleeve asunder, substantially as described.

**530,427. SUPPORT FOR CUTTER-HEADS.** ANDREW KENDIG, Texarkana, Tex., assignor to himself and John W. Kendig, same place. Filed July 7, 1894. Serial No. 516,535. (No model.)



*Claim.*—1. A support for cutter-heads, comprising a spindle mounted to turn and to slide in a fixed bearing, and adapted to support a cutter head, a pin held transversely in the spindle and adapted to be seated in grooves in the said bearing, and a spring-pressed bolt connected with the rear end of the said spindle, to hold the latter in an innermost position and with the pin in engagement with one of the said grooves, substantially as shown and described.

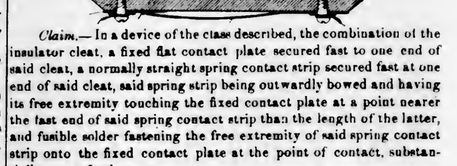
2. A tool support, comprising a stationary bearing having radial grooves at one end and an aperture at the other end, a tool carrying spindle fitting in the said bearing and provided at its end within the bearing with a reduced and headed extension projecting through the aperture in the end of the bearing, and with a transverse pin a short distance from said end, and a spring surrounding the extension, substantially as described.

3. A support for cutter-heads, comprising a stand having a bearing formed with a longitudinal bore, and a transverse partition therein, the front end of the said bearing being provided with radial grooves, a spindle fitted to turn and to slide in the front end of the said bore and adapted to support a cutter-head, a pin held transversely in the spindle and adapted to be seated in the grooves of the said bearing a bolt secured to the rear end of the spindle and extending through an aperture in the said transverse partition, and a spring coiled on the said bolt and resting with one end on the said partition and at its outer end on the head of the bolt, substantially as shown and described.

**530,428. COMPOSING-STICK.** JAMES A KEYES, New York, N. Y., assignor to N. S. Perkins, New London, Conn. Filed May 11, 1894. Serial No. 510,854. (No model.)

*Claim.*—1. The combination with the body of a composing stick, of a slide having a flexible end and means for forcing its ends against the opposite side edges of the stick, substantially as described and for the purpose specified.

2. The combination with the body of a composing stick, of the sheet metal slide made in one piece, and means for deflecting the end pieces of said slide for binding them upon the opposite edges of the stick, substantially as described and for the purpose specified.




3. The combination of the body of the composing stick with the compressible slide B having a fulcrum block, the operating lever having the eccentric 15, and a link 10 for connecting said eccentric and lever with two portions of said slide, substantially as described and for the purpose specified.

**530,429. BOTTLE.** GEORGE F. KINNEY, New York, N. Y., assignor to himself, James N. Wallace, and Edward Coppersmith, same place. Filed Sept. 27, 1894. Serial No. 524,259. (No model.)

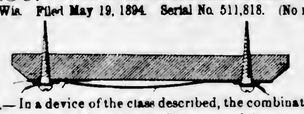


*Claim.*—1. The combination, with the bottle, of a rod arranged within it, a float held to move freely downward on the rod, and a fastening device to prevent the rising of the float, substantially as described.

2. The combination, with the bottle, of the notched rod within it, the float held to slide freely downward on the rod, and teeth on the float to engage the rod, substantially as described.

3. The combination, with the bottle and the vertical toothed rod within it, of the float mounted to slide on the rod and provided with recesses in the top, and spring teeth held in the recesses to engage the rod, substantially as described.

**530,430. THERMAL CIRCUIT-BREAKER.** HENRY KLEIN, Janesville, Wis. Filed May 19, 1894. Serial No. 511,818. (No model.)

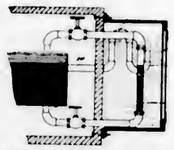


*Claim.*—In a device of the class described, the combination of the insulator cleat, a fixed flat contact plate secured fast to one end of said cleat, a normally straight spring contact strip secured fast at one end of said cleat, said spring strip being outwardly bowed and having its free extremity touching the fixed contact plate at a point nearer the fast end of said spring contact strip than the length of the latter, and fusible solder fastening the free extremity of said spring contact strip onto the fixed contact plate at the point of contact, substantially as set forth.

**530,431. FIRE-EXTINGUISHING APPARATUS.** HOMER D. KRAMER, Pittsburg, Pa. Filed July 25, 1893. Serial No. 481,399. (No model.)

*Claim.*—1. In a fire extinguishing apparatus, the combination with the storage tanks adapted to contain fire extinguishing gas, of

an aggregating chamber with which all of said tanks connect, a distributing chamber with which the pipes of the distributing system connect, a valve for cutting off the gas supply, a communicating passage between the aggregating chamber and the distributing chamber, an escape pipe connecting with said communicating passage, and a two-way valve adapted to control the passages to the distributing chamber and escape pipe, so that when one is open the other will be closed, as and for the purpose set forth.



2. In a fire extinguishing apparatus, the gas tanks and distributing chamber connecting therewith, in combination with a system of distributing pipes connected with the distributing chamber and provided with valves, levers for operating said valves, reciprocating bars provided with pins or projections for engaging the said levers adapted to operate the valves in their reciprocation, and means for reciprocating said bars, substantially as described.

3. In a fire extinguishing apparatus, the combination with gas tanks, a distributing chamber connected therewith, and a system of distributing pipes connected with said distributing chamber, of valves located in the distributing pipes and having operating levers, reciprocating rack bars provided with pins or projections for engaging the valve levers, and a pinion wheel between said rack bars and in engagement therewith adapted to be turned to operate the bars, substantially as described.

4. In a fire extinguishing apparatus, the combination of the storage tanks adapted to contain fire extinguishing gas, of an aggregating chamber, an escape pipe connecting with said aggregating chamber, a distributing chamber connecting with a system of distributing pipes and with the aggregating chamber, and a tank adapted to be filled with liquid having located therein a tube gage communicating with one of the storage tanks, and the end of the escape pipe also submerged in the body of liquid contained therein, substantially as and for the purpose set forth.

5. The fire extinguishing apparatus comprising a tank adapted to contain water or other liquid, gas-holders located within said tank and submerged in the body of liquid contained therein, a distributing chamber connected with said gas-tanks through a suitable communication, a series of distributing pipes connected with the distributing chamber each having a valve, and means for operating the said valves singly or in unison, as and for the purpose set forth.

6. In a fire extinguisher, the distributing pipe having its discharge end provided with an alarm key adapted to be vibrated by the passage of the gas, in combination with a conical hood into which said pipe extends, said hood having perforations formed in its face and sides whereby to direct the gas in all directions, substantially as set forth.

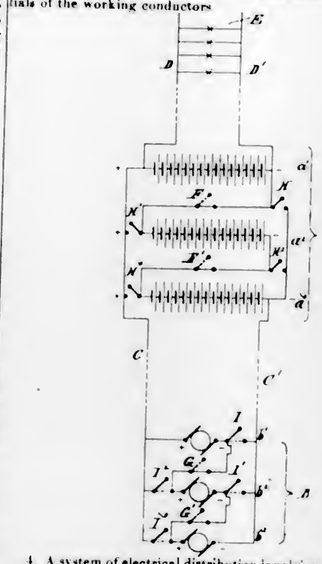
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530,432. **SYSTEM OF ELECTRICAL DISTRIBUTION WITH STORAGE-BATTERIES.** EMIL KOCHENHEISTER, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Nov. 25, 1892. Serial No. 452,980. (No model.) Patented in Germany Mar. 18, 1890, No. 56,525; in Switzerland Nov. 22, 1890, No. 3,146; in Austria Nov. 24, 1890, No. 52,749, XLI, 742; in Hungary Nov. 24, 1890, No. 6,439, XXV, 678; in Italy Nov. 26, 1890, No. 28,645; in Belgium Nov. 26, 1890, No. 92,878, and in France Nov. 27, 1890, No. 209,833.

*Claim.*—1. In a system of electrical distribution, the combination of a current generating plant, an external circuit and the translating devices therein, a storage battery divided into uniform sections and having one of said sections connected permanently across the external circuit, and means for connecting the remaining sections in series with the first section or in parallel with it across the external section when desired.

2. In a system of electrical distribution, the combination of a plurality of generators, an external circuit and the translating devices therein, a storage battery interposed between said external circuit and said generators, and said storage battery divided into as many uniform sections as there are separate generators, means for coupling said generators in series with each other, and in series with the sections of the storage battery, and means for coupling one section of the storage battery permanently in circuit with the conductors of the external circuit and the other sections of the storage battery in parallel of said conductors, when desired.

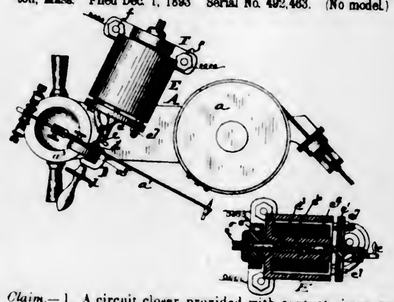
3. In a system of electrical distribution involving a plurality of uniform sections of storage battery, an energizer for each section of battery, each of said energizers having a potential equal to its respective battery sections; working conductors; and means for coupling the initial battery section in parallel of the working conductors and the remaining battery sections successively in series or in parallel with said initial section in accordance with the fluctuations in the potentials of the working conductors.



4. A system of electrical distribution involving a plurality of uniform sections of storage battery, an energizer for each section of battery, each of said energizers having a potential equal to its respective battery section; working conductors; and means for coupling the initial battery section in parallel of the working conductors and the remaining battery sections successively in series or in parallel with said initial section in accordance with the fluctuations in the potentials of the working conductors; and for adjusting the connections of said energizers with said battery section to maintain the potentials of the battery sections and their respective energizers equal.

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530,433. **INDICATOR FOR STEAM-ENGINES.** FREDERICK LANE, Brookline, assignor to the Crosby Steam Gage and Valve Company, Boston, Mass. Filed Dec. 1, 1893. Serial No. 492,463. (No model.)



*Claim.*—1. A circuit closer, provided with contact pieces, and a push plug, in combination with an indicator, one end of the push plug being near a portion of such indicator and in line with a moving part of such indicator, as set forth.

2. The combination of the magnet and its armature with the indicator, and a hook between the armature and the indicator, whereby the armature may be detached from the indicator, as set forth.

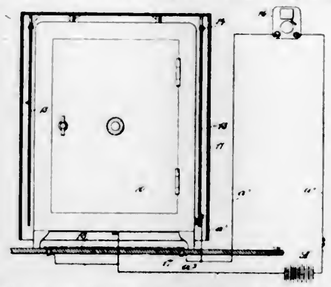
3. The combination of several indicators, one of them with a circuit closer adjacent to an indicator and in line with a moving part of such indicator, and several electro-magnets, one adjacent to each of the other indicators, the armature of each magnet being connected to a moving part of the indicator, as set forth.

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530,434. **BURGLAR-ALARM.** JOHN H. LOWE, Neosho, assignor of one-half to Arthur H. Waite, Joplin, Mo. Filed July 20, 1894. Serial No. 518,115. (No model.)



*Claim.*—1. The combination with a safe, of an inclosing casing movable relatively to the same and provided with electric contacts adapted to contact with the safe when the casing is moved, and an electric circuit including an alarm, the said contacts forming one terminal of the circuit and the safe the other, substantially as described.



2. The combination, with the safe, of the cage or envelope inclosing the safe, contact plates suspended from the envelope and held out of contact with the safe, and an electrical circuit including an alarm, the contact plates forming one terminal of the circuit and the safe the other, substantially as described.

3. The combination, with the safe and its inclosing cage, of the contact plates suspended within the cage and adjacent to the safe, the plates being hinged together at their edges and also hinged at the top, and an electric circuit including an alarm, the circuit having the contact plates forming one of its terminals and the safe the other, substantially as described.

4. The combination, with the cage adapted to inclose a safe, the case containing noxious fluids, and separate and independent from both the cage and the safe, the circuit closing mechanism in the cage, and electrically-operated mechanism in connection with the circuit closing device and adapted to open the fluid containing case, substantially as described.

5. The combination, with the cage, of the case containing noxious fluids under pressure, the valve-controlling the outlet of the case, an atomizing device in the case, the circuit closing mechanism in the cage, and means for opening the case valve by the closing of the circuit, substantially as described.

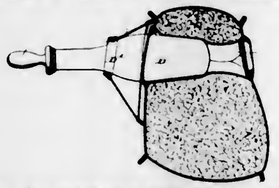
6. The combination, with the cage and the circuit-closing mechanism therein, of the case having an upper and lower compartment separated by a diaphragm, the walls of the lower compartment being perforated, a valve in the diaphragm, magnet-operated mechanism for opening the valve, and means for energizing the magnet by the circuit closing mechanism in the cage, substantially as described.

7. The combination, with the case adapted to contain noxious fluids and provided with upper and lower compartments separated by a diaphragm, the walls of the lower compartment being perforated, of a valve in the diaphragm, a stem secured to the valve and threaded in the case bottom, a handle on the stem pressed normally open by a spring, an armature latch to hold the handle and valve in closed position, a magnet opposite the armature latch, and a circuit closing device controlling the current through the magnet, substantially as described.

8. The herein described burglar alarm apparatus, comprising a cage to loosely envelop the safe and provided with freely swinging gravity contacts to engage the safe and complete the circuit, a valved noxious-fluid receptacle in the room with the cage, and an electrical circuit in which are included an alarm, the safe, the swinging contacts and the valve mechanism of the said fluid receptacle, substantially as described.

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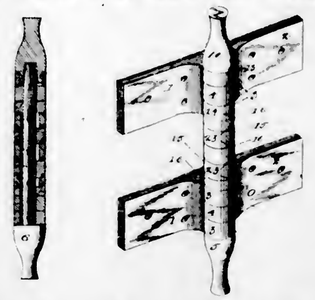
530,435. **NURSING-BOTTLE SUPPORT.** FREDERICK H. LOWERRE, Brooklyn, N. Y. Filed Feb. 21, 1894. Serial No. 500,952. (No model.)



*Claim.*—In a nursing-bottle holder, the combination with a cushion or support having a passage therein, of a flap or pocket providing a movable extension for said passage.

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530,436. **COMBINATION LOCK-HINGE.** EMIL LUNDGREN, Butler, Pa. Filed Aug. 14, 1894. Serial No. 520,323. (No model.)



*Claim.*—1. The combination with hinge-leaves having interlocking eyes provided with registering bores, of a pintle-rod engaging said eyes, and a series of tumblers concentric with the pintle-rod, said tumblers and pintle-rod being provided with intermeshing projections and notches, substantially as specified.

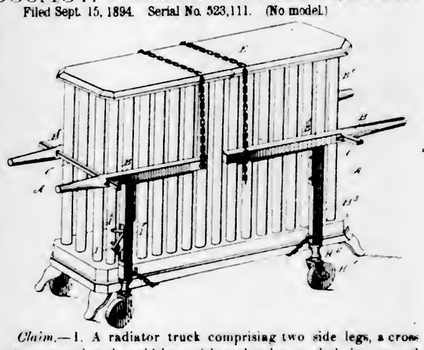
2. The combination with hinge-leaves having registering eyes, of a pintle-rod engaging said eyes and provided with studs or projections, spaced tumblers concentric with the pintle rod, spacing shells interposed between the tumblers, said tumblers being provided with grooved bores to receive the studs or projections of the pintle-rod, substantially as specified.

3. The combination with hinge-leaves having registering eyes, of a pintle-rod engaging said eyes and provided with studs or projections, a knob or handle attached to one end of the pintle rod, a series of tumblers rotatably mounted concentric with the pintle-rod and provided with grooves to allow the passage of the studs or projections on the pintle rod, and a cap removably fitted upon a hinge-eye adjacent to the end of the pintle-rod opposite to the said knob or handle, substantially as specified.

4. The combination with hinge-leaves having registering eyes, of a pintle-rod provided at one end with a knob or handle and at intervals with studs or projections, a cap attached to a hinge-eye at the opposite end of the pintle rod and having a reduced portion fitting in the bore of said eye and provided with a groove which is engaged by a lug in the eye, spaced lugs concentric with the pintle-rod and provided with longitudinal slots to receive the studs or projections thereon, and interposed spacing shells having enlarged bores, said tumblers and interposed shells being provided at their contiguous ends, respectively, with engaging extensions and cavities, and the terminal shells being provided with corresponding extensions which engage cavities in the inner sides of contiguous eyes, substantially as specified

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530,437. **RADIATOR-TRUCK.** THOMAS B. MASON, Trenton, N. J. Filed Sept. 15, 1894. Serial No. 523,111. (No model.)



*Claim.*—1. A radiator truck comprising two side legs, a cross-bar for connecting the said legs with each other, and chains secured at one end to one of the side legs and adapted to be passed over the top of the radiator and under the base of the radiator to be hooked on the other side leg, substantially as shown and described.

2. A radiator truck provided with side legs connected with each other, and a slidable caster held in each side leg and adapted to be locked in position therein, substantially as shown and described.

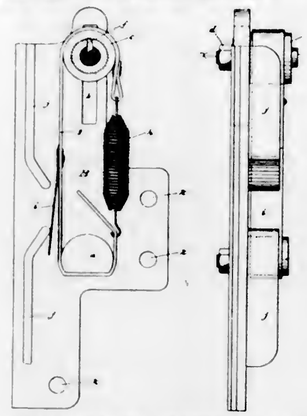
3. A radiator truck provided with a truck frame having two connected side legs, a caster held extensibly in each side leg and a

locking device on each side leg for fastening the caster in an extended position, substantially as shown and described.

4. A radiator truck comprising a frame having two connected side legs, a caster fitted to slide in the vertical part of each side leg, and a gravity pawl hung in said side leg and adapted to engage and lock its caster in an extended position, substantially as shown and described.

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530,438. PICKER-CHECK FOR LOOMS. HENRY R. MATHEWS, Trenton, N. J., assignor of one-half to Henry J. Bailey, Greeneville, R. I. Filed Feb. 3, 1893. Serial No. 460,836. (No model.)



*Claim.*—1. In a shuttle check, the combination of a buffer consisting of a yielding impact band; a fixed support for said band; and a support therefor adapted to move with the band under the impact of the shuttle; and means to prevent the return movement of the support; substantially as shown and described.

2. In a shuttle check, the combination of a buffer consisting of a yielding impact band; a fixed support therefor; a rotating support therefor; and means for preventing reverse rotation of said support; substantially as shown and described.

3. In a shuttle check, a buffer consisting of an impact band with a spring attached to said band, and exerting a tensile strain upon it; a fixed support for said band; a rotating support for said band and means for preventing reverse rotation of said support; substantially as shown and described.

4. In a shuttle check, the combination of a yielding buffer consisting of an impact band, and a spiral spring connecting the ends of said band, with two supports for said band, one of said supports being rotatable in one direction and provided with a ratchet and a dog to prevent reverse rotation thereof; substantially as shown and described.

5. In a shuttle check, the combination of a yielding buffer; a restoring device for returning the buffer to its normal position, and a retarding device for retarding the action of the restoring device; substantially as shown and described.

6. In a shuttle check, the combination of a yielding buffer; a movable support for said buffer; a restoring device for returning the buffer to its normal position, and a retarding device for retarding the action of the restoring device; substantially as shown and described.

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530,439. SUGAR-WAGON BOX. GEORGE W. MILLER, Kalamazoo, Mich. Filed May 5, 1894. Serial No. 510,240. (No model.)



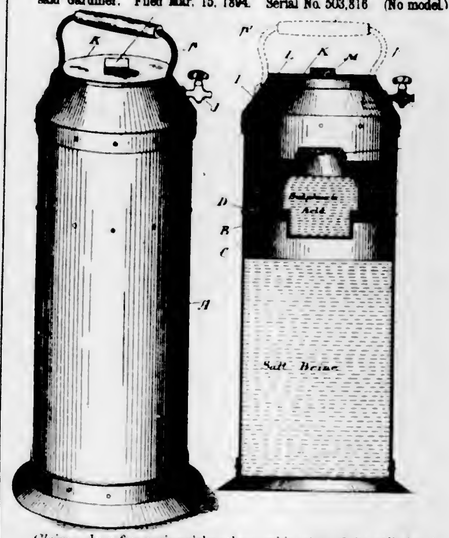
*Claim.*—1. A sugar wagon box or other vessel, made of pieces of sheet metal, one of the meeting edges of said pieces being flanged outward, the other provided with a rib against which the bend of said flanged edge rests, the edge beyond the rib, of the piece bearing said rib, being folded over onto the inside of the seam and confining said flanged edge of the other piece, the three members of the seam having longitudinal, central, registering furrows indented therein under pressure together without the plane of the general surface of said members, substantially as set forth.

2. A sugar wagon box or other vessel, having a hoop right angled in cross section, the lower flange thereof confining the body of the box at the top, and the upper flange of said hoop being confined by the outwardly flanged rim of the box folding over it, substantially as set forth.

3. A sugar wagon box or other vessel, made of pieces of sheet metal, one of the meeting edges of said pieces being flanged outward, the other meeting edge being folded over onto the inside of the seam and confining said flanged edge of the other piece, and the three members of the seam having longitudinal, central, registering furrows indented therein under pressure together without the simple curved surface of said members, substantially as set forth.

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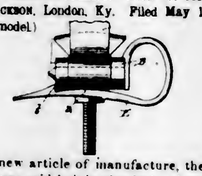
530,440. FIRE-EXTINGUISHER. WILLIAM H. MOORE, Owen Sound, and JOHN GARDINER, Dundalk, Canada; said Moore assignor to said Gardiner. Filed Mar. 15, 1894. Serial No. 503,816. (No model.)




*Claim.*—In a fire extinguisher the combination of the cylinder A, the plate B secured within the cylinder having an opening therethrough, a flange surrounding the opening through the cylinder, a bottle or vessel F supported upon the flange C, and having a flange G resting upon the plate B, a cap for the vessel or bottle F, a top I for the cylinder, a cover K to close the opening through the top, a faucet J fitted to the top, a handle P secured to the top, substantially as and for the purpose specified.

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530,441. THILL-COUPLING. JOHN W. MULLINS, Fariston, and ROBERT M. JACKSON, London, Ky. Filed May 10, 1894. Serial No. 510,726. (No model.)

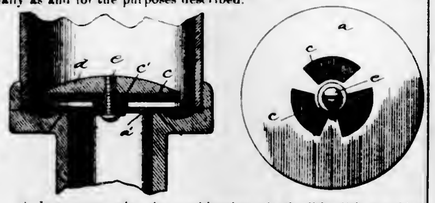


*Claim.*—As a new article of manufacture, the herein described bolt for thill-couplings, said bolt having its head provided with an extension arm bent to form a large oral spring loop extending beyond said head a considerable distance in the longitudinal plane of the bolt, the free end portion of the loop being extended underneath the bolt beyond the opposite end thereof and formed with an end catch and with an upward bend or swell adapted to bear against the thill-iron, substantially as specified.

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530,442. PUMP-VALVE. THEODORE C. MUNGER, Cedar Rapids, Iowa. Filed Aug. 17, 1894. Serial No. 520,588. (No model.)

*Claim.*—1. A valve for pumps comprising a flexible diaphragm provided with water openings and adapted to be supported at its outer edge, and a valve secured to the center of said flexible diaphragm, upon its upper side and extending over the water passages, substantially as and for the purposes described.



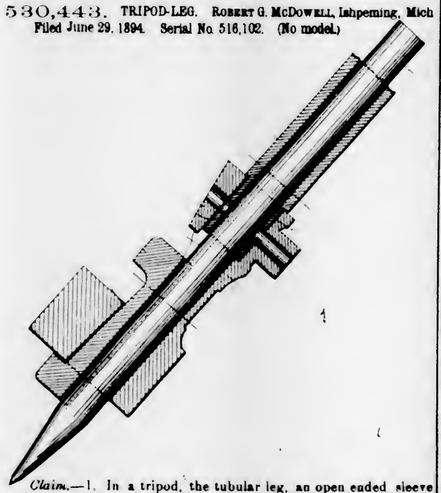
2. In a pump valve the combination of a flexible disk provided with water passages and adapted to be supported at its edge, a valve secured centrally to the upper side of said disk and extending over the water passages, and a spacing washer interposed between the disk and valve and supporting the valve above the diaphragm, substantially as described.

3. In a pump valve, the combination of a flexible disk provided with a water passage, a valve secured centrally to the upper side of said disk, a spacing-block interposed between the valve and disk, a weight secured upon the upper side of the valve, and a central screw or bolt clamping the parts together, substantially as and for the purposes described.

4. The combination with the parts *b b'* of a pump, the lower part being provided with a valve-seat *b''*, a flexible disk provided with water passages and clamped at its edge and resting on said valve-seat, and a valve secured at its center to the center of the diaphragm and supported above and out of contact therewith, substantially as described

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530,443. TRIPOD-LEG. ROBERT G. MCDOWELL, Ishpeming, Mich. Filed June 29, 1894. Serial No. 516,102. (No model.)



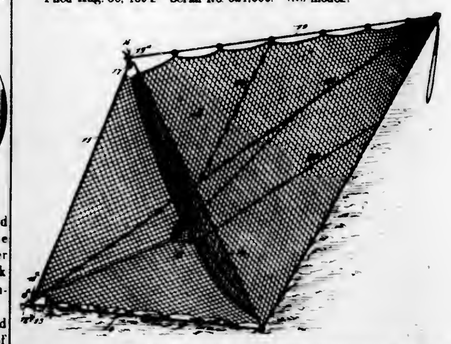
*Claim.*—1. In a tripod, the tubular leg, an open ended sleeve having its bore at its upper end enlarged to receive the lower end of the tubular leg, means for connecting the two, a longitudinally extending keyway in one side of the lower end of the sleeve and opening into the bore thereof, and a key mounted in said key-way and having headed ends to prevent disconnection from the sleeve, substantially as shown and for the purposes described.

2. A tripod leg, comprising a sleeve formed with a longitudinal bore and having a head with an enlarged bore and a foot with a key-way opening into the longitudinal bore, a tubular leg having a reduced end fitted into the enlarged bore of the head, a pin for connecting the said head with the reduced end of the tubular leg, and a key held in the said key-way and having two heads on opposite sides of the said foot, substantially as shown and described.

3. A tripod leg, comprising a sleeve formed with a longitudinal bore and having a head with an enlarged bore and a foot with a key-way opening into a longitudinal bore, a tubular leg having a reduced end fitted into the enlarged bore of the head, a pin for connecting the said head with the reduced end of the tubular leg, a key held in the said key-way and having two heads on opposite sides of the said foot, and a point held slidably in the said bore and tubular leg and adapted to be engaged by the said key, substantially as shown and described.



530,444. FISH-TRAP. WILLIAM M. MCKENNIE, New York, N. Y. Filed Aug. 30, 1894. Serial No. 521,666. (No model.)



*Claim.*—1. In a fish trap or the like, the combination of three rods pivotally connected to each other at one end and adapted to be folded together parallel to each other, means for holding the opposite ends of said rods away from one another, whereby a collapsible frame is formed, of a netting secured to said frame and adapted to be held in place thereby and a funnel secured at the mouth of the netting, substantially as set forth.

2. In a fish trap or the like, the combination of the ridge rod, and side rods pivotally connected to each other at one end, a front rod connected at its opposite ends to the respective side rods, upright rods each connected at one end to one of the side rods and at its other end to the ridge rod, whereby said ridge rod and side rods are held away from one another at one end to form a frame, a netting secured to the frame and adapted to be held in place thereby, and a funnel secured at the mouth of said netting, substantially as set forth

3. In a fish trap or the like, the combination of a ridge rod and two side rods pivotally connected to each other at one end, a front rod having one end connected to one side rod and having at its other end an eye to receive the end of the other side rod, whereby said side rods are held spaced apart at their front ends, upright rods each loosely connected at one end to one of the side rods adjacent to the said front rod, the opposite ends of said upright rods being connected to the front end of the ridge rod, whereby a frame is formed, a netting secured to the frame and adapted to be held in place thereby, and a funnel secured at the mouth of the netting, substantially as set forth.

4. The combination of a ridge rod and two side rods pivotally connected together at one end, the ridge rod and one side rod each having at the opposite end an eye, and the other side rod having at its opposite end two eyes, two upright rods each having at one end an eye connected to the eye in one of the side rods, the upper ends of said upright rods being adapted to interlock and having extremities which extend through the eye in the ridge rod, a front rod having an eye in one end to receive the end of that side rod which is provided with two eyes, a pin inserted through the other eye of the said side rod, the other end of the front rod being connected to the eye in the other side rod, whereby a collapsible frame is formed, a netting secured to said frame and adapted to be held in place thereby, and a funnel secured within the mouth of the said frame, substantially as set forth.

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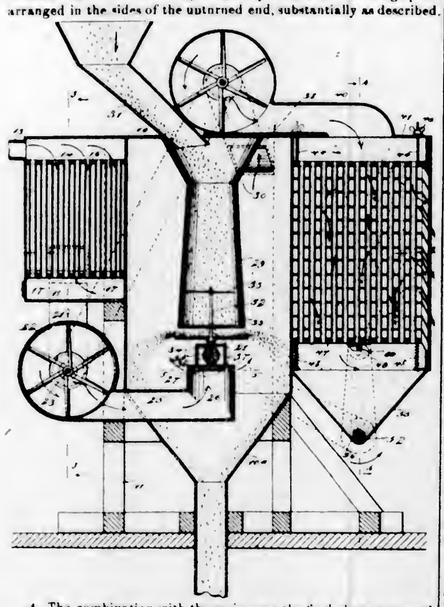
530,445. PURIFIER AND AERATOR. JAMES NEWBY and THOMAS F. NEWBY, Harrisburg, Pa. Filed Feb. 13, 1894. Serial No. 500,056. (No model.)

*Claim.*—1. An apparatus of the kind described, comprising a main case having a stock inlet at the top, a chute arranged vertically in the case and into which the stock is delivered a hopper like bottom for said case, an air purifier arranged at one side of the case, an inlet pipe receiving air from outside of the building and delivering into a space at the top of the purifier, a pipe leading from one side of said purifier, a fan connected with the said pipe for drawing the air through the purifier, a pipe leading from the fan and delivering the purified air into the lower part of the main case, and a pipe leading from the upper part of the main case and connecting with an exhaust fan, substantially as shown and described.

2. The combination with the main case having a suitable feed and discharge, of the air purifier comprising a case having a plurality of vertically arranged cloth walled cells located in the central portion of the case, a dust chamber arranged beneath the cells, a space arranged at the top of the case, a pipe leading from said space to the outside air, a pipe leading from one side of the purifier, a fan connected with the said pipe and arranged to draw air through the

purifier, and a pipe leading from the fan and discharging the air into the main case, substantially as shown and described.

3. The combination with the main case having a suitable feed inlet and discharge, a depending chute arranged vertically in the case and through which the stock falls, a revoluble agitator arranged in the lower end of the chute, and a revoluble deflector plate arranged below the said vertical chute, of an air purifier receiving out-door air, a fan to draw the air through the purifier, a pipe leading from the fan into the main case and provided with an upturned closed end located beneath the revolving deflector plate, and air discharge ports arranged in the sides of the upturned end, substantially as described.



4. The combination with the main case, the feed chute arranged vertically in the upper part thereof, and the hopper like bottom, of the air pipe delivering into the main case and having the upturned closed end, the air ports arranged in the sides of the upturned end, a casing arranged above the closed end of the pipe, a horizontal shaft held in said casing and provided with a pinion, a vertical shaft extending through the top of the casing, and provided with a pinion meshing with the pinion on the horizontal shaft, a deflector plate carried by said vertical shaft and arranged between the top of the said casing and the lower end of the vertical chute and means for revolving said horizontal shaft, substantially as shown and described.

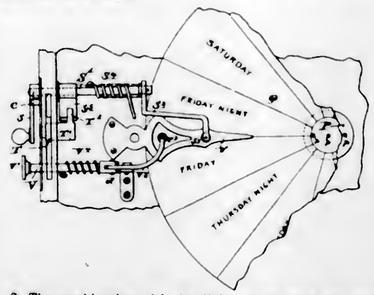
5. The combination with the main case having a stock inlet and discharge, of the dust collector having slotted sides, an inlet at the top and a hopper like bottom, a transverse carrier leading from the bottom, the cloth walled cells arranged within the case, the adjustable supports extending through the top of the case and from which the said cells are suspended, means for vibrating said cells arranged beneath the same, and a fan exhausting from the upper part of the main case and discharging into the dust collector, substantially as described.

6. The herein described dust collector, comprising a case having slotted sides, an inlet at the top, and a discharge hopper at the bottom, a frame arranged within the case near the top thereof, bolts projecting through the top of the case and on which the said frame is suspended, the said bolts being adjustable as set forth, a series of cloth walled cells suspended from the said frame, springs arranged at the bottom of the case to normally hold the cells straight, a screw conveyer in the discharge hopper, a transverse shaft beneath the cells and cams on the shaft arranged to vibrate the cells, substantially as shown and described.

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**530,446. WATCHMAN'S TIME-RECORDER.** ABRAHAM NEWMAN, Chicago, Ill. Filed Oct. 17, 1893. Serial No. 488,442. (No model.)

*Claim.*—1. The combination with a casing and a clock movement of upper and lower vertically opposite bearing yokes J′ and M′, the vertical shaft M arranged in said bearing yokes, the gears J and N arranged on the upper and lower ends of said shaft M the former gear being mechanically connected with the clock movement whereby said shaft M is operated, the horizontally disposed bearing yoke P¹, the stub shaft extending from the same, the hollow shaft arranged on the stub-shaft, the spur-gear O arranged on the hollow shaft, and the dial-carrying disk P arranged on the end of the hollow shaft, substantially as specified.




2. The combination with the dial-carrying shaft and its dial, of the overlapping guards, the casing to which the guards are secured, the rock-shaft journaled adjacent to the dial and one of the guards, and having a pricking-point carrying rock-arm, a spring for normally holding the rock shaft and a picking-point carrying rock-arm normally out of contact with the dial and above an opening formed in the guard, substantially as specified.

3. The combination with a casing, a dial-shaft, its dial and a perforated guard overlapping the dial and provided with an opening above said dial, of a reciprocating push-rod arranged in the wall of the casing, a spring for normally maintaining the rod outward from the casing, a bell-cranked lever fulcrumed at its angle and pivoted at one end to the inner end of the rod and extending over the opening in the guard, and a pricking point arranged on the inner end of the bell cranked lever over said opening, substantially as specified.

4. The combination with a casing, a dial-shaft, means for operating the same, and a dial, of a push rod yieldingly mounted in the wall of the casing, a bell-cranked lever fulcrumed at its angle in the casing and pivoted at one end to that of the push-rod, and a recording device arranged at the inner end of said lever and over the dial, substantially as specified.

5. The combination with a casing, a dial-shaft, means for operating the same, and a dial arranged upon the shaft, of a rock-shaft journaled in the wall of the casing and adapted to be oscillated, a spring coiled upon the shaft for yieldingly holding the same, and a rock-arm secured to the shaft and extending over the dial and provided with a recording device normally supported by said spring out of contact with the dial and means for rocking the rock-shaft, substantially as specified.

6. The combination with a cabinet having a door, a dial-shaft arranged in the cabinet, mechanism for operating the shaft, a dial carried by the shaft, of a key shaft journaled in the wall of the casing adjacent to the edge thereof, a hasp carried by the key-shaft and adapted to engage and lock the door, an arm exteuding from the key-shaft at an angle thereto and within the casing, a rock-shaft journaled in the wall of the casing adjacent to the key-shaft, an escutcheon-plate on the outer end of the rock shaft, a recording arm at the inner end of the rock-shaft, a spring for normally supporting the escutcheon over the outer end of the key shaft and elevating the recording-arm from contact with the dial, and a second arm extending from said rock-shaft and lying in the path of the arm of the key-shaft substantially as specified.

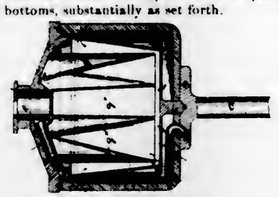
7. The combination with a casing having a door, a movable dial arranged in the casing and means for operating the dial, of a rotatable key-shaft, a hasp connected therewith for engaging the door and locking the same, a rock-shaft journaled in the casing adjacent to the key-shaft, an escutcheon carried by the outer end of the rock shaft, a recording-arm carried by the inner end of the rock-shaft and normally supported out of contact with the dial and devices between the key-shaft and rock-shaft whereby a movement of either will cause an operation of said recording arm, substantially as specified.

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**530,447. CENTRIFUGAL CREAMER.** OLOF OHLSSON, Newark, N. J., assignor to the United States Butter Extractor Company, of New Jersey. Filed June 22, 1893. Serial No. 478,539. (No model.)

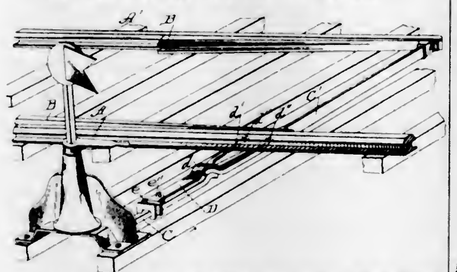
*Claim.*—1. In a centrifugal creamer, the combination with a bowl, of partitions *i* and *j* having inwardly extending corrugations inclined at their sides, the grooves of one partition being deeper at their upper ends and those of the other being deeper at their lower ends, substantially as set forth.

2. In a centrifugal creamer, the combination with the bowl, of an approximately vertical and annular partition dividing the main separating chamber into inner and outer compartments and having corrugations which are inclined and provided with perforations or ducts at their bottoms, substantially as set forth.





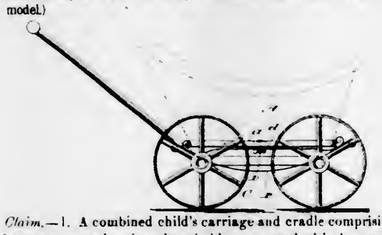
**530,448. SWITCH ATTACHMENT.** CHARLES OLSON, Casnovia, Mich. Filed June 9, 1894. Serial No. 514,076. (No model.)



*Claim.*—An attachment for switches comprising a clip for attachment to the switch rod, and a bifurcated portion pivotally connected thereto, said bifurcated portion projecting under the main rail and having hooked ends engaging the split rail, substantially as described.

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**530,449. COMBINED CHILD'S CARRIAGE AND CRADLE.** ORA ORR, Westport, Cal. Filed Apr. 26, 1894. Serial No. 509,100. (No model.)



*Claim.*—1. A combined child's carriage and cradle comprising a running gear, curved springs detachably connected with the running gear, and a body mounted on said springs, and having a swivel connection therewith, whereby the body may be turned at right angles to the springs when used as a cradle and without removing it from said springs, substantially as described.

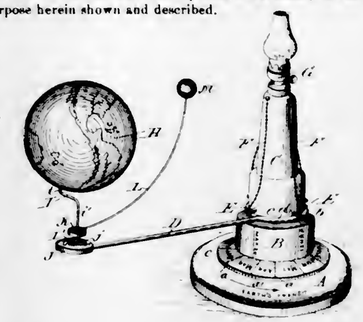
2. The combination in a combined child's carriage and cradle, of a body provided with combined springs and rockers secured thereto, said springs ranging longitudinally of the body and having each a curved lower member formed with openings, and a running gear having axles provided with recesses formed with bottom walls corresponding to the curved spring members, said axles having hooks and turn buttons projecting up into said recesses and detachably engaging the said spring members, substantially as described.

3. The combination in a combined child's carriage and cradle, with a body having a bolt hole in its bottom board, and depressions on the under side of said board, around the bolt hole, of springs ranging longitudinally of the body and having cross braces formed with projections fitting the depressions of the bottom board, a pivot bolt securing the springs to the bottom board of the body, and a running gear detachably secured to the springs, the springs having each a longitudinally curved lower member adapted to form rockers when the running gear is detached, substantially as described

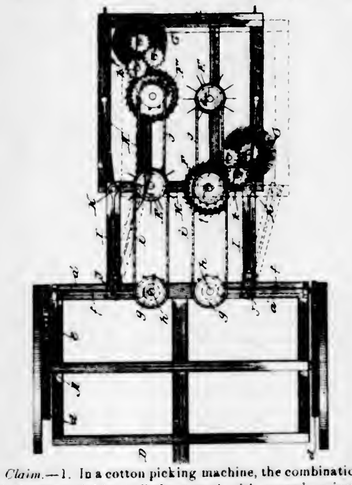
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**530,450. EDUCATIONAL APPLIANCE.** ANNETTA PATTON, Stevensville, Pa. Filed June 18, 1894. Serial No. 514,888. (No model.)

*Claim.*—The herein-described educational appliance for teaching astronomical geography, comprising the following co-operating elements constructed and combined substantially as described, viz: a circular base A provided with the central cylindrical pedestal B having a central upright or standard C of reduced diameter and provided with a series of radial apertures *e e* and with pegs E E, adapted to fit into said apertures and attached to the standard by chains; a lamp fastened to the top of the central standard; the bracket arm D having a ring *d*, at its inner end; rotatable disk J, upon the outer end of said bracket arm; the wire I attached to the disk J; the earth globe H supported by said wire; the rotatable disk K, also supported on the wire I; the bracket arm D attached to the disk K and the moon globe M fastened to the end of the bracket arm D, all constructed and combined to operate, substantially as and for the purpose herein shown and described.



**530,451. COTTON-PICKING MACHINE.** GEORGE C. PHILLIPS, Manchac, La. Filed June 13, 1893. Serial No. 477,472. (No model.)



*Claim.*—1. In a cotton picking machine, the combination, with a vertical rotary picking-cylinder armed with curved or inclined and thickly set, teeth, of a second roller, or cylinder, arranged parallel to and near the first to work on the opposite side of the row of plants, and having blunted teeth or pins set a comparatively wide distance apart, as shown and described, whereby the cotton of the opened bolls is pushed against the said picking cylinder and the unopened bolls &c. are received into the spaces between the teeth of the other cylinder, as specified.

2. In a cotton picking machine, the combination, with the picking-cylinder, F, armed with short, sharp, curved and thickly set, teeth, of a smaller cylinder, E, arranged parallel and contiguous to the former, and having radial teeth which are blunt-pointed and set about two inches more or less apart, the picking cylinder being geared as specified whereby it rotates about one eighth faster, and the other rotates that much slower than the machine advances, as specified.

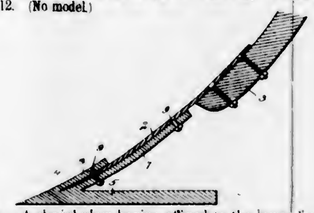
3. In a cotton picking machine, the combination, with the truck and frame attached to and supporting the picking mechanism comprising the roller, E, having blunt pointed teeth or pins, set widely apart, the contiguous and parallel picking cylinder, F, having short, sharp, and curved teeth, and the parallel and contiguous brush cyl-

inder, G, and the sprocket wheels, chains, shafts and toothed gears, all arranged in connection with the aforesaid rotary parts, E, F, G, whereby they are rotated at the relative speeds specified.

4. In a cotton picking machine, the combination, with the truck, of swinging bars pivoted and supported thereon horizontally and the frame carrying the picking mechanism, which frame is suspended from and adapted to swing with said bars, but always parallel with the row of cotton substantially as shown and described.

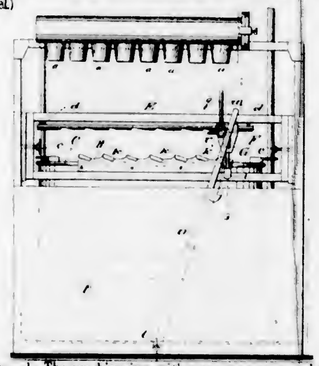
5. In a cotton picking machine, the combination, with the truck, and two parallel, pivoted swinging bars which project rearwardly therefrom, horizontally, of a frame which is attached to rods journaled in the free ends of said bars, and two sets of picking mechanism, each composed of rotary toothed rollers and a brush, one set being arranged in rear of the other, and adapted to work on the opposite side of a cotton row, as specified.

530,452. PLOW-POINT. THOMAS PRENTICE, Detroit, Tex., assignor of one-half to J. N. Norris, same place. Filed May 18, 1894. Serial No. 511,712. (No model.)



*Claim.*—A shovel plow having affixed to the lower front end of its blade a point, consisting of a horizontal main bar adapted to lie flat upon the ground and to support the weight of the blade and its attachments, and having formed integral therewith two upwardly and rearwardly projecting arms arranged in longitudinal alignment, the rearward arm being longer than its companion, and being adapted to lie in the under side of the plow blade, while the remaining arm is adapted to lie upon the front side thereof, and bolts passing through the blade into the arms, whereby the point is secured in place, substantially as described.

530,453. OXYGEN GENERATOR AND HOLDER. GEORGE R. PROWSE, Montreal, Canada, assignor of one-half to the Firm of T. H. McAllister, New York, N. Y. Filed Feb. 15, 1894. Serial No. 500,207. (No model.)



*Claim.*—1. The combination, with a gas generator, and a gasometer connected thereto, of a movable burner, and an operative connection between the burner and the movable part of the gasometer to move the burner forward by a step-by-step motion, substantially as specified.

2. The combination, with a gas generator, and a gasometer connected thereto, of a burner having guided movement longitudinally of the gas generator, a spring arranged to press the burner forward, and a releasing mechanism operatively connected to the gasometer, substantially as described.

3. The combination, with a gas generator, and a gasometer connected thereto, of a movable slide adapted to carry a burner, and an operative connection between said slide and the gasometer to move the slide forward when the contents of the gasometer decrease, substantially as described.

4. The combination, with a gas generator, and a gasometer connected thereto, of a movable slide adapted to carry a burner, a spring for pressing the slide forward, and a releasing mechanism operatively connected to the gasometer, substantially as described.

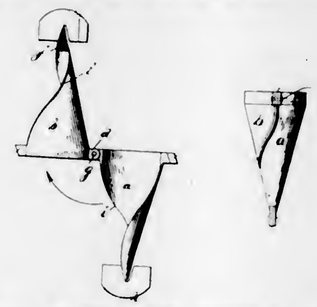
5. The combination of the ratchet bar, the spring pressed slide thereon, said slide being adapted to carry a burner, the spring pressed bolt held on the slide and adapted to engage the ratchet bar, and the gasometer provided with projections adapted to engage the said bolt to withdraw it from engagement with the ratchet bar, substantially as specified.

6. The combination of an oxygen generating retort, a burner and movable spring-pressed slide for carrying the same, and releasing mechanism operated by the gasometer, substantially as specified.

7. The combination of the ratchet bar F, the spring-pressed slide G placed thereon, the burner *q* carried by the slide, the spring-pressed bolt *A* engaging the ratchet bar and provided with the roller *j*, and the plate H provided with the hooked ears *k*, substantially as specified.

8. The combination of the retort D, provided with pockets *a*, the ratchet bar F, the slide G placed thereon and provided with the spring-pressed bolt *A* for engaging the ratchet bar, the roller *j* carried by the bolt, the plate H carried by the gasometer top and provided with curved ears *k* for engaging the roller of the bolt, the burner *q* carried by the slide G, and the spring-actuated bar *m*, for moving the burner-carrying slide, substantially as specified.

530,454. PENCIL-SHARPENER. BURT RAMSAY, New York, N. Y. Filed Feb. 17, 1894. Serial No. 500,583. (No model.)



*Claim.*—1. The pencil sharpener, approximately cone-shaped, and composed of the two longitudinal members twisted to form the longitudinal spiral edges, said members having the file surfaces at the inner faces of their small ends, the lateral lugs at their large ends pivoted together, and lateral interlocking projections from the edges of the members, substantially as described.

2. The approximately cone shaped pencil sharpener composed entirely of two longitudinal sections each integral and twisted so that the two longitudinal edges thereof are spiral, said members at or near one end having lateral projections pivoted together, and at the opposite end having projections arranged to interlock when the members are swung one over the other, substantially as described.

3. A pencil sharpener, approximately cone-shaped, and comprising the two longitudinal members having longitudinal cutting edges, said members pivoted together at or near one end, and at the opposite ends having the flat projections from their edges formed with turned edges or sockets arranged to interlock and hold the members against separation, substantially as described.

4. A pencil sharpener approximately cone-shaped and comprising the two longitudinal members loosely joined to separate laterally, the small ends of said members having the lateral plates forming a handle for turning the device and formed to interlock and hold the members together, substantially as described.

5. A pencil sharpener formed of two longitudinal members, at one edge of one end of the sharpener said members having lateral projections pivoted together, the opposite edges having interlocking edges, the opposite end of the sharpener having interlocking plates, substantially as described.

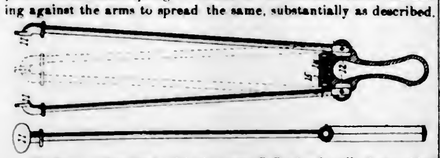
6. The cone-shaped sharpener composed entirely of two approximately similar longitudinal members, each member formed integral of sheet metal and twisted to form its longitudinal edges spiral, one of said edges forming a cutting edge, said members pivoted together at their edges on one side, and provided with interlocking edges to hold the members against separation

530,455. TONGS. FRANCOIS RAYMOND, Woodhaven, N. Y. Filed Sept. 27, 1894. Serial No. 524,275. (No model.)

*Claim.*—1. The combination of a handle A provided at one end with cavities 12, the arms B having one end arranged in said cavities,

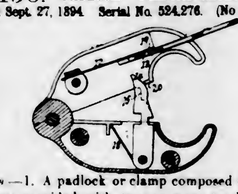


the pivots 10 securing the arms in the cavities of the handle, the tubular-socket 14 mounted on one end of the handle at a point between the pivoted arms, and a spring 15 housed in said tubular-socket and acting against the arms to spread the same, substantially as described.



2. The combination with the arms B B of a handle A provided with cavities 12, 12 for the reception of the inner ends of said arms pivots for securing the arms to the handle, an unbroken tubular socket 14 formed on or secured to the handle, a spring 15 inclosed by said socket and plugs 16 fitting the socket loosely and placed between the ends of the spring and the arms B B substantially as described.

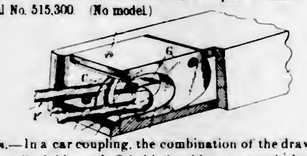
530,456. PADLOCK. FRANCOIS RAYMOND, Woodhaven, N. Y. Filed Sept. 27, 1894. Serial No. 524,276. (No model.)



*Claim.*—1. A padlock or clamp composed of two jaws A, B, the jaw B being provided with two or more tumblers and springs for throwing these tumblers into their locking position while the jaw A is provided with a shoulder adapted to engage the tumblers and with a spring having a spur adapted to engage the key and to retain the same when the clamp is open, said spring being finally pushed back by the tumblers so as to release the key when the clamp is being closed substantially as described.

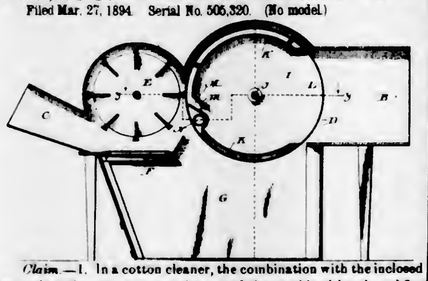
2. A padlock or clamp composed of two jaws A, B, the jaw B being provided with a long tumbler and with one or more short tumblers and springs for throwing these tumblers into their locking position, while the jaw A is provided with a shoulder adapted to engage the tumblers and with a spring having a spur adapted to engage the key and to retain the same when the clamp is open, the tumblers serving to release the key when the clamp is being closed substantially as described

530,457. CAR-COUPLING. JOHN REEL, French Camps, Miss., assignor of one-half to John J. Carter, same place. Filed June 21, 1894. Serial No. 515,300. (No model.)



*Claim.*—In a car coupling, the combination of the drawhead, the link, tongue C, rigid catch G behind said tongue and the upwardly extended springs on opposite sides of the tongue for holding the link normally above and out of engagement with the said catch, substantially as shown and described.

530,458. COTTON-CLEANER. HENRY REMBERT, Willis, Tex. Filed Mar. 27, 1894. Serial No. 505,320. (No model.)



*Claim.*—1. In a cotton cleaner, the combination with the inclosed flue casing, the rotary screen drum, and the combined brush and fan at one side of and contacting with said screen drum; of a stationary cylindrical shield casing arranged inside of the screen drum in close proximity to its periphery and open at one side next to the receiving flue, said shield casing having a dirt receiving slot in its closed side and separate means for supplying clean air to the combined brush and fan at the closed side of the shield casing, substantially as set forth.

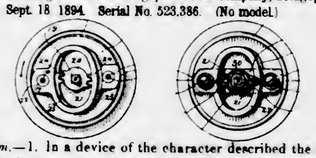
2. In a cotton cleaner, the combination with the casing, the rotary screen drum, and the combined brush and fan at one side of the drum; of a cylindrical shield casing arranged inside of the drum and communicating with the receiving flue, and air pipes arranged between one side of the shield casing and the periphery of the screen drum next to the combined brush and fan, to supply the latter with clean air, substantially as set forth.

3. In a cotton cleaner, the combination with the screen drum, and the oppositely rotating combined brush and fan at one side thereof; of a stationary cylindrical shield casing arranged inside of the drum and extending partially around the interior thereof, said casing being provided at one side with a transverse downwardly disposed dirt-slot directly opposite the point of contact between the combined brush and fan and said screen drum, substantially as set forth

4. In a cotton cleaner, the combination with the flue casing, the rotary screen drum, and the combined brush and fan at one side of and contacting with said screen drum; of a stationary cylindrical shield casing extending partially around the inside of the screen drum, and provided at a point directly opposite the point of contact between the brush and fan and drum with a transverse downwardly disposed dirt slot and air pipes arranged outside of the shield casing below said slot and between the casing and said combined brush and fan, substantially as set forth.

5. In a cotton cleaner, the combination with the inclosed flue casing, superposed reversely rotating screen cleaning drums mounted within the casing at the receiving end thereof and provided with open ends, opposite side dust flues communicating with the ends of said drums, stationary cylindrical shield casings arranged within said drums, and open at one side next to the receiving flue of the casing, and opposite curved shield flanges O embracing opposite end edges of said drums at opposite sides of the receiving flue of the casing, to prevent clogging of the cotton and the escape of air currents at the end edges of the drums, substantially as set forth.

530,459. DEVICE FOR SUSPENDING LAMPS. FRANK REHND, Meriden, assignor to The Bridgeport Brass Company, Bridgeport, Conn. Filed Sept. 18 1894. Serial No. 523,386. (No model.)



*Claim.*—1. In a device of the character described the combination with a frame carrying a stud and having bearing points 8, a drum journaled on the stud and bearing on the frame and provided with a flange 13, a spring the ends of which are attached to the drum and to the stud and chains connected to the drum from which the lamp is suspended, of a plate 14, locking cams pivoted thereon and bearing against the flange and adapted to lock the drum against rotation by the spring, said cams having rearwardly extending arms provided with lugs 24, and a plate 20 having lugs engaging the lugs on the rearwardly extending arms one of said plates being fixed to the stud and the other turning thereon so that downward pull upon the chains will oscillate the frame and stud disengage the locking cams from the flange permitting the chains to be drawn downward, and when the pressure is relieved backward movement of the frame and stud will act to throw the locking cams into engaging position unless the chains are oscillated in such a manner as to prevent oscillation of the frame and stud in which position locking movement of the cams is prevented and the spring is left free to rotate the drum and wind the chains.

2. The combination with a frame having bearing points 8 and a stud, a drum journaled on the stud and bearing on the frame, a spring connected to the drum and to the stud, and chains connected to the drum and passing over the bearing points, of a plate 14 through which the stud passes freely, locking cams on said plate by which the drum is locked against backward movement and which are provided with rearwardly extending arms having lugs 24 and a plate 20 fixed to the stud and having lugs 21 which engage lugs 24 so that oscillation of the stud in one direction will release the locking cams and oscillation in the other direction will cause them to engage the drum

3. In a device of the character described the combination with a stud, a spring drum journaled thereon and having a flange 13, a plate 14 through which the stud passes, locking cams pivoted to said plate which are adapted to engage the flange and are provided with

rearwardly extending arms having lugs, and a plate 20 carried by the stud and having lugs engaging the lugs on the arms as and for the purpose set forth.

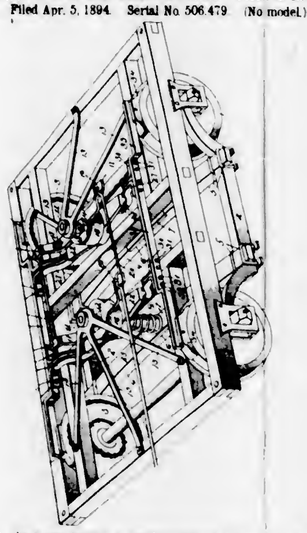
4. The combination with a frame having a stud extending therefrom and suitable bearing points, a drum journaled on the stud, a spring connected to the drum and to the stud and chains connected to the frame and extending over the bearing points, of plate 14 through which the stud passes, locking cams pivoted to said plate, a plate 20 fixed to the stud and engaging the locking cams and a tension nut upon the stud whereby the frictional contact of the drum with the frame may be regulated.

5. In a device of the character described the combination with a suitable stud, and a spring drum provided with a flange and journaled on the stud, of a plate through which said stud passes freely and a plate fixed to said stud one of said plates having pivoted thereto locking cams which engage the flange and are provided with lugs 24 and the other plate having lugs 21 which engage the lugs on the locking cams so that oscillation of the stud will cause the locking cams to engage or release the flange

6. In combination in a device of the character described, a central stud, a drum journaled thereon, plate 14, locking cams carried by said plate and provided with engaging lugs, and plate 20 having lugs engaging the lugs on the locking cams so that rotation of either of said plates in one direction causes the cams to lock the drum against rotation, and the reverse movement releases the drum.

7. The combination with a central stud and a drum journaled thereon and provided with a flange 13, of a plate 14 through which said stud passes, locking cams adapted to engage said flange which are pivoted to plate 14 and are provided with engaging lugs and plate 20 carried by the stud and having lugs engaging the lugs on the locking cams whereby said cams may be caused to engage or disengage the flange to lock or release the drum

530,460. BRAKE FOR RAILWAY-CARS. GUSTAVE ROUY, Chicago, Ill. Filed Apr. 5, 1894. Serial No. 506,479. (No model.)



*Claim.*—1. In a car brake, a stationary screw post, a cross bar mounted loosely on said post, a vertically adjustable brake shoe frame connected to said cross bar, an adjusting nut engaging the threads of the posts to lower said cross bar, and a spring arranged under the cross bar to elevate the same and said nut, substantially as set forth.

2. In a car brake, a vertically adjustable brake shoe frame carrying brake shoes to engage the top sides of car wheels, a suitably arranged stationary screw post, a turning adjusting nut engaging the threads of said post over a certain part of said brake shoe frame to lower the same, and separate means for raising the brake shoe frame, substantially as set forth.

3. In a car brake, the combination with a car truck, of oppositely arranged stationary screw posts, a brake shoe frame consisting of opposite parallel brake bars, the brake shoes attached to said brake bars over the wheels of the truck, cross bars mounted for vertical movement on said post and connected to said brake bars, adjusting nuts engaging the threads of said posts over said cross bars and provided with double cross arms extending to both sides thereof, connecting rods loosely connecting the corresponding ends of the oppositely located cross arms, a brake rod connected to one extremity of one of the cross arms, and springs arranged on the stationary posts under the cross bars, substantially as set forth.

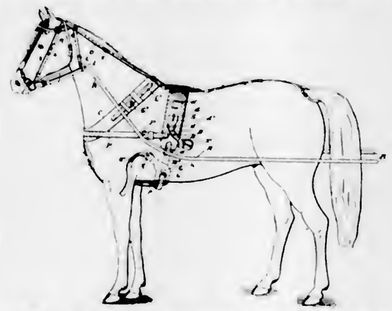
4. In a car brake, the combination with a car truck; of oppositely located transverse supporting beams mounted on opposite lower side bars of the truck, stationary screw posts mounted on said supporting beams, opposite end brace frames having collars loosely receiving the upper ends of said posts, a vertically adjustable brake shoe frame consisting of parallel brake bars carrying shoes arranged to work above the car wheels, vertically movable cross bars arranged to work on said posts and connected to said parallel brake bars, adjusting nuts engaging the threads of said posts and provided with double cross arms extending to both sides thereof, connecting rods loosely connecting the corresponding ends of the oppositely located cross arms, and springs arranged on the posts under the cross bars, substantially as set forth.

5. In a car brake, the combination with a vertically adjustable brake shoe frame having a cross bar; of a stationary screw post provided with a section of spiral threads, and a removable stop pin above the threads, an adjusting nut provided with interior spiral threads engaging those of the post and arranged to work over the cross bar of the brake shoe frame, a spring arranged on the post under the cross bar of the brake shoe frame, and means for turning the nut, substantially as set forth.

6. In a car brake, the combination with a car truck; of a lower transverse supporting beam, a stationary threaded screw post provided with a lower flanged end adapted to be bolted onto said supporting beam and at its upper end with a removable stop nut, an end brace frame consisting of a series of branched brace rods adapted to be secured to the top of the truck and carrying a brace collar loosely embracing the upper end of the post under the stop nut, a vertically adjustable brake shoe frame having a cross bar working over said post, an adjusting nut arranged to engage the threads of the post over the cross bar, and a spring arranged on the post under the cross bar, substantially as set forth.

7. In a car brake, the combination with a car truck: of a vertically adjustable T-shaped cross-bar supported for vertical movement, means for adjusting said bar, opposite vertically adjustable brake bars carrying brake shoes, and opposite pairs of branched attaching straps bolted to opposite ends of the cross bar and having outer flanged attaching ends adapted to be secured to said brake bars, substantially as set forth

530,461. HARNESS. WILLIAM H. SANBORN, Rutland, Vt., assignor of one-half to M. A. Bourne, same place. Filed Feb. 3, 1892. Renewed June 5, 1894. Serial No. 513,592. (No model.)

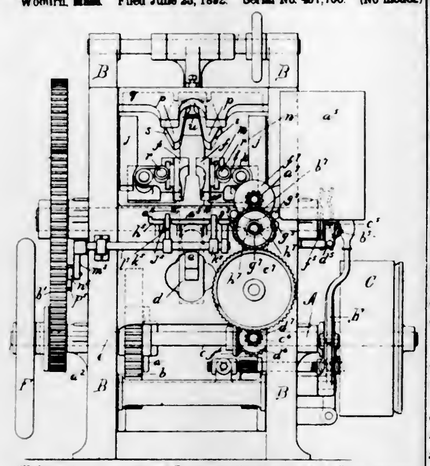


*Claim.*—1. The combination with a flexible four-ringed bit, and means for moving the check and rein rings in opposite directions to elevate the central or intermediate portion of the bit, of a rotatable pressure button arranged at the center of the bit with its axis transverse to the length of the same, whereby when the rings at opposite ends of the bit are strained alternately, said button is caused to roll transversely across the roof of the mouth, substantially as specified.

2. The combination with a bit having check and rein-rings and an intermediate pressure button, of an over-draw check attached to the check-reins, a crown-piece having guides for the said check, means for securing the crown-piece in place, a saddle, connections between the check and the saddle, pendent loops connected to the check, guides on the saddle, reins attached to the rein rings and extending through said loops and guides, a collar, connections between the collar and the saddle, and an adjustable back-strap connected at its front end to the saddle, substantially as specified.



530,462. HEEL-STIFFENER MACHINE. NATHAN J. SIMONDS, Woburn, Mass. Filed June 23, 1892. Serial No. 437,760. (No model.)



*Claim.*—1. A counter-stiffener machine having a form-carrier, means for giving to said form-carrier a regular movement of rotation in a given direction, two or more forms carried by said form-carrier, female dies co-operating with said forms and partaking of the rotary movement thereof, and means for compressing said dies against the said forms acting while said form-carrier rotates to compress said dies and hold them closed against a form during a portion of the rotation of the form-carrier while such form is traveling by the compressing devices and the next form is approaching the feeding point, substantially as described.

2. A counter-stiffener machine having a form-carrier, means for giving to said form-carrier a regular movement of rotation in a given direction, two or more forms carried by said form carrier, female dies co-operating with said forms and partaking of the rotary movement thereof, means for causing said dies to move in a path parallel with the path of movement of the forms, and means for compressing said dies against the said forms acting while said form carrier rotates to compress said dies, and hold them closed against a form during a portion of the rotation of the form-carrier, whereby the said dies may operate to engage the counter on a form and hold it compressed upon the latter during the said portion of the rotation of the form-carrier, while the next form is approaching the feeding point, substantially as described.

3. A counter-stiffener machine having a form carrier, means for rotating the same, two or more forms carried by said form-carrier, female dies co-operating with said forms to mold the sides of the counter, means for compressing said side dies against the said forms and holding them closed thereagainst during a portion of the rotation of the form-carrier, a heel-molding female die to engage the back or heel-portion of the counter, and means for compressing the said back or heel-portion between a form and the heel-die, as the form-carrier continues to rotate, substantially as described.

4. A counter-stiffener machine having a form-carrier, means for giving to said form-carrier a regular movement of rotation in a given direction, two or more forms carried by said form-carrier, female dies partaking of the rotary movement of said forms, and means for causing them to co operate with said forms to mold a counter thereon as the form-carrier rotates, said means acting while the form carrier rotates to compress the said dies against the said forms successively and hold them closed against a form during a portion of the rotation of the form-carrier while such form is traveling by the compressing devices and the next form is approaching the feeding point, and a flange-turning and rubbing device which turns and sets the flange of the counter on each form in turn during the rotation of the form-carrier, substantially as described.

5. A counter-stiffener machine having a form-carrier, means for giving to said form-carrier a regular movement of rotation in a given direction, two or more forms carried by said form-carrier, female dies partaking of the rotary movement of said forms, and means for causing them to operate with said forms to mold counters thereon as the form-carrier rotates, said means acting while the form carrier rotates to compress the said dies against the said forms successively and hold them closed against a form during a portion of the rotation of the form-carrier while such form is traveling by the compressing devices and the next form is approaching the feeding point, and flange-turning jaws adjacent to the path of movement of the forms and whereby the flange of the counter on each form in turn is turned during the rotation of the form-carrier, substantially as described.

6. In a counter stiffener machine, the combination with the rotary form-carrier provided with two or more forms $e$ of the dies $f$, the pivoted arms $h$, upon which said dies $f$ are mounted and means for reciprocating said arms $h$ whereby said arms may be made to travel with the form carrier while the dies $f$ are in engagement with the counter and may then be returned to their normal position in readiness for the succeeding form, substantially as set forth.

7. In a counter-stiffener machine, the combination with the rotary form carrier $d$ of the form $e$ mounted thereon, the dies $f$, die-holders $l$, arms $h$, said die holders being arranged to slide in said arms toward and from the form on the form carrier, and the cams $j$ for positively moving said die holders and dies into engagement with the counter blank on the form, substantially as set forth.

8. In a counter-stiffener machine, the combination with the rotary form carrier $d$ and the form $e$ mounted thereon of the dies $f$ adapted to approach and recede from said forms $e$, mechanism for actuating said dies $f$, the heel die $^3$ and the cam-actuated toggle mechanism for operating said heel die, substantially as set forth.

9. In a counter stiffener machine, the combination with a rotary form-carrier, having two or more forms mounted thereon, of the heel mold $l^3$ and its toggle-actuating arms, and the lever $g^4$ and its actuating cams, substantially as set forth.

10. In a counter-stiffener machine, the combination with the form carrier $d$, and forms $e$ mounted thereon, of the dies $f$, the lever arms $h$, the lever $b^3$, projections $c^4$ pivoted to said lever $b^3$, and projections $g$ on the form carrier, substantially as set forth.

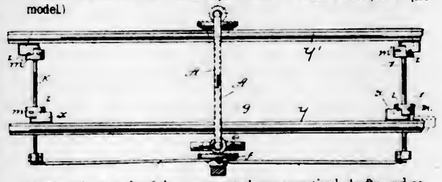
11. In a counter-stiffener machine having a rotary form-carrier provided with two or more forms upon which the counters are molded, the combination therewith of the dies $f$, the lever arms $h$ which support said dies, their actuating levers $c^4$ and the disks $h^5$ each having a pin or projection which engages a lever $c^4$ to actuate the same, substantially as set forth.

12. In a counter-stiffener machine having a rotary form carrier provided with two or more forms mounted thereon and having co-operating dies to mold the counters over and upon said forms, the combination therewith of the speeded roll $f^7$ for burnishing the counter blanks before they are subjected to the action of the dies, substantially as set forth.

13. In a counter-stiffener machine having a rotary form carrier a form mounted thereon, the combination therewith of feed mechanism, whereby the counter blanks are fed one at a time, to a position in front of the line of movement of the form, and transferring mechanism whereby said blanks are moved forward from said position into the path of the form, substantially as set forth.

14. In a counter-stiffener machine having a rotary form carrier, the combination therewith of a receptacle for holding the counter blanks, mechanism for transferring the blanks from the receptacle singly to the feed rolls, feed rolls for feeding said blanks to a suitable support in line with and in front of form and transferring mechanism for moving said blanks forward into the path of the forms, substantially as set forth.

530,463. PREVENTING DRAFT IN COAL-MINES. ERNEST A. TIFFANY, Dunmore, Pa. Filed Apr. 3, 1894. Serial No. 506,166. (No model.)



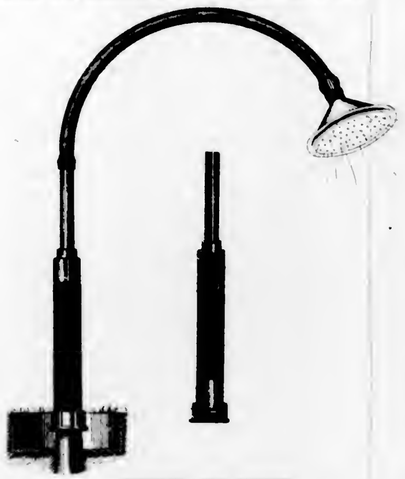
*Claim.*—1. A pair of doors mounted upon vertical shafts and arranged to open in opposite directions, the said doors being geared to segments on the same shaft, arranged to open the doors in opposite directions by one movement of said shaft, one of said segments being connected with mechanism operated by the car, all substantially as described.

2. In combination with the doors geared to a shaft and arranged to open in opposite directions by the same movement of said shaft, the spring arms $x$, $w$, a crank shaft and rods connecting the cranks with a segment on the door shaft, substantially as described.

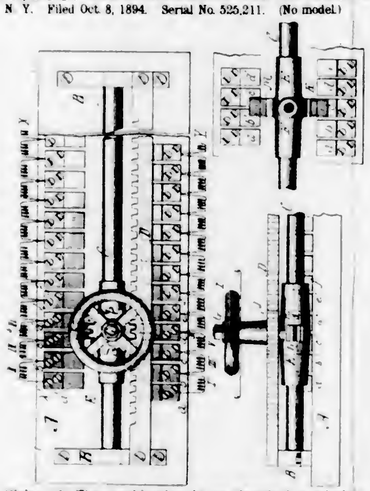
530,464. SPRINKLER. ROBERT B. VAN DYKE, Anderson, Ind., assignor to Alfred R. Bone, same place. Filed Oct. 9, 1893. Serial No. 487,659. (No model.)

*Claim.*—A sprinkler comprising a lower resilient section, a screw-

threaded coupling secured to the lower end thereof, and exteriorly threaded tube secured at its lower end in the upper end of said resilient section, an upper rigid section of smaller diameter than said lower section having a lower enlarged end, which latter is provided with an interior screw-thread for engagement with the upper projecting end of said externally threaded tube, a flexible tube secured to the upper end of said rigid section, and a nozzle on the free end of said flexible tube, substantially as and for the purpose set forth.



530,465. DYNAMO-REGULATOR. JOHN VAN VLECK, New York, N. Y. Filed Oct. 8, 1894. Serial No. 525,211. (No model.)



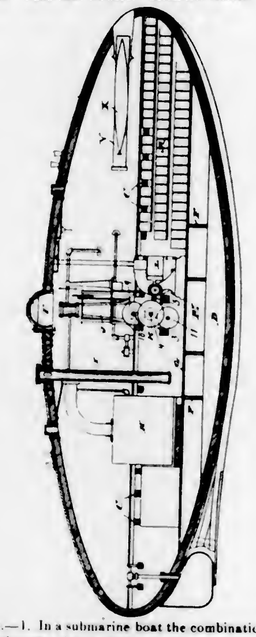
*Claim.*—1. The combination, in an electrical regulating apparatus, of two series of contact plates, each series being disposed in a straight line the plates of one series being opposite the intervals of the other, resistances interposed between the successive plates of each series and a contact piece movable over both of said series and constructed to bridge two of said plates of one series while bearing upon one of said plates of the other series, substantially as described.

2. The combination, in an electrical regulating apparatus, of two parallel series of contact plates of uniform width, each series being disposed in a straight line the plates of one series being opposite the intervals of the other, resistances interposed between successive plates of each series and a contact piece equal in width to one of said plates and movable over both of said series, substantially as described.

3. In an electrical regulating apparatus containing two series of fixed contact plates, the plates of one series being opposite the intervals bf the other, and resistances interposed between the successive plates of each series, a fixed guide-bar, a carrier thereon, a contact piece on said carrier constructed to bridge two of said fixed plates of one series while bearing upon one of said plates of the other series, a pinion on said carrier and a fixed rack with which said pinion engages: the said parts being constructed and arranged so that, by the revolution of said pinion, said carrier is caused to move along said guide-bar, thereby carrying said contact piece over said fixed contact plates, substantially as described.

4. The combination, in an electrical regulating apparatus, of the series of fixed contact plates *a*, *b*, *c*, &c., and interposed resistances I, III, IV, &c., the series of fixed contact plates *a' b' c'* and interposed resistances II, IV, VI, &c., guide-bar C, carrier E thereon, contact plates K L and M N on said carrier and meeting said fixed plates, rack and pinion on said carrier engaging with said rack.

530,466. SUBMARINE TORPEDO-BOAT. GEORGE C. BAKER, Chicago, Ill.; Mary R. Baker administratrix of said George C. Baker, deceased. Filed Mar. 14, 1893. Serial No. 465,983. (No model.)



*Claim.*—1. In a submarine boat the combination with its propeller shaft, primary and secondary motors, connections between the said motors, and direct connections between each motor and the said shaft, the combination permitting the accumulation of the secondary by the primary power, and the utilization of either power for operating said shaft.

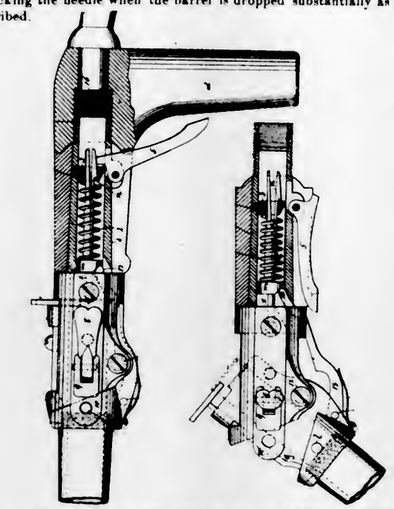
2. In a submarine boat and in combination with the propeller shaft an engine having direct connection therewith, a dynamo connection between the said engine and dynamo, and between the shaft and dynamo, and a series of storage batteries, the combination permitting the utilization of liquid or electricity as a motive power.

530,467. BREAKDOWN GUN. ADOLF BALENSIEFER, New York, N. Y. Filed Mar. 8, 1894. Serial No. 502,846. (No model.)

*Claim.*—1. A swinging or drop down gun barrel, combined with a firing needle having a forked or split spring tail provided with a shoulder, a ring or guide adapted to be engaged by the shoulder to hold the needle cocked, and an arm actuated by the barrel and adapted to engage the needle for cocking the latter when the barrel is dropped substantially as described.

2. A gun barrel combined with a firing needle having a forked or split spring tail provided with a shoulder, a ring or guide adapted for the engagement of the shoulder to hold the pin cocked, and a trigger adapted to engage the tail for freeing the latter substantially as described.

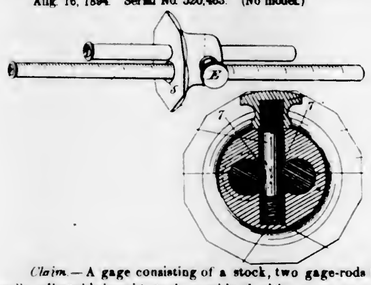
3. A swinging or drop down gun barrel, combined with a firing needle having a collar and a forked or split spring tail provided with a shoulder, a guide for the tail said guide being adapted for engagement by the shoulder to hold the pin cocked, an actuating spring for the pin said spring being braced between the guide and collar, and an arm actuated by the barrel and made to engage the collar for cocking the needle when the barrel is dropped substantially as described.



4. A gun barrel provided with a tube at its breech portion, said tube having an internal and an external screw thread, a stock secured to one of said screw threads, and a handle secured to the other screw thread, substantially as described.

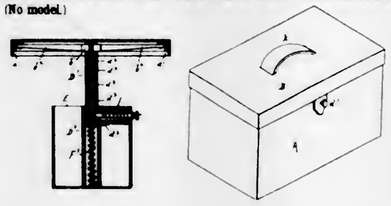
5. A gun barrel provided with a tube at its breech portion, said tube having an internal and an external screw thread, a stock secured to one of said screw threads, and a handle secured to the other screw thread, combined with a firing needle housed in said tube substantially as described.

530,468. GAGE. LUCIUS O. BARRETT, Brattleborough, Vt. Filed Aug. 16, 1894. Serial No. 520,463. (No model.)



*Claim.*—A gage consisting of a stock, two gage-rods longitudinally adjustable in said stock, combined with a screw-operated locking-bolt for said rods, extending therebetween, having a thickness near its inner extremity exceeding the distance between said rods, and a spring under the inner end of said bolt forcing the latter outwardly, substantially as set forth.

530,469. COMBINED RECEPTACLE AND ADJUSTABLE SEAT. JAMES BOYD, St. Paul, Minn. Filed Feb. 20, 1894. Serial No. 500,850. (No model.)

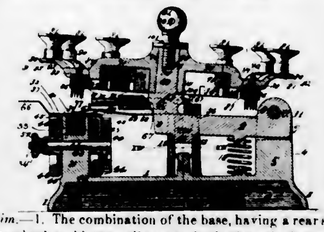




*Claim.*—1. A receptacle, a standard supported by said receptacle, a frame having a stud fitting said standard, a spring within said standard and adapted to support said stud and frame, said stud having a series of graduated indentations or cavities, and a catch adapted to enter one of said cavities and hold said frame at any required point of elevation, substantially as and for the purpose set forth.

2. A receptacle, a standard supported by said receptacle, a frame swiveled upon said standard, a combined seat and cover for said receptacle and supported by said swiveled frame, and means whereby said standard may be adjustably supported upon said receptacle, substantially as and for the purpose set forth.

530,470. CHECK-MARKER. CAROL H. COGGESHALL, St. Louis, Mo., assignor to the Coggeshall Check Marker Company, same place. Filed Dec. 9, 1893. Serial No. 493,213. (No model.)



*Claim.*—1. The combination of the base, having a rear standard, a front standard, and intermediate standards, the swinging spring arm hinged to the rear standard and extending forwardly between the intermediate standards, to the vicinity of the front standard, said spring arm having an upwardly projecting stem formed with an arbor and a marker-head rotatable on the stem aronnd the arbor, substantially as described.

2. The combination of the hollow base having a rear standard and a front standard formed with an ink-well, the swinging spring arm, hinged to the rear standard and extending forwardly, having an upwardly projecting stem, and a marker-head rotatable on the stem, having needle-holders; substantially as described.

3. The combination of the base having a rear standard, and a front standard formed with an ink-well, the table-plate having a well-opening, the swinging spring arm, hinged to the rear standard and extending forwardly, having an upwardly projecting stem and a marker-head rotatable on the stem; substantially as described.

4. The combination of the base, the swinging spring arm, hinged to the base, and extending forwardly having an upwardly projecting stem, and a marker head rotatable on the stem, having upwardly curved arms, provided with finger knobs; substantially as described.

5. The combination of the base, having a rear standard, intermediate standards, and a front standard formed with an ink-well, and the swinging spring arm hinged to the rear standard and extending forwardly between the intermediate standards, having an upwardly projecting stem, a marker-head rotatable in the stem, having needle holders; substantially as described.

6. The combination of the base, the intermediate standards having a stop between them, the swinging spring arm hinged to the base, formed with a pendent lug located over the stop, and with an upwardly projecting stem, and a marker-head rotatable on the stem; substantially as described.

7. The combination of the base having a rear standard, a boss adjacent thereto, and intermediate standards having a stop between them, the swinging spring arm hinged to the base formed with a boss, adjacent to the rear standard, with a pendent lug over the stop, and with an upwardly projecting stem, the coil spring surrounding the bosses between the base and the spring arm, and a marker-head rotatable on the stem; substantially as described.

8. The combination of the base, having a rear hollow standard, a swinging spring arm hinged to the rear standard and extending forwardly having a pendent arm located within the standard, and an upwardly projecting stem, a coil spring located between the base and the spring arm, a coil spring located in the base, connected at one end to the base and at the other end to the pendent arm, and a marker-head rotatable on the stem; substantially as described.

9. The combination of the base, the swinging spring arm hinged to the base and extending forwardly having an upwardly projecting stem, the yoke extending around the stem and secured to the base having a locking pin projecting forwardly therefrom, and a marker-head rotatable on the stem, having a pendent ring formed with slots which receive the locking pin; substantially as described.

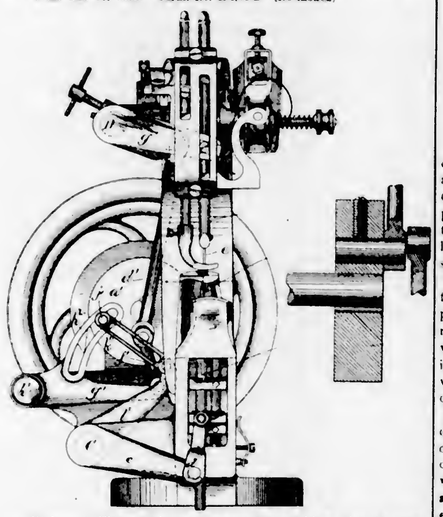
10. The combination of the base having a front standard, the swinging spring arm hinged to the base, and extending forwardly having an upwardly projecting stem and a downwardly, outwardly

and forwardly extending extension, a pawl pivoted to the extension, the shaft mounted in the standard, having fixed carrying wheels and a ratchet wheel and a marker-head rotatable on the stem; substantially as described.

11. The combination of the base, having a front standard, and intermediate standards, the swinging spring arm, hinged to the base and extending forwardly, having an upwardly projecting stem, the spring plate secured to the intermediate standards, the pressure plate extending over the table and a marker-head rotatable on the stem; substantially as described.

12. The combination of the base, having a front standard and intermediate standards, the swinging spring arm, hinged to the base and extending forwardly, having an upwardly projecting stem, the spring plate secured to the intermediate standards having a slot in its front portion and forwardly projecting arms formed with hooks, the pressure plate extending over the front standard formed with a tongue engaging through the slot with the spring plate, with side pins with which the hooks engage, and with a finger piece for lifting it, and a marker-head rotatable on the stem, substantially as described.

530,471. **SEWING-MACHINE.** PETER L. COX, Boston, Mass. Filed Dec. 10, 1892. Serial No. 454,734. (No model.)



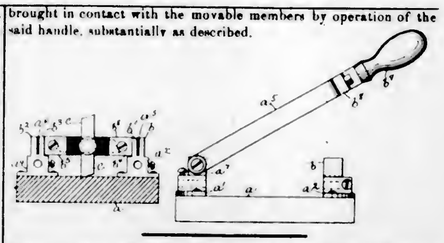
*Claim.*—1. The combination, in a sewing machine, with the upper and lower rock shafts for imparting vertical movements to the awl and needle bars, of a disk and means for actuating the same, said disk being provided with a crank pin $b'$ having an off-set or eccentric part $c'$, and connections between said crank pin and its off-set or eccentric part and said rock shafts, substantially as set forth.

2. The combination in a wax-thread sewing machine with a rock shaft, and connections, whereby the needle is operated vertically, of a disk on the driving shaft provided with a crank pin, a lever pivoted on the frame of the machine and connected with said crank pin by means of a pivoted link, a slotted arm on said lever, and a link having a pivot adapted to slide in said slotted arm and secured at the other end to an arm on the rock-shaft which operates the needle, the slot in said arm being so curved that when the needle is at its highest point the pivoted connection which is secured to said slot may be moved from one point to another thereof without moving the needle or its operating rock-shaft, substantially as set forth.

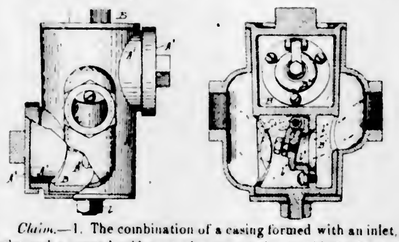
530,472. **ELECTRIC SWITCH.** JOHN M. CRONIN, Cambridge, assignor to James L. Wesson, Boston, Mass. Filed Sept. 22, 1894. Serial No. 523,764. (No model.)

*Claim.*—1. The combination with a double switch provided with movable members $a^5$ $a^6$ insulated from each other, a tie bar connecting said members, a handle carried by said tie bar, and an auxiliary circuit controller cooperating with the members $a^5$ $a^6$ and adapted to be rendered operative by the said handle to electrically connect the said members, substantially as described.

2. The combination with a double pole switch provided with movable members $a^5$ $a^6$, a tie bar $b^6$ connecting the said members, a handle carried by said tie bar, and an auxiliary controller adapted to be brought in contact with the movable members by operation of the said handle, substantially as described.



530,473. **PLUG-CHECK FOR MARINE OR OTHER BOILERS.** JAMES H. CROSBY, Somerville, Mass. Filed Feb. 26, 1894. Serial No. 501,534. (No model.)

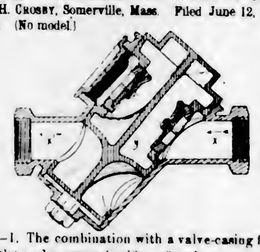


*Claim.*—1. The combination of a casing formed with an inlet, an outlet and a capped orifice; a plug mounted rotatably in the casing and formed with a plurality of passages; and a check valve for each of said passages, all so arranged and operating that when one of said passages and its check valve are in line with the inlet and outlet of the casing, another of said passages and its check valve are out of line with said inlet and outlet and in line with a capped orifice, substantially as and for the purpose set forth.

2. The combination of a casing having an inlet and outlet and formed with a plurality of other openings with a plug formed with a plurality of passages; a plurality of check-valves; and a plurality of removable caps for said openings, all so arranged and operating that when one of said passages and its check valve are in line with the inlet and outlet of the casing, another of said passages and its check valve are out of line with said inlet and outlet and in line with a capped orifice, substantially as and for the purpose set forth.

3. As an improvement in safety devices for use with marine and other boilers, the combination of a boiler; a boiler feed; a valve-casing formed with an inlet, an outlet and a capped orifice; conduits connecting the valve-casing, boiler and boiler-feed; a plug formed with a plurality of passages and mounted movably in said casing; and a check valve for each of said passages all so arranged and operating that when one of said passages and its check valve are in line with the inlet, outlet and conduits, another of said passages and its check valve are out of line therewith and in line with a capped orifice, the cap whereof is removable, whereby a check-valve may be repaired, removed and replaced without interruption of the boiler-feed, substantially as and for the purpose set forth.

530,474. **PLUG-CHECK FOR MARINE OR OTHER BOILERS.** JAMES H. CROSBY, Somerville, Mass. Filed June 12, 1894. Serial No. 514,315. (No model.)



*Claim.*—1. The combination with a valve-casing formed with an inlet, an outlet and a covered orifice of a plug mounted rotatably in said casing and formed with a plurality of passages; and a check-valve for each passage, all arranged and operating so that when one passage and its check-valve are in line with the outlet, another passage and its check-valve are in line with the covered orifice, the plug stopping flow through the valve-casing when so turned that neither check-valve is in line with the inlet and outlet, substantially as and for the purpose set forth.



2. The combination with a valve-casing having an inlet, an outlet and a covered orifice, of a plug formed with spiral passages, each passage opening at points on the surface of the plug; and a check-valve for each passage, the plug being mounted rotatably in the casing, all substantially as and for the purpose set forth.

3. The combination of a valve-casing formed with an inlet; an outlet and a single covered orifice with a plug having a plurality of passages and a check-valve for each passage, said plug being mounted rotatably in said casing, and the passages and their check-valves being so arranged that the check-valves are brought successively to one and the same covered opening by rotation of the check-valve, substantially as set forth.

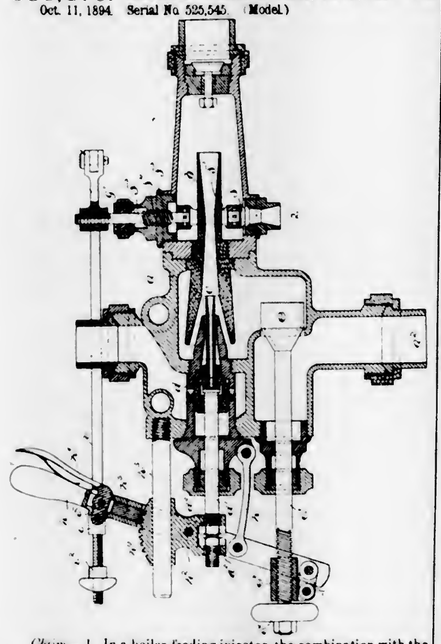
530,475. **PANTALOONS-PROTECTOR.** THÉOPHILE D'ARCOURT, Chicago, Ill., assignor of one-third to Margaret Hannon, same place. Filed Aug. 23, 1894. Serial No. 521,092. (No model.)



*Claim.*—1. In a pantaloons holding device, the combination, with a screw device adapted to be secured to the heel of the shoe, and a guide rod attached to the screw device, said rod having a head and a stop, of a traveling plate movable of the guide rod and means for securing said plate to the pantaloons, substantially as described.

2. In a garment protector of the class described, the combination, with a guide rod adapted to be secured at its lower end to the shoe, its upper free end being provided with a head, and a stop arranged between the fixed and free ends, of a traveling plate movable on the guide rod between the head and stop and removable from the guide rod, said traveling device having a spring tongue to engage the guide rod and integral points arranged to be clamped to the pantaloons, as and for the purposes described.

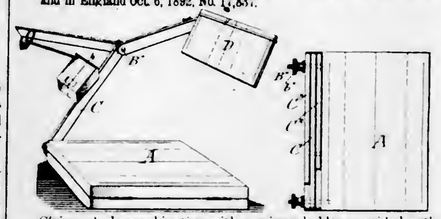
530,476. **INJECTOR.** WALTER E. DODGE, Boston, Mass. Filed Oct. 11, 1894. Serial No. 525,545. (Model.)



*Claim.*—1. In a boiler-feeding injector, the combination with the operating lever and the waste-valve whose stem is screw-threaded to engage a correspondingly formed gland so that its turning seats and unseats the valve; of an arm rotatively adjustable on said stem and adapted to be locked thereon at different adjustments, and a rod connected with said arm and extending through a collar on the operating lever and having abutments on opposite sides of said collar.

2. In a boiler-feeding injector, the combination of a suitably constructed casing, a guide-rod projecting therefrom, a slide on said guide-rod having a rack, an operating lever centrally pivoted on a movable support attached to the casing, and pivotally connected with the slide, a pawl on said lever for engagement with the rack, a steam-valve having a stem connected with the slide, and a water-valve having a stem connected with the lever on the side of its fulcrum opposite that where the slide is connected, the arrangement being such that the valve-stems are moved in opposite directions and the valves open and close simultaneously.

530,477. **PERSPECTIVE-DRAWING APPARATUS.** HEINRICH EPPERS, Braunschweig, Germany, assignor to Rudolf Schwarz, Vienna, Austria-Hungary. Filed Apr. 19, 1894. Serial No. 508,082. (No model.) Patented in Austria-Hungary July 18, 1891, No. 34,185 and No. 50,452; in Germany July 18, 1891, No. 65,849, and Feb. 10, 1892, No. 66,541; in France July 25, 1891, No. 215,112; in Belgium Mar. 26, 1892, No. 98,975, and in England Oct. 6, 1892, No. 17,837.



*Claim.*—1. In combination with a mirror-holder provided with an eye-hole, a plane mirror adapted to be arranged therein, and bared at intervals, so that parts reflect and parts transmit light, substantially as set forth.

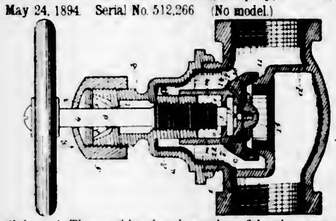
2. In combination with a mirror-holder provided with an eye-hole, a plane mirror adapted to be arranged therein, and bared at intervals, so that parts reflect and parts transmit light, and an auxiliary plane mirror adapted to be arranged above the first mirror, substantially as set forth.

3. A mirror-holder consisting of a box open at the bottom and one end having an eye-hole, means for holding two mirrors therein, and an arm extending from the box and provided with a spring-clip, substantially as set forth.

4. In combination with a supporting-base or drawing-board, and folding-bracket-arms comprising a supporting-arm, a pivot passing transversely through one end of the arm and through one side of the supporting-base or drawing-board, two auxiliary arms, and a pivot passing transversely through the inner ends of the auxiliary arms and the other end of the supporting-arm, said arms being adapted to fold together alongside of the base, of a detachable object-board and a detachable mirror-holder applied to the outer ends of the auxiliary arms when the same are spread, substantially as set forth.

5. In combination with a supporting base or drawing-board provided with parallel indicator-lines, and an object-board also provided with parallel indicator-lines adapted to register with the aforesaid indicator-lines, those two indicator-lines on the object-board nearest the central line thereof being nearer the same than the corresponding lines of the drawing-board are nearer their central line, a mirror, and means for supporting the object-board and mirror in triangular relation to the supporting-base, substantially as set forth.

530,478. **GLOBE-VALVE.** HENRY R. FRISBIE, Newark, assignor to the Eastwood Wire Manufacturing Company, Belleville, N. J. Filed May 24, 1894. Serial No. 512,266. (No model.)



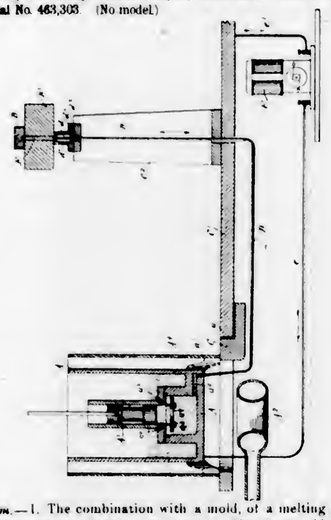
*Claim.*—1. The combination, in a valve of the character described, with the body 1, bonnet 2, valve spindle 4, round projecting disk-carrier supporting guide 9, of the disk-carrier 7 having bore $m$ to engage with such support as shown, said carrier having lateral opening $k$ to admit both the body of said spindle and the head portion $j$ thereof, a frustum shaped valve disk, frustum-shaped seat in the end of said carrier for said disk, whereby it is firmly supported therein, disk-retaining cap 15 having the square projection 14 thereon arranged to fit a square recess in the end of said carrier, retaining

screw 17 engaging said cap from above, so that when the valve spindle is attached to said carrier said screw is prevented from turning, as set forth.

2. The herein described improvement in valves, comprising in combination, a valve-disk carrier and a detachable disk, a retaining screw for securing said disk to its carrier, a valve spindle for operating said carrier, the lower end of said spindle abutting the head of said retaining screw so as to effectually lock it against displacement, and means to effectually lock the said disk against rotation, for the purpose set forth.

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530,479. **APPARATUS FOR CASTING MOLTEN MATERIAL.** GEORGE A. GOODSON, Minneapolis, Minn., assignor to the Goodson Type Casting and Setting Machine Company, same place. Filed Feb. 23, 1893. Serial No. 463,303. (No model.)



*Claim.*—1. The combination with a mold, of a melting pot for containing the material to be cast, a tube leading from said melting pot to said mold, means for controlling the discharge of molten material into the mold and connections for applying an electric current to heat said material, while in transmission through said tube to said mold, substantially as described.

2. The combination with a mold, of a melting pot for containing a supply of molten metal, a tube leading from said melting pot to said mold, means for controlling the discharge of molten material into the mold and electric connections applied to close both the tube and the molten metal therein into an electric circuit, substantially as and for the purpose set forth.

3. The combination with a stereotyping mold, of a melting-pot for containing a supply of molten metal, a tube leading from said melting pot to said mold, means for controlling the discharge of molten material into the mold and connections for applying an electric current to heat said metal, while in transmission through said tube, said electric connections being so arranged that the current will be conducted to the very outlet tip of the tube, at the mouth of the mold, but will be returned without passing through the mold, whereby the metal may be delivered to the mold throat at any desired exact temperature and the mold itself will be unaffected by the heat from the melting pot or tube, substantially as described.

4. The combination with a mold, of a vessel for containing the material to be cast, a metallic tube leading from said vessel to said mold, a contact piece, of relatively small resistance as compared to said tube, electrically connected with the tube and forming one wall of the mold, and means for applying an electric current to said tube, whereby the material to be cast may be kept hot to the very mouth of the mold while the said contact piece and the mold will remain cold, substantially as described.

5. The combination with the stereotyping mold, of the vessel for containing molten type metal, the force pump in said vessel, the metallic tube leading from said vessel to said mold, and electric connections for applying a current of electricity to said tube, substantially as and for the purpose set forth.

6. In a type casting machine, the combination with the type face matrix B and the mold B', of the casting-pot A with the force pump $A^3$ remote from said mold, a source of electricity, the tube D with the nozzle *d* leading from said melting pot to said mold and electrically connected with said source of electricity, for the outgoing branch of the circuit, and the bracket *d'* forming the mouth-piece of the mold having electrical contact with the said tube nozzle only at the mouth of the mold and provided with connections to form the return branch of the electric circuit, substantially as described.

7. The combination with a mold, of a vessel for containing the material to be cast, a force pump in said vessel, a tube leading from said vessel to said mold, and connections for applying an electric current to heat said material to be cast, while in transmission through said tube, substantially as described.

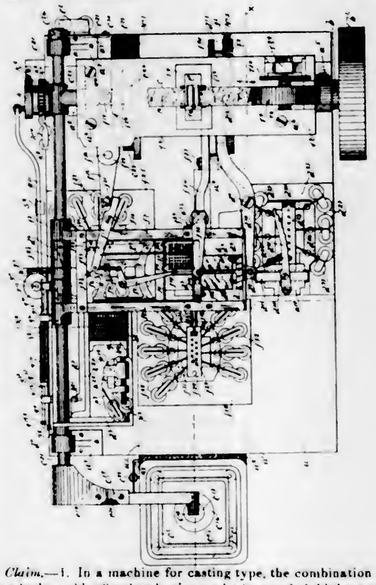
8. The combination with a mold, of a melting pot for containing the material to be cast, a tube leading from said vessel to said mold, connections for applying an electric current to heat said material to be cast, while in transmission through said tube, and mechanism for controlling the discharge of molten material into the said mold, substantially as described.

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530,480. WITHDRAWN.

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530,481. **TYPE CASTING AND SETTING MACHINE.** GEORGE A. GOODSON, Minneapolis, Minn., assignor to the Goodson Type Casting and Setting Machine Company, same place. Filed Dec. 8, 1893. Serial No. 493,116. (No model.)



*Claim.*—1. In a machine for casting type, the combination with a type-body mold, of a plate having on its face and rigid therewith a font of matrices, arranged in rows in two directions, for the alignment of any matrix with the throat of said mold by a two-way movement of said block, substantially as described.

2. In a machine for casting type, the combination with a variable type body mold, of a matrix block having a matrix-plate containing a complete font of matrices, rigid with said plate and arranged in rows in two directions for alignment of any matrix, with the throat of said type-body mold, by a two-way movement of the said block, substantially as described.

3. In a type-casting machine, the combination with a type-body mold, of a matrix-plate containing a complete font of matrices rigid with said plate, which matrices are separated from each other and are justified into corresponding positions of uniform sized spaces on said plate, by intervening walls of the said plate, which walls are of uniform width bodywise and of varying widths runningwise of the matrices or type, whereby the said plate may be brought to the casting position by uniform steps of movement, substantially as described.

4. The method of producing an integral font matrix plate, for use on a type-casting machine, which consists in setting up into a form a complete font of printers' type in the desired arrangement, and then immersing the said form itself in an electro-plating bath to obtain therefrom an electro-matrix plate by the electro depositing process, substantially as described.

5. The method of producing an integral font matrix plate, for use on a type-casting machine, which consists in setting up into a form a complete font of printers' type in the desired arrangement, then immersing the said form itself in an electro plating bath to form thereon an electro matrix plate, by the electro depositing process, and finally in separating the plate from the form, by picking the type therefrom, separately, substantially as and for the purposes set forth.



6. The method of producing the integral font matrix block, herein described, for use on type-casting machines, which consists first, in setting up into a form a complete font of printers' type, second, in separating and justifying the said type into corresponding positions of uniform sized spaces runningwise, by truncated or faceless type ground down below type-body height, and in separating and justifying the said type bodywise by rules also ground down below type-body height, third, in producing from said form an electro matrix plate by the electro depositing process, in which step the type are picked from the plate, separately, and finally, backing the said electro matrix plate with metal suitable for body, substantially as described.

7. In a type-casting machine, the combination with a type-body mold, of the two-way movable matrix-block, containing the complete font of matrices, arranged in rows in two directions, for selection by the two-way movement of the block, and arranged also in rows in one direction, with reference to the running width of face, and with all the said matrices justified into corresponding positions of uniform sized spaces on said block by intervening walls of uniform width bodywise and of varying width runningwise of the said matrices, all substantially as and for the purpose set forth.

8. In a type casting machine, the combination with a type-body mold, of the two way movable integral font matrix block, provided with centering surfaces, and a centering plunger movable transversely to the plane of the block's movement and engageable with said centering surfaces of the block to accurately center the matrices in casting position.

9. In a type casting machine, the combination with the type-body mold, of the integral font two-way movable matrix block, having the matrices on its face and the centering holes on its back, the transversely movable centering and clamping pin, and a pressure applying device applicable to said pin and co operating therewith, to center the matrix block and clamp the same to the type-body mold in casting position, substantially as described.

10. In a type-casting machine, the combination with the type body mold, having a type nick rib, of the integral font two-way movable matrix block, having the matrices on its face and the centering surfaces on its back, the centering pin engageable with said surfaces, and a combined clamping and lifting device, for operating said pin to center the block and clamp the same in casting position, and for lifting the block away from the type after the cast, substantially as and for the purpose set forth.

11. The combination with a carriage, of a font of dies movable with and crosswise of said carriage, for the selection of the dies, and a bell crank lever having its elbow pivoted to said carriage and one of its arms connected to said font of dies, whereby both movements may be imparted to said font by a thrusting movement imparted to the other arm of said bell crank, substantially as described.

12. The combination with the matrix block carriage, of the integral font matrix block transversely movable thereon, having its matrices arranged in rows in two directions, for selection by the two-way movement of the block, and the bell-crank lever having its elbow pivoted to said carriage and one arm pivotally connected to said block, whereby both movements may be imparted to said block by a thrusting movement imparted to the other arm of said bell crank lever, substantially as described.

13. The combination with a carriage and guide-ways for the same, of a font of dies movable with and crosswise of said carriage, for the selection of the dies, a bell-crank lever having its elbow pivoted to said carriage and one of its arms connected to said font of dies, an impelling spring and a cam-wheel with a two-way cam-surface operative on said lever, to effect the movements of said font of dies and restrict the spring to a timed action, substantially as described.

14. The combination with a matrix block carriage, of an integral font matrix block mounted on and movable crosswise of said carriage and having its matrices arranged in rows in two directions, for selection by said two way movement of the block, a bell crank-lever having its elbow pivoted to said carriage with one of its arms connected to said block, an impelling spring and a cam-wheel with a two-way cam surface operative on the other arm of said bell crank to effect both movements of said block and restrict the spring to a timed action, substantially as described.

15. The combination with the matrix block, carriage and guide frame, as described, of the bell crank $f^9$, link $f^{11}$, lever $f^{13}$, spring $f^{14}$, lever $f^{15}$ and cam-wheel with cam-surface $f^{16}$, all arranged and operating as described.

16. In a type casting machine, the combination with a type-body mold having a throat plunger under tension to assume an extreme position, of a series of stops for variably intercepting the plunger to fix the mold throat for the different running widths of type body, substantially as described.

17. In a type casting machine, the combination with a type-body mold having a throat plunger under tension, to assume an extreme position, of a series of stops for variably intercepting said mold plunger, magnets for operating said stops and electric connections for said magnets substantially as described.

18. In a type casting machine, the combination with the type-body mold having the throat plunger under tension, of the two-way movable matrix block, under tension and having its matrices arranged as described, and three sets of intercepting stops for positioning said parts, two sets of which cooperate to intercept the block for the selection of the matrix and the third set of which intercept said plunger to fix the running width of the mold throat, substantially as described.

19. The combination with the type-body mold, having the throat plunger under tension, of the two-way movable matrix block, under tension, having the matrices arranged in rows in two directions and also grouped into rows in one direction, according to running width of face, of the three sets of intercepting stops, two for positioning the matrix block, and the third for positioning the mold plunger, and common connections for controlling the row selecting members of the matrix stops, and the corresponding mold stops, substantially as described.

20. In a type casting machine, the combination with a variable type-body mold, of a two way movable font of matrices arranged in rows in two directions, and also arranged in rows in one direction, according to running width of face, two sets of electric devices for intercepting said block to select a matrix, and electric devices for varying said mold, connected up in series with the electric devices controlling the row selecting movements of said font, substantially as described.

21. In a type casting machine, the combination with the type-body mold, having its throat plunger under tension, as described, of the two-way movable integral font matrix block with its matrices arranged into rows in two directions and grouped according to running width of face, the two sets of stops for positioning the matrix block, the set of stops for positioning the mold plunger, the representative controlling strip, magnets for operating said stops, and circuit connections for the same, including thrust pins cooperating with said representative strip, substantially as described.

22. In a type casting machine, the combination with the relatively fixed type-body mold section, of the shifting type-body mold section, having the throat-channel fitted with the plunger, under tension to assume its outermost position, stops for variably intercepting said plunger, and cooperating mold shifting and plunger thrusting devices, substantially as described.

23. In a type-casting machine, the combination with a type body mold, of a casting pot and a casting nipple movable independently of the casting pot, for registration with the mold throat, at the time of the cast, and separation therefrom immediately after the cast is made, substantially as described.

24. In a type casting machine, the combination with the type-body mold, of the casting nipple movable independently of the casting pot, normally under strain to move away from the mold, and cam-controlled devices for moving said nipple into registration with said mold-throat, at the time of the cast, and for releasing the same, to permit the nipple to move away from the mold, immediately after the cast is taken, substantially as described.

25. The combination with the shifting section of the type-body mold, of the movable casting nipple and the mold shifting devices provided with means for clamping said nipple against the mouth of the mold when the mold is thrown to casting position, substantially as described.

26. In a type casting machine, the combination with the type-body mold, of the integral font matrix-block, having the matrices and the centering surfaces arranged as described, the centering pin engageable with said surface to center the block and clamp the same against the face of the mold, the casting nipple movable against the back of the mold, and pressure applying devices cooperating to clamp the said matrix block and said casting nipple to the mold, while the cast is being made, substantially as described.

27. In a type casting machine, the type-body mold, comprising a relatively fixed section and a two-part shifting section embracing a throat plunger, means for loosely holding the two parts of said shifting section and said plunger together, at all times, except when in the casting position, and means for tightly clamping the same together and to the fixed mold section when in the casting position, substantially as described.

28. In a type casting machine, the combination with the fixed mold section, of the two part shifting mold section embracing the mold throat plunger, a cross-bolt and spring-washer for loosely holding said shifting parts together, a shifting device and a resistance surface cooperating to clamp said shifting parts of the mold tightly together

against a shoulder of the fixed mold section, when in casting position, substantially as described.

29. The combination with the relatively fixed mold section $d^2$ of the shifting mold section $d^4$, working between jaws or shoulders of said fixed section and provided with lateral guide studs $d^{14}$, working through said jaws, the pivoted shifting arms $d^{15}$, cam-rod $d^{16}$ and eccentric cam $d^{18}$, operating substantially as and for the purpose set forth.

30. The combination with the mold sections $d^2$ and $d^3$ of the mold plunger $d$ having the guide screws $d^6$ engaging the section $d^3$, stop devices for intercepting said plunger, and springs $d^7$ on said screws $d^6$ and between the plunger head and the mold section $d^3$ and cooperating with said stop devices both to position the plunger and clamp the mold sections $d^2$ and $d^3$, together endwise, when in casting position, substantially as described.

31. The combination with the type-body mold, of the tube nipple $c^4$, the sliding keeper plate $c^5$ for the same, having the cam-roller $d^{20}$, and the shifting rod $d^{19}$ having the cam surface $d^{28}$ cooperating with said roller to clamp said nipple to the body mold, when the cast is being made, substantially as described.

32. The combination with the type-body mold and the matrix block having the centering surfaces $f^4$, of the yoke $f^{13}$ having the centering pin $f^{12}$, and the plunger $f^{34}$, for applying pressure to said pin, substantially as described.

33. The combination of the movable matrix-block having the centering surfaces, the centering pin engageable with said surfaces to center the said block in casting position, the movable plunger, for applying pressure to said pin provided with a passage through which works the head of said pin and provided with a stiff spring, for applying the pressure from the plunger to said pin, with freedom for a yielding action, when necessary, substantially as described.

34. The combination with the matrix-block, having the centering holes, of the centering pin $f^{12}$, cooperating therewith, to center the said block in casting position, the cam actuated plunger $f^{34}$, through which the head of said pin works, and the stiff spring $f^{42}$ carried by said plunger and bearing against the head of said pin, substantially as and for the purposes set forth.

35. The combination with the matrix-block and its carriage, of the pivoted guide-frame for said carriage, provided with the yoke $f^{13}$, the centering pin $f^{12}$ and the swiveled plunger $f^{34}$, substantially as and for the purposes set forth.

36. The combination with the matrix-block, its carriage and guide-ways, of the yoke $f^{13}$ having the catch-lug $f^{43}$ and the plunger $f^{34}$ having the projection $f^{41}$, for cooperation with said lug, to lift the matrix-block away from the cast type, substantially as described.

37. In a type casting machine, the combination with the matrix-block and its carriage, of a pivoted guide-frame, on which said carriage is mounted for sliding movement, a centering pin mounted on said frame and a swiveled plunger adapted for cooperation with said pin in one position, and to be turned to one side, for permitting the said frame, together with the parts carried thereby to be thrown back on its pivotal bearings, substantially as described.

38. In a type casting machine, the combination with the casting nipple, of the pivoted type-body mold and the pivoted frame supporting the matrix block carriage, substantially as and for the purposes described.

39. The combination with the pivoted mold, of the pivoted frame carrying the matrix block carriage and centering pin, and the swiveled plunger cooperating with said parts and adapted to be thrown to one side to afford clearance for the same in their pivotal movements, substantially as described.

40. The combination with the rod $c^{31}$ and the pillow block $a^4$, having the projecting lugs $a^{38}$, of the type body mold and the guide frame for the matrix block carriage pivoted to said rod at one end and having their other or free ends supported and held, from lateral displacement, when in working position, by said pillow block and lugs, substantially as described.

41. In a type casting machine, the combination with a driving shaft with cams, located at one end of the machine, of a melting pot and pump, located at the other end of the machine, a type-body mold, a matrix-block and a carriage for said block located intermediate said driving shaft and said melting pot, and an electrically heated tube, extending from said melting pot to said mold, substantially as described.

42. In a type casting machine, the combination with a driving shaft with cams, located at one end of the machine, of a melting pot and pump located at the other end of the machine, a rocker rod $c^{31}$ extending between said driving shaft and melting pot, for operating said pump under the control of one of the cams on said shaft, the type-body mold and the matrix block carriage frame pivoted to said rocker rod, intermediate said melting pot and driving shaft, and the electrically heated tube extending from the melting pot to the mold, substantially as described.

43. The combination with variable spacing devices, of operating connections for the same, comprising main and branch members and a justifier adapted to be set to throw the proper branch or branches into operative relation with said main for justifying the line, substantially as described.

44. The combination with variable word spacing devices of operating connections for the same composed of main and branch members and a justifier adapted to be set to throw the proper branch or branches into operative relation with the main at word spaces, for justifying the line, substantially as described.

45. The combination with variable spacing devices, of motors for controlling the same, motive force conductors for said motors comprising main and branch members and a justifier adapted to be set to throw the proper branch or branches into operative relation with the proper main or mains, for justifying the line, substantially as described.

46. The combination with variable spacing devices, of motors for controlling the same, motive force conductors for said motors comprising main and branch members and an automatic justifier adapted to be set to throw the proper branch or branches into operative relation with the proper main or mains, for justifying the line, substantially as described.

47. The combination with variable word spacing devices, of motors for controlling the same, motive force conductors for said motors, comprising main and branch members and a justifier adapted to be automatically set to throw the proper branch or branches into operative relation with the proper main or mains to supply the proper motors for controlling said word spacing devices to justify the line.

48. The combination with electrically controlled spacing devices, of circuit connections for the same composed of one or more main leads and a series of branch leads corresponding to the varieties of spacing, and a justifier adapted to be set to throw the proper branch leads into operative relation with the proper main leads, for rendering available the proper circuit connections to control the spacing devices so as to justify the line, substantially as described

49. The combination with electrically controlled word spacing devices, of circuit connections for the same, comprising one or more main leads and a series of branch leads corresponding to the varieties of word spacing, and a justifier adapted to be set to throw the proper branch lead or leads into operative relation with the proper main or main leads to energize the proper electric devices for controlling said word spacing devices to justify the line, substantially as described.

50. The combination with electrically controlled word spacing devices, of circuit connections for the same, composed of one or more main leads and one or more series of branch leads corresponding to the varieties of word spacing, and a justifier adapted to be set to throw the proper branch lead or leads into operative relation with the proper main lead or leads and having one element which travels for establishing the circuit connections through the set leads, at word spaces, in the proper succession, substantially as described.

51. The combination with electrically controlled word spacing devices, and a justifier, for controlling the circuit connections to the same, comprising main lead contact or contacts, and a board with branch lead contacts corresponding to the varieties of word spacing, which parts are capable of being set relative to each other for the connections required and one of which parts has a traveling movement, with respect to the other, for establishing the proper circuit connections at word spaces, substantially as described.

52. The combination with electrically controlled variable word spacing devices, of a justifier for controlling the circuit connections to the same, having as elements thereof, one or more main lead contacts, a branch lead board with one or more series of branch leads corresponding to the varieties of word spacing, and an escapement, the said first named two elements being adapted to be set relative to each other for the connections required and one thereof having a traveling movement over the other, and said escapement element being applied to said traveling element, to establish the proper circuit connections at word spaces, substantially as described.

53. A justifier, for controlling variable spacing devices, comprising as elements, one or more main operating connections and a pair of combination blocks each having a series of branch connections corresponding to the varieties of spacing, which blocks are adapted to be set relative to each other to bring the proper branch connections into operative relation with the proper main connections, and one of which elements has a traveling movement over the other to establish the proper connections in the proper order, substantially as described.

54. The combination with electrically controlled word spacing devices, of a justifier for controlling the same, comprising a pair of combination contact blocks each with a series of branch lead contacts, corresponding to the different word spaces, capable of being set for any required combination of contacts, and a main lead contact having a traveling movement over the set contacts of said blocks, for establishing the proper circuit connections in the proper order, substantially as described.



55. The combination with the series of mold plunger stop magnets $d^{27}$, of the justifier comprising the combination contact blocks $p' p^3$, each with the series of branch lead contacts $p$ and capable of being set as described, the main lead traveling contact $p^{14}$, movable over said blocks and an escapement applied to said traveling contact to establish the set circuit connections at word spaces in the proper order, substantially as described.

56. The combination with the mold plunger stop magnets $d^{27}$, of the justifier combination contact blocks $p' p^3$, each with the series of contacts and capable of being set as described, the traveling contact $p^{14}$, a magnet controlled escapement, for operating said traveling contact, the representative controlling strip $r$ and the escapement branch of the working circuit, for energizing said escapement magnet, at word spaces, under the control of said strip, substantially as described.

57. The combination with the representative strip $r$, of the type body mold, the matrix block movable to its extreme limits in two directions, to bring its quad surface into casting position at word spaces, the combination blocks $p' p^3$ with the series of branch lead contacts $p$, and capable of being set as described, the main lead traveling contact $p^{14}$ the escapement and escapement magnet for said traveling contact, and circuit connections to said escapement magnet, under the control of said strip, for operating said escapement and traveling contact, substantially as described.

58. The combination with variable spacing devices, of main and branch operating connections for the same, a justifier for establishing the proper operative relation between said connections, comprising elements certain of which are movable to permit the said elements to be properly set relative to each other, and a series of stops for variably intercepting said movable element or elements to properly set the same, substantially as described.

59. The combination with variable spacing devices, of main and branch operating connections for the same, a justifier, for establishing the proper operative relation between said connections, comprising elements certain of which are movable to permit the justifier elements to be properly set relative to each other, means for throwing said movable element or elements into an extreme position and putting the same under strain or tension to move in the opposite direction, and a series of stops for variably intercepting said movable element or elements to properly set the same.

60. The combination with variable spacing devices, of main and branch operating connections for the same, a justifier for establishing the proper operative relation between said connections, comprising elements certain of which are movable and subject to springs, for permitting the justifier elements to be properly set relative to each other, a setting device for throwing said movable element or elements to initial position, a series of stops for variably intercepting said movable element or elements to properly set the same, and an escapement for rendering said set elements active at word spaces, substantially as described.

61. The combination with variable spacing devices, of main and branch operating connections for the same, a justifier, for establishing the proper operative relation between said connections, comprising elements certain of which are movable to permit the justifier elements to be properly set relative to each other, a series of magnet controlled stops for variably intercepting said movable element or elements to properly set the same, a representative controlling strip, and circuit connections for said stop magnets controlled by said strip to set said justifier, substantially as described.

62. The combination with the justifier combination contact members, requiring to be set relative to each other, for rendering available the proper combinations, of springs applied to such of the same as require to be intercepted, magnet controlled stops for intercepting said parts, to properly set the same, a power actuated device for throwing said parts to initial position and putting the same under tension from said springs, a magnet controlling said setting device, a representative strip containing setting holes and circuit connections for said magnets, controlled by said strip, for setting the justifier, substantially as described.

63. The combination with the justifier elements $p' p^3$ and $p^{14}$, under tension, of the lever $p^{11}$, for throwing the same to initial positions, the driving shaft $b$ and connections therefrom for operating said lever, substantially as described.

64. The combination with mechanism, for the production of printing surfaces, of a representative strip and cooperating connections, for controlling said mechanism, including two or more branch sets of connections and a switch for throwing any one of said branch sets into operative relation with said strip, substantially as described.

65. The combination with mechanism, for the production of printing surfaces, of a representative strip and cooperating connections for controlling said mechanism including two or more branch-sets of connections, for controlling parts doing different kinds of work, and an automatic switch, also controlled by the strip, for throwing said branch sets of connections into action, in the proper order, substantially as described.

66. In an electrically controlled machine for the production of printing surfaces, the combination with a representative controlling strip, of circuit connections for cooperating therewith, including thrust pins and cooperating contacts between which the strip is fed, two or more branch sets of connections, for doing different kinds of work, and an automatic switch for throwing any one of said branch sets of connections into the same circuit with said thrust pins, whereby the same thrust pins and cooperating contacts may be made to serve for controlling different kinds of work, substantially as described.

67. The combination with the representative strip $r$, having the working circuit holes, setting circuit holes and trip circuit holes, as described, of the working circuit connections, setting circuit connections and trip circuit connections, for cooperation therewith, as described, and the two-way switch, controlled by said trip circuit to convert the working into the setting circuit, substantially as and for the purposes set forth.

68. The combination with the constantly running shaft, of the representative strip $r$, the working circuit connections, setting circuit connections and trip circuit connections, as described, the two-way switch and the clutch device, under the control of said strip and trip circuit, for operating said switch, to convert the working into the setting circuit, as described.

69. The combination with the representative controlling strip, of the two-way movable matrix-block, the type-body mold with its throat plunger under tension, the two sets of stops for positioning said matrix-block, the set of stops for positioning the mold plunger, magnets for operating said stops, a justifier comprising elements adapted to be set to render the proper connections to said mold magnets available, and a magnet controlled escapement, for rendering said connections active, at word spaces, and circuit connections for all of said magnets operative under the control of said strip, substantially as and for the purpose set forth.

70. In a type-casting and setting machine, the combination with the two-way movable matrix-block and a type-body mold having a throat plunger, under tension, of two sets of stops, for positioning said matrix-block, a set of stops for positioning said mold plunger, a justifier for controlling said mold plunger at word spaces, stops for setting said justifier, magnets for controlling all of the said sets of stops, a representative controlling strip having working holes and justifier setting holes, circuit connections for cooperation with said strip and magnets, including two sets of branches, one for the working and the other for the setting circuit, and a two-way switch, for converting the working into the setting circuit or vice versa, substantially as described, whereby the same thrust-pins and positions on the strip are made to answer for controlling both the working and the setting circuit, substantially as described.

71. The combination with the driving shaft and the clutch device, adapted to be thrown into and out of gear therewith, of the two-way switch $s s'$, and connections from said clutch device for shifting the movable member of said switch, substantially as described.

72. The combination with the strip $r$ of the mercury cells $t^4$, the bank of thrust pins $t^5$ between which the strip is fed, the feed needles $r^{30}$ and $r^{31}$, operating on said strip to hold and feed the same as described, and the thrust-bar $r^{18}$ for operating said bank of thrust pins and said feed needles, substantially as described.

73. The combination with the strip $r$, thrust pins $t^5$ mercury cells $t^4$, feed needles $r^{30}$ $r^{31}$ and thrust-bar $r^{18}$, as described, of the strip unwinding and winding-up spools $r^4$ $r^5$, the electric motors $r^{29}$ and $r^{39}$, for operating said spools, and circuit connections for said motors, controlled by the strip itself, substantially as described, to always maintain a slack section of the strip where operated upon by said thrust-pins and feed needles.

74. In a type-casting and type-setting machine, the combination with a type-body mold, having a delivery channel for the cast and ejected type, of an abutment plunger, under tension, and working in the said channel, for holding the said type on their feet, substantially as described.

75. In a type-casting and setting machine, the combination with a type-body mold, of a delivery channel, for receiving the ejected type, provided with a lock-rib in one of its walls, for engaging behind the ejected type, when tapped down in the channel, and an abutment plunger seated in said channel and under tension, to assume an innermost position, for holding the said type on their feet against the said lock-rib, substantially as described.

76. The combination with the mold section $d^2$ having the delivery channel $d^4$, provided with the lock-rib $d^{31}$, of the banking or abutment plunger $g' g^3$, under tension in said channel, and operating substantially as and for the purpose set forth.

77. In a type-casting and setting machine, the combination with the type-body mold, of a delivery channel, for receiving the ejected type and a line delivery device, comprising a movable slide, seated in the side of said channel, and provided with a spring-catch at its inner end, which is normally clear from the type, and a fixed cam surface, for cooperation with said catch, when the slide is moved,

to force the catch into engagement with the rear surface of the innermost type, substantially as and for the purpose set forth.

78. In a type-casting and type-setting machine, the combination with the type-body mold having a delivery channel, provided with a lock-rib of an abutment plunger seated in said channel under tension, to assume an innermost position against the outermost type, for holding the type on their feet, and a line delivery device, comprising a slide working in a seat opening from the side of said channel, and provided on its inner end with a spring catch which normally stands clear from the type, and a cam-surface in the wall of said channel, for cooperation with said catch, when the said slide is moved outward, to force the catch into engagement with the back surface of the innermost type, substantially as described.

79. The combination with the mold section $d^3$ having the delivery channel $d^4$ and cam surface $g^8$, of the delivery rack $g^7$ having the spring-catch $g^6$, under tension, and operating substantially as described.

80. The combination with the line delivery rack $g^7$, of the galley $k^{11}$ movable galley head $k^{12}$, and means for operating said rack and galley head to deliver the line of type into the galley, substantially as described.

81. The combination with the driving shaft $b$, of the clutch device adapted to be thrown into gear therewith, the line delivery rack $g^7$, the galley head $k^{12}$ and connections from said clutch for operating said line delivery rack and galley head to deliver the line of type, substantially as described.

82. The combination with the line delivery devices, of the clutch device for operating the same, the trip and trip magnet for throwing said clutch into gear with the driving shaft, the representative strip with trip-hole $r^2$ and the trip circuit to said magnet controlled by said strip, substantially as and for the purposes set forth.

83. A machine organized for casting and setting type comprising a constantly running shaft, cams, &c., for the application of power, the variable type-body mold, the two-way movable matrix-block, the sets of stops and stop-magnets, for positioning the mold-plunger and matrix-block, the representative controlling strip, electric connections for said magnets, under the control of said strip, the melting pot located remote from said mold, and the electrically heated tube, for conducting the metal from said melting pot to said mold, substantially as described.

84. The machine organized for casting and setting type into justified lines, comprising a constantly running shaft, cams, &c., for the application of power, the variable type-body mold, the two-way movable matrix block, the justifier, the sets of stops and stop magnets, for positioning the mold plunger matrix block and the parts of said justifier, the escapement controlled contact and magnet, for rendering the justifier active at word spaces, the melting pot located remote from said mold, the electrically heated tube, for conducting the metal from said melting pot to said mold, the representative controlling strip, and the electric connections, for all of the said magnets, under the control of said strip, all arranged and operating substantially as and for the purposes set forth.

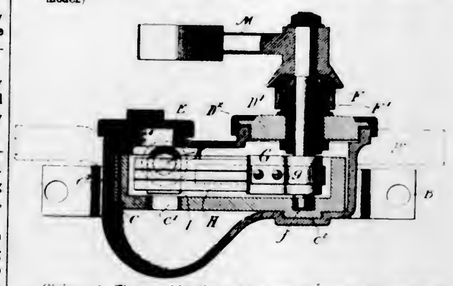
85. A machine organized for casting and setting type, comprising a constantly running shaft, cams, &c., for the application of power, the variable type-body mold, the two-way movable matrix block, the sets of stops and stop magnets, for positioning the mold plunger and the matrix block, the representative controlling strip, the electric connections for said magnets, under the control of said strip, and a melting pot, for supplying metal to said mold, substantially as described.

86. A machine organized for casting and setting type into justified lines, comprising a constantly running shaft, cams, &c., for the application of power, the variable type-body mold, the two-way movable matrix-block, the justifier, the several sets of stops and stop-magnets for positioning the mold plunger, matrix-block, and the parts of said justifier, the escapement magnet, for rendering the justifier active at word spaces, the two way switch and its trip magnet, the representative controlling strip, the electric connections for all of said magnets, under the control of said strip, arranged into the working, setting and trip circuits, as described, and a melting pot, for supplying metal to said mold, substantially as described.

87. In the type-casting and setting machine, substantially as described, the combination with the representative controlling strip and the several sets of circuit connections controlled thereby, distinguished as the working circuit, setting circuit, &c., of the spring and the constantly running rotary cam, for operating the pump plunger, a pump-latch or lock normally in position, to render the pump plunger inactive and an electric trip, for said latch, located in said working circuit only, substantially as described, whereby the pump cannot act except when a cast is required.

88. In the type casting and setting machine, substantially as described, the combination with the representative controlling strip, and the several sets of circuit connections controlled thereby, distinguished as the working circuit, setting circuit, &c., of the spring $c^{28}$ and the cam-surface $c^{29}$ on the constantly running cam-wheel No. 1, for operating the pump plunger, a latch or lock, normally in position, to render the pump-plunger inactive, and an electric trip for said pump-latch or lock, located in said working circuit only, with the said cam arranged to sustain the entire strain from said pump spring, when the trip of said lock or latch takes place, whereby the pump cannot act except when a cast is required and the electric trip can be made sensitive and quick, substantially as described.

## 530,482. ELECTRIC-RAILWAY SUPPLY SYSTEM. JOHN J. GREEN, Boonton, N. J., assignor to the Universal Electric Company of the City of New York. Filed Aug. 21, 1893. Serial No. 483,620. (No model.)



*Claim.*—1. The combination of a closed contact box, the rock-shaft extending through packing thereinto, and controlling a contact that closes the circuit in the box, a traveling shoe or collector and a switch arm outside the box normally held in the path of the shoe, at the extremity of its outward movement and moved by the shoe and actuating the shaft, said arm being arranged obliquely with reference to the line of travel of the shoe, whereby the shoe moves the switch arm in the same direction when the shoe is moved in either direction.

2. The combination with a traveling shoe or collector having a side contact surface, of closed contact boxes, a vertical rock-shaft extending through packing into each box and controlling a contact that closes the circuit in the box, and an obliquely arranged switch arm outside the box having its end normally arranged in the path of the shoe so as to be moved by the shoe in the same direction when the shoe is moved in either direction and means for holding the switch arm against a movement across a line passing transversely through the conduit and the axis of the pivot of the arm.

3. The combination with an electric conduit, of a series of closed contact boxes, contact devices arranged within the boxes, and switch arms outside the box for operating the contact devices, arranged obliquely with reference to the line of travel of the shoe or current collector in the conduit, and normally held by springs to hold their outer ends at the extremity of their outward movement and in the path of the shoe as it moves through the conduit.

4. The combination of a closed contact box, a rock-shaft extending through packing thereinto, and controlling a contact that closes the circuit of the box, a traveling shoe or collector having a vertical side contact face, and a switch arm outside the box having a curved or rounded end held normally at the extremity of its outward movement and in the path of the shoe in the conduit, and adapted to be moved by the shoe to actuate the shaft, said switch arm being arranged obliquely with reference to the line of travel so that the shoe shall move the switch-arm in the same direction when the shoe is moved in either direction.

5. The combination of a traveling contact shoe, a closed contact box, a rock shaft extending through packing therein, contact devices inclosed within the box and operated by the rock shaft, a switch arm outside the box secured to the rock-shaft and extending therefrom obliquely with reference to the plane of the shoe or the axial line of the conduit, and means for normally holding the switch arm at the extremity of its outward movement toward the shoe.

6. The combination, substantially as set forth, of the contact box having lugs B thereon, the brackets B′ to which they are bolted, the main conductor supported by the brackets, the hollow coupling L secured in an opening in the wall of the box and having the extension L′, and the branch conductor passing from the main conductor through the coupling into the box, the extension L′ being bent around the main conductor and secured to the sheath thereof and to the part L of the coupling.

7. The combination, substantially as set forth of the contact box having an aperture therein, a hollow coupling secured in the aperture and having an extension piece (L′), the main conductor insulated and provided with a metal sheath or armor, the branch therefrom passing into the box through the hollow coupling and insulation surrounding said branch and its point of connection with the main conductor, the extension L′ being bent around the sheath of the main conductor and soldered or otherwise secured thereto and to part L of the coupling.

8. The combination, substantially as set forth, of the box, the hollow detachable insulating piece lying therein, a rock shaft extending into the box and carrying or controlling a contact lying within the insulating piece, a contact on the inner wall of the insulating piece against which the first named contact works and means for operating the shaft from the exterior of the box to close said contacts.

9. The combination, substantially as set forth, of the elongated box or casing having the opening D in the top, the correspondingly shaped insulator piece adapted to be inserted into the box through said opening, and resting on the bottom of the box at one end and supported above the bottom at the other end, and the contact devices located within the insulating piece and controlled from the exterior of the box.

10. The combination, substantially as set forth, of the contact box or casing, a hollow detachable insulator piece arranged therein, an insulated rock shaft extending to the box and carrying a contact plate or piece lying within the insulator piece a switch arm carried by the outer end of the shaft and adapted to be operated by a moving shoe or current collector, and another contact piece located within the insulator piece and connected with the main circuit or conductor.

11. The combination, substantially as set forth of the box or casing, having the opening D, the hollow insulator piece lying within the box, the rock shaft passing through an insulated packing box in the cover of said opening, the contact plate or piece H carried by the shaft and lying within the porcelain insulator, a contact piece or block arranged also in the porcelain insulator and connected with the main circuit or conductor a switch arm connected with the outer end of the shaft, and a shoe or current collector adapted to operate the switch arm to close the normally separated contacts within the box.

12. The combination, substantially as set forth, of the box or casing, the cup-shaped insulator piece arranged therein and having a recess in the bottom thereof, a metal bushing in said recess, the insulated rock shaft extending into the box and seated in said bushing, the contact plate or piece H carried by the rock shaft, the contact I, a spring that holds the two contacts normally separated and the projecting switch arm on the outer end of the shaft.

13. The combination, substantially as set forth, of the box or casing having a well or depression in the bottom at one end and a recess in the bottom at the other end, the hollow or cup-shaped insulator piece having a hub on its bottom at one end, seated in said recess and supported from the wall of the box at the other end, the insulated rock shaft extending into the box and having its bearing within the insulator at one end thereof, the plate contact spring carried by the shaft within the insulator, a contact I, the spring $g$ and a switch arm on the outer end of the shaft.

14. The combination, substantially as set forth, of the elongated contact box or casing, an insulated rock shaft extending thereinto and carrying or controlling an elongated spring contact plate electrically connected with the shaft, but otherwise insulated, an insulated contact within the box against which the spring contact works, a spring that normally holds the shaft in such position as to separate said contacts, and a switch arm on the outer end of the shaft adapted to be actuated in the same direction by a traveling shoe or current collector moving in either direction.

15. The combination, substantially as set forth, of the elongated contact box or casing, an insulated rock shaft extending thereinto and carrying or controlling an elongated spring contact plate electrically connected with the shaft, but otherwise insulated, an insulated contact within the box against which the spring contact works, a spring that normally holds the shaft in such position as to separate said contacts, a slotted conduit in which the box is located, a switch arm on the outer end of the shaft projecting obliquely toward the center or slot line of the conduit, and a shoe or current collector carried by a car and traveling in the conduit and adapted to strike the switch arm and move it in the same direction whichever way the shoe is traveling.

## 530,483. BRIDGE FOR BANJOS. ALBERT D. GROVER, Malden, Mass. Filed Mar. 24, 1894. Serial No. 504,899. (No model.)



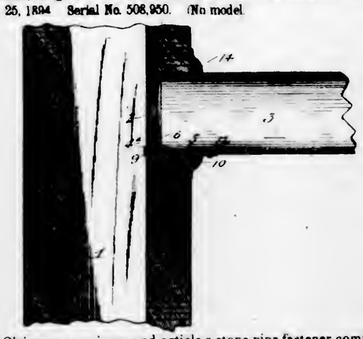
*Claim.*—1. A bridge for banjos and other like instruments, having its feet provided with holes or cavities filled with rosin or rosin composition, as and for the purposes set forth.

2. A bridge for banjos and other like instruments, recesses or cavities formed in the feet for holding rosin or a rosin composition, the edges of said feet about the cavity being removable to expose the rosin, as and for the purposes described.

3. A bridge for banjos and other like instruments, comprising the section $a$ having the feet sections $a^3$, the forward inclined feet sections $a^3$, the said feet having the recesses $a^4$ and the rosin or rosin composition $a^5$ held in said recesses, as and for the purposes described.

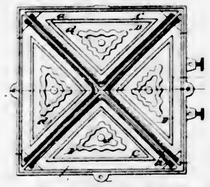


## 530,484. STOVEPIPE-FASTENER. JOSHUA A. HADLEY, Brazil, Ind., assignor of one-half to Thomas C. Smith, same place. Filed Apr. 25, 1894. Serial No. 508,950. (No model.)



*Claim.*—As an improved article a stove pipe fastener comprising the two plates adjustably connected together, one of which has its end beveled and turned or bent at an angle forming a hook, while the other near its free end is bent upwardly and downwardly forming a stop, and its extremity beveled and bent or turned at an angle forming a pointed lug, substantially as specified.

## 530,485. PRIMARY BATTERY. CHARLES J. HUBBELL, New York, N. Y., assignor to J. J. Darlington, trustee, Washington, D. C. Filed Apr. 30, 1894. Serial No. 509,441. (No model.)



*Claim.*—1. A primary battery having a positive element provided with two terminal projections, and two negative terminals embedded in the battery casing and terminating in exposed contacts located within the battery casing and below the upper edge of said positive element, and having each a separable contact with one of said terminal projections, substantially as specified.

2. A primary battery, having two negative terminals embedded in the battery casing with exposed contacts located below the upper edge of the positive element, and a positive element having two contact projections at its upper portion arranged to rest upon the exposed portions of said negative terminals, substantially as specified.

3. In a primary battery the combination with the casing provided with inwardly extending ribs, of the terminals embedded in said ribs, and having exposed ends, and the zinc plate having two projections, each contacting with one terminal at its exposed end, substantially as set forth.

4. In a primary battery, a positive plate having a contact projection thereon, and a negative terminal terminating in an exposed contact cup to receive the end portion of said projection, said contact cup being below the upper edge of the positive plate, and an impervious covering for the contactiug parts whereby they are protected from the action of the electrolyte, substantially as specified.

5. In a primary battery, a zinc plate having two terminal projections, two negative terminals embedded in the walls of the battery casing and terminating in exposed contacts located within the battery casing, and below the upper edge of said zinc plate, and having each a separable contact with one of said terminal projections, and a carbon element having its terminal contact at the bottom, substantially as specified.

6. The combination with a primary battery having a cover and containing a porous cup, of a reservoir separate from said cover and secured to said cup independently of the cover, and communicating with said cup, and absorbent material in said reservoir, substantially as specified.

7. The combination with a primary battery, containing a porous cup, two generating elements and two solutions, one for each generating element, of a liquid-tight stopper covering the porous cup, said stopper having an oxidizing chamber therein communicating with the porous cup, said stopper being arranged to prevent the fumes from said cup coming in contact with the outer electrolyte of the battery, substantially as specified.

8. In a primary battery, the combination with a porous cup, of a stopper therefor having two communicating chambers, one of which opens into the cup, the other of said chambers having a filling of absorbent and oxidizing material, substantially as specified.

9. The combination with a primary battery having a porous cup, of a reservoir secured thereabove and having a receiving chamber for the fumes and a chamber for the absorbent agent, said chambers being communicating substantially as set forth.

10. The combination with a primary battery having a cover, of a two part reservoir, supplemental to the cover, having two concentric communicating chambers, one of which is charged with absorbent material and the other of which opens into the porous cup of the battery, substantially as set forth.

11. The combination with a primary battery of a reservoir above the electrolyte in the porous cup having two communicating chambers, one of which is tapering with an aperture in its apex leading into the other of said chambers, said other chamber being charged with absorbent material said tapering chamber opening into the porous cup of the battery, substantially as set forth.

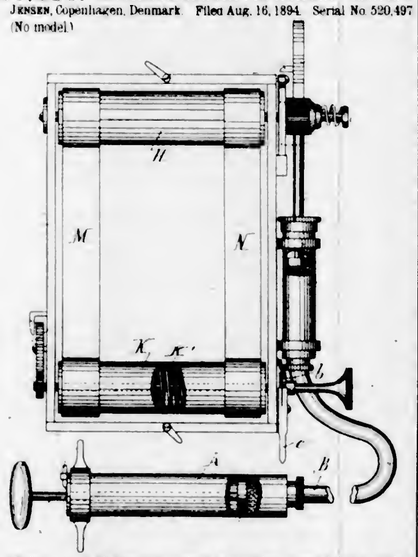
12. The combination with the casing having an aperture in its bottom of a porous cup having a recess in its bottom, a carbon having a boss fitting in said recess in said cup and a terminal passing through said aperture and secured in said boss, substantially as set forth.

13. A primary battery having a porous cup, a carbon secured in said cup and a coating of a suitable japan, such as a mixture of beeswax and asphalt, between the meeting surfaces of said carbon and cup said japan being baked substantially as specified.

14. A primary battery having a porous cup a carbon element secured in said cup, and suitable japan such as a mixture of asphalt and beeswax between the meeting faces of said carbon and cup and around the lower portion of the carbon said japan being baked to render it impervious to the attacks of the electrolyte and to prevent leakage and capillary action substantially as specified.

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530,486. **SHUTTER MECHANISM FOR CAMERAS.** THEODOR V. JENSEN, Copenhagen, Denmark. Filed Aug. 16, 1894. Serial No. 520,497. (No model.)




*Claim.*—1. A shutter operating mechanism comprising a spring actuated drum mechanism, having an operating clutch mechanism through which the drum mechanism is rotated against the action of its spring, mechanism for locking the drum mechanism when under tension and a fluid operated piston acting in its forward movement to rotate the drum mechanism through the clutch against the action of the spring and in its return movement to release the said locking mechanism and permit the drum mechanism to be actuated by its spring, substantially as described.

2. A shutter operating mechanism comprising a spring actuated drum mechanism, a gear wheel having a clutch mechanism connecting it with the drum mechanism to operate the latter against the action of the spring, a lever for locking the drum mechanism against the action of its spring, and a fluid operated piston having a rack to engage the gear in its outward movement and having a projection or lug which on the return movement of the piston acts on said lever and releases the drum mechanism for action by its spring, substantially as described.

3. A shutter operating mechanism for cameras, comprising two cylinders connected with each other by a flexible tube, the latter as well as the cylinders being filled with a liquid, pistons moving in the said cylinders, one being controlled by the operator and the other being provided on its piston rod with a rack, a gear wheel adapted to receive an intermittent rotary motion from the said rack, a drum adapted to be rotated by the said gear wheel in one direction, and a second spring pressed drum connected with the first named drum, both being connected with the shutter proper, substantially as shown and described.

4. A shutter operating mechanism for cameras, comprising two cylinders connected with each other by a flexible tube, the latter as well as the cylinders being filled with a liquid, pistons moving in the said cylinders, one being controlled by the operator and the other being provided on its piston rod with a rack, a gear wheel adapted to receive an intermittent rotary motion from the said rack, a drum adapted to be rotated by the said gear wheel in one direction, a second spring pressed drum connected with the first named drum, both being connected with the shutter proper, a pin held on the shaft of the first named drum and adapted to engage notches in the hub of the said gear wheel, and a spring pressed locking lever for the said pin and adapted to be actuated by a lug on the said rack, substantially as shown and described.

5. A shutter operating mechanism for cameras, comprising two cylinders connected with each other by a flexible tube, the latter as well as the cylinders being filled with a liquid, pistons moving in the said cylinders, one being controlled by the operator and the other being provided on its piston rod with a rack, a gear wheel adapted to receive an intermittent rotary motion from the said rack, a drum adapted to be rotated by the said gear wheel in one direction, a second spring pressed drum connected with the first named drum, both being connected with the shutter proper, and means for regulating the tension of the springs in the said second drum, substantially as shown and described.

6. A shutter operating mechanism for cameras, comprising two cylinders connected with each other by a flexible tube, the latter as well as the cylinders being filled with a liquid, pistons moving in the said cylinders, one being controlled by the operator and the other being provided on its piston rod with a rack, a gear wheel adapted to receive an intermittent rotary motion from the said rack, a drum adapted to be rotated by the said gear wheel in one direction, a second spring pressed drum connected with the first named drum, both being connected with the shutter proper, and a device for indicating the tension of the spring in the said drum, substantially as shown and described.

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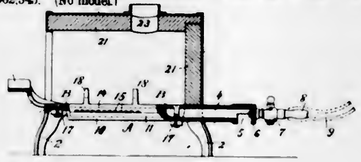
530,487. **ANIMAL-RELEASING DEVICE.** HANS LARSEN, Newell, Iowa, assignor of one-half to H. P. Jensen, same place. Filed Apr. 12, 1894. Serial No. 507,280. (No model.)



*Claim.*—The combination with upper and lower stanchion-bars, of a chain permanently secured at its lower end to the lower bar, a spring actuated bolt mounted upon the upper bar and adapted to engage a ring on the upper extremity of said chain, and a second chain permanently secured at its upper end to the upper bar and provided at its lower end and at an intermediate point with rings which are slidably fitted upon the first chain, substantially as specified.

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530,488. **SOLDERING-IRON FURNACE AND GAS-HEATER.** JOSEPH B. LAURENT, New York, N. Y. Filed Mar. 5, 1894. Serial No. 502,345. (No model.)





*Claim.*—1. A furnace or heater of the character described, having a base portion formed in two parts or castings, one part having integral therewith the outer portion of the mixing chamber and the inner forked or branched portions of said chamber which are separated by an air inlet opening; the other part of said base forming a cap to said branched portions of the mixing chamber and having a central opening and an integrally formed support for the handle of a soldering iron; burner flame apertures being provided along opposing walls of the side portions of the mixing chamber, substantially as described.

2. A furnace or heater of the character described, having a base portion formed in two parts or castings, one part having integral therewith the supporting legs, the outer portion of the mixing chamber, and the inner forked or branched portions of said chamber which are separated by an air inlet opening; the other part of said base forming a cap to said branched portions of the mixing chamber and having a central opening and an integrally formed support for the handle of a soldering iron, burner flame apertures being provided along opposing walls of the side portions of the mixing chamber, substantially as described.

3. A furnace or heater of the character described, having a base portion formed in two parts or castings, one part having integral therewith the outer portion of the mixing chamber and the inner forked or branched portions of said chamber which are separated by an air inlet opening the other part of said base forming a cap to said branched portions of the mixing chamber and having a central opening and an integrally formed support for the handle of a soldering iron, and also having integral studs projecting within the furnace casing to support the point of a soldering iron; burner flame apertures being provided along opposing walls of the side portions of the mixing chamber, substantially as described.

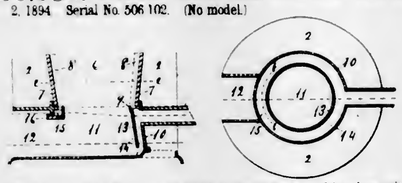
4. In a furnace or heater of the character described, the base formed of two parts, one part having integral therewith the legs 2, the tubular stem 4 and the branches 10, 10, of the burner mixing chamber; and also having air inlet opening 11; and the other part forming a cap to said branches 10, 10, and having an air inlet opening 14, and an integral tool support 20; burner flame apertures being provided at the joint between the two parts, substantially as described.

5. In a furnace or heater of the character described, the base formed of two parts A, B, the part A, having opening 11, integral legs 2, and the tubular stem 4, 5, and branches 10, 10, of the burner mixing chamber, and the part B, having opening 14, and integral tool supports 18, 20, flame apertures 15, 15, being provided at the joint of the parts A, B, substantially as described.

6. In a furnace or heater of the character described, the base formed of two parts A, B; the part A, having opening 11, and recess 12, and also having integral legs 2, and tubular stem 4, 5, and open-topped branches 10, 10, of the burner mixing chamber; and the part B, having opening 14, and integral tool supports 18, 20; flame apertures 15, 15 being provided at the joint of the parts A, B, substantially as described.

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530,489. **FURNACE.** GEORGE MAAG, Akron, Ohio. Filed Apr. 2, 1894. Serial No. 506,102. (No model.)



*Claim.*—1. In a furnace or similar object the combination, with a fire-pot having cells 8, and an ash-pit underneath, the wall of which is provided on its upper edge with a flange 9, having openings which register with cells, and which is further provided with a tube 17; of a shield 13 extending from the inner edge of flange 9 to within a short distance of ash-pit bottom, and from one ash pit entrance wall around ashpit to the other, forming a chamber 14 which is in communication with the outer air, with the cells 8, with the ashpit, and with the chamber 15, for the purpose herein set forth.

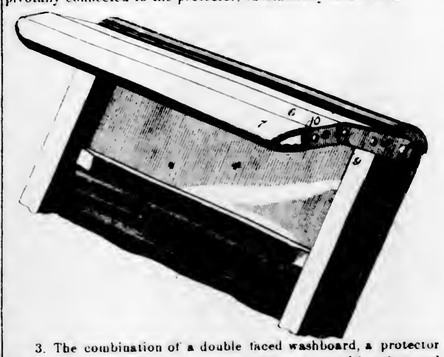
2. In a furnace or similar object, the combination, with a fire-pot having cells 8, and an ashpit underneath within which is a chamber 14 of a chamber 15 across the top of ashpit entrance, which is in communication with cells 8, and chamber 14, and is provided with a movable bottom plate 16, for the purpose herein set forth.

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530,490. **WASHBOARD.** MORGAN R. MILLER, Pittsburg, Pa., assignor to the American Washboard Company, Cleveland, Ohio. Filed May 15, 1894. Serial No. 511,332. (No model.)

*Claim.*—1. A protector for washboards having in combination therewith a movable auxiliary member having a yielding connection with the outer edge of the protector, substantially as set forth.

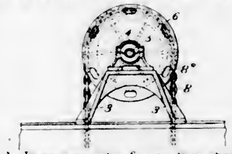
2. A protector for washboards having in combination therewith an auxiliary member formed of rigid material in one or more sections pivotally connected to the protector, substantially as set forth.



3. The combination of a double faced washboard, a protector constructed to be shifted to operative position above either face, and an auxiliary member pivotally connected to the protector and adapted to project downwardly when the protector is above either face of the washboard, substantially as set forth.

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530,491. **GALVANIZING APPARATUS.** GEORGE G. MCMURTRY, Allegheny, assignor to the Apollo Iron and Steel Company, Pittsburg, Pa. Filed May 2, 1894. Serial No. 509,803. (No model.)

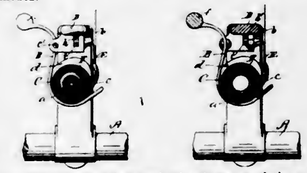


*Claim.*—1. In an apparatus for coating sheets, &c., the combination of a pot, feed mechanism arranged within the pot, mechanism for driving the feed mechanism arranged partly within and partly without the pot, and means for preventing the solidification of the molten metal on the portions of the feed mechanism without the pot, substantially as set forth.

2. In an apparatus for coating sheets, &c., the combination of a pot, feed rolls arranged within the pot, a hollow driving wheel, means for transmitting motion from said wheel to the feed rolls, and a gas pipe entering the driving wheel, substantially as set forth.

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530,492. **BOBBIN-HOLDER FOR SPOOLING-MACHINES.** NICHOLAS H. EASTON, Central Falls, assignor to the Easton & Burnham Machine Company, Pawtucket, R. I. Filed Aug. 28, 1894. Serial No. 521,506. (No model.)



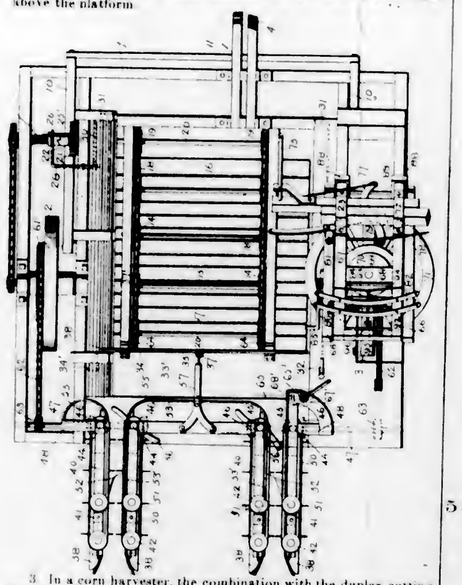
*Claim.*—The combination with the frame, and the counter-balanced pivoted cradle for holding the bobbin, of the gravitating tension arm adapted to swing with the cradle, and have an up and down movement, caused by the tension of the yarn from the bobbin, substantially as described.

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530,493. **CORN-HARVESTER.** JOHN H. HEWELL, Urbana, Ohio. Filed Sept. 6, 1893. Serial No. 484,940. (No model.)

*Claim.*—1. In a corn harvester, the combination with the cutting mechanism, of an apron adapted to move a predetermined distance, an abutment carried by the said apron, a platform arranged on the apron in front of the abutment and on which the severed stalks are adapted to rest, a shocker, and mechanism for arresting the motion of the apron opposite the shocker.

2. In a corn harvester, the combination with duplex cutting mechanism, of an apron, an abutment carried thereby, a platform arranged on the apron in front of the abutment, and a divider-arm arranged above the platform.



3. In a corn harvester, the combination with the duplex cutting mechanism, of a series of shields through which the feeding mechanism projects, an apron arranged contiguous to the ends of the shields, a divider-arm arranged above the shields, and an abutment carried by the apron.

4. In a corn harvester, the combination with the duplex cutting mechanism comprising a series of feeder arms, one series of which is arranged in advance of the other, a stationary knife and rotary packing arms co-acting with the rear portion of the feeder arms, of a series of shields through which the feeding mechanism projects, a reciprocating apron arranged contiguous to the ends of the shields, a divider arm arranged above the shields, and an abutment carried by the apron.

5. In a corn harvester, the combination with the cutting mechanism and the apron, of a platform provided with a track, a frame pivoted to the platform and having rollers bearing upon the track, a second frame pivotally connected with the pivoted frame and having laterally movable compressor arms and mechanism for opening and closing the same, and mechanism for adjusting the second frame vertically and for tilting it to the desired point.

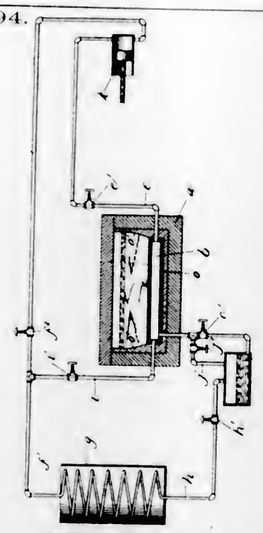
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**530,494. APPARATUS FOR MAKING ICE.** WILLIAM L. CHURCH, Newton, and SIDNEY A. REEVE, Boston, Mass., assignors to the Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Filed Jan. 25, 1894. Serial No. 498,011. (No model.)

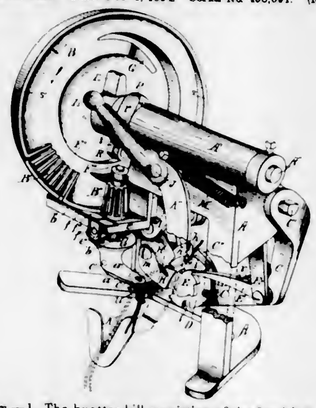
*Claim.*—1. In an ice making apparatus comprising a sweet-water receptacle, an ice generating bed therein, a volatile liquid receiver, the lower portion of which is connected with said bed by a pipe having a shut off valve, whereby the passage of said liquid to the bed may be prevented, a condenser connected with both the bed and receiver, and a compressor adapted to draw gas from the bed and force it under pressure into the condenser, the described improvement consisting in a shut-off device to prevent the escape or removal of gas from the bed, a closable connection or by pass between the bed and a gas-containing portion of the apparatus, whereby gas or vapor at a relatively high pressure and temperature may be admitted to the bed to be condensed therein by the ice on the bed, combined with means for the drainage of the liquid of condensation from the bed into the receiver.

2. An ice making apparatus comprising a generating bed, a volatile liquid receiver below said bed, a closable connection between said bed and the lower or liquid-holding portion of the receiver, whereby the liquid may be conducted from the receiver to the bed, and a closable connection between the bed and the upper portion of the receiver, whereby liquid condensed in the bed may be returned to the receiver.

**530,494.**



**530,495. KNOTTER MECHANISM FOR GRAIN-BINDERS.** MANFORD F. FAIRBANK and JOSEPH R. MEACH, Ogden Centre, Mich., assignors of one-half to Thomas Measures, same place, and Davies Brown, Seward, Ohio. Filed Feb. 1, 1894. Serial No. 498,691. (No model.)



*Claim.*—1. The knotter-bill consisting of the fixed jaw on a revoluble spindle, the movable jaw pivoted thereto and having the circular table through which said stem passes freely said table having an inclined plane, and the roller adjacent to said table.

2. In a knotter mechanism, the knotter-bill consisting of the fixed jaw on a revoluble spindle and having an extending tooth, the movable jaw pivoted thereto provided with a recess to receive said tooth and having a circular table surrounding said spindle which passes freely therethrough, a portion of the surface of said table extending above the plane thereof, and the roller adjacent to said table.

3. In a knot tying mechanism, the bill consisting of the fixed jaw on a revoluble spindle, the movable jaw pivoted thereto and having a circular table, a portion of whose surface is raised above the plane thereof and which surrounds said spindle, and the depending spring restrained roller standing contiguous to the surface of said table.

4. In a knot tying mechanism, the combination of the knotter, the hinged frame adapted to swing toward and away from said knotter and carrying the cord holder and cord cutting mechanism consisting of the rotary gripper disk seated against a plate between which and said plate the cord is confined, the fixed knife secured adjacent to the face of said disk and crossing the plane of its periphery, the movable knife so located with respect to the fixed knife that the cord is carried between their cutting edges by said disk, said movable knife being so hinged as to shear by the edge of the fixed knife adjacent to the face of the disk and sever the cord as said frame swings toward said knotter.

5. The combination with the driving wheel, the curved guide arm adapted to be actuated by said wheel, the rock shaft on which said arm is mounted, the crank depending from said shaft, the twine gripping disk, and the fixed and pivoted knives adjacent thereto together with said disk mounted on a hinged frame and the link coupling said pivoted knife to said crank, in such manner as to enable said frame to swing freely substantially as set forth.

6. In a knotter, the combination of the swinging frame carrying the twine gripping mechanism and a fixed and pivoted knife, and having an arm extending therefrom the revoluble knotter-bill, the driving wheel having a cam on the hub thereof which engages said arm and causes said frame to swing inward toward the knotter-bill as the twine winds thereon, said wheel having an incline on its face that actuates a crank to which is loosely attached a link that is pivoted to the pivoted knife and operates said knife to sever the twine, substantially as set forth.



# DESIGNS.

**23,827. SCARF-PIN.** GEORGE F. GREENE, Providence, R. I. Filed Oct. 31, 1894. Serial No. 527,584. Term of patent 3½ years.



*Claim.*—The design for a scarf pin herein shown and described.

**23,828. SCARF-PIN.** GEORGE F. GREENE, Providence, R. I. Filed Oct. 31, 1894. Serial No. 527,583. Term of patent 3½ years.



*Claim.*—The design for a scarf-pin herein shown and described.

**23,829. SCARF-PIN.** GEORGE F. GREENE, Providence, R. I. Filed Oct. 31, 1894. Serial No. 527,582. Term of patent 3½ years.



*Claim.*—The design for a scarf-pin herein shown and described.

**23,830. BADGE.** WILLIAM H. BACH, St. Paul, Minn. Filed Apr. 16, 1894. Serial No. 507,772. Term of patent 7 years.



*Claim.*—The design for a badge as herein described and shown.

**23,831. BADGE.** WILLIAM H. WALSH, New York, N. Y. Filed Oct. 25, 1894. Serial No. 526,982. Term of patent 14 years.



*Claim.*—The design for a badge as herein shown and described.

**23,832. BADGE.** BENJAMIN S. WHITEHEAD, Newark, N. J. Filed June 30, 1894. Serial No. 516,236. Term of patent 7 years.



*Claim.*—The design for a badge, as herein shown and described.

**23,833. SPOON, &c.** GEORGE W. SHIEBLER, Brooklyn, N. Y. Filed Sept. 22, 1894. Serial No. 523,641. Term of patent 7 years.



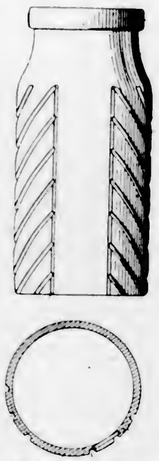
*Claim.*—1. The design for the handle of a spoon or fork herein shown and described.

2. In the design for the handle of a spoon or fork herein shown and described, the design of the obverse side of the handle as set forth.

3. In the design for the handle of a spoon or fork herein shown and described, the design of the reverse side of the handle as set forth.

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23,834. BOTTLE. HENRY WILLIAMS, Detroit, Mich., assignor to Williams Bros. & Charbonneau, same place. Filed Sept. 18, 1894. Serial No. 523,416. Term of patent 7 years.



*Claim.*—The design for a bottle, substantially as shown and described.

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23,835. WOVEN FABRIC. JOHN B. MORGAN, Philadelphia, Pa. Filed Oct. 29, 1894. Serial No. 527,355. Term of patent 7 years.



*Claim.*—The design for woven fabric as herein described and clearly shown in the accompanying drawing.

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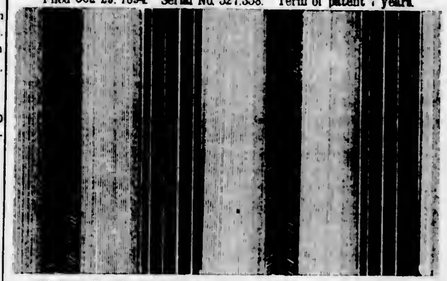
23,836. WOVEN FABRIC. JOHN B. MORGAN, Philadelphia, Pa. Filed Oct. 29, 1894. Serial No. 527,359. Term of patent 7 years.



*Claim.*—The design for woven fabric as herein described and clearly shown in the accompanying drawing.

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23,837. WOVEN FABRIC. JOHN B. MORGAN, Philadelphia, Pa. Filed Oct. 29, 1894. Serial No. 527,358. Term of patent 7 years.



*Claim.*—The design for ticking or other fabric as herein described and illustrated in the accompanying drawing.

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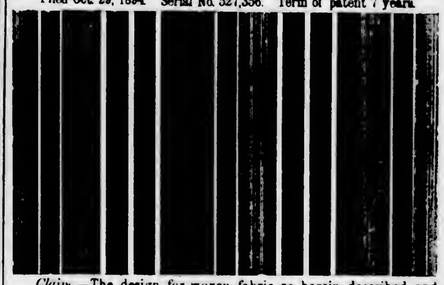
23,838. WOVEN FABRIC. JOHN B. MORGAN, Philadelphia, Pa. Filed Oct. 29, 1894. Serial No. 527,357. Term of patent 7 years.



*Claim.*—The design for woven fabric as herein described and clearly illustrated in the accompanying drawing.

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23,839. WOVEN FABRIC. JOHN B. MORGAN, Philadelphia, Pa. Filed Oct. 29, 1894. Serial No. 527,356. Term of patent 7 years.



*Claim.*—The design for woven fabric as herein described and clearly shown in the accompanying drawing.

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23,840. WOVEN FABRIC. JOHN B. MORGAN, Philadelphia, Pa. Filed Oct. 29, 1894. Serial No. 527,360. Term of patent 7 years.



*Claim.*—The design for ticking or other woven fabric as herein described and shown in the accompanying drawing.



23,841. CARPET. EMIL G. SAUER, Brooklyn, N. Y., assignor to the Lowell Manufacturing Company, Boston, Mass. Filed Oct. 24, 1894. Serial No. 526,874. Term of patent 3½ years.



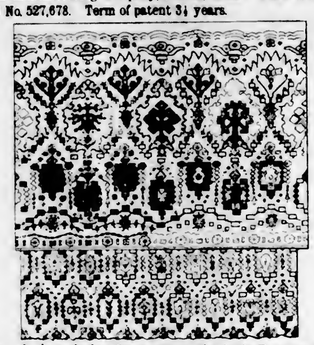
*Claim.*—1. In a design for a carpet, the body A substantially as shown.

2. In a design for a carpet, the border B, substantially as shown.

3. The design for a carpet, consisting of body A, and border B substantially as shown.

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23,842. CARPET. EMIL G. SAUER, Brooklyn, N. Y., assignor to the Lowell Manufacturing Company, Boston, Mass. Filed Nov. 1, 1894. Serial No. 527,678. Term of patent 3½ years.



*Claim.*—1. In a design for a carpet, the body B, substantially as shown.

2. In a design for a carpet, the border A, substantially as shown.

3. The design for a carpet, consisting of body B, and border A, substantially as shown.

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23,843. CARPET. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 29, 1894. Serial No. 527,378. Term of patent 3½ years.



*Claim.*—The design for carpets, substantially as shown in the illustration accompanying this specification.

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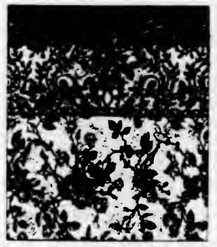
23,844. CARPET. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 29, 1894. Serial No. 527,374. Term of patent 3½ years.



*Claim.*—The design for carpets, substantially as shown in the illustration accompanying this specification.

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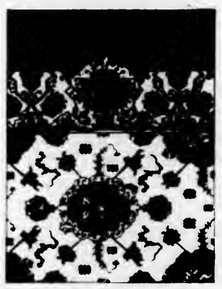
23,845. CARPET. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 29, 1894. Serial No. 527,375. Term of patent 3½ years.



*Claim.*—The design for carpets, substantially as shown in the illustration accompanying this specification.

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23,846. CARPET. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 29, 1894. Serial No. 527,377. Term of patent 3½ years.



*Claim.*—The design for carpets, substantially as shown in the illustration accompanying this specification.

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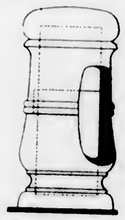
23,847. CARPET. CHARLES FREDERICK GREWEY, Brooklyn, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 29, 1894. Serial No. 527,379. Term of patent 3½ years.

23,847.



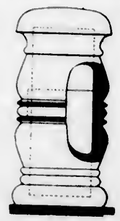
*Claim.*—The design for carpets substantially as shown in the illustration accompanying this specification.

23,848. BOX. FREDERICK J. EDGARS, Brooklyn, N. Y. Filed Oct. 31, 1894. Serial No. 527,587. Term of patent 7 years.



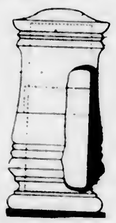
*Claim.*—The design for a wooden box substantially as shown and described

23,849. BOX. FREDERICK J. EDGARS, Brooklyn, N. Y. Filed Oct. 31, 1894. Serial No. 527,588. Term of patent 7 years.



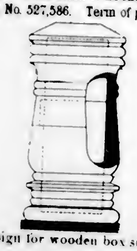
*Claim.*—The design for a wooden box substantially as shown and described.

23,850. BOX. FREDERICK J. EDGARS, Brooklyn, N. Y. Filed Oct 31, 1894. Serial No. 527,589. Term of patent 7 years.



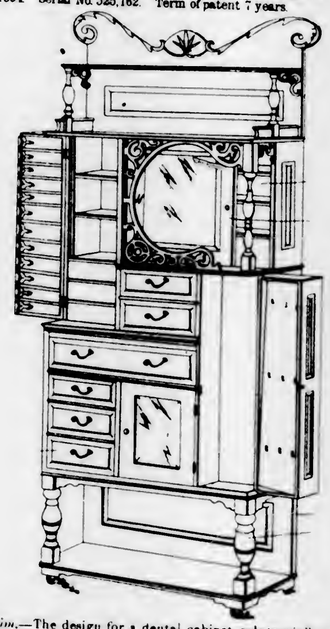
*Claim.*—The design for a wooden box substantially as shown and described

23,851. BOX. FREDERICK J. EDGARS, Brooklyn, N. Y. Filed Oct. 31, 1894. Serial No. 527,586. Term of patent 7 years.



*Claim.*—The design for wooden box substantially as shown and described.

23,852. DENTAL CABINET. WILLIAM G. HULLHORST, Toledo, Ohio, assignor to the Ransom & Randolph Company, same place. Filed Oct. 6, 1894. Serial No. 525,162. Term of patent 7 years.



*Claim.*—The design for a dental cabinet substantially as shown and described.

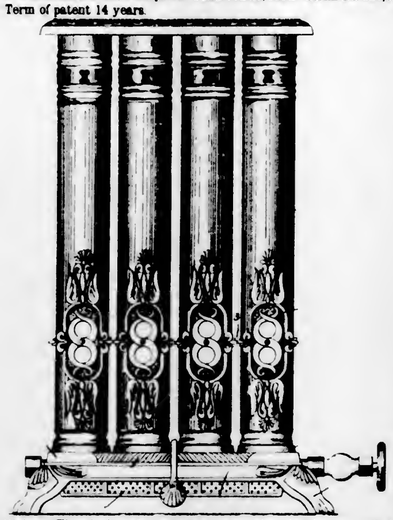
23,853. PICTURE-FRAME. RUDOLPH LIEBMANN, New York, N. Y. Filed Nov. 1, 1894. Serial No. 527,676. Term of patent 3½ years.



*Claim.*—The design for picture and analogous frames, substantially as herein shown and described.

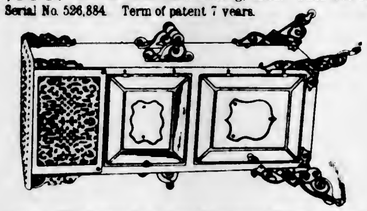


23,854. GAS-STOVE. LAZARD KAHN, Hamilton, Ohio, assignor to F. & L. Kahn & Bros., same place. Filed Oct. 29, 1894. Serial No. 527,351. Term of patent 14 years.



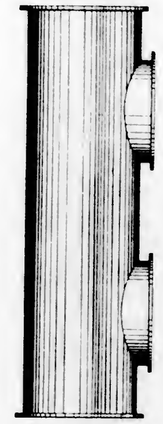
*Claim.*—The design for a gas-stove as herein shown and described.

23,855. STOVE. LEE PECK, Lansing, Mich. Filed Oct. 24, 1894. Serial No. 526,884. Term of patent 7 years.



*Claim.*—The design for a stove, substantially as shown and described.

23,856. LATRINE. FRANCIS J. TORRANCE, Allegheny, Pa. Filed Sept. 12, 1893. Serial No. 485,364. Term of patent 14 years.





*Claim.*—The design for a latrine joint substantially as described and as shown in the accompanying drawings.

# TRADE-MARKS

## REGISTERED DECEMBER 4, 1894.

25,557. RIBBONS. ABEGG & KUSCH, New York, N. Y. Filed Oct 6, 1894.



*Essential feature.*—The representation of a helmeted female figure having a trident in one hand while the other hand rests on a wheel adjacent to the figure. Used since January 1, 1892.

25,558. RIBBONS. R. & H ADAMS, New York, N. Y. Filed Oct 19, 1894.




*Essential feature.*—The words "HAMILTON MILLS," and a circle or ring inclosing said words. Used since June 1, 1880.

25,559. TISSUES AND RIBBONS. FRANCISQUE VOLAND & Co., Lyons, France. Filed Aug. 22, 1894.



*Essential feature.*—A representation of the pinions of a bird, and a battle ax in front of the same. Used since May 26, 1894.

25,560. SERGES. EGERTON BURNETT, Wellington, England. Filed Oct. 6, 1894. Registered in England Jan. 29, 1885, No. 42,411.

Egerton Burnett's Royal EB Serges

*Essential feature.*—The words "EGERTON BURNETT'S ROYAL SERGES," the initials "E. B." and device of an anchor. Used since 1885.

25,561. HOSIERY. TAYLOR, SON & Co., Pittsburg, Pa. Filed Oct. 29, 1894.

MONOGRAM

*Essential feature.*—The word "MONOGRAM." Used since January, 1882.

25,562. GLOVES AND MITTENS. TAYLOR, SON & Co., Pittsburg, Pa. Filed Oct. 29, 1894.

IRON CITY

*Essential feature.*—The words "IRON CITY." Used since April, 1863.

25,563. OVER AND DRESS SHIRTS. TAYLOR, SON & Co., Pittsburg, Pa. Filed Oct. 29, 1894.

DUQUESNE

*Essential feature.*—The word "DUQUESNE." Used since October, 1886.

25,564. MEN'S OUTER CLOTHING. FRANK L. DUNNE, Boston, Mass. Filed Oct. 1, 1894.



*Essential feature.*—A representation of the head of a merino ram upon a shield, the ends of the horns extending beyond said shield. Used since December, 1893.

25,565. TAILORING WEARING-APPAREL FOR MEN AND BOYS. SCHLOSS BROS. & Co., Baltimore, Md. Filed Oct. 23, 1894.




*Essential feature.*—The words "THE HARVARD" and representation of a heraldic shield upon the surface of which are displayed three open books, together inscribed with the word "VERITAS." Used since May 1, 1894.

25,566. SOFT AND STIFF FUR-FELT HATS FOR MEN AND BOYS. FRANK SCHOBLE & Co., Philadelphia, Pa. Filed Sept. 11, 1894.




*Essential feature.*—The word "WARBURTON." Used since June 1, 1894.

25,567. RUBBER BELTING, PACKING, AND HOSE, AND RUBBER FOOTWEAR AND WEARING-APPAREL. HARRY E. WAGONER, St. Louis, Mo. Filed Oct. 29, 1894.




*Essential feature.*—The representation of a cat in a standing position in connection with the words "HOO-HOO." Used since October 15, 1894.



25,568. ALUMINUM-GOLD KNIVES, FORKS, SPOONS, FLAT AND TABLE WARE. THE WALDO FOUNDRY, Bridgeport, Conn. Filed Oct. 29, 1894.




*Essential feature.*—The representation of a griffin's head erased and the word "WALDO." Used since September 1, 1894.

25,569. CLOCKS. WM. L. GILBERT CLOCK COMPANY, Winsted, Conn., Chicago, Ill. and New York, N. Y. Filed Oct. 22, 1894.

Wake-Up

*Essential feature.*—The compound word "WAKE-UP." Used since July 1, 1882.

25,570. BICYCLES. EVERETT B. PRESTON, Chicago, Ill. Filed Oct. 29, 1894.

CZAR

*Essential feature.*—The word "CZAR." Used since June 1, 1894.

25,571. LADIES' BICYCLES. EVERETT B. PRESTON, Chicago, Ill. Filed Oct. 29, 1894.

CZARINA

*Essential feature.*—The word "CZARINA." Used since June 1, 1894.

25,572. CRYSTALLINE PICTURES. ALFRED VON COTZHAUSEN, Milwaukee, Wis. Filed Oct. 30, 1894.

CRYSTALLOPHY.

*Essential feature.*—The word "CRYSTALLOPHY." Used since July, 1894.

25,573. CIGARETTE-WRAPPERS MADE OF WHEAT-STRAW. SOCIÉTÉ ANONYME D'EXPLOITATION DES PAPETERIES, L. LACROIX FILS Angoulême, France. Filed Sept. 5, 1894.



*Essential feature.*—A device representing several heads of wheat straw tied together with a ribbon, upon the knot of which are several rings inclosing a star. Used since August 24, 1893.

25,574. BINDING-TWINE. WALTER A. WOOD HARVESTER COMPANY, St. Paul, Minn. Filed Apr. 25, 1894.



*Essential feature.*—The representation of a loop or band of twine or rope having its ends tied together by a knot such as is formed by a self-binder. Used since April 1, 1894.

25,575. ANTISPEPTIC AND GERMICIDAL PREPARATION. FREDERICK WILLIAM RUDOLPH ESCHMANN, Yonkers, N. Y. Filed Oct. 20, 1894.

BOROLYPTOL

*Essential feature.*—The word "BOROLYPTOL." Used since December 15, 1893.

25,576. REMEDY FOR CATARRH. DOCTOR FELTAN SMITH, Looney, Tex. Filed Oct. 25, 1894.



*Essential feature.*—A portrait of Dr. D. F. Smith. Used since September 24, 1894.

25,577. REMEDIES FOR CATARRH AND SIMILAR DISEASES. JOSHUA SPEAR, Boston, Mass. Filed Oct. 29, 1894.

NAZONE

*Essential feature.*—The word "NAZONE." Used since October 1, 1894.

25,578. TONIC. FREDERICK WILLIAM RUDOLPH ESCHMANN, Yonkers, N. Y. Filed Oct. 24, 1894.

Kola Cardinette

*Essential feature.*—The words "KOLA CARDINETTE." Used since July 15, 1894.

25,579. COUGH LOZENGES. GEORGE J. BLOME, Baltimore, Md. Filed Oct. 12, 1894.

*Essential feature.*—The words "THE OLD HOMESTEAD." Used since October 5, 1894.

25,580. SMELLING-SALTS. ANDREW P. PRESTON, Portsmouth, N. H. Filed Oct. 29, 1894.




*Essential feature.*—The letters and word, "A. P. P. PORTSMOUTH." Used since September 15, 1894.

25,581. AERATED BEVERAGES. JOHN HEINEKERLING, Baltimore, Md. Filed Oct. 15, 1894.

CHALLENGE

*Essential feature.*—The word "CHALLENGE." Used since July 31, 1894.

25,582. DISINFECTING AND DEODORIZING PREPARATIONS. THE ODOL COMPANY, New York, N. Y. Filed Oct. 29, 1894.

Odol

*Essential feature.*—The word "ODOL." Used since October 1, 1894.

25,583. LEATHER-DRESSING. JAS. S. MASON COMPANY, Philadelphia, Pa. Filed Oct. 17, 1894.

MASON'S CHALLENGE BLACK PASTE

*Essential feature.*—The words "MASON'S CHALLENGE BLACK PASTE" arranged in a curve on a scroll surrounding a circular panel bearing a picture. Used since June 1, 1894.

25,584. WHISKY. ADOLPH REINERT, St. Louis, Mo. Filed Oct. 22, 1894.

The Derby

WINNER

*Essential feature.*—The words "THE DERBY WINNER." Used since May 1, 1894.

25,585. WHISKY. D. A. RHIND & CO., Leith, Scotland. Filed Feb. 20, 1893.

IVANHOE

*Essential feature.*—The word "IVANHOE." Used since December, 1875.

25,586. BEER. INDIANAPOLIS BREWING COMPANY, Indianapolis, Ind. Filed Apr. 20, 1894.

Tonica

*Essential feature.*—The word "TONICA." Used since December 12, 1893.

25,587. LAGER-BEER. JOSEPH FALLERT BREWING COMPANY, LIMITED, Brooklyn, N. Y. Filed Oct. 26, 1894.



*Essential feature.*—The representation of a ring crossed by a dart. Used since April 2, 1887.

25,588. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

SLEDGE

*Essential feature.*—The word "SLEDGE." Used since May 1, 1894.

25,589. LAUNDRY SOAP. IOWA SOAP COMPANY, Burlington, Iowa. Filed Oct. 3, 1894.

MAGICWASHER

*Essential feature.*—The word "MAGICWASHER." Used since March, 1894.

25,590. LAUNDRY AND TOILET SOAP. WABASH SOAP AND CHEMICAL COMPANY, Wabash, Ind. Filed Oct. 29, 1894.

HOOSIER

*Essential feature.*—The word "HOOSIER." Used since September 1, 1894.

25,591. CANDIES, CONSERVES, CONFECTIONS, COUGH DROPS, AND CHEWING-GUM. MULL & UNDERWOOD, Dayton, Ohio. Filed Oct. 13, 1894.



*Essential feature.*—A representation of a small boy and a girl seated on a stick of candy, which is mounted on a support, as in the act of playing see-saw. Used since November, 1880.

25,592. CAKES, BISCUITS, BREAD, AND CONFECTIONERY. MCVITIE & PRICE, Edinburgh, Scotland. Filed Oct. 6, 1894.



STAGS HEAD

*Essential feature.*—The words "STAGS HEAD" and device of a stag's head. Used since January 1, 1894.

25,593. BREAD. FREDERICK WESTERMAN, Chicago, Ill. Filed Oct. 9, 1894.

Malto-Peptine

*Essential feature.*—The compound word "MALTO-PEPTINE." Used since July, 1894.

25,594. TEA. JAMES BUTLER, New York, N. Y. Filed Nov. 12, 1894.

XLNT

*Essential feature.*—The letters "X L N T." Used since Oct. 11, 1894.



25,595. TEA, COFFEE, AND SPICES. WILLIAM MCMURRAY, St. Paul, and Minneapolis, Minn. Filed Oct. 22, 1894.

OLD COUNTRY.

*Essential feature.*—The words "OLD COUNTRY." Used since June 1, 1891.

25,596. WHEAT-STARCH. THE CRYSTAL SPRINGS MANUFACTURING COMPANY, Watertown, Mass. Filed Oct. 29, 1894.

SPEARE'S BRAND

*Essential feature.*—The word "SPEARE'S BRAND" and the representation of a spear. Used since July 1, 1892.

25,597. HAMS, BACON, AND LARD. SWIFT PROVISION CO., Baltimore, Md. Filed July 30, 1894.

SWIFT'S

CHESAPEAKE

*Essential feature.*—The words "SWIFT'S CHESAPEAKE." Used since March 1, 1894.

25,598. HAMS, BACON, AND LARD. SWIFT PROVISION CO., Baltimore, Md. Filed July 30, 1894.

ORIOLE

*Essential feature.*—The word "ORIOLE." Used since March 1, 1894.

25,599. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

NAUTILUS

*Essential feature.*—The word "NAUTILUS." Used since May 1, 1894.

25,600. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

SCROLL

*Essential feature.*—The word "SCROLL." Used since May 1, 1889.

25,601. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

HUME'S KARLUK

*Essential feature.*—The words "HUME'S KARLUK." Used since May 1, 1889.

25,602. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

NAHA BAY BRAND



*Essential feature.*—The representation of a bay or inlet with high snow covered peaks upon each side, and with a lodge and figures in the foreground and the words "NAHA BAY BRAND." Used since May 1, 1888.

25,603. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.



*Essential feature.*—A seal or disk bearing a fish-tail flag at its center with the letter "A" near the flag-staff. Used since November 16, 1893.

25,604. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

KEARSARGE

*Essential feature.*—The word "KEARSARGE." Used since May 1, 1894.

25,605. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

LION



*Essential feature.*—The word "LION" and a pictorial representation of a lion's head. Used since May 1, 1890.

25,606. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

MOUNT WRANGELL



*Essential feature.*—The words "MOUNT WRANGELL" and a pictorial representation of the mountain with smoke or vapor issuing from the top. Used since May 1, 1888.

25,607. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

EDDYSTONE

*Essential feature.*—The word "EDDYSTONE." Used since May 1, 1890.

25,608. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

COOK'S INLET BRAND

*Essential feature.*—The pictorial representation of a circular seal and swallow tail flag and the words "COOK'S INLET BRAND." Used since May 1, 1882.

25,609. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

Boss

*Essential feature.*—The word "BOSS." Used since May 1, 1886.

25,610. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

PREMIER

*Essential feature.*—The word "PREMIER." Used since May 1 1889.

25,611. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.




*Essential feature.*—The representation of the intertwined segmental scrolls and scroll sheet, and the words "CLARENCE STRAITS BRAND." Used since May 1, 1889.

25,612. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.




*Essential feature.*—The representation of a point of rocks projecting into a sheet of water, and the words "ROCKY POINT." Used since May 1, 1889.

25,613. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

CREST

*Essential feature.*—The word "CREST." Used since May 1, 1892.

25,614. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

GUARDIAN

*Essential feature.*—The word "GUARDIAN." Used since May 1, 1889.

25,615. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.




*Essential feature.*—The representation of a rocky point with waves dashing against it, and the words "CAPE KARLUK." Used since May 1, 1889.

25,616. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894



*Essential feature.*—The words "OUR TASTE" and a pictorial representation of persons at table. Used since May 1, 1889.

25,617. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

ICEBERG

*Essential feature.*—The word "ICEBERG." Used since May 1. 1889.

25,618. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

ARCTIC

*Essential feature.*—The word "ARCTIC." Used since May 1. 1884.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## DECISIONS OF THE U. S. COURTS.

### Supreme Court of the United States.

OLIN *et al. v.* TIMKEN.

*Decided November* 19, 1894.

1. TIMKEN—CARRIAGE SPRING—LACK OF INVENTION—VOID.
   Patent No. 197,689, issued November 27, 1877, to Henry Timken, for an improvement in carriage-springs, *Held* to be void for want of invention, the device therein secured involving, in view of the prior art, nothing more than mechanical skill.
2. SAME—PATENTABILITY—POPULARITY AND LARGE SALES OF PATENTED ARTICLE NOT IMPORTANT WHEN IT IS WITHOUT PATENTABLE NOVELTY.
   While the patented article may have been popular and met with large sales, *Held* those facts are not important when the alleged invention is without patentable novelty. (Citing *Duer v. Lock Company*, 149 U. S., 216; 63 O. G., 1060.)
3. TILTON AND STIVERS—REISSUE—VEHICLE-SPRING—NEW MATTER—VOID.
   Reissue Patent No 9,542, dated January 25, 1881, of patent No. 157,430, to Tilton and Stivers, for springs for vehicles, *Held* to be void as introducing matter not in the original.
4. SAME—SAME—UNDUE EXPANSION BY THE WORD "PREFERABLY."
   Where the original patent made no reference to an alternative construction of the device wherein one of the elements might be omitted, while the reissue merely retains the said element, "preferably," as another form of the device, *Held* that the effect of the insertion of the word "preferably" was to render this element non-essential and unduly to expand the original.
5. SALADEE—ROAD-WAGON—ANTICIPATED—VOID.
   Patent No 239,850, issued April 5, 1881, to C. W. Saladee, for an improvement in road-wagons, *Held* to be void as anticipated in view of the state of the art.

APPEAL from the Circuit Court of the United States for the Southern District of Ohio.

STATEMENT OF THE CASE.

This was a bill in equity, filed by Henry Timken in the Circuit Court of the United States for the Southern District of Ohio against Thomas D. Olin and Edwin D. Olin to restrain the infringement of three Letters Patent, namely, No. 197,689 granted to Henry Timken, November 27, 1877, for improvement in carriage-springs; No. 239,850 to C. W. Saladee, April 5, 1881, for road-wagon; Reissue Patent No. 9,542, granted January 25, 1881, being a reissue of Patent No. 157,430 to Tilton and Stivers for improvement in springs for vehicles, dated December 1, 1874. Complainant charged that these patents were capable of conjoint use with each other, and that defendants infringed them all. The answer set up want of patentability; anticipation; prior public use; non-infringement; that defendants had the right to manufacture the vehicle-springs they made, under a patent, No. 246,571, granted to W. H. Stickle, August 30, 1881, reissued to the defendant Thomas D Olin, August 21, 1883, as Reissue No. 10,372, and which patent was owned by the defendants; also that the Tilton and Stivers reissue was utterly void, because not issued for the same invention as the original patent, and for inventions not shown or described therein. The circuit court held the patents valid, and that the defendants infringed the single claims of the Timken and Saladee patents, and the third, fourth, and fifth claims of the Tilton and Stivers patent, and entered a decree enjoining defendants and referring the cause to a master for an account, which resulted in a final decree for damages to the amount of $27,897.75, and defendants appealed. The opinion will be found in 37 *Federal Reporter*, 205.

*Mr. George J. Murray* for the appellants.

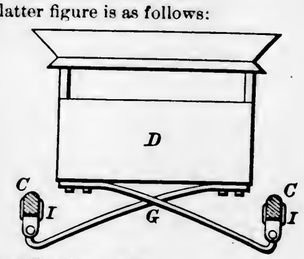
*Mr. William M. Eccles* for the appellees.

Mr. Chief-Justice FULLER delivered the opinion of the Court.

Appellants manufactured no buggies or vehicles of any kind, but purchased and made springs which were fitted on wooden bars to be attached to the vehicles, and sold such spring-bars in the market and to manufacturers of vehicles. The claims of the three patents, on which appellee's suit was based, were to combinations relating to side-bar buggies and wagons, the side-bar gear and buggy-body being elements of each combination. These patents are as follows:

First. No. 197,689, declared to be for improvement in carriage-springs, was granted to Henry Timken, November 27, 1877, upon application filed October 27, 1877. The drawings consisted of three figures: (1) a side view of a wagon-body with a spring attached; (2) a bottom view of a wagon showing the spring; and (3) "a sectional end view thereof."

The latter figure is as follows:




The specification states:

My invention relates to buggy and wagon springs; and it consists in the attachment of springs to the bottom of the body at the sides, and crossing the bottom of the body, and connecting with the side bars on the opposite sides of the body, as will be hereinafter more fully set forth.

The annexed drawing, to which reference is made, fully illustrates my invention.

A represents the hind axle, and A' the front axle, the latter having the usual head-block B. The hind axle A and head-block B are connected by side bars C C, in the usual manner. D represents the body of the vehicle.

The body D is connected to the side bars C C by means of two

springs, G G, composed of one or more plates near each end. These springs are fastened to the under side of the body D at opposite sides. The springs then cross each other, and their ends are pivoted or hinged in clips I I, fastened to the opposite side bars, as shown.

By this construction and arrangement of the springs I secure length of springs and elasticity of motion, and at the same time hanging the body low.

What I claim as new, and desire to secure by Letters Patent, is—

In combination with the side bars C C and body D, the springs G G attached to the under side of the body at opposite sides, then crossing each other and connected to the side bars on opposite sides, substantially as herein set forth.

Second. No. 9,542, reissue, dated January 25, 1881, upon application filed November 27, 1880, being a reissue of Patent No. 157,430 to Tilton and Stivers, for springs for vehicles, dated December 4, 1874, upon application filed November 25, 1874.

The specification of the original patent read thus:

The object of the present invention is to provide springs designed especially for buggies, carriages, and other light vehicles, which shall obviate all rocking motion of the body supported thereon, and cause the latter to be always maintained in a horizontal position when moving up or down, or when in a stationary position.

The invention consists in the employment of two independent crossed-leaf metal springs, the ends of which are rigidly secured to the opposite ends of the cross-bar supporting the vehicle-body, each spring being formed or provided with a socket, and the two sockets meeting each other at the center of the body-supporting bar, so as to enable an axis or pivot-bolt to be passed through both sockets for enabling the springs to turn thereon when the body is elevated or depressed. The invention further consists in securing a bearing and re-enforcing plate of metal to the under side of the body-supporting bar, said plate being provided with pendent flanges at both ends, to serve as bearing-points for the ends of the springs, in order to prevent any lateral movement of the same, and to serve, in connection with fastening-bolts, to securely hold the springs in place.

* * * * * * *

It is well known that elliptic or semi-elliptic springs, secured to the center of the cross-bar supporting a carriage-body, will permit the same to rock from side to side, which is objectionable for various reasons.

I propose to maintain a buggy, carriage, and other vehicle-body always in a horizontal position in respect to the springs and running gear, and this is accomplished by employing a pair of springs, A A, which may properly be termed sections of semi-elliptic springs. The springs are arranged to cross each other at the center of the cross-bar B, upon which the carriage body is placed, and their elevated or upper ends are permanently secured at the opposite ends of said cross-bars by means of bolts and nuts *a*. Each spring is provided with a socket, *c*, at the crossing-point, and through said sockets, which are thus brought in line with each other, an axis or pivot-bolt, D, is passed. A nut, *b*, is applied to the screw-threaded projecting end of the bolt for securing the same in place. Each spring is generally formed of two or more leaves—a long lower leaf and a shorter upper leaf—this construction being resorted to in order to obtain greater strength, and to enable the socket C to be more readily formed.

* * * * * * *

The claims were as follows:

1. The combination of two springs, each composed of one or more leaves, and hinged together at their crossing-point, and provided with an eye at one end to connect with the side sills of the running gear, and at the other end connected with the cross-bar for supporting the body of the vehicle, substantially as described.

2. The two leaf-springs, each provided with a socket at their crossing-point, in combination with a pivot or axis bolt, substantially as described.

3. The combination of two springs side by side, and connected together, with the side sills and cross-bar, for supporting the body in a horizontal position between the side sills, substantially as described.

4. The re-enforcing and bearing plate I, having end flanges, in combination with the body-supporting bar and the connected cross-springs, substantially as described.

The specification was amended in the reissue by substituting "cross-piece attached to the body," for "cross-bar supporting the vehicle-body," "the body-supporting bar," or "bar supporting the body;" and also by inserting after the word "spring," in the line reading "each spring being formed or provided with a socket," the word "preferably," and after the words "spring is," in the line reading "each spring is provided with a socket, *c*, at the crossing-point," the word "preferably."

The original claims were changed in the reissue by the substitution in the first claim of "cross-piece attached to the body," for "cross-bar for supporting the body;" and the word "cross-piece" for "cross-bar" in the third claim; and omitting the word "and" after "re-enforcing," and the substitution of the "cross-piece attached to the body" for the "body-supporting bar," in the fourth claim; and a fifth claim was added as follows:

5. In combination with the body of a vehicle and the side sills or bars, the two springs crossing each other side by side and attached to a cross-piece, substantially as described.

Third. No. 239,850, to C. W. Saladee for road-wagon, dated April 5, 1881; application filed February 7, 1881. The claim is:

A spring-platform consisting of flexion-springs arranged in pairs, the inner heavier ends of each pair being connected side by side to the central portion of the body or object supported, and the flexion portion of each spring curving downward from the center and then upward to its connection with the frame, all substantially as set forth.

It will be perceived that the third claim of the reissued Tilton patent includes, as a necessary element, two springs side by side and connected together; the fourth claim includes the connected cross-springs and the reinforcing-plate, having end-flanges; while the fifth claim is substantially the same as the single claim of the Timken patent. Both have the two springs crossing each other, though in the Timken claim these springs must be connected at the heavier ends at the opposite side from which the light ones are connected with the side bar. It seems clear that the fifth claim was intended to cover sectional cross-springs without the articulated joint in the center, and it does cover such springs, if the word "preferably," introduced for the first time in the reissue, is not an expansion of the invention described in the original patent; but we cannot concur with the learned circuit judge in his conclusion that the insertion of that word did not unduly expand the original and so invalidate the reissue. The original patent made no reference to an alternative construction with the pivot-bolt omitted, while the new matter made the connection of claims 3 and 4, (which remained practically unchanged in terms,) if broadly construed, only a preferable mode. As the patent originally stood, the connection of the cross-springs was an essential element of the claim, but, if the reissue were valid, the bolt coupling the two springs together at their center and forming an articulated joint would in effect be eliminated. The application for reissue was not filed until November 27, 1880, while the original patent was dated December 1, 1874, and the reissue was thus made by expansion to cover structures in public and common use between those two dates.

*Huber* v. *Nelson Manufacturing Co.* (C. D. 1893, 277; 63 O. G., 311; 148 U. S., 270) is much in point. There one Boyle obtained a patent for a sanitary closet, including, as an essential element of the claim, a flushing-chamber, and subsequently applied for a reissue for the purpose of eliminating that chamber, but this, it was held, could not be done.

The object of the original Tilton invention was declared to be to provide carriages or other vehicles with springs to prevent the rocking motion of the body supported thereon, and it was stated in the specification:

It is well known that elliptic or semi elliptic springs secured to the center of the cross bar of the carriage-body will permit the same to rock from side to side. It is objectionable for various reasons.





It was proposed to remedy this by taking springs of the form shown, which might be properly termed sections of semielliptic springs, and arranging them to cross each other on the center of the cross-bar upon which the body was placed, each spring being provided with a socket at the crossing-point and a pivot-bolt passing through both springs, secured by a nut, this coupling preventing them from moving independently of each other. In the first claim the words were used, "hinged together at their crossing-point;" in the second claim, "two leaf-springs, each provided with a socket at their crossing-point;" in the third claim, "the combination of two springs side by side, and connected together, with the side sills and cross-bar, for supporting the body in a horizontal position;" while the fourth claim was for the reinforcing-plate and connected cross-springs.

Appellee's contention that the connection of the crossed springs of the third and fourth claims is a connection by means of the reinforcing-plate and its flanges, which, the specification says, were intended to serve as bearing-points for the ends of the springs, described in the fourth claim as a separate element in combination with the body-supporting bar and the connected cross-springs, requires no comment.

The new fifth claim omits the crossing connection altogether and covers matter recognized as old in the original patent, and claims 3 and 4, if broadly construed in connection with the new matter introduced in the specification, render the central connection non-essential, since it might be omitted, if preferred. There is no basis for the theory of inadvertence, accident, or mistake, and the reissue cannot be sustained.

As to the original patent, it should be observed that if the bolt passing through the sockets in that portion of the springs centrally under the body and coupling them together, as shown, were omitted, the result would be the Timken spring, and it involved no invention on the part of Timken to dispense with that connecting-link, thus leaving the springs practically identical. It is true that the Tilton patent, both original and reissue, showed the light ends of the springs secured to the side bars by links or swinging shackles, while the shackles were rigid in the Timken, but both these shackles were well known, and complainant cannot contend that the difference is material.

In short, the Tilton patent relates to a crossing spring with a pivot-bolt at the intersection. The Timken spring is the Tilton spring with the pivot-bolt omitted, but in the defendants' spring the two sections do not cross each other, and cannot have a pivot-bolt at the intersection.

Many different styles of cross-springs appear in the record, representing springs of all kinds and shapes: springs placed longitudinally and transversely of the vehicle; springs with different fastenings binding them together at the crossing-point; single-sweep and double-sweep springs; springs of wood and of steel; cross-springs of rigid metal; spring-bars with semi-elliptic double-sweep springs, etc. It is not disputed that the side-bar buggy or wagon, known as the "Brewster side-bar vehicle," came into general use in 1873, and was made under a patent granted to Wood, May 27, 1873, No. 139,348, reissued August 18, 1874, No. 6,018. The Wood invention consisted in altering a side-bar buggy having downward transverse springs over the axle in which the ends of the side bars rest on the ends of the springs, by putting in upwardly-curved springs transversely between the side bars and the body of the buggy, the claim being:

A frame, consisting of the longitudinal side bars F F, downwardly-bowed end springs E E, and upwardly-bowed metal springs G G, constructed, arranged, and applied as and for the purpose described.

In the reissue the half-springs in reverse were not a part of the combination, and the claim was:

The semi-elliptic springs G G, interposed between the side bars F F, and the wagon-body, all combined substantially as specified.

The original and reissue were both held invalid by Judge Wallace in *Brewster* v. *Shuler*, (C. D. 1889, 490; 47 O. G., 1485; 37 Fed. Rep., 785.) Reference was there made to the semielliptic scroll-ended springs which had previously been interposed between the side bars and the body of a buggy belonging to a well-known class used in carriages and sold by dealers as semi-elliptic springs, as appeared in the patent to George Groot of July 13, 1869, (one of the patents in evidence here,) for an improvement in carriage-springs, which patent relates to the fastening of semielliptic springs transversely under the body of the carriage to side springs by means of saddle-clips; and there being nothing in the Wood patent to indicate that a semi-elliptic spring of a special form was an element in the claim, it was held that the claim specified one of any well-known form adapted to be interposed between the side bars and the wagon-body, and that therefore the patent was void for prior public use of semielliptic scroll-ended springs, though the drawings showed springs without scroll ends.

The Steward patent of October 25, 1870, describes a semielliptic spring, whose ends are attached to the axle by means of two diagonal spring-braces which pass from the points of attachment to the semielliptic spring diagonally past each other to points near the journals of the axle, there to be secured by means of a sleeve and set-screw or in some other suitable manner. The heavy ends are attached to the gear and the light ends to the semielliptic spring or spring-bar on which the vehicle rests, but obviously these springs could be interchangeably used for the springs shown in the Timken patent, and it would require no invention to attach them. There was no novelty in the means of accomplishing the result.

In Kenan's patent of September 13, 1870, No. 107,386, we find crossing springs coupled at the crossing-point by solid balls or blocks of india-rubber. In Labaw's, No. 84,549, February 25, 1862, and Hubbard's No. 12,890, May 15, 1855, the connection is effected by a pivot-bolt. In Cooper's patent, No. 200,435, February 19, 1878, each spring is formed of two sections, lying side by side, the inner end or heel of each section being secured to the wagon-body but a little beyond its center, while the outer ends are secured to the side bars.

Catterson's English patent, No. 2,642, May 15, 1854, shows cross-springs formed of two sections, lying side by side, pointing in opposite directions, provided at their ends with thin, flexible, curved portions, and there shackled.

The earliest patent in the record is the Manton English patent, No. 4,092, dated July 18, 1817. This patent shows a rigid gear mounted on cross-springs having their heavy ends—

attached to the under side of the body at opposite sides, then crossing each other and connected to the side bar on opposite sides.

The specification states:

My improvement in the application of springs to wheel carriages consists in placing the springs which are to support the body of the carriage in a transverse or cross position, so that the length of the springs will be in a direction from side to side of the carriage, as represented by the drawings hereunto annexed, and that each spring shall be fixed to the body or suspended part of the carriage on one side thereof by one end of the said spring, which spring shall extend crossways beneath the body of the carriage and be attached to the frame of the carriage on the opposite side to that side on which the other end of the same spring is fastened to the body of the carriage. This is shown in Figure 1, which is a view of part of a gig-body and the axletree to show the application of the springs.

A is the axl-tree; B B blocks fixed on the axletree to support the shafts, which with their cross-rail C C form a frame. Upon this frame the body D D is placed.

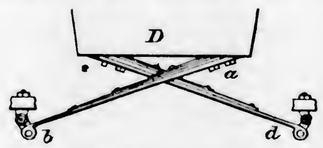
*a b* is one of the springs and *c d* the other. Both springs are bolted or otherwise firmly fastened to the under side of the body D at their thick ends *a* and *c*; the other ends *b* and *d* of the springs are received in shackles, loops, or links, which are suspended from the shafts or frame and allow the ends *b* and *d* of the springs some play. The same figure also shows clearly how the springs cross each other, but a sufficient interval must be left between the two springs, that they will not touch or rub against each other where they cross. The figure is taken at the hind part of the gig and similar cross-springs may be applied at the fore part.

The springs are suspended by the shackles, loops, or braces in order that the ends of the springs may expand and contract—that is, advance to and recede from each other—when the body rises and falls by jolts and irregular motions. * * * The thick ends *a* and *c* of the springs are fastened to a bar, G G, on the ends of which bar-irons H are fastened, and they go beneath the body D D of the carriage, and are firmly fastened thereto, so as to fix the bar G firmly to the body.

* * * * * * *

In some cases the springs may be fixed immediately to the body of the carriage, * * * and then, if there is sufficient substance of wood in the body or boot or wherever the springs are to be fastened, there will be no necessity for the bar G; but be it observed that the particular manner of attaching and affixing the springs in their places may be left to the discretion of the workman, who must adapt the springs, in respect to their dimensions, weight, strength, and mode of attachment, to their places, according to the particular kind of carriage to which they are to be applied, for I confine my improvement in the application of springs to wheel-carriages to the placing of such springs in a transverse direction when one end of each spring is attached to the body of the carriage on one side (for instance, the left hand side,) and the other end of the same spring is attached by a shackle to the carriage or frame on the opposite side (for instance, on the right-hand side,) the manner of which has been hereinbefore explained. In all cases the springs, being fixed fast at one end, must be suspended by a shackle at the other end to allow them play to expand or contract.

Fig. 1, omitting the frame formed by the axletree, the shaft-supports, and the cross-rail, is as follows:




The Manton specification covers a larger field than that of Timken, but the two devices are strikingly similar.

Passing to the question of prior use, the springs manufactured by Priest, at Detroit, Mich., show such anticipation of the alleged invention in the three patents in suit as seems to us quite decisive. The learned circuit judge, however, rejected the testimony of Priest as wholly unreliable; but in our view that testimony was so fully corroborated by other witnesses and documentary evidence, that we are constrained to arrive at a different conclusion, whatever might be said of it standing alone.

The first of the Priest springs is known as the Meisner spring. In 1872 or 1873, Priest manufactured a buggy for Doctor Meisner, which had a body coupled to the side bars by double-sweep sectional cross-springs, rigidly secured to the buggy-bottom at opposite sides by bolts passing through their thick ends, then curved downwardly from the body and up again in the direction of the side bars, to which they were coupled by swinging shackles or links.

The evidence of Priest and of one Rolfe, then a dealer in carriages, was to the effect that in 1874 Priest built a side-bar buggy on the order of Rolfe, who had contracted with C. W. Prescott to furnish a Brewster buggy for Lady Prescott; but during its construction Brewster's agent demanded a royalty, whereupon Priest used the Meisner spring, substituting the Brewster rigid shackle for the loose link.

Rolfe testified that the buggy was made in September or October, and was painted prior to December 1, 1874, and he produced the bill for the painting dated December 31 of that year; also his invoice-book showing the buggy on hand January 1, 1875, as well as entries afterward of a buggy sold Sir George Prescott, and of several other buggies with Priest springs; also bills of lading, dated March 25, 1875, from the Erie and North Shore Line, showing the consignment of the buggy to Lady Prescott, Strand Park, Herne Bay, Kent, England, one for the shipment from Detroit to New York, and another for the transportation from New York to London, April 10, by the steamer *C. F. French*; also letter of C. W. Prescott, dated June 10, 1875, from Isenhurst, Hawkhurst, Sussex, England, showing that the buggy had arrived, and ordering another for Sir George Prescott; and another letter of C. W. Prescott, without date, purporting to have been written from Lawrence, Kans., with reference to the second buggy. The testimony of Priest was sustained, not only by that of Rolfe, but of Rand, who packed and superintended the shipment of the buggy to England. Rolfe's invoice-book showed the buggy sold to Sir George Prescott, August 13, 1875, and also a Priest buggy to Doctor Drake on October 23, 1875. That the first Prescott buggy was made and shipped as contended, is satisfactorily made out, but the real question is as to the character of the springs upon it, and in respect of that Priest is corroborated by several witnesses.

Among the exhibits which Mr. Timken concedes in his evidence contain his invention, or are nearly the some as his springs, are the Matlock or Kierolf springs and the Kunkle Brothers' springs. The Kunkle springs were manufactured by one Ruple and sold to Kunkle Brothers in 1876 or the spring of 1877, and the evidence tends to show that these springs were invented by Ruple in the latter part of 1875. He applied for a patent shortly after the allowance of the Timken patent and his application was rejected, but the specification and drawing of this application are given in the record, and show clearly the invention claimed in this suit. The Kierolf springs were made during the summer or spring of 1877. Matlock identifies similar springs as made in 1877. We think counsel for appellants justified in saying that these and other springs exhibited were made in view of the reissued Wood patent embodied in the Brewster





wagon. What was known as "double-sweep Concord springs" were long enough to extend from the rear axle to the head-block, and Brewster shortened these springs and extended them across from side bar to side bar. Subsequent inventors took these same Concord springs and instead of shortening them cut them in two in the middle and crossed them past each other, extending from the middle or one side of the buggy-body to the cross-bar on the opposite side.

Timken made his application October 27, 1877, and the evidence on his behalf as to when he made his invention, which we have carefully examined, fails to show that it was earlier than the other devices to which we have referred.

Appellants' argument seems to be that the Timken patent should be so construed as to cover a double-sweep sectional spring, having the attaching ends connected to the bottom of the buggy or cross-sills at any point between the side and the center, crossing the center, bending downwardly for a distance and then upwardly to be attached to the side bar; having a thick end for attachment to the buggy-bottom and a thin end for attachment to the side-bar shackle, the curve being such as to allow the body to move up and down without expanding the side bar, but we do not understand this description to be within the terms of the patent, according to which the Timken invention consisted in the use of sectional springs arranged in pairs side by side and crossing each other to couple the body to the gear. Now that sectional springs can be used for coupling the body to the gear of the vehicle; that rigidity of spring can be obtained by making the connections rigid; that the body could be hung either high or low by the proper sweep of the spring; that the form and sweep of the springs and various methods of using them as couplings between the gear and body, were well known, the patents, exhibits, and proofs make exceedingly clear; and we should say that nothing but mechanical skill was required to so adapt these well-known springs as to attain the desired objects expressed in complainants' patent. And while the patented article may have been popular and met with large sales, that fact is not important when the alleged invention is without patentable novelty. (*Duer v. Lock Company*, 149 U. S., 216.)

If, however, such a construction could be put on the Timken patent as would save it from being held invalid for anticipation or for want of invention, that construction would certainly exclude appellants' structure. The differences between them are well and accurately given by appellants' expert. Timken's sections have their heels attached at the sides of the wagon-bed; cross the entire bottom to reach the opposite side bar; cross each other like the letter X, and have their heels fastened independently and far apart below the wagon-bed, by bolts passing through perforations in the springs, the flexible portions of the sections comprising the entire distance between the shackle-bar and the first attaching-bolt. In appellants' structure the heels of the sections attach at about the center of the wagon-bed and do not cross the entire bottom to reach the opposite side bar; the sections do not cross each other; the heels are attached closely contiguous to each other, by a rigid clip, secured by bolts and clips, the flexion of the section being limited to a length extending from the shackle end of the section to a point some distance nearer the shackle end than the bolt-perforation through the section.

As to the Saladee patent, in view of the state of the art as shown by the exhibits, all made more than two years prior to the application for this patent, which was February 7, 1881, and the fact that the proof shows that the defendants' springs are made in accordance with the Stickle patent, and that Stickle made his invention, and reduced it to practice, prior to the application for the Saladee patent, we need spend no time upon it. Moreover, the Cooper patent No. 200,435, and the rejected application of Ruple, shown to have been filed in the Patent Office early in 1878, clearly anticipated Saladee's invention.

The decree is reversed and the cause remanded with a direction to dismiss the bill.

## U. S. Circuit Court of Appeals—Third Circuit.

DEVLIN *et al. v.* PAYNTER *et al.*

*Decided November 16, 1894.*

PAYNTER—UNION FOR STEAM-PIPES—VALID AND INFRINGED.

Patent No. 367,725, issued August 2, 1887, to Edward P. Paynter, Jr., for an improvement in unions for steam-pipes, examined in view of the state of the art and *Held* to be for a patentable invention, and infringed.

APPEAL from the Circuit Court of the United States for the Eastern District of Pennsylvania.

*Mr. Hector T. Fenton* for the appellants.

*Messrs. Connolly Bros.* for the appellees.

Before ACHESON, DALLAS, and WALES, Judges.

ACHESON, *J.*:

The appellants, who were the defendants below, complain of the decree of the circuit court sustaining as valid and adjudging them to have infringed the first claim of Letters Patent No. 367,725, for improvements in unions for steam pipes, etc., granted on August 2, 1887, to Edward P. Paynter, Jr., the inventor, and John K. Moore, his assignee of a part interest.

The claim in question is in these words:

1. A union for steam-pipes, comprising a threaded ring or nut, a member having a seat of soft metal with a concave face, and an opposing member with a rounded or convex end, substantially as shown and described.

The declared object of the invention is to provide a construction whereby the joint of the union of steam and other pipes will be made more tight than heretofore and in which the danger of injury by indentation to the soft-metal seat of such union will be avoided. The specification states:

The concavo-convex character of the joint prevents the seat from being indented, even if the two members of the coupling should not be exactly aligned, thereby avoiding the difficulty hitherto encountered with the flat soft-metal seats and straight ends of unions as heretofore constructed.

The specification describes and shows a union one of the members of which is provided with an internal seat of soft metal, the face of which is made concave, and the opposing part of the union formed with a convex end, so as to conform to the concavity of the

seat against which it rests, thus making a perfectly-tight joint therewith.

A pipe-union is a complete and independent contrivance, made and sold by itself, consisting of head and tail members and a fastening ring or nut drawing the two members closely together. The purpose of the device is to join together the adjacent ends of two sections of pipe through which steam or water or other liquids or gases flow. Such unions are not designed to be fixed and permanent couplings, but they are used where the pipes are to be repeatedly disconnected and again joined, and thus it is intended that the unions shall be taken apart and put together again and again. It is of supreme importance that the union should form and constantly maintain a perfectly-tight joint, and it is also very desirable that it should be so constructed as to provide for the non-alignment of the pipes which it connects. These ends are attained by the device of the patent in suit. The patented improvement consists in having one of the two opposing members of the union formed with a concave abutting face and the other with a convex abutting face, one of these meeting faces being composed of soft metal.

The evidence is convincing that this improvement effectively overcomes difficulties incident to and inseparable from all the expedients of this general character previously in use. It meets the practical difficulty arising from want of exact axial alignment of the two pipes which are to be connected, and it not only secures complete contact between the meeting faces of the head and tail members when they are first put together, but permits, without impairing the efficiency of the joint, the repeated use of the same union as the pipes are disconnected and again united.

We have attentively examined all the earlier patents and the exhibits illustrative of the prior state of the art in evidence. To discuss these at length and point out the distinctions between them, respectively, and the Paynter-Moore device we deem unnecessary. It is enough to declare that in our judgment they do not, taken singly or considered together, anticipate the invention in question. They fail to show a union made in accordance with the patent in suit or possessing its peculiar advantages. We are entirely satisfied with the conclusion of the court below that the first claim of the patent in suit covers a union patentably new and useful.

The differences between the union shown by the patent in suit and the appellants' union are these: In the latter the convex face is on the head member and the concave face is on the tail member, reversing the arrangement of the patent, and in the appellants' union the convex face is composed of soft metal, whereas in the union described in the patent it is the concave face which is of soft metal. The appellants have transposed the position of the soft-metal face. Do they escape infringement by the transposition of parts? We think not. The essence of the invention embodied in the first claim of the patent is a union in which one of the two opposing members has a concave abutting face and the other a convex abutting face, one of these faces being of soft metal. The appellants therefore have appropriated the gist of the invention.

The changes found in their device do not at all affect either the principle of operation or the result. There is a substantial identity between the two unions. Now, in the sense of the patent law the substantial equivalent of a thing is the same as the thing itself. (*Winans* v. *Denmead*, 15 How., 330, 342; *Machine Company* v. *Murphy*, 97 U. S., 120.) The changes which the appellants have made are immaterial and, indeed, are but a subterfuge. Made, evidently, for the mere purpose of evading the wording of the claim, they are unavailing. (*Hoyt* v. *Horne*, 145 U. S., 302, 308.)

Nor do we find anything in the proceedings in the Patent Office requiring us to read the first claim of the patent as subject to the limitation upon which the appellants insist. The reasons urged by the appellees' solicitors before the Patent Office officials in favor of the grant of the patent, if entitled to consideration here at all, do not, we think, regarded as a whole, support the contention that the patentees, when in the Patent Office, placed such a narrow construction upon the claim as would exclude from its scope the appellants' device. We do not see that they take here any position inconsistent with their position when in the Patent Office. There is nothing to bring this case within the rule that where a patentee has modified his claim in obedience to the requirements of the Patent Office he cannot have for it an extended construction which has been rejected by the Office. The only amendment of the first claim ever made was the introduction of the "threaded ring or nut" as an element of the combination, and that addition does not affect the question now before us.

We are of the opinion that the decree of the circuit court was right, and accordingly it is affirmed.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 69.—No. 11. TUESDAY, DECEMBER 11, 1894. PRICE—$5 per year.

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| TRADE-MARKS | 1500 |
| PRINTS | None. |
| LABELS | None. |
| DECISIONS OF THE U. S. COURTS— | None. |
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## Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., November 30, 1894.*

SIR: The Secretary of the Interior has ordered that William T. Crawford, of Sullivan county, Ind., be not recognized after this date as attorney or agent in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,

JOSEPHUS DANIELS,
*Chief Clerk.*

The Commissioner of Patents.

## Order in Relation to Drawings.

NOTICE.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January 25, 1894.*

Order No. 980, respecting the alteration of drawings, was published in the OFFICIAL GAZETTE of December 19, 1893, (65 O. G., 1771,) by mistake, and was never in force. The following is the only order in force upon that subject:

(ORDER NO. 986.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January 25, 1894.*

Erasures or other alterations of drawings will not be made or permitted, except in compliance with this order.

Applicants are requested to furnish, with their originals, a blue print or other photographic copy of all drawings forming part of an application, and where this is done, the original drawings may be taken to the Attorneys' room, but not otherwise.

Before making a requirement to alter an original drawing the Examiner will formally make the blue print or other copy a part of the files, and in case no such copy has been furnished by the applicant, the Office will make such copy without charge, and thereupon the required alteration may be made by the applicant, under the direction of the Examiner and subject to his approval or, upon request, it will be made by the Office at the expense of the applicant.

The requirement to make alterations in original drawings will be made in writing, and the applicant's response must also be in writing, and in such case the copy of the drawing, the requirement to alter, and the applicant's response will form part of the record.

Action by the Office on the merits will not be suspended pending the change of a drawing, if the invention claimed may be understood by the Examiner.

For the purposes of this order the Office, upon the request of applicants, will make blue prints at the charge of five cents a sheet.

In appeal cases and upon the declaration of an interference a blue print or other copy will be sent forward with the files, the Examiner retaining the original drawings in his room until the hearing.

Except as herein required such blue print or other copy will not be made a part of the file, and may not be preserved after an application passes into a patent.

JOHN S. SEYMOUR,
*Commissioner.*

PHOTOGRAPHIC COPIES OF DRAWINGS.

A photographic outfit has been added to the equipment of the Patent Office, and positive photographic copies of any drawing, foreign or domestic, in the possession of the Office, will be furnished upon application to parties entitled thereto, at the following rates:

Size 10x15 inches. ..... 25 cents per sheet.
Size 7x11 inches. ..... 15 cents per sheet.
Size 5x8 inches. ..... 5 cents per sheet.

If a copy of the drawings in a pending application of the size 5x8 inches be ordered sent to any address, two copies must be ordered, as one copy is always retained by the Office and placed in the file for the purposes specified in the above Order No. 986, of January 25, 1894.

In ordering copies of foreign drawings, the examining division, the class, and sub-class where such drawings may be found, must be given.

Coupons will be received in payment of the above fees.

## Oaths of Applicants in Foreign Countries.

(ORDER NO. 822.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., June 10, 1893.*

It is hereby directed that oaths accompanying applications for patents made within the following-named foreign countries must be taken before a minister, chargé d'affaires, consul, or commercial agent holding commission under the Government of the United States:

Applications filed in this Office presenting oaths not executed in compliance with this order will be treated as incomplete.

JOHN S. SEYMOUR,
*Commissioner.*

## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $10; single copies, 10 cents, if mailed to foreign countries 10 cents additional for postage; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

## Issue of December 11, 1894.

| | | |
|---|---|---|
| Patents | 419 | No. 530,496 to No. 530,914, inclusive. |
| Designs | 21 | No. 23,857 to No. 23,877, inclusive. |
| Trade-Marks | 46 | No. 25,619 to No. 25,664, inclusive. |
| Labels | None. | |
| Prints | None. | |
| Reissues | 3 | No. 11,456 to No. 11,458, inclusive. |
| Total issue | 489 | |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | 4 | ..... | New Hampshire | ..... | ..... |
| Arizona Territory | ..... | ..... | New Jersey | 18 | 1 |
| Arkansas | ..... | ..... | New Mexico Ter. | 1 | ..... |
| California | 10 | ..... | New York | 84 | 5 |
| Colorado | 4 | ..... | North Carolina | 4 | ..... |
| Connecticut | 13 | 12 | North Dakota | ..... | ..... |
| Delaware | 2 | ..... | Ohio | 19 | 1 |
| District of Columbia | 4 | 2 | Oklahoma Ter. | 1 | ..... |
| Florida | ..... | 1 | Oregon | 1 | ..... |
| Georgia | 1 | ..... | Pennsylvania | 35 | 2 |
| Idaho | ..... | ..... | Rhode Island | 1 | ..... |
| Illinois | 36 | 2 | South Carolina | ..... | ..... |
| Indiana | 12 | ..... | South Dakota | ..... | ..... |
| Indian Territory | ..... | ..... | Tennessee | 4 | 1 |
| Iowa | 10 | 1 | Texas | 1 | ..... |
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| Kentucky | 6 | ..... | Vermont | 3 | ..... |
| Louisiana | 3 | ..... | Virginia | 2 | ..... |
| Maine | 1 | ..... | Washington | 2 | ..... |
| Maryland | 5 | 1 | West Virginia | 2 | ..... |
| Massachusetts | 33 | 3 | Wisconsin | 10 | ..... |
| Michigan | 15 | 3 | Wyoming | 1 | ..... |
| Minnesota | 8 | 1 | U. S. Army | ..... | ..... |
| Mississippi | ..... | ..... | U. S. Navy | ..... | ..... |
| Missouri | 24 | 1 | | | |
| Montana | 2 | ..... | Total to citizens of the United States | 380 | 39 |
| Nebraska | 2 | ..... | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Argentine Republic | ..... | ..... | Italy | ..... | ..... |
| Austria-Hungary | ..... | ..... | Mexico | ..... | ..... |
| Belgium | ..... | ..... | Netherlands | ..... | ..... |
| Bermuda | ..... | ..... | New South Wales | ..... | ..... |
| Brazil | ..... | ..... | New Zealand | ..... | ..... |
| Canada | 5 | ..... | Norway | 1 | ..... |
| Chile, Republic of | ..... | ..... | Queensland | ..... | ..... |
| China | 1 | ..... | Russia | 1 | ..... |
| Cuba | ..... | ..... | Scotland | ..... | ..... |
| Denmark | ..... | ..... | Servia | 1 | ..... |
| Ecuador | ..... | ..... | South Australia | ..... | ..... |
| England | 21 | 6 | Sweden | 1 | ..... |
| France | 2 | 1 | Switzerland | ..... | ..... |
| Germany | 18 | ..... | Victoria | ..... | ..... |
| Guatemala | ..... | ..... | | | |
| India | ..... | ..... | Total to citizens of foreign countries | 51 | 7 |
| Ireland | ..... | ..... | | | |

## APPLICATIONS UNDER EXAMINATION.

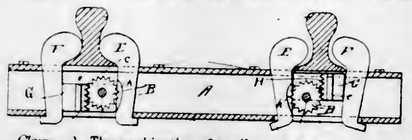
*Condition at Close of Business December 4, 1894.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | Nov. 5 | Dec. 1 | 87 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | Nov. 9 | Nov. 27 | 76 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire-Escapes and Ladders, etc. | Nov. 21 | Nov. 26 | 67 |
| 8 | Furniture, Beds, Store Furniture, etc. | Nov. 6 | Nov. 26 | 161 |
| 26 | Electricity, Generation, Distribution, Motive Power, Electric Railways, etc. | Nov. 5 | Nov. 26 | 63 |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Nov. 5 | Nov. 26 | 111 |
| 12 | Mechanical Engineering, Store-Service, etc. | Nov. 5 | Nov. 26 | 111 |
| 2 | Farm Stock, Products, etc. | Nov. 5 | Nov. 24 | 113 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Nov. 5 | Nov. 24 | 117 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | Nov. 5 | Nov. 23 | 89 |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Nov. 6 | Nov. 19 | 117 |
| 20 | Builders' Hardware, Safes, Dentistry, Undertaking, Artificial Limbs, etc. | Nov. 6 | Nov. 19 | 163 |
| 3 | Metallurgy, Metal-Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | Nov. 5 | Nov. 10 | 99 |
| | *Between one and two months.* | | | |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Oct. 29 | Nov. 28 | 73 |
| 17 | Paper-Manufactures and Printing. | Oct. 4 | Nov. 26 | 145 |
| 21 | Textiles, etc. | Oct. 8 | Nov. 24 | 112 |
| 29 | Wood-Working Machines, Carpentry, Coopering and Roofing, etc. | Oct. 10 | Nov. 22 | 137 |
| 23 | Instruments of Precision, Acoustics, etc. | Oct. 15 | Nov. 21 | 139 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | Nov. 1 | Nov. 20 | 134 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | Oct. 8 | Nov. 19 | 313 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | Oct. 29 | Nov. 16 | 254 |
| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Oct. 8 | Nov. 16 | 160 |
| 10 | Carriages and Wagons | Oct. 20 | Nov. 15 | 164 |
| 34 | Railway-Cars and Fluid-Pressure Railway-Brakes. | Oct. 5 | Nov. 15 | 217 |
| 19 | Stoves and Furnaces | Oct. 23 | Nov. 13 | 214 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, Surgery. | Oct. 29 | Nov. 12 | 222 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, Cutlery, etc. | Oct. 24 | Nov. 10 | 138 |
| 1 | Tillage and Fences | Oct. 4 | Nov. 10 | 295 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Oct. 29 | Nov. 8 | 169 |
| 18 | Steam-Engineering, etc. | Oct. 6 | Oct. 26 | 186 |
| 30 | Lamps, Gas-Fittings, Linotyping, Type-Writing Machines, Optics. | Oct. 4 | Oct. 16 | 252 |
| | *Between two and three months.* | | | |
| 24 | Sewing-Machines, Crinoline and Corsets, Apparel, and Toilet. | Sept. 13 | Nov. 15 | 111 |
| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting, and Leather Working Machinery. | Sept. 29 | Nov. 12 | 334 |
| | Total number of applications awaiting action | | | 5,143 |
| | *Under one month in arrears.* | | | |
| | Designs | Nov. 22 | Nov. 26 | 58 |
| | Trade-Marks | Nov. 27 | Nov. 30 | 31 |

# PATENTS

## GRANTED DECEMBER 11, 1894.

**530,496. COMBINED RAIL CHAIR AND TIE.** JOHN ALBRECHT, Massillon, Ohio. Filed Oct. 25, 1894. Serial No. 526,904. (No model.)



*Claim.*—1. The combination of a railway tie formed of L shaped sections, bolted or riveted together, the rail clamping dogs extended above and below the tie, the blocks or wedges G located between the dogs, and provided with the toothed shoulders H, the cog wheels B meshing with the toothed shoulders, the ratchet wheels D mounted upon the shafts C, and the pawls *g*, substantially as and for the purpose specified.

2. The combination of a railway tie provided with slots formed in the top and bottom of the tie, the locking dogs provided with hooked or flanged lower ends and curved upper ends, the blocks or wedges G, located between the dogs and within the tie, and provided with the toothed shoulders, and the toothed wheels B, substantially as and for the purpose specified.

3. The combination of the L shaped sections A formed to produce a hollow tie, and the sections bolted together substantially as and for the purpose specified.

4. The combination of a hollow tie provided with rail clamping dogs, a toothed block or wedge located between the locking dogs, a cog wheel meshing with the toothed block or wedge, a ratchet wheel and pawl, and a shaft C, substantially as and for the purpose specified.

5. The combination of a hollow tie provided with rail clamping dogs, a toothed block or wedge provided with the flanges *e*, grooves *f* formed in the sides of the tie, and means for forcing the block or wedge downward to clamp the rails, substantially as and for the purpose specified.

**530,497. STREET-SIGN.** HALSEY H. BAKER, Plainfield, N. J. Filed Jan. 22, 1894. Serial No. 497,582. (No model.)




*Claim.*—1. The combination with the suspended street lamp and a reflector above the lamp of a bracket and divided clamp for connecting the bracket to the arm supporting the lamp, a conical base on the bracket, a ring fitting the conical base and a clamping screw, arms extending outwardly from the ring and downwardly around the edge of the reflector and signs suspended from such arms, substantially as specified.

2. The combination with the suspended street lamp and a reflector above the lamp of a bracket and divided clamp for connecting the bracket to the arm supporting the lamp, a conical base on the bracket, a ring fitting the conical base and a clamping screw, an arm extending outwardly from the ring and downwardly around the edge of the reflector, a socket at the lower end of the arm, a cross rod and end pieces and a sign held by the end pieces, substantially as specified.

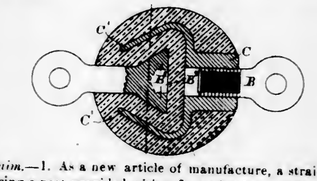
3. The combination with an electric lamp and its reflector, of arms passing around the outer edges of the reflector, signs connected with the lower ends of such arms, a clamping ring with which the upper ends of the arms are connected, and a bracket receiving and supporting the clamping ring, substantially as set forth.

4. The combination with the lamp and reflector, of signs, arms for supporting the signs, which arms pass up and around the outer edges of the reflector, a clamping ring to which the upper ends of the arms are connected, a divided bracket, means for clamping the same to the support for the reflector and lamp, and a screw connecting the clamping ring to the base of the bracket, substantially as set forth.

5. The combination with the suspended street lamp and the reflector above the lamp, of a bracket and a clamp for connecting the bracket to the arm from which the lamp is suspended, an arm connected to the bracket and extending down outside the reflector, a sign suspended from such arm and a reflector for directing light on the sign at the side away from the lamp, substantially as specified.

6. The combination with the lamp and its reflector, of an arm extending down outside of the reflector, a socket at the lower end of the arm, a cross rod connected with the socket, end pieces upon the cross rod, sign plates received at their ends into mortises or slots in the end pieces, a steady plate through which the cross rod passes and which is slotted for receiving the upper edges of the sign plates near their middle portions, substantially as set forth

**530,498. INSULATOR FOR ELECTRIC OVERHEAD CONSTRUCTION.** HENRY P. BALL, Bridgeport, Conn., assignor to the General Electric Company, Boston, Mass. Filed June 28, 1894. Serial No. 515,909. (No model.)



*Claim.*—1. As a new article of manufacture, a strain insulator comprising a part provided with a flange having one diameter of its opening greater than the other, an eye-bolt having an engaging part formed with one diameter smaller than the other, the two parts being arranged and adapted, as herein described, to engage, when the longer diameter of the eye-bolt is transverse to the short diameter of the flange, and insulating material securing the parts together and insulating them from each other.

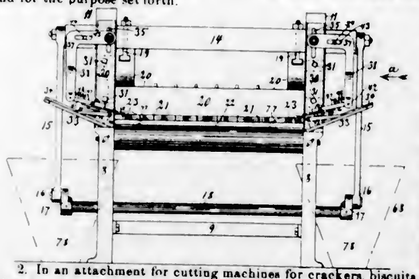
2. As a new article of manufacture, a strain insulator comprising a flanged part, as C, the flange being made in conoidal form with an elliptical base, an eye-bolt as B' having a similar engaging part adapted to be inserted within the flange and to engage therewith by a partial revolution, and insulating material, formed around and between the two engaging parts, arranged to insulate them from one another and to secure them rigidly in position.

3. As a new article of manufacture, a strain insulator comprising a flanged part, as C, the flange being of conoidal form having an elliptical base, a thread in the shank of such flanged part, and an eye-bolt as B engaging with the thread, a second eye-bolt as B' having a part adapted to engage with the flange, such part being also of conoidal form and having an elliptical base, the flange and second eye-bolt being arranged to engage with each other by a partial revolution, and insulating material formed around and between the engaging parts.

**530,499. DEVICE FOR REMOVING WASTE FROM SHEETS OF DOUGH IN CRACKER-MACHINES, &c.** JOSEPH C. BEBANG, St. Paul, Minn. Filed Sept. 27, 1894. Serial No. 524,213. (No model.)

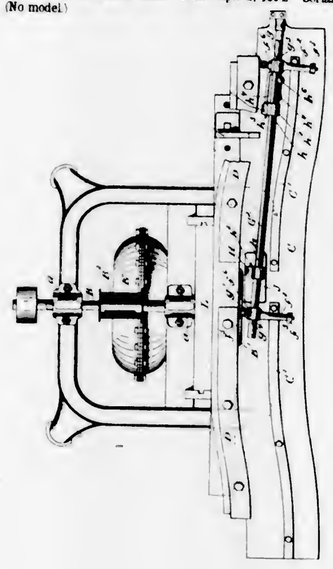
*Claim.*—1. In a cutting machine for biscuits, cakes, crackers &c., the combination with the stands or brackets 11, and cross head 14, moving up and down therein and carrying the cutter 20, and the end-

less belt moving the dough under said cutter of the attachment consisting of the bar or bracket 30, secured to the bracket 11, and having the angular lever 37 adjustably pivoted to the upper end of the bar 30, and being provided with the slots 43, the studs 45, secured in the cross-head and engaging the said slots 43, a raking device pivotally secured to the lower end of the lever 37, adapted to rake the waste or remnant strips away from the dough, and means for holding said rake elevated above the dough when moving in upon it, and to let the rake descend and engage the dough and travel in a lowered position while moving outwardly, substantially as shown and described and for the purpose set forth.



2. In an attachment for cutting machines for crackers, biscuits cakes, &c., the combination of the upright arm or bar 30, adapted to be secured to the frame work of the cutting machine and having the slot 35, in its upper end and at its lower end the outwardly and upwardly projecting guiding arm 33, the guiding lever 73, pivoted with its inner end on a stud as 70, secured in the main bar 30, the spring 76, and stud 75, for holding the lever 73, with its free end, normally down upon the guiding arm 33, the lever 37, adjustably pivoted in the slot 35, and having the slot 43, the pin or stud 45, adapted to be secured in the cross-head of the machine, and engaging said slot 43, the finger 54, adapted to move guidingly forward upon the guide lever 73, and backward below it upon the guide arm 33, and having the body portion 51, with the notches 52, and 53, the slotted connecting rod 41, adjustably secured in the notch 52, and having its other end 40, pivoted to the lower end of the operating lever 37, the slotted rake bar 56, adjustably secured in the notch 53, the toothed rake blade 62, pivotally secured to the bar 56, the spring 67, stop 64, for holding the blade 62, normally in an angular position to the bar 56, and the spring 48, tending to hold the rake downward, substantially as shown and described, and for the purpose set forth.

530,500. **MACHINE FOR JOINTING LISTED STAVES.** ARZA M. BENSON, Cleveland, Ohio. Filed Apr 2, 1894. Serial No. 505,997. (No model.)



*Claim.*—1. In a machine for jointing listed staves, the combination of a cutter arranged to operate in a vertical plane, a carriage movable in a path adjoining said cutter, vertically movable slides in said carriage, horizontal pivot points supported from said slides and adapted to engage both ends of the stave to be jointed, and a guide rest over which the stave may ride and be presented to the cutter at the proper angle, substantially as set forth.

2. In a machine for jointing listed staves, a stave carriage consisting of two uprights provided with means for guiding them in the desired path, a rod passed through the lower portions of said uprights and upon which the latter are adjustably secured, vertically guided slides upon the uprights, a rod passed through the upper ends of said slides and upon which the latter are adjustably secured, brackets adjustably secured upon said rod, a stationary pivot point horizontally projecting from one bracket, and a horizontally movable pivot point in the opposite bracket and having means for moving and locking it, substantially as set forth.

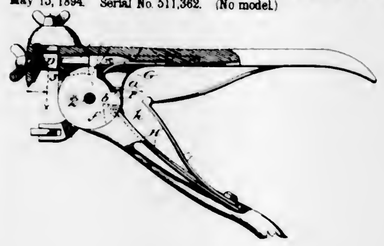
3. In a machine for jointing listed staves, a stave carriage consisting of two uprights provided with means for guiding them in the desired path, a rod passed through the lower portions of said uprights and upon which the latter are adjustably secured, vertically guided slides upon the uprights, a rod passed through the upper ends of said slides and upon which the latter are adjustably secured, brackets adjustably secured upon said rod, a stationary pivot point horizontally projecting from one bracket, and opposed and horizontally movable pivot point in the other bracket, a toggle arm pivoted to the vertical slide, and a toggle arm pivoted to said other toggle arm and to the pivot point and having a handle for manipulating it, substantially as set forth.

4. In a machine for jointing listed staves, the combination of a cutter, a carriage movable in a path adjoining said cutter and having means for supporting a stave to have movement in a plane parallel to the cutting plane of the cutter and to rock transversely to such plane, a stationary guide rest over which the stave may ride and inclined outwardly from the cutter and toward the starting point of the carriage, a stationary gage for the edge of the stave arranged near the starting point of the carriage, and a movable gage for the edge of the stave and arranged near the cutter, substantially as set forth.

5. In a machine for jointing listed staves, the combination of a table, a cutter in a plane at right angles to said table, a carriage traveling upon said table and provided with guide rollers revolving in the plane of the table and with pivot points for the ends of the stave and supported to have movement in a plane at right angles to the plane of the table, curved guide rails against which the guide rollers may travel, and an outwardly inclined and stationary stave guide rest over which the stave may ride and having an incline toward the starting point of the carriage, substantially as set forth.

6. In a machine for jointing listed staves, the combination of a horizontal table, curved guide rails upon said table, correspondingly shaped guide rails supported upon brackets above said table, a vertically revolving cutter disk having cutting edges upon its face and arranged against the middle of the inner edge of the table uprights having rollers which travel upon the table and having horizontally revolving rollers which bear against the opposite edges of the guide rails, a rod connecting said uprights, slides guided to move vertically upon the uprights, a rod connecting the upper ends of said slides, downwardly projecting brackets secured upon said rod, a stationary pivot point in the lower end of one of said brackets, a horizontally movable pivot bolt in the lower end of the other bracket, toggle arms connected to the end of said bolt and to the lower end of the slide and having a lever projecting from one arm, a stave guide rest secured at the middle of the table at about the center of the cutter disk and having an incline toward one end of the table and inclined outward from the cutter disk, a stationary gage near one end of the table, and a movable gage near the cutter disk having means for retracting it out of the path of the stave, substantially as set forth.

530,501. **SAW-SET.** JAMES T. BERNARD, Neapolis, Va. Filed May 15, 1894. Serial No. 511,362. (No model.)





*Claim.*—1. In a saw-set, the combination of two handles pivoted together, one of the handles having a grooved head and an anvil in the outer wall of the groove, a slidable hammer carried by the handle having the grooved head, a cam loosely mounted on the pivoted connection of the handles and having positive connection with the slidable hammer, a driving spring attached at one end to the operating handle and having its free end in engagement with the said cam, and a catch to hold the hammer during the storing of force in the driving spring and adapted to be released by a stop on the operating handle, substantially as described.

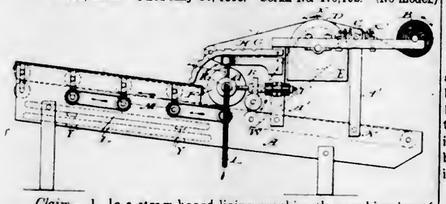
2. In a saw-set, the combination of two handles pivoted together, one of the handles being provided with a grooved head having an anvil to receive a saw blade, a hammer carried by the handle having the said grooved head and adapted to move lengthwise thereof, a driving spring for operating the hammer, a catch adapted to rock on a fulcrum and have engagement with the hammer, a cam mounted on the pivotal support of the handles and having engagement with the hammer and the driving spring, and a stop on one of the handles to engage with and release the said catch, substantially as set forth.

3. In a saw-set, the combination of two handles pivoted together, one of the handles being provided with a grooved head having an anvil to receive a saw blade, a hammer carried by the handle having the said grooved head and adapted to move lengthwise thereof, a driving spring for operating the hammer, an approximately U-shaped spring catch having one end fixed to one handle, the other end being curved and adapted to rock upon a fulcrum on the said handle and having the closed end adapted to engage with the hammer, and a stop provided on the other handle to engage with the curved end of the catch and release it from the hammer, substantially as specified.

4. In a saw-set, the combination of two handles pivoted together, one of the handles being provided with a grooved head to receive a saw blade, a hammer carried by the handle having the said grooved head and adapted to move lengthwise thereof, a catch to hold the hammer during the storing of its motive power, a cam mounted upon the pivotal support of the handles and having a tooth in positive engagement with the hammer, and having a recess in its edge, a driving spring attached at one end to the other handle and having at its free end an anti-friction roller to engage with the said recess in the cam, and a stop provided on the handle carrying the spring to release the said catch, substantially as set forth.

5. In a saw-set, a grooved head to receive a saw blade, saw setting devices, and a support for the outer edge of the saw comprising side bars pivoted to the tool and having rollers in their outer ends, a connecting cross bar uniting the side bars, a slotted segment forming a prolongation of one of the side bars, and a binding screw to secure the support in the required adjusted position, substantially as described.

530,502. **STRAWBOARD-LINING MACHINE.** LOUIS BLESSING, Jackson, Mich. Filed May 31, 1893. Serial No. 476,192. (No model.)

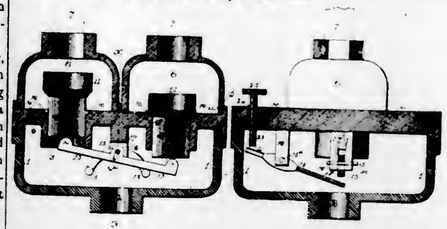


*Claim.*—1. In a straw board lining machine the combination of the circular irons H, having journal notches on their convex surface, the roller, Z, journaled on said circle irons, and capable of adjustment thereon with the automatic adjustable steam heated roll, F, substantially as and for the purpose specified.

2. In a straw board lining machine, the combination of the steam heated roll, F, having collars, R, on the gudgeons thereof, the brackets, G, the perpendicular rods, I, located loosely therein, and resting on said collars, springs, J, held on said rods, the horizontal rods, I', screwed into said collars, R, and journaled loosely in the posts, A', guide arms K, secured upon rods, I', and having a guide roller adapted to engage roll F, springs, J, held on rods I', on each side of the post, A', substantially as and for the purpose set forth.

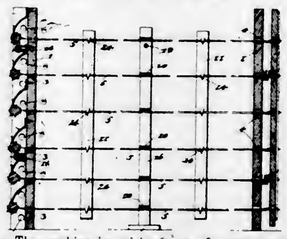
530,503. **STEAM-CYLINDER VALVE.** LEANDRE BOUDREAUX, Thibodeaux, La. Filed July 18, 1894. Serial No. 517,918. (No model.)

*Claim.*—1. In a valve of the class described, the combination of a single enlarged valve casing, a removable top cap fitted on said casing and provided with separate valve openings and valve seats, enlarged pipe necks fitted into said valve openings, cup valves working over said seats within the pipe necks and provided with depending stems, an intermediately arranged fixed pivot pin, an intermediate valve lever having a central transverse slot receiving said pivot pin, and opposite rounded ends contacting with the lower projecting stems of the valves, and a separate adjusting device for moving the valve lever upwardly on its pivot pin to uniformly adjust the ends of the valve lever under the valves, substantially as set forth.



2. In a valve of the class described, the combination of a valve casing provided with a central bottom drain opening and with separate valve openings in the top, pipe necks fitted into said top valve openings, the valve seats arranged below said pipe necks, the valves working over said valve seats, an intermediately arranged supporting arm carrying a pivot pin at its lower end, an intermediate valve lever supported in the lower end of said supporting arm and having a central transverse slot receiving said pivot pin, a separate adjusting lever pivotally supported at one side of said valve lever and provided with a U-shaped fork at one end adapted to work under said valve lever at both sides of its pivot, and an adjusting screw mounted in the top of the valve casing and having its inner end engaging the other opposite end of said separate adjusting lever, substantially as set forth.

530,504. **FENCE.** SAMUEL C. BOWER, Mountain Eagle, Pa. Filed July 14, 1894. Serial No. 517,583. (No model.)



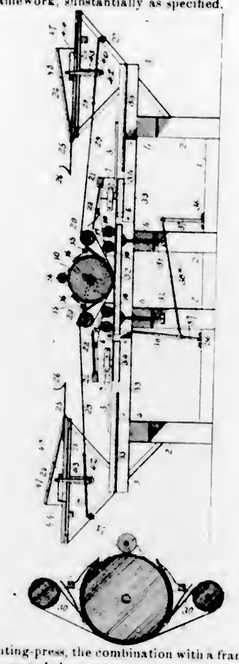
*Claim.*—The combination with a fence, of a compensator arranged at one end thereof and connected with the wires, the vertical bearing bars located at the other end of the fence and provided with series of bearing openings located at different intervals, the adjustable and detachable spools or shafts journaled in the bearing openings of the bearing bars and provided with ratchets, and the depending outwardly bent springs secured at their upper ends to the adjacent post and having their lower ends engaging the ratchets, substantially as described.

530,505. **PRINTING-PRESS.** RICHARD CLARK and LOUIS M. CRON, Warsaw, Ohio. Filed Nov. 15, 1893. Serial No. 491,014. (No model.)

*Claim.*—1. In a printing press of the class described, the combination with a frame-work having a track, a type bed arranged within the track, stationary ink-tables arranged at opposite sides of the type bed and within the track, and inclined feed tables at opposite ends of the framework; of an intermediate carriage arranged to travel over the track between the opposite feed tables, an impression cylinder journaled centrally in the carriage, yielding triangularly-shaped paper guiding fingers fixedly positioned at both sides of the cylinder and having inner curved portions lying close thereto, loose rolls journaled at opposite sides of the cylinder, guide tapes reversely wound upon the rolls and passing under the cylinder, tension tapes winding on the ends of said loose rolls and connected at their outer ends to a fixed part of the framework, the opposite pairs of inking rolls journaled in the carriage, the stationary flies pivotally mounted on the carriage at one side of the loose rolls, and means for reciprocating said carriage substantially as set forth.

2. In a printing-press, the combination with a framework having a track, a type-bed arranged in the track, and ink-tables located

at opposite sides of the type base, of a carriage mounted for movement upon the track, an impression cylinder journaled in the carriage, yielding triangularly shaped paper-guiding fingers at each side of the platen, loose rolls journaled at opposite sides of the platen, guide tapes reversely wound upon the rolls and passing under the platen, tension-tapes passing over the ends of the rolls, and coiled springs connected with the outer ends of these tapes and fastened to a fixed part of the framework, substantially as specified.



3. In a printing-press, the combination with a framework, a movable carriage arranged thereon, means for operating the carriage, a revolving cylinder arranged in the carriage, a superimposed paper-roll, and a type-bed below the revolving cylinder, of a feed-table at the end of the frame, bearings at the opposite sides of the table, a transverse crank-shaft journaled in the bearings and having its crank-portion projecting above the face of the table, a gravity-arm at one end of the crank shaft and extending forward and having an inclined end arranged in the path of the projection on the carriage, a slide-bar arranged upon the feed-table and connected with the cranked portion of the crank-shaft, and forwardly disposed arms extending from the bar and having inclined cam ends arranged in the path of the paper-roll, substantially as specified.

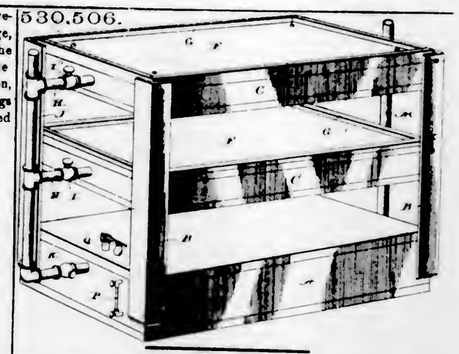
4. In a printing-press, the combination with the oblong frame, the movable carriage, the revolving cylinder arranged therein, the superimposed paper-roll, and means for operating the carriage, of the opposite inclined feed-tables 24 supported on the bases 23 having elongated slots, the opposite hangers 40 having transversely opposite bearings, the transverse shafts arranged in the bearings and having intermediate cranked portions extending through the slots and their outer ends bent to form the arms 45 having the inclined extremities 46 arranged in the path of the travel of the platen, the slide-bars 48 surmounting the tables 24 and connected to the cranked portions, and the arms 25 at the ends of the slide-bars and provided with cam portions 26, substantially as specified.

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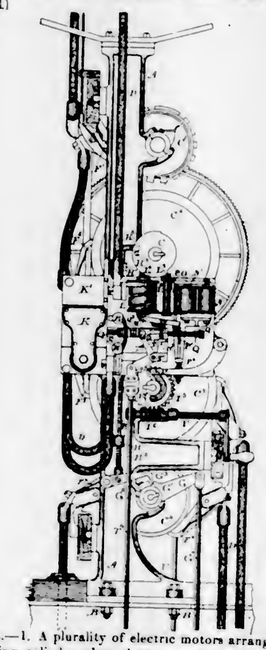
530,506. STEAM FRUIT-DRIER. JOSEPH M. COULTER, Portland, Oreg. Filed June 13, 1893. Serial No. 477,446. (No model.)

*Claim.*—In a steam fruit drier, the combination with the boiler, the hollow steam pans arranged one above the other, and the steam circulating pipe connections; of separate V-shaped steam distributing or spreading strips arranged transversely inside of each steam pan, and having their opposite ends terminating short of the sides of the pans to leave side steam passages, said strips also having their apices disposed toward the steam inlet or supply of each pan and provided in one edge with steam openings or notches, the notched edges of the strips being reversely disposed to each other substantially as set forth.

530,506.



530,507. CONTROLLER FOR ELECTRIC LOCOMOTIVES. JOHN W. DARLEY, Jr., Baltimore, Md., assignor to the General Electric Company, Boston, Mass. Filed Nov. 16, 1893. Serial No. 491,145. (No model.)



*Claim.*—1. A plurality of electric motors arranged in groups, a commutating cylinder adapted to connect them in series or multiple, and a cut-out cylinder arranged, substantially as described, to cut out any disabled motor from a group in all positions of the commutating cylinder and to cut out its mate only in multiple positions: whereby the power of the mate may be employed in the series positions, while the balance of the circuits is preserved in the multiple positions.

2. A plurality of electric motors arranged in groups, a commutating cylinder provided with contacts and cross connections adapted to connect the motors in series or multiple, and a cut-out cylinder provided with contacts and cross connections; all adapted and arranged substantially as herein described and set out to cut out a disabled motor from any group in all positions of the commutating cylinder and to cut out its mate only in multiple positions.

3. In a controlling apparatus for electric motors, an electro-magnetic circuit-breaker, a commutating cylinder and mechanism, substantially as described, operated thereby and adapted to vary the capacity of the circuit-breaker in accordance with the position of the commutating cylinder.

4. In a controlling apparatus for electric motors, an electro-magnetic circuit-breaker comprising a series coil, a core energized thereby an armature attracted by such core and arranged to prevent the separation of the circuit-breaking contacts when not attracted, and a rotary yoke carried by the commutating cylinder and adapted to vary the attraction of the core upon the armature in accordance with the positions of the commutating cylinder.



5. In a controlling apparatus for electric motors, a commutating cylinder provided with contacts and cross-connections adapted to connect the motors in series or parallel, in combination with an electro-magnetic circuit-breaker comprising a series coil, a core energized thereby, an armature attracted by such core and adapted to hold in engagement the circuit-breaking contacts, and a rotary magnetic yoke attached to and revolving with the commutating cylinder; whereby the circuit breaker may have a different capacity for the series and multiple positions of the commutating cylinder.

6. In a controlling apparatus for electric motors, an electro-magnetic circuit-breaker, a cut-out cylinder, and mechanism, substantially as described, operated thereby and adapted to vary the capacity of the circuit-breaker in accordance with the position of the cut-out cylinder.

7. In a controller for electric motors, an electro-magnetic circuit breaker, a cut-out cylinder and adjustable mechanism, substantially as described, operated thereby and adapted to vary the capacity of the circuit-breaker in accordance with the position of the cut-out cylinder.

8. In a controller for electric motors, an electro-magnetic circuit-breaker comprising a series coil, a core magnetized thereby, an armature attracted by such core against the pull of a spring, and contacts arranged to separate when the armature is thus attracted; in combination with a cut-out cylinder, and mechanism adapted to increase the tension of the spring when any motor is cut out by the revolution of the cut-out cylinder.

9. In a controller for electric motors, an electro-magnetic circuit-breaker comprising a series coil, a core magnetized thereby, an armature attracted by such core against the pull of a spring and arranged to hold in engagement the contacts of the circuit-breaker; in combination with a cut-out cylinder, a cam attached to and revolving therewith, an arm operated by such cam and arranged to furnish an adjustable bearing for the spring; whereby the revolution of the cut-out cylinder may increase the tension of the spring to vary the capacity of the circuit-breaker when a motor is cut out.

10 In a controller for electric motors, an electro-magnetic circuit-breaker comprising a series coil, a core magnetized thereby, an armature attracted by such core against the pull of a spring and contacts held in engagement when the armature is unattracted; in combination with a cut-out cylinder, a cam attached to and revolving therewith, an arm operated by such cam and adapted to form a bearing for one end of the spring; whereby the revolution of the cut-out cylinder may increase the tension of the spring to vary the capacity of the circuit-breaker when a motor is cut out.

11. In a controller for electric motors, an electro-magnetic circuit-breaker comprising a series coil, a core magnetized thereby, an armature attracted by such core against the pull of a spring, circuit-breaking contacts comprising a main and an auxiliary contact upon the same rod, and a detent upon the armature holding such contacts in engagement; all in combination with a rotary magnetic yoke attached to and revolving with the commutating cylinder and adapted to vary the pull upon the armature in accordance with the position of the commutating cylinder.

12. In a controller for electric motors, an electro-magnetic circuit-breaker comprising a series coil, a core for such series coil provided with a pole piece, a second core also provided with a pole piece, and a magnetic yoke arranged to complete the circuit between the pole pieces and to be maintained at different distances therefrom, and an armature attracted by the second core and adapted to act as a detent for the circuit breaking contacts.

13. In a controller for electric motors, a commutating cylinder adapted to connect the motors in series or parallel at will, a reversing cylinder, and mechanism adapted to release such reversing cylinder only when the commutating cylinder is in its first or off position.

14. In a controller for electric motors, a commutating cylinder, a reversing cylinder and a detent for such reversing cylinder arranged to be thrown out of engagement by the rotation of the commutating cylinder to its first or off position.

15. In a controller for electric motors, a reversing cylinder provided with detent notches, as $G'$, $G^2$, a detent lever, as $G^3$, adapted to maintain the cylinder in one or the other of two positions, a rod, as H, attached to the detent lever and adapted to co-operate with a pin, as $H^3$, rotated by the commutating cylinder and arranged to lift the detent lever $G^3$ from the notches only when the commutating cylinder is in its "off" position.

16. In a controller for electric motors, a commutating cylinder adapted to connect the motors in series or multiple, a resistance cylinder geared thereto arranged to cut in or out successive sections of resistance, and mechanism adapted to release both cylinders or lock them in position, substantially as described.

17. In a controller for electric motors, a commutating cylinder adapted to connect the motors in series or parallel at will, a cut-out cylinder, and mechanism adapted to be operated by the cut-out cylinder and arranged to stop the commutating cylinder, at a definite point in its revolution.

18. In a controller for electric motors, a commutating cylinder actuated by fluid pressure, a resistance cylinder geared to and operated by the revolution of the commutating cylinder, a stop adapted to control the revolution of the commutating cylinder, a valve adapted to control the fluid pressure and a second stop arranged to lock the resistance cylinder, the two stops and the valve being connected; whereby they may be simultaneously actuated to permit or stop the rotation of the two cylinders.

19. In a controller for electric motors, a commutating cylinder actuated by fluid pressure, a resistance cylinder geared thereto, and interlocking mechanism adapted to simultaneously control the fluid pressure and release or lock the cylinders.

20. In a controller for electric motors, a commutating cylinder, a resistance cylinder geared thereto, and interlocking mechanism adapted to permit a partial rotation of the commutating cylinder in its series position and arranged to arrest the motion of the resistance cylinder at definite points at will, and thus vary the amount of resistance in circuit in the series position of the commutating cylinder.

21. In a controller for electric motors, a cut-out cylinder, a stop actuated thereby, a commutating cylinder provided with notches co-operating with such stop and adapted to prevent the rotation of the commutating cylinder to multiple position when the cut-out cylinder is rotated to cut out a motor.

22. In a controller for electric motors, a commutating cylinder, provided with notches, as $Z^4$, $Z^5$, adapted to co-operate with a stop, as $I^{10}$, a cut-out cylinder provided with a return-cam, as $I^4$, and lever arms, as $I^6$, $I^7$, adapted to actuate the stop $I^{10}$ by the rotation of the cut-out cylinder, substantially as described.

23. In a controller for electric motors, a commutating cylinder, provided with stops, as $Z^4$, $Z^5$, adapted to co-operate with a stop, as $I^{10}$, a cut-out cylinder provided with a cam, as $I^4$, and lever arms, as $I^6$, $I^7$, a gear, as $I^3$, attached to the cut-out cylinder, and a worm, as $I^9$, co-operating with the gear to rotate the cut-out cylinder; all arranged and adapted as herein set out to stop the rotation of the commutating cylinder before reaching the multiple positions, when a motor is cut out while permitting its rotation in the series positions.

24. In a controller for electric motors, a commutating cylinder provided with a flange, a manually controlled stop adapted to move upon either side thereof, and cut away portions in such flange adapted to engage the stop and arrest the rotation of the cylinder.

25. In a controller for electric motors, a commutating cylinder provided with a flange having cut away portions, as $Z^2$, $Z^3$, adapted to engage a stop, as $U^5$, and thus arrest the rotation of the cylinder, and a longer cut away portion, as $Z^6$, with which the stop may engage without arresting the cylinder, a resistance cylinder geared to the commutating cylinder and revolving therewith, such resistance cylinder having detent notches, as W, and a stop as $U^7$, connected to and operated simultaneously with the stop $U^5$; whereby the commutating cylinder may revolve in its series positions to vary the amount of resistance in circuit.

26. A cylindrical switch for electric apparatus, provided upon the interior of its cylinder with blow-out magnets adapted to extinguish any arc that may be formed at the contacts upon the surface of the cylinder, substantially as described herein.

27. In a controller for electric motors, a resistance cylinder provided with interior blow-out magnets, one of such magnets being wound with heavier coils than the others and arranged beneath the brushes which first break contact, substantially as described.

28. In a controller for electric motors, a resistance cylinder having its contact brushes divided into a main and an auxiliary group, the brushes of the auxiliary group being arranged to break contact before those in the main group.

29. In a controller for electric motors, a resistance cylinder having its contact-brushes divided into a main and an auxiliary group, the brushes of the auxiliary group arranged to break contact before those in the main group, provided with blow-out magnets therein, and an auxiliary blow-out magnet of greater strength beneath the brushes of the auxiliary group.

30 The method of changing six motors from series to parallel groups of three in series, which consists in forming a shunt connection between the terminal of the third motor and ground, including a resistance, then open-circuiting the second group of three and cutting out the resistance, then connecting the open-circuited group in shunt around the first group, the shunt including a resistance, and then cutting out the resistance, leaving the two groups in parallel.

31. The method of changing six motors from two parallel groups of three in series to three parallel groups of two in series, which con-

sists in putting the first two motors in a circuit to ground which includes a resistance, the second two motors in a shunt around the first two motors and the resistance to the terminal of the fifth motor, making a shunt connection between the ground-terminals of the first group of two and the second group of two, putting the sixth motor in shunt between such shunt connection and the ground lead of the resistance, then open circuiting the fifth and sixth motors and connecting the terminal of the second group of two to ground and cutting out the resistance, then connecting the fifth and sixth motors between the resistance and ground and connecting the resistance to the lead to the second group of motors and finally cutting out the resistance, leaving the motors in three parallel groups of two in series.

32. In a controller for electric motors, a commutating cylinder, a reversing cylinder, and mechanism adapted to permit the starting of the commutating cylinder only when the reversing cylinder is in a running position.

33. In a controller for electric motors, a commutating cylinder, a reversing cylinder, and means arranged to interlock the two cylinders; all as herein described, whereby the commutating cylinder may be started only when the reversing cylinder is in a running position, and the reversing cylinder may be rotated only when the commutating cylinder is in its "off" position.

34. In combination, commutating mechanism adapted to connect electric motors in series or parallel, reversing mechanism for such motors, an operating lever for the commutating mechanism, a second operating lever having two running positions for the reversing mechanism, and interlocking devices arranged to permit the action of the operating lever for the commutating mechanism only when the lever of the reversing mechanism is in one or the other of its running positions.

35. In combination, commutating mechanism adapted to connect electric motors in series or parallel, reversing mechanism for such motors, an operating lever for the commutating mechanism, a second operating lever having two running positions, and a sector provided with two notches corresponding to the running positions of the reversing lever and adapted to prevent the motion of the commutating lever except when opposite one of such notches, such sector being connected to and moving with the reversing lever.

36. The method of changing five motors from series to two groups in multiple of two in series, by cutting out the fifth motor, which consists of making a shunt around three of such motors, the shunt including a resistance, then cutting out the resistance and open-circuiting the group of three, then cutting out the odd motor and including the resistance, while connecting the motors into two groups in multiple of two in series, and then cutting out the resistance.

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530,508. GAS-ENGINE. HENRY T. DAWSON, Salcombe, England. Filed May 2, 1893. Serial No. 472,770. (No model.) Patented in England Apr. 11, 1892, No. 6,952, and Apr. 11, 1893, No. 7,426; in France Apr. 8, 1893, No. 229,212; in Belgium Apr. 10, 1893, No. 104,225; in Germany Apr. 18, 1893, No. 73,561 and No. 75,328; in Switzerland Apr. 24, 1893, No. 6,703; in Victoria May 5, 1893, No. 10,506; in New South Wales May 8, 1893, No. 4,398; in New Zealand May 15, 1893, No. 6,187; in Spain June 26, 1893, No. 14,541; in Italy June 30, 1893, LXVI, 346; in Austria-Hungary Jan. 23, 1894, No. 44 and No. 973, and in Canada May 25, 1894, No. 46,157.

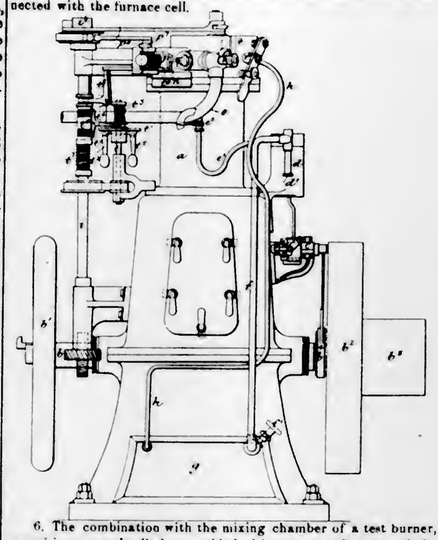
*Claim.*—1. In a gas engine the combination of a combustion chamber *o*, a furnace chamber *r* containing refractory material, means for supplying gas to such furnace chamber and burning it among the refractory material within said furnace chamber and an ignition valve *s* between the combustion chamber and the holder such valve opening inwardly into the furnace chamber and permitting a portion of the charge to penetrate among the highly heated refractory material.

2. In a gas engine, the combination with the combustion chamber, of the valve *p*, its stem $p^3$, the valve chamber *m*, a spring $p^3$ for closing the valve, the collar $p^4$ on the valve stem, the rollers $p^5$, mounted on the collar, the fingers $p^4$, in contact with the rollers and means for operating the fingers to thrust the valve open.

3. In a gas engine, the combination of a combustion chamber, forming part of the working cylinder, inlet, outlet and ignition valves in connection with the combustion chamber, a cam on a shaft parallel to the cylinder, and rotating in time with the engine cycle, connections between said cam and the ignition valve and a single eccentric upon the cam or cycle shaft connected with the inlet and outlet valves to operate them.

4. An ignition apparatus for a gas engine, comprising a holder *r*, disks of fire clay $r'$, or other suitable pieces of refractory material, devices for admitting to the midst of the disks or pieces a mixture of gas and air, which, being burned, heats the disks or pieces, and connections between the combustion chamber of the engine and the heated disks, and a valve for permitting a portion of the charge to pass to the heated surfaces.

5. An ignition apparatus for a gas engine comprising a furnace cell heated by the combustion of gas and air within it and a valve admitting into the furnace cell a portion of the charge to be ignited, in combination with a pump, separate reservoirs into which gas and air are forced by the pump in suitable proportions, and a mixing chamber into which the gas and air are forced, and which is connected with the furnace cell.



6. The combination with the mixing chamber of a test burner, comprising a metal cylinder provided with a passage for gas and air, a valve for regulating said passage, a reticulated diaphragm above the passage, and a lining of refractory material in the upper part of the cylinder.

7. The combination, with the combustion chamber of a gas-engine, of igniting apparatus connected therewith, gas and air reservoirs connected with the igniting apparatus and supplying mingled gas and air thereto, and a compound pump, comprising a casing connected to the reservoirs by suitable passages provided with suitable valves, and having a partition 2, carrying rams $2^x$, and provided with channels, as described, the pistons 3 and 4 and means for operating them

8. The combination, with the combustion chamber of a gas-engine, of igniting apparatus connected therewith, gas and air reservoirs, a mixing chamber connected with the ignition apparatus and with the gas and air reservoirs, and a pump for supplying gas and air to the reservoirs, comprising a casing, 1, a partition 2, provided with channels, as described, and one or more pistons, air inlet and outlet valves, gas inlet and outlet valves, and means for operating the pistons.

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530,509. GAS RANGE OR COOKING-CABINET. FREDERICK C. DE PRENGAL, Washington, D. C. Filed Aug. 3, 1892. Serial No. 442,048. (No model.)

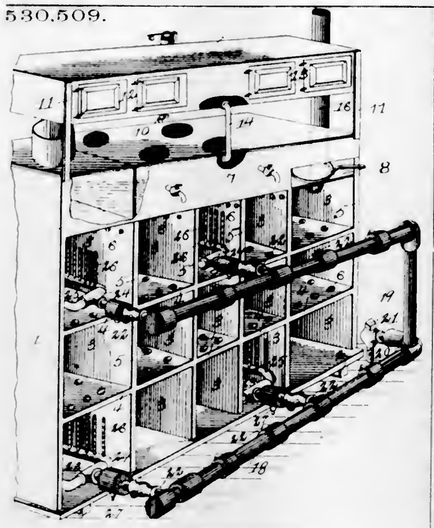
*Claim.*—1. The combination, of a number of cooking or heating chambers arranged in tiers, the chambers of one tier having gas-burners and being in communication with each other and with the chambers of the next lower tier, and the chambers of the lowermost tier also having burners and being in communication with the chambers of the intermediate tier, the chambers of the intermediate and lowermost tiers being separated by imperforate walls.

2. The combination, with a frying-chamber having an outlet, of a number of cooking or heating-chambers arranged in tiers, the chambers of one tier having gas-burners and being in communication with each other and with the chambers of the next lower tier; as well as with the frying-chamber, and the chamber of the lowermost tier also having burners and being in communication with the chambers of the intermediate tier, the chambers of the intermediate and lowermost tiers being separated by imperforate walls.

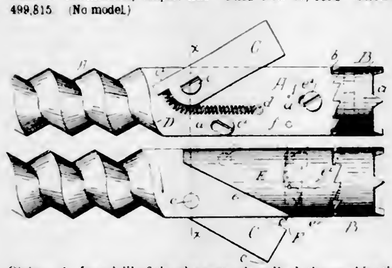
3. The combination, of a number of cooking or heating-chambers arranged in tiers, the chambers of one tier having gas burners and being in communication with each other and with the chambers of the next lower tier, and the chambers of the lowermost tier also having burners and being in communication with the chambers of the intermediate tier, the chambers of the intermediate and lowermost tiers being separated by imperforate walls, and a steam generator and cooker supported in proximity to the upper tier of chambers, so as to receive heat therefrom.



530,509.



530,510. MINING-DRILL. ROBERT H. ELLIOTT, Birmingham, and JOHN B. CARRINGTON, Jasper, Ala. Filed Feb. 10, 1894. Serial No. 499,815. (No model.)



*Claim.*—1. In a drill of the character described, the combination with a revoluble wing or cutter and means for moving the same through an angle axially, of an auger for removing the chips or cuttings, and a reciprocating block adapted to push said chips toward said auger, substantially as and for the purposes described.

2. In a drill of the character described, the combination with a revoluble wing or cutter and means for moving the same through an angle axially, of an auger for removing the chips or cuttings, a reciprocating block provided with teeth at the base thereof, a ratchet engaging in said teeth and adapted to press said block forward, and a spring adapted to press said block backward, substantially as and for the purposes described.

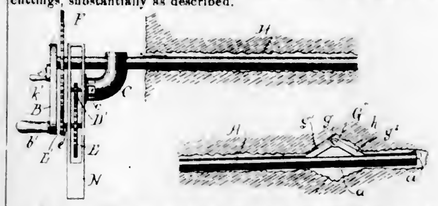
3. In a drill of the character described, the combination with a revoluble spindle or drill body, of a pivoted wing or cutter mounted thereon, means for swinging said pivoted wing outward from the axis of said spindle or drill body, an auger for removing the chips or cuttings, and a reciprocating block adapted to push said chips toward said auger, substantially as and for the purposes described.

4. In a drill of the character described, the combination with a revoluble spindle or drill body, of a pivoted wing or cutter mounted thereon, means for swinging said pivoted wing outward from the axis of said spindle or drill body, an auger for removing the chips or cuttings, a reciprocating block provided with teeth at the base thereof, a ratchet engaging in said teeth and adapted to press said block forward, and a spring adapted to press said block backward, substantially as and for the purposes described.

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530,511. MINING-DRILL. ROBERT H. ELLIOTT, Birmingham, and JOHN B. CARRINGTON, Jasper, Ala. Filed Feb. 20, 1894. Serial No. 500,910. (No model.)

*Claim.*—1. In a drill of the character described, the combination with a hollow tube slotted along an element thereof, means for revolving the said tube, of a toggle joint of hard metal mounted in said tube and adapted to move outward and inward through said slot, a rod mounted in said tube and having oppositely disposed screw threads adapted to engage nuts in the ends of said toggle joint and to open and close the same, means for turning said rod, and means for blowing air through said tube, for the purpose of carrying off the cuttings, substantially as described.



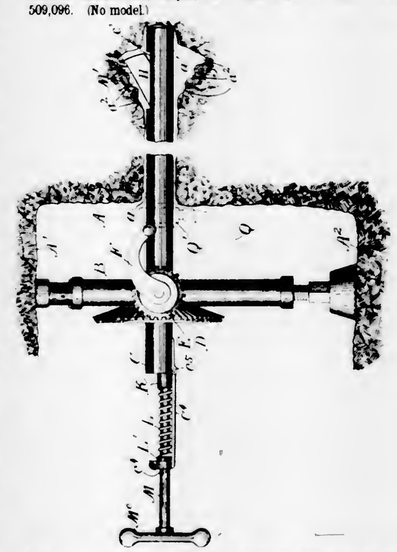
2. In a drill of the character described, the combination with an air pipe, of a hollow tube slotted along an element thereof and revolubly connected to said air pipe and receiving air therefrom, a pivoted cutter mounted in said tube, a rod mounted in said tube and adapted to move said cutter outward and inward through said slot, means for moving said rod, a fan mounted in said air pipe, and means for simultaneously revolving said tube and said fan, substantially as and for the purposes described.

3. In a drill of the character described, the combination with a hollow tube slotted along an element thereof, with perforations to admit air near the outer end thereof, of a toggle joint of hard metal mounted in said tube and adapted to move outward and inward through said slot; a rod mounted in said tube and adapted to operate said toggle joint, means for moving said rod; an air pipe, an air chamber connected to said air pipe and inclosing said tube over the perforations therein, a fan mounted in said pipe, and means for simultaneously revolving said tube and said fan, substantially as and for the purposes described.

4. In a drill of the character described, the combination with a hollow tube slotted along an element thereof, of an air pipe connected to said tube and opening thereinto, a toggle joint of hard metal mounted in said tube and adapted to move outward and inward through said slot, a rod having oppositely disposed screw threads adapted to engage nuts in the ends of said toggle joint and to open and close the same, means for turning said rod, a fan mounted in said air pipe, and means for simultaneously revolving said tube and operating said fan, substantially as and for the purposes described.

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530,512. MINING-DRILL. ROBERT H. ELLIOTT, Birmingham, and JOHN B. CARRINGTON, Jasper, Ala. Filed Apr. 26, 1894. Serial No. 509,096. (No model.)



*Claim.*—1. In a mining drill of the character described, the combination with a rotating tube slotted near the forward end thereof,

of a wing pivoted in said tube and adapted to swing outward through said slot, the said wing being provided with a longitudinal groove therein, an auxiliary cutter moving in said groove, and means for pressing said wing outward, substantially as described.

2. In a mining drill of the character described, the combination with a spindle or drill body and means for rotating the same, of an extensory wing provided with a guideway therein, and an auxiliary cutter moving in said guideway, substantially as described.

3. In a mining drill of the character described, the combination with a spindle or drill body and means for rotating the same, of an extensory wing provided with an inclined longitudinal guideway therein, an auxiliary cutter mounted in said guideway, and means for moving said cutter backward and forward, substantially as and for the purposes described.

4. In a mining drill of the character described, the combination with a rotary spindle or drill body, of an extensory wing pivoted thereto and provided with a guideway therein, a yielding elastic device for pressing said wing outward, an auxiliary cutter moving in said guideway, and means for moving said cutter backward and forward, substantially as described.

5. In a mining drill of the character described, the combination with a rotary tube slotted near the forward end thereof, of an extensory wing pivoted in said tube and adapted to swing outward through said slot, the said wing being provided with a guideway therein, an auxiliary cutter mounted in said guideway, a rod movable longitudinally in said tube, and links connecting said rod and said auxiliary cutter, substantially as and for the purposes described.

6. In a mining drill of the character described, the combination with a spindle or drill body and means for rotating the same, of an extensory wing provided with a guide way therein, means for swinging said wing outward about its pivot, and an auxiliary cutter mounted in said guideway, and means for moving said auxiliary cutter, substantially as described.

7. In a mining drill of the character described, the combination with a rotating tube slotted near the forward end thereof, of a wing pivoted in said tube and adapted to swing outward through said slot, the said wing being provided with a longitudinal groove therein, an auxiliary cutter mounted in said groove, a yielding elastic device for pressing said wing outward, a rod extending inwardly into said tube and projecting from the rear thereof, and links connecting said rod with said auxiliary cutter, substantially as and for the purposes described.

8. In a mining drill of the character described, the combination with a spindle or drill body and means for rotating the same, of an extensory wing provided with a longitudinal guideway therein, an auxiliary cutter mounted in said guideway, and a rod and flexible connection between it and said cutter for moving said cutter backward and forward in said guideway, substantially as and for the purposes described.

9. In a mining drill of the character described, the combination with a spindle or drill body and means for rotating the same, of an extensory wing provided with a longitudinal guideway therein with bottom sloping as shown, an auxiliary cutter mounted in said guideway, and adapted to move up said inclined bottom of said guideway, and a rod and a flexible connection between it and said cutter for moving said cutter backward and forward in said guideway, substantially as and for the purposes described.

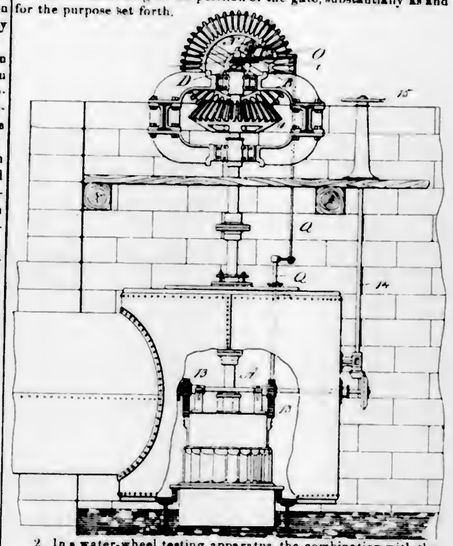
10. In a mining drill of the character described, the combination with a rotary tube slotted near the forward end thereof, of an extensory wing pivoted in said tube and adapted to swing outward through said slot, the said wing being provided with a guideway therein, an auxiliary cutter mounted in said guideway, a rod movable longitudinally in said tube, links connecting said rods and said auxiliary cutter, and an air blast passing through said tube for carrying off the chips or cuttings, substantially as described.

11. In a mining drill of the character described, the combination with a rotating tube slotted near the forward end thereof, of a wing pivoted in said tube and adapted to swing outward through said slot, the said wing being provided with a longitudinal groove therein, an auxiliary cutter mounted in said groove, a yielding elastic device for pressing said wing outward, a rod extending inwardly into said tube and projecting from the rear thereof, links connecting said rod with said auxiliary cutter, and an air blast passing through said tube for carrying off the chips or cuttings, substantially as and for the purposes described.

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## 530,513. WATER-WHEEL-TESTING APPARATUS. JAMES EMERSON, Williamsett, Mass. Filed July 23, 1894. Serial No. 518,308. (No model.)

*Claim.*—1. In a water wheel testing apparatus, the combination with the water-wheel-shaft, and the gate, of a counter, a wheel connected with the counter, a device for driving the wheel having a given working thrust relative thereto, and mechanism operatively connected to the water-wheel-shaft for operating the said driving device, a shield adapted to have a movement of interposition betweet the driving device and the part of the wheel engaged thereby, and a medium of connection between the gate and shield whereby the position of the shield relatively to the counter-driving-wheel may be variable according to the position of the gate, substantially as and for the purpose set forth.



2. In a water-wheel testing apparatus, the combination with the water-wheel-shaft, and the gate, of a counter, a wheel connected with the counter, a device for driving the wheel having a given working thrust relative thereto, and mechanism operatively connected to the water-wheel-shaft for operating the said driving device, a shield adapted to have a movement of interposition between the driving device and the part of the wheel engaged thereby, a medium of connection between the gate and shield whereby the position of the shield relatively to the counter-driving-wheel may be variable according to the position of the gate, and a second counter operatively connected with the water-wheel-shaft for indicating the number of the rotations thereof, substantially as set forth.

3. In a water-wheel testing apparatus, the combination with the water-wheel-shaft and the gate, of the ratchet-wheel, J, with the shield movably mounted adjacent thereto and having the lever arm, a rod operatively connected with the gate and with said lever-arm, a rotatable shaft having a driving connection with the water-wheel-shaft, and having the eccentric pin on which is hung a pawl-rod which has its operation upon the said ratchet-wheel as permitted by the automatically adjusted position of the said shield, and a counter operated by the rotations of the arbor of said ratchet-wheel, substantially as described.

4. In a water-wheel testing apparatus, the combination with the water-wheel-shaft and the gate-rod, of the gear, C, on the water-wheel-shaft, the counter, N, and a shaft, *d*, which operates it carrying a crank-pin and having a bevel gear wheel F, the shaft, *a*, with a bevel-pinion, *b*, in mesh with bevel-gear, F, and having the gear-wheel, D, working into the gear-wheel, C, the counter, O, and the shaft which operates it having thereon the ratchet-wheel, J, the pivotally mounted shield, K, having the lever-arm, *i*, to which the gate-rod is connected, and the pawl rod connected to said crank-pin and operating relative to the said shield and ratchet-wheel, substantially as and for the purposes set forth.

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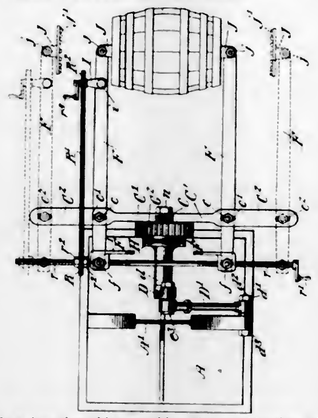
## 530,514. WITHDRAWN.

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## 530,515. BARREL-WASHER. HENRY J. FERGUSON, Brooklyn, N. Y., assignor to Charles F. Burrell, trustee. Filed Jan. 5, 1894. Serial No. 495,882. (No model.)

*Claim.*—1. In a barrel washing machine, the combination of a power driven shaft, gearing operatively connected therewith, a vibratory arm depending from said shaft and driven by said gearing, and a pair of barrel supporting arms connected to the vibratory arm, whereby a vibratory motion may be given to a supported barrel; substantially as described.

2. In a barrel washing machine, the combination with a power driven shaft, an arm loosely depending from said shaft, gearing for imparting a vibratory motion from the shaft to the arm, a pair of barrel supporting arms, and a brace or yoke for connecting said arms to the vibratory arm, whereby a vibratory motion may be given to a supported barrel; substantially as described.



3. In a barrel washing machine, the combination of a power driven shaft, gearing operatively connected therewith, a vibratory arm depending from said shaft and driven by said gearing, an additional vibratory arm carried by the main arm and also operated by the power shaft, and a pair of barrel supporting arms connected with both of the vibratory arms, whereby a vibratory motion may be given to a supported barrel in different directions; substantially as described.

4. In a barrel washing machine, the combination of a power-driven shaft, a main vibratory arm depending therefrom, an additional vibratory arm carried by the main arm, gearing for operating the main arm directly from the power shaft, a cam-groove in one of said gears for operating the additional vibratory arm, a pair of barrel supporting arms, and connections between said arms and both of the vibratory arms, whereby vibrating motion may be given to a supported barrel in different directions; substantially as described.

5. In a barrel washing machine, the combination with a power driven shaft, a vibratory arm depending therefrom, a pair of barrel supporting arms connected to said arm, a shaft $A^2$ mounted in the lower end of the arm, gearing for imparting rotary motion to the shaft $A^2$ from the power driven shaft, a crank D on the shaft $A^2$, and a vibrating link D′ mounted on the machine frame and to which the free end of the crank D is connected, whereby vibratory motion is imparted to the lower end of the vibratory arm; substantially as described.

6. In a barrel washing machine, the combination of a power-driven shaft, a vibratory arm depending therefrom, a shaft $A^2$ mounted in the lower end of the arm, a gear wheel on the power shaft, a gear wheel on the shaft $A^2$, an intermediate gear G′ on the vibratory arm for imparting motion from the power shaft to the shaft $A^2$, a crank D on the shaft $A^2$, a vibratory link D′ mounted on the machine frame and to which the free end of the crank G is connected, and a pair of barrel supporting arms connected to and movable with the vibratory arm; substantially as described.

7. In a barrel washing machine, the combination with a power driven shaft, a main vibratory arm depending therefrom, gearing for operating the main arm from the power shaft, a cam groove in one of said gears, an additional vibratory arm C pivoted at its lower end to the main vibratory arm and engaging at its other end with the cam groove, a pair of barrel supporting arms, and connections between said supporting arms and both of the vibratory arms, whereby vibratory motion may be given to a supported barrel in different directions; substantially as described.

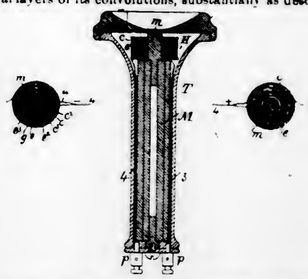
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## 530,516. SUPPRESSION OF SELF-INDUCTIVE OBSTRUCTION IN ELECTROMAGNETIC APPARATUS. STEPHEN D. FIELD, Stockbridge, assignor to the American Bell Telephone Company, Boston, Mass. Filed July 24, 1894. Serial No. 518,479. (No model.)

*Claim.*—1. In an electro magnet, the combination with the helices or convolutions thereof, of a conductor in reciprocal inductive relation with the wires composing said coils or helices, for the purpose of suppressing the reactance or self induction of the magnet, substantially as described.



2. The combination with an electro-magnet, of an associated incomplete electro-static shunt or inductive circuit, connected with one of its terminals, and having branches or extensions interposed between the several layers of its convolutions, substantially as described.



3. A combined electro magnet and condenser the condenser having for one of its plates the winding of the electro-magnet, and for the other a strip or ribbon of tinfoil or like conductor interposed between the several layers of the said winding in inductive relation thereto.

4. The combination in a magneto telephone, with the magnetic core, and its surrounding helix, of an associated incomplete inductive circuit interposed continuously between the several layers of the said helix, substantially as described.

5. A magneto telephone having conducting strips, ribbons or plates branching or extending from one of the terminals of its helix, and interposed between the several layers of the winding of said helix, whereby the electro static capacity of said helix is increased.

6. An electro magnet comprising the following elements in combination; a core capable of being magnetized; a winding or helix of two or more layers surrounding the same; and one or more incomplete inductive circuits placed in inductive relation to the said helices, substantially as specified.

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## 530,517. PROCESS OF MANUFACTURING INSULATING COMPOSITIONS FOR ELECTRICAL PURPOSES. ALFRED N. FORD, London, England. Filed June 11, 1894. Serial No. 514,248. (No specimens.) Patented in England July 17, 1890, No. 11,130.

*Claim.*—The herein described process for the manufacture of insulating compositions, which process consists, first;—in coating or saturating certain fibrous and other substances with a drying oil which has been previously partially oxidized, and then drying such fibrous substances so treated, and when dry, re-coating them again and again, each time drying the previous coat sufficiently to take another coat until the mass has increased in weight by such coating or saturation from fifty to two hundred per cent. approximately, and subjecting the material so treated to the action of grinding or amalgamating rollers, and subsequently adding a quantity of india rubber, gutta percha or similar material, say twenty-five per cent., and finally, subjecting the mass again to the action of grinding or amalgamating rollers or analogous means of mixing, substantially as described.

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## 530,518. COMBINED MONKEY AND PIPE WRENCH. SAMUEL M. FRIEDE, St. Louis, Mo., assignor of one-third to John M. Donnell, same place. Filed Jan. 29, 1894. Serial No. 498,307. (No model.)

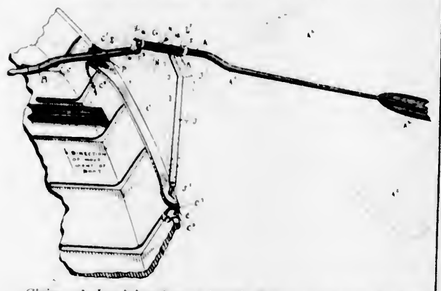


*Claim.*—1. In a combined monkey and pipe wrench, the combination of the grip jaw carrier head frame 1, the stationary outer grip jaws integral with said frame, the operating handle 2, integral with said frame, the flat screw carrier bar 16, that connects said outer jaws, and the intermediate traveler grip jaw that is mounted on said carrier bar; substantially as shown and described.

2. In a combined monkey and pipe wrench, the combination of the grip jaw carrier head frame, the stationary outer monkey grip jaw 14, the stationary outer pipe ratchet grip jaw 15, said jaws integral with said head frame, the operating handle 2 integral with said frame, the flat screw carrier bar 16, the intermediate traveler combined monkey and pipe grip jaw, mounted on said bar, the said jaw having the smooth square grip face 27, and the smooth bevel pipe grip face 29, and the screw threaded operating wheel 24; substantially as described.

3. In a combined monkey and pipe wrench, the combination of the grip jaw carrier head frame, the outer square smooth face grip jaw 14, the outer ratchet square face grip jaw 15, the operating handle 2, integral with said head frame, the said head frame having the bail shaped shoulder bar 12 with angle ends 13, and the straight guide face 11, the flat screw carrier bar 16, the intermediate traveler combined monkey and pipe grip jaw 21, mounted on said bar, said jaw having the smooth square monkey grip face 27, the smooth bevel pipe grip face 29, and the square faced extension heel 31, and the operating screw threaded wheel 24; substantially as shown and described.

530,519. BOW-FACING OAR. FREDERICK HARBERS, Peoria, Ill. Filed Mar. 15, 1894. Serial No. 503,710. (No model.)



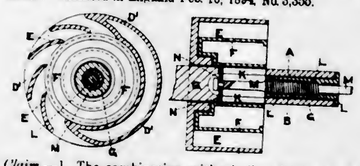
*Claim.*—1. In a jointed oar, a handle B pivoted by suitable means on a tilting or swinging support secured to the boat, a coil spring secured at one end to the said support and at the other to the boat, an oar secured on a pivotal support by suitable means on the outer free end of said handle B, said oar having a partial revoluble movement in said pivotal support, the oar having a bend in its length whereby the blade of said oar is brought below the bearing or engaged portion thereof, for the purposes set forth and a rod bent substantially as set forth one end of said rod being pivoted to the pivoted oar support and the other to the oar pivotal support substantially in the manner and for the purposes set forth and described.

2. In a jointed oar for boats, an arm B pivotally mounted on a support C pivotally secured to the boat, substantially as set forth, the outer end of said arm B having a supporting plate connected therewith and provided with bearings, an oar having its loom journaled in said bearings, said oar having a bend beyond the journaled portion whereby the oar blade is carried below the journaled portion whereby the weight of the oar is carried below the said journaled portion substantially as and for the purposes set forth and described.

3. In a jointed oar the combination of the handle B pivotally mounted on a support C pivotally mounted on a boat, a spring $C^4$ secured at one end to the said support and at the other to the boat, the oar A constructed with the bend A' substantially as set forth and for the purposes described and having its loom mounted in bearings composed of the rings G and I made with the plate H pivotally mounted on one end of the said handle B, a rod J bent at J' substantially in the manner set forth and pivoted at one end to the said plate H and at the other by suitable means to the said support C, a stop K made with the plate H, the buttons L and L' secured in suitable position upon the oar whereby the partial revoluble movement of the oar is limited, and a cam N pivoted to the oar for the purposes set forth and a spring surrounding the shank of the oar, one end being affixed to the oar and the other to the said plate H, all working together substantially in the manner and for the purposes specified.

4. In combination with a boat, a rowing mechanism comprising a handle B pivotally mounted on a tilting support pivoted on the boat, a pivot an one end of the handle for the oar and consisting of a flanged plate P terminating in a vertical portion $P^3$ secured to said handle B, a cup F seated on said plate and also terminating in a tube portion $F'$ inclosing said tube portion $P^3$, a bolt E passing through said portion P and F, a plate H carrying a ring I at its free extremity and also carrying the stop K, said plate formed with the said cup F, a ring G made with said cup P and plate H in line with said ring I, the oar A mounted within said rings G and I and provided with the bushings S and T within the said rings G and I respectively, a spring M encircling the loom of the said oar and secured at one end thereto, the other end to the plate H, the buttons L and L' secured to the oar in proper position for the purpose set forth, a cam N pivoted to the oar for the purpose set forth, and rod J pivoted at one end to the plate H and at the other to the support C substantially in the manner and for the purposes set forth and described.

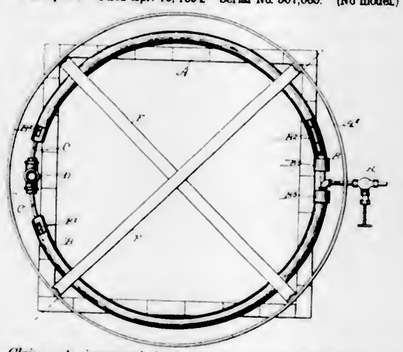
530,520. TURBINE. SAMUEL HARRISON and GEORGE H. HARRISON, Ripon, England. Filed June 2 1894. Serial No. 513,309. (No model.) Patented in England Feb. 16, 1894, No. 3,355.



*Claim.*—1. The combination, with a hollow driving shaft, and an annular turbine wheel secured thereon and provided with jets E arranged in separate groups substantially opposite each other; of a cylindrical regulator journaled on the said shaft and inside the turbine wheel, and provided with openings H, one for each group of jets; and adjusting mechanism carried by the said hollow shaft and operatively connected with the said regulator, substantially as and for the purpose set forth.

2. The combination, with a turbine wheel provided with jets E, and the hollow turbine shaft provided with slots K; of the annular regulator journaled inside the turbine wheel and provided with the opening H at its periphery and spiral slots in its hub; the plate N sliding longitudinally in the slots K and engaging with the said spiral slots, a screw-threaded sleeve secured in the hollow turbine shaft, and a revoluble screwthreaded rod engaging with the said sleeve and provided with an annular groove journaled in the said plate, whereby the regulator is adjusted, substantially as set forth.

530,521. WAGON-TIRE HEATER. ISAAC HARVEY, Hartley, Iowa, assignor of three-fourths to I. N. Drake, J. M. Yeoman, and J. P. Gross, same place. Filed Apr. 10, 1894. Serial No. 507,085. (No model.)

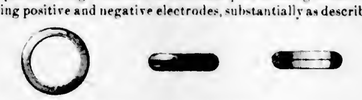


*Claim.*—An improved tire heating apparatus, comprising a suitable circular frame having cross pieces for supporting tires therein, a pipe leading from a suitable source of hydro carbon supply passed around the interior of the frame and perforated at its top, a pipe of larger diameter encircling the aforesaid pipe and closed at its ends, a pipe passed around the interior of the frame directly beneath the aforesaid pipes, closed at its ends and having perforations at its top and a pipe communicating with the central portion of the upper outside pipe and the central portion of the lower pipe, substantially as and for the purposes stated.

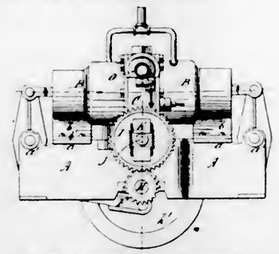
530,522. GALVANIC RING. DAVID HATTENBACK, Sioux City, Iowa. Filed Sept. 4, 1894. Serial No. 522,063. (No model.)



*Claim.*—A metallic ring in two parts soldered together the metal in each part differing from that in the other part forming in the completed ring positive and negative electrodes, substantially as described



530,523. GAS ENGINE. FEODOR HIRSCH, Steinway, N. Y. Filed Mar. 8, 1894. Serial No. 502,815. (No model.)



*Claim.*—1. In a gas engine the combiuation of two power cylinders axially out of line; a central trunk section having a chamber uniting the inner ends of said power cylinders and formed with a gas supply passage having an induction valve and an igniter, and with a discharge passage containing an exhaust valve operated intermittently and positively by a cam upon the cam shaft of the engine; trunk pistons in said power cylinders; two piston rods connecting said trunk pistons to rocking levers; said rocking levers; two pitmen connecting said rocking levers to radially opposed cranks upon a common power shaft; said power shaft formed with radially opposed cranks united by a single intermediate web; and a cam shaft for controlling the operation of the engine, geared to and rotated by the power shaft, substantially in the manner and for the purpose described.

2. In a gas engine the combination of two power cylinders axially out of line; a central trunk section having a chamber uniting the inner ends of said power cylinders and formed with a gas supply passage having an induction valve and an igniter, and with a discharge passage containing an exhaust valve operated intermittently and positively by a cam upon the cam shaft of the engine; trunk pistons in said power cylinders; two piston rods connecting said trunk pistons to rocking levers; said rocking levers; two pitmen connecting said rocking levers to radially opposed cranks upon a common power shaft; said power shaft formed with radially opposed cranks united by a single intermediate web; a cam shaft for controlling the operation of the engine, geared to and rotated by the power shaft; an air valve interposed in the gas supply conduit; and a governor on the cam shaft arranged to operate said air valve, substantially in the manner and for the purpose described.

3. In a gas engine the combination of an air valve interposed in the gas inlet passage, mechanism for operating said air valve provided with a laterally flexible cam lever, a laterally adjustable cam for engaging with said cam lever, and an automatic governor for controlling the position of the said cam with relation to the said cam lever, substantially in the manner and for the purpose described.

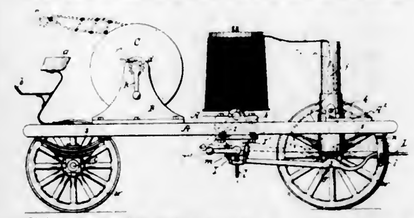
530,524. DENTAL ARTICULATOR. DAVID M. HITCH, Laurel, Del. Filed Apr. 5, 1894. Serial No. 506,462. (No model.)



*Claim.*—1. The combination in a dental articulator, of the lower jaw or model-holder having standards provided with a connecting tie-bar, a set-screw extending through said tie-bar, a yoke pivoted to the standards, supported by the upper end of the set-screw and having a central boxing, a pair of cups forming a ball-socket, and having a shank adjustable lengthwise in the boxing, an upper jaw or model-holder having a ball in close juxtaposition to its heel portion and fitting between said cups, and a set-screw passing through the shank of the cups to clamp them on the ball, whereby the ball and socket are adjustable to and fro without varying their relative position with respect to the heel of the upper jaw or model-holder, substantially as described.

2. The combination in a dental articulator, of a lower jaw or model-holder having standards or brackets provided with rearwardly projecting arms, a boxing having side arms pivoted to said rearwardly projecting arms, a pair of superimposed shank sections or plates adjustable lengthwise in the boxing and provided at one end with cups forming a ball-socket, an upper jaw or model-holder having a ball in close juxtaposition to its heel portion and fitting between said cups, a set screw for supporting the boxing at different heights, a set-screw for rigidly clamping the two shank sections together and to the boxing, and a set-screw for clamping the cups on the ball, substantially as described.

530,525. LIFE-SAVING APPARATUS. KLAAS HOEKSTRA, Battle Creek, Mich. Filed Feb. 13, 1894. Serial No. 499,999. (No model.)

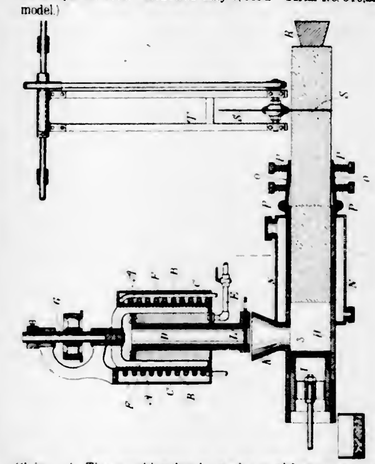


*Claim.*—1. In a life saving apparatus, a truck, a pivoted line drum, a pivoted gun barrel and a connection between the two, substantially as described.

2. In a life saving apparatus, a truck, a pivoted line drum, a pivoted guo barrel and an operating connection between the two for tilting them on their pivots in unison, substantially as described.

3. In a life saving apparatus, a truck, a pivoted and rotating line drum, a pivoted gun barrel connected to the line drum, and a detachable winding connection between the drum and frame, substantially as described.

530,526. APPARATUS FOR MANUFACTURING ICE. DANIEL L. HOLDEN, New York, N. Y., assignor to Kathryn M. Holden, same place. Filed Apr. 18, 1892. Renewed May 5, 1894. Serial No. 510,225. (No model.)



*Claim.*—1. The combination in an ice making apparatus of a water holding vessel, means for reducing the temperature and forming ice on a surface of such water holding vessel, means for cutting or scaling off the ice progressively from such surface so that it floats, a surface over which the ice is discharged, a receptacle for the ice crystals and adhering water, and means for pressing such ice to consolidate the same, substantially as specified.

2. In an ice making apparatus a refrigerating vessel having an overflow and a water supply pipe to the same, in combination with a scraper for removing or cutting the layer of ice from the surface of the refrigerating vessel, whereby the ice chips or scales are caused to accumulate and overflow with only the adhering water, substantially as set forth.

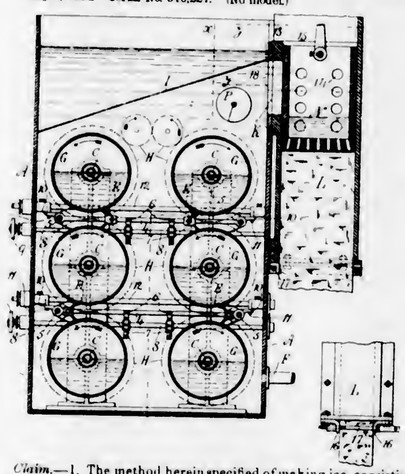
3. The combination with the refrigerating device of a water holding vessel, on the surface of which ice is formed, a gradual water supply to said vessel, and means for cutting or scaling off the ice progressively so that it floats and is discharged by the accumulation substantially as specified.

4. The combination with the refrigerating device of a water holding vessel, on the surface of which ice is formed, a gradual water supply to said vessel, and means for cutting or scaling off the ice progressively so that it floats and is discharged by the accumulation, a trunk into which the ice scales are received in their moist condition and a piston and means for moving the same to consolidate the ice substantially as specified.

5. The combination with the refrigerating device of a water holding vessel, on the surface of which ice is formed, a gradual water supply to said vessel, and means for cutting or scaling off the ice progressively so that it floats and is discharged by the accumulation, a trunk into which the ice scales are received in their moist condition and a piston and means for moving the same to consolidate the ice, and a saw for sawing off the ice into blocks as projected from the trunk substantially as specified.

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**530,527. ICE-MAKING APPARATUS.** DANIEL L. HOLDEN, New York, N. Y., and LEMUEL W. SERRELL, Plainfield, N. J., assignors to Kathryn M. Holden, New York, N. Y. Filed June 19, 1893. Renewed May 5, 1894. Serial No. 510,227. (No model.)



*Claim.*—1. The method herein specified of making ice, consisting in exposing water to a refrigerating surface upon which ice is formed, scaling or cutting off such ice, allowing the particles of ice to rise in the water, receiving such particles of ice into a suitable trunk or press below the surface of the water, and consolidating the particles of ice by pressure and discharging the surplus water from between the particles of ice, substantially as set forth.

2. The combination in an ice making apparatus, of a water holding vessel, refrigerating surfaces upon which the water is frozen, mechanism for cutting or scaling the ice from said surfaces, a trunk or receiving vessel below the water line into which the particles of ice are passed, and a piston for consolidating the particles of ice, there being openings for the escape of surplus water in consolidating the ice, substantially as set forth.

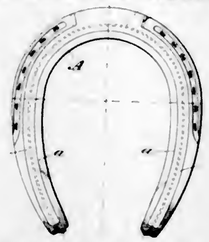
3. The method herein specified of making blocks of ice, consisting in freezing water, passing the scales or particles of ice into a trunk or holder beneath the surface of the water, and pressing such particles of ice while excluded from the atmosphere to consolidate the same, and form blocks, substantially as set forth.

4. The method herein specified of making blocks of ice, consisting in freezing water, passing the scales or particles of ice into a trunk or holder with the interstices between the ice filled with water to exclude atmosphere and pressing the mass to consolidate the ice and discharge the surplus water, substantially as set forth.

5. The combination in an ice making machine, of a frigerific surface upon which the water is frozen, cutters for cutting or scaling the ice from such surface, a press for consolidating the particles of ice, and an opening from the refrigerating vessel into the press below the surface of the water for the particles of ice to pass into the press without coming in contact with the atmosphere, substantially as set forth.

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**530,528. ELASTIC-TREAD HORSESHOE.** WILLIAM R. HOWE, Dayton, Ohio. Filed Jan. 22, 1894. Serial No. 497,686. (No model.)



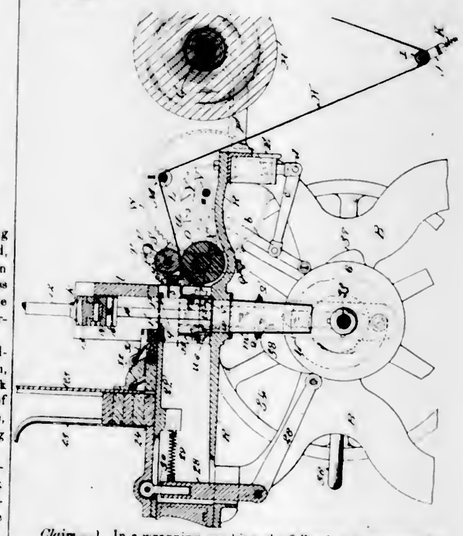
*Claim.*—1. In a horse shoe, the combination of the metal body having a continuous groove on its under side with its front wall at the toe cut away and its rear wall at the toe beveled, an elastic packing fitted or seated in said groove and toe-opening, and a retaining wire threaded through the packing its entire length and secured at its ends to the metal body, whereby said wire serves to hold said packing in place and exerts an upward pressure on the packing at the toe-opening, substantially as described.

2. In a horse-shoe, the combination of the metal body having a continuous groove on its under side with an opening in its front wall at the toe, and an elastic packing fitting and secured in said groove and toe opening, substantially as described.

3. In a horse-shoe, the combination of the metal body having a continuous groove on its under side with an opening in its front wall at the toe, and an elastic vulcanized rubber packing fitting and secured in said groove and toe opening, and with that portion in the toe opening made harder than the rest, substantially as described.

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**530,529. WRAPPING-MACHINE.** IRA R. HUTCHINSON, Fresno, Cal., assignor of five-eighths to A. L. Stout, Dayton, and William C. Van Sant, Delaware, Ohio. Filed Aug. 17, 1893. Serial No. 483,320. (No model.)



*Claim.*—1. In a wrapping machine, the following instrumentalities: the wrapping channel, supporting flaps across said channel, wrapping mechanism consisting essentially of a plunger and a double set of flaps, one set being above the other, article feeding mechanism consisting of a hopper, and a reciprocating plunger traveling across the bottom of the hopper and adapted to feed the articles upon the supporting flaps, and suitable devices to prevent the return of the articles when the plunger moves back.

2. In a wrapping machine, the following instrumentalities: a wrapping channel, supporting flaps across the channel, wrapping mechanism consisting essentially of a recessed plunger and a double set of flaps, one set being above the other, article feeding mechanism consisting of a hopper and a reciprocating plunger traveling across the bottom of the hopper and adapted to feed the articles upon the supporting flaps, and one or more detents to engage with the articles to prevent their dislodgment.

3. In a wrapping machine, the combination with a wrapping channel, of two associated flaps mounted at the opposite sides of the said channel, respectively, and operating mechanism for said flaps arranged and combined with one flap to turn it down to fold over one edge of the paper about the article and to turn the flap back, and with the other flap to turn it down to fold the other edge of the paper over the article and to delay this flap in a down position, and a reciprocating notched plunger which descends and folds the upper projections of the paper down against the ends of the article then ascends, after which the delayed flap through its mechanism is turned up.

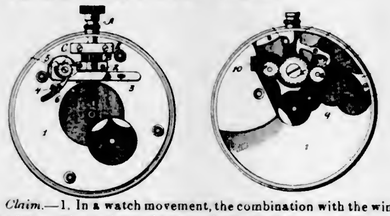
4. In a wrapping machine, the combination with a wrapping channel, a plunger provided with a central recess, two upper folding flaps and two double lower folding flaps, all operating within said channel, of a series of cams and intermediate mechanism whereby the plunger is given one descent, one of the upper flaps turned down and back, the other upper flap is turned down and held, the plunger is given a second descent and returned, such delayed flap is turned back, one of the double lower flaps is turned down and back, and the other is turned down and back.

5. In a wrapping machine, the combination with a wrapping channel, of an upper set of flaps and a lower set of double flaps, the flaps of each set being arranged upon the opposite sides of the said channel, and mechanism for operating the said flaps so that one flap of the upper set shall turn down and back, and the other turn down and be delayed and then turned back after such delay, one of the lower set shall turn down and back and then the other shall turn down and back, and a recessed plunger, and mechanism to operate it to cause it to descend and ascend prior to the movement of the first of the upper flaps, and then make a second descent and ascent after the second flap has been turned down.

6. In a wrapping machine, the combination with a wrapping channel, a recessed plunger for making the first end folds, working within the channel, yielding supporting flaps standing normally across the channel, a feeding plunger operating to feed the articles upon said supporting flaps and then withdraw, and two sets of folding flaps, the upper set consisting of two flaps and the lower set of two double flaps, one set being above the other set, and mechanism for operating the wrapping plunger, the feeding plunger, and both sets of flaps at the proper time, substantially as described.

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**530,530. WATCH.** JOHN L. HUTCHINSON, La Porte, Ind. Filed Apr. 19, 1894. Serial No. 508,105. (No model.)



*Claim.*—1. In a watch movement, the combination with the winding and the setting trains, and a pivoted yoke having mounted thereon a crown wheel, adapted to be revolved by the winding pinion, and in gear therewith a setting wheel and an intermediate winding wheel adapted to be thrown into and out of gear with their respective trains by the pivotal movement of said yoke, of means operated by the longitudinal movement of the watch stem in one direction, but independent of the movement of the same in the opposite direction, for effecting both the movement of the pivoted yoke, substantially as described.

2. In a watch movement, the combination with the winding and setting trains, of a pivoted yoke having mounted thereon a crown wheel, adapted to be revolved by the winding pinion, and in gear therewith a setting wheel and an intermediate winding wheel, adapted to be thrown into and out of gear with their respective trains by the pivotal movement of said yoke, a pin projecting from said yoke, a spur wheel engaged by said pin, whereby the position of the pivoted yoke and gears borne thereon is determined by whether the pin lies between the teeth of the spur gear or is riding upon said teeth, and means, operated by the longitudinal movement of the stem, but independent of the position of the same, for actuating said spur wheel, substantially as described

3. In a watch movement, the combination with the winding and setting trains, of a pivoted yoke having mounted thereon a crown wheel, adapted to be revolved by the winding pinion, and in gear therewith a setting wheel and an intermediate winding wheel, adapted to be thrown into and out of gear with their respective trains by the pivotal movement of said yoke, a pin projecting from said yoke, a spur wheel engaged by said pin, whereby the position of the pivoted yoke and gears borne thereon is determined by whether the pin lies between the teeth of the spur wheel or whether it is riding upon said teeth, a ratchet wheel mounted upon the same arbor as the spur wheel, and having twice as many teeth as said spur wheel, and a pivoted lever adapted to be depressed by the downward movement of the watch stem, and by such depression to move the ratchet wheel one tooth, and thereby the spur wheel one half a tooth, thereby changing the position of the pivoted yoke, substantially as described.

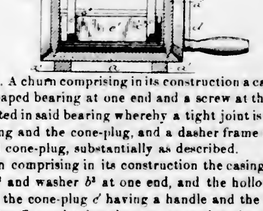
4. In a watch movement, the combination with the winding and setting trains, of intermediate gear wheels in gear with the winding pinion, and adapted to be thrown into or out of gear with said trains, and means for indicating on the dial of the watch which train is in gear with the winding pinion, substantially as described.

5. In a watch movement, the combination with the winding and setting trains, and a pivoted yoke having mounted thereon a crown wheel, adapted to be revolved by the winding pinion, and in gear therewith a setting wheel, and an intermediate winding wheel, adapted to be thrown into and out of gear with their respective trains by the pivotal movement of said yoke, of means for indicating on the dial of the watch the position of said yoke, substantially as described.

6. In a watch movement, the combination with the winding and setting trains, and a pivoted yoke having mounted thereon a crown wheel adapted to be revolved by the winding pinion, and in gear therewith a setting wheel and an intermediate winding wheel, adapted to be thrown into and out of gear with their respective trains by the pivotal movement of said yoke, of a pivoted lever having one end held continuously pressed against said yoke, and formed at its other end with a segmental gear which meshes with a pinion mounted upon a pin bearing an indicating hand, substantially as described.

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**530,531. CHURN.** JAMES M. JACKSON, Millport, N. Y., assignor to Myra K. Jackson, same place. Filed Aug. 14, 1894. Serial No. 507,546. (No model.)

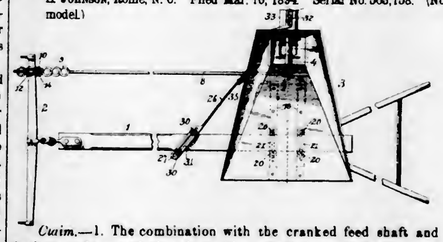


*Claim.*—1. A churn comprising in its construction a casing having a fixed cone-shaped bearing at one end and a screw at the other end, a cone-plug fitted in said bearing whereby a tight joint is formed between the casing and the cone-plug, and a dasher frame mounted on said screw and cone-plug, substantially as described.

2. A churn comprising in its construction the casing having the screw $b'$ nut $b^3$ and washer $b^3$ at one end, and the hollow cone $d$ at the other end, the cone-plug $c'$ having a handle and the square stud $c^3$, and the dasher frame having the concave socket $f$ and the square socket $f''$, substantially as described.

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**530,532. FEED-ACTUATING DEVICE FOR PLANTERS.** PERRY E. JOHNSON, Rome, N. C. Filed Mar. 10, 1894. Serial No. 503,158. (No model.)



*Claim.*—1. The combination with the cranked feed shaft and singletree of an agricultural machine, of a bolt projecting upward from the singletree, and a rod terminating at its rear end in an eye for engaging the crank, and at its front end in a series of eyes, any one of which may be engaged with said bolt, substantially as described.

2. The combination with the cranked feed shaft and singletree of an agricultural machine, of an L-shaped link embracing two of the sides of the single trees, an L shaped bolt embracing the remaining sides of the singletree and passing through and beyond the link, and the rod connected at its front end to the bolt and at its rear end to the crank of the shaft, substantially as described.

3. The combination with the cranked feed shaft and singletree of an agricultural machine, of the L-shaped link embracing two of the sides of the singletree, the opposite L shaped bolt embracing the other sides of the singletree and extending through and beyond the link and having an elongated vertical portion, nuts arranged on the bolt, the cylindrical sleeve mounted on the vertical portion of the bolt and having an internal lining, and a rod terminating at its rear end in an eye to receive the crank of the shaft and provided at its front end with a series of eyes to receive the sleeve whereby the rod is adjusted, substantially as described.

4. The combination with the cranked feed shaft and singletree of an agricultural machine, of a rod terminating at its rear end in an eye for receiving the crank and having its front portion bent sinuously and doubled on itself and producing a series of eyes, and a bolt for connecting any one of the eyes to the singletree, substantially as described.

5. The combination in an agricultural machine, of a hopper having a feed shaft terminating in a crank and provided with wrist pins, a beam, and a singletree connected with the front end of the beam, of a rod terminating at its rear end in an eye for engaging a pin of the feed shaft and provided at its front end with means for connecting it to the singletree, and a brace extending from the beam to the hopper and provided with a depending arm or guard arranged at the inner side of the rod to retain the eye on the wrist-pin, substantially as described.

6. The combination of a beam, of a hopper arranged at one side of the beam, the bracket bar resting upon the beam and having approximately L-shaped portions and inclined extremities secured to the hopper, bolts arranged at opposite sides of the beam passing through the bracket bars and provided with nuts, and links located on the lower face of the beam, and connecting the lower extremities of the bolts, substantially as described.

7. The combination with a beam and a hopper having an inclined side adjacent to the beam, of bracket bars having L-shaped upper portions mounted on the beam and provided with inclined extensions secured to the hopper, and a brace arranged in advance of the hopper and having its inner end secured to the beam and inclining downward and rearward therefrom and secured to the hopper, substantially as described.

8. The combination of a beam, a hopper arranged at one side thereof, bracket bars mounted on the beam and secured to the hopper, the rearwardly and downwardly inclined brace having an upper slotted extremity located beneath the beam and provided at its outer extremity with an angular bend and slotted extension, bolts located at opposite sides of the beam and arranged in the slot at the inner end of the brace, a link connecting the upper ends of the bolts, a slide mounted at the bottom of the hopper for regulating the discharge opening thereof, and a clamping bolt connected with the slide and arranged in the slot of the extension, substantially as described.

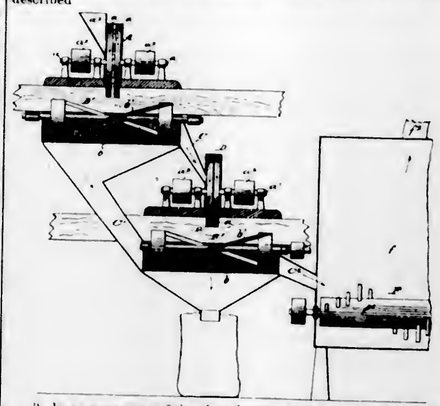
9. The combination of a beam, a hopper having an inclined side adjacent to the beam, L-shaped bracket bars arranged on the beam and having inclined extremities secured to the hopper, bolts passing through the bracket bars and located at opposite sides of the beam and provided with nuts, a slide arrangd at the bottom of the hopper for regulating the discharge and provided with a clamping bolt, an inclined brace having slotted extremities and provided near its outer end with an angular bend and secured thereat to the hopper, the outer extremity of said brace being arranged over the slide and receiving the clamping bolt and the inner extremity of the brace being located on the lower face of the beam, bolts arranged at opposite sides of the beam and fitting in the slot of the brace and provided with nuts, and a link arranged on the upper face of the beam and connecting the bolts to the brace, substantially as described.

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## 530,533. PROCESS OF AND APPARATUS FOR TREATING COTTON SEED AND HULLS. WILLIAM C. JOHNSON, Memphis, Tenn., assignor of one-half to Hugh S. Hayley and Dwight M. Armstrong, same place. Filed Mar. 27, 1894. Serial No. 505,268. (No model.)

*Claim.*—1. The process herein described, which consists in first breaking the hulls and seeds by attrition or concussion and forcibly ejecting the mass into a separator, conducting the fiber to a second breaker and subjecting the same to a finer and closer grinding operation and then forcibly ejecting the ground mass into a second separator, the bolted mass from the first separator being led also to this second separator and finally conducting the separated fiber away from the second separator, substantially as shown and described.

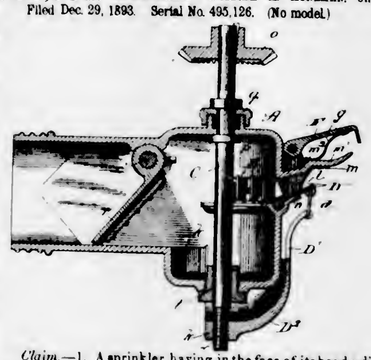
2. In an apparatus of the class described, the combination with the vertical rotary disks, *a a*, of the horizontal separator, B, arranged beneath the same, the chute C leading from the end of separator, the chute, C, leading from the bottom of separator, the second breaker, D, the disks of which are arranged closer together than the disk *a* of the first breaker, the horizontal separator B' and the chutes for conduoting the fiber and bolted material, substantially as shown and described



3. In an apparatus of the class described, the combination with a breaker, consisting of the oppositely revolving disks, of a separator comprising a screen and brush, the chutes leading therefrom, a second breaker having its disks closer to each other than the first breaker, a second separator and a beater, all arranged and connected substantially as shown and described.

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## 530,534. SPRINKLER. WILLIAM A. KONEMAN, Chicago, Ill. Filed Dec. 29, 1893. Serial No. 495,126. (No model.)



*Claim.*—1. A sprinkler having in the face of its head a discharge-orifice having partitions dividing it into channels and provided with an upper lip having an outwardly and upwardly projecting deflector-extension, substantially as and for the purpose set forth.

2. A sprinkler having in the face of its head a discharge-orifice having partitions dividing it into channels and provided with an upper lip having a deflector-extension projecting outward and upward where it overlies the outer side of said orifice and depressed throughout a portion of its extent, substantially as and for the purpose set forth.

3. A sprinkler having in the face of its head a discharge-orifice provided with an upper lip having a deflector-extension projecting outward and upward where it overlies the outer side of said orifice and depressed throughout a portion of its extent, and a hood adjustably supported on the head, substantially as and for the purpose set forth.

4. In a sprinkler, the combination with the hollow head having a rounded face provided with a discharge-orifice, of an upper lip projecting obliquely upward from the orifice, a lower flange affording a seat, valves hinged at intervals on said seat, partitions extending between the valves and dividing the orifice into channels, and means, substantially as described, for raising and lowering said valves, from without the head, with relation to their seat, substantially as and for the purpose set forth.



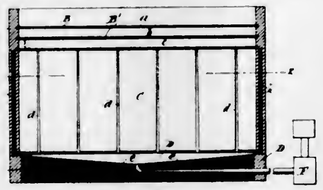
5. In a sprinkler, the combination with the hollow head having a rounded face provided with a discharge-orifice, of an upper lip projecting obliquely upward from the orifice, a lower flange affording a seat, a threaded rotary shaft journaled in the head, a spider engaging the thread on the shaft and carrying arms connected with the valves, partitions extending in the head between the valves, and dividing the orifice into channels, and means for rotating the shaft, substantially as and for the purpose set forth.

6. In a sprinkler, the combination with the hollow head having a rounded face provided with a discharge-orifice and an inlet-neck containing a valve, of an upper lip projecting obliquely upward from the orifice, a lower flange affording a seat, valves hinged on said seat, partitions extending between the valves and dividing the orifice into channels in non-radial relation to the mouth of the inlet, and means, substantially as described, for raising and lowering said valves on their hinges, from without the head, with relation to their seat, substantially as and for the purpose set forth.

7. A sprinkler comprising, in combination, a neck B and a hollow head A formed in an upper and a lower section, the lower section affording a gravel-reservoir and the two sections forming between them a discharge-orifice *l* and having, respectively, the lip *m* provided with a deflector-extension *m'*, and the flange *n*, a rotary threaded shaft C journaled in the head, a spider $D^2$ engaging the thread on the shaft and carrying arms D', hinged valves D in the orifice connected with the arms D', partitions E depending from the upper section and flanking the valves to divide the orifice *l* into channels, and means for rotating the shaft, the whole being constructed and arranged to operate substantially as described.

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## 530,535. APPARATUS FOR REFRIGERATING. OTTO KUPHAL, New York, N. Y. Filed Mar. 22, 1893. Renewed May 5, 1894. Serial No. 510,226. (No model.)



*Claim.*—1. The combination with a vacuum chamber arranged for the application of vapor therein to cooling a space or body to be refrigerated, of a water chamber separated from said vacuum chamber by porous material, substantially as described.

2. The combination with a vacuum chamber arranged for the application of vapor therein to cooling a space or body to be refrigerated, of a water chamber separated from said vacuum chamber by porous material, and a pump connecting with said vacuum chamber, substantially as described.

3. The combination with a water chamber, of a vacuum chamber, and a plurality of separated layers of porous material between said water and vacuum chambers, substantially as described.

4. The combination with a series of pipes traversing the space or body to be refrigerated, and a vacuum pump connected with said pipes, of a water chamber, and a plurality of separated layers of porous material forming an air tight chamber or chambers between said water chamber and pipes, substantially as described.

5. The combination with a series of vertical pipes traversing the space or body to be refrigerated, and a vacuum pump connected with said pipes, of a water chamber, and a plurality of separated layers of porous material forming an air tight chamber or chambers between said water chamber and pipes, substantially as described.

6. The combination with a series of pipes traversing the space or body to be refrigerated and a vacuum pump connected with said pipes, said pipes being enlarged toward the vacuum pump, of a water chamber and a plurality of separated layers of porous material forming an air tight chamber or chambers between said water chamber and pipes, substantially as described.

7. The combination with the chamber C, of tanks A, D, slabs of porous material dividing the tank A into a water chamber and air tight chambers, pipes *d* connecting the inner air tight chamber with tank D, and a vacuum pump connected with the tank D, substantially as described.

8. The combination with the chamber C traversed by vertical pipes *d*, of the tanks A, D respectively above and below the chamber and connected by said pipes *d*, slabs of porous material dividing said upper tank A into a water chamber and lower air tight chambers, with the lowest of which the vertical pipes *d* connect, and a vacuum pump connected with the tank D, substantially as described.

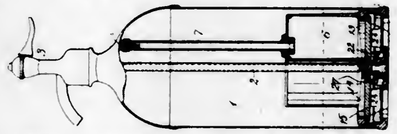
9. The combination with chamber C traversed by vertical conical pipes *d* having their larger diameter below, of the tanks A, D respectively above and below the chamber and connected by said pipes, said upper tank A containing an upper water chamber separated by porous material from a lower air tight chamber with which the vertical pipes *d* connect, and a vacuum pump connected with the tank D, substantially as described.

10. The combination with the chamber C traversed by vertical conical pipes *d* having their larger diameter below, of the tanks A, D respectively above and below the chamber and connected by said pipes, said upper tank A containing an upper water chamber separated by porous material from a lower air tight chamber with which the vertical pipes *d* connect, tank D having a slanting bottom *c*, and a vacuum pump connected with the tank D, substantially as described.

11. The combination with the chamber C traversed by vertical conical pipes *d* having their larger diameter below, of the tanks A, D respectively above and below the chamber and connected by said pipes, said upper tank A containing an upper water chamber separated by porous material from a lower air tight chamber with which the vertical pipes *d* connect, tank D and a vacuum pump connected with said tank D by conical pipe *f*, substantially as described.

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## 530,536. REGENERATIVE SIPHON. FREDERICK LAMPLOUGH, New York, N. Y., assignor to Julius Wielar, same place. Filed Apr. 2, 1894. Serial No. 506,105. (No model.)



*Claim.*—1. A siphon for aerated liquids having within it a gas generating chamber provided with a yielding valve to automatically permit the exit of the gas from said chamber into the receptacle, said chamber having an opening direct to the atmosphere and a cover for said opening substantially as set forth.

2. The combination with the body of the siphon or other vessel, of a base having a chamber and openings into the vessel and chamber respectively, a cover for closing said openings hermetically, and a check-valve within the siphon for regulating escape from said chamber into the receptacle, substantially as set forth.

3. A portable siphon for aerated liquids containing a separate chamber for gas generation, and having in its bottom contiguous apertures for charging said chamber and receptacle, a cover for closing said apertures hermetically, and a clamp for securing the cover, substantially as set forth.

4. A siphon for aerated liquids having a separate chamber for gas generation, and openings into the body of the vessel and into said chamber, a rotary cover adapted to close both of said openings, and a clamp for hermetically securing the cover, substantially as set forth.

5. The combination with the siphon having the base, the chamber, and the openings, the double cover, the journals having clamping cams and a handle, and the cap pivoted on the base, substantially as set forth.

6 The combination with the siphon, of the chamber G, the tube 7 having an automatic valve within the siphon, and means for independently charging the siphon and said chamber, substantially as set forth.

7. A siphon having a base provided with a chamber and openings into said chamber and siphon respectively, a swinging cover adapted to close both of said openings, and a clamp for the cover, substantially as set forth.

8. The combination with the vessel having openings, of a swinging cover, a clamping bar or shaft connected and turning therewith, supports for the bar, and cams for causing the bar to clamp the cover by reaction against said supports, substantially as set forth.

9. The combination with the vessel having openings, of a swinging cover for the same, a rock shaft having cams, and a central rotary support for the shaft, substantially as set forth.

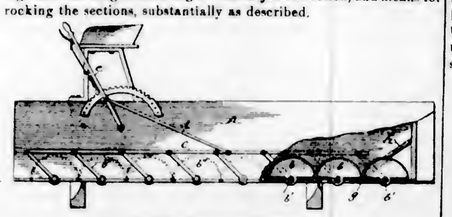
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## 530,537. WAGON-BED. CHARLES P. LANCASTER, Jonesborough, Ind. Filed Mar. 10, 1894. Serial No. 503,162. (No model.)

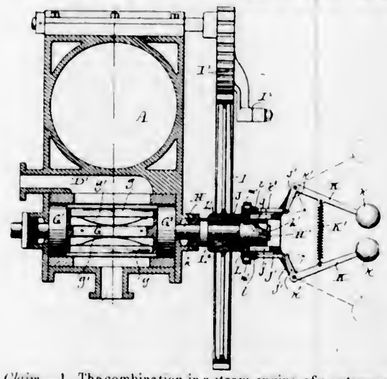
*Claim.*—1. The combination of a vehicle-body, a bed therefor consisting of a series of parallel sections pivoted at their ends and having their upper sides curved to correspond substantially with the arc of a circle struck from the center of the pivots, and means for operating said sections or bars, substantially as described.

2. The combination of a wagon-body, a bed composed of a series of rocking sections transversely curved on their upper sides,

each of said sections being provided with a longitudinal flange engaging under the longitudinal edge of the adjacent section, and means for rocking the sections, substantially as described.



530,538. STEAM-ENGINE GOVERNOR. LUCIUS A. LE MIEUX, Seymour, Wis. Filed Mar. 28, 1892. Serial No. 426,758. (No model.)



*Claim.*—1. The combination in a steam engine, of a rotary valve for controlling the admission of steam to and the exhaust of steam from the cylinder, a spindle extending from the end of said rotary valve and provided at its outer end with an oblique slot, a wheel loosely mounted on said spindle and carrying governor mechanism, and a pin secured to said governor mechanism and operatively engaged with said oblique slot in said spindle, substantially as described.

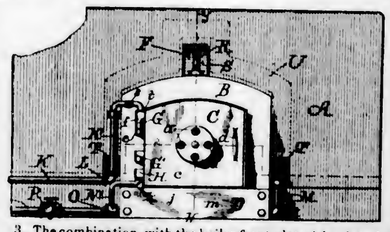
2. The combination in an engine, of a rotary valve for controlling the admission of steam to and the exhaust of steam from the cylinder, a spindle extending from one end of said rotary valve and provided at its outer end with a substantially V shaped slot, a wheel loosely mounted on said spindle and operatively connected with a moving portion of the engine, and provided with a tubular extension upon one end of its hub to which extension is secured suitable governor mechanism, a collar movably engaged with the outside of said extension and operatively engaged with the said governor mechanism so as to be adjusted longitudinally upon said extension by the movements of said governor mechanism, and a pin carried by said collar and adapted for engagement with the V shaped slot in the outer end of the spindle, substantially as and for the purposes described.

3. The combination in a steam engine, of a rotary valve, for governing the admission and exhaust of steam a spindle projecting axially from one end of said valve and provided at its outer end with a substantially V shaped slot, a collar located around the outer end of said stem and provided with one or more inwardly projecting pins adapted for movable engagement with the oblique branches of said slot, said collar being operatively engaged with governor mechanism, a vibrating lever operatively engaged with said collar, stops for limiting the movement of said lever, and means for freeing said lever to permit it to be moved so as to carry the said pins out of engagement with said slot, substantially as and for the purpose described.

530,539. COMBINATION WATER-JACKET FOR FURNACE DOORS AND MOUTHS. SACKVILLE G. LEYSON, Syracuse, N. Y. Filed Mar. 3, 1893. Renewed Apr. 21, 1894. Serial No. 508,532. (No model.)

*Claim.*—1. The combination, with the boiler front-plate A, of a hollow dead-plate secured to the said front-plate, the rearwardly-diverging hollow jambs E resting on the said dead-plate and connected by the hollow arched portion F, water pipes connected to one jamb and to one end of the dead-plate, and a pipe connecting the other jamb with the other end of the dead-plate, substantially as set forth.

2. The combination, with the boiler front-plate A, and the door-frame; of the hollow door hinged to the said frame, the hollow dead-plate secured to the said front-plate, the rearwardly-diverging hollow jambs E resting on the dead-plate and connected by the hollow arched portion F, the water pipes K, M and N whereby water is circulated through the said jambs, arch and dead-plate, and branch pipes connecting the said pipes K and N with the said door, substantially as set forth.



3. The combination, with the boiler front-plate A having air holes T therein, of a hollow dead-plate, the hollow jambs and arch supported on the dead-plate around the door opening, and a hollow arch-shaped casting U inclosing the aforesaid jambs and arch and communicating with the said air holes, substantially as and for the purpose set forth.

530,540. BICYCLE. HOSEA W. LIBBEY, Boston, Mass. Filed Dec 16. 1893. Serial No. 493,849. (No model.)

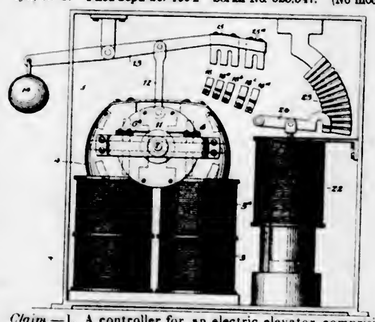


*Claim.*—1. In a bicycle an axle divided in the center of its length and having collars at the inner end of each section said collars bearing against each other and a hub divided longitudinally and having annular recessed projections, pawls mounted in said recesses and ratchet teeth on the axle sections for said pawls and means for alternately rotating said axle sections as set forth.

2. In a bicycle a single hub divided longitudinally and inclosing an axle divided in the center of its length, collars mounted upon the inner ends of said axle, two series of pawls arranged in the divided hub near the inner ends of each section of the axle, ratchet teeth upon each of said axle sections in combination with drums mounted upon the outer end of said axle sections, a strap wound thereon the outer end of which is attached to an operating lever and a volute spring for rewinding the strap upon the drum substantially as set forth.

3. In a bicycle an axle formed in two parts D, D', collars $d$, $d'$, secured on their inner ends, a longitudinally divided wheel hub E, pawls F, arranged therein, ratchet teeth $d^2$, cut in the axle section, a drum G, on the outer end of each axle section, straps H, secured at one end to said drums G, the outer ends being attached to operating levers I, fulcrumed to the frame of the machine, and volute springs K, for rewinding said straps H, upon the drums G, substantially as shown and described.

530,541. APPARATUS FOR CONTROLLING ELECTRIC ELEVATORS. NILS O. LINDSTROM, Union Course, and ORRIE P. CUMMINGS, Brooklyn, assignors to the A. B. See Manufacturing Company, Brooklyn, N. Y. Filed Sept. 20. 1894. Serial No. 523,547. (No model.)



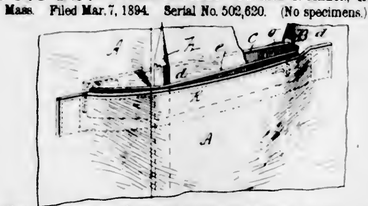
*Claim.*—1. A controller for an electric elevator comprising an auxiliary electric motor having a non-commutated armature circuit, the polar axis of the armature normally lying transverse to the field of force, a controlling switch on the elevator car for reversing the direction of the armature torque, and reversing switches in the main motor circuit attached by the auxiliary motor.

2. A controller for an electric elevator comprising a controlling switch mounted on the car, an auxiliary motor for operating the controlling switches of the main motor, the auxiliary motor being provided with a non-commutated armature circuit and with independent reversely wound coils on one of its members connecting respectively with different points of the controlling switch.

3. The combination with the main electric motor of an auxiliary motor for controlling its direction of movement, a controlling switch for changing the direction of movement of the auxiliary motor, independent reversely-wound field-magnet coils for the auxiliary motor, and a circuit-changer normally holding both field-magnet coils in operative relation to the motor terminals but adapted to cut one out of circuit after the motor has been actuated.

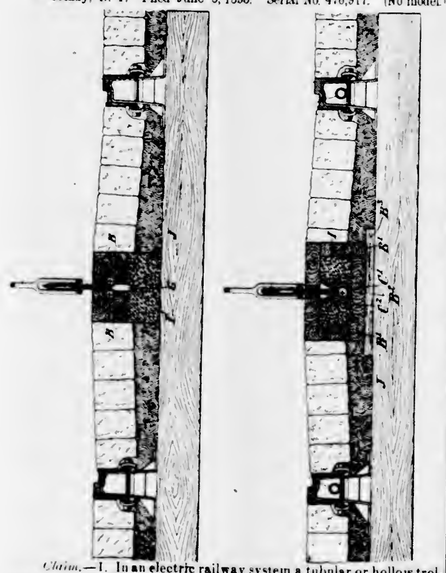
4. The combination of a main electric motor, an auxiliary motor adjacent thereto for controlling its direction of movement, a distant controlling switch and circuit connections for reversing the auxiliary motor, a circuit-changer for opening one branch of the controlling circuit after the auxiliary motor has been actuated, and means for normally holding both branches in operative relation to the controlling switch.

530,542. GARMENT-POCKET. PATRICK T. MAHON, Holyoke, Mass. Filed Mar. 7, 1894. Serial No. 502,620. (No specimens.)



*Claim.*—A garment having a pocket comprising an inner and an outer wall, said pocket having an elastic strip applied to the outer face of the inner wall thereof, the ends of said strip being passed rearwardly through openings in said wall and folded, and a metallic strip with perforated ends applied to the rear face of the garment opposite said elastic strip, and devices for securing the end of the two strips together, substantially as described.

530,543. CONDUIT ELECTRIC RAILWAY. DAVID MASON, Schenectady, N. Y. Filed June 8, 1893. Serial No. 476,917. (No model.)



*Claim.*—1. In an electric railway system a tubular or hollow trolley conductor, in combination with means for heating and forcing liquids, vapors, or gases through it, substantially as described.

2. In an electric railway system a tubular or hollow current main, in combination with an electrical generator connected thereto and means for heating and forcing liquids, vapors, or gases through it.

3. In an electric railway system one or more tubular or hollow conductors located in a slitted conduit and operatively connected to a source of electrical energy, in combination with means for heating and forcing liquids, vapors, or gases through said tube or tubes, substantially as described.

4. In an electric railway system one or more pipes or tubes embedded in insulating material in a slitted conduit, an additional pipe or tube located beneath each tram rail, in combination with means for heating and forcing liquids, vapors or gases through the pipes, substantially as described.

5. In an electric railway system one or more hollow or tubular conductors connected to a source of electrical energy and extending over the entire route, in combination with means for heating liquids, vapors or gases and forcing the same through said pipe or pipes, substantially as described.

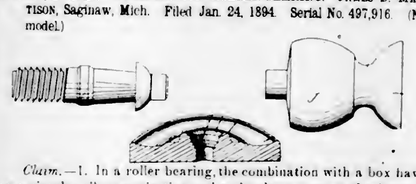
6. In an electric railway system one or more hollow or tubular trolley conductors held in a slitted conduit in close proximity to the surface of the road-bed, in combination with an electrical generator connected thereto and an apparatus for forcing heated liquids, vapors or gases through said hollow or tubular conductors, substantially as described.

7. In an electric railway system one or more hollow or tubular conductors held between one or more pairs of insulating supports in close proximity to the surface of the road-bed, an electrical generator connected thereto and a heating apparatus adapted to force heated liquids, vapors or gases there-through, substantially as described.

8. In an electric railway system a two-part tubular trolley conductor held in insulating supports near the surface of the road-bed, in combination with an electrical generator connected thereto and an apparatus for heating liquids, vapors or gases, said apparatus being connected directly to said tubular conductor, substantially as described.

9. In an electric railway system a two-part tubular conductor held in a slitted conduit, in combination with a trolley adapted to bear upon both of said tubular conductors, and means for heating and forcing liquids, vapors or gases through said tubes, substantially as described.

530,544. ANTIFRICTION ROLLER-BEARING. JAMES D. MATTISON, Saginaw, Mich. Filed Jan. 24, 1894. Serial No. 497,916. (No model.)



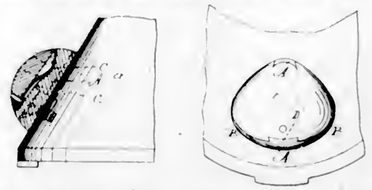
*Claim.*—1. In a roller bearing, the combination with a box having a circular rib or projection and a circular groove, and a journal or shaft, of an interposed roller comprising a body adapted to travel in the groove of the box, a reduced neck, and a head to engage the rib or projection of the box, substantially as and for the purpose set forth.

2. In a roller bearing, the combination with a box having a circular rib or projection and a circular groove, and a journal or shaft also having a circular groove; of an interposed roller comprising a body adapted to travel in the grooves of the box and journal, a reduced neck, and a head to engage the rib or projection of the box, substantially as and for the purpose set forth.

3. In a roller bearing the combination with a box having a circular rib or projection and also having a circular groove, a journal or shaft also having a circular groove, and a pin extending inwardly from the center of the box and having a head or enlargement; of an interposed roller comprising a body, a reduced neck, and a head adapted to engage the rib or projection of the box; the said roller being also provided in its inner end with a recess to receive the head or enlargement of the pin carried by the box, substantially as specified.

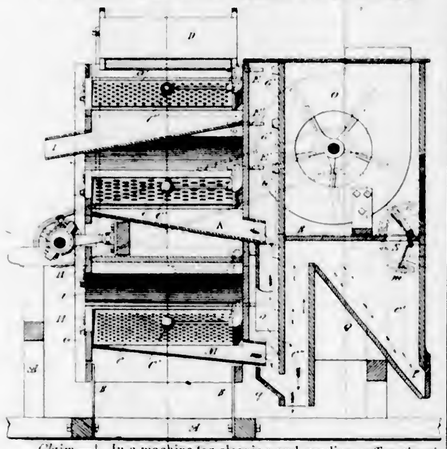
4. In a roller bearing, the combination with a box, a disk of hardened steel having a circular groove in one side and also having a circular rib or projection, a pin E, connecting said disk to the box and extending inwardly from the disk and having a head or enlargement $i$, a journal, and a disk of hardened steel connected to the inner end of the journal and having a circular groove corresponding in diameter to that of the disk of the box; of a roller interposed between the disks of the journal and box and comprising a body adapted to engage the grooves of said disks, a neck and a head to engage the circular rib or projection of the disk of the box; said roller also having a circular recess in its end to receive the head or enlargement of the pin E, all substantially as and for the purpose set forth.

530,545. TOE-WEIGHT. WILLIAM H. MEASURES, Stoneham, Mass. Filed May 31, 1894. Serial No. 512,991. (No model.)



*Claim.*—The herein described improved toe-weight, consisting essentially of the base provided with the dove-tailed central portion A grooved at C and said groove being provided with the depression C', and the ball or weight proper E provided with the dove-tailed groove F and spring H in said groove, said spring having the curvature H' corresponding with said depression, substantially as described.

530,546. MACHINE FOR CLEANING AND SEPARATING COFFEE. JOHN S. MILLER, Brooklyn, assignor to David B. Fraser, New York, N. Y. Filed Mar. 25, 1893. Serial No. 467,543. (No model.)

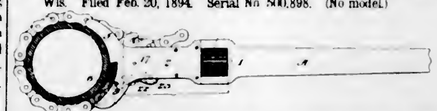


*Claim.*—1. In a machine for cleaning and grading coffee, the vibratory frame, the series of oppositely inclined sieves carried thereby, the sieves being of different mesh to effect a separate grade of the coffee to each of the grading sieves, an independent trough to each sieve to receive the grade of that particular sieve, and an incline beneath each sieve arranged to receive the several grades of coffee passing through the sieve next above it and deliver them on the upper portion of the sieve next below, combined with the independent trunks, one in communication with each sieve to receive its particular grade of coffee, a series of bins, one in communication with each trunk at its upper portion, means for creating an air current through each trunk and bin, and means for independently controlling the force of the current through each trunk and bin, substantially as and for the purposes described.

2. In a coffee separator and grader, the vibratory frame, the oppositely inclined sieves carried by said frame, the upper sieve having a mesh to permit all the grades of coffee to pass through it, and the lower sieves formed each with a different mesh so as to effect a separate grade of the coffee on each sieve, an incline under each sieve arranged to direct onto the upper portion of the next lower sieve the various grades of coffee passing through the next above sieve, a trough at the lower end of the upper sieve to receive foreign matter passing over the end of that sieve, and a separate trough to each of the lower sieves to receive the particular grade of coffee from each respective sieve, combined with independent trunks, one for each of the grading sieves to receive the distinct grade of each respective sieve, bins, one for each trunk and in communication with the upper portion of the trunk, and a fan for creating an air current through each independent trunk and bin, substantially as and for the purposes described.

3. In a coffee separator and grader, the vibratory frame carrying a series of inclined sieves of different mesh to effect a separate grade of coffee on each sieve, an incline beneath each sieve to receive the various grades passing through the sieve next above and deliver them to the next lower sieve, and an independent trough to each sieve to receive the grade of its particular sieve, combined with a stationary frame to one side of the vibratory frame and having a series of independent trunks on its side next to the vibratory frame and communicating one with each of the troughs of the sieves to receive each an independent grade of coffee, independent bins arranged in the stationary frame and communicating one with each of said trunks, a fan chamber in communication with all of said bins, and means for independently controlling communication between said fan chamber and each of said bins, substantially as and for the purposes set forth.

530,547. CHAIN PIPE-WRENCH. JOHN H. NEWELL, Hurley, Wis. Filed Feb. 20, 1894. Serial No. 500,898. (No model.)



*Claim.*—1. In a chain pipe-wrench, the combination of a hand-lever having an axial bore and recesses at the respective ends of said bore, a take-up nut within one of said recesses, a take-up screw partly within said nut and said bore, a movable hook or hooks within the other of said recesses acted on by said screw, and a chain both ends of which are acted on simultaneously by said hook or hooks, substantially as hereinbefore specified.

2. The combination with the hand-lever and with the take-up screw of a take-up nut having a closed end provided with a pivotal support and a sleeve-extension at its opposite end forming a second pivotal support, said lever having an axial bore and recesses fitted to said nut and its pivotal supports, and said screw having a cylindrical portion working snugly within said sleeve-extension, and cooperating with the nut to exclude dust and dirt from the screw-thread, substantially as hereinbefore specified.

3. The combination with the hand-lever, the chain, and the take-up screw carried by the lever, of a hook or hooks common to both ends of the chain and hinged to said take-up screw by a pivot which provides for a limited swinging movement of the lever independent of said hook or hooks, substantially as hereinbefore specified.

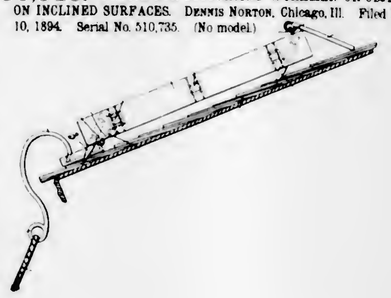
4. In combination with the hand-lever, the chain, and the take-up screw, a hook or hooks, common to both ends of the chain, hinged to the take-up screw and provided with stop shoulders, and a stop carried by the lever and interposed between said shoulders, substantially as hereinbefore specified.

5. In combination with the hand-lever, the chain, and the take-up screw, a hook or hooks, common to both ends of the chain, hinged to the take up screw, and provided with stop-shoulders, and an adjustable stop carried by the lever and interposed between said shoulders, substantially as hereinbefore specified.

6. The combination with the hand-lever, the chain, and the take-up screw, of a hook or hooks, common to both ends of the chain, pivoted to said screw, and provided with stop-shoulders, and an adjustable stop, interposed between said shoulders, consisting of a screw carried by the lever, and a sleeve oblong in cross section and movable into different positions by turning the screw last named, substantially as hereinbefore specified.

7. In a chain pipe-wrench, a hand-lever having a foot which projects symmetrically in opposite directions, in combination with a double-acting take-up hook or hooks and a take-up screw in line with the longitudinal axis of the lever, substantially as hereinbefore specified.

530,548. DEVICE FOR SUPPORTING WORKMEN OR OBJECTS ON INCLINED SURFACES. DENNIS NORTON, Chicago, Ill. Filed May 10, 1894. Serial No. 510,735. (No model.)



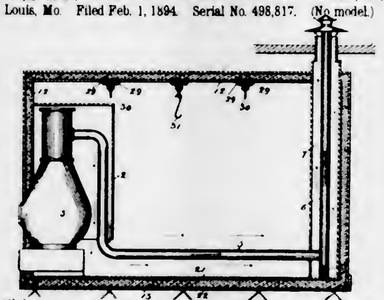


*Claim.*—1. A device for the purpose described having a portable frame provided with means for enabling it to cling to a roof or other inclined surface, in combination with a block having a socket, secured to said frame and adapted to rest on the said roof or surface, and a hook adapted to engage in said socket, and having means for the attachment of a stage or other object to be suspended, substantially as set forth.

2. A device for the purpose described having in combination a frame provided with means for enabling it to cling to a roof or inclined surface, in combination with a block or rest having a socket and being loosely connected to said frame so as to rest upon said roof or inclined surface, substantially as set forth.

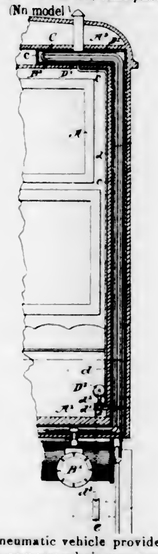
3. A device for the purpose described having a block or rest provided with a socket, a hook adapted to engage in said socket at one end and being curved so as to extend around the eaves or cornice of a roof so as to support an object at its lower end, in combination with means for causing said block to automatically cling to the roof by the pressure brought to bear on said hook, substantially as set forth.

530,549. JAPANNING-FURNACE. PETER J. PAULY, JR., St. Louis, Mo. Filed Feb. 1, 1894. Serial No. 498,817. (No model.)



*Claim.*—A japanning furnace comprising an air tight baking chamber, a suitable heater in said chamber, a shield for said heater, an air shaft leading from said chamber, a valve for said shaft, a flue located within said air shaft and passing through the ceiling of said chamber, and a connecting pipe between said flue and heater, substantially as set forth.

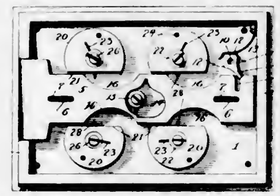
530,550. PNEUMATIC VEHICLE. ADDISON C. RAND, New York, N. Y., assignor to James F. Lewis, same place. Filed Sept. 19, 1894. Serial No. 523,467. (No model.)



*Claim.*—1. In a pneumatic vehicle provided with a propelling pneumatic-motor and a compressed-air storage reservoir, the combination with the pipe which connects the air storage reservoir to the motor-cylinder, of an insulated chamber constituted in a wall of the vehicle, through which chamber said connecting pipe extends, on its way from said reservoir to said cylinder, and a heat-generator within said chamber and adapted to apply heat generated thereby to the surface of said connecting-pipe, substantially as and for the purpose specified.

2. In a pneumatic vehicle provided with a propelling pneumatic-motor and a compressed-air storage reservoir, the combination with the pipe which connects the air storage-reservoir to the motor-cylinder, of an insulated chamber constituted in a wall of the vehicle and through which chamber said connecting-pipe extends on its way from said reservoir to said cylinder, and a heat-generator adapted to apply heat generated thereby to the surface of said connecting-pipe within said chamber, together with a valve governing the intensity or degree of heat generated by said generator, and valve-operating gearing connecting said valve to the running-gear of the car, whereby the generation of a maximum of heat when the car is in rapid motion and the generation of a less degree of heat when the car is moving slowly or is at rest, are automatically secured; substantially as and for the purpose specified.

530,551. PERMUTATION-LOCK. FRANK C. RICHARDS, Felicity, Ohio. Filed Feb. 9, 1894. Serial No. 499,659. (No model.)



*Claim.*—1. In a lock, the combination with a bolt having a number of recesses in its edge, and means for operating it; of a circular tumbler fitting each recess and having cut away a segment of the size of said recess, means for turning the tumblers independently, and a rubber plug inserted in certain of the tumblers and bearing frictionally against the inner face of one of the face plates of the lock, as and for the purpose set forth.

2. In a lock, the combination with a bolt having a number of recesses in its edge, and means for operating it: of a circular tumbler fitting each recess and having cut away a segment of the size of said recess, a rubber plug inserted in certain of the tumblers and bearing frictionally against the inner face of one of the face plates of the lock, and trunnions on each tumbler journaled in said face plates, the trunnion and tumbler being slotted radially and one face plate being provided around the bearing for the trunnion with a number of radial slots marked with a scale, as and for the purpose set forth.

3. In a lock, the combination with a bolt having a number of recesses in its edge, and means for operating it: of a circular tumbler fitting each recess and having cut away a segment of the size of said recess, and trunnions on each tumbler journaled in said face plates, the trunnion and tumbler being slotted radially and both face plates being provided around the bearing for the trunnion with a number of radial slots marked with a scale, as and for the purpose set forth.

4. In a lock, the combination with a bolt having a number of recesses in its edge, and means for operating it; of a circular tumbler fitting each recess and having cut away a segment of the size of said recess, the tumbler being provided with a central hole having a radial slot, and a spindle journaled in said hole and having reduced trunnions journaled in the face plates, the spindle and its trunnions having a radial slot and one face plate having a number of radial slots around the journal for the trunnions, as and for the purpose set forth.

5. In a lock, the combination with a bolt having a number of recesses in its edge, and means for operating it: of a circular tumbler fitting each recess and having cut away a segment of the size of said recess, a rubber plug inserted in certain of the tumblers and bearing frictionally against the inner face of one of the face plates of the lock, the tumbler being provided with a central hole having a radial slot, and a spindle journaled in said hole and having reduced trunnions journaled in the face plates, the spindle and its trunnions having a radial slot and both face plates having a number of radial slots around the journal for the trunnion, as and for the purpose set forth.

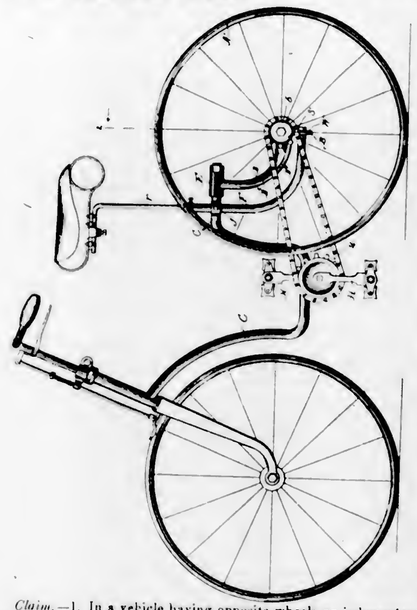
6. In a lock, the combination with a bolt sliding in suitable guides and having a heart-shaped opening, the edges of the bolt having recesses, and a radially slotted spindle journaled between the face plates within said opening, one of said face plates being provided around said journal with a number of radial slots; of a number of tumblers having trunnions also journaled in the face plates, the trunnions and tumblers being radially slotted and the face plates around said journals being also provided with a number of radial slots, scales

around said slots, the tumblers being circular so as to fit in said recesses in the bolt and having cut from one side a segment each of the size of its recess, and a catch for holding the bolt in one of two positions, as and for the purpose set forth.

7. In a lock, the combination with a bolt sliding in suitable guides and having recesses in its edges and a notch near its rear end, means for moving the bolt, and tumblers removably engaging said recesses; of a catch pivoted within the casing and having a tongue at one end engaging said notch and its other end provided with two flat faces standing at an angle with each other, and a spring bearing on one of said faces and adapted to ride over the angle when the bolt is moved, as and for the purpose set forth.

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530,552. VEHICLE. JOSEPH RIDGE, Chicago, Ill. Filed June 20, 1892. Serial No. 437,326. (No model.)



*Claim.*—1. In a vehicle having opposite wheels, an independent axle for each wheel in combination with pivoted connections joining said axles and so constructed as to preserve a constant distance between the points of contact of the wheels with the ground, but to permit the wheels to incline about their contact points as a fulcrum without sliding and consequent friction on the ground.

2. In a vehicle, having opposite wheels an independent axle for each wheel, in combination with pivotal connections joining said axles and so constructed as to preserve a constant distance between the points of contact of the wheels with the ground, but to permit the wheels to incline about their contact points as a fulcrum without sliding and consequent friction on the ground, and a frame with a seat support mounted thereon which seat support is so joined with the axle connections that movement of the seat actuates and controls the wheels in their lateral inclinations or oscillations.

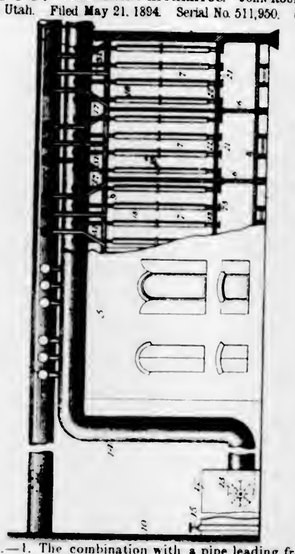
3. In a vehicle, opposite wheels and an independent axle for each wheel, in combination with pivotal connections joining said axles and so constructed as to preserve a constant distance between the points of contact of the wheels with the ground but to permit the wheels to incline about their contact points as a fulcrum without sliding and consequent friction on the ground, a frame, attached to said axles and having a front steering wheel, seat support or lever, carried by the frame and connected with the axle connections, and a cord or wire between said front wheel and seat lever whereby an inclination of the seat support serves to incline the rear wheels and automatically guide the vehicle.

4. In a vehicle, the combination of a pair of opposite wheels, an independent axle for each wheel, a frame support having lateral branches, a disk or connection to which the axles are pivotally attached, a frame support, a reach pivotally mounted on said frame support, a seat post or lever supported by said reach and connected with the disk, whereby the latter may be actuated, and pendent links pivotally connected with the axles and with the lateral branches of the frame support, substantially as and for the purposes set forth.

5. In a vehicle, the combination of a pair of opposite wheels, an independent axle for each wheel, a disk or connection to which the axles are pivotally attached, a frame support, a reach connecting with a steering wheel and having one of its ends pivotally supported upon said frame support, a seat and post or support for said seat, a horizontal lever, that is pivotally supported by the structure in a horizontal position, and engaging with the connecting link or disk between wheels and is provided with lateral extensions for attaching steering cords or wires, said seat post being so constructed and arranged as to engage with and actuate the horizontal lever, substantially as set forth and for the purpose described.

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530,553. CONDENSING APPARATUS. JOHN ROURKE, Salt Lake City, Utah. Filed May 21, 1894. Serial No. 511,950. (No model.)



*Claim.*—1. The combination with a pipe leading from the furnace stack, of a condensing and depositing chamber divided into any suitable number of compartments, tubes connected with the pipe leading from the stack and projecting into the chamber, said tubes being composed of some fibrous material adapted to catch the mineral particles, and allow the waste portion to escape, a false floor having apertures through which said tubes project, valves attached to the lower extremities of the tubes, and means for controlling said valves from the outside of the chamber, whereby the contents of the tubes may be discharged upon the bottom of the matting floor of the chamber, substantially as described.

2. In an apparatus of the character described, the combination with the pipe leading from the stack, of the chamber, the depositing tubes connected with said pipe into the chamber, the false floor through which said tubes protrude, the valves attached to the tubes and controlled from the outside of the chamber, and means connected with the tubes above the false floor for shaking said tubes from the outside of the chamber, as and for the purpose set forth.

3. In an apparatus of the character described, the combination with the pipe leading from the stack, of the closed chamber, the depositing tubes connected with the pipe and projecting into the chamber, the false floor through which said tubes protude, valves attached to the tubes beneath the false floor and controlled from the outside of the chamber, shaking means attached to the tubes above the false floor and controlled from the outside of the chamber, and a suitable outlet from the chamber for the waste fumes, whereby they are carried to the stack and delivered at a point above the connection of the first named pipe, substantially as described.

4. In an apparatus of the character described, the combination with the pipe leading from the furnace stack, of the closed condensing chamber, depositing tubes located therein and connected with said pipe, and valves located at the lower extremities of said tubes and controlled from the outside of the chamber, substantially as described.

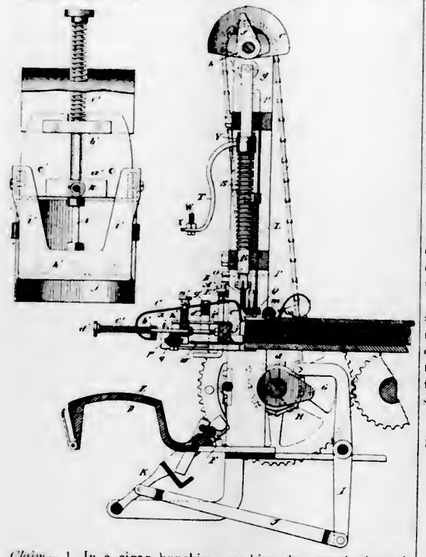
5. In an apparatus of the character described, the combination with the pipe leading from the furnace stack, of a condensing chamber, depositing tubes located therein and connected with said pipe,



valves located in the lower part of the tubes and controlled from the outside of the chamber, and shaking means attached to the tubes above the valves, whereby the tubes may be shaken from the outside of the chamber, substantially as described.

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530,554. CIGAR-BUNCHING MACHINE. HENRY SCHMIDT and CHARLES J. WERNER, New York, N. Y. Filed May 9, 1894. Serial No. 510,581. (No model.)



*Claim.*—1. In a cigar bunching machine the trough through which the mass of filler tobacco is fed, and the plate *h* extending transversely across and forming the upper surface of said trough at its outlet end and resting on the filler tobacco, combined with the vertically reciprocating presser plate over said hinged plate, the reciprocating knife for severing the charge of tobacco, bunch rolling mechanism and means for delivering the severed charge of tobacco to said mechanism; substantially as and for the purposes set forth.

2. In a cigar bunching machine the trough through which the mass of filler tobacco is fed, the hinged plate *h* extending transversely across and forming the upper surface of said trough at its outlet end, and the spring connected with said plate, combined with the vertically reciprocating presser plate over said hinged plate, the reciprocating knife for severing the charge of tobacco, bunch rolling mechanism and means for delivering the severed charge of tobacco to said mechanism; substantially as and for the purposes set forth.

3. In a cigar bunching machine, the trough through which the mass of filler tobacco is fed, and bunch rolling mechanism, combined with the knife B for severing the charge of tobacco, the rods O having coiled springs and carrying said knife, the presser plate Q independent of said knife but adjacent thereto, the rod P having coiled springs and carrying said presser plate, the transverse guides N for said rods O, P, the shaft *b* above said rods, the cams on said shaft and engaging said rods, and means for conveying the severed charges of filler tobacco to the bunch rolling mechanism; substantially as and for the purposes set forth.

4. In a cigar bunching machine, the feed trough for filler tobacco, the knife for severing the charges thereof, and bunch rolling mechanism, combined with the oscillatory charge carrier for conveying the severed charges of tobacco to the bunch rolling mechanism and consisting of the plate *w*, hinged plate *x*, plunger *j*, plunger rod *i*, spring arms *f'* having shoulders *g'*, and plate *k'* having cam edges *j'*; means for closing said carrier while in a horizontal position, the vertically reciprocating rod R, having a spring S and arm T, the shaft *b*, and the cam *f* on said shaft for depressing the rod R and causing the arm T to depress the said plunger rod and plunger and open said carrier, substantially as and for the purposes set forth.

6. In a cigar bunching machine the feed trough for filler tobacco, the knife for severing the charges thereof, and bunch rolling mechanism, combined with the oscillatory charge carrier for conveying the severed charges of tobacco to the bunch rolling mechanism and consisting of the plate *w*, hinged plate *x*, plunger *j*, plunger rod *i*, spring arms *f'* having shoulders *g'*, and plate *k'* having cam edges *j'*; the pivoted rod A' for closing the carrier while in its horizontal position, the pin on the wheel for actuating said pivoted rod, and means for opening said carrier while in its vertical position; substantially as and for the purposes set forth.

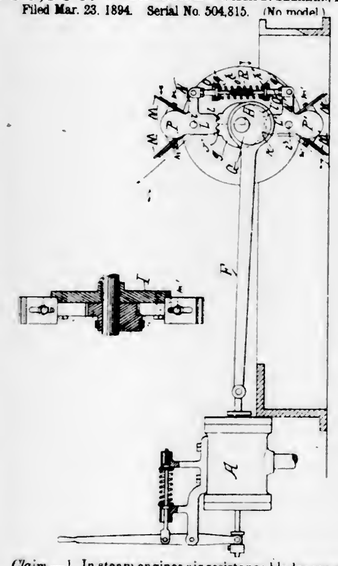
7. In a cigar bunching machine, the feed trough, the knife for severing the charges of filler tobacco, bunch rolling mechanism, and means for conveying the severed charges of tobacco to said mechanism, combined with the endless feed-belts F', G', and the hinged board I' extending over the belt G'; substantially as shown and described.

8. In a cigar bunching machine, the feed trough, the knife for severing the charges of filler tobacco, bunch rolling mechanism, and means for conveying the severed charges of tobacco to said mechanism, combined with the endless feed-belts F', G', and the hinged board I composed of separated slats and extending over the belt G'; substantially as shown and described.

9. In a cigar bunching machine, the feed trough, the knife for severing the charges of filler tobacco, bunch rolling mechanism, and means for conveying the severed charges of tobacco to said mechanism, combined with the endless feed-belts F', G', the hinged board I' extending over the belt G', and the stops L' preventing the said board from remaining upward unsupported; substantially as shown and described.

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530,555. STEAM-ENGINE. WILLIS D. SHERMAN, Brooklyn, N. Y. Filed Mar. 23, 1894. Serial No. 504,815. (No model.)



*Claim.*—1. In steam engines air resistance blades operatively connected with the main shaft and with the eccentric for the purpose of automatically varying the lead of the main valve according to the speed of the piston, substantially as described.

2. The combination with port-reversing engines of air resistance blades operatively connected with the main shaft and with the eccentric for the purpose of automatically varying the lead of the main valve according to the speed of the piston, substantially as described.

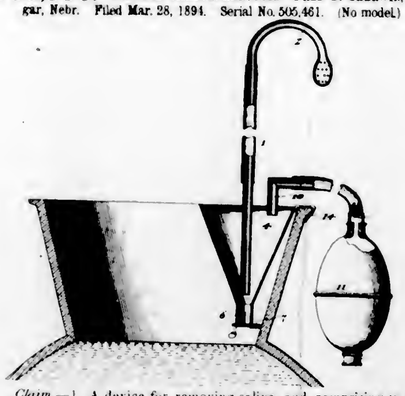
3. The combination in steam engines of the cylinder, piston, main shaft, eccentric, main valve and air resistance blades operatively connected with the main shaft and the eccentric for the purpose of varying the lead of the main valve according to the speed of the piston, substantially as described.

4. In operative combination with the main shaft eccentric and valve, slotted blades M adapted to expose greater or less effective

surface to the air for the purpose of varying the eccentric according to the speed of the engine, substantially as described.

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530,556. **DENTAL SALIVA-EJECTOR.** FRED D. SHERWIN, Edgar, Nebr. Filed Mar. 28, 1894. Serial No. 505,461. (No model.)



*Claim.*—1. A device for removing saliva, and comprising in its construction a chamber adapted to receive the saliva and to form a connection between the saliva-conveying and air-exhausting pipes, the lower end of said chamber being provided with a nozzle, a plate connected to the nozzle and extending laterally therefrom, the end of said plate being bent to form a clasp, and a rubber valve plate held by said clasp and arranged over the mouth of the nozzle, substantially as described.

2. A device for removing saliva, and consisting of a tube adapted to be placed in the patient's mouth, a chamber having the said tube entering at its upper end and extending down to the lower end of the chamber, at which portion it discharges its contents, an outwardly-opening valve at the lower portion of the chamber, and through which the saliva from the said tube passes from the chamber, a second tube communicating with the upper side of the chamber, and an air-exhausting apparatus connected to the second tube, and whereby the first tube is made to draw the saliva and discharge it upon the valve, substantially as described.

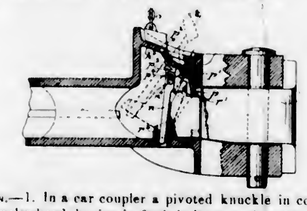
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530,557. **COMPOSITION FOR SIZING WALLS.** ROBERT J. SISK, New London, Conn. Filed Apr. 18, 1894. Serial No. 507,964. (No specimens.)

*Claim.*—The herein described composition of matter for "paper hangers' size," consisting of water, saccharine matter, glue, alcohol, boracic acid, oil of sassafras and oil of mirbeau, in substantially the proportions specified.

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530,558. **CAR-COUPLING.** STEPHEN T. SMITH, Noroton, Conn. Filed Feb. 28, 1894. Serial No. 501,784. (No model.)

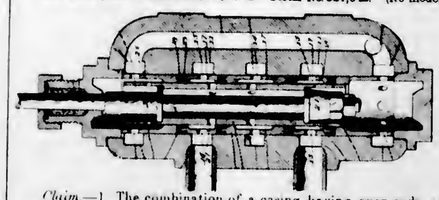


*Claim.*—1. In a car coupler a pivoted knuckle in combination with a coupler head, having in front in its central cavity, suspended from a pin passing through it transversely above said cavity, two tumblers each having the outer side face rectangular to the directrix of the supporting pin, and the inner adjoining side faces forming an oblique angle with the directrix of said pin, and a weighted bell-crank-lever fulcrumed upon said pin, one arm projecting through an opening in the top and adapted to lift the tumblers simultaneously, without interfering, when at rest, with their independent successive return as and for the purposes herein shown and described.

2. In a car coupler the combination of a pivoted knuckle with a coupler head having a recess in the bottom of its central cavity and opening in the top wall, and in front in its central cavity, suspended from a pin passing through it transversely, two tumblers each having its outer side face rectangular to the directrix of the supporting pin, and the inner adjoining side face forming an oblique angle with the directrix of said pin, and a weighted lever fulcrumed upon said pin and adapted to lift the tumblers simultaneously, without interfering, when at rest, with their independent successive return, and a tumbler-lock bar suspended from said lever and guided in a slot of the tumbler nearest the knuckle tail, (when fully locked) and adapted to slide in the said slot and to oscillate with said lever and tumbler, and to engage with the hole or recess in the bottom wall of the coupler head, as and for the purposes herein shown and set forth.

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530,559. **BALANCED PISTON-VALVE.** JOHN A. SMITH, Johnstown, Pa., assignor of two-thirds to James Hart and Abraham Wilkinson, same place. Filed Aug. 31, 1894. Serial No. 521,842. (No model.)



*Claim.*—1. The combination of a casing having open ends, an exterior duct connecting the ends of the bore thereof, an inlet and a cylinder port, a sectional bushing arranged in the casing and provided with perforations communicating with the openings in the shell of the casing, caps fitted in the ends of the casing and bearing against the ends of the bushing, packing-rings interposed between the sections of the bushing, and a cylindrical terminally-closed piston arranged in the bushing and provided with ports to register with said inlet and cylinder ports, substantially as specified.

2. The combination of a casing having an exterior duct connecting its ends, and an inlet and a cylinder port, a sectional bushing arranged in the casing, packing-rings interposed between the ends of the sections, and a hollow piston provided with ports to register with the inlet and cylinder ports, substantially as specified.

3. The combination of a casing having an exterior duct connecting its extremities, and inlet and cylinder ports, said casing being counterbored in communication with the ports and the terminals of the duct, a sectional bushing provided with ports and counter-bores in communication with the openings in the casing, packing-rings arranged between sections of the bushing, and a piston, cylindrical in construction, provided with annular series of ports adapted to register with the counter-bores in the bushing, substantially as specified.

4. The combination of a casing provided with inlet and cylinder ports, communicating with counterbores, and an exterior duct connecting the ends of the casing and also communicating with counterbores, a sectional bushing provided with ports and counterbores, packing-rings interposed between the ends of the sections of the bushing, and a hollow piston having closed extremities and intermediate ports adapted to register with the inlet and cylinder ports, and also provided with hollow extensions having openings to register with the counterbores communicating with the ends of the said duct, substantially as specified.

5. The combination of a casing provided with inlet and cylinder ports, communicating with counterbores, and an exterior duct connecting the ends of the casing and also communicating with counterbores, a sectional bushing provided with annular series of ports, packing-rings arranged between the extremities of the sections of the bushing, and a piston having a cylindrical shell provided with intermediate ports and terminal ports and having interior annular seats, perforated heads fitting said seats, and a stem having a shoulder to engage one of the heads and a nut engaging the other head, said seats being set in from the extremities of the shell, between the intermediate and the terminal ports, substantially as specified.

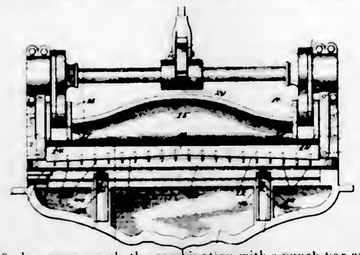
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530,560. **GANG-PUNCH.** FLETCHER D. SWANEY, Kansas City Kans. Filed May 3, 1894. Serial No. 509,894. (No model.)

*Claim.*—1. In a gang-punch, the combination with a punch-bar, and anti-friction rollers carried thereby and provided with circular shoulders arranged concentric to the axis of said rollers, of a shaft, eccentric mounted upon said shaft and frictionally engaging said anti-friction rollers, and provided with circular shoulders arranged concentric to the periphery of said eccentrics, and link-plates having openings engaging the circular shoulders of the anti-friction rollers and of the eccentrics, substantially as set forth.

2. In a gang-punch, the combination with a punch-bar having an oppositely inclined lower surface, and punches depending vertically from said lower surface, and anti-friction rollers carried by said punch-bar, and circular shoulders projecting from said anti-friction rollers and concentric to the axis thereof, of a shaft, eccentrics mounted upon said shaft and frictionally engaging said rollers, and eccentric shoulders, and link-plates having circular openings engaging the shoulders of said rollers and of the said eccentrics, substantially as set forth.





3. In a gang-punch, the combination with a punch-bar and anti-friction rollers carried thereby, of a shaft, eccentrics mounted upon said shaft and engaging said anti-friction rollers, a ratchet-wheel mounted upon said shaft, a lever, and a pawl carried by said lever and engaging said ratchet wheel, substantially as set forth.

4. In a gang-punch, the combination with a suitable framework, dies carried thereby, a punch-bar above said dies, anti-friction rollers carried thereby, and circular shoulders projecting from said anti-friction rollers, of a shaft journaled in said frame, eccentrics mounted upon said shaft and engaging said anti-friction roller, eccentric shoulders projecting from said eccentrics, and link-plates having openings connecting the circular shoulders of the rollers with the eccentric shoulders of the eccentrics, a ratchet-wheel mounted upon the shaft and provided with hub-flanges, a lever terminating in collars, which are mounted loosely upon said hub-flanges of the ratchet, a double pawl carried by said lever and provided with conical recesses, and a spring-actuated pin engaging one or the other of said recesses, substantially as set forth.

5. In a gang-punch, the combination with a suitable framework provided with vertical guide-slots, and dies carried by said framework, of a reciprocatory punch-bar, having flanges engaging said guide-slots, anti-friction rollers carried by said punch-bar, a shaft, eccentrics mounted upon said shaft and engaging said anti-friction rollers, and link-plates having openings engaging the circular shoulders arranged concentric to the axis of said rollers, and circular shoulders arranged concentric with the periphery of said eccentrics, substantially as set forth.

6. In a gang-punch, the combination with a suitable framework provided with a longitudinally slotted rib, and dies carried by said rib, and supporting flanges arranged in the same horizontal plane as the upper surface of said rib, and brackets carried by said framework, of adjustable gage-plates carried by said brackets, a gage-plate carried by said frame at one end, and means to adjust said gage-plate at an angle to the longitudinally exteoding slot of the rib, substantially as set forth.

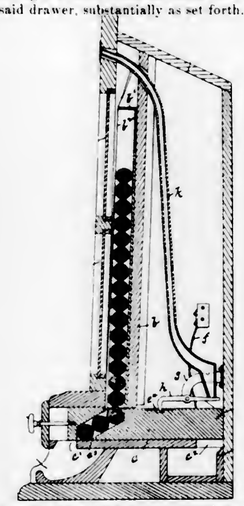
7. In a gang-punch, the combination with a suitable framework, and dies carried thereby, of brackets secured to the framework, and gage-plates carried thereby, and recesses at their inner ends, and pins projecting upward from said gage-plates, substantially as set forth.

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530,561. **VENDING-MACHINE.** EARL A. THISSELL, Florence, Mass. Filed Mar. 30, 1892. Serial No. 427,123. (No model.)

*Claim.*—1. In a vending machine, the combination of a case having a storage space for the articles to be sold and a movable goods drawer adapted to carry said articles from said storage space to the outer side of the case, of a coin chute communicating at its upper end with a slot in the front side of said case which is adapted to receive a coin of a predetermined size, and a locking lever pivotally supported between its ends within said case, said lever having its front end adapted to operatively engage said goods drawer to lock the latter in its closed position and terminating at its rear end in a fork which normally occupies a position adjacent to the lower end of said coin chute, the inside width of said fork being but slightly less than the diameter of the predetermined coin, whereby a coin of less diameter will pass said lever without rocking it, substantially as and for the purpose described.

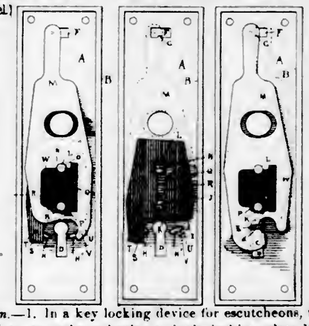
2. In a vending machine, the combination with the case having the front side thereof composed of a hinged door which is provided with a coin-receiving slot, and having near said front side a removable partition against which the goods are supported in a substantially vertical column, a goods drawer located beneath said partition and movable toward and away from the front side of the case, a pivotally supported detent lever having at its front end a hook adapted to engage a locking aperture in said drawer and having at its rear end a horizontally disposed fork of slightly less inside width than the diameter of the coin by which it is designed to be operated, a money drawer located beneath the rear end of said goods drawer, access to which is closed by the latter in its retracted position, and a coin chute having its upper end extended through said partition in the case to the coin-receiving slot in the door, said chute terminating at its lower end above the fork on said detent lever and at a distance above the goods drawer less than the diameter of the coin with which it is designed to be used, whereby the coin when dropped through said chute will engage the fork on the detent lever and rock the latter sufficiently to release the goods drawer, but will be prevented from entirely leaving the chute until an initial forward movement is imparted to said drawer, substantially as set forth.



3. In a vending machine, a case provided with a goods storing space and having an open goods receptacle, as *d*, and a horizontally disposed partition, as *c*, having therein a slot or opening, as *c'*, communicating with said receptacle, a plurality of goods drawers resting upon said partition and movable toward and away from the front side of the case, a portion of said drawers having extending therethrough in a vertical plane a transverse opening, as $c^2$, and the remainder thereof being provided with a transverse opening, as $c^3$, extending therethrough in an inclined plane, said openings, in the rearmost positions of the drawers, registering with the goods storing space, and, in the forwardmost positions of the drawers, with said slot or opening in said partition, locking devices for said drawers, and coin releasing mechanism therefor, combined and operating substantially as set forth, whereby a portion of said drawers are adapted to deliver the articles one at a time into said open receptacle, and the remainder to deliver a plurality of articles at a time.

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530,562. **COMBINED ROSE AND ESCUTCHEON.** CHARLES R. UHLMANN, Peoria, Ill. Filed Mar. 10, 1894. Serial No. 503,107. (No model.)



*Claim.*—1. In a key locking device for escutcheons, the combination of an escutcheon having a single locking plate M pivotally mounted therein, substantially as set forth, the upper extremity of

said plate forming a spring, a knob $M^2$ secured to the said upper extremity of the plate for engagement with the escutcheon, a recess formed in the lower extremity of the plate, a slot or notch *d* cut in said extremity and forming part of said recess, and a key E engaged by the said slot *d* substantially in the manner and for the purposes set forth and described.

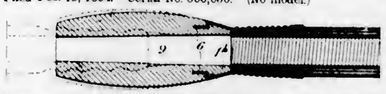
2. In a key locking device for escutcheons, the combination of an escutcheon, a plate M pivotally mounted therein on the post L, a post K situated below the post L on the escutcheon, a slot I' in the plate M for allowing the said plate to swing, a key W secured between the said posts L and K for keeping the plate M in place, a slot *d* made in the lower end of said plate M, the key E adapted to be engaged by said slot *d*, a spring tongue forming part of the upper part of the plate M, a knob $M^2$ on said tongue and a slot F and lug G in said escutcheon as set forth, for engagement with said knob $M^2$ substantially as and for the purposes described.

3. In combination with an escutcheon, a post K made with the said escutcheon and having a plate I pivotally mounted thereon, said plate I carrying at its lower extremity a pin or lug T substantially in the manner and for the purpose set forth, a post L made with the said escutcheon and having a locking plate M pivotally mounted thereon, said plate M being in working engagement with said plate I by suitable means, the lower extremity of said plate M having a pin or lug V for the purposes set forth and means for locking said plate M when in any position for the purpose herein described and shown.

4. In a combined rose and escutcheon, a key-lock comprising a plate I secured in working position on the escutcheon, a locking plate M also secured in working position on said escutcheon for actuating the said plate I substantially in the manner and for the purposes set forth, said plate M having a knob $M^2$ secured thereto and operated from the outside of the device above or below the key hole or on either side thereof for the purposes set forth.

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530,563. ATTACHING-SOCKET FOR TUBING. JOHN J. VAUTIER, Brooklyn, assignor of one-half to John Grierson Law, New York, N. Y. Filed Feb. 13, 1894. Serial No. 500,050. (No model.)



*Claim.*—1. An attaching socket of the character described, having a tubular elastic tip made with side walls thicker at its central or intermediate portion

2. An attaching socket of the character described, comprising a tubular elastic tip made larger transversely at its central or intermediate portion, and a ferrule connected to one end of the tip.

3. The combination in an attachment socket of the character described, of an elastic tip portion adapted for yielding at its outer part when applied to a gas nipple or connection, and a ferrule attached to the rear end of said tip and adapted for connection thereto of flexible tubing, said ferrule at its forward end having an interlocking flange or part entering the tip, said tip extending rearward within the ferrule behind said interlocking flange or part, substantially as set forth.

4. An attaching socket of the character described, comprising a tubular elastic tip made larger in transverse section at its central or intermediate portion, and a connected ferrule having a rearwardly projecting tubular stem provided with interior screw threads adapted to engage the tubing, substantially as set forth.

5. An attaching socket of the character described, comprising a tubular elastic tip made larger in transverse section at its central or intermediate portion, and a connected ferrule having a rearwardly projecting tubular stem provided with interior screw threads impressed from its outer face and adapted to engage the tubing, substantially as set forth.

6. The combination, in an attaching socket of the character described, of a tubular elastic tip, and a connected ferrule having end parts 4, 7, the part 4 having an inturned flange or shoulder 5, behind which the material of the tip interlocks and extends longitudinally within the ferrule, substantially as set forth.

7. The combination, in an attaching socket of the character described, of a tubular elastic tip, and a connected ferrule having end parts 4, 7; the part 4 having an inturned flange or shoulder 5, and a supplemental flange 6, entering and interlocking with the material of the tip, substantially as set forth.

8. The combination, in an attaching socket of the character described, of a tubular elastic tip having larger transverse section at its central or intermediate portion, and a connected ferrule having end parts 4, 7, the part 4 having an inturned flange or shoulder interlocked with the material of the tip, and the part 7 having an interior screw-thread 8 impressed inward and adapted to engage the tubing, substantially as set forth.

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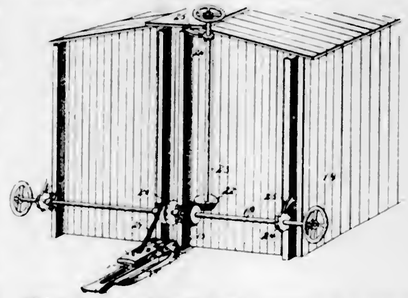
530,564. FOLDING CHAIR. JONATHAN WALTON, Brooklyn, N. Y. Filed Jan. 10, 1894. Serial No. 496,399. (No model.)



*Claim.*—The combination substantially as herein set forth, of the frame C, having the cross bar $c^3$, and stop *h*; the seat A, pivotally connected to the cross bar $c^3$, and having the side pieces *a* formed with the recesses *f*, $f^2$; the back B, formed with side pieces *b*, having the slots $b^2$, $b^3$, and the stop $b^4$; the braces G, having the pins *g*, *g*, resting in the slots $b^3$, $b^3$; the swinging latch *e*, formed with the longitudinal slot $e^3$, the lifter L, consisting of the rock lever *l*, formed with the handle *l'*, springs *s*, *s*, and latch arm $l^2$; and the frame D, pivotally connected with the frame C, and carrying the cross bar *d'*, engaging the recessed seat bar and latch, the whole constructed and operating as shown and described.

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530,565. CAR-COUPLING. SAMUEL N. WASHBURN, Olympia, Wash. Filed Apr. 23, 1894. Serial No. 508,685. (No model.)



*Claim.*—1. In a car coupling, the combination of a draw-head bottom provided with a catch, the sides pivoted to the bottom and arranged to engage and lift a link, and the top hingedly connected with the sides and resting upon the catch, and having a limited swinging movement independent of the sides to permit a link to lift it and engage the catch without raising the sides, substantially as described

2. The combination of the draw-head bottom provided with a catch and having opposite recesses or seats, sides pivoted to the bottom and having their front portions supported by said seats and being flush with the upper face of the bottom, a stop carried by the sides for limiting their upward swing, and a top hingedly connected with the sides and extending above the catch to confine a link, substantially as described.

3. In a car coupling, the combination of the draw-head bottom provided with opposite recesses or seats, the sides pivoted to the body and having their front portions supported by said recesses or seats and adapted to swing upward to release the link, and a top hingedly connected with the sides, substantially as described.

4. In a car coupling, the combination of the draw-bar having an enlarged front end and provided with opposite curved recesses or seats, a catch carried by the draw-bar, the sides pivoted to the draw-bar, and having forwardly projecting upward extending rear terminals located above the draw-bar, said sides having their front ends rounded and supported by said recesses or seats, a top having its rear end hingedly connected with the upper terminals of the sides, and a stop for limiting the upward swinging of the sides, substantially as described

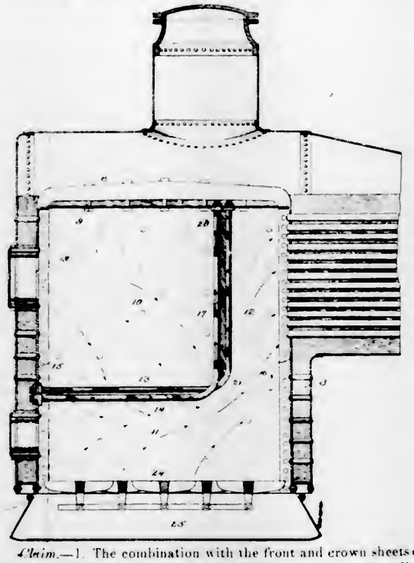
5. In a car coupling, the combination with a draw-head having a catch, of a link having laterally enlarged beveled ends provided



with opposite side flanges, substantially as and for the purpose described.

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530,566. LOCOMOTIVE-BOILER FURNACE. GEORGE H. WATSON St. Louis, Mo. Original application filed Dec. 30, 1892, Serial No. 456,759. Divided and this application filed June 3, 1893. Renewed Oct. 24, 1894. Serial No. 526,814. (No model.)



*Claim.*—1. The combination with the front and crown sheets of a locomotive boiler, or like furnace, and the water spaces surrounding the same, water grate bars having their rear ends bent or curved upwardly, the opposite ends of said bars being extended through and secured in said front and crown sheets respectively, and the spaces between the upturned ends or parts of the water bars being closed by a suitable filling, substantially as and for the purpose specified.

2. The combination with the boiler shell, of the fire box arranged therein and surrounded by the water spaces or legs, the front crown and flue sheets respectively, of said box, a door 19 leading into the upper part thereof and the basket grate formed by a series of tubes or pipes, extending part way through the fire box and bent or carried upward in the rear part thereof, the lower ends of said pipes being extended through and secured in the front sheet to communicate with the front water leg, the upper ends of the pipes being carried upward through, and secured in the crown sheet, and a refractory filling provided between the up-turned ends of said pipe or tube, said fire box being divided by said grate into three parts or chambers 10, 11 and 12, for fuel, combustion, and, escape, respectively, all substantially as described.

3. The combination with the boiler shell, of the fire box arranged therein and surrounded by the water spaces or legs, the bent water tubes or bars forming the grate within said fire box, the rear ends of said bars being carried upwardly in front of the flue sheet and extended through the crown sheet, the lower and forward ends of the bars passing through the front sheet and thus communicating with the front water leg and the spaces between the up-turned parts of the water tubes being filled with refractory material, while the outside surfaces of said up-turned parts are exposed, substantially as and for the purpose specified.

4. The combination with the boiler shell, of the fire box arranged therein and having the front, crown, and, flue, sheets respectively, the water tubes or bars forming the grate within said box, and having their rear ends extending upwardly in front of said flue sheet, the opposite ends of said pipes being connected with the water spaces surrounding the fire box and the spaces between the upright parts of said tubes or bars being closed by a suitable filling to compel a down draft through the spaces between the lower parts of the tubes, substantially as described.

5. The combination with the boiler shell of the fire box arranged therein, the upper and lower sets of water grate bars or tubes 13, 14, the rear ends of said tubes being bent or curved and extended upwardly in the rear part of said box, the up-turned ends of the upper set of bars being extended through the spaces between the like ends of the lower bars and standing back of the same to form a crotch or seat 21, a refractory filling arranged between the up-turned ends of the two sets of bars and resting in said seat, and the ends of said grate bars being connected with the water spaces of the boiler, substantially as described.

6. The combination with the boiler shell, of the fire box arranged therein, the upper and lower sets of water grate bars or tubes, 13, 14, the rear ends of said tubes being bent or curved and extended upwardly in the rear parts of the box, the up turned ends of the upper set of bars being extended through the spaces between the ends of the lower bars and standing back of the same to form a crotch or seat 21, a refractory filling arranged between the up-turned ends of the two sets of bars, and resting in said seat, and the opposite ends of said bars being extended through and secured in the front sheet and the crown sheet of the fire box, respectively, and communicating directly with the surrounding water spaces, substantially as described.

7. The combination with the boiler shell, of the fire box arranged therein, and surrounded by the water spaces, the bent tubes having the horizontal and upright parts, the ends of said tubes being secured in the front and crown sheets of the fire box, respectively, by all threaded connections and the spaces between the upright parts of the tubes being closed by a refractory filling, substantially as described.

8. The combination with the boiler casing, of the fire box arranged therein, the water tubes extending horizontally and vertically in said fire box and connected with the surrounding water spaces, the spaces between the vertical parts of said tubes being closed by a suitable filling, said fire box being divided by the grate so formed into the three chambers 10, 11 and 12, respectively, and an up draft grate provided in the lower part of the fire box and a normally closed ash receptacle or space provided beneath the same, substantially as described.

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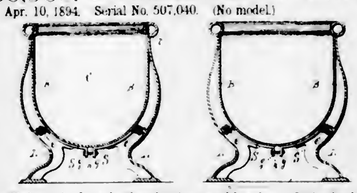
530,567. INCUBATOR. ANDREW WICKEY, Chicago, Ill. Filed Sept. 14, 1892. Serial No. 445,862. (No model.)



*Claim.*—A nest comprising a frame, a series of cross bars, rollers at the opposite sides of the frame, and a flexible apron wound upon the rollers and extending between the same over the cross bars with enough slack to sag between the bars sufficiently to prevent the eggs from rolling over the bars when the apron is moved along

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530,568. BATH-TUB. ROBERT M. WILSON, Rome, N. Y. Filed Apr. 10, 1894. Serial No. 507,040. (No model.)



*Claim.*—1. In a bath-tub, the combination of the body of the tub, and a rim for the body consisting of a tube of greater length than the upper edge of the body of the tub having its adjacent ends lapped and provided with a lengthwise slot for receiving the upper edge of the body of the tub, substantially as and for the purpose specified.

2. In a bath-tub, the combination of a body consisting of head, foot, and intermediate sections formed of substantially rigid sheet metal and having their adjacent edges secured together, and a rim for the body consisting of a tube provided with a lengthwise slot for receiving the upper edge of the body of the tub, substantially as and for the purpose described.

3. In a bath-tub, the combination of the body of the tub, opposite legs for supporting said body, a connection between said legs having its upper face engaged with the adjacent portion of the body and consisting of separate sections having their opposite ends secured to the legs, and an adjuster for engaging the adjacent ends of the sections of said connection, substantially as set forth.

4. In a bath-tub, the combination of the body of the tub, opposite legs for supporting said body, a connection between said legs having its upper face engaged with the adjacent portion of the body and consisting of separate sections having their opposite ends elevated above

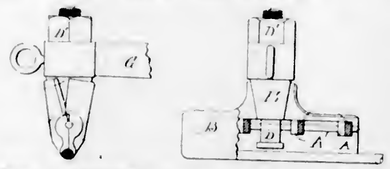
their adjacent ends and removably secured to said legs and having their adjacent ends provided with ears, and an adjuster engaged with said ears, substantially as and for the purpose described.

5. In a bath tub, the combination of the body of the tub, opposite legs shaped to conform to the outline of said body for supporting said body but disconnected therefrom, and an adjustable connection between the opposite legs for drawing them against the sides of said body, substantially as described and shown.

6. In a bath tub, the combination of the body of the tub formed of head, foot, and intermediate sections of sheet metal in one thickness, an ornamental stiffening rim attached to the upper edge of said body, and four legs shaped to conform to the outline of the tub body set in pairs and adjustably connected to support the same, substantially as described and shown.

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530,569. **TROLLEY-WIRE CLAMP.** MONTRAVILLE M. WOOD, Chicago, Ill., assignor to The Ohio Brass Company, Mansfield, Ohio. Filed July 2, 1894. Serial No. 516,330. (No model.)



*Claim.*—1. A trolley wire clamp comprising two jaws pivoted together, a stud bolt attached thereto by which the clamp is supported, and a wedge associated with said bolt and adapted to be moved with relation to said bolt and to the two jaws, whereby the distance between the clamping edges is varied by the movement of said wedge, substantially as described.

2. A trolley wire clamp comprising two jaws, each provided with projecting lugs, an interlocking pin passing through holes in said lugs whereby the jaws may be rocked about said pin, a stud bolt by which the clamp is supported, said bolt being provided with a head adapted to be received into recesses in the jaws of said clamp, substantially as described.

3. The combination in a trolley wire clamp of two jaws, each provided with projecting lugs, an interlocking pin passing through holes in said lugs, a stud bolt by which said clamp is supported, a cone-shaped wedge encircling said stud bolt, a groove in each jaw for the reception of said wedge, and means for forcing said wedge into said grooves so as to spread the jaws apart at the top and cause their clamping edges to firmly grip the trolley wire, substantially as described

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530,570. **CARVING-MACHINE.** CHARLES S. YARNELL, Minneapolis, Minn., assignor to the Moore Carving Machine Company, same place. Filed Apr. 30, 1894. Serial No. 509,520. (No model.)

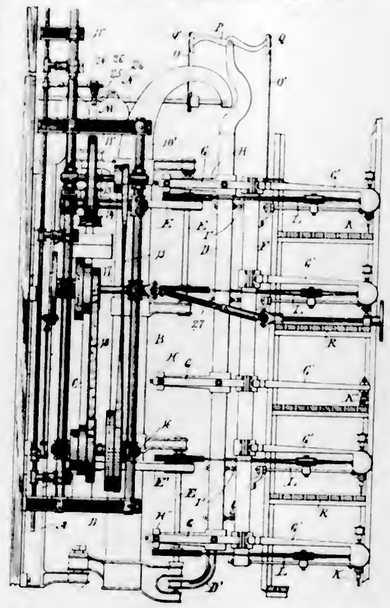
*Claim.*—1. The combination with the vertically movable tool-carrying frame of a carving machine, of mechanism for automatically raising the tool-carrying frame intermittingly, comprising a driven shaft (17) a vertically reciprocating rod connected to the shaft by a pitman, an arm fixed on the rod, and means connecting the arm to the tool-carrying frame, whereby the depressing of the rod lifts the frame, substantially as described.

2. In mechanism for lifting the tool-carrying frame of a carving machine, the combination of a driven shaft, (13) a thereto belted and thereby driven shaft, (16) a third shaft belted through speed pulleys to the said second shaft, a crank on said third shaft, a vertically reciprocable rod and a pitman connecting the rod to a wrist pin on the crank, substantially as described

3. In mechanism for lifting the tool-carrying frame of a carving machine, the combination with a driven shaft (16) and a shaft (17) driven therefrom by a belt running on speed pulleys thereon, of a vertically reciprocable rod, a pitman connected at one extremity to a sleeve adjustable on the rod and at the other extremity to a wrist pin adjustable in a crank on said second shaft, substantially as described.

4. The combination with a carving or similar machine, having a tool-carrying frame movable vertically and counterpoised by weights on a horizontally extending and vertically swinging arm which arm projects through the extension of the axis on which the tool-carrying frame and related parts swing horizontally, of a vertically reciprocative rod connected to the weight-carrying arm at the point therein in the projection of the vertical axis on which the tool carrying-frame swings horizontally, substantially as described.

5. The combination with the vertically movable tool-carrying frame of a carving machine, and a vertically reciprocable rod connected thereto, of a shaft connected eccentrically to the reciprocable rod by a pitman, and an extension of the shaft provided with a hand wheel and a medial tumbling-rod section or part connected thereto by universal joints, substantially as described.



6. In a carving machine, the combination with relatively fixed ways, a frame movable on the ways, and anti-friction bearing wheels interposed between the frame and the ways, of a cap having a recess and thereby fitted on a bearing wheel and its stem, covering the wheel at the front, and bearing movably against the ways, substantially as described.

7. In a machine having a swinging tool-carrying frame supported movable vertically on a counterpoised arm, a vertically reciprocable arm connected to said counterpoised arm, and a swiveled double head pivoted respectively to the counterpoised arm and to the vertically reciprocable arm, substantially as described.

8. In a carving machine, the combination with a vertically movable frame having a plurality of laterally projecting tool carrying arms and vertically-disposed revoluble cutting tools mounted in some of said arms, of a sleeve adjustable vertically in an arm of said frame, a vertically disposed non-revoluble tool-guide movable limitedly vertically in the adjustable sleeve and projecting from its arm in the same direction that the cutting tools project from their arms, a collar on the tool-guide, and a spring interposed between the collar on the tool-guide, and the relatively fixed sleeve adapted to project the tool yieldingly toward its work, substantially as described.

9. With a carving or boring machine having one or more cutting tools and a tool-guide in a horizontally swinging and vertically movable frame, a pattern provided with a series of cone shaped depressions for centering the guide and for bringing and holding the cutting tools to their work, and an upwardly projecting flange on and in addition to the pattern near the line of the depressions adapted to catch and limit the movement of the guide-tool so that it cannot pass the depressions in the pattern in one direction, substantially as described

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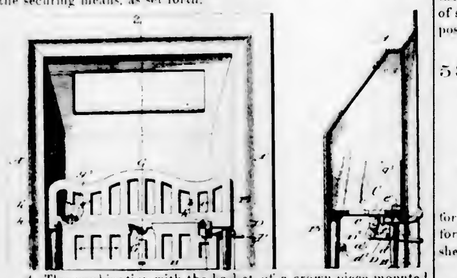
530,571. **FIRE BASKET OR GRATE.** JOHN ZIPP, New Albany, Ind. Filed May 28, 1894. Serial No. 512,721. (No model.)

*Claim.*—1. The combination with the basket, of a front crown piece or bottom pivotally mounted on the basket front for endwise movement as well as movement upon its pivots, and a lever forming a support therefor when in its horizontal position, as set forth.

2. The combination with a pivoted grate, and the pivoted lever mounted at one end of the grate on a vertical pivot for preventing its being dumped, provided with a horizontal portion, of the crown piece or bottom to the basket mounted on the basket front for pivotal and endwise movement and to be supported in one position by said lever, substantially as specified.



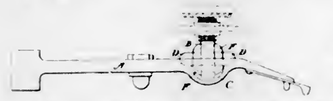
3. The combination with the basket, of a front therefor having lugs upon its rear portion to bear upon the upper face of the front bar of the basket and a lug to engage the under face of said bar and the securing means, as set forth.



4. The combination with the basket, of a crown piece mounted on the front for pivotal and endwise movement, the grate and a pivoted lever for preventing the dumping of the grate and adapted to support the crown piece when in its horizontal position, as set forth.

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530,572. **MECHANICAL CLIPPER FOR ANIMALS.** PHILIP ASHBERRY and WALTER BARNES, Sheffield, England. Filed May 16, 1894. Serial No. 511,464. (No model.) Patented in England Apr. 13, 1894, No. 7,360.



*Claim.*—1. The combination with a vibrating arm of a mechanical clipper for animals of a roller B having an axle D and an intermediate circle of rollers E retained in position by collars F supported within a recess C in the arm A, and constituting a traveling path for the end of the pressure screw to bear upon, substantially as hereinbefore specified.

2. The combination in a mechanical clipper for animals of a vibrating arm A provided with an oil-retaining recess C, an axle D supported by its ends across said recess and provided with collars F and an anti-friction roller B revolving between said collars, substantially as hereinbefore specified, for the purpose set forth.

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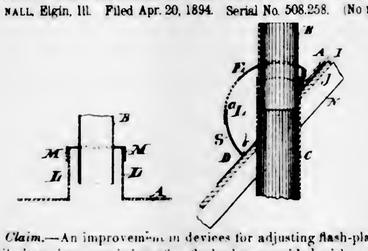
530,573. **DOUBLETREE.** FRANCIS M. BEAVER, Pleasant Valley, Tex., assignor of one-half to Jesse Henry Griffin, same place. Filed Nov. 2, 1893. Serial No. 489,888. (No model.)



*Claim.*—A double tree, comprising the main bar adapted to be connected at each end to a vehicle, the T-shaped link pivotally secured to the center of said bar, the auxiliary bars pivotally connected at their abutting ends to each other and to the center of the main bar by said link, the bar *c* pivotally attached at one end to the inner ends of the auxiliary bars and at the other end to the ends of the main bar, substantially as shown and for the purposes described.

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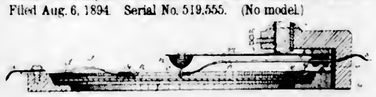
530,574. **DEVICE FOR ADJUSTING FLASH-PLATES TO VENTILATING-PIPES AND DIFFERENT-PITCHED ROOFS.** BURNETT B. BIGNALL, Elgin, Ill. Filed Apr. 20, 1894. Serial No. 508,258. (No model.)



*Claim.*—An improvement in devices for adjusting flash-plates to ventilating pipes, consisting of a flash-plate provided with an elongated opening and housed in with two segment-plates I, a fixed end cover, and an end piece secured water-tight to the flash-plate and segments I, I, in combination with an adjustable cover which supports the upper section B of the ventilating pipe and the lower section C of said pipe telescoped over section B, substantially as and for the purpose specified

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530,575. **TELEPHONE-TRANSMITTER.** ARTHUR F. BOARDMAN, Somerville, assignor of one-half to James D Leatherbee, Braintree, Mass. Filed Aug. 6, 1894. Serial No. 519,555. (No model.)



*Claim.*—1. In a telephone, an offset an electrode, a support therefor mounted on said offset, an adjusting screw mounted on said offset for adjusting the pressure of said electrode consisting of a threaded shell, containing a cork stopper for bearing against said electrode

2. In a telephone, an offset, an electrode, a support therefor mounted on said offset, an adjusting screw mounted on said offset for adjusting the pressure of said electrode consisting of a threaded shell, containing a cork stopper for bearing against said electrode, and a locking device for locking said adjusting screw.

3. In a telephone, a support cast or molded comprising an annular ring, and an offset, a recess in said ring under said offset, a diaphragm supported on said ring, and electrodes mounted on said offset

4. In a telephone, a diaphragm support, and an offset rigidly connected thereto, a recess in said support under said offset, a current varying device mounted on said offset, and an adjustment therefor mounted on said offset.

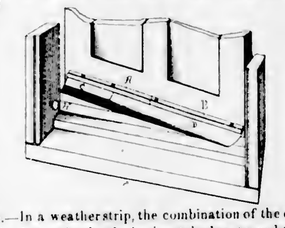
5. In a telephone, a current varying device, an adjustment therefor comprising a non-corrosive dampening cushion, and threads connected thereto, an annular ring having a recess, and an offset over said recess carrying said adjustment and current varying device, and a diaphragm mounted on said ring.

6. In a telephone, a current varying device, an adjustment therefor comprising a screw, a cork bearing surface rigidly connected thereto, an annular ring having a recess and an offset over said recess carrying said adjustment and current varying device, and a diaphragm mounted on said ring.

7. In a telephone, a support cast or molded comprising an annular ring, an offset arm, a recess in said ring under said offset, a diaphragm supported upon said ring, and electrodes and an adjustment therefor, both directly mounted upon said offset.

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530,576. **WEATHER-STRIP.** DALLAS A. BODIKER and JOHN H. BODIKER, Dayton, Ohio. Filed Feb. 17, 1894. Serial No. 500,445. (No model.)



*Claim.*—In a weather-strip, the combination of the curved plates C and D, the former having its horizontal edges turned to inclose the horizontal edges of the latter, whereby said plates are adapted to slide longitudinally one over the other, the angular plates A and B inclosing the upper horizontal edges of the plates C and D and the screw F provided with an eccentric head by means of which the plates C and D may be adjusted with reference to the proximity of their lower horizontal edges, to the threshold of the door, substantially as described.

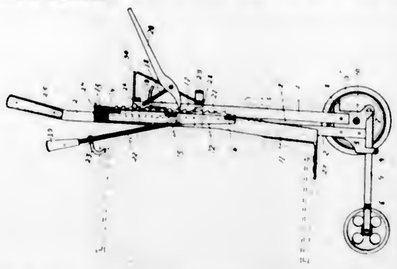
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530,577. **BARREL-TRUCK.** ORRA J. BOWSER, Fort Wayne, Ind. Filed Apr. 20, 1894. Serial No. 508,301. (No model.)

*Claim.*—1. In a barrel-truck the described truck frame having suitable wheels and feet, as shown, provided with the pivoted arms 4, the yokes 18 and 19, the longitudinal guide-ways 2, and the pivotally mounted hand-lever 20, for elevating the load, as described, in combination with a sliding frame having a loading ledge, a hook mounted holding rod and a longitudinal rack-bar adapted for engagement with the said hand-lever and the said yoke 19, all substantially as described.

2 The combination in a barrel-truck, of a truck having the

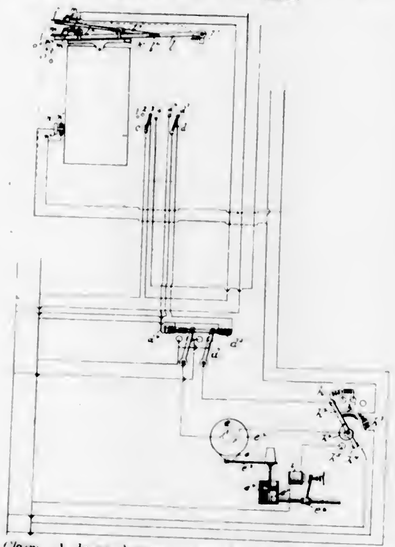
wheels 5, the feet 30, the pivotal arms 4 adapted to be secured in the lugs 8 or 9, the longitudinal guide-ways 2' for the sliding frame, and provided with the holding yoke 19 adapted for a normal engagement with the rack-bar 21, and the pivotally mounted hand-lever 20 adapted to elevate the said rack-bar, as described, and the sliding frame mounted in said guide-ways as shown, having a loading ledge 27, a hook-mounted holding-rod 22 and a rigid rack-bar 21, all substantially as described.



3. The described truck having the pivoted arms 4, as shown, guide-ways 2' for the barrel holding frame, and means for elevating the said frame by the aid of the rack-bar 21, in combination with a vertically adjustable frame mounted in said guide-ways, as described, having a loading ledge, a pivoted holding rod 22 having a hook or claw 23 for clutching the chine of the barrel, and a rigid rack-bar 21, as shown, substantially as described

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530,578. ELECTRIC ELEVATOR-CONTROLLER. LEROY S. BUFFINGTON, Minneapolis, Minn., and WALTER C. JONES, Chicago, Ill. Filed Feb 23, 1894. Serial No. 501,116. (No model.)



*Claim.*—1. In an elevator system, the combination with an electro-magnetic device adapted to control the motive power, of a switch adapted to control the operation of said electro-magnetic device, an electro-magnetic device adapted to place an element in position to be engaged by the moving elevator car and thereby to cause the actuation of said switch, and switching apparatus provided upon the elevator car in electrical connection with said second mentioned electro-magnetic device and adapted to control the same, substantially as described.

2. In an elevator system, the combination with an electro-magnetic device adapted to control the motive power, of a switch adapted to control the operation of said electro magnetic device, an electro-magnetic device, an element adapted to be placed thereby in position to be engaged by the moving elevator car and thereby to cause the opening of the elevator door, said door being adapted in its movement to actuate said switch, and switching apparatus provided upon the elevator car and adapted to control said second mentioned electro-magnetic device, substantially as described.

3. In an elevator system, the combination with an electro-magnetic device adapted to control the motive power, of a switch adapted to control the operation of said electro-magnetic device, a pivoted bar, an elevator door suspended therefrom, an electro-magnetic device, an element adapted to be placed thereby in position to be engaged by the moving elevator car, and thereby to raise the end of said pivoted bar to cause said door to open, said door being adapted in its movement to actuate said switch, and switching apparatus upon the elevator car and adapted to control said second mentioned electro-magnetic device; whereby the door is automatically opened and closed and the car is automatically brought to rest opposite a predetermined floor, substantially as described.

4. In an elevator system, the combination with a pivoted bar, of an elevator door suspended therefrom, and means for raising and lowering the free end of said pivoted bar to effect the opening and closing of the elevator door, substantially as described.

5. In an elevator system, the combination with a pivoted bar, of an elevator door suspended therefrom, an electro-magnetic device adapted to place an element in position to be engaged by the moving elevator car, and thereby to raise the end of said pivoted bar to cause said door to open, and switching apparatus provided in the elevator car adapted to control said electro-magnetic device, substantially as described.

6. In an elevator system, the combination with switches provided at the several floors, of motor mechanism controlled by said switches, said switches being adapted to be actuated through the agency of the moving elevator car, and electro-magnetic devices controlled from the car for predetermining the switch to be actuated; whereby the car may be brought to rest opposite any floor, substantially as described.

7. In an elevator system, the combination with a contact arm adapted to be moved over a series of contact points, of circuit connections through said arm and contact points for controlling the movement of the elevator car, a lever pivoted upon said arm, a pair of contact points carried upon the said arm and adapted to be alternately engaged by said lever, and circuit connections through the lever and the pair of contact points adapted to control the direction of movement of the car, substantially as described.

8. The combination with a laterally sliding elevator door, of door opening mechanism for opening and closing the same through the agency of the weight of the door.

9. The combination with a laterally sliding elevator door, of means for opening the same through the agency of the weight of the door.

10. The combination with a laterally sliding elevator door, of means for raising the center of gravity of the same by the movement of the elevator car, and means for opening the door by the descent of the center of gravity of the door.

11. The combination with a laterally sliding elevator door, of means for raising the center of gravity of the same by the movement of the elevator car, mechanism for opening the door by the descent of the center of gravity, and means for closing the door by the descent of the center of gravity.

12. The combination with an elevator door, of means for opening the same through the agency of the moving elevator car, and a device for automatically stopping the car by the opening of the door, substantially as described.

13. The combination with an elevator door, of means for opening the same through the agency of the moving elevator car, and a device for automatically starting the car from rest by the closing of the door.

14. The combination with an elevator door, of means for opening the same through the agency of the moving elevator car, a device for automatically stopping the car by the opening of the door, and means for automatically starting the car from rest by the closing of the door, substantially as described.

15. The combination with an elevator door, of a moving elevator car, mechanism independent of the motion of the car for automatically opening said door, a device actuated by the moving elevator car adapted to place said mechanism in condition to open the door, and means for automatically stopping the car by the opening of the door.

16. The combination with an elevator door, of the elevator car, an electric switch thereon, an electro-magnetic device controlled thereby and means for opening the door through the agency of the moving car, said means being placed in operative condition by said electro-magnetic device.

17. The combination with an elevator door, of the elevator car an electric switch thereon, an electro-magnetic device controlled thereby and means for opening the door through the agency of the moving car, said means being placed in operative condition by said electro-magnetic device, and means for automatically stopping the car by the opening of the door.



18. The combination with an elevator door, of the elevator car, an electric switch thereon, an electro-magnetic device controlled thereby, means for opening the door through the agency of the moving car, said means being placed in operative condition by said electro-magnetic device, and means for automatically starting the car from rest by the closing of the door.

19. The combination with an elevator door, of the elevator car, an electric switch thereon, an electro-magnetic device controlled thereby, means for opening the door through the agency of the moving car, said means being placed in operative condition by said electro-magnetic device, means for automatically stopping the car by the opening of the door, and means for automatically starting the car from rest by the closing of the door.

20. The combination with an elevator car, of an elevator door, mechanism independent of the motion of the elevator car for opening the door, said means being controlled in its time of operation by the movement of the car, a device actuated by the opening of the door for bringing the car to rest, and mechanism for starting the car from rest by the closing of the door, substantially as described.

21. The combination with an elevator car, of an elevator door, mechanism independent of the motion of the car for opening the same, an electro-magnetic device, a switch upon the car for operating the same, a movable element adapted to be moved into the path of the car by said electro-magnetic device, said car being adapted to engage the same to throw said door opening mechanism into operation, substantially as described.

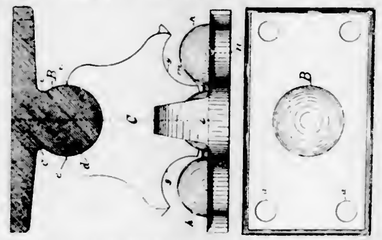
22. The combination with an elevator car, of an elevator door, mechanism independent of the motion of the car for opening the same, an electro-magnetic device, a switch upon the car for operating the same, a movable element adapted to be moved into the path of the car by said electro-magnetic device, said car being adapted to engage the same to throw said door opening mechanism into operation, and a switch controlled by said door for throwing on and off the motive power.

23. The combination with an elevator car, of an elevator door adapted to be opened through the agency of the moving car, an electric switch controlled by said door, an electro-magnetic device controlled by said switch, and motive mechanism adapted to move said car, controlled by said electro-magnetic device.

24. The combination with an elevator car of a series of contact terminals located thereon and connected respectively through electro-magnetic devices located at the several floors, a contact arm adapted to make contact with any one of said terminals to close circuit through the respective electro-magnetic devices, and mechanism controlled by said electro-magnetic devices for bringing the elevator car to rest opposite the respective floors.

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530,579. SIDE BEARING FOR CARS. JOSEPH H. CAMPBELL, Chicago, Ill. Filed Dec. 11, 1893. Serial No. 493,333. (No model.)



*Claim.*—1. In a ball and socket or knuckle joint side bearing for railway cars and other vehicles, the combination of the swivel or base, A, having a spheroidal projection, B, the intermediate, semi circular or quadrant rocker, C, with lipped socket, *d*, and the radius or tread plate, D, provided with semi spherical projections, *h*, said combination being adapted to be placed between the body and truck bolsters of railway cars and other vehicles substantially as described.

2. In a ball and socket or knuckle joint side bearing for railway cars and other vehicles: the combination with the body bolster or transom; of a base, A, having a pendent spheroidal projection, B, said base being provided with the holes, *a*, as necessary, for fastening the same to the bolster, the intermediate rocker, C, and a suitable support, D, for the same, adapted to rest on the truck; substantially as described.

3. In a ball and socket or knuckle joint side bearing, the combination of the base, A, having the spheroidal projection, B, the intermediate rocker or humeral, C, provided with the spheroidal indention or lipped socket, *b*, and being loosely in conjunction with the ball, B, and its outer side or arc, provided with the semi spherical indentions, *g*, and a suitable tread plate, D, for the same to tread upon substantially as described.

4. In a ball and socket side bearing, the combination of the base A having the spheroidal projection, B, the rocker, C, provided with the spheroidal indention or lipped socket, *b*, and semi spherical indentions, *g*, in pitch with and adapted to tread upon the semi spheres, *h*, of the radius or tread plate, D, substantially as described.

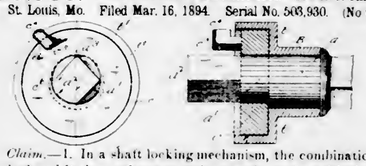
5. In a side bearing for railway cars and other vehicles, the combination of the radius plate, D, adapted to be attached to a centrally pivoted truck of said cars, said radius plate having a series of semi spherical projections, *h*, arranged radially with the center of said truck; the segmental rocker, C, having corresponding semi spherical indentions, *g*, and adapted to tread upon said semi spheres; and the base or ball plate, A, provided with the spheroidal projection B substantially as described.

6. In a side bearing of a base, A, the rocker, C, and a radius or tread plate, D, said tread plate being provided with the semi-spherical projections, *h*, the raised guides, *i*, the semi-cylindrical fillers, *m*, and suitable holes, *j*, to fasten the same to the truck bolster substantially as described.

7. A ball and socket or knuckle joint side bearing, for railway cars or other vehicles; said side bearing, being a combination of a base A provided with a pendent spheroidal projection or ball B, a rocker C, provided with a spheroidal indention or lipped socket *b*, and being loosely depending from the ball B; and its lower side or arc provided with semi spherical indentions, in pitch with, and adapted to tread upon the semi spheres, *h*, a lower bearing or truck bolster plate, D, provided with semi spherical projections, and vertical guides, and the semi cylindrical fillers, *m*; substantially as described.

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530,580. SHAFT-LOCKING MECHANISM. EDWIN G. CRAWFORD, St. Louis, Mo. Filed Mar. 16, 1894. Serial No. 503,930. (No model.)



*Claim.*—1. In a shaft locking mechanism, the combination with the shaft and its box, of an eccentric on and rotating with the shaft, a fixed stop, a wedge loosely connected with said shaft and operating between the shaft eccentric and the stop, and mechanism whereby when said shaft is turned in one direction the wedge is moved with it and, when the movement of the shaft is reversed, the wedge is jammed against the stop and locks the shaft against rotation; substantially as described.

2. In a shaft locking mechanism, the combination with the shaft and its box, of an eccentric on and rotating with the shaft, a fixed ring or flange concentric with and surrounding the shaft, an annular or disk-like wedge loosely encircling the shaft eccentric and occupying the space between said eccentric and the ring, and mechanism, whereby, when the shaft is turned in one direction, the wedge is freed from the ring and moves with the shaft, and, when said shaft is turned in the opposite direction, the wedge and shaft are locked together and the wedge is jammed against the ring; substantially as described.

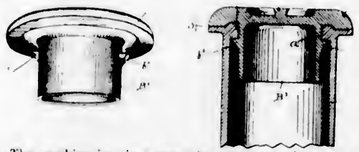
3. In a shaft locking mechanism, the combination with the shaft and its box, of an eccentric on and rotating with said shaft, a ring or flange concentric with and surrounding the shaft, an annular or disk-like wedge loosely and eccentrically sleeved upon the shaft eccentric and occupying the space between said eccentric and the ring, a handle on the shaft, and a lug on the annular wedge, said lug located and adapted to be struck by the handle when the shaft is moved in one direction, so as to move the wedge and shaft together, a movement of the shaft in the opposite direction causing the eccentric and wedge to move with relation to each other until the wedge is jammed against the ring, substantially as described.

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530,581. STREET-BOX FOR GAS OR WATER PIPES. FREDERICK A. W. DAVIS, Indianapolis, Ind., assignor to Elizabeth K. Davis, same place. Filed Mar. 23, 1894. Serial No. 504,785. (No model.)

*Claim.*—1. The combination, in a street box for gas and water pipes, of the cylindrical box A having the interior flanges *a* tapered on their under sides and cut away or having spaces between their ends, said interior flanges being at the extreme upper end, which is continued out and forms an annular flange projecting from the exterior surface of the box proper; and the integrally constructed cap or cover B extending over the whole top of the box A and forming a complete roof therefor, and having a central downwardly extending

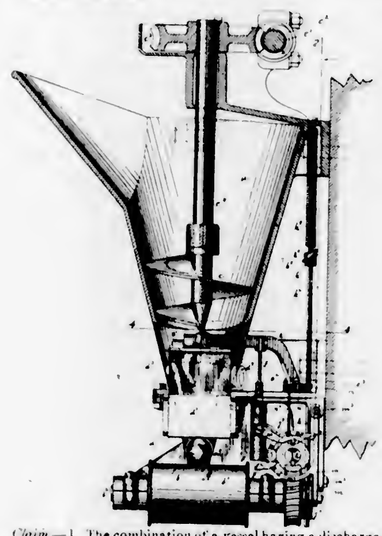
tubular projection, smaller than the interior of said box A, and provided with small projections or wings *b'* adapted to engage with the under sides of the inclined flanges *a*, all substantially as shown and described



2. The combination, in a street box for gas and water pipes, of the cylindrical box A having at the upper end the interior flanges *a*, said flanges being tapered on their under sides and cut away or having spaces between their ends; and the integrally constructed cap or cover B extending over the whole top of the box A and forming a complete roof therefor, and having a central downwardly extending tubular projection, smaller than the interior of said box A, and provided with small projections or wings *b'* adapted to engage with the under sides of the inclined flanges *a*, and also provided with a central exterior depression with a cross-bar running through it for the application of a wrench, whereby it may be attached to and removed from the box, substantially as shown and described.

## 530,582. MACHINE FOR SHAPING AND CUTTING DOUGH.

FRITZ DUBRKOP, New York, N. Y. Filed May 24, 1894. Serial No. 512,263. (No model.)



*Claim.*—1. The combination of a vessel having a discharge opening with a conveyer, a feed apron, a reciprocating cutter above the apron, and adjustable mechanism independent of the cutter-operating mechanism, for varying the intervals between the strokes of the cutter, substantially as described.

2. The combination of a vessel having a discharge opening with a conveyer, a feed apron, a uniformly reciprocating cutter above the apron, and a single adjustment stop movably supported upon the machine and provided with means for securing it in any one of the positions of its movement, which alone by its position determines the length of the intervals between the strokes of the cutter, substantially as described.

3. The combination of a vessel with a conveyer, a feed apron, a low speed shaft for operating the latter, a high speed shaft driving the apron shaft, a cutter reciprocating to and from the apron having intermittently an operative connection with the high speed shaft to reciprocate it in one direction, to obtain a quick stroke of the cutter, and means for reciprocating it in the opposite direction, the cutter being stationary for a period between the complete reciprocations, substantially as described.

4. The combination of a vessel, with a conveyer, a feed apron, a low speed shaft for operating the latter, a high speed shaft driving the apron shaft, a cutter reciprocating to and from the apron, having intermittently an operative connection with the high speed shaft to reciprocate it in one direction, to obtain a quick stroke of the cutter, and means for reciprocating it in the opposite direction as shown, the cutter being stationary for a period between the complete reciprocations, and means for regulating the length of the stationary period, substantially as described.

5. The combination of a vessel, with a conveyer, a feed apron, a cutter reciprocating upon and away from the feed apron having an intermittent operative connection with the driving mechanism of the machine for producing such reciprocation, and means independent of the operative mechanism for varying the stationary period between such reciprocations, substantially as described.

6. The combination of a cutter with an operating lever, a rod *f*, a shaft *h*, a fast and loose collar upon the same, a spring bolt adapted to connect the collars, and a roller *g'*, adapted to engage rod *f*, substantially as specified.

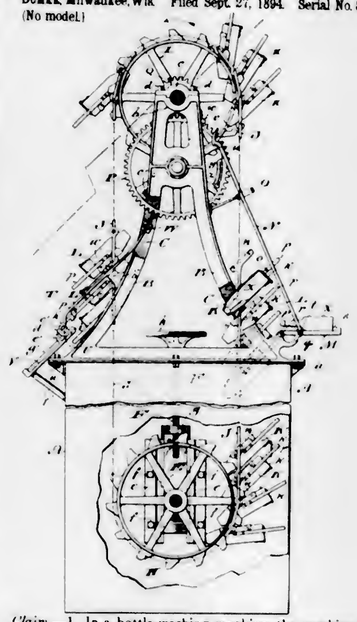
7. The combination of a cutter with an operating lever, a shaft *h*, a fast and loose collar upon the same, a spring bolt adapted to connect the collars, a finger adapted to engage the bolt, a lever that carries the finger, and an adjustable slide engaging said lever, substantially as specified.

8. The combination of rollers *f*, *m*, with a slide engaged by the same, an adjustable collar $k^3$, a lever *n*, finger $n^3$, collars *i*, *g*, spring bolt $g^3$, rod *f*, lever *e*, and cutter *d*, substantially as specified.

9. The combination of slide *k k'*, with roller *f*, lever *m'*, roller *m*, pivoted thereto, a yoke $m^4$, secured to the lever, and with a collar *g*, having lug $g^3$, adapted to engage the yoke, substantially as specified.

## 530,583. BOTTLE-WASHER.

AUGUST F. DUMKE and AUGUST C. DUMKE, Milwaukee, Wis. Filed Sept. 27, 1894. Serial No. 524,249. (No model.)



*Claim.*—1. In a bottle-washing machine, the combination of a tank or well, a suitable supporting frame, an elevator comprising sprocket-wheels mounted in the frame and a pair of sprocket-chains the links of the latter being connected by transverse bottle-holding buckets, mechanism for automatically opening the doors of said buckets and emptying them of said bottles, other mechanism for automatically feeding bottles into said buckets, and operating gearing relatively proportioned to cause said buckets to open successively after a predetermined number of revolutions, substantially as set forth.

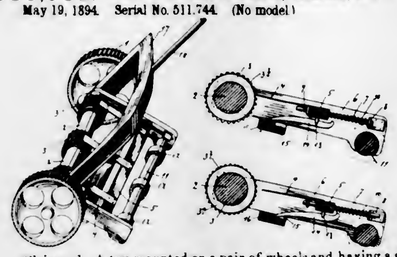
2. In a bottle-washing machine the combination with a tank or well, a suitable supporting frame and an elevator comprising suitable shafts, pinions, sprocket-wheels, and a pair of sprocket-chains the links of the latter being connected by transverse bottle-holding buckets, of a bottle-feeding table pivoted to said frame, gear wheels in mesh with the pinions on the upper shaft of the said elevator, pins on said gear wheels, lifting arms pivoted to said feeding table, and provided with hooks for engagement with said pins, and terminating in curved trips, and tripping lugs on said frame for engagement with said trips, substantially as set forth.

3. In a bottle-washing machine, the combination with a tank or well, a suitable supporting frame, and an elevator comprising suitable shafts, pinions, sprocket-wheels and a pair of sprocket-chains the links of the latter being connected by transverse bottle-holding buckets, of a bottle-receiving table secured to said frame, gear-wheels in mesh with the pinions on the upper shaft of the said elevator, beveled or inclined cam-lugs on said gear-wheels, hinged doors and spring locking latches on said buckets, slides on said receiving table, provided with tripping arms in engagement with said latches, and levers pivoted to said frame, one end of each lever projecting in the path of one of the said cam-lugs on the gear-wheels and the other end of each lever being in engagement with one of said slides on the said receiving table, substantially as set forth.



## 530,584. TOY.

S. SPENCER ECCLESTON, Canastota, N. Y. Filed May 19, 1894. Serial No. 511,744. (No model.)

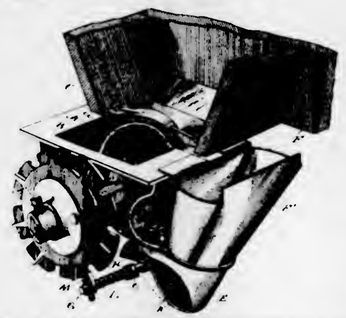


*Claim.*—1. A toy mounted on a pair of wheels and having a shaft extending between the wheels to which they are each secured, a cog-wheel secured on the shaft, a snapping spring engaging on the cog-wheel and mounted on an adjustable bar held toward the cog-wheel by a spring, and a handle by means of which the toy may be trundled, substantially as set forth.

2. A toy consisting of a frame, a pair of wheels on which the frame is mounted, a shaft between the wheels, a cog mounted on the shaft, a snapping tongue engaging with the cog-wheel and mounted on a movable bar in the frame, springs for holding the bar toward the wheel, and a catch for securing the snapping tongue out of engagement with the cog-wheel, substantially as set forth.

## 530,585. GRAIN-DRILL.

ROBERT GALLOWAY, Macedon, N. Y. Filed Aug. 27, 1894. Serial No. 521,433. (No model.)



*Claim.*—1. In a seed drill, the combination with the main shaft the rotary seed feeding disk thereon and the secondary hopper below the disk of the segmental reciprocatory retainer located in the hopper, the shaft and cam arm connected therewith and the disk on the main shaft cooperating with the cam arm to operate the retainer; substantially as described.

2. In a seed drill the combination with the continuous seed feeding or drilling mechanism and secondary hopper into which the seed and fertilizer discharge, an intermittingly operated retainer located in the said secondary hopper above the fertilizer discharge the shaft and cam arm connected therewith and the independent operating disk mounted on the main shaft, cooperating with the cam arm to operate the retainer.

3. In a seed drill, the combination with the main shaft, seed drilling mechanism operated thereby and the fertilizer conduit, of a secondary hopper into which the seed and fertilizer are discharged, a valve at the bottom of said secondary hopper, a retainer for checking the flow of seed to the hopper and an operating mechanism for simultaneously moving the retainer into operative position as the valve is opened and vice versa; substantially as described.

4. In a seed drilling machine, the combination with the seed drilling mechanism fertilizer conduit and secondary hopper into which the seed and fertilizer are discharged, of the intermittingly operated retainer located in the seed channel, a valve for closing the hopper moving with the retainer and a pivoted connection and lock between the valve and retainer for holding the valve in or out of operative position as desired; substantially as described.

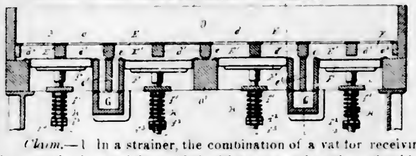
5. In a seed drilling machine, the combination with the seed drilling mechanism fertilizer conduit and secondary hopper into which the seed and fertilizer are discharged, of the retainer located in the seed channel, a valve pivotally connected with the retainer for closing the hopper, a shaft connected with said valve and retainer, a cam arm carried by the shaft and an operating disk with which said arm cooperates for intermittingly moving the retainer and valve, driven by the seed drilling mechanism; substantially as described.

6. In a seed drilling machine the combination with the seed drilling mechanism, fertilizer conduit and secondary hopper into which the seed and fertilizer are discharged, of the retainer located in the seed channel, a valve pivotally connected with the retainer for closing the hopper, a spring lock for holding the valve in or out of operative position, a shaft connected with said valve and retainer, a cam arm carried by the shaft and an operating disk driven by the seed drilling mechanism and cooperating with the cam arm for moving the retainer and valve intermittingly; substantially as described

7. In a seed drill, the combination with the continuous seed drilling mechanism and secondary hopper into which the seed and fertilizer discharge an intermittingly operated valve at the bottom of said hopper, the shaft and cam arm connected therewith and the independent operating disk on the main shaft cooperating with the cam arm to operate the valve; substantially as described.

## 530,586. STRAINER.

DARWIN B. GOTHAM, Watertown, N. Y. Filed Dec. 8, 1893. Serial No. 493,103. (No model.)

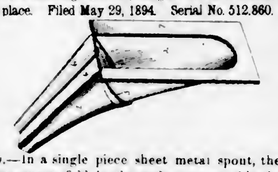


*Claim.*—1. In a strainer, the combination of a vat for receiving the unstrained material provided with a screen plate through which the material is strained, stationary suction chambers at one side of said screen plate, a downwardly extending outlet passage opening along contiguous edges of each two adjacent suction chambers, and a single outlet chamber arranged beneath each pair of outlet passages and opening therefrom, substantially as and for the purpose set forth.

2. In a strainer, the combination of a normally stationary vat for receiving the unstrained material provided with a screen plate through which the material is strained, stationary suction chambers each arranged at one side of the screen plate, a downwardly extending outlet passage opening from each suction chamber, an outlet chamber arranged beneath each pair of the outlet passages and opening therefrom and having one end thereof extending beyond the corresponding wall of the adjacent suction chamber, an upper outlet chamber arranged above the end of the former outlet chambers and having its opposite ends provided with inlets registered with the outlets in the ends of the former outlet chambers, said upper outlet chamber forming a water seal and being provided with an outlet at its central portion, substantially as and for the purpose specified.

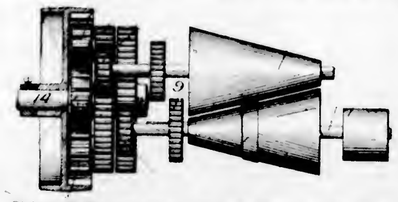
## 530,587. SINGLE-PIECE SHEET-METAL SPOUT.

JOHN W. GREENE, Canandaigua, N. Y., assignor of one-half to Tristram D. Brown, same place. Filed May 29, 1894. Serial No. 512,860. (No model.)



*Claim.*—In a single piece sheet metal spout, the spout proper having a transverse fold in the under convex side thereof, said fold adapted to add strength to the spout and also pitch it at the desired angle, as set forth

530,588. VARIABLE DIRECTION AND SPEED DEVICE. SILAS L. HEYWOOD, Minneapolis, Minn. Filed June 1, 1894. Serial No. 513,120. (No model.)



*Claim.*—1. The combination, with two driving shafts, of a third driven shaft, and a planetary gear connecting said shafts with the third shaft, whereby said third shaft may be driven in either direction and at a variable speed, substantially as described.

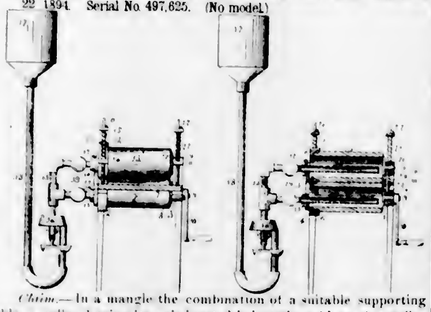
2. The combination, with the two driving shafts, of a planetary gear connecting the same, and a third shaft forming a part of said gear, and means for driving the two shafts first mentioned at various speeds, whereby a variable speed and direction of movement is obtained on said third shaft, substantially as described.

3. The combination, in the variable direction and speed device, of two large gears, one connected with the inside or internal gear, means for driving said gears at variable speeds, a shaft concentric with said gears, a smaller inner gear wheel provided thereon, and a pinion carried by the other large gear and connecting the internal gear and said inner gear, substantially as described.

4. The combination, with the two driving shafts, of a third shaft, the system of gears connecting said shafts with the third shaft, the disks provided upon the first two shafts, the movable segment blocks arranged within said disks, the belt running over the pulleys made by said blocks, the wedges for operating the blocks, the wedges belonging to the two pulleys being oppositely arranged, and the shifting frame for moving the wedges, substantially as described.

5. The combination, with the two driving shafts, of means for driving the same at variable speeds and in the same direction, the third shaft, the two large gear wheels journaled thereon, pinions upon the first shafts engaging the said large gears respectively, a smaller inner gear wheel fixed upon said shaft, the pulley also fixed thereon, one of said large gear wheels provided with an internal gear in the plane of said smaller gear, and a pinion or pinions carried upon the side of the other gear, and extending between and meshing with said smaller or inner gear and said internal gear respectively, substantially as described.

530,589. MANGLE. PETER O. JOHNSON, Rockford, Ill. Filed Jan. 22, 1894. Serial No. 497,625. (No model.)

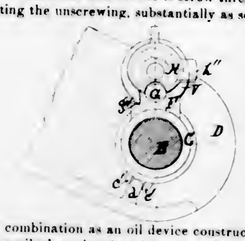


*Claim.*—In a mangle the combination of a suitable supporting table, a roller having its axis located below the table and a roller located above the table, one end of each roller held in tubular bearings, the other end of each roller having a gear wheel secured thereto, the bearings for the upper roller encircling vertical guides having their upper ends screw threaded receiving thumb nuts, and springs located between the bearings and thumb nuts, a pinion for the gear wheel of the lower roller held within a suitable bearing, a pinion for the gear wheel of the upper roller, a shaft connecting the pinions, a crank having a connection with the lower roller, and vapor burners located within the rollers.

530,590. LUBRICATING DEVICE. SAMUEL V. KENNEDY, St. Paul, Minn. Filed July 20, 1894. Serial No. 518,125. (No model.)

*Claim.*—1. In combination with a bushing or bearing, an oil device having an oil passage G and a pivoted or rotary cover H and a spring, located in recesses G', H', whereby the said cover may close the said oil passage and be held in position by the action of the spring, or may be opened for the supplying of oil, substantially as and for the purposes set forth.

2. In combination with a sleeve, bushing or bearing, an oil device provided with screw-threaded extension *g* and cast or otherwise roughly formed, in combination with a portion, lug, or ear, *f* arranged to be struck down or otherwise brought into engagement with the surface into which the said device is screw-threaded for the purpose of preventing the unscrewing, substantially as set forth.

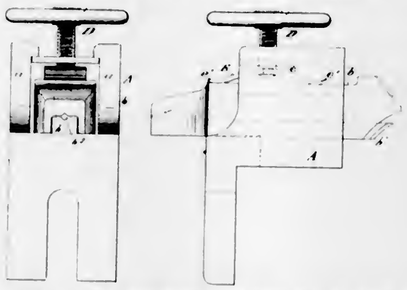


3. In combination as an oil device constructed to be used in the manner described, a chambered portion F provided with a screw threaded extension *g* and a projecting flange or ear *f*, and a rotary cover H arranged to be turned into position either to cover the mouth of the oil passage, or to leave the same unobstructed, substantially as set forth.

4. In combination in an oiling device and for the purposes described, the plate shaped portion V, cover H pivoted thereto and formed to open or close the month of the oil passage or cup, and a spring J operating in the concentric recesses G', H' to close the said cover over the said mouth, substantially as set forth.

5. In combination with a sleeve bushing or bearing, a cast brass or cast metal oil device provided with a screw thread extension arranged to fit roughly within a correspondingly screw-threaded portion of the said sleeve or bushing, and a flanged portion, lug, or ear, *f* and co-operating recess $c'''$, the said portion, lug, or ear *f*, being formed to clear the said recess during the action of screwing the said device into place and to then be bent into permanent engagement with the said recess $c'''$, substantially as set forth.

530,591. ROD-MILL GUIDE. WILLIAM A. KILMER, Newburg, N. Y. Filed Nov. 6, 1893. Serial No. 490,180. (No model.)



*Claim.*—1. The combination of the guide box, A, having the shoulders at the top, the plate, the edges of which engage such shoulders; the guide, B, within the guide box, A, and below the plate, and the screw passing through the plate and bearing on top of the guide, B, as set forth.

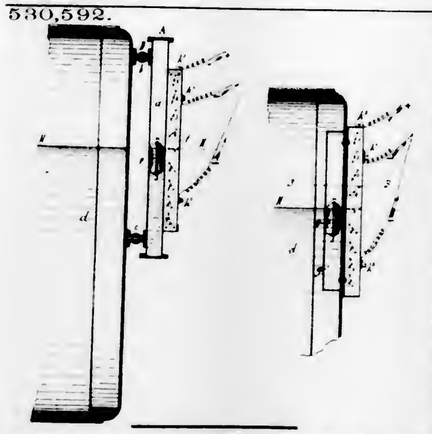
2. The combination of the guide box, A, having the shoulders at the top; the plate, the edges of which engage the shoulders; the guide, B, within the guide box and below the plate, the spring between the plate and the guide, and the screw passing through the plate and bearing on the spring, as set forth.

530,592. MAGNETIC WATER-GAGE. LJUBOMIR KLEKITJ, Belgrade, Servia. Filed Mar. 27, 1893. Serial No. 467,800. (No model.)

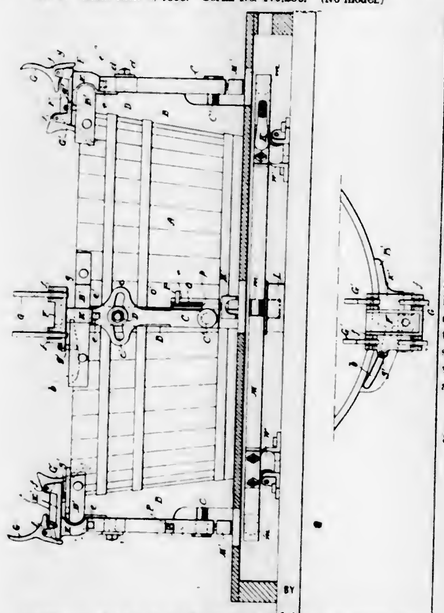
*Claim.*—In a magnetic water gage the combination of a magnetic float changing its position in a float-tube in correspondence with the level, said float tube communicating with the liquid of the vessel, with electric contacts and several magnetic needles, located in line parallel with the float-tube, which said needles are subjected to the inductive influence of the magnet, so that the positions of the needles indicate the level, especially as described and for the purpose specified



530,592.



530,593. BARREL-WASHER. CHARLES L. KLINE, New York, N. Y. Filed June 1, 1893. Serial No. 476,238. (No model.)



*Claim.*—1. In a barrel or keg washing machine, the combination with a cleansing vat containing water and adapted to hold a barrel or keg to be washed, a carrier or holder for a keg or barrel, parts of which are adapted to elevate a keg or barrel from the vat, and mechanism for imparting a four-way movement to the said carrier, as and for the purpose described.

2. In a barrel or keg washing machine, the combination of one or more barrel holding devices, a reciprocating wheel, intermediate mechanism for transmitting motion from the reciprocating wheel to the barrel holding mechanism, and devices for throwing the intermediate mechanism into and out of connection with the reciprocating wheel, substantially as described.

3. In a barrel and keg washing machine, the combination of one or more barrel holding devices, a wheel having a circumferential reciprocation, intermediate mechanism through which motion is transmitted from the wheel to the barrel-holding mechanism, and a yoked locking device for connecting said wheel and intermediate mechanism together, substantially as and for the purpose set forth.

4. The combination with a wheel having a circumferential reciprocation, of barrel-holding devices, pivoted levers connected respectively to each of the barrel-holding devices, and locking devices on said pivoted levers engaging with said wheel, the said locking devices having moving portions which are substantially parallel to the axis of the wheel, whereby each of the pivoted levers may be separately and independently thrown into and out of operative connection with the said reciprocating wheel, as and for the purpose set forth.

5. The combination with a vat adapted to be partly filled with water and to hold a keg or barrel to be washed, of a carrier above the edge of the said vat, for receiving the keg or barrel from the vat and having two pairs of curved arms, one of which is pivoted to the carrier and adapted to be turned down into the vat, as and for the purpose set forth.

6. The combination of a carrier for kegs or barrels, loosely pivoted in the top of a vertical lever, and provided with a pin extending downward into a curved slot in the support of said lever, as and for the purpose set forth.

7. The combination with a barrel-holding device of a vertical shaking lever connected thereto and pivoted near its bottom, mechanism for reciprocating the same, and a yoke or key attached to the said lever and adapted to be moved in and out, for the purpose of throwing said lever into and out of operative connection with said reciprocating mechanism, substantially as described.

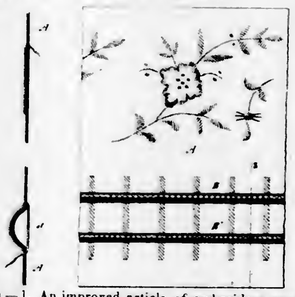
8. The combination with a vat, partly filled with water, of a carrier above the edge of the vat, the said carrier being adapted to contain a keg or barrel, and having a sluiceway for leading water from the keg or barrel back into the vat, as and for the purpose set forth.

530,594. SHIRT. JOHN L. KNIGHT, New Alexander, Ohio. Filed Mar. 27, 1894. Serial No. 505,313. (No specimens.)



*Claim.*—A shirt having a body-portion, a sheet of material impervious to moisture, arranged on the outside thereof and secured thereto at its edges, reinforce sections secured to the body and extending inwardly and over the edges of the impervious material, and a bosom arranged over the impervious sheet and extending to the inner edges of the reinforce sections and secured thereto by lines of stitching, said stitching extending through the bosom, reinforce sections and body, whereby the bosom is braced and kept from the perspiration of the wearer, and whereby the edges of the impervious sheet are allowed free movement with the body of the shirt, substantially as and for the purpose described.

530,595. EMBROIDERY. JACOB KOBELT, Hoboken, N. J. Filed Oct. 20, 1893. Serial No. 488,697. (No model.)



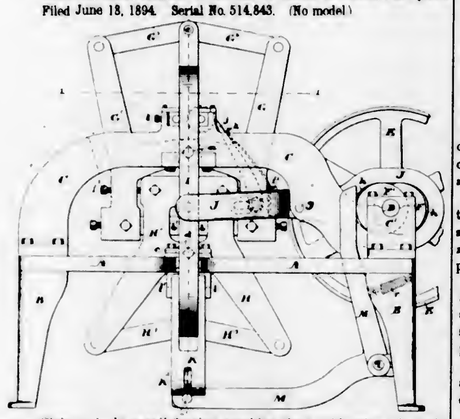
*Claim.*—1. An improved article of embroidery consisting of a piece of fabric having a hollow ridge-like portion, and having figures of embroidery thereon; each figure being composed of central embroidery stitches held over the face of such ridge, and drawn loop stitches on the back held over the hollow of the ridge, and supplemental embroidery stitches skirting the edges of the central or ridge stitches, all substantially as shown, and for the purposes described.

2. An improved article of embroidery consisting of a piece of fabric having a hollow ridge or gathered portion having figures of embroidery thereon, each figure being formed of a single thread and consisting of a loose central portion extended over the face of the ridge, drawn portions extended over the back or hollow portion of

such ridge, and supplemental angle-like portions skirting the edges of the central portion, whereby to hold such central stitch portion and the ridge from being drawn out flat, all substantially as shown and described.

3. An improved article of embroidery consisting of a piece of fabric having a hollow ridge or gathered portion having figures of embroidery thereon, formed each of a single thread and consisting of a loose central or face portion, a rear drawn portion or back stitch, and short angle embroidery portions skirting the edges of the central portions; said angle portions having back stitches extended and drawn in opposite diagonal directions, whereby to reinforce and hold the central ridge from spreading laterally, all substantially as shown and described.

## 530,596. HORSESHOE-NAIL MACHINE. RICHARD C. LAMBERT, Holbrook, Mass., assignor of one-half to Micha B. Faxon, same place. Filed June 18, 1894. Serial No. 514,843. (No model.)



*Claim.*—1. In a nail forging machine the combination of a pair of oppositely vibrating levers mounted upon a common axis; a swaging die mounted in each of said levers, below said axis of motion, with their working ends toward and near each other; a second pair of opposite vibrating levers mounted upon a common axis and movable in a plane at right angles to the plane of movement of said first mentioned levers; a pair of dies carried by said second pair of levers at the ends thereof above their axis of motion, said dies being located in the same horizontal plane as, and arranged to co-operate with, said first mentioned pair of dies to swage the same section of the nail rod.

2. In a nail forging machine, the combination of a pair of intermittently revolving feed rolls for feeding the nail rod to the dies; a non revoluble fulcrum pin arranged directly beneath the space between the feed rolls, and provided with a vertical opening through the same for the passage of the nail-rod; a pair of die operating levers mounted upon said fulcrum-pin; a die adjustably set in one end of each of said levers, and co-operating with each other to swage opposite sides of the nail rod; a pair of toggle links connecting the other ends of said levers; and means having provisions for alternately straightening and breaking said toggle, and thus cause said dies to act upon the nail-rod to change its shape.

3. The combination of the table A provided with the boxes *c d*, *l* and *l*; the arched and slotted frame C provided with the boxes C', C'; the feed rolls *i* and *i'*; the shaft D; the cams F and F'; the fixed fulcrum pins *a*, *d*, and *m*; the three pairs of levers G G', H H' and K K' mounted respectively on said pins *a*, *d*, and *m*; the toggles $G^3$ $G^4$, $H^3$ $H^4$ and $K^3$ $K^4$; the dies *b b'*, *f f'* *n* and *n'* carried by said levers and arranged relative to each other as set forth; the cutting off knives *o*, *o*; the side rods or links I and I'; the three armed lever J; the elbow lever M; and the link L, all constructed, arranged and operating substantially as described.

## 530,597. ALTERNATING-CURRENT TRANSFORMER. ALEXANDER W. MEIXON, St. Louis, Mo., assignor to the Emerson Electric Manufacturing Company, same place. Filed Jan. 23, 1893. Serial No. 459,342. (No model.)

*Claim.*—1. In a transformer, the combination with the primary coil, of two strips in the circuit thereof insulated from each other, a secondary coil provided with branch terminals, contact buttons to which said terminals lead, a switch for adjustably cutting the secondary coil in circuit by its contact with the buttons, and a spring contact on the switch for maintaining electrical connection between the strips, substantially as and for the purposes described.

2. In a transformer, the combination with the primary coil, of two segmental strips, insulated from each other, in the circuit thereof, a secondary coil provided with branch terminals, contact buttons arranged in an arc of a circle to which said terminals lead, a centrally pivoted switch for adjustably cutting in the secondary coil by its contact with the buttons, and a spring contact on the switch for maintaining electrical connection between the strips, substantially as and for the purposes described.



3. In a transformer, the combination with the primary and secondary coils, of a switch for maintaining circuit through the primary coil and adjustably cutting the secondary coil in circuit, substantially as described.

4. In a transformer, the combination with a switch and its contact buttons, of a mount therefor, an insulation plate on the reverse side of the mount, said buttons being formed with screw stems which are screwed into the insulation plate, substantially as and for the purposes described.

5. In a transformer, the combination with the inclosing case, of a mount for the several parts of the instrument, corner blocks for supporting the mount, and a screw having a bearing on the under side of the casing for holding the mount, substantially as and for the purposes described.

6. In a transformer, the combination with the inclosing case, of a removable mount for the coils, substantially as and for the purposes described.

7. In a transformer, the combination with the inclosing case, of a removable mount for the coils and means for securing the mount in the case, substantially as and for the purposes described.

8. In a transformer, the combination with the inclosing case, of a removable mount for supporting the coils, a threaded stem projecting from the mount beyond the coils, a disk for holding the coils against the mount, and a nut on the stem for holding the disk and coils in position, substantially as and for the purposes described.

9. In a transformer, the combination with a mount, of a threaded stem projecting therefrom, a coil or coils surrounding the stem, a clamping plate for holding the coils in position against the mount, and means on the stem for securing the clamping plate, substantially as and for the purposes described.

10. In a transformer, the combination with the primary and secondary coils of unequal diameter, of a mount therefor, a plate interposed between the mount and the coil of smaller diameter, and means for securing the coils to the mount, substantially as and for the purposes described.

11. A switch for transformers comprising a conducting portion, a spring metal portion, which does not conduct the current and an interposed insulation, substantially as and for the purposes described.

12. The combination with the pivot stud, and contact buttons, of a switch tongue comprising a strip of conducting material, a spring metal portion, which does not conduct the current and an interposed insulation, substantially as and for the purposes described.

13. The combination with the pivot stud, of a series of concentrically arranged contact buttons, and a yielding tongue on the pivot stud adapted to be forced in closer contact with the contact buttons as the stud is screwed in its seat by the movement of the tongue, substantially as and for the purposes described.

14. In a transformer, the combination with the primary coil, of a secondary coil provided with branch terminals leading to contact buttons, a switch included in the secondary circuit, and a screw-threaded pivot stud upon which said switch is mounted, whereby, when the switch is turned in one direction it is forced into closer contact with the terminal contact buttons, substantially as and for the purposes described.

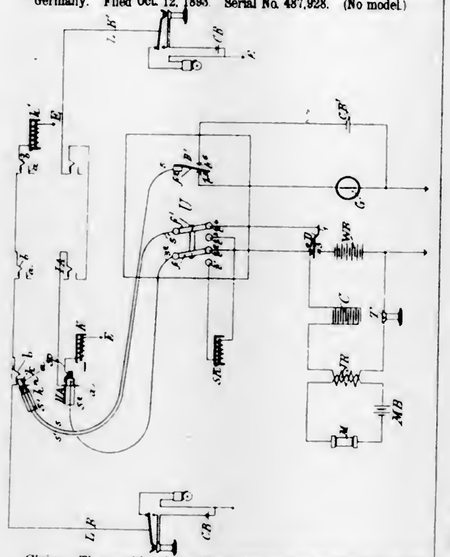
15. The combination with an insulation block, provided with a cell, of a contact button embedded in the insulation block, and separated from the side walls of the cell, substantially as and for the purposes described.

16. In a transformer, the combination with a switch and its mount, formed with cells, of contact buttons embedded in the mount and separated from the side walls of the cells, the face of the buttons being flush with the surface of the mount, substantially as and for the purposes described.

17. The combination with an insulation block, of a switch whose contact point slides thereon in its movement to co-operate with a terminal or terminals, said insulation block being so formed that the path of the switch-contact thereon, is broken.

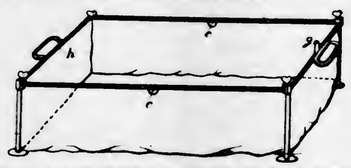


## 530,598. TELEPHONE SYSTEM. WILHELM OESTERREICH, Berlin, Germany. Filed Oct. 12, 1893. Serial No. 487,928. (No model.)



*Claim.*—The combination, with a telephone system provided with a multiple switch board; of a testing wire connected with the earth, and provided with a weak battery, a galvanometer in a branch wire, and a contact for connecting it with the circuit to be tested; and a switch provided with a depressible and oscillatory lever $f^3$, operating when depressed to leave the contact $f^4$ and touch the contact $f^5$, and operating when moved to one side to move the springs $f'$ and $f''$ clear of the contacts $f^2$ and $f^4$ and place them in contact with the contacts $f'$ and $f^5$, respectively, substantially as and for the purpose set forth.

## 530,599. CONVERTIBLE OR COMBINED BATH-TUB AND TRAVELING-BAG. FREDA VON OHEIM, Hanover, Germany. Filed Nov. 11, 1893. Serial No. 490,721. (No model.) Patented in England Aug. 21, 1893, No. 15,809; in Austria-Hungary Jan. 21, 1894, No. 44,250 and No. 65,915, and in Germany Feb. 21, 1894, No. 74,978.

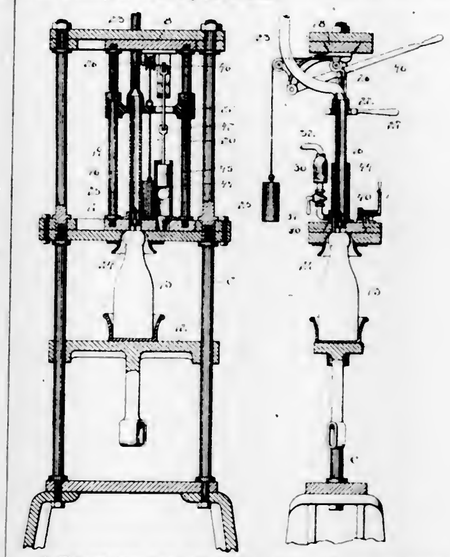


*Claim.*—1. A collapsible or convertible bathing tub and traveling bag comprising a rectangular frame, hinged or jointed together about centrally of its length, a sack or bag of water-proof material secured all around said frame, corner posts for the support of the frame, and suitable clamping devices and screws, substantially as described.

2. A collapsible or convertible bathing tub or traveling bag comprising a rectangular frame hinged or jointed about centrally of its length, and having attached or secured thereto a sack of waterproof material, a hasp and recess formed or provided on the end pieces respectively, handle portions attached to said end pieces, and suitable detachable supporting posts substantially as described.

## 530,600. APPARATUS FOR BOTTLING BEER. VALENTIN OPPL, Cleveland, Ohio. Filed June 15, 1894. Serial No. 514,653. (No model.)

*Claim.*—1. In a bottling machine, the main frame, a movable table to support the bottle, a lever to press the table and bottle upward and a lock for said lever and a sliding part —17— against which the mouth of the bottle is pressed by said table, thereby preventing outside overflow, in combination with the filling tube —16— constructed to enter the bottle and having a self-seating valve in its lower end, a flexible tubular supply connection —23— for said tube and a sliding frame in which said tube is raised and lowered and guideways to move said frame laterally, substantially as set forth.



2. The machine described having a part —17— against which the top of the bottle is tightly held to prevent leakage of liquid or gas, and means to hold the bottle in said position, in combination with a filling tube passing through part —17— into the bottle, an overflow tube —32— for the bottle, a transparent observation bulb into which the said tube discharges, and a pressure tank opening through the observation bulb into said tube, substantially as set forth.

3. The supporting frame, the bottle carrying table and the bar —17— supported in a horizontal guide way and provided with separate openings through which to fill and to cork the bottle respectively, mechanism to slide said bar from filling to corking position, and reversely, a cork containing tube and a plunger to force the cork into the bottle, substantially as set forth.

4. The machine described having a laterally sliding frame comprising uprights —19— and —20— and end pieces —17— and —18— and means to move said frame back and forth, in combination with a filling tube provided with a self-closing valve supported in said sliding frame by a sliding cross-bar —22— and a flexible supply tube connected with the said filling tube, substantially as set forth.

5. The main frame and the sliding frame therein, consisting of the end pieces —17— and —18— and the supports —19— and —20—, in combination with corking mechanism carried by said sliding frame consisting in the cork holder —47— fixed to piece —17—, the plunger —45— therein, and the operating parts —46— and —47— connected with said plunger, substantially as set forth.

6. In beer bottling apparatus, a bottling machine constructed to prevent the escape of beer and gas from the bottle while bottling occurs, said construction consisting of a part having a close-fitting seat on its under side for the mouth of the bottle and mechanism to hold the bottle closely against said seat, a beer containing tank constructed to hold the beer under pressure, pipe connections from said tank to the mouth of the bottle to be filled, a back pressure tank and an open channel connection therefrom to the mouth of the bottle, whereby the overflowing beer is taken care of, substantially as set forth.

7. In a beer bottling apparatus, a tank constructed to contain the beer under pressure, in combination with a bottling machine constructed to close the mouth of the bottle while bottling occurs to prevent the escape of gas, and said mechanism consisting in a piece —17— against which the mouth of the bottle rests and a table to raise the bottle, and a supply tube sliding through said piece —17— into the bottle and having an opening in its lower end provided with a

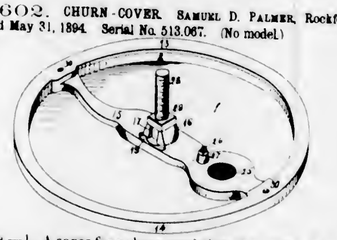
valve having a stem to strike the bottom of the bottle and open the valve and a spring to close the valve when the tube is raised, substantially as set forth.

530,601. SAWBUCK. SAMUEL D. PALMER, Rockford, Ill. Filed Feb. 28, 1894. Serial No. 501,886. (No model.)



*Claim.*—A frame having two ends, each composed of two lengthwise bars the meeting face of one bar provided with edge recesses deeper at their upper ends and tapering toward the edge of the bar and an undercut in dove tailed form, the meeting face of the other bar provided with a dove tailed recess cut crosswise of the bar and at an angle thereto, and of such dimensions as to receive the dove tailed portion of the first mentioned bar, and braces connecting the ends.

530,602. CHURN-COVER. SAMUEL D. PALMER, Rockford, Ill. Filed May 31, 1894. Serial No. 513,067. (No model.)



*Claim.*—1. A cover for a churn consisting of a center, a metallic casing surrounding the center, having a brace integral therewith and overlying the center, a projection secured to the upper face of the center and means slidably connecting the projection with the brace.

2. A cover for a churn consisting of a center, a metallic casing surrounding the center having a brace integral therewith and overlying the center, a catch secured to the upper face of the center, and a bolt slidably connecting the catch and brace.

3. A cover for a churn consisting of a center, a metallic casing surrounding the center having a brace integral therewith and overlying the center, the brace having a recess in its under face, a catch secured to the upper face of the center and located in the recess of the brace and means connecting the catch and brace.

4. A cover for a churn consisting of a center, a metallic casing surrounding the center having a brace integral therewith and overlying the center, the brace having a recess in its under face, a catch secured to the upper face of the center and located in the recess of the brace, a bolt engaging the catch, a nut located on the bolt clamping the catch to the brace.

5. A cover for a churn, consisting of a center, a casing having a brace, a catch secured to the center, a recess in the under face of the brace receiving the catch, the upper surface of the brace supporting a boss having a portion of one face cut away, a bolt connecting the center and brace, the head of the bolt adapted to pass under the catch through the cut away portion.

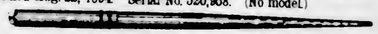
6. A cover for a churn, consisting of a center, a metallic casing surrounding the center having a projection extending inward therefrom and integral therewith, a glass located between the projection and center, a hook secured to the upper face of the center and means connecting the hook and projection.

7. A cover for a churn consisting of a center, a metallic casing surrounding the center having a projection extending inward therefrom and integral therewith, a glass located between the projection and center, a hook secured to the upper face of the center and means connecting the hook and projection.

8. A cover for a churn consisting of a center, a metallic casing surrounding the center having a projection extending inward therefrom and integral therewith and overlying the center, a glass located between the projection and center means connecting the projection and center, and a head formed in the center around the glass opening receiving a packing or cement.

9. A cover for a churn, consisting of a center and a casing connected thereto, a brace connected to the casing having a recess in its under face, a glass placed within the recess, an opening in the brace and an opening in the center coinciding, one opening located over the glass and the other beneath it.

530,603. PENHOLDER. WILLIAM T. RIGHTMYER, Meriden, Conn. Filed Aug. 22, 1894. Serial No. 520,968. (No model.)



*Claim.*—1. In a penholder the combination of a rod, provided with a recess concave transversely and terminated by a shoulder portion, a clasp piece fitted to the rod and a shell securing the said clasp piece and rod together.

2. In a penholder the combination of a rod provided with a recess terminated by a shoulder portion, a clasp piece fitting in said recess and a shell inclosing the clasp piece and the end portion of the rod.

3. In a penholder the combination of a rod provided with a recess terminated by a shoulder portion, a clasp piece fitting in said recess, and a shell inclosing the clasp piece and the end portion of the rod and having a partly closed end supporting the back of the clasp piece.

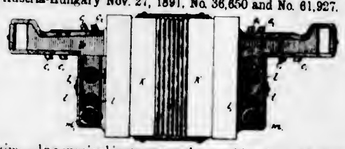
4. In a penholder the combination of a rod provided with a recess terminated by a shoulder portion, a clasp piece fitting in said recess, and a shell inclosing the clasp piece and the end portion of the rod and having a partly closed end supporting the back of the clasp piece and engaging with a teat or projection thereon.

530,604. WRITING-PEN. GERHARD SCHAGEN, Eschweiler, assignor to Max Heymann, Aix-la-Chapelle, Germany. Filed Oct. 12, 1894. Serial No. 525,710. (No model.) Patented in England Apr. 5, 1894, No. 6,824, and in Austria Apr. 17, 1894, No. 44/1,040.



*Claim.*—In a writing-pen a tongue *a* formed in one piece with the pen, being stamped out of the back part of its body and bent over forward so as to lie parallel with its back at a short distance therefrom, this tongue which extends nearly to the point of the pen being provided at the end with a notch *b* lying over the slit point of the pen, substantially as described and for the purpose specified.

530,605. MELHARMONIUM. LEONID P. SCHPANOWSKY, Odessa, Russia. Filed Aug. 8, 1893. Serial No. 482,696. (No model.) Patented in Austria-Hungary Nov. 27, 1891, No. 36,650 and No. 61,927.



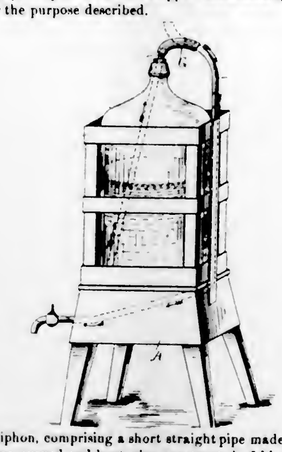
*Claim.*—In a musical instrument the combination of hollow touch boards *b b* with keys $c' c'$, $c^2 c^2$ respectively on opposite sides of the touch-board, actuating thus by means of the double-armed levers *e d* the stops, or vents *e*, substantially as described and for the purpose specified.

530,606. SIPHON. HARRY H. SHUVELT, Chicago, Ill. Filed July 3, 1894. Serial No. 516,510. (No model.)

*Claim.*—1. A siphon, comprising a short pipe, a longer pipe, and a connecting-tube detachably and separably secured to the upper ends of said pipes, substantially as and for the purpose described.



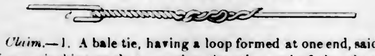
2. A siphon, comprising a short straight pipe, a longer curved and bent pipe, and a flexible connection between said pipes, detachably and separably secured to the upper ends thereof, substantially as and for the purpose described.



3. A siphon, comprising a short straight pipe made of hard rubber, a longer curved and bent pipe constructed of block tin, and a flexible rubber connecting-tube between said pipes, detachably and separably secured to the upper ends thereof, substantially as and for the purpose described.

4. In combination, the base, A, the crate, B, the bottle or cask, C, supported by said crate and adapted to contain a liquid, the short straight pipe, D, inserted in the neck or nose of said bottle or cask, the longer curved pipe, E, secured to the said crate and having its lower end bent and passing through the base, A, and terminating in a faucet, F, and the flexible connecting-tube between said pipes, D and E, detachably and separably secured to the upper ends thereof, substantially as and for the purpose described.

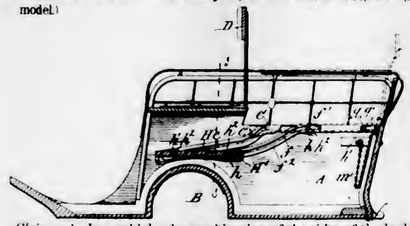
530,607. BALE-TIE. WILLIAM H. SINGLETON, Washington, D. C. Filed Feb. 10, 1892. Serial No. 421,019. (No model.)



*Claim.*—1. A bale tie, having a loop formed at one end, said loop having a pinching angle to receive the other end of the tie, and a roughened surface, as set forth.

2. A bale tie, having a loop formed at one end composed of several wires twisted together and having a pinching angle to receive the other end of the tie, such pinching angle having a roughened surface, as set forth.

530,608. SHIFTING SEAT FOR VEHICLES. GEORGE E. W. STIVERS, New York, N. Y. Filed May 17, 1894. Serial No. 511,607. (No model.)

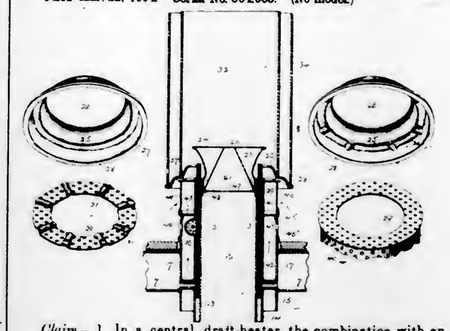


*Claim.*—1. In a vehicle, the combination of the sides of the body thereof, the said sides having inclined grooves traversing the inner faces thereof and horizontal locking grooves, and the shifting seat having projections adapted to engage with and to move in the said grooves, substantially as described.

2. In a vehicle, the combination of the sides of the body thereof, the seat mounted on the forward ends of the said sides, the said sides having grooves formed in the inner faces of the same leading from beneath the first mentioned seat to the rear and to the top of the said sides, and the shifting seat provided with projections adapted to register with the said grooves and to move therein, substantially as described.

3. In a vehicle, the combination of the sides of the body thereof, the seat movably mounted on the forward ends of the same, the said sides having grooves formed in the inner faces of the same leading from beneath the first mentioned seat to the rear and to the top of the said sides, and also having locking grooves in their extreme rear upper edges, and the shifting seat having projections adapted to register with and to move in the said grooves, substantially as described.

530,609. OIL-STOVE. AUGUSTINE C. WEST, Cambridge, Mass. Filed Mar. 22, 1894. Serial No. 504,603. (No model.)



*Claim.*—1. In a central draft-heater, the combination with an oil-reservoir, and a wick-tube cylinder which extends through the reservoir, of a wick-tube within the wick-tube cylinder, but non-contiguous thereto, and a transverse partition, said partition to extend across the space between the wick-tube cylinder and the wick-tube, substantially as stated.

2. In a central draft burner, the combination with an oil-reservoir, and a wick-tube fed from said reservoir, of a wick-tube cylinder extending up through the reservoir, said cylinder foraminated at the upper portion and open at the bottom and surrounding the wick-tube, and a removable imperforate annular partition transversely across the space between the wick-tube cylinder and the wick-tube, substantially as and for the purposes explained.

3. In a central draft-heater, a wick-tube, the central flame spreader, and a wick-tube cylinder which incloses said wick-tube, and a removable imperforate annular partition which divides the space between the wick-tube and wick-tube cylinder into an upper and lower portion, combined with an annular perforated plate 29, and a detachable chimney-holder supported upon said plate, one of said parts provided with ribs or bosses substantially as described.

4. In central draft-heaters, an oil reservoir, a wick tube cylinder, combined with a removable chimney-holder, a chimney, its inclosing jacket, and a hot air receptacle interconnected with the chimney and the jacket, substantially as stated.

5. In combination with an apertured hot air receptacle, and an oil-reservoir suitably mounted, a central draft heater supported between them and composed as follows:—a wick-tube cylinder perforated at the top portion and adapted to extend through the oil reservoir, the foraminous plate 29, a removable chimney holder, the chimney and its jacket, a central wick-tube adapted to project through the bottom of the wick-tube cylinder, the flame deflector, and means for allowing oil to pass from the oil reservoir across the wick-tube cylinder to the wick-tube, substantially as explained.

6. In a central draft heater, the combination with a wick-tube, its flame deflector, the inclosing wick-tube cylinder perforated in the upper portion, and the annular foraminated plate 29 which surmounts the same, of a removable chimney holder formed with outwardly extending horizontal ledges, and a series of inwardly projecting bosses adapted to contact with the said plate 29, substantially as set forth and stated.

7. In a central draft heater, the combination with a wick tube, its flame deflector, the inclosing wick-tube cylinder open at its lower end, and a transverse annular imperforate partition between the wick-tube and the wick-tube cylinder, of a foraminated sleeve 50 adapted to engage the top of said wick-tube cylinder, the annular foraminated plate 29 affixed to said sleeve, and a removable chimney holder fitted with outwardly extending ledges, and with a series of inwardly projecting bosses adapted to contact with said plate 29, substantially for purposes explained.

8. A detachable chimney-holder composed of an annular conical shaped ring having a central upper aperture to contain a flame spreader and wick, and formed with outwardly extending ledges at or near its base and with a series of inwardly projecting bosses as supports for said holder, substantially as specified.

9. In a central draft-heater the combination with a wick-tube,

its flame deflector, and a wick-tube cylinder open at the lower end and inclosing but non-contiguous to said wick-tube, of an annular partition transversely in the space between said wick-tube and wick-tube cylinder, circumferential openings in the wick-tube cylinder below the partition, and circumferential perforations in the said cylinder above the partition, substantially as set forth.

10. In a central draft-heater, a wick-tube, the flame deflector and a wick-tube cylinder open at the bottom to create an air passage between the wick-tube and wick-tube cylinder, an imperforate annular partition transversely across said air passage, openings in said cylinder above the partition for admission of air, perforations in said cylinder below said partition for escape of air, and a foraminous plate which caps the wick tube cylinder, substantially as stated.

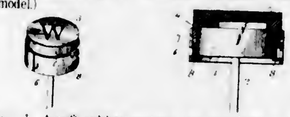
530,610. SKATE. CHARLES J. WIZEN, Wilmington, Del. Filed Nov. 25, 1893. Serial No. 491,937. (No model.)



*Claim.*—1. In a skate, the combination of the runner having posts near its ends, a supporting plate G pivoted to the rear post and having a cam slot therein, a heel plate pivoted to said plate G, a longitudinally movable lug or jaw K carried by the heel plate, and a pin projecting from said lug or jaw and engaging in said cam slot, substantially as specified.

2. In a skate the combination of the runner having posts near its ends, a supporting plate G pivoted to the rear post and having a cam slot therein, a heel plate pivoted above the plate G, and having a central guiding groove therein, a clamping lug K having a body portion adapted to said guiding groove, a pin L depending from the lug and engaging in said cam groove, substantially as described.

530,611. TYPE-WRITING-MACHINE KEY-CAP. DAVID P. WOLHAUPTER, Washington, D. C. Filed June 9, 1894. Serial No. 513,995. (No model.)



*Claim.*—1. A soft rubber cushion cap provided in its under side with a socket to accommodate therein a typewriter or a similar key, and with an integral solid top portion adapted to rest directly on top of the key and having centrally therein an air cushion recess or pocket leading off from said socket, substantially as set forth.

2. A soft rubber cushion cap adapted to fit over a typewriter or similar key and provided with an integral solid top portion adapted to rest on the top of the key and having in its under side an air cushion recess or pocket, and fastening means for the cap adapted to detachably engage beneath the key, substantially as set forth.

3. In an attachment of the class described, the combination of a soft rubber cushion cap adapted to fit a typewriter or similar key and a split spring metal clamp band or ring, substantially as set forth.

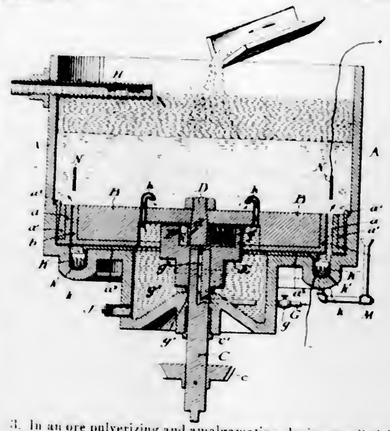
4. In an attachment of the class described, the combination of a soft rubber cushion cap adapted to be fitted over a typewriter or similar key, and a split spring metal clamp band or ring adapted to embrace said cap and having prongs adapted to engage beneath the key to which the cap is fitted, substantially as set forth.

5. In an attachment of the class described, a soft rubber cushion cap adapted to fit over a typewriter or similar key, and a split spring metal clamp band or ring adapted to embrace the cap and key to which it is fitted and provided with integral inwardly extending upper and lower catch prongs, the upper prongs being adapted to engage in the sides of the soft rubber cap, and the lower prongs being adapted to engage beneath the key, substantially as set forth.

530,612. ORE PULVERIZING AND AMALGAMATING MILL. JOHN W. BAILEY, Denver, Colo. Filed Mar. 1, 1894. Serial No. 501,938. (No model.)

*Claim.*—1. In an ore pulverizing and amalgamating device, the combination of opposing crushing surfaces whereby the ore is pulverized and an amalgamating device consisting of a metal plate, and a mercury trough, situated each on opposite sides of the space between the crushing surfaces, and electrically connected so as to form respectively anode and cathode, substantially as described.

2. In an ore pulverizing and amalgamating device, the combination of opposing crushing surfaces whereby the ore is pulverized, and an amalgamating device consisting of suitable electrodes, insulated from each other and from the crushing surfaces, and so situated that the entire space within which the crushing takes place is within the sphere of the electrical action between the electrodes, substantially as described



3. In an ore pulverizing and amalgamating device, a cylindrical pan, a cylindrical muller, means for rotating said muller within said pan, an annular insulated trough filled with mercury situated below the periphery of the muller, an annular insulated metal plate situated above the periphery, and suitable electric connections whereby the metal plate becomes an anode and the mercury a cathode, substantially as described.

530,613. KNIFE-SHARPENER. BERNARD H. BERKMAN, Long Island City, N. Y. Filed Mar. 1, 1894. Serial No. 501,920. (No model.)



*Claim.*—1. A knife sharpener consisting of a handle open at the center, and two knives mounted therein, extending into the said open center, the lower end of the said handle having a screw driver formed thereon, substantially as shown and described.

2. A knife sharpener consisting of a handle open at the center and having a slot in its lower end, and two knives mounted therein and bearing against each other each knife consisting of an elongated plate of metal tapering outwardly and beveled rearward of its cutting face, the said knives being secured in the said handle by a screw passing between the same and into the said handle, substantially as shown and described.

3. A knife sharpener consisting of a handle open at the center and having a vertical slot in its lower end, and two knives mounted in the said slot and bearing against each other at the point, each knife consisting of an elongated plate of metal tapering gradually outwardly and beveled rearward of its cutting face, the said knives being secured in the said slot by a screw passing between the knives and into the handle the said handle also having formed thereon at the bottom, a screw driver, substantially as shown and described.

530,614. SNOW-PLOW. ARTHUR M. BURNHAM, Gardiner, Me. Filed Apr 17, 1894. Serial No. 507,902. (No model.)



*Claim.*—1 In a snow plow, the combination with runners having standards at or near the rear ends elevated above the runners, of a platform hinged to these standards and extending to the forward end of the plow, and means located between the platform and runners for raising and lowering the platform, substantially as set forth.

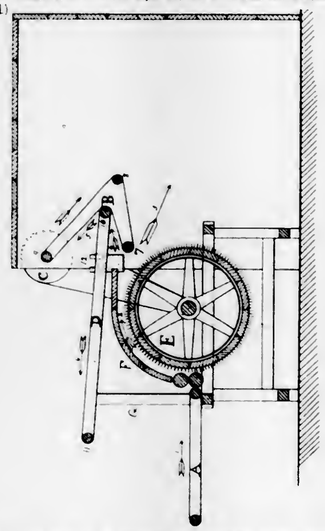
2. In a snow plow, the combination with a pair of runners, a front cross-bar connecting these runners together, said cross-bar having a sharpened forward edge, and a rear cross-bar adapted to drag over and smooth out the snow remaining on the road-bed, of a platform hinged at its rear end to the runners, and means for raising and lowering the platform, substantially as set forth.

3. In a snow plow, the combination with runners, of a presser bar secured to said runners, a platform pivotally connected with said runners and having its forward end constructed to produce a cutter, a plow located on said platform and means for raising and lowering the forward end of said platform, substantially as set forth.

4. In a snow plow, the combination with a platform pivoted at one end, of a lever pivoted between its ends, and a wedge connected to said lever and adapted to cause the forward end of the platform to raise or lower when the lever is operated, substantially as set forth.

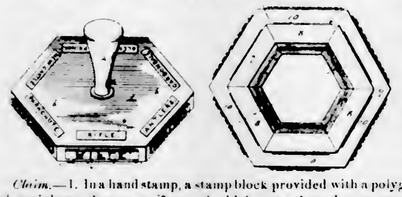
5. In a snow plow, the combination with runners and standards projecting upwardly from the rear ends thereof, of a platform pivotally connected at its rear end with said standards, a plow on said platform, a pivoted lever, a wedge located between said runners and platform and a rod connecting said wedge with the pivoted lever, substantially as set forth.

530,615. WASTE OR RAG PICKER. EDWARD R. COVERDILL, Clifton Heights, Pa. Filed Apr. 23, 1894. Serial No. 508,612. (No model.)



*Claim.*—In a picker for opening hard twisted waste, cloth-clippings, or rags, the combination of a picker cylinder, a feed apron therefor, and two supplemental aprons (B and D), located above the picker cylinder, so that apron B will catch unbroken lumps of fibrous material thrown upon it by the cylinder, and deliver them to the apron D, and said apron D, deliver them in turn to the picker feed apron to feed them again into the picker, as shown and described

530,616. HAND-STAMP. AMOS J. DICKSON, Glenwood Springs, Colo. Filed Aug. 28, 1894. Serial No. 521,513. (No model.)

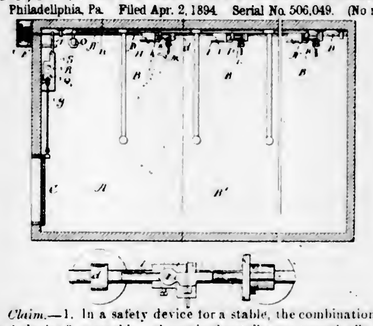


*Claim.*—1. In a hand stamp, a stamp block provided with a polygonal periphery, the square faces of which are adapted to carry a stamp strip or die, and with a polygonal offset at one side, the square faces of which offset are adapted to carry the name or other matter of the stamp strip or die located directly or diametrically opposite thereto, substantially as set forth

2. In a hand stamp, a stamp block provided with a polygonal periphery and with a polygonal offset projected from one side, stamp strips attached to the square peripheral faces of the stamp block, and indicating labels attached to the outer square faces of the polygonal offset, said labels being adapted to be arranged diametrically opposite the stamp strip having the same name or other matter, substantially as set forth.

3. In a hand stamp, the combination of a stamp block provided with a polygonal periphery, and with a polygonal offset projected from one side and comprising a series of label strips closely joined together and having outer square faces parallel to the adjacent peripheral faces of the block, stamp strips attached to the peripheral faces of the block, indicating labels attached to the square faces of said label strips and arranged diametrically opposite the stamp strip having the same name or other matter, and a handle knob secured to one side of said block.

530,617. SAFETY STABLE DEVICE. EDWARD J. GALLAGHER, Jr. Philadelphia, Pa. Filed Apr. 2, 1894. Serial No. 506,049. (No model.)



*Claim.*—1. In a safety device for a stable, the combination with a latch device for attaching a horse in the stall, an automatically opening door, means to cause the door to open automatically when permitted to operate, a trip to hold the means for opening the door out of action, a lock to hold the door closed, a latch releasing rod for operating the latch device, and operative connections between the latch releasing rod and the door lock and trip, whereby upon the operation of the latch releasing devices the door will first be unlocked and then opened automatically.

2. In a safety device for stables, the combination of a latch device for attaching a horse in a stall, a door, a weight for automatically opening the door, a lock for holding the door closed, a weight for automatically operating the lock to release the door, a latch releasing rod for operating the latch device to release the horse, and a support for the door and door lock weights, controlled by the latch releasing rod, whereby upon the operation of the rod to release the horse the door will be unlocked and automatically opened by the release of the said operating weights.

3. A safety device for stables consisting of the stationary hook I, adapted to enter a halter ring, a swinging latch I having a ring retaining projection I' and a movable bar carrying the latch I.

4. A safety device for stables consisting of the stationary hook I, adapted to enter a halter ring, a swinging latch I having a ring retaining projection I' and a movable bar carrying the latch I, and a lock for locking the swinging latch I against movement on its point of support.

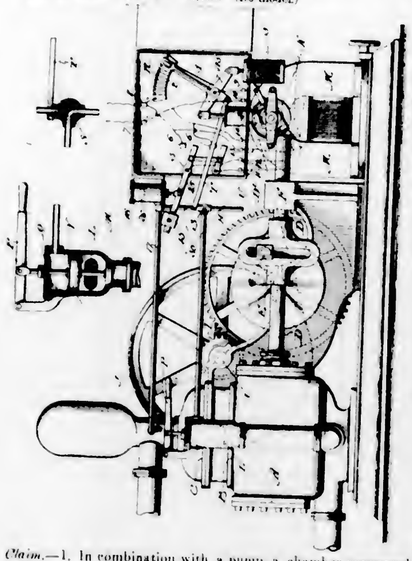
5. A safety device for stables consisting of the stationary hook I, adapted to enter a halter ring, a swinging latch I having a ring retaining projection I', a movable bar carrying the latch I, and the clearing finger W carried by the movable bar.

6. A latch device for a stable stall consisting of a ring retaining hook adapted to receive a halter ring, a clearing sleeve engaging the ring retaining hook and adapted to move the halter ring from the hook, a movable bar carrying one of the said parts and adapted to move it with reference to the other to detach the ring from the hook, a movable latch or ring detaining piece carried by the bar adapted to close the end of the hook and prevent the ring being detached therefrom except when the bar is moved, but having a movement independent of clearing sleeve and hook to permit the ring to be attached to the hook or detached from it without operating the bar, and an independent lock to lock the latch or retaining piece closed

7. A latch device for stables consisting of a movable latch actuating bar, a stationary ring retaining hook, a clearing sleeve carried by the bar and movable with it, and a latch carried by bar and movable with it, adapted to close the end of the retaining hook and prevent the ring becoming accidentally detached therefrom, but also having an independent movement so that it may be opened to

permit the hook to be placed on the ring or detached therefrom without operating either the bar or clearing sleeve.

530,618. PUMP. FRANK E. HERDMAN, Indianapolis, Ind. Filed Nov. 22, 1893. Serial No. 452,785. (No model.)



*Claim.*—1. In combination with a pump, a chamber connected with the suction of the pump, a port from the delivery to said chamber, a motor to operate said pump, a valve adapted to close the connection between the chamber and the suction of pump, a valve stem connected to said valve, a piston connected to said stem, a pipe leading from said chamber above the piston, connection between said pipe and a source of pressure, and between said pipe and an outlet, a valve adapted to connect said pipe with either the source of pressure or the outlet, a motor, power controlling devices for said motor, and connection between said power controlling devices and said valve adapted to operate the valve to open the connection between the pipe and source of power on its movement in one direction, and between the pipe and outlet in its movement in the other direction.

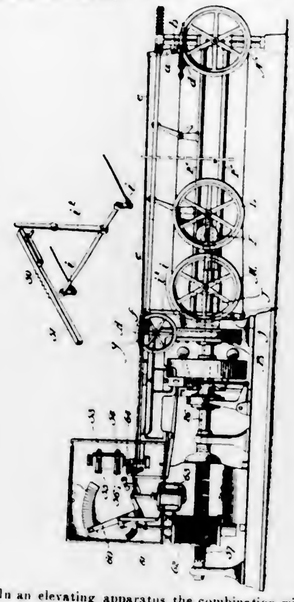
2. In combination with a pump, a suction pipe, a chamber connecting with said suction, a port from the delivery, a valve adapted to close the entrance of suction pipe, a valve stem connected to said valve and a piston connected to said stem, a pipe leading from said chamber, a valve in said pipe, an electric motor, a source of current supply, resistances, electric connection between said resistances and source of current supply, an arm adapted to travel over said resistances, and electric connection between said arm and armature of motor, connection between said arm and said last mentioned valve.

3. In combination with a pump, a suction pipe, a chamber connecting with said suction, a port from the delivery, a valve adapted to close the entrance of suction pipe, a valve stem connected to said valve and a piston connected to said stem, a pipe leading from said chamber above the piston, connection between said pipe and pump delivery and between said pipe and outlet, a valve in said pipe, said valve being adapted to close the connection between said pipe and outlet and open the connection between the pipe and pump delivery, or vice versa, and means to operate said valves as described.

4. In combination with a pump, a suction pipe, a chamber connecting with said suction, a port from the delivery, a valve adapted to close the entrance of suction pipe, a valve stem connected with said valve and a piston connected to said stem, a pipe leading from said chamber, a valve in said pipe, a motor, a source of power for operating said motor, an operative arm for regulating the admission of power to the motor, and connection between said arm and said last mentioned valve.

530,619. ELECTRIC-MOTOR-PROPELLED ELEVATOR. FRANK E. HERDMAN, Indianapolis, Ind. Filed Jan. 31, 1893. Serial No. 460,466. (No model.)

*Claim.*—1. In an elevating apparatus, the combination with an electric motor provided with extra coils upon the field, contacts, each contact in electrical connection with one coil, and a return wire to one of said contacts, electric connection between said contact and source of current supply, an arm adapted to pass over said contacts, electrical connection between said arm and the source of current supply, traveling sheaves, lifting cable wound around said sheaves and connection between said lifting cable and said arm, adapted when the strain on said lifting cable is increased beyond normal to draw said arm over said contacts.



2. In an elevating apparatus the combination with an electric motor provided with extra coils in the field, a switch interposed between said coils and source of current supply and adapted to cut out said coils or admit current to one or more of said coils, traveling sheaves, lifting cable wound around said sheaves and connection between said lifting cable and said switch adapted when the strain on said lifting cable is increased beyond the normal to operate said switch and throw into action one or more of said extra coils.

3. In an elevating apparatus, the combination with an electric motor provided with extra coils in the field, a switch interposed between said coils and source of current supply and adapted to cut out said coils or admit current to one or more of said coils, traveling sheaves, lifting cables wound around said sheaves, a pivoted lever to which said cable is connected, a spring acting upon said lever, a rod connected to said lever, said rod being also connected to said switch.

4. The combination with an electric motor provided with extra coils upon the field, contacts, each contact in electrical connection with one coil, and a return wire to one of said contacts, electric connection between said contacts and source of current supply, an arm adapted to pass over said contacts, electrical connection between said arm and the source of current supply, traveling sheaves, lifting cable wound around said sheaves, a pivoted lever to which said cable is connected, a spring acting upon said lever, a rod connected to said lever said rod being also connected to said arm.

5. In an elevating apparatus, the combination with an electric motor provided with extra coils upon the field, contacts, each contact in electrical connection with one coil, and a return wire to one of said contacts, electric connection between said contact and source of current supply, an arm adapted to pass over said contacts, electrical connection between said arm and the source of current supply, lifting cable and connection between said cable and said arm adapted when the strain upon said lifting cable is increased beyond normal, to draw said arm over said contacts.

6. In an elevating apparatus the combination with an electric motor provided with extra coils in the field, a switch interposed between said coils and source of current supply and adapted to cut out said coils or admit current to one or more of said coils, lifting cable and connection between said lifting cable and said switch, adapted when the strain on said lifting cable is increased beyond the normal to operate said switch and throw into action one or more of said extra coils.



7. In an elevating apparatus, the combination with an electric motor provided with extra coils in the field, a switch interposed between said coils and source of current supply and adapted to cut out said coils or admit current to one or more of said coils, lifting cables, a pivoted lever to which said cable is connected, a spring acting upon said lever, a rod connected to said lever, said rod being also connected to said switch.

8. The combination with an electric motor provided with extra coils upon the field, contacts, each contact in electrical connection with one coil, and a return wire to one of said contacts, electric connection between said contacts and source of current supply, an arm adapted to pass over said contacts, electrical connection between said arm and the source of current supply, lifting cable, a pivoted lever to which said cable is connected, a spring acting upon said lever, a rod connected to said lever, said rod being also connected to said arm.

9. In an elevating apparatus, in combination with the operating sheave of the lifting cable, and connection between said sheave and the elevator power regulating mechanism, a pivoted lever to which said cable is connected, a spring acting upon said lever, a rod connected to said lever, said rod being provided with a slot which surrounds a pin upon the operating sheave.

10. In an elevating apparatus the combination of traveling sheaves, lifting cable wound around said sheaves, a pivoted lever to which said cable is connected, a spring acting upon said lever, a rod connected to said lever and connection between said rod and the elevator power regulating mechanism.

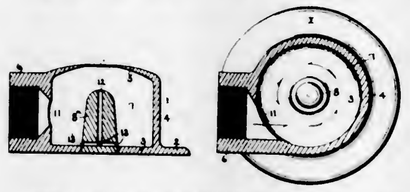
11. In an elevating apparatus, the combination with an operating sheave and connection between said sheave and the elevator power regulating mechanism, of traveling sheaves, lifting cable wound around said traveling sheaves, a pivoted lever to which said cable is connected, a spring acting upon said lever, a rod connected to said lever said rod being provided with a slot which surrounds a pin upon the operating sheave.

12. In an elevating apparatus the combination with a counterbalance cable of a lever to which said cable is attached, a spring acting upon said lever, elevator power regulating mechanism, and intermediate devices between said lever and the elevator power regulating mechanism adapted to be operated by said lever when the lever is moved.

13. In an elevating apparatus the combination of the elevator power regulating mechanism, an operating bar adapted to operate said mechanism, a counterbalancing cable, a lever to which said cable is attached, a spring acting upon said lever, an arm adapted to be operated by said lever to which cables are attached, said arm being in line with the operating bar.

14. In an elevating apparatus, the combination with an electric motor provided with extra coil in the field, of a switch interposed between said coil and the source of current supply and adapted to cut out or admit current to said coil, lifting cable and connection between said lifting cable and said switch, adapted when the strain on said lifting cable is increased beyond the normal to operate said switch and throw into action said extra coil.

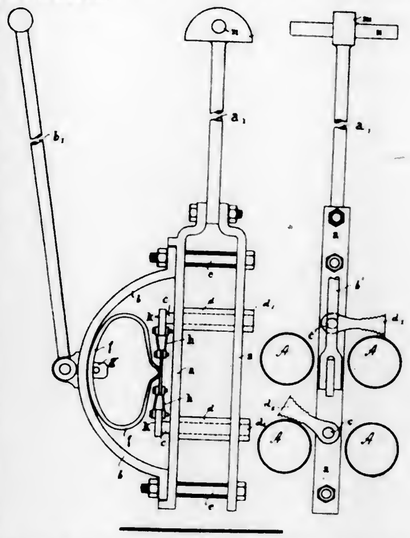
530,620. LAWN-SPRINKLER. THOMAS MAHER, Cleveland, Ohio. Filed Aug. 1, 1894. Serial No. 519,187. (No model.)



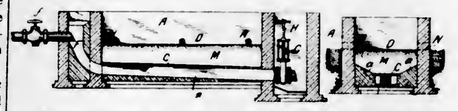
*Claim.*—As a new article of manufacture, a sprinkler consisting of a case having within it an annular chamber opening through the top of said case, a central post rising from the floor of said chamber and provided with lateral, basic passages opening into a vertical passage in said post, and an external extension projecting from the wall of said case in such a manner that a line representing the horizontal center of said extension is remote from a parallel line passing through the center of said chamber, said extension having a large, outer, threaded opening communicating with said chamber, through a contracted orifice, substantially as and for the purpose set forth.

530,621. STEAM-BOILER AND FLUE SCRAPER. JOHANNES C. A. MARCKMANN, Hamburg, Germany. Filed July 19, 1894. Serial No. 517,973. (No model.)

*Claim.*—The combination of a frame, with serrated scrapers, pivoted thereto, a stirrup bolted to the frame, a spring secured to the stirrup and connected at its ends to the scrapers, a handle secured to the top of the frame, and a handle secured to the stirrup, substantially as specified.



530,622. TREATMENT OF SEWAGE AND APPARATUS THEREFOR. WILLIAM D. SCOTT-MONCRIEFF, London, England. Filed Nov. 21, 1892. Serial No. 452,698. (No model.) Patented in England Aug. 22, 1891, No. 14,181.



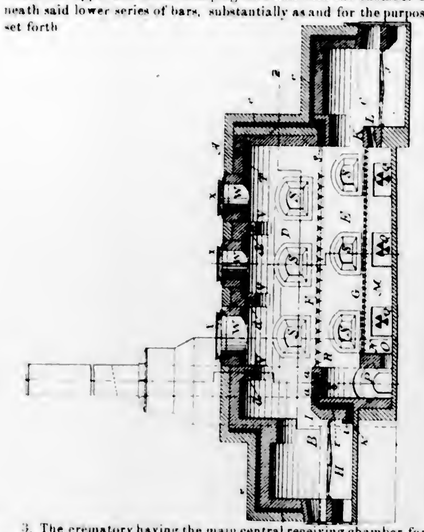
*Claim.*—The herein described method of purifying sewage which consists in passing the sewage, without previous removal of the solid portions, under a suitable head, first through a concentrating chamber with contracted outlet openings in which the solid portions are retained until so far decomposed by the action of the micro organisms that they can pass through the outlet openings, while the liquid products of the micro-organisms are allowed to pass out with the liquid and finer solid particles without delay, and then upward through a filter bed of suitable depth and of greater superficial area than said concentrating chamber, whereby the decomposition of the solid matters is substantially completed, substantially as described.

530,623. CREMATORY FOR BURNING GARBAGE AND OTHER REFUSE. JOHN E. MCKAY, New York, N. Y. Filed Jan. 4, 1894. Serial No. 495,633. (No model.)

*Claim.*—1. The crematory having the main central receiving chamber for the refuse to be burned, and a furnace at each end thereof, the said furnaces being on different planes, combined with the upper series of dumping bars extending substantially the length of said receiving chamber in line with one of said furnaces, the lower series of dumping bars extending substantially the length of said receiving chamber in line with the other of said furnaces, whereby the products of combustion from one furnace pass over the top of its adjacent series of dumping bars and then combine with the products of combustion from the other furnace, the products of combustion from the two furnaces then passing lengthwise over the series of dumping bars in line with the second furnace, the ash chamber below said lower series of bars and having doors, and the outlet flue to receive the said combined products of combustion from the two furnaces; substantially as and for the purposes set forth.

2. The crematory having the main central receiving chamber for the refuse to be burned, and a furnace at each end thereof, said furnaces being on different planes, combined with the upper series of dumping bars extending substantially the length of said receiving chamber in line with one of said furnaces, the lower series of dumping bars extending substantially the length of said receiving cham-

ber in line with the other of said furnaces, whereby the products of combustion from one furnace pass over the top of the upper series of dumping bars and then combine with the products of combustion from the lower furnace, the products of combustion from the two furnaces then passing lengthwise between the upper and lower series of dumping bars, the ash chamber below said lower series of bars and having doors, and the outlet flue connected with the space between the upper and lower dumping bars and with the chamber beneath said lower series of bars, substantially as and for the purposes set forth



3. The crematory having the main central receiving chamber for the refuse to be burned, and a furnace at each end thereof, said furnaces being on different planes, combined with the upper series of dumping bars extending substantially the length of said receiving chamber in line with one of said furnaces, the lower series of grate bars extending substantially the length of said receiving chamber in line with the other of said furnaces, whereby the products of combustion from one furnace pass over the top of the upper series of dumping bars and then combine with the products of combustion from the lower furnace, the products of combustion from the two furnaces then passing lengthwise between the upper and lower series of bars, the ash chamber below said lower series of bars and having doors, doors to said receiving chamber above the upper series of bars, doors to said receiving chamber between the two series of bars inlets for refuse at the top of said receiving chamber, and an outlet flue connected with said receiving chamber; substantially as set forth.

4. The crematory having the main central receiving chamber for the refuse to be burned, and a furnace at each end thereof, said furnaces being on different planes, combined with the upper series of dumping bars extending substantially the length of said receiving chamber in line with one of said furnaces, the lower series of dumping bars extending substantially the length of said receiving chamber in line with the other of said furnaces, the ash chamber below said lower series of bars and having doors, the outlet flue connected with said receiving chamber, and the series of arches extending downward from the ceiling of said chamber and forming air inlets thereto; substantially as and for the purposes set forth.

5. The crematory having at its ends the furnaces B, C, the intermediate receiving chamber, the arch R at the bridge wall of the upper furnace, the outlet flue communicating with said chamber below said arch, the inlets W to said chamber, and the doors S, at the sides of said chamber, combined with the upper series of supporting bars extending substantially the length of said receiving chamber in line with said arch, the lower series of supporting bars extending substantially the length of said chamber in line with the lower furnace, and the ash chamber provided with the doors Q below the lower series of bars; substantially as and for the purposes set forth.

6. The crematory having the main central receiving chamber for the refuse to be burned, and a furnace at each end thereof, combined with the upper series of revoluble winged supporting bars extending substantially the length of said receiving chamber in line with one of said furnaces, the lower series of revoluble winged supporting bars extending substantially the length of the said chamber in line with the other of said furnaces, and the ash chamber below the lower series of bars; substantially as set forth.

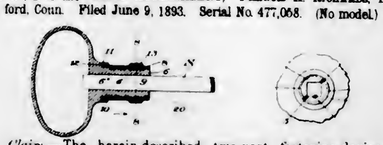
7. The crematory having the main receiving chamber and a furnace at each end thereof, combined with the series of winged revoluble supporting bars in said chamber to receive the refuse, the rods at the ends of said bars, and the open bearings *g* in the sides of the receiving chamber to receive said rods; substantially as set forth.

8. The crematory having the main receiving chamber and a furnace at each end thereof, combined with the bridge wall I having the air space *i'* and outlets *a*, the bridge wall K, the upper and lower series of supporting bars F, G, in said chamber, the ash chamber below the lower series of bars, and the outlet flue; substantially as set forth.

9. The crematory having the main receiving chamber and a furnace at each end thereof, combined with the bridge wall I, the bridge wall K having the opening L, the upper and low series of supporting bars F, G, in said chamber, the ash chamber below the lower series of bars, and the outlet flue; substantially as set forth.

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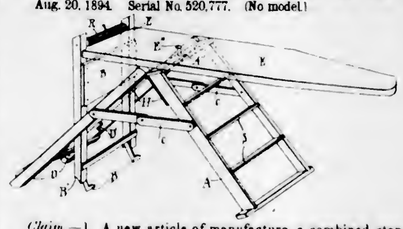
**530,624. KNOB ATTACHMENT.** FRANCIS H. RICHARDS, Hartford, Conn. Filed June 9, 1893. Serial No. 477,058. (No model.)



*Claim.*—The herein-described two-part fastening-device for knobs, it consisting of a compressible tubular stem bored to receive a spindle and having on the compressible portion thereof inclined wedge-bearings, substantially as described, and having a fixed clamp-sleeve abutment, combined with a clamp-sleeve having internal inclined bearings adapted for engaging with the bearings of the stem, and having its inner end in engagement with said abutment, and adapted to be turned for compressing the stem, substantially as described.

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**530,625. COMBINED STEP-LADDER, IRONING-TABLE, AND WASHBENCH.** HERBERT G. ROUNDS, West Bay City, Mich. Filed Aug. 20, 1894. Serial No. 520,777. (No model.)



*Claim.*—1. A new article of manufacture, a combined step-ladder, ironing table, and wash bench consisting of the ladder, the folding shelf provided with hooks B' and notches B'' on the inner end, and an eccentric roller across the outer end, stay straps C, C, and the secondary frame D pivoted to the rear legs of the ladder, and the board, substantially as described.

2. The combination with a step ladder provided with a folding shelf having hooks upon its inner end to engage the ladder and hold it, an eccentric roller on its outer end, and the stay straps C, C, of the board E adapted to rest across the upper step of the ladder with one end under the roller, substantially as set forth

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**530,626. LANTERN.** GEORGE ROWLAND, Conshohocken, Pa. Filed Sept. 26, 1894. Serial No. 524,212. (No model.)



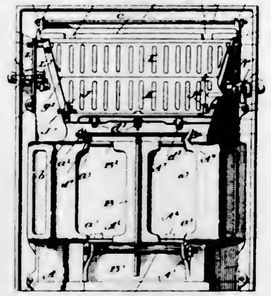
*Claim.*—1. A lantern comprising in its construction a base and cap each having a plurality of spring fingers, wires connecting the fingers of the base with those of the top, and a chimney or globe normally held by the base fingers but adapted to be lifted therefrom and moved upward into the cap, substantially as described.

2. A lantern comprising in its construction the base having spring fingers $a^1$ provided with outwardly bowed portions $a^2$, the chimney or globe B having an annular bead at its lower end adapted to enter the bowed portions of the fingers $a^1$, and having another bead at its upper end, the cylindrical cap H having spring fingers *c* and adapted to permit the passage of the upper end of the chimney to the top of the cap, a hook *c'* swiveled in the top of said cap, and the wires *d* having their ends passed through holes in the spring fingers and provided with shoulders or offsets each side of the latter, substantially as described.



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**530,627. FIREPLACE AND GRATE.** EDWARD SCANLAN and FREDERICK W. KEIFEL, Jr., Louisville, Ky., and JOHN ZIPP, New Albany, Ind. Filed June 21, 1894. Serial No. 515,310. (No model.)



*Claim.*—1. The combination with the frame and the lining, of the self-locking lining border clamps having lugs and overlapping adjacent ends, substantially as specified.

2. The combination with the end pieces having oppositely-disposed offsets with flanges, of a separable back-piece offset at the top and bottom and having lateral portions engaging said flanges, substantially as specified.

3. The combination with the end-pieces having lugs with flanges, of an independent back-piece offset at the top and bottom and having lateral portions engaging said flanges, and bolts passed through said lugs and having nuts to bind the back and end pieces together, substantially as specified.

4. The combination with the end and back-pieces and the upper trough shaped connecting piece with inclined rear portion, of a removable roof-piece having under-turned lugs to engage said inclined portion, substantially as specified

5. The combination with the frame and its upper cross piece, of an upper inclined damper mounted to open upward and having one pintle extended to engage its operating means whereby it serves to direct the smoke from the front to the rear, thereby preventing down drafts in the chimney substantially as specified.

6. The combination with the frame and the roof-piece of a damper having one of its pintles extended to be engaged by its operating means and pivotally-mounted at the upper end of the roof piece to open upward whereby it serves to direct the smoke from the front to the rear and prevent its escape into the room, substantially as specified.

7. The combination with the frame and roof-piece, of an upper damper mounted to open upward and the lower damper mounted to open rearward and provided with a stop lug, said dampers having oppositely extended pintles to be engaged by their operating means substantially as specified.

8. The combination with the frame and the dampers in its inclined portion and having extended pintles, of slidable push rods mounted at opposite ends for operating the dampers, substantially as specified.

9. The combination with a pivoted damper having one of its pintles extended for the engagement of its operating means, of a push rod slidingly and rotatably mounted to operate said damper, substantially as specified.

10. The combination with a damper, mounted to open upward and having one of its pintles extended for the engagement of its operating means, of a push rod mounted for sliding and rotatable movement and disconnected from the damper but constructed to operate it, as set forth.

11. The combination with a pivoted damper having one of its pintles extended for the engagement of its operating means, of a push rod mounted for sliding and rotary movement and having a lateral portion to engage means connected with the damper, substantially as specified.

12. The combination with a pivoted damper having one of its pintles extended for the engagement of its operating means, of a push rod mounted for sliding and rotary movement and having a lateral arm, and a curved lever connected with the pintle of the damper to be actuated by said arm, substantially as specified.

13. The combination with a pivoted damper, of a push rod mounted for sliding and rotary movement and having a lateral arm, a curved lever on the pintle of the damper, and a rack bar for engaging said lateral arm, substantially as specified.

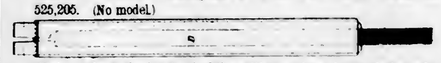
14. The combination with a pivoted damper, of a push rod mounted for sliding and rotary movement and having a lateral arm and an oppositely-disposed stop, and a rack bar for engaging said lateral arm, substantially as specified.

15. The combination with a damper mounted to move upward to open, of a push rod mounted for sliding and rotary movements and provided with a lateral arm having rounded under face, a curved lever connected with the pintle of the damper and a rack bar engaging said lateral arm, substantially as specified.

16. The combination with a pivoted damper having one of its pintles extended for the engagement of its operating means, of a push-rod mounted for sliding and rotary movement and provided at its inner end with means for engaging a part moving with the damper, substantially as specified.

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**530,628. HOLDING DEVICE FOR EMBROIDERY-SILKS, &c.** LEONARD O. SMITH, Philadelphia, Pa. Filed Oct. 8, 1894. Serial No. 525,205. (No model.)



*Claim.*—1. A device for holding silks or threads consisting of a casing carrying an inner card recessed or perforated at one or both ends and adapted to carry a skein of thread, the portion of said card adjacent to the recess, at one end being bent or hooked over the adjacent portion of the case to prevent the card from being withdrawn excepting in one direction; substantially as and for the purpose specified.

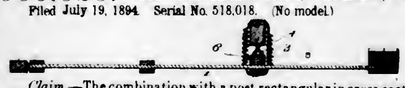
2. A device for holding silks or threads consisting of an elongated casing carrying an inner card recessed or perforated at one end, and supporting a skein of thread, the portion of said card adjacent to said recess being hooked over the adjacent end of the case and attached thereto to prevent the parts from being separated, substantially as described.

3. A device for holding threads consisting of a substantially parallel sided casing carrying an inner card recessed or perforated at one end, and supporting a skein of thread, the portion of the said card adjacent to the recess being hooked over the end of the case and attached thereto to prevent the parts from being separated, substantially as described.

4. A device for carrying silks or threads consisting of a substantially parallel sided casing open at both ends and carrying an inner card recessed at the upper end, and supporting a skein of thread, the portion of the card on each side of the recess being partially or wholly bent over the adjacent end of the casing and attached thereto to prevent withdrawal, substantially as described

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**530,629. GATE.** FREDERICK H. STURM, West Milford, W. Va. Filed July 19, 1894. Serial No. 518,018. (No model.)



*Claim.*—The combination with a post rectangular in cross-section, of a balanced gate hinged intermediate of its ends to the fence post and provided with a vertical bar located at the point of hinging, and the pair of horizontally disposed spiral springs disposed at opposite sides of the post and the bar and secured to the rear face of the former and connected to the gate, whereby when the gate is opened in either direction, a spring will be distended for closing the same, substantially as described.

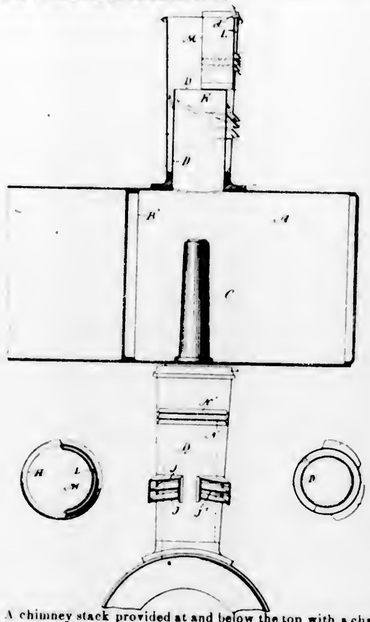
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**530,630. ATMOSPHERIC-PRESSURE RELIEF FOR CHIMNEY-STACKS.** BENJAMIN F. TAYLOR, Newark, N. J., assignor to the Taylor Improved Draught Company, of New Jersey. Filed Feb. 10, 1894. Serial No. 499,763. (No model.)

*Claim.*—1. In a device for improving the draft in stacks, the combination, with the smoke pipe D, of the casing G uncovered at the top and extended above the top of the smoke pipe and having the bottom closed and attached to the smoke pipe, and provided in the side with the air inlets I having a series of vanes inclined upwardly and inwardly toward the smoke pipe, the casing forming an annular open topped chamber discharging an annular current of air upward around the top of the smoke pipe, substantially as herein set forth.

2. The combination, with the smoke pipe D, and the casing G extended above the top of the same, and provided with air inlets arranged above one another below the top of the smoke pipe, of means for deflecting air from the lower inlet to the rear side of the stack within the casing, as herein set forth

3. The combination, with the smoke pipe D and the casing G extended above the top of the same, and provided with air inlets I below the top of the smoke pipe, of the vanes J J' inclined inwardly and upwardly from such openings, and the intermediate vane J extended into contact with the smoke pipe and forming a partition around the front side of the same, as herein set forth.



4. A chimney stack provided at and below the top with a chamber formed around the front half of the stack and extended upward parallel to the side of the stack, such chamber having an air inlet upon its front side, and operating to direct an air current upwardly upon the side of the stack at its top, and thus deflect upwardly any horizontal current moving above the stack, substantially as herein set forth.

5. The combination, with the smoke pipe D, of the casing G extended above the top of the same and provided with air inlets I below the top of the smoke pipe, and having a chamber upon the front side at the top with an air inlet upon the outer side of the same, as and for the purpose set forth.

6 The combination, with the smoke pipe D, of the casing G extended above the top of the same, and provided inside near the top with a chamber having an air inlet upon its outer side, the whole operating to deflect upwardly the horizontal current above the stack, substantially as herein set forth.

7. The combination, with the smoke pipe D, and the casing G extended above the top of the same, and provided with air inlets I below the top of the smoke pipe, of the curved partition M forming a chamber inside the casing above the smoke pipe, with an air inlet upon the outer side of the same, the air inlets being provided with upwardly inclined vanes and the air from the top of the chamber operating to deflect upwardly the horizontal current above the stack, substantially as herein set forth.

8. In a device for improving the draft in locomotive stacks the combination, with the locomotive stack, of the smoke pipe D having the casing G arranged about the same and provided with air inlets I in two groups upon the front quarters of the casing, vanes for deflecting the air upwardly to the inlets, and the cheek pieces $J^3$ projected obliquely at the outer ends of the inlets to throw the passing current of air into the same, substantially as herein set forth.

9. In a locomotive stack designed for movement in opposite directions, the combination, with the smoke pipe, of a rotatable casing having air inlets, and means for turning the casing with the air inlets at the front or back of the stack at pleasure, substantially as set forth.

10. In a locomotive stack designed for movement in opposite directions, the combination, with the smoke pipe, of a rotatable casing having air inlets, and provided with guides to center it upon the smoke pipe, and with anti-friction wheels to sustain the weight, and means for turning the casing with the air inlets at the front or back of the stack at pleasure, as herein set forth

11. In a locomotive stack designed for movement in opposite directions, the combination, with the locomotive boiler and the smoke pipe D, of the rotatable casing G extended above the same, and provided with the air inlets I upon its quarters, and with the chamber M at the top with inlets N as described, stops to regulate the movement of the casing, and suitable means extended to the cab for rotating the casing at pleasure, as herein set forth.

## 530,631. WELL-PACKING. EGBERT T. WARNER, Elwood, Ind. Filed Feb. 10, 1894. Serial No. 499,811. (No model.)



*Claim.*—1. In a well packing, the combination with a line of well tubing; of the upper rubber packer loosely arranged on the well tubing and adapted to be expanded against the sides of the well by the weight of such tubing, an inlet cage for the upper packer and communicating with the well tubing below the upper packer, a lower rubber packer connected with the cage of the upper packer, an inlet cage for the lower packer below the same, and a separate fluid conducting pipe arranged within the well tubing and communicating with the interior tubing of the lower packer, said conducting pipe passing up through the upper packer and well tubing, substantially as set forth.

2. In a well packing, the combination with the well tubing; of a slotted combined coupling and inlet cage, a rubber packer loosely fitted over the well tubing, a packer sleeve made fast in the inner upper end of the rubber packer a shoulder ring fitted onto the tubing below said sleeve, upper and lower packer caps embracing the upper and lower ends of the rubber packer and the upper of which is fitted on the well tubing, and a winged coupling head fitted on the lower end of the well tubing and arranged to work in said slotted cage, substantially as set forth.

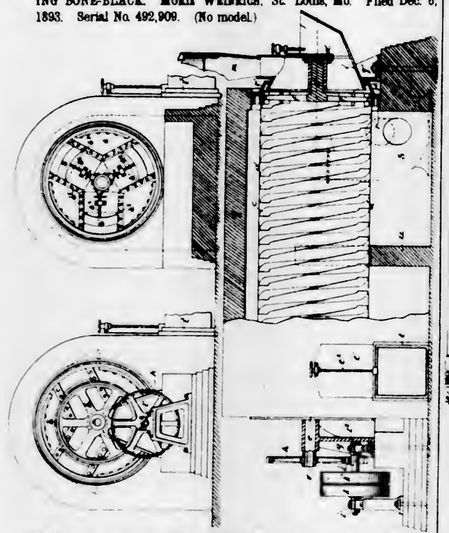
3. In a well packing, the combination with the well tubing, of a combined coupling and inlet cage provided with longitudinal slots having shouldered off-sets at their upper ends, a rubber collar loosely fitted over the well tubing and having beveled upper and lower ends, an interior shoulder, a packer sleeve made fast within said collar, a shoulder ring fitted onto the tubing between said sleeve and the shoulder of the collar, upper and lower flanged packer caps embracing the upper and lower ends of the collar, the upper of said caps being fitted onto the well tubing and the lower cap being removably fitted in the upper end of said cage, and a winged coupling head fitted onto the lower end of the well tubing and working inside of said slotted cage and the off-sets of the slots, substantially as and for the purpose described.

4. In a well packing, the combination with the well tubing; of a slotted combined coupling and inlet cage, a cap loosely embracing the tubing and fitted to the upper end of the cage, the rubber packer sleeve supported in position on said cap and loosely fitting the well tubing, a winged coupling head fitted onto the well tubing and working in said cage, and a packing washer arranged on top of the winged coupling head and working over the lower side of the cap, substantially as set forth.

5. In a well packing, the combination with the well tubing and packing devices; of an anchoring head provided with a series of longitudinal spring slots, anchoring springs adjustably mounted in said slots and provided with twisted engaging points at their extremities above and below the anchoring head, and removable retaining rings engaging the upper and lower ends of said anchoring head to confine the spring ends therein, substantially as set forth.



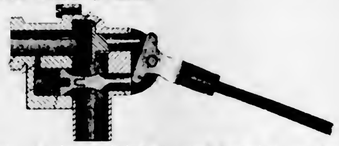
## 530,632. APPARATUS FOR DECARBONIZING AND REVIVIFYING BONE-BLACK. MORIS WEINRICH, St. Louis, Mo. Filed Dec. 6, 1893. Serial No. 492,909. (No model.)



*Claim.*—1. An apparatus adapted for decarbonizing and for revivifying bone-black without charring the same, having in combination a horizontal or nearly horizontal, revoluble drum into which atmospheric air is admitted and provided with interior projecting ribs, a wall surrounding such drum, means for regulating the continuous draft of air through the drum, and a flue for admitting hot air or gases from an extraneous source of supply into the space beneath such drum, all substantially as set forth.

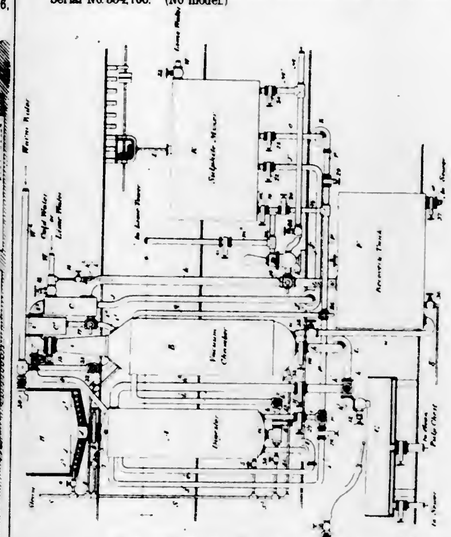
2. An apparatus adapted for decarbonizing and for revivifying bone-black without charring the same, having in combination a horizontal or nearly horizontal, revoluble, sheet iron drum into which atmospheric air is admitted, and provided with interior projecting ribs, a wall surrounding such drum, means for regulating the continuous draft of air through the drum, and a flue provided with a damper, and located under the rear end of the drum, and serving to supply and admit from a furnace or other outside source of heat all the heat required, all substantially as set forth.

## 530,633. VALVE. CORNELIUS BIRKERY, Hartford, Conn., assignor to the Birkery Manufacturing Company, same place. Filed Nov. 8, 1893. Serial No. 490,394. (No model.)



*Claim.*—A valve consisting of a shell formed in two separable parts, one of said parts having an inlet chamber with a seat at its end and a piston chamber parallel with the inlet chamber with a small passage between the inlet chamber and the piston chamber, and the other part having a disk chamber and outlet bib extending at right angles to the inlet chamber and bearing a three-armed float lever, a spindle bearing a disk movable in the disk chamber toward and from the seat in line with the inlet chamber and at right angles to the outlet bib, the end of the spindle being adapted to push outward against one arm of the float lever, a piston in a piston chamber facing in the same direction as the disk and movable parallel with the inlet chamber a spindle loosely attached to the piston and adapted to push against an arm of the float lever on the opposite side of its pivot, and a float rod connected with the third arm of the lever, substantially as specified.

## 530,634. APPARATUS FOR DISINTEGRATING FIBERS AND RECOVERING SULFUROUS GASES EMPLOYED THEREIN. HENRY BLACKMAN, New York, N. Y. Original application filed Oct. 21, 1889, Serial No. 327,615. Divided and this application filed June 9, 1890. Serial No. 354,760. (No model.)



*Claim.*—1. The combination of the digester, the vacuum retaining chamber connected therewith into which the contents of said digester are discharged and retained, the vacuum pump connected on its suction side with the upper part of said vacuum retaining chamber, and a recovering conduit leading from the discharge side of said pump, substantially as set forth, whereby the fibrous material when discharged from said digester into said vacuum retaining chamber is disrupted and retained in said chamber, and the disengaged gases are drawn off by said pump and discharged into said recovering conduit for further utilization.

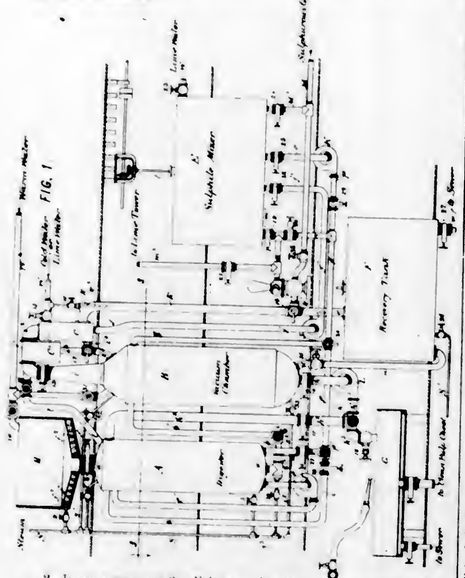
2. The digester, the vacuum retaining chamber connected therewith into which the contents of said digester are discharged and retained, the vacuum pump connected on its suction side with the upper part of said vacuum retaining chamber, and a recovering conduit leading from the discharge side of said pump, in combination with a spent liquid draining pipe leading from the bottom of said vacuum retaining chamber, a valve therefor, a steam-introducing pipe opening into the bottom of said vacuum retaining chamber, and a valve therefor, substantially as set forth, whereby the steam is forced through the drained pulp and the gases are drawn off therefrom by the vacuum pump while the pulp is within the vacuum retaining chamber.

3. The digester, the vacuum retaining chamber connected therewith into which the contents of said digester are discharged and retained, the vacuum pump connected on its suction side with the upper part of said vacuum retaining chamber, and a recovering conduit leading from the discharge side of said pump, in combination with a spent liquid recovery tank, a pipe leading from the bottom of said vacuum retaining chamber to said recovery tank, a valve in said pipe, means for heating the contents of said recovery tank, and a pipe leading from the upper part of said recovery tank to a vacuum pump, substantially as set forth, whereby the digesting gas is recovered from the spent liquid drawn off from the vacuum retaining chamber.

## 530,635. PROCESS OF AND APPARATUS FOR MAKING PAPER-PULP. HENRY BLACKMAN, New York, N. Y. Filed Oct. 21, 1889. Renewed Oct. 13, 1894. Serial No. 525,843. (No model.)

*Claim.*—1. The improved process of preparing paper pulp, which consists in partially digesting the fibers, then disrupting the fibers by

blowing them into a vacuum, and then resuming the digestion and repeating the blowing into a vacuum until the fibers are reduced to the desired fineness.




2. In an apparatus for disintegrating fiber the combination with a digester of a vacuum chamber, an outlet from the digester to the vacuum chamber, a vacuum pump for maintaining a vacuum in the vacuum chamber, and an inlet pipe or passage leading from the outlet of the vacuum chamber to the digester, whereby the matter blown off from the digester into the vacuum chamber may be returned from the latter to the digester

3. The combination with a digester having an outlet at its bottom a vacuum chamber having an inlet connected to said outlet, a vacuum pump for maintaining a vacuum in said vacuum chamber, a pipe extending from the outlet in the lower part of the vacuum chamber to the upper part of the digester, and a pump for forcing fibrous matter through said pipe, whereby the fibrous matter may he drawn by said pump from the vacuum chamber and forced into the digester during the blowing off of the fibrous matter from the bottom thereof into the vacuum chamber.

4. The combination of a digester a discharge outlet at its lower portion, a vacuum chamber having an inlet nozzle or orifice communicating with said outlet, a vacuum pump connected to the vacuum chamber to draw off the gaseous or vaporous matters therefrom and a pipe connecting the discharge of said pump with the digester, whereby during the operation of blowing off the fibrous matter from the digester into the vacuum chamber, the gases drawn off by the pump may be reintroduced into the digester.

5. The combination with a digester, of a vacuum chamber having an inlet nozzle or orifice at its upper part communicating with the outlet from the digester, and having a screen or perforated false bottom and a pulp outlet from said screen, a pipe for draining off the liquid from the bottom of the vacuum chamber beneath said screen, and a pipe entering the upper part of the chamber whereby the fibrous matter discharged into said vacuum chamber may be drained of liquid on said screen and may be supplied with fresh liquid and be discharged through the pulp outlet.

6. The combination with a digester of a vacuum chamber having an inlet nozzle or orifice communicating with the outlet from the digester, a vacuum pump, a pipe connecting the upper part of the vacuum chamber with the suction of said pump, a steam-pipe entering the lower part of the vacuum chamber, and a pulp outlet leading from the lower part of said chamber, whereby the fibrous matter may be discharged from the digester into said vacuum chamber, and while under vacuum therein steam may be forced through the mass and the gas or vapor thereby disengaged be drawn off by the vacuum.

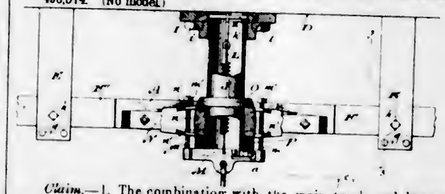
7. The combination with a digester and vacuum chamber of a discharge pipe from the bottom of the digester entering the vacuum chamber, a vacuum pump, a pipe connecting the upper part of the vacuum chamber with the suction of said pump, a valve in said pipe a steam pipe entering the upper part of the vacuum chamber, and a pulp outlet from the lower part thereof, whereby when a charge of fibrous matter has been introduced into the vacuum chamber the latter may be closed at the top and steam pressure introduced theinto to blow out the charge from the bottom.

8. The combination with a vacuum chamber of a vapor pipe i ascending from its top, a vapor separator C into which said pipe discharges and constructed to mechanically disengage particles of liquid from the vaper passing through it, a vacuum pump D, and a pipe connecting the outlet of said vapor separator to the suction of said pump.

9. The combination with a vacuum chamber, of a vapor outlet pipe from the upper part thereof, a condenser into which said pipe discharges, a liquid outlet from the bottom of said condenser, a pump with its suction connected to said liquid outlet to pump away the condensed liquid, a gas or vapor outlet from said condenser, and a vacuum pump with its suction connected to said outlet for drawing off the gaseous matter from said condenser and maintaining a vacuum in the vacuum chamber.

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**530,636. OVERHEAD-TRACK APPARATUS.** JOSEPH F. BORK and JOSEPH SIMANDL, Milwaukee, Wis. Filed Jan. 31, 1894. Serial No. 498,574. (No model.)

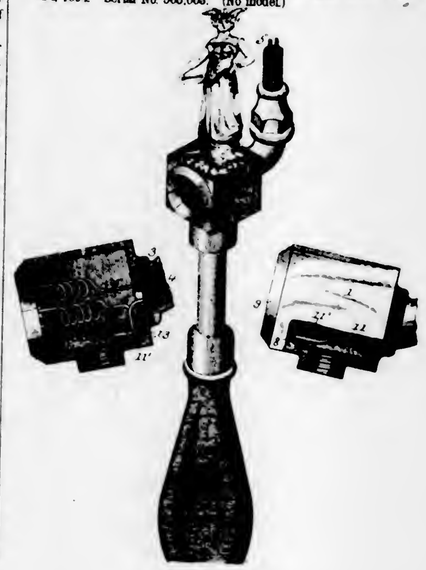


*Claim.*—1. The combination with the main track and branch tracks of a support, a switch frame provided with track sections and so mounted on said support as to revolve thereon, a lock permanently connected with said switch frame so as to revolve therewith and adapted to lock the frame in position when said frame is either adjusted so as to connect the main track with the adjacent section thereof or with any one of the branch tracks, substantially as set forth.

2. In an overhead track-system, the combination with the main and branch tracks of a suspended switch post having locking notches on its under side, a swivel and spring depending from said post, a switch frame revoluble on said post and carrying track sections, and a lock connected to said spring and movably secured to said switch-frame for engagement with said locking notches, substantially as set forth.

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**530,637. ELECTRIC CIGAR-LIGHTER.** CLYDE J. COLEMAN, Chicago, Ill., assignor of one-half to Robert Burns, same place. Filed Mar. 24, 1894. Serial No. 505,003. (No model.)



*Claim.*—1. In an electric cigar lighter, the combination of the pendent lighter casing carrying an incandescing conductor and having a weighted handle, a suspending cord attached laterally to the casing and inclosing the electric conductors, a circuit closer consisting of closed casing arranged in a removable manner in the interior of the lighter casing, and containing a body of mercury, and contact points passing into the interior of such circuit closer casing so as to contact with the body of mercury, when the same flows downward in such casing, in the operation of raising the lighter for use, substantially as herein described.

2. In an electric cigar lighter, the combination of the pendent lighter casing carrying an incandescing conductor and having a weighted handle, a suspending cord attached laterally to the casing and inclosing the electric conductors, a circuit closer consisting of a closed casing arranged longitudinally in a removable manner, in the interior of the lighter casing and containing a body of mercury, and contact points passing into the interior of such circuit closer casing near the rear end of the same, substantially as set forth.

3. In an electric cigar lighter, the combination of the pendent lighter casing having a weighted handle, a suspending cord attached laterally to the casing and inclosing the electric conductors, a plate or disk 7 of insulating material secured to the front of the lighter body, an incandescing conductor 10, attached to said plate and arranged in circuit with the line conductor, a circuit closer consisting of a closed casing arranged in a removable manner in the interior of the lighter casing, and containing a body of mercury, and contact points passing into the interior of the circuit closer casing near the rear end of the same, substantially as set forth.

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**530,638. MECHANICAL MOVEMENT.** SIMEON B. CURTIS, Springfield, Ill. Filed Sept. 21, 1893. Serial No. 486,096. (No model.)



*Claim.*—1. In a mechanical movement the means adapted to alternately engage parallel wheels with and disengage them from a supporting shaft on which said wheels turn, to wit:—a suitably supported driving shaft, bevel cog wheels face to face, loose on said shaft, said wheels having channels in their inner faces and having cams and ledges projecting into said channels, a suitably supported pinion meshing with both of said cog wheels, a rotating arm secured to the driving shaft between said wheels, and a pawl pivoted in the end of said arm, the ends of said pawl being adapted to run in the channels in said wheels, as set forth.

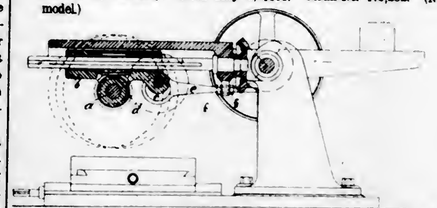
2. In a mechanical movement the combination of the base, the standards, on the base, the driving shaft supported and turning on said standards the means for rotating said driving shaft, the driven shaft supported on and turning in the base, the parallel cog wheels loose on the driving shaft, said cog wheels having annular channels in their faces and having cams and ledges projecting into said channels, the arm secured to and turning with the driving shaft, the pawl pivotally supported in the end of said arm, the ends of said pawl being adapted to run in the channels in said wheels, and the pinions secured to the driven shaft and meshing with both of the wheels on the driving shaft, as set forth.

3. A pawl for a mechanical movement, widened at its central part, adapted to turn on a pivot and having reduced ends adapted to run in channels; in combination with an arm secured to a rotatable driving shaft and adapted to pivotally support said pawl, parallel cog wheels loose on said shaft provided with channels and having cams and ledges projecting into said channels, and a pinion secured to the driven shaft and meshing with both of the cog wheels on the driving shaft, as set forth.

4. In a mechanical movement the combination of the base, the integral standards on the base, the journal boxes on the standards, the rotatable driving shaft supported in the boxes, the parallel cog wheels loose on said shaft, provided with channels and having cams and ledges extending into said channels, the arm between said wheels, secured to and turning with the driving shaft, the pawl on said arm adapted to run in channels, the driven shaft, the bevel cog pinion meshing with said wheels and connected with the driven shaft, and the adjustable collar on the driven shaft, as set forth and for the purpose stated.



**530,639. COLD-SAWING APPARATUS.** HEINRICH EBERHARDT, Dusseldorf, Germany. Filed May 6, 1893. Serial No. 473,252. (No model.)



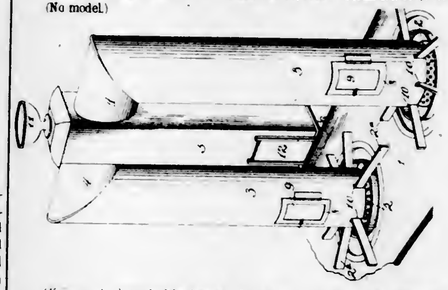
*Claim.*—1. The combination with a revolving circular saw, of means in operative connection therewith for automatically imparting thereto, while cutting, and independent of the feed motion a short oscillatory motion in its own plane and across the direction of the feed, substantially as and for the purpose specified.

2. The combination with a circular saw, of means in operative connection therewith for imparting thereto, while cutting, and independent of the feed motion a short oscillatory motion, in its own plane and across the direction of the feed and means for disconnecting the oscillatory devices, substantially as described.

3. The combination with a circular saw mounted on a carriage adapted to reciprocate across the direction of the feed, of an eccentric in operative connection with said carriage for imparting a short oscillatory motion independent of the feed motion to the same during the feed, and across the direction of the feed, substantially as described.

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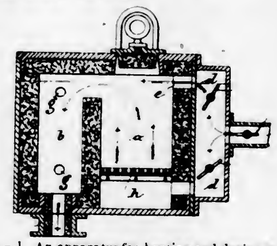
**530,640. HEATING ATTACHMENT FOR GAS COOKING-STOVES.** JOSEPH GUY, New York, N. Y. Filed Oct. 10, 1893. Serial No. 487,779. (No model.)



*Claim.*—A detachable heater for gas, or oil or other cooking stoves, consisting of supporting drums open at their lower ends and adapted to rest upon the stove over the burners thereof, and the central depending box or drum carried by and communicating with said supporting drums, and having at its lower end an exit opening or openings for the heated air, substantially as set forth.

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**530,641. APPARATUS FOR DRYING CASTING-MOLDS.** WILHELM HANSEN, Gotha, Germany. Filed Jan. 10, 1893. Renewed Jan. 11, 1894. Serial No. 496,552. (No model.)



*Claim.*—1. An apparatus for heating and drying molds by a current of air and combustion gases comprising a furnace, a valved conduit having branches communicating with the space below the grate and with the space between the grate and the outlet for conveying compressed air thereto in regulated quantities and a mixing chamber communicating with the combustion space and having a downwardly projecting nozzle, to discharge the hot products into the mold, substantially as described.

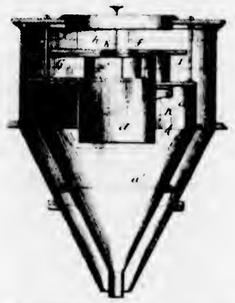
2. An apparatus for heating and drying molds by a current of air and combustion gases comprising a furnace, a conduit having branches communicating with the space below the grate and with the space between the same and the outlet, the valves in said branches regulating the supply of compressed air under the grate of the furnace and into the combustion chamber, a main valve in the main portion of the conduit for regulating the entire blast entering the apparatus and a mixing chamber communicating with the combustion space and having a downwardly projecting nozzle to discharge the hot products into the mold, substantially as described.

3. An apparatus for heating and drying molds by a current of air and combustion gases comprising a furnace, a conduit having branches communicating with the space below the grate and with the space between the grate and the outlet, the valves for regulating the flow of compressed air through said branches, a main valve in the main portion of the conduit for regulating the entire blast entering the apparatus and the mixing chamber communicating with the combustion space above the grate and having the downwardly projecting nozzle leading therefrom to discharge the hot products into the mold, said mixing chamber having also the sight holes therein, substantially as described

4. An apparatus for drying molds by a current of air and combustion gases comprising a furnace, a conduit having branches communicating with the space below the grate and with the space between the grate and the outlet, and a mixing chamber communicating with the combustion space and having a downwardly projecting nozzle to discharge the hot products into the top of the mold, said apparatus being portable, substantially as described

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530,642. DUST-COLLECTOR. LEVI S. HOGEBOOM, Three Rivers, assignor to the Knickerbocker Company, Jackson, Mich. Filed Sept. 13, 1894. Serial No. 522,867. (No model.)



*Claim.*—1. The combination with a primary dust collector, having a tangential inlet spout, an air outlet and a dust outlet, of a surrounding secondary dust collector having an air outlet and a dust outlet, and an air chamber interposed between the air outlet of the primary dust collector and the secondary dust collector, said chamber discharging part of the air from the machine and delivering the rest of the air into the secondary dust collector for further separation, substantially as set forth.

2. The combination with the primary dust collector having a tangential inlet spout, an air outlet and a dust outlet, of a surrounding secondary dust collector having an air outlet and a dust outlet, and an air chamber arranged within the secondary dust collector and above the air outlet of the primary dust collector and having an air outlet between the air outlets of the two dust collectors and a peripheral discharge spout opening into the secondary dust collector substantially as set forth.

3. The combination with the primary dust collector, having a tangential inlet spout, an air outlet provided with a tubular guard and a dust outlet, of a secondary dust collector having an air outlet provided with a tubular guard and a dust outlet, and an air chamber which is arranged above the air outlet of the primary dust collector and which has an air outlet of smaller diameter than that of the primary dust collector, and a peripheral discharge spout opening into the secondary dust collector, substantially as set forth

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530,643. HORSESHOE. WILLIAM J. KENT, New York, N. Y. Filed Mar. 3, 1894. Serial No. 502,167. (No model.)

*Claim.*—1. A horse-shoe having a body of relatively soft metal and a wearing strip of relatively hard metal carried by said body, which strip when in position in the shoe inclines downwardly and outwardly and is exposed at the bottom face of the shoe where it constitutes the wearing portion thereof, whereby the strain due to the toe of the shoe striking the ground is received in the direction of the inclination of said strip.

2. A horse-shoe having a body of relatively soft metal and a wearing strip of relatively hard metal carried by said body near the front edge thereof, and when in position in the shoe said strip exposed at the bottom face of the shoe and constituting the wearing portion of the latter, whereby the strain when the shoe strikes the ground is received by said strip, said body having nail holes through its soft metal portion and at the inner side of said strip, whereby the nails when driven in said holes strengthen the retention of the wearing strip in place in the body of the shoe.



3. A horse-shoe having a body of relatively soft metal which furnishes the seat of the shoe, and a wearing strip of relatively hard metal which constitutes the wearing portion of the shoe, said strip projecting at its lower edge at the bottom face of the shoe and there receiving the concussion of the shoe when in use, and of greater width at its upper edge, inclosed at its wide upper edge in the soft metal of the body of the shoe, and transmitting said strains to said body through its wider edge, whereby said strains are received by the narrow edge of the strip and are distributed over an extensive portion of said body by the wide inclosed edge of said wearing strip.

4. A horse-shoe having a body of relatively soft metal which furnishes the seat of the shoe, and has an outwardly inclining bottom face, and an inwardly inclining front face, said faces meeting and forming an angle at the sole of the shoe, and said shoe having a hard metal wearing strip which is exposed at the angle formed by said bottom and front faces at its lower edge, and inclosed in the soft metal of said body at its upper edge, said wearing strip receiving at its lower exposed edge at said angle the concussion due to the shoe striking the ground and transmitting such concussion through its inclosed upper edge to the interior of said body below said seat whereby said angle constitutes the striking point of the shoe and has a hard metal point

5. A horse shoe having a body of relatively soft metal which furnishes the seat of the shoe and has an outwardly inclined bottom face and an inwardly inclined front face, said faces forming an angle at the sole of the shoe near the front edge thereof, and said shoe also having a wearing strip exposed at the angle formed by said bottom and front faces at one edge, and inclosed in said body near said seat at its other edge, said strip inclining downwardly and outwardly from its portion nearest the seat to its exposed edge at said angle, whereby said strip constitutes the wearing portion of the shoe, and the strain when the shoe strikes the ground is received at said angle in the direction of the inclination of said strip.

6. A horse-shoe consisting of an aluminum body *a* having a continuous bearing seat F at top, and a downwardly inclining bottom face D, said shoe having a hard steel wearing strip 1 traversing said body throughout substantially the entire length thereof, said wearing strip exposed at its lower edge at the bottom face of said body and inclosed at its upper edge within said body near said seat, whereby the strains in use are received by said wearing strip, and by it transmitted to said body, and said body having nail holes at the inner side of said strip, through which holes the shoe can be nailed to the hoof of a horse, substantially as and for the purpose set forth.

7. A horse shoe having a body of aluminum, and a wearing strip of steel carried by said body, which strip when in position in the shoe inclines downwardly and outwardly and is exposed at the bottom face of the shoe where it constitutes the wearing portion thereof, whereby the strain due to the toe of the shoe striking the ground is received in the direction of the inclination of said strip and the steel of the strip protects the aluminum of the body from wear

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530,644. HORSESHOE. WILLIAM J. KENT, Brooklyn, N. Y. Filed Aug. 9, 1894. Serial No. 519,807. (No model.)

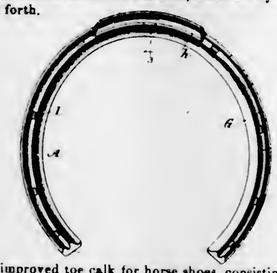
*Claim.*—1. A horse shoe A, having an outer front wall D a gripping edge E at the bottom of said wall, and a wall *a* on its under face, in combination with a calk B, having a bearing edge *e*, shoulder *f* embracing the wall D in front of said gripping edge E, a groove *g* receiving said gripping edge, and a face *h* embracing said wall *a*, said calk brazed to said shoe, substantially as and for the purpose set forth.

2. A horse shoe A, having a gripping edge E and a groove F on its bottom face, in combination with a toe calk B, having an edge *e*, a shoulder *f* embracing said gripping edge, a face *h*, and a shoulder *i* seating in said groove, said calk brazed to said shoe, substantially as and for the purpose set forth.

3. The improved toe calk for horse shoes, having a downwardly and forwardly inclined edge and upwardly and rearwardly inclined body, a shoulder on its upper face adapted to embrace the front face of the horse shoe, and a face at rear of this shoulder adapted to embrace the under face of a horse shoe, substantially as and for the purpose set forth.

4. The improved toe calk for horse shoes, consisting of a piece of sheet metal folded on itself and having at its fold a bearing edge, and above its fold faces adapted to fit and be attached to the bottom face of a horse shoe, substantially as and for the purpose set forth.

5. The improved toe calk for horse shoes, consisting of a piece of sheet metal, having flaps *l* and *m* folded together and constituting at their fold the bearing edge of the calk, and constituting above this edge faces for attachment to a horse shoe, substantially as and for the purpose set forth.



6. The improved toe calk for horse shoes, consisting of a piece of sheet metal having a bearing edge *e*, a shoulder *f*, a groove *g*, a face *h*, a shoulder *i*, and a tongue *j*, substantially as and for the purpose set forth

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530,645. MANUFACTURE OF ASBESTOS CEMENT, &c. ALBERT KUHLEWEIN, Berlin, Germany. Filed Apr. 10, 1894. Serial No. 507,059. (No specimens.)

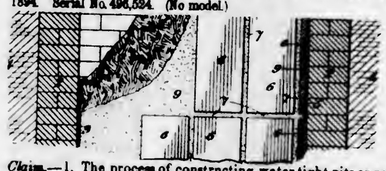
*Claim.*—1. A fire and weather proof asbestos cement composed of asbestos, gypsum, lime-powder, chalk, fire-clay, and graphite, substantially as described.

2. A fire and weather proof asbestos cement composed of asbestos, asbestine, gypsum, lime powder, chalk, fire clay, graphite and coke ashes, substantially in the proportions set forth.

3. A slab or other covering composed of asbestos, gypsum, lime powder, chalk, fire clay, graphite, and coke ashes with an embedded wire netting and a textile netting embedded on opposite sides of the wire netting, substantially as described

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530,646. PROCESS OF CONSTRUCTING WATER-TIGHT PITS OR VAULTS. WILLIAM MACLEOD, New York, N. Y. Filed Jan. 11, 1894. Serial No. 496,594. (No model.)



*Claim.*—1. The process of constructing water tight pits or vaults consisting in inclosing same by a wall of masonry, preparing asphalt in slabs, interposing between said slabs and wall fresh cement in applying the slabs in position thereon, and in heating the edges of said slabs and causing a union between same by the introduction of hot asphalt, substantially as and for the purpose set forth.

2. The process of constructing water tight pits or vaults consisting in inclosing the same by a wall of masonry, plastering said wall to give a rough finish, making a series of asphalt slabs, treating one side thereof and the plastered wall with a thin coat of fresh cement, and applying said slabs to said wall while cement on both is still fresh or unset, leaving a space between the edges of each of the slabs and the ones in proximity thereto, in heating the edges of the asphalt slabs after same are in place and causing a union between them by introducing hot asphalt, thus to form a continuous lining, as and for the purpose herein set forth.

3. The process of constructing water tight pits or vaults consisting in inclosing same by a wall of masonry, making a floor foundation of concrete or its equivalent, plastering or rendering the exposed surfaces of walls and floor, making slabs of asphalt and treating one side thereof with a thin coat of cement, treating the plastered wall with a similar coat, and applying the slabs thereto while the cement on both is fresh, in covering the floor with asphalt and forming a union between the asphalt on the floor and the slabs by heating the edges of the latter in proximity thereto, in forming a union between the edges of the slabs by heating the same and interposing hot asphalt all substantially as herein described and for the purpose set forth.

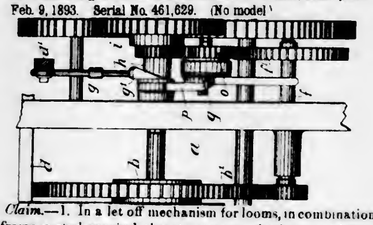
4. The herein described process of constructing water tight pits or vaults consisting in inclosing the sides of the same by a wall of masonry, filling in the bottom with broken stone to form a blind train, superposing a floor foundation of concrete or its equivalent, and lining the whole throughout with a continuous lining of asphalt by applying the same on the wall in the form of slabs on the surface of which as on the surface of the wall has been placed some fresh cement such application being made while said cement is fresh or unhardened, in forming a union between said slabs and each other, and between said slabs and said floor by heating the edges thereof and introducing hot asphalt all substantially as and for the purpose set forth.

5. The process of constructing a water tight wall consisting in first plastering or rendering same and allowing it to dry, in then making a series of asphalt plates or slabs and treating same with a coat of cement, in treating the plastered walls in a similar manner, in applying the asphalt plates to the walls a small distance away from each other while the cement is still fresh or unset and allowing same to set or harden, and the slabs consequently to adhere, and lastly in heating the edges of the asphalt slabs and introducing in the spaces between same hot asphalt, causing said slabs to merge into one continuous sheet of asphalt, substantially as and for the purpose set forth.

6. The process of constructing water tight pits or vaults consisting in inclosing the sides of the same by a wall of masonry, filling in the bottom with loose material as broken stone to form a blind drain, superposing a floor foundation of concrete or the like but permitting a communication to the drain through such foundation, of lining the pit or vault throughout with asphalt and lastly of hermetically sealing the communication with the blind drain, substantially as set forth.

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530,647. LET-OFF FOR LOOMS. CHARLES N. MARTIN, Willimantic, Conn., assignor of one-half to Arthur P. Benner, same place. Filed Feb. 9, 1893. Serial No. 461,629. (No model.)



*Claim.*—1. In a let off mechanism for looms, in combination with the frame, a stud secured thereto, a gear wheel mounted to rotate loosely on said stud and in mesh with the main driving gear of the loom, a clutch section located in the loosely mounted gear wheel and adapted to frictionally engage the same, a pinion secured to the clutch section and adapted to rotate the warp beam, the warp beam, a sliding collar mounted on the stud with one side engaging with the gear secured to the clutch section and its opposite side bearing a cam face, a wedge having one end adapted to engage the cam face of the collar and its opposite end connected with the whip roll, and the whip roll, all substantially as described.

2. In a let off mechanism for looms, in combination with the frame, a stud secured to the frame, a gear wheel mounted to rotate on the stud, a spring actuated clutch section loosely mounted on the stud and within said gear wheel and adapted to frictionally engage the same, a gear secured to the clutch section and adapted to rotate the warp beam, the warp beam, a collar loosely mounted on the stud with one side engaging the gear on the clutch section and the other side having a cam face, a wedge with one end resting against the cam face of the collar and the other end operatively connected with the whip roll, and the whip roll, all substantially as described.

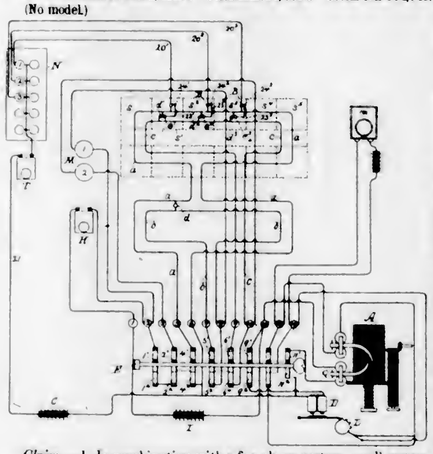
3. In a loom, in combination with the warp beam, a flanged clutch section having secured thereto a gear adapted to rotate the warp beam, a stud on which the clutch section is loosely mounted, a sliding collar mounted on the stud with one end engaging the gear secured to the clutch section and the other end bearing a cam face, a wedge having one end resting against the cam face of the collar and the other end operatively connected with the whip roll, the whip

roll, a gear wheel mounted to rotate on the stud, a socket on the inner side of said gear wheel containing an elastic disk, the elastic disk, a socket located in the clutch section, an elastic disk secured therein, a spring plate bearing against the elastic disk, springs seated upon the spring plate and normally pressing against a face plate, and the face plate adapted to engage the elastic disk on the gear mounted on the stud whereby the clutch sections are thrown into engagement by the downward movement of the wedge, all substantially as described.

4. In a let off mechanism for looms in combination with the frame, a gear wheel loosely mounted thereon and having a socket, an elastic disk located in the socket, a clutch section having an annular flange located in the socket in said gear, a socket located in the clutch section, an elastic disk located in the socket in the clutch section, a spring plate, and a face plate with springs interposed therebetween located in the socket in the clutch section whereby a yielding contact between the face plate and the elastic disk in the gear wheel is obtained, a shifting lever connected with and operated by the whip roll of the loom to throw the clutch sections into and out of operative engagement, and the whip roll, all substantially as described.

5. In a let off mechanism for looms, in combination with the clutch mechanism controlling the movement of the warp beam, the warp beam, an automatic friction brake comprising a gear wheel interposed between the clutch mechanism and the warp beam of the loom and operatively connected therewith, a cap located in said gear wheel and fixed to the stud upon which said wheel rotates, the stud, a friction plate interposed between the cap and bottom of the socket in the wheel, a socket piece secured to an arm supporting the said stud, the arm, a friction disk located in the socket piece, a spring plate resting against the friction disk, pins secured to said plate and projecting into sockets in the gear wheel, and springs located on said pins and thrusting against the spring plate and gear to force the latter outward and impinge the friction disks with a yielding pressure all substantially as described.

530,648. **FIRE-ALARM AND ANNUNCIATOR SYSTEM.** FREDRICK S. PALMER, Boston, Mass. Filed Mar. 24, 1894. Serial No. 504,940. (No model.)

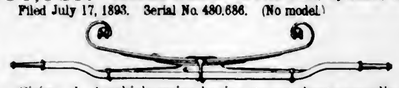


*Claim.*—1. In combination with a fire alarm system, a call system, and independent batteries for each system, two thermostats electrically united with the fire system, one thermostat being arranged to short-circuit the battery in the fire system through said system, the other thermostat to short-circuit the battery in the call system through the annunciator apparatus of said system, and through the fire system in part, substantially as described.

2. The combination with a fire alarm system having inner and outer wires, a battery therefor, and thermostats which short-circuit said wires, of a second call system, a battery therefor, annunciator apparatus, a wire which unites the outer wire of the fire system with the call system, wires from the call system to the several rooms of a building, and room thermostats which electrically join the fire alarm system with the individual room systems to operate the call system, substantially as stated.

3. A fire alarm system having inner floor wires, a single outer wire, a battery therefor, and thermostats which short-circuit the inner and outer wires in time of danger, combined with a call system, a battery for this sysem, wires to various rooms, annunciator apparatus, a wire therefrom to the battery, and thermostats in the rooms which are joined to outer fire alarm wire, and means to electrically unite such thermostats with individual call wires in their respective rooms, substantially as explained.

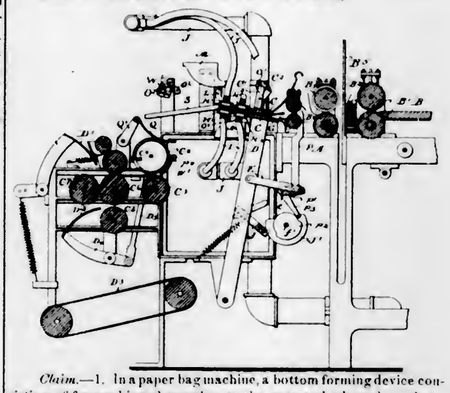
530,649. **VEHICLE-SPRING.** GEORGE PENN, Syracuse, N. Y. Filed July 17, 1893. Serial No. 480,686. (No model.)



*Claim.*—1. A vehicle spring having its ends bent upwardly and curved inwardly and downwardly and then bent horizontally to form a seat for the side bars of the vehicle, substantially as specified.

2. The combination with the axles of a vehicle, of the springs having their ends bent upwardly, inwardly, downwardly and then horizontally, the side bars supported by and rigidly clipped to the horizontal portions, and means for securing the springs and head block of the axle, as set forth.

530,650. **PAPER-BAG MACHINE.** WILLIAM R. PURVIS, Philadelphia, Pa., assignor to the Eastern Paper Bag Company, of Connecticut. Filed Dec. 15, 1893. Serial No. 493,726. (No model.)



*Claim.*—1. In a paper bag machine, a bottom forming device consisting of frames hinged together at the rear and adapted to clamp the paper tube section between their front edges, and movable suction formers carried by the frames and extending beyond their front edges.

2. In a paper bag machine, a bottom forming device consisting of frames hinged together at the rear and adapted to clamp the paper tube section between their front edges, a lock adapted to lock the upper frame in a raised position so as to admit the paper tube, and movable suction formers carried by the frames and extending beyond their front edges.

3. In a paper bag machine, a bottom forming device consisting of frames hinged together at the rear and adapted to clamp the paper tube section between their front edges, a lock adapted to lock the upper frame in a raised position so as to admit the paper tube, movable suction formers carried by the frames and extending beyond their front edges, and a trip to operate the lock and release the frame.

4. In a paper bag machine, a bottom forming device consisting of frames hinged together at the rear and adapted to clamp the paper tube section between their front edges, a lock adapted to lock the upper frame in a raised position so as to admit the paper tube, movable suction formers carried by the frames and extending beyond their front edges, a trip to operate the lock and release the frame, and a second trip to operate the lock and relock the frame.

5. In a paper bag machine, the combination of intermittently actuated clamping frames between which the paper tube to be formed is fed, movable suction formers located in front of the clamping frames for forming the ends of the tube when clamped by the frames, and intermittently separated feeding rollers to feed the paper tube sections between the clamping frames and release them when the frames are actuated to clamp the tube.

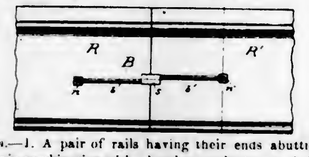
6. In a paper bag machine, the combination with bottom forming devices, for partially forming the bag bottom of stripping devices to strip the bag sections from the bottom forming devices, and a reciprocating smoothing plate arranged adjacent to the stripping devices to pass over the partially formed bag bottom as it is stripped from the bottom forming devices.

7. In a paper bag machine, the combination with the bottom forming devices, and the stripping roller C of the reciprocating smoothing plate Q arranged adjacent to the stripping roller C and adapted to move over the end of the paper tube as it is stripped from the bottom forming devices.

8. The bottom formers consisting of the hinged frames C, C suction formers H, H arm C', and dog $C^3$ adapted to engage and carried one by each frame C, C, the trip O' arranged to actuate the dog $C^3$ and disengage it from the arm C' and the trip $O^3$ to actuate the arm C' and re engage it with the dog $O^3$.



530,651. **RAIL BOND OR CONNECTOR.** CHARLES J. REED, Philadelphia, Pa., assignor to the Reed Electric Company, same place. Filed Sept. 20, 1894. Serial No. 523,559. (No model.)



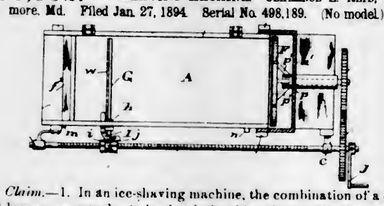
*Claim.*—1. A pair of rails having their ends abutting against each other in combination with a bond or conductor consisting of two separate parts secured by screw-threads in the lateral or bottom faces of the rails, said parts being afterward united together at their opposite ends so as to constitute a single bond or connector, substantially as described.

2. A rail bond or connector adapted to electrically connect a pair of abutting rails, said bond consisting of two separate parts screw-threaded into the lateral faces of the rails and afterward bent so that their opposite ends overlap each other, in combination with means for electrically uniting said ends together so as to constitute a single continuous bond.

3. A rail bond or connector consisting of two separate parts screw-threaded into the ends of the rails and then twisted together, and afterward united by solder.

4. A rail bond or connector consisting of two separate parts adapted to be screwed into the opposite ends of adjoining rails and afterward bent so as to overlap each other, in combination with means for holding the overlapping ends together, said holding means and the overlapping ends being united together by solder.

530,652. **ICE-SHAVING MACHINE.** CLARENCE E. REID, Baltimore, Md. Filed Jan. 27, 1894. Serial No. 498,189. (No model.)

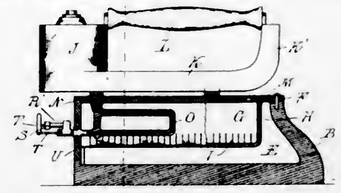


*Claim.*—1. In an ice-shaving machine, the combination of a covered box or receptacle, A, having in its side a longitudinal slot, *g*; a cutter-head mounted at one end of the box; a screw-threaded shaft journaled in bearings on the exterior of the receptacle and parallel with the said longitudinal slot; a follower in the receptacle; a nut on the said screw-shaft formed of two halves one of which is connected by an arm, *h*, extended through the longitudinal slot, to the said follower; two stops, *m*, *n*, on the box, one at each end of the longitudinal slot; and a yoke-lever which operates to close and open the two halves of the nut and thereby engage the nut with or disengage it from the said screw-shaft and which is automatically operated by the said two stops.

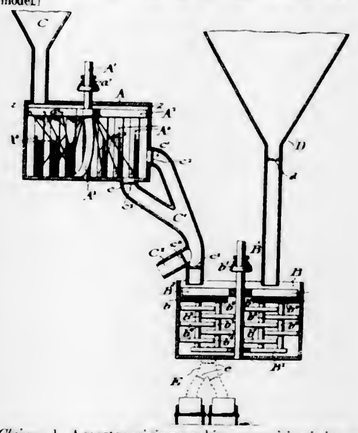
2. In an ice-shaving machine, the combination of a covered box or receptacle, A, having at one end a recess or compartment, *f*', and provided with a longitudinal slot, *g*, in its side; a screw-threaded shaft journaled on the exterior side of the box and parallel with the said longitudinal slot; a cutter-head mounted at that end of the box opposite the said compartment, *f*'; a follower within the box having an arm, *h*, extended through the longitudinal slot to the exterior, and said follower adapted to enter said compartment; and means coacting between the screw-shaft and arm, *h*, to move the follower back and forth within the receptacle.

530,653. **SAD-IRON.** BERNARD REIN, Detroit, Mich., assignor to the Union Heater Supply Company, same place. Filed Dec. 14, 1893. Serial No. 493,671. (No model.)

*Claim.*—In a self heating sad iron, the combination of the base having marginal flanges, a top plate fitting thereon and forming beneath a combustion chamber, the casing H depending from the top plate, slotted at the lower edge to form the burner, the end wall U formed integral with the top plate, and forming the rear wall for the burner and combustion chamber the valve casing at the end of the burner, the nipple R' thereon, the needle valve R sliding therein, the lever T for actuating the valve, the link T' pivoted to the valve casing and forming the fulcrum for the lever, the tank, the supply pipe therefrom, the generating pipe in the combustion chamber beside the burner, and a supporting connection between the generating pipe and the valve casing, substantially as described.



530,654. **MACHINE FOR MIXING MORTAR.** WILLIAM RENNYSON, Norristown, Pa. Filed Apr. 21, 1894. Serial No. 508,551. (No model.)



*Claim.*—1. A mortar mixing machine, comprising in its construction a lime slaker, a mixing tank located below the level of the slaker, and a valved conduit leading from one to the other, the connection of said conduit with the slaker being at the bottom thereof and also at the side above the bottom, substantially as described.

2. A mortar mixing machine comprising in its construction a lime slaker, a mixing tank located below the level of the slaker, a conduit having its upper end branched, one of said branches being connected to the bottom of the slaker and the other branch to the side thereof, the lower end of said conduit terminating above or within the mixer and having a branch terminating outside thereof, and a valve for each branch of the conduit, substantially as described.

3. A mortar mixing machine, comprising in its construction a lime slaker and a mixing tank below the level thereof, a valved conduit from one to the other, having its upper end branched and connected with the side and bottom of the slaker, a vertical shaft in the slaker and in the mixer, each shaft having stirring blades, and means such as clutches for connecting or disconnecting the shafts with operating means, substantially as described.

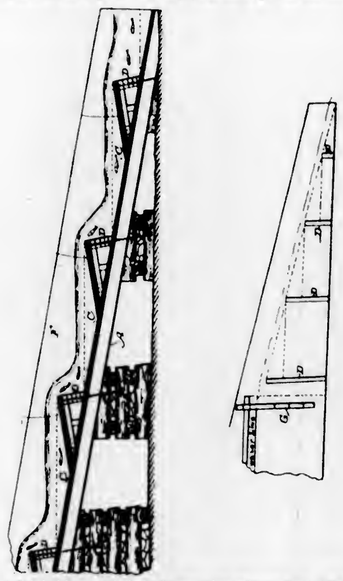
530,655. **FISH-LADDER.** JAMES A. RICHARDSON, San Francisco, Cal. Filed July 21, 1894. Serial No. 518,261. (No model.)

*Claim.*—1. A fish ladder consisting of an inclined imperforate apron extending from the top of the dam to the bed of the stream beneath, and having transverse approximately vertical obstructions at intervals in its surface whereby wells or pools of quiet water will be formed in the spaces beneath the obstructions while the rapid flow of water passes above them.

2. A fish ladder consisting of an inclined imperforate apron formed with offsets extending from the water above the dam or obstruction to that below it, transverse obstructing riffles comprising approximately vertical risers built across the apron whereby wells or pools of comparatively quiet water are formed beneath each riffle,

while the main body of water is allowed to flow over said pools without imparting its motion to the water therein.

3. A fish ladder consisting of an inclined imperforate apron, approximately vertical riffles extending across the same so as to provide spaces back of the riffles in which the water collects and backs up to form quiet wells or pools, while the main body of water flows over the top of the riffles, and inclined planes or aprons extending backwardly from the tops of the riffles adapted to protect the latter from driftwood and logs which may pass through the fish-way.

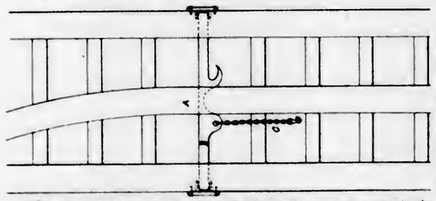


4. A fish ladder consisting of approximately vertical riffles placed at different levels in a channel or water-way, with their upper portions below the surface of the water whereby the spaces between the riffles form wells or pools of quiet water while the more rapid current flows over the top of the riffles, without disturbing the quiet pools.

5. A fish ladder consisting of riffles fixed transversely in a cut or channel in the dam or obstruction with their upper portions at different levels and below the surface of the water whereby wells or pools of quiet water are formed between the riffles while the more rapid current flows over the top of the riffles without disturbing the water of the pools, and a gate above the uppermost riffle.

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**530,656. APPARATUS FOR FASTENING FIRE-HOSE TO LADDERS.** EDWIN F. RICHARDSON, Boston, Mass. Filed Sept. 12, 1894. Serial No. 522,814. (No model.)

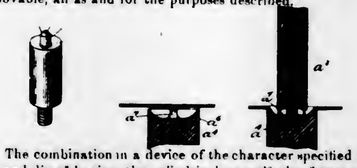


*Claim.*—A ladder rung made and adjusted so as to revolve in the sides of the ladder with a bend or depression in said rung, into which a hose can partially enter, with a flexible fastening attached at one side of such bend or depression, and so adjusted and arranged that it can be attached to the rung at the other side of said bend or depression after being passed over and around the hose, thereby holding it firmly and securely in position substantially as set forth.

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**530,657. DEVICE FOR ATTACHING MEMBERS OF GLOVE OR OTHER FASTENINGS.** WILLIAM S. RICHARDSON, Boston, and JOSIAH R. CRANE and PORTER R. CRANE, Newton, Mass. Filed Dec. 17, 1891. Renewed Oct. 30, 1894. Serial No. 527,495. (No model.)

*Claim.*—1. The combination in a device of the character specified of a holder for the section of the fastener having a rivet or eyelet, said holder provided with a concave top shaped substantially as described to support the said section and center the rivet or eyelet, with a holder and die for the other section of the fastener, having means for supporting and centering the said member and a cylindrical post provided with a cylindrical centering point and frusto-conical turning die arranged in relation to the rivet or eyelet hole of the section to be held and attached thereby as specified, and mechanism for operating the two members, or dies, one of which is stationary and the other movable, all as and for the purposes described.



2. The combination in a device of the character specified of the holder and die $a^8$ having the cylindrical post $a^{10}$, the frusto-conical turning die $a^{12}$ and the cylindrical centering point $a^{14}$ with the holder $a^4$ having the concave centering recess $a^5$ all arranged for conjoint use in the attachment of the sections of a fastening to a fabric and without first making a hole therein, as and for the purposes described.

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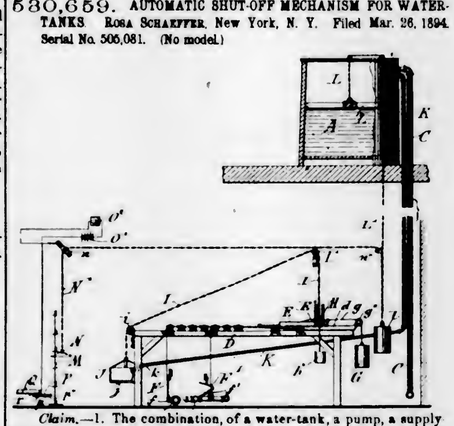
**530,658. FOOT-GUARD FOR RAILWAY-FROGS.** MICHAEL RILEY, London, Ohio. Filed Aug. 11, 1893. Serial No. 482,903. (No model.)



*Claim.*—In a foot guard or filling plate for railway frogs the combination with the converging rails and ties upon which the latter are supported, of the angular filling plate $d$ adapted to fit as described between said converging rails, spike holes in said plate, spikes passing loosely therethrough and into said ties and springs between said plates and ties, substantially as and for the purpose specified.

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**530,659. AUTOMATIC SHUT-OFF MECHANISM FOR WATER-TANKS.** ROSA SCHAEFFER, New York, N. Y. Filed Mar. 26, 1894. Serial No. 505,081. (No model.)



*Claim.*—1. The combination, of a water-tank, a pump, a supply pipe leading from the pump to the tank, supply pipes for the pump, stop-cocks in all of said pipes, an overflow-pipe leading from the tank and provided with a discharge-nozzle, a suspended receptacle located below said discharge-nozzle, a slide provided with a shoulder, means for operating the slide, a latch extending transversely of said slide and adapted to engage said shoulder, a connection between the receptacle and latch, and means interposed between the slide and the stop-cocks whereby the same may be operated when the latch is disengaged from the slide, substantially as set forth.

2. The combination, of a water-tank, a pump, a supply-pipe leading from the pump to the tank, supply-pipes for the pump, stop-cocks in all of said pipes, an overflow-pipe leading from the tank and provided with a discharge-nozzle, a suspended receptacle located below said discharge-nozzle, a slide, a weight, a chain connecting the latter to the slide, a pulley over which the chain passes, a latch adapted to engage said slide, a connection between the receptacle and latch, means interposed between the slide and the stop-cocks, whereby the same may be operated when the latch is disengaged from the slide, and a pull-chain connected with the slide, for resetting the same, substantially as set forth.

3. The combination of a water tank, a pump, a supply-pipe leading from the pump to the tank, supply-pipes for the pump, stop-cocks in all of said pipes, an overflow-pipe leading from the tank and provided with a discharge-nozzle, a perforated receptacle located below said discharge-nozzle, a chain for suspending said receptacle, a pulley over which said chain passes, a pivoted latch connected with said chain, means for depressing the latch, a slide provided with a shoulder adapted to be engaged by said latch, means for operating the slide, and means interposed between the slide and the stop-cocks, whereby the same may be operated when the latch is disengaged from the slide, substantially as set forth.



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**530,660. SASH-HOLDER.** GEORGE E. SCHAIBER, Saline, Mich. Filed Dec. 19, 1893. Serial No. 494,134. (No model.)



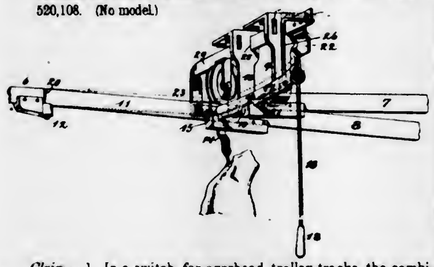
*Claim.*—1. A sash holder consisting of a spring having one edge bent back at an incline and a curved spreading extension and securing means engaging the extension for varying the pitch of the bent edge, substantially as described.

2. In a window, the combination with a frame the stop and sash, the latter having a beveled side edge, of a fastener consisting of a substantially V-shaped spring interposed between the sash and frame with its apex adjacent to the stop, and arranged to press outwardly from the frame in the direction of and against the beveled edge of the sash whereby the spring will force the sash against the stop, substantially as described.

3. A sash-holding spring, consisting of a strip of metal having its edge bent back to form a substantially V-shaped holding portion, the outer edge of the bent back portion being turned up to form a stop, and a securing means passing through the strip at a point beyond the V-shaped section, substantially as described.

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**530,661. SWITCH FOR OVERHEAD-TROLLEY TRACKS.** CHARLES G. SCHMIDT, Cincinnati, Ohio. Filed Aug. 13, 1894. Serial No. 520,108. (No model.)



*Claim.*—1. In a switch for overhead trolley-tracks, the combination of the branch-tracks 7, 8, the hangers supporting them,—provided with brackets 15, and flanges 16, the switch 11 hinged to the main-track in a manner to permit a limited vertical movement in addition to its lateral swing, and an arm 17 rigidly secured to the switch, said arm provided with notches 19 in its lower edge and so located as to be in all positions above flanges 16, to enable notches 19, which are properly located, to engage with them for the purpose of locking the switch in position.

2. In a switch for overhead trolley-tracks, the combination of the switch 11, hinged to the main-track, the branch-tracks 7 and 8, the hangers supporting them, each provided with a support for the free swinging end of the switch to rest on when in alignment with either track, a guide-bar 24, guided and supported by and on these hangers, which support the switch-and track-ends, guards 22, and 23, carried by the guide-bar and an operative connection between this latter and the switch.

3. In a switch for overhead trolley-tracks, the combination of the branch-tracks, 7, 8, the hangers supporting them, the switch 11 hinged to the main track, arm 17 rigidly secured to the switch, guards 22 and 23, to close the open track ends, a guide-bar 24, guided by and on the hangers, and which guide bar carries the guards and an operative connection between arm 17 and the guide-bar, whereby the latter is caused to move with the switch.

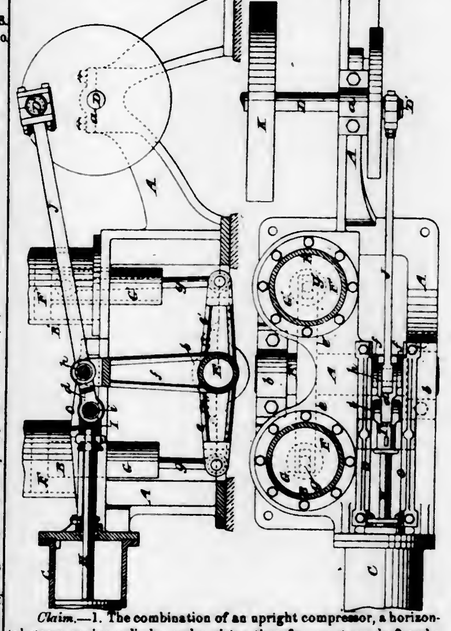
4. In a switch for overhead trolley-tracks, the combination of the branch-tracks 7, 8, the hangers supporting them, provided with brackets 15 and flanges 16, the switch 11, hinged to the main track in a manner to permit a limited vertical movement in addition to its lateral swing, guards 22 and 23, to close the open-track ends, a guide-bar 24, guided by and on the hangers and carrying the guards, an arm 17 rigidly secured to the switch, and provided with notches 19 in its lower edge and so located as to be in all positions above flanges 16, to enable notches 19 to engage with said flanges for the purpose of locking the switch, as well as the guards in position, an operative connection between arm 17 and the guide-bar whereby the latter is caused to move with the switch and a handle to operate the latter from below.

5. In a switch for overhead trolley-tracks, the combination of the branch-tracks 7, 8, the hangers supporting them, provided with brackets 15, the switch 11 hinged to the main-track, arm 17 rigidly secured to the switch and so located thereon as to be in all positions of the switch above brackets 15, to support the switch-end in all its positions and during its operation, a handle 18 on arm 17 for the purpose of operating the switch from below, the guide-bar 24 moving in slots in the upper part of the hangers, and upright 26 which connects the guide bar to arm 17, whereby these three members form a frame 24, 26 and 17, to aid arm 17 in its function as a support for the switch in case the latter has missed its proper position.

6. A hanger for overhead trolley-tracks, provided with the upper horizontal part whereby it is secured in position, the vertical depending part which carries the support for the track-end and is bent inwardly at its lower end to bring the track sufficiently to one side to permit the trolleys to pass the vertical part of the hanger, said track-support being extended longitudinally, that is in the direction of the track and toward the switch to form a bracket 15 for the swinging end of the former to rest on, a flange 16 on said bracket to prevent the switch-end from passing beyond it, and a corresponding bracket and flange on the other side of the hanger, whereby said hanger becomes adapted to be put up on either side of the track to clear the depending brackets of the trolleys, no matter on what side of the track they travel.

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**530,662. AIR-COMPRESSOR.** HENRY C. SERGEANT, Westfield, N. J., assignor to the Ingersoll-Sergeant Drill Company, New York, N. Y. Filed Nov. 18, 1893. Serial No. 491,306. (No model.)



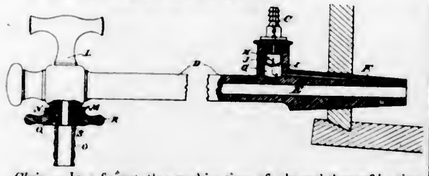
*Claim.*—1. The combination of an upright compressor, a horizontal steam engine cylinder and a piston therefor, a rotary shaft and a crank and fly-wheel thereon, a connecting-rod, and a bell-crank one arm of which is connected directly with the rod of the compressor

piston and another arm of which is connected in one direction with the engine piston rod and also connected in the opposite direction by means of the connecting rod with the crank on the rotary shaft, all substantially as herein set forth.

2. The combination of an upright compressor, a horizontal steam engine the piston-rod of which is furnished with a cross-head, guides for said cross-head, a crank-shaft, crank and fly-wheel for said engine, a bell-crank one arm of which projects laterally and is connected directly with the compressor piston-rod and the other arm of which projects upwardly directly into alignment with the engine piston-rod, a connecting-rod connecting the last mentioned arm on one side with the engine crank, and a link in line with the engine piston-rod connecting the said last mentioned arm on its opposite side with the cross-head, all substantially as herein set forth.

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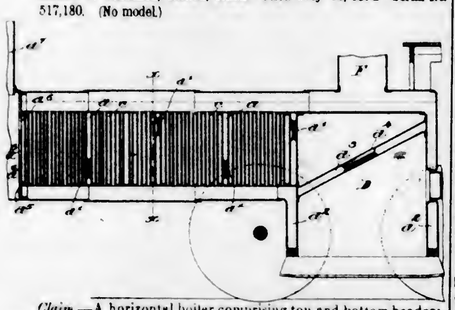
530,663. FAUCET. ALBERT C. SHAW, San Francisco, Cal. Filed Jan. 20, 1894. Serial No. 497,544. (No model.)



*Claim.*—In a faucet, the combination, of a barrel thereof having a main discharge passage and a chambered extension provided with exterior threads, the nuts fitted in said chamber, the connection O for the delivery pipe, having a flange at its upper end adapted to fit under the lower end of said chamber and to make a tight joint therewith, and a handled nut threaded upon the exterior of the extension of the faucet and having a flange Q at its lower end adapted to pass under the flange of the connection O whereby when the nut is screwed into place the flange thereof forces the flange Q closely against the chamber and forms a tight joint.

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530,664. WATER-TUBE BOILER. DAVID SMITH, Wellesley, and HENRY P. GOLDRICK, Natick, Mass. Filed July 11, 1894. Serial No. 517,180. (No model.)



*Claim.*—A horizontal boiler comprising top and bottom headers, the former having a steam space above the water-level, water tubes connecting said headers, and water partitions interposed between sections of the tubes through which water may circulate from one header to the other, said water partitions being provided with smoke openings staggered in successive partitions to cause the products of combustion to pursue a continuous course and to thereby more effectually impinge upon and heat the faces of said partitions, substantially as described.

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530,665. DUPLICATE-WHIST APPARATUS. WILLIAM SOWDON, New York, N. Y. Filed Apr. 22, 1893. Serial No. 471,469. (No model.)

*Claim.*—1. The combination with a game box divided into two or more compartments adapted to hold one or more packs of cards, of a rest consisting of a flat piece having an angular extension at one end thereof, so constructed that it may be used to lift the packs from the box and adapted to support the separate packs of cards in the several compartments in an inclined position, substantially as set forth.

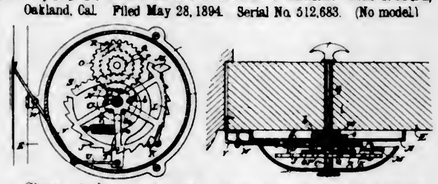
2. An apparatus for use in games of cards consisting of a box or receptacle divided into separate compartments, dividers to separate the different hands of cards, and rests each consisting of a flat piece having an angular extension at one end thereof so constructed that it may be used to lift the packs of cards from the box, said rests being adapted to support the separate packs and dividers in the several compartments in an inclined position, substantially as set forth.

3. In a box for use in games of cards, the rest consisting of the flat portions *a*, the angular extension *b* and the upper rim *c*, said rest being adapted to lift the packs of cards from the box and to support the packs of cards in an inclined position, substantially as set forth.



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530,666. DOOR-BELL AND BURGLAR-ALARM. JOHN T. STONE, Oakland, Cal. Filed May 28, 1894. Serial No. 512,683. (No model.)



*Claim.*—1. In an alarm bell, a gong, a hammer, and an escapement by which the hammer is actuated to strike the gong, an escapement wheel mounted upon a central shaft, gears by which said wheel is turned in one direction, a ratchet mechanism by which the main gearing is connected with a pinion when turned in one direction and the pinion is allowed to move freely in the opposite direction, a segmental rack lever engaging said pinion, a diagonally fulcrumed lever fulcrumed between its opposite ends, having one of said ends connected with the rack lever and the opposite end adapted to engage the door jamb whereby said segmental rack is moved when the door is closed, and a spring by which the rack is returned and the escapement is rotated so as to operate the hammer when the door is opened.

2. The combination in an alarm bell of a gong, a hammer, and an escapement by which said hammer is caused to continuously strike the gong, a pinion mounted upon the shaft of the escapement wheel, a gear engaging said pinion, a ratchet and pinion turnable together and a spring pawl fulcrumed upon the gear to engage the ratchet when turned in one direction, and allow it to move freely in the opposite direction, a segmental rack engaging the pinion of the ratchet and fulcrumed at one side of the bell plate, a diagonally arranged lever fulcrumed between its opposite ends having one end connected with the arm of the rack, and the other engaging the door jamb whereby the motion of the parts is multiplied, and the segmental rack lever is actuated so as to turn the pinion and ratchet in one direction without moving the gear, a spring connected with the segmental rack lever whereby it is returned to its normal position and the gear and escapement mechanism are actuated.

3. The combination of an alarm bell and gong having a hammer, and escapement by which said hammer is caused to continuously strike the gong, a lever movable by the closing of the door, and a segmental rack, pinion, and ratchet, and gearing whereby the movement of the rack acts upon the escapement to actuate the hammer, a spindle passing through the door having a handle upon the outer end by which it may be turned, and a pawl and ratchet mechanism connected with said spindle whereby it is connected with the escapement mechanism when the handle is turned in one direction, and the bell is sounded independent of the alarm mechanism.

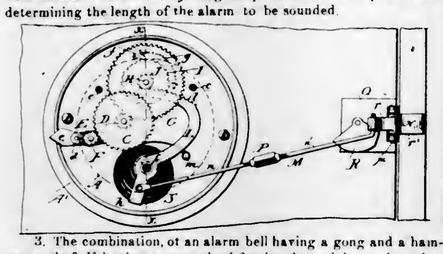
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530,667. DOOR-BELL AND BURGLAR-ALARM. JOHN T. STONE, Oakland, Cal. Filed Aug. 28, 1894. Serial No. 521,539. (No model.)

*Claim.*—1. The combination, with an alarm bell having a gong and hammer, and a train of gearing for operating said hammer, of a pivoted rack lever included in said train of gearing, a helical spring surrounding the axis of the rack lever having one end connected with the lever and the opposite end connected with a fixed portion of the bell casing, a pivoted trip lever having an arm adapted to be introduced between a fixed and movable surface, and a rod or bar connecting the opposite end of the trip lever with the rack lever, said rod or bar being adjustable in the direction of its length to limit the movement of the trip lever and the consequent winding of the spring and throw of the rack lever.



2. The combination, with an alarm having a gong and hammer, a lever having one end formed with a curved rack surface, a train of gearing comprising a gear engaging a pinion on the hammer shaft, and provided with a pinion D, a gear G to mesh with the pinion D, and a ratchet and pinion on the shaft of the gear G, said train of gearing being interposed between said lever and the hammer and adapted to be set in motion by said lever, a helical spring surrounding the axis of the lever and connected with the lever so that it may be wound by the movement of the same, a pivoted trip lever having an arm adapted to be introduced between the door and its jamb or casing, and a two-part rod connecting the opposite end of the trip lever with the rack lever for adjusting the position of the trip lever and determining the length of the alarm to be sounded.



3. The combination, of an alarm bell having a gong and a hammer, a shaft H having a gear wheel fixed to it, a pinion and ratchet loose on said shaft, a pawl uniting the gear wheel with the ratchet when the gear turns in one direction and slipping upon the ratchet when the gear moves in a reverse direction, gearing between said gear wheel and the hammer, a lever having a curved rack portion to engage the loose pinion, a helical spring surrounding the axis of and connected with the lever, a two-part adjustable rod extending from the lever, and a pivoted or hinged trip lever connected with the outer end of the rod whereby the position of the trip lever is regulated by the lengthening or shortening of the rod, and the duration of the alarm to be sounded is correspondingly regulated.

4. The combination, of an alarm bell with its gong and hammer, the shaft H with its fixed gear G and loose pinion and ratchet, a pawl between the gear and ratchet, other gearing between the gear G and the hammer, a lever having a segmental rack at one end engaging the loose pinion, a trip lever hinged or pivoted so that one of its arms may be introduced between the door and its jamb or casing, an adjustable connection between the other end of this trip lever and the rack lever whereby the position of the trip lever is regulated and the length of the alarm to be sounded is determined, a disk fixed on the shaft which carries the loose pinion and ratchet, a ratchet U loose on said shaft and adapted to slip upon its pawl when the gear G and its ratchet are united to move together, and to be united with the disk when the said gear and ratchet are caused to slip one on the other, and a handle connected with the ratchet U for operating it, whereby a call alarm may be sounded by the turning of the handle without affecting the automatic mechanism, and the latter mechanism may operate without disturbing the handle of the call alarm.

5. The combination, with an alarm bell and mechanism for operating the same comprising a train of gearing, a fulcrumed rack lever connected therewith, a trip lever between the door and its jamb or casing, and a connection between the trip lever and the rack lever, of a means contiguous to the trip lever for engaging and holding the same depressed and inoperative whereby the door may be opened and closed without affecting or sounding the alarm.

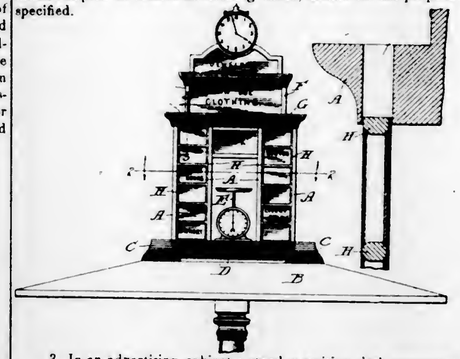
6. The combination with an alarm bell and mechanism for sounding an alarm, of a trip lever to be inserted between a movable and fixed structure, and a two-part rod and turnbuckle forming an adjustable connection between said lever and the alarm mechanism whereby the length of duration of the alarm is regulated.

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530,668. CABINET FOR ADVERTISING PURPOSES. GEORGE H. STRONG, Chicago, Ill. Filed Dec. 26, 1893. Serial No. 494,627. (No model.)

*Claim.*—1. An advertising cabinet comprising a frame having two or more sides or faces, arranged at right angles relative to each other, vertical guide ways or channels formed in each side or face, arranged in pairs, a panel frame adapted to be received removably in each pair of guide ways, said panel frames being provided with independent pockets or compartments, arranged horizontally therein, and adapted to receive advertising cards therein, as and for the purpose set forth.

2. In an advertising cabinet an upright frame or casing, comprising two or more pairs of vertically arranged guide ways, the contiguous or adjacent pairs being arranged angularly relative to each other forming an open framework, removable panels adapted to be received in said pairs of vertical guideways, each panel being provided with a series of transverse independent pockets or compartments adapted to receive advertising cards; as and for the purpose specified.

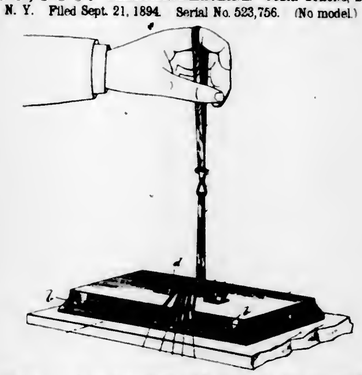


3. In an advertising cabinet a stand, a writing desk supported thereby, a cabinet supported by said desk, comprising an upright frame work, formed of two or more sides or faces arranged at right angles relative to each other, a coping at the top of each side or face forming a seat, a supplementary cabinet adapted to be received on said seat and to receive advertising cards, two or more sets of vertical guide ways formed in each face or side and through said coping in the first mentioned cabinet, a removable panel adapted to be received in each set of guide ways, each having a series of independent transverse pockets arranged therein, adapted to receive advertising cards, said supplementary cabinet arranged out of line with said vertical guide ways, as and for the purpose set forth.

4. In an advertising cabinet a writing desk having ink-wells and pen racks formed therein, and having a seat for a cabinet on the top thereof, a suitable support for said desk, in combination with an upright rectangular frame or casing having the sides or faces thereof cut away as shown, a coping arranged at the top of each side or face, and joining the edge portions and adapted to form a seat, a pair of vertical guide ways formed in each side or face near the edge thereof, said coping having passage ways communicating with said pairs of guide ways, a removable panel adapted to be received in each pair of guide ways, thus forming a recess or compartment in said frame work between said pairs of guide ways, each of said panels being provided with a series of transverse pockets or compartments adapted to receive advertising cards, as and for the purpose set forth.

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530,669. EXERCISING-MACHINE. JULIA STRONG, Brooklyn, N. Y. Filed Sept. 21, 1894. Serial No. 523,756. (No model.)



*Claim.*—1. In an exercising apparatus, the combination of a supporting table, an elastic band, a catch for detachably connecting the band to the table, and a band of inelastic flexible material adapted to be detachably connected to the elastic band, substantially as described.

2. In an exercising apparatus, the combination of a supporting table, a plurality of elastic bands of varying strength, a catch com-

mon to and adapted to receive all of said bands for detachably connecting them to the table, and a band of inelastic flexible material adapted to be detachably connected to any of said elastic bands, substantially as described.

3. In an exercising apparatus, the combination of a supporting table, an elastic band, a catch for detachably connecting the band to the table, and a band of inelastic flexible material of a size adapting it to receive the hand and adapted to be detachably connected to the elastic band and provided with means for adjusting it to vary the size of the loop of the band, substantially as described.

4. In an exercising apparatus, the combination of a supporting table, an elastic band, a catch for detachably connecting the band to the table, a band of inelastic flexible material adapted to be detachably connected to the elastic band, and a substantially rigid contact plate adapted to be introduced into the loop of the band and to engage and distend the same, substantially as described.

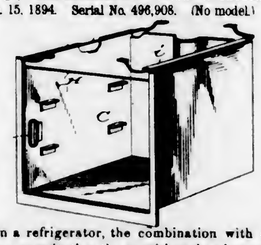
5. The combination of table *a*, rubber elastic bands *g*, *h*, &c., catch *c*, inelastic band *n*, and snap hook *o*, substantially as described.

6. The combination of a table *a*, rubber elastic bands *g*, *h*, &c., catch *c* hinged to the table, nut *e*, inelastic band *n*, and snap hook *o*, substantially as described.

7. The combination of table *a*, rubber elastic bands *g*, *h*, &c., catch *c*, inelastic band *n* provided with adjusting buckle *q*, and snap hook *o*, substantially as described.

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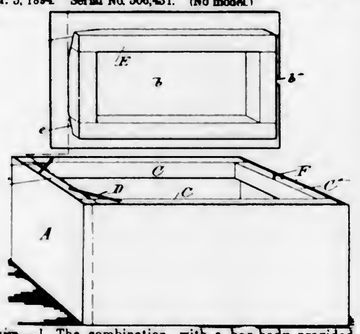
530,670. REFRIGERATOR. LAKIN C. TAYLOR, Kankakee, Ill. Filed Jan. 15, 1894. Serial No. 496,908. (No model.)



*Claim.*—In a refrigerator, the combination with a case, and a removable lining constituting the provision chamber open at the top and front side and braced by cross bar, of rods attached to the case and adapted to be engaged by portions of the said removable lining to support and steady the same in its sliding movements, substantially as set forth.

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530,671. PACKING-BOX. LEOPOLD WEISS, New York, N. Y. Filed Apr. 5, 1894. Serial No. 506,431. (No model.)



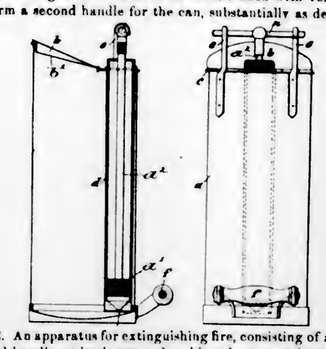
*Claim.*—1. The combination, with a box-body provided with corner-pieces at one end, of a lid comprising a cover-part and a frame secured to the latter, said frame having corner-recesses adapted to receive said corner-pieces, and means for securing the other ends of the body and lid, substantially as set forth.

2. The combination with a box body having an internal strengthening-frame, and diagonal wires in the rear corners of said frame, of a lid comprising a cover-part and a frame secured to the under side thereof and adapted to fit within the body-frame, said lid-frame having corner recesses adapted to receive said corner-pieces, and a fastening device for securing the lid to the body, substantially as set forth.

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530,672. FIRE-EXTINGUISHER. MARTIN WIELANDT, Berlin, Germany. Filed Nov. 17, 1893. Serial No. 491,199. (No model.) Patented in England Oct. 31, 1893, No. 20,552.

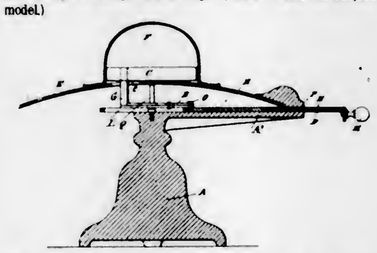
*Claim.*—1. An apparatus for extinguishing fire, consisting of a can, a handle secured thereto, a hinged cover at the top of the can, a syringe secured to the latter, an actuating handle for the syringe, and a locking device to hold said handle fixed with relation to and to form a second handle for the can, substantially as described.



2. An apparatus for extinguishing fire, consisting of a can having a fixed handle at its lower end, a hinged cover at its top, the said cover having an inclined inner surface, and the can having therein a hand syringe the piston rod of which carries a handle capable of being engaged with hooks on the can to so fix it that it serves as the other handle of the can, substantially as described.

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530,673. HAT-MEASURING APPARATUS. AUGUST ALLSTÄDT, Heidelberg, Germany. Filed July 18, 1894. Serial No. 517,850. (No model.)



*Claim.*—1. A device for measuring the size of hats, which comprises a supporting-stand, a slide rod guided in the same, a lazy-tong, one pivot of which is connected to the slide-rod and the other pivot to the stand, and a measuring band attached to the free ends of the lazy-tong, substantially as set forth.

2. A device for measuring the size of hats, which comprises a supporting-stand, having a horizontal bracket-arm, a slide-rod guided on said bracket-arm and provided with a slotted end, a lazy-tong, one pivot of which is attached to said slide-rod and the other pivot of which is attached to the stand and passes through said slot, an extensible measuring band, the ends of which are attached to the free ends of the lazy-tong, and a convex supporting-plate attached to the bracket-arm, substantially as set forth.

3. A device for measuring the size of hats, which comprises a supporting-stand, having a horizontal bracket arm, a slide-rod guided on said arm and provided with a scale at one end and a slot at the other end, a lazy-tong, one pivot of which is attached to the slide-rod, while the other pivot is attached to the stand and passes through said slot, a measuring band, the ends of which are attached to the free ends of said lazy-tong, and a convex supporting-plate attached to said bracket-arm, below the band, and resting on the center pivot of the stand, said convex plate being provided with an opening for the supporting-arms of the steel band, substantially as set forth.

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530,674. TROLLEY-WIRE AND SUPPORT THEREFOR. HERBERT H. ASHLEY, Springfield, Mass. Filed Aug. 25, 1894. Serial No. 521,767. (No model.)



*Claim.*—1. The improved trolley wire support which consists of the two parallel opposing longitudinally ranging cheek-plates suitably united at, and between, their upper portions whereby there is left clear between their opposite portions, at each end of the support, downwardly and endwise opening spaces, and having, near such ends, the slots, *a*, *a*, which incline in directions downwardly and toward the middle of, and which open to the lower edges of, the cheek-plates, and said cheek-plates having their lower edge portions continuous and unobstructed between the said slots, in combination with the trolley wires having provided at their end portions and above the longitudinal line thereof the lateral oppositely extending projections, *b*, *b*, which are adapted to have engagements in said inclined slots, all whereby the trolley wires will be detachably supported to lie along the level of the lower edges of the said cheek-plates, substantially as and for the purpose set forth.

2. The improved trolley-wire support consisting of the two parallel cheek-plates suitably united so as to have at their end portions clear, downwardly, and endwise opening spaces, and having at such end portions the rearwardly and downwardly inclined slots, *a*, *a*, in combination with the trolley wire having at its extremity the bar, *m*, with the upstanding longitudinal web which is provided with the laterally extending projections, *b*, *b*, all substantially as and for the purpose set forth.

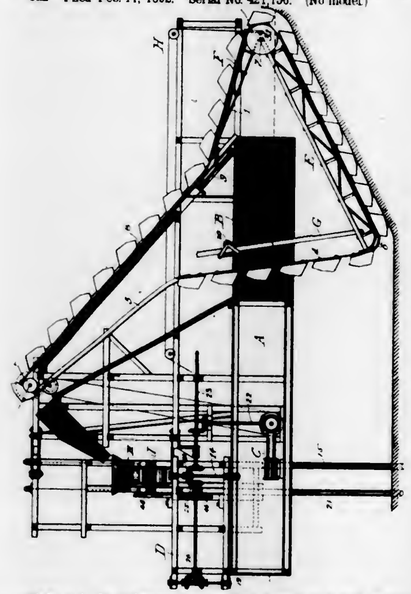
3. The improved trolley-wire support consisting of the two parallel united cheek-plates having the endwise and downwardly opening spaces therebetween, and having the inclined slots, *a*, *a*, in combination with the trolley-wire having the upset end, and the bar which is longitudinally channeled and provided with the wire embracing lips, $m^2$, $m^3$, and which has a rising member supporting the lateral projections, *b*, *b*, substantially as and for the purposes set forth.

4. The trolley support herein described, the same consisting of the opposing cheek members, *d*, *d*, having the downwardly and rearwardly inclined slots, *a*, *a*, and the end inclines, *k*, the central uniting web, *f*, and the webs, *g*, *g*, at and uniting the upper end portions of said cheek members, substantially as described.

5. The trolley support herein shown and described which consists of the opposing cheek members, *d*, *d*, having the downwardly and rearwardly inclined slots, *a*, *a*, and the end inclines, *k*, the central uniting web, *f*, provided with the upward support member, *h*, the webs, *g*, *g*, uniting the upper end portions of said cheek members, and having at such upper end portions the eyes, *i*, *i*, for the purposes set forth.

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530,675. DREDGING-MACHINE. JOHN A. BALL, Grass Valley, Cal. Filed Feb. 11, 1892. Serial No. 421,156. (No model.)



*Claim.*—1. In a dredging apparatus, a swinging hull carrying dredging machinery, in combination with an anchored bridge frame to which said hull is pivotally connected, substantially as set forth.

2. In a dredging apparatus, a swinging hull carrying dredging machinery, in combination with an anchored bridge frame to which said hull is pivotally connected, and means substantially as described for swinging the hull upon said pivot.

3. In a dredging apparatus, a hull carrying dredging machinery, an independent bridge frame pivotally connected to the hull and anchored at each side of the hull by movable spuds, in combination with two auxiliary spud frames pivoted at their inner ends at or near the center of oscillation, and means for bringing pressure to bear upon either auxiliary spud frame, and thereby cause one end of the bridge frame and the hull bodily, to move forward.

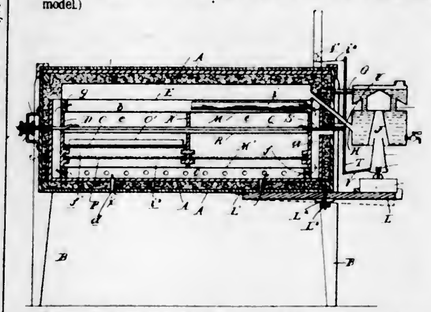
4. In a dredging apparatus, the combination of a hull, a bridge frame having anchoring spuds, and pivotally connected to the hull, a wheel or gipsy on the bridge frame, and a chain or rope passing around said wheel or gipsy and having each of its ends connected rigidly to the hull, and means for turning said wheel in either direction and thereby causing the hull to swing laterally independently of the anchored bridge frame, substantially as set forth.

5. An endless chain and bucket dredging mechanism mounted upon a sweeping or oscillating support, and an inclined face ladder combined with rigid channel tracks, rollers or wheels within the chains arranged to run in the channel tracks whereby said buckets are held to the work rigidly, and directed in a right line against vertical and lateral yielding, substantially as described.

6. In a dredging machine an endless carrier, comprising the endless chains composed of divided links, transverse rods connecting the two chains and extending to the outside faces thereof, wheels journaled upon the rods between the arms of the divided links, and carrying sections secured to the rods, substantially as described.

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530,676. INCUBATOR. MAJOR G. BENTON, Coldwater, and GEORGE J. NISSLY, Saline, Mich. Filed Mar. 19, 1894. Serial No. 504,180. (No model.)



*Claim.*—1. In an incubator, the combination with the outer casing of an inner casing forming vertical air spaces, a hot water tank on top of the inner casing, an egg chamber in the inner casing, a horizontal cloth partition constituting the top of the egg chamber, and forming between it and the under side of the hot water tank an air space, communicating with the air spaces between the outer and inner casing, substantially as described.

2. In an incubator, the combination with the outer casing, of an inner casing forming vertical air spaces between the walls of the outer and inner casing, a hot water tank on top of the inner casing, an egg chamber in the inner casing below the hot water tank—a cloth partition constituting the top wall of the egg chamber and forming an air space between it and the hot water tank, an egg tray in the egg chamber having a perforated bottom covered with cloth, a sand tray below the egg tray, air spaces being formed above and below the sand tray, and air passages connecting the same with the air spaces between the outer and inner casing, substantially as described.

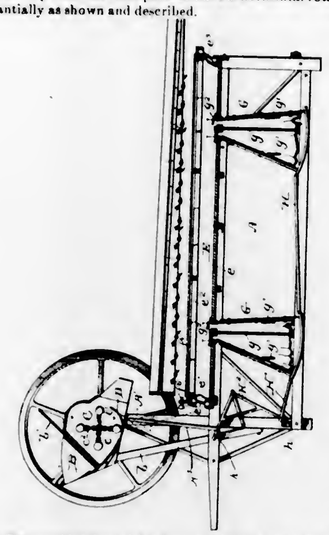
3. In an incubator, the combination with the outer casing and the egg chamber provided with heating and ventilating devices substantially as described, of the thermic bar Q extending longitudinally through the egg chamber the screw threaded extension S' thereof, the guide T' and adjusting nuts U' the vertical lever T at the end of the casing, the crank shaft W actuated thereby, the wick sleeve Z carried by the crank shaft W, and the damper *i* connected to and controlled by the lever T all arranged to operate substantially as described.

4. In an incubator, the combination with the outer casing heating tank secured in the top of said casing, of an inner casing, air spaces being formed between the outer and inner casing an egg chamber within the inner casing and perforated partition on top and bottom separating the egg chamber from the air spaces, substantially as described.

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530,677. GOLD SEPARATOR AND EXTRACTOR. JOHN B. BETTEGAR and JACOB SCHWARTZ, Albuquerque, N. Mex. Filed May 24, 1894. Serial No. 512,811. (No model.)

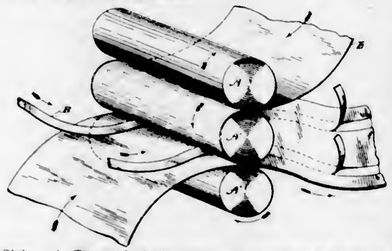
*Claim.*—1. In a concentrator and separator, the combination with the frame and hopper of the breaker or crusher thereon, the revolving drive shafts, the crank arms and gears mounted thereon, the vertical and horizontal shafts journaled alongside the frame, the gears mounted thereon, the short vertical shaft carrying crank arms and gears, the air chamber having double bellows, the adjustable connections between the drive shaft and one of the bellows, the connection between the bellows, the riffle plate carrying a screen and means for connecting the plate to the air chamber, and the movable supporting rods which permit the riffle plate to have a horizontal rotary motion, substantially as shown and described.



2. The combination with a hopper having a regulating gate, of a horizontal shaft *c*, passing through said hopper, the chains $c^3$ connected to said shaft and the balls *c'* carried at the end of each chain, and the screen D, arranged within the hopper and adjacent to the breaker, substantially as shown and described.

3. The combination with the frame A, carrying the bellows G, of the open frame $e^3$, the movable links $e^4$ supporting said frame $e^3$ the pins $f^3$, carried by said frame, a riffle plate resting upon the frame, the depending hooks $f^4$, carried by the riffle plate, the screw $f^6$, carried by the frame and adapted to bear upon the end of the riffle plate to hold the hooks in engagement with the pins, substantially as shown and described.

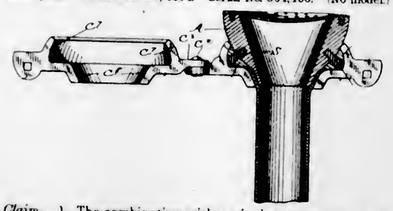
530,678. PROCESS OF MANUFACTURING SAMPLES OF HOSE, &c. WILLIAM F. BOWERS, San Francisco, Cal. Filed May 3, 1894. Serial No. 509,866. (No specimens.)



*Claim.*—1. The method of producing a sample piece for displaying the material used in the manufacture of hose, belting, packing, or similar articles containing rubber and woven or other fabric, which consists in coating the canvas sheet, or other fabric, with a layer of rubber and thence removing a portion of the rubber surface, whereby a free or uncoated portion of the canvas is exposed to view.

2. The method of producing a sample sheet or piece for displaying the quality of the material used in the manufacture of hose, belting, packing, or similar articles containing rubber and canvas or other woven fabric, which consists in placing upon the sheet of canvas or woven fabric a protecting strip which covers a portion of the canvas or woven material, coating the surface of the canvas or woven fabric and protecting strip with rubber, and thence removing the protecting strip and such portion of the rubber coating as adheres thereto, thereby leaving the portion of the canvas or woven fabric covered by the protecting strip free or exposed, whereby the material may be inspected.

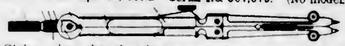
530,679. NIPPLE CONNECTION. THEODORE R. BRIEN, Hoosick Falls, N. Y., assignor of one-half to George O. Walrad and Louie J. Brien, same place. Filed Mar. 20, 1894. Serial No. 504,400. (No model.)



*Claim.*—1. The combination with a nipple having an exteriorly projecting annular flange, and made of relatively rigid material, of a nipple inclosing pipe made of a relatively yielding material, a hinge-coupling inclosing the nipple-flange and the nipple-inclosing portion of the pipe, and means for clamping the coupling upon such flange and pipe, substantially as described.

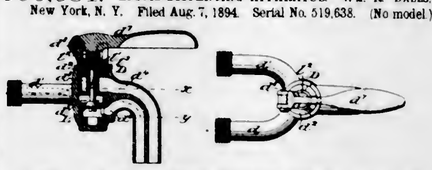
2. The combination with a conical flanged nipple having the side of the flange adjacent to the base of the nipple oppositely inclined to the inclined wall of the nipple, and a pipe having a nipple-inclosing flaring mouth, of a hinge-coupling provided with oppositely inclined inner surfaces adapted to engage respectively the inclined surface of the nipple-flange and the nipple-inclosing portion of the pipe, and means for clamping the coupling upon such flange and pipe, substantially as described.

530,680. DRAWING-INSTRUMENT. HARRISON COLE, Columbus, Ohio. Filed Apr. 16, 1894. Serial No. 507,679. (No model.)



*Claim.*—In a drawing instrument the combination with a compass or similar drawing instrument consisting of jointedly connected arms, a handle yoke embracing the head thereof as described, a central threaded opening in said yoke head, and a finger piece adjustably engaging with said threaded opening, of a brake shoe interposed between said yoke head and compass head and a stem on said brake shoe projecting within said yoke head opening as described, substantially as and for the purpose specified.

530,681. LIQUID-DISPENSING APPARATUS. WM. R. DALES, New York, N. Y. Filed Aug. 7, 1894. Serial No. 519,638. (No model.)



*Claim.*—1. A liquid dispensing apparatus, comprising a discharge conduit leading from a supply, a vacuum tank, a return conduit leading from the vacuum tank and means for controlling the discharge and return of the liquid, substantially as set forth.

2. A liquid dispensing apparatus, comprising a discharge conduit leading from a supply, a vacuum tank, a return conduit leading from the upper portion of the vacuum tank, a branch conduit leading from the bottom of the vacuum tank to the said return conduit and means for controlling the discharge and return of the liquid, substantially as set forth.

3. A liquid dispensing apparatus, comprising a discharge conduit leading from a supply, a vacuum tank, an auxiliary vacuum tank connected with the aforesaid vacuum tank, a return conduit leading from the first named vacuum tank and means for controlling the discharge and return of the liquid, substantially as set forth.

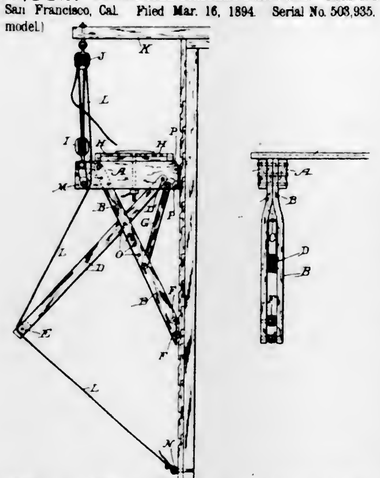
4. The faucet provided with a plurality of inlet conduits and a plurality of discharge conduits, a cut off for one of the conduits and a valve carried by said cut off, for controlling the opening and closing of another conduit, substantially as set forth.

5. The faucet provided with a plurality of inlet and discharge conduits, a turn plug interposed in the conduits and forming a cut off for one of them, and a valve seated in the turn plug and forming a cut off for another of the conduits, substantially as set forth.

6. The faucet provided with a plurality of inlet and discharge conduits, a turn plug interposed in the conduits and forming a cut off for one of the conduits, a valve seated in the turn plug and forming a cut off for another of the conduits, and a valve operating lever carried by the turn plug for operating the valve at any point during the turning of the plug, substantially as set forth.



530,682. ADJUSTABLE BRACKET-SCAFFOLD. REES O. DAVIS, San Francisco, Cal. Filed Mar. 16, 1894. Serial No. 503,935. (No model.)



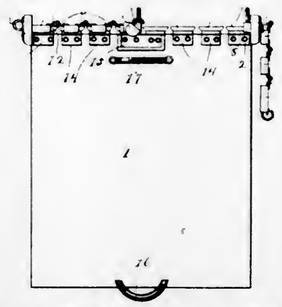
*Claim.*—1. A scaffolding consisting of timbers projecting away from the front of the building having a platform secured thereon, brace bars B fixed to the outer ends of the timbers, extending downwardly and inwardly to form contact with the building front, other bars D having their upper ends attached to the inner ends of the timbers A and crossing the timbers B, pulley blocks and hoisting ropes passing around said blocks, thence around the outer ends of the bars D to a point of attachment upon the building front below the horizontal plane of the brace bars and scaffolding as described.

2. An adjustable bracket scaffold consisting of horizontal timbers projecting away from the building front and having the platform secured thereto, brace bars having their outer ends fixed to the outer ends of the scaffold timbers, and the lower ends in contact with the building front at a point below the scaffolding, other bars having their upper ends pivoted to the inner ends of the scaffold timbers, and the outer ends projecting downwardly and outwardly beyond and below the front of the scaffold, devices by which these brace bars are adjustably united together where they cross each other, pulley blocks attached respectively to suspending timbers above and to the outer edge of the scaffold timbers, and a rope passing around said pulley blocks, thence around a pulley in the outer end of timbers A and the lower ends of the depending brace timbers D, and thence to a point of fastening upon the building front below the scaffolding as described.

3. The suspended scaffolding with the ropes and pulley blocks, diagonal braces attached respectively to the outer and inner ends of the scaffold timbers crossing and adjustably united with each other, anti-friction rollers in the inner ends of the scaffold timbers, and the diagonal braces which incline inwardly from their outer ends, whereby the friction of said contact ends with the building wall is relieved, and a pulley in the lower outer end of the diagonal bars D over which the pulley rope passes after leaving the scaffolding, and a fastening for the end of said rope below and interior to said pulley, substantially as described.

4. A scaffolding consisting of a frame work, pulleys and ropes passing around the pulleys whereby the scaffolding is suspended and adjusted, bars secured to the frame work and extending downwardly to form contact with the building front, other bars secured at one end and crossing the first named bars, and adjustably connected to the latter at the point of crossing, said second arm projecting beyond the edges of the scaffolding, and over which projecting arms the ropes are passed from the lower part of the scaffolding, and attachments for the ropes interior to the vertical plane of the suspension of the scaffold, whereby the rope acts to retain the scaffold against the side of the building.

530,683. MAIL-BAG. ALBERT F. GEORGE, Kansas City, Mo., assignor of one-half to Joseph H. Fink, same place. Filed Mar. 24, 1894. Serial No. 504,904. (No model.)



*Claim.*—1. In a mail bag, the combination with guides secured to the open end of the bag, of a sliding clasp for engaging the said guides, and a yoke or guiding frame secured to the bag and through which the sliding clasp passes when engaging with the guides, substantially as described.

2. In a mail bag, the combination with guides secured to the open end of the bag, of a sliding clasp for engaging with the said guides, an outer guiding frame or yoke through which the sliding clasp passes, and an inner curved guide over which the sliding clasp passes when engaging with the guides, substantially as described.

3. In a mail bag, the combination with guides secured to the open end of the bag, of a flexible sliding clasp for engaging with the said guides, the said sliding clasp being flexible vertically and horizontally, and means for preventing the flexing of the sliding clasp above a horizontal position, substantially as described.

4. In a mail bag, the combination with guides secured to the open end of the bag, of a sliding clasp for engaging with said guides, the sliding clasp consisting of a series of clamping plates hinged together so as to be movable in a vertical and horizontal plane with reference to contiguous plates, substantially as described.

5. In a mail bag, a sliding flexible clasp consisting in a series of clamping plates, a hinge connecting and pivoted to contignous clamping plates, whereby the clasp may be flexed in a vertical and a horizontal plane, substantially as described.

6. In a mail bag, a sliding flexible clasp consisting in a series of clamping plates, a hinge connecting and pivoted to contiguous plates, whereby the clasp may be flexed vertically and horizontally, and means for preventing the clasp being flexed vertically above a substantially horizontal position, substantially as described.

7. In a mail bag, the combination with a series of grooved guide plates secured to the open end of the bag, of a series of clamping plates for engaging with the grooved guide plates, a hinge connecting and pivoted to contiguous clamping plates, the hinge being provided with a stop for limiting the movement of the connected clamping plates, substantially as described.

8. In a mail bag, the combination with a series of guiding plates secured to the open end of the bag, of a series of clamping plates adapted to engage with the guiding plates, a hinge connecting contiguous plates, a yoke through which the clamping plates pass when engaging with the guiding plates, and means for releasably locking the guiding plates and clamping plates together, substantially as described.

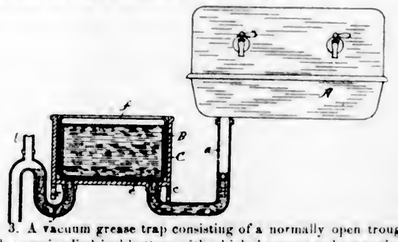
9. In a mail bag, the combination with guides secured to the open end of the bag, of two series of clamping plates, contiguous plates being vertically and horizontally hinged together, and adapted to engage with the guiding plates, a staple secured to the inner clamping plate of each series, and means provided at each side of the bag for guiding the clamping plate onto the guide, substantially as described.

530,684. GREASE-TRAP. MICHAEL J. GIBBONS, Dayton, Ohio. Filed July 2, 1894. Serial No. 516,400. (No model.)

*Claim.*—1. In a vacuum grease-trap, the combination of a trough with openings in the bottom, a cylinder removably placed in said trough having a longitudinal slot that normally lies above said openings, waste and sewer pipes attached to said openings whereby a water-seal is normally maintained, as herein specified.

2. In a vacuum grease trap, the combination with a trough provided with an open top, and a semi-cylindrical bottom with which the waste and sewer pipes connect; of a cylinder with inclosed ends, and a slot extending the length thereof; said slot adapted to register with the waste and sewer pipes, whereby grease and other matter

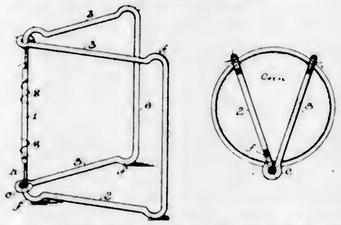
will be collected in said cylinder; and means for removing said cylinder from the trough, substantially as described.



3. A vacuum grease trap consisting of a normally open trough with a semi cylindrical bottom with which the waste and sewer pipes are connected; of a cylinder adapted to be placed in said trough, provided with a handle (*f*), and a longitudinal slot (*c*); said slot adapted to occupy a position over said waste and sewer pipes, whereby grease and other matter of a less specific gravity than water, are permitted to enter said cylinder; and the water to form a seal and pass off, free from said grease, substantially as described.

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530,685. COIN-HOLDER. JAMES W. GRANT, Bridgeport, Conn. Filed Feb. 19, 1894. Serial No. 500,607. (Model.)



*Claim.*—1. The angularly constructed or V-shaped skeleton coin holder formed of a single piece of wire, the sides of such angular construction forming the diverging arms of the holder, the free ends of two of said arms journaled at or near the extremity of the bar forming the apex of such angular construction, the other two arms of said holder integrally formed with said apex bar so that the necessary spring or resiliency to operate the holder will be located entirely in the said apex bar, as described and set forth.

2. The herein described V-shaped coin-holder formed of a single piece of wire, consisting of the apex bar 1, arms 2, 2 integral therewith, arms 3, 3 pivotally supported to said bar, as shown, indentations *A* in said bar for supporting said pivoted arms in place and further enhance the torsional qualities of such bar, projections *f* formed in said arms to provide supporting points or legs for the holder to maintain it in a vertical position, all arranged and constructed for the purpose set forth.

3. The V-shaped skeleton coin-holder formed of a single piece of wire consisting of the apex-bar 1, arms 2, 2 integral therewith, arms 3, 3 loosely pivoted to said bar, as shown, projections *f* in said arms serving as supporting legs for the holder when placed on end, the central portion of said arms depressed so as to give the holder an endwise expansion to accommodate different thickness of coin of the same denomination, as set forth.

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530,686. ROTARY MEASURE. JAMES GRAY, Chicago, Ill. Filed Feb. 20, 1893. Serial No. 463,023. (No model.)



*Claim.*—1. A rotary hand-propelled measuring-instrument, comprising a rotative measuring-wheel carrying a graduated scale and operated by tractional rotation, a frame-piece or arm on which said measuring-wheel is journaled, and a pointer rigidly secured to said frame and operating in conjunction with the graduated scale at the starting point of the measurement; said frame being formed for direct tractional contact with the surface to be measured and thus maintaining itself and its pointer in operatively fixed relation to the wheel during the measuring-operation, substantially as set forth.

2. A rotary measuring-instrument, comprising a rotative measuring-wheel carrying a primary and also a secondary graduated scale and operated by tractional rotation, a frame-piece or arm on which said wheel is journaled, an indicating arm or pointer rigidly secured to the frame and operating in conjunction with the primary scale, a train of gearing carried and actuated by the measuring-wheel, a rotative arbor also carried by the measuring-wheel and having a gear-wheel engaging the train, and a pointer carried by said arbor and operating in conjunction with the secondary scale; the frame-piece being formed for direct tractional contact with the surface to be measured and thus maintaining itself and its pointer in fixed operative relation to the measuring-wheel during the measuring-operation, substantially as set forth.

3. A rotary measuring-instrument, comprising a rotative measuring-wheel carrying a primary and also a secondary graduated scale and operating by tractional rotation, a frame-piece or arm, on which said wheel is journaled, formed for direct tractional contact with the surface to be measured and carrying a rigid pointer operating in conjunction with the primary scale, a train of gearing carried movably as a whole by the measuring-wheel, a rotative arbor also carried by the measuring-wheel and having a gear-wheel for disengageable connection with the gear-train, and a pointer movable with said arbor and operating in conjunction with the secondary scale, substantially as set forth.

4. A rotary measuring-instrument, comprising a rotative measuring-wheel carrying a primary and also a secondary graduated scale and operating by tractional rotation, a frame-piece or arm, on which said wheel is journaled, formed for direct tractional contact with the surface to be measured and carrying a rigid pointer operating in conjunction with the primary scale, a rotative arbor carried by the wheel and carrying a rigid pointer operating in conjunction with the secondary scale, and a gear-wheel also carried by said arbor, and a spring-pressed frame carried by the measuring-wheel and supporting a train of gearing one member of which engages the wheel on the secondary pointer arbor; said train-carrying frame being formed for engagement by hand to throw its train out of engagement with said arbor-wheel, substantially as set forth.

5. A rotary hand propelled measuring-instrument, comprising a rotative measuring-wheel, a frame-piece or arm essentially right angular in form, upon which said wheel is journaled, formed for direct tractional engagement with the surface to be measured, and a brake-lever pivoted upon said arm adjacent to the angle thereof and engaging the periphery of the wheel, substantially as set forth.

6. A rotary hand-propelled measuring-instrument, comprising a rotative measuring-wheel, a frame-piece or arm essentially right angular in form, upon which said wheel is journaled, formed for direct tractional engagement with the surface to be measured, and a spring-pressed brake-lever carried by said arm adjacent to the angle thereof and engaging the periphery of the wheel; said lever being formed with a handle or projection to disengage it from the wheel, substantially as set forth.

7. A rotary measuring-instrument, comprising a hollow rotative measuring-wheel carrying a primary and also a secondary graduated scale and operating by tractional rotation, a frame-piece or arm, on which said wheel is journaled, formed for direct tractional contact with the surface to be measured and carrying a rigid pointer operating in conjunction with the primary scale, a train of gearing carried movably as a whole within the measuring-wheel, a rotative arbor also carried by the measuring-wheel and having a gear-wheel, within said measuring-wheel, for disengageable connection with the gear-train, and a pointer movable with said arbor and operating in conjunction with the secondary scale, substantially as set forth.

8. A rotary measuring-instrument, comprising a hollow rotative measuring-wheel carrying a primary and also a secondary graduated scale and operating by tractional rotation, a frame-piece or arm, on which said wheel is journaled, formed for direct tractional contact with the surface to be measured and carrying a rigid pointer operating in conjunction with the primary scale, a rotative arbor carried by the wheel and having a rigid pointer operating in conjunction with the secondary scale, and a gear-wheel also carried by the arbor and located within the measuring-wheel, a spring-pressed frame located within the measuring-wheel and supporting a train of gearing one member of which engages the wheel on the secondary-pointer arbor; said train-carrying frame being formed for engagement by hand to throw its train out of engagement with said arbor-wheel, substantially as set forth.

9. A rotary hand-propelled measuring-instrument, comprising a main measuring-wheel, a frame in which the wheel is journaled, a pointer rigidly connected to said frame and extending substantially at right angles therewith to the periphery of the wheel; said frame being provided with a depending end having a traction roller or wheel to rest upon the surface to be measured, substantially as set forth.

10. A rotary measuring-instrument, comprising a measuring-wheel and a frame in which said wheel is mounted, said frame having a depending end-portion to bear upon the surface to be measured, a lever pivoted to said frame and means for passing said lever normally at one end against the measuring-wheel the lever terminating at its opposite end in such position as to be pressed to release the lever from braking contact with the wheel, substantially as set forth.

11. A rotary measuring-instrument, comprising a measuring-wheel, and a frame in which said wheel is mounted, bell-crank levers pivoted on opposite sides of the frame and connected together at one end, and a roller located at such point of connection and means for pressing the lever-roller normally against the periphery of the measuring-wheel, substantially as set forth.



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530,687. CUTTER-SCREW FOR DITCHING AND TILE-LAYING MACHINES. ODILON B. H. HANNEBORG, Urakong, Norway. Filed Aug. 31, 1894. Serial No. 521,873. (No model.)

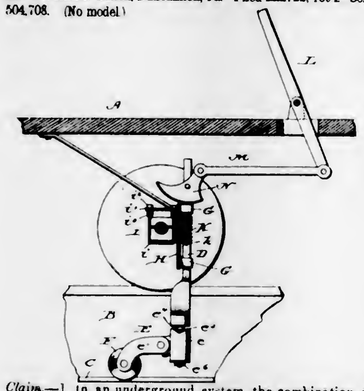


*Claim.*—1. In a ditching machine, a spiral cutter arranged vertically and having bearings for supporting it in position, the thread of said cutter being formed with an increasing pitch from the lower end upward, substantially as described.

2. In combination, the spiral cutter having a recessed lower end, the hollow pivot located in said recess, and the oil pipe extending up within said hollow pivot, substantially as described.

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530,688. CONDUIT-RAILWAY TROLLEY. JOSEPH C. HAWLEY and WILLIAM J. BLACK, Duncannon, Pa. Filed Mar. 22, 1894. Serial No. 504,708. (No model.)



*Claim.*—1. In an underground system, the combination with a depending standard, of a vertically movable spring actuated bracket arranged upon the lower end of said standard, and extending downward at an angle from said standard, said bracket carrying a contact wheel at its outer end, substantially as shown and described.

2. In an underground system, the combination with a depending standard of the guide frame, the hand lever, the link attached thereto and the cam shaped lever pivotally connected at its end with the link and pivoted intermediate its ends to the standard, the cam face of said lever being adapted to bear upon the guide frame whereby the standard is raised, substantially as shown and described.

3. In an underground system the combination with a depending standard of a reversible trolley-carrying bracket having a vertically movable spring actuated member, substantially as shown and described.

4. In an underground system the combination with the axle of the bearing secured thereto, the frame connected with the bearing, the vertically adjustable standard and the trolley bracket connected therewith, substantially as described.

5. In an underground system the combination with the depending standard of the guide frame, the spring encircling the standard within the limits of the said guide frame, a trolley bracket carried at the lower end of the standard, a cam shaped lever pivoted to the upper end, a hand lever and a link connecting the hand and cam levers whereby when said hand lever is operated the cam face contacts with the guide frame and raises the standard and trolley the spring acting to return the standard and trolley as soon as the hand lever is released, substantially as shown and described.

6. In an underground system, the combination with the axle, of the bearing formed in two sections, the binding straps, and cap plate, the interposed springs, the guide frame, and the depending standard working in the guides of said frame said standard carrying a trolley at its lower end, substantially as shown and described.

7. In an underground system, the combination with a standard, of a trolley bracket connected thereto, said bracket comprising a tubular bearing and an arm pivotally connected therewith, a trolley wheel and a spring attached to the tubular bearing and pressing upon the arms, substantially as shown and described.

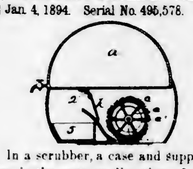
8. In an underground system, the combination with the standard reduced as described, of a trolley bracket having a tubular bearing, the spiral spring within said bearing and the nut for securing said parts in place, substantially as shown and described.

9. In an underground system, the combination with a standard having anti friction rollers thereon, the trolley bracket having a tubular bearing the upper edge of said bearing being cam shaped to engage the rollers and means for holding said bearing up against the latter, substantially as shown and described.

10. In an underground trolley the combination with the axle and bearing of the guide frame, the standard, the spring around the same, and levers for raising said standards, the trolley bracket having the pivotal arms, the trolley wheel, and the springs for holding the trolley upon the conductor and in a straight line, substantially as described.

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530,689. SCRUBBING-MACHINE. JOHN S. HITCHCOCK, Oneida, N. Y. Filed Jan. 4, 1894. Serial No. 496,576. (No model.)



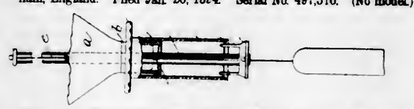
*Claim.*—1. In a scrubber, a case and supporting wheels, a rotating brush driven in the reverse direction of the supporting wheels by the rotations thereof, a water tank above the brush and means to discharge water therefrom in front of the brush, an inclined partition in front of the brush, a throat between it and the top of the case, a pan in the case in front of said partition, adapted to receive the water centrifugally thrown from said brush, and a gate adapted to be swung to open or close the throat, in combination.

2. A drier, comprising wheels journaled upon trunnions secured upon the ends of a pan, a stationary pan between said wheels a slotway in the top of the tank, a roller in said slot-way journaled in the ends of the tank, a cylinder of felt secured to said wheels and inclosing and parallel to said tank, a stretching roller journaled upon the lower side of said tank and bearing upon the inner side of said felt, a yoke having its arms secured to said trunnions, and a roller journaled in said yoke, above said felt and adapted to compress it, as it rotates, against the roller in the top of said pan, in combination.

3. A drier comprising a cylinder of absorbent material, circular rotatable heads upon which it is secured, a stationary pan within said cylinder, provided with stationary trunnions upon which said heads are journaled, a yoke secured to said trunnions, squeezing rollers between which said cylinder passes, journaled in said yoke and in a slotway in said pan, and a stretching roller journaled in the lower side of said pan and engaging with said cylinder, in combination.

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530,690. FUNNEL. HENRY G. JAMES, Corsham, near Chippenham, England. Filed Jan. 20, 1894. Serial No. 497,510. (No model.)

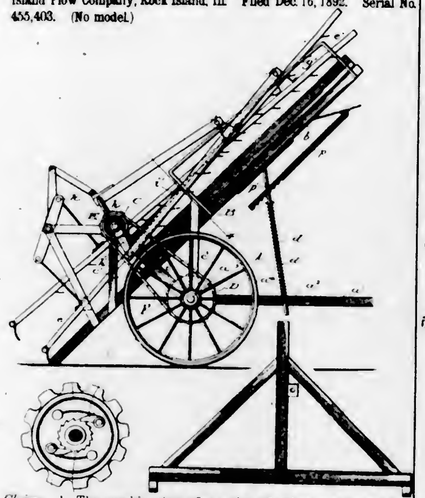


*Claim.*—1. The combination with the funnel terminating in the outlet tube *b*, of a sleeve within which said tube has vertical play, said sleeve being formed with a valve seat at the bottom, the stem secured to the tube *b*, and the valve attached to the lower end of said stem and operated by the vertical movement of the funnel in regard to the sleeve, substantially as described.

2. In combination with the funnel having a discharge tube *b*, a sleeve arranged to slide thereon, the valve arranged to be moved to

and from its seat by the movement of the discharge tube and sleeve in relation to each other, the float and indicator rod and means for guiding the indicating rod and also for connecting the valve with the movable part consisting of the tube through which the indicator rod passes said tube carrying fixed thereto the valve which is of annular ring form surrounding the tube, substantially as described.

530,691. HAY-LOADER. CARRIE A. JEWETT, Sand Spring, Iowa, (administratrix of Charles C. Jewett, deceased,) assignor to the Rock Island Plow Company, Rock Island, Ill. Filed Dec. 16, 1892. Serial No. 455,403. (No model.)



*Claim.*—1. The combination of a series of rake bars, means for reciprocating them longitudinally, and a separate and distinct mechanism for raising and lowering the same, said mechanism comprising a horizontal rock shaft above said rake bars, and connections between the same and the side of the shaft.

2. The combination of a series of rake bars, means for reciprocating them longitudinally, and a separate and distinct mechanism for raising and lowering their lower ends, said mechanism comprising a transverse rocking frame above the rake bars, and swinging hangers between the lower ends of the same and the frame.

3. The combination of the rake bars connected in two series pitmen connected respectively to said series of rake bars, cranks for operating the pitmen, a rock shaft extending transversely of the bars above the same, swinging hangers connecting the sides of the rock shaft with the bars, and means for rocking the shaft.

4. In a hay-loader, the combination of the rake-bars, the crank-shaft, and pitman connections for imparting reciprocating motion to the rake bars, a supporting-frame, swinging hanger connections between the frame and the rake-bars, and connections between the crank-shaft and said supporting frame for imparting a rocking motion to the same.

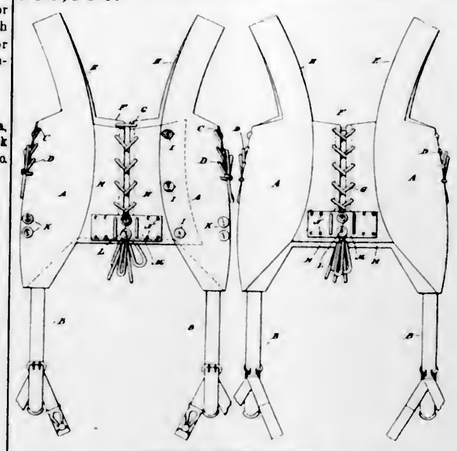
5. The combination of the rake-bars, the crank-shaft, and pitman connections for imparting reciprocating motion to the rake-bars, a pivoted frame having transverse supporting bars *k k*, link connections between the frame and crank-shaft for imparting a rocking motion to the frame, and swinging hanger connections between the transverse bars of the frame and the lower ends of the rake-bars to support the latter.

6. The combination of two series of rake-bars, the bars of one series alternating with those of the other series, a crank-shaft, and connections for reciprocating the two series of bars alternately, a transverse pivoted frame and connections for imparting a rocking motion thereto, and swinging hangers supporting one series of rake-bars from one side, and the other series from the other side, of said rocking frame.

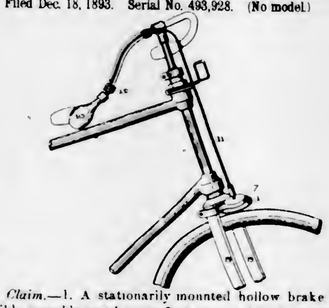
530,692. UNDERWAIST. FRANK KERN, Mattoon, Ill. Filed Oct. 10, 1894. Serial No. 525,688. (No model.)

*Claim.*—An underwaist divided vertically provided with means for adjustably securing the edges of the division, combined with a horizontally disposed strap bridging said division having fasteners upon the central portion thereof and means at each side of said fasteners for adjusting said strap whereby said fasteners may be brought to a central position between said division.

530,692.



530,693. BRAKE APPARATUS FOR CYCLES OR OTHER ROAD-VEHICLES. JOHN G. A. KITCHEN, Ardwick, near Manchester, England. Filed Dec. 18, 1893. Serial No. 493,928. (No model.)



*Claim.*—1. A stationarily mounted hollow brake shoe with a flexible movable tread or surface arranged to be moved toward or from the wheel into or out of operative braking position by variations of the air pressure within the hollow shoe, substantially as described.

2. A brake comprising a hollow brake shoe having a flexible or movable tread arranged to be forced against the wheel into braking position by expansion of the shoe, and operating means substantially as described to expand the shoe and apply the brake, substantially as described.

3. As a new article of manufacture, a pneumatic brake consisting of an air tight flexible tube terminating at one end in an air tight contractile hollow brake shoe and at the other end in an air tight collapsible vessel.

4. A bicycle having a stationary holder secured over one of the wheels, an expansible brake shoe carried by said holder, an air compressor on the frame, and a tube connecting said compressor and shoe so that the shoe can be expanded against the wheel tire by the compressor, substantially as described.

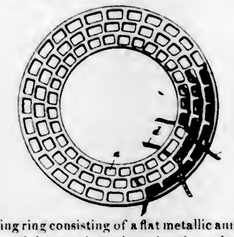
5. A brake composed of a suitably supported brake shoe composed of an expansible body arranged to be forced against the tire by the internal pressure within the shoe, and operating connections for said shoe composed of a collapsible body and a conduit therefrom to said shoe, substantially as described.

530,694. JOINT-MAKING PACKING. REINHOLD KRÖGER, Berlin, Germany. Filed Dec. 13, 1893. Serial No. 493,598. (No model.)

*Claim.*—1. A packing consisting of a flat metallic disk having holes therein from one to the other side, and a cord of soft fibrous material braided or threaded loosely through said holes, to be thereby detained in place and form a substantially continuous packing surface when subjected to pressure, substantially as described.

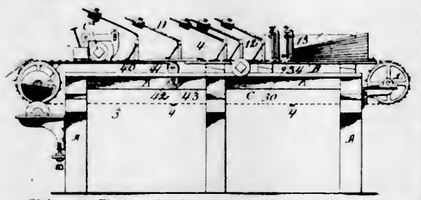
2. A packing ring consisting of a flat metallic annular core having a series of holes therein, and one or more cords of soft fibrous material threaded through said holes, between the inner and outer edges of the ring to form a substantially continuous annular surface of fibrous material, when subjected to pressure, leaving the metallic edges of the core exposed substantially as described.





3. A packing ring consisting of a flat metallic annular core having concentric series of elongated openings therein, and one or more cords of soft fibrous material threaded through said openings, between the inner and outer edges of the ring to fill the openings and also form a substantially continuous packing surface on the core when subjected to pressure, and leaving the metallic edges of the core exposed substantially as described.

530,695. SHINGLE-PLANING MACHINE. EDWARD H. KRUGER, Elizabeth City, N. C. Filed Mar. 12, 1894. Serial No. 503,324. (No model.)



*Claim.*—1. The combination with the pusher, of the selector, consisting of a vertically movable gate, said gate provided with spring fingers, constructed to raise the gate when flexed by the shingle substantially as described.

2. The selector described, consisting of a slotted gate having spring fingers secured to its face and extending lengthwise of the slots, said fingers constructed to raise the gate when flexed by the shingle, and normally extending below the plane of the lower edge of the gate, in combination with the pusher mechanism, substantially as described.

3. In a machine of the character described, the table, feed trough, and feeding pusher, the shingle supports and a starter acting to drop a shingle from the supports upon the table, and the selector operating to prevent the advance of more than one shingle, all combined substantially as described.

4. In combination with the pusher or feed mechanism, the selector or gravity gate having spring fingers as described, the fixed support for said gate, and an adjustable bearing piece by which the lowermost position of the gate relatively to said support may be determined, substantially as described.

5. In a machine of the character described, the feeding pusher, the trough, a support for one end of the shingle when resting in said trough and a cut-off, operated by said pusher to drop the other end of the shingle as the pusher moves forward, all substantially as described.

6. In a shingle planer, the shingle trough, the cut-off, and the dog constructed to engage the end of the shingle connected to said cut-off by an intermediate piece and the pusher arranged to operate said cut-off and dog, all combined substantially as described.

7. In a machine of the character described, the machine bed, feeding pusher, and trough, and the selector consisting of a vertically movable gate having a vertical face against which the ends of the shingles rest, said gate being raised by the tapered shingle as the same moves forward, all combined substantially as described.

8. In a machine of the character described, the work support, the pusher, and a movable dog actuated by the mechanism to engage the end of the lowermost remaining shingle and support the bunch of shingles when the bottom one is dropped, all combined substantially as described.

9. In a machine of the character described, the work support, the feeding pusher, and a starter constructed to drop first one end and then the other end of a shingle by which the bottom shingle is moved in front of the feeding pusher, and supports by which the other shingles are upheld while the bottom shingle is moved by the pusher.

10. In a machine of the character described, the feeding pusher, the cut off, and dog connected thereto, adapted to engage the end of the shingle and an intermediate lever in the path of movement of some part of the pusher, and engaging the cut-off, all combined substantially as described.

11. In a machine of the character described, the traveling pusher, the cut-off and its intermediate lever, and the dog in position to engage the end of the shingle and an intermediate yielding connection to said cut-off, all combined substantially as described.

12. In a machine of the character described, the pusher, the cut-off and its dog, to engage the end of the shingle, as described and the lever and weight connected to the cut-off and operating to restore the cut-off to normal position, all combined substantially as described.

13. In a machine of the character described, the feed trough, the pusher, the tip support, and driving gears whereby the tip support is moved at intervals in contrary direction to the pusher, all combined substantially as described.

14. In a machine of the character described, the feed trough, the pusher, the rotatable tip support consisting of toothed wheels connected to a shaft, the pinion on said shaft, and the gear engaging said pinion and having an arm in the path of movement of some part of the pusher, all combined substantially as described.

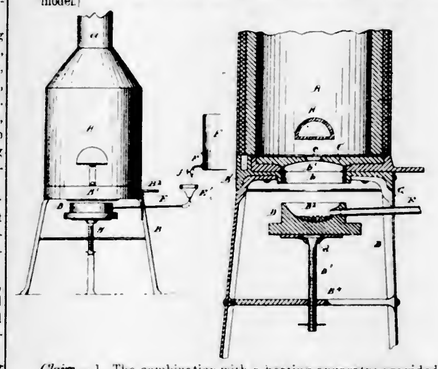
15. In a shingle planer, the pusher, the cut-off, and the movable tip support, the said pusher having projections in position to engage and operate the cut-off, and engage and operate the tip support successively, all combined substantially as described.

16. In a shingle planing machine, the compensating bed pivoted at one end and supported by eccentric disks at the other end, and the feeding pusher driven by a sprocket, said sprocket being connected as a driver to the eccentric disks, all in combination.

17. In a shingle planer, the compensating bed pivoted at one end, the eccentric disks supporting the other end, the anti-friction wheels on which the eccentrics rest, and the sprocket chain acting as a feeding pusher and a driver for the eccentrics, all combined substantially as described.

18. In a shingle planer, the compensating bed pivoted at one end, the eccentric disks supporting the other end, the vertically adjustable supports for said disks, and the feeding pusher acting as a driver for said disks, all combined substantially as described.

530,696. APPARATUS FOR FOCUSING FLAME. CHARLES H. LAND, Detroit, Mich. Filed Mar. 2, 1894. Serial No. 502,152. (No model.)



*Claim.*—1. The combination with a heating apparatus provided with a burner and a combustion chamber, of a removable perforated diaphragm located therebetween, substantially as set forth.

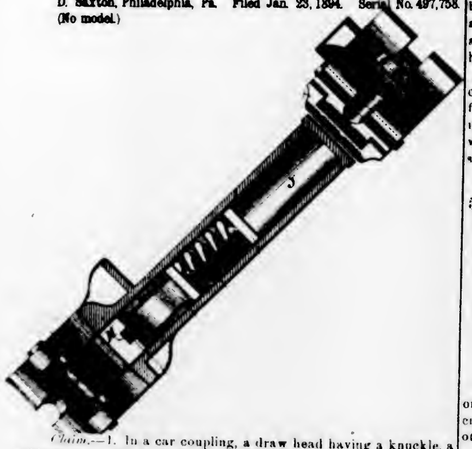
2. The combination with a heating apparatus provided with a burner, a combustion chamber, and a support therefor, of a removable perforated diaphragm located between the support and the combustion chamber, substantially as set forth.

3. The combination with a heating apparatus provided with a burner and a combustion chamber, of a removable slide, and a removable perforated diaphragm engaged with said slide, substantially as set forth.

4. The combination with a heating device of a combustion chamber, a removable perforated diaphragm at the base of said chamber, and a vertically adjustable burner located therebeneath, substantially as set forth.

5. The combination with a heating apparatus provided with a combustion chamber, of a removable perforated diaphragm located at the base of the combustion chamber, a vertically adjustable burner located beneath said diaphragm, a tubular supporting stem supporting the burner, and an air flue extended through the burner and communicating with the interior of said stem, substantially as set forth.

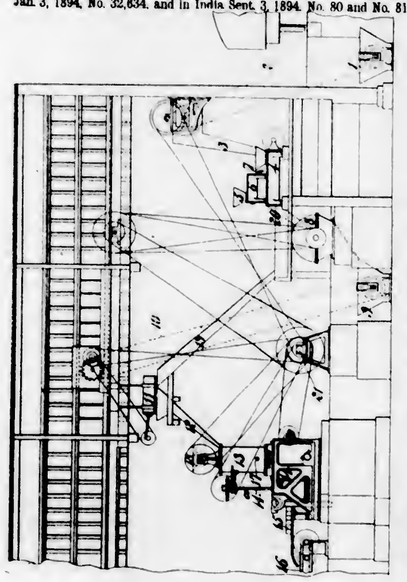
530,697. CAR-COUPLING. JONATHAN F. LATHAM, Paint Rock, Ala., (administrator of Ephraim Latham, deceased,) assignor to Lionel D. Saxton, Philadelphia, Pa. Filed Jan. 23, 1894. Serial No. 497,758. (No model.)



*Claim.*—1. In a car coupling, a draw head having a knuckle, a slide for controlling said knuckle, a swinging lever for withdrawing said slide, and an ear on the outside of the draw head, said lever passing freely through a slot in said slide, and slots in the sides of the draw head, and protruding through the latter at both ends, one end being pivotally connected with said ear, and the parts combined substantially as described.

2. A car coupling consisting of the draw head A, with the arm B, the knuckle C on said arm, the slide E adapted to interlock with the heel of said knuckle, the swinging lever M passing freely through the slot L in the slide, the ear N on the draw head, and the side slots Q, Q', in the wall of the draw bar, said lever having both ends protruding through said side slots outside of the draw bar, and having one end pivoted on said ear, the parts being combined substantially as described.

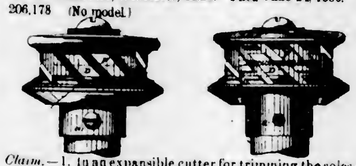
530,698. BLOCK OR BRIQUET OF FUEL. THOMAS W. LEE, London, England. Filed Jan. 25, 1893. Serial No. 459,695. (No specimens.) Patented in England Sept. 2, 1892, No. 15,748, and Jan. 7, 1893, No. 392; in Belgium Mar. 14, 1893, No. 103,828; in France Mar. 15, 1893, No. 228,634; in Spain June 26, 1893, No. 14,531; in Italy June 30, 1893, LXVII, 328; in Canada Oct. 6, 1893, No. 44,416; in Austria-Hungary Jan. 3, 1894, No. 32,634, and in India Sept. 3, 1894, No. 80 and No. 81.



*Claim.*—1. The process of manufacturing blocks or briquets of fuel which consists in intimately mixing in the dry state powdered carbonaceous fuel with a binding agent composed of organic material and caustic alkaline material, subjecting the mixture to the direct action of steam, and compressing the mixture while in a moist and heated condition into blocks or briquets substantially as described.

2. The process of manufacturing blocks or briquets of fuel which consists in intimately mixing in the dry state powdered carbonaceous fuel with a binding agent composed of flour and lime, subjecting the mixture to the direct action of steam, and compressing the mixture while in a moist and heated condition into blocks or briquets substantially as described.

530,699. CUTTER FOR TRIMMING SOLES OF BOOTS OR SHOES. JAMES J. MABRAY, Worcester, Mass. Filed June 24, 1886. Serial No. 206,178. (No model.)



*Claim.*—1. In an expansible cutter for trimming the soles of boots or shoes, a pair of telescopic tubes for protecting the interior of the cutter and a spring by which one of said tubes is pressed out of the other, substantially as described.

2. In a rotary cutter for trimming the soles of boots or shoes, composed of two halves capable of being expanded as described; the tubes *n* and *n'* and spring $n^3$ combined with said halves.

3. The combination in a cutter for trimming the soles of boots or shoes, of the tubes *n* and *n'* spring $n^3$ and pin $n^4$ in the tube *n* and entering a slot in the tube $n^3$.

530,700. RANGE-TANK. JAMES J. MALLEY, St. Louis, Mo., assignor of one-half to Henry J. Brinkenkamp, same place. Filed Apr. 16, 1894. Serial No. 507,882. (No model.)



*Claim.*—The improved range-tank, comprising the body 10 having a closed bottom and substantially vertical side and end walls the upper edges of which are first bent outward to about a right-angle to form wide horizontal flanges 13, 14 which are cut away at each corner of said body to form an angular space thereat, the cover 15 formed of a sheet of metal and having an angular-notch 17 in each corner thereof, the edges of the cover-sheet being bent down and inward to form grooves or channels which are engaged to the marginal-edges of said flanges 13, 14 on said body and compressed against the same, and the said flanges 13, 14 of the body and the seamed margin of said cover being then conjunctively bent downward at a point some distance from the upright walls of said body to form a projection both horizontally and obliquely outside the plane of the side-portions of said body, and presenting a substantial and finished appearance, and said cover having an aperture to afford access to the interior of said body, and a lid applied to said aperture, substantially as herein specified.

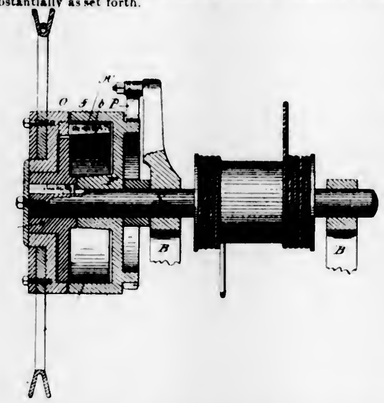
530,701. CLUTCH MECHANISM. LUTHER E. MANSFIELD, Brooklyn, N. Y. Filed Oct. 8, 1892. Serial No. 448,182. (No model.)

*Claim.*—1. The combination of a shaft, a pawl, a wheel mounted loosely upon said shaft, provided with ratchet teeth as set forth and an engaging surface, an operating part also loosely journaled upon said shaft, and an engaging band, connections between one end of said band and said shaft and connections between the other end of said band and the operating part, the engaging surface of said band being adapted to engage and release the engaging surface of the wheel, all substantially as set forth.

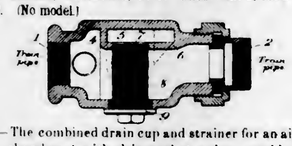
2. The combination of a shaft, a pawl, a wheel mounted loosely upon said shaft, provided with a friction surface and ratchet-teeth as set forth, an operating wheel also loosely mounted on said shaft and a friction band, connections between one end of said band and said shaft and connections between the other end of said band and the operating part, the friction surface being adapted to be moved toward and away from the friction surface of the wheel, all substantially as set forth.



3. The combination of a shaft, a pawl, a wheel loosely mounted thereon and provided with ratchet teeth and a friction surfaced crown extending from the face of said wheel and parallel to said shaft, an extension mounted rigidly upon said shaft and extending within and across the face of said crown, an operating wheel also loosely mounted upon said shaft and provided with an extension extending within and across the face of said crown and a friction band arranged within and having its face opposed to the inner face of said crown and its ends secured one to the extension rigidly secured to the shaft and the other to the extension extending from the operating wheel, all substantially as set forth.

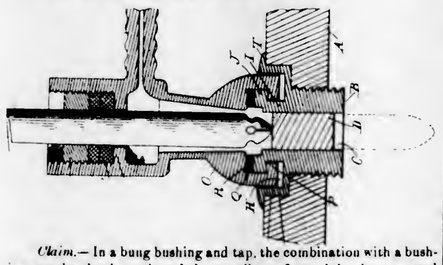


530,702. DRAIN-CUP AND STRAINER FOR AIR-PIPES. ALBERT P. MASSEY, Watertown, N. Y. Filed Mar. 2, 1894. Serial No. 502,062. (No model.)



*Claim.*—The combined drain cup and strainer for an air pipe consisting of a chamber 4 with drip pocket and removable plug 11, a strainer 8 attached to a removable cap 9, located in the upper part of chamber 4, and a chamber 5 open to the interior of the strainer, and having a connection for a branch air pipe, substantially as set forth.

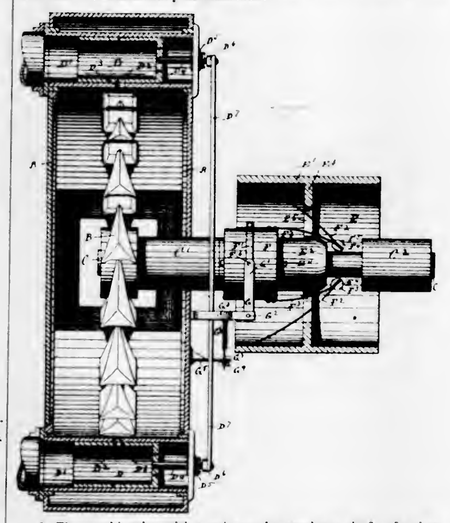
530,703. BUNG BUSHING AND TAP. JOHN MOHN, Detroit, Mich. Filed Aug. 28, 1894. Serial No. 521,477. (No model.)



*Claim.*—In a bung bushing and tap, the combination with a bushing member having a threaded centrally perforated shank, a recessed outer face, and a central projection I, in the recess having oppositely inclined coupling flanges J, on its sides spaced apart, a centrally apertured stuffing box having a bell-shaped coupling foot O, formed with inwardly extending lugs P, adapted to engage the flanges J, the packing R, between the bushing and box, the flange M, in the upper end of the box, the packing M', on the same, the nut N, in the upper end of the box, and the nipple S, substantially as described.

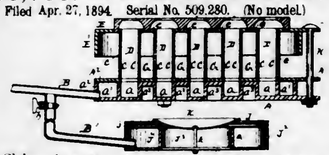
530,704. GOVERNOR. ALLEN D. MOORE, Montpelier, Vt. Filed Aug. 4, 1892. Serial No. 442,187. (No model.)

*Claim.*—1. The combination of a revolving shaft C and a pulley carried by said shaft, of a collar capable of sliding on said shaft, but having a spline connection therewith, a spring $F^3$ attached at one end to said sliding collar and a weight attached to its opposite end, said spring being arranged with its weighted end nearer the axis of said revolving shaft than its attached end, a blade spring $F^3$ connecting the weighted end of said spring $F^3$ with said pulley, whereby the centrifugal force applied to the weighted end of said spring by the rotation of said shaft will carry said weighted end away from the axis of the shaft and slide said collar, a pivoted yoke G engaging said sliding collar, an arm $G^4$ extending from said yoke, a rocking valve having a radial arm $D^6$ and a link connecting said radial arm $D^6$ with said arm $G^4$, substantially as described.



2. The combination with a valve and a revolving shaft, of a ring or collar rotated with said shaft; but capable of sliding thereon, a pulley attached to said shaft and inclosing said sliding ring, a blade spring having one end attached to said ring, a weight attached to the opposite end of said spring, said spring being curved so as to bring its weighted end nearest the axis of said shaft and a blade spring connecting the free end of said weighted spring with said pulley, so that when said curved spring is straightened, it will cause said sliding ring to move lengthwise said shaft and a pivoted yoke engaging said sliding ring, said yoke being operatively connected with said valve, substantially as described.

530,705. VAPOR-BURNER. EDWIN G. MUMMERY, Detroit, Mich. Filed Apr. 27, 1894. Serial No. 509,280. (No model.)

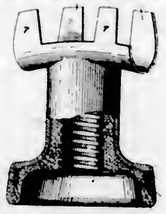


*Claim.*—In a vapor burner, the imperforate base provided with an outside channel *a'*, and a series of inside channels *a*, communicating at their ends with the outside one; the plate $A^3$, placed upon the top of the base and made to cover over the outside channel and provided with a slot or opening for each channel *a*; air inlet plates C, arranged upon the opposite edges of the slots and forming combustion chambers D and air chambers G, the flanged and slotted plate E forming a top for the combustion chambers, and the slotted plate F, raised above the plate E, so as to admit air to the flames, substantially as shown.

530,706. INSULATOR. LOUIS MCCARTHY, Boston, Mass. Filed Sept. 18, 1894. Serial No. 523,372. (No model.)

*Claim.*—1. An insulator comprising a metallic case having a downwardly projecting skirt with perforations therein, and a mass of insulating material applied to both the interior and exterior as well as the edge of said skirt and passing through said perforations, the edge portion of said skirt being embedded in the insulating material, substantially as described.

2 An insulator comprising a metallic case having at the lower edge thereof a downwardly projecting portion or skirt with perforations therein, a shoulder on the proximate portion of the said metallic case, and a mass of insulating material in which said downwardly projecting portion of the skirt is embedded and which is molded against the said shoulder, substantially as described.

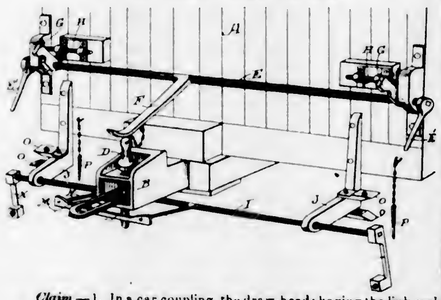


530,707. SHOE-CLEANER. WILLIAM A. MCCREERY and JOHN TAYLOR, Franklin, Ky. Filed May 14, 1894. Serial No. 511,248. (No model.)



*Claim.*—In a shoe-cleaning device of the kind described, the combination with the base or trough like member, the scraper and the longitudinally disposed brushes, of the spring bails, having securing arms of unequal length secured to the base, said arms ending in spring coils, said coils being connected by an intermediate vertically disposed bail-like portion secured to the backs of the brushes, all arranged substantially as shown, whereby the said brushes will be spring-pressed toward each other and held with their brush faces forced toward each other, and with their operating faces converging from the scraper end to the outer end, as and for the purposes described.

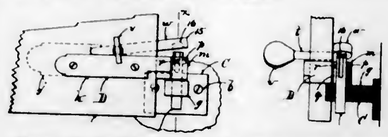
530,708. CAR COUPLING. JAMES MCDONOGH, San Francisco, Cal. Filed July 21, 1894. Serial No. 518,246. (No model.)



*Claim.*—1. In a car coupling, the draw-heads having the link and pins by which the link is connected with opposing draw-heads, the bearing J upon each side and below the draw-head, having the clamping arms projecting laterally from the bearings, a transversely slidable rock-shaft journaled in the bearings having arms projecting from it and adapted to directly engage and lift the link and move the same laterally and crank arms upon the outer end of the shaft by which to operate it, said arms adapted to be forced between the clamping arms and means comprising pins passing through holes in the clamping arms and crank arms for locking said arms together, substantially as described.

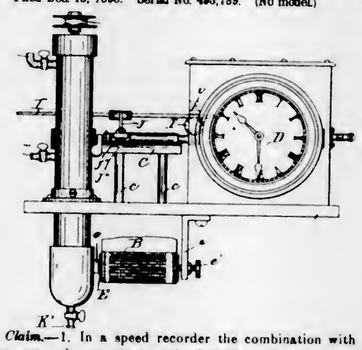
2. In a car-coupling, a draw-head, a link connected therewith by a coupling pin, a shaft extending horizontally beneath the draw-head and slidable endwise in its bearings, arms projecting from said shaft having a transverse uniting bar provided with an upwardly extending pin adapted to enter the slot in the coupling link, and to engage the inner walls of said slot so as to move the link endwise, clamping arms on the shaft support having holes made through them, and arms on the outer ends of the shaft adapted to be forced between said clamping arms, and having holes adapted to coincide with the holes in the clamping arms, and a pin adapted to enter said holes and secure the arms whereby the link raising mechanism is held in a locked position out of the way.

530,709. BLIND-HINGE. NEIL MCKINNON, Newport, R. I. Filed June 6, 1894. Serial No. 513,617. (No model.)



*Claim.*—In a blind hinge the member, C, provided with a pintle, *f*, having the squared or grooved upper end in combination with the leaf, D, provided with arms, *j*, *k*, and pintle socket, *m*, the lever, *w*, pivoted to swing vertically on the blind and provided with the head 15, for engaging the upper end of the pintle and a key adapted to be operated from the inner face of the blind and actuating said lever, substantially as described.

530,710. SPEED-RECORDER. JAMES NAYLOR, Jr., Boston, Mass., assignor of three-fourths to George Thomas McLauthlin, same place. Filed Dec. 15, 1893. Serial No. 493,789. (No model.)



*Claim.*—1. In a speed recorder the combination with a time movement and connecting mechanism therefrom to a toothed feed roll, and said roll; of a mounted and driven propeller, stationary partitions in close proximity above and below it, a contained liquid and a float thereon, connecting mechanism therefrom to a marking point and said marking point as herein set forth.

2. In a speed recorder the combination with a receptacle containing the liquid; of a mounted propeller immersed in said liquid, partitions in close proximity thereto, a float with connecting mechanism to a marking point and said point as herein shown and described.

3. The combination with a liquid contained in a U-shaped receptacle; of a mounted propeller immersed in said liquid, stationary partitions above and below said propeller, and a float provided with suitable guides and communicating mechanism therefrom to a marking point as herein set forth.

4. The combination with a receptacle and a contained liquid, said receptacle provided with an inlet, an outlet and an overflow; of a mounted propeller, fixed partitions in said receptacle, a float therein and connecting mechanism therefrom to a marking point as herein set forth.

5. In a speed recorder, the combination with a time movement operatively connected to a toothed feed roll; said roll supported in bearings over the surface of the stationary table and said table; of a float, a contained liquid, connecting mechanism therefrom to a pen holder and pen, so that said float positively moves said pen in either direction and in a straight line, and said pen holder and pen as shown and described.

6. The combination with a suitably mounted screw propeller provided with blades, and means by which it is revolved; of the stationary radial partitions *f' f' f'* having their edges in proximity to the plane of revolution of said blades, and conforming thereto so as to effect a shear-like motion by the said blades passing the said partitions which are secured in the cylinder as herein shown and described.

7. The combination with a supported and driven shaft provided with a propeller; of the stationary partitions located in close proximity to said propeller, the whole being immersed in a liquid as shown and for the purpose herein set forth.

8. In a recorder, the supported horizontal bar having a positive rectilinear movement; of a gravity acting pen holder connected thereto and provided at its outer end with a pen and ink-well each separately and independently secured to the said pen holder so that the motions of each are identical, and means whereby said pen is supplied with ink from said well as herein shown and described.

9. In a recorder, the horizontal supporting table, a paper blank provided with a regular series of perforations along one edge of its length, a time movement operatively connected to feed the said blank over the stationary surface of the said table by engagement of the said perforations; in combination with a gravity acting pen and holder connected to a supported bar, said bar having a positive rectilinear movement from and by a float, said float and connecting mechanism to said bar and means whereby said float receives its vertical movement co-incident with the variable motion of the shaft G' as herein set forth.

10. In a speed recorder, the combination with a horizontal supported table, a paper blank provided with a regular series of perforations along one edge of its length, a time movement operatively connected to feed the said blank over the stationary surface of said table by engagement of the said perforations; of a gravity acting pen and holder operatively connected to a float, said float and a supporting liquid influenced by the combined action of the propeller and partitions as herein set forth.

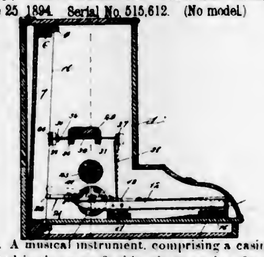
530,711. SKATE. WALTER H. NICHOLLS, Lynn, assignor of one-half to Libby, Harlow & Co., Boston, Mass. Filed Aug. 8, 1894. Serial No. 519,735. (No model.)



*Claim.*—1. In a skate, a vertically swinging rod or bar pivotally secured to the stationary portion of the skate, a horizontally slotted frame engaging with the said rod or bar by means of pins extending from the latter into said slots, a frame supporting the heel clamps adjustably secured to said slotted frame, horizontally moving sole clamps, and a connection between said sole-clamps and slotted frame whereby the swinging of the said rod or bar and slotted frame moves the sole-clamps into and out of engagement with the shoe, substantially as set forth.

2. In a skate, the rod or bar H H' H'' H''' of substantially the shape shown and pivoted to the skate-runner, said rod being provided with the engaging pins J and dog or clamp I, the swinging frame K K' K'' provided with the slots J', the link D connecting said frame with the sole-clamps, and the heel-plate provided with heel-clamps and supported by the frame F F' adjustably secured to the swinging frame, said rod or bar extending loosely into said heel-plate frame, substantially as set forth.

530,712. CLAVO-MANDOLIN. CHARLES A. NOACK, St. Louis, Mo. Filed June 25, 1894. Serial No. 515,612. (No model.)



*Claim.*—1. A musical instrument, comprising a casing, a sounding board located in the rear of said casing, a series of paired strings located adjacent said sounding board, keys carrying disks longitudinally positioned within said casing, vibrating arms pivoted to said keys and contacting with the strings, and operating mechanism for said disks.

2. In a musical instrument, a series of paired vertically arranged strings, or wires, a corresponding number of keys horizontally positioned within the instrument, waved, or corrugated, disks rotatably mounted upon the rear ends of said keys, arms pivoted upon the rear ends of the keys and vibrated by the waved disks, and a rubber-faced roller adapted to drive the waved disks.

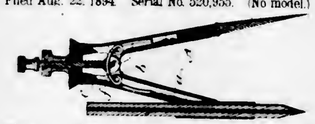


3. In a device of the class described, a key comprising a body portion, the rear end of which is slotted, a slotted plate mounted upon the rear end of said key, a waved, or corrugated disk mounted within said slotted key and plate, and a vibrating arm pivoted to said slotted plate carrying a flexible tongue.

4. In a clavo-mandolin, the combination of a rectangular frame work, a series of paired wires, or strings mounted upon tuning-pins or pegs within said frame work, keys horizontally positioned within said frame work, a waved, or corrugated disk mounted for rotation in the ends of said keys, arms carrying flexible tongues pivoted to said keys and vibrated by the wave disks, a rubber roller located immediately above said waved disks, means for rotating said rubber faced roller, and a damper comprising a horizontally moving rod having a felt disk on its forward end adapted to engage with the vertically positioned strings, and a disk upon its rear end adapted to be engaged by a vertical wire from the key.

5. In a device of the class described, the combination of a rectangular frame work, vertically positioned sounding board and strings, keys carrying on their ends waved disks, vibrating arms operated by said waved disks, and a corrugated rubber roller horizontally positioned immediately above said waved disks and adapted to drive said disks.

530,713. CALIPERS. GEORGE OBERBECK, Jersey City, N. J., assignor to the Eagle Pencil Company, same place, and New York, N. Y. Filed Aug. 22, 1894. Serial No. 520,955. (No model.)

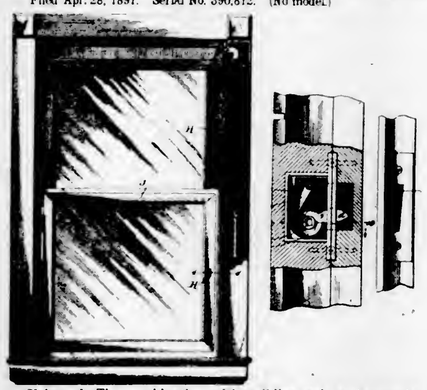


*Claim.*—1. The tubular sheet metal legs formed with ears *b* and extensions above the pivotal point, in combination with the screw stem B, the pivot pin by which the ears *b* and the screw stem are held together, the nut C, the sliding block D loosely encircling the screw stem and provided with wings or lateral projections bearing against and engaging said extensions, and the spring, as herein shown and described.

2. The sheet-metal legs formed with tubular parts *a*, ears *b*, and extensions *c*, in combination with the screw stem having slotted end *g*, the nut C and block D, provided with side wings which bear upon and engage said extensions, the pivot-pin by which the legs and screw-stem are held together, and the spring *h*, passing through the slotted end of the screw-stem above the pivot-pin, and having its free ends downwardly extending and housed in the legs, as herein shown and described.

3. In combination with the tubular legs, the screw stem having slotted end *g*, and the pivot pin by which said stem and legs are secured together, of the spring *h* having its bight contained in the slotted end of the screw-stem above the pivot pin, and its free downwardly extending ends housed in the tubular legs, as herein shown and described.

530,714. WINDOW-SASH. CHARLES F. OLCESE, Chicago, Ill. Filed Apr. 28, 1891. Serial No. 390,812. (No model.)



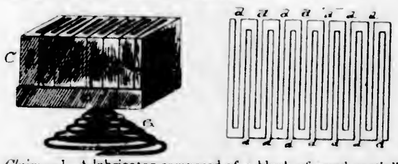
*Claim.*—1. The combination with a sliding sash, and a supplemental sash hinged therein, of a latch bolt in one of said sash, provided with a ratchet and pawl, and a cam-like or inclined keeper in the other sash, whereby said sash are locked and tightened together.

and the latch bolt locked in its adjusted position, substantially as described.

2. The combination, with a sliding sash, of a supplemental sash hinged therein, a latch in one of said sash provided with a mutilated pinion having a hollow spindle adapted to receive a key, a latch bolt secured to said pinion a spring actuated pawl adapted to engage the teeth of said pinion and provided with a lug normally projecting into and adapted to be displaced from the hollow spindle by a suitable key, substantially as described.

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580,715. LUBRICATOR. LYMAN O. ORTON, Mishawaka, Ind., assignor to the Dodge Manufacturing Company, same place. Filed June 23, 1894. Serial No. 515,504. (No model.)





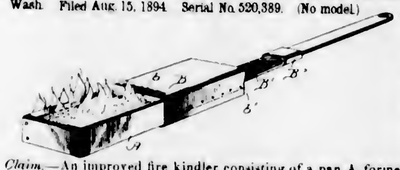
*Claim.*—1. A lubricator composed of a block of wood partially severed by saw cuts, and closed at their open ends by permanently pressing together to constitute internal thin capillary tubes, substantially for the purpose set forth.

2. A lubricator composed of a block of wood C partly severed by saw cuts *d. d.* penetrating from opposite sides alternately, and a fastening band *e* substantially for the purpose set forth.

3. A lubricator composed of a block of wood C partly severed by saw cuts penetrating from opposite sides alternately and having side grooves *A* combined with a band *e* provided with flanges *i. i.* and the supporting spring G substantially for the purpose set forth.

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530,716. FIRE-KINDLER. FLETCHER R. PEARSON, Vancouver, Wash. Filed Aug. 15, 1894. Serial No. 520,389. (No model.)



*Claim.*—An improved fire kindler consisting of a pan A, formed of a single piece of sheet metal, and provided with a metallic handle A', an enveloping sleeve B, formed also of a single piece of sheet metal, and provided with an arm B', carrying a guide $B^3$, which slides upon the handle A', the sleeve B, being open at each end to slide upon the pan A, said sleeve having a depression *b*, in its upper face, and a crimp or bend *b'*, in its side at the rear end, whereby the movements of said sleeve upon the pan are limited, substantially as shown and described.

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530,717. BRUSH FOR DYNAMO-ELECTRIC MACHINES. EDWARD T. PLATT, Chicago, Ill., assignor of two-thirds to William Freise and Charles O. Moyer, same place. Filed June 11, 1894. Serial No. 514,143. (No model.)



*Claim.*—1. In combination with a dynamo or other electric machine having a commutator, a commutator brush provided with a flexible body portion and a series of rolls arranged on an arc of a circle to contact at least two segments of the commutator, substantially as described.

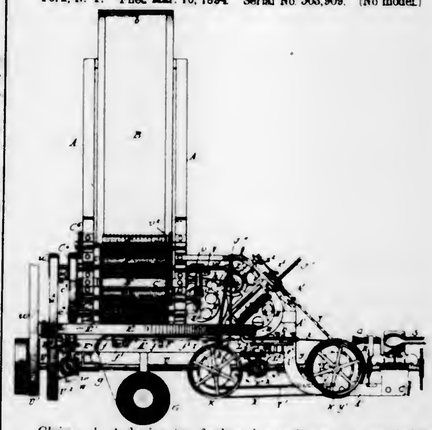
2. In combination with a dynamo or other electric machine, a commutator provided with a contacting portion formed of a series of copper rolls having hardened steel pivots, and bearing portions for such pivots made of brass and secured to the body portion of the brush, substantially as described.

3. In combination with a dynamo or other electric machine, a commutator brush provided with a flexible body portion, a contacting portion formed of a series of copper rolls having hardened steel pivots, and brass bearing portions for such roll pivots secured to the body portion, of the brush, substantially as described.

4. In combination with a dynamo or other electric machine having a commutator, a commutator brush provided with a flexible body portion, and a series of at least four rolls arranged on an arc of a circle to contact at least two segments of the commutator, substantially as described.

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530,718. CIGARETTE-MACHINE. EDWARD T. POLLARD, New York, N. Y. Filed Mar. 16, 1894. Serial No. 503,909. (No model.)



*Claim.*—1. A device for feeding loose, fibrous or shredded tobacco in cigarette machines, comprising a casing or hopper having a lateral mouth or discharge opening, a discharge roll working therein, a belt moving edgewise across the mouth of the hopper, substantially in the same horizontal plane as the bottom of the discharge roll, which throws the tobacco directly and laterally thereon, and an abutment between which and the mouth of the hopper the belt is arranged to move.

2. A device for feeding loose, fibrous or shredded tobacco in cigarette machines, comprising a casing, endless aprons arranged one above the other, and moving continuously in the same direction, in the same vertical plane, and the lower one projecting slightly beyond the other, groups of rolls combing or drawing out the fibers from the aprons, a carrying-belt moving across the face of the last roll, which throws the tobacco laterally upon the belt, with its fibers transverse thereto, and an abutment opposite the mouth of the hopper bearing against the outer edge of the belt to prevent the lateral escape of the tobacco therefrom, substantially as hereinbefore set forth.

3. A device for feeding and carrying loose, fibrous or shredded tobacco in cigarette machines, comprising a casing or hopper, devices inclosed therein for combing or drawing out loose, fibrous tobacco fed thereto, a discharge roll working in the mouth of the hopper, a carrying-belt moving across this mouth and the face of the discharge-roll, which discharge-roll throws the tobacco laterally upon the carrying-belt, a pressing belt moving over and in the same direction with the carrying-belt, and an abutment against which the opposite edges of both belts work, to prevent the lateral escape of the tobacco therefrom, substantially as hereinbefore set forth.

4. A filler-forming device for cigarette machines, comprising two converging endless belts moving in the same direction, mechanism for discharging tobacco laterally between the belts, and a resilient or yielding abutment bearing against the outer edges of the belts, to prevent the escape of tobacco therefrom, substantially as hereinbefore set forth.

5. A filler-carrying device for cigarette machines, comprising a flexible, resilient hoop or endless belt moving in a vertical circuit without guides or supports except in that portion of its circuit in which it carries the filler, and friction rollers directly and positively driving the belt, substantially as hereinbefore set forth.



6. The hereinbefore described filler-pressing device for cigarette machines, comprising a flexible, resilient hoop or endless belt moving in a vertical circuit, a guide around which it moves while pressing the filler, but unsupported elsewhere, and friction-rollers directly and positively driving the belt, substantially as hereinbefore set forth.

7. A device for vertically pressing the filler in cigarette machines, comprising a flexible, resilient hoop or endless carrying belt moving in a vertical circuit without guides or supports except in that portion of its circuit in which it carries the filler, a similar flexible, resilient endless pressing-belt moving in a vertical circuit over the carrying belt, a guide around which the pressing belt moves while pressing the filler, and friction-rollers directly and positively driving each belt, substantially as hereinbefore set forth.

8. A filler-carrying device for cigarette machines, comprising two flexible, resilient hoops or endless belts moving one over the other in a vertical circuit, friction-rollers directly and positively driving the belts, a guide around which one of the belts runs, and a rocking-arm or latch-lever on which the guide is mounted, substantially as hereinbefore set forth.

9. A device for feeding loose, fibrous or shredded tobacco and compressing it vertically, in cigarette machines, comprising two endless converging belts of flexible, resilient material, such as steel, arranged one above the other, in the same vertical plane, friction-gearing actuating them, mechanism for feeding the tobacco laterally between the belts, and a resilient or yielding abutment bearing against the edges of the belts on one side to prevent the lateral escape of the tobacco.

10. A device for feeding a cigarette wrapper longitudinally and vertically or edgewise to the wrapping-devices of a cigarette machine, comprising endless belts arranged one above the other, mechanism for driving them positively in the same direction and at the same speed, a yielding abutment between which and the adjacent edges of the belt the wrapper passes, a fixed guide for the wrapper, and mechanism for drawing or feeding the wrapper positively, at the same speed as the belts, substantially as hereinbefore set forth.

11. A filler-forming device for cigarette machines, comprising converging belts arranged one above the other, mechanism for discharging the tobacco laterally between the belts, an abutment bearing against the edges of these belts opposite the feed side, a compressing or filler-forming belt working diagonally between the converging belts, and a wrapper-guide against which the diagonal belt compresses the tobacco to form the filler, substantially as hereinbefore set forth.

12. A filler-forming and wrapper-applying device for cigarette machines, comprising converging belts arranged one above the other, a compressing or filler forming belt working diagonally between them, and a fixed wrapper-guide bearing against the edges of the converging belts, to form the filler and compress it against the wrapper, substantially as hereinbefore set forth.

13. A filler-forming, pasting and wrapper applying device for cigarette machines, comprising converging belts arranged one above the other, a compressing or filler-forming belt working diagonally between them, a wrapper-guide against which the filler is compressed, and mechanism for applying paste to the upper edge of the wrapper, above the belt, before the guide commences its folding action, substantially as hereinbefore set forth.

14. A filler-forming, pasting and wrapper-applying device for cigarette machines, comprising converging belts arranged one above the other, mechanism for feeding the tobacco laterally between them, a yielding abutment bearing against the outer edges of these belts, a compressing or filler-forming belt working diagonally between the converging belts, a wrapper-guide against which this belt compresses the tobacco to form the filler, mechanism for applying paste to the upper edge of the wrapper, above the belt, at the point of convergence of the diagonal belt and wrapper guide, before the folding action commences, and mechanism for moving the belts and wrapper at a uniform speed in the same direction, substantially as hereinbefore set forth.

15. A filler-forming and wrapper-folding device for cigarette machines, comprising laterally-curved, resilient endless belts, normally moving parallel with each other, with mechanism, substantially such as described, which causes them at intervals to converge and overlap each other to fold the wrapper upon the filler.

16. A cigarette-filler forming and wrapping device, comprising a flexible, resilient, laterally-curved endless belt, mechanism for moving it in the line of movement of the filler, a series of flexible, resilient, laterally curved endless belts normally movable parallel with each other on the opposite side of the filler, mechanism for moving them at substantially the same speed as the opposed belt, and a guide which causes these last-named belts to converge laterally and overlap each other to form the filler and partially enfold it in the wrapper, substantially as hereinbefore set forth.

17. The combination, substantially as hereinbefore set forth, of endless belts lying one above the other, between which the filler is carried, an endless belt moving diagonally between them, a series of laterally-curved, flexible, resilient endless belts normally moving parallel with each other and the opposed diagonal belt, and a guide which causes the series of belts to converge laterally and overlap to form and wrap the filler.

18. The combination, substantially as hereinbefore set forth, of endless belts lying one above the other, between which the filler is carried, an endless belt moving diagonally between them, a wrapper-guide bearing against the edges of one side of the filler-carrying and pressing-belts, a series of laterally-curved, flexible, resilient endless belts normally moving parallel with the opposed diagonal belt between which last-named belts the wrapper passes, and a guide which causes the series of belts to overlap each other laterally to wrap the filler.

19. The combination, substantially as hereinbefore set forth, of a wrapper-guide, a series of laterally-curved, flexible, resilient endless belts normally moving in a path parallel with that of the filler, a similar belt on the opposite side of the filler, a folding-guide which causes the series of parallel belts to overlap and fold the wrapper upon the filler, and a separator which temporarily prevents contact of the edges of the wrapper.

20. The combination, substantially as hereinbefore set forth, of a series of flexible, resilient endless belts normally moving in parallel paths, a guide which causes them to converge laterally and overlap, and an adjustable tongue or cam in the guide to vary the overlap, and consequently the size of the cigarette formed by them.

21. The combination, substantially as hereinbefore set forth, of a series of flexible, resilient endless belts normally moving in parallel paths, a guide which causes them to converge laterally and overlap to fold the wrapper upon the filler, a separator opposed to these belts, and an up-turner or guide, which folds the unpasted side of the wrapper upon the filler.

22. The combination, substantially as hereinbefore set forth, of a series of flexible, resilient endless belts normally moving in parallel paths, a guide which causes them to converge laterally and overlap, to fold the wrapper upon the filler, another guide which folds the unpasted side of the wrapper upon the filler, and still another guide which folds the pasted edge of the wrapper upon the folded unpasted edge.

23. The combination, substantially as hereinbefore set forth, of a casing or hopper, a belt moving edgewise across its mouth, a wrapper guide at the side or edge of the belt directly opposite the forward end of the mouth of the hopper, and means for discharging the tobacco directly upon the belt between the hopper and guide, for the purposes specified.

24. The combination, substantially as hereinbefore set forth, of a casing or hopper, a belt moving edgewise across its mouth, a wrapper guide, and a yielding abutment opposite the mouth of the hopper, and means for discharging the tobacco directly upon the belt for the purposes specified.

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530,719. PROCESS OF MAKING PLATES, &c., OF COMBINED METALS. ADOLF RODIG, Saband, Germany. Filed Jan. 6, 1893. Renewed Jan. 31, 1894. Serial No. 498,664. (No specimens.) Patented in England Nov. 24, 1892, No. 21,467; in France Nov. 24, 1892, No. 225,887; in Belgium Nov. 24, 1892, No. 102,300; in Sweden Nov. 24, 1892, No. 4,293; in Norway Nov. 24, 1892, No. 4,970; in Italy Dec 21, 1892, XXVII, 33,023, LXV, 16; in Spain Jan. 4, 1893, No. 13,995, and in Austria-Hungary June 30, 1893, No. 60,621 and No. 22,013.



*Claim.*—1. The herein described method for manufacturing plates, bars, rods and the like, of combined metals, consisting in placing the two metal blanks back to back, forming about the combined blanks a shell of a relatively softer metal, and then reducing and separating the compound blank thus formed, substantially as and for the purpose set forth.

2. The herein described method for manufacturing plates, bars, rods and the like of combined metals, consisting in placing the two metal blanks back to back with the interposition of an insulating material, forming about the combined blank a shell of the relatively softer metal, then shaping and separating the compound blank thus formed, substantially as described.

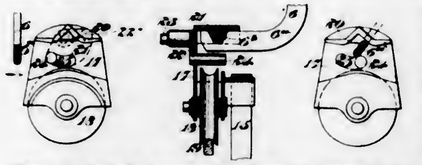
3. A method for the manufacture of sheets, plates, bars and the like of combined metals, consisting in placing two metal blanks together, covering the same with the comparatively softer metal, and subsequently dividing the same, substantially as and for the purpose set forth.

4. The herein described method of manufacturing plates, bars, rods and the like, of combined metals, which consists in reducing and separating a compound blank composed of two metal blanks placed back to back and having an exterior shell of a relatively softer material, substantially as set forth.

5. The herein described method of manufacturing plates, bars, rods and the like, of combined metals, which consists in reducing and separating a compound blank composed of two metal blanks placed back to back and having an exterior shell of a relatively softer material and an interposed layer of insulating material between the metal blanks, substantially as set forth.

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530,720. APPARATUS FOR TRANSPORTING LOADS BY TRAVELING CABLES. JOHN P. ROE, London, England, assignor to the Ropeways Syndicate, Limited, same place. Filed Oct. 23, 1893. Serial No. 488,910. (No model.) Patented in England May 19, 1893, No. 10,039; in France Jan. 12, 1894, No. 235,470; in Belgium Jan. 18, 1894, No. 108,098; in Spain Feb. 15, 1894, No. 15,373, and in New South Wales Mar. 6, 1894, No. 4,904.



*Claim.*—1. A clip for permanent attachment to a traveling rope comprising a clip body, a separate metal strap encircling said rope and fixed to said clip body, and a tightening up device for simultaneously drawing up both ends of said strap, substantially as herein described.

2. A clip for permanent attachment to a traveling rope, comprising a clip body against one end of which said rope can abut, a sheet metal strap of approximately uniform thickness made separate from said clip body adapted to fit around the rope to which the clip is to be fixed and having its end portions brought close together, means for simultaneously drawing up the two end portions of said strap so as to firmly connect said rope to said clip body, and means for fixing the end portions of said strap upon said clip body substantially as herein described.

3. A clip for permanent attachment to a traveling rope, comprising a clip box provided at its nose end with an abutment for the rope and with a slot between said abutment and clip box, a metal strap made separate from said clip box and adapted to fit said rope, the end portions of said strap being arranged to pass over and below said nose and one of them to pass through said slot so that they can be brought close together, means for drawing up said strap so as to force the rope upon which it is fitted against said abutment, and means for clamping the end portions of said strap upon each other and upon said clip box substantially as herein described.

4. A clip for permanent attachment to a traveling rope, comprising a clip box provided with a longitudinal abutment for said rope and with a slot between said abutment and clip box, a sheet metal strap made separate from said clip box and adapted to fit said rope, the end portions of said strap being arranged to pass over and below said nose and one of them to pass through said slot so that they can be brought close together, plates between which the juxtaposed end portions of said strap are clamped and held against said abutment, means for drawing up the end portions of said strap, and means for forcing said plates together and for connecting them to said clip box substantially as herein described.

5. The combination in a clip for permanent attachment to a traveling rope, of a clip box the sides of which are connected at the nose end by a V-shaped abutment $5^b$, a metal strap arranged to pass above and below said abutment and around the rope to be held against the same, and having its end portions brought close together, plates between which the juxtaposed end portions of said strap are directly clamped, means for simultaneously drawing up both end portions of said strap, and a screw for tightening said plates upon the end portions of said strap and for connecting them to said clip box substantially as herein described.

6. A clip for permanent attachment to a rope comprising a clip body, a separate strap fixed thereto, and encircling said rope, and means for tightening said strap upon said rope said means comprising a hook shaped device adapted to engage said strap and provided with a screw threaded extension, a bridge piece through which said extension passes, and a tightening nut fitting the outer portion of said screw threaded extension and bearing against said bridge pieces, substantially as herein described for the purpose specified.

7. In apparatus for transporting loads by means of a traveling rope or cable the combination with a clip adapted to be fixed upon said rope or cable, and a clip hanger suspended therefrom, of a lower hanger for carrying the load to be transported, and a box or frame connected to the upper end of said lower hanger and provided with a recessed portion into which the lower end of said clip hanger is adapted to take so as to support said box or frame and attached parts when said clip hanger moves upward relatively to the lower hanger substantially as herein described.

8. In apparatus for transporting loads by means of a traveling rope or cable the combination with a clip fixed upon said rope and a clip hanger suspended therefrom, of a lower hanger for carrying the load to be transported, a box or frame connected to the upper end of said lower hanger, an oscillating device journaled in the top of said box or frame and formed at its under side with a recess, into which the lower bent end of said clip hanger is adapted to take, and a locking device adapted to prevent the lower bent end of said clip hanger passing completely through the box in a lateral direction until after it has fully entered the recess in the top of the box or frame substantially as herein described.

9. In apparatus for transporting loads by means of a traveling rope or cable, the combination with a clip fixed upon said rope and a clip hanger suspended therefrom, of a lower hanger for carrying the load to be transported, a box or frame connected to the upper end of said lower hanger, an oscillating device journaled in the top of said box or frame and formed with a recess at its under side into which the lower bent end of said clip hanger is adapted to take, and a locking device for holding said oscillating device in the engaging portion until after the said lower end of the clip hanger has fully entered the recess in said device substantially as herein described.

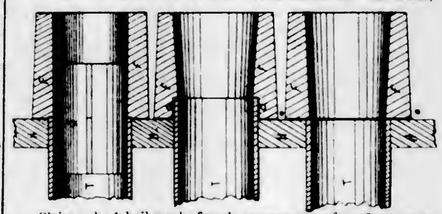
10. In apparatus for transporting loads by means of a traveling rope or cable the combination with a clip fixed upon said rope or cable and a hanger suspended therefrom, of a lower hanger for carrying the load to be transported, a box or frame connected to the upper end of said lower hanger, an oscillating device journaled thereon and formed with a recess in its under side into which the lower bent end of said clip hanger is adapted to take and a locking device comprising an arm pivoted to said box or frame and provided with a shoulder adapted to hold said oscillating device in position for the lower bent end of said clip hanger to pass into the same, said arm being arranged to project outward in such a manner that it can be tripped by a fixed pin or projection arranged in the path of said arm substantially as herein described for the purpose specified.

11. Apparatus for transporting loads comprising a traveling rope or cable, a clip fixed thereto a clip hanger suspended from said clip and having its lower end bent and formed with a recess a lower hanger carrying a box to contain the load to be transported, a box or frame connected to the upper end of said lower hanger, an oscillating device 25 journaled in said box or frame and formed at its under side with a V-shaped recess and with a transverse rib to engage the recessed lower bent end of said clip hanger, the center of oscillation of said device being arranged slightly to one side of the apex of the V shaped recess in its under side, a pin or projection adapted to hold said oscillating device in place, and a tripping arm 26ª pivoted to said box or frame and provided with a shoulder or abutment adapted to hold said oscillating device in position until after engagement with said clip hanger substantially as herein described.

12. In apparatus for transporting loads by traveling ropes, the combination with a hanger for suspending the box for containing the load to be transported, of a box or frame 17 fitted to the upper end of said hanger and provided with a wheel 18, an oscillating device 25 journaled in said box or frame and formed with a V-shaped recess in its under side, the center of oscillation of said device being arranged at one side of the apex of said recess, a pin or projection for suspending said device in said box or frame and an arm 26ª pivoted to said box or frame and provided with a shoulder or abutment adapted to hold said oscillating device in position to permit the lower bent end of a clip hanger to engage the recess in its under side substantially as herein described.

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530,721. FERRULE FOR BOILER-TUBES. HENRY S. ROSS, New York, N. Y. Filed June 26, 1893. Serial No. 478,797. (No model.)



*Claim.*—1. A boiler tube ferrule or protector of a refractory material which projects into a fire or combustion chamber but does not enter the tube, and means for securing the said ferrule in place said tube ferrule or protector having approximately the same internal diameter as the tube which it protects.

2. A boiler tube ferrule or protector of a refractory material which projects into a combustion chamber but does not enter the boiler tube, and means for securing said ferrule or protector against a tube end in line therewith.

3. The combination with a boiler tube of a ferrule or protector of refractory material which fits over the outside end of said tube, projecting into a combustion chamber but not entering the tube, of an elastic holder entering into the boiler tube and the ferrule.

4. The combination with a fire tube of a ferrule or protector of a refractory material having approximately the same internal diameter as the tube attached to the end of said tube and projecting into the combustion chamber.

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530,722. RELEASING BELAYING-PIN. AXEL V. T. SABROE, Hadersley, Germany. Filed June 28, 1894. Serial No. 515,932. (No model.)



*Claim.*—The combination with the hollow block having the slots in the upper part, of the prongs pivoted within the chamber of the block and projecting outward through the slots, the inwardly projecting arms of the prongs the center post, the arms of the center post engaging the inwardly projecting arms of the prongs when in operative position, and means for turning the center post all substantially as described.

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530,723. ANIMAL-TRAP. RICHARD SCHEIBEL, St. Louis, Mo., assignor of one-half to Peter M. King, same place. Filed July 30, 1894. Serial No. 518,935. (No model.)

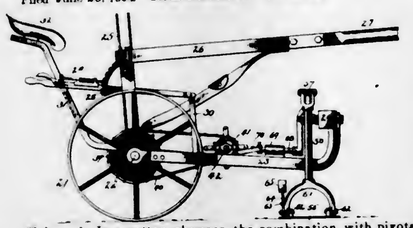


*Claim.*—1. In an animal trap, a bait receptacle located in the top of said trap, said bait-receptacle comprising a section of reticulated material, and a plate of transparent material, such as glass, positioned above said reticulated material.

2. In an animal trap, the combination of a rectangular frame work having inclined ends, reticulated doors covering said inclined ends, reticulated swinging doors positioned across the interior of said frame work, and a series of tilting platforms and cut-off doors radiating from the central shaft, said shaft being journaled in the sides of the frame work.

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530,724. COTTON-CHOPPER. ALVIN E. SCHEVEY, Mayfair, Ill. Filed June 20, 1894. Serial No. 515,091. (No model.)



*Claim.*—1. In a cotton chopper the combination with pivoted oscillated carriers, hoes mounted thereon, an actuator bar pivotally connected with the carriers, a driven counter shaft rotating actuator arms to successively bring the same first against one impact arm of a rock shaft and then against the other and transmitting mechanism between the impact arms and the actuator bar.

2. A hoe for a cotton chopper which hoe is positioned first upon one side of the row of stalks and then upon the other comprising a pivoted or hinged blade or knife and gravity mechanism adapted to tilt the pivoted blade and bring the same into proper relative chopping position as the hoe is shifted.

3. A hoe for a cotton chopper which is adapted to be positioned first upon one side and then upon the other of the rows of stalks comprising a pivoted or hinged blade or knife and automatically operating shifting mechanism for tilting the blade or knife alternately into the proper cutting positions.

4. A hoe for a cotton chopper which is adapted to be positioned first upon one side and then upon the other of the rows of stalks, comprising a pivoted or hinged blade or knife, a pivoted and weighted tilting arm adapted to oscillate in the change of position of the blades or knives and tilt the latter to bring the same into proper cutting position.

5. In a cotton chopper, the combination with pivoted oscillated carriers, means for oscillating the same and a hoe blade or knife pivotally mounted upon the carriers and automatically operating shifting mechanism for tilting the blade or knife alternately into the proper cutting position.

6. In a cotton chopper, the combination with pivoted oscillated carriers, hoes mounted thereon, an actuator bar pivotally connected with the carriers, a driven counter shaft rotating actuator arms to bring the same first against one impact arm on a rock shaft and then against the other and transmitting mechanism between the impact arms and the actuator bar together with pivoted or hinged blades or knives of the hoes and automatically operating shifting mechanism for tilting the blades or knives alternately into the proper cutting positions.

7. In a cotton chopper, pivoted oscillated carriers, tilting hoes carried thereby and intermittently operating mechanism for oscillating said carriers.

8. In a cotton chopper, pivoted oscillated carriers, tilting hoes carried thereby, a rock shaft for oscillating the pivoted carriers and means for operating the rock shaft.

9. In a cotton chopper, pivoted oscillated carriers, tilting hoes carried thereby, intermittently operating mechanism for oscillating the carriers and a separator bar between the said carriers.

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530,725. PRESSED-STEEL FENCE-POST. CHARLES T. SCHOEN, Allegheny, Pa. Filed Apr. 24, 1894. Serial No. 508,759. (No model.)



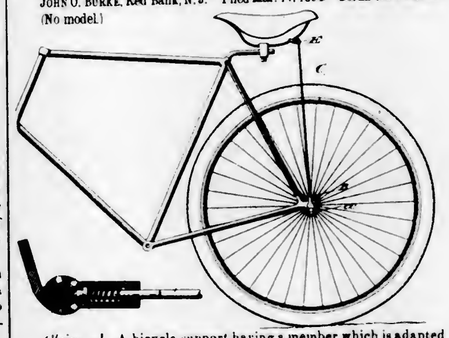
*Claim.*—1. A post of wrought metal, having a body, edge flanges extending from end to end, and a driving shoulder or offset formed of and by deflecting the body and flanges, substantially as described.

2. A post of wrought metal, having a body, and edge flanges thereon extending from top to bottom, the upper portion of the post being angular in cross-section, and the earth-entering portion being curved in cross-section and provided with a driving shoulder formed by deflecting or offsetting the body and flanges, substantially as described.

3. As an improved article of manufacture, a pressed steel fence post, composed of a body, and edge flanges extending from end to end, the upper portion of the post being angular in cross-section and the lower portion curved in cross-section, the said curved portion terminating at its upper end in an offset or shoulder for use in driving the post into the earth, anchoring spurs in the lower portion, and wire-receiving spurs in the upper portion, substantially as described.

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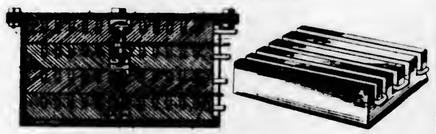
530,726. ATTACHMENT FOR BICYCLES. EBENEZER SCOTT and JOHN O. BURKE, Red Bank, N. J. Filed Mar. 17, 1894. Serial No. 504,029. (No model.)



*Claim.*—1. A bicycle support having a member which is adapted to be secured to the frame of the bicycle, said member having a lug with recesses $a^2$ in its outer edge, together with a member B pivotally connected to the lug and provided with a supporting rod C which is movable therein and adapted to engage the recesses in the lug, the rod having a collar c for limiting its movement.

2. A bicycle support having a member which is adapted to be secured to the frame of the bicycle, said member having a lug with recesses $a^2$ in its outer edge, together with a member B pivotally connected to the lug and provided with a recess to receive the supporting rod C and helical spring $c'$, the supporting rod being movable in the recess and adapted to engage the recesses in the lug, the rod having a collar $c$ against which the helical spring bears, substantially as shown and for the purpose set forth.

530,727. RHEOSTAT. THOMAS W. SHELTON, St. Louis, Mo. Filed Aug. 20, 1894. Serial No. 520,785. (No model.)

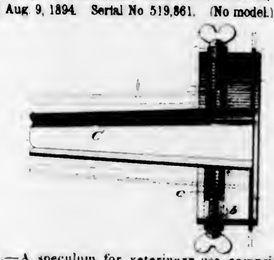


*Claim.*—1. A rheostat, comprising a cylindrical casing, a cover bolted to said casing, a series of fire-clay disks or plates in which are embedded suitable wire coils, bolts connecting each pair of said disks, and suitable conductors from said bolts to the outside of the cylindrical casing.

2. A rheostat, comprising a cylindrical casing provided with a vertical slot in its face, a vertical rib on the interior of its wall, a suitable cover for said casing, a series of fire-clay disks located within said casing, said disk being provided with convolute grooves in their faces and semi-circular depressions in their edges, suitable conductors embedded in said convolute grooves or depressions, bolts securing the disks together in pairs, and conductors leading from said bolts to the outside of the casing.

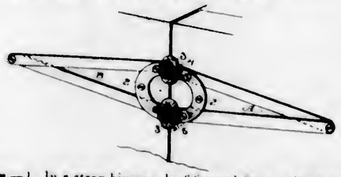
3. In a rheostat, pairs of disks or plates of fire-clay or analogous material bolted together, said plates having embedded therein convolute conductors, and suitable conductors from the bolts to the edges of the disks or plates.

530,728. SPECULUM. JESSE D. SHERBROOK, Winnetoon, Nebr. Filed Aug. 9, 1894. Serial No. 519,861. (No model.)



*Claim.*—A speculum for veterinary use comprising a flat ring having slots $a$ $a$ and apertures $a'$, blades C curved transversely in the segment of a circle and having internally screw-threaded lugs c and projecting portions C', which pass through the slots $a$, and thumb-screws B retained in the apertures $a'$ by shoulders and engaging the screw-threaded lugs on the blades, substantially as shown and described.

530,729. STRAP-HINGE. LOUIS H. SHOLDER, Cleveland, Ohio. Filed Jan. 29, 1894. Serial No. 498,422. (No model.)



*Claim.*—1. In a strap hinge, a leaf formed from a single piece of strap metal of predetermined length and width having a double bend, one of said bends being edgewise of the strap and the other flatwise thereof and the edgewise bent portion being thus turned back upon the face of the flat portion, whereby pintle bearings are formed at the junction of said bends, and the edgewise bent portion forms a brace between said bearings, substantially as set forth.

2. A hinge leaf constructed substantially as described, comprising a pluralify of arms for attachment to one of the hinged parts, a semi-circular brace connecting the inner ends of two of said arms and pintle bearing ears at the extremities of said brace and at right angles thereto and to said arms, substantially as set forth.

3. A hinge section consisting of strap metal having a plurality of bearings and a portion thereof bent edgewise and forming a brace between said bearings and the portion forming said bearings bent at right angles to said edgewise portion, substantially as set forth.

530,730. REVOLVER. JOHN T. SMITH, Rockfall, Conn. Filed Mar. 5, 1894. Serial No. 502,349. (No model.)



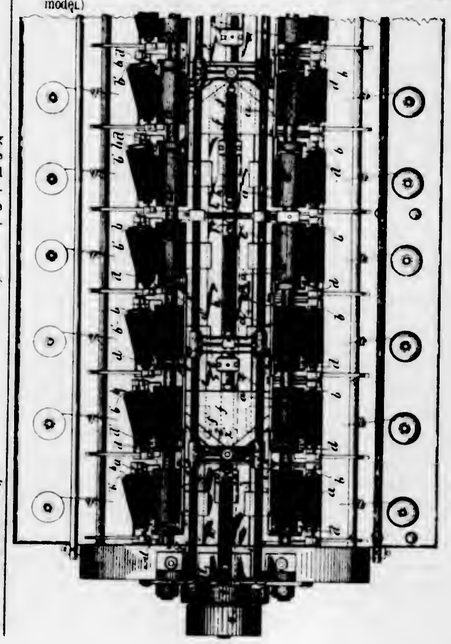
*Claim.*—1. The combination with the frame and the other instrumentalities of a revolver, of a cap or cover fitted to the said frame, and constructed upon its forward edge with a recoil-shield, substantially as described.

2. The combination with the frame and the other instrumentalities of a revolver, of a cap or cover fitted to the said frame, and provided upon its upper edge with an inwardly projecting flange, and upon its forward edge with a recoil-shield, the said flange and shield being formed integral with the cap or cover substantially as described.

3. In a revolver, the combination with a frame having a spring-chamber formed in the base of its trigger-guard and open at both ends, of a trigger, a trigger spring located in the said chamber in front of the trigger, and engaging at its rear end therewith, and a screw-plug located in the forward end of the said chamber for holding the trigger-spring in place therein, substantially as described.

4. In a revolver, the combination with the cylinder, of a cylinder pin constructed with a circumferential recess, a retaining-dog entering the said recess for holding the pin in position, a friction pin mounted in the frame, and arranged to engage with the forward end of the cylinder for preventing the rotary retrograde movement thereof, and a spring engaging with the said pin and dog, and compelling both to perform their functions, substantially as set forth.

530,731. WINDING OR SPOOLING MACHINE. WILLIAM A. SMITH, Lawrence, Mass. Filed Mar. 30, 1894. Serial No. 505,718. (No model.)





*Claim.*—1. A spooling machine comprising in its construction a plurality of gangs of yarn-guides arranged end to end, one gang being movable independently of another, and mechanism for oppositely reciprocating said gang to neutralize the jar caused by the reversal of their movement, as set forth.

2. In a spooling machine, the combination of two gangs of yarn-guides arranged end to end each gang being movable indepeodently of the other, and two oppositely arranged cams, one engaged with one gang and the other engaged with the other gang, said cams being formed to move the two gangs simultaneously in opposite directions and to simultaneously reverse their movement, as set forth.

3. A spooling machine comprising in its construction a plurality of gangs of yarn-guides arranged end to end, mechanism for independently reciprocating said gangs and for simultaneously reversing their movement, and alternately actiog springs applied to each gang, one spring acting during one reversal of movement while the other spring acts during the other reversal of movement.

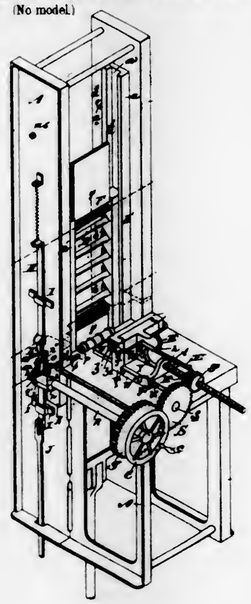
4. A spooling machine comprising in its construction two gangs of yarn-guides arranged end to end each gang being movable independently of the other, two oppositely arranged cams engaged with said guides, and two springs acting to yieldingly oppose the movement of said gangs in one direction, and two other springs acting to yieldingly oppose the movemeot of the gangs in the opposite direction, as set forth.

5. A spooling machine comprising in its construction a supporting frame having fixed guides, two carriages arranged end to end movable on said guides, each carriage supporting a gang of yarn-guides, and two oppositely arranged cams engaged with projections or trundle-rolls on said carriages, said cams being formed to move the two carriages simultaneously in opposite directions and to simultaneously reverse their movement, as set forth.

6. In a spooling machine, the combination of two independently movable carriages arranged end to end each having a gang of yarn-guides, two oppositely arranged cams engaged with trundle-rolls or projections on said carriages, and two springs engaged with each carriage, one opposing the latter part of the movement of the carriage in one direction while the other opposes the latter part of the movement of the carriage in the other direction, as set forth.

7. In a spooling machine, the combination with a friction driving-roll and a traversing yarn-guide, of a holder composed of two sections independently pivoted to fixed supports, each section having a weight whereby it is pressed inwardly, one section having a bar projecting behind the other section and adapted to communicate an outward movement to the latter, as set forth.

530,732. EXCELSIOR-CUTTING MACHINE. CHARLES G. SMITH, Detroit, Mich. Filed Apr. 29, 1891. Renewed June 18, 1894. Serial No. 514,992. (No model.)



*Claim.*—1. In an excelsior cutting machine, the combination of the main frame A with the table M the ways I in which the bar H reciprocates; the bar H reciprocated by the pitman actuated by any proper mechanism on the main driving shaft, and carrying the pawl K, the pawl to engage with the ratchets on the wheel L, the ratchet wheel L rotated by the pawl, spring $k$ to keep the pawl in contact with the ratchet wheel, and the rock-shaft O to which the spring $k$ is attached by which the pawl K is held in contact with or released from the ratchet wheel L and the feed table Y and the mechanism through which motion is communicated thereto, all substantially as described.

2. In an excelsior cutting machioe the combination of the main frame A with the table M the ways I in which the bar H reciprocates, the bar H reciprocated by the pitman actuated by any proper mechanism on the main driving shaft, and carrying the pawl K, the pawl K to engage with the ratchet wheel L, the ratchet wheel rotated by the pawl K, the spring $k$ to keep the pawl in contact with the ratchet wheel, the rock-shaft O, to an arm of which the spring $k$ is attached, the set lever P which engages with an arm of the rock-shaft O, and the stop W on the feed carriage, the feed carriage and the mechanism through which motion is communicated thereto all substantially as described.

3. In an excelsior cutting machine, the combination of the main frame A with the ways I in which the bar H reciprocates, the bar H reciprocated by a pitman actuated by any proper mechanism on the main driving shaft, and carrying the pawl K, the pawl K to engage with the ratchet wheel L, the ratchet wheel L keyed onto the shaft R, the mechanism to communicate motion from the shaft R to the screw feed shaft T, the screw feed shaft T and the feed table Y, and the mechaniam by which the pawl K is held in contact with and released from the ratchet wheel L all substantially as described.

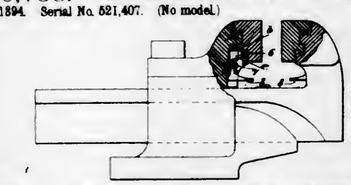
4. In an excelsior cutting machine the combination of the main frame A, with the ways I in which the bar H reciprocates, the bar H carrying the pawl K, the pawl K to engage with the ratchet wheel L, the ratchet wheel L keyed onto the shaft R, the mechanism to convey motion from the screw feed shaft T, the screw feed shaft T propelling the feed table Y, the feed table Y sliding on the ways on the table M, the stop W on the feed table Y, to engage with the set lever P, the set lever P, actuating the arm $o$ of the rock-shaft O, the rock-shaft O provided with the arms $o$ and $o'$ and the spring $k$ connecting the arm $o$ of the rock-shaft O, with the pawl K, all substantially as described.

5. In an excelsior cutting machine, the combination of the main frame carrying the cutting knives, with the table M, supporting the feed mechanism, the way U on the table M, provided with the overhanging ledges $u'$ $u'$, the feed carriage Y provided with the hooked foot Y, which catches under the ledges $u'$ $u'$, the standard Y' and plate $Y^3$, the slots $y'$ $y'$ in the standard Y' to receive the studs $z$ on the dog Z, the dog Z, provided with the studs $z$ and actuated by the lever E' and the lever E', pivoted to the standard Y' and locked in place by suitable mechanism, all substantially as described.

6. In an excelsior cutting machine the combination of the parts of the knife frame provided with the inclined recesses, with the cutting knives, the set screws for retaining the knives in place, and the gage blocks for regulating the cut of the knives, all substantially as described.

7. In an excelsior cutting machine, the combination of the parts of the knife frame provided with the inclined recesses for the reception of the cutting knives and the horizontal recesses for the slitting bar, the slitting bar carrying the slitting knives, the cutting knives inserted in the inclined recesses, the means for holding them in recesses, and the gage blocks to regulate their position in the recesses in accordance with their order in the frame as cutting knives, all substantially as set forth.

530,733. VISE. JOHN J. TOWER, Brooklyn, N. Y. Filed Aug. 27, 1894. Serial No. 521,407. (No model.)

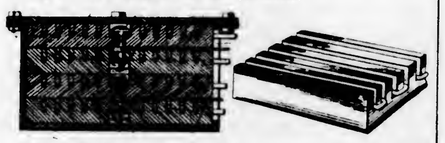


*Claim.*—1. A vise jaw having a seat in its overhanging part formed in the arc of a circle, a face piece having a segmental back fitting said seat and sliding endwise therein to vary the angle of its face, and suitable means of securing said face piece at a central position.

2. The combination with a vise jaw and a movable face piece connected thereto by a sliding joint provided with grooves $a$, and ribs

2. A bicycle support having a member which is adapted to be secured to the frame of the bicycle, said member having a lug with recesses $a^2$ in its outer edge, together with a member B pivotally connected to the lug and provided with a recess to receive the supporting rod C and helical spring $c'$, the supporting rod being movable in the recess and adapted to engage the recesses in the lug, the rod having a collar c against which the helical spring bears, substantially as shown and for the purpose set forth.

530,727. RHEOSTAT. THOMAS W. SHELTON, St. Louis, Mo. Filed Aug. 20, 1894. Serial No. 520,785. (No model.)

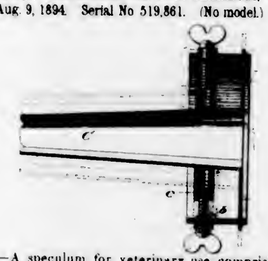


*Claim.*—1. A rheostat, comprising a cylindrical casing, a cover bolted to said casing, a series of fire-clay disks or plates in which are embedded suitable wire coils, bolts connecting each pair of said disks, and suitable conductors from said bolts to the outside of the cylindrical casing.

2. A rheostat, comprising a cylindrical casing provided with a vertical slot in its face, a vertical rib on the interior of its wall, a suitable cover for said casing, a series of fire-clay disks located within said casing, said disk being provided with convolute grooves in their faces and semi-circular depressions in their edges, suitable conductors embedded in said convolute grooves or depressions, bolts securing the disks together in pairs, and conductors leading from said bolts to the outside of the casing.

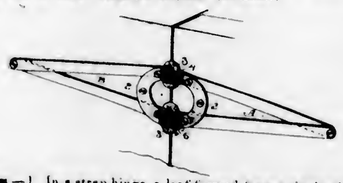
3. In a rheostat, pairs of disks or plates of fire-clay or analogous material bolted together, said plates having embedded therein convolute conductors, and suitable conductors from the bolts to the edges of the disks or plates.

530,728. SPECULUM. JESSE D. SHERBROOK, Winnetoon, Nebr. Filed Aug. 9, 1894. Serial No. 519,861. (No model.)



*Claim.*—A speculum for veterinary use comprising a flat ring having slots $a$ $a$ and apertures $a'$, blades C curved transversely in the segment of a circle and having internally screw-threaded lugs c and projecting portions C', which pass through the slots $a$, and thumb-screws B retained in the apertures $a'$ by shoulders and engaging the screw-threaded lugs on the blades, substantially as shown and described.

530,729. STRAP-HINGE. LOUIS H. SMOLDER, Cleveland, Ohio. Filed Jan. 29, 1894. Serial No. 498,422. (No model.)

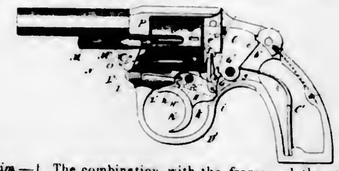


*Claim.*—1. In a strap hinge, a leaf formed from a single piece of strap metal of predetermined length and width having a double bend, one of said bends being edgewise of the strap and the other flatwise thereof and the edgewise bent portion being thus turned back upon the face of the flat portion, whereby pintle bearings are formed at the junction of said bends, and the edgewise bent portion forms a brace between said bearings, substantially as set forth.

2. A hinge leaf constructed substantially as described, comprising a plurality of arms for attachment to one of the hinged parts, a semi-circular brace connecting the inner ends of two of said arms and pintle bearing ears at the extremities of said brace and at right angles thereto and to said arms, substantially as set forth.

3. A hinge section consisting of strap metal having a plurality of bearings and a portion thereof bent edgewise and forming a brace between said bearings and the portion forming said bearings bent at right angles to said edgewise portion, substantially as set forth.

530,730. REVOLVER. JOHN T. SMITH, Rockfall, Conn. Filed Mar. 5, 1894. Serial No. 502,349. (No model.)



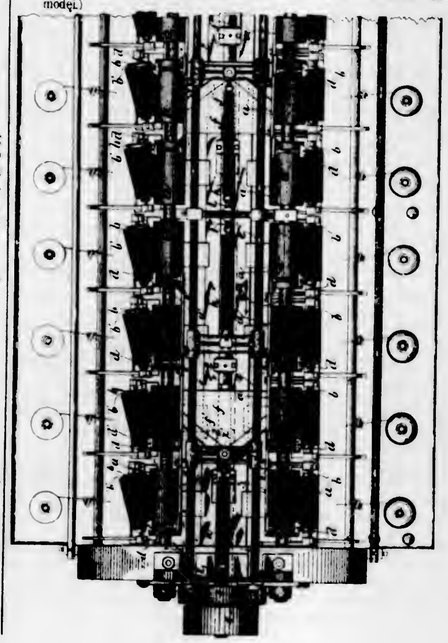
*Claim.*—1. The combination with the frame and the other instrumentalities of a revolver, of a cap or cover fitted to the said frame, and constructed upon its forward edge with a recoil-shield, substantially as described.

2. The combination with the frame and the other instrumentalities of a revolver, of a cap or cover fitted to the said frame, and provided upon its upper edge with an inwardly projecting flange, and upon its forward edge with a recoil-shield, the said flange and shield being formed integral with the cap or cover substantially as described.

3. In a revolver, the combination with a frame having a spring-chamber formed in the base of its trigger-guard and open at both ends, of a trigger, a trigger spring located in the said chamber in front of the trigger, and engaging at its rear end therewith, and a screw-plug located in the forward end of the said chamber for holding the trigger-spring in place therein, substantially as described.

4. In a revolver, the combination with the cylinder, of a cylinder pin constructed with a circumferential recess, a retaining-dog entering the said recess for holding the pin in position, a friction pin mounted in the frame, and arranged to engage with the forward end of the cylinder for preventing the rotary retrograde movement thereof, and a spring engaging with the said pin and dog, and compelling both to perform their functions, substantially as set forth.

530,731. WINDING OR SPOOLING MACHINE. WILLIAM A. SMITH, Lawrence, Mass. Filed Mar. 30, 1894. Serial No. 505,718. (No model.)





*Claim.*—1. A spooling machine comprising in its construction a plurality of gangs of yarn-guides arranged end to end, one gang being movable independently of another, and mechanism for oppositely reciprocating said gang to neutralize the jar caused by the reversal of their movement, as set forth.

2. In a spooling machine, the combination of two gangs of yarn-guides arranged end to end each gang being movable independently of the other, and two oppositely arranged cams, one engaged with one gang and the other engaged with the other gang, said cams being formed to move the two gangs simultaneously in opposite directions and to simultaneously reverse their movement, as set forth.

3. A spooling machine comprising in its construction a plurality of gangs of yarn-guides arranged end to end, mechanism for independently reciprocating said gangs and for simultaneously reversing their movement, and alternately acting springs applied to each gang, one spring acting during one reversal of movement while the other spring acts during the other reversal of movement.

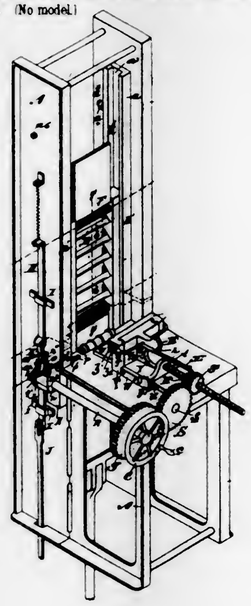
4. A spooling machine comprising in its construction two gangs of yarn-guides arranged end to end each gang being movable independently of the other, two oppositely arranged cams engaged with said guides, and two springs acting to yieldingly oppose the movement of said gangs in one direction, and two other springs acting to yieldingly oppose the movement of the gangs in the opposite direction, as set forth.

5. A spooling machine comprising in its construction a supporting frame having fixed guides, two carriages arranged end to end movable on said guides, each carriage supporting a gang of yarn-guides, and two oppositely arranged cams engaged with projections or trundle-rolls on said carriages, said cams being formed to move the two carriages simultaneously in opposite directions and to simultaneously reverse their movement, as set forth.

6. In a spooling machine, the combination of two independently movable carriages arranged end to end each having a gang of yarn-guides, two oppositely arranged cams engaged with trundle-rolls or projections on said carriages, and two springs engaged with each carriage, one opposing the latter part of the movement of the carriage in one direction while the other opposes the latter part of the movement of the carriage in the other direction, as set forth.

7. In a spooling machine, the combination with a friction driving-roll and a traversing yarn-guide, of a holder composed of two sections independently pivoted to fixed supports, each section having a weight whereby it is pressed inwardly, one section having a bar projecting behind the other section and adapted to communicate an outward movement to the latter, as set forth.

530,732. EXCELSIOR-CUTTING MACHINE. CHARLES G. SMITH, Detroit, Mich. Filed Apr. 29, 1891. Renewed June 18, 1894. Serial No. 514,992. (No model.)



*Claim.*—1. In an excelsior cutting machine, the combination of the main frame A with the table M the ways I in which the bar H reciprocates; the bar H reciprocated by the pitman actuated by any proper mechanism on the main driving shaft, and carrying the pawl K, the pawl to engage with the ratchets on the wheel L, the ratchet wheel L rotated by the pawl, spring $k$ to keep the pawl in contact with the ratchet wheel, and the rock-shaft O to which the spring $k$ is attached by which the pawl K is held in contact with or released from the ratchet wheel L and the feed table Y and the mechanism through which motion is communicated thereto, all substantially as described.

2 In an excelsior cutting machine the combination of the main frame A with the table M the ways I in which the bar H reciprocates, the bar H reciprocated by the pitman actuated by any proper mechanism on the main driving shaft, and carrying the pawl K, the pawl K to engage with the ratchet wheel L, the ratchet wheel L rotated by the pawl K, the spring $k$ to keep the pawl in contact with the ratchet wheel, the rock-shaft O, to an arm of which the spring $k$ is attached, the set lever P which engages with an arm of the rock-shaft O, and the stop W on the feed carriage, the feed carriage and the mechanism through which motion is communicated thereto all substantially as described.

3 In an excelsior cutting machine, the combination of the main frame A with the ways I in which the bar H reciprocates, the bar H reciprocated by a pitman actuated by any proper mechanism on the main driving shaft, and carrying the pawl K, the pawl K to engage with the ratchet wheel L, the ratchet wheel L keyed onto the shaft R, the mechanism to communicate motion from the shaft R to the screw feed shaft T, the screw feed shaft T and the feed table Y, and the mechanism by which the pawl K is held in contact with and released from the ratchet wheel L all substantially as described.

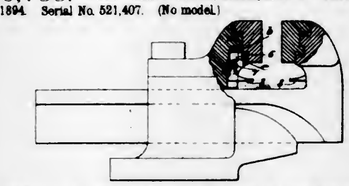
4. In an excelsior cutting machine the combination of the main frame A, with the ways I in which the bar H reciprocates, the bar H carrying the pawl K, the pawl K to engage with the ratchet wheel L, the ratchet wheel L keyed onto the shaft R, the mechanism to convey motion from the screw feed shaft T, the screw feed shaft T propelling the feed table Y, the feed table Y sliding on the ways on the table M, the stop W on the feed table Y, to engage with the set lever P, the set lever P, actuating the arm $o$ of the rock-shaft O, the rock-shaft O provided with the arms $o$ and $o'$ and the spring $k$ connecting the arm $o$ of the rock-shaft O, with the pawl K, all substantially as described.

5. In an excelsior cutting machine, the combination of the main frame carrying the cutting knives, with the table M, supporting the feed mechanism, the way U on the table M, provided with the overhanging ledges $u'$ $u'$, the feed carriage Y provided with the hooked foot Y, which catches under the ledges $u'$ $u'$, the standard Y' and plate $Y^3$, the slots $y'$ $y'$ in the standard Y' to receive the studs $z$ on the dog Z, the dog Z, provided with the studs $z$ and actuated by the lever E' and the lever E', pivoted to the standard Y' and locked in place by suitable mechanism, all substantially as described.

6 In an excelsior cutting machine the combination of the parts of the knife frame provided with the inclined recesses, with the cutting knives, the set screws for retaining the knives in place, and the gage blocks for regulating the cut of the knives, all substantially as described

7. In an excelsior cutting machine, the combination of the parts of the knife frame provided with the inclined recesses for the reception of the cutting knives and the horizontal recesses for the slitting bar, the slitting bar carrying the slitting knives, the cutting knives inserted in the inclined recesses, the means for holding them in recesses, and the gage blocks to regulate their position in the recesses in accordance with their order in the frame as cutting knives, all substantially as set forth.

530,733. VISE. JOHN J. TOWER, Brooklyn, N. Y. Filed Aug. 27, 1894. Serial No. 521,407. (No model.)



*Claim.*—1. A vise jaw having a seat in its overhanging part formed in the arc of a circle, a face piece having a segmental back fitting said seat and sliding endwise therein to vary the angle of its face, and suitable means of securing said face piece at a central position.

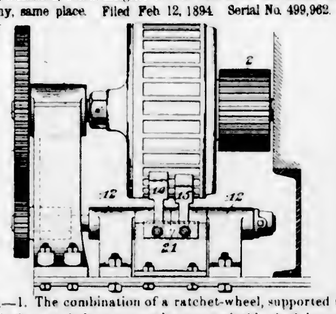
2. The combination with a vise jaw and a movable face piece connected thereto by a sliding joint provided with grooves $a$, and ribs

*b*, extending lengthwise of the face piece, adapted to interlock, one set of said grooves and ribs being located at the upper part of the joint in close proximity to the top surface of the jaw interlocking in such manner as to prevent the outward displacement of the face piece and opening of the seam of the joint at said top surface as described.

3. The combination with the jaw B, and the movable face piece A, connected thereto by a sliding joint in the arc of a circle, of ball bearings interposed in the said joint substantially as shown.

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530,734. PAWL-AND-RATCHET MECHANISM. HENRY R. TOWNE, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Feb 12, 1894. Serial No. 499,962. (No model.)



*Claim.*—1. The combination of a ratchet-wheel, supported upon a suitable shaft, a pawl also supported upon a suitable shaft in proper relation to the ratchet wheel and having frictional engagement with its shaft, and means for communicating motion from the ratchet-wheel shaft to the pawl-supporting shaft, whereby the pawl will be held out of engagement with the ratchet-wheel when the ratchet-wheel is rotating forwardly and in engagement therewith when it tends to rotate backwardly, substantially as and for the purposes set forth.

2. The combination of a ratchet-wheel mounted upon a suitable shaft, a pawl supported upon a suitable shaft in proper relation to the ratchet-wheel and having frictional engagement with its supporting shaft, and gearing between the ratchet-wheel-supporting-shaft and the pawl-supporting-shaft for rotating the latter in opposite direction to the former, whereby the pawl will be held out of engageiment with the ratchet-wheel when it is rotated forwardly and in engagement with the ratchet-wheel when it tends to rotate backwardly, and the clinking of the pawl is thereby obviated, substantially as set forth.

3. The combination of a ratchet-wheel, a pawl supported upon a suitable shaft in proper relation to the ratchet-wheel, and means for rotating the pawl-supporting shaft in an opposite direction to the ratchet-wheel, said pawl being provided with a spring-pressed friction shoe for affording suitable frictional contact between the pawl and its supporting shaft, substantially as and for the purpose set forth.

4. The combination of a ratchet-wheel, a pawl-supporting shaft, means for rotating said shaft in a direction opposite to that of the ratchet-wheel, and a pawl mounted upon said shaft and provided with a spring-pressed friction shoe, and means for adjusting the pressure of said shoe upon the shaft, substantially as set forth.

5. The combination of a ratchet-wheel, a pawl-supporting shaft geared thereto so as to rotate when the ratchet-wheel rotates and in a direction opposite thereto, and a pawl mounted upon said shaft and adapted to gear with said ratchet-wheel; said pawl having a cut-out portion, a friction shoe mounted in said cut-out portion, a spiral spring engaging said shoe and an adjustable screw plug confining said spring, substantially as and for the purpose set forth.

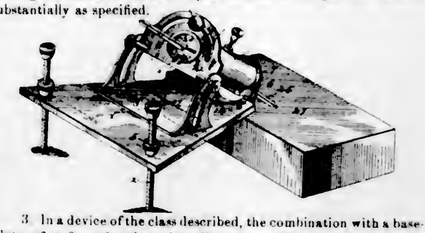
6. The combination of a power shaft, the two part clutch mechanism mounted upon said power shaft, the ratchet wheel, the load pinion, the pawl-supporting shaft, gearing between the power shaft and the pawl-supporting shaft, and a pawl mounted upon said shaft and having frictional engagement therewith and adapted to engage the ratchet-wheel, substantially as and for the purpose set forth.

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530,735. HOLDER FOR SHARPENING GRAVERS OR OTHER TOOLS. JULIUS J. VERNIER, Toledo, Ohio. Filed Mar. 26, 1894. Serial No. 505,172. (No model.)

*Claim.*—1. In a device of the class described, the combination with a base-plate, of a tool socket supported thereon, means for adjusting the tool socket revolubly upon its axis as a center and angularly with relation to the base-plate, and means for securing a tool in the socket approximately in alignment with the axis thereof, substantially as specified.

2. In a device of the class described, the combination with a base-plate, of a front bracket pivotally connected to the base-plate, a rear bracket provided with means for adjustment toward and from the plane of the base plate, a revolubly adjustable tool socket mounted at its extremities in aligned openings in said brackets, and means for locking the socket in the desired position and securing a tool therein, substantially as specified.



3. In a device of the class described, the combination with a base-plate, of a front bracket pivotally connected thereto, segmentally slotted gage-guides, a rear bracket, shouldered thumb-screws extending through the slots of the gage-guides and engaging sockets in the rear bracket, a tool-socket removably and revolubly mounted in registering openings in said brackets, and means for securing the socket in the desired position and locking a tool therein, substantially as specified.

4. In a device of the class described, the combination with a base-plate, of a front bracket pivotally connected thereto, a rear bracket, means for adjusting the rear bracket toward and from the plane of the plate, a tool-socket fitting loosely and revolubly in openings in said brackets and provided at one end with a lug, a ring fitted on the socket and provided with a radial ear, a set-screw extending through a segmental slot in the rear bracket and engaging a socket in said ear, and means for securing a tool in the socket, substantially as specified.

5. In a device of the class described, the combination with a base plate, of a tool-socket provided with terminal rests having notches of which the one adjacent to the front end of the socket is V-shaped, means for locking a tool in said notches, and means for adjusting the socket angularly and revolubly, substantially as specified.

6. In a device of the class described, the combination of a base-plate, adjustable supports threaded in perforations at the rear angles of the plate, jam-nuts to secure the supports at the desired adjustment, an angular and revolubly adjustable tool-socket mounted upon the plate, and means for securing a tool in said socket, substantially as specified.

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530,736. WHEEL-RIM. EDWARD WARWICK, Birmingham, England. Filed Dec. 6, 1893. Serial No. 492,914. (No model.) Patented in England Sept. 14, 1893, No. 17,307.



*Claim.*—A wheel rim, comprising a strip of metal formed into a hoop having the meeting ends thereof engaged by a strip *k*, the ends of which are turned inward so as to be embraced by said hoop ends which are bent over the same and the said metal strip so bent as to form a rectangular recess or trough within the rim for the reception of the spokes of a wheel and the flaring surface of said bent metal strip having straight portions merging with arched surfaces reversely arranged with respect to each other and terminating in the outer ends of the formed rim in tubular channels having strengthening bars inserted therein and supported thereby in the manner shown and described and for the purposes set forth.

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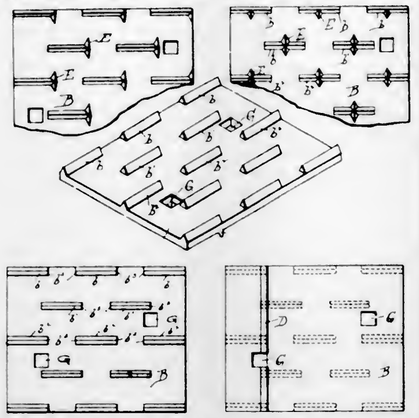
530,737. GARMENT-FASTENER. WILLIAM S. WHEATFIELD, New York, N. Y. Filed Sept. 8, 1894. Serial No. 522,474. (No model.)



*Claim.*—As an improved article of manufacture, a garment fastener hasp, with an elevated, straight bridge strip having downward bends at each end thereof, lateral arrow head projections adjacent to the bends, said projections being extended and formed with rounded ends with inwardly curved recesses between the heads and ends, and central holes or apertures, thus forming thread bars for securing the hasp, substantially as described



530,738. RAILWAY TIE-PLATE. BENJAMIN WOLHAUPTER, Morgan Park, Ill. Filed Mar. 10, 1894. Serial No. 503,111. (No model.)



*Claim.*—1. A railway tie plate provided on its under side with one or more elongated divided ridges inside the outer edges of the plates, said ridges extending when in position upon the tie parallel with the grain of the tie, substantially as described.

2. A railway tie plate provided on its under side with one or more elongated divided ridges inside the outer edges of the plate, said ridges extending when in position on the tie, parallel with the grain of the tie and on its upper side with one or more rail abutting ridges, substantially as described.

3. A railway tie plate provided on its under side with one or more elongated divided ridges inside the outer edges of the plate, said ridges extending when in position on the tie parallel with the grain of the tie, a division of one ridge being out of transverse alignment with the divisions of the next adjacent ridge, substantially as described.

4. A railway tie plate provided on its under side with a series of divided ridges extending when in position on the tie parallel with the grain of the tie, a division of one ridge being out of transverse alignment with the divisions of the next adjacent ridge and the ends of a division of one ridge overlapping the ends of a division of the next adjacent ridge, substantially as described.

5. A railway tie plate provided on its under side with a series of ridges extending parallel with the grain of the tie, one or more of the ridges provided with spurs or projections, substantially as described.

6. A railway tie plate provided on its under side with a series of divided ridges extending when in position on the tie parallel with the grain of the tie, one or more of the divisions provided with projecting spurs, substantially as described.

7. A railway tie plate provided on its under side with a series of engaging devices consisting of one or more divided ridges adapted to engage it to the tie, and on its upper side with a series of ridges extending at right angles to the rail, said ridges being adapted after the plate is rolled to be cut away to form a way for the rail, substantially as described.

8. A railway tie plate provided on its under side with a series of divided ridges extending when in position parallel with the grain of the tie and on its upper side with a series of ridges extending parallel with the ridges on the under side, each of the said upper ridges being adapted after being rolled to be cut away to form a way for the rail, substantially as described.

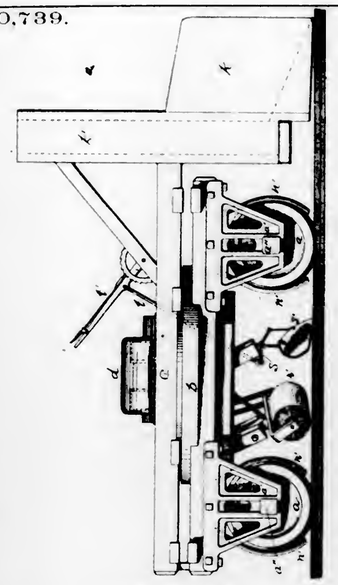
9. A railway tie plate provided on its under side with a series of divided ridges extending when in position on the tie, parallel with the grain thereof, and provided on its top with a series of divided ridges parallel with the ridges on the under side, the ends of the divisions of the upper ridges overlapping the ends of the divisions of the lower ridges, substantially as described.

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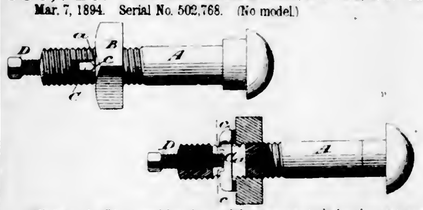
530,739. ROTARY SNOW-PLOW. WILLIAM O. WOOD, Syracuse, N. Y. Filed Dec. 13, 1893. Serial No. 493,520. (No model.)

*Claim.*—In a snow plow a main frame mounted upon wheels and a turn table erected thereon, in combination with an auxiliary frame mounted upon said turn table a motor mounted thereon, a case carried by said auxiliary frame, a winged head within said case operated by said motor and a rotating sweeper and a flange suspended from said frame and means for rotating said sweeper.

530,739.



530,740. NUT-LOCK. HORACE L. WOOD, New York, N. Y. Filed Mar. 7, 1894. Serial No. 502,768. (No model.)

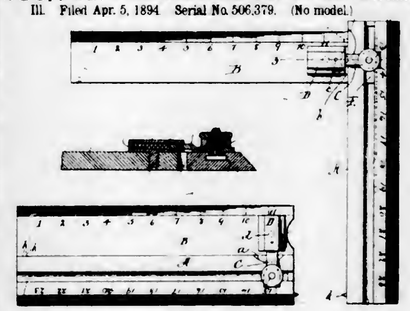


*Claim.*—1. The combination with a screw-bolt having a transverse slot and having in its end a screw-threaded longitudinal bore communicating with said slot, of a nut screwing onto said bolt, a clamp or dog inserted into said slot outside of the nut and a set screw screwing into said bore to press the clamp or dog against the nut, substantially as herein set forth.

2. The combination with a screw-bolt having a transverse slot through its threaded portion and having in its end a screw-threaded longitudinal bore communicating with said slot, of a nut screwing on to said bolt, a clamp or dog inserted through said slot and projecting therefrom on opposite sides of the bolt and a set-screw screwing into said bore, the so projecting portions of said clamp or dog having sharp edges to be indented into the nut by the pressure of the set screw, substantially as herein set forth.

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530,741. DRAFTSMAN'S RULE. FRANCIS W. ALTPETER, Chicago, Ill. Filed Apr. 5, 1894. Serial No. 506,379. (No model.)



*Claim.*—1. The combination in a draftsman's rule, of the two members, A, B, the member A having a longitudinal channel with contracted opening, a T-headed stud, E, projecting outwardly and adapted to slide in the channel, and a spring retracted extensible arm for uniting the two members and being pivoted to the member, B, and apertured to receive the stud, E, substantially as described and for the purpose specified.

2. The combination, in a draftsman's rule, of a member, A, having a longitudinal channel with contracted opening, a block adapted to slide within the channel, a stud E, set in the block and projecting outwardly through the channel opening, a member, B, adapted to be joined to the member, A, end to end, or to have its end abut against the edge of member A, and slide thereon, and having its abutting end recessed to facilitate change of angular position, a spring retracted arm for uniting the two members and being pivoted to the member, B, and recessed to receive the stud, E, substantially as described and for the purpose specified.

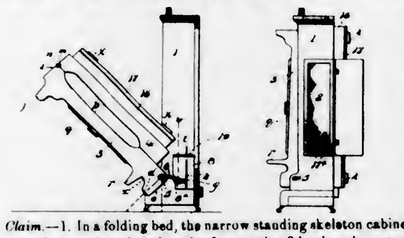
3. The combination, in a draftsman's rule, of two members, A, B, adapted to co-operate end to end, or the one perpendicular to the other, of a spring retracted arm for uniting the two members, said arm being pivoted to one member by a fixed pin and to the other by means of a pin adapted to move longitudinally upon said member, substantially as described and for the purpose specified.

4. In an adjustable draftsman's rule, the combination with the member A, having a square end and a concave recess in one of its edges near such end, of a member, B, a spring retracted arm for uniting the two members and being pivoted to the member, B, at a fixed point and to the member, A, by a movable pin, whereby the end of the member, B, may be held in contact with the recessed edge of the member, A, said recess allowing the member, B, to be turned to bring its edge against the edge of the member, A, substantially as described and for the purpose specified.

5. The combination, in a draftsman's rule, of two members, A, B, adapted to co-operate end to end or the one perpendicular to the other, of a spring retracted arm, C, for uniting the two members, said arm being pivoted to the member A, a socketed block attached to the member B, the arm C being adapted to slide within such socket, substantially as described

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530,742. **FOLDING BED.** RICHARD T. BARTON, New Haven, Conn. Filed Feb. 14, 1893. Serial No. 462,340. (No model.)



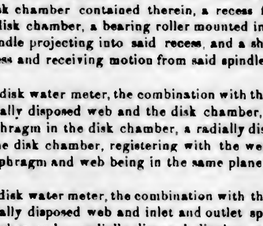
*Claim.*—1. In a folding bed, the narrow standing skeleton cabinet 1, narrow bed sections 3 and 4, the first section 3 having the extension *d*, by means of which said first section is pivotally supported to the cabinet, as shown, so as to carry said sections when opened therefrom, entirely outside of said cabinet, the second bed section 4 interchangeably pivoted to the first section, as shown so that it may be opened to the right or left, box 16 attached to the second section extending substantially the full length thereof and serving a two fold purpose, viz: as a receptacle for bedding or other like articles and a support for said section when unfolded, the cabinet open back and front and constructed of less depth than the folded sections, thus giving free access to said box or receptacle when said sections are closed therein.

2. In a folding bed of the character described, the narrow skeleton cabinet 1 open back and front, narrow longitudinal bed sections 3 and 4 interchangeably hinged together as shown, so that one section may be unfolded to the right or left of the other section and the cabinet, folding foot and head boards in each section arranged to be locked together when opened, the longitudinal side rails of each bed section cut away so as to afford free circulation of air between the same when closed, box 16 arranged upon and substantially the same length of the upper section and serving both as a support therefor, when unfolded, and also as a receptacle for bedding or other like articles, the lower bed section 3 having extension *d* pivotally supported to shaft 5 of the cabinet, links 6 rigidly supported to said shaft, lifting rod 8 mounted in their free ends as shown, weight box 8 having elongated groove or slot *g* with which the said lifting rod of the links engage so as to move said box in a direct vertical line, removable weights therefor so as to readily balance the bed sections, stay pins upon which weights are placed to keep them in position, as set forth.

3. In a folding bed of the character described, the skeleton cabinet 1, open back and front as shown, folding bed sections 3 and 4 arranged to operate as shown, and arranged when folded and closed within the cabinet to project therefrom, both back and front, weight box 8 connected to and arranged to be operated by one of said bed sections, in the manner described and shown, side closets 2 on said cabinet to hold the bed weights when not in use as well as other articles for which such closets may be adapted, all constructed to operate as set forth.

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530,743. **WATER-METER.** GEORGE B. BASSETT, Buffalo, N. Y. Filed July 28, 1894. Serial No. 518,788. (No model.)



*Claim.*—1. In a water meter, the combination with a disk-chamber, of a bushing removably mounted in said disk chamber and forming a bearing for the intermediate gearing shaft, substantially as described.

2. In a water meter, the combination with a separate outer surrounding case and a disk-chamber contained therein, of a bushing mounted in said disk-chamber and forming a bearing for the intermediate gearing shaft, substantially as described.

3. In a water meter, the combination with the disk-chamber, the disk and its spindle, of a bearing roller controlling the disk spindle, said roller being located in a chamber or recess formed by walls integral with the said disk chamber, substantially as described.

4. In a water meter, the combination with a separate outer case, of a disk-chamber provided with a cone-shaped end and having a recess formed in the cone of said disk-chamber, a disk and spindle in said chamber, and a bearing roller controlling the disk spindle and mounted in said recess, substantially as described.

5. In a water meter, the combination with the disk-chamber having a conical end and an inclosed recess forming an integral part thereof, of a bearing roller for the disk spindle mounted in said recess and intermediate gearing mounted on a pin fixed to the said disk-chamber, substantially as described.

6. In a disk water meter, the combination with an outer surrounding case having inlet and outlet openings, of a disk-chamber held in place in said outer case by an annular projection formed integral with one of the end cones of said disk chamber extending into an annular notch formed in the meeting flanges of said outer case, substantially as described.

7. In a disk water meter, the combination with an outer surrounding case having inlet and outlet openings, of a transverse web and an inner disk-chamber so located as to divide the total space between the inner wall of said outer case and the outer wall of said disk chamber into three compartments, substantially as described.

8. In a water meter, the combination with a disk-chamber having a conical part provided with a web or fin radially disposed across its outer side, of an outer surrounding case one part of which has a radially disposed partition that registers with said web, for the purposes specified.

9. In a disk water meter, an outer casing provided with inlet and outlet spuds, and having a radially disposed partition at right angles to the center line of the inlet and outlet spuds, substantially as described.

10. In a water meter, the combination with a separate outer case, of a disk chamber contained therein, a recess formed in one cone of said disk chamber, a bearing roller mounted in said recess, a disk with spindle projecting into said recess, and a shaft projecting into said recess and receiving motion from said spindle, substantially as described.

11. In a disk water meter, the combination with the outer casing having a radially disposed web and the disk chamber, of a radially disposed diaphragm in the disk chamber, a radially disposed web on one end of the disk chamber, registering with the web in the outer case, said diaphragm and web being in the same plane, substantially as described.

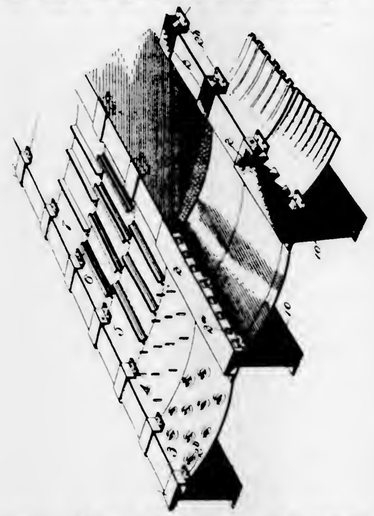
12. In a disk water meter, the combination with the outer casing having a radially disposed web and inlet and outlet spuds, and with the disk chamber and a radially disposed diaphragm therein, of a radially disposed web on one cone of the disk chamber registering with a radially disposed web in the outer case, a diaphragm and web being at right angles to the center line of the inlet and outlet spuds, substantially as described.

13. In a water meter, the combination with intermediate gearing permanently mounted on the end of the disk chamber, of a bearing roller for the disk spindle mounted in a recess within the end cone of the disk chamber, substantially as described.

14. In a water meter, the combination with a separate outer surrounding case containing inlet and outlet spuds, of the disk and disk-spindle and a separate inner disk-chamber and recess, entirely surrounding the disk and disk-spindle and its bearing roller, thus maintaining an equal pressure on both sides of the disk ball, substantially as described.

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530,744. **FLOOR CONSTRUCTION.** PRESTON M. BRUNER, St. Louis, Mo. Filed Oct. 1, 1894. Serial No. 524,629. (No model.)



*Claim.*—1. The combination with supporting beams, of sheet metal or webbing which is supported from the tops of said beams, said metal or webbing spanning the bay and being so formed that the material which is laid thereon to form the floor, comes in contact with the supporting beams to prevent a swinging or lateral movement, substantially as described.

2. The combination with supporting beams, of sheet metal or webbing which is supported from the tops of said beams, and which bridges the bay, said supporting beams having their channels filled in with composition material between the webs of the beams and depending portions of the caps, whereby lateral movement of the middle portion of the span is prevented, substantially as described.

3. The combination with supporting beams, of caps which are provided with depending flanges, which flanges are formed with openings through which may be introduced the material composing the floor proper, and a permanent substructure, which is secured to the flanges of said cap, substantially as described.

4. The combination with supporting beams, of caps which straddle the same, depending flanges extending from said caps, said flanges being so formed as to afford means of attachment for the substructure and to permit the material to be forced behind the flanges, and sheet metal which bridges the bay and is permanently secured to said caps, substantially as described.

5. The combination with supporting beams, of caps, and sheet metal or webbing which is secured to the caps and bridges the bay, said sheet metal or webbing being bellied or sagged at its middle portion, and having means for affording an intimate attachment of the composition material thereto, substantially as described.

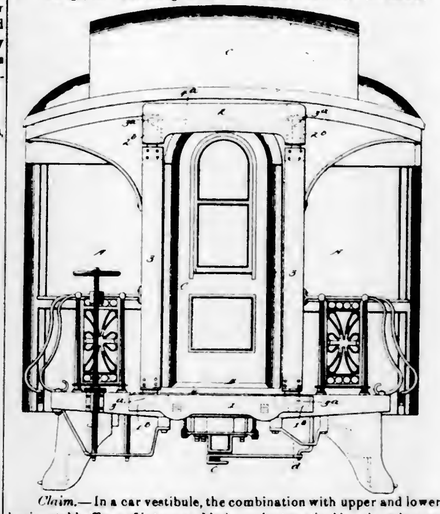
6. A floor which is composed of sheet metal or webbing, and composition material, said metal being continuous the length of the bay and sagged between its points of support so as to continuously increase the bulk of material midway the bay, substantially as described.

7. The combination with the supports, of caps straddling the same, sheet metal or webbing which is secured to said caps, and which metal bridges the bay, means on the sheet metal or webbing for affording intimate attachment therebetween and the composition material which is laid thereon, said sheet being sagged at its middle, so that when the material forming the floor proper is leveled, its greatest thickness will be at the middle of the span, substantially as described.

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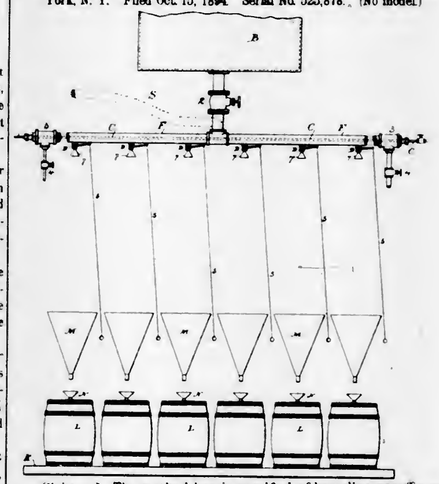
530,745. **CAR-VESTIBULE DIAPHRAGM.** HARRY C. BUHOUP, Chicago, Ill. Filed Aug. 30, 1894. Serial No. 521,749. (No model.)



*Claim.*—In a car vestibule, the combination with upper and lower horizontal buffers, of interposed independent vertical legs loosely connected with each of said buffers: substantially as and for the purposes specified.

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530,746. **BARRELING PARAFFIN, &c.** CHARLES C. BURKE, New York, N. Y. Filed Oct. 15, 1894. Serial No. 525,878. (No model.)



*Claim.*—1. The method herein specified of barreling paraffin or similar material, consisting in melting the paraffin, running the same from an elevated vessel, discharging the paraffin in small streams or thin layers, allowing the same to fall through the atmosphere the necessary distance for parting with the required amount of heat and receiving such material into barrels at a temperature corresponding or nearly so to the crystallizing or consolidating point of the wax, substantially as set forth.

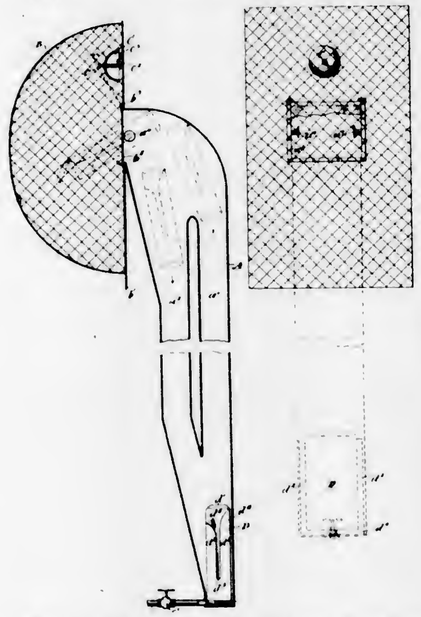
2. The combination in an apparatus for barreling paraffin and similar material, of an elevated tank for receiving the melted wax, a cock and horizontal pipe through which the paraffin is allowed to

flow, discharge cocks connected with the horizontal pipe, barrels and funnels or troughs for directing the material into the barrels, such paraffin or similar material being allowed to fall through the atmosphere a sufficient distance for reducing the temperature of the melted wax to the point of crystallization or nearly so, substantially as set forth.

3. The combination in an apparatus for barreling paraffin and similar material, of an elevated tank for receiving the melted wax, a cock and horizontal pipe through which the paraffin is allowed to flow, discharge cocks connected with the horizontal pipe, and spreaders upon which the melted wax is received from the cocks, barrels and funnels or troughs for directing the material into the barrels, such paraffin or similar material being allowed to fall through the atmosphere a sufficient distance for reducing the temperature of the melted wax to the point of crystallization or nearly so, substantially as set forth.

4. The combination in an apparatus for barreling paraffin and similar material, of a pipe through which the paraffin is allowed to flow, discharge cocks connected with the pipe, barrels and funnels or troughs for directing the material into the barrels, such paraffin or similar material being allowed to fall through the atmosphere a sufficient distance for reducing the temperature of the melted wax to the point of crystallization or nearly so, substantially as set forth.

530,747. PARCEL-DELIVERY SYSTEM. KATHARINE J. C. CARVILLE, New York, N. Y. Filed Feb. 19, 1894. Serial No. 500,759. (No model.)



*Claim.*—1. In a parcel delivery system a hollow carrier loaded at its base, and adapted to receive a parcel, and when inverted to discharge the same, and provided with axis bearings near its base, in combination with means to project and guide the carrier, and to receive the same in its axis bearings, and after the carrier is inverted by the weight of its contents and released by the weight of its base, to permit its return to the point of departure by the force of gravity and suitable guides, substantially as described.

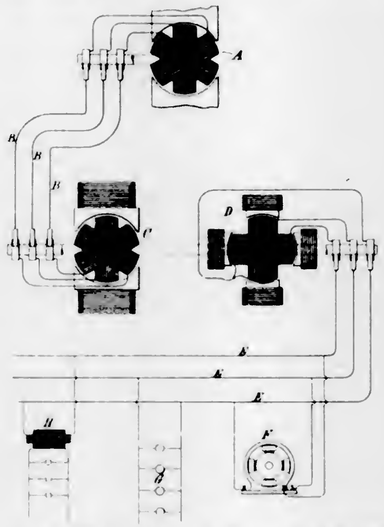
2. In a parcel delivery system the combination of a hollow carrier loaded at its base, and adapted to receive a parcel, and when inverted to discharge the same, ways secured to each side of the carrier, terminating in bearings, forming an axis for the carrier near its base, means to project and guide the carrier and to receive the same in its axis bearings, and when the contents of the carrier are discharged to permit its return to the point of departure by the force of gravity and suitable guides, substantially as described.

3. In a parcel delivery system the combination of a hollow carrier loaded at its base, and adapted to receive a parcel, and when inverted to discharge the same, ways secured to each side of the carrier, terminating in bearings, forming an axis for the carrier near its base, and means controlling pneumatic pressure to project the carrier and means to guide the same, and means to receive the carrier in its axis bearings, and after the carrier is inverted by the weight of its contents and released by the weight of its base, to guide the carrier to its point of departure by the force of gravity, substantially as described.

4. In a parcel delivery system a hollow carrier loaded at its base and adapted to receive a parcel, and when inverted to discharge the same, ways secured to each side of the carrier terminating in bearings, forming an axis for the carrier near its base and means controlling pneumatic pressure to project the carrier and means to guide the same, and means to receive the carrier in its axis bearings, a pouch to receive the contents of the carrier, and after the carrier is inverted by the weight of its contents and released by the weight of its base, means to guide the carrier to its point of departure by the force of gravity, substantially as described.

5. In a parcel delivery system the combination of a hollow carrier loaded at its base and adapted to receive a parcel, and when inverted to discharge the same, ways secured to each side of the carrier, terminating in bearings forming an axis for the carrier near its base and means controlling pneumatic pressure to project the carrier and means to guide the same, and means to receive the carrier in its axis bearings, a pouch to receive the contents of the carrier and an alarm operated by the movement of the carrier and means to guide the carrier to its point of departure by the force of gravity when the same is inverted by the weight of its contents and released by the weight of its base, substantially as described.

530,748. SYSTEM OF TRANSMITTING AND DISTRIBUTING ELECTRICAL ENERGY. CUMMINGS C. CHESNEY, Pittsfield, Mass., assignor to the Stanley Laboratory Company, same place. Filed Apr. 19, 1894. Serial No. 508,079. (No model.)



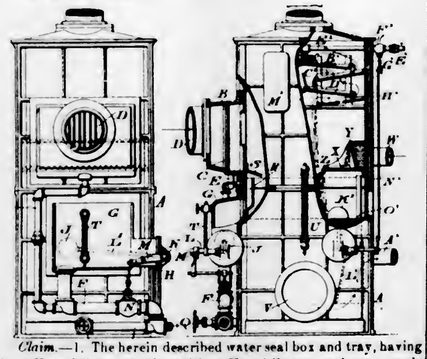
*Claim.*—1. The method of transmitting and distributing electric energy which consists in generating three phase currents of low frequency and high tension, operating by these a motor, driving by such motor a two phase generator adapted to yield currents of high frequency and distributing such currents to translating devices, as set forth.

2. The combination in a system of transmitting and distributing electric energy, of a three phase generator, a three phase motor located near the center of distribution driven by the currents from said generator, a two phase secondary generator mechanically connected with said motor, and translating devices supplied with current from the two phase generator as set forth.

3. The combination in a system of electrical transmission and distribution, of a primary three phase generator adapted to produce currents of low frequency and high tension, a three phase motor near the center of distribution operated by the currents from said generator, a two phase secondary generator adapted to produce currents of high frequency and translating devices operated thereby as set forth.



530,749. FEED-WATER HEATER, PURIFIER, AND SEPARATOR. DAVID COCHRANE, Philadelphia, Pa., assignor to the Harrison Safety Boiler Works, same place. Filed Apr. 20, 1894. Serial No. 508,342. (No model.)



*Claim.*—1. The herein described water seal box and tray, having a base X, and the serrated partitions Y and Z, arranged at an angle thereto said box being adapted to be attached to a heater, substantially as described.

2. A water seal box and tray provided with a base X, and the partitions Y and Z adapted to be attached to the interior of a feed water heater, substantially as described.

3. A feed water heater, a steam separator, and a steam trap suitably attached thereto, and independent passages leading from the heater and separator to the same, said trap being provided with a valve, waste pipe, and float-actuated mechanism communicating therewith, said parts being combined substantially as and for the purpose set forth.

4. A feed water heater, a steam separator and trap attached thereto, independent passages from the separator and leading to the trap, float-actuated mechanism for relieving the trap of any accumulation of water, and a water seal device located opposite the return pipe of the heater, said parts being combined substantially as described.

5. In a feed water heater, having a return pipe, a water seal box and tray adjacent thereto, a pipe leading to a feed pump, an inlet for exhaust steam above the water level of the heater, a cold water supply pipe for the heater, a float-actuated mechanism connected to the cold water supply pipe, whereby any lowering of the water level in the tank will cause an inflow of cold water, and vice-versa, substantially as described.

6. In a feed water heater, having a return pipe, a water seal box or tray adjacent thereto, a pipe leading to a feed pump, an inlet for exhaust steam above the water level of the heater, a cold water supply pipe for the heater, a hood projecting over said pipe, leading to the feed pump, float actuated mechanism connected to the cold water supply pipe, whereby any lowering of the water level in the tank will cause an inflow of cold water, and vice-versa, substantially as described.

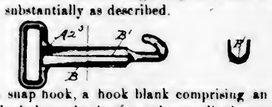
7. A feed water heater provided with a separator, and a trap attached thereto, independent passages leading from the separator and heater to said trap, float actuated mechanism, whereby any undue accumulation of water in the trap is prevented, a water seal placed adjacent to the return pipe inlet, a cold water inlet pipe, float-actuated mechanism connected therewith, said parts being combined substantially as described.

8. In a feed water heating device of the character described, a pipe P leading to the atmosphere, a back pressure valve therein, pipes below said valve leading to radiators or heating systems, an auxiliary live steam pipe S entering the pipe P, below the back pressure valve, provided with a reducing valve T, set at a lower pressure than the back pressure valve, said parts being combined substantially as and for the purpose set forth.

9. A feed water heater, a steam separator, and a steam trap attached thereto, and independent passages leading from the heater and separator to said trap, the passage leading from the heater being provided with a valved waste pipe, and float actuated mechanism operating therewith, said parts being combined substantially as described.

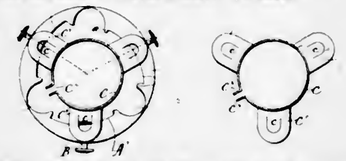
530,750. SNAP-HOOK. JAMES C. COVERT, West Troy, N. Y. Filed July 27, 1894. Serial No. 518,693. (No model.)

*Claim.*—1. In a bolt snap hook, a hook blank comprising an integral barrel in which the bolt works, having a longitudinal groove in its base extending from a point at or near the rear of the barrel to the hooked end thereof, and an elongated guide slot in the upper end of the barrel, substantially as described.



2. In a bolt snap hook, a hook blank comprising an integral barrel in which the bolt works, having a longitudinal groove in its base extending to the hooked end thereof, increasing in depth toward the hooked end, substantially as described.

530,751. SHADE-HOLDER FOR INCANDESCENT ELECTRIC LAMPS. NATHAN W. CRANDALL and EDGAR A. RUSSELL, Wallingford, Conn., assignors to the Housatonic Manufacturing Company, same place. Filed June 18, 1894. Serial No. 514,936. (No model.)



*Claim.*—1. In a shade holder for incandescent electric lamps, the combination with a shade-ring, of a clamping-ring made independently thereof, one of the said rings being constructed with a cam, and the other ring being adapted to engage with the same for adjusting the clamping-ring, and the two rings being permanently, though loosely, connected together substantially as described.

2. In a shade-holder for incandescent electric-lamps the combination with a shade-ring constructed with a cam, and with two stops respectively located at the ends of the same; of a clamping ring constructed with a locking-finger for engagement with the said cam to effect the adjustment of the clamping-ring and with the said stops to limit the rotation of the two rings on each other whereby they are permanently, though loosely, connected together, substantially as described.

3. In a shade-holder for incandescent electric-lamps, the combination with a shade-ring having its body constructed with a large central opening, the walls of which are formed in part by cams, of a clamping-ring provided with radial arms having locking-fingers which engage with the said cams for adjusting the clamping-ring which is permanently, though loosely, connected with the shade ring, substantially as described.

4. In a shade-holder for incandescent electric lamps, the combination with a shade-ring having a central opening containing a cam, of a clamping-ring constructed with a locking finger passing through the said opening and extending outward and engaging with the said cam, whereby the two rings are permanently though loosely connected together, and whereby also the clamping-ring is adjusted through the action of the cam on the said finger, substantially as described.

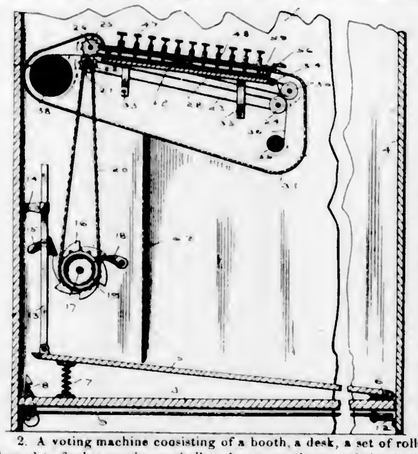
5. In a shade-holder for incandescent electric lamps, the combination with a shade-ring having its body constructed with a large central opening, the walls of which are formed by cams flanked at their ends by stops, of a clamping-ring constructed with locking-fingers arranged to pass down through the said opening and then bent outward, whereby the two rings are permanently though loosely connected together, and the clamping-ring adjusted by the co-action of the fingers and cams, and whereby also the rotation of the clamping ring in either direction is limited by the engagement of the locking-fingers with the said stops, substantially as described.

6. In a shade-holder for incandescent lamps, the combination with a shade-ring, of a clamping ring, the said rings being made independently of each other, and permanently though loosely connected together for rotation one upon the other to effect the contraction of the clamping-ring or to permit its expansion, substantially as described.

7. In a shade holder for incandescent lamps, the combination with a shade-ring, of a clamping-ring, the said rings being permanently though loosely connected together for the rotation of one upon the other, and one of the parts being constructed with a cam with which the other part co-acts for the contraction of the clamping-ring, substantially as described.

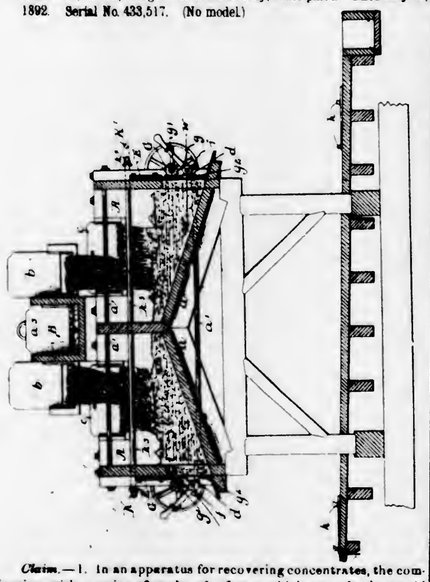
530,752. VOTING-MACHINE. DOUGLAS DOBBINS, Franklin, Ind., assignor to Thomas J. Coyle, Wm. B. Jennings, Thomas E. Valentine, F. N. Whitesides, Wm. D. Welsh, Emil H. Jennings, Benjamin P. Brown, Jesse T. Overstreet, and L. Byron Whitesides, same place, and John C. McNutt, Indianapolis, Ind. Filed June 26, 1893. Serial No. 478,804. (No model.)

*Claim.*—1. A voting machine consisting of a desk, a top over such desk consisting of glass panels, rows of spring controlled stamps beside such panels, a continuous ballot sheet between the desk and glass panels, one ticket being under one glass panel, and the party emblem and each candidate's name being opposite the stamps, a roll within such desk on which such ballot sheet is wound, a pair of contiguous rolls between which such ballot sheet may pass, means of actuating such rolls in opposite directions, and a spring actuated roll adapted to draw the ballot sheet over the top of the desk and around itself far enough to withdraw a voted ticket and to substitute for it a new ticket properly located, substantially as shown and described.



2. A voting machine coosisting of a booth, a desk, a set of rolls adapted to feed a continuous ballot sheet over the top of the desk, a pedal, a vertical bar mounted thereon and provided with an actuating pawl, a ratchet wheel mounted on a shaft in the booth, a sprocket wheel on such shaft, a sprocket wheel mounted on a roll in the desk, a sprocket chain connecting the sprocket wheels, pulleys connecting the rolls, and means of marking the ballot sheet, substantially as shown and described.

530,753. METHOD OF RECOVERING CONCENTRATES AND APPARATUS FOR CARRYING OUT SAID METHOD. JOHN S. DOUGHERTY, Anaconda, Mont., assignor to Marcus Daly, same place. Filed May 19, 1892. Serial No. 433,517. (No model.)



*Claim.*—1. In an apparatus for recovering concentrates, the combination with a series of tanks of a flume which extends along said tanks a gate between said flume and one of the tanks and a gate in said flume adjacent to the gate between flume and tank.

2. In an apparatus for recovering concentrates, the combination with a series of tanks of a flume which extends alongside said tanks, gates between said flume and two or more of said tanks and gates in said flume adjacent to the gates between the flume and tanks and outlets from one tank to the adjacent tank in the series.

3. In an apparatus for recovering concentrates, a tank provided with an inclined bottom, guides in the side of said tank, an opening in said tank, a plate adapted to rest and have play in said guides and mechanism substantially as described to force said plate against the side of the tank.

4. In an apparatus for recovering concentrates, a tank provided with an inclined bottom, guides in the sides of said tank, an opening in said tank, a plate adapted to rest and have play in said guides, and an eccentric adapted to force said gate against the side of said tank.

5. In an apparatus for recovering concentrates, a tank provided with an inclined bottom, guides in the sides of said tank, an opening in said tank, a plate adapted to rest and have play in said guides, a bearing upon each of said guides, a shaft in said bearings, and eccentric clamps upon said shaft adapted to press against said plate.

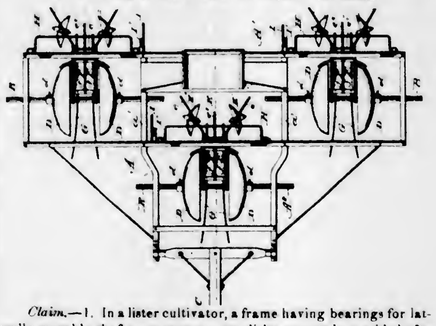
6. The hereinbefore described method of recovering concentrates, which consists in admitting the concentrates to one end of a series of tanks, allowing the liquid to overflow from one tank to the other to the end of the series of tanks, then reversing by admitting the concentrates to the tank at the other end of the series and allowing the liquid to overflow from one tank to the other to the tank first mentioned.

530,754. ART OF PUMPING. MARIE E. B. DU MARAIS, Paris, France. Filed Apr. 26, 1893. Serial No. 471,964. (No model.)

*Claim.*—1. That improvement in the art of pumping which consists in imparting to a fluid-column by rapidly successive lifting impulses a velocity so great that the momentum of said column is not lost in the time-intervals between said impulses, and in storing the energy of the impulses and restoring the same to the column between said impulses and in rendering the column elastic throughout its length or substantially so by mingling air-bubbles therewith, which air-bubbles remain in and form part of the column to or near the place of discharge thereof and escape into the atmosphere, whereby the losses due to shock and the transformation of external into internal work are lessened or avoided and the *vis viva* is conserved, substantially as and for the purposes set forth.

2. That improvement in the art of pumping which consists in imparting to a fluid-column by rapidly successive lifting impulses a velocity so great that the momentum of said column is not lost in the time intervals between said impulses, and in storing the energy of the impulses and restoring the same to the column between said impulses and in rendering the column elastic throughout its length or substantially so by introducing air-bubbles therein at a point between the starting place thereof and the point of impulsion, which air-bubbles remain in and form part of the column to or near the place of discharge thereof, whereby the losses due to shock and the transformation of external into internal work are reduced or avoided and the *vis viva* is conserved, substantially as and for the purposes set forth.

530,755. LISTER-CULTIVATOR. BENJAMIN F. ERWAY, Mapleton, Iowa. Filed Aug. 9, 1894. Serial No. 519,857. (No model.)



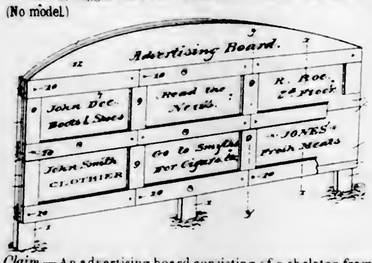
*Claim.*—1. In a lister cultivator, a frame having bearings for laterally movable shafts, concavo-convex disks mounted on said shafts, rock-shafts journaled on the main frame and connected to operating levers, and cultivator frames supported at their forward ends upon the laterally movable shafts and connected at their rear ends to the rock-shafts, substantially as shown and for the purpose set forth.



2. The combination in a lister cultivator, of a frame constructed substantially as shown, shafts loosely mounted in bearings and provided with concavo-convex disks adjustably mounted on said shafts, and cultivator frames supported upon the shafts between the concavo-convex disks.

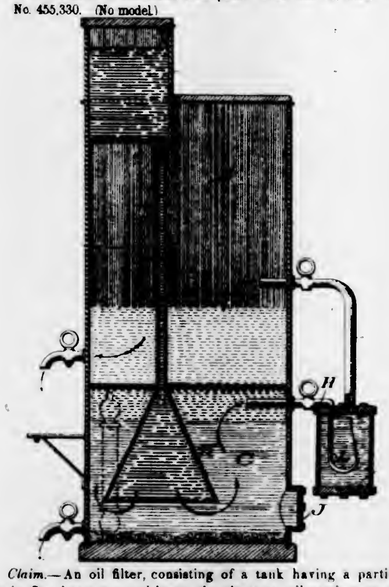
3. The combination in a lister cultivator, of a frame constructed substantially as shown, shafts B journaled in bearings supported by the frame, concavo-convex disks adjustably mounted on said shafts, cultivator frames carrying cultivators supported upon the shafts B, together with rock-shafts having operating levers, the cultivator frames being connected to said rock-shafts, substantially as shown and for the purpose set forth.

530,756. ADVERTISING-BOARD. GEORGE C. EVANS and JOSEPH W. LAYNE, Higginsville, Mo. Filed June 4, 1894. Serial No. 513,440. (No model.)



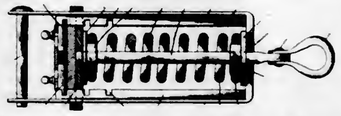

*Claim.*—An advertising board consisting of a skeleton frame provided with legs or posts by which it may be supported in an upright position, a cleat extending horizontally along the lower side of the frame, a series of independent sign cards mounted upon the cleat and supported thereby, a second series of sign cards mounted above the first and with their edges upon the same, and a series of short strips removably secured to the frame and with the edges of the cards between them and the frame, said strips being of two different lengths, equal, respectively, to the length and width of the cards, whereby the cards may be removed and replaced independently of each other, substantially as described.

530,757. OIL-FILTER. JOSEPH T. FEWKES, Philadelphia, Pa., assignor to Ellen H. Anderson, same place. Filed Dec. 16, 1892. Serial No. 455,330. (No model.)




*Claim.*—An oil filter, consisting of a tank having a partition therein, forming upper and lower chambers, an oil receiver on said tank, with a discharge pipe passing through said upper chamber, and provided with an outlet in said lower chamber, a secondary filtering vessel outside of said tank, a pipe leading from the upper part of said lower chamber to a goose neck in the lower part of said secondary vessel, a pipe leading from said secondary vessel to said upper chamber, and a discharge faucet for said upper chamber, said parts being combined substantially as described.

530,758. SPRING-COCKEYE. WILLIAM FINTER, Pleasant Hill, Mo., assignor of one-half to H. B. Beach, same place. Filed May 28, 1894. Serial No. 512,747. (No model.)



*Claim.*—1. The combination of a frame, a draft rod mounted therein, a cross-bar slidingly mounted on the frame and connected with the draft rod, a spring disposed on the draft rod and interposed between the sliding cross-bar and the rear end of the frame, an adjustable cross-bar located on the frame in advance of the sliding cross-bar and limiting the inward movement of the draft rod and devices for securing the ends of the adjustable cross bar to the frame, whereby the tension of the spring may be regulated, substantially as described.

2. The combination of a rectangular frame provided at its rear end with an opening, a draft rod arranged in the opening and carrying at its rear end a cockeye, a sliding cross-bar connected to the front end of the draft rod and provided with openings receiving the sides of the frame, a spiral spring disposed on the draft rod and interposed between the sliding cross-bar and the rear end of the frame, and an adjustable cross-bar arranged in advance of the sliding cross-bar and having openings receiving the sides of the frame, said adjustable cross-bar being provided with bolts for engaging the frame, whereby the tension of the spring is regulated, substantially as described.

3. The combination of a rectangular frame provided at the inner faces of its sides with notched guide flanges, a draft rod mounted in the frame and provided at its rear end with an eye, a sliding cross-bar provided at its ends with openings conforming to the configuration of and receiving the sides of the frame and the flanges thereof and connected between its ends with the draft rod, a spiral spring disposed on the draft rod, and interposed between the sliding cross-bar and the rear end of the frame, an adjustable cross-bar provided at its ends with slots conforming to the configuration of the flanges and the sides of the frame and having between its ends a hollow boss, and spring actuated bolts mounted in said boss and arranged to engage the notches of the flanges, substantially as described.

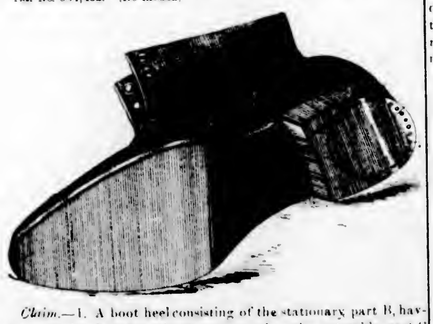
530,759. REVOLVER. CHARLES FOEHL, Philadelphia, Pa., assignor of one-half to Henry Ruhland, same place. Filed Jan. 30, 1894. Serial No. 498,437. (No model.)



*Claim.*—1. A fire arm having a rotary chamber with an annular recess in the rear end thereof, and a movable catch having one end freely entering said recess and adapted to be withdrawn therefrom, substantially as described.

2. A fire arm having a rotary chamber with an annular recess in the rear end thereof, a strap with a chamber therein, and a spring-actuated catch in said chamber, one limb of said catch occupying an opening in said strap, and the other limb freely engaging the end of the rotary chamber in said annular recess, substantially as described.

530,760. HEEL. GEORGE FOWLER, Philadelphia, Pa., assignor of one-half to James W. Mathers, same place. Filed Feb. 26, 1894. Serial No. 501,482. (No model.)



*Claim.*—1. A boot heel consisting of the stationary part B, having a semi-circular recess in its rear portion, the rotatable part C having a portion occupying said recess, the plate H with the nut G secured thereto, the screw E connecting said plate and the sole of the boot, the lift J covering said plate and the lift L secured to said lift J, said parts being combined substantially as described.

2. A boot heel consisting of the stationary part B, having a semi-circular recess in its rear portion, the rotatable part C having a portion occupying said recess, the plate H having the nut G with the wings N, the screw E connecting said plate and the sole of the boot, the lift J secured to said plate, and the lift L secured to the rim of the lift J, said part B having the flanged shoulder Q inclosing the rim of the plate H, said parts being combined substantially as described.

3. A heel formed of stationary and rotary parts, a lift carrying plate with a nut on the rotary part, a connecting screw passing through the sole and stationary part into the nut, a winged nut for preventing rotation of the rotary part, and a flange for the stationary part freely encircling said plate of the rotary part, the combination being substantially as described.

4. In a heel, a stationary part having a recess, a rotatable part having a portion occupying said recess, a plate with a nut thereon, a connecting screw for said plate, the litt J which is secured to said plate by the devices K, the lift L, which is secured to the lift J by the devices M, said devices K and M being independent of each other substantially as described.

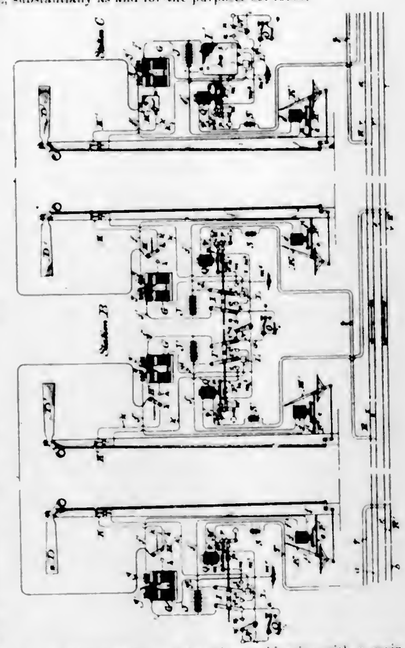
530,761. BEER-TAPPING DEVICE. HENRY FRIEDLANDER, Perry, Okla. Filed July 30, 1894. Serial No. 518,973. (No model.)



*Claim.*—In a device of the class described, a mandrel composed of a globular body portion, a head or handle formed integral with said body portion, said body portion and head having a slot or groove therein, and said body portion provided with a projecting lug or boss on its side, and a circular depression in its flattened base or bottom.

530,762. ELECTRICAL BLOCK-SIGNAL APPARATUS. URIAS J. FRY, Milwaukee, Wis., and GEORGE M. BASFORD, Oak Park, Ill. Filed July 5, 1893. Serial No. 479,553. (No model.)

*Claim.*—1. In block-signal apparatus the combination with a main line or circuit connecting stations, of a signal, an electrically controlled signal-locking device, a polarized magnet controlling the operation of said signal and constructed and arranged to positively shift its armature in opposite directions when energized by currents of opposite polarity, and to return said armature to its normal position when the main circuit is broken and a pole-changing switch arranged to reverse the current through the coils of said polarized magnet, substantially as and for the purposes set forth.



2. In block-signal apparatus the combination with a main line or circuit connecting stations, each of which is provided with a suitable signal, of a locking device for each signal, a polarized magnet controlling each locking device, and constructed and arranged to positively shift its armature in opposite directions when energized by currents of opposite polarity, and to return said armature to its normal position when the main circuit is broken and a pole-changing switch at each station arranged to reverse the current through the main line and the coils of the polarized magnet of another station, substantially as and for the purposes set forth.

3. In block-signal apparatus, the combination with a main line or circuit connecting stations each provided with suitable signal, and with electrical transmitting and receiving instruments, of signal-locking devices, polarized magnets controlling said locking devices, switches arranged to connect and disconnect either the polarized magnet or the transmitting and receiving instruments of each station with the main line, and pole-changing switches each arranged to reverse the current through the coils of the polarized magnet of another station substantially as and for the purposes set forth.

4. In block-signal apparatus the combination with a main line or circuit connecting stations each provided with a suitable signal and with electrical transmitting and receiving instruments, of signal-locking devices, polarized magnets controlling said locking devices, and pole-changing switches each arranged to reverse the current through the polarized magnet of another station, and to simultaneously cut out of circuit the transmitting and receiving instruments of the station where that pole-changing switch is located, substantially as and for the purposes set forth.

5. In block-signal apparatus, the combination with a main line or circuit connecting stations, of a signal, a polarized magnet controlling the operation of said signal, a pole changing switch located at another station and arranged to reverse the current through the main line, and a device arranged to control the circuit through the coils of said polarized magnet, and to be operated by said pole-changing switch, substantially as and for the purposes set forth.

6. In block-signal apparatus, the combination of a main line or circuit connecting two stations, one of which is provided with a signal and polarized magnet controlling the operation of said signal, and the other with a pole-changing switch, of a device arranged to control the circuit of said polarized magnet and to be shifted to abnormal position by said pole changing switch, and a train circuit arranged to effect or permit the restoration of said circuit controlling device to normal position, substantially as and for the purposes set forth.



7. In block-signal apparatus, the combination with a main line or circuit connecting distant stations, one of which is provided with a signal and a polarized magnet controlling the operation of said signal, and the other with a pole-changing switch, of a circuit controlling device arranged to be shifted into abnormal position by said switch, and in such position to render said magnet inoperative, a train circuit arranged to effect or permit the restoration of said circuit controlling device to normal position, and a detent arranged to hold said circuit controlling device in abnormal position and to be disengaged by said train circuit, substantially as and for the purposes set forth.

8. In block signal apparatus, the combination of a main circuit connecting two stations, one of which is provided with a signal and a polarized magnet controlling the operation of said signal, and the other, with a pole-changing switch, of a circuit breaker arranged to be opened by the operation of said switch, and a train circuit arranged to close said circuit, substantially as and for the purposes set forth.

9. In block-signal apparatus, the combination with a main circuit connecting the termini of a block, of a signal, a locking device controlling the operation of said signal, a local circuit provided with an electro-magnet arranged to unlock said signal, a polarized relay controlling said local circuit, and constructed and arranged to positively shift its armature in opposite directions when energized by currents of opposite polarity, and to automatically return said armature to its normal position when the main circuit is broken and a pole changing switch arranged to reverse the current of the main circuit through the coils of said polarized relay, substantially as and for the purposes set forth.

10. In block-signal apparatus, the combination of main lines or circuits connecting stations, each provided with signals and transmitting and receiving instruments, of electrically controlled locking devices governing the operation of said signals, and a switch at each intermediate station arranged to connect the transmitting instrument of that station with the main line leading to the next station in either direction, substantially as and for the purposes set forth.

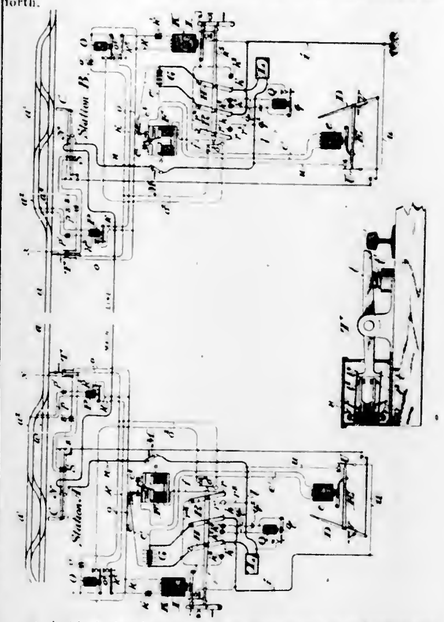
11. In block signal apparatus, the combination with a main line or circuit connecting distant stations each of which is provided with a battery and a suitable signal, of a locking device for each signal comprising an unlocking magnet in a local circuit with the main line battery, a polarized relay controlling said local circuit, and arranged to positively shift its armature in opposite directions when energized by currents of opposite polarity and to automatically return said armature to its normal position when the main circuit is broken, signal transmitting and receiving instruments at each station, a switch arranged to connect either the transmitting and receiving instruments and the battery or the polarized relay of each station with the main line, and a pole changing switch at each station arranged to reverse the poles of the main battery to the main line, whereby the entire energy of a single battery at each station is utilized for transmitting signals, operating the polarized relay of the distant station and unlocking the signal of the local station, substantially as and for the purposes set forth.

530,763. BLOCK-SIGNAL APPARATUS. URIAS J. FRY, Milwaukee, Wis., and GEORGE M. BASFORD, Oak Park, Ill. Filed Sept. 17, 1894. Serial No. 523,205. (No model.)

*Claim.*—1. In block signal apparatus, the combination with a main line or electric circuit connecting stations, each of which is provided with a signal, an electro-magnetic signal locking device and means of releasing the locking device of the distant station; of a circuit breaker adapted to render the signal releasing means inoperative after it has been operated, a magnet controlling said circuit breaker in a local circuit provided with two circuit breakers, which are controlled by separate train circuits or track instruments, substantially as and for the purposes set forth.

2. In block signal apparatus, the combination with a main line or electric circuit connecting stations, each of which has a suitable signal, an electro-magnetic signal locking device and means of releasing the locking device of the distant station; of a circuit breaker adapted to render said releasing means inoperative after each operation thereof, a magnet controlling said circuit breaker in a local circuit provided with two circuit breakers, magnets controlling said two circuit breakers in separate train controlled circuits and a secondary local circuit including the windings of one of said magnets and provided with two circuit breakers, one controlled by the included magnet and the other by the signal releasing means, substantially as and for the purposes set forth.

3. In block signal apparatus, the combination with a main line or electric circuit connecting stations, each of which is provided with a signal, a signal locking device, a polarized magnet controlling said locking device, and a pole changing switch; of a circuit breaker controlling the main circuit for reversed currents and arranged to be opened by the operation of the pole changing switch, a locking device for holding said circuit breaker open and a magnet controlling said locking device in a local circuit, having two circuit breakers, controlled by separate train circuits, whereby the passage of an approaching train over two points in one direction only is necessary to close or restore the main circuit, substantially as and for the purposes set forth.




4. In block signal apparatus, the combination with a main line or electric circuit connecting stations, each of which is provided with a signal, a signal locking device, a polarized magnet controlling said locking device, and a pole changing switch; of a circuit breaker controlling the main circuit for reversed currents, and arranged to be opened by the operation of the pole changing switch, a locking device for holding said circuit breaker open, a magnet for releasing said locking device in a primary local circuit having a circuit breaker, a magnet controlling said circuit breaker in a train circuit, and a secondary local circuit, having two circuit breakers, one controlled by the magnet in the train circuit and the other by the pole changing switch whereby the pole changing switch opens the primary local circuit when the current is reversed in the main line, but cannot close it, and an incoming train alone is enabled to close said primary local circuit, substantially as and for the purposes set forth.

5. In block signal apparatus, the combination with a main line or electric circuit connecting stations, each of which is provided with a signal, a signal locking device, a polarized magnet controlling said locking device, and a pole changing switch; of a circuit breaker controlling the main circuit for reversed currents and arranged to be opened by the operation of the pole changing switch, a locking device for holding said circuit breaker open, a magnet for releasing said locking device in a primary local circuit having two circuit breakers, train circuits having magnets controlling said two circuit breakers, and a secondary local circuit having two circuit breakers, one controlled by a magnet in one of the train circuits and the other by the pole changing switch, substantially as and for the purposes set forth.

6. In block signal apparatus, the combination with an electric circuit connecting stations, one of which has a signal, a signal locking device and a polarized magnet controlling said locking device, and the other, a pole changing switch; of a circuit breaker in the circuit of said pole changing switch for a reversed current, a magnet controlling said circuit breaker and having its windings included in the same circuit and a circuit breaker at the distant station arranged to be opened by the admission of a train at that station into the intervening block and to de-energize the magnet controlling the cir-

cuit breaker at the other station, substantially as and for the purposes set forth.

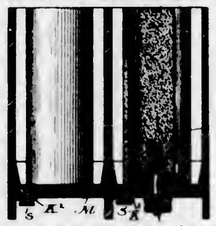
7. In block signal apparatus, the combination with a main line or electric circuit connecting stations, each of which has a signal, a signal locking device, a polarized magnet controlling said locking device and a pole changing switch; of a circuit breaker controlling the main circuit for a reversed current, a magnet controlling said circuit breaker and included in said main circuit, and a local circuit also including said magnet and rendered effective to close said circuit breaker by the movement of the pole changing switch from normal to abnormal position, substantially as and for the purposes set forth.

8. In block signal apparatus, the combination with a main electric circuit connecting stations, each of which is furnished with a signal, a signal locking device, a polarized magnet controlling said locking device and a pole changing switch; of a circuit breaker controlling the main circuit for a reversed current, a normally open local circuit arranged to be closed by the pole changing switch in its movement from normal to abnormal position, a magnet controlling said circuit breaker and included both in the main and local circuits, and a switch or circuit controller operated by the pole changing switch to short circuit the main battery connected therewith when the local circuit is closed, substantially as and for the purposes set forth.

9. In block signal apparatus, the combination with a main electric circuit connecting stations, each of which has a suitable signal, and a signal locking device, of a magnet for releasing said locking device in a local circuit, provided with a circuit breaker, and a polarized magnet adapted to be connected through the main line or circuit with the distant station, and arranged when energized by a normal reversed current to close said local circuit, but when energized by an abnormally strong reversed current, to operate said circuit breaker and open the local circuit, substantially as and for the purposes set forth.

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**530,764.** PRIMARY BATTERY. GEORGE H. GARDNER, Boston, Mass. Filed Mar 12, 1894. Serial No. 503,331. (No model.)

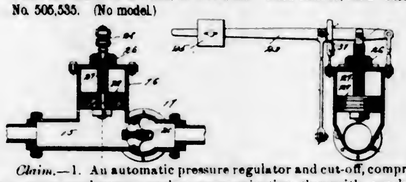


*Claim.*—1. In a primary battery, an annular metallic contact plate K molded into the material of which the cell is composed and having its edges overlaid by the said cell material and adapted to form a metallic lining for that part of the bottom of the cell that lies between the porous cup and the walls, substantially as and for the purpose set forth.

2. In a primary battery, the combination of the carbon element and porous cup; with a metallic terminal piece I'' having at its upper end a coarse sharp threaded screw adapted to work its own screw in connection with the lower end of the carbon element, and by aid of screw nuts at its lower end, to clamp the said carbon element and the porous cup to the bottom of the cell of the battery, the lower end of said metallic terminal piece passing through the bottom of the cell and being provided with a screw and screw nuts outside of said bottom, substantially as and for the purpose set forth.

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**530,765.** AUTOMATIC PRESSURE-REGULATOR AND STOP-VALVE. ISAAC N. GASKILL, St. Louis, Mo. Filed Mar. 29, 1894. Serial No. 505,535. (No model.)

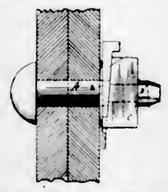


*Claim.*—1. An automatic pressure regulator and cut-off, comprising a steam conductor, a casing communicating therewith, a valve-plug mounted for oscillation within said casing, a weighted lever, a cylinder communicating with said casing, a piston mounted within said cylinder, a standard on said cylinder, a pin 31 removably mounted in an aperture in said standard beneath said lever, connections between said piston and the weighted lever, and connections between said lever and the valve-plug, whereby upon the variation of the steam pressure in said casing, the horizontal plane of the piston will co-incidently vary and automatically oscillate the valve-plug, whereby the flow of steam through said valve-plug is regulated and controlled.

2. In a device of the class described, a valve-plug semi-cylindrical in form and having slots therein, and an axial bore oval in cross-section, in combination with a shaft oval in cross-section and inserted in said bore, and lever mechanism connected with said shaft, whereby the same is actuated to oscillate the said plug.

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**530,766.** BOLT AND NUT LOCK. JAMES M. GASTON, Louisville, Ky. Filed Apr. 18, 1894. Serial No. 508,041. (No model.)



*Claim.*—1. The herein described threadless bolt and nut, comprising the rod or bolt having an unthreaded reduced portion at one end forming a shoulder against which the inner face of the nut seats, a series of parallel ribs on said reduced portion separated from each other by grooves or spaces, and having shoulders at their inner ends which form the outer bearing for the nut, a nut having an unthreaded opening for said bolt and having offset grooves corresponding in form to the ribs on the bolt, and separated from each other by ribs corresponding to the spaces separating the ribs on the bolt, and a locking device for securing said parts, substantially as specified.

2. A threadless bolt having an unthreaded nut-receiving portion of reduced diameter, forming an inwardly offset shoulder $a$, against which the nut seats, and a series of longitudinal parallel ribs A' upon the said reduced portion, the inner ends of said ribs being separated from the shoulder $a$, by a space substantially equal to the thickness of the nut which seats thereon, substantially as specified.

3. A threadless bolt having thereon a series of parallel segmental ribs A', a shoulder $a$, and a nut seat between said shoulder $a$ and the said ribs, in combination with a nut having grooves offset from its opening, said nut having a beveled inner face, and a locking device seating between said beveled face and shoulders on the said bolt, substantially as specified.

4. In a threadless bolt and nut device, the nut having an unthreaded bolt opening therethrough, a series of segmental grooves offset from the inner circumference of said opening, said grooves extending parallel with the axis of said opening, the inner face of said nut being beveled, and a rib or flange upon said beveled face, notched to receive a locking device, substantially as specified.

5. The combination with the threadless bolt A, having the shoulder $a$, the parallel, segmental ribs A', separated by grooves, and a nut seat between the shoulder $a$ and the inner ends of said ribs, of the nut having the unthreaded bolt opening, the parallel grooves offset from said opening, and corresponding to the said ribs A' of the bolt, the ribs between said grooves corresponding to the grooves between the ribs A', the beveled inner face, and the rib on said face having the oblique converging notches therein, and a locking device slotted at one end portion to receive the bolt and having prongs at each side of the slot arranged to engage the said converging notches, substantially as specified.

6. In combination, an unthreaded bolt having a nut seat thereon, and a series of parallel ribs, a nut having a series of grooves to pass said ribs, and a beveled inner face formed with a notched rib, and a locking device having a wedge surface for engagement with the beveled face of the nut, and prongs for engaging the said notched rib, substantially as specified.

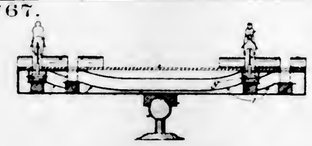
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**530,767.** TOY TRACK OR COURSE. DAVID C. B. GRIFFITH, London, England. Filed July 6, 1894. Serial No. 516,773. (No model.)

*Claim.*—In toy race tracks or courses a base plate, tracks or guides attached to said base plate, and having raised portions or inclines; carriages carrying figures which run upon said tracks or guides; an upper plate having grooves or apertures which correspond with, or lie over the tracks or guides aforesaid; hurdles or fences attached to said upper plate so as to be over the raised portion of the track or guides aforesaid; a cup or recess attached to the bottom plate; a pivot or support for engaging in said cup or recess and upon which the device may be rocked or oscillated; all in combination and substantially as described and illustrated

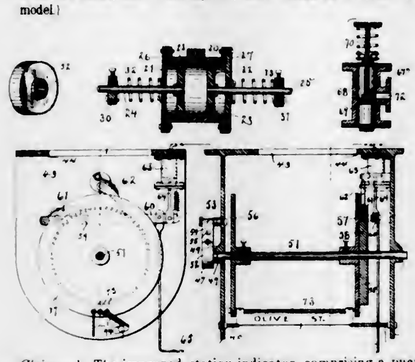


**530,767.**



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**530,768.** STREET-INDICATOR. AUGUST HADAM and CHARLES WOLF, St. Louis, Mo. Filed Apr. 11, 1894. Serial No. 507,188. (No model.)



*Claim.*—1. The improved station indicator, comprising a pneumatic cylinder 20 mounted beneath the car and extending laterally of the same, two separate single-acting pistons 21 and 22 mounted within said cylinder to compress the air between themselves, long piston-rods 24, 25 connected one to each of said pistons and extending at each end of said cylinder to the track-rails, with the free end of one closely adjacent one side of the railway-track, and the free end of the other closely adjacent the opposite side of said track, suitable supports for said piston rods, springs 32 and 33 mounted on said piston-rods and arranged to return said pistons to their normal position at the outer ends of said cylinder, obstructions fixed oppositely along both sides of the railway track at determinate distances apart and adapted to be struck by said piston-rods which project over the rails of the track, whereby both of said pistons will be simultaneously forced inward, or if one be out of order the remaining piston will be forced inward, an indicating apparatus mounted within the car, and a pipe 66 connecting said indicating apparatus with the space between said pistons, substantially as herein specified.

2. In a station indicator, the combination of two opposite depending portions 45, 46 having bearings, a horizontal shaft 51 mounted in said bearings, opposite disks or heads 56, 57 fixed on said shaft between said depending portions 45, 46, a plurality of horizontal rods 73 connecting said opposite heads and spaced apart, a plurality of cards 74 marked upon corresponding faces with the names of streets or stations and loosely mounted at one edge, one upon each of said rods, so as to depend therefrom by the action of gravity with the lower edges of said cards free, two studs or pins 75 and 76 projecting oppositely upon the inner faces of said depending portions 45, 46 in the path of the lower edges of said cards and adapted for successive engagement thereby, whereby said cards will be successively tipped face downward as the frame which carries them revolves in a given direction, a friction-brake for holding the card frame in a given position, and mechanism for rotating the frame which carries said cards, substantially as herein specified.

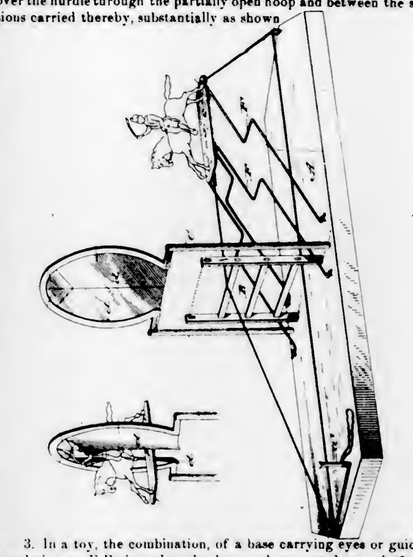
3. In a pneumatically operated station indicator, the combination, of a pneumatically-operated indicating-mechanism, a pipe for conveying air to said mechanism, a pump for forcing air into said pipe, a valve interposed in the line of the passage of the air, a transverse partition in said valve having a transverse aperture therein, a plug seated in said aperture and in engagement with a valve-stem, and a spring acting upon said valve-stem and normally retaining the same in its seat.

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**530,769.** TOY. FRANCIS R. HARVEY, Glen Moore, Pa. Filed Aug. 16, 1894. Serial No. 520,515. (No model.)

*Claim.*—1. In a toy, the combination, of a base having a hurdle and hoop carrying frame mounted thereon, and a figure pivotally supported on the base and adapted to be actuated so as to jump the hurdle and pass through the partially open hoop, substantially as shown, and for the purpose set forth.

2. In a toy, the combination with a supporting base carrying centrally a hurdle B and posts C C which extend above the hurdle and support a partially open hoop or ring having flexible sections $d$ $d'$ carried thereby, of arms F F pivotally attached to the base on opposite sides of the hurdle and posts, the upper ends of said arms carrying a figure, and means for actuating the arms to cause the figure to move over the hurdle through the partially open hoop and between the sections carried thereby, substantially as shown

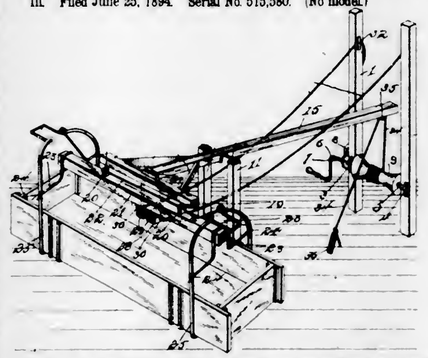


3. In a toy, the combination, of a base carrying eyes or guides $a$ and $a'$, arms F F pivoted to the base and connected to a platform upon which is mounted a figure, and flexible connections extending from said platform through the eyes to move the figure in opposite directions upon the base, substantially as shown.

4. In a toy, the combination, of a base having a hurdle and a supporting frame for a partially open hoop or ring carried thereby, of a pair of arms or bails pivoted to the base on opposite sides of the hurdle and within the hoop supporting frame, a platform connecting the upper ends of the arms or bails to each other, a figure mounted on the platform, and means for moving the platform so that the figure thereon will be carried over the hurdle and through the partially open hoop or ring, substantially as shown and for the purpose set forth.

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**530,770.** WAGON-BOX LIFTER. JOHN W. HAYES, Jr., Chester, Ill. Filed June 25, 1894. Serial No. 515,580. (No model.)



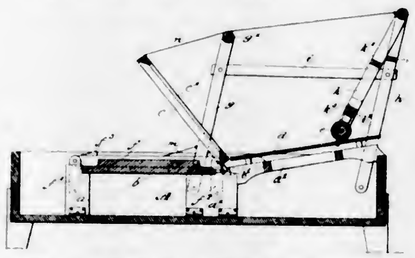
*Claim.*—1. The improved wagon-box lifter, comprising a pivoted beam or lever 15, a drum or sheave and a rope for depressing one end of said lever, a cross timber 16 fixed upon the opposite end of said lever, an additional cross-timber 21 suspended parallel with and from the under side of said cross-timber 16 but having a length in excess of the latter, bars or straps 23 secured to the outer ends of said cross-timber 21 and having journals 24 at their outer ends, loops 25 having a width sufficient to embrace an ordinary wagon-box and mounted

intermediate of their lengths on said journals 24, horizontal rectangular loops 26 secured at the upper ends of said loops 25 and bent so as to engage over the said cross-timber 21 when the upper ends of said loops 25 are drawn inward and downward, a strap 27 suspended from the said lever 15 adjacent said cross-timbers and extending downward to a point in a plane below said timbers, blocks 29 secured to the lower portion of said strap 27, pulleys 30 mounted upon said blocks, and suitable ropes 31 secured to the loops 26 and passing around said pulleys and extending to a stationary object, one on each side of said lever 15, substantially as herein specified.

2. A wagon box lifter, comprising a pair of upright posts, a drum or sheave operating between said posts, a second pair of upright posts located directly in front of the first mentioned pair of posts, a beam forming a lever fulcrumed on a shaft engaging in bearings on the top of the second pair of uprights, a cross-timber secured to the forward end of the lifting lever, a cross-timber hinged loosely to and beneath the first said cross-timber, rectangular loops swung from bars on the ends of the lower or swinging timber, ropes or cables connected to said loops at a point above the pivotal point of the latter, and passing over pulleys and blocks to the first pair of upright posts, and a rope or cable, one end of which is secured to a stationary object and passing over a pulley secured to the rear end of the lifting lever and from thence over the drum or sheave, all substantially as shown and described.

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530,771. DUPLICATING APPARATUS. IRVING S. HAYNES, New York, N. Y. Filed June 26, 1894. Serial No. 515,720. (No model.)



*Claim.*—1. In a duplicating apparatus, the combination of a platen, a stencil adapted to rest thereon, a source of ink supply, a swinging frame, means to cause the same to raise and lower said stencil by its vibrations, a roller adapted to receive ink from said source of ink supply and operated by said swinging frame to move upon said stencil, and means to prevent the roller from touching the stencil when moving in one direction, substantially as described.

2. In a duplicating apparatus, the combination of a platen, a stencil adapted to rest thereon, a source of ink supply, a swinging frame, means to cause the same to raise and lower said stencil by its vibrations, a roller adapted to receive ink from said source of ink supply and operated by said swinging frame to move upon said stencil, supporting rods upon which said roller is adapted to travel, and means to cause said supporting rods to withdraw their support from said rollers, substantially as described.

3. In a duplicating apparatus, the combination of a platen, a stencil adapted to rest thereon, a source of ink supply, a swinging frame, means to cause the same to raise and lower said stencil by its vibrations, a roller adapted to receive ink from said source of ink supply and operated by said swinging frame to move upon said stencil, pivotally swung supporting rods upon which said roller is adapted to travel, and means to cause said supporting rods to be swung downward by the movement of the roller, substantially as described.

4. The combination of a platen, a stencil adapted to rest thereon, a source of ink supply, a swinging frame means to cause the same to raise and lower said stencil by its vibrations, a roller carrier pivoted to said swinging frame, said roller carrier carrying a roller adapted to receive ink from said source of ink supply and to move upon said stencil, and means to prevent the roller from touching the stencil when moving in one direction, substantially as described

5. The combination of a platen, a stencil adapted to rest thereon, a source of ink supply, a swinging frame means to cause the same to raise and lower said stencil by its vibrations, a roller carrier pivoted to said swinging frame, said roller carrier carrying a roller adapted to receive ink from said source of ink supply and to move upon said stencil, supporting rods upon which said roller carrier may travel, means to lower said supporting rods at the end of movement of said roller carrier in one direction, and a flexible strap connecting said supporting rods to said swinging frame and adjusted to raise said supporting rods when said swinging frame is moved backward, substantially as described.

6. The combination of a platen, a stencil hinged thereto, an inking plate, a swinging frame having its vibrating end pivoted to a roller carrier having projecting ends and carrying a roller adapted to move upon said stencil and said inking plate, pivotally swung supporting rods, upon which said projecting ends of the roller carrier are adapted to travel, said rods being provided with lugs against which said projecting ends will strike, and flexible straps connecting said stencil and said supporting rods with said swinging frame, substantially as and for the purpose set forth.

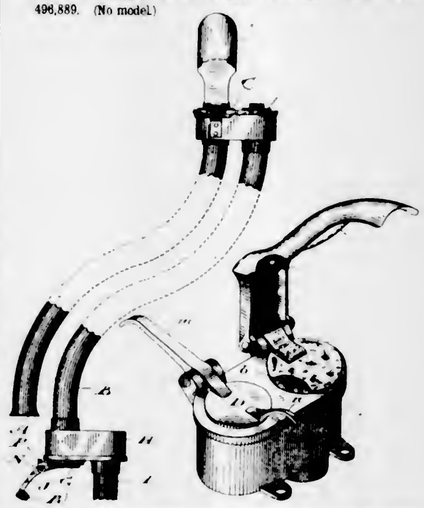
7. The combination of a box, hinged supports therein, a platen having a stencil hinged thereto, an inking plate having an open chamber thereunder, said platen and said plate being removably fixed to said supports, a swinging frame having hinged thereto a roller carrier provided with an ink roller adapted to move upon said stencil and said inking plate, projections on said roller carrier, pivotally swung supporting rods provided with a lug or offset portion, said supporting rods acting to support the projections on said roller carrier and adapted to be pushed down by the striking of said projections against said lugs, and flexible straps connecting said supporting rods and said stencil with said swinging frame, substantially as and for the purpose described.

8. The combination of a receptacle; supports therein, a platen and stencil resting upon said supports; and supporting rods, a swinging frame and roller carrier swung adjacent to the sides of the platen, substantially as described

9. The combination of a receptacle, hinged supports therein, a platen and stencil and an ink supply resting upon said supports, supporting rods swung from said supports, and a swinging frame and roller carrier swung from said receptacle, substantially as described.

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530,772. PNEUMATIC CASH-CARRIER APPARATUS. FREDERICK J. H. HAZARD, Toronto, Canada. Filed Jan. 15, 1894. Serial No. 496,889. (No model.)



*Claim.*—1. In a pneumatic cash carrier apparatus, the combination of a chamber, an up tube and a down tube connected to said chamber, and means for affording communication between one of said tubes and the outer air when the other tube is closed by the carrier, substantially as described.

2. In a pneumatic cash carrier apparatus, the up tube A, and down tube B, closed by the pivoted traps C, and D, in combination with the chamber E, communicating with the tubes A, and B, by the large openings *a*, and directly with the outer air by the opening *b*, when the trap C is raised, substantially as and for the purpose specified.

3. In a pneumatic cash carrier apparatus, the combination with a delivery tube and an exit trap normally closing said delivery tube, of a hood M' located above said exit trap and arranged to deflect a carrier in its passage from said exit trap, substantially as described.

4. In a pneumatic cash carrier apparatus, the combination of a delivery tube, a pivoted trap closing the end of the same, a hood M' located above said trap and arranged to deflect a carrier in its passage out of said trap, and a buffer on said hood to receive the shock from the pivoted trap, substantially as described.

5. In a pneumatic cash carrier apparatus, the combination of the up tube A, having suitable communications with the down tube B, the pivoted leather trap C, located at the end of the tube A, and means as the opening *b*, forming when the trap C, is raised, a communication between the down tube B, and the outer air, substantially as and for the purpose specified.

6. In a pneumatic cash carrier apparatus, the down pipe B, closed by the pivoted spring-actuated trap G, in combination with the pivoted spring-actuated stop J, substantially as and for the purpose specified.

7. In a pneumatic cash carrier apparatus, the down pipe B, closed by the pivoted spring-actuated trap G, in combination with the pivoted spring-actuated stop J, the lug K, and stop L, substantially as and for the purpose specified.

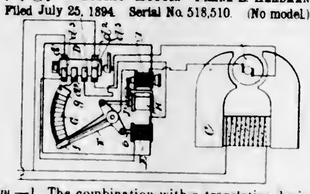
8. The leather carrier F, comprising the following elements—the outer leather case *c'*, the inner leather case *d*, the stop *e*, and the opening *f*, substantially as and for the purpose specified.

9. The leather carrier F, comprising the following elements—the outer leather case *c'*, the inner leather case *d*, the stop *e*, the opening *f*, the flexible washer *g*, and soft head *h*, substantially as and for the purpose specified.

10. In a pneumatic cash carrier system, the combination of the carrier F, the up tube A, and the down tube B, having openings therein the pivoted traps C, and D, the chamber E, the openings *a*, and *b*, the pivoted spring actuated trap G, the lower end of the down pipe, the chamber H, means as the large opening *c*, for affording communication between one of said tubes and the outer air and suction pipe I, substantially as and for the purpose specified.

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530,773. ELECTRIC MOTOR. FRANK E. HERDMAN, Winnetka, Ill. Filed July 25, 1894. Serial No. 518,510. (No model.)



*Claim.*—1. The combination with a translating device, a switch, electric connection from said switch to the translating device, resistances in said circuit, a second switch in said circuit, an arm adapted to travel over said resistances and increase the amount or strength of current in the circuit to the translating device, of a device adapted to retard the movement of said arm over said resistances, mechanism for varying the retarding strength of said device, a solenoid in the circuit with the translating device, and connection between the solenoid and regulating mechanism of retarding device, the connection being such that when said solenoid is excited, the mechanism is thrown into action to increase the retarding strength of said device.

2. The combination with an electric motor, a switch, electric connection from said switch to the armature of said motor, resistances in said circuit, an arm adapted to travel over said resistances and increase the amount or strength of current in the circuit to the armature of said motor, actuating mechanism for operating said arm, of a device adapted to retard the movement of said arm over said resistances, mechanism for varying the retarding strength of said device, a solenoid in circuit with the circuit to the armature of said motor, and connection between the solenoid and regulating mechanism of retarding device, the connection being such that when said solenoid is excited the mechanism is thrown into action to increase the retarding strength of said device.

3. The combination with a translating device, electric connection from a source of current supply to said translating device, resistances in said circuit, an arm adapted to pass over said resistances and increase the strength of current in the circuit to the translating device, of a device adapted to retard the travel of said arm over said resistances, mechanism for varying the retarding strength of said device, a solenoid in the circuit to the translating device, and connection between the solenoid and regulating mechanism of retarding device, the connection being such that when said solenoid is excited, the mechanism is thrown into action to increase the retarding strength of said device.

4. The combination with an electric motor, electric connection from a source of current supply to the armature of said motor, resistances in said circuit, an arm adapted to pass over said resistances and increase the strength of current in the circuit to the armature of said motor, actuating mechanism for operating said arm, of a device adapted to retard the travel of said arm over said resistance, mechanism for varying the retarding strength of said device, a solenoid in the circuit to the armature of said motor, and connection between the solenoid and regulating mechanism of retarding device, the connection being such that when said solenoid is excited the mechanism is thrown into action to increase the retarding strength of said device.

5. In combination with a translating device, a switch, electric connection from said switch to the translating device, resistances in said circuit, a second switch in said circuit, an arm for closing and opening said second switch, said arm being adapted to travel over said resistances and increase the amount or strength of current in the circuit to the translating device, actuating mechanism for operating said arm, a dash pot for controlling the speed of movement of said arm over said resistances, a valve to control the passage of liquid in the dash pot, a solenoid in the circuit to the translating device, and connection between the core of the solenoid and the stem of said valve, the connection being such that when said solenoid is excited the valve is acted upon in the direction to close it.

6. In combination with an electric motor, a switch, electric connection from said switch to the armature of said motor, resistances in said circuit, a second switch in said circuit, an arm for closing and opening said second switch, said arm being adapted to travel over said resistances and increase the amount or strength of current in the circuit to the armature of said motor, actuating mechanism for operating said arm, a dash pot for controlling the speed of movement of said arm over said resistances, a valve to control the passage of liquid in the dash pot, a solenoid in the circuit to the armature of said motor, and connection between the core of the solenoid and the stem of said valve, the connection being such that when said solenoid is excited the valve is acted upon in the direction to close it.

7 The combination with a translating device, electric connection from a source of current supply to said translating device, resistances in said circuit, an arm adapted to pass over said resistances and increase the strength of current in the circuit to the translating device, actuating mechanism for operating said arm, of a dash pot for controlling the speed of movement of said arm over said resistances, a valve to control the passage of liquid in the dash pot, a solenoid in the circuit to the translating device, and connection between the core of the solenoid and the stem of said valve, the connection being such that when said solenoid is excited the valve is acted upon in the direction to close it.

8. The combination with an electric motor, electric connection from a source of current supply to the armature of said motor, resistances in said circuit, an arm adapted to pass over said resistances and increase the strength of current in the circuit to the armature of said motor, actuating mechanism for operating said arm, of a dash pot for controlling the speed of movement of said arm over said resistances, a valve to control the passage of liquid in the dash pot, a solenoid in the circuit to the armature of said motor, and connection between the core of the solenoid and the stem of said valve, the connection being such that when said solenoid is excited the valve is acted upon in the direction to close it.

9. In combination with a translating device, a switch, electric connection from said switch to the translating device, resistances in said circuit, a second switch in said circuit, an arm for closing and opening said second switch, said arm being adapted to travel over said resistances and increase the amount or strength of current in the circuit to the translating device, of a device adapted to retard the travel of said arm over said resistances, mechanism for varying the retarding strength of said device, and means to operate said mechanism to increase its retarding strength dependent upon the amount of strength of the current passing to the translating device.

10. The combination with an electric motor, a switch, electric connection from said switch to the armature of said motor, resistances in said circuit, a second switch in said circuit, an arm for closing and opening said second switch, said arm being adapted to travel over said resistances and increase the amount of current in the circuit to the armature of said motor, actuating mechanism for operating said arm, of a device adapted to retard the travel of said arm over said resistances, mechanism for varying the retarding strength of said device, and means to operate said mechanism to increase its retarding strength dependent upon the amount or strength of the current passing through the armature.

11. The combination with the translating device, electric connection from a source of current supply to said translating device, resistances in said circuit, an arm adapted to pass over said resistances and increase the strength of current in the circuit to the translating device, of a device adapted to retard the travel of said arm over said resistances, mechanism for varying the retarding strength of said device, and means to operate said mechanism to increase its retarding strength dependent upon the amount or strength of current passing to the translating device.

12. The combination with an electric motor, electric connection from a source of current supply to the armature of said motor, resistances in said circuit, an arm adapted to pass over said resistances and increase the strength of current in the circuit to the armature of said motor, actuating mechanism for operating said arm, of a device adapted to retard the travel of said arm over said resistances, mechanism for

varying the retarding strength of said device, and means to operate said mechanism to increase its retarding strength dependent upon the amount or strength of the current passing to the armature.

13. In combination with a translating device, a switch, electric connection from said switch to the translating device, resistances in said circuit, a second switch in said circuit and an arm for closing and opening said second switch, said arm being adapted to travel over said resistances and increase the amount or strength of current in the circuit to the translating device, actuating mechanism for operating said arm, of a dash pot for controlling the speed of movement of said arm over said resistances, a valve to control the passage of liquid in the dash pot, and means to act on said valve to close the same to an extent dependent upon the current passing to the armature.

14. An electric current transmitting or circuit-closing apparatus, comprising essentially a circuit closing device, a secondary contact lever, a solenoid for operating the secondary lever, a circuit connection whereby upon the closing of the circuit by the circuit closing device, the secondary lever is automatically set in motion to gradually increase the strength of current flowing through the circuit, a second solenoid in said circuit adjusted to the desired current, and means to regulate the speed of movement of said contact lever inversely to the extent said last mentioned solenoid is energized.

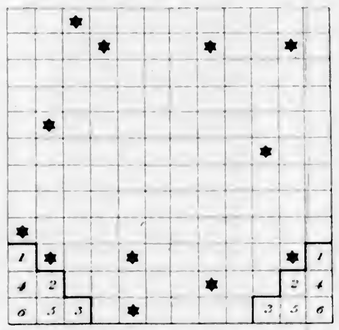
15. The combination with a translating device, electric connection from a source of current supply to said translating device, resistances in said circuit, an arm adapted to pass over said resistances and increase the strength of current in the circuit to the translating device, actuating mechanism for operating said arm, of a dash pot for controlling the speed of movement of said arm over said resistances, a valve to control the passage of liquid in the dash pot, a solenoid in the circuit to the translating device, and connection between the core of the solenoid and the stem of said valve, the connection being such that when said solenoid is excited, the valve is acted upon to close to an extent proportionate to the amount or strength of the current to the translating device

16. In combination with the translating device, electric connection from a source of current supply to said translating device, resistances in said circuit, an arm adapted to pass over said resistances and increase the strength of current in the circuit to the translating device, of a device adapted to retard the travel of said arm over said resistances, mechanism controlled by the translating device current to increase the retarding strength of said device proportionate to the amount or strength of said current.

17. In combination with a translating device, a switch, electric connection from said switch to the translating device, resistances in said circuit, a second switch in said circuit and an arm for closing and opening said second switch, said arm being adapted to travel over said resistances and increase the amount or strength of current in the circuit to the translating device, actuating mechanism for operating said arm, of a dash pot for controlling the speed of movement of said arm over said resistances, a valve to control the passage of liquid in the dash pot, and a device controlled by the translating device current and connected with said valve to close it to an extent proportionate to the amount or strength of said current.

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530,774. PUZZLE. FLORENCE HESSE, Frederick, Md. Filed Mar. 31, 1894. Serial No. 505,869. (No model.)



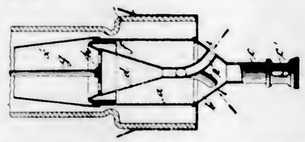
*Claim.*—1. A puzzle board, divided into spaces, certain of which spaces are particularly marked, and irregularly distributed therethrough, and certain other spaces, which are situated in two corners of the board, are designated as the points where the pieces, with which the puzzle is to be worked out, are to be placed, and from which they are to be moved, as described.

2. A puzzle board, divided into spaces, certain of which spaces are particularly marked and irregularly distributed therethrough, and certain other spaces which are situated in the adjacent corners of the board, are designated as the points where the pieces, with which the puzzle is to be worked out, are to be placed, and from which they are to be moved, as described.

3. A puzzle board, divided into one hundred and forty-four spaces, twelve of which spaces are particularly marked and irregularly distributed throughout the board, twelve other of the spaces, the six in each of two adjacent corners of the board are differently marked as the points where the pieces, with which the puzzle is to be worked out, are to be placed, and from which they are to be moved, as described, the remaining spaces are unmarked.

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530,775. BURNER FOR INCANDESCENT GAS-LIGHTING. MORITZ HORWITZ, Berlin, Germany. Filed June 22, 1894. Serial No. 515,348. (No model.)



*Claim.*—1. An incandescent gas burner, comprising a casing provided with a tapering bottom with a perforated nipple or nozzle, an internal tapering tube provided with branches for the introduction of air therethrough and with a flanged top arranged close to said casing so as to form a narrow passage between said tube and shell to permit of a thorough admixture of the air and gas, a stem provided with top and bottom disks, a mantle supported within a globe or shade from one of said disks and engaging said casing, substantially as and for the purposes set forth

2. An incandescent gas burner, comprising a shell provided with a gas inlet communicating with a tubular chamber, a central air inlet formed therewith and provided with a flange forming a passage between the wall of said gas chamber and said air chamber, a perforated disk mounted in the upper end of said chamber, a stem provided at the upper end with a perforated disk, a mantle suspended therefrom and engaging the wall of said gas chamber and a globe or shade adapted to engage spring clamps of the casing of said lamp, substantially as and for the purposes set forth.

3. An incandescent gas burner, comprising a casing provided with spring clamps having a globe or shade detachably engaging therewith, a perforated inlet nipple or nozzle engaging a bifurcated and truncated shell having an open hood reversely tapering with respect to said shell, a tapering air chamber carrying a perforated disk with a tapering projection, a perforated plate mounted on said disk and provided with a stem supporting a mantle composed of refractory material to required position, substantially as and for the purposes set forth

4. An incandescent gas burner provided with a spring clamp having a shade or globe in detachable engagement therewith, a tubular gas chamber provided with a contracted throat with a perforated inlet nipple or nozzle, a tapering air chamber having the upper end provided with a flange and with branches in the lower portion thereof extending through the throat of said gas chamber, a stem provided with perforated disks at the upper and lower ends thereof, and a mantle suspended from one of said disks and normally engaging the wall of said gas chamber, substantially as and for the purposes set forth.

5. An incandescent gas burner, comprising an inlet in communication with a chamber having a central air conduit with a flange, a perforated disk mounted in the upper end of said tube and provided with a stem or pin provided at the upper end with a perforated disk, a mantle supported therefrom and engaging the wall of said chamber, and a globe or shade clamped to the casing of the burner, substantially as and for the purposes set forth.

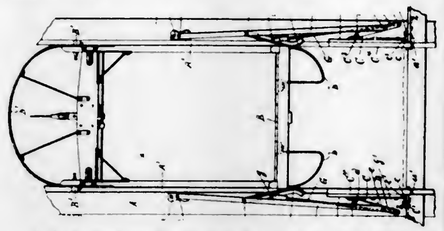
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530,776. ELEVATOR. EDGAR W. HOUSER and CLARENCE C. DECKER, Syracuse, N. Y. Filed Jan. 13, 1894. Serial No. 496,775. (No model.)

*Claim.*—1. In an elevator, the combination with a car; of a support or guide for the car provided with an inwardly extending recess in its face and a second recess arranged above the former recess and formed of less depth than said former recess, a hinged shaft door or guard arranged in proximity to the support or guide and movable into and out of the second recess, said door or guard being provided with a shoulder extending beyond its pivot and movable in the former recess and beyond the plane of the inner wall of the second recess, substantially as described.



2. In an elevator, the combination with a car; of a support or guide for the car provided with an inwardly extending recess in its face having a stop shoulder, and a hinged shaft door or guard arranged in proximity to the support or guide and having a shoulder extending beyond its pivot and movable in the recess into and out of engagement with said stop shoulder, substantially as and for the purpose described.



3. In an elevator, the combination with a car; of a support or guide for the car having a guide rib on one face thereof and provided with an inwardly extending recess in said face and with a second recess in said face arranged above the former recess, and a hinged shaft door or guard arranged in proximity to the support or guide and movable into and out of the second recess, said door or guard being provided with a guide rib on its normal lower face having one extremity thereof extended beyond the pivot of the door and movable in the former recess into and out of alignment with the adjacent portion of the guide rib of the support or guide, substantially as and for the purpose specified.

4. In an elevator, the combination with a car; of a support or guide for the car having a guide rib on one face thereof and provided with an inwardly extending recess in said face having a concave lower face, and a second recess in said face arranged above the former recess, and a hinged shaft door or guard arranged in proximity to the support or guide and movable into and out of the latter recess, said door or guard having its pivot interposed between vertical planes extending from the opposite extremities of the concave lower face of the former recess, and being provided with a guide rib on its normal lower face having one extremity extended beyond said pivot and movable in the former recess into and out of alignment with the adjacent portion of the guide rib of the support or guide, substantially as and for the purpose described.

5. In an elevator, the combination with a car; of a support or guide for the car having a guide rib on one face thereof and provided with an inwardly extending recess in said face having a stop shoulder, and with a second recess arranged above the former recess, and a hinged shaft door or guard arranged in proximity to the support or guide and movable into and out of the latter recess, said door or guard being provided with a guide rib on its normal lower face having one extremity extended beyond the pivot for the door and movable in the former recess into and out of engagement with said stop shoulder and into and out of alignment with the adjacent portion of the guide rib of the support or guide, substantially as and for the purpose set forth.

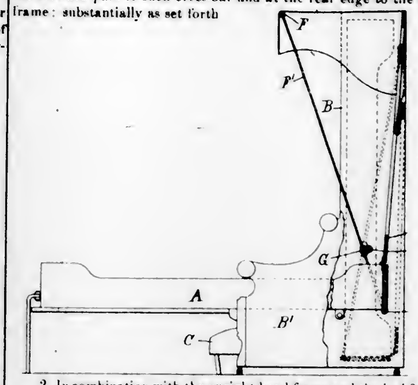
6. In an elevator, the combination with a car; of a support or guide for the car provided with an inwardly extending recess in its face and a second recess arranged above the former recess and formed of less depth than said former recess, a shaft door or guard arranged in proximity to the support or guide and movable into and out of the second recess, a pivot for the shaft door or guard arranged within the normal outer edge of the shaft door or guard and substantially midway between the opposite sides thereof, a shoulder provided upon said door and extending beyond its pivot and movable in the former recess and beyond the plane of the inner wall of the second recess, and mechanism, substantially as described, for rocking said door or guard on its pivot, substantially as specified.

7. In an elevator, the combination with a car, a floor, a shaft door or guard having cut-outs or apertures in the opposite ends of its normal outer edge, attaching plates secured to the floor and provided with ears arranged within said cut-outs or apertures, pivot-secured to said door and ears and arranged within the outer edge and between the opposite sides of the door or guard, and mechanism substantially as described, for rocking said door or guard on its pivot, substantially as and for the purpose described.

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530,777. FOLDING BED. KNUD L. HYLLER, Chicago, Ill. Filed Feb. 9, 1894. Serial No. 499,618. (No model.)

*Claim.*—1. In combination with the upright head-frame and the bed frame pivoted thereto, a U-frame having side-arms F, pivotally connected at the lower ends to the bed-frame, at points which move forward as the bed swings up and provided with the sliding pivotal connection with the cheeks of the head-frame respectively, and connected by a cross-bar F at the top; the flexible canopy secured at the forward part to such cross-bar and at the rear edge to the head frame; substantially as set forth




2. In combination with the upright head frame and the bed frame pivoted thereto, the head-frame having a head-board sliding therein at the upper end and operated by connection with the bed frame at the lower end; a U-frame having its side-arms pivoted to the bed-frame at the lower ends at points which move forward when the bed swings up and having sliding pivotal connection with the cheeks of the head-frame, respectively, and connected by the cross-bar F at the top; the flexible canopy attached at the forward part to the cross-bar, and at the rear to the sliding head-board of the head-frame; substantially as set forth.

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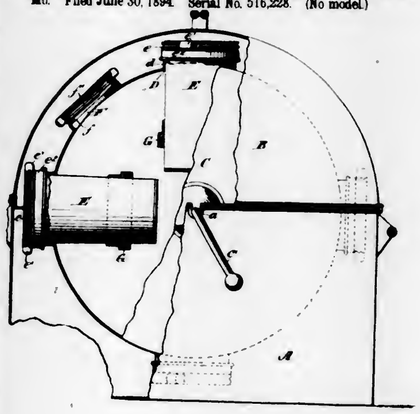
530,778. TIMBER RAILROAD-TIE. LUMAN C. INGERSOLL, Keokuk, Iowa. Filed May 31, 1894. Serial No. 513,036. (No model.)



*Claim.*—A timber railroad tie, consisting of a single piece whose top surface is composed of a longitudinal spine and enlargements projecting on each side thereof at such a distance as will correspond to the width of the track, while the side surfaces of the tie comprise downwardly spreading inclined portions arranged both interiorly and exteriorly of the said enlargements of the top surface, and portions of greater inclination relatively to the top surface of the tie than the said inclined portions and located between the inclined portions, whereby shoulders are formed on the side surfaces of the tie, substantially as shown and described, and for the purpose set forth.

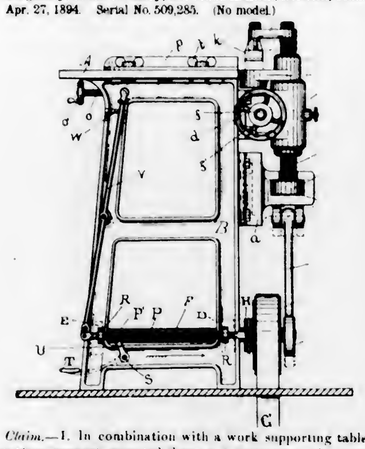
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530,779. ICE-CREAM FREEZER. ROBERT P. JONES, Rocheport, Mo. Filed June 30, 1894. Serial No. 516,228. (No model.)



*Claim.*—An ice-cream freezer, consisting of a rotary drum having its periphery provided with a series of apertures, the edge of each of which is constructed with an annular flange *d*, the radially arranged cans E fitting said apertures and each provided with an annular outwardly flaring collar $e^3$ engaging and tightly embracing one of the said flanges, and a series of collars G fixed to the drum and receiving the inner ends of the cans, all of the cans being retained in position solely by frictional contact with the said flanges and collars, substantially as and for the purposes described.

530,780. MACHINE FOR CORNERING BOX-BLANKS. ARTHUR L. KINGSBURY, Northampton, Mass., assignor of two-thirds to Addison Kingsbury, South Coventry, and Frank H. Allen, Norwich, Conn. Filed Apr. 27, 1894. Serial No. 509,285. (No model.)



*Claim.*—1. In combination with a work supporting table, a reciprocatory support mounted thereon, a cutter upon the support located eccentrically to and movable parallel with the axis of the support, said cutter being movable relatively to the material upon table, with the support as a center of said movement, and means for reciprocating the support and cutter, substantially as set forth.

2. In combination with a work supporting table, a shell or collar secured thereto, a longitudinally movable rotary support within the shell, a cutter secured to the support eccentric to the axis thereof, and means for moving the support, substantially as set forth.

3. In combination with a work supporting table, a support thereon, a guide upon the support, an arm upon the support and an arm upon the guide, a cutter upon the arm of the support, and the arm of the guide being provided with an opening, and means for moving the support and for rotating it and the guide, substantially as set forth.

4. In combination with a work supporting table, a sleeve carried thereby a guide in said sleeve provided with an angular longitudinal perforation, an angular support through the guide, the upper end of which is provided with a cutter located eccentrically to the axis of the support, a set screw through the sleeve, the inner end of which is adapted to engage with the guide, and to lock it against rotation, and means for reciprocating the support, substantially as set forth.

5. In combination with a work supporting table, provided with a cross arm, a pair of reciprocatory supports carried by said cross arm, the upper end of each of which supports is provided with a cutter located eccentrically to the axis of the support, and means for simultaneously moving said supports toward each other and for rotating them upon their axes, substantially as set forth.

6. In combination with a work supporting table provided with an under cut cross bar, of a pair of sleeves upon said bar, each sleeve being provided with a perforated projection which fits within the under cut portion of the bar, an oppositely screw threaded rod through the perforations of the projections, a guide in each sleeve, an arm upon the upper end of the guide provided with a hole, a longitudinally movable rotary support within each guide, the upper end of which is provided with a cutter located eccentrically to the axis thereof, and means for simultaneously reciprocating said supports, substantially as set forth.

7. In combination with a work supporting table provided with a cross bar, a pair of longitudinally movable reciprocatory supports carried by said bar, the lower end of each of which is provided with a head, a cutter secured to the upper end of each support, a grooved carriage below the cross bar, the ends of the supports fitting within the grooved portion of the carriage, and means for moving the carriage, substantially as set forth.

530,781. TROMBONE. FRANK A. LELAND, Worcester, Mass. Filed May 18, 1894. Serial No. 511,638. (No model.)



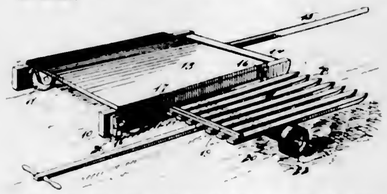
*Claim.*—1. In a trombone or similar wind instrument, the combination of a return pipe and a flaring portion or bell, a supplemental pitching pass arranged between said return pipe and bell, and a pitching valve for controlling the pitching pass, substantially as described.

2. In a trombone or similar wind instrument, the combination of a return pipe and a flaring portion or bell, a supplemental pitching pass and tuning slide arranged between said return pipe and bell, and a pitching valve for controlling the pitching pass, substantially as described.

3. In a trombone or similar wind instrument, the combination of a return pipe, and a flaring portion or bell, brace rods or ties for connecting these parts, a supplemental pitching pass located between said brace-rods, whereby the same will be protected from accidental derangement or injury, and a pitching valve for controlling the pitching pass, substantially as described.

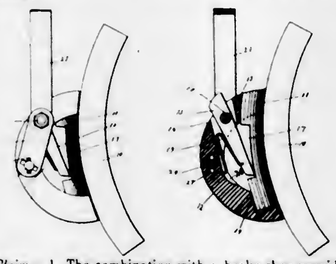
4. In a trombone or other similar wind instrument, the combination of induction and return pipes, a valve being located in said return pipe, a tapering valve plug located in said valve casing, a pitching pass controlled by said valve, and a supplemental tuning slide located in said pitching pass, substantially as described.

530,782. FODDER OR FEED LOADER AND SLED. EDWIN F. LEWIS, Vine Creek, Kans. Filed Apr. 13, 1894. Serial No. 507,459. (No model.)



*Claim.*—A machine for gathering and carrying hay comprising the low wheeled-sled having a longitudinal bar journaled on one side and provided between its ends with a transverse bearing, a slotted gathering platform having an axle between its ends, the inner end of the axle being mounted in said transverse bearing, a wheel on the outer end of the axle and a rearwardly extending handle on the said platform by which its inclination may be changed, substantially as described.

530,783. BRAKE-SHOE. HARRY A. LEWIS, Norristown, Pa., assignor to himself and William M. Sullivan, same place, and David O. Kerbaugh, New York, N. Y. Filed July 27, 1894. Serial No. 518,794. (No model.)



*Claim.*—1. The combination with a brake shoe provided on its back with a dovetailed rib having a notch therein, of a holder provided with a dovetailed groove in its upper part, a dovetailed socket in its lower part, and a slot in its upper part, and the spring pressed pawl pivoted in the slot of the holder, said pawl having its lower end engaging the notch of the rib and its upper end projecting out through the said slot, substantially as described.

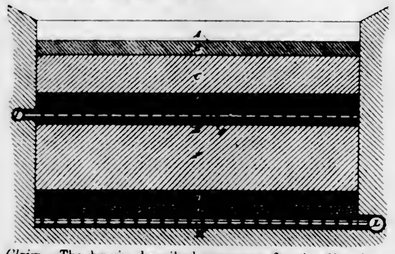
2. The combination with a shoe holder provided with an opening, of a brake beam fitting in the opening of the holder and provided with a transverse pin in its end, and a keeper having a slot to receive the pin on the brake beam, said keeper being turned and secured to the holder after the pin has passed through its slots to bring the slots out of alignment with the pin and thereby lock the holder to the beam, substantially as described.

3. The combination, with the brake shoe, the holder containing the shoe, and the hanger pivoted to the holder, of the brake beam pivoted to the holder and provided with a transverse end pin, and the keeper connecting the hanger bolt and the end of the brake beam the keeper having a slot to receive the pin on the beam, substantially as described.

4. The combination, with the brake shoe having the dovetailed rib on its back with an elongated notch in the rib, of the holder having a dovetailed slot at the top and a similarly shaped socket at the bottom to receive the rib of the shoe, the spring-pressed pawl pivoted in the holder and arranged to engage the notch of the rib, a hanger pivoted to the holder and having its pivot bolt projecting through the pawl, a brake beam pivoted to the holder, and a keeper connecting the hanger bolt and the outer end of the brake beam, substantially as described.

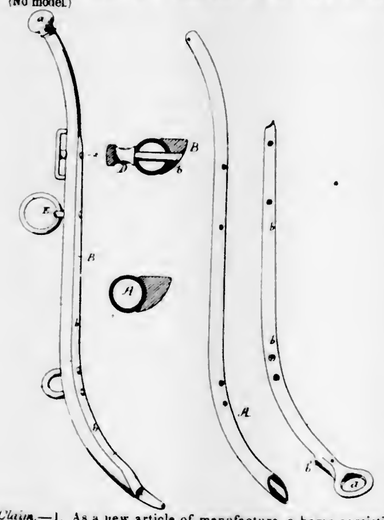


530,784. FILTRATION. SIDNEY R. LOWCOCK, Birmingham, England. Filed May 21, 1894. Serial No. 511,999. (No model.) Patented in England Mar. 24, 1892, No. 5,787.



*Claim.*—The herein described apparatus for the filtration and aeration of liquids, the same consisting of alternate layers of fine and coarse filtering material, perforated air conveying pipes located in a layer of coarse filtering material at the base of an upper layer of finer filtering material and connected with a main air pipe through which a continuous current of air or oxygen may be forced under pressure into said perforated pipes and thence to the interstices of the filtering material, perforated drain pipes located at the bottom of the filter in a layer of coarse material, and a main drain connected with said pipes below the level of the bottom of the filter, substantially as specified.

530,785. HAME. JAMES A. MEANY, Camden, and CHARLES H. SCHNITZLER, Orston, N. J. Filed Aug. 25, 1893. Serial No. 484,013. (No model.)

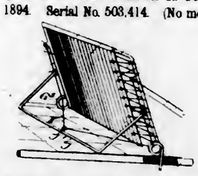


*Claim.*—1. As a new article of manufacture, a hame consisting of a bent tube of even diameter throughout the length of the hame, a metallic filler, shaped to fit the collar, and secured to the bent tube by trimmings, substantially as set forth.

2. As a new article of manufacture, a hame consisting of a bent tube of even diameter throughout the length of the hame, and a metallic filler secured to said tube and having a strap eye at its lower end, substantially as set forth.

3. As a new article of manufacture, a hame consisting of a bent tube of even diameter throughout the length of the hame a metallic filler shaped to fit the collar and tube to which it is secured, and having a projection, *b'*, at its lower end over which the lower end of the tube is neatly fitted, substantially as described.

530,786. HEAD-REST FOR BEDSTEADS. GEORGE G. J. MILLAR, Groveport, assignor of one-half to Lewis R. Young, Columbus, Ohio. Filed Mar. 13, 1894. Serial No. 503,414. (No model.)



*Claim.*—1. A head-rest comprising a U-shape frame having coil springs at its points of attachment, a brace pivoted to the said frame, an operating cord extending through guide eyes on the frame and brace and through the said springs, substantially as described.

2. A head-rest, comprising a U shaped frame formed at the ends of its sides into spring coils, pins projecting from the spring coils and adapted to engage the sides of the bedstead, and a leg or brace pivoted on the said frame, substantially as shown and described.

3. A head-rest, comprising a U-shaped frame formed at the ends of its sides into spring coils, pins projecting from the spring coils and adapted to engage the sides of the bedstead, a leg or brace pivoted on the said frame, and a covering material stretched over the said frame and having a lacing for tightening the covering material, substantially as shown and described.

4. A head-rest, comprising a U-shaped frame formed at the ends of its sides into spring coils, pins projecting from the spring coils and adapted to engage the sides of the bedstead, a leg or brace pivoted on the said frame, and a pivoted latch for fastening the said frame in place over the mattress, substantially as shown and described.

530,787. HAIR-CURLER. THOMAS C. MOORE, Great Falls, Mont. Filed Jan. 4, 1894. Serial No. 495,599. (No model.)



*Claim.*—In a hair-curler of the character specified, the combination with the tapered tubular body having a radial flange at its larger end, of a ring or collar fitted loosely on said flange and adapted to revolve thereon, and a clamp arm pivoted to the ring, as shown and described.

530,788. POCKET-KNIFE. CARL C. MORITZ and STEPHEN D. GREENWOOD, Salt Lake City, Utah. Filed Apr. 3, 1894. Serial No. 506,189. (No model.)



*Claim.*—1. A knife handle comprising the side pieces, one of which is provided with the rivets for the blade and back spring, the outer ends of the end rivets being notched or headed and the other side piece having key-hole slots formed in its inner faces to receive and lock on said notched or headed ends of the end rivets, and means for preventing longitudinal movement of the slotted side piece, substantially as described.

2. A pocket knife comprising the two side pieces one of which has notched end and middle rivets, and the other side plate having end key-hole slots to lock on said notch ends of the end rivets, and an opening to receive the middle rivet, a latch to engage the middle rivet, a partition having apertures for the rivets, a back spring apertured for the middle rivet and blades on the end pivots, substantially as described.

3. The knife handle, comprising a side piece having projecting notched rivets, a side piece having a perforated lining plate to receive the rivets and slots to engage the notches of the rivets, and a fastening device to prevent the endwise movement of the removable side piece, substantially as described.

4. The combination, with the side piece and the notched rivets fixed thereto, of the second side piece having a perforated and slotted lining plate to engage the rivets, and a latch held behind the lining plate and adapted to engage a notch of one of the rivets, substantially as described.

5. The combination, with the side piece and the notched rivets fixed thereto, of the second side piece having perforations and slots in its inner side to engage the rivets, a screw held to turn in the second side piece, and a latch carried by the screw to engage a notch of one of the rivets, substantially as described.

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530,789. **PENCIL-SHARPENER AND POINT-PROTECTOR.** JUDSON T. MUNDY, Newark, N. J. Filed Apr. 25, 1894. Serial No. 509,040. (No model.)

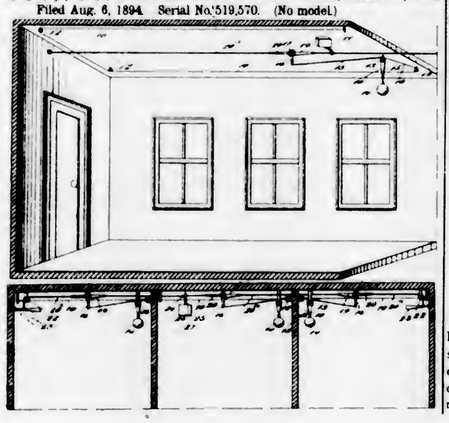


*Claim.*—1. A pencil sharpener and point protector, comprising in its construction, a cone-shaped main portion, having secured integrally therewith a point protector having an opening extending therethrough, a lead-shaving knife secured to said main portion near its top, the edge of said knife being adapted to shave the lead at a slight angle; an opening extending through said main portion, of slightly larger diameter than that in the point protector; a curved wood-cutting knife secured to said main portion at its base, the edge of which extends in a gradual curve, from the inner side of said main portion at its base, to the edge of said opening in the main portion; an enlarged band integrally formed with said main portion; and a clamping portion adapted to clasp a lead pencil, substantially as described.

2. In a pencil sharpener and point protector, the combination of the point protector 1, having opening 3; the conical main portion 2 secured to said point protector; lead shaving knife 9 secured in said main portion near its top; wood-cutting knife 7 secured in said main portion near its base; the opening 11, passing through said main portion from the top of said wood cutting knife 7 to said lead-shaving knife 9, said opening being of slightly larger diameter than the opening 3; the enlarged band portion 4, formed integrally with said main portion; and the clamping portion 5, consisting of the cylindrical portion 6, and the fingers extending downwardly therefrom, the whole being adapted to embrace a lead-pencil, substantially as described.

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530,790. **FIRE-ALARM.** EUGENE P. MCCASLIN, Tullahoma, Tenn. Filed Aug. 6, 1894. Serial No. 519,570. (No model.)



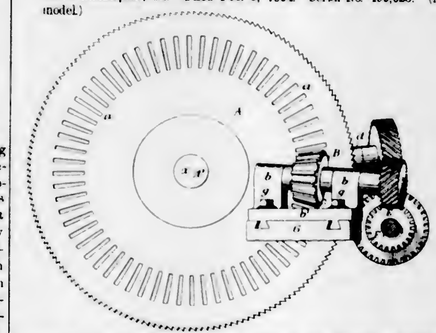
*Claim.*—1. A fire alarm system, comprising a wire having weights at the ends, tripping devices to separate the wire, alarms set in motion by the movement of the wire, a weighted combustible cord hung on suitable supports, and means for releasing a tripping device by the dropping of the cord weight, substantially as described.

2. A fire alarm system, comprising a wire having weights at the ends, a series of alarms arranged along the wire, triggers connected with the wire and with the alarms to set the same in motion, tripping devices to cause the separation of the wire, a weighted combustible cord arranged on suitable supports, and a second non-combustible cord connected with the weight and with one of the tripping devices, substantially as described.

3. A fire alarm system, comprising a separable wire having weighted levers at its ends, tripping devices connecting the sections of the wire and consisting of a connecting rod secured to one section, a tripping lever fulcrumed on the connecting rod and a second connecting rod secured to the adjacent wire section and terminating in a hook to engage the tripping lever, alarms arranged along the wire and set in motion by the movement thereof, a combustible cord arranged on supports and provided with weights at one end, and connections between the weights and the tripping devices, substantially as described.

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530,791. **MECHANISM FOR DRIVING SAWS.** CHARLES C. NEWTON, Philadelphia, Pa. Filed Feb. 9, 1894. Serial No. 499,625. (No model.)



*Claim.*—1. The combination of a circular saw having a series of slots arranged in a circular path, with toothed wheels entering said slots one in advance of the other and one on one side of the blade and the other on the opposite side, substantially as set forth.

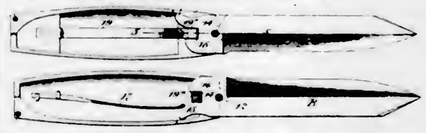
2. The combination of the slotted saw blade, the shafts B' and D' arranged on lines radiating from the center of the saw, one on each side, with toothed pinions B and D, entering the slots in the saw blade, one in advance of the other, with means for driving said shafts, substantially as set forth.

3. The combination of the slotted saw blade, the shafts B' and D' arranged in lines radiating from the center of the saw one on each side, toothed pinions on each shaft entering the slots in the saw blade one in advance of the other, spiral gear wheels on each shaft, a driving shaft F having wheels meshing with the gear wheels of the shafts B' and D' so that the said shafts will be driven at the same speed, substantially as described.

4. The combination of the slotted saw blade, the shafts B' and D', one set in advance of the other, toothed wheels on each shaft engaging with the saw blade, bearings for said shafts, said bearings being adjustable toward and from the saw blade, with means for driving the shafts, substantially as set forth.

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530,792. **POCKET-KNIFE.** JOHN P. NORDLOW, Worcester, Mass. Filed July 24, 1894. Serial No. 518,437. (No model.)

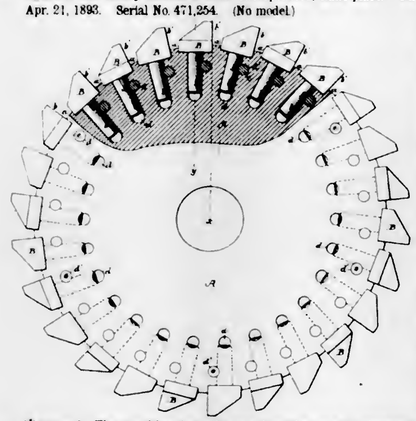


*Claim.*—In a knife, the combination, with a handle, having a locking spring interiorly secured to one section, the free end of the spring being provided with a head, a latch located upon the exterior of the handle, and a connection between the latch and the free end of the spring, whereby its head may be moved to and from the exterior of the handle, and a second or tension spring also secured upon the handle, substantially opposite the spring provided with a head, of a blade pivoted in the handle, the tang of the said blade being provided with a heel outwardly curved and engaged by the free end of the tension spring, the said spring having a tendency to force the heel outwardly, the tang of the blade being further provided with a recess adapted to receive the head of the locking spring, as and for the purpose specified.



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530,793. **METAL-SAW.** MATTHEW ODGERS, Philadelphia, Pa., assignor to the Henry Disston & Sons, Incorporated, same place. Filed Apr. 21, 1893. Serial No. 471,254. (No model.)

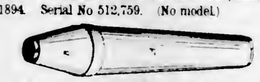


*Claim.*—1. The combination of a metal cutting saw having sockets in its periphery and ribs alternating with the sockets, with detachable saw teeth adapted to said sockets and ribs, said teeth having square bases and beveled at the back and some of the teeth being beveled also on one side while others are beveled on the opposite side, substantially as described.

2. The combination in a metal cutting saw, of a blade having a series of ribs on its periphery, sockets between said ribs, transverse orifices crossing the sockets, detachable teeth having squared heads adapted to fit between the ribs, and shanks entering the sockets, and securing pins adapted to the transverse orifices for locking the teeth to the blade, substantially as described.

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530,794. **CIGAR-MOLD.** JAMES H. OGDEN, Camden, N. J. Filed May 28, 1894. Serial No. 512,759. (No model.)



*Claim.*—1. A cigar bunch mold consisting of a tapering tubular body and a reversely tapering tubular cap, both of non-absorbent material, one of said parts having at its large end a projecting flange serving to guide the other part into place and to retain the same by friction thereupon, substantially as specified.

2. A cigar bunch mold consisting of a tapering tubular body and a reversely tapering tubular cap, one of said parts having at its large end a projecting flange serving to guide the other part into place and to retain the same by friction thereupon, substantially as specified.

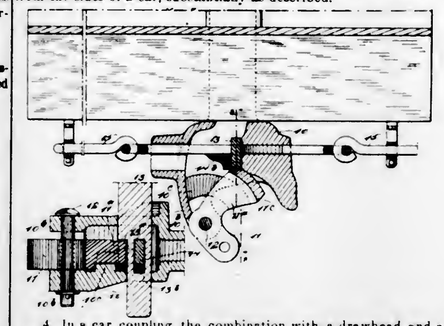
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530,795. **CAR-COUPLING.** ALONZO C. PACKER, Pittsburg, Pa. Filed July 13, 1894. Serial No. 517,459. (No model.)

*Claim.*—1. In a car coupling, the combination with a drawhead, and a pivoted latch block, of a vertically sliding key, and a lifting bar passing through the key and adapted to elevate said key and release the latch block, when longitudinally moved, substantially as described.

2. The combination, with a recessed drawhead vertically slotted, and transversely apertured to intersect said slot, of a pivoted latch block, a locking key shouldered on the front edge and working in the vertical slot, which key locks the latch block when depressed, a lifting bar passing through a lateral slot in the key and having a cam slope on its top edge that engages the upper edge of the key slot to elevate said key when the bar is moved, and means to move the bar, substantially as described.

3. The combination with a chambered drawhead, a pivoted latch-block adapted to slide around on an inclined plane in the drawhead chamber, and a vertically reciprocating locking key having an arresting shoulder, said key arranged to lock the tail-piece of the block when the shoulder is lowered, of a lifting bar working through transverse aligned slots in the drawhead and key and having a cam slope whereon the key may rest, and means to longitudinally move the bar from the sides of a car, substantially as described.

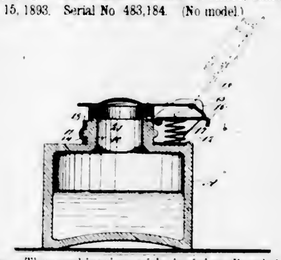


4. In a car coupling, the combination with a drawhead and a pivoted latch block, of a vertically movable key in the drawhead, and having its body reduced in width for a part of its length to produce an arresting shoulder forwardly thereon, and also transversely slotted near said shoulder, and a key lifting bar having a cam slope on its top edge and working through the slot in the vertical key to lift it, substantially as described.

5. In a car coupling, the key-lifting bar working through transverse aligned slots in the drawhead, and through a vertically sliding locking key, that when depressed locks the latch block in coupled condition, said bar having a cam slope on its upper edge that is adapted to raise the key, and further provided with a pusher lug at one side which outwardly rocks the latch-block after it is released, substantially as described.

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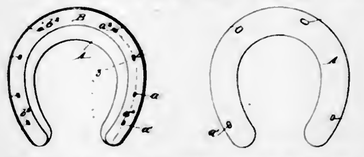
530,796. **INK-WELL.** WILLIAM B. PRATT, Rahway, N. J. Filed Aug. 15, 1893. Serial No. 483,184. (No model.)



*Claim.*—The combination, with the ink well and the cover pivotally connected therewith, said cover having an angular extension projecting beyond the pivot, of a normally horizontal platform pivoted nearer the mouth of the ink well than the cover, and adapted to engage the said angular extension of the cover, and a coil spring arranged essentially vertically and having its lower end fitted into a recess of the ink well, while its upper end is in engagement with the platform between the pivot thereof and the point of engagement with the cover, whereby the platform will assume a substantially horizontal position both when the cover is open and when it is closed, and whereby the cover will readily respond to the action of the spring, as set forth.

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530,797. **HORSESHOE.** ERASMUS RICHARDSON, Esbon, Kans. Filed July 20, 1894. Serial No. 518,082. (No model.)

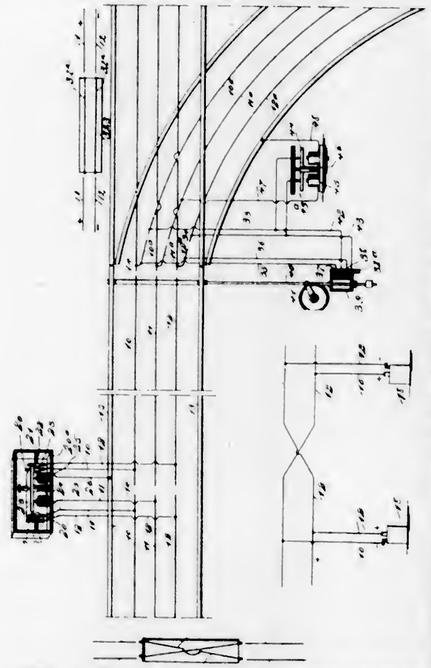


*Claim.*—1. A compound horseshoe, consisting of a heavy outer training section, and a lighter racing section fitting between the heavy section and the hoof, and having a larger number of nail-holes than the outer section, one set of which nail-holes of said lighter sec-

tion serve to give passage to nails fastening it direct to the horse's hoof and the other set of nail-holes in said lighter section being coincident with nail-holes in the outer section, and serving to give passage to the nails which secure the outer section of the shoe, both sets of nail holes in the two sections being in the same curved line whereby the removal of the outer section does not affect the firm connection of the inner light section, substantially as and for the purpose described.

2. A compound horseshoe, consisting of a heavy outer training section recessed on its inner face, and a lighter racing section fitting flush within said recess and having two sets of holes, one set being for the direct connection of the light shoe section to the hoof, and the other set being coincident with the nail-holes of the heavier outer section to give passage to the nails which detachably secure said outer section, the nail holes of both shoe sections being in the same curved line substantially as and for the purpose described.

530,798. RAILWAY-SIGNAL. JAMES V. RICHARDSON, Farmville, Va. Filed Mar. 30, 1894. Serial No. 505,704. (No model.)



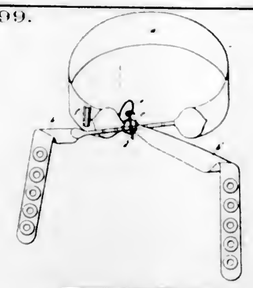
*Claim.*—1. The combination, with the parallel line conductors arranged in blocks, as specified, contact devices carried by a locomotive to engage the conductors and a signal in circuit with the conductors, of a circuit breaker to connect the blocks of line conductors, the circuit breaker having cross connections to connect the positive conductor of one block to the negative conductor of the next, and connections to connect the positive and negative conductors of one block to the similar conductors of the next, substantially as described.

2. The combination, with the line conductors, of similar conductors arranged in blocks on the siding, means for making and breaking the connections between the line and the siding conductors by the operation of a railway switch, a magnet-operated armature adapted to short circuit the siding conductors, a second conductor on the siding, connections between this conductor, the magnets and the ground, and means for supplying current to the second conductor from a locomotive on the siding, substantially as described.

530,799. SAFETY-BELT. HERMANN SCHARF, Halle-on-the-Saale, Germany. Filed June 30, 1894. Serial No. 516,208. (No model.)

*Claim.*—The safety belt provided with an attaching device on each end, a ring some distance from one end through which the other end of the belt is to be passed, and a pin to pass through said inserted end and abut against said ring while leaving said end to work freely in one direction through said ring, substantially as described.

530,799.



530,800. HOOK AND EYE. JOSEPH F. SCHOEPPL, Pittsburg, Pa. Filed May 5, 1894. Serial No. 510,151. (No model.)

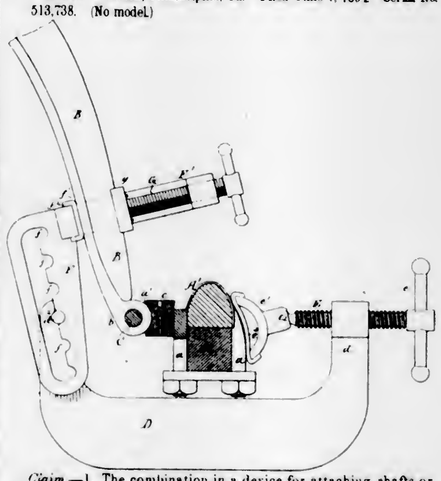


*Claim.*—1. A hook and eye connecting device formed of a body portion having a hook member extended from one side thereof, wings projected from the ends and an extension projected from the body centrally between the wings to a point beyond the hook portion, as set forth.

2. An improved hook and eye connection having a hook member having a flat uncut hook having a shank formed with a forwardly extending clamp member, said clamp member being slitted and formed with a spring tongue, and side or securing wing members connected with the shank or clamp members all arranged substantially as herein shown and described.

3. An improved hook portion for hook and eye connections, consisting of a flat hook member having a shank member formed of a forwardly extending clamp portion, slitted and formed with a spring tongue, said clamp portions having lateral downwardly bent members, and wing members formed integral with such bent members, said wings comprising rearwardly extending shoulders and forwardly extending pointed or barbed members, such wings being arranged in a plane back of the clamp member all arranged substantially as shown and described.

530,801. DEVICE FOR ATTACHING SHAFTS TO VEHICLES. WILLARD T. SEARS, Philadelphia, Pa. Filed June 7, 1894. Serial No. 513,738. (No model.)



*Claim.*—1. The combination in a device for attaching shafts or poles to vehicles, of the frame adapted to the axle, with a clamp to which the shaft or pole is rigidly secured, and means for drawing the shaft or pole toward the axle and the end of the shaft or pole into the coupling against the pressure of the anti-rattling device, substantially as described.

2. The combination in a device for attaching shafts or poles to vehicles, of the frame partially encircling the axle, a head adjustable thereon, one of said parts being rigidly secured to the shaft, with a pressure device carried by the other part and adapted to rest against the rear of the axle and to draw the shaft in a direct line toward the coupling, substantially as specified.

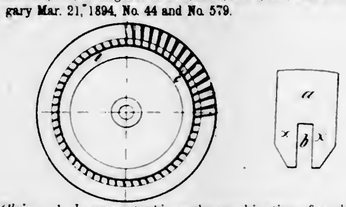
3. The combination of the frame D having two arms, a clamping screw E mounted in one arm, a head F pivoted to the other arm, a clamp on said head by which it is rigidly secured to the shaft or pole, substantially as described.

4. The combination of the frame D having two arms, a pin $d^2$ on one arm, a head F having a series of notches adapted to the pin, a clamp screw engaging with the shaft or pole and by which the head is rigidly secured to the shaft or pole, with a clamping screw E adapted to the arm $d$ of the frame D and adapted to force the shaft or pole into position against the pressure of the anti-rattling device, substantially as described.

5. The combination of the frame D, a head F adjustably mounted on the frame, a clamp for securing the head rigidly to the shaft or pole, a clamping screw carried by the frame and having a swiveled bearing plate adapted to force the shaft or pole into position, substantially as described.



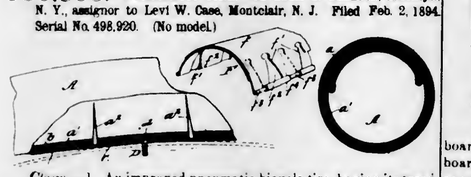
530,802. STEAM TURBINE WHEEL. EBERHARD BEGER, Stockholm, Sweden. Filed Aug. 17, 1894. Serial No. 520,623. (No model.) Patented in Sweden Nov. 10, 1893, No. 5,132; in France Mar. 5, 1894, No. 236,668; in England Mar. 5, 1894, No. 4,611; and in Austria-Hungary Mar. 21, 1894, No. 44 and No. 579.



*Claim.*—1. In steam-turbines, the combination of a wheel-body, the ring (*c*) of which at its both edges has notches (*d*) cut out obliquely and converging toward each other, and of curved paddle-blanks (*a*), which at their lower ends have a notch (*b*) and flaps (*x*), adapted to be inserted into the notches in the ring of the wheel.

2. In a turbine wheel, the combination with the wheel body and its ring having notches converging as described, of the paddles having ends projecting inside the wheel ring, and bent against its inside, and rings placed at the inside of these ends for the purpose of firmly holding the paddles.

530,803. PNEUMATIC TIRE. CEVEDRA B. SHELDON, Brooklyn, N. Y., assignor to Levi W. Case, Montclair, N. J. Filed Feb. 2, 1894. Serial No. 498,920. (No model.)



*Claim.*—1. An improved pneumatic bicycle tire, having its tread face practically non-expansible longitudinally, and a seat portion having one or more portions longitudinally expansible, when the tire is inflated, and fastening devices secured to the said seat portion, all arranged substantially as shown and described.

2. A pneumatic tire formed of a tubular body having at intervals transverse slits, in its seat portion and supplemental portions of a greater elasticity than such body portions secured to such body and extended over the said slits, all arranged substantially as shown, whereby the under or seat portion will be capable of longitudinal expansion when the said tube is inflated to its greatest diameter all arranged substantially as and for the purposes described.

3. A pneumatic bicycle tire, formed of a tubular body of the same thickness throughout, having at intervals one or more transverse slits in its under face, and supplemental portions secured on the outer face of the tube over the slits, of a greater elasticity than the main or body portion, whereby such tube can be stretched longitudinally at such slitted portions without changing the condition of the outer or tread portion of such tube as set forth.

4. As an improvement in pneumatic tires for bicycles, the combination with the tire having its under or seat face formed with one or more portions of greater elasticity than the remaining portions, such greater elastic portions having fastening devices secured thereto, whereby the tire can be fastened to the rim substantially as shown and described.

5. An improved pneumatic bicycle tire, having one or more transverse slits in its seat face, a supplemental portion integrally formed therewith extended over such slits and a fastening bolt having its head embedded between the supplemental portion and the body substantially as shown and described.

6. An improved bicycle tire, having at intervals a pair of transverse slits and a supplemental portion integrally formed therewith extended over such slits, and a fastening bolt having its head embedded in the supplemental portion at a point between the said slits all arranged substantially as shown and described.

7. A pneumatic tire for bicycles having an armor formed of a thin continuous plate formed with a solid longitudinal bearing face and a series of lateral curved fingers having their ends terminating in turned up or bead like portions, whereby such ends as they are expanded will be prevented from cutting the tire body as set forth.

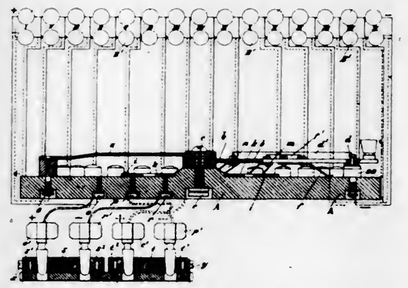
8. A pneumatic tire for bicycles, having an armor formed of two thin continuous plates having lateral fingers, said plates being held one under the other, with the fingers of the inner one arranged under the spaces between the upper fingers substantially as shown and described.

9. A pneumatic bicycle tire having an armor formed of a pair of thin plates having lateral fingers or projections, held to lap each other and interlock substantially as shown and for the purposes described.

10. A pneumatic bicycle tire having an armor formed of a pair of thin plates having each a continuous outer or bearing portion, and lateral fingers, held to lap and projected to form a continuous metal deflecting portion, said fingers having turned up or bead portions joined as and for the purposes described.

11. An armor for pneumatic bicycle tires comprising a pair of plates having each a continuous solid longitudinal or bearing portion and lateral fingers, the fingers of one overlapping the spaces between the fingers of the other, and a canvas or analogous covering for such armor plates all substantially as shown and described.

530,804. BATTERY-SWITCH. HEINRICH K. SPANGENBERG, Leipsic, Germany. Filed July 24, 1893. Serial No. 481,359. (No model.)



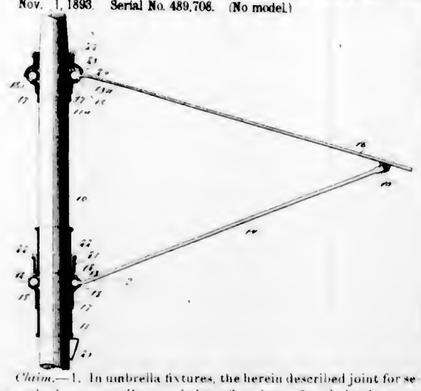
*Claim.*—1. The combination with two sets of cells, of a switch board for regulating the number of cells in use and a distributing board, provided with means for cutting out one set of cells and for coupling the two sets of cells in series or multiple arc, substantially as described.

2. The combination with two sets of cells, of a switch board for regulating the number of cells in use, connections from the negative pole of one set of cells, to a series of contact points on the switch board connecting from the negative poles of the other set of cells to an independent series of contacts on the switch board and a switch arm provided with devices for engaging both series of contacts, substantially as described.

3. The combination with two sets of cells, of the switch board for regulating the number of cells in use, said switch board being provided with terminals independently connected with the positive and negative poles of each set of cells, the distributing board and pins connected with said terminals, substantially as described.

4. The combination with two sets of cells, of the switch board for regulating the number of cells in use, said switch board being provided with terminals independently connected with the positive and negative poles of each set of cells, the distributing board provided with two plates adapted to be connected with the line wires and a connecting plate or plates insulated from said first named plates and pins connected with said terminals, for engaging said plates for cutting out one set of cells or for connecting said sets of cells in series or multiple arc, substantially as described.

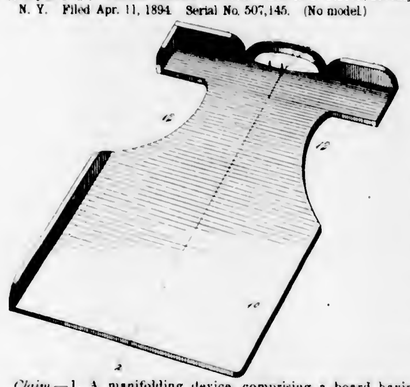
530,805. UMBRELLA. WILLIAM R. TERRY, Tiskilwa, Ill. Filed Nov. 1, 1893. Serial No. 489,708. (No model.)



*Claim.*—1. In umbrella fixtures, the herein described joint for securing the braces or ribs, consisting of an inner ferrule having concave seats intermediate its end on its exterior face, an outer ferrule surrounding the inner one and formed with concaves in its inner surface intermediate its ends, the said outer ferrule extending in cylindrical form at each end, beyond the concaves thereof, the outer ferrule further having openings leading outward therethrough from the concaves and slits extending from said openings through one cylindrical end to the end edge thereof, and a ring surrounding such cylindrical slitted end, the extreme slitted end being bent outward over the ring, substantially as described.

2. In umbrella fixtures, the herein described joint for securing the braces or ribs, consisting of an inner ferrule having concave seats intermediate its ends on its exterior face, an outer ferrule surrounding the inner one and formed with concaves in its inner surface intermediate its ends, the said outer ferrule extending in cylindrical form at each end, beyond the concaves thereof, the outer ferrule further having openings leading outward therethrough from the concaves and slits extending from said openings through one cylindrical end to the end edge thereof and a ring surrounding such cylindrical slitted end, the extreme slitted end being bent outward over the ring, and the ring having its lower end expanded and curved outward and downward, substantially as described.

530,806. MANIFOLDING DEVICE. EDWIN B. TILTON, Brooklyn, N. Y. Filed Apr. 11, 1894. Serial No. 507,145. (No model.)



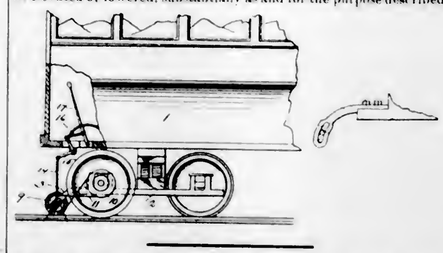
*Claim.*—1. A manifolding device, comprising a board having right angled flanges on two adjacent edges and having its opposite sides recessed, substantially as described.

2. A manifolding device, comprising a board having right angled flanges on two adjacent edges, recessed sides, and a hanger at one end, substantially as described.

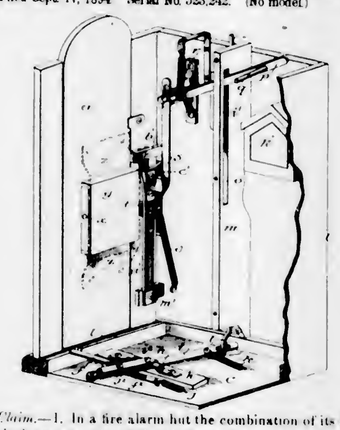
3. A manifolding device, comprising a board having right angled flanges at adjacent edges, side recesses, a hanger at one end, and fastening pins, all substantially as described

530,807. RAIL-CLEANER AND CAR-FENDER. JOHN S. TOMER, Pittsburg, Pa. Filed Apr. 28, 1894. Serial No. 509,335. (No model.)

*Claim.*—The herein described rail cleaner and car fender, consisting of the slotted brackets 3 attached to the forward truck of the car, the shaft 6 operating therein capable of a limited vertical movement, the brushes 7, and 8 attached to the said shaft, the pulley 9 attached to the shaft 6 and connected by a belt 11 to a pulley 10 secured to the forward axle of the car, as a means for rotating the said brushes, and the lever 17 arranged within the car, and connected by suitable cranks and links to the shaft 6, whereby the said shaft may be elevated or lowered, substantially as and for the purpose described



530,808. FIRE-ALARM HUT. HENRI TRUDEL, Montreal, Canada. Filed Sept. 17, 1894. Serial No. 523,242. (No model.)



*Claim.*—1. In a fire alarm hut the combination of its door having a lock case *y* a plate *u* therein having a toothed edge and forced laterally by a spring, with a pivoted rod *a'*, a latch *t* pivoted to said rod, a connecting rod *s* having its lower end pivoted to the latch and a pivoted lever *q* in engagement with the upper end of said rod substantially as described.

2. In a fire alarm hut the combination of its door and its lock case having therein a plate provided with a toothed edge, a pivoted rod *a'*, a latch pivoted to said rod, a connecting rod *c'* having one end pivoted to said rod, a metal strap *d'* hinged to the outside of the hut and flexibly united to the opposite end of said connecting rod substantially as described.

3. In a fire alarm hut the combination of its door, the lock case having therein a plate provided with a toothed edge, the rod *a'*, a latch pivoted to said rod, the connecting rod *c'* having ons end pivoted also to said rod and the other end to a metal plate *d'*, said plate being hinged to the outside of the hut and having a mortise in its upper portion, a staple received in said mortise, and a padlock having its hasp received in said staple substantially as described.

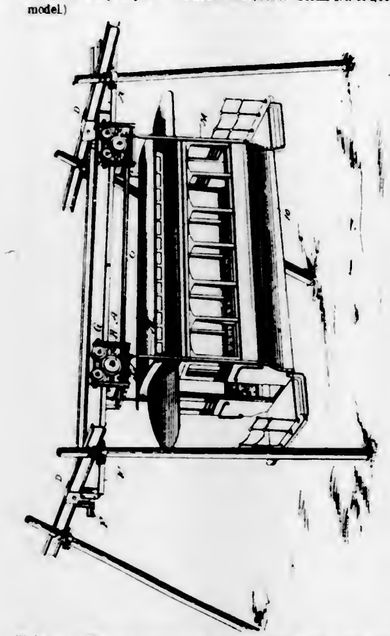
4. In a fire alarm hut the combination of its door, its lock case, the pivoted latch *t* in engagement with said lock case, a rod *s* having one end pivotally secured to said latch, and a lever *p* having one end pivotally connected to the opposite end of said rod, with a yieldingly retained lever *i* having one end adapted to arrest the descent of the lever *p* substantially as described.

5. In a fire alarm hut the combination of its door, its lock, a pivoted latch in engagement with said lock, and the pivoted lever *p* connected to said latch, with the horizontal slotted lever *f* having one end pivoted to the bottom of the door of the hut, the pivoted lever *i* having one end connected with the slot of the lever *f* and the opposite end provided with a slot, a crank shank *l* having one end received in said slot, and the stop bolt *i'* opposite a crank portion of said shaft substantially as described.

6. In a fire alarm hut the combination of its door, the door closing lever *f* and spring *j* having one end attached to said lever, with the blade *l* alongside of the bottom edge of the door and having the lever *f* passing therethrough substantially as described.



530,809. CARRIAGE FOR ELEVATED RAILWAYS. JOHN N. VALLEY, Jersey City, N. J. Filed Dec. 19, 1893. Serial No. 494,100. (No model.)



*Claim.*—1. The combination of the carriage frame, the running wheels thereon, driven wheels secured on the axles of two of the running wheels, on the outside of the carriage frame, and a driving wheel in engagement with the said driven wheels, substantially as described.

2. The combination of the carriage frame, the running wheels thereon, driven wheels secured on the axles of two of the running wheels, on the outside of the carriage, and a driving wheel in engagement with the said driven wheels, the axle of the driving wheel being located in a different plane from that of the axles of the driven wheels, substantially as described.

3. In a carriage for elevated railways, the combination with a frame work comprising a bottom frame composed of U-shaped members having their arms overlapped and secured together, and longitudinal and transverse braces, uprights rising from the bottom frame and having their upper ends returned, and longitudinal yokes secured to said uprights and to the returned ends thereof, of running wheels journaled in said yokes, substantially as described.

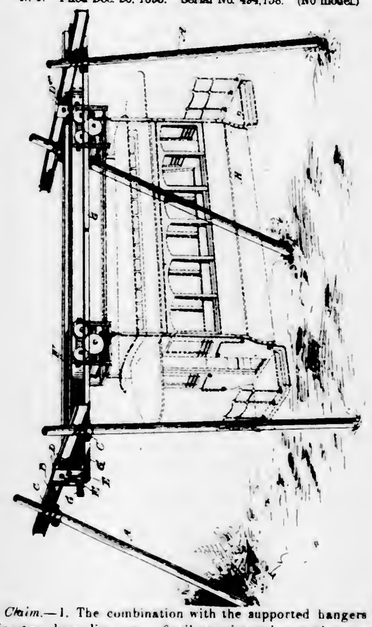
4. In a carriage for elevated railways, the combination of the following elements:—a bottom frame, uprights secured thereto and having returned upper ends, yokes formed each of two longitudinal members secured together and to the uprights and the returned ends thereof, running wheels journaled in said yokes, certain of said running wheels having driven wheels secured on their axles, longitudinal side bars, and a drive wheel having its shaft journaled in said side bars, said drive wheel being in engagement with the driven wheels, substantially as described.

5. In a carriage for elevated railways, the combination with a suitable frame provided with running wheels, of a transverse bar having a swivel connection with the frame, said bar extending beyond the carriage and forming laterally projecting arms, suspension rods adapted to support a car or other load, and a spring connection between the suspension rods and the said arms, substantially as described.

6. In a carriage for elevated railways, the combination with a suitable frame provided with running wheels, of a transverse bar extending beyond the carriage and forming laterally extending arms, suspension rods adapted to support a car or other load the said rods extending upward through the projecting arms, springs on the rods above the said arms, and a coupling for two carriages, consisting of two elongated spaced bars, having a pivotal connection with the carriage, substantially as described.

7. In a railway, carriages comprising each the following elements,—a framework comprising uprights, having their upper ends returned and bent downward, two parallel longitudinal yokes secured to the uprights at each side, a horizontal band secured to the uprights and extending entirely around the carriage and consisting of two U-shaped members, the legs of which overlap and are bolted together, braces extending transversely and longitudinally of the band and secured thereto, running wheels journaled in the longitudinal yokes,—guide wheels mounted on stud axles secured to one of the said bars below the running wheels, lateral arms extending outward from the carriage, suspension rods for a car, said rods extending upward through the lateral arms, springs surrounding the said rods above the arms and seated on the latter, and a coupling connection for two adjacent carriages, consisting of two parallel plates pivotally bolted to the braces of the horizontal bands of each car, substantially as described.

530,810. ELEVATED RAILWAY. JOHN N. VALLEY, Jersey City, N. J. Filed Dec. 20, 1893. Serial No. 494,158. (No model.)



*Claim.*—1. The combination with the supported hangers each having two depending arms, of rail-carrying stringers whose respective meeting ends are each secured to one of the depending arms of the same hanger, substantially as described.

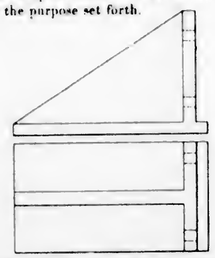
2. In an elevated railway, the combination of suitably supported transverse girders, hangers of inverted U-shape, secured to said girders, having their depending arms extending below the girders, vertically disposed angle irons secured by one arm or wing to said hangers, longitudinal stringers in the form of channel beams secured to the angle irons, and T-rails secured to the flanges of the channel beams, the heads of said rails being disposed vertically, substantially as described.

3. The herein described elevated railway, comprising suitably supported girders, U-shaped hangers secured to said girders, angle irons having one flange or member of each secured to said hangers, tracks in the form of channel irons which are secured to said angle irons, said tracks being adapted for reversal for bringing the flanges thereof either to the inside or the outside of the structure, and rails secured to said channel irons, the rails consisting of T irons having the heads thereof disposed vertically, substantially as described.

530,811. BRACKET-CARRIER FOR BOILERS. HENRY VOGT, Louisville, Ky. Filed May 24, 1894. Serial No. 512,318. (No model.)

*Claim.*—1. In a bracket carrier for steam boilers in combination a detachable angle bracket F having a shoulder J a brace I and bolt holes G, and a fixed part A having slots D to receive the heads of the

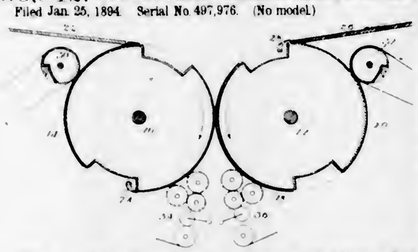
bolts holding the two parts of the bracket carrier together substantially as and for the purpose set forth.



2. In a bracket carrier for steam boilers, the combination of a detachable angle bracket having a shoulder, a fixed part having vertical slots on its inner side, and bolts, the heads of which enter said slots, passed through the bracket and provided with nuts.

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530,812. **PRINTING-PRESS.** WILLIAM C. WENDTÉ, Boston, Mass. Filed Jan. 25, 1894. Serial No. 497,976. (No model.)

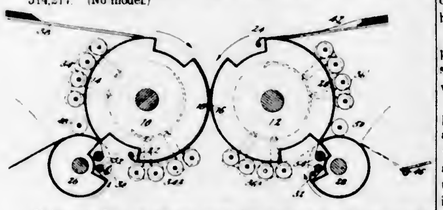


*Claim.*—1. In a printing press, a cylinder carrying both a form and an impression-surface, the latter provided with grippers, in combination with another cylinder furnished in like manner, and with two feed-boards, or equivalent means for feeding sheets; substantially as described.

2. In a press for printing sheets, two revolving cylinders of equal size geared together, each provided with a form- and an impression-surface of equal size separated from each other by gaps and angularly adjusted to follow each other in alternating sequence; in combination with a set of grippers for each cylinder placed functionally in one of its gaps; with sheet feeding and delivery apparatus to and from each of said grippers; and with inking apparatus provided with form-rollers adapted to drop on the forms as they pass the same; substantially as described.

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530,813. **PERFECTING-PRESS FOR PRINTING SHEETS.** WILLIAM C. WENDTÉ, Boston, Mass. Filed June 11, 1894. Serial No. 514,217. (No model.)



*Claim.*—1. In a perfecting press for printing sheets; two cylinders of equal size geared operatively together and provided each with one or more form- and impression-surfaces placed operatively thereon and separated from each other by gaps; in combination and in operative contact each with an auxiliary impression-cylinder the circumference of which is equal in length to the length of an impression-surface and gap upon one of the main cylinders, and which is adjusted angularly to present a sheet thereon to every form upon the main cylinder which passes said auxiliary cylinder; substantially as described.

2. In a perfecting press for printing sheets; two main cylinders of equal size geared operatively together and provided each with one or more form- and impression-surfaces alternately placed, and separated from each other by gaps; in combination with sheet-feeding apparatus to each of said main cylinders; with a set of grippers for each impression-surface thereon; with an auxiliary cylinder for each main cylinder in operative contact therewith and related in diameter thereto as one is to twice the number of forms on the main cylinder, with grippers for the auxiliary impression-cylinder adapted and adjusted angularly to seize and hold a partly printed sheet on the same while a form passes it; and with delivery apparatus to receive the perfected sheet from the auxiliary impression-cylinder and transport it from the press; substantially as described.

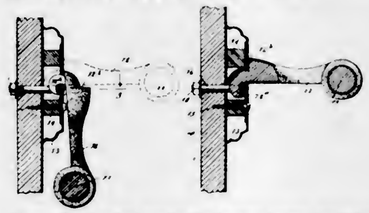
3. In a perfecting press for printing sheets, two cylinders of equal size geared operatively together and provided each with a form- and with an impression-surface; in combination and in operative contact each with one auxiliary impression-cylinder of half the diameter of the main cylinders provided with grippers, and adapted and adjusted angularly to take from one of the latter a sheet printed on one side, and present the back thereof to the form upon the main cylinder which passes the same; substantially as described.

4. In a perfecting press for printing sheets, two cylinders of equal size geared operatively together and having a form- and an impression-surface provided with grippers on each, in combination with a sheet-feeding device for each cylinder; with two auxiliary impression-cylinders of half the diameter of the main cylinders in operative contact with the same, one with each; and with grippers on the latter adapted to seize and transfer the sheets from the impression-surfaces on the main cylinders to those on the auxiliary cylinders, for the back printing of each sheet before the final delivery of the same; substantially as described.

5. In a perfecting press for printing sheets; two main cylinders of equal size geared operatively together, and having a form- and an impression-surface provided with grippers on each; in combination with two feed-boards one for each main cylinder; with two auxiliary impression-cylinders provided with grippers and geared operatively to the main cylinders one to each; with two independent sets of inking rollers for each form, controlled by cams or their equivalents for lifting and dropping each of the same to and from the forms; and with delivery apparatus for taking the perfected sheets from the auxiliary impression-cylinders; substantially as described.

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530,814. **CASKET-HANDLE.** LYMAN E. WOODARD, Owosso, Mich. Filed Aug. 22, 1894. Serial No. 520,974. (No model.)



*Claim.*—1. In casket handle attachments, a sheet metal disk having an opening, and a separate washer reinforcing the disk at its opening, substantially as described.

2. In casket handle attachments, the combination with a disk having an opening, and a washer adapted to reinforce the disk at its opening, of a bolt entering the washer aperture, and an arm connectible with the bolt, substantially as described.

3. The combination with the wall of a casket, of a recessed and perforated ear, a washer in the recess, impinging the casket wall and said ear, and means for securing the ear and washer to the casket wall, substantially as described.

4. The combination with the wall of a casket, a recessed and perforated ear attached thereto, a washer in the recess in the ear and impinging on the coffin wall and ear, and a screw securing the washer and ear on the casket wall with the apertures in said wall and ear in alignment, of an arm having a hooked end adapted to enter the aperture in the ear and washer, and a ring eye bolt secured in the casket wall and engaged by the hooked end of the arm, substantially as described.

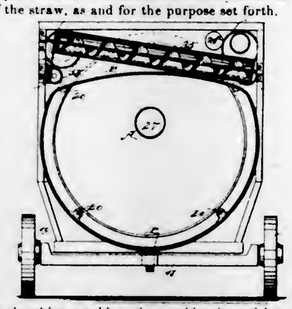
5. The combination with the wall of a coffin, and a handle bar having arms provided with hooked ends and peripheral shoulders at the bases of said hooked ends, of hinge bolts securable in the coffin wall and loosely engaging the hooked ends of the arms, sheet metal ears apertured to receive the hooked ends of the arms and receive the impinge of the shoulders on said arms, reinforcing washers within the ears, impinging the wall of the coffin and said ears, and means to changeably secure the ears and the reinforcing washers on the coffin wall, substantially as described.

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530,815. **THRASHING-MACHINE.** ISAAC W. WOODBURN, Rock Rapids, Iowa. Filed July 7, 1894. Serial No. 516,790. (No model.)

*Claim.*—1. In a thrashing machine, a casing, a screening cylinder mounted to revolve in the casing, provided with exterior spiral ribs serving to convey the screened material in direction of one end of the casing, a concave and cylinder leading into the screening cylinder, an elevator receiving the screened material and conducting the same to auxiliary rotary screening cylinders, and a fan receiving its air supply from the auxiliary screening cylinders and exhausting at the delivery end of the main casing, whereby the chaff is drawn from the grain by the fan and the exhaust from the fan serves to facilitate the exit of the straw, as and for the purpose set forth.



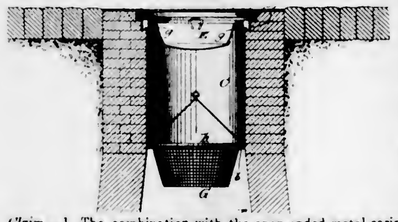


2. In a thrashing machine, the combination, with a casing having a discharge opening at one of its ends, a main screening cylinder mounted to revolve in said casing and provided with exterior ribs, spirally arranged and serving to conduct the screened material in direction of one end in an opposite direction to that of the outlet, and a cylinder and concave leading into the main screening cylinder, of an elevator receiving the screened material from said casing, auxiliary revoluble screening cylinders, provided with apertured or screening surfaces of different mesh, a communication being established between both of the auxiliary cylinders and one of said cylinders and the elevator, a fan casing containing a revoluble fan, a connection between the casing and the auxiliary screening cylinders, whereby the fan receives its air supply from said auxiliary cylinders, an offtake chute connected with the fan casing and extending through the main screening cylinder to the outlet of the casing, and a driving mechanism, substantially as and for the purpose specified.

3. In a thrashing machine, the combination, with a casing having a delivery end, an elevator connected with the opposite end, a main screening cylinder mounted to revolve in the said casing, having spiral ribs adapted to conduct the screened material to the elevator, and a concave and thrashing cylinder leading into the main screening cylinder, of auxiliary revoluble screening cylinders, a connection between the rear ends of the said auxiliary cylinders, a fan casing connected with the forward ends of the auxiliary cylinders, receiving its air supply therefrom, a fan mounted in the said casing, an exhaust chute leading from said fan to the delivery end of the main casing, a conveyer located beneath the auxiliary cylinder, in communication with the elevator, receiving the screenings therefrom, the said conveyer being connected likewise with the fan casing, a second conveyer located beneath a second auxiliary screening cylinder, receiving two sizes of grain therefrom, being provided with an outlet for one class of grain, and means for delivering the second class to the thrashing cylinder, and a driving mechanism, substantially as shown and described, whereby the cylinders are revolved and likewise the fan and elevator, as and for the purpose specified.

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530,816. **MANHOLE FOR SEWERS.** GEORGE WRIGHT, Winnipeg, Canada. Filed May 11, 1894. Serial No. 510,888. (No model.)

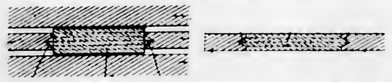


*Claim.*—1. The combination with the open ended metal casing or lining for manholes formed near its upper end with an offset *d*, and a second off set *c* thereabove, the upper horizontal wall or flange of which is provided with slots *f* in its inner edge, of the open work cover resting on said flange and having radial pins *e* passed down through slots *f* and engaging the under side of said flange, and the mud pan E of less diameter than the casing and having radial pins *g* resting on the shoulder formed by the off set *d*, substantially as described.

2. A manhole casing comprising the open ended metal case C having an inwardly projecting rib *b* around its lower edge, an off set *d* just below its upper end, a second larger off set *c* thereabove and having its upper flange provided with slots *f* in its inner edge, a purifier G resting on the rib *b*, a mud pan of less diameter than the case and having radial pins *g* resting on the shoulder formed by the off set *d* and the cover resting on the top flange of the case and provided with radial pins *e* passed through slots *f* and engaging the lower side of said top flange, substantially as described.

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530,817. **PROCESS OF INLAYING METAL GOODS WITH TORTOISE-SHELL OR CELLULOID.** HENRI F. L. AUMONT, London, England. Filed Sept. 12, 1894. Serial No. 522,803. (No specimens.) Patented in France Mar. 5, 1894, No. 236,758.

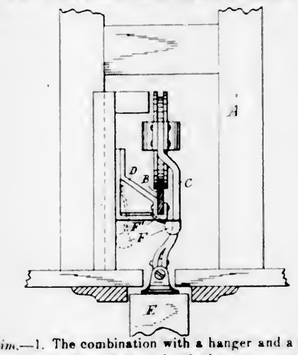


*Claim.*—1. The herein described mode of inlaying metal goods with tortoiseshell or celluloid, which consists in squeezing the pieces of material to be inlaid, when softened by heat, into interlocking engagement with the grooved or beveled edges of "through" apertures in the metal, maintaining the pressure until the work is cold, and then removing any superficial excess of the inlaid material, substantially in the manner described.

2. A plate of metal having pieces of tortoiseshell or celluloid inlaid in it by being squeezed, under the combined effect of heat and pressure, into interlocking engagement with the edges of "through" apertures in the plate, substantially as specified.

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530,818. **STOP FOR DOOR-HANGERS.** FRANK A. AUSTIN, Syracuse, N. Y. Filed Mar. 1, 1894. Serial No. 501,933. (No model.)



*Claim.*—1. The combination with a hanger and a track for the hanger, of a support, and a stop for the hanger mounted loosely on said support and adapted to be moved out of the path of the hanger, as and for the purpose set forth.

2. The combination with a hanger, track and two brackets supporting the track, of a stop in the path of the hanger, and an extension of the stop lying loosely upon and between the said bracket, as and for the purpose described.

3. The combination with the hangers, track and the two central brackets supporting the track, of a central stop in the path of and between the hangers, an extension of the stop lying loosely upon and between the said brackets, and suitable means to confine the stop to its seat, as set forth.

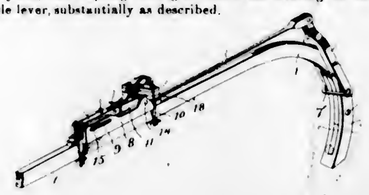
4. The combination with the hangers, track and the two central brackets supporting the track, of a central stop in the path of the hangers formed of a single piece of sheet metal, and consisting of an inverted U-shaped part, a shank extending from the central part of the same, and a plate formed on said shank to lie on and between the said hangers, as and for the purpose described.

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530,819. **CULTIVATOR ATTACHMENT.** DILVER R. BAKER, Cowgill, Mo. Filed Aug. 30, 1894. Serial No. 521,747. (No model.)

*Claim.*—1. The combination with a cultivator beam provided with a pivoted point-shank, and a yoke pivoted on the beam and having its lower end portion adapted to bear rearwardly against the

upper front portion of the point shank above its pivot, of toggle levers mounted on the forward portion of the beam, a rod connecting the front end of the forward toggle lever with the upper end of said pivoted yoke, and a spring arranged above and bearing on the rear toggle lever, substantially as described.

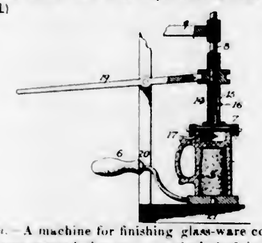


2. The combination with a cultivator beam, a yielding point shank and a yoke pivoted on the beam and provided at its lower end with a cross bar or bail adapted to bear rearwardly against the upper front portion of the point shank above its pivot, of a frame mounted on the forward portion of the beam and provided in its opposite sides with longitudinal slots, toggle levers mounted in said frame and pivoted thereto at one end and provided at the other end with pins engaged in the slots of the frame, a rod connecting one of said pins with the upper end of the pivoted yoke, and a spring arranged above and bearing on one of the toggle levers, substantially as described.

3. The combination with a cultivator beam 1 and yielding point-shank 3, of the pivoted yoke 6 provided with cross bar 7, the frame 8 mounted on the forward portion of the beam and provided with slots 9, the toggle levers 11 and 12 mounted in said frame and provided with pins 15 engaging the slots 9, the rod 16 connecting the toggle levers and the yoke, the spring 19, above the toggle levers, and the set screw 20 adjustable in one of said toggle levers, substantially as described

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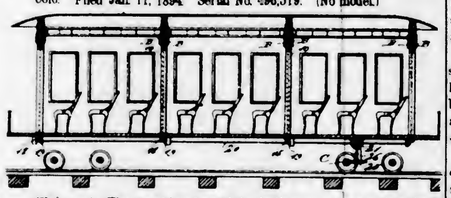
530,820. MACHINE FOR FINISHING GLASSWARE. WILLIAM H. BARR, Tiffin, Ohio. Filed Sept. 26, 1894. Serial No. 524,168. (No model.)



*Claim.*—A machine for finishing glass-ware comprising a table, a guide-frame erected thereon, a vertical shaft in said guide frame having a sleeve disk, a lever pivoted to said frame and connecting said sleeve and a removable finishing plug held from turning and in alignment with the axis of the chuck disk for operation in rotating and finishing the article in the way described.

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530,821. STATION-INDICATOR. DENNIS B. D. BLAKE, Denver, Colo. Filed Jan. 11, 1894. Serial No. 496,519. (No model.)



*Claim.*—1. The combination of the indicator, an operating shaft geared to the car axle and formed in telescopic sections, a cam or spiral groove being formed in one shaft-section and the other having a pin entering said groove, gear wheels on one of said shaft-sections, with shafting geared to the indicator and provided with a gear intermediate of the first named gears and with which said two gears are alternately and automatically engaged when the rotation of the axle is reversed, substantially as set forth.

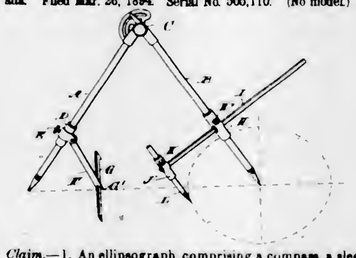
2. The combination of the indicator an operating shaft geared to the car axle and formed in telescopic sections, a cam or spiral groove being formed in one shaft-section and the other having a pin entering the groove, two bevel gears on the upper shaft section, and the lower shaft section being universally jointed at its lower portion to the gearing which connects it with the axle, with shafting geared to said indicator and provided with a gear intermediate of said two gears and whereby rotary motion in the same direction is transmitted thereto regardless of the direction of rotation of the car axle, substantially as set forth.

3. A station indicating apparatus comprising a vertically swinging bracket through which the car axle freely passes, a horizontal worm wheel geared to the axle, a spring supporting the bracket from the under side of the car, a hanger on the car bottom, a vertical shaft section journaled therein, a second shaft section journaled in the lower end of the hanger and having a longitudinal bore receiving the lower end of the first shaft section, a spiral groove and pin connecting said telescopic ends, a longitudinally extensible shaft section universally jointed to the lower end of said second shaft section and to the axis of said horizontal worm gear, an indicating mechanism and line shafting geared thereto and provided with an operating gear intermediate of the two first named gears to be driven in the same direction thereby, substantially as set forth.

4. The combination with the compartmented car having hollow partitions or casings 10 in the end walls of its compartments, shafts extending through opposite sides thereof and provided with pointers, dials at both sides of the end walls, bevel gears on the inner ends of said shafts, and vertical shafts extending down through said walls or partitions beneath the car and there provided with bevel gears, of the line shafting extending longitudinally of the under side of the car and provided with bevel gears meshing with said vertical shafts, a vertical automatically reversing shaft having two bevel gears between which are similar gears on the line shafting; the said vertical shaft being formed longitudinally extensible and in universally jointed sections and provided on its lowermost section with a worm gear meshing with a worm on the car axle and a yielding bearing carrying said worm gear, substantially as set forth.

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530,822. ELLIPSOGRAPH. JOHN A. CALDWELL, Vancouver, Canada. Filed Mar. 26, 1894. Serial No. 505,110. (No model.)



*Claim.*—1. An ellipsograph, comprising a compass, a sleeve fitted to slide loosely on one of the legs of the compass, and a rod held adjustable in the said sleeve and standing at right angles to the leg, the said rod carrying a pencil or pen-holder, substantially as shown and described.

2. An ellipsograph, comprising a compass, a device for adjusting to and holding the compass in a vertical position, a sleeve fitted to slide loosely on one of the legs of the compass, and a rod held adjustable in the said sleeve and adapted to be fastened thereto, the said rod standing at right angles to the leg carrying the said sleeve, the said rod also carrying a pencil or pen-holder, substantially as shown and described

3. An ellipsograph, comprising a vertically-disposed compass, a sleeve fitted to slide loosely on one of the legs of the compass, a rod held adjustable in the said sleeve and standing at right angles to the leg carrying the sleeve, and a holder held adjustable on the said rod and adapted to carry a pen or pencil, substantially as shown and described.

4. An ellipsograph, comprising a sleeve fitted to slide loosely on one of the legs of a compass, a rod held adjustable in the said sleeve and standing at right angles to the leg carrying the sleeve, and a holder held on the said rod and adapted to carry a pen or pencil, the said holder standing at right angles to the rod, substantially as shown and described.

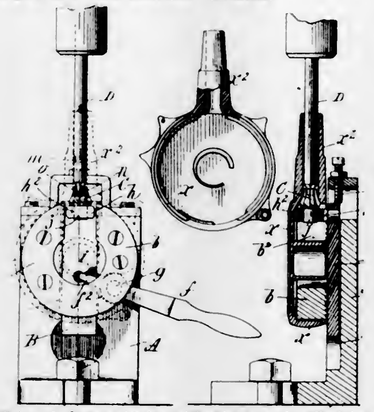
5. An ellipsograph, comprising a sleeve fitted to slide loosely on one of the legs of the compass, a rod held adjustable in the said sleeve and standing at right angles to the leg carrying the sleeve, a holder held on the said rod, a second rod held adjustable in the said holder, and a pen support pivoted on the said second rod, substantially as shown and described.

6. An ellipsograph, comprising a sleeve fitted to slide loosely on one of the legs of the compass, a rod held adjustable in the said sleeve and standing at right angles to the leg carrying the sleeve, a holder held on the said rod, a second rod held adjustable in the said holder a pen support pivoted on the said second rod, and a pin held adjustable on the pivoted support, substantially as shown and described.



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530,823. MACHINE FOR COUNTERBORING BARRELS OF REVOLVER-CASINGS. ELBERT M. COUCH, Northampton, Mass. Filed Aug. 23, 1894. Serial No. 521,064. (No model.)



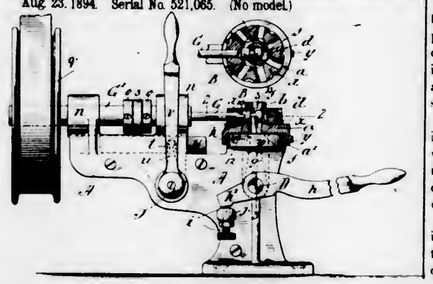
*Claim.*—1. In a mechanism of the character described, in combination, a part against which the annular object to be counterbored may rest, or be set, the tool adapted to have a location within the annular object and to have its working extremity entered in the inner end of the radial bore of said object, a carrier for the tool with which the latter has a rotary engagement and which is movable to advance the tool into the bore of the work, and a power-shaft entered from the outer end of the bored work therewithin to an engagement with the outer end portion of the tool, substantially as described.

2. In a mechanism of the character described, the combination with the stand having the slide-way and slide with the stud, *h*, having the transverse journal socket, $h^2$, the rest, *b*, projecting from the side of the stand and having the recess, $b^2$, and adapted to afford a steadying support for the annular and radially bored work, the counterbore tool rotatably supported by the said stud of the slide, means for imparting the reciprocatory movement to the slide and the rotating shaft to be entered through the outer end of the radially bored work and having a temporary engagement with the outer end of said tool, substantially as described.

3. In a mechanism of the character described, the combination with the stand having the slide-way and the adjustable abutment, *m*, and the rest, *b*, projecting from the side thereof, provided with the recess, $b^2$, and adapted to afford a steadying support for the annular and radially bored work, of the slide movable in said slide-way and provided with the stud having the transverse socket, $h^2$, the counterbore tool rotatably supported by the said stud, the lever for imparting a reciprocatory movement to the slide and the rotating shaft to be entered through the outer end of the radially bored work and having a temporary engagement with the outer end of said tool for causing the rotation of the latter, substantially as described.

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530,824. MACHINE FOR COUNTERBORING CHAMBERS OF REVOLVER-CYLINDERS. ELBERT M. COUCH, Northampton, Mass. Filed Aug. 23, 1894. Serial No. 521,065. (No model.)



*Claim.*—1. The combination with the stand having a rest with a vertical projection which is vertically apertured and also transversely horizontally apertured, which rest is adapted to receive about the said apertured projection the annular radially bored work, a counterbore tool rotatably located in the said transverse aperture, a lever projected within the vertical aperture and having an endwise forcing engagement with an intermediate part of the tool, and an endwise movable shaft adapted to be entered through the bore of the work at its outer end and to engage the outer end of the tool, substantially as described.

2. The combination with the vertically projecting part which is vertically and also transversely apertured, of a rotary counterboring tool set in said transverse aperture, means for imparting an endwise movement to the tool, and a shaft mounted in alignment with the tool and adapted by entrance through the radially bored work to engage said tool whereby the latter may receive its rotary movement, substantially as described

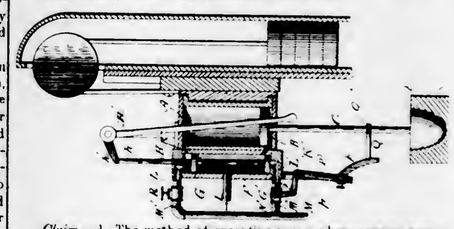
3. In a machine of the character described, the combination with the vertically hubbed rest having the vertical aperture and the transverse aperture through the hub, of the counterbore tool located to rotate in said transverse aperture and having intermediately the peripheral groove, the rock shaft having the handle-lever and a lever-arm the extremity of which enters the said vertical aperture of the rest and engages in the peripheral groove of the said tool, and the endwise movable shaft mounted in axial alignment with said tool, and adapted to have, endwise, a temporary engagement therewith, substantially as described.

4. In a machine of the character described, the combination with the stand having the vertically projecting part which is vertically and also transversely apertured, of a rotary counterboring tool set in said transverse aperture, means for imparting an endwise movement to the tool, a shaft supported to rotate and to slide endwise in bearings of said stand to engage and disengage the forward end of the tool, and having the fixed collars, *o*, *o*, a slide on said stand having the projection to engage said collars, and an operating lever for the slide, all substantially as and for the purpose set forth.

5. In a machine of the character described, the combination with the stand and the rest removably secured upon said stand and having the upstanding hub-like projection which has the transverse aperture, of a counterboring tool set for rotation in the said aperture, a shaft mounted in alignment with the tool and adapted to have a longitudinal movement to endwise engage the tool and means for imparting to the tool its endwise advancing movement, substantially as and for the purpose set forth.

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530,825. METHOD OF AND APPARATUS FOR PRESSING GLASSWARE. JOHN H. CROSKEY and JOSEPH LOCKE, Pittsburg, Pa. Filed June 7, 1894. Serial No. 513,808. (No model.)



*Claim.*—1. The method of operating power glass pressing apparatus, which consists in varying the speed and force of the piston and plunger during their working strokes, so as to cause the plunger to descend slowly until it reaches the glass in the mold, and to then increase its speed of movement

2. In steam or equivalent power-operated glass presses, the combination with the piston cylinder, and the power supply or exhaust pipe, of a throttle valve, and mechanism substantially as described, comprising a moving part attached to the valve stem and a contacting part attached to the piston rod whereby the said valve is operated automatically during the working stroke of the piston and plunger, so as to periodically increase the effective working pressure.

3. In a glass press, the combination with the steam, or other cylinder, of an exhaust pipe provided with a throttle valve, combined with automatic mechanism substantially as described, comprising a rod or lever on the valve and a tappet on the piston rod adapted to contact with said rod or lever for operating said valve so as to periodically increase the exhaust.

4. In a glass press, the combination with the steam or other cylinder, and the piston and plunger of an exhaust or supply pipe, containing a throttle valve, a crank on the stem of said valve, a lever coupled to said crank, a cam or horn on said lever, and a plate or

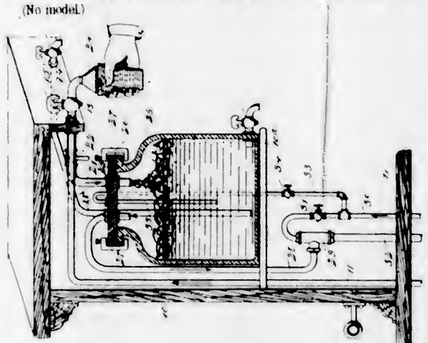
striker attached to the plunger rod, and arranged and adapted to strike said cam or horn during its descent, and to thereby periodically increase the opening of the exhaust valve.

530,826. MANUFACTURE OF CELLULOSE ACETATE. CHARLES F. CROSS and EDWARD J. BEVAN, London, England. Filed June 4, 1894. Serial No. 513,466. (Specimens.)

*Claim.*—1. The manufacture of an intermediate product consisting of cellulose and zinc acetate by mixing cellulose hydrate with zinc acetate solution, drying and dehydrating the compound, substantially as described.

2. The manufacture of cellulose acetate, by treating with acetyl chlorid the intermediate product manufactured by mixing cellulose hydrate with zinc acetate solution, drying and dehydrating; washing the crude product of the reaction, pressing and drying, treating the dried substance with chloroform whereby a solution of cellulose acetate is obtained free from cellulose, and finally, evaporating the solvent, substantially as described.

530,827. BEER DRAWING AND SAVING APPARATUS. WILLIAM R. DALES, New York, N. Y. Filed Apr. 5, 1894. Serial No. 506,454. (No model.)



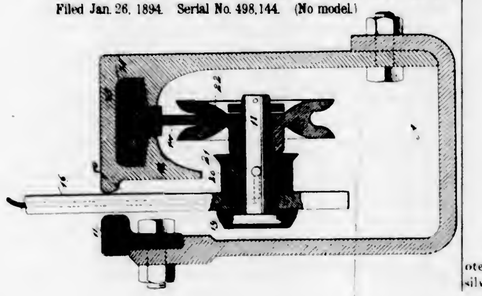
*Claim.*—1. A beer-drawing and saving apparatus, composed of a vacuum tank, a beer-discharge pipe, a two way faucet connecting with both tank and pipe, and a hood applied to the faucet, as shown and described to operate as specified.

2. In a beer-drawing and saving apparatus, the combination with a vacuum tank and inlet pipe leading thereto, of a beer-discharge pipe, having its nozzle arranged in connection with that of the tank pipe, a hood connected with the latter, and means for controlling the discharge and inlet pipes, as shown and described.

3. In a beer-drawing and saving apparatus, the combination with a vacuum tank and froth inlet pipe connected therewith, a beer discharge pipe whose nozzle is arranged with that of said inlet pipe, a hood applied to such nozzles, and means for controlling inlet and discharge, as shown and described.

4. The combination, with the vacuum tank, the beer supply pipe and the two-way faucet connected with the tank and pipe, of the water pipe, the aspirator connected with the water pipe and tank, and a second pipe leading from the supply pipe into the tank, substantially as described.

530,828. CONDUIT-RAILWAY TROLLEY. WALTER E. DELABARRE, FRANCIS M. FRAZER, and ROBERT A. CARRICK, New York, N. Y. Filed Jan. 26, 1894. Serial No. 498,144. (No model.)

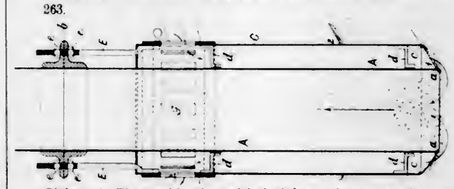


*Claim.*—1. The combination, with the slotted conduit, the conductor therein, and the transmitting arm adapted to project through the slot of the conduit, of a trolley connected to the said arm, and a covering of an insulating material secured to the arm beneath the slot of the conduit, said covering being provided, at its ends, with bevels facing in the opposite direction from that of the trolley, as and for the purpose set forth.

2. The combination, with the conduit having a slot and a guard plate on one side thereof, and the conductor held in the conduit laterally of the said guard plate, of a transmitting arm adapted to project through the said slot, a trolley connected to the arm and adapted for contact with the conductor, and an insulating covering connected to the said arm and arranged essentially beneath the said guard plate, the said covering being provided, intermediate of the trolley and the vertical line of the guard plate, with a bevel facing in the direction of the slot, substantially as and for the purpose set forth.

3. The combination, with the transmitting arm adapted to project through the slot of a conduit, of a trolley connected to the said arm, and a covering of an insulating material secured to the arm, said covering being provided, at its ends, with bevels facing in the opposite direction from that of the trolley, as and for the purpose set forth.

530,829. PNEUMATIC APPARATUS FOR CONVEYING GRAIN. FREDERIC E. DUCKHAM, London, England. Filed Dec. 14, 1893. Serial No. 493,697. (No model.) Patented in British India Oct. 28, 1893, No. 263.

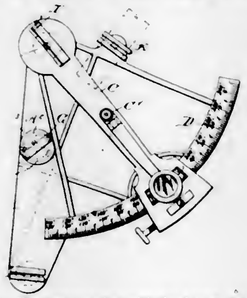


*Claim.*—1. The combination, with the inlet suction nozzle of pneumatic conveying apparatus, of an air supplying sleeve surrounding the nozzle at a distance, and fitted to slide longitudinally thereon for the purpose of varying the relative height of its lower end to that of the nozzle, a relatively fixed abutment carried by the nozzle, means for adjustably connecting the sleeve to the said abutment, and spacing devices between the sleeve and the nozzle to permit of a guided movement of the former on the latter and maintain it concentric therewith, substantially as described.

2. The combination with the inlet suction nozzle of pneumatic conveying apparatus, and an abutment that is stationary relatively to the said nozzle, of an adjustable air supplying sleeve surrounding the nozzle and fitted to slide up and down thereon, screw rods connected to the sleeve and to the said abutment, and nuts screwing on the said rods, whereby the relative height of the sleeve and nozzle may be adjusted as specified.

3. The combination with the inlet suction nozzle of pneumatic conveying apparatus, of an adjustable air supplying sleeve surrounding the nozzle, and having a circumferential regulator near its upper end controlling the admission of air thereto, the sleeve being adjustably connected to the nozzle to slide longitudinally thereon, whereby the relative height of the lower end of the sleeve to that of the nozzle may be varied substantially as specified.

530,830. SEXTANT ATTACHMENT. THOMAS T. H FERGUSON, Hankow, China. Filed Nov. 7, 1893. Serial No. 490,215. (No model.)

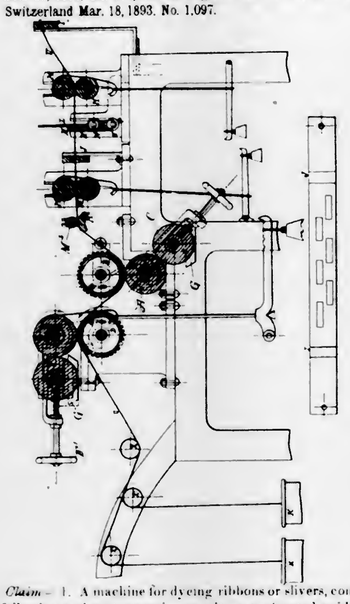


*Claim.*—1. The combination with the frame, graduated arc, pivoted vernier, and other ordinary attachments of a sextant, of a half silvered glass which is movable vertically, and adapted to turn horizontally, and occupies the place of the horizon glass, as shown and described.

2. A sextant attachment, comprising a plate having a graduated arc, a vernier pivoted on the said plate, an index glass held on the pivot end of the vernier, two rings held on the plate and each adapted to carry the telescope, and a half-silvered glass mounted to turn on the said plate in alignment with the index glass and one of the telescope rings, substantially as shown and described.



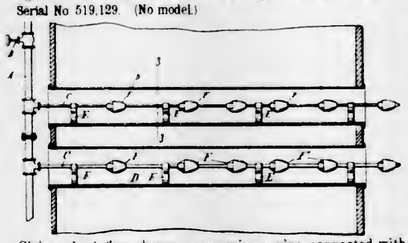
530,831. MACHINE FOR DYEING SLIVERS, &c., DIRECT FROM COMBS. JULES A. J. FLORIN-LECLERCQ, Roubaix, France. Filed Apr. 20, 1893. Serial No. 471,068. (No model.) Patented in France Sept. 30, 1891, No. 216,354; in Germany Sept. 22, 1892, No. 67,729; in Belgium Dec. 10, 1892, No. 102,510; in England Jan. 16, 1893, No. 955, and in Switzerland Mar. 18, 1893, No. 1,097.



*Claim.*—1. A machine for dyeing ribbons or slivers, consisting of the following series of agencies, to wit: a perforated guide bar I, a pair of pressure rollers M, a transversely operating agitator or beater H, a second perforated guide bar J, a second pair of pressure rollers M', a pressure bar $M^2$ and roller $M^3$, and two printing couples B C and D E, the first arranged out of line with the bar and the second couple, and each comprising a yielding printing roll C, E, and a hard fluted roll B D around which the ribbons pass, substantially as described.

2. In a machine for treating ribbons or slivers from the comb, an agitator comprising two parallel bars, uprights to which said bars are adjustably secured, a shaft carrying said uprights, vertical bearings in which the ends of said shaft slide adjustable cranks connected with the ends of the shaft, and means for rotating the cranks substantially as described.

530,832. FLUE-CLEANER. JULIUS O FRAZIER, McCall, La., assignor of one-half to Lezin A. Becnel, same place. Filed July 31, 1894. Serial No. 519,129. (No model.)



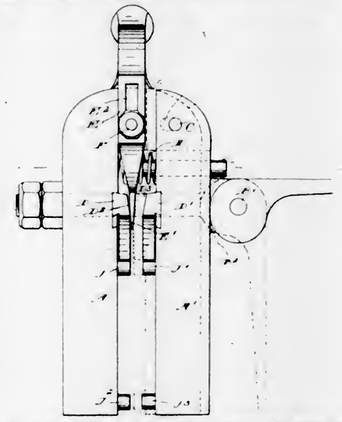
*Claim.*—1. A flue cleaner, comprising a pipe connected with a fluid supply, and a length to extend from end to end of the flue and a series of nozzles on the said pipe, and each having jet apertures to permit the fluid to pass in jets out of the nozzles into the flue to be cleaned, substantially as shown and described.

2. A flue cleaner, comprising a pipe adapted to rest in the flue to be cleaned, and a length to extend from end to end of the flue bearings for supporting the said pipe in the said flue, and a series of spaced nozzles held on the said pipe and having jet apertures for the escape of steam or other fluid, substantially as shown and described.

3. A boiler flue cleaner, comprising a vertical supply pipe A, a series of horizontal pipes of a length to extend from end to end of the flues, a series of brackets E on each pipe to center and support them in the flues, and a series of the nozzles F on each pipe between the brackets and having discharge apertures $F^3$ in one end, substantially as shown and described.

4. The flue cleaning nozzle F formed with a truncated hollow body $F^3$ having threaded pipe connection $F^5$ $F^3$ at its opposite ends, a series of inclined apertures $F^3$ in the larger end of the nozzle beyond the pipe connection $F^5$ and a plurality of longitudinal convex ribs $F^6$ extending from end to end of the nozzle.

530,833. DEVICE FOR SIDE-DRESSING SAW-TEETH. GEORGE FRITZ, Rib Lake, Wis. Filed June 13, 1894. Serial No. 514,425. (No model.)



*Claim.*—1. A device for dressing saw teeth, comprising two arms, means for moving the said arms toward and from each other, a vertically adjustable tooth guide supported from one of said arms and adapted to engage with its lower end the front and back of a tooth, beveled jaws secured on the said arms and adapted to engage the sides of a tooth, the said beveled jaws being arranged obliquely on the said arms, whereby the tooth operated upon by the said jaws is left wider at the extreme point, and also wider on the face or cutting side of the tooth than on the back thereof, as and for the purpose set forth.

2. A device for dressing saw teeth, comprising two arms loosely connected with each other at their upper parts, beveled jaws held in an inclined position on the said arms, a tooth guide supported from one of said arms, a guide bolt on which one of said arms is adapted to slide toward and from the other, means carried by the guide bolt for moving the said arms to close the jaws, and a spring to open the jaws, substantially as shown and described.

3. A device for dressing saw teeth, comprising an arm having a lug projecting from its upper part and provided with a slot, a second arm provided with a forked upper end secured to the said lug by means of a bolt passing through the said slot, a guide on which one of said arms is adapted to slide toward and from the other, a spring arranged to press the arms apart, a cam lever to move one of said arms toward the other, beveled jaws held in an inclined position on the said arms and adapted to engage the sides of a tooth, and a tooth guide supported from one of the arms and extending with its lower end intermediate of the jaws to engage the front and back of a tooth while the jaws operate on the sides thereof, substantially as set forth.

4. A device for dressing saw teeth, comprising two arms adapted to move toward and from each other, beveled jaws held in an inclined position on the said arms and adapted to engage the sides of a tooth, a tooth guide supported from one of the arms and extending intermediate of the jaws to engage the front and back of a tooth, a saw clamp supported from one of said arms and means for moving the arms toward and from each other to open and close the jaws, substantially as shown and described.

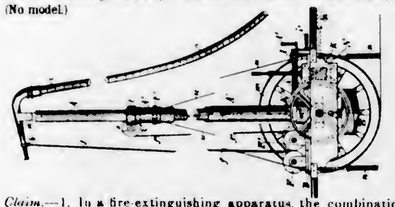
5. A device for dressing saw teeth comprising two arms, jaws

held on the said arms to engage the sides of a tooth, a tooth guide supported from one of the said arms to engage the front and back of a tooth, a guide bolt passing through the said arms and on which one of said arms is adapted to move toward and from the other, and a cam lever fulcrumed on said bolt and engaging the said movable arm, substantially as shown and described.

6. A device for dressing saw teeth, comprising two arms adapted to move toward and from each other and provided with projecting lugs on their opposing faces for the purpose set forth, beveled jaws held in an inclined position on the said arms a tooth guide supported from one of said arms, a spring arranged to force the arms apart, an adjustable pin on which the said spring is coiled, the said pin serving to limit the closing movement of the arm, and means for moving the arms toward each other, substantially as shown and described.

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530,834. **FIRE-EXTINGUISHING APPARATUS.** AUGUST L. GAISER, Würtemberg, Germany. Filed Jan. 24, 1894. Serial No. 497,922. (No model.)



*Claim.*—1. In a fire-extinguishing apparatus, the combination, with a pair of wheels, an axle on which the wheels are mounted, and a frame swiveled on the wheels, of a worm-wheel fixed on the axle, a worm-gear mounted on the frame and meshing with the worm-wheel, a mast carried by the axle, and means for holding the frame substantially horizontal.

2. In a fire-extinguishing apparatus, the combination, with a pair of wheels, an axle on which the wheels are mounted, and a frame swiveled on the wheels, of a worm-wheel fixed on the axle, a worm-gear mounted on the frame and meshing with the worm-wheel, a platform fixed on the axle, a mast mounted on the axle at right angles to the platform, and a lever fixed to the mast and movable over the platform, substantially as set forth.

3. In a fire-extinguishing apparatus, the combination, with a pair of revoluble drum shafts, and means for simultaneously rotating both shafts, of a drum fixed on one shaft, a drum loose on the other shaft, a clutch member at each end of the latter drum, a fixed clutch-member, a clutch member attached to the latter drum shaft, and means for shifting the latter drum, so as to engage one or the other of its clutch members with their respective corresponding clutch members, whereby said latter drum is either locked to its drum shaft or held stationary by the fixed clutch member, substantially as set forth.

4. In a fire-extinguishing apparatus, the combination, with an axle having a central opening, and a mast stepped in said opening, of means for rotating said mast, and means for rotating the axle, substantially as set forth.

5. In a fire-extinguishing apparatus, the combination, with a telescopic mast, of a collar fixed to one of the mast sections, a loose collar above the said fixed collar, a pulley revolubly mounted on the loose collar, and a cable passing over the pulley and connected to one of the mast sections, substantially as set forth.

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530,835. **COFFEE-POT.** THOMAS GLYNN, Philadelphia, Pa. Filed Mar. 19, 1894. Serial No. 504,223. (No model.)



*Claim.*—1. A liquid receptacle, comprising in its construction, a cylindrical vessel open at its top and having a handle and spout; a removable lid adapted to fit said opening; and a handle pivotally connected to said lid, said handle having at one end a spout cup adapted to fit the end of said spout, substantially as described.

2. A liquid receptacle, comprising in its construction a cylindrical vessel, open at its top, and having a handle and spout; a removable lid adapted to fit said opening, and a spring-actuated handle pivotally connected to said lid, said handle having at one end a spout cup adapted to fit the end of said spout, substantially as described.

3. A liquid receptacle, comprising in its construction a cylindrical vessel, open at its top, and having a handle and spout; a removable lid adapted to fit said opening, and a spring-actuated handle pivotally connected to said lid, said handle having at one end a spout cup adapted to fit the end of said spout, and having its other end located above the handle of the cylindrical vessel, substantially as described.

4. A liquid receptacle, comprising in its construction, a cylindrical vessel, open at its top, and having a spout and handle; a lid adapted to fit the top of said vessel; a cone-shaped cylinder secured to the top of said lid, and having openings on opposite sides to allow of the passage therethrough of a twisted wire handle; a spring actuated frame attached to said lid and to said twisted wire handle; a twisted wire handle having at one end a spout-cap, adapted to fit the end of the spout, and having at its other end a ring formed integral therewith, said ring being located above and at a suitable distance from the handle of the coffee pot, whereby when said ring is depressed, the spout cap will be lifted from the end of the spout, and when the ring is released, the spout cap will be returned automatically to its normal position, substantially as described.

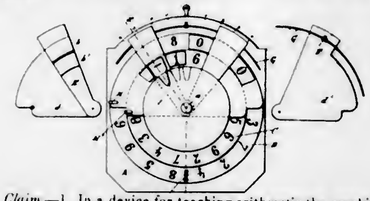
5. A liquid receptacle, comprising in its construction a cylindrical vessel, open at its top and having at opposite sides thereof a handle and a spout; a lid adapted to fit said opening, means for preventing the rotation of said lid; and a spring-actuated handle, pivotally connected to the top of said lid, said handle having at one end a spout cup adapted to fit over the end of the said spout, and having its other end located above the handle of the cylindrical vessel, substantially as described.

6. A strainer for coffee pots, comprising in its construction, a cone shaped strip of metal, having at its apex a rivet, and having its outer edges overlapping; triangular-shaped openings in said strip; wire cloth located in said openings; a slot cut in the outer overlapping edge, adapted to receive a rivet; and a strip of wire, extending partially around the top circumference of the strainer, and adapted to form handles, whereby the strainer is capable of being made larger or smaller, at the option of the user, substantially as described.

7. A strainer for coffee pots, comprising in its construction, a cone shaped strip of metal, having at its apex a rivet and having its outer edges over-lapping; openings in said strip to receive wire cloth; handles formed at the top of said strip of metal; and means for detachably connecting said overlapping edges, whereby the strainer may be made larger or smaller, substantially as described.

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530,836. **CALCULATING CLOCK OR DIAL.** FRIEDRICH A. GOTTSCH, Kiel, Germany. Filed July 19, 1894. Serial No. 517,906. (No model.)



*Claim.*—1. In a device for teaching arithmetic the combination with the concentric dials of different diameters provided with numerals, of covering plates adjustable toward and from each other to expose one or more characters of each dial, substantially as described.

2. In a device for teaching arithmetic the combination with the concentric revoluble dials, of the covering plates, adjustable toward and from each other to expose one or more characters of each dial, said plates having recessed portions to receive removable characters, substantially as described.

3. In a device for teaching arithmetic the combination with the concentric revoluble dials, of covering plates adjustable toward and from each other to expose one or more characters of each dial, a device provided with sockets and removable parts bearing the signs indicating arithmetical operations adapted to engage said sockets, substantially as described.

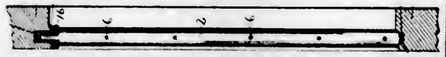
4. In a device for teaching arithmetic the combination with the revoluble concentric dials provided with numerical characters, of the segmental covering plates, adjustable toward and from each other to expose one or more characters on each dial, and spring clips for securing said dials in position, with respect to said covering plates, substantially as described.



5. In a device for teaching arithmetic the combination with the supporting plate, provided with a guide rod, of concentric calculating dials, covering plates provided with devices frictionally engaging said guide rod for adjusting said plates from and toward each other, substantially as described.

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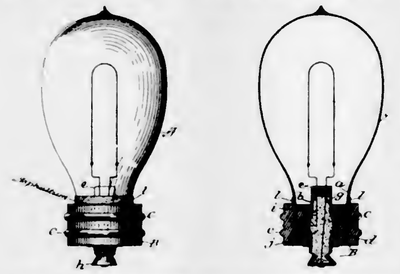
530,837. **WINDOW-SHUTTER.** SAMUEL F. GREENE and SETH W. LAW, Philadelphia, Pa. Filed Apr. 23, 1894. Serial No. 508,633. (No model.)



*Claim.*—The combination with the frame 1, having openings 10 in the lower portion; of the beads 2, the rounded portion 11 of which is adapted to fit in said openings 10; slats 3 having enlarged edges 4 and longitudinal ribs 5, secured to said beads by means of screws or tacks 7 passing through openings 6 in said beads, the said bearing points being located at the center of the enlargements 4 of the slats 3; the metallic strip 8, having rounded edge 9, secured to the ends of the slats opposite to the bearing point of the slats; and means for removably securing the upper ends of said beads to the upper portion of the frame, substantially as described.

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530,838. **INCANDESCENT LAMP.** JACOB R. GROVE, New York, N. Y., assignor to Walter E. Peck, trustee, same place. Filed May 26, 1893. Renewed May 14, 1894. Serial No. 511,256. (No model.)



*Claim.*—1. In an incandescent lamp, the combination with a bulb having its neck closed by an independent section of fusible material spanning the neck opening of a non-metallic yielding sealing medium located on adjacent parts of glass and said section, substantially as set forth.

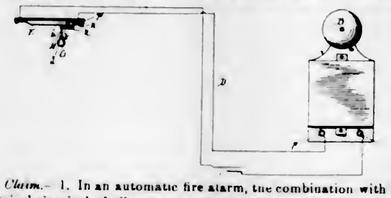
2. In an incandescent lamp, the combination with a bulb having its neck closed by an independent section of fusible material spanning the neck opening of a coating of asphaltum applied to adjacent parts of glass and said section, substantially as set forth.

3. In an incandescent lamp the combination with the bulb, of an independent section of cast material closing the neck of the same and having integral ridge or thread to adapt it for engagement with the socket, substantially as set forth.

4. In an incandescent lamp, the combination with a bulb having its neck closed by an independent section of fusible material spanning the neck opening, of a vertical tube of insulating material embedded in said fusible section and expanded as described, together with leading in wires and a filament, substantially as set forth.

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530,839. **AUTOMATIC FIRE-ALARM.** WILLIAM A. GUTHRIE, Durham, N. C. Filed Apr. 26, 1894. Serial No. 509,120. (No model.)

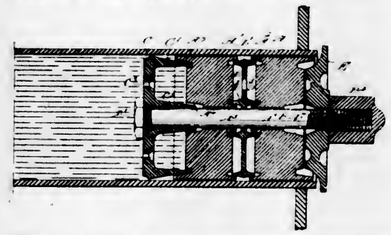


*Claim.*—1. In an automatic fire alarm, the combination with an electrical circuit, including a source and an alarm, of an automatic closing device for such circuit, and forming a part thereof, said device comprising an insulated base, a spring conducting arm E secured thereto and connected with one terminal of the circuit, a contact plate also secured to said base, and connected with the other terminal of the circuit, a weight suspended from the free portion of said arm E and normally holding it out of contact with said plate, a two-part metallic hook connecting said spring and weight, a fusible alloy connecting the two parts of said hook, and a back stop for said spring arm, whereof the weight is prevented from straining said arm, substantially as specified.

2. The herein described automatic circuit closer for fire alarms, comprising a non-conducting base, a spring arm secured thereto, a contact plate also secured to said base, contact points on said arm and plate, a weight suspended from the free portion of said spring and normally holding it out of contact with said plate, a two part hooked-link forming the suspension medium, an easily fused metallic alloy forming the connection between the parts of said link, and a safety back stop arm for said spring arm, substantially as specified.

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530,840. **TUBE-PLUG.** ANDREW L. HARRISON, Wilmington, N. C. Filed Mar. 21, 1894. Serial No. 504,546. (No model.)



*Claim.*—1. A tube plug, comprising a plug of expansible material, a head provided near its outer edge with beveled projections adapted to engage the said plug at the inner surface of its rim, and means for forcing the said projections into the plug, substantially as described.

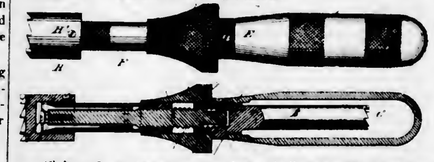
2. A tube plug, comprising a central bolt adapted to receive an outer head, an expansible plug held on the said bolt and provided at its inner end with an inwardly projecting rim, having a beveled inner surface, and an inner head held on the bolt and formed with a wedge-shaped rim adapted to engage the rim of the expansible plug, substantially as described.

3. A tube plug, comprising a plurality of expansible plugs, an expanding head located between two adjacent plugs and adapted to engage each of the same, and means for forcing the said plugs toward each other, substantially as described.

4. A tube plug, comprising an expansible plug, an inner head adapted to engage the inner end of the plug, and an outer head for engaging the outer end of the plug, said outer head being provided with a recess adapted to receive the end of the tube, substantially as described.

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530,841. **REAMER.** FOIST HATMAKER, Ithaca, N. Y. Filed July 13, 1894. Serial No. 517,441. (No model.)



*Claim.*—1. A reamer, comprising a hollow handle, a reversible shank adapted to be fastened to the said handle and carrying a fixed reamer, and a reamer having adjustable cutters adapted to be fastened on the said shank, substantially as shown and described.

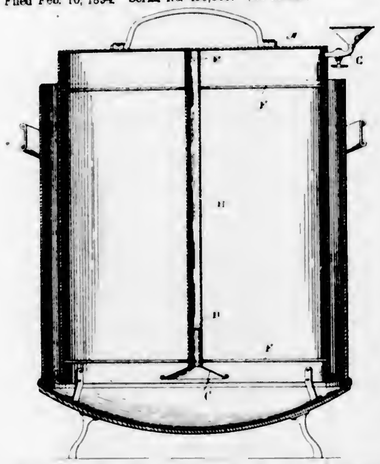
2. A reamer, comprising a shank, cutters held longitudinally on the said shank, adapted to be bent inward or outward, a sleeve held on the said shank and extending over the said cutters, and a screw screwing in the shank and engaging the said cutters to press the latter outward into a bent position against the said sleeve, substantially as shown and described.

3. A reamer, comprising a hollow handle, a shank formed with a fixed reamer, and provided with two sets of screw threads adapted to screw in the open end of the said handle, a reamer with adjustable cutters adapted to be fastened in the said shank, and a centering guide adapted to screw on one of the threads on the said shank, substantially as shown and described.

4. A reamer, comprising a hollow handle, a shank formed with a fixed reamer and provided with two sets of screw threads adapted to screw in the open ends of the said handle, a reamer with adjustable cutters adapted to be fastened in the said shank, a centering

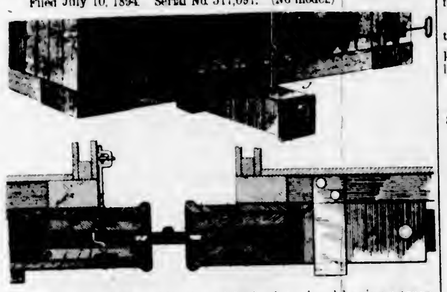
guide adapted to screw on one of the threads of the shank, and a large cutter adapted to be fastened on the said reamer having adjustable cutters, substantially as shown and described.

530,842. WASHBOILER. JOHN K. HAWKINS, Mohawk, Tenn. Filed Feb. 10, 1894. Serial No. 499,809. (No model.)



*Claim.*—The combination of a boiler, a clothes containing vessel closed at its upper end and open at its lower end adapted to fit within said boiler, and a valve at the said upper or closed end, substantially as shown and described

530,843. CAR-COUPLING. BLAN B. HAYDON, New Castle, Ky. Filed July 10, 1894. Serial No. 517,091. (No model.)

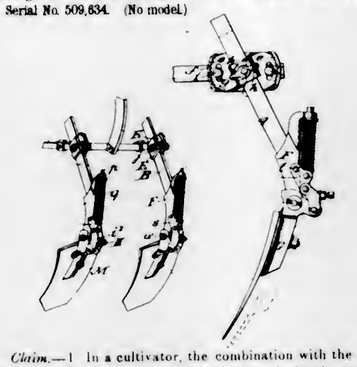


*Claim.*—1. The combination with the draw head having a transverse coupling shoulder at the front end of the bottom of the mortise, and a yielding member held in such bottom with its front end normally flush with top of the said front end of the said mortise bottom, of a coupling jaw held in the top of the mortise, pivoted at its rear end, and having its front end spring pressed toward the bottom of the mortise, its front end having a transverse coupling flange on its under face, the link having its ends beveled and formed with transverse coupling shoulders, and means for uncoupling, all arranged substantially as shown and for the purposes described.

2. In a car coupling the combinationwith the draw-head A having a coupling shoulder *c* and a recess C in the bottom, and a yielding member D in the said recess, of the pivoted coupling jaw F having a coupling flange *f* disposed above the shoulder *c*, a spring for forcing the front end of such jaw downward, said spring having a pressure greater than the yielding pressure of the member D, the link H provided with transverse coupling shoulders and means for uncoupling all arranged substantially as shown and described.

3. The combination, with the draw-head A provided with a yielding member in the bottom of its mortise, and a coupling shoulder *c* at the front end of such bottom, and the coupling jaw F pivoted at its rear end in the mortise, a spring for forcing the front end downward said end having a coupling flange *f* said jaw having an inclined recessed portion at one side, of the uncoupling shaft J, journaled vertically in the draw-head having a winged portion adapted to be swung into engagement with the said inclined recess of the jaw F, and thereby force it upward against its spring tension and means for operating the shaft from the top or sides of the car all arranged substantially as shown and described.

530,844. CULTIVATOR. WILFORD H. HOLSCLAW, Louisville, Ky., assignor to the B. F. Avery & Sons, same place. Filed May 1, 1894. Serial No. 509,634. (No model.)

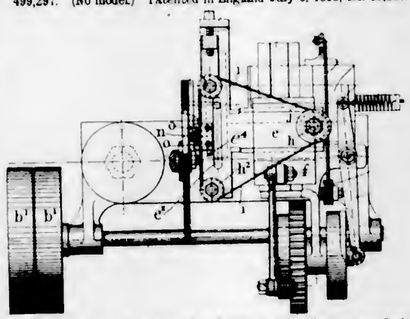


*Claim.*—1. In a cultivator, the combination with the beam D, and the standard A, of the shoe-piece C, formed with the notched end flanges *c;* the shoe-piece E, provided with serrations *e*, at each end, and formed with an integral loop, or yoke, for the reception of said standard A; the bolt *j* for adjustably fastening said standard in said loop; and securing bolts 1 and 2 for adjustably fastening the two shue-pieces to each other and to the beam D; all substantially as and for the purposes set forth.

2. In a cultivator, the combination, with the standard, of a socket-like device F, a shovel-stock pivotally connected to said device and having rearwardly projecting portions; a set of toggle-joint coupler devices pivoted together, and respectively coupled to the device F, and the shovel stock; and a spring-actuated push-bar; the whole arranged to operate in substantially the manner and for the purpose set forth.

3. In combination with the devices F and G, pivotally connected, the toggle-joint connections, as specified; and the spring actuated push-bar, means for setting the said toggle-joint connections more, or less, out of line; all substantially as and for the purpose described.

530,845. MACHINERY FOR FINISHING, POLISHING, OR SURFACING CORKS. JOHN E. HOWARD, London, England, assignor to the Cork Company, Limited, same place. Filed Feb 6, 1894. Serial No. 499,297. (No model.) Patented in England July 6, 1893, No. 13,225.



*Claim.*—1. In a machine for finishing, polishing, or surfacing corks by grinding, the combination with an abrading surface; of a platform movable toward and away from said abrading surface, and means for moving said platform; and a flexible cork holder mounted on said platform and consisting essentially of an endless traveling band adapted to hold corks of various shapes and sizes against the abrading surface, and to rotate the cork while in said position, substantially as described.

2. In a machine for finishing polishing or surfacing corks by grinding—the combination with an abrading surface of a platform adapted to travel across the face of said abrading surface and a flexible cork holder consisting of an endless traveling band vertically disposed and traveling in a horizontal plane round and the vertical supporting rollers carried on said platform



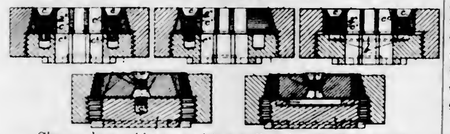
3. In a machine for finishing polishing or surfacing corks by grinding—the combination with an abrading surface of a platform adapted to travel across the face of said abrading surface an endless traveling band vertically disposed to travel in a horizontal plane around its vertical supporting rollers on said platform to form a flexible cork holder and means to adjust the tension of said endless band.

4. In a machine for finishing polishing or surfacing corks by grinding—the combination with an abrading surface of a platform adapted to travel across the face of said abrading surface, an endless traveling band vertically disposed to travel in a horizontal plane round its vertical supporting rollers on said platform to form a flexible cork holder, means to adjust the tension of said endless band, a rest for the corks to be successively deposited thereon endwise and means to feed said corks one at a time endwise onto said rest.

5. In a machine for finishing polishing or surfacing corks by grinding—the combination with an abrading surface of a platform adapted to be moved parallel to and also at right angles to the said abrading surface, a flexible cork holding device carried on said platform, means to impart traveling motion to said flexible cork holding device so as to rotate the cork while presented thereby against the said abrading surface and means to propel the said platform and parts carried thereon in a parallel direction to—as well as means to move said platform toward and away from—said abrading surface substantially in the manner and for the purposes hereinbefore set forth.

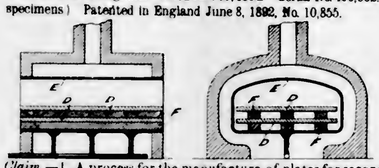
6. In a machine for finishing polishing or surfacing corks by grinding—the combination with a grinding disk of an endless traveling belt i, vertically disposed rollers *h h' h²* supporting same, a movable platform *e* carrying said rollers and belt and adapted to slide in opposite horizontal directions, means to impart reciprocating movement to said platform in said two directions, means to impart rotary motion to one or more of said vertical rollers carrying said belt and means to alter the relative positions of said rollers *h h' h²* so as thereby to adjust the tension of said flexible cork holding band i, all substantially in the manner and for the purposes hereinbefore set forth.

530,846. SCREW-CUTTING PLATE. HENRY B KEIPER, Lancaster, Pa. Filed Mar. 15, 1892. Serial No. 424,955. (No model.)



*Claim.*—In combination with a collet ring B, die sections A, a guide disk in rear of said sections, a screw between said sections and conical ends on said screws fitting corresponding recesses in the upper and under faces of the adjacent edges of the die sections, substantially as described.

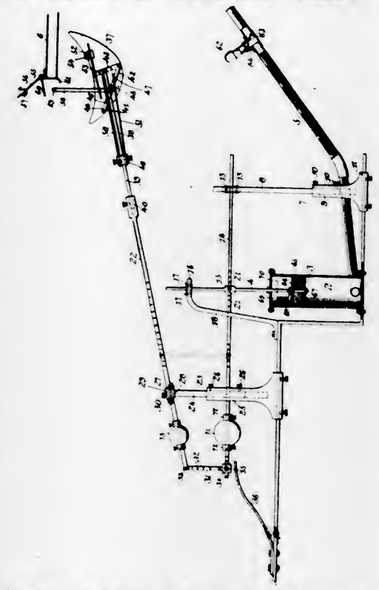
530,847. PROCESS OF MANUFACTURING PLATES FOR SECONDARY BATTERIES. HUGH F. KIRKPATRICK-PICARD and HENRY THAME, London, England. Filed Jan. 13, 1894. Serial No. 496,802. (No specimens.) Patented in England June 8, 1892, No. 10,855.



*Claim.*—1. A process for the manufacture of plates for secondary electrical batteries consisting of the firing of plates mechanically admixed of about three parts of lead sulphide and one part of lead oxide, in a closed furnace or oven at about 500° to 600° centigrade, air being admitted through the said furnace or oven, and about the surface of the said plates, to effect the chemical re-action of the said oxide and sulphide of lead, and to produce in a short time, a plate with central layer of spongy lead and surfaces oxidized to litharge, ready for immediate and effective use in a secondary battery, substantially as described.

2 A process for the manufacture of framed plates for secondary electrical batteries consisting of the firing of plates, mechanically admixed of oxide and sulphide of lead, the adaptation thereto when hard and cold, of semi-vulcanized india-rubber, in a plastic condition, to embrace in a solid mass without joint, the edges of the said plate; the adaptation, similarly, of separate pieces to the surface of the said plates; and finally, a vulcanization of the said frame and separators *in situ* on the plate by heat, substantially as described.

530,848. PUMP-MOTOR. BENJAMIN MELLOR of Mark, Ellicott City, Md. Filed Feb. 13, 1894. Serial No. 500,021. (No model.)



*Claim.*—1. In a device of the class described, the combination with a cylinder, a plunger, and a plunger-rod, of a guide arranged above the cylinder and having anti-friction rolls to direct the movement of the plunger-rod in alignment with the axis of the cylinder, a standard having an extensible stem, means for locking said stem at the desired extension, anti-friction rolls mounted in suitable bearings in the stem, a pump-lever swiveled to the pump-rod, and fitting between the anti-friction rolls, and means for operating the pump-lever, substantially as specified.

2. In a device of the class described, the combination with a cylinder, a plunger operating thereiu, a plunger-rod connected to said plunger, and means for guiding the plunger-rod, of a standard having a socket portion provided with a horizontal opening to receive the base of the mechanism, and a stem fitting adjustably in the socket portion, means for locking said stem at the desired extension, a pump-lever slidably fulcrumed to the upper end of the stem, and means for operating the pump-lever, substantially as specified.

3. In a device of the class described, the combination with pump-mechanism, and a lever connected to said mechanism, of a variable weight consisting of a tilting-cup fulcrumed at a point in advance of its center of gravity, lateral pins carried by the tilting-cup, and tilting springs carried by the lever and arranged at their extremities in operative relation with said pins, to cushion the cup and assist gravity in tilting and returning the same substantially as specified.

4. In a device of the class described, the combination with a pump-mechanism, and a lever connected therewith, of a variable weight consisting of a bifurcated stem, a tilting-cup fulcrumed between the arms of said stem, pins adjustably secured to the sides of the cup above and below the plane of said stem, and tilting springs secured to and carried by the stem and arranged at their free ends in operative relation with the pins, substantially as specified.

5. In a device of the class described, the combination with a pump mechanism and a lever connected therewith, of a variable weight carried by the lever and comprising a tilting cup pivoted in advance of its center of gravity and having lateral upper and lower stop pins arranged in rear of its pivot point, tilting springs carried by the lever and arranged with their free ends in operative relation with said pins to cushion the tilting cup and assist in tilting and returning the same, and an adjustable weight carried by the tilting cup and adapted to be arranged either in advance or in rear of its pivot point to secure equilibrium of the parts, substantially as specified.

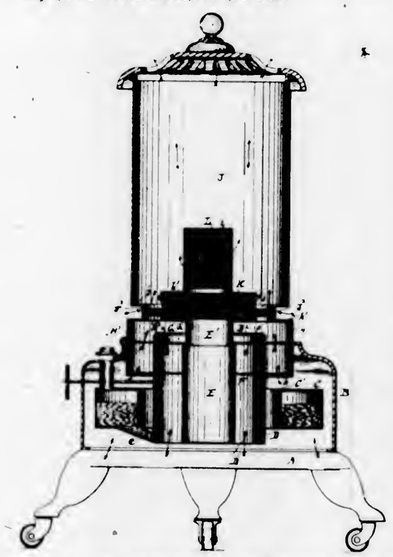
6. In a device of the class described, the combination with a pump mechanism, and a lever connected therewith, of a variable weight consisting of a tilting-cup, and means for tilting the same, a gate controlling the outlet from the water-supply flume, and having a weighted arm adapted to be arranged upon either side of the plane of the pivot of said gate to maintain the latter either in its open or

its closed position, a trip-bar carried by the tilting-cup, and a trip-arm connected to the gate and arranged in the path of said trip-bar, substantially as specified.

7. In a device of the class described, the combination with a pump mechanism, and a lever connected therewith, of a variable weight consisting of a tilting-cup, and means for tilting the same, a gate controlling the outlet from the water supply flume, a weighted arm arranged to lie on either side of the plane of the pivot of said gate to hold the latter in either its closed or open position, a trip-arm, and a trip-finger carried by the gate, and a trip-bar carried by said tilting-cup and adapted to engage the trip-arm and trip-finger respectively during the upward and downward movements of the variable weight, substantially as specified.

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530,849. OIL-STOVE. EDWIN G. MUMMERY, Detroit, Mich. Filed May 9, 1894. Serial No. 510,606. (No model.)



*Claim.*—1. In an oil stove provided with a case B, a tank chamber, a wick tube therein, an interior flue E within the wick tube forming an air flue D' therebetween, a distributing chamber K located above the flue E and communicating therewith, an air chamber H extending over and downward about the upper end of the wick tube communicating at the upper portion thereof with the flue D' and at the base with the tank chamber, a cylinder L above said distributing chamber and communicating therewith, a drum located about said cylinder and distributing chamber and extending thereabove, said chambers communicating with said drum, substantially as set forth.

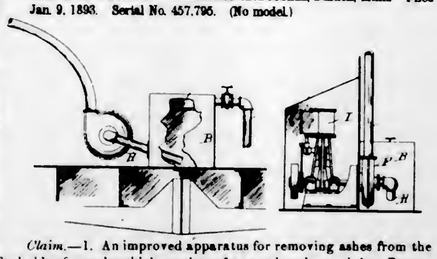
2. In an oil stove, a tank chamber, a wick tube therein, an air chamber H communicating with the interior of the wick tube and with said tank chamber, a flue E located within the wick tube and spaced therefrom, a perforated distributing chamber K located above the flue E and communicating therewith, an air space $J^3$ about said distributing chamber, a cylinder L, located above said distributing chamber and a drum communicating with the air space $J^3$, the distributing chamber K, and the cylinder L, substantially as set forth.

3. In an oil stove, a tank chamber, a wick tube therein, an air chamber H communicating with the interior of the wick tube and with said tank chamber, a flue E located within the wick tube and spaced therefrom, a perforated distributing chamber K located above the flue E and communicating therewith, an air space $J^3$ about said distributing chamber provided with laterally perforated walls, a cylinder L, located above said distributing chamber, and a drum communicating with the air space $J^3$, the distributing chamber K, and the cylinder L, substantially as set forth.

4. In an oil stove, the combination of a wick tube, an interior flue E forming an air flue D' therebetween, perforated plates located in the air flue D', an air chamber H provided with a perforated base located about the upper end of the wick tube and communicating with the flue D' a perforated diaphragm in the chamber H, a laterally perforated distributing chamber K communicating with the flue E, a laterally perforated cylinder L communicating with the distributing chamber, and a drum located about said cylinder and distributing chamber and communicating therewith and with the air chamber H, substantially as set forth.

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530,850. APPARATUS FOR REMOVING ASHES FROM FIRE-HOLDS OF VESSELS. ALEXANDER MCDOUGALL, Duluth, Minn. Filed Jan. 9, 1893. Serial No. 457,796. (No model.)



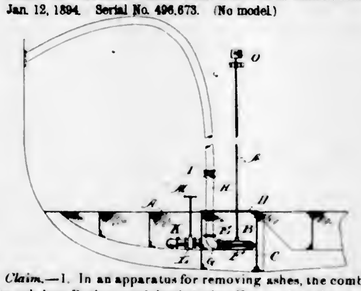
*Claim.*—1. An improved apparatus for removing ashes from the fireholds of vessels, which consists of a metal tank or ash box B open at its upper end; a heavy grating near the upper end thereof; a pipe connecting with the outside water and entering the said metal tank or ash box B above said grating C; and a pump F having its suction pipe connecting with said metal tank or ash box B near the lower end thereof and with its discharge pipe G passing outside of the vessel at a point above the water line, substantially as described.

2. In an improved apparatus for removing ashes from the fireholds of vessels, the combination of a metal tank or ash box B; the heavy metallic grating C, near the upper end thereof; the pipe D connecting with the outside water and entering said metal tank or ash box B, above said grating C; the sea valve E within said pipe D; the pump F adjacent to the said metal tank or ash box B; the suction pipe H of said pump entering said metal tank or ash box B near the lower end thereof; and the discharge pipe G of said pump passing outside of the vessel at a point near the water line, substantially as described.

3. In an apparatus for removing ashes from the fireholds of vessels, the combination of a metallic tank or ash box open at its upper end; the metallic grating C within said metal tank or ash box and near its upper end; the pipe D connecting with the outside water and entering said metal tank or ash box at a point above said grating C; the sea valve E in said pipe D; the centrifugal pump F adjacent to said metal tank or ash box; the suction pipe of said pump entering said metal tank or ash box at the lower end thereof; the discharge pipe G of said pump passing outside of the vessel at a point near the water line; the engine I for operating said pump; the casing J for covering said engine for the purposes set forth, substantially as described.

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530,851. APPARATUS FOR REMOVING ASHES FROM FIRE-HOLDS OF VESSELS. ALEXANDER MCDOUGALL, Duluth, Minn. Filed Jan. 12, 1894. Serial No. 496,673. (No model.)



*Claim.*—1. In an apparatus for removing ashes, the combination of the ash box B, the precipitating pipe K, entering the same; the discharge pipe H and the pump E within said ash box and connecting with said discharge pipe, substantially as described.

2. In an apparatus for removing ashes, the combination of the ash box B, the precipitating pipe K, entering the same, and communicating with the outside water, the discharge pipe H, extending outside of the vessel and the pump E, within said ash box and connecting with said discharge pipe, substantially as described.

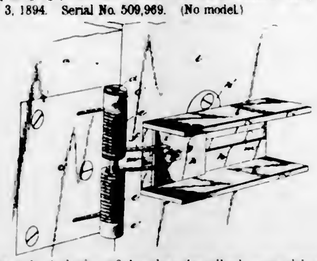
3. In an apparatus for removing ashes, the combination of the ash box B, formed within, and a part of, the water bottom of a vessel; the precipitating pipe K, entering the same; the discharge pipe H, and the pump E, within said ash box and connecting with said discharge pipe substantially as described.



4. In an apparatus for removing ashes from the fireholds of vessels, the combination of the ash box B, the precipitating pipe K, the discharge pipe H, the pump E, within said ash box and the grating D, at the top of said ash-box, substantially as described.

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530,852. DOOR-SPRING. ALTON D. PHELPS, Galt, Cal. Filed May 3, 1894. Serial No. 509,969. (No model.)

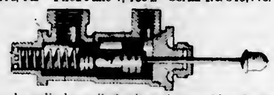


*Claim.*—1. A device of the class described, comprising a spring designed to be mounted on a door frame and provided with an arm, a guide designed to be secured to a door and provided with side flanges and forming a way, and a sliding plate mounted in the guide and embraced by the flanges thereof and connected with the arm of the spring, substantially as described.

2. A device of the class described, comprising an attachment plate provided with vertically aligned eyes, a pintle arranged in the eyes, a spiral spring mounted on the pintle and engaging the attachment plate and provided with a central loop, a horizontally disposed guide having parallel side flanges and provided between the same with a longitudinal groove, and a rectangular sliding plate arranged in the guide and embraced by the flanges thereof and provided on its inner face with a rib arranged in said groove, said sliding plate being provided on its outer face with an eye and having the loop of the spring looped into the same, substantially as described.

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530,853. CYLINDER RELIEF-VALVE. BERNARD T. REILLY, Wilkes-Barré, Pa. Filed June 7, 1894. Serial No. 513,778. (No model.)

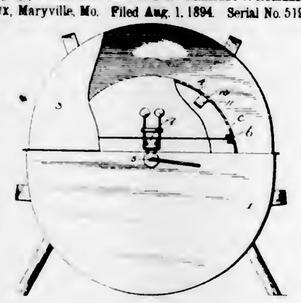


*Claim.*—1. In cylinder relief valves the combination with a steam supply pipe D and with the engine cylinder, of the casing having a small inner cylinder and a large outer cylinder fitted with pistons upon a common piston rod, a spring normally holding the pistons in their outer position, a port at the inner end of the casing communicating with the cylinder, a port in the side of the inner and smaller cylinder normally communicating with the inner end port of the casing, and a port arranged to admit steam to the outer side of the larger and outer cylinder, the inner piston being adapted to travel over the side port of the inner cylinder, substantially as described.

2. In cylinder relief valves the valve casing having two cylindrical portions of different diameters, pistons fitting said cylinders and arranged upon a common piston rod, an indicator rod connected with said pistons and piston rod and extending outside of the casing to show the position of the pistons, and ports in the casing communicating respectively with the engine cylinder and steam supply and the water waste pipe, substantially as described.

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530,854. WASHING-MACHINE. PRESSLEY J. RUSSELL and LOUIS DE VAUX, Maryville, Mo. Filed Aug. 1, 1894. Serial No. 519,208. (No model.)

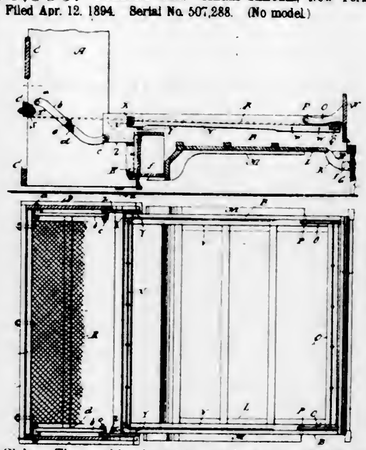


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*Claim.*—In combination with the water receptacle, the clothes receptacle journaled therein having elongated openings in its periphery, flanges extending radially inward from the edges of said openings, and the flaps pivoted centrally of the openings and extending inward beyond the flanges, substantially as described.

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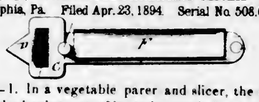
530,855. FOLDING BED. MARKS SAMUELS, New York, N. Y. Filed Apr. 12, 1894. Serial No. 507,288. (No model.)



*Claim.*—The combination with a stationary non-folding upright frame A, a folding bed frame B, and a flexible bed bottom R secured at one end to the upright frame, and at the other end to the folding bed frame, of supporting links *b* and Z jointed together at their adjacent ends and respectively pivoted to the said stationary upright frame and the folding bed frame, a cross-bar *d* secured to the links *b* between their pivoted ends, and springs *e* carried by the cross-bar and supporting the head portion of the flexible bed bottom when the bed is unfolded, substantially as described.

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530,856. VEGETABLE PARER AND SLICER. JOSEPH SEUBERT, Philadelphia, Pa. Filed Apr. 23, 1894. Serial No. 508,645. (No model.)



*Claim.*—1. In a vegetable parer and slicer, the combination of a slicing blade, having one of its ends rounded; a screw attached to the rounded end of said slicing blade; an extension formed integrally with said slicer blade at the opposite end to that to which the screw is attached; said extension being inclined to a slight degree from the horizontal, and having therein a parer; an angular shaped portion formed integrally with and located at the end of said extension, said portion having its two outer edges sharpened; and a handle secured to said slicer blade, substantially as described.

2. In a vegetable parer and slicer, the combination of a slicing blade, having one of its ends rounded; a screw attached to the rounded end of said slicing blade; an extension formed integral with said slicer blade at the opposite end to that to which the screw is attached, said extension being inclined to a slight degree from the horizontal, and having therein a parer; an angular shaped portion formed integral with and located at the end of said extension, said portion having its two outer edges sharpened; a handle secured to said slicer blade; and a removable sheath, adapted to fit the sharpened edge of said slicer blade, substantially as and for the purpose set forth.

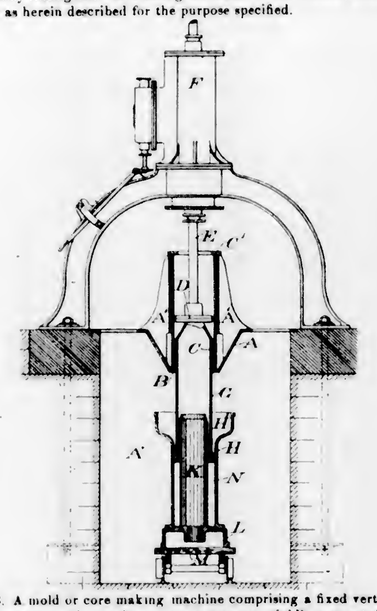
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530,857. MACHINE FOR MAKING MOLDS AND CORES TO BE USED IN CASTING METAL PIPES, &c. JOB SHEPHERD, Lower Bredbury, near Stockport, assignor to himself, and THOMAS BOWES LEIGH, Heaton Mersey, near Manchester, England. Filed Mar. 1, 1894. Serial No. 501,975. (No model.) Patented in England Dec. 12, 1892, No. 22,785; in Germany Jan. 6, 1894, No. 77,640, and in Belgium May 18, 1894, No. 110,026.

*Claim.*—1. A mold or core making machine comprising a hollow rammer, means for vertically reciprocating said rammer, a hollow stationary feeding hopper provided at its lower end with an outlet, a tubular valve arranged to slide vertically within said hopper and to control said outlet, and means operated by said rammer for

automatically raising said valve during the ascent of said rammer, substantially as herein described for the purpose specified.

2. A mold or core making machine, comprising a fixed vertically acting reciprocating motor, a vertically reciprocating rammer arranged below and directly and rigidly connected to the reciprocating part of said motor and having its lower end corresponding in cross sectional form to that of the mold or core to be produced, a hollow stationary feeding hopper provided with a lateral outlet, a tubular valve arranged to slide vertically within said hopper and control said outlet, and means operated by said rammer for automatically raising said valve during the ascent of the rammer, substantially as herein described for the purpose specified.



3. A mold or core making machine comprising a fixed vertical fluid pressure reciprocating motor, a rammer rigidly connected to and actuated directly by the piston of said motor, a mold or core box having a central pattern or core barrel arranged below said motor, a stationary feeding hopper fixed independently of and above said mold or core box and provided with a feed outlet and a tubular and normally stationary valve arranged to slide vertically in said hopper to control said feed outlet, and to be automatically raised and opened by said rammer at each upstroke thereof, substantially as herein described for the purpose specified

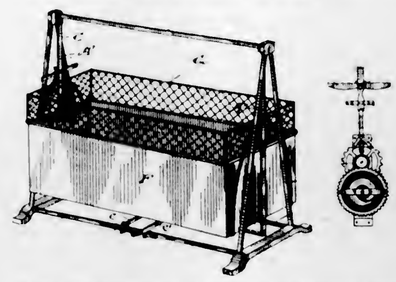
4. A mold or core making machine, comprising a fluid pressure reciprocating motor, a vertically movable rammer connected to the piston of said motor, a hopper having at its lower end an outlet surrounding said rammer, a tubular valve arranged within said hopper so as to control the outlet therefrom and provided with a lip or projection and a projecting part carried by said rammer and arranged to act against said lip or projection on each upward movement of said rammer substantially as herein described for the purpose specified.

5. A mold or core making machine, comprising a plurality of vertically reciprocating rammers each corresponding in cross sectional form to that of the mold or core to be made, a plurality of stationary feeding hoppers each provided with an outlet and arranged to surround one of said rammers above the corresponding mold or core box, a plurality of tubular valves each normally stationary and adapted to control the outlet of one of said hoppers and arranged to be automatically raised and opened by the corresponding rammer when the same moves upward, a cross head common to said rammers and to which they are fixed, and a fixed vertical reciprocating motor having its reciprocating part rigidly connected to said cross head, all substantially as herein described for the purpose specified.

6. The combination with a vertical mold or core box having therein a fixed pattern or core barrel, of a vertically reciprocating annular rammer carrying a projecting part a fixed vertically reciprocating motor arranged above and having its reciprocating part rigidly connected to said rammer, a stationary feeding hopper fixed above and independently of said box and having a lateral feed outlet, and a tubular valve arranged to slide vertically within said hopper and control its feed outlet, and provided with a lip or projection arranged in the path of the projecting portion carried by said rammer substantially as herein described.

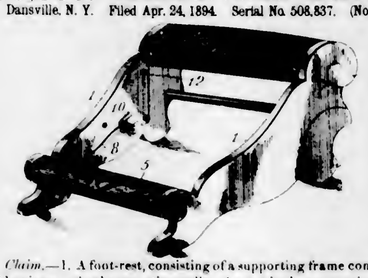
7. A mold or core making machine, comprising the hopper A formed with lower outlet B and arranged at the top of a molding pit or chamber A*, the tubular valve C with lip or projection C', the vertical rammer G with flange D, the fluid pressure motor F having its piston rod E extending through said hopper and connected to said rammer, and the mold or core box H supported below said hopper, formed with an enlarged upper end H' and provided with a central pattern or core barrel K substantially as described and shown for the purposes specified.

530,858. CRADLE. WILLIAM J. SHORTILL, Ballinafad, Canada. Filed July 7, 1894. Serial No. 516,870. (No model.)



*Claim.*—The combination of the cradle, the standards located at either end of the cradle, the cross bar connecting together the upper ends of the standards, the stays connecting together the lower ends of the standards, the guide bars mounted on the said stays, the swinging frame connected to the cross bar and carrying the cradle, the lugs connected to the under side of the cradle and engaging with the cross bars and the rocking mechanism consisting of a spring operated drum having a gear wheel connected to its side face, the escapement wheel having a pinion, the pallet operated by the escapement wheel, the pendulum operated by the pallet, the pin connected to the swinging frame and working in the upper forked end of the pendulum, the guide connected to the pin, and a pin connected to the pendulum, substantially as specified.

530,859. SELF-ADJUSTING FOOT-REST. GEORGE J. SHULTS, Dansville, N. Y. Filed Apr. 24, 1894. Serial No. 508,837. (No model.)

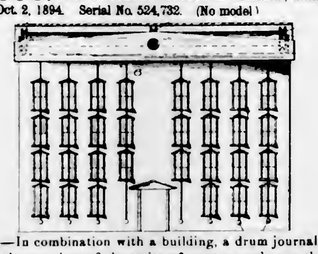


*Claim.*—1. A foot-rest, consisting of a supporting frame composed of side pieces, a heel-supporting roll or bar at its lower portion, and a roll or cross-bar at its upper portion, a rest-frame or section pivoted between its upper and lower ends to the side pieces of the supporting frame, normally standing in an inclined position and rising at its upper end when its lower end is depressed below the heel supporting roll or bar, a laterally projecting stop-pin secured to a side piece of the supporting frame for limiting the depression of the upper end of the rest frame or section, and a spring arranged to swing the lower end of the pivoted rest frame in an upward direction against the heel-supporting roll, substantially as described.

2. A foot rest, consisting of a supporting frame composed of side pieces, a heel-supporting roll or bar at its lower portion, and a roll or cross-bar at its upper portion, a rest-frame or section pivoted between its upper and lower ends to the side pieces of the supporting frame, normally standing in an inclined position and rising at its upper end when its lower end is depressed below the heel-supporting roll or bar, a laterally projecting stop pin secured to a side piece of the supporting frame for limiting the depression of the upper end of the rest-frame or section, and a spring secured to a side piece of the supporting frame and acting to swing the lower end of the pivoted rest-frame in an upward direction against the heel-supporting roll and normally holding the upper end of the rest-frame or section against said stop-pin, substantially as described.

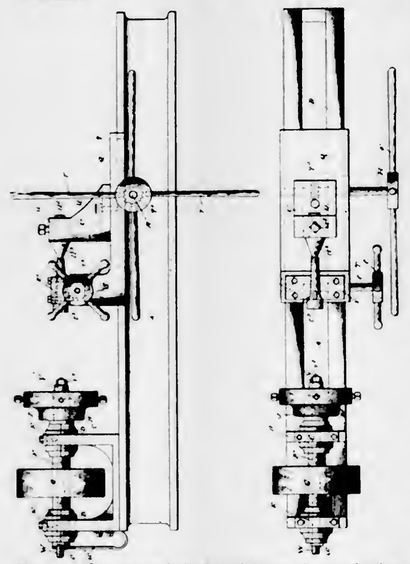


530,860. FIRE-ESCAPE. GEORGE L. SILLIMAN, Rutland, Vt. Filed Oct. 2, 1894. Serial No. 524,732. (No model.)



*Claim.*—In combination with a building, a drum journaled centrally upon the top thereof, the series of ropes wound upon the drum and passing to the front and rear of the building over suitable guide pulleys, a casing for the drum, a series of covered guide ways for the ropes extending from the said casing to the front and rear of the building and means for operating the drum, substantially as described.

530,861. TURNING-LATHE FOR AXLE-BOXES. RALPH R. SPEARS, Wheeling, W. Va. Filed Nov. 10, 1893. Serial No. 490,577 (No model.)



*Claim.*—1. In a turning lathe for axle boxes, the combination of the live spindle mounted fixedly at one end, a cutter head mounted on one end of said spindle and having a central opening, a self-adjusting sprig-projected work guide arranged to move within the central opening of the cutter head and adapted to be normally projected out of said central opening beyond the cutter head, and a sliding feed carriage adapted to be moved to and from the cutter head, substantially as set forth.

2. In a turning lathe for axle boxes, the combination with the lathe bed; of a hollow spindle mounted at one end of the bed, a rotary cutter head mounted on the inner end of said spindle and having a central opening, a cylindrical guide bush adapted to be fitted in the inner end of the hollow spindle in a line with the central opening of the cutter head, a work vise adapted to be moved to and from the cutter head, and a form-mandrel of an exterior shape corresponding to the interior shape of an axle box and provided at one end with a guide tongue adapted to work in said guide bush, substantially as set forth.

3. In a turning lathe of the class described, the combination of the lathe bed having a head stock at one end, a live spindle journaled on the head stock, a rotary cutter head mounted on the inner end of the live spindle, a sliding feed carriage mounted on the lathe bed, and provided at one end with an upwardly extended vise-block, simultaneously adjustable vise jaws mounted on said block, a post block adjustably secured directly on top of the carriage at one side of the vise-block thereof, a conical work holding center post having a shank removably mounted in the upper end of said post block, and a rack and pinion device for moving the feed carriage in either direction, substantially as set forth.

4. In a lathe of the class described, the combination of the lathe bed having a bearing head block at one end, a hollow live spindle journaled on said head block and threaded at its inner end, an interiorly threaded rotary cutter head removably mounted on the threaded end of the spindle and having a series of radial slots, cutter bits loosely arranged in said slots, a separate and independent retaining band or ring encircling the cutter head, adjusting screws mounted in said ring or band and working against the outer ends of the cutter bits to adjust the same, binding screws working in the cutter head and against one side of the cutter bit to hold the same stationary in an adjusted position, and the sliding feed carriage, substantially as set forth.

5. In a lathe for turning axle boxes, the combination of the lathe bed, a hollow live spindle journaled in bearings at one end of the lathe bed, a rotary cutter head mounted on the inner end of the hollow spindle, a stationary mandrel arranged within said hollow spindle and projecting beyond both ends thereof, a stationary spring connected to the outer projecting end of said mandrel, a cylindrical and slightly tapered guide collar mounted on the inner end of the mandrel and working in the central opening of the cutter head, the sliding feed carriage, and the work holding center post mounted on said feed carriage, substantially as set forth.

530,862. LOCK. OLIVER P. TEED, Chicago, Ill., assignor to the Western Leather Manufacturing Company, same place. Filed Apr 9, 1894. Serial No. 506,885. (No model.)



*Claim.*—1. In a lock the combination of a case, a bolt, a push button for moving the bolt in one direction, a spring for moving the bolt in the opposite direction, a hasp adapted to be engaged by the bolt and a gravitating tumbler so arranged that when the case is tilted one way the tumbler engages the bolt and prevents its movement by pressure upon the push button, and when the case is tilted another way the tumbler disengages the bolt and permits its movement, substantially as set forth.

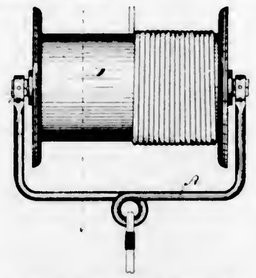
2. In a lock, the combination with a case, a pair of bolts located so as to leave a space between them and movable in opposite directions, a push button for moving each of said bolts in one direction, and a spring for moving it in the opposite direction, and a gravitating tumbler so arranged that when the case is tilted one way the tumbler will enter the space between the bolts and prevent their movement toward each other, and when the case is tilted another way said tumbler will escape from between the bolts and permit their movement toward each other, substantially as set forth.

3. In a lock, the combination with a case, and a bolt arranged to slide therein, of a gravitating tumbler so arranged that when the case is tilted one way the tumbler engages the bolt and prevents its movement, and when the case is tilted another way the tumbler disengages the bolt and prevents its movement, the case being provided upon its bottom with a rib for confining the tumbler in each of its two positions until the case is tilted to a certain angle, substantially as set forth.

4. In a lock, the combination with a case having a pair of bolts movable in opposite directions, of the gravitating tumbler G movable to and from a position between said bolts which will prevent their movement toward each other, and a rib for holding the tumbler in each of its two positions until the case is tilted to a certain angle, substantially as set forth.

5. In a lock, the combination with a case, of the bolts B movable toward each other and having the projections $b'$ with parallel portions and portions flaring outward therefrom, the gravitating tumbler G located between said projections, the lug $a^2$ projecting from the case so as to limit the movement of the tumbler, and a rib H projecting upward from the bottom plate of the case, substantially as set forth.

530,863. **FIRE-ESCAPE.** WILLIAM D. THACKSTON, Des Moines, Iowa, assignor to Josiah C. Bennett, Lynn, Mass. Filed May 26, 1893. Serial No. 475,662. (No model.)

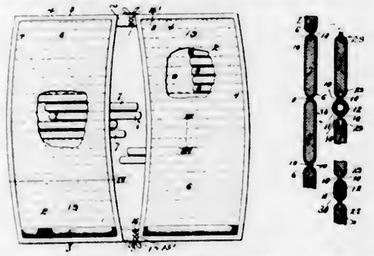


*Claim.*—1. A friction brake for fire escapes &c. consisting of a cylinder adapted to contain a fluid, connected eccentrically with an axle and a diaphragm adapted for allowing ingress and egress of fluids between the opposite compartments of the cylinder said cylinder and diaphragm adapted to operate substantially as shown and described to operate in the manner set forth.

2. A fire escape consisting of a frame A, stationary axle B, a reciprocating diaphragm C, rotatable drum D, having annular flanges $D^2$, a cylinder eccentrically pivoted to the axle and adapted to rotate thereon, constructed and combined substantially as shown and described to operate in the manner set forth.

3. A governing brake for fire escapes &c. comprising a frame an axle fixed to the frame, a drum having a chamber extending eccentrically relative to the axis of the drum and the axle extended through said chamber, and a diaphragm exteoding parallel with the axle and adapted to move laterally relative to the axle to produce two transformable compartments within the chamber in the drum and to force fluid from one compartment to the other, arranged and combined as and for the purposes stated.

530,864. **SADDLE-BLANKET.** JAY L. TORREY, Embar, Wyo. Filed July 24, 1893. Serial No. 481,372. (No model.)





*Claim.*—1. In a ventilated corset saddle blanket, multiple layers of fabric, the approximately vertical stay pockets having the spring stays provided with the combined sweat drainage and aerating flutes 29, and provided with the outer combined drainage and aerating ducts 10, substantially as shown and described.

2. In a ventilated corset saddle blanket, multiple layers of fabric having approximately vertical stay pockets 6, made by lines of stitches through said layers of fabric and bow-shaped spring stays provided with sweat drainage and aerating flutes 29 embedded in said pockets, substantially as shown and described.

3. In a ventilated corset saddle blanket, multiple layers of fabric, the approximately vertical stay pockets 6, and intervening tube pockets 11, made by lines of stitches through said layers, the approximately vertical bow-shaped spring stays embedded in said pockets 6, the elastic pulsating tubes 12 embedded in said pockets 11, the said tubes alternating with the spring stays: substantially as described.

4. In a ventilated corset saddle blanket, multiple layers of fabric, having approximately vertical pockets 6 and 11 formed by lines of stitches that connect said layers the spring stays provided with the combined drainage and aerating flutes 29, said stays seated in said pocket 6, the elastic pulsating tubes 12, seated in said pockets 11, the outer combined sweat drains and aerating channels 10, and the retention pads 5: substantially as shown and described.

5. In a ventilated corset saddle blanket, multiple layers of fabric having approximately vertical stay pockets 6; the approximately vertical concave convex spring stays 7 occupying the whole length of said pockets and the approximately vertical short stays 8, adjustably arranged in a portion of said pockets, the said corset blanket provided with the pliant area 9, substantially as shown and described.

6. In a ventilated corset saddle blanket, multiple layers of fabric, having approximately vertical stay pockets 6, and tube pockets 11, made by lines of stitches through said layers of fabric, the approximately vertical long spring stays 7 that occupy the entire length of said pockets 6, the parallel short spring stays 8, adjustably arranged in a portion of said pockets 6, the said stays 7 and 8 provided with the combined drainage and aerating flutes 29, in direct contact from end to end with said layers of fabric, the long elastic pulsating tubes 12, that occupy from end to end of said pockets 11, the short elastic pulsating tubes 12' that occupy part of said pockets 11, parallel with said short stays, and the said corset blanket provided with the pliant area 9: substantially as shown and described.

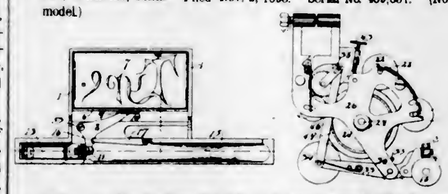
7. In a ventilated corset saddle blanket, the layers of inclosing fabric 1, the divisional moieties 19 of the corset blanket the coupling straps and tie laces that connect said moieties, the projecting corset blanket retention pads 5, the approximately vertical stay pockets 6 and tube pockets 11, the long spring stays 7, that occupy the whole length of certain of said pockets 6, the short spring stays that are adjustably located in a portion of said pockets 6, the said stays 7 and 8 provided with the combined sweat drainage and aerating flutes 29, in direct contact from end to end with said inclosing fabric, the long elastic pulsating tubes 12, the short elastic pulsating tubes 12' the said corset blanket provided with the pliant areas 9, devoid of stays and tubes substantially as described.

8. In a ventilated corset saddle blanket, the divisonal moieties 19 of the corset blanket, the long coupling straps 15, secured to one of said moieties, the short coupling straps 15' secured to the other moiety, the perforate eyelets 16 secured in said coupling straps, the tie laces 17, that couple together the said respective long and short straps in close proximity to the upper edge of one of said moieties, the multiple layers of inclosing fabric, having approximately vertical stay pockets 6 and tube pockets 11 formed therein, the long spring stays 7 and short spring stays 8 inserted in said approximately vertical pockets 6, the pulsating long elastic tubes 12 and pulsating short elastic tubes 12' inserted in said pockets 11, alternate and parallel with said stays, the binding 3 that surrounds each moiety of said corset blanket, and the overlap strips 14, that cover the openings 6' to the stay pockets 6, the outer combined sweat drains and air vents 10, between said pockets and the said corset saddle blanket provided with the pliant areas 9 devoid of stays and tubes: substantially as described.

9. In a ventilated corset saddle blanket, the combination of the multiple inclosing layers of fabric, the respective series of approximately vertical pockets 6 inclosed in said layers, the long spring stays 7 and short spring stays 8 inclosed in said pockets the said stays provided with the combined sweat drainage and aerating flutes 29, the integral coupling fold 28, that unites the two sides of the saddle blanket, the corset blanket retention pads 5 the reinforce fabric strips secured to said corset blanket at the bottom of said stay pockets, the selvage overlap strips 24, and fabric strips 25 by which said stay pockets are reinforced at their openings and the said corset saddle blanket provided with the pliant areas 9: substantially as shown and described.

10. In a ventilated corset saddle blanket, the combination of the multiple inclosing layers of fabric, having the integral coupling overlap 28, the series of approximately vertical stay pockets 6, the long spring stays 7, and the short adjustable spring stays 8, said stays 7 and 8 provided with the sweat drainage and aerating flutes 29 and inclosed in said approximately vertical pockets, the respective reinforce and inclosing strips of fabric 22, 24 and 25, the extension holder cords, 26, inclosed by said strips, the corset blanket retention pads 5, and the said corset blanket provided with the pliant area 9 devoid of stays: substantially as shown and described.

530,865. **CHROMATIC-PRINTING DEVICE.** THEODORE J. TURLEY, Nashville, Tenn. Filed Nov. 2, 1893. Serial No. 489,831. (No model.)



*Claim.*—1. The combination with the printing press, of a frame provided on the bottom with projections having inclined sides and flat upper faces, and adapted to be secured rigidly within the main form, a supplemental form provided with corresponding projections having flat lower faces and engaging the projections on the frame, a dog pivoted on the frame, a bell crank lever with one end engaging the dog and connected by a sliding connection to the side of the supplemental form, substantially as described.

2. In a printing press, the combination with the main form of the supplemental form for color printing, consisting of a frame, a form, vertically movable therein, a bell crank lever pivoted to the frame, having one arm engaging the form, the spring pressed dog pivoted to the said frame, with one end contacting the other arm of the said bell crank lever, to raise the form, and means for actuating the bell crank lever to lower said form, substantially as described.

3. In a printing press the combination with the main form, of a frame locked therein, having a bar projecting therefrom and provided with a rail thereon, the trigger located at one end of the rail, the form-holder or plate in said frame, the bell crank lever, having one end engaging the plate, the lever on the inking apparatus carrying a roller and a wheel at opposite ends thereof, adapted to be operated by the rail as the form passes under the inking apparatus, substantially as described.

4. A color printing device consisting of the frame having inclined projections on the bottom, a form holder provided with corresponding projections, a lever pivoted to the form, one arm provided with a pin engaging the slot in the form-holder, a dog on said frame with its free end contacting with the free end of the lever, whereby the form may be raised when the dog is depressed, with means for lowering said form, substantially as described.

5. The combination with a printing press, of a frame carrying an inking device consisting of a main roller with a cam on one end thereof, an ink reservoir, pivotally supported above said roller, and adapted to be tilted by said cam, a feed roller on said reservoir provided with a ratchet wheel, a lever on the frame provided with an inking roller, and a rod operatively connecting said lever with the ratchet wheel on the feed roller, substantially as described.

6. An inking mechanism consisting of a frame adapted to be attached to the press, provided with bearings in which are journaled inking and distributing rollers, an ink reservoir supported above the main roller, a lever pivoted in the lower part of the frame, an ink roller mounted directly upon one end of said lever, and means upon the bed of the press for engaging directly the other end of said lever, whereby the ink roller carried thereby is lowered to ink the form as it passes under said mechanism, substantially as described.

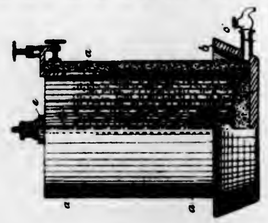


530,866. **ICE-PICK.** HARRIET A. VANHOUTEN, Paterson, N. J. Filed Mar. 9, 1894. Serial No. 503,064. (No model.)



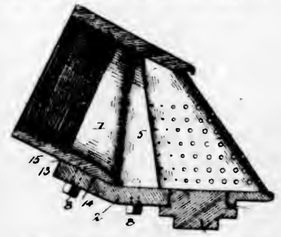
*Claim.*—In an ice pick, the combination of a shank provided at its lower end with a flat head having teeth, a rectangular casing provided with a longitudinal opening snugly receiving and conforming to the configuration of the shank and forming a guide for the same, said casing being provided, intermediate of its ends, with a longitudinal slot and having the solid integral upwardly-projecting neck or shank exteriorly-threaded and forming a solid striking portion for contacting with the upper end of the shank, a screw passing through the slot and engaging the shank and detachably securing the same in the casing, said screw being located a sufficient distance from the upper end of the shank to avoid coming in contact with the upper portion of the casing, and a handle having a threaded socket receiving the upper end of the neck or shank of the casing, substantially as described.

530,867. **PRIMARY BATTERY.** WILLIAM WALKER, Jr., Birmingham, and FRANK R. WILKINS, Handsworth, assignors of one-third to Jabez Lones, Smethwick, England. Filed June 4, 1894. Serial No. 513,475. (No model.) Patented in England Dec. 14, 1892, No. 23,007, in Belgium Feb. 7, 1894, No. 106,431, and in Austria Apr. 27, 1894, No. 1,246.



*Claim.*—A primary battery having a negative element of carbon forming part of the jar containing the exciting solution, with which one surface of said carbon is in contact while the other is exposed to the atmosphere, and a saucer containing the jar and provided with a discharge.

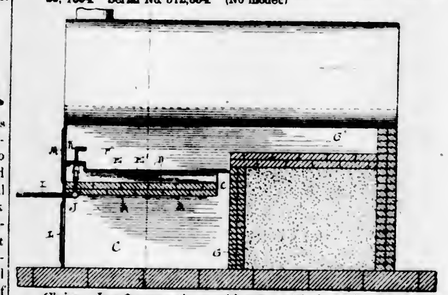
530,868. **SPRINKLING-HEAD.** CLINTON A WEED, Racine, Wis. Filed Mar. 23, 1894. Serial No. 504,788. (No model.)



*Claim.*—1. A sprinkler head for sprinkling wagons comprising the cast metal frame having a cylindrical screw threaded portion, inclined side wings provided with flanges, and a semi-circular lug formed with a flange; the bottom plate detachably secured to said frame having diverging sides and a semi-circular rear portion formed with a groove, and the curved perforated plate the edges of which engage with said flanges and groove; substantially as and for the purpose specified.

2. In a sprinkler head for sprinkling wagons, the combination with the cast metal frame comprising the cylindrical screw-threaded portion, the inclined side wings, formed with flanges, and the semi-circular lug formed with a flange, of the removable bottom plate provided with a projection at its front edge, and formed with diverging sides and a semi-circular rear portion having a groove, the screw threaded plug fitting in an aperture in said plate and the curved perforated plate, the edges of which engage with the flanges of the side wings and lug of the frame and the groove in the bottom plate; substantially as described.

530,869. **FURNACE.** JACOB P. WEIS, Anderson, Ind. Filed May 29, 1894. Serial No. 512,834. (No model.)

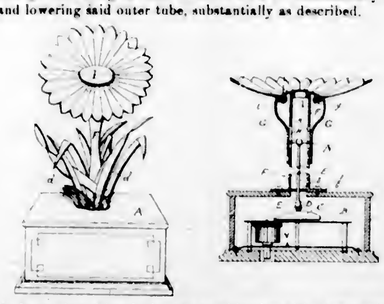


*Claim.*—In a furnace, the combination with the bed and the vertical walls thereof, of the horizontal wall D, forming a cold air chamber C between said wall and the bed, a series of longitudinal partitions above said wall D, forming a series of flues E, which communicate at their rear ends with said cold air chamber by a vertical passage c between the rear end of the wall D and a bridge wall G, a wall E' forming the top of said flues E, and the bottom of a combustion chamber F, a transverse gas receiving pipe in the forward portion of the chamber C, a series of burners extending from said pipe into the forward portion of the combustion chamber, and a gas and air mixer on each of said burner pipes in the forward portion of each of said flues E, and receiving the hot air therefrom, substantially as specified.

530,870. **MECHANICAL ARTIFICIAL FLOWER FOR ADVERTISING PURPOSES.** JOHN H. WISNER, Paradise, Pa. Filed Apr. 12 1894. Serial No. 507,230. (No model.)

*Claim.*—1. In an advertising device, the combination with a base pedestal, or box; of an upright tube secured to said base or box, said tube having its top closed by a detachable cover; a series of leaves hingedly connected to said cover at its outer periphery, said leaves being adapted to be raised and lowered; and means for mechanically raising and lowering said leaves substantially as described.

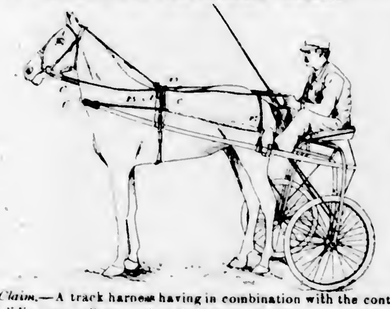
2. In an advertising device, the combination with a base pedestal or box; of an upright tube secured to said base or box, said tube having its top closed by a detachable cover; a series of leaves hingedly connected to said cover at its outer periphery; a tube adapted to fit over the said upright tube, the upper end of said outer tube being adapted to bear against the under side of said leaves for the purpose of raising or lowering the leaves; and means for mechanically raising and lowering said outer tube, substantially as described.



3. In an advertising device, the combination with a base pedestal or box; of an upright tube secured to said base or box, said tube having its top closed by a detachable cover, the diameter of said cover being greater than the diameter of the upper end of said upright tube; a series of leaves hingedly connected to said cover at its outer periphery; an outer tube adapted to fit over the said upright tube; the upper end of said outer tube being of greater diameter than that of the cover, the upper end of said outer tube being adapted to bear against the under side of said leaves, for the purpose of raising and lowering the leaves; and means for mechanically raising and lowering said outer tube, substantially as described.

4. In an advertising device, the combination with a base pedestal or box; said box being adapted to contain a motor; of an upright tube secured to said box, said tube having intermediate its ends, longitudinal slots formed therein at diametrically opposite points, said tube having also its top closed by a detachable cover; a series of leaves pivoted to the outer periphery of said cover, the point of connection being below the plane of said cover; an outer tube, adapted to fit over the said upright tube, the upper end of said outer tube being of greater diameter than diameter of said cover, the top of said outer tube being adapted to bear against the under side of said leaves for the purpose of raising and lowering them; a transverse bar, adapted to pass through said openings in the upright tube, and secured to said outer tube; a vertical rod attached to said transverse rod, adapted to extend downward into said base or box; and means whereby when said motor is in operation, said vertical rod will be raised and lowered, substantially as described

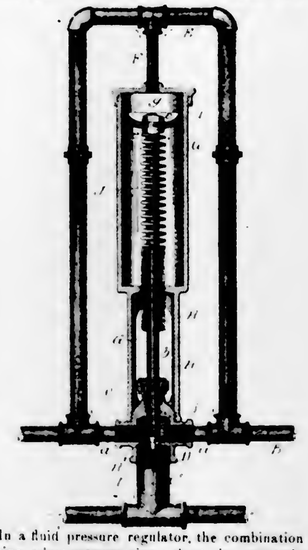
530,871. TRACK-HARNESS. JAMES L. WHIPPLE, Brattleborough, Vt. Filed Sept. 17, 1894. Serial No. 523,261. (No model.)



*Claim.*—A track harness having in combination with the continuous sliding straps B, secured at their forward ends to caps, designed to fit over the ends of the thills of a sulky, their rear ends secured to the axle thereof, a hip strap designed to pass over the back of the horse and having its ends secured to the shafts on either side, and provided with loops through which the said straps B are passed and supported therein for the purpose specified.

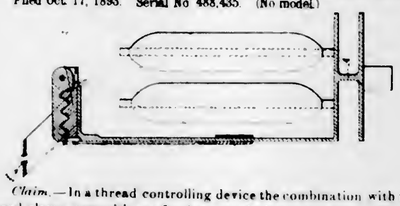
530,872. FLUID-PRESSURE REGULATOR. JAMES WILSON, Jackson, Ohio, assignor of one-half to C. A. Mullen, same place. Filed Jan 20, 1894. Serial No. 497,518. (No model.)

*Claim.*—1. In a fluid pressure regulator, the combination with a main supply pipe, a low pressure pipe adapted to communicate therewith and a valve between said pipes, of a by-pass at a point between its ends communicating with the low pressure pipe at two points, a cylinder communicating with said by-pass at a point between its ends, a piston in said cylinder and connected directly with said valve, and a spring adapted to maintain said valve open when the pressure on said piston is sufficiently low, substantially as set forth.



2. In a fluid pressure regulator, the combination with a main supply pipe, a low pressure pipe a short pipe connecting the two together and a valve seat in the connecting pipe, of a by-pass communicating with the low pressure pipe at two points on each side of the connecting pipe, a cylinder communicating with said by pass, a piston in said cylinder, a piston rod or stem secured to said piston and adapted at its opposite end to constitute a valve to rest on said valve seat, a spring tending to normally open said valve, and means for adjusting the tension of said spring, substantially as set forth

530,873. THREAD-CONTROLLING DEVICE FOR LACE-MAKING MACHINES. CARL P. WOLFERTS, Barmen Rittershausen, Germany. Filed Oct. 17, 1893. Serial No. 488,435. (No model.)



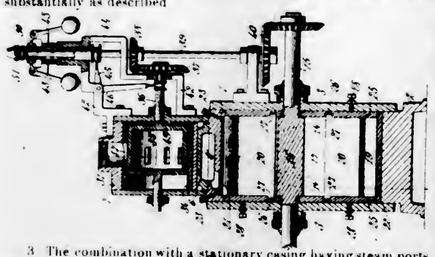
*Claim.*—In a thread controlling device the combination with the thread clamp comprising a fixed serrated plate, and a movable serrated plate hinged thereto and provided with a thread guide at its free end, and the delivery eye located above the plane of the thread clamp, of the sliding weight and the thread eye connected therewith engaging the thread between the thread clamp and the delivery eye, substantially as described.

530,874. ROTARY ENGINE. DAVID F. ALLEN, Richburg, N. Y. Filed May 15, 1894. Serial No. 511,363. (No model.)

*Claim.*—1. The combination with a stationary casing having the adjustable wear-plate 22 and steam ports 13, exhaust 5 and channels or passages 14 diverging from the steam ports to the opposite ends of the wear-plate, of an engine shaft 15, a rotatable piston-cylinder 16 carried by said shaft and having radially slidable pistons 20 provided with lugs 27 and jointed piston-heads 19, cam-races engaging the lugs of the piston and having their upper portions concentric with the internal surface of the casing above and around the engine shaft and their lower portions concentric with the said wear-plate, a reversing valve 6 governing the steam-ports and exhausts, and an expansion cut-off valve arranged above the reversing valve substantially as and for the purposes described.



2. The combination with a stationary casing having steam ports, and a rotatable piston-cylinder having radially slidable pistons, of an automatic expansion cut-off-valve composed of a horizontal hollow valve cylinder having approximately triangular ports and a horizontal interior hollow valve cylinder having a series of ports, means for rotating and horizontally moving one of said hollow cylinders by the rotation of the piston-cylinder devices for varying the horizontal throw of the rotating cylinder, and a reversing valve interposed between the automatic expansion cut-off-valve and the piston cylinder, substantially as described



3. The combination with a stationary casing having steam ports, and a rotatable piston-cylinder having radially slidable pistons, of an automatic expansion cut-off-valve composed of a horizontal valve cylinder having suitable ports and a horizontally rotating and reciprocating hollow valve cylinder having a series of ports, a governor-shaft geared to the shaft of the piston-cylinder and to the rotating and reciprocating cylinder, a governor mounted on the governor shaft and connected with the rotating and reciprocating valve-cylinder for reciprocating the latter horizontally, and the reversing valve governing the ports of the stationary casing, substantially as described

4. The combination with a stationary casing having steam ports, and a rotatable piston cylinder having radially slidable pistons, of an automatic expansion cut-off-valve composed of a horizontal hollow valve-cylinder having suitable ports and a horizontally rotating and reciprocating hollow valve cylinder having a series of ports, a governor-shaft geared to the shaft of the piston-cylinder and to the rotating and reciprocating valve-cylinder, a governor mounted on the governor shaft and having a vertically movable sleeve, connections between the said sleeve and the rotating and reciprocating valve-cylinder for moving the latter horizontally by the action of the governor, and a reversing valve governing the ports of the stationary casing, substantially as described.

5. The combination with a stationary casing having steam ports, and a rotatable piston-cylinder, having radially slidable pistons, of an expansion cut off valve composed of a stationary hollow valve-cylinder provided with approximately triangular ports, and a rotating and legthwise reciprocating hollow valve-cylinder provided with a series of ports, the area of which is more or less placed in communication with the triangular ports by shifting the valve cylinder lengthwise, gearing between the engine-shaft and the rotatable valve-cylinder, a governor, and connections between the governor and the rotatable valve-cylinder for automatically shifting the latter lengthwise, substantially as described.

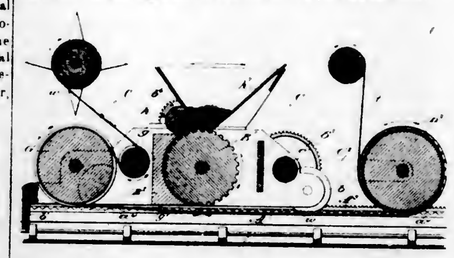
6. The combination with a stationary casing having steam-ports, and a rotatable piston-cylinder having radially slidable pistons, of an expansion cut-off valve composed of a stationary hollow valve-cylinder having approximately triangular ports, and a rotating and lengthwise moving hollow valve cylinder having a series of ports, the area of which is more or less placed in communication with the triangular ports by the lengthwise movements of the rotating valve cylinder, gearing between the engine-shaft and the rotatable valve cylinder, a governor, connections between the governor and the rotating and lengthwise moving valve-cylinder, and devices for varying the lengthwise throw of the rotating hollow cylinder, substantially as described.

530,875. MACHINE FOR COILING MATCH-SPLINTS. CHARLES B. ANDREWS, Lebanon, Pa., assignor of one-half to Charles E. Rauch, same place. Filed Apr. 19, 1894. Serial No. 508,192. (No model.)

*Claim.*—1. The combination with a track or way of a match coiling machine mechanically propelled or drawn over said track or way and having means for depositing match-splints at intervals thereon, and removing them therefrom for the purpose set forth

2. The combination with a track or way, and serrated bars located between the track or way, of a machine moving over the track or way and having means for depositing match splints on said serrated bars and mechanism for taking them therefrom and for coiling the match-splints, for the purpose set forth.

3. The combination with a track or way having recesses between the tracks to receive match-splints, of a match splint coiling machine moving over the track or way and having means for depositing match-splints in the recesses, between the track and removing them therefrom and coiling them on a spool for the purpose set forth.



4. The combination with a track or way having serrated bars between the track, of a machine moving over the track or way and having means for depositing match splints upon the serrated-bars, and taking them therefrom for the purpose set forth.

5. The combination with a track or way, of a coiler mounted thereon having means for depositing match-splints at intervals upon the track or way and then bundling them, and means for causing the coiler to travel on the track or way for the purpose set forth.

6. In an apparatus for coiling match-splints, the combination, of a track or way upon which the coiling machine travels and the coiling machine having means which engage with the propelling means, said propelling means being located beneath the track or way for the purpose set forth

7. In an apparatus for coiling match-splints, the combination, of a slotted track or way, means located thereon for holding the match-splints at intervals, and a machine for taking the match-splints and winding them upon a spool, of an endless cable located beneath the track or way with which the coiler engages for the purpose set forth.

8. The combination with a slotted track or way, beneath which is located driving mechanism of a machine moving over the same and having a hopper and serrated wheel or cylinder for depositing match-splints at intervals upon the track or way, said machine having means which engages with the driving mechanism beneath the track or way for the purpose set forth

9. The combination with a slotted track or way having an endless belt or cable beneath the track, of a serrated plate or plates located upon the same and a machine having means which passes through the slot in the track or way and engages with the endless belt or cable, said machine also having a hopper and serrated wheel or cylinder for depositing match-splints upon the serrated plate or plates, for the purpose set forth.

10. In a movable or traveling apparatus for coiling match-splints, the combination, of a track or way having means for receiving and spacing match-splints, together with a traveling coiler having a web which is adapted to pick up the match-splints and wind them upon a block, as the coiling machine moves upon the track or way for the purpose set forth.

11. In a movable apparatus for coiling match-splints, the combination, of the slotted track or way having at intervals spaces for receiving match-splints, together with a traveling coiler having web and tape which pass on each side of the match-splints and are wound upon a block, and propelling mechanism beneath the track or way with which the collar engages for the purpose set forth.

12. In an apparatus for coiling match-splints, the combination of a track or way having at intervals spaces for receiving match-splints, together with a traveling collar having a serrated cylinder for taking the match-splints from a hopper and depositing them upon the track or way and a web which is guided below the splints, said web being connected to a coiling block so as to take the splints from the track or way and bundle them, for the purpose set forth.

13. In an apparatus for coiling match-splints, the combination, of of a track or way having serrated bars upon which the match splints are deposited and a rack-bar extending parallel with said track or way, of coiling mechanism having gearwheels which mesh with the rack-bar and means for causing the carriage or coiling apparatus to travel upon the track or way, for the purpose set forth.

14. In an apparatus for coiling match splints, the combination, of a slotted track or way, serrated bars positioned between the tracks for receiving match-splints, a carriage adapted to carry the match-splints and deposit them upon the serrated bars and means carried by the coiler which engages with an endless cable or belt located beneath the slotted track for moving the coiler thereon, for the purpose set forth

15. In combination with a track or way, of a match-splint coiling machine adapted to travel upon said track or way, the coiling machine having a tape or web of less length than the track or way and means for depositing the match-splints upon the tape or web between the tracks and coiling them upon a spool, substantially as shown and for the purpose set forth.

16. In a coiling apparatus for match splints which is adapted to travel on a track or way, the combination, of a hopper and distributing cylinder, a spool carrying a web or flexible band, said web or flexible band being guided below the distributing cylinder to a coiling-block, the coiling-block and distributing cylinder being actuated by the travel of the coiling machine as it is moved over the track or way, for the purpose set forth.

17. In a match coiling apparatus, the combination, of a carriage or coiling apparatus having supporting wheels, a hopper carried thereby, a feed roller and distributing cylinder positioned with respect to the hopper as shown, a block forming with the distributing cylinder a way for the match-splints, a web carried by the carriage and guided beneath the distributing-cylinder, a coiling-block carried by the carriage to which the web is connected, and mechanism for communicating motion to the parts as the carriage is moved upon the track or way, substantially as shown and for the purpose set forth.

18. In an apparatus for coiling match-splints, the combination, of a hopper, serrated cylinder and feeding roller, the hopper having a pivoted board $h'$ the lower end of which rests upon the serrated cylinder, substantially as shown and for the purpose set forth.

19. In an apparatus for coiling or separating match-splints, the combination, of a hopper, serrated distributing cylinder and feed-roller $h$, of a board or inclined way forming one side of the hopper, said board being vibrated by the distributing cylinder, substantially as shown and for the purpose set forth.

20. In a machine for separating and bunching match-splints, the combination, of a hopper, a serrated cylinder and an inclined board $h'$ pivoted adjacent to its upper end to the hopper the lower end of the same resting upon the serrated cylinder so that the board will be vibrated as the cylinder is rotated, substantially as shown and for the purpose set forth.

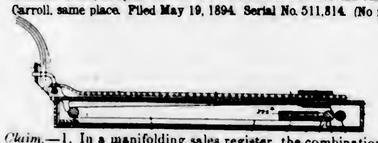
21. In a machine for bunching match sticks or splints, the combination, of a movable carriage having a hopper and means for conveying the match-splints therefrom and depositing them above a flexible tape or web, of supports which carry the spool containing the web, a guide roller for the web, a coiling-block removably mounted upon the carriage, means for rotating the coiling-block, of a slotted track or way beneath which is an endless cable the traveling machine having means which passes through the slot and engages with an endless cable substantially as shown.

22. In an apparatus for coiling match-splints, the combination, of the tracks or ways having slots, serrated bars located between one pair of the tracks, a rack bar located to one side of one of the rails of the track, an endless cable located beneath the slots in the tracks, the end sections of the tracks beyond the cable having switches, substantially as shown, and a machine adapted to travel upon the tracks and deposit match-splints upon the serrated bars and then bunch them, for the purpose set forth.

23. In an apparatus for coiling match-splints, the combination of a track or way having serrated bars, an endless cable and rack-bar for imparting motion to the coiling apparatus which travels upon the track or way, of a coiling apparatus mounted on wheels and provided with gearwheels which are adapted to engage with the rack-bar, said gearwheels imparting motion to the mechanism for depositing matches upon the serrated bars and to the mechanism for picking up the match-splints and coiling them upon a block as the carriage moves upon the track, the carriage having means for engaging with the cable, substantially as shown and for the purpose set forth.

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530,876. **MANIFOLDING SALES-REGISTER.** WILLIAM ASHETON, Baltimore, Md., assignor of two-thirds to David Stewart and Charles J. Carroll, same place. Filed May 19, 1894. Serial No. 511,814. (No model.)



*Claim.*—1. In a manifolding sales register, the combination of a case having a chamber, *b*, a top surface platen, B, and a transverse opening, *q*, through the said platen; means for holding one end of a bunch of paper-blanks on the platen and leaving the other end of the bunch unconfined and resting over the said transverse opening; and a frame inclosed within the said chamber of the case and provided with means for carrying a strip of paper which is to be exposed at the said transverse opening.

2. The combination of the case having the platen, B; a transverse rod, *e*, provided with pins, *g*, and mounted at one end of the case; and a bar, *f*, pivoted on the transverse rod so as to tilt back and forth and engage the said pins.

3. The combination of the case having a platen, B; paper-holding pins mounted at one end of the case; and a bar, *f*, provided with pin-holes and having its end pivoted so as to permit the bar to tilt back and forth and engage the free ends of the pins.

4. In a manifolding sales register, the combination of a case having a chamber, a top-platen, B, and a transverse opening, *q*, through the platen; means for holding paper-blanks on the platen so that one end of the blanks will rest immediately over the said transverse opening; an interior frame, C, fitting within the said chamber and provided with suitable rollers to carry a band or strip of paper which is to be exposed at the said transverse opening; and a pivoted actuating bar, D, by which the rollers of the interior frame are revolved.

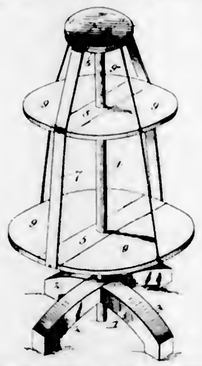
5. In a manifolding sales register, the combination of a case having a chamber, *b*, a top surface platen, B, and a transverse opening, *q*, through the platen; an interior frame, C, within the chamber carrying a roller, *k*, at one end and two rollers, $k'$, $k^2$, at the other end in frictional contact—one roller, $k'$, having its ends fitting in slots in the sides of the frame; a spring presser-bar pressing each end of said roller, $k'$, to force it into close contact with the other roller, $k^2$; a strip or band of paper, *j*, carried by the rollers and exposed at the said opening, *q*; and means to actuate one of the said two rollers.

6. In a manifolding sales register, the combination of the case having a chamber, *b*, a top surface platen, B, and an opening, *q*, through the platen; means for holding a number of blanks on the platen so that one end of the blanks will be unconfined and rest over the said transverse opening; an interior frame, C, inclosed within the chamber and having at one end a single roller, *k*, and at the other end two rollers, $k'$, $k^2$, in frictional contact—one of said two rollers carrying a ratchet wheel, *n*,—the said rollers adapted for carrying a strip or band of paper: and a pivoted actuating bar. D, carrying a pawl which engages the ratchet wheel, and which when the bar is tilted revolves the said roller.

7. In a manifolding sales register, the combination of the case having a chamber, *b*, a top-surface platen, B, and a transverse opening, *q*, through the platen; means for holding a number of paper-blanks on the platen so that their unconfined ends will rest over the said transverse opening; rollers for carrying a strip or band of paper and inclosed within the said chamber; a pivoted actuating bar, D, to rest upon the unconfined ends of the said paper-blanks over the said transverse opening and said bar provided with slots in coincidence with said transverse opening; and means connecting between the said pivoted actuating bar and the said rollers in the chamber, whereby in tilting the bar the said rollers will be actuated.

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530,877. **ROTATING STAND.** ANDREW BALDWIN, Viroqua, Wis. Filed Mar. 28, 1894. Serial No. 505,436. (No model.)



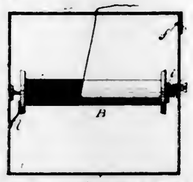
*Claim.*—The combination with the base pieces having interlocking recesses or hinges and central apertures, and the vertical shaft passing through said apertures, of the rotatable shelves through which said shaft passes, the strap secured to said shelves and to a cap having an annular recess, the hinged platform connected by cords or other supports with said cap and the cover secured at its upper edge to said cap; substantially as and for the purpose specified.

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530,878. **TWINE-HOLDER.** WALTER S. BRADEN, Wataska, Ill. Filed July 9, 1894. Serial No. 516,967. (No model.)



*Claim.*—1. The herein described twine holder, consisting of the open jointed frame, A, having interior spindles L and *k*, a brake spring, *l*, and a coiled spring, *j*, both adapted to bear against the bobbin B substantially as described.

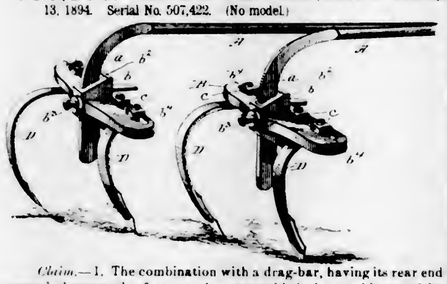


2. A twine holder, consisting of the frame A, bobbin B, bobbin spindles, L and *k*, brake springs, *l*, and tension spring, *j*, adapted to bear against said bobbin, a washer between said tension spring and the spool and a thumb screw for carrying said washer, and thereby regulating the tension, substantially as described.

3. A twine holder consisting of a frame, A having sides, *a*, *b*, *c* and *d*, the side *a* provided with a short arm, *e*, having a catch thereon, said arm, *e*, adapted to overlap the side, *d*, said catch, *f*, adapted to enter a slot in side, *d*, whereby the frame is locked in combination with spindles L and *k*, the springs, *l* and *j*, and a spool, substantially as described.

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530,879. **CULTIVATOR.** JAMES V. BRADY, Sonora, Ill. Filed Apr. 13, 1894. Serial No. 507,422. (No model.)

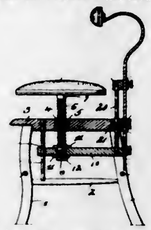


*Claim.*—1. The combination with a drag-bar, having its rear end curved downward, of a cross-beam provided about midway of its length with an enlargement having a central vertical perforation or chamber and binding screws or bolts to retain the drag-bar in desired position, and provided, further, with slots toward its ends, and of stirrups or yokes set in the slots with their curved portion downward and having their extremities threaded and provided with nuts, all substantially as and for the purpose described.

2. The combination with drag-bars, having their rear ends curved downward, of cross-beams provided about midway of their length with enlargements having central vertical perforations or chambers and binding screws or bolts to retain the drag-bars in desired position, and provided, further, with slots toward its ends, of stirrups or yokes set in the slots with their curved portion downward and having their extremities threaded and provided with nuts, and teeth having shanks adjustably held by the yokes, one shank of a pair being of greater length than the other, all substantially as and for the purpose set forth.

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530,880. **CHAIR.** EDMUND W. BRIGGS, Jr., Lyons, Iowa. Filed Apr. 27, 1894. Serial No. 509,245. (No model.)



*Claim.*—1. In a chair, the combination of a frame, a threaded shaft arranged vertically therein, a seat connected to the upper end of the shaft, a back movable vertically on the frame, a bar connecting the back and shaft, a rod arising vertically from the bar, and an adjustable connection between the rod and back, whereby the back is braced and its resiliency regulated, substantially as described.

2. In a chair, the combination of a frame, a threaded shaft movable vertically therein, a seat mounted on the shaft, a rod rigidly secured to the frame and projecting downwardly therefrom, a bar connected to the shaft and movable longitudinally on the said rod, a back movable vertically on the frame and connected to the bar, whereby the back and seat are moved in unison, and a rod rigidly secured to and arising vertically from the bar and an adjustable connection between the rod and back, whereby the back is braced and its resiliency regulated, substantially as described.

3. In a chair, the combination of a stationary seat supported on legs, a threaded shaft movable vertically therein, a seat proper fixed to the upper end of the threaded shaft, a bar loosely mounted on the lower end of the threaded shaft and below the stationary seat and projected beyond the rear side thereof, a back slidably mounted on the rear side of the stationary seat and rigidly connected to the rear end of the bar, a series of rigid rods rigidly secured to the bar and projecting transversely from each side thereof, a vertically extending rod for each of the several transverse rods and rigidly connected thereto and two arms rigidly secured to the upper ends of the vertical rods and one at each side of the chair and slidably connected to the stationary seat at opposite sides thereof; substantially as described.

4. In a chair, the combination of a stationary seat supported on legs, a threaded shaft movable vertically therein, a seat proper fixed to the upper end of the shaft, a bar loosely mounted on the lower end of the shaft and below the stationary seat and projecting to the rear side thereof, a back slidably connected to the rear side of the stationary seat and rigidly connected to the corresponding end of the bar, a series of rods rigidly connected to the bar and projecting transversely beyond either side thereof, a series of arm-supporting rods respectively connected to the rods of the bar and projecting vertically therefrom and slidably connected to the sides of the stationary seat, a collar fitting loosely on the threaded shaft and at the upper end thereof directly below the seat proper, brace-rods connected to the collar and to the arm-supporting rods, and arms mounted upon said arm-supporting rods, substantially as described.

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530,881. **RATCHET-WASHER NUT-LOCK.** ELI H. G. BRINSER, Elizabethtown, Pa. Filed May 21, 1894. Serial No. 511,932. (No model.)

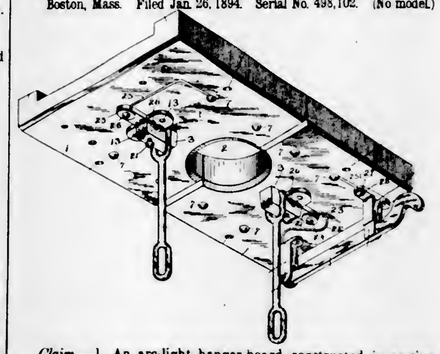


*Claim.*—1. In a washer provided with means to keep it from turning, the side projecting arm or arms curving spirally inward from the heels to the points thereof, said arms having their upper and lower edges forwardly approaching and their forward ends outwardly curved and the corrugations or notches in the concaved faces of the curved portions of said arms, substantially as described and for the purpose hereinbefore set forth.

2. The combination in a ratchet washer nut-lock, with a washer having means provided to keep said washer from turning, of a forwardly tapering, inwardly concaved and spirally curved arm, having its wider rear end rigidly secured to the edge of said washer, and its narrower front end outwardly curved, and corrugations or notches in the concaved inner face of said arm, all substantially as and for the purpose hereinbefore set forth.

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530,882. **ARC-LIGHT HANGER-BOARD.** DAVID J. CARTWRIGHT, Boston, Mass. Filed Jan. 26, 1894. Serial No. 498,102. (No model.)

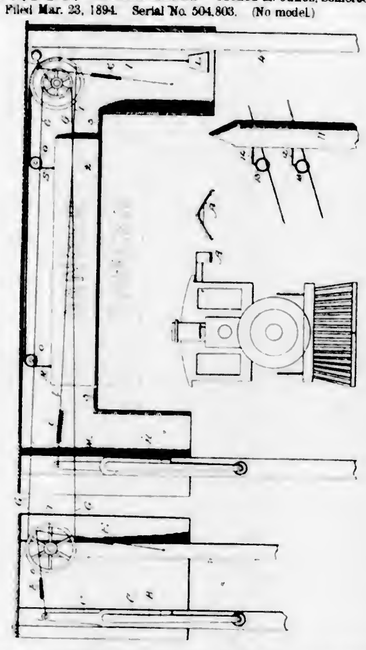


*Claim.*—1. An arc-light hanger-board constructed in sections having hangers for the suspension of an electric lamp respectively attached thereto, and provided with means for securing the said sections at different distances apart, substantially as described.

2. An arc-light hanger-board constructed in sections having hangers for the suspension of an electric lamp respectively attached thereto, rods or strips for uniting the said sections with each other, and means for adjustably securing the said rods or strips to the said sections, substantially as described.

3. The combination with an arc-light hanger-board provided with hangers, and converging contact springs in electrical connection with one of said hangers, of a switch-lever in electrical connection with the other of said hangers and arranged to swing vertically with relation to the said hanger-board, and the spring-actuated plunger, coacting with the heel of the said switch-lever to complete the movement thereof in either direction and retain it in either of the positions which it is caused to assume, the switch-lever being provided with a heel having an apex which passes from side to side of the said plunger substantially as described.

## 530,883. DANGER-SIGNAL. GEORGE M. CHACK, Somerset, Mass. Filed Mar. 23, 1894. Serial No. 504,803. (No model.)



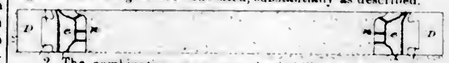
*Claim.*—1. The combination with a vertically movable signal, a counterbalancing device, of an actuating lever located a proper distance from the signal, a wheel having connections with the said lever, connections between the said wheel and signal for operating the latter, and a spring for holding the said wheel in either of its two positions, substantially as set forth.

2. The combination with a vertically movable signal, a wheel, a counterbalancing weight attached to said wheel connections for attaching the signal to the said wheel, an operating lever located a proper distance from the signal, a second wheel having connection with the said lever, springs connected to said wheels and connections for uniting and causing the said wheels to operate in unison, whereby the signal and operating lever will move together, substantially as set forth.

3. In combination, a housing and vertically movable signal hidden from view within the said housing, a wheel, connections between the said signal and wheel, a weight and spring for operating on the said wheel, an audible signal operatively connected with the said wheel, a second wheel located a proper distance from the signal and connected at opposite points with corresponding points of the first mentioned wheel, two sets of levers, each composed of independent parts and having separate connection with the said wheels, substantially in the manner set forth for the purpose described.

## 530,884. CHILL FOR CAST-IRON CAR-WHEELS. PATRICK CONNELLY, Rochester, N. Y. Filed June 15, 1892. Serial No. 436,768. (No model.)

*Claim.*—1. The combination, in a car-wheel-chill, of the radially arranged chill-segments A, the ring B cast around the rear portion of the segments and with radial tongues projecting between the segments, and suitable openings through which the joints between the segments and tongues are ventilated, substantially as described.

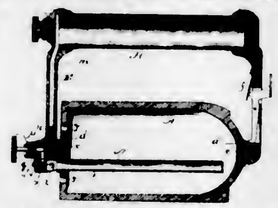


2. The combination, in a car-wheel-chill, of the radially arranged chill-segments A, provided with recesses for the reception of the cores *c*, and the ring B cast around the rear portion of the segments with radial tongues projecting between the segments substantially as described.

3. The combination, in a car-wheel-chill, of the radially arranged chill-segments A, provided with recesses for the reception of the cores *c*, and grooves *n* in the face of said chilled segment, and the ring B, cast around the rear portion of the segments and with radial tongues projecting between the segments, substantially as described.

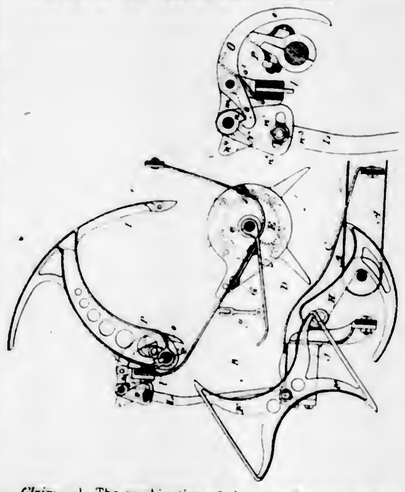
4. The combination, in a car-wheel-chill of the radially arranged chill-segments A, provided with recesses for the reception of the cores *c*, having openings *h* and *i* on both sides of the chill, and the ring B, cast around the rear portion of the segments with radial tongues projecting between them, substantially as described.

## 530,885. SAD-IRON. HERBERT M. COOLEY, Kansas City, Mo. Filed Apr 16, 1892. Renewed Nov. 15, 1894. Serial No. 528,928. (No model.)



*Claim.*—In a sad iron, the combination with a reservoir, standards, hollow iron and burner, of a feed bore in the rear standard, a primary heater in the feed bore consisting of a mass of granulated material of high thermal capacity, through which the fuel is adapted to percolate, adapted to be heated by the iron a vapor generating chamber communicating with the feed bore, and a commingling chamber communicating with the generating chamber and with the burner, a valve for regulating the flow from the feed bore, and a screen or sieve at the end of the vapor generating chamber, substantially as specified.

## 530,886. GRAIN-BINDER. JOHN S. DAVIS, Cleveland, Ohio. Filed May 28, 1890. Serial No. 353,417. (No model.)



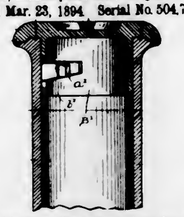
*Claim.*—1. The combination of the arm F, at the waist of the bundle mounted on a shaft located on one side of the binding recep-



tacle, the rock shaft having retainer prongs located on the opposite side of the receptacle, the hooked sleeve N, secured on said shaft, the dog O, engaging the hook on the sleeve having the tail which extends over the needle shaft, and a lug or wiper on the needle shaft to trip the dog substantially as set forth.

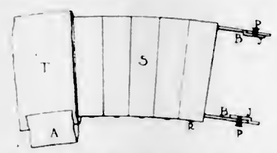
2. The combination of the binding receptacle, the trip float, the retainer forming the outer wall of the receptacle consisting of a rock shaft with prongs and a hooked sleeve and the dog O by means of which the retainer is locked, the slotted quadrant on the sleeve to permit of adjusting the prongs of the retainer relatively to the receptacle as set forth.

## 530,887. STREET-BOX FOR GAS OR WATER PIPES. FREDERICK A. W. DAVIS, Indianapolis, Ind., assignor to Elizabeth K. Davis, same place. Filed Mar. 23, 1894. Serial No. 504,786. (No model.)



*Claim.*—The combination, in a street box for gas or water pipes, with the box proper having an annular flange *a*, and a projection or lug *a'*, of the cap B having a central tubular projection with a T-shaped slot therein, and also provided with an annular flange *b* surrounding the flange *a* when in place, the lines of division between the cap B and the upper end of the box A on which it rests being substantially horizontal, substantially as shown and described.

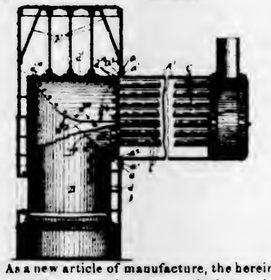
## 530,888. STEEL-SPRING TIRE. JOHN S. EDDY, Denver, Colo., assignor of one-half to Milton Smith, same place. Filed June 2, 1894. Serial No. 513,288. (No model.)



*Claim.*—1. A tire for bicycles and other vehicles, consisting in combination, of a series of independent, circular, flat metal springs arranged in contact, bars B, uniting said springs above and below, said springs fastened independently to said bars, the ends of each bar connected by a screw P, the whole having an outside rubber covering, T, substantially as described.

2. A tire for bicycles and other vehicles, consisting in combination, of a series of independent, circular flat metal spring rings arranged in contact, cross bars B, uniting said circular rings at opposite points above and below, each of said circular rings independently secured to said bars, the whole having a rubber covering, T, substantially as described.

## 530,889. STEAM-GENERATOR. PATRICK FITZGIBBONS, Oswego, N. Y., assignor to the Fitzgibbons Boiler Company, same place. Filed July 21, 1894. Serial No. 518,177. (No model.)



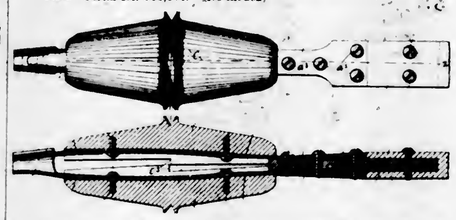
*Claim.*—1. As a new article of manufacture, the herein described combustion chamber, the same being composed of an upright shell of rounding cross section having its top edge inclined downwardly from one side to its opposite side, and a curved cut-out standing in a vertical plane and extending downwardly from the lower end of said edge, a cap of rounding cross section arranged above the upper extremity of said upright shell and having its lower edge lapped with the top edge of the upright shell and formed of substantially the same contour, the end of said cap of greatest width having its edge aligned with the downwardly extending cut-out of the upright shell, and a substantially flat vertical flue sheet secured to the latter end of the cap and to the adjacent edge of the cut-out, substantially as and for the purpose described.

2. As a new article of manufacture, the herein described combustion chamber, the same being composed of an upright shell of rounding cross section having its top edge inclined downwardly on a curved line from one side to its opposite side and provided with an inwardly extending shoulder at the upper portion of the top edge and a curved cut-out standing in a vertical plane and extending downwardly from the lower end of said edge, an outwardly extending shoulder at the edge of said cut-out, a cap of rounding cross section arranged above the upper extremity of said upright shell and having its edges secured to and formed of substantially the same contour, as those of the shell the end of said cap of greatest width having its edge aligned with the shoulder at the outer edge of the downwardly extending cut-out of the upright shell, and a substantially flat vertical flue sheet secured to the latter end of the cap and to the adjacent shoulder of the upright shell, substantially as and for the purpose described.

3. As a new article of manufacture, the herein described combustion chamber, the same being composed of an upright cylindrical shell having at one side two integral flaps standing in a curved plane at right angles to the axis of the shell with their outer edges forming a downwardly-extending curved cut-out, the upper edges of said flaps being approximately horizontal, then merging into curves, and then extending on oblique lines to the opposite side and the upper corner of the shell, a cap of rounding cross section arranged above and having its edges secured to the upper end of said shell and to the upper edges of the flaps with its end of greatest width standing in the vertical plane of the ends of the flaps, and a flue sheet arranged within this plane and secured to the cap and the flaps, substantially as and for the purpose set forth.

4. In a steam generator, the combination with an upright water-containing shell, a substantially horizontal extension therefrom, flues arranged longitudinally within the extension, and a smoke box at the remote end of said extension one side of which constitutes a flue sheet for this end of the flues: of the herein described combustion chamber consisting of an upright shell arranged concentrically within the water-containing shell and having at one side two integral flaps standing in a curved plane at right angles to the axis of the shell with their outer edges forming a downwardly-extending curved cut-out, the upper edges of said flaps being approximately horizontal, then merging into curves, and then extending on oblique lines to the opposite side and the upper corner of the shell and there having an inwardly projecting flange, a cap of rounding cross section arranged above and having its edges secured to the flange at the upper end of said shell and to the upper edges of the flaps with its end of greatest width standing in the vertical plane of the ends of the flaps, and a flue sheet arranged within this plane opposite said horizontal extension of the water containing shell and secured to the cap and the flaps, the inner ends of the flues being secured to this sheet, substantially as and for the purpose set forth.

## 530,890. FLUE-CLEANER. PATRICK FITZGIBBONS, Oswego, N. Y., assignor to the Fitzgibbons Boiler Company, same place. Filed July 21, 1894. Serial No. 518,178. (No model.)



*Claim.*—1. In a flue cleaner, the combination of a shank, spring sections having corresponding extremities fixed to the shank and their opposite extremities separated and independently movable, engaging sections fixed to the spring sections and having their adjacent edges provided with lateral interlocking shoulders arranged one in advance of the other and their outer faces provided with transverse rounding engaging shoulders, a projecting socket secured to the free end of one of the engaging sections, and a projection or spur secured to the free end of the other engaging section and movable within the socket, substantially as described.

2. In a flue cleaner, the combination of a shank, spring sections having corresponding extremities removably attached to the shank, and their opposite extremities independently movable, and engaging sections fixed to the spring sections and having their outer faces provided with rounding engaging shoulders and their inner faces provided with grooves extending from end to end for receiving the adjacent portions of the spring sections and formed of substantially the same width as said portions, a projecting socket secured to the free end of one of the engaging sections, and a projection or spur secured to the free end of the other engaging section and movable within the socket, substantially as set forth.

3. In a flue cleaner, the combination of a shank, spring sections having corresponding extremities fixed to the shank and their opposite extremities separated and independently movable, and engaging sections removably attached to the outer faces of the spring sections and extending laterally beyond the same, said engaging sections having their adjacent edges at either side of the springs provided with lateral interlocking shoulders arranged one in advance of the other and their outer faces provided with transverse rounding engaging shoulders, substantially as described.

4. In a flue cleaner, the combination of a shank, spring sections having corresponding extremities removably attached to the shank, and their opposite extremities independently movable, engaging sections fixed to the spring sections and having their adjacent edges provided with lateral interlocking shoulders arranged one in advance of the other, their outer faces provided with rounding engaging shoulders and their inner faces provided with grooves extending from end to end for receiving the adjacent portions of the spring sections and formed of substantially the same width as said portions, a projecting socket secured to the free end of one of the engaging sections, and a projection or spur secured to the free end of the other engaging section and movable within the socket, substantially as set forth.

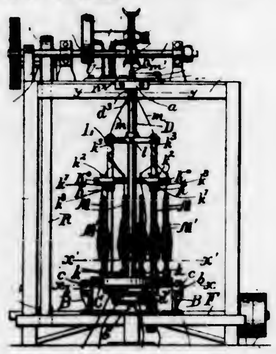
5. In a flue cleaner, the combination of a shank, spring sections having corresponding extremities fixed to the shank and their opposite extremities separated and independently movable, and engaging sections secured to the spring sections and having their central portions formed of greater thickness than their extremities, said sections having their inner faces formed with recesses or grooves for receiving the spring sections, their adjacent edges provided with interlocking shoulders and their outer faces provided with rounding shoulders, substantially as and for the purpose set forth.

6. In a flue cleaner, the combination of a shank, spring sections having corresponding extremities removably attached to the shank and their opposite extremities independently movable, engaging sections fixed to the spring sections and having their outer faces provided with rounding engaging shoulders, a projecting socket secured to the free end of one of the engaging sections, and a projection or spur secured to the free end of the other engaging section and movable within the socket, substantially as set forth.

7. In a flue cleaner, the combination of a shank, spring sections having corresponding extremities fixed to the shank and their opposite extremities separated and independently movable, engaging sections secured to the spring sections and having their outer faces provided with rounding shoulders, a projecting split socket secured to one of the sections and formed with a yielding wall, and a projection or spur secured to the other section and movable into and out of said socket and into and out of engagement with the yielding wall thereof, substantially as and for the purpose specified.

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**530,891. TWINE-MACHINE.** GEORGE FLORENCE, Newman, Ga., assignor of one-half to R. D. Cole, Sr., same place. Filed July 9, 1894. Serial No. 516,994. (No model.)



*Claim.*—1. In a machine of the character described, the combination with a layer spindle and means for rotating the same, of a bearing disk or spider fast to said layer spindle, a friction ring exterior to and inclosing said layer spindle, a reversible plate pivotally attached near one end to said disk or spider and provided with a spindle journal bearing therein in the center thereof, a former spindle journaled in said bearing, and a whirl carried by said former spindle and adapted to bear against the inner face of said ring when the free end of said pivoted plate is swung outward by centrifugal force, substantially as described.

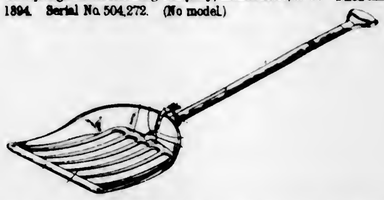
2. In a machine of the character described, the combination with a layer spindle and means for rotating the same of a bearing disk or spider fast to said layer spindle, a friction ring exterior to and inclosing said layer spindle, a reversible plate pivotally attached near one end to said disk or spider and provided with a spindle journal bearing in the center thereof, a former spindle journaled in said bearing, and a whirl carried by said former spindle and adapted to bear against the inner face of said ring when said pivoted plate is swung outward by centrifugal force, bobbin supports carried by the layer spindle and adapted to move in circles about the axis of said whirl and to hold said bobbins fast thereon, and means for drawing the yarn from the top of the bobbins without causing the same to revolve about their axes, substantially as described.

3. In a machine of the character described, the combination with a layer spindle and means for rotating the same of a bearing disk or spider fast to said layer spindle, a friction ring exterior to and inclosing said layer spindle, a plurality of reversible plates $H^2$ pivotally attached near one end to said disk or spider and each provided with a spindle journal bearing $A^4$ and an oil cup $A^6$ in the center thereof, former spindles journaled in said bearings, and whirls carried by said former spindles and adapted to bear against the inner face of said ring when the free ends of said pivoted plates are swung outward by centrifugal force, substantially as described.

4. In a machine for making twine or cord, the combination with a hollow layer spindle and means for driving the same, of a top spider and a spindle step spider fast to said layer spindle; reversible plates each having a spindle step in the center thereof pivoted near one end on said spindle step spider and adapted to have their free end swing outward, due to centrifugal force, a former spindle journaled in each of said pivoted plates, and in said top spider, a whirl fast to said former spindle, tension plates fast to said former spindles, tension wires on said plates, and an adjustable clamp tube at the top of said layer spindle; a friction ring exterior to said whirl and adapted to be borne against by said whirl when the said pivoted plates swing outward, a bobbin support holder rotating with said whirl, bobbin supports mounted in said holder, and adapted to hold the bobbins against revolving thereon, and a stretcher swift for taking the cord from the layer spindle, substantially as described.

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**530,892. FORK.** MYRON H. FULLER, Phelps, assignor to the Clifton Springs Manufacturing Company, Manchester, N. Y. Filed Mar. 19, 1894. Serial No. 504,272. (No model.)



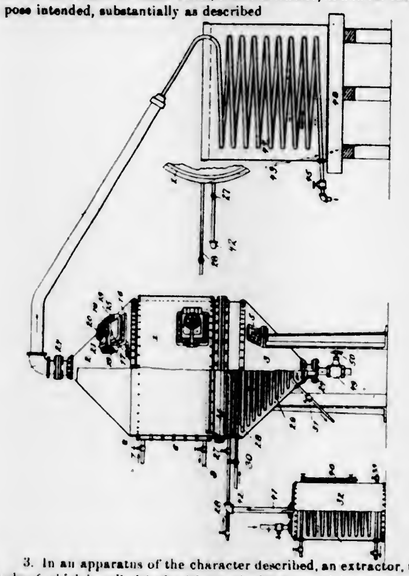
*Claim.*—A removable shovel blade for forks, consisting of a front portion adapted for the reception of the points of the tines, and having side and rear plates rigidly secured thereto, said side and rear plates being disposed approximately vertical and extending from the sides of the tines upwardly therefrom, the lower edge of the rear plate being adapted to engage the handle of the fork, and an arm secured to the plate adjacent to the handle and projecting rearwardly from the plate, said arm being connected to the handle, whereby the rear plate is drawn down tightly against the handle and made to bind thereagainst, substantially as described.

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**530,893. EXTRACTING APPARATUS.** CHARLES F. HOOD, Pittsburg, Pa., assignor to the Pittsburg Chemical Company, of Pennsylvania. Filed Sept. 18, 1894. Serial No. 523,366. (No model.)

*Claim.*—1. In an apparatus of the character described, a cylindrical extractor provided with an interior foraminous supporting tray for material under treatment, vapor, air and steam coils, arranged one above the other, under the tray, in combination with an exterior vapor generator, connected to inlets of the extractor, and a condenser connected to outlets therefrom, substantially as described.

2. In an apparatus of the character described, an extractor surrounded with a steam jacket; provided interiorly with a foraminous supporting tray, a vapor coil, beneath the tray, comprised of a single perforated convolute tube, connected to an outer generator; an air tube, of like construction, under the vapor coil connected to an outer supply source, and an imperforate steam coil, connected to an outer generator; each of said coils provided with stop cocks whereby the flow of air, vapor, and steam, may be independently regulated, in combination with a vapor generator, connected to inlet tubes, and a condenser connected to outlet tubes, of the extractor, as and for the purpose intended, substantially as described

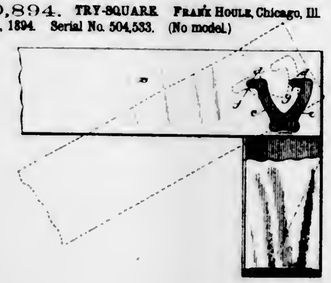


3. In an apparatus of the character described, an extractor, the body of which is cylindrical, with a conical top to which is connected an outlet tube extending therefrom to a condenser, the extractor having an inverted conical bottom provided with a drain cock, an interior foraminous tray, within the main chamber of the extractor, below which are perforated convolute air and vapor coils having underneath an imperforate-spiral steam coil each of said coils connected with external sources of supply, substantially as described.

4. In an apparatus of the character described, an extractor having an upper charging door and lower emptying door, for supply of material to be treated, and withdrawal of residuum thereof, said extractor having inlet air, vapor and steam tubes connected separately to the main chamber of the extractor, each tube provided with a stop-cock to independently regulate flow respectively therethrough, from external sources of supply, into the extractor which is provided near its lower end with a foraminous tray for support of material to be treated, under which are arranged perforated convolute tubes, for discharge of air and vapor, having a lower spiral imperforate steam coil, all in combination with an outer condenser having a tube extending therefrom and coupled to upper end of the extractor, as and for the purpose intended, substantially as described.

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**530,894. TRY-SQUARE.** FRANK HOULE, Chicago, Ill. Filed Mar. 21, 1894. Serial No. 504,533. (No model.)

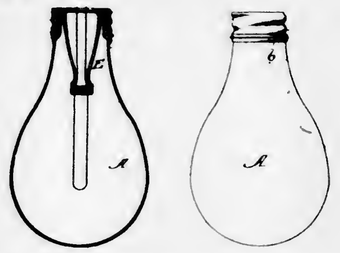


*Claim.*—The try square consisting of a slotted handle, and a blade in said slot, said blade having a furcated opening, a fixed pin passing through the handle and one branch of the opening in the blade, and a bolt passing through the handle and the other branch of the opening in the blade, said bolt having a tightening nut, substantially as described.

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**530,895. INCANDESCENT ELECTRIC LAMP.** EDWARD KAYE, Monaco, Pa. Filed Feb. 4, 1893. Renewed Nov. 10, 1894. Serial No. 528,490. (No model.)



*Claim.*—1. In an incandescent electric lamp, the combination of a bulb having a threaded neck and shoulder, and a stopple or plug having a flange, leading in wires sealed in said plug and a filament connected to said wires, with a cap screwing on said neck and gaskets fitting against the shoulder and the end of the neck, said cap being constructed and adapted to fit into a lamp socket, substantially as described.

2. An incandescent electric lamp, having a threaded neck, in combination with a removable plug or stopple and a cap threaded interiorly to screw onto said neck and threaded exteriorly to screw into a lamp socket, substantially as described.

3. An incandescent electric lamp, comprising a bulb, a plug or stopple having leading in wires sealed therein, and connected to the incandescing filament, and a cap or ferrule securing said plug and bulb together, and constructed and adapted to fit into a lamp socket and forming the connection between the lamp and the socket, to which socket it is mechanically connected or coupled, substantially as described.

4. An incandescent electric lamp, comprising a bulb having a neck, a plug or stopple inserted in said neck and formed with a flange at its base, leading in wires sealed in said plug or stopple and connected to the incandescing filament and a cap or ferrule which covers said flange and connects the bulb and plug together, said cap or ferrule being electrically connected to the filament and constructed and adapted to fit into a lamp socket to which it is mechanically connected or coupled.

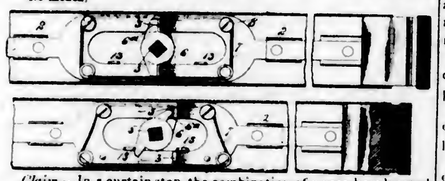
5. An incandescent electric lamp, comprising a bulb having a neck, a tubular plug or stopple inserted in said neck and formed with an outwardly projecting flange, leading in wire inserted and sealed in said plug and connected to an incandescing filament and a cap or ferrule covering said flange and connecting the bulb and plug together, said cap or ferrule being electrically connected to the filament and adapted to fit into a lamp socket and to be mechanically coupled or interlocked therewith.

6. An incandescent electric lamp, comprising a bulb having a neck, a plug or stopple inserted in said neck, and having a widened base, leading in wires sealed in said plug and connected to an incandescent filament, and a metallic cap or ferrule secured to said neck and connecting said bulb and plug together, said cap or ferrule being electrically connected to the filament and constructed and adapted to fit into a lamp socket and to be mechanically coupled or interlocked therewith.

7. An incandescent electric lamp, comprising a bulb having a neck, a plug or stopple inserted in said neck and detachable therefrom, leading in wires sealed in said plug and connected to an incandescing filament, and a cap or ferrule covering the base of said plug and detachably secured to the neck of the bulb, said cap or ferrule being electrically connected to the filament and constructed and adapted to fit into a lamp socket and electrically connect the filament and socket and provided with means for mechanically coupling or interlocking the cap and socket together.

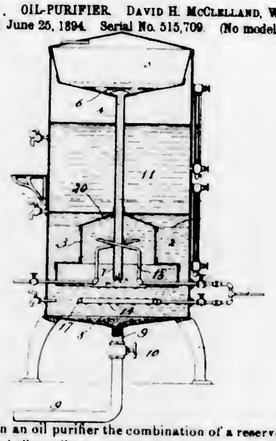
8. An incandescent electric lamp, comprising a bulb having a screw threaded neck, a screw threaded metallic ferrule fitted on said neck, and a hollow glass plug or stopple fitting within said neck and held in place by said ferrule, said plug or stopple having one end open and the other end closed and holding the leading in wires, substantially as described.

530,896. CURTAIN-STOP. LEIGH MOYLE, St. Louis, Mo., assignor to M. M. Buck & Co., same place. Filed June 30, 1894. Serial No. 516,149. (No model.)



*Claim.*—In a curtain stop, the combination of a case, bars located in the case and having bifurcated heads on their inner ends, springs for forcing the bars in an outwardly direction, and means for retracting the bars, consisting of a shaft traversing the heads of the bars, a hub on the shaft, ears formed on the hub, and adapted to engage with lugs on the heads of the bars, and means for preventing excessive retraction of the bars, consisting of lugs 13 on the heads of the bars, with which the ears on said hub engage; substantially as and for the purpose set forth.

530,897. OIL-PURIFIER. DAVID H. MCCLELLAND, Washington, D. C. Filed June 25, 1894. Serial No. 515,709. (No model.)



*Claim.*—1. In an oil purifier the combination of a reservoir for a purifying liquid, a bell or oil receptacle therein having an opening or openings through which the oil may pass into said liquid at a point below the surface of the latter, a pipe for supplying oil to said receptacle, a screen situated in said reservoir in the path of the oil, and means above the screen for drawing off the purified oil, substantially as set forth.

2. In an oil purifier the combination in a reservoir, of a bell open at its under side and situated in the lower portion of said reservoir, and a transverse obstructing screen situated above the point or points of exit from the bell, means for supplying the oil to be purified to said bell, and means above the screen for drawing off the oil, substantially as set forth.

3. In an oil purifier the combination in a suitable reservoir, of a bell adapted to be submerged beneath the purifying liquid, a transverse obstructing screen situated at or above the point or points of exit from said bell, means for washing off the under side of said screen, and a pipe for supplying oil to the bell, substantially as set forth.

4. In an oil purifier the combination of a reservoir adapted to contain a purifying liquid, a bell open at its under side situated in said reservoir and having suitable oil-supply devices, a transverse obstructing screen connecting said bell with the walls of the reservoir and means above the screen for drawing off the oil, substantially as set forth.

5. The combination with the reservoir, of the bell open at its under side, the screen 12 above the lower edge of said bell, the jet nozzles below the screen, and means for supplying the latter with a vapor or liquid, substantially as set forth.

6. The combination with the reservoir, of the bell open at its under side, the supply pipe thereon, and the extension of the latter having the perforation 20 within the bell, for the purposes set forth.

530,898. MANUFACTURE OF WOOD PULP. EDWARD NOLON, Waunau, Wis., assignor to Charles M. Greene, Highland Park, Ill. Filed June 9, 1894. Serial No. 514,010. (No specimens.)

*Claim.*—1. The herein described method, which consists in subjecting wood fibers to the combined action of steam, kerosene, salt and saltpeter, grinding said fibers and forming the same into a pulp, and then impregnating said pulp while containing a percentage of moisture with rosin, glue and asphaltum, substantially as described.

2. The herein described composition of matter for the treatment of wood pulp, comprising dissolved glue, disintegrated rosin and asphaltum, substantially as described.

3. The herein described composition of matter for the treatment of wood pulp, comprising glue, linseed oil, rosin, turpentine and asphaltum, substantially as described.

4. The herein described composition of matter for the treatment of wood pulp, comprising glue, linseed oil, rosin, turpentine, asphaltum, coloring matter and white or red lead, substantially as described.

530,899. BICYCLE-PEDAL. ALBERT PERKINS, Chicopee Falls, Mass., assignor to the Lamb Manufacturing Company, same place. Filed Sept. 14, 1894. Serial No. 523,031. (No model.)

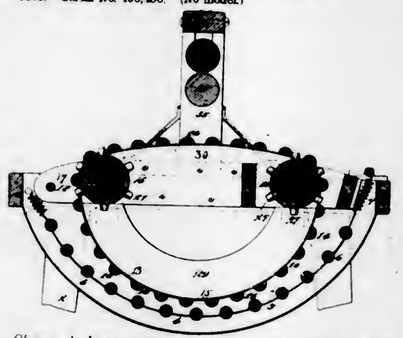


*Claim.*—1. The combination with a pedal frame consisting of the end plates and the large tubular side bars forming therewith a practically one-piece frame, of the sidebar-inclosing sleeve made up of sheet steel sections having their margins bent outward in radial planes and united by rivets to form the treads of the pedal.

2. The combination with the practically one-piece frame composed of the end plates and the tubular side bars, of the sleeve sections inclosing said sidebars and having their marginal portions bent outward, elastic pads placed between the members of opposite pairs of said portions, and rivets uniting said members and binding the pad in place to receive the pressure of the foot.

3. The combination with the rigid frame made up of end plates and tubular sidebars, of revoluble sleeves inclosing the sidebars, respectively, and made up of sections having their lateral margins bent outward and riveted together, to form the foot plate of the pedal and means for locking the sleeves, when in different positions, against rotation upon the tubes.

530,900. WASHING-MACHINE. ULRICH REIFFER, St. Louis, Mo., assignor of one-half to Gottlieb Rupp, same place. Filed Nov. 9, 1893. Serial No. 490,450. (No model.)

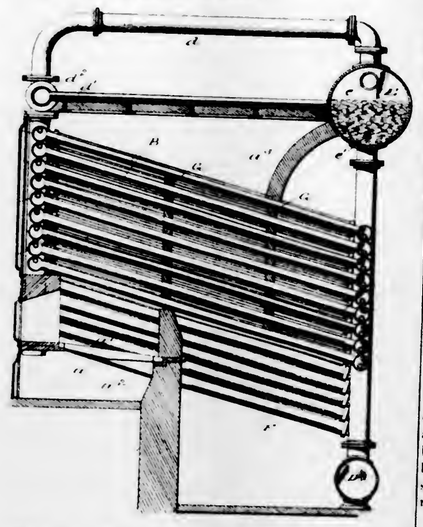


*Claim.*—1. In a washing machine, the combination of the frame supporting the body 3, an adjustable flexible bottom 4 supported in the body, a frame pivoted to said body, rollers journaled in the pivoted frame, a rubbing band or belt mounted upon the rollers which are journaled in the frame, semi-circular strips beneath which the rubbing band or belt passes sprocket-wheels keyed to the journals of the rollers, a sprocket chain passing around said sprocket-wheels, and a crank for operating one of the sprocket-wheels, substantially as and for the purpose set forth.

2. In a washing machine, the combination of a frame, a body 3 secured to the frame, a bottom 4 located within the body, a rubbing band or belt 13, rollers upon which the rubbing band or belt is mounted, hinged strips 17 in which said rollers are journaled, semi-circular strips 29 beneath which the band or belt passes, and strips 30 over which the band or belt passes, substantially as and for the purpose set forth.



530,901. STEAM-BOILER. ALBERT F. L. REUSSNER, Jersey City, N. J., assignor of one-half to William C. Barr, same place. Filed Feb. 7, 1894. Serial No. 499,366. (No model.)



*Claim.*—1. A boiler having a series of longitudinally-extended tubes inclined from front to rear, a forward, upper series of transverse horizontal headers, a rearward, lower series of transverse horizontal headers, said tubes opening into said headers, cold water being supplied to said rearward, lower series of headers at the ends thereof, and deflector plates or bridges, substantially as set forth, whereby the products of combustion are caused to pass out over the top of said rearward, lower series of headers, as stated.

2. A boiler having a series of longitudinally extended tubes inclined from front to rear, a forward, upper series of transverse horizontal headers, a rearward, lower series of transverse longitudinal headers, said tubes opening into said headers, forward and rearward sets of perpendicular stand-pipes into which both of said series of headers open at their ends, said rearward sets of stand-pipes being designed to supply cold water to said lower series of headers at the ends thereof, and the plates or deflectors through which said inclined tubes are passed, substantially as set forth, whereby the products of combustion are caused to pass out over the top of said rearward, lower series of headers and between said rearward sets of stand-pipes, substantially as set forth.

3. In a boiler, the combination with the longitudinally disposed inclined tubes and two sets of stand-pipes connected thereto, of the steam drum to the under side of which one of said sets of stand-pipes is connected, the outer pipes connecting the other set of stand-pipes to said drum, and the series of tubes extending from said latter stand-pipes to said drum below the water-line therein, substantially as set forth.

4. A boiler having a series of inclined tubes, horizontally disposed headers to which said tubes are connected, two sets of stand-pipes into which said horizontal headers open, and a series of inclined tubes connecting the opposite stand-pipes of each of said sets, substantially as set forth.

5. A boiler having a series of inclined tubes, two sets of stand-pipes, two sets of headers, the headers of each set being arranged one upon the other and having the said inclined tubes opening thereinto, and forming water-backs, said headers opening at their ends into said stand-pipes, and the two side series of tubes connecting the opposite stand-pipes of said sets, the tubes of each series being arranged one upon the other, forming side water-walls or backs, substantially as set forth.

6. The herein-described improved boiler consisting of a series of inclined staggered tubes, two series of horizontal headers into which said tubes open, said headers resting one upon the other, two sets of perpendicular stand-pipes into which said headers open at their ends, forming up-takes and down-takes, the series of inclined tubes connecting the opposite stand-pipes of said sets of stand-pipes, the steam-drum to which said down-take stand-pipes are connected, the steam-pipes and the series of tubes connecting said up-take stand-pipes to said drum, substantially as set forth.

7. In a boiler, the combination with the casing, of a series of longitudinally disposed water tubes, a steam-drum located outside of said casing, perpendicular up-takes leading from said water tubes through said casing and having direct connections outside thereof with said steam-drum, one of said connections being above the other, the lower connection leading into the water space of said drum, and the other into the upper or steam space thereof, whereby the steam and water are separated before entering the steam-drum, substantially as set forth.

8. In a boiler, the combination with the casing, of a series of longitudinally disposed water tubes, a steam-drum located outside of said casing, perpendicular stand-pipes with which said water tubes communicate at their ends, upper pipes located outside of said casing connecting the forward stand-pipes or up-takes with the upper portion or steam space of said steam-drum, and lower water tubes also located outside of said casing leading from said up-take stand-pipes to said drum beneath the water-line therein, substantially as set forth.

530,902. RUNNING AND CARRYING CABLE. JOHN P. ROE, London, England, assignor to the Ropeways Syndicate, Limited, same place. Filed Jan. 3, 1894. Serial No. 498,443. (No model.)



*Claim.*—1. Apparatus for transporting loads by means of a traveling rope, comprising a frame, grooved blocks carried thereby and adapted to take upon a traveling rope, and projections carried by said blocks and projecting into the grooves therein, the portion of each block carrying a projection being capable of movement to and from said rope while the remaining portion of said block bears upon said rope substantially as described for the purpose specified.

2. In apparatus for transporting loads by means of traveling ropes, a block formed with a groove or recess of bent form in longitudinal section and having one or more projecting parts adapted to engage with the helically twisted strands of a cable substantially as herein described for the purpose specified.

3. In apparatus for transporting loads by means of traveling ropes, the combination of a frame or backbone, and a block formed with a groove or recess of wedge shape in cross section and of bent form in longitudinal section so as to be capable of rocking or turning on the cable to which it is applied, substantially as herein described for the purpose specified.

4. Apparatus for transporting loads by means of traveling ropes, comprising a frame, and a block adjustably connected therewith and having one or more projecting parts adapted to engage with the helically twisted strands of a rope, the groove in said block being doubly inclined in the direction of its length, substantially as herein described for the purpose specified.

5. Apparatus for transporting loads by means of traveling ropes comprising a frame, front and rear blocks each connected by a pin and slot connection with said frame and formed with a groove of bent form in the direction of its length, and oppositely arranged projections each adapted to engage with a helically twisted strand of a rope when moved longitudinally thereon, one of said projections being located in the forward grooved portion of said front block, and the other in the rearward grooved portion of said rear block substantially as herein described for the purpose specified.

6. In apparatus for transporting loads by means of traveling ropes, a block formed with a groove to fit over a rope and provided with a projection formed with a flat or curved vertical active face inclined to a vertical plane passing longitudinally through the groove in said block and adapted to engage the side of a helically twisted strand of a rope substantially as herein described for the purpose specified.

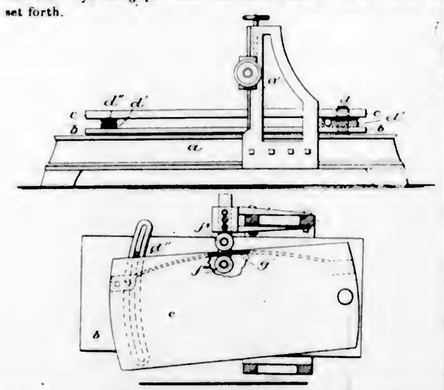
530,903. SHAPING ATTACHMENT FOR STONE-PLANERS. HOMER W. RIGHTMYER, Ulysses, N. Y. Filed Nov. 11, 1893. Serial No. 490,720. (No model.)

*Claim.*—1. In a stone planing machine, the combination of the reciprocating bed *b*; the bed or platen *c*, pivoted thereunto by the stud *d*; the guide patterns *g*, attached to the platen *c*; and the wheels or rollers $f'''$ $f^4$, mounted on the arm $f'$, secured to the frame of the machine; the said parts being combined and arranged, substantially, as set forth.

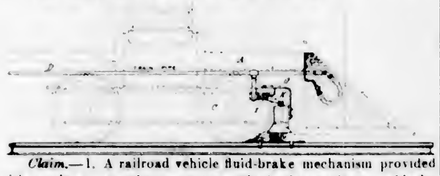
2. In a stone planing machine, the described reciprocating bed *b*; platen *c*, pivoted to the bed *b*, by the stud *d*; the guide patterns *g*, attached to the platen *c*; the guide-wheels $f'''$ $f^4$, fast to the arm $f'$; and ways $d'$ $d''$, between the bed *b* and the platen *c*, combined and operating as set forth.

3. In a stone planing machine, the combined parts; *b* the reciprocating machine bed; *c* the platen, pivoted about the stud *d*; the guide patterns *g*, attached to the platen *c*; and the rollers $f'''$ $f^4$

mounted on the arm $f$; the ways $d$ $d'$, on which the platen rests the said ways being provided with anti-friction rollers or balls, as set forth.



530,904. AIR-BRAKE MECHANISM. EDWARD G. SHORTT, Carthage, assignor to Charles Goodwin Emery, trustee, New York, N. Y. Filed Mar. 9, 1893. Serial No. 465,243. (No model.)



*Claim.*—1. A railroad vehicle fluid-brake mechanism provided with a valve arranged to move to set the brakes, and a movable device for holding the valve closed and adapted under the force of an explosion to release the said valve.

2. In combination, with a railroad car or locomotive fluid-brake mechanism, a valve in said brake mechanism capable of movement to effect the application of the brakes, and mechanism controlling said valve and positioned near a wheel of the car and adapted to be actuated to release the said valve by the action of an explosion effected by the wheel.

3. In combination with a brake train-pipe a valve normally closing said pipe and operative to effect a brake-application reduction of pressure, valve releasing mechanism consisting of a disk or piston connected with said valve, and a hood or bell inclosing said piston and acting to direct the force of a concussion upon the same.

4. In combination, the train pipe provided with the valve F, a cam holding said valve closed, and a disk or plate, as piston M, connected to said cam and adapted to be acted upon by the force of an explosion and to thereby release said valve, as and for the purpose set forth.

530,905. THROTTLE-ACTUATING MECHANISM FOR LOCOMOTIVES. EDWARD G. SHORTT, Carthage, assignor to Charles Goodwin Emery, trustee, New York, N. Y. Filed Apr. 6, 1893. Serial No. 469,266. (No model.)

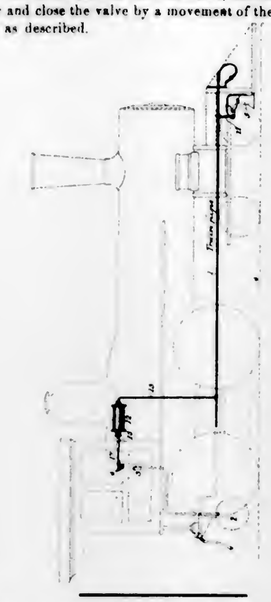
*Claim.*—1. In combination with the throttle lever of a locomotive or the mechanism whereby the valve supplying the cylinders is operated, fluid-pressure apparatus connected with said lever and adapted to operate the same, and mechanism controlling said fluid pressure apparatus and operating by the force of an explosion to set the same in action, for the purpose set forth.

2. In combination with the throttle valve of a locomotive, mechanism located near a wheel of the locomotive and adapted to be brought into action by an explosion effected thereby, and throttle valve mechanism controlled by said explosion mechanism whereby the former is operated by the latter, substantially as described.

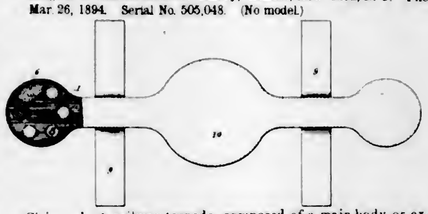
3. In combination with the throttle valve actuating mechanism of a locomotive, a fluid pressure apparatus operatively connected thereto, and a torpedo apparatus located adjacent one of the wheels of the locomotive and adapted under the force of an explosion to bring said fluid pressure apparatus into action, substantially as described.

4. In combination with the throttle lever or valve of a locomotive, a cylinder and piston for operating the same which is connected with a fluid brake system, a torpedo apparatus also connected with said brake system and adapted under the force of an explosion to bring the same into operation, substantially as described.

5. In combination, in a mechanism for operating the throttle valve of a locomotive, a lever connected to and for actuating said valve, a fluid-pressure cylinder and piston connected to said lever and for operating said valve through said lever, and connections between the said piston and the said lever permitting the independent opening and closing of the lever and the throttle valve, but adapted to engage said lever and close the valve by a movement of the said piston, substantially as described.



530,906. RAILWAY-TORPEDO. EDWARD G. SHORTT, Carthage, assignor to Charles Goodwin Emery, trustee, New York, N. Y. Filed Mar. 26, 1894. Serial No. 505,048. (No model.)



*Claim.*—1. A railway torpedo, composed of a main body or explosive part, and of an igniting duct or passage extending from such main part to a distance therefrom, whereby when such duct is ignited at its outer end the main explosion will occur at a distance therefrom, for the purpose set forth.

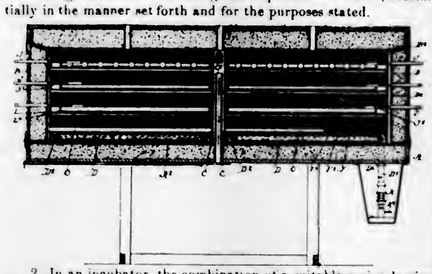
2. A railway torpedo composed of a main or body part, as disk 2, and of an igniting duct or passage 4 extending to a definite distance from said body part, substantially as and for the purpose set forth.

3. A railway torpedo composed of a main or body part, as disk 2, and of one or more ducts 4 extending a definite distance from said body part and provided at their outer ends with percussion cap nipples or like igniting devices, substantially as and for the purpose set forth.

530,907. INCUBATOR. JOHN E. STANLEY, Des Moines, Iowa, assignor, by direct and mesne assignments, to G. H. Huttonlocher and J. S. Gilcrest, same place. Filed July 20, 1892. Renewed Aug. 30, 1894. Serial No. 521,754. (No model.)

*Claim.*—1. In an incubator, the combination of a suitable protecting case, having a door at each end, a plurality of tracks leading from both ends to the interior and arranged one above the other, a wire netting or its equivalent fixed to the interior of the incubator and extended around the sides of each end portion, at a slight distance therefrom and through the central portion thereof to produce a chamber for the circulation of air around the drawers, and to prevent the young chicks from falling off, a water tank placed on the bottom of each end of the device, means for heating said water tank, and ventilating tubes extending from the bottom of the incubator upwardly to the approximate top portion of the interior of the incubator, and ventilating tubes extended through the top of the incubator, substantially in the manner set forth and for the purposes stated.





2. In an incubator, the combination of a suitable casing having a door at each end, a plurality of tracks leading from both ends to the interior and arranged one above the other, a wire netting or its equivalent fixed to the interior of the incubator and extended around the sides of each end portion, at a slight distance therefrom and through the central portion thereof to produce a chamber for the circulation of air around the drawers, and to prevent the young chicks from falling off, a water tank placed on the bottom of each end of the device, a pipe coiled within each tank and having its one end extending through the bottom of the incubator and its other end through the side and then upwardly, a pipe extending upwardly through the bottom of the incubator into proximity to the top of its interior between the central wire netting and a plurality of ventilating tubes extended through the top of the incubator, and means for closing the said tubes, substantially in the manner set forth and for the purposes stated.

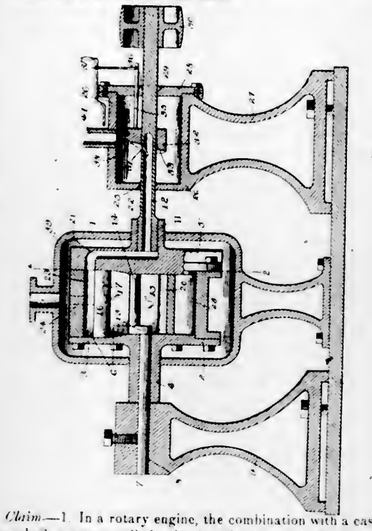
3. In an incubator the combination of the following elements, to wit: a casing composed of an outer wall A and an inner wall $A^2$ with a nonconductor of heat between them, the doors at each end thereof composed of the parts B and $B^2$ and having the flange $B^3$, the vertical strips $B^4$ secured to the inner walls of the incubator for the purposes stated, the tracks $B^5$ secured to the said vertical strips and extended longitudinally of the incubator, the wire netting C extending around the sides and across the central portion of each end as set forth, the ventilating tubes $C^2$ extending through the bottom portion of the casing, the tubes $C^3$ and $C^4$ extending through the top of the same, the water tanks D resting on the bottom of the interior of the incubator, the coiled pipes $D^2$ within said tanks and opening below the casing to admit heat to the tanks, the water jackets $D^3$ surrounding portions of said pipes and the lamps K all arranged and combined substantially as and for the purposes stated.

4. An improved incubator composed of the following elements; a suitable double walled casing having a door at each end, a plurality of tracks extending from the ends to the central portion of the incubator and arranged one above the other, suitable ventilating tubes to supply fresh air into the incubator, a hot water tank located in the bottom of each end, a coiled pipe within each tank reaching to the bottom of the incubator through the tank and out at its side, a lamp beneath the lower end of each of the said pipes, a plurality of egg drawers arranged to be placed in each end and located above the other, means substantially as shown for automatically regulating the heat of the interior of the incubator, and the tubes extended through the sides of the incubator whereby a thermometer may be admitted into the egg drawers, arrangd and combined substantially as set forth.

5. An improved incubator comprising the casing composed of the outer portion A and the inner portion $A^2$ with a nonconducting material between them, a door at each end of said casing composed of the parts B and $B^2$ and having a flange $B^3$, the wire nettings C C, the ventilating tubes $C^2$ $C^3$ and $C^4$, the tank D having the coiled pipe $D^2$ arranged therein, the water containing jacket $D^3$ surrounding portions of the pipe $D^2$, the branch pipe $D^4$, the damper $H^2$ adapted to enter the pipe $D^2$ and cut off the supply of heat in the incubator, and means for operating the said damper, a plurality of tubes J extended through the sides of the incubator in proximity to each egg drawer and a thermometer $J^2$ fixed to the rod $J^3$ and a stopper $J^4$ adapted to be extended through the tubes J into the incubator, a lamp K having a tube $K^2$ arranged therein as set forth, an egg containing drawer composed of the part L and the part $L^2$ having perforations $L^3$ formed therein, all arranged and combined substantially in the manner set forth and for the purposes stated.

6. In an incubator having doors for the admission of egg containing drawers at each of its ends, the combination of a plurality of tracks arranged one above the other, adapted to support egg containing drawers and extended from each end toward the center of the incubator, and wire netting fixed to the interior of the incubator and extending around the sides and inner ends of the egg containing drawers at a slight distance from the sides of the incubator to provide a space for the circulation of air and heat around the egg containing drawers and to prevent young chicks from falling off of the egg drawers, substantially as set forth.

530,908. ROTARY STEAM-ENGINE. HENRY STAUB, Allegheny, Pa., assignor of one-fourth to Gustav Peyer, same place. Filed June 4, 1894. Serial No. 513,461. (No model.)



*Claim.*—1. In a rotary engine, the combination with a casing, a driven-shaft, a rotary cylinder fixed to the driven shaft, a rotary eccentric core arranged in the cylinder in contact with one side thereof, and a wing carried by the cylinder and connected to the core, whereby motion is communicated from the cylinder to the core, of a steam-inlet channel arranged concentric with the cylinder and communicating by a radial passage with an inlet-port in the wall of the cylinder, substantially as specified.

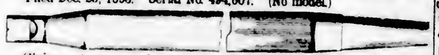
2. In a rotary engine, the combination of a casing, a driven-shaft provided with an axial steam-inlet channel, a valve for controlling the inlet of steam, a cylinder concentric with and carried by the driven-shaft, a rotary eccentric core mounted within the cylinder and in contact at one side with the inner surface thereof, and a wing carried by the cylinder and connected to the core, substantially as specified.

3. In a rotary engine, the combination of a casing, a rotary cylinder having concentric sleeves mounted in bearings in opposite sides of the casing, a fixed spindle arranged in the sleeve at one side of the cylinder and provided within the cylinder with an off-set or eccentric journal, a core mounted upon said eccentric journal, a wing carried by the cylinder and connected to the core, a tubular driven shaft secured in the sleeve at the opposite side of the cylinder, the bore of said shaft communicating with a steam passage leading to a port in the cylinder, and a valve for controlling an opening communicating with the bore of the shaft, substantially as specified.

4. The combination with a driven shaft, of a concentric revoluble cylinder, a core arranged eccentrically within the cylinder, a wing connecting said cylinder and core, a steam-chamber and an exhaust-port arranged respectively upon opposite sides of and contiguous to the plane of said wing, a steam-inlet pipe connected to and coaxial with the cylinder and having a lateral port, and a non-rotatable controlling valve encircling and slidably mounted upon said inlet pipe and having a spiral face to vary the intervals of the admission and cut off of the steam, substantially as specified.

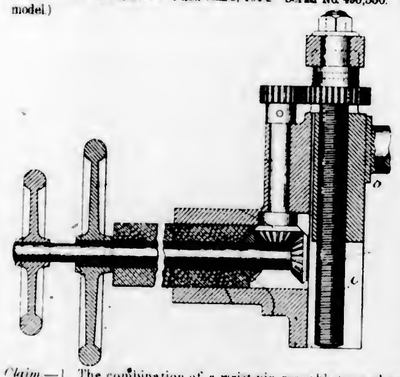
5. The combination of a rotary cylinder, an eccentric contained core, a wing connecting said core and cylinder, a steam-chamber and exhaust-port arranged respectively upon opposite sides of the plane of said wing, a bored driven shaft forming a steam-inlet pipe arranged concentric with the cylinder and communicating by a radial channel with said steam-chamber in the cylinder, a steam-chest concentric with said driven shaft, an inlet port formed in the side of the driven shaft and communicating with its bore, a non-rotatable controlling valve slidably mounted on the driven shaft within the steam-chest, and means for operating said valve, substantially as specified.

530,909. PNEUMATIC TOY. FRANCIS G. STONE, Lockport, N. Y. Filed Dec. 23, 1893. Serial No. 494,607. (No model.)



*Claim.*—A pneumatic toy consisting of a flexible tube having at one extremity a suitable mouth-piece and at the opposite extremity a whistle or sounder, substantially as described.

530,910. ADJUSTABLE WRIST-PIN. FLORENTINE I. STONE, Brockton, assignor of two-thirds to the Bouve, Crawford & Company Corporation, Boston, Mass. Filed Jan. 3, 1894. Serial No. 496,530. (No model.)



*Claim.*—1. The combination of a wrist-pin movable toward and from the center of its support, a screw engaging said wrist-pin a radial spindle on said support, gears connecting said spindle with the said screw, a spindle journaled concentric with the rotary support and having a handle, and gearing connecting said concentric spindle with the radial spindle.

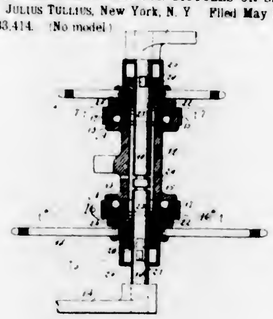
2. The combination of a wrist-pin movable toward and from the center of rotation of its support; a pair of handles independently journaled concentric with said support, and adjusting connections between each of said handles and the wrist-pin rotatively connecting the handles with the rotary support when said handles are free to turn, and effecting movement of the wrist-pin toward or from the center of rotation, according as one handle or the other is held from turning, substantially as described.

3. The combination of a wrist-pin movable toward and from the center of rotation of its support, two spindles both rotatively supported concentric with the said support, and gearing operatively connecting the spindles with the wrist-pin.

4. The combination of a wrist-pin movable toward and from the center of rotation of its support, a screw engaging said wrist-pin, and a pair of spindles rotatively supported concentric with the said support, and operatively connected with said screw.

5. The combination of a wrist-pin movable toward and from the center of rotation of its support, a screw engaging said wrist-pin, a spindle extending radially of the said support and geared to the said screw and carrying a bevel pinion, and two spindles rotatively supported concentric with the support and each carrying a bevel-gear in mesh with that on the radial spindle.

530,911. MOTIVE POWER FOR BICYCLES OR SIMILAR MACHINES. JULIUS TULLIUS, New York, N. Y. Filed May 18, 1892. Serial No. 433,414. (No model.)



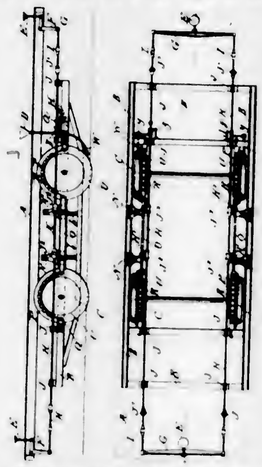
*Claim.*—1. In a driving mechanism for bicycles, the combination with a bearing sleeve having cupped ends, and a sliding pedal shaft projecting through the sleeve, of socket plates fitting in the cupped ends of the sleeve and secured to the said shaft, balls in the bearings formed by the cupped ends and socket plates and gear wheels of different sizes loosely mounted on the pedal shaft and loosely connected with the ends of the sleeve, substantially as described.

2. In a driving mechanism for bicycles, the combination with a bearing sleeve having cupped ends, and a sliding pedal shaft in the sleeve, of socket plates fitting in the cupped ends of the sleeve and secured to the shaft, balls in the bearings formed by the cupped ends and socket plates, gear wheels of different mesh loosely mounted on the pedal shaft, and rings mounted loosely on the hubs of the wheel and connected with the ends of the sleeve, substantially as described.

3. In a driving mechanism for bicycles, the combination with a bearing sleeve having cupped ends, and a sliding pedal shaft therein, of socket plates fitting in the cupped ends of the sleeve and splined to the pedal shaft, balls in the bearing formed by the cupped ends of the sleeves and the socket plates, plates secured to the cupped ends of the sleeve for holding the socket plates in position, gear wheels loose on the pedal shaft, and rings mounted loosely on the hubs of of the gear wheels, and connected with the plates which hold the socket plates in position, substantially as herein shown and described.

4. In a driving mechanism for bicycles, the combination with a sleeve having cupped ends, and a pedal shaft sliding in said sleeve, of socket plates fitting in the cupped ends of the sleeve, balls in the bearings formed by the said cupped ends and socket plates, gear wheels of different mesh loosely mounted on the pedal shaft, rings mounted loosely on the hubs of the wheels and connected with the ends of the sleeve, and clutches for alternately locking the gear wheels to the pedal shaft, substantially as herein shown and described.

530,912. BRAKE FOR RAILWAY-CARS. JOSIAH A. WEBBER, Brooklyn, N. Y. Filed Feb 3, 1894. Serial No. 498,965. (No model.)



*Claim.*—1. The combination of a longitudinally movable rod, a horizontal bar connected with friction straps having brake shoes, means between the movable rod and the horizontal bar for depressing the latter when the former is moved, and means accessible to the operator for longitudinally moving the rod, substantially as set forth.

2. The combination of a longitudinally movable rod, a horizontal bar connected with friction straps having brake shoes, toggle arms supported at one end by the frame of the truck and engaging with a horizontal bar at their other end, and by a longitudinally moving rod at their knuckle, and means accessible to the operator for longitudinally moving the rod, substantially as set forth.

3. The combination of a longitudinally movable rod, a horizontal bar connected with friction straps having brake shoes, toggle arms supported at one end by the truck frame and engaging with a horizontal bar at their other end and with a longitudinally movable rod at their knuckle, means accessible to the operator for longitudinally moving the rod, and friction surfaces or ledges on the sides of the wheels against which the brake shoes act, substantially as set forth.

4. The combination of a longitudinally movable rod, a horizontal bar connected with friction straps having brake shoes, means between the movable rod and the horizontal bar for depressing the latter when the former is moved, a lever located near the said rod, which is adapted to actuate the valve of the sand box, and a stop on the rod, which engages with the said lever, substantially as set forth.

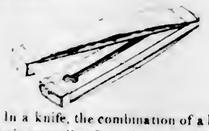
5. The combination of a longitudinally movable rod, and horizontal bar, toggle arms supported by the truck frame and engaging with the horizontal bar at their other end and with the longitudinally movable bar at their knuckle, means accessible to the operator for longitudinally moving the rod and friction shoes connected with said horizontal bar, substantially as set forth.

6. The combination of a longitudinally movable rod, a horizontal bar brake shoes connected with said horizontal bar, means between the movable rod and the horizontal bar for depressing the latter when the former is moved, a lever located near the said rod which actuates the valve of a sand box, and a stop on the rod which engages with said lever, substantially as set forth.

7. The combination of a longitudinally movable rod, a horizontal bar, means operated by the driver or motorman for longitudinally moving said rod, devices connecting the rod and the bar, friction devices connected with the bar and operated by it, which bear upon the top of the tread of the wheel or on the top of a supplemental braking surface, as the case may be, substantially as set forth.



530,913. KNIFE. JAMES H. COOK, Jr., Homer, Mich., assignor of one-half to Henry O. Cook, same place. Filed Jan. 29, 1894. Serial No. 498,407. (No model.)



*Claim.*—1. In a knife, the combination of a hollow case, a blade sliding therein, a pin extending from the base of the blade and entering a longitudinal slot in one side of the case, and a plate secured to the outer end of the pin, adapted to be turned at an angle to the case, adapted to form a handle to move the blade, and to form a complementary portion thereof when the blade is open or closed, substantially as described.

2. In a knife, the combination of a hollow casing, a blade sliding therein, a pin extending from the base of the blade through a longitudinal slot in the side of the casing, a plate secured to the outer end of the pin, and adapted to be turned at an angle or parallel with the handle, and means for locking the blade in its open and closed position by the movement of the plate, substantially as described.

3. In a knife, the combination of the hollow casing, open at one end, the blade slidingly engaging therein, and a plate I pivoted to the outside of the casing having the hook J adapted to cover the open end of the casing when the plate is over the casing, substantially as described.

4. In a knife, the combination of the casing A, the blade C therein, the plate I, the pin connecting the butt of the blade with the end of the plate, and projecting through a slot in the casing, the hook J on the plate, the enlargements at the ends of the slot having shoulders H, the parts arranged and operating substantially as and for the purpose described.

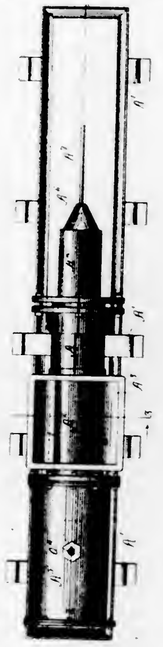
530,914. PRESS. MAGNUS SWENSON, Chicago, Ill. Filed Jan. 16, 1894. Serial No. 497,037. (No model.)

*Claim.*—1. In a press, the combination with a cylinder provided with an admission port or opening and perforated adjacent to its discharge end, of a hollow piston or plunger fitted to said cylinder to which reciprocal movement is imparted whereby the admission port is intermittently opened, the front end of said piston or plunger terminating in a perforated point, substantially as described.

2. In a press, the combination with a cylinder provided with an admission port or opening and perforated adjacent to its discharge end, of a hollow piston or plunger fitted to said cylinder, to which reciprocal movement is imparted, whereby the admission port is intermittently opened, the front end of said piston terminating in a perforated point or cone, the base of which is smaller than the end of the piston or plunger, substantially as described.

3. In a press, the combination with a cylinder provided with an admission port or opening and perforated adjacent to its discharge end, of a jacket inclosing the perforated section thereof, a hollow piston fitted to said cylinder, to which reciprocal movement is imparted, whereby the admission port is intermittently opened, the front end of said piston or plunger terminating in a perforated point, substantially as described.

4. In a press, the combination with a cylinder provided with an admission port or opening and perforated adjacent to its discharge end, of a jacket inclosing the perforated portion thereof, a hollow piston or plunger fitted to said cylinder, to which reciprocal movement is imparted, whereby the admission port is intermittently opened, the front end of said piston or plunger terminating in a perforated point, the base of which is smaller than the end of the piston or plunger, substantially as described.



# REISSUES.

11,456. INJECTOR. FERDINAND BRUNBAUER, Vienna, Austria-Hungary. Filed Nov. 16, 1894. Serial No. 529,062. Original No. 500,752, dated July 4, 1893.

*Claim.*—1. A lifting steam tube and combining tube, in combination with a forcing steam tube centrally arranged in said tubes, the outside of said forcing steam tube forming with the bore of the lifting steam tube an annular lifting steam passage and with the inside of the combining tube an annular lifting combining tube and an annular lifting delivery tube, said combining tube being provided with one or more overflow openings in that portion of it which constitutes the exterior wall of the said annular lifting combining tube and annular lifting delivery tube, substantially as described.

2. A lifting steam tube and a combining tube, in combination with a forcing steam tube centrally arranged in said tubes and endwise movable therein, the outside of said movable forcing steam tube forming with the bore of the lifting steam tube a variable annular lifting steam passage and with the inside of the combining tube an annular lifting combining tube and an annular lifting delivery tube, both of variable sections, substantially as and for the purposes specified.

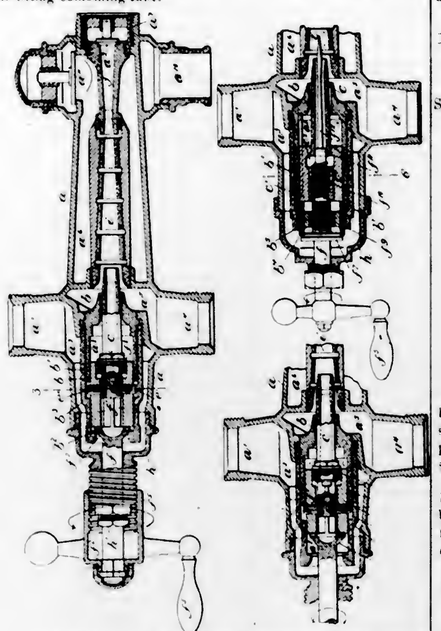
3. An annular lifting steam tube and a central forcing steam tube in combination with a combining tube, forming an annular lifting combining tube and an annular lifting delivery tube as well as a forcing combining tube, substantially as described.

4. An annular lifting steam tube and a central forcing steam tube in combination with a combining tube, provided with overflow openings and forming an annular lifting combining tube and an annular lifting delivery tube as well as a forcing combining tube, substantially as described.

5. An annular lifting steam tube, a central forcing steam tube and a combining tube provided with overflow openings and forming an annular lifting combining tube and an annular lifting delivery tube as well as a forcing combining tube, in combination with an overflow chamber in which said overflow openings are located, substantially as described.

6. In an injector the combination substantially as hereinbefore

set forth of a forcing steam nozzle, a lifting steam tube, an annular lifting combining tube, a forcing combining tube and an annular lifting delivery tube interposed between the forcing combining tube and the lifting combining tube.



7. In an injector the combination substantially as hereinbefore set forth of a forcing steam nozzle, a lifting steam tube, an annular lifting combining tube, a forcing combining tube, a forcing delivery tube and an annular lifting delivery tube interposed between the lifting-combining and forcing-combining tubes.

8. In combination with a lifting steam tube and a forcing steam tube centrally arranged and endwise movable in said lifting steam tube, the main injector steam chamber, a supplementary steam chamber containing the steam inlet ports, of said tubes, and a valve controlling the steam inlet from the main to the supplementary steam chamber, substantially as described.

9. The combination with a lifting steam tube and a forcing steam tube centrally arranged and endwise movable in said lifting tube of the main injector steam chamber, a supplemental steam chamber containing the steam inlet ports of said tubes, a valve controlling the steam admission from the main to the supplemental steam chamber, and a supplemental valve contained in said supplemental chamber for controlling the steam inlet port of the forcing steam tube, substantially as described.

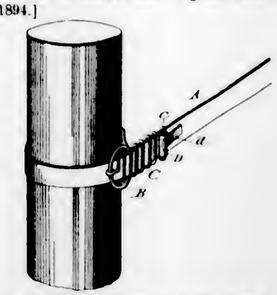
10. The combination of a fixed lifting steam tube, a fixed combining tube, a longitudinally movable forcing steam tube, the outside of this tube forming with the bore of the lifting steam tube a lifting steam passage of annular section and furthermore with the inside of the combining tube a lifting combining tube and a lifting delivery tube both also of annular sections, and a spindle, the forward end of which terminates at a point within said movable tube, which tube is so proportioned and arranged in relation to the fixed tubes and spindle that the central passage in said movable tube and also the annular passages of the aforesaid tubes will be simultaneously altered by the longitudinal movement of said movable tube alone, substantially as described.

11. The combination of a fixed lifting steam tube, a fixed combining tube, a longitudinally movable forcing steam tube, the outside of this tube forming with the bore of the lifting steam tube a lifting steam passage of annular section and furthermore with the inside of the combining tube a lifting combining tube and a lifting delivery tube both also of annular sections, said movable tube being so proportioned and arranged in relation to the fixed tubes that the annular passages of the aforesaid tubes will be simultaneously altered by the longitudinal movement of said movable tube alone, substantially as described.

12. The combination of the injector casing *a* with a set of water tubes comprising the combining tube *i*, forcing delivery tube *j*, check valve box *a'* rigidly connected together which set is inserted into the aforesaid casing *a* and held in position by the tail piece and coupling nut belonging to the injector delivery pipe, substantially as described.

**11,457. HITCHING-STRAP.** JAMES H. VALLEAU, Sioux City, Iowa, assignor of one-half to T. N. Bray, same place. Filed Nov. 14, 1894. Serial No. 528,841. Original No. 525,568, dated Sept. 4, 1894.

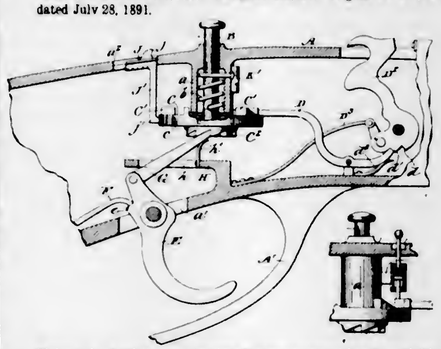
[Reissue to correct inventor's name. Original Patent No. 525,568, September 4, 1894.]




*Claim.*—1. The combination, with a hitching strap, of a ring or loop arranged thereon, a spiral spring connected at one end with the said ring encircling the strap, and having a frame or loop at the opposite end, and a locking cam connected with said frame, or loop, substantially as shown and described.

2. An improved attachment for hitching straps comprising a ring B, the coiled spring C, having a frame c, formed at one end and the binding cam or tongue D, having a handle *d*, the said ring, spring and frame being adapted to receive a strap, substantially as shown and described.

**11,458. TRIGGER MECHANISM FOR GUNS.** FRANK D. GRANGER, New York, N. Y., assignor of one-half to Hallack A. Penrose, New London, Conn. Filed Mar. 6, 1893. Serial No. 464,898. Original No. 456,813, dated July 28, 1891.



*Claim.*—1. A trigger mechanism for guns, comprising a revoluble disk mounted upon a vertical axis and having cam-teeth upon its end face to engage and operate the lock sears during the revolution of the disk, and a trigger connected with said disk for turning the same, substantially as described.

2. A trigger mechanism for guns, comprising a revoluble disk, mounted on a vertical axis and having cam-teeth upon its end face adapted to be moved in horizontal planes to actuate the lock sears during the revolution of the disk, and a trigger mechanism for turning the disk, substantially as described.

3. A trigger mechanism for guns, comprising a revoluble disk mounted upon a vertical axis and having cam-teeth upon its end face to engage and operate the lock sears during the revolution of the disk, and also having ratchet teeth to engage the trigger pawl, a trigger pivoted in the breech, and a pawl pivoted to the trigger and having its end in engagement with the ratchet teeth of the disk, substantially as described.

4. A trigger mechanism for guns, comprising a revoluble disk mounted upon a vertical axis and having cam-teeth on one end face to engage the lock-sears and ratchet-teeth on the opposite end face to engage the trigger-finger, a trigger pivoted in the breech, and a finger pivoted at one end to the trigger and having its opposite end in engagement with the teeth of the disk, substantially as described.



5. A trigger mechanism for guns, comprising a horizontal revoluble disk mounted on a vertically-movable support and provided on its upper end face with inclined cam teeth to engage the lock-sears and on its under end face with a series of teeth, a trigger pivoted in the lower portion of the breech, and a pawl pivoted at one end to the trigger and having its other end in engagement with the lower teeth of the firing-disk, substantially as described.

6. A trigger mechanism for guns, comprising a horizontally-revoluble firing-disk having inclined cam-teeth on its upper end surface to engage the lock-sears and having a series of teeth on its under end surface, a trigger pivoted in the breech and provided with a pawl having one end pivoted to the trigger and the opposite end in engagement with the lower teeth of the firing-disk, and a guide for the finger, substantially as described.

7. A trigger mechanism for guns, comprising a revoluble and vertically-movable disk having teeth on its upper end surface to engage the lock-sears, and means for revolving said disk by the movement of the trigger, substantially as described.

8. A trigger mechanism for guns, comprising a hollow bracket in the interior of the breech, a spring-pressed pin mounted in the bracket and projecting through the breech-top, a revoluble disk mounted on the lower end of the bracket and provided on its upper end face with cam-teeth to engage the lock-sears and on its lower end face with a series of teeth, a trigger pivoted in the breech, and a pawl pivoted to the trigger and extending into the path of the lower disk-teeth, substantially as described.

9. In a trigger mechanism, the combination, with the firing-disk provided with teeth to engage and operate the lock sears and having notches in the edge, of a safety-catch slidably mounted in the breech and having a projecting end to engage the disk-notches, substantially as described.

10. In a trigger mechanism, the combination, with the revoluble firing-disk having cam-teeth on the end face thereof, of spring-pressed indicating pins mounted in the path of the teeth and extending upward through the breech, substantially as described.

11. The combination with a plurality of hammers and sears, and means for releasing the latter, of a horizontal disk provided with cam teeth and vertical indicating pins situated above the path of said cam teeth and adapted to be elevated thereby alternately, substantially as set forth.

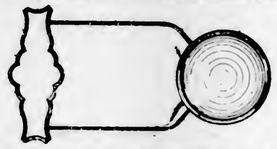
# DESIGNS.

**23,857. WATCH-CHARM, &c.** GEORGE E. RHODES, Shreveport, La. Filed Jan. 22, 1894. Serial No. 497,714. Term of patent 7 years.



*Claim.*—The design for a watch charm, or pendant locket, substantially as herein shown and described.

**23,858. BADGE.** BENJAMIN S. WHITEHEAD, Newark, N. J. Filed June 7, 1894. Serial No. 513,831. Term of patent 7 years.



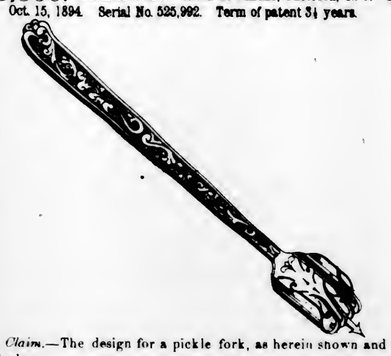
*Claim.*—The design for a badge, substantially as described and set forth.

**23,859. BADGE.** BENJAMIN S. WHITEHEAD, Newark, N. J. Filed June 7, 1894. Serial No. 513,832. Term of patent 7 years.



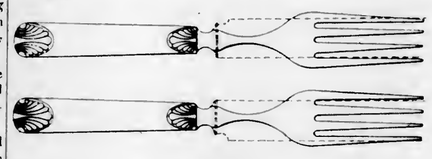
*Claim.*—The design for a badge, as herein shown and described.

**23,860. PICKLE-FORK.** LOUIS A. PLAGET, Paterson, N. J. Filed Oct. 15, 1894. Serial No. 525,992. Term of patent 3½ years.



*Claim.*—The design for a pickle fork, as herein shown and described.

**23,861. KNIFE OR FORK HANDLE.** HUBERT C. HART, Unionville, Conn. Filed Aug. 22, 1894. Serial No. 521,036. Term of patent 7 years.



*Claim.*—The design for a knife or fork handle, substantially as herein shown and described.

**23,862. BUTTON-HOOK, &c.** JOHN L. SOMMER, Newark, N. J. Filed Oct. 17, 1894. Serial No. 526,225. Term of patent 7 years.



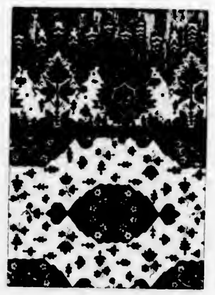
*Claim.*—The design for the handles of button hooks and similar articles herein shown and described.

**23,863. CARPET.** ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Nov. 5, 1894. Serial No. 527,978. Term of patent 3½ years.



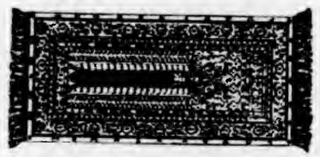
*Claim.*—The design for carpets, substantially as shown in the drawing accompanying this specification.

23,864. CARPET. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Nov. 5, 1894. Serial No. 527,979. Term of patent 3½ years.



*Claim.*—The design for carpets, substantially as shown in the drawing accompanying this specification.

23,865. RUG. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 12, 1894. Serial 525,751. Term of patent 3½ years



*Claim.*—The design for rugs, substantially as shown in the illustration accompanying this specification.

23,866. RUG. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 12, 1894. Serial No. 525,749. Term of patent 3½ years.



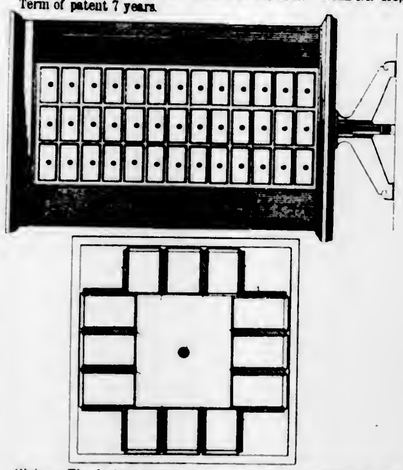
*Claim.*—The design for rugs, substantially as shown in the illustration accompanying this specification.

23,867. RUG. JOHN R. NEIL, New York, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Nov. 5, 1894. Serial No. 527,974. Term of patent 3½ years.



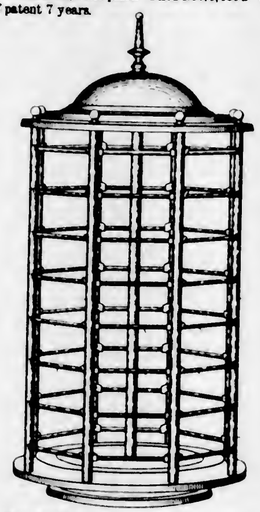
*Claim.*—The design for rugs, substantially as shown in the drawing accompanying this specification.

23,868. BUTTON-CASE. JOSEPH WIEDENMEIER, Jr., and ANTON WIEDENMEIER, Carroll, Iowa. Filed Dec. 30, 1893. Serial No. 496,260. Term of patent 7 years.



*Claim.*—The design for a button case substantially as herein shown and described.

23,869. SPOOL-RACK. FRANK S. ADAMS, Boston, Mass., assignor to Brown, Durrell & Co., same place. Filed Nov. 9, 1894. Serial No. 528,352. Term of patent 7 years.



*Claim.*—The design for spool racks substantially as shown and described.

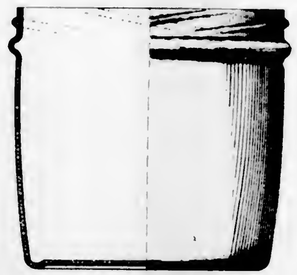
23,870. ROPE-CLAMP FRAME. PER OLOF OLSSON, Marshall, Minn. Filed Mar. 17, 1894. Serial No. 504,098. Term of patent 3½ years.



*Claim.*—The design for a rope clamp frame herein shown and described.

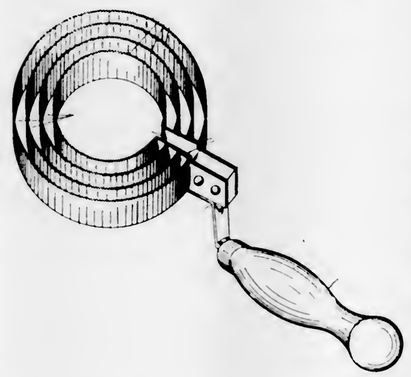


23,871. GLASS JAR. FREDERICK R. CORNWALL, St. Louis, Mo., assignor to the F. R. Rice Mercantile Cigar Company, same place. Filed Aug. 13, 1894. Serial No. 520,225. Term of patent 14 years.



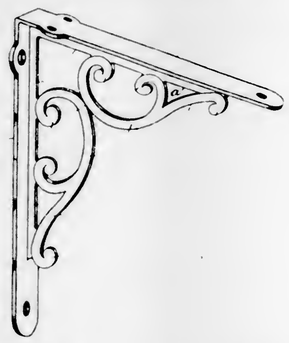
*Claim.*—The design for a glass jar, substantially as herein shown and described.

23,872. CURRYCOMB. WILLIAM P. KELLOGG, Troy, N. Y. Filed July 16, 1894. Serial No. 517,747. Term of patent 14 years.



*Claim.*—The design for a curry-comb as herein shown and described.

23,873. BRACKET. JOHN H. GAVIN, Chicago, Ill., assignor to the L. Wolff Manufacturing Company, same place. Filed Nov. 5, 1894. Serial No. 527,977. Term of patent 14 years.



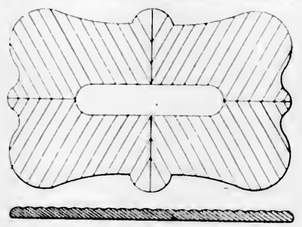
*Claim.*—The design for a bracket herein shown and described.

23,874. BOTTLE. CHARLES A. TATUM, New York, N. Y., assignor to Whittall, Tatum & Co., same place. Filed Oct. 30, 1894. Serial No. 527,488. Term of patent 14 years.



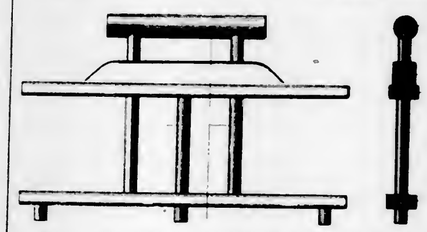
*Claim.*—The design for bottles, substantially as herein shown and described.

23,875. CAKE. FREDERICK CALLARD, Brooklyn, N. Y. Filed Aug. 22, 1894. Serial No. 521,038. Term of patent 3½ years.



*Claim.*—The design for cakes herein shown and described.

23,876. CLOTHES-LINE REEL. HARRY COOK, St. Louis, Mo. Filed Nov. 12, 1894. Serial No. 528,584. Term of patent 7 years.



*Claim.*—The design for a clothes-line reel as herein shown and described.

23,877. HEATING-STOVE. WARREN MCARTHUR, Chicago, Ill. Filed Aug. 3, 1894. Serial No. 519,420. Term of patent 3½ years.



*Claim.*—The design for a stove substantially as shown.

# TRADE-MARKS

## REGISTERED DECEMBER 11, 1894.

25,619. WHITE BRILLIANTS. RIPLEY HOWLAND MANUFACTURING COMPANY, Boston, Mass. Filed Nov. 1, 1894.




*Essential feature.*—The representation of a shield surmounted by a crown and superposed upon a streamer or ribbon, and the words "SIBERIAN BRILLIANT." Used since October 24, 1894.

25,620. KID GLOVES. HOUSTON & HENDERSON, Boston, Mass. Filed Nov. 15, 1894.

Melba

*Essential feature.*—The word "MELBA." Used since September, 1892.

25,621. BOOTS, SHOES, AND SOLES THEREFOR. FRANK T. KEE, New York, N. Y. Filed Oct. 29, 1894.

Cushion

*Essential feature.*—The word "CUSHION." Used since January 1, 1880.

25,622. MEN'S AND BOYS' GARMENTS. GUITERMAN BROTHERS, St. Paul, Minn. Filed Nov. 5, 1894.

SUMMIT

*Essential feature.*—The word "SUMMIT." Used since September 15, 1894.

25,623. OVERCOATS. ALFRED BENJAMIN & Co., New York, N. Y. Filed Nov. 14, 1894.

ALBERT

*Essential feature.*—The word "ALBERT." Used since May 1, 1894.

25,624. WOOL PIECE GOODS. HAMLYN BROTHERS, Buckfastleigh, England. Filed Oct. 6, 1894.



*Essential feature.*—The representation of a yacht. Used since 1883

25,625. YARNS. J. & J. BALDWIN, Halifax, England. Filed Nov. 9, 1894.




*Essential feature.*—The letters "B. B" and the representation of two bees. Used since 1875.

25,626. SPOOL-COTTON. THE WILLIMANTIC LINEN COMPANY, Hartford, Conn. Filed Nov. 14, 1894.



*Essential feature.*—The representation of an eagle. Used since 1863.

25,627. SPOOL-COTTON. THE WILLIMANTIC LINEN COMPANY, Hartford, Conn. Filed Nov. 14, 1894.




*Essential feature.*—The word "WILLIMANTIC" across which is set an oblong panel, in connection with the words "THE BEST THREAD FOR SEWING MACHINES." Used since November, 1878.

25,628. SPOOL-COTTON. THE WILLIMANTIC LINEN COMPANY, Hartford, Conn. Filed Nov. 14, 1894.

IVERTON

*Essential feature.*—The word "IVERTON." Used since July, 1881.



25,629. SPOOL-COTTON. THE WILLIMANTIC LINEN COMPANY, Hartford, Conn. Filed Nov. 14, 1894.

INTRINSIC

*Essential feature.*—The word "INTRINSIC." Used since 1878.

25,630. SPOOL-COTTON. THE WILLIMANTIC LINEN COMPANY, Hartford, Conn. Filed Nov. 14, 1894.

DRAGON

*Essential feature.*—The word "DRAGON." Used since May, 1883.

25,631. SPOOL-COTTON. THE WILLIMANTIC LINEN COMPANY, Hartford, Conn. Filed Nov. 14, 1894.

LIBERTY

*Essential feature.*—The word "LIBERTY." Used since 1893.

25,632. SPOOL-COTTON. THE WILLIMANTIC LINEN COMPANY, Hartford, Conn. Filed Nov. 14, 1894.

STAR

*Essential feature.*—The word "STAR." Used since 1889.

25,633. SPOOL-COTTON. THE WILLIMANTIC LINEN COMPANY, Hartford, Conn. Filed Nov. 14, 1894.



*Essential feature.*—The symbol of a star. Used since 1865.

25,634. SPOOL-COTTON. THE WILLIMANTIC LINEN COMPANY, Hartford, Conn. Filed Nov. 14, 1894.



*Essential feature.*—A representation of the Liberty Bell. Used since 1893.

25,635. SPOOL-COTTON. THE WILLIMANTIC LINEN COMPANY, Hartford, Conn. Filed Nov. 14, 1894.

W.L.Co

*Essential feature.*—The letters "W. L. Co." Used since 1877.

25,636. SPOOL-COTTON. THE WILLIMANTIC LINEN COMPANY, Hartford, Conn. Filed Nov. 14, 1894.

ALPHA

*Essential feature.*—The word "ALPHA." Used since June, 1886.

25,637. CERTAIN NAMED REMEDIES. DR. KILMER & Co., Binghamton, N. Y. Filed Oct. 10, 1894.



*Essential feature.*—A portrait of Dr. Kilmer. Used since July 20, 1881.

25,638. INTERNAL REMEDY FOR COLDS. FORSYTH & Co., Passaic, N. J. Nov. 5, 1894.

ANTICOLD

*Essential feature.*—The word "ANTICOLD." Used since October 1, 1892.

25,639. REMEDIES FOR FEMALE DISEASES. SYDNEY B. LEONARDI, Tampa, Fla. Filed Nov. 9, 1894.

DOCTOR RENO'S
New Health
OR
WOMAN'S SALVATION

*Essential feature.*—The words "DR. RENO'S NEW HEALTH OR WOMAN'S SALVATION." Used since October 1, 1894.

25,640. REMEDY FOR THE CURE OF CONSUMPTION. OSCAR J. FULLERTON, Waterloo, Iowa. Filed Nov. 2, 1894.




*Essential feature.*—A pictorial representation of the registrant and of a hypodermic syringe and the words "THE FULLERTON HYPODERMIC CONSUMPTION CURE." Used since January 1, 1894.

25,641. TREE-WASH AND INSECT-DESTROYER. JOHN M. CARNAHAN, Faulkner, Kans. Filed Sept. 8, 1894.



*Essential feature.*—A representation of two trees, one being bare and the other in full foliage. Used since 1890.

25,642. LIQUID REMEDY FOR SKIN DISEASES. BENJAMIN F. MINER, Montague, Mass. Filed Oct. 22, 1894.

TOILETINE

*Essential feature.*—The word "TOILETINE." Used since May, 1891.

25,643. TOILET SOAP. GRAHAM BROS. & Co., Chicago, Ill. Filed Nov. 12, 1894.



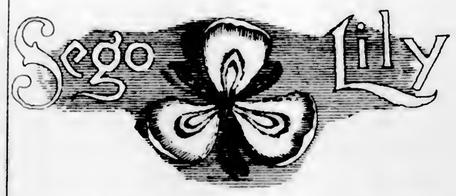
*Essential feature.*—A pictorial representation of an irregular-edged scroll or ornamental banner of a green bronze color, bearing an inscription of a contrasting color, and beyond the edges of which scroll or banner appear, at intervals, branches, flowers and leaves, of a purple color. Used since February 1, 1894.

25,644. LAUNDRY AND TOILET SOAP. ENTERPRISE SOAP WORKS, Nashville, Tenn. Filed Nov. 5, 1894.

WATERMELON

*Essential feature.*—The word "WATERMELON." Used since April, 1894.

25,645. CERTAIN NAMED TOILET PREPARATIONS. NELDEN-JUDSON DRUG COMPANY, Salt Lake City, Utah. Filed June 11, 1894.




*Essential feature.*—The words "SEGO LILY" and a representation of the flower. Used since July 1, 1893.

25,646. DRIED PRUNES. JAMES VIOLETT, BIRD & Co., Bordeaux, France. Filed Oct. 20, 1894.

IMPERIAL

*Essential feature.*—The word "IMPERIAL." Used since March, 1859.

25,647. COCOA AND COCOA EXTRACTS. HENRI BOISSELIER, Enfield, England. Filed Nov. 5, 1894.

BOISSELIER'S
COCOA GENE

*Essential feature.*—The words "BOISSELIER'S COCOA GENE." Used since June 30, 1894.

25,648. GINGER ALE. THE PENNSYLVANIA BOTTLING AND SUPPLY COMPANY OF PHILADELPHIA, Philadelphia, Pa. Filed Apr. 30, 1894.




*Essential feature.*—The words "DOVE BRAND" and a representation of three doves perched on an olive branch. Used since December 28, 1892.

25,649. MINERAL WATERS AND CARBONATED BEVERAGES. SPRUDEL WATER COMPANY, Mount Clemens, Mich. Filed May 15, 1894.



*Essential feature.*—The representation of a crown with radiant lines, the words "MOUNT CLEMENS SPRUDEL" a ribbon bearing the words "PRO BONI HOMINI," and a diamond shape, and rectangle, forming lines, inclosing contrasting colors. Used since January 10, 1887.

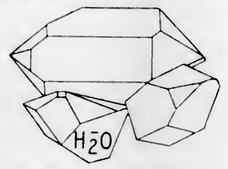


25,650. AERATED BEVERAGES. JOHN HEINEKERLING, Baltimore, Md. Filed Oct. 15, 1894.



*Essential feature.*—The representation of a knight in armor. Used since July 31, 1894.

25,651. CERTAIN NAMED BEVERAGES. CRYSTAL WATER COMPANY, LIMITED, Bay City, Mich. Filed July 5, 1894.




*Essential feature.*—The representation of a group of crystals, with the symbol "H$_2$O" on a facet of the lower crystal. Used since May 25, 1894.

25,652. MALT BEVERAGES. R. WHITE & SONS, London, England. Filed Oct. 22, 1894.

KOPS EXTRA.

*Essential feature.*—The words "KOPS EXTRA." Used since November 30, 1893.

25,653. MALT BEVERAGES. R. WHITE & SONS, London, England. Filed Oct. 22, 1894.

KOPS CHEER.

*Essential feature.*—The words "KOPS CHEER." Used since November 30, 1893.

25,654. TEA. THE BRITISH TEA AND TRADING ASSOCIATION, LIMITED, London, England. Filed Oct. 30, 1894.

BLUE CROSS

*Essential feature.*—The representation of a cross and the words "BLUE CROSS." Used since 1886.

25,655. CIGARS AND TOBACCO. JAS. L. BARBOUR & SON, Washington, D. C. Filed Oct. 25, 1894.

BELLE OF WASHINGTON.

*Essential feature.*—The words "BELLE OF WASHINGTON." Used since March 4, 1892.

25,656. CIGARS AND TOBACCO. JAS. L. BARBOUR & SON, Washington, D. C. Filed Oct. 25, 1894.



*Essential feature.*—The representation or picture of a young woman of pleasing features, having her neck and shoulders covered with a handkerchief or scarf so draped as to leave the neck partially exposed, surrounded by a circular border. Used since March 4, 1892.

25,657. MIXTURE OF PERIQUE, VIRGINIA, HAVANA, AND TURKISH TOBACCOS. LLEWELLYN L. STODDARD, New Haven, Conn. Filed Nov. 16, 1894.




*Essential feature.*—The words "HANDSOME DAN MIXTURE" and the picture of the head of a bull dog. Used since September, 1893.

25,658. FIREPROOF WATER-PAINT. THE MARTIN PROCESS FIRE-PROOFING PAINT COMPANY, New York, N. Y. Filed Nov. 5, 1894.

KALZITE

*Essential feature.*—The word "KALZITE." Used since June 15, 1894.

25,659. TOILET PAPER. FRANCIS TEMPEST, Birmingham Township, county of Delaware, Pa. Filed Oct. 30, 1894.

CLOVER LEAF

*Essential feature.*—The words "CLOVER LEAF." Used since July 2, 1894.

25,660. FLY-PAPER. O. & W. THUM COMPANY, Grand Rapids, Mich. Filed Nov. 6, 1894.

TANGLEFOOT

*Essential feature.*—The word "TANGLEFOOT." Used since January, 1888.

25,661. RUBBER PACKING-RINGS. CRESCENT MANUFACTURING Co., St. Louis, Mo. Filed Nov. 5, 1894.

CRESCENT



*Essential feature.*—The word "CRESCENT" and the symbol of a crescent. Used since August 15, 1894.

25,662. CARD GAME. JOHN MCLOUGHLIN, New York, N. Y. Filed Oct. 24, 1894.

STAR AUTHORS

*Essential feature.*—The words "STAR AUTHORS." Used since August, 1876.

25,663. CATALOGUES AND NEWSPAPERS. F. M. SPROKHELF & Co., Chicago, Ill. Filed Nov. 6, 1894.




*Essential feature.*—The words "OUR SALESMAN" and the conventional figure of Uncle Sam. Used since January, 1894.

25,664. BICYCLE-LAMPS. THE SHELL CYCLE FITTINGS COMPANY Toledo, Ohio. Filed Oct. 31, 1894.

FLASH-LIGHT

*Essential feature.*—The word "FLASH-LIGHT." Used since October 1st, 1894.

PHOTO-LITH. WASHINGTON D.C. THE NORRIS PETERS CO.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## DECISIONS OF THE U. S. COURTS.

### Supreme Court of the United States.

SCHILLINGER *et al. v.* THE UNITED STATES.

*Decided November* 19, 1894.

1. SCHILLINGER — CONCRETE PAVEMENT — CLAIM AGAINST THE UNITED STATES FOR AN ALLEGED WRONGFUL USE OF PATENTED INVENTION NOT SUSTAINABLE, BECAUSE SOUNDING IN TORT.

Action against the United States to recover damages for the alleged wrongful use of the invention secured by a patent, No. 105,599, issued July 19, 1870, and reissued May 2, 1871, No. 4,364, to John J. Schillinger, for an improvement in concrete pavements, *Held* to be an action "sounding in tort" and not maintainable.

2. COURT OF CLAIMS—JURISDICTION—ACT OF MARCH 3, 1887, (24 STAT., 505)—MERE TORTS AGAINST THE GOVERNMENT NOT COGNIZABLE.

The Court of Claims has no jurisdiction to hear and determine claims against the United States for mere torts. Some element of contractual liability must lie at the foundation of every action.

APPEAL from the Court of Claims.

STATEMENT OF THE CASE.

On July 19, 1870, a patent was issued to John J. Schillinger for an improvement in concrete pavement. The claim of the patent was in these words:

The arrangement of tar paper or its equivalent between adjoining blocks of concrete, substantially as and for the purpose described.

A reissue was granted May 2, 1871. The claims in the reissue were thus stated:

1. A concrete pavement laid in detached blocks or sections, substantially in the manner shown and described.
2. The arrangement of tar paper or its equivalent between adjoining blocks of concrete, substantially as and for the purpose set forth.

On February 27, 1875, Schillinger filed in the Patent Office a disclaimer, which, after stating the language of the specification disclaimed, added:

Your petitioner hereby disclaims the forming of blocks from plastic material without interposing anything between their joints while in the process of formation.

Thereafter the Architect of the Capitol invited proposals for a concrete pavement in the Capitol grounds, and on September 2, 1875, entered into a contract with G. W. Cook for the laying of such pavement. It does not appear that in the proposals, specifications, or contract there was in terms any reference to or description of the Schillinger patent.

Fred. Law Olmsted was the party who prepared the plans and specifications, and in the contract it was provided as follows:

The pavement to be laid with free joints, in the best manner, the courses running diagonally, and arranged around the curved parts to the satisfaction of the said Fred. Law Olmsted.

It is understood and agreed by the party of the second part that in the event of any legal proceedings being taken by other parties against the contractor of the United States for the infringement of any patent or claimed patent during the execution of the work the contractor shall hold the United States harmless; and if said proceedings tend to create delay in the prosecution of the work the United States shall have the right to immediately employ other parties to complete the same, and the contractor shall reimburse the United States in any extra amount it may have to pay for such completion over and above the amount which the contractor would have been entitled to for the same work.

This is the only language found in the contract which in any manner suggests the use, or possibility of use, of the Schillinger patent. The contract price was 28½ cents per square foot. Certain of the claimants who had acquired by assignment the right to use the Schillinger patent in the District of Columbia were bidders for such contract, and proposed to do the work in accordance with the Schillinger patent at 45 cents per square foot. Cook proceeded to perform the contract; finished it, and received payment between October, 1875, and July, 1881.

On March 22, 1887, these claimants filed their petition in the Court of Claims, asserting full ownership of the Schillinger patent, and seeking to recover from the United States damages for the wrongful use thereof in the construction of this pavement. The Court of Claims held (24 Court of Claims, 278) that there was no contract, either expressed or implied, on the part of the government for the use of such patent, and on that ground dismissed the petition as outside of the jurisdiction of the court.

From that judgment the claimants appealed to this Court.

*Mr. John C. Fay* and *Mr. William G. Johnson* for the appellants.

*Mr. Attorney-General Olney* for the United States.

Mr. Justice BREWER delivered the opinion of the Court.

The United States cannot be sued in their courts without their consent, and in granting such consent Congress has an absolute discretion to specify the cases and contingencies in which the liability of the Government is submitted to the courts for judicial determination. Beyond the letter of such consent, the courts may not go, no matter how beneficial they may deem or in fact might be their possession of a larger jurisdiction over the liabilities of the Government.

Until the organization of the Court of Claims by the act of February 24, 1855, (10 Stat., 612,) the only recourse of claimants was in an appeal to Congress. That act defines the claims which could be submitted to the Court of Claims for adjudication as follows:

The said court shall hear and determine all claims founded upon any law of Congress, or upon any regulation of an executive department, or upon any contract, expressed or implied, with the Government of the United States, which may be suggested to it by a petition filed therein; and also all claims which may be referred to said court by either house of Congress.

On March 3, 1863, (12 Stat., 765,) additional jurisdiction was given in respect to set-offs and counter-claims of the Government, as follows:

That the said court * * * shall also have jurisdiction of all

set offs, counter-claims, claims for damages, whether liquidated or unliquidated, or other demands whatsoever on the part of the Government against any person making claim against the Government in said court

On March 3, 1887, (24 Stat., 505,) a new act was passed in reference to the jurisdiction of the court, its language being as follows:

The Court of Claims shall have jurisdiction to hear and determine the following matters:

First. All claims founded upon the Constitution of the United States or any law of Congress, except for pensions, or upon any regulation of an executive department, or upon any contract, expressed or implied, with the Government of the United States, or for damages, liquidated or unliquidated, in cases not sounding in tort, in respect of which claims the party would be entitled to redress against the United States either in a court of law, equity, or admiralty if the United States were suable.

Second. All set offs, counter-claims, claims for damages, whether liquidated or unliquidated, or other demands whatsoever on the part of the Government of the United States against any claimant against the Government in said court.

Under neither of these statutes had or has the Court of Claims any jurisdiction of claims against the Government for mere torts; some element of contractual liability must lie at the foundation of every action. In *Gibbons* v. *United States* (8 Wall., 269 275) it was said:

The language of the statutes which confer jurisdiction upon the Court of Claims excludes by the strongest implication demands against the Government founded on torts. The general principle which we have already stated as applicable to all governments, forbids, on a policy imposed by necessity, that they should hold themselves liable for unauthorized wrongs inflicted by their officers on the citizen, though occurring while engaged in the discharge of official duties.

And, again, in *Morgan* v. *United States*, (14 Wall., 531–534:)

Congress has wisely reserved to itself the right to give or withhold relief where the claim is founded on the wrongful proceedings of an officer of the Government.

The rule thus laid down has been consistently followed by this Court in many cases up to and including the recent case of *Hill* v. *United States*, (149 U. S., 593, 598.)

If there was any error in this interpretation, first announced in 1868, of the scope of the act, and if it was the intent of Congress to grant to the court jurisdiction over actions against the Government for torts, an amending statute of but a few words would have corrected the error and removed all doubt. While the language of the act of 1887 is broader than that of 1855, it is equally clear in withholding such jurisdiction. It added, "all claims founded upon the Constitution of the United States," but that does not include claims founded upon torts, any more than "all claims founded upon any law of Congress" found in the prior act. The identity of the descriptive words forbids the thought of any change.

It is said that the Constitution forbids the taking of private property for public uses without just compensation; that therefore every appropriation of private property by any official to the uses of the Government, no matter however wrongfully made, creates a claim founded upon the Constitution of the United States and within the letter of the grant in the act of 1887 of the jurisdiction to the Court of Claims. If that argument be good, it is equally good applied to every other provision of the Constitution as well as to every law of Congress. This prohibition of the taking of private property for public use without compensation is no more sacred than that other constitutional provision that no person shall be deprived of life, liberty, or property without due process of law. Can it be that Congress intended that every wrongful arrest and detention of an individual, or seizure of his property by an officer of the Government, should expose it to an action for damages in the Court of Claims? If any such breadth of jurisdiction was contemplated, language which had already been given a restrictive meaning would have been carefully avoided.

It is true also that to jurisdiction over claims founded "upon any contract, express or implied, with the Government of the United States," is added jurisdiction over claims "for damages, liquidated or unliquidated," but this grant is limited by the provision "in cases not sounding in tort." This limitation, even if qualifying only the clause immediately preceding, and not extending to the entire grant of jurisdiction found in the section, is a clear indorsement of the frequent ruling of this Court that cases sounding in tort are not cognizable in the Court of Claims.

That this action is one sounding in tort is clear. It is in form one to recover damages. The petition charges a wrongful appropriation by the Government, against the protest of the claimants, and prays to recover the damages done by such wrong. The successive allegations place the parties in continued antagonism to each other, and there is no statement tending to show a coming together of minds in respect to anything. It is plainly and solely an action for an infringement, and in this connection reference may be made to the statutory provision (Rev. Stat., sec. 4919) of an action on the case, as the legal remedy for the recovery of damages for the infringement of a patent. If it be said that a party may sometimes waive a tort and sue in assumpsit, as on an implied promise, it is technically a sufficient reply to say that these claimants have not done so. They have not counted on any promise, either express or implied.

But we do not care to rest our decision upon the mere form of action. The transaction as stated in the petition, and as disclosed by the findings of the court, was a tort pure and simple. The case was, within the language of the statute, one "sounding in tort." It is in this respect essentially different from *United States* v. *Palmer*, (128 U. S., 262.) That was an action to recover for the authorized use of a patent by the Government, and these observations in the opinion (p. 269) are pertinent:

This is not a claim for an infringement, but a claim of compensation for an authorized use—two things totally distinct in the law, as distinct as trespass on lands is from use and occupation under a lease. The first sentence in the original opinion of the court below strikes the key-note of the argument on this point. It is as follows: "The claimant in this case invited the Government to adopt his patented infantry equipments, and the Government did so. It is conceded on both sides that there was no infringement of the claimant's patent, and that whatever the Government did was done with the consent of the patentee and under his implied license." We think that an implied contract for compensation fairly arose under the license to use, and the actual use, little or much, that ensued thereon.

Here the claimants never authorized the use of the patent-right by the Government; never consented to, but always protested against it, threatening to interfere by injunction or other proceedings to restrain such use. There was no act of Congress in terms directing, or even by implication suggesting, the use of the patent. No officer of the Government directed its use, and the contract which was executed by Cook did not name or describe it. There was no recognition by the Government or any of its officers of the fact that in the





construction of the pavement there was any use of the patent, or that any appropriation was being made of claimant's property. The Government proceeded as though it were acting only in the management of its own property and the exercise of its own rights, and without any trespass upon the rights of the claimants. There was no point in the whole transaction from its commencement to its close where the minds of the parties met or where there was anything in the semblance of an agreement. So not only does the petition count upon a tort, but also the findings show a tort. That is the essential fact underlying the transaction and upon which rests every pretense of a right to recover. There was no suggestion of a waiver of the tort or a pretense of any implied contract until after the decision of the Court of Claims that it had no jurisdiction over an action to recover for the tort.

It may be well to notice some of the cases in which the jurisdiction of the Court of Claims over implied contracts has been sustained. In the case of *United States* v. *Russell*, (13 Wall., 623.) which was an action to recover for the use of certain steamers, the property of the claimant, it was found as a fact—

that in the case of each of these steamers, at the times when the same were respectively taken into the service of the United States, the officers acting for the United States *did not intend to "appropriate" these steamers to the United States, nor even their services; but they did intend to compel the captains and crews with such steamers to perform the services needed, and to pay a reasonable compensation for such services, and such was the understanding of the claimant;* and that each of said steamers, so soon as the services for which they were respectively required had been performed, were *returned* to the exclusive possession and control of the claimant.

Thus it appears that the minds of the claimant and the officers acting for the Government met; both intended a contract; and the power of the officers to act for the Government in the premises not being disputed, it was obviously just to treat the case as one of contract and not of tort. So also in the case of *United States* v. *Great Falls Manufacturing Company*, (112 U. S., 645.) The appropriation of the claimant's property was under direct legislative enactment by Congress. The property thus appropriated was confessedly the property of the claimant, to which the Government made no pretense of title. The claimants assented to such appropriation; entered into arbitration proceedings to determine the amount due them therefor. Hence all the elements of contract were found in the transaction.

But there is still another aspect in which this case may be considered. The patent of Schillinger runs to the mode of constructing concrete pavements. The mere form of a pavement with free joints, that is, in separate blocks, is not since the filing of his disclaimer within the scope of his patent. It may be that the process or mode by which Cook, the contractor, constructed the pavements in the Capitol grounds was that described in and covered by the Schillinger patent. He may, therefore, have been an infringer by using that process or mode in the construction of the pavement, and liable to the claimants for the damages they have sustained in consequence thereof. It may be conceded, also, that the Government, as having at least consented to the use by Cook of such process or method in the construction of the pavement, is also liable for damages as a joint tort feasor. But what property of the claimants has the Government appropriated? It has, and uses, the pavement as completed in the Capitol grounds, but there is no pretense of a patent on the pavement as a completed structure.

When a contractor, in the execution of his contract, uses any patented tool, machine, or process, and the Government accepts the work done under such contract, can it be said to have appropriated and be in possession of any property of the patentee in such a sense that the patentee may waive tort and sue as on an implied promise? The contractor may have profited by the use of the tool, machine, or process, but the work, as completed and enjoyed by the Government, is the same as though done by a different and unpatented process, tool, or machine. Take, for illustration, a patented hammer or trowel. If a contractor in driving nails or laying bricks use such patented tools, does any patent-right pass into the building and become a part of it, so that he who takes the building can be said to be in the possession and enjoyment of such patent-right? Even if it be conceded that Cook, in the doing of this work, used tar paper, or its equivalent, to separate the blocks of concrete, and thus finally completed a concrete pavement in detached blocks or sections, was such completed pavement any different from what it would have been if the separation between the blocks had been accomplished in some other way; and is the Government now in possession or enjoyment of anything embraced within the patent? Do the facts, as stated in the petition or as found by the court, show anything more than a wrong done, and can this be adjudged other than a case "sounding in tort?"

We think not, and therefore the judgment of the Court of Claims is affirmed.

## Court of Appeals of the District of Columbia.

### WELLS, JR., *et al. v.* REYNOLDS *et al.*

*Decided December 5, 1894.*

COURT OF APPEALS—APPEALS FROM THE COMMISSIONER OF PATENTS—NO POWER TO AWARD COST.

In appeals from the Commissioner of Patents the Court of Appeals has no power or jurisdiction to award cost or to execute any judgment therefor that it might enter therein.

MOTION to tax costs.

STATEMENT OF THE CASE.

The Court of Appeals of the District of Columbia, in a case entitled as the above, decided priority of invention in favor of Wells and directed a certificate of the proceedings in that court and its decision therein—

to be returned to the Commissioner of Patents to be entered of record in the Patent Office, as the law directs. (*Wells et al.* v. *Reynolds et al.*, 69 O. G., 121.)

Counsel for Wells thereafter filed a motion for an order amending the decree, which motion, omitting the mere formal parts and one ground not touched upon by the decision of the court in disposing of it, was as follows, to wit: 1. By inserting in the body of the decree the costs to be recovered—that is, the specific sum to be recovered. 2. By estimating and including as a part of such costs so specified the cost of the transcript of the record furnished by the Commissioner of Patents, which was paid by the appellant, as is evidenced by the accompanying certificate annexed to this motion.

*Mr. Frank T. Brown* for the motion.

Mr. Chief-Justice ALVEY delivered the opinion of the court.

Upon consideration of this motion the court has concluded that, under the law, it has no power or jurisdiction to award cost or to execute any judgment therefor that might be entered in cases of appeals from the Commissioner of Patents.

The motion is therefore denied.

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## U. S. Circuit Court—Eastern District of Wisconsin.

### DIAMOND MATCH COMPANY *v.* OSHKOSH MATCH WORKS *et al.*

*Decided October 29, 1894.*

The defendants concealed their machines, so that the complainant could not make satisfactory proof of infringement. Complainant thereupon called one of the directors of the defendant corporation and proved by him that the defendants' machines contained the elements mentioned in certain claims of complainant's patents, and then moved the court for an order requiring the defendants to produce drawings or a model of said machines or to permit complainant's experts to visit their shops and make such drawings from the machines. *Held*, first, that, although such order should not be granted upon mere suspicion or allegation of infringement, yet here, as the complainant had shown probable cause for believing that infringement was going on, the order should be granted; second, that the fact that an application for a patent on one of the defendants' machines was pending was no ground for denying the order, the rule of secrecy in the Patent Office having no application to investigations of causes by the courts; third, rule entered for the defendants to produce drawings of the alleged infringing machines upon payment of the cost thereof by the complainant.

*Messrs. Prindle & Russell*, *Mr. L. Hill*, and *Mr. H. G. Underwood* counsel for the complainant.

*Mr. C. T. Benedict* and *Messrs. Thompson, Harshaw & Davidson* for the defendants.

SEAMAN, *J.*:

The complainant is prosecuting two actions in equity against the defendants, alleging infringement in each case of certain Letters Patent, and the defendants answer in each under oath, denying infringement. The complainant was proceeding with the taking of testimony before a notary, acting as examiner, pursuant to stipulation, and produced as a witness in its behalf William H. Wyman, who was superintendent and director of the Oshkosh Match Works and inventor of the alleged infringing machinery used by the defendants. It is sufficient to state that this witness testifies that applications are pending in the Patent Office for patents upon one of these machines; that full and complete drawings have been made of each of the machines, but were delivered to their solicitor for use with applications for patents, and are not in possession of the witnesses; that he is not sufficiently skilled to make drawings or sketches which would accurately represent the machines, and has no model of them. His answers to certain of the direct interrogatories, which are framed in the precise language of claims set out in complainant's patents, tend to show that there is present in the defendants' machines, in each case, at least a similar combination of elements for a similar purpose. There is sufficient in some of these answers to show ground for suspicion of infringement and to demand accurate information of the means or elements employed in order to determine the question of conflict. In this state of the inquiry it is not "a mere fishing excursion" for evidence against the defendants or a move upon bare suspicion. The case differs materially from that presented in *Dobson* v. *Graham* (49 Fed. Rep., 17) and comes clearly within the rule announced in *Edison Elec. Light Co.* v. *U. S. E. L. Co.*, (44 Fed. Rep., 294; S. C., 45 Fed. Rep., 57;) *Coop* v. *Dr. Savage, &c.*, (47 Fed. Rep., 899;) *Johnson S. S. R. Co.* v. *North Branch Street Co.*, (48 Fed. Rep., 195.)

The complainant is not entitled to the aid of the court upon a suspicion or an allegation of infringement to pry into the business, operations, or appliances of the defendants, either to the end of making out a case against them, or for any other object. The defendants are entitled to protection in their rights and property and will not be required to make premature disclosure of their matters of defense; but the answers above referred to so far establish ground for a *prima facie* case of infringement that it is fairly opened for inquiry, and the complainant is entitled to accurate information of the constituents and mode of operation of the alleged infringing machines. That information can be readily furnished. It is a part of the complainant's case, but cannot at this stage be withheld upon the ground simply that it is under the control of defendants.

I doubt whether the question of identity could be determined satisfactorily without the aid of drawings, models, or inspection, and I am unable to find any reason for the fear expressed by the defendants that some harm, aside from the issues in this action, might result from disclosure while the application in the one case is pending in the Patent Office. Any invention it may show cannot be forestalled at this time. The rule of practice of the Patent Office which withholds the drawings and papers from the public eye until the case is disposed of, is salutary there, but is not applicable to the investigation of causes by the courts. The application in the other case is stated to be in readiness for filing, and disclosure obtained in this public manner cannot be presumed to imperil any invention it may contain.

The drawings must be produced, if in existence and within control of the defendants or their counsel, for use before the Examiner, upon payment by the complainant of such sum for their use as shall be reasonable. A rule will be entered accordingly, with leave to complainant to apply for further relief upon default or insufficiency of the information.

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## U. S. Circuit Court—District of New Jersey.

### THE BRUSH ELECTRIC COMPANY *et al. v.* THE ELECTRIC STORAGE BATTERY COMPANY *et al.*

*Decided August 27, 1894.*

BRUSH—STORAGE-BATTERY—MOTION FOR PRELIMINARY INJUNCTION DENIED, ALTHOUGH PATENT HAD BEEN LITIGATED AND SUSTAINED, BECAUSE PROOF OF INFRINGEMENT NOT CLEAR AND DECISIVE, AND COMPLAINANT CHARGEABLE WITH LACHES IN NOT EARLIER INSTITUTING SUIT.

Although the validity of the patent sued on had been sustained in previous litigation and was beyond dispute, yet where on a motion for a preliminary injunction the proof of infringement is not clear and decisive, but is in doubt, and, further, where the complainant is guilty of laches in standing idly by for several years during the time of the alleged infringement, *Held* that for these reasons the motion for preliminary injunction must be denied.





ON motion for a preliminary injunction.

*Messrs. Witter & Kenyon* for the complainants.

*Mr. John R. Bennett* for the defendants.

GREEN, *J.*:

Two reasons conjointly compel a denial of the motion for a preliminary injunction made by the complainants.

The validity of the Letters Patent in question is beyond dispute. They have been sustained by all the courts before which they have been the subject of litigation. The only question to be considered upon this motion, under the circumstances, is that of infringement. While it is well settled that a preliminary injunction will issue almost as a matter of course in any given case wherein the defendants are shown to be guilty of infringement, after an adjudication establishing the validity of the Letters Patent involved in the litigation, yet it is equally well settled that to warrant and justify the exercise of this extraordinary power the proof of the alleged infringement must be clear and decisive. Equity peremptorily insists that such action, so drastic in its effects, shall be taken only in those cases wherein a clear, unclouded, equitable right to the interference of the court is shown. In all other cases the demand is to be met by refusal. Otherwise unfair prejudgment may result.

In the case at bar the proof of infringement fails to attain to this standard.

It is quite true that, on the part of the complainants, certain gentlemen most eminent in their profession, and whose opinions as experts are entitled to great weight, have not hesitated in their affidavits presented to the court upon this motion to assert quite positively that not only the storage-battery manufactured by the defendants, but, as well, the process used in the manufacture, do without doubt infringe some, if not almost all, of the claims of the Letters Patent under consideration; and they laboriously strove to justify the opinions so expressed, first, by giving to the Letters Patent and the various claims an exceedingly broad construction, and, secondly, by basing such broad construction upon a yet broader construction of the legal conclusions of the learned judges who have in past litigations defined and characterized the inventions of Faure and Brush.

Giving full weight to the opinions of these witnesses, elucidated and most eloquently enforced upon the attention of the court in the exceedingly able argument of counsel, it still remains to be said that the defendants have, in opposition thereto, presented opinions of other scientists equally as learned and of equal standing and repute in the scientific world which are directly antagonistic thereto, and by which they most distinctly and positively declare that in their judgment neither the process pursued by the defendants nor the completely-manufactured battery impinges in the slightest particular upon those secured to the complainants by their Letters Patent; and so upon the one side are found the concurring opinions of Professor Morton and Professor Chandler, Professor Houston and Doctor Barker; upon the other those of Professor Brackett, Professor Cross, Professor Thomson, and Mr. Van Size. These are gentlemen of unquestioned veracity, thoroughly understanding the subject-matter under consideration; stating opinions with confidence which they believe to be well formed, and yet they arrive at conclusions which are irreconcilably and diametrically opposed. It must be apparent that affidavits of this character, *ex parte* as they are, can only be productive of doubt. When the statements so made and the opinions so expressed come to be tested by a severe and thorough cross-examination, beyond question those which show themselves securely founded upon reason and fact will be immediately accepted and concurred in; but until then the existence of a doubt, well founded and reasonable, as to the right of the complainants to the remedy they ask cannot be overlooked. The existence of such doubt must now, at least, control the action of the court. It is fatal to a motion for a preliminary injunction. To justify the interference of a court of equity, *pendente lite*, by way of an injunction, the actual or threatened infringement of a right must appear as clear as the noonday sun.

There is another reason why this motion must be denied. Equity demands of a complainant that he should display great diligence in the assertion and vindication of his rights. Inexcusable delay on his part, though it may not amount to conclusive proof of acquiescence, nevertheless may be and often is sufficient cause to disentitle him to the summary interference of the court on his behalf by way of interlocutory injunction. Whatever may be the original equities of the case as between the parties, if the complainant stands quietly by without seeking to enforce his rights, while the defendant expends time and labor and money upon the enterprise sought to be enjoined, upon faith that no actual or effective objection thereto will be made, he will be shorn of any right to appeal to the court of equity for assistance. (*Hummer* v. *Hummer*, 2 Green, ch., 263; *Whitney* v. *Union Co.*, 11 Gray, 359; *Carlisle* v. *Cooper*, 21 N. J. Equity, 599.)

In other words, the principle has been thus stated: No one can have relief if his own conduct has led to that state of affairs which occasions the application.

The proofs submitted to the court on this motion show these facts: The defendant corporation was organized, under the laws of the State of New Jersey, in 1888. Its sole purpose was to engage in the manufacture and sale of electric storage-batteries of the type known as the "chloride accumulator." Its works were located at Gloucester, in said State, and from the time of its incorporation to the present it has carried on its business without interruption. Its existence and the character and extent of its operations were well known to the principal officers and managers of the complainant corporation. In the conduct of its business at various times, and especially in 1891, 1892, and 1893, the defendants openly installed storage-battery plants of the alleged infringing type in various public buildings and for various corpora-

tions. Thus, for example, they furnished plants or batteries to the Provident Insurance Company, of Philadelphia; to the Metropolitan Railway Company, of Washington; to the Union Square Theater, in New York, and elsewhere. The fact that these plants were furnished by the defendants was well known to the complainants. Besides, early in 1893 the defendants issued a pamphlet in which was printed an opinion of Professor Chandler, of Columbia College, on storage-batteries, and which contained a detailed and correct statement of the mode of construction and operation of the storage-batteries of the defendants and a full and succinct comparison between them and the batteries of the complainants. This pamphlet was widely circulated and admittedly the complainants knew of it. In July, 1893, the defendant, through its president, sent to the complainant corporation a letter, in which, among other things, is the following statement and appeal:

PHILADELPHIA, PA., *July* 27, 1893.

MR. WILLIAM BRACKEN,
*President Consolidated Electric*
*Storage Company, New York, N. Y.:*

DEAR SIR: I am favored with copies of your letters of 27th of February and the 24th of July, 1893, to Mr. George W. Pearson, president of the Metropolitan Railway Company of Washington, D. C., wherein you state that the battery manufactured by The Electric Storage Battery Company, of Philadelphia, is a clear infringement of the Brush patents, and of which "there is no earthly doubt."

By what authority do you say our battery infringes the claims of your Brush patent? Surely on the authority of no court, for you well know that no court has declared our battery to be an infringement, and although we have been, to your knowledge, openly engaged in manufacturing our batteries for some years, you have not down to this moment proceeded against us although threatening to do so for nearly eight months past. You apparently propose to dispose of our battery, and business without even resorting to the courts wherein such questions are usually determined.

Unlike you, we have sufficient confidence in our position to submit the question to the courts empowered to consider and determine such questions, and there we invite you to meet us at once, and unless you do so, or discontinue your libelous statements against our battery, we will take such steps as we are advised are open to us to protect our interests.

We are advised by our counsel and experts that our battery does not infringe any of the claims of your patents, and having confidence in their opinion, we propose to continue making and selling our battery, and shall protect and save harmless all users of them, not only as against any claim you may make, but against all claims from whatever source.

Now, being advised of our intentions, we demand, in view of statements made in your letter to Mr. Pearson and other parties, that you proceed at once against us on a bill for infringement accompanied with motion of injunction so that the question of our infringement of your patents may be determined, and to that end we advise you, viz:

We are a New Jersey corporation with a factory at Gloucester, in that State, where batteries are being manufactured daily, and we will at any time furnish you with one of our batteries, at the usual price, accompanying same with a sworn statement of precisely how they are made with permission to use the same in any proceedings against us.

We have, to avoid delay, authorized our counsel, Mr. John B. Bennett, Potter building, New York city, to accept service papers in our name and to aid you in every way possible to reach the courts at the earliest possible moment, and you can arrange with him either direct or through your counsel for one of our batteries and a statement of its construction.

If you have confidence in your position you will, of course, accept our most reasonable proposition to proceed against us at once, and if you do not we hereby notify you that we shall proceed against you to protect our interests, holding you responsible for the damages resulting to our business by the making of statements and the sending out of such unfounded libelous letters as you have sent to Mr. Pearson.

To this letter the complainants returned no answer beyond a mere acknowledgment of receipt and admittedly took no action toward the assertion of their claims until months after.

In the meantime the defendants, assuming, as it cannot be denied they had reason to do, that no attack was to be made upon them, increased their capital stock $250,000 and proceeded to erect in addition to their existing factories a very extensive plant at a very large cost. It was not until 1894, months afterward, that this bill of complaint was filed. Realizing the necessity of making explanation of their delay, the complainants allege that it was caused, first, by their diligent searching for some purchaser of the defendants' storage-battery within the jurisdictional limits of the Circuit Court of the United States for the District of Southern New York, in which forum much of the previous litigation concerning the Brush and Faure batteries had taken place, and so avoid by the bringing of their suit in that jurisdiction some of the trouble and labor which would necessarily follow the commencement of a suit in this jurisdiction, and, further, that all the operations of the defendants were considered by the complainants to be simply tentative in the line of producing a practical commercial storage-battery and only an effort on the part of the defendants to persuade the complainants to spend thousands of dollars in substantially a moot litigation to stop the making and sale or use of only a few batteries, and because the complainants believed the venture of the defendants was destined to be a failure and die a natural death.

It is hardly necessary to say that such excuses do not justify the laches of which the complainants have been clearly guilty. If the rights of the complainants are now trespassed upon by the defendants, they were in like manner trespassed upon more than four years ago, and the trespass, of which so loud complaint is made now, has been continuous. For reasons satisfactory to themselves the complainants, well aware of these continuous trespasses, chose to stand by without taking action looking to the vindication of their rights and the prompt punishment of the trespasser. The result of such inaction on the part of the complainants is found in the increased contribution to the capital stock of the defendant corporation of hundreds of thousands of dollars and the expenditure of an exceedingly large amount of money in the erection of a greatly-extended plant. If, in fact, the rights of the complainants have been invaded by the alleged infringing acts of the defendants, it is scarcely an exaggeration to say that the dilatory conduct of the complainants in protecting their rights amounted to open encouragement of or at least to silent acquiescence in such invasion. Such conduct bars absolutely the remedy asked for at this time by the complainants. (*Brisbin* v. *Burdick*, 12 Beavan, 1; *Smith* v. *S. W. Railway Co.*, Kay, 417.)

It was admitted upon the argument that the defendants were financially responsible and amply able to respond to any award of damages that might be made against them.

Under all the circumstances and for the reasons given the motion for a preliminary injunction is denied.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 69.—No. 12. TUESDAY, DECEMBER 18, 1894. PRICE—$5 per year.

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## Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., December* 12, 1894.

SIR: The Secretary of the Interior has ordered that William A. Phelps, of Richwood, Ohio, be not recognized after this date as attorney or agent in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,

JOSEPHUS DANIELS,
*Chief Clerk.*

The Commissioner of Patents.

## Order in Relation to Drawings.

NOTICE.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January* 25, 1894.

Order No. 980, respecting the alteration of drawings, was published in the OFFICIAL GAZETTE of December 19, 1893, (65 O. G., 1771,) by mistake, and was never in force. The following is the only order in force upon that subject:

(ORDER NO. 986.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January* 25, 1894.

Erasures or other alterations of drawings will not be made or permitted, except in compliance with this order.

Applicants are requested to furnish, with their originals, a blue print or other photographic copy of all drawings forming part of an application, and where this is done, the original drawings may be taken to the Attorneys' room, but not otherwise.

Before making a requirement to alter an original drawing the Examiner will formally make the blue print or other copy a part of the files, and in case no such copy has been furnished by the applicant, the Office will make such copy without charge, and thereupon the required alteration may be made by the applicant, under the direction of the Examiner and subject to his approval or, upon request, it will be made by the Office at the expense of the applicant.

The requirement to make alterations in original drawings will be made in writing, and the applicant's response must also be in writing, and in such case the copy of the drawing, the requirement to alter, and the applicant's response will form part of the record.

Action by the Office on the merits will not be suspended pending the change of a drawing, if the invention claimed may be understood by the Examiner.

For the purposes of this order the Office, upon the request of applicants, will make blue prints at the charge of five cents a sheet.

In appeal cases and upon the declaration of an interference a blue print or other copy will be sent forward with the files, the Examiner retaining the original drawings in his room until the hearing.

Except as herein required such blue print or other copy will not be made a part of the file, and may not be preserved after an application passes into a patent.

JOHN S. SEYMOUR,
*Commissioner.*

PHOTOGRAPHIC COPIES OF DRAWINGS.

A photographic outfit has been added to the equipment of the Patent Office, and positive photographic copies of any drawing, foreign or domestic, in the possession of the Office, will be furnished upon application to parties entitled thereto, at the following rates:

Size 10x15 inches.....25 cents per sheet.
Size 7x11 inches.....15 cents per sheet.
Size 5x8 inches.....5 cents per sheet.

If a copy of the drawings in a pending application of the size 5x8 inches be ordered sent to any address, two copies must be ordered, as one copy is always retained by the Office and placed in the file for the purposes specified in the above Order No. 986, of January 25, 1894.

In ordering copies of foreign drawings, the examining division, the class, and sub-class where such drawings may be found, must be given.

Coupons will be received in payment of the above fees.

## Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

## Oaths of Applicants in Foreign Countries.

It is hereby directed that oaths accompanying applications for patents made within the following-named foreign countries must be taken before a minister, chargé d'affaires, consul, or commercial agent holding commission under the Government of the United States:

| | |
|---|---|
| Austria-Hungary. | Netherlands. |
| Argentine Republic. | Norway. |
| Belgium. | Peru. |
| Brazil. | Portugal. |
| Costa Rica. | Russia. |
| Denmark. | San Salvador. |
| Haiti. | Servia. |
| Honduras. | Sweden. |
| Italy. | Switzerland. |
| Mexico. | |

Applications filed in this Office presenting oaths not executed in compliance with this order will be treated as incomplete.

## Issue of December 18, 1894.

| | | |
|---|---|---|
| Patents | 377 | No. 530,915 to No. 531,291, inclusive. |
| Designs | 6 | No. 23,878 to No. 23,883, inclusive. |
| Trade-Marks | 34 | No. 25,605 to No. 25,638, inclusive. |
| Labels | None. | |
| Prints | None. | |
| Reissues | 1 | No. 11,459. |
| Total issue | 418 | |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | 5 | .... | Nevada | .... | .... |
| Arizona Territory | .... | .... | New Hampshire | 3 | .... |
| Arkansas | 1 | .... | New Jersey | 20 | .... |
| California | 12 | .... | New Mexico Territy | .... | .... |
| Colorado | 3 | .... | New York | 57 | 7 |
| Connecticut | 12 | 1 | North Carolina | .... | .... |
| Delaware | .... | .... | North Dakota | .... | .... |
| District of Columbia | 7 | .... | Ohio | 26 | 1 |
| Florida | .... | .... | Oregon | 1 | .... |
| Georgia | 3 | .... | Pennsylvania | 28 | 4 |
| Idaho | .... | .... | Rhode Island | 4 | .... |
| Illinois | 30 | 1 | South Carolina | 1 | .... |
| Indiana | 14 | 3 | South Dakota | 1 | .... |
| Indian Territory | .... | .... | Tennessee | 4 | .... |
| Iowa | 4 | .... | Texas | 6 | .... |
| Kansas | 7 | .... | Utah Territory | .... | .... |
| Kentucky | 4 | .... | Vermont | .... | .... |
| Louisiana | 1 | .... | Virginia | 2 | .... |
| Maine | .... | .... | Washington | 3 | .... |
| Maryland | 2 | 1 | West Virginia | .... | .... |
| Massachusetts | 22 | 2 | Wisconsin | 5 | 1 |
| Michigan | 20 | .... | Wyoming | .... | .... |
| Minnesota | 17 | 1 | U. S. Army | .... | .... |
| Mississippi | .... | .... | U. S. Navy | .... | .... |
| Missouri | 15 | 1 | | | |
| Montana | 1 | .... | Total to citizens of the United States | 345 | 23 |
| Nebraska | 1 | .... | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Argentine Republic | .... | .... | Mexico | .... | .... |
| Austria-Hungary | 4 | .... | Netherlands | .... | .... |
| Belgium | 1 | .... | Newfoundland | .... | .... |
| Bermuda | .... | .... | New South Wales | .... | .... |
| Brazil | .... | .... | New Zealand | .... | .... |
| British Guiana | .... | .... | Norway | .... | .... |
| Canada | 5 | .... | Queensland | .... | .... |
| Chile, Republic of | .... | .... | Russia | .... | .... |
| Cape Colony | .... | .... | Scotland | .... | 3 |
| Colombia | .... | .... | South Australia | .... | .... |
| Cuba | .... | .... | Spain | .... | .... |
| Denmark | .... | .... | Sweden | 1 | .... |
| Ecuador | .... | .... | Switzerland | 3 | .... |
| England | 7 | 8 | Victoria | .... | .... |
| Finland | .... | .... | West Australia | .... | .... |
| France | 8 | .... | | | |
| Germany | 9 | .... | Total to citizens of foreign countries | 38 | 11 |
| Italy | .... | .... | | | |

## APPLICATIONS UNDER EXAMINATION.

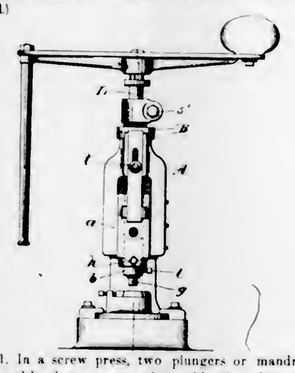
*Condition at Close of Business December 11, 1894.*

| Division No. | Subjects of invention. | Oldest new application and oldest application by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Nov. 12 | Dec. 10 | 66 |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | Nov. 12 | Dec. 10 | 84 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire-Escapes and Ladders, etc. | Dec. 1 | Dec. 6 | 43 |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Nov. 15 | Dec. 5 | 71 |
| 8 | Furniture, Beds, Store-Furniture, etc. | Nov. 13 | Dec. 5 | 166 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | Nov. 12 | Dec. 4 | 71 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | Nov. 12 | Dec. 4 | 74 |
| 12 | Mechanical Engineering, Store-Service, etc. | Nov. 17 | Dec. 3 | 117 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Nov. 12 | Dec. 3 | 114 |
| 2 | Farm Stock, Products, etc | Nov. 14 | Dec. 1 | 106 |
| 10 | Carriages and Wagons | Nov. 13 | Nov. 30 | 142 |
| 26 | Electricity, Generation, Distribution, Motive Power, Electric Railways, etc. | Nov. 21 | Nov. 28 | 73 |
| 3 | Metallurgy, Metal-Founding, Conting, Annealing and Tempering, Electro-Chemistry, etc. | Nov. 12 | Nov. 28 | 97 |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Nov. 12 | Nov. 24 | 155 |
| 30 | Builders' Hardware, Safes, Dentistry, Undertaking, Artificial Limbs, etc. | Nov. 12 | Nov. 23 | 156 |
| 19 | Stoves and Furnaces | Nov. 13 | Nov. 19 | 174 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Nov. 12 | Nov. 19 | 147 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | Nov. 12 | Nov. 16 | 226 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, Cutlery, etc. | Nov. 12 | Nov. 14 | 108 |
| | *Between one and two months.* | | | |
| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting, and Leather Working Machinery. | Oct. 11 | Dec. 10 | 233 |
| 18 | Steam-Engineering, etc | Oct. 12 | Dec. 4 | 156 |
| 29 | Wood-Working Machines, Carpentry, Coopering and Roofing, etc. | Oct. 30 | Dec. 3 | 126 |
| 21 | Textiles, etc | Oct. 11 | Dec. 3 | 112 |
| 34 | Railway-Cars and Fluid-Pressure Railway-Brakes. | Oct. 15 | Dec. 1 | 199 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | Nov. 8 | Nov. 27 | 137 |
| 23 | Instruments of Precision, Acoustics, etc. | Nov. 6 | Nov. 26 | 124 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | Oct. 13 | Nov. 26 | 309 |
| 17 | Paper-Manufactures and Printing | Oct. 12 | Nov. 26 | 169 |
| 1 | Tillage and Fences | Oct. 22 | Nov. 21 | 263 |
| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Oct. 19 | Nov. 16 | 172 |
| 24 | Sewing-Machines, Crinoline and Corsets, Apparel, and Toilet. | Nov. 5 | Nov. 15 | 94 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, Surgery. | Nov. 6 | Nov. 13 | 182 |
| 30 | Lamps, Gas-Fittings, Linotyping, Type-Writing Machines, Optics. | Oct. 11 | Oct. 18 | 221 |
| | Total number of applications awaiting action | | | 4,687 |
| | *Under one month in arrears.* | | | |
| | Designs | Dec. 6 | Dec. 6 | 37 |
| | Trade-Marks | Dec. 4 | Dec. 5 | 37 |

# PATENTS

## GRANTED DECEMBER 18, 1894.

530,915. JEWELER'S PRESS. CHARLES M. ADAMS and GEORGE W. ADAMS, Providence, R. I. Filed Dec. 26, 1893. Serial No. 494,717. (No model.)



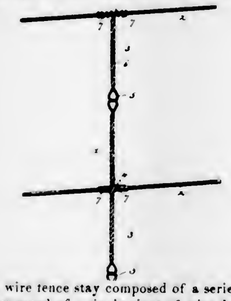
*Claim.*—1. In a screw press, two plungers or mandrels with punches, operated by the same screw, in combination with said screw, substantially as described.

2. In a screw press, the combination of two sliding punches operated by the same screw, and means for connecting one of said punches with the other punch, and for disconnecting it from said punch, and means for locking said punch when so disconnected, to prevent its further motion, substantially as set forth.

3. In a screw press, the combination of two sliding plungers, one working inside the other and operated by one screw, the inner plunger being recessed in its lower end as described to hold a drawing punch, a socket in the outer plunger holding a cutting punch, said cutting punch having a hole through it to receive the drawing punch, substantially as described.

4. In a screw press, the combination of two sliding punches operated by the same screw and sliding one in the other, the outer plunger having a recess through it, and a recess in the front of the inner plunger having projecting edges at the lower edges of the recesses in the plungers and the upper side of the recess in the inner plunger beveled away, a front plate adjustably attached to the press standard and having a recess in its lower end the bottom of which projects inward and the upper side of which is beveled away, a block fitted to slide in the recess in the outer plunger and having its ends beveled, substantially as described.

530,916. FENCE-STAY. WILLIAM D. ALBRIGHT, Greenville, Ohio. Filed Apr. 21, 1894. Serial No. 508,509. (No model.)



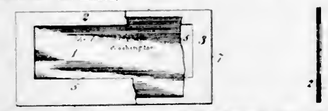
*Claim.*—A wire fence stay composed of a series of flexible sections, each constructed of a single piece of wire doubled to form a loop, which is linked into the loop of the adjacent section, twisted to form a rigid stem, and has its terminals coiled at each side to form eyes to receive a fence wire, the adjacent ends of the sections of the stays being interlaced on the fence wires at opposite sides of the stay, whereby the sections are hingedly connected together and to the fence wires, and a continuously connected stay is formed, substantially as and for the purpose described.

530,917. PIPE-COUPLING. OAKES AMES, Canton, Mass., assignor to the Meteor Despatch Company, Portland, Me., and Boston, Mass. Filed Jan. 18, 1894. Serial No. 497,257. (No model.)



*Claim.*—A clamp or coupling for pipe sections having a sleeve covering the junction of said pipe sections, a ring of two internal diameters adapted to fit around the pipe and end of the sleeve and split downwardly on a line between the two diameters, and means for securing both parts of said ring independently of one another to said sleeve and pipe.

530,918. REINFORCED STENCIL-CARD. FRANK D. BELKNAP, New York, N. Y. Original application filed Apr. 9, 1894. Serial No. 506,852. Divided and this application filed Sept. 20, 1894. Serial No. 523,544. (No model.)

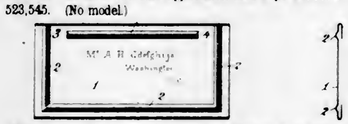


*Claim.*—1. The combination with a stencil card, of a frame for said card which has an opening through which the stenciled part of the card will appear, said frame overlapping the edges of said card, both front and back, and holding said card in place, wholly or in part, by friction against the over-lapped portions, substantially as described.

2. The combination with a stencil card, of a frame for said card which has an opening through which the stenciled part of the card will appear, said frame overlapping the edges of said card both front and back and holding said card in place, wholly or in part, by friction against the overlapped portions, the front and back portions of the frame being connected together along a sufficient portion of their edges to produce such frictional contact upon the inclosed card, but being left unconnected along a sufficient portion of said edges to permit the sliding in and out of said card, substantially as described.

3. The combination with a stencil card of nonmetallic material, of a frame for said card which has an opening through which the stenciled part of the card will appear, said frame overlapping the edges of said card both front and back, but being attached to the card along a limited portion only of said edges, substantially as described.

530,919. REINFORCED STENCIL-CARD. FRANK D. BELKNAP, New York, N. Y. Original application filed Apr. 9, 1894. Serial No. 506,852. Divided and this application filed Sept. 20, 1894. Serial No. 523,545. (No model.)

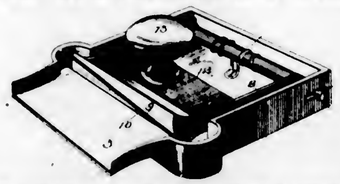


*Claim.*—1. As an article of manufacture, a perforated stencil card made of parchment or other non metallic material with its edges reinforced by one or more embossed lines near said edges, and with one or more of said edges folded over against the concave side of said embossed portions, substantially as described.

2. A stencil card which has its edges reinforced by one or more

embossed lines near said edges, and which has one or more of said edges folded over against the concave side of said embossed portions, substantially as described.

530,920. **ENVELOPE-OPENER.** ANDREW O. BLOMGREN, Granite Falls, Minn. Filed Dec. 8, 1893. Serial No. 493,104. (No model.)



*Claim.*—In an envelope opener the combination of a casing or box having at the front portion thereof two oppositely situated, semi-circular bays or projections, a front feed tray or chute having an inner terminating straight edge, the said inner edge of the feed chute projecting part way into the bays and rear slots in the opposite sides of said casing, conical trunnions adjustably mounted in the said slots, a rock shaft supported by the said trunnions and having said arms extending forwardly from the opposite ends thereof with a diagonal cutting rib across the front cutting bar of the same, an operating handle and a spring engaging the center of the rock shaft and secured to the base of the casing, the said inner edge of the feed chute extending into the space formed by the bays and clear of the latter for the purpose of admitting the cutting rib to act against said edge without contact with adjacent parts, substantially as and for the purposes specified.

530,921. **CHAIN-LINK.** RICHARD A. BREUL and CHARLES BREUL, Bridgeport, Conn.; said Charles Breul assignor to said Richard A. Breul. Filed June 12, 1894. Serial No. 514,307. (No model.)



*Claim.*—1. A chain link formed of a single piece of wire bent at its center to form the single loop, the side wires being then offset toward each other at the termination of said loop, then offset in the general direction of the link, extended and crossing each other, and then curved to form the two registering loops, the ends of the wire running back and passing through the single loop, and terminating in eyes which closely encircle the offsets of their respective shanks; substantially as set forth.

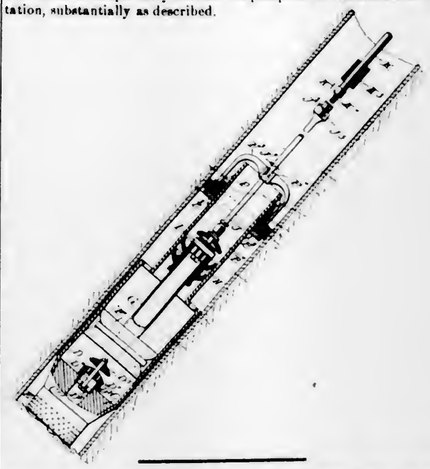
2. A chain link formed of a single piece of wire, bent at its center to form the single loop, the side wires being then offset toward each other at the termination of said loop, then offset again in the general direction of the link, extending and crossing each other, and then curved to form the two registering loops which extend in the same plane with the single loop forming the other half of the link, the ends of the wire running back past the central offset, passing through the single loop, and terminating in the eyes which closely encircle the offsets of their respective shanks; substantially as set forth.

530,922. **DOUBLE-ACTING PUMP.** FRANK J. BROWN, ALFRED ALLEN, and SOLOMON ALLEN, Halstead, Kans. Filed Oct. 24, 1893. Serial No. 488,987. (No model.)

*Claim.*—1. The combination, with the cylinder, the plunger, the pump rod for operating the plunger, and the compressible ring encircling the cylinder and supported thereon, of a sleeve loosely mounted on the cylinder, means for moving the sleeve longitudinally of the cylinder when it is turned thereon, to press on the said ring and expand the same, and a connection between the sleeve and the pump rod to couple them for simultaneous rotation, substantially as described.

2. In a pump, the combination, with the cylinder having two sets of lugs on its outer surface, the lugs of one set being arranged in transverse alignment with each other, and those of the second set being located out of the line of the first named set, of a compressible ring surrounding the cylinder between the two sets of lugs, and adapted to be supported on the set of transversely aligning lugs, a flange encircling the cylinder between the said sets of lugs and adapted for engagement with one side of the compressible ring to press it toward its support, and a sleeve interposed between the said flange and the said second set of lugs, and formed with an inclined edge adapted for engagement with the said set of lugs, the sleeve being loosely mounted on the cylinder, as and for the purpose set forth.

3. The combination, with the pump cylinder having projections on its outer surface, the plunger, the pump rod for operating the plunger, and the compressible ring encircling the cylinder and supported thereon, of a flange engaging the said compressible ring, a sleeve loosely mounted on the cylinder and provided with an inclined edge engaging the projections of the cylinder, said sleeve being adapted to press the said flange onto the compressible ring, a yoke connected to the sleeve to turn therewith, and provided with a notch, and a pin secured to the pump rod and adapted for engagement with the said notch to couple the yoke and the pump rod for simultaneous rotation, substantially as described.



530,923. **EXPANSION-BIT.** REUBEN H. BROWN, New Haven, Conn. Filed Jan. 23, 1894. Serial No. 497,759. (No model.)



*Claim.*—1. An expansible bit, comprising in combination a semi-cylindrical head having a gimlet pointed lead screw, a transverse recess formed in such head having circular foot and rear end walls, an angularly disposed front wall tangential with said circle, a cutter having a circular base to engage with the circular recess of the cutter-head, and a forward bearing surface tangential with the said circular base to engage with the angularly disposed front wall of said head, said bearing surface projecting beyond the cutter head and terminating in a cutting lip, a clamping plate and screw to prevent transverse displacement of the cutter, as set forth.

2. An expansible bit, comprising in combination, shank 2, semi-cylindrical head 1, lead screw 11, circular recess 3 angularly disposed front wall 6 tangential with said circular recess, cutter 7 having the circular base 8 to fit the circular recess of the cutter head, and the bearing surface *b* tangential with said circular base, and arranged to rest against the angular front wall of the cutter-head, said bearing surface projecting beyond the end of said head and terminating in the cutting lip *c* and spur *m*, the angular disposition of the said cutter being on a line with the cutting strain, in combination with its circular base, preventing vertical displacement of said cutter, clamping plate 9, ledge or floor 4 having under-cut *q* therefor, said plate having an inclined forward edge to rest against the inclined wall *o* of the cutter, and the base of said plate against the horizontal ledge *n* of said cutter, so as to prevent accidental transverse displacement of the cutter, all arranged as described and for the purpose set forth.

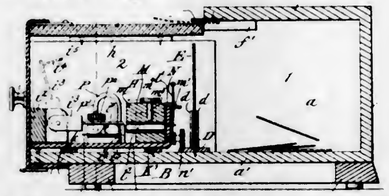
3. In a bit of the character described, the combination with the head 1, having a circular cutter seat formed transversely therein, inclined front wall to support the cutter blade, of a cutter having a circular base, a cutter-blade projecting therefrom, floor *n* and incline *o* to engage the clamping plate, combined with such clamping plate and its screw, substantially as set forth.

530,924. **SEALING DEVICE FOR CASH-REGISTERS.** JAMES O. BYERS, St. Paul, Minn. Filed Feb. 6, 1894. Serial No. 499,284. (No model.)

*Claim.*—1. In a sealing device for cash-registers, the combination, with a box having a seal-compartment and a deposit-compartment accessible only through the seal-compartment, of an end-plate closing the seal-compartment, a clamping-device within the seal-compartment and arranged to hold a strip of paper, and mechanism connected to the end-plate and arranged to tear the slip of paper, substantially as set forth.



2. In a sealing device for cash-registers, the combination, with a box having a seal compartment and a deposit compartment, accessible only through the seal-compartment, of a paper-holding clamp within the seal-compartment, an end-plate for closing the seal-compartment, and an arm pivotally attached to the end-plate and projecting inward beyond the paper-holding clamp, substantially as set forth

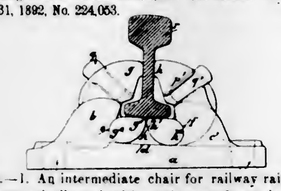


3. In a sealing device for cash-registers, the combination, with a box having a seal-compartment and a deposit compartment accessible only through the seal compartment, of a paper-holding clamp within the seal-compartment, an end-plate for closing the seal-compartment, an arm pivotally attached to the end-plate and projecting inward beyond the paper-holding clamp, and a sliding-block arranged to overhang the end of the pivoted arm, substantially as set forth.

4. In a sealing device for cash registers, the combination, with a box having a seal-compartment and a deposit compartment accessible only through the seal-compartment, of a paper-holding clamp within the seal compartment, an end plate for closing the seal-compartment, an arm pivotally attached to the end-plate and projecting inward beyond the paper-holding clamp, a sliding-block arranged to overhang the end of the pivoted arm, and means for retaining the sliding-block in said position, substantially as set forth.

5. In a cash-register, a sealing device, comprising a paper-holding clamp, a pivoted arm arranged to project inward beyond the paper-holding clamp, a sliding block, a guide-rod on which the sliding block moves, a pin fixed to the sliding block, a swinging-arm provided with a hole through which the pin passes, and a spring attached to the swinging arm and arranged to pull it to one side, when the pin is removed from the swinging arm, substantially as set forth.

530,925. **RAILWAY-CHAIR.** CHARLES CHENU, Étampes, France. Filed Aug. 6, 1894. Serial No. 519,581. (No model.) Patented in France Aug. 31, 1892, No. 224,053.

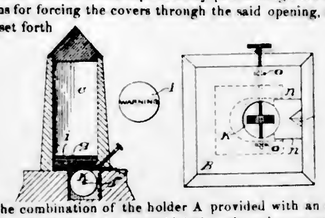


*Claim.*—1. An intermediate chair for railway rails, and which tightens automatically and without the use of a wedge, comprising two cheeks, each in two parts cast with the base of the chair and opened to receive two grips shouldered in recesses reserved for that purpose in the lower part of the cheeks, these grips, on the lower part of which the rail may rest, being, moreover, provided with side projections, which place themselves above the two parts of the cheeks of the chair, and sufficiently far from the said parts to allow of readily and easily putting in between them two tapering keys put in recesses in the opposite parts of the said cheeks.

2. An intermediate chair for railway rails, and which tightens automatically and without the use of a wedge, comprising on the outside a cheek against which the rail is supported, and, on the inside, a cheek in two parts, which receive a grip which shoulders itself in recesses reserved for that purpose at the base of the parts of the said inner cheek, and which carries the rail by means of one of its sides, and chair, with its other side on the middle part between the heads of the said rail, in order to apply and tighten it against the outside cheek, substantially as hereinbefore described, and shown in the accompanying drawings.

530,926. **DUST-PROOF SINGLE-DELIVERY COVER-GLASS MAGAZINE.** AARON H. COLE, Hamilton, N. Y. Filed June 16, 1892. Serial No. 436,964. (No model.)

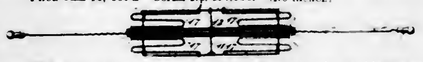
*Claim.*—1. The combination of the column or holder A provided with a delivery opening near its lower end, a base upon which the column is supported, having a shelf opposite the opening, a flexible flap adapted to close the said opening, and past which the covers are moved, and by which the covers are wiped as they pass through the opening, and means for forcing the covers through the said opening, substantially as set forth



2. The combination of the holder A provided with an opening near its lower end, the base upon which the column is supported, provided with a ledge opposite the said opening, the flexible flap adapted to close the said opening, the material *c'* secured to the said shelf of the base, and which flap and material serve to wipe the opposite sides of the covers as they are delivered through the opening, and means for forcing the covers, one at a time, through the said opening, substantially as set forth.

3. The combination of the column A wherein the plates or disks are held one above the other, provided with an opening *a*, the base upon which the column is supported, the drum or wheel K upon the periphery of which the plates or disks rest, adjustable means arranged to confine all of the plates or disks within the column until the lowermost one is removed therefrom and a flexible flap adapted to close the said opening, and past which the disks are moved and by which the disks are wiped as they pass through the opening, substantially as set forth.

530,927. **HAT-PIN.** OSBORN CONGELTON and GERTRUDE R. BOYD, Philadelphia, Pa., assignors of one-third to Oliver H. Bair, same place. Filed Jan. 16, 1894. Serial No. 497,050. (No model.)



*Claim.*—1. A hat pin, comprising a rectangular guide frame, slides arranged on the opposite ends of the guide frame and having side pieces to run on the sides of the guide frame, the said slides being provided with depending inwardly extending prongs and a spring connecting the oppositely arranged slides and normally drawing them toward each other, substantially as described.

2. A hat pin, comprising a guide frame, having eyes thereon, oppositely arranged slides having side pieces to run in the eyes of the guide frame and provided with eyes to run on the side pieces of the guide frame, the slides having depending inwardly projecting prongs, a spring band connecting the slides, and adjusting arms extending outward from the ends of the slides, substantially as described.

3. The combination with the guide frame and the oppositely arranged spring pressed pronged slides thereon, of the eyes arranged at the outer ends of the pronged slides and the longitudinally adjustable arms adapted to engage with the said eyes, substantially as described.

4. The combination with the guide frame and the oppositely arranged pronged slides thereon, of the spring band connecting the slides, eyes arranged at the outer ends of the pronged slides, the spirally twisted adjustable arms adapted to engage the said eyes, and the detachable knobs on the arms, substantially as described.

5. The combination, with the hat and the eyeleted crown tip adapted to be fastened to the hat, of the guide frame on the tip, the spring-pressed slides on the guide frame, having prongs projecting through the eyelets on the crown tip, and the outwardly-extending arms on the slides, substantially as described.

530,928. **THERMOMETER.** JOSEPH T. CRAW, Jersey City, N. J., assignor of one-half to Brown & Bailey, Philadelphia, Pa. Filed Aug. 19, 1892. Serial No. 443,517. (No model.)

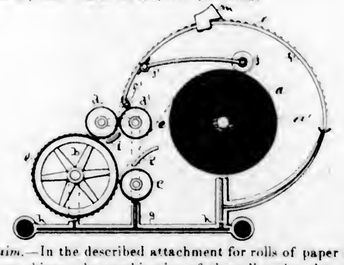


*Claim.*—1. The combination of the thermometer or barometer A, the board B grooved and slotted longitudinally a greater length than the length of said thermometer or barometer, clamps of elastic material fixed in the said groove and adapted to hold the thermometer or barometer A in the position to which the same is moved, substantially as described.

2. In combination with a board and scale a thermometer A, stop

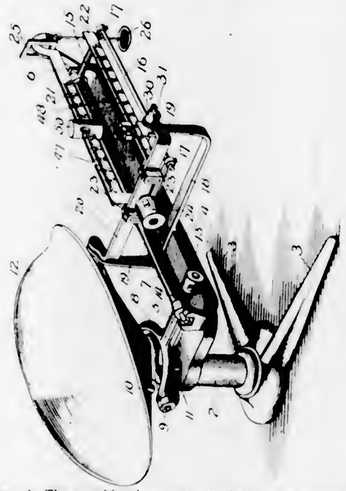
*b*, groove *c*, rubber clamps *g*, fixed in said groove c and adapted to hold the thermometer A in the position to which said thermometer is moved, and devices for holding said thermometer on the board, substantially as described.

530,929. ATTACHMENT FOR ROLLS OF PAPER TO TYPE-WRITING MACHINES. GEORGE L. CRITTENDEN, Ithaca, N. Y. Filed Dec. 27, 1892. Serial No. 456,365. (No model.)



*Claim.*—In the described attachment for rolls of paper to type-writing machines; the combination of the roll *a*, the plate *i*, roller *c*, platen *b*, guide roller *d*, hinged table *f*, retarding roller *j*, and cutting knife *m*; the several parts being mounted, arranged, and operating, as set forth.

530,930. WEIGHING AND PRICE SCALE. RIENZI A. DANIELS, Minneapolis, Minn. Filed Nov. 21, 1893. Serial No. 491,531. (No model.)



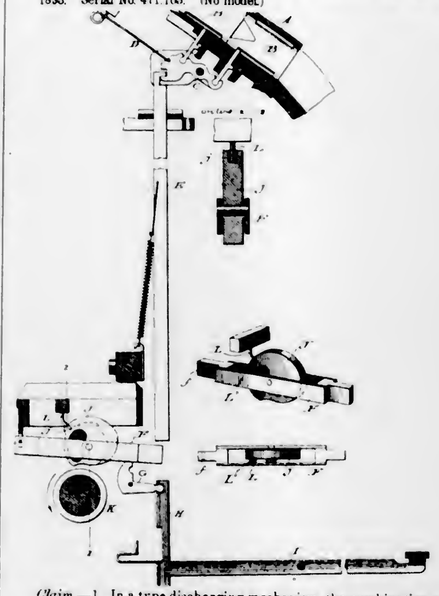
*Claim.*—1. The combination, with the base, of a rock-shaft 7 journaled thereon, a yoke arm extending therefrom and connected with the weighing support or receptacle, arms 15 projecting from the opposite side of said rock-shaft, a rod 16 connecting the outer ends of said arms, an elevated and transversely arranged rocking bar or yoke 20, the two parallel scale beams secured upon said bar, the poise upon one of said beams, a sleeve on the other, and a link connecting said sleeve with said rod 16, substantially as described.

2. The combination, with the base, of a rock-shaft 7 journaled thereon, a yoke-arm extending therefrom and connected with the weighing support or receptacle, arms 15 projecting from the opposite side of said rock shaft, a rod 16 connecting the outer ends of said arms, an elevated and transversely arranged rocking bar or yoke 20, the two parallel scale beams secured upon said bar, the poise upon one of said beams, a sleeve on the other, a link connecting said sleeve with said rod, the second scale beam being arranged directly above said rod 16, and means for securing said sleeve upon said beam at accurate points thereon, substantially as described.

3. The combination, in a weighing and price scale, of a base having a weighing mechanism thereon, a vertically movable rod 16 forming a part of said mechanism, a scale beam arranged above said rod and forming a part of said mechanism a sliding sleeve upon said beam, a slidable and pivotal link connecting said sleeve with said rod 16, the lower edge of said beam being serrated, a spring gib in the top of said sleeve, and the lower part of said sleeve provided with a tooth and adapted to engage the lower part of the beam, substantially as described.

4. The combination, with the base, of the rock-shaft thereon, the scoop rack connected with said rock-shaft, the arms projecting from the opposite side of said rock-shaft and connected by a rod 16, the elevated bar 20 having the double upper and lower knife-edges, upper and lower bearings for said knife edges, beams projecting from said bar 20, the poise upon one of said beams, a sliding sleeve on the other, and a link connecting said sliding sleeve with said rod 16, and said sleeve and link being adapted to move backward and forward on said scale rod, substantially as described.

530,931. LINOTYPE-MACHINE. PHILIP T. DODGE, Washington, D. C., assignor to the Mergenthaler Linotype Company. Filed Apr. 20, 1893. Serial No. 471,103. (No model.)



*Claim.*—1. In a type discharging mechanism, the combination of a constantly driven roller, a lever, a cam carried by said lever, and provided with a stationary shoulder and adapted to engage with the roller, a detenting mechanism to prevent the advance of the lever and cam toward the roller, and a stationary stop to arrest the rotation of the cam.

2. In combination with the escapement and its actuating rod, the lever F, its cam having a stationary stop or shoulder, a constantly driven roller to actuate the cam, a stationary stop to arrest the rotation of the cam, and a finger key mechanism controlling the movement of the cam carrying lever.

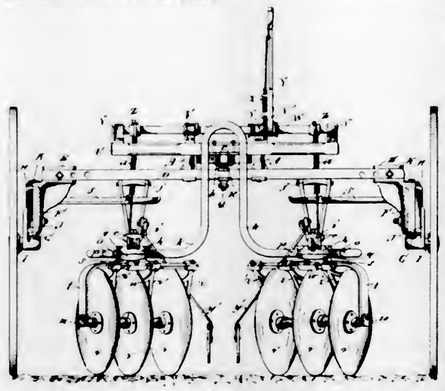
3. In a type discharging mechanism, and in combination with a constantly driven roller, a lever, a cam mounted on the lever and provided with a stationary shoulder within the line of its periphery, a detenting mechanism to prevent the advance of the lever and cam toward the roller, and a stop to engage the shoulder of the cam and arrest its rotation.

530,932. DISK CULTIVATOR. HARRY E. DODSON, Springfield, Ohio, assignor to the P. P. Mast & Company, same place. Filed Apr. 6, 1894. Serial No. 506,588. (No model.)

*Claim.*—1. In a cultivator, the combination with a gang beam non-movable laterally and braced to prevent twisting, but adjusted up and down, of a fixed bearing block connected thereto, a rolling bearing block convexed laterally and substantially straight longitudinally, and connected with the fixed bearing block by intermediate devices, and cultivating disks whose shaft is carried by the rolling bearing block, whereby the inner or the outer of said disks may be adjusted deeper or shallower into the soil.

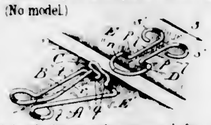
2. In a cultivator, the combination with a beam, a fixed bearing block and a cap engaging therewith, a rotatable bearing block, intermatching serrations between said bearing blocks, and a transverse serrated concave in the rotatable bearing block, a serrated rolling convexed bearing block fitting in said concave and matching with its serrations and slotted laterally, a bolt which binds the three bearing blocks and the fixed bearing block and cap to the beam, a yoke carried by the rolling bearing block, a shaft carried by the yoke, and cultivator disks on said shaft.





3. In a cultivator, the following instrumentalities: the main frame, supporting wheels swiveled thereto, and means to guide the wheels in and out of the line of travel, two beams attached to the forward part of said frame by a joint permitting up and down adjustment but resisting lateral movements of the beams, a cross-yoke secured to the rear ends of the beams, a fixed bearing block for each beam, and a rolling bearing block engaging with each fixed bearing block, a yoke connected to each rolling bearing block, a shaft carried by each yoke, and disks carried by each shaft, and a bolt which binds each pair of said bearing blocks together and to their respective beams, the arrangement between the fixed bearing blocks and the rolling bearing blocks and said bolts, respectively, permitting of the rolling bearing blocks with their yokes to be adjusted to raise and lower the ends of the yoke to and from the ground and at different angles to the line of draft, and the swivel connection of the supporting wheels compensating for the lateral rigidity of the beams.

530,933. HOOK AND EYE. JOHN H DOYLE, Chicago, Ill., assignor to Eleanor L. Doyle, same place. Filed Mar. 22, 1894. Serial No. 504,740. (No model.)



*Claim.*—1. A hook for wearing apparel, &c., comprising a base, a bill projecting upward from the base-portion, said bill being slightly inclined, and a spring tongue of universal elasticity integral with said base portion; its free end terminating substantially on a line with the inner uppermost face of the bill, substantially as shown and described.

2. A hook for wearing apparel, &c., comprising a base having shouldered portions, a bill projecting upward from the base, the uppermost portion of the bill being substantially in a transverse plane with the said shouldered portion, and a spring tongue of universal elasticity integral with the base; a portion of said tongue being inclined upward and terminating with its free end at a point in the rear of the inner face of said bill, substantially as shown and described.

3. A hook for wearing apparel, &c., comprising a base, a bill projecting upward from the base, said bill being slightly inclined, and a spring tongue of universal elasticity integral with said base; its free end terminating below the extreme upper end of the bill yet at a point in the rear of the inner face of the bill, substantially as described.

530,934. PNEUMATIC TOOL. DANIEL DRAWBAUGH, Eberly's Mill, Pa., assignor to the Pneumatic and Electric Tool Company, New York, N. Y. Filed Dec. 7, 1893. Serial No. 493,071. (No model.)



*Claim.*—1. In a pneumatic tool, the combination with the casing bored out longitudinally to form the cylinder and valve casing chamber opening into the same and the beater recessed at one end, of the valve casing having the air passage leading to the upper end of the cylinder channeled in one side and having its lower end at one side of said channel projecting into the cylinder for cooperation with the recess in the beater to form an air cushion and a valve in said valve casing; substantially as described.

2. In a pneumatic tool, the combination with the casing bored out longitudinally to form the communicating cylinder and valve casing chamber with an intermediate reduced portion or seat cut away at one side, the beater working in the cylinder and having the cylindrical recess in its rear end, of the valve-casing fitting in the valve chamber and having the reduced forward end projecting into the cylinder for entering the recess in the beater to form an air cushion and the air passage channeled therein at one side of said reduced portion and the valve working in the valve casing for controlling the beater; substantially as described.

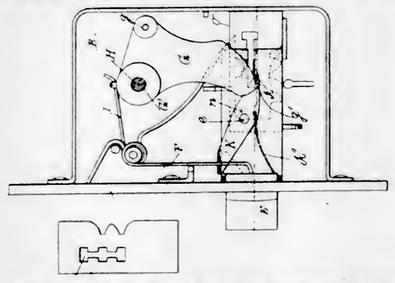
3. In a pneumatic tool, the combination with the casing containing the cylinder and the beater, of the valve casing having the chamber therein formed with the reduced lower end, the plug fitting in said chamber having the reduced opening therein forming part of the chamber, and the valve for controlling the beater, having the reduced ends working in the reduced portions of the chamber formed in the valve casing and plug respectively; substantially as described

4. In a pneumatic tool, the combination with the casing and beater working therein, of the valve casing having ports and passages registering with ports and passages in the main casing for transmitting pressure to control the beater and valve respectively, a plug fitting in the valve casing having a passage therein for the transmission of pressure to one end of the valve and an external groove for registering with a passage in the valve casing, whereby the plug does not have to be adjusted with relation to said passage; substantially as described.

5. In a pneumatic tool, the combination with the casing having the cylinder and pressure actuated valve, of the beater having the circumferential groove extending around the same, passages leading from opposite ends of the valve to the cylinder and terminating in ports located in different transverse planes, and exhaust ports located in substantially the same transverse planes as the ports to the passages leading to opposite ends of the valve, whereby the groove in the beater will connect the ports located in the same planes when at opposite extremes of its movement; substantially as described.

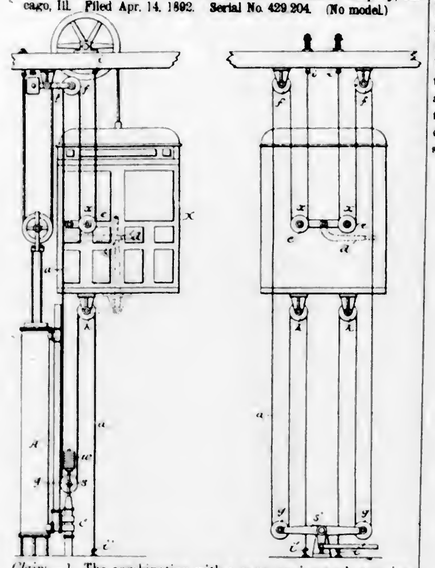
6. In a pneumatic tool, the combination with the casing having the cylinder and pressure actuated valve, of the beater having the circumferential groove extending around the same, passages leading from opposite ends of the valve to the cylinder and terminating in ports $m^3$ $m^4$ and $n^3$ $n^4$, all of said ports being located in different transverse planes with the ports $m^3$ and $n^3$ so located as to be covered by the beater at all times and to register alternately with the circumferential groove therein and exhaust ports located in substantially the same transverse planes as the ports $m^4$ and $n^4$ whereby communication is alternately opened between said last mentioned ports and the exhaust ports, said ports $m^4$ and $n^4$ being so located that they will be uncovered respectively as the beater reaches the opposite extreme of its movement allowing pressure to pass to opposite ends of the valve; substantially as described.

530,935. LOCK. FRANS E. FORSELL, Providence, R. I. Filed Aug 28, 1894. Serial No. 521,569. (No model.)



*Claim.*—The herein described spring lock consisting of a pivoted spring pressed lever G having knobs or handles H' combined with the spring pressed bolt E, the spring pressed lever K pivoted to said locking bolt, and having a wedge shaped projection *k'*, the spring pressed latch N and one or more notched tumblers O, O substantially as and for the purpose set forth.

530,936. CONTROLLING DEVICE FOR ELEVATORS. CHARLES E. FOSTER, Washington, D. C., assignor to the National Company, Chicago, Ill. Filed Apr. 14, 1892. Serial No. 429,204. (No model.)



*Claim.*—1. The combination with a cage, engine, and stopping and starting devices, of guide pulleys adjacent to the ends of the well, one being movably supported and connected with the stopping and starting device, a guide pulley and a shifting pulley on the cage, and a cable connected at opposite ends to supports at the bottom and top of the well and passing around said pulleys forming bights, the contracting and releasing of which shift the stopping and starting device, substantially as described.

2. The combination of the cage and stopping and starting device of an elevator, of a shifting pulley on the cage, a movable pulley connected with the stopping and starting device and a cable connected at its ends to supports at the bottom and top of the well and formed into bights passing round the shifting pulley and the pulley connected with the stopping and starting device, substantially as set forth.

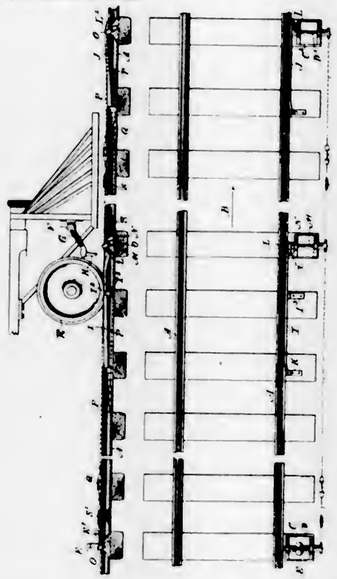
3. The combination of a cage, stopping and starting device, a lever on the cage carrying two shifting pulleys *c*, *c* guide pulleys *h*, *h*, connected with the cage, guide pulleys at one end of the well, a lever at the opposite end of the well carrying guide pulleys and connected with the stopping and starting device and two cables each connected at its ends to supports at the opposite ends of the well and passing round said pulleys, substantially as described.

530,937. BLOCK SYSTEM FOR AUTOMATICALLY OPERATING AIR-BRAKES. JOHN H. FOX, Jersey City, N. J. Filed Jan. 24, 1894. Serial No. 497,884. (No model.)

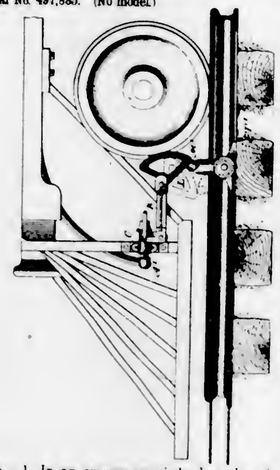
*Claim.*—1. A device for automatically stopping railway trains upon a given block or section of railway track, comprising dogs mounted movably in suitable bearings beside the track at opposite ends of such block, and adapted when set to engage a brake-valve lever upon a moving train, a primary tread-lever beside the track rail with connections for setting both dogs, and two secondary levers near the opposite ends of the section, with connections to the dogs adapted, by the depression of either of such levers by the passing train, to retract the dogs and elevate the primary tread-lever, substantially as herein set forth.

2. An overlapping safety block system comprising a series of primary tread-levers mounted at the side of the rail one at the middle of each block, dogs mounted movably at the side of the track at the opposite ends of each block, and adapted when set to engage a brake-valve lever upon a moving train, with suitable connections to the primary lever for setting such dogs by the depression of the lever, a secondary lever near each end of the block with suitable connections to both of the dogs for retracting the same by the depression of such lever, and the primary lever of each section being arranged for actuation by the moving train in advance of the last secondary lever of the preceding block, whereby the dogs at opposite ends of each section are set in an operative position before the dogs upon the next preceding block are retracted, substantially as herein set forth.

3. A device for automatically stopping railway trains upon a given block or section of railway track, comprising dogs mounted movably in suitable bearings beside the track rail at opposite ends of such block, and adapted when set to engage a brake valve lever upon a moving train, the duplex tread lever consisting of the bars I, I', fulcrumed at their outer ends and united at their inner ends by the crank L, two secondary levers near the opposite ends of the block and suitable connections from the crank L and the secondary levers to the dogs such connections being adapted by the depression of the duplex lever to set the dogs and elevate the secondary levers, substantially as herein set forth.



530,938. MECHANISM FOR AUTOMATICALLY ACTUATING AIR-BRAKES. JOHN H. FOX, Jersey City, N. J. Filed Jan. 24, 1894. Serial No. 497,885. (No model.)



*Claim.*—1. In an emergency air-brake valve, the combination with an arm for actuating the valve-lever, of a valve casing, a valve-lever pivoted adjacent thereto and provided with a trip to engage the arm, a valve with stem and suitable connection to the valve lever, a pawl for locking the valve when opened, and means for disengaging the pawl, substantially as herein set forth.

2. In an emergency air-brake valve, the combination, with a valve casing, of a fulcrum lug projected from one side of the same, a forked lever pivoted to such lug with cranks at opposite sides of the casing, a seat within one end of the casing with valve having its stem projected outside of the same, and links connecting the cranks with the end of the valve stem, as herein set forth.



3. In an emergency air brake valve, the combination, with a valve casing provided with a valve seat F, of a valve G having its stem grooved as set forth, and extended outside of the valve seat, a valve lever pivoted adjacent to the casing, with suitable connections to the valve stem, and a ratchet and pawl for locking the valve with a graduated opening when actuated by the lever, substantially as herein set forth.

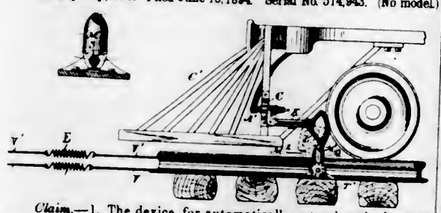
4. In an emergency air brake valve, the combination, with the casing A having the foot B for attachment to its support and the lug D formed upon one side of the casing of the forked lever K having a trip pivoted in its outer end, and having the cranks E projected to the center line upon opposite sides of the casing, the removable cap containing the valve seat F with valve G having a grooved stem G' projected outside of the cap, the cross head H secured upon the stem, the links J connecting the cranks with the cross head, and provided with one or more ratchet teeth, and the pawl *o* secured upon the casing and provided with a handle projected beyond the side of the casing, as herein set forth.

5. In an emergency air brake valve, the combination, with the casing A having the foot B for attachment to its support, and the lug D formed upon one side of the casing of the forked lever K having the trip L pivoted to its outer end, and having the cranks E projected to the center line upon opposite sides of the casing, the removable cap containing the valve seat F with valve G having a grooved stem G' projected outside of the cap, the cross head H secured upon the stem, the links J connecting the cranks with the cross head and provided with the ratchet teeth N, and a pawl for engaging such ratchet teeth, with means for disengaging the pawl to close the valve, substantially as herein set forth.

6. The combination, with the brake valve and a brake valve lever having a transverse pin as described, of the pivoted trip L with stops to limit its motion upon the pin, and the trip being weighted to throw its forward edge L' at an inclination opposite to its operative inclination, as and for the purpose set forth.

7. The combination, with the brake valve and brake valve lever K projected horizontally, and having the socket provided with the transverse pin *l* and the stops *m'* and *m²* at its opposite end, of the pivoted trip consisting of the triangular segment having the front edge L', and the top side connected thereto by the rear edge L², as set forth, and the trip being weighted as described to hold its rear edge in an operative position, and its front edge normally at an angle opposite to its operative position, substantially as herein set forth.

530,939. DOG FOR ACTUATING AIR-BRAKES. JOHN H. FOX, Jersey City, N. J. Filed June 18, 1894. Serial No. 514,943. (No model.)



*Claim.*—1. The device for automatically actuating the lever of an air brake valve mounted upon a railway train, comprising a bearing, with rotatable shaft having suitable connections, as the pulley U and cords or rods V, V' for rotating the shaft, the safety springs E inserted in the cords or rods, a rigid tripping arm attached to the shaft, and a spring or springs exerting a balanced pressure upon the shaft in opposite directions and operating to hold the shaft normally in a given position irrespective of the connections, as and for the purpose set forth.

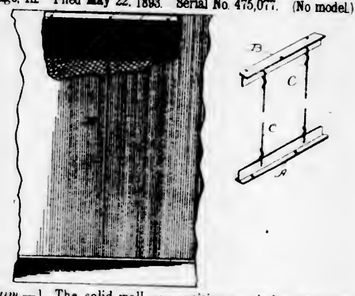
2. The device for automatically actuating the lever of an air brake valve mounted upon a railway train, comprising a bearing with rotatable shaft having suitable connections, as the pulley U and cords or rods V, V' for rotating the shaft, the safety springs E inserted in the cords or rods, a rigid tripping arm attached to the shaft, and two spiral springs W wound about the shaft and attached to the rigid arm, with their lower ends resting upon the bearing at opposite sides of the shaft, substantially as set forth.

3. The device for automatically actuating the lever of an air brake valve mounted upon a railway train, comprising the bearing T arranged adjacent to the track with shaft S rotatable therein, means, as the pulley U and cords or rods V, V', for rotating the shaft, the safety springs E inserted in such connections, the rigid tripping arm M attached to the shaft, the two spiral springs W wound about the shaft in opposite directions with their upper ends fitted to notches W' in the edges of the rigid arm, and their lower ends attached to the bearing at opposite sides of the shaft, as and for the purpose set forth.

4. The device for automatically actuating the lever of an air brake valve mounted upon a railway train, comprising the bearing T, with rotatable shaft S having suitable connections, as the pulley U and cords or rods V, V', for rotating the shaft, the safety springs E inserted in the cords or rods, a rigid tripping arm attached to the shaft and having the T-head projected from its sides in the direction of the shaft, and having upon its edges the ribs Q projected beyond the sides of the T-head to engage a snow plow, substantially as herein set forth.

5. The device for automatically actuating the lever of an air brake valve mounted upon a railway train, comprising a bearing with shaft mounted movably adjacent to the track, the tripping arm M having the T-head M', and provided at opposite sides below the head with the ribs Q projecting beyond the sides of the head, springs fulcrumed upon the bearing and operating normally to hold the arm in the path of the trip, and suitable connections, as to a switch or draw bridge, for shifting the arm to an inoperative position, and thereby setting the springs so as to erect the arm automatically if such connections be broken, as herein set forth.

530,940. PARTITION FOR BUILDINGS. JOHN F. GOLDING, Chicago, Ill. Filed May 22, 1893. Serial No. 475,077. (No model.)



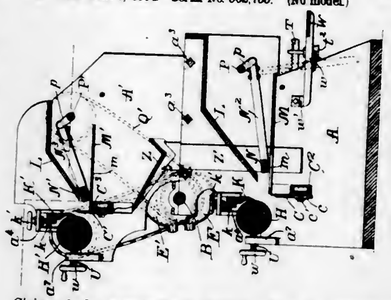
*Claim.*—1. The solid wall or partition consisting of a series of vertical members, breadths of continuous metallic lathing secured one above the other horizontally across said series of vertical members and a body of plaster covering the vertical members and lathing upon both sides, substantially as specified.

2. The combination in a wall or partition of vertical members with breadths of metallic lathing secured thereto, said breadths being interwoven with the vertical members, substantially as specified.

3. The combination in a wall or partition of vertical tension wires with breadths of metallic lathing secured thereto, said breadths being interwoven with the vertical wires, substantially as set forth.

4. The combination in a wall or partition of vertical tension wires with breadths of metallic lathing secured thereto, said breadths being interwoven with the vertical wires, and said breadths also crossing each other alternately, substantially as specified.

530,941. ROLLER COTTON-GIN. OTIS F. GOODWIN, Valdosta, Ga. Filed Mar. 7, 1894. Serial No. 502,735. (No model.)



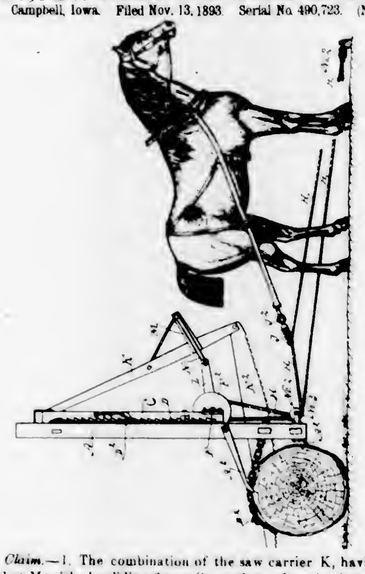
*Claim.*—1. In a machine for ginning cotton, the combination with the frame A and the frame A' mounted thereon and bolted to-

gether, of the driving shaft B journaled in the lower frame, eccentrics fast on said shaft and set at an angle of approximately one hundred and eighty degrees from each other, eccentric rods and straps operated by said eccentrics, reciprocating knives connected to said eccentric rods and arranged the one above and the other below said driving shaft, rods, and weights detachably connected to said rods, for exactly balancing the weight of said knives, and fixed knives and rollers mounted in each frame, with means for feeding the cotton to said knives, substantially as and for the purposes described.

2. In a machine for ginning cotton, the combination with the frame A and the frame A' mounted thereon and bolted together, of the driving shaft B journaled in the lower frame and carrying eccentrics E and E', and sprocket wheels F and F' and R and R' fast thereon; of the reciprocating knives C and C' mounted on bars $C^2$ and $C^3$, respectively, moving in guides in said frames; the eccentric rods D and D' and eccentric straps connecting said bars to the said eccentrics; the rollers H and H' revolubly mounted in the upper and lower frames, respectively, and mounted on shafts $h$ and $h'$ carrying sprocket wheels $h^2$ and $h^3$; the sprocket chains G and G' gearing in said sprocket wheels F and $h^2$, and F' and $h^3$, respectively, and driving said rollers; the fixed knives K and K' mounted in said frames; the chutes L and L', floors M and M' slotted at $m$, the pushers N and N', connecting rods $N^2$ and $N^3$, crank shaft P and P', sprocket wheels $P^2$ and $P^3$ mounted on said shafts, and sprocket chains gearing in said sprocket wheels $P^2$ and $P^3$ and said sprocket wheels R and R', substantially as and for the purposes described.

3. In a machine for ginning cotton, the combination with the frame A, of the driving shaft B journaled therein, the eccentrics E and E' set at an angle of approximately one hundred and eighty degrees fast on said shaft, the reciprocating knife, or clipper blade C, moving in guides in said frame, the eccentric rods D connecting one of said eccentrics with said reciprocating knife, the eccentric rods $d$ moving in guides $d'$ attached to said frame and connected to the strap on the other eccentric, and weights $d^2$ detachably secured to said eccentric rods $d$, for the purpose of balancing the reciprocating blade, substantially as described.

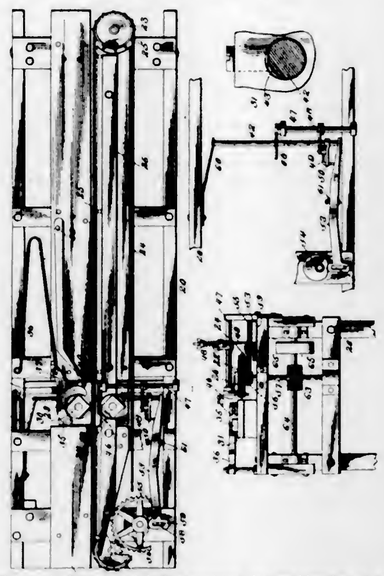
530,942. **MACHINE FOR SAWING LOGS.** AMOS L. GRINNELL, Campbell, Iowa. Filed Nov. 13, 1893. Serial No. 490,723. (No model.)



*Claim.*—1. The combination of the saw carrier K, having the bracket M, with the sliding frame C carrying a drum having a crank at its end and connected with the said bracket by means of a link, for the purposes stated.

2. An improved portable machine for sawing logs &c., comprising an oblong frame having means attached thereto for detachably fastening the frame to the side of a log and in a right angled position to the longitudinal axis of the log, an auxiliary frame having a sliding connection with the main frame and means for retaining it stationary on the main frame, a drum mounted on the auxiliary sliding frame and a crank on the end of the drum, a rope having its ends fixed to the ends of the drum and extended over directing pulleys in the manner set forth, means for moving the rope in reverse ways, a saw carrier pivoted to the auxiliary sliding frame and connected with the crank in the end of the drum by means of a link and a saw connected with the free end of the saw carrier, all arranged and combined to operate in the manner set forth.

530,943. **STAVE-JOINTING MACHINE.** LOUIS T. HAGAR, Winchester, Ky., assignor to the Conn-Hagan Company, same place. Filed Feb. 17, 1894. Serial No. 500,571. (No model.)



*Claim.*—1. In a stave jointing machine, the combination of two cutter heads one of which is movable toward and from the other, a spring to press the movable cutter head toward the stationary cutter head, a rock-shaft extended transversely through the housing or support of the movable cutter head and adapted to have a locking engagement therewith, a lever projecting in the path of an advancing stave and arranged to exert a pressure on the movable cutter head support to force it along said rock-shaft and laterally away from the stationary cutter head and mechanism actuated from the advancing stave to impart a partial rotation to the rock-shaft and cause it to become locked with the support of the movable cutter head, substantially as described.

2. In a stave jointer, the combination of two cutter heads one of which is automatically adjustable toward and from the other, an endless feed chain provided with upwardly projecting lugs arranged at intervals greater than the length of a stave, a locking rock-shaft extended through the housing or support of the movable cutter head and adapted to be locked therewith, means for actuating said rock-shaft from an advancing stave to lock the said shaft with the movable cutter head support, and mechanism for automatically imparting endwise movement to the rock shaft to control the bilge of the stave, substantially as described.

3. In a stave jointing machine, the combination with the stationary cutter head and the movable cutter-head, of a transversely arranged rock shaft extended through the housing or support of the movable cutter head and adapted to have a locking engagement therewith, a lever projecting in the path of an advancing stave to force the movable cutter head along said rock-shaft and away from the stationary cutter-head, a finger arranged to be acted on by the stave to impart a partial rotation to the said rock-shaft and cause it to become locked in the housing or support of the movable cutter head, and mechanism for imparting endwise movement to the said rock-shaft for controlling the bilge of the stave, substantially as described.

4. In a stave jointing machine, the combination with the stationary cutter head, the movable cutter head, and a transversely arranged rock-shaft extended through the housing or support of the movable cutter head and adapted to have a locking engagement therewith, said locking rock-shaft provided with an arm, of a rock-shaft mounted transversely above the machine table and provided with an arm and with a finger depending in the path of an advancing stave, a rod connecting the arms of the two rock shafts, a spring on said rod, and mechaniam for imparting endwise movement to said rock-shaft for controlling the bilge of the stave, substantially as described.

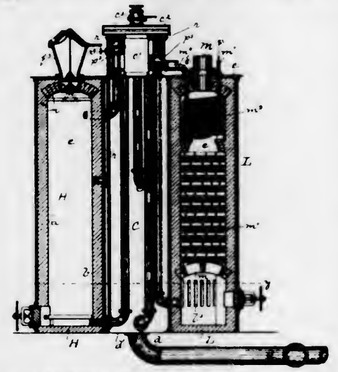


5. In a stave jointing machine, the combination of two cutter heads one of which is movable toward and from the other, a lever arranged to be acted on by an advancing stave to press the movable cutter head away from the stationary cutter head, a locking rock-shaft extended through the housing or movable support of the movable cutter head, and adapted to be locked therewith, a finger arranged to be actuated by the stave to turn the rock-shaft into locking engagement with the housing or support of the movable cutter head, a lever provided with an adjustable fulcrum and having one end in engagement with one end of the said locking rock-shaft to move it endwise for controlling the bilge of the stave, a cam acting on the other end of said lever, and a spring pressing against the other end of the rock-shaft, substantially as described.

6. In a stave jointing machine, the combination of an endless feed chain supported and driven by sprocket gears and provided with upwardly projecting lugs arranged at intervals greater than the length of a stave, two cutter heads one of which is movable toward and from the other, a locking rock-shaft extended through the housing or support of the movable cutter head and adapted to be locked therewith, a finger adapted to be actuated by the stave to turn the said rock-shaft into locking engagement with the housing or support of the movable cutter head, a lever for imparting endwise movement to said rock-shaft for controlling the bilge of the stave, and a cam geared with the driving mechanism of the feed chain and adapted to actuate said lever, substantially as described.

7. In a stave jointing machine, the combination of two cutter heads one of which is movable toward and from the other and each provided with cutters having a double slant to bevel both edges of two superposed staves at one operation, a lever acted on by the staves to press the movable cutter-head away from the stationary cutter head, a locking rock-shaft extended through the support of the movable cutter head and adapted to be locked therewith, a finger adapted to be actuated by the stave for turning said rock shaft into position for locking the movable cutter-head, and mechanism for imparting endwise movement to said rock-shaft to control the bilge of the stave, substantially as described.

530,944. **GENERATOR FOR THE MANUFACTURE OF GAS.** JAMES L. HASTINGS, Philadelphia, Pa., assignor to the National Heat and Power Company, same place. Filed June 14, 1893. Serial No. 477,566. (No model.)



*Claim.*—1. A gas apparatus formed of a central circular air tank, and a circular casing around the same, the space between the tank and casing having suitable gas generating and fixing chambers formed therein, and having air pipes leading from the upper part of said air tank through the tank to the gas generating chambers, substantially as and for the purposes set forth.

2. A gas apparatus formed of a central circular air tank, and a circular casing around the same, the space between the tank and casing having suitable gas generating and fixing chambers formed therein, and having air pipes leading from said air tank to the gas generating chambers, said air pipes having valves outside of said air tank and leading thence through the tank to the gas generating chambers substantially as and for the purposes set forth.

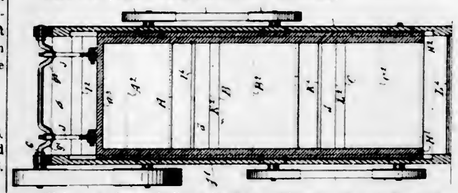
3. A gas apparatus formed of a central circular air tank, and a circular casing around the same, the space between the tank and casing having suitable gas generating and fixing chambers formed therein, the upper end of said tank having a neck of less diameter than the tank, and a hollow head of greater diameter than the neck, and an air pipe communicating with the hollow head and leading outside of the hollow neck into the tank and to one of the gas generating chambers, the valve for controlling the air pipe being located outside of the tank, substantially as and for the purposes set forth.

4. A gas apparatus formed of a central circular air tank, and a circular casing around the same, the space between the tank and casing having suitable gas generating chambers, one or more air-pipes leading to one or more of the generating chambers, and a steam superheater in the course of the gases, and having a pipe leading from said steam superheater to a ring pipe around the tank, and valve controlled pipes leading from said ring pipes within the tank to the gas generating chambers, substantially as set forth.

5. A gas making apparatus formed of two circular casings forming an annular structure and having formed therein a series of cupola generators communicating with each other at the top, and air and steam supply pipes communicating with the regenerators, and a gas fixer with the upper end of which the adjoining cupola generator communicates, said fixer having in the upper part thereof a mass of checker work and an oil entrance pipe, and in the lower part thereof a coke chamber, and having an eduction port leading from the base thereof, substantially as set forth.

6. A gas making apparatus having in the lower part thereof a coal chamber and in the upper part thereof a mass of checker work, a central passage through the checker work communicating with the coal chamber, and a solid brick work funnel above said central passage, but within the chamber and not extending to the top wall so that the gases may circulate around and pass down through the same, and having a coal feeder in the top wall above said furnace, substantially as and for the purposes set forth.

530,945. **GRINDING-MILL.** HENRY B. HEBERT, New York, N. Y. Filed Oct. 7, 1893. Serial No. 487,421. (No model.)



*Claim.*—1. In a grinding mill, the combination of a grinding roll, and an opposite conduit, said conduit being provided exteriorly with a grinding surface, and having an opening beyond the grinding surface for the entrance of ground material, substantially as specified.

2. In a grinding mill, the combination of a conduit, having an exterior grinding surface, a roll working in conjunction with the exterior grinding surface of the conduit, said conduit having a vertically reciprocating motion.

3. In a grinding mill, the combination with a conduit provided exteriorly with two grinding surfaces on different sides and suitably arranged openings beyond the grinding surfaces for the entrance of ground material, of grinding rolls opposite these grinding surfaces, substantially as specified.

4. In a grinding mill, the combination of a number of rolls arranged one above the other, a conduit having an exterior grinding surface opposite each roll and an opening beyond each roll, and means producing a relative adjustment between each roll, and conduit.

530,946. **ROSIN-PAD FOR USE ON BOWS OF STRINGED INSTRUMENTS.** HARRISON H. HESKETT, Minneapolis, Minn. Filed Mar. 22, 1894. Serial No. 504,589. (No model.)



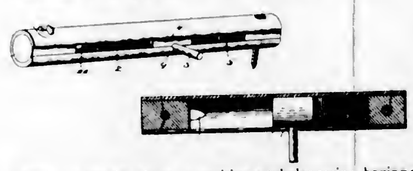
*Claim.*—1. A rosin-pad for use on bows of stringed instruments, comprising a body of powdered rosin and a case containing the same, having an exposed surface of porous textile fabric, through which said rosin may sift outward, and over which the bow-hair may be drawn to "rosin the bow," substantially as described.

2. A rosin-pad for use on bows of stringed instruments, comprising a body of powdered rosin, a block having a valley or depression containing said rosin, and a porous cloth stretched over said valley or depression, for holding the rosin therein and affording a surface over which to draw the bow, substantially as and for the purpose set forth.

3. A rosin-pad, comprising a body of powdered rosin, a wooden-block having a marginal groove, and a valley or depression containing said powdered rosin, a porous cloth stretched over said valley or depression for holding said rosin therein and affording a surface over

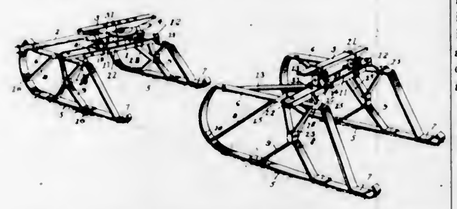
which to draw the bow, said cloth being held to said block, by having its edges tucked into the marginal groove of said block and therein secured, substantially as and for the purpose set forth.

539,947. DETONATING BURGLAR-ALARM. JAMES W. HORN, Arba, Ind. Filed Sept. 29, 1894. Serial No. 524,486. (No model.)



*Claim.*—A burglar alarm, comprising a tubular casing, having at one side a longitudinal slot and provided at the bottom of the same with a notch, a plug arranged within one end of the casing, a fastening device passing through the casing and the plug and serving as the means for securing the device to a window or the like, a hammer arranged within the casing and conforming to the configuration thereof, and provided with an arm located in the slot of the casing and adapted to engage the notch, a spiral spring located within the casing and interposed between the plug and the hammer for actuating the latter, a removable plug or block fitted in the casing at the other end thereof and provided at its inner end with a cap receiving projection, and a pin or key passing through the casing and the block or plug, substantially as described.

530,948. SLEIGH. HANS P. JENSEN, Mankato, Minn. Filed Mar. 9, 1894. Serial No. 503,048. (No model.)

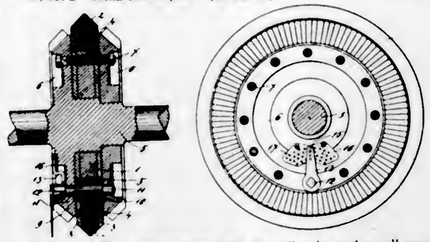


*Claim.*—1. The combination of the runners, the raves, the transverse beam secured to the raves, the braces 22 consisting of flat bars secured intermediate of their ends to the front and rear edges of the beam and having similar diverging end portions provided with a quarter turn and secured at their extremities flat against the raves and provided with depending lugs 26 engaging the outer edges of the raves, the braces 9 arranged substantially in the form of an X and centrally secured together and having their diverging ends secured to the runners and the raves, and the downwardly and outwardly diverging braces 23 secured at their upper terminals to the lower face of the beam, and having their outer ends arranged edgewise between the central portions of the braces 9 and provided with flat heads 29, engaging the outer edges of the braces 9 and forming a rigid joint, substantially as described.

2. The combination of the runners, the raves, the transverse beams secured to the raves, the braces 22 consisting of flat bars secured intermediate of their ends to the longitudinal edges of the beam and having their outer ends arranged flat against and engaging the raves, the braces 9 arranged substantially in the form of an X and secured to the raves and the runners, the oppositely inclined braces 23 extending from the beam to the braces 9 and having their lower ends arranged edgewise between the central portions of the latter and secured to the same and provided with flat exterior heads engaging the outer edges of the braces 9 to provide a rigid joint, the clips 15 embracing the beams and securing the upper terminals of the braces 23 to the beam, the plates 14 extending across the beam and secured to the same by the clips 15 and having transverse eyes, the head block, the plates 18 having depending arms 19, bolts passing through the arms and the eyes and forming a hinge joint, and clips embracing the head block and having extended terminals passing through the plates 18, and securing the same to the head block, substantially as described.

3. The combination of runners, raves, a transverse beam secured to the raves, the plates 14 clipped to the beam and provided with transverse eyes, the head block, the plates 18 having depending arms arranged at the terminals of the eyes, bolts passing through the eyes and the arms forming a hinge joint, and clips embracing the head-block and provided with clip plates fitting against the plates 18, said clips being extended and passing through the plates 18 and connecting the same with the head blocks, substantially as described.

530,949. MEANS FOR ADJUSTING ROLLS FOR ROLLING-MILLS. OTTO KLATTE, Neuwied-on-the-Rhine, Germany. Filed Apr. 12, 1894. Serial No. 507,268. (No model.)

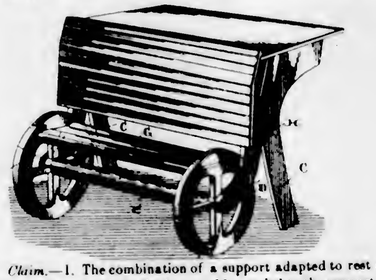


*Claim.*—1. The combination with the roll axle, and a roll comprising a central part movable on the roll axle and two outer disks or wheels between which such central part is arranged, of an eccentric resting in a hole of such central part and provided with pivots resting in holes in the aforesaid outer disks, substantially as set forth.

2. The combination with the roll axle, and a roll comprising a central part movable on the roll axle and two outer disks or wheels between which such central part is arranged, of a radially adjustable block and an eccentric located in a hole in the aforesaid central part and provided with two pivots resting in holes in such outer disks, substantially as set forth.

3. The combination with the roll axle, and a roll comprising a central part movable on the roll axle and two outer disks or wheels between which such central part is arranged, of an eccentric resting in a hole in such central part and having two pivots resting in holes in said outer disks, an indicator lever carried by one of such pivots and provided with holes as explained and a plate over which the indicator lever is adapted to move and which is secured to one of the aforesaid outer disks, substantially as set forth.

530,950. SCHOOL SEAT AND DESK. LEWIS E. KRETSMEIER, Lawrenceville, Ind. Filed Aug. 30, 1894. Serial No. 521,729. (No model.)



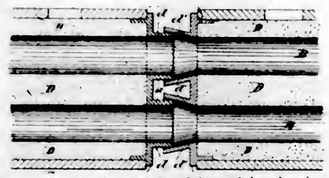
*Claim.*—1. The combination of a support adapted to rest on the floor, wheels rotatable on the floor and journaled to the support, and a seat secured to and revoluble with the wheels, substantially as shown and described.

2. The combination of a support adapted to rest on the floor, bearings thereon, wheels rotatable on the floor and journaled in the bearings, and the seat G extended between the wheels and secured at its ends thereto between the centers and peripheries of the wheels, substantially as shown and described.

3. The combination of a desk, legs upon its rear side for resting on the floor, the forward legs D forming bearings, and a seat carrier revoluble on the floor which is positioned between and journaled in said bearings, substantially as shown and described.

530,951. ELECTRIC CONDUIT. THOMAS T. LA POINTE, JAMES H. FLANAGAN, and CHARLES A. THOMPSON, New Haven, Conn. Filed Nov. 23, 1893. Serial No. 491,816. (No model.)

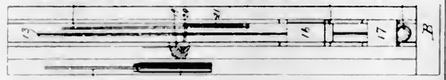
*Claim.*—1. A conduit for electric light wires, consisting of separate sections, each of which has a peripheral casing, heads thereon provided with joint rings, the head of one section having said rings male, the adjacent head of the next section having said rings female, and a grout composition in said casing perforated with passages extending from the fittings on one head plate to the fittings on the other head plate, substantially as and for the purpose described.



2. The combination in conduits of the peripheral casing A, head plates C C' thereon, male rings *d*, on one of said head plates, female rings *d'* on the other of said head plates, grout composition D and tubes E longitudinally arranged therethrough, substantially as described.

3. In conduits, the head plates C C' provided the one with a plurality of male, the other with a plurality of female fittings, substantially as described.

530,952. DOOR-OPERATING DEVICE. WILLIAM C. LUCAS, Meriden, Conn. Filed Dec. 19, 1893. Serial No. 494,051. (No model.)

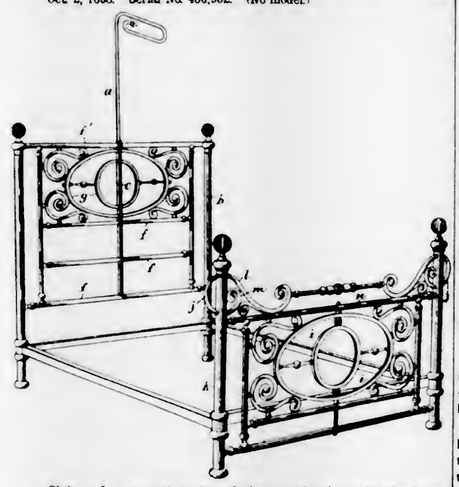


*Claim.*—1. In a door closing device, the combination of two weights, a suspension cord with which the upper weight is slidingly connected and a stop for limiting the downward motion of the upper weight before the lower weight has completed its stroke, substantially as described and for the purpose specified.

2. In a door closing device, the combination of suitable ways or guides, a weight holding catch supported in position adjacent to said guides, the weight 17 having the catch engaging projection 38 whose path is in line with the engaging position of said catch while all portions of said weight in the line of and above said projection are without said path, and the weight 16 all portions of which are without said path substantially as described and for the purpose specified.

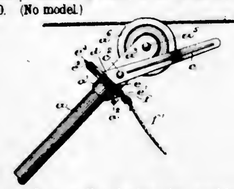
3. In a door closing device, the combination of an upper and lower weight, a catch for holding said weights at rest in an elevated position, a door closing cord slidingly connected with the upper one of said weights, and a stop for limiting the downward motion of the upper weight before the lower weight has completed its stroke, substantially as described and for the purpose specified.

530,953. SUPPORT FOR CANOPY-RODS IN METALLIC CRIBS OR BEDSTEADS. WILLIAM T. MESSEREAU, South Orange, N. J. Filed Oct. 2, 1893. Serial No. 486,952. (No model.)



*Claim.*—In a metallic bedstead, the combination, with the frame of the head or foot piece, of a vertical socket intermediate to the posts to receive a canopy rod, the upper end of the socket being threaded internally and provided in the side with the set screw hole *h*, and the threaded plug *e* fitted to the top of the socket, and provided with a set screw to fit the hole and clamp the canopy rod when desired, substantially as herein set forth.

530,954. TROLLEY-WIRE FINDER. FREDERICK F. MEYER and WILLIAM S. MEYER, Newark, N. J. Filed Mar. 14, 1894. Serial No. 503,550. (No model.)



*Claim.*—1 In a trolley device, the combination, of the trolley pole and wheel, with a trolley wire finder pivotally connected with the trolley pole, consisting essentially of pivoted finder arms extending laterally back of the trolley wheel, a ring *e* having a loop $e^2$ connected with said finder arms, and means connected with said ring *e* and its loop, for bringing the finder arms in position on opposite sides of the trolley wire, substantially as and for the purposes set forth.

2. In a trolley device, the combination, of the trolley pole and wheel, with a trolley wire finder pivotally connected with the trolley pole, consisting essentially of pivoted finder arms extending laterally back of the trolley wheel, a ring *e* pivotally connected with said finder arms, and having a loop $e^2$, and means connected with said ring *e* and its loop, for bringing the finder arms in position on opposite sides of the trolley wire, substantially as and for the purposes set forth.

3. The herein described trolley device comprising therein, in combination, a trolley pole, a bifurcated hanger mounted on the end of said pole, a trolley wheel therein, finder arms *c* and *c'* pivotally connected with said hanger and extending laterally back of the trolley wheel, a ring *e* having a loop $e^2$ connected with said finder arms, and means connected with said ring *e* and its loop, for bringing the finder arms in position on opposite sides of the trolley wire, substantially as and for the purposes set forth.

4. The herein described trolley device comprising therein, in combination, a trolley pole, a socket *a'* mounted thereon, arms $a^3$ and $a^4$ extending from said socket, a trolley wheel between said arms, arms *c* and *c'* pivotally connected with said arms $a^3$ and $a^4$ and extending laterally back of the trolley wheel, a ring *e* having a loop $e^2$ connected with said arms *c* and *c'*, and means connected with said ring *e* and its loop, for bringing said arms into position on opposite sides of the trolley wire, substantially as and for the purposes set forth.

5. In a trolley device, the combination, of the trolley pole and wheel, with a trolley wire finder pivotally connected with the trolley pole, consisting essentially of pivoted finder arms extending laterally back of the trolley wheel, reversible slide bars pivotally mounted on said trolley pole and connected with said finder arms, and means connected with said bars for bringing the finder arms into position on opposite sides of the trolley wire, substantially as and for the purposes set forth.

6. In a trolley device, the combination, of the trolley pole and wheel, with a trolley wire finder pivotally connected with the trolley pole, consisting essentially of pivoted finder arms extending laterally back of the trolley wheel, reversible slide bars pivotally mounted on said trolley pole, having slots or openings $h^3$, pins on said finder arms projecting into said openings, and means connected with said bars for bringing the finder arms into position on opposite sides of the trolley wire, substantially as and for the purposes set forth.

7. The combination of the trolley pole and wheel, with a trolley wire finder mounted on said pole, and fenders *i* and *i'* also mounted on said pole, substantially as and for the purposes set forth.

530,955. FOLDING CAMERA. GUSTAVE D. MILBURN, Rochester, N. Y. Filed July 7, 1894. Serial No. 516,814. (No model.)

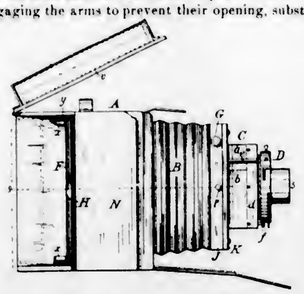
*Claim.*—1. The combination, in a photographic camera, of the expansible bellows, the internal jointed supporting arms, and a movable catch adapted to engage and retain the movable arms when the bellows is fully distended, substantially as described.

2. The combination, in a photographic camera, of the expansible bellows, the internal jointed supporting arms, a friction device adapted to retain the arms in any desired position, a movable catch adapted to engage and retain the arms when the bellows is fully distended, and an adjustable lens-support at the front of the bellows, substantially as described.

3. The combination, in a photographic camera, of the expansible bellows *B*, having frames H and J, the jointed supporting arms I,

pivoted to the front and rear frames respectively, and a movable catch, as *e*, arranged to lock the arms when the bellows is fully distended, substantially as described.

4. The combination, in a photographic camera, of the expansible bellows, the internal jointed supporting arms located on the four sides of the bellows, and means for simultaneously locking the arms when the bellows is fully distended, said means comprising pins situated in the path of the arms and between them to prevent their closing and catches engaging the arms to prevent their opening, substantially as set forth.

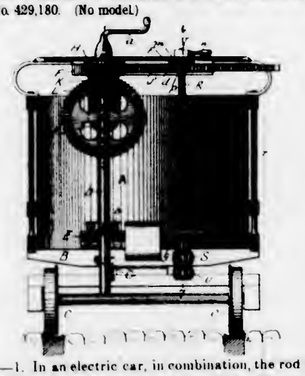


5. The combination, in a photographic camera, of the expansible bellows the internal supporting arms, an adjustable slide, and a lens on the slide, arranged so that the camera is focused for distant objects when the bellows is fully distended and the slide fully drawn out, said slide being supported by the bellows and held thereto by friction and the bellows supported from its opposite end, whereby the bellows may be fully drawn out by the slide and the latter then independently extended, substantially as set forth.

6. The combination with a photographic camera of the carrier E and a plate holder attached to and movable with said carrier, the latter being hinged to the rear of the camera whereby it may be turned back to expose to unobstructed view the ground glass, and a door N, substantially as set forth.

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**530,956. HAND OPERATING MECHANISM FOR ELECTRIC LOCOMOTIVES.** ANDREW W. MITCHELL, Boston, Mass. Filed Apr. 14, 1892. Serial No. 429,180. (No model.)



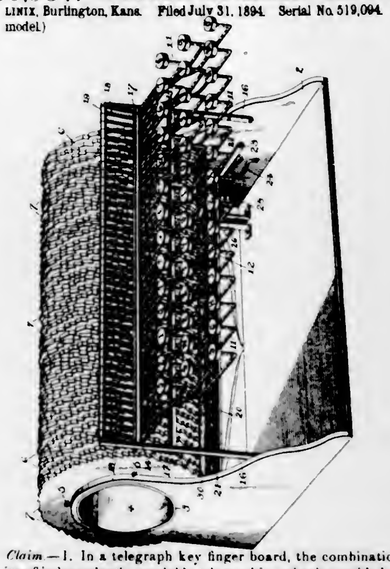
*Claim.*—1. In an electric car, in combination, the rod connected to the brake mechanism for braking the car, a gear secured thereto, a rack bar arranged to slide back and forth in suitable support and to engage with said gear, a rod turning in suitable bearings arranged and adapted to be connected to the rheostat or electric controller of the electric motor and a gear secured to said latter rod engaging with the rack bar.

2. In an electric car, in combination, a rod connected to the brake mechanism for braking the car, a gear secured thereto, a miter gear secured thereto, a miter gear turning in a suitable support and engaging with the brake rod miter gear, a lug or ear piece on the separate miter gear, a rack bar arranged to slide back and forth in a suitable support and engage with the gear on said rod, a lug or ear piece on said rack bar, arranged to engage with the lug or ear piece of the miter gear, a rod turning in suitable bearings arranged and adapted to be connected to the rheostat or electric controller of the electric motor and a gear secured to said latter rod engaging with the rack bar.

3. In an electric car, in combination, a rod connected to the brake mechanism for braking the car and a gear secured thereto, a rack bar arranged to slide back and forth in suitable support and to engage with said gear, a tubular rod turning in suitable bearings connected to the rheostat or electric controller of the electric motor, a gear secured to said tubular rod engaging with the rack bar, and a rod extending through said tubular rod, having a handle for operation thereof and arranged and adapted to be connected to the rheostat or electric controller of the electric motor.

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**530,957. FINGER-BOARD TELEGRAPH-KEY.** ELMER E. MULLINIX, Burlington, Kans. Filed July 31, 1894. Serial No. 519,094. (No model.)



*Claim.*—1. In a telegraph key finger board, the combination of a series of independently revoluble telegraphing wheels provided with peripheral symbol projections, and a single continuous movable press rod normally held in contact with the peripheries of all of said wheels and arranged to work over and onto a separate telegraph or circuit closing key, substantially as set forth.

2. In a machine of the class described, the combination of a longitudinal series of vertical independently revoluble telegraphing wheels provided with peripheral symbol projections, a single continuous movable key operating press rod held normally in contact with the peripheries of all of said wheels, and a continuous oil pad supported in contact with the peripheries of all of the wheels in front of said press rod, substantially as set forth.

3. In a machine of the class described, a longitudinal series of vertical independently revoluble telegraphing wheels provided with peripheral symbol projections, a movable key operating press rod held normally in contact with the peripheries of said wheels, a lubricating rod arranged longitudinally in front of said press rod, and an oil pad covering said rod and contacting with the peripheries of said telegraphing wheels, substantially as set forth.

4. In a machine of the class described, the combination with a supporting frame, of a longitudinal series of independently revoluble telegraphing wheels mounted within said frame and provided with peripheral symbol projections, normally spring elevated supporting arms pivoted at opposite ends of said frame, a beveled and insulated press rod connecting the free ends of said supporting arms and held in contact with the peripheries of said wheels, said rod being adapted to work over a circuit closing or telegraph key, and separate operating means for each of said telegraphing wheels, substantially as set forth.

5. In a machine of the class described, the combination with the supporting frame; of a hollow shaft cylinder removably and adjustably mounted on said frame, a longitudinal series of vertical telegraphing wheels provided with peripheral groups of symbol projections, notched hubs at one side, and retaining flanges at one side of the hubs, operating levers provided with finger keys at their outer ends and at their inner ends with circular pawls loosely embracing the notched hubs of said wheels and having catch hooks normally engaging the notches of said hubs, an upright frame arranged in front of said wheels and having upper and lower cushioned stop bars or rods between which said levers play, retractile springs connected to said levers and to said upright frame above the levers to hold the latter normally elevated, and a movable insulated press rod held normally in contact with the peripheries of said wheels and adapted to work over and onto a telegraph or circuit closing key, substantially as set forth.

6. In a machine of the class described, the combination of a series of independently revolving telegraphing wheels having peripheral groups of symbol projections, a single continuous movable press rod normally held in contact with the peripheries of all of said wheels, oppositely located circuit closing keys arranged below said press rod near its opposite ends and each comprising spaced spring key or contact plates insulated from each other at one end and provided at their opposite ends with opposed contact pins, and the circuit wires having branches connected with said contact plates of the keys, substantially as set forth.



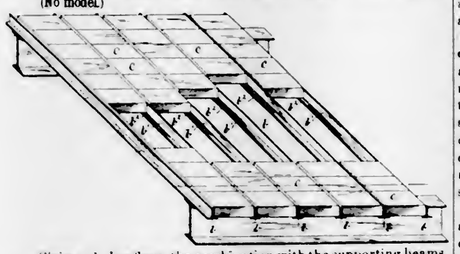
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**530,958. METHOD OF MOLDING VEGETABLE FIBROUS MATERIAL.** BERNARD MCCABE and ALBERT THAYER, Boston, Mass. Filed Feb. 12, 1894. Serial No. 499,944. (No specimens.)

*Claim.*—The method of molding articles from vegetable fiber consisting in first treating the vegetable fibrous material with acid, then forcing the material so treated through slits, holes or apertures in a suitable head, block or plate, whereby the material is formed into strips or strings, depositing said strips or strings while in a plastic condition in a mold, compressing the same therein, and finally immersing it in water, substantially as described.

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**530,959. FLOOR.** DONALD MCDONALD, Louisville, Ky., assignor, by mense assignments, to the National Heat and Power Construction Company, of Pennsylvania. Filed Apr. 16, 1894. Serial No. 507,708. (No model.)

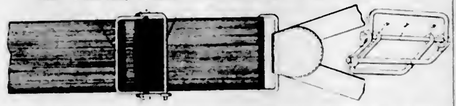


*Claim.*—1. In a floor, the combination with the supporting beams, of inverted T-bars resting thereon, (each T-bar extending over two or more beams) and incombustible blocks resting on the flanges of said T-bars, substantially as and for the purposes set forth.

2. In a floor, the combination with the supporting bearings, of inverted solid metal T-bars resting thereon, each T-bar extending over two or more beams and incombustible blocks resting on the flanges of said T-bars, said T-bars having webs of less width than the thickness of said blocks, substantially as set forth.

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**530,960. SUSPENDER-BUCKLE.** JOHN N. MCGRIFF, Anderson, Ind. Filed May 3, 1894. Serial No. 509,922. (No model.)

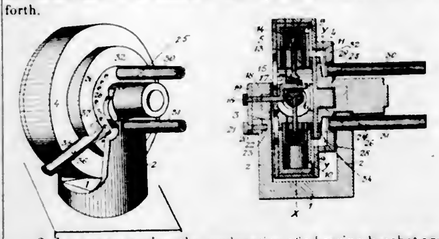


*Claim.*—The herein described suspender clasp or buckle, the same consisting of an oblong frame formed of a single piece of wire bent at opposite sides of its center to form the upper cross-bar 2, the opposite side terminals 1 coiled to form the eyes 3, one of said terminals at its lower end being bent to form the eye 4 and the opposite terminal laterally bent to form the lower cross-bar and engage with said eye, the intermediate cross-bar 7 engaging the eyes 3 and having its ends bent as shown, and the clamping-bail 8 having its terminals 9 engaging loosely with the cross-bar 7 and depending below the cross-bar of the frame so as to clamp the fabric of the suspender therebetween, substantially as specified.

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**530,961. STEAM-ENGINE.** HERMAN NIELSEN, Edgerton, Wis. Filed July 13, 1894. Serial No. 517,456. (No model.)

*Claim.*—1. In a steam engine, the combination of a bearing bracket provided with opposite parallel bearing arms, a stationary crank detachably fastened to one of the bearing arms of said bearing bracket, a stationary bearing sleeve removably mounted on the other bearing arm of said bracket opposite the said stationary crank, a revolving cylinder wheel mounted at one side on the stationary crank and provided at its opposite side with a bearing trunnion mounted in said stationary bearing sleeve, a series of radial steam cylinders mounted within said wheel and having their pistons connected with said crank, and valve devices for said cylinders, substantially as set forth.



2. In a steam engine, the combination of a bearing bracket provided with opposite parallel bearing arms having squared sockets at their upper ends, a revolving cylinder wheel mounted to rotate between said bearing arms and provided at one side with a central bearing trunnion, a stationary bearing sleeve fitted in the socket of one of said bearing arms and receiving said trunnion, a stationary crank shaft projecting centrally through one side of said wheel and provided at its inner end with a fixed crank pin, the cylinders mounted radially within said wheel and having their pistons connected with said crank pin, a squared shaft block fitted on the outer end of said crank shaft and resting in the squared socket of one of said bearing arms, means for clamping said shaft block to the adjacent bearing arms, and a valve device for said cylinders, substantially as set forth.

3. In a steam engine, the combination of a fixed or stationary crank, a cylinder or casing wheel mounted to rotate over said crank and open at one side, a series of radially disposed steam cylinders arranged within said wheel, segmental clamp plates 8 interposed between and binding at their ends against said cylinders to hold the same in position, a removable side cap plate inclosing the open side of the wheel, and having a central bearing opening for the fixed crank, the piston heads moving within said cylinders and having their rods connected with said crank, and a valve device for said cylinders, substantially as set forth

4. In a steam engine, the combination of the stationary crank, a cylinder wheel mounted to rotate over said crank and provided in one side with steam ports, a series of radial steam cylinders mounted within said wheel and having their pistons connected with said cranks and provided with steam ports in their closed ends, channel plates interposed between the cylinders and one side of the wheel to connect the ports of the cylinders with those in the wheel, and a stationary adjustable valve device arranged at one side of the wheel over the ports thereof, substantially as set forth.

5. In a steam engine, the combination of a revolving cylinder wheel carrying a series of actuating steam cylinders and provided in one side with steam ports communicating with the cylinder ports, a stationary bearing disk provided with opposite live and exhaust steam recesses, and an adjustable valve ring mounted to work over said bearing disk at one side of said wheel and provided with steam grooves adapted to connect two ports of the wheel and inner peripheral ports at the terminals of said grooves adapted to register with the steam recesses of said bearing disk, substantially as set forth.

6. In a steam engine, the combination of a revolving cylinder wheel carrying a series of actuating steam cylinders and provided in one side with steam ports communicating with the cylinder ports, a peripherally beveled stationary bearing disk arranged at one side of the wheel and provided in its periphery with directly opposite live and exhaust steam recesses, an adjustable valve ring having an inner reversely beveled periphery working over said stationary bearing disk, diametrically opposite segmental steam grooves in its inner side, and inner peripheral steam ports at the terminals of said grooves to register with the recesses of said stationary bearing disk, and a lever catch-device for said valve ring to hold the same stationary in its adjusted position, substantially as set forth.

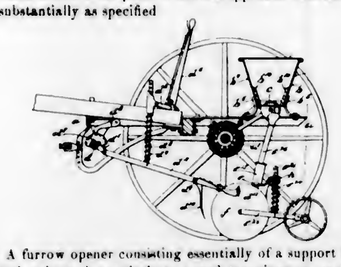
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**530,962. SEEDING-MACHINE.** FRANK R. PACKHAM, Springfield, Ohio, assignor to the Superior Drill Company, same place. Filed Apr. 9, 1894. Serial No. 506,819. (No model.)

*Claim.*—1. In a seeding machine, a furrow opener consisting essentially of a support having angularly-arranged trunnions, disks journaled at each side of said support on said trunnions so that the cutting edges thereof are made to approach each other at the front and below the center of rotation, as described, whereby an opening between said disks of decreasing size in the direction of the rotation thereof is produced above the ground line of the furrow opener, and

a guard or shield arranged in front of said disks so as to protect said opening, substantially as specified.

2. In a seeding machine, a furrow opener consisting essentially of a support having angularly-arranged disks journaled thereon with the point of nearest approach of said disks at the front of and below the center of rotation thereof, a drag bar connected to said support and extending forwardly therefrom, and a projecting shield or guard secured to said drag bar so as to protect the opening between said disks which is above the point of nearest approach between the said disks, substantially as specified



3. A furrow opener consisting essentially of a support having a conduit therein, and angularly-arranged trunnions on each side of said support formed integral therewith, rotating disks supported on said trunnions, said support being formed with an opening which extends entirely through the same and through said trunnions, and a bent rod or bolt extending through said opening and provided at each end with fastening devices for retaining said disks in position on said trunnions, substantially as specified.

4. In a furrow opener, a support having a conduit, and an upwardly-extending arm or trunnion, a backwardly-extending gage or covering device hinged to said support, a connecting rod from said arm to said extended portion, and a spring on said connecting rod, substantially as specified.

5. In a seeding machine, a furrow opener consisting of a support, and rotary disks journaled at an angle to each other on said support, a drag bar connected to said support and backwardly-extending scraper connected to said drag bar and adapted to engage on said disks, substantially as specified.

6. The combination with a disk furrow opener consisting of a support and disks journaled at an angle to each other on said support, a conduit in said support having inwardly projecting trunnions, of a sleeve formed of sheet metal having openings adapted to be forced over said trunnions and thus become pivoted in said conduit, substantially as specified.

7. The combination with a support having angularly arranged trunnions thereon, an opening extending through said support and through said trunnions, disks journaled on said trunnions, a connecting bolt extending through said support and through said trunnions and provided with means to secure said disks on said trunnions, said bolt being provided with projecting ends which extend beyond said disks, and a hanger carrying a covering device pivoted on said extended portions, substantially as specified.

8. The combination with a furrow opener, of a covering or pressing device consisting essentially of a supporting head having angularly-arranged trunnions, and wheels on said trunnions, said head being detachable and reversible so as to bring said wheels immediately over or removed from the furrow, substantially as specified.

9. The combination of a furrow opener, of a hanger connected thereto, a supporting head detachably connected to said hanger, said head having angularly arranged trunnions with wheels thereon and means, as described, for detaching and reversing said head to change the position of said wheels with reference to the furrow, substantially as specified.

10. In a seeding machine, a covering device consisting essentially of a hanger having a reversible supporting head with angularly-arranged trunnions, and conical-shaped wheels on said trunnions, said head being adapted to be removed and reversed so as to change the angular position of said wheels with reference to the furrow, substantially as specified.

11. The combination with a support having a conduit, and disks journaled at an angle thereon, a hanger pivoted to said support at the center of said disks, said hanger being extended backwardly and provided with a detachable and reversible head having angularly-arranged wheels thereon, an upwardly and backwardly extending arm on said support, and a connection between said arm and said hanger, a spring also arranged between said arm and hanger, and means for adjusting said connection, substantially as specified.

12. A furrow opener consisting essentially of a support having disks journaled at an angle thereon, and a conduit in said support, a projecting arm extending upwardly and rearwardly from said conduit, and a hanger pivoted to said support, a connection from said hanger to said extending arm, said connections being provided with perforations at a distance apart equal to the thickness of said arm, and means, as described, for attaching said connection to said arm so as to form a rigid or loose connection as desired, substantially as specified.

13. The combination with a furrow opener, of a hanger pivoted thereto, and a backwardly extending perforated arm formed on said furrow opener above said hanger, a connecting rod from said hanger extending through said perforated arm, and a series of openings in said connecting rod, said openings being arranged at a distance apart substantially equal to the thickness of said arm through which the rod extends, and pins or projections adapted to engage in said openings so as to attach said arm rigidly or loosely to said connecting device, substantially as specified

14. In a furrow opener, a support having a conduit therein and having oppositely-arranged trunnions on which are journaled disks, as described, said trunnions being arranged at an angle to each other and to the support so as to cause said disks at their peripheries to meet at a point below and in front of the center of said trunnions, and a guard or shield arranged in front of said disks so as to protect the opening between said disks above the meeting point thereof, substantially as specified.

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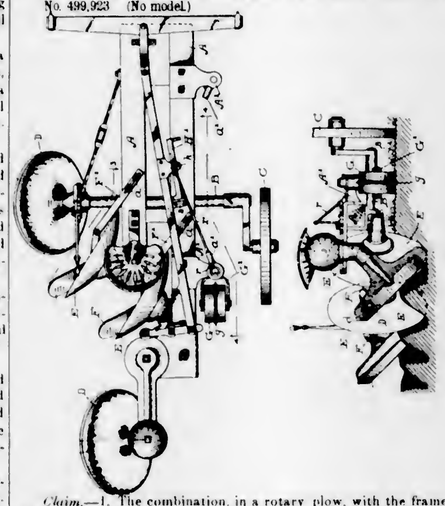
530,963. NUT-LOCK. DANIEL RHODES, Washington, D. C. Filed Feb. 16, 1894. Serial No. 500,395. (No model.)



*Claim.*—In a nut lock, the combination with a bolt, of a threadless nut provided with a groove, and a resilient sleeve arranged within the nut, and constructed of a strip of sheet metal tapering in width and provided with an exterior longitudinal rib formed by folding the sheet metal and with interior stamped threads, and having the ends of the strip separated, whereby it is made resilient, substantially as described.

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530,964. ROTARY PLOW. NATE H. ROBERTS, Indianapolis, Ind., assignor to Elias C. Atkins, same place. Filed Feb 12, 1894. Serial No. 499,923. (No model.)



*Claim.*—1. The combination, in a rotary plow, with the frame work, plowing disks, and draft bars, of the axle having an angularly set spindle at one end and a guide-wheel mounted thereon, said guide-wheel having a flat bearing surface resting on the bottom of the furrow, and a curve upon the side, the flat and curved sides, where they come together, terminating in a sharp edge, substantially as shown and described.

2. The combination, in a rotary plow, of the staggered guide-wheel mounted on a swinging arm, a lever engaging therewith, a draft-bar running forward to the double tree and attached to said lever, a pivoted lever mounted on said draft-bar, and a stop on the frame-work with which said lever will engage, substantially as shown and described.

3. The combination, in a rotary plow, of the frame-work A, axle B therefor, land wheel C, furrow wheel D, rotary plowing disks E mounted on arms secured to said frame-work, a small caster wheel G mounted in the housing G', said housing being mounted in a bracket



A' secured to and projecting laterally from said frame-work, said housing also having an engaging catch, a latch rod r engaging therewith at one end, and a foot lever mounted upon the frame-work for operating said latch rod, substantially as shown and described.

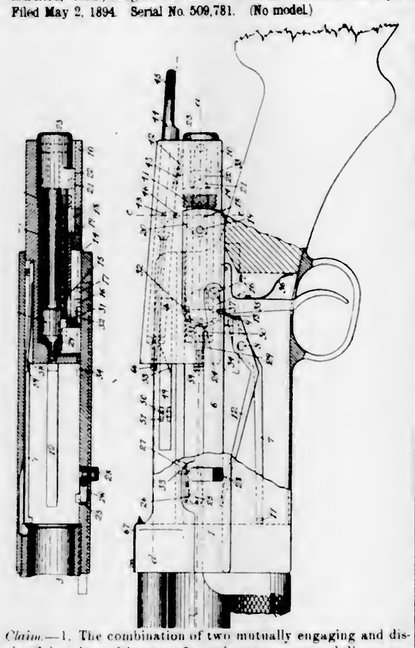
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530,965. HYPO-ELIMINATOR. ALBRECHT SCHMIDT, Berlin, Germany. Filed July 9, 1894. Serial No. 516,995. (No specimens.)

*Claim.*—In the art of photography the improvement which consists in removing the fixing agent from photographic pictures by treating them with a solution of a persulphate, substantially as set forth.

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530,966. BREECH-LOADING FIREARM. DUDLEY S. SEYMOUR, Hartford, Conn., assignor of one-half to John Johnston, same place. Filed May 2, 1894. Serial No. 509,781. (No model.)



*Claim.*—1. The combination of two mutually engaging and disengaging firing pins, with means for such engagement and disengagement; so that the secondary firing pin shall receive its blow from or through the primary firing pin, or remain idle, at the option of the gunner; all substantially as described, in that behalf.

2. The combination of two firing pins; the secondary one being provided with a fin or projection for engagement with a fin or projection of the primary one, to be engaged therewith or disengaged therefrom, by being moved into or out of aligment therewith, and so that the secondary firing pin shall receive its blow from or through the primary firing pin, or remain idle as the case may be; all substantially as described, in that behalf.

3. The combination of two mutually engaging and disengaging firing pins; and means for such engagement and disengagement; with the point of engagement between the two firing pins nearer to the nose of the primary firing pin, than to the nose of the secondary firing pin, so that when the two firing pins are in mutual engagement, the primary firing pin is held back by the secondary firing pin from reaching its cartridge; all substantially as described, in that behalf.

4. The combination of a breech block; and a primary and a secondary firing pin seated and working therein; and a stud or arm connected with the secondary firing pin, to limit the backward movement of the breech block, to prevent complete extraction of the cartridge opposite to the other firing pin from the breech of its barrel; substantially as described, in that behalf.

5. The combination of a breech block, provided with a seat for a firing pin in its interior, and a recess in its wall; and a firing pin working in that seat, and provided with a stud, working in that recess, which stud or recess has an inclined side or end, at the place where the stud works in the recess, to draw the firing pin back from its position of possible contact with the cartridge, whenever the firing pin is carried out of its firing position; all substantially as described, in that behalf.

6. The combination of a firing pin, provided with a stud projecting laterally therefrom, and a spring; and a switch having two inclined planes, by means of one of which the switch is forced out of the path of the stud against the resistance of the spring; and by means of the other of which, the switch forces the stud into a deflected path, and thus automatically moves the firing pin from its firing to its non-firing position; all substantially as described, in that behalf.

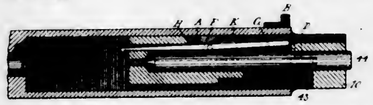
7. The combination of a firing pin, which is movable into and out of a firing position; and a cartridge shell extractor, which is carried into engagement with a cartridge shell, by the firing pin, when the firing pin is moved into its firing position, and is carried out of engagement with the cartridge shell, by the firing pin, when the firing pin is moved out of its firing position; all substantially as described, in that behalf.

8. The combination of an axially moving firing pin, having an inclined surface in its side; with a cartridge shell extractor, carried into engagement with the rim of the cartridge shell, by that inclined surface, when the firing pin is turned in one direction upon its axis, and carried out of engagement with the rim of the cartridge shell, by that inclined surface, when the firing pin is turned in the other direction upon its axis; all substantially as described, in that behalf

9. The combination of a firing pin, provided with the inclined plane 30; with the lifting wing 29, to be raised by that inclined plane, and a latch 25, to be lifted by that wing; and the slide 6, to be locked and unlocked by that latch; substantially as described, in that behalf.

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530,967. SHIFTABLE FIRING-PIN AND EXTRACTOR FOR FIREARMS. DUDLEY S. SEYMOUR, Hartford, Conn., assignor of one-half to John Johnston, same place. Filed May 2, 1894. Serial No. 509,782. (No model.)



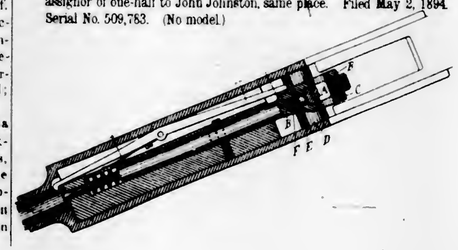
*Claim.*—1. The combination of a firing pin, which is movable into and out of a firing position; and a cartridge shell extractor, adjacent to the firing pin, and which is movable into and out of engagement with the adjacent cartridge shell; and a cam or inclined plane, adjacent to that firing pin and that cartridge shell extractor, and which moves them into or out of such position and engagement respectively, by acting on each separately and not through the other; and one or more springs oppositely located, and which move the firing pin and cartridge shell extractor in the opposite direction; all substantially as described, in that behalf.

2. In a gun mechanism, adjacent to a firing pin; the switch A, combined with the arm B, and the rock pivot C; and having the plane J, inclined crosswise of the switch, and having the ledge K, extending outward from the most inner boundary of the inclined plane J; and having the plane N, situated more inwardly than the outer boundary of the ledge K; and having the plane M, inclined inwardly, from a line more ontward than the inner boundary of the ledge K, to the plane N; and having the plane O, inclined inwardly from a line as outward as the most outward boundary of the inclined plane J, to the plane N, all substantially as described.

3. The combination of a firing pin, which is movable into and out of a firing position; with a rocking switch having the inclined plane J, the ledge K, the plane N, and the inclined plane M, and the inclined plane O, for moving that firing pin, and with the arm B, and the pivot C, for rocking the switch; and with the slide D, between the firing pin and the switch, for transmitting motion from the switch to the firing pin; all substantially as described, in that behalf.

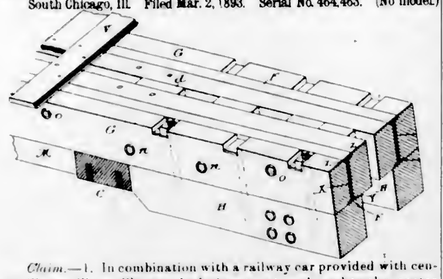
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530,968. SHIFTABLE NOSE ON HAMMER AND AUTOMATIC EXTRACTOR FOR FIREARMS. DUDLEY S. SEYMOUR, Hartford, Conn., assignor of one-half to John Johnston, same place. Filed May 2, 1894. Serial No. 509,783. (No model.)



*Claim.*—In a firearm, the combination of a hammer; a breech piece, containing several firing pins; a dog, between the hammer and the breech piece, which may be brought into alignment successively with the several firing pins and the hammer, so as to transmit the blow of the hammer to either firing pin; and a cartridge shell extractor adjacent to one of the firing pins, and which is forced into engagement with the rim of its cartridge, by the dog, whenever the dog strikes that firing pin; all substantially as described.

## 530,969. RAILWAY-CAR CONSTRUCTION. CHARLES A. SMITH, South Chicago, Ill. Filed Mar. 2, 1893. Serial No. 464,463. (No model.)



*Claim.*—1. In combination with a railway car provided with center sills, auxiliary sills attached thereto at each end to the center sills and extended back over the body bolster, and metallic strengthening beams interposed between such center sills and auxiliary sills, the whole rigidly secured together, substantially as described.

2. In combination with a railway car, center sills extending the entire length of the car, auxiliary sills attached to such center sills at each end thereof, and metallic I-beams interposed between such center and auxiliary sills, the whole being rigidly secured together, substantially as described.

3. In combination with a railway car provided with center sills, auxiliary sills attached thereto at each end to the center sills and extending back over the body bolster, and draft timbers secured to the auxiliary sills, substantially as described.

4. In combination with a railway car, center sills extending the entire length of the car, auxiliary sills rigidly attached to such center sills at each end thereof and extending back over the body bolster, and draft timbers secured to such auxiliary sills, substantially as described.

5. In combination with a railway car, center sills extending the entire length of the car, auxiliary sills rigidly attached to such center sills at each end thereof, metallic strengthening beams interposed between such center and auxiliary sills and rigidly secured to the same and extending back over the body bolster, and draft timbers secured to the auxiliary sills, substantially as described.

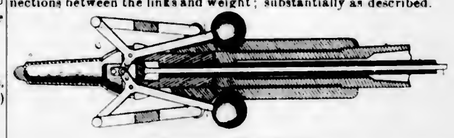
6. In combination with a railway car provided with center sills, auxiliary sills attached to such center sills at the ends thereof and extending back over the body bolster, metallic I-beams interposed between such center sills and auxiliary sills and rigidly attached to the same, and draft timbers removably secured to the auxiliary sills, substantially as described.

7. In combination with a railway car, center sills extending the entire length of the car, auxiliary sills rigidly attached to said center sills at each end thereof extending back over the body bolster and provided with notches or openings to receive the nuts of the draft bolts, metallic strengthening beams interposed between such center and auxiliary sills and rigidly attached to the same, draft timbers removably secured to the auxiliary sills, and vertical bolts passed through such draft timbers and auxiliary sills and having their nuts resting in notches or openings in the auxiliary sills, substantially as described.

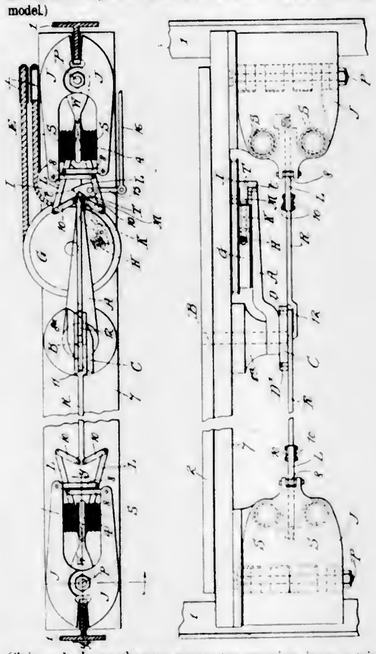
8. In combination with a railway car, a bolted chord for the center of the car comprising center sills extending the entire length of the car, auxiliary sills rigidly attached thereto at each end thereof and extending back over the body bolster, metallic strengthening beams interposed between such center and auxiliary sills and rigidly attached to the same, and splice planks secured to such center sills and having their end portions abutting the ends of the auxiliary sills, substantially as described.

## 530,970. STEAM-ENGINE GOVERNOR. HORATIO G. SMITH, Fitchburg, Mass. Filed Feb. 28, 1894. Serial No. 501,863. (No model.)

*Claim.*—In a governor, the combination with the standard, the rotary head carried thereby, the central shaft for rotating said head, the valve rod and the external independently movable weight, of the pendulous weighted arms, pivoted in the head and each having a short supplemental arm c pivotally connected with the valve rod and a relatively long arm C projecting outwardly and upwardly at such an angle as to be at its least inclination when the pendulous arm is close to the standard and to stand in its most nearly vertical position when the pendulous arm is at the outward limit of its movement, and links pivotally connected to the arms C at the upper end and pivotal connections between the links and weight; substantially as described.



## 530,971. SAFETY GRIP DEVICE FOR ELEVATORS. HUMPHREY R. SMITH, Chicago, Ill. Filed Apr. 23, 1894. Serial No. 508,679. (No model.)



*Claim.*—1. In an elevator apparatus gripping jaws, a trip latch for holding the same in open position, a governor for automatically releasing said trip latch, and auxiliary means independent of the governor for releasing said trip latch; as and for the purpose set forth.

2. In an elevator apparatus, pivoted gripping jaws, means for holding said gripping jaws in open position, a governor for automatically releasing said holding means to set said jaws, and means for temporarily rocking said jaws about their pivots, thereby relieving said jaws; as and for the purpose set forth.

3. In an elevator apparatus, gripping jaws, means for holding the same in open position, a governor for automatically releasing said holding means to set said jaws, and means, operated from the car, for rocking said jaws about their pivots, thereby temporarily releasing the jaws after they are set, whereby the car can be eased down to a landing; as and for the purpose set forth.

4. In an elevator apparatus, gripping jaws, means for holding said jaws in open position against a spring pressure, a governor for automatically releasing said holding means to set said jaws, in combination with an auxiliary means independent of the governor for releasing said holding means; as and for the purpose set forth.

5. In an elevator apparatus, gripping jaws, a means for holding said jaws in open position, a governor for automatically tripping said holding means in combination with an auxiliary tripping mechanism, adapted to be operated from the car and independent of the governor and means, also to be operated from the car and independent of the governor and of said auxiliary tripping mechanism, for temporarily relieving said jaws after they are set; as and for the purpose set forth.

6. In an elevator apparatus, a guide, a gripping mechanism comprising a pair of pivoted jaws, springs pressing against said jaws to normally close the same against said guide, a trip latch, an arm adapted to be held by said latch, connection between said arm and jaws, whereby said springs are compressed and said jaws held in open position, and a governor for automatically tripping said latch, to release said lever; as and for the purpose set forth.

7. In an elevator apparatus, a guide, a pair of pivoted gripping jaws, springs normally adapted to press said jaws against said guide, a trip latch, an arm adapted to be held by said latch, connections between said arm and jaws comprising a system of toggle levers, and a governor for automatically tripping said trip latch; as and for the purpose set forth.

8. In an elevator apparatus, a pair of guides, a pair of jaws adapted to grip each guide, springs adapted to act on said jaws, a trip latch, an arm adapted to be held thereby, a system of levers adapted to simultaneously set said jaws, connections between said arm and levers and a governor for automatically tripping said arm; as and for the purpose set forth.

9. In an elevator apparatus, guides, jaws adapted to grip the same, springs engaging said jaws normally tending to close the same, a trip latch, an arm adapted to be engaged thereby and to hold said jaws against the action of the springs a governor for automatically tripping said latch, and auxiliary means independent of said governor for tripping said latch, operated from the car, comprising an arm connected to said latch and a lever connected to said arm and extending into the car; as and for the purpose set forth.

10. In an elevator apparatus, a gripping mechanism, a tripping mechanism for automatically setting the same, and means, independent of the tripping mechanism, for temporarily releasing said gripping mechanism, comprising a rock shaft arranged to extend into and adapted to be operated from the car, and connections between said shaft and said gripping mechanism for operating the latter from the former; as and for the purpose set forth.

11. In an elevator apparatus, gripping jaws comprising pivoted levers, arranged in pairs, springs adapted to press against said jaws to normally close the same, a tripping mechanism for automatically setting said jaws, and means operated from the car for temporarily releasing said jaws after being set comprising a system of levers connected to said jaws for simultaneously moving the same, a shaft leading into the car and connections between said shaft and levers; as and for the purpose set forth.

12. In an elevator apparatus a gripping mechanism, a tripping mechanism for automatically operating the same, comprising a speed governor a safety plank for supporting said mechanism and governor, said plank adapted to be secured to the floor of an elevator car as and for the purpose set forth.

13. In an elevator apparatus a safety plank adapted to be secured to the floor of an elevator car, gripping devices carried at each end of said plank, a tripping mechanism for setting said tripping devices, comprising a speed governor, also carried by said plank, and guides arranged in the elevator shaft in proximity to the ends of said plank, adapted to be gripped by said gripping devices when operated by the tripping mechanism; as and for the purpose set forth.

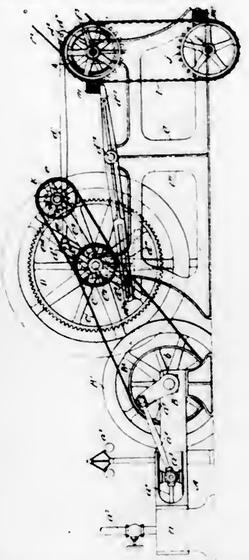
14. In an elevator apparatus a gripping mechanism comprising levers having extended gripping surfaces on their outer ends, said levers being arranged in pairs, a solid web arranged between each pair of levers, said levers being pivoted to each other and to said web, sets of springs arranged between said web and levers, arranged inside of the pivot, and normally tending to close the gripping jaws, means for retaining said jaws in their open position and means for releasing said gripping mechanism; as and for the purpose set forth.

15. In an elevator apparatus, a gripping mechanism, a tripping mechanism therefor, and means for temporarily releasing said gripping mechanism when set comprising a rock shaft having one end thereof extending into the car and flush with the floor thereof, whereby said shaft may be rocked from the car, and levers connected to said gripping mechanism and operated by said shaft; as and for the purpose set forth.

## 530,972. MEANS FOR TRANSMITTING MOTION. HERMAN C. F. E. SCHWMAN, New Paltz, N. Y. Filed Jan. 10, 1894. Serial No. 496,396. (No model.)

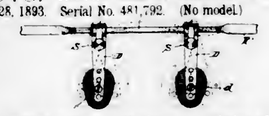
*Claim.*—1. An engine provided with a shaft B, a pulley $B^3$, mounted thereon, a stationary gear wheel D, a shaft $C^3$, a traveler arm $C^5$, secured to the shaft $C^3$, a shaft *c*, journaled in said traveler arm, a gear E fixed on one end of the shaft *c*, and adapted to revolve around the periphery of the stationary gear wheel D, a pulley *c'*, keyed to the other end of the shaft *c*, a double face pulley *c*, loosely mounted on the shaft $C^3$, a belt connecting the pulley $B^3$, with said pulley *c*, and a belt connecting said pulley *c*, with the pulley *c'*, cranks $d^4$ and $d^5$, secured on the ends of the shaft $C^3$, a transmitting shaft *f*, a crank $d^6$ on one end of said transmitting shaft, a rod $d^7$, connecting the crank $d^6$, with the crank $d^8$, a slotted arm $d^{11}$, having the crank $d^8$, engaging in said slot, a pawl $d^{13}$, pivotally connected to the end of said arm, sprocket wheels *j*, mounted on the shaft *i*, attached to the standard C, sprocket-wheels *k*, keyed to the transmitting shaft *f*, chains *l* and *l'*, connecting said sprockets and steps *m* and *m'*, carried by said chains, substantially as and for the purposes set forth.





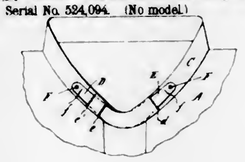
2. An engine provided with a shaft B, carrying a fly-wheel B, a pulley $B^3$, mounted on said shaft, a stationary gear D, a shaft $C^3$, a traveler arm $C^5$, secured to the shaft $C^3$, a shaft *c* journaled in said traveler arm, a gear E, fixed on one end of the shaft *c*, and adapted to revolve around the periphery of the stationary gear D, a pulley *c'*, keyed to the other end of the shaft *c*, a double face pulley *c*, loosely mounted on the shaft $C^3$, a belt connecting the pulley $B^3$, with said pulley *c*, and a belt connecting said pulley *c*, with the pulley *c'*, a fly wheel $C^4$, mounted on the shaft $C^3$, cranks $d^4$ and $d^5$, secured to the ends of the shaft $C^3$, a transmitting shaft *f*, a crank $d^6$, on one end of said transmitting shaft, a rod $d^7$, connecting the crank $d^6$, with the crank $d^8$, a slotted arm $d^{11}$, having the crank $d^8$, engaging in said slot, a pawl $d^{13}$, pivotally connected to the end of said arm, sprocket wheels *j*, mounted on the shaft *i*, attached to the standard C, sprocket wheels *k*, keyed to the transmitting shaft *f*, and chains *l* and *l'*, connecting said sprockets and steps or projections *m* and *m'*, carried by said chains, substantially as and for the purposes set forth.

## 530,973. TRUSS. JAMES F. STAFFORD, Wichita, Kans. Filed July 28, 1893. Serial No. 481,792. (No model.)



*Claim.*—The herein described truss, consisting of the combination of the bendable bar R flattened at either end; the arms D placed on the bar, the arms V fixed on the bar, the set screws S turned through corresponding holes of said arms V and adapted to be adjusted to adjust the arms D, the pads P, the screws *d* for attaching the pads, the coil springs C arranged cushioning the pads, and the belt B, substantially as set forth.

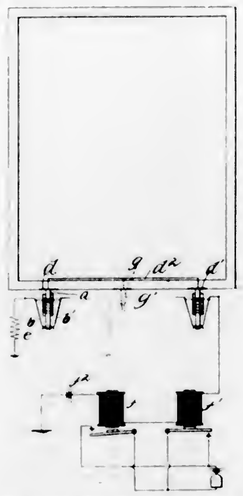
## 530,974. SHIRT. JOSEPH STECKER, Lexington, Ky. Filed Sept. 25, 1894. Serial No. 524,094. (No model.)



*Claim.*—A shirt having a neck band and projecting tabs at each end thereof, the said neck band being provided with the slit *d* on one side and the slits *e* and *e'* on the other side of the shirt opening, for the said tabs to pass through, the size of the shirt neck being adjusted by sliding the said tabs in the said slits, substantially as set forth.

## 530,975. CIRCUIT-CLOSER FOR BURGLAR-ALARM SYSTEMS.

ALFRED STROMBERG, Chicago, Ill. Filed May 24, 1894. Serial No. 512,339. (No model.)



*Claim.*—1. The combination with the covering of an opening, of a plate carried thereon and connected in circuit, a plunger adapted to make contact with said plate and to be depressed when said covering is closed, and contact springs adapted to be engaged by said plunger in the depressed position thereof, said springs being connected in circuit, substantially as described.

2. The combination with the covering of an opening, of a pair of electrically connected plates carried thereon, a pair of plungers adapted to make contact with said plates respectively, and to be depressed when said covering is closed, and contact springs adapted to be engaged by said plungers in the depressed positions thereof, substantially as described.

3. The combination with the covering of an opening, of a plate carried thereon and connected in a protective circuit, a plunger adapted to make contact with said plate and to be depressed when said covering is closed, contact springs adapted to be engaged by said plunger in the depressed position thereof, a resistance connected between said springs and ground, a local circuit at the central office containing a battery and a signal device, an electro-magnet thereat adapted to close said local circuit when the protective circuit is opened, and an electro-magnet adapted to close said local circuit when said resistance is cut from the circuit, substantially as described.

## 530,976. BURGLAR-ALARM SYSTEM.

ALFRED STROMBERG, Chicago, Ill. Filed May 24, 1894. Serial No. 512,340. (No model.)

*Claim.*—1. The combination with a removable covering for an opening, of a socket provided with contacts, a removable plug provided with contacts adapted when the plug is inserted in the socket to engage the contacts of said socket to complete a protective circuit, said socket being so located that the plug, when inserted therein, will lie in the path of said removable covering to prevent the uncovering of the opening without the removal of the plug, and signal apparatus in circuit with said plug adapted to sound an alarm when the plug is withdrawn from the socket, substantially as described.

2. The combination with a series of openings to be protected, of a series of plugs and sockets associated therewith, said plugs being provided with terminals adapted to be closed together to complete an electric circuit when the plug is inserted in the socket, said plugs being each provided with a normally insulated grounded terminal; whereby tests may be made, substantially as described.

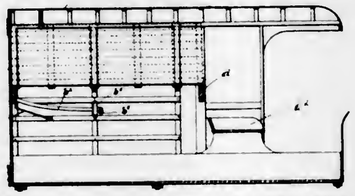
3. The combination with a protective circuit, of a series of plugs and sockets through which said circuit is normally completed, said plugs being each provided with a grounded, normally insulated terminal, and a testing battery and signal device adapted to be connected in circuit to determine the presence and location of faults on the circuit, substantially as described.



4. The combination with a protective circuit, of a series of normally closed circuit closers located therein, said circuit closers being arranged in sections, a key at the end of each section for closing the section to ground, a grounded normally insulated terminal at each circuit closer, and a testing battery and signal device adapted to be connected with the circuit to determine the presence and location of a fault on the line, substantially as described.

## 530,977. VEHICLE-BODY.

EDWARD I. TENNANT, Springfield, Ohio. Filed Apr. 14, 1894. Serial No. 507,562. (No model.)



*Claim.*—1. In a vehicle body, a hinged deck formed in two parts, as described, a stationary bar to support one end of said deck and to form a back for the vehicle seat, and a sliding bolt for connecting the respective parts of said deck at the end opposite to said bar, and retaining devices for supporting the respective parts of said deck when turned on their hinged connection, substantially as specified.

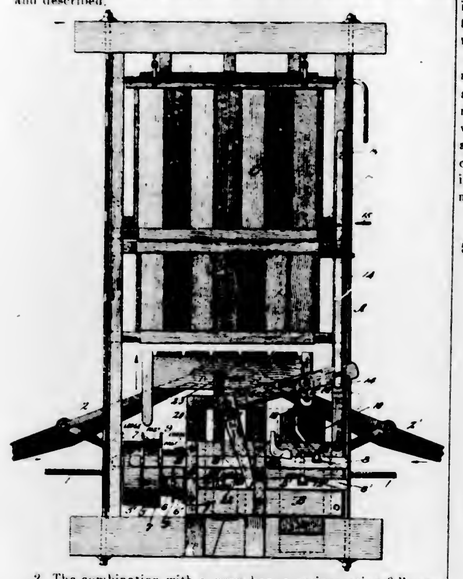
2. The combination with the hinged door of the curved sustaining bar hinged at one end to said door and provided at the other with a hook having a shoulder and a forwardly projecting lip a brace formed with a U-shaped end to form a guide and stop for said sustaining bar an additional guide for the end of said sustaining bar the curved portion of said bar being adapted to bear on said U-shaped guide so as to elevate the end of said bar in passing through said second guide substantially as specified.

## 530,978. COMBINED BELT-SHIFTER AND BRAKE FOR COTTON-PRESSES.

THOMAS M. WALLACE, Marion, Ala. Filed June 21, 1894. Serial No. 515,256. (No model.)

*Claim.*—1. The combination, with two sets of fast and loose pulleys, which are of different diameters and have the same axis, the two fast pulleys being arranged contiguously, and two slidable belt-shifters, or bars, arranged parallel horizontally and having lateral projections, of a vertically-slidable plate, having two obtuse angle slots, one arranged above another, their apexes pointing in opposite directions, their adjacent portions being inclined, and the upper portion or member of the upper slot and the lower portion of the lower slot being vertical, a pivoted angle lever which engages one of said bars, the press follower, and a bar connected with said lever and extending upward alongside the press-box, for operating said lever, as shown and described.





2. The combination with a press box, a reciprocating follower, and means for forcing the latter upward which include fast and loose pulleys, a sliding bar or belt-shifter having a lateral projection, a fast and loose pulley and a driving belt, of a vertical reciprocating slide having an angle slot in which the projection of the belt-shifter works, and a pivoted locking dog which automatically engages the belt-shifter when the latter has shifted the belt onto the fast pulley, as shown and described.

3. The combination with a press-box, follower, levers connected with the latter, a rotatable screw shaft for actuating said levers, fast and loose pulleys, a shaft carrying the latter and geared with said screw-shaft, open and crossed belts, two belt-shifters, a device for locking the latter, a lever arranged transversely in the path of the follower levers, and its free end engaging such locking devices, and means for operating said lever, substantially as shown and described, whereby, when the follower reaches the limit of its upward movement, the belt-shifter is moved to shift the driving belt, as specified.

4. The combination, with a press-box follower, and means for operating the latter, of fast and loose pulleys, a sliding belt-shifter having a lateral projection, a device for locking said belt-shifter, a vertical reciprocating slide having an angle slot, and a pivoted lever 18 connected with said slide for operating it, of a lever pivoted and arranged in the path of the means for forcing the follower upward, and its free end engaging said locking device, whereby the latter is operated and allows the shifting of the driving belt, when the follower is about to reach the upward limit of its movement, substantially as shown and described.

5. The combination with a slidable bar or belt shifter, a dog for engaging the latter and means for operating the belt-shifter, of a pivoted lever whose free end engages said dog, a press-box, a follower and means for operating the latter, said means being adapted to act on the lever when the follower is at one limit of its movement, as shown and described.

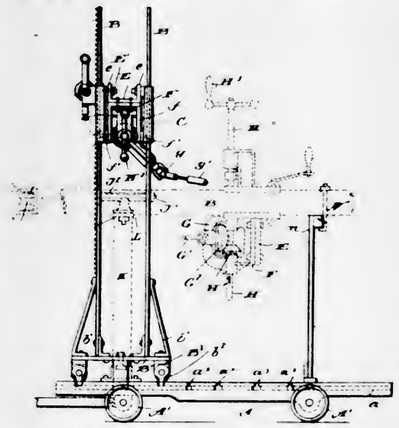
6. The combination with a press box, follower, and means for operating it which include fast and loose pulleys and belts, of sliding belt-shifters having lateral projections, and two vertical slides, the main slide having two guideways and the other one guideway for the said projections, and means for raising the supplementary slide and lever connected with said main slide for raising it, and a projection or shoulder on the lower belt-shifter, which comes in contact with such lever when said belt-shifter is moved endwise by the supplementary slide, substantially as shown and described, for the purpose specified.

7. The combination with the press-box, the follower, means for operating the latter, including fast and loose pulleys, and belts running thereon, and two sliding belt-shifters having lateral projections, of the main slotted vertical slide and the parallel supplemental slide, the pivoted, main, angle shaped, lever connected with the main side, and having a pendent free arm, and a pivoted lever having a joint connection with the supplementary slide, and its free end projecting into the path of the follower, whereby, when the latter is nearing the limit of its descent, it tilts such lever and thus raises the supplementary slide, and shifts the belt that runs the follower down, as set forth.

8. The combination with a press box, a follower, levers for operating it, a screw-shaft for operating the levers, a brake wheel, a movable brake-shoe acting on the latter, and a transverse brake lever arranged adjacent to the brake-shoe, to press the same against the wheel when the follower levers are at their closest approximation, and the main, slotted, vertical slide, a horizontal sliding belt-shifter connected with said slide, a lever, connected with the latter and having a pendent member against which the brake lever acts simultaneously with its action on the brake-shoe, as shown and described.

## 530,979. DRILLING-MACHINE.

FREDERICK W. WILLIAMS, Minneapolis, Minn., assignor of three-fourths to T. E. Clarke, W. H. Truesdale, and John Tonge, same place. Filed June 4, 1894. Serial No. 513,401. (No model.)



*Claim.*—1. A portable drill having its drill-carriage mounted for adjustment upon the truck thereof and carried by a support mounted for pivotal movement from a vertical to a horizontal position or vice versa, and a support on the truck for said carriage in its adjusted position substantially as specified.

2. The combination with a portable carriage having longitudinal and transverse slots, of a drill-support having a yoke with lateral extensions for engaging said slots, as set forth.

3. The combination with a carriage having longitudinal and transverse intersecting channels, of a drill-support having a yoke with lateral extensions to engage said channels, and rollers, substantially as specified.

4. The combination with a portable carriage having longitudinal and transverse intersecting channels, of substantially parallel bars mounted for adjustment in said channels and for removal therefrom, and a drill operating and carrying shaft mounted in said bars, as set forth.

5. The combination with the carriage having longitudinal and transverse channels, of the bars having yokes with lateral extensions and rollers, and adjustably and removably mounted in said channels, as set forth.

6. The combination with a drill support having a yoke with lateral extensions, of a portable drill-carriage bed having longitudinal and transverse channels and radial slots, as set forth.

7. The combination with a drill support having a yoke with lateral extensions, of a portable drill-carriage bed having radial undercut and longitudinal and transverse intersecting channels and radial slots, substantially as specified.

8. The combination with a portable carriage, and parallel bars adjustably mounted thereon, of the drill-operating devices, the adjustable support therefor, and the detachable support with a bifurcated swivel upon which the same is designed to be swung from a horizontal to a vertical position and vice versa, as set forth.

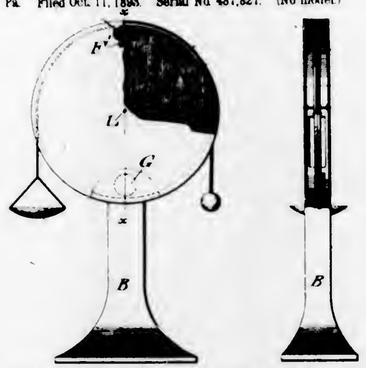
9. The combination with the carriage bed, of the parallel bars carrying the drill and drill-carriage adjusting devices, and the detachable support with swivel, substantially as specified.

10. The combination with the carriage bed, and the bars carrying the drill and drill-carriage adjusting devices, of the detachable support and swivel, the detachable rod held between the said bars and means for holding said rod detachably in place, as set forth.

11. The combination with the carriage bed and the bars with the drill and its adjusting means, of the detachable support with swivel, and the support with its lug for engagement with means on said bars to hold the same in their horizontal position, substantially as specified.

12. The combination with the parallel bars and the side portions of the drill-carriage embracing the same, of the plate adjustably held between said side portions and pivotally held at its lower end, means for adjusting the upper end to change the inclination of the drill, and the drill-shaft and holder supported in the said plate, as set forth.

## 530,980. WEIGHING-SCALE. JOSEPH R. WITZEL, Philadelphia, Pa. Filed Oct. 11, 1893. Serial No. 487,827. (No model.)

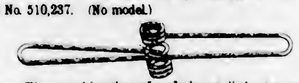


*Claim.*—1. A pendulum scale, consisting of a disk, suitably supported, and capable of turning freely about an axis, a scale pan depending from said disk, and a counterpoise weight on opposite sides of its periphery, a graduation scale on said disk, a weight secured to the latter on the diametric line of the zero point of the scale, and an index mounted adjacent to the zero mark of the said graduation scale said parts being combined substantially as described.

2. A pendulum scale, consisting of a standard having a supporting frame thereon, a disk mounted in said frame, a scale pan and a counter-poise weight secured to the opposite sides of the periphery of said disk, a graduation scale on said disk, a weight secured to said disk on the diametric line with the zero point of said graduation scale, an index on said frame at an opening therein opposite the zero point of the graduation scale, pins at proportionate distances on the said diametric line on the disk, and a weight or weights other than the disk or pan counter-poise weight before mentioned, adapted to be secured on any one of said pins, said parts being combined substantially as described.

3. A pendulum scale having a standard with a supporting frame thereon, a disk with journals, and flexible bearings for said journals connected with said frame and opening in opposite directions, said parts being combined substantially as described.

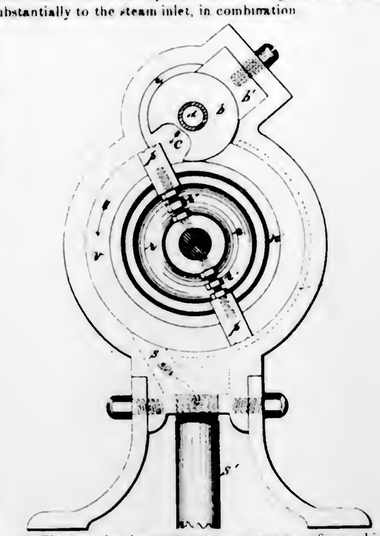
## 530,981. WIRE-FENCE STAY. DANIEL B. YOUNCE, Centre, Ohio, assignor of one-half to Charles L. Flory, same place. Filed May 5, 1894. Serial No. 510,237. (No model.)



*Claim.*—The combination of a chain of links for connecting the fence strands, each link consisting of a piece of wire having its ends doubled backward toward its center and coiled about one of the strands, and a central coil F in each link embracing the said strand, whereby the stay and strand are permanently secured together, substantially as shown and described.

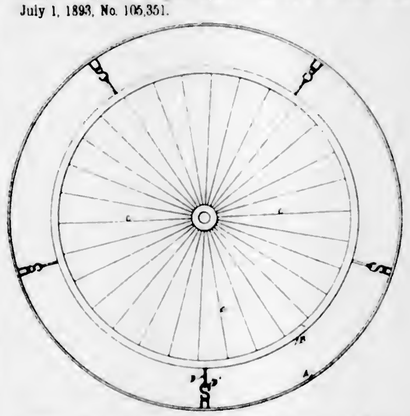
## 530,982. ROTARY ENGINE. WILLARD G. ADAMS, Weedsport, N. Y. Filed Feb. 8, 1894. Serial No. 499,464. (No model.)

*Claim.*—1. A rotary engine comprising a case, a head therein concentric therewith, pistons radially mounted in the head and fixedly adjustable in their projection beyond it, a cut-off valve mounted in a chamber connected to the steam chamber between the pistons, a rotary tubular shaft carrying said valve and provided with a port adapted to register with the steam inlet pipe, and a recess in the inner wall of the case beyond and extending from the exhaust port substantially to the steam inlet, in combination



2. The combination with a steam-inlet pipe of a combined shaft and steam conduit having a port adapted to register with said pipe, and a port coinciding with the steam port in the cut-off valve, and a cut-off valve secured upon and rotated by said shaft, and a recess in the inner wall of the case beyond and extending from the exhaust port substantially to the steam inlet.

## 530,983. WHEEL. PIERRE AMBJORN, Paris, France. Filed Mar. 12, 1894. Serial No. 503,274. (No model.) Patented in France Mar. 9, 1893, No. 228,504; in England Apr. 21, 1893, No. 8,105, and in Belgium July 1, 1893, No. 105,351.



*Claim.*—1. In a wheel, in combination with an outer flexible rim, provided with suitable notches along its edges, of transverse bands or belts inserted in such notches and intermediate devices connecting said bands with the hub, substantially as set forth.

2. In a wheel, in combination with an outer flexible rim and blocks resting against the same, transverse bands or belts placed around the rim and the blocks, and intermediate devices connecting said bands with the hub, substantially as set forth.

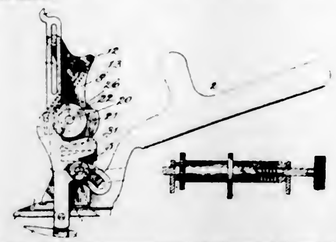
3. In a wheel provided with an inner and an outer rim, spokes extending through the inner rim to the hub, rods uniting said rims, and elastic jackets and elastic balls placed over the rods, substantially as set forth.

4. In a wheel, in combination with an outer rim and a protecting tire, transverse belts placed around such rim, and screw-threaded studs extending from such belts for the purpose of securing the tire, substantially as set forth.

5. In a wheel, in combinaton with an outer rim a protecting tire, transverse clips or bands for confining such rim and tire in contact with each other, substantially as set forth.



## 530,984. ATTACHMENT FOR HAIR-CLIPPERS. CHARLES O. BECHSTEDT, Hartford, Conn. Filed Apr. 26, 1894. Serial No. 509,131. (No model.)



*Claim.*—1. In combination with a clipper, a frame detachably secured to the clipper, a frame movably connected to the fixed frame, a comb plate borne by the movable frame, and cams borne by the fixed frame engaging parts on the movable frame for adjusting the movable frame, substantially as specified.

2. In combination with a clipper, a frame detachably secured to the clipper, a frame movably connected with the fixed frame, a comb plate adjustable with relation to the movable frame by which it is borne, cams borne by the fixed frame engaging parts on the movable frame for adjusting the movable frame, and a clamp screw for holding the adjustable comb plate, substantially as specified.

3. In combination with a clipper, a frame detachably secured to the clipper, a frame movably connected with the fixed frame, and a comb plate pivoted to the movable frame, substantially as specified.

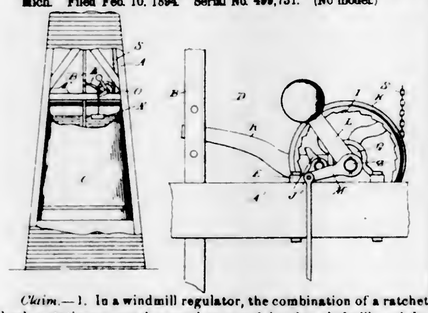
4. In combination with a clipper, a fram edetachably secured to the clipper, a frame pivoted to the fixed frame and bearing a comb plate, and mechanism for oscillating the movable frame, substantially as specified.

5. In combination with a clipper, a frame detachably secured to the clipper, a frame having a reciprocating movement on the fixed frame and bearing a comb plate, and mechanism for reciprocating the movable frame, substantially as specified.

6. In combination with a clipper, a frame detachably secured to the clipper, a frame bearing a comb plate, said latter frame having an oscillating and also a reciprocating movement on the fixed frame, and mechanism for oscillating and reciprocating the movable frame, substantially as specified.

7. In combination with a clipper, a frame detachably secured to the clipper, a frame having an oscillating and a reciprocating movement on the fixed frame, said movable frame bearing an oscillating comb plate, and mechanism for oscillating and reciprocating the movable frame, substantially as specified.

## 530,985. WINDMILL-REGULATOR. ARTHUR S. CLARK, Saline, Mich. Filed Feb. 10, 1894. Serial No. 499,731. (No model.)



*Claim.*—1. In a windmill regulator, the combination of a ratchet wheel, a stationary pawl, a pawl operated by the windmill, and devices controlled by the float for shifting the ratchet wheel in and out of engagement with the pawls, substantially as described.

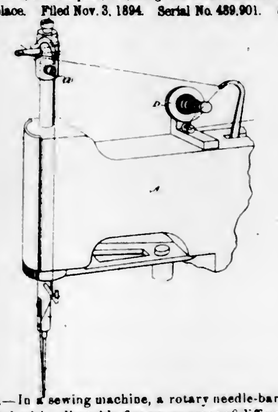
2. In a windmill regulator, the combination of a ratchet wheel, a hub upon which it is journaled, an eccentrically arranged supporting shaft therefor, a stationary pawl, a pawl operated by the windmill, and means controlled by the float for rocking the hub, whereby the ratchet wheel is moved in and out of engagement with the pawls, substantially as described.

3. In a windmill regulator, the combination of the ratchet wheel having a holding pawl and an actuating pawl operated by the windmill, of an eccentric for shifting the wheel, a weighted lever for rocking the eccentric and a connection to the float for operating the weighted lever, substantially as described.

4. In a windmill regulator, the combination of a ratchet wheel having a holding pawl, an actuating pawl operated by the windmill, an eccentric for shifting the wheel, a weighted lever for rocking the eccentric, a lever connected to the float for operating the weighted lever, the parts being arranged with a lost motion between the float operated lever and the weighted lever, and between the weighted lever and the eccentric, substantially as described.

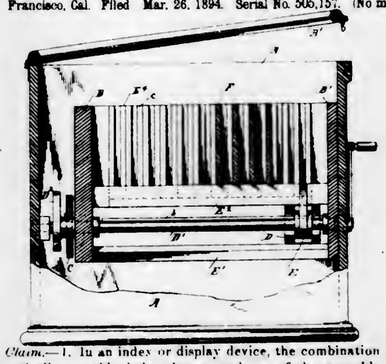
5. In a wind-mill regulator, the combination of a bracket, a shaft pivoted therein, a lever pivoted at one end, connected to the windmill pump rod, an eccentrically arranged hub upon the shaft and having stops to limit its movement a ratchet wheel journaled thereon, a pawl on the said lever adapted to engage said ratchet wheel, a stationary pawl beside the wheel and engaging the same, a weighted lever pivoted on the shaft, and a lever pivoted beside the weighted lever having a limited play in relation to the weighted lever, and operated by the float, substantially as described.

## 530,986. SEWING-MACHINE. JACOB EMANUEL and ADOLF SPIELMANN, Philadelphia, Pa., assignors of one-third to Haymin Maimin, same place. Filed Nov. 3, 1894. Serial No. 459,901. (No model.)



*Claim.*—In a sewing machine, a rotary needle-bar, a detachable cap provided with adjustable fingers or arms of different lengths and having thread guiding eyes and said fingers or arms adjustably engaging said cap and extending in different directions from said needle-bar, substantially as and for the purposes set forth.

## 530,987. INDEX OR DISPLAY DEVICE. JACOB A. FISCHER, San Francisco, Cal. Filed Mar. 26, 1894. Serial No. 505,157. (No model.)



*Claim.*—1. In an index or display device, the combination with the vertically movable index sheets or plates, of the movable carriage traveling beneath the index sheets, the cam carried thereby, and mechanism for throwing the cam vertically in order to raise one of the index sheets.

2. In an index or display device, the combination with the worm shaft, of mechanism for imparting motion thereto, carriage mounted upon the worm shaft, said carriage caused to travel back and forth with the movement of the worm shaft, cam carried by the traveling carriage, vertically movable index sheets, and mechanism for raising the cam in order to elevate the index sheets.

3. In an index or display device, the combination with the frame, of the movable index sheets secured therein, the movable carriage secured beneath the index sheets, mechanism for imparting lateral movement to the carriage, and a device carried by the carriage for raising the index sheets.

4. In an index or display device, the combination with the frame, of the index sheets secured therein, the worm shaft, the parallel shafts, the carriage secured to the worm shaft, cam working upon one of the parallel shafts and carried by the carriage, mechanism for imparting the motion of the opposite shaft to the worm shaft so as to cause lateral travel of the carriage and cam, of mechanism for throwing the cam in order to raise the index or display sheets as the cam travels thereunder.

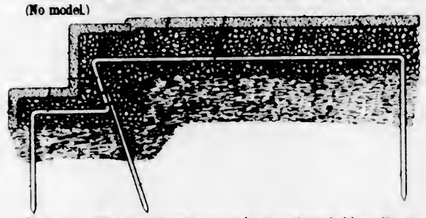
5. The combination with the frame, of the vertical guide strips removably secured and horizontally movable therein, the vertically movable index sheets mounted in said guide strips, and mechanism for raising said sheets to permit an inspection of the same.

6. The combination with the frame, and longitudinal side pieces therein, of vertical guide plates having their lower ends fitting between the said side pieces and the sides of the frame and provided with shoulders resting on the side pieces, index sheets mounted in said guide strips and mechanism for raising the index sheets.

7. The combination with the frame, of vertically movable index sheets mounted therein, and mechanism for raising said sheets, said mechanism being longitudinally movable within the frame.

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**530,988. ARTIFICIAL-STONE PAVEMENT.** FRANK L. FRY and WILLIAM J. FISHER, Tacony, Pa. Filed Oct. 8, 1894. Serial No. 525,197. (No model.)



*Claim.*—1. The combined gutter-plate, curb and sidewalk of artificial stone comprising a suitable foundation provided with a smooth facing of cement, and an upright iron brace embedded therein having the Z-shaped body formed of iron rods with its upper and lower members extended beneath the gutter-plate and the sidewalk substantially for their entire width, and provided with anchoring prongs beneath the extremities of the gutter plate and sidewalk, as and for the purpose set forth.

2. The combined gutter-plate, curb and sidewalk of artificial stone comprising a suitable foundation provided with a smooth facing of cement, and an upright iron brace embedded therein constructed of iron bars in two parts of which one is Z-shaped with prongs projected downwardly from the extremities of the lower member and with means at the outer end of that portion of the upper member adjacent to the upright member for securing the same detachably to one end of the other portion which consists of a straight bar with a downwardly projecting prong at the opposite end, as and for the purpose set forth.

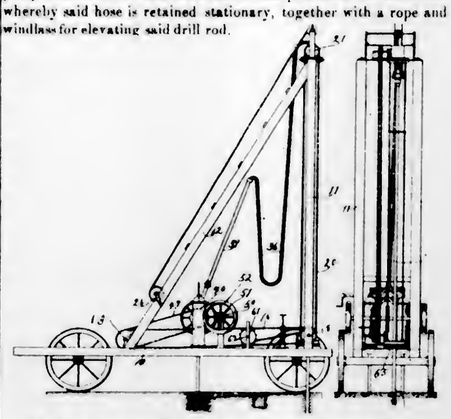
3. A brace for the purpose described consisting of the Z-shaped portion with lower member *d* formed with the prong $d'$, the upright member *e* with downwardly inclined prong $d^3$ secured thereto, and upper member formed with eye *o*, and the separate portion *f* formed with hook *h* and prong $f'$, as herein shown and described.

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**530,989. WELL-BORING APPARATUS.** LANE GIFT, Scranton, assignor of one-half to George L. Brower, Des Moines, Iowa. Filed July 3, 1893. Renewed July 27, 1894. Serial No. 518,715. (No model.)

*Claim.*—1. In an apparatus for boring wells, the combination with a prime mover geared thereto of a vertical drill rod, a clamp mounted upon said drill rod, connecting rods vertically positioned on opposite sides of said drill rod, crown wheels fixed to the top and bottom ends of said connecting rods and connecting the same, and rotated mechanism acting upon said crown wheels, as set forth.

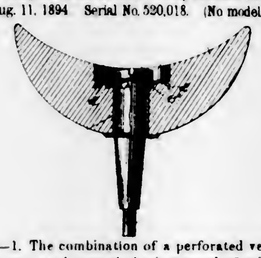
2. In an apparatus for boring wells, the combination of a drill rod, a clamp mounted upon said drill rod, crown wheels mounted at the top and bottom of the supporting frame in proximity to said drill rod, connecting rods between said crown wheels, which connecting rods engage said clamp, rotated mechanism driven by a prime mover to operate said crown wheels a hose swiveled to said drill rod, a pump connected to said hose and a clamp secured to the swivel whereby said hose is retained stationary, together with a rope and windlass for elevating said drill rod.



3. In an apparatus for boring wells, the combination with the drill rod and a hose swiveled thereto, of means for rotating said drill rod, comprising a clamp rigidly mounted upon said drill rod, vertical connecting rods, crown wheels secured to the top and bottom ends of said rods and rotated by a prime mover, and sliding bearings formed on said clamp and engaging said connecting rods.

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**530,990. VEHICLE-WHEEL RIM.** FRANK L. GOODRICH, Belvidere, Ill., assignor to the National Sewing Machine Company, same place. Filed Aug. 11, 1894. Serial No. 520,018. (No model.)

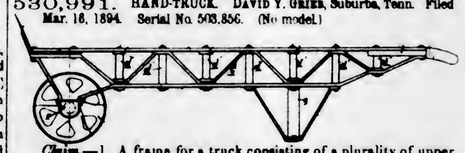


*Claim.*—1. The combination of a perforated vehicle wheel rim, of a washer arranged around the inner end of said perforation, a sheath passing through said perforation and having its end reamed down over said washer and its outer end flared outwardly over the edge of the perforation and overlapping the rim, and thereby securing both the sheath and the washer in place, and a headed stem passing through said sheath, substantially as set forth.

2. The combination with a perforated vehicle wheel rim, of a washer arranged around the inner end of said perforation, a sheath passing through said perforation and having its inner end reamed down over the edge of said washer and its outer end reamed down over the edge of the perforation and overlapping the rim and thereby holding both the washer and the sheath in place, and a stem passing through said sheath and having a head beveled on its under side and resting with such bevel against the flared end of said sheath, substantially as set forth.

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**530,991. HAND-TRUCK.** DAVID Y. GRIER, Suburba, Tenn. Filed Mar. 16, 1894. Serial No. 503,856. (No model.)



*Claim.*—1. A frame for a truck consisting of a plurality of upper and lower bars the bars of each pair being secured to each other at or near their ends; bends to the lower bars adapted to form hangers for the boxes; a brace-iron having a series of V-shaped bends, connecting the bars of each pair, and cross brace-irons connecting the pairs, substantially as and for the purpose specified.



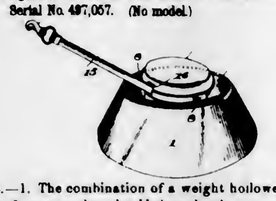
2. A frame for a truck consisting of plurality of upper and lower bars; a V shaped brace iron connecting each pair of upper and lower bars, bends in the lower bars adapted to form hangers for the boxes; a transverse groove in each of the boxes; bolts taking through the hangers and resting in the grooves, brace-irons connecting the pairs, substantially as and for the purpose specified.

3. The combination in a truck of upper bars *a*, and lower bars *b* having bends $b'$ brace irons, *c*, between the upper and lower bars, cross brace irons, *g*, connecting the sides of the frame, bolts *d* and ferrules $d'$, connecting and bracing the bars and brace irons; boxes *k*, having groove $k'$, and bolts *l* connecting the sides of bend $b'$ and resting in the groove $k'$, substantially as and for the purpose specified.

4. The combination in a truck of the bars *a* and *b*, the brace irons *c* and *g*, the baudle *e* and the nose iron *n* combined and arranged substantially as and for the purpose specified.

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**530,992. HITCHING DEVICE.** ALBERT G. HAMBLIN, Ashland, Wis., assignor of one-half to C. H. Wallow, Detroit, Mich. Filed Jan. 16, 1894. Serial No. 497,057. (No model.)

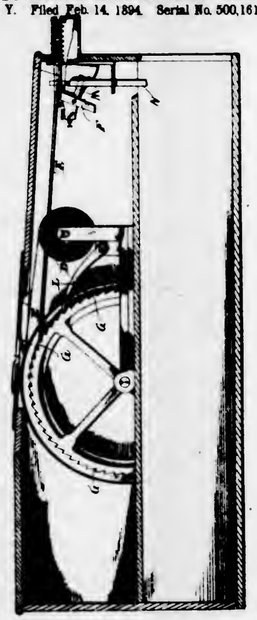


*Claim.*—1. The combination of a weight hollowed out at its upper side to form a cavity, the U-shaped yoke arranged within the cavity of the weight and swiveled to the bottom thereof, and a casing having a spring actuated drum and adapted to receive a hitching strap and swiveled between the sides of the yoke, whereby it is capable of swinging vertically and horizontally to prevent a hitching strap from becoming tangled, substantially as described.

2. The combination of a truncated cone-shaped weight hollowed out at its upper side to form a cavity and provided at the bottom thereof with a recess, a rotary disk seated in the recess, a U-shaped yoke arranged within the cavity of the weight and having a stem secured to the disk and swiveled to the bottom of the weight, a nut arranged on the lower end of the stem and countersunk in the bottom of the weight, and a casing provided with a spring actuated drum and adapted to receive a hitching strap and journaled between the sides of the yoke and capable of swinging vertically and horizontally, substantially as and for the purpose described.

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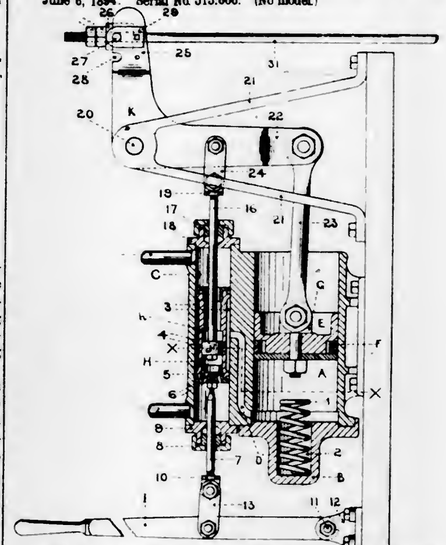
**530,993. MANUAL SALES-RECORDER.** AXEL C. HOUGH, South Butler, N. Y. Filed Feb. 14, 1894. Serial No. 500,161. (No model.)



*Claim.*—In combination with the locking mechanism of a cash register, consisting of a rocking frame F carrying an integral projecting arm M adapted to engage a locking bolt N, a spring actuated push rod J having pivotal connection at its inner end with the said rocking frame, and a rod E having one end pivoted to the frame F and its free end engaging with the circumferential notches G of a record drum, the said mechanism adapted to simultaneously unlock a cash drawer and cause a partial rotation of the drum all substantially as shown and described.

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**530,994. ENGINE FOR OPERATING CLUTCHES OR OTHER DEVICES.** JOHN K. HOWE and JAMES CLARK, Albany, N. Y. Filed June 6, 1894. Serial No. 513,666. (No model.)



*Claim.*—1. The combination of a main-cylinder, an auxiliary-cylinder connected to said main-cylinder by means of a passage communicating with the bores of both of said cylinders; each of the latter being provided with a piston connected to a lever or arm that is common to both pistons, and the auxiliary-piston being arranged in such manner that only one of its ends will be exposed to the pressure of live steam, and a manually-operated tubular-valve for controlling the admission and emission of steam into and out from said main-cylinder; whereby the main-piston will be moved in one direction by pressure acting directly upon said piston, and in the opposite direction by pressure applied directly against the auxiliary-piston and transmitted—by means of said lever or arm—to the main-piston, and for the purpose specified.

2. The combination of a main-cylinder having a piston fitted to reciprocate therein, an auxiliary-cylinder ancillary to said main-cylinder and provided with an induction-pipe—which leads into one end—and an eduction-pipe leading from the opposite end of the same, a tubular-valve fitted to slide in the bore of the auxiliary-cylinder and having its periphery arranged to form an annular-passage between said valve and the bore of the auxiliary-cylinder; said annular-passage forming a constantly-open communication with a passage leading into the bore of the main-cylinder, an opening or openings leading from the bore of said valve into the annular-passage, a piston fitted to move in the bore of said valve and arranged to govern the openings of the latter into the annular-passage, a manually-operated lever connected to said valve, and an arm or lever to which the main-piston and auxiliary-piston are both connected, as and for the purpose specified.

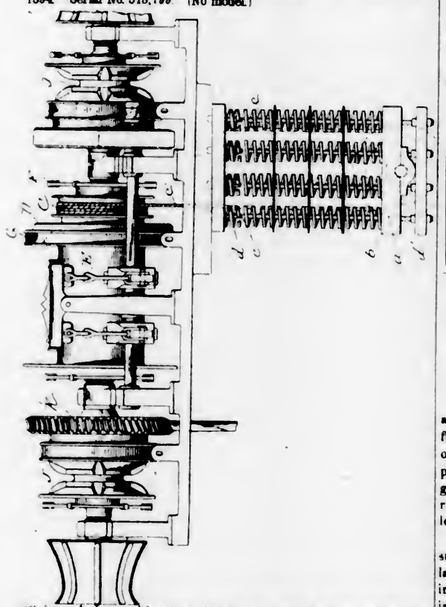
3. The combination of a main-cylinder provided with a piston fitted to reciprocate therein, an auxiliary-cylinder provided with a passage that leads into the main-cylinder, a tubular-valve which controls the admission and emission of steam into and from said main-cylinder; said valve being counterbored to form a shoulder near the middle of the valve, an auxiliary-piston fitted to reciprocate in the larger bore of said valve, a lever or arm connected to both of said pistons, and an operating-lever connected to said valve; whereby the latter can be moved so that its shoulder will take against the auxiliary-piston to effect an initial inward movement of the main-piston, as and for the purpose specified.

4. The combination of a main-piston, an auxiliary-piston, a lever or arm to which both of said pistons are connected; both of said pistons being arranged to move in unison, and a buffer spring arranged to receive the impact of the main-piston, as and for the purpose specified.

5. The combination of a manually-operated valve, a piston fitted to move reciprocally in said valve, and openings formed in said valve; whereby said openings can be automatically closed by said piston while the latter is moving in either direction, as herein specified.

6. The combination of a cylinder, a tubular-valve whose extremities are fitted to the bore of said cylinder and whose body is reduced in diameter to form an annular-passage between said body and the bore of the cylinder; one end of said valve being open and the opposite end being provided with a head containing an opening or openings; the body of said valve being provided with an opening or openings which lead from the bore of the valve into said annular-passage, and a piston fitted to reciprocate in the bore of said valve; said piston being arranged to automatically close the openings leading from the bore of the valve into said annular-passage, as and for the purpose specified.

## 530,995. TENSION DEVICE FOR TOWING-CABLES. WILLIAM F. HUMPHREY and SAMUEL V. HOFFMAN, Boston, Mass. Filed June 7, 1894. Serial No. 513,799. (No model.)



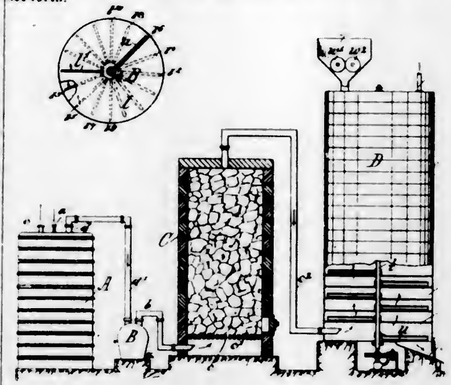
*Claim.*—1. In combination with the main shaft, the towing drum the take-up drum, means for locking said drums together and to the shaft, and a sliding frame under tension of a spring, and connections between said frame and the take-up drum, substantially as described.

2. In combination with the main shaft, the towing drum thereon, the take-up drum, the cable thereon, the series of spiral springs, the frame beneath the same, and a pulley carried by said frame, the cable of the take-up drum bearing on said pulley, substantially as described.

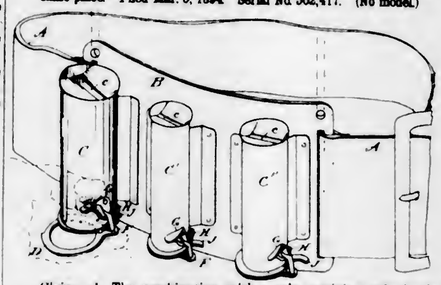
3. In combination with a main shaft, a drum C thereon, a spring frame connected to said drum by a cable, a towing drum and a wild cat also on said main shaft, and locking means for said drums and wild cat, whereby one or the other may be locked to the shaft, and the tension of the springs applied to the cable of the locked part, substantially as described.

## 530,996. APPARATUS FOR MAKING BLEACHING-POWDER. CARL KELLNER, Vienna, Austria-Hungary. Filed Jan. 4, 1892. Serial No. 417,014. (No model.)

*Claim.*—The herein described apparatus for the production of bleaching powder, comprising an absorption tower divided into a series of chambers communicating with one another by a long narrow opening or slot formed in the intervening partitions, the slots in the partitions of contiguous chambers being arranged so as not to register with one another, a revoluble scraper for each of the chambers, feeding devices for feeding the hydrate of lime to the upper chamber in the tower in pre-determined uniform quantity, and a source of chlorin supply connected with the lower chamber, for the purpose set forth.



## 536,997. COIN HOLDING AND DELIVERING DEVICE. CHARLES F. KRAUMP, St. Louis, Mo., assignor of one-half to Ernest G. Bruckman same place. Filed Mar. 5, 1894. Serial No. 502,417. (No model.)



*Claim.*—1. The combination with a coin receiving tube having a bottom secured to the rear portion only of the tube and free at the front, thus forming a slot, of a ring pivotally mounted in said slot at one side end of said slot, provided with an arm extending outside the pivot, a thumb-operated lever pivoted on the side of the tube and engaging at one end with said ring-arm to throw it backward and the ring outward with the contained coin, and a spring to return said lever and ring.

2. The combination with a coin receiving tube having a bottom supported by its rear half only and set off from the tube to form a lateral slot, of a feeding ring mounted in said slot and normally closing the front and having a side arm, a pivot pin through the ring adjacent to the arm, a bent lever pivoted to the side of the tube above the arm and slidingly engaged therewith at one end, and flattened for the operating thumb at the other end, and a spring to return the lever and ring after each operation.

3. The combination with a thin supporting plate curved to fit the body and suitably supported, of a series of coin receiving tubes independently mounted on said plate at their rear sides, and each having a bottom set away from the tube a distance corresponding to the thickness of one of the contained coins, and secured to the tube at the rear portion only, a ring matching each tube pivotally mounted above said bottom and normally closing the front opening in the tube, and means to operate said ring about its pivot beyond the tube.

4. The combination with a thin supporting body plate, of a series of coin receiving tubes secured independently thereto by their rear portions, each having a bottom secured to the tube at its rear half only and set off to form a slot open at the front, a matching ring pivotally mounted at the side of each tube and provided with a spur extending rearward from the middle of its rear half and passing outward through a rear opening in the tube, and means to operate said ring in and out of said front opening.

5. The combination with a thin curved body-plate adapted to be supported at the conductor's waist, of a series of coin receiving tubes independently mounted thereon by web plates at their rear sides, and each provided with a bottom set away from the tube to form a front slot and closed at the rear half, and a feeding ring pivotally mounted



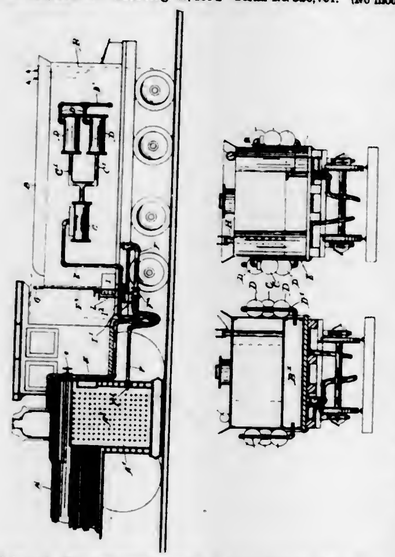
at the side of each tube and normally closing the front of the slot, provided with a rearward spur extending in an arc about the pivot and passing through an opening at the rear of the tube, the web plates allowing of setting off each tube from the body plate to accommodate said spur, substantially as shown and described.

6. In a money changer, the combination with a coin tube having an open slot at the front, of an operating mechanism herein described, consisting of a feeding ring pivoted at the side of the slot and having an arm extension, a bent lever pivoted to the side of the tube, one end adapted to receive the thumb and the other curved outward away from the tube to a loosely sliding transverse engagement with said arm extension, and a spring to return the lever and ring to their normal position after being operated.

7. The herein described feeding ring D, having a slotted arm extension F adjacent to a pivot point, and a rearward extension J forming an attenuated spur in an arc about said pivot point.

8. In a money changer the herein described coin receiving tube, consisting of a sheet metal cylinder having a downwardly-inclined slotted top, a flanged base, and a bottom set off from said base according to the coin thickness, and secured by the rear half only, and partly cut away at front, combined with a feeding ring pivotally mounted above said bottom and under the flanged base, and adapted to be rotated in and out to discharge the coin separately.

## 530,998. FEED DEVICE FOR LOCOMOTIVES. LASER LASSERUS, Indianapolis, Ind. Filed Aug. 18, 1894. Serial No. 520,701. (No model.)



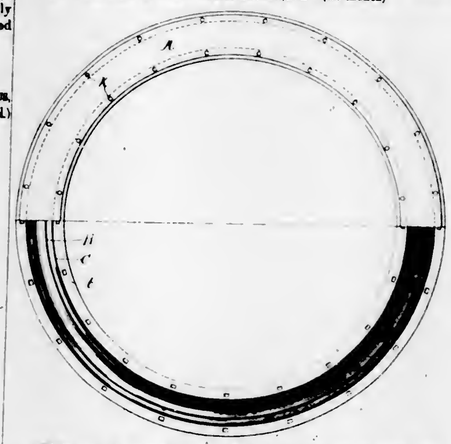
*Claim.*—1. The combination, with a locomotive and its tender, of an air pumping apparatus secured to said tender, an air reservoir or tank within said tender with which said pumping apparatus connects, a steam-pipe leading from the locomotive to said pumping apparatus, to furnish steam for operating same, and an air pipe leading from said air reservoir or tank to the fire-box of the locomotive, the section between the tender and locomotive being provided with a suitable coupling said several parts being arranged and operating substantially as set forth.

2. The combination of a locomotive provided with the usual fire-box, a tender provided with an air reservoir or tank, an air pumping apparatus mounted upon said tender, a steam pipe leading from the locomotive to said pumping apparatus whereby it is operated, connections between the air cylinders and said reservoir or tank, a pipe leading from said reservoir to the fire-box of said locomotive, and an escape pipe provided with a safety valve connected to said reservoir or tank.

3. The combination of the locomotive A having the fire-box A', the tender B having air reservoir or tank B', the air-pumping apparatus consisting of steam cylinder C and air-pumping cylinders D D, a bifurcated piston operating from said steam cylinder to said air-pumping cylinders, pipes D' D' from said air-pumping cylinders to said air reservoir or tank B', a pipe F leading from said air reservoir to said fire-box where it is provided with a nozzle F', a branch pipe $F^2$ terminating in a gage G, a valve $F^3$, a steam pipe E leading from the locomotive to the steam cylinder C and provided with a valve e, and an escape pipe H having a cap H' secured thereto by bolts k and springs k', the whole being combined, arranged and operating, substantially as shown and described and for the purposes set forth.

4. The combination of a locomotive, its tender, an air reservoir in said tender, an air pumping apparatus mounted on said tender and connected with said reservoir, a pipe leading from the locomotive to said pumping apparatus to supply steam for operating the same, a pipe leading from said reservoir to the fire box of the locomotive with a suitable coupling in the section between the tender and locomotive, a hydro-carbon reservoir and a pipe leading from said hydro-carbon reservoir to said air pipe with which it communicates by a suitable connection and suitable valves for controlling the flow of hydro-carbon, air and steam through the different parts of said apparatus, substantially as set forth.

## 530,999. PNEUMATIC SPRING. ALONZO C. MATHER, Chicago, Ill. Filed Jan. 23, 1893. Serial No. 459,374. (No model.)



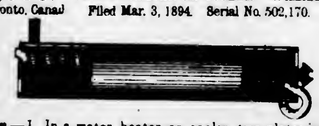
*Claim.*—1. A pneumatic spring for a railroad car or other vehicle, consisting of two circular parts fastened flexibly together with a pneumatic tube between, and a sliding bearing upon which the lower part rests, substantially as set forth.

2. In a pneumatic spring the upper half of the frame (A) in combination with the lower half (B) the sliding bearing (D) and pneumatic spring (C) substantially as shown and described.

3. In a pneumatic spring for a railroad car or other vehicle, the combination of the upper frame "A," the lower frame "B" the projections or prongs "a" connecting said frames "A" and "B" so that they may move up and down and not become separated, the pneumatic tubes or rings "C" and "H" between said frames; the tongue "B'" projecting from the lower frame "B;" the bearing "D" into which said tongue fits and the bolt "F" passing through both bearing and tongue so that said tongue cannot be separated from said bearing and yet may move in it, all substantially as set forth.

4. In a pneumatic spring the combination of the lower frame (B) the tongue (B') projecting from said lower frame, the bearing (D) into which said tongue fits and the bolt (F) passing through so said tongue cannot be separated from the bearing and may yet move in it, all substantially as set forth.

## 531,000. WATER HEATER OR COOLER. WILLIAM MORRISON, Toronto, Canad. Filed Mar. 3, 1894. Serial No. 502,170. (No model.)



*Claim.*—1. In a water heater or cooler, two plates inclosing a water space and formed into a cylinder, in combination with a feather or partition arranged to divide the water space so that a channel is formed to convey the water over successive portions of the acting surface, and an inlet and outlet for the water, substantially as and for the purpose specified.

2. In a water heater or cooler, two cylinders inclosing a water

space between them in combination with a spirally arranged feather or partition dividing the water space so that a channel is formed to convey the water over successive portions of the acting surface, and an inlet and outlet for the water substantially as and for the purpose specified.

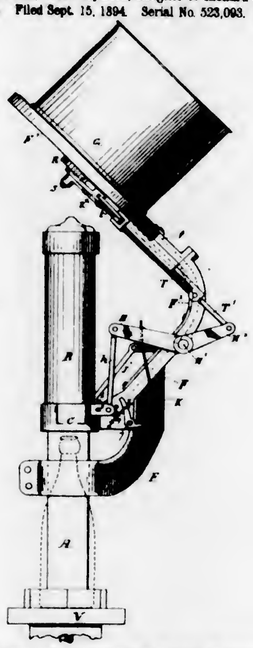
3. In a water heater or cooler, the combination of two plates inclosing a water space; a feather or partition arranged to divide the water space so that a channel is formed to convey the water over successive portions of the heating surface; a coil of tubing connected at one end to the said water space, and a suitable inlet and outlet respectively to the said coil and water space, substantially as and for the purpose specified.

4. In a water heater or cooler, the combination of two plates inclosing a water space; a feather or partition arranged to divide the water space so that a channel is formed to convey the water over successive portions of the heating surface; a coil of flattened tubing connected at one end to the said water space, and an inlet and outlet, substantially as and for the purpose specified.

5. In a water heater or cooler, the combination of two plates inclosing a water space and formed into a cylinder; a feather or partition arranged to divide the water space so that a channel is formed to convey the water over successive portions of the heating surface; a coil of flattened tubing connected at one end to the said water space; suitable inlet and outlet pipes connected respectively to the said coil and water space; and a burner adapted to use liquid or gaseous hydrocarbon fuel, substantially as and for the purpose specified.

## 531,001. MACHINE FOR FEEDING CROWN BOTTLE-STOPPERS.

NELSON MUHLAR, West Boylston, assignor to Richard C. Hemman, Boston, Mass. Filed Sept. 15, 1894. Serial No. 523,093. (No model.)



*Claim.*—1. The combination with mechanism for attaching crown bottle-stoppers to the tops of bottles; of a feed-hopper comprising the bottom-plate and adjacent revoluble rim having barriers thereon with intervening spaces formed for automatically separating and arranging crown bottle-stoppers, a crown-conducting chute leading from said hopper to the attaching mechanism, the gate controlling the delivery end of said chute, having a mouth that receives and singly presents said crowns, and means for projecting the crown from said gate into the chamber of the crown-attaching mechanism, acting at each reciprocal movement of said attaching mechanism, substantially as set forth.

2. The combination, of the crown holder having a lateral opening and carrying suitable dies for crimping the crowns upon the bottle-head, a feed-chute through which crowns are supplied, provided with a gate adapted for individually presenting the crowns in proper position for delivery, a resilient rebounding striker that ejects the crown from the delivery-gate into the crown-holder, and operating connections whereby said delivery gate and striker are actuated with the movement of the crown holder, for the purpose set forth.

3. The mechanism for feeding crown bottle stoppers, comprising the feed-chute, its head-plate carrying a hopper, said hopper having the crown-separating barriers on its annular base-flange, mechanism for rotating said hopper, the rocking delivery-gate journaled at the end of the chute, having a mouth or pass-way adapted for singly presenting a crown bottle stopper, the ejector-spring or striker, the striker-discharging trip, the actuating-arm, a rocker-shaft and connections for operating said delivery-gate, striker, and hopper mechanism, combined and operating substantially as set forth.

4. The combination with the reciprocating plunger or head that carries the crown-clinching dies, in a crown bottle-stopper attaching machine, of the crown-holder detachably secured to said plunger and having an interior crown-centering chamber with a lateral opening or pass-way thereinto, and an external projecting ear, an automatic laterally-delivering feed-mechanism for the crown-bottle-stoppers, and a suitable connecting link joining the operating-arm of said feed mechanism with said ear, and working said feed-mechanism in unison with said crown-holder and die-carrying head, substantially as set forth.

5. The hopper provided with the annular separator rim having a series of passways or spaces with intervening barriers N formed with laterally projecting lugs or guards *n* thereon for controlling the passage of crown bottle stoppers in uniform order, in combination with the bottom-plate having the run-way *f* at one side, and mechanism for revolving said separator rim upon the plate, substantially as set forth.

6. In mechanism for feeding and attaching crown bottle stoppers, the combination with the feed chute, its delivery-gate and means for ejecting the crown from said delivery-gate, and the crown-holder having a crown-carrying space with a lateral pass-way leading thereinto, of a check-spring 5, or device for retaining the crowns from rebound within the crown holder, substantially as set forth.

7. In a crown bottle stopper feeding mechanism, the inclined feed chute or run-way formed with a reversing bend therein, in combination with a hopper having separator devices that deliver the crown bottle stoppers arranged face upward, and delivery mechanism, substantially as described, that presents the crowns to the attaching mechanism face downward and means for placing or attaching such crowns upon bottles.

8. In mechanism for separating and feeding crown-bottle-stoppers, the inwardly projecting shelf or guard *g* disposed about the interior of the hopper adjacent to and above the exit spaces; in combination with the hopper G and its separator flange G', substantially as and for the purpose set forth.

9. In mechanism for feeding crown-bottle-stoppers; the rocking gate I having a mouth or interior opening for receiving the crown, and provided with an upwardly projecting segmental guard 3 that obstructs the runway of the chute when said gate is depressed; in combination with the chute, gate-operating mechanism, and crown ejector, substantially as set forth.

## 531,002. ELECTRIC PROGRAM-CLOCK.

JOHN L. MCCARREY, Waynesborough, Pa., assignor to Frederick Frick. Filed Sept. 13, 1893. Serial No. 485,410. (No model.)

*Claim.*—1. A node made in coil spring form and mounted upon a screw, substantially as specified.

2. A node formed of resilient material made in the shape of a coil with an extension for increasing the contact surface of the coil and mounted upon a screw for determining the pressure at the point of surface contact, substantially as specified.

3. The combination with a clock hand having a contact, of a series of nodes each rotatably mounted upon and compressible by a screw, seated in a dial, substantially as specified.

4. The combination with a clock hand and with a series of contacts carried thereby, of an adjustable bar for supporting the free ends of said contacts, substantially as specified.

5. The combination with a clock hand, of a series of spring contacts, a support for the same, and an adjustably connected bar extending beneath the contacts and connected to the hand, substantially as specified.

6. A contact formed at one end for connection with a carrier and provided with a spring coil at an intermediate portion and terminating with a slight upwardly bent contact point, substantially as specified.

7. A dial comprising an exterior annulus, an interior disk, and an interposed rabbeted annulus or ring of non-conducting material, substantially as specified.

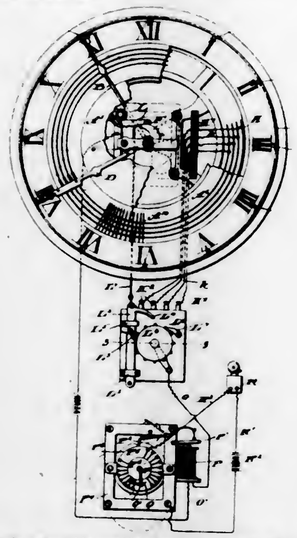
8. A dial provided with a grooved annulus and with an insulating annulus having its edge seated in the groove of the dial, substantially as specified.



9. A hand provided with a counterbalancing extension and with an attaching plate secured to the hand, both being screw-threaded for connection with an arbor, substantially as specified.

10. An insulating annulus provided with radial slits and concentric grooves, substantially as specified.

11. An insulating annulus provided with concentric grooves, metallic annuli within said grooves, and nodes adapted to fit the annuli, substantially as specified.



12. A node removably combined with an annulus and with an insulating annulus having radial slits for receiving nodes, substantially as specified.

13. The combination with the arbor having a shoulder, of a spring bearing against said shoulder, and a means for regulating the tension of the spring, substantially as specified.

14. The combination with a hand carrying a contact, of an arbor carrying the hand, a spring bearing against the arbor and means passed through said spring for adjusting the same, substantially as specified.

15. The combination with a dial, of a hand carrying a contact and a roller, of an arbor carrying a hand and a spring mounted to act in the direction of the length of the arbor, and means for regulating its pressure upon the arbor, substantially as specified.

16. A dial carrying an insulating annulus, a conducting annulus carried by the dial, and an insulating bar for the connection of conductors with the conducting annulus, substantially as specified.

17. A dial provided with an insulating annulus having a series of conducting annuli, conductors extending from each of said annuli to an insulating bar carried by the dial, an hour hand provided with a series of contacts and removable nodes arranged upon the annuli, and means controlled by the clock for rotating the spindle of the calendar switch, substantially as specified.

18. In a program clock, a calendar switch, the ratchet of which is provided with a single movable contact and a series of conducting plates in the path of said contact and insulated from each other and having suitable electrical connections and means controlled by the clock for rotating the spindle of the calendar switch, substantially as specified.

19. In a program clock, a calendar switch having a portion mounted yieldingly in the line of the axis of the spindle and means controlled by the clock for rotating the spindle of the calendar switch, substantially as specified.

20. In a calendar switch, a ratchet mounted yieldingly and carrying a contact and means controlled by the clock for rotating the spindle of the calendar switch, substantially as specified.

21. A calendar switch comprising a yieldingly-mounted ratchet, means for operating the same, a series of plates and electrical connection between the ratchet and the plates, substantially as specified.

22. The combination with a program clock, of a series of alarms, a calendar switch, an electrically-operated detent and a mechanically operated contact, substantially as specified.

23. A motor the spindle of which is provided with a contact-carrying arm, a series of contacts insulated from the motor and its spindle, an automatically-operated alarm-selecting device, an alarm in circuit with the contact and motor, and a detent for controlling the operation of the motor, substantially as specified.

24. The combination with a clock the hands of which are provided with contacts and the dial of which is provided with insulated annuli, of an electrical calendar switch, an alarm-selecting mechanism, and an electrical device for releasing said alarm-selecting mechanism, substantially as specified.

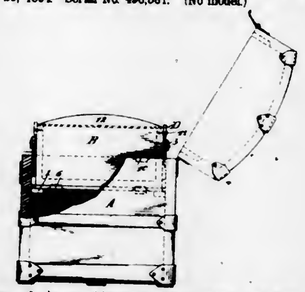
25. The combination with a clock having insulated annuli and contact-bearing hands, of an electrically-connected calendar switch and an alarm-selecting device, substantially as specified.

26. The combination with a dial having concentric grooves and intersecting radial slits, of annuli in the grooves, and nodes removably fitted in the slits of the annuli and held therein by frictional engagement, substantially as specified.

27. The combination with a dial having concentric grooves and intersecting radial slits, of annuli in the grooves, and removable nodes on the annuli and seated in the slits, substantially as specified.

## 531,003. TRUNK.

KEEFFE S. O'KEEFFE, San Francisco, Cal. Filed Jan. 29, 1894. Serial No. 498,381. (No model.)



*Claim.*—1. In combination with a trunk, a sliding till or tray having guide rollers adapted to bear upon the upper edges of the front and back of the trunk, bearing rollers journaled in the end of the trunk for supporting said till, and legs pivoted to the till and capable of being dropped below said till for supporting the end of said till when withdrawn longitudinally from the trunk, substantially as set forth.

2. In combination with a trunk, independent longitudinal tracks secured at the upper edges of the front and back of said trunk, a till having bearing rollers for traveling upon said track, and legs pivoted to the said till for supporting its end when withdrawn from the trunk, said legs being adapted to be withdrawn and held in place between the till and the trunk when the till is in place, substantially as set forth.

3. In combination with a trunk, a till having bearing rollers and adapted to move longitudinally upon the upper edges of the trunk, and slotted legs pivoted to the till, so as to support the said till when the latter is withdrawn from the trunk, and to slide upon the front and rear of the till between said till and the trunk when the till is to be returned to the trunk, substantially as set forth.

## 531,004. PROCESS OF AND APPARATUS FOR DESULPHURIZING ORES.

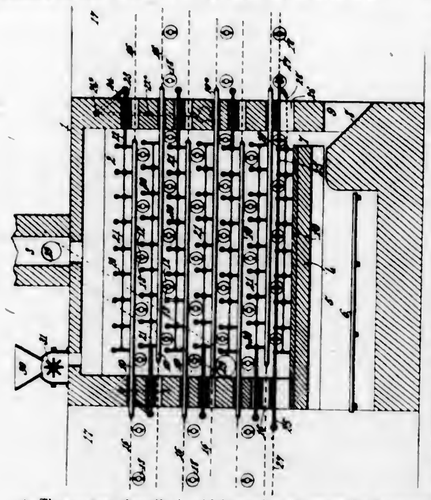
LOUIS PELATAN, Paris, France, and FABRIZIO CLERICI, Milan, Italy. Filed Aug. 28, 1894. Serial No. 521,552. (No model.)

*Claim.*—1. The process herein described for desulphurizing refractory ores, said process consisting in arranging the ore in a series of quantities each of which is a step nearer the fire, roasting part of the whole number of quantities in direct contact with the fire, and simultaneously roasting the remaining number of quantities without access of fire, and periodically advancing the whole series a step, whereby one of the separate quantities is discharged from and another is brought into the fire, while all the quantities in one part of the series are brought a step nearer the fire, substantially as described.

2. The process described for desulphurizing refractory ores, said process consisting in arranging the ore in a series of separate quantities, separating several of said quantities from the remaining quantities, roasting the entire series simultaneously, part of the whole series with, and the other part without direct contact with the fire, and transferring the entire series step-by-step to bring the quantities in one part into and through the fire and out of the furnace, and to advance the quantities in the other part toward the fire and bring them successively into the first series, substantially as described.

3. The process described for the complete desulphurization of refractory ores by a single, continuous treatment, said process consisting in arranging the ore in separate quantities one above the other, roasting those quantities above a given point without access of fire,

and those below said point in the presence of both air and fire, periodically transferring the several separate quantities of ore a step downward whereby they successively approach, enter, and ultimately pass through the fire and out of the furnace, and periodically supplying quantities of fresh ore at the top, substantially as described.



4. The process described, which consists in arranging separate quantities of ore one above another, roasting part of said quantities without contact with fire and the remainder with contact of both air and fire, transferring the separate quantities of ore periodically a step downward to bring them successively nearer to and into the fire, carrying the separate quantities of said ore through the fire and out of the same, transferring the roasted ore to a vat, flooding it with a chlorine solution, filtering, and finally precipitating the chlorides of gold by aluminium, substantially as described.

5. A furnace for desulphurizing refractory ores, said furnace having a series of horizontally movable soles arranged one above another over the fire-chamber of a furnace, a series of rakes arranged over each sole and pivotally connected to each other, below their pivotal supports, and to a pivoted rod capable of swinging outwardly, one of said soles between the top and bottom being adapted to cut off the upward passage of air and products of combustion, and means for conducting the latter from the space beneath said sole to the chimney, substantially as described.

6. A furnace for desulphurizing refractory ores, the same comprising a series of soles arranged one above another in a closed chamber above the fire-chamber, one of said soles at or near the middle of the series being adapted to cut off the upward passage of air and products of combustion, means for drawing said soles out of and into said chamber independently; a series of rakes arranged over each sole and connected to each other and to an arm in such manner as to turn on pivotal supports when the soles are drawn into the chamber and to stand rigidly vertical when said sole is drawn out and external pipes connecting the space beneath the middle sole with the chimney, substantially as described.

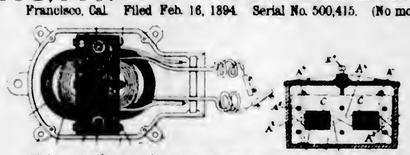
7. In a furnace for desulphurizing refractory ores, the combination with a series of soles arranged one above another in a chamber over the fire-chamber, their edges resting on rolls mounted on fixed axes in recesses in the walls, of means for drawing said soles out of and into said chamber in opposite directions alternately, supplemental supporting rolls mounted on extension side-walls, rakes arranged over each sole and connected together and to a pivoted external arm, a series of movable rakes over a fixed sole at the bottom of the fire-chamber, an outlet chute and an automatic feeder for supporting ore at the top, one of the soles at or near the middle of the series being adapted to cut off the passage of air and products of combustion, and deflect the same into external passage, substantially as described.

8. The combination with a desulphurizing furnace having horizontally movable soles arranged in a vertical series in a chamber over the fire-chamber, of means for drawing said soles independently out of and into said chamber, external pipes connecting the chimney with the space beneath a sole at or near the middle of the series, a feeder, a chlorination tank having filtering material in its bottom and receiving the roasted ore from the furnace, and reservoirs containing a solution of chlorine arranged above the level of the tank, substantially as described.

9. The process described for recovering gold from its ores, the same consisting in arranging the ore in separate quantities removed, successively, a step farther from the fire, separating part of the whole number of quantities from the other part, roasting the whole series by a single fire simultaneously, one part with and the other part without direct access of fire, advancing the separate quantities periodically to bring them nearer to, into, through, and out of the fire, treating the roasted ore with a chlorine solution, filtering, precipitating the gold from the chloride solution by alumidium, and recovering the coarse gold present, in the tailings by amalgamation, substantially as described

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531,005. ELECTRIC CONVERTER. FRANK C. PRIESTLY, San Francisco, Cal. Filed Feb. 16, 1894. Serial No. 500,415. (No model.)



*Claim.*—1. In an electric converter, such as described, a core composed of two segments formed by superposed sheets of thin metal fastened together, the sheets of each segment having a series of extensions or projections extending between corresponding extensions or projections on the opposing segment, and the ends of the projections on each sheet being beveled or inclined in the same direction, with means for forcing said segments together.

2. In an electric converter, such as described, a core composed of two segments formed by superposed sheets of thin metal, the sheets of each segment having a series of extensions or projections extending between corresponding projections or extensions on the opposite segment, said extensions or projections being tapered or enlarged slightly toward the base and bolts for drawing the segments toward each other, whereby the size of the openings between the extensions or projections is reduced and coils held therein clamped tightly, substantially as described.

3. In an electric converter, such as described, a core composed of superposed sheets of thin metal united by bolts into independent segments, said sheets having alternately arranged interlocking extensions or projections and transverse bolts for drawing the segments together with the extensions or projections intermeshing; substantially as described.

4. In an electric converter such as described a case provided with a well to receive the core of the converter, and fastening lugs to suspend the converter being raised above the level of the bottom of the well substantially as described.

5. In an electric converter such as described the combination with a case therefor and a cut out box set in the top of and extending into the said case substantially as described

6. In an electric converter such as described the combination in a cut out box of the contacts "D" and a plug making electrical contact between the said contacts and having the finger hold "$D^3$" with the protecting side pieces substantially as described.

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531,006. DYNAMOMETER. ROLF J. ROLFSON, San Francisco, Cal. Filed Oct. 4, 1893. Serial No. 487,152. (No model.)

*Claim.*—1. In a dynamometer, the combination with the rotatable sheave, the chuck located therein, the friction brake for engaging with the sheave, the register for indicating the number of rotations, mechanism for transmitting the rotation of the sheave to the register, the swinging arms, the cylinder having a tabulated scale thereon, a device for indicating the generated power of the engine upon the scale, and of mechanism for moving the swinging arms toward or from each other in order to increase or decrease the pressure of the friction brake upon the sheave.

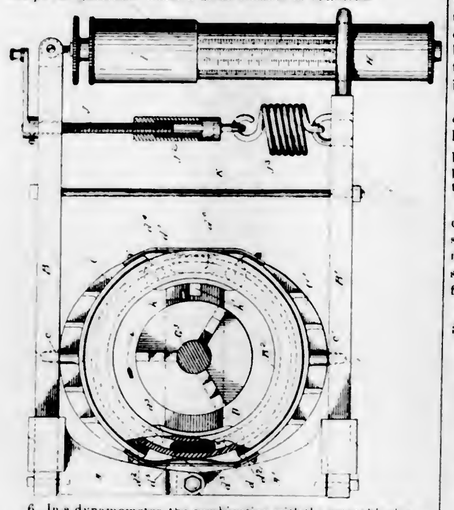
2. In a dynamometer, the combination with the rotatable sheave, the chuck secured therein for receiving the end of the machine shaft, devices for transmitting the rotations of the sheave to a register, of a cylinder containing a tabulated scale representative of power, and of a device for indicating the generated power of the engine upon the scale by the resistance offered to the rotation of the sheave.

3. In a dynamometer, the combination with the rotatable sheave, the brake shoes, said shoes having a rubbing surface of leather, the straps or bands connecting the shoes, the absorbent material located between the band and periphery of the sheave for supplying lubricant thereto, and of mechanism for moving the brake shoes toward or from each other in order to increase the frictional pressure thereof.

4. In a dynamometer, the combination with the rotatable sheave, the yoke, the chuck connected thereto, the sleeve projecting from the yoke, the machine register for indicating the revolutions of the shaft carried by the chuck, the lever projecting from the register, the eccentric yoke for reciprocating said lever, and the eccentric secured to the yoke sleeve and rotated thereby for imparting a reciprocating movement to the arm of the eccentric yoke.

5. In a dynamometer, the combination with the movable arms, the cylinder having a tabulated scale indicative of power thereon, the oil chamber, the piston working therein, the sleeve working upon the cylinder, and a device for moving the arms to or from each other, said arms when moved toward each other causing the sleeve to move downward upon the tabulated scale of the cylinder so as to indicate the power generated under a given number of rotations.

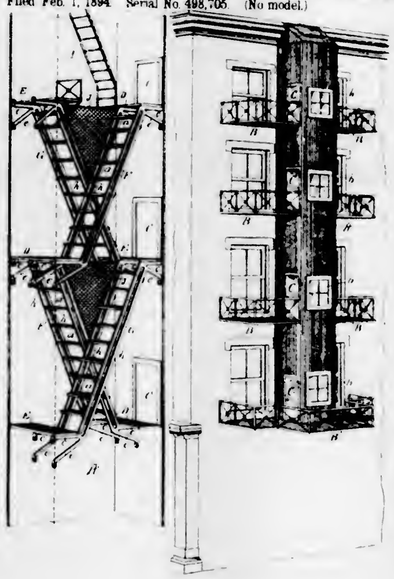




6. In a dynamometer, the combination with the rotatable sheave, the water passage-way therein, the hollow yoke having an inlet and an outlet passage-way for the water to and from the sheave, the pipe for carrying off the utilized water said pipe connected to the hollow sleeve projecting from the hollow yoke and the water supply pipe for supplying water to the yoke and sheave, said pipe extending through the outlet pipe and sleeve and having its inner end secured to the yoke

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531,007. FIRE-ESCAPE. WILLIAM D. RUMSEY, Detroit, Mich. Filed Feb. 1, 1894. Serial No. 498,705. (No model.)



*Claim.*—1. In a fire escape, the combination of a series of opposed balconies or landings arranged in vertical order, two distinct lines of stairs connecting said landings, said lines of stairs consisting of a series of independent flights extending from the opposed landings of the same plane in opposite directions to the succeeding lower landings so that said flights shall cross in their descent and the screen guard between the upper ends of said flights.

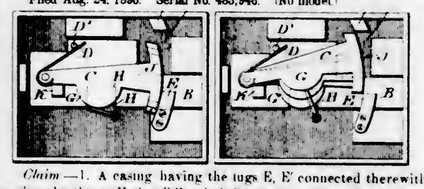
2. The combination with the inclosing shaft, the balconies communicating therewith on opposite sides, the series of landings located within the shaft and arranged in vertical order on opposite sides thereof on a plane with said balconies, two independent lines of stairs connecting said landings, said stairs consisting of a series of flights leading from opposite landings of the same plane and extending across the interior of the shaft in opposite directions to the succeeding landings below.

3. The combination of the shaft, the series of landings located on opposite sides thereof in the same plane and in vertical order, two lines of stairs connecting said landings consisting of a series of independent flights extending between the landings of an upper and lower plane and crossing the interior of the shaft in opposite directions and the screen guard between the upper ends of said flights.

4. The combination of the shaft having a series of entrances in opposite sides in vertical order, a series of opposite landings on each side of said shaft at said entrances, a series of flights of stairs connecting said landings and crossing the interior of the shaft in opposite directions, and the screen guard between the upper ends of said flights.

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531,008. LOCK. FREDERICK W. SCHULTER, Philadelphia, Pa. Filed Aug. 24, 1893. Serial No. 483,946. (No model.)



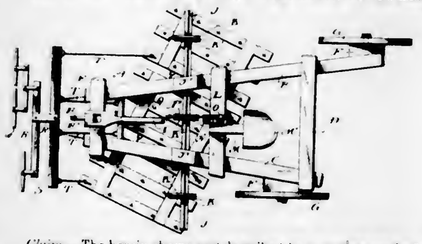
*Claim*—1. A casing having the lugs E, E' connected therewith forming the throat F, the sliding bolt B and the tumbler C, which latter is pivoted to said bolt and provided with the segmental head J, having its faces adapted to contact with the faces of said lugs, and the stop K on said bolt, said lugs being arranged in circular direction, substantially as described

2. A lock having a casing with the curved lugs E, E', connected therewith, and forming the throat F, the sliding bolt B, with the post D' and stop K thereon, and the key recess H therein, the tumbler C pivoted to said bolt and having the segmental head J and segmental side-projection, and the spring D bearing against said post D', and tumbler post adjacent to said key recess, said parts being combined substantially as described.

3. A casing having lugs connected therewith, forming a throat, a sliding bolt in said casing, and a tumbler, which latter is pivoted to said bolt, said lugs being arranged in circular direction, and said tumbler having thereon a segmental head, and a segmental side projection, substantially as described.

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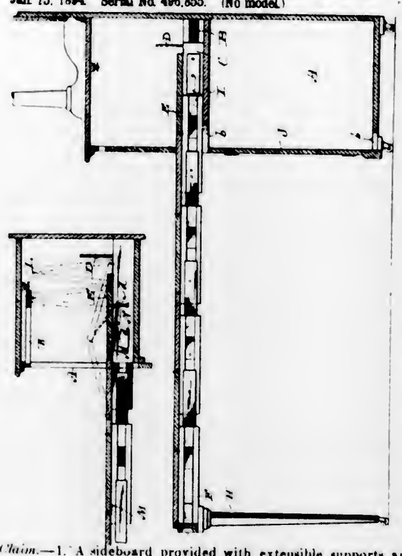
531,009. HARROW. JOHN L. SCUDDER, Middle Grove, Ill. Filed Sept. 28, 1891. Renewed Aug. 8, 1894. Serial No. 519,775. (No model.)



*Claim.*—The herein shown and described harrow composed of a frame having its rear wheels set the one in advance of the other, and having the front wheel under the control of the driver, a transverse shaft having a series of pulleys K, K, $K^2$ a harrow located beneath the frame at an angle to the line of the draft, cords K' attached at their ends, respectively, to the pulleys K and the ends of the harrow a hand operated lever, a cord $l'$ passing around the pulley $K^2$ and attached at its ends respectively, to the said lever and the harrow, where-

by on operating the said lever the transverse shaft will be rotated by means of the cord P, and the said harrow will be elevated through the medium of the cords P and K', a bar S, cords connecting the ends of the bar S with the ends of the harrow, and intermediate cords having attachments midway of their ends with the middle portion of the bar S, and having their ends connected, respectively, with the harrow and the wheel supported frame, substantially as shown and described

531,010. FURNITURE. RUSSEL B. SIGAFOOS, Racine, Wis. Filed Jan. 15, 1894. Serial No. 496,855. (No model.)



*Claim.*—1. A sideboard provided with extensible supports arranged to contract therein, a series of leaves that are connected by alternate lower and upper hinges and have their bearing on the supports, projections depending from certain of the leaves, and a resistance device in the path of the projections, substantially as set forth.

2. A sideboard having its bottom provided with front recesses and a horizontal partition also provided with recesses, leaf supports contractible in the sideboard above said partition, a rail that normally constitutes a front portion of said sideboard and is joined to the outer ends of the leaf supports, legs depending from the rail to come within said recesses, and swinging doors having depending portions that close the front recesses in the sideboard-bottom, substantially as set forth.

3. A sideboard having its bottom provided with front recesses and a horizontal partition also provided with recesses, extensible supports contractible in the sideboard above said partition, a rail that normally constitutes a front portion of said sideboard and is joined to the outer ends of the supports, legs depending from the rail to come within said recesses, doors having depending portions that close the bottom-recesses, a series of hinge-joined leaves on said supports, and suitable means for compelling an automatic folding of the leaves coincident with a contraction of the aforesaid supports, substantially as set forth.

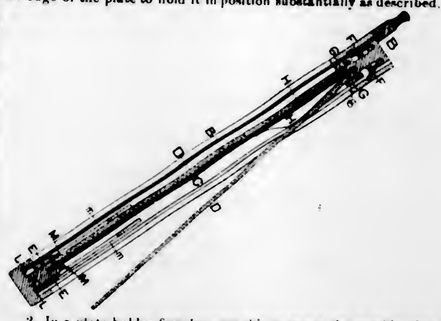
531,011. RESPIRATOR. HEINRICH SIMONS, Aix-la-Chapelle, Germany. Filed Nov. 7, 1893. Serial No. 490,326. (No model.)



*Claim.*—In an instrument for regulating the breathing the combination of a short tube such as *a* tapering somewhat toward its front end, the other end being adapted to be received between the lips, the valve *c* closing its front tapered end, such valve being disposed at the extremity of a spring *b* fixed to the tube *a* and the protector composed of two cross-bridges *c c'* substantially as set forth and for the purpose stated

531,012. PHOTOGRAPHIC-PLATE HOLDER. JOHN E. THORNTON and EDGAR PICKARD, Altrincham, England. Filed Jan. 18, 1894. Serial No. 497,327. (Model.)

*Claim.*—1. In a plate holder the combination with the frame A provided with rigid ledges *a* the slide B, the light excluding strips F, the projecting piece *g* forming the groove G of the fixed bar K against the edge of which the sensitive plate D rests and the spring bar E which slides upon the surface of the fixed bar K and overlaps the edge of the plate to hold it in position substantially as described.



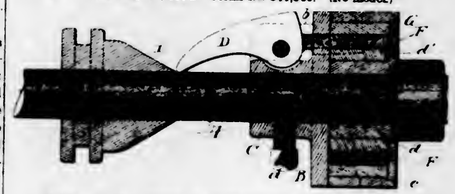
2. In a plate holder for photographic cameras the combination of the frame A the slide B the central division plate C the light excluding strip F the projection *g* forming the groove G to receive the top edge of the plate D the fixed bar K forming a rigid ledge for the bottom edge of the plate to rest against, the spring bar E sliding over the surface of the fixed bar K and overlapping the edge of the plate to secure it in position the spring L to move the spring bar in one direction the pins M to control the movement of the spring bar and the springs H to prevent movement of the plate and force it outward when released substantially as described

531,013. MALTED FOOD. MARY WATSON, London, England. Filed Dec. 28, 1893. Serial No. 494,992. (No specimens.) Patented in England May 31, 1893, No. 10,689.

*Claim.*—1. A composition of matter comprising cooked and powdered leguminous seed, malt, and vegetable fatty matter combined in or about the proportions specified, such fatty matter forming a coating which protects the malt and other perishable matter from atmospheric and other deteriorating influences.

2. A composition of matter comprising cooked and powdered leguminous seed, diastatic malt product, and vegetable fatty matter combined in or about the proportions specified, such fatty matter forming a coating which protects the diastatic malt product and other perishable matter from atmospheric and other deteriorating influences.

531,014. FRICTION-CLUTCH. JOHN A. BARNES, Wadsworth, Ohio. Filed May 17, 1894. Serial No. 511,589. (No model.)



*Claim.*—1. In a clutch the combination with a casing having an internal hub, of a split ring embracing the hub and provided with outwardly projecting lugs near its ends, a split ring adapted to snugly fit within the casing and provided with inwardly projecting lugs, a wedge adapted to enter between one of the outwardly projecting lugs on the inner ring and inwardly projecting lug of the outer ring, and a lever for forcing said wedge inwardly between the lugs, substantially as set forth.

2. The combination with a shaft, a casing having an internal hub, two split rings located within said casing and provided with ears or lugs as shown, a fixed wedge located between one pair of said ears or lugs and a movable wedge located between the other pair of lugs, of a disk secured on the shaft, and a lever carried by the disk and adapted to engage the movable wedge.

3. The combination with a shaft, a disk rigidly secured thereon, a lever pivoted to the disk and a projection on the inner face of the disk, of a casing loosely mounted on the shaft, two split rings located within the casing, each ring having projecting lugs or ears, a wedge located between an outwardly projecting lug on the inner ring and an inwardly projecting lug on the outer ring, said wedge adapted to be engaged by the lever, the projection on the disk resting between two inwardly projecting lugs on the outer ring, substantially as set forth.

4. The combination with a shaft a disk thereon and a lever pivoted to the disk, of a casing having two split rings each provided with projecting ears or lugs, a wedge located between a lug on the outer ring and a lug on the inner ring, the said wedge passing through the disk and held in place by a nut, and a movable wedge located between a lug or ear on the outer ring and a lug or ear on the inner ring the last named wedge adapted to be engaged by the lever, substantially as set forth.



531,015. HORSE-DETACHER. JOHN E. BERKSTRESSER, Sylacauga, Ala. Filed Feb. 12, 1894. Serial No. 499,904. (No model.)



*Claim.*—1. The metallic attachments B, B secured to the shafts A, A having a detachable eye C adapted to be attached to the top or bottom of the attachments B, two metallic spring casings D, D provided with hooks E to engage the eyes of the attachments B, two spring pressed strap connections G, G having stems inserted in the casings, a strap H attached to the connection G, G, all combined as shown and for the purpose set forth.

2. The metallic detachers I, I secured to the shafts A, A the detachers provided with spring pressed bolts to engage the metallic casings N, the bolts J provided with levers L having lines M attached, guide pins K attached to the shafts the guide pins engaging the metallic casings N the casings provided with eyes C to attach the traces, all combined as shown and for the purpose described.

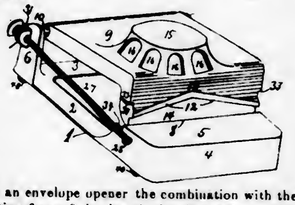
531,016. BICYCLE SAFEGUARD AND SUPPORT. TITUS L BISSELL, Charleston, S. C. Filed Jan. 30, 1894. Serial No. 498,493. (No model.)



*Claim.*—In combination with a bicycle, substantially as shown and described, the combination of the angle blocks *c*, secured to the bifurcated arm *a*; guides $c^2$, secured to the lower end of said blocks; guides *h*, secured to the front faces of said blocks; arms *e*, pivoted to said angle blocks and operating in guides $c^2$; side arms $g^3$, provided at their rear ends with loop $g^7$, encircling arms *a*; said arms passing through guides *h*, their front ends pivoted to the elbow lever *g*; elbow lever *g*, pivoted to the connecting rod *f*; coil spring $f^3$, secured to the socket *j*, its free end operating the horizontal end of lever *g*; lock spring *k*, adapted to lock the horizontal arm of lever *g*, substantially as shown and described and for the purposes set forth.

531,017. ENVELOPE-OPENER. ANDREW O. BLOMGREN, Granite Falls, Minn. Filed Apr. 20, 1894. Serial No. 508,364. (No model.)

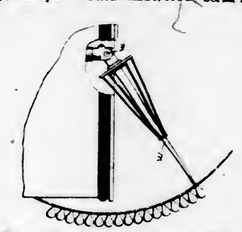
*Claim.*—1. An envelope opener consisting of a cast bed plate having at its front end a box shaped portion of which the top forms a table with a rearwardly projecting chilled cutting edge as 8, and at its rear corner a pair of posts as 6, with conical journal bearings as 11; the cutting frame 9, having the conical trunnions 10, inserted in said bearings in the posts and retained therein by the spring action of the bed plate, and its front end formed with a chilled cutting edge or rib adapted to co-act with the cutting edge 8, of the bed plate, and the guiding face 14, formed below and slightly back from the face of the cutting rib, said cutting rib 12, and face 14, being of a segmental curvature with the trunnions of the cutting frame for center of the segments, a press or striking button as 15 for operating the cutter frame, stops regulating its stroke and a suitable spring for returning it to its normal position and means for taking up the wear of the cutting edges and the trunnions, substantially as shown and described.



2. In an envelope opener the combination with the spring actuated cutting frame 9, having the hand press button 15, the cutting rib 12, the envelope guiding face 14, and conical trunnions 10, of the bed plate 1, having the cutting edge 8, the holes 28, the posts 6, with the lugs 7, and conical journal bearings 11, adapted to be sprung upon the trunnions, said bed plate having the flexible frame bars 2 and 3, the adjustment rods 27, having the thumbnuts 30; and the adjustment rod or screw 35, adapted to take up the wear of the parts of the machine, substantially as shown and described and for the purpose set forth.

3. In an envelope opener, the combination of the bed plate or frame 1, having the feet or cushions 40, secured in and projecting below its bottom side, the cutting edge 8, shoulders 34, and posts 6; with the cutting frame 9, pivotally secured in said posts and having the striking button 15, a cutting rib co-acting with the cutting edge of the bed-plate, the shoulders 33, having the elastic cushions 39, adapted to meet the shoulders 34, of the bed plate, the arm 17, and removable stopping block 18, engaging with said arm, the bow-shaped spring 24, acting between the rear frame bar 3, and the front of the inner side of the striking button, substantially as and for the purpose set forth.

531,018. SIGN-ADVERTISING MACHINE. ORLANDO P. BRIGGS and WILLIAM R. PATTERSON, Chicago, Ill., assignors to the Western Electric Company, same place. Filed Jan. 26, 1894. Serial No. 498,128. (No model.)



*Claim.*—1. The combination with lamps arranged to form words or characters and adapted to be successively lighted, of an automatically actuated pointer adapted to trace said words or characters as the lamps are lighted, substantially as described.

2. The combination with lamps arranged to form words or characters, of switches adapted to be actuated to successively illumine said lamps, and an automatically actuated pointer adapted to trace said words or characters as the lamps are lighted, substantially as described.

3. The combination with lamps arranged to form words or characters, of switches for controlling the circuits through the respective lamps, an automatically actuated part of the machine adapted to successively actuate said switches, and an automatically actuated pointer adapted to trace the progress of the illumination or extinguishment of the lamps, substantially as described.

4. The combination with the switches comprised in part by the longitudinally movable rods, of the plates through which the rods are adapted to alternately extend, and the traveling rollers adapted to successively engage the rods to move the same longitudinally to open or close the switches, substantially as described.

5. The combination with the switches comprised in part by the longitudinally movable rods, of the plates through which the rods are adapted to alternately extend, and the traveling rollers placed one in advance of the other, the rearward roller being adapted to successively engage the rods to move the same longitudinally to open or close the switches, substantially as described.

6. The combination with the traveling carriage, of the rotating screw adapted to impel the same, the switch actuating rollers carried by said carriage, and means for reversing the movement of said carriage, substantially as described.

7. The combination with a shaft adapted to rotate about a vertical axis, of a bar movable longitudinally thereto and carrying a rack, a pivoted member supported upon said shaft and adapted to rotate about a horizontal axis, and a pinion connected with said pivoted member and adapted to engage said rack, substantially as described.

8. The combination with a shaft adapted to rotate about a vertical axis, of a bar movable longitudinally thereto and carrying a rack, a pivoted member supported upon said shaft and adapted to rotate about a horizontal axis, and a pinion connected with said pivoted member and adapted to engage said rack, a cam roller connected with said shaft and adapted to reciprocate the same, and a cam roller connected with said bar and adapted to move the same back and forth longitudinally, substantially as described.

9. The combination with a pivoted member, of a cam channel, a cam roller engaging the same to impart to the pivoted member rotation about an axis, of a second cam channel and a cam roller engaging the same to impart to said pivoted member rotation about an axis perpendicular to said first mentioned axis, substantially as described.

10. The combination with lamps arranged to form words or characters and adapted to be successively lighted, of a pivoted pointer adapted to be simultaneously rotated about two axes at right angles to one another to trace said words or characters as the lamps are lighted, substantially as described.

11. The combination with lamps arranged to form words or characters, of switches adapted to be actuated to successively illumine or extinguish the lamps, a pivoted pointer adapted to be simultaneously rotated about two axes at right angles to one another to trace said words or characters as the lamps are lighted or extinguished, substantially as described.

12. The combination with the shaft $o$, adapted to be rotated by the cam roller $o^3$, of the longitudinally movable rack bar $n^3$ adapted to be reciprocated by the cam roller, $r'$, substantially as described.

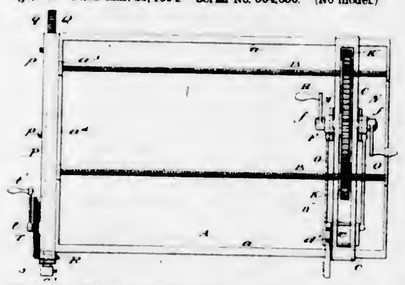
13. The combination with the rotatable shaft $o$ carrying the pivoted pointer, of the longitudinally movable rack bar $n^3$, the longitudinally movable bar $r$ and the connection between said bars $n^3$ and $r$ permitting relative rotation but constraining relative longitudinal movement, substantially as described.

14. The combination with the rotatable shaft $o$ actuated by cam roller $o^3$, the pointer $m$ pivoted to the upper end thereof, the longitudinally movable rack bar $n^3$ adapted to rotate said pointer, and provided with tongue $n^4$, the longitudinally movable bar $r$, carrying the arc-shaped channel $p'$ engaged by said tongue, said bar $r$ adapted to be actuated by cam roller $r'$, substantially as described.

15. The combination with a longitudinally movable rod, of a spring bearing by its end thereon, said rod being provided with a notch in which said end is adapted to rest, and an inclined surface adapted to be engaged by the end of said spring when the same is moved out of said notch, a contact point provided with a tapering end, contact fingers adapted to make contact with said tapering end, said rod being situated to move downward when the same is moved to open the switch, whereby the weight of the rod and the oblique surfaces coact to give the rod a rapid motion, substantially as described

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**531,019. COAL-MINING MACHINE.** PATRICK F. CAMPBELL, Portage, Pa. Filed Mar. 23, 1894. Serial No. 504,856. (No model.)



*Claim.*—1. The combination with a rectangular bed frame A, of the said frame C, mounted on said frame A and movable longitudinally thereof, said frame C having a depending guide frame arranged adjacent to and aligned with one of the side pieces of said bed frame, a cross head, guided and movable on said guide frame, and aligned with the side piece of the bed frame, saws, secured to said cross head on opposite sides of said side piece of the bed frame and projecting at right angles to said side piece, means for moving said saw frame longitudinally on the bed frame and means for reciprocating said cross head, substantially as set forth.

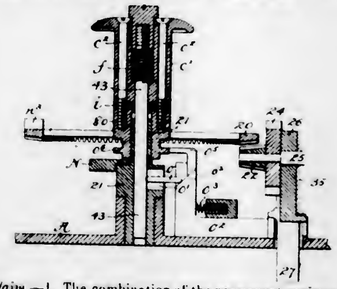
2. The combination with a rectangular bed frame, of the paralleled feed screws, collared at opposite ends thereof, a saw frame provided with openings having flanged ends adapted to take over the side pieces of the bed frame, a driving gear wheel mounted on the saw frame, internally threaded gears mounted on the feed screws and projecting through the opening in the saw frame into engagement with the driving gear wheel, a guide frame depending from the saw frame adjacent to and in alignment with one of the side pieces of the rectangular frame, a cross-head guided on and movable on said guide frame and aligned with the side piece of the bed frame, saws secured to said cross-head on opposite sides of and projecting at right angles to said side piece of the bed frame, a crank wheel rotatively mounted in the saw frame and connected to the cross head, and a gear wheel fixed to said crank wheel in engagement with the driving wheel, substantially as described and for the purpose set forth.

3. The combination, with a bed frame, of a pair of feed screws fixed in the bed frame, a saw frame movable on the bed frame and provided with flanged ends, a securing device attached to each flanged end, a pair of internally threaded gear wheels revoluble on the feed screws and located in the saw frame, a guide frame extending downward from the saw frame, a reciprocatory head movable in the guide frame and provided with saw receiving sockets, a driving gear wheel mounted in the saw frame and engaging the internally threaded gear wheels on the feed screws, means for operating the driving gear wheels, a connecting rod attached to the reciprocatory head, a crank wheel to which the connecting rod is attached and means for conveying motion from the driving gear wheel to the crank wheel, substantially as described and for the purpose set forth

4. The combination, with a bed frame, a drill frame removably secured to the bed frame and provided with journal boxes and threaded boxes, a pair of spindles each threaded at one end and slotted at the other end, the threaded end passing through internally threaded boxes on the drill frame and the slotted ends passing through journal boxes in the drill frame, and a pair of oppositely beveled gear pinions mounted on the slotted ends of the spindles and provided with feathers entering the slots in said spindles, the bevel pinions being in mesh with each other, of a swinging yoke hinged to the drill frame and normally holding the bevel pinions in place, means for locking the yoke in its normal position, a chuck on each spindle, a bevel driving wheel revolubly attached to the frame and meshing into one of the bevel pinions, and a crank attached to the bevel driving wheel, substantially as and for the purpose set forth.

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**531,020. FARE-REGISTER.** EPHRON CATLIN and GUSTAVUS REIN, St. Louis, Mo., assignors to the St. Louis Register Company, same place. Filed Oct. 24, 1893. Serial No. 489,061. (No model.)



*Claim.*—1. The combination of the permanent register mounted in a fixed position, a trip register normally connected to move in unison with the permanent register, and means for moving the trip register outwardly on its axis of rotation to disconnect the two registers and rotate the trip register to zero, substantially as described.

2. The combination of the permanent register, a trip register normally connected to move in unison with the permanent register, a bearing for the trip register permitting the outward movement of the trip register and on which said register rotates, and a grasping piece connected with the trip register for moving said trip register, and returning it to zero substantially as described.

3. The combination of a permanent register, mounted in a fixed position, a trip register connected therewith, a grasping piece for disconnecting the trip register, and a lock acting to lock the permanent register against movement while disconnected, substantially as described.

4. The combination of the permanent register, a trip register connected therewith, a grasping piece for disconnecting the trip register, a guard preventing such disconnection, and means for removing said guard, substantially as described



5. The combination of the permanent register mounted in a fixed position, an outwardly movable trip register, a grasping piece therefor, a lock acting to lock the permanent register, a push piece mounted within said grasping piece to move the lock into operative position, substantially as described.

6. In a register, the combination of the actuating pawl, and a stepped or notched piece mounted adjacent to said pawl to be free thereof in the forward actuating movement of the pawl and to be engaged thereby and prevent a premature return movement thereof, substantially as described.

7. In a register, the combination of the actuating pawl, and a bell hammer rocked by said pawl and having a stepped or notched portion in position to be engaged by the pawl to prevent its premature return movement, substantially as described

8. The combination of the direction indicator anchor lever, carrying a stop, the trip register wheel having a projection for contact with said stop, and means for rotating said wheel to move the lever, substantially as described.

9. The combination of the outwardly movable trip register wheel and the pawl $q$ adapted to occupy inactive and active positions with respect to said wheel to prevent operative forward movement of said wheel in one of its moved positions, substantially as described.

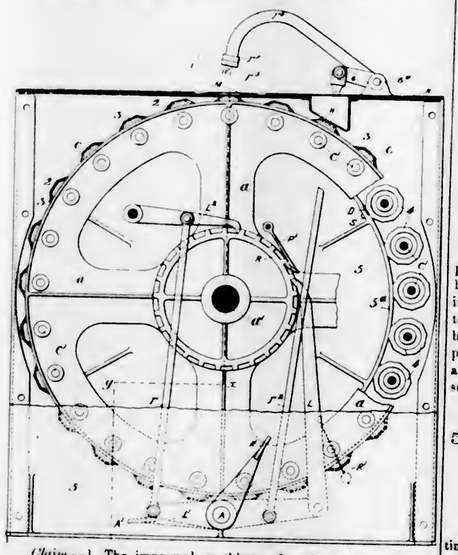
10. The combination with the direction indicator of an anchor-lever, for moving said indicator, a spring for rocking the lever in one direction, a removable stop restraining the action of the spring, and means for rocking the lever in the opposite direction, substantially as described.

11. The combination with the trip and permanent registers, of means for disconnecting said registers, a guard normally preventing the disconnection, and a lock acting to lock one of the registers against movement, and means for removing the guard and moving the lock, substantially as described.

12. The combination with the trip and permanent registers and means for moving the trip register into disconnected position, of a guard normally engaging the trip register and preventing its disconnective movement and a lock acting to lock the permanent register against movement while the trip register is disconnected, substantially as described.

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**531,021. MACHINERY FOR ADDRESSING ENVELOPES, &c.** GEORGE CLARK, Carlisle, England. Filed Feb. 17, 1894. Serial No. 500,592. (No model.)

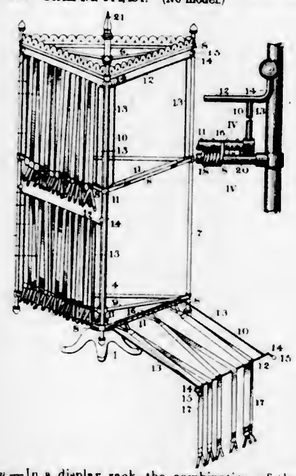


*Claim.*—1. The improved machinery for addressing envelopes circulars and papers consisting in the combination with a pair of mounted cheek-disks or wheels having canted type-plate-carrying-cylinders arranged in peripheral bearings therein-between of a wheel rack and treadle-actuated pawl L and lever $r$ and check pawls $L^3$ and $P'$ for revolving the cheek-disks in equal circumferential units, treadle-actuated stamping lever $r^2$ for actuating through a crank 6 stamping bar $r^4$ and pad $r^5$, circular flange $5^a$ on casing having a recess D and stop-stud S therein against which the ends of grooves G in tumblers 4 successively abut so as to partially revolve them and the type-plate-carrying cylinders at each complete revolution of the cheek-disks, and inking pad for smearing the cants with ink just prior to their coming under the stamping lever these several parts and motions thereof being arranged and combined to act together substantially as and for the purposes herein set forth.

2. The combination of mechanisms for revolving the cheek-disks type-plate-carrying-cylinders and tumblers in circumferential units consisting of levers A' L', L and $r$ with check-pawls $L^3$ and $P'$ acting in conjunction with wheel rack on cheek-disks, and means for rotating the type-plate-carrying-cylinders a portion of a revolution during each complete revolution of the cheek-disks consisting of a flange $5^a$ on casing recess D and stop S therein acting in conjunction with grooves G in tumblers 4, and means for stamping envelopes during each cessation of rotation of cheek-disks consisting of treadle-actuated lever $r^2$ operating through crank 6 bent arm $r^4$ and pad $r^5$ the resilient non-smudging plate M, and means for smearing the cants successively with ink prior to their arrival under the stamping or pressure pad consisting of the receptacle H having its lower surface so arranged with an ink-pad that each cant in passing same must become smeared with ink, all these several parts with their several motions being arranged and combined to cooperate together substantially as and for the purposes herein set forth.

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**531,022. COMBINED FOLDING AND REVOLVING DISPLAY-RACK.** WILLIAM H. CONRAD, Pasadena, Cal., assignor of one-half to Luther H. Buchanan and Alexander R. Metcalfe, same place. Filed June 13, 1894. Serial No. 514,451. (No model.)



*Claim.*—In a display rack, the combination of the supporting post 2 having an upper conical end a sleeve surrounding the post and having its upper end closed with a conical recess therein, thus forming a bearing for the upper end of the post, a frame connected with the sleeve, brackets 10 hinged to the frame, hooks secured to said brackets, a spring for holding the brackets normally in their closed position, means for limiting the downward movement of the brackets, and rods 12 at upper end of the brackets having their ends upturned; substantially as described and for the purpose set forth.

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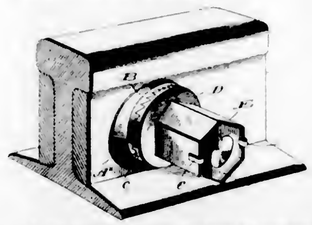
**531,023. METHOD OF MAKING KNITTING-NEEDLES.** AVERY B. DODGE, Rochester, N. Y. Filed Nov. 22, 1893. Serial No. 491,640. (No model.)



*Claim.*—1. The improved method of securing the latches in knitting needles, which consists in coating the surface of the pivot pin with hard solder, then mounting the latch in the slot of the needle upon such pin and then subjecting the needle to a temperature sufficient to melt said solder, substantially as set forth.

2. The improved method of making latched knitting needles consisting in coating the surface of the pivot pin with hard solder, then mounting the latch in the needle upon such pin, then hardening the needle in the usual way by heating and cooling it, whereby the pivot pin will be secured and the needle hardened at a single heat, substantially as set forth.

**531,024. NUT-LOCK.** HENRY DOLAN, Minersville, Pa. Filed Sept. 28, 1894. Serial No. 524,382. (No model.)

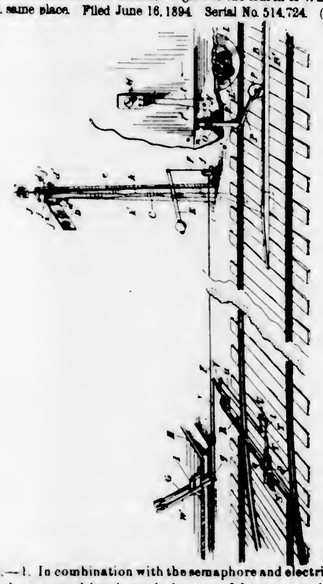


*Claim.*—1. A nut lock comprising the serrated washers and the spring as described carried on a bolt used in connection with a fish plate, combined with a nut and a cap designed to engage with the said nut, and a shoulder on the washer D for locking the nut to the washer, substantially as shown and described.

2. A nut lock as described, composed of the washers B and D combined with the fish plate, bolt and nut, the retaining cap E and the washer E' for holding the said cap in a locked relation, substantially as shown and described.

3. In a nut lock, the washer B beveled and designed to be seated in a recess in a fish plate, said recess being inclined, the washer D combined with the spring, the nut, cap and washer with integral arms designed to hold the said cap to the shoulder of the washer D, all substantially as shown and described.

**531,025. DANGER-SIGNAL AND LOCK FOR SWITCHES.** GEORGE E. EDWARDS, Brantford, Canada, assignor of one-fourth to William Hartwell, same place. Filed June 16, 1894. Serial No. 514,724. (No model.)



*Claim.*—1. In combination with the semaphore and electrical connections to be operated by the train in case of danger, a switch, the levers "W" and "G," connections between said switch and lever W, and connections between the lever G and the semaphore and means for connecting said lever whereby the forward movement of the lever W to lock the switch will operate the lever G to change the semaphore from a danger signal, substantially as described.

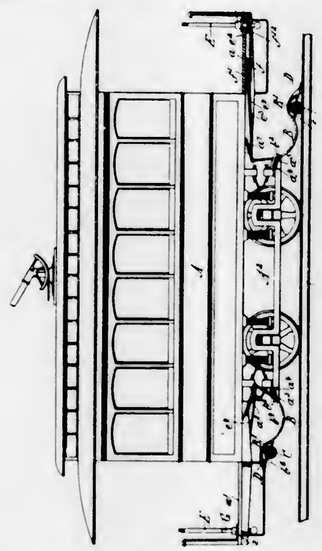
2. In combination, the semaphore, the bell on the train, and electrical connections whereby the bell is operated when the semaphore is at danger, the switch, the lock for retaining it in proper position, the lever at the station for locking and unlocking the switch, and connections from said lever to the semaphore whereby the latter is retained at the danger signal until the switch is locked, substantially as described.

3. In combination with the semaphore, the bell on the train, and the electrical connections whereby the bell is operated when the semaphore is set to indicate danger, the switch, the sliding bolt for locking the rails against movement, the lever on the platform with connections to the bolt, the weighted lever E operatively connected to the semaphore, and connections therefrom to the lever on the platform whereby the rails must be locked against movement before the semaphore can be removed from the position of danger, substantially as described.

4. The combination with the post, C, board, D, contact plates, $d^3$ and $d^4$, and storage battery and circuit wires all arranged to complete the circuit through the bell in the tender of the engine when the board is up as specified, of the crank, $d'$, on the pivot rod of the board, rod, $e$, weighted lever, E, wire, F, lever, G, having a lateral extension, $g$, quadrant, I, and lever, W, and means for locking the switch by the operation of such lever as and for the purpose specified.

5. The combination with the post, C, board, D, contact plates, $d^3$, and, $d^4$, and storage battery and circuit wires all arranged to complete the circuit through the bell in the tender of the engine when the board is up as specified, of the crank, $d'$, on the pivot rod of the board, rod, $e$, weighted lever, E, wire, F, lever, G, having a lateral extension, $g$, quadrant, I, and lever, W, rod, $v$, bell-crank, V, rod, $w$, bell crank, U, link, $t$, bolt, T, sleeve, T', cross bar, Q, with holes, $q$, $q'$, and socket, S, all arranged as and for the purpose specified.

**531,026. CAR-FENDER.** GEORGE W. ENGEL and WILLIAM C. JURAM, Philadelphia, Pa. Filed Sept. 11, 1894. Serial No. 522,706. (No model.)



*Claim.*—1. The combination with a car, of a fender having an apron or couch journaled to slotted hangers or brackets provided with springs, said apron or couch provided with a shield and catcher, an operating lever and intermediate mechanism for elevating said fender and a lever and pawl-and-ratchet connection between said levers for permitting of the lowering of the same, substantially as and for the purposes set forth.

2. The combination with a car, of a fender provided with an apron or couch having a frame provided with journals held in slotted spring hangers, said frame having an arched shield with wheels and slanting fingers or strips and means for elevating said fender and returning the same to its normal position, substantially as and for the purposes set forth.

3. The combination with a car, of a fender provided with an apron or couch journaled to brackets and having shielded wheels and a slanting catcher, hand and foot operating levers and mechanism for controlling the elevation and automatic return of the fender to its lowered position, substantially as and for the purposes set forth.

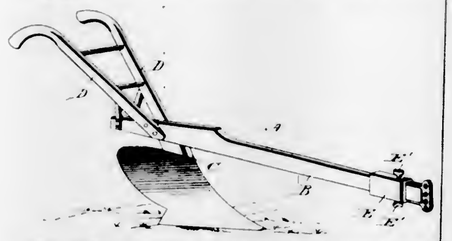
4. The combination with a car, of a fender located beneath the same in rear of each platform and journaled to slotted hangers provided with springs, said fender having an arched shield with projecting fingers or strips and wheels and means for manually elevating and automatically returning the same to its normal position, substantially as and for the purposes set forth.



5. The combination with a car, of a fender provided with a recessed and curved apron or couch having journals held in slotted hangers provided with springs, the apron or couch having a front arched shield mounted on wheels and slanting fingers or strips and means for manually elevating and returning the fender to its lowered position, substantially as and for the purposes set forth.

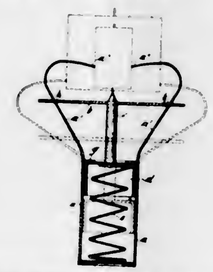
6. The combination with a car, of a fender journaled to slotted hangers and held under spring tension therein, said fender having a shield mounted on wheels and provided with a yielding front catcher, hand and foot levers connected with each other by a spring controlled pawl-and-ratchet connection and means connected with said fender and one of said levers to permit of the elevating and lowering of the same, substantially as and for the purposes set forth.

**531,027. WEIGHT FOR PLOW-BEAMS.** JOHN A. L. GIST, Curia, Ark. Filed Feb. 27, 1893. Renewed Oct. 15, 1894. Serial No. 525,997. (No model.)



*Claim.*—The combination with a plow beam, of a weight in the form of a single rectangular hollow casting loosely sleeved upon said plow beam forward of the plow, and set-screws passed through said weight and into engagement with the beam to hold said weight in its adjustable position, substantially as shown and described.

**531,028. CANDLE-GRASP.** HERMANN GLASER, Vienna, Austria-Hungary. Filed Apr. 18, 1894. Serial No. 507,970. (No model.) Patented in Germany Nov. 17, 1893, No. 20,023.

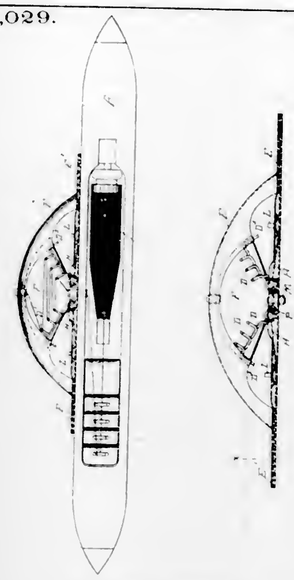


*Claim.*—A candle-holder, comprising a sheath, cylinder or tube provided with spring fingers or clamps flaring outwardly and curving inwardly, a disk in sliding engagement with said fingers or clamps a stem or pin fastened to and supporting said disk and provided with a cone-shaped end adapted to engage a candle and the opposite end of said stem or pin engaging a case, and a spiral spring engaging at one end with said stem or pin and at the other with said sheath, substantially as and for the purposes set forth.

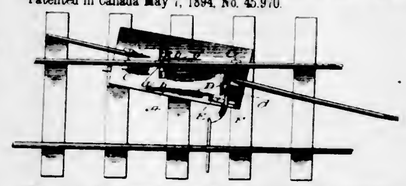
**531,029. TENSION DEVICE FOR LOOM-SHUTTLES.** ISAAC A. HALL, Paterson, N. J. Filed Sept. 10, 1894. Serial No. 522,537. (No model.)

*Claim.*—The combination with a shuttle body, of the guard having a circular portion and extended ends, said portion and ends being made of one piece of metal, the base plate —G— also made of one piece of metal and having its longitudinal edges bent upward and over so as to form a raceway or receptacle, the extended ends of the guard being adapted to surround and reinforce the ends of the base plate, a back piece —F— secured at top and bottom to said guard and base-plate and provided with flanges $F^2$ and openings $F^3$, flies D pivoted within the guard, the rings —$s$— on said flies, springs carried in said raceway or receptacle, and bearing on said rings —$s$—, and the sliding pin L movable in said raceway and bearing upon said spring, substantially as shown and described.

**531,029.**



**531,030. RAILWAY FROG AND SWITCH.** FREDERICK HARDY, Birmingham, Ala. Filed Apr. 12, 1894. Serial No. 507,293. (No model.) Patented in Canada May 7, 1894, No. 45,970.

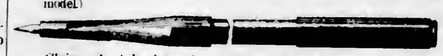


*Claim.*—1. The combination with a bed plate of a movable rail pivoted thereon, the fixed stops or braces near each corner of the bed plate, the operating rod having shoulders and the projection upon the bed plate adapted to engage the shoulders upon the operating rod, substantially as shown and described.

2. The combination with a bed plate having locking projections thereon of a movable rail pivoted upon the said plate and a curved or angular operating rod having shoulders thereon adapted to engage the locking projection, substantially as shown and described.

3. The combination with a bed plate having a circular opening of a circular disk located therein the movable rail secured thereto, the bearing blocks having knife edges, the braces or stops at each corner of the bed plate, the locking projections, the operating rod passing between the same, said rod having shoulders to engage the locking projections, substantially as shown and described.

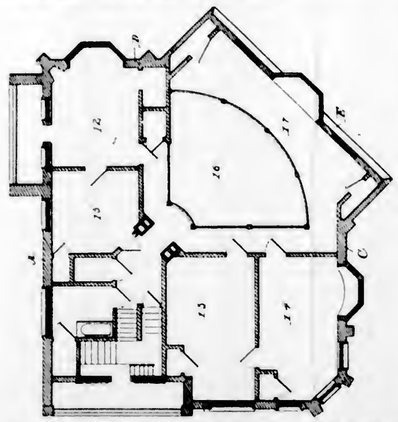
**531,031. COMBINED LEAD-PENCIL AND SHARPENER.** THOMAS F. HARRIS, Anniston, Ala. Filed Oct. 11, 1894. Serial No. 525,555. (No model.)



*Claim.*—1. A lead pencil consisting of a body part in which the lead is loosely inserted, a metallic sleeve surrounding the body portion having a bifurcated tapering extension with opposite slots therein, and a lead gripping or clamping device, consisting of a collar surrounding said tapering extension, having fingers extending backwardly therefrom with inturned flanges thereon which fit into said slots and grip the lead, substantially as described.

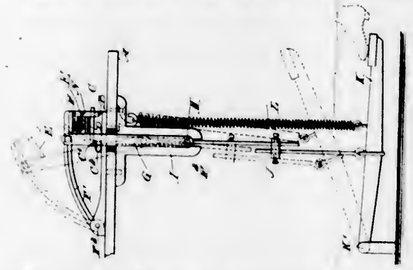
2. The combination with a lead pencil of the character described, of a sharpening device adapted to fit the end of said pencil, the same consisting of a collar having a portion thereof crimped to form on its inner side a cone-shaped cutting or grinding surface, and a protecting sleeve surrounding said collar and adapted to hold a rubber, substantially as described.

531,032. HOUSE. DECATUR H. HIBBERT, Wallingford, Pa. Filed Oct. 24, 1894. Serial No. 526,786. (No model.)



*Claim.*—A new and improved construction of house having two foundation walls at substantially right angles to each other, and two other foundation walls intersecting said last mentioned walls and extending a part of the distance of the width and length of the house and connected by a wall making an oblique angle with the two last mentioned walls, and provided with a room, in the portion formed by the last mentioned wall, which extends vertically above the second floor, and provided with an internal gallery at or about the level of the second floor.

531,033. CONFECTIONERY-MACHINE. SIMEON J. HICKS, Englewood, Ill. Filed Mar. 14, 1894. Serial No. 503,566. (No model.)



*Claim.*—1. A confectionery machine provided with a hinged stripper plate adapted to support the pieces cut by the knives, substantially as shown and described.

2. A confectionery machine provided with a set of fixed knives, a set of movable knives, and a hinged stripper plate engaging the said fixed knives to support the candy cut by the knives, substantially as shown and described.

3. A confectionery machine provided with a set of fixed knives, a set of movable knives, a hinged stripper plate engaging the said fixed knives to support the candy cut by the knives, and means, substantially as shown and described, for operating the said stripper plate from the frame carrying the movable knives, substantially as shown and described.

4. A confectionery machine, comprising a fixed knife plate carrying knives, a hinged knife frame carrying knives operating in conjunction with the said fixed knives, and a stripper plate hinged on the fixed knife plate and formed with slots for the passage of the fixed knives, substantially as shown and described.

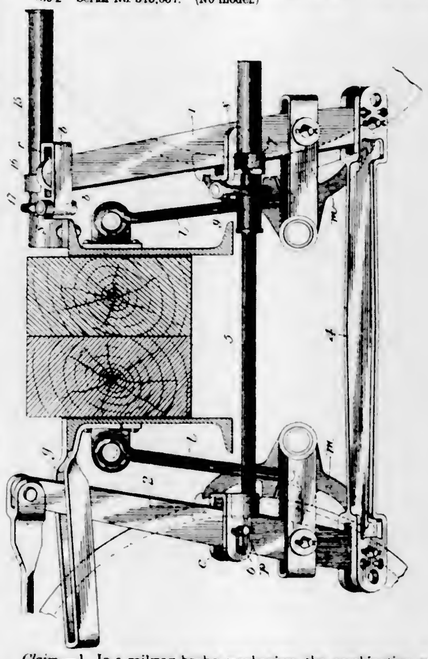
5. A confectionery machine, comprising a fixed knife plate carrying knives, a hinged knife frame carrying knives operating in conjunction with the said fixed knives, a stripper plate hinged on the fixed knife plate and formed with slots for the passage of the fixed knives, and a spring for holding the said stripper plate in a normal position over the said fixed knife plate, as set forth.

6. A confectionery machine, comprising a fixed knife plate carrying knives, a hinged knife frame carrying knives operating in conjunction with the said fixed knives, a stripper plate hinged on the fixed knife plate and formed with slots for the passage of the fixed knives, and catches held on the said hinged knife frame and adapted to engage the said stripper plate to impart an upward swinging motion to the same to move the candy out from between the fixed knives, substantially as shown and described.

7. A confectionery machine, comprising a fixed knife plate carrying knives, a hinged knife frame carrying knives operating in conjunction with the said fixed knives, a stripper plate hinged on the fixed knife plate and formed with slots for the passage of the fixed knives, and a treadle mechanism connected with the said hinged knife frame to actuate the latter, substantially as shown and described.

8. A confectionery machine, comprising a fixed knife plate carrying knives, a hinged knife frame carrying knives operating in conjunction with the said fixed knives, a stripper plate hinged on the fixed knife plate and formed with slots for the passage of the fixed knives, a treadle mechanism connected with the said hinged knife frame to actuate the latter, and a spring pulling on the said treadle mechanism, substantially as shown and described.

531,034. SLACK-ADJUSTER. HOWARD HINCKLEY, Trenton, N. J., assignor to the Hinckley Brake Company, same place. Filed June 6, 1894. Serial No. 513,637. (No model.)



*Claim.*—1. In a railway brake mechanism, the combination of the dead-lever, an adjustable fulcrum for the same, the live-lever, said levers being connected together for operation as usual, and an automatically extensible additional connection between the levers, whereby when there is any increase in the movement of the live-lever incident to slack in the rigging said additional connection will shift the fulcrum of the dead-lever; substantially as described.

2. In a railway brake mechanism, the combination of the dead-lever, an adjustable fulcrum for the same, the live-lever, said levers being connected together for operation as usual, and a connecting rod between the levers, said rod having a connection with one of the levers which permits it to move freely in one direction independently of the lever and causes it to engage and carry the lever with it when moved in the opposite direction; substantially as described.

3. In a railway brake mechanism, the combination of the dead-lever, an adjustable fulcrum for the same, the live-lever, said levers being connected together for operation as usual, and a connecting rod between the levers, said rod having a connection with one of the levers which permits it to move freely independently of the lever while the brakes are being applied and causes it to carry the lever with and by it when the brakes are released; substantially as described.

4. In a railway brake mechanism, the combination of the dead-lever, an adjustable fulcrum for the same, the live-lever, said levers being connected together for operation as usual, and a connecting rod between the levers, said rod being connected and arranged so as to move with the live lever in both directions, and the connection with the dead-lever being such that the rod moves in one direction independently of the lever, but is locked or clutched to said lever when moved in the opposite direction; substantially as described.

5. In a railway brake mechanism, the combination of the dead-lever, an adjustable fulcrum for the same, the live lever, said levers being connected together for operation as usual, an additional connecting rod between the levers, said rod being connected and arranged to move with the live-lever in both directions and a one-way gripping device carried by the dead-lever and through which said rod slides, whereby, when the movement of the live-lever exceeds the normal, owing to slack in the rigging, the connecting rod will slide freely through the gripping device in one direction, but, upon the return of the live-lever, will be caught by said gripping device, and will move the dead-lever with it; substantially as described.

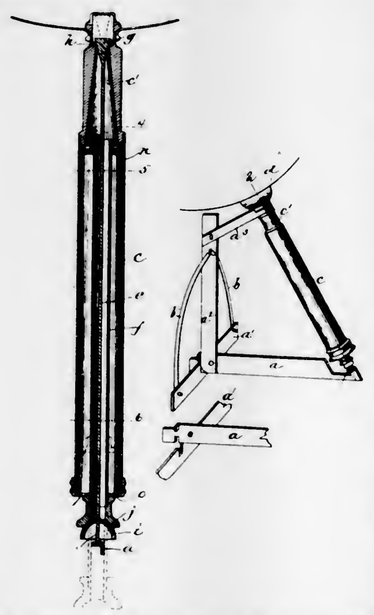
6. In a railway brake mechanism, the combination of the dead lever 1, the adjustable keeper *b* constituting the lever fulcrum, the live-lever 2, the rod 4 connecting the levers, and the adjusting rod 5 between said levers, the rod 5 being connected with the live-lever by a loose connection 6, and having the adjustable connection 7, 8, 9, with the dead-lever; substantially as described.

7. In a railway brake mechanism, the combination of the dead-lever, the keeper *b* constituting the fulcrum for the lever, the fulcrum-supporting rod 15 upon which the keeper is sleeved, the shackle 17, the connecting rod 5, the clip 8 connected to the dead-lever, the sleeve 7 through which the rod 5 slides, and the shackle 9 pivoted to the clip and encircling the rod; substantially as described.

8. The combination of the clip 8, the connecting rod 5, having sliding connection therewith, and the loop or shackle 9 pivoted on the clip and encircling the rod, and the stop 12 whereby, when the rod is moved in one direction, the shackle will bind on or grip the same, and, when the rod is moved in the opposite direction, will strike the stop and permit the rod to move freely through it; substantially as described.



531,035. GEOGRAPHICAL GLOBE. ISAAC HODGSON and MARY A. HODGSON, Chicago, Ill. Filed Feb. 19, 1894. Serial No. 500,724. (No model.)



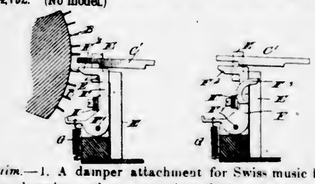
*Claim.*—1. The hollow stem or neck-piece attached to a collapsible globe; a valve-seat and valve in said hollow stem or neck; an air-pump attached to the hollow stem or neck of the collapsible globe, the valve in the stem or neck operating in connection with the piston in the air-pump in inflating the globe; and suitable devices connected with the valve in the stem or neck for holding it tightly and firmly closed to retain the air in the globe when in use

2. The stem or neck-piece of a collapsible globe having a valve-seat, a valve carried in a chamber in said stem or neck-piece; an air-pump connected to said stem or neck-piece; a tubular piston-rod in said air-pump by which the piston is operated; a valve-stem attached to the valve in the neck or stem and extending through the tubular piston-rod of the air-pump; and a suitable mechanism to firmly secure the lower end of this valve-stem at the lower end of the tubular piston-rod.

3. A collapsible globe; a neck or stem connected thereto and through which the globe is inflated; a stand for said neck or stem provided with a pivoted, forked arm or rest for the neck of the stem, and having a bottom plate or piece supporting the lower end of the stem of the globe, the pivoted and bifurcated arm being so arranged as to hold the geographical globe at an inclination, and to admit it to revolve on its axis, substantially as and for the purpose specified.

4. A geographical globe; a neck or stem connected to said globe; a stand having a bottom plate or piece supporting the lower end of the stem of the globe; and an upright piece pivoted to the bottom piece; and an arm of a length shorter than that of the bottom plate or piece pivoted to the upper end of this upright piece, said arm being bifurcated at one end and adapted to support the stem of the globe whereby the globe and its stem can be readily removed from the stand and the stand folded, substantially as specified.

531,036. DAMPER ATTACHMENT FOR SWISS MUSIC-BOXES. WILLIAM H. HOSCHKE, Brooklyn, N. Y. Filed Mar. 23, 1894. Serial No. 504,792. (No model.)



*Claim.*—1. A damper attachment for Swiss music boxes, comprising a damping rod or arm adapted to come in contact with a tooth of the comb, but normally out of contact therewith, and a lever, one end of which projects adjacent to the said tooth and into the path of travel of the corresponding cylinder pin, so that the said pin will actuate the lever immediately before striking the tooth, in such a manner that the damping rod or arm will move into contact with the tooth when the said lever is actuated, substantially as described.

2. A damper attachment for Swiss music boxes, comprising a damping rod or arm adapted to come in contact with a tooth of the comb, but normally out of contact therewith, a lever, one end of which projects adjacent to the said tooth and into the path of travel of the corresponding cylinder pin, so that the said pin will actuate the lever immediately before striking the tooth, in such a manner that the damping rod or arm will move into contact with the tooth when the said lever is actuated, and a spring for returning the said lever to its normal position, substantially as described.

3. A damper attachment for Swiss music boxes, comprising an elastic damping rod or arm adapted to be pressed against a tooth of the comb by its own elasticity, and a lever for normally holding the damping arm out of contact with the tooth, one end of said lever projecting adjacent to the said tooth and into the path of travel of the corresponding cylinder pin, so that the said pin, immediately before striking the tooth, will actuate the lever to release the damping arm, substantially as described.

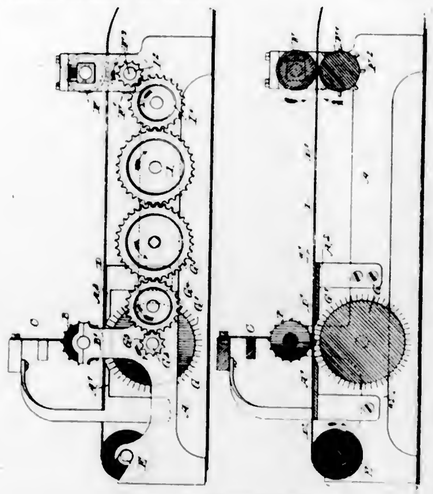
531,037. AUTOMATIC MUSICAL INSTRUMENT. WILLIAM H. HOSCHKE, Brooklyn, N. Y. Filed Apr. 7, 1894. Serial No. 506,694. (No model.)

*Claim.*—1. An automatic musical instrument, provided with a rotatable part, having pins for sounding the teeth of the comb, and outwardly movable plungers, and a driving mechanism adapted to engage the said plungers to turn the said rotatable part and sound the teeth of the comb, substantially as described.

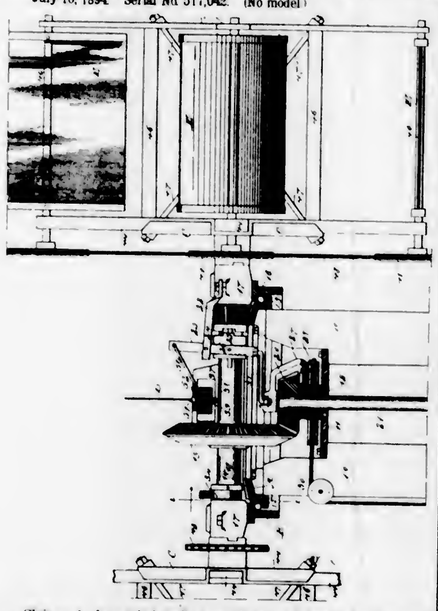
2. An automatic musical instrument, provided with a star wheel, having picking pins and gravity plungers, and a revolving wheel having projections adapted to engage the protruding ends of the plungers to turn the star wheel and sound the corresponding tooth of the comb, substantially as described.

3. An automatic musical instrument, comprising a star cylinder having rotatable disks, each having picking pins and gravity plungers, a traveling sheet having slots for the passage of the said gravity plungers, and a revolving cylinder having blades adapted to engage the projecting ends of the plungers extending below the said traveling sheet, substantially as shown and described.

4. An automatic musical instrument, comprising a star cylinder having rotatable disks, each having picking pins and gravity plungers, a traveling sheet having slots for the passage of the said gravity plungers, a revolving cylinder having blades adapted to engage the projecting ends of the plungers extending below the said traveling sheet, and a motor for imparting a rotary motion to the said cylinder, the said motor also imparting motion to the said traveling sheet, substantially as shown and described.



531,038. WINDMILL. SETH K. HUMPHREY, Omaha, Nebr. Filed July 10, 1894. Serial No. 517,042. (No model.)



*Claim.*—1. In a wind mill, a carriage, a driving shaft carried thereby, sails connected with the driving shaft, a fixed gear located upon the carriage, and stationary with respect to the sails and driving shaft and an endless belt engaging with said gear and having driving connection with the sails, whereby the upper sail will be perpendicular, the lower one horizontal and the side sails at an angle to a perpendicular line, their upper ends inclining in opposite directions, substantially as set forth.

2. In a windmill, a horizontal driving shaft, a frame carried thereby, sails located in the said frame, wheels operating said sails and located in a vertical plane, a central fixed wheel, stationary with respect to the driving shaft and sail frame and an endless belt passing over the fixed wheel and over the wheels of the sails, substantially as shown and described.

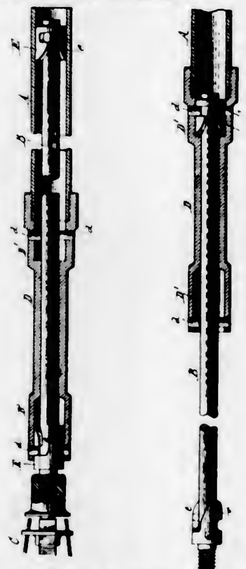
3. In a wind mill, the combination, with a carriage, a driving shaft carried thereby, and a sprocket wheel located upon the carriage, of a frame attached to the driving shaft, sails journaled in the said frame, sprocket wheels attached to the trunnions of the sails, an idler located adjacent to the fixed wheel, and an endless chain engaging all of the sprocket wheels of the sail and passed over the fixed wheel and idler, substantially as shown and described, whereby the position of the upper and lower sails will be at right angles to each other, and the position of the side sails at an angle of about forty-five degrees, their upper ends facing in opposite directions, as set forth.

4. In a wind mill, the combination, with a drive shaft and a spider secured thereto, of a frame consisting of an inner section attached to the spider, and an outer section, cross bars connecting the two sections, and truss rods diagonally connecting said sections of the frame and located between the cross bars, substantially as shown and described, the said frame being adapted for the carrying of sails, as specified.

5. In a wind mill, the combination, with a tower, and a frame secured upon said tower, having a cogged upper surface, of a carriage held to turn upon said frame, a driving shaft held to revolve in the carriage and provided with wind wheels, and an eccentric at one point in its length, a double dog loosely mounted upon the eccentric and controlled thereby, the dog being adapted for engagement with the cogged surface of the carriage, a vane pivoted upon the carriage, and a connection between the vane and the dog, whereby the former operates to throw one or the other point of the latter in engagement with the cogs of the carriage, as and for the purpose specified.

6. In a wind mill, a cogged platform, a carriage held to revolve around the platform, a driving shaft journaled upon said carriage, a pinion loosely mounted upon the shaft and engaging with the cogs of the said platform, a clutch carried by the shaft and adapted for driving connection with the pinion, a shifting mechanism, substantially as shown and described, connected with said clutch, a vane pivoted upon the carriage, and a connection between the shifting mechanism and the said vane whereby they operate together, as and for the purpose set forth.

531,039. FLUE-BRUSH HANDLE. EDWARD P. HUNT, Buffalo, N. Y., assignor of one-half to Jacob Bloeser, same place. Filed Aug. 17, 1894. Serial No. 520,582. (No model.)



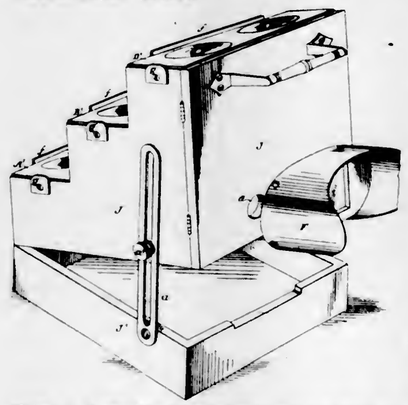
*Claim.*—1. In a flue brush handle, the combination with an outer tube or hollow section, of a coupling sleeve secured to the inner end of said hollow section and provided at each end with a locking device, and an inner section adapted to telescope into said coupling sleeve and said hollow outer section and provided near opposite ends thereof with couplings adapted to interlock with the respective locking devices of said sleeve, substantially as set forth.

2. In a flue brush handle, the combination with an outer tube or hollow section, of a coupling sleeve secured to the inner end of said hollow section and provided at each end with an internal pin or projection, and an inner section adapted to telescope into said coupling sleeve and said hollow outer section and provided near each end with an angular slot adapted to interlock with the corresponding pin or projection of the coupling sleeve, substantially as set forth.

3. In a flue brush handle, the combination with an outer tube or hollow section, of a coupling sleeve secured to the inner end of said section and provided at each end with an enlargement having an internal radial locking pin, and an inner section adapted to telescope into said sleeve and said hollow outer section and provided at each end with a coupling collar having an L-shaped slot adapted to interlock with the corresponding locking pin of said coupling sleeve, substantially as set forth.



531,040. PHOTOCHROMOSCOPE AND PHOTOCHROMOSCOPE-CAMERA. FREDERIC E. IVES, Philadelphia, Pa. Filed July 3, 1894. Serial No. 516,465. (No model.)



*Claim.*—1. A casing for a photochromoscope or photochromoscope camera having a series of inclined reflecting mirrors some of which are transparent, a series of color screens and a chromogram or plate support having its base line so disposed that the images of the chromogram or plate will be located one above another, substantially as specified.

2. A casing for a photochromoscope or photochromoscope camera having a series of inclined mirrors some of which are transparent, a series of color screens and a series of chromogram or plate supports one above another, substantially as specified.

3. A photochromoscope comprising a casing having a series of inclined mirrors some of which are transparent, a series of color screens, a series of chromogram supports one above another, and means for varying the angle of said instrument in respect to the direction of the light rays, substantially as specified.

4. The combination in a photochromoscope, of a casing having a series of inclined mirrors, some of which are transparent, a series of color screens, one or more supports for the chromogram so arranged that the images are located one above another, and a binocular or stereoscopic eye piece, substantially as specified.

5. A chromogram consisting of a series of sections united so as to be capable of folding one upon another, the images of the sections being identical in size and perspective, but with differences in gradations of light and shade, which differences constitute a color record, substantially as specified.

6. A chromogram consisting of a series of sections united by flexible cords or strips, the images of the sections being identical in size and perspective, but with differences in gradations of light and shade, which differences constitute a color record, substantially as specified.

7. A chromogram consisting of a series of pairs of images, the images of each pair being alike, except for the difference of perspective which characterizes the two images of a stereoscopic photograph and the pairs of images being identical in size and perspective, but with differences in gradations of light and shade, which differences constitute a color record, substantially as specified.

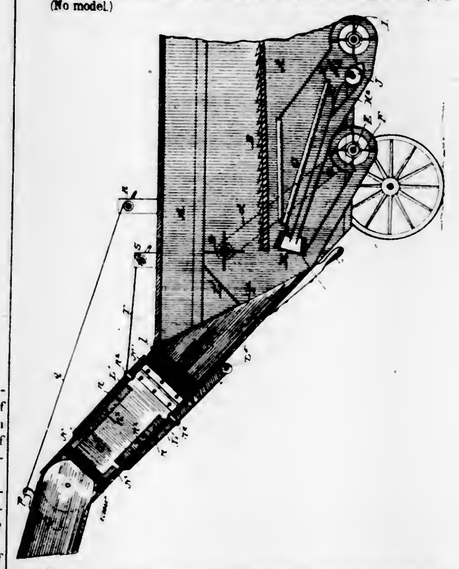
8. A photochromoscope comprising a casing having a series of seats one above another, for a sectional chromogram, a series of inclined mirrors, and a series of color screens, the chromogram supports and mirrors being so arranged that the instrument is adapted for use in connection with an external reflector, substantially as specified.

9. A photochromoscope having a transparent mirror located therein at an angle, so as to reflect and also transmit rays of light, said mirror being so colored that it will absorb unreflected rays of a character which the mirror is designed to reflect, but transmit rays of the character which the mirror is designed to transmit.

10. A binocular or stereoscopic photochromoscope having one or more chromogram supports so disposed that the images of the chromogram are located one above another, a series of color screens, and a series of mirrors some or all of which are transparent, said mirrors being inclined in a horizontal plane and located one behind another in the line of sight, substantially as specified.

11. A photochromoscope comprising a casing having a series of seats one above another, for a sectional chromogram, a series of inclined mirrors some or all of which are transparent, said mirrors being located one behind another in the line of sight and inclined in a horizontal plane, substantially as specified.

531,041. STRAW-CONVEYER. WILLIAM L. JOHNSON and WILLIAM L. HAY, Franklin, Tenn. Filed Mar. 29, 1894. Serial No. 505,604. (No model.)



*Claim.*—1. As an improvement in pneumatic straw conveyers for thrashing machines, the combination with the main frame and the conveyer section, of a main blast tube having its discharge end at the mouth of the conveyer section, a detachable cap or spout for such end, and a supplemental blast chamber having its discharge mouth opening into the conveyer section substantially as shown and described.

2. In a pneumatic straw carrier for thrashing machines, a blast chamber having a main and supplemental discharge tube, the lower or supplemental tube, discharging into the main tube, and a transverse removable cap or spout adapted to fit onto the discharge end of the said blast chamber and projected to one side of the machine, all arranged substantially as shown and described.

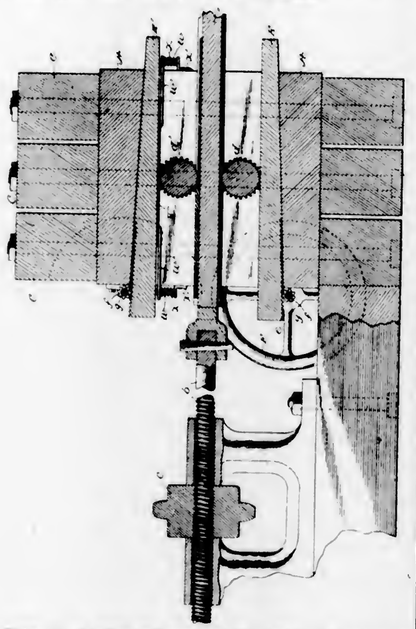
3. In a pneumatic straw conveyer, for thrashing machines, the combination with the main frame, the stacking or conveyer tube section and the lowest or final screen, of a blast chamber having two discharge tubes, one of which discharges at the front end of such screen, over and under it, and having a regulating valve, the other of which passes rearward and discharges under the screen into the first tube, such first tube held to discharge into the conveyer section at a point under the rear end of the said screen all arranged substantially as shown and described.

4. As an improvement in pneumatic straw carriers for thrashing machines, the combination with the conveyer section L having forwardly projecting portions L' at the top and bottom, and hinged wing

like members O, O, projected beyond such projecting portions L′, of the chute member N having portions N′ held to lap over the ends L′ of the section L and pivotally connected therewith to swing laterally, said member N having studs $n'$ held to engage the wings O, and means for adjusting such member N laterally substantially as shown and described.

5. In an improved pneumatic straw conveyer mechanism, the combination with the fixed conveyer section, and a screw shaft journaled on the bottom thereof, of the intermediate section pivotally connected to the main section for lateral adjustment, and having a segmental rack member held to engage the screw shaft, and a stack section pivoted to the intermediate section for vertical adjustment and means operated from the top of the machine, for adjusting such stack section all arranged substantially as shown and described.

**531,042. ROLLING-MILL.** SAMUEL JOHNSTON, New York, N. Y. Filed Dec. 27, 1893. Serial No. 494,912. (No model.)



*Claim.*—1. A rolling mill, provided with a frame, having a lower bed, a roller free to travel upon said bed, a reciprocating platen supported upon said roller, a second roller above the platen in juxtaposition to the first roller, and an upper or back-pressure bed above the second roller; substantially as described.

2. A rolling mill provided with a platen, means for advancing the platen, and rollers co-operating with opposite sides of the platen, said rollers having beds upon which they are free to travel; substantially as described.

3. A rolling mill provided with a platen, means for advancing the platen, and rollers co operating with opposite sides of the platen, said rollers being in juxtaposition to each other and having their axes in the same vertical plane and having beds upon which they are free to travel; substantially as described.

4. A rolling mill provided with a platen, means for advancing the platen, and rollers co operating with opposite sides of the platen, said rollers being geared to the platen, and having beds upon which they are free to travel; substantially as described.

5. A rolling mill provided with a platen, means for advancing the platen, and rollers co-operating with opposite sides of the platen, said rollers having beds adjustable toward or from the platen, upon which beds they are free to travel; substantially as described.

6. In a rolling mill, the combination with a platen, of means for advancing the platen, a roller co-operating with the platen to reduce the metal passing between them, and a bed for the roller, the roller being free to travel upon the bed and sufficient space being provided between the platen and bed to permit the formation of a reducing pass between the roller and platen during the advance of the latter; substantially as described.

7. In a rolling mill, the combination with a platen, of means for advancing the platen, a roller co-operating with the platen, a bed for the roller, the roller being free to travel upon the bed, and means for varying the distance between the platen and bed; substantially as described.

8. In a rolling mill, the combination with a platen, of means for advancing the platen, a roller co-operating with the platen, a bed for the roller, the roller being free to travel upon the bed, means for varying the distance between the platen and bed, and a roller bed for the platen; substantially as described.

9. In a rolling mill, the combination with a platen, of means for advancing the platen, a roller co-operating with the platen, a bed for the roller, the roller being free to travel upon the bed, means for varying the distance between the platen and bed, and a roller bed for the platen, said roller bed being free to travel with the platen; substantially as described.

10. In a rolling mill, the combination with a platen, of means for advancing the platen, a roller co-operating with the platen, a bed for the roller, the roller being free to travel upon the bed, a roller bed for the platen, and means for raising or lowering the roller bed; substantially as described.

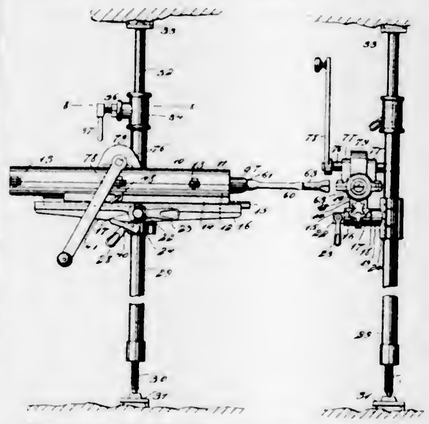
11. In a rolling mill, the combination with a reciprocating platen, of a roller co-operating therewith, and a bed for the roller, the roller being free to travel over said bed, the bed being provided with a facing plate adjacent to the roller and of a length less than the travel of the roller so that on leaving said plate the pressure of the roller upon the work is relieved; substantially as described.

12. In a rolling mill, the combination with a reciprocating platen, of a roller co-operating therewith, a bed for the roller, the roller being free to travel over the bed, the bed being made up of wedge-shaped pieces having their inclines adjacent to each other, and an independent facing plate adjacent to the roller; substantially as described.

13. In a rolling mill, the combination with a reciprocating platen, of a roller co-operating therewith, a bed for the roller, the roller being free to travel over the bed, the bed being made up of wedge-shaped pieces having their inclines adjacent to each other and an independent facing plate adjacent to the roller, said facing plate being spring supported; substantially as described.

14. In a rolling mill, the combination with the platen of the rollers co-operating therewith, the platen being provided with racks and the rollers with gears intermeshing therewith and springs for keeping the rack in mesh with the gears; substantially as described.

**531,043. ROCK-DRILL.** HARVEY P. JONES and GEORGE R. JONES, Denver, Colo. Filed Apr. 10, 1894. Serial No. 507,003. (No model.)



*Claim.*—1. A rock drill, comprising a supporting standard, a bed adjustably secured to the standard, a longitudinally movable track on the bed, a fastening device to hold the track to the bed, a drill frame arranged to slide on the track, a rachet connection between the drill frame and the track, and drill mechanism carried by the frame, substantially as described.

2. The combination, with the bed having ratchet teeth thereon, the track supported on the bed and provided with ratchet teeth, the drill frame carrying drilling mechanism, the pawls in the drill frame to engage the teeth of the track, and the spring pressed slides on the sides of the drill frame having arms to engage the teeth of the bed, substantially as described.



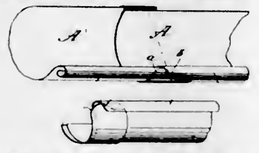
3. In a rock drill, in combination, a supporting bed having ratchet teeth 49, and having a track way, a drill frame longitudinally movable thereon, and spring pressed slides 51 on the drill frame having arms 50 adapted to be moved into engagement with such teeth, substantially as shown and for the purposes described.

4. The combination with the bed having at opposite sides the ratchet portions, the teeth of which incline in reverse directions, the track supported on the bed and provided with ratchet teeth, the drill frame carrying drilling mechanism, the pawls in the drill frame to engage the teeth of the track, swinging slides secured on the opposite sides of the drill frame, spring pressed in opposite directions, said slides having arms adapted to be moved into engagement with the teeth on the bed all arranged substantially as shown and for the purposes described.

5. The combination with the bed frame, the drill frame comprising a casing longitudinally movable on the bed, and the drill holder carried thereby having at a point within the casing a ratchet wheel, of the spring pressed hammer held within the casing, having a rack portion, the revoluble mutilated gear wheel held to engage such rack portion, said gear having a cam at one side, an oscillating lever pivoted in the casing, having one end held to engage the ratchet wheel, and the other in engagement with the cam on the gear wheel, all arranged substantially as shown and described.

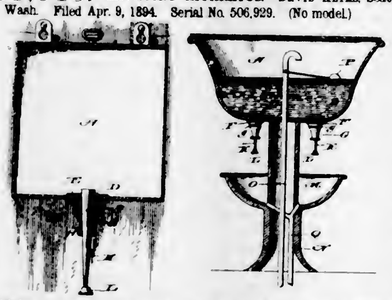
6. The combination with the drill frame casing, the revoluble drill holder therein, having a ratchet wheel and the spring pressed hammer having a rack portion, of the mutilated gear journaled within the casing adapted to engage the said rack portion, said gear having cams at one side, the pivoted lever 82 held in the casing having one end held in engagement with the cam, a spring actuated pawl held in the opposite end of the lever and adapted to engage the ratchet wheel, all arranged substantially as shown and described.

**531,044. EAVES-TROUGH.** ALVIN C. KANNEBERG, Canton, Ohio. Filed Nov. 20, 1893. Serial No. 491,377. (Model.)



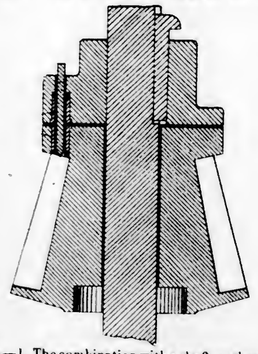
*Claim.*—As a new article of manufacture, an eaves trough having one edge of one of its ends cut away from $x$ to $x$, forming a tongue B and cut away from C to $y$, and having rounded shoulders $a$ and $b$, receding from the front end of the trough the tongue B being folded back upon the trough from the shoulder $b$, thence forward upon itself to form a groove or pocket $c$, and extension $d$, and its edge from $x$ to $x$, bent laterally into a roll, the edge of the trough being bent over the tongue, to form a roll concentric with the aforesaid roll, substantially as shown and described.

**531,045. LAVATORY APPARATUS.** DAVID KETAS, Seattle, Wash. Filed Apr. 9, 1894. Serial No. 506,929. (No model.)



*Claim.*—In a lavatory apparatus, the combination of a tank or reservoir adapted to be supported above a basin and having an outlet formed in its bottom, an annulus or boss secured to the outer face of the tank bottom, around the opening therein, and having its central opening threaded, a spout having its upper end reduced and threaded to adapt it to be screwed into the annulus or boss on the tank bottom, and a valve rod extending through such opening and having its upper end within the tank or reservoir and its lower end above the basin over which the tank is supported, substantially as shown and described, for the purpose specified.

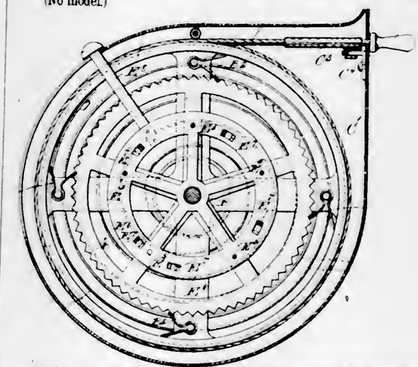
**531,046. SAFETY GEAR-WHEEL CONNECTION.** HOWARD K. KING, Philadelphia, Pa., assignor to the Chambers Brothers Company, same place. Filed Oct. 28, 1891. Serial No. 410,123. (No model.)



*Claim.*—1. The combination with a shaft, a wheel thereon, a sleeve or projection adjacent to said wheel, bushings in said sleeve or projection and wheel, and a break-pin extending through said bushings, substantially as and for the purpose set forth.

2. The combination with a rotatable shaft, of a sleeve fast thereon, a gear wheel on said shaft, bushings in said sleeve, and the pin extending through said bushings, together with the set-screw $g'$, substantially as described.

**531,047. MEASURING AND REGISTERING DEVICE.** GEORGE KRUEGER, Johnstown, Pa. Filed Apr. 28, 1894. Serial No. 509,391. (No model.)



*Claim.*—1. A device of the class described, comprising a casing, a main shaft, a cable actuated operating wheel journaled thereon, a series of graduated wheels fixedly held on the shaft, each having an independent registering device connected therewith and normally held out of operative position, and a shifting mechanism loosely mounted on the main shaft, adapted to be set to bring any one of the registering devices into an operative position, as and for the purposes set forth.

2. An improved device of the class described, comprising a casing, a main shaft, a rotatable wheel mounted thereon, spring actuated in one direction and having a cable wound on its periphery and extended through the casing to form a handle member, a series of graduated gear wheels secured on the said shaft, each having a registering device connected therewith, and a shifting mechanism held to rotate on the shaft, and having a handle extended without the casing whereby it can be set to engage any one of the registering devices, as specified.

3. A device of the class described comprising a casing a main operating shaft, means for operating it from the outside of the casing, a series of graduated gear wheels mounted thereon, registering devices having gear wheels loosely mounted on their supporting shafts and held to mesh with the graduated gear wheels, a spring actuated clutch mechanism connected with such registering devices, a shifting disk held to normally engage such clutch devices and hold them out of operative position, but capable of adjustment whereby any one of such clutch devices can be moved into operative position, said disk

having an operating member extended to the outside of the casing, all arranged substantially as shown and for the purposes described.

4. A device of the class described, provided with a revoluble wheel having a peripheral groove, and a cable adapted to engage the said groove, the said cable being normally wound up and extending in the groove of the said wheel, so that on pulling the outer end of the cable the said wheel rotates, and a pivoted guide tube for the said cable, substantially as shown and described.

5. In a device of the class described, the combination, with a wheel adapted to be turned and having recesses on its face, of a clutch mechanism controlled from the said wheel and comprising a pin adapted to abut on the face of the said wheel and adapted to pass into a corresponding recess, a clutch disk carried by the spring and coupled with the shaft to be driven, and a clutch on the driving gear wheel and adapted to be engaged by the said disk whenever the pin drops into its recess on the said wheel, substantially as shown and described.

6. In a device of the class described, the combination, with a cable, and a spring-pressed revoluble wheel adapted to be turned by the said cable, of a shaft on which the said wheel is loosely mounted, a ratchet wheel held on the said shaft, adapted to be engaged by pawls on the said wheel, a series of graduated gear wheels secured on the said shaft, and a shifting disk held to rotate on the shaft between the gear wheels and the ratchet wheel and having members adapted to be locked one at a time to a registering device, substantially as shown and described.

7. In a device of the class described, the combination with a casing, an operating shaft and ratchet wheel held thereon, a cable actuated operating wheel loosely journaled on the shaft and having spring pawl connections with the ratchet wheels and a series of graduated gear wheels fixedly mounted on the operating shaft, of a registering device for each of the graduated gear wheels comprising a gear wheel held in mesh with its corresponding graduated gear wheel, a shaft carrying said registering gear wheel, a clutch for locking such wheel to the shaft, a shifting mechanism operated from the outside of the casing for setting any one of the clutches to an operative position, and an adding mechanism common to all the registering devices adapted to be operated by the movement of any one of such devices, all substantially as shown and described.

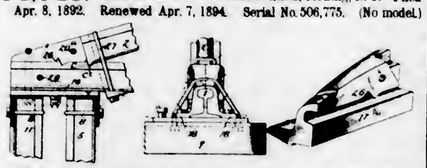
8. In a device, of the class described, the combination, with a series of graduated gear wheels adapted to be turned, of a registering device for each of the said graduated gear wheels, the said registering device comprising a gear wheel in mesh with its corresponding graduated gear wheel, a shaft carrying the said gear wheel, a clutch for locking the said gear wheel to the said shaft, a pointer on the said shaft, a dial on which the said pointer indicates, an adding mechanism actuated from the several parts, the said adding mechanism comprising a cam on each shaft, a spring-pressed lever adapted to be actuated from the said cam, a ratchet wheel adapted to be operated on by the several levers, a pointer carried on the hub of the said ratchet wheel, and a dial on which indicates the last mentioned pointer, substantially as shown and described.

9. A device of the class described, provided with an adding mechanism comprising a series of shafts, a cam on each shaft, spring-pressed levers adapted to be actuated by the said cams, a ratchet wheel adapted to be acted on by the said levers, a pointer carried on the hub of the said ratchet wheel, and a dial on which indicates the said pointer, substantially as shown and described.

10. In a device of the character described, in combination a series of registering devices having each a shaft, provided with a cam and spring pressed levers adapted to be operated by the said cams, and an adding mechanism common to all registering devices and having a ratchet wheel adapted to be acted on by the aforesaid levers, stop devices for limiting the throw of the adding ratchet wheel, a pointer carried on the hub of the said ratchet wheel and a dial on which indicates the said pointer, all arranged substantially as shown and for the purposes described.

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**531,048. TRUSS-BRIDGE.** DANIEL F. LANE, Corning, N. Y. Filed Apr. 8, 1892. Renewed Apr. 7, 1894. Serial No. 506,775. (No model.)



*Claim.*—1. In an iron bridge, the combination, of an abutment and the truss beams, the upper beam resting upon and engaging the lower beam, with a chair formed of two matching parts engaging the lower beam, the bolts 20, 20ª securing the chair parts together and to the lower beam, the nutted clip 27 engaging said beams, and the nutted clip 21 engaging the chair and the abutment, substantially as described.

2. The combination, in an iron bridge, of the truss-beams, with chairs formed of two counterparts providing sockets or seats adapted to receive and support the ends of said beams in abutting relation, and nutted bolts 20 and 20ª, passing through the beam and the chair parts, substantially as described.

3. The combination, in an iron bridge, of the truss beams, with chairs formed of two counterparts providing sockets or seats adapted to receive and support the ends of said beams in abutting relation, a base plate 16, a transverse abutment beam, and means for binding and securing said parts together, substantially as described.

4. The combination, in an iron bridge, of the truss-beams, with chairs formed of two counterparts provided with sockets or seats adapted to receive and support the ends of said beams in abutting relation, a base-plate 16, a transverse abutment beam, bolts for securing the chair, plate and said beams together, a clip for securing the chair, plate and abutment beam together, and a clip for securing the chord and truss-beams together, substantially as described.

5. The combination, in an iron bridge, of the truss-beams, with a binder chair support for their ends, an abutment formed of a beam bent and lapped at its ends, and means for binding and securing the said several beams and chair parts together, substantially as described.

6. The combination, with the truss-beams and a chair provided with seats or sockets adapted to receive and support the ends of said beams, of a base-plate for said chair, and a transverse cap-beam bent and lapped at its ends, means for securing said chair to said base-plate, and means for securing said chair, base plate and lower beams to the lapping end of said cap-beam, substantially as described.

7. The combination, in an iron bridge, of the truss-beams, with a chair formed of two counterparts having sockets or seats adapted to receive and support the ends of said beams in abutting relation, the ball or head of the truss-beam and the wall of the chair-socket having engaging upset parts, and means for binding the said beams together and to the chair parts, substantially as described.

8. In an iron bridge, an abutment chair of two half parts, each part having a base side flange 18, an end socket 25 and notches and projections 26 on its inner wall, in combination with the lower flanged truss beam having notches and projections corresponding with those of the chair-walls, and means for binding the parts together and to the said lower beam, substantially as described.

9. The combination, in an iron bridge, of the floor or girder-beams, with the truss rod and the shoe or socket blocks for connecting the ends of said truss rod and the girder-beams, substantially as described.

10. The combination, in an iron bridge, of the floor or girder-beams, and the truss-beams, with the shoe or socket-blocks, the truss-rod, the base plates 24, and the clips 23 and 29, substantially as described.

11. The combination, in an iron bridge, of the main and the arch truss-beams, and the floor or girder-beams, with the clamps or binders 35, the base-plates 24, and the clips 23 and 34, substantially as described.

12. The combination, in an iron bridge, of the floor or girder-beams, the truss-beams, and the base-plates 24, with the clamps or binders 35, the clips 29 and 34, and the brace-rods 45, substantially as described.

13. The combination, in an iron bridge, of the truss-beams, and the floor or girder-beams, with the base-plates 16 for said truss-beams, chairs or binders provided with sockets or seats adapted to receive and support the ends of the truss-beams, the brace rods 47 connecting the said base-plates and girder-beams, and means for binding and securing the said truss-beams, chairs and base-plates together, substantially as described.

14. In combination, in an iron bridge, the truss-beams, the socket chairs and the arch clamps or binders therefor, the floor or girder-beams, their truss rods and shoe or socket-blocks, the clips and brace rods, and iron abutments having cap-beams bent and lapped at their ends and bound and secured to the said socket chairs, substantially as described.

15. The combination, in a bridge, of the truss-beams and the arch-beams, with clamps or binders having their clamping sides formed with grooves interlocking with the flanges of the truss-beam and the sides of the head of the arch-beam, and riveted to the webs of both said beams, substantially as described.

16. The combination, in an iron bridge, of the truss-beams and the girder-beams, the rods 29 connecting the truss and girder-beams by the base plates 24 and by the angle plates 32 bolted to each side of the web of said truss beam, substantially as described.

17. The combination, in an iron bridge, of the truss-beams and the base-plates 16, with a sectional flanged chair 17 constructed to form the socket for the end of the truss-beam, a nutted clip 21 and the bolts 19, 20 and 20ª for securing the parts together, substantially as described.



18. The combination, in an iron bridge, of the lower chord having the notched abutments 26 and *c* in its head, with a sectional chair-socket constructed to engage the beam abutment 26, the truss-beam engaging the beam abutment *c* and means for securing said parts together, substantially as described.

19. The combination, in an iron bridge, of the truss-beams, and the girder-beams, with sectional chair sockets constructed to engage said truss-beams, the base plates 16, means for securing the latter to the section chair, means for securing the latter to the truss-beams, and the brace rods 47 connecting the said base-plates and girder-beams, substantially as described.

20. As a tie and support for the lower chord-beams of an iron bridge, the horizontal cap-beams of angle iron bent and lapped at each end, in combination, with the truss-beams, and suitable means for securing the ends of said beams to said cap-beams, substantially as described.

21. The combination, in an iron bridge truss, of a tie-beam and a brace-beam of railway T rail, with chairs formed of two parts with confronting faces, each face conforming in contour to the said beams and having a shoulder to receive the abutting end of the brace-beam and bolts for securing said parts of the chair to each other, and to the tie-beam, substantially as described.

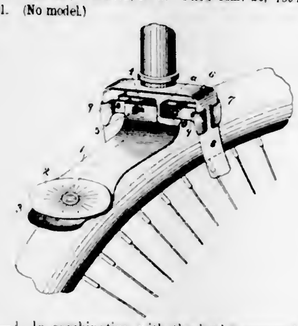
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**531,049. METHOD OF TESTING MILK.** IVAR K. LINDSTROM, Akerby Orebro, assignor to the Aktiebolaget Separator, Stockholm, Sweden. Filed May 25, 1893. Serial No. 475,430. (No specimens.) Patented in England Dec. 28, 1889, No. 20,859.

*Claim.*—The herein described method of testing milk which consists in mixing the milk with a solvent of casein, heating the mixture to the melting point of the fat, subjecting the mixture to centrifugal action, and finally solidifying the fat by cooling it with cold water while the mixture is under centrifugal action, substantially as set forth.

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**531,050. BICYCLE-BRAKE.** ISAAC W. LITCHFIELD and TOWNSEND W. SANFORD, Warwick, N. Y. Filed Mar. 26, 1894. Serial No. 506,221. (No model.)



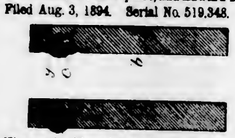
*Claim.*—1. In combination with the brake proper 1 of spring sheet metal, having at one end a portion adapted to receive the foot and at the other end a turned up portion the independent clips 7, 7 which are adapted to engage the bicycle fork and having arms projecting toward each other means of attachment of the brake proper 1 thereon, substantially as and for the purposes set forth

2. The combination of the brake spring 1 slotted as shown at 4, the clips 7, 7 having slots 6 and bolts and nuts 5, 9, all adapted to operate substantially as set forth.

3. The combination of the brake spring 1, the clips 7, 7, the bolts 5 and the wedge-shaped washers 10, arranged and adapted to operate substantially as set forth.

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**531,051. METHOD OF SECURING DIAMONDS IN STONE-CUTTING TOOLS.** RUDOLF MARQUART, New York, N. Y., assignor to himself and Charles Brandt, Jr., same place, and Edward B. Tompkins, Brooklyn, N. Y. Filed Aug. 3, 1894. Serial No. 519,348. (No specimens.)



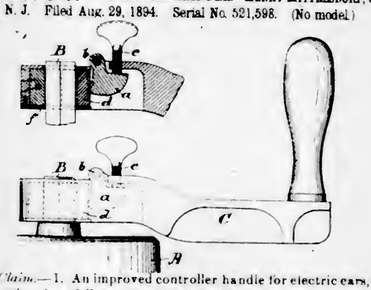
*Claim.*—1. The method herein specified of securing diamonds and other stones in implements for cutting stone, the same consisting in making a cavity or receptacle in a piece of metal, inserting the diamond into the cavity, heating the metal with the stone in place and filling in the interstices around the stone with a molten brazing metal or solder which unites with the metal and then pressing and forcing the hot metal and brazing metal from without around and over upon the stone to securely hold the same in place, substantially as specified.

2. The method herein specified of securing diamonds and other stones in implements for cutting stone, the same consisting in making a cavity or receptacle in a piece of metal, inserting the diamond into the cavity, heating the metal with the stone in place and filling in the interstices around the stone with a molten brazing metal or solder which unites with the metal and then pressing and forcing the hot metal and brazing metal from without around and over upon the stone to securely hold the same in place, and filing off or otherwise finishing one or more surfaces of the metal around and adjacent to the stone for more effectually exposing the surface of the stone for cutting, substantially as set forth.

3. The method herein specified of securing diamonds and other stones in implements for cutting stone, the same consisting in making a cavity or receptacle in a piece of metal, inserting the diamond into the cavity, heating the metal with the stone in place and filling in the interstices around the stone with a molten brazing metal or solder which unites with the metal, substantially as specified.

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**531,052. CONTROLLER-HANDLE.** HENRY MITTELSDORF, Orange, N. J. Filed Aug. 29, 1894. Serial No. 521,598. (No model.)

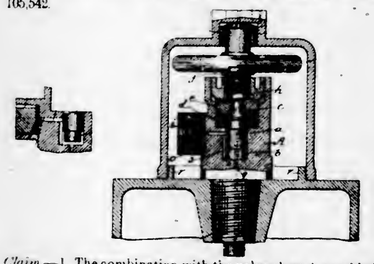


*Claim.*—1. An improved controller handle for electric cars, combining therein a follower working in said handle, and adapted to fit against the angular sides of the controller shaft, a cam, as *a*, adapted to connect with said follower, and a screw, as *c*, adapted to engage with said cam and to force the latter against said follower, as described, and for the purpose set forth.

2. In a controller handle for electric cars, the combination of a block, as *c*, a follower, as *d*, a cam, as *a*, and means for operating the cam, as and for the purposes set forth.

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**531,053. BUFFER-VALVE FOR HIGH-PRESSURE GASES AND FLUIDS.** ALBERT MUELLER, Nieder-Schönweide, near Berlin, Germany. Filed Sept. 21, 1893. Serial No. 486,132. (No model.) Patented in France July 6, 1893, No. 231,366, and in Belgium July 13, 1893, No. 105,542.



*Claim.*—1. The combination with the valve chest A provided with two compartments of different diameters and a freely operating piston, as *a*, closely fitting the lowermost compartment and provided with a shank extending through the upper compartment and having a conical head and a receding curved neck below said conical head, of an elastic buffer, as *d*, surrounding said neck, a stay plate, as *e*, resting on the elastic buffer and carried by the conical head of the aforesaid shank and means for forcing the stay plate down upon the buffer and for exerting pressure on the piston shank, substantially as set forth.

2. In a valve for high-pressure gases and liquids, the combination with the valve chest provided with a branch outlet, as *o*, a safety stopper for closing said outlet, said stopper having a longitudinal groove therein to permit the discharge of any gas which may escape

between the valve and plug, during transportation, substantially as set forth.

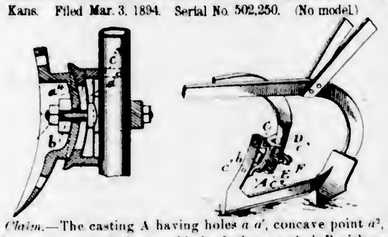
3. The combination with a valve chest provided with a branch outlet, as *o*, of a safety stopper for closing said outlet and having a longitudinal groove therein, and a packing disk *l*, substantially as set forth.

4. The combination with a valve chest provided with a branch outlet, as *o*, in combination with the exit passage, of a safety stopper closing said outlet and having a longitudinal groove therein and a pin in its rear end which is adapted to enter the aforesaid exit passage, and a packing disk as *l*, substantially as set forth.

5. The combination with the valve and a hand wheel for operating the same, of a flask having a screw threaded projection at the top, a hood inclosing the valve and adapted to be screwed onto the said projection of the flask and having a hollow central projection at its top, a hollow plug at *l* secured within said projection and an elastic plug *v* fitting within said hollow plug *l* and which, as the hood is screwed onto the flask, turns around its axis and is forced against the hand wheel thereby preventing the accidental opening of the valve during transportation, substantially as set forth.

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531,054. **DEVICE FOR ADJUSTABLY ATTACHING WEED-CUTTERS TO CULTIVATOR-STANDARDS.** WILLIAM A. MCCOY, Beman, Kans. Filed Mar. 3, 1894. Serial No. 502,250. (No model.)



*Claim.*—The casting A having holes *a a'*, concave point $a^2$, heel or flange $a^3$, concave body $a^4$ and hole $a^5$; the screwbolt B with washer *b* and nut *b'*; the casting C having the slots $c c^5$, groove $c^3$, concavity $c^4$ and grips $c^1$ $c^2$; the bolts E E and casting F with the slots *f f*, all combined and arranged as shown, for the purpose set forth.

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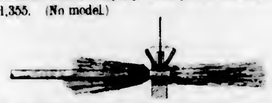
531,055. **PROCESS OF MANUFACTURING BROOMS.** DANIEL A. MCDONEL, Detroit, Mich., assignor to the Peninsular Broom Company, same place. Filed July 8, 1893. Serial No. 479,965. (No specimens.)



*Claim.*—The method of forming brooms consisting in securing the covering to a handle at a point above the lower end thereof, and with the butts presented downward and evened, securing the body to the handle below the butts, and finally securing the covering over the body, substantially as described.

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531,056. **BROOM.** DANIEL A. MCDONEL, Detroit, Mich., assignor to the Peninsular Broom Company, same place. Filed May 15, 1894. Serial No. 511,355. (No model.)



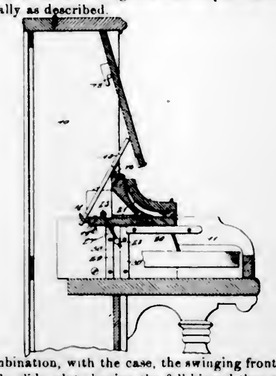
*Claim.*—1. The herein described method of manufacturing brooms which consists in first compressing the corn around the end of the handle, in an open metallic frame, next in forming the frame around the butts of the compressed corn to clamp the corn in the frame, securing the frame to the handle, and finally applying the cover upon the body, substantially as described.

2. The herein described method of manufacturing brooms which consists in first compressing the corn around the end of the handle in an open frame, next in forming the frame around the butts of the compressed corn to clamp the corn in the frame, securing the frame to the handle, securing the cover to the handle above the body with the points extending upward, and finally turning the cover over the body and securing the same thereto, substantially as described.

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531,057. **PIANO-CASE.** ALFRED J. NEWBY, New York, N. Y. Filed Sept. 22, 1894. Serial No. 523,791. (No model.)

*Claim.*—1. The combination, with the piano case, its swinging front, the fall and the horizontally movable slide plate hinged to the fall, of the lever hinged on the case and having its lower end connected with the slide plate and its upper end extending opposite the swinging front, a vertically movable guide bar parallel with the slide plate, and cranks secured to the guide bar and pivoted to the slide plate, substantially as described.



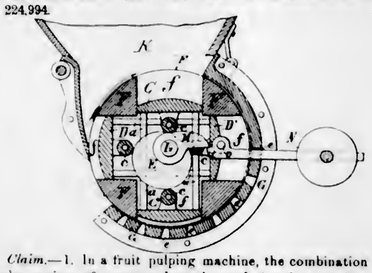
2. The combination, with the case, the swinging front, the horizontally movable slide plate having the fall hinged thereto and the lever operated by the slide plate to move the swinging front, of the vertical slideways beneath the slide plate, a guide bar extending across the case and into the slideways, and cranks secured to the guide bar and pivoted to the slide plate, substantially as described.

3. The combination, with the case, its swinging front, the slide plate and the fall carried by the slide plate, of crank guides held on adjacent supports and pivoted to the slide plate, and means for working the swinging front by the movement of the slide plate, substantially as described.

4. The combination of the case, the swinging front, supports arranged at opposite sides of the case below the swinging front, the fall back mounted to slide on said supports and having transverse slots at opposite sides of its rear portion, the fall hinged to the forward portion of the fall back, a guide bar arranged across the case parallel to the fall back and adapted to be moved vertically, crank arms at opposite ends of the guide bar having their upper ends extending through the slots in the fall back and pivotally connected to the upper surface thereof, and means for communicating the motion of said fall back to the swinging front, substantially as set forth.

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531,058. **MACHINE FOR PULPING APPLES, PEARS, &c.** CLAUDE J. OLLAGNIER, Tours, France. Filed May 4, 1893. Renewed Oct. 6, 1894. Serial No. 525,090. (No model.) Patented in France Oct. 22, 1892, No. 224,994.



*Claim.*—1. In a fruit pulping machine, the combination with a circular casing, of a rotary drum located therein, movable pistons adapted to be actuated at right angles to the axis of the drum located within the same, a normally stationary cam adapted to actuate the pistons so as to receive the fruit, compress it against the casing and discharge the same, as the drum is rotated, and means for normally holding the cam against rotation and for automatically releasing the same when any of the pistons meet with more than a predetermined resistance, substantially as shown and described.

2. In a fruit pulping machine, the combination with a circular casing, of a rotary drum located therein, a series of movable pistons located within the drum at substantially right angles to the axis thereof, a cam rigidly mounted upon a shaft and adapted to actuate the pistons so as to receive, and compress the fruit against the casing, and discharge the same, as the drum is rotated, a weighted lever, and a tappet rigidly mounted upon the cam shaft and engaging with the weighted lever; the construction being such that the weighted end of the lever will be lifted and the cam rotated with the drum when any of the pistons meet with more than a certain resistance, substantially as described.



3. In a fruit pulping machine, the combination with a circular casing provided with openings or perforations *e* in the encircling wall thereof, of a rotary drum located therein, movable pistons adapted to be actuated at right angles to the axis of the drum located within the same, and a stationary cam adapted to actuate the pistons as the drum is rotated so as to compress the fruit against the casing adjacent to the openings *e*, substantially as shown and described.

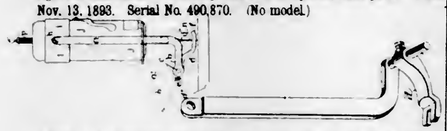
4. In a fruit pulping machine, the combination with a circular casing having a feed opening K, and a discharge opening T, and provided with openings or perforations *e* in the periphery of the casing between the feed and discharge openings, of a rotary drum located therein, movable pistons adapted to be actuated at right angles to the axis of the drum located within the same, and a stationary cam adapted to actuate the pistons so as to receive the fruit, compress it against the casing adjacent to the openings *e*, and discharge the pulp through the opening T, as the drum is rotated, substantially as shown and described.

5. In a fruit pulping machine, the combination with a circular casing provided with openings or perforations *e*, and with feed and discharge openings K and T, of a drum F provided with passages *f* located at right angles to each other and to the axis of the drum, pistons C and C', and D and D', located in the passages *f* and secured together so as to be actuated in pairs, means for rotating the drum, means for actuating the pistons so as to receive, and compress the fruit and discharge the pulp as the drum is rotated, and means for preventing more than a certain pressure from being exerted by the pistons, substantially as shown and described.

6. In a fruit pulping machine, the combination with a circular casing provided with openings or perforations *e*, and with feed and discharge openings K and T, of a drum F, provided with passages *f* located at right angles to each other and to the axis of the drum, pistons C and C', and D and D', located in the passages *f* and secured together so as to be actuated in pairs, means for rotating the drum, a cam E, rigidly mounted upon a revoluble shaft L, and located within the drum and adapted to actuate the pistons as the drum is rotated, a tappet M rigidly secured to the shaft L, and a weighted lever N, engaging the end of the tappet M, in such manner as to normally prevent the rotation of the shaft L, substantially as shown and described.

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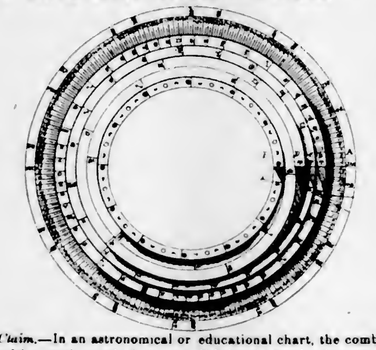
531,059. **SEWING-MACHINE.** FRED ONEILL, Redlands, Cal., assignor to himself, E. P. Whitney, and G. E. Harpham, same place. Filed Nov. 13, 1893. Serial No. 490,870. (No model.)



*Claim.*—In a sewing machine, the combination, with a presser bar suitably attached to the head of such machine, said bar consisting of the vertical portion *a*, the horizontal and rearwardly extending portion *b*, and the horizontal rod *c* extending laterally under the arm of the machine, of the presser foot *d*, adjustable on the rod *c*, substantially as set forth herein.

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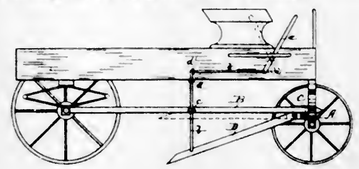
531,060. **ASTRONOMICAL CHART.** FRANK E. ORMSBY, Chicago, Ill. Filed Mar. 29, 1894. Serial No. 505,586. (No model.)



*Claim.*—In an astronomical or educational chart, the combination, with a stationary bed-piece or disk bearing a circular arrangement of figures representing a yearly calendar, and certain signs relating to the movements of the earth, of movable or revoluble rings or disks superposed upon said bed-piece or disk, on a common axis or pivot at the center of the latter, and bearing the signs of the zodiac and certain division lines denoting the movements thereof due to the movement of the earth, substantially as set forth.

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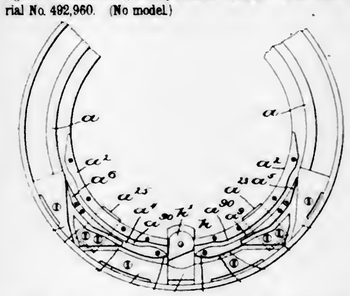
531,061. **WAGON-BRAKE.** WILLIAM PETERING, Centre, Ohio. Filed Aug. 24, 1894. Serial No. 521,205. (No model.)



*Claim.*—In a wagon brake, the combination with a wagon body, and running gear; of a brake bar D provided with a forked end, pivoted to the front axle; a hand lever (*e*) pivoted to the wagon body; and a rope attached to said hand lever, and to the lower end of said brake bar; said rope provided with guides on said wagon body, and on the coupling pole, as herein described.

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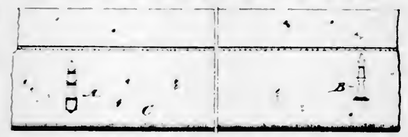
531,062. **KNITTING-MACHINE.** JOHN F. PHARO, Danville, assignor to Moritz Boas, St. Hyacinthe, Canada. Filed Dec. 7, 1893. Serial No. 492,960. (No model.)



*Claim.*—In a reversible circular knitting machine the following instrumentalities, viz:—a cam ring having right and left stitch cams and needle elevating cams and provided with right and left knitting grooves, each leading under said right and left stitch cams, they occupying a position in a lower plane, said grooves crossing each other between stationary points, portions of said grooves from their crossing points in opposite directions forming non-knitting and also topping grooves, a slidable carriage located at the junction of said grooves and having a movable directing cam and a guard; and a cam, and intermediate devices actuated thereby to move said carriage down at the commencement of a reciprocating course to enable the directing cam to direct the needles to be used in that course into the knitting groove, and then to elevate said cam to prevent the entrance into said knitting groove of the needles not to knit in said course, and enable the needles already used in that course to return from the knitting into the non-knitting groove preparatory to knitting a succeeding reciprocal course, substantially as described.

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531,063. **TROUSERS-FASTENER.** JOHN N. RHOADS, Philadelphia Pa. Filed Feb. 28, 1894. Serial No. 501,751. (No model.)



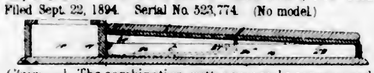
*Claim.*—In trousers, a leg fastening device, comprising a hook part, one end portion of which is bent to form the hook proper, and whose opposite, substantially straight portion is tapered to a point and provided with lateral retaining barbs, and a co-acting eye part, having a similar substantial straight, pointed and barbed end portion, and an opposite portion bent at substantially right angles and apertured for engagement with said hook, said parts being secured to the inside of the lower portion of the trousers leg, and adapted to be brought together and engaged, substantially as specified.

**531,064. TIRE-TIGHTENER.** THOMAS RODWELL, Baraboo, Wis. Filed June 22, 1894. Serial No. 515,409. (No model.)



*Claim.*—A tire-tightener, consisting of two blocks connected to the inner ends of the two adjoining fellies, a screw and guide-pin connected to one of the blocks, a hole and a guide-mortise in the end of the opposite block, to receive the ends of the screw and guide pin respectively, a nut upon the screw, and jamb-plates interposed between the blocks, substantially as and for the purpose set forth.

**531,065. WRITING-TABLET.** MAX RUBIN, New York, N. Y. Filed Sept. 22, 1894. Serial No. 523,774. (No model.)



*Claim.*—1. The combination, with a case and a cover or pad therefor, of a double hinge connected with the cover or pad, at or near its center and likewise connected with the case at or near one end of the compartment to be covered, and a keeper adapted to hold the hinge in a closed position yet admit of release upon an upward movement of the hinge, substantially as shown and described.

2. The combination, with a case and a cover or pad for said case, of a double hinge connected with the cover or pad at or near its center, and likewise connected with the case at or near one end of the compartment to be covered, the side members of the hinge being adapted to enter a recess between the cover and the body of the case when the cover is in horizontal position or substantially so, as and for the purpose specified.

3. The combination, with the case of a writing tablet or equivalent article, the said case being provided with recesses in its side portions, and a cover or pad adapted to close a receptacle in the case, of a hinge comprising a bow section upon which the cover or pad is fulcrumed between its ends, and leg sections located at an angle to the bow section, each leg section terminating in a crank arm and having a crank section with the bow section, and means, substantially as described, for pivoting the crank arms at the extremities of the hinge to the casing adjacent to the recesses therein, whereby the cover may be reversed, and when closed the leg sections of the hinge will be concealed in the recesses in the casing, as and for the purpose specified.

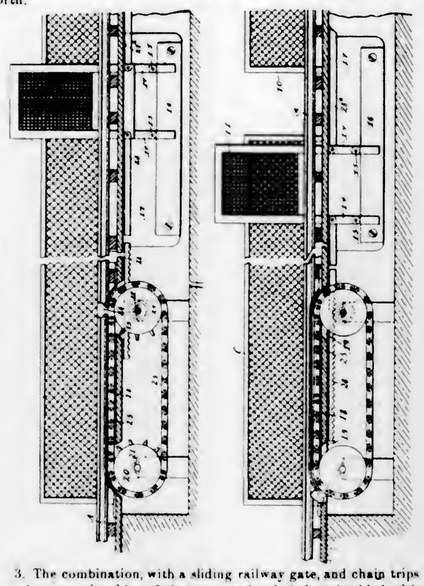
4. The combination, with the casing of a writing tablet, or like article, provided with recesses at opposite sides of a compartment contained in the casing, and a cover or pad adapted to close the said compartment, of a yoke-shaped hinge comprising a bow member pivotally connected with the cover or pad at or near its center, and leg sections located at opposite sides of the cover or pad, being connected with the bow section by connecting rods located at substantially a right angle to both the bow and leg sections, each leg section terminating at its extremity in a crank arm, and sockets located adjacent to the recesses in the said case, in which the crank arms of the hinge are mounted to turn, as and for the purpose specified.

5. The combination, with the casing of a writing tablet, or like article, provided with recesses at opposite sides of a compartment contained in the casing, and a cover or pad adapted to cover the said compartment, of a yoke-shaped hinge comprising a bow member pivotally connected with the cover or pad at or near its center, and leg sections located at opposite sides of the cover or pad, being connected with the bow section by connecting rods located substantially at a right angle to both the bow and leg sections, each leg section terminating at its extremity in a crank arm, sockets located adjacent to the recesses in the said case, in which the crank arms of the hinge are mounted to turn, and keepers adapted to hold the leg sections of the hinge concealed in the recesses of the case when the pad or cover is over the compartment therein, as and for the purpose set forth.

**531,066. RAILWAY-CROSSING GATE.** JAMES RUTHERFORD, Brooklyn, N. Y. Filed July 28, 1894. Serial No. 518,825. (No model.)

*Claim.*—1. The combination with a railway gate, of an endless chain carried on vertically disposed sprocket wheels mounted beneath the track; the upper run of the chain being provided with a projection working longitudinally between the rails, and an operating mechanism connecting the shaft of one of the sprocket wheels with the gate; one such endless chain and the mechanism operated thereby being located at each side of the crossing whereby the gate will be opened and closed, substantially as shown and described.

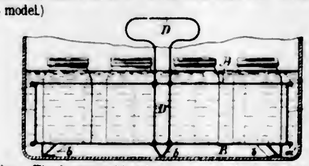
2. The combination, with a sliding railway gate and sliding trips located one at each side of the gate and adapted to be operated by a moving train, of pinions actuated by the said trips, and shifting bars connected with opposite sides of the gate, the bars being provided with rack surfaces engaging with the pinions, the rack surfaces of the bars engaging with opposite sides of the pinions, whereby the action of one is the reverse of that of the other, as and for the purpose set forth.



3. The combination, with a sliding railway gate, and chain trips located at opposite sides of the gate, each trip being provided with an offset upon its upper stretch, adapted to be acted upon by a moving train, the offsets being so located that one will be in position to be engaged by while the other will be removed from contact with the train, of pinions actuated by the said chain trips, shifting bars attached to opposite sides of the gate and provided with rack surfaces, the rack of one bar engaging with the under portion of the periphery of its pinion, and the rack of the opposite bar being in engagement with the upper peripheral portion of its pinion, as and for the purpose specified.

4. The combination, with railway gates at opposite sides of a line of tracks, the gates being held to slide in opposite directions, chain trips located in each track at opposite sides of the gates, said chain trips being provided with projections to be acted upon by a passing train, and pinions actuated by the said chain trips, the pinions of two transversely opposing trips being on the same shaft, of shifting bars connected with opposite sides of the gates, the said shifting bars being provided with racked surfaces engaging with the pinions actuated by the trips, the shifting bars of one track engaging oppositely with their pinions, the corresponding shifting bars of the adjoining track being reversely engaged with their pinions, whereby, if one trip is actuated both gates will be opened or closed, sliding in opposite directions, and means, substantially as described, for guarding the trips, as and for the purpose specified.

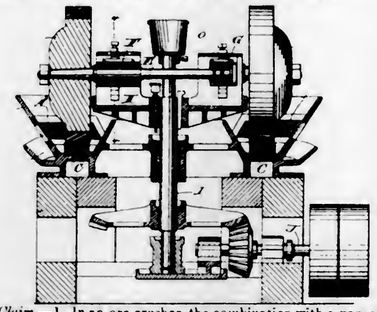
**531,067. APPARATUS FOR PRESERVING FRUITS.** SYLVESTER S. SAVAGE, Harrison, N. J. Filed Mar. 20, 1894. Serial No. 504,415. (No model.)



*Claim.*—The improved holder or receptacle for fruit jars, in which is combined a top plate having a series of openings therein to receive the fruit jars, a bottom plate on which said jars rest and having a supporting foot at each corner, a series of side plates securing said top and bottom plates in position, and a lifter composed of a single piece of sheet metal bent to form a handle at the apex or top, and two prongs arranged parallel with each other which pass through the central portion of said top plate to the bottom plate and securely fastened to each to hold them in position, and a central support or foot, secured to said bottom plate, as described and for the purposes set forth.



**531,068. ORE-CRUSHER.** AUGUST H. SCHIERHOLZ, San Francisco, Cal. Filed Mar. 26, 1894. Serial No. 506,127. (No model.)

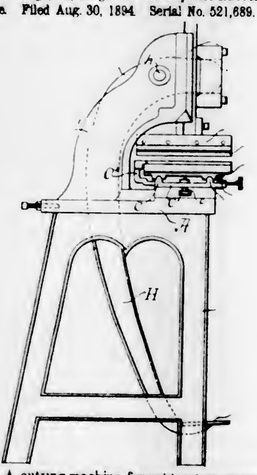


*Claim.*—1. In an ore crusher, the combination with a pan, and a vertical and rotary shaft, of a frame secured to the upper end of the said shaft, a vertically sliding bearing at each end of the frame, a trunnion mounted at each end of said frame, the trunnion at one end of the frame being opposite the sliding bearing at the opposite end of the frame, parallel shafts mounted in the said bearings and trunnions, and a crushing roller on one end of each shaft, substantially as described.

2. An ore crusher, comprising a ring-shaped pan provided with screen covered openings, a central vertical and rotary shaft projecting above the pan, a frame secured to the upper end of the shaft, a vertically sliding and a pivoted bearing at each end of the frame, the sliding bearings being opposite the pivoted bearings, parallel shafts mounted in the said bearings, a crushing roller on one end of each shaft, and a scraper secured to the frame and projecting into the pan, substantially as described.

3. An ore crusher, comprising a ring-shaped pan provided with screen covered openings, a vertical and rotary shaft, a tank supported on the upper end of the shaft, a pipe leading from the tank to the pan, a frame secured to the said shaft below the tank, a vertically sliding and pivoted bearing at each end of the frame, two parallel shafts mounted in the said bearings, a crushing roller on one end of each shaft, and a scraper secured to the frame and projecting into the pan, substantially as herein shown and described.

**531,069. MACHINE FOR CUTTING RUBBER TYPE.** LOUIS K. SCOTFORD, Chicago, Ill., assignor to the Superior Rubber Type Company, same place. Filed Aug. 30, 1894. Serial No. 521,689. (No model.)



*Claim.*—1. A cutting machine for rubber type comprising a vertically reciprocating knife, a table movable beneath the same at right angles to the cutting edge of the knife, stationary guide overlapping the table at the side edge of the same, and a guide attached to the table at the end of the same, substantially as described.

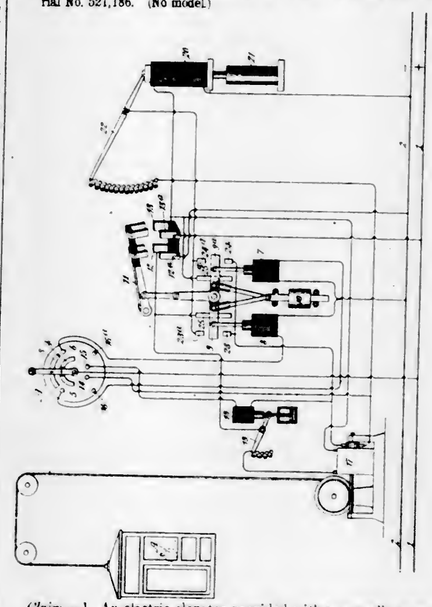
2. A cutting machine for rubber type comprising a vertically reciprocating knife, a table movable beneath the same at right angles to the cutting edge of the knife, stationary guide overlapping the table at the side edge of the same, a guide attached to the table at the end of the same, said stationary guide being provided with a notch to receive the knife, substantially as described.

3. A cutting machine for rubber type comprising a vertically reciprocating knife and a sliding carriage movable beneath and in a direction at right angles to the cutting edge of the knife, said table being provided in its upper surface with a plurality of parallel grooves placed close together and arranged parallel with the path of the table, substantially as described.

4. A cutting machine for rubber type comprising a vertically reciprocating knife, a horizontally movable table beneath the same, a stationary guide overhanging the edge of the table provided with a notch to receive the knife, a guide carried by the table, and means for giving endwise movement to the table, substantially as described.

5. A cutting machine for rubber type comprising a machine frame, a vertically reciprocating knife mounted thereon, a sliding carriage mounted beneath the knife and provided with a cutting surface or table of yielding material against which the knife edge acts, horizontal ways for supporting said table, a stationary guide overhanging the side edge of the table, a guide attached to the table, and means for moving the table, substantially as described.

**531,070. CONTROLLING DEVICE FOR ELEVATORS.** ALONZO B. SEE and WALTER L. TYLER, Brooklyn, N. Y. Filed Aug. 24, 1894. Serial No. 521,186. (No model.)

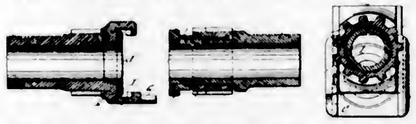


*Claim.*—1. An electric elevator provided with a normally open-circuited driving shunt wound motor, a controller mounted on the car, connections for closing the circuit when the controller is operated and gradually increasing the speed of the motor, and a circuit-closing device on the elevator for gradually varying the resistance of the field-magnet circuit.

2. An electric elevator provided with a stationary shunt-wound motor, a magnetically controlled reversing switch and circuit-closer at or near the motor, a resistance in the armature circuit, a regulator for gradually cutting it out, a regulator for gradually varying the resistance of the field-magnet circuit, and a controller mounted on the car provided with contacts for controlling the reversing switch, the circuit-closer and the field-magnet resistance.

3. An electric elevator provided with a stationary shunt-wound electric motor, a circuit-closer and reversing switch at or near the motor, a controller mounted on the car, electrical connections for operating the switch and circuit-closer, a gradually variable resistance in the armature and field-magnet circuits, respectively and solenoids for successively operating them and thereby varying the motor speed when the controller is manipulated.

531,071. COUPLING. SIMON A. STARLEY, Suspension Bridge, N. Y. Filed Sept. 7, 1894. Serial No. 522,322. (No model.)

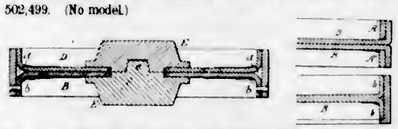


*Claim.*—1. A coupling, comprising a coupling member having a head formed with parallel transverse guideways and a rack, a second coupling member having a head formed, with lateral guides adapted to engage the said guideways, and a gear wheel mounted to rotate loosely on the said second head and adapted to engage the said rack, substantially as shown and described.

2. A coupling, comprising a coupling member having a head formed with guideways tapering from top to the bottom, a rack held intermediate of the said head alongside one of the guideways, a second coupling head formed with tapering guides adapted to engage the said guideways, and a gear wheel mounted to turn loosely on the said second head and adapted to mesh with the said rack, substantially as shown and described.

3. A coupling, comprising a member provided with lateral projections having parallel transverse beveled guide ways, one of said projections being also provided with a rack surface arranged parallel to said guide-ways, and a member having parallel beveled transverse guides adapted to engage and slide in said guide-ways, and a gear wheel mounted to turn on said second member with its teeth in engagement with the rack surface of the first-named member, said gear wheel having a roughened portion which projects beyond the lateral projections of the first-named member, substantially as set forth.

531,072. PROCESS OF MAKING WROUGHT-METAL WHEELS. ARCHY A. STEVENSON, Burnham, Pa. Filed Mar. 6, 1894. Serial No. 502,499. (No model.)



*Claim.*—1. The process herein described of making wrought metal wheels or wheel centers, said process consisting in flanging and perforating a plate, making a ring section adapted to the flange of the plate and making two hub sections, having means for uniting one with the other when heated, separately heating the hub sections, assembling the flanged plate and ring, securing the heated hub sections together and to the plate, then heating the composite structure to a welding heat and finally subjecting it to the action of dies whereby it is welded into a solid mass, substantially as described

2. The process herein described of making wrought metal wheels consisting in first forming a ring, second flanging a plate and making the central perforation therein, third securing said plate within the ring, fourth making another flanged plate and mounting it on the first flanged plate, fifth making the two hub sections, one having a projection adapted to a recess in the other, uniting said hub sections together and to the plate and heating the assembled parts and forging the same, substantially as described.

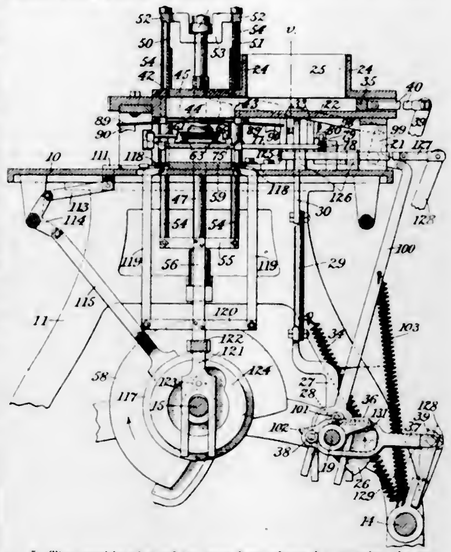
531,073. PACKAGING-MACHINE. JOHN S. VOITEK, New York, N. Y. Filed Feb. 19, 1894. Serial No. 500 629. (No model.)

*Claim.*—1. The combination of a tube having an opening in its side through which the material to be operated upon may be introduced, guards at the ends of said opening above the top of the tube, a cover for said opening hinged at one side thereof, to swing between said guards, whereby a hopper is formed to receive the loose material when the cover is turned back, a cam and intermediate means for operating said cover to compact the material within the tube, and means to expel the compacted material from said tube, substantially as shown and described.

2. The combination of a tube having an opening in its side through which the material to be operated upon may be introduced, means operating through said opening to compact the material placed within the tube, means to force the material from beneath said compacting device and from said tube, an open box to receive the partly compacted material from said tube, means to lay a wrapper across said box between it and the tube and a plunger and means to operate the same to finally compress the material in said box, substantially as shown and described,

3. The combination of a feed-tube, a plunger working transversely through said tube, an open box to receive the material from said tube, independent guard plates adjacent to the plunger on opposite ends thereof and parallel therewith, and means to move said guard plates in advance of the plunger, substantially as shown and described.

4. The combination of a feed-tube, a plunger working transversely through said tube, an open box to receive the material from said tube, yielding doors hinged at opposite sides of the opening in the tube toward which the plunger moves, independent guard plates adjacent to the plunger on opposite ends thereof and parallel therewith, and means to move said guard plates in advance of the plunger, substantially as shown and described.

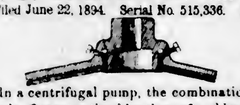


5. The combination of an open box adapted to receive the material to be wrapped and a wrapper therefor, leaves hinged in proximity to the sides of said box, means to move said leaves to fold the sides of the wrapper down upon the cake, wings hinged to the ends of said leaves, arms supported above said box and means to depress said arms to push said wings down to fold down the projecting ends of the wrapper while the leaves are in position over the cake, substantially as shown and described.

6. The combination of an open box adapted to receive the material to be wrapped and a wrapper therefor, arms pivoted in proximity to the corners of said box, wings pivoted upon the ends of said arms, springs pressing said wings toward the box and means to operate said arms to cause the wings to fold in the projecting ends of the wrapper.

7. The combination of an open box, a plunger, means to operate the same to compress the material in the box, a reciprocatiog carriage having fingers to grasp a wrapper and lay it across the box, a slide having a lip against which a wrapper may be placed, and means to move said slide for the purpose of placing the wrapper in position to be grasped by said carriage, substantially as shown and described.

531,074. CENTRIFUGAL PUMP. MATT WAGNER, Tacoma, Wash. Filed June 22, 1894. Serial No. 515,336. (No model.)



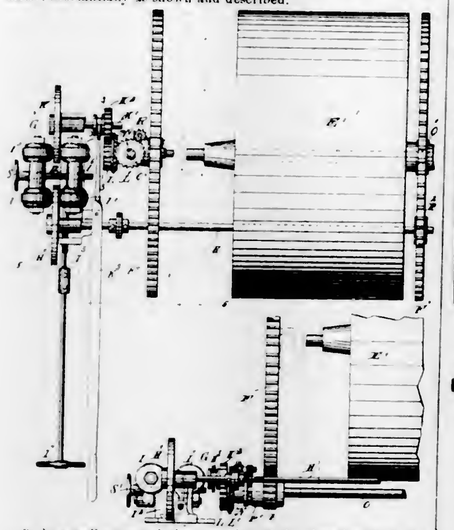
*Claim.*—In a centrifugal pump, the combination with the wheel having an annular flange on the sides thereof and its casing having an annular groove near the center thereof, an annular ring in said groove, an annular wedge back of the ring and a set-screw engaging the ring, the said annular flange on said wheel adapted to fit against the sides of the annular ring in said groove to prevent the ingress of sand and the like, substantially as described.

531,075. WALL-PAPER-PRINTING MACHINE. WILLIAM H. WALDRON, New Brunswick, N. J. Filed May 8, 1894. Serial No. 510,462. (No model.)

*Claim.*—1. A wall paper printing machine, comprising two printing machines, a drying apparatus intermediate of the said machines and a compensating device for the printing rollers of the second printing machine, to run the said printing rollers at a speed corresponding to the design of the paper printed by the first printing machine, substantially as shown and described.



2. A wall paper printing machine, provided with two printing machines each comprising a cylinder and printing rollers, and a compensating device for the printing rollers of the second machine, to run the said printing rollers at a speed corresponding to the design of the paper passing over the cylinders, independent of the speed of the latter, substantially as shown and described.



3. In a wall paper printing machine of the class described, the combination with the cylinder, of printing rollers for the said cylinder, gear wheels for driving the said printing rollers, and a compensating mechanism for regulating the speed of the said gear wheels according to the design already printed on the paper before reaching the cylinder, substantially as shown and described.

4. A wall paper printing machine of the class described, provided with a cylinder, impression rollers, and a compensating device for the impression rollers, comprising a drive shaft adapted to rotate at a predetermined rate of speed relatively to the cylinder, a friction disk held on the said driving shaft, two sets of friction wheels, of which one engages the said friction disk, a second friction disk engaged by the second set of friction wheels, a gearing for the shaft of the said second friction disk, and a transmitting device driven from the said gearing and having an operative connection with the printing rollers to modify the speed of the latter, substantially as shown and described.

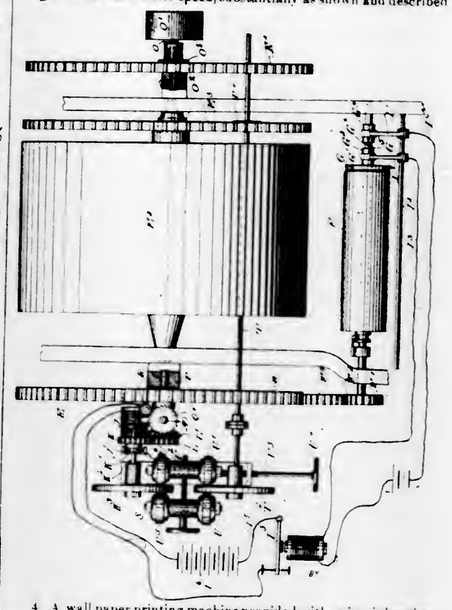
5. A printing machine provided with an impression cylinder and printing rollers, and a driving mechanism for the said printing rollers, and provided with a speed modifying device operatively connected with the said printing rollers for varying the rate of speed of the printing rollers relative to the speed of the said impression cylinder, substantially as shown and described

531,076. WALL-PAPER-PRINTING MACHINE. WILLIAM H. WALDRON, New Brunswick, N. J. Filed June 2, 1894. Serial No. 513,239. (No model.)

*Claim.*—1. A wall paper machine of the class described, provided with a compensating device for driving the printing rollers at a higher or lower rate of speed, the said compensating device comprising a driven transmitting gear wheel for rotating the printing rollers, an auxiliary driving mechanism for the said transmitting gear wheel to increase or decrease the latter's speed, and an electro magnetic shifting device for connecting and disconnecting the said transmitting gear wheel and the said auxiliary driving mechanism, substantially as described.

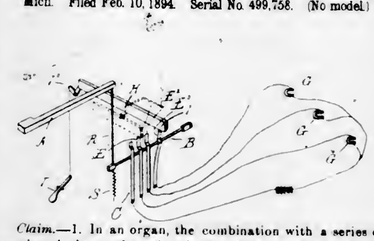
2 A wall paper machine of the class described provided with a compensating device for driving the printing rollers at a higher or lower rate of speed, the said compensating device comprising a driven transmitting gear wheel for rotating the printing rollers, an auxiliary driving mechanism for the said transmitting gear wheel to increase or decrease the latter's speed, an electro-magnetic shifting device for connecting and disconnecting the said transmitting gear wheel and the said auxiliary driving mechanism and a circuit breaker for controlling the said electro-magnetic shifting device, and controlled from the paper to be printed, substantially as described.

3. A wall paper printing machine of the class described, provided with an electro magnetic shifting device comprising a shifting lever, an electro magnet adapted to attract and release the said shifting lever, a circuit breaker in the circuit for the said electro magnet, the said circuit breaker including rotary parts closing the circuit when driven at a corresponding speed, and breaking the circuit when traveling at a different rate of speed, substantially as shown and described



4. A wall paper printing machine provided with a circuit breaker comprising a driven shaft, a spring-pressed wing held movable on the said shaft, a wheel driven from the traveling wall paper, a second spring-pressed wing, adapted to contact with the said first named wing and held movable on the said wheel, and an electric circuit connected with the said wings, substantially as described.

531,077. COUPLER FOR ORGANS. CHARLES WALES, Detroit, Mich. Filed Feb. 10, 1894. Serial No. 499,758. (No model.)



*Claim.*—1. In an organ, the combination with a series of pipe actuating devices and an electric circuit arranged in multiple, contacts in the circuit, a switch engaging the contacts, a key for actuating the switch, and means for engaging and moving the contacts out of operative relation with the switch, substantially as described.

2. In an organ, a coupling device comprising an electric circuit having movable terminals, a movable switch for the terminals, and means for moving the terminals out of the path of the switch, substantially as described.

3. In an organ, the combination of a key, a switch bar operated thereby, a series of contacts for said bar, in multiple circuit with pipe actuating devices, and means for independently moving said contacts into and out of operative relation to said switch bar, substantially as described.

4 In an organ, a coupling device comprising an electric circuit having movable terminals, a movable switch for the terminals, and means for preventing the terminals from co-operating with the switch

to form the circuit when the switch is moved, substantially as described.

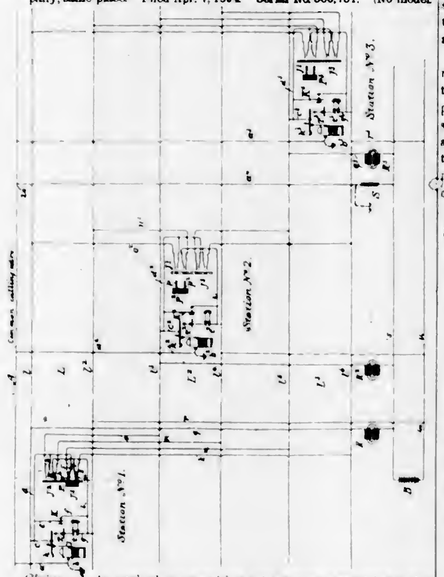
5. In an organ, the combination with a series of circuits arranged in multiple with a battery, of a series of switches, springs for normally holding the switches in inoperative positions, a universal bar to which the springs are attached, a toggle lever supporting the bar, and means for moving the toggle lever to vary the tension of the springs, substantially as described.

6. In a coupling device for organs, the combination with circuits, of terminals therefor, a support having groove therein, a block on which the terminals are secured, and a key bar for locking the blocks to the support, substantially as described.

7. In an organ, the combination with a series of spring terminals, of electric circuits each having shoulders thereon, of a switch bar normally below the shoulders, a key for actuating the bar, and means for bending the contacts to throw the contacts out of the path of the switch bar, substantially as described.

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**531,078. TELEPHONE SPEAKING-TUBE SYSTEM.** THOMAS C WALES, Jr., Boston, Mass., assignor to the American Bell Telephone Company, same place. Filed Apr. 7, 1894. Serial No. 506,731. (No model.




*Claim.*—1. In a telephone speaking tube system comprising a plurality of stations, the combination of a plurality of circuits; a common source of electricity; a call wire connected by branches to said circuits and source of electricity; said circuits extending to each station and there provided with normally open branch terminal switches or spring-jacks, with a circuit uniter, with a call key in a normally open bridge of the home circuit, and with a signal receiving instrument in a branch of said call-wire; and branches from said circuit conductors to the said source of electricity containing an electromagnetic resistance; whereby upon the connection of the circuit uniter with a spring-jacket and the closure of said key bridge, the signal receiving instrument at a distant station is operated, substantially as described.

2. In a telephone speaking tube system comprising a plurality of stations, the combination of a plurality of circuits, a common source of electricity, and a call wire connected by branches to said circuits and source of electricity, as set forth; the said circuits extending to each station and there provided with normally open branch terminal switches or spring jacks, with a circuit uniter, with a call key in a normally open bridge of the home circuit, and with a signal receiving instrument in a branch of said call wire; and branches from the said circuit conductors to the said source of electricity one of each pair having included therein an electro-magnetic resistance, whereby upon the connection of the circuit uniter with a spring jack, and the closure of the said key bridge the signal receiving instrument at a distant station is operated.

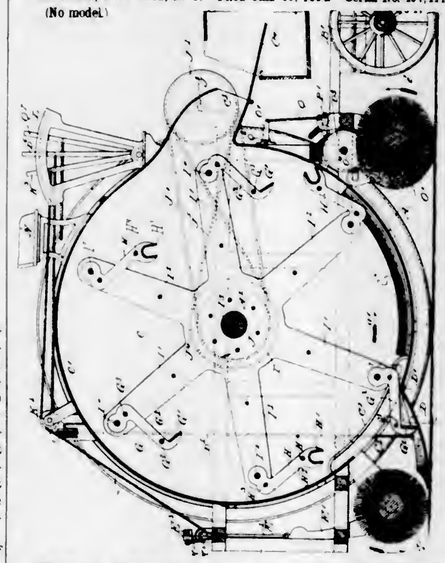
3. In a telephone speaking tube system comprising a plurality of stations, the combination of a plurality of circuits, a common source of electricity, and a call wire as set forth, the said circuits extending to each station and there provided with normally open branch terminal switches or spring jacks, one for each circuit, with a circuit uniter, and telephones in a normally open bridge of the home circuit; and branches from the said circuit conductors to the said source of electricity one of each pair having included therein an electro-magnetic resistance; whereby upon the connection of the circuit uniter with a spring jack and the removal of the telephone from the hook switch, the home circuit is linked to a distant station, and the telephones are automatically bridged into the said circuit.

4. In a telephone speaking tube system comprising a plurality of stations, the combination of a plurality of circuits, a common source of electricity, and a call wire, as set forth, the said circuits extending to each station and provided with normally open branch terminal switches or spring jacks one for each circuit, the inner springs of which are connected to the respective conductors of the home circuit and the outer springs of which are connected to the respective conductors of the associated circuits as set forth with a plug connector, and telephones in a normally open bridge of the home circuit, and branches from the said circuit conductors to the said source of electricity one of each pair having included therein an electro-magnetic resistance; whereby upon the insertion of the plug connector into a spring jack, and the removal of the telephone from the hook switch, the home circuit is linked to a distant station, and the telephones are automatically bridged into the said circuit.

5. In a telephonic system of interconnection comprising a plurality of stations, the combination of a plurality of circuits extending to each station, and a common source of current supply for signaling purposes associated with each circuit, there being at each station switching and calling devices, an electro-magnetic retardation coil in a branch conductor between one pole of the source of electricity and the home circuit, and a call bell in the signaling circuit which is normally a derived circuit around the said electro-magnetic retardation coils, as set forth

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**531,079. STREET-SWEEPER.** WILLIAM H. WALKER and THOMAS H. BOYCE, New York, N. Y. Filed Jan. 19, 1894. Serial No. 497,411. (No model.)



*Claim.*—1. A street sweeping machine provided with an elevator having a casing, provided with an inlet and an outlet and alternately arranged scrapers and buckets, adapted to travel along the casing from the inlet thereof to the outlet, the scrapers being constructed to bring the dirt within the casing, and the buckets to discharge the dirt from the casing, substantially as shown and described.

2. The combination, with the elevator casing, having an inlet and an outlet, and the adjustable pan arranged at the inlet of the casing, of a wheel mounted to revolve within the casing, and alternately arranged scrapers and buckets held loosely on the wheel, the scrapers being constructed to bring the dirt from the pan within the casing, and the buckets to discharge the dirt through the outlet of the casing, substantially as described.

3. A street sweeping machine comprising driving wheels, an axle carrying the said wheels, a frame supported on the said axle, an elevator supported on the said frame and provided with a casing having an inlet and an outlet, and a revolving wheel carrying alternately arranged scrapers and buckets, the scrapers being adapted to bring the dirt within the casing, and the buckets to discharge it therefrom a pan hinged on the rim of the said casing at the inlet opening of the latter, and a brush mounted to turn, to sweep the dirt onto the said pan, the said brush being driven from one of the said drive wheels, substantially as shown and described.



4. A street sweeping machine comprising driving wheels, an axle carrying the said wheels, a frame supported on the said axle, an elevator supported on the said frame and provided with a casing having an inlet and an outlet, a revolving wheel carrying alternately arranged scrapers and buckets, the scrapers being adapted to bring the dirt within the casing, and the buckets to discharge it therefrom a pan hinged on the rim of the said casing at the inlet opening of the latter, a brush mounted to turn, to sweep the dirt onto the said pan, the said brush being driven from one of the said drive wheels, and means, substantially as described, for raising and lowering the said brush and the said pan, substantially as shown and described.

5. A street sweeping machine comprising driving wheels, an axle carrying the said wheels, a frame supported on the said axle, an elevator supported on the said frame and provided with a casing having an inlet and an outlet, a revolving wheel carrying alternately arranged scrapers and buckets, the scrapers being adapted to bring the dirt within the casing, and the buckets to discharge it therefrom a pan hinged on the rim of the said casing at the inlet opening of the latter, a brush mounted to turn, to sweep the dirt onto the said pan, the said brush being driven from one of the said drive wheels, and a vehicle adapted to be connected with the front of the said frame, and adapted to be connected with the discharge chute of the said casing, substantially as shown and described.

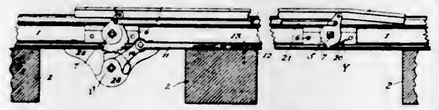
6. A street sweeping machine provided with an elevator comprising a fixed circular casing having an inlet opening in its rim, and a discharge spout likewise in the rim, a wheel mounted to turn within the said casing, scrapers and buckets held loosely on spokes of the said wheel, the scrapers being adapted to bring the dirt within the casing, and the buckets to discharge it therefrom, and cams arranged in the said casing and adapted to be engaged by projecting ends of the said buckets to hold the latter in a forward position, substantially as shown and described.

7. A street sweeping machine provided with an elevator comprising a fixed circular casing having an inlet opening in its rim, and a discharge spout likewise in the rim, a wheel mounted to turn within the said casing, scrapers and buckets held loosely on spokes of the said wheel, the buckets being adapted to discharge the dirt from the casing, and cams arranged in the said casing and adapted to be engaged by projecting ends of the said buckets to hold the latter in a forward position, and a pan hinged to the said casing at the rim thereof, and at the lower end of the inlet opening, the said scrapers being adapted to pass through the inlet opening onto the pan to engage the sweepings and move the same inwardly into the casing, substantially as shown and described.

8. A street sweeper provided with a circular casing having an inlet and a discharge spout, a wheel mounted to revolve in the casing, and a series of buckets each having a loose pivotal connection with the wheel so as to be able to make a complete rotation relatively to the wheel while the same turns in the casing, the buckets being adapted to pass into the discharge spout to discharge the sweepings into it, substantially as shown and described.

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**531,080. SWITCHING DEVICE FOR RAILROADS.** HERBERT L. WALTON and WILLIAM A. GRIFFITHS, Minneapolis, Minn. Filed Feb. 16, 1894. Serial No. 500,417. (No model.)



*Claim.*—1. In a switching device, the combination of a movable rail placed at the edge of the track rail and so as to come in contact with a passing car wheel, arms loosely attached to the movable rail and to the thin part of the track rail through a block, a portion of said arms having a segmental part extending below the said attachment thereof to the track rail, a frame adapted to be secured to the under side of the track rail and to loosely hold the lower end of an arm lever, a segment upon said arm lever extending above said loose attachment thereof to the frame, said segment having cogs which interlock with cogs upon the first named segment, and a rod attached to a switch lever and to the upper end of said lever arm, substantially as set forth.

2. In a switching device, the combination of a movable rail placed close to and running with the track rail and so as to come in contact with a passing car wheel, arms loosely attached to the movable rail and to the thin part of the track rail, a portion of said arms having a segmental part extending below the said attachment thereof to the track rail, a frame adapted to be secured to the under side of the track rail and to loosely hold the lower end of an arm lever, a segment upon said arm lever having cogs which interlock with cogs upon said first named segment, a rod attached to a switch lever adapted to throw the switch, a link attached to the outer end of said lever arm and connecting the same with said rod, and a spring adapted to return the switch to its first position and the movable rail to an elevated position, substantially as shown and described.

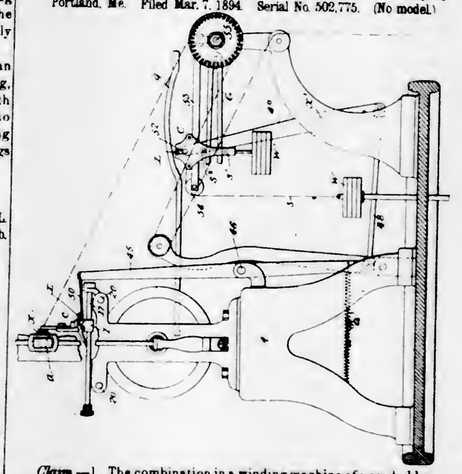
3. In a switching device, the combination of a movable rail placed at the edge of the track rail and so as to come in contact with a passing car wheel, arms loosely attached to the movable rail and to the thin part of the track rail, said arms having a segmental part extending below the said attachment thereof to the track rail, a frame adapted to be secured to the under side of the track rail and to loosely hold the lower end of an arm lever, a segment upon said arm lever having cogs which interlock with cogs upon said first named segment, a rod attached to the free end of said lever arm and to a switch lever adapted to receive the motion of said rod and throw the switch, a spring adapted to return the switch and to elevate the movable rail when the train has passed, and a switch stand connected with a connecting rod of the switch by a link, said connecting rod and link being provided with a head and loose collar, substantially as set forth

4. In a switching device, the combination of a movable rail placed at the edge of the track rail, and so as to come in contact with a passing car wheel, arms loosely attached to the movable rail and to the track, a longitudinal bar loosely secured to said arms at an intermediate point, a rod connected with a switch lever and with a movable arm, mechanism to transmit the motion of one of said first named arms to said last named arm, to move the rod and throw the switch, substantially as set forth.

5. In a switching device, the combination of a movable rail placed at the inner edge of the track rail, and so as to come in contact with the flange of a passing car wheel, arms loosely attached to the movable rail and to the track, a longitudinal bar loosely secured to said arms at an intermediate point, a rod connected with a switch lever and with a movable arm, mechanism to transmit the motion of one of said first named arms to said last named arm, to move the rod and throw the switch, and a spring tending to keep said movable rail in an elevated position, substantially as shown and described.

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**531,081. THREAD-WINDING MACHINE.** SIMON W. WARDWELL, Jr., Boston, Mass., assignor to the Universal Winding Company, Portland, Me. Filed Mar. 7, 1894. Serial No. 502,775. (No model.)



*Claim.*—1. The combination in a winding machine of a cop holder, a guide movable to and from the axis of said holder, means to reciprocate the guide longitudinally of the axis, and means for preventing the inward movement of the guide after it is moved outward by, and during the formation of, the cop, substantially as set forth.

2. The combination in a cop winding machine, of a cop tube holder, a thread guide and means for reciprocating it opposite to said holder, and devices for carrying the guide against the holder, means

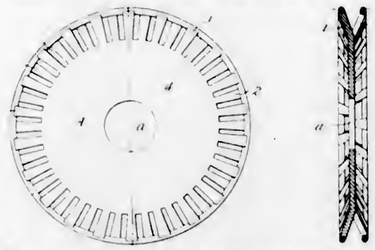
for preventing the inward movement of the guide after it is forced outward by and during the building up of the cop, substantially as set forth.

3. The combination of a cop tube holder, a reciprocating guide, and means for carrying it toward the cop, a support for said guide permitting it to move outward solely under the pressure of the increasing size of the cop, and engaging devices for preventing the inward movement of the guide after it has been forced outward, substantially as set forth.

4. The combination of the reciprocating guide, means for carrying it inward and a support permitting the outward movement of the guide, of a pawl and rack arranged to permit the outward movement, under the increasing size of the cop and to restrain the inward movement of the guide, substantially as set forth.

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**531,082. WHEEL FOR THREAD-TENSION.** SIMON W. WARDWELL, Jr., Boston, Mass., assignor to the Universal Winding Company, Portland, Me. Filed Mar. 7, 1894. Serial No. 502,776. (No model.)



*Claim.*—A thread tension device comprising a plate or disk having two series of alternating radially disposed fingers or projections bent to different sides at an angle to the body of the plate, the said fingers or projections being separated by intermediate spaces, and each series being connected or secured by a circumferential rim or band, substantially as described.

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**531,083. BOX.** ZADA B. WEBB, Whippany, N. J. Filed Nov. 29, 1892. Serial No. 453,485. (No model.)



*Claim.*—1. A box formed of flexible material, and comprising a bottom having its ends pointed and inclined slightly upward, and two sides approximately elliptical in shape and secured to the bottom, substantially as described.

2. A box formed of flexible material and comprising a bottom having its ends pointed and inclined slightly upward, two sides approximately elliptical in shape and secured to the bottom, the sides being provided with registering apertures at their upper edges, and a ribbon or cord passed through said apertures, substantially as described.

3. A box formed of flexible material, and comprising a bottom having inwardly turned triangular flaps at its ends, and sides integral with the bottom and having their outer edges curved and their ends inclined outwardly and secured to the flaps of the bottom, substantially as described.

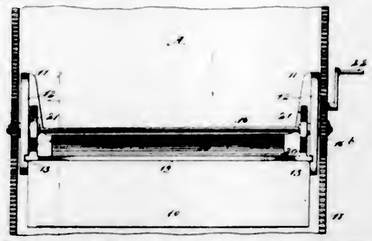
4. A box formed of flexible material, and comprising a bottom having inwardly turned and apertured flaps at its ends, sides having curved outer edges and provided with an aperture near the lower edge of each end and with apertures near their upper edges, ribbons or cords passed through the end apertures of the sides and the apertures of the flaps and tied, and a ribbon having its ends passed through the apertures in the upper edges of the sides and provided with knots, substantially as herein shown and described.

5. A blank for boxes, consisting of a rectangular central or bottom portion 10 having its ends scored diagonally across the corners to form triangular flaps 12, and side pieces 13 having curved outer edges 14 and inwardly converging ends 15, substantially as shown and described.

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**531,084. MACHINE FOR CUTTING STICK-CANDY.** JOHN M. ALLARDICE, Galveston, Tex. Filed Feb. 7, 1894. Serial No. 499,331. (No model.)

*Claim.*—1. In a candy cutting machine, the combination of a traveling bed, means for operating the bed, a reciprocating cutter mounted in the bed, and mechanism controlled by the bed operating mechanism for raising the cutter and allowing it to drop, substantially as described.



2. In a machine for cutting candy in lengths, and for analogous purposes, a bed having a raised surface thereon, a cutter carried by the bed, said cutter having timed movement to and from the raised surface of the bed, and means for driving the cutter, substantially as shown and described.

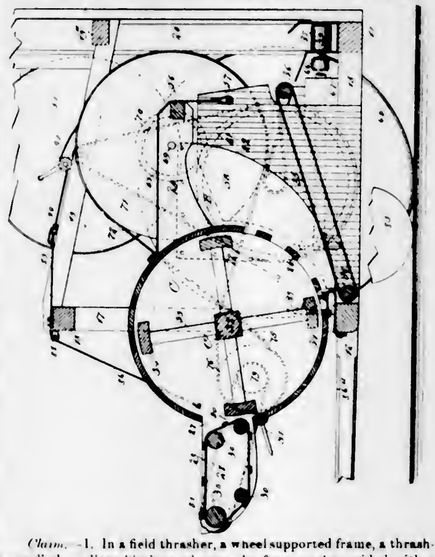
3. In a machine for cutting candy and for analogous purposes, a traveling bed, a drive shaft carried by the bed, pinions actuated from the drive shaft and adapted to engage with racks, and a reciprocating cutter actuated by the drive shaft and having timed approach to the bed, as and for the purpose set forth.

4. The combination, with a bed, standards projected therefrom, a drive shaft carried by the standards, driving gears carried by the shaft, and pinions actuated from said gears, adapted to engage with stationary racks, of a cutter having vertical movement over the bed and provided with racks upon one of its faces, and mutilated gears carried by the drive shaft and adapted for engagement with the racks of the cutter, as and for the purpose set forth.

5. The combination, with stationary racks, a bed located between the racks, having a beveled forward surface and a raised surface back of said beveled surface, and a drive shaft supported in bearings connected with the bed, of gears carried by the shaft, pinions meshing with the racks and with said gears, a knife capable of sliding movement above the bed and adapted for engagement with its raised surface, racks located upon the knife, and mutilated gear carried by the drive shaft and adapted for engagement with the racks of the knife, whereby the latter is raised and then allowed to drop, substantially as and for the purpose set forth.

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**531,085. FIELD THRASHING-MACHINE.** AXEL ANDERSON, Ronda, Tex. Filed Nov. 1, 1893. Serial No. 489,686. (No model.)



*Claim.*—1. In a field thrasher, a wheel supported frame, a thrashing cylinder adjustably located upon the frame and provided with a mouth at its front to receive the heads of standing grain, a mechanism for directing the heads of grain into the mouth, a flexible connection between the cylinder and the supporting frame, and means for raising and lowering said cylinder, as and for the purpose set forth.

2. In a field thrasher, a wheel supported frame, a thrashing cylinder mounted to swing vertically in said frame, and provided with a mouth at its front adapted to receive the heads of standing grain, a chamber located at the rear of the cylinder and into which the grain is delivered from said cylinder, and an adjustable connection between the lower part of the thrashing cylinder and the frame of the machine whereby the cylinder may be raised or lowered and the front lower portion of the chamber remain closed, substantially as shown and described.

3. In a field thrashing machine, the combination with a wheeled frame of a thrashing cylinder mounted to swing vertically in the frame and provided with a mouth at its front and an opening in its rear face, a chamber located at the rear of the cylinder, a flexible connection between the lower part of the cylinder and the supporting frame, and guard plates arranged at the sides of the chamber and adapted to move upward and downward with the said cylinder, substantially as shown and described.

4. In a field thrasher, a wheel supported frame, a thrashing cylinder provided with a mouth at its front and mounted to swing vertically upon the frame, a beater mounted to rotate in the said cylinder, a chamber located at the rear of the cylinder and into which the grain is delivered from said cylinder, a flexible connection between the lower part of the thrashing cylinder and the frame of the machine, a conveyer located in said chamber and leading from the thrashing cylinder, an elevator, and a winnowing device into which the elevator empties its contents, substantially as described.

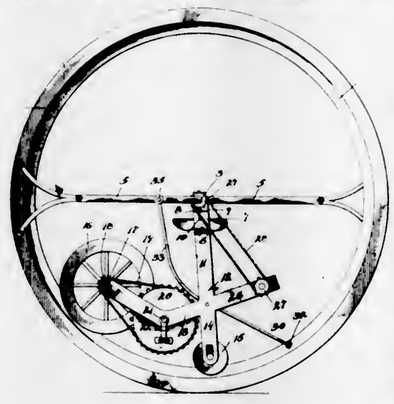
5. In a field thrasher, a wheel supported frame, a thrashing cylinder provided with rearwardly extending arms by which said cylinder is pivoted to the frame, the said cylinder having a mouth at its front to receive the grain, a feed mechanism for directing the heads of grain to the mouth, a chamber at the rear of the thrashing cylinder into which the cylinder discharges, a cover for said chamber secured to the rear of the cylinder and passing over the rearwardly extending arms, means for raising and lowering the said cylinder, and guard plates extending downward from the said rearwardly extending arms and adapted to move upward and downward as the cylinder is raised and lowered, the said guard plates closing the spaces between the upper ends of the side walls of the chamber and the under surface of the said arms, as and for the purpose set forth.

6. In a field thrashing machine, the combination with a wheeled frame, of a thrashing cylinder provided with rearwardly extending arms by which said cylinder is pivoted to the frame, the said cylinder being provided with a mouth at its front and an opening in its rear face, means for directing the grain into the said mouth, a beater mounted to rotate in the said cylinder, a chamber located at the rear of the cylinder, a conveyer belt located within said chamber, a flexible connection between the lower part of the cylinder and the supporting frame forming the front wall of the chamber when the cylinder is raised, a cover for said chamber, downwardly extending guard plates arranged to move with the said cylinder for the purpose specified, and means for raising and lowering said cylinder substantially as shown and described.

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**531,086. UNICYCLE.** FABIAN H. ARMISTEAD, Farmville, Va., assignor of one-fourth to J. R. Spencer and E. W. Speed, Hill City, S. D. Filed May 7, 1894. Serial No. 510,350. (No model.)



*Claim.*—1. In a unicycle, the combination with a rim having a central divided spindle held in place by radial spokes, of a bearing frame having extensible arms fulcrumed upon the spindle of the rim, a driving wheel having its shaft mounted in said frame and bearing upon the inner periphery of the rim, a guiding-wheel also mounted in the bearing-frame and bearing upon the inner periphery of the rim, a crank shaft provided with pedal cranks, and connections between the crank-shaft and the shaft of the driving-wheel, substantially as specified.

2. In a unicycle, the combination with a rim having a central divided spindle held in place by radial spokes, of a bearing frame having extensible arms fulcrumed upon said spindle upon opposite sides of the plane of the rim, a driving-wheel having its shaft mounted in bearings in the bearing-frame, a guiding-wheel mounted upon the bearing frame, a crank-shaft, connections between the crank-shaft and the shaft of the driving-wheel, and independent connections between the crank-shaft and the spindle of the rim, substantially as specified.

3. In a unicycle, the combination with a rim having a central divided spindle held in place by radial spokes, of a bearing frame having extensible arms fulcrumed upon said spindle upon opposite sides of the plane of the rim, a driving-wheel having its shaft mounted in bearings in the bearing-frame, a guiding-wheel mounted upon the bearing-frame, a crank shaft, chain-wheels carried by the crank-shaft and the shaft of the driving-wheel, a chain connecting said chain-wheels, a countershaft having chain wheels, chain-wheels fixed to the spindle of the rim upon opposite sides of the plane of the rim, a chain connecting a chain-wheel upon the crank-shaft with one of the chain-wheels upon the countershaft, and chains connecting other chain-wheels upon the countershaft with said chain-wheels upon the spindle of the rim, substantially as specified.

4. In a unicycle, the combination with a rim having a central spindle, a bearing-frame fulcrumed upon said spindle, driving and guiding wheels mounted upon the bearing-frame and bearing upon the inner periphery of the rim, and means for imparting motion to the driving-wheel, of a braking and guiding mechanism having a shoe provided with a central bearing surface to engage the inner periphery of the rim, and lateral bearing surfaces to engage either side surface of the rim, and means for operating said shoe, substantially as specified.

5. In a unicycle, the combination with a rim having a V-shaped track or guide and a central spindle, of a bearing-frame fulcrumed upon said spindle and provided with extensible arms, driving and guiding wheels mounted upon the bearing frame and bearing upon the V-shaped track or guide of the rim, means for imparting motion to the driving-wheel, and a braking and guiding mechanism comprising a shoe having a central and opposite lateral bearing surfaces, the central bearing-surface being adapted to engage the apex of the V-shaped track or guide, and the lateral bearing-surfaces being adapted to engage either side surface of said track or guide, and a stem carrying said shoe having a universal connection with the bearing frame and provided with a handle-bar, substantially as specified.

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**531,087. RAILWAY-GATE.** CHARLES A. BALL, Washington, D. C. Filed July 2, 1894. Serial No. 516,370. (No model.)

*Claim.*—1. In combination with an arm B; a cylinder, a piston mounted therein and connected with the arm; a main closed to the outside atmosphere, connected with the cylinder, and containing a fluid under pressure to act upon both faces of the piston, and means operated by a train for setting the fluid in motion.

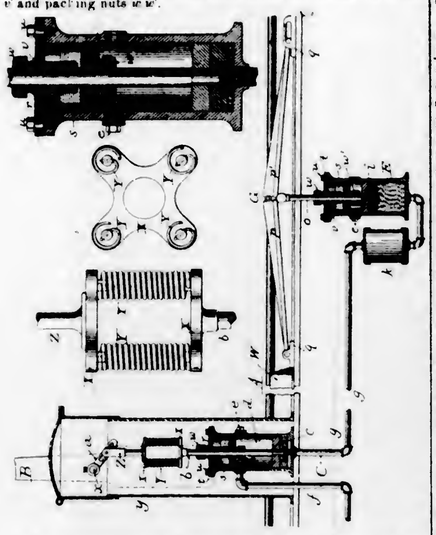
2. In combination with a main or pipe closed to the outside atmosphere and containing a fluid under pressure; a cylinder and piston at each end thereof for transmitting motion to the fluid; an arm B, and a piston mounted within a cylinder and interrupting or dividing the fluid; the main connecting with the latter cylinder above and below the piston, whereby the piston and the arm B connected therewith are balanced.

3. In combination with a main or pipe and the cylinders arranged at the ends thereof, and constituting with the main, a closed air-tight chamber containing a fluid under pressure; a cylinder connected with the main at a point between the ends of the latter and containing a piston which is subjected on both faces to the action of the fluid in the main, and which-piston divides the fluid into two distinct bodies, between or by which the piston is balanced; an arm B operatively connected with the said piston; pistons *h i* mounted within the cylinders at the ends of the main; and trips actuated by the train to depress the pistons in the end-cylinders, whereby when either trip is depressed the other is elevated, and the arm is moved positively by the confined fluid.

4. In combination with the gate B and its actuating piston and cylinder, the springs Y interposed between the arm and piston.

5. In combination with gate B and its arm *a*; a cylinder and piston; the plates X X connected respectively with the arm *a* and the rod of the piston; and springs Y Y connecting the plates.

6. In combination with a cylinder and piston; a cylinder head *r* provided with cup *s*, fitting within the cylinder and having the glands *v v'* and packing nuts *w w'*.

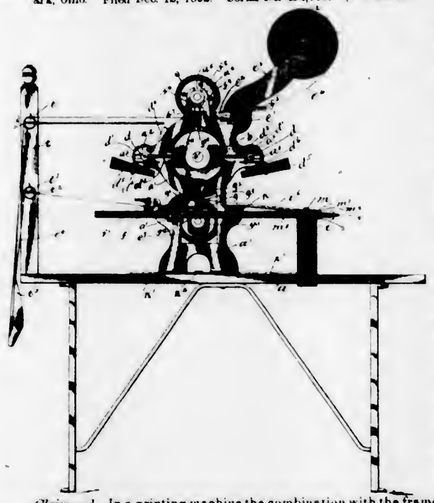


7. In combination with a cylinder and a piston; means for supplying a compressed fluid to the one side of the piston; a cylinder-head *r* applied to the cylinder at that end at which the fluid is admitted; a cup *s* carried by the head and projecting into the cylinder and containing a mercury seal and oil, and suitable glands.

8. In combination with a cylinder and piston; a cylinder head *r* provided with flange *t*; bolts *u* connecting the head to the cylinder; a cup *s* projecting into the cylinder; glands *v v'*; and nuts *w w'*.

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531,088. PRINTING-MACHINE. THOMAS BARTHOLOMEW, Newark, Ohio. Filed Dec. 12, 1892. Serial No. 454,969. (No model.)



*Claim.*—1. In a printing machine the combination with the frame work, a printing roller journaled therein, and pliable type detachably supported on said roller periphery, of two or more impression rollers supported adjacent to said printing roller two or more inking rollers journaled adjacent to said printing roller and adapted to come into contact with the type faces when said printing roller is rotated, a paper roll journaled in bearings in the framework, independent tensions for the strip of paper adjacent the impression rollers, an upright standard carried by the framework, and two horizontal arms projecting therefrom and having slots through which the strip passes and between which it is given a twist, substantially as and for the purpose specified.

2. In a printing machine, the combination with the standards, a type carrying printing roller journaled therein, impression rollers journaled above and below said printing roller, a tension device in advance of each impression roller, means for releasing the tension during the passage of the type between these rollers, a type-high spacing strip on the printing roller in advance of the type, and cam projections opposite said spacing strip on the ends of the printing roller; of the spring-actuated inking rollers journaled at opposite sides adjacent said printing roller, said inking rollers being normally supported in the path of the cams and adapted to be forced outward by contact with the latter, and means for passing a paper strip between the printing roller and the upper impression roller, then around the inking roller, and finally between the printing roller and the lower impression roller, said strip being controlled by the tension devices adjacent both impression rollers, substantially as and for the purpose set forth.

3. In a printing machine the combustion of standards, a printing roller journaled therein, channeled type holding strips $b^2$ having end tongues as described, end bands $b^1$ on said printing roller beneath which said type strip tongues are adapted to fit and slide, mouths $b^4$ as described in said bands and following strips $b^2$ having end shoulders $b^5$ said following strips adapted to fit and slide beneath said bands $b^3$, and means for rotating said printing roller and inking the face of the type contained in said type holding strips substantially as and for the purpose specified.

4. In a printing machine the combination with a printing roller *b*, type holding strips detachably secured thereon, pliable type supported in said strips, end blocks $e^{11}$ in said type strips as described, an impression roller journaled in said standards adjacent to said printing roller, a peripheral groove $e^{12}$ in said impression roller, a feed board $e^3$ supported as described adjacent to the upper portion of said printing roller, a paper reel supported from said feed board, a spring actuated pressure or retaining bar pivoted to the frame work and adapted to bear on said feed board and a spring finger $e^{10}$ extending from said pressure bar to a point beneath the roller groove $e^{12}$ the end of said spring finger being normally supported in the path of said blocks $e^{11}$ when said printing roller is rotated substantially as and for the purpose specified.

5. In a printing machine the combination with the standards, a type carrying roller journaled therein, and one or more impression rollers $e$ $e'$ journaled adjacent to said printing roller, a type high spacing strip on said printing roller and the cam projections $d^4$ opposite said spacing strip on the ends of said printing roller, of the spring actuated inking rollers journaled at opposite points and adjacent to said printing roller said inking rollers normally supported in the path of said cams and adapted to be forced outward by contact with the latter when the printing roller is rotated substantially as and for the purpose specified.

6. In a printing machine, the combination with a printing roller *b*, type detachably secured thereon, end blocks also carried thereon as described, an impression roller adjacent said printing roller, a peripheral groove $e^{12}$ in said impression roller, a feed board $e^3$ supported as described adjacent to the upper portion of said printing roller, a paper reel, a spring-actuated pressure or retaining bar pivoted to the framework and adapted to bear on said feed board, a spring finger $e^{10}$ extending from said pressure bar to a point beneath the roller groove $e^{12}$, the end of said spring finger being normally supported in the path of said block $e^{11}$ when said printing roller is rotated, a type high spacing strip on said printing roller, the cam projections $d^4$ opposite said spacing strip on the ends of said printing roller, and spring-actuated inking rollers journaled at opposite points and adjacent to said printing roller, said inking rollers normally supported in the path of said cams and adapted to be forced outward by contact with the latter when the printing roller is rotated, as and for the purpose specified.

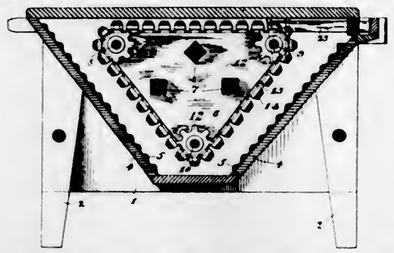
7. In a printing machine the combination of the base and standards thereon, a type carrying printing roller having its end spindles journaled in said standards an outturned and inturned cam disk carried on one of said spindles, one or more impression rollers journaled adjacent to said printing roller, a cutting block adjustably supported on said base, a knife rod journaled in said cutting block and in one of said standards, an operating finger *o* adjustably supported on said knife rod, said finger being notched to receive the edge of said cam disk and a cutting blade yieldingly held on said rod and adapted to shear as described against the outer side of said cutting block substantially as and for the purpose specified.

8. In a printing machine, the combination of the standards, a printing roller journaled therein, pliable type supported on said roller periphery, impression rollers $e$ and $e'$ journaled above and below said printing roller, a paper roll journaled in the machine framework, means for passing the paper strip between said rollers as described, and for giving the strip a twist after the first and before the second impression, inking rollers journaled as described in the side of said standards, and independent tension bars adapted to restrain the movement of said strip of paper when said type are not between the rollers, substantially as and for the purpose specified.

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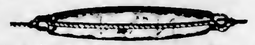
531,089. WASHING-MACHINE. JOHN W. BECWAR, Millbank, S. D., and DAVID SHAW, Ortonville, Minn. Filed Apr. 16, 1894. Serial No. 507,737. (No model.)



*Claim.*—In a washing machine, the combination of a casing or housing having inclined end walls, corrugated strips secured to said walls, a triangular frame pivoted at one of the upper corners in the casing, shafts mounted in the corners of the frame and carrying sprocket wheels, one of the upper shafts passing through the casing at one end and carrying a crank, the shaft at the other upper corner extending beyond the frame, recesses in the side walls of the casing forming bearings for the ends of the shaft, pivoted plates having a serrated edge bearing against the ends of the shaft, arms connected to the plates for holding them in position, a sprocket chain passing over the sprocket wheels and having the inclined grasping lugs to hold the rubbing strips.

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531,090. FISHING-LINE SINKER. CHARLES W. BLACK and BYRON J. CHAPMAN, Michigan City, Ind., assignors of one-third to Frank M. Boeckling, same place. Filed May 22, 1894. Serial No. 512,104. (No model.)



*Claim.*—1. A sinker for fishing-lines, consisting of a weight having a hook rigidly secured thereto, said hook being arranged with its point beyond the surface of the weight and adapted to have the line passed through it, and an eye secured to the weight and adjacent to the hook, and being normally in engagement therewith, the hook and eye being adapted to hold the line by their engagement therewith, substantially as described.

2. A sinker for fishing-lines, and consisting of a weight having two wires embedded therein, the wires being extended beyond the sides of the weight at their ends and the ends of one wire being each bent to form a hook, while the ends of the second wire are each bent to form an eye, said eyes being arranged directly adjacent to their respective hooks and adapted to hold the line engaged therewith by their contact with the hooks, substantially as described.

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531,091. HOSE BRIDGE AND TOWER. JAMES BLAKE and EMIL F. BECHERING, Union Hill, N. J. Filed May 19, 1894. Serial No. 511,832. (No model.)

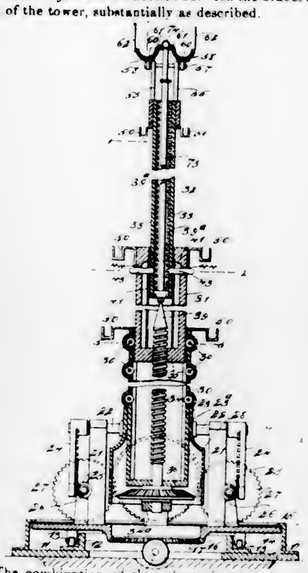
*Claim.*—1. The combination with the tower sections, the bottom of the second section having a threaded aperture and the section there-above having internal racks, of a vertical screw extending up through the lower section and said threaded aperture into engagement with said internal racks and an operating mechanism geared to the lower end of the screw.

2. The tower apparatus comprising the truck, the turn table mounted thereon and provided with an operating mechanism, standards on the turn table, a casing $23^a$ having trunnions journaled on the standards and provided with an operating mechanism, a step $34^a$, the extensible tower, the lower section 23 of which is mounted in the said casing a screw 34 mounted in said step and having an operating gearing, the second section 31 having a threaded aperture in its bottom through which said screw passes and the third section 32 having internal racks engaged by the upper end of the screw.

3. The combination, of the water tower, the hose bridge thereon, the movable nozzle on the hose bridge, water supply pipes carried by the tower and connected with the nozzle, and a shaft and gear mechanism for moving the nozzle from the foot of the tower, substantially as described

4. The combination, with the tower, of the opposite brackets on the tower top, and the hose bridge hinged to one bracket and detachably connected with the other, substantially as described.

5. The combination, of the extensible tower, the folding hose bridge, the jointed braces, means for extending the braces longitudinally, and an adjustable connection between the braces and the lower portion of the tower, substantially as described.



6. The combination, of the telescoping tower sections having registering holes therein, the levers pivoted on the outer section and provided with arms to enter the holes of the two sections, and the screw for adjusting the levers, substantially as described.

7. The combination, of the tower, the hooks thereon, and the ladders having curved upper ends and slotted top plates, substantially as described.

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531,092. PROCESS OF FORMING DENTAL PLATES. MINOR P. BOYD, Atlanta, Ga. Filed Apr. 2, 1894. Serial No. 506,059. (No specimens.)



*Claim.*—1. The improved process of forming the exterior gum surface of a dental plate, which consists in setting artificial teeth on wax applied upon the inner side of a base or model and removing any wax that may protrude or adhere in the front or outer side of the denture, and then applying an adhesive liquid or semi-liquid plastic on such front or outer side of the denture, to form the continuous gum of the finished plate, substantially as described.

2. In forming a dental plate, the process of preparing a model which consists in packing it with wax on the inner or palatal side only of the base and setting the teeth on the edge of the wax, then packing the model around the front or outer side of the denture, before flasking, as shown and described.

3. The improved process of forming the exterior gum surface of a dental plate, which consists in setting artificial teeth on wax applied upon the inner or lingual side of a base or model, and removing any wax that may protrude between or adhere on the front side of the teeth, then applying a thin coat of adhesive liquid or semi liquid plastic material around the front side of the denture, next laying a strip of soft rubber upon the coat of plastic, and finally applying a thicker coat of plastic material over the said rubber strip, thus embedding, covering and concealing it, and building up a continuous exterior gum, as shown and described.

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531,093. DENTAL NAPKIN-HOLDER. GEORGE A. BRONSON, St. Louis, Mo. Filed May 21, 1894. Serial No. 511,941. (No model.)

*Claim.*—1. A dental napkin holder, comprising the presser-piece and its handle as hereinbefore described, and a keeper tang on said presser piece, substantially as described.

2. A dental napkin holder, comprising an elongated dished presser piece, a curved handle-piece projected from one end of the presser piece, and a keeper tang secured by one end on the convex side of the presser piece and projected oppositely from the handle piece, substantially as described.



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531,094. DENTAL NAPKIN-HOLDER. GEORGE A. BRONSON, St. Louis, Mo. Filed May 21, 1894. Serial No. 511,942. (No model.)



*Claim.*—1. A dental napkin holder, comprising a handle having two spaced limbs at one end, and a presser wing on one of said limbs and a presser piece on the other limb, substantially as described.

2. In a dental napkin holder, a handle piece divided near one end to produce two limbs, hooked at the other end and spaced apart where divided, a presser wing laterally projected from one limb, a keeper tang on said limb, and a looped pressure piece on the other limb opposite the wing, substantially as described.

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531,095. EYEGLASS FOLDING FRAME. ALFRED BRUNNER, Laupen, Switzerland. Filed Oct. 2, 1894. Serial No. 524,745. (No model.)



*Claim.*—1. The combination with a pair of eye-glass frames connected by a foldable bridge, of temple bows each composed of a rigid and a spring section articulated together, said spring section bent into a loop and adapted to encompass the eye-glass frames when folded, for the purpose set forth.

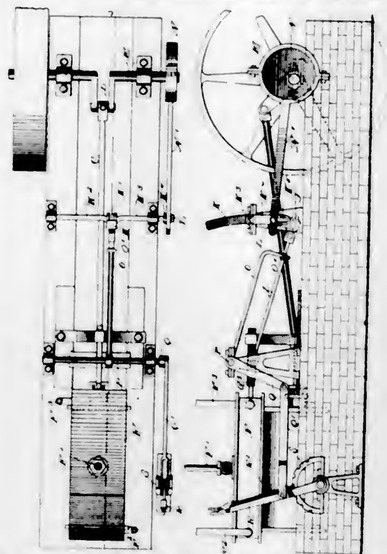
2. The combination with a pair of eye-glass frames and a bridge composed of two sections, of a joint piece provided with pivot bearings for a lug at the proximate ends of the sections and locking grooves or recesses intersecting the pivot bearings at right angles in which grooves the ends of the bridge sections are adapted to seat, for the purposes set forth.

3. Spectacles provided with a two part bridge, each part composed of two springs, in combination with a joint piece grooved longitudinally in its upper and lower faces and provided with pivot bearings for the free ends of said springs and with grooves intersecting said pivot bearings, the ends of said springs adapted to seat in said longitudinal and transverse grooves when in a normal position or when turned at right angles to the joint piece respectively, for the purpose set forth.

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531,096. VALVE-GEAR FOR STEAM-ENGINES. LEMON O. BURR, Corning, Ark., assignor to himself and Douglas Hopson, same place. Filed June 1, 1894. Serial No. 513,153. (No model.)

*Claim.*—1. A device of the class described, comprising a reversing link adapted to be rocked from the main shaft, a block fitted to slide in the said reversing link, a connecting rod for connecting the block with the valve stem, and a raising and lowering device for the said connecting rod, to move the block in the said reversing link, said device comprising a rock shaft having a rigidly connected arm provided with an eye through which the connecting rod slides, and means for adjusting the rock shaft substantially as shown and described.



2. A valve gear for steam engines, comprising the slotted rocking link having a crank arm linked to the main shaft, a block adjustable in the slotted link, a cross head connected to the slide valve in the steam chest, a rod connecting said cross head with the block, a crank shaft above the cross head and having a rigidly connected arm projecting toward the slotted link and provided with an eye through which the connecting link reciprocates and an operating lever connected to the said rock shaft and provided with a locking mechanism, substantially as described.

3. The combination with a steam chest provided at its ends with openings and removable cover sections, valve casings in the ends of the casing and removable upwardly through said end openings, the middle portion of the chest forming the chamber for live steam and the portions beyond the said casings forming the exhaust chambers, ports *a b* leading directly from the two valve casings into the cylinder and two connected slide valves working in said casings, substantially as described.

4. The combination with the steam chest having openings in its top at both ends, cover sections therefor, lugs $l^3$ in the side walls of the chest in line with the openings, valve casings inserted removably into the chest through said openings and held in place by said lugs, ports *a b* leading from the live steam chamber into the cylinder and exhaust chambers in the ends of the chest, of the two connected valves mounted in the respective valve casings and provided with spring seated packings, substantially as described.

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531,097. DITCHING-MACHINE. ALFRED C. CARTER, Greenfield, Iowa. Filed Dec. 9, 1893. Serial No. 493,240. (No model.)

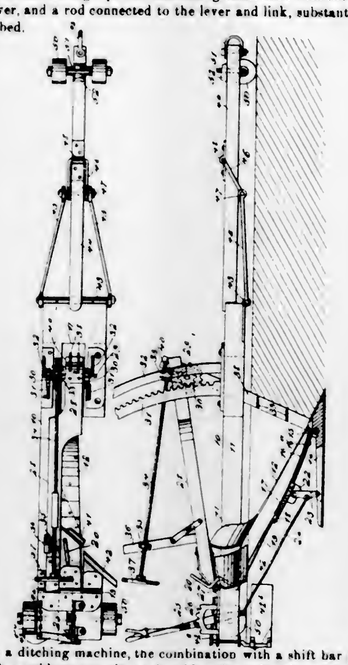
*Claim.*—1. In a ditching machine, the combination with a beam, of a hinged plow, means for raising and lowering the plow, a point pivoted to a laterally movable support, and means for swinging the point on its pivot, substantially as described.

2. In a ditching machine, the combination with a beam, of a hinged plow, a point pivoted to a laterally movable support, means for swinging the point on its pivot, knives secured to the pivot of the point and projecting above the beam, and means for raising and lowering the plow and knives, substantially as described.

3. In a ditching machine, the combination with a beam, and a plow carried thereby, of a shift bar pivoted to the under side of the plow to swing horizontally, a point pivoted to the shift bar to swing vertically, and means for operating the shift bar on its pivot, substantially as described.



4. In a ditching machine, the combination with a beam, and a plow carried thereby, of a shift bar pivoted on the plow, a point pivoted on the shift bar, means for operating the shift bar, a link pivoted to the point and having a pivotal and sliding connection with the shift bar, a lever, and a rod connected to the lever and link, substantially as described.



5. In a ditching machine, the combination with a shift bar provided with a guide-way on its under side, of a point pivoted to the shift bar, a slide fitting in the guide-way of the said shift bar, a link pivoted to the slide and point, an operating lever, and a rod connected to the lever and link, substantially as and for the purpose specified.

6. In a ditching machine, the combination with a beam, and a plow hinged thereto, of a pivoted lift bar, knives carried by the plow point and connected at their upper ends with the lift bar, and means for operating the said lift bar, substantially as described.

7. In a ditching machine, the combination with a beam, and a plow carried by the beam, of a crank shaft mounted on the rear end of the beam, a landside plate on the lower end of the crank shaft, a crank handle on the upper end of said shaft, and means for locking the crank in position, substantially as described.

8. A ditching machine, comprising a main beam, a plow hinged thereto, a shift bar fulcrumed on the under side of the plow, a plow point carried by the shift bar, a lever mechanism for moving the shift bar, a vertically movable lift bar hinged to the top of the machine, means for swinging the lift bar, and parallel knives extending from the lift bar to the plow point, substantially as described.

9. A ditching machine, comprising a longitudinally slotted main beam, a plow hung in the slot and exteoding downward from the beam, a vertically and laterally moving plow point carried by the plow, a lift bar hinged above the plow, a gear mechanism for adjusting the lift bar vertically and the parallel knives extending from the lift bar to the plow point, substantially as described.

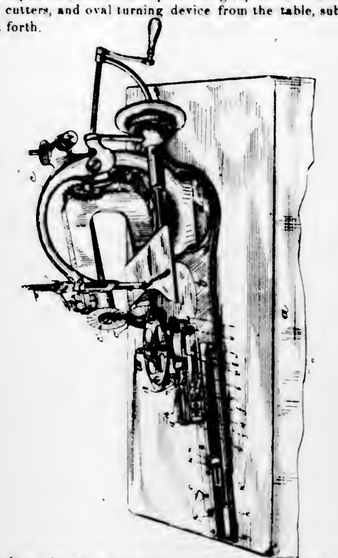
10. The combination, with the beam, the swinging plow, the plow point, the swinging lift bar above the plow point, and the knives connected with the plow point and the lift bar, of the rack on the main beam, the shaft on the lift bar geared to the rack, and the screw shaft for turning the shaft on the lift bar, substantially as described.

11. The combination, with the main beam and its ditching mechanism, of the draft beam abutting with the front end of the main beam, braces hinged to the front end of the main beam, and a clevis connection between the braces and the draft beam, substantially as described.

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531,098. HAT-LINING MACHINE. HENRY CHARNBURY, Newark, N. J. Filed July 11, 1891. Serial No. 399,262. (No model.)

*Claim.*—1. In a hat lining machine, the combination with the table, a sewing head, the oval forming device, and the cutters, of a bed plate having bearings *d*, *e*, *e'*, and *g* and carrying said sewing head, oval turning device and cutters and holding the same in permanent relative position, the said bed plate being separable with said sewing head, cutters, and oval turning device from the table, substantially as set forth.



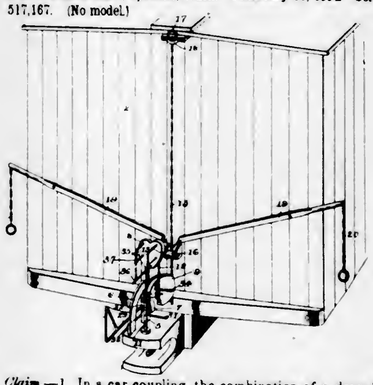
2. In combination in a hat lining machine, the bed plate, *b*, having bearings *d*, *e*, *e'*, and *g*, and carrying a cutter, and sewing head, and having an adjustable oval forming device bearing thereon and movable laterally from the cutters to the sewing head or vice versa, the said oval forming device comprising a fulcrumed carriage, *h*, a longitudinally movable plate *k*, a carrier *v* and the oval forming mechanisms *w*, all arranged and combined substantially as and for the purposes set forth.

3. In combination with the oval-forming mechanisms, *w*, and the carrier *v*, a lock plate, 15, adapted to slide to and from the said oval forming mechanisms to hold the same from turning and a spring catch to control the sliding, substantially as and for the purposes set forth.

4. The combination with the table, *a*, of a removable bed plate, *b*, carrying thereon a sewing head, a cutter and an oval forming device, the carriage for said oval forming device being fulcrumed, as at *g*, on an extended arm of said plate and having a sliding movement on the slideway, *i*, substantially as set forth.

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531,099. CAR-COUPLING. JOEL CLARK, Hartland, assignor of one-half to Nelson Clark, Spokane, Wash. Filed July 11, 1894. Serial No. 517,167. (No model.)



*Claim.*—1. In a car coupling, the combination of a draw-head, a coupling pin mounted therein, a laterally swinging cam connected with the coupling pin, and means adapted to engage said cam and capable of automatically actuating said cam to raise the pin should a car fall over on its side, substantially as described.

2. In a car coupling, the combination of a draw-head, a transversely swinging cam mounted above the draw-head and loosely connected with the coupling pin, vertically disposed rods mounted on the cam and offset therefrom, and an outward extending rod mounted on the cam and located between the vertical rods and projecting beyond the same and adapted to engage the rods of a corresponding car coupling, substantially as and for the purpose described

3. In a car coupling, the combination of a draw-head, a coupling pin mounted therein, a substantially heart-shaped cam mounted above the draw-head and arranged to swing longitudinally thereof, and loosely connected at its top with the coupling pin, means for limiting the swing of the cam, a chain extending from the cam to a car and located in rear of the former and attached to the bottom of the same and designed to terminate at the top of the car and side operating levers connected with the chain, whereby the operation of uncoupling may be performed from the sides of a car, substantially as described.

4. In a car coupling, the combination of a draw-head, a coupling pin mounted therein, a cam mounted above the draw-head arranged to swing longitudinally thereof and connected with the coupling pin, said cam being provided with means for limiting its swing, a swinging angle arm mounted on the cam and depending therefrom, and a trip-bar extending outward beyond the draw-head for engaging the angle arm, substantially as described.

5. In a car coupling, the combination of a draw-head, a coupling pin mounted therein, a cam located above the draw-head and loosely connected with the coupling pin and arranged to swing longitudinally of the draw-head, and provided with a rigid laterally extending arm, a swinging angle arm depending from the cam, and a trip bar projecting from the draw-head and provided at its outer end with an upward extending triangular loop and adapted to engage the axle arm of a corresponding coupling, substantially as described.

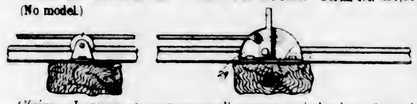
6. In a car coupling, the combination of a draw-head provided with a post and having a front brace b provided with a vertical recess, a spring secured to the brace and extending across the recess and having one end free, the trip bar detachably secured at its inner end to the post and confined in the recess by the spring and provided at its outer end with an upward extending triangular loop, a coupling pin mounted in the draw-head, a cam pivoted on the post and loosely connected with the coupling pin and provided with outward extending arms adapted to be engaged by a trip bar, substantially as described.

7. In a car coupling, the combination of a draw-head, a post mounted thereon and provided at its top with a laterally disposed arm, the front and rear braces supporting the post, a coupling pin mounted on the draw-head, a lower cam fulcrumed on the post and loosely connected with the coupling pin, and arranged to swing longitudinally of the draw-head, an upper cam pivoted on the laterally extending arm of the post and arranged to swing transversely of the draw-head, chains arranged at opposite sides of the lower cam and loosely connecting the cams, and means for swinging the lower cam from the top and sides of a car, substantially as described.

8. In a car coupling, the combination of a draw head, a coupling pin mounted in the draw-head, the upper and lower heart-shaped cams arranged above the draw-head and located respectively transversely and longitudinally of the draw-head, connections between the cams and the coupling pins, and means for operating the cams substantially as described.

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**531,100. TRACK DEVICE TO AUTOMATICALLY OPERATE AIR-BRAKES OF TRAINS.** JAMES P. CLIFTON, Riverside, assignor to Archer E. Clifton, Cincinnati, Ohio. Filed Jan. 23, 1893. Serial No. 459,309. (No model.)

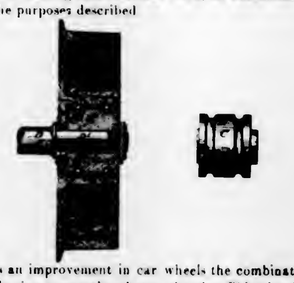


*Claim.*— In means to automatically operate air-brakes of a train from the track, the combination of a pipe 12 connected to the air-brake system of the train and reaching down close to the track, a release valve secured to the end of this pipe a handle secured to this valve, a pivoted arm connected near the track and adapted to be adjusted to a position which brings it within the path of the valve handle to enable it to open the valve for the purposes desired, and a heel connected to the arm, which supports this latter in its operative position and prevents it from being knocked down by the contact with the valve handle.

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**531,101. BALL-BEARING WHEEL.** HALLAM F. COATES, Cambridge, Ohio. Filed Dec. 11, 1893. Serial No. 493,330. (No model.)

*Claim.*—1. As an improvement in car wheels, the combination with a wheel having its hub portion formed with a central socket or chamber, having its base or inner wall centrally apertured to receive the axle, and a non-rotatable axle projected into such chamber, of a filler of slightly less diameter than the chamber, adapted to be slid endwise therein, said filler having a plurality of annular grooves, the bearing balls fitted therein to engage the wall of such chamber, and means for adjustably connecting such filler on the axle, whereby it will be held from turning when fitted thereon and whereby its upper and lower faces can be turned to diametrically opposite points as the lower or bearing face becomes worn, all substantially as shown and for the purposes described



2. As an improvement in car wheels the combination with the wheel A, having a central socket or chamber B' having in its base or rear wall an aperture b' of a larger diameter than the axle, and the axle projected into such chamber having a collar d, abutting the face of the wheel, and its end apertured, of the filler C held on the axle said filler having a central reduced portion $c'$ at one end and a reduced apertured portion $c^4$ at the other, a key fitting the aperture and the coincident aperture in the axle, and provided with annular grooves c', and the balls F fitting such grooves all arranged substantially as shown and described.

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**531,102. BENCH-STOP.** JOSIAH DAILY, North Peoria, Ill. Filed July 23, 1894. Serial No. 518,341. (No model.)



*Claim.*—The combination substantially as herein described of the bench having a series of sockets the stop composed of a shank having at one end a stud fitted to said sockets and easily detachable whereby it may be changed from place to place the cross piece or head extended at right angles from the said shank and having the lower edge of the stop side formed with an edge by which to mark the board or other timber, the upper edge of the shank next to the said cross piece being extended or projected above the under side of said cross piece all substantially as and for the purposes set forth.

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**531,103. BOWLING-BALL.** FREDRIK G. DUKKENWADEL, Union City, Ind. Filed Mar. 29, 1894. Serial No. 505,562. (No model.)



*Claim.*— 1. A bowling ball consisting of the core having the central sockets, and the side sockets, elastic linings for said sockets, weights fitting in the elastic linings of the sockets, and an elastic outer covering on the core, said side sockets being arranged on only one side of the core and formed in the abutting faces of the sections of the core.

2. A bowling ball consisting of the core having the finger and thumb sockets, the elastic covering or jacket on the core, and the sleeves or ferrules fitting in said sockets and having their outer ends engaging the covering.

3. A bowling ball, consisting of the sectional core having the central cavities, the elastic lining or cushion for said cavities, the weight seated in the cushion, and the outer covering on the core.

4. A bowling ball, consisting of the core, the weight or weights within the core, the sockets in the core, the lining for said sockets and the elastic covering on the core.

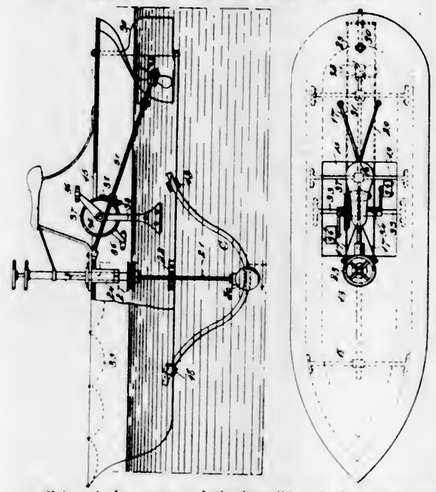
5 A bowling ball consisting of the hard core provided with a weight and having the finger and thumb sockets, the elastic covering or jacket on the core, and the sleeves or ferrules fitting in said sockets and having their outer ends engaging the covering.

6. A bowling ball consisting of the core having the central and side sockets or cavities, elastic linings for said cavities, weights closely fitting in the linings and an elastic outer covering on the core.

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**531,104. MARINE VELOCIPEDE.** WILLIAM DRYDEN, Brooklyn, N. Y. Filed Apr. 6, 1894. Serial No. 506,584. (No model.)



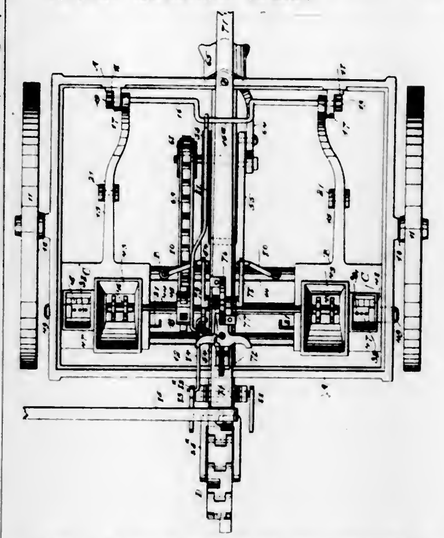
*Claim.*—1. In a water velocipede or life raft, the combination with a hull of the catamaran order, the hull sections being united at the bow, of a propeller shaft, a propeller thereon, a seat for the operator, a pedal shaft capable of operation from said seat and in gear with the propeller shaft, a center board located between the hull sections, and a regulating rod connected with said center board and extending upward beyond the deck of the hull and adapted to be manipulated by the operator when in position on the seat, as and for the purpose set forth.

2. In a water velocipede and life raft, the combination, with a hull of the catamaran order, the sections of the hull being connected at the bow and connected at the upper portion of the stern, a propeller shaft extending sternward between the hull sections, being provided at its outer end with a propeller, and a rudder journaled at the stern of the hull, of a pedal shaft, a gear connection between the pedal shaft and the propeller shaft, a center-board consisting of a bar or tube of pliable material, having its ends free to move in guides, a weight carried by the tube, a regulating rod connected with the weight and extending upward beyond the deck of the hull, a steering shaft provided with a pulley, and steering lines attached to the said pulley and to the rudder, substantially as shown and described.

3. In a water velocipede or life raft, the combination, with a hull of the catamaran order, the hull sections being united at the bow and at the upper portion of the stern, each hull section being triangular in cross section and comprising an inner and an outer wall and a filling of buoyant material between them, the deck being laid over the hull sections, a propeller shaft journaled between the hull sections, extending sternward beyond said sections and terminating in a propeller, a rudder journaled at the stern, and a seat supported upon the deck, of a pedal shaft capable of operation from said seat, a gear connection between the propeller shaft and the pedal shaft, a center-board centrally located between the hull sections, being constructed of a pliable material having free but guided movement, a weight located upon the center-board near its center, a regulating rod capable of raising and lowering the center board, attached to the weight and carried up through the deck convenient to the seat, a sleeve held to turn around the regulating rod, a pulley attached to the lower end of the said sleeve, and steering lines attached to the said pulley and the rudder, as and for the purpose set forth.

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**531,105. CORN-PLANTER AND FERTILIZER-DISTRIBUTER.** JACOB W. DURYEA and WILLIAM C. DURYEA, Blawenburg, N. J. Filed May 29, 1894. Serial No. 512,839. (No model.)



*Claim.*—1. In a planter, an endless check row belt provided with spurs located at intervals thereon and adapted to enter the ground, and markers located upon the belt and projecting from the outer face thereof, substantially as shown and described

2. In a planter an endless check-row belt, provided with spurs located at intervals thereon and adapted to enter the ground, and markers located upon the outside of the belt and adapted to make an impression on the ground, and means for supporting the belt, whereby the machine may travel upon it, as and for the purpose set forth.

3. In a planter, an endless check-row belt, provided with spurs upon its outer face adapted to enter the ground, and markers located at intervals upon the outer face of the belt, adapted to leave an impression in the ground, and trips carried by the said markers, and extending beyond the inner face of the belt and adapted for engagement with the release mechanism of the seed discharge chutes of the planter, the planter being adapted to travel upon and over the said belt, as and for the purpose specified.

4. In a planter, the combination with an endless check row belt comprising a series of pivotally connected links, provided at intervals with spurs upon their outer faces, and having their upper or inner faces semi-circular or dome shaped, the said links being provided at intervals with recesses formed in their dome shaped faces, of wheels carried by the planter and over which the endless belt passes, the said wheels being provided with peripheral grooves in which the inner or dome shaped surface of the belt is adapted to fit and one of said wheels being provided with projections formed at intervals in the central portions of the peripheral groove, the said projections being adapted to be received in the recesses in the links, as and for the purpose set forth.

5. The combination, with a planter, its seed boxes, distributing chutes, gates located in the seed-boxes, and a mechanism, substantially as shown and described, for opening the said gates, of an endless chain check rower, provided with spurs upon its outer face adapted to enter the ground, and also provided with marking blocks upon its outer face, arranged at intervals thereon, and projecting therefrom each marking block being provided with a trip device extending beyond the inner face of the belt and adapted for engagement with the opening mechanism for the seed gates, and wheels carried by the planter, over which the endless belt passes, the belt being so sustained that the machine will travel thereon, as and for the purpose set forth.

6. In a planter, the combination, with a wheel supported frame, a swinging frame adjustably connected with the wheel supported frame,

seed boxes and distributing chutes carried by the swinging frame, and a bar extending forwardly and rearwardly, attached to said swinging frame, provided with a forward large chain wheel and a rear smaller wheel of like character, of an endless chain check rower carried by said wheels, provided with spurs upon its outer face adapted to enter the ground and maintain the chain from moving in a forward direction, marking blocks located upon the outer surface of the belt at predetermined intervals apart, a trip mechanism carried by each marking block, and extending beyond the inner face of the belt and a release mechanism connected with the distributing chutes and adapted to be operated from the trip mechanism of the marking blocks, substantially as shown and described.

7. In a planter, the combination, with a wheel-supported frame, a swinging and adjustable frame supported from the main frame, seed boxes and distributing devices carried by the swinging frame, distributing chutes leading downward from the boxes, furrow openers located in front of the chutes, and coverers located at the rear thereof, of chain wheels carried by the said swinging frame, one in advance of the other, an endless chain marking belt carried by the said wheels, having spurs upon its outer face whereby the chain may not move in a forward direction when in engagement with the ground, markers carried by the said chain, gates located in the delivery chutes, means, substantially as described, for opening said gates from the markers, and a clearance share located in advance of the marking chain, substantially as shown and described.

8. In a planter, the combination with a wheel supported frame, of the swinging frame carried thereby, the said swinging frame supporting at its rear end the seed and fertilizer boxes, and having forwardly extending arms, a crank shaft upon which the front ends of said arms are loosely mounted, elongated boxes secured to the main frame, and through which pass loosely the ends of the crank shaft, a pinion secured to each end of the crank shaft and a rack surface engaged by the said pinions, a longitudinal bar secured to said swinging frame, wheels journaled at each end of the bar, an endless check row belt carried on said wheels, and means, substantially as described, for raising and lowering the said swinging frame and the parts carried thereby, as and for the purpose specified.

9. In a planter, the combination with the wheel supported frame, of the swinging frame carrying the seed and fertilizer boxes, a longitudinal bar secured to said frame, wheels journaled at each end of the bar and provided with peripheral grooves, a check row belt composed of a series of pivotally connected links provided with spurs upon their outer faces and semi-circular or dome shaped upon their inner faces to fit the peripheral grooves in the wheels, and a grooved wheel carried by the longitudinal bar and adapted to travel upon the upper or inner dome shaped or rounded face of the lower stretch of the marking chain, substantially as shown and described.

10. In a planter, the combination with the wheel supported frame, the swinging frame, the endless check row belt, wheels carried by the swinging frame and over which the endless belt passes, the hand lever, and connections, substantially as described, between said hand lever and the swinging frame for raising and lowering the same, of the pivoted marking rod carried at the rear of the planter, the transverse rock shaft provided at each end with a rearwardly extending arm upon which the said marker rod is adapted to rest, and a connection between the said shaft and the hand lever, whereby the said marking rod is raised when the hand lever is operated to raise the swinging frame, as and for the purpose set forth.

11. In a planter, a fertilizer distributer, the same consisting of a cylinder having receiving pockets adjustable in size, a hopper located above the cylinder, an agitator located in the said hopper, means for rotating the said cylinder and agitator, a distributing chute arranged below the cylinder, a gate adapted to close the bottom of said chute, a shank connected with said gate and extending upwardly at the rear of the chute, a rock shaft to which said shank is secured, a trip arm carried by said rock shaft, a spring connected with said rock shaft and normally closing said gate, and means, substantially as shown and described, for engaging said trip arm and opening the gate, as and for the purpose set forth.

12. In a planter and seed distributing device, the same consisting of a hopper, a distributing chute located beneath the hopper, means, substantially as described, for controlling the outlet of the chute, and a seed dropping cylinder, held to revolve between the hopper and the said chute, the said cylinder being provided with series of pockets, and gravity plungers operating in said pockets, substantially as shown and described.

13. In a planter, a seed distributing device, the same consisting of a hopper, a distributing chute located below the hopper, and a seed-dropping cylinder held to rotate between the hopper and chute, the said cylinder being provided with series of pockets, and gravity-operated plungers located within said pockets, and leveling dogs or pawls pivotally located in the hopper and arranged in corresponding order with the seed receiving pockets, whereby one pawl or dog will pass over each pocket located in the same circumferential plane and remove surplus seed therefrom, substantially as shown and described.

14. In a planter, the seed distributing mechanism, the same consisting of a hopper, a chute located below the hopper, and a seed dropping cylinder held to revolve between the hopper and the chute, the cylinder being provided with a series of pockets adapted to receive seed, gravity plungers operating in the said pockets leveling dogs or pawls pivoted in the hopper, and adapted, one for engagement with each circumferential series of pockets, and a slide located in the bottom of the hopper, capable of closing any predetermined number of pockets in the cylinder, as and for the purpose set forth.

15. In a planter, a seed distributing cylinder constructed in sections and provided with a series of seed-receiving pockets, and gravity plungers operating in said pockets, substantially as shown and described.

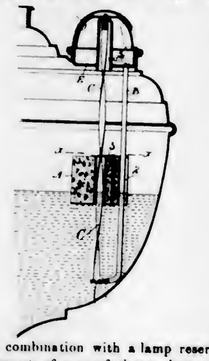
16. In a planter, a seed distributing cylinder formed in sections and provided with seed receiving pockets produced in its outer face and leading into the interior, and a seed discharging device held in the said cylinder and adapted to extend into the said pockets when in their lowermost position for the purpose of dislodging seed therefrom, as and for the purpose specified.

17. A seed distributing cylinder constructed in sections, provided with seed-receiving pockets, plungers having movement in said pockets, and a gravity lever connected with the plungers of each series of pockets, as and for the purpose specified.

18. In a planter, a seed distributing cylinder constructed in two longitudinal sections and provided with a series of seed receiving pockets produced in its outer face and leading into the interior of the cylinder, plungers having movement in said pockets, a weighted cross bar arranged in the interior of the cylinder and connected with the inner ends of the plungers, the said cross bar being provided with a shank by which it is pivotally connected with the inner face of the cylinder, substantially as shown and described.

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**531,106. OIL-INDICATOR FOR LAMP-RESERVOIRS.** FRANK G. ECHOLS, Waterbury, Conn., assignor to the Plume & Atwood Manufacturing Company, same place. Filed Oct. 8, 1894. Serial No. 525,199. (No model.)



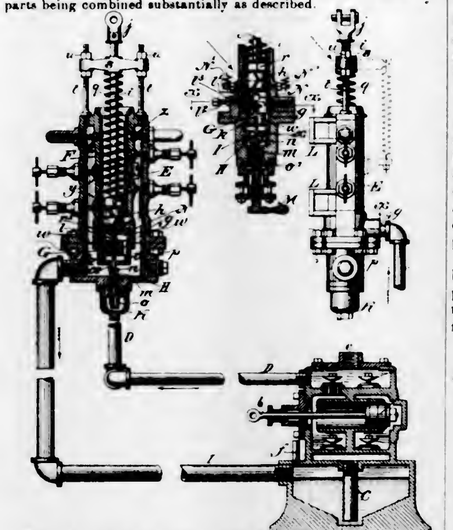
*Claim.*—1. The combination with a lamp reservoir having an opening in its upper part, of a cap fitting such opening and means for securing the cap in position, a guide wire connected with the cap and extending down into the reservoir, a central twisted rod or strip pivoted at its lower end in the guide wire, a float through which the twisted rod passes and having a notch or opening for the guide wire, and an indicating dome upon the top of the twisted wire and containing marks to denote the height of the oil in the reservoir, substantially as set forth.

2. The combination with a lamp reservoir having an opening in its upper part, of a cap removably connected with the reservoir at the opening, a guide wire descending from the cap into the reservoir, a twisted strip pivoted upon a step at the lower end of the guide wire, a float having a guide through which the twisted rod passes, and a notch to receive the guide wire, a pivot at the upper end of the twisted rod, an outer dome connected with the cap and having an opening, and an inner dome connected with the twisted rod and having indicating marks thereon visible through the opening in the outer dome, substantially as forth.

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**531,107. GOVERNOR FOR ENGINES.** ASAHEL H. FISHER, Philadelphia, Pa., assignor of one-tenth to Charles E. Voorhees, same place. Filed Dec. 9, 1893. Serial No. 493,201. (No model.)

*Claim.*—1. In an engine governor, a casing with an inner cylinder, a pipe leading into said inner cylinder, a pipe leading from said casing, a piston in said inner cylinder above its inlet pipe, and an adjustable valve below said piston controlling the communication between a chamber in said cylinder below said piston, and a chamber in the casing outside of said cylinder said valve having its seat in a cap suitably attached to the lower end of the inner cylinder, said parts being combined substantially as described.



2. In an engine governor, a casing with an inner cylinder forming a chamber in said casing outside of said cylinder, a piston in said cylinder, a pipe leading into said cylinder below said piston a pipe leading from said chamber in the casing, a cap on the lower end of said cylinder, and a valve in said cylinder below said piston having a seat thereon for said valve, said seat having openings therein, said parts being combined substantially as described.

3. In an engine governor, a casing having an inner cylinder with an intervening chamber, a pipe leading into said cylinder, and a pipe leading from said casing, a piston in said casing above the said inlet pipe, a cap secured to said cylinder having a valve seat with openings therein, and a valve adapted to close an opening in said cap, said piston having its stem provided with means for connecting it with the throttle valve of an engine, said parts being combined substantially as described.

4. In an engine governor, a casing with an inner cylinder forming an intervening chamber, a pipe leading into said cylinder, a pipe leading from said chamber, a piston in said cylinder above said inlet pipe, a cap at the lower end of said cylinder with an opening therein communicating with said chamber, a valve in said cylinder closing said opening, a stop in said cylinder for said valve, and means connected with the stem of said piston for connecting it with the throttle of an engine, said parts being combined substantially as described.

5. The combination of a pump having a piston adapted to be connected with a reciprocating part of a main engine, a governor having a casing with an inner cylinder forming an intermediate chamber, a piston in said cylinder having its stem provided with means for connecting it to the throttle of the main engine, a pipe leading from said chamber in the casing to a reservoir in communication with said pump, and an adjustable valve in said cylinder controlling an opening in the lower end of the cylinder, communicating with said intermediate chamber said valve having its seat in a cap suitably attached to the lower end of the inner cylinder said parts being combined substantially as described.

6. In an engine governor, a cylinder with inlet and outlet openings, a piston in said cylinder above said inlet opening, a pivoted stop piece in said cylinder, an adjusting screw having a bearing and in contact with said stop piece, and a valve controlling the outlet opening of the cylinder and adapted to abut against said stop, said parts being combined substantially as described.

7. In an engine governor, a cylinder with inlet and outlet openings, a piston in said cylinder above said inlet opening, a cap on the lower end of said cylinder, a valve seated in said cap and controlling said outlet opening and an adjustable stop for said valve, said parts being combined substantially as described.

8. A governor for an engine consisting of a casing having an inner cylinder with an intervening chamber, a piston in said cylinder, an adjustable spring bearing against said piston, a cap on the lower end of said cylinder with an opening therein, a valve in said cylinder controlling said opening, and a stop in said cylinder for said valve, said cylinder having openings therein above said piston, forming seats for relief valves, said parts being combined substantially as described.

9. In an engine governor, a cylinder having inlet and outlet openings, a piston in said cylinder above said inlet opening, an adjustable spring or its equivalent bearing on said piston, a valve controlling said outlet opening and a pivoted stop for said valve and an adjusting screw for said stop, said parts being combined substantially as described.

10. An engine governor, consisting of a casing having an inner cylinder with an intervening chamber, a piston in said cylinder, an adjustable spring bearing against said piston, a perforated partition in the lower portion of the said cylinder, a valve suitably supported and guided in said partition and adapted to control a port in the end of the cylinder, relief valves in the inner cylinder above the piston and openings into the outer casing and inner cylinder, adapted to be connected with the discharge and suction passage of a pump, said parts being combined substantially as described.

11. In an engine governor, an inner cylinder with a cap on its lower end, and a valve having a seat on said cap, said cylinder being provided with a piston adapted to have a connection with the throttle of an engine, and having also connections below said piston to and from a pump, substantially as described.

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**531,108. EXTRACTING APPARATUS.** WALTER T. FORBES, Atlanta, Ga. Filed Jan. 20, 1894. Serial No. 497,513. (No model.)



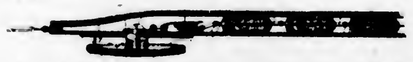
*Claim.*—The combination with a digester having a dome in communication therewith, a pipe leading into the dome, a branch pipe leading into the first mentioned pipe, and valves in said pipes, of a heater below the digester, pipes leading from the digester into the heater, a pump, a pipe leading from the pump into the digester, a discharge pipe leading from the heater, a steam pipe in communication with the discharge pipe, and valves in said pipes, substantially as set forth.

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**531,109. ELECTRIC BELT.** LOUIS F. FULLER, and ANDREW J. TAYLOR, Norfolk, Va. Filed Aug. 8, 1894. Serial No. 519,579. (No model.)

*Claim.*—1. In an electric belt, the herein-described battery consisting of a series of cells each comprising an outer oval or U-shaped element, an inner element of different metal from the outer element, and an absorbent packing interposed between the two elements, the copper connecting links or loops connected at one side to the non-corroding element of one cell and a non-corroding connection between the other side of said links or loops and the corroding element of an adjacent cell, substantially as set forth.

2. The herein-described battery for electric belts consisting of a series of connected cells each comprising an outer oval or U shaped zinc casing element, an inner copper plate, an absorbent cell packing between the copper plate and the zinc element, and a removable lock cap detachably interlocked with the free extremities of the zinc casing element, said lock cap being made of copper and provided with an integral connecting eye, and copper connecting links or loops connected at one side to the connecting eye of a lock cap and at the opposite side to the copper plate of an adjacent cell, substantially as set forth.



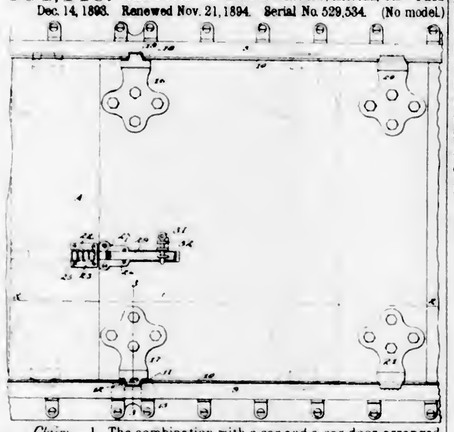
3. In an electric belt, the combination of the body or casing belt, the flexible galvanic battery arranged within said belt, connecting plates arranged at opposite ends of the belt, conducting screws securing said connecting plate to the belt, the end electrodes provided with nuts detachably engaging said conducting screws, a separable hinge clasp connection between the opposite ends of the battery and said connecting plates, and absorbent pads removably secured on said electrodes substantially as set forth

4. In an electric belt, the combination of the body or casing belt, conducting screws fitted in opposite ends of the belt, a battery arranged within the belt and detachably connected to said screws, metallic electrode disks provided upon their inner sides with attaching nuts detachably engaging said screws, pads removably secured on said electrode disks, and impervious insulating disks arranged in rear of said electrode disks, substantially as set forth.

5. In an electric battery, the combination of the belt, the battery, end electrodes connected with opposite ends of the battery and provided upon their inner sides with projections having annular grooves, absorbent pads placed on the outer faces of said end electrodes, cloth pad coverings adapted to cover the electrodes and the pads thereon, and draw strings engaging the edges of said coverings and adapted to have their free ends wound in said annular grooves, substantially as set forth.

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531,110. CAR-DOOR. RICHARD T. GARLAND, Altoona, Pa. Filed Dec. 14, 1893. Renewed Nov. 21, 1894. Serial No. 529,534. (No model.)



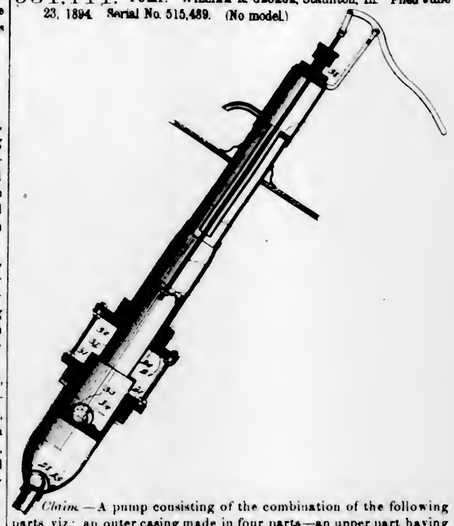
*Claim.*—1. The combination with a car and a car-door arranged to have one end moved off and onto guide-rails, of a fastening and starting means consisting of a keeper secured to the jamb of the door-opening formed with a recess and having notches or depressions in its outer surface, a bracket secured to the door formed with a recess having a slot in its opposite walls, a lever fulcrumed in the slot and arranged to engage in the recess of the keeper to lock the door and formed with a lug to engage the notches in the keeper, whereby the door may be moved onto the tracks and started thereon.

2. The combination with a car and a car-door of a fastening and opening lever formed with a lug on its outer edge and a notched plate on the jamb of the door whereby the lever-lug may engage the notches of the plate and start the door on its supports.

3. The combination with a car and a sliding car-door, of track-rails secured along the top and bottom of the door opening and arranged obliquely to the side of the car and formed with lateral edge flanges along their tread-faces and notches having flaring side-edges in the treads, brackets secured between the rails and the car and formed with ways registering with the notches of the rails, guide-brackets on the top and bottom of the door having their outer flanges formed to hook under and engage the lateral tread-flange of the rail and made with tapering side-edges to pass through the notches of the rails and into the ways of the brackets, and the inner flanges elongated to lodge against the notches in the guide-rails as and for the purpose specified.

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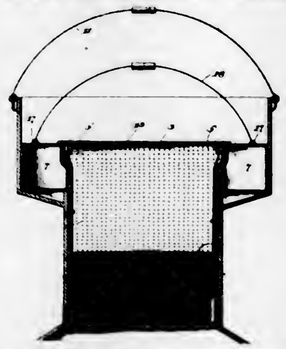
531,111. PUMP. WILLIAM R. GEORGE, Staunton, Ill. Filed June 23, 1894. Serial No. 515,489. (No model.)



*Claim.*—A pump consisting of the combination of the following parts, viz: an outer casing made in four parts—an upper part having a sealed air chamber with spout and handle, a next lower section having a closed upper end with a central tube passing through it forming a passage way for water and also for the plunger rod, and also forming around the same an annular air chamber, and two separated pump barrel sections below it of different diameters with stuffing boxes connected by external tie rods; a tubular plunger of two corresponding diameters working in the said pump barrel sections; a plunger rod extending from the plunger to the handle above and passing through the central water passage way and surrounding annular air cushion; and upwardly opening valves arranged in the lower end of the pump barrel and the plunger, substantially as and for the purpose described.

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531,112. BAIT-RECEPTACLE. WILLIAM B. GILMORE, Columbia, Ill. Filed Apr. 25, 1894. Serial No. 508,979. (No model.)



*Claim.*—1. A bait receptacle, consisting of a vessel adapted to have water therein and having a lid hinged thereto, and a bait-cup located in the vessel and movable vertically therein and connected to the lid, whereby upon raising the lid the bait cup will be correspondingly raised, substantially as and for the purpose described.

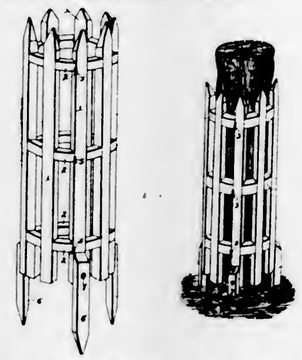
2. A bait receptacle, consisting of a cylindrical vessel adapted to have water therein and having a pulley secured on each of its upper opposite sides, a lid hinged to the upper end of the vessel, a bait-cup located in the vessel and movable vertically therein, and cords connected to the lid and to the bait-cup and passing over the pulleys on the receptacle, whereby upon raising the lid the bait-cup will be correspondingly raised, substantially as and for the purpose described.

3. A bait receptacle, consisting of a bucket adapted to be partially filled with water, a perforated vessel adapted to be arranged therein and to have the water circulate through it, a lid pivoted to the upper end of the vessel, and a perforated bait-cup located in the vessel and vertically movable therein and connected to the lid, whereby when the lid is raised the bait-cup will be correspondingly raised, substantially as and for the purpose described.

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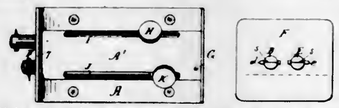
531,113. TREE-PROTECTOR. CHARLES GOERSCH, Jeddo, Pa. Filed July 10, 1894. Serial No. 517,114. (No model.)



*Claim.*—A tree protector consisting of a number of bars or rods rectangular in cross-section, extending parallel with each other and arranged in a circular line, a series of spacing blocks arranged in horizontal alignment and one between each pair of bars or rods, said spacing blocks being trapezoidal in shape and having their smaller ends arranged at the inner side of the protector, and a flexible wire passed through the blocks and through the bars or rods at points adjacent to the blocks, the wire being drawn tightly and fastened at its ends, whereby the bars or rods are forced to snugly and tightly engage the radially-extending sides of the respective blocks, and whereby the protector is made rigid in its circular form, substantially as described.

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531,114. COMBINED HINGE-GAGE AND SQUARE. ALBERT D. GOODELL, Worcester, Mass. Filed Oct. 9, 1893. Serial No. 487,566. (No model.)



*Claim.*—1. A hinge-gage provided with markers for respectively laying off the width of the hinge on both the door and jamb, and having a body or frame with a flat under face, and provided with thin laterally extending plates or flanges, rectangular in shape with its side edges at right angles to its ends and provided at one end with an upward rectangular face, and at its other end with a downward rectangular face, as set forth; whereby the gage is adapted for use as a square upon the door-jamb or door, for laying off transverse lines, as the end of the hinge-recess.

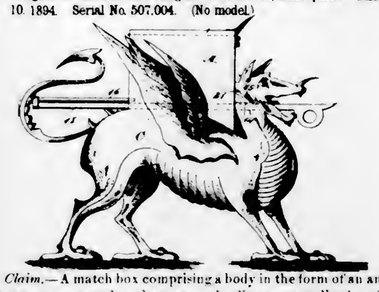
2. In a hinge-gage having a pair of marking points respectively adapted for gaging the width for the hinge upon the door and door-jamb, both controlled by a single adjustment; the combination with one of said marking points, of means for the slight independent adjustment of the same toward or from the other point for indicating greater or less amount of clearance for the door, as set forth.

3. The body or frame having the flat parallel side flanges, the square ends forming right angles therewith and raised central portion with the internal chamber and two longitudinal slots thereinto; in combination with the two cylindrical point carrying rods adjustably arranged within said frame and projecting from one end thereof, the marking points fixed in said rods, and the rod-clamping screws, as shown and described.

4. In a hinge-gage the body or frame formed of sheet metal and consisting of the rectangular bottom-plate having the upturned square end 6, the upper arched portion having longitudinal slots therein and its side plates connected to said bottom plate by rivets 4, and the rigidly attached end-plate having the downwardly extending squaring-lip 8 and openings for guiding the point-carrier rods, in combination with the point-carrier rods, the marking points fixed therein, and the set-screws for retaining said rods, as set forth.

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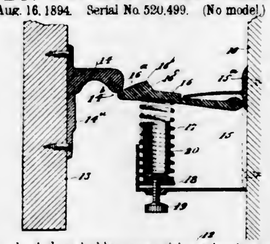
531,115. MATCH-RECEPTACLE. FRED D HALSEY, Tyler, Tex., assignor to himself and August Olfenbuttel, same place. Filed Apr. 10, 1894. Serial No. 507,004. (No model.)



*Claim.*—A match box comprising a body in the form of an animal having an open mouth and a passage leading rearwardly therefrom, a match receptacle on the animal's back and having a match trough in its bottom communicating at one end with said passage, a plunger working in the gutter and provided with a spring pressed rod extending forwardly through the animal's mouth and forming the animal's tongue, the said tongue serving also as a finger piece, while the tail of the animal extends into the rearward path of the rod and forms a stop therefor and the ignition devices in said passage, substantially as described.

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531,116. DOOR-CHECK. CHARLES W. HAMSHAW, Gallatin, Mo. Filed Aug. 16, 1894. Serial No. 520,499. (No model.)



*Claim.*—1. A door holder, comprising a hook, and a holder consisting of a casing, a latch pivoted in the casing and projecting through the casing, an adjustable base block in the casing, and a spring supported on the base block and having its upper end engaging the under side of the latch, substantially as described.

2. In a door holder, the combination with a casing, of a latch pivoted in the casing and projecting out through the same, a screw projecting through the bottom of the casing, a base block carried by the screw within the casing and a spring interposed between the base block and latch, substantially as described.

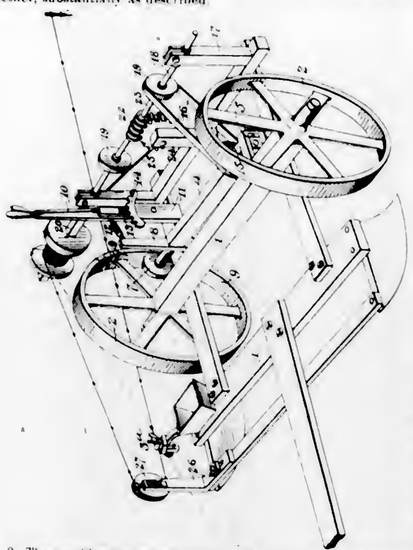
3. In a door-holder, the combination, with a bracket hook having a base piece attached to the door, and a hook limb projected outwardly and downwardly from the base piece and having its nose rounded on its front and rear edges, of a holder device attached to a fixed support and comprising a case having parallel side walls, and an aperture at its front upper corner, a latch pivoted at its rear end in the case and projecting through said aperture, and having a hook shoulder on its upper face at its outer end, a spiral spring in the case, supporting the latch, a base block supporting the spring, and an adjusting screw for the base block and spring, substantially as described.

4. In a door-holder, the combination, with a bracket hook having a depending hook limb rounded on its nose, and a base plate attachable to a door, of a holder device, comprising a case attachable to a fixed support, and apertured at its front upper corners, an elongated latch pivoted at its rear end in the case and extending through the aperture in the case, and having a forward and rearward inclined latch portion on it at its free end, a spiral spring in the case, supporting the latch, a yielding tubular support within the spring, a circular base block supporting the spring, and an adjusting screw for the base block and spring, substantially as described.

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531,117. CHECK-ROW ATTACHMENT FOR PLANTERS. SAMUEL W. HARMAN, Rogers, and FREELAND H. ROMANS, Bentonville, Ark. Filed June 6, 1894. Serial No. 513,673. (No model.)

*Claim.*—1. The combination with a planter, of a check row attachment therefor, consisting of a shaft having a wheel thereon adapted to engage the wheel of the said planter, and to be driven thereby, a rocking bar pivoted at one of its ends and carrying the said shaft, mechanism whereby the said rocking bar may be moved, a countershaft carrying a spool, and a connection between the said first named shaft and the countershaft, whereby they are rotated together, substantially as described.

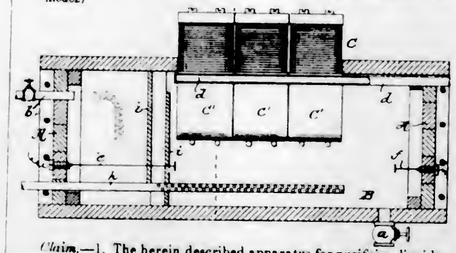


2. The combination with a planter, of a check row attachment therefor, consisting of a shaft having a wheel thereon, a rocking bar pivoted at one of its ends, and carrying at an intermediate point the said shaft, means whereby the rocking bar may be moved to cause the engagement of the wheel upon the said shaft with the tread of one of the wheels of the said planter, a reversible countershaft having a spool carried thereon, a spool mounted upon the said spool carrier, a connection between the said first named shaft and the countershaft, whereby the latter is rotated, a worm mounted on the said countershaft, a worm wheel adapted to engage with the said worm, and a connecting rod connected with the said spool, and eccentrically connected with the said worm wheel, substantially as described.

3. The combination with a planter, of a check row attachment therefor, consisting of a shaft mounted between the wheels of the planter, and having a wheel on one end thereof, a rocking bar pivoted at one of its ends to the frame of the planter, and carrying at an intermediate point that end of the said shaft which is pivoted to the said wheels, a graduated segment, a lever moving over the said segment, a spring connecting the said lever and the said rocking bar, whereby the said shaft may be moved to cause the engagement of the wheel thereon with the tread of one of the wheels of the planter, a pulley mounted on the said shaft, a reversible countershaft having a spool carrier thereon, and having two oppositely located pulleys, a belt passing over the pulley upon the first named shaft, and over one of the pulleys upon the countershaft, a spool mounted upon the said spool carrier, a worm mounted on the said countershaft, a worm wheel journaled to the frame of the said planter, and adapted to engage with the said worm, and a connecting rod connected with the said spool, and eccentrically connected with the said worm wheel, substantially as described.

4. The combination with a planter, of a check row attachment therefor, consisting of a shaft mounted between the wheels of the planter, and having a wheel on one end thereof, a rocking bar pivoted at one of its ends to the frame of the planter, and carrying at an intermediate point that end of the shaft which is provided with the said wheel, a graduated segment, a lever moving over the said segment, a spring connecting the said lever and the said rocking bar, whereby the said shaft may be moved to cause the engagement of the wheel thereon with the tread of one of the wheels of the planter, standards rising from the frame of the said planter, and having bearings in their upper ends, a reversible countershaft having a spool thereon, means for driving the countershaft from the first named shaft, a spool mounted upon the said spool carrier, a worm mounted on the said countershaft midway of its bearings, a worm wheel journaled to the frame of the said planter and engaging with the said worm, a connecting rod connecting with the said spool, and eccentrically connected to the said worm wheel, and reversible brackets having guide pulleys thereon mounted on the forward portion of the frame of the planter, substantially as described.

## 531,118. APPARATUS FOR PURIFYING LIQUIDS. JOHN T. HARRIS, New York, N. Y. Filed Nov. 18, 1892. Serial No. 452,366. (No model.)



*Claim.*—1. The herein described apparatus for purifying liquids, consisting of a receptacle for the liquid, an induction passage opening thereinto, a magnet having its pole piece extending into the said receptacle, and an eduction pipe having its exit orifice located in close proximity to the surface of the pole piece, substantially as specified.

2. The herein described apparatus for purifying liquids, consisting of a receptacle for the liquid, an induction passage opening thereinto, a double pole magnet having its pole pieces extending into the said receptacle, and an eduction pipe having its exit orifice located in close proximity to the surface of the pole pieces, substantially as specified.

3. The herein described liquid purifying apparatus, consisting of a holder for the liquid, an induction pipe leading thereto, a magnet having its pole pieces extending into said holder, an eduction pipe the orifice which leads from between said pole pieces, electrodes within the holder to increase the effect of the magnet, and a pipe for conducting an oxidizing agent into said holder.

4. The combination of the holder having a supply or induction pipe leading thereto, a magnet having its pole pieces extending into the liquid space in said holder and an eduction pipe, the orifice of which leads from between said pole pieces, substantially as described.

5. The combination of the holder for the liquid, a magnet having for its pole pieces two opposed broad pieces of metal providing a vertical space between the pole pieces which extend into the liquid space in the holder, an eduction pipe leading from the upper end of the space between the pole pieces and means for supplying liquid to the holder, substantially as described.

6. The combination of the holder for the liquid, a plurality of magnets having their pole pieces extending into the liquid space in said holder, and an eduction pipe, the orifice of which leads from between each of the pairs of pole-pieces of the magnets, substantially as described.

## 531,119. VALVE FOR AUTOMATIC FIRE-EXTINGUISHERS. GEORGE E. HIBBARD, Chicago, Ill. Filed Dec. 24, 1892. Serial No. 456,256. (No model.)

*Claim.*—1. The combination with a valve and a seat therefor, of a flexible ring carrying said seat and extending inward beneath the valve, the valve being movable toward and from the seat, substantially as set forth.

2. The combination of a casing, a valve located therein, a flexible ring having its inner margin reflexed, and a valve-seat carried by the reflexed portion of said ring, substantially as set forth.

3. The combination with a casing, a valve located therein, and a flexible valve supporting ring, of means for adjusting the pressure of said ring against the valve, substantially as set forth.

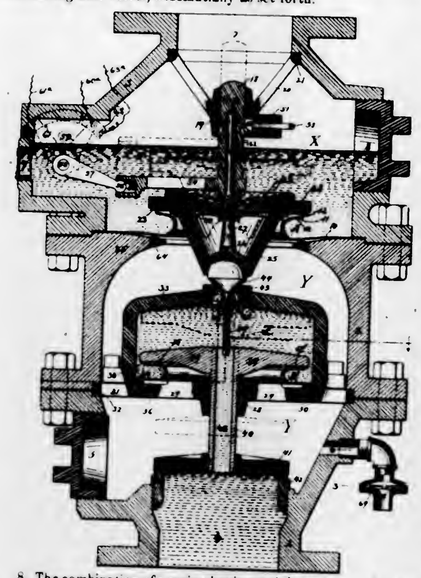
4. The combination with a casing, and a valve located therein, of the flexible ring A having the reflexed inner margin *a*, and the adjustable ring 64 bearing against the ring A, substantially as set forth.

5. The combination with a casing and a valve, of a flexible valve-supporting ring having its inner margin reflexed, said ring being formed of two annular plates having their inner margins reflexed and secured together, substantially as set forth.

6. The combination with two movable valves and a rigid stem connecting them, of a seat for each of said valves, and a flexible ring carrying one of said seats and extending inward beneath the valve, substantially as set forth.

7. The combination of a casing having an inlet and an outlet and having chambers Y and Z, the latter being in open communication with the water supply and having two openings, a valve controlled by the pressure in the system for controlling one of said openings, a flexible ring forming a valve seat support surrounding the other of said openings, a valve 39 located in the chamber Z and resting upon said ring, a valve 41 located in chamber Y and closing the inlet, and a stem connecting said valves, substantially as set forth.





8. The combination of a casing having an inlet and an outlet, and having chambers Y and Z, the latter being in open communication with the water supply and having two openings, a valve controlled by the pressure in the system for controlling one of said openings, a flexible ring having a reflexed margin surrounding the other of said openings, a valve 39 located in chamber Z and resting upon said ring, a valve 41 located in chamber Y and closing the inlet, and a stem connecting said valves, substantially as set forth.

9. The combination of a casing having an inlet and an outlet, and having chambers Y and Z, the latter having two openings, a valve controlled by the pressure in the system for controlling one of said openings, a flexible ring having a reflexed margin surrounding the other of said openings, a valve 39 located in chamber Z, and resting upon said ring, a valve 41 located in chamber Y and closing the inlet, and a hollow stem 40 connecting the valves 39 and 41 and having a passage way 48 communicating with the chamber Z and the inlet, substantially as set forth.

10. The combination with a casing having the communicating chambers X and Y, of a valve for controlling the opening through which they communicate, a flexible diaphragm arranged on said valve so as to be movable independently of it, an alarm mechanism, and suitable connections between said alarm mechanism and diaphragm, substantially as set forth.

11. The combination with a casing having the communicating chambers X and Y and a valve for controlling the opening through which they communicate, of a flexible diaphragm arranged on said valve, a stem to which said diaphragm is secured, means for sustaining and guiding said stem, an alarm mechanism and suitable connections between said stem and alarm mechanism, substantially as set forth.

12. The combination of a casing having the communicating chambers X and Y, a valve, concave on its top side, controlling the opening through which said chambers communicate, and having a guide stem 16, a flexible diaphragm secured to the top side of said valve, a stem 18 having a closed bore in which the stem 16 fits, the lower end of said stem 18 being secured to said diaphragm, means for guiding the stem 18, an alarm mechanism, and means connecting the alarm mechanism and diaphragm, substantially as set forth.

13. The combination of a casing having communicating chambers X and Y, the valve 15, a flexible diaphragm carried by said valve, two separate alarms, means actuated by the movement of the diaphragm for starting one of said alarms, and means actuated by the movement of the valve for starting the other of said alarms, substantially as set forth.

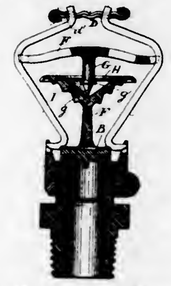
14. The combination with the casing having the communicating chambers X and Y, the chamber X having an outlet and the chamber Y having an inlet, the valve 15 controlling the opening between which said chambers communicate, and the valve 44 controlling the inlet of the chamber Y, said valve 44 having a spherical top, of a spherical socket 26 in which said valve 44 fits, and means connecting said socket to the valve 15, substantially as set forth.

15. The combination of a casing having the chamber Y, the chamber Z located therein and having two openings communicating with the chamber Y, a valve controlled by the pressure in the system controlling one of said openings, an outward seating valve located in the chamber and closing the other of said openings, and a passage connecting said chamber with the water supply, substantially as set forth.

16. The combination of the casing having an inlet and an outlet and having communicating chambers X and Y, a valve 15 controlling the opening through which they communicate, the dome 33 located in the chamber Y and having two openings, the valve 44 closing one of said openings, a part extending from the valve 15 to the valve 44, a valve 39 located in the chamber Z of the dome and closing its second opening, a smaller valve 41 located in the chamber Y and closing the inlet, and a stem connecting the valve 39 and 41, substantially as set forth.

17. The combination with the casing having the chamber Y and the drain pipe 66, of the valve casing 67, and the valve disk 68 situated therein and having the spring tongues 69 bent downward and resting upon the casing whereby the valve is held normally off of its seat, said disk being slit to form said tongues substantially as set forth.

## 531,120. SPRINKLER-HEAD FOR AUTOMATIC FIRE-EXTINGUISHERS. GEORGE R. HIBBARD, Chicago, Ill. Filed Jan. 13, 1893. Serial No. 458,216. (No model.)



*Claim.*—1. As a new article of manufacture, a link for sprinkler heads, made up of two corrugated plates placed parallel to each other, each having a part overlapping the other, and fusible keys inserted beneath said overlapping parts, substantially as set forth.

2. As a new article of manufacture, a link for sprinkler heads made up of two corrugated plates placed parallel to each other, each of said plates having one of its ends reflexed so as to overlap the other plate, and fusible keys inserted beneath said reflexed ends, substantially as set forth.

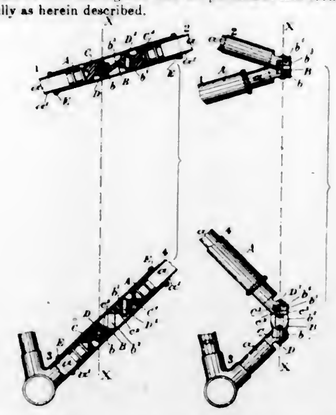
3. As a new article of manufacture, a link for sprinkler heads make up of two corrugated plates placed parallel to each other, each of said plates having a slot extending to one of its ends and having its other end reflexed so as to overlap the other plate, and fusible keys inserted beneath said reflexed ends, the meeting faces of the plates being soldered, substantially as set forth.

4. In a sprinkler head, the combination of a frame, a pointed stem having a shoulder, a disk having a central opening and slits radiating therefrom, said disk fitting loosely upon said stem, above the shoulder, and a deflector having in its top side a conical depression forming a bearing for the point of the stem, and having also a circular rabbet in which said disk fits, the metal forming the margin of the rabbet being turned over the edge of the disk, substantially as set forth.

## 531,121. FOLDING JOINT FOR BARS OR RODS. ALPHONSE HOFBECK, Issy, France. Filed July 12, 1894. Serial No. 517,272. (No model.) Patented in France, Dec. 21, 1893, No. 234,963.

*Claim.*—1. The combination with two sections of a bar or rod, of an articulating link the terminal portions of which connected by two parallel pivots with the two said sections respectively are perpendicular to said pivots and the intermediate portions of which form an angle between said terminal portions, and a sleeve for receiving said link and portions of said sections, substantially as herein described.

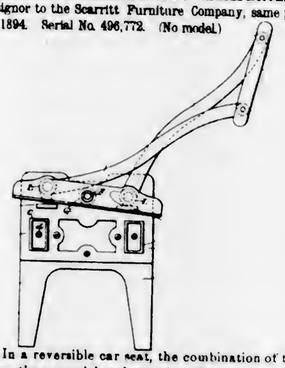
2. The combination with two sections of a bar or rod, of a bent articulating link the terminal portions of which receiving two pivots forming connections with said two sections respectively, are parallel with each other in different planes and perpendicular to said pivots, and a sleeve for receiving said link and portions of said sections, substantially as herein described.



3. The combination with two sections of a bar or rod having at their adjacent ends forks set at corresponding angular inclinations, a link comprising terminal ears which are parallel with each other but in different planes and which have an angular inclination to the intermediate portion of the link, and a sleeve for receiving said link and portions of said sections, substantially as herein described.

4. In a structure comprising two bars or rods which when straight stand at an inclination to each other, the combination of two sections in each bar or rod, two links each forming a connection between the two sections of one of said bars or rods, two pivots for articulating each link with the two sections of its respective bar or rod and two sleeves one for receiving each link and the adjacent portions of the sections of its respective rod, the said pivots being all parallel with each other but those of each rod forming an angle with its respective rod different from that formed between the other rod and its pivot, substantially as and for the purpose herein described.

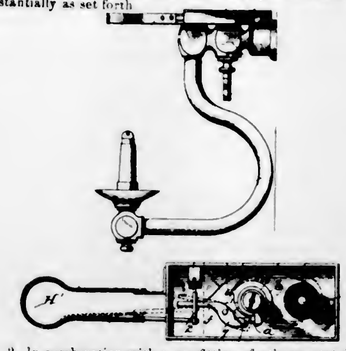
**531,122. REVERSIBLE CAR-SEAT.** SAMUEL HOFFMAN, St. Louis, Mo., assignor to the Scarritt Furniture Company, same place. Filed Jan. 13, 1894. Serial No. 496,772. (No model.)



*Claim.*—In a reversible car seat, the combination of the plate A having thereon the central bearing or boss B and stops or lugs D D on opposite sides of said bearing, the seat supporting plate E having a central bearing or bushing G rotatably connected with the boss or bearing B and fulcrum lugs F F on opposite sides of said bushing G, and the intersecting arms K K' pivoted to the fulcrum lugs and each having a cam L to engage the stops D D, the said central bearings being arranged with respect to the stops D D and fulcrum lugs so as to serve as a common support for the arms K K', substantially as shown and described.

**531,123. AUTOMATIC GAS CUT-OFF.** LEWIS JOHNSON and LEWIS FRIDLUND, Willmar, Minn. Filed May 9, 1894. Serial No. 510,646. (No model.)

*Claim.*—1. In a gas fitting, the combination with a key for turning on and off the supply of gas, of a thermostat arranged to be acted upon by the flame and having one end firmly attached to the fixture, a dog loosely connected with the free end of the thermostat, a catch pivoted between its ends and engaged by the said dog, an incline to engage with the free end of the dog to automatically disengage it from the catch, a stop plate mounted directly upon the key and having a limited movement relative thereto and operated upon by a retracting spring, and a trip firmly attached to the key so as to move therewith and disengage the catch from the stop plate in advance of the key reaching the limit of its movement relatively to the said stop plate, substantially as set forth.

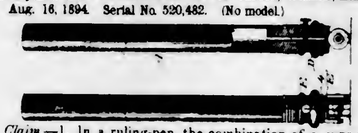


2. In combination with a gas fitting of a thermostat disposed to be acted upon by the flame, a catch arranged to be operated upon by the thermostat, a stop plate mounted upon the key and having a limited movement relative thereto, a retracting spring operatively connected with the stop plate, a trip secured to the key so as to move therewith and adapted to disengage the catch from the stop plate, and a gas controlling key, substantially as described for the purpose set forth.

3. In a gas fitting, the combination of a gas controlling key, a stop plate mounted on the key, and having a limited movement relative thereto, a trip fixedly attached to the key so as to move therewith, a catch pivoted between its ends and adapted to engage with the stop plate and having a projecting portion to be engaged by said trip, a thermostat arranged to be acted upon by the frame, a dog pivotally attached to the free end of the thermostat and adapted to engage the said pivoted catch, an incline to engage with the dog and automatically disengage it from the said catch, and a retracting spring having connection with the stop plate to normally close the key to shut off the flow of gas when said stop plate is released, substantially as set forth.

4. The combination with a key for turning on and off the gas in a gas fixture, of a stop plate mounted on the key and having a limited movement relative thereto, a spring connected with the stop plate for returning the key to normal position when released a catch to engage with the stop plate and hold the key open, and having a projection beveled in opposite directions on the side facing the key, a spring for holding the catch in operative relation, a trip movable with the key to engage with the projection and release the catch, a thermostat operated by the heat of the gas jet, a pivoted dog carried by the thermostat, and an incline to automatically disengage the dog from the catch, substantially as set forth.

**531,124. RULING-PEN.** LEWIS JOHNSON, Willmar, Minn. Filed Aug. 16, 1894. Serial No. 520,482. (No model.)



*Claim.*—1. In a ruling-pen, the combination of a support, two markers mounted upon the said support and having tubular extensions on their opposing sides which are adapted to telescope, and means for securing the markers in the relative adjusted position, substantially as set forth.

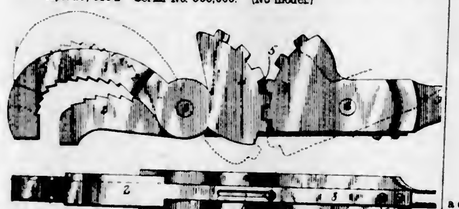
2. In a ruling pen, the combination of a handle, two rotary markers journaled in the handle upon a support common to each, and a guard arranged adjacent to one of the rotary markers and disposed wholly to one side of a plane passing vertically through the axis or support of the markers in the direction of its length, whereby when the pen is slanted toward the side of the plane farther from the guard both markers will be in active engagement with the paper, and when the pen is slanted to the side of the plane nearer the guard the marker contiguous to the said guard will be lifted from engagement with the said paper, substantially as described for the purpose specified.

3. A ruling pen comprising a fountain handle having a head provided with cheeks, a shaft supported at its ends in the said cheeks, rotary markers mounted upon the said shaft and relatively adjustable to and from each other to vary the distance apart of the lines to be ruled, and a guard contiguous to one of the markers and located wholly to one side of a plane passing vertically through the said shaft in the direction of its length, whereby when the pen is slanted toward the side of the plane farther from the guard all the said markers will engage with and rule the paper, and on slanting the pen to the side of the plane nearer the guard, the latter will trail upon the paper and lift the contiguous marker from operative engagement with the said paper, substantially as set forth.

4. The herein specified ruling pen, comprising a fountain handle having a head provided with cheeks, a shaft supported at its ends in the said cheeks, a single and a double line rotary marker mounted upon the said shaft and relatively adjustable thereon, means for securing the rotary markers in the located position, a distributing pad located between the said cheeks, a valve for controlling the supply of ink from the handle to the pad, and a guard forming a prolongation of one of the said cheeks and located wholly to one side of a plane passing vertically through the axis or shaft in the direction of its length, whereby when the pen is slanted toward the side of the plane farther from the guard both markers will rule the paper, and when the pen is slanted toward the side of the plane nearer the guard only one of the markers will come in contact with and rule the paper, substantially as specified.



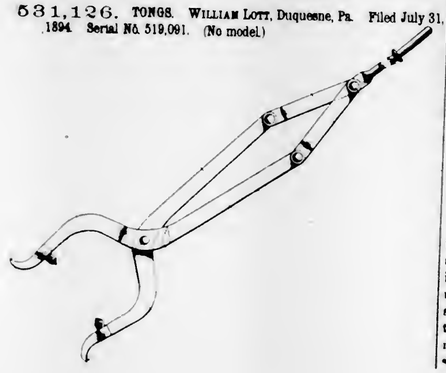
**531,125. PIPE-WRENCH.** HUGH LIND, Whitewater, Colo. Filed Apr. 23, 1894. Serial No. 508,666. (No model.)



*Claim.*—1. In a pipe or rod wrench, the combination of the two jaws thereof, one of which has a gear segment concentric with the pivot of the two jaws, and the other having an extended lever arm, of a handle pivotally connected with the latter, and having a gear segment concentric with its pivot and meshing with the first mentioned gear segment, and a spring for yieldingly preserving the alignment of the parts, substantially as described.

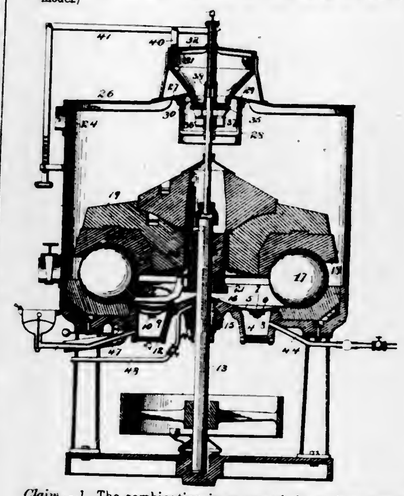
2. In a pipe or rod wrench, the combination with the jaws 1 and 2, pivotally connected to each other, the jaw 1 having the gear segment 4, of the lever arm 5, extending from the jaw 2, the handle A pivotally connected with the lever arm 5 and having the gear segment 7 adapted to mesh with, or be thrown out of engagement from the gear segment 4, and the spring 6, yieldingly connecting the handle A and the jaw 2, substantially as described.

**531,126. TONGS.** WILLIAM LOTT, Duquesne, Pa. Filed July 31, 1894. Serial No. 519,091. (No model.)



*Claim.*—The combination with the straight lever-arms, *a* and *b*, provided with curved grappling jaws, *c*, each jaw provided with a gripping pin, *m*, and terminating below the pin, in an outwardly curved extension, *g*, extending substantially at right angles to the jaw, of the toggle-arms, *h*, *h*, pivotally connected to the ends of said lever-arms and extending inwardly therefrom, and a stiff hanger, *i*, to which the inner ends of said toggle-arms are pivoted, one of said lever-arms provided with a slot, *e*, through which the other arm is passed, whereby the movements of the lever arms are guided and limited, substantially as described.

**531,127. ORE GRINDER AND SEPARATOR.** JOHN W. MACDONALD, Pittsburg, Pa. Filed Dec. 13, 1893. Serial No. 493,579. (No model.)



*Claim.*—1. The combination, in an ore grinder and separator, of a casing, an annular grinding track within said casing, and an annular auxiliary chamber having an opening or a series of openings circularly arranged inside the circle of said grinding track and concentric therewith, substantially as and for the purposes set forth.

2. The combination, in an ore grinder and separator, of a casing, an annular grinding track, and an auxiliary chamber provided with a series of openings through the top thereof, and with removable bottoms substantially as and for the purposes set forth.

3. The combination, in an ore grinder and separator, of a casing forming a body portion containing an annular grinding track, an annular chamber formed in the bottom of said body portion within the circle of said grinding track and concentric therewith; an annular concave plate shaped to cover said annular chamber and provided with openings in the center thereof, adapted to receive a series of conduits substantially as and for the purpose set forth.

4. The combination, in an ore grinder and separator of a casing forming a body portion and provided with an annular auxiliary chamber beneath the same, a series of removable sectional covers having slotted openings therein, and adapted to form conduits, substantially as and for the purposes set forth.

5. The combination, in an ore grinder and separator, of a casing forming a body portion, a chamber or trough 4, within said body portion, a series of conduits in the upper part of said chamber or trough, a lower grinding track outside of said chamber or trough and concentric therewith, a vertical shaft passing through the body portion, an upper grinding track mounted upon said shaft, grinding rolls between said upper and lower grinding tracks, a stuffing box for said shaft in the bottom of the body portion, a chamber 15, surrounding said shaft above said stuffing box, and a bushing 16 surrounding said shaft above said chamber 15, substantially as set forth.

6. The combination, in an ore grinder and separator, of a casing forming a body portion, a chamber beneath the said body portion, a series of conduits in the upper part of said chamber, a lower grinding track in said casing and outside of said conduits, a vertical shaft mounted within the casing, an upper grinding track mounted on said shaft, grinding balls or rolls between said upper and lower grinding tracks, a hopper mounted above the casing, a distributing disk mounted beneath said hopper and a clutch between said vertical shaft and said distributing disk, substantially as described.

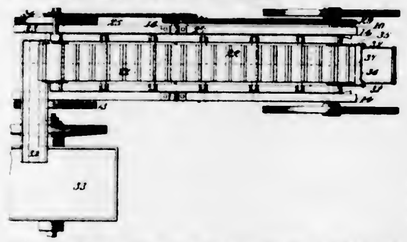
7. The combination in an ore grinder and separator, of a casing forming a body portion, a chamber beneath said body portion and communicating with the same, a lower grinding track in said body portion, a vertical shaft mounted within the casing, an upper grinding track mounted on said shaft, grinding balls or rolls between said upper and lower grinding tracks, a hopper in the upper part of the casing, a distributing disk beneath said hopper, and adjacent to the upper end of said vertical shaft, clutch connections between said vertical shaft and said distributing disk, and an adjusting rod 39, for adjusting the position of said distributing disk, substantially as described.

8. The combination, in an ore grinder and separator, of a casing forming a body portion, a chamber beneath said body portion and communicating with the same, a series of conduits in the upper part of said chamber, a lower grinding track within the casing and outside of said conduits, a vertical shaft mounted within the casing, an upper grinding track mounted on said shaft, grinding balls or rolls between said upper or lower grinding tracks, a water supply pipe 43, extending around the machine, and branch pipes 44, from said supply pipe leading into said chamber substantially as described.

9. The combination, in an ore grinder and separator, of a casing 23, a chamber 4, in said casing, removable conduits 7, for said chamber, a lower grinding track 3, adjacent to said chamber, a vertical shaft 13, an upper grinding track 18, mounted on said vertical shaft, grinding or crushing rolls 17, between said upper and lower grinding tracks, a mercury vessel 46, on the outside of the machine, and a pipe 45, connecting said mercury vessel with a chamber 4, substantially as described.

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531,128. **EARTH-SCRAPER.** JACOB MAES, St. Louis, Mo. Filed July 3, 1894. Serial No. 516,445. (No model.)



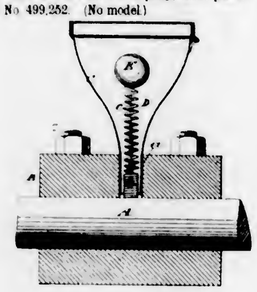
*Claim.*—1. In an earth scraper, the combination with a truck, of an elevator frame mounted thereon, a conveyer belt on said frame, a scraper blade pivotally mounted on said frame and adapted to gather the earth to be conveyed by the conveyer belt, and a handle on said scraper for regulating the depth of its cut, substantially as described.

2. In an earth scraper the combination of a wheeled truck and an elevator frame mounted for oscillation on said truck, a scraper blade mounted for oscillation on said frame, a handle fixed to said blade and adapted for manual actuation, and gathering shares depending from said frame in advance of said blade.

3. In an earth scraper, the combination with a suitable wheeled truck, of a frame pivoted thereon, drums mounted in the ends of said frame, a conveyer belt mounted on the drums, suitable means for driving said belt from the ground wheels of the truck, a scraper blade mounted on the rear end of the frame, said blade being provided with means for manual operation, and gathering shares for said blade mounted in standards depending from the elevator frame, substantially as described.

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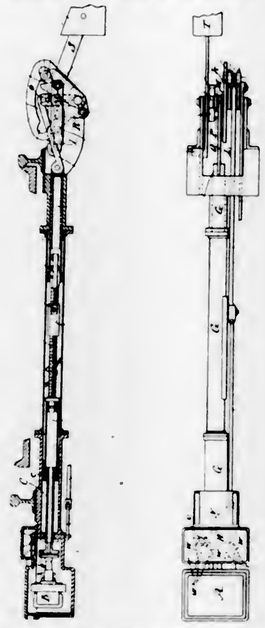
531,129. **LUBRICATOR.** WILLIAM P. MILLER, Brooklyn, N. Y., assignor to the William P. Miller Company, same place. Filed Feb. 6, 1894. Serial No. 499,252. (No model.)



*Claim.*—The combination with a grease cup, of a flexible and elastic wire coil the lower part of which is received within the throat of the cup and the upper part of which projects upward into the body of the cup to within some distance from the top thereof, and a weight attached to the upper end of said coil and held at a distance above the throat but otherwise unconfined and free to vibrate laterally in all directions with the upper part of the coil within the body of the cup, substantially as herein described.

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531,130. **ELECTRICAL SWITCH SETTING AND LOCKING DEVICE.** KARL MODEREGGER, Vienna, Austria-Hungary, assignor to Siemens & Halske, Berlin, Germany. Filed Feb. 8, 1893. Serial No. 461,414. (No model.) Patented in Germany Dec. 6, 1891, No. 65,810, and in Austria-Hungary Dec. 14, 1891, No. 42,614 and No. 73,712.



*Claim.*—1. In a railway switch, the combination with the switch rails, of a screw shaft, means for rotating the shaft, a nut on the screw, rocking grip plates, and rods connecting the grip plates to the switch rails and nut, substantially as described.

2. In a railway switch, the combination with the switch rails, of a screw shaft, means for rotating the shaft, a nut on the screw, rocking grip plates having recessed free ends, a rod connected at one end with the nut and engaging the grip plates at its other end, a rod connecting the grip plates and switch rails, and a guide plate provided with a curved slot having tangential end extensions and adapted to guide the connections between the nut rod and grip plates, substantially as described.

3. In a railway switch, the combination with the switch rails, of a screw shaft, means for rotating the shaft, a nut on the screw, rocking grip plates having recessed free ends, a rod connected at one end with the nut and engaging the recessed grip plates at its other end, a rod connecting the grip plates and switch rails, a guide plate provided with a curved slot having tangential end extensions, and connections between the nut rod and grip plates, the recesses of the grip plates receiving such connections being larger than and giving play to the latter, substantially as described, whereby said connections may enter the tangential portions of the guide plate slot and be latched therein by the grip plates on movement of the latter in one direction, and whereby also the grip plate recesses permit initial movement of the connections from the tangential end portions into the main curved part of the guide plate slot on movement of the grip plates in the other direction, as set forth.

4. In a railway switch, the combination with a rotatable telescoping shaft, of mechanism connected therewith for normally operating the switch by the rotation of the shaft, and means operated by the telescoping of said shaft for throwing the switch over to the opposing main line rails when run through and opened by an engine or train, substantially as described.

5. In a railway switch, the combination with a rotatable telescoping shaft, of mechanism connected therewith for normally operating the switch by the rotation of the shaft in either direction, and means operated by the telescoping of said shaft for throwing the switch over to the opposing main line rails when run through and opened by an engine or train substantially as described.

6. In a railway switch, the combination with a connection to the switch rails adapted to normally actuate them, of a rocking cam coupled to the connection, and a counterpoise acting on the cam, substantially as described.

7. In a railway switch, the combination with a telescoping connection to the switch rails adapted to normally actuate them, of a rocking cam coupled to the telescoping connection, and a counterpoise acting on said cam, substantially as described.

8. In a railway switch, the combination with the switch rails, of a telescoping revoluble shaft carrying a screw, a nut on the screw, and connections between the switch rails and the telescoping shaft and its nut, substantially as described, whereby the switch may be normally operated from the rotating screw shaft without telescoping said shaft, and whereby also the switch may be "cut open" as the shaft is telescoped endwise and without movement of the nut along the shaft, as herein set forth.

9. In a railway switch, the combination with the switch rails, of a telescoping revoluble shaft carrying a screw, a nut on the screw, connections between the switch rails and the telescoping shaft and its nut, a rocking cam interposed in said connections, and a counterpoise acting on said cam, substantially as described, whereby the switch may be normally operated from the rotating screw shaft without telescoping said shaft, and whereby also when the switch is "cut open" as the shaft is telescoped endwise and without movement of the nut along the shaft, the counterpoise by action on the cam will complete the throw of the switch rails to opposing main line rails, as herein set forth.

10. In a railway switch, the combination with the switch rails, of a telescoping revoluble shaft carrying a screw, a nut on the screw, rocking grip plates having recessed free ends, a rod connected with the nut and engaging the grip plates, a rod connecting the grip plates and switch rails, a rocking guide plate provided with a curved slot having tangential end extensions and adapted to guide and latch the connections between the nut rod and grip plates, a pivoted catch, a rod connecting the catch to a non-rotatable part of the screw shaft, means on the rocking guide plate for actuating said catch, and means for preventing rocking of the guide plate when the switch is operated normally by or from the rotating screw of the telescoping shaft, substantially as described.

11. In a railway switch, the combination with the switch rails, of a telescoping revoluble shaft carrying a screw, a nut on the screw, rocking grip plates having recessed free ends, a rod connected with the nut and engaging the recessed grip plates, a rod connecting the grip plates and switch rails, a rocking guide plate provided with a curved slot having tangential end extensions and adapted to guide and latch the connections between the nut rod and grip plates, a pivoted catch, a rod connecting the catch to a non-rotatable part of the screw shaft, means on the rocking guide plate for actuating said catch, a pivoted cam having a central upper recess, a pin on the guide plate entering the cam, and a counter-weighted lever bearing at the central upper recess of the cam, substantially as described, whereby rocking of the guide plate and endwise telescoping action of the screw shaft is prevented when the switch is adjusted normally from the shaft, and whereby also complete lateral movement of the switch rails to opposing main line rails will be effected when the switch is "cut open" toward said main rails by the engine or car wheels, as herein set forth.

12. The combination with a railway switch comprising switch rails, a screw shaft, a nut adapted to travel along the screw, and connections between the switch rails and nut, of an electro-motor coupled to the screw shaft for rotating the same, and electric switch devices coupled with the motor and the switch rail actuating mechanism, substantially as described, whereby as the switch is set over in one direction by operation of said mechanism, the contacts will be automatically re-adjusted in readiness to reverse rotation of the screw shaft on the next passage of the current through the motor, substantially as described.

13. The combination with a railway switch, comprising switch rails, a revoluble screw shaft capable of endwise telescoping movement, a nut on the screw and mechanism substantially as specified for operating the switch normally by or from the screw shaft, and for permitting "cutting open" of the switch and subsequent full setting over in the same direction of the switch rails to opposing main line rails, of an electro-motor coupled to the screw shaft for operating the same, substantially as described.

14. The combination with a railway switch, comprising switch rails, a revolnble screw shaft capable of endwise telescoping movement, a nut on the screw and mechanism, substantially as specified, for operating the switch normally by or from the screw shaft and for permitting "cutting open" of the switch and subsequent full setting over in the same direction of the switch rails to opposing main line rails, of an electro-motor coupled to the screw shaft for operating the same, and electric switch devices coupled with the motor and the switch rail actuating mechanism, substantially as described, whereby as the switch is set over in one direction, either normally or by being "cut open," the electric contacts will be automatically re-adjusted in readiness to reverse rotation of the screw shaft on the next passage of the current through the motor, substantially as described.

15. In a railway switch, the combination with the main line rails 1, 1, and switch rails 2, 2, of a laterally ranging shaft having a screw portion E, means for rotating said shaft, a nut H, on the screw, rocking grip plates J, J, a rod I, connecting the nut and grip plates, and a rod U, coupling the grip plates and switch rails, substantially as described.

16. In a railway switch, the combination with the main line rails 1, 1, and switch rails 2, 2, of a laterally ranging shaft having a screw portion E, means for rotating said shaft, a nut H, on the screw, rocking grip plates J, J, a rod I, coupled to the nut H, and carrying rollers $j$, $j$, $k$; a guide plate K, having a slot $k'$ with end extensions $k^2$ $k^3$, said slot receiving the roller $k$, while the grip plates receive the roller $j$, $j$, and a rod U, coupling the switch rails and grip plates, substantially as described.

17. In a railway switch, the combination with the main line rails 1, 1, and switch rails 2, 2, of a laterally ranging revoluble and telescoping shaft, comprising parts C, D, a screw E, and a non-rotatable end portion F; a nut H, on the screw, rocking grip plates J, J, a rod I, coupled to the nut H, and carrying rollers $j$, $j$, $k$, a guide plate K, having a slot $k'$ with end extensions $k^2$ $k^3$, said slot receiving the roller $k$, while the grip plates engage the rollers $j$, $j$; a pivoted slotted catch M, a pin N, on the guide plate K, engaging said catch, a rod O, connecting the catch M, with the part F, of the lateral shaft, and a rod U, coupling the switch rails and grip plates, substantially as described.

18. In a railway switch, the combination with the main line rails 1, 1, and switch rails 2, 2, of a laterally ranging revoluble and telescoping shaft comprising parts C, D, a screw E, and a non-rotatable end portion F; a nut H, on the screw, rocking grip plates J, J, a rod I, coupled to the nut H, and carrying rollers $j$, $j$, $k$, a guide plate K, having a slot $k'$, with end extensions $k^2$ $k^3$, said slot receiving the roller $k$, while the grip plates engage the rollers $j$, $j$, a pivoted slotted catch M, a pin N, on the guide plate K, engaging said catch, a rod O, connecting the catch M, with the part F, of the lateral shaft, a rocking cam R, having a recess $r$, a counterweighted lever S, T, having a roller $s$, adapted to the recess $r$, and exterior convex faces of the cam, a connection P, between the parts K, R, and a rod U, coupling the switch rails and grip plates, substantially as described.

19. In a railway switch, the combination with the switch and main line rails, a revoluble telescoping shaft C, D, E, F, a nut H, on the screw portion E, of said shaft, mechanism I, J, K, M, O, P, R, S, T, coupled to the nut, and a bar U, connecting said mechanism to the switch rails, of an electro-motor coupled to the shaft, a rod V, connected to the nut H, electric switch devices $w$, connected with the motor to reverse the current and the direction of rotation, and connections between said switch devices and the rod V substantially as described, for the purposes set forth.

20. In a railway switch, the combination with the switch and main line rails, a revoluble telescoping shaft C, D, E, F, a nut H, on the screw portion E of said shaft, mechanism I, J, K, M, O, P, R, S, T, coupled to the nut, and a bar U, connecting said mechanism to the switch rails, of an electro-motor coupled to the shaft, a rod V, connected to the nut H, electric switch devices connected by the rod V, to the motor to reverse the current and direction of rotation; and a telegraph line and electric switch device connected therewith to signal operation of the switch at a distant point, substantially as described.

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531,131. **AUTOMATIC CAR-BRAKE.** HENRY E. OLSON, Chicago, Ill. Filed Sept. 17, 1894. Serial No. 523,312. (No model.)

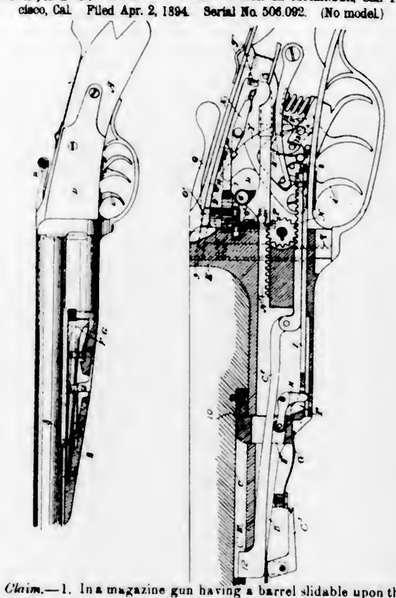


*Claim.*—1. In an automatic car-brake, the combination with a casing, open at both ends and secured to a car, of an air-vane, pivotally suspended in said casing, a rocker, to which said vane is secured, a clutch-bar, a lever, supporting said bar, a companion clutch-bar,

movably secured to the car-frame, and means for connecting said clutch with the draw bars and brake-mechanism, substantially as set forth.

2. In an automatic car-brake, the combination with a casing open at both ends and secured to the car-frame, of an air-vane, a rocker, pivotally mounted, and from which said vane is suspended, a clutch-bar, a lever F, supporting said bar, a companion clutch-bar E, loosely supported and adapted to have an endwise movement, a lever $b$, a rod, connecting-levers F and $b$, a rod $b^2$, a lever $b^4$, and a rod $b^5$, the draw-bar and brake-mechanism, substantially as set forth.

## 531,132. MAGAZINE-GUN. WILLIS H. OSTRANDER, San Francisco, Cal. Filed Apr. 2, 1894. Serial No. 506,092. (No model.)



*Claim.*—1. In a magazine gun having a barrel slidable upon the stock, a vertically moving locking bolt or latch, a bell crank lever fulcrumed behind the latch having one arm projecting into a slot or channel in the latch, a horizontally sliding bar and a trigger by which it is drawn backward, said bar having an enlongated slot in the front end into which the second arm of the bell crank lever projects, and an extension which normally stands beneath the locking latch and prevents its being withdrawn, the slot allowing this extension to be withdrawn from beneath the latch before the bell crank lever is engaged to depress the latch.

2. In a magazine gun, the vertically movable locking bolt or latch a horizontally slidable bar, the front end of which extends beneath the latch when the barrels are closed and locked, a bell crank lever fulcrumed behind the latch having one arm extending forwardly into a slot or channel in the latch, and the other arm extending downwardly into a channel in the sliding bar, the length of which allows the bar to be drawn backward until it releases the locking latch before the sliding bar commences to act upon the bell crank lever whereby the latch is depressed.

3. In a magazine gun, a vertically moving locking latch, a horizontally slidable bar and a bell crank lever whereby the latch is withdrawn to release the barrels, said latch having its rear face inclined and adapted to engage the corresponding inclined face against which it locks whereby the barrels are locked and looseness prevented by the wedge action of these faces when the latch is thrown upward, and the faces are disengaged and released by the first downward movement of the latch.

4. In a magazine gun, the horizontally slidable barrels, the vertically locking latch, the horizontally slidable bar and bell crank lever by which the latch is actuated, the rack and pinion mechanism and the link or bar extending to the front and having the up-turned end adapted to be engaged so as to actuate the cartridge carrying mechanism when the barrels are moved forward, in combination with a hinged latch adapted to hold said link in place or to disengage it for the removal of the barrels as described.

5. In a gun having the barrels slidable horizontally upon the fore end, a guiding tongue upon which the rib of the barrel slides and is guided, said tongue being removably attached to the fore end and being split or slotted in the direction of its length, and means for expanding the sides of the tongue.

6. In a gun having the barrels slidable upon the fore end, a guiding rib upon which they travel, said rib having expansible sides, and a screw whereby the sides are separated to fit in the channel on the rib, and compensate for wear.

7. In a magazine gun having the barrels slidable upon the fore end, a mechanism consisting of slidable racks, pinions engaged by said racks to actuate the carriers by which the cartridges are lifted from the magazine to a position opposite the open rear end of the barrel, a rotating post, a lever by which it is turned from side to side, plates slidable transversely and adapted to move the pinions correspondingly so as to disengage either pinion from the rack bar to allow one mechanism to be actuated independently, slots made in the transversely moving plates and pins projecting respectively from the opposing plates into these slots, so that either pinion will be returned into engagement with the rack, by the movement of the other plate to disengage the other pinion.

8. In a gun, the combination, of the longitudinally sliding racks, pinions turning upon a shaft, and movable transversely to disengage them from the rack, transversely sliding plates, each of which engages one of the pinions and a rotary post and top lever by which said plates are moved to right or left, slots made in each of the plates and pins projecting into the slots from the opposing plates, so that when either plate is moved to disengage its pinion, the other plate will be drawn in the same direction to insure the re-engagement of the other pinion.

9. The safety catches adapted to engage the hammers when drawn back and the thumb pieces slidable upon the stock and adapted to disengage the catches from the hammers, bars slidable in the upper part of the casing having stops to engage the safety catches and prevent their being lifted when the barrels are unlocked and moved forward, and projections from the front end of said bars to be engaged by the barrels when the latter are closed and locked, whereby the sliding barrels are moved backwardly to release the safety catches and allow them to be raised by the thumb pieces.

10. In a gun, the combination, of the vertical rotary post having a top lever by which it is actuated for the purpose of disengaging either of the pinions from the rack bars, said post having rearwardly extending arms or an open ring between their rear ends, a spring or springs having the rear end attached to the casing and the front end extending between said arms to return the post and lever to a central position after it has been turned to either side.

11. A central revolving pinion actuated by a longitudinally sliding rack bar connected with the slidable barrels of a gun, loose pinions mounted upon the same shaft, engaging the cartridge carriers and movable into engagement with the central pinion by pressure from their outer sides, transversely sliding plates with lugs engaging grooves in the hubs of the movable pinions, a longitudinal pin slidable to disengage the movable pinions from the central one when the breech is closed, and allow them to be moved into engagement when the breech is opened.

12. A central revolving pinion actuated by a longitudinally sliding rack bar connected with the slidable barrels of a gun, loose pinions mounted upon the same shaft, engaging the cartridge carriers and movable into engagement with the central pinion by pressure from the outer sides, transversely sliding plates with lugs engaging grooves in the hubs of the movable pinions, a longitudinal tapering pin slidable between the plates to separate them and the pinions, and locking pins, whereby the plates are retained apart and the movable pinions out of engagement with the one by which they are rotated.

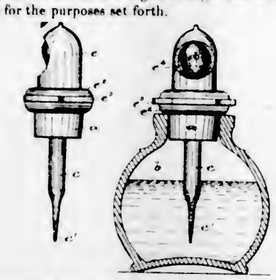
13. A central pinion revoluble by the reciprocation of the slidable barrels of a gun, pinions turning loosely upon the same shaft with the first named pinion, and slidable into or out of engagement with clutches upon opposite sides thereof by means of transversely sliding plates having lugs engaging channels in the hubs of the movable pinions, a wedge or taper pin movable between the sliding plates to separate them and disengage the pinions when the breech of the gun is closed, spring-actuated locking pins by which the plates and pinions are retained separate while the hammers are drawn back, and either one is disengaged to allow its pinion to be thrown into engagement when the hammer is down and the corresponding barrel discharged.

## 531,133. COMBINED STOPPER AND FILLER FOR BOTTLES. ISAAC POMEROY, Newark, N. J. Filed Oct. 6, 1894. Serial No. 525,087. (No model.)

*Claim.*—1. A combined stopper and liquid filler, comprising therein, in combination, with a filling tube and a compressible bulb arranged thereon, a non-compressible shield arranged over said bulb and having an opening or openings therein, for the insertion of the finger, or finger and thumb, as and for the purposes set forth.

2. A combined stopper and liquid filler, comprising therein, in combination, a perforated stopper, as $a$, for a bottle, a filling tube in said stopper, a compressible bulb on said tube, and a non-compressible shield arranged over said bulb and having an opening or openings therein, for the insertion of the finger, or finger and thumb, substantially as and for the purposes set forth.





3. A combined stopper and liquid filler, comprising therein, in combination, a perforated stopper $a$, for a bottle, a filling tube $c$, a compressible bulb $d$ on said tube, and a non-compressible shield $e$, over said bulb, said shield having a recess $e'$ in which the upper portion of the stopper $a$ is fitted and secured, and an opening or openings in said shield for the insertion of the finger, or finger and thumb, substantially as and for the purposes set forth.

## 531,134. TERRA-COTTA AND OTHER FIREPROOF CONSTRUCTIONS. JOSEPH W. ROWELL, San Francisco, Cal. Filed July 29, 1893. Serial No. 481,864. (No model.)



*Claim.*—A hollow tile having an arched strengthening rib and having longitudinal rabbets on its sides in a plane coinciding with that of the upper surface of the strengthening rib, and provided at one end with a projecting lip or rim.

## 531,135. PENCIL-CASE. RICHARD H. RYAN, Brooklyn, N. Y. Filed May 5, 1894. Serial No. 510,174. (No model.)



*Claim.*—In combination with the longitudinally-slotted tube A, provided with collar $c$ and sleeve or extension $d$; the tube B provided with reverse slots $e$ and $f$; a ring $i$ secured to tube B; carriers C D provided respectively with pins $g$ $h$ to work in the slots, and the two-part shell or casing F G connected with the tubes A and B.

## 531,136. PENCIL-CASE. RICHARD H. RYAN, Brooklyn, N. Y. Filed May 29, 1894. Serial No. 512,931. (No model.)



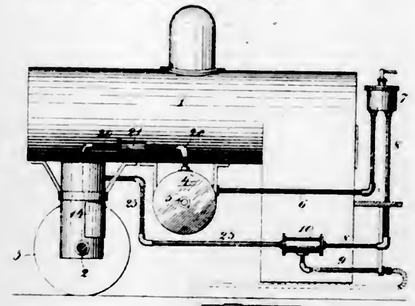
*Claim.*—1. In a combined pencil and eraser, the combination with shell or tube A provided with spirally slotted tube B; of the straight slotted tube C within tube B; the pencil D provided with pin $d$ to engage the slotted tubes B C; the sleeve E journaled upon the end of the shell A and connected with tube C; the eraser holder F provided with pin $g$ to enter a slot in the shell A; and the encircling sleeve H connected with the pin $g$, said parts being adapted to co-operate substantially as shown and described.

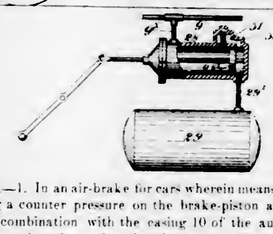
2. In a combined pencil and eraser, the combination with shell A provided at one end with spirally-slotted tube B, and the rim $a$ and ring $b$; of a longitudinally-slotted tube C fitting freely within tube B; a pencil D provided with a pin to engage the slotted tubes; an eraser mounted within the shell A; a sliding sleeve H encircling the tube between the rim $a$ and ring $b$, and connected with the eraser by a pin; and a rotatable sleeve E journaled at one end upon the shell and connected at the opposite end with the tube C, said parts being arranged to co-operate substantially as shown and described.

3. In combination with shell A provided with collar $c$; the tube B secured to the collar and projecting beyond the end of the shell: the tube C within tube B; the collar $c$ at the outer end of tube C; the pencil D provided with pin $d$ to engage the slotted tubes B C; and the sleeve E journaled upon the end of the case A and connected at its opposite end to the collar $c$.

4. In combination with a pencil case provided with a pencil movement and a pencil at one end; a hollow eraser-holder within the case at the opposite end and means for moving said holder longitudinally, whereby the pencil may be retracted into that portion of the case in which the eraser holder is mounted.

## 531,137. AIR-BRAKE. JOHN D. P. SCHENCK, Newark, N. J. Filed Mar. 12, 1894. Serial No. 503,226. (No model.)





*Claim.*—1. In an air-brake for cars wherein means are employed for putting a counter pressure on the brake-piston at low rates of speed, the combination with the casing 10 of the automatic valve open at one end to the engineer's valve, at the other end to a source of compressed air under low tension, and at the side with the train-pipe, the said train-pipe, and the valve 10ª in said casing, of a valve adapted to control the admission of air under low tension behind the valve 10ª, and to open the said casing in succession to a series of relief ports, whereby the tension of the counter pressure is regulated, and a governor driven from the axle of the train and operating said valve, as set forth.

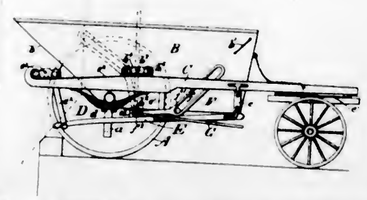
2. In an air-brake for railway cars, the combination with the automatic valve controlling the admission of air to the train-pipe when the brakes are set, to provide a counter pressure of less tension than the main pressure, and the casing of said valve, of a valve-chest, open to a source of air at low tension, said chest having a port 22, open to the casing of the automatic valve and back of the latter, and a series of relief ports, some of which are controlled by pressure-reducing valves, a valve 18 in said chest adapted to open the relief ports in succession to the port 22, and a governor driven from one of the axles of the train and operating the valve 18, whereby the position of said valve is governed by the speed at which the train is moving, as set forth.

3. In an air-brake for railway cars, the combination with the main air-reservoir, a pipe connecting said reservoir with the train-pipe, the automatic valve and engineer's valve controlling the flow of air to the train-pipe, the said train-pipe, and a governor driven from an axle of the locomotive or train, of a valve chest open to air under a tension less than that in the main reservoir, said chest having a port 22, open to the casing of the automatic valve and back of said valve, a relief port 24, open to the atmosphere and a relief port or ports controlled by spring valves which resist the outflow of air thereat, and a valve operated by the governor and adapted to open the port 22 to one or the other of the said relief ports, according to the speed at which the train is moving, as set forth.

4. In an air-brake for cars wherein means are employed for automatically regulating the effective braking pressure in accordance with the speed of the train, the combination with a main compressed air-reservoir, an engineer's valve, a train-pipe, an automatic cut-off valve between the engineer's valve and the train-pipe on the car, means for supplying air at a tension below the maximum tension behind said automatic valve for actuating it to cut off the train-pipe from the engineer's valve and opening the train-pipe to the reduced

air-pressure, and a governor driven from one of the axles of the train, of means controlled by said governor for effecting a graduated reduction of the tension of the air behind said automatic cut-off valve at intervals as the speed of the train increases, substantialy as set forth.

## 531,138. DUMPING-WAGON. MARTIN L. SENDERLING, Jersey City, N. J. Filed Jan. 24, 1891. Serial No. 378,925. (No model.)



*Claim.*—1. A dumping wagon comprising a suitable supporting frame, a body having a tilting movement and a rearwardly traveling movement, and a track independent of the body support with which the body has a movable connection throughout its tilting and rearwardly traveling movement, the said track being secured at one end to the supporting frame, substantially as set forth.

2. A dumping wagon comprising side bars between which the body is located, a supporting frame depending from the side bars, the body having normally a bearing upon the depending supporting frame and being provided with a second bearing which is adapted to engage the side bars and form a support for the body when the body is tilted, the said body having a traveling movement bodily between the side bars and a tilting movement, and a guide track secured at one end to the frame and having a loose connection with the body, substantially as set forth.

3. A dumping wagon comprising side bars having downwardly inclined tracks leading toward their rear ends, a frame depending from the side bars, a body having a normal support in the depending frame and having an auxiliary support upon the tracks, the said body being free to tilt and move rearwardly between the side bars and a guide track with which the body has a movable connection, the said track being secured at one end to the supporting frame, substantially as set forth.

4. In a dumping wagon, the combination with supporting wheels and a crank axle, of a pair of side bars supported upon the axle, a depending frame fixed to the side bars, a body supported normally upon the depending frame within the crank portion of the axle and having an auxiliary support upon the side bars, the said body being free to tilt and move rearwardly between the side bars and a swinging guide track pivotally secured to the depending frame and having a movable connection with the body, substantially as set forth.

5. In a dumping wagon, the combination with the supporting frame and the body having a tilting and rearwardly traveling movement in the frame, of a guide track independent of the body support pivotally secured at one end to the supporting frame and having a movable connection with the body throughout its tilting and rearwardly traveling movement, and an operating lever engaged with the swinging guide track for tilting the body, substantially as set forth.

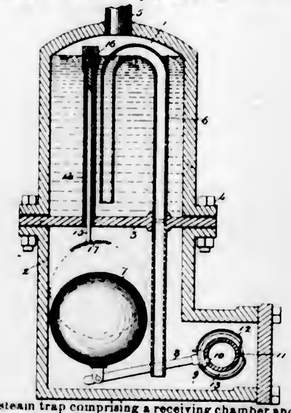
6. The combination with the supporting frame consisting of a pair of side bars provided with tracks and a frame depending from the side bars, of a body supported normally upon the depending frame, the said body being provided at its sides with trucks in proximity to the tracks on the side bars, the said body being free to tilt and travel rearwardly, the relation between the bearing of the body on the depending frame and its truck bearings on the side being such that when the body is tilted it will bear upon the trucks on the tracks, substantially as set forth.

## 531,139. STEAM-TRAP. THOMAS S. SMITH, East St. Louis, Ill., and ALFRED M. SHEPARD, St. Louis, Mo. Filed Aug. 13, 1894. Serial No. 520,119. (No model.)

*Claim.*—1. A steam trap comprising two contiguous chambers an equalizing pipe between said chambers, a siphon communication between the two chambers, and a valve in one of the chambers controlled by the proportionate amount of discharge by the siphon, substantially as set forth.

2. A steam trap comprising a receiving chamber and a discharge chamber an equalizing pipe between the chambers, a siphon establishing communication beween the chambers, a valve-controlled opening in the discharge chamber, a float operating said valve in proportion to the amount discharged by the siphon into said discharge chamber, substantially as set forth.

3. A steam trap comprising a receiving chamber and a discharge chamber, an equalizing pipe establishing communication between the chambers, a siphon adapted to convey water from one chamber to the other, a valve-controlled discharge opening in the discharge chamber, a float operating said valve and controlling the opening in the equalizing pipe, substantially as set forth.



4. A steam trap comprising a receiving chamber and a discharge chamber, an equalizing pipe establishing communication between the chambers, a stem in said pipe carrying a valve, a disk on the lower end of said stem in the discharge chamber, a siphon for discharging water from the receiving into the discharge chamber, a valve-controlled discharge opening in the discharge chamber, a float operating said valve and adapted to strike the disk on the stem and force the valve thereon to its seat and close the equalizing pipe, substantially as set forth.

5. A steam trap comprising a receiving chamber having a suitable inlet, a discharge chamber located below the same, a plate separating the said chambers, a siphon establishing communication between the chambers, an equalizing pipe between the two chambers, a stem operating within the pipe, a valve on top of said stem, a striking disk at the lower end of the stem located in the discharge chamber, a float in the discharge chamber located below the stem, an arm pivotally secured to the float, a valve at the free end of the arm, a discharge pipe having an opening controlled by said valve leading from the discharge chamber, and a spring encircling the pipe and secured to the valve for holding the latter to its seat, substantially as set forth.

## 531,140. MINNOW-HOLDER FOR FISH-HOOKS. FREDERICK STAPP, Denver, Colo. Filed Mar. 2, 1894. Serial No. 502,043. (No model.)



*Claim.*—As an improved article of manufacture, and in combination with an ordinary fish hook to which the line is attached, the herein described minnow holder consisting of the straight shank having the sharp point, and terminating at the top or opposite extremity in an eye bent out of line with the shank, and adapted to receive the shank of the hook when in a position parallel with the shank of the device, the latter being provided with short barbs located intermediate its extremities, as and for the purpose set forth.

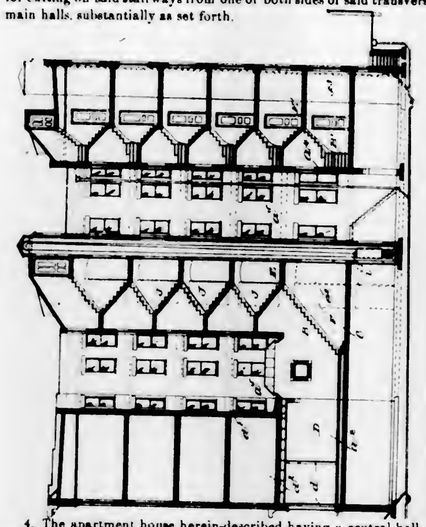
## 531,141. APARTMENT-HOUSE. MARTIN L. UNGRICH, New York, N. Y. Filed Sept. 7, 1894. Serial No. 522,396. (No model.)

*Claim.*—1. An apartment house having independent front and rear portions, central walls and a transverse wall leading from the rear ends of said central walls, a main hallway being located between said central walls, a forward stairway leading from said hallway in the front portion of said building and a second stairway leading from the rear of said hallway to the said rear portion of said building, substantially as set forth.

2. The apartment house herein-described having a central main hallway, central walls between which said hallway is located, front and rear stairways, upper main halls into which said stairways open, and private hallways leading from said main hallways to the front and rear apartments, substantially as set forth.



3. The apartment house herein-described having a central hallway, two central walls between which said hallway is located, a front stairway between said walls, upper transverse main halls into which said stairway opens, and fire-proof doors or slides in said central walls for cutting off said stairways from one or both sides of said transverse main halls, substantially as set forth.



4. The apartment house herein-described having a central hallway, two central walls between which said hallway is located, a stairway between said walls, an upper main hallway transverse to said former hallway and into which said stairway opens, two longitudinal hallways at right angles to said transverse hallway, and a series of apartments with which said longitudinal hallways connect, substantially as set forth.

5. The apartment house herein-described having a central hallway, a stairway leading from the rear end of said hallway, an upper main hallway into which said stairway opens, two separate hallways leading from said main hallway, and two sets of apartments with which said separate hallways respectively connect, substantially as set forth.

6. The apartment house herein described having a central hallway, a stairway leading from the rear end of said hallway, an upper main hallway into which said stairway opens, the water-closet at the rear of said upper hallway, a lift or elevator shaft adjoining said water-closet, two separate hallways leading from said main hallway, and two sets of apartments with which said separate hallways respectively connect, substantially as set forth.

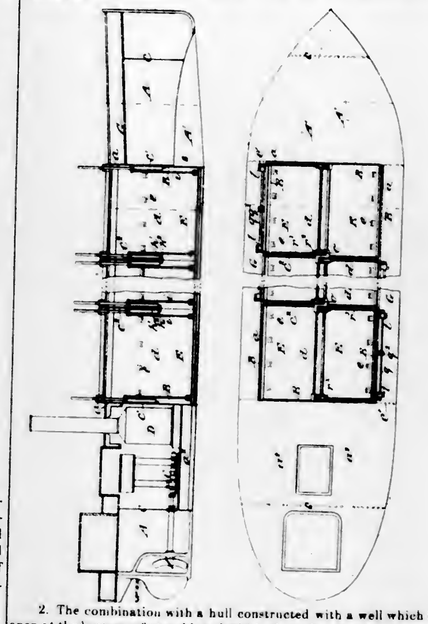
7. The apartment house herein-described having water-closets, an air-well in rear of said water-closets, a heating medium at the lower end of said air-well, and soil, vent and supply pipes located in said air-well, substantially as set forth.

8. The apartment house herein-described having front and rear portions, a central hallway, two central walls between which said hallway is located, a transverse wall connected to said central walls, a front stairway between said central walls, a second stairway in rear of said transverse wall, main hallways leading from both of said stairways, separate hallways at angles to said main hallways, and separate apartments communicating with said separate hallways, substantially as set forth.

9. The apartment house herein-described having front and rear portions, a central hallway, two central walls between which said hallway is located, a transverse wall connected to said central walls, a front stairway located between said central walls, a "lift" or elevator shaft also located between said central walls, upper main transverse hallways onto which said stairway opens, doors connected to said central walls for closing over said upper transverse hallways, longitudinal hallways at right angles to said transverse hallways, separate apartments leading from said longitudinal hallways, a stairway leading from said central hallway in rear of said transverse wall, main hallways onto which said rear stairway opens, separate hallways leading from said latter main hallways, and separate apartments communicating with said separate hallways, substantially as set forth.

## 531,142. DUMPING-SCOW. JOHN W. WILSON, New York, N. Y. Filed Apr. 4, 1894. Serial No. 506,264. (No model.)

*Claim.*—1. The combination with a hull constructed with a well which is open at the bottom, of traps which are hinged within the well to the sides thereof at points distant from the top and bottom of the well and from the top and bottom of the said traps to form the sides and bottom of a cargo space within the well, substantially as herein set forth.



2. The combination with a hull constructed with a well which is open at the bottom, of traps hinged within the well to the sides thereof to form the sides and bottom of a cargo space within the well, and counterbalance weights arranged within the hull outside of the well and connected with said traps, substantially as herein set forth.

3. The combination of a hull constructed with a well which is open at the bottom, two traps hinged within the said well one to each side thereof and forming the bottom and sides of a cargo space, a counterbalance connected with said traps, and a brake for controlling the movements of said traps and counterbalance, substantially as herein set forth.

4. The combination of a hull constructed with a well which is open at the bottom, two traps hinged within said well one to each side thereof and forming the bottom and sides of a cargo space, a shaft and bearings therefor on the hull, a drum on the said shaft, a counterbalance within the hull, a rope or chain passing around said drum and connecting said counterbalance with said traps, and a hand-controlled brake on said shaft, substantially as herein set forth.

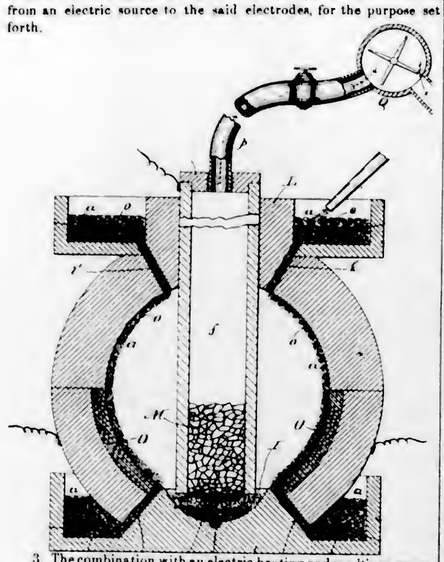
5. The combination with a hull constructed with a well which is open at the bottom, of two traps which are hinged within the well one to each side thereof and which form the bottom and sides of a cargo space, a locking rod common to both traps and provided with a stop, connecting rods one on each trap connected with said locking rod and a stop on the well for engaging with said stop on the locking rod, substantially as herein set forth.

6. The combination with the hull A having the well B, the traps E hinged within the well, the locking rod *o* fitted to a guide *p* on the the hull, the connections *h i* between the locking rod and the traps, the rock-shaft *q* supported on the hull outside of the well and carrying a crank *q'* and movable stop *r'* connected with said crank for engaging with the locking rod, all substantially as herein set forth.

## 531,143. APPARATUS FOR ELECTRIC HEATING, SMELTING, AND SEPARATING. JOSEPH W. WOODFOLK and JOHN C. WHARTON, Nashville, Tenn. Filed Dec. 12, 1893. Serial No. 493,500. (No model.)

*Claim.*—1. The combination with an electric heating and smelting apparatus having means for circulating a body of water, of the hollow electrode through which the material to be treated is fed, the electrode K, surrounding said hollow electrode and through which the water circulates, and the connections from an electric source to the said electrodes, for the purpose set forth.

2. The combination with an electric heating and smelting apparatus having means for circulating a body of water, of the hollow electrode through which the material to be treated is fed, the electrode K, surrounding the hollow electrode and through which the water circulates, the oxidizable material O, arranged upon the electrode K, so that the water will come in contact with it, and the connections from an electric source to the said electrodes, for the purpose set forth.



3. The combination with an electric heating and smelting apparatus, the electrode through which the material to be heated is fed, the electrode K, through which the water circulates having oxidizable material arranged in contact with the water, the water basin or vessel with which the electrode K, is provided, and the connections from an electric source to the electrodes, substantially as and for the purpose set forth.

4. In an electric heating, smelting and separating apparatus in which is circulated a body of water, the combination of the vessels for containing the water, means for forcing the water from one vessel to the other, the separator located in one of the vessels, the walls forming one electrode and provided with water channels, the hollow electrode between the said walls and extending through one of the said vessels, and the electrical connections from the electrodes to an electric source, substantially as and for the purpose set forth.

5. The combination in an electric smelting and separating apparatus, the electrode K, having liquid or water channels, the oxidizable material secured to the said electrode so that the liquid or water will engage the material, and the oxygen liberated from the liquid will be reabsorbed by the said material, the hollow electrode *f*, extending through the electrode K, and through which electrode *f*, the material to be smelted is fed, the cover P, the stop cock *q*, to open or close the passage way of gases, or to force the vapors through the said liquid or water channels, substantially as set forth.

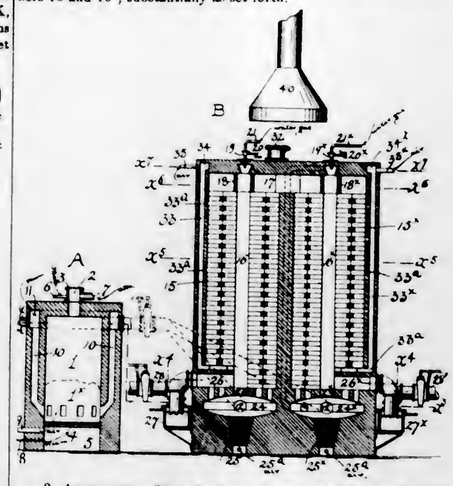
6. In an electric smelting apparatus provided with means for supplying a moving body of liquid, the vessels containing the liquid, means for conveying the liquid from one vessel to the other, the electrode through which the liquid is passed, the electrode containing the material to be smelted, means connected to this electrode to make a draft through it, or to confine the vapors within the other electrode, as desired, for the purpose set forth.

7. The combination with the furnace forming one electrode, through which acidulated water is circulated, of the other electrode through which the material to be melted is passed, the exhaust fan connected to this electrode, and the electrical connections from an electric source to each of the said electrodes, substantially as set forth.

## 531,144. APPARATUS FOR THE MANUFACTURE OF GAS.

WALTER A. ALLEN, New York, N. Y. Filed Aug. 6, 1894. Serial No. 519,609. (No model.)

*Claim.*—1. In an apparatus for carbureting and fixing gas, the combination of a generator, two receiving chambers 24 and 24×, each connected to the generator, two upright combining and fixing chambers 15 and 15×, arranged over the respective receiving chambers and filled with checker work having chambers 16 and 16×, a chamber or space 17, connecting the chambers 15 and 15× at their upper ends, and atomizers 19 and 19×, arranged over the respective chambers 16 and 16×, substantially as set forth.



2. An apparatus for making gas, comprising a generator, a receiving chamber 24, a conduit connecting the generator with said receiving chamber, an upright combining and fixing chamber 15, arranged over the chamber 24, an upright combining and fixing chamber 15×, connected at its upper end with the chamber 15, an upright flue 31×, in the wall about the chambers 15 and 15×, said flue connecting at its lower end with the bottom of the chamber 15×, whereby the gases are compelled to pass first upwardly through the chamber 15 and thence downwardly through chamber 15×, and a purge valve 32×, on the upper end of the flue 31×, substantially as set forth.

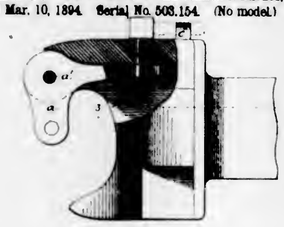
3. An apparatus for carbureting and fixing water gas, comprising a receiving chamber for the crude gas, an upright combining and fixing chamber arranged over the receiving chamber and provided with checker-work, an atomizer arranged over the combining and fixing chamber and having an inlet into the same, and a flue for hot water-gas extending up through the brick-work about the combining chamber, said flue connecting at its lower end with the receiving chamber and at its upper end with the atomizer inlet, substantially as set forth.

4. In an apparatus for carbureting and fixing water gas, the combination with a generator, a receiving chamber 24, for the crude gas adapted for communication with the generator, an upright combining chamber 15, above the receiving chamber and containing checker-work arranged to form a central chamber 16, and an atomizer 19, arranged over and connecting with the chamber 16, whereby hydrocarbon in the form of vapor may be injected downwardly into the upper end of the chamber 16, of a fire-box or furnace 25, arranged at the bottom of the receiving chamber 24, substantially as and for the purposes set forth.

5. In an apparatus for making gas, the combination of a generator, two receiving chambers each adapted for independent communication with the generator, and a combining-chamber and a fixing-chamber, arranged over the respective receiving chambers, and connected together at their upper ends, said fixing and combining-chambers being each provided with a gas-outlet at its lower end, substantially as set forth.

## 531,145. CAR-COUPLING.

LAWRENCE T. BACKUS, Atchison, Kans. Filed Mar. 10, 1894. Serial No. 503,154. (No model.)



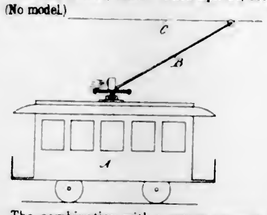
*Claim.*—1. In a car-coupling, the combination with the pivoted hook having a slotted lever-arm, of a rotatable stud or shaft having spiral wings adapted to be acted upon by the sides of said slot, substantially as described.

2. In a car-coupling, the combination with the pivoted hook having a slotted lever-arm, of a rotatable stud or shaft provided with two shoulders having beveled surfaces, a weight connected with said shaft for normally holding the shoulders across the slot of the lever-arm, and means for rotating said shaft, substantially as described.



## 531,146. SIGNAL-LAMP FOR ELECTRIC-RAILWAY CARS.

CHARLES H. BAKER, Detroit, Mich. Filed Apr. 24, 1894. Serial No. 508,780. (No model.)



*Claim.*—1. The combination with a rotary support of a trolley arm of an electric car, of a signal lamp carried by said support, substantially as described.

2. The combination with the rotary support of the trolley arm of an electric car, of an electric signal lamp carried by said support, and included in the lamp circuit of the car, substantially as described.

3. The combination with the rotary trolley support of an electric car of a signal lamp secured thereto, an electric connection whereby one terminal of the lamp is in fixed connection with the trolley circuit of the car and the other in traveling contact with the branch circuit on the car, substantially as described.

4. The combination with the trolley support of an electric railway car, of an electric signal lamp inclosed in the casing secured to the rotary support of the trolley arm and having one terminal of the lamp in electrical contact therewith, an arm secured to the lamp casing constituting the other terminal of the lamp, and a fixed contact ring with which said arm is adapted to form a traveling electric contact, said contact ring forming one terminal of the lamp circuit on the car, substantially as described.

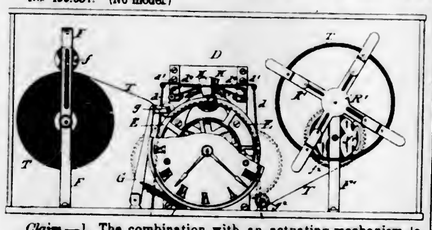
5. The combination with an electric railway car having a trolley arm hinged to a rotary support, of a signal lamp inclosed in a casing which is secured to one end of the hinge pin of the trolley arm, substantially as described.

6. The combination with a rotary trolley support of the car, of the electric lamp G, its casing H, the bracket I, securing the lamp to the rotary support and electrically connecting one terminal of the lamp in a branch circuit with the trolley wire, the contact ring O, secured to the fixed support of the trolley arm and insulated therefrom, and a traveling contact arm K electrically connecting the other terminal of the lamp with the contact ring O, and the branch circuit P' on the car connected to the ring O, all substantially as described.

7. The combination with the trolley arm of the car and its fixed and rotary support, of the electric lamp G, the metallic casing H provided with a bracket I, by means of which the casing is secured to one end of the hinge pin of the trolley arm, and an electric connection for maintaining the lamp in a branch circuit derived from the current of the trolley wire, substantially as described.

## 531,147. APPARATUS FOR RECORDING SPEED OF VEHICLES.

FRANK BAYERDOERFER, Brooklyn, N. Y. Filed Feb. 9, 1894. Serial No. 499,657. (No model.)



*Claim.*—1. The combination with an actuating-mechanism located below the bottom of the car or vehicle and actuated by the axle of the same, of a speed-recording device located in the car or vehicle and composed of a clock-movement, a guide-ring rotated by the same, a recording-tape, means for passing the same over the guide-ring, spring-retracted marking-hammers above the tape and pull-rods connected with the actuating-mechanism and said hammers and adapted to depress said hammers against the action of their springs, substantially as set forth.

2. The combination with an actuating-mechanism located below the bottom of the car or vehicle and actuated by the axle of the same, said actuating-mechanism comprising a fulcrumed lever adapted to be rocked by the axle, and bell-crank levers engaged by said lever, of a speed-recording device located in the car or vehicle and composed of a clock-movement, a guide-ring rotated by the same, a recording-tape passed over the guide-ring, means for moving said recording-tape, spring-retracted marking-hammers above the tape and pull-cords connected with said bell-crank levers and said hammers, substantially as set forth.

3. The combination of a speed-recording device located in the car, with an actuating-mechanism below the bottom of the car, and means for connecting the speed-recording device with the said actuating-mechanism, which latter consists of a worm-gear operated by the car-axle, a fulcrumed and spring-actuated lever operated intermittently by the worm-gear, bell-crank levers and means in connection with the lower arms of the bell-crank levers and said spring-actuated lever for causing the movement of said bell-crank levers, the upper arms of the bell-crank levers being applied to the connections of the actuating-mechanism with the speed-recording device, substantially as set forth.

4. The combination with a speed-recording device located in the car, with an actuating-mechanism below the bottom of the car, and means for connecting the speed-recording device with said actuating-mechanism, which latter consists of a worm-gear operated by the car-axle, a fulcrumed and spring-actuated lever operated intermittently by the worm-gear, a slotted plate on said fulcrumed lever, and bell-crank levers, the lower arms of which are provided with pins that engage said slotted plate, while the upper arms are applied to the connections of the actuating-mechanism with the speed-recording device, substantially as set forth.

5. The combination of a speed-recording device located in the car, with an actuating-mechanism below the bottom of the car, and means for connecting the speed-recording device with said actuating-mechanism, which latter consists of a worm mounted on the car-axle, a worm-wheel engaged by the worm and provided with a trip-pin on one face, a fulcrumed and spring-actuated lever operated intermittently by the trip-pin, bell-crank levers and means in connection with the lower arms of the bell-crank levers and said spring-actuated lever for causing the movement of said bell-crank levers, the upper arms of the bell-crank levers being applied to the connections of actuating-mechanism with the speed-recording device, substantially as set forth.

6. A speed-recording device consisting of a clock-movement, a guide-ring rotated by said clock-movement, a recording-tape fed over said guide-ring, a winding-up reel for the recording-tape, a spring-drum for actuating said winding-up reel, spring-retracted marking-hammers located above the upper part of the guide-ring and means connected with the marking-hammers whereby they are caused to mark the tape when the vehicle is moving in one or the opposite direction, substantially as set forth.

7. The combination of a clock-movement, a guide-ring rotated by said clock-movement, a recording-tape passed over said guide-ring, a spring-actuated arm located on one side of the guide-ring and provided with a guide-roller at its upper end under which the tape passes, and a second guide-roller located at the other side of said guide-ring, intermittently actuated marking-hammers located sidewise of each other above the guide-ring, means for actuating said hammers when the vehicle is moving in one or the opposite direction, and a spring-actuated winding-up reel for the recording-tape, substantially as set forth.

8. The combination, with a speed-recording device composed of a clock-movement, a guide-ring rotated by the same, and intermittently operated marking-hammers, of a recording-tape passing over said guide-ring, guide-rollers for said tape, and a winding-up reel composed of a reel-frame, a supporting-band for the tape on said reel-frame, radially-guided and spring-actuated keepers for the tape and a spring-drum for actuating the reel-frame and winding-up the tape as the same is fed by the speed-recording device, substantially as set forth.

## 531,148. BLUE DYE.

JOSEPH BIEDER and CHARLES DE LA HARPE, Basle, Switzerland, assignors to L. Durand, Huguenin & Co., same place, St. Fons, France, and Hüningen, Germany. Filed Aug. 22, 1894. Serial No. 521,033. (No specimens.) Patented in France July 4, 1893, No. 231,316, and in England July 4, 1893, No. 24,802.

*Claim.*—1. The herein described improvement in the manufacture of blue coloring matters, consisting in the production of a leuco-body or product of condensation by the action of a phenolsulfonic acid on a gallocyanin-dye.

2. The herein described improvement in the manufacture of blue coloring matters, consisting in the condensation of beta-naphtholsulfonic acid of Schaeffer with a gallocyanin-dye obtained by the action of hydrochlorate of nitrosodialkylanilin or of hydrochlorate of dialkylamidoazobenzene on gallic acid or its derivatives.

3. The herein described improvement in the manufacture of blue coloring matters, which consists in the oxidation of the product of condensation of a phenolsulfonic acid with a gallocyanin-dye.

4. The herein described improvement in the manufacture of blue coloring matters, which consists in oxidizing the product of condensation of the beta-naphthol sulfonic acid of Schaeffer and a gallocyanin-dye resulting from the condensation of hydrochlorate of nitrosodialkylanilin, or of hydrochlorate of dialkylamidoazobenzene and gallic acid or its derivatives.

5. The herein described improvement in the manufacture of blue coloring matters, which consists in exposing to contact with the atmosphere, a solution in alkali of the condensation product resulting from the action of the beta-naphtholsulfonic acid of Schaeffer on a gallocyanin-dye resulting from the condensation of hydrochlorate of nitrosodialkylanilin or of hydrochlorate of dialkylamidoazobenzene with gallic acid or its derivatives.

6. As a new article of manufacture, the herein described coloring matter produced by the oxidation of the product of condensation of the beta-naphthol sulfonic acid of Schaeffer with a gallocyanin-dye, said coloring matter dyeing wool when mordanted with chrome mordants, in an acid bath, to a blue tint, and being soluble in alkalies with a violet-blue coloration, and in concentrated sulfuric acid and sodium acetate solution with a blue coloration.

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**531,149. SUBSTANTIVE RED DYE.** JOHANN J. BRACK, Basle, Switzerland, assignor to L. Durand, Huguenin & Co., same place. Filed Aug. 15, 1894. Serial No. 520,346. (Specimens.)

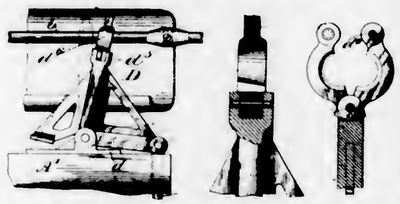
*Claim.*—1. The herein described improvement in the manufacture of substantive cotton dyes, which consists in heating formaldehyde with tolidin in the presence of an excess of hydrochloric acid, in dilute aqueous solution, substantially as set forth.

2. The herein described improvement in the manufacture of substantive cotton dyes, which consists in combining three molecules of a naphthylaminsulfo-acid with one molecule of the hexazo-derivative of the triamido-base derived from the condensation of formaldehyde with tolidin, substantially as set forth.

3. The herein described hexazo-coloring matter derived from alpho-naphthionic acid and the hexazo-derivative of the triamido-base produced by the condensation of formaldehyde with tolidin, said coloring matter being in the form of a brick-red powder which dyes unmordanted cotton red and being readibly soluble in hot water with a brown-red coloration slightly soluble in alcohol, almost insoluble in glacial acetic acid and dilute acetic acid, and soluble in concentrated sulfuric acid with a blue violet coloration, substantially as set forth.

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**531,150. DEVICE FOR OPERATING SLIDING DOORS.** WILLIAM H. BRODIE, Brooklyn, N. Y. Filed Feb. 26, 1894. Serial No. 501,517. (No model.)



*Claim.*—1. The combination with a sliding door, a track, and a trolley on the track from which the door is hung, of a shifting rod extending along the track and provided with a button to engage some part connected with the door, whereby endwise movement of the shifting-rod operates the door, said door being normally independent of said rod, whereby it may be opened and closed without disturbing the latter, as set forth.

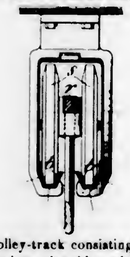
2. The combination with a series of sliding doors, a track, and a series of trolleys on the track from which the respective doors are hung, of a shifting-rod extending along the track and provided with buttons to engage parts connected with respective doors, whereby the endwise movement of the said rod is adapted to operate all of the doors simultaneously, and a yielding resistance substantially as described for permitting an obstructed door to remain unoperated, as set forth.

3. The combination with a sliding door, a track and a trolley on said track from which the door is hung, of a shifting-rod provided with a button, a fastening for the door, an unlatching device carried by the door, said device comprising a rocking-lever having an eye in in its upwardly extending arm through which the shifting-rod plays, and having its other arm coupled to a latch-releasing rod adapted to release the door-fastening, and the said releasing-rod, the door being normally independent of said rod whereby it may be opened and closed without disturbing the latter, substantially as set forth.

4. In a mechanism for operating a sliding-door, the combination with the shifting-rod and a wedge shaped button secured thereon, of the arm $d^8$, attached to the door and provided with an expanding eye at its end through which the said shifting-rod plays, and a rivet $d^9$, securing the members of the said eye together, said rivet being of comparatively soft material, whereby the expanding eye and rivet form a yielding resistance in case the door is obstructed, as set forth.

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**531,151. TROLLEY-TRACK.** WILLIAM H. BRODIE, Brooklyn, N. Y. Filed Oct. 4, 1894. Serial No. 524,857. (No model.)



*Claim.*—1. A trolley-track consisting of a metal tube having a longitudinal slot along its under side and having along the respective sides of said slot track-rails of substantially semi-polygonal cross-section, each track-rail having a flat bottom *a* and flaring sides *b*, as set forth.

2. A trolley-track consisting of a metal tube having a longitudinal slot along its under side with the margins along the sides of the slot turned inward and upward to form track-rails, the metal of the tube which forms the track-rails being of greater thickness than that which forms the body-portion of the tube, substantially as set forth.

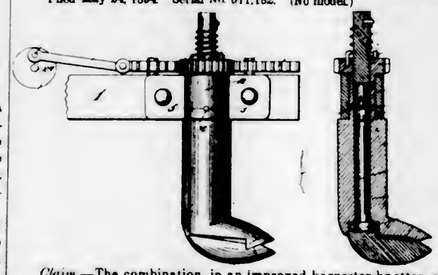
3. A trolley-track consisting of a metal tube slotted longitudinally at its under side and furnished with two track-rails of semi-polygonal cross-section along the margins of said slot, the metal of the track which forms the said rails being thicker than that of the body of the tubular track, substantially as set forth.

4. An integral, tubular trolley-track having semi-polygonal, flat-bottomed rails extending along an open, longitudinal slot in its bottom, the metal of the tubular track which forms the rails being thicker than the main or body-portion of the tube, substantially as set forth.

5. The combination with a trolley-track having a longitudinal slot along its under side and having along the respective sides of said slot track-rails of substantially semi-polygonal cross-section, each rail having a flat bottom with flaring, inclined sides, of a trolley having wheels with flat faces adapted to run on the flat bottoms of the tracks, as set forth.

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**531,152. KNOTTER FOR HARVESTERS.** WILLIAM B. BROWN, Labaddie, Mo., assignor of one-half to Frank M. North, same place. Filed May 24, 1894. Serial No. 511,182. (No model.)

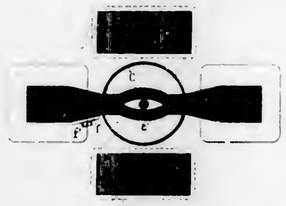


*Claim.*—The combination, in an improved harvester-knotter, of a sleeve and an arm having adjacent beaks at like ends, said arm being mounted to move axially within said sleeve, a spring for retaining said sleeve and arm in relative positions and exerting a torsional strain upon them in opposite directions, said sleeve having a circumferential-slot 31 extending through a half circle, said arm having a circumferential-slot or recess 32 extending through but a quarter of a circle opposite the said slot of said sleeve, a bearing 2 in which said sleeve is mounted, a pin 30 fixed in said bearing and projecting into both of the slots 31 and 32 to restrict the relative rotary movements of said sleeve and arm, and mechanism for rocking said sleeve, substantially as herein specified.



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**531,153. ELECTRIC METER.** THEODOR BRUGER, Bockenheim, near Frankfort-on-the-Main, Germany, assignor to Hartmann & Braun, same place. Filed June 22, 1894. Serial No. 515,392. (No model.)



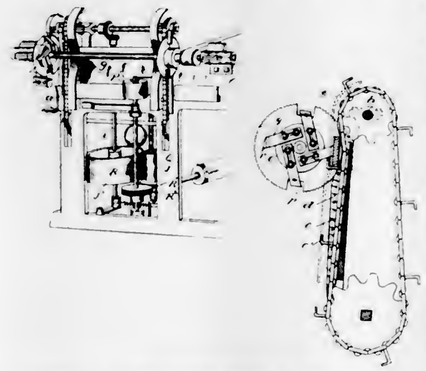
*Claim.*—1. In alternating-current meters, the combination of a shunt electro-magnet arranged in parallel circuit with the lamps, an armature arranged between and in line with the pole-ends of said shunt electro-magnet, a rotary metallic cylinder inclosing the armature, and a main electro-magnet within whose field the cylinder and its inclosed armature are located, said field intersecting the field of the shunt-magnet, and said main electro-magnet being arranged at such a distance from the armature that the phase-movement between the two fields is as great as possible, the interval of proportionality between the current and velocity being within broad limits and the damping by Foucault's currents rendered very effective and independent of the main-current, substantially as set forth.

2. The combination of a main electro-magnet, a shunt electro-magnet, whose field is intersected by the field of the main electro-magnet, an armature located between and in line with the pole ends of the shunt-magnet, a rotary metallic cylinder inclosing the armature, and means, substantially as described, whereby the magnetic field of the shunt electro magnet is rendered unsymmetrical, and the latter alone enabled to exert a small rotary momentum on the rotary cylinder, substantially as set forth.

3. The combination of a main electro-magnet, a shunt electro-magnet whose field is intersected by the field of the main electro-magnet, an armature located between and in line with the pole-ends of the shunt-magnet, a rotary metallic cylinder inclosing the armature, and adjustable pole-plates arranged at one side of the pole ends of the shunt-magnet, so as to render the magnetic field of the latter non-symmetrical, substantially as set forth.

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**531,154. STAVE JOINTING AND CROZING MACHINE.** THEODORE BRUNO, Saginaw, Mich. Filed Jan 2, 1894. Serial No. 495,362 (No model.)



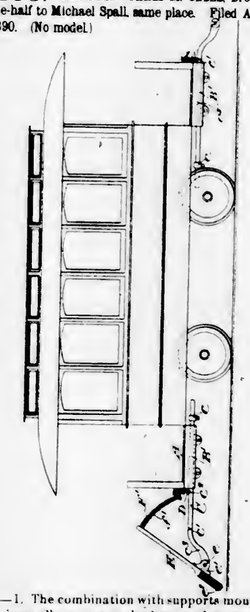
*Claim.*—1. In a stave jointing machine, the combination with a crozing and chamfering attachment comprising feed rolls, of an endless carrying belt having a vertical portion across the cutters, a drive mechanism for the carrier, a stop for said drive mechanism, a lever connected with the stop, and a projection on the lever arranged in the path of the staves and adapted to be struck by a stave for actuating said lever, substantially as described.

2. The combination with a stave jointing machine, of a crozing and chamfering attachment, comprising feed rolls, an endless carrier having a vertical portion extending beside the cutters, a drive mechanism therefor, friction gear in said drive mechanism, a stop for said feed mechanism adapted to be struck by the incoming stave for tripping said stop, substantially as described.

3. The combination with a stave jointing machine, of a crozing and chamfering attachment comprising feed rolls, an endless carrier having a vertical portion across the cutters, a drive mechanism therefor, a friction gear in said drive mechanism, a lever or stop for said feed mechanism adapted to be struck by an incoming stave for tripping the lock and a spring for resetting the lock, substantially as described.

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**531,155. FENDER.** JAMES M. CABLE, Brooklyn, N. Y., assignor of one-half to Michael Spall, same place. Filed Apr. 5, 1894. Serial No. 506,390. (No model.)



*Claim.*—1. The combination with supports mounted to move outwardly and inwardly at a car platform and means for locking the supports in their advanced and withdrawn adjustments, of a removable fender hinged below its center to the supports and having a rearwardly tilting movement toward a horizontal position, substantially as set forth.

2. The combination with the tilting fender and a suitable support for it, of a guide rod extending rearwardly and downwardly from its upper portion and provided with an enlarged head, a bracket secured to the platform and provided with an opening to receive the head of the guide rod and a catch secured to the bracket for locking the guide rod to the bracket, substantially as set forth.

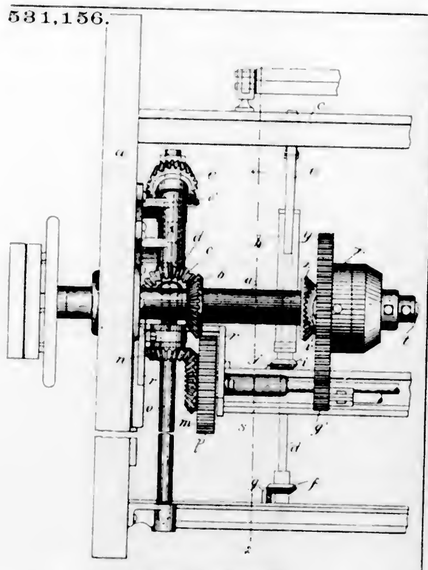
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**531,156. ROVING-FRAME.** MALCOLM CAMPBELL, Woonsocket, R. I. Filed June 24, 1893. Serial No. 478,765. (No model.)

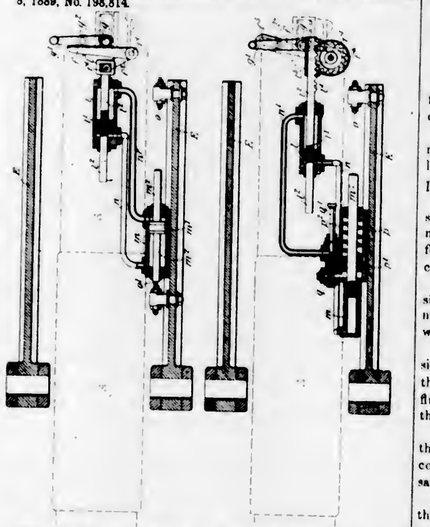
*Brief.*—The object of the invention is to provide gearing whereby the speed of the bobbin may be unaffected by the traverse of the bobbin-rail, so that the roving may be wound on the bobbin under uniform tension.

*Claim.*—A roving machine comprising in its construction a rotary bobbin support, a vertically reciprocating bobbin-rail, a head (*r*) supported by said rail, gearing carried by said head for operating said bobbin support at one end of the train, a vertically arranged rotary shaft and a gear splined on said shaft and supported by said head in mesh with the other end of said train of gearing, a main shaft, a sleeve (*a'*) thereon provided with gears (*z*) and (*b'*), gearing connecting the main shaft with the gear (*z*), and an inclined shaft (*d'*) provided with gears (*c'*) and (*e'*) connecting the gear (*b'*) with a gear (*o'*) on said vertical shaft, substantially as and for the purpose described.

531,156.



531,157. RECOIL-ACTUATED HYDRAULIC BREECH-OPERATING MECHANISM FOR ORDNANCE. JEAN B. G. A. CANET, Paris, France, assignor of one-half to the Sir Joseph Whitworth & Company, Limited, Manchester, England. Filed Nov. 17, 1892. Serial No. 452,344. (No model.) Patented in England June 8, 1889, No. 285, and in France June 8, 1889, No. 198,814.



*Claim.*—1. In a quick firing gun in which the breech is opened by the simple pull of a lever, the combination with the said lever, of a hydraulic cylinder secured to the gun and having its piston rod adapted to engage said lever, of a second hydraulic cylinder secured to a part of the gun mounting that recoils and provided with a piston, pipes connecting said cylinders and means for driving forward the piston of the second cylinder by the recoil of the gun whereby a liquid contained therein is displaced and forced into the first cylinder and moves its piston to open the breech, substantially as described.

2. In a quick firing gun in which the breech is opened by the simple pull of a lever, the combination with the said lever, of a hydraulic cylinder secured to the gun and having its piston rod adapted to engage said lever, a second hydraulic cylinder secured to a part of the gun mounting that recoils and provided with a piston, pipes connecting said cylinders, a spring recuperator communicating with said second cylinder, a pipe connecting said first cylinder and recuperator, a valve controlling said communication, and means for driving forward the piston in said second cylinder by the recoil of the gun, substantially as described.

3. In a quick firing gun, in which the breech is opened by the simple pull of a lever, the combination with said lever, of a hydraulic cylinder secured to the gun and having its piston rod adapted to engage said lever, a second hydraulic cylinder secured to a part of the gun mounting that recoils and provided with a piston, pipes connecting said cylinders, a stop fixed to a stationary part of the mounting and arranged in the path of the piston rod of the second cylinder, whereby the piston is driven forward upon the recoil of the gun and a liquid in said cylinder is displaced, a spring recuperator communicating with said second cylinder, a pipe connecting said first cylinder and recuperator, and a valve controlling said communication, substantially as described.

4. In a quick-firing gun in which the breech is operated by the simple pull of a lever, the combination with the said lever, of a lever $f$ pivoted on the hinge of the breech-block carrier bracket, a pinion $f^6$ fixed on the pivot of the lever $f$, a hydraulic cylinder $l$ fixed to the gun, the piston rod of the said cylinder projecting from both ends and having a rack $l^6$ at the rear end which engages with the pinion $f^6$ another hydraulic cylinder $m$ fixed to the cradle and having at one end a spring accumulator $p$ a ram $m^2$ having a valve head $m^3$, a movable piston valve seat $m^4$ in the cylinder, a spring $m^5$ for forcing the said seat against the valve head, an adjustable stop $o$ fixed to the carriage in the line with the ram $m^2$, a valve box $m^5$ fitted with valves $r$, $r'$ for distributing the liquid through pipes $n$, $n'$ to the cylinder $l$, a passage $m^7$ leading from the rear end of the cylinder $m$ to the valve box, a pipe $m^8$ forming an exhaust passage from the valves $r$ $r'$ to the forward end of the cylinder and a handle for operating the valves $r$ $r'$ the whole operating so that at the end of the recoil the ram $m^2$ is driven inward by the stop $o$, thus charging the accumulator with liquid under pressure which is used upon opening the valve $r$ for actuating the piston $l'$ and opening the breech and upon opening the valve $r'$ for returning the piston $l'$ and reclosing the breech, substantially as described.

531,158. PROCESS OF MANUFACTURING ARTIFICIAL SILK. HILAIRE DE CHARDONNET, Besançon, France. Filed Jan. 24, 1894. Serial No. 497,913. (No specimens.) Patented in France June 30, 1893, No. 231,230.

*Claim.*—1. The new substance hydrated pyroxylin which differs from ordinary pyroxylin by containing at least twenty-five per cent. of water, and which has the property of greater solubility.

2. The improved process consisting in treating cellulose with nitric and sulphuric acids to convert it into pyroxylin, washing the latter, and then treating it while still moist with hydrated ether to preserve it as hydrated pyroxylin.

3. The process consisting of treating cellulose with nitric and sulphuric acids to form pyroxylin, washing it, and then while still moist dissolving it to form collodion, whereby the collodion thus formed is more fluid and more easily coagulable by air than ordinary collodion.

4. In the manufacture of artificial silk, the improved process consisting in dissolving hydrated pyroxylin to form collodion, and spinning the collodion into threads by discharging it through nozzles, whereby it instantly solidifies in the air.

5. In the manufacture of artificial silk, the improved process consisting in dissolving hydrated pyroxylin to form collodion, mixing therewith a substance, such as described, adapted to increase the fluidity of the collodion, and then spinning the fluid collodion into threads by discharging it through nozzles.

6. In the manufacture of artificial silk, the process of denitrating the spun collodion, consisting in immersing it in a denitrating bath consisting of a mixture of calcium monosulphide and an ammoniacal salt capable of decomposing said monosulphide.

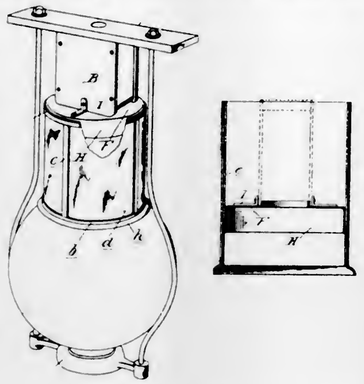
7. In the manufacture of artificial silk, the process of denitrating the spun collodion consisting in preparing a bath by mixing monosulphide of calcium, sulphate of ammonia and water, separating the precipitate, and immersing the skeins in the clear bath.

8. In the manufacture of artificial silk, the process consisting of preparing a denitrating bath by mixing monosulphids of calcium, sulphate of ammonia and water and separating the precipitate, immersing the skeins to be denitrated in this bath, and subsequently regenerating the spent bath by adding sulphuric acid, and then adding calcium monosulphide and separating the precipitate.

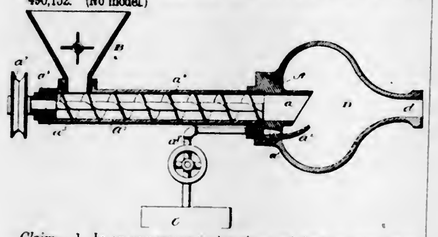
531,159. SPARK-ARRESTER FOR ARC LAMPS. EDWIN M. CLARK, Detroit, Mich. Filed Apr. 24, 1894. Serial No. 508,770. (No model.)



*Claim.*—In an arc lamp, the combination with the globe and the supporting bracket, of the depending casing B arranged centrally above the globe, an imperforate circular head F on the lower end of the casing extending out beyond the same, an open frame comprising a lower ring $h$ fitted loosely on the globe, the upper ring $a$ loosely fitted around the head F, and the vertical connecting bars $c$ between the rings, and the cylindrical screen carried by the open frame, substantially as described.



531,160. APPARATUS FOR BURNING GRANULAR FUEL. COLIN W. CLAYBOURNE, Indianapolis, Ind. Filed Nov. 6, 1893. Serial No. 490,152. (No model.)



*Claim.*—1. In an apparatus for burning coal-dust, or other granular or pulverized fuel, in combination with a conduit and a source of supply of the granular or pulverized fuel feeding into such conduit, an enlarged mixing chamber into which the conduit discharges, having a suitable discharge mouth, a source of supply of steam, and a conduit for the same discharging into the mixing chamber past the mouth of the fuel passage, substantially as and for the purpose specified.

2. In an apparatus for burning coal-dust, or other granular or pulverized fuel, in combination with the enlarged mixing chamber having a suitable discharge mouth, a steam jet entering such chamber, and the feed conduit connected with a source of supply of the fuel, and having its forward end projecting into the chamber, to a point forward of the discharge mouth of the steam passage, substantially as and for the purpose shown and described.

3. In an apparatus for burning coal-dust, or other pulverized or granular fuel, in combination with a conduit, a source of supply of the granular or pulverized fuel, and means for feeding the same through the conduit, an enlarged mixing chamber into which the fuel is discharged, having a suitable discharge mouth, a source of supply of fluid under pressure, and a conduit for the same entering the chamber so that the fluid will come in contact with the fuel entering the chamber and mingle with the same, substantially as and for the purpose specified.

4. In an apparatus for burning coal-dust, or other pulverized or granular fuel, in combination with a conduit, and means for supplying and feeding the pulverized or granular fuel through the same, a second conduit connected with a source of supply of fluid under pressure, an enlarged mixing chamber around the place where the two conduits discharge, having a suitable discharge month, and the deflector extending at an angle forward and inward across the path of the jet entering through the fluid conduit and toward a line through the fuel conduit, substantially as and for the purpose shown.

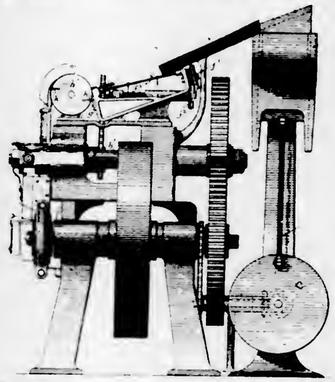
5. In an apparatus for burning coal-dust, or other pulverized or granular fuel, in combination with a conduit and means for supplying and feeding the pulverized or granular fuel through the same, a second conduit connected with a source of supply of fluid, under pressure, a bulb surrounding the place where such conduits discharge, having its interior chamber expanding suddenly forward, and than contracted down to a smaller discharge mouth, and a deflector to direct the fluid entering the chamber forward and inward at an angle to a line through the fuel conduit, substantially as and for the purpose set forth.

6. In an apparatus for burning coal-dust or other pulverized or granular fuel, in combination with a source of supply of such fuel, and means for feeding the latter from the same, a conduit through which the fuel is fed, a second conduit connected with a source of supply of steam, and a bulb having an enlarged chamber into which the fuel and steam conduits discharge, and within which the steam and fuel are mingled together, and a reduced discharge opening, substantially as and for the purpose described.

7. In an apparatus for burning coal dust, or other granular fuel, in combination with the enlarged mixing chamber having a suitable discharge month, a passage for steam into said chamber, the fuel conduit extended into the same with its discharge end inclining rearward and downward, and a deflector adjacent to the mouth of the steam passage to guide the steam past the inclined end of the fuel conduit, substantially as and for the purpose shown.

8. The improved process of burning coal-dust or other pulverized or granular fuel, which consists in feeding such fuel into an enlarged chamber with a suitable discharge opening, and bringing into contact with it as it enters such a chamber, an expansible fluid under pressure, to separate the particles of fuel and whirl them around with the fluid within the chamber before they reach and pass from the discharge opening, substantially as and for the purpose specified.

531,161. MACHINE FOR MAKING HORSESHOE-NAILS. JOHN A. COLEMAN, Providence, R. I. Filed June 16, 1890. Serial No. 355,623. (No model.)



*Claim.*—1. In a machine for making horse shoe nails, the combination substantially as hereinbefore described, of a feed tube, a raceway composed of rotative parallel rods, driven in opposite directions, and diving fingers at one end of the raceway, whereby nail blanks deposited upon one end of said raceway will be carried thereon in a pendent position by their heads to the foot of the incline, and from thence be lifted by the diving fingers, and delivered head first to the feed tube.

2. In a machine for making horse shoe nails, the combination substantially as hereinbefore described, of a raceway composed of parallel rotated rods or bars, separated by a space less than the thickness of the head of a nail blank, but closed in its lower end to the outward passage of nails or blanks, a hopper or receptacle for receiving nail blanks in mass, and separating mechanism for detaching and lifting nails from the mass and delivering them singly upon the raceway, the latter holding said blanks in a pendent position and causing them to move to the end of the raceway.

3. In a machine for making horse shoe nails the combination substantially as hereinbefore described, of a pan or receptacle for receiving nail blanks in mass, a vertically reciprocating separator within said pan, and provided with a grooved inclined upper edge for picking up blanks sidewise, a raceway for holding blanks by their heads, and a V-shaped trough between said separator and said raceway, whereby blanks lifted by the separator, will slide endwise longitudinally therefrom into the trough, and from thence to the raceway, and thereon assume a vertical pendent position.

4. In a machine for making horse shoe nails, the combination substantially as hereinbefore described, of a receptacle for nail blanks

in mass, a vertically reciprocating separator provided with a shallow groove at its top within said receptacle, a raceway composed of parallel rotative rods separated by a space less than the thickness of the heads of the blanks, and a V shaped chute between said separator and raceway.

5. In a machine for making horse shoe nails, the combination substantially as hereinbefore described, of a feed tube, a raceway composed of parallel rotative rods, pointed at their ends, and separated by a space less than the thickness of a nail blank head, a vertical stop or finger at the discharging end of the raceway for preventing the passage of blanks beyond the pointed ends of said rods, and diving fingers which engage with the head of each blank held by said stop or finger, and lift it from the raceway, and deliver it head first to the feed tube.

6. In a machine for making horse shoe nails, the combination with die rolls, of a reciprocating knife guide, located between said rolls and provided with a guiding edge which forcibly engages with the middle of the edge of a blank head as it leaves the roll, and a cam and a spring for imparting its reciprocating movements, whereby the blank as it emerges from the rolls is restricted to a right line movement.

7. The combination substantially as hereinbefore described, a pair of die rolls, which develop webbed nail blanks and discharge them head downward, a point trimming die, and its plunger, for cutting the webs from blanks in a vertical position with their heads upward, and a blank reverser, and an automatically operated blank head clamp, substantially as described between said rolls and the die, which respectively, separately and individually controls each blank, and directly reverses it endwise, and suspends it by its head, and delivers it to the die.

8. The combination substantially as hereinbefore described, of a nail point trimming die, having its head receiving portion above the point trimming portion, a plunger co-operating therewith, a rib parallel with the face of the die, and co-operating with an adjacent surface for holding nail blanks in a pendent position, and jaws for clamping a blank edgewise at its head and holding it during the operation of the die and plunger.

9. The combination substantially as hereinbefore described, of a nail point trimming die and its plunger, co-operating to cut a web from the point of a blank in a pendent position, a rib for supporting a webbed blank by its head parallel with the face of the die, and a pair of jaws which grasp the blank edgewise at its head, and move the blank to, and maintain it in a pendent position in front of the die and in line with the plunger.

10. The combination with a pair of die rolls which develop a nail blank having a web at and adjacent to the rolled point of the nail of a point trimming die, and its plunger for operating on blanks head upward and in a pendent position, a chute or pocket below the rolls and between them and the die; a rib in said chute for supporting each blank by its head, and a pair of jaws by which the head of a blank is grasped edgewise and carried in a pendent position opposite the die, and in line with the plunger.

11. The combination substantially as hereinbefore described, of a chute or pocket for receiving nail blanks which require the removal of a web for developing the points, a curved rib in said pocket which stops the fall of a blank, permits it to swing into a pendent position and holds it by its head; a pivoted jaw which swings along said rib; a sliding jaw and a point trimming die and its plunger, which cut the webs from blanks standing head upward, said swinging jaw serving to assure the pendent position of each blank, and both of them co-operating to grasp a blank head edgewise and to carry the pendent blank in front of the die, and in line with the plunger.

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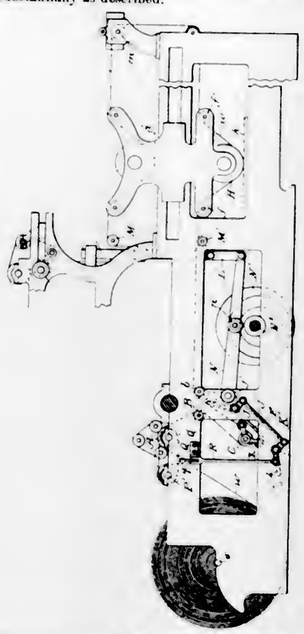
**531,162. PAPER-WEB-FEEDING DEVICE.** JOSEPH L. COX, Battle Creek, Mich., assignor to the Duplex Printing Press Company, same place. Filed Dec. 9, 1892. Serial No. 454,653. (No model.)

*Claim.*—1. The combination in a web feeding device, of devices for forwarding the web from its source of supply, an intermittently acting feed governing device arranged in the path of the web beyond the forwarding devices, and means for regulating or adjusting the action of the forwarding devices from the action of the feed governing device, substanttally described.

2. The combination of a looping roller, a paper feed mechanism between the paper carrying roll and roller, and mechanism substantially as described whereby said feed mechanism is controlled by the movement of said roller, substantially as described.

3. In a printing press the combination of a governor roller for looping the web located between the feed and printing mechanisms, a feed mechanism for drawing the web from the said roll, the cone pulleys and belt for driving said feed mechanism, and mechanism whereby the belt is shifted to retard or accelerate the speed of the feed mechanism controlled and actuated by the said governor roller, substantially as and for the purpose specified.

4. In a printing press the combination of a feed mechanism, a paper delivery, a governor roller for looping the web between the feed mechanism and printing mechanism, and mechanism for retarding or accelerating the speed of the feed mechanism operated by the governor roller when it exceeds or falls short of its desired length of travel, substantially as described.



5. The combination of a feed mechanism driven by cone pulleys and belt, the belt shifter, a vibrating governor roller located between the feed and printing mechanisms, the rock shaft and the arms thereon adapted to be alternately shifted by the governor roller, and the connections between said rock shafts and the belt shifter, substantially as specified.

6. The combination of the feed mechanism, the governor roller movably mounted on bars, the vibrating arms at opposite ends of the bars, the connections between said arms and mechanism operated thereby for varying and controlling the speed of the feed mechanism, substantially as described.

7. In a printing press the combination of the printing devices, a web carrying roll, a feed mechanism, for drawing the web from the web carrying roll, a governor web looping roller between the feed mechanism and printing devices, and mechanism for varying the speed of the feed mechanism controlled by the governor roller, substantially as and for the purpose set forth.

8. The combination of mechanism for producing an impression, and web delivery mechanism, a web looping roller interposed between the printing mechanism and delivery for intermittently drawing the web forward, with a web feed and a governor roller adapted to form a loop in the web between the web feed and printing mechanism, and means substantially as described for regulating the speed of said feed controlled by said governor roll, substantially as and for the purpose described.

9. The combination of mechanism for taking an impression, a web feed, a governor roll, a speed regulator for the feed rollers controlled by the position of the governor roller, a delivery mechanism, a positively actuated looping roller co-acting therewith, and web guide rollers, all constructed and arranged to operate substantially as and for the purpose specified.

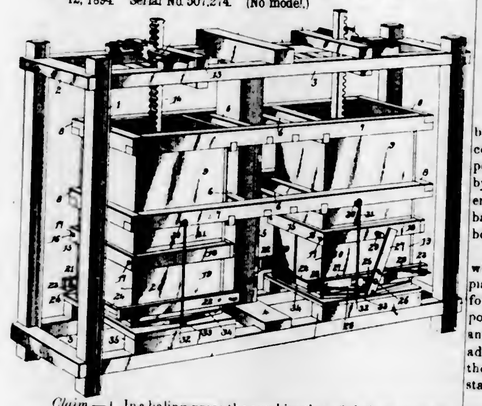
10. The combination of two type beds, two impression cylinders, a delivery mechanism, and a web feed, and web guide rollers for conducting the web from the roll successively between the beds and cylinders and thence to the delivery, a web feed looping roller interposed between the second bed and the delivery, and mechanism for positively reciprocating said roller, with a governor roller interposed between the web feed and first bed adapted to maintain the tension of the web and means for regulating the speed of the feed controlled by said governor roller, substantially as described.

11. The combination of the type beds, two impression cylinders, a delivery mechanism and web feed, and web guide rollers for conducting the web successively between the beds and cylinders and thence to the delivery, a web looping roller interposed between the second bed and the delivery and mechanism for positively reciprocating said roller; with a governor roller interposed between the web feed and first bed adapted to tension the web, and mechanism controlled by the excessive rise or descent of the governor roll for increasing or diminishing the speed of the feed, substantially as and for the purpose described.

12. The combination of two type beds arranged one above the other, and two impression cylinders coacting therewith for taking an impression, a paper feed, a governor roll mounted on curved bars, a speed regulator mechanism for the web feed controlled by the position of the governor roll a delivery mechanism, a positively actuated looping roller coacting therewith, and web guide rollers, all constructed and arranged to operate substantially as and for the purpose described.

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**531,163. BALING-PRESS.** ALLEN L. COX, Wise, Ala. Filed Apr. 12, 1894. Serial No. 507,274. (No model.)

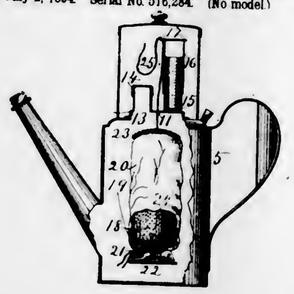


*Claim.*—1. In a baling-press, the combination of a baling-chamber, opposite pivoted doors connected at their upper edges to the lower end of the chamber and provided with opposite side-pieces 20 which combine with the doors to form a continuation of the chamber, cleats attached to the doors near their lower edges and projecting beyond the side edges thereof, eye-bolts connecting the projecting ends of said cleats, the same being permanently attached at one end to one of the cleats and being provided at the other end with eyes to engage slots in the other cleat, locking-bolts for engaging said eyes, and means for operating the locking-bolts and securing them in their operative positions, substantially as specified.

2. The combination with the framework, the opposite platforms, the intermediate swiveled post, the frame carried thereby, and baling-chambers carried by the frame, of the opposite hinged doors at the lower ends of the baling-chambers, means for locking the same together, removable bottoms for the baling-chambers provided with opposite studs and adapted to be seated on the platforms, and suspension-rods loosely connected with one of the frames for supporting the chambers, and terminating in hooks for removably engaging the studs, substantially as specified.

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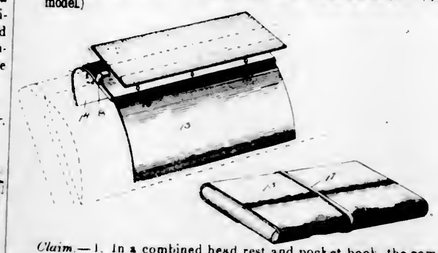
**531,164. COFFEE-POT.** CHARLES C. DAVIS, Texarkana, Ark. Filed July 2, 1894. Serial No. 516,284. (No model.)



*Claim.*—The combination in a coffee pot, of a boiler; a condensing chamber above it; a perforated coffee receptacle suspended within the boiler by a wire; a telescoping standard provided with a scale and fixed on top of the boiler and having a perforated flanged head; the said wire passing freely through an aperture in the boiler top to be connected with the said flanged head substantially as described whereby the coffee receptacle may be set within the boiler at the desired height.

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**531,165. COMBINED POCKET-BOOK AND HEAD-REST.** FRANK DENIO, Bay City, Mich. Filed Jan. 19, 1894. Serial No. 497,418. (No model.)



*Claim.*—1. In a combined head rest and pocket book, the combination of a base-plate, a superinposed head-rest plate, intermediate coiled springs studs depending from the base plate, horizontally disposed slidable and slotted U-shaped keepers secured to the base plate by the studs and having their upper ends arranged to engage over the ends of the head-rest plate, when the latter is compressed upon the base, and flaps for folding over the head rest plate to form a pocket-book substantially as specified.

2. In a combined pocket book and head rest, the combination with the base plate, the superimposed yieldingly supported head-rest plate, flaps to fold over the latter to form a pocket book, and means for holding the head rest plate in a compressed position, of the opposite pivoted curved spring-fingers for engaging the back of the seat, and the keepers arranged on the lower face of the base-plate and adapted to receive and hold the free ends of said fingers, whereby the latter are held flat against the lower faces of the base plate, substantially as specified.

3. A head-rest, consisting of the base plate, the superimposed head-rest plate, the intermediate springs, and means for holding the head rest plate in a compressed position, combined with the cover attached to the base-plate, and comprising the opposite end-flaps 15 and the front and rear flaps 13 and 14, and adapted to fold over the head-rest plate to form a pocket book, substantially as specified.

4. In a combined pocket-book and head-rest, the combination of a base plate, a superimposed head-rest plate, intermediate coiled springs, means for holding the head-rest plate in a compressed position, and flaps secured to the base plate and arranged to fold over the head-rest plate, substantially as described.

5. The combination with a folding cover consisting of the main section 12, opposite end-flaps 15, the front flap 13 and the rear-flap 14, of the base-plate 1, secured at one edge at 16 to the flap 13, the head-rest plate, the cushioning springs arranged upon the base plate and supporting the head-rest plate, means for holding the head-rest plate in a compressed position, the spring-fingers arranged beneath the base-plates and adapted to project therefrom to engage the back of a seat and to swing thereunder for folding, and means for locking the springs in their folded positions, substantially as specified.

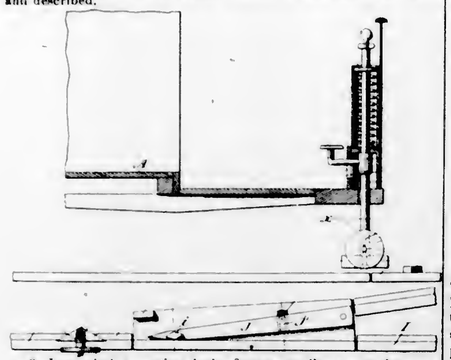
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**531,166. SWITCH-OPERATING DEVICE.** CHARLES DIENER, Brooklyn, N. Y., assignor of one-third to Bernard Bomeisl, same place. Filed Aug. 30, 1894. Serial No. 521,707. (No model.)

*Claim.*—1. A switch operating device for street railway cars, comprising a box secured to the platform, having a horizontal partition therein, a vertical shaft journaled in the said box having a crank upon the top thereof, a collar below the crank, a spiral spring surrounding the shaft between the partition and the said collar, a sleeve loosely mounted upon the shaft below the partition, a shoulder beneath the sleeve to restrict the upward movement of the shaft, a radial arm projecting from the sleeve through the box to slide therein, a pedal upon the said arm to depress the shaft, and a shoe upon the lower end of the shaft adapted to engage with the switch and throw the same, substantially as shown and described.

2. A switch operating device for street railway cars, comprising a box secured to the platform against the dash-board, a vertical shaft journaled therein, a spring surrounding the same to maintain the shaft normally upward, a sleeve surrounding the shaft having a pedal mounted thereon to depress the same, a shoe upon the lower end of

the shaft beveled upon its forward end to open the switch, and also beveled upon the rear end thereof, whereby when the same is reversed, the said shoe will close the switch, a crank upon the top of the shaft to turn the same, and means whereby the movement of the said shaft is restricted to a half revolution, substantially as shown and described.

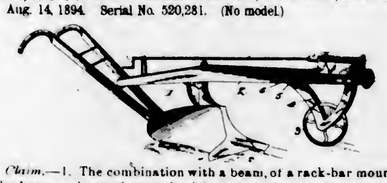


3. In a switch operating device for street railway cars, the combination, with a vertical shaft suitably journaled in the car-platform and normally raised by means of a spring surrounding the same, a pedal to depress the said shaft, and a crank to turn the same, of a substantially triangular shoe mounted upon the end of the shaft, having a lateral groove therein in which the said shaft works, and springs within the shoes at either side of the shaft whereby the same is yielding, substantially as shown and described.

4. A switch operating device for street railway cars, comprising a box secured to the car-platform against the dash-board, having a horizontal partition therein, and a longitudinal slot in the front thereof below the partition, a vertical shaft journaled in the said partition, having an annular collar near the top thereof, a spiral spring surrounding the shaft between the partition, and the collar to keep the same normally raised, a sleeve loosely mounted upon the shaft below the partition, a shoulder beneath the sleeve to limit the upward movement of the shaft, a radial arm projecting from the sleeve, having a pedal thereon, a shoe mounted upon the lower end of the shaft having a lateral slot in which the said shaft works, springs within the shoe at either side of the shaft, whereby the said shoe is laterally yielding, the said shoe being beveled from the center forwardly and rearwardly, a wheel journaled upon the shaft adjacent to the shoe and adjustable in height relatively thereto, and a crank upon the top of the shaft to reverse the shoe, the said crank being fixed upon the shaft against the dash-board whereby but a half revolution thereof is permitted, substantially as shown and described.

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**531,167.** PLOW. GILBERT DROVDAL, West Duluth, Minn. Filed Aug. 14, 1894. Serial No. 520,281. (No model.)



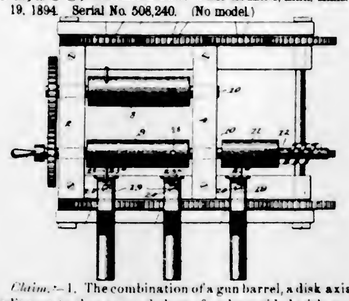
*Claim.*—1. The combination with a beam, of a rack-bar mounted on the beam and carrying a wheel for supporting the beam, a gear wheel meshing with the rack-bar and adapted to raise and lower the same, a worm meshing with the gear wheel, and means for rotating the worm, substantially as described.

2. The combination with a plow beam, of the rack-bars pivotally mounted at their rear ends on the beam, and provided at their opposite ends with teeth, a wheel journaled between the rack-bars, a transverse gear wheel mounted on the beam and engaging the teeth of the rack-bars, a worm meshing with the gear-wheel, and a rearward extending shaft connected with the worm, substantially as described.

3. The combination of a plow beam, a casing mounted thereon, the approximately V-shaped rack-bars pivoted at their rear terminals at opposite sides of the beam and having their front sides provided with teeth and arranged within the casing, a transverse gear wheel journaled in the casing and engaging the teeth of the rack-bars, a longitudinally disposed worm mounted in the casing and meshing with the gear wheel and provided with a rearward extending socket, and an operating shaft extending longitudinally of the beam and secured at its front end in the socket of the worm, substantially as described.

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**531,168.** MACHINE GUN. FRED EBELING, Linn, Kans. Filed Apr. 19, 1894. Serial No. 508,240. (No model.)



*Claim.*—1. The combination of a gun barrel, a disk axially mounted adjacent to the rear end thereof and provided with means for imparting a rotary movement to it, the said disk having a series of cartridge-receiving openings therein, said openings being capable of respectively registering with the bore of the gun barrel, a spring-plate provided with a firing-pin the plate being mounted so as to be capable of movement in a line longitudinally with the gun barrel and directly toward the rear end thereof, and a revoluble shaft having studs thereon for swinging said spring-plate and thereby causing the firing-pin to explode the cartridges placed in the path thereof, substantially as described.

2. The combination in a machine gun, of a frame having a vertical side portion, a gun barrel provided with a rearwardly offset arm secured to the upper edge of said side portion by means thereof, a shaft projecting out from the side portion, a gear-wheel mounted thereon and provided with a circular series of cartridge-receiving openings capable of being successively presented to the gun barrel, means for driving the gear-wheel, a spring-plate fixed to the side portion and provided with a firing-pin projected through an opening in said side portion and capable of exploding the cartridges as they are presented to the gun barrel, a shaft or drum revolving above the spring-plate, and an arm radiating from said shaft or drum adapted to engage the spring-plate as the shaft or drum revolves, substantially as described.

3. In a machine gun, the combination of a frame having a vertical side portion, a plurality of shafts projecting transversely therefrom, a gear-wheel mounted on each shaft and provided with a circular series of cartridge-receiving openings, a horizontal bar in which the outer ends of the shafts are arranged, brackets secured to the side portion and supporting the horizontal bar, a gun barrel for each gear-wheel and in juxtaposition to the cartridge receiving openings thereof, a spring-plate fixed to the side portion, a firing-pin carried by said plate, and an arm moving in a circular path and adapted to engage the spring plate, substantially as described.

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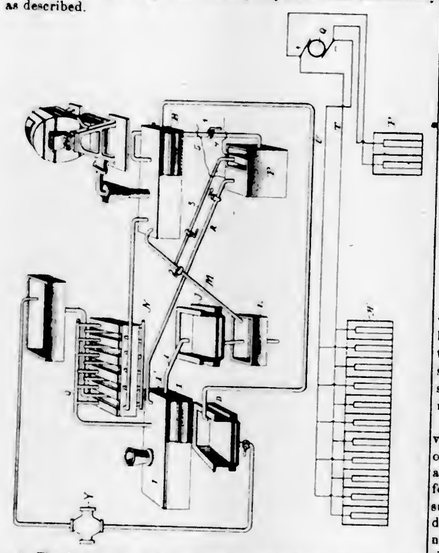
**531,169.** PROCESS OF EXTRACTING METALS FROM SULFIDE ORES, &c. VICTOR ENGELHARDT, Vienna, Austria-Hungary, assignor to Siemens & Halske, Berlin, Germany. Filed Jan. 21, 1893. Serial No. 459,224. (No specimens.) Patented in Germany June 29, 1892, No. 67,973; in Austria July 5, 1892, No. 34,413; in Hungary July 5, 1892, No. 53,757; in France Oct. 24, 1892, No. 225,145; in Italy Oct. 26, 1892, No. 32,905; in Spain Dec. 21, 1892, No. 13,898, and in England Aug. 19, 1893, No. 15,966.

*Claim.*—1. The herein described process of treating the sulphur compounds of metals, which consists in extracting the metals by treatment with an alkaline sulph-hydrate, subjecting the solution thus formed to the action of an electric current in the cathode compartment of an electrolytic cell, in the anode compartment of which is a solution of a suitable salt, which, under electrolytic action, is changed in its chemical properties, thereby obtaining the metals, reforming the alkaline sulph-hydrate, and changing the characteristics of the anode liquid, substantially as described

2. The herein described process of treating the sulphur compounds of metals, which compounds have united therewith compounds of other metals not soluble in a solution of an alkaline sulph-hydrate, which consists in extracting the sulphur compounds by treatment with an alkaline sulph-hydrate, subjecting the solution thus formed to the action of an electric current in the cathode compartment of an electrolytic cell, in the anode compartment of which is a solution of a suitable salt, thereby obtaining the metals, reforming the alkaline sulph-hydrate, and changing the characteristics of the anode liquid, and treating the ore residues resulting from the sulph-hydrate bath with the anode liquid, substantially as described.



3. The herein described process of treating the sulphur compounds of metals, which compounds have combined therewith other ore compounds not soluble in a solution of an alkaline sulph-hydrate, which consists in extracting the sulphur compounds by treatment with an alkaline sulph-hydrate, thereby liberating sulphureted hydrogen, subjecting the solution thus formed to the action of an electric current in the cathode compartment of an electrolytic cell, thereby obtaining the metals and reforming the alkaline sulph-hydrate, forming a solution of the ore residues resulting from the sulph-hydrate bath, and treating the solution thus formed with the sulphureted hydrogen resulting from the sulph-hydrate bath, substantially as described.



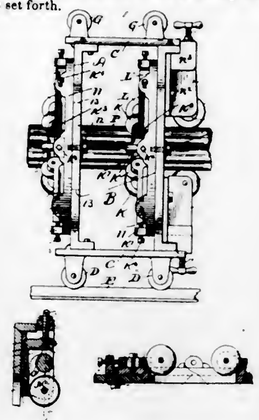
4. The herein described process of treating the sulphur compounds of metals, which compounds have combined therewith other ore compounds not soluble in a solution of an alkaline sulph-hydrate, which consists in extracting the sulphur compounds by treatment with an alkaline sulph-hydrate, thereby also generating sulphureted hydrogen, subjecting the solution thus obtained to the action of an electric current in the cathode compartment of an electrolytic cell, in the anode compartment of which is a solution of a suitable salt, thereby obtaining the metals, reforming the alkaline sulph-hydrate, and changing the characteristics of the anode liquid, treating the ore residues resulting from the sulph-hydrate bath with the anode liquid, thereby obtaining the metals in such residues in solution, and subjecting the solution thus obtained to the action of the sulphureted hydrogen first generated in the sulph-hydrate bath, substantially as described.

5. The herein described process of treating the sulphur compounds of metals, which compounds have combined therewith other ore compounds not soluble in a solution of an alkaline sulph-hydrate, which consists in extracting the sulphur compounds by treatment with an alkaline sulph-hydrate, thereby also generating sulphureted hydrogen, subjecting the solution thus formed to the action of an electric current in the cathode compartment of an electrolytic cell, in the anode compartment of which is an alkaline chloride, thereby obtaining the metals, reforming the sulph-hydrate, and liberating free chlorine, treating the ore residues resulting from the sulph-hydrate bath with such chlorine, and subjecting the solution thus obtained to the action of the sulphureted hydrogen first generated in the sulph-hydrate bath, substantially as described.

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**531,170.** MACHINE FOR MAKING CONDUCTOR-PIPES. EMIL H. PICKINGER, Canton, Ohio, assignor to the Acme Roofing Company, same place. Filed Dec. 11, 1893. Serial No. 493,445. (No model.)

*Claim.*—1. The combination with a two-railed supporting track, a rail or guide arranged centrally of, parallel with and a suitable distance above the supporting-track, and a longitudinally-corrugated stationary form or die for receiving the pipe to be corrugated and arranged parallel with and between the aforesaid track and guide, of a pair of heads A and B located a suitable interval apart and rigidly connected with each other, said heads or their connecting members being provided with wheels engaging the aforesaid supporting track and guides, and a series of corrugating dies arranged to co-operate with the stationary form or die in corrugating the pipe, substantially as set forth.



2. In a machine of the variety indicated, a head or carriage provided with a slide and slideway, a seaming-roller-bearing-frame or block pivotally secured to the slide, said frame or block being free to swing in the one direction, a stop for preventing said frame from swinging in the opposite direction, suitable means for adjusting the slide and suitable means for securing the same in the desired adjustment, substantially as set forth.

3. In a machine of the variety indicated, a head or carriage provided with a slide-way, a slide adjustable endwise of said way, a frame or block pivotally secured to said slide, said frame or block bearing a seaming-roller and being free to swing in the one direction, a stop for preventing the frame from swinging in the opposite direction, suitable means for adjusting the slide and holding the latter in the desired adjustment and the axis of the seaming-roller being located nearer to said stop than the axis of the roller-bearing-frame, substantially as and for the purpose set forth.

4. In a machine of the variety indicated, a head or carriage B, a plate *n'* secured to one side of said carriage and adjustable horizontally, said plate being provided with a vertical slideway, a slide adjustable endwise of said way, suitable means for adjusting and securing the slide in the desired adjustment, a seaming-roller-bearing-frame pivotally secured to the slide, said frame being free to swing in the one direction, and a stop for preventing said frame from swinging in the opposite direction, substantially as set forth.

5. In a machine of the variety indicated, a longitudinally-corrugated stationary die or form upon which the pipe to be corrugated and seamed is mounted, a track arranged parallel with said form or die and the machine having wheels engaging said track, corrugating dies arranged to engage and operate upon the external surface of the pipe and co operate with the stationary form or die in corrugating the pipe, a seaming-roller adjustable radially relative to the work and a bearing for the work and a stationary form or die at a point diametrically or approximately diametrically opposite the location of the seaming-roller, said bearing being also adjustable relative to the work to be operated upon and the stationary die or form having a surface adapted to co-operate with the seaming-roller, substantially as set forth.

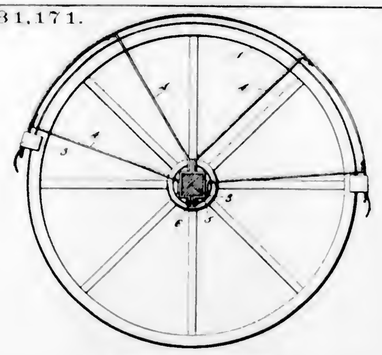
6. In a machine of the variety indicated, a longitudinally stationary die or form upon which the pipe to be corrugated and seamed is mounted, a track arranged parallel with said former die and the machine having wheels engaging said track, radially adjustable corrugating dies arranged to engage and operate upon the external surface of the pipe and co-operate with the stationary form or die in corrugating the pipe, and a roller adjustable radially relative to the work and adapted to press together the portion of the pipe to be seamed preparatory to the seam-closing operation, substantially as and for the purpose set forth.

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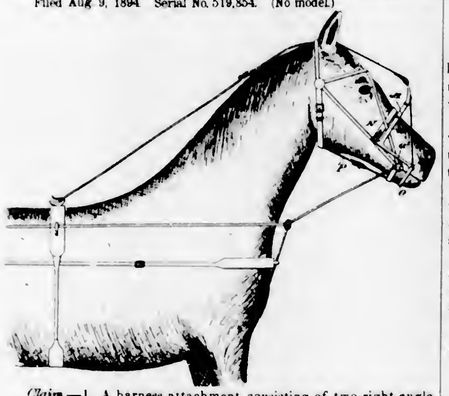
**531,171.** WHEEL-CLEANER. LIZZIE B. FLEMING, Pierce City, Mo. Filed Mar. 22, 1894. Serial No. 504,730. (No model.)

*Claim.*—In a wheel cleaning device, a rim having suitable supports, each end being in juxtaposition with the tire of the wheel, and a device having flanges which project over the edges of the wheel connected to each end of said rim, substantially as set forth.

531,171.



531,172. HARNESS. WILL J. FLEMING, San Francisco, Cal. Filed Aug. 9, 1894. Serial No. 519,854. (No model.)



*Claim.*—1. A harness attachment consisting of two right-angle shaped side pieces, each composed of two arms extending substantially at right angles to each other, one arm of each side piece being adapted for connection to a check rein, the curved cross piece connecting the side pieces, adjustable connections between said side pieces, and two straps connecting the side pieces and arranged to extend above and below the head of the horse on which the attachment is placed, substantially as shown and described, for the purpose specified.

2. A harness attachment consisting of two right angled side pieces adapted to be connected to a check rein, a cross-piece or bar arranged between and having its ends extending through aligned openings in the side pieces, an adjusting bar connected to the cross-piece or bar and having its ends threaded and extending through aligned openings in the side pieces, lock nuts secured on the theaded ends of the adjusting bar and bearing against both faces of each side piece, and straps connecting the side pieces and arranged to extend above and below the head of the horse on which the attachment is placed, substantially as shown and described, for the purpose specified.

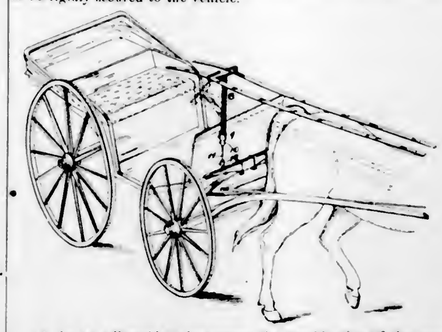
3. A harness attachment consisting of two side pieces, each composed of two arms arranged substantially at right angles to each other, one arm of each side piece being provided with means for attachment to a check rein, adjustable connections between said arms, a nose strap having its ends extending through slots in the other arms of the side pieces, a chin strap extending through slots in said arms on the opposite sides of the other arms from the nose strap, and inclined brace rods connecting the arms of the side pieces, substantially as shown and described, for the purpose specified.

531,173. REIN-SUPPORT. CHARLES E. FORD, Cincinnati, Ohio. Filed July 7, 1894. Serial No. 516,797. (No model.)

*Claim.*—1. In a rein-support, the combination of the open loop 6, adapted to receive and retain the reins, an upright coil-spring which supports the same and a socket within which the lower end of the coil-spring rests and which is adapted to be rigidly secured to the vehicle.

2. In an adjustable rein-support, the combination of the open loop 6, adapted to receive and retain the reins, a resilient standard which carries the loop, a socket 9 in which the standard rests, a post 11 to which socket 9 is adjustably secured and means whereby post 11 is rigidly held in position on the vehicle.

3. In a rein-support, the combination of the open loop 6, adapted to receive and retain the reins, an upright coil-spring which supports the loop and a post which carries the coil-spring and which is adapted to be rigidly secured to the vehicle.



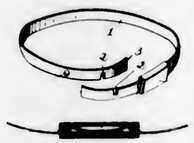
4. In an adjustable rein-support, the combination of the open loop 6, a coil-spring which carries it, a socket 9, in which the latter rests, a post 11, to which socket 9 is adjustably secured and means whereby post 11 is held in position on the vehicle.

5. In an adjustable rein-support, the combination of an open wire-loop 6, a standard for it formed by a coil spring, a plug 14, in the upper end of the coil-spring, to secure the free end of the wire of the loop and means whereby the standard is supported on the vehicle

6. In an adjustable rein-support, the combination of the open loop 6, an anti friction roller 15, carried by it in the lower part of the same, a resilient standard which carries the loop and means whereby the standard is secured to the vehicle.

7. In a rein-support the combination of a standard consisting of a coil-spring, an open loop 6, at the upper end thereof, an anti-friction roller 15, at the lower part of the loop and means whereby the lower end of the spring standard is secured to the vehicle.

531,174. SEAL. STEPHEN A. FOSTER, Toledo, Ohio, assignor of one-half to William B. McClaren, Frankfort, Ind. Filed Sept. 23, 1893. Serial No. 486,316. (No model.)



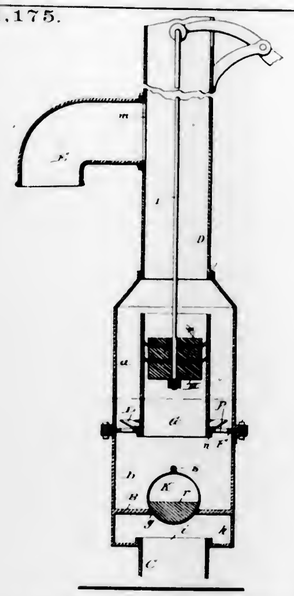
*Claim.*—In a seal, a band having notches upon each inner side, whereby the ends may be interlocked the curved end portions extending beyond the interlock, and an enveloping seal having walls against which the ends of the curved portions abut.

531,175. PUMP. EDWARD E. FRIZELL, Larned, Kans. Filed Apr. 27, 1894. Serial No. 509,259. (No model.)

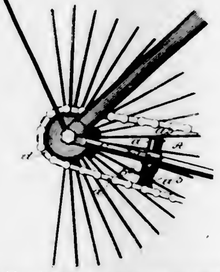
*Claim.*—The herein described pump consisting essentially of the casing A, formed in two sections *a*, *b*, and having the contiguous ends of said sections flanged, the horizontal wall B, in the lower casing section having a central aperture, a valve K, seated in said aperture, the suction pipe detachably connected to the said lower casing section, the pipe D, larger in diameter than the valve K, and detachably connected at its lower end to the upper casing section *a*, and also having the discharge spout E, which is larger in diameter than said valve K, the plate or disk F, interposed and secured between the flanges of the casing sections *a*, *b*, and having the central, internally threaded aperture *n*, and the circular series of apertures *p*, surrounding said aperture *n*, the plunger cylinder G, larger in diameter than the valve K, and about the same size as the pipe, D and threaded at its lower end and screwed into the aperture *n*, of the plate F, a piece of rubber or other suitable material surrounding the plunger cylinder and having the annular portion secured to the upper side of the disk or plate F, and the several, independently-movable segmental valves L, arranged over the apertures *p*, of said disk or plate F, and the plunger adapted to move in the plunger cylinder, all substantially as and for the purpose specified.



531,175.



531,176. LUBRICATOR FOR BICYCLES. CHAS. O. FURBUSH, Jr., Minneapolis, Minn. Filed Nov. 23, 1893. Serial No. 491,812. (No model.)



*Claim.*—1. In a bicycle, the combination with the sprocket-chain thereof, of an upright or vertically-placed, loosely-mounted lubricant-receptacle which rests wholly upon such chain; and which, in the use of the vehicle, receives its discharge-actuation solely from the chain.

2. In a bicycle, or like chain-actuated machine, the combination with a fixed attachment of the machine; of a lubricator and cleaner which has free up-and-down movement within the fixed attachment, and which is composed essentially of an upper vertically-extending, cylindrical, lubricant receiving and discharging chamber, and a lower cleaning and polishing extremity, by which the lubricator and cleaner is wholly supported upon the chain, to receive discharging actuation therefrom.

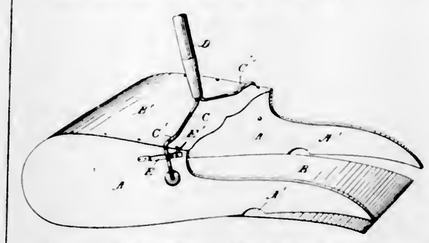
3. The connecting-bar *c*; the guide or holder *b*, adjustably secured by its horizontal portion $b^4$ to the connecting-bar; and the lubricator A, loosely received by its upper portion within the vertical portion $b^3$ of the guide or holder; in combination with the chain *d*;—substantially as and for the purposes specified.

4. A lubricator and cleaner for bicycle-chains, which embraces an adjustable holder which consists of a horizontal sleeve and an upright sleeve or guide; and a reciprocating lubricant receiver and discharger which rests directly and wholly upon the bicycle chain, and is loosely received within the upright sleeve or guide, and which consists of a vertical chamber, a closing-cap, and a discharging-tube, and a clearing brush which are fitted in the lower extremity of the chamber.

5. In combination with a holder, a cylindrical lubricant-receptacle, mounted vertically within the holder, and movable up and down and axially therein, so that the receptacle may rise and fall and also turn axially.

6. A bicycle which is provided with a guide or holder which is attached to a fixed part of the vehicle; and which is provided also with a lubricant-receptacle and chain cleaner which is loosely maintained in an upright position within the guide or holder, and which by its lower extremity is seated upon the lower portion and inner surface of the sprocket-chain; so that in the use of the bicycle the chain operates to repeatedly impel the receptacle upwardly, and also to cause it to rotate.

531,177. DUST-PAN. GEORGE H. GERR, Grand Rapids, Mich. Filed Apr. 23, 1894. Serial No. 508,564. (No model.)

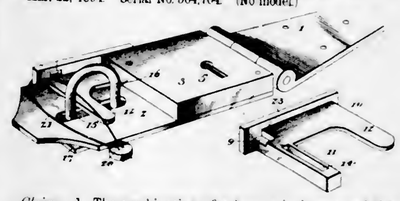


*Claim.*—1. In a dust pan, side walls having forwardly projecting portions above the bottom, and detached therefrom, and a bottom having a detached downwardly curved and flexible forward portion, substantially as described.

2. In a dust pan, a bottom having a detached downwardly curved and flexible forward portion, and side walls having forwardly projecting portions above the same and detached therefrom, and openings, or notches for the escape of dust, substantially as described.

3. In a dust pan, side walls having semi-circular rear ends, downwardly curved forward ends, and notched lower sides, a bottom detached, downwardly curved, and flexible at its forward side and extended around and secured to the semi-circular walls, substantially as described.

531,178. HASP-LOCK. FRANK F. GETZE, Los Angeles, Cal. Filed Mar. 22, 1894. Serial No. 504,704. (No model.)



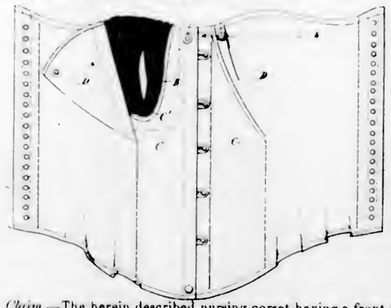
*Claim.*—1. The combination of a hasp, a lock mounted thereon and provided at one side with an opening and having a transverse way located at the opening, a transversely movable bolt composed of inner and outer arms, the outer arm being located outside of the lock casing and arranged opposite the hasp opening, and the inner arm being located in said way and guided by the same and having a limited movement, and a longitudinal bolt mounted within the lock casing and adapted to be operated by a key, and arranged to engage the inner arm of the transverse bolt to secure the same against outward movement, substantially as described.

2. The combination with a hasp, of a lock-casing mounted on the hasp, a longitudinal bolt arranged in the casing and adapted to be operated by a key, a transversely-movable bolt having inner and outer arms, the outer arm being arranged opposite the hasp-opening and the inner arm being arranged in the casing and operating through the same and arranged to be engaged by the longitudinal bolt and provided with a slot 14 arranged longitudinally of it, and a pin arranged in the slot and limiting the outward movement of the transverse bolt, substantially as described.

3. The combination with a hasp, of a lock-casing mounted on the hasp, a longitudinal bolt arranged in the casing and adapted to be operated by a key, a transversely-movable bolt having inner and outer arms, the outer arm being arranged opposite the hasp-opening and the inner arm being guided in the casing and operating through an opening in the same and arranged to be engaged by the longitudinal bolt and provided with a slot 14, a pin arranged in the slot and limiting the outward movement of the transverse bolt, and a flat spring disposed longitudinally of the inner arm of the transverse bolt and connected with the casing and frictionally engaging the transverse bolt, substantially as and for the purpose described.

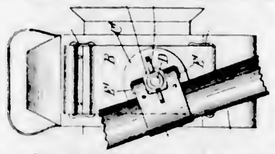
4. The combination with a hasp, of a lock-casing mounted thereon, a longitudinal bolt arranged within the lock-casing, a transverse bolt having inner and outer arms and provided at its outer side with a flange having an opening, said outer arm being located opposite the hasp-opening and the inner arm being arranged within the casing and adapted to be engaged by the longitudinal bolt, substantially as described.

531,179. CORSET. THOMAS S. GILBERT, Springfield, Mass., assignor to the Gilbert Corset Company, same place. Filed Aug 24, 1894. Serial No. 521,210. (No model.)



*Claim.*—The herein described nursing-corset having a front section constructed with an opening located in its upper edge, a loose shield placed in the said opening, and comprising two vertically arranged pieces of soft cloth constructed and adapted to entirely cover and protect the breast and nipple, and having portions of their inner edges free to be pushed back and separated to expose the nipple as required for nursing, and a flap secured to the outer face of the said section and adapted, when closed, to cover the said opening and shield, substantially as described.

531,180. VELOCIPEDE-LANTERN. RICHARD P. GORMULLY, Chicago, Ill. Filed July 13, 1894. Serial No. 517,457. (No model.)



*Claim.*—1. In combination, substantially as set forth, the lantern supporting plate, the bolt which penetrates it and has its head stopped against it, a nut on the bolt, a flexible strap having both ends loosely retained on the bolt between the nut and the plate and adapted to be forced by the nut longitudinally with respect to the bolt.

2. In combination, substantially as set forth, a lantern supporting plate, the flexible strap back of the plate, the clamping bolt penetrating the plate and having both ends of the strap retained by it and its head stopped on the plate, and the clamping nut on the opposite end whereby both ends of the strap are bound between the nut and the plate.

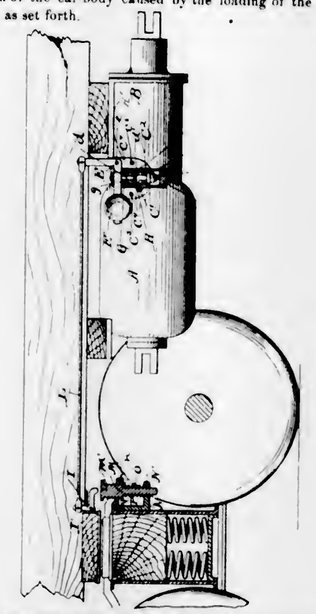
3. In combination, substantially as set forth, the lantern supporting plate, the bolt which penetrates it and has its head stopped against it, the nut on the bolt and a flexible strap whose ends are retained by the bolt between the nut and the plate, one end of the strap being penetrated by the bolt and the other end being provided with universal sliding joint connection with the bolt.

4. In combination with the lantern supporting plate the strap C and the bolt which penetrates both, the eye-block E loose on the bolt and pivotally connected to the strap at an axis transverse to the bolt, and the clamping nut on the bolt outside the eye-block, substantially as set forth.

5. In combination substantially as set forth, the lantern-supporting plate, a flexible strap secured to the plate at one end, a clamping-bolt penetrating the plate and having the other end of the strap loosely retained by it and the clamping nut on the bolt outside the strap, whereby the screwing up of the nut causes the strap to bind the frame-bar to which it is attached.

531,181. GOVERNOR FOR AIR-BRAKES. THEODORE H. HABERKORN, Fort Wayne, Ind. Filed Oct. 9, 1893. Serial No. 487,588. (No model.)

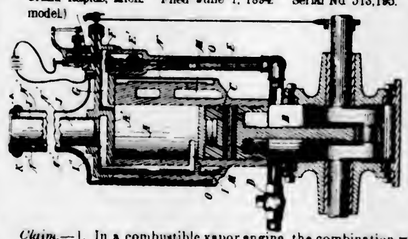
*Claim.*—1. In a governor for air-brakes, a governor-valve located in the line of communication between the brake-cylinder and co-operating air-reservoir, valve proper and valve-stem having two opposing surfaces, respectively, exposed to the air-pressure of the auxiliary reservoir, and the valve having a surface exposed to the air-pressure of the brake-cylinder, the reservoir-pressure-receiving surface with which the valve-stem is provided being larger in area than the reservoir-pressure-receiving-surface of the valve, thereby effecting a co-operation of the air-pressure of the auxiliary-reservoir and brake-cylinder to move the valve toward its closed position, suitable means for retaining the valve open, and a variable stop for limiting the closing movement of the valve, said stop being adapted to be automatically shifted in the direction of opening the valve by means of the depression of the car-body caused by the loading of the car, substantially as set forth.



2. In governing mechanism for air-brakes, the combination of a valve located in the line of communication between the air-reservoir and brake-cylinder, a lever E for actuating the valve to open, lever I operatively connected with lever E substantially as indicated, bar M depressibly supported, suitable means for locking said bar in the desired adjustment as against automatic upward movement, and means for automatically moving said bar upwardly, the arrangement of parts being substantially as shown, for the purpose specified.

3. In governing mechanism for air-brakes, the combination of a valve located in the line of communication between the air-reservoir and brake-cylinder, lever E for actuating the valve to open, lever I operatively connected with lever E substantially as indicated, toothed or notched bar M depressibly supported, and a spring actuated dog or bolt adapted to engage the notches or teeth of said bar and lock the latter as against moving upwardly automatically, the arrangement of parts being substantially as shown, for the purpose specified.

531,182. COMBUSTIBLE-VAPOR ENGINE. RALPH B. HAIN, Grand Rapids, Mich. Filed June 1, 1894. Serial No. 513,195. (No model.)

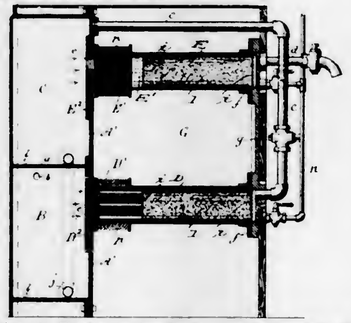


*Claim.*—1. In a combustible vapor engine, the combination with the cylinder having an exhaust port intermediate its ends, the stack surmounting said cylinder, and a water jacket surrounding said cylinder, of the exhaust passage extending through said water jacket and opening into said stack and the air jacket surrounding said water jacket and stack and open to the atmosphere at its ends, substantially as described.

2. In a combustible vapor engine, the combination with the cylinder having an exhaust port intermediate its ends, the stack surmounting said cylinder, and the water jacket surrounding said cylinder, of the exhaust passage extending through said water jacket and opening into said stack, an air jacket surrounding said water jacket and stack and formed with openings at one end, and a ring secured to the tops of said stack and air jacket and formed with a flange having openings communicating with the space in the air jacket, substantially as described.



531,183. METHOD OF AND APPARATUS FOR PURIFYING LIQUIDS. JOHN T. HARRIS, New York, N. Y. Filed Oct. 17, 1890. Serial No. 368,418. (No model.)



*Claim.*—1. The herein described method of purifying liquids which consists in successively presenting to a moving body or stream of liquid being treated, magnetic poles of different polarity in such manner that the impurities in the liquid are successively and diamagnetically repelled in the direction opposite to the movement of the stream, substantially as set forth.

2. In a liquid purifying apparatus, the combination of a settling chamber, an outlet pipe leading therefrom, and a magnet pole piece extending along the side of said pipe and physically projecting into said chamber, whereby the impurities repelled by the pole piece are prevented from entering the pipe, substantially as described.

3. In a liquid purifying apparatus, the combination of a continuous passage for a flowing body of liquid, and a magnet the two poles of which are physically inserted at successive separated points in said passage, the poles being inserted relative to the outward direction of the passage so that the magnetic force repels the diamagnetic particles in the liquid in like manner at both poles and in a direction opposite to the outward flow of the liquid whereby such particles are prevented from passing onward, with the liquid from which the particles have been repelled, substantially as described.

4. In a liquid purifying apparatus, the combination of a settling chamber, an outlet therefor, a magnet pole piece in said chamber, a second settling chamber into which said outlet leads, an outlet from said second chamber, and the other pole piece of the magnet in said second chamber, the two poles being arranged in the chambers substantially parallel with the direction of the outlets therefrom whereby the impurities repelled by the pole pieces are prevented from entering each outlet, substantially as described.

5. In a liquid purifying apparatus, the combination, with a settling chamber, of an outlet pipe opening into said chamber, and a magnet pole piece projecting physically into the chamber and located about the entrance to said outlet pipe, whereby the impurities repelled by the pole piece are prevented from entering said pipe, substantially as described.

6. In a purifying apparatus, the combination with two separated chambers for the liquid, of a magnet, the opposite poles of which are arranged one in each chamber above the lower portion of the chamber to permit the repelled particles to settle therein through the body of liquid being treated, and a conduit from each chamber adapted to convey the purified liquid from the chambers above their said lower portions substantially as described.

7. In a filtering apparatus, the combination with two separated chambers, of a magnet, the poles of which are arranged one in each chamber and conduits for leading off the treated liquid from the face of the magnet poles, substantially as described.

8. In a filtering apparatus, the combination with two separated chambers, of a plurality of magnets, the poles of which are arranged with one polarity in each chamber and conduits for leading off the treated liquid from the face of the magnet poles, substantially as described.

9. In a filtering apparatus, the combination with two separated chambers for the liquid, of a hollow or perforated magnet, the poles of which are in connection one with each chamber and both serving as a conduit for the liquid from the face of the magnet poles, substantially as described.

10. In a filtering apparatus, the combination with two separated chambers for the liquid, of a plurality of hollow or perforated magnets, the poles of which are in connection one polarity with each chamber and serving as a conduit for the liquid from the face of the magnet poles, substantially as described.

11. In a filtering apparatus, the combination with one or more chambers for the liquid, a mud pipe or pipes therefor and a washing-out pipe or pipes in communication with said chamber or chambers, of a magnet in position in the chamber or chambers adapted to repel the impurities in the liquid and cause them to settle downwardly aided by gravity, and a conduit the entrance to which is at the surface of the magnet pole piece at a point within the strongest field of the lines of force and arranged to conduct off the purified liquid in a direction opposed to the repellent action of such lines of force, as set forth.

12. In a filtering apparatus, the combination with one or more chambers for the liquid, and a mud pipe or pipes therefor, of a hollow or perforated magnet in position to subject the liquid to its repelling influence and to act as a conduit therefor, and a washing-out pipe or pipes connected with said hollow magnet for washing out the same, substantially as described.

13. The combination of one or more chambers for the liquid, a filtering bed therefor, containing magnetizable material a magnet adjacent said filtering bed to magnetize said material and interposed between the chamber or chambers and said filtering bed, and a conduit for leading the liquid from the face of the magnet pole to the filtering bed, substantially as described.

14. The combination of two separated chambers, a filtering bed in communication with each chamber a magnet interposed between each chamber and the filtering bed, and a conduit for leading the liquid from the face of the magnet pole to the filtering bed, substantially as described.

15. The combination with one or more chambers for the liquid, of a perforated electro-magnet in position to subject the liquid in the chamber or chambers to its magnetic influence, said perforations forming a conduit for leading off the liquid from the face of the perforated magnet, substantially as described.

16. The combination with one or more chambers for the liquid, of a magnet in position to subject the liquid in the chambers to its magnetic influence and carrying a plate within the chamber for increasing the magnetic surface and adapted to repeal the impurities in the liquid and cause them to settle downwardly aided by gravity, and a conduit the entrance to which is at the surface of said plate at a point within the strongest field of the lines of force and arranged to conduct off the purified liquid in a direction opposed to the repellent action of such lines of force, as set forth.

17. The combination with one or more chambers for the liquid, of a hollow or perforated magnet in position to subject the liquid in the chamber to its magnetic influence and carrying a plate within the chamber for increasing its magnetic surface, and through which hollow magnet the treated liquid is drawn off from the chamber, substantially as described.

18. The combination with two separated chambers, of a magnet, having hollow poles one pole of which is in communication with each chamber, a pipe extending from one hollow pole to the other chamber, and a discharge pipe extending from the other hollow pole, substantially as described.

19. In a filtering apparatus, the herein described filtering bed composed of magnetized material through which the liquid being treated may pass and a contiguous magnet for magnetizing such material.

20. In a filtering apparatus, the combination of a conduit for the liquid, a body of magnetized filtering material confined in said conduit and a contiguous magnet for magnetizing such material, substantially as described.

21. The combination with a liquid chamber and an electro magnet, the helix of which is wholly without the chamber and its pole piece extending within the chamber and insulated therefrom, of liquid supply and discharge conduits leading to and from said chamber, substantially as described.

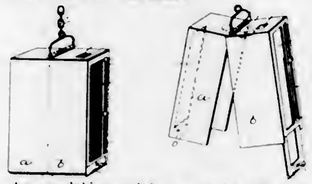
531,184. STOCK-TROUGH. THOMAS C. HARRY and HUGH W. HARRY, Dallas, Tex. Filed June 14, 1894. Serial No. 514,582. (No model.)

*Claim.*—In a stock trough, the combination of a supporting frame having opposite side rails, a semi-cylindrical transversely corrugated sheet metal trough body secured at its opposite side edges to said side rails, end plates seamed onto the ends of said trough body, and metal side cap plates fitted on the upper edges of said side rails and provided with inwardly projected ledges having upper inclined sides extending over the corrugated portion and under shouldered portions projected over the upper edges of said trough body, said side cap plates being further provided with inner side extensions facing the inner sides of the side rails below the upper edges of the trough body, substantially as set forth.



## 531,185. SUSPENDABLE MATCH-BOX.

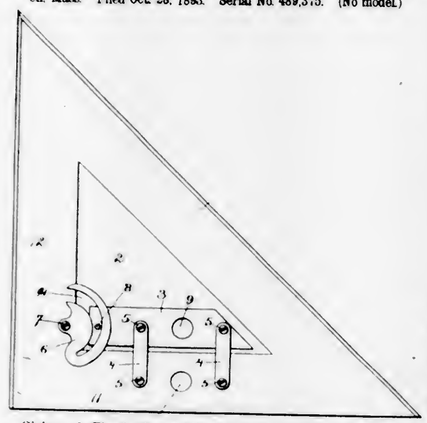
JEAN M. HEIMANN, Sandfeld, near Dornap, Germany. Filed Aug. 19, 1893. Renewed Nov. 13, 1894. Serial No. 528,685. (No model.)



*Claim.*—A suspendable match box, consisting of the two parts *a* and *b* hinged together and slightly overlapping when closed, spring *e* and catch *f*, wide slits *h* at the sides of said parts *a* and *b*, a further guide slit *k*, guide bar *l* with guide buttons *i*, handle *m* and, pin *n* in part *b* and catches *o* in part *a*, substantially for the purpose herein described with reference to the accompanying drawings.

## 531,186. DRAFTSMAN'S INSTRUMENT.

OSCAR F. HILL, Lowell, Mass. Filed Oct. 28, 1893. Serial No. 489,375. (No model.)



*Claim.*—1. The draftsman's instrument consisting of the triangle, the supplemental piece movably attached to the triangle and located within the central opening of the latter, and the adjustable gage for limiting the movement of the said parts relatively to each other and graduating the extent of such movement, substantially as described.

2. The draftsman's instrument consisting of the triangle, the supplemental piece movably attached to the triangle and located within the central opening of the latter, and the adjustable gage having the opening of varying width for limiting the movement of the said parts relatively to each other and graduating the extent of such movement, substantially as described.

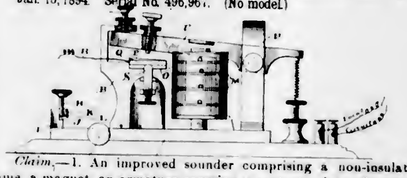
3. The draftsman's instrument consisting of the triangle, the supplemental piece located within the central opening of the triangle, the parallel links connecting the said parts, and the pivoted gage having the opening of varying width for limiting the movement of the triangle and supplemental piece relatively to each other and graduating the extent of such movement, substantially as described.

## 531,187.

WITHDRAWN.

## 531,188. SOUNDER.

FRANK F. HOWE, Marietta, Ohio. Filed Jan. 15, 1894. Serial No. 496,967. (No model.)



*Claim.*—1. An improved sounder comprising a non-insulated frame, a maguet, an armature carrying a contact point, a frame detachably secured to the first named frame, a direct and an insulated post carried by said frame, and an insulated contact plate to which the wire leads from the insulated post, substantially as shown and described.

2. An improved magnet for telegraphic instruments comprising separated cores, coils therefor and a movable cross bar for connecting the cores at different points, substantially as shown and described.

3. An improved magnet for telegraphic instruments comprising separated cores, coils therefor, projections from the cores to the exteriors of the coils, and a movable cross bar for connecting the corresponding projections of the cores, substantially as shown and described.

4. The combination of catch I having recess J, lip K over-hanging said recesses and inclined upward and inward at its lower end and shoulder L at the upper end of said incline, and cut out arm H adapted to be depressed to the lower end of lip K when it will spring inward and upward and be lodged in the upper portion of notch J from lateral displacement, substantially as shown and described.

5. The combination of a sounder bridge, a movable plate secured thereto carrying a circuit contact, and an armature contact adapted to engage the first named contact, substantially as shown and described.

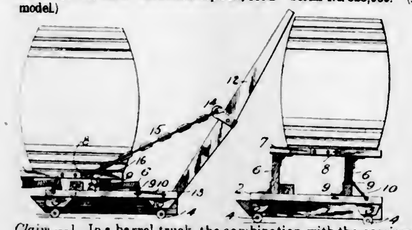
6. An improved sounder comprising a non-insulated frame, a magnet, an armature carrying a contact, a direct and an insulated post detachably secured to the frame, and an insulated contact opposite the armature contact and connected to the insulated post, substantially as shown and described.

7. The combination with the bridge of a sounder, of a plate recessed on its under side to fit the bridge, means for securing it in position, a ridge on the upper side of the plate, and a contact secured to said ridge, substantially as shown and described.



## 531,189. BARREL-TRUCK.

CALVIN A. HUTCHINSON, Spencer, Ind., assignor of one-half to Bert F. Sloan and John R. Greene, same place. Filed Apr. 29, 1893. Renewed Sept. 24, 1894. Serial No. 523,989. (No model.)

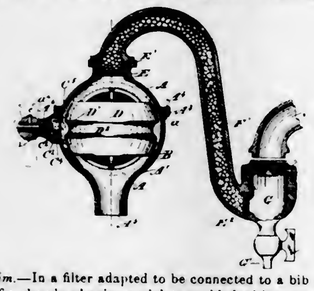


*Claim.*—1. In a barrel truck, the combination with the carriage, of the transverse boards hinged thereto, and the upper platform hinged to said boards, provided with a circular hub on its upper side, substantially as described.

2. In a barrel elevating apparatus, the combination with the carriage having staples on its under side with which the removable lever is adapted to engage, the removable lever having a notch at its lower end, and provided with a chain having a hook at one end, of the transverse boards hinged to said carriage, and provided with eye bolts at their ends the upper platform hinged to said boards, and provided with hooks, and the hooks secured to the carriage, substantially as described.

## 531,190. FILTER.

ALBERT I. HYMAN and DANIEL HYMAN, New York, N. Y. Filed Apr. 25, 1894. Serial No. 508,917. (No model.)



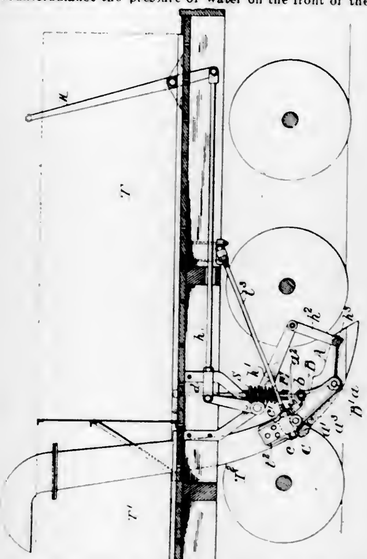
*Claim.*—In a filter adapted to be connected to a bib cock, consisting of a chamber having an inlet provided with a screw cap as a means of connection with a threaded bib, said cap holding in position on the inlet a flexible and centrally perforated diaphragm arranged to be used as a means of connecting said inlet to a plain bib cock, the said diaphragm being formed thicker at the point of perforation than at its perimeter and having formed on its superior superficies a series of concentric rings, said chamber having two outlets, one controlled by a cock, the other closed by a screen located upon one end of an outlet pipe containing filtering material, the other end of said pipe closed by a foraminated disk, in combination with chamber A and rotatable box D, operated by means of a lever and spring key, said box having filtering material inclosed therein, arranged to admit of fluid passing through it, said box provided on its outer surface with an annular groove adapted when the box is rotated to the proper position to allow fluid to flow from the chamber A through said groove and out through an opening provided for such purpose in the bottom of said chamber, as herein shown and described.

## 531,191. TENDER-SCOOP.

WILLIAM F. KIESEL, Jr., Altoona, Pa. Filed Sept. 15, 1894. Serial No. 523,070. (No model.)

*Claim.*—1. In a tender scoop, the combination with a suitable supporting frame, of a dipper formed and pivoted as described, and so that the pressure of the ascending column of water acting at the rear of the pivot will tend to counterbalance the pressure of water on the front of the dipper.

2. In a tender scoop, the combination with a suitable supporting frame, of a dipper of substantially uniform curvature, pivoted at substantially its central point on said frame so that the pressure of the ascending column of water acting at the rear of the pivot will tend to counterbalance the pressure of water on the front of the dipper.



4. The combination in a tender scoop, of a suitable supporting frame, a dipper pivoted to said frame as described and so that the pressure of the ascending column of water, acting at the rear of the pivot will tend to counterbalance the pressure of water on the front of the dipper, stops to limit the swing of the dipper, and a pipe to convey away the water collected thereby.

5. In a tender scoop, a suitable tube or conduit $T^3$ secured to the tender, a joint piece C pivoted to said tube $T^3$, and a dipper pivoted to said joint piece C so that the joint piece and dipper can have independent movements.

6. In a tender scoop, a tube or conduit $T^3$ secured to the tender, a joint piece C pivoted on said tube $T^3$, a frame secured to said joint piece C and a dipper pivoted substantially as described, on said frame, so that the pressure of the ascending column of water at the rear of the pivot will tend to counterbalance the pressure of water on the front of the dipper.

7. In a tender scoop, a tube or conduit $T^3$ secured to the tender, a joint piece C pivoted on said tube $T^3$, a frame secured to said joint piece C, a dipper A pivoted substantially as described on said frame, stops to limit the swing of the dipper relatively to the frame, and means for raising and lowering the dipper so that on raising the dipper it will first swing on the frame till clear of the water, and then rise with the frame and joint piece.

8. In a tender scoop, the combination with a pivoted frame, of a dipper pivoted substantially as described on said frame as and for the purpose specified, and a counter balance for the frame and dipper.

9. In a tender scoop, a pivoted frame B, a dipper pivoted as described on said frame so as to render it substantially balanced at all speeds, and a suitable connection adapted when the frame B and dipper are in operation, and in their lowermost position, to support the frame and dipper directly from the tender.

10. In a tender scoop, a yoke D supported from the tender, a pivoted frame B having a dipper A thereon and a rod or rods E connected to said frame B and adapted, when said frame is in its lowermost position, to be supported on the yoke, whereby the strain due to the inrushing water may be borne by the tender.

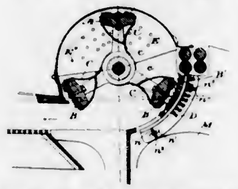
11. In a tender scoop, a yoke D supported from the tender, a pivoted frame B having a dipper A thereon and a rod or rods E connected to said frame B, stops on said rods, and a spring between the stop on each rod and the yoke, all substantially as and for the purpose specified

12. In a tender scoop, a yoke D supported from the tender, a pivoted frame B having a dipper A pivoted thereon, a rod or rods E connected to said frame B, adjustable stops on said rods, and springs for normally holding the stops away from the yoke, all substantially as specified, and so that when the dipper is in its lowermost position and in operation that the strain due to the inflowing water may be borne by the tender.

13. In a tender scoop, the combination with a tube or conduit $T^3$ secured to the tender, of a joint piece C pivoted thereto, and making a joint $c'$ therewith, a frame B formed integral with the joint piece C, a dipper A pivoted at substantially its middle point to the frame B, and making a joint with the joint piece C at $a'$, and means for raising and lowering the dipper.

## 531,192. WITHDRAWN.

## 531,193. COTTON-OPENER. AUGUSTE KIRSCHNER, St. Etienne-de-Rouvray, France. Filed Apr. 28, 1892. Serial No. 431,086. (No model.) Patented in England Nov. 17, 1890, No. 18,498; in France Nov. 22, 1890, No. 209,706; in Belgium Mar. 28, 1891, No. 94,322; in Italy Apr. 22, 1891, No. 29,595, and in Switzerland Apr. 30, 1891, No. 3,581.



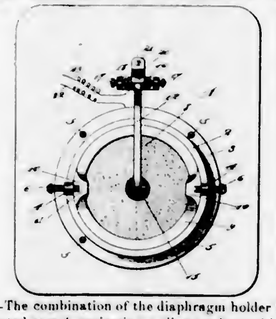
*Claim.*—1. In a machine for opening and cleaning cotton and other fiber, a device for acting upon the cotton with a progressive penetration, consisting of a shaft provided with radial arms, each arm carrying one or more rails, and each rail having rows of stout rigid teeth, the leading row on each rail being the shortest, and the other rows increasing regularly in length, substantially as described.

2. In a machine for opening and cleaning cotton and other fiber, the combination with a shaft, of radial arms, rails secured to the outer ends of said arms, stout, rigid teeth set in rows in said rails, and progressing in length from the front row to the rear row, and curved metallic plates secured to the arms inside the rails, and having openings between the inner edge of the plates and the shaft, substantially as described.

3. In a machine for opening and cleaning cotton and other fiber, the combination with the revolving beater, of a curved casing covering the same having the rows of holes F, and the sliding adjustable plate H adapted to be moved transversely to said rows of holes so as to cover any number of rows of holes, substantially as described.

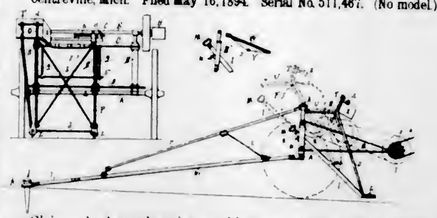
4. In a machine for opening and cleaning cotton and other fibers, the combination with the casing having in its ends the holes E, of the plate G provided with slots and screws, and arranged to wholly or partially cover said holes, substantially as described.

## 531,194. TELEPHONE-TRANSMITTER. DAVID A. KUSEL, St. Louis, Mo. Filed Aug. 6, 1894. Serial No. 519,544. (No model.)



*Claim.*—The combination of the diaphragm holder 2 having opposite perforated ears 4 projecting a distance beyond its rear edge, clamping screws 6 extending in alignment and threaded into said ears with their headed ends outward, an internal annular flange or shoulder 7 on said holder, to support the diaphragm some distance in the rear of the front piece of the transmitter-box, a diaphragm, a clamping ring 9 loosely mounted in rear of said diaphragm and provided with diametrically opposite projections 10 having inwardly and rearwardly converging or inclined surfaces 11 which are engaged by the inner ends of said clamping screws, whereby when said screws are moved toward each other they will forcibly engage said inclined surface of said ring and urge the latter forward into intimate contact with said diaphragm, an electrode adjacent said diaphragm, and suitable connections, substantially as herein specified.

## 531,195. PORTABLE SAWING-MACHINE. JAMES H. LANGTON, Centreville, Mich. Filed May 16, 1894. Serial No. 511,467. (No model.)



*Claim.*—1. A wood sawing machine, comprising a single wheeled axle a suitable support attached to and extending immediately above said axle, the saw and its arbor with bearings on said support, a swinging saw feeding-jack supported from said upwardly extending support on the axle, and bars forming a tongue-frame rigidly attached to said support and axle and convergingly extending forward therefrom, whereby the saw feeding-jack is supported by a single wheeled axle from a point above and immediately over said axle, substantially as set forth.

2. A wood sawing machine, comprising a single wheeled axle, a suitable support attached to and extending immediately upward from said axle, a saw and its arbor having bearings on said support, a supporting-frame for sustaining the saw-feeding-jack, said supporting-frame being attached to the support above the axle and extending downwardly and rearwardly therefrom, a swinging saw feeding-jack pivotally attached at its lower end to the lower end of said supporting-frame, and a tongue-frame rigidly attached to the axle and the support thereon, and convergingly extending forward therefrom, the entire machine having three points of contact with the ground, substantially as set forth.

3. In a wood sawing machine, the combination of a single wheeled-axle, a suitable support attached to and extending immediately above said axle, a supporting-frame for sustaining the saw feeding-jack, said supporting-frame being adjustably attached to the support above the axle, and a saw feeding-jack pivotally attached to said supporting-frame at its lower end, substantially as set forth.

4. In a wood sawing machine, the combination of a single wheeled-axle, a suitable support attached to and extending immediately above said axle, a supporting-frame for sustaining the saw feeding jack, said supporting-frame being attached to the support above the axle and extending downwardly and rearwardly therefrom, a saw feeding-jack adjustably pivoted at its lower end to one of a series of holes in the foot of the supporting-frame, and an adjustable stop attached to the upper front side of the saw feeding-jack, in keeping with its lower end adjustment, substantially as set forth.

5. A wood sawing machine, comprising a single wheeled-axle, pillars attached to and extending upward from said axle, a saw and its arbor having bearings on said pillars, a tongue-frame rigidly attached to the pillars and axle and convergingly extending forward therefrom, the downwardly and rearwardly extending supporting-frame for sustaining the saw feeding jack, said supporting-frame being adjustably attached to the pillars above the axle, and a swinging saw feeding-jack pivotally attached at its lower end to the supporting-frame, substantially as set forth.

6. In a wood sawing machine, the combination of a suitable saw arbor-support, a swinging saw feeding jack pivotally fulcrumed at its lower end in the rear of said support, and having the central depressed throat to receive the sawed stick of wood, the side frames detachably attached at the forward ends to the saw arbor-support and extending rearwardly therefrom, an elevator carrier having its driving shaft at its lower end, said shaft having bearings on the free ends of said rearwardly extending side frames in the rear of the saw feeding-jack so that the elevator carrier receives the wood delivered from the throat of the saw feeding-jack when swung backward, and mechanism for driving the elevator carrier, in which mechanism are the friction gears one of which is adjustable for detachable contact with the saw arbor, whereby detaching the side frames separates the sawing machine from all connection with the elevator carrier and its driving mechanism, substantially as set forth.

7. A portable wood sawing machine, comprising a wheeled-axle, pillars attached to and extending upward therefrom, a saw and its arbor having bearings on said pillars, a tongue frame attached to said axle and pillars and converging to a single point of contact with the ground at the front end, the downwardly and rearwardly extending supporting-frame for sustaining the saw feeding-jack, said supporting-frame being adjustably attached to the pillars above the axle, a swinging saw feeding-jack pivotally and adjustably attached to said supporting frame at the lower end, and an adjustable stop attached to said saw feeding-jack in position to strike against one of the pillars, substantially as set forth.

8. The elevator carrier, comprising the bottom board and side pieces, the side-boards above said side pieces forming spaces between, the transverse slats having their ends in said spaces, the side chains attached to the ends of said slats, and the transverse bars beneath the bottom-board having their ends bowed around the chains and bent back upon themselves and attached to the side boards, substantially as set forth.

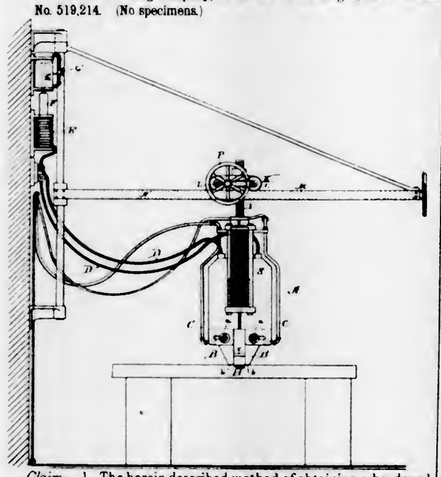


## 531,196. STAKE OR POST-BASE. JAMES H. LANGTON, Centreville, Mich. Filed May 16, 1894. Serial No. 511,468. (No model.)



*Claim.*—A stake or post-base, comprising a polygonal body portion provided on its alternating sides with radial wings, the other alternating sides of the body being exposed between the wings throughout the length of the stake, said exposed surfaces between said wings tapering from the upper to the lower end of the stake, the entire vertical width and thickness of said wings also tapering from the upper to the lower end of the stake, and the entire horizontal thickness of the wings tapering from the sides of the body to the outer edge of the wings, substantially as set forth.

## 531,197. METHOD OF PRODUCING LOCALLY-ANNEALED STEEL PLATES. HERMANN LEMP, Lynn, Mass., assignor to the Thomson Electric Welding Company, of Maine. Filed Aug. 1, 1894. Serial No. 519,214. (No specimens.)



*Claim.*—1. The herein described method of obtaining a hardened piece of metal with a portion only in the body thereof softened, consisting in hardening the whole piece, generating heat in the portion to be softened by an electric current passing through the metal itself at the portion whose temper is to be drawn, and then gradually diminishing the amount of heat supplied by the current to said heated portion at such a rate that, at any period of time, the amount of heat supplied is nearly but not quite equal to the amount of heat being absorbed by the surrounding metal, as and for the purpose set forth.

2. The herein described process of locally softening or drawing the temper from a Harveyized plate or similar plate having a skin of hardened metal, consisting in passing a heating electric current through the metal from one point on the surface thereof to another point by electric contacts engaged with said surface, heating the metal by the heat generated through the passage of the current in the metal, and to a dull red heat, and then gradually removing or withdrawing the electric current, at such rate that the amount of heat supplied is nearly but not quite equal to the amount of heat being absorbed by the surrounding metal, as and for the purpose described.

3. In a heating device employing a transformer, the combination with the secondary, of hollow contacts or electrodes connected thereto, feeding and discharge pipes connected respectively to said electrodes, and a pipe of insulating material connecting said electrodes for the purpose set forth.

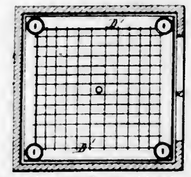
4. In a heating device employing a transformer, the combination with the secondary, of hollow electrodes seated in ways in the ends of the secondary and adjustably secured in place, feeding and discharge pipes connected respectively to said electrodes, and a connecting pipe between the electrodes properly insulated therefrom and having a sliding union with one of them.

5. In an apparatus for producing local annealing, the combination with the heating device, of a swinging bracket provided with a track, a carriage running on said track for carrying said heating device, a screw located in said bracket, a nut in the carriage fitted to said screw, a hand wheel for turning the screw to propel the carriage, and means for raising and lowering said device for the purpose set forth.

6. In an apparatus for producing local annealing, the combination with the heating device, of an overhead track, a carriage on said track, a screw-threaded rod connected to the heating device, a worm-nut located on said carriage to receive said rod, a worm for operating said nut to thereby raise and lower the heating device, and means for moving the carriage along its track for the purpose set forth.

7. The combination, substantially as described, with an electric heating apparatus, of an automatic current regulator for producing a diminished rate of flow of the heating current, and a retarding device connected with said current regulator whereby a slow diminution in the supply of heat may be produced.

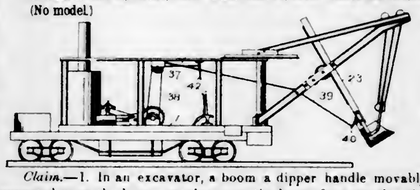
## 531,198. ELEVATOR-GUARD. NORMAN LEVISON, Rochester, N. Y. Filed June 16, 1894. Serial No. 514,818. (No model.)



*Claim.*—1. In an elevator, the combination, with the car, of two sets of chains, one attached to the car and rising and falling with it, the other attached to the well and rising and falling with the car, a set of platforms connected with the chains spaced to separate a distance equal to the distance between the floors, and cups attached to the platforms serving as stops to separate the platforms when closed, and as receptacles to take up the loose chain in closing the platforms, as described.

2. In an elevator, the combination, with the car, of chains, a set of platforms connected with the chains, and a signal device, the chains being connected with a movable part whereby an alarm is made by the depression of any one of the platforms by extra weight thereon, as herein shown and described.

## 531,199. EXCAVATING, DITCHING, OR DREDGING MACHINE. GEORGE L. LEWIS, Toledo, Ohio. Filed Mar. 26, 1892. Serial No. 426,521. (No model.)



*Claim.*—1. In an excavator, a boom a dipper handle movably supported upon the boom, gearing upon the boom for actuating the handle, a continuously revolving shaft geared with the power and gearing upon the boom, a clutch upon the handle operating mechanism, a wheel for operating the same, a lever and resilient connections with the lever and wheel.

2. In an excavator a boom, a dipper handle movably supported therein, mechanism supported on the boom for operating the handle,

a clutch and brake upon the mechanism, a wheel for operating the clutch and brake, a lever under control by the engineer and connections with the lever and wheel.

3. In an excavator, a shaft, a lever thereon connected with the chain wheel, and a lever upon the shaft for opening the governor valve stem and mechanism upon said shaft for operating said lever to speed the engine.

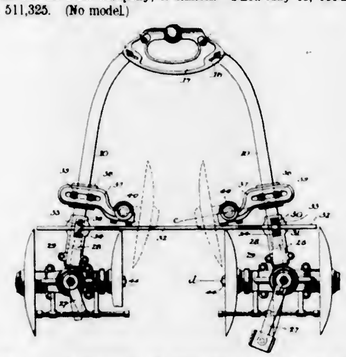
4. In an excavator, a power mechanism, a hoisting mechanism, a boom, a dipper handle movably supported upon the boom, a shaft a lever thereon for connecting the power and hoisting mechanism, gearing upon the boom for actuating the dipper handle, a transmitting gear from the power gear to the gearing upon the boom, a clutch upon the handle operating mechanism, a wheel for operating the clutch, a lever upon the shaft connected with said wheel, and a lever upon the shaft having connections with the governor valve stem, all under control of the engineer, whereby when the dipper is filling the governor valve is opened.

5. In an excavator, a power mechanism, a drum driven thereby, a clutch upon the drum, a lever under control of the engineer for actuating the clutch, a dipper a clutch and brake for controlling the same, a lever under control of the engineer and a flexible connection between the same.

6. In an excavator a boom, a dipper handle movably secured therein, a plurality of geared shafts journaled in the boom to actuate the handle, a clutch and brake mechanism upon one of the shafts, a wheel for actuating the same, and means for operating the wheel and speeding the engine simultaneously comprising an angled lever pivoted centrally, a flexible connection with the wheel and two of the arms of the lever treadles upon the opposite arms, and a bell crank lever pivoted beneath one treadle, having one end to contact with the same, the opposite end being connected with the governor valve stem.

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**531,200. CULTIVATOR.** AUGUST LINDGREN, Moline, Ill., assignor to the Moline Plow Company, of Illinois. Filed May 15, 1894. Serial No. 511,325. (No model.)



*Claim.*—1. In a cultivator the combination of the frame, the journal bearing thereon having a spherical socket, the globular enlargement mounted in said socket and provided with trunnions, a yoke plate mounted on said trunnions and two beams adjustably connected to said yoke plate

2. In a disk cultivator the combination with the two gangs of disks, of disk receiving standards mounted in advance of the disks and adjustable longitudinally and transversely of the machine.

3. The combination in a disk cultivator, of the beams, the gangs of disks at their rear ends, and the supplemental disk-supporting arms mounted on the beams and adjustable thereon in a longitudinal direction.

4. The combination of the beams, the disk gangs at the rear ends of the same, the two horizontal arms connected to the beams in advance of the gangs and adjustable bodily in a straight line transversely of the same said arms having vertical sockets at their inner ends and vertical disk receiving standards adjustably mounted in said socket.

5. The combination in a disk cultivator, of the beams, the disk gangs at their rear ends, the inwardly extending arms slotted at their outer ends and provided with sockets at their inner ends, the staple bolts embracing the beams and extending through the slots, the vertical standards seated in the sockets in the arms, and the staple bolts embracing the standards and extending through the ends of the arms.

6. In a disk cultivator the combination of the beams, the yokes sustaining at their lower ends the gangs of disks, the sleeves in which the yokes are mounted at their upper ends the forwardly extending cylindrical arms projecting from the sleeves, the saddle plates embracing said arms, and the rear ends of the beams, devices for securing the saddle plates and cylindrical arms together, the transverse connecting yoke, and devices for connecting the ends of the yoke with the saddle plates and beams.

7. In a disk cultivator the combination of the frame, the beams pivoted thereto and adjustably connected at their front and rear ends, the gangs of disks on the rear end of the beams adjustable around longitudinal and vertical axes, and the two vertical disk receiving standards connected to the beams in advance of the gangs and adjustable transversely of the beam and around vertical central longitudinal axes.

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**531,201. WINDOW-SHADE.** SAMUEL LONGANECKER, Anderson, Ind. Filed July 3, 1894. Serial No. 516,467. (No model.)



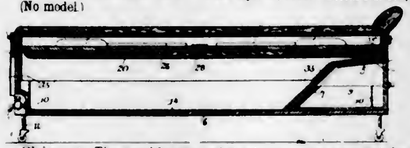
*Claim.*—1. The combination with a window shade having one or more folds upon itself, and a weight roller supported in the fold thereof, of operating cords attached to the shade upon opposite sides of said roller, the overhead hanger, its pivoted lever and guides, and the sliding cam pieces engaged by said levers and arranged to hold the cords against said guides, substantially as specified.

2. The combination with a window shade, the two cords attached thereto at different points, the weight roller supported in the fold of said shade a bent fringe rod secured to said roller, a fringe attached to said rod, the overhead hanger, its pivoted levers, and guides, and the sliding cam pieces engaged by said levers and arranged to hold the cords against said guides, substantially as specified.

3. In a window shade hanger and cord holder, the combination with a frame having a guide thereon, and a cam piece slidable in said guide, of a lever pivoted to said frame, an eye in said lever for a cord, and a tongue or extension on the opposite arm of said lever loosely engaging a depression in said cam piece, substantially as specified.

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**531,202. COMBINED COUCH, BED, AND BATH-TUB.** BENJAMIN S. MABEN, Manchester, N. H. Filed Apr. 25, 1893. Serial No. 471,823. (No model.)



*Claim.*—1. The combination of the lounge, the bath tub in the body thereof, an apron connected to said apparatus and adapted to lie against the outside of the lounge when the bath tub is in use, and over the top of the bath tub when the lounge is in use, and the adjustable lounge top adapted to close down upon and cover said apron and the tub below, substantially as described.

2. A portable bath tub having a cover removably fitted upon and adapted to close the top of the same, and an impervious curtain secured at one edge to the upper edge of each of the walls of the tub and adapted to fold within or cover the outer surfaces of the walls substantially as specified.

3. In a device of the class described, the combination of a bath-tub, a bed hinged at one edge to one side wall of the bath-tub and adapted to fold within the latter, a couch hinged to the opposite side wall of the bath-tub and adapted to close the top of the latter and cover the contained bed, and impervious curtains secured to the upper edges of the walls of the bath-tub and adapted to fold within the latter or drop outside of the same to cover the connected bed and couch when the bath-tub is in use, substantially as specified.

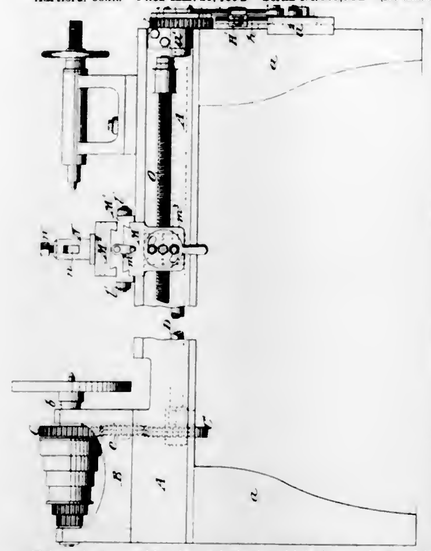
4. The combination with a tub and its casing, of a superimposed couch-section having depending notched flanges, a hook and a cleat secured to the head-end of the couch-section, and a binding rope or cord having a ring at one end to engage in the hook adapted to rest in the notches and at its free end to be engaged with the cleat, substantially as specified.

5. The combination with a bath-tub, of a bed-section hinged at one side thereto and adapted to fold therein, a couch-section hinged at the opposite side and adapted to form a cover for the tub and be folded over upon the bed, and impervious curtains connected at their inner edges to the bath-tub and adapted to fold over the bed and couch when the same are open, substantially as specified.



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**531,203. LATHE FOR TURNING ELLIPTICAL FORMS.** CHARLES W. MACCORD, Hoboken, N. J., assignor to The Pratt & Whitney Company, Hartford, Conn. Filed Mar. 29, 1894. Serial No. 505,544. (No model.)



*Claim.*—1. In combination, a lathe in which the cutting tool is supported to move toward and away from the piece to be operated upon, an elliptographic trammel, connections for turning the wheel or disk of the trammel at the same speed with the lathe mandrel, means for converting the movement of one point of the trammel bar into a reciprocating rectilinear movement and connections for transmitting the said reciprocating rectilinear motion to the cutting tool of the lathe, substantially as set forth.

2. In combination, a lathe in which the cutting tool is supported to move toward and away from the work, an elliptographic trammel, connections for driving the wheel or disk of the trammel at the same speed with the lathe mandrel, means for causing one point of trammel bar to move in a reciprocating rectilinear path, connections for imparting said reciprocating rectilinear movement to the cutting tool, and adjusting devices for increasing or diminishing the lengths of the movements of the tool relatively to the length of movement of the rectilinear moving point on the trammel bar, substantially as set forth.

3. The combination with the work holding mechanism of a turning lathe, and a slide arranged to move along the lathe bed, of a transversely movable carriage supported upon the slide rest, a second transversely movable carriage surmounting the first named carriage, a tool holder carried by said second carriage, means for adjusting the tool carrying carriage relatively to the first named carriage, an elliptographical trammel actuated by the lathe mandrel and connections between the trammel bar and the first named carriage for imparting to it its transverse movement, substantially as set forth.

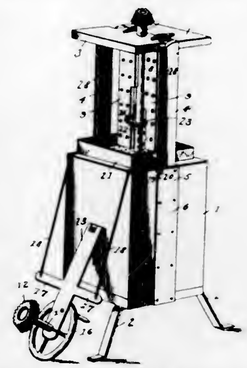
4. The combination with a lathe provided with a transversely movable tool-operating carriage, of an elliptographic trammel, a slide connected with the trammel bar and arranged to move in a right line, a second slide connected with the said transversely movable carriage and arranged to move in a right line, a lever connecting the two slides and provided with an adjustable fulcrum, and means for operating the elliptographic trammel, substantially as set forth.

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**531,204. CHURN.** JOHN A. MADDOX, West Union, Ohio, assignor, by direct and mesne assignments, of two-thirds to M. A. Little and William Cooper, same place. Filed Aug. 14, 1894. Serial No. 520,317 (No model.)

*Claim.*—1. In a churn, the combination of a churn body, a vertically movable cover connected with the body, dasher mechanism connected with the cover, a butter receptacle carried by the same, a swinging lever frame connected with the cover and mounted on the churn body and adapted to elevate the cover, substantially as described.

2. In a churn, the combination of a churn body, a cover provided with slides mounted on the body and capable of vertical movement, dasher mechanism carried by the cover, a swinging frame mounted on the body and carrying gearing for operating the dasher mechanism, and the flexible connections between the frame and the slides, whereby the cover and the dasher mechanism are elevated when the frame is swung away from the churn body, substantially as described.



3. In a churn, the combination of a churn body, a cover provided with slides mounted on the churn body, the butter lifter and strainer connected with and carried by the cover, and the swinging frame mounted on the churn body and connected with the slides, substantially as and for the purpose described.

4. In a churn, the combination of a churn body provided with ways, a cover having depending slides arranged in the ways of the body, dasher mechanism mounted on the cover, a swinging frame hinged to the churn body and carrying gearing for operating the dasher mechanism, and the cords extending from the frame to the slides and connected with the lower ends of the latter, substantially as described.

5. In a churn the combination of a churn body provided with ways and having grooves at its upper edges, pulleys located at the inner terminals of the grooves and located adjacent to the ways, grooved slides mounted in the ways, a swinging frame hinged to the churn body, the cords arranged at opposite sides of the churn body and secured to the frame and arranged in said grooves and connected to the slides at the bottom thereof and fitting in the grooves of the same, and dasher mechanism carried by the cover, substantially as described.

6. In a churn, the combination of a churn body, a cover provided with slides mounted on the body, a swinging frame hinged to the churn body and connected with the slides, a dasher shaft journaled on the cover and depending therefrom and provided with blades, gearing carried by the frame for rotating the dasher shaft, and a butter lifting receptacle conforming to the configuration of the churn body and connected with the lower end of the shaft and carried by the same, substantially as described.

7. In a churn, the combination of a churn body, a cover provided with slides mounted on the body, a swinging frame hinged to the churn body and connected with a slide, a dasher depending from the cover, a receptacle arranged at the bottom of the dasher and detachably swiveled to the same, substantially as described.

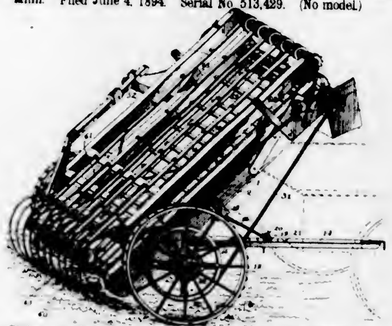
8. In a churn, the combination of a churn body, a cover provided with slides mounted on the body, a swinging frame hinged to the body and connected with the slides, a dasher shaft depending from the cover, a receptacle conforming to the configuration of the churn body and provided with an upward extending sleeve receiving the lower end of the shaft and having a flange, and a pivoted catch mounted on the shaft and having an arm provided with a curved portion conforming to the configuration of the sleeve and engaging the same below the flange thereof, substantially as described.

9. In a churn, the combination of a churn body, a cover provided with slides mounted on the body, a dasher having a shaft journaled on the cover and extending above the same, a pinion arranged at the upper end of the dasher shaft, a swinging frame mounted on the churn body and connected with said slide and provided with a bearing, a shaft journaled in the bearing and having a crank handle at its outer end, and a gear wheel arranged at the inner end of the last mentioned shaft and arranged to mesh with the pinion of the dasher shaft when the swinging frame is in a vertical position, substantially as described.

10. In a churn, the combination of a churn body, a cover provided with slides mounted on the churn body, a swinging frame hinged to the churn body and connected with the slides, a dasher shaft provided with blades and journaled on the cover and extending above and below the same, a perforated receptacle detachably swiveled to the lower end of the dasher shaft, a pinion fixed to the upper end of the dasher shaft, and a drive shaft journaled on the swinging frame and carrying a gear wheel arranged to mesh with the pinion, when the frame is in an upright position, substantially as described.

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**531,205. HAY RAKE AND LOADER.** JOHN MARTIN, Belview, Minn. Filed June 4, 1894. Serial No. 513,429. (No model.)



*Claim.*—1. In a hay rake and loader, the combination with the wheeled inclined carrier frame and the carrier apron therein; of an adjustable rake having an oscillating rake bar supported over the lower end of said carrier frame, a rock arm attached to said rake bar, a weight arm pivotally connected at one end to the upper extremity of said rock arm, a weight block adjustably mounted on said weight arm, a swinging adjusting arm pivoted at one end to one side of the carrier frame and adjustably at its other end to said weight arm, the adjustment of said adjusting arm being compensated for by a corresponding adjustment of said weight block and an adjusting cord or wire connected with the connection between the adjusting arm and the weight arm, substantially as set forth.

2. In a hay rake and loader, the combination with the carrier frame and the upper and lower apron rollers; of the chain wheels loosely mounted on the shaft extremities of the upper apron roller and provided at one side with clutch faces, the drive chains arranged to pass over said chain wheels, clutch collars feathered on the shaft extremities at one side of the chain wheels and provided with spring sockets, catch pins fitted in the shaft extremities, springs arranged in the sockets of said collars and bearing at one end against said catch pins, and a suitable catch or lock attached directly to said collars and adapted to engage with said catch pins to hold the collars out of engagement with the clutch faces of the chain wheels, substantially as set forth.

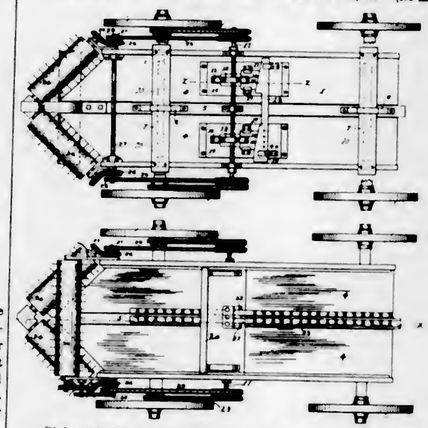
3. In a hay rake and loader, the combination with the carrier frame and the upper and lower apron rollers; of the chain wheels loosely mounted on the shaft extremities of the upper apron rollers and provided at one side with clutch faces, the drive chains arranged to pass over said chain wheels, spring actuated clutch collars feathered on the shaft extremities at one side of said chain wheels, catch pins fitted in the shaft extremities, and U-shaped lock bails pivotally connected with said clutch collars and adapted to be temporarily engaged with said catch pins, substantially as set forth.

4. In a hay rake and loader, the combination with the main carrier frame and the endless carrier apron traveling therein, of opposite guide arms secured at opposite sides of the main carrier frame, a self-adjusting supplemental carrier frame pivoted at one end over the lower end of the main carrier frame, a belt roller journaled at the upper end of the self-adjusting frame and carrying a series of spaced flanged belt pulleys, a series of spring-wire supporting arms attached to the lower pivoted end of the self-adjusting frame and extending beyond such end, belt pulleys journaled at the outer unattached extremities of said supporting arms, a longitudinal series of separate and independent auxiliary carrier belts arranged on the belt pulleys of said belt roller and on said wire arms, and adjustable gearing between said upper belt roller and the upper apron roller of said carrier apron, substantially as set forth.

5. In a hay rake and loader, the combination with the inclined main carrier frame and the apron traveling therein; of the self-adjusting supplemental carrier frame pivotally supported at one end over the main carrier frame, a longitudinal series of auxiliary carrier belts arranged to travel on the self adjusting frame, spring supports for the lower portions of each separate carrier belt, an operating pinion mounted on one shaft extremity of the upper apron roller of said carrier apron, a fixed lower gear pinion meshing with said operating pinion, an upper gear pinion mounted on one shaft extremity of the upper belt roller of said self adjusting frame, separate pairs of gear links respectively connected pivotally at one end at both sides of said upper and lower gear pinions, and an intermediate adjustable pinion meshing with both the upper and lower gear pinions and journaled on the connection between the separate pairs of gear links, substantially as set forth.

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**531,206. MANURE-SPREADER.** DANIEL B. MERRELL, Canandaigua, N. Y. Filed May 19, 1894. Serial No. 511,863. (No model.)



*Claim.*—1. In a manure spreader, the combination with feeding devices, of the two beaters arranged at an angle to each other, and driving devices for rotating said beaters, substantially as described.

2. In a manure spreader, the combination with the reciprocating bottom having the pointed rear end, and a feeding device operated thereby, of the two rotary beaters at the rear of said bottom arranged at an angle to each other, substantially as described.

3. In a manure spreader, the combination with the two reciprocating bottom sections having the inclined rear ends the ratchet bar between them, one of said sections having a ratchet, and the follower having the two pawls, of the two rotary beaters at the rear, set at an angle to each other, substantially as described.

4. In a manure spreader, the combination with the body and feeding devices, of two lower rotary beaters arranged at an angle to each other and a transversely-extending rotary beater or spreader arranged over the two lower beaters, substantially as described.

5. In a manure spreader, the combination with the sides, and feeding devices, of the bottom having the stationary and the adjustable abutments, and the rotary cam arranged between them for causing the reciprocation of said bottom, substantially as described.

6. In a manure spreader, the combination with the reciprocating bottom composed of the two sections, one of them having the ratchet, the stationary ratchet between, and the movable follower having the pawls, of the rotary shaft having the cams, the stationary abutment on each of the bottom sections, the movable abutments and connections for simultaneously adjusting the latter, substantially as described.

7. In a manure spreader, the combination with the reciprocating bottom section, the stationary roller thereon, the adjustable slide having the inclined edge, and the roller, and the adjustable wedge engaging said slide, of the rotary shaft having the cam engaging the rollers, substantially as described.

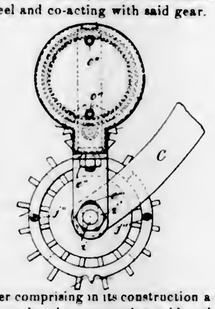
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**531,207. CYCLOMETER.** CHARLES E. MOSS, Boston, Mass. Filed Mar. 19, 1894. Serial No. 504,137. (No model.)

*Claim.*—1. In a cyclometer, the combination of a number of independently rotatable registering gear-wheels arranged side by side, and all but the last one of the series having projections for intermittent transmission of power, a shaft carrying an intermittently acting driver to turn one of the registering wheels, pinions loosely mounted on said shaft and meshing with the other registering wheels respectively, and arranged to be turned by the projections on the adjacent wheels, a gear affixed to said shaft, and an intermittently acting driver arranged to be carried by the ground-wheel and to turn said gear step-by-step.



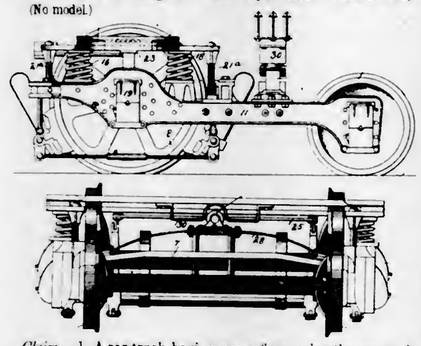
2. In a cyclometer, the combination of a number of independently rotatable registering gear-wheels arranged side by side, and all but the last one of the series having projections for intermittent transmission of power, a shaft carrying an intermittently acting driver to turn one of the registering wheels, pinions loosely mounted on said shaft and meshing with the other registering wheels respectively, and arranged to be turned by the projections on the adjacent wheels, spring detents engaging said pinions to prevent accidental rotation thereof, a gear on the said shaft, and an intermittently acting driver on the ground-wheel and co-acting with said gear.



3. A cyclometer comprising in its construction a casing having a transverse aperture; a bracket supporting said casing and adapted to be fastened to the fixed axle of the wheel and to hold the casing vertically with the aperture uppermost; a set of registering wheels arranged side by side within the casing and having graduated peripheries visible through the aperture in the casing; means for effecting intermittent transmission of motion between the registering wheels; and means for transmitting motion from the ground-wheel to the registering wheels including a shaft projecting through the side of the casing, a gear on said shaft having concaved teeth, and an annulus fastened to the wheel and having a single tooth for engagement with said gear, the periphery of said annulus fitting the concave teeth of the latter.

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**531,208. RAILWAY-TRUCK.** WILLIAM A. MCGUIRE and MOSES G. HUBBARD, Jr., Chicago, Ill. Filed May 27, 1893. Serial No. 475,744. (No model.)



*Claim.*—1. A car-truck having means for varying the proportion of weight or load on the car axles by the action of curving, substantially as described.

2. A car truck having means for varying the proportion of weight or load on the car axles by the action of curving at an inverse ratio to the radius of the curve, whereby the trucks are prevented from being derailed in passing around curves, substantially as described.

3. A car truck having a pair of driving wheels and an idle or guide wheels, and in which the driving wheels carry the greater part of the entire car body and load on a straight track and provided with means for throwing a portion of such weight on the guiding wheels in passing around curves, substantially as specified.

4. A car-truck having driving wheels and guide wheels and provided with cam-actuated pressure mechanism arranged above the forward portion of the truck, said cam actuated mechanism being adapted to operate to press the guide-wheels upon the rails with an increased force by the action of curving, whereby derailment on curves is prevented, substantially as described.

5. A car-truck having driving wheels and guide wheels and provided with a cam controlled spring bearing on the forward portion of the truck and adapted to press the guide wheels upon the rails with an increased and yielding or elastic pressure while passing around curves, and cam mechanism which actuates said spring, whereby derailment on curves is prevented and easy riding is attained, substantially as described.

6. The combination with a pivotal car-truck provided with guide wheels and drive wheels and having its pivotal center located directly over the driving axle, of mechanism which increases the pressure of the guide wheels upon the rails when passing around curves, substantially as and for the purpose described.

7. An independent car-truck adapted to swivel under a car body, said truck being constructed with driving wheels and idle or guiding wheels, and having a center upon which it swivels, located practically over the said driving axle, and having mechanism controlled by the movement of the truck in curving, which increases the pressure on the guiding wheels while passing around curves, substantially as set forth.

8. An independent car-truck having driving wheels and guide wheels and adapted to swivel under a car body, practically all the weight of the car and load being carried by the drive wheels on a straight track and mechanism which shifts part of the weight from the driving wheels onto the guide wheels on curves, substantially as and for the purpose described.

9. An independent four wheeled truck adapted to be swiveled under a car body and provided with cam actuated pressure mechanism which acts to vary the proportion of weight on the truck axles by the action of the truck movement under the car body in passing around curves, substantially as and for the purpose set forth.

10. The combination of a car body, a plurality of trucks swiveled under said car body, said trucks being provided with driving wheels and guide wheels, the said driving wheels being arranged to carry the greater part of the weight of the car and load on a straight track, and mechanism which acts to increase the load on the guide wheels while passing around curves, substantially as and for the purpose set forth.

11. The combination of a pivotal car truck having small guide wheels and large drive wheels, the pivotal center of the truck being located practically over the driving axle, with mechanism which acts to increase the pressure of the guide wheels upon the rails when passing around curves, substantially as and for the purposes described.

12. A pivotal car truck having springs for supporting the car body and load located on each side of the driving axle, in combination with an elastically supported roller and an actuating cam, whereby the guiding or idle wheels have an increased elastic downward pressure applied to them in passing around curves, substantially as and for the purpose specified.

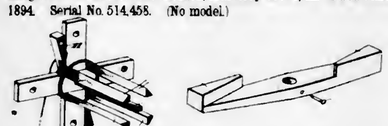
13. The combination of a car truck adapted to be pivoted to a car body, and having driving and guiding wheels, with a roller and cam arranged to be brought into contact by the movement of the truck in curving, and an interposed spring whereby the guiding wheels of the truck are pressed upon the rails in curving with an increased elastic force, substantially as described.

14. The combination of a car truck adapted to be swiveled to the car body and having small guide wheels and large driving wheels, and cam actuated devices for shifting a portion of the weight of the car body to said guide wheels when rounding a curve, substantially as described.

15. The combination with a car truck adapted to be swiveled to the car body and having large drive wheels arranged to support the entire weight of the car body, of small guide wheels, and cam actuated spring mechanism for shifting a portion of the weight to said guide wheels when rounding a curve, substantially as described.

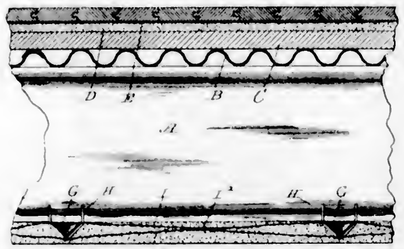
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**531,209. WIRE-STRETCHER.** ALFRED NICKLE, Pleasant Mound, assignor of one-half to J. J. Jackson, Mulberry Grove, Ill. Filed June 13, 1894. Serial No. 514,458. (No model.)



*Claim.*—In the wire stretcher a revoluble shaft, a reel loose on said shaft, and having at one end a beam extending on each side of the shaft, a clutch bar fixed to the shaft directly adjacent to said beam and extending diagonally so that one end of the clutch bar will lie on one side of the beam, and the remaining end on the opposite side, the ends of the clutch bar being respectively formed with inwardly projecting lugs, having diagonally extending faces lying snugly against the adjacent sides of the beam, the wire being arranged with its end between one of the lugs on the clutch bar and the adjacent side of the cross bar of the reel, and with its contiguous portion wound around the reel, substantially as described.

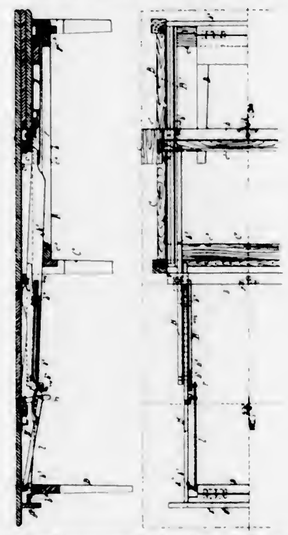
**531,210. FIREPROOF FLOOR.** ORLANDO W. NORCROSS, Worcester, Mass. Filed Oct. 31, 1894. Serial No. 527,525. (No model.)




*Claim.*—1. A fire-proof floor comprising in combination the floor-beams A; the covering on top thereof, consisting of the layer of corrugated sheet metal, B; the grooved planking, C; the plaster D, filled in said grooves, and the top flooring F, arranged one above another in the order named, preferably with a layer of sheathing-paper or similar material interposed between said planking and the top flooring; and the bottom covering under said beams, consisting of the cross-furrings G; means for fastening them to the bottoms of beams A; the two layers of wire fabrics, I, I', one spread above, and the other under said furrings, united and fastened together midway between the furrings, and plaster J, applied to said double wire ceiling, substantially as and for the purpose set forth.

2. The combination of the floor-beams of a building and the covering on top thereof, with the bottom or ceiling covering, consisting of the cross-furrings G, means for fastening them to the bottoms of said floor-beams, the two layers of wire fabric I, I', one spread above and the other under said furrings, united and fastened together midway between the furrings, and plaster, J, applied to said double wire ceiling, substantially as and for the purpose set forth.

**531,211. EXTENSION-TABLE.** ALBERT OBERLANDER, Berlin, Germany. Filed May 2, 1894. Serial No. 509,838. (No model.)

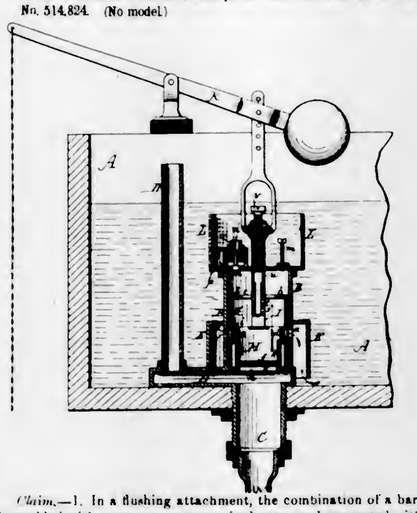


*Claim.*—1. The combination in an extension-table, of a frame and a vertically movable top connected therewith, the bars B guided in said frame and adapted to move upward when outwardly drawn, the leaf A' mounted on bars B, the bars B' guided on bars B and adapted to move parallel therewith, the leaf $A^3$ mounted on bars B', the legs D hinged to the depending rail of leaf $A^3$, the curved plates *m* secured to bars B, links *n* pivoted to bars B', and the rods *l* connecting the said links and legs, substantially as and for the purpose set forth.

2. The combination with a frame and a vertically movable top connected thereto, of the bars B, guided in the frame beneath the top and adapted to move upward in a slanting direction when withdrawn, the leaf A' mounted on bars B, the bars B' guided on bars B and also adapted to move in a slanting direction, the leaf $A^3$ mounted on bars B', the leg D hinged to the depending rail of leaf $A^3$, the curved plates *m* secured to bars B and provided with pins *o*, the links *n* pivoted to bars B' in the plane of the plates *m*, the rods *l* connecting said links to said leg D and hooks on said rods *l* adapted to engage the pins on plates *m*, substantially as set forth.

3. In an extension table, the combination of the bars B and connecting cross piece *b*, with the bars B' provided at their rear-ends with projections $b^4$ and carrying on their outer ends the leaf $A^3$, depending-rail $b^5$, hinged-legs D and leg operating mechanism, as described, the bars B and B' adapted to move in a slanting upward direction, when withdrawn, the legs D being kept clear of the floor until projections $b^4$ have cleared the cross piece *b* substantially as set forth.

**531,212. FLUSHING ATTACHMENT.** JAMES A. O'CONNOR and GEORGE H. GRAHAM, Rochester, N. Y.; said O'Connor assignor of one-fourth to Michael J. Lennon, same place. Filed June 16, 1894. Serial No. 514,824. (No model.)




*Claim.*—1. In a flushing attachment, the combination of a barrel provided with a port or ports near its bottom and connected with an exit pipe, a piston resting in the barrel operated by suitable means to cover and uncover the port or ports, a cup connected with the barrel for holding water independently of the barrel, means for supplying water from the cup to regulate the movement of the piston in the down stroke, and means for allowing the discharge of such water in the up stroke, as shown and described and for the purpose specified.

2. In a flushing attachment, the combination of a barrel provided with a port or ports and connecting with an exit pipe, a cylinder resting in the barrel also provided with a port or ports aligning with the port or ports of the barrel when the cylinder is lowered, a piston resting in the cylinder, operated by suitable means to cover and uncover the port or ports in the cylinder, and a cup connected with the barrel, with means for supplying water to regulate the drop of the piston and cylinder when elevated, and means for allowing discharge of such water when the piston and cylinder are lowered and in the act of being elevated.

3. In a flushing attachment, the combination of a barrel provided with a port or ports, a cylinder resting in the barrel, also provided with a port or ports, a piston resting in the cylinder operated by suitable means, a cup connected with the barrel with means for supplying water to regulate the drop of the piston when elevated, means for allowing the discharge of such water in the act of raising the piston, and a device for holding the cylinder down so that the piston can be operated independently of it, as and for the purpose specified.

4. In a flushing attachment, the combination of a barrel provided with a port or ports, a piston in the barrel capable of forward and back movement, a cup connected with the barrel for supplying water thereto during the drop of the piston, a valve for allowing the discharge of such water in the rise of the piston, and a piston rod connected with the piston made tubular and provided with openings which allow passage of water in the cup to the interior of the barrel, as and for the purpose specified.

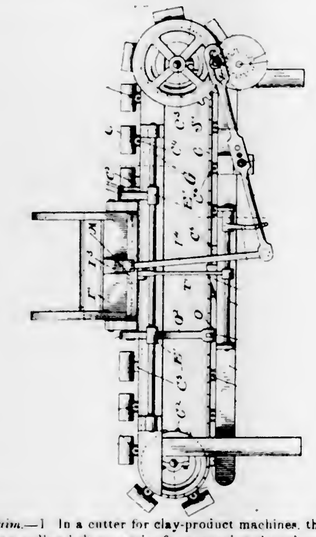
5. In a flushing attachment, the combination of a barrel provided with a port or ports near its bottom and communicating with an exit pipe, a piston in the barrel capable of forward and back motion, a cup connected with the barrel for holding water, means for supplying water from the cup to the barrel to regulate the movement of the piston in the downstroke, means for allowing the discharge of such water in the up stroke, and a jacket surrounding the lower end of the barrel and reaching nearly to the bottom of the tank, as shown and described and for the purpose specified.

6. In a flushing attachment, the combination of a barrel provided with a port or ports, a piston resting in the barrel and capable of forward and back movement, a cup connected with the barrel for supplying water to the same, a valve for allowing the discharge of such water, a piston rod connected with the piston passing through the cup and provided with holes by which the water in the cup can be carried to the interior of the barrel, and an adjusting device which is capable of intersecting one of said holes to regulate the escape of the water, as specified.

7. In a flushing attachment, the combination of a barrel provided with a port or ports near its bottom and connected with an exit pipe, a piston resting in the barrel operated by suitable means to cover and uncover the port or ports, a tube connected with the piston provided with holes through its sides which serve to admit water from above the barrel to regulate the down movement of the piston, and a valve in the barrel to allow discharge of such water in the up movement of the piston, as herein shown and described.



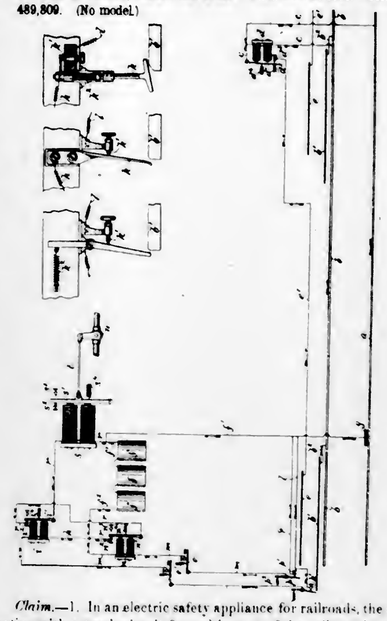
**531,213. CUTTER FOR CLAY-PRODUCT MACHINES.** JACOB H. OMWAKE, Iler, Ohio, assignor of one-half to John W. Walters, same place. Filed May 28, 1894. Serial No. 512,713. (No model.)



*Claim.*—1. In a cutter for clay-product machines, the combination of an endless-belt or carrier for conveying the column of clay to the place of cutting, suitably supported severing-wire-carriage, pivotal arms or dogs L and O carried by said carriage, stationary incline-M and N, projecting-members $C^8$ on the belt or carrier, and suitable mechanism for actuating the severing-wire-bearing-members of the severing-wire-carriage to cause the severing-wires to perform their function during the aforesaid movement of the severing-wire-carriage with the column of clay, substantially as set forth.

2. In a cutter for clay-product machines, the combination of an endless-belt or carrier for conveying the column of clay to the place of cutting, suitably supported severing-wire-carriage, means whereby said carriage is moved with the moving column of clay during its severing operation, means whereby the severing-wire-bearing members of said carriage are actuated to cause the wires to perform their function, the severing-wire-bearing members of the carriage being capable of oscillation, a crank-wheel or crank operatively connected with the aforesaid belt or carrier, a tilting-lever suitably connected with said crank, an arm or lever rigid with the severing-wire-bearing-members and a link operatively connecting said arm or lever with the aforesaid crank-engaging lever, the arrangement of parts being substantially as shown, for the purpose specified.

**531,214. ELECTRIC SAFETY APPLIANCE FOR RAILROADS.** EDWARD L. ORCUTT, Somerville, Mass. Filed Nov. 2, 1893. Serial No. 489,809. (No model.)



*Claim.*—1. In an electric safety appliance for railroads, the combination with a track-circuit formed in part of the rails of the track and a parallel or actuating-circuit so arranged that the charging or breaking of one of said circuits will close or break the other and a contact plate in each circuit, of a source of electricity, a closed track-circuit charging-circuit, a closed parallel or actuating-circuit charging-circuit, and a closed train-controlling-circuit on the train switching or looping brushes in the track-circuit charging-circuit and in the parallel or actuating-circuit charging-circuit, to engage respectively the contact plates in the track-circuit and parallel or actuating-circuit, to loop the latter circuits into the former when said brushes engage said plates, and mechanism substantially as described, operated by the breaking of either of said circuits to stop the train, for the purpose set forth.

2. In an electric safety appliance for railroads, a track mechanism consisting of a track-circuit formed in part of the rails of the track, an electro-magnet contained in said circuit, a parallel or actuating-circuit, the armature of said electro-magnet contained in the latter circuit breaking or closing the circuit by its movements and a contact plate in the parallel or actuating-circuit, combined with mechanism carried on the train consisting of a suitable source of electricity for the circuits contained therein, a closed circuit for the contact plate in the track mechanism, a switching or looping brush an electro-magnet in said closed circuit, a closed train-controlling-circuit, an electro magnet and the armature of the electro-magnet in the other closed circuit on the train contained in the train-controlling-circuit and mechanism substantially as described, operated by the movements of the armature of the electro magnet in the train-controlling-circuit to automatically govern or control the movements of the train for the purpose set forth.

3. In an electric safety appliance for railroads, a track-mechanism consisting of an open track-circuit, an electro-magnet contained in said circuit, an open parallel or actuating-circuit, the armature of the electro-magnet contained in the latter circuit breaking or closing the circuit by its movements, both of said circuits being formed in part of the rails of the track and a contact plate in each of said circuits, combined with a train mechanism consisting of a suitable source of electricity for the circuits contained therein, a closed track-circuit charging circuit, a closed parallel or actuating-circuit-charging-circuit, a switching or looping brush to engage their respective contact plates in the track mechanism and an electro-magnet contained in each of said closed circuits, a closed train-controlling-circuit, an electro-magnet and the armatures of the electro-magnets in both charging-circuits contained in the track-controlling circuit, and mechanism substantially as described operated by the movements of the armature of the electro-magnet in the train controlling-circuit to govern or control the movements of the train, for the purpose set forth.

4. In an electric safety appliance for railroads the combination of a track mechanism consisting of electric circuits, said circuits being composed in part of the rails of the track, and contact plates, a train mechanism consisting of a plurality of closed circuits, switching or looping brushes to loop the track circuits into the train circuits and mechanism operated by the breaking of either or all of the circuits to automatically stop the train, for the purpose set forth.

5. In an electric safety appliance for railroads, the combination of a track mechanism consisting of a track circuit composed in part of the two parallel lines of the rails of the track and including an electro magnet, a parallel or actuating circuit controlled by the action of said electro magnet, and a contact plate in the parallel circuit, a closed circuit on the train having switching brush to engage said plate, an electro magnet in said closed circuit and mechanism controlled by said electro magnet to automatically stop the train when said closed circuit is broken, for the purpose set forth.

6. In an electric safety appliance for railroads, the combination of a track mechanism having a contact plate substantially as described, two closed circuits on the train, a switching or looping brush in one train circuit to engage the contact plate in the track mechanism, an electro magnet in the closed circuit which has the switching or looping brush, the armature of said electro magnet forming a part of the other closed circuit on the train, an electro magnet in the second train circuit and mechanism connected to and operated by the armature of the electro-magnet in said second circuit to cause the stopping of the train by the breaking of either of the circuits on the train for the purpose set forth.

7. In an electric safety appliance for railroads, the combination with the incomplete track circuit composed in part of the rails having an electro magnet included therein, a second circuit parallel with the track circuit controlled by the magnet in the track circuit and contact plates in said circuits, of closed circuits upon the train controlling the movements of the train said circuits having looping brushes included therein to engage the contact plates in the track mechanism to loop the track mechanism into the train circuits, the closed circuits on the train being controlled by the track mechanism substantially as described.

8. In an electric safety appliance for railroads, the combination of closed circuits carried on the train operating when broken to stop the train and looping brushes included in said circuits substantially as described, an incomplete circuit composed in part of two parallel lines of the rails of the track and including an electro magnet, a contact plate in said incomplete circuit, a second contact plate, connecting mechanism between the electro magnet and the second contact plate, the looping brushes on the train adapted to engage the contact plates in the track mechanism whereby the train circuits are controlled by the electro-magnet in the track circuit for the purpose set forth.

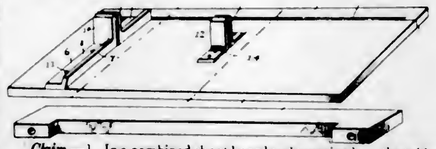
9. In an electric safety appliance for railroads, the combination with a closed circuit carried on the train operating when broken to stop the train and a looping brush included in the train circuit, of a track mechanism consisting of a track circuit composed in part of the two parallel lines of the rails of the track and including an electro magnet, a parallel or actuating circuit including the armature of the electro magnet in the track circuit and a contact plate the looping brush engaging the contact plate to loop the track mechanism into the train circuit whereby the train circuit is controlled by the electro magnet in the track circuit, for the purpose set forth.

10. In an electric safety appliance for railroads, the combination with a plurality of closed circuits carried on the train operating to stop the train by the breaking of any or all of said circuits and a looping brush included in one of these train circuits, of a track mechanism consisting of a track circuit composed in part of the two parallel lines of the rails of the track and including an electro magnet, a parallel or actuating circuit including the armature of the electro magnet in the track circuit and a contact plate, the looping brush engaging the contact plate to loop the track mechanism into the train circuits whereby the circuits on the train are controlled by the electro magnet in the track circuit for the purpose set forth.

11. In an electric safety appliance for railroads the combination with a track circuit formed in part of the rails of the track and a parallel or actuating-circuit so arranged that the charging or breaking of one of said circuits will close or break the other and a contact plate in each circuit of a source of electricity, a closed track-circuit charging-circuit, a closed parallel or actuating-circuit, charging-circuit, and a plurality of closed train-controlling-circuits on the train, switching or looping brushes in the track-circuit-charging circuit, and in the parallel or actuating-circuit charging circuit to engage respectively the contact plates in the track-circuit and parallel or actuating-circuit to loop the latter circuits into the former when said brushes engage said plates, and mechanism substantially as described operated by the breaking of either of said circuits to stop the train, for the purpose set forth.

## 531,215. COMBINED SHOOT-BOARD AND SQUARING-BOX.

THOMAS OWEN, Houston, Tex., assignor of two-thirds to Leonard W. Martyr and Hilliary Eldridge, same place. Filed May 5, 1894. Serial No. 510,213. (No model.)

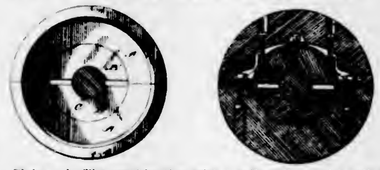


*Claim.*—1. In a combined shoot board and squaring box, the table board provided at one side edge with a longitudinal plane groove, a transverse rest bar arranged on the board near one end, and longitudinally aligned saw guides arranged on the table board, substantially as set forth.

2. In a combined shoot board and squaring box, the flat table board, a separate guide bar secured to one side edge of the table board and spaced therefrom to form a longitudinally disposed plane slide groove, a transverse rest bar secured on the table board near one end and having a saw guide, and an intermediate saw guide mounted on the table board in longitudinal alignment with the saw guide of the rest bar, substantially as set forth.

3. In a combined shoot board and squaring box, the table board provided at one side edge with a plane slide groove, a transverse sectional rest bar arranged on the board near one end and comprising flanged aligned sections terminating short of each other at their adjacent ends and provided at such ends with parallel upwardly disposed saw guide plates, and a pair of intermediate saw guide plates arranged on the table board in longitudinal alignment with the guide plates of the rest bar and provided with attaching flanges at their lower ends resting flat on and secured to the top of the table board, substantially as set forth.

## 531,216. SPLIT PULLEY. WILLIAM R. PATTEN, Chattanooga, Tenn. Filed Apr. 3, 1894. Serial No. 506,194. (No model.)



*Claim.*—1. The combination with a split pulley and a split bushing having its halves in direct frictional engagement with bushing seats in the corresponding halves of the pulley, of a metal band sunk in one of said seats and passing around one half-bushing, bolts detachably connecting said band with the half-pulley in which it lies, and bolts detachably connecting the same band with the other half of the pulley.

2. The combination with a split pulley, of a cylindrical split bushing fitting directly in seats in the corresponding halves of the body of the pulley, a central metal band sunk in one of said seats and extending around the convex surface of the corresponding half bushing, bolts detachably securing the ends of the band to the opposite half of the pulley and bolts securing the remaining half of the pulley directly to the central portion of said band.

3. The combination with a wooden split pulley and a suitable bushing therefor, of a metal bushing clamp fitting around one side of the bushing, means for drawing said clamp against the bushing, and headed bolts projecting inward from one part of said pulley, engaging in threaded apertures in said clamp, and at their inner ends impinging upon the bushing.

4. The combination with one half of a split pulley, of a metal band arching the axial channel in said half and adjustably and detachably secured, at its ends, to the half pulley, upon opposite sides of said channel, a second half pulley recessed to receive said band, and bolts adjustably securing said second half to said band.

## 531,217. SELF-CLOSING SHUTTER. WILLIAM W. PERKINS, Escanaba, Mich. Filed June 26, 1894. Serial No. 515,800. (No model.)

*Claim.*—1. A self closing shutter, composed of two corrugated plates having flat middle portions inclosing a vertical space between them, and a frame to which said plates are secured, substantially as described.

2. The combination with a shutter composed of two corrugated plates having flat middle portions inclosing a vertical space, of pulleys at the upper end of the shutter, a weight sliding in said space, and a chain attached to the weight and passing over the pulleys to a fixed support, substantially as described.

3. The combination with a window provided with self closing shutters, of brackets adjacent to the window, pulleys mounted on the brackets, fastening bolts on the shutters, and chains connected with said bolts and passing around the pulleys to a common operating point, substantially as described.



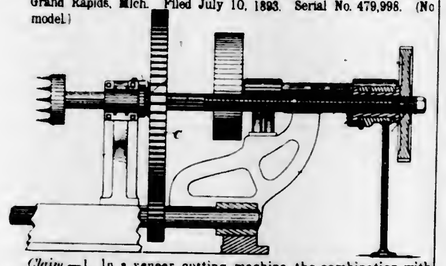
4. The combination with a window provided with self closing shutters, of fastening bolts on said shutters, levers for operating said bolts, brackets adjacent to the windows, pulleys on said brackets, and chains attached to the levers and passing around the pulleys to a common operating point, substantially as described.

5. The combination with one or more pairs of self closing shutters, of chains for opening said shutters, an endless belt to which said chains are connected, and means for actuating said belt, substantially as described.

6. The combination with one or more pairs of self closing shutters, of chains for opening said shutters, an endless belt to which said chains are connected, means for operating said belt, and stops on the belt to limit the movement, substantially as described.

7. The combination with one or more pairs of self closing shutters, of chains for opening them, an endless belt to which said chains are attached, a sprocket wheel for actuating said belt, and a shaft for said sprocket wheel extending through the wall of the building and having at each end a squared portion for a crank, substantially as described.

## 531,218. VENEER-CUTTING MACHINE. WILLIAM H. POWERS, Grand Rapids, Mich. Filed July 10, 1893. Serial No. 479,998. (No model.)

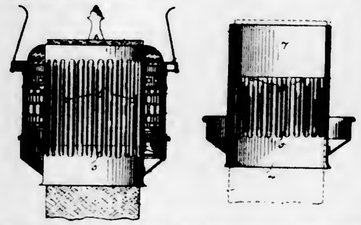


*Claim.*—1. In a veneer cutting machine, the combination with the rotative shaft carrying log engaging devices at one end and reduced in diameter at its other end, a non-rotative sleeve encircling the reduced part of said shaft and threaded externally, and a rotative nut on said sleeve for moving the same and the shaft longitudinally, substantially as described.

2. In a veneer cutting machine, the combination with an externally threaded sleeve having a longitudinal key-way, a longitudinally-movable shaft rotating freely through said sleeve and having log engaging devices at one end, a rotative nut threaded upon said sleeve, a fixed lug engaging said key-way and preventing rotation of the sleeve, a gear fixed upon said nut, and driving mechanism engaging said gear, substantially as described.

3. In a veneer cutting machine, the combination with a shaft having mechanism for moving it longitudinally and provided with log carrying devices and formed with a longitudinal key-way, of a gear wheel through which the shaft moves longitudinally, said gear wheel having a key engaging said key-way in the shaft and also having a grooved hub, a fixed journal bearing for the shaft having a hook engaging said grooved hub and preventing longitudinal movement of the gear wheel, and means for operating said gear wheel to rotate the shaft, substantially as described.

## 531,219. LAMP-BURNER. FRANK REHND, Meriden, assignor to The Bridgeport Brass Company, Bridgeport, Conn. Filed Mar. 31, 1894. Serial No. 506,850. (No model.)



*Claim.*—1. In a central draft lamp, the combination with an outer air distributer, of a wick tube, a removable sleeve adapted to lie within said wick tube, and projections on one of said parts below the top of the sleeve which form contact points between said parts so that the wick is kept out of contact with the upper end of the wick tube, and a space is likewise formed between the upper end of the sleeve and the upper end of the wick tube as and for the purpose set forth.

2. The combination with the wick tube, of a removable sleeve adapted to lie within the wick tube, and projections 5 on one of said parts below the top of the sleeve which form contact points between said parts so that the wick is kept out of contact with the upper end of the wick tube, and a space is likewise formed between the upper end of the sleeve and the upper end of the wick tube, and said wick tube being provided with a stop 6 by which the sleeve is retained even with the top of the wick tube.

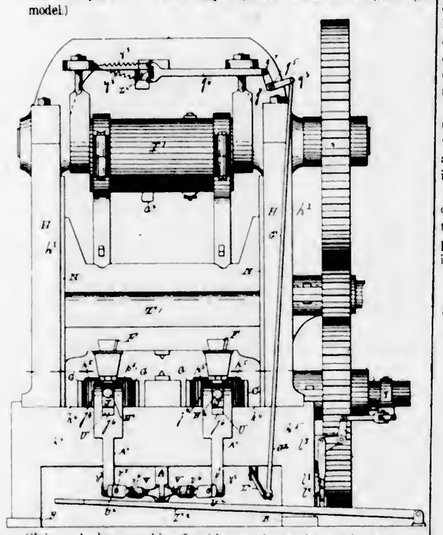
## 531,220. MULTIPLE GEARING. FREDERICK C. ROBINSON, East Fremont, Mich. Filed July 14, 1894. Serial No. 517,548. (No model.)



*Claim.*—In a bicycle, the combination with a framework, a driving-wheel axle fitted in seats in the framework, means for adjusting the axle in a horizontal plane, a driving-wheel mounted upon said axle, and a chain-wheel carried by the driving-wheel, of a crank-shaft provided with a cylindrical enlargement or boss 10 having a flattened side in which are formed duplicate spaced sockets 12 and 13, a double-gear having a common hub fitted upon the enlargement of the crank-shaft and provided at one side of its bore with a flat surface to correspond with the similar surface on said enlargement, a chain connecting one of the members of the double gear with the chain wheel on the driving-wheel, a locking pin fitting in a radial opening in the hub of the double-gear and adapted to engage one of the sockets in the enlargement of the crank-shaft to secure either member of the double-gear in the plane of the chain-wheel on the driving-wheel, a pivotal lever arranged between the members of the double-gear and connected to said locking pin, and a spring for holding the lever in its normal position, said lever being provided at its free end with a guide opening fitted upon a guide pin fixed to the hub of the double-gear, and said spring being coiled upon the guide pin, substantially as specified

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**531,221. MACHINE FOR MAKING AX-POLLS.** ETHAN ROGERS, Ballston Spa, N. Y. Filed May 16, 1894. Serial No. 511,418. (No model.)



*Claim.*—1. In a machine for side-swaging and punching ax-polls, the combination with the grippers G, G, vertically pivoted to the machine bed at $p^5$, and each provided on its inner opposite side with a side swaging die-part; of the shaft S', having mounted thereon the rollers R', $R^3$, each having upon its inner opposite sides the cam $C^2$, and the easing off cam $M^4$, and the spring $U^4$, arranged between said grippers, substantially in the manner as and for the purposes set forth.

2. In a machine for side-swaging, punching and head shaping ax-polls, the combination with the grippers G, G, each vertically pivoted to the machine table at $p^5$, and each having die-parts placed on their inner opposite faces, of the shaft S', made with the gripper operating rollers R', $R^3$, each having the cam $C^2$, on their inner opposite faces and the roller $R^3$, made with the cam $C^4$ on its outer face; the connected pivoted levers A', V and $A^3$, and the head holder and former J, adapted to be operated substantially as and for the purposes set forth.

3. The combination with the grippers G, G, each vertically pivoted to the machine table and each having swaging-dies on their inner opposite sides, and constructed to be operated substantially as described; of a head shaper and former made with notches $j^7$, on its under surface; a lever $A^3$, made with a slotted end to receive said head holder or shaper; a cross pin in said slot to engage with one of the notches in said holder; a lever V, pivotally connecting with the lower end of said lever $A^3$; a lever A', pivotally connected with said lever V, and a cam $C^4$, on the roller $R^3$, constructed and arranged to operate, substantially as shown and described.

4. The combination with the grippers G, G, arranged in pairs, each vertically pivoted to the machine bed, and each provided with a swaging die-part upon its inner opposite side face; of the shaft S', having the rollers R', $R^3$, made with the cams $C^2$, and the cam $C^4$, arranged on the roller $R^3$, constructed to be operated substantially as described; the head holders or shapers J, each made with notches on its under surface; and the lever $A^3$, made with a slot and cross-pin; and the levers V and A', substantially as and for the purposes set forth.

5. In a machine for rough-punching and rough-swaging ax-poll blanks, the combination with a pair of grippers G, G, which at their front ends are vertically pivoted to the machine table, and each made with a die-part recess on its inner opposite sides, and constructed to be operated substantially as described; of a two-part die D', made with the shoulder $d^3$, formed oppositely on the inner side of each die-part in advance of its punching area, and each die-part arranged in one of said gripper recesses; and the rough-punch O', made substantially as described, and operated to pass through a blank when held by said die and grippers, and then recede therefrom, as and for the purposes set forth.

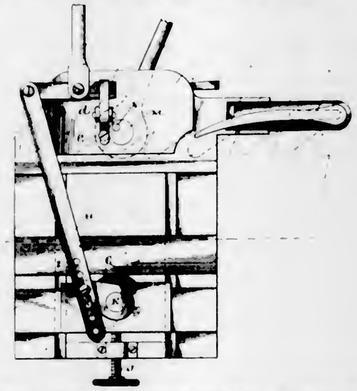
6. The combination with the shaft $S^3$, having bearings in the machine housing, of the sleeve I', eccentrically arranged upon said shaft; the clutch-dog $a^3$, pivotally arranged within a recess in said sleeve; the clutch-latch $c^3$, arranged within a recess in said sleeve and caused to enter a recess $c^4$, formed in said shaft, and by the spring $c^5$, retained therein when not operated upon by the clutch-dog; the lever $I.^3$, pivoted to the under side of the cap C, and adapted when drawn in by the spring $y^5$, to engage with said clutch-dog, and when drawn outwardly by the lever $y^4$, to release and make active the clutch dog $a^3$, substantially in the manner as and for the purposes set forth.

7. The two-part die D', for swaging ax-polls, having each part thereof made with the interiorly opposite vertical side face $d^2$, and with the shoulder $d^3$, formed oppositely on the inner die-part sides in advance of its punching area, and each die-part made with a retaining lip $d^5$, substantially as and for the purposes set forth.

8. The combination with two swaging die-grippers G, G, vertically pivoted to the machine table, of cam rollers R', $R^3$, made with the cams $C^2$, and easing off cams $M^4$, by which after the blanks are punched they will be loosely held by the die grippers, substantially in the manner as and for the purposes set forth.

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**531,222. SAW-SWAGE.** CHRISTIAN A. SCHOESSEL, Rock Island, Ill. Filed June 7, 1894. Serial No. 513,807. (No model.)



*Claim.*—1. A saw swage comprising a frame, a swaging die at the upper end thereof, a vertically adjustable support D upon said frame, an adjustable means carried by the said frame and engaging said support, an oscillating cam carried by said support above the adjusting means, an operating handle for said cam, and a saw carrier supported by said cam, substantially as specified.

2. A saw swage comprising a frame, a swaging die at the upper end thereof, a saw carrier, a vertically adjustable support D, a cam carried by said support and engaging said saw carrier, a laterally moving clamp for said saw, a lever for operating said clamp, and an adjustable connection between said clamping lever and the vertically adjustable cam, substantially as described.

3. A saw swage comprising a frame, a swaging die carried thereby, a saw support, a laterally moving clamp for the saw, an intermediately pivoted clamping lever *d* having one end engaging said clamp, and a lever moving in a plane at right angles to the clamping lever and engaging the opposite end of said lever *d*, substantially as set forth.



4. A saw swage comprising a frame, a swaging die carried thereby, a saw support, a laterally moving clamp for the saw, a means for moving the saw support, an intermediately pivoted lever *d* having one end engaging the said clamp, a lever *s* pivoted at right angles to the lever *d* and having an incline engaging the opposite end of said lever, and a connection between the lever *s* and the said saw support operating means, substantially as described.

5. A die for a saw swage consisting of a rotating member having a longitudinal opening and a lateral cut out portion to said opening, an endwise adjustable die in said longitudinal opening, and a laterally moving feather for holding the die, substantially as described.

6. A die for a saw swage comprising a rotating member having a longitudinal opening, an endwise adjustable swaging die within the said opening, a lever connected to the rotating die, a feather engaging the said swaging die, and a clamping screw passing through the said lever and engaging the feather substantially as described.

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**531,223. GATE.** JOHN W. SHANBECK, Mulberry, Ind. Filed July 20, 1894. Serial No. 518,142. (No model.)

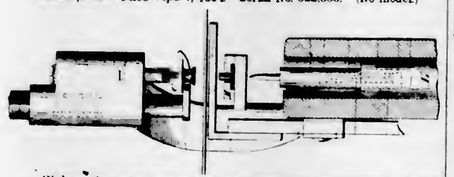


*Claim.*—1. The combination with a swinging gate, of a rearwardly extending horizontally disposed frame located at the top of the gate at the back thereof, the front and rear pulleys 16 and 17 arranged in pairs at opposite sides of the frame, a latch, and the operating ropes extending from the gate in opposite directions, and arranged at the outer side of the rear pulley of the nearer pair, and extending across the frame therefrom, and passing between the pulleys of the other pair, and arranged on the front one of the same and connected with the latch, whereby when either operating rope is pulled it will leave the rear pulley of the nearer pair to make its action on the gate in opening the same direct, substantially as described.

2. The combination of a swinging gate having a latch, of an oval frame arranged at the top of the gate and extending rearward therefrom, a curved bar secured to the back of the frame and separated therefrom and forming an intervening space, the pulleys 16 and 17 arranged in pairs and located in the space at the back of the frame, and the operating ropes extending across the back of the frame and arranged in rear of the pulleys 17 and passing around the pulleys 16 and connected with the latch, substantially as described.

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**531,224. BUTTON-SETTING MACHINE.** ALFRED J. SHIPLEY, Waterbury, Conn., assignor to The Scovill Manufacturing Company, same place. Filed Sept. 7, 1894. Serial No. 522,333. (No model.)

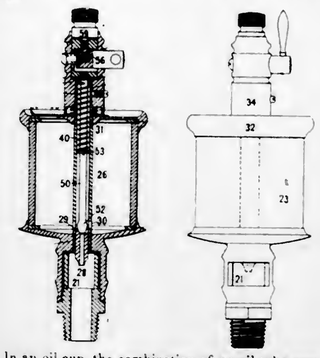


*Claim.*—In a button setting machine, the combination, with a stationary die, provided with a central downwardly projecting pin, and having an annular upsetting bevel located at the base of the said pin; of a yielding forked button-head holder, arranged horizontally under the said die, a table located below the said yielding button-head holder, and containing a clearance opening in line with the die, an eyelet chute, terminating below the said table, and having a clearance opening located in line with the die and in line with the opening in the table, a plunger located below the eyelet-chute, a carrier mounted in the said plunger, in line with the clearance openings in the chute and table and also in line with the die, a yielding bodkin mounted in the said carrier and adapted to pierce the fabric and forming a guide for the eyelet while the same is being forced through the puncture by the carrier, and a spring located within the carrier and adapted to maintain the bodkin in a projected position until the point of the bodkin reaches the pin of the die, after which the bodkin is retired into the carrier during the final upward movement thereof, substantially as set forth.

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**531,225. LUBRICATOR.** FREDERICK E. SMALL, Boston, Mass. Filed Mar. 26, 1894. Serial No. 505,188. (No model.)

*Claim.*—1. In an oil cup, the combination of an oil tube stud having a circumferential groove therein, a spindle head, a spindle, a spindle case provided with a set screw adapted to fasten the spindle case to the oil tube stud, a spindle operating shaft passing through said spindle head, and an indicating handle on said shaft, substantially as described.



2. In an oil cup, the combination of an oil tube stud, a spindle head provided with a spindle, an oil feed adjusting screw, a spindle case, a spindle operating shaft passing transversely through said spindle head, and provided with a recess adapted to engage said oil feed adjusting screw, substantially as described.

3. An oil cup provided with a spindle case, a spindle head provided with a spindle, an oil feed adjusting screw, and a spindle operating shaft provided with recesses for engaging the point of the feed adjusting screw, substantially as described.

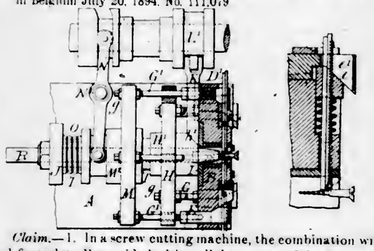
4. In an oil cup, the combination of a spindle head, a spindle, a spindle case an oil feed adjusting screw, and a spindle operating shaft provided with recesses of different depths adapted to engage the point of said oil feed adjusting screw, substantially as described.

5. An oil cup provided with a spindle case, a spindle head, a spindle having a valve attached thereto, an oil feed adjusting screw, and a spindle operating shaft extending transversely through said head and provided with means for regulating the flow of the oil from the cup, substantially as described.

6. In an oil cup, the combination of an oil receptacle, a spindle having a valve attached thereto, a spindle head, an oil feed adjusting screw, a spindle operating shaft having one end thereof reduced, a screw for engaging said reduced end, an indicating handle in the opposite end thereof, and means adapted to engage the point of the oil feed adjusting screw, substantially as described.

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**531,226. MACHINE FOR THREADING WOOD-SCREW BLANKS.** THOMAS B. SMITH, Birmingham, England. Filed July 23, 1894. Serial No. 518,369. (No model.) Patented in England Apr. 7, 1894, No. 6,962, and in Belgium July 20, 1894. No. 111,079



*Claim.*—1. In a screw cutting machine, the combination with the fixed face plate B provided with radial grooves, of the tool carrying blocks C provided on their outer faces with inclines *c* and having a sliding movement in the radial grooves of the fixed face plate, the bars E arranged to slide through said face plate in a direction approximately parallel with the axis of the machine and provided with inclines *e* adapted to force the tool carrying blocks *c* radially inward during a backward movement of said bars, the springs F to force the blocks and tools radially outward on the forward movements of the bars E, the screw stems G adjustably connected to the bars E, the disk H carrying said screw stems, and mechanism for moving said disk forward and backward, substantially as described.

2. In a screw cutting machine the combination with a face plate B of radially sliding blocks C holding the tools and having inclines *c*,

bars E sliding through the face plate and having inclines *c* adapted to force the block C and tools radially inward when the bars are moved in a backward direction, springs F adapted to force the blocks C and tools radially outward on the forward motion of the bars E, a disk H carrying screw stems G adjustably connected to the bars E, a sliding sleeve H′ forming part of disk H, and having inclined faces, and a sliding arm K with inclines operating against the inclines of the sleeve H′ and an appliance for moving the said arm forward so as to force backward the sleeve H, substantially as described.

3. In a screw cutting machine the combination with a face plate B, of radially sliding blocks C, carrying the operating tools D D′ $D^2$, and sliding in grooves in the face plate, bars E sliding through the face plate having inclines operating against inclines on the blocks C, and slots through which the tools D D′ $D^2$ pass, screwed stems G screwing into threaded holes in the bars E and rotatably secured in a disk H, and means for imparting a to and fro motion to the said disk, substantially as described.

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**531,227. FLEXIBLE DOOR.** ALGENON S. SPAULDING, Worcester, Mass., assignor to the Flexible Door and Shutter Company, Portland, Me. Filed Mar. 2, 1892. Serial No. 423,461. (No model.)



*Claim.*—1. The combination with a series of parallel bars, or leaves, forming the body of the door, said bars having their opposing edges provided alternately with a concave edge and a convex bead fitting said concave edge, of a series of hinge bolts held transversely in said leaves and arranged in pairs, one bolt of each pair having a flattened head B′ bounded on one side by a circular arc corresponding with the curvature of the convex bead on the bar, or leaf, and having a concentric hole $B^2$ to receive the pintle of the opposite bolt, and the opposite bolt of said pair having a flattened head C′ bounded upon one side by a circular arc concentric with the axis of the hinge and corresponding with the curvature of the beaded edge of the bar, or leaf, and having a projecting stud $C^2$ entering the hole $B^2$ and forming the pintle of the hinge, substantially as described.

2. The combination with parallel leaves or bars forming the body of the door, of a series of bolts hinged together and held transversely in said leaves and provided with notched inner ends, which overlap and engage each other, whereby said bolts are locked together, substantially as described.

3. The combination with parallel leaves, or bars forming the body of the door, of a series of bolts hinged together and held transversely in said leaves and provided with notched and beveled ends which overlap and engage each other, whereby said bolts are locked together, substantially as described.

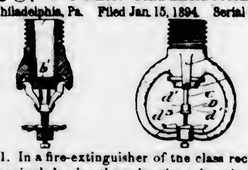
4. The combination with a series of parallel bars, or leaves forming the body of a flexible door, of a series of bolts held in said leaves with their inner ends arranged to engage each other, whereby said bolts are locked together, said bolts being hinged together at their outer ends, substantially as described.

5. The combination with a series of parallel bars, or leaves forming the body of the door, each of said leaves having a concave edge and upon the opposite edge a convex bead fitting the concave edge of the adjacent leaf, of a series of hinge bolts held in said leaves and hinged together at their ends concentrically with the convex beads, substantially as described.

6. The combination with a series of parallel bars, or leaves forming the body of the door, of the hinge bolts B, C, held in said leaves and having flattened and curved heads B′, C′, the head B′ being provided with a concentric hole $B^2$ and the head C′ having a concentric pintle $C^2$ by which said heads are hinged together, the opposite ends of said bolts being provided with interlocking notches having shoulders $B^4$, $C^4$ and inclined surfaces $B^3$, $B^4$, $C^3$, $C^4$, substantially as described.

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**531,228. AUTOMATIC FIRE-EXTINGUISHER.** EDWIN W. STORER, Philadelphia, Pa. Filed Jan. 15, 1894. Serial No. 496,850. (No model.)

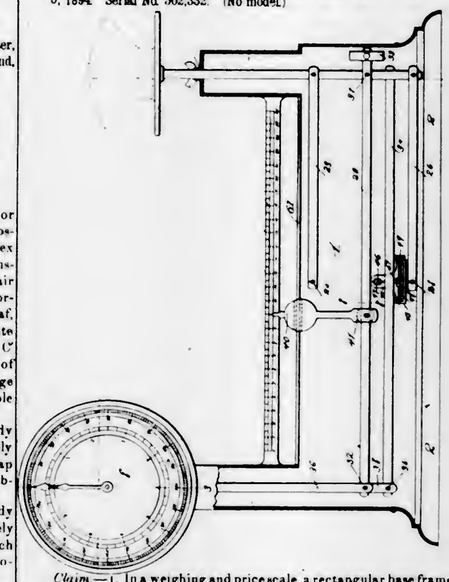


*Claim.*—1. In a fire-extinguisher of the class recited, the combination with the nipple having the yoke, the valve, the lugs having the hooks, the arms bearing against said valve and having hooks engaging the hooks of the lugs, the fusible joint locking device engaging the free ends of said arms, the screw pin bearing against said locking device, substantially as and for the purpose set forth.

2. In a fire-extinguisher of the class recited, the combination with the nipple having the yoke, the valve, the lugs having the hooks, the arms bearing against said valve and having hooks engaging the hooks of the lugs, the fusible joint locking device engaging the free ends of said arms, the screw or pin bearing against said locking device, together with a water spreading device, located opposite to, and in line with the exit end of the nipple, all constructed and adapted, to operate substantially as and for the purpose set forth.

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**531,229. COMPUTING-SCALE.** WILLIAM R. STOVER, St. Louis, Mo., assignor of one-half to Carew C. Sanders, same place. Filed Mar. 5, 1894. Serial No. 502,332. (No model.)



*Claim.*—1. In a weighing and price scale, a rectangular base frame having the upwardly extending portions at each end, a series of vertically movable bars connected at their lower ends by a cross-bar, a series of longitudinally extending beams and bars pivoted to these vertical bars, two vertical bars pivoted to the forward ends of these longitudinal bars, and segmental racks operated by these vertically extending bars, a pinion mounted upon a shaft, the teeth of which mesh with the teeth of one of the segmental racks, a hollow shaft mounted on this central shaft, a pinion mounted upon this hollow shaft, the teeth of which mesh with the remaining segmental rack, and two indicating fingers mounted upon the central shaft and the hollow shaft, all to operate in the manner described and for the purposes stated.

2. The combination in a weighing and price scale of a base or casing having a horizontal guide, a longitudinally adjustable fulcrum, engaging said guide and consisting of a pointer or finger having its lower portion bifurcated, a disk pivoted within said bifurcation, said disk having a rectangular opening through its body portion and a bar or beam engaging said opening, substantially as shown and specified.

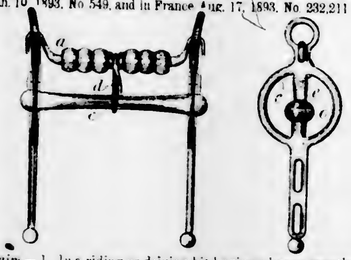
3. In a weighing and price scale, the vertically and longitudinally adjustable fulcrum, comprising a rectangular frame provided with an upwardly extending portion, said upwardly extending portion provided with a slot, a screw-threaded shaft located near the forward portion of the frame and having a head located on the outside of said rectangular frame, and a rectangular block mounted upon said screw-threaded shaft and provided with an upwardly inverted V-shaped portion, substantially as shown and specified.

4. In a weighing and price scale, the combination of a rectangular base 1 having the upright portions 3 and 4 and the vertically moving bars 13, 14 and 16, the longitudinally extending beams 29 and 30 and 34 pivoted to the vertical bars, the longitudinally adjustable fulcrum for the beam 29, and the vertically and longitudinally adjustable fulcrum for the beam 34, the vertical bars pivoted to the forward ends of the longitudinal beams 29, 30 and 34, segmental racks 37 and 39 operated by said vertical bars, a central shaft, a pinion and indicating finger mounted on said central shaft, a hollow shaft mounted on said central shaft, and a pinion and indicating finger mounted on said hollow shaft, all to operate in the manner set forth and for the purposes specified.



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**531,230. BRIDLE-BIT.** FRANK SWALES, London, England. Filed Apr. 24, 1894. Serial No. 508,848. (No model.) Patented in England Jan. 10, 1893, No. 549, and in France Aug. 17, 1893, No. 232,211.

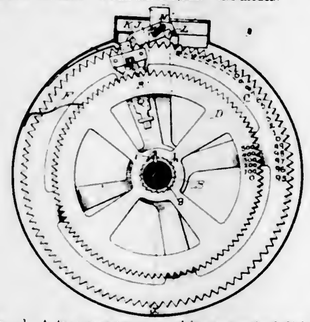


*Claim.*—1. In a riding or driving bit having a bar or mouth-piece movably connected thereto a bridoon provided with bent ends, a central connecting device between the bridoon and the mouth piece and serving to retain them in their proper relative positions, substantially as described.

2. The combination with a riding bit having a revolving sliding mouth-piece, of a bridoon having tapering bent ends, the said bridoon being movably attached to the center of the mouth-piece, substantially as described.

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**531,231. FARE-REGISTER.** EDWARD T. TAYLOR, Oakland, Cal. Filed Feb. 12, 1894. Serial No. 499,942. (No model.)



*Claim.*—1. A fare register comprising a toothed disk rotating about a center, an oscillating lever movable with relation to said disk, a pawl carrying arm fulcrumed with relation to said lever, and a diagonal guide whereby the forward movement of the lever first depresses the arm so as to cause the pawl to engage a notch in one of the disks preparatory to moving it forward.

2. A fare register comprising a circular toothed disk journaled to rotate within a case, an oscillating lever movable with relation thereto, a pawl carrying arm mounted upon a reciprocating guide, a diagonal guide upon said pawl arm adapted to engage a pin or lug upon the lever, whereby the first movement of the lever depresses the pawl to engage the notch in the toothed disk and a continuation of the movement of the lever advances the pawl and its carrying arm so as to move the disk forward a single tooth.

3. The combination, of a toothed circular disk rotatable within a containing case, an oscillating lever movable with relation to said disk, a pawl carrying lever fulcrumed upon a sliding guide which is movable in the direction of motion of the lever, a diagonal guide upon the pawl carrying arm, and a pin on the lever engaging said guide whereby the pawl is depressed to engage a notch in the disk when the lever commences its forward movement, and the sliding guide and pawl-carrying arm are advanced during the latter part of the movement of the lever to move the disk forward a single tooth, a spring pressing upon the lever to return it to its normal position when released, whereby the pawl is lifted from the notch by the return of the pin in the diagonal guide, and a second spring whereby the slide of the pawl-carrying arm is returned to its normal position and the pawl brought into position above the next tooth of the disk.

4. A fare register comprising toothed disks rotating upon a common center, a mechanism consisting of an oscillating lever movable with relation to the outermost disk, a pawl-carrying arm slidable in the direction of motion of the lever, having an inclined guide engaging a lug upon the lever whereby the pawl is first depressed to engage a notch in the disk and afterward advanced to move the disk forward a single tooth, and springs whereby the parts are returned to their normal position when released, a radially sliding plate movable upon the outer disk to and from the center, the outer end of said plate registering with the final notch of the disk at the point where a rotation has been completed, whereby the depression of the pawl which advances the outer disk will also force the plate toward the center, a pawl carried by said sliding plate and adapted to engage a notch in the periphery of the second disk when the plate is so moved, whereby the forward movement of the lever and outer disk advances the second disk one tooth simultaneously with the movement of the outer disk.

5. A fare register comprising toothed disks of different diameters journaled to turn about a common center post, the outer disk having its peripheral rim thickened so that its face is approximately in the same plane with the face of the inner disk, figures made upon the faces and near the peripheries of these disks corresponding with the number of teeth therein, a pawl mechanism whereby the outer disk is advanced tooth by tooth until a rotation is completed, a radially slidable plate the outer end of which is adapted to register with the final notch of the outer disk, and a pawl on said plate adapted to engage the inner disk whereby the inner disk is advanced one tooth at the completion of each rotation of the outer disk, a dial having its face near the periphery marked to correspond with the teeth of the outer disk and slots made in one side on a horizontal line with the center through which one line of figures upon the two disks are exposed, and an index hand or pointer movable over the dial in unison with the movement of the outer disk.

6. A fare register comprising toothed disks journaled to rotate about a common center, pawl mechanism whereby the outer disk is advanced one tooth at a time, and the inner disk is advanced a single tooth at the completion of a full rotation of the outer disk, a dial marked to correspond with the teeth and marks upon the outer disk and slotted to expose the marks of the disks through the face of the dial, an index hand or pointer fixed to the rotating central post and movable over the dial in unison with the forward movement of the outer disk, said index hand having a short arm projecting therefrom, and a toothed dial journaled upon a face of the main dial so as to be engaged by the short arm of the index hand and moved forward a single tooth when the index hand has completed a rotation over the face of the main dial.

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**531,232. SUSPENSORY BANDAGE.** JOHN TEUSCHER, Jr., Bridal Veil, Oreg. Filed July 25, 1894. Serial No. 518,569. (No model.)



*Claim.*—In a suspensory bandage, a bag consisting of two duplicate parts adjustably seamed together at their meeting edges, an absorbent roll or pad extending partially across the upper rear edge of said bag, a pair of short straps attached to the front corners of the bag and disposed at an angle thereto, the main body belt having an auxiliary cross belt connecting the opposite side portions thereof, and elastic strips connecting the adjacent ends of said short connecting straps and the main body belt, substantially as set forth.

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**531,233. CARTRIDGE-SHELL FOR PRACTICE SHOOTING.** WILLIAM M. THOMAS, Bridgeport, Conn., assignor to the Union Metallic Cartridge Company, same place. Filed Mar. 16, 1894. Serial No. 503,841. (No model.)



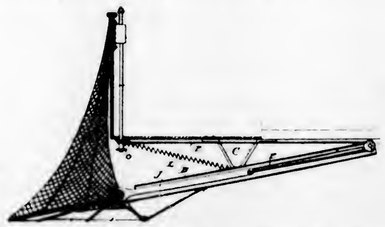
*Claim.*—A sheet metal cartridge shell consisting of a single metal shell having the ordinary powder chamber 1, and the reduced or "bottle-necked" part 3, said bottle-necked part being still further reduced to form the extension 9, the interior of said shell conforming substantially in configuration to the exterior, whereby a short projectile may be used in said cartridge shell without altering the external configuration, substantially as described.

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**531,234. AUTOMATIC STREET-CAR FENDER.** JEAN T. VAN GESTEL, New York, assignor of one-fourth to R. H. Sherwood, Bensonhurst, N. Y. Filed Nov. 10, 1893. Serial No. 490,555. (No model.)

*Claim.*—1. The combination with a sheath, of a folding fender retractible therein, and means for automatically projecting and unfolding said fender.

2. The combination with a car, of a sheath supported thereunder, a fan-like folding fender retractible within said sheath, means for retracting said fender, springs for projecting said fender, and releasing mechanism controlling the projection of said fender.



3. The combination with a car, of an automatically projectible folding fan-like fender, normally retracted under the car and a net connected thereto and to the dash-board of said car, for the purpose set forth.

4. The combination with a car, of an automatically projectible fender of fan-like construction, means for retracting the same, a sheath for receiving said fender when retracted, and a net connected at one edge to the fender and at the other to the dash-board of the car.

5. The combination with a car, of a retractible folding fan-like fender, a shaft upon the platform of said car connected with means for retracting said fender, catches for holding said shaft in position, a releasing device for said catches, and springs for projecting said fender rendered operable by the release of said catches.

6. The combination with a car, of an automatically projectible fender, a sheath therefor pivotally supported under the car in a manner such that when the fender is projected it will meet the track at such an oblique angle as to over-ride any roughness therein.

7. The combination with a car and an automatically projectible fender therefor, of a combined retracting and releasing device, substantially as shown, consisting of the shaft M, with its drum and catches, notched hearing Q, the pin S, and the handle T.

8. The combination with a car, of a folding-fan-like fender normally retracted under the car, a net connected to the forward end thereof and to the dash-board above the drawhead, and means under the control of the driver for projecting the folding fan-like fender.

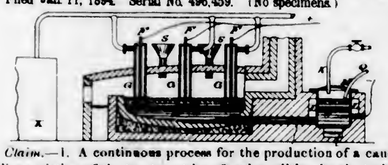
9. A fan-like fender normally folded under the car, and means for projecting and spreading the same, as and for the purpose described.

10. The combination with a car, of a retractible fan-like fender, means for projecting the same, and stays connected to the terminal rays thereof for spreading said fan-like fender as it is projected.

11. The combination with a car, of a retractible fan-like fender, a sliding stem connected to the rays thereof, means for guiding and holding said stem, and stays connected to the terminal rays of the fan for spreading the same as it is projected.

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**531,235. PROCESS OF AND APPARATUS FOR THE PRODUCTION OF CAUSTIC ALKALI.** CLAUDE T. J. VAUTIN, London, England. Filed Jan. 11, 1894. Serial No. 496,459. (No specimens.)



*Claim.*—1. A continuous process for the production of a caustic alkali, consisting of the treatment in a fused condition by electrolysis of a salt of sodium or potassium forming the electrolyte, upon a molten bath of lead alloying with sodium and potassium, and not affected by fused caustic alkali, the said metal forming the cathode of the electric circuit; the conversion into a caustic alkali of the sodium or potassium from its alloy with the molten cathode, by the treatment of a part of said cathode, *in situ*, by water in any form; and the removal of the caustic alkali from the surface of the molten bath for collection and utilization, substantially as described.

2. A process, consisting of the treatment by electrolysis of the chlorides of potassium or sodium in a fused condition over a cathode of molten lead; the treatment by water in any form, of part of the cathode *in situ*, without removal or diminution of the lead, to convert the potassium or sodium into caustic alkali; the collection of the chlorine evolved at the anodes of the electric circuit; and the conversion of the chlorine into the chloride of lime, substantially as described.

3. The treatment of a part of a cathode of an electrolytical furnace, consisting of a molten alloy of lead with sodium and potassium, by heating the said part to be treated, while still in fluid communication with the said cathode, and by introducing a jet of steam upon the surface of the said separated part, to convert the sodium or potassium as it collects by transfusion through the molten cathode, into a caustic alkali, for collection and utilization, substantially as described.

4. The combination of two covered furnaces or equivalent furnace pots, connected at the bottom by an open conduit; grates and flues adapted thereto to externally heat the same; anodes in one pot or furnace, protected by surrounding refractory tubes having connecting pipes; a fluid cathode common to both furnaces or pots; and a steam admission pipe, and exit pipe passed through the cover of the other pot or furnace, to carry the herein described process into effect, substantially as described.

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**531,236. TABLE.** JOHN WADDELL, Eagle Grove, Iowa. Filed Apr. 26, 1894. Serial No. 509,132. (No model.)



*Claim.*—A table comprising a rectangular box provided at the upper edge of one of its sides with a rectangular recess, legs supporting the box, a vertical socket tube located within the box and arranged adjacent to said recess, a table top conforming to the configuration of the box, and a vertical pivot pin arranged in said socket and provided at its upper end with a rectangular plate secured to the lower face of the table top and interlocking with the recess of the body or box, whereby the table top is normally held against turning on its pivot, substantially as described.

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**531,237. DEVICE FOR DIVIDING POWDERS, &c.** RALPH WALSH, Washington, D. C. Filed Feb. 8, 1894. Serial No. 499,499. (No model.)



*Claim.*—1. A device for separating substances into portions, consisting of a case open at top and bottom and provided with a guide-way at the bottom, a sliding plate to enter the guide-way to close or wholly or partially open the bottom, and a second plate provided with cross-plates arranged at intervals, the second plate adapted to close the top and the cross-plates being of a height and width corresponding to the height and width of the interior of the case, substantially as described.

2. A device for separating substances into portions, consisting of a case open at top and bottom and having sets of interior grooves extending from top to bottom, a movable partition designed to be placed in a set of the grooves to divide off the interior and to adapt the device to the separation of any desired quantity of substance less than the capacity of the entire frame, a sliding plate for closing or for wholly or partially opening the bottom of the case, and another plate, being a top-plate, provided with a number of cross-plates of a size corresponding to the opening in the case, substantially as described.

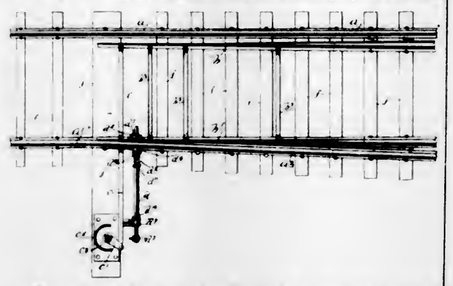
3. A device for separating substances into portions, consisting, essentially, of a case open at top and bottom, and provided with a guide-way, a sliding plate to move back and forth in the guide-way, a second plate for closing the opposite opening in the case, having its ends bent at right angles and adapted to engage the outer ends of the case, and, also, provided with cross-plates corresponding in height and width to the height and width of the interior of the case, there being ledges arranged between the cross-plates fitting into the top of the case, substantially as described.

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**531,238. SAFETY SHIFT OR LOCK FOR SPLIT SWITCHES.** GEORGE L. WARREN, St. Paul, Minn., assignor of one-half to Watts N. Davis, same place. Filed June 18, 1894. Serial No. 514,864. (No model.)

*Claim.*—1. The combination with a point or split switch and an automatic switch-stand, of a supplemental safety shift or lock applied to the movable points, cooperating with the switch-stand but also operative independent of the same, when in locked position, to yieldingly hold the movable point of the main line in its closed position and to close the same, if forced open, and operative, when unlocked, to release said points, for permitting the same to be thrown by the ordinary switch-levers, substantially as and for the purposes set forth.





2. A safety shift or lock, for split switches, comprising a rocking horizontal rod or bar having a lug engageable with and disengageable from one of the movable points and a spring applied to said rod and tending, when the rod is in its locking position, to hold the said points in position to close the main line, and means for rocking said rod from its locking to its releasing position or vice versa, substantially as described.

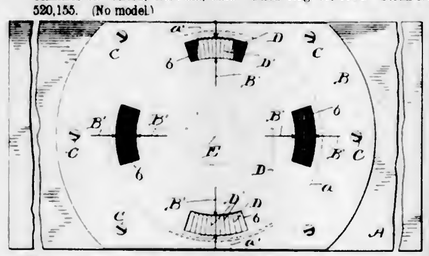
3. The combination with a split switch, of a pair of depending brackets rigidly secured one to the movable point and the other to the adjacent fixed or stock rail and a rod or bar extending through the depending parts of said brackets below the rails, and cooperating with said brackets and rails to prevent the upward jumping of the movable or point rail, substantially as described.

4. A safety shift or lock for split switches, comprising a rocking shift rod or bar having a cam-lug on its inner end, suitable bearings for said rod including a pair of brackets securable one to the movable point and the other to the adjacent fixed rail, the inner member of which is engageable by said cam-lug, when in locking position, and is provided with a passage for the same when in releasing position, a spring reacting against said outer bracket and a fixed collar on said rod, and a hand-lever for rocking said rod, substantially as described.

5. The combination with a split switch and a switch-stand of the bearing brackets $d^3$ $d^4$, the inner member, at least, of which has the cam surface $d^7$, and the cam-lug passage $d^8$, fixed one to the movable point $b'$ and the other to the fixed rail $d^3$, of the rocking rod $d$, seated in said brackets $d^3$ $d^4$ and an outer end bracket $d^9$ and provided with the cam $d'$, fixed collars $d^{10}$ and $d^{11}$, the spring $d^{12}$, the loose collar $d^{13}$, the hand-lever $d^3$ and the padlock and chain $d^{14}$, carried by the lever $d^3$, for securing both the ordinary switch-lever and the safety-lever, $d^3$, to the stand, in their switch locking position, all substantially as described.

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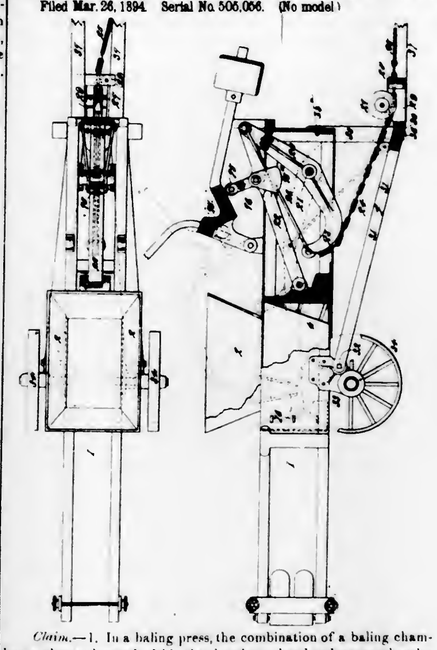
**531,239. COMBINED LEVEL, PLUMB, AND SLOPE-INDICATOR.** ORRAMUS A. WHITE, Norwalk, Ohio. Filed Aug. 13, 1894. Serial No. 520,155. (No model.)



*Claim.*—A combined level, plumb and slope-indicator, consisting of an oblong stock or body-portion A, chambered as at *a*, and provided with a hole or window *a'* in each longitudinal edge and in open relation with the aforesaid chamber; pendulum D pivotally supported centrally of chamber *a*, said pendulum consisting of a plate bent laterally at each end, and in the same direction, as at $D^2$, the face of the pendulum and the outside of the laterally-bent members of the pendulum being graduated, as at $D^3$, and a plate B closing the outer side of chamber *a* and provided with holes or windows *b* and marks or lines B', all arranged and operating substantially as shown, for the purpose specified.

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**531,240. BALING-PRESS.** CHARLES E. WHITMAN, St. Louis, Mo. Filed Mar. 26, 1894. Serial No. 505,056. (No model.)



*Claim.*—1. In a baling press, the combination of a baling chamber, a plunger located within the chamber, a head and means whereby the head is yieldingly connected to the plunger so as to assume an inclined position as the plunger recedes and a vertical position as the plunger advances, substantially as and for the purpose set forth.

2. In a baling press, the combination of a baling chamber, a plunger, a head hinged to the plunger, and means for causing the head to assume an inclined position as the plunger recedes; substantially as and for the purpose set forth.

3. In a baling press, the combination of a baling chamber, a plunger, a head having slot and pin connection with the plunger at its upper end, and means for causing the lower end of the head to assume an inclined position as the plunger recedes; substantially as and for the purpose set forth.

4. In a baling press, the combination of a baling chamber, a plunger, a head having side wings and hinged to the plunger at its upper end, and a spring actuated rod connecting the head to the plunger at its lower end; substantially as and for the purpose set forth.

5. In a baling press, the combination of a chamber, a plunger, a head having slotted side wings, a slot and pin connection between the head and the plunger, and a spring actuated rod for connecting the lower end of the head to the plunger; substantially as and for the purpose set forth.

6. In a baling press, the combination of a baling chamber, a plunger, a head having slotted side wings and hinged to the plunger, a rod secured to the head and fastenings through the plunger, a spring located between the plunger and the head, a bracket through which said rod passes, a spring surrounding the rod back of the bracket, and a nut on the outer end of the rod; substantially as and for the purpose set forth.

7. In a baling press, the combination of a baling chamber, a plunger, means for imparting movement to the plunger, timbers hinged to the baling chamber, legs supporting the outer ends of the timbers, a casting pivoted to the timbers, a second set of timbers secured to said casting, and a power mechanism secured to the last mentioned timbers, substantially as and for the purpose set forth.

8. In a baling press, the combination of a plunger and a power mechanism, consisting of a casting 39, arms 41 having a hub 40, and spaces 42, a sweep, a casting 44 with a hub 43 having spaces 46, and which is secured to the sweep, bolts connecting the arms to said sweep casting, a cam sleeved onto said arms, and a connection between the cam and the plunger; substantially as and for the purpose set forth.

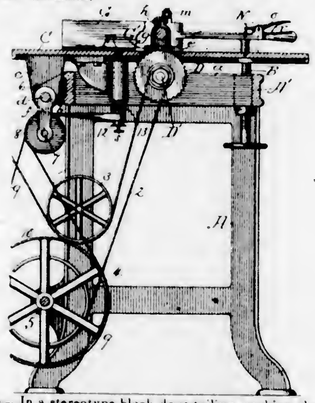
9. In a baling press, the combination of a plunger, a lever for

moving the plunger, a link connecting the lever to the plunger, a feeder having a counterbalanced pivoted arm, and an arm 74 connected to said link, and adapted to bear against the counterbalanced pivoted arm of the feeder, substantially as and for the purpose set forth.

10. In a baling press, the combination of a plunger, a lever, a link connecting the lever to the plunger, an arm hinged to the link, a counter-balance weight actuating said arm, a roller on the arm, and an arm on the feeder provided with a counter-balance weight; substantially as set forth.

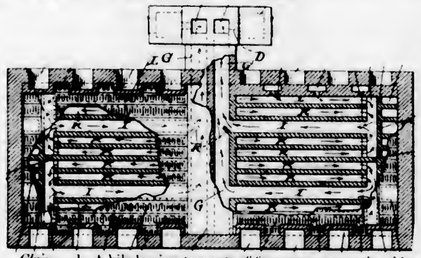
11. In a baling press, the combination of a feeder having an arm carrying a counter-balance weight, a plunger, a pivoted lever, a link connecting the lever to the plunger, an arm hinged to said link, and provided with a counter-balance weight, and a spring 78, substantially as and for the purpose set forth.

**531,241. DOVETAILING-MACHINE FOR PREPARING EDGES OF PARTS OF ELECTROTYPE OR STEREOTYPE PLATE BLOCKS.** EDWARD C. WILLIAMS, Chicago, Ill. Filed May 29, 1893. Serial No. 475,915. (No model.)



*Claim.*—In a stereotype block dove-tailing machine, the combination with the cutting devices, of the bed-plate, the guard-plate, bar *g*, collar M having a lug projecting therefrom which is provided with a suitable rod *m*, lever I, the short arm of which is provided with guides *i*, *i*, block J adjustable longitudinally between said guides, and having a longitudinally elongated opening therein, and set-screw K, said rod *m* connecting said collar M, and block J, as set forth.

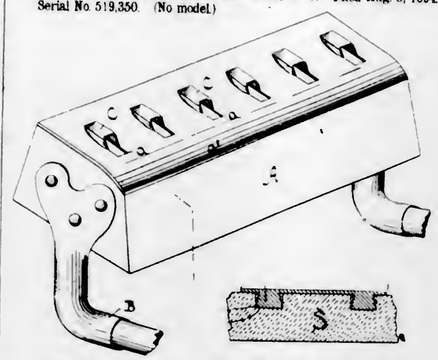
**531,242. KILN.** WILLIAM S. WILLIAMS, Canton, Ohio. Filed Feb. 27, 1894. Serial No. 501,625. (No model.)



*Claim.*—1. A kiln having two sets of furnaces on opposite sides, respectively, upright flues or ducts at the rear of said furnaces for conveying the heating-agent into the interior of the kiln, a system of heating-agent distributing-ducts or flues below the floor of the kiln, holes or perforations establishing open relation between said distributing-ducts or flues and the interior of the kiln, a stack or chimney and one or more passage-ways connecting said chimney with the ducts or flues under the floor of the kiln, one or more furnaces whose ash-pit or pits are in open relation with said last-mentioned passage-way or passage-ways and whose fuel-chamber or chambers are in open relation with the aforesaid chimney, substantially as set forth.

2. A kiln having two sets of heating-furnaces located on opposite sides of the kiln, respectively, ducts or flues for conveying the heating-agent from said furnaces to the interior of the kiln, a stack or chimney, flues G and H located below the floor of the kiln and arranged between the two sets of furnaces, and ducts or flues I establishing open relation between the aforesaid ducts or flues G and H, duct or flue G being in open relation with the stack or chimney and ducts or flues H and I being in open relation with the interior of the kiln, substantially as set forth.

**531,243. METHOD OF AND IMPLEMENT FOR FORMING GROOVES.** JAMES G. WILSON, New York, N. Y. Filed Aug. 3, 1894. Serial No. 519,350. (No model.)



*Claim.*—1. In an implement of the character specified, the combination of a receiver for the material removed, containing a series of orifices in its bottom, cutters arranged opposite said orifices constructed to cut substantially rectangular slots, and terminating in dovetails, substantially as described.

2. In an implement of the character specified, the combination of a receiver for the material removed, containing a series of orifices in its bottom, cutters arranged opposite said orifices having side and bottom cutting edges, and inwardly curved sides forming dovetails, substantially as described.

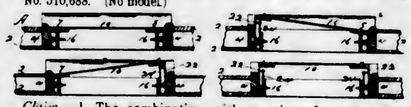
3. In an implement of the character set forth, the combination of a receiver for the material removed containing a series of orifices, cutters arranged opposite said orifices and having side and bottom cutting edges, substantially rectangular bottoms, inwardly curved sides, and inclined backs, substantially as described.

4. The herein described implement provided with cutters having side and bottom cutting edges in front, and sides curving inwardly toward the back of the cutters to form dovetails, substantially as and for the purpose set forth.

5. An implement composed of a number of cutting and forming tools attached to a plate provided with orifices above the cutters, and a hopper for the reception of the material removed; all constructed for cutting and forming simultaneously in a plastic material a number of parallel grooves, the sides of which are at an angle to the surface, substantially as described.

6. The herein described method of forming a dovetail groove in plastic material by one continuous operation, consisting in forming a substantially rectangular groove and forcing in the sides radially by downward pressure.

**531,244. SWINGING-SASH MOUNTING.** LEONARD G. ABBOTT and THOMAS D. GREENE, Syracuse, N. Y. Filed May 10, 1894. Serial No. 510,688. (No model.)



*Claim.*—1. The combination with a casing of a sash mounted therein, reciprocatory hinge leaves secured thereto upon its opposite sides, bearings for said leaves, pinions upon the casing provided with crank pins, connecting rods connected to said leaves and to said crank-pins, and means to rotate said pinions, to open one side of the sash and leave the other closed.

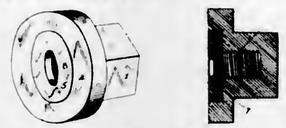
2. The combination with the casing of a sash mounted therein, reciprocatory hinge leaves secured thereto upon its opposite sides, bearings for said leaves and in which they are reciprocated, geared pinions upon the casing provided with crank-pins, a vertically reciprocated rack-bar engaging with said pinions, and means to reciprocate said rack-bar and throw said connecting rods upon the center horizontally.

3. The combination with the casing of a sash mounted therein, hinge leaves secured to said sash and bent substantially as at 25 and



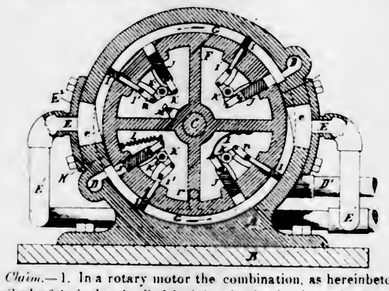
means to reciprocate said leaves comprising a vertically reciprocated rack-bar, pinions rotated thereby and provided with crank-pins and connecting rods connected thereto and to said hinge leaves, whereby a half rotation of said pinions swings said connecting rods upon a horizontal center and locks the sash open or shut.

**531,245. AXLE-NUT.** EDWIN N. ANDERSON, Lilly Dale, N. Y. Filed Apr. 19, 1894. Serial No. 508,195. (No model.)



*Claim.*—The combination of a nut having a threaded longitudinal bore and provided at the inner end thereof with an interiorly threaded annular recess, an adjustable washer threaded at its periphery and arranged in the threaded recess and adapted to bear against the outer shoulder of a spindle, and a packing located in the recess between the shoulder formed by the same and the washer and composed of a series of layers, and supporting the adjustable washer and providing a solid bearing for the shoulder of the spindle, substantially as and for the purpose described.

**531,246. ROTARY MOTOR.** OLIVER ARNOLD, Leicester, Mass., assignor of one-half to Malcom G. Clark, same place. Filed Mar. 8, 1894. Serial No. 502,799. (No model.)



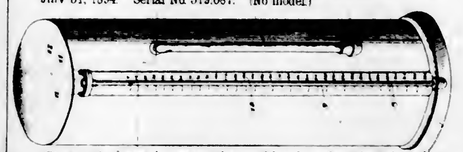
*Claim.*—1. In a rotary motor the combination, as hereinbetore described, of the inclosed cylindrical chamber its circular casing having two opposite barriers fixed on the interior of its circle, the induction and eduction ports opening to the interior adjacent to the front and back of said barriers, and disposed diametrically opposite each other, in pairs; the circumferentially channeled rotator-head with the series of radially sliding gates and pressure-actuated gate-operating pistons therein, disposed at intervals that represent two gates relatively to each inlet, the leading gate sustaining the working pressure until, by the pressure exerted upon its actuating pistons, the following gate is fully projected for controlling the channel, as set forth.

2. The rotary motar hereiu described, comprising the circular casing provided with a plurality of induction ports and exhaust passages, oppositely disposed in pairs withiu the circle, a plurality of inwardly projecting bariers fixed to the casing respectively adjacent to the induction ports and obstructing the steam channel, the rotator-head having a circumferential channel and flanged rim, its periphery fitting within said circular casing, the series of transverse pockets formed in said rim and radially sliding gates therein disposed at intervals that represent two gates to each induction port, one gate retaining the working pressure while the pressure actuates the piston of the following gate said gates having stems that project through the rim, the pressure-actuated pistons respectively arranged within openings that communicate with the steam-channel in rear of said gates, the rockers connecting said pistons with the gate-stems, the retracting springs that move said pistons in opposition to the steam-pressure, and stops that limit the movement of the rockers and connected parts, all substantially as set forth.

3. In combination, as described, the inclosing casing formed of the ring portion, with close fitting side plates completely inclosing the rotator, the rotator head adapted for peripheral application of the motive force, radially sliding gates and pressure-actuated gate-operating pistons working in the rotator rim, and the relief-pass or means for exhausting the central space within said rotator-head, as set forth.

4. In a rotary motor having its rotator-head provided with a circumferentially channeled rim with radially sliding gates therein; the rim constructed as shown, with a flanged portion having the pocket-grooves for the reception of said sliding-gates cut transversely completely across the same, in combination with annular side-plates *f* formed separate and attached to the sides of said rim, for closing the ends of said grooves, guiding the ends of said gates, and forming the outer fitting surface of said rotator rim, substantially as set forth.

**531,247. SPIROMETER.** FRANK W. BAKER, Kokomo, Ind. Filed July 31, 1894. Serial No. 519,087. (No model.)



*Claim.*—1. In a spirometer, the combination of an air tight cylinder, a flexible air tube connected with said cylinder at an intermediate point and provided with a mouth-piece, an upright liquid tube arranged within the cylinder, and having its open upper end terminating short of the top of the cylinder, a register or scale plate secured on the outside of said cylinder, and a separate gage glass or tube secured on said register or scale plate and connected at its lower end with the lower end of said liquid tube, substantially as set forth.

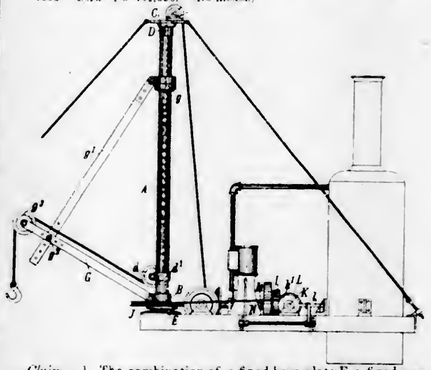
2. In a spirometer, the combination of an air cylinder or receiver, a flexible air tube connected with said cylinder or receiver and provided with a mouth-piece, an open liquid tube arranged vertically inside of the cylinder or receiver and extending from the bottom thereof to a point short of its top, a register or scale plate secured to the outside of the cylinder or receiver and provided with a longitudinal tube groove, and a gage glass or tube arranged in said tube groove and connected at its lower end with said liquid tube, said gage glass or tube being open at its upper end and of a smaller diameter than the liquid tube, substantially as set forth.

**531,248. CLOTHES-LINE FASTENER.** CHARLES BARTSCH, New York, N. Y. Filed Aug. 14, 1894. Serial No. 520,242. (No model.)



*Claim.*—The combination of a slotted tubular shell having an inner serrated surface $a^3$ and a jam shoulder $a^4$, with a clamping lever provided with a cam $c'$, and a serrated dog $c^2$, placed at about right angles, and adapted to co operate with the surface $a^3$, and shoulder $a^4$, respectively, substantially as specified.

**531,249. DERRICK.** MOSES BEAL, Elyria, Ohio. Filed Feb. 6, 1893. Serial No. 461,096. (No model.)



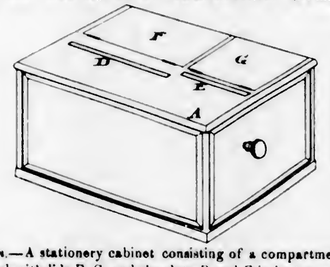
*Claim.*—1. The combination of a fixed base-plate E, a fixed guy plate C having a central vertical hole, a hollow vertical post A which is mounted at its upper and lower ends respectively in said base plate and guy plate, whereby said post is adapted to rotate upon its vertical axis, said post having a slot near its lower end, a sheave $d^2$ mounted on the guy plate, a sheave *d* mounted on the post and pro-

jecting through the said slot therein, with a boom pivoted to said post, a collar *g* secured to said post, a brace *g'* pivoted to said collar, means for adjustably connecting said brace and boom, a sheave $g^3$ on the end of said boom, and a hoisting cable passing over the sheaves $g^3$, *d* and $c^3$, substantially as and for the purpose specified.

2. The combination of a fixed base plate E, having a cylindrical opening, a plate B having a cylindrical neck which enters said opening, and ball bearings between said two plates whereby the plate B may turn upon a vertical axis, a hollow vertical post secured to said plate B having a slot near its lower end, a collar D rigidly secured to the upper end of said post, a fixed guy plate C having a tubular cylindrical stem which enters the upper end of said post, ball bearings between the collar D and guy plate C, a sheave mounted on the guy plate extending over to near the axis of the post, a sheave mounted on the post and projecting through the slot therein, a boom carried by said post, and mechanism for moving said post upon its vertical axis, substantially as and for the purpose specified.

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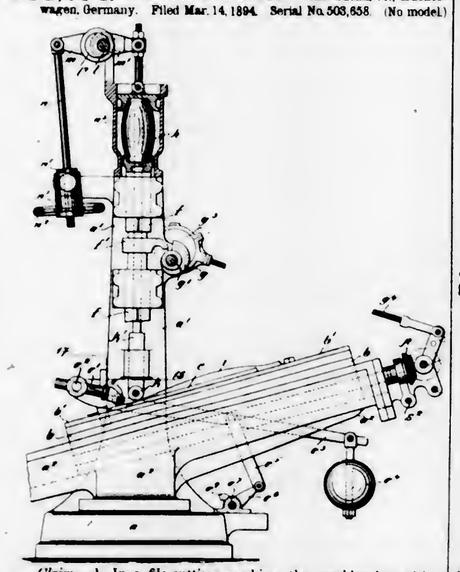
**531,250. STATIONERY-CABINET.** LESTER C. BEARDSLEY, Cleveland, Ohio. Filed May 12, 1894. Serial No. 511,065. (No model.)




*Claim.*—A stationery cabinet consisting of a compartment box A provided with lids F, G, and the slots D and E in its top; the adjustably inclined false bottoms H, I; the track rails J J, on said false bottoms; trucks K K having wheels *k k* riding on said rails, and carrying paper and envelopes; friction rollers L, M, against which the paper and envelopes bear, and are adapted for conveying sheets of paper or envelopes upward into the slots D and E for delivery substantially as and for the purpose specified.

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**531,251. FILE-CUTTING MACHINE.** JEAN BÜCHE, Jr., Huckeswagen, Germany. Filed Mar. 14, 1894. Serial No. 503,658. (No model.)



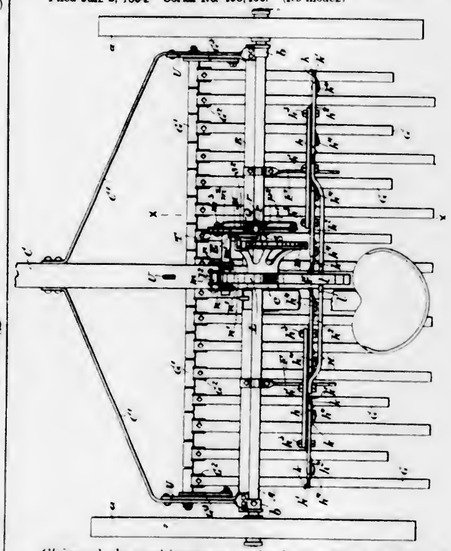
*Claim.*—1. In a file-cutting machine, the combination with a chisel-bar *f* adapted to be raised intermittently, of an elastic body *h* adapted to be compressed or strained by the raised chisel bar, and to strengthen the blows of the same; a counter bearing $a^4$ for said elastic body; a double armed lever *m m'* connected with one end to said counter-bearing; an eccentric $l^3$ holding said double-armed lever, and adapted to raise and lower the same; a draw- or push rod *n* connected with the other end of said lever, and adapted to turn the latter on said eccentric; a lever *l'* connecting the shaft of said eccentric with a rod *k'* arranged parallel to the chisel-bar; and an exchangeable ledge *i* arranged on the file-bed and adapted to displace said rod longitudinally, substantially and for the purpose as described.

2. In a file cutting machine, the combination with a chisel-bar *f* adapted to be raised intermittently, of an elastic body *h* adapted to be compressed or strained by the raised chisel bar, and to strengthen the blows of the same, a counter bearing $a^4$ for said elastic body; a double-armed lever *m m'* connected with its one end to said counter-bearing; an eccentric $l^3$ holding said double-armed lever, and adapted to raise and lower the same; a draw- or push-rod *n* connected with the other end of said lever, and adapted to turn the latter on said eccentric; a lever *l'* connecting the shaft of said eccentric with a rod *k'* arranged parallel to the chisel-bar; an exchangeable ledge *i* arranged on the file-bed, and adapted to displace said rod longitudinally, a weighted lever $o^3$ adapted to press the file onto said bed by the mediation of a roller *o*; and a lever $o^4$ having a thumb $o^5$ and connected by a link $o^3$ with said weighted lever; the latter being adapted to be held in raised position by said thumb, and to raise in its turn the said rod *k'*, substantially and for the purpose as described.

3. In a file cutting machine, the combination with a chisel-bar *f* adapted to be raised intermittently, of an elastic body *h* adapted to be compressed or strained by the raised chisel-bar, and to strengthen the blows of the same; a counterbearing $a^4$ for said elastic body; a double-armed lever *m m'* connected with its one end to said counter-bearing; an eccentric $l^3$ holding said double armed lever, and adapted to raise and lower the same; and a draw- or push-rod *n* connected with the other end of said lever, and adapted to turn the latter on said eccentric; a lever *l'* connecting the shaft of said eccentric with a rod *k'* arranged parallel to the chisel bar; an exchangeable ledge *i* arranged on the file-bed, and adapted to displace said rod longitudinally, a rod $g^4$ connecting an eccentric $g^3$ on the shaft *g'* with a lever $p'$ carrying a pawl $p^4$; a shaft $p^3$ having a ratchet wheel $p^3$ operated by said pawl, and a bevel-wheel $p'$ gearing with a bevel wheel $p$ on a threaded spindle *d* adapted to intermittently displace the file-bed *b b'*; a rotatable ledge *r'* adapted to disengage pawl $p^4$ from ratchet-wheel $p^3$; a shaft $r^3$ carrying a weighted lever $r^4$, and a cog-wheel $r^3$ gearing with a like wheel *r* carrying the said ledge *r'*, substantially and for the purpose as described.

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**531,252. CULTIVATOR.** THOMAS BELAIR, Montreal, Canada. Filed Jan. 2, 1894. Serial No. 495,466. (No model.)



*Claim.*—1. In a cultivator or like implement having a series of depressible working fingers, and suitable supporting framing, the combination with same, of an intermediate pressure distributer, connected with said fingers and adapted to receive a depressing force at a single point and to distribute and maintain it upon each finger, with a leaf spring and a movable carrier for same to furnish such depressing force.

2. In a cultivator or like implement having a series of depressible working fingers, and suitable supporting framing, the combination with same, of an intermediate pressure distributer composed of a series of equalizing bars including a main bar to receive the depressing force at a single point, and bars connected with said fingers, the device adapted to distribute the depressing force received by its main bar to and maintain it upon each finger, with a leaf spring and a movable carrier for same to furnish such depressing force.

3. In a cultivator or like implement having a series of depressible working fingers, and suitable supporting framing, the combination with same, of an intermediate pressure distributer of substantially whiffle-tree construction connected with said fingers, a leaf spring and a movable carrier for same, located centrally of the machine and exerting a depressing force upon the pressure distributer for the purpose set forth.

4. In a cultivator or like implement having a series of depressible working fingers, and suitable supporting frame pieces, the combination with the same of an intermediate pressure distributer connected with said fingers, a spring pressure device located centrally of the machine and exerting a depressing force upon the pressure distributer and means for regulating the degree of such depressing force for the purpose set forth.

5. In a cultivator or like implement having a series of depressible working fingers, and suitable supporting frame pieces, the combination with same, of the intermediate pressure distributer comprising a main stationary bar and movable bars pivoted to the stationary bar; connections between the movable bars and said fingers and a spring pressure device located centrally of the machine and exerting a depressing force upon the main stationary bar of the distributer.

6. In a cultivator or like implement having a series of depressible working fingers, and suitable supporting frame pieces, the combination with same of the intermediate pressure distributer, comprising a main stationary bar and movable bars pivoted to the stationary bar; connections between the movable bars and said fingers and a spring pressure device located centrally of the machine and exerting a depressing force upon the main stationary bar of the distributer, and means for regulating the degree of such depressing force for the purpose set forth.

7. In a cultivator or like implement having a series of depressible working fingers suitable frame pieces and a rotatable axle, the combination with same, of lifting mechanism, a pressure distributer connected with said fingers and supported at times by said lifting mechanism, and an operating lever projecting from said axle and adapted to rotate same for the purposes set forth.

8. In a cultivator or like implement having a series of depressible working fingers suitable frame pieces and a rotary axle, the combination with same, of lifting arms projecting from said axle, a pressure distributer connected with said fingers and supported at times by said lifting arms, and an operating lever projecting from said axle and adapted to rotate same for the purposes set forth.

9. In a cultivator or like implement having a series of depressible working fingers, suitable supporting frame pieces, a rotatable axle, and an operating lever, the combination with such parts, of a pressure distributer connected with said fingers and a spring exerting a depressing force upon said distributer, a movable carrier or mounting for said spring, and a connection between said operating lever and said carrier for the purposes set forth.

10. In a cultivator, or like implement having a series of depressible working fingers, suitable supporting frame pieces, a rotatable axle, and an operating lever, the combination with such parts, of a pressure distributer connected with said fingers, a spring exerting a depressing force upon said distributer, a movable carrier or mounting for said spring and an adjustable connection between said lever and said carrier for the purposes set forth.

11. In a cultivator, the combination with the operating lever and the movable carrier of the spring pressure device of the adjustable connection between them in the form of a bar pivoted at one end to said carrier and having notches on its lower edge to engage a projection from said lever with means for disengaging said bar from said projection for the purpose set forth.

12. In a cultivator, the combination with the operating lever and the movable carrier, of the spring pressure device, of the notched adjustable bar pivoted to the carrier and engaging a projection from said lever, a lifting slide carried by said lever and provided with a projection to engage an extension from said bar and a thumb lever and connection for operating said slide for the purpose set forth.

13. In a cultivator, the combination with the operating lever, the means for locking it in position, the spring pressure device, the pivotal carrier for same, the adjustable bar connection between said lever and said carrier, and the slide for disengaging said bar connection from said lever,—of the cam lever S and bell crank lever T pivoted to said operating lever and the former adapted upon being drawn inward to operate the latter as and for the purposes set forth.

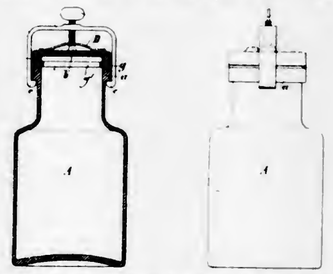
14. A cultivator or like implement having suitable supporting framing, all its working fingers directly attached at their bases or inactive ends to a common removable shaft straight throughout its length; and a graduated notched bearing or holder secured to the framing of the cultivator to carry said shaft, for the purpose set forth.

15. A cultivator or like implement having suitable supporting framing, all its working fingers directly attached at their bases or inactive ends to a common removable shaft straight throughout its length; depending brackets U secured to the framing of the cultivator and having notches formed in the edge thereof to receive said shaft, and means for retaining it in place.

16. A cultivator or like implement having suitable supporting framing, all its working fingers directly attached at their bases or inactive ends to a common removable shaft straight throughout its length; depending brackets U secured to the framing of the cultivator and having notches formed in the edge thereof to receive said shaft, and a pivoted hook $G^2$ for retaining it in place.

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**531,253. COVER FOR FRUIT-JARS.** VICTOR BIART, Stuttgart, Germany. Filed Apr. 13, 1894. Serial No. 507,415. (No model.)



*Claim.*—1. The combination, with a fruit jar, of a cover provided with upward-projecting gage-lugs arranged with a space between them, a yoke arranged to engage the fruit jar, a screw passing through the yoke, and a spring located over the space between the lugs and having its ends resting on the cover, its central portion coinciding with the screw, substantially as set forth.

2. The combination, with a fruit-jar having a flange around its mouth, a yoke engaging the flange, a screw passing through the yoke, and a spring beneath the lower end of the screw, of a cover provided with an upward-projecting lug arranged at one side of the spring, substantially as set forth

3. The combination, with a fruit jar having a flange around its mouth, of a cover provided with upward-projecting lugs arranged with a space between them, a yoke engaging the flange, a screw passing through the yoke, and a spring located over the space between the lugs and having its ends resting on the cover, its central portion contacting with the screw, substantially as set forth.

4. A packing ring for fruit-jars comprising an annular portion and a vertical projecting portion rising from the inner periphery of the annular portion, substantially as set forth.

5. A packing ring for fruit jars comprising an annular horizontal portion and an annular vertical portion connected to the horizontal annular portion at the inner periphery of the latter, substantially as set forth.

6 The combination, with a fruit-jar, a cover having an annular downward-extending flange, and means for holding the cover onto the jar, of a packing ring having a horizontal annular portion interposed between the lower surface of the flange on the cover and the upper surface of the jar, and a vertical portion extending upward inside the flange on the cover and contacting therewith, substantially as set forth.

7. The combination, with a fruit-jar, a cover having an annular downward-extending flange, and means for holding the cover onto the jar, of a packing ring having a horizontal annular portion interposed between the lower surface of the flange on the cover and the upper surface of the jar, and an annular vertical portion extending upward inside the flange on the cover, and contacting therewith, substantially as set forth.

8. The combination, with a fruit-jar having a flange around its mouth, a cover having an annular downward-extending flange, a yoke engaging the flange on the jar, and means intermediate the yoke and cover for holding the latter onto the jar, of a packing ring having a horizontal annular portion interposed between the lower surface of the flange on the cover and the upper surface of the jar, and a ver-

tical portion exteading upward inside the flange on the cover and contacting therewith, substantially as set forth.

9. The combination, with a fruit jar having a flange around its mouth, a cover having an annular downward extending flange, a yoke engaging the flange on the jar, and means intermediate the yoke and cover for holding the latter onto the jar, of a packing ring having a horizontal annular portion interposed between the lower surface of the flange on the cover and the upper surface of the jar, and an annular vertical portion extending upward inside the flange on the cover and contacting therewith, substantially as set forth.

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**531,254. GEAR-CASE.** WALTER BIDDLES, Leicester, England. Filed Sept. 4, 1894. Serial No. 522,132. (No model.) Patented in England Oct. 5, 1893, No. 18,621.



*Claim.*—1. In a case for inclosing and covering the chain driving gear of cycles and like vehicles, the combination with a case formed in two parts such as A and A', of a foundation piece formed essentially of two plates such as B and B' and a junction strip such as *b*, as and for the purpose set forth.

2. In a gear case, the combination of the case formed in two parts A and A' the former having overlapping strips $a^3$ and the latter a window such as H, and of the foundation piece consisting of the two plates B and B' and the strip *b*, all combined, arranged and adapted to operate, as and for the purpose set forth.

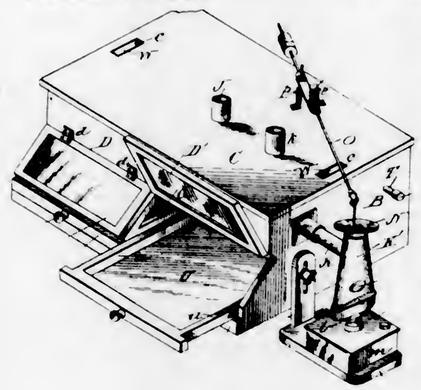
3. In a gear case, the combination of the case formed in two parts A and A' the former having overlapping strips $a^3$ and the latter a window such as H, of the foundation piece consisting of the two plates B and B' and the strip *b*, of the socket C carried by the foundation piece, and of the screw D, all combined, arranged and adapted to operate, as and for the purpose set forth.

4. In a gear case, the combination of the case formed in two parts A and A' the former having overlapping strips $a^3$ and the latter a window such as H, of the foundation piece consisting of the two plates B and B' and the strip *b*, of the socket C carried by the foundation piece, of the screw D, and of the sliding plates E, F and F', all combined, arranged and adapted to operate, as and for the purpose set forth.

5. In a gear case, the combination with the case formed in two parts such as A and A', of the plates $A^3$, and the overlapping strips $a^3$ on the part A of the case, of the window H, of the foundation piece consisting of the two plates B and B' and the strip *b*, of the socket C carried by the foundation piece, of the screw D, of the sliding plate E, and of the compound sliding plate F, F', all combined, arranged and adapted to operate, as and for the purpose set forth.

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**531,255. CHICKEN-BROODER.** LOUIS C. BILLINGS, Milford, N. H., assignor to the L. C. Billings Company, same place. Filed May 7, 1894. Serial No. 510,354. (No model.)

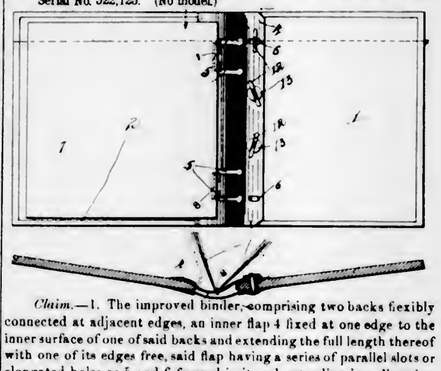


*Claim.*—1. In a brooding apparatus, the combination with the brooding chambers provided with removable bottom trays and separated from one another by transverse screen partitions leaving open spaces at the top, the water tank located above said brooding chambers, the lamp, the pipe communicating therewith and passing through said tank, of the thermostat, the lever having an adjustable weight at one end and provided with a downwardly depending rod at the other end, the damper connected with said rod, and the rod adjustably connecting said lever with the thermostat, substantially as described.

2. In a brooding apparatus the combination with the brooding chambers, separated from one another by screen partitions leaving open air spaces at the tops of said partitions, the heating tank located above said brooding chambers, the lamp, the pipe communicating therewith and passing through said tank, the thermostat, the lever having an adjustable weight at one end and provided with a downwardly depending rod at the other end, the damper connected with said rod, and the rod adjustably connecting said lever with the thermostat, of the end ventilators consisting of vertical ducts or air chutes opening up at their lower ends near the bottom of the end and chambers, to the sides of which they are affixed and impinging with their open upper ends against the apertured top or roof of the apparatus, said apertures forming outlets for the ventilator ducts, substantially as described and for the purpose specified.

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**531,256. BINDER FOR MUSIC, MAGAZINES, &c.** WILLIAM C. BOEING and THEODOR P. STORK, Hermann, Mo. Filed Sept. 4, 1894. Serial No. 522,125. (No model.)

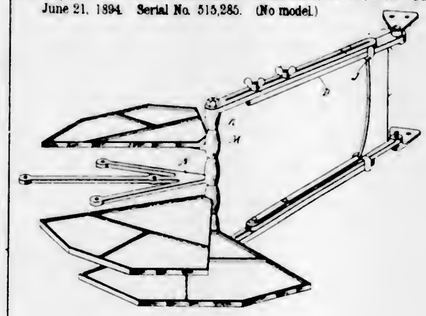


*Claim.*—1. The improved binder, comprising two backs flexibly connected at adjacent edges, an inner flap 4 fixed at one edge to the inner surface of one of said backs and extending the full length thereof with one of its edges free, said flap having a series of parallel slots or elongated holes as 5 and 6 formed in it and extending in a direction at right angles to the length of said flap, fastening devices arranged to slide back and forth in said slots, whereby the leaves to be bound are loosely connected to said flap, and means for temporarily securing the free edge of said flap to the opposite back, substantially as herein specified.

2. The herein described book, comprising backs 1 and 2, a flap 4 provided with elongated holes 5 and 6, one edge of said flap being securely fastened to the back 2, fasteners 12 for detachably securing the remaining edge of said flap to the back 1, sheets of printed matter 7, and metallic staples 8 for securing said sheets of printed matter to the flap 4, substantially as set forth.

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**531,257. DENTAL BRACKET.** ADAM BOND, Detroit, Mich. Filed June 21, 1894. Serial No. 515,285. (No model.)

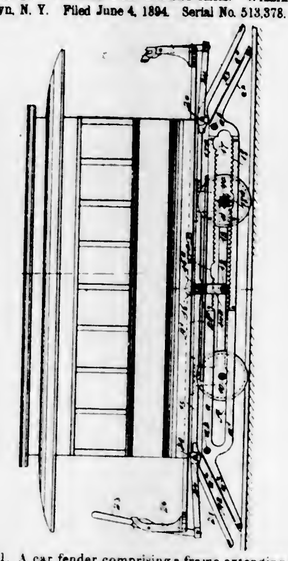


*Claim.*—A dental bracket consisting of two parallel arms, a connecting web between the same located in advance of the rear ends thereof, securing plates pivotally secured to the rear ends of the arms, sliding bars on the arms having elongated slots therein, pins fixed in the arms and projecting through the slots, nuts on the pins engaging the outer faces of the bars, a pivot rod between the outer ends of the bars, shelves on the rod, a nut for compressing the ends of the bars against the shelves, and means rigid on the inner ends of the bars projecting over the inner faces of the arms for retaining the relative position between the bars and arms, substantially as described.



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**531,258. FENDER FOR STREET-CARS.** WILLIAM H. BROCK, Brooklyn, N. Y. Filed June 4, 1894. Serial No. 513,378. (No model.)



*Claim.*—1. A car fender comprising a frame extending from end to end of the car with fending devices at both ends, gearing for propelling the said frame from the car axle, mechanism for raising and lowering the frame out of and into gear with the axle, and an automatically operated trip and a lever mechanism at each end of the car and connected with said raising and lowering mechanism.

2. A fender for cars, having longitudinal movement beneath the car, a transverse rock shaft below and between the ends of the fender and provided with cams adapted as supports for the fender, the fender being capable of movement independent of the cams, a shifting frame also capable of longitudinal movement, and an actuating connection between the shifting frame and the said rock shaft, as and for the purpose specified.

3. A fender for cars, adapted to be operated from the car axle having longitudinal movement beneath the car, and provided with downwardly inclined ends at opposite ends of the car a shifting device also capable of longitudinal movement and serving likewise as a support for the fender, inclined ends of the said shifting device extending beyond the fender when the latter is in inner position, substantially as described, whereby the inner movement of the shifting device consequent upon meeting an object will operate to place the fender in position to travel outward for the purpose specified.

4. A car fender capable of longitudinal movement beneath the car, the said movement being effected by the rotation of an axle of the car, and a shifting device having movement in a like direction to that of the fender, the outer end of the shifting device being provided with a trip extension, adapted in one position of the fender to extend forwardly beyond the same, a rocking support for the fender, and a connection, substantially as shown and described, between the shifting device and the said support, whereby the latter, through the medium of the trip, may be placed in operative connection with the axle to accomplish the outward movement of the fender, substantially as shown and described.

5. The combination, with a car, a fender carried thereby and movable longitudinally of the car, and means, substantially as shown and described, for actuating the fender by the rotation of the car axle, of a shifting device capable of placing the fender in reversing position, a trip device connected with the shifting device and adapted to extend beyond the fender when the latter is in an inner position, and means, substantially as described, for operating the shifting device from the platform of the car, the trip device acting automatically and independently of the platform operating mechanism, as and for the purpose set forth.

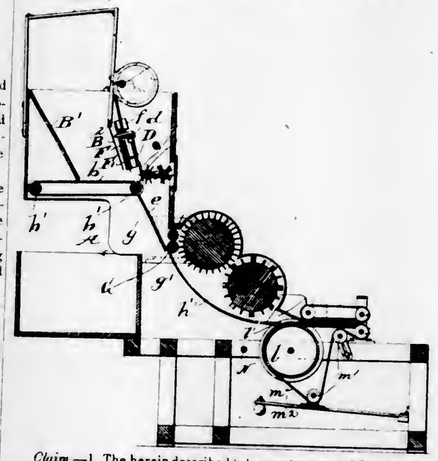
6. The combination, with a car, a fender carried thereby and movable longitudinally of the car, and means, substantially as shown and described, for actuating the fender by the rotation of the car axle, of a shifting device capable of operation from the platform of the car and provided with a trip extension adapted to extend over the fender and beyond the same when the latter is in a predetermined position, a supporting device sustaining the fender, and a connection between the shifting device and supporting device, whereby the fender may be raised or lowered, as and for the purpose set forth.

7. The combination, with a car, a fender carried thereby, a frame connected with the fender and having longitudinal movement beneath the car, and a gear upon one of the car axles, adapted for engagement with either the upper or lower racks located upon the fender frame, of a rock shaft, cams carried by the shaft and adapted as supports for the said fender frame, rocking arms also carried by the said shaft, a shifting frame connected with the said rocking arms, and trip devices located at the end portion of the shifting frame, as and for the purpose set forth.

8. The combination, with a car, a fender carried thereby, a frame connected with the fender and having longitudinal movement beneath the car, and a gear upon one of the car axles, adapted for engagement with either the upper or the lower of the racks located upon the fender frame, of a rock shaft, cams carried by the said shaft and adapted as supports for the said fender frame, rocking arms also carried by the shaft, a shifting frame having longitudinal movement and connected with the rocking arms, said frame being provided with pivotally connected trip sections adapted to extend over and beyond the fender when the latter is in an inner position, and a hand lever likewise connected with the shifting frame, whereby the said frame may be operated either by the motorman or automatically through the medium of the said trip section, as and for the purpose set forth.

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**531,259. TOBACCO DRESSING AND FEEDING MACHINE.** JOHN E. BUCKLIN, Washington, D. C. Filed Sept. 16, 1893. Serial No. 485,708. (No model.)



*Claim.*—1. The herein described tobacco dresser and feeder, comprising among its members a pneumatic feeding roller, substantially as described.

2. The herein described combination with devices for separating and lightening the tobacco of a pneumatic feeding roller, substantially as described.

3. The herein described tobacco separating devices comprising a movable rake, and a stirrer cooperating therewith to divide off a part of the tobacco and move it forward.

4. In a tobacco dresser, a hopper provided with tobacco feeding devices consisting of a movable rake for moving a portion of the tobacco toward the delivery side of the hopper and a fork stirrer cooperating therewith, substantially as described.

5. The combination with the pneumatic feeding roller, of the condensing chamber and the delivery passage, substantially as described.

6. The combination with the pneumatic feeding roller, of the delivery passage and condensing chamber one of the walls of the two latter devices being provided with an air outlet, substantially as described.

7. The combination with devices for separating and lightening the tobacco, of the pneumatic feeding roller, the delivery passage and condensing chamber, substantially as described.

8. A tobacco dresser provided with tobacco separating devices, a picker, a conveyer and a feeding rake movable upon and longitudinally of the conveyer, substantially as described.

9. In a tobacco dressing and feeding mechanism, the combination with a hopper, of an endless conveyer located at the bottom thereof, a feeding rake having a downward movement upon the conveyer, a forward movement upon said conveyer and then a backward and upward movement, and a stirrer cooperating with said rake to separate the tobacco in the hopper, and actuating devices substantially as described.

10. In a tobacco dressing and feeding device the combination with a hopper, of an endless conveyer in the bottom of the same and tobacco separating devices consisting of a rake moving toward the delivery side of the hopper and a stirrer moving in the opposite direction, and actuating devices substantially as described.

11. A tobacco dresser provided with tobacco separating devices consisting of the picker, the movable feeding rake for feeding the tobacco toward said picker and the stirrer for forcing portions of the tobacco away from said picker and the endless carrier for conveying tobacco from said stirrer to the picker, substantially as described.

12. In a tobacco dresser the combination with the pneumatic feeding roller, of the condensing chamber having tapering walls and an air outlet other than the discharge passage, substantially as described.

13. In a tobacco dresser the combination with the pneumatic feeding roller, of the condensing chamber provided with tapering walls, one of said walls being perforated to allow the escape of air, substantially as described.

14. In a tobacco dresser the combination with the pneumatic feeding roller, of the condensing chamber provided with tapering walls, a delivery passage communicating with said condensing chamber and a conveyer forming a portion of the walls of the condensing chamber and delivery passage, substantially as described

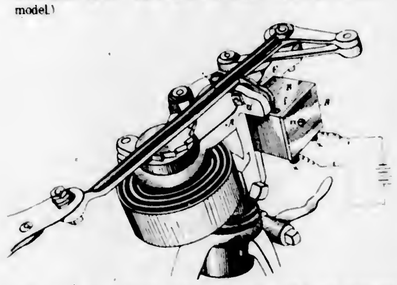
15. In a tobacco dresser the combination with the picker, of the adjustable comb, and the conveyer, the feeding rake movable upon and longitudinally of said conveyer and adjusting devices for said rake, substantially as described

16. In a tobacco dresser the combination with the picker, of the comb and the feeding rake, adjusting devices for said comb and adjusting mechanism for said rake connected with said comb adjusting mechanism, substantially as described.

17. In a tobacco dresser the combination with the hopper, of the conveyer, the pivoted guides, and the rake moving in said guides, and the adjustable plate provided with a stripper flange, substantially as described

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531,260. RELEASE FOR TARGET-TRAPS. BENJAMIN O. BUSH, Kalamazoo, Mich. Filed Mar. 23, 1894. Serial No. 504,812. (No model.)



*Claim.*—1. In a release mechanism for a trap, the combination of the trap arm A'; the locking lever, C, pivoted at *d* to the trap frame, A, with a notch to engage said trap arm; a lever, E, pivoted at *r*, in the case, B, having a notch, *j*, to engage the lower end of the locking lever, C; a pin, *m*, on the lever, E, to be pressed by said lever, C; a lever, E", pivoted at *r'*; a cross-piece, E', connecting said levers, E and E"; a spring, *t*, attached to lever, E", to pull it forward; a rock shaft, *i'*, with a catch, *i*, to engage the cross-piece, E'; a spring, *s*, to throw said catch, *i*, in position to engage the bar, E'; an armature, *i''*, attached to arms on said rock shaft, *i'*; an electro magnet to depress said armature, and suitable means of exciting the magnet, substantially as described for the purpose specified.

2. In a release mechanism for a target trap, the combination of a trap arm, A'; the locking lever, C, pivoted at *d*, with a catch to engage said trap arm; a lever, E, pivoted at *r* with a catch, *j*, to engage the lower end of said locking lever, C; a pin, *m*, on said lever, E to come in contact with the lever, C; and suitable means of actuating the lever, E, to depress the catch, *j*, to release the lever, C and start it, for the purpose specified.

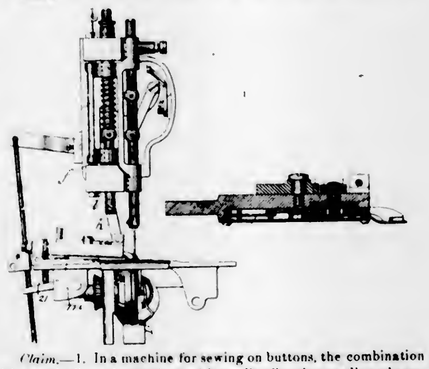
3. In a target trap, the combination with the trap arm, of a bent locking lever pivoted near the arm; of a bent lever pivoted at its angle and below the said lever; a notch on the horizontal portion of said bent lever to engage the locking lever, a stop on said locking lever to strike the detaining lever to throw it in position; and means of holding the said detaining lever in position until it is required to release the trap, for the purpose specified.

4. In a target trap, the combination with the trap arm, of a locking lever, C, pivoted at *d* below said trap arm; a suitable catch to engage the trap arm; a lever, E, pivoted below at *r*, having a notch, *j*, to engage said locking lever; the said locking lever being adapted to strike said lever, E, above its pivot and throw the catch, *j*, up to engage it; a spring adapted to throw said lever, E, forward to release the locking lever, and suitable means of detaining said lever, E until it is required to release the trap arm.

5. In a release mechanism for a target trap, the combination of a trap arm, A'; with the locking lever, C, pivoted below said trap arm, a detaining lever, E, pivoted at *r*, to engage the lower end of said locking lever, C, by the notch, *j*, said locking lever striking the detaining lever, E, above its pivot to throw it in position to engage said locking lever; a catch to engage said detaining lever, E; and an electro magnet to depress said catch to allow the detaining lever to swing forward and release the locking lever to release the trap arm, for the purpose specified.

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531,261. MACHINE FOR SEWING ON BUTTONS. EDWIN HANSALPAKAR, Watertown, assignor to the Union Button Sewing Machine Company, Boston, Mass. Filed Feb. 9, 1894. Serial No. 499,587. (No model.)



*Claim.*—1. In a machine for sewing on buttons, the combination with a vertically reciprocating and laterally vibrating needle and complemental stitch-forming mechanism, of a button holder and carrier supported above the bed-plate and confined to movement in a single rectilinear line at a right angle to the lateral vibration of the needle and intermittently operating means acting upon said holder and carrier to hold the same stationary during a predetermined number of stitches, then to shift said holder and carrier a predetermined distance in said line during the rise of said needle and then to hold said holder and carrier stationary during a predetermined number of stitches, substantially as and for the purpose set forth.

2. In a machine for sewing on buttons, the combination with a vertically reciprocating and laterally vibrating needle, and complemental stitch forming mechanism, of a button holder and carrier supported above the bed plate and confined to movement in a single rectilinear line, said button holder comprising a pair of adjustable jaws provided with slotted lugs, a turn-plate mounted upon one end of a vertical shaft and having pins arranged to engage said slots, a lug upon the opposite end of said shaft and a lever, one end of which is arranged to engage said lug and means acting upon said holder and carrier to hold the same stationary during a predetermined number of stitches, then to shift said holder and carrier a predetermined distance in said line during the rise of said needle, and then to hold said holder and carrier stationary during a predetermined number of stitches, substantially as and for the purpose set forth.

3. In a button holding attachment for button sewing machines, the combination with a pair of spring-pressed adjustable jaws, provided with slotted lugs, of a turn-plate mounted upon one end of a vertical shaft having pins arranged to engage said slots, and means connected with the other end of said shaft for moving said turn-plate to operate said jaws, substantially as and for the purpose set forth.



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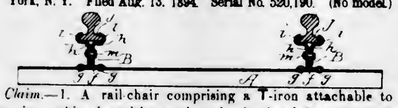
531,262. PROCESS OF REWORKING SCRAP-STEEL. HENRY HARRIS, Georgetown, Pa., assignor of one-half to Henry W. Bingeman and William H. Moyer, same place. Filed June 20, 1894. Serial No. 515,132. (No specimens.)

*Claim.*—1. The improvement in the process of reworking old or scrap steel which consists in immersing the same in a bath of melted slag or equivalent material containing lime, cryolite, oxide of lead, borax and sodium, substantially in the proportions described and thereafter maintaining said bath at a high temperature until the immersed steel has been properly decarbonized.

2. A decarbonizing bath for old or scrap steel consisting of melted slag or equivalent material having thoroughly mixed therewith lime, cryolite, oxide of lead, borax and sodium substantially in the proportions described.

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531,263. RAIL CHAIR AND TIE. EBEN N. HIGLEY, Summersworth, N. H., assignor to the International Railway Tie Company, New York, N. Y. Filed Aug. 13, 1894. Serial No. 520,190. (No model.)



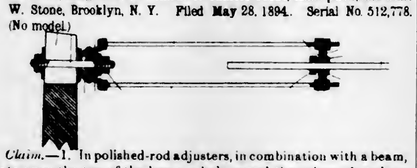
*Claim.*—1. A rail-chair comprising a T-iron attachable to a sleeper in combination with two plates having heads bent to embrace the rail flange and their shanks detachably secured to the shank of said T-iron, substantially as described.

2. A rail-tie comprising an approximately U-shaped metallic plate in combination with a chair comprising a T-iron bolted to said tie; two plates bolted to the shank of said T iron and having heads for embracing the rail flange.

3. In combination the tie, A; the T-iron, *f*, secured thereto by bolts, *g*; the plates, *h*, secured by bolts, *m*, to the shank of said T iron and having heads, *i*, for embracing the flange of the track rail, substantially as set forth.

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531,264. POLISHED-ROD ADJUSTER. FRANK M. KENNEDY, Cygnet, Ohio, assignor of two-thirds to Charles Cusac, same place, and Jane W. Stone, Brooklyn, N. Y. Filed May 28, 1894. Serial No. 512,778. (No model.)



*Claim.*—1. In polished-rod adjusters, in combination with a beam, a plate upon the top of the beam, a bolt passed therethrough and extending beneath the beam, a journal plate and a journal washer secured upon the bolt beneath the beam a plate secured between the journal plate and journal washer with a swivel movement and rods secured at their upper ends to the plate, the lower ends having a grip to hold the polished rod.

2. In polished-rod adjusters, a beam, a frame extending beneath the same having swivel relation thereto, a grip plate upon the lower end of the frame having a conical opening, and a communicating slot through one side of the same of the size to receive the polished rod, slips having an inclined side equal to the inclination of the sides of the conical opening, and a clamp nut screwed into the opening and bearing upon the slips.

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531,265. WITHDRAWN.

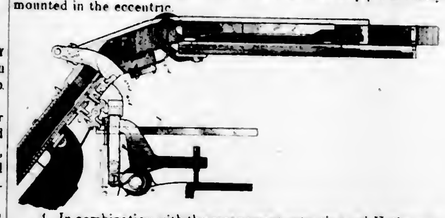
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531,266. COMPOSING MECHANISM FOR LINOTYPE-MACHINES. OTTMAR MERGENTHALER, Baltimore, Md., assignor to the Mergenthaler Linotype Company, New York, N. Y. Filed Apr. 17, 1893. Serial No. 470,790. (No model.)

*Claim.*—1. In combination with the escapement device and its actuating rod, the actuating lever carrying an eccentric, the continuously driven roll thereunder, and the finger-key mechanism for sustaining and releasing the lever, whereby the eccentric is held normally out of contact with the roller action of the key and is caused to throw into action the eccentric for operating the escapement.

2. In combination with the escapement operating rods, the actuating levers, their eccentrics, the constantly driven rolls, dogs to sustain the levers, the finger-keys and connections thence to the dogs.

3. In combination with the escapement operating rods, the springs connected thereto, the actuating levers, their eccentrics, the rolls, the finger-key mechanism to sustain the lever, and the stop-pin movably mounted in the eccentric



4. In combination with the escapement actuating rod H, the actuating lever, its eccentric provided with a movable stop, the constantly driven roll, the lever sustaining dog, the dog actuating bar, and a finger-key connected thereto.

5. In combination with type releasing devices an actuating mechanism, consisting of levers carrying cams, rolls to turn the cams and thereby actuate the levers, means for holding the cams normally out of operative contact with the rolls, and finger-keys to trip them into action.

6. In combination with the magazine and the series of escapements, the series of operating rods, the guide plate through which they pass, and the rock-shaft and its arms for adjusting said plate.

7. In combination with the magazine, its escapements, and their actuating rods, the movable guide frame through which they pass, said frame adapted to engage the magazine and secure lateral alignment of the parts.

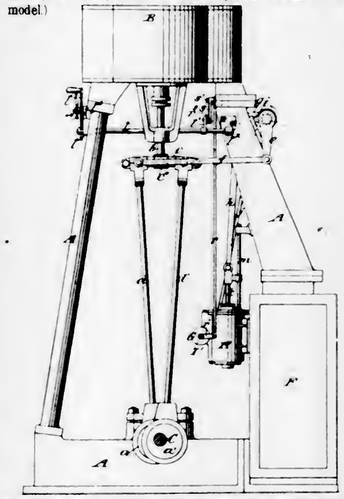
8. In combination with the magazine a channeled mouth-piece hinged to swing to and from its operative position in order to expose the mouth of the magazine.

9. In combination with the main frame—the magazine detachably connected thereto, the channeled mouth-piece or guide hinged to swing from its operative position, and the spring arms whereby it is sustained.

10. In combination with the magazine and the hinged channeled mouth-piece, the front plate G, hinged to the mouth-piece.

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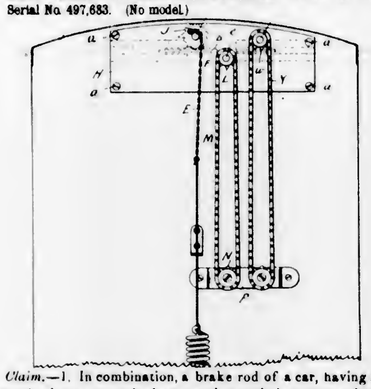
531,267. STEAM-ENGINE. ALEXANDER MILLER, New York, N. Y., assignor to William Brown, Jersey City, N. J., and Alexander Miller, New York, N. Y. Filed Mar. 8, 1894. Serial No. 502,833. (No model.)



*Claim.*—1. The combination with a steam cylinder and piston and a rock-shaft connected with and operated by said piston, of a hollow circular valve having a port 1 through which it receives steam and ports 2 and 4 through which it effects the induction and eduction of steam to and from said cylinder, a hand-operated valve I within the said hollow valve for opening communication to and from the cylinder through said ports 2 and 4, and a connection between said hollow valve and said rock-shaft for producing the closing of said ports 2 and 4, substantially as herein set forth.

2. The combination with a steam engine having two eccentrics and a connecting link for operating its valve, of a rock-shaft and connections for shifting said link, a steam cylinder containing a piston connected with said rock-shaft for operating the same, a hollow circular valve H having a port 1 through which it receives steam and ports 2 and 4 through which it effects the induction and eduction of steam to and from said cylinder, a hand-operated valve I within the said hollow valve for opening communication to and from the cylinder through said ports 2 and 4, and a connection between said hollow valve and said rock-shaft for producing the closing of said ports 2 and 4, substantially as herein set forth.

## 531,268. BRAKE AND POWER CONTROLLER FOR ELECTRIC CARS. ANDREW W. MITCHELL, Boston, Mass. Filed Jan. 22, 1894. Serial No. 497,683. (No model.)



*Claim.*—1. In combination, a brake rod of a car, having a handle or wheel, a gear on its lower end, a rack bar arranged to slide back and forth in suitable guideways to engage with said gear, another gear on a suitable support arranged to engage with said rack bar, a sprocket wheel connected to said latter gear or its journal, and a chain engaging with said sprocket wheel and with the rheostat or electric controller of an electric motor.

2. In combination, a brake rod of a car having a handle or wheel, a gear on its lower end, a rack bar having gear teeth on its two opposite sides, arranged to slide back and forth in suitable guideways and to engage by one side with said gear, another gear on a suitable support arranged to engage with said rack bar on its opposite side, a sprocket wheel connected to said gear or its journal, and a chain engaging with said sprocket wheel and with the rheostat or electric controller of an electric motor.

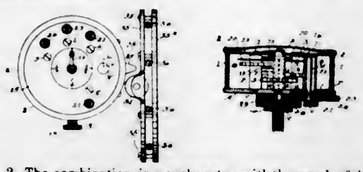
3. In combination a brake rod of a car having a handle or wheel, a gear on its lower end, a rack bar arranged to slide back and forth in suitable guideways and to engage with said gear an opening or socket in said bar, a gear on a suitable support, arranged to engage with said rack bar, a sprocket wheel connected to said gear or its journal, and a chain engaging with said sprocket wheel and with the rheostat or electric controller of an electric motor, a slide bar adapted to engage with said rack bar, a pivoted lever engaging by one arm with said slide bar and by its other arm with a push rod or spindle extending up through the bottom of the car for operation thereof.

4. In combination, a brake rod of a car, having a handle or wheel, a gear on its lower end, a projection or lug thereon, a rack bar having a projection or lug near one end with which said brake rod lug is adapted to engage arranged to slide back and forth in suitable guideways, and to engage with said gear, a gear on a suitable shaft arranged to engage with said rack bar, a sprocket wheel connected to said gear or its journal, and a chain engaging with said sprocket wheel and with a rheostat or electric controller of an electric motor.

5. In combination, a brake rod of a car having a handle or wheel, a gear on its lower end, a projection or lug on said rod or gear, a rack bar arranged to slide back and forth in suitable guideways, and to engage with said gear, and arranged to engage with said brake rod lug or projection, and the rheostat or electric controller of an electric motor arranged to be connected with said rack bar for operation thereof.

## 531,269. CYCLOMETER. JAMES A. MOSHER, Boston, Mass., and WILLIAM N. BEARDSLEY and ALVIN D. MOULTON, Bridgeport, Conn., assignors to Marcellus Hartley and Malcolm Graham, New York, N. Y. Filed June 29, 1894. Serial No. 516,131. (No model.)

*Claim.*—1. A cyclometer for bicycles, comprising in combination, a suitable casing and cover therefor, a series of supporting studs having a lower threaded end whereby they are rigidly secured to the inside bottom of the case, said studs divided into two semi-cylindrical parts by a narrow central kerf extending nearly to the shouldered portion above said threaded end and of equal width throughout its length, so as to give resiliency to the semi-cylindrical parts of said studs, a series of registering wheels having elongated hubs, a straight internal bore slightly smaller in diameter than said studs, so that when mounted thereon the semi-cylindrical parts thereof will be compressed so as to form a straight frictional bearing surface substantially the entire length of said studs, the upper portion of said hubs of the registering wheels being closed to exclude the dust from the bearing surfaces, and also to provide means for independently rotating each of said wheels without removing the overlying dial, substantially as shown and described.



2. The combination, in a cyclometer, with the case 1 of the driving wheel 25 and its elongated hub *q* extending into the case, one side of said wheel bearing against the outside bottom thereof, a dust-proof washer interposed between said wheel and case, a circular retaining groove or recess therefor, said wheel and its hub having a central bore, supporting stud 26 therefor, bracket 27 to which said stud is secured, which bracket is, in turn, secured to the bottom of the case, as set forth.

3. A cyclometer, comprising in combination, a case and cover therefor, a train of registering wheels having elongated hubs closed at the upper end, supporting studs upon which said hubs are rotatably mounted and maintained thereon by the frictional contact of said studs produced by means of a narrow central kerf of equal width throughout their length, the upper end of said hubs being closed to exclude the dust and such closed ends projecting through the large overlying dial plate 15, and means for engaging such closed projecting ends to turn the registering wheels without removing said dial, small registering dials mounted on said hubs, peep holes in the overlying dial plate 15 to read the figures on said registering dials, driving wheel constructed as shown to rotate outside and against the bottom of the case, a dust-proof washer interposed between said case and wheel, a supporting stud therefor mounted upon an outside bracket, means whereby all the wheels of the train are brought into engagement with each other, substantially as set forth.

4. A cyclometer for bicycles, comprising in combination, a suitable casing and cover therefor, a series of supporting studs and means for securing them rigidly to the inside bottom of the case, said studs divided into two semi-cylindrical parts by a narrow central kerf extending nearly to the shouldered portion of said studs and of equal width throughout their length, so as to give the proper resiliency to the semi-cylindrical parts thereof, a series of registering wheels having elongated hubs and a straight cylindrical bore slightly smaller in diameter than said studs so that, when mounted thereon, the semi-cylindrical parts of said studs will be compressed so as to form a straight frictional bearing surface substantially the entire length of said studs, the upper portion of said hubs of the registering wheels closed to exclude dust from the bearing surfaces, as described and set forth.

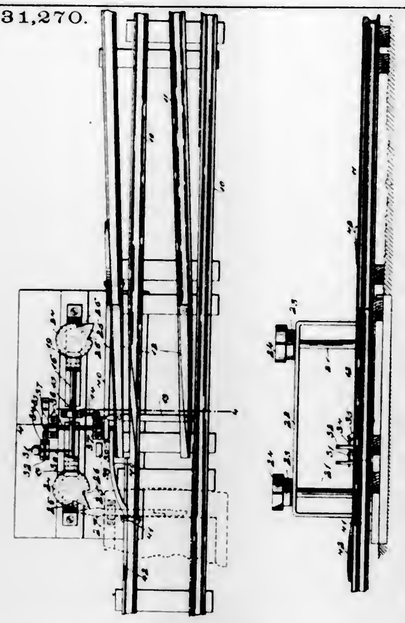
## 531,270. SWITCH-WORKING MECHANISM. JAMES MCGHEE and CHARLES MCGHEE, Sandy Valley, assignors of one-third to David Fleming, De Lancey, Pa. Filed July 12, 1894. Serial No. 517,328. (No model.)

*Claim.*—1. The combination, with the main and switch rails, of pivoted levers arranged in alignment alongside the track, the crank-shaft arranged at a right angle to the track and having its bent inner end pivotally connected with the inner ends of said levers, a locking pin attached to the outer bent end of the shaft, a rock shaft arranged parallel to the track, and means for connecting it with the switch rails, a weighted arm fixed to said shaft, and two vertical shafts geared with the rock shaft, and having striking plates which are provided with lateral arms for engagement with a device projected from a passing train, as shown and described.

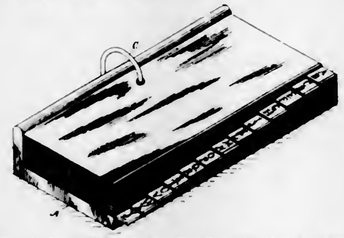
2. The combination, with the switch, the crank shaft adjacent to the switch and adapted to throw it, and the vertical shafts geared to the crank shaft and provided with striking arms, of the arm on the crank shaft, the forked post to receive the arm, the pin adapted to move through the arms of the post, the crank shaft for actuating the pin, and levers fulcrumed at the side of the track and adapted to turn the shaft and move the pin, substantially as described.



531,270.



## 531,271. ACCOUNT-FILE. JOHN U. PARRET, Kalamazoo, Mich., assignor, by direct and mesne assignments, to the Simple Account File Company, Fremont, Ohio. Filed Jan. 16, 1894. Renewed Oct. 22, 1894. Serial No. 526,573. (No model.)



*Claim.*—1. In a bill file the combination of a base A; a vertical guiding back board B; a filing wire C in base board A, and curved over the guiding back; and a retaining wire D, adjustable in grooves D', substantially as described for the purpose specified.

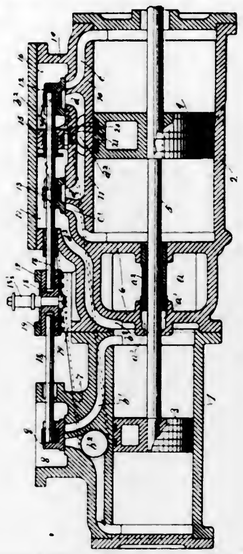
2. In a bill file, the combination of a base, a vertical guiding back, and a filing wire inserted in the base and bent over the guiding back, to receive bills and permit of opening the file for examination or to make new entries substantially as described.

3. In a bill file the combination of a base, a vertical guiding back attached thereto, a filiog wire inserted in the base and bent over the guiding back, and suitable means of retaining the bills substantially as described.

## 531,272. COMPOUND ENGINE. JOHN PEEBLES, Minneapolis, Minn., assignor to the Woolf Valve Gear Company, same place. Filed June 18, 1894. Serial No. 514,854. (No model.)

*Claim.*—1. In a double compound engine, the combination with the high pressure cylinder, having a pair of admission ports, of an admission valve controlling said ports, a low pressure cylinder having a pair of low pressure valve-seats, a pair of passages connecting the ends of the high pressure cylinder, one with each end of said valve-seat, and a pair of valves on said low pressure seat controlling the admission to and exhaust from said low pressure cylinder, substantially as described.

2. In a tandem double compound engine, having their pistons on a common rod, the combination with the high pressure cylinder having a pair of admission ports, of an admission valve controlling said high pressure ports, a low pressure cylinder provided with a valve-seat having a pair of low pressure admission and exhaust ports, a pair of passages, one connecting each end of the high pressure cylinder with one end of said low pressure valve-seat, independent of said admission valve, a pair of low pressure valves on said low pressure valve-seat, and a common rod connected to all of said valves, substantially as described.



3. In a tandem double compound engine, the combination with the high pressure cylinder having a valve-seat provided with a pair of admission ports, of an admission valve on said port, a low pressure cylinder provided with a pair of valve seats each having a low pressure admission and an exhaust port, low pressure valves on said seats, and a pair of valve chests, one over each of said seats provided with passages connecting the same, one with each of the opposite ends of said high pressure cylinder, independent of said high pressure admission valve, substantially as described.

4. In a tandem compound engine, the combination with the high pressure cylinder having the valve-seat provided with a pair of admission ports, of the admission valve on said seat, the low pressure cylinder having the pair of valve-seats each with a low pressure admission and exhaust port, a pair of valves on said seat, a valve-chest over said seats divided into two unequal compartments, the outer and smaller of which is connected with the outer end of said high pressure cylinder and the inner and larger of which is connected with the inner end of said high pressure cylinder, substantially as and for the purpose set forth.

5. In a double compound engine, the combination with the high pressure cylinder, having the valve-seat provided with a pair of admission ports, of the admission valve on said seat, the low pressure cylinder having the pair of valve seats each with a low pressure admission and exhaust port, a pair of valves on said seat, a pair of chests over said seats connected one to each end of the high pressure cylinder, independent of said high pressure admission valve, and a starting valve in the dividing partition between said chests, for converting the compounds into simple acting engines, substantially as described.

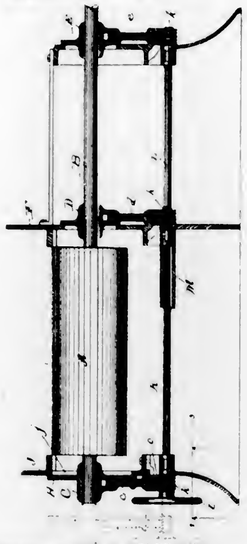
## 531,273. DEVICE FOR ADJUSTING SANDPAPER-CYLINDERS. JAMES L. PERRY, Chicago, Ill., assignor to the Perry Sander Company, same place. Filed Feb. 12, 1892. Renewed Apr. 16, 1894. Serial No. 507,775. (No model.)

*Claim.*—1. The combination with the bearings one of which is removable of a sand paper cylinder and adjusting supports for said bearings, of an extensible shaft for actuating the support in effecting the adjustments of said bearings, substantially as set forth.

2. The combination with the bearings of a sand paper cylinder, and adjusting supports for said bearings, one of said bearings being removable with its support, of an extensible shaft, substantially as specified.

3. The combination with a sand paper cylinder of a removable bearing, an adjusting support for said bearing removable therewith

and a shaft for adjusting all the bearings of the cylinder, said shaft having a portion adapted to be slid longitudinally so as to avoid separating the gearing by which it actuates the support of said removable bearing, substantially as set forth.



4. The combination with a sand papering cylinder of suitable bearings, one of which is removable, supports for each of said bearings by means whereof they are adjusted vertically, and a worm shaft for causing such adjustment, the latter being made in two parts, one of which is movable longitudinally with respect to the other, substantially as set forth.

5. The combination with the sand papering cylinder of bearings therefor, and supporting and adjusting screws for such bearings, one of said bearings being removable together with its adjusting screw, and worms for rotating said screws, one of said worms being movable with said removable screw, substantially as set forth.

6. The combination with the sand papering cylinder of a removable and a non-removable bearing, adjusting screws supporting said bearings, worms operating the screws, and a shaft carrying the worms, the adjusting screw and worm of the removable bearing being movable with such bearing, substantially as set forth.

7. The combination with the removable bearing C, of an adjusting screw, a pinion on said screw, and a worm meshing with said pinion, all movable with said bearing, substantially as set forth.

8. The combination with a removable bearing of a supporting device by which the bearing may be vertically adjusted and actuating devices whereby said supporting device is moved in the adjusting operation, both the supporting device and the actuating devices being movable with the removable bearing, substantially as set forth.

9. The combination with the cylinder of a bearing, and its adjusting screw and a worm for rotating said screw, said bearing being removable and the screw and worm moving with it when removed, and a non-removable bearing with its adjusting screw and worm, the two worms being mechanically connected so that neither can turn independently of the other, substantially as set forth.

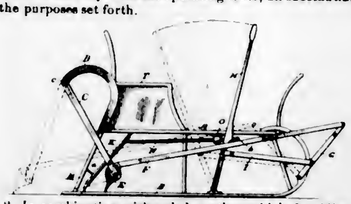
10. The combination with the adjusting screws, one of which is removable, of the worm shaft for rotating said screws, said shaft being made in two parts and coupled together by a sleeve, substantially as specified.

11. The combination with the sand papering cylinder of vertically adjustable bearings, one of which is removable, supports for said bearings, each carrying a worm pinion, and a shaft having worms meshing with said pinions, one part of said shaft being movable longitudinally and having a mechanical connection to the other part whereby the two parts are compelled to rotate together, substantially as set forth.

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**531,274. SLED-PROPELLER.** WILLIAM R. PRINDLE, Aurora, Ill., assignor of one-half to Alfred H. Ramey, same place. Filed Mar. 23, 1894. Serial No. 504,845. (No model.)

*Claim.*—1. In combination with a sled or other vehicle for riding over the snow and ice, a swinging arm suspended from the sled or vehicle, the spur pivoted between its ends to said arm, the operating lever pivoted in front of said arm, and one arm of said spur being connected indirectly with the operating lever, all substantially as and for the purposes set forth.



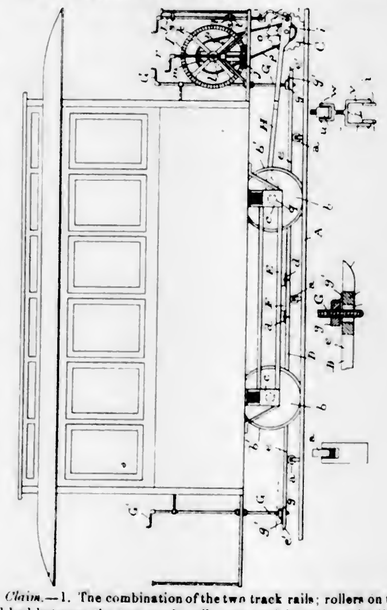
2. In combination with a sled or other vehicle for riding over the snow and ice, a swinging arm suspended from the sled or vehicle, the spur pivoted between its ends to said arm, the operating lever pivoted in front of said arm, a lever pivoted in front of the operating lever, a link connecting said two levers, and another link connecting the lever in front of the operating lever with one arm of the spur, all combined and adapted to operate as set forth.

3. In combination with a sled or other vehicle for riding over the snow and ice, a swinging arm suspended from the sled or vehicle, the spur E pivoted between its ends to said arm, and a longitudinally movable rod connected with one arm of the spur, said arm being adapted to raise the biting end of the spur on the first part of its forward movement, and to lower said end of the spur to the ground on the first part of the backward movement of said rod, all as and for the purposes set forth.

4. In combination with the lever for operating the propelling devices of the sled or other vehicle, the rod N, loosely suspended from the sled body, and provided with a pin or projection extending over the line of return movement of the propelling lever and adapted to engage with said lever, the swinging lever K having a spur on its lower end, and connected with the rod N, and means for holding up said lever and spur out of contact with the snow or ice, except when said lever is operated, all as set forth.

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**531,275. STREET-CAR MOTOR.** JOHN RADOMSKI, Baltimore, Md., assignor of one-half to Mieczyslaw Barabasz, same place. Filed July 13, 1894. Serial No. 517,431. (No model.)



*Claim.*—1. The combination of the two track rails; rollers on the road bed between the two track rails arranged in two longitudinal lines and spaced apart; a car provided with flanged wheels to traverse the track rails; a transverse bar, F, underneath the car; and a pressure-frame below the car-axles and having one end hinged to the said transverse bar and the other end free to be raised or lowered,—said frame to rest upon and traverse on the said rollers on the road bed.

2. The combination of the two track rails; rollers on the road bed between the two track rails arranged in two longitudinal lines and spaced apart; a car provided with flanged wheels to traverse the track rails; a pressure-frame on the car below the car-axle and hinged at one end,—said frame to traverse upon the rollers on the road bed; and a screw co-acting with the free end of the pressure-frame to raise and lower it.

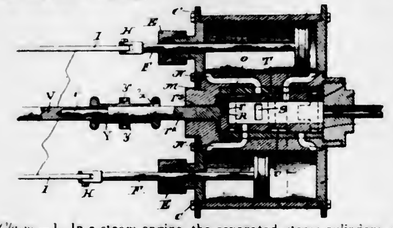
3. The combination of the two track rails; rollers on the road bed between the two track rails arranged in two longitudinal lines and spaced apart; a car provided with flanged wheels to traverse the track rails; a pressure-frame on the car below the car-axles and hinged at one end,—said frame to traverse upon the rollers on the road bed; a nut hinged to said pressure-frame; and a screw on the car—the said screw taking into the hinged nut.

4. The combination of the two track rails; a rack-bar on the road bed between said track rails; a car provided with wheels to traverse the rails; a draw-bar having one end pivoted to the car and the other end provided with two arms; a motor wheel, C, mounted between said arms of the draw-bar and having teeth to engage with the rack-bar; mechanism to impart motion to said motor wheel; and means to raise and lower the draw-bar and motor wheel.

5. The combination of the two track rails; a rack-bar on the road bed between said track rails; a car provided with wheels to traverse the rails; a draw-bar having one end pivoted to the car and the other end provided with two arms; a motor wheel, C, mounted between said arms of the draw-bar and having teeth to engage with the rack-bar; mechanism to impart motion to said motor wheels; a screw on the car; a nut into which the lower end of the said screw enters; and a yoke connecting the said two arms of the draw-bar and the nut.

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**531,276. STEAM-ENGINE.** WILLIAM S. RUSH, Alexandria, assignor, by direct and mesne assignments, of one-third to James S. Derrough and W. F. Holton, Walnut Hill, La. Filed Mar. 23, 1894. Serial No. 504,848. (No model.)



*Claim.*—1. In a steam engine, the separated steam cylinders, a cylindrical valve casing arranged intermediate of said cylinders and provided with a series of top exhaust ports, and opposite sets of steam ports opening into the cylinders at their ends a separate stationary bearing tube fitted in said casing, and a hollow rotary valve mounted within said bearing tube and provided with a series of steam ports or slots for the cylinder ports, a series of exterior exhaust grooves out of circular alignment with the steam ports or slots, and offstanding exhaust spaces communicating with said grooves and arranged in circular alignment with and directly opposite to said steam ports or slots, substantially as set forth.

2. In a steam engine, the combination with the separated steam cylinders, a cylindrical valve casing arranged intermediate of said cylinders and provided with top exhaust ports and opposite pairs of cylinder ports the inner terminals of which open into the valve casing at alternate points, and the pistons moving within the cylinders; of a hollow rotary valve mounted within said valve casing and provided with opposite or end pairs of steam ports, a series of circular exterior exhaust grooves alternating with the pairs of steam ports and communicating with the top exhaust ports of the valve casing, and exterior exhaust spaces located diametrically opposite each one of the steam ports and communicating with said exterior exhaust grooves, substantially as set forth.

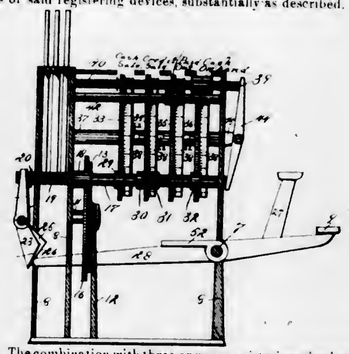
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**531,277. MULTIPLE ADDING-MACHINE FOR CASH-REGISTERS.** CHARLES J. RYBERG, Chicago, Ill. Filed May 13, 1893. Serial No. 474,142. (No model.)

*Claim.*—1. The combination with three or more registering devices, of a single series of keys adapted to operate said registering devices, and means for simultaneously throwing two of said registering devices into or out of operative connection, substantially as described.

2. The combination with devices adapted to register three or more items, and an operating device common to said registering devices, of means for simultaneously throwing two of said registering devices into or out of operative engagement and at the same time throwing another of said registering devices out of or into operative engagement, substantially as described.

3. The combination with devices adapted to register three or more items, and an operating device common to said registering devices, of means for simultaneously throwing two of said registering devices into or out of operative engagement and at the same time throwing another of said registering devices out of or into operative engagement, a single series of keys for operating the different registering devices, and one or more keys for effecting the different engagements of said registering devices, substantially as described.



4. The combination with three or more registering wheels adapted to be rotated in the same direction, of actuating mechanism common to the different register wheels, and means for simultaneously operatively connecting two of said wheels with said actuating mechanism, while disconnecting another of said wheels, substantially as described.

5. The combination with three or more registering devices, of actuating mechanism common to the different registering devices, and means for simultaneously operatively connecting two of said registering devices with the actuating mechanism, while disconnecting another of said registering devices, substantially as described.

6. The combination with three or more registering devices, of mechanism for operating said registering devices, said operating mechanism being normally in operative engagement with two of said registering devices, and means for throwing the different registering devices into operative engagement at will, substantially as described.

7. The combination with two or more register wheels adapted to register different items, a shaft, a series of pinions mounted thereupon and arranged to be moved into operative engagement with the different register wheels by the shifting of said shaft, means for shifting said shaft, a series of operating keys arranged to operate the different register wheels by means of said pinions and mechanism for operating the shaft from the keys, substantially as described.

8. The combination with a plurality of registering wheels, and register keys, of means for rotating said wheels positively for purposes of addition, and means for reversing the rotation of one of said wheels for purposes of subtraction, and simultaneously positively rotating certain other of said wheels by operating said keys, substantially as described.

9. The combination with a plurality of registering wheels adapted to rotate forward, register-keys, and mechanism for rotating said wheels forward, of means whereby an equal reverse rotation of one of said wheels simultaneously with the forward rotation of certain other of said wheels may be effected by operating said keys, substantially as described.

10. The combination with a plurality of registering devices, and mechanism for operating said registering devices positively for purposes of addition, means for causing a reverse operation of certain of said registering devices simultaneously with the positive operation of certain other of said registering devices, and a single series of keys for operating said registering devices, substantially as described.

11. The combination with a plurality of registering devices adapted to be actuated in the same direction, of register-actuating mechanism common to the different registering devices for actuating them in the same direction, and means for imparting a reverse actuation to one of said registering devices simultaneously with an equal to the forward actuation of certain other of said registering devices, substantially as described.

12. The combination with a plurality of register wheels adapted to register different items, of operating keys, an operating train movable into engagement with the different register wheels, so that the different register wheels may be operated by a single series of oper-

ating keys, means for shifting said train, and means for reversing the rotation of certain of said wheels, substantially as and for the purpose specified.

13. In a cash register, the combination with cash-sale, cash-paid-out and cash-on-hand registering devices, of means for throwing said cash-sale and cash-on-hand registering devices into operative engagement simultaneously whereby they may be operated at the same time, means for throwing said cash-sale registering device out of operative engagement and for throwing said cash paid out registering device into operative engagement, and means for reversely operating said cash on-hand registering device simultaneously with the positive operation of said cash-paid-out registering device, substantially as described

14. In a cash-register, the combination with cash-sale, cash-on-hand, cash-paid-out and credit-sale registering devices, of a single series of operating keys for operating the different registering devices, means for positively operating the cash-sale and cash-on-hand registering devices simultaneously, means for positively operating the cash-paid-out registering device and simultaneously reversely operating the cash-on-hand registering device, and means for throwing out of operative position the cash-sale, cash-on-hand and cash-paid out registering devices and for simultaneously throwing the credit-sale registering device into operative position, substantially as described.

15. The combination with a series of register wheels, of a shaft, a series of pinions mounted upon said shaft and movable into engagement with the different register wheels by the longitudinal movement of said shaft, means for shifting said shaft longitudinally whereby said pinions may be moved into engagement with the respective wheels at the will of the operator, and means for effecting the reverse rotation of one of said register wheels simultaneously with the forward rotation of certain other of said wheels, substantially as described.

16. A cash register having cash-on-hand and cash-paid-out registering devices, register keys, and means for operating said registering devices relatively to each other by operating said keys so that the sum of the readings of said registering devices will indicate the total cash received, substantially as described.

17. A register having a cash-sale and cash-on-hand registering devices, and means for operating said devices relatively to each other so that the difference between the readings of said register devices will indicate the total cash paid out, substantially as described.

18. A cash register having devices for registering cash-on-hand, cash sales, and cash-paid-out, and having a single series of register keys for operating the different item-registering devices and means whereby the said registering devices are operated so that their indications bear the proper relation to each other, substantially as described.

19. A cash-register having a single series of register keys, and devices for registering cash-on-hand and cash-paid-out, such registering devices being operated by the same series of register keys, a controlling key for controlling the registration of the register, and means whereby the said registering devices are operated, so that their indications bear the proper relation to each other, substantially as described.

20. The combination with two or more independent registering devices, register-keys, and mechanism whereby by operating said keys said registering devices may be operated positively for purposes of addition, of means for causing a reverse operation of certain of said registering devices simultaneously with the positive operation of certain of said registering devices, substantially as described.

21. A cash register having devices for registering cash-on-hand, cash-sales and cash paid-out, and means for operating said registering devices relatively to each other, so that the sum of the readings of the cash-on-hand and cash-paid-out registering devices will equal the cash-sale registering device, substantially as described.

22. In a register, the combination with a series of register wheels, of longitudinally movable shafts, as 17, and 39, pinions carried by said shafts adapted to be moved to place certain of said register wheels in operative engagement by the longitudinal movement of said shafts, means for moving one of said shafts longitudinally, and means for simultaneously moving the other of said shafts in a reverse direction, substantially as described.

23. In a register, the combination with a series of register wheels, of two shafts 17 and 39, pinions carried by said shafts adapted to be moved to place certain of said register wheels in operative engagement by the longitudinal movement of said shafts, and a lever 44 extending opposite the ends of said shafts 17 and 39, whereby when one of said shafts is moved longitudinally the other of said shafts will be moved in an opposite direction, substantially as described.

24. The combination with two or more register wheels, and an adjustable shaft 17, of pinions mounted upon said shaft, said pinions being adapted to be moved into mesh with the different register wheels by different adjustments to said shaft, register keys, means for rotating said shaft by operating said register keys, and means for shifting said shaft to throw the different wheels into operative engagement, substantially as described.

25. The combination with a plurality of registering mechanisms, actuating devices therefor, and means for positively actuating said registering mechanisms by operating said actuating devices, of means whereby, by operating said actuating devices, one of said registering mechanisms may be positively actuated simultaneously with the reverse actuation of another of said registering mechanisms, substantially as described.

26. The combination with two registering devices adapted to be actuated in the same direction, of a series of register-keys common to the different registering devices, so that by actuating said keys said registering devices may be actuated in the same direction simultaneously, and means whereby by operating said register-keys one of said registering devices may be reversely actuated, substantially as described.

27. In a cash register, the combination with a cash sale registering device, and a cash on hand registering device, of mechanism for operating said registering devices simultaneously, means for throwing said cash sale registering device out of operation, and means for reversing the rotation of said cash on hand registering device, substantially as described.

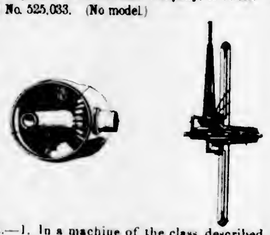
28. In a cash register, the combination with a cash sale registering device, and a cash on hand registering device, of a series of operating keys adapted normally to operate said cash sale and cash on hand registering devices simultaneously, reversing mechanism whereby said cash on hand registering device may be reversely operated for purposes of subtraction, and means for throwing said cash sale registering device out of operative engagement, substantially as described.

29. In a cash register, the combination with cash sale, cash paid out, and cash on hand registering devices, said registering devices being adapted to be operated by the same register keys, of keys for operating said registering devices, means for throwing said cash sale and cash on hand registering devices into operative engagement simultaneously whereby they may be operated together, means for throwing said cash sale registering device out of operative engagement and for simultaneously throwing said cash paid out registering device into operative engagement, and means for throwing said cash on hand registering device into position to be operated in a reverse manner simultaneously with the throwing of the cash paid out registering device into operative position, substantially as described.

30. In a cash register, the combination with cash sale, cash paid out, and cash on hand registering wheels, a shaft 17, pinions 29, 31 and 32 mounted upon said shaft, said pinion 31 being movable into engagement with the cash paid out wheel 35, said pinions 29 and 32 being in normal engagement with the wheels 33 and 36 respectively, a pinion 43 in engagement with the wheel 35, and pinion 41 in engagement with the wheel 36 and movable into engagement with the pinion 43, of operating keys, means for rotating the shaft 17 by operating said keys, means for shifting the shaft 17 to move the pinion 31 into engagement with the wheel 35, and means for simultaneously moving the pinion 41 into engagement with the pinion 43, substantially as described.

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**531,278. GEARING AND GEAR-COVERING FOR AGRICULTURAL MACHINERY.** JAMES D. SCHOFIELD, Dallas, Tex., assignor to the Texas Implement and Machine Company, of Texas. Filed Oct. 5, 1894. Serial No. 525,033. (No model.)



*Claim.*—1. In a machine of the class described, the same comprising an intermediate-shaft and opposite side-beams, the combination therewith of the cup-like cast-metal guard, having a central transverse tubular bearing and a radial bearing, the latter receiving the lower end of said intermediate-shaft, a pinion on the lower end of the shaft within the guard, a bolt passed through the central transverse tubular bearing of the guard and the opposite side-beams of the machine, and a ground-wheel closing against the guard and having a central tubular hub located to revolve upon the tubular bearing of the guard, and a surrounding pinion intermeshing with that of the intermediate shaft and inclosed by the guard, substantially as specified.

2. In a machine of the class described, the same comprising an intermediate-shaft and opposite side-beams, the combination therewith of the cup-like casting or guard, having a central transverse tubular bearing, at one side of the same an off-set, and radially in line therewith provided with a tubular bearing, the latter receiving the lower end of the intermediate-shaft, a pinion on the lower end of said shaft and occupying the off-set, a bolt passed through the central transverse tubular bearing of the guard and the opposite side-beams of the machine, and a ground-wheel closing against the guard and having a central tubular hub located upon and shorter than the central bearing of the guard, and a surrounding pinion intermeshing with that of the intermediate shaft and inclosed by the guard, substantially as specified.

3. In a machine of the class described, the same comprising an intermediate shaft and opposite side-beams, the combination therewith of the cup-like casting or guard having a central transverse tubular bearing extending at opposite sides thereof, and a radial bearing tube, the latter receiving the intermediate shaft, a pinion on the lower end of said shaft within the guard, a bolt passed through the central bearing and the opposite side-beams, and the ground-wheel having a tubular hub shorter than and mounted upon the central tubular bearing of the guard, a pinion surrounding the hub and meshing with that of the intermediate-shaft, and having an annular flange surrounding the pinion and telescoping with the flange of the guard, substantially as specified.

4. In a machine of the class described, the same comprising an intermediate shaft and opposite side-beams, the combination therewith, of the annular flanged or cup-like casting, the same having a central bored and externally conical bearing-tube, an off-set at one side thereof and a radial tubular bearing in line therewith, a bolt having a nut passed through the central bearing and the ends of the beams a pinion fixedly mounted on the lower end of the intermediate-shaft, a ground-wheel having a central conically bored tubular hub mounted upon and shorter than the central tubular bearing of the guard, an integrally formed pinion surrounding said hub, and an integrally formed annular flange surrounding said pinion, and receiving the flange of the guard, and a sleeve fitting the radial tubular bearing of the guard and the intermediate-shaft, substantially as specified.

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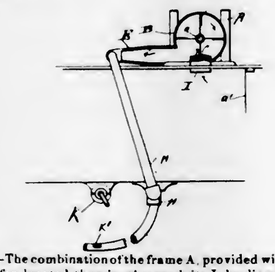
**531,279. WRENCH.** AARON SELLERS, Muncie, Ind. Filed Apr. 14, 1894. Serial No. 507,534. (No model.)



*Claim.*—In a wrench the combination with the stationary jaw A and handle B having a slotted portion C, of a serrated block G pivoted in the slotted portion, the movable jaw F having the handle E passing through the slotted portion C of the stationary handle, serrations on the under face of the handle E adapted to engage the serrations on the block G, recesses in the outer ends of the handles and a spring J having its opposite ends pivoted in the recesses for normally holding the handles together, substantially as described.

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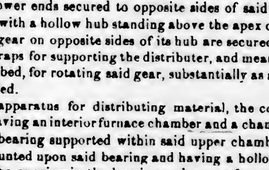
**531,280. DUST-CONVEYER FOR THRASHING-MACHINES.** MATHIAS L. SHUSTER, Mineral Point, Ohio, assignor of one-half to Ira B Shuster, same place. Filed Aug. 23, 1894. Serial No. 521,085. (No model.)



*Claim.*—The combination of the frame A, provided with the casing B, having a fan located therein, the conduit I, leading from the interior of the thrashing machine to the fan chamber, the conduit E, the pipes F, the hose H' and the cylinder or drum K, provided with the button or stud *k*, and means for attaching the hose to the button or stud, substantially as and for the purpose specified.

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**531,281. ENVELOPE.** HERMAN C. F. E. SNOWMAN, New Paltz assignor to the New York Labor Saving Patents Exploiting Company, New York, N. Y. Filed Jan. 31, 1894. Serial No. 498,553. (No model.)



*Claim.*—An envelope provided with imperforate side flaps, a bottom cone-shaped sealed flap with perforations arranged adjacent to the upper edges thereof and at the apex portion of the same is provided a cluster of perforations, a complemental cone-shaped sealing flap with perforations arranged adjacent to the lower edges and with a cluster of perforations in the apex portion thereof, a hexagonal shaped aniline coated or colored detector and distributer interposed between the perforated sealing and sealed flaps and engaging the imperforate side flaps and provided with inclined coated or colored arms, substantially as and for the purposes set forth.

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**531,282. CHARGING APPARATUS.** ERNEST SOLVAY, Brussels, Belgium. Filed Nov. 10, 1890. Renewed Nov. 14, 1894. Serial No. 528,756. (No model.) Patented in Belgium July 2, 1890, No. 91,114; in England July 3, 1890, No. 10,721; in France July 19, 1890, No. 207,081, and in Germany July 31, 1890, No. 55,811.



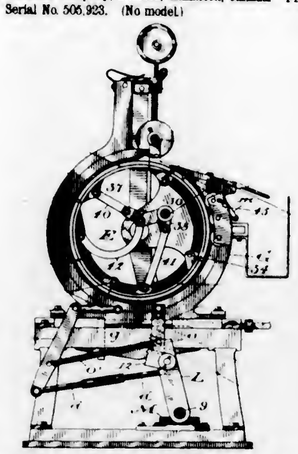
*Claim.*—1. The herein described apparatus for distributing material, the same consisting of a distributer or charger in the shape of a spiral cone having its upright sides inclining downwardly and outwardly from a point at the axis of the distributer and having its base disposed in a horizontal plane and forming substantially a true spiral, one extremity of which extends substantially to the axis of the distributer the body completely surrounding the axis, and the other extremity of which is considerably separated from the axis of said distributer, substantially as set forth.

2. The herein described apparatus for distributing material, the same consisting of a distributer or charger in the shape of a spiral cone having its upright sides inclining downwardly and outwardly from the axis of the distributer and having its base disposed in a spiral plane, one extremity of which extends substantially to the axis of the distributer where this end of the spiral is vertical and the other extremity of which is considerably separated from the axis of said distributer and has its greatest inclination, and means, substantially as described, for supporting and rotating said distributer, from above, substantially as and for the purpose described.

3. The herein described apparatus for distributing material, the same consisting of a revoluble distributer or charger in the shape of a spiral cone having its upright sides inclining downwardly and outwardly from the axis of the distributer, upwardly extending straps having their lower ends secured to opposite sides of said spiral, and a gear formed with a hollow hub standing above the apex of said cone and to which gear on opposite sides of its hub are secured the upper ends of said straps for supporting the distributer, and means, substantially as described, for rotating said gear, substantially as and for the purpose specified.

4. In an apparatus for distributing material, the combination with a tower having an interior furnace chamber and a chamber above it, an annular bearing supported within said upper chamber, a horizontal gear mounted upon said bearing and having a hollow hub registering with the opening in the bearing and means for rotating said gear; of a revoluble distributer formed in the shape of a spiral cone and located within said furnace chamber below the gear, and upright straps connected at one end with the sides of the distributer and at the other end with opposite sides of said hollow hub, as and for the purpose set forth.

**531,283. BARREL-MAKING MACHINE.** WILLIAM T. VALE, Toronto, Canada, and GEORGE A. OHL, Newark, N. J., assignors to the Vale Barrel Machine Company, Limited, Hamilton, Canada. Filed Mar. 31, 1894. Serial No. 505,923. (No model.)



*Claim.*—1. In a barrel machine, a cylindrical barrel-former composed of three or more sections hinged so that they may be folded together, one within the other and one of the sections being fixed and rigidly connected to the barrel former shaft, substantially as and for the purpose specified.

2. In a barrel machine a cylindrical barrel-former composed of three or more sections hinged so that they may be folded together, one within the other and one of the sections beiog fixed and rigidly connected to the barrel former shaft, in combination with means for holding the said hinged sections in their normal position and for folding them in to their collapsed position, substantially as and for the purpose specified.

3. In a barrel machine, a cylindrical barrel-former composed of three or more sections hinged so that they may be folded together, one within the other and one of the sections being fixed and rigidly connected to the barrel former shaft in combination with a crank shaft journaled on the fixed section and having crank arms formed thereon connected by pivoted links to the said hinged sections, substantially as and for the purpose specified.

4. In a barrel machine, a barrel-former comprising the following elements:—three or more sections hinged so that they may be folded together, one of the sections being fixed and rigidly connected to the barrel former shaft, a crank shaft journaled on the said fixed section; crank arms connected to the said shaft; links pivoted to the said crank arms and to the said hinged sections; and a spring lock connected to the said crank shaft and adapted to engage with a notch formed in the fixed section of the barrel former, substantially as and for the purpose specified.

5. In a barrel machine, the barrel-former F, composed of the fixed section 30, rigidly connected to the shaft E, the sections 31, and 33, hinged to the said section 30, and the section 32, cut away at 43, and hinged to the section 31, in combination with the crank shaft 35; crank arms 37, 38 and 39; pivoted links 40, 41, and 42, the latter being curved as shown; and the spring lock 36, adapted to engage with a notch in the edge of the barrel former, substantially as and for the purpose specified.

6. In a barrel machine, the barrel-former F, carried by a shaft E, permanently journaled at one end of the machine, in combination with the rocking frame L, having a bearing 26, thereon, for the barrel former shaft and provided with a curved guide piece 28, substantially as and for the purpose specified.

7. In a barrel machine, the barrel-former F, carried by a shaft E, permanently journaled at one end of the machine, in combination with the rocking frame L, having bearings 26, thereon, for the barrel former shaft, which bearings are closed by hinged caps 27, provided with suitable locks to hold them closed, the outer standard of the frame having a curved guide-piece 28, connected thereto, substantially as and for the purpose specified.

8. In a barrel machine, center half rings G and H, and a stop *m* arranged to hold the staves in position therein, in combination with a spindle journaled in one of said half rings, and stops *p* connected with said spindle and constructed to arrrange said staves parallel to each other so as to be caught and held by the stop *m*, substantially as described.

9. In a barrel machine, the upper stops *m*, pivoted on the half rings G, and connected together by the rod *n*, in combination with the lower stops *p*, pivoted on one of the half rings G, and operated from the rod *n*, by means of the link *r*, bell-crank lever *q*, and link *s*, substantially as and for the purpose specified.

10. In a barrel machine, the upper stops *m*, pivoted on the half rings G, and connected together by the rods *n*, in combination with the lower stops *p*, pivoted on one of the half rings G, and operated from the rod *n*, by means of the link *r*, bell-crank *q*, and link *s*, one or both of the upper stops *m*, being provided with a spring catch, substantially as and for the purpose specified.

11. In a barrel machine, the half rings G and H arranged when closed to leave a gap at their upper ends for the entrance of staves, in combination with a pivoted lock-piece *i* pivoted on one of said half rings and arranged to swing around and cover the gap between said two half rings, lock-handles *j* pivotally secured to said lock-pieces and arranged to lock the latter across the gap by fitting in notches in one of the half rings, substantially as described.

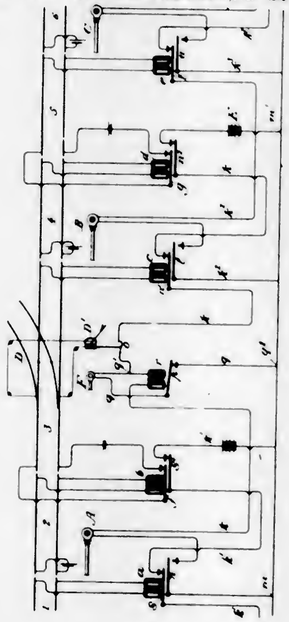
12. In a barrel machine, the rocking frame L, having a bearing M, on the bed of the machine, an opening being provided in the lower end of the rocking frame L, through which the shaft 9, passes without touching said rocking frame, substantially as and for the purpose specified.

13. In a barrel machine, belt pulleys 7 and 8, a pivoted lever 19 having one end curved, brake shoes attached near the other end of said lever, and arranged to act on the belts on said pulleys, and a foot lever arranged to swing under the curved end of said lever 19, and engage forcibly therewith thereby operating said lever to bring the brake shoes in contact with the belts on said pulleys, and to hold the lever 19 in the position in which it is shifted, substantially as described.

14. In a barrel machine, belt pulleys 7 and 8, a pivoted lever 19 having brake shoes attached thereto adapted to engage with the belts on said pulleys, in combination with pulleys 14 and 15, a belt for said pulleys and a belt shifter for said belt, a sliding rod 17 arranged when moved to operate said belt shifter, and a pivoted foot lever 18 having one end connected with said sliding rod 17 and its other end arranged to contact with the pivoted lever 19 and engage forcibly therewith, thus holding the same in the position to which it is shifted whereby, when said foot lever 18 is operated, the belt shifter shifts the belt on the pulleys 14 and 15 and also applies the brake shoes on said pulleys 7 and 8, thus stopping these parts of the machine, substantially as and for the purpose specified.

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**531,284. ELECTRIC BLOCK-SIGNALING SYSTEM.** ADONIRAM J. WILSON, Port Chester, N. Y., assignor to the Hall Signal Company, of Maine. Filed May 14, 1894. Serial No. 511,178. (No model.)





*Claim.*—1. In an electric signaling system for railways, the combination of a track divided into a series of overlapping blocks, each divided into subsections, a signal for each block, overlapping signal circuits for the signals, a track circuit for each subsection of a block controlling the electric condition or the signal circuit for said block, two or more of said track circuits being so connected together that when one is operated the other is also operated to affect the signal circuit, substantially as set forth.

2. In an electric signaling system for railways, the combination of a block of a track divided into subsections, a track circuit which includes the rails of the track for each subsection, a signal normally at danger and a normally deenergized signal circuit for the block, means for energizing the signal circuit in the rear of the block and means for deenergizing the signal circuit upon a change in the electric condition of each of the track circuits of the block, two or more of the said track circuits being so connected together that when one of them is operated another is also operated to affect the signal circuit, substantially as set forth.

3. In an electric signaling system for railways, the combination of a track divided into a series of blocks, each divided into subsections, a signal normally at danger and a track circuit which includes the rails of the track for each subsection, a normally deenergized signal circuit for each block, means located in one block for energizing the signal circuit of a block in advance, and means for deenergizing the said signal circuit upon a change in the electric condition of each of the track circuits of the said block in advance, two or more of the track circuits of said block in advance being so connected together that when one is operated the other is also operated to affect the signal circuit, substantially as set forth.

4. In an electric signaling system for railways, the combination of a track divided into a series of blocks each divided into subsections, a track circuit for each subsection, a normally deenergized signal circuit for each block, means included in each signal circuit for energizing it upon a change in the electric condition of each of two or more operatively connected track circuits of a block in the rear, and means included in each signal circuit for deenergizing it upon a change in the electric condition of each of the track circuits of its block, substantially as set forth.

5. In an electric signaling system for railways, the combination of a track divided into a series of overlapping blocks each divided into subsections, a track circuit for each subsection, a normally deenergized overlapping signal circuit for each block, means located in one block for energizing the signal circuit of a block in advance and means for deenergizing the said signal circuit upon a change in the electric condition of each of the track circuits of the said block in advance, two or more of the track circuits of said block in advance being so connected together that when one is operated the other is also operated to affect the signal circuit, substantially as set forth.

6. In an electric signaling system for railways, the combination of a track divided into a series of overlapping blocks each divided into subsections, a track circuit for each subsection, a normally deenergized overlapping signal circuit for each block, means included in each signal circuit for energizing it upon a change in the electric condition of each one of two or more operatively connected track circuits of a block in the rear, and means included in each signal circuit for deenergizing it upon a change in the electric condition of each of the track circuits of its block, substantially as set forth.

7. In an electric signaling system for railways, the combination of a track divided into a series of blocks each divided into subsections, a track circuit for each subsection two or more of which are so operatively connected that when one of them is operated another is also operated, a normally open signal circuit for each block adapted to operate a signal near the entrance thereof, each block and each signal circuit overlapping respectively the succeeding block and signal circuit, means included in each signal circuit for closing it upon a change in the electric condition of each of the connected track circuits of the preceding block, and means included in each signal circuit for breaking it upon a change in the electric condition of each of the track circuits of its block, substantially as set forth.

8. In an electric signaling system for railways, the combination of a track divided into a series of blocks each divided into subsections, a track circuit for each subsection two or more of which are so operatively connected that when one of them is operated another is also operated, a normally open signal circuit for each block adapted to operate a signal near the entrance thereof, means included in each signal circuit for closing it upon a change in the electric condition of each of the connected track circuits of the preceding block, and means included in each signal circuit for breaking it upon a change in the electric condition of each of the track circuits of its block, substantially as set forth.

9. In an electric signaling system for railways, the combination of a signal operating or controlling circuit, a track circuit controlling the signal circuit, and a switch indicator connected in a bridge across the signal circuit, whereby the operation of the track circuit affects both the signal circuit and the indicator, substantially as set forth.

10. In an electric signaling system for railways, the combination of a signal, a normally deenergized signal circuit operating or controlling said signal, a switch indicator connected in a bridge across the signal circuit, and means controlled by a train for energizing said signal circuit, and simultaneously operating the indicator, substantially as set forth.

11. In an electric signaling system for railways, the combination of a signal operating or controlling circuit, a track circuit controlling the signal circuit, a switch indicator connected in a bridge across the signal circuit whereby the operation of the track circuit affects both the signal circuit and the indicator, and a switch so connected with the signal circuit that when the switch is operated the signal circuit is affected, substantially as set forth.

12. In an electric signaling system for railways, the combination of a signal, a normally deenergized signal circuit operating or controlling said signal, a switch indicator connected in a bridge across the signal circuit means for energizing said signal circuit, and simultaneously operating the indicator, and a switch so connected with the signal circuit that when the switch is operated the signal circuit is affected substantially as set forth.

13. In an electric signaling system for railways, the combination of a signal, a normally deenergized signal circuit operating or controlling the signal, a track circuit for operating the signal circuit, a switch and an indicator for the switch, said indicator connected in a bridge across the signal circuit whereby when the track circuit is operated both the indicator and signal circuit are operated, the switch and signal circuit being so connected that when the switch is opened the signal circuit is also opened, substantially as set forth.

14. In an electric signaling system for railways, the combination of a track section divided into sub sections, a signal operating or controlling circuit, a track circuit for each subsection controlling the electric condition of the signal circuit, two or more of said track circuits being operatively connected together whereby when one of the said connected circuits is operated another of said connected circuits is also operated to affect the signal circuit, a switch for the track and an indicator for the switch, a circuit for operating or controlling the condition of the indicator, and means for controlling the indicator circuit located in the rear of the indicator, substantially as set forth

15. In an electric signaling system for railways, the combination of a track section divided into subsections, a signal operating or controlling circuit, a track circuit for each subsection controlling the electric condition of the signal circuit, a switch for the track and an indicator for the switch, a circuit for operating or controlling the condition of the indicator, and means for controlling the indicator circuit located in the rear of the indicator, substantially as set forth.

16. In an electric signaling system for railways, the combination of a track divided into a series of blocks each divided into subsections, a signal for each block, signal circuits for the signals, a track circuit for each subsection of a block controlling the electric condition of the signal circuit for said block, a switch for a block and an indicator therefor, a circuit for operating or controlling the indicator and means for controlling the indicator circuit located in the rear of the indicator, substantially as set forth.

17. In an electric signaling system for railways, the combination of a track block divided into subsections, a track circuit for each subsection, a normally deenergized signal circuit for the block, means for energizing the signal circuit in the rear of the block and means for deenergizing the signal circuit upon a change in the electric condition of each of the track circuits of the block, a switch for the block and an indicator therefor, a circuit for operating or controlling the indicator, and means for operating the indicator circuit located in the rear of the indicator, substantially as set forth.

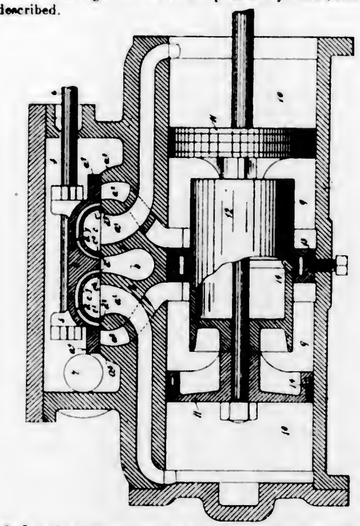
18. In an electric signaling system for railways, the combination of a track block divided into subsections, a track circuit for each subsection, a normally deenergized signal circuit for the block, means for energizing the signal circuit in the rear of the block and means for deenergizing the signal circuit upon a change in the electric condition of each of the track circuits of the block, two or more of the said track circuits being so connected together that when one of them is operated another is also operated to affect the signal circuit, a switch for the block, and an indicator therefor, a circuit for operating or controlling the indicator, and means for operating the indicator circuit located in the rear of the indicator, substantially as set forth.

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**531,285. ENGINE.** ELLIS J. WOOLF, Minneapolis, Minn., assignor to the Woolf Valve Gear Company, same place. Filed Mar. 9, 1894. Serial No. 503,047. (No model.)

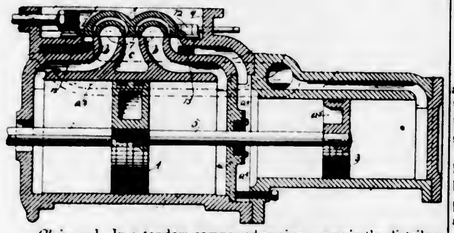
*Claim.*—1. In a double compound engine, the combination with a valve-seat having a central final exhaust port, a pair of low pressure ports, one on each side of said final exhaust port, and a pair of high pressure ports, one external of each cooperating low pressure

port crossing the same, of a valve having outside laps over said high pressure ports, and provided with the two internal cavities *c*, each of which, in one position of the valve, connects one of said high with one of said low pressure ports, and, in the opposite position of the valve, connects the same low pressure port with said final exhaust port; and whereby, the pistons will reciprocate together and are made to travel with the valve, both when the valve is cutting off admission to the high and to the low pressure cylinders, substantially as described.



2. In a double compound engine, the combination with a valve seat having a central final exhaust port, a pair of low pressure ports, one on each side of said final exhaust port, and a pair of high pressure ports, one external of each cooperating low pressure port and crossing the same, of a valve having outside laps over said high pressure port, and provided with four internal cavities *c d*, cooperating in sets of two, each set of which, in one position of the valve, cooperate to connect one of said high with one of said low pressure ports, and in the opposite position of the valve, cooperate to connect the same low pressure port with said final exhaust port, whereby an increased available admission area and an increased available exhaust area is obtained for a given valve travel, and the pistons are made to reciprocate together and to travel with the valve, when the valve is cutting off admission to the high and to the low pressure cylinder, substantially as described.

531,286. ENGINE. ELLIS J. WOOLF, Minneapolis, Minn., assignor to the Woolf Valve Gear Company, same place. Filed June 2, 1894. Serial No. 513,240. (No model.)



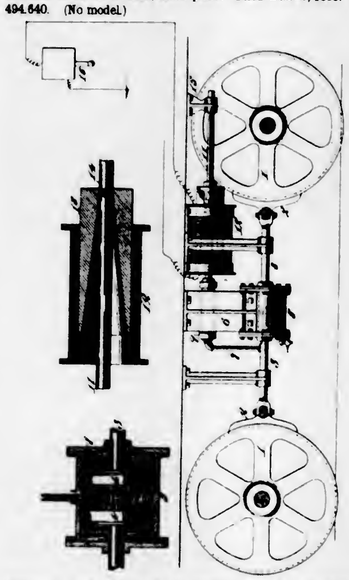
*Claim.*—1. In a tandem compound engine, wherein the distribution is effected from a common seat on the low pressure cylinder and the pistons move in the same direction, the combination with the outer end high pressure port, of the inner end high pressure port, having continuous therewith a clearance chamber formed in the low pressure cylinder casting an opening into the inner end of the high pressure cylinder, whereby the excessive clearance caused by the necessary length of said outer end port may be compensated for by said inner end clearance chamber, substantially as described.

2. In a tandem compound engine, wherein the distribution is effected from a common seat on the low pressure cylinder and the pistons move in the same direction, the combination with the outer end high pressure port, of the high pressure piston recessed on its inner face to afford inner end clearance, and the inner end high pressure port having continuous therewith a clearance chamber formed in the low pressure cylinder casting an opening into the inner end of the high pressure cylinder, whereby the inner end clearance afforded by said chamber and recessed pistons will compensate for the clearance in said outer end port, substantially as described.

3. In a tandem compound engine, having a common valve seat located on the lower pressure cylinder, the combination with the low pressure cylinder casting, having a recess at its inner end, for forming space for an inner end high pressure clearance chamber, of a removable partition seated in said recess coincident with the bridge wall dividing the inner high and low pressure ports, and forming the inner end of both cylinders, substantially as described.

4. In a tandem compound engine having a common valve-seat located on the low pressure cylinder, the combination with the low pressure cylinder casting having an enlarged recess at its inner end, for forming an inner end high pressure clearance chamber, of the removable partition, seated in said recess coincident with the bridge wall dividing the inner high and low pressure ports and forming the inner end of both cylinders, and set-screws tapped through the high pressure cylinder flange and bearing against said partition for holding the same in position, substantially as described.

531,287. CAR-BRAKE. ETHAN ALLEN, St. Louis, Mo., assignor of one-half to David W. Case, same place. Filed Dec. 26, 1893. Serial No. 494,640. (No model.)



*Claim.*—1. In a car brake, the combination of a brake cylinder, a brake shoe, a connection between the brake shoe and the piston of the cylinder, a hydraulic cylinder, a magnet and a core; the core of the magnet being connected to the piston of the hydraulic cylinder; substantially as and for the purpose set forth

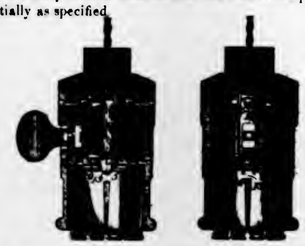
2. In a car brake, the combination of the brake shoes, a hydraulic cylinder, a piston working in said cylinder and connected with the brake shoes, and an electric device for imparting movement to the piston of the hydraulic cylinder, said device consisting of a magnet and a core, the said core having a tapering cavity, substantially as set forth.

3. In a car brake, the combination of the brake shoes, a brake cylinder, a connection between the brake shoes and the pistons in the brake cylinder, a hydraulic cylinder, a pipe connecting the hydraulic cylinder to the brake cylinder, a magnet, and a core connected to the said piston rod of the hydraulic cylinder; said core having a conical center; substantially as and for the purpose set forth.

531,288. INCANDESCENT-ELECTRIC-LAMP SOCKET. CHARLES H. BAILEY, Connellsville, Pa., assignor of one-fourth to G. W. Bryner, same place. Filed Apr. 20, 1894. Serial No. 508,366. (No model.)



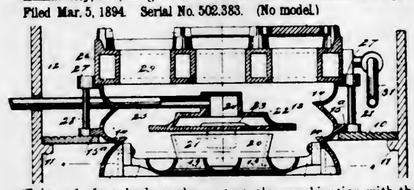
*Claim.*—1. In an electric lamp socket, the combination with the body provided with a transverse septum, a lamp clamp therebelow, a conductive part, as for instance, the arm 10, thereabove, make and break mechanism between the lamp clamp and conductive part, a lamp head connecting part projecting through the septum in electrical connection with the conductive part thereabove, as for instance, the arm 16, a cap adapted to be secured to the body and provided with line wire connections, and conductive plates in electrical connection with the line wire connections and adapted when the cap is secured to the body to be in contact with the conductive parts therein, substantially as specified.



2. In an electric lamp socket, the combination with the body provided with a transverse septum, a lamp clamp therebelow, a conductive part, as for instance, the arm 10, thereabove, make and break mechanism between the lamp clamp and conductive part, a lamp head connecting part projecting through the septum in electrical connection with the conductive part thereabove, as for instance, the arm 16, a cap adapted to be secured to the body and provided with line wire connections and conductive plates adapted when the cap is secured to the body to be in contact with the conductive parts therein and fuses between the conductive plates and line wire connections, respectively, substantially as specified.

3. In an electric lamp socket, the combination with a body and cap, of arms secured to the body and to a lamp head connecting part and lamp clamp, respectively, make and brake mechanism operatively connected with one of the arms, conductive parts upon the cap adapted to form contact with the arms when the cap and body are united, line wires electrically communicating with said conductive parts, and mechanism for securing the cap and body together, substantially as set forth.

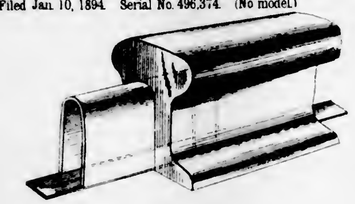
531,289. HYDROCARBON-BURNER. CHARLES E. COOKERLY, Kansas City, Mo., assignor of one-half to Frank F. Schmidt, same place. Filed Mar. 5, 1894. Serial No. 502,383. (No model.)



*Claim.*—1. In a hydrocarbon retort, the combination with the inclosing shell, of a fire-pan arranged within it, an oil-discharge pipe arranged above said pan, a well or tube inclosing the nozzle of the discharge pipe and having its top open, the retort arranged over such well and projecting laterally as specified, and a steam-jet pipe arranged adjacently to the lateral edge of the retort, as shown and described.

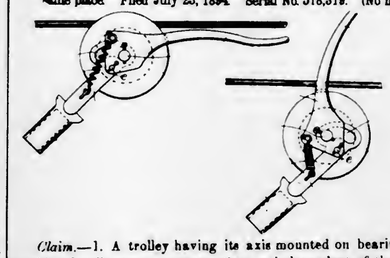
2. The combination, with the shell and the steam supply pipe therein, of the fire pan suspended in the shell, an oil retort arranged above the fire pan and provided with a depending discharge pipe, and an oil well consisting of an open ended tube embracing the discharge pipe and delivering into the fire pan, substantially as specified.

531,290. RAILROAD-RAIL. LAWRENCE K. DEVLIN, Helena, Mont. Filed Jan. 10, 1894. Serial No. 496,374. (No model.)



*Claim.*—The combination, with railroad rails each having a longitudinal recess extending through the under side thereof, of a bottom plate forming a closure of such recesses, and extending unbroken from one rail to the other at the joints thereof, and abutting at its side edges against the side walls of the recesses, and a hood extending a short distance into the recess of each rail at the joint, substantially as described.

531,291. GUIDE FOR TROLLEY-WHEELS. WILLIAM H. DICKERHOOF, Cincinnati, Ohio, assignor of one-half to George W. Pollock, same place. Filed July 23, 1894. Serial No. 518,319. (No model.)



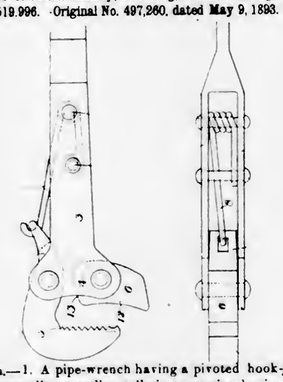
*Claim.*—1. A trolley having its axis mounted on bearings and capable of a vibratory movement thereon independent of the movement of said bearings, guide-arms connected with said axis and pivoted to said bearings, and a yielding connection between said guide-arms and the bearing supports, substantially as set forth.

2. In combination with the guide-arms, the bifurcated bearings attached to the trolley-pole, a trolley having its axis attached to said guide-arms, said axis being mounted upon said bearings and capable of a vibratory movement thereon independent of the movement thereof, said guide-arms being pivotally connected to said bearings, and a yielding connection between the latter and said arms for vibrating the latter and the trolley-axis so soon as pressure is removed from the trolley.

3 The combination of trolley C having an axis, *d*, bearings *b* having an elongated circular slot $b^3$ therein within which said axis is mounted, guide-arms E pivotally connected to said bearings beneath said slot, the axis *d* projecting through said arms, the latter being yieldingly connected with the bearings, and means for attaching the latter to the trolley-pole.

# REISSUES.

11,459. PIPE-WRENCH. GEORGE P. WOELFEL, Spring Garden, assignor to Josiah Bindley, Pittsburg, Pa. Filed Aug. 10, 1894. Serial No. 519,996. (Original No. 497,260, dated May 9, 1893.



*Claim.*—1. A pipe-wrench having a pivoted hook-jaw provided with a rearwardly extending tail-piece, a spring having an interlocking connection with the tail-piece, and a second jaw pivoted independently of the hook-jaw; substantially as described.

2. A pipe-wrench having a pivoted hook-jaw provided with a rearwardly-extending tail-piece, a spring arranged to actuate the tail-piece, and a second cam-jaw having different working faces and pivoted independently of the first; substantially as described.

3. A pipe-wrench having a pivoted hook-jaw provided with a slotted tail-piece, a coiled spring having a hook portion entering the slot, and a second pivoted cam-jaw; substantially as described.

# DESIGNS.

23,878. CARPET. CHARLES FREDK. GEDNEY, Brooklyn, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 29, 1894. Serial No. 527,381. Term of patent 3½ years.



*Claim.*—The design for carpets, substantially as shown in the illustration accompanying this specification.

23,879. CARPET. CHARLES FREDK. GEDNEY, Brooklyn, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Oct. 29, 1894. Serial No. 527,380. Term of patent 3½ years.



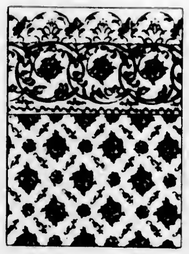
*Claim.*—The design for carpets, substantially as shown in the illustration accompanying this specification.

23,880. CARPET. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Nov. 19, 1894. Serial No. 529,326. Term of patent 3½ years.



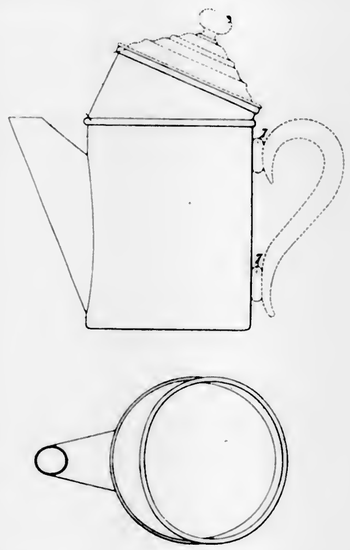
*Claim.*—The design for carpets, substantially as shown in the drawing accompanying this specification.

23,881. CARPET. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Nov. 19, 1894. Serial No. 529,325. Term of patent 3½ years.



*Claim.*—The design for carpets, substantially as shown in the drawing accompanying this specification.

23,882. BODY FOR COFFEE OR TEA POTS. MARCUS C. ROBBLE, Washington, D. C. Filed Nov. 21, 1894. Serial No. 529,525. Term of patent 14 years.



*Claim.*—The design for the body of a coffee or tea pot substantially as herein shown and described.

23,883. VEHICLE-STEP. HENRY C. SWAN, Oshkosh, Wis. Filed Oct. 3, 1894. Serial No. 524,839. Term of patent 14 years.



*Claim.*—The design for vehicle steps substantially as herein shown and described.

# TRADE-MARKS

## REGISTERED DECEMBER 18, 1894.

25,665. MEN'S TROUSERS. SCHWERIN BROS., Philadelphia, Pa. Filed Nov. 20, 1894.

Monarch

*Essential feature.*—The word "MONARCH." Used since June 1, 1892.

25,666. SHIRT-WAISTS AND LADIES' UNDERWEAR. THE HOLZMAN MANUFACTURING CO., Baltimore, Md., and New York, N. Y. Filed Nov. 1, 1894.

Marquise

*Essential feature.*—The word "MARQUISE." Used since October 30, 1894.

25,667. CLOTHING FOR MEN AND BOYS. THOMAS W. FARNSWORTH, Boston, Mass. Filed Oct. 30, 1894.

YANKEE

*Essential feature.*—The word "YANKEE." Used since February 13, 1888.

25,668. YARNS. J. & J. BALDWIN, Halifax, England. Filed Nov. 9, 1894.

B B

*Essential feature.*—The letters "B B." Used since 1875.

25,669. YARNS. J. & J. BALDWIN, Halifax, England. Filed Nov. 9, 1894.



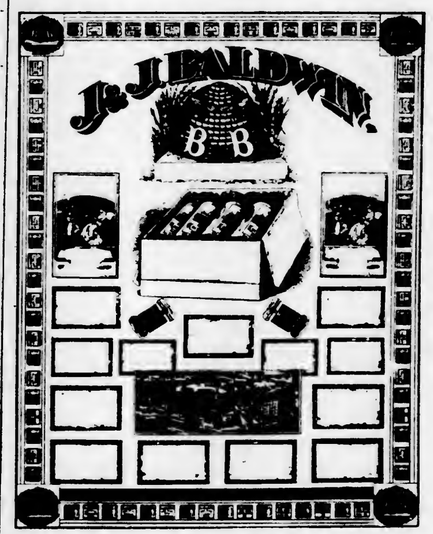

*Essential feature.*—The representation of a bee hive, with the letters "B B" and two bees appearing thereon. Used since 1875.

25,670. YARNS. J. & J. BALDWIN, Halifax, England. Filed Nov. 9, 1894.




*Essential feature.*—A pictorial representation of mills showing several many storied buildings and the usual tall chimneys and the words "CLARK BRIDGE MILLS, HALIFAX." Used since May, 1894.

25,671. YARNS. J. & J. BALDWIN, Halifax, England. Filed Nov. 9, 1894.




*Essential feature.*—The letters, character and word "J. & J. BALDWIN" above a representation of a bee hive, and a box of yarn below the hive, surrounded by labels, the whole being inclosed in an ornamental border formed of labels, with a bee hive at each corner. Used since 1886.

25,672. YARNS. J. & J. BALDWIN, Halifax, England. Filed Nov. 9, 1894.

BEE

*Essential feature.*—The word "BEE." Used since 1875.

25,673. YARNS. J. & J. BALDWIN, Halifax, England. Filed Nov. 9, 1894.




*Essential feature.*—The representation of a bee hive with two bees and the letters "B B" thereon, beneath which are the words, "J. & J. BALDWIN'S BEE HIVE, SOFT KNITTING WOOL," on the right of which are pairs of mittens, leggins and socks, and on the left a tippet and a stocking. Used since 1879.

25,674. YARNS. J. & J. BALDWIN, Halifax, England. Filed Nov. 9, 1894.

BEE-HIVE

*Essential feature.*—The compound word "BEE-HIVE." Used since 1875.

25,675. YARNS. J. & J. BALDWIN, Halifax, England. Filed Nov. 9, 1894.

HIVE

*Essential feature.*—The word "HIVE." Used since 1875.

25,676. WOVEN COTTON GOODS. MASSACHUSETTS COTTON MILLS, Lowell, Mass. Filed Apr. 30, 1894.



*Essential feature.*—The representation of a Roman gladiator standing erect in a position of rest. Used since March 1, 1894.

25,677. CARPETS. WILLIAM C. GRAY, Ayr, Scotland. Filed Nov. 17, 1894.

KASHGAR

*Essential feature.*—The word "KASHGAR." Used since October, 1892.

25,678. CARPETS. WILLIAM C. GRAY, Ayr, Scotland. Filed Nov. 17, 1894.

ISTAKHR

*Essential feature.*—The word "ISTAKHR." Used since May, 1890.

25,679. CARPETS. WILLIAM C. GRAY, Ayr, Scotland. Filed Nov. 17, 1894.

AYRANIAN

*Essential feature.*—The word "AYRANIAN." Used since May, 1890.

25,680. TOWELS. DENNIS HOWARTH, Chester, Pa. Filed Nov. 13, 1894.



*Essential feature.*—The representation of a scimiter from the handle of which flows a ribbon streamer and having above it a Turk's fez surmounted by radiating lines. Used since November 1, 1894.

25,681. DENTIFRICE. ALLEN-FOISE MANUFACTURING COMPANY, New York, N. Y., and Plainfield, N. J. Filed Nov. 20, 1894.

ROYAL TOOTH POWDER

*Essential feature.*—The words "ROYAL TOOTH POWDER." Used since May, 1891.

25,682. REMEDIES FOR NERVOUS DISEASES. THE LESLIE E. KEELEY COMPANY, Dwight, Ill. Filed Sept. 10, 1894.




*Essential feature.*—The representation of an escutcheon bearing the words "DR. L. E. KEELEY'S DOUBLE CHLORIDE OF GOLD CURE." Used since April 15, 1886.



25,683. BLOOD PURIFIERS AND TONICS. WILLIAM R. KENNARD, New York, N. Y. Filed Nov. 17, 1894.



*Essential feature.*—The pictorial representation of the half of a pear with the seeds exposed to view. Used since October 15, 1894.

25,684. BLOOD PURIFIERS AND TONICS. WILLIAM R. KENNARD, New York, N. Y. Filed Nov. 17, 1894.

CEDRONA

*Essential feature.*—The word "CEDRONA." Used since October 15, 1894.

25,685. REMEDIES FOR PULMONARY AND SIMILAR DISEASES. WILLIAM R. KENNARD, New York, N. Y. Filed Nov. 17, 1894.

*Bromomulsion*

*Essential feature.*—The word "BROMOMULSION." Used since October 15, 1894.

25,686. PILLS OR PELLETS. WILLIAM R. KENNARD, New York, N. Y. Filed Nov. 17, 1894.



*Essential feature.*—A pictorial representation of a bunch of grapes with one or more of the individual grapes broken open to expose the seeds to view. Used since October 15, 1894.

25,687. PILLS OR PELLETS. WILLIAM R. KENNARD, New York, N. Y. Filed Nov. 17, 1894.



*Essential feature.*—A pictorial representation of half an apple showing the seeds contained therein. Used since October 15, 1894.

25,688. MEDICINAL TABLETS. THE ANTIKAMNIA CHEMICAL COMPANY, St. Louis, Mo. Filed Nov. 17, 1894.



*Essential feature.*—A monogram composed of the letters "A K Q S." Used since November 1, 1894.

25,689. PERFUMERIES. CHAPMAN & RODGERS, Philadelphia, Pa. Filed Oct. 30, 1894.

PRINCESS BONNIE

*Essential feature.*—The words "PRINCESS BONNIE." Used since June 22, 1894.

25,690. TOILET SOAP. FRANK G. BURKE, New York, N. Y. Filed Nov. 19, 1894.

MYUCCA

*Essential feature.*—The word "MYUCCA." Used since October 20, 1894.

25,691. SOAP. WABASH SOAP and CHEMICAL COMPANY, Wabash, Ind. Filed Nov. 8, 1894.




*Essential feature.*—The word "DELIGHT" and the representation of a woman. Used since October 1, 1894.

25,692. COFFEE. THE INDIANA COFFEE COMPANY, Indianapolis, Ind. Filed Nov. 22, 1894.



*Essential feature.*—The word "PURITAN" and the picture of a Puritan girl. Used since May 1, 1894.

25,693. BEER, ALE AND PORTER. MADISON BREWING COMPANY, Madison, Ind. Filed Nov. 10, 1894.



*Essential feature.*—A monogram formed of the letters and abbreviation "M B Co." Used since April 1, 1894.

25,694. CUTTER AND MATCHER HEADS USED IN WOODWORKING-MACHINES. SAMUEL J. SHIMER & SONS, Milton, Pa. Filed Nov. 20, 1894.

THE SHIMER CUTTER HEAD

*Essential feature.*—The words "THE SHIMER CUTTER HEAD." Used since 1879.

25,695. HOSE-NOZZLES. THE EATON, COLE & BURNHAM COMPANY, Bridgeport, Conn. Filed Nov. 21, 1894.

GEM

*Essential feature.*—The word "GEM." Used since October, 1884.

25,696. ALLOY OF METAL. THE DIPPO MANUFACTURING COMPANY, Cleveland, Ohio. Filed Nov. 15, 1894.

Ferrosteel

*Essential feature.*—The word "FERROSTEEL." Used since January 1, 1893.

25,697. BAR-IRON. SMADBOLT & BOYD IRON COMPANY, Milwaukee, Wis. Filed Nov. 17, 1894.

SILVER SHOE SHAPE

*Essential feature.*—The words "SILVER SHOE SHAPE." Used since June 26, 1894.

25,698. HARVESTING MACHINERY FOR HAY AND GRAIN. WALTER A. WOOD HARVESTER COMPANY, St. Paul, Minn. Filed May 31, 1894.




*Essential feature.*—The picture of an Indian girl and the hyphenated word "MINNE-HA-HA." Used since January 1, 1894.

PHOTO-LITH. THE NORRIS PETERS CO. WASHINGTON, D.C.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE FOWLER *et al.*

*Decided September* 18, 1894.

JOINT INVENTORS—ASSIGNMENT BY ONE OF THEM, WITH REQUEST THAT PATENT ISSUE TO ASSIGNEE, WILL BE OBSERVED.

Where an assignment from one of several joint inventors contains a request that the patent shall issue to his assignee, *Held* that the request will be observed and the patent be issued jointly to the remaining inventors and the assignee.

REQUEST by two of three joint inventors that a request by the third concerning an assignment be ignored. Denied.

FARE-REGISTER.

Application of John W. Fowler, William J. England, and Anton E. Nielsen filed April 6, 1894, No. 506,581. Patent dated Oct. 9, 1894. No. 527,387.

*Mr. Charles G. Coe* and *Mr. William H. Finckel* for the applicants.

FISHER, *Acting Commissioner:*

This is a request by two of the three inventors that a request embodied in an assignment of the third that the patent issue to the assignee of the said third inventor be ignored and that the patent issue to—

John W. Fowler, William J. England, and Anton E. Nielsen as joint patentees of the invention for which as joint inventors and applicants they applied for a joint patent.

The inventors Fowler and England submit that no request to issue can have any force or effect except it come from all three of the inventors and that Nielsen cannot substitute another for himself. The petitioners seem to regard joint inventors as copartners; but they bear no such relation. They are tenants in common, and each has a right to dispose of his estate without the least reference to any of the others, and his assignee has the same right to be named in the title as if he were the assignee of all three. (See Rob. on Pats., Vol. II, sec. 795, *et seq.*)

The request must therefore be denied.

## DECISIONS OF THE U. S. COURTS.

### Supreme Court of the United States.

DEERING *v.* WINONA HARVESTER WORKS.

*Decided December* 3, 1894.

1. OLIN—HARVESTER—INFRINGEMENT—CLAIM OF IMPROVEMENT—PATENT LIMITED BY STATE OF THE ART AND HISTORY OF APPLICATION AND PATENT.

Claim 1 of Patent No 223,812, describing a swinging elevator located upon the *grain* or ascending side of the main belt, pivoted at its *lower* end and movable at its *upper* end, cannot be construed to cover a similar device located upon the *stubble* side, pivoted at its *upper* end and swinging at its *lower* end, particularly in view of the facts that the patent is not a pioneer patent, that the specification confines the invention to the terms of the claim, that in no one of the six claims is there a suggestion that the elevator or belt could be located upon the stubble side, that the invention was of doubtful utility and never went into practical use, that the mechanism set forth in the patent to Bullock and Appleby of October 31, 1882, under which the defendant manufactured its machines, was extensively sold throughout the country for about eight years before any assertion of adverse right under the Olin patent, the plaintiff himself becoming a licensee under the patent, and that, though Olin, while in the Patent Office, was thrown into an interference with another application having broader claims, he made no attempt to insert such broader claims. The Olin patent was not infringed.

2. STEWARD—HARVESTER—VALID—PUBLIC USE—ORAL EVIDENCE WEAKENED AND CONTRADICTED BY EXHIBIT—CLAIM OPERATIVE—INFRINGEMENT.

Claims 20 and 21 of Patent No. 272,598, not anticipated by British patent of Howard and Bousfield of 1881, Steward having made oath during pendency of application that he had completed the invention and made a working model before the date of the British patent. Nor was the evidence of a use by one Heller, in 1877–78, of an extension butt-adjuster connected with an Appleby machine sufficient to create the bar of public use. "This case is an illustration of the wisdom of the rule requiring such anticipations to be proven by evidence so cogent as to leave no reasonable doubt in the mind of the Court that the transaction occurred substantially as stated. The very exhibit produced by the witness Heller contradicted—so far as it could contradict—his testimony, and the witnesses who ought to have corroborated his story gave version which showed it to be untrue in more than one important particular." * * * "His efforts in that direction must be relegated to that class of unsuccessful and abandoned experiments which, as we have repeatedly held, do not affect the validity of a subsequent patent. (*Corn Planter Patent*, 23 Wall., 181, 211; *Coffin v. Ogden*, 18 Wall., 120, 124.) Claim 20 is not invalid because inoperative for want of additional elements. The appropriate means for rendering the combination operative will be understood in any such case. This claim is valid and infringed; but as the defendants use a different method of adjusting the extension, which is neither the same invented by Steward nor an equivalent, claim 21 is not infringed.

APPEAL from the Circuit Court of the United States for the District of Minnesota.

STATEMENT OF THE CASE.

This was a bill in equity for the infringement of Letters Patent No. 223,812, issued January 27, 1880, to William F. Olin, for an improvement in harvesters, and Patent No. 272,598, issued February 20, 1883, to John F. Steward, for an improvement in grain-binders. The original bill was founded upon five different patents, but appellant acquiesced in the decree of the circuit court dismissing his bill as to all but the two patents above named.

In the patent to Olin for an improvement in har-

vesting-machines, the patentee stated in his specification as follows:

In that class of harvesting-machines where the grain is received upon a carrier-platform and elevated over the drive-wheel by an elevator and deliverer to the binders or an automatic binder it is desirable that there shall be no stoppage in the flow of the grain in its passage to its place of delivery; that the butts of the grain shall be carried up parallel, or nearly so, with the heads of the grain, so as to deliver the grain in proper shape for binding purposes, and that the grain shall be delivered to the receiving-table so that it can be bound at or near the middle.

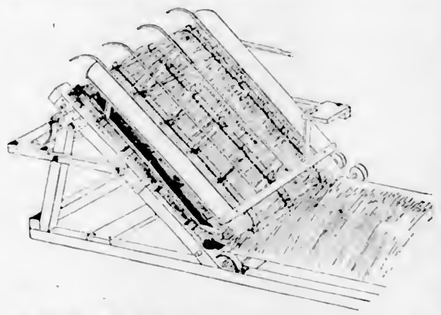
The object of this invention is to provide devices for attaining all of these results; and it consists in interposing a roller between the lower end of the elevator and the inner end of the grain carrier, to facilitate elevating the grain and prevent clogging at that point, and prevent the grain from being carried down or falling through between the elevator and carrier; in providing a belt or chain at the grain side of the machine for elevating the butts of the grain, supported on a swinging bar, so that it can be adjusted, according to the length of grain being elevated, to deliver the grain so that it can be bound at the middle; in devices for operating and adjusting the elevator for the butts; in the peculiar construction of the cover; in arranging and operating the belt for the butts so that it prevents any clogging by short grain at the heel of the sickle; in arranging the device for elevating the butts so that it will bear against the butts of the grain and crowd or move the grain back on the elevator toward the center, for the purpose of straightening the grain in its passage up the elevator, and delivering it so that it can be clasped or bound near the middle, to facilitate the ease of binding; and in the several parts and combination of parts hereinafter described as new.

Here follows at great length a description of the device claimed to be novel.

The specification concludes as follows:

The butts of grain are heavier than the heads, and consequently lag behind unless some means are provided to make them move faster than the heads. In order to elevate the butts even with the heads the belt or elevator Q is so arranged that the teeth *b* will engage with the butts of the grain on the roller I and carry them up while the heads are being carried up by the elevator belts M. The lower pulley, *c*, is to be so arranged that it will permit the teeth *b* on the elevator Q to clear the end of the roller and engage the butts, and this pulley *c* is located as close to the main frame as is possible and permit the operation of the butt-elevator, which location of the pulley brings the butt-elevator in position to enable it to catch any short grain, which short grain is liable to fall down and be caught by the heel of the sickle and clog the sickle. By locating the lower pulley, *c*, of the belt Q at the proper distance above the main frame A the teeth *b* on the elevator will come in contact with such short grain and force it forward on to the carrier-platform, thus keeping the heel of the sickle clear at this point.

The following drawing exhibits the "swinging elevator" feature of the patent:



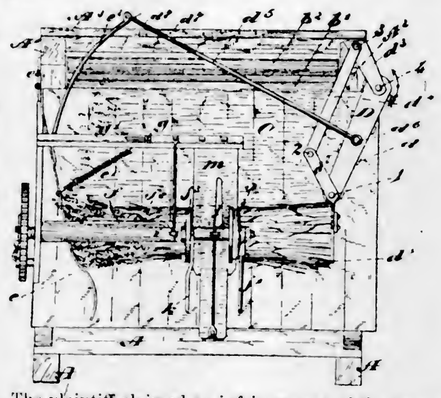
The plaintiff claimed an infringement of the first claim of the patent, which reads as follows:

1. In combination with a harvester-elevator, a swinging elevator pivoted at its lower end and suitable devices for shifting its upper end, whereby the swinging elevator forms a means for elevating the butts of the grain and delivering grain of different lengths at the same point, substantially as specified.

In the patent to Steward for improvements in grain-binders, the patentee stated:

The object of my invention is to provide means that, combined with an automatic grain-binder, shall make it automatically regulate the position of the band on the gavel—that is, shall automatically place the band upon the gavel in its proper position relative to the length of the grain without any aid or attention from the operator—and its nature consists in locating, in such a position as to be influenced by the heads of the incoming grain, or gavel or bundle, a device to be moved thereby, the said device connected with means for adjudging the relative positions of the said grain and the binding mechanism.

The following drawing exhibits the patented device:



The plaintiff claimed an infringement of the twentieth and twenty-first claims of the Steward patent, which read as follows:

20. The combination, in a grain-binder, of moving butt-adjusting mechanism and the board $d'$, substantially as described.

21. The combination of the swinging butt adjuster, the arms $d^2$, $d^3$, $d^4$, and the board $d'$, pivoted to the swinging butt-adjuster, substantially as described.

Upon a hearing upon pleadings and proofs, the court below dismissed the bill upon the ground that the Olin patent was not infringed, and that the Steward patent was invalid by reason of a certain device theretofore used, which was held to have anticipated the patent. From this decree plaintiff appealed to this Court. The opinion of the circuit court is reported in 52 O. G., 1123; C. D., 1890, 434; 40 Fed. Rep., 236.

*Mr. Ephraim Banning* and *Mr. T. A. Banning* for the appellant.

*Mr. P. C. Dyrenforth* for the appellee.

Mr. Justice BROWN delivered the opinion of the Court.

First. The Olin patent relates to a harvesting-machine, and more particularly to a certain method of elevating the grain from the harvester-platform, upon which it falls as it is cut, to the top of the delivery-apron, where it is discharged from the machine either into the hands of a binder, or into a mechanical grain-binder, as the case may be.

In machines of this description the grain, as it is cut, falls upon a platform, and is carried to the base of an endless belt provided with teeth, which seize the grain and carry it over the driving-wheel of the harvester, up to a higher level than that where the binding is done, from which point it falls a short distance to reach the binder. The side of the elevator upon which the grain ascends is termed the "grain side;" the side upon which it descends to the binder is called the "stubble side." In the operation of a harvester of this kind it was observed that, as the grain mounted the elevator on the grain side, the butt-end of the stalks, being heavier than the heads, exhibited a tendency to lag behind, so that the stalks assumed a diagonal position across the harvester-platform. The consequence of this was that the heads of the stalks were delivered to the binder in advance of the butts, and obliquely—a peculiarity which interfered with the





proper binding of the grain. In addition to this, the different lengths of the stalks required some means whereby the binding-band might be placed centrally to their lengths, that is, if the stalks, after being cut, are twelve inches long, the band should be placed about six inches from each end, but if the stalks are five feet long, it should be placed about two and a half feet from each end. To obviate the difficulty of the butts lagging behind, and also to secure proper delivery of the grain as to length, Olin invented an auxiliary belt located at a right angle to the main belt, but moving in the same direction and at somewhat greater speed. This auxiliary belt was also provided with teeth, which engaged the butt-end of the stalks, and moving faster than the main belt, kept the butts up to a level with the heads. As shown and described in the patent, this auxiliary belt was arranged with one end located at the lower end of the main belt and near the carrier-platform, and the other end at the apex of the main belt or the highest point at which the grain ascends. The mechanism was intended to act upon the swath of flowing grain, and change its direction, pushing the stalks endwise, so that they might be delivered to the binder in proper position to be bound in their center, and also hastening their butts so that the stalks might not be delivered diagonally, but parallel with each other and with the flow of the main belt. The claim describes this swinging elevator as pivoted at its lower end, with suitable devices for shifting its upper end, whereby it forms a means for elevating the butts of the grain, and delivering grain of different lengths at the same point.

Devices bearing certain similarity to this, and having in view the performance of a like function, were not wholly unknown to the prior art. These devices, though not claimed to fully anticipate the Olin patent, are important in their bearing upon the construction of this patent and upon the alleged infringement by the defendants.

Thus the patent to Elward of July 6, 1875, exhibits two rollers mounted in front of the horizontal belt. These rollers carry a short belt or apron, whose face, like that of the Olin patent, is perpendicular to the face of the horizontal belt. It is stated in the patent that one of these rollers may be driven by proper gearing, and it is so represented in the model. The face of this small belt moves in the same direction as the horizontal belt, and is set at an angle with the line of direction or travel of the grain. The specification states that this belt or apron—

may be operated either by the friction of the passing butts of the grain, or it may be given a positive movement by gears or belts and pulleys from any convenient driving-shaft, the movement of the apron in either case serving to move or shove backward the butts of the grain projecting over the finger-bar.

This auxiliary belt of Elward's acts much in the same way in relation to grain moved by and on the horizontal apron that the auxiliary belt of Olin does upon grain carried upward by the main horizontal belt, shoving the grain endwise toward the rear of the machine while it is being carried along. No method is stated, however, by which the canvas may be rotated, and even if it were, it would still be incompetent to perform the office of the Olin belt, because it is not adjustable at either end.

The patent to George F. Green of March 6, 1877, also shows an adjustable butter, which he designates as a "grain-guide;" pivoted at the lower front corner of the elevator-frame, on the grain side, and provided at its upper end with a handle convenient to the driver sitting in his seat. This so-called "grain-guide" is much like that of Olin's in shape and location, though apparently not provided with a movable belt, and hence not adapted to hasten the ascent of the butts, but only to shove back the butts of the shorter stalks. Instead of operating to hasten the butts, it can only operate to retard them to the extent of the friction between the butts and the surface of the board.

The patent to C. W. and W. W. Marsh of January 5, 1864, shows alongside of the main belt, an auxiliary belt, mounted on the same rollers as the main belt, and therefore proceeding at the same speed. The horizontal belt carrying the grain over the harvester-platform is described as traveling faster than the main elevator, so as to operate to straighten the grain, or bring the stalks parallel to each other before beginning their ascent. The auxiliary belt, however, is not arranged on vertical rollers as in the Olin patent, but upon the same rollers as those carrying the main belt; neither is it pivoted at its lower end, nor capable of being shifted at its upper end, and hence is incapable of moving the grain endwise to even the butts. There are two or three other patents, which appear to have a somewhat remoter bearing upon the Olin patent, but are not necessary to be noticed in the consideration of this case.

The gist of Olin's invention seems to be in his taking the grain-guide used by Green, providing it with a belt and teeth somewhat upon the principle of the independent belt or bands used by the Marshes, traveling faster than the main belt, and for the purpose of keeping the butts in line with the heads of the stalks. The important feature, however, connected with all these prior patents is found in the fact that the devices described in them were all located on the grain side of the elevator, and were designed to secure parallelism in the stalks, as they mounted the main belt, and before they reached its apex. Olin proceeded upon the same theory, and located his swinging elevator or auxiliary belt upon the same side of the main elevator, and described it in his claim as pivoted at its *lower* end, with suitable devices for shifting its *upper* end.

In defendant's device, the grain is carried up upon the main belt or elevator, as in the Olin patent, without, however, any means whatever for hastening the butts or moving the stalks endwise upon the harvester-elevator; but, after having been lifted or carried over the apex of the main belt, and while descending upon the stubble side to the binder, they are adjusted in position by a traveling belt or apron almost identical in principle with that of the Olin patent, but pivoted at its *upper* end and swinging at its *lower* end. This device is shown in a patent to Bullock and Appleby of October 31, 1882, in which the prior use of the plain-face deflector board or surface was recognized, but was said not to be a sufficient means for effecting the desired adjustment of the grain-stalks endwise.

The butt-ends of the stream of grain will lag by contact with

the stationary surface of such a designed deflector or adjuster, and the grain will not be properly guided to the binder or the point at which the binding is to be done.

Their invention consists, as they state, essentially in the employment of an adjuster and deflector composed of a traveling surface, mounted in an adjustable frame, and provided with suitable means for operating it, by which the cut grain, while passing from the delivery end of the conveyer to the binder shall be perfectly adjusted lengthwise of its stalks and to an extent corresponding to the length of the grain, so as to effect a presentation of the grain always in a given relative position to the binder devices of the machine and in proper condition for binding.

The third and most important claim of the patent was for—

an endless belt moving in the direction of the grain-delivery and operating in contact with the stubble end of the grain on its passage from the elevator to deliver it to a binding mechanism, substantially as set forth.

The real question in this case as between these two devices is, whether the first claim of the Olin patent describing a swinging elevator located upon the *grain* or ascending side of the main belt, pivoted at its *lower* end and movable at its *upper* end, can be construed to cover a similar device located upon the *stubble* side, pivoted at its *upper* end and swinging at its *lower* end. We are of opinion that it cannot. Plaintiff claims in this connection that, by the *lower* end of the swinging elevator is in reality meant the *receiving* end, and that, as the defendant's device (which can hardly be called an elevator at all, since it facilitates the *descent* of the grain) is pivoted at its receiving end, which happens to be its upper end, it is within the spirit though not within the letter of the claim. But of whatever elasticity of construction this claim might have been susceptible, if it had been a pioneer patent, it is clear that, in view of the prior devices, of which it was only an improvement, and of the explicit language of the specification and claims, the patentee had only in view an auxiliary belt located upon the grain or ascending side of the elevator. Indeed, from the statement in the introduction of the specification, through all the description, and in each of the claims, care is taken to emphasize the fact that the invention relates to the combination, with the ordinary harvester-elevator, of a butt-elevator which operates upon the butts of the grain while the grain is being lifted upon the main belt, so as to hasten the ascent of the butts and move the stalks back upon the harvester-elevator. In no one of the six claims of the patent is there a suggestion that the elevator or belt Q could be located upon the stubble side, although this belt is made an element in all but one of the claims.

If Olin had been the first to devise a contrivance of this description for adjusting the flow of grain upon the main elevator, it is possible that, under the cases of *Ives* v. *Hamilton*, (10 O. G., 336, C. D.; 92 U. S., 426,) and *Hoyt* v. *Horne*, (59 O. G., 1764; C. D., 1892, 435; 145 U. S., 302,) a construction broad enough to include defendant's device might have been sustained. But in view, not only of the prior devices, but of the fact that his invention was of doubtful utility and never went into practical use, the construction claimed would operate rather to the discouragement than the promotion of inventive talent. Not only does it appear that the device described in this patent did not go into general use, but that the mechanism set forth in the patent to Bullock and Appleby of October 31, 1882, under which the defendant manufactured its machines, was extensively sold throughout the country for about eight years before any assertion of adverse right under the Olin patent, and that the plaintiff himself became a licensee under the Appleby patent, and manufactured his own machines in accordance therewith.

Another fact is deserving of consideration. While the application for the Olin patent was pending, another application was made by McGregor and Flennekin, showing a grain-adjusting device similar to that used by the defendants; that is, a butt-adjuster like that of Olin's, but located upon the descending line of grain travel, and pivoted at its upper end instead of its lower end. This application was thrown into interference with that of Olin—the Examiner holding the subject-matter involved in the interference to be—

an endless belt moving in the direction of the grain-delivery, operating in contact with the end of the grain to deliver it to a binding mechanism.

This interference seems to have been decided in Olin's favor, since a patent was subsequently issued to him; but inasmuch as he thus was warned of the claim of McGregor and Flennekin, and of its extent, it is somewhat singular that he did not at least endeavor to obtain an enlargement of his claim, to cover an endless belt moving in the direction of the delivery, whether such belt were located upon the grain or stubble side of the elevator, and thus anticipate McGregor and Flennekin. His failure to make an effort in that direction indicates a consciousness on his part that he had limited himself to an endless belt upon the grain side, and the fact that the McGregor and Flennekin patent was subsequently issued, with the broad claim of the endless belt moving in the direction of the grain-delivery, indicates that, notwithstanding the interference, it was not considered as anticipated by the Olin patent previously granted. In the meantime, and during the pendency of the Olin application, Bullock and Appleby applied for a patent upon the combination of the traveling apron with the table of the grain-binder, as used by these defendants, and a patent was issued to them October 31, 1882. If Olin were entitled to all that plaintiff now claims, it would seem that the patent to McGregor and Flennekin, as well as that to Bullock and Appleby, are infringements upon his own. It is possible that Olin was entitled to a broader claim than that to which he limited himself; but if he described and claimed only a part of his invention, he is presumed to have abandoned the residue to the public. (*McClain* v. *Ortmayer*, 57 O. G., 1229; C. D., 1891, 532; 141 U. S., 419.) There was no error in holding that the Olin patent had not been infringed.

Second. There are twenty-one claims in the Steward patent, the last two of which only are involved in this controversy. These claims are as follows:

20. The combination, in a grain-binder, of moving butt-adjusting mechanism, and the board $d'$, substantially as described.

21. The combination of the swinging butt-adjuster, the arms $d^2$, $d^3$, and $d^4$ and the board $d'$, pivoted to the swinging butt-adjuster, substantially as described.

The peculiar feature of this portion of the patent is





in the attachment to a butt-adjuster, such as is described in the Bullock and Appleby patent—that is, upon the stubble side of the elevator—of a board pivoted to the end of the movable butt-adjuster to bear against the butts of the sheaf of grain, after it passes the butt-adjuster proper, and while it is being acted upon by the binding mechanism. This board $d'$ is described in the patent as—

a thin board or plate of metal, as wide as the adjusting-canvas, and pivoted to the frame of the latter at its lower extremity. From this board reaches upward and inward an arm $d^2$. The board and frame are as one piece; but the board itself is made in two parts, so that its greater portion (which is the lower) can be removed.

As the grain advances into the binding-receptacle, the board bears against the butts, and holds them in an even condition, and in such a position as to insure the central binding of the bundle. In practice two forms of this extension of the butt-adjuster have been used; one consisting of a board or sheet-iron plate *rigidly* secured to the butt-adjuster at its lower end, and the other consisting of such a board or plate *pivotally* connected to the butt-adjuster at its lower end, and connected to the binder in such a way as to cause it to remain "parallel with itself" in the various positions which it assumes. In other words, when the pivotal form of extension is used the connections are such that, while the angle of the butt-adjuster with the top of the binder changes, the angle of the extension and the same board remains constant, or nearly so. Defendant's machine is provided with a moving butt-adjusting mechanism, and also with a board pivoted to the lower end of the butt-adjuster, practically identical in its construction and operation with that of the Steward patent. The defenses to these claims are:

First. That claim 20 is void, in that it describes an incomplete and inoperative invention, and if completed by reading into it the necessary specifications, the defendants do not infringe.

Second. That claim 21 is not infringed by defendant's machine.

Third. That both claims are void, because Steward was not the first inventor, and because substantially the same device as shown and described in the patent and referred to in the claims was in public use in the United States for more than two years before the application was filed.

As the last defense goes to both of these claims, it may properly be considered first.

The English patent to Howard and Bousfield of 1881 may be left out of consideration, because, although it antedates the Steward patent, Steward made oath that he had completed his invention and made a working model before the date of the English patent. As his oath was accepted by the Patent Office as decisive of the fact, and a patent was issued to him upon it, and there is no evidence before us to contradict it, it need not be further noticed here.

The court below found, however, that the device in question was invented and publicly used by one Gottlieb Heller on his farm in Kansas in the harvest of 1877–'78. The importance and peculiar character of the testimony upon this point will justify a somewhat extended analysis and consideration of it. Heller is a Kansas farmer, who also appears to have been for some years agent for the Beloit—later the Milwaukee—Harvester Company. He testified that in 1878 he bought from an agent of the Beloit Company a combined harvester and binder, which had a traveling butt-adjuster precisely as it appears in the Bullock and Appleby patent, except that it had no construction corresponding to the board $d'$ of the twentieth claim. He found that when the grain was short and thin it did not work well, so that he added an extension to the butt-adjuster, to keep the straw of the bundle even at the butts. This extension, as he explained it, was first made with a piece of tin or sheet-iron *nailed* on to the frame of the butt-adjuster. This arrangement proved unsatisfactory. He then says he made an extension out of sheet-iron and heavy hoop-iron, which would adjust and keep straight with the butt of the bundle, and in that way it satisfied him. He illustrated this device by a rough sketch, containing much the same elements as those described in claim 21 of the Steward patent. He then produced what he claimed to be the identical device which he made in 1878, and used publicly in the harvest of that year. This device was put in evidence. He says his wife and son helped him in the harvest and drove the machine which was used to cut part of two hundred and fifty acres. He also attempted to use the device the next year, 1879, but the grain was so short it proved unsatisfactory, and he took it off and elevated the grain into a wagon. In 1880 he got a new binder, which the adjustable extension did not fit, and for lack of time he put on a rigid one instead of an adjustable one, though he preferred the latter. At various times he put on rigid ones for other persons. The pivoted butt-adjuster represented in his sketch and relied upon to establish the prior use was thrown aside and lost sight of for several years, Heller never applying for a patent nor taking any steps toward the introduction of the device.

One Rubin, a neighbor of Heller's, who sold him the harvester and binder he used in 1878, went to Heller's farm in the harvest of that year to see how it worked, when Heller's son called his attention to an improvement in the butt-adjuster which he said his father had made; but he evidently did not remember whether the board extension was rigidly or pivotally attached to the adjuster, though he thought it was screwed upon the frame of the adjuster, *stiff*.

George Heller, the son, testified that his father made an extension, like the one introduced by him, for the harvest of 1878, and that the sheet-iron piece was from an old Kirby self-rake. He seemed to have put it on as a rigid extension at first, and, after using it a day or two, substituted an automatic extension, which he believes to have been the identical device put in evidence. He says his father afterward put a stiff one on the second binder they bought.

One Edward D. Bishop saw only the rigid extension, and did not see the improved device. Rosina Heller, the wife, testified that she ran the harvester and binder in the harvest of 1878. She testified generally to the use of the butt-adjuster, with the adjustable extension, during the year 1878.

From the testimony in reply to this it appeared

that the butt-adjuster of tin or iron, said to have been first made in 1878, and which was put in evidence, bore no marks whatever of nails having been driven into it; also, that the iron extension which Heller's son swore was from a piece of a Kirby rake owned by them, and bought of a firm in Junction City, could not have been taken from a Kirby self-rake, since that pattern of rake did not contain any such sheet iron as the extension was made of. It further appeared that the extension came from a machine called the "Triumph," which Heller never owned, but which belonged to another man, one Schlesener, who lived some eight or ten miles distant. It further appeared that the extension was not applied until 1880, and was then *rigidly* fastened by Heller and Schlesener to the frame of the butt-adjuster, instead of being pivotally attached, as claimed by Heller. This machine was subsequently, and in 1882, bought by one Messing, whose son testified that at that time the extension was rigidly fastened to the adjuster, and so remained until the spring of 1883, when it passed out of his possession. It further appeared that Heller was an agent for the Milwaukee Harvester Company, which was making butt-adjusters with pivoted extensions, was interested in defeating the Steward patent, and took an active part in securing his testimony.

This entire evidence, taken in connection with certain damaging admissions made by Heller as to the compensation he received, both for his testimony in this case and for his concealment of certain facts in relation to another patent, throws discredit upon the whole case made by the defendant with respect to the anticipation of the Steward patent. Taking this evidence together, it falls far short of establishing an anticipation with that certainty which the law requires. As we have had occasion before to observe, oral testimony, unsupported by patents or exhibits, tending to show prior use of a device regularly patented, is, in the nature of the case, open to grave suspicion. (*The Barbed Wire Patent*, 58 O. G., 1555; C. D., 1892, 299; 143 U. S., 275.)

Granting the witnesses to be of the highest character, and never so conscientious in their desire to tell only the truth, the possibility of their being mistaken as to the exact device used, which, though bearing a general resemblance to the one patented, may differ from it in the very particular which makes it patentable, are such as to render oral testimony peculiarly untrustworthy; particularly so if the testimony be taken after the lapse of years from the time the alleged anticipating device was used. If there be added to this a personal bias, or an incentive to color the testimony in the interest of the party calling the witness, to say nothing of downright perjury, its value is, of course, still more seriously impaired. This case is an apt illustration of the wisdom of the rule requiring such anticipations to be proven by evidence so cogent as to leave no reasonable doubt in the mind of the court that the transaction occurred substantially as stated. The very exhibit produced by the witness Heller contradicted, so far as it could contradict, his testimony, and the witnesses who ought to have corroborated his story gave a version which showed it to be untrue in more than one important particular.

Under the circumstances, it would be going too far to reject his entire testimony, but giving it all the weight to which it can reasonably be entitled, it shows no more than he affixed some sort of an extension to a butt-adjuster connected with an Appleby machine. If, as he says, in 1878, he tried a rigid extension and found it unserviceable, and subsequently, in the same season, he invented a pivoted extension, and it worked well, it is improbable that he would have cast it aside altogether at the end of the season, and taken up again the theory of a rigid extension, and applied it not only to his own, but to a number of other machines. His excuse that the binder was incapable of doing satisfactory work during the season of 1879, by reason of the shortness of the grain that season, is evidence that it was inoperative. If it had been a success, he would hardly have thrown it aside permanently. Doubtless he did use a rigid extension of some sort; but if he ever used a pivoted device at all—of which we have considerable doubt—his efforts in that direction must be relegated to the class of unsuccessful and abandoned experiments, which, as we have repeatedly held, do not affect the validity of a subsequent patent. (*Corn Planter Patent*, 6 O. G., 392; 23 Wall., 181, 211; *Coffin* v. *Ogden*, 5 O. G., 270; 18 Wall., 120, 124.)

Defendants further insist that the twentieth claim of this patent is invalid, by reason of the fact that, if the board $d'$ be construed, as it evidently must, as a board pivoted to the butt-adjuster, the combination is incomplete and inoperative, because the means by which it is held and controlled are not stated in the claim: and if the additional elements, namely, the arms $d^2$, $d^3$, and $d^4$, be read into it, it becomes the same as the twenty-first claim, and the novelty of the claim must be made to depend upon the peculiarities of the board $d$. Admitting that additional elements are necessary to render the device operative, it does not necessarily follow that the omission of these elements invalidates the claim, or that the precise elements described in the patent as rendering it operative must be read into the claim. If Steward were in fact the first to invent the pivotal extension to a butt-adjuster, he is entitled to a patent therefor, though the infringer may make use of other means than those employed by him to operate it. (*Webster Loom Company* v. *Higgins*, 21 O. G., 2031; C. D., 1882, 285; 105 U. S., 580, 584.) In such case any appropriate means for making it operative will be understood. Otherwise the infringer might take the most important part of a new invention and, by changing the method of adapting it to the machine to which it is an improvement, avoid the charge of infringement. The invention of a needle with the eye near the point is the basis of all the sewing-machines used; but the methods of operating such a needle are many, and if Howe had been obliged to make his own method a part of every claim in which the needle was an element, his patent would have been practically worthless. We think it sufficiently appears that Steward was the inventor of the pivoted extension described in the twentieth claim; that the claim is valid, and was infringed by the defendants.

We agree, however, that the defendants made use of a different method of adjusting this extension,





which is neither the same invented by Steward, nor a mechanical equivalent of the same. We hold, therefore, that the twenty-first claim was not infringed.

But for the reasons given above the decree of the court below must be *reversed, and the case remanded for further proceedings in conformity with this opinion.*

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## Supreme Court of the United States.

WARREN *et al. v.* KEEP.

*Decided December 3, 1894.*

MASTER'S REPORT—RULE OF ASCERTAINING PROFITS ON ARTICLE OF MANUFACTURE FOLLOWED.

It is no doubt well settled that where a patent is for a particular part of an existing machine it is not sufficient to ascertain the profits on the whole machine, but it must be shown what portion of the profits is due to the particular invention secured by the patent in suit. (*Blake* v. *Robertson*, 11 O. G., 877; 94 U. S., 728; *Dobson* v. *Hartford Carpet Co.*, 31 O. G., 787; 114 U. S., 120;) but it is equally true that where the patented invention is for a new article of manufacture, which is sold separately, the patentee is entitled to damages arising from the manufacture and sale of the entire article. (*Gould Manufacturing Co.* v. *Cowing*, 21 O. G., 1277; 105 U. S., 258; *Hurlbut* v. *Schillinger*, 47 O. G., 1067; 130 U. S., 456; *Crosby Valve Co.* v. *Safety Valve Co.*, 57 O. G., 1000; 141 U. S., 441.) The fact that another grate of the same kind was sold at the same time does not present any argument for lessening damages.

APPEAL from the Circuit Court of the United States for the Northern District of New York.

*Mr. Esek Cowen* for the appellants.

*Mr. N. Davenport* for the appellee.

Mr. Justice SHIRAS delivered the opinion of the Court.

On the 14th day of March, 1881, William I. Keep filed a bill of complaint in the Circuit Court of the United States for the Northern District of New York, against John Hobert Warren, Joseph W. Fuller, George A. Wells, and Walter P. Warren, alleging complainant's ownership of several Letters Patent and infringement by the defendants.

The subject-matter of the Letters Patent was certain devices and designs for base-burning stoves and stove-grates.

The case was put at issue by an answer and replication, but on the 20th day of March, 1883, a decree was entered by consent, declaring the validity of the Letters Patent set forth in the bill, and infringement by the defendants of some of them.

The decree directed that an account should be taken for profits and damages upon all the patents so declared to be infringed, but contained the following provision:

> That such gains, profits, damages, and accounting shall not apply to any stoves made or sold by said defendants before February 1, 1876, nor to any grates made or sold by said defendants before that date, except as to grates covered by said Letters Patent No. 139,583, and supplied by defendants after January 1, 1878, to stoves originally sold by them without such grates.

The master found that, between January 1, 1876, and January 1, 1882, the defendants sold grates upon which the profits amounted to $11,363.54, and that amount, with six cents' damages and costs, were awarded by the master to and in favor of the complainant.

Exceptions to this report were filed by the defendants, alleging that the evidence did not sustain the master in finding the number of the infringing grates sold by the defendants, nor in finding the amount of profits which the defendants had realized from the infringement.

The court below sustained an exception to the action of the master in allowing the sum of $348.00 as profits on four hundred grates, made and sold by the defendants between January 1, 1879, and July 1, 1879, but overruled the other exceptions, and entered a final decree in favor of the complainant for the sum of $10,510.86 with costs, from which decree the defendants appealed to this Court.

The first error insisted upon is that the evidence did not justify the master in finding the number of grates sold by the defendants during the six years over which the accounting extended. The defendants' contention is not that due effect was not given to the evidence adduced on their behalf, but that the plaintiff's evidence, consisting chiefly of the testimony of Keep himself, did not clearly establish the number of the infringing grates sold.

Our examination of this part of the subject has not enabled us to approve the defendants' contention. The master's action in restricting his finding to grates sold as separate and independent articles, and in excluding from the account all grates which were sold in or with a stove, was quite as favorable to the defendants as they had any right to claim. In finding the number of grates sold during the period in question, as separate articles, the master depended chiefly on the entries in the defendants' books, as testified to and explained on the part of the complainant by Keep, who had been engaged with the defendants for more than eight years, and claimed to be thoroughly acquainted with their methods of business, and, on the part of the defendants, by L. W. Drake, who was their assistant superintendent. There was a considerable amount of this evidence, and it was, to some extent, conflicting. The master acted in view of this evidence, and the court below concurred in his finding, except in some unimportant particulars. As no obvious error or mistake has been pointed out to us, their conclusions must be permitted to stand. (*Tilghman* v. *Proctor*, 43 O. G., 628; 125 U. S., 136; *Crawford* v. *Neal*, 144 U. S., 585; *Furrer* v. *Ferris*, 145 U. S., 132.)

Assuming that the number of infringing grates sold by the defendants was correctly found, we have next to consider whether the master erred in awarding to the complainant the entire profits made upon the grates so sold. The appellee's contention is that there was no evidence tending to show how much of the profits was due to the complainant's invention, and that hence he was entitled to recover nominal damages only. It is, no doubt, well settled that where a patent is for a particular part of an existing machine, it is not sufficient to ascertain the profits on the whole machine, but it must be shown what portion of the profits is due to the particular invention secured by the patent in suit. (*Blake* v. *Robertson*, 11 O. G., 877; 94 U. S., 728; *Dobson* v. *Hartford Carpet Co.*, 31 O. G., 787; 114 U. S., 120.) But it is equally true that, where the patented invention is for a new article of manufacture, which is sold separately, the patentee is en-

titled to damages arising from the manufacture and sale of the entire article. (*Gould Manufacturing Co.* v. *Cowing*, 21 O. G., 1277; 105 U. S., 258; *Hurlbut* v. *Schillinger*, 47 O. G., 1067; 130 U. S., 456; *Crosby Valve Co.* v. *Safety Valve Co.*, 57 O. G., 1000; 141 U. S., 441.)

The grates, on whose sale the master assessed profits, were not sold as an incident to any particular stove, but as an independent, marketable article, and the infringers must pay the entire profits realized from the sale thereof. The statement that, at this late day, there can be a grate, for use in ordinary stoves, which is entirely new, and patentable in all its parts and as an entirety, is somewhat surprising; but that is what we learn from this record. The patent infringed contains eight claims, of which seven are for the several parts of the grate, and the eighth for the entire device, and the defendants are precluded by the decree, to which they consented, from contending that the plaintiff is to be restricted, in his demand for damages, to any one feature or part of the grate.

It is further claimed that the master ought to have reported nominal damages only, because there was evidence before him to the effect that the defendants, at the time they made and sold the complainant's grate, likewise made and sold another kind of a grate, called the "Hathaway" grate, and that the same price was received for both kinds. From this it is said to follow that there was no advantage derived by the defendants from the manufacture and sale of the complainant's grate, above that which they would have received had they made and sold the Hathaway grate only. We do not think that the consequence suggested necessarily follows as matter of fact, nor that it has any relevancy as matter of law.

*Maury* v. *Whitney*, (14 Wall., 620,) and *Littlefield* v. *Perry*, (7 O. G., 964; 21 Wall., 205,) which are relied on by the defendants to sustain this contention, were both cases in which the patented features were so blended with other features not covered by the patent that it became necessary to inquire into what portion of the defendants' profits was due to the patented features, and to apportion the profits accordingly. Thus it was said in *Maury* v. *Whitney:*

> The patent is for an entire process, made up of several constituents. The patentee does not claim to have been the inventor of the constituents. The exclusive use of them singly is not secured to him. What is secured is their use when arranged in the process.

In *Littlefield* v. *Perry*, the patent was for certain improvements in cooking-stoves, and the court below, having found an infringement, decreed an account—

> of all the profits, gains, and advantages which the said defendants have received, or which have arisen or accrued to them, from the manufacture, use, or sale of stoves embracing the improvements described in and covered by the said Letters Patent.

This Court said:

> The decree is, as we think, too broad. * * * The order is to account for all profits received from the manufacture, etc., of stoves embracing the improvements covered by any of the patents. This would cover all the profits made upon a stove having in it any one of the improvements patented. The true inquiry is as to the profits which the defendants have realized as the consequence of the improper use of these improvements. Such profits belong to the plaintiff, and should be accounted for to him.

We think the court below was justified in saying:

> The complainant's grate was made and sold separately from stoves. Unquestionably it was intended for use in stoves; but so are many devices that may be the subject of distinct inventions. It was not sold for use in one pattern of stove alone; it could be used in many different stoves. Although in general appearance like other grates, it is so constructed that no part can be used upon any other grate, and no parts of other grates can be used upon it. Remove the patented features, and nothing remains. Although it is an improvement upon stoves, the complainant is not seeking to recover the profits upon the stoves, but upon the improvement only. The rule requiring that the profits arising from the patented features must be separated from those arising from the unpatented features has little application in a case where every feature is patented.

Finally, it is contended that the master and the court below erred in not allowing credit to the defendants for a manufacturer's profit.

We are relieved from considering what might be a problem of some difficulty, namely, when a complainant's damages are to be measured by the profits of the defendant, what credit should be allowed to the latter, as a mere agency for producing the patented article, for a so-called "manufacturer's profit," by the fact that the defendants, neither before the master nor in the court below, made any claim for such an allowance, or offered any evidence by which it could be estimated. The complainant testified as to the cost of making the grates, and stated that he included in his estimate of the cost a manufacturer's profit. As no countervailing evidence was put in by the defendants and no specific exception was made to the master's calculations, that he made no allowance for a manufacturer's profit, we think there is no foundation on which to base such a claim now.

The decree of the circuit court is affirmed.

## U. S. Circuit Court—Southern District of New York.

### HOSTETTER COMPANY *v.* VAN VORST.

*Decided June 29, 1894.*

TRADE-MARKS—HOSTETTER'S BITTERS—INFRINGEMENT.

Selling an imitation, as such, without any suggestion or arrangement that it be sold again for the genuine article, although with assent to such suggestions from others, does not infringe the right of the manufacturer of the genuine.

THIS was a suit by the Hostetter Company against John Van Vorst for infringement of a Trade-Mark.

*Mr. James Watson* and *Mr. Albert H. Clarke* for the complainant.

*Mr. Patrick H. Loftus* for the defendant.

WHEELER, *J.:*

This suit is brought for the alleged selling, or procuring to be sold, of an imitation produced by the defendant as the genuine Hostetter's Bitters of the plaintiff. This is denied, and the principal question is whether this allegation is proved. (*Hostetter Co.* v. *Fries*, 17 Fed. Rep., 620; 21 Blatchf., 339; *Hostetter Co.* v. *Brueggeman, etc., Co.*, 46 Fed. Rep., 188.) The evidence shows well enough that the defendant sells the imitation as such, and that he would sell it to others, to be by them sold again for the genuine, if they would. It does not show any suggestion from him that it could be nor any arrangement by him that it should be so sold, but only his assent to suggestions that it might be. The selling of the imitation, as such, does not infringe upon the right of the plaintiff that it should not be sold as the genuine. The defendant owes no duty of preventing such sales. He is only bound not to make, or, at most, not to encourage, them. The proofs do not show encouragement even of them, and so fall short of sustaining this allegation and of entitling the plaintiff to relief. The conduct of the defendant, however, so invited this litigation that he ought not, in equity, to have costs.

Bill dismissed, without costs.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 69.—No. 13. TUESDAY, DECEMBER 25, 1894. PRICE—$5 per year.

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## Withdrawal of Guatemala from the International Union for the Protection of Industrial Property.

By a note dated November 8, 1894, addressed to the Swiss Federal Council, the Guatemalan Legation at Paris has, in the name of its government, renounced the convention of March 20, 1883, for the protection of industrial property.

By the terms of the convention it will remain in force in Guatemala for a year from the date of renunciation—to wit, until November 8, 1895.

(Signed) JOHN S. SEYMOUR,
*Commissioner.*

## Order in Relation to Drawings.

NOTICE.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January 25, 1894.*

Order No. 980, respecting the alteration of drawings, was published in the OFFICIAL GAZETTE of December 19, 1893, (65 O. G., 1771,) by mistake, and was never in force. The following is the only order in force upon that subject:

(ORDER No. 986.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., January 25, 1894.*

**Erasures or other alterations of drawings will not be made or permitted, except in compliance with this order.**

**Applicants are requested to furnish, with their originals, a blue print or other photographic copy of all drawings forming part of an application, and where this is done, the original drawings may be taken to the Attorneys' room, but not otherwise.**

**Before making a requirement to alter an original drawing the Examiner will formally make the blue print or other copy a part of the files, and in case no such copy has been furnished by the applicant, the Office will make such copy without charge, and** thereupon the required alteration may be made by the applicant, under the direction of the Examiner and subject to his approval or, upon request, it will be made by the Office at the expense of the applicant.

The requirement to make alterations in original drawings will be made in writing, and the applicant's response must also be in writing, and in such case the copy of the drawing, the requirement to alter, and the applicant's response will form part of the record.

Action by the Office on the merits will not be suspended pending the change of a drawing, if the invention claimed may be understood by the Examiner.

For the purposes of this order the Office, upon the request of applicants, will make blue prints at the charge of five cents a sheet.

In appeal cases and upon the declaration of an interference a blue print or other copy will be sent forward with the files, the Examiner retaining the original drawings in his room until the hearing.

Except as herein required such blue print or other copy will not be made a part of the file, and may not be preserved after an application passes into a patent.

JOHN S. SEYMOUR,
*Commissioner.*

PHOTOGRAPHIC COPIES OF DRAWINGS.

A photographic outfit has been added to the equipment of the Patent Office, and positive photographic copies of any drawing, foreign or domestic, in the possession of the Office, will be furnished upon application to parties entitled thereto, at the following rates:

Size 10x15 inches. ..... 25 cents per sheet.
Size 7x11 inches. ..... 15 cents per sheet.
Size 5x8 inches. ..... 5 cents per sheet.

If a copy of the drawings in a pending application of the size 5x8 inches be ordered sent to any address, two copies must be ordered, as one copy is always retained by the Office and placed in the file for the purposes specified in the above Order No. 986, of January 25, 1894.

In ordering copies of foreign drawings, the examining division, the class, and sub-class where such drawings may be found, must be given.

Coupons will be received in payment of the above fees.

## Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $10; single copies, 10 cents, if mailed to foreign countries 10 cents additional for postage; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

## Issue of December 25, 1894.

| | |
|---|---|
| Patents | 327—No. 531,292 to No. 531,618, inclusive. |
| Designs | 38—No 23,881 to No. 24,921, inclusive. |
| Trade-Marks | 58—No. 25,699 to No. 25,756, inclusive. |
| Labels | None. |
| Prints | None. |
| Reissues | 1—No. 11,460. |
| Total issue | 424 |

TO CITIZENS OF THE UNITED STATES.

| States | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | 5 | .... | New Hampshire | 2 | .... |
| Arizona Territory | .... | .... | New Jersey | 30 | 3 |
| Arkansas | .... | .... | New Mexico Ter | .... | .... |
| California | 7 | 8 | New York | 65 | 20 |
| Colorado | 6 | .... | North Carolina | 1 | .... |
| Connecticut | 10 | .... | North Dakota | 1 | .... |
| Delaware | .... | .... | Ohio | 30 | 1 |
| District of Columbia | 2 | 1 | Oklahoma Ter | .... | .... |
| Florida | .... | .... | Oregon | 2 | .... |
| Georgia | 3 | .... | Pennsylvania | 33 | 2 |
| Idaho | .... | .... | Rhode Island | 2 | .... |
| Illinois | 27 | 5 | South Carolina | 1 | 1 |
| Indiana | 13 | .... | South Dakota | 2 | .... |
| Indian Territory | .... | .... | Tennessee | .... | .... |
| Iowa | 4 | 1 | Texas | 7 | .... |
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| Kentucky | 4 | 1 | Vermont | 1 | .... |
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| Maine | 4 | .... | Washington | 2 | .... |
| Maryland | 2 | 1 | West Virginia | 1 | .... |
| Massachusetts | 28 | 3 | Wisconsin | 8 | .... |
| Michigan | 11 | 1 | Wyoming | .... | .... |
| Minnesota | 2 | .... | U. S. Army | .... | .... |
| Mississippi | 1 | .... | U. S. Navy | .... | .... |
| Missouri | 14 | 1 | | | |
| Montana | 2 | .... | Total to citizens of the United States | 325 | 50 |
| Nebraska | 4 | .... | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Argentine Republic | .... | .... | Italy | .... | .... |
| Austria-Hungary | .... | .... | Mexico | .... | .... |
| Belgium | .... | 1 | Netherlands | .... | .... |
| Bermuda | .... | .... | New South Wales | 1 | .... |
| Brazil | .... | .... | New Zealand | .... | .... |
| Canada | 4 | .... | Norway | .... | .... |
| Chile, Republic of | .... | .... | Queensland | .... | .... |
| China | .... | .... | Russia | .... | .... |
| Cuba | .... | .... | Scotland | .... | .... |
| Denmark | .... | .... | Servia | .... | .... |
| England | 14 | 4 | South Australia | .... | .... |
| Finland | 1 | .... | Sweden | .... | .... |
| France | 5 | 1 | Switzerland | .... | .... |
| Germany | 4 | 2 | Victoria | .... | .... |
| Guatemala | .... | .... | | | |
| Hawaii | 1 | .... | Total to citizens of foreign countries | 30 | 8 |
| Ireland | .... | .... | | | |

## APPLICATIONS UNDER EXAMINATION.

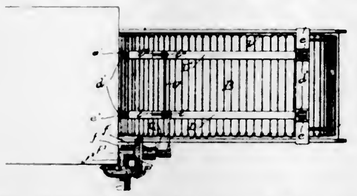
*Condition at Close of Business December* 18, 1894.

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | Nov. 26 | Dec. 17 | 77 |
| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting, and Leather Working Machinery. | Nov. 19 | Dec. 17 | 139 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | Nov. 21 | Dec. 15 | 54 |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Nov. 21 | Dec. 15 | 70 |
| 8 | Furniture, Beds, Store Furniture, etc. | Nov. 20 | Dec. 13 | 179 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire-Escapes and Ladders, etc. | Dec. 5 | Dec. 12 | 57 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Nov. 20 | Dec. 12 | 101 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signalling. | Nov. 21 | Dec. 11 | 65 |
| 29 | Wood-Working Machines, Carpentry, Coopering and Roofing, etc. | Nov. 21 | Dec. 10 | 121 |
| 12 | Mechanical Engineering, Steam Service, etc. | Nov. 19 | Dec. 10 | 99 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Nov. 19 | Dec. 10 | 100 |
| 2 | Farm Stock, Products, etc | Nov. 19 | Dec. 10 | 109 |
| 3 | Metallurgy, Metal-Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | Nov. 20 | Dec. 8 | 85 |
| 26 | Electricity, Generation, Distribution, Motive Power, Electric Railways, etc. | Nov. 21 | Dec. 6 | 51 |
| 10 | Carriages and Wagons | Nov. 20 | Dec. 3 | 147 |
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| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Nov. 10 | Dec. 1 | 158 |
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| 24 | Sewing-Machines, Crinoline and Corsets, Apparel, and Toilet. | Nov. 5 | Nov. 23 | 109 |
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| | *Under one month in arrears.* | | | |
| | Designs | Dec. 13 | Dec 15 | 54 |
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# PATENTS

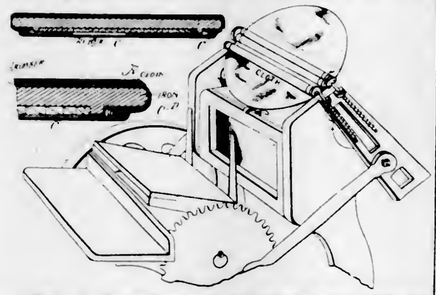
## GRANTED DECEMBER 25, 1894.

**531,292. SEPARATOR FOR CORN-SHELLERS.** JOHN Q. ADAMS, Marseilles, Ill. Filed July 30, 1894. Serial No. 519,041. (No model.)



*Claim.*—In a corn sheller, a cob rake, in combination with rock shafts, D, D', mounted above and lengthwise of the cob rake, a right angled bracket, F, provided with journal bearings, $f^2$, $f^3$, $f^4$, $f^5$, arranged on its right angled plates as described, crank shaft, G, mounted in the bearings, $f^3$, $f^5$, and having beveled gear, $g$, fixed thereon, shaft, H, mounted in bearings, $f^2$, $f^4$, and having a beveled gear, $h'$, fixed thereon, connecting devices between the crank of the crank shaft and the said rock shafts, and driving mechanism for rotating the gear, $h'$, substantially as described.

**531,293. DISK-COVER FOR JOB-PRINTING PRESSES.** CHARLES E. ADAMSON, Muncie, Ind. Filed Jan. 8, 1894. Serial No. 496,178. (No model.)



*Claim.*—1. The combination with the ink distributing disk of a printing press, of a detachable cover having an ink retaining outer surface and means for securing the cover to the disk, substantially as described.

2. The combination with the ink distributing disk of a printing press, of a detachable flexible cover having an ink retaining outer surface and a band on its periphery for securing the cover to the disk substantially as described.

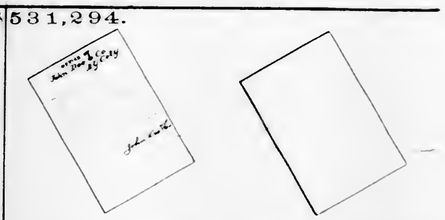
3. The combination with the ink distributing disk of a printing press, of a detachable flexible cover having an ink retaining outer surface, an impervious lining and means for securing the cover to the disk, substantially as described.

4. The combination with the ink distributing disk of a printing press, of a detachable impervious cover having an ink retaining surface and means for securing the cover to the disk, substantially as described.

**531,294. METHOD OF AND APPARATUS FOR PRODUCING COPIED EFFECT ON PRINTED MATTER.** CHARLES E. ADAMSON, Muncie, Ind. Filed Aug. 29, 1894. Serial No. 521,611. (No model.)

*Claim.*—A method for producing a copied effect on printed matter consisting, first in rolling the printed sheets with a dampened roller having an ink absorbing and retaining surface and finally rolling the roller over a dampening pad made of a greater ink absorbing and retaining surface for supplying moisture to and removing the ink stains from the said roller, substantially as described.

**531,294.**



**531,295. ATTACHMENT FOR HAND-RAKES.** WILLIAM ASHBY, Lafayette, Ind. Filed Mar. 31, 1894. Serial No. 505,837. (No model.)



*Claim.*—1. An attachment to hand or garden rakes, consisting of a suitable frame having spring arms with hooks at their ends, a plate for attachment to the handle of the rake and provided with guides and seats for the arms, substantially as and for the purpose described.

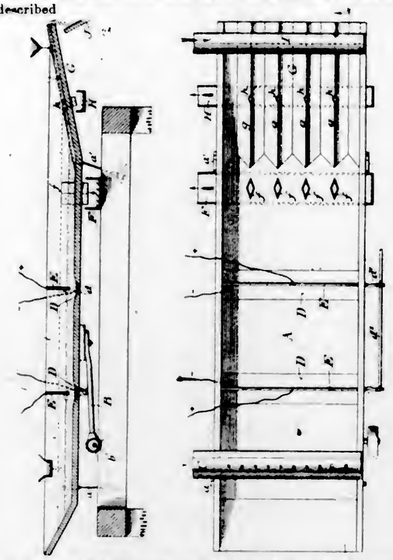
2. An attachment to hand or garden rakes, consisting of a spring wire frame of any suitable form having arms which terminate in hooks, a clamping plate connected to the handle of the rake and provided with guides for said hooks and seats for the arms, and coiled springs encircling the arms between the hooks thereof and the seats upon the plate, substantially as and for the purpose set forth.

**531,296. AMALGAMATOR AND SEPARATOR.** JOHN W. BAILEY, Denver, Colo. Filed Mar. 1, 1894. Serial No. 501,937. (No model.)

*Claim.*—1. An amalgamator consisting of a frame with means for imparting thereto continuous, rapid, longitudinal vibration, and transverse troughs filled with mercury in the bottom of the frame, said troughs having sloping sides and being so constructed as to oppose only inclined surfaces to the rolling motion of the mercury, substantially as described.

2. An amalgamator consisting of a frame with means for imparting thereto continuous, rapid, longitudinal vibration; transverse troughs filled with mercury in the bottom of said frame; corre-

sponding transverse metal bars situated above each of the mercury troughs, and electrical connections whereby each mass of mercury is constituted a cathode and each metal bar an anode, substantially as described



3. An amalgamator consisting of a frame with means for imparting thereto continuous, rapid, longitudinal vibration; transverse troughs filled with mercury in the bottom of said frame; corresponding transverse metal bars situated above each of the mercury troughs; electrical connections whereby each mass of mercury is constituted a cathode and each metal bar an anode; and a series of pipes standing up through the bottom of the frame to the level of the water in the frame, substantially as described.

4. A concentrator consisting of a frame with means for imparting thereto continuous, rapid, longitudinal vibration; a gently inclined discharge end having longitudinal corrugations; and a series of openings at the points where the crests of the corrugations cross the water level, substantially as described.

5. A concentrator consisting of a frame with means for imparting thereto continuous, rapid, longitudinal, vibration; a gently inclined discharge end having longitudinal corrugations; a series of openings at the points where the crests of the corrugations cross the water level; and a drip box above the series of openings, substantially as described.

6. A concentrator consisting of a frame with means for imparting thereto continuous, rapid, longitudinal vibration; a series of pipes standing up through the bottom of the frame to the level of the water in the frame; a gently inclined discharge end having longitudinal corrugations; and a series of openings at the points where the crests of the corrugations cross the water level, substantially as described.

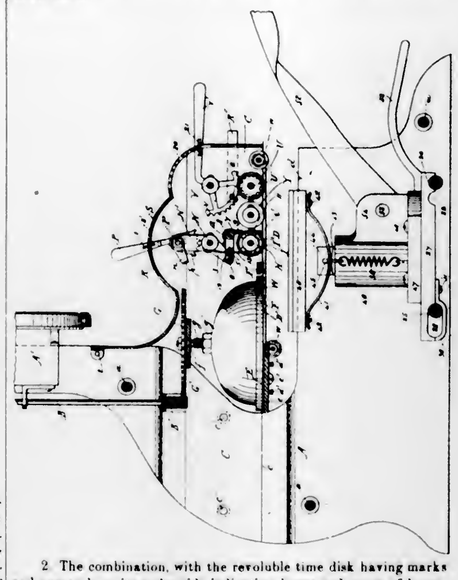
7. A concentrator consisting of a frame with means for imparting thereto continuous, rapid, longitudinal vibration; a series of pipes standing up through the bottom of the frame to the level of the water in the frame; a gently inclined discharge end having longitudinal corrugations; a series of openings at the points where the crests of the corrugations cross the water level; and a drip box above this series of openings whereby the light material is removed, substantially as described.

8. A combined amalgamator and concentrator consisting of a suitable frame having one or more sloping edges; suitable receptacles filled with mercury in the bottom of the frame; metal bars above each of said mercury receptacles; electrical connections whereby each mass of mercury is constituted a cathode and each metal bar an anode; and means for imparting to said frame continuous vibratory motion which imparts a rolling motion to the mercury during the process of amalgamation, and which at the same time effects the concentration of the stock by driving the tailings over the sloping edges of the frame, substantially as described.

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**531,297. TIME-STAMP. EDWARD P. BAIRD and FRANK NASH, Plattsburg, N. Y.; said Nash assignor to said Baird. Filed Mar. 17, 1894. Serial No. 504,053. (No model.)**

*Claim.*—1. The combination, with the main frame of the stamp provided with horizontal portions *d*, and horizontal grooves *e* in its side plates; of the carrier for the stamp wheels consisting of vertical plates braced together and secured at one end in the said grooves, a space D being formed between the portions *d* and the under side of the carrier for the insertion of the paper to be stamped, substantially as set forth.



2. The combination, with the revoluble time disk having marks and numerals on its under side indicating hours and parts of hours, the time disk shaft, and bearings for the said shaft above and below the time disk; of a toothed wheel secured on the top of the said shaft, the shaft B journaled parallel with the aforesaid shaft, the toothed pinion secured on the shaft B and gearing into the said wheel, a clock, and the two intergearing beveled toothed wheels secured on the shaft B and on the minutes-hand arbor of the said clock respectively, substantially as set forth.

3. The combination, with the revoluble time disk having numerals and letters on its under side and a substantially concavo-convex upper portion; of a vertical shaft secured to the said time disk, bearings for the said shaft above and below the time disk, and means for revolving the time disk, such as a toothed wheel, secured on the said shaft, substantially as set forth.

4. The combination, with the side plates of the carrier, and the stationary disk E provided with a flange secured to the under sides of the said plates; of the revoluble time disk encircling the disk E and provided with a substantially concavo-convex upper portion, the plate G' secured to the upper sides of the said plates, a vertical shaft secured to the time disk, supported by the disk E, and journaled in the plate G'; and means for revolving the time disk, such as a toothed wheel, secured on the said shaft, substantially as set forth.

5. The combination, with the shaft H, and the tens wheel i journaled thereon and provided with laterally projecting pins *i'*; of the shaft N, the collar *p* secured on the shaft N and provided with the arms 3 and 4, the lever 5 pivoted to the arm 3 and provided with a hole 19, the spring-pressed pawl 7 pivoted to the end of the lever 5 and engaging with the pins *i'*, the tumbler 14 pivoted to the arm 4 and provided with the pin 18 engaging with the said hole 19, and a laterally projecting pin 16; the spring 13 pressing against the pins *i'*; and an oscillatory operating plate journaled on the shaft N and provided with the pins 17 and 17' for striking the said pin 16, and thereby turning the said tens wheel, substantially as set forth.

6. The combination, with the shaft H, and the units wheel J and toothed pinion J' secured together and journaled on the said shaft; of the tens wheel *i* also journaled on the said shaft and provided with laterally projecting pins; the shaft N, the oscillatory operating plate Q journaled on the shaft N and provided with a toothed segment gearing into the pinion J', and the laterally projecting pins 17 and 17'; the stationary spring 13 and the spring pawl 2 engaging with the pins *i'* and with the teeth of the pinion J' respectively; and intermediate trip mechanism substantially as set forth, operated by the said pins 17 and 17' and provided with a pawl for engaging the said pins *i'*, whereby the tens wheel is operated when the units wheel has been turned to print its highest numeral, substantially as set forth.

7. The combination, with the main frame, the carrier secured to the main frame, and the stamp wheels provided with operating levers and supported by the carrier substantially as set forth; of a cover plate pivoted at one end to the said main frame and provided with slots through which the said operating levers protrude; and spring catches for securing the other end of the cover plate to the carrier, substantially as set forth.

8. The combination, with the main frame provided with transverse bars; and a series of printing devices supported face downward over the said bars, of a plate movable on the said bars and provided with notches engaging with them; and a vertically movable platen carried by the said plate and operating to cause all or only a part of the printing devices to print simultaneously according to the position of the said movable plate on the said bars, substantially as set forth.

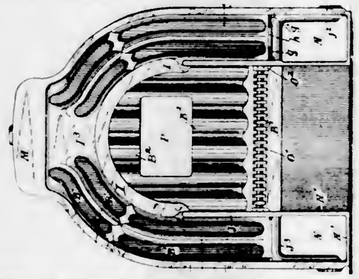
9. The combination, with the main frame provided with two transverse bars; of a movable plate for supporting the platen, said plate being provided with a broad groove engaging one of the said bars, and narrow grooves adapted to engage with the other said bar; and a hooked plate secured to the said movable plate and engaging with the bar in the broad groove, substantially as set forth.

10. The combination, with the platen, and the concavo-convex plate secured to its under side; of the piston provided with a tongue passing through a hole in the said plate, the piston cylinder, the pivoted hand lever for raising the piston, and springs normally holding the platen depressed and permitting it to be self-adjusting when raised, substantially as set forth.

11. The combination, with the platen, and the concavo-convex plate secured to its under side; of the piston provided with a tongue passing through a hole in the said plate; and a forked lower end provided with a roller; the piston cylinder provided with a bottom flange and lugs upon one side; the springs attached to the said flange and to the said plate, and a hand lever pivoted to the said lugs and projecting under the said roller, substantially as set forth.

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**531,298. STEAM OR HOT-WATER HEATING-BOILER. LAWRENCE R. BLACKMORE, Newark, N. J. Filed May 24, 1894. Serial No. 512,249. (No model.)**



*Claim.*—1. In a vertical sectional boiler, a flat section having a series of three or more water arches, the said arches being successively of greater thickness from the inner to the outer arch, substantially as herein set forth.

2. In a vertical sectional boiler, a flat section having a series of three or more water arches, the said arches being successively of greater thickness from the inner to the outer arch, and connected at the top by a circulating chamber, and above the bases of the arches by a transverse connecting passage, as herein set forth.

3. In a vertical sectional boiler, a flat section having a series of three or more water arches, the said arches being successively of greater thickness from the inner to the outer arch, and connected at the top by a circulating chamber and above the bases of the arches by a transverse water connection of less thickness than the arches, as herein set forth.

4. In a vertical sectional boiler, a flat section having a series of water arches, the said arches being successively of greater thickness from the inner to the outer arch, and connected at the top by a circulating chamber and above the bases of the arches by a transverse water connection of less thickness than the arches, the water chamber and the transverse connection being of graduated thickness and increasing in thickness toward the outer arch, as herein set forth.

5. In a vertical sectional boiler, a flat section having a series of water arches, the said arches being successively of greater thickness from the inner to the outer arch, and each of the arches being sloped outwardly upon its inner side to expose an inclined surface to the direct heat rays, as herein set forth.



6. In a vertical sectional boiler, a flat section having a series of water arches, the said arches being successively of greater thickness from the inner to the outer arch, the inner arch being of wedge shape adjacent to the furnace and the adjoining arch of oval form transversely, as herein set forth.

7. In a vertical sectional boiler, an integral flat section having a series of three or more water arches with independent water legs extended downward therefrom at the sides of the furnace, substantially as set forth.

8. In a vertical sectional boiler, an integral flat section having a series of three or more water arches with independent water legs extended downward therefrom at the sides of the furnace, and connected at the top, bottom, and one or more intermediate points by transverse circulating passages or connections, substantially as herein set forth.

9. In a vertical sectional boiler, an integral flat section having a series of three or more water arches with independent water legs extended downward therefrom at the sides of the furnace and connected at the top, bottom, and one or more intermediate points by transverse circulating connections of less thickness than the section, as and for the purpose set forth.

10. In a vertical sectional boiler, an integral flat section having a series of three or more water arches with independent water legs extended downward therefrom, the said arches being successively of greater thickness from the inner to the outer arch, and the arches and water legs being connected at the top, bottom, and one or more intermediate points by transverse circulating connections of less thickness than the section, as and for the purpose set forth.

11. In a vertical sectional boiler, an integral flat section having a series of three or more arches with independent water legs extended downward therefrom at the sides of the furnace, the arches being connected at the top by a circulating chamber and the water legs at the bottom having a transverse water connection of less thickness than the section with a discharge flue in the section below such transverse connection, substantially as herein set forth.

12. In a vertical sectional boiler, an integral flat section having a series of three or more water arches with independent water legs extended downward therefrom at the sides of the furnace, the inner and outer water legs being of the same thickness as the section, the inner and middle arches being connected at the top by a circulating chamber, and the water legs at the bottom having a transverse water connection of less thickness than the section with a discharge flue in the section below such transverse connection, substantially as herein set forth.

13. In a vertical sectional boiler, an integral flat section having a series of three or more water arches with independent water legs extended downward therefrom at the sides of the furnace, the inner and outer water legs being of the same thickness as the section, the inner and middle arches and the middle water leg being of less thickness, the arches being connected at the top by a circulating chamber, and the water legs having a transverse water connection and a discharge flue below the level of the grate, and the outer water legs being extended down the outer side of such discharge flue, and provided with a pipe inlet, as herein set forth.

14. A vertical sectional boiler composed of a series of flat sections secured together, and comprising a series of arches with intermediate smoke passages over the furnace, a series of diving flues at the sides of the furnace, a discharge flue at the bottom of the section at each side of the boiler connected by passages between the sections with such diving flues, and a smoke box for connecting the rear ends of such discharge flues with the smoke pipe, substantially as herein set forth.

15. A vertical sectional boiler composed of a series of flat sections secured together, and comprising several series of arches with intermediate smoke passages over the furnace, a series of diving flues at the sides of the furnace, a discharge flue at the bottom of the section at each side of the boiler connected by passages between the sections with such diving flues, a rear section formed with a direct draft outlet at the under side of the arches, and smoke passages connecting with the bottom discharge flues, and a detachable smoke box upon the outer side of the rear section with passages to connect the discharge flues and the direct draft outlet with a smoke pipe, and the direct draft outlet having a damper to close the same at pleasure to throw the smoke into the diving flues, substantially as set forth.

16. A vertical sectional boiler composed of a series of flat sections secured together, and comprising several series of arches with intermediate smoke passages over the furnace, a series of diving flues at the sides of the furnace, a discharge flue at the bottom of the section at each side of the boiler connected by passages between the sections with such diving flues, a rear section formed with a direct draft outlet at the under side of the arches, and smoke passages connecting with the bottom discharge flues, and a smoke box connecting the two discharge flues and the direct draft outlet with a smoke pipe, as herein set forth.

17. In a vertical sectional boiler having the intermediate sections formed with a series of arches, and independent water legs extended downward therefrom, a rear section having a water plate B' with the half arches I, I', I³ formed upon the inner side thereof, substantially as herein set forth.

18. In a vertical sectional boiler having the intermediate sections formed with a series of arches, and independent water legs extended downward therefrom, a rear section having a water plate B' with the half arches I, I', I³ formed upon the inner side thereof, and making a single chamber with the water space within the plate, substantially as set forth.

19. A vertical sectional boiler having the intermediate sections formed with a series of arches, and independent water legs extended downward therefrom, with the inner water legs of the same thickness as the section to form diving flues, passages through the section below the water legs to form continuous discharge flues, with vertical smoke passages into the diving flues, a rear section having the flat plate with the half arches I, I', I³ formed upon the inner side thereof corresponding to the intermediate sections and having the direct draft outlet P, the bottom smoke passages and the transverse water connections J³ to restrict the downward movement of the smoke from the diving flues, substantially as herein set forth.

20. A vertical sectional boiler composed of a series of flat sections secured together, and comprising a series of arches with intermediate smoke passages over the furnace, a series of diving flues at the sides of the furnace, a discharge flue at the bottom of the section at each side of the boiler, graduated passages between the sections from the bottoms of the diving flues into the discharge flues to circulate the smoke and gases between the front sections, and a smoke box for connecting the rear ends of such discharge flues with the smoke pipe, substantially as herein set forth.

21. A vertical sectional boiler composed of a series of flat sections secured together, and comprising a series of arches with intermediate smoke passages over the furnace, a series of diving flues at the sides of the furnace, a discharge flue at the bottom of the section at each side of the boiler connected by passages between the sections with such diving flues, throttle plates applied to such passages with apertures adapted to circulate the smoke and gases between the front sections, and a smoke box for connecting the rear ends of such discharge flues with the smoke pipe, substantially as herein set forth.

22. A vertical sectional boiler composed of a series of flat sections secured together, and comprising a series of arches with intermediate smoke passages over the furnace, a series of diving flues at the sides of the furnace, a discharge flue at the bottom of the section at each side of the boiler connected by passages between the sections with such diving flues, the sides of the passage being formed with ribs, and removable plates supported on such ribs and formed with apertures graduated as set forth, to circulate the smoke and gases between the front sections, and a smoke box for connecting the rear ends of such discharge flues with the smoke pipe, substantially as herein set forth.

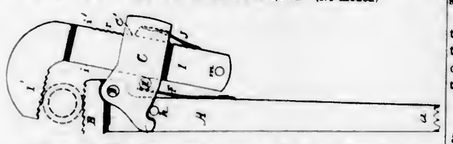
23. In a vertical sectional boiler, a flat section having a series of water arches formed successively of greater thickness from the inner to the outer arch, and connected at the top by the circulating chamber I³ tapered downwardly in conformity with the width of the several arches, substantially as set forth.

24. In a vertical sectional boiler, a flat section having a series of water arches formed successively of greater thickness from the inner to the outer arch, and connected at the top by the circulating chamber I³ having the steam chamber M extended upward from the same, substantially as set forth.

25. In a vertical sectional boiler, a flat section having a series of water arches formed successively of greater thickness from the inner to the outer arch, and connected at the top by the circulating chamber I³ having the steam chamber M extended upward from the same, and provided at the sides with the recesses M' to admit the gases for heating such steam chamber, substantially as set forth.

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**531,299. PIPE-WRENCH.** WILLIAM A. BLAISDELL, Worcester, Mass. Filed Oct. 4, 1894. Serial No. 524,854. (No model.)

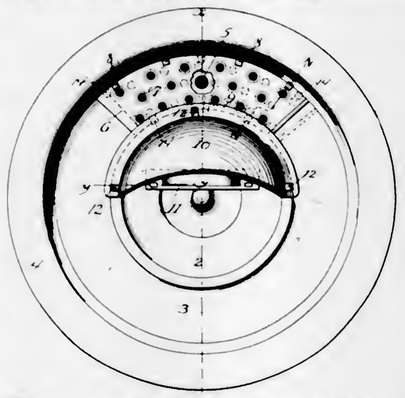


*Claim.*—1. The pipe-wrench constructed as herein described, comprising the hand-bar having the jaw on its end, the swing-piece pivotally connected to the rearward portion of said hand-bar adjacent to said jaw, said swing-piece having its two sides joined at the outer end and internally provided, at its upper part, with the transversely-disposed inwardly projecting lug, and at its lower part with the transverse bearing-pin, the rectangular endwise adjusting bar extending through the swing-piece between said lug and bearing-pin and carrying the outer jaw, the bar-spring giving outward pressure against said bearing-pin, and a spring secured within the outer end of said swing-piece, its free end downwardly extended, resting against and giving inward pressure upon the back of said adjusting-bar, all substantially as set forth.

2. In a pipe-wrench of the character described; the hollow swing-piece having the solid outer end and provided at its upper part with an internal lug C', the bearing-pin E across the lower central part, and the guard or hooked portion e at the inner end of its side, in combination with the hand-bar having the jaw B, the pivot-pin D passing through the upper part of said swing-piece and the rearward portion of the bar, the stud A projecting from the side of the hand-bar and adapted for engaging with said guard to limit the upward movement of said swing-piece; the endwise adjusting jaw-carrying-bar arranged through said swing-piece between said bearing-pin E and the lug C,' its edges i i' engaged and clamped thereby, the springs F that normally elevate said swing-piece bringing its guard against said stud A, and the spring J fixed within the outer end of the swing-piece, below said lug C', its lower end acting against the back of said jaw-carrying-bar, all substantially as shown and for the purpose set forth.

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**531,300. COMBINED KETTLE-COVER, STRAINER, AND STEAM-GUARD.** JAMES M. BENSON and JOHN E. BERGLIN, Minneapolis, Minn. Filed May 22, 1894. Serial No. 512,067. (No model.)



*Claim.*—1. In a device of the class described, the combination with the lid, provided with holes 5, of the curved and conforming slide 6 having holes 7, and provided on the top of the lid, and the wire fabric screen slide supported on the under side of the lid and covering the holes therein, substantially as described.

2. The combination, in a device of the class described, of the lid, provided with the section having the holes 5, with the curved and conforming sheet metal slide 6 having holes 7, the steam guard 10 provided with the flange 9 beneath which the curved edge of said slide is retained and the struck-up lugs for retaining the lower edge of said slide, substantially as described.

3. The combination, with the lid, provided with the wide peripheral flange, and having the section provided with the holes 5, of the up and down-struck lugs provided at opposite edges of said perforated section, the sheet metal slide 6 having holes 7 smaller than those in the lid and having its lower edge retained by the struck-up lugs, the curved steam guard 10 having the flange 9 retaining the inner edge of said slide, and the framed screen slide held by the down-struck lugs, substantially as described.

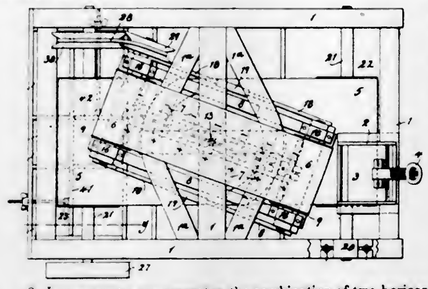
4. The combination, with the lid, having the perforated sections, the means for closing the holes therein, the curved steam guard on the top of the lid and opposite the perforated section, and the handle of the lid arranged beneath said guard and forward of the center of the lid, substantially as and for the purpose specified.

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**531,301. MAGNETIC-ORE SEPARATOR.** CHARLES G. BUCHANAN, New York, N. Y. Filed May 12, 1893. Serial No. 474,035. (No model.)

*Claim.*—1. A magnetic ore separator constructed with a carrier belt, an opposing belt moving obliquely thereto, and a series of magnets whose poles face the oblique belt, all arranged substantially as described, whereby the conjoint action of the belts and magnets will cause the magnetic particles to be alternately lifted from the carrier belt to the oblique belt and be dropped therefrom to the carrier belt as said particles are carried by the two belts through the fields of force of the successive magnets during traverse of ore through the machine, as herein set forth.





2. In a magnetic ore separator, the combination of two horizontal moving belts occupying parallel horizontal planes and whose direction of motion is oblique to each other, and means for varying the angle included between the respective axes of movement of the two belts

3. A magnetic ore separator constructed with a carrier belt, a second belt arranged with its lower traveling side above and obliquely to the carrier belt, and a series of magnets arranged in the bight of the upper belt with their poles facing the lower side thereof, substantially as described, whereby the conjoint action of the belts and magnets causes the oblique belt to draw the lifted particles out of the field of each magnet, while the carrier belt draws the dropped particles into the field of the next succeeding magnet, as herein set forth.

4. A magnetic ore separator comprising a carrier belt, an opposing belt traveling obliquely thereto and adjustable to different angles relatively to the carrier belt, and magnets next the oblique belt, substantially as described.

5. A magnetic ore separator comprising a carrier belt, an opposing belt traveling obliquely thereto, and a series of independent magnets next the oblique belt and coinciding in direction therewith, said belts being relatively adjustable to bring their opposing sides nearer to or farther from each other, substantially as described.

6. A magnetic ore separator constructed with a carrier belt, an opposing belt moving obliquely thereto, and a series of magnets whose poles face the oblique belt, said magnets adapted for adjustment to and from each other, and all arranged substantially as described, whereby the conjoint action of the belts and magnets will cause the magnetic particles to be alternately lifted from the carrier belt to the oblique belt and be dropped therefrom to the carrier belt as the particles are carried by the two belts through the fields of force of the successive magnets, and whereby also the degree or extent of isolation of the magnetic fields may be controlled by relative adjustment of the magnets, as herein set forth.

7. A magnetic ore separator comprising a carrier belt, a device feeding ore but part way across said belt, an opposing belt traveling obliquely to the carrier belt, and magnets next the oblique belt, substantially as described.

8. In a magnetic ore separator, the combination with a main frame, a carrier belt thereon, an upper auxiliary frame swiveled to the main frame, an oblique traveling belt on the upper frame, and magnets on said swiveled frame next the oblique belt, substantially as described.

9. In a magnetic ore separator, the combination with a main frame, a carrier belt thereon running at the discharge end over a magnetic roll, a device feeding ore but part way across the belt, an upper auxiliary frame swiveled to the main frame, an oblique traveling belt on the upper frame, and magnets on said swiveled frame next the oblique belt, substantially as described.

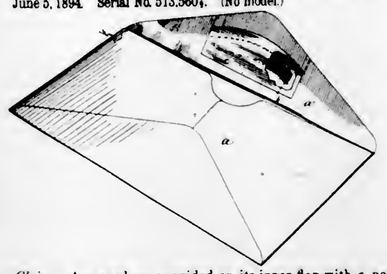
10. The combination in a magnetic ore separator, of a main frame 1, a carrier belt 5 thereon, an upper frame 8 swiveled to the main frame, drums 9, 9, and rollers 10, 10 on the frame 8, said rollers 10 being held to pivoted arms 17 connected by devices 18, 19; a belt 6 on the parts 9, 10, and magnets 7 on the frame 8 facing the belt 6, substantially as described.

11. The combination in a magnetic ore separator, of a main frame 1, a carrier belt 5 thereon, an upper frame 8 swiveled to the main frame, drums 9, 9, and rollers 10, 10 on the frame 8, said rollers 10 being held to pivoted arms 17 connected by devices 18, 19; a belt 6 on the parts 9, 10, magnets 7 on the frame 8 facing the belt 6, and an ore feeding device 2, 3 delivering ore but part way across the carrier belt, substantially as described.

12. The combination in a magnetic ore separator, of a main frame, a carrier belt 5 running on a roll 22 and a magnetic roll 23, said rolls being journaled in vertically adjustable boxes 26 fitted in longitudinally adjustable bearings 20, an auxiliary frame 8 swiveled to the main frame, drums 9, 9, and rollers 10, 10 on the frame 8, said rollers 10 being held to arms 17 coupled by devices 18, 19, a belt 6 on the parts 9, 10, magnets 7 in the frame 8 facing the belt, and devices 2, 3 feeding ore but part way across the carrier belt 5, substantially as described.

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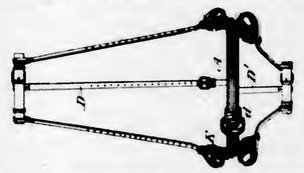
**531,302. ENVELOPE.** MICHAEL CAREY, New York, N. Y. Filed June 5, 1894. Serial No. 513,604. (No model.)



*Claim.*—An envelope provided on its inner flap with a powder which is an absorbent of water and soluble therein, and whose solution is a coloring compound, said powder being secured in place and likewise protected from accidental contact with moisture, by a suitable covering, substantially as described.

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**531,303. SHOWER-BATH APPARATUS.** HENRY M. CHRISTOPHER, New York, N. Y. Filed Nov. 28, 1893. Serial No. 492,246. (No model.)



*Claim.*—1. A shower-bath apparatus for bathing the legs of animals, comprising a spray pipe provided with a series of perforations, supports connected to said pipe arranged to be attached to the animal's body to support the pipe, and means connected to the pipe and adapted to engage the animal's leg and hold the pipe in a substantially pre-determined position in relation to the leg, whereby the pipe is prevented from striking the leg when the latter is moved, substantially as set forth.

2. A shower-bath apparatus for bathing the legs of animals, comprising a spray pipe provided with a series of perforations, supports connected to said pipe arranged to be attached to the animal's body to support the pipe, and a collar connected to the pipe and adapted to engage the animal's leg and hold the pipe in a substantially predetermined position in relation to the leg, whereby the pipe is prevented from striking the leg when the latter is moved, substantially as set forth.

3. In a shower bath apparatus, the combination of an encircling pipe provided with perforations around its inner periphery,—and an adjustable supporting collar adapted to be clasped around the leg of an animal, and adjustable connections between the collar and pipe whereby the pipe may be supported by said collar in close proximity to the leg of the animal, substantially as set forth.

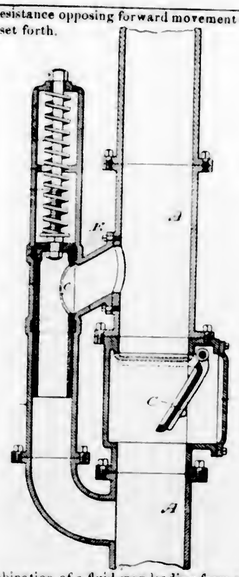
4. In a shower bath apparatus, the combination of a pipe provided with perforations along its inner periphery,—a collar located above the pipe and adjustable connections between the pipe and collar, and a second collar located below the pipe and adjustable connections between the second collar and pipe, substantially as set forth.

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**531,304. AUTOMATIC CHECK-VALVE.** JAMES H. DOUSMAN, Milwaukee, Wis. Filed Nov. 21, 1893. Serial No. 491,529. (No model.)

*Claim.*—1. The combination of a fluid-way leading from a service-main to a storage-receptacle, a check-valve arranged in the fluid-way, a chamber having openings communicating with said fluid-way in opposite directions from the check-valve, a hollow piston arranged within the chamber and provided with an opening normally in register with the chamber-opening ahead of said check-valve, and a spring of pre-

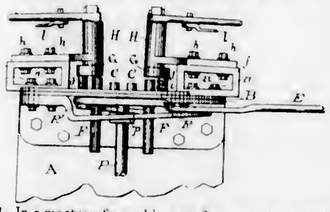
determined resistance opposing forward movement of the piston, substantially as set forth.



2. The combination of a fluid-way leading from a service-pipe to a storage-receptacle, a check-valve arranged in the fluid-way, a chamber having openings communicating with said fluid-way in opposite directions from the check-valve, a cut-off for the chamber opening ahead of said check-valve and a spring of predetermined resistance opposing forward movement of the cut off, substantially as set forth.

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**531,305. MACHINE FOR MAKING NUT-FASTENERS.** WILLIAM DUNN, Philadelphia, Pa. Filed Sept. 5, 1894. Serial No. 522,161. (No model.)



*Claim.*—1. In a machine for making nut fasteners, the combination of a bed plate having two studs thereon, a pivoted lever carrying two studs adapted by the movement of the lever to revolve partially around the studs on the bed plate, and means for causing said lever to rise toward the bed plate during its rotation.

2. In a machine for making nut fasteners, the combination of studs C, lever E with studs F, and inclined ways R and R', substantially as shown.

3. In a machine for making nut fasteners, the combination of the two studs C, on the bed plate the pivoted lever E, with its two studs F, inclined ways R and R', shaft P, and adjustable collar *p*, as shown and described and for the purpose specified.

4. In a machine for making nut fasteners, the combination of a bed plate, with studs C, thereon, a pivoted lever E, beneath the bed plate, carrying two studs F, adapted to partially revolve around the studs C, inclined ways R, and R', adjustable collar *p*, two inclined shafts G and fingers J, adapted to revolve partially around the studs F, and rise during their revolution, substantially as shown and described

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**531,306. CONVEYER-CHAIN OR LINK BELT.** STEPHEN ESSEX, Providence, R. I. Filed May 28, 1892. Serial No. 434,715. (No model.)



*Claim.*—1. A chain link having a hooked portion and a bearing shoulder adjacent thereto and at the front side of the hook socket to bear on the side bar of the adjacent link forward of the fulcrum poiut thereof to hold the links substantially in the same plane and rigid against movement in one direction, substantially as described.

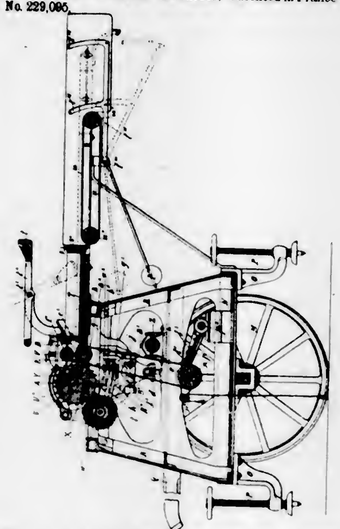
2. A chain link having a hooked portion and a bearing shoulder adjacent thereto and at the front side of the hook socket to bear on the side bar of the adjacent link forward of the fulcrum point thereof to hold the links substantially in the same plane and rigid against movement in one direction, said shoulder being carried by an extension of the side bar bent over the hook socket to the front side thereof, substantially as described.

3. A chain link, having a hooked portion and an extension from the side bar bent over the hook socket and forming a lateral extension of the hook, said extension providing a shield for the joint between the links and having a bearing shoulder at the front in the plane of the upper sides of the side bars.

4. In combination in a link chain, the hook having the hook portions with the side bar extensions having bearing shoulders at their front ends to bear on the side bars of the adjacent links forward of the fulcrum point whereby the links will be maintained in the same plane against movement in one direction and the flights or carriers attached to the rigid side of the said chain, substantially as described.

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**531,307. MACHINE FOR DECORTICATING RAMIE OR OTHER PLANTS.** ALFRED D. ESTIENNE, Marseilles, France. Filed Feb. 21, 1894. Serial No. 500,940. (No model.) Patented in France Apr. 1, 1893, No. 229,066.



*Claim.*—1. In a decorticating machine the combination of a beater cylinder, a pair of feed rollers, an endless apron carried by one of said rollers, the other of said rollers being fluted, means for imparting to the beater cylinder and the endless apron the same surface speed, means for imparting to the fluted roller a slower surface speed than that of the cylinder and apron and a fixed bed bar or anvil, substantially as described.

2. In a machine for decorticating ramie and other plants, leaves or textile matters, the combination with the feed table divided into compartments, of the mechanism for supplying the stalks thereto, consisting of an endless apron, an oscillating frame whereby the stalks are deposited thereon, a grooved guide bar for the ends of the stalks and the horizontal fingers pivoted upon vertical axes, all as herein-before described.

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**531,308. HARROW.** IRA T. EVANS, Clive, Iowa. Filed Mar. 27, 1894. Serial No. 505,351. (No model.)



*Claim.*—1. In a harrow, a drag bar having a series of vertical bores on each side of its center for adjustably connecting clevises



therewith and also having a series of bores on each side of its center extending horizontally rearward, clevises connected with the bar at equal distances from the center of the bar, chains connected with a double tree and a bolt attached to the free end of each chain and passed through the said clevises and inserted in bores as shown and described, and all the parts arranged and combined for the purposes stated.

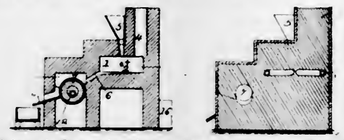
2. In a harrow, the combination of a drag-bar, a plurality of vertical bores on each side of the center, two clevises one on each side of the center of the drag-bar bores extending in opposite directions diagonally outward from the forward center thereof, two eye-bolts adapted to enter the said horizontal bores, drag chains secured to the said eye bolts, extended through the said clevises, and a whiffle-tree connected with the forward ends of the said drag-chains substantially as set forth.

3. In a harrow the combination of a drag-bar, a plurality of vertical bores on each side of its center, two clevises one on each side of the center of the drag-bar, pins adapted to enter the said bores, a plurality of horizontal bores extending in opposite directions diagonally outward from the forward center thereof, two eye-bolts adapted to enter the said horizontal bores, drag chains secured to the said eye-bolts extended through the said clevises, connecting rods secured to the ends of the said drag chains, a whiffle-tree attached to the forward end of the said connecting rods, a curved metal strip secured to each end of the drag bar and curved downwardly and inwardly under the same, substantially as and for the purposes stated.

4. An improved drag harrow comprising the harrow sections A the drag-bar $A^2$ the chains $A^3$ connecting the harrow-sections and drag bar. The vertical perforations B in the drag-bar, the clevises $B^2$ the bores C the eye-bolts $C^2$, the drag-chains D, the connecting rods $D^2$ the whiffle-tree F and the metal clips H substantially as set forth.

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**531,309. APPARATUS FOR EXTRACTING METALS.** ALFRED GUILLAUME, Chicago, Ill., assignor to Thomas T. Oliver, same place. Filed Jan. 30, 1892. Serial No. 419,815. (No model.)



*Claim.*—1. In an electric metal-separator, the combination of a metal body rotatably supported in a suitable housing and forming the negative pole of an electric generator, an inlet leading to the said body for the molten mass to be treated, a chamber for the supply of said molten mass discharging through the inlet into said housing and a positive pole of the generator in the path of the molten mass to said body, substantially as and for the purpose set forth.

2. In an electric metal-separator, the combination of a tapering metal drum rotatably supported in a suitable housing and provided with means for rotating it and with water induction and eduction pipes communicating with the interior of the drum, said drum forming the negative pole of an electric generator, a metal-outlet in said housing and a slag-outlet therein at the tapering end of the drum, a scraper for the drum, and a positive pole of the generator in the path of the molten mass to the drum, substantially as and for the purpose set forth.

3. In an apparatus for separating metals by electric action, the combination of the fusiou-chamber 1, the arc-electrodes 2 and 3 in a generator-circuit and extending into said chamber, and the extractor communicating with the fusion-chamber and containing a movably supported metallic surface connected with the negative pole of a generator, substantially as set forth.

4. In an apparatus for separating metals by electric action, the combination of the fusiou-chamber 1, the arc-electrodes 2 and 3 in a generator-circuit, and extending into said chamber, the resistance-box 16 arranged in the circuit, and the extractor communicating with the fusion-chamber and containing a movably supported metal surface connected with the negative pole of a generator, substantially as set forth.

5. In an apparatus for the separation of metals by electric action, the combination of the fusion-chamber 1, the arc-electrodes 2 and 3 in a generator-circuit and extending into said chamber, and the extractor communicating with the fusion-chamber and containing a rotatably supported metallic drum connected with the negative pole of a generator, substantially as set forth.

6. In an apparatus for the separation of metals by electric action, the combination of the fusion-chamber 1, the arc-electrodes 2 and 3 in a generator-circuit and extending into said chamber, the resistance-box 16 arranged in the circuit, and the extractor communicating with the fusion-chamber and containing a rotatably supported metallic drum connected with the negative pole of a generator, substantially as set forth.

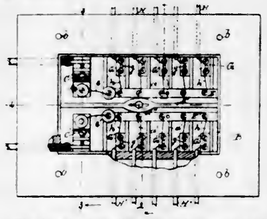
7. In an apparatus for the separation of metals by electric action, the combination of the fusion-chamber 1, the arc-electrodes 2 and 3 in a generator-circuit and extending into said chamber, and the extractor communicating with the fusion-chamber and containing a rotatably supported tapering metallic drum connected with the negative pole of a generator, substantially as set forth.

8. In an apparatus for the separation of metals by electric action, the combination of the fusion-chamber 1, the arc-electrodes 2 and 3 in a generator-circuit and extending into said chamber, and the extractor communicating with the fusion-chamber and containing a rotatably supported metallic drum connected with the negative pole of a generator and provided with pipes for circulating water through it, substantially as set forth.

9. In an apparatus for separating metals by electric action, the combination of the fusion-chamber 1, the arc-electrodes 2 and 3 in a generator-circuit and extending into said chamber, the negative electrode 3 being hollow for the passage of a cooling current of water, and the extractor communicating with the fusion-chamber and containing a movably supported metallic surface connected with the negative pole of a generator, substantially as set forth.

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**531,310. ELECTRIC CUT-OUT.** HARRY HANSEN, Everett, assignor of one-half to Nils Olson, Maplewood, Mass. Filed Jan. 23, 1894. Serial No. 497,810. (No model.)



*Claim.*—The herein described electric cut out and box combined consisting of a sunken box A of insulating material having face plate B and detachable cover I, said box having longitudinal and lateral insulated ribs *a a'* A' conductors E E' connected by fuses to the line wires and lamp wires connected to said conductors by means of binder posts and fuses substantially as and for the purpose set forth.

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**531,311. VEHICLE-WHEEL.** CARL VON DER HEYDE, Milwaukee, Wis., assignor to the Telegram Cycle Manufacturing Company, same place. Filed Aug. 27, 1894. Serial No. 521,410. (No model.)



*Claim.*—1. A wheel-hub having its end-portions of greater diameter than the remainder thereof, a flanged sleeve contained within each end of the hub, and a series of wire-spokes having hook-shaped inner ends engaging perforations in the end-portions of said hub.

2. A wheel-hub embodying two concentric walls, the outer one of which is provided with perforations in rows those in one row breaking joints with those in the adjacent row, and wire-spokes having hook-shaped ends engaging the perforations, one set of spokes being extended from said hub in a direction opposite to that of the other set.

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**531,312. DEVICE FOR HOLDING AND CLAMPING PAPERS, &c.** ISAAC W. HEYSINGER, Philadelphia, Pa. Filed Oct. 1, 1894. Serial No 524,558. (No model.)



*Claim.*—1. A device for clamping and holding papers consisting of a flat supporting board, adapted to rest by its rear margin upon a table, its forward margin raised and supported upon a spring support, under tension, and provided with a bell-crank clamping arm pivoted to said board near said front margin, near the middle of said clamping arm, its upper free end forming a clamping jaw, and its lower free

end forming an angular support beneath said board, and adapted by the depression of said free forward margin thereof to tilt up, on said pivoted bearing, the upper free end of said clamping jaw from said supporting board, under spring pressure, and when said depression of said board is removed, to cause said clamping jaw to engage under spring pressure upon said board, substantially as described.

2. In combination with a flat board adapted to rest by its rear margin upon a table, a spring adapted to raise and support the free forward end of said board under spring tension, and an angularly shaped clamping device pivoted to said board near its raised front margin, its upper portion forming a spring clamping jaw against said board, and its under portion extended longitudinally along and beneath the line of said board, and downwardly therefrom, substantially as and for the purposes described.

3. In combination with a flat supporting board, one end adapted to rest upon a table, and the opposite end raised therefrom and supported directly or indirectly by a spring, a clamping device having an upper clamping jaw and a lower lever extension, pivoted to said board and under spring tension to close said jaw, said board adapted, when forced downward at its free end, to cause by its movement the said clamping device to rotate upon its pivoted bearing, and release the pressure of said jaw from said board, by the compression of said lever against or toward the under surface of said board, substantially as described.

4. In combination with a board adapted to rest along its rear margin upon a table, and a spring adapted by its tension to sustain its forward margin raised from said table, a pivoted clamping device secured by a pivot bearing to the said board at or near its free margin, and actuated by the tension of said spring and the depression of said free margin of said board to cause rotation of said clamping device upon said pivot, said clamping device having a clamping point adapted to engage with said board, a raised portion intermediate between said clamping point and said pivot, and a longitudinal arm extended angularly downward from said pivoted bearing and adapted by its leverage to raise and depress, under spring tension the said clamping point, substantially as described.

5. In a paper clamping and holding device, the combination of board, A, supported upon table, T, at one end, and spring, C, at the other, together with angular, pivoted clamping device, B, pivoted to said board at A′, and having arm, $B^3$, extended longitudinally downward from said pivot, and connected operatively with said spring C, substantially as described.

6. In a paper clamping and holding device, the combination of supported board A, having marginal contact in rear with a desk or table, spring C, angular bell-crank clamping and operating device, B, having pivot $B^3$ and pivot support A′ on said board, A, near its free and spring-supported margin, substantially as and for the purposes described.

7. In combination with a paper supporting board, adapted to rest at its rear margin upon a table, and a spring support beneath its forward free margin, adapted to raise the same and maintain it in a permanently raised position, a paper holding clamp pivoted to said board near its free margin, having an upper arm or arms extended forward toward said free margin of said board, in the form of a raised arch, terminating in one or more pointed perforating extremities, and a lower arm extended longitudinally forward along and beneath said board, in operative connection with said spring support, together with one or more recesses for the reception of said perforating points, substantially as and for the purposes described.

8. In a device for clamping and holding papers the combination of board, A, spring C, angular clamp, B, having arms B′ $B^3$, pivoted to A, at A′ $B^2$, and lower angular arm, $B^3$, and cross bar, E, said bar, E, in operative connection with said spring, C, and said angular arm, $B^3$, substantially as described.

9. In combination with board, A, spring C, cross bar E, and angular clamping arm, B, having integrally attached longitudinal operating arm, $B^3$, the guide plate, F, having guide grooves, $F^2$, substantially as described.

10. In combination with a spring actuated perforating and holding jaw, and a supporting board, and supporting cross-bar beneath said board adapted to form a yielding support, for said spring and said jaw, a locking bolt secured to the under side of said board, and above said cross-bar and spring, and adapted to engage with the board-supporting cross-bar which rests upon the table, and is constructed to support the free end of said board under spring tension, and lock the said jaw open against spring pressure and permit the removal of papers from said perforating and holding jaw, substantially as described.

11. In combination with a board A, spring C, and spring actuated clamping jaw operatively connected therewith, a spring support for said spring consisting of projecting edge, $c^2$, recessed support, $C^2$, pin $C^3$, and rearward lug having screw support, C′, said pin adapted to engage in a terminal perforation, $c'$, in said spring, and said spring adapted to be held under strain against said edge, $c^2$, substantially as described.

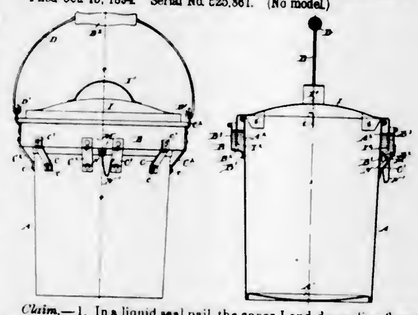
12. In a device for clamping and holding papers, in combination with board, A, springs C, C, and clamping jaw, B, the spring holders, $C^2$ $C^2$, said springs having independent operative attachments to the said board, said spring supports joined by the connecting bar, $C^3$, permanently formed therewith, substantially as and for the purposes described.

13. In a device for clamping and holding papers the combination of board, A, springs, C, C, and clamping jaw, B, with the transverse bar, E, said springs connected under tension at their rear ends with the under surface of said board, A, and at their forward ends with said bar, E, and said clamping jaw in operative connection with the same, said bar E consisting of a cylindrical rod of wood, substantially as described.

14. In combination with board, A, spring, C, clamping jaw, B, having raised upper portion, B′ $B^3$, and longitudinal downward arm, $B^3$, the cross bar E, and covering plate, F, said plate adapted to form screw-hole supports, for screws *s s*, through perforated springs, C C, and into wooden cross bar E, and sleeves, $F^2$ $F^2$, for passage of angular arms, $B^2$ $B^3$, of said clamping jaw, substantially as described.

## 531,313. LIQUID-SEAL PAIL. GARRIT HIGBIE, Brooklyn, N. Y.

Filed Oct. 15, 1894. Serial No. 525,861. (No model.)



*Claim.*—1. In a liquid seal pail, the cover I and depending flange $I^2$, the annular trough, formed by the upper portion $A^2$ of the body and the portions $B^2$ and $B^3$ of the ring, in combination with the drain-tube M set in the portion $B^2$ of the trough and projecting downwardly from the latter and outwardly from the oppositely inclined surface of the pail, to direct the drainage away from the pail and with the stopper N for closing the tube, all substantially as herein specified.

2. In a liquid seal pail, the cover I and depending flange $I^2$, the annular trough, formed by the upper portion $A^2$ of the body and the portions $B^2$ and $B^3$ of the ring, in combination with the drain-tube M set in the portion $B^2$ of the trough and projecting downwardly from the latter and outwardly from the oppositely inclined surface of the pail, to direct the drainage away from the pail the stopper N for closing the tube, and with the braces C, C, located one on each side of the said tube to protect it against accidental blows and also to support the trough, substantially as herein specified.

## 531,314. PROCESS OF AND APPARATUS FOR PREPARING BEER, &c., IN RECEPTACLES FOR MARKET. ALVIN M. HOFFMANN, Chicago, Ill. Filed Mar. 31, 1894. Serial No. 505,882. (No model.)

*Claim.*—1. The process of preparing carbonated liquid in a package for the market, which consists in first filling the receptacle with the uncarbonated liquid, then withdrawing therefrom a portion of its contents, supplanting the withdrawn liquid with liquid highly charged with gas, and finally sealing the package, substantially as described.

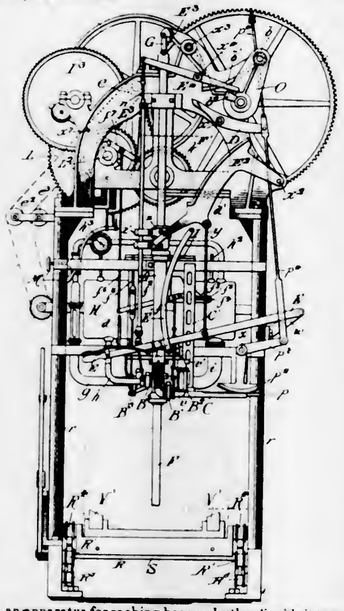
2. The process of preparing carbonated liquid in a package for the market, which consists in first filling the receptacle with the uncarbonated liquid, then withdrawing therefrom a portion of its contents and storing and charging with gas the withdrawn portion, returning into the receptacle and mixing with its contents a quantity of such stored and charged liquid, and finally sealing the package, substantially as described.

3. The process of filling a receptacle with liquid and charging its contents with gas, which consists in introducing the liquid to be charged into the receptacle till it is completely full, or approximately so, then withdrawing therefrom a predetermined portion of its contents, and introducing into the receptacle a quantity, substantially equal to that withdrawn, of liquid highly charged with gas, substantially as described.

4. The process of filling a receptacle with liquid and charging its contents with gas, which consists in introducing the liquid to be charged into the receptacle till it is completely full, or approximately so, then withdrawing therefrom a predetermined portion of its contents and storing the withdrawn liquid and charging it with gas, and returning into the receptacle and mixing with its contents a quantity of such stored and charged liquid, substantially as described.



5. In an apparatus for racking beer and other liquids into receptacles and charging their contents with gas, a filling tube, into which the liquid-supply pipe leads, reciprocably adjustable to insert it, at one end, into and withdraw it from a receptacle a pump exhaustively communicating with the filling-tube, to withdraw from said receptacle liquid by the same passage in the filling-tube through which it entered the receptacle a holder for the supply of gas-charged liquid, communicating with said tube, and automatic actuating means operating successively to work the pump to withdraw liquid through the tube and discharge charged liquid from said holder through the tube, substantially as described.



6. In an apparatus for racking beer and other liquids into receptacles and charging their contents with gas, a filling-tube into which the liquid-supply pipe leads, reciprocably adjustable to insert it, at one end, into and withdraw it from a receptacle a holder for the supply of gas-charged liquid communicating with the filling-tube, a pump communicating with the tube and holder, to withdraw from said receptacle liquid by the same passage in the filling-tube through which it entered the receptacle and automatic actuating means operating successively to work the pump to withdraw a predetermined quantity of liquid through the tube and discharge it into said holder, and discharge from the latter a predetermined quantity of its charged contents through the tube, substantially as described.

7. In an apparatus for racking beer and other liquids into receptacles and charging their contents with gas, a reciprocably supported filling-tube into which the liquid-supply pipe leads, a pump exhaustively communicating with the filling-tube, a holder for the supply of gas-charged liquid communicating with said tube, a bung-feed leading into the tube, a bung-driver, and automatic actuating means operating successively to work the pump to withdraw liquid through the tube and discharge it into the holder, discharge liquid from said holder through the tube, raise the filling-tube, feed a stopper into position to be driven and drive the stopper, substantially as described.

8. In an apparatus for racking beer and other liquids into receptacles, a reciprocable filling-tube for a receptacle, a stationary head in which the filling-tube is supported and through which the liquid-supply pipe leads into the filling-tube and a stopper-driver reciprocably supported in and movable independently of said tube, substantially as described.

9. In an apparatus for racking beer and other liquids into receptacles, a filling-tube reciprocably supported to be inserted into and withdrawn from a receptacle and longitudinally adjustable to regulate the extent of its insertion, an inlet for the liquid in the tube-support, and openings at different points along the filling-tube registrable by its adjustment one at a time with said inlet according to the size of the receptacle or depth to which the tube shall be inserted therein, substantially as described.

10. In an apparatus for racking beer and other liquids into receptacles, a filling-tube reciprocably supported to be inserted into and withdrawn from a receptacle and longitudinally adjustable to regulate the extent of its insertion and rotatably adjustable on its support, an inlet for the liquid in the tube-support, openings at different points along the filling-tube in different longitudinal sections thereof, and a supplemental tube in and longitudinally movable with said filling-tube and having aligning openings facing the plane of said inlet, whereby the filling-tube and its contained tube may be adjusted lengthwise to bring either opening in the latter coincident with the inlet and the filling-tube may be turned to present its corresponding opening to the inlet, while the inner tube closes the other openings in the filling-tube, substantially as described.

11. In an apparatus for racking beer and other liquids into receptacles, a filling-tube reciprocably supported to be inserted into and withdrawn from a receptacle and longitudinally adjustable to regulate the extent of its insertion and rotatably adjustable on its support, an inlet for the liquid in the tube-support and a stopper insertion opening therein, openings at different points along the filling-tube in different longitudinal sections thereof, a supplemental tube in and longitudinally movable with said filling-tube and having aligning openings facing the plane of said inlet, a stopper-driver reciprocably supported in said supplemental tube and a stopper-feed communicating with the stopper-insertion opening, substantially as described.

12. A barrel or keg support for sustaining and reciprocably adjusting the barrel or keg with relation to the filling-tube of a beer-racking apparatus, said support comprising a bed having journaled in it a rock-shaft R provided with an operating handle and rollers $R^5$, a frame S carrying rollers $R^4$ to coincide with the rollers $R^5$, and heads R′ on the shaft, each carrying at its opposite ends wedge-arms extending in contrary directions between adjacent rollers $R^4$, $R^5$, whereby turning the shaft extends or withdraws the wedge-arms between said rollers to raise or lower the frame, substantially as described.

13. A barrel or keg support for sustaining and reciprocably adjusting the barrel or keg with relation to the filling-tube of a beer-racking apparatus, said support comprising a vertically reciprocable frame on a base and provided with means for reciprocating it, and with rollers journaled near its corner-portions to revolve parallel with the sides of the frame, and a carriage for the keg or barrel resting in the frame on said rollers, substantially as described.

14. A barrel or keg support for sustaining and reciprocably adjusting the barrel or keg with relation to the filling-tube of a beer-racking apparatus, said support comprising, in combination, a bed having journaled in it rollers $R^5$, a rock-shaft R provided with an operating handle and means for securing and releasing it, a frame S carrying rollers $R^4$, to coincide with the rollers $R^5$, and rollers S′, heads R′ on the shaft, each carrying at its opposite ends wedge-arms extending in contrary directions between adjacent rollers $R^4$, $R^5$, whereby turning the shaft extends or withdraws the wedge-arms between said rollers to raise or lower the frame, and a carriage V carrying tapered rollers V′ and seated in the frame S on the rollers S′, substantially as described.

15. In an apparatus for racking beer and other liquids into receptacles and bunging the latter, the combination with the frame of a guide or sleeve provided with an inlet, a vertical filling-tube reciprocably supported in said guide and also provided with an inlet adapted to register with said first mentioned inlet in the guide, a bung-driver reciprocably supported in said tube, a bung-feed leading laterally into the guide, and driving-means operating to successively raise the filling-tube, actuate the bung-feed to introduce a bung into said guide and the bung-driver to drive said bung, and finally restore the bung-feed to its initial condition, substantially as described.

16. In an apparatus for racking beer and other liquids into receptacles and bunging the latter, the combination with the frame of a vertical filling-tube reciprocably supported in a guide provided with an inlet leading into the tube, a cam-lever engaging the filling-tube, a bung-feed leading into said guide, a bung-driver reciprocably supported inside said tube, a cam-lever connected at opposite sides of its fulcrum respectively with the bung-driver and bung-feed, a rotatably supported crank-arm, a cam-lever free at one end and at its opposite end engaging the bung-feed, and driving-mechanism with which said crank-arm is geared to be revolved and engage at different points in its path said filling-tube-lever to raise the tube, said cam lever to operate the feed and said bung-driver lever to actuate the bung driver and restore the bung-feed to its initial condition, substantially as described.

17. In an apparatus for racking beer and other liquids into receptacles and bunging the latter, the combination with the frame of a vertical filling-tube reciprocably supported in a guide provided with an inlet leading into the tube, a cam-lever engaging the filling-tube, a bung-feed comprising a rack-bar having a head reciprocably con-

tined in a passage leading into said guide, a bell crank having at one end a pinion-device and connected at its other end with an operating rod, a bung-driver reciprocably supported inside said tube, a cam-lever connected at opposite sides of its fulcrum respectively with the bung-driver and said rod, a cam-lever connected at one end with said rod below the bung-driver lever, a rotatably supported crank-arm, and driving-mechanism with which said crank-arm is geared to be revolved and engage successively said filling-tube lever to raise the tube, said rod-lever to actuate the bung-feed in one direction and said bung-driver lever to actuate the bung-driver and the bung-feed in the opposite direction, substantially as described.

18. In an apparatus for filling a receptacle with beer or other liquid and charging its contents with gas, the combination with the frame of a vertical filling-tube reciprocably supported in a guide provided with an inlet leading into the tube, a holder for charged liquid having a pipe-connection with said inlet containing a shut-off valve normally closed by a spring rod, a bung-driver reciprocably supported in said tube, a bung-feed leading into the guide, and driving-means operating to successively open, temporarily, said valve, raise the filling-tube, actuate the bung feed to introduce a bung into said guide and the bung-driver to drive said bung, and finally restore the bung-feed to its initial condition, substantially as described.

19. In an apparatus for filling a receptacle with beer or other liquid and charging its contents with gas, the combination with the frame of a vertical filling-tube reciprocably supported in a guide provided with an inlet leading into the tube, a holder for charged liquid having a pipe-connection with said inlet containing a shut off valve normally closed by a spring-rod, an agitator in said holder, a bung-driver reciprocably supported in said tube, a bung-feed leading into the guide, and driving-means operating to successively open, temporarily, said valve, raise the filling-tube, actuate the bung-feed to introduce a bung into said guide and the bung-driver to drive said bung, and finally restore the bung-feed to its initial condition, substantially as described.

20. In an apparatus for filling a receptacle with beer or other liquid and charging its contents with gas, the combination with the frame of a vertical filling-tube reciprocably supported in a guide provided with an inlet leading into said tube, a holder for charged liquid having a pipe-connection with said inlet containing a shut-off valve normally closed by a spring-rod, a bung-driver reciprocably supported in said tube, a pump communicating with the filling-tube and discharging into said holder, a shut-off valve in communication between the pump and tube, a bung-driver reciprocably supported in said tube, a bung-feed leading into the guide, and driving-means operating to successively actuate the pump, shut off the valve in the passage to the pump and temporarily open that controlling the flow from the holder, raise the filling-tube, actuate the bung feed to introduce a bung into said guide and the bung-driver to drive said bung, and finally restore the bung-feed to its initial condition, substantially as described.

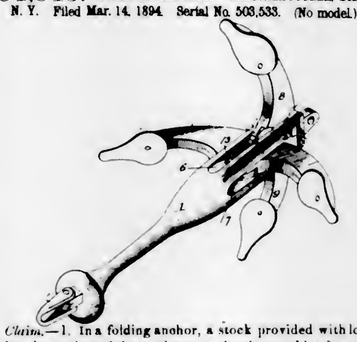
21. In an apparatus for filling a receptacle with beer or other liquid and charging its contents with gas, the combination with the reciprocable filling-tube, charged-liquid holder controllably communicating therewith and their actuating-means, of a pump communicating with the tube and holder and having its piston-rod adjustably connected with said driving-means to regulate its stroke, substantially as described.

22. In an apparatus for filling a receptacle with beer or other liquid and charging its contents with gas, the combination with the reciprocable filling-tube, charged liquid holder controllably communicating therewith and their actuating means, of a pump communicating with the tube and holder, a head on which the piston-rod of the pump is adjustably pivoted, and a rotatably-supported cog-wheel in gear with said actuating means and carrying said head to rotate with it, substantially as described.

23. In an apparatus for filling a receptacle with beer or other liquid and charging its contents with gas, the combination with the frame of a vertical filling-tube reciprocably supported in a guide provided with a gasket $q$, and having an inlet leading into said tube and an outlet, a lantern $B^3$ having an outlet $c'$ and provided with a float-valve $c^3$ and communicating with said guide outlet through a passage $r$ containing a valve B' and provided with a safety-valve B, a holder for charged liquid having a pipe connection with said inlet containing a valve $B^2$ normally closed by a spring-rod, a vent $a$ leading from between the gasket and tube into said passage $r$, a bung-driver reciprocably supported in said tube, a pump communicating with said holder and guide inlet through a pipe $i$ containing a valve $B^4$ and a check-valve, a connection between valves B' and $B^4$ having an actuating rod $f^4$ extending upward from it, a bung-feed leading into the guide, and driving-means operating to successively actuate the pump, shut off valves B' and $B^4$ through the rod $f^4$ and temporarily open valve $B^2$ through said spring-rod, actuate the bung-feed to introduce a bung into said guide, and finally restore the bung-feed to its initial condition, substantially as described.

24. In an apparatus for filling a receptacle with beer or other liquid and charging its contents with gas, the combination with the frame of a guide-sleeve A terminating in a hollow head having an inlet and an outlet and containing a gasket $q$ and a reciprocably supported filling-tube, a bung-driver G in said tube, a pipe $g$ leading to said inlet and containing a valve $B^5$, a charged-liquid holder H communicating with said inlet through a pipe A containing a valve $B^2$ having a spring-rod connection, a pump H' communicating with said holder and inlet through a pipe $i$ containing a check-valve $i'$ and a valve $B^4$, a bung-feed having its bell-crank $p^2$ connected with a bifurcated rod $p^4$, a cam-lever $E^2$ engaging the filling-tube, a hand-lever E linked to said cam-lever, a cam-lever D engaging the rod $p^4$, a lever $E^3$ engaging at opposite ends the bung-driver and rod $p^4$, a lever $E^4$ engaging said spring-rod, a lever $f^7$ connected with rod $f^4$, and a train of driving-gears, one of said gears carrying an abutment $c$ and another of said gears carrying a cam N to engage a clutch-device $M^3$ on a shaft K' carrying the gear-wheel K, and a crank arm O and a cam $b^3$ on said shaft, the whole being constructed and arranged to operate substantially as described.

## 531,315. FOLDING ANCHOR. FLETCHER JOYNER, Schenectady, N. Y. Filed Mar. 14, 1894. Serial No. 503,533. (No model.)

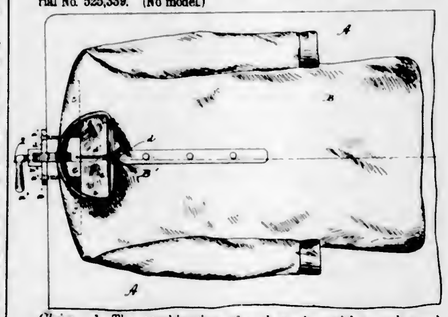


*Claim.*—1. In a folding anchor, a stock provided with longitudinal slots located at right angles to each other, and having two pairs of pivoted fluke arms, one pair of each of which is located in each slot, and one pair of said arms being adapted to lock the other pair, when either in a folded or open position, in combination with a pin adapted to secure the locking pair of arms in an open or closed position, substantially as and for the purpose set forth.

2. In a folding anchor, the slotted stock, 1, the pivoted arms, 8 and 9 and 11 and 12, located in said slots, the arms, 8 and 9, being adapted to lock the arms, 11 and 12, either in a closed or open position, substantially as shown and described.

3. In a folding anchor, the combination with the stock provided with longitudinal slots 6 and 7 at right angles to each other, and with the shoulders 25 and 26, of two pairs of fluke-arms 8—9 and 11—12, pivoted in said slots, one pair in each slot, and one pair adapted to lock the other pair, in either a folded or open position, by means of the recesses 16 and 17, and the shoulders 33 and 33 on the rear ends of the fluke arms, and the pin 50, substantially as shown and described.

## 531,316. CLAMP FOR IRONING-TABLES. ISRAEL H. KAUFMANN and MOSES NIMKOFF, New York, N. Y. Filed Oct. 9, 1894. Serial No. 525,339. (No model.)

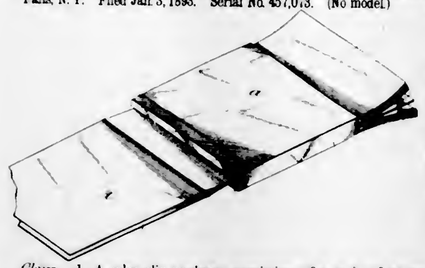


*Claim.*—1. The combination of a clamp bar with a yoke and with a neck band adapted to be attached to the bar, substantially as specified.



2. The combination of a clamp bar with a yoke and with an adjustable neck band adapted to be attached to the bar, and with a stud connected to the yoke, substantially as specified.

## 531,317. MEMORANDUM SALES-SLIP PACKAGE. WILL M. KINNARD, Dayton, Ohio, assignor to the Carter-Crume Company, Niagara Falls, N. Y. Filed Jan. 3, 1893. Serial No. 457,073. (No model.)



*Claim.*—1. A sales slip package consisting of a strip of paper folded in bellows folds to form a series of sales checks, and a paper strip similarly folded to form a series of duplicate slips, each of said strips being folded separately and arranged with their outer or delivery ends inside, with partition to separate the two strips, and binders for holding the same together, substantially as shown and described.

2. A package for use in sales slip cases consisting of a sales strip of paper folded in bellows-folds, and a duplicate strip similarly folded, each strip folded separately, with a binder for said strips forming a receptacle therefor and provided with an end to serve as a butt, having a central longitudinal slit through which said strips are fed, substantially as shown and described.

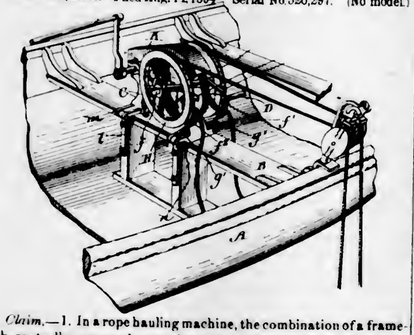
3. A package for use in sales slip cases, consisting of a sales strip of paper folded in bellows-folds and a duplicate strip similarly folded, each strip folded separately, with a binder for said strips provided with a central partition to separate the same said partition being cut away at its inner end to allow the strips to be fed from the package, substantially as shown and described.

4. A package for use in sales slip cases consisting of a sales strip of paper folded in bellows-folds and a duplicate strip similarly folded, each strip folded separately, with a binder for said strips provided with a central partition to separate the strips and an end having a central longitudinal slit therein through which said strips are fed, substantially as shown and described.

5. A package for use in sales slip cases, consisting of a sales strip of paper and a duplicate strip each folded separately in bellows-folds and a binder for the same provided with a central partition cut away at its inner end to separate the strips and an end having a central longitudinal slit therein, through which the strips are fed, substantially as shown and described.

6. A package for use in sales slip cases consisting of a sales strip of paper and a duplicate strip, each folded separately in bellows-folds and a binder for the same provided with a central partition cut away at its inner end and extending outside of the receptacle and an end having a central longitudinal slit therein, through which the strips are fed, substantially as shown and described.

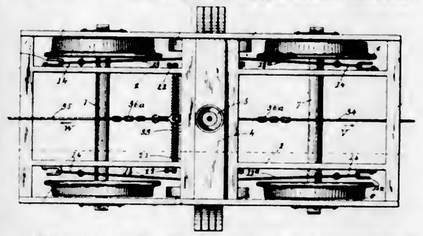
## 531,318. ROPE-HAULING MACHINE. WILLIAM B. LANTZ, Gloucester, Mass. Filed Aug. 14, 1894. Serial No. 520,297. (No model.)



*Claim.*—1. In a rope hauling machine, the combination of a framework, centrally arranged operating gearing mounted upon the same, grooved rope hauling wheels mounted on each side of the gearing and operated thereby, rope pressing sheaves, pivoted supporting bars having bifurcated ends in which the sheaves are journaled, springs connected to said pivoted bars and the frame whereby the sheaves are pressed against the rope on the grooved drums or wheels, which causes the rope to pass almost completely around said wheels and retains the ropes being hauled in said grooves; said bifurcated bars guiding the ropes as they pass from the wheels, and a pin for locking the gearing, substantially as described.

2. In combination with the seat of a boat, a rope hauling machine removably secured at its opposite sides by separable hinges consisting of spaced apertured lugs located on the frame, apertured shanks secured to the seat supports and adapted to engage the apertured lugs and removable pins passed through the lugs and shanks whereby the machine may be removed entirely from the support or turned down on either side of said support, substantially as described

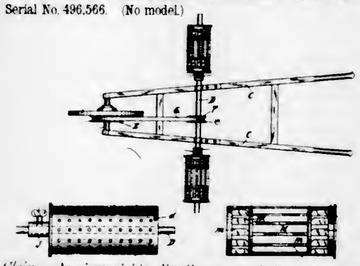
## 531,319. BRAKE FOR RAILWAY-CARS. AUGUSTUS F. LETSON, Buffalo, N. Y. Filed Aug. 9, 1894. Serial No. 519,843. (No model.)



*Claim.*—1. In a rail road car brake, the combination with the truck of a pair of brake shoes, rigidly connected to a cross bar and suspended by upward yielding supports connected with the truck frame, rock arms, pivoted centrally to the cross bar, and each having one end pivoted to suspended arms having their upper ends pivoted to stationary supports, pivoted arms at the opposite ends of the rock arms having a connection with a crank shaft and means substantially as above described for setting or operating the brake shoes.

2. In a rail road car brake, the combination with a railway truck of a pair of brake shoes, secured to a cross-bar and suspended by upward yielding links to the truck frame, rock arms pivoted to the cross-bar each having one of their ends pivoted to a horizontally movable support and their opposite ends pivoted to arms connected to crank arms, a spring for holding the brake shoes up from the rails and means connected with a double arm mounted on a crank shaft for operating the brake from both ends of the car, substantially as described.

## 531,320. INSECT-POWDER-DUSTING MACHINE. FRANCIS LOUSAW and THOMAS E. CLARKE, Bothwell, Canada. Filed Jan. 11, 1894. Serial No. 496,566. (No model.)

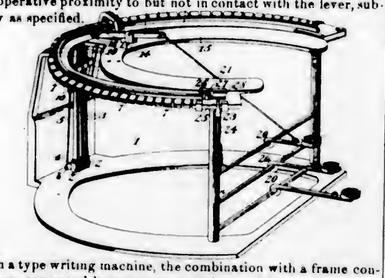


*Claim.*—An insecticide distributer consisting of a rotatively mounted perforated cylindrical holder having at one end a screw and a filling aperture and at the other end a circumferential ridge or flange, in combination with a perforated cylindrical cover closely fitting said cylindrical holder and adapted to abut at one end against the flange thereof, the other end of said cover having a slot adapted to permit the passage of said screw and also to be brought into register with the filling aperture, and a nut on said screw whereby when adjusted, said cover may be locked in position, substantially as set forth.

## 531,321. TYPE-WRITING MACHINE. AUSTIN LOWE, Minneapolis, Kans. Filed Dec. 19, 1893. Serial No. 494,035. (No model.)

*Claim.*—1. In a type writing machine, the combination with the frame, of a plurality of type bars fulcrumed at the bottom thereof

and adapted to imprint upon a sheet beneath the frame, an apertured movable segmental plate carried at the top of the frame, a lever pivotally secured to a fixed part of the frame, a key and key rod connected thereto and a plurality of laterally movable rods pivotally connected with the type bars below their fulcrums, passing through the apertures in the movable plate and having their upper ends above the plate in operative proximity to but not in contact with the lever, substantially as specified.



2. In a type writing machine, the combination with a frame consisting of an upper and lower segmental plate and connecting parts, of type bars pivoted to the lower plate and adapted when actuated to bring the type into contact with a platen located beneath the frame, an apertured movable segmental plate supported by the upper plate, spring actuated rods pivotally connected to the type bars below their fulcrums and passing through the apertures, hooks upon the upper end of the rod above the movable plate, a pivoted lever provided with a perforated spoon end adapted to engage the hooks when actuated and a key and key rod connected with the lever, substantially as specified.

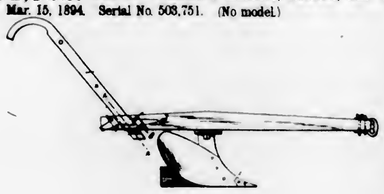
3. In a type writing machine, the combination with the frame, of a plurality of type bars fulcrumed at the bottom thereof and adapted to imprint upon a sheet beneath the frame, an apertured movable segmental plate carried at the top of the frame, a lever pivotally secured to a fixed part of the frame and provided with an apertured end, a key and key rod connected thereto and a plurality of laterally movable rods pivotally connected with the type bars below their fulcrums, passing through the apertures in the movable plate and having their upper ends above the plate provided with a hook adapted to engage the apertured end of the lever when the same is actuated, mechanism for actuating the movable plate, and means independent of such mechanism for securing the plate in the adjusted position, substantially as specified.

4. In a type writing machine, the combination with the frame, of a plurality of type bars fulcrumed at the bottom thereof and adapted to print upon a sheet beneath the frame, an apertured movable segmental plate carried at the top of the frame, a lever provided with an apertured spoon end pivoted above the movable plate to a fixed part of the frame, a key and key rod connected thereto, a spring normally depressing the spoon end of the lever and retaining the key in the elevated position, laterally movable rods passing through the apertures in the movable plate provided thereabove with a hook held removably in operative proximity to the lever and pivotally secured at their lower ends to the type bars below their fulcrums, and springs secured to the rods and bearing against the movable plate whereby the type bars are held in the elevated position, substantially as specified.

5. In a type writing machine, the combination with a frame, of a plurality of type bars fulcrumed at the bottom thereof, a movable segmental plate at the top of the frame provided with radial apertures 7, a slot 28 and recess 25, of rods passing through the radial apertures pivoted at their lower ends to the type bars and provided upon their upper ends with hooks, a lever having a spoon end in proximity to said hooked ends, a key rod and key connected with the lever, the actuating lever 23 adapted to engage the recess, the bolt 27 passing through the slot and the nut adapted to be screwed upon the bolt to secure the plate in the adjusted position, substantially as specified.

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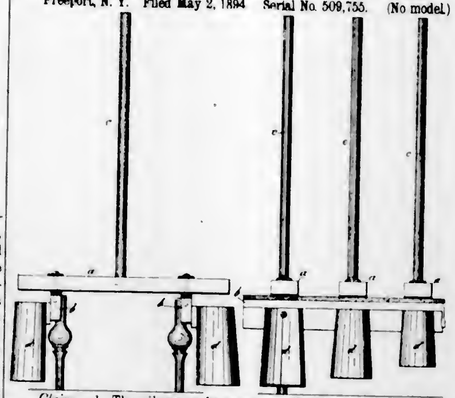
**531,322. PLOW.** WILLIAM I. MANNING, Roanoke, Ala. Filed Mar. 15, 1894. Serial No. 503,751. (No model.)



*Claim.*—In combination with a perforated plow beam, the handle A, provided with the parallel grooves *a*, and the deep clip B, provided with the perforated wings *b*, and flange *c*, at right angles to the face of the clip and adapted to fit in the grooves *a*; said clip adapted to be secured to the plow beam by bolts and nuts, substantially as shown and described and for the purposes set forth.

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**531,323. MUSICAL INSTRUMENT.** ROWLAND H. MAYLAND, Freeport, N. Y. Filed May 2, 1894. Serial No. 509,755. (No model.)



*Claim.*—1. The vibratory bar, supported at the nodes, combined with a frictional rod attached thereto at substantially right angles, all substantially as described and for the purposes set forth.

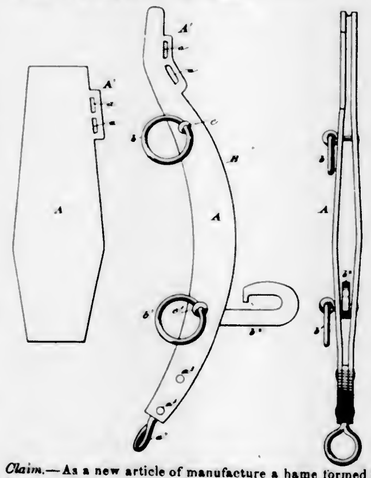
2. The vibratory bar, supported at the nodes and combined with the frictional rod attached thereto centrally of the nodes, and at substantially right angles to the bar, all substantially as described and for the purposes set forth.

3. The combination of the vibratory bar, the frictional rod and a resonator, substantially as described and for the purposes set forth.

4. The combination of the vibratory bar, the frictional rod, and two resonators located outside of the nodes, all substantially as described and for the purposes set forth.

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**531,324. HAME.** CHARLES F. MOCK, Louisville, Ky. Filed June 6, 1894. Serial No. 513,601. (No model.)



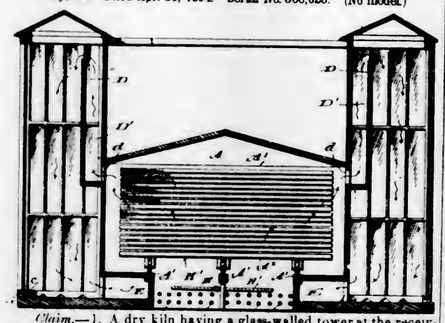
*Claim.*—As a new article of manufacture a hame formed from a flat sheet metal blank, whose opposite edges taper similarly from a point between toward its ends, and having an integral projection at one side near the top end, pierced to provide a series of openings to receive the hame strap, said blank being folded longitudinally between its edges and curved outward between its ends to adapt it to the collar, the outer edge of the hame being open, a string loop having a flattened end fitted and secured between the walls of the lower



end of the hame, eye rivets *c c'* connecting the folds of the blank, rings *b b'* fitted in the apertured ends of the said eye rivets, and a tug hook secured between the said folds by the eye rivet *c'*, substantially as specified.

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**531,325. LUMBER-DRYING KILN.** WALTER P. MURPHY, Ridgway, Pa. Filed Apr. 23, 1894. Serial No. 508,623. (No model.)



*Claim.*—1. A dry kiln having a glass-walled tower at the receiving end projected above the same, as set forth.

2. A dry kiln provided with a glazed tower upon each side thereof at the receiving end, as set forth.

3. A dry kiln provided with a tower with glazed walls and a vertical and a horizontal partition, as set forth.

4. A dry kiln provided with a glass walled tower having communication therewith near the top of the kiln, and a longitudinal conduit separated from the heating chamber and having communication with the tower near the lower end thereof and leading to an opposite end of the kiln, as set forth.

5 A dry kiln provided at its receiving end with a glass walled tower outside of the kiln proper and having communication therewith near the top thereof, and a longitudinal conduit separated from the heating chamber and having communication with the bottom of the tower at one end and with the kiln proper at the other end, as set forth.

6. A dry kiln provided with a glass walled condensing tower at each side of its receiving end, a longitudinal conduit upon each side within the kiln between the towers and the heating devices of the kiln and communicating with the towers, vertical partitions in the towers, and steam pipes extending longitudinally of the kiln between said conduits, as set forth.

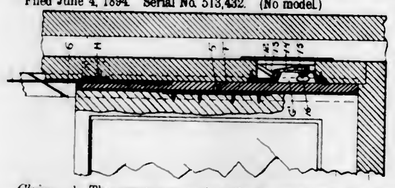
7. A dry kiln provided with glass lined condensing towers, st eam heating pipes and an independent live steam pipe constructed to deliver live steam directly into the kiln, substantially as and for the purpose specified.

8. In a dry kiln a door formed with an air space with a glazed wall upon one side and upon the opposite side a wooden wall with perforations, as set forth.

9. In a kiln, the combination of glazed condensing towers arranged outside of the kiln proper and internally longitudinally disposed conduits separated from the heating devices of the kiln and means for giving communication between the towers and kiln at the top thereof and between the towers and the conduits at the bottom of the towers, substantially as specified.

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**531,326. WINDOW-CASING.** HENRY J. OLIVER, Cleveland, Ohio. Filed June 4, 1894. Serial No. 513,432. (No model.)

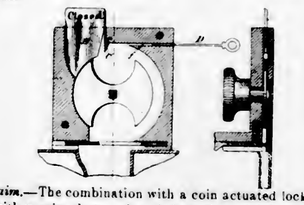


*Claim.*—1. The construction described, consisting in the casing having recesses and metallic boxes in said recesses provided with inclined slots, jamb strips in channels in the said casing and guide projections on said strips engaged in said slots, and means to raise said strips, substantially as set forth.

2. The window casing having metallic boxes with inclined slots set in the lower half of the window and movable parting strips having projections engaging in said slots, and fixed parting strips for the sashes in the upper half of the window, in combination with the sashes and the sliding side pieces in which the sashes are pivoted, whereby either sash can be brought to the bottom of the window and reversed, substantially as set forth.

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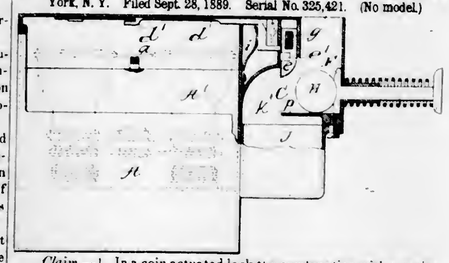
**531,327. COIN-OPERATED MECHANISM.** JAMES W. PATTERSON, New York, N. Y. Filed Sept. 24, 1889. Serial No. 324,930. (No model.)



*Claim.*—The combination with a coin actuated lock casing provided with a coin chute, a key hole and special key, of a stopper adapted to close the coin chute and provided with a spring catch which engages a suitable projection in the casing, thereby fastening it in position to close the slot and whereby it may be released by the said key passing through the key hole and disengaging the spring catch.

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**531,328. COIN-ACTUATED LOCK.** JAMES W. PATTERSON, New York, N. Y. Filed Sept. 28, 1889. Serial No. 325,421. (No model.)



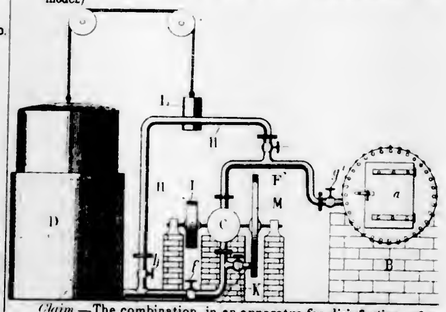
*Claim.*—1. In a coin actuated lock the combination with a casing formed with a coin conduit, of the movable coin propeller, the sliding tumbler provided with a recess, and the sliding locking bolt adapted to directly engage said tumbler.

2. In a coin actuated lock the combination with a casing provided with a coin conduit, a plate extending partially across the coin conduit, a coin propeller, a sliding tumbler provided with a recess, and the sliding locking bolt adapted to directly engage said tumbler.

3. In a coin actuated lock the combination with a casing provided with a coin conduit, a plate extending partially across said conduit, a coin propeller, a sliding tumbler provided with a recess, the sliding locking bolt adapted to engage said tumbler and a spring bearing against the sliding bolt.

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**531,329. DISINFECTING APPARATUS.** RAOUL P. PICTET, Paris, France, assignor to the Société Anonyme de l'Institut Raoul Pictet, Freyburg, Switzerland. Filed Aug. 8, 1894. Serial No. 519,733. (No model.)

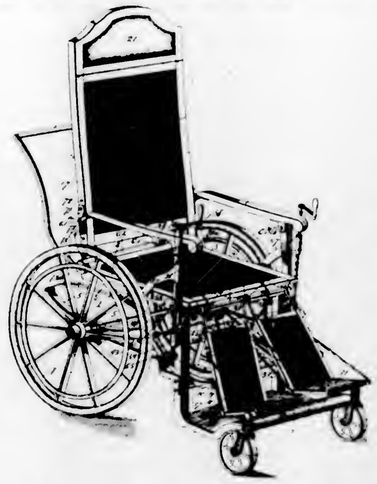


*Claim.*—The combination, in an apparatus for disinfecting, of a cylindrical vessel provided with a door in one end arranged to resist atmospheric pressure, an air pump or exhauster connected with said vessel for creating a vacuum and to permit of antiseptics being

introduced therein to re-act on articles or bodies to be disinfected in said vessel, means for actuating said pump or exhauster, a gasometer having an oil seal, pipes having stop-cocks connecting said vessel with said gasometer and pump and an outlet pipe from said pump having a stop-cock, substantially as shown and described.

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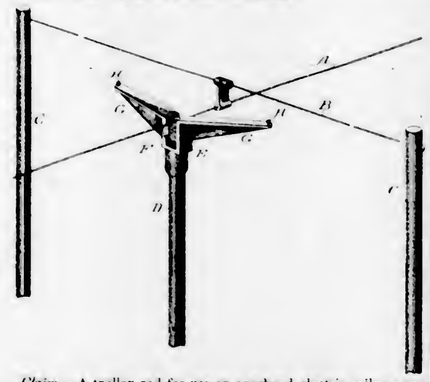
531,330. INVALID-CHAIR. SARAH A. POTTER, Harper, Kans. Filed July 19, 1892. Serial No. 440,544. (No model.)



*Claim.*—In an invalid chair, the combination with a wheeled frame, springs carried thereby, gear-pinions upon the axle of the frame, bearings carried by said axle, a seat-frame mounted upon said springs and provided with depending standards, horizontal and vertical bearing-brackets carried thereby, horizontal shafts mounted in said horizontal bearing-brackets and in the bearings carried by the axle, and provided at either end with gear-pinions, the rear ones meshing with the axle gear-pinions, bearing-brackets carried by the seat-frame proper, vertical shafts journaled therein and in the vertical bearing-brackets of the said standards, and provided at their upper ends with crank-handles and at their lower ends with gear-pinions which mesh with the gear-pinions at the front end of the horizontal shafts, a hinged back, and arm-rests pivotally carried by the seat-frame and said back, substantially as set forth.

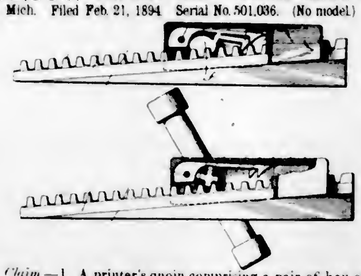
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531,331. TROLLEY. CHARLES E. POWELL, Philadelphia, Pa. Filed Oct. 31, 1894. Serial No. 527,522. (No model.)



*Claim.*—A trolley rod for use on overhead electric railway systems, having a bracket at its upper ends, in which is mounted a roller, the said bracket being provided with a fender, consisting of two integrally formed outwardly projecting arms one on each side of the roller, said arms having inclined upper faces, and pins projecting from their outer ends, substantially as and for the purpose described.

531,332. PRINTER'S QUOIN. CHRISTIAN REITTER, Saginaw, Mich. Filed Feb. 21, 1894. Serial No. 501,036. (No model.)



*Claim.*—1. A printer's quoin comprising a pair of key operated wedges, in combination with catches arranged to be actuated by the key in the operation of inserting and withdrawing, substantially as described.

2. A printer's quoin comprising the usual co-operating wedges, one of which is provided with a longitudingal rack and the other with a transverse key hole, and spring-actuated catches extending across the key hole in such a manner as to be thrown out of engagement by the insertion of the key in the manner and for the purpose substantially as described.

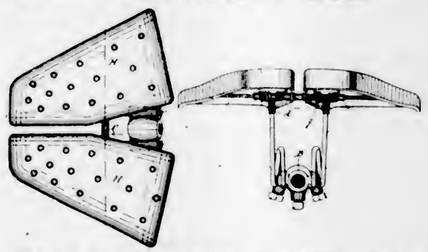
3. A printer's quoin comprising a pair of key-operated wedges, in combination with a catch arranged to be actuated by the key in the operation of inserting and withdrawing the latter, substantially as described.

4. The herein described printers's quoin consisting of the combination of a pair of wedge-sections, one of which is provided with a longitudinal rack, an opposing section grooved to pass astride the rack, and provided with a transverse key hole, and a pair of spring-actuated catches extending across the key hole, one being arranged to project farther into the rack than the other, whereby the insertion of the key will disengage them successively, substantially as described.

5. The herein described printer's coin which consists of a wedge section provided with a longitudinal rack, in combination with an opposing wedge-section provided with spring actuated catches of unequal length arranged to be successively actuated by the insertion and withdrawal of the key, substantially as described.

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531,333. BICYCLE-SADDLE. CHARLES T. ROGERS, Mansfield, Mass. Filed Sept. 24, 1894. Serial No. 523,877. (No model.)



*Claim.*—1. In a velocipede saddle, a saddle frame consisting of two spring rods having upright portions, a tubular T piece on the upper end of each upright portion, a transverse shaft passing through the cross parts of said T pieces, a divided seat consisting of two lateral portions each pivoted on said shaft, one above each of the spring rods and rocking independently of each other with the movement of the rider in operating the treadles, a coil spring around each of said T pieces and binding the spring rod and T piece together, and having oppositely projecting ends which bear against the seat and cause it to return to its normal position when the pressure is removed, substantially as described.

2. In a velocipede saddle, a seat-supporting-frame consisting of two spring rods substantially parallel, throughout their length, each formed with a bow and an eye in the bow formed by a coil in the rod, and terminating in an upright portion, and a transverse shaft supported on the ends of the said upright portions, in combination with a seat pivoted on said transverse rod, and springs which hold the seat in its normal position except when under pressure and which allow a rocking movement of the seat when under pressure, substantially as described.

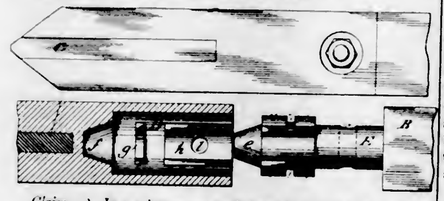
3. In a velocipede saddle, a seat supporting-frame consisting of two spring rods with their lower ends secured in a block mounted on the seat post, thence extending rearwardly and coiled to form an eye and thence extending forwardly to form a bow and thence upwardly, a transverse rod across the upper ends of the said spring rods, and tubular T pieces and springs which secure the spring rods and the transverse rod together, in combination with a divided seat composed of two independent portions pivoted on said transverse rod, the springs on the transverse rod causing the seat to return to its normal position when the tilting pressure is removed, substantially as described.

4. In a velocipede saddle, a block with central tubular opening and set screw whereby the block is secured to the seat post, tubular side ears to receive the seat frame, a seat supporting frame consisting of two spring rods with their lower ends clamped in the side ears of said block, thence extending rearwardly and coiled to form an eye and thence extending forwardly to form a bow, and thence upwardly, a transverse rod across the upper ends of the said spring rods, and tubular T pieces and springs which secure the spring rods and the transverse rod together, in combination with a divided seat composed of two independent portions with flanged sides pivoted on said transverse rod and tilting under pressure, the springs on the transverse rod causing the seat to return to its normal position when the tilting pressure is removed, substantially as described.



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531,334. SUBAQUEOUS ROCK-BREAKING CHISEL. WILLIAM L. ROSS, Newark, N. J., assignor to P. Sanford Ross, same place. Filed July 11, 1894. Serial No. 517,176. (No model.)



*Claim.*—1. In a sub-aqueous rock-breaking chisel, the combination of a long heavy shank provided with a stud at its lower end, a removable point provided with a socket adapted to receive the stud of the shank, the socket and stud having projections and recesses which, when the stud is inserted within the socket and turned through a given angle, are adapted to interlock, and means for maintaining the parts in locked position whereby the point and shank are rigidly and detachably united, substantially as set forth.

2. In a sub-aqueous rock-breaking chisel, the combination of a long heavy shank provided with a stud at its lower end, a removable point having at one end a cutting tip and provided with a welded in steel core extending upward from the tip and at its other end provided with a socket adapted to receive the stud of the shank, the socket and stud having projections and recesses which, when the stud is inserted within the socket and turned through a given angle, are adapted to interlock, and means for maintaining the parts in locked position whereby the point and shank are rigidly and detachably united, substantially as set forth.

3. In a sub-aqueous rock breaking chisel, the combination of a long heavy shank provided with a stud at its lower end, a removable point provided with a socket adapted to receive the stud of the shank, the socket and stud having projections and recesses which, when the stud is inserted within the socket and turned through a given angle, are adapted to interlock, and a removable bolt passing through the socket and stud for maintaining the parts in locked position whereby the point and shank are rigidly and detachably united, substantially as set forth.

4. In a sub aqueous rock breaking chisel, the combination of a long heavy shank provided with a stud at its lower end, a removable point having at one end a cutting tip and provided with a welded in steel core extending upward from the tip and at its other end provided with a socket adapted to receive the stud of the shank, the socket and stud having projections and recesses which, when the stud is inserted within the socket and turned through a given angle, are adapted to interlock, and a removable bolt passing through the socket and stud for maintaining the parts in locked position whereby the point and shank are rigidly and detachably united, substantially as set forth.

5. In a sub-aqueous rock-breaking chisel, the combination of a long, heavy shank provided with a stud E at its lower end, a removable point A provided with a socket D adapted to receive the stud of the shank, the socket having projections *g g'* and *h h'* and corresponding recesses, and the stud having projections *b b'*, and *c c'* and recesses *d d'* which, when the stud is inserted within the socket and turned through a given angle, are adapted to lock, and a removable bolt F passing through the socket and stud for maintaining the parts in a locked position whereby the point and shank are rigidly and adjustably united, substantially as set forth.

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531,335. PNEUMATIC TIRE. CHARLES H. ROTH, Cincinnati, Ohio. Filed Jan. 20, 1894. Serial No. 497,483. (No model.)



*Claim.*—1. A pneumatic tire, having a plurality of air confining layers formed from a single strip of material, the outside layer forming the tube proper and the inside layer or layers extending longitudinally of the tire and being free from the outside layer, substantially as described.

2. An air tube for pneumatic tires formed from a single strip of thin rubber overlapped so as to form a continuous longitudinal healing flap inside the tube proper and free therefrom, substantially as and for the purpose described.

3. In a valve for pneumatic tires, the combination of an elastic sleeve, an air inlet and outlet tube within the sleeve and secured leak-tight to the outer portion thereof, and free from the inner portion thereof, and a check valve controlling the passage of air through the air inlet and outlet tube, for the purpose set forth.

4. The combination with the air tube of a pneumatic tire and the wheel rim, of an elastic sleeve extending through the rim secured to the air tube and communicating with the interior of the air tube, an air inlet and outlet tube within the sleeve and secured thereto only at and near the outer end thereof and extending normally slightly beyond the inner end of the sleeve, projections on the inner end of the sleeve, and a check valve within the air tube, substantially as and for the purpose set forth.

5. The combination with the air tube of a pneumatic tire and the wheel rim, of an elastic sleeve having a flange on its inner end which is secured to the air tube, but with the wall of the air tube left free from its central portion and opposite the end of the sleeve, the elastic diaphragm thus formed having openings therein, a tube within the sleeve secured thereto only at and near the outer portion thereof and extending normally slightly beyond the inner face of the flange, and projections on the inner face of the flange, substantially as and for the purpose described.

6. The combination with the air tube of a pneumatic tire and the wheel rim, of a flange secured to the air tube so as to leave the wall of the air tube opposite its central portion free therefrom, an elastic sleeve carried by the flange and communicating with the interior of the air tube, an air inlet and outlet tube arranged within the sleeve and extending normally slightly beyond the inner face of the flange, the sleeve being secured near its outer end to the air inlet and outlet tube, and having a portion of its bore toward the air tube of a slightly greater diameter than the diameter of the air inlet and outlet tube, and projections on the inner face of the flange, the elastic diaphragm formed of the free portion of the wall of the air tube opposite the central portion of the flange having openings therein to one side of the end of the air inlet and outlet tube, substantially as and for the purpose described.

7. In a valve for pneumatic tires, the combination of a diaphragm 22 formed of a portion of the wall of the air tube and having openings therethrough, the elastic sleeve 20 secured to the air tube by a flange 21, and the tube 23, substantially as described.

8. In a valve for pneumatic tires, the combination of a diaphragm 22, an elastic sleeve 20, a flange 21 on the inner end of the sleeve, a tube 23 and projections 27 on the end of the sleeve, substantially as described.

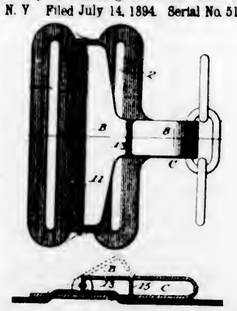
9. In a valve for pneumatic tires, the combination of a diaphragm 22 having openings therethrough, an elastic sleeve 20 having a flange 21 at one end, a tube 23 arranged within the sleeve and extending slightly beyond the sleeve at each end thereof, and secured to the sleeve at and near the outer end of the sleeve, a dust cap 29, and openings 30 in the tube 23 beyond the outer end of the sleeve 20, substantially as described.

10. In a valve for pneumatic tires, the combination of an elastic sleeve secured to the air tube of the tire, an air inlet and outlet tube secured within the sleeve, a check valve controlling the passage of air through the air inlet and outlet tube, and a cap adapted to screw onto the air inlet and outlet tube directly against the end of the sleeve, substantially as described.

11. The combination with the air tube of a valve for pneumatic tires, and a screw dust cap for the end of said air tube, of a spring

support to which the cap is rotatively secured, substantially as described.

## 531,336. BUCKLE. FRED C. RUTHEAD and WALTER F. ANTHONY, Williamsport, Pa., assignors to the Clark Stamping Company, Rochester, N. Y. Filed July 14, 1894. Serial No. 517,595. (No model.)

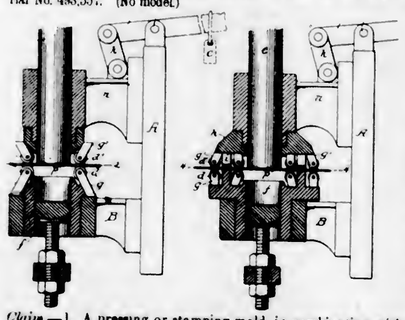


*Claim.*—1. In a buckle, the combination with the body-plate having a depending hook, of a clasping or wedging frame pivoted to the body and provided at its lower extremity with a substantially right angled portion adapted, when the clasp is closed, to lie across and immediately above the opening of the hook to form a guard for the same, substantially as described.

2. In a buckle, the combination with the body-plate having parallel slots, an intermediate bar, perforated lugs at the ends of the bar, and a depending hook, of a clasp having a substantially right angled portion at one end provided with pintles arranged in the perforations of the lugs, and a substantially right angled portion at the opposite end, adapted, when the clasp is closed, to lie across and immediately above the opening of the hook to form a guard for the same, substantially as described.

3. In a buckle, the combination with the body having parallel slots through which the strap or band passes, a bar between the slots, lugs at its ends, and a depending tongue having a bend 7, and a return or hook portion 8 parallel with the body-plate; of a T-shaped clasp having a substantially right angled portion at its upper end provided with a serrated edge and with pintles engaging the lugs, and having a substantially right angled portion at its lower end adapted to lie across and above the opening of the hook to form a guard for the same, the body of said clasp when locked upon the band being in line and flush with the return portion 8 of the hook, substantially as described.

## 531,337. STAMPING OR PRESSING MACHINE. EMIL SALTZKORN and LUDWIG NICOLAI, Dresden, Germany. Filed Dec. 13, 1893. Serial No. 493,557. (No model.)



*Claim.*—1. A pressing or stamping mold, in combination with a series of rollers adapted to be held in contact with the surface of the material being acted upon and to guide the same evenly toward the mold, substantially as specified.

2. In a pressing or stamping machine, the combination with a mold, of a die, a movable guide therefor and a series of rollers carried by such guide and adapted to be brought into contact with the surface of the material being acted upon, substantially as specified.

3. In a pressing or stamping machine, the combination with a mold and die, of a series of rollers provided around the entrance of the mold and adapted to support the material being operated upon, and a second series of pressing rollers provided above the mold and adapted to bear upon the upper surface of such material.

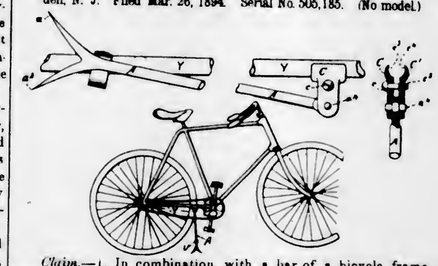
4. The combination with a mold and die, of two or more series of rollers arranged in concentric circles and adapted to support the material being acted upon, the rollers of one series being arranged on radial lines extending through the intervening spaces of the rollers of the opposite series, substantially as specified.

5. The combination with the mold and die, of two or more series of rollers arranged concentrically and adapted to support the material being operated upon, and an intervening friction ring between the series of rollers, substantially as specified.

6. The combination of the mold, two or more series of concentrically arranged rollers provided around the mouth of said mold, a friction ring provided between adjoining series of rollers, a die, a guide therefor, and pressing rollers and friction ring provided on said guide at points directly opposite to the rollers and friction ring of the mold, the whole being adapted to clamp and guide the material being acted upon, substantially as specified.

7. The combination of the mold, a die, a vertically movable guide for said die, a series of rollers carried by said guide and adapted to press upon the material being acted upon, a fulcrumed lever connected to said guide and a weight adjustable upon said lever, substantially as specified.

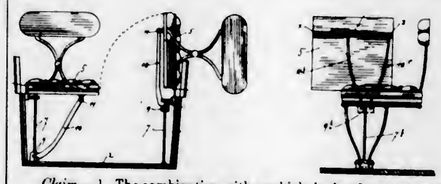
## 531,338. SUPPORT FOR BICYCLES. CHARLES A. SCHLOER, Camden, N. J. Filed Mar. 26, 1894. Serial No. 505,185. (No model.)



*Claim.*—1. In combination with a bar of a bicycle frame, a clamp comprising the members C and C' having the gripping jaws $c^4$ and $c^4$, the screw c, the shouldered arbor $a^4$, and the strut A journaled on the arbor between the clamp members substantially as shown and described.

2. A new article of manufacture comprising a clamp having the gripping jaws $c^4$ and $c^4$ controlled by the screw c, the removable shouldered arbor $a^4$, the pivoted strut A and the spring clasp U carried by the strut.

## 531,339. DEVICE FOR SUPPORTING VEHICLE-SEATS. ERIK SELEN, Utica, N. Y. Filed July 25, 1894. Serial No. 518,507. (No model.)



*Claim.*—1. The combination with a vehicle body of a seat hinged to the side of the body, a guide-post beneath the seat and a brace for the seat hinged at one end to the seat and running on the guide post at the other, substantially as set forth.

2. A seat hinged to a support by a sliding hinge, a fixed guide and brace beneath the swinging side of the seat and the guide engaging the seat by the sliding joint which permits the seat to be adjusted laterally, combined substantially as set forth.

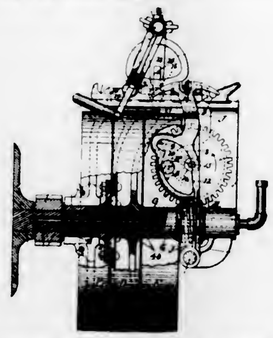
3. A seat hinged to a support by a sliding hinge, a lock for holding it in position when in use, a fixed guide and brace between the swinging side of the seat and the guide and engaging the seat by a sliding joint which permits the seat to be adjusted laterally when in unlocked position, substantially as set forth.

## 531,340. MECHANICAL MOVEMENT. ALONZO SHARP, Troy, N. Y. Filed Feb. 24, 1894. Serial No. 501,375. (No model.)

*Claim.*—1. A mechanical movement, consisting of three pulleys of equal diameter—of which the two outer ones are idlers adapted to rotate in opposite directions in relation to each other, a worm attached to one of said idlers, a worm-wheel fitted to mesh into said worm and having a wrist-pin fixed eccentrically therein, a vibratile



lever provided with an opening formed substantially as described; the perimeter of said opening being arranged to bear against said wrist-pin and adapted to effect alternating intervals of motion and rest for said lever, a slide operated by said lever and arranged to alternately take against a pair of pendulous-arms loosely pivoted on a stationary center, and a belt-shipper attached to each of said arms; said belt-shippers being arranged to operate independently of each other and to shift a pair of belts which move in opposite directions; whereby the middle pulley will be alternately rotated in opposite directions, as and for the purpose herein specified.



2. The combination of vibratile lever, J, arranged to receive alternating periods of rest and motion, a pair of belt-shipper arms, 22 and 23, each having a tongue, 28, and a belt-shipper, and a slide, N, operated by said lever and provided with seats, 33 and 36, and with notches, 34 and 37; said notches being arranged to consecutively engage with one of said tongues while the other tongue is held on a seat, as and for the purpose herein specified.

3. The combination of a vibratile lever, J, having a notch, 14, in its free end, a slide, N, having a latch, 32, jointed to said slide, and a stationary guide, M, having a standing flange provided with a notch, 31, adapted to receive said latch, whereby said slide can be locked in a fixed position, as herein specified.

4. The combination, with three pulleys—of which the two outer ones are idlers and are adapted to rotate in opposite directions, of a pair of belt-shippers arranged at opposite sides of said pulleys and fitted to move independently of each other, and the mechanism herein described for operating said belt-shippers: whereby one of the latter will be automatically moved to carry a belt into line with one of the idler-pulleys while the other belt-shipper is in position to run a belt on the middle pulley, substantially as herein specified.

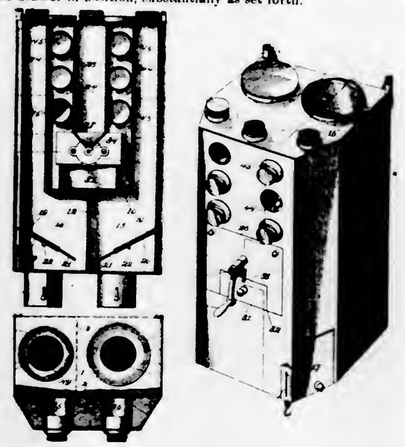
5. The combination of a bracket having an eye, 19, an arbor, 20, held stationary in said eye, and a pair of belt-shipper arms, 22 and 23, arranged to vibrate at opposite sides of said eye: the upper end of each of said arms being provided with a pair of eyes, 24, which are fitted to interlock with the pair of eyes of the other arm of said pair and with the eye 19, substantially as herein specified.

6. The combination of a pair of pendulous-arms, 22 and 23, each carrying a belt-shipper provided with an inwardly extending bar, 29, as herein set forth, and an open yoke, 18, into which said bar projects and—by taking against the rim of said yoke—is prevented from being carried beyond the extremity of its proper movement when the belt-shipper is freed from the control of its moving mechanism, as herein specified.

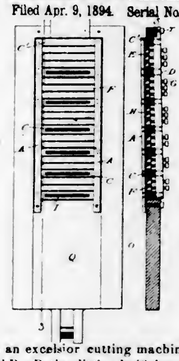
## 531,341. KITCHEN-CABINET. THOMAS E. SMITH, Kansas City, Mo. Filed Apr. 6, 1894. Serial No. 506,551. (No model.)

*Claim.*—1. In a kitchen cabinet, the combination with a suitable casing provided with two vertical partitions to form a central coffee compartment, a cover therefor, a horizontal partition to form a chamber below the coffee compartment, a coffee-grinder therein, and a drawer below the discharge opening of the coffee-grinder, and resting upon said horizontal partition, of a plate fitting detachably in an opening in the front wall of the casing and provided with a notch through which the said drawer projects, and an aperture through which the shaft of the coffee-grinder projects, substantially as set forth.

2. In a kitchen cabinet, the combination with a suitable casing provided with a coffee-compartment, a coffee-grinder located below said coffee-compartment and communicating therewith, and a drawer located below the discharge opening of the coffee-grinder, of a plate fitting in an opening in the front wall of the casing, and having a notch, through which the said drawer projects, and an aperture through which the shaft of the coffee-grinder projects, angular projections pivotally engaging apertures in the partition upon which the drawer is supported, apertured plates projecting inwardly from the upper corners of said plates, and spring catches engaging the apertures of said plates, to yieldingly hold the detachable plate in its closed position, a crank-handle mounted upon the outer end of the coffee-grinder shaft, and a turn-button carried by the detachable plate and holding the drawer in position, substantially as set forth.



## 531,342. EXCELSIOR-CUTTING MACHINE. CHARLES G. SMITH, Detroit, Mich. Filed Apr. 9, 1894. Serial No. 506,979. (No model.)



*Claim.*—1. In an excelsior cutting machine the combination of the posts A—A and B—B, the slitting knife boxes C, securely fastened together in such a manner as to form the opening for the reception of the shaving knives F, the posts B—B provided with the means for holding the ends of the shaving knives F in position and against the posts A—A substantially as described.

2. In the knife frame of the excelsior cutting machine the combination of the posts A—A and B—B, the slitting knife box C and the friction or guide plates C' securely fastened together and arranged to leave a space for the reception of the ends of the slitting knives F with the knives inserted in the spaces in the adjustable frame and the means to lock them against the posts A—A with the clearance plates H for holding the back or top of the knife away from the wood to be cut,—all substantially as described.

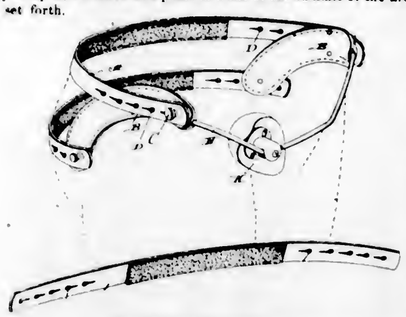
3. In an excelsior cutting machine the combination of the posts A—A and B—B, friction or guide plates C', slitting knife box C, clearance plates H, shaving knives F, set screw G, and the gage block S,—substantially as described.

4. In an excelsior cutting machine the combination of the posts A—A and B—B, friction or guide plates C', slitting knife boxes C, clearance plates H, shaving knives F, set screw G, gage block S, and the reciprocating frame O,—all substantially as described.

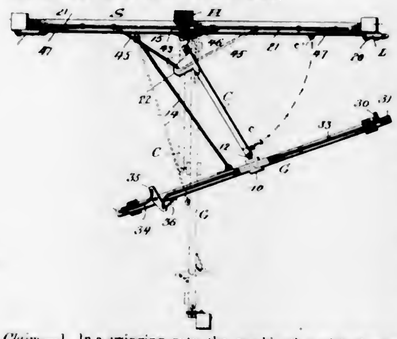
## 531,343. TRUSS. LUCIUS A. SMITH, Topeka, Kans. Filed June 9, 1894. Serial No. 514,079. (No model.)

*Claim.*—A truss, substantially as described, consisting of the body spring having its ends curved upward, rearward, and downwardly in the form of an arch on each side, the pad K, secured in place upon

the spring, a strap connecting each end of the spring and an auxiliary strap A, attached at a point in front of the summit of the arch as set forth.



531,344. GATE. JACOB W. SMITH, Chambersburg, Ohio. Filed Aug. 24, 1894. Serial No. 521,234. (No model.)



*Claim.*—1. In a swinging gate, the combination with the gate proper supported by a suitable post, a lever pivoted to a remote post, rods and connections between the lever and gate for swinging the latter, a catch on the supporting post, and a latch on the gate for engaging the same; of an upright rod journaled in eyes in the supporting post and having a crank for disengaging said latch and catch when the rod is turned, a head at the upper end of this rod, and connections between said head and lever whereby the upright rod is oscillated by the movement of the lever, as and for the purpose set forth

2. In a swinging gate, the combination with the gate proper having end and central upright panels, one gate bar being extended beyond said end panels and notched, and hinges for supporting the central panel; of rigid posts against which the extremities of said gate bar strike as the gate is closed, catches carried by these posts, latches carried by the gate and normally engaging said catches, and connections substantially as described between the latches for causing them to work in unison, as and for the purpose set forth.

3. In a swinging gate, the combination with the gate proper having end and central upright panels, one gate bar being extended beyond said end panels, and hinges for supporting the central panel; of rigid posts against which the extremities of said gate bar strike as the gate is closed, catches carried by these posts, rods extending the length of the gate and carrying latches normally engaging said catches, a hand-lever pivoted to said gate and also to these rods, and a spring normally moving the hand-lever in a direction to lock the latches and the catches, as and for the purpose set forth.

4. In a swinging gate, the combination with the gate proper having end and central upright panels, one gate bar being extended beyond said end panels, and hinges for supporting the central panel; of rigid posts against which the extremities of said gate bar strike as the gate is closed, catches carried by these posts, latches carried by the gate and normally engaging said catches, connections between said latches for causing them to move in unison, an upright rod journaled in eyes in one of said fixed posts and having a crank standing adjacent a projection on the nearest latch, and means for oscillating this rod to move the crank and disengage said latches from their catches, as and for the purpose set forth.

5. In a swinging gate, the combination with the gate proper supported by a suitable post, a lever pivoted to a remote post, rods and connections between the lever and gate for swinging the latter, a pivoted catch on the supporting post and a sliding latch on the gate for engaging the same; of an upright rod journaled in eyes in the supporting post and having a crank for moving said latch from under the catch when the rod is turned, a head at the upper end of this rod, and connections between said head and lever whereby the upright rod is oscillated by the movement of the lever, as and for the purpose set forth.

6. In a swinging gate, the combination with the gate proper having end and central upright panels, one gate bar being extended beyond said end panels and notched, and hinges for supporting the central post; of rigid ports against which the extremities of said gate bar strike as the gate is closed, pivoted catches carried by these posts and standing over the notches, sliding latches carried by the gate and normally engaging said catches, and connections substantially as described between the latches for causing them to work in unison, as and for the purpose set forth.

7. In a swinging gate, the combination with the gate proper having end and central upright panels, one gate bar being extended beyond said end panels, and hinges for supporting the central post; of rigid posts against which the extremities of said gate bar strike as the gate is closed, pivoted catches carried by these posts, latches consisting of sliding rods carried by the gate and having their ends normally engaging said catches, a hand-lever pivoted to said gate bar and also to these rods, and a spring normally moving the hand-lever in a direction to project the catches, as and for the purpose set forth.

8. In a swinging gate, the combination with the gate proper having end and central upright panels, one gate bar being extended beyond said end panels, and hinges for supporting the central panel; of rigid posts against which the extremities of said gate bar strike as the gate is closed, pivoted catches carried by these posts, sliding latches carried by the gate and normally engaging said catches, connections between said latches for causing them to move in unison, an upright rod journaled in eyes in one of said fixed posts and having a crank standing adjacent a projection on the nearest catch, and means for oscillating this rod to move the crank and disengage said latches from their catches, as and for the purpose set forth.

9. In a swinging gate, the combination with the gate proper hinged at its center and having one bar extended beyond its ends, posts against which the ends of the bar strike as the gate is closed, pivoted catches on these posts, and sliding latches carried by the gate and moving in unison, their extremities normally engaging the catches and one of them being provided with a projection; of an upright rod having a crank standing adjacent said projection and an elbow at its upper end, a sliding rod on the side fencing, a hook on this rod engaging the elbow so as to retract the latches when the rod is moved, and connections between the rod and gate for swinging the latter when unlatched, substantially as described.

10. In a gate, the combination with posts at the opposite sides of the roadway, a crane hinged to one post, a gate proper hinged to the outer end of the crane, a strut rod pivotally connecting the side fencing with the gate beyond its hinge, and latches and catches on the gate and posts adapted to engage automatically; of a rod sliding in eyes on the side fencing, levers pivoted to remote posts therein, links connecting the levers with said rod, another link connecting the rod with a lateral arm on the crane, and devices substantially as described operated by the initial movement of the sliding rod to disengage the latches and catches, as and for the purpose set forth.

11. In a gate, the combination with posts at the opposite sides of the roadway, a crane hinged to one post, a gate proper hinged to the outer end of the crane, a strut rod pivotally connecting the side fencing with the gate beyond its hinge, and latches and catches on the gate and post adapted to automatically engage; of a rod sliding in eyes on the side fencing, levers pivoted to remote posts therein, links connecting the levers with said rod, another link connecting the rod with a lateral arm on the crane, an upright rod journaled in ears on the hinge post and having a crank, a projection on one of the latches standing normally adjacent this crank, an elbow at the upper end of the rod, a spring turning the rod in one direction, and a hook on the sliding rod engaging said elbow and adapted to turn the upright rod in the opposite direction at the initial movement of the sliding rod, as and for the purpose set forth.

12. In a gate the combination with the gate proper, a sliding latch thereon, a projection on said latch, a post, and a pivoted catch engaging the tip of the latch when the latter is projected; of a plate secured to the post and having aligned ears, the catch being pivoted to this plate, a lug on the plate upon which the catch rests, an upright rod journaled in the ears and having a crank between them, and means for turning this rod to throw the crank against said projection and retract the latch, as and for the purpose set forth.

13. In a gate, the combination with the gate proper, a sliding latch thereon, a projection on said latch, a post, and a pivoted catch engaging the tip of the latch when the latter is projected; of a plate secured to the post and having aligned ears, the catch being pivoted to this plate, a lug on the plate upon which the catch rests, an upright rod journaled in the ears and having a crank between them, a spring turning the crank in one direction, a lip on the plate limiting such turning of the crank, and means for turning the rod in the opposite direction to retract the latch, as and for the purpose set forth.

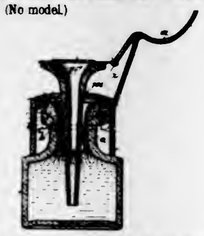
14. In a gate, the combination with the gate proper, a sliding latch thereon, a projection on said latch, a post, and a pivoted catch engaging the tip of the latch when the latter is projected; of a plate secured to the post and having aligned ears, the catch being pivoted to this plate, a lug on the plate upon which the catch rests, an upright rod journaled in the ears and having a crank between them standing opposite said projection, a spring throwing the crank normally away from the projection, an elbow at the upper end of this rod, a sliding rod in the side fencing, and a hook pivoted to said sliding rod with an overhanging lip at its free end resting on the rod and its face standing adjacent the elbow, as for and the purpose set forth.

15. In a gate, the combination with the gate proper having a sliding latch, a catch on the post with which said latch engages, and an upright crank rod journaled in a support on the post and adapted when turned to retract the latch; of an elbow at the upper end of the rod, a horizontal rod guided in eyes in the side fencing, means for moving this rod, and a projection thereon engaging said elbow when the sliding rod is moved in one direction, as and for the purpose set forth.

16. In a gate of the character described, the combination with the hinge post carrying upwardly projecting hooks, and the gate proper having an upright central panel carrying downwardly projecting hooks; of a crane consisting of two upright straps, top and bottom horizontal straps extending beyond the upright straps and having eyes at both ends, those at one end engaging the hooks on the post and those at the other receiving the hooks on the gate, a tie rod leading from the outer corner of the crane through the upper strap near its inner end, a nut on the upper end of the rod for the purpose set forth, means substantially as described for swinging and latching the gate, and a hook and eye for connecting the crane with the side fencing when desired, as and for the purpose set forth.



531,345. INKSTAND. LINCOLN N. THOMAS, Cincinnati, Ohio, assignor to Augustus N. Ritz, Milwaukee, Wis. Filed Sept. 27, 1894. Serial No. 524,311. (No model.)



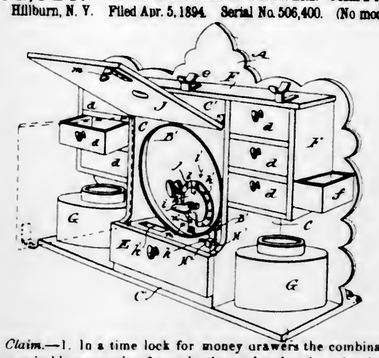
*Claim.*—1. In an ink-stand, the combination with an ink-receptacle having a neck rising therefrom and provided with a series of exterior flanges or shoulders, of a dip-cup adapted to depend within said ink-receptacle, an elastic perforated disk for the suspension of said dip-cup, and a band or collar vertically movable on said neck and attached to said disk and provided with movable lugs or dogs for engagement with one or another of said series of flanges or shoulders, substantially as set forth.

2. In an ink-stand, the combination with an ink receptacle having a neck rising therefrom and provided with a series of exterior flanges or shoulders, of a dip-cup adapted to depend within said receptacle, an elastic perforated disk for the suspension of said dip-cup, a band or collar vertically movable on said neck and attached to said disk and provided with movable lugs or dogs for engagement with said flanges or shoulders, and a cap or casing for covering said band and its attachments and having a perforation for the admission of the said dip-cup therethrough, substantially as set forth.

3. In an ink-stand, the combination with an ink receptacle having a neck rising therefrom and provided with a series of exterior flanges or shoulders, of a dip-cup adapted to depend within said receptacle, an elastic perforated disk for the suspension of said dip-cup, a band or collar vertically movable on said neck and attached to said disk and provided with movable lugs or dogs for engagement with said flanges or shoulders, a cap or casing for covering said band and its attachments and having a perforation for the admission of the said dip-cup therethrough, a penholder rack supported by and rising from said cap or casing, and a cover hinged to said rack and adapted to normally rest upon and close the orifice of said dip-cup, substantially as set forth.

4. In an ink-stand, the combination with an ink-receptacle having a neck rising therefrom and provided with a series of exterior flanges or shoulders, of a vertically movable band or collar adapted to fit around said neck, and formed with slots or perforations therethrough, a spring secured to said band and parallel therewith for a portion of its length and having lugs or dogs adapted to pass through said slots or perforations and engage with said flanges or shoulders, an elastic disk secured to said band and provided with a central perforation, and a dip-cup adapted to pass through said perforation and be suspended by said disk and to depend into said ink-receptacle, substantially as set forth.

531,346. TIME-LOCK FOR MONEY-DRAWERS. JOSEPH TOTTEN, Hillburn, N. Y. Filed Apr. 5, 1894. Serial No. 506,400. (No model.)



*Claim.*—1. In a time lock for money drawers the combination, with a suitable supporting frame having a slot therein and a drawer in the frame having a slot registering with the first, of a clock having a lever thereon normally resting in the slot and connections from the clock to the lever to raise the said lever at intervals to permit access to the drawer, substantially as shown and described.

2. In a time lock for money drawers the combination, with a suitable supporting frame having a slot therein, and a drawer in the said frame provided with a slot registering with the first, of a clock mounted above the said drawer, having a lever pivoted thereto normally resting in the said slots, and a disk upon the winding spindle of the clock, the said disk carrying a stud adapted to raise the lever, substantially as shown and described.

3. In a time lock for money drawers, the combination, with a suitable supporting frame having a slot therein, and a drawer in the said frame provided with a slot registering with the first, of a clock mounted above the said drawer, having a lever pivoted thereto normally resting in the said slots, a disk upon the winding spindle of the clock carrying a stud adapted to raise the lever, and a dial having numeral characters marked thereon, and adapted to be turned independently of the said disk, substantially as shown and described.

531,347. MINER'S SPOONING-TOOL. NATHAN E. VARNEY, Denver, Colo., assignor of one half to Lucius L. Moore and John A. Moore, same place. Filed Feb. 19, 1894. Serial No. 500,771. (No model.)



*Claim.*—1. In a miner's spoon, a rod having a shoulder near one end, a steel wire coiled into a cone, and having a pointed base terminal end, and coiled adjacent to the apex end around the end of said rod, and a hole through said shoulder in which said coil is secured, as specified.

2. In a miner's spooning tool, the combination of a rod having an enlargement near one end, and a cone-shaped bowl formed of a spirally coiled wire, having its base terminal flattened and pointed, and its apex end emerging into a cylindrical coil and wound round the end of said rod, and secured to said enlargement, as set forth.

3. In a miner's spooning tool, the combination of a rod having the miner's spoon forged on one end and an enlargement formed near the opposite end, provided with an axially arranged hole, with a steel wire coiled to form a cylindrical, hollow cone, said cone emerging at the apex end into a cylindrical coil, adapted to fit tightly the end of said rod and to pass through the hole in said enlargement, and having the base terminal of the wire cone flattened wedge-shaped to a point, as herein specified.

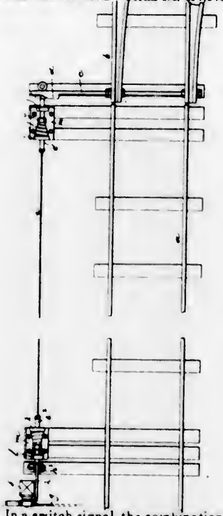
4. The combination in a miner's spooning tool, of a spoon formed of a steel wire, spirally wound into a cone, the coils of which are slightly separated, and the base wire of which is flattened and pointed at the end, and the apex of which extends cylindrically and embraces

the end of the rod, with a rod provided with a collar near one end, to which the apex end of said coil is secured.

5 In a miner's spoon, a spooning bowl consisting of a steel spring round wire spirally coiled into a flexible cone, the base terminal end of which is beveled off to form a wedge-shaped point and the apex end of which emerges into a cylindrical coil, a rod suitable for a handle fitting tightly in the cylindrical portion of the spiral cone, an enlargement on said rod near one end, a small hole through said enlargement through which the apex terminal end of the wire may be drawn and bent to secure said spiral cone to said rod, and a common bowl spoon forged on the opposite end of said rod, as specified

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**531,348. RAILWAY-SWITCH SIGNAL.** JAMES WAYLAND, Newark, N. J. Filed Jan. 24, 1894. Serial No. 497,875. (No model.)



*Claim.*—1. In a switch signal, the combination with the rod, *c*, of counterbalances *i*, arranged at opposite ends of said rod and exerting, normally, equal tension or draft on said rod, each counterbalance drawing the rod toward itself, said rod having means at one of its opposite ends to receive the power exerted by the moving switch, and at the other to transmit said power to the signal, substantially as set forth.

2. The combination with the switch and signal of a rod having springs, *i*, at its opposite ends each normally under tension or compression and normally holding said rod at an initial position and adapted to return said rod to said initial position after said rod has been forced therefrom.

3. The combination with the switch and the rod, *c*, thereof, having means thereon for converting the lateral movement thereof into longitudinal movement, of a longitudinally movable rod, *e*, arranged in bearings, *l*, *l*, and having springs *i*, *i*, at its opposite ends, drawing each upon said rod and normally holding said rod in an initial position and after the counterpoise of the rod is disturbed returning said rod to said initial position automatically, and a switch signal adapted to be operated by said rod, *e*, all substantially as and for the purposes set forth.

4. In combination with the switch, *b*, and rod, *c*, having the incline, *g*, a rod, *e*, engaging said incline and adapted to be moved longitudinally thereby, springs, *i*, secured to said rod at one end and pressing against bearings, *k*, at the other said bearings, a bell crank, A, rod, $A^1$, and a semaphore, *g*, stationed on a post, *f*, at a distance from the switch, substantially as and for the purposes set forth.

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**531,349. RAIL-FASTENING.** GEORGE A. WEBER, New York, N. Y., assignor to the Weber Railway Joint Manufacturing Company, of West Virginia. Filed July 10, 1891. Serial No. 399,102. (No model.)

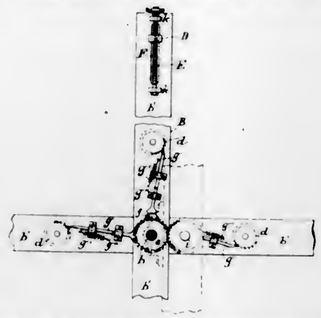
*Claim.*—1. The combination of the rail A, fish plate C, bolt D, and rolled metal chair B, provided with the portion H integral therewith, and bent upward, inward and again upward, so that when in position the part H is in vertical contact with the fish plate C and the foot of the rail is in contact with the horizontal surface of said chair, the rail, fish plate and chair being bolted together, substantially as described.

2. The combination of the rail A, fish-plate C, bolt D, and rolled metal chair B, provided with the portion H integral therewith and bent upward and inward so that when in position the part H is in contact with the fish-plate C, and the foot of the rail is in contact with the horizontal surface of said chair, the fish-plate C and the chair B being corresponding slotted for the passage of the spike F, substantially as described.



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**531,350. DYEING-MACHINE.** LEONARD WELDON, Amsterdam, N. Y. Filed Feb. 7, 1894. Serial No. 499,386. (No model.)



*Claim.*—1. In a dyeing machine, the combination with the revoluble frame for supporting the skeins of yarn, of a shaft for said frame, a gear wheel keyed to said shaft, a gear wheel loose on said shaft and having a different number of teeth in its periphery, a gear wheel meshing with the two other gear wheels, a cam carried by the loose gear wheel, a pawl operated by the cam, and a ratchet wheel engaging the pawl and secured to a revoluble cross-bar supporting the skeins, as set forth.

2. In a dyeing machine, the combination with a revoluble frame for supporting the skeins of yarn, of a shaft for said frame, a gear wheel keyed to said shaft, a gear wheel loose on said shaft and having a different number of teeth in its periphery, a gear wheel meshing with the two other gear wheels, a cam carried by the loose gear wheel, a plurality of pawls carried by the frame and operated by the cam, a ratchet wheel engaging each pawl and revoluble cross-bars operated by the ratchet wheels, substantially as described.

3. In a dyeing machine, the combination with the revoluble frame for supporting the skeins of yarn, of a shaft for said frame, a gear wheel keyed to said shaft, a gear wheel loose on said shaft and having a different number of teeth in its periphery, a gear wheel meshing with the two other gear wheels, a cam carried by the loose gear wheel, a longitudinally movable pawl operated by the cam, and a ratchet wheel engaging the pawl and secured to a revoluble cross bar supporting the skeins, as set forth.

4. In a dyeing machine, the combination with the revoluble frame for supporting the skeins of yarn, of a shaft for said frame, a gear wheel keyed to said shaft, a gear wheel loose on said shaft and having a different number of teeth in its periphery, a gear wheel meshing with the two other gear wheels, a cam carried by the loose gear wheel, a pawl provided with bearing on one end to engage the cam and with its opposite end engaging a ratchet wheel on a revoluble cross-bar supporting the skeins, a spring to retract the pawl and a stop, as and for the purpose described.

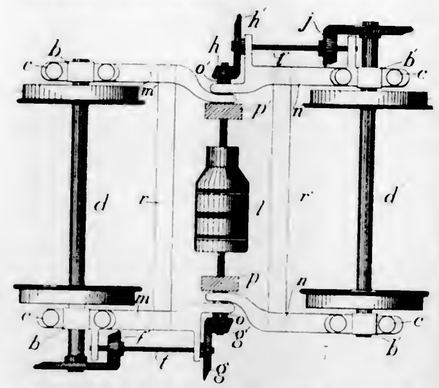
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**531,351. FLEXIBLE GEAR FOR ELECTRIC-CAR TRUCKS.** FERDINAND A. WESSEL and ERNST EGGER, New York, N. Y., assignors of one-fourth to Aaron Naumburg, same place. Filed Sept. 22, 1893. Serial No. 486,187. (No model.)

*Claim.*—1. In an electric car, the combination with the truck and car axles, of a motor having a shaft a pair of levers rotary around both the shaft and the axles, gear wheels upon each end of the shaft, a gear wheel upon one end of each axle, but upon opposite sides of the car, and intermediate gearing between the gear wheels on the shaft and axles and said intermediate gearings supported on said levers and springs between said car and said levers.

2. In an electric car the combination with the truck and car axles, of a motor having a shaft, a pair of levers rotary around both the shaft and the axles, gear wheels upon each end of the shaft, a gear wheel upon one end of each axle, but on opposite sides of the car, intermediate gearing between the gear wheels on the shaft and axles, said intermediate gearings supported on said levers, flexible ties connecting those levers which are connected to the same axle and supports between said car and said levers.





3. In an electric street car truck, the combination of a car body and frame, said frame consisting of a system of cross ties and swinging levers suitably pivoted and hung on bearings formed upon posts rigidly connected to the frame, said levers being provided with projections in which bearings are formed, such bearings being arranged so as to permit of the rotation of a shaft whose axis is in the same plane with the axes of the axles of the car wheels, but in a direction perpendicular to them.

4. In an electric street car truck, the combination of a car body, a frame consisting of cross ties and levers hung upon bearings and provided with projections in which said bearings are formed, of a motor, of a system of gear wheels mounted upon shafts, one shaft being the armature shaft, or a shaft, driven directly by the motor and the other axle of the car wheels, the power being transmitted from one shaft to the other by means of gear wheels mounted upon a shaft rotating in the bearings formed in the projections upon the said swinging levers.

5 In an electric street car truck, the combination of a car body, a frame consisting of cross ties and levers, a motor, bevel gear wheels mounted on the armature shaft and on the car-wheel axles, and intermediate bevel gear wheels engaging with the same and having their bearings rigidly fixed on said levers.

6. In an electric street car, the combination with the truck and car axles, of a motor having a shaft, a pair of levers rotary around each axle and around the said shaft and connecting the same, bevel gear wheels at the ends of the armature shaft and upon the axles, and intermediate shafts having bevel gear wheels which engage with the first named gear wheels, and have their bearings rigidly fixed on said levers.

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**531,352. TYPE-WRITING MACHINE.** MARSHALL A. WIER, Kingston-upon-Thames, England. Filed Oct. 29, 1891. Serial No. 410,267. (No model.) Patented in England Sept. 7, 1891. No. 15,107.

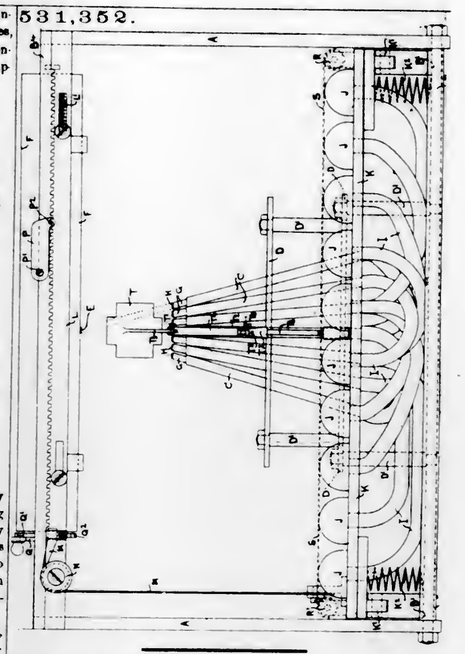
*Claim.*—1. In a typewriting machine, the combination with a rocking board provided with compressible air chambers of inking mechanism capable of actuation by said board, type-bars, carriers for said type-bars and connections between the compressible chambers and type bars whereby the latter are actuated upon the movement of said rocking board, substantially as described.

2. In a typewriting machine, the combination with type-bars and their actuating mechanism, of an inking device, a rocking board capable of being depressed independently of, or by reason of, the operation of said mechanism, for communicating motion to said inking device, substantially as described.

3. In a typewriting machine, the combination with type-bars and their actuating mechanism, of a rocking board, capable of being depressed independently of, or by reason of, the operation of said mechanism, a hinged pad and a connection between said board and pad for operating the latter, substantially as described.

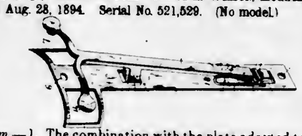
4. In a typewriting machine, the combination with type-bars and their actuating mechanism, of an inking device, a rocking board capable of being depressed independently of, or by reason of, the operation of said mechanism, for simultaneously imparting a step-by-step motion to the paper and operating the said inking device, substantially as described.

**531,352.**



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**531,353. GATE-LATCH.** JAMES L. WILSON, Mountain Peak, Tex. Filed Aug. 28, 1894. Serial No. 521,529. (No model.)

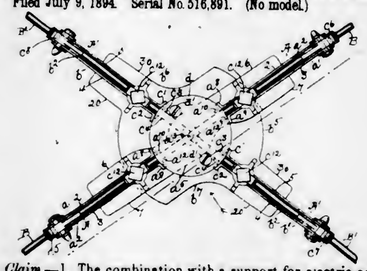


*Claim.*—1. The combination with the plate adapted to be secured to a gate, having an elongated slot at its lower end formed with a transverse bent arm, integral with said plate, of the spring actuated lever, having a bend at its lower end engaging with said arm, and a lug provided with a lip, passing through an aperture in said plate, substantially as described.

2. The combination with the plate having a slot at its lower end formed with a transverse bent arm and at its upper end formed with lateral curved arms, of the lever having a bend at its lower end, lateral finger holds at its upper end, and a lug with a lip, and the spring bent to form arms resting on said plate, arms embracing the lever, and a bend against which the lever abuts, substantially as described.

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**531,354. ELECTRIC-CONDUCTOR SUPPORT.** JOHAN M. ANDERSEN, Boston, Mass., assignor of one-half to Albert Anderson, same place. Filed July 9, 1894. Serial No. 516,891. (No model.)



*Claim.*—1. The combination with a support for electric conductors comprising grooved end portions, and an intermediate portion weaker than the said end portions, of a bridge or anti-buckling device intermediate of the said end portions and reinforcing the weaker intermediate portion of the support, for the purpose specified.

2. The combination with a support for electric conductors comprising two crossing members, each comprising grooved end portions, and intermediate connecting weaker portions, of a bridge or anti-buckling device secured to one of said members intermediate of the end portions of the said members and reinforcing the weaker connecting portions of the said members, for the purpose specified.

3. The combination with a support for electric conductors comprising thickened end portions, and an intermediate connecting weaker or thinner portion, of a bridge separate from the said support but secured thereto between the thickened end portions to operate, substantially as described.

4. The combination with a support for electric conductors comprising two members, one of which is composed of thickened end portions, and an intermediate connecting thinner or weaker portion, the other of which is composed of thickened end portions having locking projections or extensions co-operating with the under side of the connecting portion of the first member, and a bridge intermediate of the thickened portions of said members, and means to secure said bridge to one of said members, for the purpose specified.

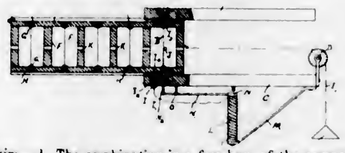
5. The combination with a support for electric conductors comprising end portions composed of upright walls forming a groove downwardly inclined at its ends, thickened bottom portions for said grooves rearwardly extended from its outer ends, an intermediate substantially flat portion connecting the said end portions and forming practically a continuation of the bottom of said groove, shoulders on the inner ends of said upright walls, and a bridge resting on said shoulders and secured to the said support, for the purpose specified.

6. The combination with an adjustable support for electric conductors comprising two members, adjustably secured together and each composed of end portions consisting of upright walls forming a groove having its bottom downwardly inclined at its outer ends and thickened toward the central portion, an intermediate substantially flat connecting portion joining the thickened end portions, of a bridge or anti-buckling device interposed between the thickened end portions to strengthen the substantially flat intermediate connecting portions, substantially as described.

7. The combination with a support for electric conductors comprising side walls forming a groove for the reception of the conductor and having its bottom provided with nubs or projections forming between them a recess or depression 10 in the bottom of the said groove, of a clamping device co-operating with the said nubs to crimp or bend the electric conductor into said depression, for the purpose specified.

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**531,355. FUSE-BOX.** CLAUDE L. ASHLEY, Atlanta, Ga. Filed Apr. 30, 1894. Serial No. 509,580. (No model.)



*Claim.*—1. The combination in a fuse box, of the compartment box A, with the guides C C' the weight E, the slate piece J, substantially as herein described.

2. In a fuse box, the combination of a box A, a number of fuse wires contained in said box, binding posts to secure the wires in place, the copper contact plate H, the spring copper contact point $I^3$, means for moving the box along the guides C, C', with the guides C, C' and means for stopping the box at the correct position, substantially as herein described.

3. An automatic magazine fuse box controlled by gravity, said fuse box consisting of box A containing several compartments each of which contains a binding post G and fuse wire, the contact plate H, the spring contact point $I^3$, the guides C, C', means for moving box A along the guides C, C' and means for stopping the same at the correct position, substantially as herein described.

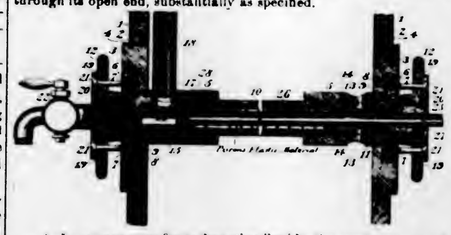
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**531,356. APPARATUS FOR CARBONATING BEER.** CARL BARUS, Washington, D. C., assignor of one-half to Albert Lieber, Indianapolis, Ind. Filed Apr. 30, 1894. Serial No. 508,332. (No model.)

*Claim.*—1. In an apparatus for carbonating liquids, the combination with a receptacle designed to contain liquid, of an elastic porous closed gas receiver within the receptacle adapted to supply gas in an atomized form to the interior of the receptacle, substantially as specified.

2. In an apparatus for carbonating liquids, the combination with a receptacle designed to contain liquid, of an elastic porous closed gas receiver within the receptacle, and means for automatically expanding or contracting the receiver to open or close the pores, substantially as specified.

3. In an apparatus for carbonating liquids, the combination with a receptacle designed to contain liquid under pressure, of an elastic porous closed gas receiver within the receptacle and open at one end, said open end being secured to one wall of the receptacle, and means for supplying gas from the exterior of the receptacle to said receiver through its open end, substantially as specified.



4. In an apparatus for carbonating liquids, the combination with a receptacle designed to contain liquid, of an elastic porous gas receiver, and a superimposed conduit therein, substantially as specified.

5. In an apparatus for carbonating liquids, the combination with a receptacle designed to contain liquid of an elastic porous gas receiver, a superimposed conduit through which liquid is adapted to circulate, and means for regulating the circulation through said conduit, substantially as specified.

6. In an apparatus for carbonating liquids, the combination with a receptacle, of a conduit therein communicating with the exterior thereof and apertured at one end, a pipe within said receptacle communicating the opposite end of said conduit with the receptacle above the contained liquid, and an elastic porous body within said conduit adapted to receive gas under pressure, substantially as specified.

7. In an apparatus for carbonating liquids, the combination with a receptacle designed to hold liquids, of an elastic porous receiver open at one end and closed at the other, said open end being secured to the wall of the receptacle and communicating with the exterior thereof, and a superimposed conduit communicating with the interior and the exterior of the receptacle whereby the liquid in passing from the receptacle circulates through the conduit and around the receiver, and means for controlling the circulation through the conduit, substantially as specified.

8. In an apparatus for carbonating liquids, the combination with a receptacle, of an elastic porous gas receiver therein adapted to supply gas to the interior of the receptacle in an atomized form, and means for preventing the collapse of the receiver, substantially as specified.

9. In an apparatus for carbonating fluid, the combination with a receptacle, of an elastic gas receiver therein, the walls thereof being provided with numerous minute diametrical punctures or apertures, and means for supplying gas to the receiver, substantially as specified.

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**531,357. BOOK-SEWING MACHINE.** WILLIAM L. BLACKMAN, Columbus, Miss. Filed June 28, 1894. Serial No. 516,031. (No model.)

*Claim.*—1. In apparatus for sewing book signatures, the combination with a group of carriers suitably supported for carrying parallel binding cords, a frame transversely thereof adapted to receive a signature, and means for laying a signature thread longitudinally in the frame, of a series of punches operating to force the thread in loops through the fold of the signature, mechanism for knotting said signature thread-ends about the two outside cords, together with means for inserting the remaining cords of the group through the loops of the signature thread, substantially as and for the purposes explained.

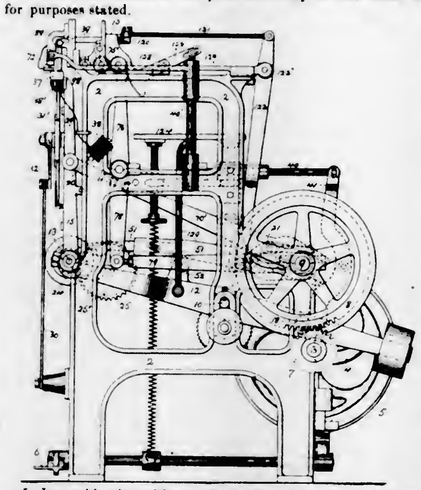
2. In apparatus for sewing book signatures, a group of parallel binding cord carriers horizontally supported, a frame adapted to swing transversely of said carriers, a grooved plate which surmounts said frame, and a series of parallel punches which reciprocate through the plate, combined with revoluble arms for placing the signature thread, mechanism for holding, and mechanism for cutting said thread, means for actuating the punches in succession from the signature center toward each end, to loop the signature thread, and mechanism by which the signature is transferred upon the binding cord carriers, substantially as set forth.

3. In apparatus for sewing signatores, a swinging frame adapted to rise and fall, a grooved plate upon which the signature is supported along its fold, a group of parallel punches adapted to reciprocate transversely across the groove upon movement of the frame, combined with a group of rotary arms to lay successively a thread along the groove, thread-holders in the end of each arm, means to cause the holders to grasp and release the thread, together with mechanism



for severing the thread to produce a signature thread of the proper length, substantially as specified.

4. In apparatus for sewing book signatures, the combination with a main driving shaft, a main cam-shaft, and rocking arms, a vertical frame pivotally mounted in the ends of said arms, a grooved plate which surmounts said frame, and an actuating cam lever, of a secondary cam-shaft, a series of punches adapted to reciprocate across and through the groove of the plate, toothed wheels for actuating the secondary cam shaft, and a cam lever adapted to engage at intervals one of the toothed wheels, the punches moving in pairs and in succession from the middle of the plate outwardly toward either end for purposes stated.



5. In combination with a swinging frame adapted to rise and fall, a longitudinally grooved plate, and a series of punches to move intermittently, a group of arms adapted to move upon a common center and supported in the frame, a bell-lever affixed upon the same center, an actuating lever joined to one end of said bell-lever, a dog secured upon the other and free end, the descent of the frame causing each arm to lay a signature thread along the grooved plate, substantially as stated and set forth.

6. In combination with a movable frame, a grooved plate thereupon, a series of thread-carrying arms pivoted thereupon, and means for operating the same at intervals, of twin shields oppositely on the frame, clamps at the free end of each arm, means for opening each clamp to receive the severed thread-end as the arm enters one shield, a spring to close the clamp as the arm leaves this shield, a lever operated by a punch rod to actuate a clamp and release the thread end in one arm, and a second cutter-armed lever attached to an opposite punch to sever the thread, substantially as explained.

7. In apparatus for sewing signatures, the combination with a plate adapted to support a signature and constructed to receive a mechanically-laid signature thread, of a series of punches to force said thread through the signature fold to produce a series of loops, a group of binding-cord carriers, and mechanism operating to present the several loops to the carriers which pass therethrough, substantially as described.

8. In a machine for sewing signatures, a rocking frame, a grooved plate, revolving arms adapted to lay a signature thread lengthwise in said plate, a group of punches carried in the frame, cams to force said punches through the folded signature supported on the plate, combined with a pendent transfer plate co-operating with the punches, and a group of carriers positioned to enter loops in the signature thread, substantially as stated.

9. The combination with a plate adapted to receive a mechanically-laid signature thread, and punches to force said threads in loops through the signature which straddles the plate, of a group of carriers for carrying binding cords, two shafts, two sets of holders to grasp the carriers, mechanism to cause the holders to alternately grasp and release the carriers, and means to advance the signature along upon the carriers, as explained.

10. In combination with a swinging frame, a grooved plate to receive a mechanically laid signature thread, and a series of punches which thrust the thread in loops through the signature, a series of horizontal carriers, two sets of holders which grasp and release the carriers, a pendent transfer plate adapted to support the ends of the binding-cord carriers, and mechanism for reciprocating the carriers to allow said binding cord carriers to enter the loops of the signature thread, substantially as herein stated.

11. The combination with the mechanically-laid signature thread, and punches for creating loops in the signature thread, of a series of carriers, two shafts in horizontal alignment, two sets of holders arranged to operate in pairs and mounted on said shafts, and means for alternately operating one set of holders to release all the carriers, and thereby permit advance of the signature along the carriers at that point, substantially as explained.

12. In an apparatus for sewing book signatures, a plate adapted to receive a mechanically-laid signature thread, punches for looping said thread through the signature, and mechanism for forming a kettle or end-stitch, combined with a group of carriers in parallelism, two rotating shafts transversely above said carriers, a set of carrier-holders on each shaft arranged to alternately release and grip the carriers, feed-teeth arranged diametrically on the shafts, and means for operating the shafts and the feed-teeth to advance the signature along the carrier at the point of release, substantially as and for the purposes set forth.

13. In apparatus for sewing book signatures, the combination with a series of binding cord carriers in parallelism, adapted to receive book signatures, of mechanism to support said carriers and comprising two transverse revolving shafts, groups of carrier-holders in pairs thereon, one movable and one fixed, a non-rotary shaft, lateral yokes secured to said shaft, and mechanism to impart endwise movement to said non-rotary shaft to cause the yokes to engage the movable holders and actuate each set alternately, substantially as described.

14. In a machine for sewing book signatures, an oscillating frame, a series of binding-cord carriers, two rotating shafts, carrier-holders and feed-teeth thereupon, combined with shouldered disks fast upon the shafts, two gears loose upon said shafts and furnished with pawls to engage the disks, an intermediary gear, and a toothed sector actuated by the rise and fall of said frame, all operating substantially as stated.

15. In combination with a rising and falling frame suitably mounted, a plate thereupon longitudinally grooved, and a series of reciprocating punches, a fixed casting, a pendent transfer plate pivotally mounted on said casting, a longitudinal V groove in the lower edge of said transfer plate, transverse apertures likewise in said edge adapted to register with the punches, binding-cord carriers to enter said transverse apertures, together with vertical openings to allow the two outermost punches to pass through said transfer plate, substantially as described.

16. The combination with a main standard, a fixed casting thereupon, a pendent swinging transfer plate, and two plates reciprocating on the transfer plate and having oppositely disposed hooks upon their lower edges, of a thrust bar affixed to the casting and which engages apertures common to the two reciprocating plates, whereby swinging of the transfer plate causes lateral travel of the plates to separate the hooks and thus creates a series of open notches, as and for purposes explained.

17. In apparatus for sewing book signatures, the combination with a frame, a longitudinally grooved plate, and means for causing the rise and fall of both frame and plate, a main standard, a fixed casting, an oscillating transfer plate pendent therefrom and formed with a V lower edge which engages with the grooved plate, of a finger secured to said transfer plate, and a boss upon the frame whereby movement of the frame oscillates the transfer plate, substantially as stated.

18. In apparatus for sewing signatures, a main standard, a swinging frame to rise and fall, a group of punches, a fixed casting on the standard, and a pair of heads adapted to reciprocate transversely of the casting, combined with a carriage movable to and fro with respect to the casting, thrust bars affixed to the carriage and means to advance the carriage to produce opposite rise and fall of the heads, as explained and stated.

19. In apparatus for sewing book signatures, the combination with a fixed casting, and a head movably secured in guide slots obliquely in said casting, of a knotting device comprising a thread clamp, a reciprocating looper, an oscillating looper, a holdfast, a plunger, a clearer plate, an actuating cam surface, and means for operating the latter to cause the said knotting devices to tie a kettle or end-stitch, for purposes explained.

20. In machines for sewing book signatures mechanically, a rising and falling signature plate armed with reciprocating punches, a group of parallel binding-cord carriers supported on revoluble shafts, and a carriage movable upon the machine frame and on which the shafts are mounted, combined with a swinging transfer plate likewise secured on the machine frame, vertical holes for the punches and horizontal holes for the ends of the binding cord carriers, and mechanism operating to retract the carriers from the transfer plate at the time the punches enter said plate, substantially as stated.

21. In machines for sewing book signatures mechanically, a rising

and falling signature plate, equipped with reciprocating punches, a group of binding-cord carriers co-operating therewith, a carriage movable on the machine frame, combined with two heads containing knot-tying elements and adapted to rise and fall obliquely on the machine frame, thrust bars affixed upon the carriage and engaging the heads, and means for causing to and fro travel of said carriage to produce oblique motion of the heads, for the purposes explained.

22. In apparatus for sewing book signatures, the combination with a suitable machine standard, a rising and falling signature plate, an oscillating transfer plate fixed on the machine standard, and a group of binding-cord carriers arranged to enter transverse holes in the transfer plate, of two sliding plates 64. 64'. secured on the back of the transfer plate, a stationary traverse bar on the machine standard, and means for rocking the transfer plate to cause the traverse bar to slide the said plates 64. 64'. oppositely upon each other to release the points of the carriers, for purposes described.

23. In mechanism for forming a kettle-stitch in a signature thread, a fixed tying-post secured in a head or casting and adapted to deliver a thread centrally from said post, a spring-actuated knot-clamp, means for presenting the loop of a signature and releasing said clamp to grasp one side of the loop, combined with a revoluble looper, an oscillating plunger, and clearer, and a reciprocating looper to carry the free end of the thread through the loop formed, substantially as specified.

24. In combination with a main head, a continuous bar thread centrally of a tying post, a looped signature thread transversely of and across the bar thread, a spring-actuated knot-clamp, a revoluble looper adapted to carry the signature thread from one side of the tying-post to the other, and mechanism for producing a limited movement to said looper, a reciprocating knot cam plate 86, an oscillating plunger adapted to thrust the free end of the thread through the loop created by the revoluble looper, a clearer moving in consonance with the plunger to retain one portion of the loop, and a reciprocating looper actuated by the cam plate 86 in a plane to one side of the revoluble looper to draw the free end of the thread through the loop, substantially as specified.

25. In mechanism for creating an end-stitch in a signature thread, the combination with a suitable head, a fixed tying-post, and a spring knot-clamp released by the act of looping the signature thread, of a revoluble looper, an oscillating plunger, a clearer, a barbed looper reciprocated by the knot cam plate 86, and a rocking holdfast adapted to move across the path of the thread-end, together with cam surfaces to time the oscillations of the plunger and clearer, substantially as stated.

26. In apparatus for sewing book signatures, a rising and falling signature plate armed with punches to loop the signature thread through the signature, and a movable head adapted to deliver a bar thread continuously across the signature thread, combined with a knot clamp caused to grasp the thread when a punch creates a loop, a reciprocating knot cam plate 86, a revoluble sickle-shaped looper, a plunger and clearer operated positively by cam surfaces on the plate 86, a reciprocating barbed looper adapted to carry the free thread-end forward and back, a rocking holdfast, means for timing the motion of the holdfast with respect to the barbed looper, and devices for limiting the travel of the plate 86, substantially as specified.

27. In knot-tying mechanism, the combination, with a central tying-point 87, of a revoluble sickle shaped looper adapted to carry a thread thereabout to produce a loop, a shoulder on said looper to separate the two sides of the loop, a plunger to carry the flexed free end of the thread in part through the loop now formed, a barbed looper to pull said end through the loop, a clearer to free the thread from the shoulder, and a cam-surfaced plate to time said co-operating elements in accordance with the duties to be performed.

28. In combination with a fixed tying-point, a head supporting the same, a hook-shaped looper having a toothed arbor, a reciprocating knot cam-plate, a movable toothed rack affixed to the cam-plate, and a latch operated by the movement of the cam-plate to lock the rack, and thus limit and control the rotation of the hooked looper and hold it stationary at certain predetermined intervals of time.

29. In apparatus for sewing book signatures, a plate adapted to receive a mechanically-laid signature thread, punches for looping the same through the signature, means for producing a kettle-stitch in the ends of the signature thread, combined with a group of binding-cord carriers in parallelism, two rotating shafts, a set of carrier-holders on each shaft, feed-teeth diametrically on the shafts, means for operating the shafts to advance the signature along the carrier at the point of release, and two brushes upon the rear shaft and in alignment with the bar threads, said brushes being adapted to position all the ends of the signature threads above and upon the backs of the signatures, for purposes set forth.

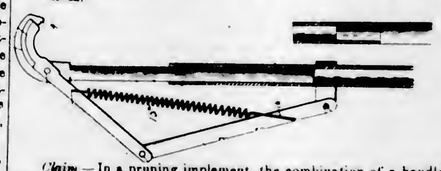
30. In combination with a rising and falling signature plate, a series of reciprocating loop-forming punches, a group of transverse binding cord carriers, means for causing advance and entrance of said carriers through the loop created by the punches, revolnble spools to supply continuous bar-threads, and mechanism adapted to tie each end of a signature thread to a bar thread, substantially as specified.

31. In mechanism for tying a knot, comprising a support for the various elements, and a fixed tying post, a device for holding the thread end, means for seizing the thread and creating a loop, mechanism for thrusting the thread end transversely across the plane of the loop and through the latter in part, an element for holding a portion of the loop stationary, and means for seizing and completing the passage of the thread end through the loop, substantially as explained.

32. In mechanism for sewing signatures, the combination with a movable plate adapted to carry a signature, and a transfer plate to receive said signature, a group of binding cord carriers, mechanism to support said carriers, and instrumentalities adapted to cause the points to enter and withdraw from holes in said plate at stated interrals of time, substantially as described.

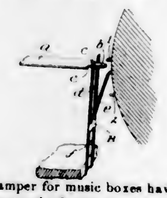
33. The combination with shuttles in parallelism, a swinging transfer plate, a series of horizontal and vertical holes interconnecting as shown, a group of binding-cord carriers the points of which enter the horizontal holes, a series of punches each in alignment transversely of one of the carriers and adapted to enter the vertical holes, means for causing the carrier to advance and retreat at stated times, and mechanism to reciprocate the punches within the vertical holes, substantially as specified.

## 531,358. PRUNING-KNIFE. LEWIS C. BOSLEY and BENJAMIN BOSLEY, Spickard, Mo. Filed Jan. 2, 1894. Serial No. 495,399. (No model.)



*Claim.*—In a pruning implement, the combination of a handle-supporting tube, a reciprocating shank mounted to slide within said tube and provided at its upper outer end with a curved hook portion, a knife-lever pivoted intermediate of its ends at one side of the reciprocating shank adjacent to the hook and provided near its point of pivot with a curved knife portion, a clip or cuff adjustably clamped on said tube, a movable link pivotally connected at one end to said clip or cuff and at its other end to one extremity of said knife lever, said link being provided in its outer edge with a longitudinal series of catch notches, and an adjustable retractile spring arranged in the angle between the knife lever and said link, said spring being connected at one end to the knife lever at one side of its pivot and provided at its other end with a loop arranged to loosely embrace said link and adapted to adjustably engage the notches thereof, substantially as set forth.

## 531,359. DAMPER FOR MUSIC-BOXES. GUSTAV A. BRACHHAUSEN, Hoboken, N. J. Filed Aug. 15, 1894. Serial No. 520,345. (No model.)



*Claim.*—1. A damper for music boxes having two forked damping arms of equal extent and a finger or projection independent thereof extending from the body of the damper, substantially as described.

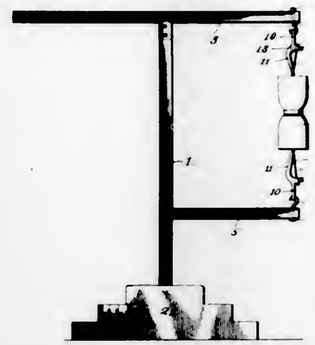
2. In a music box, a rigidly supported damper having two resilient forked damping arms, with an arm or projection independent thereof extending from the body of the damper, substantially as described.

3. In a music box, the combination of a music tongue having shoulders thereon, means for vibrating said tongue, a damper having a finger or projection extending therefrom, and two forked arms straddling and adapted to be forced in contact with the shoulders on said music tongue, substantially as described.

4. In a music box, the combination of a music tongue having a contracted portion forming shoulders thereon, a damper extending into the space formed by said contracted portion, and adapted to be forced into contact with said shoulders, a projection extending from said damper, and means for co-operating therewith to operate the damper, substantially as described.



## 531,360. MAIL-BAG HANGER. JOHN A. BRANIFF, Kansas City, Mo. Filed Mar. 20, 1894. Serial No. 504,471. (No model.)

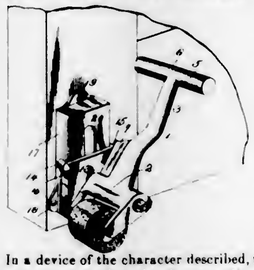


*Claim.*—1. A mail-bag supporting device, comprising a casting having a curved portion, an arm projecting from said casting at the concaved side of the curved portion, a spring extending through and adjustably carried by said arm, and bearing at its lower end against said casting so as to form an opening to receive the ring of a mail-bag, and means to secure said spring at any desired point of its adjustment, substantially as and for the purpose set forth.

2. A mail-bag fastener, comprising a casting having a curved portion, an arm projecting from said casting, and having a vertical aperture having inclined side-walls, a spring passing vertically through said aperture and, having a head, a set-screw passing through said arm and engaging said spring, substantially as set forth.

3. In a mail-bag hanger, the combination with a supporting crane, and hooks carried vertically thereby, of a pair of fasteners, comprising stem-portions engaging said hooks and terminating in curved portions, arms projecting laterally from said stems and provided with apertures, springs extending through said apertures and bearing at one end against the said curved portions, and set-screws carried operatively by said arms and impinging upon said springs, substantially as set forth.

## 531,361. DOOR-CHECK. CHARLES H. CAMERON, Huron, S. D. Filed Aug. 23, 1894. Serial No. 521,125. (No model.)

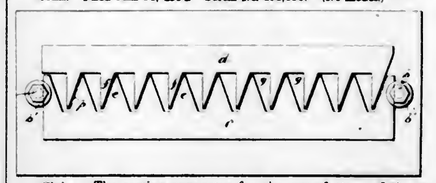


*Claim.*—1. In a device of the character described, the combination with a supporting section adapted to be secured to a door, of a two-armed pivoted lever adapted to be adjusted vertically upon said supporting section, said arms being arranged relatively to each other at or about at the angle specified, one of said arms being heavier than the other so as to operate by gravity to normally hold the lighter arm in an elevated position, and a roller journaled in the lighter arm, all as and for the purpose specified.

2. In a device of the character described, the combination with a supporting section adapted to be secured to a door, of a lever carrying a roller at one end adapted to engage with a floor, a pin or bolt upon which said lever is pivotally mounted, a washer or plate carried by said bolt and a nut also carried by said bolt and adapted to screw upon the same, said plate and nut adapted to adjustably clamp the supporting section in the manner described.

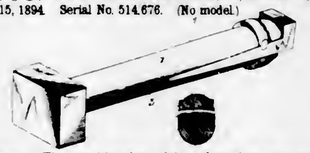
3. In a device of the character described, the combination with a supporting section, provided with a vertical slot, a lever carrying a roller at one end adapted to engage with a floor, a pin or bolt upon which said lever is pivotally mounted and passing through the slot, a washer or plate carried by said bolt upon one side of said slot and a nut also carried by said bolt upon the opposite side of the slot and adapted to screw upon the bolt, said washer and nut adapted to adjustably clamp the supporting section as described and stops carried by the said section and adapted to limit the throw of the lever in each direction.

## 531,362. APPARATUS FOR CASTING. HARRY B. COX, Hartford, Conn. Filed Jan. 31, 1894. Serial No. 498,659. (No model.)



*Claim.*—The casting apparatus for the manufacture of thermo-electric piles which comprises a base, the two parallel plates arranged on said base, one at least, of said plates being movable, said plates having the inwardly extending projections from their inner edges arranged to alternate and extend between each other to form the mold cavities, each pair of opposite projections having their adjacent edges formed to leave the slots connecting the mold cavities, substantially as described.

## 531,363. BOLT. JACOB DINKELACKER, Jr., Millersville, Pa. Filed June 15, 1894. Serial No. 514,676. (No model.)



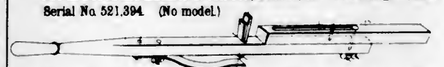
*Claim.*—1. The combination with a slotted or split bolt having an enlarged shouldered terminal, of a tapered spreading-key adapted to fit in the slot or kerf of the bolt and provided at its outer end with a lateral ear or projection to limit the insertion of the key and facilitate the withdrawal thereof, and a removable pin for locking the key, temporarily, in said slot or kerf, substantially as specified.

2. The combination of a slotted or split bolt having an enlarged shouldered terminal, a tapered spreading-key adapted to fit in the slot or kerf of the bolt, and a bent locking-pin engaging a transverse seat in contiguous faces of the key and bolt, substantially as specified.

3. The combination of a slotted or split bolt having an enlarged shouldered terminal, a tapered spreading-key adapted to fit in the slot or kerf of the bolt, contiguous faces of the key and bolt being provided with registering transverse grooves which vary, inversely, in depth from their centers toward their extremities, and a locking-pin to fit in said registering grooves and bent to conform to the shape thereof, substantially as specified.

4. The combination of a slotted or split bolt, tapered exteriorly toward one end, and terminating in an enlargement which is approximately equal in diameter, when the bolt is contracted, with the body-portion of the bolt, said enlargement terminating at its inner side in an abrupt shoulder and being tapered or beveled at its outer side, a tapered spreading-key adapted to fit in the slot or kerf in the bolt to expand the slotted or split portion of the latter, and means to lock the key in engagement with the bolt, substantially as specified.

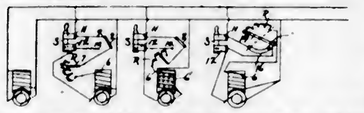
## 531,364. IMPLEMENT FOR SHARPENING DISK KNIVES. RODNEY H. DODGE and HARMON S. CLINTON, Ancona, Ill. Filed Aug. 27, 1894. Serial No. 521,394. (No model.)



*Claim.*—1. The herein described disk knife sharpener comprising the bar or frame A, the leg or support B, adjustably connected to the bar or frame A, a sharpening blade or implement carried by the bar or frame A, and adapted to engage one side of a disk knife and the spring connected to the bar A, and adapted to engage the opposite side of the disk knife, substantially as and for the purpose set forth.

2. The herein described disk knife sharpener comprising the bar or frame A, the leg or support B, having a longitudinal slot, a bolt extending through the slot of the leg B, and the bar A, a thumb screw mounted on said bolt, a sharpening blade or implement carried by the bar or frame A, and adapted to engage one side of the disk knife, the spring C, connected at one end to the bar A, and adapted to engage the opposite side of a disk-knife, a threaded bolt taking through the spring C, and bar A. and a thumb screw mounted on said bolt, substantially as and for the purpose set forth.

**531,365. CONTROLLING ELECTROMAGNETIC MACHINES.** WILLIAM I. DOMSHKA, New York, N. Y. Filed Jan. 29, 1894. Serial No. 498,335. (No model.)



*Claim.*—1. The method of controlling electro-magnetic machines, which consists in exciting the field coil of such machine by connecting it to a source of current exterior to the machine itself, when throwing the machine into use, and before closing the armature circuit and converting it into a self-exciting machine before or while throwing it out of use whereby field discharge is accomplished gradually, substantially as described.

2. The method of controlling electro-magnetic machines which consists in quickly establishing a field by a current from a source interior to the machine itself, and before closing the armature circuit when starting, and maintaining during use the connection of such exterior source, and finally converting the machine into a self-exciting machine, substantially as described.

3. The method of controlling dynamos having shunt coils which consists in maintaining the machine connected to an exterior circuit and source of current during use, and before closing the armature circuit and when throwing the same out of circuit breaking the connection between the external circuit and source and the machine, but maintaining the shunt circuit of the machine intact until the field is gradually reduced, substantially as described.

4. The method of connecting electro magnetic machines having shunt field coils to the multiple buses of a divided source system which consists in connecting the shunt coils in circuit with said buses, and connecting each armature of the divided group of machines to said buses after its field coil is connected.

5. The method of controlling electro magnetic machines having shunt field coils to the multiple buses of a divided source system which consists in connecting the shunt coils in circuit with said buses, connecting each armature of the divided group of machines to said buses after its field coil is connected, and disconnecting the machines from the buses leaving the shunt field coils connected in circuit with their armatures.

6. The combination of an electro-magnetic machine having suitable field coils, and armature, means adapted to connect the field coils to a source of current exterior to the machine and then to close the armature circuit, and switching devices for connecting the field coils to the armature of the machine itself, to form a self exciting machine, substantially as described.

7. The combination of an electro-magnetic machine having suitable field coils and armature, bus wires, means for connecting said coils thereto before closing the armature circuit, and for breaking such connection, and means for connecting the field coils to the armature of the machine itself, to form a self exciting machine, substantially as described.

8. The combination of two buses connected to a source of current, a shunt machine adapted to be connected to said buses, a switch in each bus, one between the connection of the shunt coil and the commutator of the machine, and the other switch outside the connection of the opposite end of the shunt coil, substantially as described.

9. The combination of dynamos, connected to positive, negative, and neutral conductors, switching devices for connecting the field coils between the negative and positive and the neutral conductors, and switches adapted to cross connect the dynamos, substantially as described.

10. The combination of positive, negative and neutral buses, electro-magnetic machines connected or adapted to be connected thereto, switches 18 between the machines and buses, and switch contacts 25, 26 connected from the negative to the positive and from the positive to the negative sides, respectively, substantially as described.

11. The combination of two or more buses, electro-magnetic machines, switch contacts 22, 24, and means for connecting the machines to either set of said contacts, substantially as described.

12. The combination of parallel pivoted switch blades, each blade having separate contacts, an arm projecting from one blade, and means for connecting said arm to the other blade, as and for the purpose set forth.

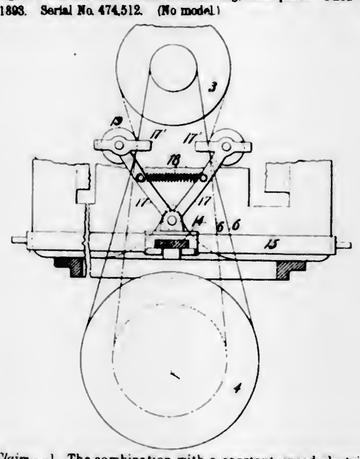
13. The combination of parallel switch blades, each blade having separate contacts, an arm projecting from one blade, a catch carried by the other blade and adapted to engage said arm.

14. The combination of two switches movable both separately and together, one terminal of each of which is connected to a separate circuit from the other, and means for connecting and disconnecting said switches, substantially as described.

15. The combination with an electro-magnetic machine having a suitable armature circuit, and a shunt field coil, of a switch having contacts 34, 35, connected or adapted to be connected to the machine and to a bus, a switch arm 33, to which the shunt coil is or may be connected, adapted to connect them, and adapted also by movement in one direction to break contact with one and then with the other of said contacts, substantially as described.

16. The combination, in a switch, of a switch arm to which one circuit wire can be connected, and contacts in position to make simultaneous contact with said arm when it is in one position, and said contact being placed so that the arm will break contact therewith successively as the switch arm is moved forward, substantially as described.

**531,366. MEANS FOR CONTROLLING ELECTRIC LOCOMOTIVES.** ERNST EGGER and FERDINAND A. WIESEL, New York, N. Y., assignors of one-fourth to Aaron Naumburg, same place. Filed May 17, 1893. Serial No. 474,512. (No model.)



*Claim.*—1. The combination with a constant speed electric motor, and with the wheels of an electric car, of conical pulleys on the motor axle and car axle respectively and connected by a driving belt, a belt shifter for adjusting the belt along the lengths of the pulleys, and means carried by the belt shifter for automatically tightening the taut and loose portions of the belt as the load increases.

2. The combination with a constant speed electric motor and with the wheels of an electric car, of conical pulleys respectively therefor connected by a driving belt, and means for tightening and shifting the belt along the lengths of the said pulleys, said means consisting of a slide movable along a guide bar, levers pivoted to said slide and carrying rollers which bear upon said belt, a spring connecting the levers, a handle, and gearing connecting the handle to the slide.

3. The combination with a constant speed electric motor and with the wheels of an electric car, of conical pulleys respectively therefor connected by a driving belt, a belt shifter for tightening and shifting the belt along the lengths of said pulleys, a circuit controller, and means for operating, simultaneously, the said belt shifter and said circuit controller.

4. The combination with a constant speed electric motor and with the wheels of an electric car, of conical pulleys respectively therefor connected by a driving belt, a belt shifter for tightening and shifting the belt along the lengths of said pulleys, a circuit controller and means for operating, simultaneously, the said belt shifter and the said circuit controller, said means consisting of a handle, on the platform of the car, a shaft extending under the car having cranks, and geared to said handle, pivoted rods connecting said cranks to said belt shifter, and gearing connecting said shaft to said circuit controller.

5. The combination with a constant speed electric motor and with the wheels of an electric car, of conical pulleys respectively therefor connected by a driving belt, a belt shifter for tightening and shifting the belt along the lengths of said pulleys, a circuit controller, and means for operating, simultaneously, the said belt shifter and the said circuit controller, said means consisting of a handle, on the platform of the car, a shaft extending under the car having cranks, and geared to said handle, pivoted rods connecting said cranks to said belt shifter, and gearing connecting said shaft to said circuit controller, said circuit controller consisting of means for including more and more resistance in circuit with the field magnet of the motor, when said handle is turned farther and farther in either direction, and for reversing the motor when said handle is turned in opposite directions.



6. The combination with an electric motor having a conical pulley and with a car having a conical pulley arranged parallel to the first, of a belt connecting the pulleys, a belt shifter for the belt, a swinging handle on the platform of the car carrying a bevel gear, an upright shaft carrying a bevel gear which gears with the first gear, a horizontal shaft gearing with the upright shaft, cranks belonging to the horizontal shaft and having pivoted rods, a slide connecting said rods, and carrying said belt shifter and a guide bar upon which the slide is movable.

7. The combination with an electric motor having a conical pulley and with a car having a conical pulley arranged parallel to the first, of a belt connecting the pulleys, a belt shifter for the belt, a swinging handle on the platform of the car carrying a bevel gear, an upright shaft carrying a bevel gear which gears with the first gear, a horizontal shaft and having pivoted rods, a slide connecting said rods, and carrying said belt shifter, and a guide bar upon which the slide is movable, and a circuit controller in circuit with said motor and geared to said horizontal shaft, for the purpose as set forth of throwing more and more resistance into the circuit with the field magnet of the motor as the belt shifter is thrown farther and farther along the pulleys by the mere operation of the said swinging handle.

8. The combination with a constant-speed electric motor and with the wheels of an electric car, of conical pulleys respectively therefor connected by a driving belt, and means for tightening and shifting the belt along the lengths of said pulleys, said means consisting of a slide movable along a guide bar, levers pivoted to said slide and carrying rollers which bear upon said belt, a spring connecting the levers, a handle, and gearing connecting the handle to the slide, and a loose pulley at the end of one of said conical pulleys.

9. The combination with a constant speed electric motor and with the wheels of an electric car, of conical pulleys respectively therefor connected by a driving belt, a belt shifter for tightening and shifting the belt along the lengths of said pulleys, a circuit controller, and means for operating, simultaneously, the said belt shifter and the said circuit controller, and a loose pulley at the end of one of said conical pulleys.

10. The combination with a constant speed electric motor and with the wheels of an electric car, of conical pulleys respectively therefor connected by a driving belt, a belt shifter for tightening and shifting the belt along the lengths of said pulleys, a circuit controller, and means for operating, simultaneously, the said belt shifter and the said circuit controller, said means consisting of a handle, on the platform of the car, a shaft extending under the car having cranks, and geared to said handle, pivoted rods connecting said cranks to said belt shifter, and gearing connecting said shaft to said circuit controller, and a loose pulley at the end of one of said conical pulleys.

11. The combination with a constant speed electric motor and with the wheels of an electric car, of conical pulleys respectively therefor connected by a driving belt, a belt shifter for tightening and shifting the belt along the lengths of said pulleys, a circuit controller, and means for operating, simultaneously, the said belt shifter and the said circuit controller, said means consisting of a handle, on the platform of the car, a shaft extending under the car having cranks, and geared to said handle, pivoted rods connecting said cranks to said belt shifter, and gearing connecting said shaft to said circuit controller, said circuit controller consisting of means for including more and more resistance in circuit with the field magnet of the motor, when said handle is turned farther and farther in either direction, and for reversing the motor when said handle is turned in opposite directions, and a loose pulley at the end of one of said conical pulleys.

12. The combination with a constant speed electric motor and with the wheels of an electric car, of conical pulleys respectively therefor connected by a driving belt, a belt shifter for tightening and shifting the belt along the lengths of said pulleys, a circuit controller, and means for operating, simultaneously, the said belt shifter and the said circuit controller, said means consisting of a handle, on the platform of the car, a shaft extending under the car having cranks, and geared to said handle, pivoted rods connecting said cranks to said belt shifter, and gearing connecting said shaft to said circuit controller, said circuit controller consisting of means for including more and more resistance in circuit with the field magnet of the motor, when said handle is turned farther and farther in either direction, and for reversing the motor when said handle is turned in opposite directions, a brake magnet in circuit with said circuit controller, and with the field magnet of said motor, and a loose pulley at the end of one of said conical pulleys.

13. The combination with a constant speed electric motor and with the wheels of an electric car, of conical pulleys respectively therefor connected by a driving belt, a belt shifter for tightening and shifting the belt along the lengths of said pulleys, a circuit controller, and means for operating, simultaneously, the said belt shifter and the said circuit controller, said means consisting of a handle, on the platform of the car, a shaft extending under the car having cranks, and geared to said handle, pivoted rods connecting said cranks to said belt shifter and gearing connecting said shaft to said circuit controller, said circuit controller consisting of means for including more and more resistance in circuit with the field magnet of the motor, when said handle is turned farther and farther in either direction, a brake magnet in circuit with said controller, and with the field magnet of said motor.

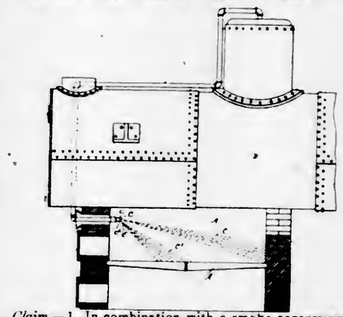
14. The combination with an electric motor having a conical pulley and with a car having a conical pulley and a loose pulley arranged parallel to the first, of a belt connecting the pulleys, a belt shifter for the belt, a swinging handle on the platform of the car carrying a bevel gear an upright shaft carrying a bevel gear which gears with the first gear, a horizontal shaft gearing with the upright shaft, cranks belonging to the horizontal shaft and having pivoted rods, a slide connecting said rods, and carrying said belt shifter, and a guide bar upon which the slide is movable.

15. The combination with an electric motor having a conical pulley and with a car having a conical pulley and a loose pulley arranged parallel to the first, of a belt connecting the pulleys, a belt shifter for the belt, a swinging handle on the platform of the car carrying a bevel gear, an upright shaft carrying a bevel gear which gears with the first gear, a horizontal shaft and having pivoted rods, a slide connecting said rods, and carrying said belt shifter, and a guide bar upon which the slide is movable, and a circuit controller in circuit with said motor and geared to said horizontal shaft, for the purpose as set forth of throwing more and more resistance into the circuit with the field magnet of the motor as the belt shifter is thrown farther and farther along the pulleys by the mere operation of the said swinging handle.

16. The combination with a constant speed electric motor and with the wheels of an electric car, of conical pulleys on the motor axle and car axle respectively and connected by a driving belt, a belt shifter movable along the direction of the length of the pulleys, and means for automatically tightening the taut and loose portions of the belt as the load increases.

17. The combination with a constant speed electric motor and with the wheels of an electric car, of conical pulleys on the motor axle and car axle respectively and connected by a driving belt, a belt shifter movable in the direction of the length of the said pulleys and consisting of pivoted arms with projections extending beyond the edges of the belt and an automatic belt tightener consisting of pulleys carried by said arms, and a spring connecting the arms for pressing the last named pulleys against the belt.

**531,367. SMOKE-CONSUMING FURNACE.** MORRIS EVANS, Erie, Pa., assignor of two-thirds to C. McCreary and K. Gieseler, same place. Filed Feb. 15, 1894. Serial No. 500,255. (No model.)



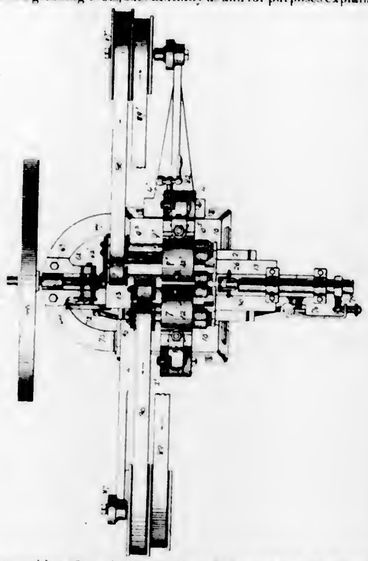
*Claim.*—1. In combination with a smoke consuming furnace, a jet nipple having a plurality of series of jet orifices, the jets of each series being laterally divergent with relation to each other.

2. The combination with a smoke consuming furnace, of a jet nipple having a series of jet orifices therein, and an outwardly extending deflecting lip, *c*, thereon adjacent to the jet orifices of said series.

**531,368. MACHINE FOR CONCAVING RAZORS.** JAMES J. FIFIELD, Chelsea, Mass. Filed Feb. 23, 1894. Serial No. 501,084. (No model.)

*Claim.*—1. The combination with two oppositely rotating shafts suitably mounted, and their grinding disks, of a self-centering or automatically adjustable table movably freely at right angles to the longitudinal axis of said shafts, a tool-holder mounted on said table and adapted to have right line reciprocations in parallelism with said shafts, and means for causing rise and fall of the grinder-carrying shafts, substantially as stated.

2. In combination with two movable standards, one being fixed in position relatively to the article to be ground, the other movable with respect to said article, two axially adjustable heads affixed to said standards, each standard to move transversely of the article, one or more parallel rotary shafts, grinding tools upon the shafts, a table movable freely transversely of the longitudinal axis of the shafts, a tool holder adapted to reciprocate in parallelism with said shafts, and a support for the article to be ground and automatically adjustable between the grinding tools, substantially as and for purposes explained.



3. In machines for grinding tools, a fixed standard, a movable standard, actuating feed mechanism for the latter, vertically moving carriages in said standards, means for reciprocating said carriages, grinder-carrying heads revoluble axially for adjustment, a series of shafts armed with grinders rotating independently in said heads, the active grinders to rotate oppositely and co-operate, substantially as specified.

4. In mechanism for grinding tools, the combination with two oppositely rotating grinders, a movable table, a tool stock thereon for a tool which is free to adjust itself between said grinders, of rocking standards, adjustable grinder heads, carriages which support said heads and are attached to the standards, and mechanism for causing the grinders to rise and fall while in rotation, substantially as stated.

5. In mechanism for grinding tools, a rocking standard thereupon, a reciprocating carriage on the standard, a cylindrical shell, a grinder therein, and a series of shafts adapted for independent rotation in said head and carrying grinders, combined with a continuous rotary shaft, rocking levers and connecting rods to said carriage, and a variable connecting rod which unites the rocking levers and the rotary shaft, substantially as set forth.

6. In a machine for grinding tools, the combination with a rocking standard, a movable carriage counterpoised therein and carrying a series of rotating shafts with grinders, of a fixed post, a removable templet thereon, a finger affixed to the movable carriage, and a spring which interconnects the carriage and post in order to cause the templet and finger to co-operate, substantially as described.

7. In machines for grinding tools, a tool-stock comprising an arbor, a transverse guide pin at one end, two parallel plates adapted to slide upon said pin, a clamping screw which controls said plates, the two vertically grooved guide plates, an adjustable post to support the tool, and rear holding clamps, all operating substantially as explained.

8. In combination with two oppositely rotating grinding disks, and a tool held therebetween, a table freely movable to allow automatic change in the tool to compensate for loss in material, a series of balls which support said table and play in grooves, a removable gib fitted with anti-friction rolls and interposed between the machine frame and the standard, together with means by which lost motion is obviated while the table is free to move, substantially as set forth.

9. In mechanism for grinding tools, two oppositely rotating grinders adapted to rise and fall while in rotation, a freely movable table fitted with a tool-stock adapted to reciprocate in a direction normal to the plane of rotation of the cutters, combined with a rocking feed lever carried by the table, and means for causing the feed lever to rock, comprising a continuously moving worm, and worm gear, a revolving pin-plate, an oscillating finger, together with connections from the feed-lever to the finger, and from the finger to the pin-plate, substantially as explained.

10. In mechanism for grinding tools, a freely movable table carrying a tool rest, a reciprocating tool-stock, and an oscillating feed lever, with means for operating said lever, combined with two oppositely rotating grinder-heads and grinders mounted on independently revolving shafts, mechanism for reciprocating the grinder-heads comprising connecting rods, oscillating levers, a continuously rotary main shaft, and a variable connecting rod, composed of jointed arms having horizontal and vertical screw adjustment, substantially as stated.

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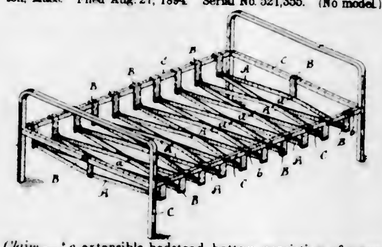
**531,369. COMPOSITION FOR BUILDING CONSTRUCTIONS.** WALTER R. FORBUSH, Boston, Mass. Filed May 2, 1893. Serial No. 472,741. (No specimens.)

*Claim.*—1. The herein described composition for building construction, consisting of infusorial earth, silicate of soda, and a saline solution, substantially as described.

2. The herein described composition for building construction, consisting of infusorial earth, soluble glass, and salt, substantially as described.

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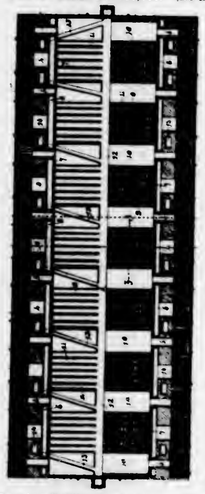
**531,370. EXTENSIBLE BED-BOTTOM.** AUGUST H. FREESE, Boston, Mass. Filed Aug. 27, 1894. Serial No. 521,355. (No model.)



*Claim.*—An extensible bedstead bottom consisting of a number of pairs of bars set vertically each pair being attached at each end to a hanger adapted to fit onto a bedstead rail, each of said pairs of bars being connected to the adjacent pair by a central rivet and a hanger secured to the outer bar of each end pair substantially as set forth.

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**531,371. BRICK-KILN.** CHARLES E. FROST, New Lisbon, Ohio. Filed May 10, 1894. Serial No. 510,780. (No model.)



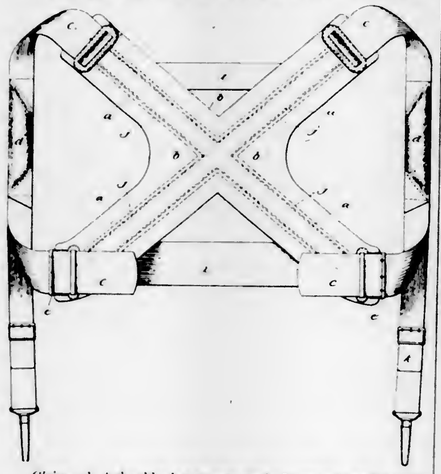
*Claim.*—1. In a brick kiln, the combination of the kiln body having opposite inner vertical side flues, a kiln flooring arranged on the bed of the kiln and comprising alternate open and closed portions, a main longitudinal bed flue formed in the bed of the kiln below the flooring, a series of draft flues arranged directly under the open portions of the flooring and communicating with said bed flue, suitably arranged stack flues, and fire arches formed in the kiln walls and leading alternately into said vertical side flues and into the kiln body directly above the closed portions of the flooring, substantially as set forth.



2. In a brick kiln, the combination of the kiln body having opposite inner vertical side flues, and vertical stack flues formed in the side walls thereof, the opposite furnaces, a kiln flooring arranged in parallel sections within the kiln body and comprising alternate open and closed portions, a main longitudinal bed flue formed in the bed of the kiln centrally therein, a series of draft flues arranged directly under the open portions of the floor and opening at their inner ends into said main longitudinal bed flue, stack flues formed in the bed of the kiln under the closed portion of the floor and communicating with the main longitudinal bed flue and the stack flues in the kiln walls, and fire arches formed in the kiln walls and leading from said furnaces alternately into the said side flues and into the kiln body over the closed portions, substantially as set forth.

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**531,372. SHOULDER-BRACE.** WILL M. GAMBLE, New Whatcom, Wash. Filed Dec. 3, 1891. Serial No. 414,196. (No model.)



*Claim.*—1. A shoulder brace composed of a central portion, pockets projecting therefrom, stiffeners crossing each other in said central portion, the ends of said stiffeners projecting into said pockets, and adjustable shoulder straps extending over the shoulders and connecting the ends of the upper and lower pockets for holding the brace in position on the body of the wearer, substantially as described.

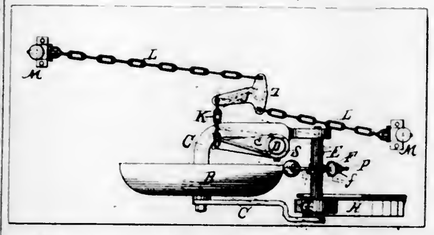
2. A shoulder brace composed of a central portion, four pockets extending therefrom in diagonally opposite directions, stiffeners crossing each other in said central portion, the ends of said stiffeners projecting into said pockets, adjustable shoulder straps extending over the shoulders and connecting the ends of the upper and lower pockets for holding the brace in position on the body of the wearer, and adjustable clothing supports attached to said shoulder straps near the lower ends thereof, substantially as described.

3. A shoulder brace composed of a central portion, four pockets projecting therefrom, stiffeners crossing each other in said central portion, the ends of said stiffeners projecting into said pockets, adjustable shoulder straps provided with fastening devices extending over the shoulders and connecting the ends of the upper and lower pockets for holding the brace in position on the body of the wearer, pads on said straps, an elastic strap connecting the ends of said projecting pockets and means attached to said brace for supporting the clothing of the wearer, substantially as described.

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**531,373. SIGNAL-BELL.** IRAD L. GARSIDE, Paterson, N. J., assignor to the Multi-Stroke Bell Company, of New Jersey. Filed May 15, 1894. Serial No. 511,294. (No model.)

*Claim.*—1. In combination with a bell or gong operated by a contact or friction roller, a spring acting to cause the said roller to make yielding contact with the tire or wheel, a spring actuated connection for withdrawing the said roller against the action of the said spring, a second spring for actuating the said connection, and means for counteracting the effect of the said second spring whereby the said roller may be freely forced into contact by the action of the first said spring, substantially as and for the purposes set forth.



2. In combination, a friction-roller bell and mechanism, pivotally mounted, a spring for turning the bell upon its pivotal mounting and causing the friction roller to make contact with the tire or wheel, a chain or flexible connection for withdrawing the bell out of operation and against the force of the said spring, a pivoted spring-actuated crank or lever for such chain or flexible connection, and means for counteracting or restraining the action of the said spring-actuated crank, at will, whereby the bell may be brought into action, substantially as and for the purposes set forth.

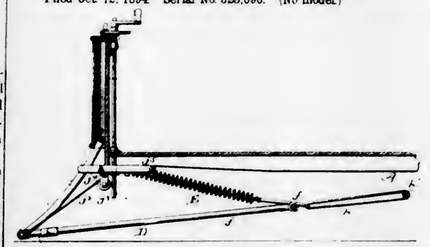
3. In combination in a bell ringing mechanism, the bell or gong and its frame or support C, a shaft mounted and turning in the said frame, a friction roller carried on the said shaft, a rotary striker or strikers mounted upon the said shaft, and means for rotating the said frame to cause the said roller to make contact with the wheel for which it is designed, substantially as and for the purposes set forth.

4. In combination in a striker or hammer device for bells, a rotary shaft, a plate or support mounted thereon and one or more strikers, hammers, or knockers, suspended by and between two or more links *f*, within or upon the said support, substantially as and for the purposes set forth.

5. The herein described improvement in alarm and signal bells, consisting of the strikers, hammers, or knockers, and the link suspension therefor, the said strikers, hammers, or knockers being free to play within a limited space and substantially forming an intermediate link of a chain in connection with and continuation of the said link suspension.

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**531,374. CAR-FENDER.** WILLIAM B. GEORGE, Columbus, Ohio. Filed Oct. 12, 1894. Serial No. 525,696. (No model.)



*Claim.*—1. The combination with a car and a fender, of means for inclosing said fender in front of the car, substantially as set forth.

2. The combination with a car having a compartment at the end thereof, of a fender constructed and adapted to enter said compartment, substantially as set forth.

3. The combination with a car having a dash board constructed with two walls to produce an intermediate compartment, of a fender constructed and adapted to enter said compartment, substantially as set forth.

4. The combination with a car and a fender, of means for normally inclosing said fender in front of the car, and springs constructed and adapted to project said fender when released, substantially as set forth.

5. The combination with a car having a dash board constructed with a compartment, of a fender frame, and a fender composed of a series of bars connected to said frame and adapted to enter said compartment, substantially as set forth.

6. The combination with a car having a dash board constructed with a compartment, of a fender frame, a fender connected to said frame and adapted to enter said compartment, springs attached to said frame and to the car so as to project the fender when the latter

is released, and means for limiting the forward movement of the fender frame, substantially as set forth.

7. The combination with a car having a dash board constructed with a compartment, of a fender frame, a fender connected to said frame and adapted to enter said compartment, springs secured at one end to said frame and at the other end to the car in front of the connection of said springs to the frame, a bar secured to the car in rear of said frame, and a strap connecting said bar and frame whereby to limit the movement of the latter, substantially as set forth.

8. The combination with a car having a dash board constructed with a compartment, of a fender frame, a fender connected to said frame and adapted to enter said compartment, springs connected with said frame and the car for projecting the fender, and an arm projecting from the car and between two bars of the fender whereby to guide the same, substantially as set forth.

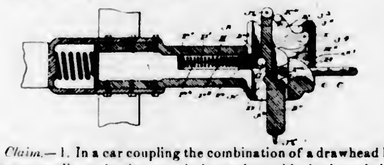
9. The combination with a car having a dash board made with a compartment, of a fender adapted to enter said compartment, springs for projecting said fender when released, a vertical shaft, a cord or chain secured to the fender and adapted to wind on said shaft, and means for locking said shaft when the fender is in its inoperative position, substantially as set forth.

10. The combination with a car having a dash board made with a compartment, of a fender adapted to enter said compartment, springs for projecting said fender, a vertical shaft, a cord or chain secured to the fender and wound on said shaft, a perforated plate secured to the shaft, a dog pivoted to the dash board and adapted to enter a perforation in said plate, and a crank on said shaft, substantially as set forth.

11. The combination with a car having a dash board made with a compartment, of a fender adapted to enter said compartment, springs for projecting said fender when released, a vertical shaft, means for turning said shaft, a pulley mounted under the forward end of the car and a cord or chain secured at one end to the fender, passed over said pulley and wound on said vertical shaft, substantially as set forth.

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531,375. CAR-COUPLING. DAVID G. GROSS, Berlin, Canada, assignor of one-half to John R. Eden, same place. Filed Jan. 11, 1894. Serial No. 496,563. (No model.)



*Claim.*—1. In a car coupling the combination of a drawhead having an upwardly projecting spur in its cavity, a block pivoted above the spur and adapted to engage the same, said block having two vertically aligned projections on each of its sides and a vertically reciprocating bar, having two lugs adapted to lie one on each side of the block and between the projections thereof, substantially as described.

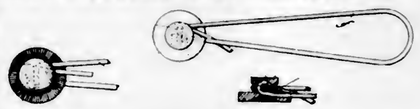
2. In a car coupling, the combination of a drawhead having an upwardly projecting spur in the cavity thereof, a block pivoted above the spur and adapted to bear upon the same, said block having on each of its sides two vertically aligned projections a vertically reciprocating bar having two lugs adapted to lie one on each side of the block and between the projections thereof, and a second block or detent having a spring tendency toward the back and adapted to hold the bar at various positions throughout its length substantially as described.

3. In a car coupling, the combination of a drawhead having an upwardly projecting spur in the cavity thereof, a block pivoted above the spur and adapted to bear thereon, said block having on each of its sides two vertically aligned projections, a bar movable vertically in the drawhead and having two lugs adapted respectively to lie between the projections of the block, the rear side of the bar being formed with a lug and a shoulder and a spring actuated block or detent adapted to bear against the rear side of the bar and operate with the lug and shoulder thereon, substantially as described.

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531,376. SEAL. FRANK E. GUTTERSON, Brooklyn, N. Y., assignor of one-half to Henry H. Howard, East Orange, N. J. Filed Apr. 12, 1894. Serial No. 507,213. (No model.)

*Claim.*—The combination with a metallic seal consisting of the base A, the neck *b*, provided with the hole *d*, and the cap or disk c, of the shackle wire *f* one end of which is provided with a hook or loop *g* embedded in said seal and extending into said neck around said hole, and the other or free end of which is to be passed through said hole and wound about said neck, the said hole *d* being transverse to the length of the said shackle wire, so that the free end of the latter will be bent at a right angle, or approximately so, to its length, to pass it through said hole and wind it about said neck.



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531,377. GUM AND PROCESS OF MAKING SAME. JOHN HANSON, PETER C. D. CASTLE, and JAMES H. MORRISON, Liverpool, England. Filed Nov. 2, 1893. Serial No. 489,851. (No specimens.)

*Claim.*—1. As a new article of manufacture, a gum comprising the soluble matter of the cotyledons of the beans of the locust tree, and water in substantially the proportion set forth,—said gum being characterized as being of the almost exact specific gravity of water, as containing no starch, and as acting strongly upon iron and zinc, the presence of iron turning the gum nearly black and the said gum forming a somewhat stiff jelly when containing about ninety-six per cent. of water and having the useful qualities herein set forth.

2. As a new article of manufacture the combination of the gummy extract of the split cotyledons of the locust beans with the extract of the cuticle of the same, the said gum having strong keeping qualities.

3. The process of manufacturing gummy matter from the beans or kernels of the locust tree, which consists in breaking the kernels; separating the cotyledons from the germs and steeping the former in warm water for long periods, as described; and separating the solution from the insoluble residue.

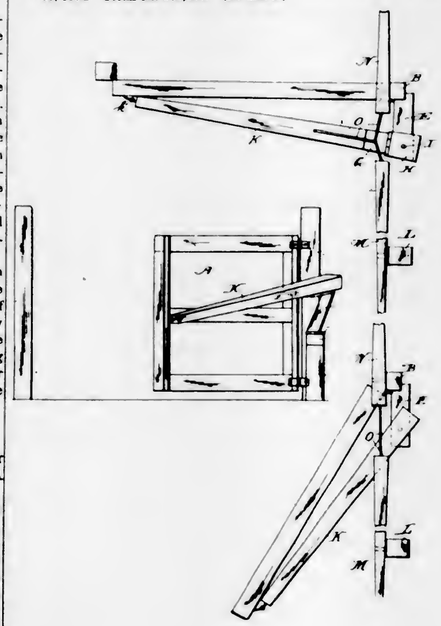
4. In the process of manufacturing gummy matter from the beans or kernels of the locust tree steeping the split kernels in water, keeping it about blood heat for many hours and agitating until the kernels become an apparently homogeneous mass and separating the gummy solution from the solid matter by centrifugal action.

5. In the process of manufacturing gummy matter from the beans or kernels of the locust tree, steeping the broken kernels and cuticle in water above blood heat until the extractive matter from the cuticle has become dissolved whereby an antiseptic matter is added to the gum produced from the kernels.

6. In the process of manufacturing gummy matter from the beans or kernels of the locust tree, splitting the kernels; separating the cotyledons from the germs; and dissolving out the soluble matters from the cotyledons.

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531,378. GATE. JACOB E. KNAPP, Brownsville, Oreg. Filed July 28, 1894. Serial No. 518,874. (No model.)



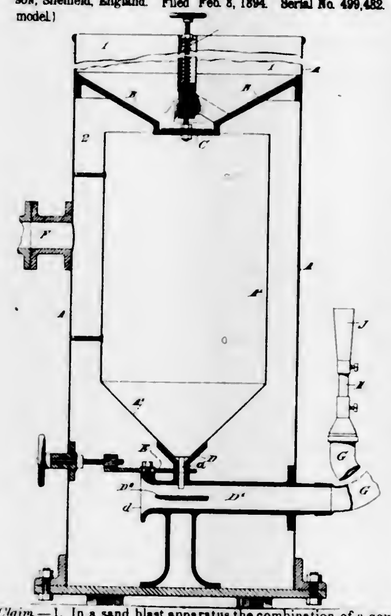


*Claim.*—1. The combination with a hinged gate, of a block arranged adjacent to the hinged end of said gate, a bar pivotally connected at its outer end to the gate near the outer end thereof, a hinge comprising three sections hinged together, one of said sections being pivotally connected to said block, and another section being fixedly secured to the said bar near its inner end, and means for raising the said inner end of the bar in the manner and for the purpose specified.

2. The combination with a hinged gate, of a block arranged adjacent to the hinged end of said gate, a bar pivotally connected at its outer end to the gate near the outer end thereof, a hinge comprising three sections hinged together, one of said sections being pivotally connected to said block and another section being fixedly secured to the said bar near its inner end, a post arranged adjacent to the gate, a bar pivoted to said post, a second bar pivoted to the post to which the gate is hinged, a rope, bar or the like connecting the adjacent ends of the said bars to the inner end of the bar which is pivotally connected with the gate, all arranged for co-operation, substantially as described.

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531,379. SAND-BLAST APPARATUS. JEREMIAH E. MATHEWSON, Sheffield, England. Filed Feb. 8, 1894. Serial No. 499,482. (No model.)



*Claim.*—1. In a sand blast apparatus the combination of a compartment or chamber 2, a sand hopper situated therein, an inlet into said chamber for a suitable compressed propelling medium, a combining or contact chamber beneath the sand hopper, a passage for the flow of sand from said hopper to the contact chamber and an inlet thereto for the propelling medium and a tube for conveying away the sand driven by the propelling medium.

2. In a sand blast apparatus, the combination of an air tight compartment or chamber 2, a sand hopper situated therein, an inlet into said chamber for a suitable compressed propelling medium, a combining or contact chamber beneath the sand hopper, a passage for the flow of sand from said hopper to the contact chamber, an inlet for the propelling medium from the chamber 2 to the combining chamber, and an outlet from said combining chamber for the mixed sand and propelling medium.

3. In a sand blast apparatus, the combination of a sand hopper, a combining or contact chamber into which the sand flows from the hopper, an inlet to said chamber for fluid under pressure, a flexible pipe G, of the same cross-section as the combining chamber, leading therefrom, and serving to conduct away the propelling medium mixed with sand, and a blast pipe H of reduced cross section arranged on the end of the flexible pipe G whereby the sand may have a comparatively slow motion in the flexible pipe and attain its maximum velocity only in the blast pipe.

4. In a sand blast apparatus, the combination with a sand hopper, of a combining or contact chamber into which sand flows from the hopper, an inlet thereto for fluid under pressure, a tube or pipe G leading from said chamber, a blast pipe H of reduced size on the end of the tube, and an outwardly flaring tube J on the end of the blast pipe, substantially for the purpose specified.

5. In a sand blast apparatus, the combination of a sand hopper, a combining or contact chamber into which the sand flows from the hopper, an inlet to said chamber for fluid under pressure, a flexible pipe G of the same cross-section as the combining chamber leading therefrom and serving to conduct away the propelling medium mixed with sand, a blast pipe H of reduced cross-section arranged on the end of the flexible pipe G, and a flaring pipe or tube J, into which the blast pipe H opens, whereby the sand may have a comparatively slow motion in the flexible tube and attain its maximum velocity in the blast pipe, and so that the propelling medium may have a chance to expand after leaving the blast pipe.

6. In a sand blast apparatus, the combination of a sand hopper, a combining or contact chamber into which the sand flows from the sand hopper, an inlet for fluid under pressure to said combining or contact chamber and a plate or platform $D^2$ in said chamber into which the sand flows from the hopper.

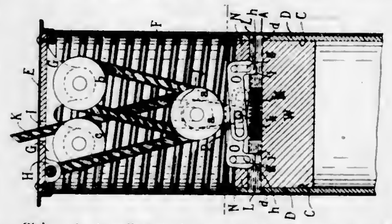
7. In a sand blast apparatus, a box or casing A divided into two compartments 1 and 2 by a suitable partition, a sand hopper in the upper compartment 1, a valved opening in the partition whereby sand can be supplied to the sand hopper, an inlet for fluid under pressure leading into the lowermost compartment, a contact or combining chamber underneath the hopper, an inlet from the compartment 2 to the combining chamber and a blast pipe leading therefrom.

8. In a sand blast apparatus the combination with a suitable casing having an opening $1^a$, of a sand hopper as $A^2$ in said casing below the opening $1^a$, a pipe L leading from the casing outside of the hopper $A^2$, means for creating a current of air through the casing and out at the tube L, and a sand blast pipe adapted to throw a stream of sand against an object held over the opening $1^a$, all substantially as specified, and so that the fine dust and broken sand will be separated from the unbroken sand and carried out of the casing while the unbroken sand will fall into and be collected in the hopper $A^2$.

9. In a sand blast apparatus the combination with an air tight casing or compartment 2 to which fluid under pressure is supplied, of a receptacle for sand situated therein, a combining or contact chamber below the receptacle, a passage for the flow of sand from said hopper to the contact chamber, a second chamber 1 through which the sand blast passes, a pipe opening from the chamber 1 an ejector adapted to create a current of air through said chamber and a passage leading from the compartment 2 to the ejector and adapted to supply operating fluid thereto.

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531,380. TROLLEY-CATCHER. PETER D MILLOY, Buffalo, N. Y. Filed Apr. 2, 1894. Serial No. 506,088. (No model.)



*Claim.*—1. A trolley catcher consisting of a cylindrical barrel having a weight and a compression spring acting conjointly to draw down the rope when the bolts are released, substantially as shown.

2. The combination of a cylindrical barrel carrying a weight and spring acting conjointly, with a set of compounding pulleys for multiplying the action of the weight and spring, substantially as shown.

3. A cylindrical barrel having a weight, W, and a spring, F, the weight being held against axial rotation by means of guides, D, D, which fit freely into grooves upon the face of the weight, substantially as shown.

4. A trolley catcher consisting of a cylindrical barrel carrying a weight and compression spring acting conjointly, a set of compounding pulleys for compounding the action of the weight and spring, and an automatic releasing mechanism, consisting of bolts secured to the weight and engaging in the guides, D, D, compression spring, *k*, and lever arms, O, O, which withdraw the bolts and which are actuated by the vertical action of the pulley block, P, within the bracket secured to the weight, substantially as described.

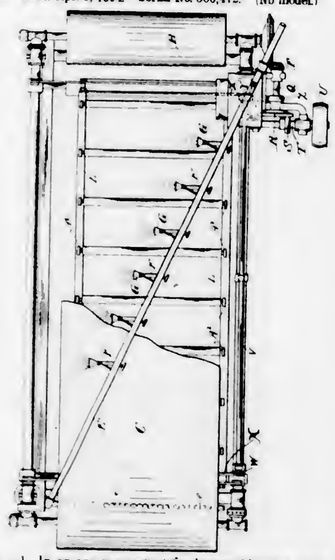
5. In a trolley catcher, the combination of a cylindrical barrel carrying a weight and compression spring acting conjointly as described, and a set of compounding pulleys, with an automatic locking and unlocking mechanism consisting of a pulley block having a

vertical action within a bracket secured to the weight, the vertical action of said pulley block being produced by the tension of the rope and by gravity, said pulley block having a pivot engaging within slotted openings in the longer arms of the levers, O, O, and said levers having beveled points engaging in notches in the bolts, L, L, said levers being pivoted to the weight through slotted openings on the shorter arms, substantially as and for the purposes set forth.

6. A trolley catcher consisting of a cylindrical barrel carrying a weight and spring acting conjointly, a pulley-block mounted in brackets rigidly secured to said weight, a trolley rope, bell crank levers pivoted to said weight through slotted openings in the shorter arms of said levers, the inner and longer arms having slots taking over a pin in said pulley-block, bolts mounted upon said weight, a spring acting upon said bolts and guides within said cylindrical barrel to engage with said bolts, the action of releasing said weight and spring being produced by the vertical action of said pulley-block actuating the arms of said levers which release said bolts, and the action of setting up said spring and weight being produced by the vertical action of the pulley-block actuated by the strain upon said trolley rope carrying the weight upward by means of said slotted brackets until said bolts are driven to place by said spring and into engagement with said guides, and then said lever arms being carried into engagement with said bolts by the downward movement of said pulley-block by gravity, substantially as set forth.

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**531,381.** ORE-CONCENTRATOR. JOHN M. MONTGOMERY, Butte, Mont. Filed Apr. 5, 1894. Serial No. 506,472. (No model.)



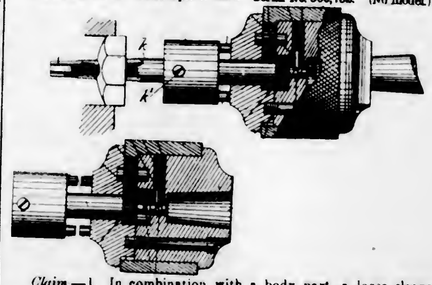
*Claim.*—1. In an ore concentrator, the combination with a supporting frame, of an endless apron or belt, end rollers or drums supporting said apron, a frame carrying apron-supporting rollers and provided with cross bars having ends projecting beyond the sides of the frame, a longitudinal shaft, ratchet wheels mounted thereon, and upon which ratchet wheels the projecting ends of the cross bars bear, and means for rotating the said shaft and one of the apron rollers, for the purpose specified.

2. In an ore concentrator, the combination with a supporting frame, of an endless belt or apron, drums or rollers supporting said apron at the ends, a frame carrying intermediately arranged apron-supporting rollers and having cross-bars whose ends project beyond the frame, a longitudinal shaft V provided with ratchet wheels upon which latter said ends of the cross-bars bear, and means for rotating the end-supporting apron rollers and shaft V consisting of a bevel wheel O on the shaft of one roller, a shaft Q having a bevel pinion P meshing with the said wheel O, a friction disk R on said shaft Q, a shaft T, a friction disk S thereon engaging the disk R, a belt pulley Z on shaft Q, a belt pulley Y on said shaft V and belted to a belt pulley U on shaft T, as described.

3. In an ore concentrator, the combination with a supporting frame, an endless apron or belt, drums or rollers supporting said apron, a frame L, and crossbars on said frame having projecting ends a longitudinal shaft having ratchet wheels upon which said projecting ends bear, of means for adjusting the ends of frame L simultaneously, consisting of vertical screw-threaded shafts H at each end of the machine, the upper ends of said shafts being jointed to the frame L, threaded blocks J through which said shafts work, said blocks being pivotally carried by the main frame, a hand wheel for each of the vertical shafts, sprocket wheels M on the shafts H and a sprocket chain N gearing said sprocket wheels together, as and for the purpose specified.

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**531,382.** REVERSING TAP-HOLDER. FREDERICK C. MCCLARY, Hartford, Conn. Filed Apr. 7, 1894. Serial No. 506,732. (No model.)



*Claim.*—1. In combination with a body part, a loose sleeve mounted on the body part and revoluble thereon and bearing an annular gear, a rotary shaft mounted in the body part and having a lengthwise movement in its bearings therein, the outer end of said shaft having a tap holding device and the inner end bearing a pinion adapted to mesh with the train of reversing gears, the reversing train of gears, and the clutch appurtenant to the body part and rotary shaft respectively, all substantially as described.

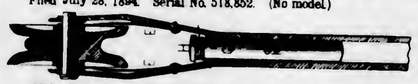
2. In combination in a reversing tap holder, a body part having means for attachment to a live spindle, a sleeve loosely borne on the body part and having an internal gear, a tap holding shaft having a lengthwise and rotary movement within the body part, a pinion borne on the inner end of said shaft and adapted to be moved into and out of engagement with the train of reversing gears, the reversing gears, the catch device located within the body part and adapted to hold the shaft at either limit of its play, and a clutch device appurtenant to the body part and tap holding shaft, all substantially as described.

3. In a reversing tap holder, in combination, a body part having means for attachment to a live spindle, a sleeve loosely mounted on the body part and having an internal annular gear, a tap holding shaft loosely mounted in the body part and having a rotary and also a lengthwise sliding movement in bearings in the body part, reversing gears located within the body part, and a clutch adapted to unite temporarily the body part and the tap holding shaft, all substantially as described.

4. In combination in a reversing tap holder, a body part having a shoulder, a cap secured to the body part as by means of screw bolts, a loose sleeve borne on the body part and having an internal gear, a recess formed between the body part and the cap, reversing gears located in said recess, a rotary and lengthwise movable shaft held in a bearing in the cap, a pinion secured to the shaft, the extended inner end of the shaft having grooves, a spring catch borne in a socket in the body part and adapted to engage the grooves in the shaft, a tap holder borne on the outer end of the shaft, and the fixed pins arranged on the body part and cap respectively whereby a positive clutch is formed, all substantially as described.

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**531,383.** TROLLEY. GEORGE A. NEWHOUSE, New Albany, Ind. Filed July 28, 1894. Serial No. 518,852. (No model.)



*Claim.*—1. A trolley, comprising a pole, a fork, and connection between the fork and pole included within the limits thereof, and tending to maintain the fork and pole in their normal relations while permitting an oscillating movement of the fork, substantially as described.

2. In a trolley, the combination with the pole, of an oscillating fork mounted thereon, and a yielding connection between the fork and pole included within the limits of the pole and fork, tending to maintain the fork and pole in their normal relations while permitting an oscillating movement of the fork substantially as described.

3. In a trolley, the combination with the pole having an opening in its end, of a fork having an opening in its neck, a pin secured in one of the openings and extending into the other, and a spring connection between the pin and one of the parts, substantially as described.



4. In a trolley, the combination with the pole having an opening in its end, of a fork having an opening in its end, a headed connecting pin extending through the opening in the fork and secured in the opening in the pole, and a spring interposed between the head of the pin and the fork, substantially as described.

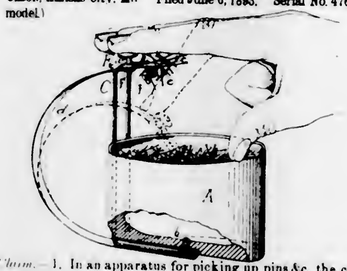
5. In a trolley, the combination with the pole and fork having adjacent cam surfaces, of a spring connection between the fork and pole permitting the oscillation of the fork and included within the limits of the fork and pole, substantially as described.

6. In a trolley, the combination with a fork and pole having an opening in their ends and having adjacent cam surfaces, of a connecting pin mounted in said openings and secured to the pole, and a spring surrounding the pin and tending to maintain the normal relations of the parts, substantially as described.

7. In a trolley, the combination with the pole having an open end, of a fork having an opening in its end, a connecting pin secured in the opening in the pole, a head, a spiral spring interposed between the head and the fork, a cam or projection on the pin, and a curved surface on the fork engaging the pin, substantially as described.

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**531,384.** APPARATUS FOR PICKING UP PINS, &c. ANDREW B. OLSON, Kansas City, Mo. Filed June 6, 1893. Serial No. 476,781. (No model.)



*Claim.*—1. In an apparatus for picking up pins &c. the combination of a receiver for the pins &c. having guiding standards a bowed spring plate having its lower end supported by and connected with said receiver and its upper end extended between said standards and provided with pick up devices, and means for retaining said upper end within the said standards as and for the purpose described.

2. In an apparatus for picking up pins &c. the combination with the receiver for the pins &c. of a bowed spring plate having the lower end of said plate supported by and connected with said receiver standards mounted upon said end of said plate having a connection between their upper ends adapted to retain the upper end of said bowed spring plate and pick up devices upon said end and an operating handle substantially as shown and described.

3. In an apparatus for picking up pins &c. the combination with the receiver for the pins &c. having guiding standards attached thereto and a connection between their upper ends of a bowed spring plate having one end connected with the bottom of said receiver and the other end extended between the said standards and adapted to be drawn within and retract from said receiver and a magnet connected with said end of said spring plate and an operating handle connected with said spring plate adjacent to said magnet as and for the purpose described.

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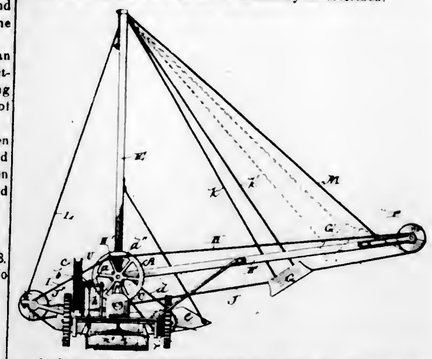
**531,385.** MACHINE FOR BUILDING EMBANKMENTS. WILLIAM G. PRICE, Sioux City, Iowa. Filed Mar. 22, 1894. Serial No. 504,701. (No model.)

*Claim.*—1. In a machine for building embankments the combination of a traveling wagon which carries a scraper, a stationary earth receptacle on said wagon, an oscillating bucket, means for pivotally supporting the bucket on the machine, said bucket in operating passing through the earth receptacle and removing the earth therefrom, and means for oscillating the bucket substantially as described.

2. In a machine for building embankments, the combination of a scraper provided with a trough and an oscillating bucket adapted to remove the scraped earth from the trough of the scraper, substantially as described.

3. In a machine for building embankments the combination of a movable wagon carrying a double scraper which is provided with an open ended trough and an oscillating throwing bucket which moves at approximate right angles to the movement of the scraper and is adapted to remove the scraped earth from the trough of the scraper and throw it in the direction of the embankment, substantially as described.

4. In a machine for building embankments the combination of a movable wagon carrying a double scraper which is provided with an open ended trough and an oscillating throwing bucket which moves at approximate right angles to the movement of the scraper and is adapted to remove the scraped earth from the trough of the scraper and throw it in the direction of the embankment, said bucket being provided with an automatically operating gate which is adapted to be opened as the bucket is moved in one direction and closed as it moves in the opposite direction, substantially as described.



5. In a machine for building embankments the combination of an oscillating bucket, the wheel A, pin H' on said wheel, pulleys B and D, ropes J and J' connected to bucket and passing about said pulleys B and D, differential pulleys $g$ and $g'$, ropes H and I connected to wheel A and passing about the differential pulleys, substantially as described.

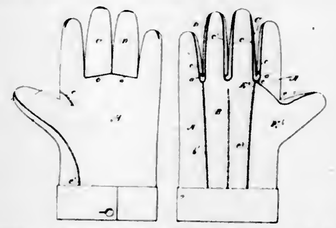
6. In a machine for building embankments the combination of a traveling wagon, a mast mounted thereon, a boom extending from said mast, an oscillating bucket, pulleys B and D, differential pulleys $q$ and $g'$, ropes J and J' connected to the scraper and passing about the pulleys B and D and ropes H and I passed about the differential pulleys and connected with means for operating said ropes, substantially as described.

7. In a machine for building embankments the combination of a traveling wagon, a scraper having a trough provided with guiding lugs, an oscillating bucket adapted to work in said trough and remove the dirt from the same and throw it in the direction of the embankment, substantially as described.

8. In a machine for building embankments the combination of a traveling wagon, an oscillating bucket having an open front end and its rear end closed by automatically operating gates, springs for returning the gates to their normally closed position, the construction and operation being such that as the bucket swings backward the gates are partially opened and as the bucket swings forward the gates are closed, substantially as described.

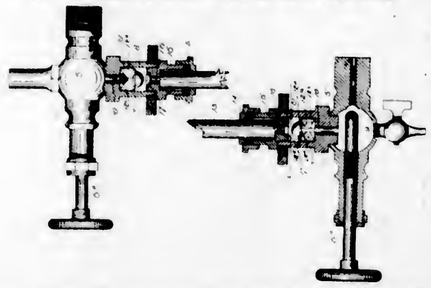
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**531,386.** GLOVE. REUBEN RAYMOND, San Francisco, Cal. Filed Apr. 28, 1893. Serial No. 472,203. (No model.)



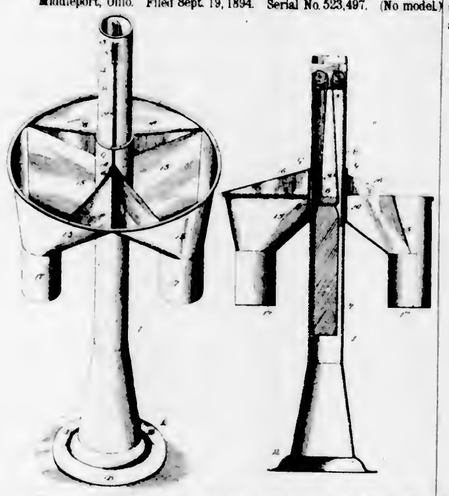
*Claim.*—A glove constructed of the main portion fashioned to form the front, one side and the index and small fingers of the body of the glove said portion having formed integral with the palm thereof, the front E of the thumb, the piece B secured along one edge in the back of the main portion of the glove and forming the back of the second and third fingers, fourchettes forming the front and sides of said fingers, and the independent piece E' forming the back of the thumb and having a point which is stitched to the base of the back of the index finger and to the adjoining side of the back piece B, substantially as herein described.

**531,387. WATER-GAGE SAFETY-VALVE.** JOHN RUDDY, Denver, Colo. Filed Mar. 16, 1894. Serial No. 503,966. (No model.)



*Claim.*—The combination of the globe valve comprising the casing adapted to be screwed into the boiler, and the horizontal screw stem adapted to close the aperture leading from the boiler to the valve, the valve chamber 7 screwed into the top of the globe valve casing and provided with an aperture connecting the two valve chambers the automatic valve located in the casing 7 and comprising a semispherical top and depending radial supporting wings beveled on their lower ends, the wings and top of the valve being as large as will move easily in the valve chamber whereby the valve is accurately guided to its seat, and the edge of the top being notched between the wings to afford a sufficient passageway for the liquid or vapor through the valve chamber, a stuffing box casing 15 screwed into the top of the casing 7, the two chambers being connected by an aperture, and the casing 15 being concaved around the aperture to afford a perfect seat for the automatic valve, an interiorly threaded cap applied to the top of the casing 15 and adapted to hold the packing in place, and a gage tube inserted in the stuffing box, substantially as described.

**531,388. FUNNEL.** ISAAC F. ROOT and WILLIAM O. SILVEY, Middleport, Ohio. Filed Sept. 19, 1894. Serial No. 523,497. (No model.)



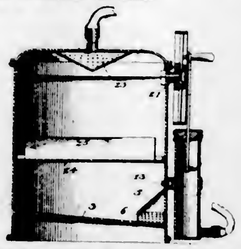
*Claim.*—1. The combination of a vertical standard, a funnel movable vertically thereon, a weight counterbalancing the funnel and movable vertically also, a cord connecting the weight and funnel, and an idler pulley over which the cord passes, substantially as described.

2. The combination of a vertical standard hollow throughout its interior, a funnel movable vertically on the standard, a weight movable in the interior of the standard, an idler pulley at the upper end of the standard, and a cord connected to the weight and to the funnel and passing over the idler pulley, substantially as described.

3. The combination of a standard hollow throughout its interior and having an exterior and longitudinal groove, a funnel movable vertically on the standard and provided with an inwardly-projecting eye extending into the groove, a weight arranged and movable in the standard, a cord connected to the eye of the funnel and to the weight and passing through the groove of the standard, and an idler pulley over which the cord passes, substantially as described.

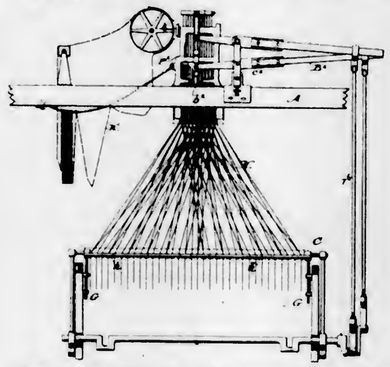
4. The combination of a vertical standard hollow throughout its length and provided with two exterior and longitudinal grooves, a funnel movable vertically on the standard and provided with two eyes fitting respectively within the grooves of the standard, a weight movable in the standard, two cords connected to the weight and to the respective eyes of the sleeve, and passed through the respective grooves of the standard, and two idler pulleys over which the cords are passed, substantially as described.

**531,389. DISH-CLEANER.** FRANK ROWLEY, West Superior, Wis., assignor of one-half to George W. Roberts, same place. Filed Apr. 30, 1894. Serial No. 509,553. (No model.)



*Claim.*—In a dish washer, the combination with the tank having a bottom outlet and a top inlet opening: of an oscillating pump cylinder arranged at one side of the tank and having its piston rod or stem extended thereabove, a circular attaching clamp 12, embracing the cylinder at an intermediate point, a bolt 13, detachably and pivotally connecting said clamp 12, to the tank, the nut of said bolt 13 being arranged inside of the tank, an operating wheel having a crank pin connected to said piston rod or stem, a headed journal bolt 21 passed through the hub of said wheel and detachably bolted to one side of the tank, the nut of said bolt 21, being arranged inside of the tank, and the pipes connected with the pump cylinder and the outlet and inlet openings of the tank, substantially as set forth.

**531,390. JACQUARD APPARATUS FOR LOOMS.** OTTO W. SCHAUM, Philadelphia, Pa. Filed May 13, 1893. Serial No. 474,123. (No model.)



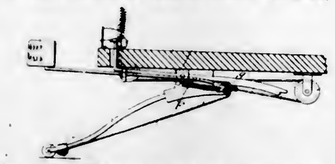
*Claim.*—1. The combination with the hooks of a rise and fall Jacquard machine and the harness cords secured thereto, of upper and lower hook plates adapted to operate the hooks, a compart board having a series of unslotted holes through which the harness cords pass freely and whose function is to guide said cords, and a connection to some moving part of the loom for moving the compart board in unison with one of said hook plates, substantially as and for the purpose specified.

2. The combination with the hooks of a rise and fall Jacquard machine and the harness cords secured thereto, of upper and lower hook plates adapted to operate the hooks, a compart board having a series of holes through which said harness cords are adapted to pass and whereby they are guided, and means for moving said compart board in unison with the lower hook plate substantially as and for the purpose specified.



3. The combination with the hooks of a Jacquard machine and the harness cords operated thereby, of upper and lower hook plates adapted to operate the hooks, a compart board through which the harness cords are adapted to pass freely, a connection between the lower hook plate and the compart board whereby they are both moved together, and guides for the compart board substantially as specified.

**531,391. LIFE-GUARD FOR CARS.** JAKOB SCHNEIDER, New York, N. Y. Filed July 11, 1894. Serial No. 517,179. (No model.)



*Claim.*—1. In a life guard for cars, the combination of a cradle adapted to be thrown forward and downward and means for throwing the same, of a pivoted catch-lever engaging directly with the rear cross-bar of the cradle to hold the same in its elevated position, and locking means for holding the cradle in its forward position substantially as described.

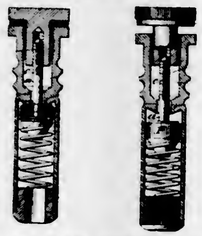
2. In a life guard for cars, the combination of a cradle adapted to be thrown downward and forward and means for so throwing the same, of a pivoted catch-lever engaging directly with the cradle to hold the same in its elevated position and adapted to release the cradle by its movement, the said catch-lever also engaging the cradle to lock the same in its forward position, substantially as described.

3. In a life guard for cars, the combination of suitable brackets, a cradle frame having side-bars working in said brackets and adapted to be thrown downward and forward and mechanism for so throwing the same, together with a pivoted catch-lever engaging directly with the cradle frame to hold the same in its elevated position, the said catch-lever also engaging the cradle to lock the same in its forward position substantially as described.

4. In a life guard for cars, the combination of brackets B, a cradle frame having side-bars C working in the said brackets, and a rear cross-bar D, and springs F connected to the rear cross-bar and to the brackets, and a pivoted lever G having shoulders *g g'*, arranged to co-operate with the rear cross-bar of the cradle in its extreme position and connected to a plunger H upon the car platform, substantially as described.

5. In a life guard for cars, the combination with a cradle and means for throwing the same downward and forward, of a pivoted lever G having shoulders *g g'* arranged to co-operate with the fender in its extreme positions to lock the same in position and means for rocking the pivoted lever, substantially as described.

**531,392. VALVE.** GEORGE H. F. SCHRADER and HENRY P. KRAFT, New York, N. Y.; said Kraft assignor to said Schrader. Filed June 8, 1894. Serial No. 513,878. (No model.)



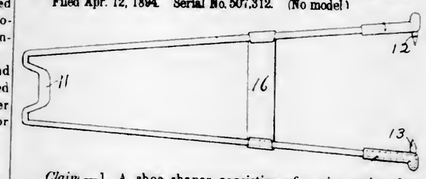
*Claim.*—1. In a valve, a shell having an annular valve seat, a throat above said seat, and a chamber beneath said seat, in combination with a valve proper consisting of a stem having a screwthreaded outer end, a reduced portion inwardly of said seat, a shoulder between its screw threaded end and said reduced portion, an enlarged body beneath said reduced portion having a tapering under face at bottom, and an annular flange at top surrounding said reduced portion, a packing washer within said flange embracing the reduced portion of said stem beneath the shoulder of the latter and engaging said seat when the valve is closed, and a nut screwing on the end of said stem embracing the exterior of said shell and drawing said washer against said seat to close the valve, all combined and arranged substantially as and for the purpose set forth.

2. In a valve, a shell having an annular valve seat, a contracted throat therethrough, and an enlarged chamber at the inner side of said seat, in combination with a valve proper consisting of a stem and head, said stem having a screwthreaded outer end projecting through and beyond said throat, a reduced portion at the inner side of said seat, a shoulder between said reduced portion and its screwthreaded end, and an enlarged body at its inner end beyond said reduced portion and within said chamber, said stem and body all formed in one integral piece, a sheet metal annular flange seated on and carried by said body opposite said reduced portion, and an annular packing washer embracing the reduced portion of said stem bearing against the enlarged body thereof, embraced externally by said sheet metal flange, and engaging said sheet when the valve is closed, and a nut screwing on the end of said stem engaging the exterior of said casing and holding said valve proper seated when the valve is closed, all combined and arranged substantially as and for the purpose set forth.

3. In a valve, a casing having an annular seat, a contracted throat, and an enlarged chamber, in combination with a valve proper consisting of a stem and head, said stem having an outer screwthreaded end projecting through said throat, a reduced portion at the inner side of said throat, a shoulder between said reduced portion and outer end, an annular enlargement having an overhanging flange at the inner end of said reduced portion, and a body at the inner end of said enlargement, all formed in one integral piece, a cup-shaped sheet metal piece embracing said enlargement beneath the overhanging flange thereof, seating on said body and having an annular flange opposite said reduced portion of said stem, and an annular packing washer embracing said reduced portion within the flange of said cup-shaped piece and engaging said seat, and a nut screwing on the end of said stem and engaging the exterior of said shell for holding the valve closed, all combined and arranged substantially as and for the purpose set forth.

4. A valve stem and head consisting of the stem D of turned metal having a screwthreaded end *c*, shoulder *e*, reduced recess *d*, enlargement *f*, top face *g* and body *h*, and a metal cup *i* having an aperture *j* fitting over said enlargement, a bottom *k* engaging said face, and annular flange *l* opposite said recess *d*, said enlargement overhanging said cup and thereby fixing it in position, and a rubber washer seated in said recess and within said flange.

**531,393. SHOE-SHAPER.** JOSEPH W. SKINNER, La Crosse, Wis. Filed Apr. 12, 1894. Serial No. 507,312. (No model.)




*Claim.*—1. A shoe shaper consisting of a wire spring formed with a book 10, adapted to attach one end of said shoe-shaper to the toe of the shoe, and with the points 12 and 13, adapted to attach the other end of said shoe-shaper to the heel of the shoe, and provided with the slide 16, adapted to clamp said points 12 and 13 into the heel.

2. A shoe-shaper consisting of the combination with a wire spring, formed with a hook 10 at one end and provided at the other end with the rubber bearings 14 and 15, of the slide 16, adapted to clamp said rubber bearings upon the heel of said shoe.

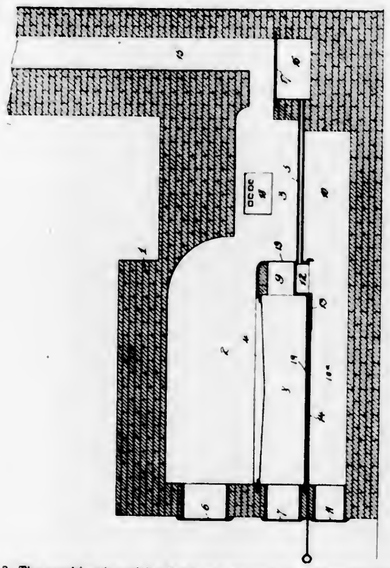
3. The combination, in a wire spring shoe-shaper, of the hook 10 located at one end of said shoe-shaper, the points 12 and 13 and the bearings 14 and 15 located at the other end of said shoe shaper, and the slide 16.

**531,394. FURNACE.** HENRY D. SMITH, Chicago, Ill. Filed Apr. 24, 1893. Serial No. 471,716. (No model.)

*Claim.*—1. The combination with a furnace structure having a smoke conduit 15 at the rear, of an air chamber 16 located under the smoke conduit, two combustion chambers 2 and 3 arranged one in rear of the other, a passage 9 leading from the ash pit of the front combustion chamber to the rear combustion chamber, hollow air-conducting grate-bars 5 for the rear combustion chamber, connected with the air chamber under the smoke conduit, a passage-way 12 leading from the ash-pit of the rear combustion chamber to the front open ends of the hollow grate bars, an air conduit for supplying fresh air to the front combustion chamber, and a separate air conduit for supplying air to the rear combustion chamber, substantially as described.

2 The combination with a furnace structure having a smoke conduit 15 at the rear, of an air chamber 16 located under the smoke

conduit, two combustion chambers 2 and 3 arranged one in rear of the other, hollow air conducting grate bars 5 for the rear combustion chamber, connected with the air chamber under the smoke conduit, a passage-way 12 leading from the ash-pit of the rear combustion chamber to the front open ends of the hollow grate-bars, a slide or damper 13 for closing communication between the said passage-way and the ash-pit of the rear combustion chamber, an air conduit for supplying fresh air to the front combustion chamber, and a separate air conduit for supplying fresh air to the rear combustion chamber, substantially as described.



3. The combination with a furnace structure having a smoke-conduit at the rear, two communicating combustion chambers 2 and 3 arranged one in rear of the other, and hollow air conducting grate-bars 5 for the rear combustion chamber having communication with the smoke-conduit, of a separate air-conduit $10^a$ closed against communication with the front ash-pit and supplying fresh air to the forward ends of the hollow grate-bars, substantially as and for the purposes described.

4. The combination with a furnace structure having a smoke conduit 15 at the rear, of an air chamber 16 located under the smoke conduit, two combustion chambers 2 and 3 arranged one in rear of the other, front grate bars 4, a passage 9 leading from the ash-pit of the front combustion chamber to the rear combustion chamber, hollow air conducting grate bars 5 for the rear combustion chamber, connected with the one chamber under the smoke conduit, a passage-way 12 leading from the ash-pit of the rear combustion chamber to the front open ends of the hollow grate bars, a slide or damper 13 for closing communication between the said passage-way and the rear ash-pit, an air conduit for supplying fresh air to the front combustion chamber, and a separate air conduit for supplying fresh air to the ash-pit of the rear combustion chamber, substantially as described.

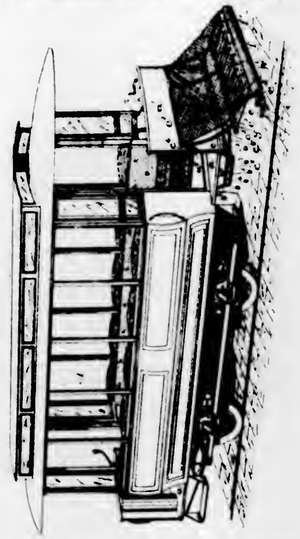
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531,395. CAR-FENDER. ALONZO D. SMITH, Newark, N. J. Filed Sept. 8, 1894. Serial No. 522,414. (No model.)

*Claim.*—1. A fender for cars, comprising therein, a fender frame, bearings or brackets, as $b$, secured to the platform of the car, a rod movable in said bearings, said fender frame being pivotally connected with said rod and with the dash board of the car, a vertical rod having a rotary movement on the platform, and a chain or wire rope connecting said vertical rod with said movable rod in the bearings underneath the platform, for retaining the fender in a raised position in front of the car, but being capable of lowering the fender when said vertical rod is operated, substantially as and for the purposes set forth.

2. A fender for cars, comprising therein, frame portions $c$, $c'$, $c^3$ and $c^4$, spring-plates $e$ extending from said portionns $c^3$, said plates being U-snaped, as at $e^1$, and spirally wound, as at $e'$, and means for securing said fender to a car, substantially as and for the purposes set forth.

3. A fender for cars, comprising thereiu, frame portions $c$, $c'$, $c^3$ and $c^4$, spring-plate $e$ extending from said portions $c^3$, said plates being U-shaped, as at $e^1$, and spirally wound, as at $e'$, a spring, as $e^3$, on each of said plates $e$, a flexible guard $f$, and means for securing said fender to a car, substantially as and for the purposes set forth.



4. A fender for cars, comprising therein, frame portions $c$, $c'$, $c^3$ and $c^4$, spring-plates $e$ extending from said portions $c^3$, said plates being U-shaped, as at $e^1$, and spirally wound as at $e'$, rollers or wheels $e^4$ connected with said plates $e$, and means for securing said fender to a car, substantially as and for the purposes set forth.

5. A fender for cars, comprising therein, frame portions $c$, $c'$, $c^3$ and $c^4$, spring-plates $e$ extending from said portions $c^3$, said plates being U-shaped, as at $e^1$, and spirally wound, as at $e'$, rollers or wheels $e^4$ connected with said plates $e$, a spring $e^3$ on each of said plates $e$, a flexible guard $f$, and means for securing said fender to a car, substantially as and for the purposes set forth.

6. In a fender for cars, in combination, a pair of bearings, as $b$, adapted to be secured underneath the platform, a rod $b^7$ movably arranged in said bearings, frame portions $c$, $c'$, $c^3$ and $c^4$, rods $c^6$ and $c^7$ for pivotally connecting said frame portions $c$ and $c'$ with said rod $b^7$, and spring-plates $e$ extending from said frame portion $c^3$, said plates being U-shaped, as at $e^1$, substantially as and for the purposes set forth.

7. In a fender for cars, in combination, a pair of bearings, as $b$, adapted to be secured underneath the platform, a rod $b^7$ movably arranged in said bearings, frame portions $c$, $c'$, $c^3$ and $c^4$, rods $c^6$ and $c^7$ for pivotally connecting said frame portions $c$ and $c'$ with said rod $b^7$, spring-plates $e$ extending from said frame portion $c^3$, said plates being U-shaped, as at $e^1$, a spring $e^3$ on each of said plates $e$ and a flexible guard $f$, substantially as and for the purposes set forth.

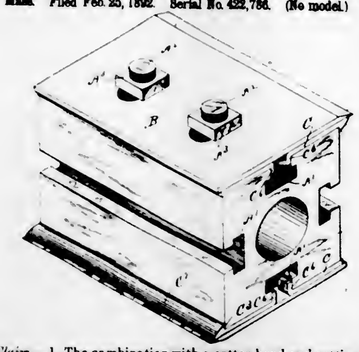
8. In a fender for cars, in combination, a pair of bearings, as $b$, adapted to be secured underneath the platform, a rod $b^7$ movably arranged in said bearings, frame portions $c$, $c'$, $c^3$ and $c^4$, rods $c^6$ and $c^7$ for pivotally connecting said frame portions $c$ and $c'$ with said rod $b^7$, spring-plates $e$ extending from said frame portion $c^3$, said plates being U-shaped, as at $e^1$, rollers or wheels $e^4$ in said plates, a spring $e^3$ connected with each of said plates, and a flexible guard $f$, substantially as and for the purposes set forth.

9. A fender for cars, comprising therein, frame portions $c$, $c'$, $c^3$ and $c^4$, slots or openings $c^5$ in said portion $c^3$, and spring-plates $e$ secured in said slots or openings $c^5$ and connected at the bottom with a flexible guard, substantially as and for the purposes set forth.

10. In a fender for cars, in combination, a pair of bearings, as $b$, adapted to be secured underneath the platform, a rod $b^7$ movably arranged in said bearings, frame portions $c$, $c'$, $c^3$ and $c^4$, slots or openings $c^5$ in said portions $c^3$, spring-plates $e$ secured in said openings or slots $c^5$ and connected at the bottom with a flexible guard, rods $c^6$ and $c^7$ pivotally connecting said frame portions $c$ and $c'$ with said rod $b^7$, and lugs or ears on said frame portions, and pins $d$ for pivotally connecting said frame portions with similar lugs or ears on the dash board of the car, substantially as and for the purposes set forth.



331,396. CUTTER-HEAD. ALONZO S SPAULDING, Worcester, Mass. Filed Feb. 25, 1892. Serial No. 422,786. (No model.)



*Claim.*—1. The combination with a cutter-head and cutting knife attached thereto, of a break-iron interposed between said knife and cutter-head and provided with an abutting shoulder $C^9$ bearing against the side of the cutter-head, substantially as described.

2. The combination with a cutter-head provided with grooves and cutting knife attached thereto, of a break-iron interposed between said cutter-head and said knife and provided with wings $C^9$, which are bent or turned into grooves of said cutter-head, substantially as described.

3. The combination with a cutter-head and cutting knife attached thereto, of a break-iron interposed between said cutter-head and said knife and having its edge next the cutting edge of the knife slightly raised, substantially as described.

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531,397. PIN-GUARD. FREDERICK G. STEPHENSON, Plainville, Conn. Filed Apr. 21, 1894. Serial No. 508,424. (No model.)



*Claim.*—The herein described pin guard consisting of the axially bored head having a finger grasping surface, the spring jaws, and tubular sleeve having a finger grasping surface and screwed over said jaws upon said head, the whole adapted to be fastened upon the body of a pin, substantially as described and for the purpose specified.

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531,398. APPARATUS FOR APPLYING ICING TO PASTRY. ALBERT A. STROHECKER and JOHN HUTTON, Trenton, N. J.; said Hutton assignor to said Strohecker. Filed Oct. 6, 1894. Serial No. 525,137. (No model.)



*Claim.*—A device for applying icing to cakes, &c., consisting of a pan or receptacle having flanges approximately at its inner corners, slides, springs mounted on said slides and angle supports carried by said springs, substantially as set forth.

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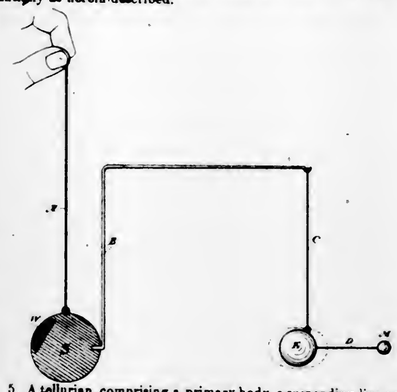
531,399. TELLURIAN. CORNELIUS G. SULLIVAN, Woodland, Cal. Filed Apr. 25, 1894. Serial No. 509,082. (No model.)

*Claim.*—1. In a tellurian, the combination of a primary body, a suspending line acting by torsion to rotate said body, a secondary body and a connection between said secondary body and the primary body whereby the former is caused to revolve about the latter by the rotation of said primary body substantially as herein described.

2. In a tellurian, the combination of a primary body having a means for rotating it, and provided with an arm or bracket extending from it, a secondary body and a line suspending said secondary body from the arm or bracket of the primary body, whereby said secondary body is caused to revolve about the primary body, said line acting by torsion to impart rotation to said secondary body, substantially as herein described.

3. In a tellurian, the combination of a primary body having a means for rotating it, and provided with an arm or bracket extending from it, a secondary body and a line suspending said secondary body from the arm or bracket of the primary body, whereby said secondary body is caused to revolve about the primary body, said line acting by torsion to impart rotation to said secondary body, and a satellite body connected with the secondary body, revolving around it and accompanying it in its revolution about the primary body, substantially as herein described.

4. A tellurian, comprising a primary body, a suspending line acting by torsion to rotate said body, an arm extending from said body, a secondary body and a line suspending it from the arm of the primary body and acting by torsion to rotate said secondary body, substantially as herein described.



5. A tellurian, comprising a primary body, a suspending line acting by torsion to rotate said body, an arm extending from said body a secondary body, a line suspending it from the arm of the primary body and acting by torsion to rotate said secondary body, and a satellite body connected with said secondary body, substantially as herein described.

6. A tellurian, comprising the body S suspended by a line adapted to be twisted and having the counterbalancing weight on one side and the arm on the other, the body E suspended from the said arm by a line adapted to be twisted, and the body M connected with body E, substantially as herein described.

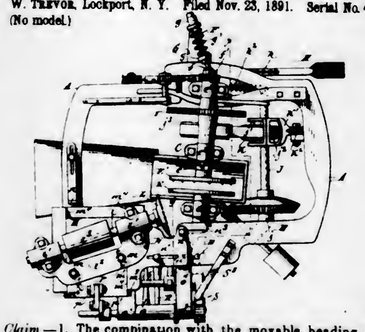
7. In a tellurian, the combination with a primary body, of a secondary body and accompanying satellite body, and a connection with the secondary body operating by torsion to cause it and the satellite body to revolve about the primary body, said secondary body being mounted to rotate eccentrically, substantially as herein described.

8. In a tellurian, the combination with the rotatable primary body, of the secondary body and accompanying satellite body, and the line attached eccentrically to said secondary body and suspended from an arm extending from the primary body, said line acting by torsion to rotate said secondary body eccentrically, substantially as herein described.

9. A tellurian comprising the primary body suspended by a line adapted to be twisted, said body having an extending arm, the secondary body E having a line attached eccentrically to it and suspending it from the arm of the primary body, said line acting by torsion to rotate said secondary body eccentrically and the satellite body connected with the body E, substantially as herein described.

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531,400. MACHINE FOR TURNING BARREL-HEADS. WILLIAM W. TREVOR, Lockport, N. Y. Filed Nov. 23, 1891. Serial No. 412,754. (No model.)



*Claim.*—1. The combination with the movable heading clamp and the saw and its carriage, of an actuating device tending to move the saw carriage forwardly, a stop mechanism whereby the forward

movement of the saw carriage is arrested before the saw has reached the cutting position and a trip device whereby the saw carriage is released when the heading blank has reached the cutting position, substantially as set forth.

2. The combination with the heading clamp and the saw, both capable of movement toward and from the cutting position, of mechanism connecting the heading clamp with the saw carriage and retracting the saw carriage by the backward movement of the clamp, an actuating device which tends to move the saw carriage to the cutting position, a stop mechanism whereby the forward movement of the saw carriage is arrested before it reaches the cutting position and a trip mechanism whereby the saw carriage is released and permitted to be moved forwardly when the clamp has moved the blank to the cutting position, substantially as set forth.

3. The combination with the main frame, the clamp frame pivoted on the main frame and the revolving heading clamp journaled on the clamp frame, of a saw having its axis arranged obliquely with reference to the axis of the heading clamp, a sliding plate having a movement parallel with the axis of the heading clamp and adapted to carry the saw across the path of the heading blank, a rock shaft having an upper and a lower rock arm, a link connecting the upper rock arm with the sliding plate, a spring connected with the lower rock arm and adapted to move the saw into its operative position, and a retracting arm mounted on the clamp frame and adapted to engage with the lower rock arm for moving the saw into its inoperative position, substantially as set forth.

4. The combination with the clamp frame, the heading clamp mounted on said frame and the saw having a movement toward and from the heading clamp, of a spring whereby the saw is moved forward, a pawl whereby the forward movement of the saw is arrested and a trip arm connected with the clamp frame and adapted to release the saw from the pawl, substantially as set forth.

5. The combination with the main frame, the clamp frame movably arranged in said main frame and the heading clamp mounted in said clamp frame of a sliding plate guided upon the main frame, and having a movement toward and from said clamp, a saw mounted upon said sliding plate, a ratchet connected with said sliding plate, a pawl engaging with said ratchet, and an arm attached to the clamp frame and engaging with said pawl, whereby the latter is released from said ratchet, substantially as set forth.

6. The combination with the main frame, the vertical rock shaft journaled in said frame, the clamp frame supported on said vertical shaft and the heading clamp arranged upon the clamp frame, of a sliding plate guided upon the main frame and having a movement toward and from the heading frame, a concave saw mounted on said sliding plate, a horizontal rock shaft journaled in the main frame and connected with the sliding plate, a ratchet wheel and a depending elbow lever secured to said horizontal rock shaft, a spring connecting said elbow lever with the main frame, a pawl engaging with said ratchet wheel and provided with a trip arm, and a rock arm secured to the vertical rock shaft and engaging with the elbow lever and trip arm, substantially as set forth.

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**531,401. OIL-CUP.** CHARLES C. TYLER, Hartford, assignor of one-half to R. S. Tyler, Jewett City, Conn. Filed May 9, 1894. Serial No. 510,619. (No model.)



*Claim.*—1. The herein-described oil cup, it consisting of an inner cylindrical member having an external flange or shoulder at each end thereof adapted for engaging and preventing longitudinal movement of an outer member, and a concentric outer member supported between the end-flanges of the inner member, substantially as described.

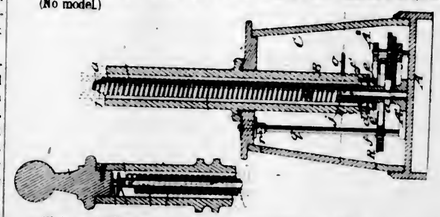
2. The herein-described oil-cup, it consisting of a cylindrical transversely-perforated casing externally screw threaded at one end, and a cylindrical coincidingly-perforated member revolubly contained in said casing and having an external flange at each end thereof, in engagement with opposite ends of the casing, substantially as described and for the purpose set forth.

3. In an oil-cup, in combination, the open-ended cylindrical outer member screw-threaded at one end and having the transverse oil-hole and internal annular shoulder, and the inner cylindrical member closed and externally flanged at one end and having a transverse perforation to register with the oil-hole of the casing, and having an external flange at its opposite end in engagement with the shoulder of said casing, whereby the parts are locked against longitudinal movement, substantially as described.

4. In an oil-cup, in combination, the internally-shouldered cylindrical casing or outer member C open at both ends and having the oil-hole 4 therein, and the cylindrical inner-member D closed and externally flanged at its upper and lower ends and slit longitudinally at its lower end to form resilient arms for holding the said member against accidental rotation within the casing and locked against longitudinal movement with relation to said casing by means of the external flange engaging the shoulder of said casing, substantially as described.

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**531,402. REVOLVING-POLE SIGN.** MICHAEL H. WILSON, New York, N. Y., assignor, by mesne assignments, to the Wilson Revolving Pole Sign Company, same place. Filed Dec. 23, 1893. Serial No. 494,513. (No model.)

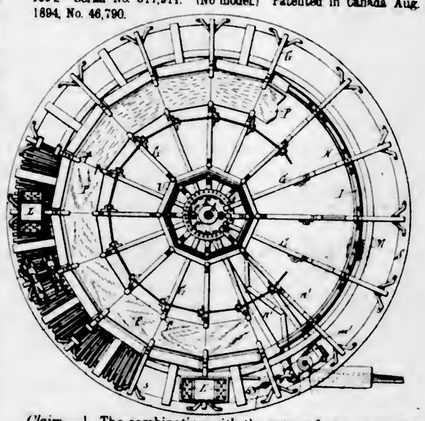


*Claim.*—1. The combination in a revolving pole sign, of a base and a fixed post erected thereon, a hollow pole arranged to turn upon said post, a motor train supported on said base, and a coil spring surrounding said post within said pole and having one end connected with said post and the other end connected with the motor train; substantially as and for the purpose herein set forth.

2. The combination of a fixed post, a hollow pole centered on and suspended from the top of said post, a spur wheel loose on the lower part of said post constituting part of a driving train for the pole and having an elongated hub projecting within the pole, a coil spring of which the upper end is fast to said post and the lower end fast to the said spur wheel, and a ball-bearing at the bottom of said pole fitted to turn on the said hub, all substantially as herein set forth.

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**531,403. ROUNDABOUT.** JAMES ARMITAGE, ALLAN HERSCHELL, and GEORGE C. HERSCHELL, North Tonawanda, N. Y. Filed July 18, 1894. Serial No. 517,911. (No model.) Patented in Canada Aug. 8, 1894, No. 46,790.



*Claim.*—1. The combination with the rotary frame or platform and the track arranged underneath the same, of supporting legs depending from the under side of said platform, wheels journaled in said legs and running upon said track and an annular cable rim arranged on the outer side of said wheels and secured to the lower portions of said supporting legs whereby the cable rim forms a tie ring or stay connecting the various legs, substantially as set forth

2. In a roundabout, the combination with the center post and the rotary platform or frame surrounding said post and provided with a cable rim, of a stay or guide frame attached at its inner portion to said post and extending outwardly therefrom, a guide pulley mounted on said frame, and a driving cable passing around said rim and said guide pulley, substantially as set forth.

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**531,404. VEGETABLE OR FRUIT PARER AND SCISSORS-SHARPENER.** ENOCH BARTUM, Warrensburg, Mo. Filed Mar. 19, 1894. Serial No. 504,368. (No model.)



*Claim.*—1. A parer comprising a wire frame, a transverse plate arranged at one end of the handle, an inclined triangular blade arranged adjacent to the plate and provided with a transverse cutting edge and having its outer end or point curved rearward under it and forming a hook-shaped eye extractor, substantially as and for the purpose described.



2. A parer comprising a wire frame, a transverse plate arranged at one end of the handle, a casing arranged adjacent to the plate at an angle thereto and composed of two sides, and a blade arranged within the casing and provided with a transverse cutting edge located adjacent to the plate, substantially as described.

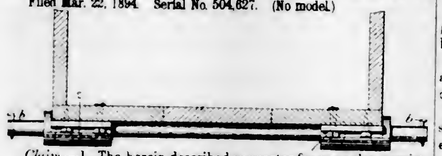
3. A parer comprising a wire handle having opposite sides and having one end bent at an angle and provided with a transverse connecting portion, a casing provided with sockets receiving the handle and composed of opposite sides, a blade arranged within the casing and supported by the transverse portion of the handle, a transverse tie-plate provided at its ends with sockets to receive the sides of the handle and arranged adjacent to the blade, substantially as and for the purpose described.

4. The combination of a wire handle having opposite sides, a transverse casing connecting the sides at one end of the handle and provided with sockets to receive said sides, and having at its outer edge an opening, and a blade arranged in the casing and exposed through the opening and forming a scissors sharpener, substantially as described.

5. A parer and scissors sharpener comprising a wire handle having opposite sides, and a transverse connecting portion, the casings arranged at the ends of the handle and provided with sockets receiving the sides of the same, blades arranged in the casing, one of the blades being triangular and having its outer point curved and having a transverse cutting edge and arranged at an angle to the length of the handle, and a transverse tie plate connecting the sides of the handle and arranged adjacent to the cutting edge of the triangular blade and forming an intermediate space, substantially as described.

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**531,405. CAR-AXLE.** REINHOLD BETTERMANN, Johnstown, Pa. Filed Mar. 22, 1894. Serial No. 504,627. (No model.)



*Claim.*—1. The herein-described supporter for car-axles, consisting of a clamping-member having a semi-cylindrical portion and end-wings, adapted to be attached to the car-body, and a saddle-block provided with a projecting-pin adapted to seat in a socket of the axle, substantially as set forth.

2. The herein-described supporter for car-axles, consisting of a clamping-member having a collar-portion through which the axle can pass, and adapted to abut against the side of the car-body, and a saddle-block provided with a projecting-pin adapted to seat in a socket of the axle, substantially as set forth.

3. The combination, with an axle provided with side sockets, of supporters consisting of clamping-members, saddle-blocks seated in said clamping-members, and pins projecting from the saddle-blocks and entering the sockets in the axle, substantially as set forth.

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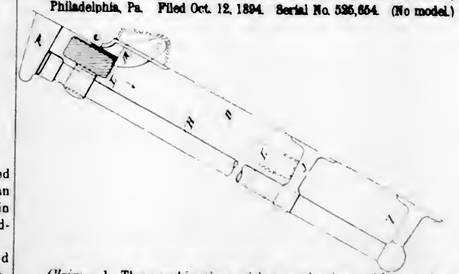
**531,406. COMMUTATOR.** HENRY L. BRIDGMAN, Blue Island, Ill. Filed July 3, 1894. Serial No. 516,491. (No model.)



*Claim.*—A commutator comprising the insulating frame B having the flanges *q* affording pockets *o*, and an electro-deposited filling *l* of metal in said pockets, affording the conducting portion of the commutator, substantially as described.

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**531,407. ENTRANCE-GUARD FOR OPEN CARS.** JOHN A. BRILL, Philadelphia, Pa. Filed Oct. 12, 1894. Serial No. 526,654. (No model.)



*Claim.*—1. The combination, with a car having a side opening for ingress and egress, of a bar forming a movable guard extending adjacent to and co-extensively with said opening, and a gravity latch for supporting the said bar in its elevated position, substantially as described.

2. The combination, with a car having a side opening for ingress and egress, of a bar forming an upwardly movable guard extending adjacent to and co-extensively with said opening, guides for said bar, and an automatically operating latch for supporting the bar when elevated above the line of egress and ingress, the latch being receded by the upward movement of the bar, and moving into position to support the bar when the same has passed it, substantially as described.

3. The combination of a car having cross seats and posts at the ends thereof, bars on the outside of the posts, with a guard extending along said posts, stops extending between the posts and the bars to support the guard, and a hinged latch to sustain said guard in an elevated position, substantially as described.

4. The combination of a car having side posts, with bars H extending along the outside of said posts, a guard passing along said posts and between said posts and bars, said guard having guides or eyes to receive certain of said bars, and a gravity latch for sustaining said guide in an elevated position, substantially as described.

5. The combination of a car having side posts and guide bars H, with a guard L, and a hinged and inwardly moving latch M to sustain said guard, substantially as described.

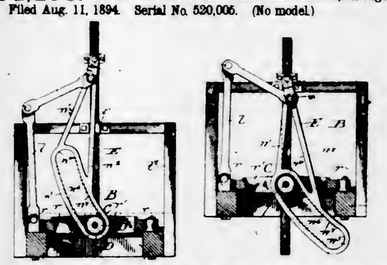
6. The combination of a car having side posts and bars H, with a guard L having guides or eyes $L^2$ engaging said bars, and a hinged latch M to sustain said guard, substantially as described.

7. The combination of a car having side posts, with a guard L, a latch M, and a casing having a slot, said latch being pivoted in said casing and projecting through said slot, substantially as described.

8. The combination of a car having a drip-board without the car side, side posts, bars H depending from said board, a guard L having eyes $L^2$ movably secured to said bars between the bars and said posts, and a latch to sustain said guard in an elevated position within the bars and under said drip board, substantially as described.

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**531,408. POWER-CONVERTER.** EDWARD CARLSON, Chicago, Ill. Filed Aug. 11, 1894. Serial No. 520,005. (No model.)



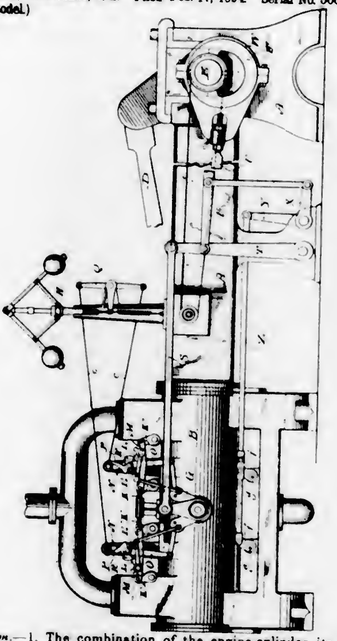
*Claim.*—1. The combination with the vertically reciprocating power-transmitter, of a vibrating frame pivoted at its upper end-portion to the transmitter and provided at its lower end portion with parallel racks, a pinion between the racks, and means for shifting the racks alternately into engagement with the pinion with the changes of motion of the transmitter, said means comprising a swinging arm pivotally and frictionally connected with the vibrating frame to operate, substantially as and for the purpose set forth.

2. The combination of a frame B, vertically reciprocating power-transmitter movable in guides on the frame B, vibrating frame pivoted at its upper end-portion to the transmitter and provided at its lower end-portion with parallel racks, a pinion journaled in the frame B between the racks, and shifting means for the vibrating frame, said means comprising an arm *l* pivoted to the frame B, and an arm *l'* pivoted at one end to the arm *l* and at its opposite end pivotally and frictionally connected with the vibrating frame to operate, substantially as and for the purpose set forth.

3. The combination with the frame B, and rod A reciprocating in guides on said frame, of a frame C, shaft D journaled in the frame C and carrying a pulley and pinion D', vibrating frame E pivotally connected at its upper end-portion to the rod A, and having a loop $n^3$ presenting parallel racks on opposite sides of the said pinion, and friction-shift mechanism for the vibrating frame, substantially as and for the purpose set forth.

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**531,409. VALVE-GEAR FOR STEAM-ENGINES.** MELVIN R. COPE, Milwaukee, Wis. Filed Feb. 17, 1894. Serial No. 500,450. (No model.)



*Claim.*—1. The combination of the engine-cylinder, its supply valves, their primary actuating devices, the vibratory wrist-plate, pallets having pivotal connection with said valve-actuating devices and link-connection with said wrist-plate, pendulum arms also linked to the aforesaid wrist-plate, and governor controlled wipers carried by said arms to have variable intermittent contact with the pallets, substantially as set forth.

2. The combination of the engine-cylinder, its supply valves, their primary actuating devices, the vibratory wrist-plate, pallets having pivotal connection with said valve-actuating devices and link-connection with said wrist-plate, pendulum arms also linked to the aforesaid wrist-plate, and governor-controlled spring-resisted wipers carried by said arms to have variable intermittent contact with said pallets, substantially as set forth.

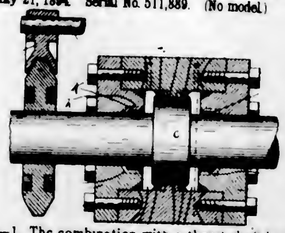
3. The combination of an engine cylinder, its supply-valves, their primary actuating devices, the vibratory wrist-plate, the governor, and a gear for each valve that comprises a pair of variable intermittent contact devices under control of said wrist-plate and governor but movable for a time in the same direction proportionate to their area of contact to automatically regulate the opening of the relative valve, substantially as set forth.

4. The combination of an engine-cylinder, its supply-valves, cranks, connected to the valve-stems, slotted push-bars connecting these cranks with others parallel thereto, the vibratory wrist-plate, pallets pivoted within the push-bars and provided with lever-arms in link-connection with said wrist-plate, standards rising from said cylinder pendulum arms pivoted to the standards and also linked to the aforesaid wrist-plate, lateral pivots on said arms, bifurcated levers supported on the pivots, a governor controlled yoke having rod connection with the levers, and wipers that are loose on said pivots within the lever-furcations and have noses opposing the lever-butts, substantially as set forth.

5. The combination of an engine-cylinder, its supply-valves, their gear, the wrist-plate connected to the valve-gear, a rod connected to said wrist-plate, a crank on the engine-frame, the eccentric having ring-and-rod connection with the crank, a bell-crank in link-connection with the eccentric-rod, and the exhaust-valves in working connection with the bell-crank, substantially as set forth.

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**531,410. JOURNAL-BEARING.** IVAR CORNELIUSSEN, Chicago, Ill. Filed May 21, 1894. Serial No. 511,889. (No model.)



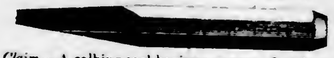
*Claim.*—1. The combination with a thrust shaft having a band C, of a journal box inclosing the shaft and having an internal annular rib of less width than the band C, and serving as a circumferential bearing therefor, glands, D, E, for closing the ends of the box and adapted to form with the band and with the walls of the box annular chambers at each side of the band, liquid filling the chambers, and packing rings G, G, for preventing communication between the chambers, substantially as described and for the purpose set forth.

2. The combination with a thrust shaft having a band, C, of a journal box inclosing the shaft and having an internal annular rib of less width than the band C and serving as a circumferential bearing therefor, glands, D, E, for closing the ends of the box and adapted to form with the band and with the walls of the box annular chambers at each side of the band, liquid filling the chambers, packing rings, G, G, for preventing communication between the chambers, ducts leading to the chambers, and means for automatically replenishing the liquid, substantially as described and for the purpose set forth.

3. The combination with the thrust shaft C, having an annular band, *c*, a chambered journal box inclosing the band, c, and having an annular rib of less width than and in frictional contact with the band, of packing rings encircling the band on each side of the rib and having their outer faces annularly grooved, substantially as and for the purpose set forth.

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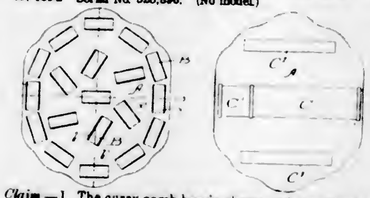
**531,411. CALKING-TOOL.** DENNIS FALVEY, Battle Creek, Mich. Filed Aug. 12, 1893. Serial No. 482,951. (No model.)



*Claim.*—A calking tool having a concave face formed by a shallow curved groove extending along the working face thereof, said curve extending continuously from edge to edge of said working face, substantially as described.

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**531,412. CURRYCOMB.** CHARLES J. GARVEY, Chicago, Ill., assignor to the Colhoun Manufacturing Company, same place. Filed Oct. 15, 1894. Serial No. 525,896. (No model.)



*Claim.*—1. The curry comb herein shown and described, consisting of a hand-shaped flexible pad provided with a series of narrow short rectangular metallic clips arranged over its surface at angles to each other, each having a toothed flange and a smooth edged flange, and an open channel between said flanges substantially as specified.

2. The combination with a band-shaped flexible pad A, of a series of diversely arranged narrow short rectangular metallic clips B secured to said pad at angles to each other without rows of open spaces across the pad in any direction, each of said clips being provided with a toothed flange *b* and a smooth edged flange *b'*, and integral tongues $b^3$ for securing the clip to the pad, said flanges being parallel to each other with an open channel between them, substantially as specified.



3. The combination with a band-shaped flexible pad A provided with loops on its back for the hand and thumb, of a series of diversely arranged short narrow rectangular metallic clips B provided each with a toothed flange *b* and a smooth flange *b'* having a rounded notch $b^3$, each of said metallic clips having also integral tongues $b^3$ stamped out of the body portion $b^4$ of the clip, and each of said clips having an open channel between said flanges *b b'*, substantially as specified.

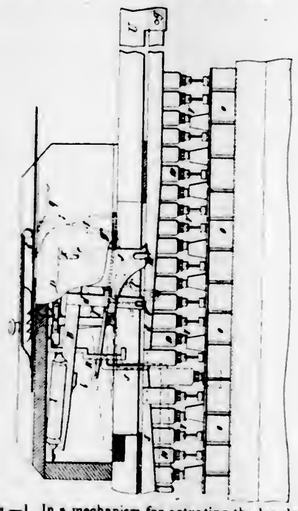
4. The curry comb herein shown and described, and consisting of a hand-shaped flexible pad provided with a series of separate short narrow rectangular straight parallel flanged metallic comb clips secured thereto and arranged over the surface of the pad at angles to each other and without rows of open spaces across the pad in any direction, so that the toothed flange of one clip does not follow in line with that of another, to enable the curry comb to be moved in any direction over the body or limbs of the animal without injury thereto, substantially as specified.

5. The curry comb herein shown and described, consisting of a hand-shaped flexible pad provided with a series of separate short, narrow, straight parallel flanged rectangular metallic comb-clips secured thereto, each having a toothed flange *b* and a smooth flange *b'* and arranged over the surface of the pad at angles to each other in part in a marginal row and in part in an intermediate portion arranged at angles to the radii, the clips in the marginal row having their smooth flanges outermost, there being no continuous row of open spaces between the clips across the pad in any direction, substantially as specified.

6. The curry comb herein shown and described, consisting of a hand-shaped flexible pad provided with a series of separate short, narrow, straight parallel flanged rectangular metallic comb clips secured thereto, each having a toothed flange *b* and a smooth flange *b* and arranged over the surface of the pad at angles to each other in part in a marginal row and in part in an intermediate portion arranged at angles to the radii, the clips in the marginal row having their smooth flanges outermost, and each of said clips having transversely stamped out integral tongues $b^3$ to secure the clips to the pad, there being no continuous rows of open spaces between the clips across the pad in any direction, substantially as specified.

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**531,413. MECHANISM FOR ACTUATING KEYBOARDS BY MEANS OF PERFORATED CARDS.** CLAUDE GAVIOLI, Paris, France. Filed May 3, 1894. Serial No. 509,916. (No model.)



*Claim.*—1. In a mechanism for actuating the key boards of organs, the combination, with a case provided with a top opening, and an operating frame movably mounted therein, of an arm pivoted to said frame, a foot-piece projecting downwardly from said arm, and provided with a toe at its lower end adapted to be struck by said frame, and a spring-actuated lever pivoted to said foot-piece and provided with a toothed end and adapted to project through said opening and engage perforated cards, substantially as set forth.

2. In a mechanism for actuating the key-boards of organs, the combination with a case provided with a top opening and adapted to be supported upon the key-board, and an operating-frame movably mounted within the case, of a spring-actuated arm pivoted to said operating-frame, and provided with a finger at its free end, a notched lug fixed near the opening in the case and adapted to receive and guide said finger, a foot piece depending from said pivoted arm, and provided with a toe at its lower end adapted to be struck by said frame, a bell-crank lever pivotally supported on said foot-piece and provided with a toothed upper end projecting through the opening of the case, and springs for actuating said bell-crank lever, substantially as set forth.

3. In a mechanism for actuating the key-boards of organs, the combination with a case provided with a top opening, and a movable operating-frame supported within said case, of a spring-actuated arm pivoted to said frame, a foot-piece depending from said arm and provided with a toe adapted to be engaged by said operating-frame, a bell-crank lever pivoted to said foot-piece and provided with a toothed upper end, adapted to project through the opening of the case, springs for actuating said bell-crank lever, and a yoke fixed to said arm for limiting the movements of said bell-crank lever, substantially as set forth.

4. In a mechanism for actuating the key-boards of organs, the combination with a case provided with a top opening, a movable frame pivoted in said case, and an operating handle projecting from said frame, of a spring-actuated arm pivoted to said frame and provided with a finger at its free end, a notched lug secured to said case for guiding the finger, a foot-piece depending from said lever and provided with a projecting toe at its lower end, adapted to be engaged by said movable frame, and a spring-actuated bell crank-lever pivoted to said foot-piece and provided with a toothed upper end adapted to project through said opening, substantially as set forth.

5. In a mechanism for actuating the key-boards of organs, the combination with a case and a movable frame supported within said case, of keys pivoted within the upper part of said case and provided with projecting noses adapted to be engaged by perforated cards, springs acting on said keys, rods pivoted to the lower portions of said keys, means for guiding said rods, key-levers adapted to engage the respective keys of the organ board, and means interposed between said pivoted rods and key-levers, whereby when said movable frame is depressed to engage said rods, said key-levers are operated, substantially as set forth.

6. In a mechanism for actuating the key-boards of organs, the combination with a case and an operating-frame movably supported within said case, of a transverse slotted guide-plate supported in the case, keys pivoted in the upper part of said case and provided with noses adapted to take into perforated cards, rods pivoted to the lower portions of said keys, and guided within said slotted plate, striker-levers pivotally supported in the base of the case, and projecting at their free ends into the slots of said plate and under the ends of said rods, and means for operating the organ-board through the medium of said striker-levers when said movable frame is depressed to engage the ends of said rods, substantially as set forth.

7. In a mechanism for actuating the key-boards of organs, the combination with a case and a movable frame supported within said case, and provided with a cross-bar, of keys pivoted in the upper part of said case and provided with projecting noses adapted to take into perforated cards, rods pivoted to the lower ends of said levers, a slotted guide-plate supported within the case and adapted to guide the free ends of said rods, striker-levers pivotally-supported in the base of the case and provided with upwardly bent free ends adapted to project into the slots of said plate, and means for operating through the medium of said striker-levers the keys of the organ-board when said movable frame is depressed, substantially as set forth.

8. In a mechanism for actuating the key-boards of organs, the combination with a case and a movable frame supported therein, of striker-levers pivotally supported in the base of the case, strikers on the striker-levers and transverse key-levers located under the striker-levers and adapted to be operated by the depression of said strikers, keys pivoted within the upper part of the case and provided with projecting noses adapted to take into perforated cards, and means located between the keys and striker-levers for effecting through the operation of said movable frame the conjoint action of said keys and striker-levers, substantially as set forth.

9. In a mechanism for actuating the key-boards of organs, the combination with a case and a movable frame supported therein, of key-levers pivotally supported within the base of the case, and adapted to engage the keys of the organ-board, means interposed between the movable frame and said key-levers whereby the same are actuated, a movable stop-bar supported adjacent to the free ends of said key-levers, and means for actuating said stop-bar by the depression of said frame, substantially as set forth.

10. In a mechanism for actuating the key-boards of organs, the combination with a case and a movable frame supported therein, of a series of key-levers pivotally supported within the base of the case, means interposed between the movable frame and the key-levers for depressing the latter, a movable stop-bar located adjacent to the free ends of said key-levers, a roller adapted to coact with said stop-bar, means for movably supporting the stop-bar and roller, and means for engaging said roller for actuating said stop-bar through the depression of said movable frame, substantially as set forth.

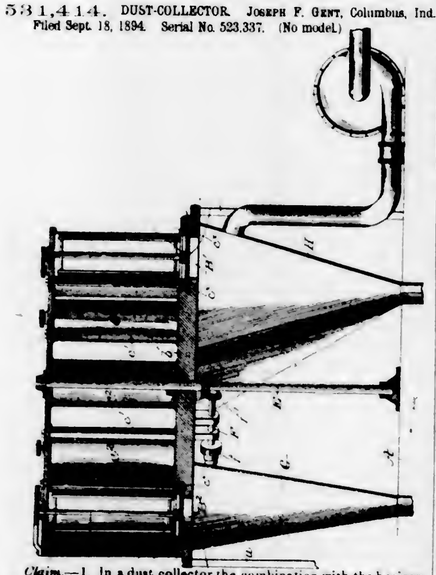
11. In a mechanism for actuating the key-boards of organs, the combination with a case, a movable frame supported therein, a bracket depending from said frame, a pivoted pawl located on said bracket, a series of key-levers supported within the base of the case, means interposed between the movable frame and said key-levers whereby the latter are actuated, a stop-bar movably supported adjacent to the free ends of said key-levers, and a roller adapted to move said stop-bar when engaged by the pawl through the depression of said movable frame, substantially as set forth.

12. In a mechanism for actuating the key-boards of organs, the combination with a case and a movable frame supported therein, and provided with a depending bracket, of a key pivoted in the upper part of the case and provided with a projecting nose, a rod pivoted to said key and guided in said bracket, a pivoted lever, located within the case and provided with a stop adapted to engage the free end of said rod, key-levers pivoted within the base of the case and adapted to be actuated through the medium of said frame, a stop-bar movably supported adjacent to the free end of said key-levers and a roller adapted to move simultaneously with said stop-bar, said roller being engaged at intervals by the end of the first mentioned lever, substantially as set forth.

13. In a mechanism for actuating the key-boards of organs, the combination of a case and a movable frame supported therein, and provided with a depending bracket, of a key pivotally supported in the upper part of the case and provided with a projecting nose adapted to take into perforated cards, a finger pivoted to said key and adapted to be guided within said bracket, a pawl pivoted to said bracket and provided with an upwardly projecting stem adapted to be engaged by said finger, key-levers pivotally supported on the base of the case, a stop-bar movably supported adjacent to the free ends of said key-levers, and a roller connected with and adapted to move simultaneously with said stop-bar, when engaged by said pawl, substantially as set forth.

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**531,414. DUST-COLLECTOR.** JOSEPH F. GENT, Columbus, Ind. Filed Sept. 18, 1894. Serial No. 523,337. (No model.)



*Claim.*—1. In a dust collector the combination with the horizontally revoluble drum carrying a series of dust chambers, of a receiving hopper having a discharge opening at its lower end, located beneath said drum and communicating with one or more of said dust chambers, an inlet pipe discharging horizontally into said hopper, a discharging hopper separate from the receiving hopper located beneath said drum, revoluble brushes in said dust chamber, means for moving said dust chambers successively from the receiving hopper over the discharging hopper and means for rotating said brushes while the dust chambers are above said discharging hopper, substantially as described.

2. In a dust collector the combination with the horizontal revoluble drum carrying a series of dust chambers open at their lower ends, a rotary brush located in each of said chambers for engaging the walls thereof and provided with an operating pinion, a receiving hopper, an inlet pipe discharging into said hopper perpendicularly to the axes of said dust chambers, a discharging hopper, a rack supported adjacent to said receiving hopper in position to engage all the pinions of the brush shafts of said dust chambers, substantially as described.

3. In a dust collector, the combination with the bottom plate provided with an annular recess, an aperture communicating with the air inlet and an aperture communicating with the dust discharge hopper, of a horizontally revoluble drum having a portion engaging said annular recess and provided with a series of dust chambers open at their lower ends, revoluble brushes located in said dust chambers and provided with operating pinions and a rack rigidly supported adjacent to the dust receiving hopper and adapted to engage the pinions of said brushes, substantially as described.

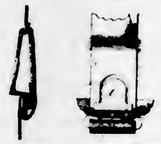
4. In a dust collector, the combination with the bottom plate provided with an annular recess, an elongated slot communicating with the receiving hopper and an elongated slot communicating with the dust discharging hopper, of a horizontal revoluble drum having a portion engaging said annular recess and carrying a series of dust chambers open at their lower ends, revoluble brushes in said dust chambers provided with operating pinions, an air receiving hopper located beneath said bottom plate an air inlet pipe and an air forcing device discharging into said hopper horizontally, a dust receiving hopper located beneath said bottom plate and a rack supported from said bottom plate in position to engage said brush operating pinions, substantially as described.

5. In a dust collector the combination with the stationary bottom plate provided with an opening communicating with an air blast and an opening communicating with a receiving hopper, of a revolving drum located above said plate and carrying a series of dust chambers open at their lower ends, said openings being adapted to pass over the openings of said stationary plate, said plate having solid portions or bridges between said openings of greater width than one of said blast chambers to prevent air from passing from said air inlet to said receiving hopper, substantially as described.

6. In a dust collector the combination with the stationary bottom plate provided with two slots, of a revolving drum provided with a series of dust chambers open at one end, said open ends being adapted to pass over said slots and bridges, a receiving hopper located beneath one of said slots, an air blast connected therewith and a discharging hopper located beneath the other of said slots, said bottom plate being provided with solid portions or bridges of greater width than one of said dust chambers, between the adjacent ends of said slots and said drum having an air tight packing engaging said bridges to prevent the air from passing from the blast pipe into said discharging hopper, substantially as described.

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**531,415. GARMENT-SUPPORTER CLASP.** FRED D. HARDING, Baldwin, Me. Filed Feb. 7, 1894. Serial No. 499,349. (No model.)



*Claim.*—1. In a garment supporter clasp, a plate folded to form jaws, the base having an upwardly extending set-off therein near its forward end and a slot in the vertical wall of said set-off, the top having an angular clasp pivotally attached thereto, one end adapted to press the garment down upon the base and forward into said slot and the other end serving as a lever, and means for attaching the clasp to the supporter strap, substantially as and for the purposes set forth.

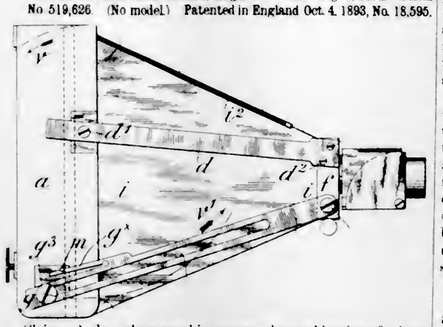
2. In a garment supporter clasp, a plate bent to form jaws, the base having an upwardly extending set-off therein near its forward end and a slot in the vertical wall of said set-off, a clamping jaw pivotally attached to the top and having a set-off on its lower extremity adapted to enter said slot, and means for attaching said clasp to the supporting strap, substantially as and for the purposes set forth.

3. In a garment supporter clasp, a metallic plate bent to form jaws, the base having an upwardly extending set-off therein near its forward end, a clamping device pivotally attached to the forward end of the top, said device having shoulders projecting from the sides thereof adapted to limit the rotary motion of said clamping device, and means for attaching said clasp to the supporting strap, substantially as and for the purposes set forth.



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**531,416. FOLDING PHOTOGRAPHIC CAMERA.** HENRY HILL and ARTHUR L. ADAMS, London, England. Filed Aug. 4, 1894. Serial No. 519,626. (No model.) Patented in England Oct. 4, 1893, No. 18,595.



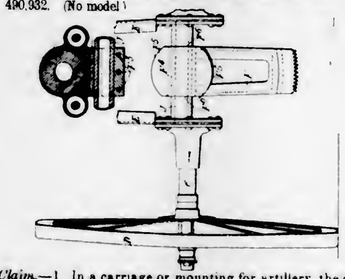
*Claim.*—1. In a photographic camera, the combination of a front plate, backwardly extending arms rigidly pivoted thereto, a swinging frame provided with a guide pin also pivoted to said arms, one end of said frame being adapted to swing outwardly and the other end inwardly when the bellows is to be folded, a bellows connected to said front plate and frame, and a slotted bar connected at one end to said front plate and at its other end to said frame and adapted to work on said guide pin.

2. In a photographic camera, the combination of a front plate, backwardly extending arms rigidly pivoted thereto, a swinging frame provided with a guide pin also pivoted to said arms, one end of said frame being adapted to swing outwardly and the other end inwardly when the bellows is to be folded, a bellows connected to said front plate and frame, a slotted bar connected at one end to said front plate and at its other end to said frame and adapted to work on said guide pin, and means for holding said slotted bar in rigid position when the bellows is open.

3. In a photographic camera, the combination of a front plate, backwardly extending arms rigidly pivoted thereto, a swinging frame provided with a guide pin also pivoted to said arms, one end of said frame being adapted to swing outwardly and the other end inwardly when the bellows is to be folded, a bellows connected to said front plate and frame and adapted to collapse in folds on one side and expand telescopically on the other side and vice versa when folding or unfolding the camera respectively, and a slotted bar connected at one end to said front plate and at its other end to said frame and adapted to work on said guide pin.

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**531,417. CARRIAGE OR MOUNTING FOR ARTILLERY.** HERMAN JAKOBSSON, London, England. Filed Nov. 15, 1893. Serial No. 490,932. (No model.)



*Claim.*—1. In a carriage or mounting for artillery, the combination with the trail, the divided wheel axle, and a transom fixed to the trail in the plane of the axle, of a cradle mounted on said transom and movable vertically for elevation and horizontally for accurate laying independently of said transom, and a gun mounted in the cradle, as set forth.

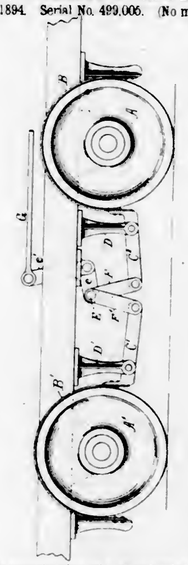
2. In a carriage or mounting for artillery the combination with the trail, the wheel axle, and a transom fixed to the trail, of a cradle mounted to turn about said transom for elevation, and in a horizontal direction independently of the transom, for accurate laying, a gun carried by the cradle, means for elevating the cradle and means for turning the same horizontally to effect the fine or accurate laying of the gun, substantially as described.

3. In a carriage or mounting for artillery, the combination with the trail, the wheel axle, and a transom fixed to the trail of a gun cradle mounted to turn on the transom for elevation, a gun carried by the cradle, said cradle also turning in a horizontal direction independently of the transom for fine or accurate laying, means for elevating the cradle, an arm F secured at its forward end to the transom and entering at its rear end a guide G on the cradle, a toothed segment formed at said rear end, a worm carried by the cradle and gearing with said toothed segment, and means for turning said worm, substantially as described.

4. In a carriage or mounting for artillery, the combination, with the wheel axle, of a trail comprising shafts E and cheeks K' secured to the axle, a transom secured to said cheeks, a gun cradle mounted to turn thereon for elevation, a gun carried by the cradle, said cradle also turning in a horizontal direction independently of the transon for fine or accurate laying, means for elevating the gun and means for effecting the horizontal laying said latter means comprising an arm F carried at its forward end by the transom and guided at its rear end by a guide G secured to the cradle, a toothed segment formed at said rear end, a worm carried by the cradle and gearing with said toothed segment, and means for turning said worm, substantially as described.

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**531,418. CAR-BRAKE.** SAMUEL S. LEONARD, Cleveland, Ohio. Filed Feb. 3, 1894. Serial No. 499,006. (No model.)



*Claim.*—1. The combination of a car wheel, a flexible brake band fixed at one end to a suitable support adjacent to one side of the wheel and extending therefrom over and partly around said wheel, a fixed post extending down by that side of the wheel opposite to that at which the brake band is fixed, a lever pivoted to said post and connected at one end with the adjacent end of the brake band, a rock shaft, an arm secured thereto, a link connecting said arm with one end of said lever, and mechanism for operating said rock shaft, substantially as and for the purpose specified.

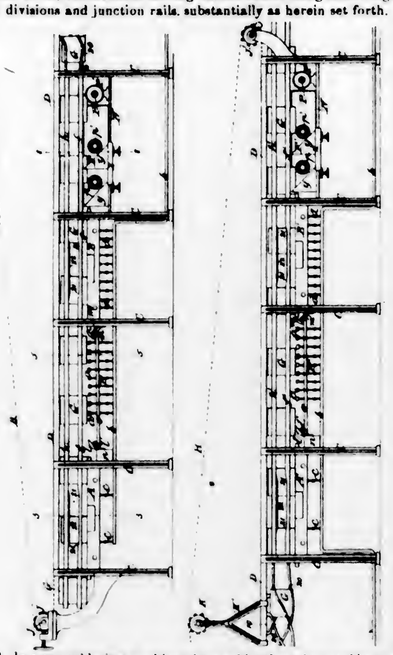
2. The combination of two car wheels, two brake bands fixed at their remote ends to suitable supports adjacent to said wheels respectively, and extending from said fixed points over and partly around said wheels, two levers pivoted to fixed points and connected with the movable ends of said brake bands respectively, a rock shaft, an arm secured thereto, and links connecting said arm with said two levers, and mechanism for operating said rock shaft, substantially as and for the purpose specified.

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**531,419. SOLDERING-MACHINE.** HERMAN MILLER, New York, N. Y. Filed May 15, 1894. Serial No. 511,383. (No model.)

*Claim.*—1. In a can soldering machine, the combination of two solder vessels in direct alignment with each other, two straight track divisions directly in alignment with each other over the said vessels, and junction rails in the form of threads of a straight screw the axis

of which is parallel with and central to the width of both of the said straight track divisions, the said rails connecting the said straight track divisions, and means of moving the can bodies along said straight track divisions and junction rails, substantially as herein set forth.



2. In a can soldering machine, the combination of two solder vessels in alignment with each other, a track composed of two straight divisions which are directly in alignment with each other and an intermediate division consisting of rails in the form of threads of a straight screw the axis of which is parallel with and central to the width of said straight division, and an endless chain arranged above said track and furnished with pushers for pushing the can bodies along said track, the latter rails being interrupted in the upper part of the track for the passage of the pushers, substantially as herein set forth.

3. In a can soldering machine, the combination with rails for supporting a series of can bodies and means of moving the same along said rails, of one or more metallic scrapers or wipers consisting of plates having their upper surfaces concave transversely and convex longitudinally and pivoted under the said rails, substantially as and for the purpose herein set forth.

4. In a can soldering machine, the combination with a vessel for containing solder or flux and an endless chain for moving can bodies over such vessel, of a track composed of upper and lower angle-iron rails in the lower of which rails depressions are produced over said vessel by the reduction of their edges and in the upper of which rails corresponding depressions are produced by the addition of cheek plates, substantially as herein set forth.

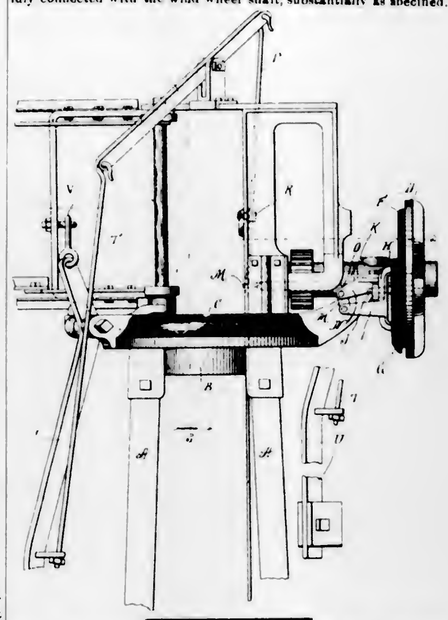
5. In a can soldering machine, the combination with rails for supporting can bodies with their seams exposed through an open space between said rails and means of moving the can bodies along said rails, of rotary brushes arranged below said space and means of adjusting the said brushes toward and from said open space, substantially as herein set forth.

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**531,420. WINDMILL-BRAKE.** JOHN H. MILLER, Batavia, Ill., assignor to the United States Wind Engine and Pump Company, same place. Filed Sept. 19, 1894. Serial No. 523,490. (No model.)

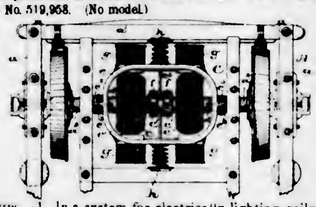
*Claim.*—1. In a windmill, a brake having bearings adapted to rest upon lugs or flanges supported on the turn-table; flanges or lugs supported on the turn-table on which the brake has its bearings; a lever pivotally attached to said brake, pivoted on the turn-table and adapted to be connected with the rod by which the wind wheel is thrown out of wind; and a frictional bearing surface connected rigidly to the wind wheel shaft whereby the brake is operated by the rod, and sliding on the lugs or flanges makes a frictional contact with the attachment of the wind wheel shaft, as specified.

2. The rod with which the wind wheel is thrown out of wind; a stop on the rod adapted to operate the brake-lever; a brake-lever pivoted to the turn-table and connected with the rod and with the brake-shoe; a brake-shoe having bearings adapted to slide upon lugs or flanges; lugs or flanges attached to the turn-table, having inclined bearing surfaces which support the brake-shoe; and a bearing rigidly connected with the wind wheel shaft, substantially as specified.



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**531,421. ELECTRIC-LIGHTING SYSTEM FOR RAILWAY-CARS.** MORRIS MOSKOWITZ, Newark, N. J., assignor to himself and Leon D. Adler, same place, and A. S. Adler, Philadelphia, Pa. Filed Aug. 10, 1894. Serial No. 519,958. (No model.)



*Claim.*—1. In a system for electrically lighting railway cars, in combination, with the car-axle, frame-sections $e$ and $e'$ having bearing portions $e^3$ and bolts $e^4$ for securing said sections to the car wheel axle, field magnets $g, g$, on the outside of said frame-sections, and two or more armatures arranged and wound on said axle and connected in series or tensions, substantially as and for the purposes set forth.

2. In a system for electrically lighting railway cars, in combination, with the car axle, frame-sections $e$ and $e'$ having bearing portions $e^3$ and bolts $e^4$ for securing said sections to the car-wheel axle, field-magnets, $g, g$, on the outside of said frame-sections, springs, as $h$, connecting said frame-sections with the truck frame, and two or more armatures arranged and wound on said axle and connected in series or tension, substantially as and for the purposes set forth.

3. In a system for electrically lighting railway cars, in combination, with the car axle, frame-sections $e$ and $e'$ having bearing portions $e^3$ and bolts $e^4$ for securing said sections to the car-wheel axle, a tube $d$ on the car-wheel axle, between the bearing-portions of said frame-sections, field magnets $g, g$ on the outside of said frame-sections, and two or more armatures arranged and wound on said tube $d$ and connected in series or tension, substantially as and for the purposes set forth.

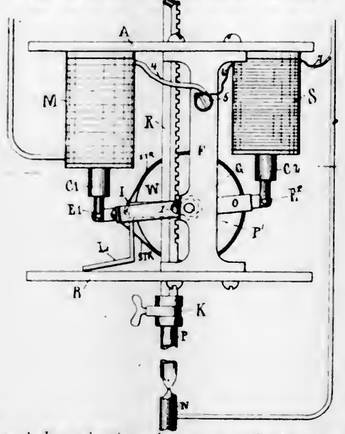
4. In a system for electrically lighting railway cars, in combination with the car-wheel axle, frame-sections $e$ and $e'$ having bearing portions $e^3$ and bolts $e^4$ for securing said sections to the car-wheel axle, a tube $d$ on the car-wheel axle between the bearing portions of said frame-sections, field magnets $g, g$ on the outside of said frame-sections, springs, as $h$, connecting said frame-sections with the truck frame, and two or more armatures arranged and wound on said tube $d$ and connected in series or tension, substantially as and for the purposes set forth.

5. In the herein described dynamo adapted to be mounted on a car-wheel axle, an armature winding, having the wires thereof cushion supported and insulated, in the manner, substantially as and for the purposes set forth.



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**531,422. ELECTRIC-ARC LAMP.** EDWIN J. MURPHY, New York, N. Y. Filed Feb. 16, 1894. Serial No. 500,405. (No model.)



*Claim.*—1. In an electric arc lamp, the combination with a vertically movable upper carbon carrying rod, and a shaft for moving said rod, of a brake wheel connected with said shaft, a brake strap applied to said wheel, two levers connected to opposite ends of the strap, and a magnet for operating one of said levers, as set forth.

2. In an electric arc lamp, the combination with a vertically movable upper carbon carrying rod, and a shaft for moving said rod, of a brake wheel connected with said shaft, a brake strap applied to said wheel, two levers connected to opposite ends of the strap, a stop for limiting the movement of one lever, and a magnet for operating the other of said levers, as set forth.

3. In an electric arc lamp, the combination with the shunt magnet and the main magnet, of a shaft connected with a brake wheel, a brake strap for said wheel, two levers connected to opposite ends of the strap and one of said levers connected to the magnets and a carbon carrying rod having connection with said shaft, as set forth.

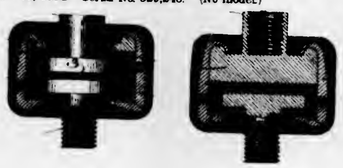
4. The combination with a fixed lower carbon, a vertically moved upper carbon carrying rod and a shaft for moving said rod, of a brake wheel connected with the shaft, a brake strap applied to said wheel, two levers connected to opposite ends of said strap, a stop for limiting the movement of one lever and main and shunt magnets for moving the other lever, as set forth.

5. The combination with the pinion shaft, its pivot pins and a brake wheel and its strap connected with said shaft, of a U-shaped lever connected to one end of said strap, another lever connected to the other end of said strap and a main and shunt magnet for rocking said last named lever, as set forth.

6. The combination of a movable carbon carrying rack rod for the upper carbon, a brake wheel connected with said rod and having a brake strap, a pair of rocking levers concentric with the axis of the brake wheel and connected to opposite ends of said strap, and two magnets connected to opposite ends of one of said levers, as set forth.

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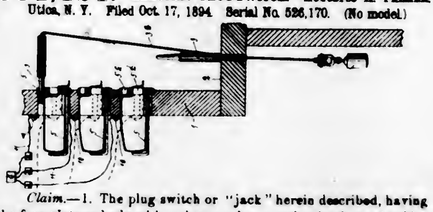
**531,423. INSULATOR.** LOUIS MCCARTHY, Boston, Mass. Filed Nov. 19, 1894. Serial No. 529,248. (No model.)



*Claim.*—An insulator comprising a case having holes or perforations therethrough, one or more connections within said case, insulating material adjacent said connection or connections substantially as set forth, and a mass of insulating composition applied exteriorly to the said case, interiorly thereof around the said connection or connections and extending through the said holes or perforations aforesaid, all substantially as described.

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**531,424. ELECTRIC PLUG-SWITCH.** AUGUSTUS H. PALMER, Utica, N. Y. Filed Oct. 17, 1894. Serial No. 526,170. (No model.)



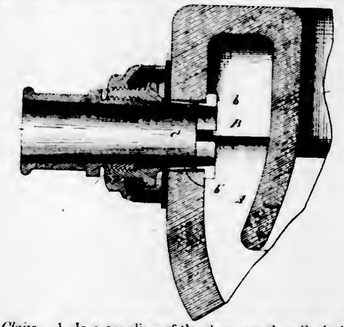
*Claim.*—1. The plug switch or "jack" herein described, having the face-plate or body with a plug opening, a spring having a shoulder closing the opening against the plug, and a projection through the face of the body by means of which the spring can be operated, and a conductor with which the spring is adapted to engage when the plug is removed, combined, substantially as set forth.

2. The combination in a plug switch or "jack," of a body or face-plate having a plug opening and a line-wire connection, a spring attached to the back of the plate and having a shoulder on its movable end closing the plug opening against the plug, and also having a projection through the face of the plate by means of which the spring may be operated, and a conductor with which the spring will engage when the plug is removed, substantially as set forth.

3. A plug switch having a body, a plug opening in the body, a spring secured to the body having a shoulder on the free end adapted to close the plug opening against the plug, means for operating the free end of the spring to free the plug opening, and a contact piece with which the free arm of the spring is adapted to engage, combined, substantially as set forth.

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**531,425. WATER-CLOSET COUPLING.** JOHN PORTEOUS, Cincinnati, Ohio. Filed Mar. 12, 1894. Serial No. 503,224. (No model.)



*Claim.*—1. In a coupling of the character described, the combination of the thimble, having one end screw threaded to receive the coupling tube, and its opposite end or neck formed of segments terminating in outwardly projecting flanges or collars, the coupling tube exteriorly screw threaded to engage the screw threads in the thimble and having a plain tubular portion in advance of the screw threaded portion to bear upon the inner walls of the thimble segments and expand them as the tube is screwed into the thimble for the purpose of locking the thimble in place, substantially as shown and described.

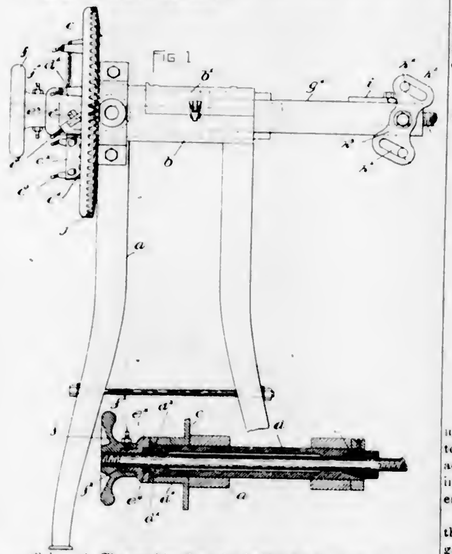
2. The combination of the thimble having tapering neck and outwardly projecting flange, a bore cone shaped and severed into segments, and having the end opposite the neck screw threaded interiorly and exteriorly, the coupling tube having screw threaded portion to engage the interior screw thread of the thimble and a plain tubular portion in advance of the screw thread to expand the segments as the tube is screwed into the neck, and the cap, D, having its neck interiorly screw threaded to engage the exterior thread upon the thimble, substantially as shown and described.

3. The combination of the bowl, A, perforated to receive the coupling, and having a plain seat surrounding the outer end of the opening, the thimble having tapering neck formed of segments, having

outwardly projecting flanges and screw threaded exteriorly and interiorly at the end opposite the flange, the coupling tube exteriorly screw threaded to engage the interior screw thread of the flange and having tubular end to expand the segments of the flange as the tube is screwed in, the packing gasket around the neck of the thimble and the cap having interiorly screw threaded neck to engage the exterior thread of the thimble, and its edge pressing against the gasket, whereby the flanges of the thimble or segments are drawn firmly against the inner wall of the bowl as the cap is screwed up, and a water tight joint secured, substantially as shown and described.

4. The combination of the thimble, having its neck formed of segments having outwardly projecting flanges, its opposite end exteriorly and interiorly screw threaded, the one thread being a right and the other a left hand thread, a wrench seat intermediate the neck and screw threaded portion, the coupling tube having screw threaded portion, a wrench seat at one end of the screw threaded portion and a tubular extension at the opposite end to expand the neck segments as the tube is screwed into the thimble, the cap having its neck interiorly screw threaded to engage the screw threads in the exterior of the thimble, and a wrench seat to force the cap on the thimble, substantially as shown and described.

## 531,426. MACHINE FOR COMMINUTING BONE AND VEGETABLE MATTER. EDWARD J. ROCHE, Milford, Mass. Filed Feb. 8, 1894. (Serial No. 499,497. (No model.)


FIG 1

*Claim.*—1. The combination of a holder for the material, a rotary cutter working across said holder, a follower to feed the material in the holder, a feed-screw for advancing said follower, and means for frictionally connecting the feed-screw with the rotary cutter.

2. The combination of a holder for the material, a rotary cutter working across said holder, a follower to feed the material in the holder, a feed-screw for advancing said follower, means for frictionally connecting the said screw and the rotary cutter by a longitudinal movement of the screw, and means for moving the screw into such engagement with the disk.

3. The combination of a holder for the material, a rotary cutter working across said holder, a follower to feed the material in the holder, a feed-screw for advancing the follower, a friction cone clutch for operatively connecting the rotary cutter and the feed-screw by longitudinal movement of the latter, and means for producing such movement of the screw.

4. The combination of a holder for the material, a rotary cutter working across said holder and having an elongated hub, a follower to feed the material in the holder, a feed-screw for advancing said follower, said screw extending through the hub of the cutter and provided with friction devices adapted to engage the said hub at opposite ends, one being fixed on the shaft and the other longitudinally movable thereon, and a handle screwing on said shaft and engaging the longitudinally movable friction device so as to move it longitudinally but free to turn independently thereof.

5. The combination of a holder for the material, a rotary cutter working across said holder, a feed-screw adapted to be rotatively connected with said cutter, a follower for feeding the material in the holder, a separable nut carried by said follower and engaging the feed-screw, and a cam for opening the same and adapted to be actuated at a predetermined point in the follower's advance.

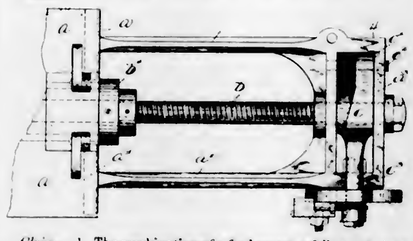
6. The combination of a holder for the material, a rotary cutter working across said holder, a feed-screw adapted to be rotatively connected with said cutter, a follower for feeding the material in the holder, a separable nut carried by said follower and engaging the feed-screw, a cam for opening the same, and a lever for operating the cam and adapted to abut a fixed part of the machine whereby it is actuated.

7. In a machine of the character described, a cutter adapted to work across the end of the holder for the material and comprising a blade having a plain cutting edge, a blade lying upon the same and having a toothed or serrated cutting edge back of the plain edge of the first-named edge, and fastenings common to both blades and securing them to a suitable support.

8. A machine of the character described comprising in its construction a pair of horizontal cylinders arranged side-by-side, and having movable covers on the upper side, a rotary disk extending over the cylinders, followers in the cylinders, and a feed-screw for advancing said followers and adapted to be operatively connected with the rotary disk.

9. In a machine of the character described, the combination of a pair of horizontal parallel cylinders for containing the material to be acted upon, and a wheel or disk supported between the said cylinders and extending over the ends of the same and having knives on opposite sides of its center, substantially as described.

## 531,427. MEANS FOR CONTROLLING OPERATIVE CONNECTION BETWEEN FEED-SCREWS AND FOLLOWERS. EDWARD J. ROCHE, Milford, Mass. Filed Mar. 12, 1894. Serial No. 503,306. (No model.)



*Claim.*—1. The combination of a feed-screw, a follower to be actuated thereby, a separable nut carried by the follower and adapted to engage the feed-screw, a pivotal cam interlocked with the nut and adapted to open and close the same by movement on its pivot, a spring impelling said cam in a direction to close the nut, and a detent for engaging the cam to restrain the spring, substantially as described

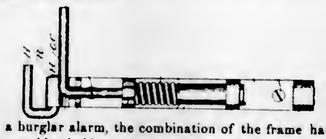
2. The combination of a feed-screw, a follower to be actuated thereby, a separable nut carried by the follower and adapted to engage the feed-screw, said nut being composed of two pivotal members, a pivotal cam-plate slotted for engagement of the said nut-members, a spring actuating said cam-plate in a direction to close the nut, and a detent arranged for engagement with the cam-plate so as to restrain the said spring, and adapted to be tripped by encountering an abutment.

3. The combination of a feed-screw, a follower to be actuated thereby, a separable nut carried by the follower and adapted to engage the feed-screw, said nut being composed of two crossed pivotal members, a spring-actuated controlling device for opening and closing the nut, and a detent for restraining the spring and adapted to be tripped by encountering an abutment.

4. The combination of a fixed cylinder, a feed-screw, a follower to be actuated by the feed-screw, a separable nut carried by the follower and composed of two pivotal members, a pivotal cam-plate slotted for engagement of said nut-members and adapted to open and close the nut, a spring actuating said cam-plate in a direction to open the nut, and a pivotal detent arranged for engagement with the cam-plate to restrain the spring and adapted to abut the cylinder and be tripped thereby.

## 531,428. DETONATING BURGLAR-ALARM. SAM D. SILVER, Idaho Springs, Colo. Filed Mar. 24, 1894. Serial No. 505,002. (No model.)

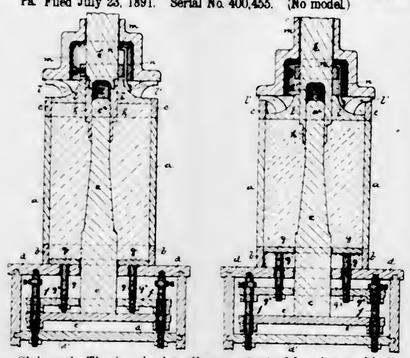
*Claim.*—1. In an alarm, the combination of the frame having at one end an integral perforated lug forming a cartridge holder, and also having in line with the cartridge holder, bearings for the firing pin, and a fixed slotted lug which is adapted to be engaged by said pin, the firing pin situated in the aforesaid bearings and having a right-angled arm which is adapted to engage the fixed lug as described, and a drive spring enveloping the pin between its bearing and operating to impart an endwise movement thereto when its arm is released substantially as described.



2. In a burglar alarm, the combination of the frame having at one end a cartridge-holder and in line therewith bearings for the firing-pin, the firing pin located in said bearings and having a right-angled arm which is adapted to engage a fixed lug on the frame by the partial rotation of the pin, and a drive-spring enveloping the pin and operating to impart an endwise movement thereto when the firing-pin arm is released, and a guard having the form of three sides of a parallelogram and loosely engaging the hooked end of the frame, substantially as described.

3. In a burglar alarm, the combination of the frame having at one end a cartridge holder, and in line therewith, bearings for the firing pin, the spring-provided firing pin having an angular arm, and a guard having the form of three sides of a parallelogram and loosely engaging the hooked end of the frame, substantially as described.

## 531,429. MOLDING APPARATUS. STEPHEN J. ADAMS, Pittsburg, Pa. Filed July 23, 1891. Serial No. 400,455. (No model.)



*Claim.*—1. The herein described method of forming molds, consisting in compacting the sand within a flask by forcing the same in opposite directions into the flask around the patterns, and by an independent movement compacting the sand by forcing the two patterns longitudinally toward each other within the body of sand, substantially as and for the purposes set forth.

2. In apparatus for forming molds, the combination of a flask, two patterns entering within each flask from opposite ends, and adapted to be forced longitudinally toward each other within the same so as to compact the sand while approaching each other, and two pressing plates separate from and fitting around the patterns at the top and bottom of the flask respectively, and adapted to be forced toward each other so as to compact the sand around the patterns, substantially as and for the purposes set forth.

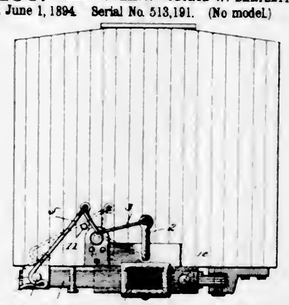
3. In apparatus for forming molds, the combination of a flask, two patterns entering within the flask and adapted to be forced longitudinally toward each other within the same so as to compact the sand while approaching each other, two pressing plates separate from and fitting around the patterns at the top and bottom of the flask respectively, and adapted to be forced toward each other so as to compress the sand around the patterns, and two sand reservoirs at the top and bottom of the flask respectively, within which said pressing plates enter, substantially as and for the purposes set forth.

4. In apparatus for forming sand molds, the combination of a flask, two sets of separate patterns entering within the flask from opposite directions and out of line with each other, the patterns entering in one direction, being adapted to enter the spaces between the patterns entering in the opposite direction, and pressing plates separate from and fitting around the two sets of patterns and adapted to be forced toward each other, substantially as and for the purposes set forth.

5. In apparatus for formings and molds, the combination of a flask, two sets of separate patterns entering within the flask from opposite directions and out of line with each other, the patterns entering in one direction, being adapted to enter the spaces between the patterns entering in the opposite direction, the ends of said patterns being tapering toward a point to spread the sand as they pass into the same, and pressing plates separate from and fitting around the two sets of patterns and adapted to be forced toward each other, substantially as and for the purposes set forth.



## 531,430. CAR-COUPLING. GEORGE W. BARTLETT, Lineville, Ala. Filed June 1, 1894. Serial No. 513,191. (No model.)

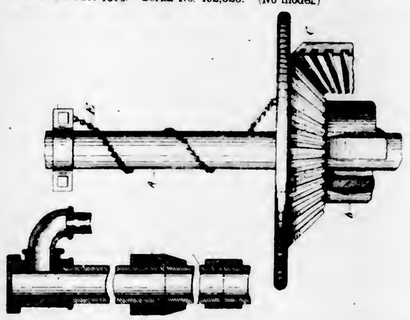


*Claim.*—1. A car-coupling consisting of a draw-head, a coupling pin, means for supporting said pin above the drawhead and for automatically dropping it, said means consisting of the pivoted angle-lever 3, the bar 5 pivoted on lever 3 and formed with the hook 6, the horizontal sliding-bar 7, over which the hook 6 engages, and means operated by an approaching car for withdrawing the bar 7 to drop the pin, substantially as described.

2. A car-coupling consisting of a draw-head a coupling pin, means for supporting said pin above the draw-head and for automatically dropping it, said means consisting of the pivoted angle-lever 3, the bar 5 pivoted on lever 3 and formed with the hook 6, the horizontal sliding-bar 7 over which the hook 6 engages, a spring pressed lever 8, and a push-bar as 10, its inner end bearing against the lever 8, its front end projecting forward of the end of the car, substantially as described and for the purpose set forth.

3. A car-coupling consisting of a draw-head, a coupling pin, means for supporting said pin above the drawhead and for automatically dropping it, said means consisting of the pivoted angle-lever 3, the bar 6 pivoted on lever 3 and formed with the hook 6, the horizontal sliding-bar 7 over which the hook 6 engages, and means operated by an approaching car for withdrawing the bar 7 to drop the pin, a pin 11 to support the bar 5, when it is released from bar 7, and a handle 12 formed on the bar 5 near its lower end, substantially as described and for the purpose set forth.

## 531,431. ROCK-DRILLING MACHINE. MOSES BEAL, Elyria, Ohio. Filed Nov. 29, 1893. Serial No. 492,328. (No model.)



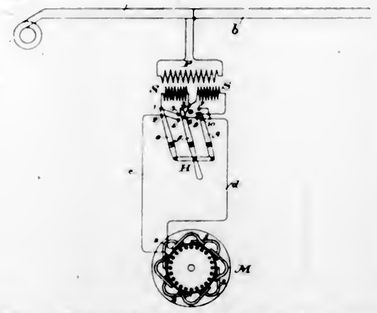
*Claim.*—1. The combination of a driven drill wheel and a revoluble and longitudinally movable drill stem, which passes loosely through the center of said drill wheel with a flexible chain or rope which is wound spirally about said drill stem and is connected at one end with the drill wheel and at the other end with the drill stem, substantially as and for the purpose specified.

2. The combination of a tubular revoluble drill stem, a hollow irrevoluble section G having an annular flange on its lower end, a

coupling piece secured to said drill stem and surrounding the lower end of said tubular section, a gland screwed into said coupling piece, and packing inclosed in said coupling piece between said gland and annular flange, substantially as and for the purpose specified.

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**531,432. STARTING ALTERNATING-CURRENT MOTORS.** LOUIS BELL, Boston, Mass., assignor to the General Electric Company, same place. Original application filed July 3, 1893, Serial No. 479,457. Divided and this application filed Mar. 12, 1894. Serial No. 503,258. (No model.)



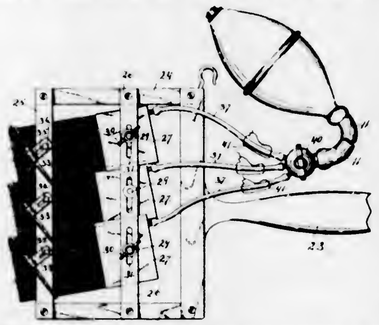
*Claim.*—1. The method of operating an alternating current motor supplied from a transformer having a divided secondary coil, which consists in arranging the divided secondary coils in series to start the motor, and changing the relation to multiple when the motor attains speed.

2. In combination, an induction motor, a transformer having a primary coil and a divided secondary coil, and a switch adapted to connect such divided coil in series or multiple relation to the motor, as set out.

3. A generator or alternating current, lines supplying such current to transformers comprising primary windings and divided secondary windings, a switching mechanism adapted to connect such divided secondary windings in series or multiple, and an alternating current motor in circuit with such secondary windings.

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**531,433. PAINTING APPARATUS.** SEWELL A. BROOKS, Strykersville, N. Y. Filed May 22, 1894. Serial No. 512,050. (No model.)



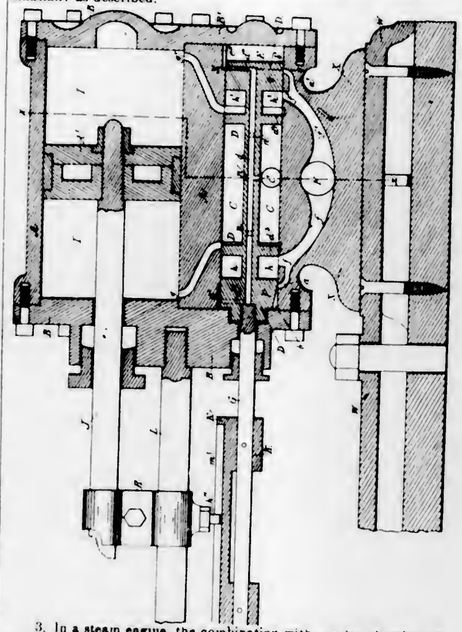
*Claim.*—A gang-brush consisting of two or more brushes adjustably secured in a frame and adapted to simultaneously paint two or more surfaces lying in parallel planes and two or more smaller or tool brushes adjustably secured on the same frame and adapted to simultaneously paint two or more edges or surfaces perpendicular to the first surfaces or planes.

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**531,434. BALANCED STEAM-ACTUATED VALVE.** WILLIAM F. BROWNE, New York, N. Y. Filed Mar. 24, 1894. Serial No. 504,971. (No model.)

*Claim.*—1. In a steam engine, a single reciprocating and rotatable or oscillating balanced valve, having a central steam chest or induction port and two eduction channels or ports, one in each of its solid ends, separated from said induction port by circular abutments, said ports being adapted to registar with the cylinder ports and the exhaust passages and port and said solid ends of the valve being also provided with eduction ports registering with exhaust ports, in combination with steam inlets at the ends of the valve chamber, and means for oscillating the valve for controlling the steam inlets and eduction ports at the ends of the valve chamber, substantially as described.

2. In a steam engine, a reciprocating balanced steam valve, having a central induction port and exhaust ports at each end thereof for supplying steam to and exhausting it from the piston cylinder and also having interior steam passages and ports for conducting live steam to the ends of the valve chamber for reciprocating the valve, substantially as described.



3. In a steam engine, the combination with a valve chamber of the reciprocating and rotatable or oscillating balanced valve, having a central induction port, an abutment and exhaust port at each end thereof, a central longitudinal steam passage and a small induction port in each end registering with an induction port in the wall of the chamber, also a small eduction port in each end adapted to register with an exhaust passage, and means for rotating or oscillating the valve, substantially, as described.

4. In a steam engine, the reciprocating and rotatable or oscillating balanced valve D, having solid ends, a longitudinal stem and circular abutments near such ends forming the central steam chest or induction port, C, and the eduction channels or ports, $A$ and $A^1$; also having a central longitudinal steam passage and a small induction port leading therefrom in each of the solid ends, said ends also having small eduction ports, in combination with the valve chamber, having in its wall at each end a small induction port arranged to register with said induction port in the valve; suitable exhaust passages and a port in the base of the engine and means for oscillating the valve.

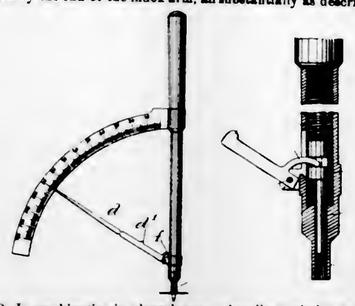
5. In a steam engine a single reciprocating and oscillating balanced valve having a central steam chest or induction port and two eduction ports, one in each of its solid ends, in combination with the valve chamber having steam inlets and exhaust ports for reciprocating the valve, the valve rod having an oscillating bar provided with cam surfaces, and a tappet pin connecting with the piston rod and bearing on said cam surfaces for oscillating the valve, substantially as described.

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**531,435. WATCHMAKER'S LENGTH-GAGE.** HENRY J. COGSWELL, Hartford, Conn. Filed Oct. 1, 1894. Serial No. 524,578. (No model.)

*Claim.*—1. In combination in a length gage a handle, the tubular shank terminating in a nipple, an index arm pivoted to the shank with a branch extending within the latter and in contact with a plunger, a plunger located within the shank and having a shoulder cooperating with the shoulder within the shank whereby the outer end of the plunger is held in exact alignment with the outer end of the nipple, a spring actuated piston arranged within the plunger and pressing upon the branch, and a graduated arm adapted to be traversed by the end of the index arm, all substantially as described.





2. In combination in a length gage a handle, a tubular shank terminating with a nipple, a spring actuated piston located within the shank, a shouldered plunger loosely supported within the shank and having a shoulder cooperating with a shoulder within the shank whereby the outer end of the plunger is held in exact alignment with the outer end of the nipple, a gradnated arm, an index arm having a branch located between the proximate surfaces of the plunger and the piston, and a stop on the lower end of the index arm limiting the swinging play of the arm, all substantially as described.

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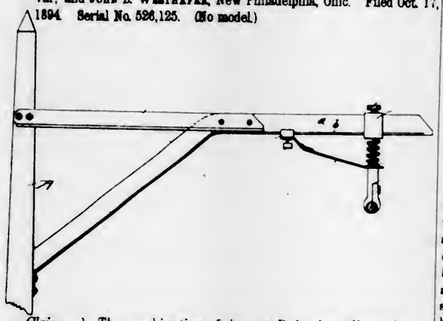
**531,436. PNEUMATIC TIRE FOR BICYCLES.** ANDREW C. DAVIDSON, St. Thomas, Canada. Filed July 6, 1894. Serial No. 516,759 (No model.) Patented in Canada July 26, 1894, No. 46,671.



*Claim.*—The combination of the levers B, having their contiguous ends pivotally connected together and provided at their outer or free ends with lugs C, and the securing wire A, having its ends connected to the levers B, at intermediate points in the length of the same, substantially as and for the purpose set forth.

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**531,437. TROLLEY-WIRE BRACKET.** WINFIELD S. KLINE, Bolivar, and JOHN R. WESTHAFER, New Philadelphia, Ohio. Filed Oct. 17, 1894. Serial No. 526,125. (No model.)



*Claim.*—1. The combination of the arm B, having adjustably attached thereto the clips D and $d$, the spring E and the hinged arm G, substantially as and for the purpose specified.

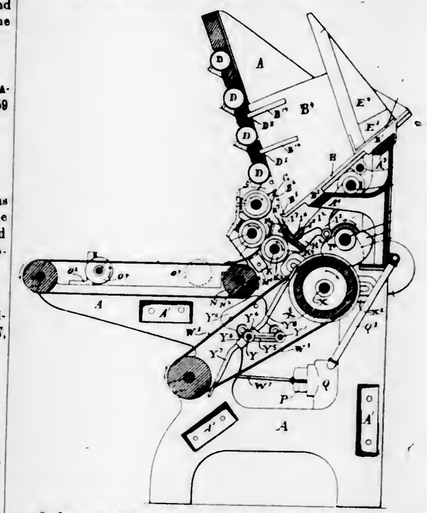
2. The arm B formed of a single piece, the braces C secured to said arm and to the pole the spring E carrying the trolley wire clamp, and the hinged arm G, substantially as and for the purpose specified.

3. The combination of the arm B, the clips D and $d$, provided with the set-screws $d'$ $d^1$ and a spring connection to the trolley wire, substantially as and for the purpose specified.

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**531,438. MACHINE FOR FEEDING SHEETS OF PAPER.** JOHN H. KNOWLES, Philadelphia, Pa. Filed Apr. 5, 1894. Serial No. 506,392. (No model.)

*Claim.*—1. In a machine for feeding sheets successively from a pack, the combination of a support for the pack of sheets, a separating instrument or separator adapted to seize upon the surface of the outermost sheet in the pack at a point on that edge of the sheet which lies most advanced in the direction in which the sheet is to be moved, means to operate the separating instrument to bring an end of the instrument first into contact with and to cause it to seize upon the sheet then to cause that end of the instrument which has seized upon the sheet to move in a direction so related to the said most advanced edge of the sheet as to cause a portion of that edge to be bent outward without bending the entire edge of the sheet whereby a space shall intervene between the said bent out portion of the edge of the sheet and the subjacent sheets of the pack with a clear opening from said space forward in the direction in which the sheet is to be moved and then to cause the instrument to assume a state of rest thereby maintaining the outward bend in the edge of the sheet until a movable blade shall have passed under the bend and thereafter to cause the instrument to release its seizure upon the sheet, a movable blade having an edge inclined relatively to the forward edges of the sheets forming the pack, means to support and guide said blade so that when it moves its inclined edge will move in a plane adjacent to the surface of the pack, means to give a reciprocating movement to said blade whereby in its forward motion an advanced part of its inclined edge shall first enter through said opening into said space under said bent out portion of the edge of the sheet while the said portion of the edge is maintained in an outwardly bent position by the separating instrument and thence to pass its inclined edge under all that portion of the edge of the sheet which was not bent outward by the separating instrument whereby the blade shall lie under the entire edge of the sheet and separate it from the pack, and devices to operate upon the separated edge and withdraw the sheet from the pack.



2. In a machine for feeding sheets successively from a pack, the combination of a support for the pack of sheets, a separating instrument or separator arranged adjacent to a side edge of the pack of sheets adapted to seize upon one corner of the outermost sheet on that edge which lies most advanced in the direction in which the sheet is to be moved, means to operate the separating instrument to bring an end of the instrument first into contact with and to cause it to seize upon the sheet then to cause that end of the instrument which has seized upon the sheet to move in a direction so related to the said most advanced edge of the sheet as to cause a portion of that edge to be bent outward without bending the entire edge of the sheet whereby a space shall intervene between the said bent out portion of the edge of the sheet and the subjacent sheets of the pack with a clear opening from said space forward in the direction in which the sheet is to be moved and then to cause the instrument to assume a state of rest thereby maintaining the outward bend in the edge of the sheet until a movable blade shall have passed under the bend and thereafter to cause the instrument to release its seizure upon the sheet, a movable blade having an edge inclined relatively to the forward edges of the sheets forming the pack, means to support and guide said blade so that when it moves its inclined edge will move in a plane adjacent to the surface of the pack, means to give a reciprocating movement to said blade whereby in its forward motion an advanced part of its inclined edge shall first enter through said opening into said space under said bent out portion of the edge of the sheet while the said portion of the edge is maintained in an outwardly bent position by the separating instrument and thence to pass its inclined edge under all that portion of the edge of the sheet which was not bent outward

by the separating instrument whereby the blade shall lie under the entire edge of the sheet and separate it from the pack, and devices to operate upon the separated edge and withdraw the sheet from the pack.

3. In a machine for feeding sheets successively from a pack, the combination of a support for a pack of sheets, a suction nozzle adapted to suck upon and seize the surface of the outermost sheet in the pack at a point on that edge of the sheet which lies most advanced in the direction in which the sheet is to be moved, means to operate the suction nozzle to bring an end of the nozzle first into contact with and to cause it to suck and seize upon the sheet then to cause that end of the nozzle which has seized upon the sheet to move in a direction so related to the said most advanced edge of the sheet as to cause a portion of that edge to be bent outward without bending the entire edge of the sheet whereby a space shall intervene between the said bent out portion of the edge of the sheet and the subjacent sheets of the pack with a clear opening from said space forward in the direction in which the sheet is to be moved and then to cause the nozzle to assume a state of rest thereby maintaining the outward bend in the edge of the sheet until a movable blade shall have passed under the bend and thereafter to cause the nozzle to release its seizure upon the sheet, a movable blade having an edge inclined relatively to the forward edges of the sheets forming the pack, means to support and guide said blade so that when it moves its inclined edge will move in a plane adjacent to the surface of the pack, means to give a reciprocating movement to said blade whereby in its forward motion an advanced part of its inclined edge shall first enter through said opening into said space under said bent out portion of the edge of the sheet while the said portion of the edge is maintained in an outwardly bent position by the nozzle and thence to pass its inclined edge under all that portion of the edge of the sheet which was not bent outward by the nozzle whereby the blade shall lie under the entire edge of the sheet and separate it from the pack, and devices to operate upon the separated edge and withdraw the sheet from the pack.

4. In a machine for feeding sheets successively from a pack, the combination of a support for a pack of sheets, a suction nozzle arranged adjacent to a side edge of the pack of sheets adapted to suck upon and seize one corner of the outermost sheet on that edge which lies most advanced in the direction in which the sheet is to be moved, means to operate the suction nozzle to bring an end of the nozzle first into contact with and to cause it to suck and seize upon the corner of the sheet then to cause that end of the nozzle which has seized upon the said corner to move in a direction so related to said most advanced edge of the sheet as to cause the corner seized upon to be bent outward from the subjacent sheets of the pack without bending the entire edge of the sheet and then to cause the nozzle to assume a state of rest thereby maintaining the corner in an outwardly bent position until a movable blade shall have passed under the said corner and thereafter to cause the nozzle to release its seizure upon the sheet, a movable blade having an edge inclined relatively to the forward edges of the sheets forming the pack, means to support and guide said blade so that when it moves its inclined edge will move in a plane adjacent to the surface of the pack, means to give a reciprocating movement to said blade whereby in its forward motion an advanced part of its inclined edge shall first enter under said outwardly bent corner of the sheet while the said corner is maintained in an outwardly bent position by the nozzle and then to pass its inclined edge under all that portion of the edge of the sheet which was not bent outward by the nozzle whereby the blade shall lie under the entire edge of the sheet and separate it from the pack, and devices to operate upon the separated edge and withdraw the sheet from the pack.

5. In a machine for feeding sheets successively from a pack, the combination of a support for a pack of sheets, a suction nozzle arranged adjacent to a side edge of the pack of sheets adapted to suck upon and seize one corner of the outermost sheet on that edge which lies most advanced in the direction in which the sheet is to be moved, means to operate the suction nozzle to bring an end of the nozzle first into contact with and to cause it to suck and seize upon the corner of the sheet then to cause that end of the nozzle which has seized upon the said corner to move in a direction so related to said most advanced edge of the sheet as to cause the corner seized upon to be bent outward from the subjacent sheets of the pack without bending the entire edge of the sheet and then to cause the nozzle to assume a state of rest thereby maintaining the corner in an outwardly bent position until a movable blade shall have passed under the said corner and thereafter to cause the nozzle to release its seizure upon the sheet, a movable blade having an edge inclined relatively to the forward edges of the sheets forming the pack, means to support and guide said blade so that when it moves its inclined edge will move in a plane adjacent to the surface of the pack, means to give a reciprocating movement to said blade whereby in its forward motion an advanced part of its inclined edge shall first enter under said outwardly bent corner of the sheet while the said corner is maintained in an outwardly bent position by the nozzle and then to pass its inclined edge under all that portion of the edge of the sheet which was not bent outward by the nozzle whereby the blade shall lie under the entire edge of the sheet and separate it from the pack, and devices to operate upon the separated edge and withdraw the sheet from the pack.

6. In a machine for feeding sheets successively from a pack, the combination of a support for a pack of sheets, a suction nozzle arranged adjacent to a side edge of the pack of sheets adapted to suck upon and seize one corner of the outermost sheet on that edge which lies most advanced in the direction in which the sheet is to be moved, means to operate the suction nozzle to bring an end of the nozzle first into contact with and to cause it to suck and seize upon the corner of the sheet then to cause that end of the nozzle which has seized upon the said corner to move in a direction so related to said most advanced edge of the sheet as to cause the corner seized upon to be bent outward from the subjacent sheets of the pack without bending the entire edge of the sheet and then to cause the nozzle to assume a state of rest thereby maintaining the corner in an outwardly bent position until a movable blade shall have passed under the said corner and thereafter to cause the nozzle to release its seizure upon the sheet, a movable blade having an edge inclined relatively to the forward edges of the sheets forming the pack, means to support and guide said blade so that when it moves its inclined edge will move in a plane adjacent to the surface of the pack, means to give a reciprocating movement to said blade whereby in its forward motion an advanced part of its inclined edge shall first enter under said outwardly bent corner of the sheet while the said corner is maintained in an outwardly bent position by the nozzle and then to pass its inclined edge under all that portion of the edge of the sheet which was not bent outward by the nozzle whereby the blade shall lie under the entire edge of the sheet and separate it from the pack, a frictional roller or rollers arranged to act by frictional contact upon the separated edge and withdraw the sheet from the pack.

7. In a machine for feeding sheets, the combination of a holder adapted to support rectangular sheets on their edges in an approximately vertical position and having an inclined bottom and an inclined front and side guides adapted to maintain the alignment of the side edges of the sheets, with a reciprocating suction nozzle adapted to suck upon and bend outward one corner of the foremost sheet, a reciprocating blade having a slanting edge adapted to enter first under the corner after it is bent out and thence to pass under the entire edge of the sheet and separate it from the pack, and means to operate upon the separated edge of the sheet to withdraw the sheet from the pack.

8. In a machine for feeding sheets from a pack, the combination of a holder adapted to support rectangular sheets on their edges in an approximately vertical position having an inclined bottom and an inclined front and side guides adapted to maintain the alignment of the side edges of the sheets, with a reciprocating suction nozzle adapted to suck upon and bend outwardly one corner of the foremost sheet, a reciprocating blade having a slanting edge adapted to enter first under the said outwardly bent corner, and thence to pass under the entire edge of the sheet and separate it from the pack, and a friction roller or rollers arranged to act by frictional contact upon the separated edge and withdraw the sheet from the pack.

9. In a machine for feeding sheets from a pack, the combination of a holder adapted to support rectangular sheets on their edges in an approximately vertical position having an inclined bottom and an inclined front and side guides adapted to maintain the alignment of the side edges of the sheets, with a reciprocating suction nozzle adapted to suck upon and bend outwardly one corner of the foremost sheet, a reciprocating blade having a slanting edge adapted to enter first under the said outwardly bent corner and thence to pass under the entire edge of the sheet and separate it from the pack, a frictional roller or rollers arranged to act by frictional contact upon the separated edge and withdraw the sheet from the pack, and feeding rollers arranged to receive the sheet from the friction roller or rollers.

10. In a machine for feeding sheets from a pack, the combination of a holder adapted to support rectangular sheets on their edges in an approximately vertical position having an inclined bottom and an inclined front and side guides adapted to maintain the alignment of the side edges of the sheets, with a reciprocating suction nozzle adapted to suck upon and bend outwardly one corner of the foremost sheet, a reciprocating blade having a slanting edge adapted to enter first under the said outwardly bent corner and thence pass under the entire edge of the sheet and separate it from the pack, a friction roller or rollers arranged to act by frictional contact upon the separated edge and withdraw the sheet from the pack, feeding rollers arranged to receive the sheet from the friction roller or rollers, and a stationary guide to direct the sheet located between the friction roller or rollers and the feeding rollers.

11. In a machine for feeding sheets, the combination of a holder adapted to support the sheets on edge in an approximately vertical position, a reciprocating suction nozzle adapted to suck upon and bend outward one corner of the foremost sheet, a movable blade adapted to enter first under the outwardly bent corner and thence pass under the entire edge of the sheet and separate it from the pack, a friction roller or rollers adapted by frictional contact to seize upon the separated sheet and remove it from the pack, feeding rollers adapted to receive the sheet as it is carried down by the friction roller or rollers and completely withdraw it from the holder, and a conveyer to receive the sheet from the feeding rollers.



12. In a machine for feeding sheets, the combination of a holder adapted to support the sheets on edge in an approximately vertical position, a reciprocating suction nozzle adapted to suck upon and bend outward one corner of the foremost sheet, a movable blade adapted to enter first under the outwardly bent corner and thence pass under the entire edge of the sheet and separate it from the pack, a friction roller or rollers adapted by frictional contact to seize upon the separated sheet and remove it from the pack, feeding rollers adapted to receive the sheet as it is carried down by the friction roller or rollers and completely withdraw it from the holder, a conveyer to receive the sheet from the feeding rollers, and a stop motion located over the conveyer and controlled by the sheets thereon adapted to stop the machine when the sheets are improperly fed upon the conveyer.

13. In a sheet feeding machine, the combination of a holder adapted to support a pack of sheets on edge in an approximately vertical position, a reciprocating nozzle adapted to suck upon and bend outward one corner of the outermost sheet, the reciprocating separator blade $H^7$ adapted to enter under the outwardly bent corner and thence pass under the entire edge of the sheet, and friction disks arranged in front of the separator blade $H^7$ and adapted to act in conjunction therewith upon the edge of the separated sheet to withdraw it from the holder, and cam devices to operate said blade.

14. In a machine for feeding sheets, the combination of a holder adapted to support rectangular sheets on their edges in an approximately vertical position with the side edges of the sheets in vertical planes and having an inclined bottom and an inclined front continuous from one side to the other of the holder and side guides adapted to maintain the alignment of the vertical side edges of the sheets, a reciprocating suction nozzle adapted to suck upon and bend outward one corner on the lower edge of the foremost sheet, and a stationary lip or projection along the horizontal lower edge of the holder adjacent to the nozzle adapted to obstruct the removal of the edge of the sheet as it is lifted by the suction nozzle and thereby assist in detaching it from the edge of the adjacent sheet.

15. In a machine for feeding sheets, the combination of a holder adapted to support rectangular sheets on their edges in an approximately vertical position with the side edges of the sheets in vertical planes and having an inclined bottom and an inclined front continuous from one side to the other of the holder and side guides adapted to maintain the alignment of the vertical side edges of the sheets, a reciprocating suction nozzle adapted to suck upon and bend outward one corner of the lower edge of the foremost sheet, and a projection extending inward from one of the side guides of the holder adjacent to the nozzle adapted to scrape upon the side edge of the sheet as it is moved by the suction nozzle and assist in separating the edge from the adjacent sheet.

16. In a sheet feeding machine, the combination of a support for a pack of sheets, a separator to bend outward a portion of an edge of the outermost sheet, a movable blade adapted to enter first under the outwardly bent portion and thence pass under the entire edge of the sheet and separate it from the pack, a frictional disk or disks arranged to act upon the separated edge of the sheet and withdraw the sheet from the pack, and means for driving the frictional disk or disks with a yielding rotary motion.

17. In a sheet feeding machine, the combination of a support for a pack of sheets, a separator to bend outward a portion of an edge of the outermost sheet, a movable blade adapted to enter first under the outwardly bent portion and thence to pass under the entire edge of the sheet and separate it from the pack, a frictional disk or disks arranged to act upon the separated edge of the sheet and withdraw the sheet from the pack, means for driving the frictional disk or disks with a yielding rotary motion and rigidly after a predetermined limit of elastic motion has been reached.

18. In a machine for feeding sheets, the combination of a support for the pack of sheets, a separator adapted to bend outward one corner only of the outermost sheet on that edge which lies most advanced in the direction in which the sheet is to be moved, means to adjust the said separator to different positions across the width of the holder to correspond to any change in the width or position of the pack of sheets, a reciprocating blade having an inclined edge adapted to enter first under said outwardly bent corner and thence to pass under the entire edge of the sheet and separate it from the pack, the said blade having a fixed width practically equal to the width of the widest sheet which is to be fed by the machine and being so disposed as to the separator that a high part of its inclined edge may pass under the corner bent out by the separator in whatever position the separator may chance to be adjusted without requiring any adjustment of the blade, and devices to operate upon the separated edge and remove the sheet from the pack.

19. In a machine for feeding sheets, the combination of a support for the pack of sheets, a separator to separate the outermost sheet from the others in the pack a frictional disk to act upon the separated sheet and withdraw it from the pack, a driving gear for imparting motion to said frictional disk loosely mounted upon its shaft, a spring connected at one end to the shaft and at the other end to the gear, whereby a yielding rotary motion is communicated to the shaft from the gear through the medium of the spring connection to impart a yielding rotary motion to the friction disk, and a key or stop between the shaft and gear arranged to arrest the independent motion of the gear upon the shaft and cause the gear to drive the shaft positively after a given amount of elastic motion.

20. In a sheet feeding machine, the combination of a support for the pack of sheets, a reciprocating suction nozzle adapted to suck upon and bend outward a portion of the edge of the outermost sheet, a pneumatic device for rocking the said suction nozzle, a suction creating device, independent pneumatic connections between the suction creating device and the suction nozzle and the pneumatic device respectively, and means for independently controlling the suction within the suction nozzle and the pneumatic device.

21. In a sheet feeding machine, the combination of a support for a pack of sheets, a rocking suction nozzle arranged adjacent to the support and adapted to suck upon and separate a portion of the edge of the outermost sheet from the others in the pack, a pneumatic device adapted to rock the suction nozzle, a suction creating device, an air passageway or tube between the suction creating device and the suction nozzle and the pneumatic nozzle rocking device respectively, a valve in each of the said communicating passageways or tubes, and power devices for operating said valves to automatically open and close the said air passage ways or tubes and thereby intermittently rock the nozzle and create suction therein.

22. In a sheet feeding machine, the combination of a support for a pack of sheets, means for withdrawing the outermost sheet from the pack, a conveyer to receive the sheets as they are successively withdrawn and convey them away from the holder, a rocking frame arranged over the conveyer and provided with one or more sustaining fingers resting upon the moving sheets as they are passing upon the conveyer for the purpose of normally sustaining the rocking frame, stopping devices for stopping the operation of the machine, and a connection between the stopping devices and the rocking frame, all operating together to stop the operation of the machine whenever spaces of more than a normal width occur between adjacent sheets as they are being carried forward by the conveyer.

23. In a sheet feeding machine, the combination of a support for a pack of sheets, means for withdrawing the outermost sheet from the pack, a conveyer to receive the sheets as they are successively withdrawn and convey them away from the holder, a rocking frame extending over the conveyer and provided with a series of fingers resting upon the moving sheets as they are passing upon the conveyer for the purpose of normally sustaining the rocking frame one or more of said fingers being adjustably supported by the frame whereby they may be arranged at different distances apart on a line parallel to the direction in which the sheets are moving, stopping mechanism for arresting the motion of the machine and a connection between the rocking frame and the motion stopping mechanism all operating together to stop the operation of the machine whenever spaces occur between adjacent sheets as they are being carried forward by the conveyer of a greater width than the distance between the two extreme fingers of the series as they may be adjusted when resting upon the sheets.

24. In a sheet feeding machine, the combination of a support for a pack of sheets, means for successively withdrawing the sheets therefrom, a conveyer to receive the sheets as they are successively withdrawn and convey them away from the holder, a rocking frame arranged above said conveyer, two or more fingers carried by the rocking frame and adapted to rest upon the moving sheets as they are passing upon the traveling conveyer to normally support the rocking frame, said fingers being free to be moved longitudinally in a line parallel to the direction in which the sheets are moving for purposes of adjustment and also to be lifted out of action away from the conveyer, motion arresting devices for stopping the machine, and a connection between the rocking frame and said motion arresting devices substantially as and for the purposes described.

25. In a sheet feeding machine, the combination of a support for a pack of sheets, means for successively withdrawing the sheets therefrom, a conveyer arranged to receive the withdrawn sheets, a rocking frame extending above the conveyer provided with the rod $Z^3$ fingers $Z^7$, carried by the rod $Z^3$ through movable collars $Z^8$, adapted to rest upon the sheets carried by said conveyer and thereby sustain

the rocking frame, a motion arresting device, and a connection between the motion arresting device and the rocking frame.

26. In a sheet feeding machine, the combination of a support for a pack of sheets, means to withdraw the sheets successively from the pack, a conveyer arranged to receive the withdrawn sheets, a rocking frame extending over the conveyer provided with one or more sustaining fingers adapted to rest on the sheets passing on the conveyer and thereby sustain the rocking frame, a motion arresting device for stopping the operation of the machine, a toggle connected with the motion arresting device, a spring acting on the toggle to normally bend it and operate the motion stopping device, and a depending rod carried by the rocking frame and engaging the joint of the toggle

27. In a sheet feeding machine, the combination of a support for a pack of sheets, separating devices arranged adjacent to the holder to bend outward the opposite corners of the edge of the outermost sheet which lies most advanced in the direction in which the sheet is to be moved, means to adjust each of the separating devices independently to different positions, across the width of the holder to correspond to any change in the width or position of the pack of sheets, a separator blade having an inclined edge and adapted to enter first under one of the said outwardly bent corners and thence to pass under the entire edge of the sheet, and a second separator blade also having an inclined edge and adapted to first enter under the other outwardly bent corner and thence to pass under the entire edge of the sheet in the opposite direction, whereby both blades shall lie under the same edge of the sheet, each of said blades having a fixed width practically equal to the width of the widest sheet which is to be fed by the machine and each blade being so disposed toward its corresponding separating device that a high part of its inclined edge may pass under the corner bent out by the separator in whatever position the separator may chance to be adjusted without requiring any adjustment of the blade, for the purposes described.

28. In a machine for feeding sheets from a pack, the combination of a holder for the pack of sheets, separating devices arranged adjacent to the holder to bend outward the opposite corners of that edge of the outermost sheet which lies most advanced in the direction in which the sheet is to be moved, a separator blade adapted to enter first under one of the said outwardly bent corners and thence to pass under the entire edge of the sheet, and a second separator blade adapted to first enter under the other outwardly bent corner and thence to pass under the entire edge of the sheet in the opposite direction whereby both blades shall lie under the same edge of the sheet, for the purpose described.

29. In a machine for feeding sheets from a pack, the combination of a holder to support the pack of sheets, a suction separator arranged adjacent to each side of the holder adapted to suck upon and lift the opposite corners of that edge of the outermost sheet which lies most advanced in the direction in which the sheet is to be moved, a separator blade adapted to enter first under one of the outwardly bent corners of the sheet and thence to pass under the entire edge, and a second separator blade adapted to first enter under the other outwardly bent corner and thence to pass under the entire edge of the sheet in the opposite direction whereby both blades shall lie under the same edge of the sheet for the purpose set forth.

30. In a machine for feeding sheets from a pack, the combination of a holder adapted to support the sheets on edge in an approximately vertical position, having an inclined bottom and an inclined front two reciprocating suction nozzles located one adjacent to each side of the holder adapted to suck upon and bend outward opposite corners of that edge of the foremost sheet of the pack which lies most advanced in the direction in which the sheet is to be moved, and two movable blades each adapted to enter first under one outwardly bent corner and thence to pass under the entire edge of the sheet whereby both blades shall lie under the same edge of the sheet, for the purpose described.

31. In a machine for feeding sheets from a pack, the combination of a holder to support the pack of sheets, a suction separator arranged adjacent to each side of the holder adapted to suck upon and lift the opposite corners of that edge of the outermost sheet which lies most advanced in the direction in which the sheet is to be moved, a separator blade adapted to enter first under one of the outwardly bent corners of the sheet and thence to pass under the entire edge, a second separator blade adapted to first enter under the other outwardly bent corner and thence to pass under the entire edge of the sheet in the opposite direction, whereby both blades shall lie under the same edge of the sheet and cam devices to move said blades in succession.

32. In a machine for feeding sheets from a pack, the combination of a holder to support the sheets, a suction separator arranged adjacent to each side of the holder adapted to suck upon and lift the opposite corners of that edge of the outermost sheet which lies most advanced in the direction in which the sheet is to be moved, a separator blade adapted to enter first under one of the outwardly bent corners of the sheet and thence to pass under the entire edge, a second separator blade adapted to first enter under the other outwardly bent corner and thence to pass under the entire edge of the sheet in the opposite direction, whereby both blades shall lie under the same edge of the sheet and a sustaining lug or lip carried by one of the blades and extending toward the other substantially as and for the purpose described.

33 In a sheet feeding machine, a holder adapted to support rectangular sheets upon their edges in an approximately vertical position with the side edges of the sheets in vertical planes, having a fixed inclined front continuous from one side to the other of the holder and two inclined bottom pieces or supports for the lower edges of the sheets in the pack to rest upon each provided with a side guide adapted to maintain the alignment of the side edges of the sheets, one or both of the bottom pieces or supports carrying their respective side guides being laterally adjustable to adapt them to support sheets of different widths.

34. In a sheet-feeding machine, a holder adapted to support rectangular sheets upon their edges in an approximately vertical position with the side edges of the sheets in vertical planes, having a fixed inclined front continuous from one side to the other of the holder and two inclined bottom pieces or supports for the lower edges of the sheets in the pack to rest upon each provided with a side guide adapted to maintain the alignment of the side edges of the sheets, one or both of the bottom pieces or supports carrying their respective side guides being laterally adjustable to adapt them to support sheets of different widths, combined with an independent follower carried by each bottom piece and adjustable therewith adapted to press upon the rear or back of the sheets and feed the same forward.

35. In a sheet feeding machine, a holder adapted to support rectangular sheets upon their edges in an approximately vertical position with the side edges of the sheets in vertical planes, having a fixed inclined front formed of alternately arranged slats and rollers continuous from one side to the other of the holder and two inclined bottom pieces each provided with a side guide adapted to maintain the alignment of the side edges of the sheets, one or both of the bottom pieces carrying their respective side guides being laterally adjustable to suit different widths of sheets, combined with means for withdrawing the foremost sheet in the pack from the holder.

36. In a sheet feeding device, an adjustable holder adapted to support rectangular sheets on edge in an approximately vertical position with the side edges of the sheets in vertical planes, consisting of two independent bottom pieces or supports for the lower edges of the sheets in the pack to rest upon, one or both of the bottom pieces being provided with an upwardly extending side piece adapted to maintain the alignment of the side edges of the sheets a fixed inclined front independent of the bottom and side pieces, and adjusting screws acting upon the bottom pieces to adjust the side and bottom pieces laterally to support sheets of different widths.

37. In a sheet feeding device, an adjustable holder adapted to support a pack of sheets on edge in an approximately vertical position consisting of two independent inclined bottom pieces each provided with an upwardly extending side piece, an inclined front independent of the bottom and side pieces, adjusting screws acting upon the bottom piece to adjust the two sides and bottom pieces laterally to suit different sizes of sheets, and an independent follower carried by each bottom piece adapted to press upon the rear or back of the sheets and feed the same forward.

38. In a sheet feeding device, a holder for a pack of sheets adapted to support rectangular sheets upon their edges in an approximately vertical position with the side edges of the sheets in vertical planes consisting of an inclined front continuous from one side to the other of the holder, grooves or spaces formed horizontally across said front on that surface of the front which lies toward the pack of sheets, an inclined bottom, a side piece or side pieces adapted to maintain the alignment of the side edges of the sheets, means to adjust said side piece or side pieces laterally across the holder to support sheets of different widths and to maintain said piece or pieces in any adjusted position and tongues carried by said side piece or pieces projecting into and moving in said grooves in the front of the holder to close the spaces between the said front and the edge or edges of the said side piece or side pieces.

39. In a machine for feeding sheets from a pack, the combination of a holder having adjustable sides to suit sheets of different width, means to withdraw the sheets successively from the pack embracing friction disks located in the front of the holder and adapted to act upon the withdraw sheets, means to adjust the friction disks laterally to suit the adjustment of the sides of the holder or sheets of different widths, and a connection between the means for adjusting the disks and the adjustable sides of the holder whereby the said disks may be adjusted automatically with the adjustment of the sides of the holder.

40. In a machine for feeding sheets from a pack, the combination of a holder adapted to support the pack of sheets, provided with adjustable sides, whereby the holder may be adjusted to sheets of different widths, means for withdrawing the sheets successively from the holder embracing a series of friction disks mounted upon a shaft and movable longitudinally thereon, springs between adjacent disks, longitudinally movable adjusting sleeves on the shaft adapted to act upon the disks for the purpose of adjusting them, and a connection between the said adjusting sleeves and the adjustable sides of the holder, whereby the disks will be automatically adjusted to suit the adjustment of the sides of the holder for sheets of different widths.

41. In a machine for feeding sheets from a pack, the combination of a holder for a pack of sheets having adjustable sides whereby the holder may be adjusted to suit sheets of different widths, and a suction nozzle adapted to suck upon and lift the corner of the foremost sheet pivotally attached to one of the adjustable sides of the holder, whereby the suction nozzle may be adjusted with the side of the holder to suit sheets of different widths.

42. In a machine for feeding sheets from a pack, the combination of a holder for the pack of sheets having its sides adjustable to suit sheets of different widths, a suction nozzle for sucking upon and lifting outward a portion of the edge of the outermost sheet pivotally attached to one of the adjustable sides, and a pneumatic device, connected to the said suction nozzle and adapted to rock it upon its pivot, carried by the adjustable side so as to move with it.

43. In a machine for feeding sheets successively from a pack, the combination with a support for the pack of sheets, and separating devices for separating the outermost sheet from the others in the pack, of a cam shaft, power transmitting connections between the cam shaft and the separating devices for operating or controlling the same, driving devices for rotating the cam shaft intermittently, and means for controlling the periods between successive rotations of the cam shaft without varying the speed of the shaft when in the act of rotation whereby the period of intermission between successive operations of the separating devices may be varied without varying the speed with which the cycle of movements of the separating devices is performed.

44. In a machine for feeding sheets from a pack, the combination of a holder for a pack of sheets, separating devices for successively separating the outermost sheet from others in the pack, a cam shaft, power transmitting connection between the cam shaft and separating devices, a cam shaft operating shaft, a friction disk on the cam shaft having a portion of its periphery cut away, a friction disk on the cam shaft operating shaft adapted to make contact with the friction disk on the cam shaft and drive the same until the cut away portion of its periphery is reached, a rotary assistant driving disk arranged adjacent to the disk of the cam shaft and adapted to operate upon the same to turn it and move its friction face again in contact with the friction face of the disk on the cam shaft operating shaft, a variable speed transmitting connection between the assistant driving disk and the cam shaft operating shaft, a friction creating device for overcoming the momentum of the cam shaft disk when the same has ceased to make contact with the disk on the cam shaft operating shaft and means carried by the assistant driving disk for releasing said friction creating device and permitting the cam shaft disk to be moved into frictional contact with the disk on the cam shaft operating shaft, all for the purpose of operating the separating devices intermittently and for varying the period of intermission between successive operations of those devices.

45. In a machine for feeding sheets from a pack, the combination of a support for the pack of sheets, a separator adapted to separate one edge of the outermost sheet from the others in the pack, a feeding roll or rollers for seizing the outwardly bent edge and withdrawing the sheet from the holder, a conveyer having a constant surface speed and adapted to receive the sheets as they are delivered by the feeding roll or rollers, and speed regulating devices for varying the speed of the feeding roll or rollers with reference to the conveying surface, whereby the relation of the adjacent edges of the successive sheets as they are received upon the conveyer may be varied.

46. In a machine for feeding sheets from a pack, the combination of a holder for supporting the pack of sheets, a separator to separate the outermost sheet from the others in the pack, a feeding roll or rollers adapted to act upon the separated sheets and to feed them from the holder, a conveyer having a constant surface speed and adapted to receive the sheets as they are delivered by the feeding roll or rollers, the shaft W having a uniform rotary motion and carrying a cone $W^2$, shaft X carrying the cone $X^2$, a belt $W^3$ about the cones $W^2$ and $X^2$ whereby the shaft X may be driven from the shaft W, power transmitting connections between the shaft W and the conveyer, power transmitting connections between the shaft X and the feeding roll or rollers, and means for adjusting the belt $W^3$ upon the cones to vary the speed of the shaft X.

47. In a machine for feeding sheets from a pack, the combination of a support for a pack of sheets, a separating device adapted to separate the outermost sheet from the others in the pack, a feeding roll or rollers adapted to act upon the separated sheet and withdraw it from the holder, a conveyer having a constant surface speed arranged to receive the sheet as it is delivered by the feeding roll or rollers, a cam shaft, power transmitting connections between the cam shaft and separating devices, a driving shaft, for driving the feeding roll or rollers and the cam shaft means for driving the cam shaft intermittently from said driving shaft, power transmitting connections between said driving shaft and the feeding roll or rollers, and means to vary the speed of said driving shaft, whereby the speed of said cam shaft and feeding roll or rollers may be varied.

48. In a machine for feeding sheets from a pack, the combination of a support for a pack of sheets, a separating device adapted to separate the outermost sheet from the others in the pack, a feeding roll or rollers adapted to act upon the separated sheet and withdraw it from the holder, a conveyer having a constant surface speed arranged to receive the sheet as it is delivered by the feeding roll or rollers, a cam shaft, power transmitting connections between the cam shaft and separating devices, a driving shaft, for driving the feeding roll or rollers and the cam shaft means for driving the cam shaft intermittently from said driving shaft, power transmitting connections between said driving shaft and the feeding roll or rollers, means to vary the speed of said driving shaft, whereby the speed of the said cam shaft and feeding roll or rollers may be varied, and means for varying the period of intermittency of the rotation of the cam shaft, controlled by the power devices which drive the cam shaft, whereby the period of intermission between successive operations of the separating devices may be varied independently of the variations of the speed of the said driving shaft.

49. In a machine for feeding sheets from a pack, the combination of a support for the pack of sheets, means for withdrawing the outermost sheet from the pack, a conveyer composed of a series of adjacent bands arranged to receive the separated sheets from the withdrawing devices and having a surface speed less than the speed of the withdrawing devices, whereby each sheet as it is fed by the withdrawing devices will overtake and overlap the sheet previously laid upon the conveyer, and devices located between the bands of the conveyer and extending above the surface thereof, whereby the forward edge of each sheet fed to the conveyer will be lifted by said devices above the rear edge of the preceding sheet to cause the overlapping of the edge.

50 In a machine for feeding sheets from a pack, the combination of a support for the pack of sheets, means for withdrawing the outermost sheet from the pack, a conveyer composed of a series of adjacent bands arranged to receive the separated sheets from the withdrawing devices and having a surface speed less than the speed of the withdrawing devices, whereby each sheet as it is fed by the withdrawing devices will overtake and overlap the sheet previously laid upon the conveyer, a series of rotary disks located between the bands of the conveyer and projecting above the surface thereof adapted to act upon the foremost sheet as it is fed to the conveyer and lift it and thereby cause it to overlap the rear edge of the preceding sheet, and a shaft for said overlapping disks carried in longitudinally adjustable bearings whereby the position of said overlapping disks may be adjusted in the length of the conveyer to suit the length of the sheets which are being fed.

51. In a machine for feeding sheets from a pack, the combination of a support for the pack of sheets, means for withdrawing the outermost sheet from the pack, a conveyer composed of a series of adjacent bands arranged to receive the separated sheets from the withdrawing devices and having a surface speed less than the speed of the withdrawing devices whereby each sheet as it is fed by the withdrawing devices will overtake and overlap the sheet previously laid upon the conveyer, a series of rotary disks located between the bands of the conveyer and projecting above the surface thereof, adapted to act upon the foremost sheet as it is fed to the conveyer and lift it and thereby cause it to overlap the rear edge of the preceding sheet, and a shaft for said disk carried in vertically adjustable bearings, whereby the said disks may be thrown below the surface of the conveyer when the overlapping devices are not required.

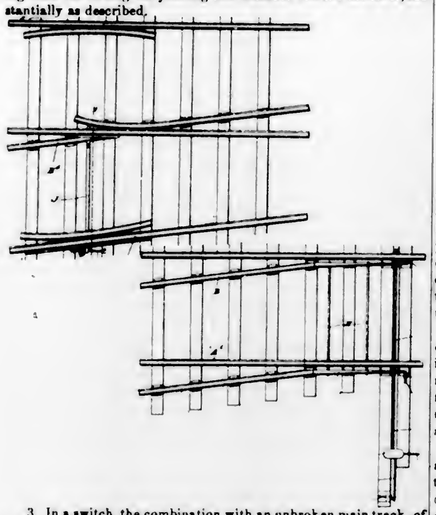
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**531,439.** RAILWAY-SWITCH. GEORGE E. LEMMON, Cary, N. C. Filed Sept. 27, 1894. Serial No. 524,292. (No model.)

*Claim.*—1. In a switch, the combination with a main track, of a siding, having a switch section, a movable cross-over section for the inner rail of the siding, an elongated tapering rail L parallel with and in close proximity to the outer rail of the siding and extending in opposite directions beyond the plane of the point of the movable cross-over section, springs supporting the rail L, a double crank shaft arranged parallel with the axis of the outer siding rail, a link connection between one of the cranks and rail L, and a throw rod secured to the movable cross-over section having its outer end connected with the other crank of the crank shaft, substantially as described.

2. In a switch, the combination with an unbroken main track, of a siding, a switch section elevated above the plane of the main track, a switch actuating means comprising a lever, a throw rod, a

yielding intermediate link member, means for permitting the yielding movement thereof in one direction only, and means connected with the switch actuated mechanism arranged to be struck by a passing train for forcing the yielding link member toward the lever, substantially as described.



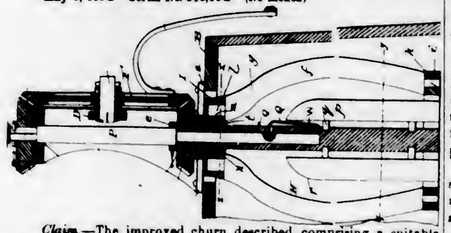
3. In a switch, the combination with an unbroken main track, of an elevated switch section, a lock therefor means actuated by a passing train for opening the switch, and means for preventing the return movement of the switch and locking the same substantially as described.

4. In a railway switch, the combination with an unbroken main track, of a switch section elevated above the plane of the rails thereof, means for setting the switch, a lock for the setting means, a projection extending above the rails connected to said switch section and arranged in the path of a passing train, and means for permitting the movement of the switch in one direction only substantially as described.

5. In a switch, the combination with a switch section comprising two movable rail points locked together, the end of one of the points being turned out at an angle, an independent contact block secured on the upper face of said turned out portion, and means for setting the switch, substantially as described.

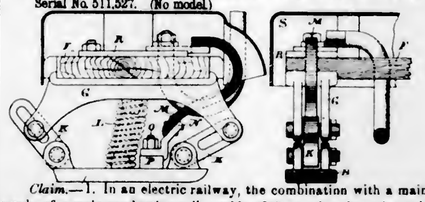
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**531,440. CHURN.** CHARLES A. LORENZ, Reynoldsville, Pa. Filed May 9, 1894. Serial No. 510,604. (No model.)



*Claim.*—The improved churn described, comprising a suitable body, the frame C, constructed as shown, the drive gear F, arranged vertically and journaled in said frame and having the operating handle, the dasher rod, the upper horizontal bevel gear secured to said rod, the lower horizontal bevel gear receiving the dasher rod, and having an angular depending portion and both gears in engagement with the drive gear, the outer dasher, having the ring at its lower end, the blades rising from the ring and curved at their upper ends, and the head secured to the upper curved ends of said blades and having an angular aperture to receive the angular depending portion of the lower horizontal gear, the inner dasher having the central stem provided with a socket at its upper end and a lateral aperture, and also having the blades beveled at their outer upper ends, and arranged within the outer dasher, the dasher rod secured to the inner dasher by the spring and the balance wheel on the upper end of the dasher shaft, all combined and adapted to operate, substantially as specified.

**531,441. ELECTRIC RAILWAY.** CHARLES H. MACLOSKIE, Schenectady, and HENRY M. BRINCKERHOFF, Matteawan, assignors to the General Electric Company, Schenectady, N. Y. Filed May 17, 1894. Serial No. 511,527. (No model.)



*Claim.*—1. In an electric railway, the combination with a main track, of a main conducting rail outside of the track, a branch track and a branch conductor outside of the branch track, the main and branch conductors being separated by a mechanical break, and a supplementary sectional conductor located near the switch on the side of the track opposite to that upon which the main conductor is located, the arrangement and location of the parts being such that a contact device makes contact with the conductors to preserve the continuity of the circuit.

2. The combination with a railway track and a vehicle thereon, of a conducting rail placed outside of the track, a branch track having a similar conducting rail but separated from the main conducting rail by a mechanical break, and a supplementary sectional conductor for bridging the break placed on the opposite side of the track, and contact devices on the vehicle for making connection with the main and branch conductors and with said supplementary conductor.

3. In an electric railway, the combination with a main track, and a vehicle traveling thereon, of a conducting rail having a short break therein, contact devices on each end of the vehicle adapted to bear on the conducting rail and bridge the short breaks therein, a supplementary section of rail for bridging breaks longer than the distance between the said contact devices and a supplementary contact device adapted to bear on the supplementary section of rail.

4. The combination with a railway track and a vehicle thereon, of a conducting rail, a branch track having a similar conducting rail separated by a mechanical break from the conducting rail of the main track, contact devices at each end of the vehicle for bearing on the conducting rails, a supplementary contact device on the opposite side of the vehicle, and a supplementary section of conductor upon which the contact device bears bridging the break between main and branch conducting rails.

5. In an electric railway, the combination with a railway track and a vehicle provided with swiveling trucks traveling thereon, of a conducting rail outside of the track rails and slightly elevated above them, contact devices placed upon each truck and upon opposite sides of the truck, and a supplementary contact rail located on the opposite side of the track from the conducting rail bridging a break in the conducting rail.

6. In an electric railway provided with a conducting rail adjacent to the track rails, a curved portion, a portion tangent to the curve, and a short branching inclined piece attached to the conducting rail at the junction of the curve and the tangent, adapted to guide the contact shoe upon the conducting rail, as herein set out.

7. In a contact device, a supporting piece, a contact shoe, intermediate link connections, pivoted at their lower ends to the shoe and having a pivoted and sliding connection with the support whereby the shoe has vertical play and can automatically reverse its position to trail in either direction, and a spring forming a supplementary and flexible electrical connection between the contact shoe and its support.

8. The combination with a swiveling truck having a lateral extension, of a contact shoe suspended therefrom by a linked connection and a conducting rail outside of the track rails and slightly elevated above them.

9. In an electric railway, a continuous conducting rail provided at its side with a short branching inclined piece at an angle thereto, in combination with a main track parallel with the conducting rail, a branch track, and a branch conductor parallel therewith, the branch conductor being separated from the main conductor by a mechanical break.

10. In an electric railway, the combination with a swiveling truck having an insulating extension, of a contact shoe thereon vertically suspended by means of linked connections permitting the contact shoe to automatically adjust itself in the reverse movement of the car to trail in either direction.

11. An electric railway car having swiveling trucks, contact devices arranged to trail in either direction of the motion of the car and independent of the wheels, located on opposite sides of the truck.

12. In an electric railway, a car having swiveling trucks and contact devices placed on opposite sides of the trucks, in combination with a main track, a branch track, a branch conductor separated by a mechanical brake from the main conductor and a supplementary sectional conductor on the opposite side of the main track from the main conductor and adjacent to the switch.

13. In an electric railway, the combination with a main conducting rail, of an insulated section of conducting rail disconnected from the circuit and in line with the main conducting rail, an intermediate section of conducting rail insulated from the main and sectional conducting rails, branch conductors leading from the main and sectional conductors and a switch connecting the branch main and sectional conductors together.

14. In an electric railway, the combination with a main conducting rail, of a cut out section of conducting rail, an intermediate section of conducting rail in line with and insulated from the main conducting rail and the cut out section and a switch connecting the cut out section with the main conducting rail and intermediate section of conducting rail.

15. In an electric railway, the main conducting rail D in combination with cut out section of conducting rail D', the intermediate section of conducting rail $D^4$, insulated from the conducting rail D and from the sectional conductor D', and having the sectional conductors $D^3$, $D^4$ in line with D and D' and the switch V connecting the leads $D^2$ of D and D' and the intermediate section $D^4$.

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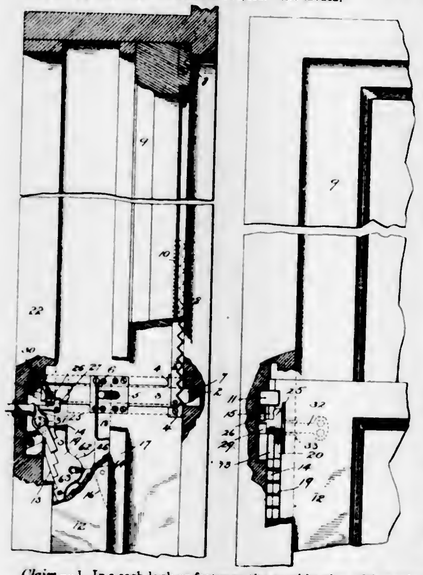
**531,442. GARMENT-HOOK.** ORVILLE L. MASON and ROMAINE C. COLE, Cleveland, Ohio. Filed Apr. 25, 1894. Serial No. 508,913. (No model.)



*Claim.*—A hook having a tongue extending through the shank and hook proper between the side bars thereof, said tongue having a retaining bend extending from the hook portion toward the shank portion and a relieving bend in the shank portion opposite to the retaining bend and in the same direction therewith, substantially as shown and described.

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**531,443. SASH-FASTENER.** LEWIS C. MILLER, St. Louis, Mo. Filed Sept. 29, 1894. Serial No. 524,482. (No model.)



*Claim.*—1. In a sash lock or fastener, the combination with mechanism for locking the top and the bottom sash in the operation of lowering the bottom sash, of means formed to have a detachable key engage therewith for releasing the bottom sash, substantially as and for the purposes described.

2. In a sash lock or fastener, the combination with a rack bar provided for each the top sash and bottom sash, a sliding bolt to lie transversely across the meeting rails of the two sashes and engage the locking bar of one sash, a pawl to engage the rack bar of the other sash, said pawl and bolt being thrown into position with their respective rack bars by the operation of lowering the bottom sash so as to lock both top and bottom sashes, and independent cams one to engage a portion of the locking bolt to move it into locking engagement with its sash when the bottom sash is lowered and the other to engage with a portion of the bolt to move it into its unlocking position when raising the bottom sash, substantially as and for the purposes described.

3. In a sash lock or fastener, the combination with a rack bar for the top sash and a rack bar for the bottom sash, of a locking bolt to lie transversely across the meeting rails of the top and bottom sashes and engage the rack bar of the top sash, a pawl to engage the rack bar of the bottom sash, a cam for the front edge of the bottom sash having an actuating face so formed that during a partial movement of the cam it will actuate the locking bolt and during its further movement it will hold the bolt in its locking position, a second cam for the rear edge of the bottom sash having an actuating face so formed that during a partial movement of the cam it will act upon a portion of the bolt to throw the bolt into its unlocking position while during its further movement it will be non actuating, and means for releasing the pawl from the rack bar of the bottom sash when said sash is to be raised, substantially as and for the purposes described.

4. In a sash lock or fastener, the combination of a rack bar for the top sash, a rack bar for the bottom sash, a pawl to engage the rack bar of the bottom sash to lock said sash, means for releasing said pawl from its rack bar, a dog to engage said pawl and hold it out of engagement with the rack bar for a period, and a locking bolt to engage the rack bar of the top sash to lock the same and actuating said dog to release the pawl when the bolt is thrown into its unlocking position whereby said pawl will resume its normal position to engage the rack bar of the bottom sash as the latter is lowered, substantially as and for the purposes described.

5. In a sash lock or fastener, the combination with a locking bolt placed transversely across the meeting rails of the top and the bottom sash and adapted to engage a part of the top sash to lock the sash, of a cam for the bottom sash having an actuating face so formed that during a partial movement of the cam it will actuate the locking bolt and during its further movement will hold the bolt in its locking position, and means for adjusting laterally said cam relatively to the portion of the bolt with which it engages, substantially as and for the purposes described.

6. In a sash lock or fastener, the combination with a rack bar for the top sash, of a locking bolt to lie transversely across the meeting rails of the top and bottom sash and engage the rack bar of the sash, said bolt being formed in sections adjustable one in relation to the other to lengthen or shorten the bolt, and means for actuating said bolt in the movement of the bottom sash, substantially as and for the purposes described.

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**531,444. RAILROAD-RAIL.** ARTHUR J. MOXHAM, Johnstown, Pa. Filed June 2, 1894. Serial No. 513,277. (No model.)



*Claim.*—1. As a new article of manufacture, a rail integral throughout provided with a head and web, the head differing in contour at one portion from that at another portion of the rail.

2. As a new article of manufacture, a rail integral throughout provided with a head and web, the web differing in position at one portion from that at another portion.

3. As a new article of manufacture, a rail integral throughout provided with a head and web, the head differing in contour, and the web in position at one portion from that in the other.

4. As a new article of manufacture, a rail integral throughout provided with a head and web, the cross section of the rail at one end differing from that at the other, whereby the said rail is adapted to be connected at each end to rails of corresponding cross sections.

5. As a new article of manufacture, a rail integral throughout provided with a head and web, the web at one end differing in position from the web at the other end.

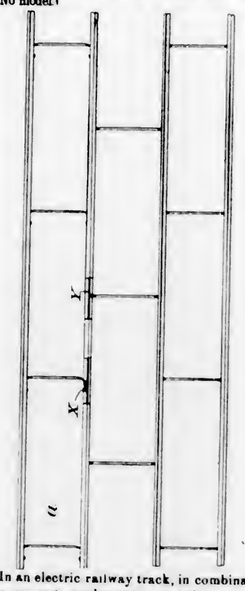
6. As a new article of manufacture, a rail integral throughout provided with a head and web, the head at one end differing in contour and the web in position from that at the other end.

7. In combination with two rolled railway rails of unlike section and interposed between them, a rail formed of cast metal each end of which is of the same section as the adjacent rail, one end of said intermediate rail being welded to the adjacent rail, and the other end adapted to be connected by splice bars.

8. In combination with a rolled railway rail a rail of cast metal one end being of the same section as the rolled rail and the other end being of different section, the cast and rolled rails being welded together at their similar ends.

## 531,445. ELECTRICAL CONNECTION FOR RAILWAY-RAILS.

ARTHUR J. MOXHAM, Johnstown, Pa. Filed June 2, 1894. Serial No. 513,280. (No model.)

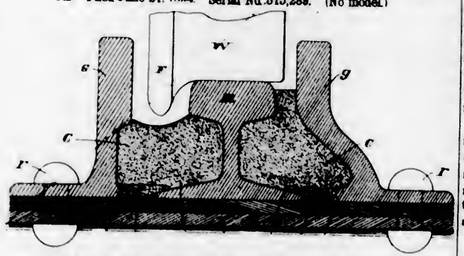


*Claim.*—1. In an electric railway track, in combination with the track rails, cross current conductors connecting the several rails together electrically, said conductors having a portion or portions formed flexible and having their ends integrally united to the track rails.

2. A cross electric connection for railway rails, said connections consisting of a metal bar having a flexible portion or portions, and having integrally secured to its ends portions of metal adapted to be welded to the track rails.

## 531,446. RAILWAY-TRACK.

ARTHUR J. MOXHAM, Johnstown, Pa. Filed June 21, 1894. Serial No. 515,289. (No model.)

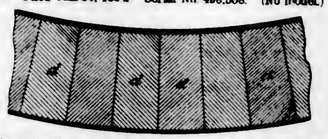


*Claim.*—1. In a railway track, a track rail having a pocket or recess on each side, a guard rail on each side of the track rail, said guard rails also having pockets or recesses on the sides next the track rail, and a filling material between the several rails, whereby they are so bonded together that the guard rails are adapted to support the track rail.

2. In a railway track, in combination with a track rail having pockets or recesses in its sides, an inner guard rail and an outer guard rail, said guard rails having pockets or recesses in their sides next the track rail, and filling blocks between the track rail and guard rails and entering the pockets therein, said filling blocks being adapted to transmit a portion of the load upon the track rail to the guard rails.

## 531,447. CARRIAGE-WHEEL.

EDWARD S. RENWICK, Millburn, N. J. Filed Jan. 31, 1894. Serial No. 498,558. (No model.)



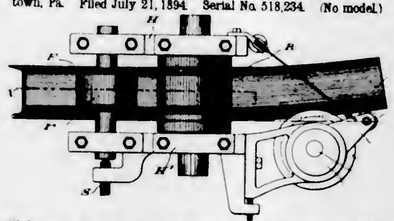
*Claim.*—1. The carriage wheel consisting of the wheel body fitted with a permanently moist tire of cork impregnated with a non-drying substance, substantially as before set forth.

2. The permanently moist hoop-formed cork tire-core for a carriage wheel composed of cork impregnated with a non-drying substance, substantially as before set forth.

3. The permanently moist cork tire for a carriage wheel constructed substantially as before set forth, of cork impregnated with a non-drying substance and inclosed in a tubular cover of hoop form.

## 531,448. CAMBERING-MACHINE.

HERBERT C. RYDING, Johnstown, Pa. Filed July 21, 1894. Serial No. 518,234. (No model.)



*Claim.*—1. A cambering machine consisting of two parallel pairs of rolls between which the rail passes, said rolls having passes adapted to receive the rail and support it in a direction parallel to the axis of the rolls and a cambering roll set at right angles to the first mentioned rolls and adapted to engage the rail after it has passed between the first mentioned rolls and force it into a curved position.

2. A cambering machine consisting of two pair of rolls, having their axes parallel and each pair having flanges or shoulders adapted to support the rail lengthwise of the rolls as it passes between them, and a single roll mounted beyond said rolls, its axis being at right angles to the axis of the first mentioned rolls.

3. A cambering machine consisting of two parallel pair of rolls, between which rolls the rail passes, one pair of said rolls being operated by suitable power and the other pair being revolved by contact with the bar; and a cambering roll having its axis perpendicular to the axes of the before mentioned rolls, said before mentioned rolls having flanges or shoulders as described adapted to support the rail in the plane of bending.

4. A cambering machine consisting of a pair of driven rolls having a pass adapted to grasp and draw through the rail to be cambered, a pair of idle rolls between which the rail passes and parallel to the first mentioned rolls, both said pairs of rolls having shoulders or flanges substantially perpendicular to the axis of the rolls which shoulders or flanges are adapted to afford support to the rail while being cambered, and a cambering roll having its axis perpendicular to the other rolls and adapted to act against the rail.

5. In a cambering machine in combination with a pair of driven rolls having a pass between them adapted to receive the bar to be cambered, and a cambering roll set at right angles thereto, a pair of rolls having their axis substantially parallel to the axis of the first mentioned pair of rolls and so formed that as the rail passes between them they are adapted to support it in the direction of their length against the action of the cambering roll.

## 531,449. WEEDING AND ROOT-PULLING IMPLEMENT.

THOMAS L. SMITH, Milwaukee, Wis. Filed Aug. 25, 1894. Serial No. 521,314. (No model.)

*Claim.*—1. In a weeding and root pulling implement, the combination with a suitable body, of prongs attached thereto and movable at their lower ends toward and from the axis of the implement, and a guide adapted to bear on the surface of the ground and to automatically force said prongs toward each other when they are thrust into the ground, substantially as and for the purposes set forth.



2. In a weeding and root pulling implement, the combination with a suitable body provided with a handle, of prongs attached thereto and movable at their lower ends toward and from the axis of the implement, a guide adapted to bear on the surface of the ground and to automatically force said prongs toward each other when they are thrust into the ground, and a handle connected with said guide for holding the prongs in engagement with a root when they are withdrawn from the ground, substantially as and for the purposes set forth.



3. In a weeding and root pulling implement, the combination with a suitable body and handle, of prongs attached thereto and having guiding faces inclined to the axis of the implement, a guide movable lengthwise of said prongs in engagement with their inclined faces and adapted to bear on the surface of the ground and automatically force the prongs toward each other when they are thrust into the ground, a handle connected with said guide for holding it in its upper position, and a spring tending to return it to its lower position, substantially as and for the purposes set forth.

4. In a weeding and root pulling implement, the combination of a hollow shank composed of two sections having an inwardly projecting flange, a thimble having an outwardly projecting flange, prongs notched to engage with said flanges and rigidly held between them, said prongs having guiding faces inclined to the axis of the implement and a guide movable lengthwise thereof in engagement with said guiding faces, substantially as and for the purposes set forth.

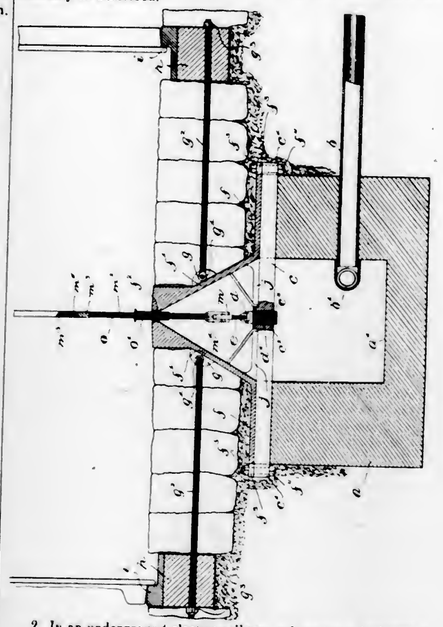
5. In a weeding and root pulling implement, the combination with a suitable body and handle, of elastic prongs rigidly secured at their upper ends to said body and converging toward their lower ends; a perforated guide-plate loosely engaging the converging portions of said prongs and movable endwise thereon; a rod attached at its lower end to said guide-plate, and provided at its upper end with a handle and a spring tending to force said guide-plate toward the free ends of said prongs, substantially as and for the purposes set forth.

6. In a weeding and root pulling implement the combination of a hollow shank composed of two sections and having a handle at the upper end; an inwardly projecting flange at or near the lower end and longitudinal slots in the sides; a thimble having an outwardly projecting notched flange, prongs notched to engage with said flanges, and clamped between them; said prongs converging toward their lower ends; a rod passing loosely through said thimble and provided at its upper end with a handle, projecting through the slots in said shank; a guide carried by the lower end of said rod in engagement with the converging portions of said prongs; and a spiral spring placed on said rod between said thimble and guide, substantially as and for the purposes set forth.

## 531,450. CONDUIT ELECTRIC RAILWAY.

WILLIAM H. SWIFT, Boston, Mass., assignor of one-half to John H. McGrady, same place. Filed Apr. 27, 1894. Serial No. 509,267. (No model.)

*Claim.*—1. In an underground electric-railway, sub-masonry inclosing a conduit, beams extending across said conduit and supported on the sub-masonry and having bifurcated ends projecting beyond the same, castings forming the entrance slot for the trolley and supported on the sub masonry and cross-beams, said castings being in sections fitted together end to end and having ears extending over the bifurcated ends of the beams and notched to their confronting edges, and bolts engaging said bifurcated beam ends and the casting-ears, substantially as described.



2. In an underground electric railway, sub-masonry inclosing a conduit, cross-beams supported by said sub-masonry and extending across the conduit, and castings forming the entrance slot for the trolley and supported on the sub-masonry and cross-beams and secured to the latter, said castings having inward-extending knee-braces resting on the cross beams.

3. In an underground railway, sub-masonry inclosing a conduit, beams extending across said conduit and having centrally located sockets, chairs fitting said sockets, a conductor-rail supported by said chairs, and castings forming an entrance for the trolley.

4. In an underground railway, sub-masonry inclosing a conduit, beams extending across said conduit, chairs on said beams, a conductor-rail supported by said chairs, castings forming the entrance-slot for the trolley and having knee-braces extending inwardly over the cross-beams, said castings being in sections fitted together end to end, and insulating coverings over the knee braces.

5. In an underground electric railway, beams extending across the conduit and having vertically extending sockets, chairs resting on said beams and having shanks engaging the sockets, and a conducting rail resting on said chairs.

6. In an underground electric-railway, beams extending across the conduit, chairs supported on said beams, a conducting-rail supported by said chairs and made in sections whose confronting ends rest in the said chairs, and springs yieldingly supporting and electrically connecting the rail-sections.

7. In an underground electric-railway system, the combination of a socket pendent from the car, a trolley device having a stem at its upper end fitted to slide in said socket, a spring in the socket back of the said stem, and a conductor-rail for the trolley.

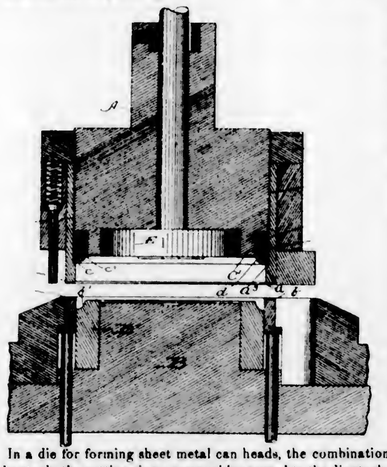
8. In an underground electric-railway system, the combination of a socket pivoted to the car and depending therefrom a trolley device having a stem at its upper end fitting said socket, a spring back of said stem, and a conductor-rail for the trolley.

## 531,451. DIE FOR FORMING CAN-HEADS.

NELSON TROYER, Astoria, Oreg. Filed May 24, 1894. Serial No. 512,341. (No model.)

*Claim.*—1. In a die for forming sheet metal can heads, the combination of the die stock, the cutting ring *a* removably secured to the die stock, and the removable hardened steel rings C C having the

sharpened corners c c' exposed to come in contact with the sheet metal blank, substantially as specified.



2. In a die for forming sheet metal can heads, the combination of the die stock, the cutting ring *a* removably secured to the die stock, the removable hardened steel rings C C' having the sharpened corners c c' exposed to come in contact with the sheet metal blank, and the intermediate ring D, substantially as specified.

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**531,452. CHRISTMAS-TREE LIGHT.** EDWARD A. UEHLING, Birmingham, Ala. Filed July 25, 1894. Serial No. 518,584. (No model.)



*Claim.*—1. A tubular candle-holder for Christmas trees, having a spring for automatically feeding the candle, a piercing-point standing down centrally from the bottom of said holder, and a weight hanging from, centrally with, and below said holder, acting to maintain the point in its piercing position on the tree-branch.

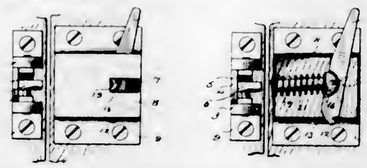
2. In a candle-holder, the tubular holder having its walls terminating in an open top spheroidal enlargement or bulge to form a reservoir, in combination with a cap, for holding the candle against the feed of the spring, the cap itself being held within and against the inner walls of the holder-bulge by the pressure of the candle, the vertical walls of which serve to close the bottom of the bulge to form the reservoir.

3. In a candle-holder for Christmas-trees, the combination of a tubular-holder, and a suspending device therefor consisting of a wire having one end terminating in a coil forming a seat for said holder, the end of which coil terminates in a downward piercing point central therewith, the lower end of said wire having a weight, and the piercing point, the center of the weight and the center line of the candle-holder being vertically co-incident for sticking the holder in position upon the tree-branches.

4. A candle-holder having a spring for feeding the candle as it is consumed, and terminating in a reservoir inclosing the burning end of the candle and having radial notches, and a cap forming an inverted cup inclosing the burning end of the candle and having wings corresponding with the notches in the reservoir for engaging the inner walls of the latter for the purpose stated.

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**531,453. FASTENER FOR MEETING-RAILS OF SASHES.** THEODORE E. WARDWELL, Stamford, Conn. Filed Mar. 26, 1894. Serial No. 505,061. (No model.)

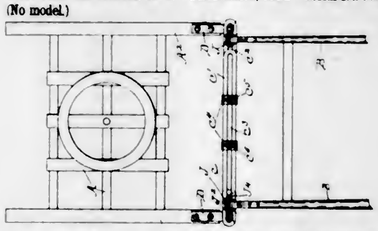


*Claim.*—1. In a fastener of the character described the combination with a locking arm having a catch on its under side, of a housing having an opening to receive the catch, a locking lever adapted to engage said catch and a spring actuated plunger which acts to hold the locking lever in the locking position.

2. The combination with a locking arm having a catch 6, of a housing having an opening 7 to receive said catch and slots 11 and 13, a locking lever adapted to engage the catch, the free end of said locking lever passing through slot 11 and the opposite end being provided with a hook which passes through slot 13 and engages the wall of the housing, a plunger 17 one end of which passes through the wall of the housing the other end being provided with a head engaging the locking lever and a spring bearing against the head of the plunger and the housing and acting to hold the locking lever in the locking position.

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**531,454. DRAW-BAR FOR VEHICLES.** RICHARD WHALON, West Granville Corners, N. Y. Filed Mar. 2, 1894. Serial No. 502,030. (No model.)



*Claim.*—1. In a vehicle, the combination with the running part and thills, of a drawbar comprising a pair of slotted links adjustably movable longitudinally one upon the other, means for securing the links together in adjusted positions, a separate connection between each link and the running part, and a separate thill-coupling secured to and adjustable longitudinally of each link, substantially as described.

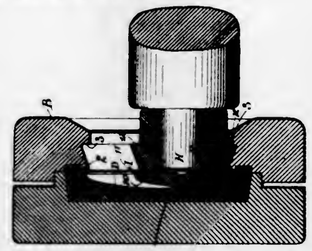
2. In a vehicle, the combination with a pair of slotted drawbar-links C, $C^3$, of a pair of coupling-irons D, D, adjustably secured to the respective links, a pair of thill-couplings J, J, adjustably secured to the respective links, and yokes $C^4$, $C^4$, embracing both links intermediately of the coupling-irons, substantially as described.

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**531,455. TOOL FOR ORNAMENTING WATCHCASES, &c.** CHARLES WILHELM, New York, and FREDERIC ECAUBERT, Brooklyn, N. Y., assignors to said Ecaubert. Filed May 23, 1894. Serial No. 512,156. (No model.)

*Claim.*—1. The combination in tools for making watch case lids and similar articles, of a die corresponding internally to the exterior of the article to be produced, a die having a central opening corresponding or nearly so to the inner edge of the lid or similar article, a roller corresponding at its periphery to the interior of the article near the edges thereof, and shoulders in rigid connection with the die and at a distance from such article and by which the roll is supported while finishing the interior of such article, substantially as specified.

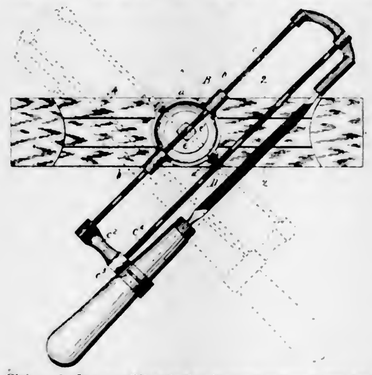
2. The combination with an internal die having a configuration corresponding to the exterior of the watch case lid or other article to be made, of a die having a central opening corresponding or nearly so to the size of the inner edge of such article, and a separate annular shoulder of larger diameter, a roll having a peripheral configuration corresponding to the interior of the lid or similar article to be produced near the edge thereof, and an annular shoulder of larger diameter resting upon the shoulder of the internal die while the lateral motion is being communicated to the roll within the lid or similar article, substantially as set forth.



3. The combination in tools for making watch case lids and similar articles, of a die corresponding internally to the exterior of the article to be produced, a die having a central opening extending to the inner edge of the surface against which the inner edge of the lid or similar article is formed, and a separate offset shoulder of larger diameter, a roller for finishing the interior of the article near the edges thereof and an annular shoulder on such roll to rest on the offset shoulder and support the roll during its operation, substantially as set forth.

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**531,456. SAW-FILING DEVICE.** MILFORD J. WILSON, Painesville, Ohio. Filed July 21, 1894. Serial No. 518,176. (No model.)



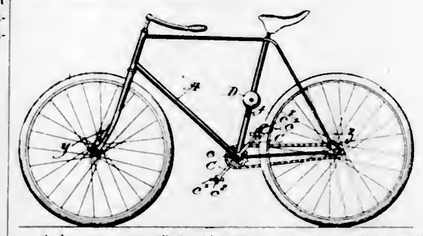
*Claim.*—1. In a saw-filing device, in combination, a base having a projection with a cup-shaped top, a slotted concavo convex file-frame support seated in the cup-shaped top of said projection, a washer having a spherical under side which is seated on said file-frame support, a bolt passing through said projection, through the slot in the file-frame support and through said washer, a nut on said bolt, two guides which are secured to and project upward from said file-frame support, and a file-frame having a cylindrical rod which is movable in cylindrical holes in said guides, substantially as and for the purpose specified.

2. In a saw filing device, in combination, a base having a projection near the middle thereof, and a kerf extending through said base and into said projection, a file-frame support pivoted to the top of said projection, having guides for the file frame which lie in the plane of the vertical axis of said file-frame support, a clamp for fixing the position of said support on said projection, a file frame having a rod which is adapted to move longitudinally and axially in said guides, two adjustable stops secured to said file frame support on opposite sides of its pivot, and a rod secured to said file-frame support adapted to engage with said stops, substantially as and for the purpose specified.

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**531,457. AUTOMATIC BICYCLE-BELL.** CHARLES A. BEMIS and EDWARD A. ADAMS, West Medway, Mass. Filed Jan. 2, 1894. Serial No. 495,397. (No model.)

*Claim.*—1. In a crank propelled vehicle, the combination with, an audible alarm and an actuator therefor, of propelling cranks for the vehicle, provided with pivoted treadles, and a removable finger clamped to one of said cranks by the treadle-pivot thereon, and adapted to engage and move said actuator at each rotation of the said cranks, substantially as described.



2. In a crank-propelled vehicle, the combination with an audible alarm, of an actuator, and a pawl thereon co-operating with and to be engaged by the cranks to sound the alarm during rotation of the latter in one direction only, substantially as described.

3. In a vehicle, the combination with a frame, a bell and its actuator adapted to be engaged and moved by a moving part of the vehicle, of a support for said bell, and a clamp adapted to be secured to said frame and in which said support is adjustably mounted, substantially as described.

4. In a crank propelled vehicle, an audible alarm and its actuator, combined with a finger, a movable end-piece attached thereto and adapted to be moved into operative or inoperative position, and a locking device for said end piece, substantially as described.

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**531,458. SAFETY-PIN.** CHARLES A. BRYANT, Wakefield, Mass., assignor to the Consolidated Safety Pin Company, Bloomfield, N. J. Filed Aug. 14, 1894. Serial No. 520,240. (No model.)



*Claim.*—1. In a safety pin or other device of like character, the combination with a disk-like hood or shield having an opening to permit the passage of the pin point thereinto and secured to the pin in the same plane with the two members thereof, of a disk-like guard pivoted upon the hood or shield to rotate with respect thereto and parallel therewith, and having an opening to permit the passage of the pin point, whereby the guard may be rotated with respect to the hood or shield to prevent or permit the movement of the pin point from said hood or shield, substantially as shown and described.

2. In a safety pin or other device of like character, the combination with a disk-like hood or shield secured to the pin in the same plane with the two members thereof and having a flange notched to receive the pin point, of a disk-like guard pivoted upon the hood or shield to rotate with respect thereto and parallel therewith and having an opening to permit the passage of the pin point, whereby the guard may be rotated with respect to the hood or shield to prevent or permit the movement of the pin point from said hood or shield, substantially as shown and described.

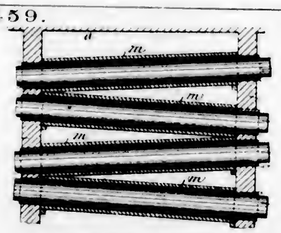
3. In a safety pin or other device of like character, the combination with a disk-like hood or shield secured to the pin in the same plane with the members thereof and having a flange notched to receive the pin point, of a disk-like guard pivoted upon the hood or shield to rotate with respect thereto and parallel therewith and having an opening to permit the passage of the pin point, whereby the guard may be rotated with respect to the hood or shield to prevent or permit the movement of the pin point from said hood or shield, said guard also having a projection to limit its movement by contact with fixed parts of the pin, substantially as shown and described.

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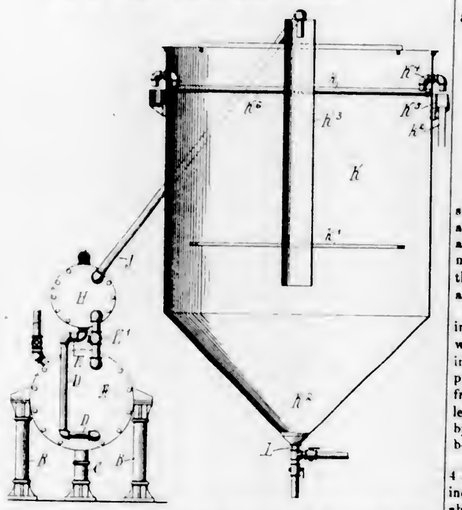
**531,459. APPARATUS FOR PRODUCING OXIDS.** ATKINSON CROSSLEY, Cwmavon, England. Filed June 22, 1894. Serial No. 515,421. (No model.) Patented in England July 28, 1891, No. 12,813.

*Claim.*—The combination with a furnace having double front and back walls, of inclined tubes extending through the two inner walls and opening into the space between the two walls at the ends of the furnace, an outer casing *m* inclosing said tubes, bearings *d* for the ends of the tubes, toothed wheels upon the front ends of the tubes meshing with each other and also with idle toothed wheels between the said ends of the tubes, means for driving the said toothed wheels to rotate the tubes, and funnel-shaped hoppers between the double walls of the furnace communicating with the ends of the tubes, substantially as and for the purposes described.

531,459.



531,460. PROCESS OF AND APPARATUS FOR DEFECATING SACCHARINE SOLUTIONS. EUGENE W. DENING, New Orleans, La. Filed Jan. 29, 1894. Serial No. 498,359. (No model.)



*Claim.*—1. The process of defecating saccharine solutions, which consists in rapidly superheating the solution under a pressure above that of the atmosphere by forcing it through relatively small passages within a heating medium at a high velocity, and then separating the coagulated impurities from the clear liquid, substantially as described.

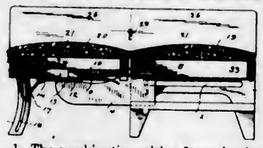
2. The process of defecating saccharine solutions, which consists in rapidly superheating the solution under a pressure above that of the atmosphere by forcing the solution through relatively small passages within a heating medium at a high velocity, continuously discharging the solution into a tank, permitting the clear liquid to flow off at the top of the tank and contemporaneously removing the precipitated impurities from the bottom of the tank, substantially as described.

3. In an apparatus for defecating saccharine solutions, the combination with a heating tank or digester having a plurality of small tubes forming a conductor for the solution, and a surrounding shell adapted to contain a heating fluid, of an absorber or cooler having a plurality of tubes and a surrounding shell, an inlet in said absorber shell for the admission of the solution, connections between said absorber shell and one end of the digester tubes and between the other end of the digester tubes and one end of the absorber tubes, and an outlet for the solution at the other end of the absorber tubes, substantially as described.

4. In an apparatus for defecating saccharine solutions, the combination, with a heating tank or digester having a plurality of small tubes forming a conductor for the solution, and a surrounding shell adapted to contain a heating fluid, of an absorber or cooler having a plurality of tubes and a surrounding shell, an inlet in said absorber shell for the admission of the solution, connections between said absorber shell and one end of the digester tubes and between the other end of the digester tubes and one end of the absorber tubes, and an outlet for the solution at the other end of the absorber tubes, and a settling tank provided with a downwardly turned inlet between the bottom and the top of the tank, an outlet for the precipitated impurities at the bottom of the tank, and a pipe leading from the discharge end of the absorber tubes into said tank inlet, substantially as described.

5. In an apparatus for defecating saccharine solutions, the combination, with a heating tank or digester having a plurality of small tubes forming a conductor for the solution, and a surrounding shell adapted to contain a heating fluid, of an absorber or cooler having a plurality of tubes and a surrounding shell, an inlet in said absorber shell for the admission of the solution, connections between said absorber shell and one end of the digester tubes and between the other end of the digester tubes and one end of the absorber tubes, an outlet for the solution at the other end of the absorber tubes, and a settling tank having a conical bottom provided at its lower end with an outlet for the precipitated impurities, an open-ended downtake terminating between the top and bottom of the tank, a pipe leading from the discharge end of the absorber tubes to the downtake, and means for drawing off the clear liquid at the top of the tank, substantially as described.

531,461. BED-LOUNGE. ALFRED J. GAUTRAN, Stamford, Conn. Filed Sept. 4, 1894. Serial No. 522,009. (No model.)



*Claim.*—1. The combination with a frame having a recess 33 and slides 4 and 8, of a laterally sliding bar connected to slides 8, a movable bed frame pivoted to slides 4 and to the laterally sliding bar and adapted to make a half turn on its pivots, and legs hinged to the movable bed frame and adapted to be moved into position to support the movable bed frame when the latter is turned to position for use as a bed.

2. The combination with a frame having a recess 33 and slots 2 in its ends, slides 4 having pins 3 engaging said slots and provided with slots 5, and slides 8 having slots 9, of a laterally sliding bar having plates 11 carrying pins 10 engaging slots 9 a movable bed frame pivoted to slides 8 and having pins 6 engaging slots 5 so that said frame may be given a half turn upon the slides by which it is carried legs hinged to the movable bed frame and crank shaped brace rods by which the legs are moved to operative position when the movable bed frame is turned

3. The combination with the frame having a recess 33 and slides 4 and 8, of a laterally sliding bar connected to slides 8, and sliding independently thereof, said bar being provided with arms 14, a movable bed frame pivoted to slides 4 and to the laterally sliding bar, legs hinged to the movable bed frame and having slots 18 and crank shaped brace rods whose inner arms engage arms 14 and whose outer arms engage slots 18 so that when the movable bed frame is turned upon its pivots the crank arms will throw the folding legs downward into position to support the outer edge of the movable bed frame.

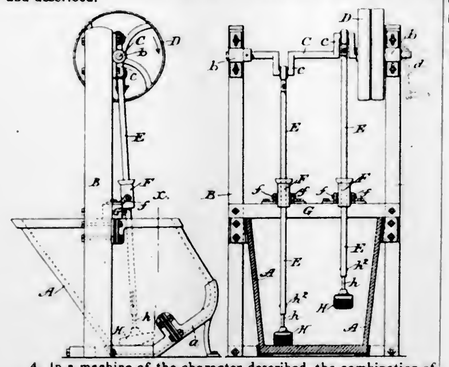
4. The combination with the frame having a recess 33, a movable bed frame adapted to be received in said recess and to make a half turn on pivots when drawn out and suitable legs for supporting it in the open position, of mattress 21 adapted to cover the frame and the movable bed frame and means as a lacing and eyes for detachably securing the mattress to the movable bed frame, so that in use it will pass with the latter into the recess.

531,462. MACHINE FOR SOFTENING SKINS. GEORGE GEYER, Brooklyn, N. Y. Filed Oct. 3, 1894. Serial No. 524,798. (No model.)

*Claim.*—1. In a machine of the character described, the combination of a receptacle for the skins or pelts to be treated, said receptacle having an inclined bottom a crank shaft, an actuating rod or bar mounted on the crank shaft, a guide for said rod or bar through which it may slide and in which it may at the same time vibrate, and a foot or pounder carried by said rod or bar, whereby said foot or pounder has a compound vertical and swinging movement and during part of its movement follows substantially the inclination of the bottom substantially as shown and described.

2. In a machine of the character described, the combination of a receptacle for the skins or pelts to be treated, a crank shaft, an actuating rod or bar mounted on the crank shaft, a guide for said rod or bar through which it may slide and in which it may at the same time vibrate, a foot supported by said bar to be movable longitudinally with respect thereto and means to limit the movement of said foot with respect to the bar, substantially as shown and described.

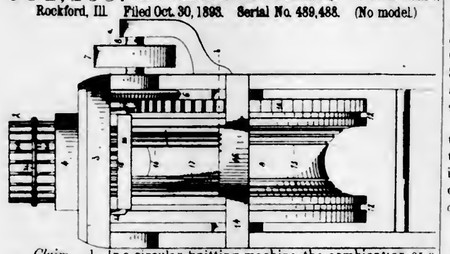
3. In a machine of the character described, the combination of a receptacle for the skins or pelts to be treated, a crank shaft, an actuating rod or bar mounted on the crank shaft, a guide for said rod or bar through which it may slide and in which it may at the same time vibrate, a foot supported by said bar to be movable longitudinally with respect thereto, and a spring interposed in the connection between the foot or pounder and its rod or shaft, substantially as shown and described.



4. In a machine of the character described, the combination of a receptacle for the skins or pelts to be treated, a crank shaft, an actuating rod or bar mounted on the crank shaft, a foot having a stem to enter a longitudinal hole in said bar, a spring to press said foot outwardly and means to limit the movement of the foot with respect to the bar, substantially as shown and described.

5. In a machine of the character described, the combination of a receptacle for the skins or pelts to be treated, said receptacle having an inclined bottom, a crank shaft, an actuating rod or bar mounted on the crank shaft, and a foot supported by said bar to be movable longitudinally with respect thereto, substantially as shown and described.

531,463. CIRCULAR-KNITTING MACHINE. WILL R. JOHNS, Rockford, Ill. Filed Oct. 30, 1893. Serial No. 489,488. (No model.)



*Claim.*—1. In a circular knitting machine, the combination of a needle cylinder, needles located in the cylinder, a pattern wheel having a concave surface corresponding to the convex surface of the cylinder, and means forming a connection between the pattern wheel and needles.

2. In a circular knitting machine, a needle cylinder, needles located in the cylinder, a pattern wheel, fingers controlling the actions of the fashioning needles located in the needle groove, each having an independent engagement with the pattern wheel, a suitable frame having an engagement with the pattern wheel, and fingers supported by the frame.

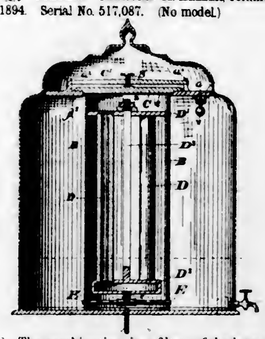
3. In a circular knitting machine, a needle cylinder, needles located in the cylinder, a pattern wheel, a series of fingers connected to a semi-circular ring, a swinging frame having a pivotal connection with the semi-circular ring, the frame being controlled by the pattern wheel, fingers located in the needle grooves and having a movement in the lengthwise direction thereof.

4. In a circular knitting machine, a needle cylinder, needles located in the cylinder, a concave faced pattern wheel, fingers controlling the action of the fashioning needles located in the needle grooves, each having an independent and direct engagement with the pattern wheel, and a spring having a connection with each finger and with a stationary support holding the fingers in a yielding manner in their downward position.

5. In a circular knitting machine, a needle cylinder, needles located therein, a ring located around the cylinder and a series of springs connected to the ring independent of any other support, resting in contact with the needles at two points, and forming the only means for holding the needles in the needle grooves.

6. In a circular knitting machine, a needle cylinder, needles located therein, a ring located around the cylinder and a series of springs connected to the ring independent of any other support, resting in contact with the needles at two points, and forming the support for the ring and the only means for holding the needles in the needle grooves.

531,464. FILTER. CHRISTIAN M. KELLER, Columbus, Ind. Filed July 10, 1894. Serial No. 517,087. (No model.)



*Claim.*—1. The combination, in a filter, of the large body or tank closed as described, a central cylinder united thereto at the upper and lower ends by water-tight joints, and a filter positioned within said cylinder and consisting of the filtering tubes D secured between the heads $D'$ and $D^2$, the latter of which is hollow, and pipes communicating with the hollow or opening in said part $D^2$ and leading to the water reservoir or tank, substantially as shown and described.

2. The combination, in a filter, of the body or tank portion, a cylinder within the same, and in contact with both ends thereof a filter within said cylinder, a cover C covering the space containing said cylinder, and devices for securing said cover firmly in place, substantially as shown and described.

3. The combination of the filter body A having the bottom $A'$ and top $A^3$, the latter having a central opening, the cylinder B secured to the bottom $A'$ and to the opening in the top $A^3$, the cover C adapted to extend over said opening, a cross-bar C' and set-screw S for securing said cover in place, a filter within said cylinder, and an inclosing cover T for inclosing the mechanism, substantially as shown and described.

4. The combination, in a filter, of the main body or reservoir thereto, a central cylinder B containing filtering elements and secured to the top and bottom of said main body or reservoir, which latter is entirely closed except the small air vent *a*, and a float valve *v* for closing said vent when the reservoir is nearly full, thus preventing overflow, substantially as set forth.

531,465. CAP FOR BOLTS OR SCREWS. GEORGE A. LAMBERT, Union City, Ohio. Filed Dec. 26, 1893. Serial No. 494,708. (No model.)



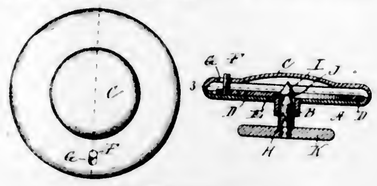
*Claim.*—1. A cap for bolts having the central opening provided with a curved groove, and a bolt having a curved feather adapted to form a locking engagement with the groove by turning the bolt.

2. A cap for bolts or screws having the holding portions and the countersunk opening having the curved groove and the bolt having the head provided with the spiral feather for engaging the groove when the bolt is turned to lock the bolt to the cap.

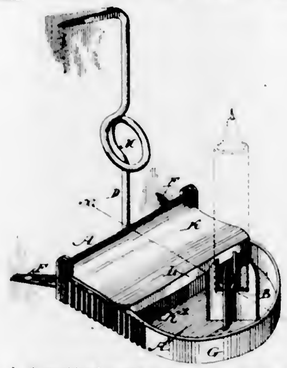
531,466. DETACHABLE BUTTON. WILLIAM J. MOORE, Chicago, Ill., assignor of one-half to Cyrus A. Houghton, same place. Filed Jan. 29, 1894. Serial No. 498,346. (No model.)

*Claim.*—In a detachable button, the button-head composed of a face-plate and a back plate, the back or base-plate being provided with a tube for laterally supporting the stem of the button; a spring located in the head of the button, one end projecting over the tube of the back or base-plate of the head, a pin attached to said spring near its free end and projecting through a slot in the head of the but-

ton for throwing the spring back; a button stem rigidly attached to the shoe of the button, and provided with a pointed head which penetrates the cloth, and a recess forming a shoulder at the base of the pointed head under which the spring in the head of the button engages to hold the post in the button-head; and a shoe to which the stem is rigidly attached, as specified.



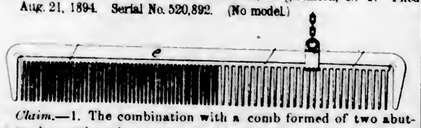
531,467. COMBINED CANDLESTICK AND MATCH-BOX. AUGUST NUTTINGER, Sr., Philadelphia, Pa. Filed Mar. 2, 1894. Serial No. 502,083. (No model.)



*Claim.*—1. A combined candle stick and match box consisting of a base and a rim with a partition, ears rising from said base, a lid journaled in said ears and having a flange embracing said partition, a candle socket rising from said base in front of said partition, a handle secured to said base having a spur at its upper end, and spurs connected with the rear portion of the base, said parts being combined substantially as described.

2. A combined candle stick and match box, consisting of a base with a rim and a partition, ears rising from said base at the rear end of the sides thereof, a lid having journal bearings in said ears, flaring spurs connected with the rear of the match box portion, and a handle secured to an ear at rear of said match box portion and provided with a spur at its upper end, and an eye intermediate of its ends, said parts being combined substantially as described.

531,468. COMB. JOSEPH P. NOYES, Binghamton, N. Y. Filed Aug. 21, 1894. Serial No. 520,892. (No model.)

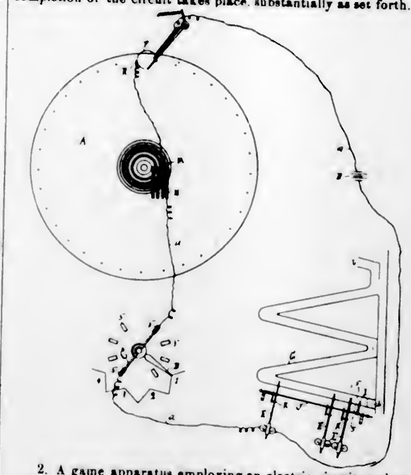


*Claim.*—1. The combination with a comb formed of two abutting teeth-carrying pieces and a back uniting them, of a band passing between the contiguous teeth of said abutting pieces in line with their abutting ends and embracing the comb back, substantially as described.

2. The combination with a comb formed of two abutting teeth-carrying pieces and a back uniting them, of a band provided with a central strip passing between the contiguous teeth of said abutting pieces in line with their abutting ends and with side strips engaging the opposite sides of said teeth, said band embracing the comb back, substantially as described.

531,469. COIN-CONTROLLED GAME APPARATUS. ARTHUR L. PRATT, Kalamazoo, Mich. Filed Dec. 26, 1893. Serial No. 494,514. (No model.)

*Claim.*—1. A game apparatus, comprising a revoluble part, an electric circuit, a detached portion of said circuit being arranged in the revoluble part in such a manner that when the latter chances to stop at a certain point, the detached portion of the circuit will contact with the balance of the circuit, thus completing said circuit, and means in the circuit adapted to deliver coins or the like, when said completion of the circuit takes place, substantially as set forth.



2. A game apparatus employing an electric circuit, and a revoluble wheel bearing colors or characters on which the game is played, an indicator pointing out the color or character on which the wheel stops, a pointer for the player's use, and electrically operated mechanism for delivering coins to the winner, all in said circuit, substantially as set forth.

3. A game apparatus comprising an electric circuit, a part having characters or colors on which the game is played, an indicator pointing out said colors or characters, a pointer for the player's use, a coin conveyer, an armature lever or levers each provided with a projection for entering said conveyer to block and release the coins, all in said circuit, substantially as set forth.

4. A game apparatus employing an electric circuit, a revoluble wheel bearing colors or characters on which the game is played, an indicator pointing out the colors or characters on which the wheel stops, a pointer for the player's use, a coin conveyer, an armature lever or levers each provided with a projection for entering the coin conveyer to block and release the coins, all in said circuit, substantially as set forth.

5. A game apparatus employing an electric circuit, a revoluble wheel provided with metal pins or points of contact representing colors or characters on which the game is played, and with metal rings, said pins and rings connecting with the circuit wires, metal fingers forming a sliding contact with said rings and attached to the circuit wires, an indicator for contacting with said pins, a pointer for the player's use, and mechanism for delivering coins to the winner, said indicator, pointer, and mechanism being in said circuit, substantially as set forth.

6. In a game apparatus employing characters or colors on which the game is played, the combination of an electric circuit, an indicator for pointing out said colors or characters, a pointer for the player's use, a coin conveyer, a spring actuated lever provided with a projection for entering said conveyer to block the coins at the delivery end, and an armature lever adapted to block the coins back of a number of coins blocked by the spring actuated lever, and at the same time to release the latter lever from blocking the coins, said characters or colors, indicator, pointer, and armature lever being in the circuit, substantially as set forth.

7. A game apparatus employing an electric circuit, a revoluble wheel provided with metal pins representing colors or characters on which the game is played, and with metal rings, metal fingers contacting with said rings, the pins, rings and fingers connecting with the circuit wires, an indicator in the circuit for contacting with the pins, a switch having metal contact points in said circuit, a pointer for the player's use provided with arms for contacting with said points of contact in the switch, a coin conveyer, and armature levers in the circuits for blocking and releasing the coins in the conveyer, substantially as set forth.

8. A game apparatus employing an electric circuit, and a revoluble wheel bearing colors or characters on which the game is played, an indicator for pointing out said colors or characters on which the wheel stops, a pointer for the player's use, and mechanism for operating the wheel, a pivoted lever provided with a shoulder, a lug on the crank shaft in position to contact with the shoulder of the lever to tilt it, one end of the separated circuit wire being attached to the free end of the lever, and insulated therefrom, in position to connect with and disconnect from the other end of the circuit wire in "making" and "breaking" the circuit when the crank shaft is operated, substantially as set forth.



9. In a game apparatus employing a revoluble wheel and a crank shaft and means for operating said wheel, the combination of a pointer for the player's use provided with a lock notch, a pivoted dog for entering said notch, a quadrant on the crank shaft, and a sliding pin between the end of the dog and the quadrant, substantially as set forth.

10. A game apparatus employing an electric circuit, a revoluble wheel bearing colors or characters on which the game is played, an indicator for pointing out said colors or characters a pointer for the player's use, mechanism for delivering coins to the winner, all in said circuit, a pulley on the wheel shaft bearing a spring for revolving the wheel and a belt for tightening said spring, a crank shaft, a loose lever on said shaft to which the belt is attached, a lever rigid on said shaft and bearing a spring actuated pin adapted to engage the loose lever, a lever attached to said pin, a point for the latch lever to contact with to release the pin from contact with the loose lever, and a circuit "maker" and "breaker" in said circuit operated by revolving the crank shaft, whereby the circuit is "made" by holding the crank shaft down until after the wheel stops revolving, substantially as set forth.

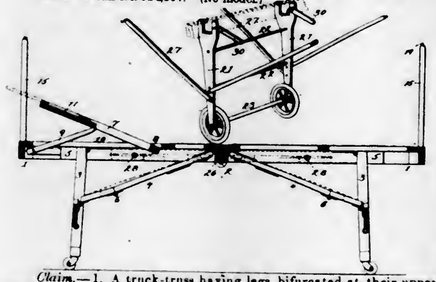
11. A game apparatus employing an electric circuit and employing in said circuit, a revoluble wheel bearing colors or characters on which the game is played, an indicator pointing out the color or character on which the wheel stops, and armature levers and a coin conveyer adapted to deliver coins when the wheel stops at a point to close the circuit, substantially as set forth.

531,470. PLAITING APPARATUS. CHARLES L. SEWARD, Liberty, Ind. Filed Sept. 6, 1886. Serial No. 213,465. (Model.)



*Claim.*—The combination with the blades and needles of a plaiting apparatus, of the grooved frame bar A having an elastic filling within the groove, and the opposing locking frame bar B, whereby the blades and needles are adapted to be quickly and easily inserted and removed in the process of forming plaits as set forth.

531,471. CHURCH-TRUCK. NOAH T. SHAW, Columbus, assignor of one-half to Charles B. Palmer, Franklin County, Ohio. Filed Sept. 28, 1894. Serial No. 524,397. (No model.)



*Claim.*—1. A truck-truss having legs bifurcated at their upper ends, and connected by cross-rods and the axle of the truck-wheels, braces connecting said legs and clamping jaws pivoted to the bifurcated ends of the latter, the said truck-truss being adapted by its bifurcated legs, clamps and braces, as an attachment for funeral directors' church-truck and pall-board, substantially as described.

2. In a funeral director's church-truck and pall-board, the combination, with the hinged board sections, each section having sockets 28 on its inner sides, hinged folding-legs and hinged folding-braces, of an attachable truck truss having legs bifurcated at their upper ends adapted to embrace the meeting-bars of the hinged board-sections, clamps pivoted to the said legs at their bifurcated ends adapted to engage and bind the legs to said meeting-bars, and spring-braces pivoted to said legs and adapted to engage the sockets of said board-sections, substantially as described.

3. The combination, with the hinged board-sections, each having surface recesses at its side edges and sockets at each corner, of canopy supporting posts having slots and pivoted within said corner-sockets said sockets adapted to receive the ends of the posts when in operative position and said recesses adapted to receive the posts lengthwise when in inoperative relation, substantially as described.

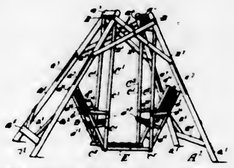
4. The combination, with the hinged-board sections, each having surface recesses at its side edges and sockets at each corner, of canopy-supporting posts having slots and pivoted within said corner-sockets for rigid vertical adjustment therein and spring pins for securing said posts when folded within their receiving edge recesses, substantially as described.

5. The combination, with the hinged board sections, of an adjustable head-section pivoted within the board and having a longitudinal middle opening forming a divided back support and having an extensible head-rest fitted to slide in said opening, substantially as described.

6. The combination, with the hinged board sections, and the hinged leg-frames, of the jointed hinged-braces provided at their joints with tongues on one part and co-acting slots on the other part, the tongue of each joint having a spring locking-catch adapted to engage the slotted part for preventing the accidental flexure of the brace, as described.

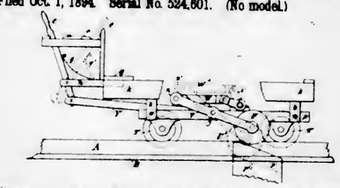
7. A funeral director's church-truck, consisting of a board of hinged sections, having hinged folding-legs, hinged folding-braces of jointed sections provided with spring locking-catches at the joints, and a truck-truss attachment having braces and clamps adapted to secure the truck to the meeting-bars and sides of the hinged-sections, substantially as described.

531,472. PORTABLE SWING. REUBEN A. SHOREY and GEORGE E. SHOREY, Fairfield, assignors to John E. Kelley, Randolph, and George T. Curtis, Freeport, Me. Filed Nov. 14, 1893. Serial No. 490,969. (No model.)



*Claim.*—The combination with a swing frame of standards to which the swing frame is pivoted and which do not project substantially above the points of support of said swing frame, and cross braces pivoted to standards and extending across to opposite standards where they are adjustably secured, said cross braces being pivoted to each other at the point where they cross, substantially as specified.

531,473. SWITCH-THROWER. JOHN G. SIEBER, Louisville, Ky. Filed Oct. 1, 1894. Serial No. 524,601. (No model.)



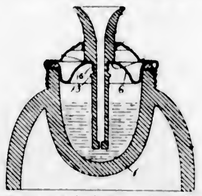
*Claim.*—1. An appliance on a street car by which the man on the platform can bring pressure on sliding pivots on the sides of the track, parts of a device for the throwing of a switch, the appliance on the car consisting in the main, of two lever arms in front of the motorman or driver, connecting at their lower ends by means of suitable appliances with the levers V, $V^3$ on the two sides of the car, so as to deflect alternately the lower arms of these levers, and with them the pressure wheels U $U^3$ borne on their respective rear or lower ends on the stationary sliding pivots F $F^3$; one of the lever arms to connect with the lever $V^3$ on its side directly by jointed levers, the other to transmit its motion by a revolving shaft S, resting upon the truck of the car; and in connection therewith the springs $f^3$ and $g$ substantially as shown above, to hold the pressure wheels at a sufficient height above the track when the respective levers are not operated.

2. An appliance on a street car by which the man on the platform can bring pressure on sliding pivots on the sides of the track, parts

of a device for the throwing of a switch, the appliance on the car consisting in the main of two lever arms in front of the motorman or driver, connecting at their lower ends by means of suitable appliances with the levers V, $V^3$, on the two sides of the car, so as to deflect alternately the lower arms of these levers, and with them the pressure wheels U, $U^3$ borne on their respective rear or lower ends on the stationary pivots F, $F^3$; one of the lever arms to connect with the lever $V^3$ on its side directly by jointed levers, the other to transmit its motion by means of a revolving shaft S, resting upon the truck of the car.

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**531,474. PNEUMATIC INKSTAND.** CHRISTIAN A. SIGELEN, Indianapolis, Ind. Filed Mar. 29, 1894. Serial No. 505,657. (No model.)



*Claim.*—1. In a pneumatic ink stand, a diaphragm having a central conoidal portion provided with an air vent in its top, and a funnel extending through such diaphragm provided with a shoulder overhanging such air-vent and adapted to close the same, said diaphragm being sufficiently thin to centrally rise to a point when there is air pressure below whereby the vent is opened, substantially as herein described.

2. In a pneumatic ink stand, a funnel provided with a shoulder, and a diaphragm having a central conoidal portion with a central opening through which such funnel extends, a collar depending from such diaphragm tightly embracing such funnel and an air vent in the top of the diaphragm under the shoulder of the funnel, substantially as shown and described.

3. In a pneumatic ink stand, a diaphragm having a central conoidal portion provided with an air vent in its top, said diaphragm being sufficiently thin to rise centrally to a point when there is air pressure below and a funnel extending centrally through such diaphragm and provided with a shoulder over such air vent and rounded whereby only a portion of such shoulder will rest on the diaphragm when the funnel is not depressed.

4. A pneumatic ink stand consisting of an ink well, a diaphragm provided with an annular seat resting on such ink well and having reverse curves forming a central conoidal and outer depressed portion and having an air vent in its top, and a centrally depending collar, a cap adapted to clamp the diaphragm to the ink well and having an air vent in its top and a funnel extending through the cap and said collar on the diaphragm and provided with a shoulder adapted to rest on such diaphragm and over-hanging said air-vent whereby it will close or open the air vent in such diaphragm, substantially as shown and described.

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**531,475. DEVICE FOR HOLDING SILKS OR THREADS.** LEONARD O. SMITH, Philadelphia, Pa. Filed Oct. 6, 1894. Serial No. 525,079. (No model.)



*Claim.*—1. A device for holding embroidery silk or thread consisting of an elongated card the opposite edges of which incline toward each other, said card carrying longitudinally thereon a skein of thread, with an outer casing enveloping said card and shaped to correspond therewith, said casing being open at the narrower end to permit the threads to be independently withdrawn therethrough, substantially as described.

2. A device for holding embroidery silks or threads consisting of an elongated tapered card recessed at the broader end and enveloped in a casing of corresponding shape and size, said casing being open at the narrower end to permit threads mounted upon said card to be withdrawn from the holder through the narrower end of the casing without displacing said card, substantially as described.

3. A device for carrying threads consisting of an elongated card the edges of which incline toward each other, said card being recessed as described, a skein of thread longitudinally disposed on said card, with an envelope open at both ends and shaped to correspond substantially to the size of the said card, and surrounding the same, substantially as and for the purpose specified.

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**531,476. INHALER.** EDMOND SOUCHON, New Orleans, La. Filed May 22, 1894. Serial No. 512,067. (No model.)

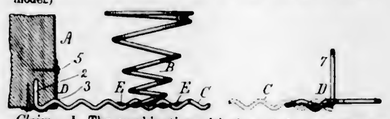


*Claim.*—1. In a device for administering anæsthetics, the combination with the receptacle containing absorbent material and provided with a stopper and pipes held in the said stopper and provided with stop cocks, of a holder for said receptacle, an air bulb carried by said holder and connected with one of the pipes leading into the receptacle and a flexible discharge tube connected with the other pipe and having a closed end and a side opening, both of said pipes passing through the stopper being made to terminate near the inner end thereof and above the absorbent material held in the receptacle whereby only the dry anæsthetic vapor contained in the upper part of the receptacle is emitted from the device, substantially as described.

2. A device for administering anæsthetics, comprising a holder having upper and lower bands and connections between the two bands, the said holder being provided with a thumb ring on one side and having projecting arms on the opposite side terminating in rings, of a receptacle held in the said holder and provided with a stopper, pipes extending through the stopper and terminating near the inner end thereof for the purpose set forth, a stop cock for each of said pipes, an air bulb having its ends removably held in the rings on the holder, a tube connecting the upper end of the air bulb with one of the pipes extending through the stopper, and a flexible discharge tube connected with the other pipe, substantially as described.

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**531,477. SPRING-SUPPORT FOR CHAIR-SEATS.** JOHN A. STAPLES, Newburg, N. Y. Filed Nov. 27, 1893. Serial No. 492,073. (No model.)



*Claim.*—1. The combination with the upholstery spring and the spring support of corrugated wire, of a spring clip having openings through which pass corrugations of the wire spring support and between which clip and the corrugations of the wire, the end coil of the upholstery spring is passed, substantially as set forth.

2. The combination with the corrugated wire spring support and the upholstery spring, of means for connecting the springs and the support and an angle clip having openings for the reception of the corrugations of the spring support, and means for fastening such angle clip to the vertical and under surfaces of the seat frame, substantially as set forth.

3. The combination with the upholstery spring and the spring support of corrugated wire, of a spring clip of sheet metal having openings through which pass corrugations of the wire spring support and between which sheet metal clip and the corrugations of the wire the end coil of the upholstery spring is passed, substantially as set forth.

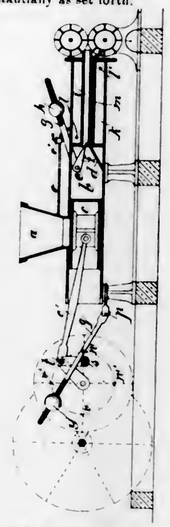
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**531,478. MACHINE FOR FORMING PEAT BRIQUETS.** EMANUEL STAUBER, Hamburg, Germany. Filed Sept. 5, 1893. Serial No. 484,837. (No model.) Patented in Germany June 17, 1891, No. 60,627, and Feb. 2, 1892, No. 63,923, and in England May 29, 1892, No. 10,448.

*Claim.*—1. In an apparatus for forming peat briquets and the like, the combination with a cylinder having a feed-hopper, of a piston mounted in the cylinder and adapted to be reciprocated past the hopper opening, an outlet-tube arranged at the end of the cylinder opposite the hopper-opening and elevated above the base wall thereof, a partition arranged across said tube longitudinally of the same and an inclined perforated partition arranged in the cylinder and extending from the partition in the tube to the bottom of the cylinder, substantially as set forth.



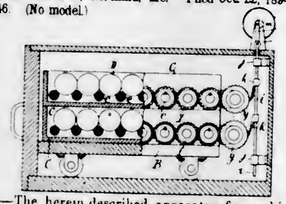
2. In an apparatus for forming peat briquets and the like, the combination with a cylinder having a feed-hopper, and having a partition whereby a steam chamber is formed therein at the end of the cylinder opposite the hopper-opening, of a piston arranged in the cylinder and adapted to be reciprocated past the hopper-opening, a series of open-ended outlet-tubes extending longitudinally through the said steam chamber, perforated partitions arranged across said outlet-tubes longitudinally of the same, an inclined perforated partition arranged in the end of the cylinder and extending from the partitions in the tubes to the bottom of the cylinder, the shaft *e*, pivoted in the cylinder, the plate *f* secured thereto and adapted to partially cover the open ends of the outlet-tubes, and an adjustable weight connected to said shaft *e*, substantially as set forth.



3. In an apparatus for forming peat briquets and the like, the combination with a cylinder having a feed-hopper, of a piston arranged therein and adapted to be reciprocated past the hopper-opening, a crank-shaft having a crank-pin, a connecting rod coupled at one end to the crank-pin and at the other end to the piston, and a weighted lever suspended from the crank-pin, substantially as set forth.

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**531,479. APPARATUS FOR COOKING CORN, &c., IN CANS.** HENRY R. STICKNEY, Portland, Me. Filed Oct. 22, 1894. Serial No. 526,546. (No model.)



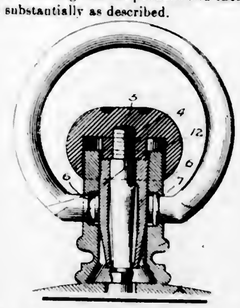
*Claim.*—The herein described apparatus for cooking corn and other like substances in sealed cans, consisting of a retort, trays, adapted to fit therein, said trays having journaled therein a series of rollers on which the cans rest on their sides, a train of gears connecting the ends of said rollers a ratchet gear journaled at the end of each tray and engaging the said train of gears and a reciprocating pawl adapted to engage each of said ratchet gears.

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**531,480. WATCH-BOW FASTENER.** ERICK J. SWEDLUND, Atwater, Minn. Filed Dec. 5, 1893. Serial No. 492,836. (No model.)

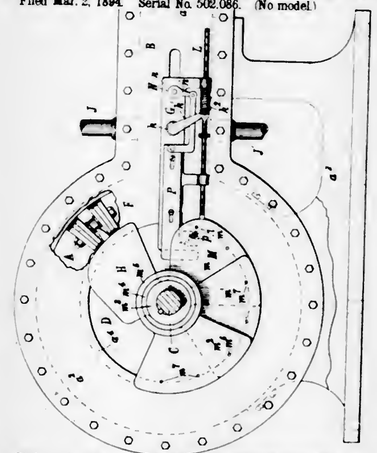
*Claim.*—1. The combination, with the watch-head or pendant provided with peripheral openings forming interior sockets 6 having smaller openings leading therefrom, of the watch-bow having grooved ends inserted into said sockets, and a split ring 10 clamped in the groove of each end of said ring by the walls of said socket and forming an obstruction to the withdrawal of the end of the bow, substantially as described.

2. The combination, with the watch-head or pendant provided with the peripheral openings forming interior sockets 6 having smaller openings 7 leading therefrom, of the watch-bow having grooved ends inserted into said sockets, a split ring 10 clamped in the groove of each end of said ring and forming an obstruction to the withdrawal of the end of the bow, and a sleeve 12 inserted in said pendant and preventing the pushing in of the ends of the watch-bow and also forming a tight joint with the inner wall of the pendant and preventing dust, or similar material, working into the pendant and thence into the works of the watch substantially as described.



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**531,481. ROTARY ENGINE.** FREDERICK D. SWEET, Elyria, Ohio. Filed Mar. 2, 1894. Serial No. 502,086. (No model.)



*Claim.*—1. In a rotary engine, the combination of an annular cylinder, a revoluble shaft, a disk secured to the shaft entering and closing a slot in the inner periphery of the cylinder, a piston secured to said disk and movable in the cylinder, with a sliding abutment having the inlet port $e'$, the exhaust port $e^2$, a valve in said inlet port and a cam secured to the shaft for operating said valve, substantially as and for the purpose specified.

2. In a rotary engine, the combination of an annular cylinder, a revoluble shaft, a disk secured to the shaft entering and closing a slot in the inner periphery of the cylinder and a piston secured to said disk lying in the cylinder, with a box in communication with the cylinder, a sliding abutment lying in said box and movable into and out of said cylinder, said abutment having two ports $e'$ $e^2$, an inlet chamber in the box above the abutment, an exhaust chamber in the box below the abutment, a valve in the inlet port $e'$, means for operating said valve, and means for operating the abutment, substantially as and for the purpose specified.

3. In a rotary engine, the combination of an annular cylinder, a revoluble shaft, a disk secured to the shaft entering and closing a slot in the inner periphery of the cylinder and a piston secured to said disk lying in said cylinder, with a sliding abutment having two steam ports $e'$ $e^2$ in communication respectively with the inlet and exhaust pipes, a valve in said inlet port and a cam variable in size secured to the shaft and adapted to operate said valve, substantially as and for the purpose specified.

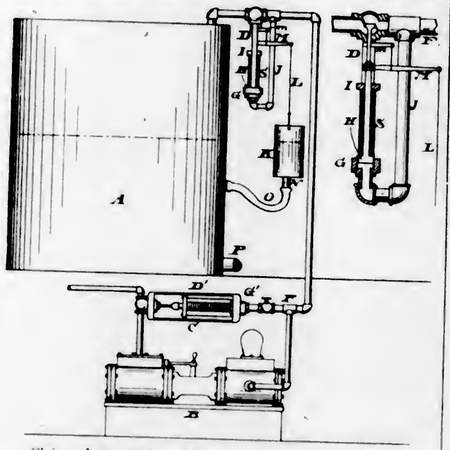
4. In a rotary engine, the combination of an annular cylinder, a revoluble shaft, a disk secured to the shaft entering and closing a slot in the inner periphery of the cylinder and a piston secured to

said disk and movable in said cylinder, with a sliding abutment and means for moving the same into and out of the cylinder, said abutment having a cylinder in its rear end, a fixed piston lying in said cylinder, a port $c^4$ in the abutment adapted to permit the entrance and escape of steam from said cylinder, a valve in said port, a bar secured to the side of the abutment, a slide mounted on said bar, suitable connection between said slide and valve, and a cam on the shaft adapted to strike the ends of said slide and bar, substantially as and for the purpose specified.

5. In a rotary engine in combination with the inlet valve, a rotary shaft and a cam secured to said shaft composed of two or more parts, one part having a hub which is secured to the shaft, the other parts having hubs loosely mounted on the hub of the first part, said parts having holes for the reception of a pin and suitable mechanism connected with the valve, whereby said valve is operated by said cam, substantially as and for the purpose specified.

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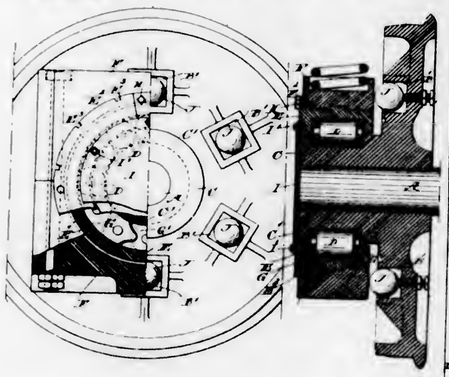
**531,482. REGULATOR FOR OPEN TANKS.** JOSHUA THOMAS, Cleveland, Ohio. Filed Apr. 23, 1894. Serial No. 508,629. (No model.)



*Claim.*—In a regulator for open tanks the combination with water pipe F, of the regulator consisting of the frame D, connected with the valve E in said water pipe; the cylinder G in lower end of frame D and connected by a branch pipe J with said water pipe F, a piston in said cylinder having a rod coupled with the valve stem; a crossbar I, connected to frame D, a spring S on said piston rod, a lever M, fulcrumed to the frame D and connected with the coupling nut on said valve stem and piston rod; and means substantially as described for operating said lever M, for actuating the valve E, as and for the purpose set forth.

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**531,483. REVOLUBLE SECTIONAL JOURNAL-BEARING.** WILLIAM J. TRIPP, New York, N. Y. Filed Mar. 8, 1894. Serial No. 502,865. (No model.)



*Claim.*—1. The combination, with the hub adapted to receive an axle, and having an annular recess in its outer peripheral surface, of a brass or journal box formed with an annular interior recess corresponding to that of the hub and registering therewith, rings interposed between the brass and the hub and projecting partly into the recess of the hub, and partly into that of the brass, and rollers journaled in the said rings and arranged within the said recesses, substantially as described.

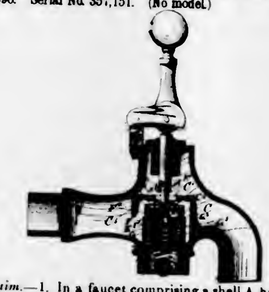
2. A bearing ring for the purpose described, said ring consisting of sections provided at their adjacent ends with notches and noses respectively, said notches and noses being adapted to engage at their central portions, but being spaced at their inner and outer portions when the sections form a circular ring, so that each of the sections can be turned outward relatively to the adjacent sections, substantially as described.

3. A hub having an annular recess in its outer peripheral surface, a journal box surrounding the hub and having a corresponding annular interior recess, and roller-carrying rings interposed between the journal box and the hub and projecting partly into that of the recess of the hub, and partly into that of the journal box, said rings being composed of sections that are capable of a limited movement relatively to each other, whereby the rollers are rendered self-adjusting, substantially as described.

4. A car wheel provided with an annular exterior recess in its hub, a journal box inclosing the said hub and provided with an annular interior recess, rollers interposed between the said journal box and hub and located within the recesses thereof, the wheel also having in its web recesses arranged at a greater distance from the wheel center than the recesses in the hub and journal box, and the balls located in the recesses of the web and adapted to bear against the journal box, substantially as described.

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**531,484. SELF-CLOSING FAUCET.** WILLIAM A. TURNER, Worcester, Mass., assignor to Edmund Converse, same place. Filed June 28, 1890. Serial No. 357,151. (No model.)

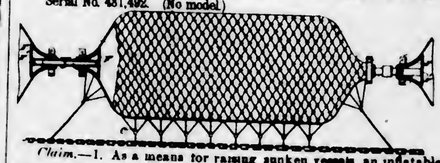


*Claim.*—1. In a faucet comprising a shell A having a partition C containing a water way, and a valve disk closing said water way, the combination of a sliding spindle by which said valve disk is actuated, a stuffing box inclosing said spindle, packing rings held in said stuffing box, a screw threaded ring $K^3$ by which said packing rings are compressed, spindle depressing mechanism, whereby said spindle is pushed downward for the purpose of opening the valve, and a hollow screw $K^4$ held in the upper end of said stuffing box and in the path of said spindle depressing mechanism, whereby the movement of the spindle is adjusted, substantially as described.

2. The combination of the shell A, partition C having a water way C', shell F having one end open and carrying a valve disk by which said water way is closed, a shell G closed at one end and provided with a hole $G^2$ and having at its opposite end a flange G', said shell G having its closed end screw threaded and held in the open end of said shell F and a series of packing rings $G^3$ between the shell F and the flange G', substantially as described.

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**531,485. MEANS FOR RAISING SUNKEN VESSELS.** WILLIAM A. TURNER and FRED E. TURNER, Malden, Mass. Filed July 26, 1893. Serial No. 481,492. (No model.)



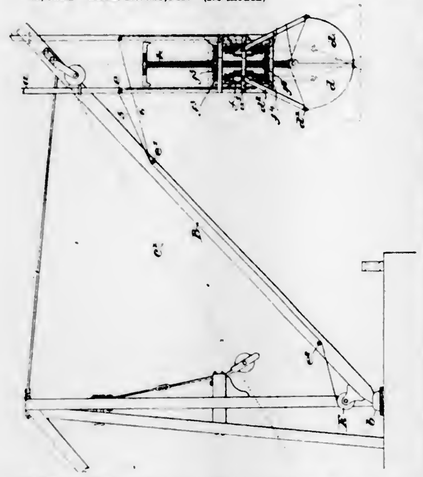
*Claim.*—1. As a means for raising sunken vessels, an inflatable receptacle having a valve inlet comprising a casing provided with an eccentrically located opening in its inner end, and a pipe fitted and adapted to turn in said casing, and open at its outer end, and having an eccentric opening in its inner end, as shown and described, whereby the circumferential adjustment of the pipe opens or closes the air passage to said receptacle, as specified.

2. A means for raising sunken vessels, consisting of an inflatable receptacle having a valve inlet comprising a bell-shaped casing formed in its base with an opening, a clamp for fastening the said casing to the end of the said receptacle, and a pipe mounted to turn in the said casing and formed at its inner end with an opening adapted to register with the opening in the base of the said casing, substantially as shown and described.

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**531,486. DREDGING-MACHINE AND ELECTRICALLY-ACTUATED BUCKET THEREFOR.** COLCORD UPTON, Salem, Mass. Filed Oct. 15, 1894. Serial No. 525,943. (No model.)



*Claim.*—1. The combination with a bucket having two movable jaws, of a frame to which said jaws are connected, an electric motor mounted on said frame, and means actuated thereby to close said jaws, substantially as described.

2. The combination with a bucket having two jaws hinged at their inner adjacent sides, of a frame to which the outer ends of said jaws are connected; an electric motor mounted on said frame, its armature; and connections between the motor and joint connecting said jaws, whereby the said joint may be moved to open and close said jaws, substantially as described.

3. The combination with a clam-shell bucket having two hinged jaws, and a frame in which the outer ends of said jaws are connected, of two electric motors attached to said frame, a screw connected with the hinge of said jaws and moved longitudinally by operation of said motors to open and close said jaws, substantially as described.

4. In a machine of the class described, a bucket composed of two jaws hinged together, a frame to which the outer ends of said jaws are connected, a screw connected with the hinge joint between said jaws, a toothed wheel in which said screw is threaded, and one or more electric motors to rotate said wheel and thereby cause longitudinal movement of said screw to open and close said jaws, substantially as described.

5. In a dredging machine, the combination with a bucket, and supports to enable the same to be immersed below the surface of the water, of a water-proof electric motor connected to and movable with said bucket and to operate the latter to open and close its jaws, substantially as described.

6. A machine of the class described, containing the following instrumentalities, viz:—a frame adapted to be raised and lowered, a plurality of jaws connected thereto, an electric motor raised and lowered with and connected to and to operate the said jaws, a distant circuit-controlling device, and connections between the same and said motor whereby said motor is controlled from a distant point, substantially as described.

7. A machine of the class described containing the following instrumentalities, viz:—a frame adapted to be raised and lowered and a plurality of jaws connected thereto, an electric motor raised and lowered with and connected to and to operate the said jaws, a distant circuit-controlling device, flexible connections connecting the same with said motor, and a take-up to take up and give out the slack in said connections to permit the said bucket to be raised and lowered substantially as described.

8. A machine of the class described containing the following instrumentalities, viz:—a boom, a bucket connected therewith, and means to raise and lower the said bucket; two electric motors on and to operate said bucket, a distant-circuit controlling device to control the operation of both motors in one direction and to reverse one of the said motors and not the other, for the purpose specified.

9. A movable frame, one or more movable jaws carried by said frame, an electric motor carried by and movable with said frame and connected with and to operate said jaws, substantially as described.

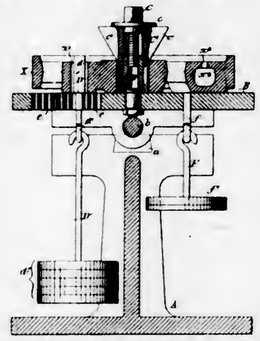
10. In an apparatus such as described, the combination with a boom, a frame suspended therefrom and adapted to be raised and lowered with relation thereto, a plurality of engaging jaws carried by said frame, and one or more electric motors also mounted on said frame and connected with and to operate said jaws, substantially as described.

11. In an apparatus such as described, the combination with a boom, and a bucket and its frame suspended therefrom and adapted to be raised and lowered with relation thereto, of one or more electric motors attached to and movable with said bucket frame and to control the operation of said bucket, substantially as and for the purpose specified.

12. A support, a grip or bucket having a plurality of engaging jaws suspended from said support, one or more electric motors also suspended from said support and connected to and thereby moved with said grip or bucket as the latter is raised, lowered, or otherwise changed in position with relation to said support, and connections between the said motor or motors and said jaws, whereby the latter are operated by the former, substantially as described.

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**531,487. METHOD OF AND APPARATUS FOR COUNTERBALANCING WHEELS.** SAMUEL M. VAUCLAIN, Philadelphia, Pa. Filed May 19, 1894. Serial No. 511,859. (No model.)



*Claim.*—1. The process herein described of counterbalancing driving wheels, said process consisting in first mounting the wheels on their sides upon a pivoted table, with the holes for the counterbalance uppermost, second, placing a predetermined weight upon the crank pin side of the wheel, third pouring molten metal into the counterbalance section of the wheel until the molten metal balances the weight and finally removing the wheel from the table, substantially as described.

2. The combination of a pivoted table on which is mounted the wheel to be balanced, an adjustable pin adapted to openings in the table and to the crank pin opening of the wheel, a weight suspended from said pin, said weight being the equivalent of the counterbalancing material of the wheel, substantially as described.

3. The combination of the base, the bed or table pivoted thereto, said bed having a series of openings at one side of the center, a pin adapted to said openings, a weight hanger hung to said pin, a balancing hanger on the opposite side of the pivot for balancing the pin and hanger, with weights adapted to balance the counterbalancing material of the wheel, substantially as described.

4. The combination of the base, the bed pivoted thereto, a pin on said bed, a clamp for the wheel, said pin adapted to the crank pin opening, with a weight on the crank pin side adapted to balance the counterbalancing material, substantially as described.

5. The combination of the base, the pivoted bed upon which the wheel is mounted, a central post adapted to pass through the hub of the wheel, a tapered sleeve, the clamp screw adapted to clamp the wheel to the bed, a detachable pin adapted to the crank pin opening

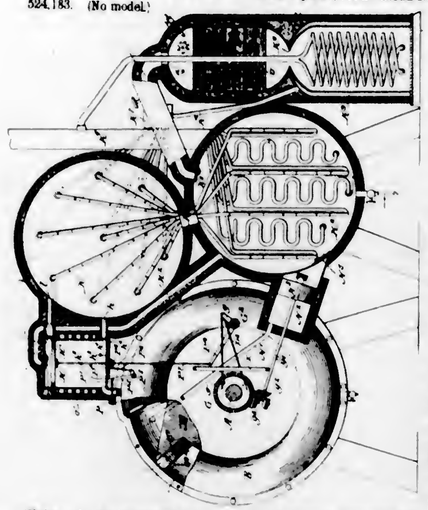
of the wheel, a weight hung from said pin to balance the counterbalancing material, substantially as described.

6. The combination of the base, the pivoted bed upon which the wheel is mounted, an adjustable weight for balancing the counterbalancing material, with two screw studs one on each side of the pivoted bed, said studs being connected together, with means for raising and lowering the studs, substantially as and for the purpose set forth.

7. The combination of the base, the pivoted bed for the wheel to be balanced, screw studs depending from the bed, one on each side of the pivot, nuts, arms thereon, a rod connecting the arms, and a hand lever for raising or lowering the nuts, substantially as described

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**531,488. COMBINED ENGINE AND SUPERHEATER APPARATUS.** JAMES C. WALKER, Waco, Tex. Filed Sept. 26, 1894. Serial No 524,183. (No model.)



*Claim.*—1. An improved steam operated motor, comprising an engine, a supplemental superheated steam chamber connected with the valved inlet port of the engine, a main steam supply, a reservoir connected therewith, a superheater, said heater and reservoir having valved discharge ports opening into the supplemental chamber, operating mechanism for such valves and the engine inlet valve, a piston operating in the supplemental chamber, connected to such mechanism, and tripping devices connected to the piston and the engine drive shaft, arranged to lift the piston to its final up thrust, to operate the valve mechanism substantially in the manner hereinbefore described.

2. In a combined mechanism as described, in combination an engine having a valved inlet port, a supplemental superheated steam chamber connected with the said inlet port, a reciprocating piston operating therein, a steam reservoir, a superheater holding steam under greater pressure than the reservoir, said heater having a valved port opening into the said chamber under the piston, the reservoir having a valved port opening on top of such piston, and mechanism for shifting the valves of the several ports in the said chamber, operated by the piston as it reaches its final up thrust, and tripping devices operated by the engine shaft adapted to raise such piston, when the pressure on the opposite sides thereof is equalized, as set forth.

3. In a combined mechanism as described, the combination with the engine the exhaust thereof, the supplemental steam chamber, the steam reservoirs and the valve shifting devices, substantially as described, of a rotary pumping or analogous mechanism connected with and operated by the engine shaft, held to discharge into one of the reservoirs, and a pipe connecting such mechanism and the exhaust of the engine all arranged substantially as shown and for the purposes set forth.

4. In a mechanism as described, in combination a steam generating boiler, a reservoir, connected therewith, a superheater a supplemental superheated steam chamber, valved ports opening therein from the reservoir and superheater, an engine having a valve inlet opening into the supplemental chamber, the valve shifting mechanism, a piston operating in the supplemental chamber arranged to operate the shifting mechanism, and a supplemental or steam injector means, having discharges projected into the reservoir and the superheater, said means having alternately operating pistons and valve shifting devices, and a feed pipe connected with the main boiler all arranged substantially as shown and described.

5. In a steam generating means, as described, a primary boiler, having a heat retaining jacket, an upper, and a lower chamber, connected by a reduced or throat portion, the upper chamber having steam purifying means located therein, and a steam outlet, oil burners held in the lower chamber and projected up through the upper chamber through the top thereof, and a gas or air outlet in such upper chamber all substantially as and for the purposes shown and described.

6. In a mechanism as described, the combination with the engine, the steam feed chamber, the reservoir having a stack pipe and superheater the valved inlet ports from the reservoir and heater and the chamber to the engine the piston operating in the chamber and the valve shifting mechanism operated by the movement of the piston, of the series of oil burners and tubes therefor projected into the heater and the reservoir, held to circulate therein, and then pass out into the stack pipe, all arranged substantially as shown and for the purposes specified.

7. An improved steam motor comprising a rotary engine, a supplemental superheated steam chamber connected therewith having a valved feed port discharging into the piston chamber of the engine, a steam supply pipe, having a feed pipe opening into the top of the supplemental chamber, and provided with an outwardly opening valve, a superheater having ports $h$ and $l$ and opening respectively at the bottom and top into the said supplemental chamber, a compound valve mechanism operating to alternately close the inlet port to the engine piston chamber and the port $h$ a piston operating in the supplemental chamber, having a trip adapted to engage the compound valve mechanism and shift it as it reaches its final reciprocal thrusts, and means operated by the engine drive shaft for interimittently operating the piston independent of its steam force action as specified.

8. In a mechanism as described the combination with the engine proper, the reservoir $K^3$ and superheater K arranged to hold steam under different pressures, and a pump cylinder connected with the reservoir having a port opening therein normally closed by a valve held closed by the pressure in the reservoir, of the supplemental chamber H, the piston H' the ports $l$ $h$, $H^2$ and P and the valves P, $h$, $h'$, and $h^2$, the tripping mechanism for such valves, a pipe connecting the exhaust of the engine with the aforesaid pump cylinder, a rotary turbine like force pump, operating such cylinder to draw the exhaust from the engine and gear mechanism operated by the engine drive shaft arranged to operate such force pump, all substantially as shown and for the purposes described.

9. In a steam motor, the combination with the engine cylinder, the rotary piston, the abutment and the inlet and exhaust ports arranged substantially as shown, of the chamber H, the steam supply ports $h$ and $h'$, the piston H', having its rod $I^7$ provided with a stop $I^8$ the pivoted valve mechanism, having a valve $I^5$ operating over the inlet of the cylinder and having a member fitted about the rod $I^7$ the hinged member $h^4$ fitted about the rod $I^7$ having a valve operating over the port $h$ and the tripper $h^3$ all arranged as shown and for the purposes described.

10. In a mechanism described, the combination with the engine, the reservoir $K^3$, the superheater K, having oil burners held therein, the chamber H, piston H' the inlet and discharge ports opening into such chamber and the valve shifting mechanism for such ports arranged substantially as shown, of oil burners coiled about the chamber H having their discharge ends connected with fire tubes in the superheater, and a heat retaining casing surrounding the said coils as set forth.

11. The combination with the engine shaft a pair or pairs of engine cylinders, having abutments arranged at the same points, the pistons operating in such cylinders, the pistons being projected in opposite directions to each other, the steam chamber H connected with such cylinders, the piston and the steam feed ports and valves therefor arranged substantially as described, of the rock shafts $G'$ and $G^2$, means connected with the engine shaft for intermittently rocking each shaft $G'$ and $G^2$, crank members $I^{10}$ projected from the shafts $G'$ and $G^2$ in opposite directions, the said members being connected with the ends of the piston rods $I^7$, and shifting devices connected with the valves of the steam ports, arranged to be operated in alternate directions by the alternate movements of the piston rods $I^7$ as and for the purposes specified.

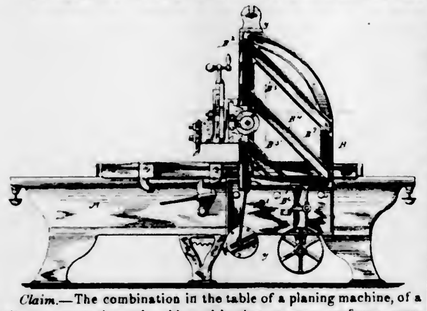
12. In a mechanism as described, the combination with the primary boiler having a supplemental heat collecting chamber, the reservoir $K^3$, and superheater, the oil burners projected therein, the tubes surrounding the burners and connected with the supplemental heat collecting chamber of the primary boiler, all substantially as shown and described.

13. The combination with the primary boiler, the reservoir and the superheater, of the combined pump and injector devices connecting the primary boiler and reservoir and superheater, comprising a double cylinder, a single piston rod having pistons, one for each cylinder, an inlet from the boiler opening into each cylinder alternately operating shifting valves for such inlets, an atmosphere outlet opening into the opposite ends of the outermost cylinder, a discharge outlet opening from the onter end of the innermost cylinder into the reservoir $K^3$, alternately operating shifting valves therefor, said inner cylinder having a discharge nozzle projected into the superheater, and a back pressure valve and the tripping devices connected with the valve mechanism arranged to be operated by the reverse movements of the piston as set forth.

14. An improved steam generator and motor comprising a primary boiler, a reservoir having heating means to hold the steam to a predetermined pressure, a superheater adapted to hold the steam at a greater pressure than the reservoir, a steam chamber, having a valved inlet port at the upper end, connected with the reservoir, and a second outlet at the top having a back pressure valve, communicating with the superheater, and an inlet port at the bottom opening into the superheater, a valve device movable over such lower port, the engine cylinder having an inlet port opening into the steam chamber H having a shifting valve, the piston operating in the said chamber, having its rod projected, and connected with the valves for the lower ports in such a chamber, and a shifting device connected with the engine shaft and the piston rod arranged to intermittently lift the piston, all arranged substantially as shown and described.

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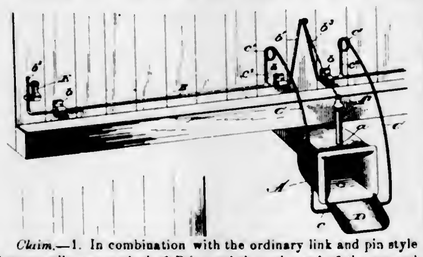
**531,489. METAL-PLANING MACHINE.** JOSHUA S. WHEELER, Worcester, Mass. Filed May 28, 1890. Serial No. 353,470. (No model.)



*Claim.*—The combination in the table of a planing machine, of a shell open upon the under side and having an upper surface $g$, upon which the work is supported and vertical sides $h$, a central longitudinal rib $l$ and a series of transverse ribs $m$, all cast integrally in one piece and a series of bosses integral with said shell and also with said central and transverse ribs, said bosses being provided with holes to receive the work holding pins, substantially as described.

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**531,490. CAR-COUPLING.** JOHN L. WHITE and JOHN R. WHITE, Wakefield, Va. Filed Aug. 30, 1894. Serial No. 521,746. (No model.)

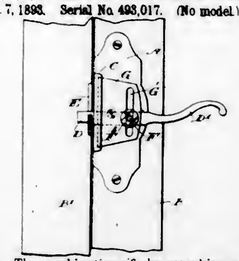


*Claim.*—1. In combination with the ordinary link and pin style of car-couplings, a rock shaft B journaled on the end of the car and provided with end handles $b^2$ and central projecting portion $b'$ which is connected to the coupling-pin, together with a yielding frame C rigidly secured to the shaft B on each side of the projecting portion $b'$ and consisting of side members and a connecting portion c the side members being coiled upon themselves as shown at $c'$, and a link-guide or plate D rigidly secured to the connecting portion c of the frame, substantially as shown and for the purpose set forth.

2. In combination with the ordinary link and pin style of car-couplings, of a rock-shaft B journaled on the end of the car and provided with end handles $b^2$ and central projecting portion $b'$ which is connected to the coupling-pin, a yielding frame C rigidly secured to the shaft B on each side of the projecting portion $b'$ and consisting of a bar bent to present side members and a connectiog portion c, the side members being coiled upon themselves as shown at $c'$, a link-guide or plate D rigidly secured to the connecting portion c of the frame, and a swinging catch E pivoted to the side of the car so as to engage the operating handle, substantially as shown and for the purpose set forth.

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**531,491. GATE-LATCH.** WILLIAM F. WILSON, Cookstown, Pa. Filed Dec. 7, 1893. Serial No. 493,017. (No model.)



*Claim.*—1. The combination of the attaching plate or case, and a stationary or non-sliding pivot adjustably mounted thereon, with a swinging latch pivoting on said pivot, substantially as shown and described.

2. The combination of the latch casing having a slotted front end, and a vertically adjustable transverse stationary or non-sliding pivot bolt in the casing, with a latch pivoting on said bolt and extending through said slot, substantially as shown and described.

3. The combination of the slotted latch case or attaching plate, of a stationary or non-sliding pivot adjustable in said slot and the swinging latch pivoting on said pivot and having a stop rib or projection on its side adjacent to its axis and working in the slot to limit the rocking movement of the latch, substantially as shown and described.

4. A gate latch, comprising a frame plate formed with diverging recesses and a dovetail in its face, a stirrup at the front end of the frame plate, a cap fitted at its top and bottom in the said diverging recesses, the said cap also engaging the stirrup on the frame plate, a bolt engaging the said dovetail in the frame plate and extending through a slot in the said cap, and a latch engaged by the said bolt, substantially as shown and described.

5. A gate latch, comprising a frame plate formed with diverging recesses and a dovetail in its face, a stirrup at the front end of the frame plate, a cap fitted at its top and bottom in the said diverging recesses, the said cap also engaging the stirrup on the frame plate, a bolt engaging the said dove-tail in the frame plate and extending through a slot in the said cap, a latch engaged by the said bolt, and a winged nut screwing on the said bolt to abut on the outer face of the said cap, substantially as shown and described.

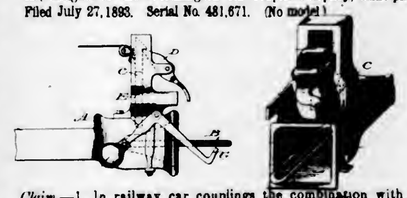
6. The combination with the casing plate having an undercut slot or dovetail enlarged at one end, and the slotted cap plate, of the bolt having its head entered into the said slot or dovetail through its enlarged end; the threaded end of the bolt extending through the slot in the cap plate and provided with a nut by which it may be held in its adjusted position and also hold the two parts of the casing together, and a latch pivoting on the bolt, substantially as shown and described.

7. The latch D having a handle D' at one end, a pivot aperture between its ends and the inclined stop ribs or lugs $D^2$ $D^2$ on its opposite sides and intersected by said aperture, substantially as set forth.

8. The combination with a latch casing having a slotted back plate and a slotted cap, of pivot bolt adjustable in said slots and securing the two parts of the casing together, and a swinging latch pivoting on the bolt, substantially as set forth.

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**531,492. CAR-COUPLING.** ALBERT I. WORTHINGTON, Chicago, Ill., assignor to the Worthington Car Coupler Company, same place. Filed July 27, 1893. Serial No. 481,671. (No model.)



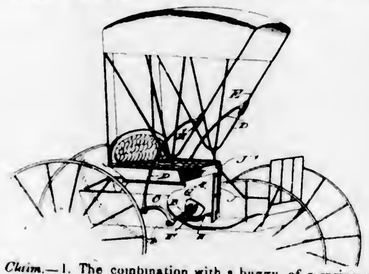
*Claim.*—1. In railway car couplings the combination with, a frame work, surrounding the drawhead thereof, said frame work con-

taining a vertical slide way in which the pin thereof operates vertically of a gravity latch to suspend said pin when the cars are uncoupled, and a swinging gravity link support to keep the link uplifted as set forth.

2. In railway car couplings the combination with an ordinary draw-bar supplied with a frame-work surrounding said draw-bar, a short distance from the front end thereof, said framework containing a pin situated in a vertical slideway of a latch pivoted to said frame work, said latch being operated by contact with the said framework as the bumpers approach each other, and a counterbalancing link support pivoted to said frame work to prevent said link from dropping down at the loose end thereof substantially as and for the purpose set forth.

3. In couplings for railway cars the combination with pin "C" the upper part thereof being made broad and supplied with a hooked device to engage latch "D" of frame work "E" drawbar "A" balancing weight "F" supporting bar "G" and link "B" substantially as and for the purpose set forth.

## 531,493. BUGGY-TOP ATTACHMENT. JOHN D. AXLINE and JAMES L. BAILLIE, Shawnee, Ohio. Filed Mar. 27, 1894. Serial No. 505,291. (No model.)

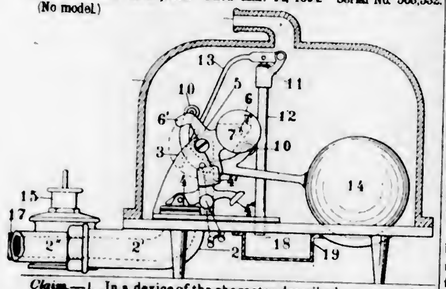


*Claim.*—1. The combination with a buggy, of a spring pressed shaft journaled in the body of the buggy and provided with arms on its ends, and links pivoted to the said arms and having their upper ends pivotally and slidably connected with the forward stays of the top, substantially as described.

2. A buggy top attachment, comprising a spring pressed shaft adapted to be journaled in the buggy body and provided with arms at its ends, links pivoted to the arms and having their upper ends slotted to receive pins on the stays of the buggy top, and a releasing mechanism, substantially as described.

3. A buggy top attachment, comprising a spring pressed shaft adapted to be journaled in the buggy body, arms on the ends of the shaft, links pivoted to the ends of the arms and provided with slots in their upper ends to receive pins on the stays of the top, a segmental ratchet wheel on the shaft, a spring pawl engaging the ratchet wheel, and a sliding rod having its lower end connected with the pawl, substantially as described.

## 531,494. AIR-PRESSURE BEER-FORCING APPARATUS. HENRY E. BAILEY, Albany, N. Y., assignor to the Cox Brass Manufacturing Company, Limited, same place. Filed Mar. 14, 1894. Serial No. 503,532. (No model.)

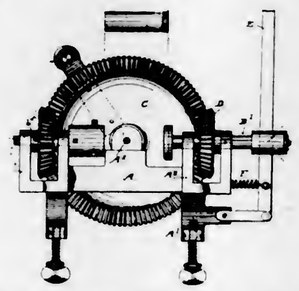


*Claim.*—1. In a device of the character described a water and air chamber containing an intake and a discharge water valve arranged to be opened and closed alternately at predetermined times in order that water may enter and compress the air in the chamber and then escape therefrom, and a vent device in said chamber arranged to discharge the compressed air therein into an expansion chamber during the time the water is escaping from the chamber, said expansion chamber having an opening in communication with the surrounding atmosphere, substantially as described.

2. In a device of the character described an air and water chamber as —1— a standard as —3— in said chamber removably attached to the air and water chamber, standard —3— having a valve casing and a port as —8"— in communication with a body of water under pressure, and a rotary valve as —8— in said valve casing and a flap valve as —4—, the rotary valve as —8— arranged to act as a pivot by means of which the flap valve is opened and closed and a weighted trigger as —6— and a float as —14— arranged to operate said trigger, said trigger arranged to open and close the rotary valve and flap valve alternately when the trigger is operated and having a vent device as —11—12—13— arranged to be operated by said trigger and an expansion chamber as —18— into which the vent device discharges, said expansion chamber being open to the atmosphere, substantially as described.

3. In a device of the character described an air and water chamber as —1— a standard as —3— in said chamber removably attached to the air and water chamber, said standard having a valve casing, and a port —8"— in communication with a body of water under pressure, and a rotary valve as —8— in said valve casing and an outlet valve as —4— the rotary valve arranged to act as a pivot by means of which the outlet valve is opened and closed, and a weighted trigger as —6— and a float as —14— arranged to operate said trigger, said trigger arranged to open and close the rotary valve and outlet valve alternately when the trigger is operated and a vent device as —11—12—13— arranged to be operated by said trigger substantially as described.

## 531,495. CARTRIDGE-CRIMPING MACHINE. THOMAS R. BARNET, San Francisco, Cal. Filed Sept. 13, 1894. Serial No. 522,908. (No model.)



*Claim.*—1. In a cartridge-crimping tool, or machine, the combination of two revolving spindles, geared into a bevel driving-wheel on opposite sides of the center and receiving simultaneous rotation in opposite directions from the motion of said driver, a crimping-head on the end of one spindle adapted to turn the end of the cartridge-shell a head on the end of the opposite spindle adapted to grip the head of the cartridge and means for moving said head longitudinally toward the opposite head to feed the edge of the cartridge shell forward during the crimping operation, substantially as hereinbefore described.

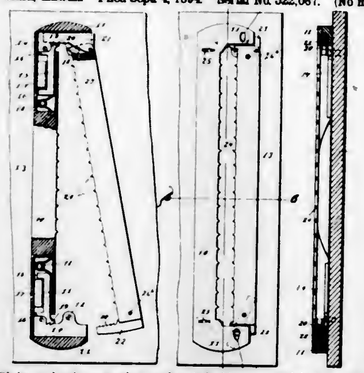
2. In a cartridge crimping tool, or machine, the combination of a suitable frame, a bevel driving-gear mounted therein, two separate revolving spindles B B' geared into said driver on opposite sides of its center to receive motion therefrom simultaneously in contrary directions by the rotation of said driver, the crimping-head fixed on the end of one spindle composed of a cylindrical-body G and a yielding cylindrical core G' movable therein, the revolving-head L fixed on the end of the opposite spindle having a flaring recess L' with roughened face to grip the head of the cartridge, the spindle of the said revolving head being movable longitudinally, and the hand-lever E connected to said spindle as a means for moving the same forward to advance the cartridge shell into the crimping head, substantially as hereinbefore described.

3. In a cartridge crimping tool, a crimping head consisting of the hollow cylindrical body G, the cylindrical-core G' movable longitudinally in the body but rotating with it, and of smaller diameter at the front end than the surrounding body, the spiral spring K and the crimping-pins H H, the said device adapted to be fixed on and removed from a driving-spindle.

4. In a cartridge-crimping tool, the revolving head L having a circular, flaring recess with a roughened face L' fixed on the end of a revolving-spindle, in combination with a spindle carrying a crimping-head and means whereby said spindles are simultaneously driven with rotary motion in contrary directions.



## 531,496. MAGAZINE OR BOOK HOLDER. FRANK BARWICK, Honolulu, Hawaii. Filed Sept. 4, 1894. Serial No. 522,087. (No model.)



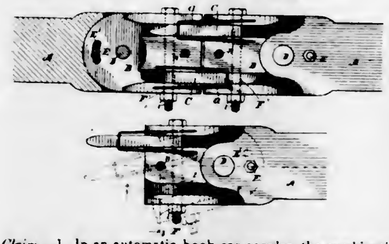
*Claim.*—1. A magazine or book holder comprising a stationary member having a raised inner longitudinal edge and means for securing it to a table or desk, keylocks in the ends of said member, and a movable member also having a raised inner longitudinal edge and provided at its ends with two transverse bars or basps engaged by the said locks, one of the bars being hinged to said movable member, substantially as described.

2. A device of the kind described, comprising a fixed jaw having recessed ends, spring-pressed tumblers held in the said recessed ends, a movable jaw having end toothed bars to enter the recesses and engage the tumblers, and a hinge connection between one of the said bars and the movable jaw, substantially as described.

3. A device of the kind described, comprising a fixed jaw having end offsets, the ends of the fixed jaw and the offsets being recessed, spring-pressed tumblers held in the recesses and provided with teeth at their outer ends, and a movable jaw provided with end toothed bars to engage the tumblers, one of the bars having a hinge connection with the movable jaw, substantially as described.

4. A magazine and book holder, comprising a fixed jaw, inclined upward toward its inner edge, which is provided with projecting teeth, the jaw having recesses at its ends, tumblers held in the recesses, a movable jaw also inclined upward toward its inner edge and provided with teeth thereon, and locking bars at the ends of the movable jaw, the bars being adapted to engage the tumblers of the fixed jaw and one of them being pivotally connected with the said movable jaw, substantially as described.

## 531,497. CAR-COUPLING. THOMAS P. BRADLE, Climax, Mich. Filed Feb. 27, 1894. Serial No. 501,642. (No model.)

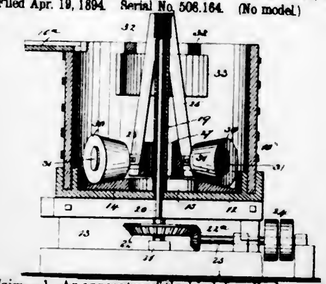


*Claim.*—1. In an automatic hook car coupler, the combination of draw-heads, B, pivoted to the draw-bars by bolts, D; bolt, E, in the slot, E', to limit the lateral motion of said draw-heads; hooks, C, in longitudinal grooves pivoted to bolts, F, to engage a catch in the opposite facing corresponding member; and spring, *a*, to force the hook, C, down, all substantially as described for the purpose specified.

2. In an automatic hook car coupler, the combination of the draw-head, B, pivoted to the draw-bars by bolts, D; bolt, E, in the slot, E', to limit the lateral motion of said draw-heads; hooks, C, in longitudinal grooves pivoted on bolts, F, to engage catches in the oppositely facing corresponding members, all substantially as described for the purpose specified.

3. In an automatic hook car coupler, the combination of draw-heads, B, pivoted to the draw-bars by bolts, D; bolt, E, in the slot, E', to limit the lateral motion of said draw-heads; pointed hooks, C, in longitudinal grooves pivoted on bolts, F, to engage catches in the oppositely facing members; and funnel shaped guideways to receive said hooks and guide the coupler together, for the purpose specified.

## 531,498. ORE-CONCENTRATOR. SAMSON BEER, Butte, Mont. Filed Apr. 19, 1894. Serial No. 508,164. (No model.)



*Claim.*—1. An apparatus of the kind described, comprising a tub having a central basin and an outwardly inclined bed, a driving shaft, a frame carried by the driving shaft, and crushing rollers having their shafts pivotally connected with the said frame, substantially as described.

2. An apparatus of the kind described, comprising a tub provided with a vertical central casing and an outwardly inclined bed having a central basin, a driving shaft turning in said casing and projecting above the top of the same, a frame secured to the end of the shaft projecting above the casing and extending down to within a short distance of the bottom of the tub, shafts pivoted to the frame, and rollers mounted on the said shafts, substantially as described.

3. An apparatus of the kind described, comprising a tub having in its bottom a bed plate with an inclined top and a central basin, a shaft casing projecting upward from the tub bottom, a driving shaft turning in the casing, a frame carried by the driving shaft, and tapering rollers journaled on the frame to run on the bed plate substantially as described.

4. An apparatus of the kind described, comprising a tub provided with a central casing and an outwardly inclined bed having a central basin, a vertical driving shaft revolving in the tub, a frame carried by the shaft, tapering rollers having their shafts pivoted to the frame, and traveling on the inclined bed, and a current breaker, comprising a frame formed of cross and diagonal plates secured in the upper part of the tub above the rollers, substantially as described.

5. An apparatus of the kind described, comprising a tub, a shaft casing projecting upward from the tub bottom, a bed plate arranged in the tub bottom the said bed plate being thinner at its outer edge than at its inner edge and provided with a central basin, a driving shaft turning in the casing, a frame carried by the driving shaft, and vertically swinging rollers projecting radially from the frame and running on the bed plate, substantially as described.

6. In an apparatus of the kind described, the combination with the tub, and revolving rollers therein, of a current breaker in the tub, and comprising cross plates and diagonal plates secured to and connecting said cross plates, substantially as described.

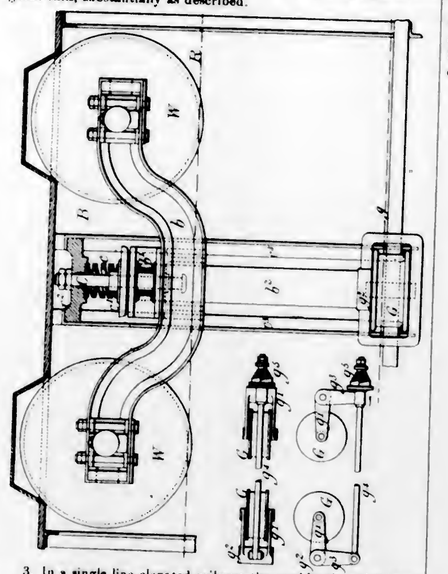
7. The combination, with the tub, the inclined bed therein and the basin in the bed, of the crushing rollers running on the bed, and the amalgam box arranged outside the tub and connected with the basin, substantially as described.

## 531,499. ELECTRIC LOCOMOTIVE FOR ELEVATED RAILWAYS. FRITZ R. BEER, London, England. Filed Feb. 27, 1894. Serial No. 501,668. (No model.) Patented in England July 19, 1893, No. 13,996; in France Aug. 17, 1893, No. 232,301; in Belgium Feb. 5, 1894, No. 108,409; in Switzerland Feb. 7, 1894, No. 8,038; in Hungary Mar. 2, 1894, No. 327; in Italy Mar. 12, 1894, LXX, 156; in Austria Mar. 15, 1894, No. 44/480, and in Austria-Hungary Mar. 21, 1894, No. 47,158 and No. 9,815.

*Claim.*—1. An electric locomotive for a single rail elevated railway having a pair of bogies each consisting of a bogie frame carrying a pair of vertical running wheels and a pair of horizontal guide wheels, and passenger compartments supported on said frames, each of said vertical wheels being mounted between a pair of electro-magnets and provided with coils and a commutator on each of its faces to operate as an electric motor, substantially as described.

2. In a single line elevated railway, the combination with a passenger vehicle and two parallel guide rails, of a pair of bell cranks pivoted to each of the opposite sides of said vehicle, each pair being connected by a rod pivoted to one of said cranks and loosely passing through an eye in the other crank, a spring interposed between the

latter crank and a nut on the end of said crank, and guide-wheels journaled in the free ends of said cranks and bearing against said guide rails, substantially as described.



3. In a single line elevated railway, the combination with a covered trough carrying a conductor and provided upon its side with a slot and having suitable outlets, of a carbon contact carried by a support suspended from the locomotive, said carbon and support being provided with a conduit for supplying water to the said conductor, substantially as described.

## 531,500. ROLLER CHAFE-IRON. CHARLES I. BELLAMY, Arlington, N. J. Filed Mar. 29, 1894. Serial No. 505,533. (No model.)



*Claim.*—1. A roller chafing iron in which is comprised a rigid bearing arranged to be secured to a vehicle body, or frame, in combination with a revoluble conoid wearing piece mounted upon said bearing, and arranged to receive the impact of the center of the wheel tire substantially as shown and described.

2. In a device of the character herein specified, the combination with a conical bearing mounted upon a fixed base and extending therefrom at an angle, of a conical revoluble wearing piece mounted upon said bearing, and arranged to receive the impact of a vehicle wheel upon its periphery, whereby the wearing piece is caused to revolve, and is forced toward the base of the bearing substantially as shown and described.

3. In a device of the character herein specified, the combination with a conical bearing made hollow and provided with a lubricating perforation, of a conical wearing piece mounted upon said bearing and held in place by a longitudinally yielding pin or bolt, substantially as shown and described.

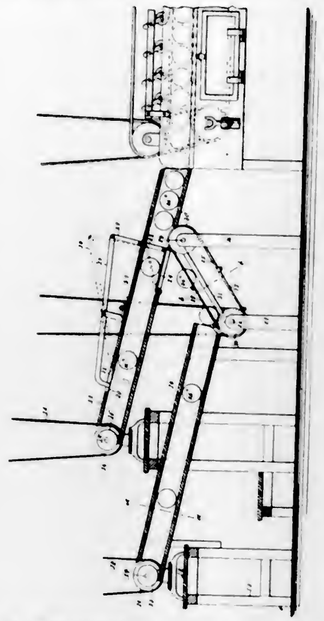
4. In a device of the character herein specified, a conical, revoluble wearing piece arranged to receive the impact of the center of the wheel tire.

5. In a chafe iron, the combination with a fixed conical bearing mounted upon a supporting base and extending therefrom at an angle, of a revoluble wearing piece mounted thereon, and arranged to receive the impact of a vehicle wheel, and to be revolved thereby, and be forced toward the base of its bearing substantially as shown and described.

## 531,501. CAN SOLDERING AND TESTING PLANT. NOAH L. BISHOP, Wassaic, assignor to the New York Condensed Milk Company, New York, N. Y. Filed July 25, 1894. Serial No. 518,515. (No model.)

*Claim.*—1. In a can-soldering machine, a feed device consisting of two troughs both adapted to receive and deliver cans, a conveyer connection between the two can troughs, and a stop mechanism located upon one of the troughs and operated through intervening mechanism by the cans carried by the conveyer, as and for the purpose specified.

2. In a plant for soldering or testing cans, a feed device, a resin-affixing machine connected with the feed device, a soldering machine, a conveyer connecting the two machines, a second conveyer leading from the soldering machine, and a testing machine automatically receiving the cans from the conveyer, substantially as set forth.



3. In a can-soldering machine, a feeding device, the same consisting of a chute, a second chute located above the first and in communication with the soldering machine, a gate located in the upper chute, a cut-off lever fulcrumed upon said chute, adapted to enter the same at one end and connected at the opposite end with said gate, and an elevator leading from the lower to the upper chute, as and for the purpose specified.

4. In can soldering machines, a feed device, consisting of a lower and an upper chute, the upper chute being in communication with the receiving end of the machine, the said upper chute being provided with a gate opening inward, a lever connected with the said gate, one end of which lever is adapted to enter the chute and constitute a barrier therein when the gate is open, and an elevator connecting the two chutes, the cans carried by the elevator operating upon the said gate to open the same, substantially as shown and described.

5. In can soldering machines, a lower chute, an upper chute connected with the receiving end of the said machine, a gate located in the bottom of the upper chute, opening upward, a cut-off lever, one end of which is connected with the said gate, the opposite end being adapted to enter the upper chute and form a barrier therein when the gate is raised, and an elevator located in rear of the lower chute, receiving the cans therefrom and entering the upper chute at the rear of its gate, the elevator being provided with elevating belts having connecting bars adapted as supports for cans, whereby the uppermost cans on the elevator operate to open the said gate and stop further passage of cans in the upper chute from its inlet end, substantially as described.

6. In a can-soldering machine, the combination, with the machine, a lower chute, an upper chute connected with the receiving end of the soldering machine, and assembling devices located at the receiving ends of the said chutes, both chutes being given an inclination in direction of the soldering machine, of a gate located in the bottom of the upper chute, a cut-off lever fulcrumed upon the upper chute, one end of which is curved downward to enter the chute and constitute a barrier, connecting rods uniting the opposite end of the said lever with the free end of the said gate, an elevator adapted to receive cans from the delivery end of the lower chute, said elevator entering the upper chute between the soldering machine and the gate of the said upper chute adjacent to said gate, the elevator consisting of endless chain belts traveling upon sprocket wheels, the belts being connected by cross bars provided with angled extensions at their ends, and a box-like bed located between the stretches of the chain belts, the connecting bars being adapted to receive and convey upward the cans while the bed constitutes a support therefor, as and for the purpose set forth.



7. In a plant for soldering cans, a feed device consisting of an upper and a lower chute, the upper chute being provided with a cut-off lever, a gate controlling said lever, and an elevator connecting the two chutes, adapted to assist in the elevation of the gate, a resin-applying machine connected with the upper chute, a soldering machine, and a chute connecting the resin-affixing and soldering machines, the said chute being constructed of a series of longitudinally placed bars located at predetermined intervals apart, whereby the least possible amount of frictional surface is presented to the cans having the resin applied and passing to the soldering machine, as and for the purpose specified.

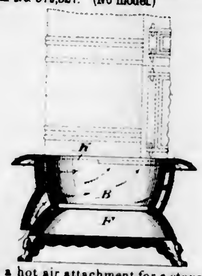
8. In a plant for soldering cans, a feed device consisting of an upper and a lower chute, the upper chute being provided with a cut-off lever, a gate controlling said lever, and an elevator connecting the two chutes, adapted to assist in the elevation of the gate, a resin-applying machine connected with the upper chute, a soldering machine, and a chute connecting the resin-affixing and soldering machines, the said chute being constructed of a series of longitudinally-placed bars located at predetermined intervals apart, whereby the least possible amount of frictional surface is presented to the cans having the resin applied and passing to the soldering machine, and an elevator located at the delivery end of the soldering machine, a chute leading from the soldering machine to the elevator, a blast pipe located at the base of the elevator and adapted to cool the cans located thereon, and means, substantially as shown and described, for supplying air to the said blast pipe, as and for the purpose set forth.

9. In a plant for soldering and testing cans, a feed device, a resin-affixing machine connected with the feed device, a soldering machine, a conveyer connecting the two machines, a second conveyer leading from the soldering machine, an elevator connected with the said conveyer, an air blast located over the elevator, in position to cool material carried thereby, a receiver to which the material from the elevator is delivered, and a testing machine supplied from the said receiver, as and for the purpose specified.

10. In a plant for soldering and testing cans, a feed device, substantially as described, provided with a cut-off operated by the cans being fed, and a resin affixing and soldering machine connected with the said feed device, an elevator receiving the cans from the soldering machine an air blast located over the elevator for the purpose described, a trough receiving the material from the elevator, a testing machine receiving the material from said trough, an elevator receiving the cans from the testing machine, and a conveyer to which the cans are finally delivered, as and for the purpose specified.

11. In a can-soldering machine, a feeding device consisting of troughs each adapted to receive cans and one of them being provided with a gate, and a cut-off lever connected with the gate and operated therefrom, and an elevator establishing communication between the two troughs, the cans carried by the elevator serving to operate the gate and cut-off lever, as and for the purpose specified.

## 531,502. HOT-AIR ATTACHMENT FOR STOVES. ISAAC BROOKE, Pottstown, assignor to Floyd, Wells & Co., Royersford, Pa. Filed Aug. 6, 1894. Serial No. 519,527. (No model.)

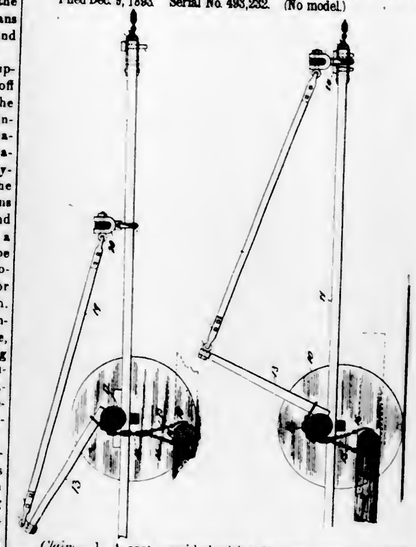


*Claim.*—1. In a hot air attachment for a stove, a jacket adapted to inclose the fire pot of the stove, so as to leave an air chamber between the same and said pot, and having a depending portion, forming with the wall of the ash pit of the stove an air-supply nozzle, said parts being combined substantially as described.

2. A stove with a circumferential rim in combination with a jacket forming a chamber between the fire-pot of the stove, the lower portion of one side of the jacket being extended, forming with the wall of the ash pit of the stove, an air-supply nozzle, the remainder of the lower edge of the jacket being closed on the stove, and an outlet passage existing between said jacket and rim, said parts being combined substantially as described.

3. A jacket adapted to surround a fire-pot of a stove, and having an air supply nozzle, the chamber between said jacket and pot being closed at bottom, and having a discharge passage at top, a portion of the wall of said jacket extending above said passage and closing against the rim or deflector of the stove above said fire-pot, the parts being combined substantially as described.

## 531,503. LOGGING-TRUCK. WILLIAM BROUGH, Jr., Warren, Tex. Filed Dec. 9, 1893. Serial No. 493,232. (No model.)

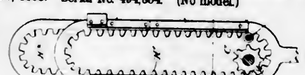


*Claim.*—1. A cart provided with a hoisting device, a relatively stationary hitch, another hitch having relative movement to the said stationary hitch longitudinally of the cart, and an operative connection between the hoisting device and the movable hitch, substantially as described.

2. The combination, with the cart provided with a rigid tongue having a hitch secured thereto, and a hoisting device on the cart, of a slide having guided movement longitudinally of the tongue, a hitching device secured to the slide in the rear of the hitch that is secured to the tongue, and an operative connection between the slide and the hoisting device, substantially as described.

3. The combination, with the cart and tongue, of a hoisting device carried by the cart, said hoisting device being provided with a sweep, the slide on the tongue, and a connecting rod extending from the sweep to the slide, substantially as described.

## 531,504. TRANSMITTING-GEAR FOR WINDMILLS. FRANK J. BROWN, ALFRED ALLEN, and SOLOMON ALLEN, Halstead, Kans. Filed Dec. 27, 1893. Serial No. 494,834. (No model.)



*Claim.*—1. The combination with a driven shaft, a pinion thereon, an elongated internal rack, and means for holding the rack in mesh with the pinion, of an auxiliary segmental rack adjustably secured to the elongated rack, substantially as and for the purpose set forth.

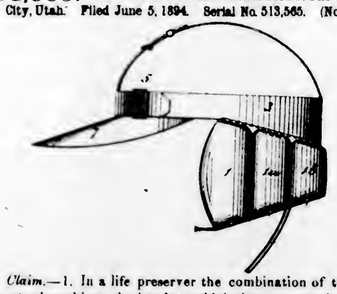
2. The combination with a driven shaft, a pinion thereon, and an elongated internal rack meshing with the pinion, of an auxiliary segmental rack adjustably secured to the elongated rack, adjustable guides on the elongated rack, and projections on a fixed support for engaging the guides to hold the rack in mesh with the pinion, substantially as described.

3. In a transmitting gear, an elongated internal rack provided with vertically disposed guides, and with an adjustable auxiliary segmental rack, substantially as and for the purpose set forth.

4. A transmitting gear, comprising, a pinion on the main shaft, an elongated internal rack engaging the pinion, guideways formed in sections detachably secured to the rack, friction rollers on a fixed support and engaging the guideways to hold the rack in engagement with the pinion, and an auxiliary segmental rack adjustably secured to the elongated rack, substantially as herein shown and described.

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531,505. **LIFE-PRESERVER.** JEANNETTE P. BROWN, Salt Lake City, Utah. Filed June 5, 1894. Serial No. 513,565. (No model.)



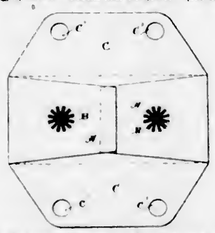
*Claim.*—1. In a life preserver the combination of two or more separate air cushions, the bands to which they are attached, the head strap which holds said band up, and the additional straps for holding the cushions down in position, one of the lines of division between two of said separate air cushions being located at the back of the head substantially as described.

2. In a life preserver, the combination of two or more separate air cushions; each air cushion being divided into separate air tight compartments, a common mouthpiece and tube connecting with each of the separate compartments of each air cushion, the openings from each of said compartments to the tube, and independently and positively operating valves for opening and closing said connections, substantially as described.

3. In a life preserver, the combination of two or more separate air cushions; each air cushion being divided into separate air tight compartments, a common mouthpiece and tube connecting with each of the separate compartments of each air cushion, the openings from each of said compartments to the tube, and independently and positively operating valves for opening and closing said connections, the band to which the air cushions are attached, the head straps which hold said band up and the additional straps for holding the cushions down in position, substantially as described.

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531,506. **MONEY-ENVELOPE.** CHARLES H. CAMERON, Chicago, Ill. Filed July 5, 1894. Serial No. 516,598. (No model.)



*Claim.*—1. An improved envelope having one portion provided with channels, and a flap or overlapping portion having perforations of smaller extent than the said channels and with which said perforations are adapted to register when the flap is closed, whereby when sealing material is applied it will spread in the channels and thus be caused to engage the inner as well as the outer surface of the overlapping portion, substantially as shown and described.

2. An improved envelope having one portion provided with radially arranged channels and a flap or overlapping portion having perforations smaller than the channels but adapted to register therewith when the flap is closed, whereby when sealing material is applied it will be evenly spread by said channels and be caused to engage the inner as well as the outer surface of the overlapping portion, substantially as shown and described.

3. An improved envelope having oppositely arranged flaps folded inward and each having channels formed therein, a second set of oppositely arranged flaps adapted to fold transversely over the first named flaps, said second flaps having registering perforations of less extent than said channels with which they are coincident when folded, whereby when sealing material is applied the same will be spread by said channels beneath the inner one of said second set of flaps, for the purpose shown and described

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531,507. **PAPER FOR BANK-NOTES, CHECKS, BONDS, STOCKS, AND OTHER INSTRUMENTS.** DAVID N. CARVALHO, New York, N. Y. Filed Jan. 26, 1894. Serial No. 498,160. (No specimens.)

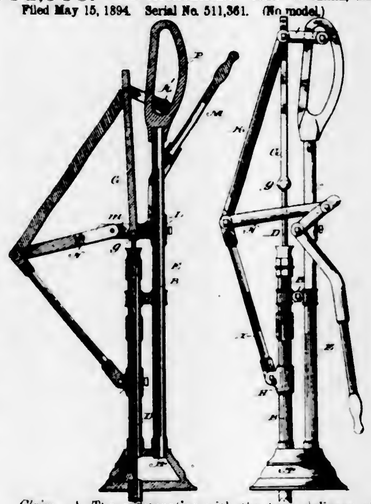
*Claim.*—1. A safety paper consisting of paper charged with bismuth iodide and sodium iodide, substantially as described.

2. As a new article of manufacture, the combination of paper and a salt of bismuth with iodide of sodium and either primulin, congo red, or other pigment for the purpose of obtaining a variety of colors, substantially as described.

3. A check protecting fluid consisting of a solution of a benzidene dye with an alkaline iodide, substantially as specified.

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531,508. **PUMP ATTACHMENT.** JOHN W. CLARK, Du Bois, Pa. Filed May 15, 1894. Serial No. 511,361. (No model.)

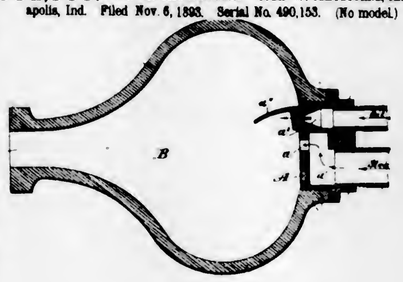


*Claim.*—1. The combination with the base, delivery pipe, and standard, of the sucker rod, passing through the delivery pipe, the pitman rod, connected with the sucker rod, by means of a ball and socket joint, the collar attached to the delivery pipe, the toggle arms I, K, the arm K, having an angle *k*, and roller *k'*, the open track, or casting P, located upon the upper end of the standard, the collar L, and handle M, and the link N, connecting the joint of the toggle arms with the handle M, substantially as shown and described.

2. The combination, with a standard of the open track or casting located at the upper end of the same, the sucker rod and pitman connected therewith by a ball and socket joint, the toggle arms I and K, the collar L, the angular shaped handle M, and the link N, connecting the handle with the joint of the toggle arms, the arm K, having an angular upper portion *k*, carrying a roller *k'*, which engages the open track or casting, said toggle arm K, being pivotally connected to the upper end of the pitman, substantially as shown and described.

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531,509. **OIL OR GAS BURNER.** COLIN W. CLAYBOURNE, Indianapolis, Ind. Filed Nov. 6, 1893. Serial No. 490,153. (No model.)





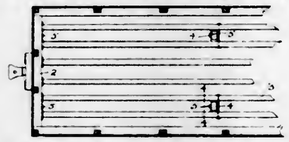
*Claim.*—1. A burner for oil or gas, having a suitable body with the small passage, the deflector extending inward and forward at an angle across the path of a jet issuing from such passage, the second passage, and the bulb with its interior expanding forward from around the mouths of the two passages, and then tapering forward, and a discharge mouth on the forward end of the tapering part of the bulb, substantially as and for the purpose set forth.

2. In a burner for hydro-carbon, in combination with a suitable body having the steam-passage, a smaller oil-passage, and the deflector extending forward and inward at an angle to a jet issuing from the oil-passage, the bulb on the body having the chamber within it expanding forward from around the place, where the steam and oil-passages enter, and then reduced forward to a discharge mouth larger than the mouth of the steam-passage, means for feeding the oil through its passage under pressure, and a source of supply of steam connected with the steam-passage, so that the steam will enter the bulb at a rate that will cause the discharge from the burner to be at a low pressure, substantially as and for the purpose described.

3. In a burner for hydro-carbon, in combination with a suitable body provided with the large central passage, the smaller passage to one side of the other, and the deflector extending forward and inward, at an angle to a jet issuing from the smaller passage, the bulb attached to the body, having its interior suddenly expanding forward from around the mouths of the passages, and then contracted, and having on its forward end a discharge mouth or nozzle, and sources of supply of steam and the hydro-carbon, under pressure, one connected with one passage, and the other, with the other, substantially as and for the purpose specified.

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531,510. **CAR CONSTRUCTION.** WALTER E. COFFIN, Marshall, Tex. Filed May 19, 1894. Serial No. 511,782. (No model.)



*Claim.*—1. In combination in a car floor frame, a block or the like removably secured between two sills, detachable holders provided each with a flange inclosing a pocket and with a base having bolt holes for securing said holders to the sills, said base also provided with holes or recesses adjacent the pocket wall for bolts 12, said bolts, and a hanger supported by the block substantially as set forth, whereby the block is sustained and held both laterally and longitudinally and whereby the supporting timber can be removed without spreading the car floor frame.

2. In a car floor frame the combination of a block or the like, a supporting holder having a pocket surrounded by a flange and fitted to the end of the block, said holder being provided with a flat base having holes to receive screw bolts for the attachment of the holder to the frame and having a hole or recess in the base near its flange to receive a tie bolt, such as 12, said tie bolt, and the sills or timbers tied thereby, all substantially as set forth.

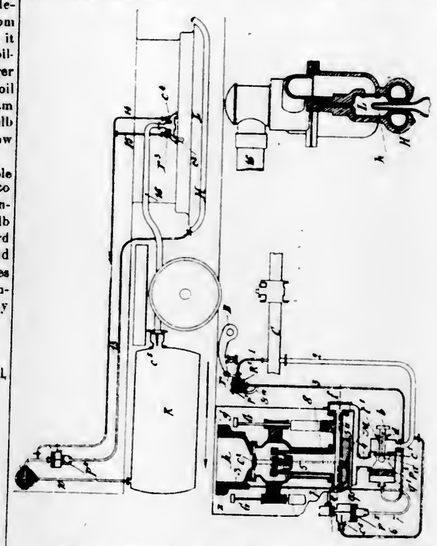
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531,511. **MOTOR-CHARGING DEVICE.** JAMES T. F. CONTI, Paris, France. Filed May 4, 1894. Serial No. 510,096. (No model.) Patented in Austria-Hungary, Apr. 20, 1893, No. 22,432 and No. 63,327, and in France, May 27, 1893, No. 230,413.

*Claim.*—1. The herein-described apparatus for charging the storage reservoirs of vehicles with a fluid under pressure comprising a receiving chamber on the vehicle, in communication with the reservoir thereof, the casing of such chamber having an opening, extending longitudinally of its bottom and a charging nozzle connected with a suitable source of supply and arranged at the track or line of travel of the vehicle, and means for vertically moving such nozzle into the path of one end of said chamber to cause it to enter said opening at one end and remain stationary relatively to longitudinal movement of the chamber in passing on or off the nozzle, substantially as described.

2. The herein-described apparatus for charging the storage reservoirs of vehicles with a fluid under pressure, comprising a receiving chamber on the vehicle, in communication with the reservoir thereof, the casing of such chamber having an opening, extending longitudinally of its bottom and provided throughout its length with normally contracting yielding lips, and a charging nozzle connected with a suitable source of supply and arranged at the track or line of travel of the vehicle, and means for vertically moving such nozzle into the path of one end of said chamber to cause it to part said lips, and enter the opening and remain relatively stationary to the longitudinal movement of the chamber, substantially as described.

3. The herein-described apparatus for charging the storage reservoirs of vehicles with a fluid under pressure, comprising an elongated receiving chamber supported on the vehicle and in communication with the reservoir to be charged, guides arranged at the front end of the casing of said chamber, and the said casing having an opening in its under side, a charging nozzle communicating with a suitable source of supply, and means for vertically moving said nozzle, substantially as described.



4. The herein-described apparatus for charging the storage reservoirs of vehicles with a fluid under pressure, comprising a main along the track or line of travel of the vehicles, vertically movable valve nozzles adapted to communicate with the main, and means for automatically raising said nozzles, said means including a trip operated by the vehicle and the movement of which trip serves to establish communication between the main and the nozzle, substantially as described.

5. In apparatus of the character described, a series of vertically movable nozzles, a source for supplying fluid under pressure, and actuating devices for raising the nozzles, the said devices being operated by the fluid, substantially as described.

6. In apparatus of the character described, the combination with the vertically movable nozzles and a fluid supply, of a piston valve controlling the admission of the fluid to the nozzle, a cock controlling the admission of the fluid to the chamber of the piston valve, and a trip adapted to be actuated by the vehicle to be charged and serving to operate said cock, substantially as described.

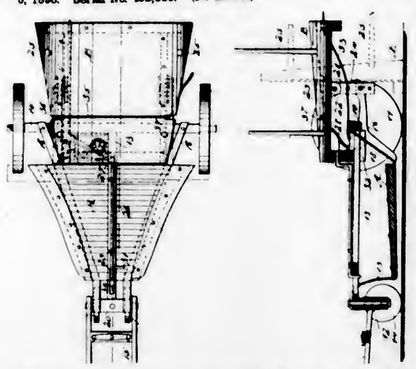
7. In apparatus of the character described, charging nozzles having a vertical and a lateral rocking movement, substantially as described.

8. An apparatus for charging the storage reservoirs of vehicles with a fluid under pressure, comprising a chamber for receiving a charging nozzle, a charging nozzle, a source of supply, means for establishing communication between the nozzle and the source of supply, and a valve for cutting off the passage of fluid through the nozzle, said valve having means for automatically closing it when the pressure in the reservoir equals that of the fluid supplied, substantially as described.

9. In apparatus of the character described, the combination with a casing, of a vertically movable nozzle, the casing having an opening for the outward passage of the nozzle, and shutters normally closing such opening and adapted to be raised by the nozzle, the said shutters being provided below their meeting edges with operating devices spaced apart to receive the nozzle between them in its upward movement substantially as described.

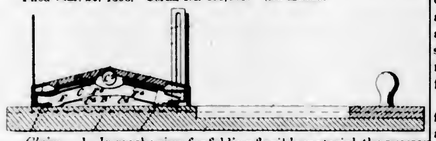
10. In the herein-described apparatus the means whereby the receiving device may be put in communication with the reservoir on the vehicle or with the open air, consisting of a three-way cock and pipe connections as described in combination with flexible tubular lips on said receiving device filled with water or other fluid and means whereby the air pressure in the reservoir is caused to act thereon and expand the same, substantially as described.

**531,512. CORN-HARVESTER.** HENRY M. COX, Palmer, Nebr., assignor to himself and Andrew M. Templin, same place. Filed Dec. 6, 1893. Serial No. 492,889. (No model.)



*Claim.*—A corn harvester, consisting of a frame comprising front and rear axles connected together by a reach and upon which wheels are mounted, the front axle being shorter than the rear axle, angular brackets secured to the rear axle and projecting rearwardly and forwardly and downwardly, a triangular cutter platform suspended between the wheels by arms secured to the forwardly projecting portion of the said brackets and to a head block of the reach, said platform being provided with a blade at each side, a concave shock or bundle platform pivoted to the rearwardly projecting portion of the said brackets, and a locking device for holding the said platform in a horizontal position, substantially as described.

**531,513. FOLDING-MACHINE.** WILL E. CURTIS, Cincinnati, Ohio. Filed Mar. 20, 1893. Serial No. 466,875. (No model.)



*Claim.*—1. In mechanism for folding flexible material, the presser feet, a reciprocating conveyer for locating the folded material beneath them, a frame vertically reciprocal, and containing the presser feet, and also guides whereby the conveyer is properly reciprocated in relation to the flexible material and the presser feet, substantially as and for the purposes specified.

2. In a machine for folding strips, the opposite presser feet, a frame in connection with them, the frame having sides as B′, provided with guideways C, and attendant guides, and a conveyer having a slot $D^3$ therein, and having means substantially as described for engaging said guides, substantially as and for the purposes specified.

3. In a machine for folding strips, the opposite presser feet and the sides B′ provided with guideways C and attendant guides, the conveyer having a slot therein, and having means substantially as described for engaging the guides, and chute or guiding slot $B^3$ formed by connecting parts of the frame-work, substantially as described.

4. In a machine for folding strips, the opposite presser feet, a frame in connection with them, a conveyer having the slot $D^3$, and at the ends the lugs $D^4$, $D^4$, and stops $D^5$, and arm $D^6$, having projecting arm $D^7$, the folder frame having an opening $B^3$, and sides each provided with a guideway C, and guides as $C^3$, $C^4$, above and $C^5$ below, and additional guides $C^6$, $C^6$, respectively located above the guides $C^3$, $C^4$, and central guide $C^8$, and means for compelling the depression of the conveyer when near each end of the guideway, and the consequent elevation of the adjacent presser foot, substantially as and for the purposes specified.

5. In a machine for folding strips, the opposite presser feet F, F and the folder frame carrying the springs $F^4$, $F^4$, respectively connected to said presser feet, and a conveyer having a slot $D^3$, and portions D′ D′, and means for enabling the conveyer to be reciprocated and alternately convey the strip to be folded to said presser feet, and lift said feet and insert one of said portions D′ below the said foot, along with the strip to be folded, substantially as and for the purposes specified.

6. In a machine for folding strips, opposite presser feet, a frame connecting them, and having guides, and the conveyer having at each end lugs $D^4$, $D^4$, and arm $D^6$, and a stop $D^5$, and the reciprocating pieces E, and means for enabling the arms $D^6$ to be operated by the said pieces, and the springs $F^4$, respectively connected to a connection $F^3$ of the adjacent presser foot, substantially as and for the purposes specified.

7. In a machine for folding strips, opposite presser feet, a frame connecting them, and having guides, and the conveyer having at each end lugs $D^4$, $D^4$, and arm $D^6$, and a stop $D^5$, and the reciprocating pieces E, and means for enabling the arms $D^6$ to be operated by the said pieces, and the adjustable spring $F^4$, respectively connected to a connection $F^3$ of the adjacent presser foot, substantially as and for the purposes specified.

8. In a machine for folding strips, the opposite presser feet, a frame connecting them, and having guides, and the conveyer having at each end lugs $D^4$, $D^4$, and arm $D^6$, and a stop $D^5$, and the reciprocating pieces E, and means for enabling the arms $D^6$ to be operated by the said pieces, and the springs $F^4$ connected by suitable connections to their respective presser feet, and the folder frame having the projections $F^6$, $F^6$, on which the spring rests, and the set screw $F^5$ located between the said projections, substantially as and for the purposes specified.

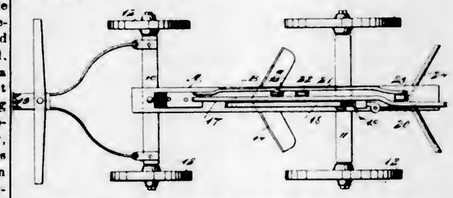
9. A frame provided with presser feet, and guide for allowing the frame to rise and fall vertically, but preventing horizontal movement thereof, a conveyer working in said frame, and reciprocating therein, the folded portions of the strips being beneath the folding frame, the superincumbent weight of the frame being adapted and exerted to fold the strip and retain it in a folded condition, substantially as and for the purposes specified.

10. In a machine for folding flexible strips, the oppositely arranged presser feet, under which the opposite folds of the strip respectively lie, and a folder frame connecting the feet, located above the folded strip, and a conveyer in conjunction with the presser feet for folding the strip, the conveyer adapted to reciprocate between and under the presser feet and over the folded strip, and means substantially as described for enabling the front edge of the conveyer to be turned under and reversed and to successively fold alternate ends of the strip, substantially as and for the purposes specified.

11. In a machine substantially as described for folding flexible strips into reciprocated folds, the oppositely arranged presser feet, under which the opposite folds of the strip respectively lie, and a frame, and a conveyer having parts D′, D′, and slot $D^2$, and at each end an arm $D^6$, the frame having a guideway therefor, consisting of elongated slots extending toward the opposite presser feet, and means for reciprocating the conveyer between and under the feet, substantially as and for the purposes specified.

12. In a machine for folding strips, the opposite presser feet, a frame connecting them, and having guides, and the conveyer having at each end lugs $D^4$, $D^4$, and arm $D^6$, and a stop $D^5$, and the reciprocating pieces E, and means for enabling the arms $D^6$ to be operated by the said pieces, and the springs $F^4$ connected by suitable connections to their respective presser feet, and the folder frame having the projections $F^6$, $F^6$, on which the spring rests, and the set screw $F^5$ located between the said projections, the spring $F^4$ having the slot $F^{12}$, for enabling the presser foot to be adjusted nearer or farther from the center of the folder, substantially as and for the purposes specified.

**531,514. CULTIVATOR.** LOUIS DANOS and ALBERT HAYDEL, Hohen Solms, La. Filed May 19, 1894. Serial No. 511,830. (No model.)

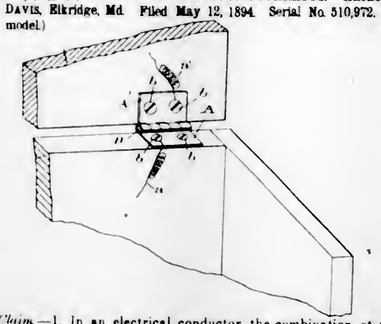


*Claim.*—1. In a cultivator, the combination with a suitable frame and a vertical standard therein, of a horizontal V-shaped scraper fixed on the end of said standard, and a knife fixedly attached to the apex of the scraper, and projecting below it, and having a convex cutting edge, whose point of maximum convexity is above the plane of the scraper, as shown and described.

2. In a cultivator, the combination of a V-shaped moldboard, with the V-shaped scraper arranged in advance, and the knife secured on the scraper and projecting below its point, and means for adjusting the moldboard and scraper vertically, as shown and described whereby the soiled loosened and parted by the scraper is separated and thrown laterally by the moldboard, as specified.



**531,515. HINGE FOR ELECTRIC APPARATUS.** ARTHUR B. DAVIS, Elkridge, Md. Filed May 12, 1894. Serial No. 510,972. (No model.)

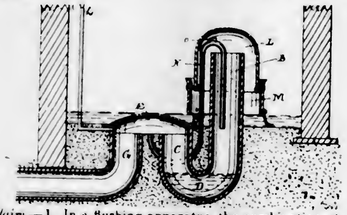


*Claim.*—1. In an electrical conductor, the combination of the leaves, A, A′, of the hinge; a pintle of non-oxidizable material connecting the two leaves of said hinge; and two circuit wires, *a*, *a*′, attached to the leaves and in electrical connection with said pintle.

2. In an electrical conductor, the combination of the leaves, A, A′, of the hinge; a pintle of non-oxidizable, malleable material expanded inside the bore or joints of the leaves to fill the interstices thereof; and electric circuit wires connected with said leaves.

3. The combination of a box to contain electrical instruments and provided with a lid or cover; hinges having two leaves, A, A′, secured, respectively, to the box and cover; a pintle of non-oxidizable, malleable material expanded within the bore or joints of the hinge to fill the interstices thereof; and circuit wires, *a*, *a*′, in electrical connection with said leaves, substantially as described.

**531,516. AUTOMATIC SIPHON-FLUSHER.** REVERDY C. DE LA HUNT, Cedar Rapids, Iowa. Filed Oct. 29, 1892. Serial No. 450,357. (No model.)



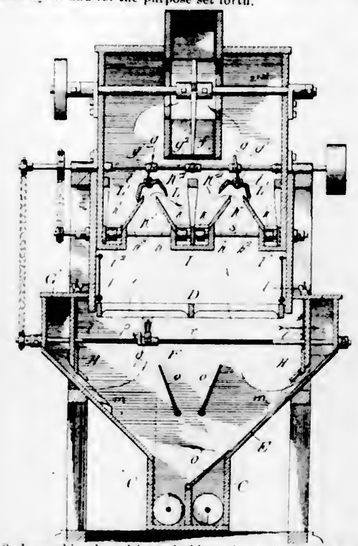
*Claim.*—1. In a flushing apparatus, the combination of a reservoir, an intaking-pipe having a trap formed in the lower part thereof, a bell, and a sleeve connected with the lower part of said bell, so as to leave an open space between the bell and sleeve, the sleeve adapted to project above and below the mouth of the bell, as described, so that the clear liquid shall pass under the sleeve to the bell and intaking pipe, substantially as described.

2. In a flushing apparatus, the combination of a reservoir, a trapped discharge-pipe provided at its inlet with a bell and sleeve, as described, and an S-shaped siphon-pipe having an orifice or tube in its upper bend; the upper leg of the siphon inserted in the inlet of the discharge-pipe and the lower leg thereof terminating in the covered trap, through which the discharge passes to the drain-pipe, substantially as set forth.

3. The combination in a siphon flusher, of a tank, a vertical intaking-pipe having a trap in the lower part thereof, a bell, and a sleeve for supporting same over the top of the intaking-pipe, a drain-pipe provided with an upwardly turned end, and a covered-trap connecting the drain-pipe and discharge end of the intaking-pipe, with an S-shaped siphon-pipe having one end located in the top of the intaking-pipe and its opposite end in the covered-trap, an orifice in the upper bend of the siphon-pipe, as described, and a ventilating-pipe connected with the covered trap, substantially as and for the purpose set forth.

**531,517. DUST-COLLECTOR.** EMIL R. DRAVER, Alliance, Nebr., assignor to Florence N. Draver, same place. Filed June 25, 1894. Serial No. 515,629. (No model.)

*Claim.*—1. In combination with a suitable casing and a fan for forcing air through the same, an air-passage in the casing leading to the fan, dust-arresters flanking said air-passage, an oscillatory valve supported between the dust-arresters and operating to open the course of the air-current and direct it toward each dust-arrester while closing the course to the other, means for oscillating the valve, and jarring means for the dust-arresters operating against each, in succession, when the course of the air-current thereto is closed by the valve, substantially as and for the purpose set forth.



2. In combination with a suitable casing and a fan for forcing air through the same, an air-passage in the casing leading to the fan and provided with a hood open along its top, dust-arresters at opposite sides of said hood in the air-passage, an oscillatory valve supported on said hood between the dust arresters to be turned alternately into engagement with each side of the hood there to close the air-passage and open and direct it to the dust-arrester at the opposite side, means for oscillating the valve, and jarring means for the dust arresters operating against each, in succession, when the course of the air-current thereto is closed by the valve, substantially as and for the purpose set forth.

3. In combination with a suitable casing and a fan for forcing air through the same, an air-passage in the casing leading to the fan and provided with a hood open along its top, dust arresters flanking said hood, an oscillatory valve supported to be turned into engagement with either side of said hood to close the outlet thereat, a rotary shaft carrying obliquely a head engaging said valve to oscillate it, and jarring means for the dust-arresters on the shaft alternating in their operation with the valve-opening function of said head, substantially as and for the purpose set forth.

4. In combination with a suitable casing having a fan for forcing air through the same and containing middlings-purifying mechanism, substantially as described, conveyer-containing troughs above the screen D, affording air-passages between them, hoods K and K′ extending over the air-passages, oscillatory cap-valves $K^2$ supported over the hoods, dust arresters L, L′ supported to discharge into the troughs, a knocker-device for each dust-arrester, and a rotary shaft $g^2$ carrying oblique heads *g* engaging the cap valves and striker-arms *f* for said knocker-devices, substantially as and for the purpose set forth.

5. In combination with a suitable casing having a fan for forcing air through the same, air-boxes at the opposite outer sides of the casing opening into the latter, cleats provided at intervals at the openings, wind-boards having recesses to coincide with said cleats and adjustably supported to increase and decrease, at will, the extent of opening between the cleats and recesses, and branches leading from the fan outlet-pipe to said air-boxes, substantially as described

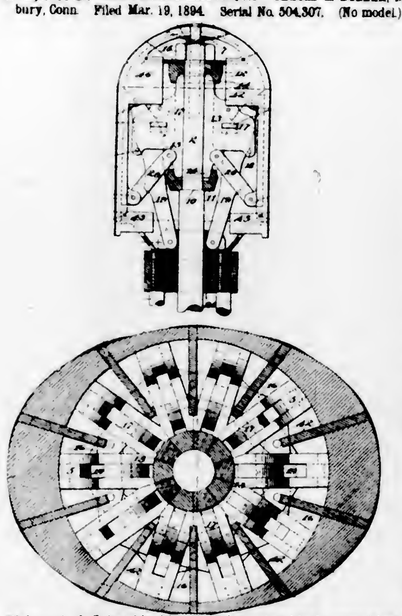
6. In combination with a suitable casing having a fan for forcing air through the same, a hopper E in the base of the casing protruding at its sides through openings in the sides of the casing and forming the inclined bases for air-boxes at said sides, cleats provided at intervals at said openings, wind-boards having recesses to coincide with said cleats and adjustably supported to increase and decrease, at will, the extent of opening between the cleats and recesses, and branches leading from the fan outlet-pipe to said air-boxes, substantially as described.

7. In combination with a middlings-purifier having a casing A provided with a fan B, middlings-purifying mechanism, substantially

as described, in the casing, an air-passage in the casing, above the screen D, leading to the fan and provided with a hood open along its top, dust-arresters flanking said hood, an oscillatory valve supported to be turned into engagement with either side of said hood to close the outlet thereat, a rotary shaft connected with the valve to oscillate it and carrying jarring means for the dust arresters alternating in their operation with the valve-opening function of the valve-connection with the shaft, air-boxes at opposite sides of the casing and opening into the latter below said screen D and provided with air-regulating means, and branches leading into said boxes from the discharge pipe of the fan, the whole being constructed and arranged to operate substantially as described.

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531,518. EXPANDING HAT-BLOCK. SAMUEL E. DUNHAM, Danbury, Conn. Filed Mar. 19, 1894. Serial No. 504,307. (No model.)



*Claim.*—1. In a hat blocking machine, a hat block comprising a number of longitudinally and laterally movable sections or segments, a supporting medium for each of such sections movably connected therewith and having a longitudinally and laterally defined path of movement, a lifting device common to all of such supporting mediums, and an actuator for such lifting device, whereby upon the upward movement of the lifting device the said supporting mediums are caused to move upwardly and outwardly simultaneously and to transmit corresponding motions to their respective block-sections, substantially as described.

2. The combination of a vertical standard or spindle, a hat block comprising a number of sections or segments assembled about the said spindle, a series of brackets corresponding in number to the number of sections or segments constituting the block and assembled about the said spindle radially and clamped thereto, a series of levers corresponding in number to the number of brackets and segments passed through and guided in their movements by the said brackets and connected at one end with said segments, and a movable collar slidable upon the said spindle or standard and provided with lever-supports in which the lower ends of the levers are arranged, substantially as and for the purpose described.

3. The combination with a hat block comprising a number of segments, a spindle or standard about which the said segments are assembled and to which they are secured, levers, and a lifting device for such levers for operating the said segments, the said lifting device consisting of a series of cylindrical segments and an annular collar provided with an internal groove and an external entrance to such groove, the said cylindrical segments being provided with external projections adapted to be entered into the internal groove of the said collar through its external opening, and means to raise and lower the said lifting device, substantially as described.

4. The combination with a vertical spindle or standard, of a hat block composed of a series of segments, brackets clamped to said spindle and containing rollers or pins arranged at obliquely opposite points, and cam-like levers connecting the said brackets and segments and engaging the rollers in said brackets, a collar slidable upon the said spindle and containing supports for such levers and means to move the spindle bodily, and independent means to move the collar containing the lever supports independently, substantially as described.

5. The combination with a spindle or standard, of a hat block comprising a series of segments or sections assembled about the said spindle or standard, a second spindle arranged in a socket in the upper end of the first-named spindle and provided with an external inverted cap-plate and a slotted internal spring plate, between which plates the upper ends of the segments are arranged, and means to connect the segments with the spindle and to expand and contract them relatively to the spindle, substantially as described.

6. The combination with a spindle or standard provided with a shoulder 10, of a number of brackets having their upper and lower ends beveled, a correspondingly beveled recessed plate situated upon the shoulder of the spindle to receive one of the ends of the said brackets and a similarly beveled and recessed plate applied to the upper ends of the brackets and about the spindle and fastened to the spindle and block sections or segments, and levers for connecting the said sections or segments and the said brackets, substantially as described.

7. The combination with a hat block comprising a number of segments or sections and means to expand and contract the said block, of thin metallic leaves overlapping adjacent sections in substantially the external plane of the sections and without materially increasing the circumference of the block, and made as separate structures from the said block-sections, and interlocking connections between the leaves and block-sections affording a support for the said leaves and to cause them to move with the sections as the said sections are moved to expand or contract the block, substantially as described.

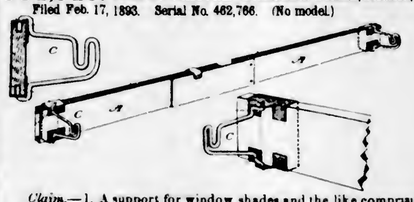
8. The combination with a hat block comprising a series of segments or sections and means to expand and contract the block, of leaves having ribs interposed between the adjacent edges of the said segments, the leaves themselves overlapping the block segments or sections externally so as to preserve the continuity of the block practically unbroken, inward projections on said ribs at top and bottom, a block spindle, and supports on such spindle for receiving the said projections and sustaining said leaves, and an interlocking connection between the leaves and the block-sections causing the leaves to move with the block-sections, substantially as and for the purpose described.

9. The combination with a spindle or standard, of a series of segments or sections assembled about said spindle or standard, means to connect the segments with the spindle and to expand and contract them collectively relatively to the spindle, a removable plate applied to the spindle to cover the openings between the segments when they are expanded, and a number of similar plates of different size applicable to the end of the spindle to permit the use of one block for a number of differently shaped hats, substantially as described.

10. In a hat blocking machine, a hat block comprising a number of longitudinally and laterally movable sections or segments, a supporting medium for each of such sections movably connected therewith and having a longitudinally and laterally defined path of movement, connectors movably joining the lower portions of the sections to a fixed portion of the apparatus, a lifting device common to all of such supporting mediums, and an actuator for such lifting device, whereby upon the upward movement of the lifting device the said supporting mediums are caused to move upwardly and outwardly simultaneously and to transmit corresponding motions to their respective block-sections, substantially as described.

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531,519. CURTAIN-FIXTURE. ABRAHAM B. DUNKLE, Steelton, Pa. Filed Feb. 17, 1893. Serial No. 462,766. (No model.)



*Claim.*—1. A support for window shades and the like comprising a strip, a band or collar sliding thereon provided with suitable bearings, and brackets provided with stops and having their inner ends pivoted in said bearings; substantially as described.

2. A support for window shades and the like, comprising a strip, a collar sliding thereon and spring pressed against the same, and roller brackets pivotally supported on said collar, substantially as described.

3. A support for window shades comprising a strip having grooves in its edges, a band or collar sliding thereon and having perforations



registering with said grooves, and roller brackets having their ends pivoted in said perforations and passing into the grooves whereby the bracket is guided; substantially as described.

4. In combination with a strip having a groove in one of its edges, a pivoted roller bracket provided with a lug fitting in said groove; substantially as described.

5. In combination with a strip having grooves in its edges, a roller bracket provided with lugs fitting in said grooves, one of said lugs being of a length greater than the depth of the groove into which it enters; substantially as described.

6. In combination with a strip having grooves in its edges, a collar sliding upon said strip, perforations in said collar registering with said grooves, and a roller bracket provided with lugs fitting in said perforations, one of said lugs being of a length greater than the depth of the groove into which it enters; substantially as described.

7. The combination with the sleeve, adapted to partially surround a strip of material or other suitable support, said sleeve having perforated ears thereon, of a bracket provided with pintles adapted to bear in the perforations in the ears, whereby a hinged connection is formed; substantially as described.

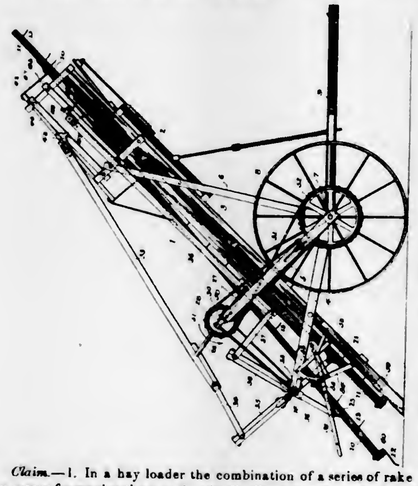
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531,520. COMPOSITION FOR ARTIFICIAL STONE. BENJAMIN W. EDDY, Eastlake, Ala. Filed Mar. 26, 1894. Serial No. 505,166. (No specimens.)

*Claim.*—The herein described composition of matter to be used for making weights, cellar and basement floors, and to fill safes and vaults, consisting of water, metallic turnings and borings, cement, and oxide of iron in the proportions specified.

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531,521. HAY-LOADER. EMIL EINFELDT, Davenport, Iowa, assignor to the Eagle Manufacturing Company, same place. Filed July 28, 1893. Serial No. 481,762. (No model.)



*Claim.*—1. In a hay loader the combination of a series of rake bars, means for moving the same longitudinally, guides through which the rake bars slide, a rock shaft, a series of arms connected at one of their ends to the rock shaft and pivoted at their opposite ends to the guides, and means for rocking the shaft.

2. In a hay loader the combination of two series of rake bars, means for moving the same alternately in a longitudinal direction, guides through which the rake bars slide, two rock shafts, two series of arms fixed at one of their ends to the two rock shafts respectively, and pivoted at their opposite ends to the movable guides, and means for rocking the shafts.

3. In a hay loader the combination of two series of rake bars, means for moving the same longitudinally, movable guides sustaining the rake bars, two rock shafts, two series of arms pivoted at one of their ends to the movable guides, one of said series of arms loosely encircling one of the rock shafts and attached rigidly to the other rock shaft, and the other series of arms connected rigidly to the encircled rock shaft, and means for rocking the shafts.

4. The combination of the series of rake bars, a transverse bar connecting their upper ends, a pitman pivoted at its upper end to the connecting bar, a crank connected to the lower end of the pitman, a shoe fixed to said pitman and provided with a forward extension and a guide or track on which the shoe slides; whereby when the lower end of the pitman is elevated by the crank on its backward movement, the forward end of the pitman will move upward on the end of the shoe as a fulcrum and the rake bars will be raised bodily.

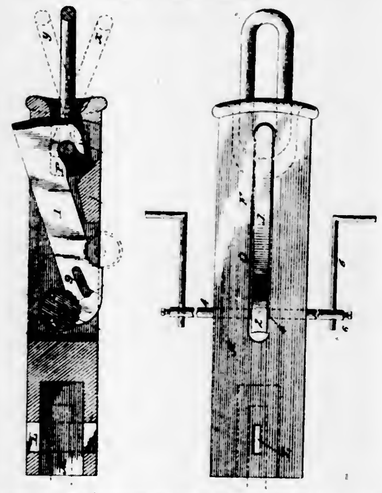
5. In a hay loader the combination of a series of rake bars, a transverse shaft connected to their upper ends, pitman bars, cranks connected to the lower ends of the pitman bars, rigid sleeves fixed to said bars near their upper ends provided with shoes, said sleeves encircling the transverse shaft, and guides on which the shoes travel, whereby when the pitmen are retracted by the cranks and their lower ends elevated, the upper ends will move upward on the shoes as fulcrums, thereby raising the rake bars bodily.

6. In a hay loader the combination of the axle, the ground wheels, the inclined frame mounted to rock on the axle, the movable shoe at the lower end of the frame in position to engage the ground, and means controlled by a hand lever for moving said shoe to engage the ground, whereby by the movement of the lever the shoe may be moved to raise or lower the lower end of the frame as circumstances may demand.

7. In a hay loader the combination of the axle, the ground wheels, the inclined frame mounted to rock thereon, the series of rake bars sustained by said frame, the longitudinally movable sliding shoes at the lower end of the frame arranged to rest upon the ground, the standards rising from the frame, the hand levers pivoted to said standards and having their lower ends connected to the shoes.

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531,522. CAR-COUPLING. JAMES W. ELLIOTT, Galveston, Tex., assignor of one-half to J. L. Kane and John Sweeney, same place. Filed July 5, 1893. Serial No. 479,602. (No model.)



*Claim.*—1. The combination with the draw bar, and its axial bolt 9; of the latch 1 having a coupling hook at its front end and a slot S and curved eccentric seat at its rear end, said slot S being inclined or diagonal to the longitudinal axis of the latch, and a horizontal rock shaft 4 having a rigidly attached eccentric 2 arranged to bear against the curved seat of the latch to adjust the latch to its several positions, substantially as and for the purpose described.

2. The combination with the draw bar and its axial bolt 9, and the link of the latch 1 having a rearwardly turned coupling hook H with a ridge P immediately in rear of it, and a slot S at its rear end inclined to the longitudinal axis of the latch and embracing the bolt 9, and the rock shaft 4 with rigid eccentric 2 bearing against the latch, substantially as and for the purpose described.

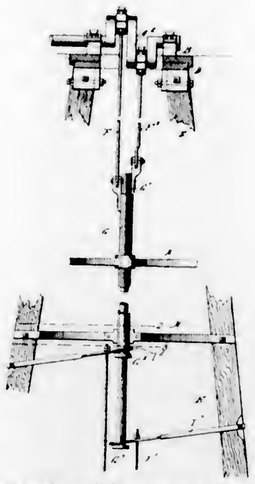
3. The combination of a draw bar, a pivotal coupling latch, and an eccentric arranged to operate upon said latch, and having flattened stop faces on its periphery to fix the positions of its adjustment substantially as shown and described.

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531,523. PUMP-GEAR FOR WINDMILLS. ANDREW S. ERICKSON, Holdrege, Nebr. Filed Sept. 10, 1894. Serial No. 522,959. (No model.)

*Claim.*—1. A pump gear for windmills, comprising an outer tube mounted to slide and to turn in bearings attached to the tower, an inner tube fitted to slide in the said outer tube, pitmen connecting the

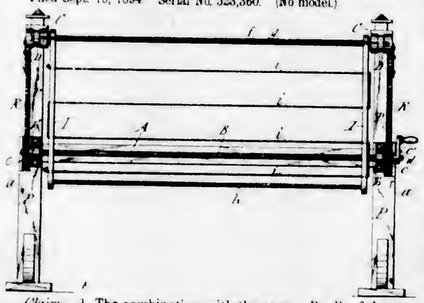
said tubes with the crank arms of the windmill shaft, and levers connected between their ends with the pump rods and having a sliding connection at their inner ends with the lower ends of the said tubes, the opposite outer ends of the levers being pivoted to the tower substantially as shown and described.



2. A pump gear for windmills, comprising an outer tube mounted to slide and fitted to turn in bearings held on the tower, an inner tube mounted to slide in the said outer tube, both tubes being provided at their lower ends with flanges, pitmen connecting the said tubes with the crank arms of the windmill shaft, and levers fulcrumed on the tower and connected with the pump rods, the said levers being formed with eyes loosely engaging the lower ends of the said tubes and resting on the flanges thereof, substantially as shown and described.

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531,524. CLOTHES-DRIER. GEORGE FINKBEINER, Syracuse, N. Y. Filed Sept. 18, 1894. Serial No. 523,360. (No model.)



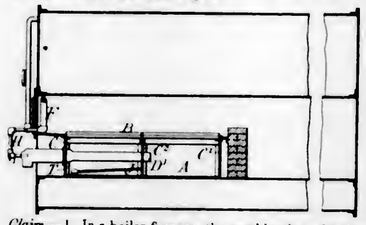
*Claim.*—1. The combination, with the posts —P—P, of the cross-heads —C—C—, clothes-line arms —D—D— connected to said cross-heads adjustably from a horizontally distended position to a vertically folded position, and the clothes-line bars —I—I— suspended from said cross-heads as set forth.

2. A clothes-drier comprising two posts, cross-heads sliding vertically on said posts and sustained adjustably to different elevations thereon, two pairs of arms pivoted respectively to opposite ends of the cross-heads to swing upward from horizontal to convergent positions over the posts, shoulders on the pivoted ends of the arms engaging the cross-heads and sustaining said arms in their horizontal positions, and clothes-lines or bars extending from the arms of one cross-head to the corresponding arms of the opposite cross-head as set forth.

3. The combination of two posts, a strut-bar between the upper ends of said posts, cross-heads sliding vertically on the posts, vertical racks attached to said cross-heads, a shaft journaled at opposite ends on the two posts, pinions on said shaft engaging the rack, a crank attached to the shaft, two pairs of arms pivoted respectively to the ends of the two cross-heads to swing from horizontal positions upward to convergent positions over the posts, and two sets of clothes-lines or bars connected at opposite ends to the two pairs of arms as set forth.

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531,525. BOILER-FURNACE. OTTO FRIEDERICI, London, England. Filed Aug. 28, 1894. Serial No. 521,512. (No model.) Patented in Belgium Aug. 6, 1894, No. 111,278.



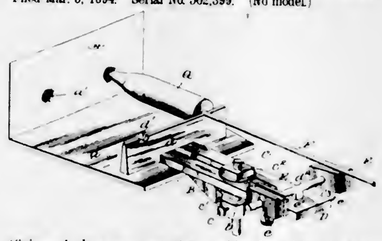
*Claim.*—1. In a boiler furnace, the combination of a chamber A closed upon its sides and bottom and divided by a transverse partition C' into a front and a rear compartment, said chamber being arranged beneath the fire grate, a nozzle D communicating at one end with the atmosphere and at its other end with the front compartment, a nozzle D' passing through the front compartment and at one end communicating with the atmosphere and at its other end with the rear compartment, and steam jets discharging into said nozzles for forcing air into said compartments, substantially as described.

2. In combination with the nozzles D D' and steam jets E E' for supplying forced air to the air chambers of a furnace, an arched steam pipe or chamber F, within the furnace, supplied with steam from the boiler and connected to the nozzles E E' for superheating the steam supply to the latter, substantially as described.

3. An air chamber below a furnace grate divided by a partition into a front and a back compartment each of which receives a separate forced air supply, an opening in the said partition for the removal of ashes and a rake for removing the ashes from the air chamber, whose blade forms the door closing the said opening substantially as described.

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531,526. SNAP-REST. ROBERT GOOD, Jr., Poughkeepsie, N. Y. Filed Mar. 5, 1894. Serial No. 502,399. (No model.)



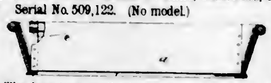
*Claim.*—1. In a snap-rest, the combination with a fixed support having a series of notches, of two or more supports capable of an independent tilting movement, substantially as set forth.

2. The combination with a bracket held in place adjacent to a stopper or false-face, of a snap-rest supported by said bracket, constructed so as to permit a vertical and longitudinal adjustment of the snap handle with respect to the holes of the said stopper or false-face, substantially, as described.

3. In combination, a supporting bracket, a standard, having a vertical adjustment therein, a bar having a longitudinal adjustment on said standard, a fixed snap support carried at one end of said bar and provided with notches or guides, and tilting supports carried at the opposite end of said bar, substantially as and for the purpose described.

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531,527. TROUGH. ADAM W. HAAG, Fleetwood, Pa. Filed Apr. 26, 1894. Serial No. 509,122. (No model.)

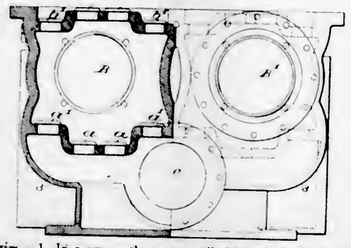


*Claim.*—The herein described trough comprising a sheet of metal bent to form the bottom and side portions of the trough, and having the upper edges of said side portions formed with hollow scrolls and separate end pieces, each provided with bottom and side flanges adapted to be secured to the sheet metal bottom and sides, and having about its upper edge a bead corresponding in arrangement to the scrolls of the sheet metal sides, and projections at the ends of the said bead arranged inside and adapted to fit the end portions of the hollow scrolls on the sheet metal sides, substantially as set forth.



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531,528. PUMP. ALBERT F. HALL, Boston, Mass., assignor to the Geo. F. Blake Manufacturing Company, of New Jersey. Filed Aug. 26, 1891. Serial No. 403,781. (No model.)



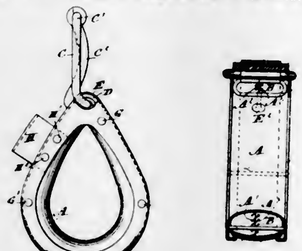
*Claim.*—1. In a pump, the pump cylinder or chamber in which the plunger moves, the valve seat consisting of a series of adjacent horizontal steps arranged on levels of different altitude, the entrances to the valve openings within the suction chamber being arranged on levels of different altitude, the vertically movable valves seated upon said steps, the suction chamber, and a lateral inlet or suction opening therefor, located below the uppermost step and with its top above the lowermost step, substantially as described.

2. In a pump, the pump cylinder or chamber in which the plunger moves, the valve seat consisting of a series of adjacent horizontal steps arranged on levels of different altitude, the entrances to the valve openings within the suction chamber being arranged on levels of different altitude, vertically movable valves seated upon said steps, the suction chamber, and a lateral inlet or suction opening in said suction chamber, located below the uppermost step, the entrance to the uppermost valve opening being arranged in substantially the same plane with the top of the suction chamber, substantially as and for the purpose set forth.

3. In a pump, the pump cylinder or chamber in which the plunger moves, inlet and outlet valve seats consisting of sets or series of adjacent horizontal steps, the steps of each series being arranged on levels of different altitude, the entrances to the inlet valve openings within the suction chamber also being arranged on levels of different altitude, vertically movable valves seated upon said steps, the suction chamber, and a lateral inlet or suction opening therein located below the uppermost step of said inlet valve seat, the entrance to the valve opening of the uppermost of said inlet valve steps being arranged in substantially the same plane with the top of the suction chamber, substantially as and for the purpose described.

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531,529. SHAFT-TUG. ARTHUR E. HART, Broken Hill, New South Wales. Filed Oct. 25, 1893. Serial No. 489,151. (No model.)



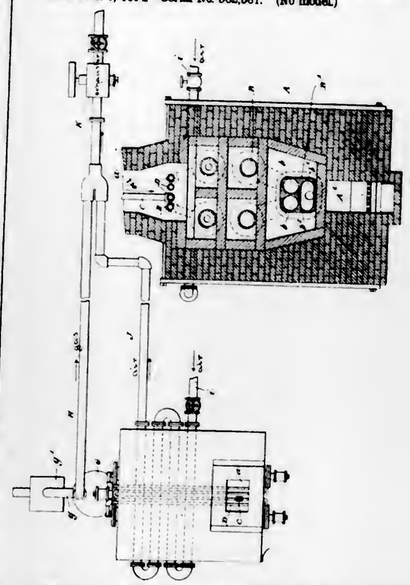
*Claim.*—1. The improved flexible shaft tug having a body composed of a leather piece formed into a tube of oval shape, the edges of said piece being approximated on the outer side of the tube, a flexible filling for the latter, and a cover strap applied over the edges of the leather pieces and extending around the tube and secured thereto on its upper side, as shown and described.

2. The improved shaft tug formed of a hollow or tubular body filled with scrap leather, flanged metal rings or mountings applied to the sides of said body and transverse rivets connecting and securing said parts together, as shown and described.

3. The improved shaft tug composed of a hollow leather body, a filling therefor, a leather cover extending around the same, a metal strap riveted to such body and cover, and a buckle whose loop is secured beneath said cover and strap, and provided with a tongue hinged to the upper or free end of the buckle loop, as shown and described.

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531,530. GAS-RETORT. THOMAS HENNESSY, Grand Forks, N. D. Filed Mar. 6, 1894. Serial No. 502,581. (No model.)

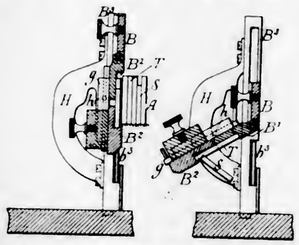


*Claim.*—1. The combination of the retorts, one of which has upper passages *b b* and lower passage *b'* and serves as a fixing chamber, a pipe leading from said retort to the seal, a gas-conveying-pipe leading from the seal to the exhauster, an oil supply pipe for the retorts which is so situated as to be heated from the products of combustion arising from the furnace, and the air supply pipe located above the retorts and connecting by a suitable pipe with the gas-conveying pipe, all arranged so that the air and gas may be separately heated before being mixed, substantially as described.

2. In a gas retort for making gas from oil and other carboniferous matter, the combination of the retort in which the gas is formed, the cooling device which receives the gas therefrom, an air supply pipe within which air is heated to a high temperature, a passage leading from the cooling device to the air supply pipe so that the cooled gas may be united with the previously heated air, substantially as described.

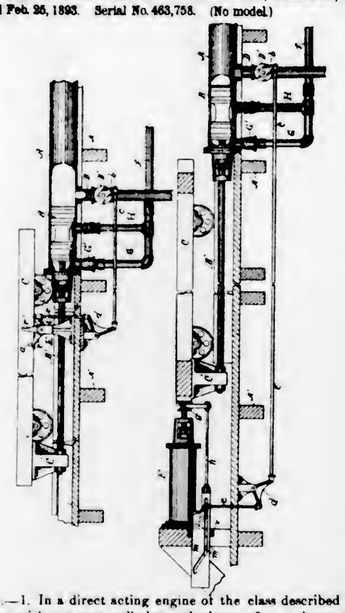
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531,531. TYPE-DISTRIBUTING APPARATUS. CHARLES F. HILDER, London, England. Filed June 19, 1894. Serial No. 515,038. (No model.) Patented in England July 29, 1893, No. 14,624.



*Claim.*—In a type distributing apparatus, the combination with the upper gate section B, of the lower gate section B' hinged thereto and provided with a slidable section $B^3$, the lower section and the slidable section having lipped recesses to receive a type, and means whereby the slidable section is moved to hold and retain character types only, substantially as and for the purposes described.

**531,532.** DIRECT-ACTING STEAM-ENGINE FOR RECIPROCATING SAWMILL-CARRIAGES. WILLIAM E. HILL, Kalamazoo, Mich. Filed Feb. 26, 1893. Serial No. 463,758. (No model.)



*Claim.*—1. In a direct acting engine of the class described the combination with a steam cylinder and piston of an exhaust pipe containing a valve, a stop on a moving part of the mechanism, a lever which is connected with the valve stem with which said stop coacts to exhaust the steam from behind the piston head and relieve the pressure for the purpose specified.

2. In a direct acting steam engine of the class described an exhaust pipe containing a valve with suitable mechanism for operating the same by a stop on a moving part of the engine adapted to be opened to relieve the pressure of steam back of the piston head when the head compresses steam confined in the end of the cylinder and adapted to close said valve when the piston head recoils, for the purpose specified.

3. In a direct acting steam engine an exhaust pipe containing a valve operated by suitable mechanism in connection with a stop on a moving portion of the engine, said exhaust pipe connecting with the steam cylinder so as to open back of the piston head when the piston head cushions on steam confined in the end of the cylinder for the purpose specified.

4. In a direct acting engine the combination of the steam cylinder A, the inlet pipe G, containing the check valve G', the exhaust pipe H and the exhaust pipe D containing the valve D' a stop on a moving part of said mechanism, a lever which is connected by connecting rods and bell cranks to the arm *b* of the valve D' and in position to be actuated by said stop, substantially as described for the purpose specified.

**531,533.** DINNER-PAIL. HENRY M. HOLMES, Ayer, Mass. Filed July 27, 1894. Serial No. 518,695. (No model.)

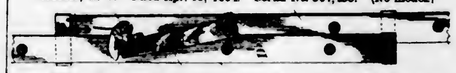


*Claim.*—1. A dinner pail having food and drink compartments, a lamp chamber and a lamp, a flue extending to the top of said pail and a tubular handle registering with said flue, as set forth.

2. A dinner pail having food and liquid compartments, a lamp chamber containing a lamp, a flue extending to the top of said pail, and a tubular handle, and a valve controlling the current of hot air.

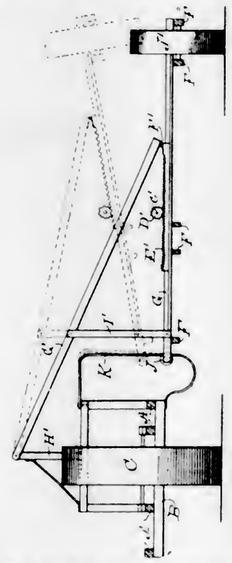
3. A dinner pail having food and drink compartments, a lamp chamber containing a lamp, a flue extending to the top of said pail, a cover having a flue, a tubular handle and a valve whereby the hot air may be turned entirely through the tubular handle, or entirely through the flue in said cover, or divided and sent through both at the same time, as set forth.

**531,534.** EXTENSION-LADDER. CHARLES W. HOWARD, North Hector, N. Y. Filed Apr. 13, 1894. Serial No. 507,455. (No model.)



*Claim.*—In extension ladders, two elbow-levers made fast near the elbow to a spring-actuated turn shaft or rung, near the upper end of the stationary section, and a two-armed detent on a spring-actuated turn-shaft of said section; whereby the rungs on the sliding section depress the levers and the levers depress the detent, while the springs retract detent and levers as shown and described.

**531,535.** HARVESTER. GEORGE W. INGERSOLL, Stockton, Cal., assignor of one-half to Herman Teech, same place. Filed Mar. 19, 1894. Serial No. 504,276. (No model.)



*Claim.*—In a harvester the combination of a main frame, having an upright H' and also having a laterally-disposed guide rod as K, a drive wheel mounted in said main frame, a header frame loosely connected to the main frame and having a traveler wheel engaging the guide rod K, thereof and also having an upright as I', a rack bar E', connected to and adapted to slide upon the header frame, a bar G', loosely connected to the bar E', and also loosely connected to the bars H', and I', of the main frame and header frame, respectively, a shaft C', journaled on the header frame and carrying a pinion engaging with the rack bar E', and gearing intermediate of the drive wheel and the shaft C', all substantially as and for the purpose set forth.

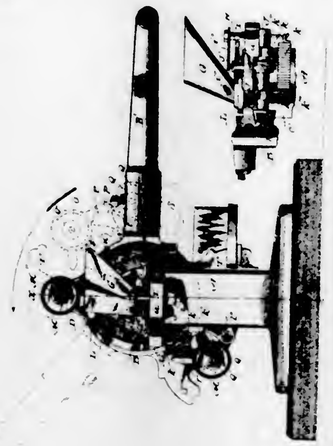
**531,536.** TABLET-COMPRESSING MACHINE. HARRY H. JONES, Lancaster, N. H. Filed May 25, 1894. Serial No. 512,495. (No model.)

*Claim.*—1. In a tablet compressing machine, the combination of a die-box or bushing, a set of co-acting dies adapted to work in said die-box, a movable disk carrying two presser rolls M', O, arranged thereon to ride upon the heads of said dies in one position of the disk, to force the dies together and upon the material in the die-box, and a hopper actuated by the movable disk to supply the material to said die-box, substantially as and for the purposes described.

2. In a tablet compressing machine, the combination of a die-box, a set of co-acting dies, a movable disk provided with cams and compressor rolls to actuate the dies, and a hopper to supply the material to the die-box, substantially as and for the purpose described.

3. In a tablet compressing machine, the combination with a bushing, a set of co-acting dies, and a supply hopper, of a movable disk carrying oppositely-disposed presser rolls to force the dies upon the material, another roll to control the height of the lower die in the bushing, and an ejector to lift the lower die through the bushing and eject the pressed tablet therefrom, substantially as and for the purposes described.





4. In a tablet compressing machine, the combination with a die-box, a hopper, and a set of co-acting dies, of a movable disk carrying presser-rolls to force the dies together, a device for lifting the lower die to eject the compressed tablet, and a roll to lift the lower die the proper height in the die-box to determine the weight or quantity of the loose material therein, substantially as and for the purposes described.

5. In a tablet compressing machine, the combination with a die-box, a hopper, and a set of co-acting dies, of a disk carrying presser rolls and an ejector cam, substantially as and for the purposes described.

6. In a tablet compressing machine, the combination of a die-box, a hopper, a set of co-acting dies, and a disk carrying three rolls, two of which actuate the dies to compress the material in the die-box and the third roll adjusts the lower die to automatically regulate the quantity of material supplied to the die-box, substantially as described.

7. In a tablet compressing machine, the combination with a die-box, a set of co-acting dies, and a disk carrying means to actuate the dies and provided with the cam, L, L' on one face thereof, of a hopper movable with relation to the die box, a spring-controlled rod bearing against the cam L, L' on the disk, and connections between the movable hopper and the rod, substantially as described.

8. In a tablet compressing machine, the combination with a die-box, the dies, and means for actuating the dies, of an oscillating spider pivoted at one side of the die box, a hopper rigidly united to the spider and movable therewith, a reciprocating rod connected with the spider and normally pressed, by a spring, into contact with a cam on the die-actuating devices, and an adjustable spring controlled pin engaging with said oscillating spider to yieldingly hold the spider and hopper upon the table or bed of the machine, substantially as and for the purposes described.

9. In a tablet compressing machine, the combination with a die box, the dies, and a disk having means to actuate the dies, and provided with a face-cam, L, L', of a spider pivoted by a loose pin to the bed or table of the machine, a spring-controlled arm bearing upon said pivot pin of the spider, a reciprocating rod bearing against the cam L, L' and connected with the spider, and a hopper carried by the spider, substantially as and for the purposes described.

10. In a tablet compressing machine, the combination with a die box, a set of dies, and a disk having presser rolls to simultaneously force the dies together, of an adjustable roll carried by said disk and adapted to contact with the lower die to move the latter a limited distance in the die-box after the loose material has been supplied thereto, for the purposes described, substantially as set forth.

11. In a tablet compressing machine, the combination with a die-box, a set of dies, a hopper, and a disk having presser rolls to actuate the dies, of a shaft carrying a roll to bear against the lower die, and means for adjusting the shaft and locking the same in its adjusted position, substantially as and for the purposes described.

12. In a tablet compressing machine, the combination with a die-box, a hopper, a set of dies, and a disk carrying presser rolls to actuate the dies, of an eccentric rock shaft journaled in the disk at one side of the lower presser roll for the lower die and carrying a weight or quantity determining roll also adapted to contact with the lower die, an adjusting arm rigid with the said shaft and carrying a locking pin, and a segment on the disk with which the locking pin can be engaged, for the purposes described, substantially as set forth.

13. In a tablet compressing machine, the combination with a die-box, a hopper and a set of co-acting dies, of a disk provided with a cam to lift the upper die and a presser roll to depress said upper die, of a rock-shaft journaled in the disk and carrying a presser roll to actuate the lower die, and means for turning and locking the rock shaft to its adjusted position, substantially as and for the purposes described.

14. In a tablet compressing machine, the combination with a die-box, a set of dies, and a hopper, of a disk having means to actuate the upper die, an adjustable presser roll carried by the disk in a position to actuate the lower die, whereby the lower presser-roll may be adjusted to move the lower die at variable distances relative to the upper die and thus regulate the compression of material between the co-acting dies, for the purposes described, substantially as set forth.

15. In a tablet compressing machine, the combination with a die-box, a set of dies, and a hopper, of a disk having means to actuate the upper die, an axially-adjustable shaft or pin journaled in the disk and carrying a presser-roll arranged to lift the lower die, an adjusting arm connected to the shaft or pin and provided with a locking-stud, and a segment on the disk with which the locking stud is adapted to engage, substantially as and for the purposes described.

16. In a tablet compressing machine, the combination with a die-box, and a hopper, of the stand having the guides *c*, *c'*, the upper and lower dies fitted in said guides and provided with the pins or studs, a pivoted disk having the cams which engage with the studs or pins on the dies, and the presser rolls carried by the disk to force the dies into the die-box, substantially as described.

17. In a tablet compressing machine, the combination with a stand or base provided with guides, *c*, *c'*, of a removable die box or bushing fixed in said stand, the removable dies fitted in the guides, *c*, *c'*, and a disk pivoted to the stand and carrying pressure rolls, a quantity determining roll, and an ejector, all arranged to act in the manner and for the purposes described.

18. In a tablet compressing machine, the combination with a die-box, a set of co-acting dies, and a hopper, of a disk carrying the presser rolls to force the dies into said die-box, and a yielding ejector cam carried by the disk and arranged to lift the lower die as the disk is moved in one direction and to automatically trip itself and clear the lower die as the disk is reversed, substantially as and for the purposes described.

19. In a tablet compressing machine, the combination with a die-box, a set of co-acting dies, and a hopper, of a disk having the upper presser roll to act upon the upper die, an adjustable presser roll to raise the lower die toward the upper die as it descends, a weight or quantity determining roll adjustable on the disk and adapted to lift the lower die after the material has been supplied thereto, and a yielding ejector cam carried by the disk between the two lower rolls and adapted to lift the lower die after the material has been compressed in the die box between the upper and lower dies, substantially as and for the purposes described.

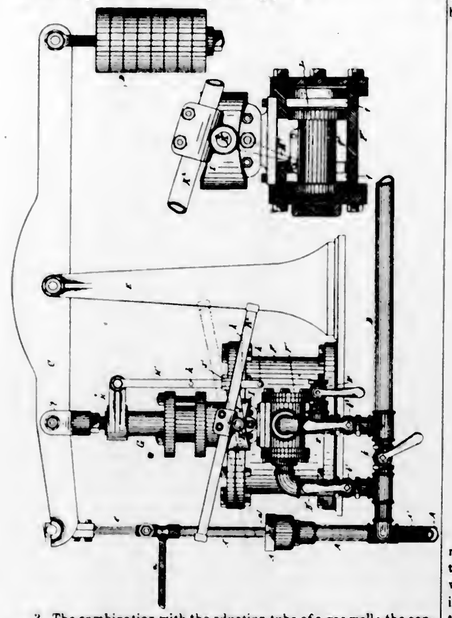
20. A tablet compressing machine comprising a base or stand having the table or bed *a*, the die-box rigid thereon, the upper and lower dies guided in said base or stand, the disk pivoted to the base and provided with the cams which engage with the dies and the presser rolls which force the dies together, an ejector cam carried by the disk to actuate the lower die, a weight or quantity determining roll also carried by the disk, at one side of the ejector cam, and arranged to lift the lower die after the ejector cam has cleared the same, a hopper fitted on the bed or table, and mechanism between the disk and hopper to move the latter toward and from the die-box, substantially as and for the purposes described.

**531,537.** MEANS FOR PUMPING LIQUIDS FROM GAS-PRODUCING WELLS. JOHN S. KLEIN, Oil City, Pa. Filed Feb. 2, 1894. Serial No. 498,914. (No model.)

*Claim.*—1. The combination with the eduction tube of a gas well; the conduit that conveys gas away from said well; and a pump within said well; of a double acting engine for operating said pump in both directions that receives its propelling force gas, from said well; and means for balancing the vertically moving parts of said mechanism, substantially as described.

2. The combination with the eduction tube of a gas well; the conduit that conveys the gas away from said well; and the pump within

said well; of a double acting engine for operating said pump in both directions that receives its propelling force gas, from said well; a working beam connected with the vertically moving parts of said mechanism; and a counter weight on said working beam for balancing the weight of said vertically moving parts.



3. The combination with the eduction tube of a gas well; the conduit that conveys gas away from said well; and the pump within said well; of a double acting engine for operating said pump in both directions, that receives its propelling force gas from said well and exhausts the same into said conduit; a working beam connected with the vertically moving parts of said mechanism; and a counterweight on said working beam for balancing the weight of said vertically moving parts.

4. The combination with the eduction tube of a gas well; and the conduit for conveying gas away from said well; of an engine adapted to be operated by gas as its propelling agent; a branch connection from said conduit to the intake of said engine; a branch connection from the exhaust of said engine back into said conduit; a regulating valve in said conduit between said branches; and means for conveying the exhaust into the atmosphere when desired.

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**531,538. REVOLVING FURNITURE.** OLAUS O. KRABOL and CHRISTIAN BOSTAD, Chicago, Ill., assignors to the Automatic Folding Bed Company, same place. Filed Sept. 6, 1894. Serial No. 522,803. (No model.)

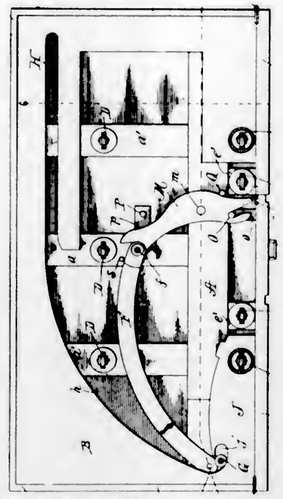
*Claim.*—1. The combination with the article, X, and a base for carrying such articles, of a link bar, F, connecting the article and base as shown, the pin, G, set in the article, and journal bearings for such pin at opposite ends of the base.

2. The combination with the article X, and with a base for carrying such article, of a link bar pivotally attached to the bottom of the article at its central point and to the base near one of its forward corners, a pin, G, set in the article near one end, and journal bearings for such pin at opposite ends of the base.

3. The combination with the article, X, and with a base for carrying the article, of a link bar pivotally attached to the bottom of the article at its central point, and to the base near one of its forward corners, a pin, G, set in the bottom of the article near one of its forward corners, and journal bearings for the pin in diagonally opposite sections of the base.

4. The combination of an article, X, and with a base, of casters or rollers set in the base for carrying the article, a link bar pivotally attached to the bottom of the article at its central point, and to the base near one of its forward corners, a pin, G, set in the bottom of the article near one of its forward corners, and journal bearings for the pin in diagonally opposite sections of the base.

5. The combination with the article, X, and with a base for carrying the article, of a link bar pivotally attached to the bottom of the article at its central point, and to the base near one of its forward corners, a pin, G, set in the bottom of the article, and journal bearings for such pin in diagonally opposite sections of the base, and a guideway for the pin connecting such bearings.



6. The combination with the article, X, and with a base for carrying the article, of a link bar pivotally attached to the bottom of the article at its central point and to the base near one of its forward corners, a pin, G, set in the bottom of the article near one of its forward corners, the distance from the pin to the adjacent side of the article being less than from the point of the attachment of the link bar to the base to the adjacent side of the base, a recess, *j*, in the base adjacent to the end of the link bar for the pin, a longitudinal slot, H, in the base diagonally opposite the recess, *j*, and a guideway as, *k*, connecting the recess and the slot.

7. The combination with an article of furniture and with a base for carrying the article and upon which it is adapted to turn, of casters or rollers interposed between the base and article, a link bar pivotally secured to the center of the bottom of the article, and to the base near its end, a stop for limiting the forward movement of the link, a pin, G, set in the article near its end, and adapted to pivotally engage the base during the first portion and last portion of a half revolution of the article, and being freed from such engagement during an interval between such first and final engagement.

8. The combination with an article of furniture and with a platform base, of upwardly projecting casters mounted on the base for carrying the article, the link, F, connecting the article with the base the pin, G, and a guideway in the base for the engagement of the pin, substantially as and for the purpose specified.

9. The combination with an article of furniture adapted to rotate upon a stationary base and to swing forwardly in turning, and with its base, of bars, C, C', pivotally attached to the front corners of the base and lying along its front side, the adjacent ends of such bars being pivotally united and one of the bars being telescopically extensible, such bars being adapted when swung forwardly, to support the article when in its advanced position.

10. The combination with an article of furniture adapted to rotate upon a stationary base and to swing forwardly in turning, and with its base, of bars, C, C', pivotally attached to the front corners of the base and lying along its front side, the adjacent ends of such bars being pivotally united and one of the bars being telescopically extensible, such bars being adapted when swung forwardly to support the article when in its advanced position, and casters or rollers carried by the bars for carrying the article.

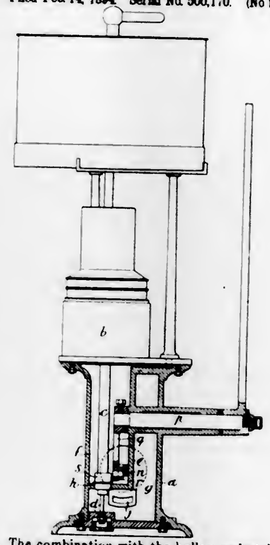
11. The combination with an article of furniture adapted to rotate upon a stationary base and to swing forwardly in turning, with its base, and with a pivoted extensible section of the base adapted to swing forwardly to support the article in its advanced position, of a horizontally swinging lever, M, pivoted to the base and normally substantially transverse thereto, an appendage to the article adapted to engage the inner end of the lever when the article is in its normal position, whereby the article is locked against rotation, and means of attachment between the lever, M, and the extensible section, whereby the lever is disengaged from the article by the advance of the extensible section, and re-engaged therewith by its recession.

12. The combination with an article of furniture adapted to rotate upon a stationary base and to swing forwardly as it turns, and having a central depending pivot, and with its base having an extensible section adapted to increase its area and to support the article when in its advanced position, of a horizontally rocking lock lever pivoted to the base and adapted to engage the central pivot of the article for locking the latter in its normal position, a diagonal slot in the forward end of the lever, and a pin carried by the extensible section and adapted to engage said slot and rock the lever.



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**531,539. PRODUCTION OF HIGH-SPEED ROTARY MOTION FOR CENTRIFUGAL OR OTHER MACHINES.** ALBERT KRANK, Taipale, Finland. Filed Feb. 14, 1894. Serial No. 500,170. (No model.)



*Claim.*—1. The combination with the hollow pedestal casing for supporting a machine to be driven and provided with pump cylinders and plungers, said casing being divided into two fluid chambers by a stationary partition, a turbine and turbine shaft located adjacent to said partition, and adapted to be operated by the fluid in passing from one chamber to the other, said shaft extending above said pedestal for operating said machine to be driven, a reciprocating lever for operating said pump plungers to force the fluid from one chamber through said turbine to the other chamber and a return passage for said fluid, substantially as described.

2. The combination with the hollow pedestal casing for supporting a machine to be driven, said casing being divided into two chambers by a partition, provided with an opening therein, a turbine located in said opening and communicating with both chambers, pumps located in said hollow pedestal for forcing the fluid from one chamber through said turbine into the other chamber and a reciprocating lever for operating said pumps, substantially as described.

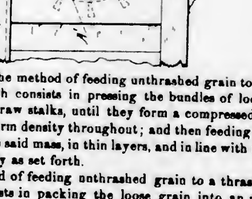
3. The combination with the hollow pedestal casing for supporting a machine to be driven, provided with oppositely horizontally disposed pump cylinders and plungers for said cylinders, said casing being divided by a partition into two fluid chambers, a turbine located in an aperture in said partition and communicating with both chambers, a shaft operated by said turbine extending above said pedestal for operating the machine to be driven, return passages from said pump cylinders to one of said chambers and a reciprocating lever operatively connected with the plungers of both of said cylinders for forcing the fluid through said turbine from one chamber to the other, substantially as described.

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**531,540. CAN-CLOSURE.** ALBERT S. LAMBERT, Bridgeton, N. J. Filed Aug. 25, 1892. Serial No. 444,096. (No model.)

*Claim.*—1. The combination with a can top having its mouth provided with depending cams, of a cover fitting into said mouth and provided with projecting lips each composed of a fold of metal integral with said cover, substantially as described.

2. The combination with a can top having its mouth provided with depending cams, of a cover having a countersunk central portion provided with projecting lips each composed of a fold in the metal of the cover, substantially as described.



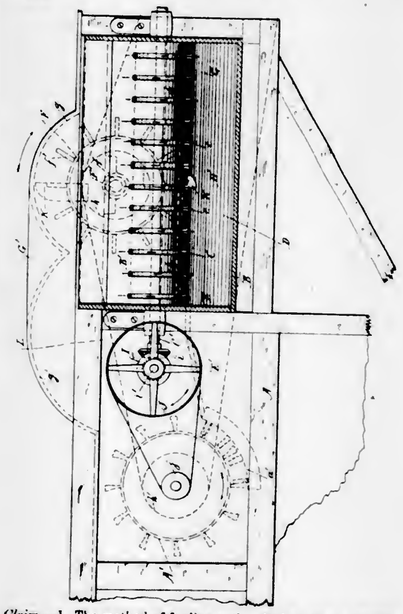
3. The combination with a can top having its mouth provided with recesses or notches and depending cams, of a cover having a countersunk central portion and projecting lips which engage with the depending cams of the top, each of said projecting lips being composed of a fold in the metal of the cover, substantially as described.

4. The combination with a can top having its mouth provided with depending cams, of a cover having a countersunk central portion having a peripheral depending bead formed at two or more points into lips projecting beyond the countersunk portion, substantially as described.

5. A can cover, consisting of the flange *c*, the adjacent vertical wall *c'*, the bottom *c²*, and two or more lips E projecting beyond the wall *c'*, each lip being composed of a portion of the bead D, substantially as described.

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**531,541. BAND-CUTTER AND FEEDER.** FRANK P. LANDIS, Waynesborough, Pa. Filed July 17, 1894. Serial No. 517,773. (No model.)



*Claim.*—1. The method of feeding unthrashed grain to a thrashing machine, which consists in pressing the bundles of loose grain, laterally of the straw stalks, until they form a compressed mass of substantially-uniform density throughout; and then feeding the grain uniformly from the said mass, in thin layers, and in line with the straw stalks, substantially as set forth.

2. The method of feeding unthrashed grain to a thrashing machine, which consists in packing the loose grain into an upwardly moving mass of uniform density, and feeding the grain from the upper surface of the said mass to the thrashing machine in uniform quantity, substantially as set forth.

3. The combination, with a hopper for receiving unthrashed grain, and a packing chamber communicating therewith, of packing mechanism operating to press the loose grain laterally into the said cham-

ber, and feeding devices arranged at right angles to the packing mechanism and operating to feed the grain longitudinally from the packed mass to the thrashing machine in uniform quantity, substantially as set forth.

4. The combination, with a hopper for receiving unthrashed grain, and a packing chamber communicating therewith; of a revoluble packing roller in the said hopper operating to press the loose grain into the lower part of the said chamber, and a revoluble feeding roller arranged above the said chamber and operating to feed the upper layer of packed grain to the thrashing machine, substantially as set forth.

5. The combination, with a hopper for receiving unthrashed grain, and a packing chamber joining onto the bottom of the hopper on one side and provided with an upwardly inclined bottom; of a revolnble packing roller in the said hopper, and a revoluble feeding roller arranged above the said chamber, substantially as set forth.

6. The combination, with the hopper for receiving the unthrashed grain, and the packing chamber communicating therewith; of a revoluble feed roller arranged above the said chamber and operating to feed the upper layer of packed grain to the thrashing machine; the guard plate provided with slots and secured in the said hopper, and the revoluble packing roller provided with teeth projecting through the said slots and operating to pack the grain into the said chamber, substantially as set forth.

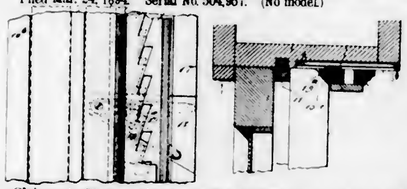
7. The combination, with the packing chamber provided with an inclined bottom, and means for packing the unthrashed grain therein; of a substantially vertical breast board at the rear end of the said chamber, a substantially horizontal top board at the front of the said chamber, and a revoluble feed roller above the said chamber and between the breast board and the top board, substantially as set forth.

8. The combination, with the hopper, and the packing roller journaled therein; of the packing chamber communicating with the said hopper; and the feed roller journaled above the said packing chamber at right angles to the feeding roller and at about the middle of its length, said feed roller being provided with a projecting knife for cutting the binding twine at the entrance to the said chamber, substantially as set forth.

9. The combination, with a thrashing cylinder, of a hopper for receiving unthrashed grain, a packing roller in the said hopper, driving mechanism operatively connecting the said cylinder and roller, a packing chamber joined onto the bottom of the said hopper, a feed roller arranged over the said chamber parallel with the thrashing cylinder and at right angles to the packing roller, and means for revolving the said cylinder and feed roller, arranged at the opposite end of the cylinder from the aforesaid driving mechanism, substantially as set forth.

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**531,542. SASH-FASTENER.** JOHN B. LASHBROOK, Oxford, Nebr. Filed Mar. 24, 1894. Serial No. 504,967. (No model.)

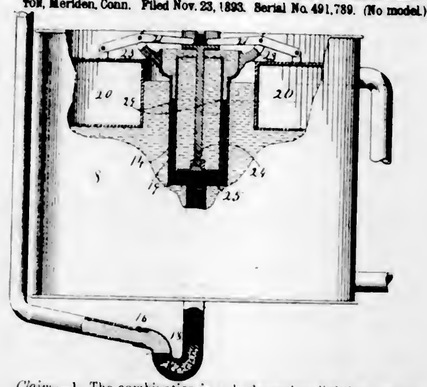


*Claim.*—1. The combination with a window casement, the sashes therein, and parting strips between the sashes, of a serrated keeper strip along one side edge of the sash and fast on the casement, a serrated locking strip engaging the teeth of the keeper strip with its reversed sloped teeth and adapted to bind one sash when slid on the keeper strip, and a device to slide the locking strip, substantially as described.

2. The combination with a window casement, the sashes therein, parting strips between the sashes, and strips on the casement outside of the upper sash, of a beveled keeper strip engaging a beveled corner on the lower sash, a serrated keeper strip at the other side of the casement, a loose serrated locking strip, having a beveled corner that fits on a bevel corner of the lower sash, and a lever pivoted on the casing and also on the locking strip, substantially as described.

3. The combination with a window casement, the sashes therein, parting strips between the sashes, and bead strips on the casement outside of the upper sash, of a beveled keeper strip on one side of the casement, engaging a beveled corner on the lower sash, a loose serrated locking strip at the other side of the casement, fitting on a beveled corner of the lower sash, a fixed keeper strip bevel cornered above the lower sash, and serrated to mate the serrations of the locking strip, joint cover strips on the keeper strips, and a lever pivoted in a slot of the casement and also pivoted on the locking strip, substantially as described.

**531,543. HYDROCARBON-LIGHTING SYSTEM.** BURTON L. LAWTON, Meriden, Conn. Filed Nov. 23, 1893. Serial No. 491,789. (No model.)



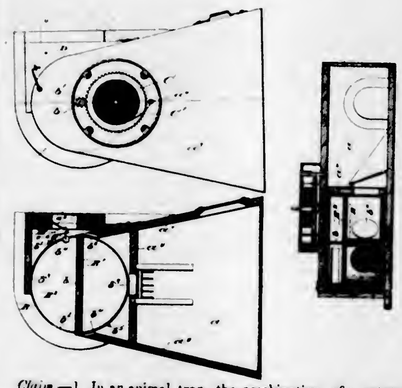
*Claim.*—1. The combination in a hydrocarbon lighting system, of burners; a reservoir located above the level thereof; a distributing tank at the level of the burners; a supply pipe depending from the reservoir to a point below the level of the said distributing tank; a stand-pipe rising into the distributing tank and enlarged at its upper end and connected at its lower end with the supply pipe by a U-shaped trap; a plunger located within the enlarged end of the stand-pipe and leaving an annular space around it about equal in area to the cross-sectional area of the smaller portion of the stand-pipe; an annular float surrounding the stand-pipe within the distributing tank; a pitman connected with the plunger, and levers each pivoted to a fixture and communicating between the float and pitman and mercury in the stand-pipe, and communicating pipes between the distributing tank and burners, substantially as described.

2. The combination in a hydrocarbon lighting device, of a distributing tank; a supply pipe rising into the same and provided with a mercurial trap; a plunger freely floating in the mercury in the supply pipe; a float in the tank beside the supply pipe; a pitman within the said plunger and connected thereby by a ball and socket joint near the lower end of the plunger; and one or more levers pivoted to a fixture and communicating between the said plunger and float, substantially as described.

3. The combination in a hydrocarbon lighting device of a distributing tank; a supply pipe rising into the same and provided with a mercurial trap; a plunger freely floating in the mercury in the supply pipe; a float in the tank surrounding the supply pipe; a pitman connected to the interior bottom of the plunger by a ball-and-socket joint and a series of levers located around the pitman and each pivoted at one end to the float; and pivoted midway to a fixture and freely connected at the other end with the said pitman.

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**531,544. ANIMAL-TRAP.** DAVID W. LEEDY, Lima, Ohio. Filed Aug. 16, 1894. Serial No. 520,518. (No model.)



*Claim.*—1. In an animal trap, the combination, of a rotatable cage with a central partition forming two compartments each having



three openings in its side wall two of which are located opposite each other and adjoining the partition, pins projecting from opposite sides of the cage, and a pivoted detent having a pin which engages with the pins projecting from the cage to hold said cage against rotation, the detent also having an end which is engaged by the cage to move said detent in the path of the projecting pins and means for limiting the movement of the detent by engaging with a fixed part of the trap, the parts being combined and organized so that one of the openings in each compartment will be successively brought on a line with an opening leading into the prison-chamber and provided with a self-closing door.

2. In an animal trap, the combination, of a rotatable cage having a horizontal partition formed in part of a wire fabric, an upper compartment formed by the partition, said upper compartment having an opening leading thereto which is normally closed by the frame of the trap, substantially as described.

3. In an animal trap, the combination, of a rotatable cage and detent constructed substantially as shown, a hinged section D having an opening one of the side walls of which is adapted to engage with the detent, for the purpose set forth.

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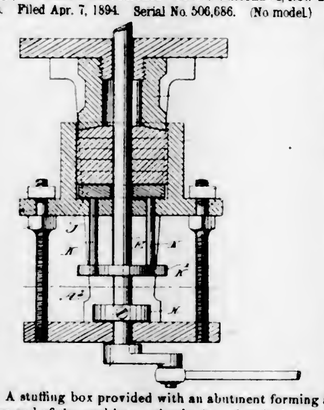
**531,545. SYRINGE.** EDWIN C. MANNING, Washington, D. C., assignor to the Cooper Chemical Company, of Kansas. Filed July 31, 1894. Serial No. 519,052. (No model.)



*Claim.*—The combination with the tube, having one end rounded and the other end provided with a disk or shoulder, and formed with a series of elongated peripheral slots having rounded edges, of the plunger consisting of a cylindrical rod fitting snugly in said tube and provided at the inner end with an elastic piston and at the other end with a handle, substantially as described.

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**531,546. PACKING-DISPLACER.** JOSEPH MATTHEWS, New Bedford, Mass. Filed Apr. 7, 1894. Serial No. 506,686. (No model.)



*Claim.*—1. A stuffing box provided with an abutment forming a seat for the inner end of the packing, a gland adapted to inclose the said packing and the said abutment, and another abutment projecting into the gland opposite the first-named abutment, to engage the outer end of the packing and hold the latter stationary while the gland is moved outward, substantially as described.

2. A gland comprising a base and a sleeve adapted to contain the packing, the sleeve being open at the end opposite to the base, and an abutment projecting through the base of the gland to engage the packing therein and hold it stationary while the gland is moved longitudinally with the base at its front end, substantially as described.

3. A gland adapted to contain a packing, a support for the gland, and a connection between the gland and its support permitting the former to be moved relatively to the latter, an abutment projecting into the gland to engage the packing, said abutment being movable relatively to the support, and adapted to collide with a stop limiting its motion, whereby the packing is allowed to move in unison with the gland until the said abutment collides with the stop, whereupon the packing will be held stationary during the further movement of the gland, as and for the purpose set forth.

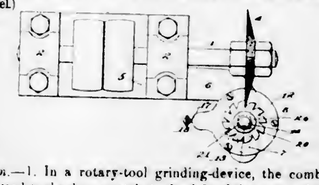
4. A gland adapted to contain a packing, lugs rigidly secured to the tubular portion of the gland, a support for the gland, an adjustable connection between the said lugs and the gland support to permit of moving the gland relatively to its support, and an abutment projecting into the gland to hold the packing therein stationary while the gland is moved longitudinally, as and for the purpose set forth.

5. A packing displacer, comprising a washer held in the gland and abutting on the packing, and pins engaging the said washer and fitted to slide in apertures in the bottom of the said gland, substantially as shown and described.

6. A packing displacer, comprising a washer held in the gland and abutting on the packing, pins engaging the said washer and fitted to slide in apertures in the bottom of the said gland, and a saddle connecting the pins with each other at their outer ends, the said saddle being adapted to abut against a fixed stop, substantially as shown and described.

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**531,547. GRINDING DEVICE FOR ROTARY CUTTERS.** JOHN MILLER, Newton, N. J., assignor of two-thirds to John Huston and Ira C. Moore, same place. Filed Mar. 12, 1894. Serial No. 503,299. (No model.)

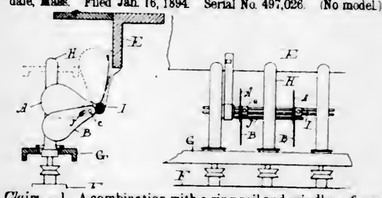


*Claim.*—1. In a rotary-tool grinding-device, the combination, with a slotted tool-arbor, a ratchet-wheel fixed thereon, and a spring-pawl in engagement with the ratchet-wheel, of a sleeve mounted on the tool-arbor and provided with a feather engaging the slot in the arbor, and a nut threaded onto the end of the sleeve, substantially as described.

2. In a rotary-tool grinding device, the combination, with a grinding wheel, an arbor on which the wheel is fixed, means for revolving the arbor, a frame in which the arbor is journaled, an arm attached to the frame and provided with a slot, a ratchet-case having a stud adjustably secured in the slot, a ratchet-wheel located in the ratchet-case, a pawl, a spring normally holding the pawl into engagement with the ratchet, means for withdrawing and a sleeve arbor fixed to the ratchet-wheel, of a sleeve movable on the tool-arbor and provided with a feather engaging the slot in the tool-arbor and a nut screwed onto the sleeve, substantially as described.

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**531,548. YARN-SEPARATOR FOR RING SPINNING MACHINES.** ERNEST L. MORRILL, Saco, Me., assignor to George Draper & Sons, Hopedale, Mass. Filed Jan. 16, 1894. Serial No. 497,026. (No model.)



*Claim.*—1. A combination with a ring rail and spindles, of a series of separators each composed of a plurality of blades or arms adapted to be struck by the ring rail and lifted in succession, substantially as described.

2. A combination with the ring rail and spindles, of a yarn separator consisting of a plurality of blades or arms pivoted one with relation to the other, whereby one may be moved independently of and in advance of the other, substantially as described.

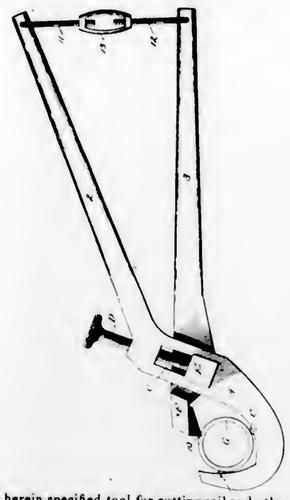
3. In a separator for ring spinning machines, the combination of a shaft adjacent to the spindles, a separator blade secured to said shaft, an auxiliary blade pivoted to said separator blade, overlapping slots being formed in said blades, said slots being at an angle with each other when the blades are open, and a rod connecting several of said blades and passing through said slots, substantially as described.

4. A combination with the ring rail and spindles, of a yarn separator consisting of a plurality of blades or arms pivoted one directly upon the other, whereby one may be moved independently of and in advance of the other, substantially as described.

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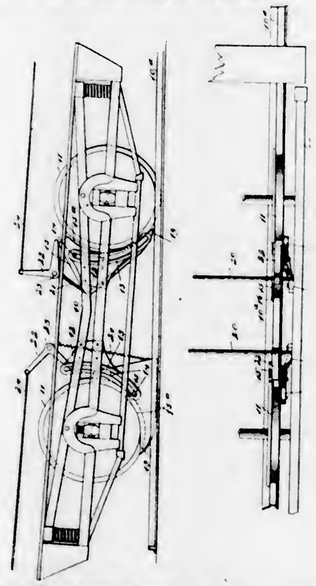
**531,549. PIPE-CUTTER.** JEREMIAH J. MCCARTHY and JOHN J. MCCARTHY, Philadelphia, Pa. Filed Apr. 9, 1894. Serial No. 506,872. (No model.)

*Claim.*—1. A tool for cutting soil or other pipe comprising a head to receive and retain the pipe in place, a relatively movable jaw having a slot which flares from the outer to the inner face, and having lateral recesses, and a cutter removably attached to the jaw having lateral projections which enter the said recesses substantially as described.



2. The herein specified tool for cutting soil and other pipes comprising two levers adjustably connected together by a movable pivot, one lever having its jaw provided with a slot which flares from the outer to the inner face, and with lateral recesses, a cutter removably attached to the slotted jaw, having lateral projections which enter the said recesses and means for positively drawing the free ends of the levers together and holding them in the adjusted position, substantially as set forth.

## 531,550. CAR-BRAKE. RUSSELL W. MCKEE, Clifton, N. J. Filed Feb. 7, 1894. Serial No. 499,348. (No model.)



*Claim.*—1. The combination with a truck provided with guides having curved slots, of shoes approximately triangular in shape, having one edge curved to fit upon the wheels, and provided with a flange projecting from one edge of the bottom and with pins projecting from the sides thereof and working in the curved slots, wedge shaped rubber feet covering the bottom surface of the shoes, springs for holding the shoes elevated, and means for forcing the shoes in contact with the rails, substantially as described.

2. The combination with a truck provided with curved guideways, of shoes provided with pins working in the guideways, springs secured to the shoes and to the truck frame, and bell cranks arranged above the shoes and having one arm engaging the shoes, the other being adapted to be connected with an operating lever, substantially as described.

3. The combination with a truck provided with curved guideways having lateral extensions at their lower ends, of shoes having pins working in the guideways, spring pressed buffers in the shoes, and means for raising and lowering the shoes, substantially as described.

4. The combination with a truck provided with curved guideways having lateral extensions at their lower ends, of spring pressed shoes having rubber feet and provided with pins working in the guideways, and means for depressing the shoes, substantially as described.

## 531,551. SALES-CHECK CASE. WILL M. KINNARD, Dayton, Ohio, assignor to the Carter-Crume Company, Niagara Falls, N. Y. Filed Dec. 3, 1892. Serial No. 453,969. (No model.)



*Claim.*—1. In a sales check case, the combination, with the case, of a sliding frame extending across the delivery end of the case and across which the delivery of the paper strips is made, whereby the frame and strips may be grasped simultaneously and the frame drawn out with the slips to aid in the delivery thereof, substantially as shown and described.

2. In a sales check case, the combination, with the case, of a sliding frame extending across the delivery end of the case and across which the delivery of the paper strips is made, whereby the frame and strips may be grasped simultaneously and the frame drawn out with the slips to aid in the delivery thereof, and means for retracting said frame after each operation, substantially as shown and described.

3. In a sales check case the combination with the case of a sliding frame to aid in delivering the strips of paper, and a spring controlled wheel with cords or other suitable flexible material connecting said frame and wheel, substantially as shown and described.

4. In a sales check case the combination of a sliding frame for a guide and support in drawing the strips of paper from the case and a roller upon which is stored a record strip of paper with means connecting said frame and roller whereby the operation of the frame will revolve said roller, substantially as shown and described.

5. In a sales check case the combination of a sliding frame to aid in delivering the strips of paper, a roller upon which is stored a record strip of paper, spring actuated carrier for retracting said frame within the case and connecting mechanism between said carrier and roller whereby the movemeot of said frame will actuate said storage roller, substantially as shown and described.

6. In a sales check case, the combination with the case, of a sliding bar extending across the front of the case and under which the paper strips are passed, and adapted to be drawn out with the strips of paper with a spring acting on said bar to return the same to place after each operation, substantially as shown and described.

7. In a sales check case the combination with the case of a sliding bar extending across the front of the case and under which the paper strips are passed, and adapted to be drawn out with the strips of paper with a tearing edge formed on the outer edge of said bar and a spring to retract said bar after the proper delivery of the paper strips, substantially as shown and described.

8. In a sales check case the combination with the case of a movable bar extending across the front of the case and under which the paper strips are passed, rigid arms thereon, extending at right angles to the bar and sliding in grooves at each side of the case, with spring to retract the bar after the strips of proper length have been delivered, substantially as shown and described.

9. In a sales check case the combination with the case of a sliding bar extending across the front of the case under which the paper strips are passed and a thumb opening in said case, so that the bar and paper strips may be easily grasped, substantially as shown and described.

10. In a sales check case the combination with the case of a movable bar extending across the front of the case and under which the paper strips are passed, a tearing edge formed on the outer edge of said bar, thumb openings in said case whereby the bar may be readily grasped, rigid arms on said bar extending back at right angles to the bar and sliding in grooves in each side of the case with spring to retract the bar after the paper strips of proper length have been delivered, substantially as shown and described.

11. In a sales check case the combination with the case of a movable bar extending across the front of the case and under which the paper strips are passed, thumb openings in said case whereby the bar and paper strips may be readily grasped, rigid arms on said bar extending back at right angles to the bar and sliding in grooves in each side of the case, with spring to retract the bar after the strips of proper length have been delivered, substantially as shown and described.

12. A sales check case provided with two shallow compartments, the one to hold a strip of paper folded in bellows folds to form a series of sales checks, the other to hold a paper strip similarly folded to form a series of duplicate checks, a writing tablet upon which said strips are to be laid with manifolding material to make duplicate copies, and a sliding guide to aid in delivering said strips, substantially as shown and described.

13. In a sales check case, the combination of a roller for receiving the record strip, a movable spindle thereon with a slotted plug in the roller and a pin on the spindle together with spring to keep said spindle and roller in connection, substantially as shown and described.

14. In a sales check case the combination of a movable bar to aid in delivering the strips of paper from the case, a roller upon which is stored a record strip of paper, a pawl carrying wheel mounted in connection with said roller, a ratchet on said roller and mechanism connecting said wheel and guiding frame whereby the operation of the one will operate the other, substantially as shown and described.

15. In a sales check case, the combination with a case for holding two or more strips of paper and carbon material for making transfers, of a movable frame G under which said paper is passed, roller L for a record strip with wheel K, cords attached to said wheel and connected with said frame and cord connecting said wheel K and the roller L, said wheel being provided with a slot to allow a partial revolution of said wheel, without actuating the roller, substantially as shown and described.

16. In a sales check case the combination with a compartment for holding the strips of paper folded in bellows folds, and a block or butt extending across said compartment against which said folded strips are drawn, of a movable bar extending across the front of the case and under which the paper strips are passed, to establish a proper tension thereon, and to aid in the delivery thereof from the compartment, substantially as shown and described.

17. In a sales check case the combination with a compartment for holding the strips of paper and a block or butt against which said folded strips are drawn, of a movable frame extending across the front of the case, under which said strips are passed, and abutting against a shoulder on the case, with means for retracting and holding said frame against the case, substantially as shown and described.

18. In a sales check case in which a duplicate set of paper strips are employed, a sheet of manifolding material and a bar for holding said sheet said bar having its upper edge arranged diagonally across said strips, substantially as and for the purpose described.

19. In a sales check case the combination of a sliding bar to aid in the delivery of the paper strips, a carrier, and flexible material connecting said bar and carrier, with spring acting on said carrier to operate the same and retract the bar after each operation, substantially as shown and described.

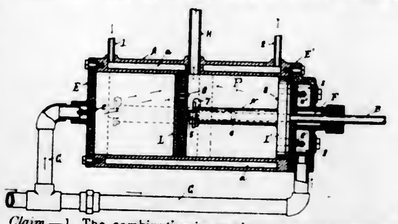
20. In a sales check case the combination of a sliding bar to aid in the delivery of the paper strips, a wheel whose circumference approximates to the throw of said bar, flexible material connecting said bar and the periphery of said wheel, with spring acting thereon to revolve said wheel and retract said bar after each operation, substantially as shown and described.

21. In a sales check case the combination of a sliding bar to aid in the delivery of the paper strips, a storage roller for the record strip, a carrier journaled in the case, and flexible material connecting said bar and carrier, spring acting on said carrier to retract said bar and connecting mechanism between said carrier and storage roll whereby the movement of the bar will operate said storage roll, substantially as shown and described.

22. In a sales check case the combination of a movable bar extending across the front of the case and under which the paper strips are passed, shoulder on the case against which said bar abuts to act as a tension for the paper strips and a guide for the delivery thereof, and spring to retract and hold in position said bar, substantially as shown and described.



## 531,552. AIR OR GAS COMPRESSOR. CASPER W. MILES, Cincinnati, Ohio. Filed May 15, 1893. Serial No. 474,330. (No model.)



*Claim.*—1. The combination in an air or gas compressor, of a cylinder A provided with inlet valves *e* and *e'* at its opposite ends, a pair of connected pistons movable in the cylinder and provided with outlet valves 8, a piston-rod extending through one end of the cylinder and connected with one of the pistons, an outlet pipe H opening through the cylinder and communicating therewith between the said pistons, and a supply-pipe G connected with and supplying the air or gas to the opposite ends of the cylinder through said inlet valves, substantially as described.

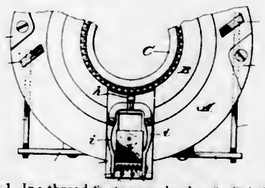
2. The combination in an air or gas compressor, of a cylinder A having at one end an inlet valve *e* and at the opposite end a stuffing-box F, a cooling chamber 3 surrounding the stuffing-box, an inlet valve *e'* controlling communication between the interior of the cylinder and the said cooling chamber, two connected pistons moving in the cylinder, a piston-rod extending through the said stuffing-box and connected with one of the pistons, a supply-pipe G connected with and supplying air or gas to the opposite ends of the cylinder through said inlet valves and cooling chamber, and an outlet-pipe H leading from the cylinder and communicating therewith between the said connected pistons, substantially as described.

3. The combination in an air or gas compressor, of a cylinder A having inlet valves *e e'* at opposite ends, a supply-pipe connected with said inlet valves, a pair of connected pistons, suitable means for varying the distance between said pistons, outlet valves 8 arranged in the pistons, and an outlet-pipe H leading from the cylinder between the pistons, substantially as described.

4. The combination in an air or gas compressor, of a cylinder A having inlet valves *e* and *e'* at its opposite ends, a supply-pipe G connected with said inlet valves, a pair of pistons arranged in the cylinder and one provided with a shank N having a socket 6 and the other with a stem 5 entering said socket and adjustable therein for varying the position of the two pistons relatively to each other, outlet valves 8 arranged in the pistons, and an outlet-pipe H leading from the cylinder between the pistons, substantially as described.

## 531,553. CIRCULAR-KNITTING MACHINE. JOSEPH P. MORIN and GEORGE J. H. JACQUES, Laconia, N. H. Filed Dec. 21, 1893. Serial No. 494,339. (No model.)

*Brief.*—The device introduces a reinforcing-thread into the web of knitted goods at the parts where the greatest wear is sustained, as in the heel of stockings. The reciprocating block carrying the reinforcing-thread is controlled by cams on the bed-plate and reciprocates between the arms of a clamp which breaks the reinforcing-thread when not needed in the web.



*Claim.*—1. In a thread-feeding mechanism for knitting-machines, the combination, of a reciprocating block having an eye through which passes a reinforcing thread, a stationary eye for the main thread on a line with the eye of the reciprocating block and a clamp consisting of a pair of jaws pivoted so that the clamping ends will close upon

the reinforcing thread, the opposite ends of the jaws being drawn together by a spring and separated by the reciprocating block, of a lever which engages with the reciprocating block and means for actuating said lever, the means being carried by the bed-plate, for the purpose set forth.

2. In a thread-feeding machine for knitting-machines, a reciprocating block having an eye for the passage of the reinforcing thread, a fixed eye through which pass both the main and reinforcing threads, and a clamp which is adapted to engage with the reinforcing thread on the outward movement of the reciprocating block and hold the same so that it will be broken at the needles, together with a spring for opening the jaws of the clamp, a lever carried by the cam ring for reciprocating the block through which the reinforcing thread passes, stationary and movable blocks which project above the surface of the bed-plate, and a pattern-chain having projections which actuate the movable cams through the interposition of the levers pivoted to the bed-plate, substantially as shown, and for the purpose set forth.

3. In a knitting machine, the combination, of a thread guide having an eye through which is threaded the main and reinforcing threads, a clamp having jaws between which the reinforcing thread passes, and a reciprocating block having an eye for the reinforcing thread said block moving between the long ends of the pivoted jaws to close the clamping ends of said jaws upon the reinforcing thread, substantially as shown and for the purpose set forth.

4. In a knitting machine a thread guide comprising a stationary eye, a reciprocating block with an eye through which the reinforcing thread passes, and a clamp having separable jaws which are spring-actuated in one direction and operated by the movable block in the other direction, substantially as shown and for the purpose set forth.

5. In a knitting machine, a ring provided with cams a thread guide comprising a stationary eye, a reciprocating block with an eye through which the reinforcing thread passes, a clamp having separable jaws which are spring-actuated in one direction and actuated in the other direction by the movable block, and a lever carried by the cam-ring, and connected to the reciprocating block and operated upon by cams, substantially as shown and for the purpose set forth.

6. In a knitting machine, a bed-plate having on one or more sides a stationary block or cam *a* and a movable block or cam *d*, of a thread guide consisting of a reciprocating block and clamp having jaws which are positioned between the fixed thread-guide and the reciprocating block, and a pivoted lever for reciprocating the block, one end of said lever being adapted to engage the blocks or cams, substantially as shown and for the purpose set forth.

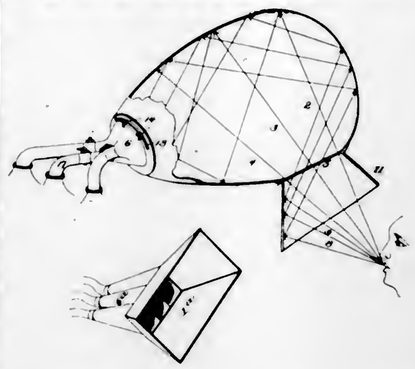
7. In a knitting-machine, the combination, of a bed-plate supporting the needle-cylinder and cam ring, fixed cams secured on the bed-plate and cams movable above and below the surface of the latter, means for operating the movable cams from a pattern chain and a lever pivoted to the cam ring and adapted to be operated upon by the cams, together with a thread-guide comprising a reciprocating block through which the reinforcing thread passes and clamping jaws which are operated by the reciprocating block to close them upon the reinforcing thread, the reciprocating block being connected to the lever carried by the cam ring, substantially as shown and for the purpose set forth

8. In a feeding-mechanism for knitting-machines, the combination, of a bed-plate having a stationary cam or cams *a* and a movable cam or cams *d*, means for raising the movable cam or cams above the surface of the bed-plate, a cam-ring and a thread-guide carried by said cam-ring, the thread-guide comprising a stationary eye, a clamp and a reciprocating block for operating the clamp, the reciprocating block having a thread-eye, together with a lever pivoted to the cam ring and engaging at one end the reciprocating block and at the other the stationary and movable cams, substantially as shown and for the purpose set forth.

9. In a knitting machine, a thread-guide having a reciprocating block with an eye, clamping jaws and a lever connected to the reciprocating block, in combination with stationary cams located on the bed-plate and cams which are movable above and below the surface of the bed plate, together with a lever which operates said cams, rods *e e* connected to the movable cams, levers connected to the rods *e e* and a chain having pattern-links which actuate the levers, substantially as shown and described.

10. In a knitting machine, the combination, of a bed-plate having stationary blocks or cams *a*, with inclined sides, and vertically movable blocks or cams *d*, means for elevating the movable blocks or cams, a thread-guide carried by the cam-ring B of the machine, the thread-guide comprising a plate *g*, clamping jaws *i i* pivoted thereupon, helical spring *j* for connecting the outer ends of the levers *i i* the tendency of which is to open the jaws, a reciprocating block with an eye located between the levers, a pivoted lever connected to the reciprocating block and operated upon by the blocks or cams *a* and *d*, said reciprocating block engaging the clamping levers to clamp them upon the reinforcing thread, substantially as shown and for the purpose set forth.

**531,554. APPARATUS FOR COLLECTING, CONCENTRATING, AND DISTRIBUTING SOUNDS.** STEWART D. MCKELVEY, Canton, Ohio. Filed Feb. 5, 1894. Serial No. 499,155. (No model.)



*Claim.*—1. An apparatus for collecting and distributing sound waves and increasing the amplitude of the vibrations, consisting of an approximately ovoid concentrating chamber for receiving and reflecting the sound waves and tubes connected with said chamber for distributing the sound to a plurality of phonographs, substantially as described.

2. In an apparatus for collecting, concentrating and distributing sound waves, the combination of a diaphragm chamber, an approximately ovoid concentrating chamber, a distributing head connected with the concentrating chamber, and tubes for connecting the distributing head with the diaphragm of a plurality of phonographs, substantially as described.

3. In an apparatus for collecting, concentrating and distributing sound waves, the combination of a concentrating chamber, a distributing head, and tubes that connect said chamber and head in series substantially as described.

4. In an apparatus for collecting, concentrating and distributing sound waves, the combination of a concentrating chamber, an outer receiving chamber communicating with the concentrating chamber near one end thereof, a distributing head connected with the outer end of the concentrating chamber, and tubes leading from said distributing head to conduct the sound waves to various points, substantially as described.

5. In an apparatus for collecting, concentrating and distributing sound waves, the combination of a concentrating chamber and a distributing head having an adjustable connection with each other, the said concentrating chamber being adapted to be rotated on said head to be adjusted toward the source of sound, substantially as described.

6. In an apparatus for collecting, concentrating and distributing sound waves, the combination of an approximately ovoid concentrating chamber having an inlet near its larger end, a distributing head connected with the smaller or reduced end of said chamber, and a tube or tubes for conducting sound from said distributing chamber to one or more points, substantially as described.

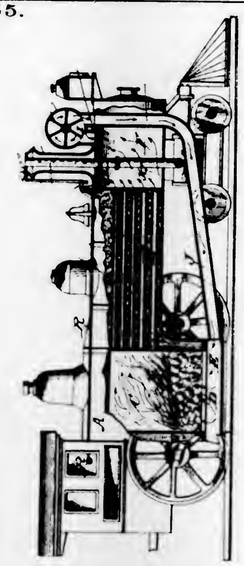
7. In an apparatus for collecting, concentrating and distributing sound waves, the combination of a concentrating chamber, tubes communicating with said chamber to conduct the sound to different points, and valves for controlling or cutting off the passage of sound through said tubes, substantially as described.

**531,555. SMOKE-CONSUMING LOCOMOTIVE.** FRANK C. MCNALLY, Kansas City, Mo. Filed May 7, 1894. Serial No. 510,366. (No model.)

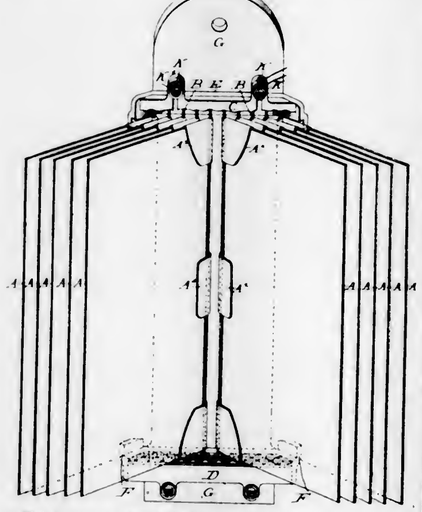
*Claim.*—In a smoke consuming locomotive, the combination with the fire-box, the closed ash pan, the smoke or cinder box, the fan chamber G, having an inlet I from the smoke box, and outlet *j*, the rotary fan blower H, the pipe J leading from the fan chamber to the ash pan, and the smoke stack, of the bifurcated steam exhaust pipe K provided with the detachable coupling sleeve L, the exhaust pipe M, connected with said coupling located in and concentric with the smoke stack, with its upper end flush with the upper end of said stack, the damper hinged to said stack and having a central aperture and the flexible connection leading therefrom to the cab, the construction being such that when said damper is closed it will close the top of the smoke stack, but leave the exhaust pipe M open, substantially as specified.



**531,555.**



**531,556. TELEPHONE-INDEX.** CHARLES A. ORTH, Trenton, N. J. Filed Sept. 18, 1894. Serial No. 523,327. (No model.)

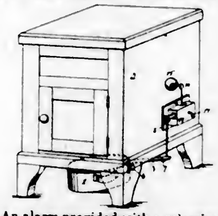


*Claim.*—1. In a telephone index, the leaves A. hinged and having vertical play upon their axes in combination with diagonal series of grooves adapted to lock said leaves by means of their own gravity, substantially as shown and described.

2. In a telephone index, the leaves A. hinged and having vertical play upon their axes combined with a right hand diagonal series of grooves, and a left hand diagonal series of grooves, adapted to lock said leaves by means of the gravity of said leaves, either to the right or left, substantially as shown and described.

3. In a telephone index the leaf A. provided with clips A.' and axial rod B. in combination with bed plate F. retaining plate D. provided with diagonal series of grooves D'. bed plate E. and retaining plate C. provided with slots I. and screws K. substantially as shown and described.

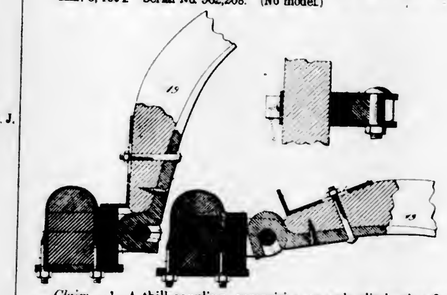
**531,557. REFRIGERATOR-LEAK ALARM.** EUGEN C. PAHFOW, New York, N. Y. Filed July 19, 1894. Serial No. 518,001. (No model.)



*Claim.*—1. An alarm provided with a releasing lever in combination with a pan or vessel having attached thereto a supporting arm and a connection between said supporting arm and releasing lever for supporting a portion of the weight of said pan or vessel, substantially as described.

2. An alarm mechanism comprising a toothed wheel and an escapement or anchor movement actuated by said wheel, in combination with a lever fulcrumed between its ends and at one end normally held in engagement with the anchor movement to prevent the action of the latter, and a pan or vessel suspended from the other end of said lever, substantially as described.

**531,558. THILL-COUPLING.** DANIEL PARKER, Calvert, Tex. Filed Mar. 3, 1894. Serial No. 502,208. (No model.)



*Claim.*—1. A thill coupling, comprising an axle clip having forwardly projecting lugs, and a base plate having its front end projecting beneath the lugs, a resilient block whose lower end rests on the said base plate between the lugs, the thill iron having a knuckle thickened at the back and adapted for pivotal connection with the said lugs in advance of the resilient block, and an abutment plate on the back of the thill projecting beyond the back of the knuckle and above the yielding block, substantially as described.

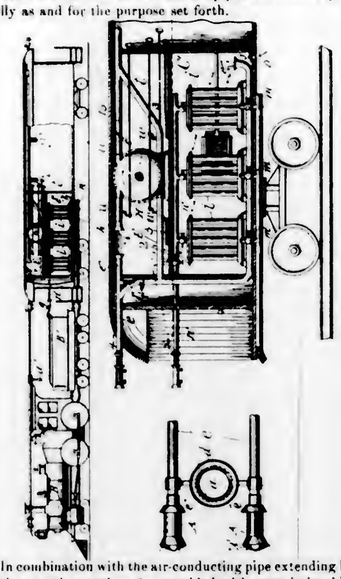
2. A thill coupling, comprising an axle clip having forwardly projecting lugs and a base plate having its front end projecting beneath the lugs, a resilient block whose lower end rests on the said base plate between the lugs, the thill iron having a knuckle thickened at the back and adapted for pivotal connection with the said lugs in advance of the resilient block, and an abutment plate held on the rear surface of the thill and adjustable longitudinally thereof, the said abutment plate projecting beyond the back of the knuckle and above the yielding block, substantially as described.

**531,559. CAR HEATER AND VENTILATOR.** LUTHER A. PECKHAM, Oswego Falls, N. Y. Filed Feb. 14, 1894. Serial No. 500,125. (No model.)

*Claim.*—1. A car-heating and ventilating apparatus consisting of two sets of heaters disposed in separate compartments in a car, two sets of rotary fans likewise in separate compartments in said car, communicating ports in the partitions of said compartments, dampers for opening and closing said ports, separate cold air inlets to the respective compartments, valves controlling said inlets, separate pipes extending from the fans and communicating with the cars of the train, suction-pipes attached to the fans and communicating with the aforesaid cars, and valves connected to the aforesaid pipes for controlling the currents of air to and from the cars as set forth.

2. A car heating and ventilating apparatus consisting of a chamber divided into compartments by vertical and horizontal partitions provided with ports through which to communicate with each other, dampers for opening and closing said ports, heaters in the lower compartments, rotary fans in the upper compartments to receive the air therefrom, main air-conducting pipes extending from the fans and

communicating with the interiors of the cars, branch pipes connecting the said main pipes to the fans at points diametrically opposite the attachment of the main pipes, pipes attached to the fans in lines with the branch pipes and leading to the lower compartments, and valves connected to the aforesaid main pipes and branch pipes substantially as and for the purpose set forth.



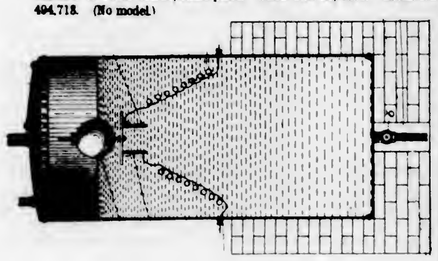
3. In combination with the air-conducting pipe extending lengthwise of the car, the nozzle —8— provided with ports in its sides, the skeleton cage —6— surrounding said nozzle, and the valve —10— pivoted to said cage substantially as described and shown.

4. The combination of the air-receiving pipe —*e*— formed with a funnel shaped front end and provided with the cap —A'— having slots —A"—A"—, the rod —19— extending lengthwise of the interior of said pipe and pivoted to said cap, the damper —*a*"'— attached to said rod, the collar —*a*"— loosely embracing the pipe, and the lever —*a*'— attached to the rear end of the rod —19— and to the aforesaid collar, said lever passing through a transverse slot in the pipe and affording means for turning the rod as set forth.

5. The combination of the air-receiving pipe —*e*— formed with a funnel-shaped front end and provided with a slotted cap —A'— and the ports —16— back of the funnel, the damper —*a*"'— pivoted to the cap, and the cylindrical damper —5— embracing the pipe back of its funnel end whereby the front of said pipe may be closed to exclude snow, sleet and rain, and the side ports of the pipe opened to admit air substantially as set forth.

6. The combination of the pipe —*e*— formed with a funnel-shaped front end and provided with the slotted cap —A'— and with ports —16— back of the funnel, the damper —*a*"'— pivoted to said cap, the cylindrical damper —5— embracing the pipe back of its funnel, the tube —A— extending from the funnel rearward, and the flange —*e*'— attached to the rear end of said tube and extending outward and forward therefrom substantially as and for the purpose set forth.

## 531,560. APPARATUS FOR VAPORIZING PETROLEUM OR OTHER LIQUIDS. STANLEY C. PEUCHEN, Toronto, Canada, assignor of one-half to Peter Clarke, same place. Filed Dec. 26, 1893. Serial No. 494,718. (No model.)



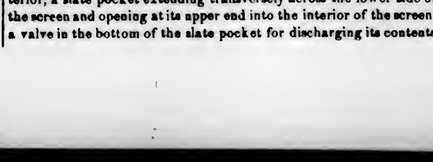
*Claim.*—1. In an apparatus for vaporizing liquids, a still to contain the liquid to be operated on, an electric heating apparatus for acting on said liquid, means for suspending said electric heating apparatus near the surface of the liquid, and wires connected with said heating apparatus and with the still at about the center of the latter, whereby said heating apparatus may rise and fall equally above and below the center of said still substantially as described.

2. The still A, adjusted for filling with petroleum or other liquid and supplied with inlet and outlet vapor pipes, in combination with an adjustable float E, which carries the carbon plates F, and G, suspended near the surface of the petroleum or other liquid, and wires H, and I, connecting the said carbon plates with the poles of a battery, substantially as specified.

3. The adjustable float E, provided with sleeve M, and adapted to float on the surface of the liquid to be vaporized, in combination with the stem N, plate O, and carbon plates F, and G, or other resisting media connected with the poles of a battery, substantially as specified.

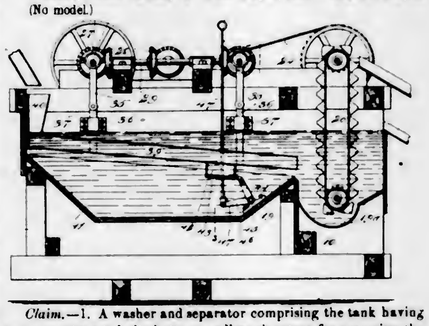
4. The combination of the still, A, adapted for filling with petroleum or other liquid, adjustable float E, sleeve M, stem N, plate O, plates F, and G, battery wires H, and I, and insulating plugs K, and L, substantially as specified.

## 531,561. SEPARATOR FOR SPINNING-RAILS. ALONZO E. RHOADES, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Oct. 24, 1893. Serial No. 488,978. (No model.)



*Claim.*—A separator composed essentially of a head having stops, and a plurality of arms made of wire bent into loop form and pivoted on said head, the stops determining the normal positions of the arms, substantially as described.

## 531,562. COAL WASHER AND SEPARATOR. THOMAS M. RIGHTER, Mount Carmel, Pa. Filed May 3, 1894. Serial No. 509,929. (No model.)

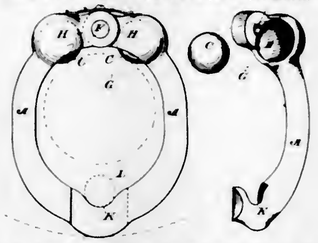


*Claim.*—1. A washer and separator comprising the tank having two compartments in its bottom, endless elevators for removing the contents of said compartments, transverse shafts 17, 26 geared together and to elevator shafts, and provided with eccentrics, pitmen depending from said eccentrics, a tubular screen rectangular in cross section perforated at top and bottom and operatively connected with the pitmen, the lower open end of the screen discharging into one of said compartments and its upper end having an inlet hopper, secured thereto and discharging into the interior of the screen and a pocket opening upwardly into the bottom of the screen between the ends thereof and discharging into the other compartment, a valve closing the bottom of the compartment and a lever mechanism wholly exterior to the tubular screen and connected with said valve and having an operating rod or handle extending to the upper edge of the tank, and a drive shaft, substantially as described.

2. A coal washer and separator comprising the water tank having two compartments in its bottom, an inclined tubular screen rectangular in cross section, perforated at top and bottom and extending at its lower open end over one of said compartments, a feed hopper carried by the upper end of the screen and discharging into its interior, a slate pocket extending transversely across the lower side of the screen and opening at its upper end into the interior of the screen, a valve in the bottom of the slate pocket for discharging its contents into the other compartment, mechanism for operating the valve, and an operating mechanism suspending the screen below the water level and imparting an up and down motion to it, substantially as described.



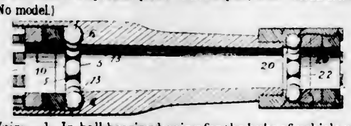
## 531,563. CURTAIN-POLE RING, &c. JULIUS A. RINGS, New York, N. Y. Filed Sept. 22, 1891. Serial No. 406,448. (No model.)



*Claim.*—1. A ring for curtain poles or analogous purposes, composed of two members each having at one end a socket with an open mouth and an ear adjacent thereto, and at the other end one half of its body cut away on the plane of the ring with a rib across the contact face thereof, and the upper edges concaved or depressed and provided with a rivet for holding said parts together and having balls in the sockets so formed, substantially as set forth.

2. A ring having in combination two similarly formed members provided with open sockets and overlapping ears for retaining the balls in the sockets and a rivet or pin for holding the two members together and retaining said balls in position and balls in said sockets, substantially as set forth.

## 531,564. BALL-BEARING FOR WHEEL-BOXES. WILLIAM S. ROBINSON, Fancy Farm, Ky., assignor of two-thirds to Thomas J. Robb and Charles A. Haseeley, same place. Filed Sept. 8, 1894. Serial No. 522,482. (No model.)



*Claim.*—1. In ball-bearing boxing for the hubs of vehicle wheels, the combination of the main box section having one end externally screw threaded and the other end screw threaded internally and provided with a series of longitudinal open ended slots, a detachable internally screw threaded box section adapted to engage at one end with the exterior screw threads of the main box section and provided at the other end with a series of longitudinal open ended slots, a ring screwed into each box section, respectively, and adapted to form with an interior shoulder thereof an annular ball retaining recess or pocket, and caps engaged with the respective outer sides of said ball retaining rings and with slots in the ends of the hub box section, substantially as described.

2. In ball-bearing boxing for the hubs of vehicle wheels, the combination of a main box section to be inserted into one end of the wheel hub and having on its exterior fins or projections to prevent it from turning therein, the smaller end of said box section being provided with exterior screw threads, a ring screwed into the larger end portion of the said main box section and adapted to form with an interior shoulder thereof an annular ball retaining recess or pocket, an annular cap engaged with said ring and with the end of the main box section, a detachable box section having interior screw threads to engage the exterior screw threads on the main box section, a ring screwed into said detachable section and adapted to form with an interior shoulder thereof an annular ball retaining recess or pocket, and an annular cap engaged with said ring and with the outer end of the detachable box section, the said ball retaining recesses in the two box sections being adapted to hold the anti-friction balls in position whether the wheel is on an axle or removed therefrom, substantially as described.

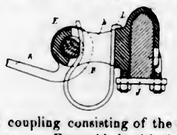
3. In ball-bearing boxing for the hubs of vehicle wheels, the combination of a main box section having an enlarged slotted end and a smaller externally screw threaded end, the said main box section being adapted for insertion into one end of a wheel hub and provided in the interior with an annular shoulder having a concavely flanged side, a detachable box section adapted to be inserted into the other end of the wheel hub and provided with interior screw threads to engage the externally screw threaded end of the main box section, the said detachable box section being also provided with a slotted end and with an interior annular shoulder having a concavely flanged side, ball retaining rings screwed into the said box sections and each having a concavely flanged side adapted to correspond with the similar flanged sides of the shoulders in the box sections and form annular ball retaining recesses or pockets therein, and annular caps engaged with rings and provided with radial lugs to engage the slotted ends of the box sections, substantially as described.

4. In ball-bearing boxing for the hubs of vehicle wheels, the combination of a main box section provided at one end with a series of open ended slots and with interior screw threads and an internal annular shoulder having a concavely flanged side, the other end of said box section being provided with exterior screw threads, a ring screwed into said main box section and provided on one side with lugs or projections and on the other side with a concaved flange to form an annular ball retaining pocket or recess with the concavely flanged side of the shoulder in said box section, an annular cap having in one side recesses to receive or engage the lugs of the said ball retaining ring and provided with radial lugs or projections to engage the slots in the end of the main box section, a detachable box section provided with interior screw threads and adapted to engage the exterior screw threads of the main box section, the said detachable box section being also provided at one end with a series of open ended slots and with an internal annular shoulder having a concavely flanged side, a ring screwed into said detachable box section and provided on one side with lugs or projections and on the other side with a concaved flange to form an annular ball retaining recess or pocket with the concavely flanged side of the shoulder in said box section, and an annular cap having in one side recesses to engage the lugs of said ball retaining ring and provided with radial lugs to engage the slots in the end of the detachable box section, substantially as described.

5. In ball-bearing boxing for the hubs of vehicle wheels, the combination of a main box section slotted at one end and adapted to be inserted into one end of a wheel hub and held from turning therein, a detachable box section adapted to be inserted into the other end of the wheel hub and having a screw threaded connection with the main box section, the outer end of said detachable box section being provided with a series of open ended slots and intervening projections, ball retaining rings screwed into said box sections and provided with lugs, the said lugs on the rings and the said projections on the detachable box section being adapted for the attachment of a wrench to screw and unscrew said parts, and annular caps inserted into the ends of the box sections and having recesses to receive the lugs of the ball retaining rings and provided with radial lugs or projections to engage the open ended slots of the box sections, substantially as described.

6. In ball-bearing boxing for the hubs of vehicle wheels, the combination of a main box section inserted into one end of the wheel hub and held from turning therein, a detachable box section inserted into the other end of the hub and having a screw threaded connection with the main box section, ball retaining rings screwed into said box sections and adapted to form annular ball retaining recesses or pockets therewith, annular caps engaged with said rings and box sections, annular series of anti-friction balls in the ball retaining pockets of the box sections, the said pockets being formed to hold the balls in position whether the wheel is on the axle or removed therefrom, and the axle spindle and its nut, substantially as described.

## 531,565. THILL-COUPLING. FREDERICK W. ROLF, Lawrenceburg, Ind. Filed Apr. 6, 1894. Serial No. 506,595. (No model.)

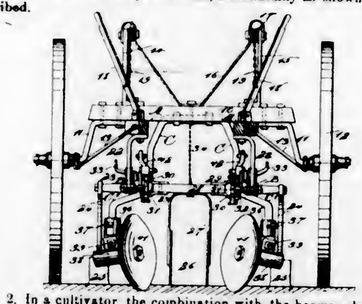


*Claim.*—A thill coupling consisting of the saddle F clamped to the axle and having an eye E provided with the vertical slot *b*, the thill iron A provided with boss B, the stud or pin C having one end rigidly connected with said boss and its other end engaged in the eye E and provided with a groove or recess *a*, registering with the slot *b* in said eye, and the spring I connected at one end with the saddle of the axle and having its other end extended through the slot *b* of the eye E and engaged in the groove or recess *a*, of the pin C, substantially as and for the purpose specified.

## 531,566. CULTIVATOR. BENJAMIN M. ROLPH, Dixon, Ill. Filed Mar. 23, 1894. Serial No. 504,777. (No model.)

*Claim.*—1. In a cultivator, the combination with the beams adapted to carry plows, of a shield adapted to be located between the beams, a cross bar to which the shield is attached, arms pivotally connected with the beams and likewise pivotally connected with the ends of the

cross bar and levers fulcrumed on the beams, and connected with the said arms, whereby the shield may be raised and lowered independent of the movement of the plow beams, substantially as shown and described.



2. In a cultivator, the combination with the beams adapted to carry plows, of a shield adapted to be located between the beams, a cross bar to which the shield is attached, arms pivotally connected at their forward ends with the beams and pivotally connected at their rear ends with the ends of the cross bar, levers fulcrumed upon the beams and having link connection with the said arms near their pivoted ends, the said levers extending rearward and adapted to be engaged by the feet of the driver, substantially as shown and described.

3. In a cultivator, the combination with the plow beams, of the shields adapted to be located between the beams, a cross bar to which said shields are secured the said cross bar being provided at each end with a yoke tip arms pivotally connected at their forward ends to the beams, and having bifurcated rear ends in which the said yoke tips of the cross bar are pivoted, and levers fulcrumed upon the beams and connected with the arms near their forward or pivoted ends substantially as shown and described.

4. In a cultivator, the combination with beams adapted to carry plows, of an arch carried by the beams and connected to the latter, the said arch being made to terminate at its lower ends in crank arms, the horizontal or upper member of each of said crank arms extending outwardly and forwardly beneath the beams, sleeves arranged upon the lower or vertical members of the crank arms, and adjustable vertically and circumferentially thereon, disks carried by the said sleeves and adapted to be raised and lowered when the sleeves are vertically adjusted, and to be given a greater or less diagonal inclination when the sleeves are circumferentially adjusted, the connection between the said disks and the sleeves being adjustable, whereby the vertical pitch inward or outward of the said disks may likewise be varied, substantially as shown and described.

5. In a cultivator, the combination with beams adapted to carry plows, of an arch carried by the beams and connecting the same, the lower ends of the arch being made to terminate in crank arms, the horizontal or upper members of said crank arms having an outward and forward inclination, sleeves adjustable vertically and circumferentially upon the vertical members of the crank arms, horizontal bearings pivotally connected with the said sleeves, and disks journaled in said bearings, as and for the purpose specified.

6. An arch for disk cultivators, having crank arms formed at the lower portion of its members, the upper or horizontal members of the said crank arms extending outwardly and forwardly from the body of the arch, sleeves mounted upon the lower or vertical members of the said crank arms and adjustable vertically and circumferentially thereon, and bearings adapted to journal disks and pivotally connected with the said sleeves, as and for the purpose specified.

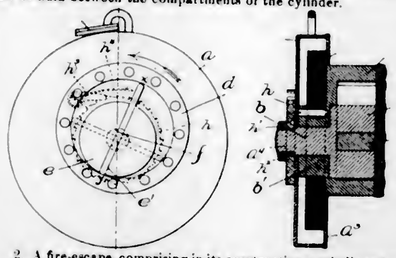
7. In a disk cultivator, the combination, with beams, of an arch terminating in crank arms at its lower ends, the said crank arms having an outward and forward inclination, a pivotal connection between the arch and the beams, take-up devices connected with the beams at the rear of the arch and connected with the arch above its pivot, and bearings located upon the crank arms of the arch and adapted to receive disks, as and for the purpose specified.

8. In a disk cultivator, the combination, with beams adapted to carry plows, an arch the lower extremities of which are provided with crank arms having an outward and forward inclination, and a removable pivotal connection between the arch and the beams, of take-up devices connected with the beams at the rear of the arch and connected with the arch above its pivots, a sleeve adjustably mounted upon each crank arm of the arch, and a horizontal bearing adapted to journal a disk, pivotally connected with each sleeve, substantially as and for the purpose specified.

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**531,567. FIRE-ESCAPE.** SYLVESTER H. ROPER, Boston, Mass. Filed May 19, 1893. Serial No. 474,763. (No model.)

*Claim.*—1. A fluid retarder comprising in its construction a cylinder rotatively and eccentrically mounted on a rotatable support and adapted to contain a fluid, means for locking the said support against rotation in one direction and permitting its rotation in the opposite direction, and a movable partition carried by the support and dividing the cylinder and designed to adjust itself under rotation of the cylinder on its support to the changing relation of said cylinder and support due to their eccentricity, said partition causing a restricted flow of fluid between the compartments of the cylinder.



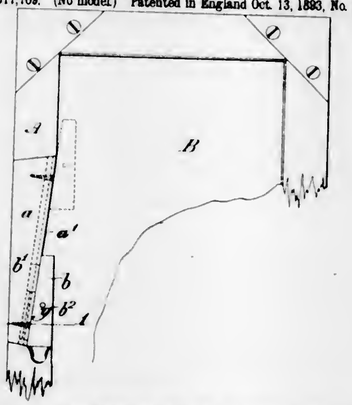
2. A fire-escape, comprising in its construction a spindle and support therefor, a drum on said spindle, a line attached to said drum, a chamber arranged to rotate with the drum, a movable wall in the chamber and rendered operative by the rotation of the drum on the spindle to produce resistance to such rotation, in co-action with a fluid in the cylinder, and means whereby under one direction of rotation the drum turns on the spindle, whereas under the opposite direction of rotation the drum and spindle turn together.

3. A fire-escape, comprising in its construction a spindle and support therefor, a drum on said spindle, a line attached to said drum, a chamber adapted to rotate with the drum and eccentric with respect to the spindle, a circular block fast with the spindle and inclosed within the said chamber, said block being concentric with the spindle and having a diametrical slide-way, a movable wall fitting said slide-way and adapted to be reciprocated therein as the drum rotates, a ratchet affixed to the spindle, and a pawl on the spindle-support and engaging the ratchet.

4. A fire-escape, comprising in its construction a spindle and support therefor, a drum on said spindle, a line attached to said drum, a chamber adapted to rotate with the drum and eccentric with respect to the spindle, a circular block fast with the spindle and inclosed within the said chamber, said block being concentric with the spindle and having intersecting diametrical slide-ways, and movable walls fitting said ways and adapted to be reciprocated therein by engagement with the wall of the eccentric chamber.

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**531,568. APPARATUS FOR SECURING TYPE OR MATTER IN PRINTERS' GALLEYS.** FRANK ROSS, London, England, assignor to Thomas White Smith, same place. Filed July 16, 1894. Serial No. 517,709. (No model.) Patented in England Oct. 13, 1893, No. 19,265.



*Claim.*—1. In a printer's galley, the combination of two blocks having their adjacent faces reversely inclined and provided with interlocking L shaped projections, and an expansion spring interposed between said projections and exerting a constant pressure to force said blocks together, substantially as described.

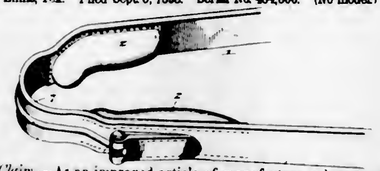
2. In a printer's galley, the combination of the block *a* inserted



in one of the side walls of the galley and grooved upon its under side as at *c*, the plate *a'* secured to the inner side of said block and projecting down in front of said grooved portion, the block *b* provided at its lower edge with an inwardly and upwardly projecting lip *d'* interlocking with the groove and plate on the block *a*, the adjacent faces of said blocks being reversely inclined, and an expansion spring *e* interposed between the plate *a'* and lip *d'*, substantially as shown and described.

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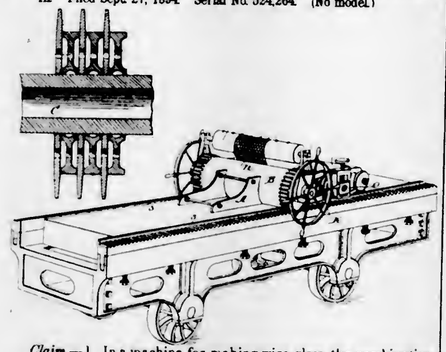
**531,569. BREAST-STRAP FOR HARNESS.** CHARLES H RUSSELL, Ennis, Tex. Filed Sept. 5, 1893. Serial No. 484,866. (No model.)



*Claim.*—As an improved article of manufacture, a breast-collar comprising a continuous strap, arched in front to extend around and fit the horse's neck and provided with pads on its inner side in rear of the arched portion, loops or clips on the exterior surface of the strap adjacent to the front ends of the pads, and an arched metal tree with vertical holes through its ends, and lying immediately adjacent to the strap and connected by vertical pivots to the loops or clips, substantially as described.

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**531,570. WIRE-GLASS MACHINE.** FRANCIS M. RYON, Streator, Ill. Filed Sept. 27, 1894. Serial No. 524,264. (No model.)



*Claim.*—1. In a machine for making wire glass, the combination with a carrying frame; of an axle having arranged upon the same a series of parallel and independently revolving disks to press the wire netting into the glass substantially as shown and described.

2. In a machine for making wire glass, the combination with a carrying frame; of a spreading roller arranged at the front, a smoothing roller arranged at the rear, and an intermediate axle having a series of parallel and independently revolving disks for forcing the wire into the glass substantially as and for the purpose described.

3. In a machine for making wire glass, the combination with a carrying frame; of a series of disks having open spaces in them for ventilation and an axle carrying them, for forcing the wire into the glass substantially as described.

4. In a machine for making wire glass, the combination with a carrying frame; of a device for pressing the wire netting into the glass consisting of a frame with means for propelling it, and an axle having freely and independently revolving disks and alternating washers, both being cut out or made with openings to permit a circulation of air for keeping them cool substantially as and for the purpose described.

5. In a machine for making wire glass, the combination with a carrying frame and means for propelling it; of a spreading roller arranged in front, a smoothing roller arranged in the rear, an embedding device consisting of an axle with independent and freely revolving disks arranged between the rollers, and a drum or spool for the wire netting arranged in bearings above the spreading roll, substantially as and for the purpose described.

6. In a machine for making wire glass, the combination with a carrying frame and means for propelling it; of two rolls arranged at opposite ends of the frame, and an intermediate axle with independent and freely revolving disks, a spool or drum arranged above the front or spreading roll, and guides or cheeks arranged in front of the spreading roll to determine the width of the glass substantially as and for the purpose described.

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**531,571. ANIMAL-TRAP.** VICTOR J. SCHERR, North Pasadena Cal. Filed Mar. 22, 1894. Serial No. 504,691. (Model.)



*Claim.*—1. An animal trap, comprising a pair of spring-pressed arms having jaws at their free ends, and a tripping plate to hold the jaws apart, the plate having a bait hook thereon, side wings adapted to lie adjacent to the jaws, and inturned flanges at the top, substantially as described.

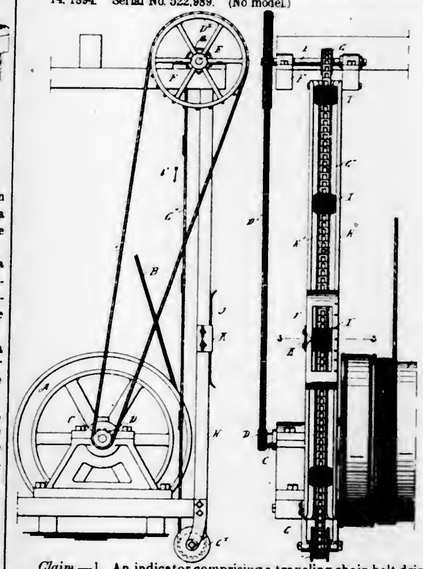
2. An animal trap, comprising a pair of spring-pressed arms having jaws at their free ends, a tripping plate having notches in its lower edge to engage the arms, and provided with side wings cut away or inclined on their lower edges, and a bait hook on the tripping plate, substantially as described.

3. An animal trap, comprising a pair of cross arms terminating at one end in a coil and at their opposite ends in jaws, and a tripping plate having notches to engage the arms and hold the jaws open, the plate having a bait hook thereon, the said plate having side wings cut away or inclined on their lower edges substantially as described.

4. An animal trap, comprising a pair of spring cross arms merging at one end in a coil and coiled longitudinally and vertically at their free ends to form a pair of flat faced jaws 10, and a plate having notches in its lower edge to engage the arms and hold the jaws apart and a bait hook thereon, the said plate having side wings cut away or inclined on their lower edges substantially as described.

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**531,572. INDICATOR.** JOSEPH H. SCOTT, Aspen, Colo. Filed Sept. 14, 1894. Serial No. 522,989. (No model.)



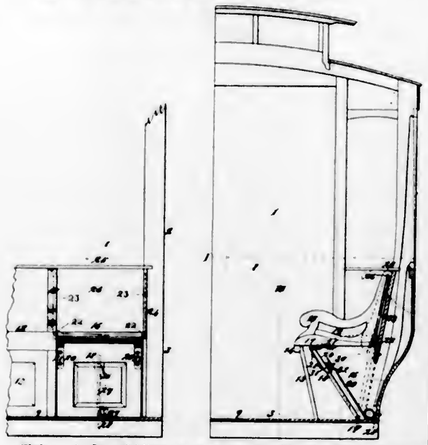
*Claim.*—1. An indicator comprising a traveling chain belt driven from the hoisting drum, a vertically disposed guideway through which passes the front run of the said chain belt, indicating plates secured on the said chain belt and denoting different levels of the mine shaft, and a pointer secured on the said guideway and adapted to indicate on the said indicating plates as they pass through the guideway, substantially as shown and described.

2. An indicator comprising a traveling chain belt driven from the hoisting drum, a vertically disposed guideway through which

passes the front run of the said chain belt, indicating plates secured on the said chain belt, and denoting different levels of the mine shaft, and a pointer secured on the said guideway and adapted to indicate on the said indicating plates as they pass through the guideway, and an apertured guide plate secured on the said guideway, the said pointer extending into the opening of the said guide plate, substantially as shown and described.

## 531,573. FOLDING CAR SEAT. WILLIAM SUTTON, St. Louis, Mo.

Filed Oct. 30, 1893. Serial No. 489,499. (No model.)



*Claim.*—1. In a folding car-seat, the combination of the folding seat bottom 17, the hinged panel frame 18, pivotally secured to the floor and to said seat, the journals 22, that project laterally from the rear of said seat, the stationary seat 12, the elbow frame 15 provided with a guide slot 23, the supplemental frame 25, having the standard 24 provided with a guide slot 23, and the spring 27 with its operative arm 29, secured to said panel frame upon which panel frame said spring acts to fold said seat; substantially as described.

2. In a folding car-seat, the combination of the stationary seat 12, the elbow frame 15, provided with the slot-way 23, the supplemental frame 25, having the standard 24, provided with the slot-way 23, the head paneling 26, the folding seat 17, the frame 18, having hinged connections to the floor and to the seat, the journals 22 and the automatic spring 27; substantially as described.

3. In a folding car-seat, the combination of the car having the combined folding doors 4, and sliding door 6, the stationary seats 12, having the elbow frames 15, provided with the slot-ways 23, the supplemental frames 25 having the standards 24, provided with the slot ways 23, the head paneling 26, the folding seat 17, the hinged panel support 18, and the automatic springs 27 with their operative arms 29 secured to said hinged panel support; substantially as described.

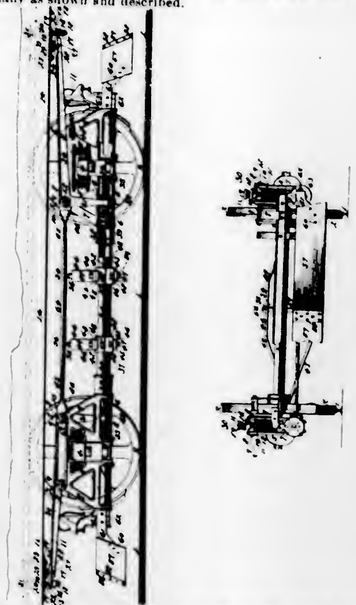
4. In a folding car-seat, the combination of the car having double doors, the stationary seats 12, having the elbow frames 15, and supporting panel frames 13, the said elbow frames 15 provided with the slot ways 23, the supplemental frames 25, having the standards 24, provided with the slot ways 23, the head paneling 26, the folding seat 17, the hinged panel support 18, the hinges or pivots 19, the hinges 20, the journals 22, the automatic operator springs 27, having the base arms 28, and the long driver attachment arms 29, and the holder brackets 31 having the perforate spring arm seat 30; substantially as described.

## 531,574. SPRING-BEARING CAR-TRUCK. WILLIAM SUTTON, St. Louis, Mo. Filed Jan. 13, 1894. Serial No. 496,720. (No model.)

*Claim.*—1. In an anti-concussion lateral spring journal bearing for car trucks, the combination of the wheels 2, the axles 3, the spring bearer boxes 4, the bell-crank levers 11, and the journal bolts 12 forming bearings for the said bell-crank lever and located between the front and rear axle bearings; substantially as shown and described.

2. In an anti-concussion lateral spring journal bearing for car trucks the combination of the axles 3 provided with their direct bearings, and the bell crank levers 11, that support the car, the lateral spring connections of said levers with said axle bearings, and the journal bolt bearings of said bell-crank levers at points intermediate between the front and rear axle bearings, arranged to reduce the concussion on the cars or trucks from the movement of the wheels, substantially as shown and described.

3. In an anti-concussion lateral spring journal bearing for car trucks, the combination of the axle journals provided with their direct bearings, the bell-crank levers 11, the journal bolts 12, located between the direct bearings of the axles, the truck or car sills 14, the upper ball housing seats 19, the lower ball housing seats 25, the bearer balls 28, the attachment bolts 23, and the guide traveler bolts 15; substantially as shown and described.



4. In an anti-concussion lateral spring journal bearing for car trucks, the combination of the axle journals, the wheels, the direct journal boxes of said axles, the bell-crank levers 11, the journal bolts 12 on which said levers are mounted said journal bolts provided with bearings 9 midway between the direct forward and rear bearings of the axles, the upper ball housing plates 19, provided with the cup housings 29, the lower ball housing seats 25 provided with the cup housings 27, the bearer balls that work in said housings, the truck or car sills 14, the guide bolts 15, fast seated in said sills, said bell-crank levers provided with loose bearings, in which the pendent ends of said bolts 15 work, the perforate rubber cushion blocks 16, the washers beneath said cushions through which cushions and washers said bolts pass and the screw nuts 18 secured to said bolts, substantially as shown and described.

5. In an anti-concussion lateral spring journal bearing for car trucks, the combination of the compound pedestal frames 7, having the tubular bases 6 and the tube holder ends 38, the circular bosses 8 and 8' and inner guide lugs 8², the truck wheels, the axles on which said wheels are fast mounted, the spring bearer boxes in line with said axles, the bell-crank levers 11, the journal bolts 12 on which said levers work, said bolts having bearings midway between the axle bearings, the tubular tension tie beams 36, the tension ends of said tie beams fast tension held within said tube holder ends 38 of said compound pedestal frames, the car truck sill, the connection of the long arms of said bell-crank levers to said sill, the spring valve reels pendent from short arms of bell-crank lever, the horizontal spiral springs 33 that work at one end of said reel and the volute spring 35 that works between the other end of said reel and the inclosed tension end 37 of the tie tube 36; substantially as shown and described.

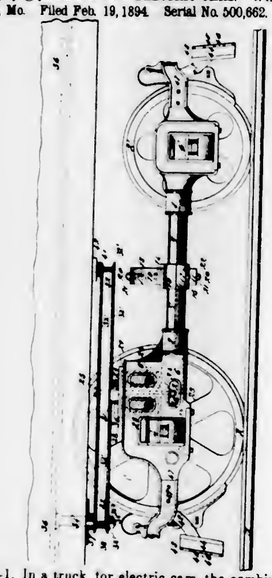
6. In an anti-concussion lateral spring journal bearing for car trucks, the combination of the compound pedestal frames 7, having the perforate connecting bail shaped ends 66, the bell-crank levers 11, having the long arms 30, provided with the perforate attachment ends 13, the short pendent arms 31, and the elbows 10 between said arms, said elbows provided with the journal bearings 9, the upper tie beams 64 secured to said ends 66 of said pedestal frames, the journal bolts 12, the truck or car sills 14, carried by said bell-crank levers, the horizontal springs 33 and 35, the tubular tension tie beams 36 having the integral disk closures 39, the ball housing seats 19 and 25, provided with the cup housings 27 and 29, the bearer balls 28 that work in said housings, the sliding attachment bolts 13, and the perforate spring blocks 16; substantially as shown and described.



7. In an anti-concussion lateral spring journal bearing for car trucks, the combination of the compound pedestal frames 7, having the tubular bases 6, the tubular tension tie beams 36, the corresponding tube holder ends 38, the upper tie bars 64 with the screw attachment ends 65 and coupling ends 67, the bell-crank car bearer lever 11, the journal bolts 12, the horizontal lateral play springs 33 and 35, the cross spring bearer bars 40, the spring cushions 41 and the life guards 57, the grip holder clamps 42 and 42', and the motor carrier frame 49 having the base bars 43 and the surmounting bars 44; substantially as shown and described.

8. In an anti-concussion lateral spring journal bearing for car trucks, the combination of the compound pedestal frames 7, the tubular tension tie-beams 36, the corresponding tube holder ends 38 having the peripheral reinforce beading 38', the upper tie bars 64, coupled to said pedestal frames, the bell crank car bearer levers 11, the motor carrier frame 49 having the base bars 43 and surmounting bars 44, the grip holder clamps that secure said frames to said tie beams 36, and the wing flanges 50 that project from the holder clamps, said flanges provided with the brace shoulders 51; substantially as shown and described.

## 531,575. TRUCK FOR ELECTRIC CARS. WILLIAM SUTTON, St. Louis, Mo. Filed Feb. 19, 1894. Serial No. 500,662. (No model.)



*Claim.*—1. In a truck for electric cars, the combination of the traction driving wheels, the pony trailing wheels, the dual supporting springs 23, the spring housing caps 28, the upholder pedestals 30 having the holder lugs 31, the intervening integral supporting frame 32 having the integral horizontal projecting flanges 32' and the car or carriage 36 supported by said elements; substantially as shown and described.

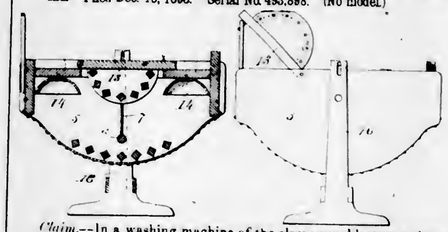
2. In a truck for electric cars, the combination of the traction drive wheels, the pony trailing wheels, the dual supporting springs 23, the spring housing caps 28, the upholder pedestals 30 having the holder lugs 31, the intervening supporting frames 32 elevated on said pedestals midway between said springs and the car bed, the pedestals 37, the friction pedestals 41, the rub plates 42, and the car or carriage 36; substantially as shown and described.

3. In a dual truck for electric cars, the combination of the spring bearer pedestal boxes 4, the compound pedestal frames 5, having the tubular bases 6, the tubular tension tie beams 7, the tube holder clutches 8 in which said beams are tension-seated, the spring bearer platform 24 within said compound pedestal frames, the dual side supporting springs 23 seated on said platforms, the spring housing caps 28, the pedestals 30, the intervening supporting frames 32, the coupling bolts 34, the pedestals 37, the friction pedestals 41, the bars 42, and the car or carriage supported by said means; substantially as shown and described.

4. In a truck for electric cars, the combination of the spring bearer pedestal boxes 4, the compound pedestal frames 5, having the tubular bases 6, the tubular tension tie beams 7, the tubular holder clutches 8, in which said beams are tension held, the lower and upper clutches 9 and 10 of the grip holder clamps on said tie beams, the screw bolts 15, the motor carrier frame 13, the dual side supporting springs 23 the spring housing caps 28, the surmounting pedestals 30, the intervening supporting frames 32, and the car or carriage supported thereby, leaving a clear intervening space between said tie-beams 7 for the carriage of and access to the motor frames; substantially as shown and described.

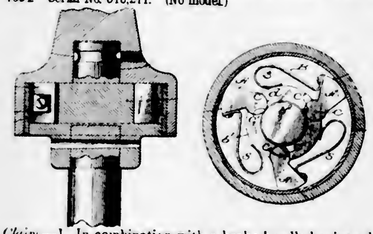
5. In a truck for electric cars, the combination of the spring bearer pedestal boxes 4, the compound pedestal frames 5, the tubular tension tie beams 7, the tube holder clutches 8 in which said beams are tension held, the lower and upper clutches 9 and 10, of the grip holder clamps on said tie-beams, the screw bolts 15, the motor carrier frame 13, having the base and surmounting bars 11 and 12, the central vertical tie bolts 20, the wing flanges 18, the brace shoulder blades 19, the dual side supporting springs housed in said compound pedestal on each side of said truck, the spring housing caps 28, having the surmounting pedestals 30, the supporting frames 32, and the car or carriage supported thereby, leaving a clear intervening space between said tie-beams for the carriage of and access to the motor frames; substantially as shown and described.

## 531,576. WASHING-MACHINE. WARREN SWEET, Fort Wayne, Ind. Filed Dec. 18, 1893. Serial No. 493,898. (No model.)



*Claim.*—In a washing machine of the class named having a close cover or lid to retain the heat and steam; a rubber or agitator placed within the suds vessel below the center of the arc of oscillation and near its bottom; levers attached to the rubber or agitator at each end, extended therefrom upward above the center of the arc of oscillation of the suds vessel, thence at right angles through the sides of the suds vessel, thence upward outside the suds vessel and provided with projections at their upper ends extending into slots in the standards of the frame.

## 531,577. BRAKE-HANDLE. HENRY S. TEAL, Chicago, Ill., assignor to the Adams & Westlake Company, of Illinois. Filed July 21, 1894. Serial No. 518,211. (No model.)



*Claim.*—1. In combination with a brake handle having a lower socket, and a brake staff, a series of oscillating gripping jaws within said socket, each having a curved face eccentric with the center of oscillation of the jaw, substantially as set forth.

2. In combination with a brake handle having a lower socket, and a brake staff, a series of oscillating gripping jaws within said socket, each having a curved face eccentric with the center of oscillation of the jaw, and springs for insuring contact between the operative faces of said jaws and the surface which they are adapted to engage, substantially as set forth.

3. In combination with a brake handle having a socket and a steel bushing or lining, and a brake staff, a series of oscillating gripping jaws, within said bushed socket, each having a curved face eccentric with the center of oscillation of the jaw, substantially as set forth.

4. In combination with a brake handle having a lower socket, and a brake staff, a series of oscillating gripping jaws within said socket each having a curved face eccentric with the center of oscillation of the jaw, and means, substantially as described, for preventing disengagement of the handle from the brake staff during operation, yet admitting of the rotation of the handle upon or around said staff, substantially as set forth.

**531,578. HOSE-MENDER.** ARTHUR VAN DYKE, Orange, N. J. Filed Apr. 25, 1894. Serial No. 508,965. (No model.)



*Claim.*—1. A hose mender, comprising a tube, and a shell secured to and surrounding each end of the tube, an annular space between the inner ends of the shells and the tube being formed, whereby provision is made for the inner edges of the shells embedding themselves in the hose, as and for the purpose set forth.

2. A hose mender, comprising a tube, and a conical shell at each end of the tube, the said shells being secured at their smaller ends to the extreme outer ends of the tube so that the bases of the conical shells will surround the tube and form annular spaces therebetween whereby provision is made for the base edges of the shells embedding themselves in the hose, as set forth.

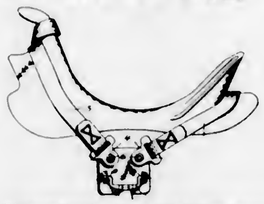
3. A hose mender, comprising a tube, a shell surrounding each end of the tube and in the form of the frustum of a cone, with the small end united with the tube near the end thereof, and a bead on each end of the tube, substantially as shown and described.

**531,579. WALL-COATING AND METHOD OF MANUFACTURING SAME.** JOHN WALKER and HARRY CARVER, Pendleton, England. Filed Oct. 12, 1893. Serial No. 487,983. (No specimens.)

*Claim.*—1. The process of manufacturing a substance impervious to moisture and capable of resisting the action of strong disinfectants for coating wall-paper, paper hangings, calico, walls or other fabrics or structures, which consists of mixing with melted resin a quantity of caustic lime and linseed oil, then adding petroleum, turpentine or other oily spirit to reduce it to the required consistency, treating it with a solution of soda and tartrate salts to emulsify it, and then grinding with a suitable earthy matter, such as described, to give the desired body thereto, with the addition of a pigment or coloring matter to give the desired color or tint substantially as described.

2. A covering composition of the character described consisting of a mixture of resin, caustic lime, linseed oil, soda carbonate and salts of tartar in substantially the proportions specified, an earthy matter to give it body and a suitable color pigment.

**531,580. CINCH-PLATE.** ALBION P. WEEKS, Santa Cruz, Cal. Filed Mar. 22, 1894. Serial No. 504,695. (No model.)



*Claim.*—1. The combination of a saddle having downwardly converging saddle straps provided at their lower ends with metal ears, a girth, a base plate arranged beneath said ears and having them pivoted to it at its top, and the hingedly mounted girth fastening receiving the girth and carried by the plate and located below said ears, substantially as described.

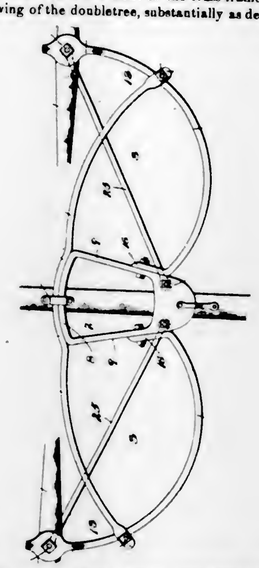
2. The combination with saddle straps and a girth of a cinch plate comprising a base plate, ears pivoted at the top of the same and extending beyond the upper corners thereof and provided with openings receiving said straps, a loop hinged at its ends to the base plate below the ears and provided with a slot receiving the girth, and fastening devices securing the girth in said slot, substantially as described.

**531,581. DOUBLETREE.** ORLANDO R. WIBELOW and HERBERT KIPS, Marshfield, Mo. Filed Apr. 23, 1894. Serial No. 508,686. (No model.)

*Claim.*—1. A doubletree, comprising a central triangular truss-frame provided at its rear end with a pivot opening, and the opposite truncated elliptical side frames composed of rearwardly curved front bars and forwardly curved rear bars provided at their outer ends with forward extensions or arms, substantially as described.

2. A doubletree, comprising a central triangular truss-frame, opposite side frames connected to and extending from the truss frame and composed of front and rear sides and having forwardly extending arms at their outer ends, and the braces extending from the truss-frame to the forwardly extending arms, substantially as described.

3. A doubletree, comprising a central triangular truss-frame having a curved front end and provided at its rear end with a pivot opening, the opposite truncated elliptical side frames composed of oppositely curved front and rear bars 11 and 12, the rear bars having their inner ends secured to the truss-frame and provided at the outer terminals of the front bars with forwardly extending arms, the curved connecting portions 18 formed integral with the front bars 11 and arranged contiguous to and conforming to the configuration of the front of the truss-frame, and a guide or keeper receiving the connecting portion 18 and the front of the truss-frame and adapted to limit the swing of the doubletree, substantially as described.



4. A doubletree, comprising a central truss-frame and the opposite side frames composed of front bars 11, having their outer terminals bifurcated and the rear bars having their inner ends connected with the truss-frame and extending through the bifurcated terminals of the front bar and provided with forwardly extending arms bent upward on themselves and forming singletree receiving loops, substantially as described.

**531,582. RAILWAY-CAR BRAKE.** WILLIAM BAXTER, Jr., Baltimore, Md. Filed Dec. 12, 1891. Serial No. 414,848. (No model.)

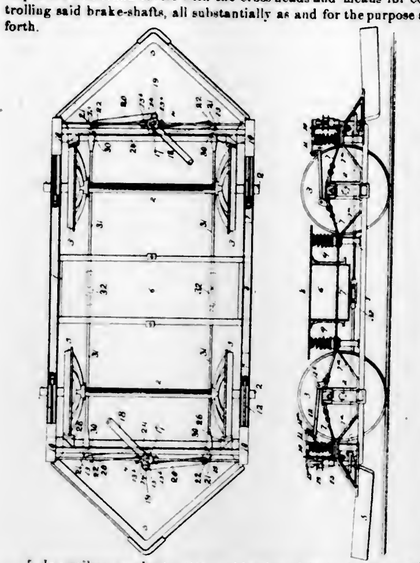
*Claim.*—1. In a railway car brake the combination of the side frames provided with suitable end posts, the double end pieces consisting of two parallel horizontal parts connected with the side frames and spaced by the end posts, a brake beam, hangers for the brake beam on the upper member or part of the end piece, and a brake shaft having bearings in both parts of the end frame, and having controlling connection with said brake-beam, substantially as and for the purpose set forth.

2. In a railway car brake, the combination of the side frames and the end pieces, the brake-shaft mounted upon one end piece, the brake-beams supported from said end piece, links connecting the brake-beam eccentrically with the brake shaft, and a controlling lever connected with said brake-shaft, all substantially as and for the purpose set forth.

3. In a railway car brake, the combination of the side frames, the end pieces connected with said side frames, a brake-shaft mounted upon one end piece, a cross-head on the brake-shaft, the brake-beam supported from said end piece, bell-crank levers mounted upon the respective ends of the brake-beam, links connecting the ends of the bell-crank levers with the cross-head on the brake-shaft and a controlling lever also connected with said brake-shaft, substantially as and for the purpose set forth.

4. In a railway car brake, the combination with the side frames, of the end pieces connected with said side frames, the brake-shafts mounted upon said end pieces, the brake-beams supported from the end pieces, the brake-shoes carried by the brake-beams and adapted to bear against the wheels, a pair of bell-crank levers bearing at their outer ends against the respective ends of each brake beam, brake-rods connecting the angles of corresponding bell-crank levers of the respective pairs, brake-shafts mounted upon the respective end pieces and provided with cross-heads, links connecting the inner ends of the respective bell-crank levers with the cross heads and means for controlling said brake-shafts, all substantially as and for the purpose set forth.





5. In a railway car brake, the combination of the brake-beam, fulcrumed bell-crank levers bearing at the respective ends of the brake-beam for applying the brakes, and a centrally disposed rock-shaft having means for controlling it and having a cross-head connected to the respective free ends of the bell-crank levers, substantially as and for the purpose set forth.

6. In a railway car brake, the combination of the brake-shoes, the bell-crank levers controlling the brake shoes, means for connecting the fulcrums of the bell-crank levers together, and a rock shaft having connection with the bell-crank levers for controlling them as explained.

7. In combination with a car truck of substantially the character specified, having the supporting springs for receiving the car body and having brakes mounted upon said truck, the brake-shaft 17 having crank connection with the brakes for applying, and also carrying a cross-head 14 connected by links 13 with the car body for restricting its lateral movement on the truck, as explained.

**531,583. FOLDING CHAIR.** GEORGE M. BENNETT, Grand Rapids, Mich., assignor, by direct and mesne assignments, to the Grand Rapids Seating Company, same place. Filed Aug. 12, 1893. Serial No. 482,994. (No model.)



*Claim.*—1. In a folding chair the combination of the seat bracket provided with an enlargement, a bearing for said enlargement, said bearing comprising a fixed and a relatively movable member adapted to clamp the enlargement between them, and means controlled by the bracket for moving the movable member of the bearing toward the fixed member when the seat is turned.

2. In a folding chair the combination with the seat standard and with the seat bracket provided with an arm having an enlargement thereon, of the bearing within which said enlargement is mounted, said bearing comprising a fixed and a relatively movable member coupled together to permit a swinging or vibrating movement of the movable member relatively to the fixed member, and means controlled by the seat bracket for vibrating said movable member.

3. The seat bracket provided with a globular enlargement or head and with an arm having inclined shoulders, in combination with a fixed member provided with a socket, and a laterally yielding plate coupled with the fixed member, and also provided with a socket, the enlargement on the bracket being seated between said members, in the sockets thereof, and the shoulders on the arm arranged to engage and move the plate laterally as the seat is raised or lowered.

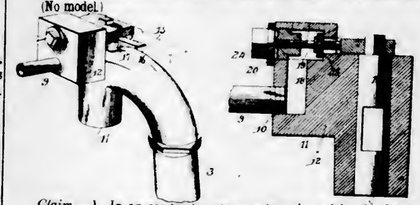
4. In a folding seat the combination with the seat bracket formed with an enlargement, the seat standard provided with a fixed or rigid bearing for said enlargement, a clamping plate coupled at one side of the axis of movement of the seat bracket, and arranged to clamp the enlargement in its bearing, and a cam arm on the seat bracket to engage and rock the clamping plate on its coupling to move the clamping end toward the fixed bearing when the seat is turned.

5. The combination with the fixed seat standards, of the brackets 8ª jointed at their upper ends to the standards, the seat back connected rigidly to said brackets, the bearings sustained at the lower ends of said brackets and comprising each two members, and the seat brackets 4 pivoted between the members of said bearings and extending downward beyond the same, and having their ends mounted in elongated slots in the standards; whereby when the seat is folded upward it will swing the lower ends of the brackets 8ª rearward and the ends of the seat brackets rising in the elongated slots will admit of a corresponding downward movement of the seat.

6. The combination of the standards, the seat back, the brackets sustaining the back and mounted to tip back and forth with respect to the standards and provided at their lower ends with sockets, the relatively movable plates sustained by the brackets and provided with sockets, the seat brackets pivoted between the standards and provided with enlargements seated in the sockets, and the arms carried by the seat brackets and arranged to engage and move the movable plates as the seat is raised or lowered.

7. In a folding seat the combination of the joint comprising a fixed and a relatively movable member each provided with a complementary socket bearing, the seat bracket provided with an enlargement seated in said bearings and a curved arm carried by the bracket and arranged to engage and move the movable member of the bearing, said arm having a stop lug adapted to engage the seat support and limit the forward movement of the seat.

**531,584. SIGNAL APPARATUS FOR AIR-BRAKES.** EDWARD P. BISHOP, Jr., Birmingham, Ala. Filed Mar. 13, 1894. Serial No. 503,440. (No model.)



*Claim.*—1. In an air brake, the combination with a brake-pipe, a signal-pipe and pressure-indicating devices connected with the signal-pipe, of a brake-pipe stop-cock having a plug, a spring-seated check valve controlling an outlet which is in communication with the signal-pipe, and means for communicating motion from the stop-cock plug to the check valve, whereby when the stop-cock is closed the check valve is unseated, substantially as specified.

2. In an air-brake, the combination with a brake-pipe, a signal-pipe, and pressure indicating devices connected with the signal-pipe, of a brake-pipe stop-cock provided in its casing with a chamber in communication with said signal-pipe, and a check-valve closing an outlet from said chamber, and connections having a stem in position to receive pressure from the stop-cock plug to unseat the valve, substantially as specified.

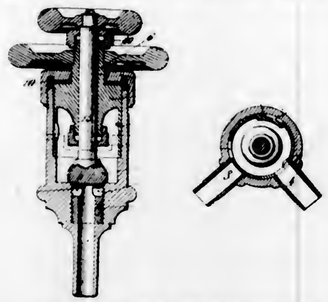
3. In an air-brake, the combination with a brake-pipe, a signal-pipe and pressure indicating devices connected with the signal-pipe, of a brake-pipe stop cock provided in its casing with a chamber in communication with the signal-pipe, and a spring-pressed check-valve arranged to close an outlet from said chamber and provided with a stem

arranged in the path of a cam face upon the handle of the brake-pipe stop-cock, substantially as specified.

4. The herein described brake-pipe stop-cock having its casing provided with a transverse chamber adapted to be connected with an air-brake signal-pipe and having its casing further provided with a superjacent valve casing having an outlet contiguous to the plane of the stop-cock plug, a cap fitted removably in the outer end of said valve casing and provided with a tubular extension, a check valve having its stem fitted in said tubular extension of the cap and adapted to engage a seat surrounding said outlet, an actuating spring in operative relation with the check-valve to normally hold it seated, and a cam carried by the operating handle of the brake-pipe stop-cock plug and adapted to contact with the outer extremity of the check-valve stem when said operating handle is turned to close the stop-cock, substantially as specified.

## 531,585. FAUCET FOR SUPPLYING HOT OR COLD WATER.

GEORGE H. COLE, Atlanta, Ga. Filed Feb. 1, 1894. Serial No. 498,724. (No model.)



*Claim.*—1. A hot and cold water faucet, the body portion of which is provided with a chamber having separate inlets for hot and for cold water, a stem centrally arranged in said chamber and having an enlarged head upon its lower end, which lies in said chamber, and is provided with a reduced terminal which is tapped into a counter bored chamber concentric with the outlet opening, said terminal being chambered and provided with outlet openings, and an interior shell provided with openings adapted to register separately with the hot and cold water inlets, and being capable of rotary movement independently of the stem, substantially as described.

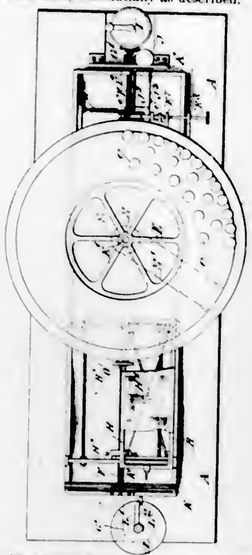
2. The combination with the chambered body-portion of a faucet having a depending spout, of a head closing the open upper end of the chamber in the body, a cap screwed upon the latter and closely surrounding a neck on the head, a shell formed in one piece with the head and lying in a counter-bored recess in the chamber of the faucet, and having two openings adapted to register with two separate water-inlets, a stem passing through the head and neck and provided upon its lower end with an enlarged head having a hollow, reduced terminal which is tapped into a counter-bored chamber surrounding the outlet opening, and means for giving rotary movement to the stem and shell, independently, substantially as described.

## 531,586. MACHINE FOR PRODUCING STEREOTYPE-MATRICES AND TYPE-WRITING.

THOMAS G. DAW and HILDER DAW, Sevenoaks, England. Filed Jan. 21, 1892. Serial No. 418,746. (No model.) Patented in England Sept. 17, 1891, No. 15,799; in Germany Jan. 14, 1892, No. 71,383; in Victoria Feb. 11, 1892, No. 9,454; in New South Wales Feb. 13, 1892, No. 3,591; in Queensland Feb. 15, 1892, No. 1,993; in Tasmania Feb. 20, 1892, No. 103; in New Zealand Feb. 25, 1892, No. 5,448; in France Mar. 16, 1892, No. 220,192; in Belgium Mar. 17, 1892, No. 98,841; in Sweden Apr. 8, 1892, No. 5,053; in Norway Apr. 8, 1892, No. 2,534; in Spain May 6, 1892, No. 13,149; in Italy June 30, 1892, No. 481; in Austria-Hungary July 7, 1892, No. 3,103, and in South Australia July 27, 1892, No. 2,275.

*Claim.*—1. In a machine for producing stereotype matrices and typewriting, the combination with type operating mechanism, and a paper or matrix carrier, of a feeding wheel connected with said carrier and having a roughened serrated periphery, a feeding device adapted to act by friction against the periphery of said feeding wheel and to impart a step by step movement thereto and to said carrier feeding mechanism for actuating said device from said type operating mechanism, and a friction brake adapted to bear against the periphery of said feeding wheel and arranged to be actuated by said feeding mechanism during the return movement thereof, substantially as herein described for the purpose specified.

2. In a machine for producing stereotype matrices and typewriting, the combination, with the paper or matrix carrier H, of a frame $H^6$ on which the carrier slides transversely, a screw threaded shaft G engaging said frame, a longitudinal slotted shaft F, a toothed wheel $F^3$ on said slotted shaft, a rack $H^3$ on said carrier and with which said toothed wheel engages, wheels $F^4$ and $G^2$ fixed on said shafts F and G respectively, a vertical slide $J^2$ adapted to engage frictionally in its downward movement with each of said wheels $F^4$ and $G^2$, a key J for depressing said slide, and an adjustable stop $J^3$ to limit the downward movement of said slide, substantially as described.



3. In a machine for producing stereotype matrices and typewriting, the combination with a paper or matrix carrier, of a wheel $E^2$ from which motion is transmitted to said carrier, a rocking frame $E^5$ carrying grippers *e* to engage said wheel, a pivoted piece $e^6$ carried by said rocking frame and having arms connected with corresponding arms on the axles of the said grippers, and means for moving the said pivoted piece so as to put the grippers into or out of engagement with said wheel prior to the movement of said frame substantially as described.

4. In a machine for producing stereotype matrices and typewriting, the combination with a paper or matrix carrier, type bars and cams $D^2$ carried by said bars, of a wheel $E^2$ from which motion is transmitted to said carrier, a rocking frame $E^5$ inclosing said wheel and carrying grippers *e*, a pivoted piece $e^6$ carried by said frame and serving to put said grippers *e* in and out of engagement with said wheel, an oscillating wheel E provided with projections $E^6$ arranged to be acted upon by said cams $D^2$, and having a finger or projection $E^6$ engaging the said pivoted piece *e*, the spring $E^9$, the sliding bar $E^8$, and an adjustable stop $E^8$ for said sliding bar, substantially as described for the purpose specified.

5. In a machine for producing stereotype matrices or typewriting, the combination with a transverse movable carrier, a toothed wheel $F^3$ and shaft F for moving the carrier transversely and feeding mechanism for imparting an intermittent rotary motion to said shaft, of a justification scale K, a toothed wheel $F^3$ fixed on said shaft and arranged to move said justification scale transversely in a corresponding manner to said carrier, and a fixed pointer or index K′ substantially as herein described for the purpose specified.

6. In a machine for producing stereotype matrices and typewriting, the combination with a carrier and a shaft for imparting longitudinal motion thereto to form successive lines, of indicating mechanism, comprising a graduated disk geared with said shaft and provided with a clip $L^3$ capable of sliding thereon, and a fixed pointer or finger L′ arranged to prevent movement of said clip with the disk in one direction substantially as herein described for the purpose specified.

7. In a machine for producing stereotype matrices and typewriting, the combination of the carrier H, the carrier frame $H^6$, a screw threaded shaft G for operating said frame, a beveled wheel G′ on said shaft, a beveled toothed disk I adapted to be moved into and out of engagement with said wheel, and a spring I′ by which the said beveled disk is normally held out of engagement with said beveled wheel substantially as described for the purpose specified.



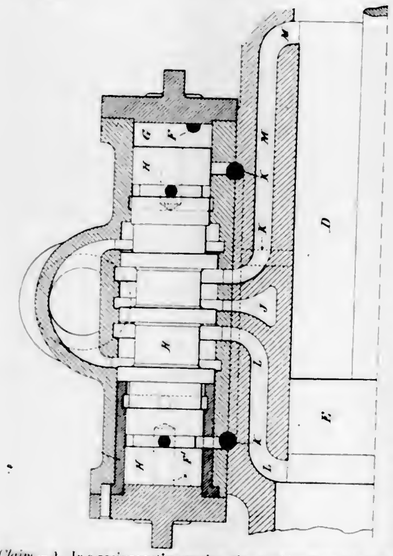
8. In a machine for producing stereotype matrices and typewriting, the combination with the type bars D, of the inking pad M, the ring N, the replenishing pad $N^2$, the lever M′, the cam $N^3$ on the ring N, the finger $M^2$, the springs $M^4$, the circular rack $N^4$ on the pad $N^2$, and the pawl $N^5$ substantially as described for the purpose specified.

9. In a machine for producing stereotype matrices and typewriting, the combination of a carrier H for the matrix material or paper to be impressed, a head B arranged above said carrier and carrying type and type operating mechanism, an oscillating wheel E adapted to be actuated from said type operating mechanism, and formed with a central aperture E′ through which the type projects when depressed, and vertically adjustable supports B′ whereon said head rests substantially as described for the purpose specified.

10. In a machine for producing stereotype matrices and typewriting, and provided with type and type operating mechanism, a supplementary socket or holder O for holding special characters, a guide in which said socket or holder can slide, and a lever for operating said socket or holder substantially as described.

## 531,587. VALVE FOR PERCUSSION ROCK-DRILLS.

ALBERT W. DAW and ZACHARIAS W. DAW, London, England. Filed Apr. 13, 1894. Serial No. 507,386. (No model.) Patented in England June 13, 1893, No. 11,607.



*Claim.*—1. In a reciprocating engine, the combination of a cylinder having a piston therein, a main valve cylinder, having a valve therein, and an auxiliary valve cylinder, also having a valve therein, supply ducts leading from near the opposite ends of said piston cylinder to the opposite ends of said auxiliary valve cylinder, said ducts being controlled by said piston, supply ducts also leading from said piston cylinder to near the opposite ends of said main valve cylinder and being controlled by said piston, exhaust ducts leading from the ends of said main valve cylinder to the auxiliary valve cylinder, a main exhaust duct for said engine, and a passage connecting said main exhaust duct with said auxiliary valve cylinder, said main exhaust passage and said main valve exhaust ducts being controlled by said auxiliary valve, substantially as described.

2. The combination with the main valve of reciprocating engines, of an auxiliary valve having passages leading from the opposite ends of the cylinder in which such auxiliary valve works, respectively, to near the opposite ends of the main cylinder in which the main piston works, and which passages are controlled by the movement of the piston, the movement of such auxiliary valve controlling other passages leading respectively to the opposite ends of the cylinder in which the main valve works so as to place such ends alternately in connection with an exhaust passage through the ports of the main cylinder and through the main valve to the main exhaust, while the supply to the opposite ends of the main valve is controlled directly by the movement of the main piston through passages leading from the two ends of the main valve cylinder to the main piston cylinder, substantially as described.

## 531,588. BRAKE FOR RAILWAY-CARS.

GEORGE W. DICKINSON and HENRY H. WARNER, Tacoma, Wash. Filed Apr. 18, 1894. Serial No. 508,019. (No model.)



*Claim.*—1. In car brake mechanism of the class hereinbefore described, the levers A, A, having each a connection with the hand brake mechanism at one end, and with the brake applying levers at the opposite end, and a fulcrum intermediate of their ends, and a connection between each of said levers and the power brake mechism, such points of connection being between the fulcrums and the power brake ends, substantially as specified.

2. In car brake mechanisms, the combination of the cylinder levers, the hand brake rods, the levers A, A′, the rods D, D′ forming the connections between the cylinder levers and the levers A, A′, said rods having each a sliding connection with the respective cylinder lever and a connection with the lever A or A′ between its fulcrum and power brake end substantially as specified.

3. In car brake mechanisms of the class described, the rods D, D′ having each a sliding connection at one end portion with the respective cylinder levers, and at the other end portion a connection with the brake shoe operating lever between the fulcrum of the latter and its power brake end, substantially as specified.

4. In car brake mechanisms, the combination of the brake shoes, the lever actuating said shoes and fulcrumed intermediately of its end portions, the intermediate connections between said levers and shoes, the hand brake rod, the cylinder lever, and the rod having a sliding connection at one end portion with the cylinder lever and at the opposite end portion a connection with the said intermediately fulcrumed lever between the fulcrum of the latter, and its power brake end, substantially as specified.

5. In car brake mechanism, the combination of the cylinder levers C, C′, the rod E, connecting said levers, the intermediately fulcrumed levers A, A′, the rods D, D′ having each a sliding connection at one end portion with the respective cylinder lever, and at the opposite end portion a connection with the lever A or A′ between the fulcrum of the latter and its power brake end, the hand brake rods connected to the levers A, A′ at the other side of their fulcrums, the brake shoes, and connections between the levers A, A′ and the respective sets of brake shoes, substantially as specified.

## 531,589. LATHING-STRIP.

LOUIS T. HAGAN, Winchester, Ky., assignor of one-half to Samuel A. Conn, same place. Filed Mar. 27, 1894. Serial No. 506,305. (No model.)



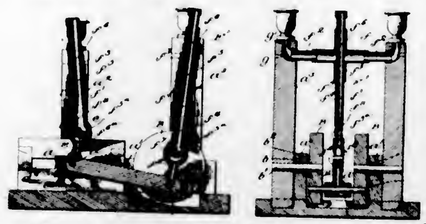
*Claim.*—1. A lathing-strip having a plurality of curved grooves or channels arranged in longitudinal series that are substantially parallel with each other, the depth of each groove being increased from its ends toward its center and the grooves of one series alternating with the grooves of an adjacent series, substantially as described.

2. A lathing-strip having a plurality of curved grooves or channels arranged in longitudinal series that are substantially parallel with each other, the adjacent grooves in each series having their ends close together and the depth of each groove being increased from its ends toward its center, substantially as described.

3. A lathing-strip having a plurality of curved grooves or channels arranged in parallel longitudinal series, the grooves in adjacent series being of opposite curvature and alternating with each other and the depth of each groove increasing from its ends toward the center, substantially as described.

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**531,590. LUBRICATOR.** THOMAS G. HOWELLS, Warren, Ohio. Filed June 1, 1894. Serial No. 513,181. (No model.)



*Claim.*—1. A lubricator designed to be connected to movable machinery, the same comprising an oil cup, a reciprocating tube pivotally connected at its lower end to said cup, a hollow rock-shaft mounted at its ends and having an intermediate right angular sleeve through which said tube is passed and is free to move, said tube having a slot therein through which communication is had with said shaft, and an oil supply reservoir opening into one end of said rock-shaft, substantially as set forth.

2. A lubricator designed to be connected to movable machinery the same comprising an oil-cup having an upper slot, a slotted reciprocating tube pivoted at its lower end in said cup and extending through the slot thereof, the inclosing cap secured to said tube and encompassing said oil-cup, the hollow rock-shaft mounted at its ends and having an internal sleeve through which said tube is passed and free to move, and an oil reservoir opening into one end of said rock-shaft, substantially as set forth.

3. A lubricator designed to be connected to movable machinery, the same comprising an oil cup having an upper slot, a slotted reciprocating tube having a hollow head at its lower end provided with holes or perforations, said head fitting in said oil-cup, the pivot-pin for said head, the hollow rock-shaft having a central sleeve through which said reciprocating tube is free to move, and an oil reservoir opening into one end of said rock-shaft, substantially as set forth.

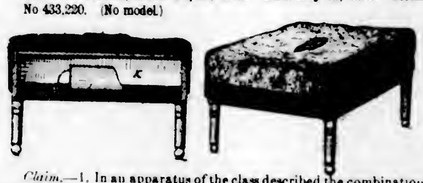
4. A lubricator designed to be connected to movable machinery, the same comprising an oil-cup having an upper slot, a reciprocating tube having a slot therein and extended at its lower end through the slot in said cup to which latter said tube is pivotally connected, a rock-shaft having a sleeve through which said tube is passed, and an inner lug extending into the slot of said tube, and an oil-reservoir communicating with said rock-shaft substantially as set forth.

5. The combination with a piston-rod or plunger or other movable part of an engine, and two corresponding posts, of an oil-cup secured to said piston-rod or plunger, a rock-shaft having two end-sections supported by said posts and a central right-angular sleeve, a slotted reciprocating tube pivotally connected at its lower end to said cup and movable in said sleeve, a right-angular tube in one of said posts communicating with one of said end-sections, and an oil-reservoir supported by one of said posts and opening into said right-angular tube, substantially as set forth.

6. The combination with a piston-rod or plunger or other movable part of an engine, and two corresponding posts, of an oil-cup secured to said rod or plunger, a hollow rock-shaft having end-sections supported by said posts and a central right-angular sleeve provided with an inner lug in its vertical portion, a reciprocating tube fitted in said sleeve and having a slot into which said lug projects, a hollow head secured to the lower end of said tube and pivoted in said oil-cup, said head having a series of perforations therein, the inclosing cap also secured to said tube, the right-angular tube in one of said posts communicating with one of said end-sections of said rock-shaft, and an oil-reservoir opening into said right-angular tube, substantially as set forth.

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**531,591. HOUSEHOLD FIRE-EXTINGUISHING APPARATUS.** DAVID L. KEELER, Grand Rapids, Mich. Filed May 16, 1892. Serial No. 433,220. (No model.)



*Claim.*—1. In an apparatus of the class described the combination of the box A, mounted upon legs A', and having a compartment K, having a hermetically sealed cover E, of some easily broken material, preferably paper, and a strong detachable cover D, resting on the cover E, and the sack cover B, inclosing and forming a covering for the device, substantially as set forth.

2. In an apparatus of the class described, the combination of the box A, mounted upon legs A', and having a hermetically sealed compartment K, with a cover E, and detachable cover D, provided with a rim G, the blanket H, and cover B, arranged substantially as described and for the purposes set forth.

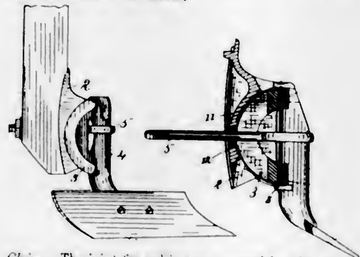
3. As an improved article of manufacture the apparatus herein described consisting of the box A, mounted on suitable supports, having a compartment K provided with a hermetically sealed easily broken cover E and one or more compartments K' having inclined bottoms M and a cover D provided with dowel pins F, and having a rim G of flexible material for holding the blanket H, and a sack-cover B having a handle C, arranged substantially as described and for the purposes set forth.

4. The combination of the box A, having one or more compartments K', having inclined bottoms M, the cover D, and the sack cover B, arranged substantially as described and for the purposes set forth.

5. The combination with the box A, having one or more inclined bottoms M, and the cover D, having the rim G, of flexible material, for holding the blanket H, and the cover B, arranged substantially as described and for the purposes set forth.

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**531,592. JOINT FOR CULTIVATORS.** JOHN H. KNAPP, Decatur, assignor to John Alexander Suffern, Pierson, Ill. Filed Sept. 22, 1894. Serial No. 523,786. (No model.)



*Claim.*—The joint for cultivators, comprising the shoe 2 having the vertical corrugated concavity 11, the block 3 adapted to the concavity of the shoe and having ribs as 12, the bracket-shank 4 having rounded and ribbed surfaces adapted to corrugated concavities of the block, and the eye bolt 5 adapted to bind the parts together and to the shank of the cultivator, substantially as set forth.

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**531,593. GAGE-COCK.** CHARLES R MOORE, Newport, Vt. Filed July 20, 1894. Serial No. 518,135. (No model.)



*Claim.*—1. In a gage cock, the combination of the tubular body provided with a raised valve seat on its inner end, a longitudinally movable valve stem arranged to work through said body, and a valve disk loosely or pivotally mounted on one end of said valve stem and provided with a renewable packing ring adapted to work against said valve seat, substantially as set forth.

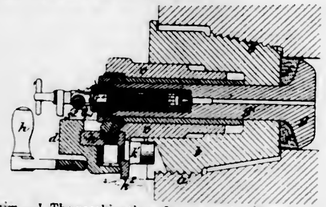
2. In a gage cock, the combination of a tubular body provided with a valve seat on its inner end, a longitudinally adjustable valve stem arranged to work through said valve body, and provided near one end with a squared combined guide and cleaning collar adapted to work in said body, and a valve disk loosely or pivotally mounted on one end of said valve stem and working against said valve seat, substantially as set forth.

3. In a gage cock, the combination of a tubular valve body provided with a raised valve seat on its inner end, the longitudinally movable valve stem working in said body and provided at one end with a squared projection and a threaded socket, and adjacent to such end with an exteriorly tapered collar, a valve disk loosely mounted to turn on the valve stem between the squared projection and tapered collar thereof and provided at one side with an interiorly threaded annular flange and at its opposite side with an annular seat, a soft metal renewable packing ring fitted in said seat and adapted to be held against said tapered collar on the valve stem, a washer with a squared opening fitted over said squared projection, a pivot clamp screw working over said washer and engaging the threaded socket of the valve stem, and a threaded cap plug fitted in the interiorly threaded annular flange of the valve disk to inclose said washer and screw, substantially as set forth.

4. The combination with a valve stem or the like, of a metallic hand wheel provided with a central hub rib having a series of integral rivet pins projected from one side, a wheel plate spaced from the hub rib and secured on said pins and having a squared collar, and a heat non-conducting packing interposed between said plate and said rib, substantially as set forth.

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**531,594. BREECH-LOADING ORDNANCE.** ANDREW NOBLE and EDWARD W. LLOYD, Newcastle-upon-Tyne, England, assignors to the Sir W. G. Armstrong, Mitchell & Co., Limited, same place. Filed Feb. 5, 1894. Serial No. 499,144. (No model.)



*Claim.*—1. The combination of parts consisting of the screw breech block *b* mounted on the pivot *c* on which it can both turn and slide, and the carrier arm *d* supporting the pivot and jointed to the breech of the gun.

2. The combination of the breech block, its pivot, the carrier arm to which the pivot is secured, the sliding piece *k*, means for moving the sliding piece *k* along the carrier arm, and connections between the sliding piece and the breech block to move it along its pivots.

3. The combination of the gun, the breech block, its pivot, the carrier arm to which the pivot, is secured, the sliding piece *k*, connections between the sliding piece *k* and the breech block to operate it, and the spring bolt which locks the sliding piece fast with the carrier arm when said arm retires from the breech of the gun.

4. The combination of the gun, the breech block, its pivot, the carrier arm to which the pivot is secured, the sliding piece *k* connected with the breech block to operate it, and a guide on the gun for the sliding piece *k* which prevents the carrier arm from leaving the breech of the gun until the unlocking movement of the slide is complete.

5. The combination of the gun, the breech block, a hollow bolt contained in a cavity in the breech block, a locking device *q* upon the rear end of the bolt to lock it in the cavity and release it so that it may be withdrawn, the firing pin within the hollow bolt, a sprig pressing the firing pin forward to bring it into contact with the primer, an insulated conducting core *s* in the firing pin and a contact $s^2$ connecting in circuit with a firing key the conducting core and the primer in contact with the same.

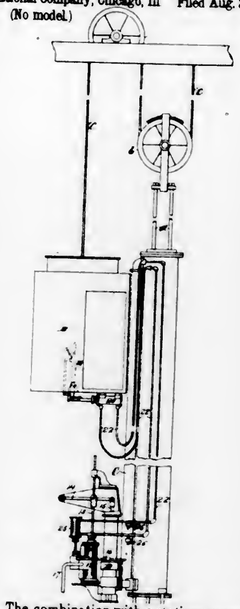
6. Firing apparatus consisting of a hollow bolt to be inserted into a cavity in the breech closing appliance with means for preventing the bolt turning in the cavity; a socket piece screwed on the rear end of the bolt and having interrupted threads on its exterior serving to lock the bolt in the cavity provided to receive it; a cap screwing on to the fore end of the bolt to hold the primer in its place; a firing pin consisting of an insulated rod incased in a tube having a handle at its rear end; such firing pin being contained within the hollow bolt in which it is free to slide but restrained from turning; a coiled spring within the hollow bolt and around the firing pin which it presses forward; interlocking recesses and projections on the socket piece and the firing pin; circuit arrangements for electric firing; and releasing arrangements for percussion firing.

7. The safety appliance consisting of a locking slide lying in a recess in the pivot piece and engaging with a controlling groove in the breech block; such locking slide abutting on the firing pin and only permitting it to advance when the breech block has been turned sufficiently to lock it securely in the gun.

8. The combination of the gun, the breech block, a carrier arm, a pivot on the carrier arm about which the breech block is free to turn, a sliding piece mounted in the carrier arm and connected with the breech block, means for moving the sliding piece in the carrier arm transversely across the breech end of the gun, connections between the breech block, and the sliding piece to move the breech block backwardly from the gun, and mechanism for operating the carrier arm.

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**531,595. ELEVATOR.** NORTON P. OTIS, Yonkers, N. Y., assignor to the National Company, Chicago, Ill. Filed Aug. 30, 1892. Serial No. 444,513. (No model.)



*Claim.*—1. The combination with a stationary working cylinder and piston and mechanism operated by the latter, of a moving cylinder and piston controlled by an attendant for operating said working piston, flexible connections between each end of each cylinder and one end of the other, a volume of liquid filling the two cylinders and the connections, a passage through said moving piston and its piston rod affording communication between the opposite ends of said moving cylinder, a valve apparatus controlling said passage, and a lever for operating said valve apparatus, substantially as described.

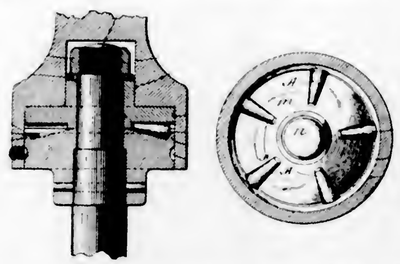
2. The combination with cylinder 25 and its piston 24, cylinder 20 and its hollow piston 19, flexible connections between each end of each cylinder and one end of the other, and a volume of liquid filling the two cylinders and the connections, of hollow piston rod 9 connected with piston 19 and provided with opening 2 affording communication between the opposite ends of cylinder 20, valve 3 controlling said opening, and lever 4 and connections for operating said valve, substantially as described.

3. The combination with a cylinder having a piston connected to operate the stopping and starting mechanism of an elevator, of cylinder 20 carried by the car and provided with hollow piston 19 controlled by the conductor on the car, flexible connections between each end of each cylinder and one end of the other, and a volume of liquid filling the two cylinders and the connections, of hollow piston rod 9 connected with piston 19 and provided with opening 2 affording communication between the opposite ends of cylinder 20, valve 3 controlling said opening, and lever 4 and connections within the car controlled by the conductor, for operating said valve, substantially as described.

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**531,596. BRAKE-HANDLE.** JAMES W. PATTERSON, Chicago, Ill., assignor to the Adams & Westlake Company, of Illinois. Filed July 25, 1894. Serial No. 518,566. (No model.)

*Claim.*—1. In combination with a brake handle and a brake staff, a frictional clutch, one member of which is secured to the brake staff and provided with an inclined surface, and the other member of which is secured to the brake handle and furnished with a series of inclined faces, and a series of conical or tapered rolls, confined radially between the two members of the frictional clutch, substantially as set forth.



2. The combination of a brake handle and a brake staff a frictional clutch, one member of which is secured to the brake staff and provided with an inclined upper surface, and the other member of which is secured to the brake handle and provided with a series of inclined lower surfaces, and a series of conical or tapered rolls confined radially between said two members of the clutch, substantially as set forth.

3. The combination of a brake staff, two members of a clutch provided with frictional surfaces and a series of conical rolls confined radially between said frictional surfaces of the two members of the clutch, substantially as set forth.

4. The combination of a brake staff, two members of a clutch provided with frictional surfaces, a series of radially arranged conical rolls confined between said surfaces, and a brake handle having a socket inclosing the two members of the clutch, and the rolls, substantially as set forth.

5. The combination of a brake handle having a lower socket, a frictional clutch, the lower member of which is secured to the brake staff and provided with an operative surface to engage friction rolls, the other member of which is secured to the brake handle, and also provided with operative surfaces to engage the friction rolls, and a series of radial conical friction rolls, the whole frictional roll clutch or gripping device being confined within the socket of the handle, substantially as set forth.

6. The combination of a brake handle, a frictional clutch, one member of which is secured to the brake handle and provided with inclines on its lower surface, and the other member of which is secured to the brake staff and provided with an inclined upper surface, and a series of friction rolls radially arranged between the opposing surfaces of the respective members of the clutch, and means whereby the two members of the friction clutch may be drawn or tied together to clamp said friction rolls between them, substantially as set forth.

7. In combination with a brake handle, a hub secured thereto and having an upper inclined surface, a plate provided with a series of inclines and adapted to revolve upon the brake staff, and a series of radial conical rolls confined between said upper inclined surface of the hub and the inclines of the plate, said brake handle having a socket inclosing said members of the frictional clutch, and adapted to move coincidently with the said plate, substantially as set forth.

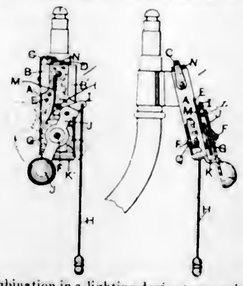
8. In a frictional roll clutch for a brake handle, the combination of a brake staff, a hub mounted thereon having an inclined upper surface and an outer rim, a series of conical friction rolls resting on said upper surface, the end thrust of which rolls is received by said outer rim, an upper plate having a series of inclined faces at its under side and adapted to rotate with the handle upon the brake staff, said upper plate resting upon the series of conical rolls, and means for clamping the hub and plate and the conical rolls between the surfaces thereof, substantially as set forth.

9. The combination of a brake handle having a lower socket, a plate held within the socket, a brake staff, a hub, mounted on the said staff, having a circumferential groove, a series of friction rolls confined between the faces of the said plate and hub, respectively, and a screw or pin projecting through the socket into said groove, whereby the socket may turn upon the said hub and yet be prevented from detachment therefrom, substantially as set forth.

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**531,597. LIGHTING DEVICE.** BRADFORD H. PENDLETON, Evanston, Ill. Filed Feb. 26, 1894. Serial No. 501,512. (No model.)

*Claim.*—1. In a lighting device, the case therefor comprising a back portion with sides and inward projections B and B' therefrom, as described, the front side comprising a plate having the operative parts attached thereto, which plate is adapted to slide longitudinally into the said back portion under the said projections, a hole Q in the back portion to receive the free end of shaft F and serve in combination with the said projections for the purpose stated.



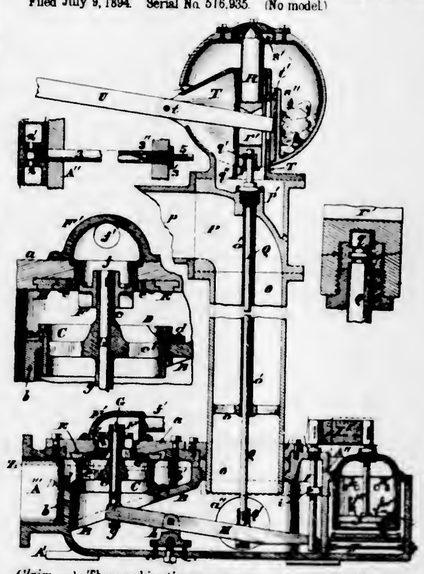
2. The combination in a lighting device having the main portion A of the casing with sides and projections B and B' therefrom, and a scratcher C attached thereto, as described, of the front plate of the case with a roller mounted to revolve at one end thereof, and a tape winder shaft at the other, a tape having a series of igniting points thereon coiled around a pin between the roller and the shaft, a portion of the tape passing over the roller under the scratcher, and one end attached to the winder shaft which is adapted to wind up the tape and successively fire the igniting points, as shown and described.

3. In a lighting device, means for operating the tape winding shaft, comprising a ratchet wheel secured thereto and a weighted lever loosely mounted thereon, a pawl pivoted to the lever and adapted to engage the ratchet wheel, an actuating cord attached to the pawl and stops on the case for limiting the motion of the lever, and a pawl for preventing a backward motion of the ratchet wheel, the parts operating in combination for the purpose stated.

4. In a lighting device of the class described having a tape winder shaft with a limited intermittent movement, the tape having igniting points disposed thereon at a gradually increasing distance apart from the first used to the last, for the purpose stated.

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**531,598. WATER-COLUMN.** JOHN N. POAGE, College Hill, Ohio. Filed July 9, 1894. Serial No. 516,935. (No model.)



*Claim.*—1. The combination, in a water-column, of a hollow base, an inlet-valve fitted within said base, and near one end thereof; a special chamber near the opposite end of said base, and having a cataract-gear arranged therein; a discharging main communicating with said base; a lever that operates said inlet-valve and the cataract-plunger; and means for rocking said lever; the arrangement of these appliances being such as to enable the removal of the cataract-gear without disturbing other parts of the column.

2. The combination, in a water-column, of a hollow-base; an inlet-valve fitted therein; a capped-chamber communicating with said base; a cataract gear fitted within said chamber; a lever that operates said inlet-valve and the cataract-plunger; a discharging-main communicating with said base between said inlet-valve and cataract-gear; and a rod or shaft that traverses said discharging-main and rocks said lever, the arrangement of these appliances being such as to enable the removal of the cataract-gear without disturbing other parts of the column.

3. The combination, in a water-column, of a hollow-base; an inlet-valve fitted therein; a special chamber having a filter at bottom, and adapted to receive a limited supply of water from said base; a cataract-gear fitted within said chamber; a lever that operates said inlet-valve and the cataract-plunger, in the manner described; a discharging-main communicating with said base between said inlet-valve and cataract gear, and a rod that traverses said main and operates said lever, all as herein set forth.

4. The combination, in a water-column, of a hollow base, having an inlet valve and discharging main; a chamber communicating with said base by a valve-guarded passage; a filter through which water enters said chamber; and a cataract gear fitted within the latter, and regulating the closing of said inlet-valve, in the manner described.

5. In a water-column, the hollow base A, having an inlet A'''; inclined diaphragm B; guide *b*; and side passages *b'*, *b'*, in combination with a hollow inlet-valve C, that traverses said guide *b*, as herein described.

6. In a water-column the hollow base A, having an inlet A'''; inclined diaphragm B; guide *b*; side passages *b'*; *b'*; and cap *a*, provided with the valve seat E; in combination with a hollow inlet-valve C, that reciprocates within said guide, and closes against said seat, for the purpose described.

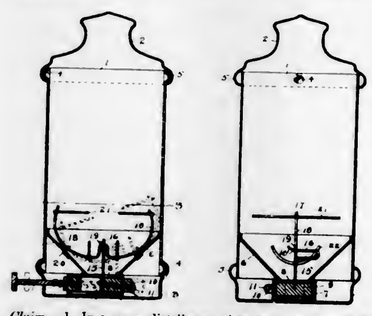
7. The combination in a water-column, of the hollow base A, having an inclined diaphragm B, provided with a guide *b*, traversed by the hollow inlet-valve C; the cap *a* secured upon said base, and provided with a seat E, an open-ended guide *f*, and the waste valve F, secured to the stem of said valve C, and traversing this guide *f*, for the purpose stated.

8. The combination, in a water-column, of the class specified, of the discharging-main O; a shaft Q, traversing the same and operating the valve-mechanism, in the manner set forth; a standard T projecting upwardly from said main; a lever U pivoted to said standard; a hollow ball S, adapted to play up and down on said standard; and a connector R coupled to said shaft and ball, and having the short arm of said lever engaged therewith, all as herein shown and explained.

9. The combination in a water-column, of the shaft Q provided with one or more annular grooves *q'*; the metallic bushing *q'*, cast around said grooves; the connector R, having a socket *r*, within which said bushing is inserted; and the nut *q''*, that surrounds said shafting and retains said bushing in place, as herein described.

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**531,599. SOAP-DISTRIBUTER.** WILLIAM F. ROSS and WILLIAM WILCKLOW, Rochester, N. Y. Filed June 7, 1894. Serial No. 513,740. (No model.)

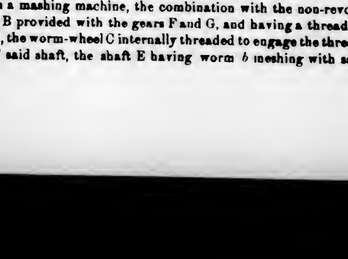


*Claim.*—1. In a soap distributer the open ended case having holes in top and bottom, the hopper seated on the case about the upper hole, the slide having a discharge passage therethrough, the post secured in said slide and standing above the same within the hopper, and the stirring device loosely suspended on the top of said post, said device consisting of two members 18 provided with curved arms 21 and 22 the latter situated near the bottom of the hopper and conforming approximately to its sides in a vertical direction and the former near its top and conforming approximately to its sides in a horizontal direction, substantially as set forth.

2. In a soap distributer the combination of a hopper, a discharge slide, a post secured in said slide and standing above the same within the hopper and provided with a bent arm at its top, and a stirrer having two members 18 connected by a bend adapted to hang loosely on said arms and provided with curved stirring arms 21 and 22 situated near the walls of the hopper, and means for moving the slide and post whereby the contents of the hopper are cut centrally and whereby the curved stirrer arms are caused to oscillate near the curved surface of the hopper both at top and bottom, substantially as set forth.

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**531,600. DIE-PUNCH AND PROCESS OF AND MEANS FOR MAKING SAME.** HENRY S. SCHAADT, St. Louis, Mo., assignor to the Bradley Stencil Machine Company, of Missouri. Filed Oct. 13, 1894. Serial No. 525,839. (No model.)



*Claim.*—1. The process of making punches, which consists in forming a metallic blank of approximately the shape of the punch to be made but slightly larger than such punch, and forcing said blank into a die of the size and shape of the punch to be made, substantially as and for the purpose specified.

2. The process of making punches, which consists in forming a metallic blank consisting of a base and a projecting portion of the shape of but slightly larger than the punch to be made, the sides of the outer part of said projecting portion tapering so as to make the outer face thereof narrower than the punch to be made, and forcing said projecting portion of said blank into a die which is the counterpart of the punch to be made, and cutting off the narrower outer part of said projecting portion, substantially as and for the purpose described.

3. The process of making punches, which consists in forming a metallic blank of approximately the shape of the punch to be made, but slightly larger than such punch, and forcing said blank into a die of the exact size and shape of the punch to be made and whose face inclines upwardly to the edges of its opening, all substantially as and for the purpose described.

4. The process of making punches which consists in casting a metallic blank of approximately the shape but slightly larger than the punch to be made, and forcing said blank into a die which is the counterpart of the punch to be made, substantially as and for the purpose described.

5. A punch blank consisting of a base portion and a projecting portion of the shape but slightly larger than the punch to be made, the sides of said projecting portion tapering so that the outer face of said projecting portion is smaller than the punch to be made, substantially as and for the purpose specified.

6. A die having the portion immediately around the die opening raised above the general level of the upper face of the die, said raised portion being inclined upwardly from such general level to make an acute angle with the side face of the die opening, substantially as and for the purpose set forth.

7. A die having its upper face inclined upwardly to the edges of its opening, substantially as and for the purpose set forth.

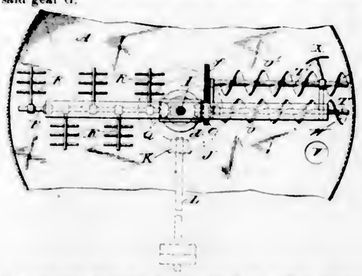
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**531,601. MASHING-MACHINE.** ADAM SCHULTZ, Cincinnati, Ohio, assignor of one-half to John Deck, same place. Filed May 25, 1893. Renewed Nov. 21, 1894. Serial No. 529,527. (No model.)

*Claim.*—1. In a mashing machine, the combination with the non revoluble shaft B provided with the gears F and G, of the revoluble shaft I, the horizontal bar N secured to said shaft I and extending on opposite sides thereof, a revoluble stirring device supported from said bar N on one side of said shaft I and operated from said gear F, and a revoluble conveying device supported from the said bar N on the other side of said shaft I and operated by the said gear G.

2. In a mashing machine, the combination with the non-revoluble shaft B provided with the gears F and G, and having a threaded-lower end, the worm-wheel C internally threaded to engage the threaded end of said shaft, the shaft E having worm *b* meshing with said

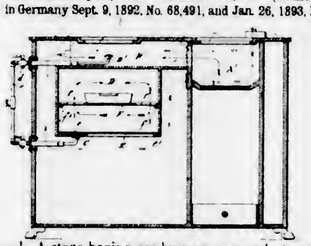
worm-wheel, and the bracket D on which said worm-wheel is supported in such a manner as to be free to turn but not to move vertically, of the revoluble shaft I, the horizontal bar N secured to said shaft I and extending on opposite sides thereof, a revoluble stirring device supported from said bar N on one side of said shaft I and operated from said gear F, and a revoluble conveying device supported from the said bar N on the other side of said shaft I and operated by the said gear G.



3. In a mashing machine, the combination of a central non-revoluble shaft B, means for raising and lowering the same, the gears F, G, fast on said shaft, the revoluble power shaft I in line with and carried on the shaft B, the bar N carried by the shaft I, the shaft P carried thereby and having stirrer arms R and a pinion Q meshing with the gear F, the conveyer shaft T carried by the bar N and having conveyer U W and pinion *d* meshing with the gear G, and a second conveyer shaft T' having conveyers U' W' and a gear *f* meshing with a gear *e* on the shaft T, substantially as described.

## 531,602. COAL AND GAS BURNING STOVE OR RANGE.

ALBERT STECKE, Osnabrück, Germany, assignor to Walter C. Eymann, Anaheim, Cal. Filed July 20, 1894. Serial No. 518,160. (No model.) Patented in Germany Sept. 9, 1892, No. 68,491, and Jan. 26, 1893, No. 71,461.



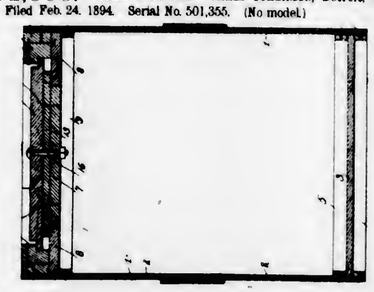
*Claim.*—1. A stove having gas burners arranged at openings in the stove, and protectors adapted to said openings and fitting over said burners for protecting the same, substantially as described.

2. The combination with a solid fuel burning stove having an opening in its top above the passage for the products of combustion, of a gas burner arranged below said opening, and a plate fitting in the opening and provided with a tubular extension into which the burner projects, substantially as described.

3. The combination with the oven of a solid fuel burning stove having an opening in its bottom, of a gas burner below the said opening, and a plate fitting in said opening and closing the same and provided with a tubular projection fitting over the burner, substantially as described.

## 531,603. PICKLE-BARREL.

JAMES TOMLINSON, Detroit, Mich. Filed Feb. 24, 1894. Serial No. 501,355. (No model.)



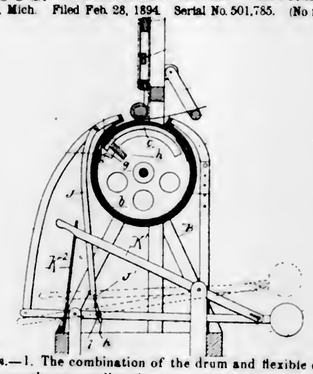
*Claim.*—1. A package for holding pickles, &c., comprising a body-portion having a cover-support provided with a central opening, said body-support being tightly secured within one end of the cover-portion, a cover fitting tightly but removably into and abutting against the margin or inner periphery of the support, a flanged locking-ring, and a retaining cross-bar extending across the outer surface of the cover and detachably engaging the said locking-ring, substantially as set forth and described.

2. A package for holding pickles, &c., comprising a body-portion having a cover-support provided with a central opening, said cover-support being tightly secured in one end of the body-portion and secured therein against inward and outward displacement by oppositely-disposed retaining-rings, a cover fitting tightly but removably into and abutting against the inner periphery or margin of the support, a flanged locking-ring, and a retainiug cross-bar detachably engaging said locking-ring, substantially as set forth and described.

3. A package for holding pickles, &c., comprising a body-portion having a cover-support provided with a central opening, said cover-support being tightly secured in one of its ends and a cover fitting tightly but removably into and abutting against the inner periphery or margin of the support, a cap piece overlapping the opening in said support, a flanged locking-ring, and a pivoted locking bar detachably engaging said locking-ring, the latter being firmly secured to a retaining-ring, substantially as set forth and described.

## 531,604. VENEER-COILING MACHINE.

JAMES TOMLINSON, Detroit, Mich. Filed Feb. 28, 1894. Serial No. 501,785. (No model.)



*Claim.*—1. The combination of the drum and flexible compression apron nearly surrounding the same, of the compression arms applied to the forward edge of the apron, levers for actuating the arms and to which they are pivoted, flexible ties for the outer ends of the arms having their lower ends connected to the levers, supports for the rear edge of the apron, and the vertically adjustable curved sections secured to the upper portions of the supports and bearing against the rear edge of the apron, substantially as described.

2. The combination of the drum and flexible compression apron nearly surrounding the same, of a support for the rear edge thereof, the compression arms applied to the front edge, levers for actuating said arms and to which they are pivoted, and a flexible tie for the outer end of the arms, substantially as and for the purpose described.

3. The combination of the drum and flexible compression apron nearly surrounding the same, of a support for the rear edge thereof, the compression arms applied to the front edge, levers for actuating said arms, to which they are pivoted, and a tie connecting the outer end of the compression arms to the long arm of the lever, having a flexible section, substantially as and for the purpose described.

4. In a veneer coiling machine, the combination of the rotary drum, the flexible compression apron nearly encircling the same, the compression arms $I^3$ secured to the apron at each end, the weighted levers I pivotally supporting the arms $I^3$, tie bars flexibly connecting the upper ends of the compression arms with the weighted levers, the connecting bar K, the lever K' connected to said bar, and extending to the front of the machine, and the vertical rack bar $K^3$ beside said lever, substantially as described.

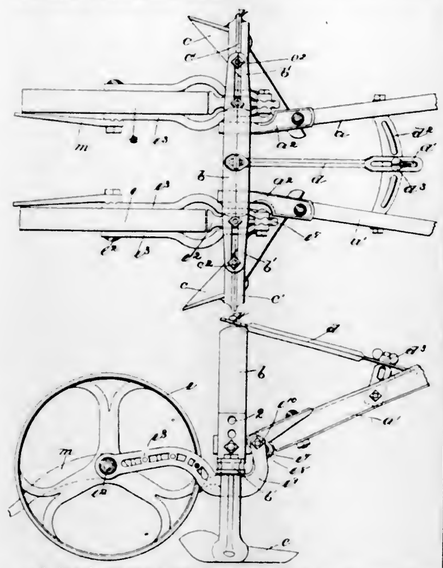
## 531,605. CULTIVATOR.

CHARLES W. WARNER, Melrose, and GEORGE A. CRANE, Worcester, Mass. Filed Nov. 13, 1893. Serial No. 490,839. (No model.)

*Claim.*—1. In a device of the character described, the combination of the handle frame, wheels and tools, and an arched frame supporting said tools and arranged transversely to the line of draft, and pivot bolts connecting it with the handle frame, substantially as described.



2. In a device of the character described, the combination of the handle frame, wheels and tools, and an arched frame supporting said tools, arranged transversely to the line of draft, pivot bolts therefor, and a retaining device for retaining said pivoted arched frame at any angle at which it may be set.



3. In a device of the character described, the combination of the handle frame, wheels and tools, and an arched frame supporting said tools, pivot bolts therefor, and the adjustable link *d* connected at one end to the arched frame and at the other end to a fixed point.

4. In a device of the character described, the combination of the handle frame, wheels supported thereby and tools, and a vertically adjustable arched frame supporting said tools arranged transversely to the line of draft and connected with said handle frame, substantially as described.

5. In a device of the character described, the combination of the handle frame, wheels supported thereby and tools, and an arched tool supporting frame having at each side several holes arranged one above the other, any pair of which may receive the attaching bolts for attaching it to the handle frame, substantially as described.

6. In a device of the character described, the combination of the handle frame, wheels supported thereby and tools, and an independent arched frame having slotted extensions *b'*, projecting in opposite ways which receive and support the tools, and bolts attaching said independent arched tool-carrying frame to the handle frame.

7. In a device of the character described, the combination of the handle frame, a wheel and supporting arm therefor, the bolt $c^2$ extending through said supporting arm, and bushing *c'* thereon upon which said wheel revolves, and the vine guard *m* also on said bolt $c^2$, adapted to be clamped between the supporting arm and bushing by tightening the nut on said bolt.

8. In a device of the character described, the combination of the handles, slotted tool-carrying frame connected thereto, a wheel, and supporting arm therefor, a block detachably connected with said tool-carrying frame to which said wheel-supporting arm is pivotally connected, and an adjusting device for said wheel supporting arm.

9. In a device of the character described, the combination of a handle frame, tool-carrying frame, and tools carried by it, a wheel and a laterally adjustable supporting arm therefor.

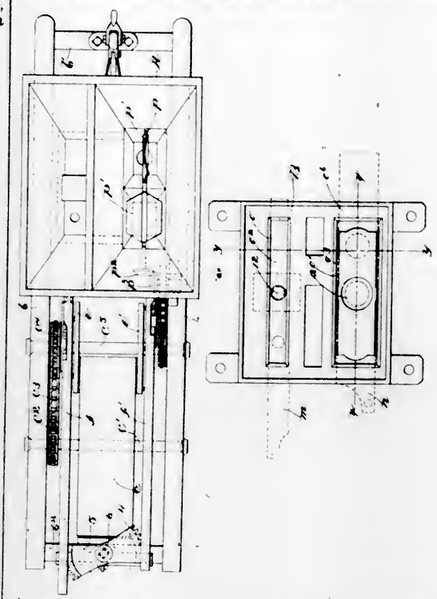
10. In a device of the character described, the combination of the handles, arched tool-carrying frame connected thereto, having slotted extensions *b'*, two wheels, and supporting arms therefor, adjustably and detachably connected with said extensions *b'*.

11. In a device of the character described, a wheel, and supporting arm therefor, a block to which it is connected having a scraper $b^3$, thereon which terminates adjacent the wheel.

12. In a device of the character described, a wheel and supporting arm therefor, a block having a scraper $c^{13}$, thereon which terminates adjacent the wheel, pivot bolt connecting said wheel supporting arm with a block, and an adjusting device for adjusting said arm with relation to the block.

## 531,606. PLANTER.

CHARLES W. WARNER, Melrose, Mass. Filed Nov. 18, 1893. Serial No. 491,306. (No model.)



*Claim.*—1. In a planter, the combination of two compartments, delivery slides *m*, *n*, for said compartments, bars *f*, *f'*, connected to said slides, disks having pins for advancing them alternately, shaft for said disks, ground wheel, and shaft therefor, and connections between said shafts, racks 3, at the rear ends of said bars *f*, *f'*, toothed plate 5, engaging therewith, and the vertically adjustable stand 7, to which said toothed plate is pivoted.

2. In a planter, the combination of two compartments, delivery slides *m*, *n*, bars *f*, *f'*, connected thereto, having depending dogs $f^3$, disks *c*, *c'*, having pins 2, shaft $c^5$, to which said disks are secured, ground wheel *c*, its shaft *c'*, and intermediate connections between said shafts $c^5$, and *c'*, whereby the former is driven by the latter.

3. In a planter, the combination of two compartments, delivery slides *m*, *n*, bars *f*, *f'*, connected thereto, having depending dogs $f^3$, disks *c*, *c'*, having pins 2, shaft $c^5$, to which said disks are secured, sprocket wheel $c^4$, chain $c^3$, sprocket wheel $c^2$, shaft *c'* and the ground wheel *c*.

4. In a planter, the combination with a fertilizer compartment having two delivery orifices, and a reciprocating delivering device, of an agitator contained in said compartment, consisting of the rotary shaft *p*, two pairs of radial blades *p'*, *p'*, arranged thereon at right angles with relation to each other as shown, there being one pair above each delivering orifice, and by their construction and arrangement acting to crowd the material down into the orifices, alternately, and gearing connecting said shaft *p* with a driving shaft whereby the former is rotated by the latter, substantially as described.

5. In a planter, the combination of two compartments, a base B therefor, consisting of an integrally formed casting comprising a top plate provided with elongated openings *o*, *o'* beneath the compartments, bottom plates $o^2$, $o^3$, made substantially as long as said openings, and having central delivery openings and side supports for holding them a short distance beneath, but in a parallel plane with said openings, said side supports being arranged a certain distance apart to present side and end openings, and delivery slides *m*, *n* upon said bottom plates $o^2$, $o^3$, and means for moving them longitudinally thereon, substantially as described.

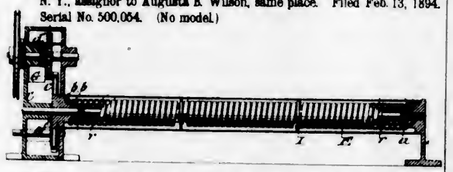
6. In a planter, the combination of a compartment, a base B therefor, consisting of an integrally formed casting comprising a top plate having an elongated opening *o* directly beneath the compartment, bottom plate $o^3$, beneath said opening, made substantially as long as said opening and having a central delivery opening side supports for holding said bottom plate in a plane below but substantially parallel with said opening, said supports being arranged at suitable distances apart to present side and end openings, a delivery slide *m*, upon said bottom plate $o^3$, and means for moving said slide longitudinally, substantially as described.

7. In a planter, the combination of a compartment, a base therefor having an elongated delivery opening, bottom plate $o^3$ beneath said opening, made substantially as long as said opening, and having a central delivery opening, side supports for holding said bottom plate in a plane below but substantially parallel with said opening, said supports being arranged at suitable distances apart to present side and end openings, and a delivery slide *m* moving upon said bottom plate $o^3$ having two openings 13, and provided upon its under side with marginal ribs 14, circular ribs 15, and transverse connecting ribs 16, and means for reciprocating said slide longitudinally to alternately bring the ribs 15, 16, flush with the opposite ends of the bottom plate $o^3$, substantially as described.

8. In a planter, a ground wheel, its shaft, an operating shaft arranged in paralleliam therewith and adapted to control the delivering device, a sprocket wheel on each shaft, one of which has a radial shaft receiving opening, means for securing said sprocket wheel to its shaft, and a sprocket chain passing around said sprocket wheels.

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**531,607. SPRING-MOTOR.** MICHAEL H. WILSON, New York; N. Y., assignor to Augusta R. Wilson, same place. Filed Feb. 13, 1894. Serial No. 500,054. (No model.)



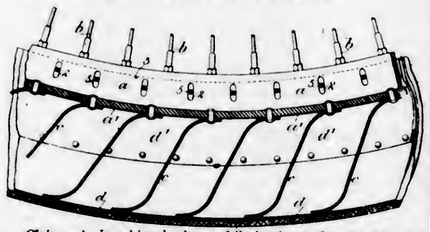
*Claim.*—1. In a spring motor, the combination of a shaft and a support for the same, a spiral motor spring surrounding and connected with said shaft, and interposed loose sleeves which are capable of turning on the said shaft and upon which the spring is free to turn independently, substantially as and for the purpose herein set forth.

2. In a spring motor, the combination of a central shaft, a spiral motor spring consisting of a plurality of spring sections arranged end to end, one or more rotary disks for connecting together said spring sections end to end, and a separate bearing on the shaft for each disk by which it is independently confined lengthwise of the shaft, substantially as herein set forth.

3. In a spring motor, the combination of a central shaft, two spiral motor springs arranged one within the other around said shaft and each composed of a plurality of spring sections arranged in line with each other end to end, and a disk which is interposed between two of the said sections of each spring and which forms a connection common to the sections of both springs and which is fitted to the said shaft to turn thereon with the coiling and uncoiling of the spring, substantially as herein set forth.

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**531,608. BICYCLE-TIRE.** FRANK M. ASHLEY, Hawthorne, N. J. Filed Mar. 12, 1894. Serial No. 503,253. (No model.)



*Claim.*—1. In a bicycle tire, a felly having a flat bar face and springs connected therewith, in combination with a thin metal tube open centrally along its inner face and having flanged edges adjacent to the sides of the felly, means for connecting said flanges to the felly and a rubber shoe outside the tube, substantially as specified.

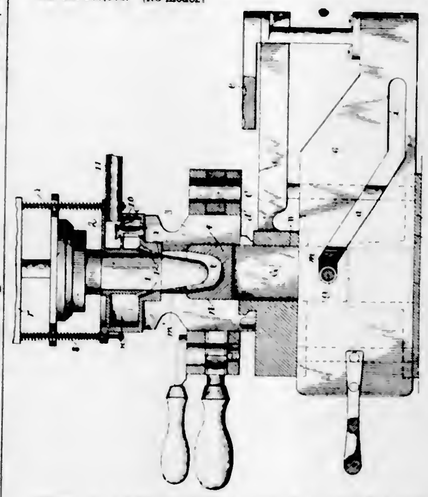
2. In a bicycle tire, a metal felly of T-shape in cross section and projecting blade springs connected to the face of the felly, in combination with a spring metal tube divided centrally and having flanged edges to receive the web of the T shaped felly and with means for securing the flanges and connecting them to the felly, substantially as specified.

3. In a bicycle tire, the combination with the rubber shoe, of a steel tube within the rubber shoe, a felly composed of a rib and flat faced bar, means for connecting the same and the tire, and springs connected to the outer surface of the bar and bearing against the inner face of the steel tube, substantially as set forth.

4. In a bicycle tire a felly composed of a rib *a* with radial mortises and a flat bar face *a'* in combination with the blade springs *c* secured to said bar face, the steel tube tire surrounding said springs and composed of the outer curved section *d* and inner curved sections $d'$ $d^3$ and flanges 3 4, the rivet pins 5 passing through the flanges and rib and connecting the parts and the rubber shoe surrounding and cemented to the steel tube, substantially as set forth.

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**531,609. MOLD FOR THE MANUFACTURE OF GLASSWARE.** CHARLES E. BLUE, Wheeling, W. Va., assignor of five-eighths to Arthur E. Hubbard and Louis V. Blue, same place. Filed June 27, 1894. Serial No. 515,872. (No model.)



*Claim.*—1. A mold comprising a mold body, a vertically movable primary bottom, a horizontally movable secondary bottom, and a direct communication between said bottoms for the purpose described.

2. A mold comprising a mold body, a movable primary bottom therein, a movable secondary bottom adapted to take its place, and a slide connected with the said bottoms for moving them simultaneously, substantially as set forth.

3. A mold comprising a mold body, a movable primary bottom within the same, a movable secondary bottom for taking the place of the primary bottom, and a slide carrying said secondary bottom and operatively connected with the said primary bottom, substantially as set forth.

4. A mold comprising a mold body, a vertically movable primary bottom, a horizontally movable secondary bottom, and a handle operatively connected with both of said bottoms.

5. A mold comprising a mold body, a movable primary bottom for the same, a sliding rod having a secondary bottom connected thereto, and a cam carried by said rod adapted to engage and operate the said movable primary bottom.

6. A mold comprising a mold body, a movable primary bottom within the same, a rod moving transverse the said mold and operatively connected with the said primary bottom, a secondary bottom moving transverse the mold and adapted to take the place of the primary bottom, and operative connections between the said rod and the secondary bottom, substantially as described.

7. A mold comprising a mold body, a movable primary bottom within the same, the mold body having a transverse opening, a movable rod or bar within the opening, a movable secondary bottom adapted to take the place of the said primary bottom, and operative connections between the bottoms and the rod whereby the rod simultaneously operates both bottoms for the purpose set forth.

8. A mold comprising a mold body, a movable primary bottom within the same, the mold body having a transverse opening below the main portion of the mold, an endwise moving rod within the same, the said primary bottom having a vertical opening for the movement of said rod, the rod having a cam adapted to operate said primary bottom, and a movable secondary bottom adapted to be operated by the said rod simultaneously with the operation of the primary bottom for the purpose described.

9. A mold comprising a mold body, a movable air chamber above the same having a vertical plunger opening, the walls of said opening having an air inlet, the wall of said chamber having a valve air inlet.



the said valve adapted to engage the upper wall of said mold, and a plunger within the said vertical opening and adapted to close the air inlet.

10. A mold comprising a mold body, a movable air chamber above the same having a vertical plunger opening, the walls of said opening having an air inlet, a valve inlet for the said air chamber, and means for opening said valve when the air chamber is in its downward position, substantially as described.

11. A mold comprising a mold body, a movable air chamber above the same having an air inlet in the said mold, a vertically moving plunger adapted to close the said inlet, and a valved air inlet to the said chamber and an air supply, substantially as specified.

12. A glass mold comprising a mold, a movable combined ring and air chamber having a plunger opening the wall of which is provided with an air inlet, a plunger movable in said opening and adapted to open and close said air inlet, in combination with a press and its head, the plunger having a firm connection with said head, and the ring and air chamber a yielding connection with the same head, whereby a single upward movement of the head first lifts the plunger and admits air, and a continuation of the same movement of the head lifts the combined air chamber and ring, substantially as described.

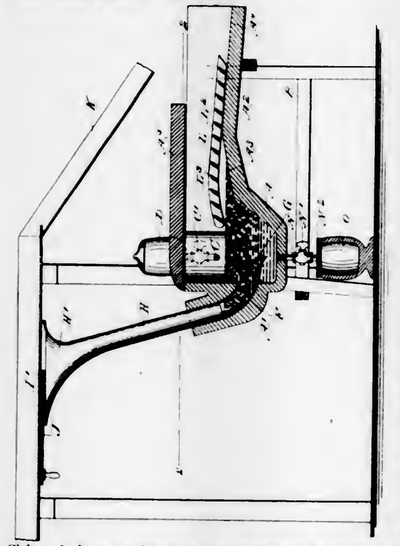
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**531,610. MARINE ENAMEL OR PAINT.** KATHARINE L. CHRISTMAN, New York, N. Y., executrix of Charles H. Christman, deceased. Filed Mar. 20, 1894. Serial No. 504,464. (No specimens.)

*Claim.*—An enamel composition, composed of linaceæ ditath, rhus vernicifera, English linseed oil, copal varnish, and a drier, in substantially the relative proportions, and for the purposes specified.

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**531,611. AMALGAMATOR.** LEWIS D. COE, Leadville, Colo., assignor of one-half to Joseph A. Lamping, same place. Filed Jan. 16, 1894. Serial No. 497,051. (No model.)



*Claim.*—1. In an amalgamator, the combination with a mercury well having an outlet channel, of a riffle frame secured in the outlet channel and projecting into the well, substantially as and for the purpose set forth.

2. In an amalgamator, the combination with a mercury well having an outlet channel, of a material supply pipe projecting into the well, near the bottom thereof, a screen on the inner end of the said pipe, and a riffle frame secured in the outlet channel and projecting into the well, substantially as described.

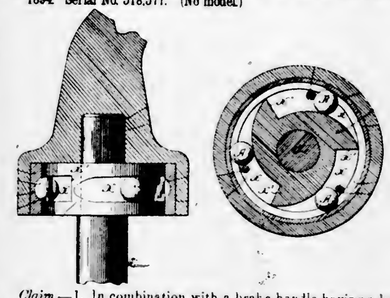
3. In an amalgamator, the combination with a mercury well having an outlet channel, the bottom portion $A^3$ of which inclines downwardly and inwardly, and the portion $A^4$ downwardly and outwardly, of a riffle frame secured to the part $A^4$ of the bottom of the channel and projecting over the part $A^3$ into the well, substantially as described.

4. In an amalgamator, the combination with a mercury well having an outlet channel, of a chute above the well, and having a valved opening in its bottom and a supply pipe leading from the opening in the bottom of the chute to the mercury well near the bottom thereof, and having its inner end projecting a short distance into the well and covered by a screen, substantially as described.

5. In an amalgamator, the combination with a mercury well having an outlet channel, of a chute above the well, a supply pipe leading from an opening in the bottom of the chute to the well and projecting into the same near the bottom thereof, a screen covering the end of the supply pipe projecting into the well, and a riffle frame secured to the bottom of the outlet channel and projecting into the well, substantially as described.

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**531,612. BRAKE-HANDLE.** PLATO G. EMERY, Chicago, Ill., assignor to the Adams & Westlake Company, of Illinois. Filed July 25, 1894. Serial No. 518,571. (No model.)



*Claim.*—1. In combination with a brake handle having a lower socket provided with an inner grooved annular surface, and a brake staff, a carrier having a series of slots or depressions eccentric to the axis of said brake staff, while its circumference is concentric therewith, and a series of balls confined within races formed by the said slots or depressions and the grooved annular surface of said handle socket, substantially as set forth.

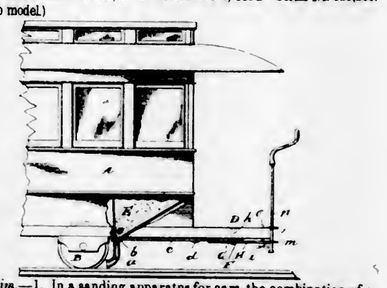
2. In combination with a brake handle having a lower socket provided with an inner grooved annular surface, a brake staff and a carrier having a series of slots or depressions eccentrically arranged with respect to the axis of said brake staff and inclined from a line horizontal with said axis, a series of balls confined within races formed by said slots or depressions and the grooved annular surface of said handle socket, substantially as set forth.

3. In combination with a brake handle having a lower socket formed with an inner grooved annular surface, and a brake staff, a carrier secured to or forming a part of said brake staff and having slots or depressions eccentrially arranged with reference to the axis thereof, balls adapted to ride or bind between said carrier and said handle socket, and devices for maintaining said balls closely to the point of effective action, substantially as set forth.

4. In combination with a brake handle having a lower socket formed with an inner grooved annular surface, a brake staff, a carrier fixed thereto having circularly grooved surfaces eccentric to the axis of said brake staff, and balls confined and adapted to bind between said carrier and socket, during the rotation of said handle in one direction, and to be released during its rotation in the opposite direction, substantially as set forth.

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**531,613. SANDING DEVICE FOR STREET-CARS.** WILLIAM C. FISHER, Mount Vernon, N. Y. Filed Oct. 8, 1894. Serial No. 525,269. (No model.)



*Claim.*—1. In a sanding apparatus for cars, the combination of a sand box having a discharge spout; valve connected with said sand box; a pivoted rod connected by one end with said valve and having

the other end projecting toward the front of the car, a cam acting upon the front end of said rod; and means for operating said cam.

2. In a sanding apparatus for cars, the combination of a sand box having a discharge pipe or spout, a slide valve, a valve rod connected by one end to said valve, a cam having a pinion wheel, and a rack for operating said cam and valve rod.

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531,614. ELECTRIC CABLE. THEODORE GUILLEAUME, Cologne, Germany. Filed Apr. 26, 1892. Serial No. 430,791. (No model.) Patented in Germany Nov. 7, 1891, No. 65,930, and in England Nov. 12, 1891, No. 19,630.



*Claim.*—1. In an electric cable, a strand or bundle consisting of one or more pairs of flat wires or ribbons, each insulated from the other or others and each pair serving to convey flow and return currents in a closed circuit, the several wires or ribbons being laid flatwise against one another and the whole group being then twisted together, substantially as herein described.

2. In an electric cable, a strand or bundle consisting of one or more pairs of flat wires or ribbons, such as *b*, each served with insulating material, such as *c*, and laid together flatwise, the whole strand or bundle being subsequently twisted, and, either before or after the twisting operation, provided with an insulating covering C×, substantially as herein described.

3. An electric cable consisting of a pair or pairs of insulated ribbons, such as *b*, twisted together to form a strand or strands, such as B, the strand or strands being then insulated and laid up into a cable and inclosed in a sheathing, such as C, substantially as herein described.

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531,615. PIPE CONNECTION FOR FLUIDS. THOMAS JAMES and WILLIAM T. JAMES, Braddock, Pa. Filed Feb. 10, 1894. Serial No. 499,748. (No model.)

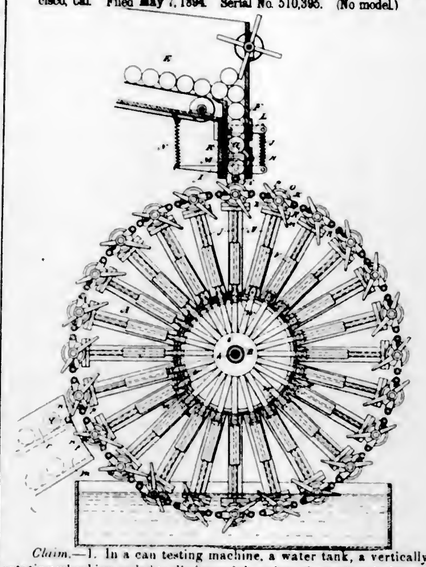


*Claim.*—1. A fluid connection comprising pipes or conduits having a longitudinal and rotary motion relatively to each other and provided with passages for at least two streams of water, and connections from said pipes to a fluid supply or exhaust and to an external motor or motors; substantially as described.

2. A fluid connection for cranes or other rotating and longitudinally movable mechanism, which consists of at least four concentric pipes or conduits, of which two at least are connected by fixed connections to fluid supply or exhaust, while the other two are longitudinally movable and rotary thereon and are connected with a motor or motors to be supplied, said concentric pipes having lateral passages to permit passage of the fluid from the fixed fluid connection to the movable fluid connection, and vice versa; substantially as described.

3. In a fluid connection for cranes or other rotating or longitudinally movable mechanism, the combination of concentric pipes J, D and C, the pipe J being vertically movable, and the outer traveling section E movable with said pipe J, fluid passages connected with the said ports C, D and E, and lateral openings connecting the ports J and D, and C and E respectively; substantially as described.

531,616. CAN-TESTING MACHINE. JOSEPH BLACK, San Francisco, Cal. Filed May 7, 1894. Serial No. 510,395. (No model.)



*Claim.*—1. In a can testing machine, a water tank, a vertically rotating wheel journaled to dip its periphery into the tank at its lowest point, clamping disks adapted to receive the ends of the cans and hold the latter between them, mechanism by which the outer disk is reciprocated, consisting of the toggle levers, the stationary cam and connecting rods by which they are actuated, cross heads and slide rods connecting them and the outer clamping disk, an inner retractile disk having an annular ring washer adapted to form a tight joint with the open head of the can, a hollow rearward extension of the inner disk, a radial pipe through which air is delivered into the extension, a flange projecting inwardly within the extension, a shaft extending there-through having a collar and a washer forming a joint against the flange and projecting through an opening in the center of the disk and having channels through which air may escape into the can when the disk is retracted upon the shaft.

2. In a can testing machine, a water tank, a vertically rotating wheel journaled to dip its periphery into the tank at its lowest point, a slidable frame composed of parallel rods and end cross heads, a clamping head carried by said frame and an opposing yielding cross head guided on said frame, a cam and toggle lever mechanism connected with the slidable frame for moving said frame and its fixed clamping head whereby said clamping head is first advanced toward the opposing clamping head to confine the can between the heads, after which both heads and the can continue to move in the same direction, a stationary central shaft passing through one of the heads to form a valve or closure therefor, and a surrounding chamber receiving air under pressure and adapted to deliver into the can.

3. In a can testing machine, the combination, of a water tank, a vertically rotating wheel journaled to dip its periphery into the tank at its lowest point, a transversely slidable frame composed of parallel rods and end cross heads, a clamping head fixed to one of said cross heads and an opposing clamping head yieldingly mounted and guided on said frame, an air chamber communicating with one of said heads, with a valve or closure controlling its outlet, and means connecting with the end of the frame opposite to fixed clamping head for operating said frame.

4. In a can testing machine, two opposing clamping heads between which the can is received, a slidable frame composed of parallel rods or bars and end cross-heads to one of which heads one of the clamping heads is fixedly secured, while the other clamping head is movable and guided on said rods or bars, one of said clamping heads being provided with a valve or closure controlling the discharge from an air chamber, and means for operating the frame transversely whereby as the fixed clamping head advances toward the opposing head it presses the can against the latter and then overcomes the resistance of the said opposing head to cause it to slide upon the movable frame and uncover the valve-controlled discharge from the air chamber.

5. In a can testing machine having a water tank, a vertically rotating wheel journaled to dip its periphery into the tank at its lowest point, opposing clamping heads carried by the wheel and adapted to receive the cam between them, a frame consisting of parallel rods and cross heads slidable transversely of said wheel and carrying one of said heads and serving as a guide for the opposing head, means whereby said opposing head may yield in the direction of the movement of the frame, and means for operating the frame whereby the clamping head carried by it is advanced toward the opposing head to confine the can between itself and the opposing head and transmits its own movement to the opposing head, and means for supplying air to the interior of the can during the movement of said opposing head.



6. In a can testing machine, a frame composed of parallel bars or rods slidably mounted and connected at their ends by cross heads, an outer clamping head carried by one of said cross heads, an opposing inner clamping head yieldingly mounted in said frame and having an internal chamber connected with an air supply, toggle levers connected with the other cross head, a stationary cam for actuating said levers, and a stationary shaft passing through the chamber of the inner clamping head to form a valve or closure therefor.

7. In a can testing machine, a water tank, a vertically rotating wheel journaled to dip its periphery into the tank at its lowest point, a transversely slidable frame carried by the wheel and comprising parallel rods and end cross heads, a clamping head fixed to one of said cross heads, an opposing head yieldingly mounted in the slidable frame, said heads adapted to receive the can between them, means for operating the slidable frame consisting of toggle levers connected therewith and with a fixed point, a stationary cam and a vertically slidable connection between the same and the toggle levers, one of said heads being connected with an air chamber controlled by a valve which opens when the head is moved, whereby air may be discharged into the can.

8. In a can testing machine, a water tank, a vertically rotating wheel, clamping heads upon the wheel, mechanism for admitting air under pressure through one series of these heads into the cans clamped between opposing heads, a chute having a vertical extension whose lower end stands in line above the top of the wheel, a shaft mounted in said vertical extension and carrying a pawl the upper end of which projects into the passage of the extension and means for oscillating said pawl.

9. In a can testing machine having a revoluble wheel with opposing clamping heads for receiving the can between them, a chute having a vertical extension with a passage through which the cans pass terminating just above the top of the wheel, an oscillating pawl operating within said vertical passage to check the passage of the cans, and means for operating the pawl consisting of suitably fulcrumed levers and connecting rods, one of said levers being actuated during the passage of a previous can beneath it whereby the can held in check is permitted to descend.

10. In a can testing machine, a revoluble wheel and peripheral clamping devices adapted to receive and hold the cans to be tested, a chute through which cans pass to the top of the wheel, having a vertical extension terminating just above the top of the wheel, an oscillating stop so fulcrumed that its ends when interposed in the passage will check the movement of the cans, a lever so fulcrumed to said extension that it will be in the path of and will be elevated by a can or other projection carried by the rotating wheel, and connections between the lever and the stop whereby the latter is oscillated to release and deliver a can between each set of clamps upon the wheel.

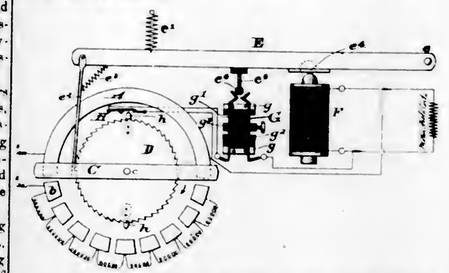
11. In a can testing machine, a revoluble wheel with reciprocating clamps around its periphery, a chute and mechanism by which the cans are delivered singly between the clamps, supports upon which the cans are received and held while being grasped by the clamps, lever arms fulcrumed upon the axis of the exterior clamps, with arms *p* extending therefrom beneath the cans, a discharge chute *r* and a stop *p* adapted to engage the arms and turn them to eject the cans into the chute.

12. A can testing machine consisting of a revoluble wheel journaled to dip its periphery into a water tank at its lowest point, and comprising a hollow hub and radial extensions, movable disks upon the periphery of the wheel against which the ends of the cans are adapted to abut, having chambers into which air under pressure is admitted from the radial pipes and valves closing openings through the disk faces to the cans, opposing disks between which and the air supply disks the cans are clamped, and mechanism comprising a stationary cam and toggle levers by which the latter disks are moved to first clamp the cans and afterward retract the air supply disks and open the passages to the cans.

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531,617. AUTOMATIC RHEOSTAT. RODOLPHUS W. HOLLIS, Atlanta, Ga. Filed Apr. 30, 1894. Serial No. 509,522. (No model.)

*Claim.*—1. The combination of the rheostat comprising segments, and a spring brush pivoted by the middle concentrically thereof, an electro magnet in circuit with the motor-field-coils, an armature thereto, and means for connecting said armature with the rheostat lever operatively, a shunt-circuit, including a switch adapted to close said shunt-circuit after the energizing of the magnet, and a switch adapted to open said circuit on the rheostat, being turned to full on, for the purpose specified.



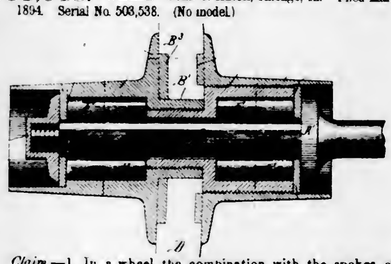
2. The rheostat consisting of segments, a shaft mounted centrally thereof, a brush carried on said shaft, and adapted to traverse said segments, a ratchet-wheel mounted on said shaft, a lever, a pawl thereon adapted to engage said ratchet-wheel, an electro-magnet adapted to actuate said lever, and means for short-circuiting said magnet on the depression of the lever, consisting of a shunt-circuit, including vertically movable separated terminals, and a pin carried on the lever adapted to engage said terminals on the depression of the lever, for the purpose specified.

3. The rheostat, consisting of segments, a shaft mounted centrally thereof, a brush carried on said shaft, and adapted to traverse said segments, a ratchet-wheel mounted on said shaft, a lever, a pawl thereon adapted to engage said ratchet-wheel, an electro-magnet adapted to actuate said lever, and means for short-circuiting said magnet on the depression of the lever, consisting of a shunt-circuit including springs carried on a vertically movable block, set in guides, a motion-limiting stop, and a pin having its end enlarged carried on the said lever, in such a position as to be inserted between the springs on the depression of the lever, for the purpose specified.

4. The rheostat, consisting of segments, a shaft mounted centrally thereof, a brush carried on said shaft and adapted to traverse said segments, a ratchet-wheel mounted on said shaft, a lever, a pawl thereon adapted to engage said ratchet-wheel, an electro-magnet adapted to actuate said lever and means for short-circuiting said magnet on the depression of the lever, consisting of the shunt-circuit and spring-jack therein, and pin on the lever, a self-closing switch in said shunt-circuit and pins on the shaft of the rheostat adapted to trip same, substantially as and for the purpose specified.

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531,618. WHEEL. JOHN G. KEITH, Chicago, Ill. Filed Mar. 14, 1894. Serial No. 503,538. (No model.)



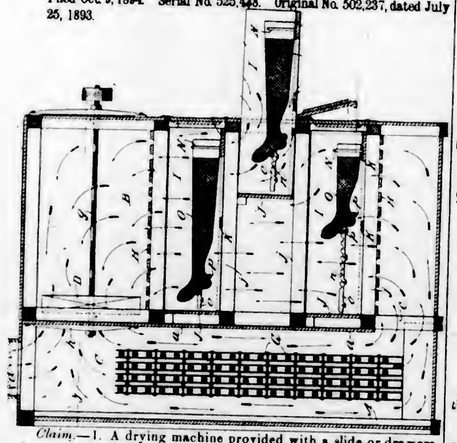
*Claim.*—1. In a wheel, the combination with the spokes, of a hub section having a seat, B', upon which the spokes rest, a flange, $B^3$, having extensions, $B^4$, extending into the spaces between the spokes, a hub section, C, threaded to the section, B, a sleeve, E, threaded to the section, C, by threads differing in pitch from the threads joining the sections, B, and C, and having a flange, E', bearing extensions, $E^2$, extending into spaces between the spokes, substantially as described.

2. In a wheel, the combination with the spokes, of a hub section having a seat, B', upon which the spokes rest, a flange, $B^3$, having extensions, $B^4$, extending into the spaces between the spokes, a hub section, C, threaded to the section, B, a sleeve, E, threaded to the section, C, by threads differing in pitch from the threads joining the sections, B, and C, and having a flange, E', bearing extensions, $E^2$, extending into spaces between the spokes, the sections, B, and C, having

annular recesses, $B^4$, and $C^4$, respectively, adapted to receive anti-friction rollers, F, substantially as described.

# REISSUES.

11,460. DRYING-MACHINE. JOSIAH K. PROCTOR, Philadelphia, Pa., assignor to the Philadelphia Textile Machinery Company, same place. Filed Oct. 9, 1894. Serial No. 525,428. Original No. 502,237, dated July 25, 1893.



*Claim.*—1. A drying machine provided with a slide or drawers, a frame for holding one of the ends of stocking forms or boards and means for adjusting the frame so as to accommodate the same to varying lengths of forms or boards, substantially as and for the purposes described.

2. A drying machine provided with communicating heating and air distributing compartments, slides or drawers located in the air distributing compartments, a frame for holding one of the ends of forms or boards adapted to receive goods, means for adjusting said frame so as to accommodate the same to different lengths of forms or boards and means for causing a circulation of the air through said compartments, substantially as and for the purposes described.

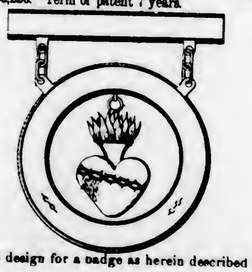
3. A drying machine provided with slides or drawers, a frame having downwardly projecting lugs at either end thereof in combination with notched cleats connected with the sides of the slides or drawers to permit of said frame being adjusted to and retained in different positions with respect to the front of the slides or drawers for holding boards or goods of different lengths, substantially as described.

4. In a drying machine provided with slides or drawers, a frame for holding a stocking form or board, and notched cleats connected with the sides of the slides or drawers, substantially as and for the purposes described.

5. In a drying machine provided with slides or drawers, a casing having hinged doors, an internal frame for holding stocking forms or boards and means for adjusting the same, substantially as and for the purposes described.

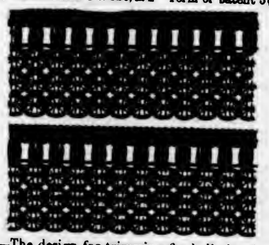
# DESIGNS.

23,884. BADGE. JOHN F. KELLER, St. Louis, Mo. Filed Oct. 17, 1894. Serial No. 526,226. Term of patent 7 years.



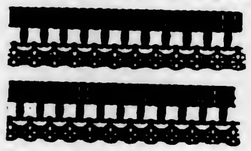
*Claim.*—The design for a badge as herein described and shown.

23,885. TRIMMING. FRANK A. BYRAM, Philadelphia, Pa. Filed Nov. 10, 1894. Serial No. 528,424. Term of patent 3½ years.



*Claim.*—The design for trimming for ladies' underwear substantially as shown and described.

23,886. TRIMMING. FRANK A. BYRAM, Philadelphia, Pa. Filed Nov. 10, 1894. Serial No. 528,425. Term of patent 3½ years.



*Claim.*—The design for trimming for ladies' underwear substantially as shown and described.

23,887. ORNAMENTAL FABRIC. HENRY SPENCER LAWSON, West Bergen, N. J., assignor to Clarence Whitman & Co., New York, N. Y. Filed Nov. 8, 1894. Serial No. 528,262. Term of patent 7 years.



*Claim.*—The design for an ornamental fabric substantially as shown and described.

23,888. CARPET. ARTHUR MIDDLETON ROSE, Yonkers, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Nov. 30, 1894. Serial No. 530,486. Term of patent 3½ years.



*Claim.*—The design for carpets, substantially as shown in the drawing accompanying this specification.



23,889. CARPET. ARTHUR L. HALLIDAY, New York, N. Y., assignor to Matthew J. Whittall, Worcester, Mass. Filed Nov. 30, 1894. Serial No. 530,485. Term of patent 3½ years.



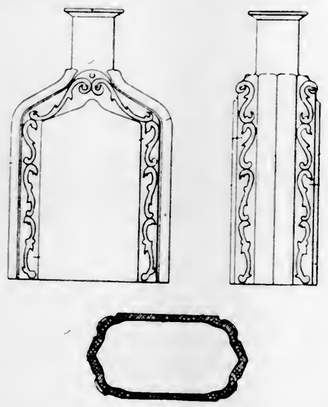
*Claim.*—The design for carpets, substantially as shown in the drawing accompanying this specification.

23,890. PITCHER. CHARLES C. WIENTGE, Providence, R. I., assignor to the Howard Sterling Company, same place. Filed Oct. 29, 1894. Serial No. 527,361. Term of patent 7 years.



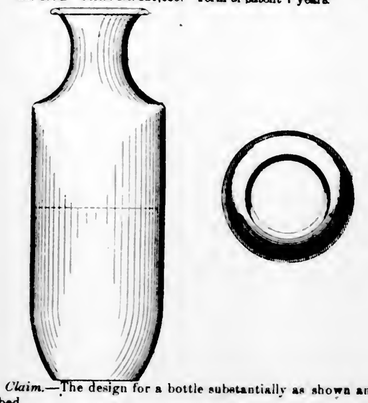
*Claim.*—The design for the body of a pitcher as herein shown and described.

23,891. BOTTLE. COURTNEY H. WEST, St. Louis, Mo., assignor to the Moffitt-West Drug Company, same place. Filed Nov. 27, 1894. Serial No. 530,183. Term of patent 14 years.



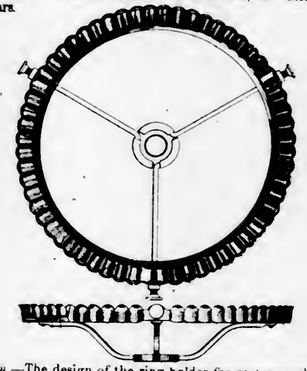
*Claim.*—The design for a bottle, substantially as herein shown and described.

23,892. BOTTLE. CHARLES GULDEN, New York, N. Y. Filed Nov. 22, 1894. Serial No. 529,655. Term of patent 7 years.



*Claim.*—The design for a bottle substantially as shown and described.

23,893. GLOBE OR SHADE HOLDER. LEWIS J. ATWOOD, Waterbury, Conn., assignor to the Plume & Atwood Manufacturing Company, same place. Filed Oct. 8, 1894. Serial No. 525,302. Term of patent 7 years.



*Claim.*—The design of the ring holder for globes or shades substantially as shown and described.

23,894. WASHBOWL AND SLAB. JOHN H. GAVIN, Chicago, Ill., assignor to the L. Wolff Manufacturing Company, same place. Filed Sept. 4, 1894. Serial No. 522,139. Term of patent 14 years.



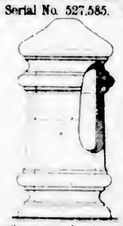
*Claim.*—The design for a corner wash bowl and slab herein shown and described.

23,895. WASHBOWL AND SLAB. JOHN H. GAVIN, Chicago, Ill., assignor to the L. Wolff Manufacturing Company, same place. Filed Sept. 10, 1894. Serial No. 522,671. Term of patent 14 years.



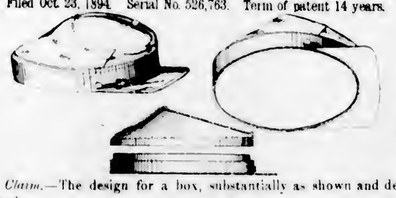
*Claim.*—The design for a corner wash bowl and slab herein shown and described.

23,896. WOODEN BOX. FREDERICK J. EDGARS, Brooklyn, N. Y. Filed Oct. 31, 1894. Serial No. 527,585. Term of patent 7 years.



*Claim.*—The design for a wooden box substantially as shown and described.

23,897. BOX. FREDERIC WILLIAM BARTHMAN, Jr., Brooklyn, N. Y. Filed Oct. 23, 1894. Serial No. 526,763. Term of patent 14 years.



*Claim.*—The design for a box, substantially as shown and described.

23,898. EGG-CUP. WILLIAM R. HILL, Syracuse, N. Y., assignor to the Premier Egg Cup Company, same place. Filed Oct. 30, 1894. Serial No. 527,494. Term of patent 14 years.



*Claim.*—The design for an egg cup, substantially as herein shown and described.

23,899. BOTTLE AND GLASS TRAY FOR COUNTERS. RUDOLPH WITTGENFELD, Cincinnati, Ohio, assignor of one-half to Frederick C. Weber, same place. Filed Oct. 29, 1894. Serial No. 527,350. Term of patent 14 years.



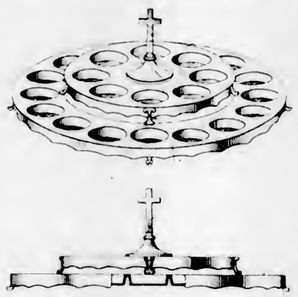
*Claim.*—The design for a bottle and glass tray for counters, substantially as shown and described.

23,900. PLATE OR SIMILAR ARTICLE. CHARLES EDWARD HAVILAND, Limoges, France. Filed Nov 16, 1894. Serial No. 529,060. Term of patent 14 years.



*Claim.*—The design for a plate or similar article, substantially as shown and described.

23,901. COMMUNION-SERVICE TRAY. EDWIN J. HOWE, Newark, N. J., assignor of one-half to George R. Howe, same place. Filed Nov. 17, 1894. Serial No. 529,188. Term of patent 14 years.



*Claim.*—The design for a communion service tray, substantially as shown and described.

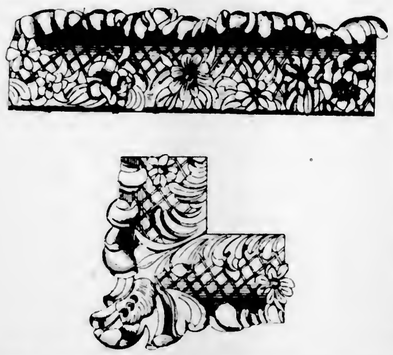
23,902. MOLDING FOR PICTURE-FRAMES, &c. LAWRENCE LIPPI, New York, N. Y., assignor to R. W. Aubé & Son, same place. Filed Nov. 26, 1894. Serial No. 530,054. Term of patent 3½ years.



*Claim.*—The design for a molding for picture frames and the like substantially as herein shown and described.



23,903. MOLDING FOR PICTURE-FRAMES, &c. REUBEN W. AUBÉ, Brooklyn, N. Y. Filed Nov. 26, 1894. Serial No. 530,048. Term of patent 3½ years.



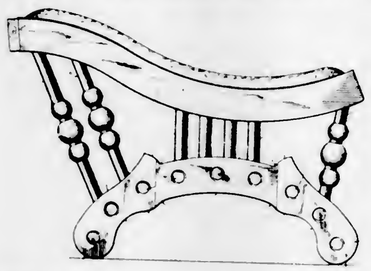
*Claim.*—The design for a molding for picture frames and the like, substantially as herein shown and described.

23,904. MOLDING FOR PICTURE-FRAMES, &c. LAWRENCE LIPPI, New York, N. Y., assignor to R. W. Aubé & Son, same place. Filed Nov. 26, 1894. Serial No. 530,053. Term of patent 3½ years.



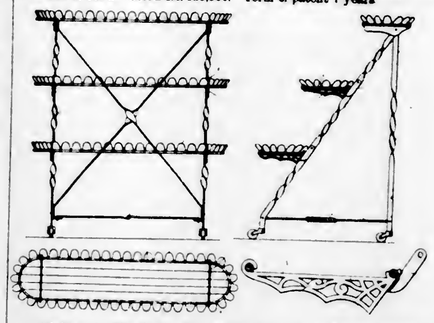
*Claim.*—The design for a molding for picture frames and the like, substantially as herein shown and described.

23,905. CHAIR-SEAT FRAME. FRED A. BENNETT, Sheboygan, Wis. Filed Nov. 30, 1894. Serial No. 530,493. Term of patent 7 years.



*Claim.*—The design for a chair seat frame substantially as shown and described.

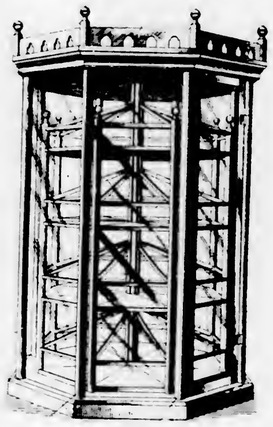
23,906. FLOWER-STAND. JOHN L. SYMONDS, Detroit, Mich. Filed Oct. 8, 1894. Serial No. 525,300. Term of patent 7 years.



*Claim.*—1. The design for a flower stand bracket, substantially as herein shown and described.

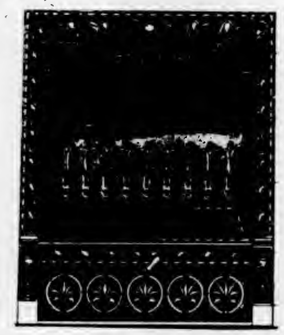
2. The design for a flower stand, as herein described and shown.

23,907. CABINET. JACOB G. SCHUHM, La Porte, Ind. Filed Nov. 2, 1894. Serial No. 527,767. Term of patent 7 years.



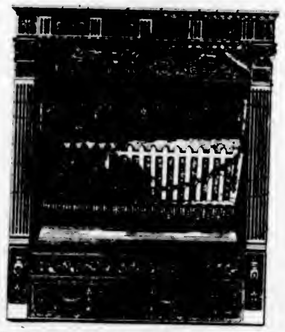
*Claim.*—The design for a cabinet herein shown and described.

23,908. FIREPLACE. HENRY G. DAWSON and WILLIAM R. DAWSON, Chicago, Ill. Filed Nov. 26, 1894. Serial No. 530,071. Term of patent 7 years.



*Claim.*—The design for a fire place substantially as herein shown and described.

23,909. FIREPLACE. HENRY G. DAWSON and WILLIAM R. DAWSON, Chicago, Ill. Filed Nov. 26, 1894. Serial No. 530,070. Term of patent 7 years.



*Claim.*—The design for a fire place substantially as herein shown and described.

23,910. FIREPLACE. HENRY G. DAWSON and WILLIAM R. DAWSON, Chicago, Ill. Filed Nov. 26, 1894. Serial No. 530,072. Term of patent 7 years.



*Claim.*—The design for a fire place, substantially as herein shown and described.

23,911. HEATING-STOVE. GEORGE O. BERGSTROM, Neenah, Wis., assignor to Bergstrom Brothers & Co., same place. Filed Aug. 6, 1894. Serial No. 519,604. Term of patent 7 years.



*Claim.*—1. In a design for a stove the design for the stove leg base 1, substantially as shown and described.

2. In a design for a stove the design for the stove base section 2, substantially as shown and described.

3. In a design for a stove the design for the ash pit door 3, substantially as shown and described.

4. In a design for a stove the design for the foot rail 4, substantially as shown and described.

5. In a design for a stove the design for the flue wings 5, substantially as shown and described.

6. In a design for a stove the design for the front body of the stove, 6, substantially as shown and described.

7. In a design for a stove the design for the panel 7, substantially as shown and described.

8. In a design for a stove the design for the door 8, substantially as shown and described.

9. In a design for a stove the design for the door 9, substantially as shown and described.

10. In a design for a stove the design for the panel 10, substantially as shown and described.

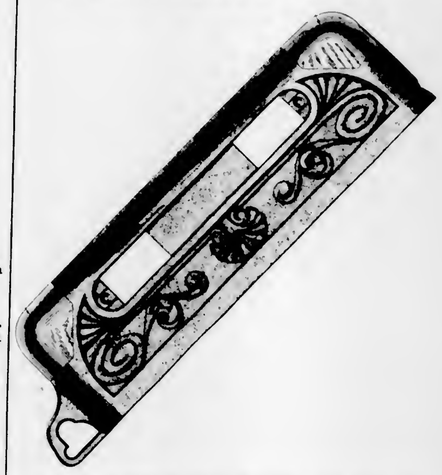
11. In a design for a stove the design for the stove top section, 11, substantially as shown and described.

12. In a design for a stove the design for the top piece, 12, substantially as shown and described.

13. In a design for a stove the design for the tea kettle attachment, 13, substantially as shown and described.

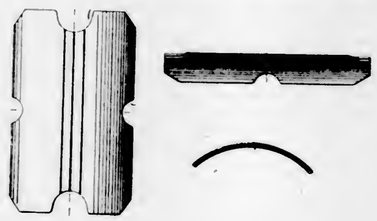
14. The design for a heating stove, as herein shown and described.

23,912. STOVE-PLATE. GEORGE E. WILBUR, Taunton, Mass., assignor to the Weir Stove Company, same place. Filed June 27, 1894. Serial No. 515,892. Term of patent 14 years.



*Claim.*—The design for a stove plate with round, light colored corners and dull dark rounded front edges as shown and described.

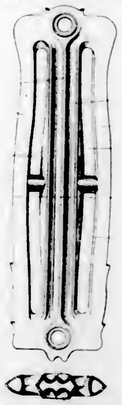
23,913. COLOR-PLATE. ANDREW J. MORROW, Philadelphia, Pa. Filed Oct. 15, 1894. Serial No. 525,990. Term of patent 14 years.



*Claim.*—The design of a color plate, herein shown and described.

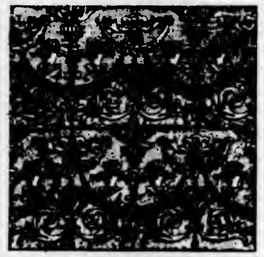


23,914. RADIATOR-LOOP. CHARLES F. WALTHER, Buffalo, N. Y. Filed Oct. 12, 1894. Serial No. 525,726. Term of patent 7 years.



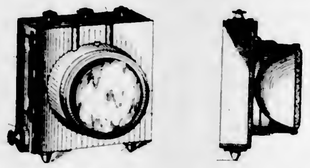
*Claim.*—The design for a radiator loop, substantially as shown and described.

23,915. FINISHING-PLATES. ROBERT H. PRATT, Mamaroneck, N. Y., assignor to the Wheeler Corrugating Company, Wheeling, W. Va. Filed Nov. 30, 1894. Serial No. 530,494. Term of patent 14 years.



*Claim.*—The design for a finishing plate herein shown and described.

23,916. BATTERY-CASE. WILLIAM MORISON, Montclair, N. J. Filed May 25, 1894. Serial No. 512,493. Term of patent 14 years.



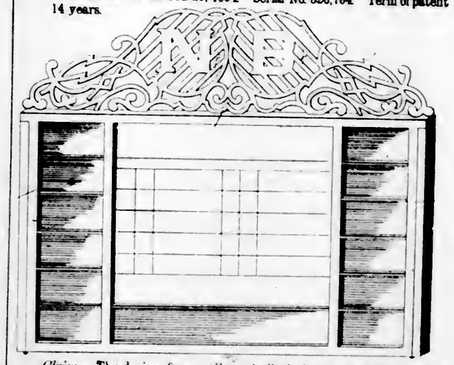
*Claim.*—The design for a battery case herein shown and described.

23,917. NUT. JOHN G. LANE and GEORGE LANE, Poughkeepsie, N. Y. Filed Nov. 6, 1894. Serial No. 528,092. Term of patent 14 years.



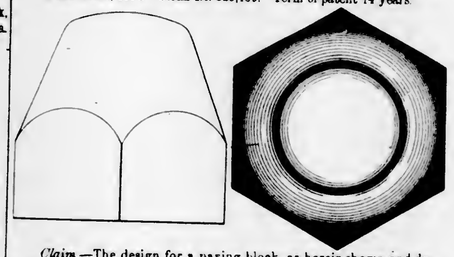
*Claim.*—The design for a nut herein shown and described.

23,918. RAILWAY BULLETIN-BOARD. ABBOTT L. JOHNSON, Muncie, Ind. Filed Oct. 23, 1894. Serial No. 526,764. Term of patent 14 years.



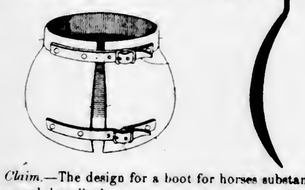
*Claim.*—The design for a railway bulletin-board substantially as herein shown and described.

23,919. PAVING-BLOCK. WILLIAM F. NEPPER, Cincinnati, Ohio. Filed Oct. 6, 1894. Serial No. 525,159. Term of patent 14 years.



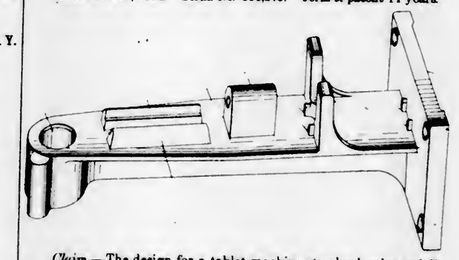
*Claim.*—The design for a paving block, as herein shown and described.

23,920. HORSE-BOOT. FREDERICK H. WOOD, Cleveland, Ohio, assignor of one-half to A. A. Wenham, same place. Filed Nov. 12, 1894. Serial No. 528,585. Term of patent 14 years.



*Claim.*—The design for a boot for horses substantially as herein shown and described.

23,921. STANDARD FOR TABLET-MACHINES. CHARLES A. TATUM, New York, N. Y., assignor to Whitall, Tatum & Co., same place. Filed Nov. 28, 1894. Serial No. 530,275. Term of patent 14 years.



*Claim.*—The design for a tablet machine standard, substantially as herein shown and described.

# TRADE-MARKS

## REGISTERED DECEMBER 25, 1894.

25,699. OUTER CLOTHING FOR MEN AND BOYS. GEORGE BRUCK & Co., New York, N. Y. Filed Oct. 31, 1894.

ROB ROY

*Essential feature.*—The words "ROB ROY." Used since October 15, 1894.

25,700. DRESS AND CORSET STAYS. JULIUS JANOWITZ, New York, N. Y. Filed Nov. 23, 1894.

EAGLE BONE.

*Essential feature.*—The words "EAGLE BONE." Used since January 1, 1894.

25,701. CERTAIN NAMED UNDERWEAR. MATTES & LUTZ, Besigheim, Germany, and New York, N. Y. Filed Nov. 6, 1894.

*Essential feature.*—The word "MATTELUTZ." Used since May 15, 1894.

25,702. SILK RIBBONS. E. S. JAFFRAY & Co., New York, N. Y. Filed Nov. 22, 1894.

*La Tuetic*

*Essential feature.*—The words "LA TUETIC." Used November 12, 1894.

25,703. BOOTS AND SHOES. REGAL SHOE Co., Boston, Mass. Filed Nov. 23, 1894.

3 OF A KIND
TAKE A PAIR.

*Essential feature.*—The figure and words "3 OF A KIND, TAKE A PAIR." Used since September 15, 1893.

25,704. COTTON PIECE GOODS. THE PELZER MANUFACTURING COMPANY, Pelzer, S. C. Filed Nov. 19, 1894.



*Essential feature.*—The representation or figure of a canal. Used since June 1, 1884.

25,705. STRENGTHENING-PLASTERS. JOHNSON & JOHNSON, New Brunswick, N. J., and New York, N. Y. Filed Oct. 18, 1894.

JOHNSON'S CAPSICIN

*Essential feature.*—The words "JOHNSON'S CAPSICIN" and the representation of two Greek crosses. Used since April, 1888.

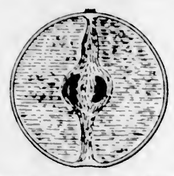
25,706. CERTAIN NAMED REMEDIES. HENRY CLARK, Buffalo, N. Y. Filed Oct. 22, 1894.

4 BIG FOUR REMEDIES

*Essential feature.*—The figure "4," having on its face the words "BIG FOUR REMEDIES." Used since October 1, 1894.

25,707. BLOOD PURIFIERS AND TONICS. WILLIAM R. KENNARD, New York, N. Y. Filed Nov. 17, 1894.

ORANGE-SEEDS



*Essential feature.*—A pictorial representation of half of an orange with the seeds exposed to view in connection with the words "ORANGE-SEEDS." Used since October 15, 1894.

25,708. BLOOD PURIFIERS AND TONICS. WILLIAM R. KENNARD, New York, N. Y. Filed Nov. 17, 1894.

LEMON-SEEDS



*Essential feature.*—A pictorial representation of half of a lemon with the seeds exposed to view in connection with the words "LEMON-SEEDS." Used since October 15, 1894.

25,709. POISON FOR RATS. CHURCHILL DRUG COMPANY, Burlington, Iowa. Filed Oct. 29, 1894.

RAT-TRAP

*Essential feature.*—The compound word "RAT-TRAP." Used since September 1, 1893.



25,710. COCA TONIC CHAMPAGNE. VEUVE LAURENT CIE., Bouzy, France. Filed July 21, 1894.



*Essential feature.*—The representation of a shield bearing the words "LAURENT-PERRIER" and "BOUZY-RHEIMS" with spray of a grape vine and branch of a coca plant. Used since June 22, 1893.

25,711. WINES AND LIQUORS. JEAN BAPTISTE GUTTIN, New York, N. Y. Filed Nov. 30, 1894.

THE J.B.G.

*Essential feature.*—The word and letters "The J. B. G." Used since January, 1893.

25,712. WHISKY. THE JOSEPH R. PEEBLES SONS COMPANY, Cincinnati, Ohio. Filed Nov. 26, 1894.

PEEBLES
OLD CABINET
~~1840~~

*Essential feature.*—The words and figures "PEEBLES OLD CABINET, 1840." Used since November 1, 1894.

25,713. WHISKY. W. H. JONES & Co., Boston, Mass. Filed Dec. 17, 1891

OLD GOLD

*Essential feature.*—The words "OLD GOLD." Used since November 1, 1891.

25,714. WHISKY. BELMONT DISTILLERY COMPANY, Louisville, Ky. Filed Nov. 27, 1894.

NUTWOOD

*Essential feature.*—The word "NUTWOOD." Used since November 15, 1886.

25,715. WHISKY. LOUIS A. WESSEL, New York, N. Y. Filed Oct. 5, 1894.

Ante-Bellum

*Essential feature.*—The compound word "ANTE-BELLUM." Used since September 1, 1894.

25,716. MALT BEER. S. LIEBMANN'S SONS BREWING COMPANY, Brooklyn, N. Y. Filed Nov. 21, 1894.

TEUTONIC

*Essential feature.*—The word "TEUTONIC." Used since July 1, 1894.

25,717. COFFEE. HOFFMAN, LEE & Co., Baltimore, Md. Filed Nov. 14, 1894.




*Essential feature.*—The word "ORIOLE" and the representation of a Baltimore oriole. Used since November 7, 1894.

25,718. CRACKERS. WILLIAM H. DANIELS, Ogdensburg, N. Y. Filed Apr. 3, 1894.

X

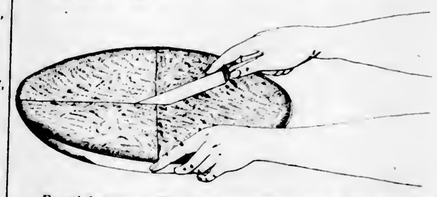
*Essential feature.*—The letter "X" printed in red color. Used since May 1, 1890.

25,719. FILLING FOR PIES. THOMAS E. DOUGHERTY, Chicago, Ill. Filed Nov. 22, 1894.

LIKE MOTHER USED TO MAKE

*Essential feature.*—The words "LIKE MOTHER USED TO MAKE." Used since September 1, 1892.

25,720. FILLING FOR PIES. THOMAS E. DOUGHERTY, Chicago, Ill. Filed Nov. 22, 1894.



*Essential feature.*—The representation of a pie and pie plate held by one hand, and a knife held by the other hand in the act of cutting the pie. Used since January 1, 1893.

25,721. ROLLED OATS. STOBIE CEREAL MILLS, St. Louis, Mo. Filed Nov 26, 1894.

ROLLED
IRISH
OATS

*Essential feature.*—The words "ROLLED IRISH OATS" and the representation of a harp and shamrock inclosed by a circular border line. Used since September 1, 1894.

25,722. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.




*Essential feature.*—The representation of a shield bearing a picture of the Capitol at Washington surmounted by a spread eagle and the letters "U S." Used since May 1, 1889.

25,723. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

AURORA BOREALIS

*Essential feature.*—The words "AURORA BOREALIS." Used since May 1, 1886.

25,724. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

ANCON

*Essential feature.*—The word "ANCON." Used since April 1, 1890.

25,725. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

BOUNDARY LINE

*Essential feature.*—The words "BOUNDARY LINE." Used since May 1, 1887.

25,726. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.




*Essential feature.*—The words "NORTH POLE" and the representation of a globe. Used since May 1, 1888.

25,727. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

COLD COIN

*Essential feature.*—The words "GOLD COIN." Used since May 1, 1889.

25,728. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

NORTHERN LIGHTS

*Essential feature.*—The words "NORTHERN LIGHTS." Used since May 1, 1889.

25,729. CANNED SALMON. ALASKA PACKERS' ASSOCIATION, San Francisco, Cal. Filed Oct. 17, 1894.

COMET

*Essential feature.*—The word "COMET." Used since May 1, 1889.

25,730. SAUCE OR RELISH FOR MEATS, SOUPS, FISH, AND OYSTERS. THOMAS C. MCKOWEN and HARRIS MCVEA, Lindsay, La. Filed Nov. 10, 1894.

RED SNAPPER
SAUCE.

*Essential feature.*—The words "RED SNAPPER SAUCE" in connection with the representation of a fish. Used since October 1, 1894.

25,731. MUSTARD AND MUSTARD PRODUCTS. J. & J. COLMAN, London, England. Filed Dec. 18, 1893.



*Essential feature.*—The representation of a bull's head. Used since 1868.

25,732. CIGARS AND SMOKING-TOBACCO. ADOLPH STARKMANN, Scranton, Pa. Filed Nov. 5, 1894.

TRI-COLOR

*Essential feature.*—The compound word "TRI-COLOR." Used since October 24, 1894.



25,733. CLEANING AND POLISHING COMPOUNDS. G. W. COLE & Co., New York, N. Y. Filed Nov. 27, 1894.

R
R

*Essential feature.*—The letters "R. R." Used since October 1, 1894.

25,734. PAPER BAGS. UNION BAG AND PAPER COMPANY, Chicago, Ill. Filed July 28, 1894.



*Essential feature.*—The figure of a bear. Used since July, 1875.

25,735. PAPER BAGS. UNION BAG AND PAPER COMPANY, Chicago, Ill. Filed July 10, 1894.



*Essential feature.*—A representation of the head of a zebra. Used since June 1, 1880.

25,736. HOUSEHOLD CEMENT. WALTER F. APPLEBY, Washington, D. C. Filed Nov. 24, 1894.

Nonpareil

*Essential feature.*—The word "NONPAREIL." Used since Jan. 30, 1894.

25,737. USEFUL AND ORNAMENTAL HOUSE FURNISHINGS. JOSEPH P. MCHUGH, New York, N. Y. Filed Sept. 24, 1894.



*Essential feature.*—The words "POPULAR SHOP" produced upon a pictorial representation of a swinging or fixed sign panel, banner or tablet, having any preferred plain or ornamental configuration. Used since March 1, 1894.

25,738. CARPET-SWEEPERS. THE SWEEPERETTE CO., Grand Rapids, Mich. Filed Oct. 24, 1894.

Sweeperette

*Essential feature.*—The word "SWEEPERETTE." Used since June 1, 1894.

25,739. BOX FILES FOR HOLDING PAPERS. WILLIAM A. COOKE, Jr., New York, N. Y. Filed Apr. 7, 1894.

Falcon

*Essential feature.*—The word "FALCON." Used since January 13, 1894.

25,740. SCREW-DRIVERS. TOWER & LYON, New York, N. Y. Filed Nov. 22, 1894.

CHAMPION

*Essential feature.*—The word "CHAMPION." Used since May 31, 1877.

25,741. CUTLERY, TOOLS, METAL GOODS, AND HOLLOW WARE. JAMES PINDER, Sheffield, England. Filed Oct. 20 1894.



*Essential feature.*—The representation of four double ended spears crossed to form a diamond shaped figure. Used since July 24, 1885.

25,742. BLIND-LADDER TAPES. JAMES CARR & SONS, Manchester, England. Filed Oct. 6, 1894.



*Essential feature.*—The name "CARR'S," the monogram of the letters "J C M," and the representation of a Venetian blind. Used since 1880.

25,743. WALL-COVERINGS, STEAM PACKINGS, AND OTHER GOODS MADE WHOLLY OR IN PART OF ASBESTOS. THE NEW JERSEY ASBESTOS COMPANY, Jersey City, N. J. Filed Nov. 30, 1894.

CARBO-BESTON

*Essential feature.*—The compound word "CARBO-BESTON." Used since October 1, 1894.

25,744. WALL-COVERINGS, STEAM PACKINGS, AND OTHER GOODS MADE WHOLLY OR IN PART OF ASBESTOS. THE NEW JERSEY ASBESTOS COMPANY, Jersey City, N. J. Filed Nov. 30, 1894.

RUBESTO

*Essential feature.*—The word "RUBESTO." Used since October 1, 1894.

25,745. CYCLES. WITCH CITY CYCLE CO., Salem, Mass. Filed Nov. 30, 1894.

WIZARD

*Essential feature.*—The word "WIZARD." Used since December 1, 1892.

25,746. BICYCLES, TRICYCLES, AND OTHER VELOCIPEDES. SIEGEL & CO., Coventry, England. Filed Nov. 28, 1894.

MODÈLE DE LUXE

*Essential feature.*—The words "MODÈLE DE LUXE." Used since November 14, 1891.

25,747. RAILROAD-BRASSES AND JOURNAL-BOXES AND METALS THEREFOR. MAGNOLIA METAL COMPANY, New York, N. Y. Filed Nov. 26, 1894.

CAMELIA

*Essential feature.*—The word "CAMELIA." Used since May, 1887.

25,748. SUGAR-CANE MILLS. FRED. C. M. LAUTS, Buffalo, N. Y. Filed Nov. 14, 1894.

MOUNTAINEER

*Essential feature.*—The word "MOUNTAINEER." Used since September 11, 1871.

25,749. SUGAR-CANE MILLS. FRED. C. M. LAUTS, Buffalo, N. Y. Filed Nov. 14, 1894.

NIACARA

*Essential feature.*—The word "NIAGARA." Used since January 24, 1879.

25,750. SUGAR-CANE MILLS. FRED. C. M. LAUTS, Buffalo, N. Y. Filed Nov. 14, 1894.

DIAMOND

*Essential feature.*—The word "DIAMOND." Used since March 3, 1879.

25,751. SUGAR-CANE MILLS. FRED. C. M. LAUTS, Buffalo, N. Y. Filed Nov. 14 1894.

PEARL

*Essential feature.*—The word "PEARL." Used since March 29, 1879.

25,752. SUGAR-CANE MILLS. FRED. C. M. LAUTS, Buffalo, N. Y. Filed Nov. 14, 1894.

GEM

*Essential feature.*—The word "GEM." Used since April 22, 1879.

25,753. BRUSHES AND BROOMS. ACTIEN GESELLSCHAFT FUR BÜRSTEN INDUSTRIE, Striegau, Germany, and New York, N. Y. Filed Oct. 18, 1894.



*Essential feature.*—The representation of a quarter-foil with serrated edges. Used since February 27, 1894

25,754. ROOFING-SLATES. THE OLD BANGOR SLATE COMPANY, Bethlehem, Pa. Filed Nov. 26, 1894.

Old Bangor

*Essential feature.*—The words "OLD BANGOR." Used since February 15, 1882.

25,755. WATERPROOF CLOTH. THE FIRM OF WILLIAM WILFORD, Tamise, Belgium. Filed Nov. 9, 1894.

T




*Essential feature.*—A device of a loaded railway wagon, the word "MATCHLESS" thereon and the letter "T." Used since September 1, 1894.

25,756. PAPER BAGS. UNION BAG AND PAPER COMPANY, Chicago, Ill. Filed July 10, 1894.

BEAR

*Essential feature.*—The word "BEAR." Used since May 1, 1894

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# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court of Appeals—First Circuit.

BABCOCK *et al. v.* CLARKSON *et al.*

*Decided June 23, 1894.*

1. CLARKSON—JUMP-SEATS FOR CARRIAGES—NOT INFRINGED.
Patent No. 300,847, issued June 24, 1884, to Joseph T. Clarkson, for an improvement in jump-seats for carriages, consisting of a falling tail-board and two seats connected so that an upward movement of the board will drop the rear seat out of use and move the front seat back, *Held* not infringed by an arrangement effecting a different set of movements.
2. SAME—ASSIGNMENT—VALIDITY OF THE PATENT—ESTOPPEL.
The assignment of a patent by a patentee for a valuable consideration estops him, when sued for infringement thereof by an assignee deriving title under the assignment, from setting up the question of validity, except as affected by the state of the art and anticipatory matter as a part of the state of the art, and these only as bearing on the construction of the patent.

APPEAL from the Circuit Court of the United States for the District of Massachusetts.

STATEMENT OF THE CASE.

This was a suit by Frank A. Babcock and others against Joseph T. Clarkson and others for infringement of a patent. The patent was No. 300,847, issued June 24, 1884, to defendant Clarkson, for an improvement in jump-seats. Complainants claimed title under assignments from Clarkson. The circuit court dismissed the bill, and a decree for defendants was entered thereon. (58 Fed. Rep., 583.) Complainants appealed.

*Mr. Edward P. Payson* for the complainants.

*Mr. Thomas W. Porter* for the defendants.

Before COLT, PUTNAM, and NELSON, Judges.

PUTNAM, *J.:*

Joseph T. Clarkson, one of the respondents below, was the original patentee, and the title of complainants is derived under assignments from him for a pecuniary consideration, valuable in law, though said to be small. Consequently an estoppel operates against him. The precise nature of this estoppel does not seem to have been always clearly apprehended. It is, in effect, that when one has parted with a thing for a valuable consideration he shall not, so long as he retains the consideration, set up his own fraud, falsehood, error, or mistake to impair the value of what he has thus parted with. As applied to the specifications of a patent the vender patentee is as much barred from setting up that his allegations therein were merely erroneous as that they were willfully false. This is as much in harmony with sound morals as with the fundamental rules of equity law. The estoppel is not technically by record; nor is it the usual estoppel *in pais* arising from the representations or silence of the party against whom the estoppel is charged, as in *Sturm* v. *Boker* (150 U. S., 312; 14 Sup. Ct., 99) and *Brant* v. *Iron Co.*, (93 U. S., 326.) Consequently the estoppel which we apply to this case does not run against a patentee whose patent has been sold by his assignee in bankruptcy. These distinctions lay out of this case *Cropper* v. *Smith*, (26 Ch. Div., 700,) affirmed on this point in *Smith* v. *Cropper*, (L. R., 10 App. Cas., 249.)

*Hall* v. *Conder* (2 C. B., [N. S.,] 22) was decided in 1857. It related solely to a question of implied warranty at common law, an essentially different matter from the principle of the equitable rule that one cannot avail himself of his own wrong, which includes error, to the detriment of his privy in title. Much was said in that case with reference to the proposition that the facts were equally within the knowledge of each party; but in applying the equitable rule referred to reliance, unless in exceptional cases, is put on the equitable obligations of the vender, and the question of knowledge is unimportant. In *Hall* v. *Conder* an appeal was taken to the House of Lords; but we do not find that it was perfected. At any rate its principles could not have escaped so learned and experienced a lawyer as Lord Romilly, then master of the rolls, who decided *Chambers* v. *Crichley* (33 Beav., 374) in 1864. There the same estoppel was applied as is raised in this case, although the transaction was between partners, who must be presumed to have had equal sources of knowledge. His opinion summarizes the law so well that we give the whole of it on this point, as follows:

> I do not intend to express my opinion as to the validity of Wright's patent. I will assume, for the purpose of my judgment, that it is worth nothing at all. But this is certain; that the defendant sold and assigned that patent to the plaintiffs as a valid one, and, having done so, he cannot derogate from his own grant. It does not lie in his mouth to say that the patent is not good.

On the whole the estoppel raised in this case is of the same class as that applied by the Supreme Court in *Brazee* v. *Schofield*, (124 U. S., 495; 8 Sup. Ct., 604,) where the Court said (page 503, 124 U. S., and page 604, 8 Sup. Ct.) as follows:

> There is another view of this case which would seem to conclude the appellant as to the sufficiency and legality of this notification by the widow. The patent of the United States was issued upon the supposed compliance of the patentees with the requirements of the donation act. That instrument is not in the record, but we must presume that it follows the usual form of such instruments, and recites the compliance of the patentees with the requirements of the act, and the production to the proper officers of satisfactory proof on that point. The appellant derives all the title he asserts through conveyances of the heirs of the deceased settler under the patent. As well observed by the supreme court of the territory, under these circumstances these heirs and their grantees are estopped from "saying, to the prejudice of any grantee of theirs, but that the husband and ancestor,

Amos Short, deceased, duly resided upon and cultivated for the prescribed period the donation land claim known as his, or that by virtue of a full compliance with the essential requirements of the donation act, his widow and children were, at the date of his death, in January, 1853, entitled under the act to that land claim."

The principle is recognized in *Brant* v. *Iron Co.*, (93 U. S., 336, 337.)

In *Ball and Socket Fastener Co.* v. *Ball Glove Fastening Co.* (7 C. C. A., 498; 58 Fed. Rep., 818) we had occasion to consider the effect of an estoppel as against a licensee operating under the peculiar agreement existing in that case, and used the following language:

So far as this suit is concerned, the various patents referred to in the agreement are to be held valid, and the claims in each to be fully sustained, according to their fair intent, as such claims are usually construed under the rules of the patent laws; and, so far as the validity and extent of the claims are concerned, neither is to be diminished by any prior patents or inventions, known or unknown, disclosed or undisclosed, although they may come in to some extent for the purpose which we will state. The record contains very much touching the state of the art and prior patents. From what we have already said, it is plain that they cannot be introduced here for the purpose of invalidating any of the patents covered by the contract, or any portion of any claim of any of such patents. Nevertheless they, as well as the file-wrappers and their contents, are appropriate to be considered for ascertaining the true construction of the various patents involved, and especially for determining whether, according to such construction, the improvements were of a primary or secondary character, and how far the combinations admit of the doctrine of equivalents.

These expressions were special and when used were limited to that case. They happen to define accurately the operation of the estoppel in the case at bar on the questions of novelty, utility, patentable invention, anticipatory matter, and the state of the art, and they leave for our consideration none of these except the state of the art and anticipatory matter as a part of the state of the art, and these only as bearing on the construction of the patent.

We do not understand that these propositions are contested by the respondents below, now the appellees; yet we have deemed it necessary to state them at length in order that we may accurately consider the effect which the patent in question has as between the parties to this suit. We also refer in this connection to *Clark* v. *Adie*, (L. R., 2 App. Cas., 423;) *Trotman* v. *Wood*, (16 C. B., [N. S.,] 479;) *Crosthwaite* v. *Steel*, (6 R. P. C., 190;) *Ashworth* v. *Roberts*, (9 R. P. C., 309.)

Applying these principles and construing the patent in suit in the light of the art we concur in the conclusion of the circuit court, for the reasons stated in the opinion filed in that court.

Decree of the circuit court affirmed.

## U. S. Circuit Court of Appeals—Third Circuit.

WESTINGHOUSE *et al.* v. EDISON ELECTRIC LIGHT COMPANY.

*Decided September 11, 1894.*

1. EDISON—ELECTRIC DISTRIBUTION AND TRANSLATION SYSTEM.
   Claims 1, 2, and 3 in Patent No. 264,642, issued September 19, 1882, to Thomas A. Edison, for an electric distribution and translation system, *Held* to be void as involving only the knowledge and skill of one skilled in the art, particularly in view of French patent to Khotinsky, A. D. 1875.
2. SAME—LIMITATION OF CLAIM—"SUBSTANTIALLY AS SET FORTH."
   Where the claim is unambiguous and exact, matter in the description cannot be read into it to change its scope, nor do the words "substantially as described" in the claim open the way to the admission therein of matter only incidentally described or mentioned in the description.

APPEAL from the Circuit Court of the United States for the District of New Jersey.

STATEMENT OF THE CASE.

This was a bill in equity brought by the Edison Electric Light Company against Westinghouse, Church, Kerr & Co. to restrain the infringement of the Edison patent for an electric distribution and translation system. The circuit court sustained the patent and rendered a decree for complainant, (55 Fed. Rep., 490,) and defendants appealed.

*Mr. Leonard E. Curtis* and *Mr. Edmund Wetmore* for the appellants.

*Mr. Frederic H. Betts* for the appellee.

Before ACHESON, DALLAS, and BUTLER, Judges.

ACHESON, *J.*:

This suit was for the alleged infringement by the defendant of Letters Patent of the United States to Thomas A. Edison, No. 264,642, dated September 19, 1882, granted upon an application filed August 9, 1880, for an electric distribution and translation system. After stating that the—

invention relates to a method of equalizing the tension or pressure of the current through an entire system of electric lighting, or other translation of electric force, preventing what is ordinarily known as a "drop" in those portions of the system the more remote from the central station—

the specification proceeds thus:

As is well known from patents already granted me, and prior applications pending, I use in my system an electric light formed of a continuous incandescing conductor, large numbers of which are grouped into one system, supplied and regulated from a central station; main conductors leading from and to the central station; each lamp or translating device being in a derived circuit to the main conductors; the entire system being what is known as a "multiple-arc" system. From a central station the main conductors may proceed, and it is intended that they should, to a great distance, and supply a large number of translating devices. In such cases there is inevitably a difference in tension between various parts of the circuit, due to the resistance of the main conductors. This may be partially remedied by making the conductors very large near or at the station, gradually decreasing their size or conducting capacity, but such plan only lessens slightly the ratio of fall. To obviate the difficulty I provide feeding conductors which extend from the generator or generators to the main conductors of the lamp or consumption circuit or circuits; such feeding conductors not having any translating devices connected therewith, and being connected with the main conductors of the consumption circuit or circuits at the center, ends, or other points on such main conductors. From a central station several sets of such feeding-conductors may run; each set feeding into its own lamp or consumption circuit, or all the sets feeding into a connected system of lamp or consumption circuits. It will be seen that the drop upon the feeding-conductors has no effect upon the relative candle-power of the lamps of the system, the relative candle-power of the lamps being affected only by the drop upon the main conductors of the consumption circuit or circuits between the end of a set of feeding-conductors and points most distant from any feeding conductors. In order to maintain practically the same candle-power throughout the system, the main conductors of the consumption circuit or circuits should be so proportioned that the drop in tension upon them shall not exceed a definite small limit—for example, five per cent. This drop will make a difference of less than a candle-power in all the sixteen-candle-power lamps of the system, which difference is not perceptible to the eye. Upon the feeding-conductors, however, any loss can be made. This loss will be varied according to localities, and the relative cost of copper for conducting purposes and horse-power for generation. This loss upon the feeding-conductors in large and extended systems will generally be greater than upon the main conductors of the consumption circuit or circuits. It may be, for example, about fifteen per cent; but circumstances might make it desirable to diminish the loss upon the feeding-conductors down even as low as that upon the main conductors of the consumption circuit or circuits, or to increase the loss upon the feeders to more than fifteen per cent. * * * When it is desired to use a few lamps near the central station they may be placed upon a direct circuit therefrom, with resistance at the commencement or home end of the circuit sufficient to then reduce the tension of the current in such circuit so that it shall only be equal to that in the more distant circuits, and one or more of such circuits may be combined with the circuits before described. When large buildings or blocks of buildings, using many lamps, are to be supplied, it may be desirable to lay therefor separate feeders, insulated from each other. Where several central stations are used in a city, each having feeding conductors leading to lamp circuit-conductors of the description before noted, it may be advisable to connect the feeding-circuits of all the stations, equalizing the tension or pressure throughout the entire system of the place where the central stations are located.

The illustrative drawings show different applications of the general form of circuit described in the





specification. The patent has six claims; but the defendant was charged only with the infringement of the first, second, and third claims, which are as follows:

1. A consumption-circuit, in the main conductors of which the drop in tension is not sufficient to vary practically the candle-power of the lamps connected therewith, in combination with feeding-conductors connecting the consumption-circuit with the source of electrical energy, and having no translating devices connected therewith, the drop in tension upon such feeding-conductors not affecting the relative candle-power of the lamps of the consumption-circuit, substantially as set forth.
2. A consumption-circuit, in the main conductors of which there is a definite, small drop in tension, not sufficient to vary practically the candle-power of the lamps connected therewith, in combination with feeding-conductors connecting the consumption-circuit with the source of electrical energy, and having no translating devices connected therewith, the loss upon such feeding-conductors being greater than upon the main conductors of the consumption-circuit, substantially as set forth.
3. The combination of a consumption-circuit, in the main conductors of which the drop in tension is not sufficient to vary practically the candle-power of the lamps connected therewith, with a feeding-circuit having no translating devices, and extending from the source of electrical energy to the center of the consumption-circuit, substantially as set forth.

For the proper determination of this case it is essential that the subject-matter of these claims should be clearly understood. This patent does not deal with the complicated general problem of the distribution of electricity and the subdivision of the current for the purpose of domestic illumination. The patent is not for an incandescent lamp, or for a dynamo for generating electricity, or for the arrangement of the lamps in multiple arc, or for indicating and regulating devices for controlling the current from a central station, singly or combined. The patent deals with the one particular difficulty of drop in tension or fall of pressure—loss of electromotive force—due to the resistance of the conductors to the electric flow. To remedy the evil effect therefrom the patentee provides special conductors for the transmission of electricity, extending from the generator to the main conductors, with which the lamps are connected and from which they are served. The patent is for a specific arrangement and proportioning of the two sets of conductors which together constitute the complete circuit. The claims in question are perfectly clear and definite. Each claim is for a combination consisting of two constituents—namely, a consumption-circuit in the main conductors, of which the drop in tension is not sufficient to vary practically the candle-power of the lamps connected therewith, and feeding-conductors (a feeding-circuit) having no translating devices thereon uniting the consumption-circuit with the source of electrical energy. Any electric consumption-circuit the main conductors of which are so proportioned that the drop in tension therein is not sufficient to vary practically the candle-power of its lamps, in combination with feeding-conductors on which are no translating devices, falls within the scope of the claims. Plainly each of these claims is for a single circuit composed of a pair of transmitting-conductors and a pair of distributing-conductors having the specified characteristics, without regard to any other like circuit. The gist of the alleged invention is in the combination and proportioning of the two parts of the circuit and not in the scale of use. Contrary to these views the circuit court was of the opinion that certain unexpressed qualifications are to be incorporated into each of the claims by virtue of the concluding words, "substantially as set forth." After discussing the specified limitations the court said:

But this statement of the claims would be highly inaccurate, if permitted to stand alone. Other limitations must be regarded. Not only are the circuits, feeding and consumption, unique in their special characteristics, but, as well, are jointly applicable to the lighting by incandescent lamps, in multiple arc, of large areas, of which portions or parcels are very distant or remote from a central station, from which however, emanates complete control. It is true that these latter limitations are not expressed in terms in the claims under consideration, or in either of them. But, in drafting the claims, Mr Edison, by the words used, clearly referred to the descriptive phraseology of the specifications of his invention preceding them.

Accordingly the court construed these several claims as involving the lighting of a "large territory" by the use of "large numbers" of incandescent lamps and as implying central-station regulation whereby variable drop in tension in remote parts of the system may be controlled; but in our judgment these limitations are inadmissible. The fact is pending the application for this patent it was sought to amend the specification and insert a new claim by the introduction of the matter of central-station regulation; but the Patent Office rejected the proposed amendment for the assigned reason that—

it describes and claims an invention not even hinted at in the original specification, nor shown in any of the drawings.

While central-station regulation is incidentally referred to in the introductory part of the specification, it is not described at all and clearly is no part of this alleged invention. The only described means to secure equality of pressure between the lamps of a circuit near the central station and the lamps of a circuit more remote therefrom are resistance-coils put in the supply-conductors of the near circuit. This device is covered by the fifth claim, infringement of which is not charged. The claims in question are unambiguous and exact. Upon well-settled principles, then, limitations other than those expressed are to be excluded. (*Lehigh Valley Railroad Co.* v. *Mellon*, 20 O. G., 1891; 104 U. S., 112; *Yale Lock Manufacturing Co.* v. *Greenleaf*, 35 O. G., 386; 117 U. S., 554; 6 Sup. Ct., 846; *White* v. *Dunbar*, 26 O. G., 353; 119 U. S., 47, 52; 7 Sup. Ct., 72.) As was said in the last cited case:

The claim is a statutory requirement, prescribed for the very purpose of making the patentee define precisely what his invention is, and it is unjust to the public, as well as an evasion of the law, to construe it in a manner different from the plain import of its terms.

The claims here, we think, were purposely framed broadly, so as to cover the simplest form of the alleged invention.

The claims with which we are concerned, as we have seen, are each for a combination of two elements—a consumption-circuit and feeding-conductors having respectively the peculiar properties specified. The primary question for solution, then, is whether it involved invention, in a patentable sense, to combine a circuit for feeding only with a consumption-circuit the main conductors of which are so proportioned as to maintain such uniformity of pressure upon them that there is practically no variance in the candle-power of the lamps connected therewith.

Now, a claim for a combination carries with it an implication that the separate elements are old. Says Mr. Justice Bradley, speaking for the Court, in the case of *The Corn-Planter Patent*, (6 O. G., 392; 23 Wall., 181, 224:)

Where a patentee, after describing a machine, claims as his invention a certain combination of elements, or a certain device or

part of the machine, this is an implied declaration,—as conclusive, so far as that patent is concerned, as if it were expressed, that the specific combination or thing claimed is the only part which the patentee regards as new.

In the present instance the positive proofs accord with the implication. Most certainly the patent in suit discloses no new means either for transmitting a current of electricity or for equalizing pressure upon the consumption-circuit. It is to be noted that the patent leaves it altogether to the judgment of the electrical engineer or constructor to determine the relative lengths of the two parts of the combined circuit and the proper thickness of the conductors. As to these points no definite instructions are given. Undoubtedly it was well known prior to the alleged invention that a large quantity of electrical energy could be transmitted a considerable distance by a conductor of small size. Now, with respect to the loss of pressure upon the feeding-conductors, which loss depends upon the thickness of the conductors, the specification tells us that—

this loss will be varied according to localities, and the relative cost of copper for conducting purposes and horse-power for generation.

It is said that in large and extended systems this loss would generally be greater than the loss upon the main conductors of the consumption-circuit and "may be, for example, about fifteen per cent.," but that circumstances might make it desirable to diminish the loss down even as low as that upon the main conductors of the consumption-circuit or to increase the loss upon the feeders to more than fifteen per cent. Thus is it left, where indeed it properly belongs, to the intelligence of the electrical engineer to select feeding-conductors of larger or smaller diameter, depending upon the comparative cost of copper and of power or upon some special circumstances. Of a truth the feeding-conductors of the patent are nothing more than the ordinary supply-wires running from the source of the electrical energy. The proper function of such conductors being to transmit the electric current to the point where it is to be utilized, as a matter of course they have no "translating devices connected therewith." The statement in the specification—

it will be seen that the drop upon the feeding-conductors has no effect upon the relative candle-power of the lamps of the system, the relative candle-power of the lamps being affected only by the drop upon the main conductors of the consumption circuit or circuits between the end of a set of feeding-conductors and points most distant from any feeding-conductors—

is the mention of an obvious fact. Indeed, it is put as a self-evident proposition. That no loss upon the supply part of the circuit can affect the relative candle-power of the lamps upon the consumption part of the circuit is a quality inhering in the circuit by the very nature of things. It is a necessary incident of any circuit part of which supplies the current and part of which distributes it.

The specification states that—

In order to maintain practically the same candle-power throughout the system, the main conductors of the consumption circuit or circuits should be so proportioned that the drop in tension upon them shall not exceed a definite small limit, for example, five per cent.,

but gives no information whatever how this is done. This silence is highly significant. The specification assumes that to secure uniformity of electrical pressure, and thus uniformity of effect, is a matter of common knowledge among those skilled in the electrical art, as indeed it is. The drop or fall in tension or pressure in an electrical current in its passage through a conductor was an observed and well understood phenomenon long prior to the year 1880. It was known that its cause was the resistance offered by the conductor to the flow of the current, and the laws governing the flow of electricity and the drop in tension had been ascertained and published and were perfectly familiar to all skilled electricians. They understood the effect upon the drop in tension of variations in the size and length of the conductor and of changes in the electromotive force of the generator, and the ascertainment of the proportions to be given to a conductor to secure a definite fall in pressure with a given current was a mere matter of calculation, to aid which formulæ had been worked out.

In the art of electroplating as practiced long before 1880 we find an arrangement of circuits substantially the same as that of the patent in suit. Here a large number of articles to be plated simultaneously are suspended in the bath by separate wires attached to a metallic rod placed across the top of the tank—that is to say, the articles are arranged in multiple arc with respect to the electric current. The rod is supplied with the current by conducting-wires, which connect the rod with the dynamo, and the current divides among the suspended articles. It will be perceived that here one part of the circuit is used exclusively for transmitting the current and the other part for distributing it. Equality of electric pressure among the articles to be treated is essential to good work, and, in fact, the distributing-rods were made of such size that any material fall in pressure was avoided.

Turning now to the Khotinsky French patent of 1875, which relates to the art of electric lighting, we discover that it shows and describes a circuit of feeding and consumption parts in combination identical in form with that of the patent in suit. The lamps of Khotinsky's system are incandescent lamps and they are arranged in multiple arc. He shows a magneto-electric machine located "in the center of this system or at any other point." From the magneto-electric machine run two "conducting-wires," with which no translating devices are connected. These conducting or feeding wires connect with the "main conductors" of the circuit, with which all the lamps are connected. In his diagrams 1 and 3 the feeding-conductors connect with the center of the consumption-circuit and in diagram 2 at the end. Undeniably Khotinsky's combined arrangement of feeding-conductors and distributing-conductors is precisely the arrangement of the patent in suit. Nothing, indeed, is said by Khotinsky about proportioning the main conductors of the consumption-circuit so as to prevent injurious drop in tension. It was, however, wholly unnecessary for him to say anything upon that subject. All that was needful to overcome the difficulty due to drop in tension was to make the main conductors of the consumption-circuit of proper thickness. The laws governing the flow and distribution of electricity in conductors were perfectly well known to electricians at the date of Khotinsky's patent, and any electrical engineer of ordinary skill then called on to construct a circuit of Khotinsky's system, it is to be assumed, would have acted in accordance with common electrical knowledge, principles, and practice. In other words, he would have made the main conductors of the consumption-circuit sufficiently large to be of practical utility. How can it be affirmed that it would require invention simply to proportion Khotinsky's circuit in the manner contemplated by the patent in suit—to make his transmitting-wires and distributing-conductors respectively of suitable size to perform their intended functions?





Now, it is quite true that prior to the year 1880 electric lighting for ordinary domestic purposes was not an accomplished fact; but this was not for lack of anything shown by the patent in suit. The great desideratum was a practical incandescent lamp. Such a lamp, with a filamental carbon conductor of high resistance and burning with a very small amount of current, was devised in or about the year 1879, and it solved the problem of the practical subdivision of the electric current for incandescent lighting. The principle of this lamp was pronounced by Mr. Justice Bradley in *Consolidated Electric Light Co.* v. *McKeesport Light Co.* (49 O. G., 1556; 40 Fed. Rep., 21, 29) to have been—

the grand discovery in the art of electric lighting, without which it could not have become a practical art for the purposes of general use in houses and cities.

Such were the views which prevailed in the Second Circuit in the case of *Edison Electric Light Co.* v. *United States Electric Lighting Co.*, (61 O. G., 564; 47 Fed. Rep., 454; Id., 3 C. C. A., 83; 52 Fed. Rep., 300,) where it was decided that Mr. Edison was the first and original inventor of this lamp.

Under the proofs we cannot assent to the suggestion that the alleged invention here in question supplied a long-felt want or met a difficulty generally recognized in the art as a serious hinderance to the distribution of the electric current. In fact, prior to the application for this patent no incandescent-electric-lighting plant had been built. There had been no occasion to erect such plants, for no practically-successful incandescent lamp had yet been furnished to the public. Hence electrical engineers had not been called upon to deal practically with the problem of drop in tension in the construction of such plants. In truth, the feeder and main system of distribution came naturally in the ordinary progress of the art of incandescent electric lighting as and when needed.

In his Cantor Lectures of February, 1885, (put in evidence by the plaintiff below,) Prof. George Forbes, speaking of this feeder and main system, well said:

It is a result which would certainly have been arrived at by any one who thoroughly and intelligently worked out the problem.

True, he added, that, so far as he could discover, Mr. Edison—

was the first, by a long time, to hit upon this cure for the evil.

But this latter statement is without significance when we reflect that a practical incandescent lamp, without which domestic electric illumination was impossible, was invented so short a time before the application for this patent and that when the occasion for its use actually arose the feeder and main system were forthcoming.

It is a great mistake, as the proofs demonstrate, to attribute to the patent in suit the merit of having solved the problem of economically supplying the requisite current for extensive use to circuits covering large areas, portions of which are at great distances from the source of electrical energy. Whatever of economy in copper may result from the plan of the patent is confined altogether to the transmitting-conductors, and the cost of copper restricts the use of this system to comparatively narrow limits.

The extension of incandescent electric lighting over large areas is really due to subsequent inventions. Conspicuous among the more recent discoveries and improvements which have brought incandescent lighting into extensive and common use is the converter or alternating-current system, whereby the electric current is transmitted from the generating-station to a very great distance at an extremely high pressure and is converted at the points of distribution into the low-pressure currents required by the incandescent lamps.

The multiple-arc or derived-circuit system of distribution being confessedly old and the high-resistance incandescent lamp having been devised, to provide—

feeding conductors which extend from the generator or generators to the main conductors of the lamp or consumption current—

was, it seems to us, an obvious engineering expedient. Then, as already shown, the proper proportioning of the two parts of the combined circuit involved only the exercise of the common knowledge and skill of the electrician. The facts, we think, clearly bring this case within the principles announced by the Supreme Court in the case of *Hollister* v. *Manufacturing Co.* (113 U. S., 59; 5 Sup. Ct., 717) and in kindred cases. The plan of electric distribution covered by the claims in question is not—

the creative work of that inventive faculty which it was the purpose of the Constitution and patent laws to encourage and reward.

To sustain these claims would be to sanction a monopoly in that which belongs to the public.

In announcing this conclusion we cannot do better than quote some observations of the Supreme Court, which apply with great force to this case, as we read the proofs. In *Atlantic Works* v. *Brady* (23 O. G., 1330; 107 U. S., 192, 199; 2 Sup. Ct., 225) the Court said:

The process of development in manufactures creates a constant demand for new appliances, which the skill of ordinary head workmen and engineers is generally adequate to devise, and which, indeed, are the natural and proper outgrowth of such development. Each step forward prepares the way for the next, and each is usually taken by spontaneous trials and attempts in a hundred different places. To grant to a single party a monopoly of every slight advance made, except where the exercise of invention, somewhat above ordinary mechanical or engineering skill is distinctly shown, is unjust in principle and injurious in its consequences.

The appellant maintains that under the ruling of the Supreme Court in the case of *Miller* v. *Manufacturing Co.*, (66 O. G., 845; 151 U. S. 186; 14 Sup. Ct., 310) the first, second, and third claims of the patent in suit are void because of the grant of an earlier patent to Mr. Edison, No. 239,147, dated March 22, 1881, which dealt with the evil of drop in tension and provided a remedy by feeding-conductors, having no lamps therein, connected with the mains of the consumption-circuits arranged in sets concentrically around the central generating-station and so proportioned as to secure equal electrical pressure throughout the entire system.

It is contended that the invention described and claimed in the earlier patent is for one form of the

alleged invention described in the later patent and covered by the first three claims thereof and that no one could use the invention of the earlier patent without infringing these later claims. The question thus raised is a serious one; but we do not deem it to be necessary to consider it, inasmuch as the views we have expressed upon the other branch of the case are decisive.

The decree of the court below is reversed and the cause is remanded, with directions to enter a decree dismissing the bill of complaint, with costs.

## U. S. Circuit Court—District of Massachusetts.

UNITED STATES OF AMERICA *v.* AMERICAN BELL TELEPHONE COMPANY *et al.*

*Decided December 18, 1894.*

1. BERLINER—COMBINED TELEGRAPH AND TELEPHONE (MICROPHONE)—VOID—PRIOR PATENT TO SAME INVENTOR FOR SAME INVENTION.

Patent to Emile Berliner, No. 463,569, dated November 17, 1891, is void, because one of the functions of the device shown in the Patent No. 233,969, dated November 2, 1880, to the same inventor—namely, the function of transmitting articulate speech—is identical with the sole object or function of the device covered by the patent of 1891 and the device for effecting the transmission is identical in both patents. (*Miller v. Eagle Manufacturing Co.*, 66 O. G., 845; 151 U. S., 186.)

2. SAME—SAME—SAME—DELAY IN PROSECUTING APPLICATION.

The application was filed June 4, 1877; the patent granted November 17, 1891. "The device covered by the patent in suit had been in public use by the respondent corporation since the year 1878. The respondent corporation was of ample means to prosecute the application. The result of any delay which might take place in the issue of the Berliner patent would evidently be to continue so much longer the practical monopoly of the art of electrical transmission of articulate speech." Under these circumstances the duty of the respondent corporation was to use the greatest degree of diligence in prosecuting the application to an early issue. "There should have been at least as great diligence as their own interests would have called for had their business been unprotected by patent-rights." The delays subsequent to June 9, 1882, were unwarrantable, were acquiesced in, and therefore intended by the respondent corporation, and were such as to invalidate the patent.

The *Attorney-General*, the *United States Attorney*, *Mr. Causten Browne*, and *Mr. Robert S. Taylor* for the complainant.

*Mr. William G. Russell*, *Mr. James J. Storrow*, *Mr. William W. Swan*, and *Mr. Frederick P. Fish* for the defendants.

CARPENTER, *J.*:

This is a bill in equity praying the repeal of Letters Patent No. 463,569, issued November 17, 1891, to Emile Berliner as assignor to the American Bell Telephone Company, for a combined telegraph and telephone. The first ground of the bill to which I shall refer is that the patent is void as being beyond the power of the Commissioner to issue, in view of the issue of a former patent, No. 233,969, issued November 2, 1880, to Emile Berliner, for an electric telephone.

The patent of 1891 is for a transmitter for a speaking-telephone. The fourth claim of the patent of 1880 is as follows:

4. A system of two or more telephone-instruments in electrical connection with each other, each consisting of two or more poles of an electrical circuit in contact one with the other, either or both poles of each instrument being connected with a vibratory plate, so that any vibration which is made at one contact is reproduced at the other, substantially as set forth.

This patent is, therefore, for the "system" or combination of a transmitter and a receiver for a speaking-telephone. The whole apparatus is shown in the drawings of both patents and is identically the same in both. The transmitter and the receiver are identical in form and differ in function according as they are placed at the transmitting or at the receiving end of the telephone-wire. It therefore appears that one of the functions of the device shown in the patent of 1880—namely, the function of transmitting articulate speech—is identical with the sole object or function of the device covered by the patent of 1891 and that the device for effecting the transmission is identical in both patents. The patent therefore seems to me to be void and beyond the power of the Commissioner to issue. (*Miller* v. *Eagle Manufacturing Co.*: 66 O. G., 845; 151 U. S., 186.)

The second ground of the bill is that the issue of the patent was unlawfully delayed through the fault of the respondents. The respondent company was the owner of a patent previously granted to Alexander Graham Bell, which covered the art of electrical transmission of articulate speech. The device of Berliner, as both parties in this case agree, covers the only commercially practicable and useful method at present known for effecting such transmission. In this state of facts the claim of the complainant under this bill is fully and briefly stated by counsel in the following words:

The proposition is that the Bell Company intentionally delayed the prosecution of the Berliner application and the issue of the Berliner patent for the purpose and with the result of prolonging their control of the art of telephony, which would cease with the expiration of the Bell patent in 1893; and that they did this by submitting to delays on the part of the officers of the Patent Office, which delays they, the Bell Company, had it in their power to prevent, and refrained from preventing, for an unlawful purpose. This conduct is alleged to constitute a fraud practiced upon the public through the Commissioner of Patents and his assistants. And it is claimed that the patent so obtained by such fraud may be and should be annulled by the decree of the court, on the authority of *United States* v. *American Bell Telephone Company*, (45 O. G., 1311; 128 U. S., 315,) because there is no substantial difference between a fraud practiced upon the Commissioner as an agent of the public, and a fraud practiced upon the public with the Commissioner's connivance or acquiescence.

The application for the patent was filed June 4, 1877, and the patent was issued November 17, 1891. The patent to Bell expired in March, 1893. The device covered by the patent in suit had been in public use by the respondent corporation since the year 1878. The respondent corporation was of ample means to prosecute the application. The result of any delay which might take place in the issue of the Berliner patent would evidently be to continue so much longer the practical monopoly of the art of electrical transmission of articulate speech. Under these circumstances I think it clear that the duty of the respondent corporation was to use the greatest degree of diligence in prosecuting the application to an early issue. There should have been at least as great diligence as their own interests would have called for had their business been unprotected by patent-rights.

Thus far there is no dispute between the parties here. It is admitted that the greatest diligence was incumbent on the respondent corporation and that if there be unlawful delay and if there be bad faith and an intention to delay on the part of the applicant then the patent may be here held to be void.

From the filing of the application up to June 9, 1882, it is not contended that there was any delay upon which a decree here should be founded. There were delays in prosecuting the application, but they are said to be no greater than is usual in the Patent Office. On the date last given the solicitor in charge of the application was notified by the Examiner that—

as at present advised, it is believed that the claims presented may be allowed, but final action in this case must be suspended in view of probable interferences with other pending applications.

In October, 1883, the solicitor wrote to the Office asking that the case might receive attention, to which it was replied that the apprehended interferences had not yet been declared; and the correspondence was continued in the same sense until March, 1888, when the application was suspended until May 1, 1888, on the ground of the expected interference and also—

for the purpose of awaiting the determination of the telephone case in the Supreme Court.

The application with which an interference was anticipated was that filed July 26, 1880, by Daniel Drawbaugh, in which he claimed to be the original and first inventor of the telephone. His claims were rejected on the ground that the instrument which he claimed to have invented had been in public use and on sale for more than two years before the filing of his application. He had filed an affidavit in which he denied that there had been such public use with his consent and allowance. There was abundant evidence on file in the Patent Office by which was shown the fact of public use as early as July 26, 1878. It had been declared in *Manning* v. *Cape Ann Isinglass and Glue Co.* (23 O. G., 2413; 108 U. S., 462) that the statute then in force did—

not allow the issue when the invention had been in public use for more than two years prior to the application, either with or without the consent or allowance of the inventor.

The case was then pending of the Bell Company against the People's Telephone Company, owners of the alleged telephone inventions of Drawbaugh, in which was involved the question whether Drawbaugh had in fact invented the telephone at the early day claimed by him or whether, on the other hand, his claim was entirely false. Under these circumstances there was set on foot a "general understanding," as it is called, on the part of the Examiner and the respective counsel for Drawbaugh and for the Bell Company that the decision of the application for the Berliner patent should await the decision of the pending suit. There seems on the testimony no doubt that the Bell Company fully acquiesced in this general understanding, and I think that in so doing they failed in their duty and committed a wrong against the public.

It was evident that in no case could Drawbaugh be entitled to a patent. He was clearly barred by the prior use of his invention. On the other hand, it is to be observed that the action against the People's Telephone Company might not be finally decided for many years and that when decided it would not necessarily throw any light on the question then pending in the Patent Office—namely, whether Berliner or Drawbaugh was the first inventor of the microphone-transmitter. The suit was for infringement of two of the early patents issued to Bell, the first for the electrical transmission of sound and the second for a receiver. The answer denied the validity of the patents, alleged anticipations, and further averred generally that Drawbaugh was the first inventor of the speaking-telephone. The invention of the microphone—a particular form of the speaking-telephone—was therefore not in issue. The case made by the People's Telephone Company, indeed, as was well known, was that Drawbaugh had invented the whole telephone system as it was then known, including the microphone, long before Bell's invention. If this were found to be the fact, then of course it would follow that he had anticipated Berliner as well as Bell; but if this were found not to be the fact that finding would throw no light on the question whether Drawbaugh had or had not invented the microphone subsequently to Bell and prior to Berliner. It could never appear in the Patent Office therefore that Drawbaugh was entitled to a patent, and only in one aspect of the telephone case could it be decided that Berliner was not entitled to a patent. The plain duty of the respondent corporation, as it seems to me, was to press these considerations in the Patent Office and insist on its right to a patent at once, leaving the question which was pending in the courts to be settled whenever a final decision should be reached and leaving the decision of that case to have whatsoever effect it lawfully might on the validity of the patent. The Commissioner on such an application might properly have been asked to take proofs, on notice to Drawbaugh, so as to ascertain *prima facie* and with sufficient certainty for the purposes of an administrative decision by whom the first invention of the microphone had been made. It would well have been urged on him that it was his duty to make such an investigation of a question which was not in issue in the pending suit and which the decision of that suit might furnish no guide in determining.

It is objected that there was no established practice in the Patent Office by which the question of priority of invention could be ascertained and that for other reasons such an application to the Commissioner had no prospect of success. It seems to me clear that the duty of the respondent corporation was to test these questions rather than to consent that they must be decided against them, for an acquiescence in the delay seems to me to be no less than a consent that no favorable result could come from the application.

That the unwarrantable delay thus caused was intended by the respondent corporation I can have no doubt. In matters of this consequence, involving the whole business of a company of so large capital and engaged in so large affairs, I cannot doubt that they were fully advised both as to the facts and as to the law, and I think "that their acts were so gross as to forbid any inference except that they dishonestly delayed" the issue of the patent, taking advantage for that purpose of the perhaps excusable willingness of the officials of the Patent Office to postpone the decision of a sharply-debated question, in which a large public interest was involved, on the chance that a decision of the Supreme Court might supersede the necessity for a decision on their part.

In March, 1888, a final decision was rendered by the Supreme Court in the action against the People's Telephone Company, and the claim of Drawbaugh to the invention of the telephone was held to be un-

founded. In June, 1886, the Examiners-in-Chief of the Patent Office had decided that Drawbaugh's application was barred by reason of two years' public use of the invention, and the time for an appeal from this decision expired in June, 1888. The Commissioner then set on foot a proceeding to determine whether in fact there had been a public use of Drawbaugh's invention for two years before the date of his application, and the Berliner application was still suspended to await the result of an interference which might be declared in case Drawbaugh should prevail in the public-use proceeding, the rule of the Patent Office being that no interference could be declared unless in cases where the interfering applicant, if successful in the interference proceeding, would be entitled to a patent. This public-use proceeding, whose purpose is to permit the applicant to be heard on the question of public use when that question has been raised by the Office, was strenuously objected to by Drawbaugh, who took no evidence in the proceeding. In October, 1891, the proceeding came to an end by a final decision of the Commissioner to the effect that Drawbaugh was barred by the prior use of his invention. On the next day the Berliner patent was ordered to issue—

largely because well-settled principles of public policy forbid us to give any further opportunities for holding this application in the Office.

There was no effort, so far as I can see in the evidence, on the part of the respondent corporation to prevent this further delay. There was ample evidence before the Commissioner of the fact of prior use, the applicant Drawbaugh declined to take evidence in contradiction, and it seems to me clear that the respondent corporation should have urged upon the Patent Office a decision on the *prima facie* case which they had made.

I am persuaded that the delay thus caused, as well as the delay previous to the decision of the Supreme Court, was intentionally acquiesced in by the respondent corporat on for the purpose of delaying the issue of the patent. This seems to me the only conclusion from a consideration of the whole evidence. It is in proof that during the whole of the time from 1882 to the issue of the patent, and perhaps earlier, the solicitors of the Bell Company were urgently insisting to the officials of the Patent Office that prompt action should be taken in the application. Even while the "general understanding" was in force to the effect that the application should await the decision of the Drawbaugh case in the courts the evidence shows that these urgent applications were made to the Patent Office officials. I cannot think that it was by any one expected that such oral applications should have any effect unless, at least, they were made in support of formal applications made on the record and of formal arguments and representations made in support of such applications. The officers of the company also testify that at all times they were urgent in pressing for the issue of the patent. As to their state of mind and their actual intention at the time I am free to say that I place less reliance on their statements now made than on a single statement made at the time. In February, 1886, while the "general understanding" was in force, Mr. Swan, one of the solicitors for the application, wrote as follows to the president of the Bell Company:

I am working the Edison and Berliner cases along quietly and think they will be granted by the Examiner without interferences or appeals so that we can take them out by paying the final fees. We have six months to do that in.

This is but a single paragraph out of many hundreds of pages; but I think it shows clearly what was the purpose of the respondent corporation, consciously formed by their officers and perfectly understood by their agents at the Patent Office. The application was to be "worked along quietly," although apparently pushed with great energy. There would be delay, but no substantial obstacle to the grant of the patent, and even after the patent should be ordered to issue there might be a further delay within the limits of the law and without imperiling the patent. If this letter does not mean this I am at a loss to know what it does mean.

My conclusion therefore is that the complainant has made out the case and that there should be a decree that the patent in question is void and shall be delivered up to be canceled.



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OF THE

COMMISSIONER OF PATENTS

AND OF

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IN THE MATTER OF

**PATENTS, TRADE-MARKS, &c.**

*OFFICIAL GAZETTE.—October-December,* 1894.

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# DIGEST OF DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS

IN THE MATTER OF

PATENTS, TRADE-MARKS, &c.

*OFFICIAL GAZETTE—October–December*, 1894.

VOL. 69 O G—3

# DIGEST OF DECISIONS.

[Decisions of the United States courts are indicated by an asterisk (*) and of the Secretary of the Interior by a dagger (†).]

## ABANDONED EXPERIMENTS.

(See Construction of Specifications and Patents, 2.)

## ABANDONMENT.

(See Acquiescence.)

RECITAL OF BUT FAILURE TO CLAIM AS ELEMENT IN THE APPLICATION AS FIRST FILED—NO ABANDONMENT.

Before applying for the patent Hall had experimented with a carbon anode; but in his application as first filed he recited that there were certain disadvantages in its use, and it was not claimed by him until after priority of invention of the process had been awarded him in an interference with an application in which the carbon anode had been included. *Held* that this was not an abandonment of the carbon anode to the public.

[*Pittsburgh Reduction Company v. Cowles Electric Smelting and Aluminum Company, 789.

## ACQUIESCENCE.

(See Infringement, 6; Injunction, 1; Priority of Invention.)

EFFECT OF ACQUIESCING IN A DECISION OF THE PATENT OFFICE IN AN INTERFERENCE.

Where in a defense to a suit it is shown that more than two years before the suit was brought the complainant acquiesced in a decision adverse to him in an interference in the Patent Office in favor of a patent issued to the defendant, *Held* that his acquiescence in the decision for such length of time worked an abandonment of any claim he might have made to the invention.

[*Fassett *v.* Ewart Manufacturing Company, 253.

## AFFIDAVITS.

TRADE-MARK.

Where affidavits are filed which are not entitled in the cause, they cannot properly be considered by the court. (*Buerk* v. *Imhauser*, 10 O. G., 967; see also *Hawley* v. *Donnelly*, 8 Paige, 415.)

[*Goldstein *v.* Whelan *et al.*, 124.

## AGGREGATIONS.

(See Invention.)

## AMENDMENTS.

(See Reissues, 2.)

## ANALOGOUS DEVICES.

(See Infringement, 1, 2, 3, 4; Particular Patents, 2, 3, 9, 15, 17, 18, 23, 29, 30, 32, 33, 34.)

## ANTICIPATION.

(See Construction of Specifications and Patents, 2, 4; Designs, 2; Particular Patents, 2, 7, 15, 17, 22, 24, 29, 31.)

## APPEAL FROM THE COMMISSIONER OF PATENTS.

(See Appeal to the Court of Appeals of the District of Columbia.)

## APPEAL TO THE COURT OF APPEALS OF THE DISTRICT OF COLUMBIA.

APPEALS FROM THE COMMISSIONER OF PATENTS—NO POWER TO AWARD COST.

In appeals from the Commissioner of Patents the Court of Appeals has no power or jurisdiction to award cost or to execute any judgment therefor that it might enter therein.

[*Wells, Jr., *et al. v.* Reynolds *et al.*, 1507.

## APPEAL TO THE SUPREME COURT OF THE DISTRICT OF COLUMBIA.

(See Patentability; Supreme Court of the District of Columbia.)

## ASSIGNEES.

JOINT INVENTORS—ASSIGNMENT BY ONE OF THEM, WITH REQUEST THAT PATENT ISSUE TO ASSIGNEE, WILL BE OBSERVED.

Where an assignment from one of several joint inventors contains a request that the patent shall issue to his assignee, *Held* that the request will be observed and the patent be issued jointly to the remaining inventors and the assignee.

[*Ex parte* Fowler *et al.*, 1041.

## ASSIGNMENTS.

(See Assignees.)

ASSIGNOR ESTOPPED FROM CONTESTING VALIDITY OF A PATENT.

The assignment of a patent by a patentee for a valuable consideration estops him, when sued for infringement thereof by an assignee deriving title under the assignment, from setting up the question of validity, except as affected by the state of the art and anticipatory matter as a part of the state of the art, and these only as bearing on the construction of the patent.

[*Babcock *et al. v.* Clarkson *et al.*, 1773.

## BILL IN EQUITY UNDER SECTION 4915, REVISED STATUTES.

(See Patentability; Supreme Court of the District of Columbia.)

BILL IN EQUITY, SECTION 4915—DECISION OF THE COMMISSIONER OF PATENTS FOLLOWED.

Where a defeated party to an interference in the Patent Office files a bill in equity, under section 4915, against his successful contestant and patentee as defendant, the propositions submitted by the defendant that under section 4915 something more than the ordinary *quantum* of evidence is required of the complainant and that the suit must proceed upon the same lines as though it were a bill filed to set aside a judgment at law certainly have force. *Held*, however, that it was unnecessary to discuss them in this case, as the weight of evidence sustains the defense.

[*Rudolph *et al. v.* Williams *et al.*, 642.

## CHANGE OF STRUCTURE.

(See Infringement, 1, 2, 3, 4; Particular Patents, 3, 4, 18, 23, 29, 30, 32, 33.)

## COMBINATIONS.

(See Construction of Specifications and Patents, 2; Invention; Particular Patents, 6, 32.)

## CONSTRUCTION OF CLAIMS.

(See Construction of Specifications and Patents, 3; Particular Patents, 12, 34; Technical Terms.)

## CONSTRUCTION OF SPECIFICATIONS AND PATENTS.

(See Abandonment; Assignments; Designs, 2; Final Fees; Infringement, 1, 2, 3, 4, 6; Injunction, 1; Invention; Particular Patents; Priority of Invention; Public Recognition Evidence of Invention; Public Use; Reissues.)

1. PATENTEE CANNOT SAY THAT AN ELEMENT CLAIMED IS IMMATERIAL.

Where an element is described, declared to be an essential feature of the invention, and made an element in the claims, *Held* that the patentee is not at liberty to say that it is immaterial or that a device which dispenses with it is an infringement. (*Vance* v. *Campbell*, 1 Black, 427; *Water-Meter Co.* v. *Desper*, 101 U. S., 332; *Gage* v. *Herring*, 23 O. G., 2119; 107 U. S., 640, 648; *Gould* v. *Rees*, 15 Wall., 187; *Brown* v. *Davis*, 34 O. G., 435; 116 U. S., 237, 242.)

[*Wright *v.* Yuengling, 639.

2. STEWARD—GRAIN-BINDER—VALID—PUBLIC USE—ORAL EVIDENCE WEAKENED AND CONTRADICTED BY EXHIBIT—CLAIM OPERATIVE—INFRINGEMENT.

Claims 20 and 21 of Patent No. 272,598, dated February 20, 1883, not anticipated by British patent of Howard and Bousfield of 1881, Steward having made oath during pendency of application that he had completed the invention and made a working model before the date of the British patent. Nor was the evidence of a use by one Heller, in 1877-78, of an extension butt-adjuster connected with an Appleby machine sufficient to create the bar of public use. "This case is an illustration of the wisdom of the rule requiring such anticipations to be proven by evidence so cogent as to leave no reasonable doubt in the mind of the Court that the transaction occurred substantially as stated. The very exhibit produced by the witness Heller contradicted—so far as it could contradict—his testimony, and the witnesses who ought to have corroborated his story gave versions which showed it to be untrue in more than one important particular" * * * "His efforts in that direction must be relegated to that class of unsuccessful and abandoned experiments which, as we have repeatedly held, do not affect the validity of a subsequent patent. (*Corn Planter Patent*, 6 O. G., 392; 23 Wall., 181, 211; *Coffin* v. *Ogden*, 5 O. G., 270; 18 Wall., 120, 124.) Claim 20 is not invalid because inoperative for want of additional elements. The appropriate means for rendering the combination operative will be understood in any such case. This claim is valid and infringed; but as the defendants use a different method of adjusting the extension, which is neither the same invented by Steward nor an equivalent, claim 21 is not infringed.

[*Deering v. Winona Harvester Works, 1641.

3. LIMITATION OF CLAIM—"SUBSTANTIALLY AS SET FORTH."

Where the claim is unambiguous and exact, matter in the description cannot be read into it to change its scope, nor do the words "substantially as described" in the claim open the way to the admission therein of matter only incidentally described or mentioned in the description.

[*Westinghouse *et al.* v. Edison Electric Light Company, 1774.

4. BERLINER—COMBINED TELEGRAPH AND TELEPHONE (MICROPHONE)—VOID—PRIOR PATENT TO SAME INVENTOR FOR SAME INVENTION.

Patent to Emile Berliner, No. 463,569, dated November 17, 1891, is void, because one of the functions of the device shown in the Patent No. 233,969, dated November 2, 1880, to the same inventor—namely, the function of transmitting articulate speech—is identical with the sole object or function of the device covered by the patent of 1891 and the device for effecting the transmission is identical in both patents. (*Miller v. Eagle Manufacturing Co.*, 66 O. G., 845; 151 U. S. 186.)

[*United States of America v. American Bell Telephone Company *et al.*, 1778.

## CONSTRUCTION OF STATUTES.

(See Appeal to the Court of Appeals of the District of Columbia; Final Fees; Jurisdiction of the Court of Claims; Marking Articles "Patented;" Renewal of Forfeited Cases.)

## COSTS OF SUITS.

(See Appeal to the Court of Appeals of the District of Columbia.

## COURT OF APPEALS OF THE DISTRICT OF COLUMBIA.)

(See Appeal to the Court of Appeals of the District of Columbia.)

## COURT OF CLAIMS.

(See Jurisdiction of the Court of Claims.)

## DAMAGES AND PROFITS.

(See Jurisdiction of the Court of Claims; Marking Articles "Patented;" Suits for Infringement Against the United States.)

MASTER'S REPORT—RULE OF ASCERTAINING PROFITS ON ARTICLE OF MANUFACTURE FOLLOWED.

It is no doubt well settled that where a patent is for a particular part of an existing machine it is not sufficient to ascertain the profits on the whole machine, but it must be shown what portion of the profits is due to the particular invention secured by the patent in suit. (*Blake* v. *Robertson*, 11 O. G., 877; 94 U. S., 728; *Dobson* v. *Hartford Carpet Co.*, 31 O. G., 787; 114 U. S., 120;) but it is equally true that where the patented invention is for a new article of manufacture, which is sold separately, the patentee is entitled to damages arising from the manufacture and sale of the entire article. (*Gould's Manufacturing Co.* v. *Cowing*, 21 O. G., 1277; 105 U. S., 258; *Hurlbut* v. *Schillinger*, 47 O. G., 1067; 130 U. S., 456; *Crosby Valve Co.* v. *Safety Valve Co.*, 57 O. G., 1000; 141 U. S., 441.) The fact that another grate of the same kind was sold at the same time does not present any argument for lessening damages.

[*Warren *et al.* v. Keep, 1647.

## DEFENSE.

(See Acquiescence; Assignments.)

## DELAY.

(See Laches; Injunction, 2; Priority of Invention.)

## DELAY IN BRINGING SUIT.

(See Injunction, 2.)

## DELAY IN PROSECUTING AN APPLICATION.

(See Construction of Specifications and Patents, 4; Laches.)

## DEMURRER.

(See Particular Patents, 24.)

DEMURRER TO BILL OF COMPLAINT—IDENTITY OF THE PATENTS DISCLOSED ON THE FACE OF THE BILL—PRACTICE.

While ordinarily the determination of a demurrer setting up the identity of the patents to the same patentee in the bill of complaint would be left to final hearing, *Held* that, as the question of identity is one of law, to be ascertained solely from the face of the patents, exception may well be made in favor of disposing of the demurrer without waiting for the final hearing.

[*Russell v. Kern, 1208.

## DESCRIPTION.

(See Construction of Specifications and Patents, 3; Particular Patents, 11, 12.)

## DESIGNS.

(See Particular Patents, 20.)

1. MODIFICATIONS—FORMER DECISIONS OVERRULED.

In a Design application showing more than one modification applicant is permitted to show, describe, and claim modifications generically. *Ex parte Hess and Hess* (56 O. G., 1331) and *ex parte Finck* (60 O. G., 157) overruled.

[*Ex parte* Bark, 369.

2. INFRINGEMENT.

Where one person has painted a design on an object, another person cannot obtain a patent for it by simply embossing it on the same object.

[*Eclipse Manufacturing Company v. Holland, 372.

## DILIGENCE.

(See Laches.)

## DRAWINGS.

(See Particular Patents, 20; Reissues, 1.)

## DRAWINGS OF INFRINGING MACHINES.

(See Inspection of Defendant's Machine.)

## EMPLOYÉ.

(See Priority of Invention.)

## ENLARGEMENT OF CLAIMS.

(See Particular Patents, 26; Reissues, 2, 3.)

## EQUIVALENTS.

(See Infringement, 4.)



## ESTOPPEL.

(See Assignments; Supreme Court of the District of Columbia, 1.)

## EVIDENCE.

(See Affidavits; Bill in Equity under Section 4915.)

## EVIDENCE IN SUITS FOR INFRINGEMENT.

(See Inspection of Defendant's Machine.)

## EVIDENCE OF INVENTION.

See Injunction, 1; Public Recognition Evidence of Invention, 1.

## EXPIRED PATENTS.

(See Particular Patents, 24.)

## FINAL FEES.

DELAY IN PAYMENT OF.

A patent regular on its face is not subject to collateral attack because the Patent Office fee was not paid within the time prescribed by the Revised Statutes of the United States, section 4897.

[*Lamprey Boiler Furnace Mouth Protector Company v. Economy Feed Water Heater Company, 569.

## FIRST AND ORIGINAL INVENTOR.

(See Priority of Invention.)

## FORFEITED CASES.

(See Renewal of Forfeited Cases.)

## FORMER DECISIONS AFFIRMED.

(See Particular Patents, 13.)

## GOVERNMENTAL USE OF PATENTED INVENTION.

(See Suits for Infringement Against the United States.)

## GRANT OF PATENT TO ASSIGNEE.

(See Assignees.)

## IMPROVEMENTS.

(See Infringement, 5.)

## INFRINGEMENT.

(See Construction of Specifications and Patents, 1, 2; Damages and Profits; Injunction; Inspection of Defendant's Machine; Marking Articles "Patented;" Particular Patents, 3, 6, 14, 15, 18, 19, 23, 25, 29, 30, 32, 33, 34.)

1. CONSTRUCTION OF CLAIM—INFRINGEMENT.

The claim for "a toy bank consisting of a hollow toy provided with a coin-receiving and coin-discharging aperture, a movable cover for the discharging aperture, and a spring latch to secure the same from within, said spring latch being normally closed, but constructed to be opened by the weight of the coin within." *Held* infringed by a device consisting of the same elements, but in which the cover to the discharging-aperture is retained in place until a pressure applied through the contained coin greater than the weight of the coin releases said cover.

[*Colby v. Card, 125.

2. INFRINGEMENT.

As the structure for the circulation of water described in the patent may be a hollow shell or other contrivance as well as pipes, an M shaped shell structure for the channels of circulation, combined with the steam dome device, although called a "steam-drum," is an infringement.

[*Lamprey Boiler Furnace Mouth Protector Company v. Economy Feed Water Heater Company, 569.

3. BAKER—SHIRT—INFRINGEMENT.

A patent for an improvement in shirts, all the claims of which apply only to shirts which have a double or supplementary front, is not infringed by a shirt having a false front forming part of the shirt, giving the appearance, without the reality, of a double or supplementary front.

[*Knit Goods Patents Company v. Shuman *et al.*, 511.

4. PRIMARY INVENTION—DOCTRINE OF EQUIVALENTS.

Where the patented machine never before existed, it will not be carrying the doctrine of equivalents too far to hold a device an infringement which does the same work as the patented machine, if not by the same, certainly by equivalent means.

[*Beach v. American Box Machine Company, Inman, *et al.*, 1057.

5. IMPROVEMENT ON A PATENTED MACHINE GIVES NO RIGHT TO USE PRIMARY MACHINE—INFRINGEMENT.

The fact that a person has made an improvement on a patented machine does not give him the right to use such machine with his improvement nor absolve such use from being an infringement of it.

[*Traver v. Brown, 1071.

6. OLIN—HARVESTER—CLAIM OF IMPROVEMENT—PATENT LIMITED BY STATE OF THE ART AND HISTORY OF APPLICATION AND PATENT.

Claim 1 of Patent No. 223,812, dated January 27, 1880, describing a swinging elevator located upon the *grain* or ascending side of the main belt, pivoted at its *lower* end and movable at its *upper* end, cannot be construed to cover a similar device located upon the *stubble* side, pivoted at its *upper* end and swinging at its *lower* end, particularly in view of the facts that the patent is not a pioneer patent, that the specification confines the invention to the terms of the claim, that in no one of the six claims is there a suggestion that the elevator or belt could be located upon the stubble side, that the invention was of doubtful utility and never went into practical use, that the mechanism set forth in the patent to Bullock and Appleby of October 31, 1882 No. 266,949, under which the defendant manufactured its machines, was extensively sold throughout the country for about eight years before any assertion of adverse right under the Olin patent, the plaintiff himself becoming a licensee under the patent, and that, though Olin, while in the Patent Office, was thrown into an interference with another application having broader claims, he made no attempt to insert such broader claims. The Olin patent was not infringed.

[*Deering v. Winona Harvester Works, 1641.

## INJUNCTION.

(See Affidavits.)

1. PRELIMINARY INJUNCTION—PUBLIC ACQUIESCENCE—ELECTRIC WELDING.

Where a new art and apparatus, such as that of electric welding, is widely accepted by the scientific world and the public generally as novel and important, and is speedily put in operation, and the machines and rights under the patent are eagerly sought for by manufacturers, thus supplanting to a large extent the older methods—all with no question as to the validity of the patent, except in the case of the defendant—this is sufficient evidence of acquiescence to justify the issuance of a preliminary injunction, unless defendant can clearly show that the patent is invalid.

[*Thomson Electric Welding Company v. Two Rivers Manufacturing Company *et al.*, 1207.

2. MOTION FOR PRELIMINARY INJUNCTION DENIED, ALTHOUGH PATENT HAD BEEN LITIGATED AND SUSTAINED, BECAUSE PROOF OF INFRINGEMENT NOT CLEAR AND DECISIVE, AND COMPLAINANT CHARGEABLE WITH LACHES IN NOT EARLIER INSTITUTING SUIT.

Although the validity of the patent sued on had been sustained in previous litigation and was beyond dispute, yet where on a motion for a preliminary injunction the proof of infringement is not clear and decisive, but is in doubt, and, further, where the complainant is guilty of laches in standing idly by for several years during the time of the alleged infringement, *Held* that for these reasons the motion for preliminary injunction must be denied.

[*Brush Electric Company *et al* v. Electric Storage Battery Company *et al.*, 1508.

## INSPECTION OF DEFENDANT'S MACHINE.

INSPECTION OF DEFENDANTS' MACHINES ORDERED UPON EVIDENCE THAT ELEMENTS IN THEIR CONSTRUCTION INFRINGED—RULE OF SECRECY ON ACCOUNT OF PENDING APPLICATION NOT A BAR.

The defendants concealed their machines, so that the complainant could not make satisfactory proof of infringement. Complainant thereupon called one of the directors of the defendant corporation and proved by him that the defendants' machines contained the elements mentioned in certain claims of complainant's patents, and then moved the court for an order requiring the defendants to produce drawings or a model of said machines or to permit complainant's experts to visit their shops and make such drawings from the machines. *Held*, first, that, although such order should not be granted upon mere suspicion or allegation of infringement, yet here, as the complainant had shown probable cause for believing that infringement was going on, the order should be granted; second, that the fact that an application for a patent on one of the defendants' machines was pending was no ground for denying the order, the rule of secrecy in the Patent Office having no application to investigations of causes by the courts; third, rule entered for the defendants to produce drawings of the alleged infringing machines upon payment of the cost thereof by the complainant.

[*Diamond Match Company v. Oshkosh Match Works *et al.*, 1508.

INTERFERENCE.

(See Abandonment; Bill in Equity under Section 4915; Priority of Invention.)

INTERFERENCE PROCEEDINGS IN THE PATENT OFFICE.

(See Acquiescence.)

INVENTION.

(See Injunction; Patentability; Particular Patents, 15, 17, 18, 19, 29, 31, 32, 33; Public Recognition Evidence of Invention.)

AGGREGATION.

The state of the art disclosed that a cylindrical guide, a trough-like connection, and a combination of flat guides and trough each was old. *Held* that claim 2, which covers a combination of the cylindrical guide and trough-like connection, is void, as covering a mere aggregation, or, if the combination is superior to the old one, it is a difference in degree, not rising to the dignity of invention.

[*Wright v. Yuengling, 629.

INVENTION DESCRIBED BUT NOT CLAIMED.

(See Abandonment; Construction of Specifications and Patents, 3.)

INVESTIGATION BY COURT NOT BARRED BY RULE OF SECRECY IN PATENT OFFICE.

(See Inspection of Defendant's Machine.)

JOINT INVENTORS.

(See Assignees.)

JURISDICTION.

(See Supreme Court of the District of Columbia, 2.)

JURISDICTION OF THE COURT OF CLAIMS.

(See Suits for Infringement Against the United States.)

ACT OF MARCH 3, 1887, (24 STAT., 505)—MERE TORTS AGAINST THE GOVERNMENT NOT COGNIZABLE.

The Court of Claims has no jurisdiction to hear and determine claims against the United States for mere torts. Some element of contractual liability must lie at the foundation of every action.

[*Schillinger *et al.* v. United States, 1505.

LACHES.

(See Injunction, 2.)

DELAY IN PROSECUTING APPLICATION.

The application was filed June 4, 1877; the patent granted November 17, 1891. "The device covered by the patent in suit had been in public use by the respondent corporation since the year 1878. The respondent corporation was of ample means to prosecute the application. The result of any delay which might take place in the issue of the Berliner patent would evidently be to continue so much longer the practical monopoly of the art of electrical transmission of articulate speech." Under these circumstances the duty of the respondent corporation was to use the greatest degree of diligence in prosecuting the application to an early issue. "There should have been at least as great diligence as their own interests would have called for had their business been unprotected by patent rights." The delays subsequent to June 9, 1882, were unwarrantable, were acquiesced in, and therefore intended by the respondent corporation, and were such as to invalidate the patent.

[*United States of America v. American Bell Telephone Company *et al.*, 1778.

MARKING ARTICLES "PATENTED."

MARKING ARTICLES "PATENTED"—SECTION 4900—DAMAGES.

Where a thing is marked "Patented" as of a date not of its patent, but of the date of an earlier patent to the same patentee, upon which it is an improvement, *Held* not to be a compliance with section 4900 of the United States Revised Statutes and to secure to him no right to damages on proof of infringement of the improvement.

[*Traver v. Brown, 1071.

MASTER'S REPORT.

(See Damages and Profits.)

MEASURE OF DAMAGES.

(See Damages and Profits.)

MECHANICAL SKILL.

(See Particular Patents, 7, 27.)

MODE OF OPERATION.

(See Particular Patents, 18, 33.)

NEW MATTER.

(See Particular Patents, 26; Reissues, 2.)

OATH.

(See Reissues, 2.)

OLD DEVICES.

(See Particular Patents, 2.)

OLD ELEMENTS.

(See Particular Patents, 32.)

OMISSION OF PARTS.

(See Construction of Specifications and Patents, 1; Particular Patents, 34; Public Use.)

ORDER TO INSPECT DEFENDANT'S FACTORY.

(See Inspection of Defendant's Machine.)

PARTICULAR PATENTS.

(See Construction of Specifications and Patents, 2, 4; Infringement, 6.)

1. BEACH—MACHINE FOR ATTACHING STAYS TO THE CORNERS OF PAPER OR STRAWBOARD BOXES—VALID.

Claims 1, 2, 3, 4, 5, and 7 of Reissue Patent No. 11,167, reissued May 26, 1891, to A. H. Beach, for a machine for attaching stays to the corners of paper or strawboard boxes, examined and *Held* to be valid.

[*Beach v. American Box Machine Company, Inman, *et al.*, 1067.

2. BERLINER—COMBINED TELEGRAPH AND TELEPHONE (MICROPHONE)—VOID—PRIOR PATENT TO SAME INVENTOR FOR SAME INVENTION.

Patent to Emile Berliner, No. 463,569, dated November 17, 1891, is void, because one of the functions of the device shown in the Patent No. 263,969, dated November 2, 1880, to the same inventor—namely, the function of transmitting articulate speech—is identical with the sole object or function of the device covered by the patent of 1891 and the device for effecting the transmission is identical in both patents. (*Miller* v. *Eagle Manufacturing Co.*, 66 O. G., 845; 151 U. S., 186.)

[*United States of America *v.* American Bell Telephone Company *et al.*, 1778.

3. CLARKSON—JUMP-SEAT FOR CARRIAGES—NOT INFRINGED.

Patent No. 390,847, issued June 24, 1884, to Joseph T. Clarkson, for an improvement in jump-seats for carriages, consisting of a falling tail-board and two seats connected so that an upward movement of the board will drop the rear seat out of use and move the front seat back, *Held* not infringed by an arrangement effecting a different set of movements.

[*Babcock *et al.* v. Clarkson *et al.*, 1773.

4. COLBY—TOY LOCOMOTIVE—VALID.

Letters Patent No. 373,223, granted November 15, 1887, to Edward J. Colby, for a toy locomotive, *Held* to be valid.

[*Colby v. Card, 125.





5. COSTA—FISHING-BOAT ATTACHMENT—VALID.

Letters Patent No. 456,720, dated July 28, 1891, to Pedro Costa, for fishing-boat attachment, *Held* to be valid.

[*Costa *et al.* v. Drobaz, 374.

6. EDISON—ELECTRIC LAMP—EQUIVALENTS—THE DOCTRINE OF EQUIVALENTS AS APPLIED TO PRIMARY INVENTIONS NOT LIMITED BY THE QUALIFICATION OF AGE OR TIME.

Claim 2 of Patent No. 223,898, issued January 27, 1880, to Edison, for an electric lamp, is for "the combination of carbon filaments with a receiver made entirely of glass and conductors passing through the glass, and from which receiver the air is exhausted, for the purposes set forth;" and platinum wire is described in the specification as the conductor passing through the glass, and is used in the Edison lamp of commerce. *Held*, however, that as his invention resides in the carbon filament, the other elements being old and subordinate and representing, so to speak, only the environment of the filament, the plain meaning of the language of the claim should not be restricted, but construed to cover all material for this purpose capable of conducting the electric current. *Held*, further, that the patent is for a pioneer invention and entitled to a broad construction, and, therefore, that the claim is infringed by a lamp using a conductor of powdered silver, although powdered silver was not known at the date of the patent as a conductor in the narrower art of electric lighting, though it was known as a conductor in the broader art of electricity.

[*Edison Electric Light Company *et al.* v. Boston Incandescent Lamp Company *et al.*, 245.

7. SAME—ELECTRIC DISTRIBUTION AND TRANSLATION SYSTEM.

Claims 1, 2, and 3 in Patent No. 264,642, issued September 19, 1882, to Thomas A. Edison, for an electric distribution and translation system, *Held* to be void as involving only the knowledge and skill of one skilled in the art, particularly in view of French patent to Khotinsky, A. D. 1875.

[*Westinghouse *et al.* v. Edison Electric Light Company, 1774.

8. ENTWISTLE—GIRDER-SLOT-RAIL CROSSING—LACK OF INVENTION—VOID.

Claim 2 of Letters Patent No. 367,746, dated August 2, 1887, granted to E. B. Entwistle, for girder-slot-rail crossing, examined and *Held* to be void for lack of invention.

[*Johnson Company v. Pennsylvania Steel Company, 342.

9. FASSETT—MACHINE FOR COUPLING CHAIN-LINKS—SECOND PATENT FOR SAME INVENTION—VOID.

Patent No. 377,376, issued February 7, 1888, to N. B. Fassett, for a machine for coupling chain-links by a sidewise motion and also by an endwise motion, examined and *Held* to be for substantially a combination of the same machines respectively secured to him by Patent No. 347,338, dated August 17, 1886, and applied for by him in an application rejected in the Patent Office in an interference between his application and Patent No. 317,590, dated May 12, 1885, issued to E. L. Howe, and void, as being only a second patent to the same patentee for the same invention.

[*Fassett v. Ewart Manufacturing Company, 953.

10. HALL—REDUCING ALUMINIUM BY ELECTROLYSIS—VALID.

Patent No. 400,766, granted April 2, 1889, to Charles M. Hall, for an improved process of reducing aluminium by electrolysis, which consists in dissolving alumina in a fused bath composed of the fluorides of aluminium and a metal more electropositive than aluminium, and then passing an electric current through the fused mass, examined in view of the art and *Held* to be not anticipated, and valid.

[*Pittsburgh Reduction Company v. Cowles Electric Smelting and Aluminum Company, 789.

11. SAME—PROCESS—IMPROVEMENTS SUGGESTED BY ITS COMMERCIAL WORKING.

The means disclosed in Hall's patent for working his process included the fusion of the bath by external heat before the current of electricity was passed through it; but the description mentioned that in the commercial working of the process it would probably be found that the resistance of the components of the bath to the passage of a current sufficiently strong to pass through the bath would produce heat enough to maintain the fusion without the aid of external heat. *Held* that, even though the omission of the external heat might be a commercial improvement, nevertheless it was within the scope of the patent and the patentee entitled to the exclusive use of his process, whatever were the subsequent steps or means for working it.

[*Id.

12. SAME—THE PATENT NOT LIMITED TO EXTERNAL HEAT.

The fact that the specification describes an apparatus for fusing the bath by external heat and that the claims recite the dissolution of the alumina in the fused bath, "and then passing an electric current through the fused mass," does not restrict the patentee to external heat, for the claims specify nothing as to the heat and the patent states that the apparatus therein disclosed forms no part of the invention. (*Tilghman* v. *Proctor*, 19 O. G. 859; 102 U. S., 707.)

[*Id.

13. SAME—REDUCING ALUMINIUM—REHEARING—FORMER DECISION AFFIRMED.

The decree in the above-entitled case (69 O. G., 789) sustaining Patent No. 400,766, issued April 2, 1889, to Charles M. Hall, for process of reducing aluminium, re-examined on motion for rehearing and affirmed, and motion refused.

[*Id.

14. HALLIDIE—TRAMWAY FOR CURVES AND CABLE-GRIPS—CONSTRUED.

Reissue Patent No. 10,681, dated February 2, 1886, to Andrew S. Hallidie, for tramway for curves and cable-grips, examined and *Held* to be limited, in view of the art, to the combination of a separate guide-rail, slot, and cable-carrying sheaves, and not infringed by a guide-rail formed of the lower flange of the slot-iron.

[*Pacific Cable Railway Company v. Consolidated Piedmont Cable Company, 123.

15. HOUSTON—PHOTOGRAPHIC APPARATUS—NOVELTY—VALID.

Patent No. 248,179, issued October 11, 1881, to David H Houston, for improvements in photographic apparatus, consisting in adding a pointer to the projecting end of the reel on which the film of sensitized paper is wound to indicate the position of film, and also fixing a pin in the same reel to perforate the edge of the film, *Held* to be for a patentable invention and not anticipated by a cloth-measuring machine, and the first and second claims infringed by a device embodying its essential features.

[*Eastman Company v. Blair Camera Company, 243.

16. KREMENTZ—COLLAR-BUTTON—NOVELTY—VALID.

Patent No. 298,928, issued May 6, 1884, to George Krementz, for a collar-button, examined and *Held* to cover a patentable invention.

[*Krementz v. S. Cottle Company, 241.

17. LAMPREY AND BUGBEE—FURNACE-MOUTH PROTECTOR—NOVELTY—VALID.

In the Lamprey and Bugbee patent, No. 421,588, February 18, 1890, for an improvement on their Patent No. 388,367, August 21, 1888, for a structure to prevent by circulation of water the burning out of furnace-mouths, the improvement covered by claims 1 and 2, consisting of the combination, with the appliance for circulation of water set forth in the earlier patent, of a steam-dome connecting therewith and pipes affording communication with the boiler, which averts the difficulty arising from the steam generated by allowing the steam to collect in the dome and pass from it into the boiler, involves patentable novelty and was not anticipated by the Sloane patent of May 16, 1882, No. 258,141, although that patent involved the same principle and accomplished the same results, nor by other devices previously known.

[*Lamprey Boiler Furnace Mouth Protector Company v. Economy Feed Water Heater Company, 509.

18. PARK—AIR-BRAKES—INFRINGED.

Claims 1 and 2 in Patent No. 393,784, issued December 4, 1888, to Harvey S. Park, for improvements in air-brakes, which include an emergency piston and valve, the latter being mechanically opened and closed by connection with the piston, *Held* not to be infringed by a device the piston of which does not hold the valve to its seat nor restore it to its place.

[*Westinghouse Air Brake Company v. New York Air Brake Company *et al.*, 945.

19. PAYNTER—UNION FOR STEAM-PIPES—VALID AND INFRINGED.

Patent No 307,725, issued August 2, 1887, to Edward P. Paynter, Jr., for an improvement in unions for steam-pipes, examined in view of the state of the art and *Held* to be for a patentable invention, and infringed.

[*Devlin *et al.* v. Paynter *et al.*, 1365.

20. PRENTICE—DESIGN FOR A RADIATOR—LIMITATION—INFRINGEMENT.

Patent to L. H. Prentice, No. 17,270, dated April 19, 1887, for a Design for a radiator, *Held* to be limited precisely to what is shown in the drawing.

[*Eclipse Manufacturing Company v. Holland, 372.

21. RICE—BOOT AND SHOE SHANK—CONSTRUED.

Patent No. 68,652, issued September 10, 1867, to Rice, for a boot and shoe shank, construed and *Held* to be for a shank composed of steel and leather or their equivalents fastened together.

[*Le Favour v. Rice, 371.

22. SALADEE—ROAD-WAGON—ANTICIPATED—VOID.

Patent No 239,850, issued April 5, 1881, to C. W. Saladee, for an improvement in road-wagons, *Held* to be void as anticipated in view of the state of the art.

[*Olin *et al.* v. Timken, 1361.

23. SELDEN AND GRISWOLD—WAFFLE-IRON—INFRINGEMENT.

Claims 1 and 2 of Patent No. 229,280, issued June 29, 1880, to Selden and Griswold, for an improvement in waffle-irons, consisting in the hinge connecting the parts of the pan, whereby one of the journals on which the pan rotates forms part of the hinge, while the opposite journal is formed on a divided handle, so that the pan opens in the same plane with its axis of rotation, examined and *Held* not to be restricted by the state of the art to the identical construction described, and therefore infringed by a waffle-iron making the hinge itself the journal.

[*Griswold v. Harker *et al.*, 369.

24. SMITH—MACHINE FOR MIDDLINGS-PURIFIERS—DEMURRER TO BILL OF COMPLAINT SETTING UP IDENTITY OF PATENTS TO PATENTEE SUED ON WITH EXPIRED PATENTS TO SAME PATENTEE SUSTAINED.

Patents Nos. 187,923, 194,539, 208,976, 236,101, and 258,142, issued to George T. Smith, for machines for middlings-purifier, examined in view of expired patents issued to him disclosed in the bill and *Held* to be substantially identical therewith and *Held*, further, to be invalid for that reason. (*Miller* v. *Eagle Mnfg. Co.*, 66 O. G., 845; 151 U. S., 186; *Oval Wood Dish Co.* v. *Sandy Creek Co.*, 66 O. G., 1895; 60 Fed. Rep., 285.) and demurrer sustained.

[*Russell v. Kern, 1308.

25. THOMSON—ELECTRIC WELDING—VALID.
Patents Nos. 347,140 and 347,141, dated August 10, 1886, to Elihu Thomson, for improvements in electric welding, *Held* valid and infringed on motion for preliminary injunction and injunction granted.
[*Thomson Electric Welding Company v Two Rivers Manufacturing Company *et al.*, 1207.

26. TILTON AND STIVERS—REISSUE—VEHICLE-SPRING—NEW MATTER—VOID.
Reissue Patent No 9,542, dated January 25, 1881, of patent No. 157,430, to Tilton and Stivers, for springs for vehicles, *Held* to be void as introducing matter not in the original.
[*Olin *et al. v.* Timken, 1361.

27. TIMKEN—CARRIAGE SPRING—LACK OF INVENTION—VOID.
Patent No. 197,689, issued November 27, 1877, to Henry Timken, for an improvement in carriage-springs, *Held* to be void for want of invention, the device therein secured involving, in view of the prior art, nothing more than mechanical skill.
[*Id.

28. TRAVER—STITCH-BREAKING AND RAVELING ATTACHMENT—VALID.
Patent No. 431,937, dated July 8, 1890, to A. L. Traver, for a stitch-breaking and raveling attachment for machines for sewing looped fabrics, examined and *Held* to be valid.
[*Traver *v.* Brown, 1071.

29. WALKER AND EASTMAN—ROLL-HOLDER FOR PHOTOGRAPHIC FILMS.
Patent No. 317,049, issued May 5, 1885, to Walker and Eastman, for an improvement in roll-holders for photographic films, the improvement consisting in inserting a spring in the reel on which the film of sensitized paper is wound, in order to preserve the film under tension, examined and *Held* to cover a patentable improvement and not anticipated by a map-rack, and its third, twenty-sixth, twenty-ninth, thirtieth, thirty-first, and thirty-second claims infringed by a device substantially like it, though modified in some particulars.
[*Eastman Company *v.* Blair Camera Company, 243.

30. WESTINGHOUSE, JR.—FLUID-PRESSURE AUTOMATIC BRAKE MECHANISM—NO. 376,837—INFRINGEMENT.
Claims 1, 2, and 3 of Patent No. 376,837, issued January 24, 1888, to George Westinghouse, Jr., for improvements in fluid-pressure railroad-brakes, which consists in actuating the emergency devices by a piston independent of and unconnected with the triple-valve piston and actuated by auxiliary-reservoir pressure, *Held* to be infringed by a device which uses two pistons, one of which is forced down by auxiliary-reservoir pressure, but does not act directly upon the emergency-valve, and claims 1 and 3, not embracing an additional valve, as claim 2 does, are also infringed by a device in which the initially check-operating piston actuates the emergency-valve directly.
[*Westinghouse Air Brake Company *v.* NewYork Air Brake Company *et al.*, 945.

31. SAME—SAME—NO. 418,827—AIR BRAKE—VOID—AS BEING FOR THE SAME INVENTION IN PATENT NO. 376,837 TO PATENTEE.
Claims 1 and 2 in Patent No. 448,827, issued March 24, 1891, to George Westinghouse, Jr., for improvements in fluid-pressure brakes, *Held* to be void, on the ground that, in view of the state of the art, there was no patentable invention in their subject-matter apart from the invention shown in Patent No. 376,837, issued to the same patentee.
[*Id.

32. SAME—SAME—NO. 172,064—NOT INFRINGED.
Claim 3 in Patent No. 172,064, issued January 11, 1876, to George Westinghouse, Jr., for improvements in fluid-pressure brakes, which must include a port through the center of the piston, *Held* not infringed by a combination of old elements which employs a piston with a side port.
[*Id.

33. SAME—OPERATING COCKS FOR FLUID-PRESSURE BRAKES—NO. 222,803—PIONEER INVENTION—INFRINGED.
Claims 2, 3, and 4 of Patent No. 222,803, issued December 23, 1879, to George Westinghouse, Jr., for improvements in engineers' valves, which provides for operating both the supply and exhaust valves by a single stem, that only one can be opened at once, that either may be opened separately and both closed simultaneously and automatically, *Held* to cover a pioneer invention and infringed by a device which accomplishes the same result, though it is specifically different from that shown in the patent.
[*Id.

34. WRIGHT—FRAME FOR HORIZONTAL ENGINES—LIMITED TO THE EXACT CONSTRUCTION—AND AS TO CLAIM 1, NO INFRINGEMENT.
Patent No. 144,818, issued November 18, 1873, to William Wright, for an improvement in frames for horizontal engines, examined and *Held* that, as the novelty of the invention is at least open to doubt, the claims must be limited to a rigid construction, and, consequently, that claim 1 is not infringed by a frame which omits the "semicircular connecting-piece *d*."
[*Wright *v.* Yuengling, 630.

## PATENTABILITY.

(See Designs, 2.)

DURHAM—DRAINAGE APPARATUS—BILL IN EQUITY, SECTION 4915, DISMISSED.
Bill in equity filed by Caleb W. Durham, for a patent for improvements in a drainage apparatus, dismissed, on the ground of lack of patentability in the subject-matter of the bill.
[*Durham *v.* Commissioner of Patents, 507.

## PATENTS.

(See Construction of Specifications and Patents; Final Fees; Particular Patents.)

## PRACTICE IN THE COURTS.

(See Affidavits; Appeal to the Court of Appeals of the District of Columbia; Bill in Equity under Section 4915; Damages and Profits; Demurrer; Injunction; Inspection of Defendant's Machine; Jurisdiction of the Court of Claims; Suits for Infringement Against the United States; Supreme Court of the District of Columbia.)

## PRACTICE IN THE PATENT OFFICE.

(See Designs, 1.)

## PRIORITY OF INVENTION.

ELEVATOR VALVE-CONTROLLING MECHANISM—INTERFERENCE—PATENTEE VERSUS APPLICANT—PRIORITY OF INVENTION—AWARDED TO THE PATENTEE.
Where the invention has been reduced to practice in a positive form under the patent and the applicant has simply filed his application, without doing anything to adapt and render the invention practical, and where he knew of the issue of the patent within a few days after its issue, and made no suggestion that the invention was his, but recommended it to purchasers, both orally and in writing, as the invention of the patentee, and where he did not assert any title to it until six months after the issue of the patent and after he had left the employ of the company who owned the patent to do service for a rival company, *Held* that priority must be awarded to the patentee.
[*Wells *et al. v.* Reynolds *et al.*, 121.

## PROCESS.

(See Particular Patents, 10, 11, 12.)

## PUBLIC RECOGNITION EVIDENCE OF INVENTION.

(See Injunction, 1.)

1. DOUBTS AS TO NOVELTY—DISPLACEMENT OF OTHER DEVICES ON ITS MERITS—SUFFICIENT TO UPHOLD THE PATENT.
In a suit on a patent, when the other facts leave the question of invention in doubt, the fact that the device has generally displaced other devices of its kind on its merits *Held* to be sufficient to turn the scale in favor of invention.
[*Krementz *v.* S. Cottle Company, 241.

2. POPULARITY AND LARGE SALES OF PATENTED ARTICLE NOT IMPORTANT WHEN IT IS WITHOUT PATENTABLE NOVELTY.
While the patented article may have been popular and met with large sales, *Held* those facts are not important when the alleged invention is without patentable novelty. (Citing *Duer v. Lock Company*, 63 O. G., 1060; 149 U. S., 216.)
[*Olin *et al. v.* Timken, 1361.

## PUBLIC USE.

(See Construction of Specifications and Patents, 2; Laches.)

PRIOR PUBLIC USE—VALID.
Where the device set up establishing prior public use did not contain one of the features of the patented device, and which feature was useful and novel, *Held* that the public use was not established.
[*Costa *et al. v.* Drobaz, 374.

## REISSUES.

(See Particular Patents, 1, 14, 26.)

1. REISSUE TO CORRECT A MISTAKE IN THE DRAWINGS—PROPER.
Where there was a mistake in the drawings, which, however, did not render the patent wholly inoperative and probably would have been discovered by a mechanic, but was of such a character that a machine constructed from the drawings would have been inoperative for some purposes which the patentee was entitled to cover by his claims, *Held* that a reissue to correct the drawings was proper and lawful.
[*Beach *v.* American Box Machine Company, Inman, *et al.*, 1067.

2. AMENDMENT WITHIN THE SCOPE OF THE ORIGINAL INVENTION—EXPANSION OF CLAIMS—NO NEW OATH.
Where the amendment of the application as first filed is within the scope of the original invention, no charge of undue expansion can be sustained and no new oath is necessary because the amendment introduces no new invention. The rule of law in *Railway Co. v. Sayles* (15 O. G., 243; 97 U. S., 554) that an amendment seeking to introduce a material variation in the original application cannot be allowed is not applicable where it introduces no new matter.
[*Id.



3. UNDUE EXPANSION BY THE WORD "PREFERABLY."
Where the original patent made no reference to an alternative construction of the device wherein one of the elements might be omitted, while the reissue merely retains the said element, "preferably," as another form of the device, *Held* that the effect of the insertion of the word "preferably" was to render this element non essential and unduly to expand the original.
[*Olin *et al. v.* Timken, 1361.

## REJECTED CLAIMS.

(See Supreme Court of the District of Columbia, 1.)

## RENEWAL OF FORFEITED CASES.

RENEWAL OF FORFEITED APPLICATIONS.
The right of an applicant to renew a forfeited application under section 4897 is exhausted when once exercised.
[*Decisions of the Secretary of the Interior, 639.

## RESULTS.

(See Infringement, 4; Particular Patents, 33.)

## SECTION 4915, REVISED STATUTES.

(See Supreme Court of the District of Columbia.)

## SUBSEQUENT PATENTS.

(See Particular Patents, 2, 9, 24, 31.)

## SUITS FOR INFRINGEMENT.

(See Acquiescence; Affidavits; Assignments; Demurrer; Injunction, 2; Inspection of Defendant's Machine; Public Recognition Evidence of Invention, 1.)

## SUITS FOR INFRINGEMENT AGAINST THE UNITED STATES.

SCHILLINGER—CONCRETE PAVEMENT—CLAIM AGAINST THE UNITED STATES FOR AN ALLEGED WRONGFUL USE OF PATENTED INVENTION NOT SUSTAINABLE, BECAUSE SOUNDING IN TORT.
Action against the United States to recover damages for the alleged wrongful use of the invention secured by a patent, No. 105,599, issued July 19, 1870, and reissued May 2, 1871, No. 4,364, to John J. Schillinger, for an improvement in concrete pavements, *Held* to be an action "sounding in tort" and not maintainable.
[*Schillinger *et al. v.* United States, 1505.

## SUPREME COURT OF THE DISTRICT OF COLUMBIA.

(See Patentability.)

1. ESTOPPEL.
Where an applicant in the Patent Office withdrew claims which were rejected and substituted others with the statement that they were the ones on which he would want a final decision, *Held* that such action was a waiver by the applicant of his right to assert title to the withdrawn claims in a bill in equity under section 4915.
[*Durham *v.* Commissioner of Patents, 507.

2. SECTION 4915—JURISDICTION OF SUPREME COURT, DISTRICT OF COLUMBIA, THEREUNDER.
The jurisdiction of the Supreme Court of the District of Columbia to proceed in a suit under section 4915 can arise only in case of refusal of an application by the Commissioner of Patents or the Supreme Court on appeal from him.
[*Id.

## TECHNICAL TERMS.

(See Construction of Specifications and Patents, 3; Reissues, 3.)

CARBONACEOUS ANODE—CONSTRUCTION OF CLAIM 2.
The words "carbonaceous anode" in claim 2 cover both anodes made partly of and wholly of carbon.
[*Pittsburgh Reduction Company *v.* Cowles Electric Smelting and Aluminum Company, 789.

## TORT.

(See Jurisdiction of the Court of Claims; Suits for Infringement Against the United States.)

## TRADE-MARKS.

(See Affidavits.)

HOSTETTER'S BITTERS—INFRINGEMENT.
Selling an imitation, as such, without any suggestion or arrangement that it be sold again for the genuine article, although with assent to such suggestions from others, does not infringe the right of the manufacturer of the genuine.
[*Hostetter Company *v.* Van Vorst, 1648.

## USE OF PATENTED ARTICLES BY THE UNITED STATES.

(See Suits for Infringement Against the United States.)

## VALIDITY OF PATENTS.

(See Assignments; Final Fees; Public Recognition Evidence of Invention.)

## VALIDITY OF PATENTS AFFECTED BY DELAY IN PROSECUTION.

(See Laches.)

## VALID PATENTS.

(See Construction of Specifications and Patents, 2; Particular Patents, 1, 4, 5, 10, 11, 15, 16, 17, 19, 20, 21, 25, 28, 29, 30, 33.)

## VOID PATENTS.

(See Invention; Particular Patents, 2, 7, 8, 9, 22, 24, 26, 27, 31; Public Recognition Evidence of Invention, 2; Reissues, 3.)

## WAIVER.

(See Supreme Court of the District of Columbia, 1.)

# ALPHABETICAL LIST OF PATENTEES

FOR

# THE QUARTER ENDING DECEMBER 31, 1894.

[Claims and drawings of Designs do not appear in the Monthly Volumes. Separate indexes for Designs, Trade-Marks, Prints and Disclaimers follow this.]

| Name, residence, and invention. | No. | Date. | Monthly volume. Specification. | Monthly volume. Drawing. | Official Gazette. Volume. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| A. B. See Manufacturing Company. (See Lindstrom and Cummings, assignors.) | | | | | | |
| A. French Spring Company. (See French, Philo N., assignor.) | | | | | | |
| Abbé, Richard F., Brooklyn, assignor to J. R. Alsing Company, New York, N. Y. Grinding and pulverizing cylinder | 529,036 | Nov. 13 | 1037 | 250 | 69 | 854 |
| Abbott, Charles E., Boston, assignor of one-half to S. Bancroft, Reading, Mass. Letter-box | 528,897 | Nov. 6 | 978 | 163 | 69 | 770 |
| Abbott, David S., and G. G. Parker, Olean, N. Y.; said Parker assignor to said Abbott. Machine for bundling kindling-wood | 529,231 | Nov. 13 | 1269 | 305 | 69 | 896 |
| Abbott, Leonard G., and T. D. Greene, Syracuse, N. Y. Swinging sash-mounting | 531,244 | Dec. 18 | 2056 | 491 | 69 | 1618 |
| Abbott, William W., Pittsburg, Pa. Sash-balance | 527,760 | Oct. 23 | 1785 | 430 | 69 | 317 |
| Able, David, and E. Gross; said Able assignor, by mesne assignments, to W. S. Schroll, Manchester, Pa. Whiffletree | 529,673 | Nov. 20 | 2053 | 492 | 69 | 1069 |
| Abrams, Eliza A. (See Abrams, William R., assignor.) | | | | | | |
| Abrams, William R., assignor to L. A. Abrams, Los Angeles, Cal. Sash-fastener | 528,059 | Oct. 23 | 2324 | 560<br>561 | 69 | 474 |
| Acheson, Edward G., Monongahela City, Pa. Carbon for electric lights | 527,826 | Oct. 23 | 1888 | 453 | 69 | 395 |
| Acme Roofing Company. (See Fickinger, Emil H., assignor.) | | | | | | |
| Adair, John, Waterford, Ireland, assignor to Adair Syndicate, Limited, London, England. Machine for mixing or working dough | 526,986 | Oct. 2 | 547 | 126<br>127 | 69 | 97 |
| Adair, John, Waterford, Ireland, assignor to Adair Syndicate, Limited, London, England. Baker's oven | 528,456 | Oct. 30 | 3015 | 728<br>729 | 69 | 613 |
| Adair Syndicate. (See Adair, John, assignor.) | | | | | | |
| Adams, Arthur L. (See Hill and Adams.) | | | | | | |
| Adams, Charles M. and G. W., Providence, R. I. Jeweler's press | 531,915 | Dec. 18 | 1463 | 347 | 69 | 1513 |
| Adams, Edward A. (See Bemis and Adams.) | | | | | | |
| Adams, George E., New Britain, Conn. Cast-off for suspender-ends | 530,318 | Dec. 4 | 421 | 106 | 69 | 1292 |
| Adams, George E., assignor to Trant & Hine Manufacturing Company, New Britain, Conn. Cast-off for suspenders | 528,624 | Nov. 6 | 177 | 43 | 69 | 678 |
| Adams, George E., assignor to Trant & Hine Manufacturing Company, New Britain, Conn. Manufacture of sheet-metal suspender-buckles | 528,625 | Nov. 6 | 178 | 44 | 69 | 678 |
| Adams, George F. (See Lynam and Adams.) | | | | | | |
| Adams, George F., *et al.* (See Lynam, John S., assignor.) | | | | | | |
| Adams, George F., Nashua, N. H., and J. S. Lynam, Winchester, Mass., assignors to C. S. Collins, Nashua, N. H. Railway-signal | 528,913 | Nov. 13 | 733 | 172 | 69 | 801 |
| Adams, George F., Nashua, N. H., and J. S. Lynam, Winchester, Mass., assignors to C. S. Collins, Nashua, N. H. Railway-signal | 528,914 | Nov. 13 | 734 | 172 | 69 | 801 |
| Adams, George W. (See Adams, Charles M. and G. W.) | | | | | | |
| Adams, Horace B., Owego, N. Y. Attachment for coffee-pots | 529,349 | Nov. 20 | 1479 | 356 | 69 | 957 |
| Adams, John F., Aledo, Ill. Hay-press | 528,755 | Nov. 6 | 406 | 98,99 | 69 | 749 |
| Adams, John Q., Marseilles, Ill. Separator for corn-shellers | 531,292 | Dec. 25 | 2145 | 514 | 69 | 1651 |
| Adams, Stephen J., Pittsburg, Pa. Molding apparatus | 531,429 | Dec. 25 | 2381 | 570 | 69 | 1697 |
| Adams, Walter S., assignor to J. A. Brill, Philadelphia, Pa. Means for supporting motors in electric locomotives | 529,688 | Nov. 27 | 2079 | 498 | 69 | 1075 |
| Adams & Westlake Company. (See Emery, Plato G., assignor.) | | | | | | |
| Adams & Westlake Company. (See Giese, James A., assignor.) | | | | | | |
| Adams & Westlake Company. (See Paterson, James W., assignor.) | | | | | | |
| Adams & Westlake Company. (See Teal, Henry S., assignor.) | | | | | | |
| Adams, Willard G., Weedsport, N. Y. Rotary engine | 530,982 | Dec. 18 | 1578 | 374 | 69 | 1532 |
| Adams, William A., Cincinnati, Ohio. Preparing and utilizing rock asphalt | 528,841 | Nov. 6 | 589 | ..... | 69 | 753 |
| Adamson, Charles E., Muncie, Ind. Two-color attachment for printing-presses | 528,069 | Oct. 23 | 2325 | 561 | 69 | 474 |
| Adamson, Charles E., Muncie, Ind. Disk cover for job-printing presses | 531,293 | Dec. 25 | 2147 | 514 | 69 | 1651 |
| Adamson, Charles E., Muncie, Ind. Method of and apparatus for producing copied effect on printed matter | 531,294 | Dec. 25 | 2148 | 514 | 69 | 1651 |
| Adamson, Charles E., Muncie, Ind., assignor to A. Hallett, Somerville, Mass. Producing copied effects on printed matter | 528,133 | Oct. 30 | 2467 | 597 | 69 | 515 |
| Adee, Fred. (See Sanger, John N., assignor.) | | | | | | |
| Adkins, Andrew A. (See Kahne, Adkins, Peirce, Martin, and Kahne.) | | | | | | |
| Adkins, William H., Rome, Ga. Signal-recording device | 527,258 | Oct. 9 | 951 | 231 | 69 | 191 |
| Adler, A. S., *et al.* (See Moskowitz, Morris, assignor.) | | | | | | |
| Adler, Abraham S., Baltimore, Md. Conformator | 526,849 | Oct. 2 | 291 | 71 | 69 | 55 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Adler, Leon D., *et al.* (See Moskowitz, Morris, assignor.) | | | | | | |
| Advance Thresher Company. (See Snyder, Cyrus, assignor.) | | | | | | |
| Ahern, Denis, New York, N. Y. Steam-boiler | 528,409 | Oct. 30 | 2937 | 710 | 69 | 599 |
| Ahlers, William, Pyatt, Ill. Corn-planter | 528,842 | Nov. 6 | 590 | 139 | 69 | 753 |
| Aiguier, Edward B., assignor of one-half to Richardson Manufacturing Company, Newark, N. J. Combined key-ring and cigar-cutter | 529,577 | Nov. 20 | 1909 | 455 | 69 | 1033 |
| Aiken, Henry, Pittsburg, Pa. Loading apparatus | 530,296 | Dec. 4 | 390 | 98 | 69 | 1286 |
| Aitken, Andrew N. (See Middlekauff and Aitken.) | | | | | | |
| Ajax Forge Company. (See Bradley, Frank B., assignor.) | | | | | | |
| Ajax Metal Company. (See Lare and Greer, assignors.) | | | | | | |
| Akerlind, Gustaf A., Rock Island, Ill. Locomotive-boiler | 527,645 | Oct. 16 | 1591 | {384 385} | 69 | 324 |
| Akers, John M., Cleveland, Ohio. Ticket-holder | 527,644 | Oct. 16 | 1590 | 384 | 69 | 324 |
| Aktiebolaget Separator. (See Jönsson, Johan L., assignor.) | | | | | | |
| Aktiebolaget Separator. (See Lindstrom, Ivar K., assignor.) | | | | | | |
| Albrecht, John, Massillon, Ohio. Combined rail chair and tie | 529,097 | Nov. 13 | 1038 | 250 | 69 | 854 |
| Albrecht, John, Massillon, Ohio. Combined rail chair and tie | 530,496 | Dec. 11 | 747 | 184 | 69 | 1369 |
| Albright, William D., Greenville, Ohio. Fence-stay | 530,916 | Dec. 18 | 1464 | 347 | 69 | 1513 |
| Alden Type Machine Company. (See Johnson, Louis K., assignor.) | | | | | | |
| Alden Type Machine Company. (See Johnson and Low, assignors.) | | | | | | |
| Alexander, Charles B. (See Alexander, Horace G. and C. B.) | | | | | | |
| Alexander, Emra W., and H. Groswith, Philadelphia, Pa. Conductor-coil for armatures and field-magnets and making same | 529,992 | Nov. 27 | 2616 | 627 | 69 | 1175 |
| Alexander, Horace G. and C. B., Londonderry, Vt. Corner-stay for boxes or analogous receptacles | 529,057 | Nov. 13 | 967 | 228 | 69 | 842 |
| Alexander, James G. (See Fry, John H., assignor.) | | | | | | |
| Alexander, Samuel. (See Hagen, Martin P., assignor.) | | | | | | |
| Alexander, William G., Bozeman, Mont. Bell-ringing mechanism | 528,134 | Oct. 30 | 2469 | 597 | 69 | 515 |
| Alker, John H., assignor to Oliver Iron and Steel Company, Pittsburg, Pa. Bolt-heading machine | 530,076 | Dec. 4 | 1 | 1, 2 | 69 | 1215 |
| Allardyce, John M., Galveston, Tex. Machine for cutting stick-candy | 531,084 | Dec. 18 | 1753 | 418 | 69 | 1561 |
| Allen, Addison. (See Manning, Charles E., assignor.) | | | | | | |
| Allen, Alfred. (See Brown and Allen.) | | | | | | |
| Allen, Alfred A., Somerville, and C. P. Allen, Lynn, Mass. Sash-fastener | 528,707 | Nov. 6 | 325 | 80 | 69 | 705 |
| Allen, Charles P. (See Allen, Alfred A. and C. P.) | | | | | | |
| Allen, David F., Richburg, N. Y. Rotary engine | 530,874 | Dec. 11 | 1384 | 330 | 69 | 1482 |
| Allen, David P., Beacon, Iowa. Charger | 528,843 | Nov. 6 | 591 | 140 | 69 | 754 |
| Allen, E. V., *et al.* (See Neeley, Joseph P., assignor.) | | | | | | |
| Allen, Ethan, assignor of one-half to D. W. Case, St. Louis, Mo. Car-brake | 531,287 | Dec. 18 | 2137 | 512 | 69 | 1634 |
| Allen, Frank H., *et al.* (See Kingsbury, Arthur L., assignor.) | | | | | | |
| Allen, Henrietta, administratrix. (See Allen, Levi G.) | | | | | | |
| Allen, Herod W., Latta, S. C. Stalk-cutter | 527,230 | Oct. 9 | 903 | {218 219} | 69 | 184 |
| Allen, John E., Detroit, Mich. Steering-gear | 530,154 | Dec. 4 | 130 | 35 | 69 | 1239 |
| Allen, Levi G., deceased, Mannsville, N. Y.; H. Allen, administratrix. Hot-water heating system | 529,098 | Nov. 13 | 1039 | {250 251} | 69 | 855 |
| Allen, Manson B., Battle Creek, Mich. Fastening for fishing-tackle | 527,259 | Oct. 9 | 952 | 231 | 69 | 192 |
| Allen, Solomon. (See Brown and Allen.) | | | | | | |
| Allen, Sydney E., Winston, N. C. Combined brace, clamp, step fastening, and support for step-ladders | 529,993 | Nov. 27 | 2617 | 628 | 69 | 1175 |
| Allen, Walter A., New York, N. Y. Apparatus for the manufacture of gas | 531,144 | Dec. 18 | 1868 | {443 444} | 69 | 1586 |
| Allen, William H., trustee. (See Bacon, Charles H., assignor.) | | | | | | |
| Allison, Silas, Ottawa, Kans. Wire-stretcher | 528,218 | Oct. 30 | 2610 | 629 | 69 | 540 |
| Allstädt, August, Heidelberg, Germany. Hat-measuring apparatus | 530,673 | Dec. 11 | 1068 | 260 | 69 | 1424 |
| Alsop, Charles R., assignor to L. C. Alsop, Middletown, Conn. Railway-annunciator | 527,098 | Oct. 9 | 686 | 169 | 69 | 143 |
| Alsop, Charles R., assignor to L. C. Alsop, Middletown, Conn. Electric track-signal | 527,099 | Oct. 9 | 688 | 169 | 69 | 144 |
| Alsop, Lucy C. (See Alsop, Charles R., assignor.) | | | | | | |
| Alston, Samuel L., Galveston, Tex. Swing | 529,232 | Nov. 13 | 1273 | 306 | 69 | 896 |
| Altenburg, Christian L. O., New York, N. Y. Treble-bridge for pianos | 529,994 | Nov. 27 | 2618 | 628 | 69 | 1175 |
| Altham, George J., Swansea, Mass. Power-transmitting apparatus | 526,887 | Oct. 2 | 360 | 90, 91 | 69 | 67 |
| Althans, John H., and J. Ruckstinat, Providence, R. I. Dough molding and dividing machine | 527,579 | Oct. 16 | 1486 | 361 | 69 | 304 |
| Althouse, Nathan S., *et al.* (See Cavanaugh, James D., assignor.) | | | | | | |
| Altland, Samuel H., Indianapolis, Ind., and S. Mayer, Cincinnati, Ohio. Hat-conformator | 527,472 | Oct. 16 | 1316 | 321 | 69 | 275 |
| Altpeter, Francis W., Chicago, Ill. Draftsman's rule | 530,741 | Dec. 11 | 1178 | 287 | 69 | 1443 |
| Alverson, Emma A. (See Alverson, James W., assignor.) | | | | | | |
| Alverson, James W., assignor to E. A. Alverson, Brighton, N. Y. Wire fence | 529,543 | Nov. 20 | 1852 | 441 | 69 | 1022 |
| Alvord, Clinton. (See Schaum and Alvord.) | | | | | | |
| Amb jörn, Pierre, Paris, France. Wheel | 530,983 | Dec. 18 | 1579 | {374 375} | 69 | 1532 |
| Ambrose, Lewis F., Center Point, Ind. Carpet-fastener | 529,350 | Nov. 20 | 1480 | 356 | 69 | 957 |
| American Bell Telephone Company. (See Field, Stephen D., assignor.) | | | | | | |
| American Bell Telephone Company. (See Spencer, Theodore, assignor.) | | | | | | |
| American Bell Telephone Company. (See Wales, Thomas C., Jr., assignor.) | | | | | | |
| American Carving and Manufacturing Company. (See Morgeneier, Robert, assignor.) | | | | | | |
| American Egg Case Company. (See Herr, Harvey E., assignor.) | | | | | | |
| American Egg Case Company. (See Herr, Henry C., assignor.) | | | | | | |
| American Lace and Fancy Paper Works. (See Kartiel, Benzion, assignor.) | | | | | | |
| American Lead Company. (See Browne, Arthur B., assignor.) | | | | | | |
| American Optical Company. (See De Celles, Joseph H. E., assignor.) | | | | | | |
| American Steel Barge Company. (See McDougall, Alexander, assignor.) | | | | | | |
| American Sulphite Pulp Company. (See Norton, Joshua, Jr., assignor.) | | | | | | |
| American Tobacco Company. (See Peterson, Jonathan, assignor.) | | | | | | |
| American Valve and Governor Company. (See Schmid, Charles, assignor.) | | | | | | |
| American Washboard Company. (See Miller, Morgan B., assignor.) | | | | | | |
| American Wood Decorating Machine Company. (See Davis, Llewellyn P., assignor.) | | | | | | |
| Ames, Oakes, Canton, Mass., assignor to Meteor Despatch Company, Portland, Me., and Boston, Mass. Terminal for pneumatic dispatch-tubes | 527,039 | Oct. 9 | 605 | 147 | 69 | 129 |
| Ames, Oakes, Canton, Mass., assignor to Meteor Despatch Company, Portland, Me., and Boston, Mass. Pneumatic cash-carrier apparatus | 527,040 | Oct. 9 | 606 | 147 | 69 | 129 |
| Ames, Oakes, Canton, Mass., assignor to Meteor Despatch Company, Portland, Me., and Boston, Mass. Pipe-coupling | 530,917 | Dec. 18 | 1465 | 347 | 69 | 1513 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Amies, Joseph H., Philadelphia, Pa., assignor to Amies Pavement Company, Camden, N. J. Pavement of plastic composition | 530,077 | Dec. 4 | 3 | 2 | 69 | 1215 |
| Amies Pavement Company. (See Amies, Joseph H., assignor.) | | | | | | |
| Ammerman, Charles W., Greenwood, Delaware. Sash holder and fastener | 530,078 | Dec. 4 | 4 | 2 | 69 | 1215 |
| Amos, George W., Chicago, Ill. T-square attachment | 530,060 | Nov. 27 | 2743 | 658 | 69 | 1199 |
| Amthor, August, Waltershausen, Germany. Tune-sheet for automatic musical instruments | 529,995 | Nov. 27 | 2619 | {628 629} | 69 | 1175 |
| Amundson, Olof A., Chicago, Ill. Printer's quoin | 528,756 | Nov. 6 | 411 | 99 | 69 | 721 |
| Andersen, Johan M. (See Dey and Andersen.) | | | | | | |
| Andersen, Johan M., assignor of one-half to A. Anderson, Boston, Mass. Trolley-wire hanger | 529,058 | Nov. 13 | 967 | 229 | 69 | 842 |
| Andersen, Johan M., assignor of one-half to A. Anderson, Boston, Mass. Electric-conductor support | 531,354 | Dec. 25 | 2253 | 538 | 69 | 1671 |
| Anderson, Albert. (See Andersen, Johan M., assignor.) | | | | | | |
| Anderson, Axel, Ronda, Tex. Field thrashing-machine | 531,085 | Dec. 18 | 1755 | {418 419} | 69 | 1564 |
| Anderson, Benjamin C., assignor to M. H. Anderson, Brooklyn, N. Y. Stop-cock box | 529,638 | Nov. 20 | 2000 | 478 | 69 | 1050 |
| Anderson, Con D., assignor of one-half to J. K. Mower, Springfield, Ohio. Coffee-mill | 528,439 | Oct. 30 | 3092 | 750 | 69 | 628 |
| Anderson, Edwin N., Lily Dale, N. Y. Axle-nut | 531,215 | Dec. 18 | 2058 | 491 | 69 | 1619 |
| Anderson, Ellen H. (See Fewkes, Joseph T., assignor.) | | | | | | |
| Anderson, Erwin W., Rhinelander, Wis. Tongue-support for sleighs | 529,351 | Nov. 20 | 1481 | 356 | 69 | 957 |
| Anderson, Gerda A., New York, N. Y. Veil-fastener | 528,062 | Oct. 23 | 2329 | 562 | 69 | 475 |
| Anderson, J. Will, *et al.* (See Himes, Judson W., assignor.) | | | | | | |
| Anderson, James W., and R. S. Twiss, Elwood, Iowa. Harness | 528,708 | Nov. 6 | 327 | 80 | 69 | 706 |
| Anderson, John E., Carbon, Wyo. Castrating-instrument | 527,309 | Oct. 9 | 1039 | 252 | 69 | 207 |
| Anderson, John W., Philadelphia, Pa. Dental articulator | 529,010 | Nov. 13 | 893 | 211 | 69 | 829 |
| Anderson, Melleney H. (See Anderson, Benjamin C., assignor.) | 529,671 | Oct. 2 | 1 | 1 | 69 | 3 |
| Anderson, Nels M. (See Anderson, Sven J., assignor.) | | | | | | |
| Anderson, Robert L. (See Smith, William, assignor.) | | | | | | |
| Anderson, Sven J., assignor of one-half to N. M. Anderson, Everett, Mass. Hot-water heating apparatus | 528,061 | Oct. 23 | 2328 | 561 | 69 | 474 |
| Anderson, Theodore M., New Whatcom, Wash. Clothes-rack | 528,498 | Oct. 30 | 3091 | 749 | 69 | 627 |
| Anderson, Valerius D., Cleveland, Ohio. Centrifugal fan | 529,689 | Nov. 27 | 2083 | 499 | 69 | 1076 |
| Andersson, Hilda K., assignor of one-half to D. Sjöström, Stockholm, Sweden. Disinfecting apparatus | 528,135 | Oct. 30 | 2470 | 597 | 69 | 515 |
| André, Oscar, Neuilly-sur-Seine, France. Post or column | 527,310 | Oct. 9 | 1040 | 252 | 69 | 207 |
| Andres, Frederick H., New York, N. Y. Banjo | 529,514 | Nov. 20 | 1802 | 429 | 69 | 1013 |
| Andrew, Henry H., and A. R. Bellamy, Reddish, near Stockport, England. Gas, oil, or similar motor engine | 528,063 | Oct. 23 | 2330 | 562 | 69 | 475 |
| Andrews, Charles B., assignor of sixteen-twentieths to T. Williams, C. J. Barr, J. K. Randebush, and S. P. Light, Lebanon, Pa. Sanding device for railways | 528,500 | Oct. 30 | 3093 | 750 | 69 | 628 |
| Andrews, Charles B., assignor of one-half to C. E. Rauch, Lebanon, Pa. Machine for coiling match-splints | 530,875 | Dec. 11 | 1388 | {330 331} | 69 | 1483 |
| Andrews, James C., New Haven, assignor to G. D. Nichols, New Canaan, Conn. Corset | 528,064 | Oct. 23 | 2330 | 562 | 69 | 475 |
| Andrews, James C., New Haven, assignor to G. D. Nichols, New Canaan, Conn. Corset | 528,065 | Oct. 23 | 2332 | 563 | 69 | 475 |
| Andrews, James J., Hempstead, and T. Mott, Far Rockaway, N. Y. Safety apparatus for street-railway cars | 527,646 | Oct. 16 | 1595 | 385 | 69 | 324 |
| Andrews, Lee R., Bath Beach, N. Y. Grate | 526,957 | Oct. 2 | 470 | {116 117} | 69 | 89 |
| Anhaltzer, Henry, New York, N. Y. Folding baby-carriage | 526,958 | Oct. 2 | 472 | 117 | 69 | 89 |
| Anthony, Mark O., Cincinnati, Ohio. Transmitter for telephones | 526,888 | Oct. 2 | 363 | 91 | 69 | 68 |
| Anthony, Walter F. (See Ruffhead and Anthony.) | | | | | | |
| Apollo Iron and Steel Company. (See Davis, Stewart A., assignor.) | | | | | | |
| Apollo Iron and Steel Company. (See McMurtry, George G., assignor.) | | | | | | |
| Arcade File Works. (See Weed, Alfred, assignor.) | | | | | | |
| Arcourt, Théophile d', assignor of one-third to M. Hannon, Chicago, Ill. Pantaloons-protector | 530,475 | Dec. 4 | 685 | 171 | 69 | 1341 |
| Arendell, Falconer B., Salisbury, N. C. Filter | 529,471 | Nov. 20 | 1720 | 410 | 69 | 999 |
| Argall, Philip, Denver, Colo. Cyanid and chlorination process for treating gold or silver bearing ores | 527,473 | Oct. 16 | 1317 | 321 | 69 | 275 |
| Ariens, Henry, assignor of one-half to R. Wittke, Brillion, Wis. Tread-wheel | 528,066 | Oct. 23 | 2333 | 563 | 69 | 476 |
| Arkell, Bartlett. (See Matthiessen and Arkell.) | | | | | | |
| Arkell, Bartlett, and C. A. Blowers, Canajoharie; said Blowers assignor to F. O. Matthiessen, New York, N. Y. Packing-bag | 529,690 | Nov. 27 | 2084 | 499 | 69 | 1076 |
| Arlington Manufacturing Company. (See Schüpphaus, Robert C., assignor.) | | | | | | |
| Armand, Isaiah. (See Specht and Armand.) | | | | | | |
| Armanni, Luigi, London, England. Belt-shipper | 527,190 | Oct. 9 | 834 | 203 | 69 | 170 |
| Armature Bell Company. (See Hofbauer, Frank X., assignor.) | | | | | | |
| Armen, Arakelyan H., Lynn, Mass. Ohmmeter | 528,268 | Oct. 30 | 2602 | 649 | 69 | 556 |
| Armistead, Fabian H., Farnville, Va., assignor of one-fourth to J. R. Spencer and E. W. Speed, Hill City, S. D. Unicycle | 531,086 | Dec. 18 | 1758 | {419 420} | 69 | 1565 |
| Armitage, James, A. and G. C. Herschell, North Tonawanda, N. Y. Roundabout | 531,403 | Dec. 25 | 2338 | {557 558} | 69 | 1688 |
| Armstrong, Dwight M., *et al.* (See Johnson, William C., assignor.) | | | | | | |
| Armstrong, Harry W., Oakmont, Pa. Rail-bender | 527,100 | Oct. 9 | 690 | {169 170} | 69 | 144 |
| Armstrong, Harry W., Oakmont, Pa. Valve-gear for steam-engines | 528,557 | Nov. 6 | 413 | 100 | 69 | 722 |
| Armstrong, William A., assignor of one-half to O. Dickey, Elkton, Ohio. Plow | 530,061 | Nov. 27 | 2745 | 658 | 69 | 1199 |
| Arndt, Max, Aix-la-Chapelle, Germany. Gas-balance for ascertaining specific gravity of gases | 527,397 | Oct. 16 | 1187 | 292 | 69 | 240 |
| Arnold, Alvin, Burket, Ind. Mole-trap | 528,136 | Oct. 30 | 2471 | 598 | 69 | 515 |
| Arnold, Clarence W., Philadelphia, Pa. Card-setting machine | 528,354 | Oct. 30 | 2532 | {685 686 687 688 689} | 69 | 581 |
| Arnold, Edward M., Pawtucket, R. I. Means for raising sunken vessels | 526,959 | Oct. 2 | 474 | 117 | 69 | 89 |
| Arnold, Oliver, assignor of one-half to M. G. Clark, Leicester, Mass. Rotary motor | 531,246 | Dec. 18 | 2059 | 492 | 69 | 1619 |
| Arnold, Samuel D., J. B. Venker, and W. L. Barnard, St. Louis, Mo. Rubber hand-stamp | 528,583 | Nov. 6 | 100 | 25 | 69 | 664 |
| Aron, Lessar M. (See May and Aron.) (Reissue.) | | | | | | |
| Arter, John L., Sunbury, Pa. Safety device for car-couplings | 527,136 | Oct. 9 | 751 | 184 | 69 | 154 |
| Asam, Joseph E., and F. Muhlenbech, Saginaw, Mich. Fruit-basket | 527,761 | Oct. 23 | 1787 | 430 | 69 | 377 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Ash Automatic Electric Switch Company. (See Ash, Walter V. and J. H., assignors.) | | | | | | |
| Ash, Joseph H. (See Ash, Walter V. and J. H.) | | | | | | |
| Ash, Walter V. and J. H., Newark, N. J., assignors of one-half to Ash Automatic Electric Switch Company, of New Jersey. Railway electric switch | 528,898 | Nov. 6 | 679 | 164 | 69 | 771 |
| Ashberry, Philip, and W. Barnes, Sheffield, England. Mechanical clipper for animals | 530,572 | Dec. 11 | 895 | 220 | 69 | 1395 |
| Ashby, William, Lafayette, Ind. Attachment for hand-rakes | 531,295 | Dec. 25 | 2149 | 514 | 69 | 1651 |
| Ashcraft, George W., Cave Spring, Ala. Planter and fertilizer-distributer | 528,520 | Nov. 6 | 1 | 1 | 69 | 647 |
| Ashley, Claude L., Atlanta, Ga. Fuse-box | 531,355 | Dec. 25 | 2255 | 538 | 69 | 1672 |
| Ashley, Edward D. (See Ashley, George and E. D.) | | | | | | |
| Ashley, Frank M., Hawthorne, N. J. Bicycle-tire | 531,608 | Dec. 25 | 2698 | 647 | 69 | 1758 |
| Ashley, George and E. D., New Britain, Conn. Meat-cutter | 527,921 | Oct. 23 | 2069 | 496 | 69 | 428 |
| Ashley, Herbert H., Springfield, Mass. Trolley-wire and support therefor | 530,674 | Dec. 11 | 1070 | 260 | 69 | 1424 |
| Ashton, John, Lawrence, Mass. Lock-hinge | 530,377 | Dec. 4 | 533 | 133 | 69 | 1312 |
| Ashwell, William H., *et al.* (See Dubelman, John, assignor.) | | | | | | |
| Ashworth, William J. (See Maybrick and Ashworth.) | | | | | | |
| Aspinwall, Lewis A., assignor to Aspinwall Manufacturing Company, Jackson, Mich. Fertilizer attachment for planting-machines | 529,099 | Nov. 13 | 1040 | 251 | 69 | 855 |
| Aspinwall Manufacturing Company. (See Aspinwall, Lewis A., assignor.) | | | | | | |
| Assheton, William, assignor of two-thirds to D. Stewart and C. J. Carroll, Baltimore, Md. Manifolding sales-register | 530,876 | Dec. 11 | 1391 | 331 / 332 | 69 | 1484 |
| Astley, Robert, London, England. Construction of fireproof floors | 527,647 | Oct. 16 | 1597 | 386 | 69 | 325 |
| Atkins, Elias C. (See Roberts, Nate H., assignor.) | | | | | | |
| Atkinson, Alfred. (See Fowler, England, and Nielsen, assignors.) | | | | | | |
| Atwood, La Motte C., and W. T. Treadway, assignors of one-third to M. Woodson, St. Louis, Mo. Street-sprinkler | 530,092 | Nov. 27 | 2746 | 659 | 69 | 1199 |
| Anfuldish, John B., Dayton, Ohio. Cash register and indicator | 529,773 | Nov. 27 | 2218 | 528 / 529 | 69 | 1099 |
| Auerbach-Woolverton Electric Company. (See Mayer, Max, assignor.) | | | | | | |
| Auerbach-Woolverton Electric Company. (See Woolverton, John E., assignor.) | | | | | | |
| Aumont, Henri F. L., London, England. Inlaying metal goods with tortoise-shell or celluloid | 530,817 | Dec. 11 | 1297 | 313 | 69 | 1467 |
| Austen, Peter T., Brooklyn, assignor to W. J. Matheson & Co., Limited, New York, N. Y. Coloring-matter from logwood and making same | 529,631 | Nov. 27 | 2086 | ..... | 69 | 1076 |
| Austin, Frank A., Syracuse, N. Y. Stop for door-hangers | 530,818 | Dec. 11 | 1298 | 314 | 69 | 1467 |
| Austin, James E., Standish, Mich. Slicing-machine | 528,247 | Oct. 30 | 2663 | 641 | 69 | 551 |
| Austin, John W., Pilot Point, Tex. Wire-stretcher | 527,311 | Oct. 9 | 1041 | 253 | 69 | 207 |
| Austin, Lorey T., assignor of one-half to B. E. Cronkhite, Rossville, Ill. Thrashing-machine attachment | 528,915 | Nov. 13 | 736 | 173 | 69 | 801 |
| Austin, William H., assignor to himself, W. H. Cary, W. Thompson, and A. A. Delano, Brockton, Mass. Machine for manufacturing lasts for boots or shoes | 526,987 | Oct. 2 | 519 | 127 | 69 | 57 |
| Austin, William L., Denver, Colo. Smelting | 527,312 | Oct. 9 | 1042 | ..... | 69 | 207 |
| Automatic Folding Bed Company. (See Krabol and Rostad, assignors.) | | | | | | |
| Automatic Injector Company. (See Hogue, Parker P., assignor.) | | | | | | |
| Autrey, Benjamin P., Pilot Point, Tex. Metal-cutting shears | 529,639 | Nov. 20 | 2001 | 478 | 69 | 1050 |
| Avery, William C., *et al.* (See Fryer, Robert M., assignor.) | | | | | | |
| Axline, John D., and J. L. Baillie, Shawnee, Ohio. Buggy-top attachment | 531,493 | Dec. 25 | 2506 | 597 | 69 | 1720 |
| Ayres, Thomas, Philadelphia, Pa. Clew-ring | 527,260 | Oct. 9 | 954 | 231 | 69 | 192 |
| B. F. Avery & Sons. (See Holsclaw, Wilford H., assignor.) | | | | | | |
| Babbitt, Arthur B. (See Barber and Babbitt.) | | | | | | |
| Babbitt, Ira T., Abingdon, Ill. Combined ice-cream freezer and churn | 527,313 | Oct. 9 | 1047 | 253 | 69 | 208 |
| Babcock, Charles, assignor of one-fourth to B. Park, Salt Lake City, Utah. Ear-ring | 527,398 | Oct. 16 | 1189 | 292 | 69 | 246 |
| Bache & Co., Jules S. (See Moses, Alfred H., Jr., assignor.) | | | | | | |
| Bache, William H., Bound Brook, N. J. Trolley | 527,546 | Oct. 16 | 1431 | 348 / 349 | 69 | 294 |
| Backstrom, Jonas, and F. W. Johnson, Stromsburg, Nebr. Electric belt | 527,922 | Oct. 23 | 2072 | 496 | 69 | 428 |
| Backus, Lawrence T., Atchison, Kans. Car-coupling | 531,145 | Dec. 18 | 1871 | 444 | 69 | 1586 |
| Bacon, Charles H., deceased, Boston, Mass.; S. A. Bacon, administratrix, assignors to W. H. Allen and W. H. Allen, trustee, Melrose, Mass. Proportional water-meter | 530,074 | Nov. 27 | 2769 | 664 | 69 | 1203 |
| Bacon, Murray, Philadelphia, Pa. Dyeing-machine | 528,584 | Nov. 6 | 101 | 25, 26 | 69 | 664 |
| Bacon, Sarah A., administratrix. (See Bacon, Charles H.) | | | | | | |
| Badger Pearl Button Company. (See Pope, Edward J., assignor.) | | | | | | |
| Badger, Wildsmith, London, England. Ball-bearing | 527,041 | Oct. 9 | 602 | 148 | 69 | 129 |
| Badt, Francis B., Chicago, Ill. Switch | 529,578 | Nov. 20 | 1910 | 455 | 69 | 1033 |
| Bagge, Gustaf, Paris, France. Paving-block | 527,923 | Oct. 23 | 2073 | ..... | 69 | 429 |
| Bagley, Charles J., and L. Roberts, Stockton-on-Tees, England. Tongs for handling metal | 527,648 | Oct. 16 | 1598 | 386 | 69 | 325 |
| Bailey, Charles F., *et al.* (See Shydecker, Eugene, assignor.) | | | | | | |
| Bailey, Charles J., Newton, Mass. Manicure instrument | 528,317 | Oct. 30 | 2781 | 671 | 69 | 572 |
| Bailey, Ella E., Baltimore, Md. Flower-holder | 527,231 | Oct. 9 | 996 | 219 | 69 | 184 |
| Bailey, Ellene A., New York, N. Y. Rain boot or leggin for ladies or children | 529,352 | Nov. 20 | 1881 | 456 | 69 | 957 |
| Bailey, Frederic W., New Haven, Conn. Ancestral-record book | 527,261 | Oct. 9 | 955 | 232 | 69 | 192 |
| Bailey, Gilbert L., Portland, Me. Curtain stick and guide | 528,709 | Nov. 6 | 327 | 80 | 69 | 706 |
| Bailey, Henry E., assignor to Cox Brass Manufacturing Company, Limited, Albany, N. Y. Air-pressure beer-forcing apparatus | 531,494 | Dec. 25 | 2507 | 597 | 69 | 1720 |
| Bailey, Henry J. (See Mathews, Henry R., assignor.) | | | | | | |
| Bailey, James B. (See Brinton, George, assignor.) | | | | | | |
| Bailey, John W., Denver, Colo. Ore pulverizing and amalgamating mill | 530,612 | Dec. 11 | 960 | 235 | 69 | 1406 |
| Bailey, John W., Denver, Colo. Amalgamator and separator | 531,296 | Dec. 25 | 2150 | 515 | 69 | 1651 |
| Bailey, Marcellus, administrator. (See Walker, William T.) | | | | | | |
| Bailey, Sterling L., Chicago, Ill. Feed-water purifier | 528,318 | Oct. 30 | 2782 | 671 | 69 | 572 |
| Bailey, Sterling L., Chicago, Ill. Feed-water purifier | 528,512 | Oct. 30 | 3114 | 755 | 69 | 632 |
| Bailey, Thomas, New York, N. Y. Fireproof building construction | 527,649 | Oct. 16 | 1600 | 386 | 69 | 325 |
| Baillie, James L. (See Axline and Baillie.) | | | | | | |
| Bain, Robert B., assignor to Tillmann & Bendel, San Francisco, Cal. Grocer's shipping or service box or crate | 528,355 | Oct. 30 | 2842 | 689 | 69 | 582 |
| Bainbridge, Charles, Philadelphia, Pa. Carpenter's work-holder and guide | 529,235 | Nov. 13 | 1277 | 306 | 69 | 897 |
| Bair, Oliver H. (See Congelton and Boyd, assignors.) | | | | | | |
| Baird, Edward P., and F. Nash, Plattsburg, N. Y.; said Nash assignor to said Baird. Time-stamp | 531,297 | Dec. 25 | 2152 | 515 / 516 | 69 | 1652 |
| Baird, John, Paterson, N. J. Snow-guard | 529,774 | Nov. 27 | 2219 | 529 | 69 | 1099 |
| Baker, Bernard N. (See Inch, Philip, assignor.) | | | | | | |
| Baker, Charles H., Detroit, Mich. Signal-lamp for electric-railway cars | 531,146 | Dec. 18 | 1872 | 444 / 445 | 69 | 1587 |
| Baker, Charles W., Montclair, N. J. Generation of steam | 529,997 | Nov. 27 | 2623 | 630 | 69 | 1176 |
| Baker, David, Sparrow's Point, Md. Drill | 529,996 | Nov. 27 | 2620 | 629 | 69 | 1176 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Baker, Dilver E., Cowgill, Mo. Cultivator attachment | 530,819 | Dec. 11 | 1239 | 314 | 69 | 1467 |
| Baker, Frank W., Kokomo, Ind. Spirometer | 531,247 | Dec. 18 | 2061 | 492 | 69 | 1619 |
| Baker, George C., deceased, Chicago, Ill.; M. R. Baker, administratrix. Submarine torpedo-boat | 530,466 | Dec. 4 | 670 | 166 / 167 | 69 | 1338 |
| Baker, Halsey H., Plainfield, N. J. Street-sign | 530,497 | Dec. 11 | 748 | 184 | 69 | 1369 |
| Baker, Mary R., administratrix. (See Baker, George C.) | | | | | | |
| Baker, Thomas C. (See Whetstine and Baker.) | | | | | | |
| Baker, William R., Watertown, N. Y. Mast-hoop | 527,167 | Oct. 9 | 801 | 195 | 69 | 163 |
| Baker, William R., Watertown, N. Y. Center-board for boats | 528,916 | Nov. 13 | 737 | 173 | 69 | 801 |
| Baker, William S. G., Baltimore, Md. Brake for railway-cars | 530,378 | Dec. 4 | 534 | 133 | 69 | 1312 |
| Baker, William S. G., Baltimore, Md. Brake for railway-cars | 530,379 | Dec. 4 | 537 | 134 | 69 | 1313 |
| Balbian, Henry, North Vassalborough, Me. Method of and machine for fulling cloth | 529,579 | Nov. 20 | 1911 | 455 | 69 | 1033 |
| Balch, Frederick A., Neillsville, Wis. Washboard | 529,353 | Nov. 20 | 1883 | 357 | 69 | 957 |
| Baldwin, Andrew, Viroqua, Wis. Rotating stand | 530,877 | Dec. 11 | 1394 | 332 | 69 | 1484 |
| Baldwin, Charles E., *et al.* (See Ringrose, Eduard W., assignor.) | | | | | | |
| Baldwin, Cyrus W., Yonkers, N. Y., assignor to National Company, Chicago, Ill. Controlling device for elevators | 529,438 | Nov. 20 | 1662 | 395 | 69 | 989 |
| Baldwin, Rollin A., South Norwalk, Conn., assignor to Fitch Excelsior Switch Company, of New Jersey. Electric railway-switch | 529,011 | Nov. 13 | 895 | 211 | 69 | 829 |
| Balensiefer, Adolf, New York, N. Y. Breakdown gun | 530,467 | Dec. 4 | 673 | 167 | 69 | 1338 |
| Ball, Charles A., Washington, D. C. Apparatus for treating garbage | 529,236 | Nov. 13 | 1279 | 307 / 308 | 69 | 897 |
| Ball, Charles A., Washington, D. C. Railway-gate | 531,087 | Dec. 18 | 1761 | 420 | 69 | 1565 |
| Ball, Henry P., Bridgeport, Conn., assignor to General Electric Company, Boston, Mass. Insulator for electric overhead construction | 530,498 | Dec. 11 | 750 | 184 | 69 | 1369 |
| Ball, John A., Grass Valley, Cal. Dredging-machine | 530,675 | Dec. 11 | 1071 | 260 / 261 | 69 | 1425 |
| Ballard, William O., *et al.* (See Robinson, William S., assignor.) | | | | | | |
| Balph, Charles A., Pittsburg, and E. P. S. Wright, Avalon, Pa. Fireproof floor and ceiling | 527,042 | Oct. 9 | 610 | 148 | 69 | 129 |
| Balph, Charles A., and E. P. S. Wright, Pittsburg, Pa. Fireproof beam | 527,232 | Oct. 9 | 997 | 219 | 69 | 185 |
| Balsley, Charles H., assignor of one-fourth to G. W. Bryner, Connellsville, Pa. Incandescent-electric-lamp socket | 531,288 | Dec. 18 | 2137 | 512 | 69 | 1634 |
| Banbury, John, Auckland, New Zealand. Closing cans | 527,650 | Oct. 16 | 1600 | 386 | 69 | 325 |
| Bancroft, George W., assignor to Bancroft Vestibule Car Company, Chicago, Ill. Railway-car | 529,042 | Nov. 13 | 897 | 211 / 212 | 69 | 829 |
| Bancroft, Solon. (See Abbott, Charles E., assignor.) | | | | | | |
| Bancroft Vestibule Car Company. (See Bancroft, George W., assignor.) | | | | | | |
| Bang, Ivar A. F., and M. C. A. Ruffin, Paris, France. Manufacture of anhydrous stannic acid | 529,109 | Nov. 13 | 1042 | ..... | 69 | 856 |
| Banks, Thomas L., London, England. Fireproof floor, ceiling, &c | 529,153 | Nov. 13 | 1129 | 273 | 69 | 872 |
| Banks, Thomas L., London, England. Fireproof framing for partition or other walls | 529,154 | Nov. 13 | 1131 | 274 | 69 | 872 |
| Banner, John W., Banner's Elk, N. C. Brace and bit | 528,137 | Oct. 30 | 2473 | 598 | 69 | 516 |
| Bannister, Louis H., Pasadena, Cal. Casket-handle | 527,191 | Oct. 9 | 845 | 203 | 69 | 170 |
| Banwell, James, assignor to Cleveland Wood Turning Company, Cleveland, Ohio. Universal rod and ring machine | 526,673 | Oct. 2 | 5 | 2 | 69 | 4 |
| Banwell, James, assignor to Cleveland Wood Turning Company and J. A. Saunders, Cleveland, Ohio. Machine for making handles for sad-irons | 526,672 | Oct. 2 | 3 | 1 | 69 | 3 |
| Baptist, William, New Orleans, La. Apparatus for holding ends of and closing crevasses | 529,580 | Nov. 20 | 1912 | 455 / 456 | 69 | 1033 |
| Barabasz, Mieczyslaw. (See Radomski, John, assignor.) | | | | | | |
| Barber, Everett A., Lakewood, and A. B. Babbitt, Pawtucket, R. I. Street-car mechanism for operating switches | 527,202 | Oct. 9 | 956 | 232 | 69 | 192 |
| Barber, John C., St. Paul, Minn. Car-truck | 528,844 | Nov. 6 | 592 | 140 | 69 | 754 |
| Barber-Koenig Manufacturing Company. (See Koenig, Morris F., assignor.) | | | | | | |
| Barber, Luther A., Groton, N. Y. Piano-action | 527,399 | Oct. 16 | 1190 | 292 | 69 | 240 |
| Barcus, Joseph D., Shreve, Ohio. Grave-vault | 530,380 | Dec. 4 | 539 | 134 | 69 | 1313 |
| Bard, George F., Norwich, Conn. Nipple-holder | 527,168 | Oct. 9 | 802 | 195 | 69 | 164 |
| Barditzky, Herman, Florence, Ala. Combination-lock | 528,585 | Nov. 6 | 103 | 26 | 69 | 665 |
| Bardsley, Henry, South Hadley Falls, assignor to Knowles Loom Works, Worcester, Mass. Shuttle-box-operating mechanism for looms | 528,758 | Nov. 6 | 415 | 101 | 69 | 732 |
| Barhydt, James A., assignor to G. W. Disman, Lima, Ohio. Steam-motor for cars | 528,067 | Oct. 23 | 2334 | 563 / 564 | 69 | 476 |
| Barker, Frank W. (See Graf, Martin T., assignor.) | | | | | | |
| Barker, Milan S., Eugene, Oreg. Breakdown gun | 530,381 | Dec. 4 | 540 | 134 | 69 | 1313 |
| Barlow, Howard E. (See Benham and Barlow.) | | | | | | |
| Barnard, Ormond, Oxford Mills, Canada. Curd-cutter | 528,521 | Nov. 6 | 1 | 1 | 69 | 647 |
| Barnard, William, Philadelphia, Pa. Envelope | 526,739 | Oct. 2 | 213 | 51 | 69 | 41 |
| Barnard, William L. (See Arnold, Venker, and Barnard.) | | | | | | |
| Barnes, Benjamin F., assignor to W. F. & John Barnes Company, Rockford, Ill. Milling-machine | 529,613 | Nov. 13 | 899 | 212 | 69 | 829 |
| Barnes, David L., Chicago, Ill. Brake-beam | 528,522 | Nov. 6 | 2 | 1, 2 | 69 | 647 |
| Barnes, David L., Chicago, Ill. Engineer's brake-valve | 528,523 | Nov. 6 | 4 | 2 | 69 | 647 |
| Barnes, George B., Bellaire, Ohio. Bottle and stopper therefor | 526,674 | Oct. 2 | 7 | 2 | 69 | 4 |
| Barnes, John, *et al.* (See Holmgren, Alfred, assignor.) | | | | | | |
| Barnes, John A., Wadsworth, Ohio. Friction-clutch | 531,014 | Dec. 18 | 1634 | 367 / 368 | 69 | 1542 |
| Barnes, John E., Des Moines, Iowa. Carpet-stretcher | 529,155 | Nov. 13 | 1132 | 274 | 69 | 872 |
| Barnes, Merwin C., *et al.* (See Brown, Norman E., assignor.) | | | | | | |
| Barnes, Walter. (See Ashberry and Barnes.) | | | | | | |
| Barnett, Nathan W., assignor of one-half to A. H. Lindsay, Monaca, Pa. Steam-engine | 529,581 | Nov. 20 | 1914 | 456 | 69 | 1034 |
| Barnett, Stephen D., Newark, N. J. Die for making lock-nuts | 529,847 | Nov. 27 | 2349 | 560 | 69 | 1124 |
| Barnewitz, John, assignor of one-half to H. A. Richardson, Philadelphia, Pa. Packing powdered substances | 528,899 | Nov. 6 | 681 | 164 | 69 | 771 |
| Barney, Edwin E. (See Van Horn and Barney.) | | | | | | |
| Barney, Thomas R., San Francisco, Cal. Cartridge-crimping machine | 531,495 | Dec. 25 | 2509 | 597 | 69 | 1720 |
| Barnum, Enoch, Warrensburg, Mo. Vegetable or fruit parer and scissors-sharpener | 531,404 | Dec. 25 | 2340 | 558 | 69 | 1688 |
| Barr, Clinton J., *et al.* (See Andrews, Charles B., assignor.) | | | | | | |
| Barr, John H., deceased, Roaneke, Ind.; J. M. Barr, administrator. Automatic boiler-cleaner | 528,263 | Oct. 30 | 2723 | 657 | 69 | 561 |
| Barr, John M., administrator. (See Barr, John H.) | | | | | | |
| Barr, William C. (See Renssner, Albert F. L., assignor.) | | | | | | |
| Barr, William H., Tiffin, Ohio. Machine for finishing tumblers, &c | 527,924 | Oct. 23 | 2074 | 496 / 497 | 69 | 429 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Barr, William H., Tiffin, Ohio. Glass-house pot or tank | 528,710 | Nov. 6 | 328 | 80 | 69 | 706 |
| Barr, William H., Tiffin, Ohio. Machine for finishing glassware | 530,820 | Dec. 11 | 1301 | 314 | 69 | 1468 |
| Barrackman, Demas A., Decatur, Ill. Thill-support | 527,101 | Oct. 9 | 690 | 170 | 69 | 144 |
| Barreiras, Enrique S. (See Steinbrenner, Andrew G., assignor.) | | | | | | |
| Barrett, James, Boston, Mass. Grease-trap | 527,580 | Oct. 16 | 1488 | 362 | 69 | 305 |
| Barrett, Josiah, Allegheny, Pa. Tool for handling drill-bits or other tools | 527,103 | Oct. 9 | 696 | 171 | 69 | 145 |
| Barrett, Josiah, assignor to Duff Manufacturing Company, Allegheny, Pa. Jack | 527,102 | Oct. 9 | 691 | 170 and 171 | 69 | 145 |
| Barrett, Lucius O., Brattleborough, Vt. Gage | 530,468 | Dec. 4 | 674 | 168 | 69 | 1339 |
| Barrows, Charles H., Willimantic, Conn. Railway-car | 528,845 | Nov. 6 | 594 | 140 and 141 | 69 | 754 |
| Bartel, Otto, New York, N. Y. Pendulum clock | 527,233 | Oct. 9 | 908 | 220 | 69 | 185 |
| Barth, Alfred H., Lamar, Mo. Cut-off and strainer attachment for rain-water spouts | 527,400 | Oct. 16 | 1191 | 292 | 69 | 240 |
| Barth, Emanuel, New York, N. Y. Bunch-shaper | 529,541 | Nov. 20 | 1853 | 441 | 69 | 1022 |
| Barth, Emanuel, New York, N. Y. Cigar-bunching machine | 530,254 | Dec. 4 | 311 | 78 | 69 | 1272 |
| Bartholomew, Albert W., assignor of one-half to L. C. Paul, Boston, Mass. Puzzle | 527,925 | Oct. 23 | 2076 | 497 | 69 | 429 |
| Bartholomew, Cassius M. and H. D., Newark, Ohio. Paper-wrapping machine | 529,848 | Nov. 27 | 2350 | 561 and 562 | 69 | 1124 |
| Bartholomew, Coryell, Jackson, Mich. Fire-escape | 528,284 | Oct. 30 | 2724 | 658 | 69 | 562 |
| Bartholomew, Gilbert A., Maumee, Ohio. Railway-chair | 527,926 | Oct. 23 | 2077 | 497 | 69 | 429 |
| Bartholomew, Henry D. (See Bartholomew, Cassius M. and H. D.) | | | | | | |
| Bartholomew, Thomas, Newark, Ohio. Printing-machine | 531,088 | Dec. 18 | 1763 | 420 and 421 | 69 | 1566 |
| Bartlett, Alden A. (See Schauer and Bartlett.) | | | | | | |
| Bartlett, George W., Lineville, Ala. Car-coupling | 531,430 | Dec. 25 | 2284 | 570 | 69 | 1697 |
| Bartley, Samuel, Bartley, N. J. Heating-boiler | 530,155 | Dec. 4 | 131 | 35 | 69 | 1239 |
| Barton, Richard T., New Haven, Conn. Folding bed | 530,742 | Dec. 11 | 1180 | 287 and 288 | 69 | 1414 |
| Bartsch, Charles, New York, N. Y. Clothes-line fastener | 531,248 | Dec. 18 | 2063 | 493 | 69 | 1619 |
| Bartus, Carl, Washington, D. C., assignor of one-half to A. Lieber, Indianapolis, Ind. Apparatus for carbonating beer | 531,356 | Dec. 25 | 2256 | 538 | 69 | 1672 |
| Barwick, Frank, Honolulu, Hawaii. Magazine or book holder | 531,406 | Dec. 25 | 2511 | 598 | 69 | 1721 |
| Basford, George M. (See Fry and Basford.) | | | | | | |
| Bassett, George B., Buffalo, N. Y. Water-meter | 530,743 | Dec. 11 | 1182 | 288 | 69 | 1444 |
| Bassett, Norman C., Lynn, assignor to General Electric Company, Boston, Mass. Electric motor for railway-cars | 527,927 | Oct. 23 | 2079 | 497 and 498 | 69 | 429 |
| Bates, Herbert A., Bath, Me. Floor-set | 527,474 | Oct. 16 | 1320 | 321 | 69 | 275 |
| Bates, Lindon W., Chicago, Ill. Dredging-machine | 527,702 | Oct. 23 | 1788 | 439 | 69 | 377 |
| Bates, Onward, and G. W. Smith, Chicago, Ill. Guard for railways | 527,192 | Oct. 9 | 836 | 203 | 69 | 171 |
| Bates, William P. (See Hards and Woodard, assignors.) | | | | | | |
| Bath, John, Hyde Park, Mass. Micrometer-indicator | 526,960 | Oct. 2 | 476 | 117 | 69 | 90 |
| Bath, John, Hyde Park, Mass. Calipers | 527,651 | Oct. 16 | 1601 | 387 | 69 | 325 |
| Battey, Sumter B., assignor to himself and J. W. Hartley, New York, N. Y. Switch mechanism | 529,515 | Nov. 20 | 1803 | 429 | 69 | 1013 |
| Bauer, Friedrich R., New York, N. Y., assignor to G. F. W. J. Stenann, Hamburg, and M. P. C. F. A. Seebold, Berlin, Germany. Door-closer | 529,101 | Nov. 13 | 1043 | 251 | 69 | 856 |
| Bavier, Charles S., New York, N. Y. Valve | 529,692 | Nov. 27 | 2086 | 499 | 69 | 1076 |
| Baxter, William, Jr., Baltimore, Md. Railway-car brake | 531,582 | Dec. 25 | 2649 | 635 | 69 | 1748 |
| Bay, Alphonse, St. Charles, Mo. Stovepipe ventilating attachment | 528,711 | Nov. 6 | 329 | 81 | 69 | 706 |
| Bayerdoerfer, Frank, Brooklyn, N. Y. Apparatus for recording speed of vehicles | 531,147 | Dec. 18 | 1874 | 445 | 69 | 1587 |
| Bayley, Charles H., Boston, Mass. Pinking-machine | 527,928 | Oct. 23 | 2081 | 498 | 69 | 430 |
| Bayley, Richard W., assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Air-brake | 528,712 | Nov. 6 | 331 | 81 | 69 | 706 |
| Bayne, Dashiell, *et al.* (See Ringrose, Edward W., assignor.) | | | | | | |
| Bazerque, Victor H., Washington, D. C. Device for mechanically applying mucilage | 527,009 | Oct. 2 | 550 | 135 | 69 | 104 |
| Beach, Edward S., *et al.* (See Kempster, Daniel E., assignor.) | | | | | | |
| Beach, H. B. (See Finter, William, assignor.) | | | | | | |
| Beach Manufacturing Company. (See Jaros, Samuel, assignor.) | | | | | | |
| Beach, Oliver B., Stony Creek, Conn. Machine for black-leading electrotype-matrices | 527,827 | Oct. 23 | 1890 | 453 and 454 | 69 | 395 |
| Beadle, Thomas P., Climax, Michigan. Car coupling | 531,497 | Dec. 25 | 2512 | 598 | 69 | 1721 |
| Beal, Moses, Elyria, Ohio. Derrick | 531,249 | Dec. 18 | 2063 | 493 | 69 | 1619 |
| Beal, Moses, Elyria, Ohio. Rock-drilling machine | 531,431 | Dec. 25 | 2285 | 570 | 69 | 1697 |
| Beall, Charles W., Saratoga, Wyo. Funnel | 529,998 | Nov. 27 | 2024 | 630 | 69 | 1176 |
| Beaman, Jay F., Antwerp, N. Y. Game-board | 529,582 | Nov. 20 | 1915 | 456 | 69 | 1034 |
| Bean, Frank, Medford, assignor to Standard Rivet Company, Boston, Mass. Setting-machine | 528,524 | Nov. 6 | 5 | 2, 3 | 69 | 647 |
| Bean, William H., assignor to J. H. Jones, West Troy, N. Y. Curtain-fixture for cars | 528,501 | Oct. 30 | 3094 | 750 | 69 | 628 |
| Beardslee, William F., New York, N. Y., assignor to A. Poor, Boston, Mass. Seam for fabrics | 530,218 | Dec. 4 | 249 | 60, 61 | 69 | 1261 |
| Beardsley, Lester C., Cleveland, Ohio. Stationery-cabinet | 531,250 | Dec. 18 | 2064 | 493 | 69 | 1620 |
| Beardsley, William N. (See Mosher, Beardsley, and Moulton.) | | | | | | |
| Beaton, Allan J., New Britain, Conn. Pipe-hanger | 528,319 | Oct. 30 | 2783 | 672 | 69 | 572 |
| Beatty, Samuel W., Bayou Goula, La. Dumping-car and attachments | 529,583 | Nov. 20 | 1916 | 457 | 69 | 1034 |
| Beaumont, Charles E., and G. P. Wallington, assignors of one-third to L. A. Wallington, London, England. Steam-motor | 527,356 | Oct. 9 | 1114 | 272 | 69 | 221 |
| Beaver, Francis M., assignor of one-half to J. H. Griffin, Pleasant Valley, Tex. Double-tree | 530,573 | Dec. 11 | 896 | 220 | 69 | 1305 |
| Béché, Jean, Jr., Hückeswagen, Germany. File-cutting machine | 531,251 | Dec. 18 | 2065 | 494 | 69 | 1620 |
| Bechstedt, Charles O., Hartford, Conn. Attachment for hair-clippers | 530,984 | Dec. 18 | 1581 | 375 | 69 | 1533 |
| Beck, Charles W., Chicago, Ill. Water-meter | 529,156 | Nov. 13 | 1133 | 274 | 69 | 873 |
| Beck, Edwin A., Fort Worth, Tex. Box-fastener | 527,043 | Oct. 9 | 613 | 148 | 69 | 130 |
| Beck, George, St. Louis, Mo. Harness attachment | 529,014 | Nov. 13 | 899 | 212 | 69 | 829 |
| Beck, Matthias A., Milwaukee, Wis. Steering-engine | 528,356 | Oct. 30 | 2843 | 689 and 690 | 69 | 583 |
| Becker, Emilius C. F., Milledgeville, Ga. Vehicle-wheel | 528,917 | Nov. 13 | 739 | 173 | 69 | 802 |
| Becker, Heinrich. (See Popp and Becker.) | | | | | | |
| Becker, Melchior E., and R. Lind, Wilmington, Del. Fish or crab net | 530,156 | Dec. 4 | 133 | 35 | 69 | 1239 |
| Beckett, Edward H., Glan-eu-lan, Tan-y-Grisiau, and C. W. Roberts, Plas Weunydd, Blaenau-Festiniog, England. Automatic weighing-machine | 527,828 | Oct. 23 | 1892 | 454 and 455 | 69 | 395 |
| Beckett, Richard T., Woodbury, N. J. Bottle-forming machine | 529,693 | Nov. 27 | 2088 | 499 and 500 | 69 | 1076 |
| Beckett, Richard T., Woodbury, N. J. Machine for molding glass | 529,694 | Nov. 27 | 2091 | 501 | 69 | 1077 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Beckley, Timothy. (See Doyle, William J. C., assignor.) | | | | | | |
| Beckwith, Arthur K., assignor to F. E. Lee, Dowagiac, Mich. Molder's apparatus | 530,319 | Dec. 4 | 426 | 106 and 107 | 69 | 1292 |
| Beckwith, James S., *et al.* (See Thompson, Wilson, assignor.) | | | | | | |
| Becnel, Lezin A. (See Frazier, Julius O., assignor.) | | | | | | |
| Beewar, John W., Millbank, S. D., and D. Shaw, Ortonville, Minn. Washing-machine | 531,089 | Dec. 18 | 1768 | 421 | 69 | 1567 |
| Beebe, Dillon, Newark, N. J. Faucet-bung | 530,255 | Dec. 4 | 315 | 79 | 69 | 1272 |
| Beebe, Enoch M., *et al.* (See Sweetland, Jerome B., assignor.) | | | | | | |
| Beecher, Ebenezer B., Westville, and J. P. Wright, New Haven, Conn., assignors to Diamond Match Company, Chicago, Ill. Machine for making matches | 528,457 | Oct. 30 | 3018 | 729, 730, 731, 732, 733, 734, 735 | 69 | 613 |
| Beek, William G., Chicago, Ill., assignor to E. Kirstein's Sons Company, Rochester, N. Y. Eyeglasses or spectacles | 527,652 | Oct. 16 | 1603 | 387 | 69 | 326 |
| Beer, Samson, Butte, Mont. Ore-concentrator | 531,498 | Dec. 25 | 2514 | 598 | 69 | 1721 |
| Beers, Louis G. (See Burton and Beers.) | | | | | | |
| Begiebing, Emil F. (See Blake and Begiebing.) | | | | | | |
| Begole, Gordon W., Stony Creek, Mich. Checkrein-hook | 529,674 | Nov. 20 | 2054 | 492 | 69 | 1060 |
| Begole, Gordon W., Stony Creek, assignor to E. A. Darling, Willis, Mich. Spectacle-case | 528,068 | Oct. 23 | 2338 | 564 and 565 | 69 | 477 |
| Begtrup, Julius, assignor to J. H. McEwen, Ridgway, Pa. Engine cross-head | 530,320 | Dec. 4 | 429 | 107 | 69 | 1293 |
| Behlen, Charles A., Cincinnati, Ohio. Carriage-spring | 528,458 | Oct. 30 | 3029 | 735 | 69 | 615 |
| Behr, Fritz B., London, England. Electric locomotive for elevated railways | 531,499 | Dec. 25 | 2515 | 599, 600, 601 | 69 | 1721 |
| Beisang, Joseph C., St. Paul, Minn. Device for removing waste from sheets of dough in cracker-machines, &c | 530,499 | Dec. 11 | 751 | 184 and 185 | 69 | 1369 |
| Belair, Thomas, Montreal, Canada. Cultivator | 531,252 | Dec. 18 | 2068 | 495 | 69 | 1620 |
| Belches, Donald M. (See Coram, John C., assignor.) | | | | | | |
| Belivean, Ludger, Lynn, Mass. Sewer-trap cleaner | 528,459 | Oct. 30 | 3030 | 735 | 69 | 616 |
| Belknap, Frank D., New York, N. Y. Reinforced stencil-card | 530,918 | Dec. 18 | 1466 | 347 | 69 | 1513 |
| Belknap, Frank D., New York, N. Y. Reinforced stencil-card | 530,919 | Dec. 18 | 1467 | 348 | 69 | 1513 |
| Bell, Enos T. (See Forsyth and Bell.) | | | | | | |
| Bell, Henry, St. Kilda, Victoria. Spark-arrester | 526,828 | Oct. 2 | 260 | 61 | 69 | 49 |
| Bell, John. (See Rumsey, Oscar C., assignor.) | | | | | | |
| Bell, Louis, assignor to General Electric Company, Boston, Mass. Starting alternating-current motors | 531,432 | Dec. 25 | 2286 | 571 | 69 | 1698 |
| Bell Telephone Company of Canada. (See Brown, Charles W., assignor.) | | | | | | |
| Bellamy, Alfred R. (See Andrew and Bellamy.) | | | | | | |
| Bellamy, Charles L., Arlington, N. J. Roller chafe-iron | 531,500 | Dec. 25 | 2517 | 601 | 69 | 1722 |
| Bemis, Albert T., Indianapolis, Ind. Brick-drier car | 529,675 | Nov. 20 | 2055 | 492 | 69 | 1060 |
| Bemis, Charles A., and E. A. Adams, West Medway, Mass. Automatic bicycle-bell | 531,457 | Dec. 25 | 2446 | 582 | 69 | 1709 |
| Bendler, August C., Milwaukee, Wis., and W. E. Bendler, Chicago, Ill. Carriage-top worker | 527,314 | Oct. 9 | 1048 | 253 | 69 | 209 |
| Bendler, William E. (See Bendler, August C. and W. E.) | | | | | | |
| Benham, Elijah B., and H. E. Barlow, Providence, R. I., assignors to Diamond Match Company, Chicago, Ill. Machine for making splints for matches, toothpicks, &c | 530,382 | Dec. 4 | 542 | 135 | 69 | 1314 |
| Benjamin, Dana H., Utica, N. Y., assignor to White Manufacturing Company, Minneapolis, Minn. Ironing-machine | 529,695 | Nov. 27 | 2091 | 501 | 69 | 1077 |
| Benjamin, George H., New York, N. Y., assignor to Siemens & Halske, Berlin, Germany. Conductor-switch | 526,850 | Oct. 2 | 294 | 71, 72 | 69 | 56 |
| Benner, Arthur P. (See Martin, Charles N., assignor.) | | | | | | |
| Benner, Lorenzo D. (See Hill and Benner.) | | | | | | |
| Bennett, Darius, assignor to Nelsonville Foundry and Machine Company, Nelsonville, Ohio. Clutch | 529,015 | Nov. 13 | 900 | 212 | 69 | 829 |
| Bennett, Darius, assignor to Nelsonville Foundry and Machine Company, Nelsonville, Ohio. Elevating or conveying chain attachment-block | 529,016 | Nov. 13 | 901 | 213 | 69 | 830 |
| Bennett, Erastus S., Denver, Colo. Means for supporting dredge or other structures | 527,741 | Oct. 16 | 1747 | 432 | 69 | 352 |
| Bennett, George M., assignor to Grand Rapids Seating Company, Grand Rapids, Mich. Folding chair | 531,563 | Dec. 25 | 2651 | 635 and 636 | 69 | 1749 |
| Bennett, Henry B., *et al.* (See Mewer, William J., assignor.) | | | | | | |
| Bennett, Josiah C. (See Thackston, William D., assignor.) | | | | | | |
| Bennett, Walter E., Boston, Mass., assignor to Morley Button Manufacturing Company, Portsmouth, N. H. Punching-machine | 528,502 | Oct. 30 | 3026 | 734 | 69 | 628 |
| Benninger, Tony H., Louisville, Ky. Bar-lock for doors | 527,104 | Oct. 9 | 700 | 171 | 69 | 146 |
| Bennis, Alfred W. (See Bennis, Edward and A. W.) | | | | | | |
| Bennis, Edward and A. W., Bolton, England. Furnace | 528,219 | Oct. 30 | 2611 | 629 | 69 | 540 |
| Benson, Arza A., Cleveland, Ohio. Machine for jointing listed staves | 530,500 | Dec. 11 | 753 | 185 and 186 | 69 | 1370 |
| Benson, James M., and J. E. Berslin, Minneapolis, Minn. Combined kettle-cover, strainer, and steam-guard | 531,300 | Dec. 25 | 2162 | 517 | 69 | 1654 |
| Benson, John D., Brooklyn, N. Y. Micrometer-scale | 527,581 | Oct. 16 | 1490 | 362 | 69 | 305 |
| Benson, Letty C. (See Brooke, William M., assignor.) | | | | | | |
| Benster, Menzo M., Gettysburg, S. D. Horse-detacher | 528,410 | Oct. 30 | 2939 | 711 | 69 | 599 |
| Bent, Fred F., Lake Geneva, Wis. Display-rack | 529,439 | Nov. 20 | 1663 | 396 | 69 | 959 |
| Bent, George P. (See McChesney and Kunzo, assignors.) | | | | | | |
| Benton, Francis E., Stoughton, Mass. Last-block fastener | 527,582 | Oct. 16 | 1492 | 362 | 69 | 305 |
| Benton, Major G., Coldwater, and G. J. Nissly, Saline, Mich. Incubator | 530,676 | Dec. 11 | 1075 | 261 | 69 | 1425 |
| Bentrup, Carl A., Clinton, Iowa. Drilling-machine | 527,929 | Oct. 23 | 2082 | 498 | 69 | 430 |
| Beretta, Joseph P., Chicago, Ill. Coin-actuated vending-machine | 527,930 | Oct. 23 | 2084 | 499 | 69 | 431 |
| Berg, John A. P., Moline, Ill. Adjustable clamp-hook | 527,763 | Oct. 23 | 1789 | 431 | 69 | 377 |
| Bergener, Charles, assignor to C. T. Ham Manufacturing Company, Rochester, N. Y. Lantern | 529,017 | Nov. 13 | 902 | 213 | 69 | 830 |
| Berger, Ambrose J. B., Hingham, Mass., assignor to Steel Cable Engineering Company, of Maine. Car-fender | 526,851 | Oct. 2 | 296 | 72 | 69 | 56 |
| Berger, Ambrose J. B., Hingham, Mass., assignor to Steel Cable Engineering Company, of Maine. Power-wheel for endless conveyers or elevators | 528,357 | Oct. 30 | 2847 | 690 | 69 | 584 |
| Berger, Ambrose J. B., Hingham, Mass., assignor to Steel Cable Engineering Company, of Maine. Power-wheel | 528,518 | Oct. 30 | 3119 | 756 | 69 | 633 |
| Berger, Ambrose J. B., Hingham, Mass., assignor to Steel Cable Engineering Company, of Maine. Grip-wheel | 530,383 | Dec. 4 | 545 | 135 | 69 | 1315 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Berglind, Erik, and A. Reuterdahl, Providence, R. I. Polishing-machine | 529,102 | Nov. 13 | 1044 | 252 | 69 | 856 |
| Bergmann, Sigmund, New York, N. Y. Electric-arc lamp | 528,119 | Oct. 23 | 2434 | 588 | 69 | 494 |
| Bergstresser, Stewart L., Smethport, Pa. Combined mop and wringer | 528,525 | Nov. 6 | 8 | 4 | 69 | 648 |
| Bergstresser, Stewart L., and C. F. Mignot, Smethport, Pa. Curtain-fixture | 530,079 | Dec. 4 | 6 | 2 | 69 | 1216 |
| Berkey, William A. (See Lisle, Myron C., assignor.) | | | | | | |
| Berkman, Bernard H., Long Island City, N. Y. Knife-sharpener | 530,613 | Dec. 11 | 962 | 236 | 69 | 1406 |
| Berkstresser, John E., Sylacauga, Ala. Horse-detacher | 531,015 | Dec. 18 | 1635 | 388 | 69 | 1543 |
| Bernard, Alfred F., San Luis Obispo, Cal. Earth-scraping machine | 526,675 | Oct. 2 | 8 | 2,3 | 69 | 4 |
| Bernard, Alfred F., San Luis Obispo, Cal. Wheeled scraper | 526,676 | Oct. 2 | 11 | 3 | 69 | 5 |
| Bernard, Alfred F., San Luis Obispo, Cal. Attachment for wheeled scrapers | 526,677 | Oct. 2 | 13 | 3 | 69 | 5 |
| Bernard, James T., Neapolis, Va. Saw-set | 530,501 | Dec. 11 | 756 | 185 | 69 | 1370 |
| Bernardin, Alfred L., assignor to Bernardin Metallic Cork Company, Evansville, Ind. Bottle-capping machine | 527,103 | Oct. 9 | 837 | 204 | 69 | 171 |
| Bernardin Metallic Cork Company. (See Bernardin, Alfred L., assignor.) | | | | | | |
| Bernardin Metallic Cork Company. (See Leavitt, Frank M., assignor.) | | | | | | |
| Bernhardt, Herman V., Brooklyn, N. Y. Automatic stop for micrometer-gages | 528,759 | Nov. 6 | 417 | 101 | 69 | 722 |
| Bernheim, Gustav. (See Flocke, Robert, assignor.) | | | | | | |
| Bernstein, Benny, New York, N. Y. Propelling apparatus | 528,128 | Oct. 30 | 2474 | 598 | 69 | 516 |
| Beron, Frank G., assignor of one-half to J. F. Gaffney, Waterbury, Conn. Electric switch | 526,988 | Oct. 2 | 520 | 127 | 69 | 98 |
| Berridge, Thomas, Sturgis, Mich. Nut and bolt lock | 528,320 | Oct. 30 | 2784 | 672 | 69 | 572 |
| Berry, Wilbur F., Chicago, Ill. Door-hanger | 526,961 | Oct. 2 | 477 | 118 | 69 | 90 |
| Berslin, John E. (See Benson and Berslin.) | | | | | | |
| Berthon, Louis A., assignor to Société Générale des Téléphones, (Réseaux Téléphoniques et Constructions Électriques,) Paris, France. Switchboard | 529,999 | Nov. 27 | 2625 | {630 631} | 69 | 1177 |
| Bertrand, Joseph E., Boston, assignor of one-half to M. Bray, Newton, Mass. Sewing machine | 530,297 | Dec. 4 | 391 | 99 | 69 | 1286 |
| Bertschy, Perry. (See Phillips, Willis E., assignor.) | | | | | | |
| Besly, Charles H. (See Gardner, Frederick N., assignor.) | | | | | | |
| Bess, Albert. (See Clawson, Hiram, assignor.) | | | | | | |
| Bessonett, Charles L., Temple, assignor to Bessonette Cotton Compress Manufacturing Company, Waco, Tex. Cotton-baling machine | 530,000 | Nov. 27 | 2627 | 631 | 69 | 1177 |
| Bessonette, Charles L. and W. T., Temple, assignors to Bessonette Cotton Compress Manufacturing Company, Waco, Tex. Cotton-compress | 530,001 | Nov. 27 | 2631 | {632 633} | 69 | 1178 |
| Bessonette Cotton Compress Manufacturing Company. (See Bessonett, Charles L., assignor.) | | | | | | |
| Bessonette Cotton Compress Manufacturing Company. (See Bessonette, Charles L. and W. T., assignors.) | | | | | | |
| Bessonette Cotton Compress Manufacturing Company. (See Smith, Hamilton E., assignor.) | | | | | | |
| Bessonette Cotton Compress Manufacturing Company. (See Smith and Dare, assignors.) | | | | | | |
| Bessonette, William T. (See Bessonette, Charles L. and W. T.) | | | | | | |
| Bettegar, John B., and J. Schwartz, Albuquerque, N. Mex. Gold separator and extractor | 530,677 | Dec. 11 | 1077 | 262 | 69 | 1425 |
| Bettermann, Reinhold Johnstown, Pa. Car-axle | 531,405 | Dec. 25 | 2342 | 558 | 69 | 1689 |
| Bettys, Lafayette L., Oakland, Cal. Attachment for locks | 528,269 | Oct. 30 | 2693 | 649 | 69 | 556 |
| Bevan, Edward J. (See Cross and Bevan.) | | | | | | |
| Bevan, James. (See Humphrey, Walter B., assignor.) | | | | | | |
| Bever, Albert. (See Leonard and Bever.) | | | | | | |
| Bevis, Alfred, *et al.* (See Smith, Daniel W., assignor.) | | | | | | |
| Beyroux, Gabriel. (See Landry and Beyroux.) | | | | | | |
| Bezer, Henry, New Rochelle, N. Y. Razor-strop | 528,450 | Nov. 6 | 274 | 58 | 69 | 688 |
| Biart, Victor, Stuttgart, Germany. Cover for fruit jars | 531,253 | Dec. 18 | 2071 | 495 | 69 | 1621 |
| Bichet, Alphonse, and H. O'Neill, Florence, Kans. Hose-coupling | 527,764 | Oct. 23 | 1700 | 431 | 69 | 378 |
| Bickford & Hoffman Company. (See Galloway, Robert, assignor.) | | | | | | |
| Biddles, Walter, Leicester, England. Gear-case | 531,254 | Dec. 18 | 2073 | 496 | 69 | 1622 |
| Biedinger, Theodore, and T. J. Kane, New York, N. Y. Alarm-clock | 529,103 | Nov. 13 | 1045 | 252 | 69 | 856 |
| Bien, Joseph, San Francisco, Cal. Can-opener | 529,849 | Nov. 27 | 2355 | 562 | 69 | 1125 |
| Bienz, Joseph W., Rockford, Ohio. Tile-trench | 527,653 | Oct. 16 | 1604 | 387 | 69 | 326 |
| Bierer, Joseph, and C. De la Harpe, Basle, Switzerland, assignors to L. Durand, Huguenin & Co., Basle, Switzerland, St. Fons, France, and Hüningen, Germany. Blue dye | 531,148 | Dec. 18 | 1877 | ..... | 69 | 1587 |
| Biermann, William, Cincinnati, Ohio. Stovepipe-thimble | 528,139 | Oct. 30 | 2475 | 598 | 69 | 516 |
| Bigelow, Melvin F., Alden, Iowa. Bridle-bit | 529,472 | Nov. 20 | 1722 | 410 | 69 | 999 |
| Bigelow, Richard H. (See Brinkman, Sebastian G., assignor.) | | | | | | |
| Biggs, Arthur Y., Franklin, Ky. Check-row attachment for corn-planters | 529,104 | Nov. 13 | 1047 | 252 | 69 | 856 |
| Bignall, Burnett B., Elgin, Ill. Device for adjusting flash-plates to ventilating-pipes and different-pitched roofs | 530,574 | Dec. 11 | 897 | 221 | 69 | 1395 |
| Billings, Louis C., assignor to L. C. Billings Company, Milford, N. H. Chicken-brooder | 531,255 | Dec. 18 | 2071 | 496 | 69 | 1622 |
| Binder, Gottlob, Philadelphia, Pa. Lubricator | 529,473 | Nov. 20 | 1723 | 410 | 69 | 999 |
| Bindley, Josiah. (See Woelfel, George P., assignor.) (Reissue.) | | | | | | |
| Bingeman, Henry W., *et al.* (See Harris, Henry, assignor.) | | | | | | |
| Bingham, William H. (See Dyer and Bingham.) | | | | | | |
| Bingham, William P., and D. R. Jones, Jr., Dubuque, Iowa. Trunk and display tray | 530,092 | Nov. 27 | 2637 | 633 | 69 | 1180 |
| Binner, Charles S., *et al.* (See Emery, Fred B., assignor.) | | | | | | |
| Birch, Thomas, Leeds, England. Wheel-rim for pneumatic tires | 528,411 | Oct. 30 | 2941 | 711 | 69 | 600 |
| Bird, James, Tarrytown, N. Y. Car-coupling | 528,460 | Oct. 30 | 3031 | 735 | 69 | 616 |
| Birkery, Cornelius, assignor to Birkery Manufacturing Company, Hartford, Conn. Valve | 530,633 | Dec. 11 | 996 | 245 | 69 | 1415 |
| Birkery Manufacturing Company. (See Birkery, Cornelius, assignor.) | | | | | | |
| Birkinshaw, William K., Quarndon, England. Pick or similar tool | 527,829 | Oct. 23 | 1893 | 455 | 69 | 396 |
| Bisanz, Charles, Red Lodge, Montana. Bootjack | 530,080 | Dec. 4 | 7 | 3 | 69 | 1216 |
| Bisceglia, Joseph A., Waneta, Canada. Means for raising sunken vessels | 526,800 | Oct. 2 | 214 | 51, 52 | 69 | 41 |
| Bischoff, Frank R., assignor to S. C. Bone and J. D. O'Connor, Morris, Ind. Magazine tack-hammer | 529,237 | Nov. 13 | 1282 | 308 | 69 | 896 |
| Bishop, Edward P., Jr., Birmingham, Ala. Signal apparatus for air-brakes | 531,584 | Dec. 25 | 2653 | 636 | 69 | 1749 |
| Bishop, James C., assignor of two-thirds to S. H. Ussery and R. L. Harrell, Marble Falls, Tex. Car-coupling | 530,051 | Dec. 4 | 8 | 3 | 69 | 1216 |
| Bishop, Noah L., Wassaic, assignor to New York Condensed Milk Company, New York, N. Y. Can soldering and testing plant | 531,501 | Dec. 25 | 2518 | {601 602 603} | 69 | 1702 |
| Bissell, Titus L., Charleston, S. C. Bicycle safeguard and support | 531,016 | Dec. 18 | 1636 | 388 | 69 | 1543 |
| Bittle, James F., Brunswick, Md. Window-screen | 527,401 | Oct. 16 | 1192 | 293 | 69 | 250 |
| Black, Charles W., and B. J. Chapman, assignors of one-third to F. M. Boeckling, Michigan City, Ind. Fishing-line sinker | 531,090 | Dec. 18 | 1769 | 422 | 69 | 1567 |
| Black, David R., and S. A. Hill, Duluth, Minn. Mold for making washers and tacks for plumbers' use | 527,931 | Oct. 23 | 2087 | 500 | 69 | 431 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Black, Henry C. (See Johnson and Black.) | | | | | | |
| Black, Joseph, San Francisco, Cal. Can-testing machine | 531,616 | Dec. 25 | 2708 | 649 | 69 | 1760 |
| Black, Robert, and C. M. Havey, New York, N. Y. Signal for railways | 529,889 | Nov. 27 | 2416 | 580 | 69 | 1136 |
| Black, William J. (See Hawley and Black.) | | | | | | |
| Blackman, Elmer E., Raymond, Nebr. Combined shaft-support and antirattler | 527,475 | Oct. 16 | 1320 | 322 | 69 | 275 |
| Blackman, Henry, New York, N. Y. Apparatus for disintegrating fibers and recovering sulfurous gases employed therein | 530,634 | Dec. 11 | 997 | 245 | 69 | 1413 |
| Blackman, Henry, New York, N. Y. Process of and apparatus for making paper-pulp | 530,635 | Dec. 11 | 1003 | 246 | 69 | 1413 |
| Blackman, William I., Columbus, Miss. Book-sewing machine | 531,357 | Dec. 25 | 2258 | {538 539 540} | 69 | 1672 |
| Blackmore, James E., Newark, N. Y. Camera | 528,140 | Oct. 30 | 2476 | {599 600} | 69 | 517 |
| Blackmore, Lawrence R., Newark, N. J. Steam or hot-water heating-boiler | 531,298 | Dec. 25 | 2156 | {516 517} | 69 | 1653 |
| Blackwell, Josiah L., New York, N. Y., assignor to Thomson-Houston Electric Company, of Connecticut. Contact device for overhead electric railways | 529,354 | Nov. 20 | 1484 | 357 | 69 | 958 |
| Blackwell, Thomas L., Cordele, Ga. Rotary engine | 526,801 | Oct. 2 | 215 | 52 | 69 | 41 |
| Blades, Leonard J., Chicago, Ill. Ticket-holder | 529,696 | Nov. 27 | 2093 | 501 | 69 | 1077 |
| Bladon, Thomas E. (See White, William, assignor.) | | | | | | |
| Blais, Charles. (See Lepage, Charles, assignor.) | | | | | | |
| Blaisdell, William A., Worcester, Mass. Pipe-wrench | 531,299 | Dec. 25 | 2161 | 517 | 69 | 1654 |
| Blake, Dennis B. D., Denver, Colo. Station-indicator | 530,821 | Dec. 11 | 1302 | {314 315} | 69 | 1468 |
| Blake, James, and E. F. Begieleng, Union Hill, N. J. Hose bridge and tower | 531,091 | Dec. 18 | 1750 | 422 | 69 | 1567 |
| Blake, John F., New Haven, Conn. Electrical contact mechanism | 530,004 | Nov. 27 | 2640 | 634 | 69 | 1180 |
| Blake, John L., Waynesborough, Va. Running-gear for wagons | 530,003 | Nov. 27 | 2638 | {633 634} | 69 | 1180 |
| Blake, Robie, Cornish, Me. Nail-extractor | 526,678 | Oct. 2 | 14 | 4 | 69 | 5 |
| Blakemore, Benjamin A., Staunton, Va. Checking and unchecking device | 530,005 | Nov. 27 | 2641 | 634 | 69 | 1181 |
| Blakesley, George F., Duquoin, Ill. Coal-screen | 528,536 | Nov. 6 | 9 | 4 | 69 | 648 |
| Blakesley, Wallace A., assignor to Bridgeport Brass Company, Bridgeport, Conn. Lock for bicycle-lanterns | 530,384 | Dec. 4 | 546 | 135 | 69 | 1315 |
| Blakley, Cortland J., Luzerne, Mich. Milking-stool | 526,916 | Oct. 2 | 418 | 104 | 69 | 78 |
| Blanchard, Helen A., New York, N. Y. Surgical needle | 527,263 | Oct. 9 | 957 | 232 | 69 | 193 |
| Blanding, Francis, Putnam, Conn. Boat-detaching apparatus | 526,959 | Oct. 2 | 521 | 127 | 69 | 98 |
| Blaney, Elbridge G., Jr., Swampscott, assignor to A. H. Breed, Lynn, Mass. Cutter-head for woodworking-machines | 527,583 | Oct. 16 | 1492 | 363 | 69 | 305 |
| Blank, Max, Grand Rapids, Mich. Cash-registering apparatus | 528,768 | Oct. 2 | 165 | 39 | 69 | 32 |
| Blatchley, Charles, Binghamton, N. Y. Double-tenon auger | 528,527 | Nov. 6 | 10 | 4 | 69 | 648 |
| Blessing, James H., and T. H. Murray, Albany, N. Y. Tap for drawing liquids from casks, barrels, &c | 529,355 | Nov. 20 | 1485 | 358 | 69 | 958 |
| Blessing, Louis, Jackson, Mich. Strawboard lining machine | 530,592 | Dec. 11 | 758 | 186 | 69 | 1371 |
| Bliss, George H., Pittsfield, Mass. Reflector and shade for lamps | 529,105 | Nov. 13 | 1049 | 253 | 69 | 857 |
| Bliss, Louis D., assignor to C. W. Needham, Washington, D. C. Telegraph-key | 530,082 | Dec. 4 | 5 | 3 | 69 | 1216 |
| Bloch & Co., E. (See Foucault, Henri, assignor.) | | | | | | |
| Bloch, Jacob, assignor to Wolf Electrical Promoting Company, Cincinnati, Ohio. Cloth-cutting machine | 528,220 | Oct. 30 | 2613 | 630 | 69 | 541 |
| Block, Francis L., Sidney, Ill. Corn-planter | 527,332 | Oct. 23 | 2090 | 500 | 69 | 432 |
| Block, Louis, New York, N. Y. Apparatus for preparing water for the manufacture of ice | 529,356 | Nov. 20 | 1487 | 358 | 69 | 958 |
| Blocser, Jacob. (See Hunt, Edward P., assignor.) | | | | | | |
| Blomén, Jonas E., Stanhope, N. J., assignor, by mesne assignments, to Joveite Manufacturing Company, of Virginia. High-power explosive | 530,063 | Nov. 27 | 2747 | ..... | 69 | 1189 |
| Blomgren, Andrew O., Granite Falls, Minn. Envelope-opener | 530,920 | Dec. 18 | 1468 | 348 | 69 | 1314 |
| Blomgren, Andrew O., Granite Falls, Minn. Envelope-opener | 531,017 | Dec. 18 | 1637 | 388 | 69 | 1543 |
| Bloom, Charles J., Burlington Junction, Mo. Rotary oven | 528,069 | Oct. 23 | 2339 | 565 | 69 | 477 |
| Bloom, Louis, Vicksburg, Miss. Suspenders | 527,654 | Oct. 16 | 1605 | 387 | 69 | 326 |
| Blosser, Theodore B., and J. P. Kunkle, assignors of one-half to A. Ferrell, Springfield, Ohio. Vehicle-wheel | 528,474 | Nov. 20 | 1724 | 411 | 69 | 999 |
| Blount, Eugene I., Gardner, Mass. Fire-escape | 526,679 | Oct. 2 | 15 | 4 | 69 | 5 |
| Blount, Eugene I., Gardner, Mass., assignor to Blount Manufacturing Company, Portland, Me. Door check or closer | 527,584 | Oct. 16 | 1494 | 363 | 69 | 306 |
| Blount, Eugene I., Gardner, Mass., assignor to Blount Manufacturing Company, Portland, Me. Door check or closer | 527,585 | Oct. 16 | 1496 | 364 | 69 | 306 |
| Blount, Eugene I., Gardner, assignor to Blount Manufacturing Company, Boston, Mass. Sash-fastener | 527,586 | Oct. 16 | 1497 | 364 | 69 | 306 |
| Blount, Eugene I., Gardner, assignor to Blount Manufacturing Company, Boston, Mass. Door check and closer | 528,321 | Oct. 30 | 2786 | 672 | 69 | 572 |
| Blount Manufacturing Company. (See Blount, Eugene I., assignor.) | | | | | | |
| Blowers, Charles A. (See Arkell and Blowers.) | | | | | | |
| Blue, Charles E., assignor of five-eighths to A. E. Hubbard and L. V. Blue, Wheeling, W. Va. Mold for the manufacture of glassware | 531,609 | Dec. 25 | 2699 | 647 | 69 | 1758 |
| Blue, Louis V., *et al.* (See Blue, Charles E., assignor.) | | | | | | |
| Boal, Stanhope, Piqua, Ohio. Cooking-stove | 527,782 | Oct. 9 | 1158 | 284 | 69 | 230 |
| Boardman, Alphonso F., Brooklyn, N. Y. Street-car fender | 529,357 | Nov. 20 | 1490 | 358 | 69 | 959 |
| Boardman, Arthur F., Somerville, assignor of one-half to J. D. Leatherbee, Braintree, Mass. Telephone-transmitter | 530,575 | Dec. 11 | 898 | 221 | 69 | 1395 |
| Boas, Moritz. (See Pharo, John F., assignor.) | | | | | | |
| Boatwright, Jefferson D., Barachias, Ala. Cordage-measuring machine | 530,385 | Dec. 4 | 547 | 136 | 69 | 1315 |
| Bock, Johannes. (See Wulff, Ludwig, assignor.) | | | | | | |
| Bodell, Benjamin, Auburn, N. Y. Spinning-jenny | 527,587 | Oct. 16 | 1498 | 364 | 69 | 306 |
| Bodiker, Dallas A. and J. H., Dayton, Ohio. Weather-strip | 530,576 | Dec. 11 | 899 | 221 | 69 | 1395 |
| Bodiker, John H. (See Bodiker, Dallas A. and J. H.) | | | | | | |
| Boeckh, Charles, Jr., Toronto, Canada. Bridle for paint-brushes | 529,018 | Nov. 13 | 903 | 213 | 69 | 830 |
| Boeckh, Charles, Jr., Toronto, Canada. Bridle for paint-brushes | 530,386 | Dec. 4 | 549 | 136 | 69 | 1315 |
| Boeckling, Frank M. (See Black and Chapman, assignors.) | | | | | | |
| Boeing, William C., and T. P. Stork, Hermann, Mo. Binder for music, magazines, &c | 531,256 | Dec. 18 | 2076 | 496 | 69 | 1622 |
| Boesger, Max A., and F. V. Dotterweich, Cleveland, Ohio. Inhaler | 530,321 | Dec. 4 | 430 | 107 | 69 | 1293 |
| Bofinger, William H. (See Gardner, Cook, and Tannenberg, assignors.) | | | | | | |
| Bogart, Samuel S., Schraalenburg, N. J., and M. B. Leonard, Richmond, Va., assignors to Electric Selector and Signal Company, of West Virginia. Electrical apparatus for controlling signals | 529,059 | Nov. 13 | 970 | 229 | 69 | 842 |
| Bohner, Joseph J., Brooklyn, N. Y. Boiler | 530,006 | Nov. 27 | 2643 | 635 | 69 | 1181 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Bohringer, Louis. (See Brookens and Bohringer.) | | | | | | |
| Bois, Jules, assignor to Société Anonyme de la Serreure sans Clef, Lyons, France. Combination-lock | 528,651 | Nov. 6 | 235 | 58 | 69 | 688 |
| Bolsclair, John, Montreal, Canada. Windmill | 529,358 | Nov. 20 | 1492 | 358, 359 | 69 | 959 |
| Bokhof, David H. (See Rippien, Herbert A., assignor.) | | | | | | |
| Boles, Warren H. (See Collins, Herman B., assignor.) | | | | | | |
| Boles, Warren H., Syracuse, N. Y. Photographic burnisher | 527,315 | Oct. 9 | 1049 | 254 | 69 | 209 |
| Bolles, Frank G., assignor of one-third to P. Eaton, Washington, D. C. Electric switch | 528,900 | Nov. 6 | 682 | 164 | 69 | 771 |
| Bolzani, Anton, Berlin, Germany. Shaft-coupling | 527,655 | Oct. 16 | 1606 | 388 | 69 | 326 |
| Bomeisl, Bernard. (See Diener, Charles, assignor.) | | | | | | |
| Bond, Adam, Detroit, Mich. Dental bracket | 531,257 | Dec. 18 | 2078 | 497 | 69 | 1622 |
| Bond, Alice T. (See Smith, Arthur W., assignor.) | | | | | | |
| Bond, Charles W., Ripyville, Ky. Band-cutter and feeder | 529,890 | Nov. 27 | 2417 | 580, 581 | 69 | 1137 |
| Bond, George W., Raynham, Mass. Wire-nail-making machine | 529,475 | Nov. 20 | 1725 | 411 | 69 | 999 |
| Bond, George W., Raynham, Mass. Doweling-machine | 529,697 | Nov. 27 | 2094 | 502 | 69 | 1077 |
| Bond, Nathan O., Fairfax Court-House, Va. Coffee-pot | 529,208 | Nov. 13 | 1283 | 308 | 69 | 898 |
| Bone, Alfred R. (See Van Dyke, Robert B., assignor.) | | | | | | |
| Bone, Scott C., *et al.* (See Bischoff, Frank R., assignor.) | | | | | | |
| Bongfeldt, Charles J., assignor of one-half to A. Bruce, East Marinette, Wis. Sled attachment for baby-carriages | 527,357 | Oct. 9 | 1116 | 273 | 69 | 222 |
| Bonham, Baruch W., *et al.* (See Fifield, Henry H., assignor.) | | | | | | |
| Bonham, Silas S., *et al.* (See Fifield, Henry H., assignor.) | | | | | | |
| Bonner, Charles. (See May, Penjamin W., assignor.) | | | | | | |
| Bonner, Julius, New York, N. Y. Safety device for jewelry | 527,358 | Oct. 9 | 1117 | 273 | 69 | 222 |
| Bonner, Julius, Newark, N. J. Ear-ring | 527,359 | Oct. 9 | 1118 | 273 | 69 | 222 |
| Bonsack Machine Company. (See Stronse, Demetrius B., assignor.) | | | | | | |
| Bonsall, Millie V., assignor to Pelzer Art Co., Salem, Ohio. Lace-curtain frame | 527,316 | Oct. 9 | 1052 | 254 | 69 | 210 |
| Bonta, James W., Wayne, Pa., assignor to Bonta Plate Glass Company, of West Virginia. Apparatus for manufacturing embossed-glass tablets | 527,476 | Oct. 16 | 1321 | 322 | 69 | 276 |
| Bonta, James W., Wayne, Pa., assignor to Bonta Plate Glass Company, of West Virginia. Apparatus for the manufacture of ornamental sheets or plates of glass | 529,157 | Nov. 13 | 1136 | 275 | 69 | 873 |
| Bonta, James W., Wayne, Pa., assignor to Bonta Plate Glass Company, of West Virginia. Leer or annealing-oven for sheet or plate glass | 529,316 | Nov. 13 | 1424 | 342, 343 | 69 | 925 |
| Bonta Plate Glass Company. (See Bonta, James W., assignor.) | | | | | | |
| Booth, Frederick, Concord, N. H. Siphon-valve | 529,584 | Nov. 20 | 1918 | 457 | 69 | 1035 |
| Boothe, Isaac J. (See Briggs, Charles L., assignor.) | | | | | | |
| Borchard, John E., New Jerusalem, Cal. Separator | 527,656 | Oct. 16 | 1607 | 388 | 69 | 326 |
| Borchardt, August F., *et al.* (See Grant, Robert A., assignor.) | | | | | | |
| Borgfeldt, Nicholas H., Brooklyn, N. Y. Cigar-bunching machine | 529,891 | Nov. 27 | 2121 | 581 | 69 | 1137 |
| Borgfeldt, Nicholas H., Brooklyn, assignor of one-sixth to C. F. Zenker, New York, N. Y. Apparatus for aerial navigation | 530,219 | Dec. 4 | 272 | 62 | 69 | 1261 |
| Bork, Joseph F., and J. Simandl, Milwaukee, Wis. Overhead-track apparatus | 530,636 | Dec. 11 | 1009 | 246 | 69 | 1414 |
| Borsch, John L., Philadelphia, Pa. Spectacles or eyeglasses | 528,528 | Nov. 6 | 11 | 4 | 69 | 648 |
| Boscowitz, Charles M., New York, N. Y. Bottle-guard | 529,317 | Nov. 13 | 1426 | 343 | 69 | 926 |
| Bosley, Benjamin. (See Bosley, Lewis C. and B.) | | | | | | |
| Bosley, Lewis C. and B., Spickard, Mo. Pruning-knife | 531,358 | Dec. 25 | 2268 | 540 | 69 | 1674 |
| Boss, Ella M. (See Boss, Fred E., assignor.) | | | | | | |
| Boss, Fred E., assignor to E. M. Boss, New York, N. Y. Vehicle-axle nut | 530,387 | Dec 4 | 550 | 136 | 69 | 1315 |
| Bostad, Christian. (See Krabol and Bostad.) | | | | | | |
| Boston, Robert N., Chestertown, Md. Ironing-board attachment | 528,846 | Nov. 6 | 597 | 141 | 69 | 755 |
| Boston Shoe Tool Company. (See Emery, John B., assignor.) | | | | | | |
| Boswell, George G. F., assignor of one-half to W. A. Bruce, Indianapolis, Ind. Square holder | 527,035 | Oct. 2 | 596 | 144 | 69 | 112 |
| Boswell, George G. F., assignor of one-half to F. B. Davenport, Indianapolis, Ind. Tug-holder | 529,676 | Nov. 20 | 2056 | 492 | 69 | 1060 |
| Boswell, William C., Clarksburg, W. Va. Poling device for railway-cars | 529,060 | Nov. 13 | 972 | 229 | 69 | 843 |
| Bosworth, Charles B., Everett, assignor to Crosby Steam Gage and Valve Company, Boston, Mass. Feed-water regulator | 529,698 | Nov. 27 | 2096 | 502 | 69 | 1078 |
| Bosworth, Martin L., Warren, R. I. Chemical fire-extinguisher | 530,388 | Dec. 4 | 551 | 137 | 69 | 1316 |
| Boudreaux, Leandre, Thibodeaux, La. Steam-cylinder valve | 527,036 | Oct. 2 | 597 | 144 | 69 | 112 |
| Boughton, Frank M. (See Jochmus and Boughton.) | 530,503 | Dec. 11 | 755 | 186 | 69 | 1371 |
| Boughton, Frank P. (See Muckenhirn, Charles H., assignor.) | | | | | | |
| Bourgeois, Jules E. M., Paris, France, assignor to T. W. L. Emden, London, England. Dressing compound for leather | 526,769 | Oct. 2 | 167 | ..... | 69 | 32 |
| Bourne, M. A. (See Sanborn, William H., assignor.) | | | | | | |
| Bouse, James, Clintondale, Pa. Combined truck and bag-holder | 530,007 | Nov. 27 | 2644 | 635 | 69 | 1181 |
| Boutwell, George S., New Bedford, Mass. Duplicate whist-table | 529,699 | Nov. 27 | 2097 | 502 | 69 | 1078 |
| Bouvé, Crawford & Company Corporation. (See Stone, Florentine L., assignor.) | | | | | | |
| Bouvier, Adolphe, Lyons, France. Siphon test-box for gas-mains | 526,852 | Oct. 2 | 298 | 72 | 69 | 57 |
| Bowden, Junius A., Detroit, Mich. Filtering apparatus | 528,652 | Nov. 6 | 237 | 59 | 69 | 689 |
| Bowden, Junius A., Detroit, Mich. Filter | 530,608 | Nov. 27 | 2645 | 635, 636 | 69 | 1181 |
| Bowen, George M., Talbott, Tenn. Gate-hinge | 527,765 | Oct. 23 | 1791 | 432 | 69 | 378 |
| Bowen, Isaac N., and T. Troxel, Chariton, Iowa. Thill-coupling | 529,825 | Nov. 27 | 2314 | 551 | 69 | 1117 |
| Bowen, Menard K., Chicago, Ill. Street-car heater | 529,158 | Nov. 13 | 1137 | 275 | 69 | 853 |
| Bower, Samuel C., Mountain Eagle, Pa. Fence | 530,504 | Dec. 11 | 761 | 186 | 69 | 1371 |
| Bower, Thomas F., Upper Sandusky, Ohio. Vehicle-tongue | 529,106 | Nov. 13 | 1050 | 253 | 69 | 857 |
| Bowers, Henry, Milton, Wis. Land-marker | 529,585 | Nov. 20 | 1919 | 458 | 69 | 1035 |
| Bowers, William F., San Francisco, Cal. Manufacturing samples of hose, &c | 530,678 | Dec. 11 | 1079 | 262 | 69 | 1426 |
| Bowes, Homer. (See Hensel, Otto A., assignor.) | | | | | | |
| Bowles, Robert C. M., Boston, Mass. Stethoscopic instrument | 526,802 | Oct. 2 | 216 | 52 | 69 | 41 |
| Bowser, Orra J., Fort Wayne, Ind. Barrel-truck | 530,577 | Dec. 11 | 900 | 221 | 69 | 1395 |
| Bowsher, Nelson P., South Bend, Ind. Feed-mill | 528,070 | Oct. 23 | 2341 | 565 | 69 | 477 |
| Boyce, Thomas H. (See Walker and Boyce.) | | | | | | |
| Boyd, Edward J., New York, N. Y. Bottle-corking apparatus | 527,477 | Oct. 16 | 1323 | 322 | 69 | 276 |
| Boyd, Gertrude R. (See Congelton and Boyd.) | | | | | | |
| Boyd, James, St. Paul, Minn. Combined receptacle and adjustable seat | 530,469 | Dec. 4 | 675 | 168 | 69 | 1339 |
| Boyd, John G. (See Butler, William A, assignor.) | | | | | | |
| Boyd, Minor P., Atlanta, Ga. Forming dental plates | 531,092 | Dec. 18 | 1772 | 423 | 69 | 1567 |
| Boyd, Robert L., New York, N. Y. Self-binding blotter | 529,892 | Nov. 27 | 2423 | 582 | 69 | 1138 |
| Boylan, Agnes H., *et al.* (See Newlyn, Robert A., assignor.) | | | | | | |
| Boyle, James, Ware, Mass. Candle-extinguisher | 529,107 | Nov. 13 | 1050 | 253 | 69 | 857 |



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|---|---|---|---|---|---|---|
| Boyle, Thomas B., assignor of one-half to W. D. Boyle, Houston, Ill. Rotary engine | 527,933 | Oct. 23 | 2091 | 500, 501 | 69 | 432 |
| Boyle, William D. (See Boyle, Thomas B., assignor.) | | | | | | |
| Brachhausen, Gustav A., Hoboken, N. J. Damper for music-boxes | 531,359 | Dec. 25 | 2269 | 541 | 69 | 1674 |
| Brack, Johann J., assignor to L. Durand, Huguenin & Co., Basle, Switzerland. Substantive red dye | 531,149 | Dec. 18 | 1879 | ..... | 69 | 1588 |
| Braddell, Alfred E. (See Stanley and Braddell.) | | | | | | |
| Braden, Walter S., Watseka, Ill. Twine-holder | 530,878 | Dec. 11 | 1395 | 332 | 69 | 1484 |
| Bradford, Harry P., and J. A. Smith, Cincinnati, Ohio. Machine-gear | 528,653 | Nov. 6 | 239 | 59 | 69 | 689 |
| Bradish, Nelson P., assignor of one-half to J. H. Wilcox, Kansas City, Mo. Baby-walker | 529,359 | Nov. 20 | 1493 | 359 | 69 | 959 |
| Bradley, Frank B., assignor to Ajax Forge Company, Chicago, Ill. Nut or bolt lock | 530,083 | Dec. 4 | 12 | 3 | 69 | 1217 |
| Bradley & Hubbard Manufacturing Company. (See Jauch, Joseph, assignor.) | | | | | | |
| Bradley, John, North Chelmsford, Mass. Warp-knitting machine | 527,934 | Oct. 23 | 2093 | 501, 502 | 69 | 432 |
| Bradley, Leonard W. (See Fawcett, Ezra, assignor.) | | | | | | |
| Bradley Stencil Machine Company. (See Schaadt, Henry S., assignor.) | | | | | | |
| Bradshaw, Harry. (See Lux, Nicholas, assignor.) | | | | | | |
| Bradshaw, Harry, assignor to Bradshaw Paper Feeder Company, Topeka, Kans. Method of and machine for separating and feeding sheets of paper | 528,918 | Nov. 13 | 740 | 173, 174 | 69 | 802 |
| Bradshaw Paper Feeder Company. (See Bradshaw, Harry, assignor.) | | | | | | |
| Bradt, David L., *et al.* (See Stearns, William E., assignor.) | | | | | | |
| Brady, Charles N., Washington, Pa. Cover for fruit-jars or other vessels | 529,239 | Nov. 13 | 1285 | 308 | 69 | 899 |
| Brady, James V., Sonora, Ill. Cultivator | 530,879 | Dec. 11 | 1396 | 332 | 69 | 1485 |
| Bragg, Edward F., Boston, Mass. Mixing-mill for rubber | 530,157 | Dec. 4 | 134 | 36 | 69 | 1240 |
| Braham, Harry L., Cincinnati, Ohio. Fountain-pen | 528,654 | Nov. 6 | 241 | 59 | 69 | 689 |
| Braham, William T., Manchester, England. Watch-protector swivel | 529,360 | Nov. 20 | 1495 | 359 | 69 | 959 |
| Brainerd, David, Denver, Colo. Support for bicycles | 527,767 | Oct. 23 | 1792 | 432 | 69 | 378 |
| Bradley, Patrick, Oakland, Cal. Sewing-machine needle-threader | 529,586 | Nov. 20 | 1920 | 458 | 69 | 1035 |
| Bramall, Sidney, London, England. Bicycle | 529,700 | Nov. 27 | 2099 | 503 | 69 | 1078 |
| Branch, J. W. (See Thompson, John W., assignor.) | | | | | | |
| Brand, Robert, and W. Dichmann, Oshkosh, Wis. Refrigerator | 528,655 | Nov. 6 | 242 | 60 | 69 | 689 |
| Brander, George, Sutherland, Iowa. Washing-machine | 527,264 | Oct. 9 | 908 | 233 | 69 | 193 |
| Brandt, Charles, Jr., *et al.* (See Marquart, Rudolf, assignor.) | | | | | | |
| Braniff, John A., Kansas City, Mo. Mail-bag hanger | 531,360 | Dec. 25 | 2270 | 541 | 69 | 1675 |
| Branshaw, Albert M., Escanaba, Mich. Curtain | 528,071 | Oct. 23 | 2344 | 566 | 69 | 478 |
| Brantingham, Allen C., Toledo, Ohio, assignor to Nordyke & Marmon Company, Indianapolis, Ind. Dust-collector | 527,935 | Oct. 23 | 2095 | 502 | 69 | 432 |
| Brantingham, Allen C., Toledo, Ohio, assignor to Nordyke & Marmon Company, Indianapolis, Ind. Dust-collector | 527,936 | Oct. 23 | 2097 | 503 | 69 | 433 |
| Brantingham, Allen C., Toledo, Ohio, assignor to Nordyke & Marmon Company, Indianapolis, Ind. Dust-collector | 527,937 | Oct. 23 | 2100 | 503 | 69 | 433 |
| Brantingham, Allen C., Toledo, Ohio, assignor to Nordyke & Marmon Company, Indianapolis, Ind. Combined return-air sieve, purifier, and dust-collector | 527,938 | Oct. 23 | 2102 | 504 | 69 | 434 |
| Brantingham, Allen C., Toledo, Ohio, assignor to Nordyke & Marmon Company, Indianapolis, Ind. Dust-collector | 527,939 | Oct. 23 | 2105 | 504, 505 | 69 | 434 |
| Brantingham, Allen C., Toledo, Ohio, assignor to Nordyke & Marmon Company, Indianapolis, Ind. Dust-collector | 527,940 | Oct. 23 | 2106 | 505 | 69 | 434 |
| Braren, Edward F., *et al.* (See Heath, Walter A., assignor.) | | | | | | |
| Brancht, George W. (See Severance, Jamison, and Brancht.) | | | | | | |
| Brancke, Wilhelm vom, Timmerterbach, near Westig, Germany. Metal brush for dynamos | 527,766 | Oct. 23 | 1792 | 432 | 69 | 378 |
| Braun, John, *et al.* (See Lorey, William, assignor.) | | | | | | |
| Braun, John F., *et al.* (See Lorey, William, assignor.) | | | | | | |
| Braun, William P. M., *et al.* (See Lorey, William, assignor.) | | | | | | |
| Brawn, Charles. (See Friese-Greene, William, assignor.) | | | | | | |
| Bray, Mellen. (See Bertrand, Joseph E., assignor.) | | | | | | |
| Bray, T. N. (See Vallean, James H., assignor.) | | | | | | |
| Bray, T. N. (See Vallean, James H., assignor.) (Reissue.) | | | | | | |
| Brazelle, Benjamin, St. Louis, Mo. Process of and apparatus for smelting ores | 529,476 | Nov. 20 | 1727 | 412 | 69 | 1000 |
| Breed, Albert H. (See Blaney, Elbridge G., Jr., assignor.) | | | | | | |
| Brenkelman, William F. (See Fox, Jacob G., assignor.) | | | | | | |
| Brennan, Daniel, Jr., Bayonne, N. J. Grading ores or similar materials | 529,587 | Nov. 20 | 1922 | 458 | 69 | 1036 |
| Brent, Edwin. (See Brent, Richard and E.) | | | | | | |
| Brent, John. (See Brent, Richard and E., assignors.) | | | | | | |
| Brent, Richard and E., assignors of one-third to J. Brent, Wilkes-Barré, Pa. Thill-coupling | 527,010 | Oct. 2 | 554 | 135 | 69 | 105 |
| Breul, Charles. (See Breul, Richard A. and C.) | | | | | | |
| Breul, Richard A. and C., Bridgeport, Conn.; said C. Breul assignor to said Richard A. Breul. Chain-link | 530,921 | Dec. 18 | 1469 | 348 | 69 | 1514 |
| Brewer, Albert G., Hopkinton, Mass. Gore-cutting machine | 527,588 | Oct. 16 | 1499 | 365 | 69 | 306 |
| Brewer, Gilbert T., Hoboken, N. J. Hull for vessels | 527,657 | Oct. 16 | 1609 | 388 | 69 | 327 |
| Brewer, Paul C. (See Smith and Geer, assignors.) | | | | | | |
| Bridgeman, H., *et al.* (See Smith, Orison M., assignor.) | | | | | | |
| Bridgeport Brass Company. (See Blakeslee, Wallace A., assignor.) | | | | | | |
| Bridgeport Brass Company. (See Rhind, Frank, assignor.) | | | | | | |
| Bridger, Herbert K. (See Scetrind and Cade, assignors.) | | | | | | |
| Bridges, Michael, Boston, Mass. Valve for pneumatic tires | 529,588 | Nov. 20 | 1923 | 458 | 69 | 1036 |
| Bridgman, Henry L., Blue Island, Ill. Apparatus for electrodeposition | 528,586 | Nov. 6 | 104 | 26 | 69 | 665 |
| Bridgman, Henry L., Blue Island, Ill. Apparatus for electrodeposition | 528,587 | Nov. 6 | 105 | 26 | 69 | 665 |
| Bridgman, Henry L., Blue Island, Ill. Commutator | 531,406 | Dec. 25 | 2342 | 552 | 69 | 1689 |
| Brien, Louie J., *et al.* (See Brien, Theodore R., assignor.) | | | | | | |
| Brien, Theodore R., assignor of one-half to G. O. Walrad and L. J. Brien, Hoosick Falls, N. Y. Nipple connection | 530,679 | Dec. 11 | 1080 | 262 | 69 | 1426 |
| Briére, Achille, Ronen, France. Arming bicycles for military purposes | 526,680 | Oct. 2 | 17 | 4 | 69 | 6 |
| Briggs, Charles L., Norton, Mass., assignor to I. J. Boothe, Birmingham, Conn. Machine for driving screws into wood | 529,701 | Nov. 27 | 2100 | 503, 504 | 69 | 1078 |
| Briggs, Charles N., Chicago, Ill. Billiard-cue tip | 529,775 | Nov. 27 | 2221 | 529 | 69 | 1099 |
| Briggs, Edmund W., Jr., Lyons, Iowa. Chair | 530,880 | Dec. 11 | 1397 | 333 | 69 | 1485 |
| Briggs, Henry, Hasbrouck, N. J. Chain-gearing | 528,847 | Nov. 6 | 598 | 142 | 69 | 755 |
| Briggs, Orlando P., and W. R. Patterson, assignors to Western Electric Company, Chicago, Ill. Sign-advertising machine | 531,018 | Dec. 18 | 1639 | 389 | 69 | 1543 |
| Brill, John A. (See Adams, Walter S., assignor.) | | | | | | |
| Brill, John A., Philadelphia, Pa. Entrance-guard for open cars | 531,407 | Dec. 25 | 2343 | 559 | 69 | 1689 |
| Brinckerhoff, Henry M. (See Macloskie and Brinckerhoff.) | | | | | | |
| Brinkenkamp, Henry J. (See Malley, James J., assignor.) | | | | | | |
| Brinkman, Sebastian G., assignor to R. H. Bigelow, New York, N. Y. Ceiling or floor | 530,064 | Nov. 27 | 2747 | 659 | 69 | 1290 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Brinkmann, Heinrich, Munich, Germany. Oar-lock | 528,221 | Oct. 30 | 2614 | 630 | 69 | 541 |
| Brinser, Eli H. G., Elizabethtown, Pa. Ratchet-washer nut-lock | 530,881 | Dec. 11 | 1399 | 333 | 69 | 1485 |
| Brinsmade, James R. (See Johnson, Charles H., assignor.) | | | | | | |
| Brinton, George, assignor of one-half to J. B. Bailey, Harrisburg, Pa. Can or vessel | 529,677 | Nov. 20 | 2057 | 493 | 69 | 1061 |
| Bristol, Theodore L., Ansonia, Conn. Device for tradesmen's use | 527,589 | Oct. 16 | 1501 | 365 | 69 | 307 |
| Broadfoot, Thomas W., Honey Grove, Tex. Quilting-frame | 529,640 | Nov. 20 | 2003 | 479 | 69 | 1050 |
| Broadwell, Edward C., assignor to M. J. Grier, Philadelphia, Pa. Plating metals with aluminium | 527,478 | Oct. 16 | 1324 | .... | 69 | 276 |
| Brock, Andrew L., Lockhart, Tex. Disk cultivator | 526,962 | Oct. 2 | 479 | 118 | 69 | 90 |
| Brock, William H., Brooklyn, N. Y. Fender for street-cars | 531,258 | Dec. 18 | 2079 | 497 | 69 | 1623 |
| Brockie, James, London, England. Electric-arc lamp | 529,240 | Nov. 13 | 1286 | 309 | 69 | 899 |
| Brodie, William H., Brooklyn, N. Y. Device for operating sliding doors | 531,150 | Dec. 18 | 1880 | 446 | 69 | 1588 |
| Brodie, William H., Brooklyn, N. Y. Trolley-track | 531,151 | Dec. 18 | 1884 | 446 | 69 | 1588 |
| Brombacher, Emil, assignor of two-thirds to C. Floerl and E. F. Stein, Buffalo, N. Y. Railway-switch | 527,547 | Oct. 16 | 1433 | 349 | 69 | 295 |
| Bromell, Alfred E. G. (See Lawrence and Bromell.) | | | | | | |
| Bromley, Daniel W. (See Schneider and Bromley.) | | | | | | |
| Bronson, George A., St. Louis, Mo. Dental napkin-holder | 531,093 | Dec. 18 | 1774 | 423 | 69 | 1567 |
| Bronson, George A., St. Louis, Mo. Dental napkin-holder | 531,094 | Dec. 18 | 1775 | 423 | 69 | 1568 |
| Brooke, Isaac, Pottstown, assignor to Floyd, Wells & Co., Royersford, Pa. Hot-air attachment for stoves | 531,502 | Dec. 25 | 2522 | 603 | 69 | 1723 |
| Brooke, William M., New York, assignor to L. C. Benson, Brooklyn, N. Y. Traveling crane | 528,248 | Oct. 30 | 2665 | 642 | 69 | 551 |
| Brookens, Harry C., and L. Bohringer, Bloomington, Wis. Hame | 528,919 | Nov. 13 | 746 | 175 | 69 | 803 |
| Brookmire, James H., Jr. (See Steedman and Brookmire.) | | | | | | |
| Brooks, Alfred J., Chester, Pa. Calking vessels | 527,169 | Oct. 9 | 803 | 195 | 69 | 164 |
| Brooks, Edward J., East Orange, N. J., assignor to E. J. Brooks & Company, New York, N. Y. Seal | 529,318 | Nov. 13 | 1427 | 343 | 69 | 926 |
| Brooks, Fred P. (See Walker, Randall W., assignor.) | | | | | | |
| Brooks, James W., trustee. (See Heys, John J., assignor.) | | | | | | |
| Brooks, John, assignor to Potter Printing Press Company, Plainfield, N. J. Cylinder printing machine | 527,941 | Oct. 23 | 2130 | 506 | 69 | 435 |
| Brooks, John, assignor to Potter Printing Press Company, Plainfield, N. J. Bed and cylinder printing-machine | 529,850 | Nov. 27 | 2357 | 562 / 563 | 69 | 1125 |
| Brooks, John, Plainfield, N. J., assignor to C. Potter, Jr., H. W. Fish, J. M. and D. E. Titsworth, New York, N. Y. Cylinder printing-machine | 529,702 | Nov. 27 | 2103 | 504 / 505 | 69 | 1079 |
| Brooks, Miles W., Atlanta, Ga. Puzzle | 528,141 | Oct. 30 | 2478 | 600 | 69 | 517 |
| Brooks, Sewell A., Strykersville, N. Y. Painter's scaffold | 530,380 | Dec. 4 | 553 | 137 | 69 | 1316 |
| Brooks, Sewell A., Strykersville, N. Y. Painting apparatus | 531,434 | Dec. 25 | 2387 | 571 | 69 | 1698 |
| Brooks, Thomas, M. Reilly, and W. Rudkins, Peterborough, Canada. Hot-water boiler for heating purposes | 528,626 | Nov. 6 | 179 | 44 | 69 | 678 |
| Brough, William, Jr., Warren, Tex. Logging-truck | 531,503 | Dec. 25 | 2523 | 603 | 69 | 1723 |
| Brower, George L. (See Gist, Lane, assignor.) | | | | | | |
| Brown, Alexander T., Syracuse, assignor to Union Typewriter Company, New York, N. Y. Type-writer inking-ribbon | 528,142 | Oct. 30 | 2479 | 600 | 69 | 517 |
| Brown, B. B. (See Clark, William H., assignor.) | | | | | | |
| Brown & Bailey. (See Craw, Joseph T., assignor.) | | | | | | |
| Brown, Benjamin P., *et al.* (See Dobbins, Douglas, assignor.) | | | | | | |
| Brown & Besly, Incorporated. (See Brown, Reuben L., assignor.) | | | | | | |
| Brown, Charles J., Cleveland, Ohio. Clothes-line fastener | 529,703 | Nov. 27 | 2106 | 505 | 69 | 1079 |
| Brown, Charles W., Chicago, Ill. Mechanical boiler-cleaner | 526,853 | Oct. 2 | 299 | 72, 73 | 69 | 57 |
| Brown, Charles W., assignor to Bell Telephone Company of Canada, Limited, Montreal, Canada. Plug for establishing electrical connections | 528,520 | Nov. 6 | 12 | 5 | 69 | 648 |
| Brown, Clarence L., Canfield, Ohio. Animal-trap | 527,044 | Oct. 9 | 611 | 148 | 69 | 130 |
| Brown, Cyril P., Spring Lake, Mich. Music-leaf turner | 527,658 | Oct. 16 | 1610 | 388 / 389 | 69 | 327 |
| Brown, Davies, *et al.* (See Fairbank and Meach, assignors.) | | | | | | |
| Brown, Edward L., Spottswood, Va. Ball-bearing for vehicles | 527,659 | Oct. 16 | 1613 | 389 | 69 | 328 |
| Brown, Edward L., San Francisco, Cal. Penholder | 529,092 | Nov. 13 | 977 | 230 | 69 | 844 |
| Brown, Edwin, Worcester, Mass., assignor to Flexible Door and Shutter Company, Worcester, Mass., and Portland, Me. Flexible door | 528,358 | Oct. 30 | 2849 | 690 | 69 | 584 |
| Brown, Edwin L. (See Wood, James C., assignor.) | | | | | | |
| Brown, Frank J., A. and S. Allen, Halstead, Kans. Double-acting pump | 530,922 | Dec. 18 | 1470 | 348 | 69 | 1314 |
| Brown, Frank J., A. and S. Allen, Halstead, Kans. Transmitting-gear for windmills | 531,504 | Dec. 25 | 2521 | 603 | 69 | 1723 |
| Brown, Henry H., New York, N. Y. Dumping car | 529,108 | Nov. 13 | 1051 | 253 | 69 | 857 |
| Brown, Henry S. (See Orcutt, Wesley G., assignor.) | | | | | | |
| Brown, James S., Eureka, Cal. Neck-yoke | 527,660 | Oct. 16 | 1614 | 389 | 69 | 328 |
| Brown, Jeannette P., Salt Lake City, Utah Ter. Life-preserver | 531,505 | Dec. 25 | 2525 | 604 | 69 | 1724 |
| Brown, John, Weston, Canada. Clothes-drier | 526,859 | Oct. 2 | 364 | 91 | 69 | 68 |
| Brown, John P., Walcott, Ind. Frame for hay-stacks | 529,589 | Nov. 20 | 1924 | 459 | 69 | 1036 |
| Brown, Joseph H., Mooresville, N. C. Well-tiling coupler | 529,776 | Nov. 27 | 2222 | 530 | 69 | 1099 |
| Brown, Joseph J. (See Grabler and Brown.) | | | | | | |
| Brown, Leander C., Boston, Mass. Drawer lock | 528,713 | Nov. 6 | 332 | 81 | 69 | 707 |
| Brown, Mathias, Madisonville, Tex. Corn or cotton planter | 530,256 | Dec. 4 | 316 | 79 | 69 | 1273 |
| Brown, Norman E., assignor of three-fourths to M. C. Barnes, E. N. Hatch, J. E. Klund, and J. Lindt, St. Joseph, Mich. Veneer-cutting machine | 528,120 | Oct. 23 | 2424 | 589 | 69 | 494 |
| Brown, Orlando. (See Grant, Charles N., assignor.) | | | | | | |
| Brown, Perry, Sharonville, Ohio. Trace-fastening | 526,681 | Oct. 2 | 18 | 5 | 69 | 6 |
| Brown, Reuben H., New Haven, Conn. Expansion-bit | 530,823 | Dec. 18 | 1472 | 349 | 69 | 1314 |
| Brown, Reuben L., assignor to Brown & Besly, Incorporated, Chicago, Ill. Manufacturing indexes | 529,477 | Nov. 20 | 1731 | 412 | 69 | 1000 |
| Brown, Richard H., St. Louis, Mo. Locomotive or other furnace | 528,568 | Nov. 6 | 106 | 27 | 69 | 666 |
| Brown, Robert H. (See Chambers, Josephus C., assignor.) | | | | | | |
| Brown, Robert J., and J. E. Register, Logansport, La. Combined cotton chopper and cultivator | 529,061 | Nov. 13 | 973 | 230 | 69 | 843 |
| Brown, Samuel G. (See Brown, William A. and S. G.) | | | | | | |
| Brown, Tristram D. (See Greene, John W., assignor.) | | | | | | |
| Brown, William, *et al.* (See Miller, Alexander, assignor.) | | | | | | |
| Brown, William A. and S. G., Lynn, Mass. Stall-door | 528,849 | Nov. 6 | 600 | 142 | 69 | 755 |
| Brown, William B., assignor of one half to F. M. North, Labaddie, Mo. Knotter for harvestors | 531,152 | Dec. 18 | 1885 | 447 | 69 | 1588 |
| Browne, Arthur B., Cambridge, Mass., assignor to American Lead Company, Kittery, Me. Treating lead hydrate produced by electrolysis | 527,850 | Oct. 23 | 1896 | ..... | 69 | 396 |
| Browne, Arthur W., Prince's Bay, N. Y., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dental chair | 529,641 | Nov. 20 | 2004 | 479 / 480 | 69 | 1050 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Browne, George W., and J. W. Little, Brooklyn, N. Y. Motor | 528,461 | Oct. 30 | 3034 | 736 | 69 | 616 |
| Browne, William F., New York, N. Y. Balanced steam-actuated valve | 531,434 | Dec. 25 | 2388 | 571 | 69 | 1698 |
| Browne, William H., Ticonderoga, N. Y. Waterproofing compound | 528,848 | Nov. 6 | 599 | ..... | 69 | 755 |
| Brownell, Wilmot A., Boston, Mass., and J. B. Seager, Hancock, Mich. Electric burglar-alarm | 528,589 | Nov. 6 | 108 | 27 | 69 | 666 |
| Brownlee, Joseph P., assignor to M. H. Brownlee, Galva, Ill. Board roof | 530,009 | Nov. 27 | 2650 | 636 | 69 | 1182 |
| Brownlee, Marian H. (See Brownlee, Joseph P., assignor.) | | | | | | |
| Brownlees, George, Narracoorte, South Australia. Thill-coupling | 529,590 | Nov. 20 | 1925 | 459 | 69 | 1036 |
| Brown's Lumber Company. (See Hicks, Horace D., assignor.) | | | | | | |
| Brownstein, Benjamin, Philadelphia, Pa. Gripper for cable railways | 528,359 | Oct. 30 | 2851 | 691 | 69 | 584 |
| Brubaker, William, Stoyestown, Pa. Mail-bag | 527,402 | Oct. 16 | 1193 | 293 | 69 | 250 |
| Bruce, Alfred. (See Bongfeldt, Charles J., assignor.) | | | | | | |
| Bruce, William A. (See Boswell, George G. F., assignor.) | | | | | | |
| Brückert, Firmin. (See Delattre and Brückert.) | | | | | | |
| Bruckman, Ernest G. (See Kraump, Charles F., assignor.) | | | | | | |
| Bruckner, Charles C., assignor to National Engraving Machine Company, Chicago, Ill. Engraving-machine | 529,851 | Nov. 27 | 2358 | 563 / 564 | 69 | 1125 |
| Bruederle, Charles A., Fond du Lac, Wis. Insecticide | 527,234 | Oct. 9 | 910 | ..... | 69 | 185 |
| Bruger, Theodor, assignor to Hartmann & Braun, Bockenheim, near Frankfort-on-the-Main, Germany. Electric meter | 531,153 | Dec. 18 | 1886 | 447 | 69 | 1589 |
| Brumlen, Ernest. (See Brumlen, Ludwig and E.) | | | | | | |
| Brumlen, Ludwig and E., Cuero, Tex. Insecticide | 530,010 | Nov. 27 | 2651 | ..... | 69 | 1182 |
| Brunbauer, Ferdinand, Vienna, Austria-Hungary. Injector. (Reissue) | 11,456 | Dec. 11 | 1492 | 345 | 69 | 1495 |
| Bruner, Preston M., St. Louis, Mo. Floor construction | 530,544 | Dec. 11 | 1184 | 288 | 69 | 1445 |
| Brunner, Alfred, Laupen, Switzerland. Eyeglass folding frame | 531,095 | Dec. 18 | 1776 | 423 | 69 | 1568 |
| Bruno, Theodore, Saginaw, Mich. Stave jointing and crozing machine | 531,154 | Dec. 18 | 1888 | 448 | 69 | 1589 |
| Brupbacher, Ernst. (See Brupbacher, Heinrich and E.) | | | | | | |
| Brupbacher, Heinrich and E., Zurich, Switzerland. Cushion or mattress | 529,852 | Nov. 27 | 2361 | 564 | 69 | 1126 |
| Brussel, Richard. (See Rosenhauer and Brussel.) | | | | | | |
| Brust, George, D. F. Reinhard, and L. P. Dunkel, Mount Carmel, Ill. Lock | 527,105 | Oct. 9 | 701 | 172 | 69 | 146 |
| Bruycker, August M. H. de. (See Bruycker, Carl L. C. de, M. W. H., and A. M. H.) | | | | | | |
| Bruycker, Carl L. C. de, M. W. H., and A. M. H., Brooklyn, N. Y. Composition of matter for paint | 529,241 | Nov. 13 | 1287 | ..... | 69 | 899 |
| Bruycker, Max W. H. de. (See Bruycker, Carl L. C. de, M. W. H., and A. M. H.) | | | | | | |
| Bryant, Charles A., Wakefield, Mass., assignor to Consolidated Safety Pin Company, Bloomfield, N. J. Safety-pin | 531,456 | Dec. 25 | 2448 | 583 | 69 | 1709 |
| Bryant, Isaac S., La Junta, Colo. Mechanical movement | 528,412 | Oct. 30 | 2402 | 711 | 69 | 600 |
| Bryant, Luther P. (See Cary, James H., assignor.) | | | | | | |
| Bryce, Andrew, Allegheny, assignor to Bryce Universal Fuel Firing Apparatus Company, Pittsburg, Pa. Grate | 529,242 | Nov. 13 | 1288 | 309 | 69 | 899 |
| Bryce Universal Fuel Firing Apparatus Company. (See Bryce, Andrew, assignor.) | | | | | | |
| Bryner, G. W. (See Balsey, Charles H., assignor.) | | | | | | |
| Bubier, Joseph A., Boston, Mass. Grass-catcher for lawn-mowers | 530,084 | Dec. 4 | 14 | 4 | 69 | 1217 |
| Buchanan, Charles G., New York, N. Y. Magnetic-ore separator | 531,301 | Dec. 25 | 2163 | 517 / 518 | 69 | 1654 |
| Buchanan, Louis A., Stanford University, Cal. Triturator | 529,361 | Nov. 20 | 1496 | 360 | 69 | 960 |
| Buchanan, Luther H., *et al.* (See Conrad, William H., assignor.) | | | | | | |
| Buchsbaum, Maurice, Chicago, Ill. Invoice or other file | 528,285 | Oct. 30 | 2726 | 658 | 69 | 562 |
| Buck & Co., M. M. (See Moyle, Leigh, assignor.) | | | | | | |
| Buck, Henry, Mount Morris, Ill. Wire fence | 528,627 | Nov. 6 | 181 | 44 | 69 | 679 |
| Buckener, Moses L. S., *et al.* (See Heaton, John S., assignor.) | | | | | | |
| Buckeye Automatic Car Coupler Company. (See Timms, James, assignor.) | | | | | | |
| Buckland, Amos B., Rochester, N. Y. Door-securer | 526,683 | Oct. 2 | 21 | 5 | 69 | 7 |
| Buckley, William, Sheffield, England. Packing for pistons | 526,682 | Oct. 2 | 19 | 5 | 69 | 6 |
| Bucklin Copy Holder Company. (See Bucklin, John E., assignor.) | | | | | | |
| Bucklin, John E., Washington, D. C. Tobacco dressing and feeding machine | 531,259 | Dec. 18 | 2081 | 497 / 498 / 499 | 69 | 1623 |
| Bucklin, John E., Washington, D. C., assignor to Bucklin Copy Holder Company, Richmond, Va. Copy-holder | 526,996 | Oct. 2 | 523 | 128 | 69 | 98 |
| Buckman, Samuel Y., Pottstown, Pa. Machine for cutting sheet-metal plates | 530,322 | Dec. 4 | 431 | 107 | 69 | 1293 |
| Buckman, Samuel Y., Pottstown, Pa. Feeding device for apparatus for coating metal plates | 530,323 | Dec. 4 | 432 | 108 | 69 | 1294 |
| Buddle, George T., assignor of one-half to E. S. Harvey, Chicago, Ill. Door-hanger | 529,777 | Nov. 27 | 2224 | 530 | 69 | 1100 |
| Buell, Edward W. (See Conkling and Buell.) | | | | | | |
| Buffalo Dental Manufacturing Company. (See Lewis, Theodore G., assignor.) | | | | | | |
| Buffalo Forge Company. (See Wendt, Henry, assignor.) | | | | | | |
| Buffington, Leroy S., Minneapolis, Minn., and W. C. Jones, Chicago, Ill. Electric elevator-controller | 530,578 | Dec. 11 | 992 | 232 | 69 | 1396 |
| Buhoup, Harry C., Chicago, Ill. Car-vestibule diaphragm or face-plate | 526,803 | Oct. 2 | 218 | 52, 53 | 69 | 41 |
| Buhoup, Harry C., Chicago, Ill. Car-vestibule diaphragm | 530,745 | Dec. 11 | 1186 | 280 | 69 | 1445 |
| Buick, David D., Detroit, Mich. Float-valve | 529,243 | Nov. 13 | 1289 | 310 | 69 | 899 |
| Bukenhofer, Thomas, and E. H. Weiss, Terre Haute, Ind. Portable coal-box | 528,072 | Oct. 23 | 2347 | 566 | 69 | 474 |
| Bulger, James, Chicago, Ill. Conveyer | 529,159 | Nov. 13 | 1138 | 275 | 69 | 874 |
| Bull, Jeremiah N., Springfield, Mass. Bag | 529,478 | Nov. 20 | 1732 | 413 | 69 | 1001 |
| Bullard, Charles W., assignor to Bullard & Gormley Company, Chicago, Ill. Door-hanger | 529,642 | Nov. 20 | 2006 | 480 | 69 | 1051 |
| Bullard & Gormley Company. (See Bullard, Charles W., assignor.) | | | | | | |
| Bullock, Edward J., Wallingford, Conn. Insulator | 527,317 | Oct. 9 | 1053 | 255 | 69 | 210 |
| Bullock, Edward J., assignor of one-half to M. D. Tuttle, Wallingford, Conn. Insulator-pin | 527,318 | Oct. 9 | 1054 | 255 | 69 | 210 |
| Bullock, Herman, Crosby, and C. E. Ward, Penn Yan, N. Y. Drier | 529,778 | Nov. 27 | 2225 | 530 / 531 | 69 | 1100 |
| Bullock, William M., Lakeville, Ind. Tube-expander | 529,244 | Nov. 13 | 1290 | 310 | 69 | 899 |
| Bulmer, George D., Duquesne, Pa. Tongs | 529,516 | Nov. 20 | 1805 | 429 | 69 | 1013 |
| Bultman, Henry E., Oak Park, Minn. Spark-arrester | 527,661 | Oct. 16 | 1615 | 390 | 69 | 328 |
| Bundren, Jesse B., and J. W. Hedges, Danville, Ky. Bag-lock | 530,011 | Nov. 27 | 2652 | 636 / 637 | 69 | 1182 |
| Bunjes, Friederick, Shiner, Tex. Wheel-plow | 529,479 | Nov. 20 | 1733 | 413 | 69 | 1001 |
| Burden, Edward R., Sidney, Ohio. Car-coupling | 530,065 | Nov. 27 | 2748 | 659 | 69 | 1200 |
| Burdick, John R., Brooklyn, N. Y. Roller thrust-bearing | 529,853 | Nov. 27 | 2363 | 564 | 69 | 1126 |
| Burger, Leopold. (See Kohn, Adolf and S., assignors.) | | | | | | |
| Burgess, C. H., *et al.* (See Fryer, Robert M., assignor.) | | | | | | |
| Burgess, Silas P., Springfield, Mass. Roach-trap | 529,109 | Nov. 13 | 1052 | 254 | 69 | 857 |
| Burgio, Charles C., Brooklyn, N. Y. Mustache-curler | 529,591 | Nov. 20 | 1926 | 459 | 69 | 1037 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Pages. |
|---|---|---|---|---|---|---|
| Burk, Lemon O., assignor to himself and D. Hopson, Corning, Ark. Valve-gear for steam-engines | 531,096 | Dec. 18 | 1777 | 424 | 69 | 1568 |
| Burk, Michael F. (See Kenison and Burk.) | | | | | | |
| Burk, Taylor C. (See Gardy, Henry D., assignor.) | | | | | | |
| Burk, William W., Cleveland, Ohio. Setting for steam-boilers | 527,106 | Oct. 9 | 702 | 172 | 69 | 146 |
| Burkart-Stalder, August, Berne, Switzerland. Heating device | 530,390 | Dec. 4 | 554 | 138 | 69 | 1316 |
| Burke, Charles C., New York, N. Y. Barreling paraffin, &c | 530,746 | Dec. 11 | 1157 | 289 | 69 | 1445 |
| Burke, Charles G., Brooklyn, N. Y. Closed-conduit electric railway | 529,704 | Nov. 27 | 2107 | 505 | 69 | 1079 |
| Burke, John O. (See Scott and Burke.) | | | | | | |
| Burke, Joseph J. (See Culbertson and Burke.) | | | | | | |
| Burke, Melancthon T., La Crosse, Wis. Horse-collar fastener | 528,143 | Oct. 30 | 2480 | 601 | 69 | 517 |
| Burke, Walter, Providence, R. I. Musical instrument | 529,893 | Nov. 27 | 2424 | 582 | 69 | 1138 |
| Burkhardt, Franklin P., assignor of three-fourths to A. M. Pershall and A. F. Nichols, Chehan, Wash. Mortise-lock | 527,011 | Oct. 2 | 555 | 135 | 69 | 105 |
| Burkholder, Alfred, Toronto, Canada. Wringing-machine | 529,592 | Nov. 20 | 1927 | 459 | 69 | 1037 |
| Burmeister, Frederick, Cleveland, Ohio. Sash-fastener | 528,656 | Nov. 6 | 213 | 60 | 69 | 690 |
| Burnham, Arthur M., Gardiner, Me. Snow-plow | 530,614 | Dec. 11 | 963 | 226 | 69 | 1406 |
| Burns, Robert. (See Coleman, Clyde J., assignor.) | | | | | | |
| Burrell, Charles F., trustee. (See Ferguson, Henry J., assignor.) | | | | | | |
| Burrell & Co., D. H. (See Feldmeier, Harvey, assignor.) | | | | | | |
| Burrell & Co., D. H. (See Lundstrom, Carl J., assignor.) | | | | | | |
| Burrell, David H., Little Falls, N. Y. Making emulsions in cheese manufacture | 530,298 | Dec. 4 | 393 | 99 | 69 | 1286 |
| Burrill, Lemuel B., Cambridge, assignor of forty-nine one-hundredths to R. H. Gray, Boston, Mass. Detonating burglar-alarm | 530,012 | Nov. 27 | 2655 | 637 | 69 | 1183 |
| Burrowes, Edward T. (See Lidback, John A., assignor.) | | | | | | |
| Burrowes, Edward T., Portland, Me. Holding device for spring-actuated shades | 529,517 | Nov. 20 | 1805 | 429 | 69 | 1013 |
| Burt, Charles A., Rochester, N. Y. Machine for cleaning can-tops | 528,462 | Oct. 30 | 3035 | 736 | 69 | 617 |
| Burt, John, Iron River, Mich. Packing-case | 529,705 | Nov. 27 | 2110 | 506 | 69 | 1080 |
| Burton, Matthew, and L. G. Beers, Chicago, Ill. Animal-trap | 530,158 | Dec. 4 | 137 | 36 | 69 | 1240 |
| Busch, Jacob, Springfield, Ohio. Cooler for beverages | 528,463 | Oct. 30 | 3037 | 737 | 69 | 617 |
| Busenbenz, Jacob J., Chicago, Ill. Time-stamp | 526,854 | Oct. 2 | 301 | 73, 74, 75 | 69 | 57 |
| Busfield, James P., Haverhill, Mass. Apparatus for molding spring-heels | 526,890 | Oct. 2 | 305 | 91 | 69 | 68 |
| Bush, Benjamin O., Kalamazoo, Mich. Release for target-traps | 531,260 | Dec. 18 | 2085 | 499 | 69 | 1624 |
| Bush, Hiram T., assignor to Ideal Manufacturing Company, Detroit, Mich. Trap | 526,991 | Oct. 2 | 524 | 128 | 69 | 98 |
| Buskirk, Thomas B. (See Dougherty, Albert G., assignor.) | | | | | | |
| Bustard, Mary E. (See Garies, Fannie M., assignor.) | | | | | | |
| Bustin, Robert, Boston, Mass., assignor of two-thirds to J. R. McConnell and J. A. Van Wart, St. Mary's, Fredericton, Canada. Hot-water bandage for treating horses | 530,085 | Dec. 4 | 15 | 4 | 69 | 1217 |
| Butcher, Jasper N., Mulvane, Kans. Railway-switch | 529,245 | Nov. 13 | 1291 | 310, 311 | 69 | 900 |
| Butler, Henry G., Kenosha, Wis. Burning clay to make ballast, &c | 529,480 | Nov. 20 | 1734 | 413 | 69 | 1001 |
| Butler, Ira C., and G. S. Shepard, Linesville, Pa. Machine for separating and cleaning potatoes | 530,086 | Dec. 4 | 17 | 4 | 69 | 1218 |
| Butler, William A., assignor to J. G. Boyd, New York, N. Y. Conduit system for electric railways | 527,265 | Oct. 9 | 960 | 233 | 69 | 193 |
| Butman, Elmer E., *et al.* (See Hill, Wilford A., assignor.) | | | | | | |
| Butt, Addison W., Springfield, Ohio. Cultivator | 530,075 | Nov. 27 | 2771 | 664, 665 | 69 | 1203 |
| Butterworth, Robert, Somerville, Mass. Calendering machine | 528,920 | Nov. 13 | 746 | 175 | 69 | 803 |
| Butts, William, assignor to C. Mulford, New York, N. Y. Ice-cutting machine | 528,073 | Oct. 23 | 2348 | 567 | 69 | 478 |
| Butz, Edward M., assignor to M. H. Butz, Allegheny, Pa. Manufacturing structural material | 526,804 | Oct. 2 | 221 | 53,54 | 69 | 42 |
| Butz, Mary H. (See Butz, Edward M., assignor.) | | | | | | |
| Butz, Walter D., Norristown, Pa. Automatic knitting-machine | 529,362 | Nov. 20 | 1498 | 360, 361 | 69 | 960 |
| Buxton, Willard H., Worcester, assignor to Lamb Manufacturing Company, Chicopee Falls, Mass. Sheet-metal shoe plate or spike | 527,403 | Oct. 16 | 1194 | 293 | 69 | 250 |
| Buzby, Charles E., assignor to F. A. Richle, Philadelphia, Pa. Scale beam and poise for testing-machines | 529,160 | Nov. 13 | 1139 | 275 | 69 | 874 |
| Buzzo, Arthur E., Ishpeming, Mich. Mining-drill | 528,850 | Nov. 6 | 601 | 142, 143 | 69 | 755 |
| Bynon, William, assignor of two-thirds to J. A. Dolphin and T. F. Jordan, Olyphant, Pa. Shaft-hanger | 529,319 | Nov. 13 | 1428 | 343 | 69 | 926 |
| Byrd, William O., Baltimore, Md. Coffee or tea pot | 528,201 | Oct. 30 | 2576 | 623 | 69 | 534 |
| Byrne, Charles, London, England. Velocipede | 527,404 | Oct. 16 | 1195 | 293, 294 | 69 | 250 |
| Byrns, James O., St. Paul, Minn. Sealing device for cash-registers | 530,924 | Dec. 18 | 1473 | 349 | 69 | 1514 |
| C. B. Cottrell & Sons Company. (See Cottrell, Edgar H., assignor.) | | | | | | |
| C. T. Ham Manufacturing Company. (See Bergener, Charles, assignor.) | | | | | | |
| Cabell, Milton S., Quincy, Ill. Feed-water purifier | 528,851 | Nov. 6 | 603 | 143 | 69 | 756 |
| Cable, James M., assignor of one-half to M. Spall, Brooklyn, N. Y. Fender | 531,155 | Dec. 18 | 1889 | 448, 449 | 69 | 1589 |
| Cabot, Harry H., Bristol, R. I. Paper-fastener | 526,855 | Oct. 2 | 306 | 75 | 69 | 58 |
| Cade, George. (See Scetrini and Cade.) | | | | | | |
| Cadwell, Jason R., Chicago, Ill. Combined fountain and sprinkler | 528,144 | Oct. 30 | 2481 | 601 | 69 | 517 |
| Caesar, Peter J., assignor of five-eighths to A. B. Peterson and C. Elg, Fergus Falls, Minn. Device for sharpening razors | 529,320 | Nov. 13 | 1429 | 344 | 69 | 926 |
| Cahoone, Edwin R. (See Greene, William A., assignor.) | | | | | | |
| Cain, John, Utica, N. Y. Roll for spinning-machines | 527,107 | Oct. 9 | 705 | 172 | 69 | 146 |
| Caird, Edward B. (See Rayner, Thomas J., assignor.) | | | | | | |
| Cairnes, Alexander B., San Diego, Cal. Extension fire-ladder and truck | 527,942 | Oct. 23 | 2110 | 506, 507 | 69 | 435 |
| Caldwell, Andrew J., Brooklyn, N. Y., assignor to H. R. Worthington, Elizabeth, N. J. Check-valve | 528,360 | Oct. 30 | 2853 | 691 | 69 | 585 |
| Caldwell, Frank G., Wheeling, W. Va. Metallic panel for ceilings | 529,593 | Nov. 20 | 1929 | 460 | 69 | 1037 |
| Caldwell, Frank G., Wheeling, W. Va. Roofing implement | 529,594 | Nov. 20 | 1930 | 460 | 69 | 1037 |
| Caldwell, John A., Vancouver, Canada. Ellipsograph | 530,822 | Dec. 11 | 1304 | 315 | 69 | 1468 |
| Calhoun, Albert C., Harrington, Del. Barrel | 526,684 | Oct. 2 | 32 | 6 | 69 | 7 |
| Callahan, Michael. (See McMullen, Peter, assignor.) | | | | | | |
| Callender, Romaine, Brantford, Canada. Telephone-exchange system | 530,324 | Dec. 4 | 433 | 108, 109, 110 | 69 | 1294 |
| Callender, Romaine, Brantford, Canada. Telephone-switch | 530,325 | Dec. 4 | 440 | 110 | 69 | 1294 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Pages. |
|---|---|---|---|---|---|---|
| Cameron, Charles H., Huron, S. D. Door-check | 531,361 | Dec. 25 | 2272 | 541 | 69 | 1675 |
| Cameron, Charles H., Chicago, Ill. Money-envelope | 531,506 | Dec. 25 | 2527 | 604 | 69 | 1724 |
| Campbell, Andrew C., Waterbury, Conn. Double-acting press | 526,892 | Oct. 2 | 368 | 92, 93 | 69 | 69 |
| Campbell, George W., Springfield, Ohio. Corn-planter | 530,926 | Dec. 4 | 442 | 110, 111 | 69 | 1295 |
| Campbell, James, Gibson, Mich. Express-messenger's safe | 529,779 | Nov. 27 | 2228 | 531 | 69 | 1100 |
| Campbell, John, assignor to Pullman's Palace Car Company, Chicago, Ill. Water-closet | 526,891 | Oct. 2 | 367 | 92 | 69 | 68 |
| Campbell, Joseph H., Chicago, Ill. Side bearing for cars | 530,579 | Dec. 11 | 907 | 222 | 69 | 1397 |
| Campbell, Malcolm, Woonsocket, R. I. Roving-frame | 531,156 | Dec. 18 | 1890 | 449 | 69 | 1589 |
| Campbell, Patrick F., Portage, Pa. Coal-mining machine | 531,049 | Dec. 18 | 1643 | 390 | 69 | 1544 |
| Campbell, Robert, South Haven, Mich. Milk-pail | 527,768 | Oct. 23 | 1793 | 432 | 69 | 378 |
| Canet, Jean B. G. A., Paris, France, assignor of one-half to Sir Joseph Whitworth & Company, Limited, Manchester, England. Recoil-actuated hydraulic breech-operating mechanism for ordnance | 531,157 | Dec. 18 | 1891 | 450, 451 | 69 | 1590 |
| Capehart, Alexander S., Bismark, N. D. Matrix-bar and making same | 529,440 | Nov. 20 | 1665 | 396 | 69 | 989 |
| Capper, Charles, Wilkinsburg, assignor of one-half to W. D. Corcoran, Pittsburg, Pa. Apparatus for casting crucible-steel | 529,321 | Nov. 13 | 1430 | 344 | 69 | 927 |
| Carden, Godfrey L. (See See and Carden.) | | | | | | |
| Carey, Michael, New York, N. Y. Envelope | 531,302 | Dec. 25 | 2166 | 518 | 69 | 1655 |
| Carey, Samuel. (See Hartshorn, Willis N., assignor.) | | | | | | |
| Carey, Wilson W., Lowell, Mass. Ring oiler-bearing | 528,714 | Nov. 6 | 333 | 81 | 69 | 707 |
| Carleton, Ernest W., and J. M. Odell, Austin, Tex. Refrigerating apparatus | 527,831 | Oct. 23 | 1897 | 455, 456 | 69 | 396 |
| Carlson, Adolph F., Attica, Ind. Insect-trap for trees, &c | 529,643 | Nov. 20 | 2007 | 480 | 69 | 1051 |
| Carlson, Androv. (See Stromberg and Carlson.) | | | | | | |
| Carlson, Conrad, Brooklyn, N. Y. Hanger apparatus for use in laying fireproof flooring | 527,353 | Oct. 9 | 1159 | 284 | 69 | 230 |
| Carlson, Edward, Chicago, Ill. Power-converter | 531,408 | Dec. 25 | 2344 | 559 | 69 | 1689 |
| Carlson, Fredrik, Chicago, Ill. Railway-gate | 526,770 | Oct. 2 | 168 | 39, 40 | 69 | 32 |
| Carlson, Gabriel, Minneapolis, Minn. Machine for scouring or cleaning candles | 527,590 | Oct. 16 | 1563 | 366 | 69 | 307 |
| Carlson, Gabriel, Minneapolis, Minn. Apparatus for scouring and cleaning candles | 527,662 | Oct. 16 | 1617 | 380 | 69 | 328 |
| Carman, Charles L., and P. W. Gates, assignors to Gates Iron Works, Chicago, Ill. Stone-crusher | 530,087 | Dec. 4 | 18 | 4, 5, 6 | 69 | 1218 |
| Carpenter, Charles W., *et al.* (See Crowell, Luther C., assignor.) | | | | | | |
| Carpenter, Charles W., *et al.* (See Roesen, Oscar, assignor.) | | | | | | |
| Carpenter, Delos, Orion, Mich. Combined slide and buckle | 528,628 | Nov. 6 | 182 | 44 | 69 | 679 |
| Carpenter, Elmer E., Worcester, Mass. Mixing-board | 529,706 | Nov. 27 | 2111 | 506 | 69 | 1080 |
| Carpenter, John L., Auburn, N. Y. Vise | 528,674 | Oct. 23 | 2351 | 567 | 69 | 479 |
| Carpenter, Rolla C., Ithaca, N. Y., assignor of one-half to C. M. Giddings, Rockford, Ill. Governor | 526,856 | Oct. 2 | 307 | 75 | 69 | 58 |
| Carpi, Vittorio, Chicago, Ill. Voice-rectifier | 527,235 | Oct. 9 | 911 | 220 | 69 | 185 |
| Carr, Austin C., *et al.* (See Rigby, Brierley K., assignor.) | | | | | | |
| Carr, John, Philadelphia, Pa., assignor of one-half to J. Erickson, Gloucester, Mass. Bicycle | 528,145 | Oct. 30 | 2483 | 601 | 69 | 518 |
| Carr, Rimmon J., Rothbury, Mich. Fence | 530,391 | Dec. 4 | 555 | 138 | 69 | 1316 |
| Carrick, Robert A. (See Delabarre, Frazer, and Carrick.) | | | | | | |
| Carrington, Edward L., Bristol, Conn. Apparatus for automatically polishing articles of manufacture | 528,852 | Nov. 6 | 604 | 143 | 69 | 756 |
| Carrington, John B. (See Elliott and Carrington.) | | | | | | |
| Carroll, Charles J., *et al.* (See Assheton, William, assignor.) | | | | | | |
| Carroll, Edgar J., assignor to W. T. Carroll, Worcester, Mass. Spring-nut for spindle-supports | 528,361 | Oct. 30 | 2854 | 691 | 69 | 585 |
| Carroll, Edgar J., assignor to W. T. Carroll, Worcester, Mass. Spindle-bearing | 528,362 | Oct. 30 | 2855 | 692 | 69 | 585 |
| Carroll, William T. (See Carroll, Edgar J., assignor.) | | | | | | |
| Carron, Pierre J. C., Pont-de-Claix-Isère, France. Brush for dynamo-electric machines | 530,058 | Dec. 4 | 22 | 6 | 69 | 1219 |
| Carter, Alfred C., Greenfield, Iowa. Ditching-machine | 531,097 | Dec. 18 | 1779 | 424 | 69 | 1508 |
| Carter-Crume Company. (See Kinnard, Will M., assignor.) | | | | | | |
| Carter, Dinsmore & Company. (See Hopkins, Robert G., assignor.) | | | | | | |
| Carter, Edward A., *et al.* (See Sweetland, Jerome B., assignor.) | | | | | | |
| Carter, John J. (See Reel, John, assignor.) | | | | | | |
| Carter, John T., Brookland, assignor of one-fourth to S. J. Haislett, Washington, D. C. Automatic railway-signal | 530,013 | Nov. 27 | 2656 | 637 | 69 | 1183 |
| Carter, William B., Mexia, Tex. Ant-trap | 528,921 | Nov. 13 | 748 | 175 | 69 | 803 |
| Cartwright, David J., Boston, Mass. Plug and receptacle for electrical purposes | 530,666 | Nov. 27 | 2749 | 659 | 69 | 1200 |
| Cartwright, David J., Boston, Mass. Arc-light hanger-board | 530,882 | Dec. 11 | 1401 | 333, 334 | 69 | 1485 |
| Carvalho, David N., New York, N. Y. Paper for bank-notes, checks, bonds, stocks, and other instruments | 531,507 | Dec. 25 | 2527 | ..... | 69 | 1724 |
| Carver, Harry. (See Walker and Carver.) | | | | | | |
| Carville, Katharine J. C., New York, N. Y. Parcel-delivery system | 530,747 | Dec. 11 | 1189 | 290 | 69 | 1416 |
| Cary, James H., Malden, assignor of one-half to L. P. Bryant, Northampton, Mass. Signaling apparatus for telephone-exchange systems | 529,594 | Nov. 27 | 2125 | 582, 583 | 69 | 1138 |
| Cary, William H., *et al.* (See Austin, William H., assignor.) | | | | | | |
| Case, Alfred W., Highland Park, Conn. Screw-propeller | 527,045 | Oct. 9 | 615 | 149 | 69 | 130 |
| Case, Cromwell O., assignor to P. & F. Corbin, New Britain, Conn. Door-stop | 528,146 | Oct. 30 | 2484 | 601 | 69 | 518 |
| Case, Cromwell O., assignor to P. & F. Corbin, New Britain, Conn. Door-knob | 528,147 | Oct. 30 | 2485 | 602 | 69 | 518 |
| Case, Cromwell O., assignor to P. & F. Corbin, New Britain, Conn. Door check or closer | 528,853 | Nov. 6 | 605 | 143, 144 | 69 | 756 |
| Case, David W. (See Allen, Ethan, assignor.) | | | | | | |
| Case, Frank E., Canton, Ohio. Surgical chair | 530,159 | Dec. 4 | 138 | 37 | 69 | 1240 |
| Case, Joseph D., Plainfield, N. J. Keyboard attachment for musical instruments | 529,895 | Nov. 27 | 2427 | 583 | 69 | 1138 |
| Case, Levi W. (See Sheldon, Cevedra B., assignor.) | | | | | | |
| Casella & Co., Leopold. (See Weinberg, Arthur, assignor.) | | | | | | |
| Casey, Henry, assignor of one-half to F. H. Strong, West Hartford, Conn. Halter | 528,760 | Nov. 6 | 419 | 101 | 69 | 722 |
| Casey, William H., Boston, Mass. Coupling-link | 529,896 | Nov. 27 | 2428 | 583 | 69 | 1139 |
| Caspar, William, Milwaukee, Wis. Spark-arrester | 530,392 | Dec. 4 | 556 | 138 | 69 | 1317 |
| Casper Automatic Patent Company. (See Williams, Orion H., assignor.) | | | | | | |
| Cass, John A., assignor of one-half to N. Hall, Ipava, Ill. Harrow-disk sharpener | 528,922 | Nov. 13 | 749 | 176 | 69 | 803 |
| Cassidy, John C., East Orange, N. J. Electric switch or cut-out | 529,363 | Nov. 20 | 1505 | 362 | 69 | 961 |
| Cassidy, John C., East Orange, N. J. Electric switch and cut-out | 529,595 | Nov. 20 | 1932 | 460 | 69 | 1047 |
| Castaing, Jean M., and J. B. Dohin, New Orleans, La. Rain-water cut-off | 529,596 | Nov. 20 | 1934 | 460 | 69 | 1058 |
| Castle, Lewis D., Greensburg, Pa., assignor to J. T. Kelly, Brooklyn, N. Y., and G. M. Jones, Pittsburg, Pa. Valve | 530,393 | Dec. 4 | 558 | 138 | 69 | 1317 |
| Castle, Peter C. D. (See Hanson, Castle, and Morrison.) | | | | | | |
| Castner, Hamilton Y., London, England. Process of and apparatus for electrolytic decomposition of alkaline salts | 528,922 | Oct. 30 | 2787 | 673 | 69 | 573 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Catlin, Ephron, and G. Rein, assignors to St. Louis Register Company, St. Louis, Mo. Street-car register | 530,067 | Nov. 27 | 2751 | 630 | 69 | 1209 |
| Catlin, Ephron, and G. Rein, assignor to St. Louis Register Company, St. Louis, Mo. Fare-register | 531,020 | Dec. 18 | 1644 | 390 | 69 | 1544 |
| Cattori, Michelangelo, Rome, Italy. Conduit for electric railways | 526,963 | Oct. 2 | 481 | 118<br>119 | 69 | 91 |
| Cauble, Daniel B., Spencer, Ind. Scythe-rack | 528,148 | Oct. 30 | 2486 | 602 | 69 | 518 |
| Cavanaugh, James D., Lebanon, assignor to N. S. Althouse and J. H. Knoll, Reading, Pa. Washing-machine | 527,360 | Oct. 9 | 1119 | 273<br>274 | 69 | 222 |
| Cayley, Claud T., and R. S. Courtman, London, England, assignors to United States Projectile Company, Brooklyn, N. Y. Making tubular articles | 529,597 | Nov. 20 | 1935 | 461 | 69 | 1038 |
| Chace, George M., Somerset, Mass. Danger-signal | 530,883 | Dec. 11 | 1403 | 334 | 69 | 1486 |
| Chadwick, Horace E., Howard, R. I. Steam or hot-water heater | 527,405 | Oct. 16 | 1197 | 294 | 69 | 250 |
| Chaffey, George, Mildura, Victoria. Automatic water-meter | 527,046 | Oct. 9 | 616 | 149 | 69 | 130 |
| Chaffin, Lewis L., Monticello, Minn. Sleigh-knee | 527,319 | Oct. 9 | 1035 | 255 | 69 | 210 |
| Chamberlain & Co., J. W. (See Chamberlain, Joseph W., assignor.) | | | | | | |
| Chamberlain, Joseph W., assignor to J. W. Chamberlain & Co., Bangor, Me. Ceiling-plate | 530,394 | Dec. 4 | 559 | 139 | 69 | 1317 |
| Chambers Brothers Company. (See King, Howard K., assignor.) | | | | | | |
| Chambers, Josephus C., assignor to R. H. Brown, Detroit, Mich. Curling-iron and heater | 526,685 | Oct. 2 | 23 | 6 | 69 | 7 |
| Champenois, Charles C., Newark, N. J. Cuff-button or stud | 528,715 | Nov. 6 | 334 | 82 | 69 | 707 |
| Champion Safety Lock and Novelty Company. (See Hasenpflug, John A., assignor.) | | | | | | |
| Chancellor, George W. (See Rust, Robert S., assignor.) | | | | | | |
| Chandler, George E., Fall River, Mass., assignor to E. Dixon, Bristol, R. I. Mechanism for actuating roving-rods of spinning-machines | 527,391 | Oct. 16 | 1507 | 366 | 69 | 308 |
| Chandler, William, North Bend, Canada. Scissors-holder and point-guard | 530,014 | Nov. 27 | 2658 | 638 | 69 | 1183 |
| Chamind, William J. (See Robinson, John, assignor.) | | | | | | |
| Chapman, Albert H., Upton, Mass. Machine for cutting bones | 527,769 | Oct. 23 | 1795 | 433 | 69 | 379 |
| Chapman, Byron J. (See Black and Chapman.) | | | | | | |
| Chardonnet, Hilaire de, Besançon, France. Manufacturing artificial silk | 531,158 | Dec. 18 | 1894 | ..... | 69 | 1590 |
| Charles, John H. (See Ormerod and Charles.) | | | | | | |
| Charmbury, Henry, Newark, N. J. Hat-lining machine | 531,098 | Dec. 18 | 1781 | 424<br>425 | 69 | 1569 |
| Chase, Andrew J., Boston, Mass. Apparatus for distilling water | 530,015 | Nov. 27 | 2659 | 638<br>639 | 69 | 1183 |
| Chase, Frederic D., Malden, Mass. Deck-iron | 527,663 | Oct. 16 | 1620 | 391 | 69 | 329 |
| Chase, Henry A., assignor to A. Watts, Boston, Mass. Combined telephonic and signaling system | 528,075 | Oct. 23 | 2352 | 568 | 69 | 479 |
| Chase, Josiah B. (See Richardson and Chase.) | | | | | | |
| Chase, Porter B (See Richardson and Chase.) | | | | | | |
| Chatterson, Robert L., Denver, Colo. Placer-machine | 528,503 | Oct. 30 | 3002 | 751<br>752 | 69 | 629 |
| Cheever, James G. (See Colvin, Byron L., assignor.) | | | | | | |
| Chenu, Charles, Etampes, France. Railway-chair | 530,925 | Dec. 18 | 1475 | 349 | 69 | 1515 |
| Cherry, Michael, and D. Dysert, Carlisle, Pa. Butchering apparatus | 527,320 | Oct. 9 | 1056 | 255 | 69 | 210 |
| Chesney, Cummings C., assignor to Stanley Laboratory Company, Pittsfield, Mass. System of transmitting and distributing electrical energy | 530,748 | Dec. 11 | 1190 | 290 | 69 | 1446 |
| Chess, Frank G., Rocker, Mont. Billiard-cue chalker | 527,770 | Oct. 23 | 1798 | 454 | 69 | 379 |
| Chicago Railway Equipment Company. (See Robischung, Henry B., assignor.) | | | | | | |
| Chicago Stamping Company. (See Sturges, Lee assignor.) | | | | | | |
| Child, Charles T., Ashland, Va., assignor to Electric Power Company, of Maine. Alternating-current motor | 528,121 | Oct. 23 | 2436 | 589 | 69 | 494 |
| Children, Edwin, Council Bluffs, Iowa. Wheel-cultivator | 528,413 | Oct. 30 | 2993 | 742 | 69 | 630 |
| Childs, Wallace, Fort Smith, Ark. Telephone-exchange system | 528,590 | Nov. 6 | 110 | 27, 28 | 69 | 666 |
| Childs, Wallace, Fort Smith, Ark. Telegraphic and telephonic exchange system | 528,591 | Nov. 6 | 116 | 28, 29 | 69 | 667 |
| Cholerton, Charles, Philadelphia, Pa. Driving mechanism for drawing-off rollers of combing-machines | 527,664 | Oct. 16 | 1621 | 391 | 69 | 329 |
| Chope, Robert L., Detroit, Mich. Coin-case | 527,266 | Oct. 9 | 964 | 234 | 69 | 194 |
| Chouteau, Pierre, St. Louis, Mo. Attachment for engines | 528,530 | Nov. 6 | 13 | 5 | 69 | 649 |
| Christgan, Henry C. (See Weber, Friederick D., assignor.) | | | | | | |
| Christiansen, Emil. (See Thanner, Leonhard, assignor.) | | | | | | |
| Christianson, Charles, Vilas, S. D. Potato-harvester | 530,395 | Dec. 4 | 560 | 139 | 69 | 1318 |
| Christianson, Knut K. A., assignor to P. A. Östberg, Stockholm, Sweden. Manufacturing billiard-balls from iron or steel | 530,257 | Dec. 4 | 317 | ..... | 69 | 1273 |
| Christman, Augustus G., Reading, Pa. Shutter-hower | 527,047 | Oct. 9 | 617 | 149 | 69 | 131 |
| Christman, Charles H., deceased; K. L. Christman, New York, N. Y., executrix. Marine enamel or paint | 531,610 | Dec. 25 | 2701 | ..... | 69 | 1759 |
| Christman, Katharine L., executrix. (See Christman, Charles H.) | | | | | | |
| Christopher, Henry M., New York, N. Y. Shower-bath apparatus | 531,303 | Dec. 25 | 2167 | 518 | 69 | 1655 |
| Christopherson, Martin H., Chicago, Ill. Elevator-operating mechanism | 526,771 | Oct. 2 | 171 | 40 | 69 | 32 |
| Church, Duane H., Waltham, Mass. Watch-movement frame | 527,771 | Oct. 23 | 1799 | 434 | 69 | 379 |
| Church, Duane H., Newton, Mass. Watch-plate | 527,772 | Oct. 23 | 1801 | 434 | 69 | 380 |
| Church, Edward O., Denver, assignor of two-thirds to J. E. Price and T. B. Stuart, Arapahoe county, Colo Device for operating elevator-doors | 527,665 | Oct. 16 | 1623 | 391 | 69 | 329 |
| Church, Frank L., Troy, N. Y. Tape-measure | 527,194 | Oct. 9 | 841 | 205 | 69 | 172 |
| Church, Frank S., assignor of one-half to W. F. Edwards, Detroit, Mich. Coin controlled phonograph | 529,019 | Nov. 13 | 904 | 213<br>214 | 69 | 830 |
| Church, George W. (See Lang, William, assignor.) | | | | | | |
| Church, Henry A. (See Salisbury, Levi E., assignor.) | | | | | | |
| Church, Isaac, Toledo, Ohio. Expansion-bolt | 527,406 | Oct. 16 | 1198 | 294 | 69 | 251 |
| Church, William L., Newton, Mass., assignor to Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Apparatus for making ice | 529,344 | Nov. 13 | 1463 | 352 | 69 | 933 |
| Church, William L., Newton, Mass., assignor to Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Apparatus for making ice | 529,345 | Nov. 13 | 1465 | 353 | 69 | 934 |
| Church, William L., Newton, Mass., assignor to Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Ice-making apparatus | 529,346 | Nov. 13 | 1469 | 353 | 69 | 934 |
| Church, William L., Newton, Mass., assignor to Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Ice-making apparatus | 529,347 | Nov. 13 | 1472 | 353 | 69 | 934 |
| Church, William L., Newton, and S. A. Reeve, Boston, Mass., assignors to Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Ice-machine | 529,341 | Nov. 13 | 1457 | 352 | 69 | 932 |
| Church, William L., Newton, and S. A. Reeve, Boston, Mass., assignors to Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Ice-making apparatus | 529,342 | Nov. 13 | 1460 | 352 | 69 | 933 |
| Church, William L., Newton, and S. A. Reeve, Boston, Mass., assignors to Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Ice-making apparatus | 529,343 | Nov. 13 | 1462 | 352 | 69 | 933 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Church, William L., Newton, and S. A. Reeve, Boston, Mass., assignors to Westinghouse, Church, Kerr & Company, Jersey City, N. J., and New York, N. Y. Apparatus for making ice | 530,494 | Dec. 4 | 741 | 182 | 69 | 1350 |
| Ciancimino, Peter, Brooklyn, and F. W. Mattocks, New York, N. Y. Dumping-scow | 527,800 | Oct. 23 | 1853 | 445 | 69 | 389 |
| Cinnamon, John, New Brighton, N. Y. Device for heating and ventilating rooms | 530,016 | Nov. 27 | 2663 | 639 | 69 | 1184 |
| Clamer, Francis J., Philadelphia, Pa. Alloying lead and zinc | 528,923 | Nov. 13 | 751 | ..... | 69 | 804 |
| Clapp, Charles W. (See Westervelt and Clapp.) | | | | | | |
| Clapp, Ralph R. (See Shearer and Clapp.) | | | | | | |
| Clapp, Richard D., Boston, Mass., assignor to J. P. C. Weis, Providence, R. I. Drilling-machine | 527,321 | Oct. 9 | 1058 | 256 | 69 | 210 |
| Clark, Albert G., Glendale, Ohio. Car-coupling | 529,020 | Nov. 13 | 906 | 214 | 69 | 831 |
| Clark, Arthur S., Saline, Mich. Windmill-regulator | 530,985 | Dec. 18 | 1582 | 375 | 69 | 1533 |
| Clark, Edwin M., Detroit, Mich. Spark-arrester for arc lamps | 531,159 | Dec. 18 | 1896 | 452 | 69 | 1590 |
| Clark, Erwin B., Grand Rapids, Mich. Combined bed and couch | 529,644 | Nov. 20 | 2007 | 480 | 69 | 1051 |
| Clark, Frederick O. (See Hazard, Dexter, assignor.) | | | | | | |
| Clark, Frederick O. (See Hodgkins, Nelson D., assignor.) | | | | | | |
| Clark, George, Carlisle, England. Machinery for addressing envelopes, &c | 531,021 | Dec. 18 | 1618 | 391 | 69 | 1545 |
| Clark, James. (See Howe and Clark.) | | | | | | |
| Clark, Joel, Hartland, assignor of one-half to N. Clark, Spokane, Wash. Car-coupling | 531,099 | Dec. 18 | 1783 | 425 | 69 | 1569 |
| Clark, John H., Boston, Mass., assignor to General Electric Company, of New York. Electric motor | 526,686 | Oct. 2 | 24 | 6 | 69 | 7 |
| Clark, John W., Du Bois, Pa. Pump attachment | 531,508 | Dec. 25 | 2528 | 604 | 69 | 1724 |
| Clark, Leroy. (See Conner and Clark.) | | | | | | |
| Clark, Malcom G. (See Arnold, Oliver, assignor.) | | | | | | |
| Clark, Martin M., assignor to Western Electric Company, Chicago, Ill. Galvanic battery | 528,286 | Oct. 30 | 2728 | 659 | 69 | 563 |
| Clark, Nelson. (See Clark, Joel, assignor.) | | | | | | |
| Clark, Richard, and L. M. Crom, Warsaw, Ohio. Printing-press | 530,505 | Dec. 11 | 762 | 187 | 69 | 1371 |
| Clark, Sigourney F., Elizabeth, N. J. Tie-plate | 529,654 | Nov. 27 | 2464 | 565 | 69 | 1126 |
| Clark Stamping Company. (See Ruthead and Anthony, assignors.) | | | | | | |
| Clark, Theodore M., Newton, Mass. Tension-spool for roll-holders | 530,327 | Dec. 4 | 445 | 111 | 69 | 1295 |
| Clark, Ulysses G., and C. Morgan, Chicago, Ill. Piano-action | 527,018 | Oct. 9 | 618 | 149 | 69 | 131 |
| Clark, Walter N., Warren, Ohio. Folding chair | 529,645 | Nov. 20 | 2008 | 481 | 69 | 1051 |
| Clark, Warren H., West Burlington, N. Y. Machine for picking and separating hops | 529,598 | Nov. 20 | 1997 | 461 | 69 | 1038 |
| Clark, William H., assignor of one-half to B. B. Brown, Erie, Pa. Calculator | 527,943 | Oct. 23 | 2114 | 507<br>508 | 69 | 436 |
| Clarke, George R., Montel, Tex., assignor to Danbury Printing Press Company, Danbury, Conn. Feeder for printing-machines | 530,089 | Dec. 4 | 92 | 6, 7 | 69 | 1219 |
| Clarke, Peter. (See Peuchen, Stanley C., assignor.) | | | | | | |
| Clarke, T. E., *et al.* (See Williams, Frederick W., assignor.) | | | | | | |
| Clarke, Thomas E. (See Lousaw and Clarke.) | | | | | | |
| Clason, Joseph A. L., Glenwood Springs, Colo. Sectional steam-generator | 530,017 | Nov. 27 | 2664 | 639 | 69 | 1184 |
| Clandy, Christian, and J. Klusmeyer; said Clandy assignor to A. L. Poe, Birmingham, Ala. Belt-fastener | 529,364 | Nov. 20 | 1507 | 362 | 69 | 961 |
| Clans, Hubert, Thale, Germany. Enameling metal-ware | 527,361 | Oct. 9 | 1120 | 274 | 69 | 222 |
| Clausen, Julius C., Hensall, Canada. Hame-tug | 528,414 | Oct. 30 | 2045 | 712 | 69 | 601 |
| Claussen, Edward E. (See Lorenz and Claussen.) | | | | | | |
| Clawson, Hiram, Clawson, assignor to A. Bess, Hamilton, Ohio. Plow-sulky | 526,805 | Oct. 2 | 221 | 54 | 69 | 42 |
| Clay, William S., Harrisburg, assignor of two-thirds to M. I. Kast, Mechanicsburg, and D. R. Miller, Harrisburg, Pa. Combination-wrench | 529,707 | Nov. 27 | 2112 | 506 | 69 | 1080 |
| Claybourne, Colin W., Indianapolis, Ind. Apparatus for burning granular fuel | 531,160 | Dec. 18 | 1897 | 452 | 69 | 1591 |
| Claybourne, Colin W., Indianapolis, Ind. Oil or gas burner | 531,509 | Dec. 25 | 2529 | 605 | 69 | 1724 |
| Claypool, Jeremiah, Marshall, Ill. Sash-holder | 527,137 | Oct. 9 | 752 | 185 | 69 | 155 |
| Cleary, John W., Brooklyn, N. Y. Vehicle | 527,666 | Oct. 16 | 1625 | 391<br>392 | 69 | 330 |
| Cleaveland, John B., Indianapolis, Ind. Wire-braiding machine | 529,021 | Nov. 13 | 907 | 215 | 69 | 831 |
| Clements, Lewis. (See Stapleton, James, assignor.) | | | | | | |
| Clerici, Fabrizio. (See Pelatan and Clerici.) | | | | | | |
| Cleveland Foundry Company. (See Whittingham, Charles, assignor.) | | | | | | |
| Cleveland Time Register Company. (See Heene, George W., assignor.) | | | | | | |
| Cleveland Wood Turning Company *et al.* (See Banwell, James, assignor.) | | | | | | |
| Click, Isaac A. (See Click, Washington B. and I. A.) | | | | | | |
| Click, Washington B. and I. A., Sherman, assignors of one-half to J. N. Touchstone, Ida, Tex. Quilting-machine | 529,548 | Nov. 20 | 1807 | 430 | 69 | 1014 |
| Cliff, Edward, Newark, N. J. Pedestal and axle-box for car-trucks | 526,857 | Oct. 2 | 311 | 76 | 69 | 59 |
| Cliff, Edward, Newark, N. J. Brake-shoe | 529,807 | Nov. 27 | 2420 | 584 | 69 | 1139 |
| Clifford, Hersey A., San Francisco, Cal. Vote registering and recording machine | 527,138 | Oct. 9 | 754 | 185 | 69 | 155 |
| Clifton, Archer E. (See Clifton, James P., assignor.) | | | | | | |
| Clifton, James P., Riverside, assignor to A. E. Clifton, Cincinnati, Ohio. Track device to automatically operate air-brakes of trains | 531,100 | Dec. 18 | 1785 | 425 | 69 | 1570 |
| Clifton Springs Manufacturing Company. (See Fuller, Myron H., assignor.) | | | | | | |
| Clifton, Thomas, *et al.* (See Smith, William R., assignor.) | | | | | | |
| Clinton, Harmon S. (See Dodge and Clinton.) | | | | | | |
| Close, Thomas J., Philadelphia, Pa. Moistening device | 527,049 | Oct. 9 | 619 | 150 | 69 | 131 |
| Closson, Nelson A., assignor to Tropical Cocoanut Company, Boston, Mass. Preparing and preserving cocoanut | 527,139 | Oct. 9 | 758 | ..... | 69 | 156 |
| Cluff, Harvey, Grand Rapids, Mich. Hydrocarbon-burner | 526,992 | Oct. 2 | 525 | 128<br>129 | 69 | 98 |
| Coan, Asa M., Algona, Iowa. Lock | 527,012 | Oct. 2 | 556 | 136 | 69 | 105 |
| Coates, Hallam F., Cambridge, Ohio. Ball-bearing wheel | 530,396 | Dec. 4 | 561 | 139 | 69 | 1318 |
| Cobb, Woodson D., Fort Worth, Tex. Trolley-catcher | 531,101 | Dec. 18 | 1787 | 426 | 69 | 1570 |
| Coburn Trolley Track Manufacturing Company. (See Sumner, William J., assignor.) | 528,149 | Oct. 30 | 2487 | 602 | 69 | 518 |
| Cochran, Alfred W., New York, N. Y. Knotter for sewing-machines | 527,407 | Oct. 16 | 1199 | 294 | 69 | 251 |
| Cochran, Edward A., New York, N. Y. Hair-clipper | 526,858 | Oct. 2 | 312 | 76 | 69 | 59 |
| Cochran, Edward A., Brooklyn, N. Y. Shearing-clippers | 526,917 | Oct. 2 | 419 | 101 | 69 | 78 |
| Cochran, James M., Jackson, Tenn. Wrench | 527,592 | Oct. 16 | 1508 | 366 | 69 | 308 |
| Cochrane, Charles E., New York, N. Y. Clothes-drier | 528,222 | Oct. 30 | 2614 | 630 | 69 | 541 |
| Cochrane, David, assignor to Harrison Safety Boiler Works, Philadelphia, Pa. Feed-water heater, purifier, and separator | 530,749 | Dec. 11 | 1191 | 290 | 69 | 1447 |
| Cochrane, John, Barrhead, near Glasgow, Scotland, and W. Walker, Salford, Manchester, England; said Walker assignor to said Cochrane. Pumping-engine | 529,678 | Nov. 20 | 2058 | 493 | 69 | 1061 |
| Cody, Richard D., Winona, Minn. Pencil-sharpener | 530,018 | Nov. 27 | 2665 | 639 | 69 | 1184 |
| Coe, Lewis D., assignor of one-half to J. A. Lamping, Leadville, Colo. Amalgamator | 531,611 | Dec. 25 | 2702 | 648 | 69 | 1759 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Coe, Walter H., Providence, R. I. Device for applying decorative films | 526,964 | Oct. 2 | 485 | 119 | 69 | 91 |
| Coerper, Carl, Cologne, Germany. Alternating-current motor | 527,195 | Oct. 9 | 843 | 205 | 69 | 172 |
| Coes, Zorester B., assignor to Niles Tool Works Company, Hamilton, Ohio. Taper-turning tool for lathes | 527,140 | Oct. 9 | 759 | 186 | 69 | 156 |
| Coffin, C. A., *et al.*, administrators. (See Van Depoele, Charles J.) | | | | | | |
| Coffin, Charles L., Detroit, Mich. Box or furnace for electric heating apparatus | 530,019 | Nov. 27 | 2666 | 640 | 69 | 1185 |
| Coffin, Charles L., Detroit, Mich. Apparatus for welding rings | 530,020 | Nov. 27 | 2668 | 640 | 69 | 1185 |
| Coffin, Charles L., Detroit, Mich. Electrically heating metal | 530,021 | Nov. 27 | 2669 | 640 | 69 | 1185 |
| Coffin, Walter E., Marshall, Tex. Car construction | 531,510 | Dec. 25 | 2532 | 605 | 69 | 1725 |
| Coggeshall, Carol H., assignor to Coggeshall Check Marker Company, St. Louis, Mo., Check-marker | 530,470 | Dec. 4 | 676 | 168, 169 | 69 | 1339 |
| Coggeshall Check Marker Company. (See Coggeshall, Carol H., assignor.) | | | | | | |
| Coghlin, John P., *et al.* (See Stearns, William E., assignor.) | | | | | | |
| Cogswell, Henry J., Hartford, Conn. Watchmaker's length-gage | 531,435 | Dec. 25 | 2390 | 572 | 69 | 1698 |
| Cohn, Nathan. (See Rapaport, Isador B., assignor.) | | | | | | |
| Cole, Aaron H., Hamilton, N. Y. Dust-proof single-delivery cover-glass magazine | 530,926 | Dec. 18 | 1477 | 350 | 69 | 1515 |
| Cole, Francis J., Baltimore, Md. Bicycle-brake | 527,179 | Oct. 16 | 1325 | 323 | 69 | 276 |
| Cole, George H., Atlanta, Ga. Faucet for supplying hot or cold water | 531,585 | Dec. 25 | 2655 | 636 | 69 | 1750 |
| Cole, Harrison, Columbus, Ohio. Drawing-instrument | 530,680 | Dec. 11 | 1081 | 263 | 69 | 1426 |
| Cole, R. D., Sr. (See Florence, George, assignor.) | | | | | | |
| Cole, Romaine C. (See Mason and Cole.) | | | | | | |
| Cole, William H., Portland, Oreg. Boot-jack attachment | 528,363 | Oct. 30 | 2857 | 692 | 69 | 585 |
| Cole, William R., Detroit, Mich. Store-service apparatus | 529,590 | Nov. 20 | 1939 | 461 | 69 | 1039 |
| Coleman, Clarence, and R. de Saussure, Roanoke, assignors of one-third to H. J. von Hemert and E. Muller, Norfolk, Va. Metallic cross-tie for railways | 529,679 | Nov. 20 | 2059 | 493 | 69 | 1061 |
| Coleman, Clyde J., assignor of one-half to R. Burns, Chicago, Ill. Electric cigar-lighter | 530,637 | Dec. 11 | 1011 | 247 | 69 | 1414 |
| Coleman, Edward P. (See Hall, Bicknell, assignor.) | | | | | | |
| Coleman, John A., Providence, R. I. Machine for making horseshoe-nails | 531,161 | Dec. 18 | 1899 | 452, 453, 454 | 69 | 1591 |
| Coleman, Robert F., Overton, Tex. Ironing-table | 529,481 | Nov. 20 | 1737 | 414 | 69 | 1001 |
| Colhoun Manufacturing Company. (See Garvey, Charles J., assignor.) | | | | | | |
| Collins, Charles S. (See Adams and Lynam, assignors.) | | | | | | |
| Collins, Charles S. (See Lynam and Adams, assignors.) | | | | | | |
| Collins, Charles S., *et al.* (See Lynam, John S., assignor.) | | | | | | |
| Collins, Edward W., Coalville, Iowa. Check-row planter | 528,761 | Nov. 6 | 420 | 101, 102 | 69 | 723 |
| Collins, Herman B., Fulton, assignor of one-half to W. H. Boles, Syracuse, N. Y. Dynamic electric heater | 527,050 | Oct. 9 | 620 | 150, 151 | 69 | 131 |
| Colquhoun, Alexander M., *et al.* (See Parker, Thomas, assignor.) | | | | | | |
| Columbia Washer Company. (See Peckham and Swan, assignors.) | | | | | | |
| Colvin, Byron L., assignor to J. G. Cheever, North Attleborough, Mass. Chain-machine | 528,076 | Oct. 23 | 2355 | 568, 569 | 69 | 480 |
| Colvin, Frank R., New York, N. Y. Telephony | 528,592 | Nov. 6 | 121 | 29 | 69 | 658 |
| Combination Collar Company. (See Eckardt, Herman, assignor.) | | | | | | |
| Combs, Andrew B., assignor of one-half to J. G. Walker, Eureka Springs, Ark. Brake for vessels | 529,708 | Nov. 27 | 2413 | 506, 507 | 69 | 1080 |
| Combs, Edgar S., assignor of one-half to I. Paine, Rochester, N. Y. Telephone-switch | 529,826 | Nov. 27 | 2314 | 551 | 69 | 1117 |
| Combs, George W., Leavenworth, Kans. Feeder for mill-rolls | 528,077 | Oct. 23 | 2361 | 570 | 69 | 481 |
| Compagnie de l'Industrie Électrique. (See Thury, René, assignor.) | | | | | | |
| Compton, Harmon, Lynnhaven, Va. Combined planter and fertilizer-distributer | 528,364 | Oct. 30 | 2858 | 692 | 69 | 586 |
| Conboy, Daniel, Toronto, Ontario, Canada. Carriage-top spring | 529,780 | Nov. 27 | 2229 | 531 | 69 | 1100 |
| Condé, Samuel L., Rockford, Ill. Copy-holder for type-writers | 528,531 | Nov. 6 | 14 | 5 | 69 | 649 |
| Cone, Norris H., Leadville, Colo. Filler-barrel | 530,397 | Dec. 4 | 562 | 140 | 69 | 1318 |
| Congelton, Osborn, and G. R. Boyd, assignors of one-third to O. H. Bair, Philadelphia, Pa. Hat-pin | 530,927 | Dec. 18 | 1478 | 350 | 69 | 1515 |
| Conkling, Allen, and E. W. Buell, Chicago, Ill., assignors to Troy Laundry Machinery Company, Limited, Troy, N. Y. Neckband-clamp | 527,408 | Oct. 16 | 1202 | 295 | 69 | 251 |
| Conkwright, Stonewall J., Winchester, Ky. Land-marker | 527,362 | Oct. 9 | 1132 | 274 | 69 | 223 |
| Conkwright, Stonewall J., Winchester, Ky. Convertible agricultural machine | 527,363 | Oct. 9 | 1123 | 274, 275, 276 | 69 | 223 |
| Conkwright, Stonewall J., Winchester, Ky. Grain-drill | 527,364 | Oct. 9 | 1124 | 274, 275, 276 | 69 | 224 |
| Conly, Mahlon S., Chicago, Ill., assignor to United States Electric Railway Signal Company, New York, N. Y. Auxiliary signaling system for railways | 528,122 | Oct. 23 | 2437 | 590 | 69 | 494 |
| Conn-Hagan Company. (See Hagan, Louis T., assignor.) | | | | | | |
| Conn, Samuel A. (See Hagan, Louis T., assignor.) | | | | | | |
| Connelly, Patrick, Rochester, N. Y. Chill for cast-iron car-wheels | 530,884 | Dec. 11 | 1404 | 334 | 69 | 1486 |
| Conner, Benjamin F., Columbia, Pa. Boiler | 528,702 | Nov. 6 | 425 | 102 | 69 | 724 |
| Conner, Francis R., Buffington, Ky. Fence-wire tightener | 529,709 | Nov. 27 | 2114 | 507 | 69 | 1081 |
| Conner, George F., Watertown, S. D. Shoe attachment for thrashing-machines | 530,090 | Dec. 4 | 25 | 7 | 69 | 1219 |
| Conner, Patrick H., and L. Clark, Monticello, Iowa. Husking-machine feed-roll | 527,409 | Oct. 16 | 1204 | 295 | 69 | 252 |
| Connet, Frederick N., and W. W. Jackson, Providence, R. I. Integrating apparatus | 529,365 | Nov. 20 | 1508 | 362, 363 | 69 | 961 |
| Conrad, William H., assignor of one-half to L. H. Buchanan and A. R. Metcalf, Pasadena, Cal. Combined folding and revolving display-rack | 531,022 | Dec. 18 | 1651 | 391 | 69 | 1545 |
| Conradson, Conrad M., Madison, Wis. Gear-cutter | 527,410 | Oct. 16 | 1206 | 295, 296 | 69 | 252 |
| Consolidated Safety Pin Company. (See Bryant, Charles A., assignor.) | | | | | | |
| Conti, James T. F., Paris, France. Motor-charging device | 531,511 | Dec. 25 | 2533 | 606, 607 | 69 | 1725 |
| Converse, Edmund. (See Turner, William A., assignor.) | | | | | | |
| Converse, Everett H., *et al.* (See Mills, Jonathan, assignor.) | | | | | | |
| Cook, Adolphus H., assignor of one-half to A. Hisey, Almira, Canada. Portable sectional fence | 530,068 | Nov. 27 | 2255 | 661 | 69 | 1201 |
| Cook, George, Buffalo, N. Y. Balanced slide-valve | 527,141 | Oct. 9 | 761 | 186 | 69 | 156 |
| Cook, Gustave. (See Gardner, Cook, and Tannenberg.) | | | | | | |
| Cook, Henry O. (See Cook, James H., Jr., assignor.) | | | | | | |
| Cook, James H., Jr., assignor of one-half to H. O. Cook, Homer, Mich. Knife | 530,913 | Dec. 11 | 1449 | 344 | 69 | 1495 |
| Cook, John B., Lansing, Mich. Trousers-stretcher | 529,690 | Nov. 20 | 1940 | 462 | 69 | 1039 |
| Cook, William M., Julian, Ala. Portable fence | 527,773 | Oct. 23 | 1802 | 434 | 69 | 780 |
| Cookerly, Charles E., assignor of one-half to F. P. Schmidt, Kansas City, Mo. Hydrocarbon-burner | 531,289 | Dec. 18 | 2139 | 512, 513 | 69 | 1635 |
| Cooley, Charles H., assignor to Pratt & Whitney Company, Hartford, Conn. Automatic grain-scale | 529,246 | Nov. 13 | 1293 | 311, 312 | 69 | 900 |



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|---|---|---|---|---|---|---|
| Cooley, Edward A., Cloverdale, Cal. Box wiring or hooping machine | 529,247 | Nov. 13 | 1299 | 312 | 69 | 901 |
| Cooley, Henry B., J. M. Noble, Hartford, Conn., and J. E. Trevor, Manchester, England. Paper-feeding machine | 530,398 | Dec. 4 | 446 | 112 | 69 | 1295 |
| Cooley, Herbert M., Kansas City, Mo. Sad-iron | 530,885 | Dec. 11 | 1405 | 331 | 69 | 1486 |
| Cooley, Robert L., assignor of one-half to J. T. Prendergast, Abilene, Kans. Band-cutting attachment for thrashing-machines | 529,601 | Nov. 20 | 1941 | 462 | 69 | 1039 |
| Cooper, Anna R., Jersey City, N. J. Knee-desk and reading-stand | 527,108 | Oct. 9 | 705 | 173 | 69 | 146 |
| Cooper Chemical Company. (See Manning, Edwin C., assignor.) | | | | | | |
| Cooper, Daniel M., Rochester, N. Y. Workman's time-recorder | 528,223 | Oct. 30 | 2615 | 630, 631 | 69 | 541 |
| Cooper, Henry C., Springfield, Ill. Manual sales recorder | 527,667 | Oct. 16 | 1626 | 392 | 69 | 330 |
| Cooper, James O., and A. S. Jacoby, Guthrie, Okla. Ter. Barrel-cover | 527,142 | Oct. 9 | 763 | 186 | 69 | 157 |
| Cooper, John D., Cheboygan, Mich. Diving apparatus | 526,667 | Oct. 2 | 25 | 7 | 69 | 7 |
| Cooper, John M. (See Robertshaw and Cooper.) | 530,398 | Dec. 4 | 564 | 140 | 69 | 1318 |
| Cooper, W. R., *et al.* (See Tatem, James W., assignor.) | | | | | | |
| Cooper, William. (See Maddox, John A., assignor.) | | | | | | |
| Cope, Marshall M., Noyo, Cal. Saw-handle | 529,063 | Nov. 13 | 977 | 230 | 69 | 844 |
| Cope, Melvin B., Milwaukee, Wis. Valve-gear for steam-engines | 531,409 | Dec. 25 | 2346 | 559, 560 | 69 | 1690 |
| Copeland, James S., Hartford, Conn., assignor to Pope Manufacturing Company, Hartford, Conn., and Portland, Me. Pedal | 527,520 | Oct. 16 | 1389 | 338 | 69 | 266 |
| Copeland, James S., Hartford, Conn., assignor to Pope Manufacturing Company, Hartford, Conn., and Portland, Me. Brake mechanism | 528,754 | Nov. 6 | 602 | 144, 145 | 69 | 757 |
| Copeland, James S., Hartford, Conn., assignor to Pope Manufacturing Company, Hartford, Conn., and Portland, Me. Crank-shaft and bearing for velocipedes | 529,110 | Nov. 13 | 1053 | 254 | 69 | 857 |
| Coppage, Benjamin D., Wilmington, Del. Latch-lock | 527,944 | Oct. 23 | 2119 | 508, 509 | 69 | 437 |
| Coppersmith, Edward, *et al.* (See Kinney, George F., assignor.) | | | | | | |
| Coppersmith Jacob, Erie, Pa. Automatic safety relief-valve for air-brakes | 527,143 | Oct. 9 | 765 | 187 | 69 | 157 |
| Coram, John C., Lowell, assignor of one-half to D. M. Belches, Brookline, Mass. Expansion-shaft | 528,170 | Oct. 30 | 2489 | 603 | 69 | 519 |
| Corcoran William D. (See Capper, Charles, assignor.) | | | | | | |
| Coriasco, Stefano, New York, N. Y. Spiral guide for machines for making wire coils | 527,945 | Oct. 23 | 2121 | 509 | 69 | 437 |
| Cork Company. (See Howard, John E., assignor.) | | | | | | |
| Corn, Henry, *et al.* (See Deming, Edward, assignor.) | | | | | | |
| Corn, Samuel, *et al.* (See Deming, Edward, assignor.) | | | | | | |
| Cornelussen, Ivar, Chicago, Ill. Journal-bearing | 531,410 | Dec. 25 | 2348 | 560 | 69 | 1690 |
| Corrington, Murray, New York, N. Y. Railway signaling system | 528,593 | Nov. 6 | 123 | 29, 30 | 69 | 668 |
| Cottrell, Edgar H., Stonington, Conn., assignor to C. B. Cottrell & Sons Company, Westerly, R. I., and New York, N. Y. Offset mechanism for printing-machines | 527,774 | Oct. 23 | 1803 | 435 | 69 | 389 |
| Cottrell, Edgar H., Stonington, Conn., assignor to C. B. Cottrell & Sons Company, Jersey City, N. J., and Westerly, R. I. Offset mechanism for printing-machines | 527,775 | Oct. 23 | 1805 | 435 | 69 | 389 |
| Cotzhausen, Alfred von, Milwaukee, Wis. Advertising or display device | 529,602 | Nov. 20 | 1944 | 462 | 69 | 1040 |
| Cotzhausen, Alfred von, Milwaukee, Wis. Knock-down display device | 529,603 | Nov. 20 | 1945 | 463 | 69 | 1040 |
| Couch, Charles A., Columbus, Ohio, assignor to E. N. Tanner, Monson, Mass. Locomotive | 528,078 | Oct. 23 | 2363 | 570 | 69 | 482 |
| Couch, Elbert M., Northampton, Mass. Machine for counterboring barrels of revolver-casings | 530,823 | Dec. 11 | 1306 | 315 | 69 | 1462 |
| Couch, Elbert M., Northampton, Mass. Machine for counterboring chambers of revolver-cylinders | 530,824 | Dec. 11 | 1307 | 315 | 69 | 1462 |
| Coughlin, Cornelius, Cincinnati, Ohio. Street-railway switch | 529,640 | Nov. 20 | 2009 | 481 | 69 | 1054 |
| Coulson, Fred A., Detroit, Mich. Child's seat for bicycles | 530,160 | Dec. 4 | 143 | 37 | 69 | 1241 |
| Coulter, Joseph M., Portland, Oreg. Steam fruit-drier | 530,506 | Dec. 11 | 765 | 187, 188 | 69 | 1372 |
| Courtman, Reuben S. (See Cayley and Courtman.) | | | | | | |
| Cousins, Jerome S., Williamsville, Mich. Well-pipe puller | 529,604 | Nov. 20 | 1947 | 463 | 69 | 1040 |
| Coverdill, Edward R., Clifton Heights, Pa. Waste or rag picker | 530,615 | Dec. 11 | 964 | 236 | 69 | 1407 |
| Covert, James C., West Troy, N. Y. Snap-hook | 530,750 | Dec. 11 | 1393 | 340 | 69 | 1447 |
| Cowdrey, Nathaniel W., Pepperell, Mass. Attachment for doors | 528,323 | Oct. 30 | 2701 | 653 | 69 | 573 |
| Cowdrick, Jesse C., Ogdensburg, N. J. Railway-rail tie | 527,668 | Oct. 16 | 1629 | 392 | 69 | 330 |
| Cox, Allen L., Wise, Ala. Baling-press | 531,163 | Dec. 18 | 1908 | 455 | 69 | 1593 |
| Cox Brass Manufacturing Company. (See Bailey, Henry E., assignor.) | | | | | | |
| Cox, Harry B., Hartford, Conn. Radiating and supply-system for thermo-electric generators | 528,924 | Nov. 13 | 752 | 176 | 69 | 804 |
| Cox, Harry B., Hartford, Conn. Sectional thermo-electric generator | 529,710 | Nov. 27 | 2115 | 507 | 69 | 1081 |
| Cox, Harry B., Hartford, Conn. Thermo-electric generator | 529,711 | Nov. 27 | 2117 | 508 | 69 | 1081 |
| Cox, Harry B., Hartford, Conn. Apparatus for casting | 531,302 | Dec. 25 | 2273 | 542 | 69 | 1675 |
| Cox, Henry M., assignor to himself and A. M. Templin, Palmer, Nebr. Corn-harvester | 531,512 | Dec. 25 | 2536 | 607 | 69 | 1726 |
| Cox, Joseph L., assignor to Duplex Printing Press Company, Battle Creek, Mich. Single-acting sheet-printing press | 529,519 | Nov. 20 | 1808 | 430, 431, 432 | 69 | 1014 |
| Cox, Joseph L., assignor to Duplex Printing Press Company, Battle Breek, Mich. Paper-web-feeding device | 531,162 | Dec. 18 | 1906 | 455 | 69 | 1592 |
| Cox, Mat, Hale's Point, Tenn. Sawmill-carriage | 528,287 | Oct. 30 | 2729 | 659 | 69 | 563 |
| Cox, Paul F., Battle Creek, Mich., assignor to Cox Type Setting Machine Company, Chicago, Ill. Type-setting machine | 528,855 | Nov. 6 | 614 | 145 | 69 | 757 |
| Cox, Paul F., Battle Creek, Mich., assignor to Cox Type Setting Machine Company, Chicago, Ill. Type setting machine | 528,856 | Nov. 6 | 614 | 145, 146 | 69 | 758 |
| Cox, Paul F., Battle Creek, Mich., assignor to Cox Type Setting Machine Company, Chicago, Ill. Apparatus for automatically justifying type | 528,857 | Nov. 6 | 621 | 146, 147 | 69 | 759 |
| Cox, Peter L., Boston, Mass. Sewing-machine | 530,471 | Dec. 4 | 679 | 169, 170 | 69 | 1340 |
| Cox, Philip D., Jasper, Fla. Combined telegraph key and sounder | 526,965 | Oct. 2 | 486 | 119 | 69 | 91 |
| Cox Type-Setting Machine Company. (See Cox, Paul F., assignor.) | | | | | | |
| Coxe, Eckley B. (See Richards, Francis H., assignor.) | | | | | | |
| Coxe, Eckley B., Drifton, Pa. Coal-breaker | 527,411 | Oct. 16 | 1207 | 296 | 69 | 252 |
| Coxe, Eckley B., Drifton, Pa. Coal-breaking apparatus | 527,412 | Oct. 16 | 1210 | 296 | 69 | 253 |
| Coyle, Robert. (See Ralya and Coyle.) | 527,593 | Oct. 16 | 1569 | 367 | 69 | 308 |
| Coyle, Thomas J., *et al.* (See Dobbins, Douglas, assignor.) | | | | | | |
| Crabtree, William N., Globe, Cal. Bandage-machine | 527,365 | Oct. 9 | 1130 | 276 | 69 | 224 |
| Craelius, Per A., Smedjebacken, Sweden. Grab for lifting cores formed by tubular rock-drills or broken or detached drill-rods, &c., from bore-holes | 529,781 | Nov. 27 | 2230 | 531 | 69 | 1101 |

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|---|---|---|---|---|---|---|
| Craig, Lee D., San Francisco, Cal. Shoe-lace clamp | 528,464 | Oct. 30 | 3038 | 737 | 69 | 617 |
| Craige, William, Paducah, Ky. Paddle-wheel | 528,858 | Nov. 6 | 624 | 147 | 69 | 760 |
| Cramby, Martinson, Bradford, England. Apparatus for cutting patterns for cloth, &c. | 527,051 | Oct. 9 | 624 | 151, 152 | 69 | 132 |
| Crampton, Richard L., Oak Park, Ill. Holder for memorandum calendars | 529,366 | Nov. 20 | 1547 | 363 | 69 | 963 |
| Crandall, Nathan W. (See Russell and Crandall.) | | | | | | |
| Crandall, Nathan W., Meriden, and E. A. Russell, Wallingford Conn. Shade-support | 527,946 | Oct. 23 | 2122 | 509 | 69 | 438 |
| Crandall, Nathan W., Meriden, and E. A. Russell, Wallingford, Conn. Shade-holder | 528,288 | Oct. 30 | 2731 | 659 | 69 | 563 |
| Crandall, Nathan W., and E. A. Russell, assignors to Housatonic Manufacturing Company, Wallingford, Conn. Shade-holder for incandescent electric lamps | 530,751 | Dec. 11 | 1195 | 291 | 69 | 1147 |
| Crane, George A. (See Warner and Crane.) | | | | | | |
| Crane, George A., Cleveland, Ohio. Steam-boiler support and wall | 527,052 | Oct. 9 | 625 | 152 | 69 | 132 |
| Craney, Thomas, Bay City, Mich. Evaporating apparatus | 528,859 | Nov. 6 | 625 | 147, 148 | 69 | 760 |
| Craw, Joseph T., Jersey City, N. J., assignor of one-half to Brown & Bailey, Philadelphia, Pa. Combined cigarette-slide and match-box | 528,763 | Nov. 6 | 426 | 103 | 69 | 724 |
| Craw, Joseph T., Jersey City, N. J., assignor of one-half to Brown & Bailey, Philadelphia, Pa. Thermometer | 530,928 | Dec. 18 | 1480 | 350 | 69 | 1515 |
| Craw, William. (See Peat, David C., assignor.) | | | | | | |
| Crawford, Edwin G., St. Louis, Mo. Shaft-locking mechanism | 530,580 | Dec. 11 | 909 | 222, 223 | 69 | 1337 |
| Crawford, William T., Tampa, Fla. Automatic railway-gate | 529,637 | Nov. 20 | 1997 | 477, 478 | 69 | 1049 |
| Crébessac, Léonce, assignor to Société Française des Moteurs Crébessac, Paris, France. Petroleum, gas, or oil engine | 530,161 | Dec. 4 | 144 | 38 | 69 | 1242 |
| Cremar, Michael D. (See Robert, Charles A., assignor.) | | | | | | |
| Cressler, Will T. (See Leavenworth, Seth H., assignor.) | | | | | | |
| Cribbs, John R., Verona, Pa. Brake for railway-cars | 528,860 | Nov. 6 | 626 | 148 | 69 | 760 |
| Crim, Jackson A., Plainville, Ill. Churn | 528,079 | Oct. 23 | 2364 | 570 | 69 | 481 |
| Crisp, Isaac A., and J. A. Stevenson, Halsey, Oreg. Band-cutter and feeder | 528,861 | Nov. 6 | 627 | 149 | 69 | 761 |
| Crisp, James E., Handley, Tex. Wire-stretcher | 528,151 | Oct. 30 | 2490 | 603 | 69 | 519 |
| Crispin, Edward, Chicago, Ill. Ornamental work and making same | 529,782 | Nov. 27 | 2230 | 532 | 69 | 1101 |
| Cristadoro, Charles, St. Paul, Minn. Multiple boring-machine | 529,712 | Nov. 27 | 2118 | 508 | 69 | 1081 |
| Crittenden, George L., Ithaca, N. Y. Attachment for rolls of paper to type-writing machines | 530,929 | Dec. 18 | 1480 | 350 | 69 | 1516 |
| Crom, Louis M. (See Clark and Crom.) | | | | | | |
| Crompton Loom Works *et al.* (See Wyman and Poole, assignors.) | | | | | | |
| Cromn, John M., Cambridge, assignor to J. L. Wesson, Boston, Mass. Electric switch | 530,472 | Dec. 4 | 680 | 170 | 69 | 1340 |
| Cronkhite, Byron E. (See Austin, Lorey T., assignor.) | | | | | | |
| Crosby, James H., Somerville, Mass. Plug-check for marine or other boilers | 530,473 | Dec. 4 | 683 | 170, 171 | 69 | 1340 |
| Crosby, James H., Somerville, Mass. Plug-check for marine or other boilers | 530,474 | Dec. 4 | 684 | 171 | 69 | 1340 |
| Crosby, Mary A., Durand, Wis. Dish-cleaner | 527,322 | Oct. 9 | 1060 | 256 | 69 | 211 |
| Crosby Steam Gage and Valve Company. (See Bosworth, Charles B., assignor.) | | | | | | |
| Crosby Steam Gage and Valve Company. (See Gassett, Oscar, assignor.) | | | | | | |
| Crosby Steam Gage and Valve Company. (See Lane, Frederick, assignor.) | | | | | | |
| Crosby Steam Gage and Valve Company. (See Wolfe, Frank L., assignor.) | | | | | | |
| Croskey, John H., and J. Locke, Pittsburg, Pa. Glass-press | 528,080 | Oct. 23 | 2365 | 571 | 69 | 481 |
| Croskey, John H., and J. Locke, Pittsburg, Pa. Manufacture of hollow glass articles | 528,081 | Oct. 23 | 2367 | 571, 572 | 69 | 482 |
| Croskey, John H., and J. Locke, Pittsburg, Pa. Insulator for electric conductors | 530,390 | Dec. 4 | 567 | 141 | 69 | 1319 |
| Croskey, John H., and J. Locke, Pittsburg, Pa. Method and apparatus for pressing glass-ware | 530,825 | Dec. 11 | 1309 | 316 | 69 | 1469 |
| Cross, Charles F., and E. J. Bevan, London, England. Manufacture of cellulose acetate | 530,826 | Dec. 11 | 1311 | ..... | 69 | 1470 |
| Cross, George W., Pittston, Pa. Coal-screen | 528,289 | Oct. 30 | 2732 | 659 | 69 | 563 |
| Cross, George W., Pittston, Pa. Screen | 529,605 | Nov. 20 | 1949 | 463 | 69 | 1041 |
| Crossley, Atkinson, Cwmavon, England. Apparatus for producing oxids | 531,459 | Dec. 25 | 2450 | 583 | 69 | 1709 |
| Crow, James R., and J. H. Mulkey, Cleveland, Tenn. Railway-switch | 526,993 | Oct. 2 | 526 | 129, 130 | 69 | 99 |
| Crowder, George W., Goldthwaite, Tex. Wire-coiling machine | 527,144 | Oct. 9 | 766 | 187 | 69 | 157 |
| Crowell, Charles F., *et al.*, trustees. (See Monks and Severy, assignors.) | | | | | | |
| Crowell, Luther C., Brooklyn, assignor to R. Hoe, T. H. Mead, and C. W. Carpenter, New York, N. Y. Machine for wrapping newspapers, &c. | 527,521 | Oct. 16 | 1391 | 338, 339 | 69 | 287 |
| Crown Cork and Seal Company. (See Painter, William, assignor.) | | | | | | |
| Crowther, Charles, Manchester, England. Hook | 527,892 | Oct. 23 | 1900 | 456 | 69 | 397 |
| Cruger, Ernest L., London, Wis. Bridle-bit | 530,022 | Nov. 13 | 909 | 215 | 69 | 831 |
| Cudell, Frank E., Cleveland, Ohio. Grinding and polishing wheel | 527,196 | Oct. 9 | 814 | 205 | 69 | 172 |
| Cuenot, Paul A., Canton, Ohio. Riveting-machine | 530,162 | Dec. 4 | 146 | 38 | 69 | 1242 |
| Culbertson, Mathew, and J. J. Burke, Wilber, Nebr.; said Culbertson assignor to said Burke. Plow attachment | 528,324 | Oct. 30 | 2702 | 673 | 69 | 573 |
| Culver, Frank S., Eau Claire, Wis. Electrical transformer | 529,925 | Nov. 13 | 753 | 176 | 69 | 804 |
| Cumming, James, Buffalo, N. Y. Machine for lengthening boiler-flues | 526,688 | Oct. 2 | 26 | 7 | 69 | 8 |
| Cummings, Adelbert W., Dunkirk, N. Y. Machine for turning over tips of stand-up collars | 530,091 | Dec. 4 | 26 | 8 | 69 | 1219 |
| Cummings & Engelman Conduit Company. (See Cummings, James F., assignor.) | | | | | | |
| Cummings, Henry H., Malden, Mass. Speed-changing and reversing mechanism | 529,713 | Nov. 27 | 2120 | 508, 509 | 69 | 1082 |
| Cummings, Henry H., Malden, Mass. Speed-changing and reversing mechanism | 529,714 | Nov. 27 | 2122 | 509 | 69 | 1082 |
| Cummings, Henry H., Malden, Mass. Speed-changing, reversing, and stopping mechanism | 529,715 | Nov. 27 | 2124 | 509 | 69 | 1083 |
| Cummings, James F., assignor to Cummings & Engelman Conduit Company, Detroit, Mich. Apparatus for manufacturing conduit sections | 528,290 | Oct. 30 | 2733 | 660 | 69 | 563 |
| Cummings, James F., Detroit, Mich., assignor of one-half to E. M. Engelman, Milwaukee, Wis. Underground conduit | 528,291 | Oct. 30 | 2734 | 660 | 69 | 564 |
| Cummings, Orie P. (See Lindstrom and Cummings.) | | | | | | |
| Cummings, William H., Utica, N. Y. Cloth-holder | 527,109 | Oct. 9 | 766 | 173 | 69 | 147 |
| Cummins, William G., and E. A. Munro, McMinnville, Tenn. Trimming attachment for sewing-machines | 529,783 | Nov. 27 | 2232 | 532 | 69 | 1101 |
| Cunningham, Frank R., and G. A. Hitchcock, Ware, Mass. Toy or puzzle | 527,522 | Oct. 16 | 1396 | 339 | 69 | 287 |
| Cunningham, William T. (See Sparmaker, Frank L., assignor.) | | | | | | |
| Curran, Charles E. (See Kleihauer, James, Jr., assignor.) | | | | | | |
| Currier, Edwin S., Peninsula, Ohio. Rock-drill | 527,669 | Oct. 16 | 1630 | 392 | 69 | 331 |
| Curry, John W., Cairo Ill. Rotatable electric contactor | 529,898 | Nov. 27 | 2430 | 584 | 69 | 1139 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Curtice, John F. (See Sweet, Warren, assignor.) | | | | | | |
| Curtis, George T. *et al.* (See Shorey, Reuben A. and G. E., assignors.) | | | | | | |
| Curtis, Simeon B., Springfield, Ill. Mechanical movement | 530,638 | Dec. 11 | 1012 | 247 | 69 | 1415 |
| Curtis, Will E., Cincinnati, Ohio. Folding-machine | 531,513 | Dec. 25 | 2537 | 607, 608 | 69 | 1726 |
| Cusac, Charles, *et al.* (See Kennedy, Frank M., assignor.) | | | | | | |
| Cuthbert, William M., Brooklyn, N. Y. System of electric block-signals for railways | 527,267 | Oct. 9 | 965 | 234, 235 | 69 | 134 |
| Cutler, Lorrain L., assignor of one-fourth to S. A. Royster, Goodland, Ind. Fluid-pressure governor | 529,111 | Nov. 13 | 1056 | 254 | 69 | 858 |
| Cutter, Henry R. (See Stanley and Braddell, assignors.) | | | | | | |
| Cyphers, Charles A., Somerville, Mass. Incubator | 530,163 | Dec. 4 | 147 | 39 | 69 | 1243 |
| D. S. Morgan & Company. (See Maul, Chris, assignor.) | | | | | | |
| D'Humy, Paul R. D., assignor of seven-tenths to A. S. Work, Chicago, Ill. Armor-plate | 530,024 | Nov. 27 | 2674 | 641, 642 | 69 | 1186 |
| Daily, Josiah, North Peoria, Ill. Bench-stop | 531,102 | Dec. 18 | 1788 | 426 | 69 | 1570 |
| Dales, William R., New York, N. Y. Liquid-dispensing apparatus | 530,681 | Dec. 11 | 1082 | 263 | 69 | 1426 |
| Dales, William R., New York, N. Y. Beer drawing and saving apparatus | 530,827 | Dec. 11 | 1312 | 306 | 69 | 1470 |
| Daley, Michael R., Fall River, Mass. Safety money-drawer | 528,082 | Oct. 23 | 2360 | 572 | 69 | 482 |
| Daly, Marcus. (See Dougherty, John S., assignor.) | | | | | | |
| Dana, Charles H., West Lebanon, N. H. Combination-roofing | 526,994 | Oct. 2 | 529 | 130 | 69 | 99 |
| Dana, Charles H., West Lebanon, N. H. Roofing tool | 526,995 | Oct. 2 | 530 | 130 | 69 | 100 |
| Danbury Printing Press Company. (See Clarke, George R., assignor.) | | | | | | |
| Dangler Stove and Manufacturing Company. (See Ruppel, Henry, assignor.) | | | | | | |
| Daniell, Frederick H. (See Lang and Daniell.) | | | | | | |
| Daniels, Cornelius F., Macon, Ga. Electric motor or dynamo | 527,776 | Oct. 23 | 1898 | 436 | 69 | 381 |
| Daniels, Fred H., Worcester, Mass. Wire-fence machine | 528,764 | Nov. 6 | 628 | 103 | 69 | 724 |
| Daniels, Rienzi A., Minneapolis, Minn. Weighing and price scale | 530,930 | Dec. 18 | 1481 | 351 | 69 | 1516 |
| Danielson, John, Alhambra Springs, Mont. Saw | 530,092 | Dec. 4 | 27 | 8 | 69 | 1220 |
| Danos, Louis, and A. Haydel, Hohen Solms, La. Cultivator | 528,415 | Oct. 30 | 2906 | 742 | 69 | 601 |
| Dare, Benjamin A. (See Smith and Dare.) | 531,514 | Dec. 25 | 2541 | 608 | 69 | 1726 |
| Darley, John W., Jr., Baltimore, Md., assignor to General Electric Company, Boston, Mass. Controller for electric locomotives | 530,507 | Dec. 11 | 766 | 187, 189, 190, 191 | 69 | 1372 |
| Darling, Elijah A. (See Begole, Gordon W., assignor.) | | | | | | |
| Darlington, J. J., trustee. (See Hubbell, Charles J., assignor.) | | | | | | |
| Daub, Henry, and D. J. Rex, Pittsburg, Pa. Show-case and barrel-cover | 527,323 | Oct. 9 | 1062 | 257 | 69 | 211 |
| Daudelin, Jean B., Fall River, Mass. Self-threading loom-shuttle | 530,329 | Dec. 4 | 448 | 112 | 69 | 1296 |
| Davenport, Frank B. (See Boswell, George G. F., assignor.) | | | | | | |
| Davenport, Walton C., assignor to W. H. Davenport, Norwich, Conn. Shell-ejector for breakdown guns | 526,690 | Oct. 2 | 33 | 9 | 69 | 9 |
| Davenport, William H. (See Davenport, Walton C., assignor.) | | | | | | |
| Daves, William, Jersey City, N. J., assignor to Hall Signal Company, of Maine. Electric railway signaling | 530,693 | Dec. 4 | 29 | 8 | 69 | 1220 |
| David, William K., Philadelphia, Pa. Calendar | 527,433 | Oct. 16 | 1242 | 296, 297 | 69 | 253 |
| Davids, Charles H., Brooklyn, N. Y. Bicycle-pedal | 527,384 | Oct. 9 | 1161 | 284 | 69 | 231 |
| Davids, E. M. Chisholm. (See Davids, John B., assignor.) | | | | | | |
| Davids, John B., assignor to E. M. C. Davids, North Dartmouth, Mass. Means for promoting combustion in furnaces | 530,299 | Dec. 4 | 394 | 99 | 69 | 1287 |
| Davidson, Andrew C., St. Thomas, Canada. Pneumatic tire for bicycles | 531,336 | Dec. 25 | 2491 | 572 | 69 | 1659 |
| Davidson, David J., *et al.* (See Pendry, William A., assignor.) | | | | | | |
| Davidson, David J., Brockway, assignor of two-thirds to A. S. and S. G. Martin, Port Huron, Mich. Agitable sieve cut-off | 527,331 | Oct. 23 | 1901 | 456 | 69 | 397 |
| Davidson, David J., assignor of two-thirds to A. S. and S. G. Martin, Port Huron, Mich. Purifier, separator, and grader | 527,335 | Oct. 23 | 1902 | 457 | 69 | 397 |
| Davidson, Frank B. (See Howe and Davidson.) | | | | | | |
| Davidson, John, Wick, Scotland. Grater for culinary purposes | 528,416 | Oct. 30 | 2947 | 713 | 69 | 601 |
| Davies, Edward, near Stourbridge, England. Apparatus for delivering mail-bags to or from trains in motion | 528,083 | Oct. 23 | 2371 | 572 | 69 | 483 |
| Davis, Albert F., Rutland, Vt. Fodder-preparing apparatus | 529,689 | Oct. 2 | 29 | 8 | 69 | 8 |
| Davis, Arthur B., Elkridge, Md. Hinge for electric apparatus | 531,515 | Dec. 25 | 2543 | 608 | 69 | 1727 |
| Davis, Arthur V., Pittsburg, Pa. Improving surfaces of aluminium | 528,515 | Oct. 30 | 3116 | ..... | 69 | 632 |
| Davis, Bergen, Newark, N. J. Electric friction-brake | 526,960 | Oct. 2 | 487 | 120 | 69 | 91 |
| Davis, Charles C., Texarkana, Ark. Coffee-pot | 531,164 | Dec. 18 | 1910 | 455 | 69 | 1593 |
| Davis, Elizabeth K. (See Davis, Frederick A. W., assignor.) | | | | | | |
| Davis, Eugene E., Rockford, Ill. Grain-binder | 529,248 | Nov. 13 | 1300 | 313 | 69 | 801 |
| Davis, Francis G., Watertown, N. Y. Shipping-cover for vehicles | 527,833 | Oct. 23 | 1900 | 456 | 69 | 397 |
| David, Frank E., La Crosse, Wis. Colter-clasp | 529,926 | Nov. 13 | 755 | 177 | 69 | 805 |
| Davis, Frederick A. W., assignor to E. K. Davis, Indianapolis, Ind. Street-box for gas or water pipes | 530,581 | Dec. 11 | 911 | 223 | 69 | 1397 |
| Davis, Frederick A. W., assignor to E. K. Davis, Indianapolis, Ind. Street-box for gas or water pipes | 530,887 | Dec. 11 | 1409 | 335 | 69 | 1487 |
| Davis, Harry P., assignor to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Method of and means for controlling electric cars | 527,947 | Oct. 23 | 2123 | 509 | 69 | 438 |
| Davis, Henry J., and J. C. McDaniel, Iron City, Ala. Spoke-socket | 529,716 | Nov. 27 | 2127 | 510 | 69 | 1083 |
| Davis, Jesse R., assignor of one-third to C. A. Wade, Parkersburg, W. Va. Electric heater | 527,324 | Oct. 9 | 1063 | 257 | 69 | 211 |
| Davis, John S., Cleveland, Ohio. Grain-binder | 530,886 | Dec. 11 | 1407 | 335 | 69 | 1486 |
| Davis, Llewellyn P., Chicago, Ill., assignor to American Wood Decorating Machine Company, New York, N. Y. Adjustable work-support | 530,258 | Dec. 4 | 319 | 79 | 69 | 1273 |
| Davis, M. J., *et al.* (See Smith, Orison M., assignor.) | | | | | | |
| Davis, Pinkney A., Frankfort, Ind. Butchering apparatus | 529,367 | Nov. 20 | 1518 | 363 | 69 | 964 |
| Davis, Rees O., San Francisco, Cal. Adjustable bracket-scaffold | 530,682 | Dec. 11 | 1083 | 263 | 69 | 1427 |
| Davis, Samuel, *et al.* (See Lamplough, Frederick, assignor.) | | | | | | |
| Davis, Stewart A., Apollo, assignor to Apollo Iron and Steel Company, Pittsburg, Pa. Method of and apparatus for rolling sheet metal | 530,094 | Dec. 4 | 30 | 9 | 69 | 1221 |
| Davis, Thomas C. (See Van Buren and Davis.) | | | | | | |
| Davis, Watts N. (See Warren, George L., assignor.) | | | | | | |
| Davis, William L., Boston, Mass., and B. F. Leach, Louisville, Ky. Device for preventing the refilling of bottles | 527,777 | Oct. 23 | 1899 | 436 | 69 | 381 |
| Davis, William W., East Orange, N. J. Lock | 529,606 | Nov. 20 | 1950 | 463 | 69 | 1041 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Davis, William W., Woodford, assignor of one-half to C. E. Frey, Sango, Tenn. Paper-hanging apparatus | 529,249 | Nov. 13 | 1302 | 313 | 69 | 902 |
| Davison, Neville C., *et al.* (See Schon, Hubert, assignor.) | | | | | | |
| Davison, Robert A. (See Lincoln, Charles L., assignor.) | | | | | | |
| Daw, Albert W. and Z. W., London, England. Valve for percussion rock-drills | 531,587 | Dec. 25 | 2661 | 638, 639 | 69 | 1751 |
| Daw, Hilder. (See Daw, Thomas G. and H.) | | | | | | |
| Daw, Thomas G. and H., Sevenoaks, England. Machine for producing stereotype matrices and type-writing | 531,586 | Dec. 25 | 2656 | 637, 638 | 69 | 1750 |
| Daw, Zacharias W. (See Daw, Albert W., and Z. W.) | | | | | | |
| Dawes, William C., Marshall, Mo. Hay-stacker | 528,862 | Nov. 6 | 628 | 149 | 69 | 761 |
| Dawson, Henry T., Salcombe England. Gas-engine | 530,508 | Dec. 11 | 780 | 191, 192, 193 | 69 | 1374 |
| Dawson, John, Brooklyn, assignor to J. W. Mason & Co., New York, N. Y. Wood-bending machine | 527,325 | Oct. 9 | 1064 | 257 | 69 | 211 |
| Day, Homer, *et al.* (See Green, William E., assignor.) | | | | | | |
| Day, Robert A., Harrogate, England. Mud-guard for vehicles | 529368 | Nov. 20 | 1520 | 364 | 69 | 964 |
| De Arden, Charles F., New York, N. Y. Device for operating gates for elevator-wells | 529,161 | Nov. 13 | 1141 | 276 | 69 | 874 |
| De Celles, Joseph H. E., Southbridge, Mass. Eyeglasses | 527,268 | Oct. 9 | 971 | 235 | 69 | 195 |
| De Celles, Joseph H. E., assignor to American Optical Company, Southbridge, Mass. Oculist's testing-frame | 528,716 | Nov. 6 | 336 | 82 | 69 | 707 |
| De Celles, Joseph H. E., assignor to American Optical Company, Southbridge, Mass. Oculist's testing frame | 528,717 | Nov. 6 | 338 | 82 | 69 | 708 |
| De Champ, Obed, Everett, Mass. Shutter-worker | 529,607 | Nov. 20 | 1952 | 464 | 69 | 1041 |
| De Grasse, George, *et al.* (See Mochn, John N., assignor.) | | | | | | |
| De Jarnatt, James F., Lamar, Mo. Check-row corn-planter | 530,259 | Dec. 4 | 320 | 80 | 69 | 1273 |
| De Knight, Clarence W., Washington, D. C. Coin-controlled exhibitor | 528,084 | Oct. 23 | 2374 | 573 | 69 | 481 |
| De la Harpe, Charles. (See Bierer and De la Harpe.) | | | | | | |
| De La Hunt, Reverdy C., Cedar Rapids, Iowa. Automatic siphon-flusher | 531,516 | Dec. 25 | 2544 | 608 | 69 | 1727 |
| De Mott, Charles W., New York, N. Y. Primary battery | 530,260 | Dec. 4 | 322 | 80 | 69 | 1274 |
| De Prengal, Fredrecks C., Washington, D. C. Gas range or cooking cabinet | 530,509 | Dec. 11 | 783 | 193 | 69 | 1374 |
| De Rycke, Jules J. J., Brooklyn, N. Y. Condenser and exhaust-pipe head | 530,023 | Nov. 27 | 2671 | 641 | 69 | 1136 |
| De Vaux, Louis. (See Russell and De Vaux.) | | | | | | |
| De Witt, Charles, Baltimore, Md. Bottle-stopper | 527,672 | Oct. 16 | 1633 | 394 | 69 | 333 |
| Deacon, Percy J., Toronto, Canada. Bicycle | 529,717 | Nov. 27 | 2129 | 510 | 69 | 1081 |
| Deakyne, James. (See Gillingham, John, assignor.) | | | | | | |
| Dean, Francis W., Cambridge, and W. E. Mathews, Boston, assignors to Taunton Locomotive Manufacturing Company, Taunton, Mass. Snow-plow for street-railways | 527,523 | Oct. 16 | 1397 | 310 | 69 | 289 |
| Dean, S. (See Robbins, Charles H., assignor.) | | | | | | |
| Deane, Charles P., Springfield, assignor to Deane Steam Pump Company, Holyoke, Mass. Direct-acting engine | 529,545 | Nov. 20 | 1855 | 441 | 69 | 1022 |
| Deane Steam Pump Company. (See Deane, Charles P., assignor.) | | | | | | |
| Death, Edward; assignor of two thirds to E. W. Wyatt, Toronto, Canada. Automatic railway gate and signal | 529,250 | Nov. 13 | 1204 | 313, 314 | 69 | 902 |
| Debosc, Albert S., Cuero, Tex. Combined railway-switch and car-replacing mechanism | 530,022 | Nov. 27 | 2670 | 641 | 69 | 1135 |
| Deck, John. (See Schultz, Adam, assignor.) | | | | | | |
| Deckebäch, Henry E., Cincinnati, Ohio. Wort-cooler | 527,197 | Oct. 9 | 844 | 206 | 69 | 172 |
| Decker, Clarence C. (See Houser and Decker.) | | | | | | |
| Decrow, William E., Boston, Mass., assignor to Gamewell Fire-Alarm Telegraph Company, New York, N. Y. Fire-alarm telegraph system | 526,893 | Oct. 2 | 370 | 93 | 69 | 69 |
| Deere & Company. (See Poole, Staley D., assignor.) | | | | | | |
| Dehner, Christ. (See Henneteld, Dehner, and Van Ness.) | | | | | | |
| Delabarre, Walter E., F. M. Frazer, and R. A. Carrick, New York, N. Y. Conduit-railway trolley | 530,828 | Dec. 11 | 1313 | 316 | 69 | 1470 |
| Delaney, Daniel L. (See Mounce and Delaney.) | | | | | | |
| Delano, Augustus A. *et al.* (See Austin, William H., assignor.) | | | | | | |
| Delano, Eben A., assignor to J. A. Seaman, Chicago, Ill. Barrel-hooping machine | 528,765 | Nov. 6 | 429 | 103, 104, 105 | 69 | 724 |
| Delattre, Auguste, and F. Brückert Ferriere-le-Grande, France. Rotary motor | 530,220 | Dec. 4 | 255 | 63 | 69 | 1262 |
| Dell, John E. (See Johnson, Luther M., assignor.) | | | | | | |
| Delorieux, John. (See Toulouse and Delorieux.) | | | | | | |
| Delug, Alois, Munich, Germany. Camera | 529,369 | Nov. 20 | 1521 | 364 | 69 | 964 |
| Deming, Edward, assignor of three-fourths to S. and H. Corn, A. Kaufman, and I. Stern, New York, N. Y. Electric machine for railway systems | 528,465 | Oct. 30 | 3039 | 737 | 69 | 617 |
| Deming, Eugene W., New Orleans, La. Process of and apparatus for defecating saccharine solutions | 531,460 | Dec. 25 | 2451 | 583, 584 | 69 | 1710 |
| Demott, William M., Brookville, Pa. Ballot-box | 529,608 | Nov. 20 | 1953 | 464 | 69 | 1041 |
| Dempsey, Edward, Philadelphia, Pa. Furniture-leg attachment | 527,145 | Oct. 9 | 767 | 187 | 69 | 157 |
| Denno, Frank, Bay City, Mich. Combined pocket-book and head-rest | 531,165 | Dec. 18 | 1911 | 456 | 69 | 1593 |
| Denson, John H. (See Shottenberg, Theodore H., assignor.) | | | | | | |
| Denison, Rial N., and F. M. Geary, Brooklyn, N. Y. Antiseptic mouthpiece for telephones | 529,609 | Nov. 20 | 1956 | 464 | 69 | 1042 |
| Denit, Charles D., *et al.* (See Parrish, George W., assignor.) | | | | | | |
| Denne, Mark T., Eastbourne, England. Shoe-sewing machine | 527,836 | Oct. 23 | 1904 | 457, 458, 459 | 69 | 398 |
| Denne, Mark T., Eastbourne, England. Sewing-machine | 529,064 | Nov. 13 | 978 | 231, 232, 233 | 69 | 844 |
| Denney, Barclay M., Camden, N. J. Automatic circular-knitting machine | 528,864 | Nov. 6 | 630 | 150 | 69 | 761 |
| Derits, Joseph, Detroit, Mich. Interchangeable storm and screen door | 529,520 | Nov. 20 | 1815 | 432 | 69 | 1015 |
| Derrick, Alice E. (See Watkins, William D., assignor.) | | | | | | |
| Derrough, James S., *et al.* (See Rush, William S., assignor.) | | | | | | |
| Descamps, Gaston, Havana, Cuba. Phosphoric acid with an absorbent | 527,670 | Oct. 16 | 1631 | ..... | 69 | 331 |
| Deshler, Henry D., Belvidere, N. J. Fish-spear | 528,865 | Nov. 6 | 633 | 150 | 69 | 762 |
| Desmend, John, assignor to Penberthy Injector Company, Detroit, Mich. Injector | 526,918 | Oct. 2 | 421 | 104 | 69 | 78 |
| Detrick, Jacob S., Baltimore, Md. Fender and brake for street-cars | 528,766 | Nov. 6 | 433 | 105, 106 | 69 | 725 |
| Dentsch, I. W., *et al.* (See Probola, Adam, assignor.) | | | | | | |
| Dentsch, Sigmund, Philadelphia, Pa. Shirt | 529,546 | Nov. 20 | 1857 | 441 | 69 | 1023 |
| Devault, Philip J., Denver, Colo. Wind reed musical instrument | 527,742 | Oct. 16 | 1749 | 422 | 69 | 353 |
| Devereux, Arthur F., Cincinnati, Ohio. Valve for steam-engines | 528,123 | Oct. 23 | 2441 | 590 | 69 | 495 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Devlin, John H. (See Doyle, Dennis, assignor.) | | | | | | |
| Devlin, Lawrence K., Helena, Mont. Railway rail | 531,200 | Dec. 18 | 2140 | 513 | 69 | 1635 |
| Devoissaud, John P., Sherman, Tex. Main slide-valve and throttle-valve for steam-engines | 530,460 | Dec. 4 | 568 | 141 | 69 | 1319 |
| Devoll, William, Erdington, England. Driving-gear for velocipedes | 527,071 | Oct. 16 | 1632 | 393 | 69 | 331 |
| Dewees, Thomas J., Palmyra, N. J., assignor to Electric Cable Construction and Maintenance Company, of Pennsylvania. Electric cable | 527,414 | Oct. 16 | 1915 | 207 | 69 | 254 |
| Dexter Folder Company. (See Dexter, Talbot C., assignor.) | | | | | | |
| Dexter, Talbot C., assignor to Dexter Folder Company, Fulton, N. Y. Paper-folding machine | 526,859 | Oct. 2 | 314 | 76, 77, 78 | 69 | 60 |
| Dexter, Talbot C., assignor to Dexter Folder Company, Fulton, N. Y. Paper-registering machine | 528,657 | Nov. 6 | 214 | 60, 61 | 69 | 600 |
| Dey, Charles H., and J. M. Anderson, Boston, Mass. Trolley-line-breaker | 528,767 | Nov. 6 | 435 | 106 | 69 | 725 |
| Diamond Electric Company. (See Scheefler, Gustave A., assignor.) | | | | | | |
| Diamond Match Company. (See Beecher and Wright, assignors.) | | | | | | |
| Diamond Match Company. (See Benham and Barlow, assignors.) | | | | | | |
| Diehmann, William. (See Brand and Diehmann.) | | | | | | |
| Dickerhoof, William H., assignor of one-half to G. W. Pollock, Cincinnati, Ohio. Guide for trolley-wheels | 531,291 | Dec. 18 | 2141 | 513 | 69 | 1635 |
| Dickerman, Enoch and E. L., Corra, Minn. Washing-machine | 529,610 | Nov. 20 | 1956 | 465 | 69 | 1042 |
| Dickerman, Ernest L. (See Dickerman, Enoch and E. L.) | | | | | | |
| Dickerson, Chilion D., Marquette, Mich. Prescription-bottle | 526,772 | Oct. 2 | 174 | 41 | 69 | 33 |
| Dickerson, Clarence, deceased, New York, N. Y.; F. Dickerson, executor. Device for filing and binding news or other papers | 528,768 | Nov. 6 | 437 | 106 | 69 | 726 |
| Dickerson, Frank, executor. (See Dickerson, Clarence.) | | | | | | |
| Dickey, Aaron F., Friedens, Pa. Wire-fence stay | 530,069 | Nov. 27 | 2757 | 661 | 69 | 1201 |
| Dickey, Orlan. (See Armstrong, William A., assignor.) | | | | | | |
| Dickinson, George W., and H. H. Warner, Tacoma, Wash. Brake for railway-cars | 531,588 | Dec. 25 | 2663 | 639 | 69 | 1751 |
| Dickson, Amos J., Glenwood Springs, Colo. Hand-stamp | 530,616 | Dec. 11 | 965 | 236 | 69 | 1407 |
| Dickson, John H., New Philadelphia, Ohio. Sash-fastener | 528,769 | Nov. 6 | 448 | 107 | 69 | 726 |
| Dieco, Charles P., Owensborough, Ky. Mosquito-net frame | 530,164 | Dec. 4 | 149 | 39 | 69 | 1242 |
| Diehl, Philip, Elizabeth, N. J., assignor to Singer Manufacturing Company of New Jersey. Shuttle for sewing-machines | 530,095 | Dec. 4 | 32 | 9 | 69 | 1221 |
| Diener, Charles, assignor of one-third to B. Bomeisl, Brooklyn, N. Y. Switch-operating device | 531,166 | Dec. 18 | 1913 | 456 | 69 | 1593 |
| Diers, Gerhard, assignor of two-thirds to J. Diers and H. Duhne, New York, N. Y. Ceiling-top | 527,013 | Oct. 2 | 557 | 136 | 69 | 105 |
| Diers, Johanna, *et al.* (See Diers, Gerhard assignor.) | | | | | | |
| Diessel, William H. C., W. O. and E. D. Foote, Mexico, Mo. Sulky | 528,947 | Nov. 13 | 756 | 177 | 69 | 805 |
| Difenderfer, James W., *et al.* (See McLaughlin, James F., assignor.) | | | | | | |
| Dill, James B. (See Records, Edward assignor.) | | | | | | |
| Dillehay, William J., Davis, W. Va. Nut-lock | 528,592 | Nov. 6 | 15 | 6 | 69 | 649 |
| Dillmore, William R., Philadelphia, Pa. Knitting-machine | 527,759 | Oct. 23 | 1816 | 437, 438 | 69 | 382 |
| Dimmick, William F., Decatur, Ill. Truss for joints of railway-rails | 527,198 | Oct. 9 | 847 | 206 | 69 | 173 |
| Dinkelacker, Jacob, Jr., Milnesville, Pa. Bolt | 531,363 | Dec. 25 | 2254 | 542 | 69 | 1675 |
| Disbrow, Reuben B., Claremount, Minn., assignor to F. B. Fargo & Company, Lake Mills, Wis. Butter-worker | 527,673 | Oct. 16 | 1635 | 394 | 69 | 332 |
| Disman, George W. (See Barhydt, James A., assignor.) | | | | | | |
| Diss, Louis P., Ilion, assignor to Wyckoff, Seamans & Benedict, New York, N. Y. Type-writing machine | 526,894 | Oct. 2 | 371 | 93, 94 | 69 | 69 |
| Distl, Victor, and A. Susky, Kladno, Austria-Hungary. Screening apparatus | 530,261 | Dec. 4 | 323 | 80 | 69 | 1274 |
| Distl, Victor, and A. Susky, Kladno, Austria-Hungary. Screening apparatus | 530,262 | Dec. 4 | 325 | 81 | 69 | 1275 |
| Dittmann, Jacob, St. Louis, Mo. Nut-lock | 529,718 | Nov. 27 | 2130 | 510 | 69 | 1084 |
| Dittmer, Albert, Berlin, Germany. Setting diamonds in cutting-tools | 529,611 | Nov. 20 | 1957 | 465 | 69 | 1042 |
| Dixon, Ezra. (See Chandler, George E., assignor.) | | | | | | |
| Dixon, George, assignor to himself, J. Musgrave, Bolton, E. Field and F. S. Morris, Adelphi, England. Fluid-pressure engine | 528,766 | Nov. 6 | 635 | 151 | 69 | 762 |
| Dixon, John G., Birkby, England. Detonator-holder or clip for use in fog railway signaling | 527,480 | Oct. 16 | 1326 | 323 | 69 | 277 |
| Dixon, John G., Birkby, England. Treadle for use in railway signaling | 527,481 | Oct. 16 | 1327 | 323 | 69 | 277 |
| Dixon, John G., Birkby, England. Switch | 527,482 | Oct. 16 | 1329 | 324 | 69 | 277 |
| Dixon, Joseph M., assignor of one-half to A. S. French, Brooklyn, N. Y. Automatic railway-switch | 528,533 | Nov. 6 | 15 | 6 | 69 | 649 |
| Dixon, Robert M., East Orange, N. J., assignor to Safety Car Heating and Lighting Company, New York, N. Y. Steam connection for four-way cocks | 528,658 | Nov. 6 | 247 | 61, 62 | 69 | 691 |
| Dixon, Robert M., East Orange, N. J., assignor to Safety Car Heating and Lighting Company, New York, N. Y. Car-heater | 528,928 | Nov. 13 | 758 | 177, 178 | 69 | 805 |
| Dixson, Charles H., assignor to H. H. Nickelson, Port Morris, N. J. Window-screen | 529,890 | Nov. 27 | 2431 | 584 | 69 | 1139 |
| Doane, Francis. (See Severy, Melvin L., assignor.) | | | | | | |
| Doane, Francis, *et al.*, trustees. (See Monks and Severy, assignors.) | | | | | | |
| Dobbins, Douglas, assignor to T. J. Coyle, W. B. Jennings, T. E. Valentine, F. N. Whitesides, W. D. Welsh, E. H. Jennings, B. P. Brown, J. T. Overstreet, and L. B. Whitesides, Franklin, and J. C. McNutt, Indianapolis, Ind. Voting-machine | 530,752 | Dec. 11 | 1197 | 291 | 69 | 1447 |
| Dodd, James, Boston, Mass. Musical instrument | 527,269 | Oct. 9 | 973 | 236 | 69 | 195 |
| Dodd, John A., Kewanee, assignor to E. K. Hayes, Galva, Ill. Corn-planter | 528,901 | Nov. 6 | 684 | 164, 165 | 69 | 772 |
| Dodge, Avery B., Rochester, N. Y. Making knitting-needles | 531,023 | Dec. 18 | 1651 | 392 | 69 | 1545 |
| Dodge, Josiah B., Sedalia, assignor of one-half to T. E. Fleming, Graham, Mo. Race-track | 529,102 | Nov. 13 | 1146 | 276 | 69 | 875 |
| Dodge Manufactoring Company. (See Orton, Lyman O., assignor.) | | | | | | |
| Dodge, Philip T., Washington, D. C., assignor to Mergenthaler Linotype Company. Linotype-machine | 530,931 | Dec. 18 | 1483 | 351 | 69 | 1516 |
| Dodge, Rodney H., and H. S. Clinton, Ancona, Ill. Implement for sharpening disk knives | 531,364 | Dec. 25 | 2275 | 542 | 69 | 1675 |
| Dodge, Walter E., Boston, Mass. Injector | 530,476 | Dec. 4 | 686 | 172 | 69 | 1341 |
| Dodge, William E., Baltimore, Md. Vessel | 529,065 | Nov. 13 | 982 | 233 | 69 | 844 |
| Dodson, Harry E., assignor to P. P. Mast & Company, Springfield, Ohio. Disk cultivator | 530,932 | Dec. 18 | 1485 | 352 | 69 | 1516 |
| Doe, Walter S., assignor of one-half to H. Thompson, Brooklyn, N. Y. Battery connection | 530,401 | Dec. 4 | 571 | 141 | 69 | 1319 |
| Doelle, Ferdinand, and H. von Glahn, New York, N. Y. Lamp | 530,402 | Dec. 4 | 572 | 142 | 69 | 1320 |
| Doerr, August T., Harvel, Ill. Hame-coupling | 529,647 | Nov. 20 | 2010 | 481 | 69 | 1052 |
| Dohin, Jean B. (See Castaing and Dohin.) | | | | | | |
| Dokkenwadel, Fredrik G., Union City, Ind. Bowling-ball | 531,103 | Dec. 18 | 1789 | 426 | 69 | 1570 |
| Dolan, Henry, Minersville, Pa. Nut-lock | 531,024 | Dec. 18 | 1653 | 392 | 69 | 1546 |
| Dolber, John E., Manchester, N. H. Thill-support | 526,691 | Oct. 2 | 34 | 9 | 69 | 9 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Dolphin, Joseph A., *et al.* (See Bynon, William, assignor.) | | | | | | |
| Dominici, Christopher. (See Scognamillo and Dominici.) | | | | | | |
| Dominick, Gustav, Cologne, Germany. Elastic wire support for beds or seats | 526,860 | Oct. 2 | 319 | 78 | 69 | 61 |
| Donnell, John, Washington, D. C. Fence | 527,780 | Oct. 23 | 1819 | 438 | 69 | 383 |
| Donnell, John W. (See Friede, Samuel M., assignor.) | | | | | | |
| Donner, Hermann, assignor to Strickmaschinenfabrik Seyfert & Donner, Gesellschaft mit Beschränkter Haftung, Chemnitz, Germany. Transferring apparatus for knitting-machines | 527,674 | Oct. 16 | 1636 | 394, 395 | 69 | 332 |
| Donoho, Thomas, Everett, Mass. Potato-digger | 530,263 | Dec. 4 | 388 | 81 | 69 | 1275 |
| Donovan, Daniel J., Buffalo, N. Y. Grappling device for roofs | 530,165 | Dec. 4 | 150 | 39 | 69 | 1242 |
| Donovan, John T., and H. L. Gardner, Springfield, Mass. Producing ozone | 527,326 | Oct. 9 | 1066 | 257 | 69 | 242 |
| Donshea, William L., New York, N. Y. Controlling electromagnetic machines | 531,365 | Dec. 25 | 2676 | 542, 543 | 69 | 1676 |
| Doolittle, Franklin L., *et al.* (See Kirtley, Harry L., assignor.) | | | | | | |
| Doran, William L., Niagara, Canada. Suspender-buckle | 527,170 | Oct. 9 | 803 | 196 | 69 | 164 |
| Dost, Rudolf, Chicago, Ill. Separable screw-cutting die | 530,166 | Dec. 4 | 151 | 40 | 69 | 1243 |
| Doster, Jules, Montreal, Canada. Hose-coupling | 528,929 | Nov. 13 | 760 | 178 | 69 | 805 |
| Dotterweich, Frederick V. (See Boesger and Dotterweich.) | | | | | | |
| Doud, Royal H., Chicago, Ill. Process of and apparatus for destroying noxious gases | 528,718 | Nov. 6 | 339 | 82 | 69 | 708 |
| Dougherty, Albert G., Chambersburg, assignor of two-thirds to T. B. Buskirk, Paoli, Ind. Self-acting breech-loading gun | 529,521 | Nov. 20 | 1816 | 432 | 69 | 1015 |
| Dougherty, John S., assignor to M. Daly, Anaconda, Mont. Mechanism for handling molten metal | 528,770 | Nov. 6 | 440 | 107 | 69 | 726 |
| Dougherty, John S., assignor to M. Daly, Anaconda, Mont. Method of recovering concentrates and apparatus for carrying out said method | 530,753 | Dec. 11 | 1199 | 291, 292, 293 | 69 | 1148 |
| Douglass, J. Walter. (See Payne, William H., assignor.) | | | | | | |
| Donsman, James H., Milwaukee, Wis. Automatic check-valve | 531,304 | Dec. 25 | 2168 | 518 | 69 | 1655 |
| Dow, Rion L., Hartford, Conn. Envelope | 527,948 | Oct. 23 | 2124 | 510 | 69 | 438 |
| Downie, Robert M., assignor to Keystone Driller Company, Beaver Falls, Pa. Drilling-machine | 527,237 | Oct. 9 | 913 | 221 | 69 | 186 |
| Downing, Leverett H., North Andover, Mass. Shuttle-box-operating mechanism for looms | 529,163 | Nov. 13 | 1144 | 276 | 69 | 875 |
| Downing, Thomas J., Lincoln, Ill. Type-writing machine | 529,522 | Nov. 20 | 1818 | 433 | 69 | 1016 |
| Doyle, Albert T. (See Mathews and Doyle.) | | | | | | |
| Doyle, Dennis, assignor of one-half to J. H. Devlin, Worcester, Mass. Bottling apparatus | 526,773 | Oct. 2 | 175 | 41 | 69 | 33 |
| Doyle, Eleanor L. (See Doyle, John H., assignor.) | | | | | | |
| Doyle, John H., assignor to E. L. Doyle, Chicago, Ill. Hook and eye | 530,953 | Dec. 18 | 1487 | 352 | 69 | 1517 |
| Doyle, William J. C., assignor of one-half to T. Beckley, Aspen, Colo. Multiple blasting-fuse | 530,025 | Nov. 27 | 2676 | 642 | 69 | 1187 |
| Drake, David A., Englewood, Ill. File-case | 527,949 | Oct. 23 | 2125 | 510 | 69 | 438 |
| Drake, I. N., *et al.* (See Harvey, Isaac, assignor.) | | | | | | |
| Drake, James A. (See Weyman and Drake.) | | | | | | |
| Drake, Jesse, Jackson, Miss. Engine-pilot | 528,152 | Oct. 30 | 2491 | 603 | 69 | 519 |
| Drake, Owen, Armada, Mich. Horse collar fastener | 529,523 | Nov. 20 | 1822 | 433 | 69 | 1016 |
| Drake, Thomas, Huddersfield, England. Electrolytic apparatus for the manufacture of chlorin and caustic soda | 528,153 | Oct. 30 | 2492 | 603 | 69 | 520 |
| Drake, William H., and J. C. Green, Hackettstown, N. J.; said Green assignor to said Drake. Fire grate | 527,778 | Oct. 23 | 1813 | 437 | 69 | 382 |
| Draper, George O., assignor to G. Draper & Sons, Hopedale, Mass. Loom | 527,014 | Oct. 2 | 558 | 136 | 69 | 105 |
| Draper, George O., assignor to G. Draper & Sons, Hopedale, Mass. Centering device for spindles | 527,015 | Oct. 2 | 562 | 137 | 69 | 106 |
| Draper, John, *et al.* (See Holmgren, Alfred, assignor.) | | | | | | |
| Draper & Sons, George. (See Draper, George O., assignor.) | | | | | | |
| Draper & Sons, George. (See Morrill, Ernest L., assignor.) | | | | | | |
| Draper & Sons, George. (See Northrop, James H., assignor.) | | | | | | |
| Draper & Sons, George. (See Rhoades, Alonzo E.) | | | | | | |
| Draper, Tronson, Petrolia, Canada. Valve-facing tool | 530,167 | Dec. 4 | 152 | 40 | 69 | 1243 |
| Draver, Emil R., assignor to F. N. Draver, Alliance, Nebr. Bolting-reel | 528,504 | Oct. 30 | 3101 | 752 | 69 | 629 |
| Draver, Emil R., assignor to F. N. Draver, Alliance, Nebr. Dust-collector | 531,517 | Dec. 25 | 2545 | 609 | 69 | 1727 |
| Draver, Florence N. (See Draver, Emil R., assignor.) | | | | | | |
| Drawbaugh, Daniel, Eberly's Mill, Pa., assignor to Pneumatic and Electric Tool Company, New York, N. Y. Pneumatic tool | 530,934 | Dec. 18 | 1488 | 352 | 69 | 1517 |
| Dredge, Edgar, London, England. Door-check | 527,053 | Oct. 9 | 626 | 152 | 69 | 132 |
| Dreher Manufacturing Company. (See Lichtenhein, Abraham, assignor.) | | | | | | |
| Dressel, George C., New York, N. Y. Rotatable signal-lamp | 527,054 | Oct. 9 | 627 | 152 | 69 | 132 |
| Drinkwater, Orlo R., Cedar Point, Kans. Wagon-bed-lifting apparatus | 530,168 | Dec. 4 | 153 | 40 | 69 | 1243 |
| Dromgoole, Joseph P., Philadelphia, Pa. Safety-net | 527,594 | Oct. 16 | 1511 | 367 | 69 | 309 |
| Dravedal, Gilbert, West Duluth, Minn. Plow | 531,167 | Dec. 18 | 1916 | 456 | 69 | 1594 |
| Drucker, Nathan, Cincinnati, Ohio. Trunk | 529,482 | Nov. 20 | 1738 | 414 | 69 | 1002 |
| Druen, Bernard D., New Haven, Conn. Spring trace-post | 527,595 | Oct. 16 | 1513 | 367 | 69 | 309 |
| Druen, Bernard D., New Haven, Conn. Coach-step | 527,596 | Oct. 16 | 1514 | 367 | 69 | 309 |
| Dryden, William, Brooklyn, N. Y. Marine velocipede | 531,104 | Dec. 18 | 1790 | 426 | 69 | 1571 |
| Du Bois, Rhesa G. (See Horton, Emmet, assignor.) | | | | | | |
| Du Brul, Napoleon, Cincinnati, Ohio. End-opening wooden cigar-mold | 530,403 | Dec. 4 | 374 | 142 | 69 | 1320 |
| Du Marais, Marie E. B., Paris, France. Pumping | 530,754 | Dec. 11 | 1201 | ..... | 69 | 1418 |
| Dubelman, John, assignor of two-thirds to W. H. Ashwell and C. R. Robertson, Detroit, Mich. Oil-burner | 528,292 | Oct. 30 | 2735 | 660 | 69 | 564 |
| Dubois, Louis E., Toronto, Canada. Life-saving guard for cars | 527,970 | Oct. 9 | 974 | 236, 237 | 69 | 195 |
| Duckham, Frederic E., London, England. Conveying materials | 528,417 | Oct. 30 | 2948 | 713 | 69 | 601 |
| Duckham, Frederic E., London, England. Grain-conveyer | 528,418 | Oct. 30 | 2949 | 714 | 69 | 601 |
| Duckham, Frederic E., London, England. Pneumatic grain-conveyer | 528,419 | Oct. 30 | 2950 | 714 | 69 | 602 |
| Duckham, Frederic E., London, England. Pneumatic apparatus for conveying grain | 530,829 | Dec. 11 | 1314 | 316 | 69 | 1470 |
| Duehnig, Dominic. (See Lash, William, assignor.) | | | | | | |
| Duff Construction Company *et al.* (See Duff, John W., assignor.) | | | | | | |
| Duff, John W., *et al.* (See Mewer, William J., assignor.) | | | | | | |
| Duff, John W., assignor to W. J. Mewer and Duff Construction Company, Old Orchard, Me. Rotary support for hand-drills | 529,023 | Nov. 13 | 910 | 215, 216 | 69 | 831 |
| Duff Manufacturing Company. (See Barrett, Josiah, assignor.) | | | | | | |
| Duffin, George S., Cheneyville, Ill. Trace | 528,771 | Nov. 6 | 441 | 107, 108 | 69 | 727 |
| Duffy, Joseph, Terre Haute, Ind. Horse-boot | 528,249 | Oct. 30 | 2667 | 642 | 69 | 552 |
| Duguid, John B., Toledo, Ohio. Fastener for telescopic traveling-cases | 526,829 | Oct. 2 | 261 | 63 | 69 | 49 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Duhng, Henry, *et al.* (See Diers, Gerhard, assignor.) | | | | | | |
| Dührkop, Fritz, New York, N. Y. Machine for shaping and cutting dough | 530,582 | Dec. 11 | 912 | 223, 224 | 69 | 1398 |
| Duljé, Eustache R., Newark, N. J. Shoe-lace fastener | 526,830 | Oct. 2 | 262 | 64 | 69 | 50 |
| Dunbar, John W., Indianapolis, Ind. Rotary plow | 526,806 | Oct. 2 | 225 | 55 | 69 | 42 |
| Dunecker, William F., assignor to J. Shaar, Steelton, Pa. Car-fender | 529,370 | Nov. 20 | 1524 | 365 | 69 | 964 |
| Dunham, Frank A., Brockton, Mass. Welt-trimmer | 527,950 | Oct. 23 | 2126 | 510 | 69 | 438 |
| Dunham, Samuel E., Danbury, Conn. Expanding hat-block | 531,518 | Dec. 25 | 2547 | 609, 610 | 69 | 1728 |
| Dunke, August C. (See Dunke, August F. and A. C.) | | | | | | |
| Dunke, August F. and A. C., Milwaukee, Wis. Bottle-washer | 530,583 | Dec. 11 | 913 | 224 | 69 | 1398 |
| Dunkel, Louis P. (See Brust, Reinhard, and Dunkel.) | | | | | | |
| Dunkle, Abraham B., Steelton, Pa. Curtain-fixture | 531,519 | Dec. 25 | 2550 | 610 | 69 | 1728 |
| Dunkle, Allen H., East Berkley, Pa. Vapor-condenser | 530,300 | Dec. 4 | 395 | 100 | 69 | 1287 |
| Dunlap, Enoch L. (See Long, J. Milton, assignor.) | | | | | | |
| Dunlap, William A., Pittsburg, Pa. Nutmeg-grater | 527,837 | Oct. 23 | 1907 | 459 | 69 | 398 |
| Dunn, William, Philadelphia, Pa. Machine for making nut-fasteners | 531,305 | Dec. 25 | 2169 | 519 | 69 | 1656 |
| Dunwiddie, Ezra N., Brodhead, Wis. Reel-carrier | 526,692 | Oct. 2 | 36 | 9 | 69 | 9 |
| Duplex Printing Press Company. (See Cox, Joseph L., assignor.) | | | | | | |
| Durand, Huguenin & Co., L. (See Bierer and De la Harpe, assignors.) | | | | | | |
| Durand, Huguenin & Co., L. (See Brack, Johann J., assignor.) | | | | | | |
| During, Harry P., St. Louis, Mo. Adjustable coffee-pot attachment | 528,594 | Nov. 6 | 127 | 30 | 69 | 659 |
| Duryea, Jacob W. and W. C., Blawenburg, N. J. Corn-planter and fertilizer-distributer | 531,105 | Dec. 18 | 1792 | 427 | 69 | 1571 |
| Duryea, William C. (See Duryea, Jacob W. and W. C.) | | | | | | |
| Dutton, Rufus, New York, N. Y. Whetstone | 528,772 | Nov. 6 | 442 | 108 | 69 | 727 |
| Duval, Charles F., Boston, Mass. Automatic railway-switch | 528,867 | Nov. 6 | 637 | 151 | 69 | 763 |
| Dwyer, John A., Paterson, N. J. Adjustable bracket for shade or other rollers | 527,951 | Oct. 23 | 2127 | 510 | 69 | 439 |
| Dyer, Harry, and W. H. Bingham, assignors to St. Cloud Vulcanized Fibreware Company, St. Cloud, Minn. Machine for making hollow ware | 526,693 | Oct. 2 | 37 | 9 10 | 69 | 10 |
| Dysert, Daniel. (See Cherry and Dysert.) | | | | | | |
| E. Howard Watch and Clock Company. (See Learned and Mosher, assignors.) | | | | | | |
| E. J. Brooks & Company. (See Brooks, Edward J., assignor.) | | | | | | |
| E. Kirstein's Sons Company. (See Beck, William G., assignor.) | | | | | | |
| E. P. Gleason Manufacturing Company. (See Konetshny, John R., assignor.) | | | | | | |
| E. & T. Fairbanks & Company. (See Paddock and Johnson, assignors.) | | | | | | |
| E. & T. Fairbanks & Company. (See Wheeler, William A., assignor.) | | | | | | |
| Eagle, John. (See Eagle, Robert M. and J.) | | | | | | |
| Eagle Manufacturing Company. (See Einfeldt, Emil, assignor.) | | | | | | |
| Eagle Pencil Company. (See Oberbeck, George assignor.) | | | | | | |
| Eagle, Robert M. and J., Kansas City, Kans. Hog-conveyer and throw-out for scalding-vats | 529,483 | Nov. 20 | 1740 | 414 | 69 | 1002 |
| Eames, Henry H., assignor to J. M. Nicol, trustee, Detroit, Mich. Treating ores | 529,441 | Nov. 20 | 1667 | 397 | 69 | 989 |
| Earle, William, Philadelphia, Pa. Chimney cap and ventilator | 527,199 | Oct. 9 | 848 | 206, 207 | 69 | 153 |
| Eastern Paper Bag Company. (See Purvis, William B., assignor.) | | | | | | |
| Eastman, H. L. (See Paulson, Soren C., assignor.) | | | | | | |
| Easton & Burnham Machine Company. (See Easton, Nicholas H., assignor.) | | | | | | |
| Easton, Nicholas H., Central Falls, assignor to Easton & Burnham Machine Company, Paw tucket, R. I. Bobbin-holder for spooling-machines | 530,492 | Dec. 4 | 738 | 180 | 69 | 1349 |
| Eastwood Wire Manufacturing Company. (See Frisbie, Henry R., assignor.) | | | | | | |
| Eaton, Paul. (See Bolles, Frank G., assignor.) | | | | | | |
| Ebeling, Fred, Linn, Kans. Machine-gun | 531,168 | Dec. 18 | 1917 | 456, 457 | 69 | 1594 |
| Eberley, John C., Whitesborough, N. Y. Siphon water-distributing system | 529,547 | Nov. 20 | 1858 | 442 | 69 | 1023 |
| Ecaubert, Frederic. (See Wilhelm and Ecaubert.) | | | | | | |
| Eccleston, S. Spencer, Canastota, N. Y. Toy | 530,584 | Dec. 11 | 916 | 224 | 69 | 1399 |
| Echols, Frank G., assignor to Plume & Atwood Manufacturing Company, Waterbury, Conn. Oil-indicator for lamp-reservoirs | 531,106 | Dec. 18 | 1797 | 428 | 69 | 1572 |
| Eckardt, Herman, assignor to Combination Collar Company, Brooklyn, N. Y. Combined horse-collar and hames | 528,868 | Nov. 6 | 638 | 152 | 69 | 763 |
| Eckels, William, Mechanicsburg, Pa. Metallic burial-vault cover | 527,238 | Oct. 9 | 918 | 221 | 69 | 186 |
| Eckley, Henry A., Bromyard, England. Apparatus for raising or lowering heavy loads | 526,694 | Oct. 2 | 39 | 10, 11 | 69 | 10 |
| Eckman, Peter, Syracuse, Kans. Carpet-fastener | 530,096 | Dec. 4 | 34 | 9 | 69 | 1221 |
| Economic Machine Company. (See Sague, George, assignor.) | | | | | | |
| Eddy, Benjamin W., Eastlake, Ala. Composition for artificial stone | 531,520 | Dec. 25 | 2552 | ..... | 69 | 1729 |
| Eddy, John S., assignor of one-half to M. Smith, Denver, Colo. Steel-spring tire | 530,888 | Dec. 11 | 1409 | 335 | 69 | 1487 |
| Eden, John R. (See Gross, David G., assignor.) | | | | | | |
| Edgar, Ellis F., Woodbridge, N. J. Steam-boiler | 528,930 | Nov. 13 | 760 | 178 | 69 | 806 |
| Edgar, Isaiah E., Brooklyn, N. Y. Cabinet and index-file | 529,251 | Nov. 13 | 1307 | 314 | 69 | 963 |
| Edgerton, Charles, Philadelphia, Pa. Separator for steam-boilers | 526,919 | Oct. 2 | 423 | 104 | 69 | 79 |
| Edmonds, David M., Derrick City, Pa. Adjuster for sucker-rods | 529,322 | Nov. 13 | 1432 | 344 | 69 | 927 |
| Edmonds, David M., Derrick City, Pa. Adjuster for sucker-rods | 529,323 | Nov. 13 | 1432 | 345 | 69 | 927 |
| Edmonds, John P., and J. A. Kyle, Scottsborough, Ala. Clothes-rack attachment for bedsteads | 528,659 | Nov. 6 | 248 | 62 | 69 | 691 |
| Edmunds, King C., Calcutta, India. Ice-cream freezer | 527,483 | Oct. 16 | 1330 | 324 | 69 | 277 |
| Edward Miller & Company. (See Langston, Thomas, assignor.) | | | | | | |
| Edwards, Arthur, Willow Springs, Mo. Nut-lock | 526,996 | Oct. 2 | 531 | 130 | 69 | 100 |
| Edwards, George E., assignor of one-fourth to W. Hartwell, Brantford, Canada. Danger-signal and lock for switches | 531,025 | Dec. 18 | 1654 | 392 | 69 | 1546 |
| Edwards, Joseph E., Toronto, Ohio. Underground conduit | 527,597 | Oct. 16 | 1515 | 368 | 69 | 309 |
| Edwards, Robert. (See Lungen, Adam, assignor.) | | | | | | |
| Edwards, W. Fitz-Hugh. (See Church, Frank S., assignor.) | | | | | | |
| Edwards, William H., DuBois, Nebr. Car-coupling | 528,466 | Oct. 30 | 3040 | 738 | 69 | 618 |
| Edwards, Willie M., Atlanta, Ga. Automatic air-brake coupling | 527,838 | Oct. 23 | 1908 | 459 | 69 | 398 |
| Effinger, August, and W. H. Metzger, Canton, Ohio. Pruning-shears | 530,221 | Dec. 4 | 257 | 63 | 69 | 1262 |
| Ege, Alexander H. (See Richardson, John T., assignor.) | | | | | | |
| Egger, Ernst. (See Wessel and Egger.) | | | | | | |
| Egger, Ernst, and F. A. Wessel, assignors of one-fourth to A. Naumburg, New York, N. Y.) Means for controlling electric locomotives | 531,366 | Dec. 25 | 2280 | 543, 544 | 69 | 1676 |
| Ehrhardt, Heinrich, Dusseldorf, Germany. Cold-sawing apparatus | 530,639 | Dec. 11 | 1014 | 247 | 69 | 1415 |
| Eickemeyer, Rudolf, Yonkers, N. Y. Hat-stretching machine | 527,271 | Oct. 9 | 977 | 237, 238 | 69 | 196 |
| Eils, Bette E. J., New York, N. Y. Fireproof furring, partition, or wall | 528,931 | Nov. 13 | 761 | 179 | 69 | 806 |
| Eils, Bette E. J., New York, N. Y. Grille | 529,719 | Nov. 27 | 2132 | 510 | 69 | 1094 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Eimke, Charles H., Brooklyn, N. Y. Railway-switch | 530,404 | Dec. 4 | 575 | 142, 143 | 69 | 1320 |
| Einfeldt, Emil, assignor to Eagle Manufacturing Company, Davenport, Iowa. Hay-loader | 531,521 | Dec. 25 | 2552 | 610, 611 | 69 | 1729 |
| Eisert, Hermann, Baltimore, and R. B. Talcott, Garrett Park, Md. Hot-water heater | 526,967 | Oct. 2 | 488 | 120 | 69 | 92 |
| Eisman, Adam, Rochester, N. Y. Bicycle-support | 530,330 | Dec. 4 | 451 | 113 | 69 | 1296 |
| Elder, Edward E., Lynn, Mass. Machine for making bungs | 527,952 | Oct. 23 | 2128 | 511, 512, 513 | 69 | 439 |
| Elderkin, Lester L. D., Boston, Mass. Open-book holder | 527,524 | Oct. 16 | 1409 | 341 | 69 | 288 |
| Eldridge, Herbert M. (See Eldridge, Reuben C., H. M., and L. W.) | | | | | | |
| Eldridge, Hilliary, *et al.* (See Owen, Thomas, assignor.) | | | | | | |
| Eldridge, John T., Murfreesborough, N. C. Locking stop-cock for train-pipes of air-brake systems | 527,527 | Oct. 9 | 1067 | 258 | 69 | 212 |
| Eldridge, Louis W. (See Eldridge, Reuben C., H. M., and L. W.) | | | | | | |
| Eldridge, Reuben C., H. M., and L. W., Niagara, Canada. Snap-hook | 528,270 | Oct. 30 | 2691 | 649 | 69 | 557 |
| Electric Cable-Construction and Maintenance Company. (See Dewees, Thomas J., assignor.) | | | | | | |
| Electric Cutter Company. (See Thyll, Arthur, assignor.) | | | | | | |
| Electric Gas Lighting Company. (See Thomson and Galbraith, assignors.) | | | | | | |
| Electric Power Company. (See Child, Charles T., assignor.) | | | | | | |
| Electric Selector and Signal Company. (See Bogart and Leonard, assignors.) | | | | | | |
| Elfering, John H., Cincinnati, Ohio. Coin-operated electric apparatus | 528,911 | Nov. 6 | 723 | 170 | 69 | 778 |
| Elg, Charles, *et al.* (See Caesar, Peter J., assignor.) | | | | | | |
| Elgin, Jonn C., administrator. (See Elgin, Samuel T.) | | | | | | |
| Elgin National Watch Company. (See Hunter, George E., assignor.) | | | | | | |
| Elgin, Samuel T., deceased: J. C. Elgin, Amboy, Ill., administrator. Latch for end-gates | 529,720 | Nov. 27 | 2132 | 511 | 69 | 1084 |
| Ellinwood, Augustus E., assignor to L. Miller, Akron, Ohio. Corn-harvester | 530,322 | Dec. 4 | 258 | 63, 64 | 69 | 1262 |
| Elliott, James W., assignor of one-half to J. L. Kane and J. Sweeney, Galveston, Tex. Car-coupling | 531,522 | Dec. 25 | 2555 | 611 | 69 | 1729 |
| Elliott, Lucius W., assignor of one-half to W. H. Yerkes, Northville, Mich. Automatic pulley-clutch and shaft-coupling | 530,301 | Dec. 4 | 396 | 100 | 69 | 1287 |
| Elliott, Robert H., Birmingham, and J. B. Carrington, Jasper, Ala. Mining-drill | 530,510 | Dec. 11 | 784 | 193, 194 | 69 | 1375 |
| Elliott, Robert H., Birmingham, and J. B. Carrington, Jasper, Ala. Mining-drill | 530,511 | Dec. 11 | 786 | 194, 195 | 69 | 1375 |
| Elliott, Robert H., Birmingham, and J. B. Carrington, Jasper, Ala. Mining-drill | 530,512 | Dec. 11 | 788 | 195 | 69 | 1375 |
| Elliott, Sterling, Newton, Mass., assignor to Pope Manufacturing Company, Portland, Me., and Hartford, Conn. Flexible tire and rim for wheels | 527,781 | Oct. 23 | 1820 | 448 | 69 | 383 |
| Elliott, Sterling, Newton, Mass., assignor to Pope Manufacturing Company, Portland, Me., and Hartford, Conn. Flexible-tired wheel | 527,782 | Oct. 23 | 1823 | 439 | 69 | 383 |
| Elliott, Sterling, Newton, Mass., assignor to Pope Manufacturing Company, Hartford, Conn., and Portland, Me. Wooden rim, band, &c. | 529,112 | Nov. 13 | 1057 | 255 | 69 | 858 |
| Ellis, Hartley, East Liverpool, Ohio. Knockdown barrel | 527,328 | Oct. 9 | 1069 | 278 | 69 | 212 |
| Ellis, Jonathan T., Newark, N. J. Pocket-stove or portable warmer | 527,598 | Oct. 16 | 1517 | 368 | 69 | 309 |
| Ellis, Oliver J., assignor to I. & E. Hall, Limited, London, England. Packing for piston-rods | 528,773 | Nov. 6 | 444 | 108 | 69 | 727 |
| Ellison, Albert W., Point Pleasant, W. Va. Combination article of furniture and collapsible table | 528,032 | Nov. 13 | 702 | 159 | 69 | 806 |
| Ellithorpe, Frank N., Peachton, Ohio. Machine for sorting or grading fruit, &c. | 527,053 | Oct. 23 | 2135 | 513 | 69 | 440 |
| Ellithorpe, Frederick T., Newark, N. J. Safety device for elevators | 527,171 | Oct. 9 | 804 | 196 | 69 | 164 |
| Ellwood, Abram. (See Macphail, James, assignor.) | | | | | | |
| Elsesser, Arthur, San Francisco, Cal. Machine for laying cloth | 529,855 | Nov. 27 | 2365 | 565 | 69 | 1127 |
| Elsas, Oscar. (See Price, John B., assignor.) | | | | | | |
| Ely, H., *et al.* (See Paris, Robert L., assignor.) | | | | | | |
| Emanuel, Jacob, and A. Spielmann, assignors of one third to H. Maimin, Philadelphia, Pa. Sewing-machine | 530,986 | Dec. 18 | 1584 | 376 | 69 | 1533 |
| Emden, Thomas W. L. (See Bourgeois, Jules E. M., assignor.) | | | | | | |
| Emerson Electric Manufacturing Company. (See Meston, Alexander W., assignor.) | | | | | | |
| Emerson, James, Willimansett, Mass. Water-wheel-testing apparatus | 530,513 | Dec. 11 | 791 | 196 | 69 | 1376 |
| Emery, Avery L., assignor to Granite Filter Company, St. Louis, Mo. Filter | 526,695 | Oct. 2 | 40 | 11 | 69 | 10 |
| Emery, Charles G., trustee. (See Shortt, Edward G., assignor.) | | | | | | |
| Emery, Fred B., Boston, assignor of two-thirds to C. S. Bimer, Malden, and E. J. Phillips, Everett, Mass. Printers' metal furniture | 528,660 | Nov. 6 | 250 | 62 | 69 | 691 |
| Emery, John B., Lynn, assignor of one-half to Boston Shoe Tool Company, Boston, Mass. Sole-trimming machine | 528,467 | Oct. 30 | 3041 | 738 | 69 | 618 |
| Emery, Plato G., Chicago, Ill., assignor to Adams & Westlake Company, of Illinois. Door-check | 527,385 | Oct. 9 | 1162 | 285 | 69 | 231 |
| Emery, Plato G., Chicago, Ill., assignor to Adams & Westlake Company, of Illinois. Brake-handle | 531,612 | Dec. 25 | 2703 | 648 | 69 | 1759 |
| Emmert, B. E., *et al.* (See Fryer, Robert M., assignor.) | | | | | | |
| Emmons, Charles C., Pittsburg, Pa. Machine for forming plaits | 528,468 | Oct. 30 | 3043 | 738 | 69 | 618 |
| Empson, John H., Longmont, Colo. Pea-sheller | 527,954 | Oct. 23 | 2137 | 514 | 69 | 440 |
| Empson, John H., Longmont, Colo. Pea-shelling machine | 527,955 | Oct. 23 | 2140 | 515 | 69 | 441 |
| Empson, John H., and P. McDonald, Longmont, Colo. Pea-shelling machine | 527,956 | Oct. 23 | 2142 | 515 | 69 | 441 |
| Engel, George W., and W. C. Juram, Philadelphia, Pa. Car-fender | 531,026 | Dec. 18 | 1656 | 392, 393 | 69 | 1546 |
| Engel, Godfrey, South Baltimore, Md. Process of and apparatus for forming and treating metals | 528,661 | Nov. 6 | 251 | 62, 63 | 69 | 691 |
| Engelhardt, Victor, Vienna, Austria-Hungary, assignor to Siemens & Halske, Berlin, Germany. Extracting metals from sulfide ores, &c. | 531,169 | Dec. 18 | 1919 | 457 | 69 | 1594 |
| Engelman, Eugene M. (See Cummings, James F., assignor.) | | | | | | |
| England, William J. (See Fowler, England, and Nielsen.) | | | | | | |
| Engstfeld, Augustin C. L., Cleveland, Ohio, assignor of one-half to L. Lamb, Memphis, Tenn. Switch-operating device for tram-cars | 530,302 | Dec. 4 | 398 | 100, 101 | 69 | 1287 |
| Enos, Charles W., assignor of one-half to W. B. Flanagan, Peabody, Mass. Fire-engine lighter | 529,024 | Nov. 13 | 912 | 216 | 69 | 832 |
| Enriquez, Evaristo, San Juan Bautista, Tobasco, Mexico. Musical instrument | 527,675 | Oct. 16 | 1639 | 395 | 69 | 332 |
| Ensign, William W., assignor to Peck-Williamson Heating and Ventilating Company, Cincinnati, Ohio. Automatic flush-tank | 527,599 | Oct. 16 | 1518 | 368 | 69 | 310 |
| Eppers, Heinrich, Braunschweig, Germany, assignor to R. Schwarz, Vienna, Austria-Hungary. Perspective-drawing apparatus | 530,477 | Dec. 4 | 687 | 172 | 69 | 1341 |
| Erekson, Peter, Houston, Minn. Windmill | 529,612 | Nov. 20 | 1958 | 465, 466 | 69 | 1042 |
| Erickson, Andrew S., Holdrege, Nebr. Pump-gear for windmills | 531,523 | Dec. 25 | 2556 | 611 | 69 | 1729 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Erickson, John. (See Carr, John, assignor.) | | | | | | |
| Erickson, Ole S., assignor of three-fourths to M. J. and C. W. Shields and L. G. Witbeck, Moscow, Idaho. Fumigating-cartridge | 527,484 | Oct. 16 | 1331 | 324 | 69 | 277 |
| Ericksson, Eric H., St. Paul, Minn. Artificial leg | 527,525 | Oct. 16 | 1401 | 341 | 69 | 289 |
| Ericson, Lewis E., assignor to Flagg Manufacturing Company, Boston, Mass. Sole-rounding machine | 527,676 | Oct. 16 | 1640 | 395, 396 | 69 | 332 |
| Erway, Benjamin F., Mapleton, Iowa. Lister-cultivator | 530,755 | Dec. 11 | 1203 | 293 | 69 | 1448 |
| Eschenbeck, Max, Jersey City, N. J., assignor to J. Mohs, Dresden, Germany. Machine for manufacturing boxes or plates | 527,146 | Oct. 9 | 768 | 187, 188 | 69 | 157 |
| Eshliman, Christian, Glenwood, Iowa. Stovepipe-punching machine | 529,025 | Nov. 13 | 913 | 216 | 69 | 832 |
| Esmarch, Bernard C., Selly Oak, England. Lathe-carrier | 530,303 | Dec. 4 | 400 | 101 | 69 | 1288 |
| Essex, Samuel P., assignor of one-half to J. O. Hurst, Zionsville, Ind. Gas-burner | 529,324 | Nov. 13 | 1492 | 345 | 69 | 927 |
| Essex, Stephen, Providence, R. I. Conveyer-chain or link belt | 531,306 | Dec. 25 | 2170 | 519, 520 | 69 | 1656 |
| Estienne, Alfred D., Marseilles, France. Machine for decorticating ramie or other plants | 531,307 | Dec. 25 | 2172 | 519, 520 | 69 | 1656 |
| Estlow, Alfred J., Hartford, Conn. Combination-case for cards, &c. | 528,420 | Oct. 30 | 2951 | 714, 715 | 69 | 602 |
| Estlow, Alfred J., Hartford, Conn. Combination-case | 528,421 | Oct. 30 | 2953 | 715 | 69 | 602 |
| Etherington, Frank K., Cambridge, Mass. Door-lock-marking gage | 527,600 | Oct. 16 | 1520 | 369 | 69 | 310 |
| Ettinger, Joel, Milton, Pa. Rotary cutter | 529,115 | Nov. 13 | 1061 | 256 | 69 | 859 |
| Ettinger, Joel, assignor to Joel B. Ettinger Machine Company, Limited, Milton, Pa. Rotary cutter | 529,113 | Nov. 13 | 1058 | 255 | 69 | 859 |
| Ettinger, Joel, assignor to Joel B. Ettinger Machine Company, Limited, Milton, Pa. Rotary cutter | 529,114 | Nov. 13 | 1060 | 255 | 69 | 859 |
| Euchenhofer, Edward E. (See Weinman and Euchenhofer.) | | | | | | |
| Eugster, Joseph, London, England. Means for hermetically closing gazogenes, &c. | 526,696 | Oct. 2 | 41 | 11 | 69 | 11 |
| Evans, Evan, Chicora, Pa. Shut-off valve for oil-wells | 530,405 | Dec. 4 | 556 | 143 | 69 | 1320 |
| Evans, George C., and J. W. Layne, Higginsville, Mo. Advertising-board | 530,256 | Dec. 11 | 1204 | 293 | 69 | 1449 |
| Evans, Ira T., Clive, Iowa. Harrow | 531,308 | Dec. 25 | 2174 | 520 | 69 | 1656 |
| Evans, James, Linn Grove, Iowa. Device for transmitting power | 529,252 | Nov. 13 | 1310 | 314 | 69 | 903 |
| Evans, Morris, assignor of two-thirds to C. McCreary and K. Gieseler, Erie, Pa. Smoke-consuming furnace | 531,367 | Dec. 25 | 2283 | 544, 545 | 69 | 1677 |
| Evans, Robert D., *et al.* (See Gooding and Goudey, assignors.) | | | | | | |
| Evans, Robert D., *et al.* (See Knight and Gooding, assignors.) | | | | | | |
| Evans, Robert E. M. (See Reiff, William H., assignor.) | | | | | | |
| Evans, Thomas P., National Military Home, Ohio. Duplex burner | 527,957 | Oct. 23 | 2144 | 516 | 69 | 442 |
| Everts, Edward S., Chicago, Ill. Expanding cylinder for polishing-machines | 528,534 | Nov. 6 | 16 | 6 | 69 | 649 |
| Evertson, George W., assignor of one-fourth to J. J. Little, New York, N. Y. Adjustable window-shade holder | 530,026 | Nov. 27 | 2077 | 642, 643 | 69 | 1187 |
| Everitt, Percival, deceased, London, England: H. M. Woolf, executor. Velocipede | 530,169 | Dec. 4 | 155 | 40, 41 | 69 | 1243 |
| Ewert, Otto, and H. L. Marbach, Cleveland, Ohio, assignors, by mesne assignments, to F. R. Fennesy, New York, N. Y. Wick for oil stoves or lamps | 530,170 | Dec. 4 | 156 | 41 | 69 | 1244 |
| Ewing, Charles W. (See Usry, William R., assignor.) | | | | | | |
| Expanded Metal Company. (See Golding, John F., assignor.) | | | | | | |
| Eymann, Walter C. (See Stecke, Albert, assignor.) | | | | | | |
| F. B. Fargo & Company. (See Disbrow, Reuben B., assignor.) | | | | | | |
| F. B. Fargo & Company. (See Payne, Darius W., assignor.) | | | | | | |
| Fabisch, Philip, Baltimore, Md. Placket-guard | 530,027 | Nov. 27 | 2078 | 643 | 69 | 1187 |
| Fahrig, William, Chicago, Ill. Ice-velocipede | 529,371 | Nov. 20 | 1525 | 365 | 69 | 965 |
| Fahrney, Andrew, Milledgeville, Ill. Brake for railway-cars | 530,171 | Dec. 4 | 157 | 41 | 69 | 1244 |
| Fairbank, Josiah, Helena, Ohio. Machine for erecting frame structures | 530,028 | Nov. 27 | 2079 | 643 | 69 | 1187 |
| Fairbank, Manford F., and J. R. Meach, assignors of one-half to T. Measures, Ogden Centre, Mich., and D. Brown, Seward, Ohio. Knotter mechanism for grain-binders | 530,495 | Dec. 4 | 743 | 182, 183 | 69 | 1350 |
| Fairbanks, Albert C., Boston, Mass. Wheel-rim | 530,172 | Dec. 4 | 159 | 41 | 69 | 1244 |
| Fairfield, Hamilton, Harry. (See Tanner, Henry J., assignor.) | | | | | | |
| Fales, Edward, Winthrop, Mass. Dumping-grate | 529,066 | Nov. 13 | 983 | 234 | 69 | 845 |
| Falkenstein, Charles, *et al.* (See Loeben, Gustav A., assignor.) | | | | | | |
| Falkenstein, George, *et al.* (See Loeben, Gustav A., assignor.) | | | | | | |
| Faltinowsky, Frank. (See Klaffky and Faltinowsky.) | | | | | | |
| Falvey, Dennis, Battle Creek, Mich. Calking-tool | 531,411 | Dec. 25 | 2350 | 561 | 69 | 1690 |
| Fanning, Peter P. (See Ruffner, Jonas F., assignor.) | | | | | | |
| Fanshaw, Edwin, Sheffield, England. Engraving-machine | 527,677 | Oct. 16 | 1643 | 396 | 69 | 333 |
| Farbenfabriken, vormals Fr. Bayer & Co. (See Manasse, Otto, assignor.) | | | | | | |
| Farmer, George W., Indianapolis, Ind. Shuttle-guide for looms | 528,505 | Oct. 30 | 3102 | 752 | 69 | 630 |
| Farmer, William W. (See Rehfuss, George, J. G., and M. O., assignors.) | | | | | | |
| Farnham, Isaiah H., Wellesley, Mass., assignor, by mesne assignments, to Western Electric Company, of Illinois. Annunciator-signal | 527,839 | Oct. 23 | 1909 | 459 | 69 | 399 |
| Farnoff, Jay W., Buffalo, N. Y. Meat-chopping machine | 529,253 | Nov. 13 | 1311 | 315 | 69 | 903 |
| Farnsworth, Andrew C., Chicago, and C. E. Roberts, Oak Park, Ill.; said Roberts assignor to said Farnsworth. Journal-bearing | 527,016 | Oct. 2 | 563 | 137 | 69 | 106 |
| Farnsworth, Thomas, San Antonio, Tex. Gas-compressing pump | 530,097 | Dec. 4 | 35 | 9, 10 | 69 | 1221 |
| Farrell, George B., East Las Vegas, N. Mex. Ter. Watchmaker's calipers | 528,535 | Nov. 6 | 18 | 6 | 69 | 649 |
| Fatkin, James, Aspen, Colo. Wrench | 530,029 | Nov. 27 | 2080 | 644 | 69 | 1188 |
| Fatkin, James, assignor of three-fourths to J. Schoelkopf and H. W. Stormer, Aspen, Colo. Bailing device | 528,085 | Oct. 23 | 2375 | 573 | 69 | 483 |
| Faust, John, Cincinnati, Ohio, assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Automatic stop action for sewing-machines | 530,264 | Dec. 4 | 329 | 82 | 69 | 1276 |
| Fauteux, Edouard, Montreal, Canada. Awning | 530,038 | Dec. 4 | 36 | 10 | 69 | 1232 |
| Fawcett, Ezra, Alliance, assignor of one-half to L. W. Bradley, Cleveland, Ohio. Dynamo-electric machine | 527,415 | Oct. 16 | 1216 | 297 | 69 | 254 |
| Fawcett, John F. W., West Superior, Wis. Split pulley | 528,602 | Nov. 6 | 256 | 63 | 69 | 602 |
| Fawcett, Richard, Salem, Ohio. Axle-nut | 528,293 | Oct. 30 | 2736 | 661 | 69 | 564 |
| Faxon, Micha B. (See Lambert, Richard C., assignor.) | | | | | | |
| Fay, Rimmon C., assignor to Remington Arms Company, Ilion, N. Y. Breakdown gun | 528,506 | Oct. 30 | 3103 | 753 | 69 | 630 |
| Fay, Rimmon C., assignor to Remington Arms Company, Ilion, N. Y. Gun-frame | 528,507 | Oct. 30 | 3105 | 753 | 69 | 630 |
| Fay, Rimmon C., Ilion, assignor to Remington Arms Company, New York, N. Y. Adjustable handle-bar for bicycles | 528,620 | Nov. 6 | 183 | 45 | 69 | 679 |
| Fay, Rimmon C., and G. E. Humphreys, assignors to Remington Arms Company, Ilion, N. Y. Ejector for breakdown guns | 528,508 | Oct. 30 | 3106 | 753, 754 | 69 | 631 |
| Fay, S. M., *et al.* (See Julian, Gideon, assignor.) | | | | | | |
| Federici, Antonio, Paterson, N. J. Building-block | 527,416 | Oct. 16 | 1217 | 297 | 69 | 254 |
| Feiner, Adolph, and T. G. Saxton, Lexington, Ky. Device for holding collars or cuffs on shirts | 528,469 | Oct. 30 | 3044 | 739 | 69 | 619 |

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|---|---|---|---|---|---|---|
| Feishtinger, Charles W., Fritztown, assignor of one-half to S. Shearer, Lower Heidelberg, Pa. Calendar-clock | 527,386 | Oct. 9 | 1163 | 285 | 69 | 231 |
| Felbel, Jacob, New York, N. Y. Type-writing machine | 526,774 | Oct. 2 | 177 | 41 | 69 | 34 |
| Feldenheimer, Joseph, Philadelphia, Pa. Knitted undershirt | 528,536 | Nov. 6 | 19 | 7 | 69 | 650 |
| Feldmeier, Harvey, assignor to D. H. Burrell & Co., Little Falls, N. Y. Cheese-press | 529,856 | Nov. 27 | 2366 | {565 / 566} | {69 / } | 1127 |
| Fell, William T., London, England. Horse-collar | 528,422 | Oct. 30 | 2955 | {715 / 716} | {69 / } | 603 |
| Fenley, Frank, assignor to E. B. Kemp, New Orleans, La. Water-motor | 529,524 | Nov. 20 | 1892 | 433 | 69 | 1017 |
| Fenn, Jason C., Terryville, Conn., assignor of one-half to W. E. Phelps, Elmwood, Ill. Bridge | 530,265 | Dec. 4 | 333 | 82 | 69 | 1276 |
| Fennesy, Frank R. (See Ewert and Marbach, assignors.) | | | | | | |
| Ferguson, George C., Odell, Nebr., assignor of one-half to M. Oswald, Hanover, Kans. Super for beehives | 529,116 | Nov. 13 | 1062 | 276 | 69 | 859 |
| Ferguson, Henry J., Brooklyn, N. Y., assignor to C. F. Burrell, trustee. Barrel-washer | 530,515 | Dec. 11 | 793 | {196 / 197} | {69 / } | 1376 |
| Ferguson, Lyman, assignor of one-half to E. Young, Syracuse, N. Y. Bicycle | 528,423 | Oct. 30 | 2955 | 716 | 69 | 603 |
| Ferguson, Peter, and W. Y. Fleming, Paisley, Scotland. Steam-boiler | 530,331 | Dec. 4 | 452 | 113 | 69 | 1296 |
| Ferguson, Thomas, Hawksburn, Victoria. Machine for stamping and filling siphon-bottles | 526,861 | Oct. 2 | 320 | 79 | 69 | 61 |
| Ferguson, Thomas T. H., Hankow, China. Sextant attachment | 530,830 | Dec. 11 | 1316 | 317 | 69 | 1470 |
| Ferguson, William J., assignor of one-half to W. G. H. Stump, Baltimore, Md. Device for opening or closing elevator-doors | 527,366 | Oct. 9 | 1132 | 276 | 69 | 225 |
| Ferraud, Jules, Darnetal, France. Regulator for dynamo-electric machines | 529,117 | Nov. 13 | 1064 | 257 | 69 | 860 |
| Ferrell, Alphonzo. (See Blosser and Kunkle, assignors.) | | | | | | |
| Ferry, Harvey S., Mount Vernon, assignor to Ferry Manufacturing Company, New York, N. Y. Method of and means for carbonating liquids | 530,070 | Nov. 27 | 2757 | 661 | 69 | 1201 |
| Ferry, Harvey S., Mount Vernon, assignor to Ferry Manufacturing Company, New York, N. Y. Apparatus for carbonating liquids | 530,071 | Nov. 27 | 2759 | {661 / 692} | {69 / } | 1201 |
| Ferry Manufacturing Company. (See Ferry, Harvey S., assignor.) | | | | | | |
| Fewkes, Joseph T., assignor to E. H. Anderson, Philadelphia, Pa. Oil-filter | 530,757 | Dec. 11 | 1205 | 293 | 69 | 1449 |
| Fickinger, Emil H., assignor to Acme Roofing Company, Canton, Ohio. Machine for making conductor-pipes | 531,170 | Dec. 18 | 1921 | 457 | 69 | 1595 |
| Field, Arthur W., Boston, Mass. Brake-shoe | 529,372 | Nov. 20 | 1526 | 365 | 69 | 965 |
| Field, Edward, *et al.* (See Dixon, George, assignor.) | | | | | | |
| Field, John T., St. Louis, Mo. Directory-post and call-box | 530,099 | Dec. 4 | 37 | 11 | 69 | 1222 |
| Field, Stephen D. Stockbridge, assignor to American Bell Telephone Company, Boston Mass. Electromagnetic apparatus | 529,373 | Nov. 20 | 1527 | 366 | 69 | 965 |
| Field, Stephen D., Stockbridge, assignor to American Bell Telephone Company, Boston, Mass. Suppression of self-inductive obstruction in electromagnetic apparatus | 530,716 | Dec. 11 | 795 | 197 | 69 | 1357 |
| Field, William E., Hawthorn, Victoria. Miner's safety-lamp | 527,055 | Oct. 9 | 627 | 153 | 69 | 132 |
| Fields, Charles C., Bristol, Tenn., assignor to Fields Manufacturing Company, Louisville, Ky. Register | 528,569 | Oct. 30 | 3108 | 751 | 69 | 631 |
| Fields Manufacturing Company. (See Fields, Charles C., assignor.) | | | | | | |
| Fifield, Henry H., assignor of one-half to S. S. Bonham, La Plata, and B. W. Bonham, Lacrosse, Mo. Railway-rail joint | 527,367 | Oct. 9 | 1134 | 276 | 69 | 225 |
| Fifield, James J., Chelsea, Mass. Machine for concaving razors | 531,368 | Dec. 25 | 2284 | 545 | 69 | 1677 |
| Filip, Franz, New York, N. Y. Apparatus for molding veneer articles | 528,663 | Nov. 6 | 257 | 63, 64 | 69 | 692 |
| Finfrock, Ira E. (See Lippy and Finfrock.) | | | | | | |
| Finger, Carl, Wilkes-Barré, Pa. Steam-boiler | 528,086 | Oct. 23 | 2377 | 553 | 69 | 484 |
| Fink, Edgar J., Hanover, Pa. Cigar-press | 529,254 | Nov. 13 | 1314 | 316 | 69 | 904 |
| Fink, Jacob F. (See Schlientz and Fink.) | | | | | | |
| Fink, Joseph H. (See George, Albert F., assignor.) | | | | | | |
| Finkbeiner, George, Syracuse, N. Y. Clothes drier | 531,524 | Dec. 25 | 2557 | 612 | 69 | 1730 |
| Finn, Oliver B., Philadelphia, Pa. Conduit electric railway | 527,601 | Oct. 16 | 1521 | 369 | 69 | 310 |
| Finter, William, assignor of one-half to H. B. Beach, Pleasant Hill, Mo. Spring cockeye | 530,758 | Dec. 11 | 1206 | 294 | 69 | 1449 |
| Firm, Joseph L., Jersey City, N. J., assignor to Goss Printing Press Company, Chicago, Ill. Printing-machine | 529,680 | Nov. 20 | 2061 | {493 / 494} | {69 / } | 1061 |
| Fischer, George F., Rochester, N. Y. Self-loading cart | 528,421 | Oct. 30 | 2957 | {716 / 717 / 718} | {69 / } | 603 |
| Fischer, George F., Rochester, N. Y. Sole channeling and rounding-out machine | 530,072 | Nov. 27 | 2760 | {662 / 663} | {69 / } | 1202 |
| Fischer, J. & C. (See Fischer, Torquato T., assignor.) | | | | | | |
| Fischer, Jacob A., San Francisco, Cal. Index or display device | 530,987 | Dec. 18 | 1586 | 376 | 69 | 1533 |
| Fischer, Torquato T., assignor to J. & C. Fischer, New York, N. Y. Piano action | 527,485 | Oct. 16 | 1332 | 324 | 69 | 277 |
| Fish, Horace W., *et al.* (See Brooks, John, assignor.) | | | | | | |
| Fishburn, Joseph. (See Unsöld, Felix, assignor.) | | | | | | |
| Fisher, Asahel H., assignor of one-tenth to C. E. Voorhees, Philadelphia, Pa. Governor for engines | 531,107 | Dec. 18 | 1798 | 428 | 69 | 1572 |
| Fisher, John W., *et al.* (See Smith, William R., assignor.) | | | | | | |
| Fisher, William C., Mount Vernon, N. Y. Sanding device for street-cars | 531,613 | Dec. 25 | 2705 | 648 | 69 | 1759 |
| Fisher, William J. (See Fry and Fisher.) | | | | | | |
| Fisk, Frederick C., Buffalo, N. Y. Support for trolley-wires | 527,840 | Oct. 23 | 1913 | 460 | 69 | 399 |
| Fiske, Bradley A., U. S. Navy. Electrical signaling system | 527,958 | Oct. 23 | 2146 | 516 | 69 | 442 |
| Fiske, Bradley A., U. S. Navy, assignor to Western Union Telegraph Company, New York, N. Y. Printing telegraph | 529,484 | Nov. 20 | 1743 | {414 / 415} | {69 / } | 1002 |
| Fitch, Charles M., South Norwalk, Conn. Electric switch for railways | 529,164 | Nov. 13 | 1146 | 277 | 69 | 875 |
| Fitch Excelsior Switch Company. (See Baldwin, Rollin A., assignor.) | | | | | | |
| Fitzgerald, David. (See Pugsley, William E., assignor.) | | | | | | |
| Fitzgerald, Walter S., Danville, Ky. Wire-stretcher | 529,374 | Nov. 20 | 1530 | 366 | 69 | 966 |
| Fitzgibbons Boiler Company. (See Fitzgibbons, Patrick, assignor.) | | | | | | |
| Fitzgibbons, Patrick, assignor to Fitzgibbons Boiler Company, Oswego, N. Y. Steam-generator | 530,589 | Dec. 11 | 1410 | 336 | 69 | 1467 |
| Fitzgibbons, Patrick, assignor to Fitzgibbons Boiler Company, Oswego, N. Y. Flue-cleaner | 530,800 | Dec. 11 | 1413 | 336 | 69 | 1467 |
| Fitzhugh, William L., Baltimore, Md. Hydraulic car-brake | 527,743 | Oct. 16 | 1753 | 422 | 69 | 353 |
| Fitzpatrick, Thomas B., Newton, Mass. Merchandise-truck | 530,030 | Nov. 27 | 2681 | 644 | 69 | 1188 |
| Flagg, George H. P. (See Perry, Austin E., assignor.) | | | | | | |
| Flagg Manufacturing Company. (See Ericson, Lewis E., assignor.) | | | | | | |
| Flammang, Mathias, Newark, N. J., assignor to Scovill & Adams Company, of Connecticut. Panoramic camera | 527,841 | Oct. 23 | 1914 | 460 | 69 | 399 |
| Flammang, Mathias, Newark, N. J., assignor to Scovill & Adams Company, of Connecticut. Plate-holder | 530,100 | Dec. 4 | 39 | 11 | 69 | 1222 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Flanagan, James H. (See La Pointe, Flanagan, and Thompson.) | | | | | | |
| Flanagan, William B. (See Enos, Charles W., assignor.) | | | | | | |
| Flath, Daniel, *et al.* (See Grunwald, Ludwig, assignor.) | | | | | | |
| Fleming, Clifford A. (See Fleming, Peter F. and C. A.) | | | | | | |
| Fleming, David. (See McGhee, James and C., assignors.) | | | | | | |
| Fleming, Hugh N., Erie, Pa. Mail-bag catcher | 527,548 | Oct. 16 | 1435 | {349 / 350} | {69 / } | 295 |
| Fleming, Lizzie B., Pierce City, Mo. Wheel-cleaner | 531,171 | Dec. 18 | 1924 | 458 | 69 | 1595 |
| Fleming, Peter F. and C. A., Huntsville, Mo. Horse hay-rake | 526,807 | Oct. 2 | 226 | 55 | 69 | 43 |
| Fleming, Thomas E. (See Dodge, Josiah B., assignor.) | | | | | | |
| Fleming, Will A., San Francisco, Cal. Harness | 531,172 | Dec. 18 | 1925 | 458 | 69 | 1596 |
| Fleming, William Y. (See Ferguson and Fleming.) | | | | | | |
| Flemming, James, Buffalo, N. Y. Music-leaf turner | 530,031 | Nov. 27 | 2683 | 645 | 69 | 1188 |
| Flesher, Thomas, Dunkirk, N. Y. Vine-fastener | 527,959 | Oct. 23 | 2149 | 517 | 69 | 443 |
| Fletcher, Charles R., Boston, Mass. Method of and apparatus for electrodeposition of metals | 527,110 | Oct. 9 | 707 | 173 | 69 | 147 |
| Fletcher, Frederick W., London, England. Stopper or cap for bottles | 528,470 | Oct. 30 | 3046 | 739 | 69 | 619 |
| Fletcher, Wendell C., assignor of one-half to E. W. Moon, St. Louis, Mo. Electric elevator-motor | 530,032 | Nov. 27 | 2685 | {645 / 646} | {69 / } | 1189 |
| Fletcher, Westley H. (See Rollason, Sarah J., assignor.) | | | | | | |
| Flexible Door and Shutter Company. (See Brown, Edwin, assignor.) | | | | | | |
| Flexible Door and Shutter Company. (See Spaulding, Algenon S., assignor.) | | | | | | |
| Flocke, Robert, Newark, N. J., assignor to G. Bernheim, New York, N. Y. Trunk-fastener | 530,406 | Dec. 4 | 577 | 143 | 69 | 1320 |
| Floerl, Christian, *et al.* (See Brombacher, Emil, assignor.) | | | | | | |
| Florence, George, assignor of one half to R. D. Cole, Sr., Newnan, Ga. Twine-machine | 530,891 | Dec. 11 | 1415 | 336 | 69 | 1468 |
| Florin-Leclercq, Jules A. J., Roubaix, France. Machine for dyeing slivers, &c., direct from combs | 530,831 | Dec. 11 | 1318 | 317 | 69 | 1471 |
| Flory, Charles L. (See Younce, Daniel B., assignor.) | | | | | | |
| Flowers, A. E. (See Fulton, David, assignor.) | | | | | | |
| Flowers, Benjamin F. (See Kinnaman, Edward H., assignor.) | | | | | | |
| Floyd, Wells & Co. (See Brooke, Isaac, assignor.) | | | | | | |
| Foehl, Charles, assignor of one-half to H. Rohland, Philadelphia, Pa. Revolver | 530,759 | Dec. 11 | 1207 | 294 | 69 | 1449 |
| Foley, Michael, assignor to Standard Furniture Company, Herkimer, N. Y. Type-writer cabinet | 527,272 | Oct. 9 | 983 | 238 | 69 | 197 |
| Folger, Arthur, and W. H. Winder, Cincinnati, Ohio. Game-counter | 529,118 | Nov. 13 | 1065 | 257 | 69 | 860 |
| Folin, Claes E. V., Hammarby, Sweden. Machine for removing bark, &c. | 528,064 | Nov. 6 | 260 | 64 | 69 | 692 |
| Follenius, Reinhold H., St. Louis, Mo. Name or inscription plate for monuments, signs, &c | 527,744 | Oct. 16 | 1755 | 423 | 69 | 353 |
| Fonda, Isaac I., Boston, Mass. Bicycle-stand | 529,827 | Nov. 27 | 2315 | 551 | 69 | 1117 |
| Foag, Chu, New York, N. Y. Making beverages from rice | 528,514 | Oct. 30 | 3117 | ..... | 69 | 632 |
| Foos, John. (See Voll, Henry, assignor.) | | | | | | |
| Foote, Edward D. (See Diessel and Foote.) | | | | | | |
| Foote, James H., Cincinnati, Ohio. Pulley-casing for window-frames | 527,111 | Oct. 9 | 709 | 173 | 69 | 147 |
| Foote, Willis O. (See Diessel and Foote.) | | | | | | |
| Forbes, George, London, England. Commutator-brush for dynamos | 529,784 | Nov. 27 | 2284 | 532 | 69 | 1101 |
| Forbes, John, London, England. Umbrella-rib retainer | 529,255 | Nov. 13 | 1317 | {316 / 317} | {69 / } | 905 |
| Forbes, Walter T., Atlanta, Ga. Extracting apparatus | 531,108 | Dec. 18 | 1801 | 428 | 69 | 1573 |
| Forbush, Walter R., Boston, Mass. Composition for building constructions | 531,369 | Dec. 25 | 2288 | ..... | 69 | 1678 |
| Ford, Alfred N., London, England. Manufacturing insulating compositions for electrical purposes | 530,517 | Dec. 11 | 797 | ..... | 69 | 1377 |
| Ford, Charles E., Cincinnati, Ohio. Rein-support | 531,173 | Dec. 18 | 1926 | 458 | 69 | 1596 |
| Forney, Matthias N., New York, N. Y. Car-seat | 527,842 | Oct. 23 | 1916 | {460 / 461} | {69 / } | 400 |
| Forney, Matthias N., New York, N. Y. Locomotive-axle box | 527,960 | Oct. 23 | 2150 | 517 | 69 | 443 |
| Forney, Matthias N., New York, N. Y. Means for counterbalancing momentum of reciprocating elements | 528,294 | Oct. 30 | 2738 | {661 / 662} | {69 / } | 564 |
| Forsell, Frans E., Providence, R. I. Lock | 530,935 | Dec. 18 | 1490 | 353 | 69 | 1517 |
| Forsyth, Wilber D., and E. T. Bell, Dublin, Ind. Device for cleaning the interiors of boiler-tubes | 526,997 | Oct. 2 | 532 | 131 | 69 | 100 |
| Forsythe, Seneca. (See Hendricks and Forsythe.) | | | | | | |
| Foster, Alexander W., assignor to Singer, Nimick & Company, Limited, Pittsburg, Pa. Machine for drawing metal | 527,486 | Oct. 16 | 1333 | 325 | 69 | 278 |
| Foster, Benjamin R., St. Louis, Mo. Soap-powder canister | 527,329 | Oct. 9 | 1070 | 258 | 69 | 213 |
| Foster, Charles E., Washington, D. C., assignor to National Company, Chicago, Ill. Controlling device for elevators | 530,936 | Dec. 18 | 1491 | 353 | 69 | 1518 |
| Foster, Charles H., New York, N. Y., assignor to Singer Manufacturing Company of New Jersey. Sewing-machine guide | 530,173 | Dec. 4 | 160 | 42 | 69 | 1244 |
| Foster, Glenlord S. (See Murphy, Edward E., assignor.) | | | | | | |
| Foster, John W., assignor to Foster Machine Company, Westfield, Mass. Machine for winding thread | 527,602 | Oct. 16 | 1524 | 369 | 69 | 311 |
| Foster, John W., assignor to Foster Machine Company, Westfield, Mass. Thread-winding machine | 529,548 | Nov. 20 | 1859 | 442 | 69 | 1023 |
| Foster, Lucian M., Boston, assignor to B. Poole, Topsfield, Mass. Registering ballot-box | 530,034 | Nov. 27 | 2689 | {646 / 647} | {69 / } | 1189 |
| Foster Machine Company. (See Foster, John W., assignor.) | | | | | | |
| Foster, Oscar S., Utica, N. Y. Spring-bed | 526,831 | Oct. 2 | 264 | 64 | 69 | 50 |
| Foster, Oscar S., Utica, N. Y. Chair-seat | 529,485 | Nov. 20 | 1749 | 415 | 69 | 1003 |
| Foster, Oscar S., Utica, N. Y. Bedstead-fastening | 529,486 | Nov. 20 | 1750 | 415 | 69 | 1003 |
| Foster, Stephen A., Toledo, Ohio, assignor of one-half to W. B. McClaren, Frankfort, Ind. Seal | 531,174 | Dec. 18 | 1928 | 459 | 69 | 1596 |
| Foster, William C., La Crosse, Wis. Velocipede | 526,775 | Oct. 2 | 179 | 42 | 69 | 34 |
| Foster, Zebulon, Chicago, Ill. Supply system for electric railways | 530,033 | Nov. 27 | 2687 | 646 | 69 | 1189 |
| Foucault, Henri, Canton, assignor of one-half to E. Block & Co., Cleveland, Ohio. Carpenter's plane | 529,681 | Nov. 20 | 2066 | 495 | 69 | 1062 |
| Fowell, Harry, Belleville, Canada. Aerator | 526,998 | Oct. 2 | 533 | 131 | 69 | 100 |
| Fowler, Charles M., and W. Whitney, Springfield, Mass. Hand-printing device | 530,304 | Dec. 4 | 401 | 101 | 69 | 1288 |
| Fowler, George, assignor of one-half to J. W. Mathers, Philadelphia, Pa. Heel | 530,760 | Dec. 11 | 1208 | 294 | 69 | 1450 |
| Fowler, Henry A., and J. H. Lingley, Worcester, Mass. Curtain-rod | 527,273 | Oct. 9 | 984 | 238 | 69 | 197 |
| Fowler, John W., Northport, N. Y., W. J. England, El-Mora, and A. E. Nielsen, Elizabeth, N. J.; said Nielsen assignor to A. Atkinson, Brooklyn, N. Y. Fare-register | 527,387 | Oct. 9 | 1165 | {285 / 286} | {69 / } | 231 |
| Fowler, Rufus B., Worcester, Mass. Valve | 528,933 | Nov. 13 | 763 | 180 | 69 | 806 |
| Fowler, Willmore W., Oskaloosa, Iowa. Box-lid holder | 527,274 | Oct. 9 | 986 | 239 | 69 | 197 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Fox, Barbary, Napoleon, Ind. Fire-escape | 527,467 | Oct. 16 | 1335 | 325 | 69 | 978 |
| Fox, Benjamin F. (See Richards, Charles A., assignor.) | | | | | | |
| Fox, Edward P., Garner, Iowa. Apparatus for ditching or grading | 529,026 | Nov. 13 | 915 | 217 | 69 | 832 |
| Fox, Harison W. (See Fox, Jesse W. and H. W.) | | | | | | |
| Fox, Henry, Jr. (See Miner, John C., assignor.) | | | | | | |
| Fox, Ivan, Philadelphia, Pa. Eyeglasses | 527,275 | Oct. 9 | 986 | 239 | 69 | 197 |
| Fox, Jacob G., assignor of one-half to W. F. Brenkelman, Grayling, Mich. Sash-fastener | 530,266 | Dec. 4 | 335 | 82 | 69 | 1277 |
| Fox, Jesse W. and H. W., Alverton, Pa. Water-regulator for boilers | 527,417 | Oct. 16 | 1218 | 298 | 69 | 254 |
| Fox, John H., Jersey City, N. J. Block system for automatically operating air-brakes | 530,937 | Dec. 18 | 1492 | 354 | 69 | 1518 |
| Fox, John H., Jersey City, N. J. Mechanism for automatically actuating air-brakes | 530,938 | Dec. 18 | 1495 | 354 / 355 | 69 | 1518 |
| Fox, John H., Jersey City, N. J. Dog for actuating air-brakes | 530,939 | Dec. 18 | 1498 | 355 | 69 | 1519 |
| Fox, William R., Grand Rapids, Mich. Sash-pulley | 529,256 | Nov. 13 | 1318 | 317 | 69 | 905 |
| Frack, Alfred B., Girard, Ohio. Line-tightener | 530,035 | Nov. 27 | 2694 | 647 | 69 | 1190 |
| Francis, George T., Chicago, Ill. Compression-tank | 527,078 | Oct. 16 | 1645 | 397 | 69 | 333 |
| Francis, Thomas, Stevens' Point, Wis., assignor of one-half to J. S. Seeley, Chicago, Ill. Gage | 529,613 | Nov. 20 | 1960 | 466 | 69 | 1043 |
| Francisci, Carl, Schweidnitz, Germany. Furnace for distilling zinc | 526,808 | Oct. 2 | 228 | 55 | 69 | 43 |
| Frank, François, Chicago, Ill. Combined cap, pillow, and life-preserver | 529,119 | Nov. 13 | 1067 | 258 | 69 | 860 |
| Frankenberg, Louis A., Columbus, Ohio. Attachment for bicycles | 527,549 | Oct. 16 | 1439 | 350 | 69 | 296 |
| Franklin, Albert. (See Franklin, Alvin and A.) | | | | | | |
| Franklin, Alvin and A., Westerville, Ohio. Nut and bolt lock | 526,697 | Oct. 2 | 42 | 12 | 69 | 11 |
| Franklin, Edward, Boston, Ga. Hand cultivator | 528,425 | Oct. 30 | 2956 | 718 | 69 | 604 |
| Franklin, Frank A. and F. L., Evansville, Wis. Windmill | 527,276 | Oct. 9 | 988 | 230 | 69 | 197 |
| Franklin, Fred L. (See Franklin, Frank A. and F. L.) | | | | | | |
| Frantz, Ulrich, Zabize, Germany. Car-tilting device | 529,549 | Nov. 20 | 1803 | 442 / 443 | 69 | 1024 |
| Franz, Charles, and R. T. Merrill, Beloit, Wis. Ventilator or chimney-cap | 530,036 | Nov. 27 | 2695 | 647 | 69 | 1190 |
| Fraser, Allan, Providence, R. I. Antirattler for thill-couplings | 529,525 | Nov. 20 | 1824 | 434 | 69 | 1017 |
| Fraser, David B. (See Miller, John S., assignor.) | | | | | | |
| Fraser, David B., New York, N. Y. Machine for hulling, scouring, and cleaning coffee | 528,595 | Nov. 6 | 128 | 30, 31 | 69 | 660 |
| Fraser, Joseph C., Manix, Ill. Fence | 529,067 | Nov. 13 | 985 | 234 | 69 | 845 |
| Fraser, Peter, Whitman, Mass. Combined seat and folding berth | 528,271 | Oct. 30 | 2695 | 650 | 69 | 557 |
| Frasier, William E., Osceola, Tex. Pitch-board | 529,027 | Nov. 13 | 916 | 217 | 69 | 833 |
| Franz, Herman E., Baltimore, Md. Steam-generator | 527,526 | Oct. 16 | 1402 | 341 / 342 | 69 | 289 |
| Frazer, Charles R., San Francisco, Cal., assignor to Pacific Labeling Company, of California. Can-labeling machine | 529,257 | Nov. 13 | 1319 | 317 / 318 | 69 | 905 |
| Frazer, Francis M. (See Delabarre, Frazer, and Carrick.) | | | | | | |
| Frazier Cycle Company. (See Kirsch-King, Albert W., assignor.) | | | | | | |
| Frazier, Edward S., Aurora, Ill. Bicycle-tire | 529,120 | Nov. 13 | 1069 | 258 | 69 | 861 |
| Frazier, Julius O., assignor of one-half to L. A. Beenel, McCall, La. Flue-cleaner | 530,832 | Dec. 11 | 1320 | 317 | 69 | 1471 |
| Frederick, Lawrence N. (See Martin, James, assignor.) | | | | | | |
| Frederiksen, Johan D. (See Jensen, Jens S., assignor.) | | | | | | |
| Free, Charles C., and N. F. Heath, Denver, Colo. Bicycle-lock | 527,418 | Oct. 16 | 1219 | 298 | 69 | 254 |
| Freeman, Daniel A., Boston, Mass. Safety-guard for street-cars | 530,174 | Dec. 4 | 161 | 42 | 69 | 1244 |
| Freese, August H., Boston, Mass. Extensible bed-bottom | 531,370 | Dec. 25 | 2289 | 546 | 69 | 1678 |
| Freise, William, *et al.* (See Platt, Edward T., assignor.) | | | | | | |
| Freise, William A., Newark, N. Y. Filter and cleaning same | 528,630 | Nov. 6 | 184 | 45 | 69 | 679 |
| French, Arthur S. (See Dixon, Joseph M., assignor.) | | | | | | |
| French, Philo N., assignor to A. French Spring Company, Pittsburg, Pa. Spring | 526,895 | Oct. 2 | 380 | 95 | 69 | 71 |
| French, Zachary T., and W. C. Meyer, Boston, Mass. Channeling machine | 529,900 | Nov. 27 | 2432 | 584 | 69 | 1140 |
| Fretz, Samuel S., and J. B. Jesson, Philadelphia, Pa.; said Jesson assignor to said Fretz. Umbrella-runner retainer | 530,037 | Nov. 27 | 2696 | 647 | 69 | 1190 |
| Frey, Cornelius E. (See Davis, William W., assignor.) | | | | | | |
| Frick, Frederick. (See McCaskey, John L., assignor.) | | | | | | |
| Fridlund, Lewis. (See Johnson and Fridlund.) | | | | | | |
| Fridrich, George W., St. Louis, Mo. Air-moistening device for hot-air furnaces | 528,202 | Oct. 30 | 2576 | 623 | 69 | 534 |
| Friede, Samuel M., assignor of one-third to J. W. Donnell, St. Louis, Mo. Combined monkey and pipe wrench | 530,518 | Dec. 11 | 798 | 198 | 69 | 1377 |
| Friedel, Robert, Chicago, Ill. Curling-iron | 527,172 | Oct. 9 | 807 | 196 | 69 | 165 |
| Friederici, Otto, London, England. Boiler-furnace | 531,525 | Dec. 25 | 2558 | 612 | 69 | 1730 |
| Friedlander, Henry, Perry, Okla. Ter. Beer-tapping device | 530,761 | Dec. 11 | 1209 | 294 | 69 | 1459 |
| Friend, J. H. (See Stebbins, Henry W., assignor.) | | | | | | |
| Friend, Joseph P. (See Parker and Friend.) | | | | | | |
| Friese-Greene, William, assignor of one-half to C. Brawn, London, England. Apparatus for measuring electricity | 528,870 | Nov. 6 | 641 | 153 | 69 | 703 |
| Frisbie, Henry R., Newark, assignor to Eastwood Wire Manufacturing Company, Belleville, N. J. Globe-valve | 530,478 | Dec. 4 | 690 | 172 | 69 | 1341 |
| Frisbie, Samuel, Unionville, Conn. Vise | 528,426 | Oct. 30 | 2967 | 718 | 69 | 604 |
| Frisbie, Samuel, Unionville, Conn. Door-check | 530,101 | Dec. 4 | 41 | 12 | 69 | 1222 |
| Frischen, Johann H., assignor to Siemens & Halske, Berlin, Germany. Train-operated signaling system | 529,165 | Nov. 13 | 1149 | 277 | 69 | 876 |
| Frith, Eustace, London, England. Book back or cover | 529,614 | Nov. 20 | 1961 | 466 / 467 | 69 | 1043 |
| Fritz, George, Rib Lake, Wis. Device for side-dressing saw-teeth | 530,833 | Dec. 11 | 1321 | 318 | 69 | 1471 |
| Frizell, Edward E., Larned, Kans. Pump | 531,175 | Dec. 18 | 1928 | 459 | 69 | 1596 |
| Fromholt, Félix J. G., Paris, France. Machine for cutting tooth-recesses in saw-blades | 530,407 | Dec. 4 | 578 | 143 | 69 | 1321 |
| Fromholt, Félix J. G., Paris, France. Rotary borer with diamond bit | 530,408 | Dec. 4 | 579 | 144 | 69 | 1321 |
| Frost, Charles E., New Lisbon, Ohio. Brick-kiln | 531,371 | Dec. 25 | 2290 | 546 | 69 | 1678 |
| Frost, Floyd T., Washington, D. C., assignor of one-fourth to C. A. Voris, Chicago, Ill. Carpet-beater | 529,682 | Nov. 20 | 2067 | 495 | 69 | 1062 |
| Fry, Frank L., and W. J. Fisher, Tacony, Pa. Artificial-stone pavement | 530,988 | Dec. 18 | 1588 | 377 | 69 | 1534 |
| Fry, George S., and S. L. Walker, Loogootee, Ind. Spoke-sawing machine | 526,999 | Oct. 2 | 44 | 12, 13 | 69 | 11 |
| Fry, John H., assignor of one-half to J. G. Alexander, Grand Rapids, Mich. Folding drafting-table | 527,017 | Oct. 2 | 567 | 137 | 69 | 167 |
| Fry, Urias J., Milwaukee, Wis., and G. M. Basford, Oak Park, Ill. Electrical block-signal apparatus | 530,762 | Dec. 11 | 1210 | 295 | 69 | 1459 |
| Fry, Urias J., Milwaukee, Wis., and G. M. Basford, Oak Park, Ill. Block-signal apparatus | 530,763 | Dec. 11 | 1215 | 295 | 69 | 1451 |
| Fryer, Aaron, assignor of one-half to D. Wiggins, Bath-on-the-Hudson, N. Y. Means for multiplex telegraphing between cars of railways | 528,802 | Nov. 6 | 688 | 165 / 166 | 69 | 772 |
| Fryer, Robert M., assignor to J. P. V. Ritter, A. S. Johnson, C. H. Burgess, W. C. Avery, B. E. Emmert, and G. H. La Fetra, Washington, D. C. Valve-gear for engines | 527,679 | Oct. 16 | 1647 | 397 / 398 | 69 | 334 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Fryer, Robert M., assignor to J. P. V. Ritter, A. S. Johnson, C. H. Burgess, W. C. Avery, B. E. Emmert, and G. H. La Fetra, Washington, D. C. Steam-valve | 528,537 | Nov. 6 | 20 | 7 | 69 | 650 |
| Fryesinger, James M., Ohio City, Ohio. Baggage-truck | 526,698 | Oct. 2 | 43 | 12 | 69 | 11 |
| Fuchs, Benjamin F., Marble Falls, Tex. Piano-tuning hammer | 528,154 | Oct. 30 | 2403 | 604 | 69 | 520 |
| Fuchs, Henry and J. F., Toledo, Ohio. Trunk | 528,719 | Nov. 6 | 342 | 83 | 69 | 708 |
| Fuchs, John F. (See Fuchs, Henry and J. F.) | | | | | | |
| Fulgham, Emma R. (See Henley and Fulgham, assignors.) | | | | | | |
| Fulgham, Jesse P. (See Henley and Fulgham.) | | | | | | |
| Fuller, Charles D. (See St. John, Garland B., assignor.) | | | | | | |
| Fuller, Clinton H. (See Garing, Adolph, assignor.) | | | | | | |
| Fuller, Horace S., *et al.* (See Hakewessell, Reinhold, assignor.) | | | | | | |
| Fuller, Horace S., *et al.* (See Henn, Edwin C., assignor.) | | | | | | |
| Fuller & Johnson Manufacturing Company. (See Starks, Nils O., assignor.) | | | | | | |
| Fuller, Louis F., and A. J. Taylor, Norfolk, Va. Electric belt | 531,109 | Dec. 18 | 1803 | 429 | 69 | 1573 |
| Fuller, Myron H., Phelps, assignor to Clifton Springs Manufacturing Company, Manchester, N. Y. Fork | 530,892 | Dec. 11 | 1417 | 337 | 69 | 1488 |
| Fuller, Theodore W., Washington, D. C. Bench or other plane | 528,087 | Oct. 23 | 2378 | 554 | 69 | 484 |
| Fulton, David, assignor of one half to A. E. Flowers, Enterprise, Oreg. Sliding gate | 528,934 | Nov. 13 | 761 | 180 | 69 | 806 |
| Fulton, James A., South Bend, Ind. Sand-band for wagons | 528,538 | Nov. 6 | 23 | 7 | 69 | 650 |
| Funk, Levi L., Chicago, Ill. Electric mouth-battery | 527,037 | Oct. 2 | 598 | 144 | 69 | 113 |
| Funk, William R., assignor of one-half to A. G. Henry, McFarland, Kans. Extension tie-plate | 530,409 | Dec. 4 | 580 | 144 | 69 | 1321 |
| Funkhouser, I. N., *et al.* (See Humbert, James H., assignor.) | | | | | | |
| Furbush, Charles O., Jr., Minneapolis, Minn. Lubricator for bicycles | 531,176 | Dec. 18 | 1930 | 459 | 69 | 1597 |
| Furness, Frank, assignor of one-third to D. H. Watts, Philadelphia, Pa. Tile floor, wall, &c. | 527,561 | Oct. 23 | 2153 | 517 / 518 | 69 | 443 |
| Furr, Jacob. (See Leonard, Caswell L., assignor.) | | | | | | |
| Fyfe, John C., assignor of one-half to J. Hayes, Chicago, Ill. Rheostat | 528,539 | Nov. 6 | 24 | 7, 8 | 69 | 650 |
| Gabb, William J., *et al.* (See Hakewessell, Reinhold, assignor.) | | | | | | |
| Gabb, William J., *et al.* (See Henn, Edwin C., assignor.) | | | | | | |
| Gabel, Thomas R., Albuquerque, N. Mex., assignor to Q. & C. Company, Chicago, Ill. Combined tie-plate and rail-brace | 530,175 | Dec. 4 | 162 | 42 | 69 | 1244 |
| Gaffney, James F. (See Beron, Frank G., assignor.) | | | | | | |
| Gaiser, August L., Würtemberg, Germany. Fire-extinguishing apparatus | 530,834 | Dec. 11 | 1323 | 318 | 69 | 1472 |
| Galbraith, George J. (See Thomson and Galbraith.) | | | | | | |
| Gallager, Henry, Savannah, Ga. Car-coupling | 528,124 | Oct. 23 | 2442 | 591 | 69 | 495 |
| Gallagher, Daniel. (See Perkins and Scollay, assignors.) | | | | | | |
| Gallagher, Edward J., Jr., Philadelphia, Pa. Safety stable device | 530,617 | Dec. 11 | 966 | 237 | 69 | 1407 |
| Gallagher, George F., and T. B. Moore, assignors of one-third to H. Gallagher, Rochester, N. Y. Furnace | 526,756 | Oct. 2 | 180 | 42 | 69 | 34 |
| Gallagher, Henry. (See Gallagher and Moore, assignors.) | | | | | | |
| Galland, Annie M., New York, N. Y. Box | 528,935 | Nov. 13 | 766 | 180 | 69 | 807 |
| Gallegos, José, Ocós, Guatemala. Back-brace | 530,038 | Nov. 27 | 2697 | 648 | 69 | 1190 |
| Galloway, Robert, Macedon, N. Y. Grain-drill | 530,585 | Dec. 11 | 917 | 225 | 69 | 1389 |
| Galloway, Robert, Macedon, N. Y., assignor to Bickford & Huffman Company, of New York. Gearing for grain-drills | 529,375 | Nov. 20 | 1531 | 366 | 69 | 966 |
| Galt, Thomas A., Sterling, Ill. Lawn-rake | 529,901 | Nov. 27 | 2434 | 585 | 69 | 1140 |
| Gamble, Will M., New Whatcom, Wash. Shoulder-brace | 531,372 | Dec. 25 | 2291 | 546 / 547 | 69 | 1679 |
| Gamewell Fire-Alarm Telegraph Company. (See Decrow, William E., assignor.) | | | | | | |
| Ganon, Henry F., Indianapolis, Ind. Thread-cutting ring | 530,332 | Dec. 4 | 453 | 113 | 69 | 1296 |
| Ganswindt, Hermann, Schoeneberg, Germany. Propeller for aerial vehicles | 526,700 | Oct. 2 | 53 | 13 | 69 | 13 |
| Garcelon, Fred. M., Lewiston, Me. Spindle and bolster | 528,936 | Nov. 13 | 767 | 181 | 69 | 807 |
| Gardiner, Clement E., Hempstead, N. Y. Manufacture of candy whistles | 530,039 | Nov. 27 | 2698 | 648 | 69 | 1191 |
| Gardiner, John. (See Moore and Gardiner.) | | | | | | |
| Gardner, Frederick A., New Bedford, Mass. Hot-water furnace | 529,121 | Nov. 13 | 1070 | 258 | 69 | 861 |
| Gardner, Frederick N., Beloit, Wis., assignor to C. H. Besly, Chicago, Ill. Shaft-hanger | 528,774 | Nov. 6 | 445 | 109 / 110 | 69 | 727 |
| Gardner, George H., Boston, Mass. Primary battery | 530,764 | Dec. 11 | 1219 | 295 / 296 | 69 | 1452 |
| Gardner, Henry K., Pawtucket, R. I. Cigar-bunching machine | 528,903 | Nov. 6 | 691 | 166 / 167 | 69 | 772 |
| Gardner, Henry L. (See Donovan and Gardner.) | | | | | | |
| Gardner, Henry L., Springfield, Mass. Trolley-cycle | 526,832 | Oct. 2 | 265 | 64 | 69 | 50 |
| Gardner, Levi S., G. Cook, and A. O. Tannenberg, assignors to W. H. Bofinger, New Orleans, La. Cotton-band cutter | 529,276 | Nov. 13 | 1321 | 318 | 69 | 905 |
| Gardy, Henry D., assignor of one-half to T. C. Burk, Chester, Pa. Roundabout | 527,962 | Oct. 23 | 2153 | 518 | 69 | 443 |
| Garfield, Frank R., Concord, Mass. Cash-receptacle | 527,240 | Oct. 9 | 919 | 221 | 69 | 186 |
| Garies, Fannie M., assignor of one-half to M. E. Bustard, New York, N. Y. Instrument for chiropodists' use | 527,240 | Oct. 9 | 920 | 222 | 69 | 186 |
| Garing, Adolph, Allentown, assignor of one-half to C. H. Fuller, Catasauqua, Pa. Sand-box for cars | 528,904 | Nov. 6 | 711 | 168 | 69 | 776 |
| Garland, Michael. (See Thomas, Edwin E., assignor.) | | | | | | |
| Garland, Michael, Bay City, Mich. Sawing-machine | 528,688 | Oct. 23 | 2379 | 574 | 69 | 484 |
| Garland, Michael, assignor to M. Garland Company, Bay City, Mich. Driving live-rolls | 530,333 | Dec. 4 | 454 | 114 | 69 | 1297 |
| Garland, Richard T., Altoona, Pa. Car-door | 531,110 | Dec. 18 | 1806 | 429 | 69 | 1574 |
| Garside, Irad L., Paterson, N. J., assignor to Multi-Stroke Bell Company, of New Jersey. Signal-bell | 531,373 | Dec. 25 | 2293 | 547 | 69 | 1679 |
| Garvey, Charles J., assignor to Colhoun Manufacturing Company, Chicago, Ill. Curry-comb | 531,412 | Dec. 25 | 2351 | 561 | 69 | 1690 |
| Gas-Motoren-Fabrik-Deutz. (See Schumm, Hermann, assignor.) | | | | | | |
| Gas Traction Company. (See Prawatke, August, assignor.) | | | | | | |
| Gaskell, Silas S. C., assignor to F. M. Whiteman, Canton, Ohio. Tumbler-washer | 529,727 | Nov. 20 | 1826 | 434 | 69 | 1017 |
| Gaskill, Elijah T., assignor of one-half to C. D. Patterson, New Berne, N. C. Mattress-filling machine | 530,040 | Nov. 27 | 2699 | 648 | 69 | 1191 |
| Gaskill, Isaac N., St. Louis, Mo. Automatic pressure-regulator and stop-valve | 530,765 | Dec. 11 | 1220 | 296 | 69 | 1452 |
| Gaskill, William C., Kansas City, Mo. Plate or platter | 529,526 | Nov. 20 | 1825 | 434 | 69 | 1017 |
| Gaskins, Thomas, Arcadia, Fla. Seal-lock | 528,471 | Oct. 30 | 3047 | 739 | 69 | 619 |
| Gassett, Oscar, assignor to Crosby Steam Gage and Valve Company, Boston, Mass. Steam-trap | 526,862 | Oct. 2 | 324 | 79 | 69 | 61 |
| Gassett, Oscar, assignor to Crosby Steam Gage and Valve Company, Boston, Mass. Steam-trap | 528,665 | Nov. 6 | 261 | 64 | 69 | 693 |
| Gaston, James M., Louisville, Ky. Bolt and nut lock | 530,766 | Dec. 11 | 1222 | 296 | 69 | 1452 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Gates Iron Works. (See Carman and Gates, assignors.) | | | | | | |
| Gates Iron Works. (See Gates, Ryerson D., and P. W., assignors.) | | | | | | |
| Gates, Philetus W. (See Carman and Gates.) | | | | | | |
| Gates, Philetus W. (See Gates, Ryerson D. and P. W.) | | | | | | |
| Gates, Ryerson D. and P. W., assignors to Gates Iron Works, Chicago, Ill. Rock or ore crusher | 530,102 | Dec. 4 | 41 | 12 | 69 | 1223 |
| Gatewood, William F., Alton, Ill. Gate | 528,701 | Oct. 2 | 54 | 14 | 69 | 13 |
| Gaudrie, Francis X., Port Hope, Canada. Can-labeling machine | 527,843 | Oct. 23 | 1920 | 462 | 69 | 400 |
| Gautran, Alfred J., Stamford, Conn. Bed-lounge | 531,461 | Dec. 25 | 2455 | 584 | 69 | 1710 |
| Gavioli, Claude, Paris, France. Mechanism for actuating keyboards by means of perforated cards | 531,413 | Dec. 25 | 2352 | {561 / 562} | {69} | 1691 |
| Gay, Chauncy W., West Springfield, Mass. Machine for scoring paper-board | 527,963 | Oct. 23 | 2155 | 518 | 69 | 444 |
| Gayley, James, Braddock, Pa. Method of and apparatus for extracting moisture from air for blast-furnaces | 527,844 | Oct. 23 | 1924 | 463 | 69 | 401 |
| Geary, Frank M. (See Denison and Geary.) | | | | | | |
| Gebauer, John, St. Louis, Mo. Horse-collar-stuffing machine | 529,721 | Nov. 27 | 2134 | 511 | 69 | 1084 |
| Geer, Giles A., Utica, N. Y. Apparatus for ventilating cars | 526,702 | Oct. 2 | 55 | 14 | 69 | 13 |
| Geer, Maurice F. (See Smith and Geer.) | | | | | | |
| Gehly, Theodore H., *et al.* (See McLaughlin, James F., assignor.) | | | | | | |
| Gélardin, Jules, Paris, France. Saw-frame | 527,845 | Oct. 23 | 1926 | 463 | 69 | 401 |
| Gelbaugh, William H., assignor of one-half to A. Hutchinson, Manitou, Colo. Nut-lock | 526,896 | Oct. 2 | 382 | 95 | 69 | 71 |
| Geldowsky, Martha C., St. Louis, Mo. Dress-skirt | 529,828 | Nov. 27 | 2316 | 552 | 69 | 1118 |
| Gelhaar, Otto. (See Leidgen, Nicolaus, assignor.) | | | | | | |
| General Electric Company. (See Ball, Henry P., assignor.) | | | | | | |
| General Electric Company. (See Bassett, Norman C., assignor.) | | | | | | |
| General Electric Company. (See Bell, Louis, assignor.) | | | | | | |
| General Electric Company. (See Clark, John H., assignor.) | | | | | | |
| General Electric Company. (See Darley, John W., Jr., assignor.) | | | | | | |
| General Electric Company. (See Macloskie and Brinckerhoff, assignors.) | | | | | | |
| General Electric Company. (See Metzger, Amandus, assignor.) | | | | | | |
| General Electric Company. (See Potter, William B., assignor.) | | | | | | |
| General Electric Company. (See Reist, Henry G., assignor.) | | | | | | |
| General Electric Company. (See Rice, Edwin W., Jr., assignor.) | | | | | | |
| General Incandescent Arc Light Company. (See Lavens, Erwin, assignor.) | | | | | | |
| General Incandescent Arc Light Company. (See Swoboda, Hans O., assignor.) | | | | | | |
| Gengnagel, Charles, Wabasha, Minn. Horse-hitching device | 529,487 | Nov. 20 | 1751 | 416 | 69 | 1003 |
| Gent, Joseph F., Columbus, Ind. Dust-collector | 531,414 | Dec. 25 | 2358 | {562 / 563} | {69} | 1692 |
| Gentry, William T., Atlanta, Ga. Telephone-call register | 527,759 | Oct. 16 | 1779 | 429 | 69 | 358 |
| Geo. F. Blake Manufacturing Company. (See Hall, Albert F., assignor.) | | | | | | |
| Geo. F. Blake Manufacturing Company. (See Laval, George de, assignor.) | | | | | | |
| Geo. F. Blake Manufacturing Company. (See Whiting and Wheeler, assignors.) | | | | | | |
| George, Albert F., assignor of one-half to J. H. Fink, Kansas City, Mo. Mail-bag | 530,683 | Dec. 11 | 1085 | {263 / 264} | {69} | 1427 |
| George, John S., Buffalo, N. Y. Slat-and-wire fabric | 527,550 | Oct. 16 | 1439 | 350 | 69 | 296 |
| George, William B., Columbus, Ohio. Car-fender | 531,374 | Dec. 25 | 2294 | 547 | 69 | 1679 |
| George, William R., Stamton, Ill. Pump | 531,111 | Dec. 18 | 1807 | 429 | 69 | 1574 |
| Georges, Jules des, Paris, France. Brake for vehicles | 529,785 | Nov. 27 | 2235 | 533 | 69 | 1102 |
| Gerber, George B. (See Phillips, John H., assignor.) | | | | | | |
| Gere, George H., Grand Rapids, Mich. Dust-pan | 531,177 | Dec. 18 | 1932 | 459 | 69 | 1597 |
| Gerlach, Carl C., assignor of one-half to R. P. Gerlach, Cleveland, Ohio. Electromagnet | 529,325 | Nov. 13 | 1434 | 345 | 69 | 928 |
| Gerlach, Rudolph P. (See Gerlach, Carl C., assignor.) | | | | | | |
| Gerry, Edward M., Brooklyn, N. Y. Tubular resonator | 527,488 | Oct. 16 | 1336 | 325 | 69 | 278 |
| Getze, Frank F., Los Angeles, Cal. Hasp-lock | 531,178 | Dec. 18 | 1932 | 460 | 69 | 1597 |
| Geyer, George, Brooklyn, N. Y. Machine for softening skins | 531,462 | Dec. 25 | 2456 | 585 | 69 | 1710 |
| Gibbons, Michael J., Dayton, Ohio. Grease-trap | 530,684 | Dec. 11 | 1087 | 264 | 69 | 1427 |
| Gibbs, Cyrenus A., Schenectady, N. Y. Grain measuring and registering apparatus | 529,068 | Nov. 13 | 987 | {234 / 235} | {69} | 845 |
| Gibbs Loom, Harness and Reed Company. (See Vogelsang, Herman, assignor.) | | | | | | |
| Gibney, John. (See Weller, Chester A., assignor.) | | | | | | |
| Gibson, Robert A., Buffalo, N. Y. Vehicle-wheel rim | 528,066 | Nov. 6 | 263 | 65 | 69 | 693 |
| Giddings, C. M. (See Carpenter, Rolla C., assignor.) | | | | | | |
| Giese, James A., assignor to Adams & Westlake Company, Chicago, Ill. Keyhole-guard | 528,667 | Nov. 6 | 263 | 65 | 69 | 693 |
| Gieseler, K., *et al.* (See Evans, Morris, assignor.) | | | | | | |
| Giesaler, William J., assignor of one-half to A. Kilpatrick and F. J. Hunleth, St. Louis, Mo. Fireproof door or shutter | 530,410 | Dec. 4 | 581 | 145 | 69 | 1321 |
| Gifford, Charles A., assignor to Taplin, Rice & Company, Akron, Ohio. Means for opening or closing air-inlet or draft doors | 529,166 | Nov. 13 | 1152 | 277 | 69 | 876 |
| Gifford, Cyrus P., Erie, Pa. Mechanical toy speller | 527,964 | Oct. 23 | 2157 | 519 | 69 | 444 |
| Gifford, Martin S., Lockport, N. Y. Lawn-rake | 530,041 | Nov. 27 | 2701 | 649 | 69 | 1191 |
| Gilbert, Benjamin A., Boston, Mass., assignor to H. E. Kirstein, Rochester, N. Y. Bridge-spring for eyeglasses or spectacles | 527,745 | Oct. 16 | 1757 | 423 | 69 | 354 |
| Gilbert Corset Company. (See Gilbert, Thomas S., assignor.) | | | | | | |
| Gilbert, David D., New York, N. Y. Steam blower or injector for boiler-furnaces | 526,703 | Oct. 2 | 58 | 15 | 69 | 13 |
| Gilbert, Henry J., Saginaw, Mich. Wood pulley and building same | 527,965 | Oct. 23 | 2158 | {519 / 520} | {69} | 444 |
| Gilbert, Thomas S. assignor to Gilbert Corset Company, Springfield, Mass. Abdominal corset | 527,966 | Oct. 23 | 2162 | 520 | 69 | 445 |
| Gilbert, Thomas S., assignor to Gilbert Corset Company, Springfield, Mass. Corset | 531,159 | Dec. 18 | 1934 | 460 | 69 | 1598 |
| Gilchrist, Peter S., Charleston, S. C. Apparatus for making sulfuric acid | 527,689 | Oct. 16 | 1653 | 398 | 69 | 335 |
| Gilcrest, J. S., *et al.* (See Stanley, John E., assignor.) | | | | | | |
| Gile, Jacob M., Denver, Col. Electrician's combination-tool | 529,488 | Nov. 20 | 1752 | 416 | 69 | 1004 |
| Gillette, Mott G. (See Parker and Gillette.) | | | | | | |
| Gillies, Daniel, *et al.* (See Humes, Judson W., assignor.) | | | | | | |
| Gilliland, James A., Warrensburg, Mo. Shipping-coop for poultry | 529,959 | Nov. 13 | 1324 | 318 | 69 | 966 |
| Gillingham, John, assignor of one-third to J. Deakyne, Wilmington, Del. Bicycle | 530,042 | Nov. 27 | 2702 | 649 | 69 | 1191 |
| Gilman, Benjamin I., Brookline, Mass. Book-holder | 529,442 | Nov. 20 | 1668 | 397 | 69 | 990 |
| Gilmore, William B., Columbia, Ill. Bait-receptacle | 531,112 | Dec. 18 | 1808 | 430 | 69 | 1574 |
| Gilmore, William C., Letts, assignor to L. Van Horn & Snyder, Louisa county, Iowa. Hand garden-plow | 528,937 | Nov. 13 | 768 | 181 | 69 | 307 |
| Gilpin, Tilman, and L. McHargue, Broadhead, Ky. Drilling-machine | 528,472 | Oct. 30 | 3048 | 739 | 69 | 619 |
| Gilson, William M., Blanchard, Iowa. Photographic head and body rest | 527,656 | Oct. 9 | 629 | 153 | 69 | 133 |
| Gilstrap, James W., Rolla, and W. D. Gilstrap, Racine, assignors of one-third to A. L. McRae, Rolla, Mo. Burglar-alarm for safes | 530,411 | Dec. 4 | 582 | 145 | 69 | 1322 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Gilstrap, William D. (See Gilstrap, James W. and W. D.) | | | | | | |
| Gindler, Carl, Salzgitter, Germany. Horse-hoe | 527,419 | Oct. 16 | 1220 | {298 / 299} | {69} | 254 |
| Gipe, Emanuel C., assignor to Standard Store Service Company, Freeport, Ill. Package-carrier | 528,203 | Oct. 30 | 2578 | 624 | 69 | 535 |
| Girard, Moses D., Penrwater, Mich. Lumberman's rubber and stocking | 528,473 | Oct. 30 | 3049 | 740 | 69 | 619 |
| Girouard, Theophile, St. Catharines, Canada. Exterior finish for frame structures | 529,722 | Nov. 27 | 2136 | 511 | 69 | 1084 |
| Girr, Frederick, Hoboken, N. J. Pulley | 529,028 | Nov. 13 | 917 | 218 | 69 | 833 |
| Gist, John A. L., Curia, Ark. Weight for plow-beams | 531,027 | Dec. 18 | 1658 | 393 | 69 | 1547 |
| Gist, Lane, Scranton, assignor of one-half to G. L. Brower, Des Moines, Iowa. Well-boring apparatus | 530,989 | Dec. 18 | 1589 | 377 | 69 | 1534 |
| Gladfelter, George, Cedar Rapids, Iowa. Car-coupling | 529,029 | Nov. 13 | 918 | 218 | 69 | 833 |
| Glahn, George A., assignor to Simpson, Hall, Miller & Co., Wallingford, Conn. Orange-holder | 527,603 | Oct. 16 | 1594 | 370 | 69 | 311 |
| Glahn, Henry con. (See Doelle and Glahn.) | | | | | | |
| Gläser, Hermann, Vienna, Austria-Hungary. Candle-grasp | 531,028 | Dec. 18 | 1658 | 393 | 69 | 1547 |
| Gleason, Henri E., Oneida, N. Y. Wheel | 528,125 | Oct. 23 | 2143 | 591 | 69 | 495 |
| Glynn, Thomas, Philadelphia, Pa. Coffee-pot | 530,835 | Dec. 11 | 1384 | 318 | 69 | 1472 |
| Godfrey, George L., Old Town, Me. Boat | 529,756 | Nov. 27 | 2237 | 533 | 69 | 1102 |
| Goersch, Charles, Jeddo, Pa. Tree-protector | 531,113 | Dec. 18 | 1810 | 430 | 69 | 1575 |
| Goerz, Carl P., Schöneberg, and E. Von Höegh, Wilmersdorf, Germany. Lens for optical purposes | 528,155 | Oct. 30 | 2495 | 604 | 69 | 920 |
| Goettsch, Herman, Chicago, Ill., assignor of one-half to J. W. Sefton Manufacturing Company, of Indiana. Paper box | 530,334 | Dec. 4 | 456 | 114 | 69 | 1297 |
| Goetz, George W., Milwaukee, Wis. Removing enamel from metal | 528,156 | Oct. 30 | 2497 | ..... | 69 | 920 |
| Goff, Joseph G., Philadelphia, Pa. Perforating device | 526,777 | Oct. 2 | 181 | 42 | 69 | 34 |
| Goff, Joseph M., Ruston, La. Grocer's cabinet | 529,598 | Nov. 20 | 1898 | {434 / 435} | {69} | 1018 |
| Goforth, William A., Duquoin, Ill. Krant-cutter | 528,157 | Oct. 30 | 2497 | 604 | 69 | 920 |
| Gogle, John E., Middleville, Mich. Seal | 528,089 | Oct. 23 | 2381 | 574 | 69 | 484 |
| Gold Car Heating Company *et al.* (See Lamplough, Frederick, assignor.) | | | | | | |
| Gold, Egbert H., Chicago, Ill. Car-heating system | 528,158 | Oct. 30 | 2498 | {604 / 605} | {69} | 920 |
| Gold, Egbert H., Chicago, Ill. Car-heater | 529,723 | Nov. 27 | 2137 | {511 / 512} | {69} | 1085 |
| Goldberg, Ottilie H., St. Louis, Mo. Car-ventilator | 527,241 | Oct. 9 | 921 | 222 | 69 | 186 |
| Golding, John F., Chicago, Ill. Partition for buildings | 530,940 | Dec. 18 | 1501 | 355 | 69 | 1519 |
| Golding, John F., Chicago, Ill., assignor to Expanded Metal Company, of Missouri. Making expanded sheet metal | 527,242 | Oct. 9 | 922 | 222 | 69 | 187 |
| Golding, John F., assignor to Standard Fire Proofing Company, Chicago, Ill. Construction of floors and ceilings | 529,724 | Nov. 27 | 2139 | 512 | 69 | 1085 |
| Golding, William H., Newton, Mass. Printing-press | 529,489 | Nov. 20 | 1753 | {416 / 417} | {69} | 1004 |
| Goldman, Samuel S., St. Louis, Mo. Bathing apparatus | 527,057 | Oct. 9 | 631 | 153 | 69 | 133 |
| Goldrick, Henry P. (See Smith and Goldrick.) | | | | | | |
| Goldschmidt, Michael, *et al.* (See Heinrich, Oswald, assignor.) | | | | | | |
| Goldschmidt, Philipp, *et al.* (See Heinrich, Oswald, assignor.) | | | | | | |
| Goldschmidt, Siegfried, *et al.* (See Heinrich, Oswald, assignor.) | | | | | | |
| Goldsmith, Nathaniel O. (See Mellen and Goldsmith.) | | | | | | |
| Goldsmith, Nathaniel O., assignor to Weir Frog Company, Cincinnati, Ohio. Spring-frog | 528,474 | Oct. 30 | 3050 | 740 | 69 | 620 |
| Gölsdorf, Karl, Vienna, Austria-Hungary. Compound locomotive-engine | 526,778 | Oct. 2 | 183 | 43 | 69 | 35 |
| Gooch, Frank A. (See Waldo and Gooch.) | | | | | | |
| Gooch, Frank A., New Haven, and L. Waldo, Bridgeport, Conn.; said Waldo assignor to Waldo Foundry, of New Jersey. Reducing aluminium | 527,847 | Oct. 23 | 1930 | 461 | 69 | 402 |
| Gooch, Frank A., New Haven, and L. Waldo, Bridgeport, Conn.; said Waldo assignor to Waldo Foundry, of New Jersey. Reducing aluminium | 527,848 | Oct. 23 | 1934 | {464 / 465} | {69} | 402 |
| Gooch, Frank A., New Haven, and L. Waldo, Bridgeport, Conn.; said Waldo assignor to Waldo Foundry, of New Jersey. Reducing aluminium | 527,849 | Oct. 23 | 1937 | 465 | 69 | 403 |
| Gooch, Frank A., New Haven, and L. Waldo, Bridgeport, Conn.; said Waldo assignor to Waldo Foundry, of New Jersey. Reducing aluminium | 527,850 | Oct. 23 | 1941 | {465 / 466} | {69} | 403 |
| Gooch, Frank A., New Haven, and L. Waldo, Bridgeport, Conn.; said Waldo assignor to Waldo Foundry, of New Jersey. Reducing aluminium | 527,851 | " 23 | 1945 | 466 | 69 | 404 |
| Gooch, Frank A., New Haven, and L. Waldo, Bridgeport Conn.; said Waldo assignor to Waldo Foundry, of New Jersey. Reducing aluminium | 528,365 | Oct. 30 | 2859 | {692 / 693} | {69} | 586 |
| Good, Robert, Jr., Poughkeepsie, N. Y. Snap-rest | 531,526 | Dec. 25 | 2530 | 612 | 69 | 1730 |
| Goodbody, John H., Brooklyn, N. Y. Hook or eye strip | 529,550 | Nov. 20 | 1805 | 443 | 69 | 1024 |
| Goodell, Albert D., Worcester, Mass. Combined hinge-gage and square | 531,114 | Dec. 18 | 1811 | 430 | 69 | 1575 |
| Gooding, Charles S. (See Knight and Gooding.) | | | | | | |
| Gooding, Charles S., Brookline, and W. E. C. Goodey, Melrose, assignors to R. D. Evans, J. S. Lockwood, Boston, and M. E. Knight, South Framingham, Mass. Reel | 527,368 | Oct. 9 | 1135 | 277 | 69 | 226 |
| Goodman, Daniel A., Salisbury, N. C. Treating hides | 528,427 | Oct. 30 | 2989 | ..... | 69 | 605 |
| Goodman, Edward H., Pittsburg, assignor to Union Switch and Signal Company, Swissvale, Pa. Signal | 527,967 | Oct. 23 | 2164 | 520 | 69 | 445 |
| Goodman, Henry M. (See Goodman, John and H. M.) | | | | | | |
| Goodman, John and H. M., Louisville, Ky. Telephone-transmitter | 530,472 | Dec. 4 | 584 | 145 | 69 | 1322 |
| Goodrich, Frank L., assignor to National Sewing Machine Company, Belvidere, Ill. Vehicle-wheel rim | 530,990 | Dec. 18 | 1591 | 378 | 69 | 1534 |
| Goodson, George A., assignor to Goodson Type Casting and Setting Machine Company, Minneapolis, Minn. Apparatus for casting molten material | 530,479 | Dec. 4 | 601 | 173 | 69 | 1342 |
| Goodson, George A., assignor to Goodson Type Casting and Setting Machine Company, Minneapolis, Minn. Type casting and setting machine | 530,481 | Dec. 4 | 604 | {173 / 174 / 175 / 176 / 177} | {69} | 1342 |
| Goodson Type Casting and Setting Machine Company. (See Goodson, George A., assignor.) | | | | | | |
| Goodwin, Adolphus D., Haran, Va. Water-conveyer | 528,090 | Oct. 23 | 2382 | {574 / 575} | {69} | 485 |
| Goodwin, Edwin B., Boulder, Colo. Roasting-furnace | 527,746 | Oct. 16 | 1758 | 423 | 69 | 354 |
| Goodwin, Henry L., New York, N. Y., assignor to J. Starr, Halifax, Canada. Fire-ladder apparatus | 528,938 | Nov. 13 | 769 | {181 / 182} | {69} | 808 |
| Goodwin, Otis F., Valdosta, Ga. Roller cotton-gin | 530,941 | Dec. 18 | 1502 | 356 | 69 | 1519 |
| Gordon, Ora P., Hopkins Station, Mich. Device for securing barrel-heads in place | 529,725 | Nov. 27 | 2141 | 512 | 69 | 1085 |
| Gormully, Richard P., Chicago, Ill. Velocipede-lantern | 531,180 | Dec. 18 | 1935 | 460 | 69 | 1598 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Goshen Folding Bed Company. (See Ru Ton, Hiram W., assignor.) | | | | | | |
| Goss Printing Press Company. (See Firm, Joseph L., assignor.) | | | | | | |
| Gosselin, Joseph A., Drummondville, Canada. Curd-cutting machine | 527,429 | Oct. 16 | 1222 | 300 | 69 | 955 |
| Gotham, Darwin B., Watertown, N. Y. Strainer | 530,586 | Dec. 11 | 949 | 225 | 69 | 1399 |
| Göttsch, Friedrich A., Kiel, Germany. Calculating clock or dial | 530,876 | Dec. 11 | 1026 | 319 | 69 | 1472 |
| Gottwals, William O., Washington, D. C. Bill-file | 527,277 | Oct. 9 | 989 | 239 | 69 | 198 |
| Gottwals, William O., Washington, D. C. Bill-file | 527,278 | Oct. 9 | 990 | 240 | 69 | 198 |
| Goudey, William E. C. (See Gooding and Goudey.) | | | | | | |
| Gould, Aaron P., Canton, Ohio. Dental or surgical chair | 529,902 | Nov. 27 | 2436 | 585 | 69 | 1140 |
| Gould, Aaron P., Canton, Ohio. Trolley-wire support and coupling | 529,903 | Nov. 27 | 2438 | 586 | 69 | 1141 |
| Gould, Charles A., Bay Side, N. Y. Car-buffer | 529,857 | Nov. 27 | 2368 | 566 | 69 | 1127 |
| Gould, George F. (See Schumacher, Gustave W., assignor.) | | | | | | |
| Gould, Isaac C., London, England. Case or holder for letters, &c | 526,779 | Oct. 2 | 185 | 43,44 | 69 | 35 |
| Goulding, William E., Oklahoma, Okla. Ter. Invalid-lifting apparatus | 528,475 | Oct. 30 | 3051 | 740 | 69 | 620 |
| Gousset, Cyprien, New York, N. Y. Chocolate-dipper | 526,968 | Oct. 2 | 491 | 120 | 69 | 92 |
| Grabill, John D., Roanoke, Va. Truck | 528,939 | Nov. 13 | 781 | 183 | 69 | 809 |
| Grabler, Peter, and J. J. Brown, Pittsburg, Pa. Square | 527,968 | Oct., 23 | 2165 | 521 | 69 | 445 |
| Gracia, Thomas. (See Hunter, John P., assignor.) | | | | | | |
| Graf, Martin T., assignor of one-half to F. W. Barker, Buffalo, N. Y. Operating device for fare-registers | 527,018 | Oct. 2 | 568 | 138 | 69 | 107 |
| Graff, Elie B., Baltimore, Md. Car-fender | 529,260 | Nov. 13 | 1325 | 318 | 69 | 906 |
| Graham, Edmund H., Biddeford, Me., assignor of one-half to L. Woodbury, Washington, D. C. Positive shuttle-motion for looms | 527,783 | Oct. 23 | 1825 | 439 | 69 | 384 |
| Graham, Edmund H., Biddeford, Me., assignor of one-half to L. Woodbury, Washington, D. C. Positive shuttle-motion for looms | 527,784 | Oct. 23 | 1826 | 439 | 69 | 384 |
| Graham, George H. (See O'Connor and Graham.) | | | | | | |
| Graham, Howard, Chicopee, Mo. Center-revolving folding extension-table | 528,250 | Oct. 30 | 2867 | 642 | 69 | 552 |
| Graham, Malcolm, *et al.* (See Mosher, Beardsley, and Moulton, assignors.) | | | | | | |
| Graham, Robert O., Bloomington, Ill. Oil-pump | 527,421 | Oct. 16 | 1223 | 300 | 69 | 955 |
| Graham, Robert O., Bloomington, Ill. Oil-pump | 527,422 | Oct. 16 | 1224 | 300 | 69 | 955 |
| Grand' Montagne, Feuillen, Brussels, Belgium. Manufacturing artificial marbles | 527,960 | Oct. 23 | 2166 | ..... | 69 | 446 |
| Grand Rapids Seating Company. (See Bennett, George M., assignor.) | | | | | | |
| Granger, Frank D., New York, N. Y., assignor of one-half to H. A. Penrose, New London, Conn. Trigger mechanism for guns. (Reissue) | 11,458 | Dec. 11 | 1460 | 346 | 69 | 1496 |
| Granges, John C. des, Pittsburg, Pa. Elevated railway | 527,236 | Oct. 9 | 912 | 220 | 69 | 185 |
| Granite Filter Company. (See Emery, Avery L., assignor.) | | | | | | |
| Grant, Charles N., assignor of one-half to O. Brown, Haverhill, Mass. Roller-toboggan | 528,224 | Oct. 30 | 2619 | 631 | 69 | 542 |
| Grant, James W., Bridgeport, Conn. Coin-holder | 530,685 | Dec. 11 | 1088 | 264 | 69 | 1428 |
| Grant, Robert A., assignor of three-fourths to A. F. Borchardt, C. A. Hall, and J. C. Schott, Providence, R. I. Electric-railway trolley | 526,807 | Oct. 2 | 383 | 95 | 69 | 71 |
| Grauel, Edwin S., Cleveland, Ohio. Fan | 527,423 | Oct. 16 | 1225 | 301 | 69 | 955 |
| Grauert, Edgar, New York, N. Y. Bicycle-tire | 529,261 | Nov. 13 | 1326 | 319 | 69 | 906 |
| Grauten, William A., Hartford, Conn. Rail-bond | 527,785 | Oct. 23 | 1827 | 439 | 69 | 385 |
| Gray, Albert L., Tarkio, Mo. Syringe | 527,681 | Oct. 16 | 1654 | 398 | 69 | 335 |
| Gray, Douglas W., Painted Post, N. Y. Device for packing tobacco hands in cases or casks | 529,069 | Nov. 13 | 990 | 235 | 69 | 845 |
| Gray, Henry F., assignor to W. P. Harrison, Columbus, Ohio. Ironing-machine | 528,091 | Oct. 23 | 2384 | 575 | 69 | 485 |
| Gray, James. (See Johnston and Gray.) | | | | | | |
| Gray, James, Chicago, Ill. Rotary measure | 530,686 | Dec. 11 | 1089 | 264 | 69 | 1428 |
| Gray, Joshua W., Chicago, Ill. Pneumatic door-controller | 528,909 | Nov. 6 | 720 | 169 | 69 | 778 |
| Gray, Lawrence B., Boston, Mass. Holder for phonograph cylinders | 529,804 | Nov. 27 | 2439 | 586 | 69 | 1141 |
| Gray, Robert H. (See Burrill, Lemuel B., assignor.) | | | | | | |
| Graybill, Joseph F., York, Pa. Alarm lock for doors, &c | 527,527 | Oct. 16 | 1404 | 342 | 69 | 989 |
| Gredt, Paul, Esch, Belgium. Recovering iodids, chlorids, or other salts from blast-furnace gases | 529,070 | Nov. 13 | 991 | 236 | 69 | 846 |
| Green, Casper T., Dublin, assignor to A. F. Huddleston, Randolph county, Ind. Glass receptacle | 528,631 | Nov. 6 | 186 | 45 | 69 | 680 |
| Green, Henry J., Brooklyn, N. Y. Eyeglass suspender | 527,147 | Oct. 9 | 772 | 188 | 69 | 158 |
| Green, John, Renovo, Pa. Support for game-boards | 527,279 | Oct. 9 | 992 | 240 | 69 | 198 |
| Green, John C. (See Drake and Green.) | | | | | | |
| Green, John J., assignor to Loando Hard Rubber Company, Boonton, N. J. Trolley-wire hanger | 526,704 | Oct. 2 | 59 | 15 | 69 | 14 |
| Green, John J., Boonton, N. J., assignor to Universal Electric Company of the City of New York. Electric-railway supply system | 530,482 | Dec. 4 | 720 | 177 | 69 | 1346 |
| Green, John R., Woodstock, Ala. Steel combination railway-tie | 527,682 | Oct. 16 | 1655 | 399 | 69 | 335 |
| Green, Joseph J., Mulberry Grove, Ga. Cotton-chopper | 528,159 | Oct. 30 | 2501 | 605 | 69 | 521 |
| Green, Roselle T., Worcester, Mass. Adjustable curtain-bracket | 526,920 | Oct. 2 | 421 | 105 | 69 | 79 |
| Green, William E., Tiffin, assignor of two-thirds to J. G. Walter and H. Day, Maple Grove, Ohio. Wire-stretcher | 529,648 | Nov. 20 | 2011 | 481 | 69 | 1052 |
| Greenawalt, Peter C., Reading, Pa. Sad-iron | 528,306 | Oct. 30 | 2882 | 693 | 69 | 586 |
| Greene, Charles M. (See Nolon, Edward, assignor.) | | | | | | |
| Greene, John R., *et al.* (See Hutchinson, Calvin A., assignor.) | | | | | | |
| Greene, John W., assignor of one-half to T. D. Brown, Canandaigua, N. Y. Single-piece sheet-metal spout | 530,587 | Dec. 11 | 921 | 225 | 69 | 1399 |
| Greene, Samuel F., and S. W. Law, Philadelphia, Pa. Window-shutter | 530,835 | Dec. 11 | 1428 | 349 | 69 | 1473 |
| Greene, Thomas D. (See Abbott and Greene.) | | | | | | |
| Greene, William A., Ocean Grove, assignor of one-half to E. R. Cahoone, Newark, N. J. Stove or range for burning bituminous coal | 529,376 | Nov. 20 | 1533 | 367 | 69 | 966 |
| Greenwood, Stephen D. (See Moritz and Greenwood.) | | | | | | |
| Greenwood, William H. (See Herrington, Ephraim, assignor.) | | | | | | |
| Greer, Arthur, Monitean, Mo. Feed-trough | 528,871 | Nov. 6 | 643 | 153 | 69 | 764 |
| Greer, Charles M. (See Lare and Greer.) | | | | | | |
| Greer, Howard, Chicago, Ill. Railway-track brace | 527,489 | Oct. 16 | 1337 | 326 | 69 | 278 |
| Gregg, Andrew F., assignor of one-half to E. S. Havens, Cincinnati, Ohio. Hot-box indicator and oiler | 526,921 | Oct. 2 | 425 | 105 | 69 | 79 |
| Gregory, Eugene, Ann Arbor, Mich. Dice-box | 528,428 | Oct. 30 | 2970 | 718 | 69 | 605 |
| Gregory, George W. (See Noyes, Bernice J., assignor.) | | | | | | |
| Greiner, John E., Baltimore, Md. Construction of bridges, roofs, &c | 528,940 | Nov. 13 | 783 | 183 | 69 | 809 |
| Grenier, Jane B. A., Woonsocket, R. I. Wheelbarrow | 528,251 | Oct. 30 | 2668 | 643 | 69 | 552 |
| Grieb, David Y., Suburba, Tenn. Hand-truck | 530,991 | Dec. 18 | 1592 | 378 | 69 | 1514 |
| Grier, Matthew J. (See Broadwell, Edward C., assignor.) | | | | | | |
| Grieser, Henry, assignor of two-thirds to C. L. Hood and C. B. Tomlinson, St. Louis, Mo. Street-car fender | 529,726 | Nov. 27 | 2142 | 513 | 69 | 1085 |
| Griffin, Jesse H. (See Beaver, Francis M., assignor.) | | | | | | |
| Griffith, David C. B., London, England. Toy track or course | 530,767 | Dec. 11 | 1223 | 296 | 69 | 1452 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Griffith, Jacob K., Latrobe, Pa. Sole for slippers or shoes | 527,280 | Oct. 9 | 993 | 240 / 241 | 69 | 198 |
| Griffiths, William A. (See Walton and Griffiths.) | | | | | | |
| Griffiths, William U., and H. Niedermayer, Philadelphia, Pa. Air-compressing device | 530,335 | Dec. 4 | 457 | 114 | 69 | 1297 |
| Griffiths, William U., and H. Niedermayer, Philadelphia, Pa. Air-compressing device | 530,336 | Dec. 4 | 459 | 115 | 69 | 1297 |
| Griggs, Wilfred E., Waterbury, Conn. Machine for making perforated sheet music | 527,970 | Oct. 23 | 2168 | 521 | 69 | 446 |
| Grindrod, John T., Heswall, assignor of one-half to J. Holt, Wanstead Park, England. Heating apparatus | 526,780 | Oct. 2 | 187 | 44 | 69 | 36 |
| Grinnell, Amos L., Campbell, Iowa. Machine for sawing logs | 530,942 | Dec. 18 | 1501 | 357 | 69 | 1520 |
| Griscom, William, Jr., Bound Brook, N. J., assignor to Standard Paint Company, New York, N. Y. Vulcanizable compound | 529,727 | Nov. 27 | 2143 | ..... | 69 | 1086 |
| Griscom, William, Jr., Bound Brook, N. J., assignor to Standard Paint Company, New York, N. Y. Vulcanizable compound | 529,728 | Nov. 27 | 2145 | .... | 69 | 1086 |
| Griscom, William, Jr., Bound Brook, N. J., assignor to Standard Paint Company, New York, N. Y. Painting compound | 529,729 | Nov. 27 | 2147 | ..... | 69 | 1086 |
| Griscom, William, Jr., Bound Brook, N. J., assignor to Standard Paint Company, New York, N. Y. Hard vulcanized compound | 529,730 | Nov. 27 | 2149 | ..... | 69 | 1086 |
| Griscom, William, Jr., Bound Brook, N. J., assignor to Standard Paint Company, New York, N. Y. Compounding vulcanizable compounds and vulcanizing and applying the same | 529,905 | Nov. 27 | 2440 | ..... | 69 | 1141 |
| Groat, Louis W., Hudson, N. Y. Knitted shirt | 527,551 | Oct. 16 | 1441 | 350 | 69 | 996 |
| Groebli, Joseph A., assignor to Kursheedt Manufacturing Company, New York, N. Y. Fabric-moving mechanism for embroidering-machines | 528,630 | Nov. 6 | 186 | 46 / 47 / 48 / 49 / 50 | 69 | 680 |
| Gross, Albert H., *et al.* (See Howe, Henry A., assignor.) | | | | | | |
| Gross, David G., assignor of one-half to J. R. Eden, Berlin, Canada. Car-coupling | 530,375 | Dec. 25 | 2296 | 548 | 69 | 1680 |
| Gross, Eli. (See Able and Gross.) | | | | | | |
| Gross, J. P., *et al.* (See Harvey, Isaac, assignor.) | | | | | | |
| Grossé, Ernst P., Gross Krausznigk, Germany. Trap-door stair | 527,552 | Oct. 24 | 1949 | 466 / 467 | 69 | 405 |
| Groswith, Henry. (See Alexander and Groswith.) | | | | | | |
| Grosz, Martin J., Emporia, Kans. Mail-crane | 529,071 | Nov. 13 | 992 | 236 / 237 | 69 | 846 |
| Grove, Jacob R., assignor to W. E. Peck, trustee, New York, N. Y. Incandescent lamp | 530,838 | Dec. 11 | 1430 | 349 | 69 | 1473 |
| Grover, Albert D., Malden, Mass. Bridge for banjos | 530,482 | Dec. 4 | 524 | 127 | 69 | 1317 |
| Grover, Alva J., Omaha, Nebr. Self-recording canal, sewer, and rain gage or meter | 530,337 | Dec. 4 | 460 | 115 / 116 | 69 | 1298 |
| Grover, Alva J., Omaha, Nebr. Self-recording rain-gage | 530,338 | Dec. 4 | 465 | 116 | 69 | 1298 |
| Grover, George W., and J. A. Northrop, New Milford; said Grover assignor to C. L. Morgan, Danbury, Conn. Machine for wetting hat-bodies on cones | 526,999 | Oct. 2 | 534 | 131 / 132 | 69 | 100 |
| Grubb, Reuben J., Philadelphia, Pa. Apparatus for making rugs, &c | 527,971 | Oct. 23 | 2171 | 522 | 69 | 446 |
| Grubbs, John W., Fair Play, S. C. Planter attachment for plows | 527,683 | Oct. 16 | 1656 | 399 | 69 | 335 |
| Gruell, August. (See Kropf, Paul, assignor.) | | | | | | |
| Grueter, John B., and O. Jackson, Carrollton, Ill. Speed-multiplying gearing for bicycles or other machines | 530,103 | Dec. 4 | 41 | 12 | 69 | 1223 |
| Grumbley, J. S. (See Ramsey, Philip L., assignor.) | | | | | | |
| Grundy, James, Paterson, N. J. Ruling device | 528,476 | Oct. 30 | 3052 | 740 / 741 | 69 | 620 |
| Grunwald, Ludwig, Toledo, assignor of one-half to C. Lang and D. Flath, Norwalk, Ohio. Car-coupling | 530,413 | Dec. 4 | 386 | 146 | 69 | 1322 |
| Gschwendtner, Georg, Cincinnati, Ohio. Billiard-cue | 529,731 | Nov. 27 | 2150 | 513 | 69 | 1085 |
| Guarantee Trust and Safe Deposit Company, trustee. (See Lowe, Thaddeus S. C., assignor.) | | | | | | |
| Guilbert, Edmond, Woonsocket, R. I. Picker-motion for looms | 527,853 | Oct. 23 | 1950 | 467 | 69 | 405 |
| Guillan, Rosa A., Pittsburg, Pa. Bust-form | 528,633 | Nov. 6 | 209 | 51 | 69 | 681 |
| Guillaume, Alfred, assignor to T. T. Oliver, Chicago, Ill. Apparatus for extracting metals | 531,309 | Dec. 25 | 2175 | 521 | 69 | 1657 |
| Guilleaume, Theodore, Cologne, Germany. Electric cable | 531,644 | Dec. 25 | 2306 | 549 | 69 | 1760 |
| Guinard, Henry. (See Vodovelli, Edouard, assignor.) | | | | | | |
| Guinard, Henry, New York, N. Y. Hollow glassware | 529,367 | Nov. 20 | 1535 | 367 | 69 | 966 |
| Guldlin, Olaf N., Fort Wayne, Ind. Oil-feeding apparatus for gas-generators | 528,572 | Nov. 6 | 644 | 154 | 69 | 764 |
| Guldlin, Olaf N., Fort Wayne, Ind. Water-gas apparatus | 529,262 | Nov. 13 | 1327 | 319 | 69 | 906 |
| Gulliberg, Carl, Jersey City, N. J. Electric clock | 527,528 | Oct. 16 | 1405 | 342 | 69 | 989 |
| Gunner, Henry H., and F. O. Shirley, Northfield, Minn. Corn-planter | 529,167 | Nov. 13 | 1150 | 278 | 69 | 776 |
| Gunning, Thomas, Pittsburg, Pa. Steam-boiler | 529,529 | Nov. 20 | 1831 | 435 | 69 | 1018 |
| Gurney, Edward, Toronto, Canada. Steam or hot-water boiler | 528,325 | Oct. 30 | 2793 | 673 / 674 | 69 | 573 |
| Guthrie, John W. (See Sprague and Guthrie.) | | | | | | |
| Guthrie, William A., Durham, N. C. Automatic fire-alarm | 530,839 | Dec. 11 | 1431 | 349 | 69 | 1473 |
| Gutmann, Ludwig, Pittsburg, Pa. Alternating-current motor and operating same | 530,176 | Dec. 4 | 104 | 43 | 69 | 1245 |
| Gutmann, Ludwig, Pittsburg, Pa. Alternating electric motor | 530,177 | Dec. 4 | 105 | 43 | 69 | 1245 |
| Gutmann, Ludwig, Pittsburg, Pa. Electric conversion system | 530,178 | Dec. 4 | 170 | 43 | 69 | 1245 |
| Gutterson, Frank E., Brooklyn, N. Y., assignor of one-half to H. H. Howard, East Orange, N. J. Seal | 531,376 | Dec. 25 | 2297 | 548 | 69 | 1680 |
| Guy, Joseph, New York, N. Y. Heating attachment for gas cooking stoves | 530,610 | Dec. 11 | 1015 | 248 | 69 | 1115 |
| Guy, Warwick. (See Ryan, Arthur, assignor.) | | | | | | |
| Gwin, Andrew J., assignor of one-half to J. F. Hill, Minden, La. Railway cattle-guard | 527,684 | Oct. 16 | 1657 | 399 | 69 | 336 |
| H. W. Butterworth & Sons Company. (See Mackinney, William C., assignor.) | | | | | | |
| Haag, Adam W., Fleetwood, Pa. Trough | 531,527 | Dec. 25 | 2561 | 613 | 69 | 1730 |
| Haberkorn, Theodore H., Fort Wayne, Ind. Governor for air-brakes | 531,181 | Dec. 18 | 1936 | 460 | 69 | 1598 |
| Haberle, John B., assignor to Studebaker Brothers Manufacturing Company, South Bend, Ind. Sprinkler | 528,252 | Oct. 30 | 2670 | 643 | 69 | 552 |
| Hackman, Thomas B., L. and A. Rupped, Aurora, Mo. Hoisting and drilling machine | 529,378 | Nov. 20 | 1535 | 367 | 69 | 967 |
| Hackworth, Thomas R., and W. C. McLellan, assignors of one-fourth to T. S. Richards, South Pittsburg, Tenn. Fire-alarm | 528,160 | Oct. 30 | 2503 | 605 | 69 | 521 |
| Hadam, August, and C. Wolf, St. Louis, Mo. Street-indicator | 530,768 | Dec. 11 | 1224 | 297 | 69 | 1454 |
| Hadley, Joshua A., assignor of one-half to T. C. Smith, Brazil, Ind. Stovepipe-fastener | 530,184 | Dec. 4 | 724 | 178 | 69 | 1347 |
| Hadley, William, assignor of one-third to F. C. Wilkinson, Shelton, Conn. Automatic feed for wood-barking machines | 528,873 | Nov. 6 | 647 | 154 | 69 | 764 |
| Haege, Louis, Belleville, Ill. Gate-hinge | 527,685 | Oct. 16 | 1659 | 400 | 69 | 336 |
| Haesecley, Charles A., *et al.* (See Robinson, William S., assignor.) | | | | | | |
| Haff, Adolf, Pfronten, Germany, assignor to Kenffel & Esser Company, New York, N. Y. Dividers | 528,668 | Nov 6 | 265 | 65 | 69 | 693 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Hagan, Louis T., assignor to Conn-Hagan Company, Winchester, Ky. Stave-jointing machine | 530,943 | Dec. 18 | 1505 | 357 | 69 | 1529 |
| Hagan, Louis T., assignor of one-half to S. A. Conn, Winchester, Ky. Lathing-staple | 531,589 | Dec. 25 | 2664 | 640 | 69 | 1751 |
| Hagar, Franklin W., Nashville, Tenn. Valve-gear | 527,691 | Oct. 16 | 1670 | 402, 403 | 69 | 338 |
| Hagen, Martin P., assignor to S. Alexander, Minneapolis, Minn. Means for hitching horses | 526,898 | Oct. 2 | 384 | 95, 96 | 69 | 72 |
| Haggas, Arthur L., and R. Heaton, Oakworth, England. Combing-machine | 527,243 | Oct. 9 | 923 | 922 | 69 | 187 |
| Hain, Ralph B., Grand Rapids, Mich. Combustible-vapor engine | 531,182 | Dec. 18 | 1938 | 461 | 69 | 1598 |
| Haislett, Samuel J. (See Carter, John T., assignor.) | | | | | | |
| Hajos, Albin, Chattanooga, Tenn. Cravat | 529,732 | Nov. 27 | 2152 | 513, 514 | 69 | 1086 |
| Hakewessell, Reinhold, *et al.* (See Henn, Edwin C., assignor.) | | | | | | |
| Hakewessell, Reinhold, assignor, by mesne assignments, to himself, H. S. Fuller, N. F. Miller, W. J. Gabb, Hartford, and E. C. Henn, Bloomfield, Conn. Screw-making machine | 530,179 | Dec. 4 | 172 | 44, 45 | 69 | 1246 |
| Hale, George C., Kansas City, Mo. Combined horse-collar and hames | 529,733 | Nov. 27 | 2153 | 514 | 69 | 1086 |
| Hall, Albert F., Boston, Mass., assignor to Geo. F. Blake Manufacturing Company, of New Jersey. Pump | 531,528 | Dec. 25 | 2562 | 613 | 69 | 1731 |
| Hall, Alice S. (See Hall, Edgar C., assignor.) | | | | | | |
| Hall, Almond D., *et al.* (See Hall, Charles H., assignor.) | | | | | | |
| Hall, Bicknell, assignor of one-third to E. P. Coleman, Taunton, Mass. Tube for use in expansion-joints | 530,305 | Dec. 4 | 403 | 101 | 69 | 1288 |
| Hall, Charles, New York, N. Y. Pipe-clamp | 527,200 | Oct. 9 | 850 | 207 | 69 | 173 |
| Hall, Charles H., Glidden, Wis., assignor of one-half to A. D. Hall, J. Y. Kinney, and J. K. Roy, St. Louis, Mo. Potato-digger | 529,122 | Nov. 13 | 1070 | 258, 259 | 69 | 861 |
| Hall, Clifton A., *et al.* (See Grant, Robert A., assignor.) | | | | | | |
| Hall, Edgar C., Decatur, Ill., assignor of one-half to A. S. Hall, Toledo, Ohio. Combined antirattler and shaft-support | 529,327 | Nov. 13 | 1437 | 346 | 69 | 928 |
| Hall, George F., Newark, N. J. Luggage-carrier | 530,104 | Dec. 4 | 46 | 13 | 69 | 1224 |
| Hall, Isaac A., Paterson, N. J. Tension device for loom-shuttles | 531,029 | Dec. 18 | 1659 | 393, 394 | 69 | 1547 |
| Hall I. & E. (See Ellis, Oliver J., assignor.) | | | | | | |
| Hall, James, Chicago, Ill. Measuring-tank | 529,326 | Nov. 13 | 1435 | 345 | 69 | 928 |
| Hall, Milan W., Plainfield, N. J. Pump | 528,161 | Oct. 30 | 2504 | 605, 606 | 69 | 522 |
| Hall, Noah. (See Cass, John A., assignor.) | | | | | | |
| Hall, Robert F., assignor to R. F. Hall Manufacturing Company, Limited, Birmingham, England. Cycle-steering lock | 528,874 | Nov 6 | 642 | 154, 155 | 69 | 764 |
| Hall Signal Company. (See Daves, William, assignor.) | | | | | | |
| Hall Signal Company. (See Wilson, Adoniram J., assignor.) | | | | | | |
| Hallett, Albert. (See Adamson, Charles E., assignor.) | | | | | | |
| Hallett, Hervey H., Rockland, Mass. Apparatus for facilitating launching life-boats | 529,379 | Nov. 20 | 1539 | 395 | 69 | 967 |
| Halliburton, Martin J., Portageville, Mo. Chair | 529,386 | Nov. 20 | 1541 | 396 | 69 | 968 |
| Halsey, Fred D., assignor to himself and A. Olfenbuttel, Tyler, Tex. Match-receptacle | 531,115 | Dec. 18 | 1812 | 430, 431 | 69 | 1575 |
| Ham, Albert W., Lansingburg, assignor to Trojan Button Fastener Company, Incorporated, Troy, N. Y. Tube-loader for button-setting machines | 530,105 | Dec. 4 | 48 | 13, 14 | 69 | 1224 |
| Hamann, Carl, Reinbeck, Germany. Driving-gear | 527,552 | Oct. 16 | 1442 | 351 | 69 | 266 |
| Hamblin, Albert G., Ashland, Wis., assignor of one-half to C. H. Wallow, Detroit, Mich. Hitching device | 530,992 | Dec. 18 | 1593 | 378 | 69 | 1535 |
| Hamburger, Israel H. (See May and Aron, assignors.) (Reissue.) | | | | | | |
| Hamilton, Addison, and W. E. Morrison, Ravenswood, W. Va. Cultivator | 529,381 | Nov. 20 | 1542 | 369 | 69 | 968 |
| Hamilton, Charles L., Philadelphia, Pa. Machine for breaking up strings or balls of paper-stock | 527,281 | Oct. 9 | 894 | 241 | 69 | 199 |
| Hamilton, James L., Alamosa, Colo. Barrel-truck | 526,809 | Oct. 2 | 329 | 56 | 69 | 43 |
| Hamm, William S., Chicago, Ill. Lantern | 529,787 | Nov. 27 | 2238 | 503 | 69 | 1102 |
| Hammann, Edward. (See Reid and Hammann.) | | | | | | |
| Hammer, Emil G., Brooklyn, N. Y. Self-winding electric clock | 527,786 | Oct. 23 | 1928 | 440 | 69 | 385 |
| Hammond, Charles A., Boston, Mass. Mechanical trip for railway-signals | 530,114 | Dec. 4 | 568 | 146 | 69 | 1322 |
| Hampel, Carl Albert E., Leopoldshall, Germany. Casting-mold | 529,906 | Nov. 27 | 2441 | 586 | 69 | 1141 |
| Hampton, Lawson W., Elizabethton, Tenn. Vehicle | 527,058 | Oct. 9 | 832 | 194 | 69 | 133 |
| Hamshaw, Charles W., Gallatin, Mo. Door-check | 531,116 | Dec. 18 | 1814 | 431 | 69 | 1575 |
| Hanes, William H. (See Misner, Edgar D., assignor.) | | | | | | |
| Hankey, John J., Beaver Dam, Wis. Electric belt | 526,833 | Oct. 2 | 266 | 64 | 69 | 50 |
| Hann, Alice M. (See Hann, Chester K., assignor.) | | | | | | |
| Hann, Chester K., Columbus, Ohio, assignor to A. M. Hann. Grass-catching attachment for lawn-mowers | 529,030 | Nov. 13 | 949 | 218 | 69 | 833 |
| Hannay, James B., Loch Long, Scotland. Apparatus for extracting gold | 529,263 | Nov. 13 | 1330 | 319 | 69 | 905 |
| Hanneberg, Odilon B. H., Urskong, Norway. Cutter-screw for ditching and tile-laying machines | 530,687 | Dec. 11 | 1092 | 265 | 69 | 1429 |
| Hannon, Margaret. (See Arcourt, Theophile d', assignor.) | | | | | | |
| Hansalpakar, Edwin, Watertown, assignor to Union Button Sewing Machine Company, Boston, Mass. Machine for sewing on buttons | 531,261 | Dec. 18 | 2087 | 500 | 69 | 1624 |
| Hansel, Charles, Chicago, Ill. Switch | 529,168 | Nov. 13 | 1157 | 278, 279 | 69 | 877 |
| Hansen, Harry, Everett, assignor of one-half to N. Olson, Maplewood, Mass. Electric cut-out | 531,310 | Dec. 25 | 2177 | 521 | 69 | 1657 |
| Hansen, Marius H., Chicago, Ill. Spring-scale | 528,326 | Oct. 30 | 2794 | 674 | 69 | 574 |
| Hansen, Wilhelm, Gotha, Germany. Apparatus for drying casting-molds | 530,641 | Dec. 11 | 1016 | 248 | 69 | 1415 |
| Hanson, Daniel, Chelsea, Mass. Tube or flue cleaner | 527,972 | Oct. 23 | 2175 | 522 | 69 | 447 |
| Hanson, John, P. C. D. Castle, and J. H. Morrison, Liverpool, England. Gun and making same | 531,377 | Dec. 25 | 2298 | ..... | 69 | 1680 |
| Hanson, Julius L., U. S. Army. Trolley-spring | 526,705 | Oct. 2 | 60 | 15 | 69 | 14 |
| Harbers, Frederick, Peoria, Ill. Bow-facing oar | 530,549 | Dec. 11 | 799 | 198 | 69 | 1378 |
| Harboe, Kristen N., Copenhagen, Denmark. Valve | 527,201 | Oct. 9 | 851 | 207 | 69 | 174 |
| Harden, Edward W., assignor to F. C. Weir, Cincinnati, Ohio. Valve and steam-chest for engines | 527,330 | Oct. 9 | 1072 | 258, 259 | 69 | 213 |
| Harden, Edward W., assignor to F. C. Weir, Cincinnati, Ohio. Steam-chest for compound engines | 527,388 | Oct. 9 | 1168 | 286, 287 | 69 | 232 |
| Harden, Edward W., assignor to F. C. Weir, Cincinnati, Ohio. Valve-setting lever | 529,264 | Nov. 13 | 1330 | 319 | 69 | 907 |
| Hardie, Robert W., Albany, N. Y. Curry-comb | 527,973 | Oct. 23 | 2175 | 522 | 69 | 447 |
| Harding, Fred D., Baldwin, Me. Garment-supporter clasp | 531,415 | Dec. 25 | 2360 | 563 | 69 | 1692 |
| Harding, Walter L., Livingston, Tex. Wick-regulator for lamps | 529,382 | Nov. 20 | 1545 | 369 | 69 | 968 |
| Hardman, James, Jr., Belleville, N. J. Heel-valve for atomizers | 527,974 | Oct. 23 | 2177 | 523 | 69 | 447 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Hards, Edward, and W. A. Woodard, assignors of one-third to W. P. Bates, Superior, Nebr. Combined purifier and separator | 529,788 | Nov. 27 | 2239 | 534 | 69 | 1102 |
| Hardsoeg, Martin, Ottumwa, Iowa. Pick | 527,331 | Oct. 9 | 1073 | 259 | 69 | 213 |
| Hardwick, Harry, Philadelphia, Pa. Wire-retaining device for looms for weaving pile fabrics | 529,615 | Nov. 20 | 1962 | 467 | 69 | 1043 |
| Hardwick, Harry, Philadelphia, Pa. Woven pile fabric | 529,858 | Nov. 27 | 2389 | 567 | 69 | 1127 |
| Hardy, Charles S., San Diego, Cal. Refrigerator-car | 526,969 | Oct. 2 | 432 | 121 | 69 | 92 |
| Hardy, Frederick, Birmingham, Ala. Railway frog and switch | 531,030 | Dec. 18 | 1661 | 394 | 69 | 1547 |
| Harkins, Charles H., St. Louis, Mo. Supply system for electric railways | 528,477 | Oct. 30 | 3055 | 741 | 69 | 621 |
| Harman, Samuel W., Rogers, and F. H. Romans, Bentonville, Ark. Check row attachment for planters | 531,117 | Dec. 18 | 1816 | 431, 432 | 69 | 1575 |
| Harper, John D., Brooklyn, N. Y. Mute or damper for banjos | 526,899 | Oct. 2 | 386 | 96 | 69 | 72 |
| Harpham, G. E., *et al.* (See Whitney, E. P., assignor.) | | | | | | |
| Harrell, R. L., *et al.* (See Bishop, James C., assignor.) | | | | | | |
| Harrigan, Jay D., Gouverneur, N. Y. Shaft-tug | 527,153 | Oct. 9 | 808 | 197 | 69 | 165 |
| Harris, Edmund H., Philadelphia, Pa., assignor to National Machine Company, of New York. Sewing-machine for barring buttonholes | 528,225 | Oct. 30 | 2620 | 632, 633 | 69 | 542 |
| Harris, Henry, assignor of one-half to H. W. Bingeman and W. H. Moyer, Georgetown, Pa. Reworking scrap-steel | 531,262 | Dec. 18 | 2089 | ..... | 69 | 1624 |
| Harris, John T., New York, N. Y. Apparatus for purifying liquids | 531,118 | Dec. 18 | 1818 | 432 | 69 | 1576 |
| Harris, John T., New York, N. Y. Method of and apparatus for purifying liquids | 531,183 | Dec. 18 | 1939 | 461 | 69 | 1595 |
| Harris, Robert L., New York, N. Y. Tubular underground structure | 528,367 | Oct. 30 | 2865 | 693 | 69 | 586 |
| Harris, Robert L., New York, N. Y. Tube for cement foundations or underground structures | 528,368 | Oct. 30 | 2866 | 694 | 69 | 587 |
| Harris, Thomas F., Anniston, Ala. Combined lead-pencil and sharpener | 531,031 | Dec. 18 | 1662 | 394 | 69 | 1547 |
| Harrison, Andrew L., Wilmington, N. C. Tube-plug | 530,840 | Dec. 11 | 1332 | 320 | 69 | 1473 |
| Harrison, George H. (See Harrison, Samuel and G. H.) | | | | | | |
| Harrison, Haydn T., London, England. Means and apparatus for distributing electricity | 529,265 | Nov. 13 | 1331 | 320 | 69 | 907 |
| Harrison, James F., Chicago, Ill. Hot-water heater | 528,720 | Nov. 6 | 343 | 83 | 69 | 709 |
| Harrison Safety Boiler Works. (See Cochrane, David, assignor.) | | | | | | |
| Harrison, Samuel and G. H., Ripon, England. Turbine | 530,520 | Dec. 11 | 801 | 198 | 69 | 1378 |
| Harrison, Thomas. (See Tetlow and Harrison.) | | | | | | |
| Harrison, William P. (See Gray, Henry F., assignor.) | | | | | | |
| Harrison, William P., Columbus, Ohio. Dish-cleaner | 528,875 | Nov. 6 | 649 | 155 | 69 | 765 |
| Harry, Hugh W. (See Harry, Thomas C. and H. W.) | | | | | | |
| Harry, Thomas C. and H. W., Dallas, Tex. Stock-trough | 531,184 | Dec. 18 | 1943 | 461 | 69 | 1599 |
| Hart, Arthur E., Broken Hill, New South Wales. Shaft-tug | 531,529 | Dec. 25 | 2564 | 613 | 69 | 1738 |
| Hart, Geo. W., *et al.* (See Newlyn, Robert A., assignor.) | | | | | | |
| Hart, James, *et al.* (See Smith, John A., assignor.) | | | | | | |
| Hart, Thomas J., assignor to Sherwood Manufacturing Company, Buffalo, N. Y. Lubricator | 528,424 | Oct. 30 | 2971 | 713 | 69 | 605 |
| Hart, William H., New Britain, Conn. Strap-hinge | 527,975 | Oct. 23 | 2177 | 523 | 69 | 447 |
| Harte, Richard, Croydon, England. Type-writing machine attachment for writing and translating messages in cipher | 527,112 | Oct. 9 | 770 | 174 | 69 | 147 |
| Hartel, Florence L., administratrix. (See Hartel, John G.) | | | | | | |
| Hartel, John G., deceased, Keokuk, Iowa; F. L. Hartel, administratrix. Electromagnetic switch | 528,430 | Oct. 30 | 2973 | 719 | 69 | 605 |
| Hartley, Joseph W. (See Battey, Sumter B., assignor.) | | | | | | |
| Hartley, Marcellus, *et al.* (See Mosher, Beardsley, and Moulton, assignors.) | | | | | | |
| Hartley, Walter S., Little York, Ill. Thill-coupling | 527,148 | Oct. 9 | 775 | 189 | 69 | 147 |
| Hartman, Wilmer. (See Matthias and Hartman.) | | | | | | |
| Hartmann & Braun. (See Ernger, Theodor, assignor.) | | | | | | |
| Hartmann, Wilhelm, and J. L. Thomson, Offenbach-on-the-Main, Germany. Leather-skiving machine | 527,424 | Oct. 16 | 1226 | 301 | 69 | 256 |
| Hartmann, William C., Philadelphia, Pa. Centrifugal cream-separator | 528,941 | Nov. 14 | 785 | 183, 184 | 69 | 809 |
| Hartness, James, Springfield, Vt. Screw-cutting die | 529,169 | Nov. 13 | 1158 | 279 | 69 | 877 |
| Hartness, James, Springfield, Vt. Friction-clutch | 530,339 | Dec. 4 | 466 | 117 | 69 | 1290 |
| Hartshorn, Willis N., Brooklyn, assignor to S. Carey, New York, N. Y. Ball and socket joint for use in mills | 527,282 | Oct. 9 | 905 | 241, 242 | 69 | 199 |
| Hartwell, Newton W., and T. J. Howe, Louisville, Ky. Attachment for type-writing machines | 528,092 | Oct. 23 | 2385 | 555 | 69 | 485 |
| Hartwell, William. (See Edwards, George E., assignor.) | | | | | | |
| Hartwig, Charles H., New Kensington, Pa. Brow-band for bridles | 526,706 | Oct. 2 | 61 | 16 | 69 | 14 |
| Hartz, Henry V., Cleveland, Ohio. Pulley-block | 527,425 | Oct. 16 | 1225 | 302 | 69 | 256 |
| Hartz, Henry V., Cleveland, Ohio. Tackle-block | 527,490 | Oct. 16 | 1338 | 326 | 69 | 278 |
| Harvey, Edward S. (See Buddle, George T., assignor.) | | | | | | |
| Harvey, Francis B., Glen Moore, Pa. Toy | 530,569 | Dec. 11 | 1226 | 297 | 69 | 1453 |
| Harvey, George, Winnipeg, Canada. Rule and ruling device | 530,043 | Nov. 27 | 2503 | 649 | 69 | 1192 |
| Harvey, George B. M., New York, N. Y. Fare-box | 529,383 | Nov. 20 | 1547 | 369 | 69 | 969 |
| Harvey, Isaac, assignor of three-fourths to I. N. Drake, J. M. Yeoman, and J. P. Gross, Hartley, Iowa. Wagon-tire heater | 530,521 | Dec. 11 | 802 | 198 | 69 | 1378 |
| Harvey, Patrick, Chicago, Ill. Water-closet and tank | 530,306 | Dec. 4 | 404 | 102 | 69 | 1289 |
| Hasenpflug, John A., assignor to Champion Safety Lock and Novelty Company, Cleveland, Ohio. Sash-lock | 527,686 | Oct. 16 | 1650 | 400 | 69 | 336 |
| Hasenpflug, John A., assignor to Champion Safety Lock and Novelty Company, Cleveland, Ohio. Sash-lock | 528,369 | Oct. 30 | 2868 | 694 | 69 | 587 |
| Hastings, James L., assignor to National Heat and Power Company, Philadelphia, Pa. Generator for the manufacture of gas | 530,944 | Dec. 18 | 1569 | 358 | 69 | 1521 |
| Hatch, Edward N., *et al.* (See Brown, Norman E., assignor.) | | | | | | |
| Hatch, James B. (See Smith, Wilson R., assignor.) | | | | | | |
| Hathaway, Edward. (See Laskey, Philip B., assignor.) | | | | | | |
| Hatmaker, Foist, Ithaca, N. Y. Reamer | 530,841 | Dec. 11 | 1333 | 320 | 69 | 1473 |
| Hattenback, David, Sioux City, Iowa. Galvanic ring | 530,592 | Dec. 11 | 803 | 199 | 69 | 1378 |
| Hatzfeld, Richard H., Chicago, Ill. Folding umbrella | 529,170 | Nov. 13 | 1162 | 279, 280 | 69 | 878 |
| Haug, Charles F., Brooklyn, N. Y. Fender for trolley-cars | 530,223 | Dec. 4 | 260 | 65 | 69 | 1262 |
| Haupt, Edward, Phoenixville, Pa. Column for structural metal work | 530,044 | Nov. 27 | 2704 | 650 | 69 | 1192 |
| Hauser, Martin, Toledo, Ohio. Fastener for screens or sashes | 528,327 | Oct. 30 | 2796 | 675 | 69 | 574 |
| Havens, Edwin S. (See Gregg, Andrew F., assignor.) | | | | | | |
| Havey, Cornelius M. (See Black and Havey.) | | | | | | |
| Hawkins, John K., Mohawk, Tenn. Washboiler | 530,842 | Dec. 11 | 1334 | 320 | 69 | 1473 |

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|---|---|---|---|---|---|---|
| Hawley, Joseph C., and W. J. Black, Duncannon, Pa. Conduit-railway trolley | 530,688 | Dec. 11 | 1093 | 265 | 69 | 1429 |
| Hay, William L. (See Johnson and Hay.) | | | | | | |
| Haydel, Albert. (See Danos and Haydel.) | | | | | | |
| Hayden, Mortimer M., New York, N. Y. Galvanic battery | 525,069 | Nov. 6 | 267 | 65 | 69 | 693 |
| Haydon, Blan B., New Castle, Ky. Car coupling | 530,843 | Dec. 11 | 1335 | 320 | 69 | 1174 |
| Hayes, Eugenia K. (See Dodd, John A., assignor.) | | | | | | |
| Hayes, George, New York, N. Y. Metallic lathing. (Reissue) | 11,448 | Oct. 23 | 2460 | 595 | 69 | 498 |
| Hayes, James. (See Fyfe, John C., assignor.) | | | | | | |
| Hayes, John W., Jr., Chester, Ill. Wagon-box lifter | 530,770 | Dec. 11 | 1227 | {297 / 298} | 69 | 1453 |
| Hayes, Lemuel W., assignor of one-half to C. S. Paisler, New Bedford, Mass. Means for suspending hose in towers | 530,415 | Dec. 4 | 590 | 146 | 69 | 1323 |
| Hayley, Hugh S., *et al.* (See Johnson, William C., assignor.) | | | | | | |
| Hayn, Friedrich W. N. E., assignor to Siemens & Halske, Berlin, Germany. Self-lubricating contact-bar for electric railways | 530,416 | Dec. 4 | 591 | 147 | 69 | 1323 |
| Haynes, Irving S., New York, N. Y. Duplicating apparatus | 530,771 | Dec. 11 | 1229 | 298 | 69 | 1454 |
| Hazard, Dexter, Marquette, Mich. Machine for sharpening saw-teeth | 529,789 | Nov. 27 | 2243 | {534 / 535} | 69 | 1103 |
| Hazard, Dexter, assignor of one-half to F. O. Clark, Marquette, Mich. Converting reciprocatory into rotary motion | 529,859 | Nov. 27 | 2369 | 567 | 69 | 1128 |
| Hazard, Dexter, assignor of one-half to F. O. Clark, Marquette, Mich. Device for swaging saw-teeth | 529,860 | Nov. 27 | 2371 | 567 | 69 | 1138 |
| Hazard, Frederic K. H., Toronto, Canada. Pneumatic cash-carrier apparatus | 530,772 | Dec. 11 | 1231 | {298 / 299} | 69 | 1454 |
| Headen, Thomas B., Lawrence, Kans. Reversing-valve for engines | 526,707 | Oct. 2 | 62 | 16 | 69 | 14 |
| Heath, Ned F. (See Freeand Heath.) | | | | | | |
| Heath, John M., Talbotton, Ga. Cash register | 530,045 | Nov. 27 | 2705 | 650 | 69 | 1192 |
| Heath, Walter A., assignor to himself, E. F. Braren, and R. Philpott, Chicago, Ill. Valve for air compressors | 527,747 | Oct. 23 | 1834 | 441 | 69 | 385 |
| Heatley, Herbert. (See Von Bokern, William, assignor.) | | | | | | |
| Heaton, John S., assignor of one-half to W. A. McGrath and M. L. S. Buckener, Shelbyville, Ky. Car coupling | 529,443 | Nov. 20 | 1670 | 397 | 69 | 990 |
| Heaton, Robert. (See Haggas and Heaton.) | | | | | | |
| Heaton, Ryan, Howell's Depot, N. Y. Felting-machine | 527,928 | Oct. 9 | 908 | 242 | 69 | 199 |
| Hebard, Charles E., Grand Rapids, Mich., assignor of one-fourth to H. C. Keith, Rhinelander, Wis. Electric uterine battery | 525,788 | Oct. 23 | 1834 | 441 | 69 | 366 |
| Hebb, William, Cambridge, Vt. Cleaning-machine | 526,970 | Oct. 2 | 493 | 121 | 69 | 92 |
| Hebbard, Albert H. and C. C., assignors of one-third to W. H. Rankin, Elizabeth, N. J. Flying target-trap | 527,854 | Oct. 23 | 1951 | {467 / 468} | 69 | 405 |
| Hebbard, Charles C. (See Hebbard, Albert H. and C. C.) | | | | | | |
| Hebblethwaite, John H., Rock Falls, Ill. Combined hammer and nail-puller | 529,384 | Nov. 20 | 1549 | 370 | 69 | 969 |
| Hebert, Henry B., New York, N. Y. Grinding-mill | 530,915 | Dec. 18 | 1513 | {358 / 359} | 69 | 1521 |
| Heckert, William, and W. P. Rowland, Findlay, Ohio. Process of and apparatus for making gas | 527,789 | Oct. 23 | 1835 | 441 | 69 | 386 |
| Hedges, John W. (See Bundren and Hedges.) | | | | | | |
| Heene, George W., Brooklyn Village, assignor to Cleveland Time Register Company, Cleveland, Ohio. Employé's time recorder | 530,340 | Dec. 4 | 468 | {117 / 118} | 69 | 1299 |
| Hefner, John M., Marietta, Tex. Gate | 528,576 | Nov. 6 | 650 | 155 | 69 | 765 |
| Hege, Gustavus A. (See Krehbiel and Hege.) | | | | | | |
| Hegenscheidt, Wilhelm, Ratibor, Germany. Lock-hinge | 529,171 | Nov. 13 | 1164 | 280 | 69 | 878 |
| Heggem, Charles O., assignor to Russell & Co., Massillon, Ohio. Pneumatic shears | 527,590 | Oct. 23 | 1836 | 441 | 69 | 386 |
| Heggem, Charles O., assignor to Russell & Co., Massillon, Ohio. Traction-engine | 529,490 | Nov. 20 | 1757 | 417 | 69 | 1005 |
| Heilmann, Jean J., Paris, France. Electric locomotion on railways | 527,244 | Oct. 9 | 924 | 223 | 69 | 187 |
| Heilmann, Rudolph, New Brunswick, N. J. Wall-paper machine | 527,976 | Oct. 24 | 2178 | {523 / 524 / 525} | 69 | 446 |
| Heim, Sebastian, Philadelphia, Pa. Counting-machine | 530,224 | Dec. 4 | 302 | 65 | 69 | 1263 |
| Heimann, Jean M., Sandfield, near Dornap, Germany. Suspendable match-box | 531,185 | Dec. 18 | 1941 | 462 | 69 | 1600 |
| Heinrich, Oswald, Mittelwalde, assignor of one-half to M., P., and S. Goldschmidt, Breslau, Germany. Self-fastening box | 530,225 | Dec. 4 | 305 | 65, 66 | 69 | 1263 |
| Heinze, John O., Jr., Lynn, Mass. Automatic electrical boot-blacking machine | 527,977 | Oct. 23 | 2182 | 525 | 69 | 448 |
| Heinzerling, Christian, Frankfort-on-the-Main, Germany. Tawing hides | 528,162 | Oct. 30 | 2506 | ..... | 69 | 522 |
| Heisley, Lillian K., *et al.* (See Keller, Jacob, assignor.) | | | | | | |
| Heiz, Emil, Paterson, N. J. Sand-box for cars | 529,444 | Nov. 20 | 1671 | 398 | 69 | 990 |
| Heller, Adolf, assignor to Siemens & Halske, Berlin, Germany. Air-pump | 530,106 | Dec. 4 | 52 | 14, 15 | 69 | 1225 |
| Heller, Peter J., Montclair, N. J. Harrow | 527,978 | Oct. 23 | 2185 | 526 | 69 | 449 |
| Hellings, John, Philadelphia, Pa. Tobacco-cutter | 528,540 | Nov. 6 | 28 | 8 | 69 | 651 |
| Helwig, William J. (See Rogers, George A., assignor.) | | | | | | |
| Hemert, Herman J. von, *et al.* (See Coleman and Saussure, assignors.) | | | | | | |
| Henman, Richard C. (See Muslar, Nelson, assignor.) | | | | | | |
| Hemsley, Alexander, Philadelphia, Pa. Flash-light compound | 528,515 | Oct. 30 | 3117 | ..... | 69 | 632 |
| Henderson, Albert H. (See Scott, Gordon J., assignor.) | | | | | | |
| Henderson, Edward E., Sanford, Fla. Wagon running-gear | 529,734 | Nov. 27 | 2156 | {514 / 515} | 69 | 1087 |
| Henderson, Robert, New York, N. Y. Advertising or other sign | 530,226 | Dec. 4 | 266 | 66 | 69 | 1263 |
| Henderson, William M., Philadelphia, Pa. Steam-engine indicator | 528,226 | Oct. 30 | 2622 | 603 | 69 | 543 |
| Hendricks, Arthur J., and S. Forsythe, Sterling Valley, N. Y. Grain-elevator | 530,267 | Dec. 4 | 336 | 82 | 69 | 1277 |
| Hendrickson, William P. (See Shuler and Hendrickson.) | | | | | | |
| Hendryx, Andrew B., New Haven, Conn. Duplex bird-cage spring | 528,721 | Nov. 6 | 344 | 83 | 69 | 709 |
| Henley, Micajah C., and J. P. Fulgham; said Fulgham assignor to E. R. Fulgham, Richmond, Ind. Meter | 527,979 | Oct. 23 | 2186 | 526 | 69 | 449 |
| Henley, William J., Syracuse, N. Y. Adjustable pattern for curvilinear designs | 526,900 | Oct. 2 | 488 | 96, 97 | 69 | 72 |
| Henn, Edwin C., *et al.* (See Hakewessell, Reinhold, assignor.) | | | | | | |
| Henn, Edwin C., Bloomfield, assignor, by mesne assignments, to himself, H. S. Fuller, N. F. Miller, W. J. Gabb, and R. Hakewessell, Hartford, Conn. Screw-making machine | 530,180 | Dec. 4 | 178 | 45, 46 | 69 | 1247 |
| Hennefeld, Albert, C. Delmer and C. H. Van Ness, Colorado Springs, Colo. Section-insulator | 529,616 | Nov. 20 | 1963 | 467 | 69 | 1043 |
| Hennessy, Thomas, Grand Forks, N. D. Gas-retort | 531,530 | Dec. 25 | 2565 | 614 | 69 | 1731 |
| Henni, Frederik. (See Storz, Sorg and Henni.) | | | | | | |
| Henning, James. (See Kirby and Henning.) | | | | | | |
| Henretty, James, assignor of one-half to J. Niven, Staples, Minn. Thill-coupling | 528,070 | Nov. 6 | 268 | 66 | 69 | 694 |
| Henrod-Bachni, Charles E., Bienne, Switzerland. Watchcase-turning machine | 530,227 | Dec. 4 | 268 | 66, 67 | 69 | 1264 |



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| Henry, Arthur G. (See Funk, William R., assignor.) | | | | | | |
| Henry Disston & Sons. (See Odgers, Matthew, assignor.) | | | | | | |
| Henry, Edward, Jacksonville, Ill. Filter for tanks of street-sprinklers, water-tanks, boilers, reservoirs, meters, &c | 526,922 | Oct. 2 | 427 | 105 | 69 | 80 |
| Henry, Thomas, Jr., Philadelphia, Pa. Cop-tube | 529,445 | Nov. 20 | 1672 | 398 | 69 | 990 |
| Hensel, Otto A., Pittsburg, assignor of one-fourth to H. Bowes, Allegheny, Pa. Household or kitchen implement | 530,268 | Dec. 4 | 338 | 83 | 69 | 1227 |
| Henwood, John, Portsmouth, Va. Mining-machine | 527,791 | Oct. 23 | 1837 | 442 | 69 | 387 |
| Hepburn, Lewis L., assignor to Marlin Fire Arms Company, New Haven, Conn. Magazine-gun | 528,905 | Nov. 6 | 712 | 168 | 69 | 776 |
| Heppell, Thomas, Birtley, J. G. and W. Patterson, Tynemouth, England. Machinery for cutting coal, stone, or other hard substances | 529,790 | Nov. 27 | 2245 | 535 | 69 | 1103 |
| Herbkesmann, Fredrick W., St. Louis, Mo. Nozzle | 528,431 | Oct. 30 | 2974 | 719 | 69 | 606 |
| Herdman, Frank E., Indianapolis, Ind. Pump | 530,618 | Dec. 11 | 969 | 231 | 69 | 1408 |
| Herdman, Frank E., Indianapolis, Ind. Electric-motor-propelled elevator | 530,619 | Dec. 11 | 970 | {277 / 278} | 69 | 1408 |
| Herdman, Frank E., Winnetka, Ill. Electric motor | 530,773 | Dec. 11 | 1233 | 299 | 69 | 1455 |
| Hereth, Frank S., Chicago, Ill. Machine for forming tablets | 527,980 | Oct. 23 | 2188 | 527 | 69 | 449 |
| Herman, Charles, Allegheny, Pa. Molding machine | 528,295 | Oct. 30 | 2742 | {662 / 663} | 69 | 565 |
| Herman, David M., Lewisberry, Pa. Shelf-hanger | 529,791 | Nov. 27 | 2246 | 536 | 69 | 1103 |
| Herman, Frank J., Norwalk, Ohio. Hub-attaching device | 529,683 | Nov. 20 | 2069 | 495 | 69 | 1063 |
| Herman, Peter, Norwalk, Ohio. Compensator for wire fences | 529,649 | Nov. 20 | 2044 | 489 | 69 | 1052 |
| Hermes, John G., Mount Vernon, N. Y. Non-condensing apparatus for steam-whistles | 527,000 | Oct. 2 | 508 | 132 | 69 | 101 |
| Hernsheim, Charles, New Orleans, La. Cigar-band | 527,687 | Oct. 16 | 1660 | 400 | 69 | 336 |
| Hernsheim, Charles, New Orleans, La. Display-card | 527,688 | Oct. 16 | 1661 | 400 | 69 | 336 |
| Hernsheim, Charles, New Orleans, La. Cigar-shaping machine | 527,689 | Oct. 16 | 1663 | 401 | 69 | 337 |
| Herr, Harvey E., Dayton, Ohio, assignor to American Egg Case Company, Port Huron, Mich. Machine for making egg-fillers | 529,172 | Nov. 13 | 1165 | {280 / 281} | 69 | 878 |
| Herr, Henry C., Williamsville, N. Y., assignor to American Egg Case Company, Port Huron, Mich. Egg-case | 529,173 | Nov. 13 | 1171 | 282 | 69 | 879 |
| Herrington, Ephraim, assignor of one-half to W. H. Greenwood, Atlanta, Ga. Knife | 527,491 | Oct. 16 | 1339 | 326 | 69 | 279 |
| Herrmann, Franz, Iserthal, Austria-Hungary. Making artificial stones of small size for toys, &c | 527,059 | Oct. 9 | 821 | ..... | 69 | 133 |
| Herrmann, Heinrich, Lauffen, Germany. Nursing-bottle | 527,284 | Oct. 9 | 998 | 242 | 69 | 200 |
| Herschell, Allan. (See Armitage and Herschell.) | | | | | | |
| Herschell, George C. (See Armitage and Herschell.) | | | | | | |
| Hersh, Edgar E., assignor to himself and H. E. Hersh, Allentown, Pa. Cycle-frame | 529,881 | Nov. 27 | 2172 | 568 | 69 | 1128 |
| Hersh, Harvey E. (See Hersh, Edgar E., assignor.) | | | | | | |
| Herzig, Emil. (See Thies and Herzig.) | | | | | | |
| Heskett, Harrison H., Minneapolis, Minn. Rosin-pad for use on bows of stringed instruments | 530,916 | Dec. 18 | 1515 | 359 | 69 | 1521 |
| Hess, Christian J., assignor to J. F. Williamson, Minneapolis, Minn. Lever-handle for waffle-irons | 528,634 | Nov. 6 | 210 | 51 | 69 | 684 |
| Hess, John A., Philadelphia, Pa. Cutter or trimmer for wood, leather, &c | 527,604 | Oct. 16 | 1525 | 370 | 69 | 311 |
| Hesse, Florence, Frederick, Md. Puzzle | 530,774 | Dec. 11 | 1237 | 299 | 69 | 1456 |
| Hetherington, Martin, assignor to J. W. Steere & Son, Springfield, Mass. Organ | 528,478 | Oct. 30 | 3056 | {741 / 742} | 69 | 621 |
| Hetterschied, William, Grand Rapids, Mich. Knockdown base and column | 526,834 | Oct. 2 | 267 | 65 | 69 | 51 |
| Hewes, Henry M. (See Nason, Joseph H., assignor.) | | | | | | |
| Hewett, Robert J., St. Louis, Mo. Conduit railway-trolley | 526,825 | Oct. 2 | 268 | 65 | 69 | 51 |
| Heyde, Carl von der, assignor to Telegram Cycle Manufacturing Company, Milwaukee, Wis. Vehicle-wheel | 531,311 | Dec. 25 | 2178 | 521 | 69 | 1657 |
| Heydebrand und der Lasa, Ferdinand-Christoph von, assignor of one-half to G. Semler, New York, N. Y. Window | 528,637 | Nov. 6 | 213 | 52 | 69 | 684 |
| Heymann, Max. (See Schagen, Gerhard, assignor.) | | | | | | |
| Heys, John J., Lynn, assignor to J. W. Brooks, trustee, Petersham, Mass. Heel-pressing machine | 529,646 | Nov. 27 | 2707 | {650 / 651} | 69 | 1193 |
| Heysinger, Isaac W., Philadelphia, Pa. Device for holding and clamping papers, &c | 531,312 | Dec. 25 | 2179 | {521 / 522} | 69 | 1657 |
| Heywood Bros. & Co. (See Watkins, Edward G., assignor.) | | | | | | |
| Heywood, Robert, and J. H. Nunn, London, England. Tobacco-pouch | 527,202 | Oct. 9 | 853 | {307 / 308} | 69 | 174 |
| Heywood, Silas L., Minneapolis, Minn. Variable direction and speed device | 530,588 | Dec. 11 | 921 | 226 | 69 | 1409 |
| Hibbard, George E., Chicago, Ill. Valve for automatic fire-extinguishers | 531,119 | Dec. 18 | 1820 | {432 / 433} | 69 | 1576 |
| Hibbard, George E., Chicago, Ill. Sprinkler-head for automatic fire-extinguishers | 531,120 | Dec. 18 | 1824 | 433 | 69 | 1577 |
| Hibbert, Decatur H., Wallingford, Pa. House | 531,632 | Dec. 18 | 1663 | {394 / 395} | 69 | 1548 |
| Hickman, Francis, Bound Brook, N. J. Machine for grinding pulp-stock | 529,907 | Nov. 27 | 2443 | {586 / 587} | 69 | 1141 |
| Hicks, Horace D., assignor of one-half to Brown's Lumber Company, Whitefield, N. H. Adding-machine | 528,596 | Nov. 6 | 130 | 31, 32 | 69 | 670 |
| Hicks, Simeon J., Englewood, Ill. Confectionery-machine | 531,033 | Dec. 18 | 1663 | 395 | 69 | 1548 |
| Hicks, Thomas H., Detroit, Mich. Armature for dynamo-electric machines and making same | 528,204 | Oct. 30 | 2582 | 624 | 69 | 535 |
| Higbie, Garrit, Brooklyn, N. Y. Liquid-seal pail | 531,313 | Dec. 25 | 2182 | 522 | 69 | 1658 |
| Higgins, Campbell P., New York, N. Y. Apparatus for intensifying the pressure of compressed fluid | 527,981 | Oct. 23 | 2191 | {527 / 528} | 69 | 450 |
| Higgins, Oliver, Napoleon, Ohio. Magnetic telephone | 529,174 | Nov. 13 | 1173 | 282 | 69 | 880 |
| Higgins, Pattillo, Beaumont, Tex. Means for propelling boats | 527,605 | Oct. 16 | 1527 | 370 | 69 | 311 |
| Higgins, William W., Helena, Mont. Reel-oven | 528,877 | Nov. 6 | 651 | 156 | 69 | 765 |
| Higley, Eben N., Summersworth, N. H., assignor to International Railway Tie Company, New York, N. Y. Rail chair and tie | 531,263 | Dec. 18 | 2089 | 500 | 69 | 1625 |
| Hihn, Louis W., San José, Cal. Fruit-tree support | 527,492 | Oct. 16 | 1340 | 326 | 69 | 279 |
| Hilder, Charles F., London England. Type-distributing apparatus | 531,531 | Dec. 25 | 2566 | 614 | 69 | 1731 |
| Hill, Andrew L., Decatur, Ill. Rame-tug | 527,747 | Oct. 16 | 1759 | 424 | 69 | 354 |
| Hill, Edgar A., *et al.* (See Hill, Edward A., assignor.) | | | | | | |
| Hill, Edward A., assignor of two-thirds to J. L. Mallory and E. A. Hill, Chicago, Ill. Bracket for car-doors | 527,792 | Oct. 23 | 1841 | 443 | 69 | 387 |
| Hill, George S., Bradford, assignor of one-half to J. H. Murray, Haverhill, Mass. Sewing-machine for barring and tacking | 529,491 | Nov. 20 | 1759 | 418 | 69 | 1005 |
| Hill, Henry, and A. L. Adams, London, England. Folding photographic camera | 531,416 | Dec. 25 | 2361 | 563 | 69 | 1603 |
| Hill, Ira M., Boston, Mass. Safety attachment for elevators and elevator-gates | 528,873 | Nov. 6 | 653 | 156 | 69 | 765 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Hill, James F. (See Gwin, Andrew J., assignor.) | | | | | | |
| Hill, John W., Chicago, and L. D. Benner, Peoria, Ill. Method of and means for planting corn | 529,492 | Nov. 20 | 1762 | 419 | 69 | 1005 |
| Hill, Oscar F., Lowell, Mass. Draftsman's instrument | 531,186 | Dec. 18 | 1945 | 402 | 69 | 1600 |
| Hill, Stephen A. (See Black and Hill.) | | | | | | |
| Hill, Truman A., Mount Morris, N. Y. Changing-gear for grain-drill heads | 529,266 | Nov. 13 | 1336 | 320 | 69 | 908 |
| Hill, Wilford A., Waltham, assignor of one-half to J. C. Miller, Melrose, Mass. Toy | 530,107 | Dec. 4 | 54 | 15 | 69 | 1225 |
| Hill, Wilford A., assignor of two-thirds to E. E. Butman, Waltham, Mass., and G. W. Lawrence, Cromwell, Conn. Powder-folding machine | 529,908 | Nov. 27 | 2445 | 587, 588 | 69 | 1142 |
| Hill, William, assignor to Morse, Williams & Company, Philadelphia, Pa. Elevator apparatus | 527,426 | Oct. 16 | 1230 | 302 | 69 | 256 |
| Hill, William E., Kalamazoo, Mich. Direct-acting steam-engine | 530,341 | Dec. 4 | 473 | 118 | 69 | 1300 |
| Hill, William E., Kalamazoo, Mich. Direct-acting steam-engine for reciprocating saw-mill-carriages | 531,532 | Dec. 25 | 2567 | 614 | 69 | 1732 |
| Hilliard, John S., Philadelphia, Pa. Cash register and indicator | 527,748 | Oct. 16 | 1760 | 424 | 69 | 354 |
| Hillyer, Edgar C., Newport News, Va. Can filling device | 528,541 | Nov. 6 | 99 | 8 | 69 | 652 |
| Hilton, Dawson B., Brooklyn, N. Y. Retinning bath-tubs | 527,982 | Oct. 23 | 2193 | 528 | 69 | 450 |
| Himes, Judson W., Elma, assignor of one-half to J. W. Anderson and D. Gillies, Chehalis county, Wash. Trace-hook | 526,836 | Oct. 2 | 270 | ..... | 69 | 51 |
| Hinchliffe, William, Huntsville, Ala. Metallic drawing-rolls for fibrous material | 529,328 | Nov. 13 | 1438 | 346 | 69 | 938 |
| Hinchliffe, William, Huntsville, Ala. Drawing rolls for fibrous material | 527,553 | Oct. 16 | 1442 | 351 | 69 | 296 |
| Hinckley Brake Company. (See Hinckley, Howard, assignor.) | 527,554 | Oct. 16 | 1443 | 351 | 69 | 297 |
| Hinckley, Howard, assignor to Hinckley Brake Company, Trenton, N. J. Brake for railway-cars | 527,749 | Oct. 16 | 1762 | 424 | 69 | 355 |
| Hinckley, Howard, assignor to Hinckley Brake Company, Trenton, N.J. Slack-adjuster | 531,034 | Dec. 18 | 1665 | 395, 396 | 69 | 1548 |
| Hines, John H., Jr., Gloster, Miss. Necktie-holder | 528,879 | Nov. 6 | 655 | 157 | 69 | 766 |
| Hinrichs, Henry, *et al.* (See Proctor, Charles E., assignor.) | | | | | | |
| Hinrichs, William, *et al.* (See Wheeler, Fred A., assignor.) | | | | | | |
| Hinstin, Joseph, Paris, France. Heating apparatus | 529,072 | Nov. 13 | 906 | 237, 238, 239 | 69 | 846 |
| Hirsch, Carl F., San Francisco, Cal. Gas-engine | 526,817 | Oct. 2 | 271 | 65, 66 | 69 | 51 |
| Hirsch, Feodor, Steinway, N. Y. Gas-engine | 530,523 | Dec. 11 | 803 | 199, 200 | 69 | 1379 |
| Hirschfeld, Leo, assignor of one-half to J. Stern and J. Sadberg, New York, N. Y. Machine for depositing confectionery into molds | 530,417 | Dec. 4 | 592 | 147, 148 | 69 | 1323 |
| Hisey, Abraham. (See Cook, Adolphus H., assignor.) | | | | | | |
| Hisey, Charles S., Aurora, Ind., assignor to E. S. Rice, Chicago, Ill. Shell-carrier-block | 528,093 | Oct. 23 | 2386 | 556 | 69 | 485 |
| Hisey, Charles S., Aurora, Ind., assignor to E. S. Rice, Chicago, Ill. Shell-carrier-actuating mechanism for cartridge-loading machines | 528,094 | Oct. 23 | 2389 | 556, 557 | 69 | 485 |
| Hisey, Charles S., Aurora, Ind., assignor to E. S. Rice, Chicago, Ill. Shell-feeding mechanism for cartridge-loading machines | 528,095 | Oct. 23 | 2391 | 557 | 69 | 486 |
| Hisey, Charles S., Aurora, Ind., assignor to E. S. Rice, Chicago, Ill. Shell placer for cartridge-loading machines | 528,096 | Oct. 23 | 2392 | 558 | 69 | 486 |
| Hisey, Charles S., Aurora, Ind., assignor to E. S. Rice, Chicago, Ill. Powder or shot feeding mechanism | 528,097 | Oct. 23 | 2396 | 559 | 69 | 486 |
| Hisey, Charles S., Aurora, Ind., assignor to E. S. Rice, Chicago, Ill. Revolving crimper for cartridge loading machines | 528,098 | Oct. 23 | 2397 | 559 | 69 | 486 |
| Hisey, Charles S., Aurora, Ind., assignor to E. S. Rice, Chicago, Ill. Wad-feeding mechanism | 528,099 | Oct. 23 | 2399 | 559 | 69 | 487 |
| Hisey, Charles S., Aurora, Ind., and E. S. Rice, Chicago, Ill.; said Hisey assignor to said Rice. Shell-carrier for cartridge-loading machines | 527,983 | Oct. 23 | 2194 | 528, 529, 530 | 69 | 451 |
| Hitch, David M., Laurel, Del. Dental articulator | 530,524 | Dec. 11 | 805 | 200 | 69 | 1379 |
| Hitchcock, Edward B., Newton, Mass. Dental mirror | 528,163 | Oct. 30 | 2507 | 606 | 69 | 522 |
| Hitchcock, George A. (See Cunningham and Hitchcock.) | | | | | | |
| Hitchcock, John S., Oneida, N. Y. Scrubbing-machine | 530,689 | Dec. 11 | 1095 | 265 | 69 | 1429 |
| Hitchon, Alfred, Accrington, England. Separator mechanism for ring-spinning frames | 527,389 | Oct. 9 | 1171 | 287 | 69 | 233 |
| Hitchon, Edwin, Accrington, England. Spindle-support | 530,073 | Nov. 27 | 2768 | 664 | 69 | 1203 |
| Hochstetler, Moses L., Sugar Creek, Ohio. Wire-tightener | 530,181 | Dec. 4 | 186 | 46 | 69 | 1224 |
| Hodge, Robert J., Boston, Mass. Fish-trap | 527,606 | Oct. 16 | 1528 | 371 | 69 | 311 |
| Hodges, Addison S., Chelsea, assignor of one-half to A. H. Smith, Salem, Mass. Device for casting sash-weights | 527,984 | Oct. 23 | 2202 | 530 | 69 | 451 |
| Hodgkins, Nelson D., assignor of one-half to F. O. Clark, Marquette, Mich. Hub-protector for wagons | 529,909 | Nov. 27 | 2447 | 588 | 69 | 1142 |
| Hodkinson, Peter, Newark, N. J. Boiler furnace | 530,269 | Dec. 4 | 339 | 83, 84 | 69 | 1277 |
| Hodgson, Isaac and M. A., Chicago, Ill. Geographical globe | 531,035 | Dec. 18 | 1668 | 396 | 69 | 1549 |
| Hodgson, Mary A. (See Hodgson, Isaac and M. A.) | | | | | | |
| Hodgson, Thomas A., Ottawa, Canada. Knob attachment | 529,702 | Nov. 27 | 2248 | 536 | 69 | 1104 |
| Hoe, Robert, *et al.* (See Crowell, Luther C., assignor.) | | | | | | |
| Hoe, Robert, *et al.* (See Roesen, Oscar, assignor.) | | | | | | |
| Hoeft, Hermann W., La Crosse, Wis. Clasp | 526,781 | Oct. 2 | 188 | 41 | 69 | 36 |
| Hoiegh, Emil Von. (See Goerz and Höegh.) | | | | | | |
| Hoekstra, Klaas, Battle Creek, Mich. Life-saving apparatus | 530,525 | Dec. 11 | 807 | 201 | 69 | 1379 |
| Hofbauer, Frank X., assignor, by mesne assignments, to Armature Bell Company, Newark, N. J. Electric-fan motor | 529,385 | Nov. 20 | 1550 | 370 | 69 | 969 |
| Hofbeck, Alphonse, Issy, France. Folding joint for bars or rods | 531,121 | Dec. 18 | 1825 | 433 | 69 | 1577 |
| Hoffman, Jeremiah M., Cressona, Pa. Combined window-cornice and curtain-support | 530,270 | Dec. 4 | 341 | 84 | 69 | 1278 |
| Hoffman, Samuel, assignor to Scarritt Furniture Company, St. Louis, Mo. Reversible car-seat | 531,122 | Dec. 18 | 1827 | 433, 434 | 69 | 1578 |
| Hoffman, Samuel V. (See Humphrey and Hoffman.) | | | | | | |
| Hoffmann, Carl, Charlottenburg, assignor to Siemens & Halske, Berlin, Germany. Apparatus for putting electric motors into circuit | 526,810 | Oct. 2 | 230 | 56 | 69 | 43 |
| Hofmann, Alves M., Chicago, Ill. Process of and apparatus for preparing beer, &c., in receptacles for market | 531,314 | Dec. 25 | 2181 | 522, 523, 524 | 69 | 1658 |
| Hogarth, James, Kirkcaldy, Scotland. Mechanism for testing and recording properties of flour | 529,175 | Nov. 13 | 1173 | 282, 283 | 69 | 880 |
| Hoge, Harriet H., Portland, Oreg. Vapor face-bath | 527,738 | Oct. 16 | 1778 | 428 | 69 | 358 |
| Hogeboom, Levi S., Three Rivers, assignor to Knickerbocker Company, Jackson, Mich. Dust-collector | 530,642 | Dec. 11 | 1018 | 249 | 69 | 1416 |
| Hogne, Charles P., Portland, Oreg. Carrier | 528,775 | Nov. 6 | 447 | 110 | 69 | 728 |



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|---|---|---|---|---|---|---|
| Hogue, Parker P., Cincinnati, Ohio, assignor to Automatic Injector Company, of Ohio. Injector | 527,493 | Oct. 16 | 1341 | 327 | 69 | 279 |
| Holden, Daniel L., assignor to K. M. Holden, New York, N. Y. Apparatus for manufacturing ice | 530,526 | Dec. 11 | 808 | 201 | 69 | 1379 |
| Holden, Daniel L., New York, N. Y., and L. W. Serrell, Plainfield, N. J., assignors to K. M. Holden, New York, N. Y. Ice-making apparatus | 530,527 | Dec. 11 | 810 | 201 | 69 | 1380 |
| Holden, Kathryn M. (See Holden, Daniel L., assignor.) | | | | | | |
| Holden, Kathryn M. (See Holden and Serrell, assignors.) | | | | | | |
| Holihan, George T. (See Stewart, Robert A., assignor.) | | | | | | |
| Holleman, Frederik A., Oisterwijk, The Netherlands. Controlling and discharge valve for compressed-air brakes | 527,855 | Oct. 23 | 1952 | 468, 469 | 69 | 406 |
| Holliday, William, and T. F. Rawls, Barnett, Miss. Railway-switch and locomotive attachment for operating same | 528,880 | Nov. 6 | 656 | 157 | 69 | 766 |
| Holludge, George H., Tacoma, Wash. Bedclothes-holder | 528,492 | Oct. 30 | 2076 | 520 | 69 | 606 |
| Hollinger, Isaac K., Greenville, Ohio. Iron fence and gate | 528,164 | Oct. 30 | 2508 | 606 | 69 | 522 |
| Hollingsworth, Jeptha G., Kansas City, Mo., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dental tool | 527,600 | Oct. 16 | 1668 | 402 | 69 | 338 |
| Hollingsworth, William, and J. Korbel, San Francisco, Cal. Machine for stretching band-saws | 529,551 | Nov. 20 | 1866 | 444 | 69 | 1024 |
| Hollis, Rodolphus W., Atlanta, Ga. Automatic rheostat | 531,017 | Dec. 25 | 2712 | 650 | 69 | 1761 |
| Holm, John J., Madison, Wis. Combination trunk, bookcase, and writing-desk | 529,793 | Nov. 27 | 2249 | 536 | 69 | 1104 |
| Holman, Joseph W., assignor of one-third to O. J. Price, Detroit, Mich. Button-separator | 527,394 | Oct. 9 | 1178 | 288, 289 | 69 | 284 |
| Holmes, Daniel M., Arlington, N. J. Machine for molding confectionery | 528,722 | Nov. 6 | 345 | 84, 85 | 69 | 709 |
| Holmes, Daniel M., Arlington, N. J. Machine for molding confectionery | 528,724 | Nov. 6 | 347 | 84, 85 | 69 | 709 |
| Holmes, Frank D., *et al.* (See Jaeger, Winfield S., assignor.) | | | | | | |
| Holmes, Gilman D. (See Judson and Holmes.) | | | | | | |
| Holmes, Henry M., Ayer, Mass. Dinner-pail | 531,533 | Dec. 25 | 2569 | 615 | 69 | 1732 |
| Holmes, John, Newark, N. J. Separable button | 527,555 | Oct. 16 | 1444 | 352 | 69 | 297 |
| Holmes, John, Boston, Mass. Combination-undergarment | 529,493 | Nov. 20 | 1764 | 419 | 69 | 1006 |
| Holmes, John W., Louisville, Ky. Collapsible core-barrel | 530,108 | Dec. 4 | 56 | 15 | 69 | 1225 |
| Holmes, William A. B., *et al.* (See Jaeger, Winfield S., assignor.) | | | | | | |
| Holmes, William W., assignor to Q. & C. Company, Chicago, Ill. Guide-bracket and wedge for sliding doors | 530,182 | Dec. 4 | 187 | 46 | 69 | 1248 |
| Holmgren, Alfred, New York, N. Y., assignor of two-thirds to J. Draper, Wilmington, Del., and J. Barnes, Brooklyn, N. Y. Cylinder and valve for steam-motors | 528,227 | Oct. 30 | 2025 | 493 | 69 | 549 |
| Holsclaw, Wilford H., assignor to B. F. Avery & Sons, Louisville, Ky. Gang plow | 530,047 | Nov. 27 | 2712 | 651 | 69 | 1194 |
| Holsclaw, Wilford H., assignor to B. F. Avery & Sons, Louisville, Ky. Cultivator | 530,844 | Dec. 11 | 1337 | 321 | 69 | 1474 |
| Holt, James B., Fairfield Centre, Me. Coasting-sled | 529,494 | Nov. 20 | 1765 | 420 | 69 | 1006 |
| Holt, Jesse. (See Grindrod, John T., assignor.) | | | | | | |
| Holt & Willetts. (See Powell, John W., assignor.) | | | | | | |
| Holton, W. F., *et al.* (See Rush, William S., assignor.) | | | | | | |
| Holtzhonser, Jacob, New Britain, Conn. Weighing-scale | 527,427 | Oct. 16 | 1232 | 302 | 69 | 257 |
| Homan, Eugene, New York, N. Y. Bicycle | 529,267 | Nov. 13 | 1337 | 320 | 69 | 908 |
| Homer Steel Fence Company. (See Van Wagoner, Charles H., assignor.) | | | | | | |
| Hood, Charles F., Pittsburg, Pa., assignor to Pittsburg Chemical Company, of Pennsylvania. Extracting apparatus | 530,593 | Dec. 11 | 1418 | 337 | 69 | 1488 |
| Hood, Charles L., *et al.* (See Grieser, Henry, assignor.) | | | | | | |
| Hoofnagle, William T., Baltimore, Md. Tack-driving machine | 527,985 | Oct. 23 | 2204 | 531 | 69 | 452 |
| Hooker, William C., Abingdon, Ill. Animal-trap | 528,671 | Nov. 6 | 969 | 66 | 69 | 694 |
| Hookham, George, Birmingham, England. Manufacturing flat zigzag springs | 527,856 | Oct. 23 | 1954 | 469 | 69 | 406 |
| Hooper, Louis M., Rutherford, N. J., assignor to J. L. Mott Iron Works, New York, N. Y. Closet-pull attachment | 529,423 | Nov. 13 | 1074 | 259 | 69 | 862 |
| Hopkins, Robert G., Somerville, Mass., assignor to Carter, Dinsmore & Company, Boston, Mass., and New York, N. Y. Ribbon-case for type-writing machines | 530,307 | Dec. 4 | 406 | 102 | 69 | 1280 |
| Hopkirk, James, San Francisco, Cal. Reversible driving-gear for cars | 529,268 | Nov. 13 | 1338 | 321 | 69 | 908 |
| Hopson, Douglas. (See Burk, Lemon O., assignor.) | | | | | | |
| Hopson, John, Jr., New London, assignor of one-half to Waterbury Clock Company, Waterbury, Conn. Finishing metals in imitation of faience | 530,342 | Dec. 4 | 474 | ..... | 69 | 1300 |
| Horn & Brannen Manufacturing Company. (See Horn, Herman, assignor.) | | | | | | |
| Horn, Herman, Philadelphia, Pa., assignor to Horn & Brannen Manufacturing Company, of Pennsylvania. Electric-light fixture | 530,343 | Dec. 4 | 476 | 118 | 69 | 1301 |
| Horn, James W., Arba, Ind. Detonating burglar-alarm | 530,947 | Dec. 18 | 1516 | 359 | 69 | 1522 |
| Hornberger, John F., Lawrenceburg, Ind. Device for steaming coffee, tea, &c. | 530,305 | Dec. 4 | 405 | 102 | 69 | 1280 |
| Horne, George A., Syracuse, N. Y. Ejecting or cocking mechanism for breakdown guns | 528,228 | Oct. 30 | 2026 | 494 | 69 | 549 |
| Hornig, Julius L., assignor of one-half to T. H. Wurmb, St. Louis, Mo. Conduit electric railway | 528,205 | Oct. 30 | 2586 | 625 | 69 | 536 |
| Horovsky, Zdenko, Duquesne, Pa. Apparatus for the manufacture of tubing | 529,910 | Nov. 27 | 2448 | 588, 589, 590 | 69 | 1142 |
| Horrie, David, Kaukauna, Wis. Railway-frog | 528,776 | Nov. 6 | 449 | 110, 111 | 69 | 728 |
| Horton, Emmet, Dundee, N. Y., assignor of one-half to R. G. Du Bois, Washington, D. C., Basket-making machine | 530,048 | Nov. 27 | 2715 | 652, 653 | 69 | 1194 |
| Horton, Stephen A., Clarksville, Tex. Well-drilling apparatus | 526,708 | Oct. 2 | 64 | 16 | 69 | 15 |
| Horton, Stephen A., Clarksville, Tex. Well-drilling apparatus. (Reissue) | 11,446 | Oct. 16 | 1780 | 429 | 69 | 359 |
| Horton, William J., Halifax, Canada. Fire-ladder apparatus | 528,126 | Oct. 23 | 2444 | 591, 592 | 69 | 496 |
| Horwitz, Moritz, Berlin, Germany. Burner for incandescent gas-lighting | 530,775 | Dec. 11 | 1238 | 303 | 69 | 1456 |
| Hoschke, William H., Brooklyn, N. Y. Damper attachment for Swiss music-boxes | 531,036 | Dec. 18 | 1669 | 396 | 69 | 1549 |
| Hoschke, William H., Brooklyn, N. Y. Automatic musical instrument | 531,037 | Dec. 18 | 1670 | 396, 397 | 69 | 1549 |
| Hoselton, Clarence D., Drayton, N. D. Grain-separator | 529,911 | Nov. 27 | 2452 | 590, 591 | 69 | 1143 |
| Hoskins, William, Chicago, Ill. Luminous sign | 529,073 | Nov. 13 | 909 | 239 | 69 | 847 |
| Hossfeld, Otto, and P. Küsaner, Berlin, Germany. Bill-file | 528,947 | Nov. 13 | 785 | 185, 186 | 69 | 811 |
| Hough, Azel C., South Butler, N. Y. Manual sales-recorder | 530,993 | Dec. 18 | 1591 | 378 | 69 | 1535 |
| Houghton, Cyrus A. (See Moore, William J., assignor.) | | | | | | |
| Houghton, Henry S. Northbridge, Mass. Grid for cotton-openers | 530,271 | Dec. 4 | 343 | 84 | 69 | 1278 |
| Houldsworth, Henry Jr., Keighley, England. Wheelbarrow | 529,912 | Nov. 27 | 2454 | 591 | 69 | 1143 |
| Houle, Frank, Chicago, Ill. Try-square | 530,894 | Dec. 11 | 1421 | 337 | 69 | 1489 |
| Housatonic Manufacturing Company. (See Crandall and Russell, assignors.) | | | | | | |
| Housatonic Manufacturing Company. (See Russell and Crandall, assignors.) | | | | | | |
| House, George, Sr., Rochester, N. Y. Sirup-cup for bottlers | 529,735 | Nov. 27 | 2158 | 515 | 69 | 1087 |

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|---|---|---|---|---|---|---|
| House, Henry A. and Henry A., Jr., Bridgeport, Conn., assignors of one-half to R. R. Symon, London, England. Means for raising anchors | 527,060 | Oct. 9 | 635 | 154 | 69 | 134 |
| House, Henry A. and Henry A., Jr., East Cowes, assignors of one-half to R. R. Symon, London, England. Anchor | 527,061 | Oct. 9 | 636 | 154 | 69 | 134 |
| Household Boot and Shoe Stretcher Company. (See Howard, Edward J., assignor.) | | | | | | |
| Houser, Edgar W., and C. C. Decker, Syracuse, N. Y. Elevator | 530,776 | Dec. 11 | 1240 | 300 | 69 | 1456 |
| Houston, Edwin J., Philadelphia, Pa. Weather-protecting covering for electrical conductors | 527,556 | Oct. 16 | 1146 | 352 | 69 | 297 |
| Hovey, Henry J., Oak Park, Ill. Circuit-closer | 528,100 | Oct. 23 | 2403 | 580 | 69 | 488 |
| Howard, Charles D., assignor to Howard Furnace Company, Syracuse, N. Y. Heating-furnace | 528,672 | Nov. 6 | 270 | 66 | 69 | 294 |
| Howard, Charles W., North Hector, N. Y. Extension-ladder | 528,479 | Oct. 30 | 3062 | 742 | 69 | 622 |
| Howard, Edward J., Boston, Mass., assignor, by mesne assignments, to Household Boot and Shoe Stretcher Company, Portland, Me. Last | 531,534 | Dec. 25 | 2570 | 615 | 69 | 1732 |
| Howard Furnace Company. (See Howard, Charles D., assignor.) | 528,296 | Oct. 30 | 2743 | 663 | 69 | 565 |
| Howard, Henry H. (See Gutterson, Frank E., assignor.) | | | | | | |
| Howard, Jasper N., Wichita, Kans. Saw-filing machine | 527,332 | Oct. 9 | 1074 | 259 | 69 | 213 |
| Howard, John E., assignor to Cork Company, Limited, London, England. Machinery for finishing, polishing, or surfacing corks | 530,845 | Dec. 11 | 1339 | 321 | 69 | 1474 |
| Howard, William H., Pueblo, Colo. Stirring-in or mixing device | 529,617 | Nov. 20 | 1964 | 467 | 69 | 1044 |
| Howe, Charles C., Westerly, assignor to Shamnock Mica Company, Shamnock, R. I. Grinding mill | 527,986 | Oct. 23 | 2206 | 531 | 69 | 452 |
| Howe, Frank F., Marietta, Ohio. Sounder | 531,188 | Dec. 18 | 1950 | 463 | 69 | 1600 |
| Howe, Henry A., assignor to himself, J. Livingston, and A. H. Gross, New York, N. Y. Spring-buffer for street-cars | 527,203 | Oct. 9 | 851 | 208 | 69 | 174 |
| Howe, John K., and J. Clark, Albany, N. Y. Engine for operating clutches or other devices | 530,294 | Dec. 18 | 1595 | 379 | 69 | 1535 |
| Howe, Thomas J. (See Hartwell and Howe.) | | | | | | |
| Howe, Warren B., and F. B. Davidson, Chicago, Ill. Paper box | 526,782 | Oct. 2 | 180 | 45 | 69 | 36 |
| Howe, William M., Austin, Minn. Cuff-holder | 527,062 | Oct. 9 | 637 | 154 | 69 | 134 |
| Howe, William R., Dayton, Ohio. Elastic-tread horseshoe | 530,528 | Dec. 11 | 812 | 202 | 69 | 1380 |
| Howell, David, Yonkers, N. Y. Hat | 528,777 | Nov. 6 | 452 | 111 | 69 | 729 |
| Howell, Edwin C., Boston, Mass. Game apparatus | 529,913 | Nov. 27 | 2455 | {591 / 592} | 69 | 1143 |
| Howell, Elizabeth E., Maryville, Mo. Garment-stay | 528,942 | Nov. 13 | 786 | 184 | 69 | 810 |
| Howells, Thomas G., Warren, Ohio. Lubricator | 531,590 | Dec. 25 | 2665 | 640 | 69 | 1752 |
| Howes, Stephen, Jackson, Tenn. Bottle | 527,404 | Oct. 16 | 1343 | 327 | 69 | 280 |
| Hoy, Harman. (See Hoy, Louis E. and H.) | | | | | | |
| Hoy, Louis E. and H., Silver Creek, Nebr. Car elevator and dumper | 529,618 | Nov. 20 | 1965 | 468 | 69 | 1044 |
| Hoyt, Adrian H., Penacook, N. H., assignor to Whitney Electrical Instrument Company, Saco, Me. Magnet | 528,635 | Nov. 6 | 211 | 51 | 69 | 684 |
| Hoyt, Charles N., Brooklyn, N. Y. Paper doll | 526,901 | Oct. 2 | 389 | 97 | 69 | 73 |
| Hoyt, Enoch R. R., Brooklyn, N. Y. Steam-boiler furnace | 528,229 | Oct. 30 | 2628 | 634 | 69 | 544 |
| Hoyt, Upham A., Belfast, Me. Sash-fastener | 526,863 | Oct. 2 | 345 | 80 | 69 | 62 |
| Hubbard, Arthur E., *et al.* (See Blue, Charles E., assignor.) | | | | | | |
| Hubbard, Moses G., Jr. (See McGuire and Hubbard.) | | | | | | |
| Hubbell, Charles J., New York, N. Y., assignor to J. J. Darlington, trustee, Washington, D. C. Primary battery | 530,485 | Dec. 4 | 725 | 178 | 69 | 1347 |
| Hubbell, Myron R., Wolcott, Vt. Gravity door-closer | 527,405 | Oct. 16 | 1343 | 327 | 69 | 280 |
| Hubbell, Thomas J., Santa Cruz, Cal. Combined sulky harrow and cultivator | 527,174 | Oct. 9 | 809 | 197 | 69 | 165 |
| Huben, Gustavus A., Springfield, Ohio. Trolley-wire switch-plate | 528,101 | Oct. 23 | 2403 | 581 | 69 | 488 |
| Huber, Sigmund V., Pittsburg, Pa. Rolling mill | 529,124 | Nov. 13 | 1075 | {259 / 260} | 69 | 862 |
| Hucks, William, Jr., London, England. Apparatus for molding pats or blocks of butter or other like plastic material | 526,902 | Oct. 2 | 330 | 97, 98 | 69 | 73 |
| Huddleston, Albert F. (See Green, Casper T., assignor.) | | | | | | |
| Huff, Waller P. (See Jones and Wetmore, assignors.) | | | | | | |
| Hughson, Benjamin F., Cold Spring, N. Y. Car-ventilator | 527,987 | Oct. 23 | 2207 | 532 | 69 | 452 |
| Hull, Charles S., *et al.* (See Julian, Gideon, assignor.) | | | | | | |
| Hull, John H. (See Rich and Hull.) | | | | | | |
| Humann, Anna. (See Rank, Erdmann, assignor.) | | | | | | |
| Humbert, James H., assignor of two-thirds to I. N. Funkhouser and J. H. Wine, Waynesborough, Va. Coal-hod | 527,333 | Oct. 9 | 1075 | 260 | 69 | 214 |
| Hume, Robert D., Gold Beach, Oreg. Can-making machine | 528,674 | Nov. 6 | 274 | 67 | 69 | 695 |
| Hume, Robert D., Gold Beach, Oreg. Carrier for can-making machines | 529,249 | Nov. 13 | 1340 | 321 | 69 | 909 |
| Humphrey, Edgar A., Columbus, Pa. Wick-adjuster for lamp-burners | 527,692 | Oct. 16 | 1673 | 403 | 69 | 338 |
| Humphrey, Seth K., Omaha, Nebr. Windmill | 531,038 | Dec. 18 | 1672 | 395 | 69 | 1550 |
| Humphrey, Walter B., assignor of three-tenths to J. Bevan, Windsor, Conn. Combination-lock | 526,709 | Oct. 2 | 65 | 17 | 69 | 15 |
| Humphrey, William F., and S. Y. Hoffman, Boston, Mass. Tension device for towing-cables | 530,995 | Dec. 18 | 1599 | {379 / 380} | 69 | 1536 |
| Humphreys, George E. (See Fay and Humphreys.) | | | | | | |
| Hunleth, Frank J., *et al.* (See Giessler, William J., assignor.) | | | | | | |
| Hunsicker, William H. (See Wanamaker, Charles B., assignor.) | | | | | | |
| Hunt, Charles W., West New Brighton, N. Y. Elevating apparatus | 527,496 | Oct. 16 | 1345 | 328 | 69 | 280 |
| Hunt, Charles W., West New Brighton, N. Y. Lubricator | 529,125 | Nov. 13 | 1079 | 260 | 69 | 863 |
| Hunt, Edward P., assignor of one-half to J. Bloeser, Buffalo, N. Y. Flue-brush handle | 531,039 | Dec. 18 | 1676 | 397 | 69 | 1550 |
| Hunt, George G., Bristol, Ill. Grain-binder | 527,497 | Oct. 16 | 1347 | {328 / 329} | 69 | 280 |
| Hunt, Herbert E., Pittsburg, Pa. Air-brake regulating apparatus | 529,270 | Nov. 13 | 1341 | 321 | 69 | 909 |
| Hunter, George E., Elgin, assignor to Elgin National Watch Company, Chicago, Ill. Dial-sinking machine | 527,988 | Oct. 23 | 2208 | {532 / 533} | 69 | 452 |
| Hunter, James B., Cato, N. Y. Hose-reel | 528,597 | Nov. 6 | 132 | 32 | 69 | 670 |
| Hunter, John F., and S. H. Lough, Seattle, Wash. Circuit-changer for electric signaling systems | 528,127 | Oct. 23 | 2450 | 592 | 69 | 496 |
| Hunter, John P., Boise City, assignor of one-half to T. Gracia, Quartzburg, Idaho. Lubricator | 526,858 | Oct. 2 | 275 | 67 | 69 | 52 |
| Hunter, Rudolph M., Philadelphia, Pa. Process of and apparatus for the manufacture of iron or steel | 528,943 | Nov. 13 | 787 | 184 | 69 | 810 |
| Hunter, Rudolph M., Philadelphia, Pa., assignor to Thomson-Houston Electric Company, of Connecticut. Electrical transformer | 528,778 | Nov. 6 | 453 | 111 | 69 | 729 |
| Hunter, Thomas G., Philadelphia, Pa. Removing and recovering metal coatings from metallic bases | 529,862 | Nov. 27 | 2373 | 568 | 69 | 1128 |
| Hunter, Thomas G., Philadelphia, Pa. Removing and recovering metal coatings from metallic bases | 529,863 | Nov. 27 | 2375 | 568 | 69 | 1129 |



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|---|---|---|---|---|---|---|
| Hunter, Thomas G., Philadelphia, Pa. Removing and recovering metal coatings from metallic bases | 529,864 | Nov. 27 | 2376 | 568 | 69 | 1129 |
| Hurd, Joseph W., Belvidere, Ill. Bread or cake knife | 527,175 | Oct. 9 | 812 | 197 | 69 | 166 |
| Hurd, Oscar P., Binghamton, N. Y. Boot or shoe | 528,724 | Nov. 6 | 349 | 85 | 69 | 710 |
| Hurley, Jere, Ellsworth, Me. Thill-support | 528,102 | Oct. 23 | 2405 | 581 | 69 | 488 |
| Hurst, James M., Lucretia, Va. Gate | 527,633 | Oct. 16 | 1674 | 403 | 69 | 339 |
| Hurst, James O. (See Essex, Samuel P., assignor.) | | | | | | |
| Hüssener, Albert, Gelsenkirchen, Germany. Apparatus for use in sterilization of materials in bottles, jars, &c. | 529,619 | Nov. 20 | 1967 | {468 / 469} | 69 | 1044 |
| Hussey, Albertus, Milford, assignor of one-half to O. A. Shepard, Brookline, Mass. Cutting-tool | 528,725 | Nov. 6 | 351 | 86 | 69 | 710 |
| Hussey, Charles A., New York, N. Y. Combined regulating incandescent lamp and socket | 527,989 | Oct. 23 | 2210 | {533 / 534} | 69 | 453 |
| Huston, John, *et al.* (See Miller, John, assignor.) | | | | | | |
| Hutchins, Abner B., assignor to Luther & Lederhos, New York, N. Y. Gas-stove | 527,858 | Oct. 23 | 1959 | 471 | 69 | 307 |
| Hutchinson, Arthur. (See Gelbaugh, William H., assignor.) | | | | | | |
| Hutchinson, Calvin A., assignor of one-half to B. F. Sloan and J. R. Greene, Spencer, Ind. Barrel-truck | 531,189 | Dec. 18 | 1951 | 463 | 69 | 1601 |
| Hutchinson, Ira K., Fresno, Cal., assignor of five-eighths to A. L. Stout, Dayton, and W. C. Van Sant, Delaware, Ohio. Wrapping-machine | 530,529 | Dec. 11 | 813 | {202 / 203} | 69 | 1380 |
| Hutchinson, John L., La Porte, Indiana. Watch | 530,530 | Dec. 11 | 817 | 203 | 69 | 1381 |
| Hutchinson, William F., Passaic, N. J. Wood-cutting machine | 529,386 | Nov. 20 | 1551 | 374 | 69 | 969 |
| Hute, Frank J. S., Pendlebury, England. Miner's pick | 529,271 | Nov. 13 | 1342 | 321 | 69 | 909 |
| Hutin, Maurice, and M. Leblanc, assignors to Société Anonyme pour la Transmission de la Force par l'Électricité, Paris, France. Transformer system for electric railways | 527,855 | Oct. 23 | 1956 | 470 | 69 | 306 |
| Hutin, Maurice, Paris, and M. Leblanc, Le Rainey, assignors to Société Anonyme pour la Transmission de la Force par l'Electricité, Paris, France. Alternating-current electro-dynamic machine | 529,272 | Nov. 13 | 1343 | 322 | 69 | 910 |
| Hutin, Maurice, and M. Leblanc, assignors to Société Anonyme pour la Transmission de la Force par l'Électricité, Paris, France. Continuous-current dynamo electric machine | 529,650 | Nov. 20 | 2012 | 482 | 69 | 1052 |
| Hutton, John. (See Strobecker and Hutton.) | | | | | | |
| Huttonlocher, G. H., *et al.* (See Stanley, John E., assignor.) | | | | | | |
| Hyatt, Frank A., Beaumont, Tex. Dredging apparatus | 528,433 | Oct. 30 | 2976 | 720 | 69 | 606 |
| Hyatt, John W., Newark, N. J. Hanger for shafting | 526,710 | Oct. 2 | 69 | 17, 18 | 69 | 15 |
| Hyde, Charles, Pittsburg, Pa. Boiler | 528,103 | Oct. 23 | 2407 | 581 | 69 | 488 |
| Hyde, David B., Springfield, Ohio. Elastic emery-wheel | 528,726 | Nov. 6 | 352 | 86 | 69 | 710 |
| Hyller, Knud L., Chicago, Ill. Folding bed | 530,777 | Dec. 11 | 1243 | 300 | 69 | 1457 |
| Hyman, Albert L. and D., New York, N. Y. Filter | 531,190 | Dec. 18 | 1952 | 463 | 69 | 1601 |
| Hyman, Daniel. (See Hyman, Albert L. and D.) | | | | | | |
| I. B. Kleinert Rubber Company. (See Kleinert, Isaac B., assignor.) | | | | | | |
| Iddings, J. H. (See Iddings, Samuel P., assignor.) | | | | | | |
| Iddings, Samuel P., assignor of one-half to J. H. Iddings, Troy, Ohio. Fence-post | 528,674 | Nov. 6 | 280 | 68 | 69 | 696 |
| Ideal Manufacturing Company. (See Bush, Hiram T., assignor.) | | | | | | |
| Idler, Charles A., Atlantic City, N. J. Electric and gravity pleasure-railway | 527,990 | Oct. 23 | 2214 | {534 / 535} | 69 | 454 |
| Illowizi, Henry, Philadelphia, Pa. Air-moistening attachment for hot-air registers | 526,923 | Oct. 2 | 428 | 106 | 69 | 80 |
| Inch, Philip, Washington, D. C., assignor of eight-fifteenths to B. N. Baker, Baltimore, Md. Composition of metal and making same | 529,620 | Nov. 20 | 1968 | ..... | 69 | 1044 |
| Inch, Philip, Washington, D. C., assignor of eight-fifteenths to B. N. Baker, Baltimore, Md. Sheathing for ships' bottoms | 529,651 | Nov. 20 | 2014 | 482 | 69 | 1052 |
| Ingalls, Milo H., assignor of three-eighths to J. C. Shannon, North Granville, N. Y. Chimney cowl or ventilator | 530,418 | Dec. 4 | 595 | 148 | 69 | 1424 |
| Ingersoll, George W., assignor of one-half to H. Tesch, Stockton, Cal. Harvester | 531,535 | Dec. 25 | 2571 | 615 | 69 | 1732 |
| Ingersoll, Luman C., Keokuk, Iowa. Timber railway-tie | 530,778 | Dec. 11 | 1244 | 300 | 69 | 1457 |
| Ingersoll-Sergeant Drill Company. (See Sergeant, Henry C., assignor.) | | | | | | |
| Ingham, William P., Middlesbrough, England. Construction of blast furnaces, shafts, chimneys, &c. | 528,480 | Oct. 30 | 3063 | {742 / 743} | 69 | 622 |
| Ingram, Thomas D., Washington, D. C. Desk or stationery implement | 527,850 | Oct. 23 | 1960 | 471 | 69 | 307 |
| International Railway Tie Company. (See Higley, Eben N., assignor.) | | | | | | |
| Irion, John H., Table Rock, Nebr. End-board chute for wagons | 526,971 | Oct. 2 | 485 | 121 | 69 | 93 |
| Irwin, Edward C. and W. G., Winnipeg, Canada. Window-screen | 530,272 | Dec. 4 | 343 | 85 | 69 | 1278 |
| Irwin, William G. (See Irwin, Edward C. and W. G.) | | | | | | |
| Ives, Frederic E., Philadelphia, Pa. Photochromoscope and photochromoscope-camera | 531,040 | Dec. 18 | 1677 | 398 | 69 | 1551 |
| J. L. Mott Iron Works. (See Hooper, Louis M., assignor.) | | | | | | |
| J. L. Mott Iron Works. (See Reid and Hammann, assignors.) | | | | | | |
| J. R. Alsing Company. (See Abbé, Richard F., assignor.) | | | | | | |
| J. W. Sefton Manufacturing Company. (See Goettsch, Herman, assignor.) | | | | | | |
| Jackson, Byron, San Francisco, Cal. Steering mechanism for traction-engines | 529,495 | Nov. 20 | 1766 | {420 / 421} | 69 | 1006 |
| Jackson, David, and J. Osterloh, New York, N. Y. Lantern | 528,594 | Nov. 27 | 2251 | 537 | 69 | 1104 |
| Jackson, J. J. (See Nickle, Alfred, assignor.) | | | | | | |
| Jackson, James M., assignor to M. K. Jackson, Millport, N. Y. Churn | 530,531 | Dec. 11 | 820 | 203 | 69 | 1381 |
| Jackson, John, Clinton, Iowa. Type-writing machine | 529,387 | Nov. 20 | 1553 | {371 / 372} | 69 | 970 |
| Jackson, Myra K. (See Jackson, James M., assignor.) | | | | | | |
| Jackson, Oswald. (See Gruetter and Jackson.) | | | | | | |
| Jackson, Robert M. (See Mullins and Jackson.) | | | | | | |
| Jackson, Walter W. (See Connet and Jackson.) | | | | | | |
| Jacobs, Joseph, Nevada City, Cal. Feathering paddle-wheel | 527,991 | Oct. 23 | 2218 | 535 | 69 | 454 |
| Jacobsen, Marcus P., Jamestown, N. Y. Wagon | 528,598 | Nov. 6 | 133 | 33 | 69 | 670 |
| Jacoby, Albert S. (See Cooper and Jacoby.) | | | | | | |
| Jacoby, Medwin L. (See Wright and Jacoby.) | | | | | | |
| Jacques, George J. H. (See Morin and Jacques.) | | | | | | |
| Jaeger, Christian, Philadelphia, Pa. Album | 527,204 | Oct. 9 | 854 | 208 | 69 | 174 |
| Jaeger, Winfield S., assignor to W. A. B. and F. D. Holmes, Trenton, N. J. Hanger for pictures | 527,703 | Oct. 23 | 1813 | 443 | 69 | 387 |
| Jahant, Augustus, assignor of one-half to J. C. Weber, Akron, Ohio. Grate for furnaces or stoves | 528,165 | Oct. 30 | 2510 | 607 | 69 | 523 |
| Jaimison, John W., Vallejo, Cal. Child's carriage | 526,972 | Oct. 2 | 486 | {121 / 122} | 69 | 93 |
| Jakobsson, Herman, London, England. Carriage or mounting for artillery | 531,417 | Dec. 25 | 2362 | 564 | 69 | 1693 |
| Jalsoviczky, Géza, Buda-Pesth, Austria-Hungary. Valve-gear | 527,663 | Oct. 9 | 638 | 155 | 69 | 124 |
| James, Charles H., Wabash, Ind. Spraying-pump | 527,794 | Oct. 23 | 1845 | 443 | 69 | 387 |
| James, Henry G., Corsham, near Chippenham, England. Funnel | 530,690 | Dec. 11 | 1097 | 266 | 69 | 1429 |

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|---|---|---|---|---|---|---|
| James, Thomas and W. T., Braddock, Pa. Pipe connection for fluids | 531,615 | Dec. 25 | 2707 | 649 | 69 | 1760 |
| James, William T. (See James, Thomas and W. T.) | | | | | | |
| Jamison, George. (See Severance, Jamison, and Braucht.) | | | | | | |
| Jarmin, George W., Corpus Christi, Tex. Lantern | 530,049 | Nov. 27 | 2727 | 653 | 69 | 1176 |
| Jaros, Samuel, assignor to Beach Manufacturing Company, Hartford, Conn. Knitting-machine | 527,113 | Oct. 9 | 711 | 174, 175 | 69 | 147 |
| Jauch, Joseph, assignor to Bradley & Hubbard Manufacturing Company, Meriden, Conn. Air-distributer for central-draft lamps | 529,496 | Nov. 20 | 1768 | 421 | 69 | 1006 |
| Jay, William H., Providence, R. I. Screw-propeller | 528,253 | Oct. 30 | 2671 | 643 | 69 | 592 |
| Jeffery, Benjamin A. (See Jeffery, Joseph A. and B. A.) | | | | | | |
| Jeffery, Joseph A. and B. A., San Francisco, Cal. Electric dental engine | 530,344 | Dec. 4 | 477 | 118, 119 | 69 | 1301 |
| Jeffery, Thomas B., Chicago, Ill. Velocipede | 527,607 | Oct. 16 | 1529 | 371 | 69 | 311 |
| Jenkins, David, assignor to Jenkins Machine Company, Sheboygan, Wis. Planing-machine | 526,903 | Oct. 2 | 393 | 98, 99 | 69 | 73 |
| Jenkins, Lewis, Handsworth, England. Miner's safety-lamp | 526,711 | Oct. 2 | 70 | 18 | 69 | 16 |
| Jenkins Machine Company. (See Jenkins, David, assignor.) | | | | | | |
| Jenness, Edwin J., Chicago, Ill. Pneumatic tire | 529,736 | Nov. 27 | 2160 | 515 | 69 | 1088 |
| Jennings, Emil H., *et al.* (See Dobbins, Douglas, assignor.) | | | | | | |
| Jennings, George F., Fall River, Mass. Hoisting mechanism | 528,297 | Oct. 30 | 2718 | 664 | 69 | 565 |
| Jennings, John J. (See Scofield and Jennings.) | | | | | | |
| Jennings, William B., *et al.* (See Dobbins, Douglas, assignor.) | | | | | | |
| Jensen, H. P. (See Larsen, Hans, assignor.) | | | | | | |
| Jensen, Hans P., Mankato, Minn. Sleigh | 530,948 | Dec. 18 | 1517 | 359 | 69 | 1592 |
| Jensen, Jens S., Thisted, Denmark, assignor to J. D. Frederiksen, Little Falls, N. Y. Suction-pump for cow-milking machines | 529,865 | Nov. 27 | 2378 | 569 | 69 | 1130 |
| Jensen, Theodor V., Copenhagen, Denmark. Shutter mechanism for cameras | 530,486 | Dec. 4 | 729 | 178 | 69 | 1348 |
| Jerstrum, Herbert, assignor of one-half to H. A. Streeter, Chicago, Ill. Cigar-bunch machine | 528,166 | Oct. 30 | 2511 | 607, 608, 609 | 69 | 523 |
| Jeschke, Charles W. and E., Vickery, Ohio. Ditching-machine | 526,864 | Oct. 2 | 326 | 80 | 69 | 62 |
| Jeschke, Edward. (See Jeschke, Charles W. and E.) | | | | | | |
| Jess, William, Delray, Mich. Flue-cleaner | 528,132 | Oct. 23 | 2459 | 595 | 69 | 498 |
| Jesson, John B. (See Fretz and Jesson.) | | | | | | |
| Jessup, Robert W., Los Angeles, assignor of one-half to F. H. Wheelan, Santa Barbara, Cal. Separator | 528,434 | Oct. 30 | 2677 | 720 | 69 | 606 |
| Jewell, Edward. (See O'Neill, Henry G., assignor.) | | | | | | |
| Jewett, Carrie A., administratrix. (See Jewett, Charles C.) | | | | | | |
| Jewett, Charles C., deceased; C. A. Jewett, Sand Spring, Iowa, administratrix, assignor to Rock Island Plow Company, Rock Island, Ill. Hay-loader | 530,691 | Dec. 11 | 1099 | 266, 267 | 69 | 1430 |
| Jochums, Augustus C., and F. M. Boughton, Monterey, Cal. Door-bolt socket | 526,924 | Oct. 2 | 429 | 106 | 69 | 80 |
| Joel B. Ettinger Machine Company. (See Ettinger; Joel, assignor.) | | | | | | |
| Johanson, Johan A. (See Olsson, Olaus, assignor.) | | | | | | |
| Johns, Hanson A., Philadelphia, Pa. Elevator | 530,973 | Dec. 4 | 345 | 85, 86 | 69 | 1278 |
| Johns-Pratt Company. (See Perry, James W., assignor.) | | | | | | |
| Johns, Will R., Rockford, Ill. Circular-knitting machine | 531,463 | Dec. 25 | 2458 | 585 | 69 | 1711 |
| Johnson, A. C., *et al.* (See Paris, Robert L., assignor.) | | | | | | |
| Johnson, A. S., *et al.* (See Fryer, Robert M., assignor.) | | | | | | |
| Johnson, Axel, and H. C. Black, Oakland, Cal. Can-making machine | 526,925 | Oct. 2 | 430 | 106, 107 | 69 | 80 |
| Johnson, Charles E., Mount Jackson, Ind. Ribbon-feed-reversing mechanism | 526,783 | Oct. 2 | 191 | 45, 46 | 69 | 36 |
| Johnson, Charles H., assignor of one-third to J. R. Brinsmade, Derby, Conn. Curling-iron | 527,176 | Oct. 2 | 813 | 198 | 69 | 166 |
| Johnson, Chester F., Lowell, Mass. Combined book holder, index, and writing-tablet | 527,114 | Oct. 9 | 717 | 175 | 69 | 148 |
| Johnson Company. (See O'Shea, Henry, assignor.) | | | | | | |
| Johnson Company. (See Pfefferkorn, Wilhelm, assignor.) | | | | | | |
| Johnson, Frank W. (See Backstrom and Johnson.) | | | | | | |
| Johnson, Frederick W., Waltham, Mass. Device for preventing refilling of bottles | 527,992 | Oct. 23 | 2219 | 535 | 69 | 155 |
| Johnson, Henry S. (See Wildman, Robert, assignor.) | | | | | | |
| Johnson, Joseph H., Bradford, Pa. Automatic water-feeder for steam-boilers | 529,652 | Nov. 20 | 2015 | 483 | 69 | 1052 |
| Johnson, Joseph W., Point Pleasant, N. J. Shutter-fastener | 529,621 | Nov. 20 | 1992 | 469 | 69 | 1045 |
| Johnson, Lewis, Wellmar, Minn. Ruling-pen | 531,124 | Dec. 18 | 1829 | 434 | 69 | 1578 |
| Johnson, Lewis, and L. Fridlund, Willmar, Minn. Automatic gas cut-off | 531,123 | Dec. 18 | 1828 | 434 | 69 | 1578 |
| Johnson, Lorenzo R., Harrison Valley, Pa. Machine for pulverizing bark for leaching | 529,736 | Nov. 27 | 2255 | 538 | 69 | 1105 |
| Johnson, Louis F., Poughkeepsie, N. Y. Light-indicator | 527,608 | Oct. 16 | 1530 | 371 | 69 | 312 |
| Johnson, Louis K., Brooklyn, assignor to Alden Type Machine Company, New York, N. Y. Type-setting apparatus | 529,497 | Nov. 20 | 1769 | 421, 422 | 69 | 1007 |
| Johnson, Louis K., and A. A. Low, Brooklyn, assignors to Alden Type Machine Company, New York, N. Y. Type-setting apparatus | 529,446 | Nov. 20 | 1673 | 398, 399 | 69 | 991 |
| Johnson, Louis K., and A. A. Low, Brooklyn, assignors to Alden Type Machine Company, New York, N. Y. Type-setting apparatus | 529,447 | Nov. 20 | 1675 | 399, 400, 401 | 69 | 991 |
| Johnson, Luther M., assignor of one-half to J. E. Dell, Paulding, Ohio. Elevator | 529,031 | Nov. 13 | 920 | 218 | 69 | 833 |
| Johnson, Moses C., Hartford, Conn., assignor to T. & B. Tool Company, Portland, Me., and Danbury, Conn. Driving-clutch | 527,064 | Oct. 9 | 639 | 155 | 69 | 135 |
| Johnson, Nils, St. Louis, Mo. Furnace | 529,795 | Nov. 27 | 2253 | 537, 538 | 69 | 1105 |
| Johnson, Orville B. (See Paddock and Johnson.) | | | | | | |
| Johnson, Perry E., Rome, N. C. Feed-actuating device for planters | 530,592 | Dec. 11 | 821 | 204 | 69 | 1381 |
| Johnson, Peter O., Rockford, Ill. Mangle | 530,589 | Dec. 11 | 821 | 226 | 69 | 1460 |
| Johnson, William C., assignor of one-half to H. S. Hayley and D. M. Armstrong, Memphis, Tenn. Process of and apparatus for treating cotton seed and hulls | 530,593 | Dec. 11 | 823 | 204 | 69 | 1382 |
| Johnson, William E., Coon Rapids, Iowa. Sliding door lock | 527,609 | Oct. 16 | 1531 | 371 | 69 | 312 |
| Johnson, William L., and W. L. Hay, Franklin, Tenn. Straw-conveyer | 531,041 | Dec. 18 | 1681 | 398, 399 | 69 | 1551 |
| Johnston Harvester Company. (See Pridmore, Edward, assignor.) | | | | | | |
| Johnston, John. (See Seymour, Dudley S., assignor.) | | | | | | |
| Johnston, John, Philadelphia, Pa. Cover for cooking utensils | 526,712 | Oct. 2 | 72 | 19 | 69 | 16 |
| Johnston, Preston T., Frankfort, assignor of one-fourth to W. A. Orman, Russellville, Ala. Nut-lock | 527,390 | Oct. 9 | 1172 | 287 | 69 | 233 |
| Johnston, Samuel, New York, N. Y. Rolling-mill | 531,042 | Dec. 18 | 1683 | 399 | 69 | 1552 |
| Johnston, Samuel J., Leesburg, Va. Carriage or wagon jack | 530,109 | Dec. 4 | 59 | 16 | 69 | 1226 |
| Johnston, Samuel J., Leesburg, Va. Combination-tool | 530,419 | Dec. 4 | 596 | 148, 149 | 69 | 1324 |
| Johnston, Thomas J., Washington, D. C. Lock | 529,388 | Nov. 20 | 1560 | 372 | 69 | 970 |



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|---|---|---|---|---|---|---|
| Johnston, William F., Sackett's Harbor, N. Y. Door-hanger | 528,435 | Oct. 30 | 2979 | 720, 721 | 69 | 607 |
| Johnston, William F., and J. Gray, assignors to Massey-Harris Company, Toronto, Canada. Apparatus for hardening knife-sections or other articles | 530,183 | Dec. 4 | 188 | 47 | 69 | 1248 |
| Jones, Adolphus E., Greensburg, La. Combination plow-stock | 526,784 | Oct. 2 | 194 | 46 | 69 | 37 |
| Jones, Charles B., and J. S. Wetmore; said Wetmore assignor to W. P. Huff, Roanoke, Va. Hydraulic ram | 529,914 | Nov. 27 | 2458 | 592 | 69 | 1144 |
| Jones, Daniel, assignor to Two-Reel Lock-Stitch Sewing Machine Company, Limited, Birmingham, England. Drilling-machine | 529,320 | Nov. 13 | 1439 | 346, 347 | 69 | 939 |
| Jones, David R., Jr. (See Bingham and Jones.) | | | | | | |
| Jones, Edward, New York, N. Y. Feed-water heater and circulator for boilers | 530,420 | Dec. 4 | 599 | 149 | 69 | 1325 |
| Jones, Edward R., St. Lawrence, S. D. Corn-cultivator | 529,915 | Nov. 27 | 2459 | 592 | 69 | 1144 |
| Jones, Florentine A., Boston, Mass. Furnace | 528,944 | Nov. 13 | 791 | 185 | 69 | 811 |
| Jones, George B. (See Jones, Harvey P. and G. B.) | | | | | | |
| Jones, George M., *et al.* (See Castle, Lewis D., assignor.) | | | | | | |
| Jones, Harry, Richmond, Ind. Pump | 528,436 | Oct. 30 | 2981 | 721 | 69 | 607 |
| Jones, Harry H., Lancaster, N. H. Tablet-compressing machine | 531,536 | Dec. 25 | 2572 | 616 | 69 | 1702 |
| Jones, Harvey P. and G. B., Denver, Colo. Rock-drill | 531,043 | Dec. 18 | 1685 | 400 | 69 | 1552 |
| Jones, Henry C., Orange City, Fla. Fruit-sizer | 529,032 | Nov. 13 | 921 | 219 | 69 | 834 |
| Jones, James, Jr. (See Lowe, Ernest A., assignor.) | | | | | | |
| Jones, John H. (See Bean, William H., assignor.) | | | | | | |
| Jones, John M., Palmyra, N. Y. Paper-cutter | 528,509 | Nov. 6 | 135 | 33 | 69 | 671 |
| Jones, John T., Scranton, Pa. Ale or beer condenser and cooler | 530,309 | Dec. 4 | 409 | 102 | 69 | 1299 |
| Jones, Joseph B., Philadelphia, Pa. Propeller | 529,916 | Nov. 27 | 2460 | 593 | 69 | 1144 |
| Jones, Samuel M., Toledo, Ohio. Coupling for hollow rods or pipes | 528,167 | Oct. 30 | 2517 | 609 | 69 | 524 |
| Jones, Samuel M., Toledo, Ohio. Coupling for pipes or rods | 528,168 | Oct. 30 | 2517 | 609 | 69 | 524 |
| Jones, Robert P., Rocheport, Mo. Ice-cream freezer | 530,779 | Dec. 11 | 1241 | 301 | 69 | 1457 |
| Jones, Walter C. (See Bullington and Jones.) | | | | | | |
| Jones, William F., Baltimore, Md. Support for cards | 527,694 | Oct. 16 | 1675 | 403 | 69 | 339 |
| Jones, Wyatt A. O., Rogers, Ark. Harrow | 527,993 | Oct. 23 | 2221 | 536 | 69 | 455 |
| Jönsson, Johan L., assignor to Aktiebolaget Separator, Stockholm, Sweden. Journal-bearing | 530,274 | Dec. 4 | 347 | 86 | 69 | 1279 |
| Jordan, Lewis W., *et al.* (See Riley, Alberta, assignor.) | | | | | | |
| Jordan, Thomas F., *et al.* (See Bynon, William, assignor.) | | | | | | |
| Jordan, William, *et al.* (See Riley, Alberta, assignor.) | | | | | | |
| Joseph, Herschel V., Blue Ridge, Mo. Pantograph | 529,917 | Nov. 27 | 2462 | 593 | 69 | 1145 |
| Joslin, William H., assignor of one-half to H. A. McLean, Jamaica, Vt. Polishing device for spoke-lathes | 530,110 | Dec. 4 | 60 | 16 | 69 | 1226 |
| Joveite Manufacturing Company. (See Blomén, Jonas E., assignor.) | | | | | | |
| Joyner, Fletcher, Schenectady, N. Y. Folding anchor | 531,315 | Dec. 25 | 2191 | 524 | 69 | 1660 |
| Judd, Edward C., Boston, Mass. Sole-leveling machine | 530,421 | Dec. 4 | 601 | 149 | 69 | 1325 |
| Judd, Mortimer N., assignor to North & Judd Manufacturing Company, New Britain, Conn. Snap-hook | 527,498 | Oct. 16 | 1351 | 330 | 69 | 281 |
| Judson, Albert H., *et al.* (See McCollum, James C., assignor.) | | | | | | |
| Judson, Charles K., *et al.* (See McCollum, James C., assignor.) | | | | | | |
| Judson, Roswell S., and G. D. Holmes, Matteawan, N. Y. Air-brake for street-railway cars | 530,422 | Dec. 4 | 604 | 150 | 69 | 1325 |
| Juergens, Frederick A., assignor to Niagara Stamping and Tool Company, Buffalo, N. Y. Gutter-forming machine | 530,275 | Dec. 4 | 348 | 86, 87 | 69 | 1279 |
| Julian, Gideon, assignor of two-thirds to S. M. Fay, Boston, and C. S. Hull, Newton, Mass. Sole-rounding machine | 528,128 | Oct. 23 | 2452 | 592, 593 | 69 | 497 |
| Juram, William C. (See Engel and Juram.) | | | | | | |
| Kabell, Leo, Chicago, Ill. Combined folding bed and table | 528,370 | Oct. 30 | 2870 | 694, 695 | 69 | 587 |
| Kaestner, Ernest A., Baltimore, Md. Milk-can | 527,245 | Oct. 9 | 925 | 223 | 69 | 187 |
| Kahn & Bros., F. & L. (See Kahn and Moore, assignors.) | | | | | | |
| Kahn, Lazard, and H. V. Moore, assignors to F. & L. Kahn & Bros., Hamilton, Ohio. Mold for stove ash-pits | 526,904 | Oct. 2 | 386 | 99 | 69 | 74 |
| Kahne, Charles C., A. A. Adkins, W. S. Peirce, J. E. Martin, and G. F. Kahne, Ashland, Ky. Electric leak-alarm | 528,881 | Nov. 6 | 658 | 158 | 69 | 776 |
| Kahne, George F. (See Kahne, Adkins, Peirce, Martin, and Kahne.) | | | | | | |
| Kallab, Ferdinand V., assignor to Firm of K. Oehler, Offenbach, Germany. Dyeing anilin-black | 529,498 | Nov. 20 | 1771 | ..... | 69 | 1007 |
| Kallab, Ferdinand V., assignor to Firm of K. Oehler, Offenbach, Germany. Producing figures on anilin-black | 529,499 | Nov. 20 | 1772 | ..... | 69 | 1007 |
| Kallsen, Frederick, assignor to Wolf, Sayer & Heller, Chicago, Ill. Latch | 526,811 | Oct. 2 | 232 | 56 | 69 | 44 |
| Kaltonik, Stephen, Punxsutawney, Pa. Drive-gear mechanism for bicycles, &c | 528,437 | Oct. 30 | 2982 | 721 | 69 | 607 |
| Kaltwasser, Georg C. H., Oderfeld, near Barbis, Germany. Rocking-chair | 529,273 | Nov. 13 | 1347 | 322 | 69 | 910 |
| Kammerer, Frank G., Chicago, Ill. Bottle or vessel holding device | 527,334 | Oct. 9 | 1076 | 260 | 69 | 214 |
| Kamps, Berend, Zeeland, Mich. Hydrocarbon-burner | 527,695 | Oct. 16 | 1677 | 404 | 69 | 339 |
| Kane, J. L., *et al.* (See Elliott, James W., assignor.) | | | | | | |
| Kane, Maurice, Austin, Ill., assignor to Warder, Bushnell & Glessner Company, Springfield, Ohio, and Chicago, Ill. Harvester-elevator. (Reissue) | 11,447 | Oct. 16 | 1781 | 429 | 69 | 359 |
| Kane, Thomas J. (See Biedinger and Kane.) | | | | | | |
| Kanneberg, Alvin C., Canton, Ohio. Eaves-trough | 531,044 | Dec. 18 | 1688 | 400 | 69 | 1553 |
| Kanouse, John B. (See McKenzie, George A., assignor.) | | | | | | |
| Kansas City Hay Press Company. (See Wilder, Norman B., assignor.) | | | | | | |
| Kartiol, Benzion, Brooklyn, N. Y., assignor to American Lace and Fancy Paper Works, of New York. Paper cutting and embossing press | 528,542 | Nov. 6 | 32 | 9 | 69 | 652 |
| Kasson, Walter F., Boise City, Idaho. Type-writing machine | 529,274 | Nov. 13 | 1348 | 322 | 69 | 910 |
| Kast, Miller L., *et al.* (See Clay, William S., assignor.) | | | | | | |
| Kastholm, Emil L. (See Thomlinson and Kastholm.) | | | | | | |
| Kastler, Emile, Philadelphia, Pa. Mechanism for regulating the movement of cloth-rollers of looms | 527,750 | Oct. 16 | 1764 | 425 | 69 | 355 |
| Katani, Sannosuke, Belmont, Cal. Combined liner and measure | 527,335 | Oct. 9 | 1078 | 260 | 69 | 214 |
| Kates, Samuel F., Salem, N. J. Apparatus for dispensing root-beer, &c | 528,543 | Nov. 6 | 35 | 9 | 69 | 653 |
| Kathmann, Anton. (See Otten and Kathmann.) | | | | | | |
| Kato, George P., Jr., Jersey City, N. J. Box or package | 529,033 | Nov. 13 | 922 | 219 | 69 | 834 |
| Katz, Jacob, *et al.* (See Moehn, John N., assignor.) | | | | | | |
| Kaucher, Frank, St. Joseph, Mo. Grain-elevator | 528,230 | Oct. 30 | 2630 | 634, 635 | 69 | 544 |
| Kauffman, Isaac B., Marble Hill, Mo. Trunk | 527,336 | Oct. 9 | 1079 | 260, 261 | 69 | 214 |
| Kaufman, Adolph, *et al.* (See Deming, Edward, assignor.) | | | | | | |
| Kaufmann, Israel H., and M. Nimeroff, New York, N. Y. Clamp for ironing-tables | 531,316 | Dec. 25 | 2193 | 525 | 69 | 1660 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Page | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Kay, Allan B., New York, N. Y. Piston-rod packing | 530,123 | Dec. 4 | 605 | 150 | 69 | 1326 |
| Kaye, Edward, Monaca, Pa. Incandescent electric lamp | 530,895 | Dec. 11 | 1421 | {337 / 338} | 69 | 1489 |
| Kayser, Hermann F. M., Leipsic, Germany. Centrifugal separator | 527,860 | Oct. 23 | 1962 | {471 / 472} | 69 | 407 |
| Keating, Edward, Terre Haute, Ind. Span or arch | 530,424 | Dec. 4 | 606 | 150 | 69 | 1326 |
| Keating, Edward, Terre Haute, Ind. Girder for truss-bridges | 530,425 | Dec. 4 | 607 | 151 | 69 | 1326 |
| Keays, Arthur M. (See Tunnard and Keays.) | | | | | | |
| Kechn, Maximilian, New York, N. Y. Screw-driver | 527,606 | Oct. 16 | 1028 | 404 | 69 | 340 |
| Keeler, David L., Grand Rapids, Mich. Household fire-extinguishing apparatus | 531,591 | Dec. 25 | 2667 | 640 | 69 | 1752 |
| Keene, Trevor, Birkenhead, England. Packing for piston-rods | 530,426 | Dec. 4 | 608 | 151 | 69 | 1326 |
| Keep, William J., assignor to Michigan Stove Company, Detroit, Mich., Stove | 527,751 | Oct. 16 | 1765 | 425 | 69 | 355 |
| Keep, William J., Detroit, Mich., assignor to Michigan Stove Company, of Michigan, Stove | | | | | | |
| Kees, Frederick, assignor of one-half to F. B. Long, Minneapolis, Minn. Corner-strip | 528,945 | Nov. 13 | 792 | 185 | 69 | 811 |
| Keeson, Herbert V., London, England. Circuit-closer | 529,500 | Nov. 20 | 1754 | 423 | 69 | 1007 |
| Keifel, Frederick W., Jr. (See Scanlan, Keifel, and Zipp.) | 530,184 | Dec. 4 | 191 | 47 | 69 | 1249 |
| Keiner, Harvey I., Wilkes-Barré, Pa. Automatic funnel | 530,228 | Dec. 4 | 271 | 67 | 69 | 1264 |
| Keiper, Henry B., Lancaster, Pa. Screw-cutting plate | 530,846 | Dec. 11 | 1342 | 321 | 69 | 1475 |
| Keith, Hanford C. (See Hebard, Charles E., assignor.) | | | | | | |
| Keith, John G., Chicago, Ill. Wheel | 531,618 | Dec. 25 | 2713 | 650 | 69 | 1761 |
| Keller, Charles F., Danville, Cal. Can-opener | 528,371 | Oct. 30 | 2471 | 605 | 69 | 588 |
| Keller, Christian M., Columbus, Ind. Filter | 531,464 | Dec. 25 | 2460 | 586 | 69 | 1711 |
| Keller, Corinne, *et al.* (See Keller, Jacob, assignor.) | | | | | | |
| Keller, Gottlieb, West Hoboken, N. J. Gas grate | 526,973 | Oct. 2 | 497 | 122 | 69 | 93 |
| Keller, Hallie J., *et al.* (See Keller, Jacob, assignor.) | | | | | | |
| Keller, Jacob, assignor to H. J. and C. Keller and L. K. Heisley, Cleveland, Ohio. Furnace ash-sifter | 529,389 | Nov. 20 | 1562 | 372 | 69 | 971 |
| Keller, Paul A. (See Nickerson and Keller.) | | | | | | |
| Keller, Peter, Chicago, Ill. Carburetor | 528,882 | Nov. 6 | 658 | 158 | 69 | 767 |
| Keller, Peter, Chicago, Ill. Gas-burner | 528,883 | Nov. 6 | 660 | 158 | 69 | 767 |
| Kelley, Charles H., Revere, Mass. Lasting-machine | 529,390 | Nov. 20 | 1563 | 373 | 69 | 971 |
| Kelley, Charles H., Revere, Mass. Lasting-machine | 529,653 | Nov. 20 | 2047 | {483 / 484} | 69 | 1053 |
| Kelley, Harry H., Elyria, Ohio. Boiler | 527,337 | Oct. 9 | 1081 | 261 | 69 | 215 |
| Kelley, John E., *et al.* (See Shorey, Reuben A. and G. E., assignors.) | | | | | | |
| Kellner, Carl, Vienna, Austria-Hungary. Apparatus for making bleaching-powder | 530,926 | Dec. 18 | 1660 | 380 | 69 | 1536 |
| Kellogg, John H., Battle Creek, Mich. Testing-machine | 528,779 | Nov. 6 | 455 | 112 | 69 | 729 |
| Kelly, John F., assignor to Stanley Laboratory Company, Pittsfield, Mass. Alternating-current generator | | | | | | |
| Kelly, John M., Rochester, N. Y. Safety device for electric cars | 529,018 | Nov. 27 | 2463 | 593 | 69 | 1145 |
| Kelly, John T., *et al.* (See Castle, Lewis D., assignor.) | 528,438 | Oct. 30 | 2084 | 721 | 69 | 607 |
| Kelly, Oliver S. (See Linn, John B., assignor.) | | | | | | |
| Kelly, Thomas J., Los Angeles, Cal. Automatic dumping-gear for wheeled scrapers | 529,501 | Nov. 20 | 1774 | 423 | 69 | 1007 |
| Kelsch, Raymond S., Chicago, Ill. Electric switch | 527,177 | Oct. 9 | 814 | 198 | 69 | 166 |
| Kelsey, Frank N., assignor of one-half to C. L. Wright, New Haven, Conn. Trolley-stand | 529,552 | Nov. 20 | 1807 | 414 | 69 | 1021 |
| Kelso, Robert, Philadelphia, Pa. Flexible cord | 527,705 | Oct. 23 | 1847 | 444 | 69 | 388 |
| Kemp, Edgar B. (See Fenley, Frank, assignor.) | | | | | | |
| Kempster, Daniel E., assignor of one-half to H. R. Thompson and E. S. Beach, Boston, Mass. Bottle, &c | 528,544 | Nov. 6 | 36 | 9 | 69 | 653 |
| Kendall, James H., Cambridge, Mass. Steam-generator | 529,391 | Nov. 20 | 1551 | 373 | 69 | 972 |
| Kendig, Andrew, assignor to himself and J. W. Kendig, Texarkana, Tex. Support for cutter-heads | 530,427 | Dec. 4 | 609 | 152 | 69 | 1327 |
| Kendig, John W. (See Kendig, Andrew, assignor.) | | | | | | |
| Kendt, William F., assignor of two-thirds to G. M. Mitchell and R. McLeod, Buffalo, N. Y. Trolley-catcher | 530,276 | Dec. 4 | 350 | 87 | 69 | 1279 |
| Kenison, John B., and M. F. Bark, Lynn, Mass. Staging-bracket | 528,169 | Oct. 30 | 2518 | 610 | 69 | 524 |
| Kennedy, Frank M., assignor of two-thirds to C. Cusac, Cygnet, Ohio, and J. W. Stone, Brooklyn, N. Y. Polished rod adjuster | 531,264 | Dec. 18 | 2090 | 501 | 69 | 1625 |
| Kennedy, Henry C., and G. W. Rofetter, Philadelphia, Pa. Street-car fender | 529,275 | Nov. 13 | 1349 | 323 | 69 | 910 |
| Kennedy, Richard G., Pittsburg, Pa. Harness | 527,904 | Oct. 23 | 2223 | 536 | 69 | 455 |
| Kennedy, Samuel V., St. Paul, Minn. Mowing-machine | 529,448 | Nov. 20 | 1679 | {401 / 402} | 69 | 991 |
| Kennedy, Samuel V., St. Paul, Minn. Lubricating device | 530,590 | Dec. 11 | 924 | {326 / 327} | 69 | 1409 |
| Kennel, Emil P., *et al.* (See Salzman, Christian A., assignor.) | | | | | | |
| Kent, Archibald E. (See Wilson, Oliver, assignor.) | | | | | | |
| Kent, William J., New York, N. Y. Horseshoe | 530,643 | Dec. 11 | 1019 | 249 | 69 | 1416 |
| Kent, William J., Brooklyn, N. Y. Horseshoe | 530,644 | Dec. 11 | 1022 | 249 | 69 | 1416 |
| Keough, Dennis. (See Walsh and Keogh.) | | | | | | |
| Kerbaugh, David O., *et al.* (See Lewis, Harry A., assignor.) | | | | | | |
| Kern, Frank, Mattoon, Ill. Underwaist | 530,692 | Dec. 11 | 1100 | 267 | 69 | 1440 |
| Kerr, William G., Providence, R. I. Car-fender | 528,298 | Oct. 30 | 2750 | 661 | 69 | 566 |
| Ketas, David, Seattle, Wash. Lavatory apparatus | 531,015 | Dec. 18 | 1688 | 401 | 69 | 1553 |
| Ketchum, Oliver W., Toronto, Canada. Pulley | 527,095 | Oct. 9 | 640 | 155 | 69 | 135 |
| Kenffel & Esser Company. (See Hatf, Adolf, assignor.) | | | | | | |
| Kenser, Emanuel, assignor to M. Kenser, Philadelphia, Pa. Window appliance | 528,481 | Oct. 30 | 3061 | 743 | 69 | 622 |
| Kenser, Mary. (See Kenser, Emanuel, assignor.) | | | | | | |
| Kewell, Charles, San Francisco, Cal. Lighting or extinguishing street-lamps | 529,449 | Nov. 20 | 1680 | 402 | 69 | 992 |
| Keyes, James A., New York, N. Y., assignor to N. S. Perkins, New London, Conn. Composing-stick | 530,428 | Dec. 4 | 611 | 152 | 69 | 1327 |
| Keys, Charles F., Washington, D. C. Ornament for lightning-rods | 529,866 | Nov. 27 | 2480 | 569 | 69 | 1139 |
| Keystone Driller Company. (See Downie, Robert M., assignor.) | | | | | | |
| Keystone Manufacturing Company. (See Packer, George W., assignor.) | | | | | | |
| Kidd, James, Buffalo, N. Y. Direct-acting engine | 528,260 | Oct. 30 | 2752 | 665 | 69 | 566 |
| Kidder, Wellington P., Boston, Mass. Safety device for elevators. (Reissue) | 11,452 | Nov. 13 | 1475 | 354 | 69 | 935 |
| Kiesel, William F., Jr., Altoona, Pa. Tender-scoop | 531,191 | Dec. 18 | 1954 | 464 | 69 | 1601 |
| Kilanyi, Eduard von, Buda-Pesth, Austria-Hungary. Apparatus for displaying tableaux vivant | 528,372 | Oct. 30 | 2872 | 695 | 69 | 588 |
| Kilanyi, Eduard von, Buda-Pesth, Austria-Hungary. Apparatus for displaying tableaux vivant | 528,373 | Oct. 30 | 2873 | 696 | 69 | 588 |
| Killen, Edward B., Belfast, Ireland. Suspension-rim for vehicle-wheels | 526,713 | Oct. 2 | 73 | 19 | 69 | 16 |
| Killgore, Jesse F. (See Mathews and Doyle, assignors.) | | | | | | |
| Kilmer, William A., Newburg, N. Y. Rod-mill guide | 530,591 | Dec. 11 | 926 | 227 | 69 | 1400 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Page | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Kilpatrick, Alexander, *et al.* (See Giessler, William J., assignor.) | | | | | | |
| Kimball, James F., Mariaville, Me., assignor to Western Wheeled Scraper Company, Aurora, Ill. Road-machine | 527,610 | Oct. 16 | 1532 | 372 | 69 | 312 |
| Kimball, Sophie H., Ceres, N. Y. Spoon | 527,115 | Oct. 9 | 718 | 176 | 69 | 148 |
| Kindl, Frederick H., Pittsburg, Pa. Apparatus for rolling beams. (Reissue) | 11,454 | Nov. 20 | 2076 | 497 | 69 | 1064 |
| King, Frederick L., Chicago, Ill. Closed conduit for electric railways | 529,797 | Nov. 27 | 2257 | {538 / 539} | 69 | 1105 |
| King, George W., Marion, Ohio. Reversing-gear | 528,780 | Nov. 6 | 456 | 112 | 69 | 729 |
| King, George W., Marion, Ohio. Traveling crane | 528,781 | Nov. 6 | 457 | {112 / 113} | 69 | 730 |
| King, Herbert. (See Winslow and King.) | | | | | | |
| King, Howard K., assignor to Chambers Brothers Company, Philadelphia, Pa. Safety gear-wheel connection | 531,046 | Dec. 18 | 1690 | 401 | 69 | 1553 |
| King, Peter M. (See Scheibel, Richard, assignor.) | | | | | | |
| Kingsbury, Addison, *et al.* (See Kingsbury, Arthur L., assignor.) | | | | | | |
| Kingsbury, Arthur L., Northampton, Mass., assignor of two-thirds to A. Kingsbury, South Coventry, and F. H. Allen, Norwich, Conn. Machine for cornering box-blanks | 530,780 | Dec. 11 | 1246 | {301 / 302} | 69 | 1458 |
| Kingsbury, Martin V., Dover, Del. Mustache-guard | 529,553 | Nov. 20 | 1808 | 444 | 69 | 1025 |
| Kingsley, Alba T. (See McCawley and Kingsley.) | | | | | | |
| Kingsley, Alba T., assignor of two-thirds to M. McCawley, Millport, and J. B. Stanchfield, Elmira, N. Y. Door-hanger | 529,919 | Nov. 27 | 2464 | 594 | 69 | 1145 |
| Kinnard, Will M., Dayton, Ohio, assignor to Carter-Crume Company, Niagara Falls, N. Y. Memorandum sales-slip package | 531,317 | Dec. 25 | 2194 | 525 | 69 | 1661 |
| Kinnard, Will M., Dayton, Ohio, assignor to Carter-Crume Company, Niagara Falls, N. Y. Sales-check case | 531,551 | Dec. 25 | 2569 | {622 / 623} | 69 | 1738 |
| Kinnaman, Edward H., assignor of one-half to B. F. Flowers, Bellvue, Colo. Brake-shoe clamp | 527,862 | Oct. 23 | 1964 | 472 | 69 | 408 |
| Kinney, George F., assignor to himself, J. N. Wallace, and E. Coppersmith, New York, N. Y. Bottle | 530,429 | Dec. 4 | 612 | 152 | 69 | 1327 |
| Kinney, John V., *et al.* (See Hall, Charles H., assignor.) | | | | | | |
| Kinter, George H., and G. D. Teller, assignors of one-third to G. Tait, Buffalo, N. Y. Brake for railway-cars | 530,185 | Dec. 4 | 192 | 47, 48 | 69 | 1250 |
| Kinzlberger & Co. (See Muhlert, Franz, assignor.) | | | | | | |
| Kirby, Edward R., Terre Haute, Ind. Car-coupling | 530,186 | Dec. 4 | 194 | 48 | 69 | 1250 |
| Kirby, Fitz A., and J. Henning, Wyandotte, Mich. Flanging-machine | 526,714 | Oct. 2 | 75 | 19, 20 | 69 | 16 |
| Kirchenbauer, Louis, Chicago, Ill. Machine for twisting and punching grill-wires | 527,428 | Oct. 16 | 1233 | 303 | 69 | 257 |
| Kirchmann, Josef, and K. Schwinghammer, Munich, Germany. Composition for furnace-walls | 529,450 | Nov. 20 | 1681 | ..... | 69 | 992 |
| Kirk, John A., Washington, D. C. Puzzle or game | 528,675 | Nov. 6 | 281 | 68 | 69 | 697 |
| Kirkpatrick-Picard, Hugh F., and H. Thame, London, England. Manufacturing elements or plates for secondary batteries | 527,861 | Oct. 23 | 1963 | 472 | 69 | 408 |
| Kirkpatrick-Picard, Hugh F., and H. Thame, London, England. Manufacturing plates for secondary batteries | 530,847 | Dec. 11 | 1344 | 322 | 69 | 1475 |
| Kirsch, George P., Decatur, Ind. Lawn-mower | 527,697 | Oct. 16 | 1680 | 404 | 69 | 340 |
| Kirsch-King, Albert W., assignor of one-half to Frazier Cycle Company, Chicago, Ill. Journal-bearing | 529,554 | Nov. 20 | 1869 | 444 | 69 | 1025 |
| Kirschner, Auguste, St. Etienne-de-Rouvray, France. Cotton-opener | 531,193 | Dec. 18 | 1956 | 465 | 69 | 1602 |
| Kirstein, Henry E. (See Gilbert, Benjamin A., assignor.) | | | | | | |
| Kirstein, Henry E., Rochester, N. Y. Eyeglasses | 527,611 | Oct. 16 | 1536 | 373 | 69 | 313 |
| Kirstein, Henry E., Rochester, N. Y. Eyeglasses or spectacles | 527,612 | Oct. 16 | 1538 | 374 | 69 | 314 |
| Kirtland, Charles E., St. Francis, Wis. Sounding apparatus | 528,600 | Nov. 6 | 136 | 34 | 69 | 671 |
| Kirtley, Harry L., assignor to R. E. Vickers, F. L. Doolittle, Huntington, and J. F. Kirtley, Searey, W. Va. Coin-operated cigar-vending machine | 527,995 | Oct. 23 | 2224 | {536 / 537} | 69 | 455 |
| Kirtley, Harry L., assignor to R. E. Vickers, F. L. Doolittle, Huntington, and J. F. Kirtley, Searey, W. Va. Cigar-vending machine | 529,276 | Nov. 13 | 1350 | {323 / 324} | 69 | 911 |
| Kirtley, John F., *et al.* (See Kirtley, Harry L., assignor.) | | | | | | |
| Kitchen, John G. A., Ardwick, near Manchester, England. Brake apparatus for cycles or other road-vehicles | 530,693 | Dec. 11 | 1101 | 267 | 69 | 1430 |
| Kitts, Charles A. (See Whiteley, William N., assignor.) | | | | | | |
| Kizer, Carey F., and S. N. Murdock, Columbus, Ohio. Noiseless slate | 529,867 | Nov. 27 | 2382 | 570 | 69 | 1130 |
| Klaffky, Gottfried F., and F. Faltinowsky, New York, N. Y. Signal for cable railways | 529,920 | Nov. 27 | 2465 | 594 | 69 | 1145 |
| Klatte, Otto, Neuwied on the Rhine, Germany. Means for adjusting rolls for rolling-mills | 530,940 | Dec. 18 | 1518 | 360 | 69 | 1522 |
| Klauder-Weldon Dyeing Machine Company. (See Weldon, Leonard, assignor.) | | | | | | |
| Kleihauer, James, Jr., assignor to himself and C. E. Curran, Johnson, Nebr. Riding attachment for plows | 527,996 | Oct. 23 | 2229 | 598 | 69 | 456 |
| Klein, Henry, Janesville, Wis. Thermal circuit-breaker | 530,430 | Dec. 4 | 612 | 152 | 69 | 1327 |
| Klein, John S., Oil City, Pa. Means for pumping liquids from gas-producing wells | 531,507 | Dec. 25 | 2577 | 616 | 69 | 1733 |
| Kleinert, Isaac B., assignor to I. B. Kleinert Rubber Company, New York, N. Y. Ear-muff | 529,176 | Nov. 13 | 1179 | 284 | 69 | 880 |
| Klema, Martin, Caledonia, Wis. Potato-digger | 527,863 | Oct. 23 | 1965 | 472 | 69 | 408 |
| Klenze, Henry G., Great Falls, Mont. Office-indicator | 529,277 | Nov. 13 | 1353 | 324 | 69 | 911 |
| Klerilj, Ljubomir, Belgrade, Servia. Magnetic water-gage | 530,592 | Dec. 11 | 927 | 227 | 69 | 1400 |
| Klettner, Charles, Cincinnati, Ohio. Automatic railway-car protector | 528,254 | Oct. 30 | 2672 | {643 / 644} | 69 | 553 |
| Kline, Charles L., New York, N. Y. Barrel-washer | 530,593 | Dec. 11 | 928 | 228 | 69 | 1401 |
| Kline, Winfield S., Bolivar, and J. B. Westhafer, New Philadelphia, Ohio. Trolley-wire bracket | 531,437 | Dec. 25 | 2392 | 572 | 69 | 1699 |
| Klinefetter, Gideon, and J. W. Nash, Nortonville, Kans. Pruning-tool | 527,116 | Oct. 9 | 719 | 176 | 69 | 148 |
| Klink, Adam, Coaltown, Pa. Corn-planter | 527,429 | Oct. 16 | 1238 | 304 | 69 | 257 |
| Klönne, August. (See Müller, Heinrich, assignor.) | | | | | | |
| Klund, John E., *et al.* (See Brown, Norman E., assignor.) | | | | | | |
| Klusmeyer, John. (See Claudy and Klusmeyer.) | | | | | | |
| Knapp, Jacob E., Brownsville, Oreg. Gate | 531,378 | Dec. 25 | 2300 | {548 / 549} | 69 | 1680 |
| Knapp, John H., Decatur, assignor to J. A. Suffern, Pierson, Ill. Joint for cultivators | 531,592 | Dec. 25 | 2667 | 640 | 69 | 1752 |
| Knapstein, Carl C., *et al.* (See Paro, Edward, assignor.) | | | | | | |
| Knauss, Frank Y., Portsmouth, Ohio. Oven-door for cooking stoves or ranges | 526,974 | Oct. 2 | 498 | 122 | 69 | 93 |
| Knauss, Frank Y., Portsmouth, Ohio. Damper for cooking stoves or ranges | 529,622 | Nov. 20 | 1970 | 469 | 69 | 1045 |
| Knickerbocker Company. (See Hogeboom, Levi S., assignor.) | | | | | | |
| Knight, John L., New Alexander, Ohio. Shirt | 530,594 | Dec. 11 | 930 | 228 | 69 | 1401 |
| Knight, Margaret E., *et al.* (See Gooding and Gondey, assignors.) | | | | | | |
| Knight, Margaret E., South Framingham, and C. S. Gooding, Brookline, assignors to said Knight, R. D. Evans, and J. S. Lockwood, Boston, Mass. Numbering mechanism | 527,205 | Oct. 9 | 857 | {268 / 269} | 69 | 175 |
| Knight, Riley, Moscow, Idaho. Thrashing-machine | 529,623 | Nov. 20 | 1970 | 470 | 69 | 1045 |
| Knight, Walter J., Newark, N. J. Means for replacing derailed cars | 526,715 | Oct. 2 | 77 | 20 | 69 | 17 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Knights, Richard, Snaresbrook, England. Floor | 527,430 | Oct. 16 | 1242 | 305 | 69 | 258 |
| Knittel, Andrew W., New Castle, Pa. Oil-can | 528,946 | Nov. 13 | 793 | 185 | 69 | 811 |
| Knoblaugh, Edward M., Toledo, Ohio. Folding bed | 528,328 | Oct. 30 | 2797 | 675 | 69 | 574 |
| Knoll, James H., *et al.* (See Cavanaugh, James D., assignor.) | | | | | | |
| Knoll, Jonas L., Lebanon, Pa. Washing-machine | 530,277 | Dec. 4 | 352 | 87 | 69 | 1280 |
| Knollmüller, Max, Milwaukee, Wis. Bowling-alley | 529,392 | Nov. 20 | 1572 | 374 | 69 | 972 |
| Knowles, John H., Philadelphia, Pa. Machine for feeding sheets of paper | 531,438 | Dec. 25 | 2392 | 572, 573, 574, 575 | 69 | 1699 |
| Knowles Loom Works. (See Bardsley, Henry, assignor.) | | | | | | |
| Knowlton, Ephriam H. B., assignor of one-half to J. Schwalbe, West Superior, Wis. Railway-switch | 527,338 | Oct. 9 | 1092 | 261, 262 | 69 | 215 |
| Kobelt, Jacob, Hoboken, N. J. Embroidery | 530,595 | Dec. 11 | 931 | 229 | 69 | 1401 |
| Kobler-Stander, Victor, Rorschach, Switzerland. Game apparatus | 529,868 | Nov. 27 | 2383 | 570 | 69 | 1131 |
| Kobos, Jacob, Chicopee, Mass. Automatic safety-guard for elevator-ways | 529,177 | Nov. 13 | 1180 | 284 | 69 | 880 |
| Koch, Edouard A., Bayou Goula, La. Bagasse-burner | 527,001 | Oct. 2 | 539 | 132 | 69 | 102 |
| Koellhoffer, Alois A. (See Wiebach and Koellhoffer.) | | | | | | |
| Koenig, Morris F., assignor to Barber-Koenig Manufacturing Company, Hazleton, Pa. Device for supporting coats, vests, &c. | 528,601 | Nov. 6 | 139 | 34 | 69 | 672 |
| Kohn, Adolf and S., assignors of one-third to L. Burger, New York, N. Y. Saftey device for locking gas-cocks | 527,206 | Oct. 9 | 859 | 209 | 69 | 175 |
| Kohn, Samuel. (See Kohn, Adolf and S.) | | | | | | |
| Kolb, Edward. (See Murphy and Kolb.) | | | | | | |
| Koneman, William A., Chicago, Ill. Sprinkler | 530,534 | Dec. 11 | 824 | 204 | 69 | 1382 |
| Konetshny, John R., Brooklyn, assignor to E. P. Gleason Manufacturing Company, New York, N. Y. Electric-light fixture | 529,654 | Nov. 20 | 2023 | 485 | 69 | 1054 |
| Konow, Ludwig, Bergen, Norway. Apparatus for manufacturing artificial fuel | 529,278 | Nov. 13 | 1354 | 325 | 69 | 911 |
| Korbel, Joseph. (See Hollingsworth and Korbel.) | | | | | | |
| Kozlowski, Frank M. (See Rucinski and Kozlowski.) | | | | | | |
| Krabol, Olaus O., and C. Bostad, assignors to Automatic Folding Bed Company, Chicago, Ill. Revolving furniture | 531,538 | Dec. 25 | 2579 | 617 | 69 | 1734 |
| Kraft, Henry P. (See Schrader and Kraft.) | | | | | | |
| Kramer, Henry, San Francisco, Cal. Leaf-turner | 527,997 | Oct. 23 | 2210 | 538 | 69 | 456 |
| Kramer, Homer D., Pittsburg, Pa. Fire-extinguishing apparatus | 530,431 | Dec. 4 | 613 | 151 | 69 | 1327 |
| Krank, Albert, Taipale, Finland. Production of high-speed rotary motion for centrifugal or other machines | 531,539 | Dec. 25 | 2582 | 617, 618 | 69 | 1735 |
| Kraump, Charles F., assignor of one-half to E. G. Bruckman, St. Louis, Mo. Coin holding and delivering device | 530,997 | Dec. 18 | 1601 | 381 | 69 | 1536 |
| Kranshaar, George J., Cleveland, Ohio. Oiler | 529,021 | Nov. 27 | 2467 | 594 | 69 | 1145 |
| Krebs, August E., St. Paul, Minn. Combined tape-measure and square | 530,111 | Dec. 4 | 62 | 16 | 69 | 1227 |
| Krehbiel, Adolph J., and G. A. Hege, Halstead, Kans. Automatic fire-lighter | 527,698 | Oct. 16 | 1682 | 405 | 69 | 340 |
| Krehbiel, John, Cleveland, Ohio. Car-platform | 528,170 | Oct. 30 | 2519 | 610 | 69 | 525 |
| Kretzmeier, Lewis E., Lawrenceville, Ind. School seat and desk | 530,950 | Dec. 18 | 1520 | 360 | 69 | 1522 |
| Kropf, Paul, assignor of one-half to A. Grnell, Chicago, Ill. Manufacturing beer | 528,374 | Oct. 30 | 2874 | 696 | 69 | 588 |
| Krueger, George, Johnstown, Pa. Measuring and registering device | 531,047 | Dec. 18 | 1691 | 401, 402 | 69 | 1553 |
| Krueger, Herman P. D., Blooming Prairie, Minn. Belt-tightener | 530,278 | Dec. 4 | 355 | 88 | 69 | 1280 |
| Krueger, Samuel, Newark, N. J. Spring-motor | 529,074 | Nov. 13 | 1000 | 240 | 69 | 847 |
| Krueger, Theodore F., New York, N. Y. Combined paper-weight, pen-rack, and calendar | 528,545 | Nov. 6 | 38 | 10 | 69 | 653 |
| Krüger, Reinhold, Berlin, Germany. Joint-making packing | 530,695 | Dec. 11 | 1104 | 268 | 69 | 1431 |
| Krutsch, Charles A., Logansport, Ind. Device for operating jail-cell doors | 530,694 | Dec. 11 | 1103 | 268 | 69 | 1430 |
| Kuchenmeister, Emil, assignor to Siemens & Halske, Berlin, Germany. System of electrical distribution with storage-batteries | 527,752 | Oct. 16 | 1768 | 426 | 69 | 356 |
| Kuebeler, August, Sandusky, Ohio. Car-mover | 530,432 | Dec. 4 | 616 | 153 | 69 | 1328 |
| Kühlewein, Albert, Berlin, Germany. Manufacture of asbestos cement, &c. | 528,171 | Oct. 30 | 2521 | 610 | 69 | 525 |
| Kundtz, Theodor, Cleveland, Ohio. Sewing-machine table. (Reissue) | 530,645 | Dec. 11 | 1024 | ..... | 69 | 1417 |
| Kunkle, John P. (See Blosser and Kunkle.) | 11,453 | Nov. 13 | 1476 | 354, 355 | 69 | 935 |
| Kunze, Joseph G. (See McChesney and Kunze.) | | | | | | |
| Kuphal, Otto, New York, N. Y. Apparatus for refrigerating | 530,535 | Dec. 11 | 826 | 205 | 69 | 1383 |
| Küpper, Lambert, Aix-la-Chapelle, Germany. Construction of walls | 528,636 | Nov. 6 | 212 | 51 | 69 | 684 |
| Kurshcedt Manufacturing Company. (See Grodzki, Joseph A., assignor.) | | | | | | |
| Kusel, David A., St. Louis, Mo. Telephone-transmitter | 531,194 | Dec. 18 | 1958 | 465 | 69 | 1602 |
| Küssner, Paul. (See Hossfeld and Küssner.) | | | | | | |
| Kyle, James A. (See Edmonds and Kyle.) | | | | | | |
| L. C. Billings Company. (See Billings, Louis C., assignor.) | | | | | | |
| La Belle, Charles H., Salt Lake City, Utah Ter. Lock | 529,348 | Nov. 13 | 1473 | 354 | 69 | 935 |
| La Fetra, George H., *et al.* (See Fryer, Robert M., assignor.) | | | | | | |
| La France, Truckson S., Elmira, N. Y. Pump-valve | 526,975 | Oct. 2 | 499 | 122 | 69 | 93 |
| La Pointe, Thomas T., J. H. Flanagan, and C. A. Thompson, New Haven, Conn. Electric conduit | 530,951 | Dec. 18 | 1521 | 360 | 69 | 1522 |
| La Shells, Alfred F., Biggs, Cal. Railway-rail | 528,950 | Nov. 13 | 798 | 186 | 69 | 812 |
| Laib, Christian F., New London, Wis. Railway | 528,884 | Nov. 6 | 660 | 158, 159 | 69 | 767 |
| Laird, Robert W. (See Sweeney and Laird.) | | | | | | |
| Laird & Sweeney-Manufacturing Company. (See Sweeney and Laird, assignors.) | | | | | | |
| Lamb, A. S., *et al.* (See Longbmiller, Benjamin F., assignor.) | | | | | | |
| Lamb, Laurence. (See Engsfeld, Augustin C. L., assignor.) | | | | | | |
| Lamb Manufacturing Company. (See Buxton, Willard H., assignor.) | | | | | | |
| Lamb Manufacturing Company. (See Perkins, Albert, assignor.) | | | | | | |
| Lambert, George A., Union City, Ohio. Cap for bolts or screws | 531,465 | Dec. 25 | 2461 | 586 | 69 | 1711 |
| Lambert, Richard C., assignor of one-half to M. B. Paxon, Holbrook, Mass. Horseshoe-nail machine | 530,596 | Dec. 11 | 933 | 229 | 69 | 1402 |
| Lamme, Benjamin G., assignor to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Device for protecting separately-excited generators | 527,066 | Oct. 9 | 641 | 155 | 69 | 135 |
| Lamping, Joseph A. (See Coe, Lewis D., assignor.) | | | | | | |
| Lamplough, Frederick, New York, N. Y. Vending-machine | 529,655 | Nov. 20 | 2025 | 485 | 69 | 1054 |
| Lamplough, Frederick, assignor to J. Wielar, New York, N. Y. Regenerative siphon | 530,536 | Dec. 11 | 829 | 205 | 69 | 1383 |
| Lamplough, Frederick, assignor to Gold Car Heating Company, S. Davis, and J. Wielar, New York, N. Y. Trap | 528,727 | Nov. 6 | 353 | 86 | 69 | 711 |
| Lancaster, Charles P., Jonesborough, Ind. Wagon-bed | 530,537 | Dec. 11 | 831 | 205 | 69 | 1383 |
| Land, Charles H., Detroit, Mich. Refractory and non-conducting heat-magazine | 528,272 | Oct. 30 | 2699 | 650, 651 | 69 | 557 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Land, Charles H., Detroit, Mich. Apparatus for focusing flame | 530,696 | Dec. 11 | 1107 | 268 | 69 | 1431 |
| Landgraf, Carl H., assignor to H. Zimmern & Co., New York, N. Y. Watchmaker's poising-tool | 529,178 | Nov. 13 | 1182 | 284 | 69 | 881 |
| Landis, Frank F., Waynesborough, Pa. Band-cutter and feeder | 531,541 | Dec. 25 | 2584 | 618, 619 | 69 | 1735 |
| Landry, Justin, and G. Beyroux, assignors of one-third to R. de Montaignac, Paris, France. Motor-power engine | 529,330 | Nov. 13 | 1442 | 348 | 69 | 930 |
| Lane, Daniel F., Corning, N. Y. Truss-bridge | 531,048 | Dec. 18 | 1634 | 403 | 69 | 1554 |
| Lane, Frederick, Brookline, assignor to Crosby Steam Gage and Valve Company, Boston, Mass. Indicator for steam engines | 530,433 | Dec. 4 | 619 | 154 | 69 | 1328 |
| Lane, George. (See Lane, John G. and G.) | | | | | | |
| Lane, Henry, Brisbane, Queensland. Harness-saddle | 526,716 | Oct. 2 | 79 | 21 | 69 | 17 |
| Lane, John G. and G., Poughkeepsie, N. Y. Door-hanger | 529,555 | Nov. 20 | 1870 | 445 | 69 | 1025 |
| Lane, Louis, Newark, Ohio. Hanger | 529,331 | Nov. 13 | 1444 | 348 | 69 | 930 |
| Lane, Marcus, Freeport, Ill. Matrix-making machine | 530,279 | Dec. 4 | 356 | 88, 89 | 69 | 1280 |
| Lane, William G., Picton, Canada, assignor to Universal Coal Dumping Car Company, Springfield, Ill. Dumping-car | 528,546 | Nov. 6 | 39 | 10 | 69 | 653 |
| Lang, Charles, *et al.* (See Grunwald, Ludwig, assignor.) | | | | | | |
| Lang, Elmer L., and F. H. Daniell, Franklin Falls, assignors to S. Mills, Franklin, N. H. Thickening thread mechanism for knitting-machines | 527,039 | Oct. 2 | 570 | 138 | 69 | 108 |
| Lang, William, Brooklyn, N. Y., assignor to G. W. Church, Newark, N. J. Speed-measure for shafting | 527,207 | Oct. 9 | 860 | 209 | 69 | 175 |
| Lange, Fritz, Brenham, Tex. Ventilating fine | 530,229 | Dec. 4 | 272 | 67 | 69 | 1265 |
| Langenau, William C., Cleveland, Ohio. Fastener for casket-lids | 528,948 | Nov. 13 | 796 | 186 | 69 | 812 |
| Langston, Thomas, assignor to Edward Miller & Company, Meriden, Conn. Lantern | 528,439 | Oct. 30 | 2986 | 722 | 69 | 608 |
| Langton, James H., Centreville, Mich. Portable sawing-machine | 531,195 | Dec. 18 | 1959 | 465 | 69 | 1602 |
| Langton, James H., Centreville, Mich. Stake or post base | 531,196 | Dec. 18 | 1963 | 466 | 69 | 1603 |
| Laniet, Peter R., Jackson Hill, N. C. Grain-separator | 530,280 | Dec. 4 | 364 | 89, 90 | 69 | 1282 |
| Lantz, William B., Gloucester, Mass. Rope-hauling machine | 531,318 | Dec. 25 | 2196 | 525 | 69 | 1661 |
| Laraway, George W., Hartford, Conn., and J. E. West, St. Cloud, Minn.; said Laraway assignor to said West. Press for finishing molded articles | 526,717 | Oct. 2 | 80 | 21 | 69 | 17 |
| Lare, Benjamin F., and C. M. Greer, assignors to Ajax Metal Company, Philadelphia, Pa. Trolley | 528,949 | Nov. 13 | 797 | 186 | 69 | 812 |
| Larios, Pablo. (See Lowman, John, assignor.) | | | | | | |
| Larrabee, Charles S. (See Smith, William J., assignor.) | | | | | | |
| Larsen, Hans, assignor of one-half to H. P. Jensen, Newell, Iowa. Animal-releasing device | 530,487 | Dec. 4 | 741 | 179 | 69 | 1343 |
| Larson, Carl G., Sandviken, Sweden. Support for mandrel-bars of tube-rolling mills | 528,676 | Nov. 6 | 253 | 68, 69 | 69 | 697 |
| Larson, Lars G., assignor to himself and C. Lundquist, Moscow, Idaho. Portable burglar-alarm | 527,998 | Oct. 23 | 2232 | 538 | 69 | 457 |
| Larsson, Henry W., Springfield, Mass. Door spring or check | 527,753 | Oct. 16 | 1769 | 426 | 69 | 356 |
| Larsson, Henry W., Springfield, Mass. Door spring and check | 530,230 | Dec. 4 | 274 | 68 | 69 | 1265 |
| Larsson, Lars. (See Little, James, assignor.) | | | | | | |
| Lash, William, assignor of one-half to D. Duchmig, Avilla, Ind. Combined awning and fire and burglar proof shutter | 529,737 | Nov. 27 | 2161 | 515 | 69 | 1088 |
| Lashbrook, John B., Oxford, Nebr. Sash-fastener | 531,542 | Dec. 25 | 2586 | 619 | 69 | 1736 |
| Laska, Mathias A., New Orleans, La. Crevasse-closer | 526,976 | Oct. 2 | 500 | 123 | 69 | 94 |
| Laskey, Philip B., Marblehead, Mass. Syringe | 530,187 | Dec. 4 | 195 | 48 | 69 | 1250 |
| Laskey, Philip B., assignor of one-fourth to E. Hathaway, Marblehead, Mass. Sewing-machine | 528,782 | Nov. 6 | 462 | 113 | 69 | 730 |
| Latham, Ephraim, deceased; J. F. Latham, Paint Rock, Ala., administrator, assignor to L. D. Saxton, Philadelphia, Pa. Car-coupling | 530,697 | Dec. 11 | 1109 | 269 | 69 | 1432 |
| Latham, Jonathan F., administrator. (See Latham, Ephraim.) | | | | | | |
| Lauderbach, James W. (See Sweeney and Stroble, assignors.) | | | | | | |
| Laughlin, Alexander, Sewickley, and J. Renleaux, Pittsburg, Pa.; said Renleaux assignor to said Laughlin. Regenerative furnace | 529,556 | Nov. 20 | 1871 | 445, 446 | 69 | 1025 |
| Laurent, Joseph B. New York, N. Y. Soldering-iron furnace and gas-heater | 530,488 | Dec. 4 | 733 | 179 | 69 | 1348 |
| Laval, George de, Warren, Mass., assignor to Geo. F. Blake Manufacturing Company, New York, N. Y. Combined steam and power pump | 528,783 | Nov. 6 | 464 | 114 | 69 | 731 |
| Lavens, Erwin, Brooklyn, assignor to General Incandescent Arc Light Company, New York, N. Y. Carbon-holder for arc lamps | 527,864 | Oct. 23 | 1967 | 473 | 69 | 408 |
| Law, John G. (See Vautier, John J., assignor.) | | | | | | |
| Law, Seth W. (See Greene and Law.) | | | | | | |
| Lawrence, George A., Peabody, assignor to Lawrence Shaving Machine Company, Salem, Mass. Apparatus for shaving hides | 528,638 | Nov. 6 | 214 | 52, 53, 54 | 69 | 685 |
| Lawrence, George W., *et al.* (See Hill, Wilford A., assignor.) | | | | | | |
| Lawrence, Henry J., and A. E. G. Bromell, Geelong, Victoria. Boiler-tube or pipe-cleaner | 529,798 | Nov. 27 | 2359 | 539 | 69 | 1106 |
| Lawrence Shaving Machine Company. (See Lawrence, George A., assignor.) | | | | | | |
| Lawrence, William C., Casselton, N. D. Wrench | 529,624 | Nov. 20 | 1972 | 470 | 69 | 1045 |
| Lawton, Burton L., Meriden, Conn. Hydrocarbon-lighting system | 531,543 | Dec. 25 | 2588 | 620 | 69 | 1736 |
| Layne, Joseph W. (See Evans and Layne.) | | | | | | |
| Layton, C. A. (See Unterbrink, Ignatius L., assignor.) | | | | | | |
| Lazerus, Lazer, Indianapolis, Ind. Feed device for locomotives | 530,998 | Dec. 18 | 1663 | 381 | 69 | 1537 |
| Le Barron, Walter J., Barre, Vt. Runner attachment for vehicles | 529,922 | Nov. 27 | 2468 | 594, 595 | 69 | 1146 |
| Le Mieux, Lucius A., Seymour, Wis. Steam-engine governor | 530,538 | Dec. 11 | 832 | 205, 206 | 69 | 1384 |
| Leach, Benjamin F. (See Davis and Leach.) | | | | | | |
| Leach, Thomas, assignor to Reed & Barton Corporation, Taunton, Mass. Fruit-holder | 527,999 | Oct. 23 | 2231 | 539 | 69 | 457 |
| Learned, William B., and J. A. Mosher, assignors of one-half to E. Howard Watch and Clock Company, Boston, Mass. Center-arbor for watches | 530,345 | Dec. 4 | 479 | 119 | 69 | 1301 |
| Leary, Elmer E., Rock Hall, Md. Oyster-tongs | 530,346 | Dec. 4 | 480 | 119 | 69 | 1302 |
| Leatherbee, James D. (See Boardman, Arthur F., assignor.) | | | | | | |
| Leavenworth, Seth H., assignor to W. T. Cressler, Cincinnati, Ohio. Self-inking hand-stamp | 527,208 | Oct. 9 | 861 | 210 | 69 | 175 |
| Leavitt, Frank M., Brooklyn, N. Y., assignor, by mesne assignments, to Bernardin Metallic Cork Company, Evansville, Ind. Bottle-capping machine | 527,209 | Oct. 9 | 863 | 210, 211 | 69 | 176 |
| Leber, Victor, assignor, by mesne assignments, of one-half to H. H. Turner, Danbury, Conn. Fire-escape | 527,529 | Oct. 16 | 1407 | 342 | 69 | 290 |
| Leblanc, Maurice. (See Hutin and Leblanc.) | | | | | | |
| Lebolt, George W., assignor to M. A. Claflin, Chicago, Ill. Bottle-capping machine | 528,329 | Oct. 30 | 2798 | 675 | 69 | 574 |
| Lee, Fred E. (See Beckwith, Arthur K., assignor.) | | | | | | |
| Lee, Robert E., Boswell, Ind. Inhaling-cabinet | 529,279 | Nov. 13 | 1355 | 325 | 69 | 912 |
| Lee, Thomas A., New York, N. Y. Ceiling, roof, or like structure | 529,923 | Nov. 27 | 2469 | 595 | 69 | 1146 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Page. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Lee, Thomas W., London, England. Block or briquet of fuel | 530,698 | Dec. 11 | 1110 | {269 / 270} | 69 | 1432 |
| Leedy, David W., Lima, Ohio. Animal-trap | 531,544 | Dec. 25 | 2590 | 620 | 69 | 1736 |
| Leek, Samuel, and J. Norton, McKeesport, Pa. Pipe-welding apparatus | 529,280 | Nov. 13 | 1356 | 325 | 69 | 912 |
| Lehberger, George, Newburg, N. Y. Wire fence. (Reissue) | 11,445 | Oct. 9 | 1184 | 291 | 69 | 235 |
| Lehman, William B. (See Neff, Abraham J., assignor.) | | | | | | |
| Lehmann, Nicholas, Atlanta, Ga. Stove | 527,067 | Oct. 9 | 642 | 156 | 69 | 135 |
| Leidgen, Nicolaus, Milwaukee, Wis. Lubricator | 529,393 | Nov. 20 | 1571 | 374 | 69 | 973 |
| Leidgen, Nicolaus, assignor of one-half to O. Gelhaar, Milwaukee, Wis. Lock-nut | 529,034 | Nov. 13 | 922 | 219 | 69 | 834 |
| Leigh, Thomas B. (See Shepherd, Job, assignor.) | | | | | | |
| Leijonstein, Sven O., Philadelphia, Pa. Breech mechanism for ordnance | 529,394 | Nov. 20 | 1575 | {374 / 375} | 69 | 973 |
| Leineweber, Herman, Chicago, Ill. Bolt-gun | 527,369 | Oct. 9 | 1137 | 277 | 69 | 226 |
| Leitch, Henry. (See McDonald, Angus, assignor.) | | | | | | |
| Leitch, Langhorne, Boswell, Va. Bread-raiser | 530,231 | Dec. 4 | 275 | 68 | 69 | 1265 |
| Leith, Harvey I., Providence, R. I. Non-filling bottle | 529,035 | Nov. 13 | 924 | 219 | 69 | 834 |
| Leland, Frank A., Worcester, Mass. Trombone | 530,781 | Dec. 11 | 1249 | 302 | 69 | 1458 |
| Lemmon, George E., Cary, N. C. Railway-switch | 531,439 | Dec. 25 | 2444 | 575 | 69 | 1763 |
| Lemp, Hermann, Lynn, Mass., assignor to Thomson Electric Welding Company, of Maine. Producing locally-annealed steel plates | 531,197 | Dec. 18 | 1964 | 466 | 69 | 1603 |
| Lennon, Michael J. (See O'Connor and Graham, assignors.) | | | | | | |
| Lennox, David, Marshalltown, Iowa. Machine for cutting beveled edges on plate metal | 527,178 | Oct. 9 | 816 | 198 | 69 | 167 |
| Lenoir, Francis, and E. A. Seward, Columbus, Ga. Fly-fan mechanism | 526,719 | Oct. 2 | 82 | 22 | 69 | 18 |
| Lenox, Edwin, Worcester, Mass. Machine for making barbed-wire fencing | 529,036 | Nov. 13 | 927 | 220 | 69 | 838 |
| Lents, Charles F., *et al.* (See Newhouse, John E., assignor.) | | | | | | |
| Leonard, Benjamin, Sacramento, assignor of one-half to C. W. Weston, San Francisco, Cal. Fruit-wrapping device | 528,906 | Nov. 6 | 716 | 169 | 69 | 777 |
| Leonard, Caswell L., assignor of one-half to J. Furr, Veedersburg, Ind. Overcheck-rein holder | 527,706 | Oct. 23 | 1848 | 444 | 69 | 388 |
| Leonard, Caswell L., and A. Bever, Veedersburg, Ind. Churn | 528,000 | Oct. 23 | 2234 | 539 | 69 | 457 |
| Leonard, George B., Gracedale, assignor of one-half to A. D. Smith, Ashley, Pa. Car-coupling | 529,951 | Nov. 13 | 800 | 187 | 69 | 812 |
| Leonard, Michael B. (See Bogart and Leonard.) | | | | | | |
| Leonard, Samuel S., Cleveland, Ohio. Car-brake | 531,418 | Dec. 25 | 2364 | 565 | 69 | 1693 |
| Lepage, Charles, Duluth, Minn., assignor of one-half to C. Blais, Superior, Wis. Hand-truck | 529,738 | Nov. 27 | 2103 | 516 | 69 | 1088 |
| Lepper, Frederick, and W. Wighton, Toronto, Canada. Trolley-wheel | 529,829 | Nov. 27 | 2318 | 552 | 69 | 1118 |
| Leslie, Edward, Paterson, N. J. Milk-sterilizing apparatus | 529,075 | Nov. 13 | 1001 | 241 | 69 | 847 |
| Leslie, Edward, Paterson, N. J. Commode | 529,076 | Nov. 13 | 1004 | 242 | 69 | 848 |
| Lesmeister, Christian, Aix-la-Chapelle, Germany. Roofing-tile | 527,431 | Oct. 16 | 1243 | 305 | 69 | 258 |
| Lessard, Jeremie, Cohoes, N. Y. Car-coupling | 529,924 | Nov. 27 | 2472 | 595 | 69 | 1146 |
| Letourneau, John B., Brockton, Mass. Sash-fastener | 528,728 | Nov. 6 | 356 | 87 | 69 | 711 |
| Letson, Augustus F., Buffalo, N. Y. Brake for railway-cars | 531,319 | Dec. 25 | 2197 | 526 | 69 | 1661 |
| Levison, Norman, Rochester, N. Y. Elevator-guard | 531,198 | Dec. 18 | 1967 | 467 | 69 | 1603 |
| Levy, Max Z., Kansas City, Mo. Leggin | 527,149 | Oct. 9 | 774 | 189 | 69 | 159 |
| Lévy-Samson, Edmond, Paris, France. Centrifugal machine | 527,499 | Oct. 16 | 1351 | 330 | 69 | 281 |
| Lewis, Edwin F., Vine Creek, Kans. Fodder or feed loader and sled | 530,782 | Dec. 11 | 1251 | 302 | 69 | 1458 |
| Lewis, George L., Toledo, Ohio. Excavating, ditching, or dredging machine | 531,199 | Dec. 18 | 1968 | 467 | 69 | 1603 |
| Lewis, Harry A., assignor to himself and W. M. Sullivan, Norristown, Pa., and D. O. Kerbaugh, New York, N. Y. Brake-shoe | 530,783 | Dec. 11 | 1252 | 302 | 69 | 1458 |
| Lewis, James F. (See Rand, Addison C., assignor.) | | | | | | |
| Lewis, Theodore G., assignor to Buffalo Dental Manufacturing Company, Buffalo, N. Y. Dental vulcanizer | 526,785 | Oct. 2 | 195 | 46 | 69 | 37 |
| Lewis, William H., Rome, N. Y. Wood-splice | 529,395 | Nov. 20 | 1577 | 375 | 69 | 973 |
| Leyner, Peter A., Canfield, Colo. Wire-fence tightener | 526,718 | Oct. 2 | 81 | 21 | 69 | 18 |
| Leyson, Sackville G., Syracuse, N. Y. Combination water-jacket for furnace doors and mouths | 530,539 | Dec. 11 | 834 | 206 | 69 | 1384 |
| Libbey, Hosea W., Boston, Mass. Telephone | 526,865 | Oct. 2 | 327 | 80 | 69 | 62 |
| Libbey, Hosea W., Boston, Mass. Button | 527,432 | Oct. 16 | 1244 | 305 | 69 | 259 |
| Libbey, Hosea W., Boston, Mass. Bicycle | 530,540 | Dec. 11 | 838 | 206 | 69 | 1384 |
| Libby, Harlow & Co. (See Nicholls, Walter H., assignor.) | | | | | | |
| Liberty, Jerry C., assignor of one-third to O. W. Miller, Easthampton, Mass. Jacquard mechanism for looms | 530,050 | Nov. 27 | 2738 | {654 / 655} | 69 | 1196 |
| Libey, John D., Lima, Ind. Scraper | 529,945 | Nov. 27 | 2474 | 596 | 69 | 1146 |
| Lieb, Adam. (See Mueller and Lieb.) | | | | | | |
| Licher, Albert. (See Barns, Carl, assignor.) | | | | | | |
| Lichtenhein, Abraham, assignor to Dreher Manufacturing Company, New York, N. Y. Floor for car-axle boxes | 529,926 | Nov. 27 | 2476 | 596 | 69 | 1147 |
| Lidback, John A., assignor to E. T. Burrowes, Portland, Me. Holding device for spring-actuated shades | 529,179 | Nov. 13 | 1183 | 285 | 69 | 881 |
| Lidback, John A., assignor to E. T. Burrowes, Portland, Me. Holding mechanism for spring-actuated shades | 529,557 | Nov. 20 | 1873 | 446 | 69 | 1026 |
| Liefbroer, John, and J. Tendollen, Oostburg, Wis. Tire-heater | 526,977 | Oct. 2 | 502 | 123 | 69 | 94 |
| Light, Simon P., *et al.* (See Andrews, Charles B., assignor.) | | | | | | |
| Lilly, Benjamin S., Broken Bow, Nebr. Harness attachment | 527,433 | Oct. 16 | 1245 | 306 | 69 | 259 |
| Lincoln, Charles L., Brooklyn, N. Y. Switch-working mechanism | 526,979 | Oct. 2 | 505 | 124 | 69 | 94 |
| Lincoln, Charles L., assignor of one-half to R. A. Davison, Brooklyn, N. Y. Railway-switch | 526,978 | Oct. 2 | 503 | 123 | 69 | 94 |
| Lincoln, Frederick H. (See Nichols and Lincoln.) | | | | | | |
| Lind, Hugh, Whitewater, Colo. Pipe-wrench | 531,125 | Dec. 18 | 1831 | {434 / 435} | 69 | 1579 |
| Lind, Richard. (See Becker and Lind.) | | | | | | |
| Lindemann, August. (See Warg and Lindemann.) | | | | | | |
| Lindemeyer, Philip, Jr., Jersey City, N. J. Paper box | 528,639 | Nov. 6 | 217 | 54 | 69 | 685 |
| Linder, Mons A., Pullman, Ill. Keyhole-guard | 528,952 | Nov. 13 | 802 | 187 | 69 | 813 |
| Lindgren, August, Moline, Ill., assignor to Moline Plow Company, of Illinois. Cultivator | 531,200 | Dec. 18 | 1971 | {467 / 468} | 69 | 1604 |
| Lindholm, Charles A., Brooklyn, N. Y. Door-knob | 529,180 | Nov. 13 | 1184 | 285 | 69 | 881 |
| Lindner, Franz, Dresden, Germany. Repeating mechanism for pianos | 530,188 | Dec. 4 | 106 | 48 | 69 | 1250 |
| Lindsay, Augusta H. (See Barnett, Nathan W., assignor.) | | | | | | |
| Lindsay, William B., W. E. Tonner, and A. Lowmiller, Steubenville, Ohio. Filter | 528,104 | Oct. 23 | 2407 | {582 / 583} | 69 | 489 |
| Lindsey, John A. N., Princeton, Mo. Revolving ribbon-cabinet | 528,885 | Nov. 6 | 661 | 159 | 69 | 767 |
| Lindsey, Peter H., and C. H. Squires, Lockport, N. Y. Burglar-alarm | 528,953 | Nov. 13 | 803 | 187 | 69 | 813 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Page. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Lindstrom, Ivar K., Akerby Orebro, assignor to Aktiebolaget Separator, Stockholm, Sweden. Testing milk | 531,049 | Dec. 18 | 1698 | ..... | 69 | 1555 |
| Lindstrom, Nils O., Union Course, and O. P. Cummings, assignors to A. B. See Manufacturing Company, Brooklyn, N. Y. Apparatus for controlling electric elevators | 530,541 | Dec. 11 | 839 | 207 | 69 | 1384 |
| Lindt, John, *et al.* (See Brown, Norman E., assignor.) | | | | | | |
| Lingley, John H. (See Fowler and Lingley.) | | | | | | |
| Linn, John B., Cleveland, assignor of one-half to O. S. Kelly, Springfield, Ohio. Conduit system for electric railways | 528,330 | Oct. 30 | 2799 | {676 / 677} | 69 | 574 |
| Lius, Jurgen H., Brooklyn, N. Y. Oil-can carrier | 527,389 | Oct. 9 | 1084 | 262 | 69 | 215 |
| Lintner, William T., assignor of one-half to W. L. Sporborg, Gloversville, N. Y. Speed-indicator for shafting | 527,557 | Oct. 16 | 1447 | 352 | 69 | 297 |
| Lioret, Henri J., Paris, France. Phonograph | 528,273 | Oct. 30 | 2701 | {651 / 652} | 69 | 558 |
| Lippy, David, and I. E. Finfrock, Mansfield, Ohio. Driving-gear for bicycles | 528,954 | Nov. 13 | 804 | 188 | 69 | 813 |
| Lippy, David, and I. E. Finfrock, Mansfield, Ohio. Driving gear for bicycles | 528,955 | Nov. 13 | 805 | 188 | 69 | 813 |
| Lippy, David, and I. E. Finfrock, Mansfield, Ohio. Driving-gear for bicycles | 528,956 | Nov. 13 | 806 | 188 | 69 | 813 |
| Lisle, Myron C., assignor of one-half to W. A. Berkey, Grand Rapids, Mich. Magazine-gun | 528,957 | Nov. 13 | 807 | 188 | 69 | 814 |
| Lister, Joseph, Chicago, Ill. Boiler-furnace | 529,037 | Nov. 13 | 929 | {220 / 221} | 69 | 835 |
| Litchfield, Isaac W., and T. W. Sanford, Warwick, N. Y. Bicycle-brake | 528,958 | Nov. 13 | 808 | 189 | 69 | 814 |
| Littell, Matilda R. (See Littell, William J. and M. R.) | 531,050 | Dec. 18 | 1699 | 403 | 69 | 1555 |
| Littell, Oriella L., Washington, D. C. Cleaning and polishing compound | 529,291 | Nov. 13 | 1357 | ..... | 69 | 912 |
| Littell, William J. and M. R., Washington, D. C. Gage-measure | 526,926 | Oct. 2 | 436 | 108 | 69 | 81 |
| Little, James, assignor, by mesne assignments, of one-fourth to L. Larsson, San Francisco, Cal. Circular saw | 528,602 | Nov. 6 | 139 | 34 | 69 | 672 |
| Little, John W. (See Browne and Little.) | | | | | | |
| Little, Joseph J. (See Everett, George W., assignor.) | | | | | | |
| Little, M. A. (See Maddox, John A., assignor.) | | | | | | |
| Litzinger, Thomas J., Patton, Pa. Nut-lock | 527,179 | Oct. 9 | 818 | 198 | 69 | 167 |
| Livermore, Ray F., Corry, Pa. Ticketing-machine | 529,502 | Nov. 20 | 1776 | 424 | 69 | 1008 |
| Livingstone, Joseph, *et al.* (See Howe, Henry A., assignor.) | | | | | | |
| Livingstone, William, Flushing, N. Y. Tie-joint | 530,281 | Dec. 4 | 367 | 90 | 69 | 1282 |
| Lloyd, Edward W. (See Noble and Lloyd.) | | | | | | |
| Loando Hard Rubber Company. (See Green, John J., assignor.) | | | | | | |
| Lobet, Jean, Flémalle-Grande, near Liege, Belgium. Apparatus for cutting glassware | 530,189 | Dec. 4 | 198 | 49 | 69 | 1251 |
| Lock, Charles. (See Ponfé and Lock.) | | | | | | |
| Locke, James, Middletown, Ohio. Mitering-machine | 527,434 | Oct. 16 | 1246 | 306 | 69 | 259 |
| Locke, Joseph. (See Croskey and Locke.) | | | | | | |
| Lockwood, John M. (See Lockwood, William C. and J. M.) | | | | | | |
| Lockwood, John S., *et al.* (See Gooding and Gondey, assignors.) | | | | | | |
| Lockwood, John S., *et al.* (See Knight and Gooding, assignors.) | | | | | | |
| Lockwood, Lawrence A. (See Montgomery, Albert F., assignor.) | | | | | | |
| Lockwood, William C. and J. M., Brooklyn, N. Y. Telephone | 528,040 | Nov. 6 | 219 | 54 | 69 | 686 |
| Loeben, Gustav A., assignor of two-thirds to C. and G. Falkenstein, Philadelphia, Pa. Combination gas and electric light fixture | 529,451 | Nov. 20 | 1682 | 402 | 69 | 992 |
| Loewer, John A., and J. G. Sieber, Buffalo, N. Y. Sliding-door lock | 527,707 | Oct. 23 | 1849 | 444 | 69 | 388 |
| Lohr, Benjamin, Fishertown, Pa. Car-coupling | 529,396 | Nov. 20 | 1572 | 375 | 69 | 973 |
| Lones, Jabez. (See Walker and Wilkins, assignors.) | | | | | | |
| Long, Charles E., Verona, Pa. Jar-closure | 530,190 | Dec. 4 | 200 | 49 | 69 | 1251 |
| Long, Eben W., Chicago, Ill. Regulating-valve for tanks | 529,739 | Nov. 27 | 2165 | 516 | 69 | 1088 |
| Long, Frank B. (See Kees, Frederick, assignor.) | | | | | | |
| Long, Frank B., Los Angeles, Cal. Pianoforte and agraffe therefor | 529,282 | Nov. 13 | 1358 | 326 | 69 | 912 |
| Long, J. Milton, Muncie, Ind., assignor of one-half to E. L. Dunlap, Sandusky, Ohio. Endless sign | 526,905 | Oct. 2 | 397 | 100 | 69 | 74 |
| Long, James H., Liter, Ill. Fence | 526,927 | Oct. 2 | 438 | 108 | 69 | 82 |
| Long Manufacturing Company. (See Long, Timothy, assignor.) | | | | | | |
| Long, Timothy, assignor to Long Manufacturing Company, Cleveland, Ohio. Dumping apparatus for railway-cars | 527,117 | Oct. 9 | 720 | 176 | 69 | 149 |
| Long, Timothy, assignor to Long Manufacturing Company, Cleveland, Ohio. Dumping apparatus | 527,118 | Oct. 9 | 721 | 177 | 69 | 149 |
| Long, Timothy, assignor to Long Manufacturing Company, Cleveland, Ohio. Dumping apparatus | 527,119 | Oct. 9 | 724 | 178 | 69 | 149 |
| Longanecker, Samuel, Anderson, Ind. Window-shade | 531,201 | Dec. 18 | 1974 | {468 / 469} | 69 | 1604 |
| Longstreth, Charles H., *et al.* (See Smith, Daniel W., assignor.) | | | | | | |
| Lönnerberg, Adolf L., Stockholm, Sweden. Inhaling apparatus | 526,966 | Oct. 2 | 400 | 100 | 69 | 74 |
| Looney, Joseph H., Gainesville, Tex. Cot | 526,866 | Oct. 2 | 328 | 81 | 69 | 62 |
| Lorah, Mahlon B., Reading, Pa. Pulley | 530,282 | Dec. 4 | 368 | 90, 91 | 69 | 1282 |
| Lord, Mildred M., Milwaukee, Wis. Washing-machine | 529,769 | Nov. 27 | 2485 | 570 | 69 | 1131 |
| Lorenz, Charles A., Reynoldsville, Pa. Churn | 531,340 | Dec. 25 | 2417 | 575 | 69 | 1704 |
| Lorenz, William A., and E. E. Claussen, assignors to A. H. Walker, trustee, Hartford, Conn. Making paper bags | 529,656 | Nov. 20 | 2027 | 486 | 69 | 1055 |
| Lorey, William, assignor to J., W. P. M., and J. F. Braun, Philadelphia, Pa. Filter | 529,558 | Nov. 20 | 1874 | 446 | 69 | 1026 |
| Loriot, Henry, assignor to H. F. Mouquin, trustee, New York, N. Y. Electric winding and setting clock | 526,720 | Oct. 2 | 84 | 22 | 69 | 18 |
| Lorois, Maurice, assignor to Société Anonyme des Moteurs Thermiques Gardie, Nantes, France. Gas-motor | 529,452 | Nov. 20 | 1683 | {402 / 403} | 69 | 993 |
| Lorois, Maurice, assignor to Société Anonyme des Moteurs Thermiques Gardie, Nantes, France. Manufacturing gas | 529,453 | Nov. 20 | 1690 | 404 | 69 | 994 |
| Lott, William, Duquesne, Pa. Tongs | 531,126 | Dec. 18 | 1832 | 435 | 69 | 1579 |
| Loud, Philologous H., Jr., Charleston, S. C. Fish-trap | 527,435 | Oct. 16 | 1247 | {306 / 307} | 69 | 259 |
| Louden Machinery Company. (See Louden, William, assignor.) | | | | | | |
| Louden, William, Fairfield, Iowa. Hay-carrier apparatus | 526,839 | Oct. 2 | 277 | 67 | 69 | 53 |
| Louden, William, Fairfield, Iowa. Jack and trip-pulley for hay-carriers | 527,331 | Oct. 16 | 1411 | 343 | 69 | 290 |
| Louden, William, Fairfield, Iowa. Hay-elevator | 530,232 | Dec. 4 | 276 | 68, 69 | 69 | 1265 |
| Lough, Samuel H. (See Hunter and Lough.) | 527,330 | Oct. 16 | 1408 | 343 | 69 | 290 |
| Loughmiller, Benjamin F., assignor of one-half to A. S. Lamb and A. J. Robinson, Aspen, Colo. Railway-switch | 529,126 | Nov. 13 | 1080 | 261 | 69 | 863 |
| Lousaw, Francis, and T. E. Clarke, Bothwell, Canada. Insect-powder-dusting machine | 531,320 | Dec. 25 | 2198 | 526 | 69 | 1661 |
| Love, Harry H., Sacramento, Cal. Ventilator-car | 528,231 | Oct. 30 | 2633 | 635 | 69 | 545 |

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|---|---|---|---|---|---|---|
| Lovejoy, Dimmitt R. (See Morse and Lovejoy.) | | | | | | |
| Low, Abbot A. (See Johnson and Low.) | | | | | | |
| Lowcock, Sidney R., Birmingham, England. Filtration | 530,784 | Dec. 11 | 1253 | 303 | 69 | 1470 |
| Lowd, Mark, Salem, Mass. Intersecting electric railway-tracks | 528,959 | Nov. 13 | 809 | 189 | 69 | 814 |
| Lowe, Austin, Minneapolis, Kan. Type-writing machine | 531,321 | Dec. 25 | 2290 | 526 | 69 | 1661 |
| Lowe, Ernest A., assignor to himself and J. Jones, Jr., New York, N. Y. Binding-post for electric instruments | 529,127 | Nov. 13 | 1082 | 261 | 69 | 863 |
| Lowe, John H., Neosho, assignor of one-half to A. H. Waite, Joplin, Mo. Burglar-alarm | 530,434 | Dec. 4 | 620 | 155 | 69 | 1328 |
| Lowe, Thaddeus S. C., Norristown, assignor to Guarantee Trust and Safe Deposit Company, trustee, Philadelphia, Pa. Gas cleaner | 529,625 | Nov. 20 | 1973 | 470 | 69 | 1015 |
| Lowerre, Frederick H., Brooklyn, N. Y. Nursing-bottle support | 530,435 | Dec. 4 | 622 | 156 | 69 | 1329 |
| Lowman, John, London, England, assignor to P. Larios, Gibraltar. Machinery for cutting corks | 527,865 | Oct. 23 | 1908 | 473 | 69 | 408 |
| Lowmiller, Alpheus. (See Lindsay, Tonner, and Lowmiller.) | | | | | | |
| Lubbers, John H., New Kensington, assignor of one-half to R. E. Woods, Pittsburg, Pa. Manufacture of wire-glass and apparatus therefor | 527,754 | Oct. 16 | 1770 | {426 427 | 69 | 356 |
| Lucas, William C., Meriden, Conn. Door-operating device | 530,952 | Dec. 18 | 1522 | {360 361 | 69 | 1523 |
| Luchesi, Ferdinand G. (See Zorn and Luchesi.) | | | | | | |
| Ludwig, John C., San Francisco, Cal. Electric ore amalgamating apparatus | 527,150 | Oct. 9 | 775 | 189 | 69 | 159 |
| Lumber District Mill Company. (See Schulz, Herman C., assignor.) | | | | | | |
| Lumis, Thomas J., Hartford, Conn. Protractor and bevel | 528,729 | Nov. 6 | 357 | 87 | 69 | 711 |
| Lundgren, Emil, Butler, Pa. Combination lock-hinge | 530,436 | Dec. 4 | 621 | 155 | 69 | 1329 |
| Lundholm, Erik M., St. Paul, Minn. Surgical cabinet and irrigating device | 528,292 | Oct. 30 | 2635 | {635 636 | 69 | 545 |
| Lundquist, Claus. (See Larson, Lars G., assignor.) | | | | | | |
| Lundstrom, Carl J., assignor to D. H. Barrell & Co., Little Falls, N. Y. Cheese-press | 528,001 | Oct. 23 | 2235 | {539 540 | 69 | 457 |
| Lungen, Adam, assignor of one-half to R. Edwards, New York, N. Y. Self-winding electric clock | 528,960 | Nov. 13 | 811 | 189 | 69 | 814 |
| Lurssen, Herman H., and C. W. Wood, Baltimore, Md. Easel | 526,907 | Oct. 2 | 403 | 100 | 69 | 75 |
| Lusche, Frederick, assignor to Wolf, Sayer & Heller, Chicago, Ill. Refrigerator | 528,812 | Oct. 2 | 231 | 57 | 69 | 14 |
| Lusher, Godfrey, Pasadena, Cal. Sash balance | 528,331 | Oct. 30 | 2402 | 677 | 69 | 575 |
| Luther, Henry R., Cambridge, Mass. Grate | 529,503 | Nov. 20 | 1779 | 424 | 69 | 1008 |
| Luther, Henry R., Cambridge, Mass. Grate | 529,504 | Nov. 20 | 1780 | 424 | 69 | 1008 |
| Luther & Lederhos. (See Hutchins, Abner B., assignor.) | | | | | | |
| Luttues, Peter O., White Rock, S. D. Windmill | 527,866 | Oct. 23 | 1969 | 473 | 69 | 409 |
| Lux, Nicholas, assignor to H. Bradshaw, Topeka, Kans. Paper-feeding machine | 529,927 | Nov. 27 | 2477 | 597 | 69 | 1147 |
| Lydon, Martin W., North Andover, Mass. Life-guard for street-cars | 529,657 | Nov. 20 | 2029 | 486 | 69 | 1035 |
| Lyle, Robert W., Woodbridge, N. J. Accompaniment-player for musical instruments | 529,928 | Nov. 27 | 2479 | {597 568 | 69 | 1147 |
| Lyman, Henry C. (See Sherwood, Charles H., assignor.) | | | | | | |
| Lynam, John S. (See Adams and Lynam.) | | | | | | |
| Lynam, John S., Winchester, Mass., assignor of two-thirds to C. S. Collins and G. F. Adams, Nashua, N. H. Semaphore-operating apparatus | 528,961 | Nov. 13 | 813 | 190 | 69 | 815 |
| Lynam, John S., Winchester, Mass., and G. F. Adams, Nashua, N. H. Compensator for signal-operating wires | 529,392 | Nov. 13 | 1445 | 348 | 69 | 930 |
| Lynam, John S., Winchester, Mass., and G. F. Adams, assignors of one-third to C. S. Collins, Nashua, N. H. Compensator for signal-operating wires | 528,962 | Nov. 13 | 814 | 190 | 69 | 815 |
| Lyon, Edward D. (See Whitaker and Lyon.) | | | | | | |
| Lyons, Daniel C., Atlantic, Mass. Lath or shingle holder | 527,613 | Oct. 16 | 1540 | 373 | 69 | 314 |
| Lytten, Osborne T., Lowell, assignor to G. M. McAden, McAdensville, N. C. Tire shrinking or upsetting device | 529,740 | Nov. 27 | 2166 | 516 | 69 | 1059 |
| M. Garland Company. (See Garland, Michael, assignor.) | | | | | | |
| M. Thomsen Manufacturing Company. (See Thomsen, Max, assignor.) | | | | | | |
| Maag, George, Akron, Ohio. Furnace | 530,489 | Dec. 4 | 724 | 179 | 69 | 1349 |
| Maben, Benjamin S., Manchester, N. H. Combined couch, bed, and bath-tub | 531,202 | Dec. 18 | 1975 | 469 | 69 | 1604 |
| Mabray, James J., Worcester, Mass. Cutter for trimming soles of boots or shoes | 530,699 | Dec. 11 | 1112 | 270 | 69 | 1432 |
| Mabye, Peter J., assignor of one-half to W. H. Ogilvie, Brooklyn, N. Y. Fishing-reel | 529,658 | Nov. 20 | 2030 | 487 | 69 | 1035 |
| MacCord, Charles W., Hoboken, N. J., assignor to Pratt & Whitney Company, Hartford, Conn. Lathe for turning elliptical forms | 531,203 | Dec. 18 | 1977 | 470 | 69 | 1605 |
| MacDonald, John W., Pittsburg, Pa. Ore grinder and separator | 531,127 | Dec. 18 | 1893 | {435 436 | 69 | 1579 |
| MacDonald, Thomas H., Philadelphia, Pa. Shirt | 529,181 | Nov. 13 | 1185 | 285 | 69 | 881 |
| MacDonald, William, Philadelphia, Pa. Treating garbage | 528,002 | Oct. 23 | 2237 | ..... | 69 | 458 |
| MacLachlan, John, West Hoboken, N. J. Latch and lock | 526,980 | Oct. 2 | 506 | 124 | 69 | 95 |
| Macdonald, Thomas H., Bridgeport, Conn. Graphophone | 527,755 | Oct. 16 | 1773 | 427 | 69 | 357 |
| Macfarlan, Duncan, Philadelphia, Pa. Composition of matter for electric conductors | 526,721 | Oct. 2 | 85 | ..... | 69 | 19 |
| Macfarlan, Duncan, Philadelphia, Pa. Composition of matter for electric conductors | 526,722 | Oct. 2 | 88 | ..... | 69 | 19 |
| Macfarlan, Duncan, Philadelphia, Pa. Rheostat | 526,867 | Oct. 2 | 330 | 81 | 69 | 62 |
| Mackie, James S., Barre, Vt. Motor | 526,928 | Oct. 2 | 439 | 108 | 69 | 82 |
| Mackie, James S., Barre, Vt. Fan | 526,929 | Oct. 2 | 440 | 108 | 69 | 82 |
| Mackinney, William C., assignor to H. W. Butterworth & Sons Company, Philadelphia, Pa. Drying-cylinder for textile machinery | 529,038 | Nov. 13 | 934 | 221 | 69 | 836 |
| Maclaren, Arthur W., Hennepin, Ill. Gate | 528,174 | Oct. 30 | 2527 | {612 613 | 69 | 526 |
| Macleod, William, New York, N. Y. Constructing water-tight pits or vaults | 530,646 | Dec. 11 | 1026 | 250 | 69 | 1417 |
| Macloskie, Charles H., Schenectady, and H. M. Brinckerhoff, Matteawan, assignors to General Electric Company, Schenectady, N. Y. Electric railway | 531,441 | Dec. 25 | 2418 | 576 | 69 | 1704 |
| Macomber Chemical Fire Extinguisher Company. (See Macomber, Clarence R., assignor.) | | | | | | |
| Macomber, Clarence R., Worcester, Mass., assignor to Macomber Chemical Fire Extinguisher Company, Portland, Me. Fire-extinguisher | 527,120 | Oct. 9 | 725 | 178 | 69 | 159 |
| Macphail, James, Rockford, assignor to A. Ellwood, De Kalb, Ill. Disk harrow | 528,172 | Oct. 30 | 2521 | {610 611 | 69 | 525 |
| Macphail, James, Rockford, assignor to A. Ellwood, De Kalb, Ill. Disk harrow | 528,173 | Oct. 30 | 2524 | {611 612 | 69 | 526 |
| Maddock, Charles S., Trenton, N. J. Rack for decorating kilns | 530,233 | Dec. 4 | 280 | 69 | 69 | 1266 |
| Maddock, William H., Pittsburg, Pa., assignor to Wheeling Steel and Iron Company, Wheeling, W. Va. Plate-rolling mill | 530,112 | Dec. 4 | 63 | 17, 18 | 69 | 1227 |
| Maddox, John A., assignor of two-thirds to M. A. Little and W. Cooper, West Union, Ohio. Churn | 531,204 | Dec. 18 | 1980 | 470 | 69 | 1605 |
| Maes, Jacob, St. Louis, Mo. Earth-scraper | 531,128 | Dec. 18 | 1896 | 436 | 69 | 1580 |
| Maggard, James H., Iowa City, Iowa, assignor to O. S. Kelly Company, Springfield, Ohio. Separator | 529,454 | Nov. 20 | 1693 | 404 | 69 | 894 |



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| Magoris, Anthoney E., Binghamton, N. Y. Brush | 528,730 | Nov. 6 | 359 | 88 | 69 | 712 |
| Maher, Thomas, Cleveland, Ohio. Lawn-sprinkler | 530,620 | Dec. 11 | 973 | 238 | 69 | 1409 |
| Mahler, Adolph, *et al.* (See Moehn, John N., assignor.) | | | | | | |
| Mahon, Patrick T., Holyoke, Mass. Garment-pocket | 530,542 | Dec. 11 | 841 | 206 | 69 | 1385 |
| Maier, Henry, Allegheny, Pa. Orange cup and pulp-remover | 529,333 | Nov. 13 | 1446 | 349 | 69 | 930 |
| Maimin, Haymin. (See Emanuel and Spielmann, assignors.) | | | | | | |
| Main, George B., Glasgow, Scotland. Crutch | 529,659 | Nov. 20 | 2031 | 487 | 69 | 1035 |
| Malley, James J., assignor of one-half to H. J. Brinkenkamp, St. Louis, Mo. Range-tank | 530,700 | Dec. 11 | 1114 | 270 | 69 | 1432 |
| Malley, John. (See McDermott, George, assignor.) | | | | | | |
| Mallory, James L., *et al.* (See Hill, Edward A., assignor.) | | | | | | |
| Mallory, Lucilla, Bridgeport, Conn. Garment-stretcher | 529,253 | Nov. 13 | 1360 | 326 | 69 | 912 |
| Manahan, Thaddeus A., Fairfield, Tex. Fumigator | 527,699 | Oct. 16 | 1684 | 405 | 69 | 340 |
| Manasse, Otto, Munich, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Making phenol alcohol | 526,786 | Oct. 2 | 197 | ..... | 69 | 37 |
| Manchester Manufacturing Company. (See Myers, David, assignor.) | | | | | | |
| Manier, Benjamin F., Jr., Providence, R. I. Car-truck | 529,284 | Nov. 13 | 1360 | 326 | 69 | 912 |
| Manning, Charles E., assignor to A. Allen, New York, N. Y. Apparatus for extinguishing fires | 530,191 | Dec. 4 | 201 | 50 | 69 | 1251 |
| Manning, Edwin C., Washington, D. C., assignor to Cooper Chemical Company, of Kansas. Syringe | 531,545 | Dec. 25 | 2501 | 620 | 69 | 1737 |
| Manning, William I., Roanoke, Ala. Plow | 531,322 | Dec. 25 | 2291 | 567 | 69 | 1662 |
| Manross, Frederick N. (See Porter, Henry W., assignor.) | | | | | | |
| Mansfield, Luther E., Brooklyn, N. Y. Clutch mechanism | 530,701 | Dec. 11 | 1115 | 271 | 69 | 1432 |
| Mansfield, Martin W. (See McGee and Mansfield.) | | | | | | |
| Manville, Charles B., Milwaukee, Wis. Pipe-covering and manufacturing same | 527,867 | Oct. 23 | 1971 | 474 | 69 | 409 |
| Mapay, Samuel W., London, England. Primary battery and portable electric lamp | 527,436 | Oct. 16 | 1249 | 307 | 69 | 259 |
| Marasse, Siegfried, Berlin, Germany. Making salicylic acid | 529,182 | Nov. 13 | 1156 | ..... | 69 | 881 |
| Marbach, Herman L. (See Ewert and Marbach.) | | | | | | |
| Marchal, Alfred C., Paris, France. Machine for applying paraffin to cigarette-paper | 528,332 | Oct. 30 | 2503 | 677 | 69 | 575 |
| Marckmann, Johannes C. A., Hamburg, Germany. Steam-boiler and flue scraper | 530,621 | Dec. 11 | 974 | 239 | 69 | 1409 |
| Margot, Charles, Geneva, Switzerland. Decorating glass with aluminum | 527,210 | Oct. 9 | 667 | ..... | 69 | 177 |
| Marion Steam Shovel Company. (See Wright, James O., assignor.) | | | | | | |
| Mark, Charles W., New York, N. Y. Holder for attaching lenses to elevator-doors, &c. | 528,003 | Oct. 23 | 2238 | 540 | 69 | 458 |
| Mark, John W., New York, N. Y. Illuminating-tile | 528,004 | Oct. 23 | 2240 | 541 | 69 | 458 |
| Marks, George E. (See Tmax, Charles H., assignor.) | | | | | | |
| Markus, Joseph, Detroit, Mich. Mixing-machine | 528,175 | Oct. 30 | 2529 | 613 | 69 | 526 |
| Marlin Fire Arms Company. (See Hepburn, Lewis L., assignor.) | | | | | | |
| Marlin, John M., New Haven, Conn. Detachably seeming gun-barrels to stocks | 529,455 | Nov. 20 | 1694 | 405 | 69 | 894 |
| Maroniez, Georges P. C., Boulogne-sur-Mer, France. Magazine-camera | 528,176 | Oct. 30 | 2530 | {613 614 | 69 | 527 |
| Marquart, Rudolf, assignor to himself, C. Brandt, Jr., New York, and E. B. Tomkins, Brooklyn, N. Y. Securing diamonds in stone-cutting tools | 531,051 | Dec. 18 | 1699 | 404 | 69 | 1555 |
| Marsh, Edward A., Newton, Mass. Ornamenting-machine | 527,242 | Oct. 9 | 927 | {223 224 225 226 | 69 | 188 |
| Marsh, Joseph W., Pittsburg, Pa. Electric circuit | 529,359 | Nov. 20 | 1876 | 447 | 69 | 1026 |
| Marshall, Elias, Boston, Mass. Electrically-operated elevator | 528,547 | Nov. 6 | 40 | 10 | 69 | 653 |
| Marshall, Herbert, Los Angeles, Cal. Sash weight | 527,151 | Oct. 9 | 777 | 189 | 69 | 159 |
| Marshall, Le Grand. (See Walker and Marshall.) | | | | | | |
| Marshall, Thomas F., Oakland, Cal. Shoe | 528,784 | Nov. 6 | 466 | 114 | 69 | 731 |
| Marston, Nathaniel B., Lebanon, N. H. Floor-set | 529,920 | Nov. 27 | 2481 | 598 | 69 | 1148 |
| Martin, Abraham S., *et al.* (See Davidson, David J., assignor.) | | | | | | |
| Martin, Abraham S., *et al.* (See Pendry, William A., assignor.) | | | | | | |
| Martin, Carl E. R., Philadelphia, Pa. Motor for engine-governors | 528,274 | Oct. 30 | 2705 | {652 653 | 69 | 558 |
| Martin, Carl E. R., Philadelphia, Pa. Engine-reversing gear | 528,275 | Oct. 30 | 2708 | 653 | 69 | 559 |
| Martin, Carl E. R., Philadelphia, Pa. Engine-governor | 528,276 | Oct. 30 | 2710 | 654 | 69 | 559 |
| Martin, Charles N., assignor of one-half to A. P. Benner, Willimantic, Conn. Let-off for looms | 530,647 | Dec. 11 | 1028 | 250 | 69 | 1417 |
| Martin, Charles W., New York, N. Y. Letter-box | 527,709 | Oct. 23 | 1851 | 445 | 69 | 349 |
| Martin, David B. (See Pugh and Martin.) | | | | | | |
| Martin, George, Rock Rapids, Iowa. Plow | 529,570 | Nov. 27 | 2086 | 570 | 69 | 1131 |
| Martin, Horace B., Chino, Cal. Adding-machine | 529,709 | Nov. 27 | 2261 | 549 | 69 | 1106 |
| Martin, James, assignor of one-half to L. N. Frederick, Baltimore, Md. Sanding device | 527,437 | Oct. 16 | 1251 | 307 | 69 | 260 |
| Martin, John, Belview, Minn. Hay rake and loader | 531,205 | Dec. 18 | 1982 | 471 | 69 | 1606 |
| Martin, John E. (See Kahne, Adkins, Pierce, Martin, and Kahne.) | | | | | | |
| Martin, John J., *et al.* (See Senior, James W., assignor.) | | | | | | |
| Martin, John S., Snohomish, Wash. Marine propulsion | 527,708 | Oct. 23 | 1850 | 444 | 69 | 388 |
| Martin, Michael L., Chicago, Ill. Conduit for electric railways | 530,253 | Dec. 4 | 370 | 91 | 69 | 1282 |
| Martin, Samuel G., Branchport, N. J. Reefing sails | 527,340 | Oct. 9 | 1065 | {262 263 | 69 | 216 |
| Martin, Stephen G., *et al.* (See Davidson, David J., assignor.) | | | | | | |
| Martin, Stephen G., *et al.* (See Pendry, William A., assignor.) | | | | | | |
| Martin, Taylor, Fairmont, W. Va. Burial apparatus | 529,456 | Nov. 20 | 1696 | 405 | 69 | 895 |
| Martyr, Leonard W., *et al.* (See Owen, Thomas, assignor.) | | | | | | |
| Maslen, James, New York, N. Y. Horseshoe | 529,910 | Nov. 27 | 2462 | 598 | 69 | 1148 |
| Mason & Co., J. W. (See Dawson, John, assignor.) | | | | | | |
| Mason, David, New York, N. Y. Electric-railway system | 530,192 | Dec. 4 | 202 | 50 | 69 | 1252 |
| Mason, David, Schenectady, N. Y. Conduit electric railway | 530,543 | Dec. 11 | 842 | {207 208 | 69 | 1385 |
| Mason Machine Works. (See Ments, John T., assignor.) | | | | | | |
| Mason, Orville L., and R. C. Cole, Cleveland, Ohio. Garment-hook | 531,442 | Dec. 25 | 2492 | 576 | 69 | 1705 |
| Mason, Thomas B., Trenton, N. J. Radiator-truck | 530,437 | Dec. 4 | 624 | 155 | 69 | 1329 |
| Massachusetts Mohair Plush Company *et al.* (See Wyman and Poole, assignors.) | | | | | | |
| Massalski, Amandus, Chicago, Ill. Window | 528,333 | Oct. 30 | 2804 | 678 | 69 | 576 |
| Massey, Albert P., Watertown, N. Y. Drain-cup and strainer for air-pipes | 530,702 | Dec. 11 | 1116 | 271 | 69 | 1433 |
| Massey-Harris Company. (See Johnston and Gray, assignors.) | | | | | | |
| Matheny, Cicero D., Seattle, Wash. Automatic dump for unloading cars | 527,868 | Oct. 23 | 1973 | 474 | 69 | 409 |
| Mather, Alonzo C., Chicago, Ill. Railway-track | 530,113 | Dec. 4 | 66 | 19 | 69 | 1227 |
| Mather, Alonzo C., Chicago, Ill. Pneumatic spring | 530,990 | Dec. 18 | 1605 | 381 | 69 | 1537 |
| Mathers, Chester E., York Station, Ala. Rope-measuring machine | 529,285 | Nov. 13 | 1362 | {326 327 | 69 | 913 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Mathers, Ezra A., Romeoville, Ill. Underground conduit for electric roads | 528,963 | Nov. 13 | 816 | 190, 191 | 69 | 815 |
| Mathers, James W. (See Fowler, George, assignor.) | | | | | | |
| Matheson & Co., William J. (See Austen, Peter T., assignor.) | | | | | | |
| Mathews, Henry R., Trenton, N. J., assignor of one-half to H. J. Bailey, Greeneville, R. I. Picker-check for looms | 530,438 | Dec. 4 | 625 | 156 | 69 | 1330 |
| Mathews, John S., and A. T. Doyle, Pendleton, assignors of one-fourth to J. F. Killgore, Weston, Oreg. Rotary flanger and track-clearer | 527,756 | Oct. 16 | 1775 | 427 | 69 | 357 |
| Mathews, William E. (See Dean and Mathews.) | | | | | | |
| Mathewson, Jeremiah E., Sheffield, England. Sand-blast apparatus | 531,379 | Dec. 25 | 2301 | 549 | 69 | 1681 |
| Matthews, Ambrose T., assignor to Matthews Manufacturing Company, Worcester, Mass. Sheet-metal knob | 527,448 | Oct. 16 | 1252 | 308 | 69 | 260 |
| Matthews, Charles, Columbia, Mo. Draft attachment | 529,800 | Nov. 27 | 2262 | 540 | 69 | 1106 |
| Matthews, Joseph, New Bedford, Mass. Packing-displacer | 531,546 | Dec. 25 | 2592 | 624 | 69 | 1737 |
| Matthews Manufacturing Company. (See Matthews, Ambrose T., assignor.) | | | | | | |
| Matthias, William C., and W. Hartman, Reading, Pa. Electric igniting apparatus for fire-engines | 526,723 | Oct. 2 | 89 | 22 | 69 | 19 |
| Matthiessen, Franz O. (See Arkell and Blowers, assignors.) | | | | | | |
| Matthiessen, Franz O., Irvington, and B. Arkell, Canajoharie, N. Y. Bag for containing granular material | 527,558 | Oct. 16 | 1449 | 353 | 69 | 298 |
| Mattison, James D., Saginaw, Mich. Roller-bearing axle-box | 527,121 | Oct. 9 | 727 | 178, 179 | 69 | 150 |
| Mattison, James D., Saginaw, Mich. Antifriction roller-bearing | 530,544 | Dec. 11 | 844 | 208 | 69 | 1385 |
| Mattocks, Frederick W. (See Ciancimino and Mattocks.) | | | | | | |
| Matz, Adam, Cincinnati, Ohio. Switch-actuating mechanism | 528,005 | Oct. 23 | 2240 | 541 | 69 | 458 |
| Maul, Chris, assignor to D. S. Morgan & Company, Brockport, N. Y. Cultivator-tooth | 528,603 | Nov. 6 | 140 | 35 | 69 | 672 |
| Maul, Chris, assignor to D. S. Morgan & Company, Brockport, N. Y. Cultivator-tooth | 528,604 | Nov. 6 | 141 | 35 | 69 | 672 |
| Maul, Chris, assignor to D. S. Morgan & Company, Brockport, N. Y. Cultivator | 529,457 | Nov. 20 | 1697 | 405, 406 | 69 | 995 |
| Maumburg, Aaron. (See Wessel and Egger, assignors.) | | | | | | |
| Maurer, Joseph M., Washington, Pa. Obstetrical stirrup | 529,626 | Nov. 20 | 1974 | 474 | 69 | 1046 |
| Mauser, Paul, Oberndorf, Germany. Magazine for breech-loading firearms | 527,869 | Oct. 23 | 1974 | 474, 475 | 69 | 410 |
| Maxim, Hudson. (See Schipphaus, Robert C., assignor.) | | | | | | |
| Maxim, Hudson, New York, N. Y. Fulminating compound | 529,334 | Nov. 13 | 1447 | ..... | 69 | 930 |
| Maxon, Daniel M., assignor of one-half to W. H. Whittemore, Bay City, Mich. Vessel steering-gear | 526,930 | Oct. 2 | 441 | 109 | 69 | 83 |
| May, Benjamin W., assignor of one-half to C. Bonner, Chicago, Ill. Furnace for brick-kilns | 529,931 | Nov. 27 | 2463 | 599 | 69 | 1148 |
| May, Bernard H., and J. H. Morrissey, Chicago, Ill. Automatic advertising device | 528,334 | Oct. 30 | 2806 | 678 | 69 | 576 |
| May, Harrison D., Larchwood, Iowa. Band-cutter and feeder | 529,397 | Nov. 20 | 1560 | 376 | 69 | 974 |
| May, Simon, and L. M. Aron, Brooklyn, assignors to I. H. Hamburger, New York, N. Y. Souvenir medallion. (Reissue) | 11,455 | Nov. 27 | 2773 | 665 | 69 | 1204 |
| Maybeck, William, Somerville, Mass. Carving-machine | 527,152 | Oct. 9 | 778 | 190 | 69 | 159 |
| Maybrick, Thomas, and W. J. Ashworth, Manchester, England. Safety-brake for elevators | 526,931 | Oct. 2 | 443 | 109 | 69 | 83 |
| Mayer, Carl J., Lynn, Mass. Fleshing machine | 526,724 | Oct. 2 | 90 | 22, 23 | 69 | 19 |
| Mayer, Max, New York, N. Y., assignor to Auerbach-Woolverton Electric Company, of New Jersey. Electric-arc lamp | 527,211 | Oct. 9 | 868 | 211 | 69 | 177 |
| Mayer, Reinhold, Bridgeport, Conn. Chopping knife | 527,092 | Oct. 2 | 541 | 133 | 69 | 102 |
| Mayer, Sigmund. (See Altland and Mayer.) | | | | | | |
| Mayland, Rowland H., Freeport, N. Y. Musical instrument | 531,323 | Dec. 25 | 2202 | 527 | 69 | 1662 |
| McAden, G. M. (See Lytton, Osborne T., assignor.) | | | | | | |
| McAllister, Firm of T. H. (See Prowse, George R., assignor.) | | | | | | |
| McCabe, Bernard, and A. Thayer, Boston, Mass. Molding vegetable fibrous material | 530,978 | Dec. 18 | 1533 | ..... | 69 | 1525 |
| McCabe, James W., New York, N. Y. Machine for mounting photographic prints | 529,183 | Nov. 13 | 1188 | 285, 286 | 69 | 881 |
| McCallister, John P., Avoca, Wis. Grain heater or steamer | 527,442 | Oct. 16 | 1256 | 309 | 69 | 261 |
| McCarthy, Jeremiah J. and J. J., Philadelphia, Pa. Pipe-cutter | 531,549 | Dec. 25 | 2596 | 621 | 69 | 1737 |
| McCarthy, John, Newark, N. J. Fender for cars | 529,041 | Nov. 13 | 939 | 232 | 69 | 837 |
| McCarthy, John J. (See McCarthy, Jeremiah J. and J. J.) | | | | | | |
| McCarthy, Louis, Boston, Mass. Insulator | 530,706 | Dec. 11 | 1121 | 272 | 69 | 1433 |
| McCarthy, Louis, Boston, Mass. Insulator | 531,424 | Dec. 25 | 2373 | 568 | 69 | 1695 |
| McCarthy, Micheal, St. Louis, Mo. Smokeless boiler-furnace | 527,532 | Oct. 16 | 1412 | 343, 344 | 69 | 291 |
| McCarty, Eugene J. (See McGee and McCarty.) | | | | | | |
| McCarty, Harry C., Williamsport, Pa. Sealing cap for air-brake couplings | 529,290 | Nov. 13 | 1372 | 330 | 69 | 915 |
| McCarty, Richard J., Kansas City, Mo. Steam-elevator | 528,966 | Nov. 13 | 821 | 192, 193, 194 | 69 | 816 |
| McCaskey, John L., Waynesborough, Pa., assignor to F. Frick. Electric program-clock | 531,002 | Dec. 18 | 1610 | 382, 383 | 69 | 1538 |
| McCaslin, Eugene P., Tullahoma, Tenn. Fire-alarm | 530,790 | Dec. 11 | 1259 | 304 | 69 | 1460 |
| McCawley, Martin, *et al.* (See Kingsley, Alba T., assignor.) | | | | | | |
| McCawley, Martin, and A. T. Kingsley, Millport, assignors of one-third to J. B. Stanchfield, Elmira, N. Y. Door-hanger track-rail, track-rail joint, and track-rail bracket | 530,052 | Nov. 27 | 2733 | 655 | 69 | 1197 |
| McCay, Jasper N. (See McCay, Marion and J. N.) | | | | | | |
| McCay, Marion and J. N., Phœnix, Ariz. Ter. Irrigating-pump | 527,707 | Oct. 16 | 1691 | 407 | 69 | 342 |
| McChesney, Martin H., and J. G. Kunze, assignors to G. P. Bent, Chicago, Ill. Piano | 527,533 | Oct. 16 | 1414 | 344 | 69 | 291 |
| McClaren, William B. (See Foster, Stephen A., assignor.) | | | | | | |
| McClary, Frederick C., Hartford, Conn. Reversing tap-holder | 531,382 | Dec. 25 | 2307 | 551 | 69 | 1682 |
| McClave, William, Scranton, Pa. Grate for boiler or other furnaces | 529,291 | Nov. 13 | 1373 | 330, 331 | 69 | 915 |
| McClave, William, Scranton, Pa. Boiler-furnace | 529,292 | Nov. 13 | 1377 | 341, 342 | 69 | 915 |
| McClellan, Edward J., New York, N. Y. Milling-machine | 527,213 | Oct. 9 | 870 | 211 | 69 | 177 |
| McClelland, Byron. (See Schneider and Bromley, assignors.) | | | | | | |
| McClelland, David H., Washington, D. C. Oil-purifier | 530,897 | Dec. 11 | 1424 | 338 | 69 | 1490 |
| McClelland, Robert E., Williamsville, Ill. Powder-divider | 526,728 | Oct. 2 | 96 | 24 | 69 | 20 |
| McCloud, C. S. (See Walker and Moon, assignors.) | | | | | | |
| McCloud, Smith N., *et al.* (See Newhouse, John E., assignor.) | | | | | | |
| McCollough, John, Crawfordsville, Ind. Straw-stacker | 529,400 | Nov. 20 | 1584 | 377 | 69 | 974 |
| McCollum, James C., assignor of two-thirds to A. H. Judson, Los Angeles, Cal., and C. K. Judson, Chicago, Ill. Pencil-sharpener | 527,803 | Oct. 23 | 1855 | 446 | 69 | 390 |



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|---|---|---|---|---|---|---|
| McConnell, James R., Chicago, Ill. Feather-dressing machine | 527,619 | Oct. 16 | 1347 | 375 | 69 | 315 |
| McConnell, John R., *et al.* (See Eustin, Robert, assignor.) | | | | | | |
| McCoole, Gabriel W., St. Louis, Mo. Clothes-pin | 527,500 | Oct. 16 | 1353 | 330 | 69 | 284 |
| McCorkindale, Duncan L., Childs, Md. Journal-head for rolls | 527,708 | Oct. 16 | 1693 | 408 | 69 | 342 |
| McCormick, John T., San Francisco, Cal. Union of transverse metal bars | 528,677 | Nov. 6 | 285 | 69 | 69 | 607 |
| McCoubray, Thomas, New York, N. Y. Telephone-transmitter | 527,214 | Oct. 9 | 871 | 212 | 69 | 178 |
| McCoy, William A., Beman, Kans. Device for adjustably attaching weed cutters to cultivator-standards | 531,054 | Dec. 18 | 1703 | 404 | 69 | 1556 |
| McCoy, William H., Miller's Falls, Mass., and H. L. Pratt, Brooklyn, N. Y., assignors to Miller's Falls Company, Miller's Falls, Mass. Spiral screw-driver and drill | 529,401 | Nov. 20 | 1586 | 377 | 69 | 975 |
| McCreary, William A., and J. Taylor, Franklin, Ky. Shoe-cleaner | 530,707 | Dec. 11 | 1122 | 273 | 69 | 1434 |
| McCuistion, Andrew J. (See Roark, Calvin M., assignor.) | | | | | | |
| McCulley, Phillip V., *et al.* (See Wood, Gilan T., assignor.) | | | | | | |
| McDaniel, John C. (See Davis and McDaniel.) | | | | | | |
| McDermott, Charles, assignor to Steward & McDermott, New York, N. Y. Pile-driving apparatus | 529,293 | Nov. 13 | 1380 | 342 | 69 | 916 |
| McDermott, George, assignor of one-half to J. Malley, Philadelphia, Pa. Fastener for milk-cans | 527,217 | Oct. 9 | 934 | 226 | 69 | 189 |
| McDermut, Whitney B., Omaha, Nebr. Tag-holder | 529,573 | Nov. 27 | 2390 | 572 | 69 | 1132 |
| McDonald, Angus, assignor of two-thirds to H. Leitch, Quincy, Ill. Draft-equalizer | 529,294 | Nov. 13 | 1381 | 332 | 69 | 916 |
| McDonald, Donald, Louisville, Ky., assignor, by mesne assignments, to National Heat and Power Construction Company, of Pennsylvania. Floor | 530,959 | Dec. 18 | 1704 | 393 | 69 | 1525 |
| McDonald, Peter. (See Empson and McDonald.) | | | | | | |
| McDonel, Daniel A., assignor to Peninsular Broom Company, Detroit, Mich. Manufacturing brooms | 531,055 | Dec. 18 | 1704 | 405 | 69 | 1556 |
| McDonel, Daniel A., assignor to Peninsular Broom Company, Detroit, Mich. Broom | 531,056 | Dec. 18 | 1705 | 405 | 69 | 1556 |
| McDonnell, Michael, New Bedford, Mass. Electric alarm-clock | 528,678 | Nov. 6 | 285 | 69 | 69 | 607 |
| McDonogh, James, San Francisco, Cal. Car-coupling | 530,708 | Dec. 11 | 1123 | 273 | 69 | 1434 |
| McDougall, Alexander, Duluth, Minn. Apparatus for removing ashes from fire-holds of vessels | 530,850 | Dec. 11 | 1351 | 323 | 69 | 1476 |
| McDougall, Alexander, Duluth, Minn. Apparatus for removing ashes from fire-holds of vessels | 530,851 | Dec. 11 | 1353 | 323 | 69 | 1476 |
| McDougall, Alexander, Duluth, Minn., assignor to American Steel Barge Company, New York, N. Y., and West Superior, Wis. Steam freight and passenger vessel | 529,295 | Nov. 13 | 1382 | 332 | 69 | 916 |
| McDougall, Hugh, Brooklyn, N. Y. Device for securing eyeglasses | 529,402 | Nov. 20 | 1587 | 377 | 69 | 975 |
| McDougall, William C., Cheboygan, Mich. Necktie-fastener | 529,934 | Nov. 27 | 2456 | 599 | 69 | 1149 |
| McDowell, Robert G., Ishpeming, Mich. Tripod-leg | 530,443 | Dec. 4 | 641 | 157 | 69 | 1331 |
| McElfresh, Francis E., New Cumberland, assignor to Standish Clay Manufacturing Company, New Cumberland and Pittsburg, Pa. Truck for handling sewer pipe | 528,011 | Oct. 23 | 2248 | 544 | 69 | 460 |
| McEnally, Joseph B., Clearfield, Pa. Paper-file | 529,296 | Nov. 13 | 1384 | 333 | 69 | 917 |
| McEwen, James H. (See Begtrup, Julius, assignor.) | | | | | | |
| McFadyen, Agnes, Lincoln, Nebr. Heating and ventilating apparatus for buildings | 527,804 | Oct. 23 | 1857 | 446 | 69 | 390 |
| McFarland, James M., Colton, Cal. Ore-stamp-mill | 527,620 | Oct. 16 | 1549 | 375 | 69 | 315 |
| McGahey, Calvert R., Elkton, Va. Centrifugal speed-governor | 527,443 | Oct. 16 | 1257 | 309 | 69 | 261 |
| McGahey, Calvert R., Elkton, Va. Corner-brace | 528,679 | Nov. 6 | 286 | 69 | 69 | 608 |
| McGee, Edwin M., Carleton, Nebr. Pump | 528,575 | Oct. 30 | 2580 | 608 | 69 | 589 |
| McGee, Thomas F., and E. J. McCarty, Clinton, Mass. Clutch-coupling | 528,012 | Oct. 23 | 2250 | 544 | 69 | 460 |
| McGee, Van N., and M. W. Mansfield, Indianapolis, Ind. Crossing-frog for railway tracks | 528,586 | Nov. 6 | 408 | 115 | 69 | 731 |
| McGhee, Charles. (See McGhee, James and C.) | | | | | | |
| McGhee, James and C., Sandy Valley, assignors of one-third to D. Flenning Delancey Pa. Switch-working mechanism | 531,270 | Dec. 18 | 2101 | 504 | 69 | 1626 |
| McGill, Archibald D., Courtland, Miss. Draining device | 528,888 | Nov. 6 | 666 | 160 | 69 | 768 |
| McGrady, John H. (See Swift, William H., assignor.) | | | | | | |
| McGrath, William A., *et al.* (See Heaton, John S., assignor.) | | | | | | |
| McGriff, John N., Anderson, Ind. Suspender-buckle | 530,960 | Dec. 18 | 1535 | 363 | 69 | 1525 |
| McGuire, William A., and M. G. Hubbard, Jr., Chicago, Ill. Railway-truck | 531,208 | Dec. 18 | 1989 | 472, 473 | 69 | 1607 |
| McHargue, Lee. (See Gilpin and McHargue.) | | | | | | |
| McHenry, David E., Grenada, Miss. Panel-chair | 527,709 | Oct. 16 | 1694 | 408 | 69 | 342 |
| McIntosh, William, Winona, Minn. Blow-off cock | 529,133 | Nov. 13 | 1093 | 264 | 69 | 865 |
| McIntyre, James and J. G., Detroit, Mich. Scaffold and scaffold-clamp | 529,745 | Nov. 27 | 2174 | 518 | 69 | 1090 |
| McIntyre, John G. (See McIntyre, James and J. G.) | | | | | | |
| McKay, John E., New York, N. Y. Crematory for burning garbage and other refuse | 530,623 | Dec. 11 | 977 | 240 | 69 | 1469 |
| McKay, Neil, Paterson, N. J., assignor to C. H. Otis, Brooklyn, N. Y. Centrifugal snow-wheel | 529,042 | Nov. 13 | 941 | 222, 223 | 69 | 837 |
| McKee, Russell W., Clifton, N. J. Car-brake | 531,550 | Dec. 25 | 2597 | 622 | 69 | 1738 |
| McKellar, Peter, Fort William, Canada. Machine for pulverizing rock | 526,788 | Oct. 2 | 139 | 47 | 69 | 38 |
| McKelvey, Stewart D., Canton, Ohio. Apparatus for collecting, concentrating, and distributing sounds | 531,554 | Dec. 25 | 2607 | 624 | 69 | 1740 |
| McKelvey, William J. (See Raphael, Robert, assignor.) | | | | | | |
| McKenzie, Andrew, Providence, R. I. Tuning-key for musical instruments | 528,013 | Oct. 23 | 2251 | 543 | 69 | 460 |
| McKenzie, George A., assignor to J. B. Kanouse, West Bay City, Mich. Stop-hinge | 528,258 | Oct. 30 | 2680 | 646 | 69 | 555 |
| McKenzie, Peter, Ottawa, Canada. Frame or casing for window-sashes or blinds | 528,733 | Nov. 6 | 361 | 89 | 69 | 712 |
| McKenzie, William M., New York, N. Y. Fish-trap | 530,444 | Dec. 4 | 632 | 157, 158 | 69 | 1331 |
| McKenzie, William V., Rahway, N. J. Can-holder | 528,259 | Oct. 30 | 2681 | 646 | 69 | 555 |
| McKinney, Henry E., Liberty Centre, Iowa. Folding egg-case | 529,403 | Nov. 20 | 1588 | 378 | 69 | 975 |
| McKinnon, Martin, Maxton, N. C. Antirattler for thill-couplings | 528,338 | Oct. 30 | 2814 | 680 | 69 | 577 |
| McKinnon, Neil, Newport, R. I. Blind-hinge | 530,709 | Dec. 11 | 1124 | 273 | 69 | 1434 |
| McKnight, Thomas R., assignor to Western Wheeled Scraper Company, Aurora, Ill. Wheeled scraper | 529,564 | Nov. 20 | 1885 | 448, 449 | 69 | 1092 |
| McLaughlin, E. J., *et al.* (See Smith, Orison M., assignor.) | | | | | | |
| McLaughlin, James F., Philadelphia, Pa. Multiple safety cut-out | 527,501 | Oct. 16 | 1354 | 331 | 69 | 284 |
| McLaughlin, James F., Philadelphia, Pa. Closed-conduit electric railway | 527,573 | Oct. 23 | 1980 | 476 | 69 | 411 |
| McLaughlin, James F., Philadelphia, Pa. Closed-conduit electric railway | 527,574 | Oct. 23 | 1983 | 477 | 69 | 411 |
| McLaughlin, James F., Philadelphia, Pa. Closed-conduit electric railway | 528,379 | Oct. 30 | 2881 | 693 | 69 | 590 |
| McLaughlin, James F., assignor to J. W. Difenderfer, Philadelphia, and T. H. Gehly, York, Pa. Electric switch | 528,014 | Oct. 23 | 2252 | 544 | 69 | 461 |
| McLauthlin, George T. (See Naylor, James, Jr., assignor.) | | | | | | |
| McLean, H. A. (See Joslin, William H., assignor.) | | | | | | |
| McLean, Peter H., Jamestown, N. D. Combined thill-support and antirattler | 527,710 | Oct. 16 | 1695 | 408 | 69 | 343 |
| McLellan, John T., Bozeman, Mont. Automatic exhaust-nozzle | 528,549 | Nov. 6 | 44 | 12 | 69 | 654 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Design. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| McLellan, William C. (See Hackworth and McLellan.) | | | | | | |
| McLeod, Joseph N., Brooklyn, N. Y. Magneto-electric machine | 530,235 | Dec. 4 | 285 | 70 | 69 | 1267 |
| McLeod, Rod. (See Kendt, William F., assignor.) | | | | | | |
| McLewee, Anna M. (See Milliken, John A., assignor.) | | | | | | |
| McMahon, William, Rahway, N. J. Dumping-car | 530,198 | Dec. 4 | 213 | 53 | 69 | 1254 |
| McMahon, William, Rahway, N. J. Dumping-car | 530,199 | Dec. 4 | 215 | 54 | 69 | 1254 |
| McMasters, David C. (See Wallace, William, assignor.) | | | | | | |
| McMullen, Hugh A. (See Turner and McMullen.) | | | | | | |
| McMullen, Peter, assignor of one-half to M. Callahan, Buffalo, N. Y. Car-brake | 528,302 | Oct. 30 | 2755 | 665, 666 | 69 | 567 |
| McMurrin, Joseph, Shoshone, Idaho. Water-elevator | 528,015 | Oct. 23 | 2255 | 544 | 69 | 461 |
| McMurrin, Joseph, Shoshone, Idaho. Track-jack | 529,935 | Nov. 27 | 2487 | 630 | 69 | 1149 |
| McMurtry George G., Allegheny, Pa., assignor to Apollo Iron and Steel Company, Pittsburg, Pa. Galvanizing apparatus | 530,491 | Dec. 4 | 737 | 180 | 69 | 1349 |
| McNab, Robert, Paterson, N. J. Shutter-fastener | 526,729 | Oct. 2 | 97 | 24 | 69 | 21 |
| McNalley, Micheal, St. Louis, Mo. Ecraseur | 529,936 | Nov. 27 | 2489 | 600 | 69 | 1149 |
| McNally, Frank C., Kansas City, Mo. Smoke-consuming locomotive | 531,555 | Dec. 25 | 2609 | 624 | 69 | 1740 |
| McNamire, Millard F., Bolivar, N. Y. Potato-digger | 526,868 | Oct. 2 | 332 | 81 | 69 | 64 |
| McNaughton, Eliza E., Phœnix, N. Y. Game-table for soap bubbles | 529,043 | Nov. 13 | 944 | 223 | 69 | 858 |
| McNutt, John C., *et al.* (See Dobbins, Douglas, assignor.) | | | | | | |
| McPherson, Horace, Crete, Ill. Corn-shock loader | 528,734 | Nov. 6 | 365 | 89 | 69 | 713 |
| McRae, Alexander K., assignor to F. N. O. McRae, Chicago, Ill. Freight-barge | 527,215 | Oct. 9 | 872 | 212, 213 | 69 | 178 |
| McRae, Austin L. (See Gilstrap, James W. and W. D., assignors.) | | | | | | |
| McRae, Florence N. O. (See McRae, Alexander K., assignor.) | | | | | | |
| McWhorter, Eli T., Forest, Miss. Stoker for engine-furnaces | 530,117 | Dec. 4 | 72 | 20 | 69 | 1228 |
| McWilliams, Robert, West Newton, Pa. Dust-collector | 527,341 | Oct. 9 | 1057 | 263 | 69 | 216 |
| Meach, Joseph R. (See Fairbank and Meach.) | | | | | | |
| Mead, Charles R., Oneida, N. Y. Animal-trap | 529,129 | Nov. 13 | 1087 | 262 | 69 | 864 |
| Mead, Frank S., Montreal, Canada. Gas-engine | 528,006 | Oct. 23 | 2241 | 541 | 69 | 458 |
| Mead, George L., *et al.* (See Norwood, George, assignor.) | | | | | | |
| Mead, Theodore H., *et al.* (See Crowell, Luther C., assignor.) | | | | | | |
| Mead, Theodore H., *et al.* (See Roosen, Oscar, assignor.) | | | | | | |
| Mead, Willis S. (See Sumner, Lewis P., assignor.) | | | | | | |
| Means David L., Arkansas City, Kans. Manufacturing roofing-paints | 527,068 | Oct. 9 | 643 | ..... | 69 | 145 |
| Meany, James A., Camden, and C. H. Schnitzler, Orston, N. J. Flame | 530,795 | Dec. 11 | 1254 | 303 | 69 | 1459 |
| Measures Thomas, *et al.* (See Fairbank and Meach, assignors.) | | | | | | |
| Measures, William H., Stoneham, Mass. Toe-weight | 530,545 | Dec. 11 | 846 | 208 | 69 | 1396 |
| Meats, John T., assignor to Mason Machine Works, Taunton, Mass. Carding-machine | 528,007 | Oct. 23 | 2241 | 542 | 69 | 459 |
| Mechanical Amusement Company. (See Wilson, Stephen, assignor.) | | | | | | |
| Meek Elias, Freeport, Canada. Milk-cooling house | 527,700 | Oct. 16 | 1685 | 405 | 69 | 341 |
| Medrick, Henry D. assignor of one-half to J. K. Medrick, Port Jervis, N. Y. Toy pistol | 527,701 | Oct. 16 | 1686 | 406 | 69 | 341 |
| Medrick, John K. (See Medrick, Henry D., assignor.) | | | | | | |
| Meier Caspar, San Francisco Cal. Dredging implement | 528,375 | Oct. 30 | 2455 | 597 | 69 | 589 |
| Meier, Edward D. St. Louis, Mo. Steam boiler furnace and boiler | 529,741 | Nov. 27 | 2468 | 517 | 69 | 1089 |
| Meier Emil, New York, N. Y. Brake-attachment for ink-rollers | 529,932 | Nov. 27 | 2484 | 599 | 69 | 1148 |
| Messmer Julius H. Pittsburg Pa. Furnace-grate | 529,286 | Nov. 13 | 1363 | 327 | 69 | 913 |
| Mellen, John, Newport Ky. and N. O. Goldsmith, assignors to F. C. Weir, Cincinnati, Ohio. Reversing mechanism for electric motors | 528,440 | Oct. 30 | 2487 | 702 | 69 | 608 |
| Mellor of Mark Benjamin, Ellicott City, Md. Pump-motor | 530,848 | Dec. 11 | 1345 | 322 | 69 | 1475 |
| Mendenhall, Frank and T. F., Moorepark, Mich. Vehicle-wheel | 528,376 | Oct. 30 | 2476 | 697 | 69 | 589 |
| Mendenhall, Thomas F. (See Mendenhall, Frank and T. F.) | | | | | | |
| Mergenthaler Linotype Company. (See Dodge, Philip T., assignor.) | | | | | | |
| Mergenthaler Linotype Company. (See Mergenthaler, Ottmar, assignor.) | | | | | | |
| Mergenthaler Ottmar Baltimore, Md., assignor to Mergenthaler Linotype Company, of New Jersey. Linotype-machine | 527,702 | Oct. 16 | 1688 | 406 | 69 | 341 |
| Mergenthaler, Ottmar, Baltimore, Md., assignor to Mergenthaler Linotype Company, New York, N. Y. Composing mechanism for linotype machines | 531,266 | Dec. 18 | 2091 | 501, 502 | 69 | 1625 |
| Meriwether, Charles N., Clarksville, Tenn. Nut-lock | 529,742 | Nov. 27 | 2171 | 517 | 69 | 1090 |
| Merley, Nicholas Canton, Ohio Brick kiln | 527,703 | Oct. 16 | 1689 | 406 | 69 | 341 |
| Merrell, Daniel B., Canandaigua, N. Y. Manure-spreader | 531,206 | Dec. 18 | 1985 | 471, 472 | 69 | 1666 |
| Merrill, Frederick P., Hornellsville N. Y. Glove | 527,704 | Oct. 16 | 1690 | 407 | 69 | 342 |
| Merrill, Robert T. (See Franz and Merrill.) | | | | | | |
| Merserean, William T., South Orange, N. J. Support for canopy-rods in metallic cribs or bedsteads | 530,953 | Dec. 18 | 1523 | 361 | 69 | 1523 |
| Mershon, Ralph D., Pittsburg, Pa. Audible synchronism-indicator | 529,398 | Nov. 20 | 1581 | 376 | 69 | 974 |
| Mershon, Ralph D. Pittsburg, Pa. Audible synchronism-indicator | 529,399 | Nov. 20 | 1583 | 377 | 69 | 974 |
| Mershon, William R., assignor of one half to S. Smith, Newark, N. J. Draw-bridge-joint and operating mechanism | 530,294 | Dec. 4 | 280 | 69, 70 | 69 | 1266 |
| Meslein, Peter J., Chicago, Ill. Clothes-drier | 527,870 | Oct. 23 | 1956 | 475 | 69 | 410 |
| Meston, Alexander W., assignor to Emerson Electric Manufacturing Company, St. Louis, Mo. Alternating current transformer | 530,597 | Dec. 11 | 945 | 229, 230 | 69 | 1402 |
| Metal, Max H., New York, N. Y. Coin-registering purse | 528,910 | Nov. 6 | 722 | 170 | 69 | 778 |
| Metcalf, Alexander R., *et al.* (See Conrad William H., assignor.) | | | | | | |
| Metcalf, John A., assignor of one-half to H. A. Perry, Chicago, Ill. Street letter-box | 527,614 | Oct. 16 | 1540 | 374 | 69 | 314 |
| Meteor Despatch Company. (See Ames, Oakes, assignor.) | | | | | | |
| Meteor Despatch Company. (See Pearsall, Albert W., assignor.) | | | | | | |
| Metzger, Amandus, Schenectady, N. Y., assignor to General Electric Company, of New York. Electric snap-switch | 526,735 | Oct. 2 | 92 | 23 | 69 | 19 |
| Metzger, David, New York, N. Y. Brooch-pin | 529,743 | Nov. 27 | 2172 | 518 | 69 | 1090 |
| Metzger, Martin L., New York, N. Y. Teething-ring | 526,932 | Oct. 2 | 444 | 109 | 69 | 83 |
| Metzger, William H. (See Effinger and Metzger.) | | | | | | |
| Meuser, Alfonsus, Longwood, Fla. Pump attachment | 530,193 | Dec. 4 | 205 | 50, 51 | 69 | 1252 |
| Mewer, William J., *et al.* (See Duff, John W., assignor.) | | | | | | |
| Mewer, William J., assignor to J. W. Duff, W. J. C. Milliken, Old Orchard, and H. B. Bennett, Portland, Me. Adjusting device for drills, &c | 529,039 | Nov. 13 | 936 | 221 | 69 | 836 |
| Meyer, Albert W., Terre Haute, Ind. Register-gage for faucets | 529,040 | Nov. 13 | 938 | 222 | 69 | 837 |
| Meyer, Frederick F. and W. S., Newark, N. J. Trolley-wire finder | 530,954 | Dec. 18 | 1524 | 361 | 69 | 1523 |
| Meyer, William C. (See French and Meyer.) | | | | | | |
| Meyer, William S. (See Meyer, Frederick F. and W. S.) | | | | | | |
| Michaud, Jules, Paris, France. Rotary printing-machine | 528,233 | Oct. 30 | 2639 | 636 | 69 | 546 |
| Michaux, William W., Michaux, Va. Harrow | 526,933 | Oct. 2 | 445 | 110 | 69 | 83 |
| Michell, Henry C., Toronto, Canada. Non-conducting material and forming same | 527,439 | Oct. 16 | 1253 | 308 | 69 | 260 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Design. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Michigan Stove Company. (See Keep, William J., assignor.) | | | | | | |
| Middlekauff, Ellsworth D., and A. N. Aitken, San Francisco, Cal. Check-book | 526,787 | Oct. 2 | 198 | 46 | 69 | 38 |
| Miehle Printing Press and Manufacturing Company. (See Miehle, Robert, assignor.) | | | | | | |
| Miehle, Robert, Chicago, Ill., assignor, by mesne assignments, to Miehle Printing Press and Manufacturing Company, of Illinois. Inking apparatus for printing-presses | 527,391 | Oct. 9 | 1153 | 287 | 69 | 233 |
| Migliavacca, Henry B., assignor of one-tenth to S. Migliavacca, Napa, Cal. Gas-engine | 528,105 | Oct. 23 | 2409 | 583 | 69 | 489 |
| Migliavacca, Siro. (See Migliavacca, Henry B., assignor.) | | | | | | |
| Mignot, Charles F. (See Bergstresser, Stewart L., assignor.) | | | | | | |
| Millam, Gustave D., Rochester, N. Y. Folding camera | 530,955 | Dec. 18 | 1526 | 362 | 69 | 1523 |
| Miles, Casper W., Cincinnati, Ohio. Air or gas compressor | 531,552 | Dec. 25 | 2604 | 623 | 69 | 1739 |
| Millar, George G. J., Groveport, assignor of one-half to L. R. Young, Columbus, Ohio. Head-rest for bedsteads | 530,786 | Dec. 11 | 1255 | 303 | 69 | 1459 |
| Miller, Alexander, New York, N. Y., assignor to W. Brown, Jersey City, N. J., and A. Miller, New York, N. Y. Steam-engine | 531,267 | Dec. 18 | 2094 | 502, 503 | 69 | 1625 |
| Miller, David R., *et al.* (See Clay, William S., assignor.) | | | | | | |
| Miller, Fred. R., *et al.* (See Reiley, Matthew S., assignor.) | | | | | | |
| Miller, George W., Kalamazoo, Mich. Sugar-wagon box | 530,439 | Dec. 4 | 627 | 156 | 69 | 1330 |
| Miller, Herman, New York, N. Y. Soldering-machine | 531,419 | Dec. 25 | 2365 | 505, 506 | 69 | 1693 |
| Miller, James, assignor of one-half to C. Lord, Orlando, Fla. Axle for vehicles | 528,482 | Oct. 30 | 3065 | 743 | 69 | 623 |
| Miller, John, assignor of two-thirds to J. Huston and I. C. Moore, Newton, N. J. Grinding device for rotary cutters | 531,547 | Dec. 25 | 2594 | 621 | 69 | 1737 |
| Miller, John A., and J. H. Warmoth, Austin, Tex. Harness-saddle | 529,287 | Nov. 13 | 1366 | 327 | 69 | 913 |
| Miller, John C. (See Hill, Willord A., assignor.) | | | | | | |
| Miller, John H., assignor to United States Wind Engine and Pump Company, Batavia, Ill. Windmill-brake | 531,420 | Dec. 25 | 2368 | 506 | 69 | 1694 |
| Miller, John S., Brooklyn, assignor to D. B. Fraser, New York, N. Y. Machine for cleaning and separating coffee | 530,548 | Dec. 11 | 846 | 209, 210 | 69 | 1396 |
| Miller, Lewis. (See Ellinwood, Augustus E., assignor.) | | | | | | |
| Miller, Lewis, Akron, Ohio. Grain-binding harvester | 530,194 | Dec. 4 | 205 | 51, 52 | 69 | 1252 |
| Miller, Lewis C., St. Louis Mo. Sash-fastener | 531,443 | Dec. 25 | 2423 | 577 | 69 | 1705 |
| Miller, Morgan B., Pittsburg, Pa., assignor to American Washboard Company, Cleveland, Ohio. Washboard | 530,499 | Dec. 4 | 736 | 179, 180 | 69 | 1349 |
| Miller, Napoleon B., assignor of one half to F. Mohle, Omaha, Nebr. Street sweeper | 527,757 | Oct. 16 | 1777 | 428 | 69 | 395 |
| Miller, Nathan F., *et al.* (See Bakewessell, Reinhold, assignor.) | | | | | | |
| Miller, Nathan F., *et al.* (See Henn, Edwin C., assignor.) | | | | | | |
| Miller, Oscar W. (See Liberty, Jerry C., assignor.) | | | | | | |
| Miller, Samuel S. (See Rickard and Miller.) | | | | | | |
| Miller, William P., assignor to William P. Miller Company, Brooklyn, N. Y. Lubricator | 530,129 | Dec. 18 | 1487 | 336 | 69 | 1580 |
| Miller, Zeno H., Sherwood, Ohio. Planter | 529,660 | Nov. 20 | 2032 | 487 | 69 | 1055 |
| Miller's Falls Company. (See McCoy and Pratt, assignors.) | | | | | | |
| Milliken, John A., Brooklyn, assignor to A. M. McLewee, New York, N. Y. Water-gage | 528,560 | Nov. 20 | 1878 | 447 | 69 | 1027 |
| Milliken, William J. C., *et al.* (See Mewer, William J., assignor.) | | | | | | |
| Milloy, Peter D., Buffalo, N. Y. Trolley-catcher | 531,380 | Dec. 25 | 2304 | 550 | 69 | 1681 |
| Mills, Isaac, and J. Youngson, Hamilton, Canada. Automatic fire-escape | 527,180 | Oct. 9 | 849 | 199 | 69 | 167 |
| Mills, Jonathan, New York, assignor of two thirds to E. H. Converse, Brooklyn, and W. F. Steele, New York, N. Y. Air-induction apparatus for furnaces | 527,615 | Oct. 16 | 1542 | 374 | 69 | 314 |
| Mills, Morris, Lynn, assignor of one-half to W. Neilson, Malden, Mass. Car-coupling | 529,335 | Nov. 13 | 1448 | 349 | 69 | 931 |
| Mills, Sulloway. (See Lang and Daniell, assignors.) | | | | | | |
| Miner, Christopher C. (See Miner, John J., assignor.) | | | | | | |
| Miner, John C., Smyrna, assignor of one-half to H. Fox, Jr., Nelson, Nebr. Car-brake | 526,934 | Oct. 2 | 447 | 110 | 69 | 84 |
| Miner, John J., Fort Wayne, assignor of one-half to C. C. Miner, Columbia City, Ind. Water-heater, cleanser, and scale-preventer | 527,616 | Oct. 16 | 1544 | 374 | 69 | 314 |
| Minier, Maxwell, Elmira, N. Y. Step-ladder | 529,871 | Nov. 27 | 2385 | 571 | 69 | 1132 |
| Minister, Henry, Zaleski, Ohio. Cloth-measuring machine | 527,617 | Oct. 16 | 1545 | 374 | 69 | 315 |
| Minnesota Smokeless Furnace Company. (See Smith, Samuel N., assignor.) | | | | | | |
| Mishler, Milton B. (See Smith and Mishler.) | | | | | | |
| Mishler, Milton B., Ravenna, Ohio. Machine for making balls | 528,886 | Nov. 6 | 663 | 159 | 69 | 707 |
| Misner, Edgar D., Brantford, assignor of one-half to W. H. Hanes, Lynden, Canada. Wheel | 528,785 | Nov. 6 | 467 | 114 | 69 | 731 |
| Mitchell, Andrew W., Boston, Mass. Hand operating mechanism for electric locomotives | 530,956 | Dec. 18 | 1528 | 362 | 69 | 1524 |
| Mitchell, Andrew W., Boston, Mass. Brake and power controller for electric cars | 531,268 | Dec. 18 | 2096 | 503, 504 | 69 | 1626 |
| Mitchell, George H., New York, N. Y. Combined can-opener and vegetable-parer | 528,517 | Oct. 30 | 3118 | 756 | 69 | 632 |
| Mitchell, George M., *et al.* (See Kendt, William F., assignor.) | | | | | | |
| Mitchell, Henry J., Chicago, Ill. Door-locking burglar-alarm | 528,206 | Oct. 30 | 2591 | 626 | 69 | 536 |
| Mitchell, Robert C., New York, assignor of one-half to H. W. Vail, Brooklyn, N. Y. Rheostat and heater | 528,607 | Nov. 6 | 718 | 169 | 69 | 778 |
| Mitchell, Robert G., Huntington, Ind. Window-cleaner | 528,608 | Nov. 6 | 719 | 169 | 69 | 778 |
| Mittelsdorf, Henry, Orange, N. J. Controller-handle | 531,052 | Dec. 18 | 1701 | 404 | 69 | 1555 |
| Mize, George M., Batesville, Ark. Drag-saw guide | 528,064 | Nov. 13 | 849 | 191 | 69 | 816 |
| Mock, Charles F., Louisville, Ky. Flame | 531,324 | Dec. 25 | 2292 | 527 | 69 | 1662 |
| Moderegger, Carl, Vienna, Austria-Hungary, assignor to Siemens & Halske, Berlin, Germany. Method of and means for operating and controlling electromotors | 530,114 | Dec. 4 | 67 | 19 | 69 | 1227 |
| Moderegger, Karl, Vienna, Austria-Hungary, assignor to Siemens & Halske, Berlin, Germany. Electrical switch setting, indicating, and controlling device | 526,813 | Oct. 2 | 235 | 57 | 69 | 44 |
| Moderegger, Karl, Vienna, Austria-Hungary, assignor to Siemens & Halske, Berlin, Germany. Electrical switch setting and locking device | 531,130 | Dec. 18 | 1838 | 436, 437 | 69 | 1580 |
| Moehn, John N., assignor of one-half to J. Katz, A. Mahler, and G. De Grasse, Milwaukee, Wis. Check-book | 529,561 | Nov. 20 | 1880 | 447 | 69 | 1027 |
| Moffitt, William E., and J. L. Williams, Pilot Point, Tex. Cotton elevator and distributer | 528,177 | Oct. 30 | 2532 | 614 | 69 | 527 |
| Mohle, Frederick. (See Miller, Napoleon B., assignor.) | | | | | | |
| Mohn, John, Detroit, Mich. Bung bushing and tap | 530,703 | Dec. 11 | 1117 | 271 | 69 | 1433 |
| Mohr, Ulrick R., Rock Island, Ill., assignor of one-half to J. B. Morgan, Davenport, Iowa. Mixer | 530,051 | Nov. 27 | 2732 | 655 | 69 | 1197 |
| Mohs, Julius. (See Eschenbeck, Max, assignor.) | | | | | | |
| Moline Plow Company. (See Lindgren, August, assignor.) | | | | | | |
| Molloy, James F., New Haven, Conn. Buckle | 528,008 | Oct. 23 | 2245 | 542 | 69 | 459 |
| Momper, Peter M., and O. Sigwart, assignors to Seneca Glass Company, Fostoria, Ohio. Glass-mold | 527,801 | Oct. 23 | 1853 | 445 | 69 | 389 |
| Moncur, Ogilvie, Yuba, Cal. Carburetor | 528,377 | Oct. 30 | 2477 | 697 | 69 | 589 |
| Mond, Ludwig, Northwich, England. Obtaining chlorin | 529,130 | Nov. 13 | 1087 | 262 | 69 | 864 |
| Mongean, George E., Lowell, Mass. Shoe-lace holder | 528,300 | Oct. 30 | 2753 | 665 | 69 | 566 |
| Monks, Frank H., Brookline, and M. L. Severy, assignors to F. Doane, C. F. Crowell, and M. L. Severy, trustees, Boston, Mass. Apparatus for utilizing solar energy | 528,255 | Oct. 30 | 2676 | 645 | 69 | 554 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Monoline Composing Company. (See Skatulla, Collestin, assignor.) | | | | | | |
| Monroe, David M., assignor to R. T. Smith, Baltimore, Md. Device for applying solder-ing flux | 529,336 | Nov. 13 | 1449 | 349, 350 | 69 | 931 |
| Montaignac, Renaud de. (See Landry and Beyroux, assignors.) | | | | | | |
| Montgomery, Albert F., assignor to L. A. Lockwood, Lincoln, R. I. Coating electric con-ductors | 528,301 | Oct. 30 | 2754 | 665 | 69 | 567 |
| Montgomery, Harry C., Cleveland, Ohio. Sink-trap | 528,335 | Oct. 30 | 2807 | 678 | 69 | 576 |
| Montgomery, John M., Butte, Mont. Ore-concentrator | 531,381 | Dec. 25 | 2306 | 350 | 69 | 1682 |
| Montgomery, Mamie M., Gowensville, S. C. Churn | 528,149 | Oct. 23 | 2454 | 593, 594 | 69 | 497 |
| Montross, Levi H., assignor to Montross Manufacturing Company, Camden, N. J. Manu-facture of shingle siding and machinery therefor | 529,991 | Nov. 20 | 2073 | 487, 488 | 69 | 1056 |
| Montross Manufacturing Company. (See Montross, Levi H., assignor.) | | | | | | |
| Moody, James M. and S. B., assignors to A. M. Nickerson, Harwich, Mass. Cranberry-gatherer | 527,020 | Oct. 2 | 573 | 139 | 69 | 108 |
| Moody, Sidney B. (See Moody, James M. and S. B.) | | | | | | |
| Mooers, William H., and E. A. Richell, Buffalo, N. Y. Car-coupling | 526,840 | Oct. 2 | 279 | 67 | 69 | 53 |
| Mooney, Joseph G., and C. Whitehead, Erie, Pa. Mold for forming tire-casings | 530,195 | Dec. 4 | 909 | 52 | 69 | 1253 |
| Moon, Edward W. (See Fletcher, Wendell C., assignor.) | | | | | | |
| Moon, Robert G. (See Walker and Moon.) | | | | | | |
| Mooney, Lawrence F. (See Polis, Horace, assignor.) | | | | | | |
| Moore, Allen D., Montpelier, Vt. Governor | 530,704 | Dec. 11 | 1118 | 271, 272 | 69 | 1433 |
| Moore Carving Machine Company. (See Yarnell, Charles S., assignor.) | | | | | | |
| Moore, Charles R., Newport, Vt. Gage-cock | 531,593 | Dec. 25 | 2668 | 641 | 69 | 1752 |
| Moore, Chauncey G., assignor of one-half to T. F. Scullin, Indianapolis, Ind. Oil-burner | 528,336 | Oct. 30 | 2808 | 678, 679 | 69 | 576 |
| Moore, Gideon E., New York, N. Y. Manufacturing spiegeleisen | 529,458 | Nov. 20 | 1700 | ..... | 69 | 995 |
| Moore, Harrey, Wellingborough, England. Wheel for road vehicles | 529,077 | Nov. 13 | 1004 | 242, 243 | 69 | 848 |
| Moore, Harry V. (See Kahn and Moore.) | | | | | | |
| Moore, Ira C., *et al.* (See Miller, John, assignor.) | | | | | | |
| Moore, James S., Port Richmond, N. Y. Toy-balloon inflater | 529,337 | Nov. 13 | 1451 | 350 | 69 | 931 |
| Moore, John A., *et al.* (See Varney, Nathan E., assignor.) | | | | | | |
| Moore, John H., *et al.* (See Shydecker, Eugene, assignor.) | | | | | | |
| Moore, Lucius L., *et al.* (See Varney, Nathan E., assignor.) | | | | | | |
| Moore, Thomas B. (See Gallagher and Moore.) | | | | | | |
| Moore, Thomas C., Great Falls, Mont. Hair-curler | 530,787 | Dec. 11 | 1256 | 303 | 69 | 1459 |
| Moore, William H., Owen Sound, and J. Gardiner, Dundalk, Canada; said Moore assignor to said Gardiner. Fire-extinguisher | 530,430 | Dec. 4 | 628 | 156 | 69 | 1330 |
| Moore, William J., assignor of one-half to C. A. Houghton, Chicago, Ill. Detachable but-ton | 531,466 | Dec. 25 | 2462 | 586 | 69 | 1711 |
| Morden, Walter H., Toronto, Canada. File | 526,726 | Oct. 2 | 93 | 23 | 69 | 20 |
| Morehouse, Miles A., Weyertown, N. Y. Telephone-transmitter | 530,115 | Dec. 4 | 69 | 19 | 69 | 1228 |
| Moret, Jean M., Besançon, France. Gearing | 528,641 | Nov. 6 | 220 | 54, 55 | 69 | 686 |
| Morgan, Carlos. (See Clark and Morgan.) | | | | | | |
| Morgan, Clarence L. (See Grover and Northrop, assignors.) | | | | | | |
| Morgan, E. L., *et al.* (See Proctor, Charles B., assignor.) | | | | | | |
| Morgan, James B. (See Mohr, Ulrick R., assignor.) | | | | | | |
| Morganfield, August, Ogden, Kans. Clevis | 528,009 | Oct. 23 | 2247 | 512 | 69 | 459 |
| Morgeneier, Robert, assignor to American Carving and Manufacturing Company, Winona, Minn. Carving-machine | 528,337 | Oct. 30 | 2810 | 679, 680 | 69 | 577 |
| Morin, Joseph P., and G. J. H. Jacques, Laconia, N. H. Circular-knitting machine | 531,553 | Dec. 25 | 2605 | 623, 624 | 69 | 1739 |
| Morison, Donald B., Hartlepool, England. Apparatus for heating liquids by means of steam | 529,988 | Nov. 13 | 1367 | 328, 329 | 69 | 914 |
| Moritz, Carl C., and S. D. Greenwood, Salt Lake City, Utah Ter. Pocket-knife | 530,788 | Dec. 11 | 1257 | 304 | 69 | 1459 |
| Morlet, Charles, assignor of one-half to P. Nordmann, Geneva, Switzerland. Mainspring-barrel for watches | 526,935 | Oct. 2 | 448 | 110 | 69 | 84 |
| Morley Button Manufacturing Company. (See Bennett, Walter E., assignor.) | | | | | | |
| Morrill, Ernest L., Saco, Me., assignor to G. Draper & Sons, Hopedale, Mass. Yarn-sepa-rator for ring-spinning machines | 531,548 | Dec. 25 | 2595 | 621 | 69 | 1737 |
| Morris, Francis S., *et al.* (See Dixon, George, assignor.) | | | | | | |
| Morrison, James H. (See Hanson, Castle, and Morrison.) | | | | | | |
| Morrison, Warren C., Chicago, Ill. Advertising-sign device | 528,256 | Oct. 30 | 2678 | 646 | 69 | 554 |
| Morrison, William, Toronto, Canada. Water heater or cooler | 531,000 | Dec. 18 | 1696 | 381 | 69 | 1537 |
| Morrison, William E. (See Hamilton and Morrison.) | | | | | | |
| Morrison, William J., Chicago, Ill. Combination tool-handle | 528,731 | Nov. 6 | 360 | 88 | 69 | 712 |
| Morrison, William N., St. Louis, Mo. Automatic door-strip | 527,212 | Oct. 9 | 869 | 211 | 69 | 177 |
| Morriss, William N., Moonee Ponds, and R. H. Smith, South Yarra, Victoria. Feed-water heater and fuel-saver | 526,727 | Oct. 2 | 95 | 24 | 69 | 20 |
| Morrissey, John H. (See May and Morrissey.) | | | | | | |
| Morrow, George W., assignor of three-fourths to C. T. Young, Toronto, Ohio. Tile | 527,871 | Oct. 23 | 1977 | 475 | 69 | 410 |
| Morse, George J., Hyde Park, Mass. Trousers or coat | 528,178 | Oct. 30 | 2535 | 614 | 69 | 528 |
| Morse, Jamin S., and D. R. Lovejoy, New York, N. Y.; said Lovejoy assignor to said Morse. Employé's time-recorder | 527,395 | Oct. 9 | 1180 | 289, 290 | 69 | 234 |
| Morse, Orville M., Jackson, Mich. Separator | 529,872 | Nov. 27 | 2388 | 571 | 69 | 1132 |
| Morse, Oscar E., Dillon, Mont. Rotary engine | 529,289 | Nov. 13 | 1369 | 329 | 69 | 914 |
| Morse, Williams & Company. (See Hill, William, assignor.) | | | | | | |
| Mortenson, Charles G., Lorin, Cal. Garden implement | 529,562 | Nov. 20 | 1881 | 447 | 69 | 1027 |
| Morton, William F., New Haven, Conn. Wheel-felly joint | 529,131 | Nov. 13 | 1090 | 263 | 69 | 865 |
| Moseley, William H., Sparta, Wis. Clothes-drier | 527,705 | Oct. 16 | 1690 | 407 | 69 | 342 |
| Moses, Alfred H., Jr., New York, N. Y. Electric-arc lamp | 528,642 | Nov. 6 | 221 | 55 | 69 | 686 |
| Moses, Alfred H., Jr., St. Louis, Mo., assignor of one-half to J. S. Bache & Co., New York, N. Y. Electric-arc lamp | 527,559 | Oct. 16 | 1450 | 353 | 69 | 298 |
| Moses, R. H., *et al.* (See Wright, Isaac D., assignor.) | | | | | | |
| Mosher, Horace C., *et al.* (See Thompson, Wilson, assignor.) | | | | | | |
| Mosher, James A. (See Learned and Mosher.) | | | | | | |
| Mosher, James A., Boston, Mass., William N. Beardsley, and A. D. Moulton, Bridgeport, Conn., assignors to M. Hartley and M. Graham, New York, N. Y. Cyclometer | 531,269 | Dec. 18 | 2098 | 504 | 69 | 1626 |
| Moskowitz, Morris, assignor to himself and L. D. Adler, Newark, N. J., and A. S. Adler, Philadelphia, Pa. Electric-lighting system for railway-cars | 531,421 | Dec. 25 | 2369 | 567 | 69 | 1694 |
| Moss, Charles E., Boston, Mass. Cyclometer | 531,207 | Dec. 18 | 1986 | 472 | 69 | 1606 |
| Moss, James H., Irvona, Pa. Hanging lamp | 527,440 | Oct. 16 | 1254 | 308 | 69 | 260 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Mott, George E. (See Price, William G., assignor.) | | | | | | |
| Mott, Theodore. (See Andrews and Mott.) | | | | | | |
| Moulton, Alvin D. (See Mosher, Beardsley, and Moulton.) | | | | | | |
| Mounce, James A., and D. L. Delaney, Fredericktown, Mo. Automatic vehicle-brake | 528,605 | Nov. 6 | 142 | 35 | 69 | 672 |
| Mouquin, Henri F., trustee. (See Loriot, Henry, assignor.) | | | | | | |
| Mourot, Julien, Modesto, Cal. Voting-machine | 530,347 | Dec. 4 | 481 | 119, 120 | 69 | 1302 |
| Mower, J. K. (See Anderson, Con D., assignor.) | | | | | | |
| Moxham, Arthur J., Johnstown, Pa. Machine for bending flanged metal bars | 530,196 | Dec. 4 | 210 | 52 | 69 | 1253 |
| Moxham, Arthur J., Johnstown, Pa. Railway-crossing | 530,197 | Dec. 4 | 211 | 53 | 69 | 1254 |
| Moxham, Arthur J., Johnstown, Pa. Railway-rail | 531,444 | Dec. 25 | 2428 | 577, 578 | 69 | 1705 |
| Moxham, Arthur J., Johnstown, Pa. Electrical connection for railway-rails | 531,445 | Dec. 25 | 2430 | 578 | 69 | 1706 |
| Moxham, Arthur J., Johnstown, Pa. Railway-track | 531,446 | Dec. 25 | 2431 | 578 | 69 | 1706 |
| Moyer, Charles O., *et al.* (See Platt, Edward T., assignor.) | | | | | | |
| Moyer, William H., *et al.* (See Harris, Henry, assignor.) | | | | | | |
| Moyle, Leigh, assignor to M. M. Buck & Co., St. Louis, Mo. Curtain-stop | 530,896 | Dec. 11 | 1423 | 338 | 69 | 1490 |
| Muckenhirn, Charles H., Detroit, assignor to F. P. Boughton, Battle Creek, Mich. Com-bined lavatory-basin plug and overflow | 527,802 | Oct. 23 | 1854 | 446 | 69 | 389 |
| Mueller, Albert, Nieder-Schönweide, near Berlin, Germany. Buffer-valve for high-press-ure gases and fluids | 531,053 | Dec. 18 | 1701 | 404 | 69 | 1555 |
| Mueller, Albert C., and A. Lieb, Allegheny, Pa. Pipe-cleaning apparatus | 528,234 | Oct. 30 | 2641 | 636 | 69 | 546 |
| Mueller, Henry, Jr., St. Louis, Mo. Street-sweeper | 528,548 | Nov. 6 | 42 | 11 | 69 | 654 |
| Mueller, Henry, Jr., St. Louis, Mo. Street-sweeper | 529,132 | Nov. 13 | 1091 | 263, 264 | 69 | 865 |
| Muhlenbeck, Frank. (See Asam and Muhlenbeck.) | | | | | | |
| Muhlert, Franz, Pelc Tyrolka, near Prague, assignor to Kinzlberger & Co., Prague, Aus-tria Hungary. Manufacture of yellow and orange dye | 528,965 | Nov. 13 | 820 | ..... | 69 | 816 |
| Muir, James, assignor to Phenix Iron Foundry, Providence, R. I. Cloth-stretching machine | 527,441 | Oct. 16 | 1255 | 308 | 69 | 260 |
| Mulford, Charles. (See Butts, William, assignor.) | | | | | | |
| Mulkey, John H. (See Crow and Mulkey.) | | | | | | |
| Mullen, C. A. (See Wilson, James, assignor.) | | | | | | |
| Mullen, Gregory M., Baltimore, Md. Rope-clamp | 529,933 | Nov. 27 | 2485 | 599 | 69 | 1148 |
| Müller, Bernhard, Chemnitz, Germany. Making bricks from coal-dust | 526,926 | Oct. 2 | 449 | ..... | 69 | 84 |
| Müller, Carl, Eberswalde, Germany. Drawing-pin | 529,744 | Nov. 27 | 2173 | 518 | 69 | 1090 |
| Muller, Carrie E., San Francisco, Cal. Bedclothes-holder | 527,872 | Oct. 23 | 1970 | 476 | 69 | 411 |
| Müller, Etienne, *et al.* (See Coleman and Saussure, assignors.) | | | | | | |
| Müller, Georg, Kautbeuren, Germany. Apparatus for automatically mixing fire-extin-guishing substances with water | 528,441 | Oct. 30 | 2089 | 722 | 69 | 608 |
| Müller, Heinrich, Villencolonie Grunewald, near Berlin, assignor to A. Klönne, Dort-mund, Germany. Gas-holder | 530,284 | Dec. 4 | 371 | 91 | 69 | 1283 |
| Mullinix, Elmer E., Burlington, Kans. Finger-board telegraph-key | 530,957 | Dec. 18 | 1530 | 363 | 69 | 1584 |
| Mullins, John W., Fariston, and R. M. Jackson, London, Ky. Thill-coupling | 530,441 | Dec. 4 | 629 | 157 | 69 | 1330 |
| Multi-Stroke Bell Company. (See Garside, Irad L., assignor.) | | | | | | |
| Mummery, Edwin G., Detroit, Mich. Vapor-burner | 530,705 | Dec. 11 | 1119 | 272 | 69 | 1433 |
| Mummery, Edwin G., Detroit, Mich. Oil-stove | 530,849 | Dec. 11 | 1349 | 322 | 69 | 1476 |
| Mundy, Judson T., Newark, N. J. Pencil-sharpener and point-protector | 530,789 | Dec. 11 | 1258 | 304 | 69 | 1460 |
| Munger, Theodore C., Cedar Rapids, Iowa. Pump-valve | 530,442 | Dec. 4 | 630 | 157 | 69 | 1330 |
| Munro, Charles S. (See Palmer and Munro.) | | | | | | |
| Munro, Emma A. (See Cummins and Munro.) | | | | | | |
| Murdock, Samuel N. (See Kizer and Murdock.) | | | | | | |
| Murphy, Edward E., assignor of one-half to G. S. Foster, Boston, Mass. Apparatus for extracting residual substances from casks | 529,348 | Nov. 13 | 1452 | 350 | 69 | 931 |
| Murphy, Edwin J., New York, N. Y. Electric-arc lamp | 531,422 | Dec. 25 | 2371 | 567 | 69 | 1695 |
| Murphy, James A., assignor of one-half to G. Nightingale, Holyoke, Mass. Toy | 530,116 | Dec. 4 | 71 | 20 | 69 | 1228 |
| Murphy, Peter D., and E. Kolb, Lockport, N. Y. Sprocket-wheel | 527,153 | Oct. 9 | 780 | 190 | 69 | 160 |
| Murphy, Walter P., Ridgway, Pa. Lumber-drying kiln | 531,325 | Dec. 25 | 2203 | 527, 528 | 69 | 1663 |
| Murray, James H. (See Hill, George S., assignor.) | | | | | | |
| Murray, John A., Winchester, Mass. Fruit-huller | 528,257 | Oct. 30 | 2679 | 646 | 69 | 555 |
| Murray, Thomas A., Boston, Mass. Apparatus for generating electricity for lighting rail-way-cars | 529,563 | Nov. 20 | 1882 | 448 | 69 | 1028 |
| Murray, Thomas E. (See Blessing and Murray.) | | | | | | |
| Musgrave, James, *et al.* (See Dixon, George, assignor.) | | | | | | |
| Musgrove, James, Greenvale, Victoria. Seed-sower | 528,732 | Nov. 6 | 263 | 88 | 69 | 712 |
| Musical Telephone Company. (See Prince, Jerome, assignor.) | | | | | | |
| Muslar, Nelson, West Boylston, assignor to R. C. Henman, Boston, Mass. Machine for feeding crown bottle-stoppers | 531,001 | Dec. 18 | 1607 | 382 | 69 | 1538 |
| Musser, Luther W., State College, Pa. Educational appliance | 528,010 | Oct. 23 | 2247 | 512 | 69 | 459 |
| Muth, George, *et al.* (See Schon, Hubert, assignor.) | | | | | | |
| Myers, Angelo, Philadelphia, Pa. Manufacturing yeast | 528,643 | Nov. 6 | 222 | 55, 56 | 69 | 686 |
| Myers, David, assignor of one-half to Manchester Manufacturing Company, North Man-chester, Ind. Feed-water heater and steam-generator | 526,841 | Oct. 2 | 282 | 68 | 69 | 54 |
| Myers, Frederick, assignor to Myers Manufacturing Company, New York, N. Y. Vehicle-wheel | 528,887 | Nov. 6 | 664 | 160 | 69 | 708 |
| Myers Manufacturing Company. (See Myers, Frederick, assignor.) | | | | | | |
| Nadal, Jean, Paris, France. Stud or fastening for shirt-wristbands, &c | 528,339 | Oct. 30 | 2815 | 680 | 69 | 577 |
| Naef, Paul, Argentine, Kans. Furnace for roasting ores | 528,016 | Oct. 23 | 2257 | 544, 545 | 69 | 461 |
| Nash-Eddy Company. (See Nash, Nathan E., assignor.) | | | | | | |
| Nash, Frank. (See Baird and Nash.) | | | | | | |
| Nash, Jonathan W. (See Klinefetter and Nash.) | | | | | | |
| Nash, Lewis H., South Norwalk, Conn., assignor to National Meter Company, New York, N. Y. Disk water-meter | 527,534 | Oct. 16 | 1416 | 344 | 69 | 291 |
| Nash, Lewis H., South Norwalk, Conn., assignor to National Meter Company, New York, N. Y. Disk water-meter | 527,535 | Oct. 16 | 1417 | 345 | 69 | 292 |
| Nash, Lewis H., South Norwalk, Conn., assignor to National Meter Company, New York, N. Y. Disk water-meter | 527,536 | Oct. 16 | 1419 | 345 | 69 | 292 |
| Nash, Lewis H., South Norwalk, Conn., assignor to National Meter Company, New York, N. Y. Water-meter | 527,537 | Oct. 16 | 1420 | 345 | 69 | 292 |
| Nash, Lewis H., South Norwalk, Conn., assignor to National Meter Company, New York, N. Y. Disk water-meter | 527,538 | Oct. 16 | 1421 | 346 | 69 | 292 |
| Nash, Lewis H., South Norwalk, Conn., assignor to National Meter Company, New York, N. Y. Disk water-meter | 527,539 | Oct. 16 | 1422 | 346 | 69 | 292 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Nash, Myron H., Kalamazoo, Mich. Mole-trap | 529,801 | Nov. 27 | 2263 | 540 | 69 | 1106 |
| Nash, Nathan E., Westerly, R. I., assignor to Nash-Eddy Company, of Ohio. Stopping apparatus for engines | 529,297 | Nov. 13 | 1386 | 331, 334 | 69 | 917 |
| Nason, Carleton W., New York, N. Y. Belt-shifting device for air-pumps | 529,401 | Nov. 20 | 1589 | 378 | 69 | 975 |
| Nason, Joseph H., Somerville, assignor of one-half to H. M. Hewes, Boston, Mass. Self-threading shuttle for looms | 528,550 | Nov. 6 | 45 | 12 | 69 | 655 |
| National Company. (See Baldwin, Cyrus W., assignor.) | | | | | | |
| National Company. (See Foster, Charles E., assignor.) | | | | | | |
| National Company. (See Otis, Norton P., assignor.) | | | | | | |
| National Engraving Machine Company. (See Bruckner, Charles C., assignor.) | | | | | | |
| National Heat and Power Company. (See Hastings, James L., assignor.) | | | | | | |
| National Heat and Power Construction Company. (See McDonald, Donald, assignor.) | | | | | | |
| National Key-Opening Can Company. (See Underdown, John K., assignor.) | | | | | | |
| National Key-Opening Can Company. (See Zimmerman, John, assignor.) | | | | | | |
| National Lead Company. (See Ramming, John, assignor.) | | | | | | |
| National Machine Company. (See Harris, Edmund A., assignor.) | | | | | | |
| National Meter Company. (See Nash, Lewis H., assignor.) | | | | | | |
| National Sewing Machine Company. (See Goodrich, Frank L., assignor.) | | | | | | |
| National Union Telephone Company. (See Serdinko, John, assignor.) | | | | | | |
| Naughton, John W., New York, N. Y. Making electrotype-plates | 529,078 | Nov. 13 | 1006 | 243 | 69 | 848 |
| Naumburg, Aaron. (See Egger and Wessel, assignors.) | | | | | | |
| Naumburg, Aaron. (See Wessel and Egger, assignors.) | | | | | | |
| Naylor, James, Jr., assignor of three-fourths to G. T. McLauthlin, Boston, Mass. Continuous extractor | 528,735 | Nov. 6 | 366 | 89, 90 | 69 | 713 |
| Naylor, James, Jr., assignor of three-fourths to G. T. McLauthlin, Boston, Mass. Sirup-purifier | 529,062 | Nov. 20 | 2035 | 488 | 69 | 1056 |
| Naylor, James, Jr., assignor of three-fourths to G. T. McLauthlin, Boston, Mass. Centrifugal water-purifier | 529,063 | Nov. 20 | 2037 | 489 | 69 | 1057 |
| Naylor, James, Jr., assignor of three-fourths to G. T. McLauthlin, Boston, Mass. Centrifugal machine | 529,064 | Nov. 20 | 2039 | 489 | 69 | 1057 |
| Naylor, James, Jr., assignor of three-fourths to G. T. McLauthlin, Boston, Mass. Speed-recorder | 530,710 | Dec. 11 | 1425 | 273, 274 | 69 | 1434 |
| Neate, Charles, Upper Sandusky, Ohio. Fence-building machine | 528,303 | Oct. 30 | 2757 | 605 | 69 | 567 |
| Needham, Charles W. (See Bliss, Louis D., assignor.) | | | | | | |
| Neeley, J. J., *et al.* (See Neeley, Joseph P., assignor.) | | | | | | |
| Neeley, Joseph P., assignor of two-thirds to E. V. Allen, Hancock, Mo., and J. J. Neeley, Greenup, Ill. Combined door-check and buffer | 528,017 | Oct. 23 | 2270 | 545 | 69 | 461 |
| Neff, Abraham J., assignor of one-half to W. B. Lehman, Goshen, Ind. Saw-filing machine | 528,179 | Oct. 30 | 2536 | 615 | 69 | 528 |
| Neff, Charles H. (See Rooks, Alva N., assignor.) | | | | | | |
| Neff, John W., Buckhannon, W. Va. Line-chalking device | 526,937 | Oct. 2 | 450 | 111 | 69 | 84 |
| Neidhardt, Paul, Chicago, Ill. Button | 527,502 | Oct. 16 | 1359 | 331 | 69 | 382 |
| Neidig, Clement, Bourbon, Ind. Folding umbrella | 529,459 | Nov. 20 | 1701 | 406 | 69 | 995 |
| Neil, Edwin, Newark, N. J. Cable stop mechanism | 527,069 | Oct. 9 | 613 | 156, 157 | 69 | 135 |
| Neill, Francis A. R., *et al.* (See Rigby, Brierley K., assignor.) | | | | | | |
| Neilson, Walter. (See Mills, Morris, assignor.) | | | | | | |
| Nellis, Jacob H., Canajoharie, N. Y. Temporary binder | 528,551 | Nov. 6 | 46 | 12, 13 | 69 | 655 |
| Nelson, Charles, St. Louis, Mo. Protector for tops of ice-cream cans | 527,711 | Oct. 16 | 1695 | 408 | 69 | 343 |
| Nelson, Frank W., Chicago, Ill. Wrench | 527,181 | Oct. 9 | 820 | 199 | 69 | 168 |
| Nelson, Robert W., Hartford, Conn. Composition-case | 528,106 | Oct. 23 | 2411 | 584 | 69 | 490 |
| Nelson, William H., Waterbury, Conn. Cutting-tool | 528,787 | Nov. 6 | 479 | 115 | 69 | 731 |
| Nelsonville Foundry and Machine Company. (See Bennett, Darius, assignor.) | | | | | | |
| Nennstiel, Edward, Johnstown, Pa. Railway-chair | 527,712 | Oct. 16 | 1696 | 409 | 69 | 343 |
| Neville, Asa G., Blairsville, Pa. Mold for blowing glass | 529,665 | Nov. 20 | 2041 | 489 | 69 | 1057 |
| New England Automatic Gas Lighting Company. (See Shaw, Al B., assignor.) | | | | | | |
| New York Condensed Milk Company. (See Bishop, Noah L., assignor.) | | | | | | |
| New York Labor Saving Patents Exploiting Company. (See Snowman, Herman C. F. E., assignor.) | | | | | | |
| Newberry, John A., Ronse's Point, N. Y. Combined meal-card and check | 528,880 | Nov. 6 | 667 | 161 | 69 | 768 |
| Newby, Alfred J., New York, N. Y. Piano-case | 531,057 | Dec. 18 | 1706 | 405 | 69 | 1556 |
| Newby, James and T. F., Harrisburg, Pa. Purifier and aerator | 530,445 | Dec. 4 | 634 | 158 | 69 | 1331 |
| Newby, Thomas F. (See Newby, James and T. F.) | | | | | | |
| Newell, George H., Grand Rapids, Mich. Fish-rod reel | 527,713 | Oct. 16 | 1697 | 409 | 69 | 343 |
| Newell, John H., Urbana, Ohio. Corn-harvester | 530,493 | Dec. 4 | 738 | 181, 182 | 69 | 1349 |
| Newell, John H., Hurley, Wis. Chain pipe-wrench | 530,547 | Dec. 11 | 850 | 210 | 69 | 1386 |
| Newhall, George M., Philadelphia, Pa. Stuff-chest and bleacher | 529,037 | Nov. 27 | 2400 | 600, 601 | 69 | 1149 |
| Newhouse, George A., New Albany, Ind. Trolley | 531,383 | Dec. 25 | 2300 | 551 | 69 | 1682 |
| Newhouse, John F., Magnetic Springs, assignor of two-thirds to S. N. McClond and C. F. Lents, Marysville, Ohio. Hoeing drum | 529,405 | Nov. 20 | 1591 | 378 | 69 | 976 |
| Newlyn, Robert A., assignor of one-half to G. W. Hart and A. H. Boylan, Cincinnati, Ohio. Electrical recording device for safes | 529,038 | Nov. 27 | 2491 | 601 | 69 | 1150 |
| Newman, Abraham, Chicago, Ill. Watchman's time-recorder | 530,446 | Dec. 4 | 636 | 158, 159 | 69 | 1332 |
| Newport, William T., Farmersville, Ill. Race-track-leveling machine | 528,890 | Nov. 6 | 668 | 161 | 69 | 768 |
| Newton, Charles C., Philadelphia, Pa. Mechanism for driving saws | 530,701 | Dec. 11 | 1260 | 304 | 69 | 1460 |
| Ney Manufacturing Company. (See Swacick, Judson D., assignor.) | | | | | | |
| Niagara Stamping and Tool Company. (See Juergens, Frederick A., assignor.) | | | | | | |
| Nicholas, Benjamin F., Renovo, Pa. Clothes-drier | 527,001 | Oct. 2 | 542 | 133 | 69 | 102 |
| Nicholls, Walter H., Lynn, assignor of one-half to Libby, Harlow & Co., Boston, Mass. Skate | 530,711 | Dec. 11 | 1127 | 274 | 69 | 1435 |
| Nichols, Alfred F., *et al.* (See Burkhardt, Franklin P., assignor.) | | | | | | |
| Nichols, Edwin C., Kansas City, Mo. Apparatus for generating compressed air | 530,118 | Dec. 4 | 74 | 20, 21 | 69 | 1229 |
| Nichols, George D. (See Andrews, James C., assignor.) | | | | | | |
| Nichols, Henry B., and F. H. Lincoln, Philadelphia, Pa. Bond for electric railways | 528,788 | Nov. 6 | 470 | 115 | 69 | 732 |
| Nichols, Henry B., and F. H. Lincoln, Philadelphia, Pa. Underground electric railway | 529,406 | Nov. 20 | 1592 | 379 | 69 | 976 |
| Nichols, Henry C., Hopkinton, R. I. Steam-engine governor | 527,503 | Oct. 16 | 1360 | 331, 332 | 69 | 382 |
| Nickelson, Hugh H. (See Dixson, Charles H., assignor.) | | | | | | |
| Nickerson, Augustus M. (See Moody, James M. and S. B., assignors.) | | | | | | |
| Nickerson, Luke A., and P. A. Keller, Davenport, Iowa. Shears | 526,814 | Oct. 2 | 248 | 58 | 69 | 45 |
| Nickle, Alfred, Pleasant Mound, assignor of one-half to J. J. Jackson, Mulberry Grove, Ill. Wire-stretcher | 531,209 | Dec. 18 | 1992 | 473 | 69 | 1607 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Nicol, John M., trustee. (See Eames, Henry H., assignor.) | | | | | | |
| Nicol, Robert, Jr., Chicago, Ill. Toy money-box | 528,018 | Oct. 23 | 2260 | 545 | 69 | 461 |
| Nicolai, Ludwig. (See Saltzkorn and Nicolai.) | | | | | | |
| Nicolas, Edmund, assignor to Patent Plate Structure Company, Limited, Manchester, England. Construction of buildings for advertising purposes | 528,789 | Nov. 6 | 472 | 116 | 69 | 732 |
| Niederlaender, Heinrich, Chicago, Ill. Roofing-tile | 530,119 | Dec. 4 | 77 | 21 | 69 | 1229 |
| Niedermayer, Henry. (See Griffiths and Niedermayer.) | | | | | | |
| Nichorster, William L., *et al.* (See Paro, Edward, assignor.) | | | | | | |
| Nielsen, Anton E. (See Fowler, England, and Nielsen.) | | | | | | |
| Nielsen, Herman, Edgerton, Wis. Steam-engine | 530,961 | Dec. 18 | 1536 | 364 | 69 | 1525 |
| Nightingale, George. (See Murphy, James A., assignor.) | | | | | | |
| Niles, Milton C., Oak Park, Ill. Rail-joint | 529,044 | Nov. 13 | 945 | 223 | 69 | 898 |
| Niles Tool Works Company. (See Coes, Zorester B., assignor.) | | | | | | |
| Nimeroff, Moses. (See Kaufmann and Nimeroff.) | | | | | | |
| Nishwitz, Frederick, Millington, N. J. Harrow | 527,875 | Oct. 23 | 1985 | 477 | 69 | 111 |
| Nisley Practice Piano Company. (See Nisley, William O., assignor.) | | | | | | |
| Nisley, William O., assignor to Nisley Practice Piano Company, Portland, Oreg. Practice-piano | 527,504 | Oct. 16 | 1363 | 332 | 69 | 282 |
| Nissly, George J. (See Benton and Nissly.) | | | | | | |
| Nittinger, August, Sr., Philadelphia, Pa. Combined candlestick and match-box | 531,467 | Dec. 25 | 2163 | 586 | 69 | 1512 |
| Niven, John. (See Henretty, James, assignor.) | | | | | | |
| Nixon, Alban, Christiana, Pa. Bag fastener | 527,714 | Oct. 16 | 1700 | 409 | 69 | 344 |
| Nixon, James R., Denver, Colo. Steam-pump governor | 528,483 | Oct. 30 | 3067 | 743 | 69 | 623 |
| Noack, Charles A., St. Louis, Mo. Clavo-mandolin | 530,732 | Dec. 11 | 1429 | 274 | 69 | 1435 |
| Noble, Andrew, and E. W. Lloyd, assignors to Sir W. G. Armstrong, Mitchell & Co., Limited, Newcastle-upon-Tyne, England. Breech-loading ordnance | 531,504 | Dec. 25 | 2070 | 641, 642 | 69 | 1753 |
| Noble, John M. (See Cooley, Noble, and Trevor.) | | | | | | |
| Nobs, Charles, Newark, N. J. Watchcase-spring | 528,207 | Oct. 30 | 2593 | 626 | 69 | 537 |
| Noderer, Robert J., Cleveland, Ohio. Bicycle-rest | 529,839 | Nov. 27 | 2493 | 601 | 69 | 1150 |
| Nolen, Edward, Wansan, Wis., assignor to C. M. Greene, Highland Park, Ill. Manufacturer of wood pulp | 530,898 | Dec. 11 | 1426 | ..... | 69 | 1490 |
| Norbom, John, San Francisco, Cal. Concentrator | 528,442 | Oct. 30 | 2490 | 592 | 69 | 608 |
| Norcott, James R., Barling, Ark. Planter | 529,298 | Nov. 13 | 1387 | 340 | 69 | 917 |
| Norcross, George A., assignor of seven-twelfths to W. E. Sanders and J. O. Sullivan, San Antonio, Tex. Car-coupling | 529,045 | Nov. 13 | 947 | 224 | 69 | 898 |
| Norcross, Orlando W., Worcester, Mass. Fireproof partition | 526,730 | Oct. 2 | 99 | 24 | 69 | 21 |
| Norcross, Orlando W., Worcester, Mass. Fireproof door | 526,731 | Oct. 2 | 100 | 25 | 69 | 21 |
| Norcross, Orlando W., Worcester, Mass. Fireproof door | 526,732 | Oct. 2 | 101 | 25 | 69 | 21 |
| Norcross, Orlando W., Worcester, Mass. Fireproof door | 531,210 | Dec. 18 | 1993 | 473 | 69 | 1608 |
| Nordlow, John P., Worcester, Mass. Pocket-knife | 530,702 | Dec. 11 | 1261 | 305 | 69 | 1460 |
| Nordmann, Prosper. (See Morlet, Charles, assignor.) | | | | | | |
| Nordyke & Marmon Company. (See Brantingham, Allen C., assignor.) | | | | | | |
| Nordyke & Marmon Company. (See Warrington, Jesse, assignor.) | | | | | | |
| Norris, J. N. (See Prentice, Thomas, assignor.) | | | | | | |
| North, Charles H., assignor to P. North, Cleveland, Ohio. Electrical releasing device for target-traps | 529,666 | Nov. 20 | 2042 | 490 | 69 | 1058 |
| North, Frank M. (See Brown, William B., assignor.) | | | | | | |
| North, John, Toledo, Ohio. Pedal air-compressor | 527,248 | Oct. 9 | 935 | 226 | 69 | 189 |
| North & Judd Manufacturing Company. (See Judd, Mortimer N., assignor.) | | | | | | |
| North, Paul. (See North, Charles H., assignor.) | | | | | | |
| Northall, William H., assignor of two-thirds to J. H. Polsdorfer & Sons, Evansville, Ind. Cork-holding bottle-cap | 528,380 | Oct. 30 | 2884 | 698 | 69 | 590 |
| Northrop, James A. (See Grover and Northrop.) | | | | | | |
| Northrop, James H., assignor to G. Draper & Sons, Hopedale, Mass. Loom | 529,940 | Nov. 27 | 2494 | 601, 602 | 69 | 1150 |
| Northrop, James H., Hopedale, Mass., assignor to Northrop Loom Company, Hopedale, Mass., and Saco, Me. Loom | 529,941 | Nov. 27 | 2502 | 602 | 69 | 1151 |
| Northrop, James H., Hopedale, Mass., assignor to Northrop Loom Company, Hopedale, Mass., and Saco, Me. Loom | 529,942 | Nov. 27 | 2504 | 603 | 69 | 1152 |
| Northrop, James H., Hopedale, Mass., assignor to Northrop Loom Company, Hopedale, Mass., and Saco, Me. Loom | 529,943 | Nov. 27 | 2506 | 603, 604 | 69 | 1152 |
| Northrop Loom Company. (See Northrop, James H., assignor.) | | | | | | |
| Norton, Dennis, Chicago, Ill. Device for supporting workmen or objects on inclined surfaces | 530,548 | Dec. 11 | 852 | 210 | 69 | 1386 |
| Norton, Gerrit, assignor to M. M. Norton, New York, N. Y. Corking-machine | 527,021 | Oct. 2 | 374 | 139 | 69 | 108 |
| Norton, John. (See Leek and Norton.) | | | | | | |
| Norton, John A., and W. Richards, London, England. Apparatus for supplying cartridges to machine-guns | 527,342 | Oct. 9 | 1088 | 263, 264 | 69 | 216 |
| Norton, Joshua, Jr., Chatham, Canada, assignor to American Sulphite Pulp Company, Boston, Mass. Sulfite-digester | 527,876 | Oct. 23 | 1989 | 478 | 69 | 412 |
| Norton, Martha M. (See Norton, Gerrit, assignor.) | | | | | | |
| Norton, Patrick, Jersey City, N. J. Roofing-plate | 527,505 | Oct. 16 | 1364 | 332 | 69 | 282 |
| Norton, Wendell P., Torrington, Conn. Drilling-machine | 528,381 | Oct. 30 | 2886 | 699 | 69 | 590 |
| Norwood, George, assignor of two thirds to G. L. Mead and J. S. Richardson, Boston, Mass. Apparatus for leveling the meeting ends of railway-rails | 527,805 | Oct. 23 | 1858 | 446 | 69 | 390 |
| Noyes, Bernice J., assignor to G. W. Gregory, Boston, Mass. Signaling apparatus | 530,236 | Dec. 4 | 487 | 71 | 69 | 1207 |
| Noyes, Joseph P., Binghamton, N. Y. Comb | 531,468 | Dec. 25 | 2463 | 587 | 69 | 1712 |
| Noyes, La Verne W., Chicago, Ill. Press for riveting, &c., metal | 529,505 | Nov. 20 | 1888 | 449 | 69 | 1028 |
| Noyes, La Verne W., Chicago, Ill. Pole-sawing machine | 529,506 | Nov. 20 | 1889 | 449 | 69 | 1029 |
| Nunamaker, John W., Chicago, Ill. Alarm for watches | 528,790 | Nov. 6 | 473 | 116 | 69 | 732 |
| Nunn, John H. (See Heywood and Nunn.) | | | | | | |
| Nye, Merritt M., Rochester, Mich. Bean-picker | 529,687 | Nov. 20 | 2075 | 496 | 69 | 1064 |
| O. S. Kelly Company. (See Maggard, James H., assignor.) | | | | | | |
| O'Brien, John, Gracedale, Pa. Brake-shoe | 528,553 | Nov. 6 | 49 | 13 | 69 | 655 |
| O'Brien, Thomas J., and E. J. Wilson, Chicago, Ill. Bridge-gate | 530,348 | Dec. 4 | 485 | 120 | 69 | 1303 |
| O'Brien, Walter A., Boston, Mass. Union garment and knitting same | 527,216 | Oct. 9 | 874 | 213 | 69 | 178 |
| O'Connor, James A., and G. H. Graham; said O'Connor assignor of one-fourth to M. J. Lennon, Rochester, N. Y. Flushing attachment | 531,212 | Dec. 18 | 1996 | 474 | 69 | 1608 |
| O'Connor, John D., *et al.* (See Bischoff, Frank R., assignor.) | | | | | | |
| O'Donnell, John P. (See Sykes and O'Donnell.) | | | | | | |
| O'Hara, Henry, assignor of one-half to J. A. Wallace, Melbourne, Victoria. Spark arrester and extinguisher | 527,444 | Oct. 16 | 1258 | 309 | 69 | 261 |
| O'Keefe, Keefe S., San Francisco, Cal. Trunk | 531,003 | Dec. 18 | 1614 | 383 | 69 | 1539 |
| O'Neil, Daniel, Rochester, N. Y. Apparatus for tapping mains | 527,877 | Oct. 23 | 1991 | 478 | 69 | 412 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| O'Neil, John, New York, N. Y. Autographic telegraph | 529,300 | Nov. 13 | 1389 | 335 336 | 69 | 918 |
| O'Neill, Henry. (See Bichet and O'Neill.) | | | | | | |
| O'Neill, Henry G., assignor of one-half to E. Jewell, Boston, Mass. Electric robe, towel, &c., for heating | 530,053 | Nov. 27 | 2735 | 656 | 69 | 1197 |
| O'Neill, John J., New York, N. Y. Dish-cleaner | 527,122 | Oct. 9 | 730 | 179 | 69 | 150 |
| O'Neill, John W. (See Warg and Lindemann, assignors.) | | | | | | |
| O'Shea, Henry, assignor to Johnson Company, Johnstown, Pa. Tongue-switch | 530,201 | Dec. 4 | 218 | 55 | 69 | 1255 |
| Oakley, George W., Manchester, N. J. Car-fender | 529,460 | Nov. 20 | 1702 | 406 | 69 | 995 |
| Oakley, James O., Montreal, Canada. Extensible structure for use as a bridge, scaffold, tower, &c. | 530,120 | Dec. 4 | 78 | 21, 22 | 69 | 1229 |
| Oberbeck, George, Jersey City, N. J., assignor to Eagle Pencil Company, Jersey City, N. J., and New York, N. Y. Calipers | 530,713 | Dec. 11 | 1130 | 274 | 69 | 1435 |
| Oberdorfer, Jacob T., Delmount, Ohio. Variable gear for sawmills | 527,343 | Oct. 9 | 1091 | 265 | 69 | 217 |
| Oberländer, Albert, Berlin, Germany. Extension table | 531,211 | Dec. 18 | 1994 | 473 474 | 69 | 1608 |
| Obermann, August W., Pittsburg, Pa. Culinary vessel | 528,382 | Oct. 30 | 2890 | 700 | 69 | 591 |
| Odell, James M. (See Carleton and Odell.) | | | | | | |
| Odgers, Matthew, assignor to Henry Disston & Sons, Incorporated, Philadelphia, Pa. Metal saw | 530,793 | Dec. 11 | 1262 | 305 | 69 | 1461 |
| Odin, Frank A., Syracuse, N. Y. Vegetable cooking and canning machine | 528,680 | Nov. 6 | 287 | 70 | 69 | 698 |
| Oehler, Firm of K. (See Kallab, Ferdinand V., assignor.) | | | | | | |
| Oesterreich, Wilhelm, Berlin, Germany. Telephone system | 530,598 | Dec. 11 | 939 | 230 231 | 69 | 1403 |
| Offerle, Jacob B., Warren, Pa. Ball-caster | 528,791 | Nov. 6 | 475 | 116 | 69 | 732 |
| Ogden, Bayse N. (See Ogden, Otto G., assignor.) | | | | | | |
| Ogden, Herman B., Brooklyn, N. Y. Car-fender | 527,715 | Oct. 16 | 1701 | 409 | 69 | 344 |
| Ogden, James H., Camden, N. J. Cigar-mold | 530,791 | Dec. 11 | 1263 | 305 | 69 | 1461 |
| Ogden, Otto G., assignor of one-half to B. N. Ogden, Louisville, Ky. Car-coupling | 528,683 | Oct. 30 | 2891 | 700 | 69 | 591 |
| Ogilvie, William H. (See Malbye, Peter J., assignor.) | | | | | | |
| Oglesby, Jerrold E., Ladonia, Tex. Saw gummer or sharpener | 529,299 | Nov. 13 | 1388 | 334 | 69 | 918 |
| Oheimb, Freda von, Hanover, Germany. Convertible or combined bath-tub and traveling-bag | 530,599 | Dec. 11 | 941 | 231 | 69 | 1403 |
| Ohio Brass Company. (See Wood, Montraville M., assignor.) | | | | | | |
| Ohl, George A. (See Vale and Ohl.) | | | | | | |
| Ohlsson, Olof, Newark, N. J. Churn | 528,681 | Nov. 6 | 289 | 70 | 69 | 698 |
| Ohlsson, Olof, Newark, N. J. Centrifugal separating-machine | 528,683 | Nov. 6 | 293 | 71, 72 | 69 | 699 |
| Ohlsson, Olof, Newark, N. J., assignor to United States Butter Extractor Company, of New Jersey. Centrifugal butter-extractor | 528,682 | Nov. 6 | 291 | 71 | 69 | 698 |
| Ohlsson, Olof, Newark, N. J., assignor to United States Butter Extractor Company, of New Jersey. Centrifugal creamer | 530,447 | Dec. 4 | 638 | 159 | 69 | 1332 |
| Olcese, Charles F., Chicago, Ill. Window-sash | 530,714 | Dec. 11 | 1132 | 275 | 69 | 1435 |
| Oldendorph, Henry, Belleville, Ill. Plow | 528,107 | Oct. 23 | 2413 | 584 | 69 | 490 |
| Olfenbuttel, August. (See Halsey, Fred D., assignor.) | | | | | | |
| Oliver, Henry J., Cleveland, Ohio. Window-casing | 531,326 | Dec. 25 | 2296 | 528 529 | 69 | 1663 |
| Oliver Iron and Steel Company. (See Alker, John H., assignor.) | | | | | | |
| Oliver, Thomas, State Centre, assignor of one-third to C. J. Peterson, Dubuque, Iowa. Type-writing machine | 528,484 | Oct. 30 | 3068 | 744 745 | 69 | 623 |
| Oliver, Thomas T. (See Guillaume, Alfred, assignor.) | | | | | | |
| Ollagnier, Claude J., Tours, France. Machine for pulping apples, pears, &c | 531,058 | Dec. 18 | 1707 | 406 | 69 | 1556 |
| Olmstead, Oren, Sutton, Canada. Car-coupling | 527,392 | Oct. 9 | 1174 | 288 | 69 | 233 |
| Olson, Andrew B., Kansas City, Mo. Apparatus for picking up pins, &c | 531,384 | Dec. 25 | 2311 | 551 | 69 | 1683 |
| Olson, Charles, Casnovia, Mich. Switch attachment | 530,448 | Dec. 4 | 640 | 159 | 69 | 1333 |
| Olson, Henry E., Chicago, Ill. Automatic car-brake | 531,131 | Dec. 18 | 1843 | 437 | 69 | 1581 |
| Olson, John, Two Harbors, Minn. Fluid-pressure regulator | 530,200 | Dec. 4 | 216 | 54 | 69 | 1255 |
| Olson, Nils. (See Hansen, Harry, assignor.) | | | | | | |
| Olsson, Olaus, assignor of one-half to J. A. Johanson, Brooklyn, N. Y. Game apparatus | 529,802 | Nov. 27 | 2265 | 540 | 69 | 1167 |
| Omwake, Jacob H., assignor of one-half to J. W. Walters, Iler, Ohio. Cutter for clay-product machines | 531,213 | Dec. 18 | 1998 | 475 | 69 | 1609 |
| Oneill, Fred, assignor to himself, E. P. Whitney, and G. E. Harpham, Redlands, Cal. Sewing-machine | 531,059 | Dec. 18 | 1709 | 406 | 69 | 1557 |
| Ongley, Charles E., assignor to G. J. Schoeffel, New York, N. Y. Electric-arc lamp | 528,684 | Nov. 6 | 295 | 72, 73 | 69 | 699 |
| Ongley, Charles E., assignor to G. J. Schoeffel, New York, N. Y. Whistle-signal recorder | 530,121 | Dec. 4 | 81 | 22 | 69 | 1230 |
| Ongley, Charles E., assignor to G. J. Schoeffel, New York, N. Y. Signal apparatus | 530,122 | Dec. 4 | 82 | 22 | 69 | 1230 |
| Onsgord, Christen C., West Duluth, Minn. Brake | 528,019 | Oct. 23 | 2261 | 545 546 | 69 | 462 |
| Opel, Traugott, Halle-on-the-Saale, Germany. Folding bed | 529,944 | Nov. 27 | 2511 | 604 605 | 69 | 1152 |
| Oppenheimer, Zacharias A., New York, N. Y. Jewelry-setting | 529,184 | Nov. 13 | 1190 | 256 | 69 | 882 |
| Oppl, Valentin, Cleveland, Ohio. Means for transporting beer | 527,123 | Oct. 9 | 732 | 179 180 | 69 | 151 |
| Oppl, Valentin, Cleveland, Ohio. Apparatus for bottling beer | 530,600 | Dec. 11 | 942 | 231 232 | 69 | 1403 |
| Orb, William, Columbus, Ohio. Seal-lock | 529,945 | Nov. 27 | 2512 | 605 | 69 | 1153 |
| Orcutt, Edward L., Somerville, Mass. Electric safety appliance for railways | 531,214 | Dec. 18 | 2001 | 475 | 69 | 1609 |
| Orcutt, Wesley G., assignor of one-half to H. S. Brown, Ashland, Me. Ratchet-wrench | 528,644 | Nov. 6 | 225 | 56 | 69 | 687 |
| Orcutt, William D., Melrose, Mass. Device for securing cutters or other articles to rotary shafts | 530,285 | Dec. 4 | 373 | 91 | 69 | 1283 |
| Orman, W. A. (See Johnston, Preston T., assignor.) | | | | | | |
| Ormerod, George C., Asbury Park, N. J. Cable-switch | 529,530 | Nov. 20 | 1831 | 435 436 | 69 | 1018 |
| Ormerod, George C., and J. H. Charles, Asbury Park, N. J. Cable grip | 528,384 | Oct. 30 | 2893 | 700 | 69 | 591 |
| Ormsby, Frank E., Chicago, Ill. Astronomical chart | 531,060 | Dec. 18 | 1709 | 406 | 69 | 1557 |
| Orr, Ora, Westport, Cal. Combined child's carriage and cradle | 530,449 | Dec. 4 | 641 | 160 | 69 | 1333 |
| Ort, Jacob, Wahoo, Nebr. Window | 529,134 | Nov. 13 | 1096 | 264 | 69 | 866 |
| Ortega, Ricardo, Ciudad Portfrio Diaz, Mexico. Harness | 527,344 | Oct. 9 | 1092 | 265 | 69 | 217 |
| Ortega, Ricardo, Ciudad Portfrio Diaz, Mexico. Litter | 529,301 | Nov. 13 | 1402 | 336 | 69 | 924 |
| Orth, Charles A., Trenton, N. J. Telephone-index | 531,356 | Dec. 25 | 2610 | 624 625 | 69 | 1741 |
| Ortloff, Julius T. O., Heidelberg, Germany. Sewing books | 529,079 | Nov. 13 | 1008 | 243 | 69 | 849 |
| Orton, Lyman O., assignor to Dodge Manufacturing Company, Mishawaka, Ind. Lubricator | 530,715 | Dec. 11 | 1134 | 275 | 69 | 1436 |
| Osborn, Albert S., Rochester, N. Y. Trolley-catcher | 528,685 | Nov. 6 | 297 | 73 | 69 | 700 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Osborne, Grant C., *et al.* (See Savage, Charles G., assignor.) | | | | | | |
| Ostberg, Petter A. (See Christianson, Knut K. A., assignor.) | | | | | | |
| Osterloh, John. (See Jackson and Osterloh.) | | | | | | |
| Ostrander, Willis H., San Francisco, Cal. Magazine-gun | 531,132 | Dec. 18 | 1845 | 437 438 | 69 | 1582 |
| Oswald, Mathias. (See Ferguson, George C., assignor.) | | | | | | |
| Otis Brothers & Company. (See Southgate, Louis W., assignor.) | | | | | | |
| Otis, Charles, New York, N. Y. Valve-operating device | 528,385 | Oct. 30 | 2895 | 701 | 69 | 591 |
| Otis, Charles H. (See McKay, Neil, assignor.) | | | | | | |
| Otis, Norton P., Yonkers, N. Y., assignor to National Company, Chicago, Ill. Elevator | 531,395 | Dec. 25 | 2673 | 642 | 69 | 1753 |
| Otten, Henry C., and A. Kathmann, Quincy, Ill. Cultivator-plow | 528,792 | Nov. 6 | 477 | 116 | 69 | 733 |
| Ousley, George W., Jr., San José, Cal. Window-platform | 527,445 | Oct. 16 | 1259 | 309 | 69 | 261 |
| Overhiser, Charles F., Williamsport, Pa. Machine for shaping wood articles | 529,505 | Nov. 20 | 1782 | 424 425 | 69 | 1009 |
| Overman, Joseph S., and W. T. Woolston, Canton, Ohio. Air-brush | 528,686 | Nov. 6 | 298 | 73 | 69 | 700 |
| Overman Wheel Company. (See Woodward, Charles E. W., assignor.) | | | | | | |
| Overstreet, Jesse T., *et al.* (See Dobbins, Douglas, assignor.) | | | | | | |
| Owen, Henry A., assignor to Whitin Machine Works, Whitinsville, Mass. Spindle-support | 528,020 | Oct. 23 | 2262 | 546 | 69 | 462 |
| Owen, Thomas, assignor of two-thirds to L. W. Martyr and H. Eldridge, Houston, Tex. Combined shoot-board and squaring-box | 531,215 | Dec. 18 | 1996 | 476 | 69 | 1610 |
| Owens, William W., Peterborough, Canada. Nut-lock | 527,154 | Oct. 9 | 781 | 190 | 69 | 160 |
| Ozias, Orange O., Dayton, Ohio. Price and weighing scale | 527,124 | Oct. 9 | 734 | 180 | 69 | 151 |
| Ozias, Orange O., Dayton, Ohio. Price-scale | 527,125 | Oct. 9 | 738 | 181 | 69 | 152 |
| P. & F. Corbin. (See Case, Cromwell O., assignor.) | | | | | | |
| P. P. Mast & Company. (See Dodson, Harry E., assignor.) | | | | | | |
| Pacific Labeling Company. (See Frazer, Charles R., assignor.) | | | | | | |
| Packard, James W., Warren, Ohio. Electrical converter | 527,070 | Oct. 9 | 646 | 157 | 69 | 136 |
| Packard, James W., Warren, Ohio. Electrical fuse-box | 527,071 | Oct. 9 | 647 | 157 | 69 | 136 |
| Packard, Jerome W., Malden, Mass. Saw-set | 528,554 | Nov. 6 | 50 | 14 | 69 | 655 |
| Packer, Alonzo C., Pittsburg, Pa. Car-coupling | 530,795 | Dec. 11 | 1264 | 305 306 | 69 | 1461 |
| Packer, George W., Rock Falls, assignor to Keystone Manufacturing Company, Sterling, Ill. Disk harrow | 530,054 | Nov. 27 | 2736 | 656 | 69 | 1197 |
| Packer, John F., La Grange, Ill. Cultivator | 529,135 | Nov. 13 | 1096 | 264 265 | 69 | 866 |
| Packer, John F., La Grange, Ill. Cultivator | 529,136 | Nov. 13 | 1098 | 265 266 | 69 | 867 |
| Packham, Frank R., assignor to Superior Drill Company, Springfield, Ohio. Seeding-machine | 527,621 | Oct. 16 | 1551 | 376 | 69 | 316 |
| Packham, Frank R., assignor to Superior Drill Company, Springfield, Ohio. Seeding-machine | 530,962 | Dec. 18 | 1548 | 364 365 | 69 | 1525 |
| Paddock, Harvlin, and O. B. Johnson, St. Johnsbury, Vt., assignors to E. & T. Fairbanks & Company, of Vermont. Computing-scale | 528,793 | Nov. 6 | 478 | 117 | 69 | 733 |
| Paetow, Eugen C., New York, N. Y. Refrigerator-leak alarm | 531,357 | Dec. 25 | 2612 | 625 | 69 | 1741 |
| Page, Oren H., Pleasant Grove, Minn. Fence-machine | 528,794 | Nov. 6 | 480 | 117 | 69 | 733 |
| Paget, Joseph T., Boston, Mass. Straight-way-valve | 529,302 | Nov. 13 | 1404 | 336 337 | 69 | 922 |
| Paine, Irving. (See Combs, Edgar S., assignor.) | | | | | | |
| Painter, William, assignor to Crown Cork and Seal Company, Baltimore, Md. Bottle-seal or stopper | 528,485 | Oct. 30 | 3072 | 745 | 69 | 624 |
| Painter, William, assignor to Crown Cork and Seal Company, Baltimore, Md. Bottle-seal or stopper | 528,486 | Oct. 30 | 3073 | 745 | 69 | 624 |
| Painter, William, assignor to Crown Cork and Seal Company, Baltimore, Md. Bottle-seal or stopper | 528,487 | Oct. 30 | 3073 | 745 | 69 | 624 |
| Paisler, Charles S. (See Hayes, Lemuel W., assignor.) | | | | | | |
| Paisley, George W., Hillsborough, Ill. Book-holder for desks | 528,488 | Oct. 30 | 3074 | 746 | 69 | 625 |
| Palmer, Augustus H., Utica, N. Y. Electric plug switch | 531,421 | Dec. 25 | 2754 | 568 | 69 | 1695 |
| Palmer, Charles B. (See Shaw, Noah T., assignor.) | | | | | | |
| Palmer, Fredrick S., Boston, Mass. Fire-alarm and annunciator system | 530,648 | Dec. 11 | 1030 | 250 | 69 | 1418 |
| Palmer, Merritt W., Raymond, Ill., and C. S. Munro, Fairbury, Nebr. Gasoline-stove | 528,795 | Nov. 6 | 480 | 117 118 | 69 | 734 |
| Palmer, Samuel D., Rockford, Ill. Sawbuck | 530,601 | Dec. 11 | 945 | 232 | 69 | 1404 |
| Palmer, Samuel D., Rockford, Ill. Churn-cover | 530,602 | Dec. 11 | 945 | 232 | 69 | 1404 |
| Palmer, William A., Dubuque, Iowa. Flat-opening book | 528,340 | Oct. 30 | 2816 | 681 | 69 | 578 |
| Pangborn, Henry and J. K., Menominee, Mich. Sleigh-runner | 528,606 | Nov. 6 | 143 | 35 | 69 | 673 |
| Pangborn, James K. (See Pangborn, Henry and J. K.) | | | | | | |
| Pardee, Frank, Hazleton, Pa. Coal or ore separating apparatus | 528,086 | Oct. 30 | 2896 | 701 | 69 | 592 |
| Parfitt, George J. and G. J. T. J., Keynsham, England. Electric-lighting system | 528,021 | Oct. 23 | 2264 | 546 | 69 | 462 |
| Parfitt, George J. T. J. (See Parfitt, George J. and G. J. T. J.) | | | | | | |
| Paris, Robert L., assignor of two-thirds to H. Ely and A. C. Johnson, Audubon, Ky. Fence | 528,687 | Nov. 6 | 300 | 73 | 69 | 700 |
| Park, Boyd. (See Babcock, Charles, assignor.) | | | | | | |
| Park, Harvey S., Chicago, Ill. Motor for street-cars | 528,796 | Nov. 6 | 484 | 118 119 | 69 | 734 |
| Parker, Charles E., and S. W. Williams, East Orange, N. J., assignors to Seabury & Johnson, New York, N. Y. Sulfur candle and making same | 527,881 | Oct. 23 | 2001 | 480 | 69 | 414 |
| Parker, Daniel, Calvert, Tex. Thill-coupling | 531,358 | Dec. 25 | 2612 | 625 | 69 | 1741 |
| Parker, George G. (See Abbott and Parker.) | | | | | | |
| Parker, George S., Salem, and J. P. Friend, Beverly, Mass. Game apparatus | 526,908 | Oct. 2 | 404 | 101 | 69 | 75 |
| Parker, Henry F., and M. G. Gillette, New York, N. Y. Power-applying mechanism | 529,875 | Nov. 27 | 2492 | 573 | 69 | 1133 |
| Parker, James W., Viola, Ill. Planter | 528,235 | Oct. 30 | 2642 | 637 | 69 | 546 |
| Parker, John W. (See Pelham, Walter O., assignor.) | | | | | | |
| Parker, Thomas, assignor of three-fourths to J. D. Wright, F. F. Stuart, and A. M. Colquhoun, Toronto, Canada. Pulverizer | 529,874 | Nov. 27 | 2390 | 572 | 69 | 1132 |
| Parkins, Charles, Hoboken, N. J. Manhole-cover | 528,387 | Oct. 30 | 2897 | 702 | 69 | 592 |
| Paro, Edward, assignor of two-thirds to C. C. Knapstein and W. L. Niehorster, Chicago, Ill. Device for crimping wire lacing | 529,303 | Nov. 13 | 1405 | 337 | 69 | 922 |
| Parraut, Alexander, Worcester, Mass. Sand-delivering mechanism for street-cars | 527,446 | Oct. 16 | 1260 | 310 | 69 | 262 |
| Parrey, John U., Kalamazoo, Mich., assignor to Simple Account File Company, Fremont, Ohio. Account-file | 531,271 | Dec. 18 | 2102 | 505 | 69 | 1627 |
| Parrish, George W., assignor of one-half to C. D. Denit and F. G. Webber, Salem, Va. Churn-dasher | 527,022 | Oct. 2 | 576 | 139 | 69 | 109 |
| Parrott, James D., Litchfield, Ill. Price and cost tag | 529,746 | Nov. 27 | 2176 | 518 | 69 | 1090 |
| Parry, Augustus N. (See Vanier, Francis N., assignor.) | | | | | | |
| Parslow, Alfred H., Tampa, Fla. Sash-fastener | 528,208 | Oct. 30 | 2594 | 626 | 69 | 537 |

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| Name, residence, and invention. | No. | Date | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Parsons, James A., Quanah, Tex. Quilting-frame for sewing-machines | 529,946 | Nov. 27 | 2513 | 605 | 69 | 1153 |
| Paszkowski, Jan, Chicago, Ill. Harness | 530,123 | Dec. 4 | 84 | 22, 23 | 69 | 1231 |
| Patenall, Frank P. J. (See Selden and Patenall.) | | | | | | |
| Patent Plate Structure Company. (See Nicolas, Edmund, assignor.) | | | | | | |
| Paterson, Cecil E., Tooradin, Victoria. Pea-thrashing machine | 526,869 | Oct. 2 | 333 | 82 | 69 | 63 |
| Paterson, James and W., Stockton, Cal. Gas-engine | 528,479 | Oct. 30 | 3056 | 746 | 69 | 625 |
| Paterson, James W., Chicago, Ill., assignor to Adams & Westlake Company, of Illinois. Brake-handle | 531,596 | Dec. 25 | 2675 | 643 | 69 | 1753 |
| Paterson, Thomas W., Victoria, Canada. Track-laying machine | 529,830 | Nov. 27 | 2319 | {552 / 553} | 69 | 1118 |
| Paterson, William. (See Paterson, James and W.) | | | | | | |
| Patten, William R., Chattanooga, Tenn. Split pulley | 531,216 | Dec. 18 | 2007 | 476 | 69 | 1610 |
| Patterson, Caroline D. (See Gaskill, Elijah T., assignor.) | | | | | | |
| Patterson, Ernest O., Charleston, S. C. Drag for suction-pipes | 528,022 | Oct. 23 | 2265 | 547 | 69 | 463 |
| Patterson, James W., New York, N. Y. Coin-operated mechanism | 531,327 | Dec. 25 | 2208 | 529 | 69 | 1663 |
| Patterson, James W., New York, N. Y. Coin-actuated lock | 531,328 | Dec. 25 | 2210 | 529 | 69 | 1663 |
| Patterson, John G. (See Heppell and Patterson.) | | | | | | |
| Patterson, William. (See Heppell and Patterson.) | | | | | | |
| Patterson, William R. (See Briggs and Patterson.) | | | | | | |
| Pattigler, Josef, assignor to A. R. von Pischof, Vienna, Austria-Hungary. Plastic composition | 529,876 | Nov. 27 | 2394 | ..... | 69 | 1133 |
| Patton, Annetta, Stevensville, Pa. Educational appliance | 530,456 | Dec. 4 | 642 | 160 | 69 | 1333 |
| Patton, Lucius E. (See Waltz and Patton.) | | | | | | |
| Paul, Andrew G. (See Skiffington, William P., assignor.) | | | | | | |
| Paul, Andrew G., Boston, Mass. Heating system | 526,733 | Oct. 2 | 102 | 25, 26 | 69 | 21 |
| Paul, Andrew G., Boston, Mass. Drying-cylinder | 526,734 | Oct. 2 | 106 | 26 | 69 | 22 |
| Paul, James and J. T., assignors of one-half to F. M. H. Young, Edinburgh, and W. J. Roberts, Chapel Galashiels, Scotland. Sash-fastener | 528,108 | Oct. 23 | 2411 | 584 | 69 | 490 |
| Paul, John T. (See Paul, James and J. T.) | | | | | | |
| Paul, John T. H. (See Paul, Thomas H. and J. T. H.) | | | | | | |
| Paul, Lorenzo C. (See Bartholomew, Albert W., assignor.) | | | | | | |
| Paul, Thomas H. and J. T. H., Frostburg, Md. Gas-engine | 530,237 | Dec. 4 | 289 | 71 | 69 | 1268 |
| Paulsen, Heinrich, Hamburg, Germany. Preserving food | 526,735 | Oct. 2 | 111 | ..... | 69 | 23 |
| Paulson, Soren C., assignor of one-half to H. L. Eastman, Wahpeton, N. D. Bob-sleigh | 526,938 | Oct. 2 | 451 | 111 | 69 | 85 |
| Pauly, Peter J., Jr., St. Louis, Mo. File case or cabinet | 526,815 | Oct. 2 | 339 | 78 | 69 | 45 |
| Pauly, Peter J., Jr., St. Louis, Mo. Japanning furnace | 530,549 | Dec. 11 | 553 | 210 | 69 | 1387 |
| Pauthonier, Casimir, Boston, Mass. Power transmitting or driving mechanism | 527,249 | Oct. 9 | 936 | 227 | 69 | 189 |
| Payne, Darius W., Minneapolis, Minn., assignor to F. B. Fargo & Company, Lake Mills, Wis. Combined churn and butter-worker | 527,716 | Oct. 16 | 1702 | {410 / 411} | 69 | 344 |
| Payne, Frederick R., Chicago, Ill. Railway-signal | 528,797 | Nov. 6 | 490 | 119 | 69 | 735 |
| Payne, Helen A., Elmira, N. Y. Folding shelf | 530,349 | Dec. 4 | 486 | 120 | 69 | 1303 |
| Payne, William H., assignor to J. W. Douglass, Philadelphia, Pa. Liquid mixer, shaker, and fruit squeezer | 528,688 | Nov. 6 | 300 | 74 | 69 | 700 |
| Peabody, Robert S., Philadelphia, Pa. Portable spring-actuated center-mark tool | 528,555 | Nov. 6 | 51 | 14 | 69 | 656 |
| Peabody, Robert S., Philadelphia, Pa. Vise | 528,556 | Nov. 6 | 53 | 14 | 69 | 656 |
| Peabody, Robert S., Philadelphia, Pa. Clamping device for machine-tools | 528,557 | Nov. 6 | 54 | 14 | 69 | 656 |
| Peabody, Robert S., Philadelphia, Pa. Riveting hammer | 528,558 | Nov. 6 | 56 | 15 | 69 | 656 |
| Peabody, Robert S., Philadelphia, Pa. Center-punch machine | 528,559 | Nov. 6 | 57 | 15 | 69 | 656 |
| Peabody, Robert S., Philadelphia, Pa. Steering apparatus | 528,967 | Nov. 13 | 826 | 194 | 69 | 817 |
| Peabody, Robert S., Philadelphia, Pa. Bench vise | 528,968 | Nov. 13 | 827 | 194 | 69 | 817 |
| Peabody, Robert S., Philadelphia, Pa. Article or accessory for smokers' use | 529,046 | Nov. 13 | 949 | 224 | 69 | 838 |
| Peabody, Robert S., Philadelphia, Pa. Guard for lathes | 530,238 | Dec. 4 | 290 | 71 | 69 | 1268 |
| Pearcock, Christopher, North Andover, Wis. Garment-holder | 526,789 | Oct. 2 | 200 | 47 | 69 | 38 |
| Pearce, John R., Amory, Miss. Steam-engine | 527,072 | Oct. 9 | 648 | 157 | 69 | 136 |
| Pearsall, Albert W., New York, N. Y., assignor to Meteor Despatch Company, Boston, Mass. Valve for pneumatic-dispatch-tube systems | 527,073 | Oct. 9 | 649 | 158 | 69 | 137 |
| Pearson, Fletcher R., Vancouver, Wash. Fire-kindler | 530,716 | Dec. 11 | 1135 | 275 | 69 | 1436 |
| Pearson, Fred S., Boston, Mass. Lightning-arrester | 526,736 | Oct. 2 | 112 | 26 | 69 | 23 |
| Pearson, George S., Waterbury, Conn. Hook and eye | 528,341 | Oct. 30 | 2817 | 681 | 69 | 578 |
| Pearson, Josiah H., Alum Bank, Pa. Car-coupling | 528,798 | Nov. 6 | 491 | {119 / 120} | 69 | 735 |
| Pearson, William R., St. Louis, Mo. Apparatus for burning liquid hydrocarbons | 526,737 | Oct. 2 | 113 | 27 | 69 | 23 |
| Pearsons, Fillmore A., Rutland, Vt. Ash-sifter | 529,947 | Nov. 27 | 2514 | {605 / 606} | 69 | 1153 |
| Peat, David C., assignor of one-half to W. Craw, Sadorus, Ill. Ditching tool | 528,607 | Nov. 6 | 144 | 36 | 69 | 673 |
| Peck, Luke R., assignor of one-half to R. G. Steel, St. John's, Mich. Incandescent-lamp socket | 527,285 | Oct. 9 | 1000 | 243 | 69 | 200 |
| Peck, Walter E., trustee. (See Grove, Jacob R., assignor.) | | | | | | |
| Peck-Williamson Heating and Ventilating Company. (See Ensign, William W., assignor.) | | | | | | |
| Peckham, Luther A., Oswego Falls, N. Y. Car heater and ventilator | 531,559 | Dec. 25 | 2613 | {625 / 626} | 69 | 1741 |
| Peckham, Malcolm D., New York, and C. E. Swan, Rome, assignors to Columbia Washer Company, New York, N. Y. Washer for vehicle-axles | 529,331 | Nov. 27 | 2320 | 553 | 69 | 1118 |
| Peebles, John, assignor to Woolf Valve Gear Company, Minneapolis, Minn. Compound engine | 531,272 | Dec. 18 | 2103 | 505 | 69 | 1627 |
| Peel, Benjamin W., Chicago, Ill. Draft-compelling device | 526,939 | Oct. 2 | 452 | 111 | 69 | 85 |
| Peirce, Winfield S. (See Kahne, Adkins, Peirce, Martin, and Kahne.) | | | | | | |
| Pelatan, Louis, Paris, France, and F. Clerici, Milan, Italy. Extracting gold from its ores | 528,023 | Oct. 23 | 2266 | 547 | 69 | 463 |
| Pelatan, Louis, Paris, France, and F. Clerici, Milan, Italy. Process of and apparatus for desulfurizing ores | 531,004 | Dec. 18 | 1615 | {383 / 384} | 69 | 1539 |
| Pelham Hod Elevating Company. (See Wern, Erik G. P., assignor.) | | | | | | |
| Pelham Hod Elevating Company. (See Wern, Gustaf P., assignor.) | | | | | | |
| Pelham, Walter O., assignor of one-half to J. W. Parker, Taylor, Tex. Releasing device for brakes of locomotive drive-wheels | 529,948 | Nov. 27 | 2516 | 606 | 69 | 1154 |
| Pelzer Art Co. (See Bonsall, Millie V., assignor.) | | | | | | |
| Pemberton, Algernon C., London, England. Machine for cutting spiral or turned moldings and automatically turning articles from rods | 526,738 | Oct. 2 | 115 | 27, 28 | 69 | 23 |
| Penberthy Injector Company. (See Desmond, John, assignor.) | | | | | | |
| Pendergast, John, Hastings, Mich. Wool or felt boot | 527,717 | Oct. 16 | 1705 | 411 | 69 | 345 |
| Pendleton, Bradford H., Evanston, Ill. Lighting device | 531,597 | Dec. 25 | 2677 | 643 | 69 | 1754 |
| Pendleton, John H., Brooklyn, N. Y. Leaf-holder | 528,560 | Nov. 6 | 58 | 15 | 69 | 657 |
| Pendry, William A., Detroit, assignor of two-thirds to D. J. Davidson, A. S. and S. G. Martin, Port Huron, Mich. Sieve cut-off | 527,882 | Oct. 23 | 2002 | 480 | 69 | 414 |
| Peninsular Broom Company. (See McDonel, Daniel A., assignor.) | | | | | | |
| Penn, George, Syracuse, N. Y. Vehicle-spring | 530,649 | Dec. 11 | 1032 | 251 | 69 | 1118 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Pennington, Humbolt, Macon, Mich. Lubricator | 526,816 | Oct. 2 | 240 | 58 | 69 | 45 |
| Pennock, Horace A., Minerva, Ohio. Trotting-sulky | 529,185 | Nov. 13 | 1191 | 286 | 69 | 882 |
| Pennsylvania Machine Company. (See White, Joseph J., assignor.) | | | | | | |
| Penrose, Hallack A. (See Granger, Frank D., assignor.) (Reissue.) | | | | | | |
| Perkins, Albert, assignor to Lamb Manufacturing Company, Chicopee Falls, Mass. Bi-cycle-pedal | 530,869 | Dec. 11 | 1427 | {338 / 339} | 69 | 1490 |
| Perkins, Charles N., and J. P. Scollay; said Scollay assignor to D. Gallagher, Lawrence, Mass. Snap-hook | 527,286 | Oct. 9 | 1001 | 243 | 69 | 200 |
| Perkins, Ludlow P., Manchester, England. Steam or other fluid boiler | 529,304 | Nov. 13 | 1407 | 337 | 69 | 922 |
| Perkins, N. S. (See Keyes, James A., assignor.) | | | | | | |
| Perkins, William W., Escanaba, Mich. Self-closing shutter | 531,217 | Dec. 18 | 2008 | 476 | 69 | 1610 |
| Perren, George S., Chicago, Ill. Mattress | 527,287 | Oct. 9 | 1002 | 243 | 69 | 200 |
| Perrody, Esprit, Geneva, Switzerland. Metallic pavement | 529,747 | Nov. 27 | 2477 | 519 | 69 | 1091 |
| Perry, Austin E., Wakefield, assignor to G. H. P. Flagg, Boston, Mass. Bulling-pad holder | 528,024 | Oct. 23 | 2268 | 548 | 69 | 463 |
| Perry, Harry A. (See Metcalf, John A., assignor.) | | | | | | |
| Perry, James L., assignor to Perry Sander Company, Chicago, Ill. Device for adjusting sandpaper-cylinders | 531,273 | Dec. 18 | 2105 | 505 | 69 | 1627 |
| Perry, James W., Philadelphia, Pa., assignor to Johns-Pratt Company, Hartford, Conn. Trolley-wire clip | 528,561 | Nov. 6 | 59 | 16 | 69 | 657 |
| Perry, John F., Chicago, Ill. Printer's quoin | 530,124 | Dec. 4 | 86 | 23 | 69 | 1231 |
| Perry, Joseph R., Wilkes-Barré, Pa. Piano-action | 528,209 | Oct. 30 | 2595 | 626 | 69 | 537 |
| Perry Sander Company. (See Perry, James L., assignor.) | | | | | | |
| Perry, Thomas O., Chicago, Ill. Gear-cutting machine | 528,025 | Oct. 23 | 2270 | 548 | 69 | 464 |
| Perry, Thomas O., Chicago, Ill. Temperature-regulator | 528,645 | Nov. 6 | 227 | 56 | 69 | 687 |
| Perry, Thomas O., Chicago, Ill. Temperature-regulator | 528,736 | Nov. 6 | 369 | 90 | 69 | 714 |
| Perry, Thomas O., Chicago, Ill. Temperature-regulator | 528,799 | Nov. 6 | 492 | 120 | 69 | 736 |
| Perry, Thomas O., Chicago, Ill. Temperature-regulator | 528,800 | Nov. 6 | 495 | 120 | 69 | 736 |
| Perry, Thomas O., Chicago, Ill. Temperature-regulator | 528,801 | Nov. 6 | 497 | 120 | 69 | 736 |
| Pershall, Albert M., *et al.* (See Burkhardt, Franklin P., assignor.) | | | | | | |
| Petering, William, Centre, Ohio. Wagon-brake | 531,061 | Dec. 18 | 1710 | 406 | 69 | 1557 |
| Peterson, Andrew B., *et al.* (See Caesar, Peter J., assignor.) | | | | | | |
| Peterson, Charles J. (See Oliver, Thomas, assignor.) | | | | | | |
| Peterson, Jonathan, New York, N. Y., assignor to American Tobacco Company, Newark, N. J. Paper box | 530,239 | Dec. 4 | 291 | 71 | 69 | 1268 |
| Pettis, George C., New Haven, Conn., assignor to United States Rubber Company, New Brunswick, N. J. Metal last | 528,737 | Nov. 6 | 371 | 90 | 69 | 714 |
| Pettit, John M., and J. W. Watt, McLuney, Ohio. Jug or jar | 526,940 | Oct. 2 | 453 | 111 | 69 | 85 |
| Peuchen, Stanley C., assignor of one-half to P. Clarke, Toronto, Canada. Apparatus for vaporizing petroleum or other liquids | 531,560 | Dec. 25 | 2616 | 626 | 69 | 1742 |
| Peyer, Gustav. (See Staub, Henry, assignor.) | | | | | | |
| Pfaff, Albert, Dayton, Ohio. Fare-register | 529,803 | Nov. 27 | 2265 | 541 | 69 | 1107 |
| Pfefferkorn, Wilhelm, assignor to Johnson Company, Johnstown, Pa. Machine for bending flanged metal bars | 530,240 | Dec. 4 | 292 | 72 | 69 | 1268 |
| Pfouts, Leroy S., Canton, Ohio. Shape-metal-cutting machine | 528,738 | Nov. 6 | 372 | 91 | 69 | 714 |
| Pharo, John F., Danville, assignor to M. Boas, St. Hyacinthe, Canada. Knitting-machine | 531,062 | Dec. 18 | 1711 | 407 | 69 | 1557 |
| Phelps, Alton D., Galt, Cal. Door-spring | 530,852 | Dec. 11 | 1355 | 323 | 69 | 1477 |
| Phelps, William E. (See Fenn, Jason C., assignor.) | | | | | | |
| Phenix Iron Foundry. (See Muir, James, assignor.) | | | | | | |
| Philadelphia Textile Machinery Company. (See Proctor, Josiah K., assignor.) (Reissue.) | | | | | | |
| Phillippi, George W., Reading, assignor to R. M. Popham, Philadelphia, Pa. Gate for railway-crossings | 526,941 | Oct. 2 | 454 | 112 | 69 | 85 |
| Phillips, Cornelius J., New York, N. Y. Filter | 526,817 | Oct. 2 | 241 | 58 | 69 | 46 |
| Phillips, Edwin J., *et al.* (See Emery, Fred B., assignor.) | | | | | | |
| Phillips, Elwood C., Chicago, Ill. Horse-collar | 528,490 | Oct. 30 | 3058 | 746 | 69 | 625 |
| Phillips, Elwood C., Chicago, Ill., assignor to F. F. Spencer, Montclair, N. J. Auger-bit | 529,632 | Nov. 27 | 2382 | 553 | 69 | 1119 |
| Phillips, George C., Manchac, La. Cotton-picking machine | 530,451 | Dec. 4 | 644 | {160 / 161} | 69 | 1333 |
| Phillips, Herbert L., St. Paul, Minn. Automatic amalgamator sluice-box | 528,969 | Nov. 13 | 828 | {194 / 195} | 69 | 817 |
| Phillips, John H., assignor of one-half to G. H. Gerber, Pottsville, Pa. Water-heating fire-grate | 528,388 | Oct. 30 | 2898 | 702 | 69 | 592 |
| Phillips, John M., Carrick, Pa. Car-dumping apparatus | 529,305 | Nov. 13 | 1402 | {337 / 338} | 69 | 922 |
| Phillips, William A., U. S. Army. Electrical danger-signaling system | 529,949 | Nov. 27 | 2517 | {606 / 607} | 69 | 1154 |
| Phillips, Willis E., assignor of one-half to P. Bertschy, Saguache, Colo. Child's cradle | 528,026 | Oct. 23 | 2276 | 549 | 69 | 464 |
| Philpott, Richard, *et al.* (See Heath, Walter A., assignor.) | | | | | | |
| Picard, Louis L., Paris, France. Revolver with knife attachment | 529,877 | Nov. 27 | 2395 | 574 | 69 | 1133 |
| Piccioli, Joshua. (See Hill, William H., assignor.) | | | | | | |
| Pickard, Edgar. (See Thornton and Pickard.) | | | | | | |
| Picken, Archibald, Roanoke, Va. Garment-fastener | 529,748 | Nov. 27 | 2178 | 519 | 69 | 1091 |
| Pickering, Frank A., Medford, Mass. Vise | 528,912 | Nov. 6 | 731 | 171 | 69 | 780 |
| Pickett, Albert S., Delaware, Ohio. Elevated railway | 529,749 | Nov. 27 | 2179 | {519 / 520} | 69 | 1091 |
| Pickett, Charles R., Delaware, Ohio. Wire fence | 529,833 | Nov. 27 | 2325 | 553 | 69 | 1119 |
| Pickett, Harry W., Warren, Pa. Pumping mechanism for oil-wells, &c | 529,804 | Nov. 27 | 2267 | 541 | 69 | 1107 |
| Pickles, James D., Buckland, Conn. Paper-pulp-beating engine | 528,027 | Oct. 23 | 2277 | 549 | 69 | 465 |
| Pickles, Robert H., Marple, England. Mordant | 530,202 | Dec. 4 | 249 | ..... | 69 | 1256 |
| Pictet, Raoul P., Paris, France, assignor to Société Anonyme de l'Institut Raoul Pictet, Freyburg, Switzerland. Disinfecting apparatus | 531,329 | Dec. 25 | 2211 | 529 | 69 | 1063 |
| Pierce, Frank H., San José, Cal. Bicycle-stand | 528,028 | Oct. 23 | 2279 | 549 | 69 | 465 |
| Pierce, Walter S., New York, N. Y. Calcining apparatus | 530,125 | Dec. 4 | 87 | 23 | 69 | 1231 |
| Pierce, Ormel W., Olean, N. Y. Coffee or tea pot handle | 527,182 | Oct. 9 | 822 | 200 | 69 | 168 |
| Pierceall, Francis X., *et al.* (See Robinson, William S., assignor.) | | | | | | |
| Pierpoint, James, Pittsburg, Pa. Boiler | 529,306 | Nov. 13 | 1410 | {338 / 339} | 69 | 923 |
| Pierrepont, Joshua H., Trenton, N. J. Holder for napkins, &c | 529,166 | Nov. 13 | 1192 | 286 | 69 | 882 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 528,970 | Nov. 13 | 831 | 195 | 69 | 817 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 528,971 | Nov. 13 | 832 | 195 | 69 | 818 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 528,972 | Nov. 13 | 834 | 196 | 69 | 818 |
| Pike, Charles F., Philadelphia, Pa. System of washing, concentrating, and amalgamating ores | 528,973 | Nov. 13 | 835 | 196 | 69 | 818 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 528,974 | Nov. 13 | 836 | 197 | 69 | 819 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 528,975 | Nov. 13 | 837 | 198 | 69 | 819 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Pike, Charles F., Philadelphia, Pa. Amalgamator | 528,976 | Nov. 13 | 840 | 198, 199 | 69 | 819 |
| Pike, Charles F., Philadelphia, Pa. Suction-pipe for suction devices | 528,977 | Nov. 13 | 843 | 199 | 69 | 820 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 528,978 | Nov. 13 | 844 | 199 | 69 | 820 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 528,979 | Nov. 13 | 845 | 200 | 69 | 820 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 528,980 | Nov. 13 | 847 | 200 | 69 | 821 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 528,981 | Nov. 13 | 848 | 200 | 69 | 821 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 528,982 | Nov. 13 | 850 | 201 | 69 | 821 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 528,983 | Nov. 13 | 852 | 201 | 69 | 822 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 529,047 | Nov. 13 | 950 | 224, 225 | 69 | 839 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 529,080 | Nov. 13 | 1009 | 244 | 69 | 849 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 529,187 | Nov. 13 | 1193 | 287 | 69 | 882 |
| Pike, Charles F., Philadelphia, Pa. Ore crusher or concentrator | 529,188 | Nov. 13 | 1195 | 288, 289 | 69 | 883 |
| Pike, Charles F., Philadelphia, Pa. Ore washer or concentrator | 529,307 | Nov. 13 | 1412 | 339, 340 | 69 | 923 |
| Pike, Emma J., London, England. Suspensory belt | 529,750 | Nov. 27 | 2182 | 520 | 69 | 1091 |
| Pike, Orville S., New Lisbon, Ohio. Automatic pressure-retaining valve for air-brakes | 529,137 | Nov. 13 | 1100 | 266 | 69 | 867 |
| Pike, William L., Groton, N. Y. Chopping-knife | 528,562 | Nov. 6 | 61 | 16 | 69 | 657 |
| Pile, John W., Marietta, Ind. Delivery-wagon | 527,806 | Oct. 23 | 1859 | 447 | 69 | 390 |
| Pilgram, Morris, Jersey City, N. J. Billiard-cue-tip fastener | 526,842 | Oct. 2 | 283 | 68 | 69 | 54 |
| Pinkerton, Edward E., Sioux City, Iowa. Paper box | 529,308 | Nov. 13 | 1416 | 340 | 69 | 924 |
| Pischof, Alfred R. von. (See Pattigler, Josef, assignor.) | | | | | | |
| Pitts Agricultural Works. (See Todd, Marquis J., assignor.) | | | | | | |
| Pittsburg Chemical Company. (See Hood, Charles F., assignor.) | | | | | | |
| Platt, Edward T., assignor of two-thirds to W. Freise and C. O. Moyer, Chicago, Ill. Brush for dynamo-electric machines | 530,717 | Dec. 11 | 1136 | 276 | 69 | 1436 |
| Plumo & Atwood Manufacturing Company. (See Echols, Frank G., assignor.) | | | | | | |
| Plummer, Frank O., *et al.* (See Stearns, William E., assignor.) | | | | | | |
| Pneumatic and Electric Tool Company. (See Drawbaugh, Daniel, assignor.) | | | | | | |
| Pneumatic Tyre Company. (See Welch, Charles K., assignor.) | | | | | | |
| Poage, John N., College Hill, Ohio. Water-column | 531,598 | Dec. 25 | 2679 | 643 | 69 | 1754 |
| Pobst, David, Shreveport, La. Window-shutter | 528,689 | Nov. 6 | 302 | 74 | 69 | 707 |
| Poe, Augusta L. (See Claudy and Klusmeyer, assignors.) | | | | | | |
| Poggendorf, August, Rochester, N. Y. Steam-boiler | 529,805 | Nov. 27 | 2269 | 541, 542 | 69 | 1108 |
| Pole, Benjamin C., Deanewood, D. C. Differentially-geared electric motor | 527,023 | Oct. 2 | 577 | 139 | 69 | 109 |
| Polis, Horace, assignor of one-half to L. F. Mooney, Philadelphia, Pa. Railway-switch | 529,189 | Nov. 13 | 1197 | 289 | 69 | 883 |
| Polk, Robert H., Savannah, Ga. Busy-test for multiple switchboards | 527,393 | Oct. 9 | 1177 | 288 | 69 | 234 |
| Pollard, Edward T., New York, N. Y. Cutter for cigarette-machines | 529,138 | Nov. 13 | 1103 | 267 | 69 | 867 |
| Pollard, Edward T., New York, N. Y. Cigarette-machine | 530,718 | Dec. 11 | 1137 | 276, 277 | 69 | 1436 |
| Pollard, Lewis C., Waterville, Me. Top-prop for buggies | 527,183 | Oct. 9 | 823 | 200 | 69 | 168 |
| Pollock, George W. (See Dickerhoof, William H., assignor.) | | | | | | |
| Polsdorfer & Sons, J. H. (See Northall, William H., assignor.) | | | | | | |
| Polsgrove, Amelia D., Lewistown, Pa. Wood-preserving compound | 529,834 | Nov. 27 | 2426 | ..... | 69 | 1119 |
| Pomeroy, Isaac, Newark, N. J. Combined stopper and filler for bottles | 531,133 | Dec. 18 | 1849 | 438 | 69 | 1582 |
| Ponten, Anders, and J. V. Skoglund, New York, N. Y. Apparatus for centrifugal separation of compound liquids | 528,690 | Nov. 6 | 303 | 74 | 69 | 701 |
| Poole, Benjamin. (See Foster, Lucian M., assignor.) | | | | | | |
| Poole Brothers. (See Souther, Calvin N., assignor.) | | | | | | |
| Poole, George. (See Wyman and Poole.) | | | | | | |
| Poole, Staley D., assignor to Deere & Company, Moline, Ill. Draft-equalizer | 527,074 | Oct. 9 | 651 | 158 | 69 | 137 |
| Poole, Staley D., assignor to Deere & Company, Moline, Ill. Spreader-rod | 528,236 | Oct. 30 | 2645 | 637 | 69 | 547 |
| Poor, Albert. (See Beardslee, William F., assignor.) | | | | | | |
| Pope, Edward J., assignor of three-fourths to Badger Pearl Button Company, Eau Claire, Wis. Machine for forming button-blanks | 529,950 | Nov. 27 | 2521 | 608 | 69 | 1155 |
| Pope Manufacturing Company. (See Copeland, James S., assignor.) | | | | | | |
| Pope Manufacturing Company. (See Elliott, Sterling, assignor.) | | | | | | |
| Popham, Richard M. (See Phillippi, George W., assignor.) | | | | | | |
| Popp, Georg, and H. Becker, Frankfort-on-the-Main, Germany. Sterilizing apparatus | 529,190 | Nov. 13 | 1199 | 289, 290 | 69 | 883 |
| Porteous, John, Cincinnati, Ohio. Water-closet coupling | 531,425 | Dec. 25 | 2675 | 568 | 69 | 1695 |
| Porter, Charles F., Brockton, Mass. Foot-brake for bicycles | 529,627 | Nov. 20 | 1975 | 471 | 69 | 1046 |
| Porter, Charles F., Brockton, Mass. Toe-clip for bicycle-pedals | 529,951 | Nov. 27 | 2524 | 608 | 69 | 1155 |
| Porter, Henry W., assignor of one-half to F. N. Manross, Forestville, Conn. Coin-controlled musical toy bank | 528,277 | Oct. 30 | 2712 | 654 | 69 | 560 |
| Porter, Henry W., assignor of one-half to F. N. Manross, Forestville, Conn. Musical clock | 528,739 | Nov. 6 | 374 | 91 | 69 | 715 |
| Porter, Henry W., assignor of one-half to F. N. Manross, Forestville, Conn. Musical clock | 529,835 | Nov. 27 | 2327 | 554 | 69 | 1119 |
| Pöschel, Robert, Goessnitz, Germany. Button | 526,739 | Oct. 2 | 117 | 28 | 69 | 24 |
| Poston, Elias M., Springfield, Ohio. Secondary battery | 528,740 | Nov. 6 | 375 | 91 | 69 | 715 |
| Poston, Irvin G., Veedersburg, Ind. Paving-block | 529,952 | Nov. 27 | 2525 | 608 | 69 | 1155 |
| Potter, Charles, assignor to Potter Printing Press Company, Plainfield, N. J. Web-supporting device for printing-presses | 527,878 | Oct. 23 | 1994 | 478 | 69 | 413 |
| Potter, Charles, assignor to Potter Printing Press Company, Plainfield, N. J. Web-supporting device for printing-presses | 527,879 | Oct. 23 | 1996 | 479 | 69 | 413 |
| Potter, Charles, Jr., *et al.* (See Brooks, John, assignor.) | | | | | | |
| Potter, Charles, Jr., assignor to Potter Printing Press Company, Plainfield, N. J. Cylinder printing-machine | 527,880 | Oct. 23 | 1998 | 479 | 69 | 414 |
| Potter, Henry N., Allegheny, assignor to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Method of and means for synchronizing alternating-current motors or generators | 529,461 | Nov. 20 | 1703 | 406 | 69 | 996 |
| Potter, Hobert B., Hillburn, N. Y. Switch and signal lever | 529,407 | Nov. 20 | 1695 | 379 | 69 | 976 |
| Potter, James C., Pawtucket, R. I. Feeding mechanism for machines for opening cotton | 528,389 | Oct. 30 | 2599 | 702 | 69 | 592 |
| Potter, James C., Pawtucket, R. I. Feed-regulating device for machines for opening and preparing cotton | 529,567 | Nov. 20 | 1891 | 449, 450 | 69 | 1029 |
| Potter Printing Press Company. (See Brooks, John, assignor.) | | | | | | |
| Potter Printing Press Company. (See Potter, Charles, assignor.) | | | | | | |
| Potter, Sarah A., Harper, Kans. Invalid-chair | 531,330 | Dec. 25 | 2212 | 530 | 69 | 1664 |
| Potter, William B., Schenectady, N. Y., assignor to General Electric Company, of New York. Running compound-wound dynamo-electric machines in multiple | 527,075 | Oct. 9 | 652 | 158 | 69 | 137 |
| Pottle, George W. (See Richey, Virgil G., assignor.) | | | | | | |
| Poufé, Charles, and C. Lock, Philadelphia, Pa. Fire-engine and pump | 528,563 | Nov. 6 | 62 | 16, 17 | 69 | 658 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Powell, Charles E., Philadelphia, Pa. Trolley | 531,331 | Dec. 25 | 2215 | 530 | 69 | 1664 |
| Powell, John W., Smethwick, assignor to Holt & Willetts, Cradley Heath, England. Automatic brake for pulley-blocks | 528,646 | Nov. 6 | 229 | 57 | 69 | 687 |
| Powers, William H., Grand Rapids, Mich. Veneer-cutting machine | 531,218 | Dec. 18 | 2010 | 477 | 69 | 1611 |
| Powter, Nathaniel B., assignor to S. M. Roosevelt, New York, N. Y. Utilizing garbage and similar waste products | 530,126 | Dec. 4 | 89 | 23 | 69 | 1231 |
| Pratt, Arthur L., Kalamazoo, Mich. Coin-controlled game apparatus | 531,469 | Dec. 25 | 2405 | 587 | 69 | 1712 |
| Pratt, Francis B., Canton, Miss. Inkstand | 528,802 | Nov. 6 | 499 | 121 | 69 | 737 |
| Pratt, Henry C., Canandaigua, N. Y. Wire fence | 528,109 | Oct. 23 | 2415 | 584, 585 | 69 | 490 |
| Pratt, Henry L. (See McCoy and Pratt.) | | | | | | |
| Pratt, Nat. W., Brooklyn, N. Y. Expanding-tool | 527,155 | Oct. 9 | 782 | 191 | 69 | 160 |
| Pratt, Nat. W., Brooklyn, N. Y. Tube-joint for sectional boilers | 527,883 | Oct. 23 | 2003 | 480 | 69 | 414 |
| Pratt, Seymour A. Pontiac, Mich. Ironing-machine | 528,986 | Nov. 13 | 856 | 202 | 69 | 822 |
| Pratt, Theodore P., Boston, assignor to J. Wilkinson, Everett, Mass. Electric lock | 526,909 | Oct. 2 | 405 | 101 | 69 | 75 |
| Pratt & Whitney Company. (See Cooley, Charles H., assignor.) | | | | | | |
| Pratt & Whitney Company. (See MacCord, Charles W., assignor.) | | | | | | |
| Pratt, William B., Railway, N. J. Ink-well | 530,796 | Dec. 11 | 1207 | 306 | 69 | 1461 |
| Prawatke, August, Dresden, Germany, assignor to Gas Traction Company, Limited, London, England. Driving-gear for locomotives | 526,981 | Oct. 2 | 509 | 125 | 69 | 95 |
| Prendergast, John T. (See Cooley, Robert L., assignor.) | | | | | | |
| Prentice, Manning, Stowmarket, England. Still for obtaining nitric acid, &c. | 527,718 | Oct. 16 | 1707 | 411, 412 | 69 | 345 |
| Prentice, Thomas, assignor of one-half to J. N. Norris, Detroit, Tex. Plow-point | 530,452 | Dec. 4 | 646 | 161 | 69 | 1334 |
| Presnell, Charles E., Sedgewickville, Mo. Coffee-pot holder | 529,903 | Nov. 27 | 2526 | 608 | 69 | 1156 |
| Pressley, Leonidas C., San Francisco, Cal. Conduit electric railway | 529,836 | Nov. 27 | 2331 | 554 | 69 | 1120 |
| Price, J. E., *et al.* (See Church, Edward O., assignor.) | | | | | | |
| Price, John B., Wollaston, Mass., assignor to O. Elsas, Atlanta, Ga. Sewing-machine | 527,288 | Oct. 9 | 1003 | 243, 244 | 69 | 200 |
| Price, Orrin J. (See Holman, Joseph W., assignor.) | | | | | | |
| Price, William G., Sioux City, Iowa. Machine for building embankments | 531,385 | Dec. 25 | 2512 | 551, 552 | 69 | 1683 |
| Price, William G., Sioux City, Iowa, assignor of one-half to G. E. Mott, New Orleans, La. Machine for building embankments | 528,891 | Nov. 6 | 669 | 161, 162 | 69 | 769 |
| Pridmore, Edward, assignor to Johnston Harvester Company, Batavia, N. Y. Mowing-machine | 528,304 | Oct. 30 | 2758 | 666 | 69 | 567 |
| Pridmore, Edward, assignor to Johnston Harvester Company, Batavia, N. Y. Harvester | 529,954 | Nov. 27 | 2527 | 609 | 69 | 1156 |
| Priestley, Frederick. (See Priestley, George and F.) | | | | | | |
| Priestley, George and F., Bradford, England. Loom for weaving double pile fabrics | 529,955 | Nov. 27 | 2529 | 610 | 69 | 1156 |
| Priestly, Frank C., San Francisco, Cal. Electric converter | 531,005 | Dec. 18 | 1020 | 384 | 69 | 1540 |
| Prince, Jerome, Milford, Mass., assignor to Musical Telephone Company, Milford, Mass., and Saco, Maine. Mechanical telephone | 528,390 | Oct. 30 | 2000 | 703 | 69 | 593 |
| Prindle, William E., assignor of one-half to A. H. Ramey, Aurora, Ill. Sled-propeller | 531,274 | Dec. 18 | 2106 | 506 | 69 | 1628 |
| Pritchard, Nathaniel J., Shenandoah, Va. Check-valve | 529,667 | Nov. 20 | 2043 | 490 | 69 | 1058 |
| Probola, Adam, assignor to I. W. Deutsch and S. Schweiger, Cleveland, Ohio. Zanch-basket | 528,491 | Oct. 30 | 3079 | 746 | 69 | 625 |
| Proctor, John C., Dallas, Oreg. Dumping-wagon | 530,241 | Dec. 4 | 293 | 72 | 69 | 1269 |
| Proctor, Charles B., assignor of one-half to E. L. Morgan and H. Hinrichs, Milo, Iowa. Folding chicken-coop | 527,807 | Oct. 23 | 1860 | 447 | 69 | 390 |
| Proctor, Josiah K., assignor to Philadelphia Textile Machinery Company, Philadelphia, Pa. Drying-machine. (Reissue) | 11,460 | Dec. 25 | 2714 | 650, 651 | 69 | 1762 |
| Prosser, Thomas J., St. Louis, Mo. Railway water-tank | 528,110 | Oct. 23 | 2417 | 585 | 69 | 491 |
| Prowse, George R., Montreal, Canada, assignor of one-half to Firm of T. H. McAllister New York, N. Y. Oxygen generator and holder | 530,453 | Dec. 4 | 647 | 161 | 69 | 1334 |
| Pugh, Achilles H., and D. B. Martin, Cincinnati, Ohio. Railway-ticket and holder | 528,130 | Oct. 23 | 2455 | 594 | 69 | 498 |
| Pugh, Charles H., Birmingham, England. Manufacturing metallic rims for bicycle-wheels | 527,345 | Oct. 9 | 1093 | 265, 266 | 69 | 217 |
| Pugsley, William E., assignor of one-half to D. Fitzgerald, Lincoln, Nebr. Wrench | 527,156 | Oct. 9 | 783 | 191 | 69 | 160 |
| Pullman's Palace Car Company. (See Campbell, John, assignor.) | | | | | | |
| Purves, James, Munhall, Pa. Open-hearth furnace | 528,510 | Oct. 30 | 3110 | 754 | 69 | 631 |
| Purvis, William B., Philadelphia, Pa., assignor to Eastern Paper Bag Company, of Connecticut. Paper bag machine | 530,650 | Dec. 11 | 1032 | 251, 252 | 69 | 1418 |
| Pusey, Lea, Wilmington, Del. Apparatus for subdividing blocks of ice | 530,127 | Dec. 4 | 90 | 24 | 69 | 1232 |
| Putnam, Donia C., Wayne Centre, N. Y. Hoop-making machine | 527,884 | Oct. 23 | 2005 | 481 | 69 | 415 |
| Q. & C. Company. (See Gabel, Thomas R., assignor.) | | | | | | |
| Q. & C. Company. (See Holmes, William W., assignor.) | | | | | | |
| Quimby, William E., Orange, N. J. Screw-pump | 529,837 | Nov. 27 | 2333 | 554, 555 | 69 | 1121 |
| Quortrup, August, Jamaica, N. Y. Cash-controlling machine | 527,808 | Oct. 23 | 1861 | 447, 448 | 69 | 390 |
| R. F. Hall Manufacturing Company. (See Hall, Robert F., assignor.) | | | | | | |
| Radford, Benjamin F., Hyde Park, Mass. Belt-tightener | 527,506 | Oct. 16 | 1365 | 332, 333 | 69 | 283 |
| Radomski, John, assignor of one-half to M. Barabasz, Baltimore, Md. Street-car motor | 531,275 | Dec. 18 | 2109 | 506 | 69 | 1628 |
| Raffard, Nicolas J., Paris, France, assignor to Thomson-Houston Electric Company, of Connecticut. Electric locomotive | 527,126 | Oct. 9 | 740 | 181, 182 | 69 | 153 |
| Railsback, Lafayette D., Indianapolis, Ind. Rotary plow | 528,511 | Oct. 30 | 3112 | 755 | 69 | 632 |
| Ralya, William S., and R. Coyle, Indianapolis, Ind. Metal-straightening machine | 529,956 | Nov. 27 | 2531 | 610 | 69 | 1156 |
| Ramey, Alfred H. (See Prindle, William E., assignor.) | | | | | | |
| Ramming, John, St. Louis, Mo., assignor to National Lead Company, Jersey City, N. J. Mold | 529,309 | Nov. 13 | 1417 | 340 | 69 | 924 |
| Ramsay, Burt, New York, N. Y. Pencil-sharpener | 530,454 | Dec. 4 | 648 | 161 | 69 | 1334 |
| Ramsay, Erskine, Pratt Mines, Ala. Coal and mineral washer | 528,803 | Nov. 6 | 500 | 121 | 69 | 737 |
| Ramsey, Philip L., assignor of one-half to J. S. Grumbley, Elkton, Ky. Kitchen-cabinet | 528,180 | Oct. 30 | 2539 | 615 | 69 | 528 |
| Rand, Addison C., assignor to J. F. Lewis, New York, N. Y., Pneumatic vehicle | 530,550 | Dec. 11 | 854 | 211 | 69 | 1387 |
| Randall, Jabez B., Sanford, Fla. Truck | 528,443 | Oct. 30 | 2992 | 723 | 69 | 609 |
| Randall, John L., Brooklyn, N. Y. Method of and composition of matter for smelting titanic iron ore | 528,804 | Nov. 6 | 504 | ..... | 69 | 738 |
| Randolph, Clabeorn P., Los Angeles, Cal. Washing-machine | 527,507 | Oct. 16 | 1366 | 333 | 69 | 283 |
| Rank, Erdmann, assignor, by mesne assignments, to A. Hunmann, Chicago, Ill. Fire-escape | 529,462 | Nov. 20 | 1705 | 407 | 69 | 996 |
| Rankin, William H. (See Hebbard, Albert H. and C. C., assignors.) | | | | | | |
| Rann, Frank, Milwaukee, Wis. Submarine-pipe joint | 529,806 | Nov. 27 | 2270 | 542 | 69 | 1108 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Ramney, Darwin D., assignor, by mesne assignments, to M. Turner, trustee, Lewistown, Ill. Can-testing machine | 528,987 | Nov. 13 | 854 | 202, 203 | 69 | 892 |
| Ransome, Ernest L., Oakland, Cal. Mold | 528,342 | Oct. 30 | 2818 | 681 | 69 | 578 |
| Rapaport, Isador B., assignor of one-half to N. Cohn, Chicago, Ill. Permutation-padlock | 526,740 | Oct. 2 | 118 | 28, 29 | 69 | 24 |
| Raphael, Robert, assignor to W. J. McKelvey, Brooklyn, N. Y. Car-fender | 527,004 | Oct. 2 | 543 | 133 | 69 | 102 |
| Rasner, Henry C., San Francisco, Cal. Vise | 527,217 | Oct. 9 | 879 | 213 | 69 | 179 |
| Rastetter, Louis, Fort Wayne, Ind. Joint for vehicle-wheel rims | 528,741 | Nov. 6 | 377 | 91 | 69 | 715 |
| Ratcliff, Thomas, Casey, Ill. Ticket-case | 527,508 | Oct. 16 | 1370 | 333, 334 | 69 | 283 |
| Rauch, Charles E. (See Andrews, Charles B., assignor.) | | | | | | |
| Rauch, George, Milwaukee, Wis. Commutator-brush holder | 527,127 | Oct. 9 | 742 | 182 | 69 | 153 |
| Randenbush, John K., *et al.* (See Andrews, Charles B., assignor.) | | | | | | |
| Rawdon, Frank P., Worcester, Mass. Window or door button | 526,843 | Oct. 2 | 281 | 68 | 69 | 54 |
| Rawls, Thomas F. (See Holliday and Rawls.) | | | | | | |
| Raymond, Francois, Woodhaven, N. Y. Tongs | 530,455 | Dec. 4 | 659 | 162 | 69 | 1334 |
| Raymond, Francois, Woodhaven, N. Y. Padlock | 530,456 | Dec. 4 | 651 | 162 | 69 | 1335 |
| Raymond, Freeborn F., 2d, Newton, Mass. Nail making, distributing, and driving machine | 528,805 | Nov. 6 | 505 | 122 | 69 | 736 |
| Raymond, George W., Seneca, Ill. Draft-equalizer | 528,111 | Oct. 23 | 2418 | 585 | 69 | 491 |
| Raymond, Henry, Knoxville, Tenn. Car-coupling | 530,055 | Nov. 27 | 2738 | 656 | 69 | 1198 |
| Raymond, Reuben, San Francisco, Cal. Glove | 531,386 | Dec. 25 | 2315 | 552 | 69 | 1683 |
| Raymond, Ward, Johnstown, Pa. Machine for bending flanged metal bars | 530,203 | Dec. 4 | 221 | 55 | 69 | 1256 |
| Rayner, Thomas J., assignor of one-half to E. B. Caird, London, England. Float-valve | 527,346 | Oct. 9 | 1095 | 267 | 69 | 218 |
| Read, Edwin O., New York, N. Y. Device for protecting joints of windows | 529,858 | Nov. 27 | 2336 | 555 | 69 | 1121 |
| Reading, Edward, and A. Rigby, Sydney, New South Wales. Amalgamator and separator for recovering precious metals from ores | 527,076 | Oct. 9 | 654 | 158, 159 | 69 | 137 |
| Reading, John, assignor to Reading Manufacturing Company, Akron, Ohio. Sample-book rack | 527,809 | Oct. 23 | 1861 | 448 | 69 | 391 |
| Reading Manufacturing Company. (See Reading, John, assignor.) | | | | | | |
| Reaves, Henry B. (See Rigby and Reaves.) | | | | | | |
| Recknagel, Hermann, Winterthur, Switzerland. Air-draft-control apparatus | 529,191 | Nov. 13 | 1201 | 290 | 69 | 884 |
| Records, Edward, assignor to J. B. Dill, New York, N. Y. Making fertilizers | 527,810 | Oct. 23 | 1865 | ..... | 69 | 391 |
| Redding, Jerome, Malden, Mass. Gong | 528,112 | Oct. 23 | 2419 | 586 | 69 | 491 |
| Reed & Barton Corporation. (See Leach, Thomas, assignor.) | | | | | | |
| Reed, Charles J., assignor to Reed Electric Company, Philadelphia, Pa. Storage battery | 528,647 | Nov. 6 | 230 | 57, 58 | 69 | 688 |
| Reed, Charles J., assignor to Reed Electric Company, Philadelphia, Pa. Storage-battery | 528,648 | Nov. 6 | 232 | ..... | 69 | 688 |
| Reed, Charles J., assignor to Reed Electric Company, Philadelphia, Pa. Rail bond or connector | 530,651 | Dec. 11 | 1036 | 253 | 69 | 1419 |
| Reed Electric Company. (See Reed, Charles J., assignor.) | | | | | | |
| Reed, Jay, Butler, Mo. Strap-loop | 530,056 | Nov. 27 | 2739 | 657 | 69 | 1198 |
| Reefy, Solomon L., Edinburg, Ill. Bracket for vehicle-lamps | 529,751 | Nov. 27 | 2182 | 520 | 69 | 1092 |
| Reel, John, assignor of one-half to J. J. Carter, French Camps, Miss. Car-coupling | 530,457 | Dec. 4 | 652 | 162 | 69 | 1335 |
| Rees, H. Clay, Waco, Tex. Atomizer | 526,741 | Oct. 2 | 122 | 29 | 69 | 24 |
| Reeve, Sidney A. (See Church and Reeve.) | | | | | | |
| Reeves & Co. (See Reeves, Marshall T., assignor.) | | | | | | |
| Reeves, Marshall T., assignor to Reeves & Co., Columbus, Ind. Windlass | 529,531 | Nov. 20 | 1833 | 436 | 69 | 1019 |
| Reeves, William, Hoboken, N. J. Railway-train protecting device | 527,540 | Oct. 16 | 1422 | 346 | 69 | 293 |
| Regan, Patrick J., Iowa City, Iowa. Fence-making machine | 527,370 | Oct. 9 | 1139 | 278 | 69 | 226 |
| Regan, Thomas, Crawford, Nebr. Pitman connection | 527,128 | Oct. 9 | 743 | 182 | 69 | 153 |
| Register, Joel E. (See Brown and Register.) | | | | | | |
| Rehfuss, George, J. G., and M. O., Philadelphia, Pa., assignors to W. W. Farmer, New York, N. Y. Machine for dressing type | 527,371 | Oct. 9 | 1141 | 278, 279, 280 | 69 | 227 |
| Rehfuss, John G. (See Rehfuss, George, J. G., and M. O.) | | | | | | |
| Rehfuss, Martin O. (See Rehfuss, George, J. G., and M. O.) | | | | | | |
| Reichman, George, Philadelphia, Pa. Lamp-shade protector | 528,029 | Oct. 23 | 22-0 | 549 | 69 | 465 |
| Reid, Clarence E., Baltimore, Md. Ice-shaving machine | 530,652 | Dec. 11 | 1038 | 253 | 69 | 1419 |
| Reid, John, Yonkers, and B. Hammann, Brooklyn, assignors to J. L. Mott Iron Works, New York, N. Y. Washtub | 529,568 | Nov. 20 | 1892 | 450 | 69 | 1029 |
| Reid, Samuel, Jersey City, N. J., assignor of one-third to E. G. Tremaine, Brooklyn, N. Y. Tobacco stripping or stemming machine | 527,885 | Oct. 23 | 2007 | 481, 482 | 69 | 415 |
| Reiff, William H., Philadelphia, assignor of one-half to R. E. M. Evans, Norristown, Pa. Advertising apparatus | 527,024 | Oct. 2 | 578 | 140 | 69 | 109 |
| Reiffer, Ulrich, assignor of one-half to G. Rupp, St. Louis, Mo. Washing machine | 530,900 | Dec. 11 | 1428 | 339 | 69 | 1490 |
| Reiley, Matthew S., assignor of sixty-seven ninety-sixths to R. E. L., G. W., and J. M. White and F. R. Miller, Washington, D. C. Electric signaling apparatus for block systems | 528,444 | Oct. 30 | 2003 | 723, 724 | 69 | 609 |
| Reilly, Bernard T., Wilkes-Barré, Pa. Cylinder relief-valve | 530,853 | Dec. 11 | 1356 | 323 | 69 | 1477 |
| Reilly, James, Calgary, Canada. Clothes-drier | 529,628 | Nov. 20 | 1977 | 471 | 69 | 1046 |
| Reilly, Michael. (See Brooks, Reilly, and Rudkins.) | | | | | | |
| Rein, Bernard, assignor to Union Heater Supply Company, Detroit Mich. Sad-iron | 530,653 | Dec. 11 | 1039 | 253 | 69 | 1419 |
| Rein, Gustavus. (See Catlin and Rein.) | | | | | | |
| Reinhard, David F. (See Brust, Reinhard, and Dunkel.) | | | | | | |
| Reinhard, Thomas J., assignor to P. Sherrer and J. Schmidt, Cleveland, Ohio. Cask-pitching apparatus | 529,310 | Nov. 13 | 1418 | 341 | 69 | 924 |
| Reist, Henry G., Schenectady, N. Y., assignor to General Electric Company, of New York. Commutator | 526,742 | Oct. 2 | 123 | 29 | 69 | 24 |
| Reitter, Christian, Saginaw, Mich. Printer's quoin | 531,332 | Dec. 25 | 2216 | 530 | 69 | 1664 |
| Relay Manufacturing Company. (See Ziegler, John G., assignor.) | | | | | | |
| Rembert, Henry, Willis, Tex. Cotton-cleaner | 530,458 | Dec. 4 | 652 | 162, 163 | 69 | 1335 |
| Remington Arms Company. (See Fay, Rimmon C., assignor.) | | | | | | |
| Remington Arms Company. (See Fay and Humphreys, assignors.) | | | | | | |
| Remington-Sholes Typewriter Company. (See Sholes, Zalmon G., assignor.) | | | | | | |
| Remus, Teodor, Dresden, Germany. Apparatus for bending strawboard | 529,192 | Nov. 13 | 1203 | 290 | 69 | 881 |
| Reneau, James W., Houston, Tex. Car-wheel lubricator | 527,447 | Oct. 16 | 1261 | 310 | 69 | 262 |
| Renkert, Jacob J. (See Rutter, George S. M., assignor.) | | | | | | |
| Rennyson, William, Norristown, Pa. Machine for mixing mortar | 530,654 | Dec. 11 | 1040 | 254 | 69 | 1419 |
| Renter, Charles H., Allegheny, Pa. Match-safe | 528,691 | Nov. 6 | 306 | 75 | 69 | 701 |
| Renwick, Edward S., Millburn, N. J. Carriage-wheel | 531,447 | Dec. 25 | 2431 | 579 | 69 | 1706 |
| Renleaux, Josef. (See Laughlin and Renleanx.) | | | | | | |
| Rens, Michael, Escatawpa, Miss. Fruit-gatherer | 527,622 | Oct. 16 | 1553 | 376 | 69 | 316 |
| Reussner, Albert F. L., assignor of one-half to W. C. Barr, Jersey City, N. J. Steam-boiler. | 530,901 | Dec. 11 | 1429 | 339, 340 | 69 | 1491 |



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|---|---|---|---|---|---|---|
| Reuterdahl, Arvid. (See Berglind and Reuterdahl.) | | | | | | |
| Rex, David J. (See Daub and Rex.) | | | | | | |
| Reynolds, Andrew, Seattle, Wash. Device for removing ashes from locomotive ash-pans | 529,408 | Nov. 20 | 1598 | 380 | 69 | 977 |
| Reynolds, Myron H., Olean, N. Y. Grinding and polishing machine | 529,048 | Nov. 13 | 953 | 226 | 69 | 839 |
| Rheinberg, Nathan, London, England. Comb | 527,509 | Oct. 16 | 1371 | 334 | 69 | 283 |
| Rhetts, John E., Salem, Ind. Secondary battery | 528,445 | Oct. 30 | 2998 | 724 | 69 | 610 |
| Rhind, Frank, Meriden, assignor to Bridgeport Brass Company, Bridgeport, Conn. Shade or globe holder | 527,289 | Oct. 9 | 1008 | 244 | 69 | 201 |
| Rhind, Frank, Meriden, assignor to Bridgeport Brass Company, Bridgeport, Conn. Device for suspending lamps | 530,459 | Dec. 4 | 655 | 163 | 69 | 1335 |
| Rhind, Frank, Meriden, assignor to Bridgeport Brass Company, Bridgeport, Conn. Lamp-burner | 531,219 | Dec. 18 | 2011 | 477 | 69 | 1611 |
| Rhoades, Alonzo E., assignor to G. Draper & Sons, Hopedale, Mass. Separator for spinning-rails | 531,561 | Dec. 25 | 2617 | 627 | 69 | 1742 |
| Rhoads, John H., and G. H. Spannagel, Nokomis, Ill. Food-screen | 526,942 | Oct. 2 | 455 | 112 | 69 | 86 |
| Rhoads, John N., Philadelphia, Pa. Trousers-fastener | 531,063 | Dec. 18 | 1714 | 407 | 69 | 1557 |
| Rhodes, Daniel, Washington, D. C. Nut-lock | 530,963 | Dec. 18 | 1543 | 365 | 69 | 1526 |
| Rice, Abraham L., Wright, Iowa. Hay-loader | 527,510 | Oct. 16 | 1373 | 334 | 69 | 284 |
| Rice, Edwin W., Jr. (See Thomson and Rice.) | | | | | | |
| Rice, Edwin W., Jr., Swampscott, assignor to General Electric Company, Boston, Mass. Dynamo-electric machine | 526,743 | Oct. 2 | 124 | 29, 30 | 69 | 25 |
| Rice, Elliott S. (See Hisey, Charles S., assignor.) | | | | | | |
| Rice, Elliott S. (See Hisey and Rice.) | | | | | | |
| Rich, Louis F. C., and J. H. Hull, New York, N. Y. Auger for boring and reaming | 529,049 | Nov. 13 | 954 | 226 | 69 | 840 |
| Rich, Thomas. (See Sanford, Ross M., assignor.) | | | | | | |
| Richards, Charles A., assignor of one-half to B. F. Fox, Reading, Pa. Registering savings-bank | 527,290 | Oct. 9 | 1009 | 245 | 69 | 201 |
| Richards, Francis H., Hartford, Conn. Knob attachment | 530,624 | Dec. 11 | 980 | 241 | 69 | 1410 |
| Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Traveling-grate furnace | 527,448 | Oct. 16 | 1262 | 310, 311, 312 | 69 | 262 |
| Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Traveling-grate furnace | 527,449 | Oct. 16 | 1261 | 311, 312 | 69 | 263 |
| Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Traveling-grate furnace | 527,450 | Oct. 16 | 1268 | 312 | 69 | 263 |
| Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Traveling-grate furnace | 527,451 | Oct. 16 | 1272 | 312, 313 | 69 | 264 |
| Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Traveling-grate furnace | 527,452 | Oct. 16 | 1275 | 313 | 69 | 265 |
| Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Traveling-door furnace | 527,453 | Oct. 16 | 1279 | 314 | 69 | 267 |
| Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Traveling-grate furnace | 527,454 | Oct. 16 | 1281 | 314, 315 | 69 | 268 |
| Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Traveling-grate furnace | 527,455 | Oct. 16 | 1288 | 315 | 69 | 269 |
| Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Traveling-grate furnace | 527,719 | Oct. 16 | 1708 | 412 | 69 | 345 |
| Richards, Frank C., Felicity, Ohio. Permutation-lock | 530,551 | Dec. 11 | 856 | 211 | 69 | 1387 |
| Richards, George L., *et al.* (See Weale, Henry P., assignor.) | | | | | | |
| Richards, Thomas S. (See Hackworth and McLellan, assignors.) | | | | | | |
| Richards, William. (See Norton and Richards.) | | | | | | |
| Richardson, Albert C., South Frankfort, Mich. Casket-lowering device | 529,311 | Nov. 13 | 1419 | 341 | 69 | 924 |
| Richardson, Dwight S., Brooklyn, N. Y. Boiler-furnace | 529,409 | Nov. 20 | 1599 | 380 | 69 | 977 |
| Richardson, Edwin A., Cumberland Mills, Me. Cleaning attachment for pulp-screens | 529,193 | Nov. 13 | 1204 | 291 | 69 | 884 |
| Richardson, Edwin F., Boston, Mass. Apparatus for fastening fire-hose to ladders | 530,656 | Dec. 11 | 1043 | 254 | 69 | 1420 |
| Richardson, Erasmus, Esbon, Kans. Horseshoe | 530,797 | Dec. 11 | 1268 | 306 | 69 | 1461 |
| Richardson, Hamilton A. (See Barnewitz, John, assignor.) | | | | | | |
| Richardson, Isaac, Cleveland, Ohio. Coin-controlled machine | 527,886 | Oct. 23 | 2010 | 482 | 69 | 416 |
| Richardson, James A., San Francisco, Cal. Fish-ladder | 530,655 | Dec. 11 | 1042 | 254 | 69 | 1419 |
| Richardson, James V., Farmville, Va. Railway-signal | 530,798 | Dec. 11 | 1269 | 306, 307 | 69 | 1462 |
| Richardson, John S., *et al.* (See Norwood, George, assignor.) | | | | | | |
| Richardson, John T., Harrisburg, assignor of one-half to A. H. Ege, Mechanicsburg, Pa. Dumping-wagon | 529,878 | Nov. 27 | 2398 | 574 | 69 | 1133 |
| Richardson Manufacturing Company. (See Aiguier, Edward B., assignor.) | | | | | | |
| Richardson, William S., Boston, J. B. and P. B. Chase, Newton, Mass. Device for attaching members of glove or other fastenings | 530,657 | Dec. 11 | 1044 | 254, 255 | 69 | 1420 |
| Richberger, George, Clarksdale, Miss. Spool-cabinet | 529,081 | Nov. 13 | 1010 | 244 | 69 | 849 |
| Richell, Ernest A. (See Mooers and Richell.) | | | | | | |
| Richey, Frank W., Chicago, Ill. Staple-fastener for wooden vessels or boxes | 527,184 | Oct. 9 | 824 | 200 | 69 | 169 |
| Richey, Virgil G., assignor of one-half to G. W. Pottle, Dayton, Ohio. Seed-planter | 526,744 | Oct. 2 | 126 | 30 | 69 | 25 |
| Richmond, Henry T., Malvern, Iowa. Neck-yoke attachment | 527,372 | Oct. 9 | 1144 | 280 | 69 | 227 |
| Richmond, Henry T., Malvern, Iowa. Neck-yoke center | 527,373 | Oct. 9 | 1145 | 281 | 69 | 227 |
| Richter, Adolf, Rudolstadt, Germany. Damper for musical instruments | 527,811 | Oct. 23 | 1866 | 448 | 69 | 391 |
| Richter, Ernest W., Washington, D. C. Means for preventing air-bubbles in ice | 529,194 | Nov. 13 | 1205 | 291 | 69 | 885 |
| Richter, Ernst, assignor to Siemens & Halske, Berlin, Germany. Utilizing electric motors for operating machinery | 528,608 | Nov. 6 | 145 | 36 | 69 | 673 |
| Rickard, Benjamin F. and W. H., Harrisonburg, and S. S. Miller, Bridgewater, Va. Vehicle-brake | 529,668 | Nov. 20 | 2045 | 490 | 69 | 1058 |
| Rickard, William H. (See Rickard and Miller.) | | | | | | |
| Ricketts, John L., *et al.* (See Savage, Charles G., assignor.) | | | | | | |
| Riddell, Newton N., Raymond, Nebr. Boring-machine | 529,506 | Nov. 20 | 1784 | 425 | 69 | 1009 |
| Ridge, Joseph, Chicago, Ill. Vehicle | 530,552 | Dec. 11 | 858 | 211, 212 | 69 | 1388 |
| Riedy, John P., Williamsport, Pa. Lumber-stamping attachment for sawing or trimming machines | 529,195 | Nov. 13 | 1206 | 291 | 69 | 885 |
| Riehle, Frederick A. (See Buzby, Charles E., assignor.) | | | | | | |
| Riexinger, George, Buffalo, N. Y. Ice-velocipede | 526,745 | Oct. 2 | 127 | 30 | 69 | 25 |
| Rigby, Arthur. (See Reading and Rigby.) | | | | | | |
| Rigby, Brierley K., Ditton, assignor of one-half to F. A. R. Neill, St. Helens, and A. C. Carr, Rainhill, England. Manufacture of cement | 526,910 | Oct. 2 | 407 | ..... | 69 | 76 |
| Rigby, Nicholas L., and H. B. Reaves, Los Angeles, Cal. Windmill | 527,157 | Oct. 9 | 784 | 191, 192 | 69 | 160 |
| Righter, Thomas M., Mount Carmel, Pa. Coal washer and separator | 531,562 | Dec. 25 | 2618 | 627 | 69 | 1742 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Rightmyer, Genevieve M. (See Rightmyer, Homer W., assignor.) | | | | | | |
| Rightmyer, Homer W., Ulysses, N. Y. Shaping attachment for stone-planers | 530,903 | Dec. 11 | 1433 | 340 | 69 | 1491 |
| Rightmyer, Homer W., assignor to G. M. Rightmyer, Taughannock Falls, N. Y. Guide-clamp for stone-sawing machines | 530,242 | Dec. 4 | 294 | 72 | 69 | 1269 |
| Rightmyer, William T., Meriden, Conn. Penholder | 530,603 | Dec. 11 | 947 | 232 | 69 | 1404 |
| Riley, Alberta, assignor of one-half to W. and L. W. Jordan, Boston, Mass. Hinge | 529,312 | Nov. 13 | 1420 | 341 | 69 | 925 |
| Riley, Michael, London, Onio. Foot-guard for railway-frogs | 530,658 | Dec. 11 | 1046 | 255 | 69 | 1420 |
| Rmeck, John, Jr. (See Witt, Edwin F., assignor.) | | | | | | |
| Ringrose, Eduard W., assignor of one-half to D. Bayne and C. E. Baldwin, Baltimore, Md. Machine for moving railway-cars | 527,374 | Oct. 9 | 1146 | 281 | 69 | 928 |
| Rings, Julius A., New York, N. Y. Curtain-pole ring, &c | 531,563 | Dec. 25 | 2620 | 627, 628 | 69 | 1743 |
| Rinn, James J., San Francisco, Cal. Tent-fastening | 528,391 | Oct. 30 | 2901 | 703 | 69 | 593 |
| Rinn, James J., San Francisco, Cal. Tent | 528,392 | Oct. 30 | 2904 | 703, 704 | 69 | 593 |
| Rinn, James J., San Francisco, Cal. Tent | 528,393 | Oct. 30 | 2907 | 704 | 69 | 594 |
| Rinn, James J., San Francisco, Cal. Tent | 528,394 | Oct. 30 | 2910 | 704, 705 | 69 | 594 |
| Rippien, Herbert A., assignor of one-half to D. H. Bokhof, Freeport, Ill. Spring-hinge | 527,158 | Oct. 9 | 788 | 192 | 69 | 161 |
| Rites, Francis M., Pittsburg, Pa. Governor | 527,720 | Oct. 16 | 1712 | 412 | 69 | 346 |
| Ritter, J. P. V., *et al.* (See Fryer, Robert M., assignor.) | | | | | | |
| Ritter, Wilhelm, Cologne, Germany. Street-lamp | 526,870 | Oct. 2 | 334 | 82 | 69 | 63 |
| Ritz, Augustus N. (See Thomas, Lincoln N., assignor.) | | | | | | |
| Riza, Miko H., Centre Mill, Tex. Pipe-wrench | 529,196 | Nov. 13 | 1269 | 292 | 69 | 885 |
| Roark, Calvin M., assignor of one-half to A. J. McCuistion, Alto, Tex. Churn | 528,030 | Oct. 23 | 2280 | 550 | 69 | 465 |
| Roob, Thomas J., *et al.* (See Robinson, William S., assignor.) | | | | | | |
| Robbins, Charles H., Owosso, assignor of one-half to S. Dean, Ann Arbor, Mich. Gas-burner | 528,446 | Oct. 30 | 2999 | 725 | 69 | 610 |
| Robbins, Franklin S., Allentown, Pa. Nut-lock | 528,237 | Oct. 30 | 2646 | 638 | 69 | 547 |
| Robbins, John A., *et al.* (See Salzman, Christian A., assignor.) | | | | | | |
| Robert, Charles A., assignor of one-third to M. D. Cremar, Portland, Oreg. Sash-lock | 528,892 | Nov. 6 | 672 | 162 | 69 | 769 |
| Roberts, Charles E. (See Farnsworth and Roberts.) | | | | | | |
| Roberts, Charles E., Oak Park, Ill. Rod-support for screw or other machines | 526,790 | Oct. 2 | 201 | 47 | 69 | 38 |
| Roberts, Charles W. (See Beckett and Roberts.) | | | | | | |
| Roberts, Charles W., North Bennington, Vt. Method of and apparatus for producing wood-pulp | 527,812 | Oct. 23 | 1867 | 449 | 69 | 391 |
| Roberts, Cyrus, deceased; J. B. and G. A. Roberts, C. B. Tucker, Three Rivers, Mich., and S. H. Roberts, Denver, Colo., executors. Car-wheel | 528,278 | Oct. 30 | 2715 | 654 | 69 | 560 |
| Roberts, George A., *et al.*, executors. (See Roberts, Cyrus.) | | | | | | |
| Roberts, George A., Three Rivers, Mich. Dump-car | 528,279 | Oct. 30 | 2716 | 655 | 69 | 560 |
| Roberts, George W. (See Rowley, Frank, assignor.) | | | | | | |
| Roberts, James B., *et al.*, executors. (See Roberts, Cyrus.) | | | | | | |
| Roberts, Llewelyn. (See Bagley and Roberts.) | | | | | | |
| Roberts, Luke, Bradford, England. Brake for railway-cars | 529,082 | Nov. 13 | 1012 | 244 | 69 | 849 |
| Roberts, Nate H., assignor to E. C. Atkins, Indianapolis, Ind. Rotary plow | 530,964 | Dec. 18 | 1543 | 366 | 69 | 1526 |
| Roberts, Richard W., Chicago, Ill. Type-writing machine | 529,410 | Nov. 20 | 1601 | 380 | 69 | 978 |
| Roberts, Samuel H., *et al.*, executors. (See Roberts, Cyrus.) | | | | | | |
| Roberts, William J., *et al.* (See Paul, James and J. T., assignors.) | | | | | | |
| Roberts, William W., North Bend, Nebr. Collapsible decoy | 529,463 | Nov. 20 | 1706 | 407 | 69 | 996 |
| Robertshaw, Frederick W., Pittsburg, and J. M. Cooper, Bellevue, Pa. Gas-stove | 526,791 | Oct. 2 | 202 | 48 | 69 | 38 |
| Robertson, Charles R., *et al.* (See Dubelman, John, assignor.) | | | | | | |
| Robinson, A. J., *et al.* (See Loughmiller, Benjamin F., assignor.) | | | | | | |
| Robinson, Aaron J., Fremont, N. H. Sawing-machine | 529,839 | Nov. 27 | 2337 | 555, 556 | 69 | 1121 |
| Robinson, Clark, Hartley, Iowa. Tire-heater | 527,541 | Oct. 16 | 1423 | 346 | 69 | 293 |
| Robinson, Edward W., Deering, Me. Bottle-stopper extractor | 528,031 | Oct. 23 | 2282 | 550 | 69 | 466 |
| Robinson, Frederick C., East Fremont, Mich. Multiple gearing | 531,220 | Dec. 18 | 2013 | 477 | 69 | 1611 |
| Robinson, George W., Albany, N. Y. Stencil | 529,464 | Nov. 20 | 1707 | 407 | 69 | 996 |
| Robinson, Jay A., Denver, Colo. Tobacco or cigar moistener | 527,291 | Oct. 9 | 1010 | 245 | 69 | 202 |
| Robinson, John, assignor of one-half to W. J. Chaninel, Philadelphia, Pa. Manufacture of electric conductors | 529,411 | Nov. 20 | 1602 | 381 | 69 | 978 |
| Robinson, John, assignor of one-half to W. J. Chaninel, Philadelphia, Pa. Insulated electric conductor | 529,412 | Nov. 20 | 1605 | 381 | 69 | 979 |
| Robinson, John, assignor of one-half to W. J. Chaninel, Philadelphia, Pa. Manufacture of electric conductors | 529,413 | Nov. 20 | 1606 | 382 | 69 | 979 |
| Robinson, John C., Brooklyn, N. Y. Check-punch | 528,280 | Oct. 30 | 2717 | 655 | 69 | 560 |
| Robinson, Robert, Romiley, England. Apparatus for stretching felt hat-bodies | 528,806 | Nov. 6 | 507 | 122 | 69 | 738 |
| Robinson, William, Boston, Mass. Center bearing for car-trucks | 526,844 | Oct. 2 | 285 | 68, 69 | 69 | 54 |
| Robinson, William S., assignor of two-thirds to T. J. Robb and C. A. Haeseley, Fancy Farm, Ky. Ball-bearing for wheel boxes | 531,564 | Dec. 25 | 2621 | 628 | 69 | 1743 |
| Robinson, William S., assignor of thirteen-sixteenths to F. X. Piercecall, W. O. Ballard, C. A. Haeseley, J. M. Willett, T. J. Robb, and W. B. Willett, Fancy Farm, Ky. Transom-lifter | 527,347 | Oct. 9 | 1096 | 267 | 69 | 218 |
| Robischung, Henry B., Kalamazoo, Mich., assignor to Chicago Railway Equipment Company, Chicago, Ill. Finger-guard clamp for brake-beams | 527,159 | Oct. 9 | 789 | 193 | 69 | 161 |
| Robischung, Henry B., Kalamazoo, Mich., assignor to Chicago Railway Equipment Company, Chicago, Ill. Brake-beam and reinforcing-clamp therefor | 528,238 | Oct. 30 | 2647 | 638 | 69 | 547 |
| Robison, Alasco C. (See Robison, Frank L., assignor.) | | | | | | |
| Robison, Frank L., Albion, assignor of one-half to A. C. Robison, Canandaigua, N. Y. Baling-press | 529,083 | Nov. 13 | 1014 | 244 | 69 | 850 |
| Roblin, John S., West Bay City, Mich. Apparatus for lighting buildings | 527,005 | Oct. 2 | 545 | 134 | 69 | 103 |
| Roche, Charles W., Halifax, Canada. Brush | 527,456 | Oct. 16 | 1291 | 316 | 69 | 270 |
| Roche, Edward J., Milford, Mass. Machine for comminuting bone and vegetable matter | 531,426 | Dec. 25 | 2377 | 568, 569 | 69 | 1696 |
| Roche, Edward J., Milford, Mass. Means for controlling operative connection between feed-screws and followers | 531,427 | Dec. 25 | 2379 | 569 | 69 | 1696 |
| Rock Island Plow Company. (See Jewett, Charles C., assignor.) | | | | | | |
| Rockwell, Frederick C. (See Stevens, John C., assignor.) | | | | | | |
| Roder, Adolphe, Philadelphia, Pa. Air-tight package | 528,260 | Oct. 30 | 2681 | 647 | 69 | 555 |
| Rodes, Tyree T., Paris, Mo. Hand-cultivator | 526,818 | Oct. 2 | 242 | 59 | 69 | 46 |
| Rodig, Adolf, Saband, Germany. Making plates, &c., of combined metals | 530,719 | Dec. 11 | 1144 | 278 | 69 | 1437 |
| Rodwell, Thomas, Baraboo, Wis. Tire-tightener | 531,064 | Dec. 18 | 1715 | 407 | 69 | 1558 |
| Roe, John P., assignor to Ropeways Syndicate, Limited, London, England. Apparatus for transporting loads by traveling cables | 530,720 | Dec. 11 | 1146 | 278, 279 | 69 | 1438 |



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|---|---|---|---|---|---|---|
| Roe, John P., assignor to Ropeways Syndicate, Limited, London, England. Running and carrying cable | 530,902 | Dec. 11 | 1431 | 340 | 69 | 1491 |
| Roesen, Oscar, assignor to R. Hoe, T. H. Mead, and C. W. Carpenter, New York, N. Y. Clamping device for lithographic stones | 529,840 | Nov. 27 | 2339 | 556 | 69 | 1122 |
| Rogers, Charles D., Providence, R. I. Tack-driving implement | 529,958 | Nov. 27 | 2535 | 611 | 69 | 1157 |
| Rogers, Charles S., Atlanta, Ga. Churn-dasher | 528,519 | Oct. 30 | 3121 | 756 | 69 | 633 |
| Rogers, Charles T., Mansfield, Mass. Bicycle-saddle | 531,333 | Dec. 25 | 2218 | 531 | 69 | 1664 |
| Rogers, Elroy L., Wakefield, Mass. Catcher's glove | 528,343 | Oct. 30 | 2820 | 681 | 69 | 578 |
| Rogers, Ethan, Ballston Spa, N. Y. Machine for making ax-polls, &c | 531,221 | Dec. 18 | 2014 | 478, 479, 480 | 69 | 1612 |
| Rogers, George A., assignor of one-fourth to W. J. Helwig, Allegheny, Pa. Glazier's tool | 529,957 | Nov. 27 | 2534 | 611 | 69 | 1157 |
| Rogers, Henry C., Holstein, Iowa. Hay-rack | 527,292 | Oct. 9 | 1011 | 245, 246 | 69 | 202 |
| Rogers, John H., Fairland, Mich. Wire spacer and twister | 529,807 | Nov. 27 | 2271 | 542 | 69 | 1108 |
| Rogers, Robert W., San Francisco, Cal. Treating air for medical purposes | 529,684 | Nov. 20 | 2070 | 495 | 69 | 1063 |
| Rogers, Thomas N., Sault Ste. Marie, Mich. Apparatus for heating and ventilating rooms | 526,792 | Oct. 2 | 203 | 48 | 69 | 38 |
| Rohde, Charles A., *et al.* (See Wheeler, Fred A., assignor.) | | | | | | |
| Roletter, George W. (See Kennedy and Roletter.) | | | | | | |
| Rolf, Frederick W., Lawrenceburg, Ind. Thill-coupling | 531,565 | Dec. 25 | 2624 | 628 | 69 | 1743 |
| Rolfson, Rolf J., San Francisco, Cal. Dynamometer | 531,006 | Dec. 18 | 1621 | 384, 385 | 69 | 1540 |
| Rollason, Sarah J., assignor to W. H. Fletcher, London, England. Windmill or wind-motor | 529,197 | Nov. 13 | 1240 | 292 | 69 | 885 |
| Rollings, Wintield S., Indianapolis, Ind. Folding or extension table | 527,077 | Oct. 9 | 656 | 159 | 69 | 138 |
| Rolph, Benjamin M., Dixon, Ill. Cultivator | 531,566 | Dec. 25 | 2625 | 629 | 69 | 1743 |
| Roman, Reinhard L., London, England. Aluminium alloy | 528,181 | Oct. 30 | 2540 | ..... | 69 | 529 |
| Roman, Samuel, Montreal, Canada. Cigar-package | 526,943 | Oct. 2 | 456 | 112 | 69 | 86 |
| Romans, Freeland H. (See Harman and Romans.) | | | | | | |
| Rooke, George, Emporia, Kans. Boat | 527,511 | Oct. 16 | 1376 | 335 | 69 | 284 |
| Rooks, Alva N., assignor of one-half to C. H. Neff, Iuka, Ill. Buggy-top support | 528,032 | Oct. 23 | 2282 | 550 | 69 | 466 |
| Roosevelt, Samuel M. (See Fowler, Nathaniel B., assignor.) | | | | | | |
| Root, Isaac F., and W. O. Silvey, Middleport, Ohio. Funnel | 531,388 | Dec. 25 | 2317 | 553 | 69 | 1684 |
| Roper, Sylvester H., Boston, Mass. Fire-escape | 531,567 | Dec. 25 | 2628 | 629 | 69 | 1744 |
| Ropeways Syndicate. (See Roe, John P., assignor.) | | | | | | |
| Rosenbauer, August G., and R. Brussel, New York, N. Y. Street-sweeper | 529,198 | Nov. 13 | 1241 | 292, 293 | 69 | 885 |
| Rosenkranz, Adam, Allegheny, Pa. Oil-well pump | 530,350 | Dec. 4 | 487 | 120 | 69 | 1303 |
| Rosenzwey, Paul, Philadelphia, Pa. Illusion apparatus | 530,128 | Dec. 4 | 91 | 24 | 69 | 1232 |
| Ross, Frank, assignor to T. W. Smith, London, England. Apparatus for securing type or matter in printers' galleys | 531,568 | Dec. 25 | 2630 | 630 | 69 | 1744 |
| Ross, Henry S., New York, N. Y. Ferrule for boiler-tubes | 530,721 | Dec. 11 | 1150 | 279 | 69 | 1438 |
| Ross, James M., Glasgow, Scotland. Percussion apparatus for drilling | 527,078 | Oct. 9 | 657 | 160 | 69 | 138 |
| Ross, P. Sanford. (See Ross, William L., assignor.) | | | | | | |
| Ross, Solon D., Manhattan, Kans. Inhaler | 529,808 | Nov. 27 | 2273 | 542 | 69 | 1109 |
| Ross, William, Edinburgh, Scotland. Umbrella | 529,629 | Nov. 20 | 1978 | 471 | 69 | 1046 |
| Ross, William F., and W. Wilcklow, Rochester, N. Y. Soap-distributer | 531,599 | Dec. 25 | 2683 | 644 | 69 | 1755 |
| Ross, William H., Waco, Tex. Soil-breaking machine | 529,959 | Nov. 27 | 2539 | 612 | 69 | 1158 |
| Ross, William L., assignor to P. S. Ross, Newark, N. J. Subaqueous rock-breaking chisel | 531,334 | Dec. 25 | 2219 | 531 | 69 | 1665 |
| Roth, Charles H., Cincinnati, Ohio. Pneumatic tire | 531,335 | Dec. 25 | 2220 | 531 | 69 | 1665 |
| Roth, David, Cleveland, Ohio. Garment-clasp | 527,887 | Oct. 23 | 2013 | 483 | 69 | 416 |
| Rothwell, James F., St. Louis, Mo. Movable house | 528,131 | Oct. 23 | 2458 | 594 | 69 | 498 |
| Rounds, Herbert G., West Bay City, Mich. Combined step-ladder, ironing-table, and washbench | 530,625 | Dec. 11 | 982 | 241 | 69 | 1410 |
| Rourke, John, Salt Lake City, Utah Ter. Condensing apparatus | 530,553 | Dec. 11 | 860 | 212, 213 | 69 | 1388 |
| Rouse, Seymour A., Chicago, Ill. Tower for windmills | 526,793 | Oct. 2 | 204 | 48 | 69 | 39 |
| Rouy, Gustave, Chicago, Ill. Brake for railway-cars | 530,460 | Dec. 4 | 657 | 163, 164 | 69 | 1336 |
| Rowand, Lewis G., assignor to Universal Fire Alarm Company, Camden, N. J. Thermostat | 527,375 | Oct. 9 | 1147 | 281 | 69 | 928 |
| Rowell, Joseph W., San Francisco, Cal. Terra-cotta and other fireproof constructions | 531,134 | Dec. 18 | 1950 | 439 | 69 | 1583 |
| Rowland, George, Conshohocken, Pa. Lantern | 530,626 | Dec. 11 | 983 | 241 | 69 | 1410 |
| Rowland, William H., *et al.* (See Tatem, James W., assignor.) | | | | | | |
| Rowland, William P. (See Heckert and Rowland.) | | | | | | |
| Rowley, Frank, West Superior, Wis. Mail and express car | 530,243 | Dec. 4 | 295 | 73 | 69 | 1269 |
| Rowley, Frank, assignor of one-half to G. W. Roberts, West Superior, Wis. Dish-cleaner | 531,389 | Dec. 25 | 2318 | 553 | 69 | 1684 |
| Roy, Joseph K., *et al.* (See Hall, Charles H., assignor.) | | | | | | |
| Royster, Sigel A. (See Cutler, Lorrain L., assignor.) | | | | | | |
| Ru Ton, Hiram W., assignor to Goshen Folding Bed Company, Goshen, Ind. Folding bed | 528,609 | Nov. 6 | 148 | 37 | 69 | 674 |
| Rübenkamp, August, Dortmund, Germany. Apparatus for drying raw or prepared goods | 528,807 | Nov. 6 | 508 | 122, 123 | 69 | 738 |
| Rubens, Lee, assignor to L. Rubens, Chicago, Ill. Undershirt | 528,988 | Nov. 13 | 856 | 203 | 69 | 823 |
| Rubens, Lillie. (See Rubens, Lee, assignor.) | | | | | | |
| Rubenstein, Barnet, Chicago, Ill. Bung-stopper | 527,888 | Oct. 23 | 2013 | 483 | 69 | 416 |
| Rubin, Max, New York, N. Y. Writing-tablet | 531,065 | Dec. 18 | 1715 | 408 | 69 | 1558 |
| Ruby, Alba A., Quincy, Ill. Stove | 528,989 | Nov. 13 | 857 | 203 | 69 | 823 |
| Rucinski, Szymon, and F. M. Kozlowski, Hazleton, Pa. Bellows for forges, &c | 528,808 | Nov. 6 | 510 | 123 | 69 | 739 |
| Ruckstinat, Johannes. (See Althans and Ruckstinat.) | | | | | | |
| Ruddy, John, Denver, Colo. Water-gage safety-valve | 531,387 | Dec. 25 | 2316 | 552 | 69 | 1684 |
| Rudkins, William. (See Brooks, Reilly, and Rudkins.) | | | | | | |
| Rudolph, Alexander J., San Francisco, Cal. Card-catalogue | 528,692 | Nov. 6 | 307 | 75 | 69 | 702 |
| Rudolph, Alexander J., San Francisco, Cal. Binder for books or pamphlets | 528,693 | Nov. 6 | 308 | 75 | 69 | 702 |
| Rueben, Joseph, Aix-la-Chapelle, Germany. Fireproof-ceiling | 530,129 | Dec. 4 | 93 | 25 | 69 | 1232 |
| Ruehs, Charles L., assignor to Ruehs Moulding Sandpapering Machine Company, Chicago, Ill. Sandpapering-machine | 526,845 | Oct. 2 | 287 | 69 | 69 | 55 |
| Ruehs Moulding Sandpapering Machine Company. (See Ruehs, Charles L., assignor.) | | | | | | |
| Ruffhead, Fred C., and W. F. Anthony, Williamsport, Pa., assignors to Clark Stamping Company, Rochester, N. Y. Buckle | 531,336 | Dec. 25 | 2224 | 531 | 69 | 1666 |
| Ruffin, Marie C. A. (See Bang and Ruffin.) | | | | | | |
| Ruffner, Jonas F., assignor of one-fourth to P. P. Fanning, Raton, N. Mex. Ter. Retainer for scarf-pins | 526,746 | Oct. 2 | 128 | 30 | 69 | 25 |
| Ruhland, Henry. (See Foehl, Charles, assignor.) | | | | | | |
| Rumley, Charles, Helena, Mont. Pump | 526,944 | Oct. 2 | 456 | 112 | 69 | 86 |
| Rumsey, Oscar C., assignor of one-half to J. Bell, Whitman, Mass. Door-knob fastener | 527,560 | Oct. 16 | 1451 | 353 | 69 | 298 |
| Rumsey, William D., Detroit, Mich. Fire-escape | 531,007 | Dec. 18 | 1625 | 385 | 69 | 1541 |
| Rundberg, Charles J., Centropolis, Mo. Bake-pan | 526,747 | Oct. 2 | 129 | 31 | 69 | 26 |

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|---|---|---|---|---|---|---|
| Runyan, Leroy, Iola, Kans. Ridging attachment for corn-planters | 527,160 | Oct. 9 | 791 | 193 | 69 | 161 |
| Rupp, Gottlieb. (See Reiffer, Ulrich, assignor.) | | | | | | |
| Ruppel, Albert. (See Hackman and Ruppel.) | | | | | | |
| Ruppel, Henry, assignor to Dangler Stove and Manufacturing Company, Cleveland, Ohio. Air-valve for gas-burners | 528,344 | Oct. 30 | 2821 | 682 | 69 | 578 |
| Ruppel, Leonard. (See Hackman and Ruppel.) | | | | | | |
| Ruppert, Matthew. (See Thomas, William, assignor.) | | | | | | |
| Rush, George L., Dodge, Tex. Nut and bolt lock | 528,990 | Nov. 13 | 858 | 203 | 69 | 823 |
| Rush, William S., Alexandria, assignor of one-third to J. S. Derrough and W. F. Holton, Walnut Hill, La. Steam-engine | 531,276 | Dec. 18 | 2110 | 507 | 69 | 1629 |
| Rushworth, Isaac, Jamestown, N. Y. Loom-shuttle | 526,748 | Oct. 2 | 131 | 31 | 69 | 26 |
| Russell, Charles H., Ennis, Tex. Breast-strap for harness | 531,569 | Dec. 25 | 2630 | 630 | 69 | 1745 |
| Russell & Co. (See Heggem, Charles O., assignor.) | | | | | | |
| Russell, Edgar A. (See Crandall and Russell.) | | | | | | |
| Russell, Edgar A., and S. W. Crandall, assignors to Housatonic Manufacturing Company, Wallingford, Conn. Shade-holder for incandescent lamps | 527,623 | Oct. 16 | 1554 | 376 | 69 | 316 |
| Russell, N. F., *et al.* (See Smith, Orison M., assignor.) | | | | | | |
| Russell, Pressley J., and L. De Vaux, Maryville, Mo. Washing-machine | 530,854 | Dec. 11 | 1357 | 324 | 69 | 1477 |
| Rust, Robert S., assignor of one-fourth to G. W. Chanceller, Delaplane, Va. Truck | 529,960 | Nov. 27 | 2541 | 612 | 69 | 1158 |
| Ruth, Linford F., Connellsville, Pa. Combined sleeping and parlor car | 529,961 | Nov. 27 | 2542 | 612 and 613 | 69 | 1158 |
| Rutherford, Adrian S., New York, N. Y. Metallic-covered wax for dental or other purposes | 527,218 | Oct. 9 | 880 | 214 | 69 | 179 |
| Rutherford, Adrian S., New York, N. Y. Wax product for dental or other purposes | 527,219 | Oct. 9 | 881 | 214 | 69 | 179 |
| Rutherford, James, Brooklyn, N. Y. Railway-crossing gate | 531,066 | Dec. 18 | 1717 | 408 and 409 | 69 | 1558 |
| Rutter, George S. M., assignor of one-half to J. J. Renkert, Canton, Ohio. Brick-kiln | 528,113 | Oct. 23 | 2421 | 586 | 69 | 492 |
| Ryan, Arthur, assignor of one-half to W. Guy, Colbergen, Nebr. Combined hay rake and stacker | 526,819 | Oct. 2 | 244 | 59, 60 | 69 | 46 |
| Ryan, James E. (See Santee and Ryan.) | | | | | | |
| Ryan, John F., Toronto, Canada. Life-guard for street-cars | 527,813 | Oct. 23 | 1869 | 449 | 69 | 392 |
| Ryan, Richard H., Brooklyn, N. Y. Pencil-case | 531,135 | Dec. 18 | 1851 | 439 | 69 | 1583 |
| Ryan, Richard H., Brooklyn, N. Y. Pencil-case | 531,136 | Dec. 18 | 1852 | 439 | 69 | 1583 |
| Ryan, Thomas J., Buffalo, N. Y. Ventilating-cap | 527,185 | Oct. 9 | 825 | 200 and 201 | 69 | 169 |
| Ryberg, Charles J., Chicago, Ill. Multiple adding-machine for cash-registers | 531,277 | Dec. 18 | 2112 | 507 and 508 | 69 | 1629 |
| Ryding, Herbert C., Johnstown, Pa. Cambering-machine | 531,448 | Dec. 25 | 2433 | 579 | 69 | 1706 |
| Ryon, Francis M., Streator, Ill. Wire-glass machine | 531,570 | Dec. 25 | 2631 | 630 | 69 | 1745 |
| S. Bottomley & Brothers. (See Waddington, Alfred, assignor.) | | | | | | |
| S. S. White Dental Manufacturing Company. (See Browne, Arthur W., assignor.) | | | | | | |
| S. S. White Dental Manufacturing Company. (See Hollingsworth, Jeptha G., assignor.) | | | | | | |
| Saalberg, Jacob, *et al.* (See Hirschfeld, Leo., assignor.) | | | | | | |
| Sabin, John I., San Francisco, Cal. Telephone system | 529,465 | Nov. 20 | 1708 | 407 and 408 | 69 | 997 |
| Sabroe, Axel V. T., Hadersley, Germany. Releasing belaying-pin | 530,722 | Dec. 11 | 1151 | 279 | 69 | 1439 |
| Safety Car Heating and Lighting Company. (See Dixon, Robert M., assignor.) | | | | | | |
| Saffold, Ray P., Selma, Ala. Penholder | 528,809 | Nov. 6 | 511 | 123 | 69 | 739 |
| Sague, George, Ponghkeepsie, N. Y. Side-registering mechanism for paper-feeders | 529,084 | Nov. 13 | 1016 | 245 | 69 | 850 |
| Sague, George, Ponghkeepsie, N. Y., assignor, by mesne assignments, to Economic Machine Company, of New York. Paper-feeding machine | 529,414 | Nov. 20 | 1609 | 382 | 69 | 979 |
| Salberg, Frederick S., London, England. Dust-bin, dust-cart, &c. | 530,057 | Nov. 27 | 2740 | 657 | 69 | 1198 |
| Salisbury, Levi E., assignor to H. A. Church, Providence, R. I. Knitting-machine | 528,810 | Nov. 6 | 512 | 124 | 69 | 739 |
| Saltzkorn, Emil, and L. Nicolai, Dresden, Germany. Machine for fastening metal strips on pasteboard, &c | 529,752 | Nov. 27 | 2184 | 521 | 69 | 1092 |
| Saltzkorn, Emil, and L. Nicolai, Dresden, Germany. Apparatus for pressing or stamping articles from wood-pulp, &c | 529,753 | Nov. 27 | 2186 | 521 | 69 | 1092 |
| Saltzkorn, Emil, and L. Nicolai, Dresden, Germany. Stamping or pressing machine | 531,337 | Dec. 25 | 2225 | 532 | 69 | 1666 |
| Salzer, Henry, Baltimore, Md. Packing-vessel and method of preserving food articles | 528,649 | Nov. 6 | 233 | 58 | 69 | 688 |
| Salzer, Leopold, *et al.* (See Strakosch, Max, assignor.) | | | | | | |
| Salzman, Christian A., assignor of two-thirds to E. P. Kennel, Hamilton, Ohio, and J. A. Robbins, Indianapolis, Ind. Combination-tool | 529,962 | Nov. 27 | 2544 | 613 | 69 | 1159 |
| Samuels, Marks, New York, N. Y. Folding bed | 527,066 | Oct. 2 | 547 | 134 | 69 | 104 |
| Samuels, Marks, New York, N. Y. Folding bed | 530,855 | Dec. 11 | 1358 | 324 | 69 | 1477 |
| Sanborn, William H., assignor of one-half to M. A. Bourne, Rutland, Vt. Harness | 530,461 | Dec. 4 | 660 | 164 | 69 | 1336 |
| Sanders, Carew C. (See Stover, William R., assignor.) | | | | | | |
| Sanders, Thomas, Birmingham, England. Lamp-holder for bicycles | 528,811 | Nov. 6 | 514 | 124 | 69 | 739 |
| Sanders, W. E., *et al.* (See Norcross, George A., assignor.) | | | | | | |
| Sanderson, Ephraim, Cleveland, Ohio. Suction-box for paper-machines | 528,261 | Oct. 30 | 2683 | 647 | 69 | 555 |
| Sanford, Ross M., assignor of one-half to T. Rich, Hobart, N. Y. Stock-watering device | 526,911 | Oct. 2 | 407 | 101 | 69 | 76 |
| Sanford, Townsend W. (See Litchfield and Sanford.) | | | | | | |
| Sanger, John N., assignor to F. Adee, Brooklyn, N. Y. Siphon mechanism for water-closets | 529,466 | Nov. 20 | 1711 | 408 | 69 | 997 |
| Sanguinette, David, St. Louis, Mo. Necktie | 527,129 | Oct. 9 | 744 | 182 | 69 | 153 |
| Santee, Willard N., and J. E. Ryan, Letcher, S. D. Railway-switch | 528,395 | Oct. 30 | 2913 | 705 | 69 | 595 |
| Saqui, Horatio, London, England. Fastener for doors | 529,963 | Nov. 27 | 2546 | 613 and 614 | 69 | 1159 |
| Sarapata, Paul C., and P. Souvazoglu, Manchester, England. Cigar or cigarette | 527,724 | Oct. 16 | 1720 | 415 | 69 | 347 |
| Sargent, Allan C. (See Sargent, Frederick G. and A. C.) | | | | | | |
| Sargent, Frederick G. and A. C., Graniteville, Mass. Fiber-drying machine | 527,721 | Oct. 16 | 1714 | 413 | 69 | 347 |
| Sargent, Frederick G. and A. C., Graniteville, Mass. Wire apron | 527,722 | Oct. 16 | 1717 | 414 | 69 | 347 |
| Sargent, Frederick G. and A. C., Graniteville, Mass. Conveyer | 527,723 | Oct. 16 | 1718 | 414 and 415 | 69 | 347 |
| Sargent, Frederick G. and A. C., Graniteville, Mass. Wool-washing machine | 528,182 | Oct. 30 | 2540 | 616 | 69 | 529 |
| Sauer, Emil L., Chicago, Ill. Steam-engine valve | 529,841 | Nov. 27 | 2341 | 557 | 69 | 1122 |
| Sauer, Philip, Pomeroy, Ohio. Coal-drill | 527,814 | Oct. 23 | 1870 | 449 | 69 | 392 |
| Sauerburger, Joseph, St. Louis, Mo. Sash-balance | 526,945 | Oct. 2 | 458 | 113 | 69 | 86 |
| Saunders, Ira J., New York, N. Y. Automatic button-fastening machine | 529,139 | Nov. 13 | 1104 | 267 and 268 | 69 | 868 |
| Saunders, J. Ashton, *et al.* (See Banwell, James, assignor.) | | | | | | |
| Saussure, René de. (See Coleman and Saussure.) | | | | | | |
| Savage, Charles G., assignor of two-thirds to J. L. Ricketts and G. C. Osborne, Philadelphia, Pa. Electric gas-lighter | 529,313 | Nov. 13 | 1421 | 342 | 69 | 925 |
| Savage, Charles M., Warren, Pa. Electrical retoucher | 528,564 | Nov. 6 | 63 | 17 | 69 | 658 |
| Savage, Sylvester S., Harrison, N. J. Apparatus for preserving fruit | 531,067 | Dec. 18 | 1719 | 409 | 69 | 1558 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Sawyer, Henry G., Carpentersville, Ill. Mechanism for shaping the welding edges of plow-points | 530,204 | Dec. 4 | 223 | 55, 56 | 69 | 1256 |
| Sawyer, Victory L. (See Schoenmehl, Charles B., assignor.) | | | | | | |
| Saxton, Lionel D. (See Latham, Ephraim, assignor.) | | | | | | |
| Saxton, Thomas G. (See Feiner and Saxton.) | | | | | | |
| Scanlan, Edward, Louisville, Ky., and J. Zipp, New Albany, Ind. Combined fireplace and grate | 528,610 | Nov. 6 | 150 | 37 | 69 | 674 |
| Scanlan, Edward, F. W. Keifel, Jr., Louisville, Ky., and J. Zipp, New Albany, Ind. Fireplace and grate | 530,627 | Dec. 11 | 983 | 241 and 242 | 69 | 1411 |
| Scarinci, Beniamino, Philadelphia, Pa. Shoe | 529,964 | Nov. 27 | 2549 | 614 | 69 | 1159 |
| Scarlett, John W. W. (See Yates, Samuel B., assignor.) | | | | | | |
| Scarritt Furniture Company. (See Hoffman, Samuel, assignor.) | | | | | | |
| Scerbini, George H., and G. Cade, assignors to H. K. Bridger, London, England. Sewing-machine | 527,348 | Oct. 9 | 1098 | 267 and 268 | 69 | 218 |
| Schaadt, Henry S., St. Louis, Mo., assignor to Bradley Stencil Machine Company, of Missouri. Die-punch and process of and means for making same | 531,600 | Dec. 25 | 2684 | 644 | 69 | 1755 |
| Schaake, Henry, San Francisco, Cal. Crimping-machine for can bodies | 528,305 | Oct. 30 | 2759 | 667 | 69 | 568 |
| Schaake, Henry, San Francisco, Cal. Machine for crimping can-head flanges | 528,306 | Oct. 30 | 2762 | 667 | 69 | 568 |
| Schade, John, Brooklyn, N. Y. Lock | 528,114 | Oct. 23 | 2423 | 586 | 69 | 492 |
| Schaeffer, Henri N. F., Lowell, Mass. Soluble alizarin blue | 527,457 | Oct. 16 | 1292 | ..... | 69 | 270 |
| Schaeffer, Henry, Durango, Colo. Car-coupling | 527,376 | Oct. 9 | 1148 | 282 | 69 | 228 |
| Schaeffer, Rosa, New York, N. Y. Automatic shut-off mechanism for water-tanks | 530,659 | Dec. 11 | 1047 | 255 | 69 | 1420 |
| Schagen, Gerhard, Eschweiler, assignor to M. Heymann, Aix-la-Chapelle, Germany. Writing-pen | 530,604 | Dec. 11 | 948 | 233 | 69 | 1404 |
| Schairer, George E., Saline, Mich. Sash-holder | 530,660 | Dec. 11 | 1049 | 255 | 69 | 1421 |
| Schalcke, Franz, Pittsburg, Pa. Car-coupling | 527,725 | Oct. 16 | 1721 | 415 | 69 | 348 |
| Scharf, Hermann, Haile-on-the-Saale, Germany. Safety-belt | 530,799 | Dec. 11 | 1271 | 307 | 69 | 1462 |
| Schauer, Michael G., and A. A. Bartlett, Pipe Stone, Minn. Band-cutter and feeder for thrashers | 528,396 | Oct. 30 | 2914 | 705 | 69 | 595 |
| Schaum, Otto W., Philadelphia, Pa. Jacquard apparatus for looms | 531,390 | Dec. 25 | 2319 | 553 | 69 | 1684 |
| Schaum, Otto W., and C. Alvord, Philadelphia, Pa. Driving-gear for bicycles | 530,058 | Nov. 27 | 2741 | 657 | 69 | 1198 |
| Scheeffer, Gustave A., assignor to Diamond Electric Company, Peoria, Ill. Electric meter | 530,351 | Dec. 4 | 488 | 121 | 69 | 1303 |
| Scheetz, Charles, Hanover, Kans. Corn-harvester | 530,352 | Dec. 4 | 490 | 121 | 69 | 1304 |
| Scheibel, Richard, assignor of one-half to P. M. King, St. Louis, Mo. Animal-trap | 530,723 | Dec. 11 | 1152 | 279 | 69 | 1439 |
| Schenck, John D. P., Newark, N. J. Air-brake | 531,137 | Dec. 18 | 1854 | 440 | 69 | 1582 |
| Scherb, Victor J., North Pasadena, Cal. Animal-trap | 531,571 | Dec. 25 | 2633 | 631 | 69 | 1745 |
| Scheuer, Max, *et al.*, executors. (See Scheuer, Simon.) | | | | | | |
| Scheuer, Ralph, *et al.*, executors. (See Scheuer, Simon.) | | | | | | |
| Scheuer, Simon, deceased, M. and R. Scheuer, New York, N. Y., executors. Frame for pocket-books, purses, or satchels | 527,512 | Oct. 16 | 1376 | 335 | 69 | 284 |
| Schevey, Alvin E., Mayfair, Ill. Cotton-chopper | 530,724 | Dec. 11 | 1153 | 280 | 69 | 1439 |
| Schierholz, August H., San Francisco, Cal. Ore-crusher | 531,068 | Dec. 18 | 1721 | 409 and 410 | 69 | 1559 |
| Schill, John G., Jersey City, N. J. Window-screen | 530,353 | Dec. 4 | 491 | 121 | 69 | 1304 |
| Schilling, Charles R. (See Schrambstadter and Schilling.) | | | | | | |
| Schimmeyer, Max. (See Sowatsky and Schimmeyer.) | | | | | | |
| Schindel, Samuel M., Hagerstown, Md. Armor for pneumatic tires | 526,846 | Oct. 2 | 288 | 70 | 69 | 55 |
| Schinner, Augustin F., Milwaukee, Wis. Railway-switch | 527,203 | Oct. 9 | 1012 | 216 | 69 | 202 |
| Schinner, Augustin F., Milwaukee, Wis. Track-switch for electric railways | 527,204 | Oct. 9 | 1015 | 217 | 69 | 203 |
| Schisgall, Solomon, Waterbury, Conn. Watch-winding | 526,871 | Oct. 2 | 335 | 82, 83 | 69 | 63 |
| Schlatter, Moses, Inman, Kans. Floor-clamp | 528,033 | Oct. 23 | 2281 | 551 | 69 | 466 |
| Schlegel, Robert A., St. Louis, Mo. Manufacturing signs | 530,354 | Dec. 4 | 492 | 122 | 69 | 1304 |
| Schleicher, Edward G., Stamford, Conn. Wheel for vehicles | 527,727 | Oct. 16 | 1724 | 416 | 69 | 348 |
| Schleicher, Otto, Magdeburg, Germany. Steering-gear for vessels | 528,183 | Oct. 30 | 2542 | 616 and 617 | 69 | 529 |
| Schleininger, Ferdinand R., New York, N. Y. Game apparatus | 526,946 | Oct. 2 | 459 | 113 | 69 | 86 |
| Schlemmer, Oliver, Cincinnati, Ohio. Fitting for vents | 526,912 | Oct. 2 | 410 | 102 | 69 | 77 |
| Schlesinger, Julius M., San Francisco, Cal. Lace, veiling, or ribbon holder | 528,447 | Oct. 30 | 3000 | 725 | 69 | 610 |
| Schlientz, Joseph J., and J. F. Fink, Defiance, Ohio. Caster | 528,210 | Oct. 30 | 2597 | 627 | 69 | 538 |
| Schlieper, John E., Pittsburg, Pa., assignor to Stirling Company, Chicago, Ill. Steam-boiler | 526,947 | Oct. 2 | 460 | 113 | 69 | 87 |
| Schloer, Charles A., Camden, N. J. Support for bicycles | 531,338 | Dec. 25 | 2227 | 532 | 69 | 1666 |
| Schloss, Nathan, Baltimore, Md. Coat | 527,561 | Oct. 16 | 1452 | 353 | 69 | 298 |
| Schlosser, Elias E., Williamsport, Ind. Corn-planter | 526,749 | Oct. 2 | 132 | 31 | 69 | 26 |
| Schmadeke, John F. (See Thompson and Schmadeke.) | | | | | | |
| Schmid, Charles, assignor to American Valve and Governor Company, Chicago, Ill. Valve mechanism for engines | 528,742 | Nov. 6 | 378 | 92 | 69 | 715 |
| Schmidt, Albrecht, Berlin, Germany. Hypo-eliminator | 530,905 | Dec. 18 | 1545 | ..... | 69 | 1527 |
| Schmidt, Charles G., Cincinnati, Ohio. Switch for overhead-trolley tracks | 530,661 | Dec. 11 | 1050 | 256 | 69 | 1421 |
| Schmidt, Edward D., Cuyahoga Falls, Ohio. Friction-clutch | 529,755 | Nov. 27 | 2190 | 522 | 69 | 1093 |
| Schmidt, Henry, and C. J. Werner, New York, N. Y. Cigar-bunching machine | 530,554 | Dec. 11 | 862 | 213 and 214 | 69 | 1389 |
| Schmidt, Joseph, *et al.* (See Reinhard, Thomas J., assignor.) | | | | | | |
| Schmidt, Wilhelm, Wilhelmshöhe, near Cassel, Germany. Generation of steam | 529,754 | Nov. 27 | 2188 | 522 | 69 | 1093 |
| Schmoll, Armand. (See Schmoll, Lucien and A.) | | | | | | |
| Schmoll, Lucien and A., Newark, N. J. Polishing and staining machine | 527,889 | Oct. 23 | 2014 | 483 | 69 | 416 |
| Schnarr, Henry G., New York, N. Y. Extension-table | 529,140 | Nov. 13 | 1108 | 268 and 269 | 69 | 868 |
| Schneider, August, and D. W. Bromley, assignors of one-third to B. McClelland, Lexington, Ky. Bottle-stopper | 527,726 | Oct. 16 | 1722 | 416 | 69 | 348 |
| Schneider, Jakob, New York, N. Y. Life-guard for cars | 531,391 | Dec. 25 | 2320 | 554 | 69 | 1685 |
| Schnell, August, Clinton, Iowa. Spirit-level attachment | 527,815 | Oct. 23 | 1872 | 449 | 69 | 392 |
| Schnitzler, Charles H. (See Meany, James A., assignor.) | | | | | | |
| Schnurr, William, Brooklyn, N. Y., assignor to United States Printing Company, of Ohio. Adjustable gearing | 526,750 | Oct. 2 | 135 | 32 | 69 | 27 |
| Schoeffel, George J. (See Ongley, Charles E., assignor.) | | | | | | |
| Schoelkopf, Jacob, *et al.* (See Fatkin, James, assignor.) | | | | | | |
| Schoen, Charles T., Allegheny, Pa. Bolster for railway-cars | 529,809 | Nov. 27 | 2274 | 543 | 69 | 1109 |
| Schoen, Charles T., Allegheny, Pa. Pressed-steel fence-post | 530,725 | Dec. 11 | 1155 | 280 | 69 | 1439 |
| Schoen, Paul, Glens Falls, N. Y., assignor to Singer Manufacturing Company, of New Jersey. Cording attachment for sewing-machines | 529,415 | Nov. 20 | 1610 | 383 | 69 | 979 |
| Schoen, Paul, Glens Falls, N. Y., assignor to Singer Manufacturing Company, of New Jersey. Guide for two-needle sewing-machines | 529,416 | Nov. 20 | 1611 | 383 | 69 | 980 |
| Schoen, Paul, Glens Falls, N. Y., assignor to Singer Manufacturing Company, of New Jersey. Guide for sewing-machines | 529,417 | Nov. 20 | 1613 | 383 | 69 | 980 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Pages. |
|---|---|---|---|---|---|---|
| Schoen, Paul, Glens Falls, N. Y., assignor to Singer Manufacturing Company, of New Jersey. Hemstitching attachment for sewing-machines | 529,418 | Nov. 20 | 1614 | 383, 384 | 69 | 980 |
| Schoen, Paul, Glens Falls, N. Y., assignor to Singer Manufacturing Company, of New Jersey. Sewing-machine hemmer | 529,419 | Nov. 20 | 1615 | 384 | 69 | 980 |
| Schoen, Paul, Glens Falls, N. Y., assignor to Singer Manufacturing Company, of New Jersey. Plaiting attachment for sewing-machines | 529,420 | Nov. 20 | 1616 | 384 | 69 | 980 |
| Schoenmehl, Charles B., assignor of three-fourths to V. L. Sawyer, Waterbury, Conn. Bottle-stopper | 527,161 | Oct. 9 | 791 | 193 | 69 | 162 |
| Schoeppl, Joseph F., Pittsburg, Pa. Hook and eye | 530,800 | Dec. 11 | 1272 | 307 | 69 | 1462 |
| Schoessel, Christian A., Rock Island, Ill. Saw-swage | 531,222 | Dec. 18 | 2018 | 481 | 69 | 1612 |
| Schofield, James R., Dallas, Tex., assignor to Texas Implement and Machine Company, of Texas. Gearing and gear-covering for agricultural machinery | 531,278 | Dec. 18 | 2118 | 508 | 69 | 1630 |
| Schon, Hubert, Apollo, assignor to himself, N. C. Davison, Pittsburg, G. Muth and J. P. Sipe, Allegheny, Pa. Chill for making chilled castings | 528,034 | Oct. 23 | 2285 | 551 | 69 | 466 |
| Schoolhouse, Lewis, New York, N. Y. Ribbon-display cabinet | 528,035 | Oct. 23 | 2286 | 551 | 69 | 467 |
| Schoop, Paul, Zurich, Switzerland. Method of and apparatus for circulating liquid electrolytes | 529,199 | Nov. 13 | 1216 | 293 | 69 | 886 |
| Schott, John C., *et al.* (See Grant, Robert A., assignor.) | | | | | | |
| Schowalter, Peter C., Moundridge, Kans. Twine-holder | 528,694 | Nov. 6 | 311 | 76 | 69 | 702 |
| Schpanowsky, Leonid P., Odessa, Russia. Melharmonium | 530,605 | Dec. 11 | 949 | 233 | 69 | 1404 |
| Schrader, George H. F., and H. P. Kraft, New York, N. Y.; said Kraft assignor to said Schrader. Valve | 531,392 | Dec. 25 | 2322 | 554 | 69 | 1685 |
| Schrader, Henry C., Hammondville, Pa. Mold-moistener | 528,948 | Oct. 2 | 461 | 113 | 69 | 87 |
| Schrader, Paul, Witten, Germany. Wire-rolling apparatus | 529,200 | Nov. 13 | 1218 | 294 | 69 | 886 |
| Schrader, Paul, Witten, Germany. Wire-rolling apparatus | 529,201 | Nov. 13 | 1219 | 294 | 69 | 887 |
| Schramm, Charles W., Des Moines, Iowa. Measuring device | 529,202 | Nov. 13 | 1220 | 294 | 69 | 887 |
| Schraubstadter, Carl, Jr., and C. R. Schilling, assignors to Western Engravers' Supply Company, St. Louis, Mo. Routing-machine | 527,025 | Oct. 2 | 579 | 140 | 69 | 109 |
| Schroll, William S. (See Able and Gross, assignors.) | | | | | | |
| Schuckers, Jacobs W., Belleville, N. J. Type-writing machine | 529,810 | Nov. 27 | 2276 | 543, 544 | 69 | 1109 |
| Schuler, James C., Lanier, Ga. Extracting turpentine | 530,205 | Dec. 4 | 225 | 56 | 69 | 1256 |
| Schultz, Adam, assignor of one-half to J. Deck, Cincinnati, Ohio. Malting-machine | 529,842 | Nov. 27 | 2342 | 557, 558 | 69 | 1122 |
| Schultz, Adam, assignor of one-half to J. Deck, Cincinnati, Ohio. Mashing-machine | 531,601 | Dec. 25 | 2686 | 644 | 69 | 1755 |
| Schultz, Carl H., Jr., deceased, Murray Hill, N. J.; C. H. Schultz, administrator. Outboard propeller-shaft for vessels | 526,751 | Oct. 2 | 137 | 32, 33 | 69 | 27 |
| Schultz, John L., and A. C. Westlake, Brooklyn, N. Y.; said Schultz assignor to said Westlake. Manufacture of stove-boards. (Reissue) | 11,444 | Oct. 2 | 603 | 146 | 69 | 113 |
| Schultze, Frederick W., Philadelphia, Pa. Lock | 531,008 | Dec. 18 | 1626 | 386 | 69 | 1541 |
| Schmlz, Herman C., assignor to Lumber District Mill Company, Chicago, Ill. Boring-machine | 528,307 | Oct. 30 | 2765 | 668 | 69 | 569 |
| Schumacher, Gustave W., assignor to G. F. Gould, Portland, Me. Keyhole-guard | 530,206 | Dec. 4 | 226 | 56 | 69 | 1256 |
| Schumm, Hermann, assignor to Gas-Motoren-Fabrik-Deutz, Cologne-Deutz, Germany. Gas or oil motor-engine | 528,115 | Oct. 23 | 2424 | 587 | 69 | 492 |
| Schüpphaus, Robert C., Brooklyn, assignor to H. Maxim, New York, N. Y. Nitrating cellulose | 526,772 | Oct. 2 | 138 | ..... | 69 | 27 |
| Schüpphaus, Robert C., Brooklyn, assignor to Arlington Manufacturing Company, New York, N. Y. Pyroxyline compound and making same | 528,812 | Nov. 6 | 515 | ..... | 69 | 740 |
| Schutte, Louis, Philadelphia, Pa. Stop-valve | 529,879 | Nov. 27 | 2401 | 574 | 69 | 1134 |
| Schwalbe, Joseph. (See Knowlton, Ephriam H. B., assignor.) | | | | | | |
| Schwan, August H., Moundridge, Kans. Twine-holder | 529,756 | Nov. 27 | 2191 | 522 | 69 | 1093 |
| Schwaner, Christian C., Winterset, Iowa. Neck-yoke attachment | 530,355 | Dec. 4 | 493 | 122 | 69 | 1304 |
| Schwaner, Christian C., Winterset, Iowa. Trace-carrier | 530,356 | Dec. 4 | 494 | 122 | 69 | 1304 |
| Schwartz, Jacob. (See Bettegar and Schwartz.) | | | | | | |
| Schwarz, Jacob, New York, N. Y. Waistband for trousers and device for attaching shirt-waists thereto | 530,130 | Dec. 4 | 94 | 25 | 69 | 1232 |
| Schwarz, Rudolf. (See Eppers, Heinrich, assignor.) | | | | | | |
| Schwarzschild, Alexander, Frankfort-on-the-Main, Germany. Railway-rail | 530,131 | Dec. 4 | 95 | 25 | 69 | 1233 |
| Schweiger, Samuel, *et al.* (See Probola, Adam, assignor.) | | | | | | |
| Schweitzer, Fritz, Dusseldorf, Germany. Wall | 528,219 | Oct. 30 | 2649 | 638 | 69 | 548 |
| Schwiebert, Jean, Barmen, Germany. Oil-can | 528,565 | Nov. 6 | 64 | 17 | 69 | 658 |
| Schwieger, Heinrich, assignor to Siemens & Halske, Berlin, Germany. Electric tramway | 530,286 | Dec. 4 | 375 | 92, 93 | 69 | 1283 |
| Schwinghammer, Kaspar. (See Kirchmann and Schwinghammer.) | | | | | | |
| Scidmore, Arthur W., Three Rivers, Mich. Storm-hood for top carriages | 527,162 | Oct. 9 | 793 | 193 | 69 | 162 |
| Scofield, Edward S., and J. J. Jennings, Ridgeway, N. Y. Wire fence | 530,244 | Dec. 4 | 297 | 73 | 69 | 1269 |
| Scognamillo, Salvatore, and C. Dominici, Richmond, Va. Pedal for bicycles | 527,349 | Oct. 9 | 1101 | 269 | 69 | 218 |
| Scognamillo, Salvatore, and C. Dominici, Richmond, Va. Bicycle | 527,728 | Oct. 16 | 1725 | 416 | 69 | 348 |
| Scollay, John P. (See Perkins and Scollay.) | | | | | | |
| Scotford, Louis K., Chicago, Ill. Method of and apparatus for making rubber type | 528,308 | Oct. 30 | 2768 | 668 | 69 | 569 |
| Scotford, Louis K., assignor to Superior Rubber Type Company, Chicago, Ill. Machine for cutting rubber type | 531,069 | Dec. 18 | 1722 | 410 | 69 | 1559 |
| Scott, Ebenezer, and J. O. Burke, Red Bank, N. J. Attachment for bicycles | 530,726 | Dec. 11 | 1156 | 280 | 69 | 1439 |
| Scott, George A., London, England, assignor to Western Union Telegraph Company, of New York. Printing-telegraph | 529,630 | Nov. 20 | 1979 | 472, 473 | 69 | 1046 |
| Scott, Gordon J., assignor of one-half to A. H. Henderson, Philadelphia, Pa. Electromagnetic machine | 529,085 | Nov. 13 | 1019 | 245 | 69 | 851 |
| Scott, Jacob R., New York, N. Y. Skiving-machine | 528,448 | Oct. 30 | 3002 | 725, 726 | 69 | 610 |
| Scott, Joseph H., Aspen, Colo. Indicator | 531,572 | Dec. 25 | 2634 | 631 | 69 | 1745 |
| Scott-Moncrieff, William D., London, England. Treatment of sewage and apparatus therefor | 530,622 | Dec. 11 | 975 | 239 | 69 | 1409 |
| Scott, Walter, Plainfield, N. J. Bed and cylinder printing-machine | 530,357 | Dec. 4 | 495 | 122, 123, 124 | 69 | 1305 |
| Scovill & Adams Company. (See Flammang, Mathias, assignor.) | | | | | | |
| Scovill Manufacturing Company. (See Shipley, Alfred J., assignor.) | | | | | | |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Multiple-switchboard system | 529,421 | Nov. 20 | 1618 | 385 | 69 | 981 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Switching apparatus for incandescent electric lamps | 529,532 | Nov. 20 | 1834 | 436 | 69 | 1019 |
| Scudder, John L., Middle Grove, Ill. Harrow | 531,009 | Dec. 18 | 1627 | 386 | 69 | 1541 |
| Scullin, Thomas F. (See Moore, Chauncey G., assignor.) | | | | | | |
| Seabury & Johnson. (See Parker and Williams, assignors.) | | | | | | |
| Seager, James B. (See Brownell and Seager.) | | | | | | |
| Seaman, John A. (See Delano, Eben A., assignor.) | | | | | | |
| Sears, Charles, Cleveland, Ohio. Printer's make-ready | 530,310 | Dec. 4 | 411 | 103 | 69 | 1290 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Pages. |
|---|---|---|---|---|---|---|
| Sears, Willard T., Philadelphia, Pa. Device for attaching shafts to vehicles | 530,601 | Dec. 11 | 1273 | 307 | 69 | 1462 |
| Seaton, Thomas, Sr., Toronto, Canada. Pipe-bender | 528,036 | Oct. 23 | 2287 | 552 | 69 | 467 |
| Seaver, John W., Allegheny, Pa. Elevator | 527,295 | Oct. 9 | 1017 | 247 | 69 | 203 |
| Sébillot, Amédée M. G., and F. Weidknecht, Paris, France. Ship-railway | 530,245 | Dec. 4 | 298 | 73, 74, 75 | 69 | 1270 |
| Sebring, Christopher F., Leeds, Mo. Telegraph-key | 528,345 | Oct. 30 | 2822 | 682 | 69 | 578 |
| Seck, Heinrich, Dresden, Germany. Middlings-purifier | 529,965 | Nov. 27 | 2549 | 614 | 69 | 1160 |
| Sedgwick, Hiram G., Nashville, Tenn. Slow-motion attachment for microscopes | 528,211 | Oct. 30 | 2597 | 627 | 69 | 538 |
| See, Alonzo B., and W. L. Tyler, Brooklyn, N. Y. Controlling device for elevators | 531,070 | Dec. 18 | 1725 | 410 | 69 | 1559 |
| See, Horace, New York, N. Y. Evaporating apparatus | 529,533 | Nov. 20 | 1835 | 436, 437 | 69 | 1019 |
| See, Horace, and G. L. Carden, New York, N. Y. Wave-quieting device | 527,513 | Oct. 16 | 1377 | 335 | 69 | 284 |
| Seeberger, John, West Troy, N. Y. Car-brake ratchet handle | 528,492 | Oct. 30 | 3080 | 747 | 69 | 626 |
| Seebold, Moritz P. C. F. A., *et al.* (See Bauer, Friedrich R., assignor.) | | | | | | |
| Seeley, John S. (See Francis, Thomas, assignor.) | | | | | | |
| Seger, Eberhard, Stockholm, Sweden. Steam-turbine wheel | 530,802 | Dec. 11 | 1274 | 308 | 69 | 1463 |
| Segerberg, Johan A., Denver, Colo. Roller-skate | 527,164 | Oct. 9 | 796 | 194 | 69 | 162 |
| Segerdahl, Rudolph, Chicago, Ill. Electric-arc lamp | 528,184 | Oct. 30 | 2545 | 617 | 69 | 529 |
| Seiberth, Joseph, Frankenmuth, Mich. Feed device for roller-mills | 528,037 | Oct. 23 | 2289 | 552 | 69 | 467 |
| Seitzinger, Harry M., Wilkes-Barré, Pa. Combined municipal telegraph and telephone system | 528,566 | Nov. 6 | 65 | 17 | 69 | 658 |
| Selby, Ulysses G., Enid, Okla. Ter. Railway-signal case | 526,820 | Oct. 2 | 246 | 60 | 69 | 47 |
| Selden, Charles, Baltimore, Md. Railway-signal | 529,812 | Nov. 27 | 2287 | 546 | 69 | 1111 |
| Selden, Charles, and F. P. J. Patenall, Baltimore, Md.; said Patenall assignor to said Selden. Railway-signal | 529,811 | Nov. 27 | 2280 | 544, 545, 546 | 69 | 1110 |
| Selden, Samuel, Aspen, Colo. Car-coupling | 528,346 | Oct. 30 | 2824 | 682 | 69 | 579 |
| Selen, Erik, Utica, N. Y. Device for supporting vehicle-seats | 531,339 | Dec. 25 | 2298 | 592 | 69 | 1666 |
| Self-Sealing Bicycle Tire Company. (See Shaw, Ai B., assignor.) | | | | | | |
| Sellers, Aaron, Muncie, Ind. Wrench | 531,279 | Dec. 18 | 2120 | 508 | 69 | 1631 |
| Sellers, William, Haverhill, Mass. Grass-hook | 529,685 | Nov. 20 | 2071 | 496 | 69 | 1063 |
| Semenoff, Ivan, St. Petersburg, Russia. Solution of gold and mercury and making same | 528,611 | Nov. 6 | 151 | ..... | 69 | 674 |
| Semler, George. (See Heydebrand und der Lasa, Ferdinand-Christoph von, assignor.) | | | | | | |
| Sendelbach, Edward C., Chicago, and J. N. Wilkins, Ravenswood, Ill.; said Wilkins assignor to said Sendelbach. Journal-bearing | 527,026 | Oct. 2 | 580 | 140 | 69 | 110 |
| Senderling, Martin L., Jersey City, N. J. Dumping-wagon | 529,467 | Nov. 20 | 1743 | 408 | 69 | 997 |
| Senderling, Martin L., Jersey City, N. J. Dumping-wagon | 531,128 | Dec. 18 | 1856 | 440 | 69 | 1584 |
| Seneca Glass Company. (See Momper and Sigwart, assignors.) | | | | | | |
| Sénéchal, Jules E., Paris, France. Pneumatic tire | 527,130 | Oct. 9 | 745 | 183 | 69 | 153 |
| Senff, Edward E., Merwin, Mo. Well-anger | 528,695 | Nov. 6 | 312 | 76 | 69 | 702 |
| Senior, James W., assignor of two-thirds to J. J. Martin and H. C. Shultz, Reading, Pa. Lantern | 529,422 | Nov. 20 | 1620 | 385 | 69 | 981 |
| Serdinko, John, assignor to National Union Telephone Company, San Antonio, Tex. Telephone | 529,203 | Nov. 13 | 1221 | 295 | 69 | 887 |
| Sergeant, Henry C., Westfield, N. J., assignor to Ingersoll-Sergeant Drill Company, New York, N. Y. Ticket-canceling apparatus | 528,696 | Nov. 6 | 313 | 76 | 69 | 703 |
| Sergeant, Henry C., Westfield, N. J., assignor to Ingersoll-Sergeant Drill Company, New York, N. Y. Air-compressor | 530,662 | Dec. 11 | 1052 | 256 | 69 | 1421 |
| Serrell, Lemuel W. (See Holden and Serrell.) | | | | | | |
| Seubert, Joseph, Philadelphia, Pa. Vegetable parer and slicer | 530,856 | Dec. 11 | 1359 | 324 | 69 | 1477 |
| Severance, Adam W., G. Jamison, and G. W. Braucht, Genesee, Idaho. Self-feeder for thrashing-machines | 530,246 | Dec. 4 | 300 | 75 | 69 | 1270 |
| Severy, Melvin L. (See Monks and Severy.) | | | | | | |
| Severy, Melvin L., *et al.*, trustees. (See Monks and Severy, assignors.) | | | | | | |
| Severy, Melvin L., Boston, assignor of one-half to F. Doane, Norwood, Mass. Apparatus for mounting and operating thermopiles | 527,377 | Oct. 9 | 1150 | 282 | 69 | 228 |
| Severy, Melvin L., Boston, assignor of one-half to F. Doane, Norwood, Mass. Apparatus for utilizing steam for heating thermopiles | 527,378 | Oct. 9 | 1151 | 282, 283 | 69 | 229 |
| Severy, Melvin L., Boston, assignor of one-half to F. Doane, Norwood, Mass. Apparatus for generating electricity by solar heat | 527,379 | Oct. 9 | 1152 | 283 | 69 | 229 |
| Seward, Charles L., Liberty, Ind. Plaiting apparatus | 531,470 | Dec. 25 | 2468 | 588 | 69 | 1713 |
| Seward, Edward A. (See Lenoir and Seward.) | | | | | | |
| Sewell, Emeline C. (See Sewell, George, assignor.) | | | | | | |
| Sewell, George, assignor to E. C. Sewell, Brooklyn, N. Y. Steam-boiler | 527,729 | Oct. 16 | 1727 | 417 | 69 | 349 |
| Seymour, Dudley S., assignor of one-half to J. Johnston, Hartford, Conn. Breech-loading firearm | 530,966 | Dec. 18 | 1545 | 366, 367 | 69 | 1527 |
| Seymour, Dudley S., assignor of one-half to J. Johnston, Hartford, Conn. Shiftable firing-pin and extractor for firearms | 530,967 | Dec. 18 | 1552 | 367, 368 | 69 | 1527 |
| Seymour, Dudley S., assignor of one-half to J. Johnston, Hartford, Conn. Shiftable nose on hammer and automatic extractor for firearms | 530,968 | Dec. 18 | 1554 | 368 | 69 | 1527 |
| Shaar, Jacob. (See Duncker, William F., assignor.) | | | | | | |
| Shaffer, Richard M., Baltimore, Md. Method of and apparatus for producing letters or characters in bread | 527,027 | Oct. 2 | 582 | 141 | 69 | 110 |
| Shailer & Schniglau Company. (See Wakefield, James A., assignor.) | | | | | | |
| Shanbeck, John W., Mulberry, Ind. Gate | 531,223 | Dec. 18 | 2020 | 481 | 69 | 1613 |
| Shann, Montague H. C., Brisbane, Queensland. Water-tube boiler | 527,079 | Oct. 9 | 652 | 160 | 69 | 138 |
| Shannock Mica Company. (See Howe, Charles C., assignor.) | | | | | | |
| Shannon, John E. (See Ingalls, Milo H., assignor.) | | | | | | |
| Sharp, Alonzo, Troy, N. Y. Mechanical movement | 531,340 | Dec. 25 | 2229 | 533 | 69 | 1666 |
| Sharp, Edward A., Rogers Park, Ill. Paper-file | 529,534 | Nov. 20 | 1837 | 437 | 69 | 1019 |
| Sharp, John C., Delavan, Wis. Stump-extractor | 528,567 | Nov. 6 | 66 | 18, 19, 20 | 69 | 659 |
| Sharpell, Adolphe C., New York, N. Y. Drying-frame | 528,991 | Nov. 13 | 859 | 204 | 69 | 823 |
| Sharples, William E., and F. J. Snell, Fall River, Mass. Railway-head and drawing-frame | 530,358 | Dec. 4 | 503 | 124 | 69 | 1306 |
| Shauer, Louis S., Chicago, Ill. Trousers | 528,038 | Oct. 23 | 2290 | 552 | 69 | 467 |
| Shaw, Al B., Medford, Mass., assignor to New England Automatic Gas Lighting Company, Portland, Me. Time gas lighting and extinguishing apparatus | 528,697 | Nov. 6 | 314 | 76, 77 | 69 | 703 |
| Shaw, Ai B., Medford, Mass., assignor to Self-Sealing Bicycle Tire Company, Portland, Me. Making bicycle-tires | 529,142 | Nov. 13 | 1112 | 269 | 69 | 869 |
| Shaw, Albert C., San Francisco, Cal. Faucet | 530,663 | Dec. 11 | 1053 | 256 | 69 | 1422 |
| Shaw, Alton J., Muskegon, Mich. Rheostat | 527,730 | Oct. 16 | 1732 | 418 | 69 | 350 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Shaw, Alton J., Muskegon, Mich. Rheostat | 528,893 | Nov. 6 | 674 | 162 | 69 | 770 |
| Shaw, Alton J., Muskegon, Mich. Rheostat | 528,894 | Nov. 6 | 675 | 163 | 69 | 770 |
| Shaw, Alton J., assignor to Shaw Electric Crane Company, Muskegon, Mich. Pawl-and-ratchet mechanism | 528,614 | Nov. 6 | 161 | 39 | 69 | 675 |
| Shaw, Alton J., assignor to Shaw Electric Crane Company, Muskegon, Mich. Switch-operating mechanism for hoisting machinery | 528,615 | Nov. 6 | 163 | 39, 40 | 69 | 675 |
| Shaw, Alton J., assignor to Shaw Electric Crane Company, Muskegon, Mich. Crane | 528,616 | Nov. 6 | 165 | 40 | 69 | 676 |
| Shaw, Alton J., assignor to Shaw Electric Crane Company, Muskegon, Mich. Antifriction-bearing | 528,617 | Nov. 6 | 167 | 40, 41 | 69 | 676 |
| Shaw, Alton J., assignor to Shaw Electric Crane Company, Muskegon, Mich. Hoisting machinery | 528,618 | Nov. 6 | 168 | 41 | 69 | 676 |
| Shaw, Alton J., assignor to Shaw Electric Crane Company, Muskegon, Mich. Hoisting machinery | 528,619 | Nov. 6 | 170 | 41, 42 | 69 | 676 |
| Shaw, Alton J., assignor to Shaw Electric Crane Company, Muskegon, Mich. Electric hoisting machinery | 528,620 | Nov. 6 | 171 | 42 | 69 | 677 |
| Shaw, Alton J., assignor to Shaw Electric Crane Company, Muskegon, Mich. Hoisting machinery | 528,621 | Nov. 6 | 173 | 42, 43 | 69 | 677 |
| Shaw, Charles H., Brooklyn, N. Y. Cash drawer and register | 527,220 | Oct. 9 | 882 | 214, 215 | 69 | 179 |
| Shaw, David. (See Beewar and Shaw.) | | | | | | |
| Shaw Electric Crane Company. (See Shaw, Alton J., assignor.) | | | | | | |
| Shaw, George E., Cincinnati, Ohio. Pulp burial-casket and making same | 528,612 | Nov. 6 | 152 | 37 | 69 | 674 |
| Shaw, George E., Cincinnati, Ohio. Pulp-compression apparatus | 528,613 | Nov. 6 | 155 | 38 | 69 | 674 |
| Shaw, James T., Waco, Tex. Stamp sticking or sealing machine | 529,141 | Nov. 13 | 1111 | 269 | 69 | 869 |
| Shaw, Noah T., Columbus, assignor of one-half to C. B. Palmer, Franklin county, Ohio. Church-truck | 531,471 | Dec. 25 | 2469 | 588 | 69 | 1713 |
| Shaw, Wilber S., Dallas, Tex. Cuff-holder | 526,821 | Oct. 2 | 249 | 61 | 69 | 47 |
| Shearer, Arthur, and R. R. Clapp, London, England. Making phosphorus | 527,163 | Oct. 9 | 795 | 194 | 69 | 162 |
| Shearer, Solomon. (See Feishtinger, Charles W., assignor.) | | | | | | |
| Sheldon, Cevedra B., Brooklyn, N. Y., assignor to L. W. Case, Montclair, N. J. Bottle-stopper | 529,813 | Nov. 27 | 2230 | 546 | 69 | 1111 |
| Sheldon, Cevedra B., Brooklyn, N. Y., assignor to L. W. Case, Montclair, N. J. Pneumatic tire | 530,803 | Dec. 11 | 1275 | 308 | 69 | 1463 |
| Shelton, Thomas W., St. Louis, Mo. Rheostat | 530,727 | Dec. 11 | 1157 | 281 | 69 | 1440 |
| Shenston, Thomas S., Brantford, Canada. Inkstand | 528,813 | Nov. 6 | 516 | 134, 135 | 69 | 740 |
| Shepard, Alfred M. (See Smith and Shepard.) | | | | | | |
| Shepard, Garrett S. (See Butler and Shepard.) | | | | | | |
| Shepard, O. Atherton. (See Hussey, Albertus, assignor.) | | | | | | |
| Shepard, Sylvander C., assignor of one-half to C. A. Treat, Hannibal, Mo. Rotary force-pump | 528,347 | Oct. 30 | 2825 | 683 | 69 | 579 |
| Shepard, Wilbur L., assignor to Whitlock Coil Pipe Company, Elmwood, Conn. Hot-water heater | 527,890 | Oct. 23 | 2015 | 484 | 69 | 417 |
| Shepardson, Byron W. (See Shepardson, George R. and B. W.) | | | | | | |
| Shepardson, George R. and B. W., Kalamazoo, Mich. Time-check receiver | 529,468 | Nov. 20 | 1713 | 408, 409 | 69 | 998 |
| Shephard, Henry F., New York, N. Y. Vehicle-brake shoe | 527,296 | Oct. 9 | 1018 | 247 | 69 | 203 |
| Shepherd, Job, Lower Bredbury, near Stockport, assignor to himself and T. B. Leigh, Heaton, Mersey, near Manchester, England. Machine for making molds and cores to be used in casting metal pipes, &c | 530,857 | Dec. 11 | 1360 | 325 | 69 | 1477 |
| Shepherd, Robert M., *et al.* (See Williams, James F. and E. J., assignors.) | | | | | | |
| Shepherd, William G., Erie, Pa. Steam-engine valve | 526,847 | Oct. 2 | 289 | 70 | 69 | 55 |
| Shepherd, William G., Erie, Pa. Steam-engine governor | 529,507 | Nov. 20 | 1785 | 425 | 69 | 1009 |
| Sherbrook, Jesse D., Winnetoon, Nebr. Speculum | 530,728 | Dec. 11 | 1158 | 281 | 69 | 1440 |
| Sheridan, James H., Fitchburg, Mass. Arbor-press | 527,731 | Oct. 16 | 1733 | 418 | 69 | 350 |
| Sherman, Willis D., Brooklyn, N. Y. Steam-engine | 530,535 | Dec. 11 | 867 | 214 | 69 | 1389 |
| Sherrer, Philip, *et al.* (See Reinhard, Thomas J., assignor.) | | | | | | |
| Sherry, Frank, Jacksonville, Ill. Tug-adjuster | 527,732 | Oct. 16 | 1735 | 418 | 69 | 350 |
| Sherry, John, Rochester, N. Y. Torch | 529,631 | Nov. 20 | 1984 | 473 | 69 | 1047 |
| Sherwin, Fred D., Edgar, Nebr. Dental saliva-ejector | 530,556 | Dec. 11 | 868 | 214 | 69 | 1390 |
| Sherwood, Charles H., Utica, assignor of one-half to H. C. Lyman, Sherburne, N. Y. Automatic pneumatic railway-gate | 526,872 | Oct. 2 | 337 | 83, 84 | 69 | 64 |
| Sherwood, Charles H., Utica, assignor of one-half to H. C. Lyman, Sherburne, N. Y. Flanger guard-rail | 526,873 | Oct. 2 | 340 | 84 | 69 | 64 |
| Sherwood, Charles H., Utica, assignor of one-half to H. C. Lyman, Sherburne, N. Y. Railway block-signal | 530,311 | Dec. 4 | 412 | 103 | 69 | 1290 |
| Sherwood, Charles K., Brooklyn, N. Y. Car attachment | 530,359 | Dec. 4 | 504 | 124 | 69 | 1307 |
| Sherwood Manufacturing Company. (See Hart, Thomas J., assignor.) | | | | | | |
| Sherwood, R. H. (See Van Gestel, Jean T., assignor.) | | | | | | |
| Shidler, Artimus W., and W. P. Hendrickson, Farmington, N. Mex. Ter. Pump | 529,966 | Nov. 27 | 2552 | 615 | 69 | 1160 |
| Shields, Charles W., *et al.* (See Erickson, Ole S., assignor.) | | | | | | |
| Shields, George A., assignor to Shields Manufacturing Company, Anderson, Ind. Safety-guard for rip saws | 528,562 | Oct. 30 | 2684 | 647 | 69 | 555 |
| Shields, M. J., *et al.* (See Erickson, Ole S., assignor.) | | | | | | |
| Shields Manufacturing Company. (See Shields, George A., assignor.) | | | | | | |
| Shimer, Samuel J., Milton, Pa. Cutter-head | 527,080 | Oct. 9 | 659 | 161 | 69 | 139 |
| Shipley, Alfred J., assignor to Scovill Manufacturing Company, Waterbury, Conn. Button-setting machine | 531,224 | Dec. 18 | 2022 | 482 | 69 | 1613 |
| Shipman, John C., Sunbury, Pa. Crossing-frog | 527,297 | Oct. 9 | 1019 | 248 | 69 | 203 |
| Shippee, Charles W., Milford, Mass. Waterproof boot or shoe and making same | 529,880 | Nov. 27 | 2402 | 575 | 69 | 1134 |
| Shippee, Charles W., Milford, Mass. Waterproof boot or shoe | 529,881 | Nov. 27 | 2403 | 575 | 69 | 1134 |
| Shirley, Frank O. (See Gunner and Shirley.) | | | | | | |
| Shirley, William T., St. Elmo, Tenn. Advertising-machine | 528,814 | Nov. 6 | 518 | 125, 126 | 69 | 740 |
| Shleacow, Charles, Lethbridge, Canada. Fly-trap | 527,221 | Oct. 9 | 888 | 215 | 69 | 180 |
| Shockley, William L., Colorado Springs, Colo. Car-fender | 526,949 | Oct. 2 | 463 | 114 | 69 | 87 |
| Shoe, William W., Wallingford, Pa. Stove-door knob | 530,287 | Dec. 4 | 377 | 93 | 69 | 1284 |
| Shoemaker, Robert, Jr., Philadelphia, Pa. Pill-compressing machine | 527,562 | Oct. 16 | 1453 | 354 | 69 | 298 |
| Sholder, Louis H., Cleveland, Ohio. Window-screen | 528,992 | Nov. 13 | 860 | 204 | 69 | 824 |
| Sholder, Louis H., Cleveland, Ohio. Strap-hinge | 530,729 | Dec. 11 | 1159 | 281 | 69 | 1440 |
| Sholes, Zalmon G., Chicago, Ill., assignor to Remington-Sholes Typewriter Company, of Illinois. Keyboard | 527,542 | Oct. 16 | 1425 | 347 | 69 | 293 |
| Sholes, Zalmon G., Chicago, Ill., assignor to Remington-Sholes Typewriter Company, of Illinois. Type-writing machine | 527,543 | Oct. 16 | 1425 | 347 | 69 | 293 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Sholes, Zalmon G., Chicago, Ill., assignor to Remington-Sholes Typewriter Company, of Illinois. Type-writing machine | 527,544 | Oct. 16 | 1428 | 347, 348 | 69 | 294 |
| Sholes, Zalmon G., Chicago, Ill., assignor to Remington-Sholes Typewriter Company, of Illinois. Type-writing machine | 527,545 | Oct. 16 | 1429 | 348 | 69 | 294 |
| Shorb, Thomas J., Cape Girardeau, Mo. Elevated railway | 529,757 | Nov. 27 | 2193 | 523 | 69 | 1094 |
| Shorey, George E. (See Shorey, Reuben A. and G. E.) | | | | | | |
| Shorey, Reuben A. and G. E., Fairfield, assignors to J. E. Kelley, Randolph, and G. T. Curtis, Freeport, Me. Portable swing | 531,472 | Dec. 25 | 2471 | 588 | 69 | 1713 |
| Shortill, William J., Ballinafad, Canada. Cradle | 530,858 | Dec. 11 | 1362 | 325 | 69 | 1478 |
| Shortt, Edward G., Carthage, assignor to C. G. Emery, trustee, New York, N. Y. Air-brake mechanism | 530,904 | Dec. 11 | 1434 | 340 | 69 | 1492 |
| Shortt, Edward G., Carthage, assignor to C. G. Emery, trustee, New York, N. Y. Throttle-actuating mechanism for locomotives | 530,905 | Dec. 11 | 1436 | 341 | 69 | 1492 |
| Shortt, Edward G., Carthage, assignor to C. G. Emery, trustee, New York, N. Y. Railway-torpedo | 530,906 | Dec. 11 | 1437 | 341 | 69 | 1492 |
| Shottenberg, Theodore H., assignor of one-half to J. H. Denison, Hubbard, Ohio. Horse-checking device | 528,698 | Nov. 6 | 315 | 77 | 69 | 703 |
| Shutelt, Harry H., Chicago, Ill. Siphon | 530,096 | Dec. 11 | 950 | 233 | 69 | 1404 |
| Shults, George J., Dansville, N. Y. Self-adjusting foot-rest | 530,859 | Dec. 11 | 1363 | 325 | 69 | 1478 |
| Shultz, Harry C., *et al.* (See Senior, James W., assignor.) | | | | | | |
| Shumard, Eugene C., assignor of one-half to O. P. Williams, Milford, Ohio. Bottle | 530,288 | Dec. 4 | 379 | 93 | 69 | 1284 |
| Shuster, Ira B. (See Shuster, Mathias L., assignor.) | | | | | | |
| Shuster, Mathias L., assignor of one-half to I. B. Shuster, Mineral Point, Ohio. Dust-conveyer for thrashing-machines | 531,280 | Dec. 18 | 2121 | 508 | 69 | 1631 |
| Shute, Richard A., San Diego, Cal. Bridle-bit | 529,814 | Nov. 27 | 2292 | 547 | 69 | 1112 |
| Shydecker, Eugene, San Francisco, assignor of four-fifths to J. H. Moore and C. F. Bailey, San José, Cal. Steam-boiler | 527,624 | Oct. 16 | 1555 | 377 | 69 | 317 |
| Siccardi, Giovanni B., New York, N. Y. Street-sweeper | 526,794 | Oct. 2 | 207 | 49 | 69 | 39 |
| Sieber, John G. (See Loewer and Sieber.) | | | | | | |
| Sieber, John G., Louisville, Ky. Switch-thrower | 531,473 | Dec. 25 | 2472 | 589 | 69 | 1713 |
| Siemens & Halske. (See Benjamin, George H., assignor.) | | | | | | |
| Siemens & Halske. (See Engelhardt, Victor, assignor.) | | | | | | |
| Siemens & Halske. (See Frischen, Johann H., assignor.) | | | | | | |
| Siemens & Halske. (See Havn, Friedrich W. N. E., assignor.) | | | | | | |
| Siemens & Halske. (See Heller, Adolf, assignor.) | | | | | | |
| Siemens & Halske. (See Hoffmann, Carl, assignor.) | | | | | | |
| Siemens & Halske. (See Kuchenmeister, Emil, assignor.) | | | | | | |
| Siemens & Halske. (See Moderegger, Carl, assignor.) | | | | | | |
| Siemens & Halske. (See Moderegger, Karl, assignor.) | | | | | | |
| Siemens & Halske. (See Richter, Ernst, assignor.) | | | | | | |
| Siemens & Halske. (See Schwieger, Heinrich, assignor.) | | | | | | |
| Siemens & Halske. (See Zickermann, Fritz, assignor.) | | | | | | |
| Sievert, Paul, Döhlen, Germany. Apparatus for producing flat objects of glass | 528,240 | Oct. 30 | 2649 | 638, 639 | 69 | 548 |
| Sievert, Paul, Döhlen, near Dresden, Germany. Producing flat objects of glass | 530,289 | Dec. 4 | 379 | 93 | 69 | 1281 |
| Sigafoos, Russel B., Racine, Wis. Furniture | 531,010 | Dec. 18 | 1629 | 386, 387 | 69 | 1542 |
| Sigelen, Christian A., Indianapolis, Ind. Pneumatic inkstand | 531,474 | Dec. 25 | 2474 | 589 | 69 | 1714 |
| Sigwart, Otto. (See Momper and Sigwart.) | | | | | | |
| Siller, Gottlob, Esslingen, Germany. Vise | 526,753 | Oct. 2 | 139 | 33 | 69 | 27 |
| Silliman, Benjamin F., Cleveland, Ohio. Gas-compressor | 527,081 | Oct. 9 | 661 | 161 | 69 | 139 |
| Silliman, George L., Rutland, Vt. Fire-escape | 530,860 | Dec. 11 | 1364 | 326 | 69 | 1479 |
| Silsbee, Joseph L., Chicago, Ill. Railway construction | 527,891 | Oct. 23 | 2016 | 484 | 69 | 417 |
| Silver, Sam D., Idaho Springs, Colo. Detonating burglar-alarm | 531,428 | Dec. 25 | 2380 | 569 | 69 | 1696 |
| Silvey, William O. (See Root and Silvey.) | | | | | | |
| Simandl, Joseph. (See Bork and Simandl.) | | | | | | |
| Simkins, Walter, London, England. Repetition attachment for pianofortes | 527,028 | Oct. 2 | 584 | 141, 142 | 69 | 110 |
| Simmons, Henry L., Wickes, Mont. Amalgamator | 528,815 | Nov. 6 | 523 | 126 | 69 | 740 |
| Simonds, Nathan J., Woburn, Mass. Heel-stiffener machine | 530,402 | Dec. 4 | 662 | 164, 165 | 69 | 1337 |
| Simons, Heinrich, Aix-la-Chapelle, Germany. Respirator | 531,011 | Dec. 18 | 1630 | 387 | 69 | 1542 |
| Simpkins, Alvin T., St. Louis, Mo. Baker's oven | 527,892 | Oct. 23 | 2018 | 484 | 69 | 417 |
| Simple Account File Company. (See Parrey, John U., assignor.) | | | | | | |
| Simpson, Hall, Miller & Co. (See Glahn, George A., assignor.) | | | | | | |
| Simpson, Isaiah H., Brunswick, Me. Device for thawing ice from pipes | 529,204 | Nov. 13 | 1222 | 295 | 69 | 887 |
| Simpson, Matthew P., and E. P. Williams, McPherson, Kans. Combined corn-planter, seed-drill, and cultivator | 529,423 | Nov. 20 | 1621 | 385, 386 | 69 | 982 |
| Singer Manufacturing Company. (See Diehl, Philip, assignor.) | | | | | | |
| Singer Manufacturing Company. (See Foster, Charles H., assignor.) | | | | | | |
| Singer Manufacturing Company. (See Scheen, Paul, assignor.) | | | | | | |
| Singer, Nimick & Company. (See Foster, Alexander W., assignor.) | | | | | | |
| Singleton, William H., Washington, D. C. Bale-tie | 530,607 | Dec. 11 | 951 | 234 | 69 | 1405 |
| Sipe, James P., *et al.* (See Schon, Hubert, assignor.) | | | | | | |
| Sippy, Alvin H., St. Louis, Mo. Device for stringing fish | 529,758 | Nov. 27 | 2195 | 523 | 69 | 1094 |
| Sir Joseph Whitworth & Company. (See Canet, Jean B. G. A., assignor.) | | | | | | |
| Sir W. G. Armstrong, Mitchell & Co. (See Noble and Lloyd, assignors.) | | | | | | |
| Sisk, Robert J., New London, Conn. Composition for sizing walls | 530,557 | Dec. 11 | 869 | | 69 | 1390 |
| Sivertson, Lucas, Fort Abercrombie, N. D. Rotary engine | 528,493 | Oct. 30 | 3081 | 747, 748 | 69 | 626 |
| Six, William M., Westfield, Ind. Train time-indicator | 530,360 | Dec. 4 | 506 | 125 | 69 | 1307 |
| Sjöström, David. (See Andersson, Hilda K., assignor.) | | | | | | |
| Skatulla, Cöllestin, Brooklyn, N. Y., assignor of one-half to Monoline Composing Company, Washington, D. C. Machine for producing cast type-bars | 529,205 | Nov. 13 | 1223 | 295 | 69 | 887 |
| Skidmore, Frederick R., Milwaukee, Wis. Mouthpiece for wind-instruments | 528,993 | Nov. 13 | 863 | 204 | 69 | 824 |
| Skillington, William P., New York, N. Y., assignor of three-fourths to A. G. Paul, Boston, Mass. Heating system | 526,754 | Oct. 2 | 139 | 33, 34 | 69 | 28 |
| Skillington, William P., New York, N. Y., assignor of three-fourths to A. G. Paul, Boston, Mass. Method of heating | 527,029 | Oct. 2 | 586 | 142 | 69 | 111 |
| Skilling, John, Fall River, Mass. Button | 528,397 | Oct. 30 | 2915 | 705 | 69 | 595 |
| Skinner, Joseph W., La Crosse, Wis. Shoe-shaper | 531,393 | Dec. 25 | 2324 | 554 | 69 | 1685 |
| Skoda, Emil von, Pilsen, Austria-Hungary. Illuminated gun-sight | 529,424 | Nov. 20 | 1627 | 387 | 69 | 982 |
| Skoglund, Jean V. (See Ponten and Skoglund.) | | | | | | |
| Sloan, Bert F., *et al.* (See Hutchinson, Calvin A., assignor.) | | | | | | |
| Small, Frederick E., Boston, Mass. Lubricator | 531,225 | Dec. 18 | 2024 | 482 | 69 | 1613 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Small, Henderson T., Chanute, Kans. Shoe-string holder | 527,733 | Oct. 16 | 1736 | 419 | 69 | 350 |
| Smart, Elswood, Brockville, Canada. Cow-milking machine | 527,893 | Oct. 23 | 2019 | 485 | 69 | 418 |
| Smiley, Josiah E., Smiley, Ohio. Stovepipe-joint | 528,816 | Nov. 6 | 324 | 127 | 69 | 741 |
| Smith, Adam D. (See Leonard, George B., assignor.) | | | | | | |
| Smith, Albert, Grand Rapids, Mich. Flower-box | 530,132 | Dec. 4 | 96 | 25 | 69 | 1233 |
| Smith, Alonzo D., Newark, N. J. Car-fender | 531,395 | Dec. 25 | 2426 | 555 | 69 | 1686 |
| Smith, Alonzo H. (See Hodges, Addison S., assignor.) | | | | | | |
| Smith, Arthur W., assignor of one-half to A. T. Bond, Sioux City, Iowa. Plastering compound | 528,995 | Nov. 13 | 866 | ..... | 69 | 824 |
| Smith, Benjamin O., Kansas City, Mo. Hame-fastener | 527,131 | Oct. 9 | 746 | 183 | 69 | 153 |
| Smith, Charles A., South Chicago, Ill. Railway-car construction | 530,969 | Dec. 18 | 1556 | 368, 369 | 69 | 1528 |
| Smith, Charles G., Detroit, Mich. Excelsior-cutting machine | 530,732 | Dec. 11 | 1165 | 283, 284 | 69 | 1441 |
| Smith, Charles G., Detroit, Mich. Excelsior-cutting machine | 531,342 | Dec. 25 | 2234 | 544 | 69 | 1667 |
| Smith, Charles W., Pelzer, S. C. Price-scale | 529,206 | Nov. 13 | 1226 | 295 | 69 | 888 |
| Smith, Daniel A., Jr., Washington, D. C. Folding umbrella | 528,212 | Oct. 30 | 2600 | 627 | 69 | 538 |
| Smith, Daniel W., assignor of two-thirds to A. Bevis and C. H. Longstreth, St. Louis, Mo. Electric signal for railway-crossings | 529,759 | Nov. 27 | 2196 | 521, 524 | 69 | 1094 |
| Smith, David, Wellesley, and H. P. Goldrick, Natick, Mass. Water-tube boiler | 530,664 | Dec. 11 | 1055 | 257 | 69 | 1422 |
| Smith, Edward F., Erie, Pa. Rotary pump | 527,082 | Oct. 9 | 662 | 162 | 69 | 139 |
| Smith, Ernst G., Columbia, Pa. Collar or cuff shaping machine | 529,143 | Nov. 13 | 1113 | 269 | 69 | 869 |
| Smith, Eugene C. (See Smith, John J. C. and E. C.) | | | | | | |
| Smith, Eugene C., New York, N. Y. Machine for manufacturing plaster-boards | 529,535 | Nov. 20 | 1848 | 438 | 69 | 1020 |
| Smith, Fernando B., Canton, Ohio. Oil-can | 530,207 | Dec. 4 | 228 | 56 | 69 | 1257 |
| Smith, Gilman W. (See Bates and Smith.) | | | | | | |
| Smith, Hamilton E., Philadelphia, Pa., assignor to Bessonette Cotton Compress Manufacturing Company, Waco, Tex. Baling-press | 529,969 | Nov. 27 | 2561 | 617 | 69 | 1162 |
| Smith, Hamilton E., New York, N. Y., and B. A. Dare, Jersey City, N. J., assignors to Bessonette Cotton Compress Manufacturing Company, Waco, Tex. Core-holding mechanism for cotton-baling machines | 529,967 | Nov. 27 | 2553 | 615 | 69 | 1160 |
| Smith, Hamilton E., New York, N. Y., and B. A. Dare, Jersey City, N. J., assignors to Bessonette Cotton Compress Company, Waco, Tex. Cotton-baling machine | 529,968 | Nov. 27 | 2557 | 616, 617 | 69 | 1161 |
| Smith, Henry D., Chicago, Ill. Furnace | 531,394 | Dec. 25 | 2324 | 554 | 69 | 1685 |
| Smith, Horatio G., Fitchburg, Mass. Steam-engine governor | 530,970 | Dec. 18 | 1558 | 369 | 69 | 1528 |
| Smith, Humphrey R., Chicago, Ill. Safety grip device for elevators | 530,971 | Dec. 18 | 1559 | 369, 370 | 69 | 1528 |
| Smith, Jacob W., Chambersburg, Ohio. Gate | 531,344 | Dec. 25 | 2237 | 534 | 69 | 1668 |
| Smith, John A. (See Bradford and Smith.) | | | | | | |
| Smith, John A., assignor of two-thirds to J. Hart and A. Wilkinson, Johnstown, Pa. Balanced piston-valve | 530,559 | Dec. 11 | 871 | 215 | 69 | 1390 |
| Smith, John C., Sugartree, Mo. Stump-extractor | 528,994 | Nov. 13 | 864 | 205 | 69 | 824 |
| Smith, John J. C., Passaic, N. J., and E. C. Smith, Providence, R. I. Apparatus for casting metals under pneumatic pressure | 526,874 | Oct. 2 | 341 | 85 | 69 | 64 |
| Smith, John P., Cleveland, Ohio. Type-writing machine | 527,083 | Oct. 9 | 664 | 162 | 69 | 139 |
| Smith, John T., Rockfall, Conn. Revolver | 530,730 | Dec. 11 | 1161 | 281 | 69 | *1440 |
| Smith, Joseph B. (See Clough, Albert L., assignor.) | | | | | | |
| Smith, Joseph B., Manchester, N. H. Magneto call-bell | 526,982 | Oct. 2 | 510 | 125 | 69 | 96 |
| Smith, Leonard O., Philadelphia, Pa. Holding device for embroidery-silks, &c | 530,628 | Dec. 11 | 987 | 242 | 69 | 1411 |
| Smith, Leonard O., Philadelphia, Pa. Device for holding silks or threads | 531,475 | Dec. 25 | 2476 | 589, 590 | 69 | 1714 |
| Smith, Lucius A., Topeka, Kans. Truss | 531,343 | Dec. 25 | 2236 | 534 | 69 | 1667 |
| Smith, Milton. (See Eddy, John S., assignor.) | | | | | | |
| Smith, Milton E., and M. F. Geer, assignors of one-third to P. C. Brewer, Rochester, N. Y. Electric battery | 527,298 | Oct. 9 | 1020 | 248 | 69 | 204 |
| Smith, Oliver E., assignor to J. P. Woodworth, Chicopee, Mass. Revolver | 528,263 | Oct. 30 | 2655 | 647 | 69 | 555 |
| Smith, Orison M., assignor of two-thirds to M. J. Davis, E. J. McLaughlin, H. Bridgeman, and N. F. Russell, Duluth, Minn. Automatic safety-grip for inclined railways | 527,894 | Oct. 23 | 2021 | 486 | 69 | 418 |
| Staith, R. Tynes. (See Monroe, David M., assignor.) | | | | | | |
| Smith, Richard H. (See Morriss and Smith.) | | | | | | |
| Smith, Samuel. (See Mershon, William R., assignor.) | | | | | | |
| Smith, Samuel N., assignor to Minnesota Smokeless Furnace Company, Minneapolis, Minn. Smoke-preventing furnace | 527,895 | Oct. 23 | 2023 | 486, 487 | 69 | 419 |
| Smith, Sidney S., Boston, Mass. Wave-power propeller for boats | 529,582 | Nov. 27 | 2404 | 575, 576 | 69 | 1134 |
| Smith, Solomon, and M. B. Mishler, Ravenna, Ohio. Tool for linemen's use | 530,361 | Dec. 4 | 507 | 125 | 69 | 1307 |
| Smith, Stansbury J., Paris, Tex. Gate | 529,086 | Nov. 13 | 1021 | 246 | 69 | 851 |
| Smith, Stephen T., Noroton, Conn. Car-coupling | 530,558 | Dec. 11 | 870 | 214, 215 | 69 | 1390 |
| Smith, Thomas B., Birmingham, England. Machine for threading wood-screw blanks | 531,226 | Dec. 18 | 2026 | 483 | 69 | 1613 |
| Smith, Thomas C. (See Hadley, Joshua A., assignor.) | | | | | | |
| Smith, Thomas E., Kansas City, Mo. Kitchen-cabinet | 531,341 | Dec. 25 | 2232 | 533 | 69 | 1667 |
| Smith, Thomas L., Milwaukee, Wis. Weeding and root-pulling implement | 531,449 | Dec. 25 | 2435 | 579 | 69 | 1706 |
| Smith, Thomas S., East St. Louis, Ill., and A. M. Shepard, St. Louis, Mo. Steam-trap | 531,129 | Dec. 18 | 1858 | 441 | 69 | 1584 |
| Smith, Thomas W. (See Ross, Frank, assignor.) | | | | | | |
| Smith, Warren B. (See Tymeson, Eugene, assignor.) | | | | | | |
| Smith, William, New Castle, Pa. Padlock | 528,743 | Nov. 6 | 383 | 92 | 69 | 716 |
| Smith, William, assignor of one-half to R. L. Anderson, Drake's Creek, Ark. Washing-machine | 527,458 | Oct. 16 | 1294 | 316 | 69 | 270 |
| Smith, William A., Lawrence, Mass. Winding or spooling machine | 530,731 | Dec. 11 | 1162 | 282, 283 | 69 | 1440 |
| Smith, William J., New Haven, Conn., assignor to C. S. Larrabee, trustee, Bath, Me. Time-fuse | 527,222 | Oct. 9 | 889 | 215, 216 | 69 | 181 |
| Smith, William J., New Haven, Conn., assignor to C. S. Larrabee, trustee, Bath, Me. Time-fuse for projectiles | 527,250 | Oct. 9 | 937 | 227 | 69 | 189 |
| Smith, William N., Santa Cruz, Cal. Wrench | 529,632 | Nov. 20 | 1985 | 474 | 69 | 1017 |
| Smith, William R., assignor of two-thirds to J. W. Fisher, Riverside, and T. Clifton, Cincinnati, Ohio. Railway-track | 528,309 | Oct. 30 | 2770 | 669 | 69 | 570 |
| Smith, Wilson R., Beloit, assignor of one-half to J. B. Hatch, Milwaukee, Wis. Friction-clutch | 529,314 | Nov. 13 | 1422 | 342 | 69 | 925 |
| Smothers, Blannerhassett H., *et al.* (See Williams, James F. and E. J., assignors.) | | | | | | |
| Smouse, George E., Everett, Pa. Nut-lock | 529,970 | Nov. 27 | 2563 | 617 | 69 | 1163 |
| Smyth, Charles, Dayton, Ohio. Mechanism for detecting opening of locks | 530,133 | Dec. 4 | 96 | 26 | 69 | 1233 |
| Smyth, William H., Berkeley, Cal. Machine for making can-bodies, &c | 529,815 | Nov. 27 | 2294 | 547, 548 | 69 | 1112 |



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|---|---|---|---|---|---|---|
| Snell, Fernando J. (See Sharples and Snell.) | | | | | | |
| Snowman, Herman C. F. E., New Paltz, N. Y. Means for transmitting motion | 530,972 | Dec. 18 | 1562 | 370 | 69 | 1529 |
| Snowman, Herman C. F. E., New Paltz, assignor to New York Labor Saving Patents Exploiting Company, New York, N. Y. Envelope | 531,241 | Dec. 18 | 2182 | 509 | 69 | 1631 |
| Snyder, Arthur M., Fairfield, Iowa. Interchangeable sprocket | 529,843 | Nov. 27 | 2343 | 558 | 69 | 1122 |
| Snyder, Cyrus, assignor to Advance Thresher Company, Battle Creek, Mich. Tally-register for grain-measurers | 528,817 | Nov. 6 | 325 | 127 | 69 | 741 |
| Snyder, Grace M. (See Snyder, Robert J., assignor.) | | | | | | |
| Snyder, Robert J., assignor to G. M. Snyder, Bethlehem, Pa. Method of and apparatus for aligning machinery | 529,315 | Nov. 13 | 1423 | 342 | 69 | 925 |
| Société Anonyme de l'Institut Raoul Pictet. (See Pictet, Raoul P., assignor.) | | | | | | |
| Société Anonyme de la Serrenre sans Clef. (See Bois, Jules, assignor.) | | | | | | |
| Société Anonyme des Moteurs Thermiques Gardie. (See Lorois, Maurice, assignor.) | | | | | | |
| Société Anonyme pour la Transmission de la Force par l'Électricité. (See Hutin and Leblanc, assignors.) | | | | | | |
| Société Française des Moteurs Crébessac. (See Crébessac, Léonce, assignor.) | | | | | | |
| Société Générale des Téléphones, (Réseaux Téléphoniques et Constructions Électriques.) (See Berthon, Louis A., assignor.) | | | | | | |
| Solvay, Ernest, Brussels, Belgium. Charging apparatus | 531,282 | Dec. 18 | 2123 | 509 | 69 | 1631 |
| Sommer, John L., Newark, N. J. Cigarette or match case | 527,625 | Oct. 16 | 1557 | 377 | 69 | 317 |
| Sorg, Ferdinand. (See Storz, Sorg, and Henni.) | | | | | | |
| Sorrell, Matthew C., Raleigh, N. C. Cradle | 529,816 | Nov. 27 | 2302 | 548 | 69 | 1115 |
| Sotter, Frederick, Coatesville, Pa. Punching-machine and stripper therefor | 528,039 | Oct. 23 | 2291 | 552 | 69 | 467 |
| Sotter, Frederick, Coatesville, Pa. Machine for bending special shapes of iron, steel, or other metal | 529,536 | Nov. 20 | 1839 | 438, 439 | 69 | 1020 |
| Souchon, Edmond, New Orleans, La. Inhaler | 531,476 | Dec. 25 | 2477 | 599 | 69 | 1714 |
| Souer, George, Rice's, Minn. Car-coupling | 529,207 | Nov. 13 | 1223 | 296 | 69 | 888 |
| Souther, Calvin N., assignor to Poole Brothers, Chicago, Ill. Ticket-stamp | 529,669 | Nov. 20 | 2046 | 490, 491 | 69 | 1058 |
| Southgate, Louis W., Worcester, Mass., assignor to Otis Brothers & Company, New York, N. Y. Elevator-controller | 527,896 | Oct. 23 | 2025 | 487 | 69 | 419 |
| Sonvazoglu, Pericles. (See Sarapata and Sonvazoglu.) | | | | | | |
| Sowatsky, Frederick W., and M. Schimmeyer, Saginaw, Mich. Tally-table | 528,568 | Nov. 6 | 82 | 21 | 69 | 661 |
| Sowdon, William, New York, N. Y. Duplicate-whist apparatus | 530,665 | Dec. 11 | 1056 | 257 | 69 | 1422 |
| Spall, Michael. (See Cable, James M., assignor.) | | | | | | |
| Spangenberg, Heinrich K., Leipsic, Germany. Battery-switch | 530,804 | Dec. 11 | 1277 | 308 | 69 | 1463 |
| Spannagel, Gustave H. (See Rhoads and Spannagel.) | | | | | | |
| Spanoghe, Josse E., Antwerp, Belgium. Steam-boiler | 527,459 | Oct. 16 | 1295 | 316 | 69 | 270 |
| Sparmaker, Frank P., assignor of one-half to W. T. Cunningham, Philadelphia, Pa. Cigar-tip cutter | 528,996 | Nov. 13 | 866 | 205 | 69 | 825 |
| Sparks Charles F., Alton, Ill. Engine | 528,818 | Nov. 6 | 527 | 127 | 69 | 741 |
| Spaulding, Algenon S., Worcester, Mass. Cutter-head | 531,396 | Dec. 25 | 2322 | 555 | 69 | 1687 |
| Spaulding, Algenon S., Worcester, Mass., assignor to Flexible Door and Shutter Company, Portland, Me. Flexible door | 531,227 | Dec. 18 | 2028 | 483 | 69 | 1614 |
| Spear, Henry A., Everett, Mass. Heating and water-circulating system | 527,626 | Oct. 16 | 1558 | 377 | 69 | 317 |
| Spears, Ralph R., Wheeling, W. Va. Turning-lathe for axle-boxes | 530,861 | Dec. 11 | 1365 | 326 | 69 | 1479 |
| Specht, Eugene T., *et al.* (See Wheeler, Fred A., assignor.) | | | | | | |
| Specht, John, and I. Armand, Gaza, Iowa. Planter | 527,816 | Oct. 23 | 1874 | 450 | 69 | 392 |
| Speckin, Charles W., Argentine, Kans. Railway-frog | 528,348 | Oct. 30 | 2826 | 683 | 69 | 579 |
| Speed, E. W., *et al.* (See Armistead, Fabian H., assignor.) | | | | | | |
| Spencer, Christopher, assignor to I. S. Spencer's Sons, Guilford, Conn. Spring-scale | 530,302 | Dec. 4 | 508 | 125, 126 | 69 | 1307 |
| Spencer, Frank F. (See Phillips, Elwood C., assignor.) | | | | | | |
| Spencer, J. R., *et al.* (See Armistead, Fabian H., assignor.) | | | | | | |
| Spencer, Theodore, Cambridge, assignor to American Bell Telephone Company, Boston, Mass. Telephone circuit and signal | 528,040 | Oct. 23 | 2292 | 553 | 69 | 468 |
| Spencer's Sons, I. S. (See Spencer, Christopher, assignor.) | | | | | | |
| Spengler, Charles and G., Rockford, Ill. Combined latch and knob | 527,627 | Oct. 16 | 1560 | 378 | 69 | 318 |
| Spengler, George. (See Spengler, Charles and G.) | | | | | | |
| Spielmann, Adolf. (See Emanuel and Spielmann.) | | | | | | |
| Spindler, Charles, Jr., Peoria, Ill. Hot-air pipe | 527,731 | Oct. 16 | 1738 | 419 | 69 | 351 |
| Spiro, Charles, New York, N. Y. Type-writing machine | 529,208 | Nov. 13 | 1229 | 296 | 69 | 888 |
| Spooner, George A. T., Boston, Mass. Pasting-machine | 530,312 | Dec. 4 | 414 | 104 | 69 | 1290 |
| Sporborg, William L. (See Lintner, William T., assignor.) | | | | | | |
| Sprague, Austin Y. M., Rochester, N. Y. Water-sterilizing apparatus | 527,084 | Oct. 9 | 666 | 163 | 69 | 140 |
| Sprague, James O., and J. W. Guthrie, Sacramento, Cal. Carburetor | 527,085 | Oct. 9 | 667 | 163 | 69 | 140 |
| Spreckels, Claus, Philadelphia, Pa. Apparatus for heating water in sugar-refineries | 529,569 | Nov. 20 | 1716 | 409 | 69 | 998 |
| Springer, Amos C., Seattle, Wash. Ore-concentrator | 527,223 | Oct. 9 | 891 | 216 | 69 | 181 |
| Sprung, Isaac, New York, N. Y. Combined muff and purse | 526,950 | Oct. 2 | 464 | 114 | 69 | 87 |
| Spyer, Joseph, Mexico, Mexico. Rubber dental-plate blank | 527,817 | Oct. 23 | 1875 | 450 | 69 | 393 |
| Squires, Charles H. (See Lindsey and Squires.) | | | | | | |
| St. Cloud Vulcanized Fibreware Company. (See Dyer and Bingham, assignors.) | | | | | | |
| St. John, Garland B., assignor of one-half to C. D. Fuller, Kalamazoo, Mich. Apparatus for signaling the approach of street-cars | 527,461 | Oct. 16 | 1298 | 317 | 69 | 271 |
| St. Louis Register Company. (See Catlin and Rein, assignors.) | | | | | | |
| Stafford, James F., Wichita, Kans. Truss | 530,973 | Dec. 18 | 1564 | 371 | 69 | 1529 |
| Stahley, Simon A., Suspension Bridge, N. Y. Coupling | 531,071 | Dec. 18 | 1747 | 411 | 69 | 1560 |
| Staley, Raleigh H., Sheridan, Ind. Method of and apparatus for removing water or oil from bottoms of gas-wells | 528,449 | Oct. 30 | 3005 | 726 | 69 | 611 |
| Stambaugh, Julius L., Standart, Tex. Wrench | 528,398 | Oct. 30 | 2916 | 706 | 69 | 595 |
| Stanchfield, John B. (See McCawley and Kingsley, assignors.) | | | | | | |
| Stanchfield, John B., *et al.* (See Kingsley, Alba T., assignor.) | | | | | | |
| Standard Fire Proofing Company. (See Golding, John F., assignor.) | | | | | | |
| Standard Furniture Company. (See Foley, Michael, assignor.) | | | | | | |
| Standard Paint Company. (See Griscom, William, Jr., assignor.) | | | | | | |
| Standard Rivet Company. (See Bean, Frank, assignor.) | | | | | | |
| Standard Store Service Company. (See Gipe, Emanuel C., assignor.) | | | | | | |
| Standard Valve Company. (See Teal, Benjamin F., assignor.) | | | | | | |
| Standish Clay Manufacturing Company. (See McElfresh, Francis E., assignor.) | | | | | | |
| Standish, Philander H., St. Mary's, Ohio. Machine for making chains | 528,819 | Nov. 6 | 528 | 128, 129 | 69 | 741 |
| Standish, Syranus, Gridley, Cal. Fruit-pitting machine | 529,817 | Nov. 27 | 2304 | 548, 549 | 69 | 1115 |
| Stanford, Arthur L., Evanston, Ill. Lifting-jack | 527,818 | Oct. 23 | 1876 | 450 | 69 | 393 |

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|---|---|---|---|---|---|---|
| Stanhope, Redington, Lincoln, Nebr. Rein-supporter | 530,134 | Dec. 4 | 98 | 26 | 69 | 1233 |
| Stanley, John E., assignor to G. H. Huttenlocher and J. S. Gilcrest, Des Moines, Iowa. Incubator | 530,907 | Dec. 11 | 1439 | 342 | 69 | 1492 |
| Stanley Laboratory Company. (See Chesney, Cummings C., assignor.) | | | | | | |
| Stanley Laboratory Company. (See Kelly, John F., assignor.) | | | | | | |
| Stanley, Lucius T., Brooklyn, N. Y., and A. E. Braddell, assignors to H. B. Cutter, Philadelphia, Pa. Automatic electromagnetic cut-out | 528,185 | Oct. 30 | 2545 | 617 | 69 | 530 |
| Stanley, Nelson D., Essex Junction, Vt. Nut-lock | 530,290 | Dec. 4 | 381 | 94 | 69 | 1284 |
| Stanwood, Edward, Brookline, Mass. Boot or shoe polishing device | 528,349 | Oct. 30 | 2827 | 683 | 69 | 579 |
| Staples, John A., Newburg, N. Y. Spring-support for chair-seats | 531,477 | Dec. 25 | 2478 | 590 | 69 | 1714 |
| Stapleton, James, assignor of one-half to L. Clements, Ray's Mills, Ga. Roller cotton-gin | 529,425 | Nov. 20 | 1629 | 387 | 69 | 983 |
| Stapp, Frederick, Denver, Colo. Minnow-holder for fish-hooks | 531,140 | Dec. 18 | 1860 | 441 | 69 | 1584 |
| Starke, Eric A., assignor to United States Smokeless Powder Company, San Francisco, Cal. Making ammonium bichromate | 527,563 | Oct. 16 | 1456 | ..... | 69 | 299 |
| Starks, Nils O., assignor to Fuller & Johnson Manufacturing Company, Madison, Wis. Wheel | 527,735 | Oct. 16 | 1739 | 420 | 69 | 351 |
| Starr, Ferdinand W., Springfield, Ohio. Corrugated fastener | 528,569 | Nov. 6 | 83 | 21 | 69 | 661 |
| Starr, John. (See Goodwin, Henry L., assignor.) | | | | | | |
| Staub, Henry, assignor of one-fourth to G. Peyer, Allegheny, Pa. Rotary steam-engine | 530,908 | Dec. 11 | 1441 | {342 343} | 69 | 1493 |
| Stauber, Emanuel, Hamburg, Germany. Machine for forming peat briquets | 531,478 | Dec. 25 | 2479 | 590 | 69 | 1714 |
| Stauder, Joseph, Berlin, Germany. Manufacture of brushes | 527,251 | Oct. 9 | 938 | 227 | 69 | 190 |
| Stearns, William E., Berlin, Conn., assignor of one-third to D. L. Bradt, J. P. Coghlin, and F. O. Plummer, Worcester, Mass. Closed conduit for electric railways | 528,494 | Oct. 30 | 3084 | 748 | 69 | 626 |
| Stebbins, Henry W., West Carrollton, assignor of one-half to J. H. Friend, Dayton, Ohio. Digester | 528,399 | Oct. 30 | 2917 | 706 | 69 | 595 |
| Stebbins, Henry W., West Carrollton, assignor of one-half to J. H. Friend, Dayton, Ohio. Digester | 528,400 | Oct. 30 | 2918 | 706 | 69 | 596 |
| Steck, Ernst F., Chicago, Ill. Water-tower | 527,460 | Oct. 16 | 1295 | 317 | 69 | 270 |
| Steck, Ernst F., Chicago, Ill. Calculating-rule. (Reissue) | 11,450 | Oct. 23 | 2461 | 596 | 69 | 499 |
| Stecke, Albert, Osnabrück, Germany, assignor to W. C. Eymann, Anaheim, Cal. Coal and gas burning stove or range | 531,602 | Dec. 25 | 2687 | 644 | 69 | 1756 |
| Stecker, Joseph, Lexington, Ky. Shirt | 530,974 | Dec. 18 | 1565 | 371 | 69 | 1529 |
| Steed, Thaddeus F., Merkel, Tex. Track-raiser | 527,514 | Oct. 16 | 1379 | 336 | 69 | 285 |
| Steedman, George F., and J. H. Brookmire, Jr., St. Louis, Mo. Car-brake | 528,116 | Oct. 23 | 2426 | {587 588} | 69 | 493 |
| Steel Cable Engineering Company. (See Berger, Ambrose J. B., assignor.) | | | | | | |
| Steel, Robert G. (See Peck, Luke R., assignor.) | | | | | | |
| Steele, Will F., *et al.* (See Mills, Jonathan, assignor.) | | | | | | |
| Steere & Son, J. W. (See Hetherington, Martin, assignor.) | | | | | | |
| Stehle, Martin, Perry, Mo. Stovepipe-joint | 527,380 | Oct. 9 | 1155 | 283 | 69 | 230 |
| Stein, Edward F., *et al.* (See Brombacher, Emil, assignor.) | | | | | | |
| Stein, Gustav W. A., Wetzlar, Germany. Manufacturing hydraulic cement | 530,247 | Dec. 4 | 302 | ..... | 69 | 1270 |
| Steinbrenner, Andrew G., assignor to E. S. Barreiras, St. Louis, Mo. Draw-bar for railway-cars | 528,117 | Oct. 23 | 2430 | 588 | 69 | 493 |
| Steiner, Alfred, New York, N. Y. Buckle | 530,363 | Dec. 4 | 510 | 126 | 69 | 1308 |
| Steiner, William R., Frederick, Md. Corn-harvester | 526,755 | Oct. 2 | 145 | {34 35 36} | 69 | 92 |
| Steinhoff, Henry C., West Hoboken, N. J. Heating-boiler | 528,401 | Oct. 30 | 2920 | {706 707} | 69 | 596 |
| Stemann, Gottfried F. W. J., *et al.* (See Bauer, Friedrich R., assignor.) | | | | | | |
| Stephenson, Frederick G., Plainville, Conn. Pin-guard | 531,397 | Dec. 25 | 2329 | 555 | 69 | 1687 |
| Stern, Emile, Paris, France. Closing receivers charged with compressed or liquefied gases | 528,820 | Nov. 6 | 543 | 130 | 69 | 745 |
| Stern, Isaac, *et al.* (See Deming, Edward, assignor.) | | | | | | |
| Stern, Julius, *et al.* (See Hirschfeld, Leo, assignor.) | | | | | | |
| Stevens, John C., assignor, by mesne assignments, to F. C. Rockwell, Hartford, Conn. Clasp | 528,699 | Nov. 6 | 317 | 77 | 69 | 704 |
| Stevens, Sylvanus, Holgate, Ohio. Nut-lock | 529,633 | Nov. 20 | 1986 | 474 | 69 | 1047 |
| Stevens, Thomas, Vigo, Ohio. Rotary bolt | 530,364 | Dec. 4 | 511 | 126 | 69 | 1308 |
| Stevens, William P., Muncie, Ind. Combined label and price-card | 529,760 | Nov. 27 | 2199 | 524 | 69 | 1095 |
| Stevenson, Archy A., Burnham, Pa. Making wrought-metal wheels | 531,072 | Dec. 18 | 1728 | 411 | 69 | 1560 |
| Stevenson, David B., Petrolia, Pa. Deep-well pump | 529,209 | Nov. 13 | 1234 | 297 | 69 | 889 |
| Stevenson, James A. (See Crisp and Stevenson.) | | | | | | |
| Steward & McDermott. (See McDermott, Charles, assignor.) | | | | | | |
| Stewart, Charles C., Philadelphia, Pa. Carpet-lining | 528,570 | Nov. 6 | 84 | 21 | 69 | 661 |
| Stewart, David, *et al.* (See Assheton, William, assignor.) | | | | | | |
| Stewart, John, Jr., Litchfield, Nebr. Corn cutter and dropper | 528,041 | Oct. 23 | 2297 | 553 | 69 | 469 |
| Stewart, Robert A., New Rochelle, assignor of one-half to G. T. Holihan, New York, N. Y. Type-holder | 526,822 | Oct. 2 | 250 | 61 | 69 | 47 |
| Stewart, Walter H., Franklin, N. H. Automatic stitch-regulating mechanism for knitting-machines | 529,508 | Nov. 20 | 1787 | 426 | 69 | 1010 |
| Stewart, Walter H., Franklin, N. H. Automatic circular-knitting machine | 529,509 | Nov. 20 | 1790 | {426 427} | 69 | 1010 |
| Stewart, William C., Bellaire, Ohio. Enameling | 529,670 | Nov. 20 | 2049 | ..... | 69 | 1059 |
| Stickney, Allison M., Medford, assignor to Wellman Sole Cutting Machine Company, Boston, Mass. Machine for cutting soles or other forms | 529,883 | Nov. 27 | 2406 | {576 577} | 69 | 1135 |
| Stickney, Henry R., Portland, Me. Apparatus for cooking corn, &c., in cans | 531,479 | Dec. 25 | 2481 | 591 | 69 | 1715 |
| Stikeman, George, Brooklyn, N. Y. Book-support | 527,897 | Oct. 23 | 2027 | 487 | 69 | 420 |
| Stiles, Fred P., Sparta, Wis. Automatic ribbon-reverse | 530,565 | Dec. 4 | 512 | 127 | 69 | 1308 |
| Stiles, Oscar, Omaha, Nebr. Insulating compound | 528,744 | Nov. 6 | 384 | ..... | 69 | 716 |
| Stillman, George F., Syracuse, N. Y. Pneumatic tire | 528,213 | Oct. 30 | 2602 | 627 | 69 | 539 |
| Stirling Company. (See Schlieper, John E., assignor.) | | | | | | |
| Stivers, George E. W., New York, N. Y. Shifting seat for vehicles | 530,608 | Dec. 11 | 952 | 234 | 69 | 1405 |
| Stoll, Thomas A., Trenton, N. J. Spring bed-bottom | 530,248 | Dec. 4 | 302 | 76 | 69 | 1270 |
| Stone, Florentine L., assignor of two-thirds to Bouvé, Crawford & Company Corporation, Brockton, Mass. Machine for splitting insoles for boots or shoes | 527,299 | Oct. 9 | 1021 | {248 249} | 69 | 204 |
| Stone, Florentine L., assignor of two-thirds to Bouvé, Crawford & Company Corporation, Brockton, Mass. Parallel motion | 529,339 | Nov. 13 | 1454 | {350 351} | 69 | 932 |
| Stone, Florentine L., Brockton, assignor of two-thirds to Bouvé, Crawford & Company Corporation, Boston, Mass. Adjustable wrist-pin | 530,910 | Dec. 11 | 1444 | 343 | 69 | 1494 |
| Stone, Francis G., Lockport, N. Y. Pneumatic toy | 530,909 | Dec. 11 | 1443 | 343 | 69 | 1494 |
| Stone, Jane W., *et al.* (See Kennedy, Frank M., assignor.) | | | | | | |
| Stone, John T., Oakland, Cal. Door-bell and burglar-alarm | 530,666 | Dec. 11 | 1057 | 257 | 69 | 1422 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly Volume. Spec. | Monthly Volume. Des. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Stone, John T., Oakland, Cal. Door-bell and burglar-alarm | 530,667 | Dec. 11 | 1059 | 258 | 69 | 1422 |
| Stone, Marvin C., Washington, D. C. Coating paper tubes, &c | 527,736 | Oct. 16 | 1740 | 420 | 69 | 351 |
| Stoner, David U., Mount Joy, Pa. Shutter-hinge | 528,571 | Nov. 6 | 84 | 21 | 69 | 661 |
| Storer, Edwin W., Philadelphia, Pa. Automatic fire-extinguisher | 531,298 | Dec. 18 | 2029 | 483 | 69 | 1614 |
| Stork, Theodor P. (See Boeing and Stork.) | | | | | | |
| Storle, Ole O., Milwaukee, Wis. Harvester-elevator | 528,745 | Nov. 6 | 385 | 92, 93 | 69 | 716 |
| Stormer, Henry W., *et al.* (See Farkin, James, assignor.) | | | | | | |
| Story, John W., Bladestan, Ky. Flood-fence | 528,821 | Nov. 6 | 544 | 130 | 69 | 745 |
| Storz, Christian, F. Sorg, and F. Henni, Philadelphia, Pa. Table | 529,210 | Nov. 13 | 1235 | 297 | 69 | 890 |
| Stouls, Ernest, Paris, France. Cathode for electrolytic processes and making same | 528,042 | Oct. 23 | 2298 | ..... | 69 | 409 |
| Stout, A. L., *et al.* (See Hutchinson, Ira R., assignor.) | | | | | | |
| Stover, William R., assignor of one-half to C. C. Sanders, St. Louis Mo. Computing-scale | 531,229 | Dec. 18 | 2031 | 484 | 69 | 1614 |
| Stowe, Benjamin L., Jersey City, N. J. Pumping apparatus for sprinkling systems | 528,822 | Nov. 6 | 545 | 130 | 69 | 745 |
| Stowe, Benjamin L., Jersey City, N. J. Spooling or winding frame | 529,087 | Nov. 13 | 1022 | 246 | 69 | 852 |
| Stowell, Elmer H., Drayton Plains, and G. W. Terry, Pontiac, Mich. Wire-stay-weaving device | 529,211 | Nov. 13 | 1236 | 297 | 69 | 890 |
| Strakosch, Max, assignor of two-thirds to F. Wolf and L. Salzer, New York, N. Y. Match-box | 528,186 | Oct. 30 | 2547 | 618 | 69 | 530 |
| Strande, Sivert, Chicago, Ill. Bread-cutter | 529,537 | Nov. 20 | 1842 | 439 | 69 | 1020 |
| Stratton, George M., Conshohocken, Pa. Ligature-receptacle | 529,844 | Nov. 27 | 2345 | 559 | 69 | 1123 |
| Streblow, Carl, Berlin, Germany. Automatic extinguisher | 526,875 | Oct. 2 | 344 | 85 | 69 | 65 |
| Streeter, Herbert A. (See Jerstrum, Herbert, assignor.) | | | | | | |
| Strickmaschinenfabrik Seyfert & Donner, Gesellschaft mit Beschränkter Haftung. (See Donner, Hermann, assignor.) | | | | | | |
| Stripe, Isaac, Aultman, Ohio. Portable oven | 527,898 | Oct. 23 | 2028 | 487 | 69 | 420 |
| Strobel, Charles L., Chicago, Ill. Turn-table | 528,402 | Oct. 30 | 2921 | {707 708} | 69 | 596 |
| Stroble, George. (See Sweeney and Stroble.) | | | | | | |
| Strohecker, Albert A., and J. Hutton, Trenton, N. J.; said Hutton assignor to said Strohecker. Apparatus for applying icing to pastry | 531,398 | Dec. 25 | 2330 | 556 | 69 | 1687 |
| Stromberg, Alfred, Chicago, Ill. Circuit-closer for burglar-alarm systems | 530,975 | Dec. 18 | 1566 | 371 | 69 | 1530 |
| Stromberg, Alfred, Chicago, Ill. Burglar-alarm system | 530,976 | Dec. 18 | 1567 | 371 | 69 | 1530 |
| Stromberg, Alfred, and A. Carlson, Chicago, Ill. Telephone | 529,818 | Nov. 27 | 2306 | 549 | 69 | 1116 |
| Stromberg, Alfred, and A. Carlson, Chicago, Ill. Telephone-switch | 530,208 | Dec. 4 | 229 | 57 | 69 | 1257 |
| Strong, Frank H. (See Casey, Henry, assignor.) | | | | | | |
| Strong, George H., Chicago, Ill. Cabinet for advertising purposes | 530,668 | Dec. 11 | 1062 | 258 | 69 | 1423 |
| Strong, Harriet W. K., Los Angeles, Cal. Method of and means for impounding débris and storing water | 528,823 | Nov. 6 | 547 | {130 131} | 69 | 745 |
| Strong, Julia, Brooklyn, N. Y. Exercising-machine | 530,669 | Dec. 11 | 1064 | {258 259} | 69 | 1423 |
| Stroud, James, New York, N. Y. Basting and roasting pan | 527,252 | Oct. 9 | 939 | 228 | 69 | 190 |
| Stroud, James, New York, N. Y. Meat-roaster. (Reissue) | 11,451 | Oct. 30 | 3122 | {756 757} | 69 | 633 |
| Stronse, Demetrius B., assignor to Bonsack Machine Company, Salem, Va. Tube-machine | 529,426 | Nov. 20 | 1631 | {387 388} | 69 | 983 |
| Struble, Charles B., and C. S. Turner, Minneapolis, Minn. Potato-slicer | 527,253 | Oct. 9 | 940 | 228 | 69 | 190 |
| Strunz, Frederick B., Pittsburg, Pa. Leaching apparatus | 527,819 | Oct. 23 | 1877 | 450 | 69 | 393 |
| Stuart, Francis F., *et al.* (See Parker, Thomas, assignor.) | | | | | | |
| Stuart, Sinclair, Plainfield, N. J. Construction of ships | 526,823 | Oct. 2 | 251 | 61 | 69 | 47 |
| Stuart, T. B., *et al.* (See Church, Edward O., assignor.) | | | | | | |
| Studebaker Brothers Manufacturing Company. (See Haberle, John B., assignor.) | | | | | | |
| Stuebner, Adolph, Bennett, Pa. Stamp or envelope moistener | 530,135 | Dec. 4 | 99 | 26 | 69 | 1233 |
| Stump, William G. H. (See Ferguson, William J., assignor.) | | | | | | |
| Sturges, Lee, assignor to Chicago Stamping Company, Chicago, Ill. Churn | 529,884 | Nov. 27 | 2408 | 578 | 69 | 1135 |
| Sturm, Frederick H., West Milford, W. Va. Gate | 530,629 | Dec. 11 | 987 | 242 | 69 | 1411 |
| Sturtevant Mill Company. (See Sturtevant, Thomas L. and T. J., assignors.) | | | | | | |
| Sturtevant, Thomas J. (See Sturtevant, Thomas L. and T. J.) | | | | | | |
| Sturtevant, Thomas L. and T. J., Quincy, Mass., assignors to Sturtevant Mill Company, Portland, Me. Grinding-mill | 529,761 | Nov. 27 | 2200 | 524 | 69 | 1095 |
| Suffern, John A. (See Knapp, John H., assignor.) | | | | | | |
| Sullivan, Cornelius G., Woodland, Cal. Tellurian | 531,399 | Dec. 25 | 2330 | 556 | 69 | 1687 |
| Sullivan, J. O., *et al.* (See Norcross, George A., assignor.) | | | | | | |
| Sullivan, Jeremiah, Jr., Dudley, Pa. Drilling-machine | 527,462 | Oct. 16 | 1301 | 318 | 69 | 272 |
| Sullivan, William M., *et al.* (See Lewis, Harry A., assignor.) | | | | | | |
| Summers, Lewis P., Kansas City, assignor of one-tenth to W. S. Mead, Sheffield, Mo. Grain weighing, registering, and discharging machine | 528,403 | Oct. 30 | 2924 | 708 | 69 | 597 |
| Sumner, William J., assignor to Coburn Trolley Track Manufacturing Company, Holyoke, Mass. Step-ladder and guiding-trolley therefor | 528,824 | Nov. 6 | 549 | 131 | 69 | 746 |
| Superior Drill Company. (See Packham, Frank R., assignor.) | | | | | | |
| Superior Rubber Type Company. (See Scotford, Louis K., assignor.) | | | | | | |
| Susky, Adolf. (See Distl and Susky.) | | | | | | |
| Suter, John R., Conway, Ark. Cultivator | 528,825 | Nov. 6 | 550 | 131 | 69 | 746 |
| Sutton, Joseph W., Chelmer, Queensland. Rotary apparatus for generation of chlorin gas, &c | 527,899 | Oct. 23 | 2029 | 488 | 69 | 420 |
| Sutton, William, St. Louis, Mo. Folding car-seat | 531,573 | Dec. 25 | 2635 | 631 | 69 | 1746 |
| Sutton, William, St. Louis, Mo. Spring-bearing car-truck | 531,574 | Dec. 25 | 2637 | 632 | 69 | 1746 |
| Sutton, William, St. Louis, Mo. Truck for electric cars | 531,575 | Dec. 25 | 2640 | {632 633} | 69 | 1747 |
| Swacick, Judson D., assignor to Ney Manufacturing Company, Canton, Ohio. Means for shifting and securing hay-elevator pulleys | 527,737 | Oct. 16 | 1741 | 420 | 69 | 351 |
| Swales, Frank, London, England. Bridle-bit | 531,230 | Dec. 18 | 2033 | 485 | 69 | 1615 |
| Swan, Charles E. (See Peckham and Swan.) | | | | | | |
| Swanberg, Claus, Gilbert, Mich. Lock | 528,450 | Oct. 30 | 3007 | 726 | 69 | 612 |
| Swaney, Fletcher D., Kansas City, Kans. Gang-punch | 530,560 | Dec. 11 | 873 | 215 | 69 | 1390 |
| Swedlund, Erick J., Atwater, Minn. Watch-bow fastener | 531,480 | Dec. 25 | 2481 | 591 | 69 | 1715 |
| Sweeney, James, Pottstown, and G. Stroble, assignors of one-third to J. W. Lauderbach, Philadelphia, Pa. Tension device for loom-shuttles | 528,895 | Nov. 6 | 676 | 163 | 69 | 770 |
| Sweeney, James B., and R. W. Laird, assignors to Laird & Sweeney Manufacturing Company, St. Johnsbury, Vt. Power-hammer | 529,634 | Nov. 20 | 1987 | 474 | 69 | 1048 |
| Sweeney, John, *et al.* (See Elliott, James W., assignor.) | | | | | | |
| Sweeney, Vardiman T., Springfield, Ky. Wagon-brake | 528,826 | Nov. 6 | 551 | 132 | 69 | 747 |
| Sweet, Daniel F., Grand Rapids, Mich. Automatic electric cut-out | 529,212 | Nov. 13 | 1237 | 297 | 69 | 890 |
| Sweet, Daniel F., Grand Rapids, Mich. Electrical cut-out | 529,213 | Nov. 13 | 1239 | 298 | 69 | 890 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Sweet, Frederick D., Elyria, Ohio. Rotary engine | 531,461 | Dec. 25 | 2482 | 591, 592 | 69 | 1715 |
| Sweet, Larntine C., Loami, Ill. Wagon end-gate | 529,819 | Nov. 27 | 2307 | 549 | 69 | 1116 |
| Sweet, Warren, Fort Wayne, Ind. Washing-machine | 531,576 | Dec. 25 | 2643 | 633 | 69 | 1747 |
| Sweet, Warren, assignor to J. F. Curtice, Fort Wayne, Ind. Washing-machine | 527,463 | Oct. 16 | 1303 | 318 | 69 | 272 |
| Sweetland, Frank, Angola, N. Y. Hitching-strap | 530,136 | Dec. 4 | 160 | 26 | 69 | 1233 |
| Sweetland, Jerome B., Pontiac, Mich., assignor of three-fourths to E. M. Beebe, Memphis, Tenn., and E. A. Carter, Birmingham, Mich. Boot-blacking machine | 527,900 | Oct. 23 | 2031 | 488 | 69 | 421 |
| Swenson, Magnus, Chicago, Ill. Press | 530,914 | Dec. 11 | 1450 | 344 | 69 | 1495 |
| Swenson, Malcom, Concord, N. H. Ice-velocipede | 529,088 | Nov. 13 | 1024 | 246 | 69 | 852 |
| Swenson, Paul, Minneapolis, Minn. Thrashing-cylinder | 529,214 | Nov. 13 | 1241 | 298 | 69 | 891 |
| Swett, Albert L., Medina, N. Y. Door-hanger | 529,971 | Nov. 27 | 2565 | 618 | 69 | 1163 |
| Swift, Charles N., New York, N. Y. Tobacco-moistening device | 528,700 | Nov. 6 | 318 | 78 | 69 | 704 |
| Swift, William H., assignor of one-half to J. H. McGrady, Boston, Mass. Conduit electric railway | 531,150 | Dec. 25 | 2437 | 580 | 69 | 1707 |
| Swoboda, Hans O., New York, N. Y., assignor to General Incandescent Arc Light Company, of New York, Electric-arc lamp | 527,901 | Oct. 23 | 2033 | 488 | 69 | 421 |
| Sykes, William R., Jr., and J. P. O'Donnell, London, England. Signal-replacer | 528,997 | Nov. 13 | 869 | 206 | 69 | 825 |
| Symon, Robert R. (See House, Henry A. and Henry A., Jr., assignors.) | | | | | | |
| T. & B. Tool Company. (See Johnson, Moses C., assignor.) | | | | | | |
| Taafel, William G., Newark, Ohio. Pressure-regulator | 527,902 | Oct. 23 | 2035 | 488 | 69 | 422 |
| Taggart, Horace D., Akron, Ohio. Syringe-valve | 528,701 | Nov. 6 | 319 | 78 | 69 | 704 |
| Tait, George. (See Kinter and Teller, assignors.) | | | | | | |
| Talcott, Robert B. (See Eisert and Talcott.) | | | | | | |
| Tallman, John C., Bridgeport, Conn. Rubber tire | 527,820 | Oct. 23 | 1879 | 451 | 69 | 393 |
| Tannenberg, August O. (See Gardner, Cook, and Tannenberg.) | | | | | | |
| Tanner, Eveline N. (See Couch, Charles A., assignor.) | | | | | | |
| Tanner, Henry J., Lynn, assignor of one-half to H. Fairfield-Hamilton, Boston, Mass. Trolley-guard | 526,756 | Oct. 2 | 149 | 36 | 69 | 29 |
| Taplin, Rice & Company. (See Gifford, Charles A., assignor.) | | | | | | |
| Taplin, Rice & Company. (See White, Nathan D., assignor.) | | | | | | |
| Tatem, James W., assignor of one-half to W. H. Rowland and W. R. Cooper, Durham, N. C. Combined fireplace and ventilator | 529,972 | Nov. 27 | 2566 | 618 | 69 | 1163 |
| Tatham, James, Philadelphia, Pa. Sheathing electrical conductors | 529,215 | Nov. 13 | 1243 | 299 | 69 | 891 |
| Tatham, James, Philadelphia, Pa. Conduit for electric conductors | 529,216 | Nov. 13 | 1244 | 299 | 69 | 891 |
| Taunton Locomotive Manufacturing Company. (See Dean and Mathews, assignors.) | | | | | | |
| Taylor, Andrew J. (See Fuller and Taylor.) | | | | | | |
| Taylor, Benjamin F., Newark, N. J., assignor to Taylor Improved Draught Company, of New Jersey. Atmospheric-pressure relief for chimney-stacks | 530,630 | Dec. 11 | 988 | 243 | 69 | 1411 |
| Taylor, Charles L., Louisville, Ky. Means for supporting carpet-rolls | 529,973 | Nov. 27 | 2567 | 618 | 69 | 1163 |
| Taylor, Edward T., Oakland, Cal. Fare-register | 531,231 | Dec. 18 | 2034 | 485 | 69 | 1615 |
| Taylor, Fred W., Webster, Mass. Skate-sharpening device | 527,350 | Oct. 9 | 1102 | 269 | 69 | 219 |
| Taylor, Hiram B., Ramsey, Ill. Car-coupling | 529,427 | Nov. 20 | 1633 | 388 | 69 | 983 |
| Taylor Improved Draught Company. (See Taylor, Benjamin F., assignor.) | | | | | | |
| Taylor, John. (See McCreery and Taylor.) | | | | | | |
| Taylor, John W., Cape Girardeau, Mo. Belt hook or clamp | 526,757 | Oct. 2 | 150 | 36 | 69 | 29 |
| Taylor, John W., Peterborough, Canada. Apparatus for the manufacture of carbon brushes | 526,951 | Oct. 2 | 465 | 114 | 69 | 88 |
| Taylor, Joseph S. (See Welch, Rosia W., assignor.) | | | | | | |
| Taylor, Lakin C., Kankakee, Ill. Refrigerator | 530,670 | Dec. 11 | 1066 | 259 | 69 | 1424 |
| Teal, Benjamin F., assignor to Standard Valve Company, Chicago, Ill. Speed-stop for engines | 528,746 | Nov. 6 | 386 | 93 | 69 | 717 |
| Teal, Henry S., Chicago, Ill., assignor to Adams & Westlake Company, of Illinois. Brake-handle | 531,577 | Dec. 25 | 2644 | 633 | 69 | 1747 |
| Teale, William B., Birmingham, England. Driving-chain | 528,622 | Nov. 6 | 174 | 43 | 69 | 678 |
| Telow, William R., Tiskilwa, Ill. Umbrella | 530,805 | Dec. 11 | 1279 | 309 | 69 | 1464 |
| Teed, Oliver F., assignor to Western Leather Manufacturing Company, Chicago, Ill. Lock | 530,862 | Dec. 11 | 1367 | 326 | 69 | 1479 |
| Teel, George A., Newport Beach, Cal. Fuse-capper | 527,132 | Oct. 9 | 747 | 183 | 69 | 154 |
| Telegram Cycle Manufacturing Company. (See Heyde, Carl von der, assignor.) | | | | | | |
| Teller, George D. (See Kinter and Teller.) | | | | | | |
| Templeton, Charles, Akron, Ohio. Plant for the manufacture of oil-cloth | 529,217 | Nov. 13 | 1245 | 299, 300 | 69 | 891 |
| Templin, Andrew M. (See Cox, Henry M., assignor.) | | | | | | |
| Ten Eyck, Charles A. (See Ten Eyck, Frank E., C. A., and J. H.) | | | | | | |
| Ten Eyck, Frank E., C. A., and J. H., Auburn, N. Y.; said J. H. Ten Eyck assignor to said Frank E. and C. A. Ten Eyck. Egg-carrier | 528,187 | Oct. 30 | 2548 | 618 | 69 | 530 |
| Ten Eyck, James H. (See Ten Eyck, Frank E., C. A., and J. H.) | | | | | | |
| Tendollen, John. (See Liefbroer and Tendollen.) | | | | | | |
| Tennant, Edward I., Springfield, Ohio. Vehicle-body | 530,977 | Dec. 18 | 1569 | 372 | 69 | 1530 |
| Terry, George W. (See Stowell and Terry.) | | | | | | |
| Terry, Robert E., Mobile, Ala. Log-carrier | 526,758 | Oct. 2 | 152 | 36 | 69 | 29 |
| Tesch, Herman. (See Ingersoll, George W., assignor.) | | | | | | |
| Tetlow, Henry, and T. Harrison, Philadelphia, Pa.; said Harrison assignor to said Tetlow. Boiler | 527,515 | Oct. 16 | 1380 | 336 | 69 | 295 |
| Teuscher, John, Jr., Bridal Veil, Oreg. Suspensory bandage | 531,232 | Dec. 18 | 2037 | 485 | 69 | 1615 |
| Texas Implement and Machine Company. (See Schofield, James D., assignor.) | | | | | | |
| Thackston, William D., Des Moines, Iowa, assignor to J. C. Bennett, Lynn, Mass. Fire-escape | 530,863 | Dec. 11 | 1369 | 327 | 69 | 1480 |
| Thame, Henry. (See Kirkpatrick-Picard and Thame.) | | | | | | |
| Thanner, Leonhard, Boerwang, Germany, assignor to E. Christiansen, Leavenworth, Kans. Bicycle-shed | 527,903 | Oct. 23 | 2038 | 489 | 69 | 422 |
| Thayer, Albert. (See McCabe and Thayer.) | | | | | | |
| Thayer, Henry W., Brooklyn, and W. J. Wallace, Whitestone, N. Y. Stall-floor | 529,569 | Nov. 20 | 1893 | 450, 451 | 69 | 1030 |
| Therrien, Gabriel, Brockton, Mass. Buffer for shanks of boots or shoes | 529,510 | Nov. 20 | 1797 | 428 | 69 | 1012 |
| Thew, Richard, Cleveland, Ohio. Excavator dipper, scoop, or shovel | 530,209 | Dec. 4 | 230 | 57, 58 | 69 | 1257 |
| Thew, Richard, Cleveland, Ohio. Excavator shovel or scoop | 530,210 | Dec. 4 | 234 | 58 | 69 | 1258 |
| Thier, Hermann, Königstein, Germany. Button-fastener | 529,974 | Nov. 27 | 2568 | 619 | 69 | 1164 |
| Thies, Heinrich, Laaken, and E. Herzig, Mulhouse, Germany. Bleaching | 529,089 | Nov. 13 | 1025 | 247 | 69 | 852 |
| Thissell, Earl A., Florence, Mass. Vending-machine | 530,561 | Dec. 11 | 876 | 215, 216 | 69 | 1391 |
| Thom, George, Dunedin, New Zealand. Ship's log | 527,464 | Oct. 16 | 1304 | 318 | 69 | 272 |
| Thomas, Daniel W., Pittsburg, Ohio. Fence | 528,828 | Nov. 6 | 554 | 132 | 69 | 747 |
| Thomas, Edwin E., assignor to M. Garland, Bay City, Mich. Sawmill-buffer | 529,218 | Nov. 13 | 1246 | 300 | 69 | 892 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Thomas, Emily. (See Thomas, George, assignor.) | | | | | | |
| Thomas, George, assignor to E. Thomas, Jersey City, N. J. Drawing-instrument | 527,300 | Oct. 9 | 1023 | 249 | 69 | 204 |
| Thomas, Henry O., Kimball, Nebr. Hand-truck | 528,747 | Nov. 6 | 389 | 93, 94 | 69 | 717 |
| Thomas, James E., Bay City, Mich. Sediment-extractor for steam-boilers | 530,137 | Dec. 4 | 101 | 27 | 69 | 1234 |
| Thomas, Joshua, Cleveland, Ohio. Regulator for open tanks | 531,482 | Dec. 25 | 2484 | 592 | 69 | 1716 |
| Thomas, Lancaster, Philadelphia, Pa. Machine for the manufacture of compressed tablets | 528,572 | Nov. 6 | 85 | 22 | 69 | 662 |
| Thomas, Lincoln N., Cincinnati, Ohio, assignor to A. N. Ritz, Milwaukee, Wis. Inkstand | 531,345 | Dec. 25 | 2240 | 535 | 69 | 1669 |
| Thomas, Theodore L., Chicago, Ill. Apparatus for coating metal plates | 527,628 | Oct. 16 | 1561 | 378 | 69 | 318 |
| Thomas, Thomas J., Knoxville, Tenn. Sanding device | 528,998 | Nov. 13 | 870 | 206 | 69 | 825 |
| Thomas, William, assignor of one-half to M. Ruppert, Washington, D. C. Plumber's grappling-tool | 528,827 | Nov. 6 | 553 | 132 | 69 | 747 |
| Thomas, William M., assignor to Union Metallic Cartridge Company, Bridgeport, Conn. Cartridge-shell for practice shooting | 531,233 | Dec. 18 | 2038 | 486 | 69 | 1615 |
| Thomlinson, John, Jr., and E. L. Kastholm, Chicago, Ill. Planing-machine | 529,428 | Nov. 20 | 1635 | 388, 389 | 69 | 983 |
| Thompson, Charles A. (See La Pointe, Flanagan, and Thompson.) | | | | | | |
| Thompson, David W., Chicago, Ill. Thermostat | 528,189 | Oct. 30 | 2552 | 619 | 69 | 531 |
| Thompson, George A., and J. F. Schmadeke, Brooklyn, N. Y. Speed-indicator and alarm | 529,975 | Nov. 27 | 2569 | 619 | 69 | 1164 |
| Thompson, George T., Warsaw, Ky. Machine for tempering grain | 528,043 | Oct. 23 | 2290 | 554 | 69 | 469 |
| Thompson, Henry. (See Doe, Walter S., assignor.) | | | | | | |
| Thompson, Henry R., *et al.* (See Kempster, Daniel E., assignor.) | | | | | | |
| Thompson, John W., assignor, by mesne assignments, of one-third to J. W. Branch, Alvord, Tex. Force-pump | 526,759 | Oct. 2 | 154 | 37 | 69 | 30 |
| Thompson, Jonas A., Suffield, Conn. Harness | 527,904 | Oct. 23 | 2039 | 489 | 69 | 422 |
| Thompson, Oliver E., Ypsilanti, Mich. Root-cutter | 529,219 | Nov. 13 | 1249 | 300 | 69 | 892 |
| Thompson, Parker C., Elmira, N. Y. Electric-alarm operating mechanism | 526,760 | Oct. 2 | 155 | 37 | 69 | 30 |
| Thompson, Robert J., Grandin, Mo. Metal-shears | 530,059 | Nov. 27 | 2742 | 658 | 69 | 1198 |
| Thompson, William, *et al.* (See Austin, William H. assignor.) | | | | | | |
| Thompson, William H., East Stroudsburg, Pa. Key-register | 527,351 | Oct. 9 | 1103 | 269 | 69 | 219 |
| Thompson, Wilson, St. Louis, Mo., assignor of two-thirds to H. C. Mosher, Galesburg, Ill., and J. S. Beckwith, Dunlap, Tenn. Kitchen-cabinet | 527,030 | Oct. 2 | 589 | 143 | 69 | 111 |
| Thomsen, Max, assignor to M. Thomsen Manufacturing Company, Chicago, Ill. Curling-iron | 527,465 | Oct. 16 | 1306 | 319 | 69 | 273 |
| Thomsen, Max, assignor to M. Thomsen Manufacturing Company, Chicago, Ill. Curling-iron | 527,466 | Oct. 16 | 1307 | 319 | 69 | 273 |
| Thomson Electric Welding Company. (See Lemp, Hermann, assignor.) | | | | | | |
| Thomson, Elihu, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Electric transformer | 528,188 | Oct. 30 | 2550 | 618 | 69 | 531 |
| Thomson, Elihu, Swampscott, and E. W. Rice, Jr., Lynn, Mass., assignors to Thomson-Houston Electric Company, of Connecticut. Electric incandescent lamp | 529,429 | Nov. 20 | 1637 | 389 | 69 | 984 |
| Thomson, Henry C., and G. J. Galbraith, Boston, Mass., assignors to Electric Gas Lighting Company, of Maine. Automatic set-back annunciator | 529,144 | Nov. 13 | 1115 | 270 | 69 | 869 |
| Thomson-Houston Electric Company. (See Blackwell, Josiah L., assignor.) | | | | | | |
| Thomson-Houston Electric Company. (See Hunter, Rudolph M., assignor.) | | | | | | |
| Thomson-Houston Electric Company. (See Raffard, Nicolas J., assignor.) | | | | | | |
| Thomson-Houston Electric Company. (See Thomson, Elihu, assignor.) | | | | | | |
| Thomson-Houston Electric Company. (See Thomson and Rice, assignors.) | | | | | | |
| Thomson-Houston Electric Company. (See Van Depoele, Charles J., assignor.) | | | | | | |
| Thomson, Julius L. (See Hartmann and Thomson.) | | | | | | |
| Thorn, Timothy S., Plainfield, N. J. Toy | 530,138 | Dec. 4 | 104 | 27 | 69 | 1234 |
| Thornton, Albert O., Providence, R. I. Door-hanger | 530,366 | Dec. 4 | 514 | 127 | 69 | 1309 |
| Thornton, James, and A. B. Woodard, Wellsville, N. Y. Liquid-containing vessel | 528,748 | Nov. 6 | 395 | 94 | 69 | 718 |
| Thornton, John E., and E. Pickard, Altrincham, England. Focal-plane shutter | 529,820 | Nov. 27 | 2308 | 549, 550 | 69 | 1116 |
| Thornton, John E., and E. Pickard, Altrincham, England. Photographic-plate holder | 531,012 | Dec. 18 | 1631 | 387 | 69 | 1542 |
| Thum, Hugo. (See Thum, Otto and H.) | | | | | | |
| Thum, Otto and H., Grand Rapids, Mich. Fly-paper holder | 528,573 | Nov. 6 | 88 | 22 | 69 | 662 |
| Thury, René, assignor to Compagnie de l'Industrie Électrique, Geneva, Switzerland. Dynamo electric machine | 529,145 | Nov. 13 | 1117 | 270 | 69 | 870 |
| Thury, René, assignor to Compagnie de l'Industrie Électrique, Geneva, Switzerland. Regulating device | 529,570 | Nov. 20 | 1895 | 451 | 69 | 1030 |
| Thyll, Arthur, assignor to Electric Cutter Company, New York, N. Y. Cloth-cutting machine | 527,224 | Oct. 9 | 892 | 216 | 69 | 181 |
| Tierney, Thomas, Foxborough, Mass. Combined wrench and oiler | 528,574 | Nov. 6 | 90 | 23 | 69 | 662 |
| Tiffany, Ernest A., Dunmore, Pa. Preventing draft in coal-mines | 530,463 | Dec. 4 | 667 | 165 | 69 | 1337 |
| Tillinghast, Frederick. (See Van Guysling, Walter F., assignor.) | | | | | | |
| Tillinghast Manufacturing Company. (See Tillinghast, Pardon W., assignor.) | | | | | | |
| Tillinghast, Pardon W., Providence, R. I., assignor to Tillinghast Manufacturing Company, Providence, R. I., and Jersey City, N. J. Pneumatic tire and wheel-rim | 528,451 | Oct. 30 | 3008 | 727 | 69 | 612 |
| Tillmann & Bendel. (See Bain, Robert B., assignor.) | | | | | | |
| Tilton, Edwin B., Brooklyn, N. Y. Manifolding device | 530,806 | Dec. 11 | 1280 | 309 | 69 | 1464 |
| Timby, Theodore R., Washington, D. C. Apparatus for aging wines or distilled liquors | 527,564 | Oct. 16 | 1457 | 354, 355 | 69 | 299 |
| Timms, James, assignor to Buckeye Automatic Car Coupler Company, Columbus, Ohio. Draft-iron for car-couplings | 530,211 | Dec. 4 | 238 | 59 | 69 | 1259 |
| Tintoré, Ignacio M., London, England. Rotary hair-brushing machine | 528,044 | Oct. 23 | 2300 | 554, 555 | 69 | 470 |
| Titsworth, David E., *et al.* (See Brooks, John, assignor.) | | | | | | |
| Titsworth, Joseph M., *et al.* (See Brooks, John, assignor.) | | | | | | |
| Todd Cotton Harvester Company. (See Todd, George N., assignor.) | | | | | | |
| Todd, George N., Chicago, Ill., assignor to Todd Cotton Harvester Company. Cotton-harvester | 529,430 | Nov. 20 | 1639 | 390, 391 | 69 | 984 |
| Todd, Marquis J., assignor to Pitts Agricultural Works, Buffalo, N. Y. Harrow | 527,352 | Oct. 9 | 1106 | 270 | 69 | 219 |
| Todd, William A., New York, N. Y. Gas-stove | 530,139 | Dec. 4 | 106 | 27 | 69 | 1234 |
| Toles, Wallace H. (See Toles, Wilford C. and W. H.) | | | | | | |
| Toles, Wilford C. and W. H., Chicago, Ill. Rapid-acting vise | 528,190 | Oct. 30 | 2557 | 619 | 69 | 531 |
| Tollner, Charles, Pulaski, N. Y. Spool-box | 526,876 | Oct. 2 | 345 | 85 | 69 | 65 |
| Tollner, Hugo, Brooklyn, N. Y. Book-carrier | 530,291 | Dec. 4 | 382 | 94 | 69 | 1285 |
| Tolman, Edward K., Worcester, Mass. Registering and canceling ballot-box | 528,191 | Oct. 30 | 2559 | 620 | 69 | 532 |
| Tolman, George H. C., New Haven, Conn. Coach-lamp | 526,877 | Oct. 2 | 346 | 86 | 69 | 65 |
| Tomer, John S., Pittsburg, Pa. Rail-cleaner and car-fender | 530,807 | Dec. 11 | 1281 | 309 | 69 | 1464 |
| Tomkins, Edward B., *et al.* (See Marquart, Rudolf, assignor.) | | | | | | |
| Tomlinson, Charles B., *et al.* (See Grieser, Henry, assignor.) | | | | | | |
| Tomlinson, James, Detroit, Mich. Pickle-barrel | 531,603 | Dec. 25 | 2682 | 645 | 69 | 1756 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Tomlinson, James, Detroit, Mich. Veneer-coiling machine | 531,604 | Dec. 25 | 2690 | 615 | 69 | 1756 |
| Tonge, John, *et al.* (See Williams, Frederick W., assignor.) | | | | | | |
| Tonk Manufacturing Company. (See York, Phineas H., assignor.) | | | | | | |
| Tonner, William E. (See Lindsay, Tonner, and Lowmiller.) | | | | | | |
| Toole, James E., Northumberland, Pa. Conduit electric railway | 527,301 | Oct. 9 | 1025 | 249 | 69 | 204 |
| Topley, Willis K., South Williamsport, Pa. Decarbonizing steel | 528,214 | Oct. 30 | 2603 | ..... | 69 | 530 |
| Torrey, Jay L., Embar, Wyo. Saddle-blanket | 530,864 | Dec. 11 | 1370 | 327 | 69 | 1480 |
| Totten, Joseph, Hillburn, N. Y. Time-lock for money-drawers | 531,346 | Dec. 25 | 2242 | 535 | 69 | 1069 |
| Touchstone, James N. (See Click, Washington B. and I. A., assignors.) | | | | | | |
| Toulouse, Bernard, and J. Delorieux, San Francisco, Cal. Olive-mill | 527,905 | Oct. 23 | 2040 | 489 | 69 | 423 |
| Touzelin, Emmanuel C. B., Argenteuil, France. Windmill | 527,738 | Oct. 16 | 1742 | 421 | 69 | 352 |
| Tower, John J., Brooklyn, N. Y. Vise | 530,743 | Dec. 11 | 1464 | 284 | 69 | 1441 |
| Tower, Orville R., North Greenfield, Wis. Overshoe-securer | 527,046 | Oct. 9 | 668 | 163 | 69 | 140 |
| Towne, Edgar B. and F. S., Kingston, N. Y. Car-fender | 530,140 | Dec. 4 | 106 | 28 | 69 | 1234 |
| Towne, Franklin S. (See Towne, Edgar B. and F. S.) | | | | | | |
| Towne, Henry R., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Pawl-and-ratchet mechanism | 530,734 | Dec. 11 | 1169 | 284; 285 | 69 | 1442 |
| Tracy, William P., Grand Rapids, Mich. Base for furniture | 527,007 | Oct. 2 | 548 | 134 | 69 | 104 |
| Trainer, John W., Fort Wayne, Ind. Reed-organ | 527,467 | Oct. 16 | 1308 | 319 | 69 | 273 |
| Tralls, Leberecht, Dux, Austria-Hungary. Obtaining fertilizers from waste lyes | 528,999 | Nov. 13 | 871 | ..... | 69 | 825 |
| Tranquilli, Raffaele, Rome, Italy. Fire-extinguishing apparatus | 529,976 | Nov. 27 | 2570 | 619 | 69 | 1164 |
| Trask, Charles H., Lynn, Mass. Grinding-machine | 530,292 | Dec. 4 | 381 | 94; 95; 96 | 69 | 1285 |
| Traun, Heinrich, Hamburg, Germany. Vulcanizing hard-rubber articles | 528,264 | Oct. 30 | 2686 | ..... | 69 | 556 |
| Traut, Ezra H., Erie, Pa. Kitchen-cabinet | 527,629 | Oct. 16 | 1566 | 378 | 69 | 319 |
| Traut & Hine Manufacturing Company. (See Adams, George E., assignor.) | | | | | | |
| Traut, Justus A., New Britain, Conn. Plane | 528,829 | Nov. 6 | 555 | 133 | 69 | 742 |
| Treadway, William T. (See Atwood and Treadway.) | | | | | | |
| Treat, Cornelius A. (See Shepard, Sylvander C., assignor.) | | | | | | |
| Tremaine, Edward G. (See Reid, Samuel, assignor.) | | | | | | |
| Tresidder, Tolmie J., Sheffield, England. Manufacture of armor-plates | 529,050 | Nov. 13 | 957 | 226 | 69 | 840 |
| Trevor, James E. (See Cooley, Noble, and Trevor.) | | | | | | |
| Trevor, William W., Lockport, N. Y. Machine for turning barrel-heads | 531,400 | Dec. 25 | 2332 | 536 | 69 | 1057 |
| Trimble, William D., Baltimore, Md. Insulator | 527,254 | Oct. 9 | 941 | 228 | 69 | 190 |
| Trimont Manufacturing Company. (See Vinton, John H., assignor.) | | | | | | |
| Tripp, James, New York, N. Y. Shuttle-actuating mechanism for sewing-machines | 527,565 | Oct. 16 | 1459 | 355 | 69 | 299 |
| Tripp, William J., New York, N. Y. Revoluble sectional journal-bearing | 531,483 | Dec. 25 | 2485 | 592 | 69 | 1718 |
| Trojan Button Fastener Company, Incorporated. (See Ham, Albert W., assignor.) | | | | | | |
| Tropical Cocoanut Company. (See Closson, Nelson A., assignor.) | | | | | | |
| Tropiowitz, Oscar, Hamburg, Germany. Preparing topical remedies | 527,906 | Oct. 23 | 2042 | ..... | 69 | 423 |
| Trott, Warren E., Brooklyn, N. Y. Tobacco-pipe | 527,186 | Oct. 9 | 829 | 201 | 69 | 169 |
| Trouvé, Gustave, Paris, France. Fishing-net | 528,350 | Oct. 30 | 2628 | 684 | 69 | 580 |
| Troxel, Thomas. (See Bowen and Troxel.) | | | | | | |
| Troy Laundry Machinery Company. (See Conkling and Buell, assignors.) | | | | | | |
| Troyer, Nelson, Astoria, Oreg. Die for forming can-heads | 531,451 | Dec. 25 | 2438 | 580 | 69 | 1707 |
| Truax, Charles H., Chicago, Ill., assignor of one-half to G. E. Marks, New York, N. Y. Artificial leg | 527,133 | Oct. 9 | 748 | 183; 184 | 69 | 154 |
| Trudel, Henri, Montreal, Canada. Fire-alarm hat | 530,808 | Dec. 11 | 1282 | 309; 310 | 69 | 1464 |
| True, William, Pepperell, Mass. Weather-strip | 527,468 | Oct. 16 | 1310 | 320 | 69 | 274 |
| Truesdale, W. H., *et al.* (See Williams, Frederick W., assignor.) | | | | | | |
| Truland, William L., Lansingburg, N. Y. Rail-sanding apparatus | 527,630 | Oct. 16 | 1567 | 379 | 69 | 319 |
| Truscott, John S. (See Winge, Alf L., assignor.) | | | | | | |
| Tucker, Carrie B., *et al.*, executors. (See Roberts, Cyrus.) | | | | | | |
| Tucker, William W., Hartford, Conn. Hub-blank-making machine | 527,907 | Oct. 23 | 2042 | 490; 491 | 69 | 423 |
| Tudor, John C., Baltimore, Md. Cycle-lamp and support | 529,885 | Nov. 27 | 2410 | 578 | 69 | 1135 |
| Tullius, Julius, New York, N. Y. Motive power for bicycles or similar machines | 530,911 | Dec. 11 | 1445 | 343 | 69 | 1494 |
| Tunnard, Henry S., Rugby, and A. M. Keays, London, England. Automatic fire-alarm system | 529,000 | Nov. 13 | 873 | 206 | 69 | 825 |
| Tunnell, John D., assignor of one-half to J. R. Wheatley, Amarillo, Tex. Car-coupling | 528,623 | Nov. 6 | 175 | 43 | 69 | 678 |
| Turley, Theodore J., Nashville, Tenn. Chromatic-printing device | 530,865 | Dec. 11 | 1373 | 327 | 69 | 1480 |
| Turner, Alonzo B., and H. A. McMullen, Mount Savage, Md. Copying-book | 529,977 | Nov. 27 | 2571 | 620 | 69 | 1164 |
| Turner, Cornelius S. (See Struble and Turner.) | | | | | | |
| Turner, Fred E. (See Turner, William A. and F. E.) | | | | | | |
| Turner, George, and J. M. H. Venour, London, England. Wheel | 528,575 | Nov. 6 | 90 | 23 | 69 | 662 |
| Turner, Henry E., *et al.* (See Weale, Henry P., assignor.) | | | | | | |
| Turner, Henry H. (See Leber, Victor, assignor.) | | | | | | |
| Turner, John T., Jamestown, N. D. Drenching-bottle | 529,978 | Nov. 27 | 2572 | 620 | 69 | 1165 |
| Turner, Moses, trustee. (See Ranney, Darwin D., assignor.) | | | | | | |
| Turner, William A., assignor to E. Converse, Worcester, Mass. Self-closing faucet | 531,484 | Dec. 25 | 2487 | 592 | 69 | 1716 |
| Turner, William A. and F. E., Malden, Mass. Means for raising sunken vessels | 531,485 | Dec. 25 | 2489 | 593 | 69 | 1716 |
| Tutti-Frutti Automatic Vending Company. (See Williams, John A., assignor.) | | | | | | |
| Tuttle, Edward A., New York, N. Y. Hot-air register | 526,848 | Oct. 2 | 290 | 70 | 69 | 55 |
| Tuttle, Merwin D. (See Bullock, Edward J., assignor.) | | | | | | |
| Twiss, Richard S. (See Anderson and Twiss.) | | | | | | |
| Two-Reel Lock-Stitch Sewing Machine Company. (See Jones, Daniel, assignor.) | | | | | | |
| Tyler, Alfred H., and J. S. E. de Vestian, London, England. Hydraulic apparatus for forging metals, &c. | 530,313 | Dec. 4 | 416 | 104; 105 | 69 | 1291 |
| Tyler, Charles C., Hartford, Conn. Method of and apparatus for making milling-cutters | 530,212 | Dec. 4 | 238 | 59 | 69 | 1259 |
| Tyler, Charles C., Hartford, Conn. Manufacture of milling-cutters | 530,213 | Dec. 4 | 241 | 59 | 69 | 1260 |
| Tyler, Charles C., Hartford, assignor of one-half to R. S. Tyler, Jewett City, Conn. Oil-cup | 531,401 | Dec. 25 | 2335 | 557 | 69 | 1688 |
| Tyler, R. S. (See Tyler, Charles C., assignor.) | | | | | | |
| Tyler, Walter L. (See See and Tyler.) | | | | | | |
| Tymeson, Eugene, assignor to W. B. Smith, Yonkers, N. Y. Moquette fabric | 529,635 | Nov. 20 | 1988 | 474 | 69 | 1048 |
| Tymeson, Eugene, assignor to W. B. Smith, Yonkers, N. Y. Moquette loom | 529,636 | Nov. 20 | 1990 | 475; 476; 477 | 69 | 1048 |
| Uehling, Edward A., Birmingham, Ala. Christmas-tree light | 531,452 | Dec. 25 | 2439 | 581 | 69 | 1708 |
| Uhlmann, Charles R., Peoria, Ill. Combined rose and escutcheon | 530,562 | Dec. 11 | 879 | 216 | 69 | 1391 |
| Ullman, Ike W., Birmingham, Ala. Electric switch | 530,293 | Dec. 4 | 386 | 97 | 69 | 1285 |
| Umney, Herbert W., London, England. Hydraulic hoisting machinery, &c | 527,908 | Oct. 23 | 2047 | 491; 492 | 69 | 424 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Underdown, John K., assignor to National Key-Opening Can Company, Chicago, Ill. Machine for forming can-bodies | 528,192 | Oct. 30 | 2560 | 630 | 69 | 532 |
| Ungrich, Martin L., New York, N. Y. Apartment-house | 531,141 | Dec. 18 | 1860 | 441; 442 | 69 | 1584 |
| Union Button Sewing Machine Company. (See Hansalpakar, Edwin, assignor.) | | | | | | |
| Union Heater Supply Company. (See Rein, Bernard, assignor.) | | | | | | |
| Union Metallic Cartridge Company. (See Thomas, William M., assignor.) | | | | | | |
| Union Switch and Signal Company. (See Goodman, Edward H., assignor.) | | | | | | |
| Union Typewriter Company. (See Brown, Alexander T., assignor.) | | | | | | |
| United States Butter Extractor Company. (See Ohlsson, Olof, assignor.) | | | | | | |
| United States Electric Railway Signal Company. (See Conly, Mahlon S., assignor.) | | | | | | |
| United States Printing Company. (See Schnurr, William, assignor.) | | | | | | |
| United States Projectile Company. (See Cayley and Courtman, assignors.) | | | | | | |
| United States Rubber Company. (See Pettis, George C., assignor.) | | | | | | |
| United States Smokeless Powder Company. (See Starke, Eric A., assignor.) | | | | | | |
| United States Wind Engine and Pump Company. (See Miller, John H., assignor.) | | | | | | |
| Universal Coal Dumping Car Company. (See Lane, William G., assignor.) | | | | | | |
| Universal Electric Company of the City of New York. (See Green, John J., assignor.) | | | | | | |
| Universal Fire Alarm Company. (See Rowand, Lewis G., assignor.) | | | | | | |
| Universal Winding Company. (See Wardwell, Simon W., Jr., assignor.) | | | | | | |
| Unsöld, Felix, Munich, Germany, assignor to J. Fishburn, Westminster, England. Ice-rink | 530,367 | Dec. 4 | 516 | 127; 128 | 69 | 1309 |
| Unterbrink, Ignatius L., Fryburg, assignor to C. A. Layton, Wapakoneta, Ohio. Bicycle | 530,249 | Dec. 4 | 304 | 76 | 69 | 1271 |
| Upton, Colcord, Salem, Mass. Bilge-water alarm | 530,368 | Dec. 4 | 517 | 128 | 69 | 1309 |
| Upton, Colcord, Salem, Mass. Dredging-machine and electrically-actuated bucket therefor | 531,486 | Dec. 25 | 2490 | 593 | 69 | 1717 |
| Usry, William R., assignor of one-half to C. W. Ewing, Gadsden, Ala. Stalk-cutter | 527,302 | Oct. 9 | 1027 | 250 | 69 | 205 |
| Ussery, S. H., *et al.* (See Bishop, James C., assignor.) | | | | | | |
| Utt, Lincoln, Lexington, Mo. Attachment for musical instruments | 530,369 | Dec. 4 | 518 | 128 | 69 | 1309 |
| Vail, Henry W. (See Mitchell, Robert C., assignor.) | | | | | | |
| Vail, Henry W., Jr., Industry, Ill. Wire-fence | 530,250 | Dec. 4 | 307 | 77 | 69 | 1271 |
| Vale Barrel Machine Company. (See Vale and Ohl, assignors.) | | | | | | |
| Vale, William T., Toronto, Canada, and G. A. Ohl, Newark, N. J., assignors to Vale Barrel Machine Company, Limited, Hamilton, Canada. Barrel-making machine | 531,283 | Dec. 18 | 2125 | 509; 510 | 69 | 1632 |
| Valentine, Thomas E., *et al.* (See Dobbins, Douglas, assignor.) | | | | | | |
| Valentine, William F., Circleville, Ohio. Two-wheeled vehicle | 526,952 | Oct. 2 | 466 | 115 | 69 | 88 |
| Valleau, James H., assignor of one-half to T. N. Bray, Sioux City, Iowa. Hitching-strap | 528,495 | Oct. 30 | 2626 | 748 | 69 | 627 |
| Valleau, James H., assignor of one-half to T. N. Bray, Sioux City, Iowa. Hitching-strap. (Reissue.) | 11,457 | Dec. 11 | 1459 | 345 | 69 | 1486 |
| Valley, John N., Jersey City, N. J. Carriage for elevated railways | 530,809 | Dec. 11 | 1284 | 310 | 69 | 1465 |
| Valley, John N., Jersey City, N. J. Elevated railway | 530,810 | Dec. 11 | 1285 | 311 | 69 | 1465 |
| Van Amringe, William B., Boston, Mass. Construction of memorial monuments | 528,193 | Oct. 30 | 2563 | 620; 621 | 69 | 532 |
| Van Buren, George L., and T. C. Davis, Benedict, Kans. Corn-harvester | 529,431 | Nov. 20 | 1643 | 391; 392 | 69 | 985 |
| Van Depoele, Charles J., deceased, Lynn; C. A. Coffin and A. Wahl, administrators, assignors to Thomson-Houston Electric Company, Boston, Mass. Gearless electric locomotive | 529,671 | Nov. 20 | 2050 | 491 | 69 | 1059 |
| Van Dyke, Arthur, Orange, N. J. Hose-mender | 531,578 | Dec. 25 | 2645 | 634 | 69 | 1748 |
| Van Dyke, Robert B., assignor to A. R. Bone, Anderson, Ind. Sprinkler | 530,464 | Dec. 4 | 668 | 165 | 69 | 1337 |
| Van Fleet, Fred, Williamsport, Pa. Type-cleaning brush for type-writing machines | 528,215 | Oct. 30 | 2604 | 628 | 69 | 539 |
| Van Gestel, Jean T., New York, assignor of one-fourth to R. H. Sherwood, Bensonhurst, N. Y. Automatic street-car fender | 531,234 | Dec. 18 | 2039 | 486 | 69 | 1615 |
| Van Gaysling, Walter F., assignor of one-third to F. Tillinghast, Albany, N. Y. Lubricator | 527,516 | Oct. 16 | 1383 | 337 | 69 | 285 |
| Van Hennik, Sebastian, Yonkers, N. Y. Ale-tap | 527,739 | Oct. 16 | 1744 | 421 | 69 | 352 |
| Van Horn, Arthur C., and E. E. Barney, Groton, N. Y.; said Barney assignor to said Van Horn. Drawing-board | 527,134 | Oct. 9 | 750 | 184 | 69 | 154 |
| Van Horn, Charles F. (See Van Stavoren, Samuel J., assignor.) | | | | | | |
| Van Horn & Snyder, L. (See Gilmore, William C., assignor.) | | | | | | |
| Van Houten, Fred E., Hoytville, Mich. Kitchen-table | 527,303 | Oct. 9 | 1030 | 250 | 69 | 205 |
| Van Ness, Charles H. (See Hennefeld, Dehner, and Van Ness.) | | | | | | |
| Van Oostrum, Otte, Portland, Oreg. Garment-securing device | 529,117 | Nov. 13 | 1119 | 271 | 69 | 870 |
| Van Pelt, John K., Memphis, Tenn. Force-pump | 529,432 | Nov. 20 | 1648 | 392; 393 | 69 | 986 |
| Van Sant, William C., *et al.* (See Hutchinson, Ira R., assignor.) | | | | | | |
| Van Stavoren, Samuel J., assignor of one-half to C. F. Van Horn, Philadelphia, Pa. Car-axle-box pedestal | 527,087 | Oct. 9 | 669 | 163 | 69 | 140 |
| Van Stavoren, Samuel J., assignor of one-half to C. F. Van Horn, Philadelphia, Pa. Car-axle-box pedestal | 527,088 | Oct. 9 | 670 | 164 | 69 | 141 |
| Van Stavoren, Samuel J., assignor of one-half to C. F. Van Horn, Philadelphia, Pa. Car-axle-box pedestal | 527,089 | Oct. 9 | 671 | 164 | 69 | 141 |
| Van Stavoren, Samuel J., assignor of one-half to C. F. Van Horn, Philadelphia, Pa. Car-axle-box pedestal | 527,090 | Oct. 9 | 672 | 164 | 69 | 141 |
| Van Stavoren, Samuel J., assignor of one-half to C. F. Van Horn, Philadelphia, Pa. Car-axle-box pedestal | 527,091 | Oct. 9 | 673 | 164; 165 | 69 | 141 |
| Van Tine, George W., Bayonne, N. J. Valve | 527,381 | Oct. 9 | 1157 | 284 | 69 | 230 |
| Van Vleck, John, New York, N. Y. Dynamo-regulator | 526,879 | Oct. 2 | 348 | 86 | 69 | 65 |
| Van Vleck, John, New York, N. Y. Electrical measuring-instrument for switchboards | 529,433 | Nov. 20 | 1649 | 393 | 69 | 986 |
| Van Vleck, John, New York, N. Y. Service-end, cut-out, and switch-box for electric-lighting circuits | 530,141 | Dec. 4 | 108 | 28 | 69 | 1235 |
| Van Vleck, John, New York, N. Y. Dynamo-regulator | 530,465 | Dec. 4 | 669 | 166 | 69 | 1338 |
| Van Wagner, Carlon C., *et al.* (See Wright, Isaac D., assignor.) | | | | | | |
| Van Wagner, William H., *et al.* (See Wright, Isaac D., assignor.) | | | | | | |
| Van Wagoner, Charles H., assignor, by mesne assignments, to Homer Steel Fence Company, Homer, Mich. Wire-tightener | 528,194 | Oct. 30 | 2565 | 621 | 69 | 532 |
| Van Wart, James A., *et al.* (See Bustin, Robert, assignor.) | | | | | | |
| Van Wie, Charles H., Albany, N. Y. Bottle | 529,762 | Nov. 27 | 2203 | 525 | 69 | 1095 |
| Vanderman, William, Willimantic, Conn. Coupling for water-closets | 529,146 | Nov. 13 | 1117 | 270; 271 | 69 | 870 |
| Vanes, John, Brazil, Ind. Boiler | 527,631 | Oct. 16 | 1568 | 379 | 69 | 319 |
| Vanhouten, Harriet A., Paterson, N. J. Ice-pick | 530,866 | Dec. 11 | 1376 | 328 | 69 | 1481 |
| Vanier, Francis N., assignor of one-half to A. N. Parry, Amesbury, Mass. Carriage | 527,909 | Oct. 23 | 2051 | 492 | 69 | 424 |
| Vanvorce, Elizabeth B., Madison, Ill. Pipe connection | 528,045 | Oct. 23 | 2301 | 555 | 69 | 470 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Varley, John J., London, England. Manufacture of screw-stoppers | 527,517 | Oct. 16 | 1385 | 337 | 69 | 986 |
| Varney, Nathan E., assignor of one-half to L. L. and J. A. Moore, Denver, Colo. Miner's spooning-tool | 531,347 | Dec. 25 | 2244 | 535 | 69 | 1669 |
| Vaulain, Samuel M., Philadelphia, Pa. Method of and apparatus for counterbalancing wheels | 531,487 | Dec. 25 | 2493 | 594 | 69 | 1717 |
| Vaughan, Hiram G., San Francisco, Cal. Shaft attachment for buggies | 530,251 | Dec. 4 | 308 | 77 | 69 | 1251 |
| Vaughan, John W., Taylorsville, Ind. Roller-mill | 526,795 | Oct. 2 | 209 | 50 | 69 | 39 |
| Vaughan, William B., Owensville, Mo. Saw | 529,538 | Nov. 20 | 1843 | 439 | 69 | 1021 |
| Vautier, John J., Brooklyn, assignor of one-half to J. G. Law, New York, N. Y. Attaching-socket for tubing | 530,563 | Dec. 11 | 880 | 216 | 69 | 1392 |
| Vautin, Claude T. J., London, England. Process of and apparatus for the production of caustic alkali | 531,235 | Dec. 18 | 2041 | 486, 487 | 69 | 1616 |
| Vawter, Charles E., Crozet, Va. Perpetual calendar | 529,979 | Nov. 27 | 2573 | 620, 621 | 69 | 1165 |
| Vedovelli, Edouard, Paris, France, assignor to H. Guinard, New York, N. Y. Electric-lamp shade | 528,241 | Oct. 30 | 2652 | 639 | 69 | 548 |
| Venker, John B. (See Arnold, Venker, and Barnard.) | | | | | | |
| Venour, James M. H. (See Turner and Venour.) | | | | | | |
| Venus, John E. (See Wright and Venus.) | | | | | | |
| Verdon, Henry W., London, England. Pneumatic-tired wheel | 529,001 | Nov. 13 | 876 | 206 | 69 | 826 |
| Verniaud, Claudius, Quincy, Ill. Truss | 528,046 | Oct. 23 | 2302 | 555 | 69 | 470 |
| Verity, John, Bramley, England. Construction of couplings for screw-propellers | 527,632 | Oct. 16 | 1571 | 379 | 69 | 320 |
| Vernier, Julius J., Toledo, Ohio. Holder for sharpening gravers' or other tools | 530,735 | Dec. 11 | 1171 | 285 | 69 | 1442 |
| Vernon, William E., San Angelo, Tex. Water-power | 530,370 | Dec. 4 | 520 | 129 | 69 | 1309 |
| Veslan, John S. E. de. (See Tyler and Vesian.) | | | | | | |
| Vickers, Robert E., *et al.* (See Kirtley, Harry L., assignor.) | | | | | | |
| Victor, Jacob, Winona, Minn. Valve | 529,051 | Nov. 13 | 950 | 227 | 69 | 840 |
| Vierengel, Matthew, Brooklyn, N. Y. Printing-machine | 528,830 | Nov. 6 | 557 | 133, 134, 135 | 69 | 748 |
| Vinton, John H., Boston, Mass., assignor to Trimont Manufacturing Company, Portland, Me. Nipple-holder | 527,031 | Oct. 2 | 590 | 143 | 69 | 111 |
| Vittum, Charles N., Meredith, N. H. Lock | 526,878 | Oct. 2 | 347 | 86 | 69 | 65 |
| Vogel, Gustav, Orange Valley, N. J. Row-boat | 528,702 | Nov. 6 | 319 | 78 | 69 | 704 |
| Vogelsang, Hermann, Düilken, Germany, assignor to Gibbs Loom, Harness and Reed Company, Clinton, Mass. Heddle for looms | 527,165 | Oct. 9 | 798 | 194 | 69 | 163 |
| Vogler, William, Somerville, Mass. Seat or cushion | 527,633 | Oct. 16 | 1572 | 380 | 69 | 320 |
| Vogler, William, Somerville, Mass. Pillow or cushion | 527,634 | Oct. 16 | 1574 | 380 | 69 | 320 |
| Vogt, Henry, Louisville, Ky. Bracket-carrier for boilers | 530,811 | Dec. 11 | 1286 | 311 | 69 | 1405 |
| Vogt, Mary M., Rochester, N. Y. Device for teaching vocal music | 528,310 | Oct. 30 | 2772 | 669 | 69 | 570 |
| Voitek, John S., New York, N. Y. Packaging-machine | 531,073 | Dec. 18 | 1729 | 411, 412, 413 | 69 | 1560 |
| Voll, Henry, assignor to J. Foos, Springfield, Ohio. Gas-engine | 527,635 | Oct. 16 | 1575 | 380 | 69 | 321 |
| Vollmer, William G., Buffalo, N. Y. Closet-seat | 527,821 | Oct. 23 | 1880 | 451 | 69 | 393 |
| Von Bokern, William, assignor of one-half to H. Heatley, Denver, Colo. Bottle | 529,821 | Nov. 27 | 2309 | 550 | 69 | 1116 |
| Voorhees, Charles E. (See Fisher, Asahel H., assignor.) | | | | | | |
| Voorhees, Gardner T., Boston, Mass. Insulating-covering for refrigerative purposes | 530,214 | Dec. 4 | 244 | ..... | 69 | 1260 |
| Voris, Cornelia A. (See Frost, Floyd T., assignor.) | | | | | | |
| Vose, Ambrose S., Boston, Mass. Rotary trimmer | 528,311 | Oct. 30 | 2773 | 669 | 69 | 570 |
| Voss, Henry, Jersey City, N. J. Centerboard | 528,749 | Nov. 6 | 306 | 94, 95 | 69 | 718 |
| Voss, Joseph H., Cincinnati, Ohio. Cash-register | 529,980 | Nov. 27 | 2575 | 621 | 69 | 1165 |
| Vulcan Iron Works Company. (See Webber, John B., assignor.) | | | | | | |
| W. F. & John Barnes Company. (See Barnes, Benjamin F., assignor.) | | | | | | |
| Waddel, John M., Greenfield, Ohio. Locking device for show-cases | 529,886 | Nov. 27 | 2412 | 579 | 69 | 1136 |
| Waddell, John, Eagle Grove, Iowa. Table | 531,236 | Dec. 18 | 2042 | 487 | 69 | 1616 |
| Waddell, John A. L., Kansas City, Mo. Truss-bridge | 529,220 | Nov. 13 | 1250 | 301 | 69 | 892 |
| Waddell, Montgomery, Bridgeport, Conn., assignor to M. Waddell, receiver. Adjuster for field-magnets of dynamo-electric machines or motors | 527,225 | Oct. 9 | 893 | 217 | 69 | 182 |
| Waddell, Montgomery, Bridgeport, Conn., assignor to M. Waddell, receiver. Belt-tightener | 528,242 | Oct. 30 | 2652 | 639 | 69 | 548 |
| Waddell, Montgomery, Bridgeport, Conn., assignor to M. Waddell, receiver. Rheostat | 528,243 | Oct. 30 | 2653 | 640 | 69 | 549 |
| Waddington, Alfred, assignor to S. Bottomley & Brothers, Limited, Bradford, England. Shuttle-guard for looms | 529,763 | Nov. 27 | 2203 | 525 | 69 | 1095 |
| Wade, Albert G., Elkhart, Ind. Plate and base for printing | 530,371 | Dec. 4 | 521 | 129 | 69 | 1310 |
| Wade, Charles A. (See Davis, Jesse R., assignor.) | | | | | | |
| Wade, James R., St. Louis, Mo. Hydraulic elevator | 528,281 | Oct. 30 | 2719 | 655, 656 | 69 | 561 |
| Waggoner, Benjamin F. (See Waggoner, Thomas T., assignor.) | | | | | | |
| Waggoner, Thomas T., assignor of one-half to B. F. Waggoner, St. Louis, Mo. Reversing-gear and governor | 529,981 | Nov. 27 | 2579 | 621, 622 | 69 | 1166 |
| Wagner, Charles, New York, N. Y. Valve for oil-cans | 529,221 | Nov. 13 | 1251 | 301 | 69 | 893 |
| Wagner, Matt, Tacoma, Wash. Centrifugal pump | 531,074 | Dec. 18 | 1733 | 413 | 69 | 1560 |
| Wagner, Rome V., *et al.* (See Wheeler, Fred A., assignor.) | | | | | | |
| Wahl, Albert, *et al.*, administrators. (See Van Depoele, Charles J.) | | | | | | |
| Wait, William B., New York, N. Y. Writing-machine | 529,571 | Nov. 20 | 1897 | 451, 452 | 69 | 1030 |
| Wait, William B., New York, N. Y. Writing-machine | 529,572 | Nov. 20 | 1899 | 452, 453 | 69 | 1031 |
| Waite, Arthur H. (See Lowe, John H., assignor.) | | | | | | |
| Wakefield, James A., assignor of one-half to Shailer & Schniglau Company, Chicago, Ill. Sheet-piling | 527,469 | Oct. 16 | 1311 | 320 | 69 | 274 |
| Wakefield, John E., Worcester, Mass. Pipe-wrench | 529,982 | Nov. 27 | 2581 | 622 | 69 | 1166 |
| Waldo Foundry. (See Gooch and Waldo, assignors.) | | | | | | |
| Waldo Foundry. (See Waldo and Gooch, assignors.) | | | | | | |
| Waldo, Leonard. (See Gooch and Waldo.) | | | | | | |
| Waldo, Leonard, Bridgeport, and F. A. Gooch, New Haven, Conn.; said Waldo assignor to Waldo Foundry, of New Jersey. Reducing aluminium | 527,846 | Oct. 23 | 1927 | 463, 464 | 69 | 401 |
| Waldrep, Russel T., Tifton, Ga. Railway switch-frog | 529,983 | Nov. 27 | 2582 | 622 | 69 | 1166 |
| Waldron, William H., New Brunswick, N. J. Wall-paper-printing machine | 531,075 | Dec. 18 | 1734 | 413, 414 | 69 | 1560 |
| Waldron, William H., New Brunswick, N. J. Wall-paper-printing machine | 531,076 | Dec. 18 | 1736 | 414, 415 | 69 | 1561 |
| Wales, Charles, Detroit, Mich. Coupler for organs | 531,077 | Dec. 18 | 1740 | 415 | 69 | 1561 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Wales, Thomas C., Jr., assignor to American Bell Telephone Company, Boston, Mass. Telephone speaking-tube system | 531,078 | Dec. 18 | 1741 | 415 | 69 | 1562 |
| Walker, Albert H., trustee. (See Lorenz and Claussen, assignors.) | | | | | | |
| Walker, Frank, San Francisco, Cal. Asphaltum or bitumen disintegrator | 527,636 | Oct. 16 | 1576 | 381 | 69 | 321 |
| Walker, James C., Waco, Tex. Combined engine and superheater apparatus | 531,488 | Dec. 25 | 2495 | 594, 595 | 69 | 1718 |
| Walker, James G. (See Combs, Andrew B., assignor.) | | | | | | |
| Walker, John, and H. Carver, Pendleton, England. Wall-coating and manufacturing same | 531,579 | Dec. 25 | 2646 | ..... | 69 | 1748 |
| Walker, Joseph, Birmingham, England. Toy | 530,142 | Dec. 4 | 110 | 28 | 69 | 1235 |
| Walker, Orlando O., and R. G. Moon, assignors to said Moon and C. S. McCloud, Bedford, Iowa. Portable cistern | 529,511 | Nov. 20 | 1799 | 428 | 69 | 1012 |
| Walker, Randall W., assignor to F. P. Brooks, Oxford, N. Y. Sleigh | 528,831 | Nov. 6 | 573 | 136 | 69 | 750 |
| Walker, Samuel, and L. Marshall, Milwaukee, Wis. Switch-actuating mechanism | 527,637 | Oct. 16 | 1580 | 382 | 69 | 322 |
| Walker, Samuel L. (See Fry and Walker.) | | | | | | |
| Walker, William. (See Cochrane and Walker.) | | | | | | |
| Walker, William, Jr., Birmingham, and F. R. Wilkins, Handsworth, assignors of one-third to J. Lones, Smethwick, England. Primary battery | 530,867 | Dec. 11 | 1376 | 325 | 69 | 1481 |
| Walker, William H., and T. H. Boyce, New York, N. Y. Street-sweeper | 531,079 | Dec. 18 | 1744 | 416 | 69 | 1562 |
| Walker, William J., Canton, Ohio. Device for grinding lawn-mower knives | 526,824 | Oct. 2 | 252 | 62 | 69 | 48 |
| Walker, William T., deceased; M. Bailey, Washington, D. C., administrator. Apparatus for driving off volatile constituents from liquids | 529,233 | Nov. 13 | 1275 | 306 | 69 | 896 |
| Walker, William T., deceased; M. Bailey, Washington, D. C., administrator. Apparatus for driving off volatile constituents from liquids | 529,234 | Nov. 13 | 1276 | 306 | 69 | 897 |
| Wallace Electric Company. (See Wood, Montraville M., assignor.) | | | | | | |
| Wallace, Jacob B., Erie, Pa. Gas-burner for stoves | 527,566 | Oct. 16 | 1460 | 355 | 69 | 299 |
| Wallace, Jacob B., Erie, Pa. Cock for gas-stoves, &c | 527,567 | Oct. 16 | 1461 | 356 | 69 | 300 |
| Wallace, James N., *et al.* (See Kinney, George F., assignor.) | | | | | | |
| Wallace, John A. (See O'Hara, Henry, assignor.) | | | | | | |
| Wallace, Thomas M., Marion, Ala. Bale-box clamp | 528,047 | Oct. 23 | 2305 | 556 | 69 | 470 |
| Wallace, Thomas M., Marion, Ala. Combined belt-shifter and brake for cotton-presses | 530,978 | Dec. 18 | 1570 | 372 | 69 | 1530 |
| Wallace, William, assignor of one-half to D. C. McMasters, Peoria, Tex. Compound car-coupling and bumper | 526,796 | Oct. 2 | 210 | 50 | 69 | 40 |
| Wallace, William J. (See Thayer and Wallace.) | | | | | | |
| Wallington, George P. (See Beaumont and Wallington.) | | | | | | |
| Wallington, Laurence A. (See Beaumont and Wallington, assignors.) | | | | | | |
| Walmsley, Sylvester P. (See Williams, Orion H., assignor.) | | | | | | |
| Wallow, C. H. (See Hamblin, Albert G., assignor.) | | | | | | |
| Walrad, George O., *et al.* (See Brien, Theodore R., assignor.) | | | | | | |
| Walrath, Alvin, Little Falls, N. Y. Machine for sewing on buttons | 528,832 | Nov. 6 | 574 | 136 | 69 | 750 |
| Walsh, Ralph, Washington, D. C. Device for dividing powders, &c | 531,237 | Dec. 18 | 2043 | 487 | 69 | 1616 |
| Walsh, Timothy, and D. Keogh, Highlands, Colo. Flush-tank | 529,512 | Nov. 20 | 1800 | 428 | 69 | 1012 |
| Walter, Horace E., Richfield Springs, N. Y. Electric signal apparatus | 529,984 | Nov. 27 | 2583 | 623, 624 | 69 | 1167 |
| Walter, Horace E., Richfield Springs, N. Y. Electric signaling apparatus | 529,985 | Nov. 27 | 2597 | 624, 625 | 69 | 1171 |
| Walter, Horace E., Richfield Springs, N. Y. Electric signaling apparatus | 529,986 | Nov. 27 | 2601 | 625 | 69 | 1171 |
| Walter, J. G., *et al.* (See Green, William E., assignor.) | | | | | | |
| Walters, John W. (See Omwake, Jacob H., assignor.) | | | | | | |
| Walton, Herbert L., and W. A. Griffiths, Minneapolis, Minn. Switching device for railways | 531,080 | Dec. 18 | 1747 | 417 | 69 | 1563 |
| Walton, James, Phœnicia, N. Y. Vending-machine | 529,222 | Nov. 13 | 1253 | 302, 303 | 69 | 893 |
| Walton, Jonathan, Brooklyn, N. Y. Folding chair | 530,561 | Dec. 11 | 882 | 217 | 69 | 1392 |
| Waltz, George H., and L. E. Patton, Memphis, Tenn. Boiler | 529,573 | Nov. 20 | 1902 | 453 | 69 | 1031 |
| Wanamaker, Charles B., assignor of one-half to W. H. Hunsicker, Allentown, Pa. Heater | 528,404 | Oct. 30 | 2920 | 708 | 69 | 598 |
| Ward, Barton B., New York, N. Y. Circuit-controller for regulators | 527,092 | Oct. 9 | 673 | 165 | 69 | 141 |
| Ward, Charles E. (See Bullock and Ward.) | | | | | | |
| Warder, Bushnell & Glessner Company. (See Kane, Maurice, assignor.) (Reissue.) | | | | | | |
| Wardwell, Simon W., Jr., Boston, Mass., assignor to Universal Winding Company, Portland, Me. Thread-winding machine | 531,081 | Dec. 18 | 1750 | 417 | 69 | 1563 |
| Wardwell, Simon W., Jr., Boston, Mass., assignor to Universal Winding Company, Portland, Me. Wheel for thread-tension | 531,082 | Dec. 18 | 1751 | 417 | 69 | 1564 |
| Wardwell, Theodore F., Stamford, Conn. Sash-fastener | 528,833 | Nov. 6 | 577 | 136 | 69 | 751 |
| Wardwell, Theodore F., Stamford, Conn. Knob attachment | 529,887 | Nov. 27 | 2415 | 579 | 69 | 1136 |
| Wardwell, Theodore F., Stamford, Conn. Sash-fastener | 531,453 | Dec. 25 | 2441 | 581 | 69 | 1708 |
| Ware, Walter F., Camden, N. J. Combined bottle-stopper and syringe | 526,880 | Oct. 2 | 350 | 87 | 69 | 66 |
| Warg, Robert, and A. Lindemann, Milwaukee, Wis., assignors to J. W. O'Neill, Chicago, Ill. Printer's quoin | 527,638 | Oct. 16 | 1582 | 382 | 69 | 322 |
| Warmoth, James H. (See Miller and Warmoth.) | | | | | | |
| Warner, Charles W., Melrose, Mass. Planter | 531,606 | Dec. 25 | 2694 | 646 | 69 | 1757 |
| Warner, Charles W., Melrose, and G. A. Crane, Worcester, Mass. Cultivator | 531,605 | Dec. 25 | 2692 | 645, 646 | 69 | 1756 |
| Warner, Egert T., Elwood, Ind. Well-packing | 530,631 | Dec. 11 | 992 | 244 | 69 | 1412 |
| Warner, Henry H. (See Dickinson and Warner.) | | | | | | |
| Warr, Aaron, Georgetown, Fla. Orange-polishing machine | 528,195 | Oct. 30 | 2566 | 621 | 69 | 533 |
| Warren, Benjamin F., Brooklyn, N. Y. Faucet for oil-cans | 528,244 | Oct. 30 | 2655 | 640 | 69 | 549 |
| Warren, George C., Saginaw, Mich. Tonnage-computer | 528,703 | Nov. 6 | 321 | 79 | 69 | 704 |
| Warren, George L., assignor of one-half to W. N. Davis, St. Paul, Minn. Safety shift or lock for split switches | 531,238 | Dec. 18 | 2044 | 487, 488 | 69 | 1616 |
| Warrington, Jesse, assignor to Nordyke & Marmon Company, Indianapolis, Ind. Return-air purifier | 527,910 | Oct. 23 | 2052 | 492 | 69 | 425 |
| Warwick, Edward, Birmingham, England. Wheel-rim | 530,736 | Dec. 11 | 1173 | 285 | 69 | 1442 |
| Washburn, George F., Boston, Mass. Bicycle-frame. (Reissue.) | 11,449 | Oct. 23 | 2462 | 595 | 69 | 499 |
| Washburn, Samuel N., Olympia, Wash. Car-coupling | 530,565 | Dec. 11 | 884 | 217 | 69 | 1392 |
| Waterbury Clock Company. (See Hopson, John, Jr., assignor.) | | | | | | |
| Watkins, Edward G., assignor of one-half to Heywood Bros. & Co., Gardner, Mass. Workman's time-recorder | 527,304 | Oct. 9 | 1031 | 250 | 69 | 205 |
| Watkins, William D., assignor of one-half to A. E. Derrick, Yoncalla, Oreg. Clothes-pin | 527,911 | Oct. 23 | 2055 | 493 | 69 | 425 |
| Watson, Arthur J., Mean Meer, India. Reloading cartridge-holder | 527,166 | Oct. 9 | 799 | 195 | 69 | 163 |
| Watson, Edward P., New York, N. Y., and R. W. Watson, Preston, England. Tension-regulating attachment for fabric-packaging machines | 528,750 | Nov. 6 | 398 | 95, 96 | 69 | 718 |
| Watson, George H., St. Louis, Mo. Locomotive-boiler furnace | 530,566 | Dec. 11 | 885 | 217, 218 | 69 | 1393 |
| Watson, Henry W. and M., Denver, Colo. Dry placer machine | 529,340 | Nov. 13 | 1455 | 351 | 69 | 932 |

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| | | | Spec. | Dr'g. | Vol. | Pages. |
| Watson, Herbert. (See Watson, John R. and H.) | | | | | | |
| Watson, John R. and H., Wyandotte, Mich. Apparatus for drying, roasting, and calcining soda-ash | 527,912 | Oct. 23 | 2055 | 493 | 69 | 425 |
| Watson, Mary, London, England. Malted food | 531,013 | Dec. 18 | 1632 | ..... | 69 | 1542 |
| Watson, Minnie. (See Watson, Henry W. and M.) | | | | | | |
| Watson, Robert W. (See Watson, Edward P. and R. W.) | | | | | | |
| Watt, Joseph W. (See Pettit and Watt.) | | | | | | |
| Wattles, Luther H., Providence, R. I. Exhaust-valve for engines | 526,761 | Oct. 2 | 156 | 37 | 69 | 30 |
| Watts, Albert. (See Chase, Henry A., assignor.) | | | | | | |
| Watts, David H. (See Furness, Frank, assignor.) | | | | | | |
| Wauthier, Louis F., Ligny, Belgium. Beet-root or potato harvester | 528,869 | Nov. 6 | 640 | 152 | 69 | 763 |
| Wayland, James, Newark, N. J. Railway-switch signal | 531,348 | Dec. 25 | 2245 | 535 | 69 | 1670 |
| Wayne, William J., Decatur, Ill. Sulky | 529,892 | Nov. 27 | 2310 | 550 | 69 | 1116 |
| Weale, Henry P., Boston, assignor of two-thirds to G. L. Richards and H. E. Turner, Malden, Mass. Car-fender | 528,048 | Oct. 23 | 2306 | 556 | 69 | 471 |
| Weatherhead, Edward H., Cleveland, Ohio. Hydraulic air-pump | 526,762 | Oct. 2 | 158 | 37 | 69 | 30 |
| Weaver, Alfred D. P., Jackson, Miss. Secret telegraphy | 527,518 | Oct. 16 | 1386 | 337 | 69 | 286 |
| Weaver, Joseph A., Jr., New York, N. Y. Safety-catch for doors | 526,881 | Oct. 2 | 352 | 87 | 69 | 66 |
| Weaver, Joseph A., Jr., New York, N. Y. Bicycle-alarm | 529,223 | Nov. 13 | 1257 | 303 | 69 | 893 |
| Weaver, Leander H., Hudson, N. Y. Sliding door | 530,372 | Dec. 4 | 532 | {129 / 130} | 69 | 1310 |
| Webb, George S., Aurora, Ill. Driving mechanism for bicycles | 527,568 | Oct. 16 | 1463 | {356 / 357} | 69 | 300 |
| Webb, Zada B., Whippany, N. J. Box | 531,083 | Dec. 18 | 1752 | 418 | 69 | 1564 |
| Webber, Alexander, Beverly, Mass. Machine for kneading dough | 527,033 | Oct. 2 | 593 | 143 | 69 | 111 |
| Webber, Frank G., *et al.* (See Partrish, George W., assignor.) | | | | | | |
| Webber, John B., assignor to Vulcan Iron Works Company, Toledo, Ohio. Steam shovel or excavator | 528,312 | Oct. 30 | 2774 | {669 / 670} | 69 | 570 |
| Webber, Josiah A., Brooklyn, N. Y. Brake for railway-cars | 530,912 | Dec. 11 | 1447 | 344 | 69 | 1494 |
| Weber, Friederick D., assignor of one-half to H. C. Christgau, Brooklyn, N. Y. Fender for cars | 529,052 | Nov. 13 | 960 | 227 | 69 | 840 |
| Weber, George A., New York, N. Y., assignor to Weber Railway Joint Manufacturing Company, of West Virginia. Rail-fastening | 531,349 | Dec. 25 | 2246 | 536 | 69 | 1670 |
| Weber, John C. (See Jabant, Augustus, assignor.) | | | | | | |
| Weber, Julius, Reading, Pa. Box-covering machine | 527,913 | Oct. 23 | 2056 | 493 | 69 | 425 |
| Weber Railway Joint Manufacturing Company. (See Weber, George A., assignor.) | | | | | | |
| Webster, Clinton F., Brockton, Mass. Sign | 528,196 | Oct. 30 | 2568 | 621 | 69 | 533 |
| Weed, Alfred, assignor to Arcade File Works, Anderson, Ind. Machine for stripping file-blanks | 530,143 | Dec. 4 | 111 | 29 | 69 | 1235 |
| Weed, Clinton A., Racine, Wis. Sprinkling-head | 530,868 | Dec. 11 | 1377 | 328 | 69 | 1481 |
| Weed, Hiland A., Jordan, N. Y. Surgical splint | 529,002 | Nov. 13 | 878 | 207 | 69 | 826 |
| Weeden, Mark J., Springville, N. Y. Trousers-stretcher | 526,953 | Oct. 2 | 467 | 115 | 69 | 88 |
| Weeks, Albion P., Santa Cruz, Cal. Cinch-plate | 531,580 | Dec. 25 | 2647 | 634 | 69 | 1748 |
| Weeks, Charles D., St. Louis, Mo. Egg-beater | 529,764 | Nov. 27 | 2205 | 526 | 69 | 1096 |
| Wegmann, Edward, Jr., Englewood, N. J. Shutter-fastening | 530,144 | Dec. 4 | 113 | 29 | 69 | 1236 |
| Wehrman, August, Emporia, Kans. Replanting attachment for cultivators | 529,686 | Nov. 20 | 2072 | 486 | 69 | 1063 |
| Weidknecht, Frederic. (See Söbillot and Weidknecht.) | | | | | | |
| Weinberg, Arthur, assignor to L. Casella & Co., Frankfort-on-the-Main, Germany. Black azo dye | 526,763 | Oct. 2 | 159 | ..... | 69 | 31 |
| Weinhagen, Frederick, *et al.* (See Wheeler, Fred A., assignor.) | | | | | | |
| Weinman, Christian J., and E. E. Enchenhofer, Dayton, Ohio. Wrapping-machine | 528,751 | Nov. 6 | 399 | 96 | 69 | 719 |
| Weinrich, Moriz, St. Louis, Mo. Apparatus for decarbonizing and revivifying bone-black | 530,632 | Dec. 11 | 994 | 244 | 69 | 1413 |
| Weir, Fredric C. (See Harden, Edward W., assignor.) | | | | | | |
| Weir, Fredric C. (See Mellen and Goldsmith, assignors.) | | | | | | |
| Weir Frog Company. (See Goldsmith, Nathaniel O., assignor.) | | | | | | |
| Weis, J. P. Carl. (See Clapp, Richard D., assignor.) | | | | | | |
| Weis, Jacob P., Anderson, Ind. Furnace | 530,869 | Dec. 11 | 1378 | 328 | 69 | 1481 |
| Weisell, David D., Fort Wayne, Ind. Nut-lock | 527,569 | Oct. 16 | 1465 | 357 | 69 | 301 |
| Weiss, Ernest H. (See Bukenhofer and Weiss.) | | | | | | |
| Weiss, Leopold, New York, N. Y. Parcel-carrier | 530,215 | Dec. 4 | 245 | 59 | 69 | 1260 |
| Weiss, Leopold, New York, N. Y. Packing box | 530,671 | Dec. 11 | 1067 | 259 | 69 | 1424 |
| Welbourn, Josiah M., Surprise, Ohio. Straw-stacker | 530,294 | Dec. 4 | 388 | 97 | 69 | 1285 |
| Welch, Charles K., Coventry, England, assignor to Pneumatic Tyre Company, Limited, Dublin, Ireland. Pneumatic tire | 526,882 | Oct. 2 | 353 | 87 | 69 | 66 |
| Welch, Rosia W., assignor to J. S. Taylor, Baltimore, Md. Grain-scouring machine | 528,405 | Oct. 30 | 2931 | {708 / 709} | 69 | 598 |
| Weldon, Josiah, Elmore, Ohio. Sash-holder | 526,764 | Oct. 2 | 160 | 38 | 69 | 31 |
| Weldon, Leonard, Amsterdam, N. Y. Dyeing-machine | 531,350 | Dec. 25 | 2247 | 536 | 69 | 1671 |
| Weldon, Leonard, assignor to Klauder-Weldon Dyeing Machine Company, Amsterdam, N. Y. Machine for dyeing | 529,539 | Nov. 20 | 1846 | 439 | 69 | 1021 |
| Weller, Chester A., assignor of one-half to J. Gibney, Sing Sing, N. Y. Railway-signal | 527,914 | Oct. 23 | 2057 | 493 | 69 | 426 |
| Wellman Sole Cutting Machine Company. (See Stickney, Allison M., assignor.) | | | | | | |
| Wells, Charles C., San Francisco, Cal. Railway-joint bridge | 526,954 | Oct. 2 | 467 | 115 | 69 | 88 |
| Welsh, William, *et al.* (See Dobbins, Douglas, assignor.) | | | | | | |
| Wendt, Henry W., assignor to Buffalo Forge Company, Buffalo, N. Y. Forge | 529,845 | Nov. 27 | 2347 | 559 | 69 | 1123 |
| Wendté, William C., Boston, Mass. Printing-press | 530,812 | Dec. 11 | 1287 | 312 | 69 | 1406 |
| Wendté, William C., Boston, Mass. Perfecting-press for printing sheets | 530,813 | Dec. 11 | 1288 | 312 | 69 | 1466 |
| Wenger, John E., Paradise, Pa. Mechanical artificial flower for advertising purposes | 530,870 | Dec. 11 | 1379 | 329 | 69 | 1481 |
| Wenzel, Hermann, Schönlinde, Austria-Hungary. Shedding mechanism for looms | 527,093 | Oct. 9 | 675 | {165 / 166} | 69 | 142 |
| Wern, Erik G. P., Brooklyn, assignor to Pelham Hod Elevating Company, New York, N. Y. Cable-support | 527,306 | Oct. 9 | 1036 | 251 | 69 | 206 |
| Wern, Gustaf P., Brooklyn, assignor to Pelham Hod Elevating Company, New York, N. Y. Chain hod-elevator | 527,305 | Oct. 9 | 1034 | 251 | 69 | 206 |
| Wern, Gustaf P., Brooklyn, assignor to Pelham Hod Elevating Company, New York, N. Y. Elevator-platform | 527,307 | Oct. 9 | 1037 | 251 | 69 | 206 |
| Werner, Charles J. (See Schmidt and Werner.) | | | | | | |
| Wertzberger, Herman V., Glenwood Springs, Colo. Door-check | 528,049 | Oct. 23 | 2307 | 556 | 69 | 471 |
| Wessel, Ferdinand A. (See Egger and Wessel.) | | | | | | |
| Wessel, Ferdinand A., and E. Egger, assignors of one-fourth to A. Naumburg, New York, N. Y. Flexible gear for electric-car trucks | 531,351 | Dec. 25 | 2248 | {536 / 537} | 69 | 1670 |
| Wesson, James L. (See Cronin, John M., assignor.) | | | | | | |
| West, Augustine C., Cambridge, Mass. Oil-stove | 530,609 | Dec. 11 | 954 | 234 | 69 | 1405 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
|---|---|---|---|---|---|---|
| | | | Spec. | Dr'g. | Vol. | Pages. |
| West, Josiah E. (See Laraway and West.) | | | | | | |
| Westby, Joseph, Sheffield, and J. Whitfield, Menston, Wharfedale, England. Means for attaching knives to their handles | 528,452 | Oct. 30 | 3010 | 727 | 69 | 612 |
| Westcott Chuck Company. (See Westcott, James H., assignor.) | | | | | | |
| Westcott, Eugene M., Hampton, Iowa. Carburetor | 527,639 | Oct. 16 | 1584 | 383 | 69 | 322 |
| Westcott, James H., assignor of one-half to Westcott Chuck Company, Oneida, N. Y. Drill-chuck | 527,227 | Oct. 9 | 897 | 217 | 69 | 183 |
| Westerfield, Eugene T., assignor to Westerfield Wagon and Sprinkling Truck Company, New York, N. Y. Sprinkling-wagon | 527,353 | Oct. 9 | 1110 | 271 | 69 | 920 |
| Westerfield Wagon and Sprinkling Truck Company. (See Westerfield, Eugene T., assignor.) | | | | | | |
| Westerman, Frederick, Chicago, Ill. Device for preventing leakage about journals of mixing-machines | 528,050 | Oct. 23 | 2308 | 556 | 69 | 471 |
| Western Electric Company. (See Briggs and Patterson, assignors.) | | | | | | |
| Western Electric Company. (See Clark, Martin M., assignor.) | | | | | | |
| Western Electric Company. (See Farnham, Isaiah H., assignor.) | | | | | | |
| Western Electric Company. (See Scribner, Charles E., assignor.) | | | | | | |
| Western Engravers' Supply Company. (See Schraubstadter and Schilling, assignors.) | | | | | | |
| Western Leather Manufacturing Company. (See Teed, Oliver F., assignor.) | | | | | | |
| Western Union Telegraph Company. (See Fiske, Bradley A., assignor.) | | | | | | |
| Western Union Telegraph Company. (See Scott, George A., assignor.) | | | | | | |
| Western Wheeled Scraper Company. (See Kimball, James F., assignor.) | | | | | | |
| Western Wheeled Scraper Company. (See McKnight, Thomas R., assignor.) | | | | | | |
| Westervelt, Edmund C., and C. W. Clapp, South Bend, Ind. Sulky-plow | 526,983 | Oct. 2 | 511 | 125 | 69 | 96 |
| Westhafer, John B. (See Kline and Westhafer.) | | | | | | |
| Westinghouse Air Brake Company. (See Bayley, Richard W., assignor.) | | | | | | |
| Westinghouse, Church, Kerr & Company. (See Church, William L., assignor.) | | | | | | |
| Westinghouse, Church, Kerr & Company. (See Church and Reeve, assignors.) | | | | | | |
| Westinghouse Electric and Manufacturing Company. (See Davis, Harry P., assignor.) | | | | | | |
| Westinghouse Electric and Manufacturing Company. (See Lamme, Benjamin G., assignor.) | | | | | | |
| Westinghouse Electric and Manufacturing Company. (See Potter, Henry N., assignor.) | | | | | | |
| Westlake, Adelaide C. (See Schultz and Westlake.) (Reissue.) | | | | | | |
| Weston, Charles W. (See Leonard, Benjamin, assignor.) | | | | | | |
| Weston, Charles W., San Francisco, Cal. Ventilated fruit-basket | 528,834 | Nov. 6 | 578 | 137 | 69 | 751 |
| Weston, Charles W., San Francisco, Cal. Wood-veneer made basket | 528,835 | Nov. 6 | 579 | 137 | 69 | 751 |
| Weston, Edward, Newark, N. J. Scale and index for electrical measuring-instruments | 527,034 | Oct. 2 | 595 | 144 | 69 | 112 |
| Weston, Edward, Newark, N. J. Electrical measuring-instrument | 529,434 | Nov. 20 | 1652 | 393 | 69 | 986 |
| Weston, Edward, Newark, N. J. Electrical measuring-instrument | 529,435 | Nov. 20 | 1654 | {393 / 394} | 69 | 987 |
| Weston, Edward, Newark, N. J. Electrometer | 530,145 | Dec. 4 | 113 | 30 | 69 | 1236 |
| Weston, William S., Chicago, Ill. Electric-lamp hanger | 526,825 | Oct. 2 | 253 | 62 | 69 | 42 |
| Westwell William, Accrington, England. Stretching apparatus for calico block printing machines | 530,373 | Dec. 4 | 523 | {130 / 131} | 69 | 1310 |
| Wetherill, Albert L., Philadelphia, Pa. Heliograph attachment | 527,640 | Oct. 16 | 1565 | 383 | 69 | 323 |
| Wetmore, John S. (See Jones and Wetmore.) | | | | | | |
| Wetton, John M. (See Wyckoff and Wetton.) | | | | | | |
| Weyhe, Charles F., St. Paul, Minn. Combined clamp and vise | 529,765 | Nov. 27 | 2206 | 526 | 69 | 1096 |
| Weyman, James E., and J. A. Drake, Guilford, England. Means or apparatus for effecting and controlling the supply of hydrocarbon to hydrocarbon-motors | 528,836 | Nov. 6 | 580 | 137 | 69 | 751 |
| Wezen, Charles J., Wilmington, Del. Skate | 530,610 | Dec. 11 | 956 | 235 | 69 | 1406 |
| Whalen, Stephen F., Helena, Mont. Hose-coupling | 528,051 | Oct. 23 | 2310 | 557 | 69 | 471 |
| Whalon, Richard, West Granville Corners, N. Y. Draw-bar for vehicles | 531,454 | Dec. 25 | 2442 | 581 | 69 | 1708 |
| Wharton, John C. (See Woodfolk and Wharton.) | | | | | | |
| Whatley, George W., Pleasant Valley, Tex. Plow | 528,576 | Nov. 6 | 91 | 23 | 69 | 602 |
| Wheatcroft, Thomas S., Rush, Pa. Vending-machine | 530,216 | Dec. 4 | 245 | 60 | 69 | 1260 |
| Wheatfield, William S., New York, N. Y. Garment-fastener | 530,737 | Dec. 11 | 1153 | 285 | 69 | 1442 |
| Wheatley, John R. (See Tunnell, John D., assignor.) | | | | | | |
| Wheaton, Lindon S., Newark, N. J. Gate-valve | 526,797 | Oct. 2 | 211 | 51 | 69 | 40 |
| Wheelan, Fairfax H. (See Jessup, Robert W., assignor.) | | | | | | |
| Wheeler, Allen E., *et al.* (See Wheeler, Fred A., assignor.) | | | | | | |
| Wheeler, Claud C., Fairmont, W. Va. Horse checking or unchecking device | 528,577 | Nov. 6 | 92 | 23 | 69 | 603 |
| Wheeler, David C. (See Wheeler, Dwight and D. C.) | | | | | | |
| Wheeler, Dwight and D. C., Bridgeport, Conn. Shear-bow | 529,513 | Nov. 20 | 1802 | 428 | 69 | 1012 |
| Wheeler, Fred A., Chicago, Ill. assignor of twenty-three twenty-fourths to A. E. Wheeler, E. T. Specht, F. Weinhagen, W. Hinrichs, C. A. Rohde, Milwaukee, Wis., and R. V. Wagner, Chicago, Ill. Machine for crushing ore, &c | 529,766 | Nov. 27 | 2207 | 526 | 69 | 1096 |
| Wheeler, Frederick M. (See Whiting and Wheeler.) | | | | | | |
| Wheeler, Joshua S., Worcester, Mass. Metal-planing machine | 531,489 | Dec. 25 | 2501 | {595 / 596} | 69 | 1719 |
| Wheeler, Samuel H., Chicago, Ill., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Shaft-bearing | 527,641 | Oct. 16 | 1587 | 383 | 69 | 323 |
| Wheeler, Samuel H., Chicago, Ill., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Needle-bar for sewing-machines | 527,915 | Oct. 23 | 2059 | 494 | 69 | 426 |
| Wheeler, William A., Littleton, N. H., assignor to E. & T. Fairbanks & Company, St. Johnsbury, Vt. Weighing-scale | 528,837 | Nov. 6 | 581 | 138 | 69 | 751 |
| Wheeler & Wilson Manufacturing Company. (See Faust, John, assignor.) | | | | | | |
| Wheeler & Wilson Manufacturing Company. (See Wheeler, Samuel H., assignor.) | | | | | | |
| Wheeling Steel and Iron Company. (See Maddock, William H., assignor.) | | | | | | |
| Whetstine, John T., and T. C. Baker, Washington, Kans. Combined scale and coffee-case | 528,052 | Oct. 23 | 2310 | 557 | 69 | 472 |
| Whipple, James L., Brattleborough, Vt. Track-harness | 530,871 | Dec. 11 | 1381 | 329 | 69 | 1482 |
| Whipps, Solomon S., Le Sueur Centre, Minn. Propeller for vessels | 528,265 | Oct. 30 | 2687 | 648 | 69 | 556 |
| Whitaker, Charles B., Charlotte, and E. D. Lyon, Carson City, Mich. Bicycle | 527,306 | Oct. 9 | 1183 | 290 | 69 | 235 |
| Whitall, James, Chicago, Ill. Cable-gripper | 528,313 | Oct. 30 | 2776 | 670 | 69 | 570 |
| White, Amelia L., Lima, Ohio. Lunch-heater | 530,146 | Dec. 4 | 117 | 30 | 69 | 1237 |
| White, Charles G., Woodland, Cal. Nail-set | 530,252 | Dec. 4 | 309 | 77 | 69 | 1272 |
| White, Frank and I. F., Pomona, Cal. Snap-hook | 527,570 | Oct. 16 | 1466 | 357 | 69 | 301 |
| White, George W., *et al.* (See Reiley, Matthew S., assignor.) | | | | | | |
| White, Ira F. (See White, Frank and I. F.) | | | | | | |
| White, James M., *et al.* (See Reiley, Matthew S., assignor.) | | | | | | |
| White, John E. (See White, John L. and J. E.) | | | | | | |
| White, John L. and J. E., Wakefield, Va. Car-coupling | 531,490 | Dec. 25 | 2502 | 596 | 69 | 1719 |
| White, Joseph J., New Lisbon, N. J., assignor of one-half to Pennsylvania Machine Company, Philadelphia, Pa. Spacing-nail | 528,406 | Oct. 30 | 2032 | 709 | 69 | 598 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| White, Lewis B., Riverside, R. I. Ball caster | 528,266 | Oct. 30 | 2691 | 648 | 69 | 556 |
| White Manufacturing Company. (See Benjamin, Dana H., assignor.) | | | | | | |
| White, Nathan D., assignor to Tapliu, Rice & Company, Akron, Ohio. Stove-damper, &c. | 529,224 | Nov. 13 | 1258 | 303 | 69 | 894 |
| White, Orsamus A., Norwalk, Ohio. Combined level, plumb, and slope-indicator | 531,239 | Dec. 18 | 2047 | 488 | 69 | 1617 |
| White, Robert E. L., *et al.* (See Reiley, Matthew S., assignor.) | | | | | | |
| White, William, assignor of one-half to T. E. Bladon, Birmingham, England. Regenerative gas-lamp | 526,955 | Oct. 2 | 468 | 115 116 | 69 | 88 |
| White, William H., Apollo, Pa. Annealing box | 527,642 | Oct. 16 | 1568 | 384 | 69 | 323 |
| Whitehead, Charles. (See Mecmy and Whitehead.) | | | | | | |
| Whitehead, Samuel B., San Francisco, Cal. Training apparatus | 529,987 | Nov. 27 | 2608 | 626 | 69 | 1153 |
| Whiteley, Herbert D., Cheetham, England. Wearing surface for door-mats, floors, &c. | 527,094 | Oct. 9 | 678 | 166 | 69 | 142 |
| Whiteley, William N., assignor to C. A. Kitts, Muncie, Ind. Hay-tedder | 530,147 | Dec. 4 | 118 | 30 | 69 | 1237 |
| Whitesides, F. N., *et al.* (See Dobbins, Douglas, assignor.) | | | | | | |
| Whitesides, L. Byron, *et al.* (See Dobbins, Douglas, assignor.) | | | | | | |
| Whitfield, Joseph. (See Westby and Whitfield.) | | | | | | |
| Whitin Machine Works. (See Owen, Henry A., assignor.) | | | | | | |
| Whiting, Fred E. (See Whiting, George F., assignor.) | | | | | | |
| Whiting, George B., Wilmington, Del., and F. M. Wheeler, Montclair, N. J., assignors to George F Blake Manufacturing Company, of New Jersey. Pumping-engine | 526,913 | Oct. 2 | 414 | 102 | 69 | 77 |
| Whiting, George F., North Cambridge, assignor to F. E. Whiting, Boston, Mass. Brush-support | 527,032 | Oct. 2 | 592 | 143 | 69 | 111 |
| Whitlock Coil-Pipe Company. (See Shepard, Wilbur L., assignor.) | 526,914 | Oct. 2 | 415 | 102 | 69 | 78 |
| Whitman, Charles E., St. Louis, Mo. Baling-press | 531,240 | Dec. 18 | 2048 | 488 489 | 69 | 1617 |
| Whitman, Orrin M., Boston, Mass. Refrigerator or butter-cooler | 529,148 | Nov. 13 | 1120 | 271 | 69 | 870 |
| Whitney, E. P., *et al.* (See Oneill, Fred, assignor.) | | | | | | |
| Whitney Electrical Instrument Company. (See Hoyt, Adrian H., assignor.) | | | | | | |
| Whitney, George E., Boston, Mass. Bicycle-brake | 527,571 | Oct. 16 | 1468 | 358 | 69 | 301 |
| Whitney, Washington. (See Fowler and Whitney.) | | | | | | |
| Whittemore, Walter H. (See Maxon, Daniel M., assignor.) | | | | | | |
| Whittingham, Charles, assignor to Cleveland Foundry Company, Cleveland, Ohio. Oil-burner | 528,314 | Oct. 30 | 2778 | 670 | 69 | 571 |
| Whittingham, Charles, assignor to Cleveland Foundry Company, Cleveland, Ohio. Gas-burner | 529,603 | Nov. 13 | 878 | 207 | 69 | 826 |
| Whittredge, Horace L., Admire, Kans. Combined disk cultivator and harrow | 527,519 | Oct. 16 | 1368 | 337 | 69 | 286 |
| Wickey, Andrew, Chicago, Ill. Baling-press | 526,881 | Oct. 2 | 354 | 87, 88 | 69 | 67 |
| Wickey, Andrew, Chicago, Ill. Incubator | 530,567 | Dec. 11 | 888 | 218 | 69 | 1393 |
| Widdicomb, Harry, Grand Rapids, Mich. Dressing-case | 529,846 | Nov. 27 | 2348 | 559 | 69 | 1124 |
| Widdis, Albert L., Detroit, Mich. Elevated railway-car | 528,407 | Oct. 30 | 2933 | 709 710 | 69 | 598 |
| Wiebach, Charles F., Newark, and A. A. Koellhoffer, Vailsburg, N. J. Igniting spring-gun | 527,916 | Oct. 23 | 2060 | 494 | 69 | 426 |
| Wiegand, Frank J., Warren, Mich. Chicken-brooder | 527,822 | Oct. 23 | 1781 | 451 | 69 | 393 |
| Wiegand, S. Lloyd, Philadelphia, Pa. Air-heating furnace | 529,090 | Nov. 13 | 1027 | 247 | 69 | 853 |
| Wielandt, Martin, Berlin, Germany. Fire-extinguisher | 530,672 | Dec. 11 | 1068 | 259 | 69 | 1424 |
| Wielar, Julius, *et al.* (See Lamplough, Frederick, assignor.) | | | | | | |
| Wiemers, John H., New York, N. Y. Signaling device for automatic measuring-machines | 526,915 | Oct. 2 | 416 | 103 | 69 | 78 |
| Wiens, Adolph R., Milwaukee, Wis. Bottle-washer | 529,923 | Nov. 27 | 2411 | 550 | 69 | 1117 |
| Wier, Marshall A., Kingston-upon-Thames, England. Type-writing machine | 531,352 | Dec. 25 | 2250 | 537 | 69 | 1671 |
| Wigg, Thomas W., Delaware, Ohio. Rocking-chair | 529,004 | Nov. 13 | 879 | 207 | 69 | 826 |
| Wiggins, David. (See Fryer, Aaron, assignor.) | | | | | | |
| Wighton, William. (See Lepper and Wighton.) | | | | | | |
| Wilber, George H., Carthage, Mo. Combined wire-stretcher and staple-puller | 527,008 | Oct. 2 | 350 | 134 | 69 | 104 |
| Wilbor, Charles W., Rochester, N. Y. Vehicle | 527,470 | Oct. 16 | 1312 | 320 | 69 | 274 |
| Wilbur, Parlee P., Zanesville, Ohio. Jug or jar | 529,574 | Nov. 20 | 1904 | 454 | 69 | 1032 |
| Wilcklow, William. (See Ross and Wilcklow.) | | | | | | |
| Wilcox, Benajah, Gibson, N. Y. Vehicle-brake | 529,767 | Nov. 27 | 2208 | 526 527 | 69 | 1097 |
| Wilcox, Cornelius, Sunbury, Ohio. Thill-coupling | 528,351 | Oct. 30 | 2829 | 684 | 69 | 580 |
| Wilcox, Frederick W., Chicago, Ill. Paper pail | 529,053 | Nov. 13 | 961 | 227 228 | 69 | 841 |
| Wilcox, James H. (See Bradish, Nelson P., assignor.) | | | | | | |
| Wilder, George L., Waukegan, Ill. Bracket for staging on shingle roofs | 527,572 | Oct. 16 | 1470 | 358 | 69 | 301 |
| Wilder, John K., Monroe, Mich. Feed-cutter | 529,768 | Nov. 27 | 2211 | 527 | 69 | 1097 |
| Wilder, Norman B., Kansas City, Mo., assignor to Kansas City Hay Press Company, of Missouri. Hay-press | 529,540 | Nov. 20 | 1848 | 440 | 69 | 1021 |
| Wildman, Robert, assignor of one-half to H. S. Johnson, Bay City, Mich. Boiler | 528,352 | Oct. 30 | 2830 | 684 | 69 | 580 |
| Wiley, William J., Danbury, Conn. Water-purifier for hat-sizing machines | 527,187 | Oct. 9 | 830 | 201 202 | 69 | 169 |
| Wilford, William A., Todmorden, Canada. Brick-kiln | 527,255 | Oct. 9 | 942 | 228 229 | 69 | 190 |
| Wilhelm, Charles, New York, and F. Ecaubert, Brooklyn, N. Y., assignors to said Ecaubert. Tool for ornamenting watchcases, &c. | 531,455 | Dec. 25 | 2443 | 582 | 69 | 1708 |
| Wilkins, Frank R. (See Walker and Wilkins.) | | | | | | |
| Wilkins, John N. (See Sendelbach and Wilkins.) | | | | | | |
| Wilkins, Theodore, New York, N. Y. Ladder attachment | 530,374 | Dec. 4 | 528 | 132 | 69 | 1311 |
| Wilkinson, Abraham, *et al.* (See Smith, John A., assignor.) | | | | | | |
| Wilkinson, Frederick C. (See Hadley, William, assignor.) | | | | | | |
| Wilkinson, James. (See Pratt, Theodore P., assignor.) | | | | | | |
| Willcox, B. F. (See Willcox, Fenn, assignor.) | | | | | | |
| Willcox, Fenn, Newark, N. J., assignor of one-half to B. F. Willcox, New York, N. Y. Cutting-machine | 529,005 | Nov. 13 | 880 | 208 | 69 | 826 |
| Willett, Joseph M., *et al.* (See Robinson, William S., assignor.) | | | | | | |
| Willett, William B., *et al.* (See Robinson, William S., assignor.) | | | | | | |
| Willever, George O. (See Willever, Thomas D., assignor.) | | | | | | |
| Willever, Thomas D., Irvington, assignor of one-half to G. O. Willever, Phillipsburg, N. J. Railway-switch | 527,188 | Oct. 9 | 831 | 202 | 69 | 170 |
| Willey, William H., Santa Monica, Cal. Impact rotary steam-motor | 530,375 | Dec. 4 | 529 | 132 | 69 | 1311 |
| William P. Miller Company. (See Miller, William P., assignor.) | | | | | | |
| Williams, Charles E., Columbus, Ohio. Sack-sewing machine | 529,769 | Nov. 27 | 2214 | 527 | 69 | 1098 |
| Williams, Dick B., Baltimore, Md. Folding support or stand for pictures | 528,704 | Nov. 6 | 322 | 79 | 69 | 705 |
| Williams, Edward C., Chicago, Ill. Dovetailing-machine for preparing edges of parts of electrotype or stereotype plate blocks | 531,241 | Dec. 18 | 2051 | 489 | 69 | 1618 |



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| Name, residence, and invention | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Williams, Eli J. (See Williams, James F. and E. J.) | | | | | | |
| Williams, Eli P. (See Simpson and Williams.) | | | | | | |
| Williams, Eugene L., Kansas City, Mo., assignor of one-half to J. S. Williams, Jerseyville, Ill. Wire crimping and fastening pliers | 526,766 | Oct. 2 | 162 | 38 | 69 | 31 |
| Williams, Frank A., Albrighton, England. Means for joining edges of sheet, strip, and plate metal | 530,314 | Dec. 4 | 418 | 105 | 69 | 1291 |
| Williams, Frederick W., assignor of three-fourths to T. E. Clarke, W. H. Truesdale, and J. Tonge, Minneapolis, Minn. Drilling-machine | 530,979 | Dec. 18 | 1574 | 373 | 69 | 1531 |
| Williams, Gurdon H., Brighton, Ohio. Excavating and hoisting bucket | 528,579 | Nov. 6 | 95 | 24 | 69 | 663 |
| Williams, Horace D., Poplar Bluff, Mo. Drying articles | 528,496 | Oct. 30 | 3087 | 749 | 69 | 627 |
| Williams, James F. and E. J., assignors to B. H. Smothers and R. M. Shepherd, Kennedy, Ala. Combined plow and planter | 526,765 | Oct. 2 | 161 | 38 | 69 | 31 |
| Williams, James L. (See Moffitt and Williams.) | | | | | | |
| Williams, John A., Brooklyn, N. Y. Cash-register | 529,436 | Nov. 20 | 1658 | 394 395 | 69 | 988 |
| Williams, John A., Bath Beach, assignor to Tutti-Frutti Automatic Vending Company, Brooklyn, N. Y. Vending apparatus | 530,148 | Dec. 4 | 120 | 31 | 69 | 1237 |
| Williams, John H., Albion, N. Y. Fruit-jar | 528,315 | Oct. 30 | 2779 | 671 | 69 | 571 |
| Williams, John N., Newark, N. J. Type-writing machine | 528,578 | Nov. 6 | 93 | 24 | 69 | 663 |
| Williams, John S. (See Williams, Eugene L., assignor.) | | | | | | |
| Williams, John T., Brooklyn, N. Y. Telephone-transmitter | 530,315 | Dec. 4 | 421 | 105 | 69 | 1291 |
| Williams, Oliver P. (See Shumard, Eugene C., assignor.) | | | | | | |
| Williams, Orion H., Chicago, Ill., assignor to Casper Automatic Patent Company, Limited, New Orleans, La. Coin-controlled turnstile-gate | 529,006 | Nov. 13 | 882 | 209 210 | 69 | 827 |
| Williams, Orion H., Chicago, Ill., assignor to S. P. Walmsley, New Orleans, La. Register-actuating attachment for turnstiles | 529,007 | Nov. 13 | 887 | 210 | 69 | 827 |
| Williams, Otis, St. Johnsville, N. Y. Machine for crushing stone, ore, &c. | 530,295 | Dec. 4 | 389 | 97 | 69 | 1296 |
| Williams, Seward W. (See Parker and Williams.) | | | | | | |
| Williams, Thomas, *et al.* (See Andrews, Charles B., assignor.) | | | | | | |
| Williams, William E., Chicago, Ill. Machine for rolling car-wheel tires | 527,038 | Oct. 2 | 600 | 145 | 69 | 113 |
| Williams, William H., Newark, N. J. Magnetic separating-machine | 528,053 | Oct. 23 | 2311 | 557 558 | 69 | 472 |
| Williams, William H., Newark, N. J. Magnetic separator | 528,054 | Oct. 23 | 2313 | 558 | 69 | 472 |
| Williams, William H., Newark, N. J. Magnetic separator | 528,055 | Oct. 23 | 2316 | 558 559 | 69 | 473 |
| Williams, William M., Kenilworth, England. Multiple-copying apparatus | 529,824 | Nov. 27 | 2312 | 551 | 69 | 1117 |
| Williams, William R., Philipsburg, Pa. Hinge-seating device | 526,826 | Oct. 2 | 256 | 62 63 | 69 | 49 |
| Williams, William S., Canton, Ohio. Kiln | 531,242 | Dec. 18 | 2053 | 490 | 69 | 1618 |
| Williamson, David C. and J. E., Bridgeport, Conn. Filter | 529,470 | Nov. 20 | 1718 | 409 410 | 69 | 908 |
| Williamson, James E. (See Williamson, David C. and J. E.) | | | | | | |
| Williamson, Jas. F. (See Hess, Christian J., assignor.) | | | | | | |
| Willis, Edward J., Richmond, Va. Planimeter | 529,008 | Nov. 13 | 890 | 210 | 69 | 828 |
| Wilson, Adoniram J., Port Chester, N. Y., assignor to Hall Signal Company, of Maine. Electric railway-signal | 528,245 | Oct. 30 | 2657 | 640 | 69 | 549 |
| Wilson, Adoniram J., Port Chester, N. Y., assignor to Hall Signal Company, of Maine. Electric railway-signal | 528,246 | Oct. 30 | 2659 | 641 | 69 | 550 |
| Wilson, Adoniram J., Port Chester, N. Y., assignor to Hall Signal Company, of Maine. Electric block-signaling system | 531,284 | Dec. 18 | 2129 | 511 | 69 | 1632 |
| Wilson, Augusta B. (See Wilson, Michael H., assignor.) | | | | | | |
| Wilson, Edgar J. (See O'Brien and Wilson.) | | | | | | |
| Wilson, Horace, Indian Diggings, Cal. Coffee-percolator | 530,149 | Dec. 4 | 123 | 31 | 69 | 1237 |
| Wilson, Houghton W., Kingston, Canada. Stovepipe-damper | 527,573 | Oct. 16 | 1471 | 358 | 69 | 301 |
| Wilson, James, assignor of one-half to C. A. Mullen, Jackson, Ohio. Fluid-pressure regulator | 530,872 | Dec. 11 | 1382 | 329 | 69 | 1482 |
| Wilson, James D. San Diego, Cal. Pipe-wrench | 527,917 | Oct. 23 | 2062 | 494 | 69 | 427 |
| Wilson, James G., New York, N. Y. Venetian blind | 529,770 | Nov. 27 | 2216 | 528 | 69 | 1098 |
| Wilson, James G., New York, N. Y. Rolling shutter, &c. | 529,771 | Nov. 27 | 2217 | 528 | 69 | 1098 |
| Wilson, James G., New York, N. Y. Flooring | 529,772 | Nov. 27 | 2217 | 528 | 69 | 1098 |
| Wilson, James G., New York, N. Y. Method of and implement for forming grooves | 531,243 | Dec. 18 | 2055 | 490 491 | 69 | 1618 |
| Wilson, James L., Mountain Peak, Tex. Gate-latch | 531,353 | Dec. 25 | 2252 | 537 | 69 | 1671 |
| Wilson, Jeremiah M. (See Wilson, Robert B., assignor.) | | | | | | |
| Wilson, John C., Boston, Mass. Time-stamp | 527,918 | Oct. 23 | 2063 | 494 495 | 69 | 427 |
| Wilson, John H., assignor of two-thirds to C. E. and M. I. Zeigler, Carlisle, Pa. Cooking-vessel | 527,471 | Oct. 16 | 1314 | 321 | 69 | 275 |
| Wilson, Michael H., assignor, by mesne assignments, to Wilson Revolving Pole Sign Company, New York, N. Y. Revolving-pole sign | 531,402 | Dec. 25 | 2437 | 557 | 69 | 1688 |
| Wilson, Michael H., assignor to A. B. Wilson, New York, N. Y. Spring-motor | 531,607 | Dec. 25 | 2696 | 647 | 69 | 1758 |
| Wilson, Milford J., Painsville, Ohio. Saw-filing device | 531,456 | Dec. 25 | 2445 | 582 | 69 | 1709 |
| Wilson, Oliver, Philadelphia, Pa., assignor of one-third to A. F. Kent, Jamestown, N. Y. Knitting-machine | 528,838 | Nov. 6 | 583 | 138 | 69 | 752 |
| Wilson Revolving Pole Sign Company. (See Wilson, Michael H., assignor.) | | | | | | |
| Wilson, Robert B., Cincinnati, Ohio, assignor of one-half to J. M. Wilson, Washington, D. C. Electric-railway conduit | 526,767 | Oct. 2 | 164 | 38 | 69 | 31 |
| Wilson, Robert M., Rome, N. Y. Bath-tub | 530,568 | Dec. 11 | 888 | 219 | 69 | 1393 |
| Wilson, Stephen, Philadelphia, Pa., assignor to Mechanical Amusement Company, Woodbury, N. J. Mechanically-propelled figure | 526,984 | Oct. 2 | 514 | 126 | 69 | 96 |
| Wilson, Wellington, Bay City, Mich. Stovepipe attachment | 528,408 | Oct. 30 | 2936 | 710 | 69 | 599 |
| Wilson, William A., Niotaze, Kans. Attachment for self-binding harvesters | 530,376 | Dec. 4 | 531 | 132 | 69 | 1312 |
| Wilson, William F., Cookstown, Pa. Gate-latch | 531,491 | Dec. 25 | 2503 | 596 | 69 | 1719 |
| Wilt, Edwin F., Elgin, assignor to J. Rineck, Jr., Hampshire, Ill. Harness | 527,189 | Oct. 9 | 832 | 202 203 | 69 | 170 |
| Winchester, Edward S., Boston, Mass. Latch | 529,575 | Nov. 20 | 1905 | 454 | 69 | 1032 |
| Winder, Will H. (See Folger and Winder.) | | | | | | |
| Wine, J. H., *et al.* (See Humbert, James H., assignor.) | | | | | | |
| Wingard, Edwin V., Philadelphia, Pa. Chimney | 528,453 | Oct. 30 | 3011 | 727 | 69 | 612 |
| Winge, Alf L., assignor of one-half to J. S. Truscott, Miles City, Mont. Wrench | 527,643 | Oct. 16 | 1589 | 384 | 69 | 323 |
| Winslow, George H., Pittsburg, Pa. Binder for leaves | 529,091 | Nov. 13 | 1029 | 248 | 69 | 853 |
| Winslow, Orlando R., and H. King, Marshfield, Mo. Doubletree | 531,581 | Dec. 25 | 2648 | 634 | 69 | 1748 |
| Wirt, Zebulon, Monticello, Ind. Umbrella | 527,823 | Oct. 23 | 1882 | 451 452 | 69 | 394 |

*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Wisdom, Edward G. (See Wisdom, Francis B. and E. G.) | | | | | | |
| Wisdom, Francis B. and E. G., Chicago, Ill. Flue | 527,256 | Oct. 9 | 945 | 229 | 69 | 190 |
| Wise, Jacob, assignor to M. E. Wise, Mogadore, Ohio. Lamp-supporter for vehicles | 526,798 | Oct. 2 | 212 | 51 | 69 | 40 |
| Wise, Martha E. (See Wise, Jacob, assignor.) | | | | | | |
| Wister, Harry H., Colorado City, Colo. Electrical signal | 527,257 | Oct. 9 | 947 | 230, 231 | 69 | 191 |
| Witbeck, L. G., *et al.* (See Erickson, Ole S., assignor.) | | | | | | |
| Withell, Reuben, Brookside, New Zealand. Milking-machine | 529,576 | Nov. 20 | 1908 | 454 | 69 | 1033 |
| Wittke, Robert. (See Ariens, Henry, assignor.) | | | | | | |
| Witzel, Joseph R., Philadelphia, Pa. Weighing-scale | 530,980 | Dec. 18 | 1576 | 373 | 69 | 1532 |
| Wnuck, Charles E., Cincinnati, Ohio. Wheeled vehicle | 529,925 | Nov. 13 | 1259 | 303 | 69 | 894 |
| Woelfel, George P., Spring Garden, assignor to J. Bindley, Pittsburg, Pa. Pipe-wrench. (Reissue) | 11,450 | Dec. 18 | 2142 | 513 | 69 | 1635 |
| Woglom, Gilbert T., New York, N. Y. Ear-ring | 528,197 | Oct. 30 | 2570 | 622 | 69 | 533 |
| Wolf, Carl, Zwickau, Germany. Miner's safety-lamp | 530,217 | Dec. 4 | 249 | 60 | 69 | 1261 |
| Wolf, Charles. (See Hadam and Wolf.) | | | | | | |
| Wolf Electrical Promoting Company. (See Bloch, Jacob, assignor.) | | | | | | |
| Wolf Electrical Promoting Company. (See Wolf, John, Jr., assignor.) | | | | | | |
| Wolf, Frank, *et al.* (See Strakosch, Max, assignor.) | | | | | | |
| Wolf, Henry L. R., Dayton, Ohio. Bucket-fastener | 528,316 | Oct. 30 | 2780 | 671 | 69 | 571 |
| Wolf, John, Jr., assignor to Wolf Electrical Promoting Company, Cincinnati, Ohio. Take-up for conductors of cloth-cutting machines | 527,354 | Oct. 9 | 1111 | 271 | 69 | 221 |
| Wolf, John, Jr., assignor to Wolf Electrical Promoting Company, Cincinnati, Ohio. Cloth-notching device | 528,216 | Oct. 30 | 2606 | 628 | 69 | 540 |
| Wolf, John, Jr., assignor to Wolf Electrical Promoting Company, Cincinnati, Ohio. Cloth-cutting machine | 528,217 | Oct. 30 | 2607 | 628, 629 | 69 | 540 |
| Wolf, Josef, Newark, N. J. Door-check | 527,919 | Oct. 23 | 2065 | 495 | 69 | 427 |
| Wolf, Sayer & Heller. (See Kallsen, Frederick, assignor.) | | | | | | |
| Wolf, Sayer & Heller. (See Lusche, Frederick, assignor.) | | | | | | |
| Wolfe, Frank L., Medford, assignor to Crosby Steam Gage and Valve Company, Boston, Mass. Register for counting the strokes of pistons, &c. | 526,884 | Oct. 2 | 356 | 88 | 69 | 67 |
| Wolfe, Frank L., Medford, assignor to Crosby Steam Gage and Valve Company, Boston, Mass. Mechanical movement for engine-registers | 526,885 | Oct. 2 | 357 | 89 | 69 | 67 |
| Wolferts, Carl F., Barmen, Rittershausen, Germany. Thread-controlling device for lace-making machines | 530,873 | Dec. 11 | 1383 | 329, 330 | 69 | 1482 |
| Wolff, William, Cincinnati, Ohio. Lathe-chuck | 528,705 | Nov. 6 | 323 | 79 | 69 | 705 |
| Wolhaupter, Benjamin, Morgan Park, Ill. Railway tie-plate | 530,738 | Dec. 11 | 1174 | 286 | 69 | 1443 |
| Wolhaupter, David P., Washington, D. C. Type-writing-machine key-cap | 530,611 | Dec. 11 | 957 | 235 | 69 | 1406 |
| Wood, Albert A., Atlanta, Ga. Box-corner binder | 527,308 | Oct. 9 | 1038 | 252 | 69 | 207 |
| Wood, Albert A., Atlanta, Ga. Box-binding machine | 527,574 | Oct. 16 | 1472 | 359, 360 | 69 | 302 |
| Wood, Anna, *et al.* (See Wood, Orlan T., assignor.) | | | | | | |
| Wood, Augustus I. (See Ziegler and Wood.) | | | | | | |
| Wood, Bernice, Benson, N. C. Fish-trap | 528,839 | Nov. 6 | 587 | 139 | 69 | 753 |
| Wood, Charles H., Dayton, Ohio. Permutation-padlock | 529,092 | Nov. 13 | 1030 | 248 | 69 | 853 |
| Wood, Charles W. (See Lurssen and Wood.) | | | | | | |
| Wood, Edgar J., Brooklyn, N. Y. Reducing-pressure valve and regulator | 527,575 | Oct. 16 | 1480 | 360 | 69 | 303 |
| Wood, George H., near Harrowgate, England. Self-acting railway signaling apparatus | 528,451 | Oct. 30 | 3012 | 727, 728 | 69 | 613 |
| Wood, Horace L., New York, N. Y. Nut-lock | 530,740 | Dec. 11 | 1177 | 287 | 69 | 1443 |
| Wood, James C., assignor of one-half to E. L. Brown, Indianapolis, Ind. Combined brush and scraper for cleaning boots or shoes | 529,541 | Nov. 20 | 1849 | 440 | 69 | 1021 |
| Wood, James J., Fort Wayne, Ind. Armature-core | 529,437 | Nov. 20 | 1661 | 395 | 69 | 988 |
| Wood, John J., Liverpool, England. Double eyeglasses | 529,988 | Nov. 27 | 2610 | 626 | 69 | 1174 |
| Wood, Montraville M., assignor to Wallace Electric Company, Chicago, Ill. Trolley-wire support | 527,920 | Oct. 23 | 2066 | 496 | 69 | 428 |
| Wood, Montraville M., Chicago, Ill., assignor to Ohio Brass Company, Mansfield, Ohio. Trolley-wire clamp | 530,569 | Dec. 11 | 890 | 219 | 69 | 1394 |
| Wood, Orlan T., assignor to P. V. McCulley and A. Wood, Plattsmouth, Nebr. Check-row corn-planter | 527,824 | Oct. 23 | 1884 | 452 | 69 | 394 |
| Wood, William M., Elmira, N. Y. Safety device for engines | 529,672 | Nov. 20 | 2051 | 491 | 69 | 1059 |
| Wood, William O., Syracuse, N. Y. Rotary snow-plow | 530,739 | Dec. 11 | 1176 | 286, 287 | 69 | 1443 |
| Woodard, Alonzo B. (See Thornton and Woodard.) | | | | | | |
| Woodard, Edward C., Brockton, Mass. Adjustable handle for bicycles | 527,576 | Oct. 16 | 1482 | 360 | 69 | 304 |
| Woodard, Lyman E., Owosso, Mich. Casket handle | 530,814 | Dec. 11 | 1290 | 312 | 69 | 1466 |
| Woodard, William A. (See Hards and Woodard.) | | | | | | |
| Woodburn, Isaac W. Rock Rapids, Iowa. Thrashing-machine | 530,815 | Dec. 11 | 1293 | 312, 313 | 69 | 1466 |
| Woodbury, Levi. (See Graham, Edmund H., assignor.) | | | | | | |
| Woodfolk, Joseph W., and J. C. Wharton, Nashville, Tenn. Apparatus for electric heating, smelting, and separating | 531,143 | Dec. 18 | 1806 | 413 | 69 | 1585 |
| Woodhead, Sam C., Philadelphia, Pa. Trolley-wire support or hanger | 527,355 | Oct. 9 | 1113 | 271 | 69 | 221 |
| Woodin, Arthur J., Park Rapids, Minn. Harvester cutter-bar | 526,827 | Oct. 2 | 259 | 63 | 69 | 40 |
| Woodruff, Oliver D., Southington, Conn. Meat-cutter | 529,149 | Nov. 13 | 1121 | 272 | 69 | 870 |
| Woods, Richard E. (See Lubbers, John H., assignor.) | | | | | | |
| Woodson, Margery. (See Atwood and Treadway, assignors.) | | | | | | |
| Woodward, Alonzo S., East Pepperell, Mass. Process of and machine for enameling paper | 528,752 | Nov. 6 | 403 | 97 | 69 | 720 |
| Woodward, Charles E. W., Chicopee Falls, Mass., assignor to Overman Wheel Company, Chicopee Falls, Mass., and Hartford, Conn. Making joints in pneumatic tires | 528,056 | Oct. 23 | 2318 | 559 | 69 | 473 |
| Woodworth, Justin P. (See Smith, Oliver E., assignor.) | | | | | | |
| Wool, Morris, Middlebury, Vt. Holder for brushes | 528,267 | Oct. 30 | 2691 | 649 | 69 | 556 |
| Woolf, Ellis J., assignor to Woolf Valve Gear Company, Minneapolis, Minn. Engine | 531,285 | Dec. 18 | 2132 | 511 | 69 | 1633 |
| Woolf, Ellis J., assignor to Woolf Valve Gear Company, Minneapolis, Minn. Engine | 531,286 | Dec. 18 | 2134 | 511, 512 | 69 | 1634 |
| Woolf, Henry M., executor. (See Everitt, Percival.) | | | | | | |
| Woolf Valve Gear Company. (See Peebles, John, assignor.) | | | | | | |
| Woolf Valve Gear Company. (See Woolf, Ellis J., assignor.) | | | | | | |
| Woolsey, De Witt C., Middlebush, N. J. Eyelet for carriage and buggy curtains | 528,580 | Nov. 6 | 96 | 24 | 69 | 664 |
| Woolston, William T. (See Overman and Woolston.) | | | | | | |
| Woolverton, John E., New York, N. Y., assignor to Auerbach-Woolverton Electric Company, of New Jersey. Electric-arc lamp | 527,228 | Oct. 9 | 899 | 218 | 69 | 183 |



*Alphabetical list of patentees, October to December, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Woolverton, John E., assignor to Auerbach-Woolverton Electric Company, New York, N. Y. Electric-arc lamp | 527,229 | Oct. 9 | 901 | 218 | 69 | 184 |
| Work, Andrew S. (See D'Hanis, Paul R. D., assignor.) | | | | | | |
| Worley, Edward G., New York, N. Y. Electric bell | 530,253 | Dec. 4 | 309 | 77 | 69 | 1272 |
| Worswick, James E., Americus, Ga. Car-brake shoe and dresser | 528,198 | Oct. 30 | 2571 | 622 | 69 | 533 |
| Worthington, Albert I., assignor to Worthington Car Coupler Company, Chicago, Ill. Car-coupling | 531,402 | Dec. 25 | 2504 | 596 | 69 | 1719 |
| Worthington Car Coupler Company. (See Worthington, Albert I., assignor.) | | | | | | |
| Worthington, Charles C., Irvington, N. Y. Pump | 528,282 | Oct. 30 | 2720 | 656, 657 | 69 | 561 |
| Worthington, Henry R. (See Caldwell, Andrew J., assignor.) | | | | | | |
| Wowra, Carl, Chicago, Ill. Car-seat | 527,095 | Oct. 9 | 678 | 167, 168 | 69 | 142 |
| Wright, Arthur O., Birmingham, England. Metallic lathing | 527,577 | Oct. 16 | 1484 | 360 | 69 | 304 |
| Wright, Arthur O., Birmingham, England. Machine for making metal laths | 527,578 | Oct. 16 | 1484 | 361 | 69 | 304 |
| Wright, Charles A., Philadelphia, Pa. Lock for doors of moving vehicles | 528,581 | Nov. 6 | 98 | 25 | 69 | 664 |
| Wright, Charles A., Philadelphia, Pa. Vehicle-door | 529,226 | Nov. 13 | 1260 | 304 | 69 | 894 |
| Wright, Charles L. (See Kelsey, Frank N., assignor.) | | | | | | |
| Wright, Elisha P. S. (See Ralph and Wright.) | | | | | | |
| Wright, Frank W., Wichita, Kans. Can-opener | 528,582 | Nov. 6 | 99 | 25 | 69 | 664 |
| Wright, George, Winnipeg, Canada. Manhole for sewers | 530,816 | Dec. 11 | 1296 | 313 | 69 | 1467 |
| Wright, George A., and M. L. Jacoby; said Jacoby assignor of one-eighth to J. A. Wright, Bellevue, Ohio. Horse-blanket pin | 527,740 | Oct. 16 | 1746 | 421 | 69 | 352 |
| Wright, George F., Worcester, Mass. Wire-netting machine | 529,093 | Nov. 13 | 1031 | 248, 249 | 69 | 853 |
| Wright, Isaac D., assignor to C. C. and W. H. Van Wagner, I. D. Wright, and R. H. Moses, Sedalia, Mo. Shoe-fastener | 526,956 | Oct. 2 | 470 | 116 | 69 | 80 |
| Wright, Jacob P. (See Beecher and Wright.) | | | | | | |
| Wright, James N., Quincy, Ill. Dumping-cage | 529,227 | Nov. 13 | 1263 | 304 | 69 | 894 |
| Wright, James O., Lafayette, Ind., assignor of one-half to Marion Steam Shovel Company, Marion, Ohio. Dumping-incline | 528,753 | Nov. 6 | 404 | 97, 98 | 69 | 720 |
| Wright, John A. (See Wright and Jacoby, assignors.) | | | | | | |
| Wright, John D., *et al.* (See Parker, Thomas, assignor.) | | | | | | |
| Wright, Joseph, Cocks, Mich. Link-and-pin car-coupling | 528,896 | Nov. 6 | 677 | 163 | 69 | 770 |
| Wright, Sylvanus D., New York, N. Y. Car-fender | 528,057 | Oct. 23 | 2321 | 560 | 69 | 473 |
| Wright, Thomas, Jersey City, N. J. Dumping device for wagons | 529,989 | Nov. 27 | 2611 | 627 | 69 | 1174 |
| Wright, Thomas C., Chicago, Ill. Car-starter | 530,150 | Dec. 4 | 123 | 32 | 69 | 1235 |
| Wright, Wilbur S., and J. E. Venus, New Orleans, La. Automatic switch for electric railways | 526,985 | Oct. 2 | 515 | 126 | 69 | 97 |
| Wulff, Ludwig Schwerin, assignor, by mesne assignments, to J. Bock, Breslau, Germany. Crystallization of saccharine or other solutions | 528,497 | Oct. 30 | 3089 | 749 | 69 | 627 |
| Wunder, John, Dubuque, Iowa. Combined music holder and stand | 527,096 | Oct. 9 | 682 | 168 | 69 | 143 |
| Wurmb, Theodore H. (See Hornig, Julius L., assignor.) | | | | | | |
| Wyatt, Edward W. (See Death, Edward, assignor.) | | | | | | |
| Wyckoff, James W., and J. M. Wetton, Jacobsville, Mich. Metal for blades, pipes, &c. | 529,990 | Nov. 27 | 2614 | 627 | 69 | 1174 |
| Wyckoff, Joseph E., Rand, Colo. Horse hay-rake | 526,886 | Oct. 2 | 359 | 90 | 69 | 67 |
| Wyckoff, Seamans & Benedict. (See Diss, Louis P., assignor.) | | | | | | |
| Wyler, Lew., Milwaukee, Wis. Game apparatus | 529,228 | Nov. 13 | 1264 | 304 | 69 | 895 |
| Wyman, Horace, Worcester, and G. Poole, Lowell, assignors to Massachusetts Mohair Plush Company, Boston, and Crompton Loom Works, Worcester, Mass. Pile-fabric loom | 529,150 | Nov. 13 | 1124 | 272, 273 | 69 | 871 |
| Wyman, Horace, Worcester, and G. Poole, Lowell, assignors to Massachusetts Mohair Plush Company, Boston, and Crompton Loom Works, Worcester, Mass. Pile-fabric loom | 529,151 | Nov. 13 | 1126 | 273 | 69 | 871 |
| Yale & Towne Manufacturing Company. (See Towne, Henry R., assignor.) | | | | | | |
| Yant, Newton D., Allegheny, Pa. Dolly-bar for riveting | 528,118 | Oct. 23 | 2433 | 585 | 69 | 493 |
| Yarnell, Charles S., assignor to Moore Carving Machine Company, Minneapolis, Minn. Rubbing or polishing machine | 528,199 | Oct. 30 | 2573 | 622 | 69 | 534 |
| Yarnell, Charles S., assignor to Moore Carving Machine Company, Minneapolis, Minn. Carving-machine | 530,570 | Dec. 11 | 891 | 219, 220 | 69 | 1394 |
| Yates, Samuel B., assignor of one-half to J. W. W. Scarlett, New Britain, Conn. Strike-plate for bolts | 530,316 | Dec. 4 | 422 | 106 | 69 | 1292 |
| Yeager, John, Conemaugh, Pa. Sanding device for railways | 527,825 | Oct. 23 | 1887 | 452, 453 | 69 | 395 |
| Yeoman, J. M., *et al.* (See Harvey, Isaac, assignor.) | | | | | | |
| Yerkes, William H. (See Elliott, Lucius W., assignor.) | | | | | | |
| Yoch, Benhard, Belleville, Ill. Brake for mining-engines | 529,991 | Nov. 27 | 2615 | 627 | 69 | 1174 |
| York, James E. (See York, Levi D., assignor.) | | | | | | |
| York, Levi D., Portsmouth, Ohio, assignor of one-half to J. E. York, Duluth, Minn. Rolling apparatus | 528,200 | Oct. 30 | 2574 | 623 | 69 | 534 |
| York, Phineas H., assignor to Tonk Manufacturing Company, Chicago, Ill. Wooden base for piano-stools | 528,706 | Nov. 6 | 325 | 79 | 69 | 705 |
| Yost, Charles W., Steelton, Pa. Bolting-machine | 529,009 | Nov. 13 | 892 | 210, 211 | 69 | 828 |
| Younce, Daniel B., assignor of one-half to C. L. Flory, Centre, Ohio. Wire-fence stay | 530,981 | Dec. 18 | 1577 | 374 | 69 | 1532 |
| Young, Charles T. (See Morrow, George W., assignor.) | | | | | | |
| Young, Elmer C., Washington, Iowa. Grain-weigher | 529,229 | Nov. 13 | 1265 | 304 | 69 | 895 |
| Young, Ernest. (See Ferguson, Lyman, assignor.) | | | | | | |
| Young, Ernest W., Michigan City, Ind. Pneumatic tire | 527,027 | Oct. 9 | 684 | 168, 169 | 69 | 143 |
| Young, Frank M. H., *et al.* (See Paul, James and J. T., assignors.) | | | | | | |
| Young, James D., Duluth, Minn. Steam or hot-water radiator | 530,317 | Dec. 4 | 423 | 106 | 69 | 1292 |
| Young, Lewis R. (See Millar, George G. J., assignor.) | | | | | | |
| Young, McClintock, Frederick, Md. Corn-husking machine | 529,004 | Nov. 13 | 1034 | 249 | 69 | 854 |
| Young, McClintock, Frederick, Md. Brush-machine | 530,151 | Dec. 4 | 125 | 32, 33 | 69 | 1238 |
| Young, McClintock, Frederick, Md. Brush-machine | 530,152 | Dec. 4 | 126 | 33, 34 | 69 | 1238 |
| Young, William H., Jr., Philadelphia, Pa. Ratchet mechanism | 528,353 | Oct. 30 | 2831 | 685 | 69 | 580 |
| Youngson, John. (See Mills and Youngson.) | | | | | | |
| Zeigler, Charles E., *et al.* (See Wilson, John H., assignor.) | | | | | | |
| Zeigler, Milton I., *et al.* (See Wilson, John H., assignor.) | | | | | | |
| Zeller, Arthur L., St. Louis, Mo. Skirt-elevator | 528,455 | Oct. 30 | 3015 | 728 | 69 | 613 |
| Zempliner, Alfred, Vienna, Austria-Hungary. Counterweight for suspended lamps | 529,054 | Nov. 13 | 963 | 228 | 69 | 841 |
| Zempliner, Alfred, Vienna, Austria-Hungary. Canopy for counterweight drop-lights | 529,055 | Nov. 13 | 965 | 228 | 69 | 841 |
| Zenker, Charles F. (See Borgfeldt, Nicholas H., assignor.) | | | | | | |
| Zickermann, Fritz, assignor to Siemens & Halske, Berlin, Germany. Electrical transformer | 529,152 | Nov. 13 | 1127 | 273 | 69 | 871 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
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| | | | Spec. | Drgs. | Vol. | Page. |
| Ziegler, Henry Z., and A. I. Wood, Philadelphia, Pa. Dust-brush | 528,754 | Nov. 6 | 406 | 98 | 69 | 720 |
| Ziegler, John G., assignor to Relay Manufacturing Company, Reading, Pa. Bicycle | 527,135 | Oct. 9 | 751 | 184 | 69 | 154 |
| Ziellenbach, Johann W., Crefeld, Germany. Animal-securing device | 528,840 | Nov. 6 | 588 | 139 | 69 | 753 |
| Zimmerman, Israel, St. Louis, Mo. Metal folding chicken-coop | 529,230 | Nov. 13 | 1267 | 305 | 69 | 895 |
| Zimmerman, John, assignor to National Key-Opening Can Company, Chicago, Ill. Key-opening sheet-metal vessel and making same | 529,542 | Nov. 20 | 1850 | 440 | 69 | 1022 |
| Zimmern & Co., Henry. (See Landgraf, Carl H., assignor.) | | | | | | |
| Zipp, John. (See Scanlan and Zipp.) | | | | | | |
| Zipp, John. (See Scanlan, Keifel, and Zipp.) | | | | | | |
| Zipp, John, New Albany, Ind. Fire basket or grate | 530,571 | Dec. 11 | 894 | 220 | 69 | 1394 |
| Zitko, Charles, St. Louis, Mo. Radiator | 528,058 | Oct. 23 | 2323 | 560 | 69 | 474 |
| Zorn, Frederick, New York, N. Y. Safety-guard for cars | 529,095 | Nov. 13 | 1035 | 249<br>250 | 69 | 854 |
| Zorn, John, and F. G. Luchesi, New York, N. Y. Packing compound for thermocauters | 529,056 | Nov. 13 | 966 | ..... | 69 | 842 |
| Zucker, Samuel, New York, N. Y. Tooth-brush | 530,153 | Dec. 4 | 129 | 34 | 69 | 1239 |

# ALPHABETICAL LIST OF PATENTEES OF DESIGNS.

| Name, residence, and design. | No. | Date. | Official Gazette. | |
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| | | | Volume. | Page. |
| A. M. Collins Manufacturing Company. (See Odgers, John P., assignor.) | | | | |
| Adams, Frank S., assignor to Brown, Durrell & Co., Boston, Mass. Spool-rack | 23,869 | Dec. 11 | 69 | 1498 |
| American Lithographic Company. (See George, Samuel D., assignor.) | | | | |
| Andrews, George J. (See Andrews, John, assignor.) | | | | |
| Andrews, John, assignor to G. J. Andrews, Marlborough, Mass. Sash-lift | 23,728 | Oct. 23 | 69 | 91 |
| Ash, Benjamin T., Binghamton, N. Y. Spoon | 23,689 | Oct. 16 | 69 | 360 |
| Atwood, Lewis J., assignor to Plume & Atwood Manufacturing Company, Waterbury, Conn. Globe or shade holder | 23,893 | Dec. 25 | 69 | 1763 |
| Aubé, Reuben W., Brooklyn, N. Y. Molding for picture-frames, &c | 23,903 | Dec. 25 | 69 | 1765 |
| Aubé & Son, R. W. (See Lippi, Lawrence, assignor.) | | | | |
| Bach, William H., St. Paul, Minn. Badge | 23,830 | Dec. 4 | 69 | 1351 |
| Bailey, Charles A., assignor to J. & E. Stevens Company, Cromwell, Conn. Range | 23,707 | Oct. 16 | 69 | 363 |
| Barnes, William H., assignor to Sill Stove Works, Rochester, N. Y. Stove or range | 23,687 | Oct. 9 | 69 | 237 |
| Barthman, Frederic W., Jr., Brooklyn, N. Y. Box | 23,897 | Dec. 25 | 69 | 1764 |
| Bedichimer, Isaac, Philadelphia, Pa. Badge | 23,780 | Nov. 13 | 69 | 936 |
| Bennett, Fred A., Sheboygan, Wis. Chair-seat frame | 23,905 | Dec. 25 | 69 | 1765 |
| Bensinger, Moses, assignor to Brunswick-Balke-Collender Company, Chicago, Ill. Covering-plate for billiard-table cushion-rail bolts | 23,670 | Oct. 2 | 69 | 115 |
| Bergstrom Brothers & Co. (See Bergstrom, George O., assignor.) | | | | |
| Bergstrom, George O., assignor to Bergstrom Brothers & Co., Neenah, Wis. Heating-stove | 23,911 | Dec. 25 | 69 | 1766 |
| Bier, Nicholas, Salem, Oreg. Last | 23,733 | Oct. 23 | 69 | 502 |
| Bigelow Carpet Company. (See Chambellan, Pierre C., assignor.) | | | | |
| Birge & Sons, M. H. (See Clémencet, Louis, assignor.) | | | | |
| Birge & Sons, M. H. (See Hatch, Mary G., assignor.) | | | | |
| Birge & Sons, M. H. (See Ketterer, Gustav, assignor.) | | | | |
| Birge & Sons, M. H. (See Pyle, Katharine, assignor.) | | | | |
| Birge & Sons, M. H. (See Truitt, Ivy M. L., assignor.) | | | | |
| Boal, Stanhope, Piqua, Ohio. Stove | 23,780 | Nov. 6 | 69 | 783 |
| Bretz, Jacob S., New York, N. Y. Wheel-hub | 23,742 | Oct. 23 | 69 | 504 |
| Brill, George M., Philadelphia, Pa. Seat end for car-seats | 23,803 | Nov. 13 | 69 | 937 |
| Brinckmann, Robert, Michigan City, Ind. Display-case | 23,685 | Oct. 9 | 69 | 237 |
| Brown, Durrell & Co. (See Adams, Frank S., assignor.) | | | | |
| Brunswick-Balke-Collender Company. (See Bensinger, Moses, assignor.) | | | | |
| Burgess, Charles M., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Shelf-bracket | 23,731 | Oct. 23 | 69 | 502 |
| Byram, Frank A., Philadelphia, Pa. Trimming | 23,885 | Dec. 25 | 69 | 1762 |
| Byram, Frank A., Philadelphia, Pa. Trimming | 23,886 | Dec. 25 | 69 | 1762 |
| Callard, Frederick, Brooklyn, N. Y. Cake | 23,875 | Dec. 11 | 69 | 1499 |
| Challiner, Charles, Manchester, England. Metallic rim for wheels | 23,704 | Oct. 16 | 69 | 362 |
| Chambellan, Pierre C., West Hoboken, N. J., assignor to Bigelow Carpet Company, New York, N. Y. Carpet | 23,714 | Oct. 23 | 69 | 499 |
| Chambellan, Pierre C., West Hoboken, N. J., assignor to Bigelow Carpet Company, New York, N. Y. Carpet | 23,715 | Oct. 23 | 69 | 499 |
| Chouteau, Pierre, St. Louis, Mo. Pistol-grip engine | 23,679 | Oct. 2 | 69 | 116 |
| Clémencet, Louis, West Hoboken, N. J., assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper | 23,662 | Oct. 2 | 69 | 114 |
| Clémencet, Louis, West Hoboken, N. J., assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper | 23,663 | Oct. 2 | 69 | 114 |
| Clémencet, Louis, West Hoboken, N. J., assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper | 23,664 | Oct. 2 | 69 | 114 |
| Clémencet, Louis, West Hoboken, N. J., assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper | 23,665 | Oct. 2 | 69 | 114 |
| Clémencet, Louis, West Hoboken, N. J., assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper | 23,666 | Oct. 2 | 69 | 114 |
| Codman, William C., assignor to Gorham Manufacturing Company, Providence, R. I. Spoon, &c. | 23,717 | Oct. 23 | 69 | 500 |
| Collins, Frank W., Cortland, N. Y. Stove | 23,708 | Oct. 16 | 69 | 363 |
| Conkling, Addison, Plainfield, N. J. Umbrella or cane head | 23,790 | Nov. 13 | 69 | 936 |
| Cook, Harry, St. Louis, Mo. Clothes-line reel | 23,876 | Dec. 11 | 69 | 1499 |
| Cornwall, Frederick R., assignor to F. R. Rice Mercantile Cigar Company, St. Louis, Mo. Glass jar | 23,871 | Dec. 11 | 69 | 1499 |
| Covert, James C., West Troy, N. Y. Harness-hook | 23,802 | Nov. 13 | 69 | 937 |
| Crowell, Gilbert L., Jr., Arlington, N. J. Handle for spoons, &c | 23,718 | Oct. 23 | 69 | 500 |
| Currie, Robert. (See Mockford, Arthur, assignor.) | | | | |
| Davis, Othello P. (See Ingalls, Charles L., assignor.) | | | | |
| Dawson, Henry G. and W. R., Chicago, Ill. Fireplace | 23,908 | Dec. 25 | 69 | 1765 |
| Dawson, Henry G. and W. R., Chicago, Ill. Fireplace | 23,909 | Dec. 25 | 69 | 1766 |
| Dawson, Henry G. and W. R., Chicago, Ill. Fireplace | 23,910 | Dec. 25 | 69 | 1766 |
| Dawson, William R. (See Dawson, Henry G. and W. R.) | | | | |
| Dexter, James H., Boston, Mo. Display-board | 23,814 | Nov. 13 | 69 | 939 |
| Dorflinger & Sons, C. (See O'Connor, James J., assignor.) | | | | |
| Dorrance, Charles F., Portland, Oreg. Badge | 23,788 | Nov. 13 | 69 | 936 |
| Driggs, George A., Waterbury, Conn. Display-stand | 23,735 | Oct. 23 | 69 | 502 |
| Du Brul, Napoleon, Cincinnati, Ohio. Hand-lever | 23,680 | Oct. 2 | 69 | 116 |
| Du Brul, Napoleon, Cincinnati, Ohio. Frame for cigar-bunching machines | 23,702 | Oct. 16 | 69 | 362 |
| Du Brul, Napoleon, Cincinnati, Ohio. Frame for cigar-bunching machines | 23,703 | Oct. 16 | 69 | 362 |
| Ecaubert, Frederic, Brooklyn, N. Y. Metal ring | 23,684 | Oct. 9 | 69 | 236 |
| Edgars, Frederick J., Brooklyn, N. Y. Box | 23,848 | Dec. 4 | 69 | 1354 |
| Edgars, Frederick J., Brooklyn, N. Y. Box | 23,849 | Dec. 4 | 69 | 1354 |
| Edgars, Frederick J., Brooklyn, N. Y. Box | 23,850 | Dec. 4 | 69 | 1354 |
| Edgars, Frederick J., Brooklyn, N. Y. Box | 23,851 | Dec. 4 | 69 | 1354 |
| Edgars, Frederick J., Brooklyn, N. Y. Wooden box | 23,896 | Dec. 25 | 69 | 1764 |

*Alphabetical list of patentees of designs, October to December, inclusive*—Continued.

| Name, residence, and design. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Edward Miller & Company. (See Hornberger, Louis, assignor.) | | | | |
| Edwards, Edgar A., Cincinnati, Ohio. Headlight-case | 23,754 | Oct. 30 | 69 | 635 |
| Ellis, Franklin, Troy, assignor to Pettibone Manufacturing Company, Cincinnati, Ohio. Badge | 23,816 | Nov. 27 | 69 | 1204 |
| Evans, George, Detroit, Mich. Prism-reflector for area-gratings | 23,804 | Nov. 13 | 69 | 938 |
| F. R. Rice Mercantile Cigar Company. (See Cornwall, Frederick R., assignor.) | | | | |
| Fenn, Amos A., Leavenworth, Kans. Column | 23,678 | Oct. 2 | 69 | 116 |
| Ferris, Henry L., Harvard, Ill. Tank heating-stove | 23,811 | Nov. 13 | 69 | 939 |
| Field, Henry W., Columbus, Ohio. Sword-hilt | 23,820 | Nov. 27 | 69 | 1204 |
| Fountain, James H., and H. S. Parker, St. Louis, Mo. Ironing-board | 23,738 | Oct. 23 | 69 | 503 |
| Franzheim, Charles W., Wheeling, W. Va. Covered dish | 23,748 | Oct. 30 | 69 | 634 |
| Gardiner, Clement E., Hempstead, N. Y. Bonbon | 23,691 | Oct. 16 | 69 | 360 |
| Gavin, John H., assignor to L. Wolff Manufacturing Company, Chicago, Ill. Bracket | 23,730 | Oct. 23 | 69 | 502 |
| Gavin, John H., assignor to L. Wolff Manufacturing Company, Chicago, Ill. Washbowl and slab | 23,805 | Nov. 13 | 69 | 938 |
| Gavin, John H., assignor to L. Wolff Manufacturing Company, Chicago, Ill. Washbowl and slab | 23,806 | Nov. 13 | 69 | 938 |
| Gavin, John H., assignor to L. Wolff Manufacturing Company, Chicago, Ill. Bracket | 23,873 | Dec. 11 | 69 | 1499 |
| Gavin, John H., assignor to L. Wolff Manufacturing Company, Chicago, Ill. Washbowl and slab | 23,894 | Dec. 24 | 69 | 1763 |
| Gavin, John H., assignor to L. Wolff Manufacturing Company, Chicago, Ill. Washbowl and slab | 23,895 | Dec. 25 | 69 | 1763 |
| Gedney, Charles F., Brooklyn, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,847 | Dec. 4 | 69 | 1353 |
| Gedney, Charles F., Brooklyn, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,878 | Dec. 18 | 69 | 1636 |
| Gedney, Charles F., Brooklyn, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,879 | Dec. 18 | 69 | 1636 |
| George, Samuel D., Brooklyn, assignor to American Lithographic Company, New York, N. Y. Ornamental pattern for cigar-boxes | 23,669 | Oct. 2 | 69 | 115 |
| Gobeille, Joseph L., Cleveland, Ohio, assignor to Syracuse Stove Works, Syracuse, N. Y. Stove | 23,737 | Oct. 23 | 69 | 503 |
| Gobeille, Joseph L., Cleveland, Ohio, assignor to I. A., F. L., and H. R. Sheppard, Philadelphia, Pa. Cook-stove | 23,826 | Nov. 27 | 69 | 1205 |
| Gorham Manufacturing Company. (See Codman, William C., assignor.) | | | | |
| Gould Coupler Company. (See Richards, Willard F., assignor.) | | | | |
| Gray, William, Hartford, Conn. Transmitter-post for telephones | 23,825 | Nov. 27 | 69 | 1205 |
| Greene, George F., Providence, R. I. Scarf-pin | 23,755 | Nov. 6 | 69 | 780 |
| Greene, George F., Providence, R. I. Scarf-pin | 23,756 | Nov. 6 | 69 | 780 |
| Greene, George F., Providence, R. I. Scarf-pin | 23,757 | Nov. 6 | 69 | 780 |
| Greene, George F., Providence, R. I. Scarf-pin | 23,758 | Nov. 6 | 69 | 780 |
| Greene, George F., Providence, R. I. Scarf-pin | 23,759 | Nov. 6 | 69 | 780 |
| Greene, George F., Providence, R. I. Scarf-pin | 23,760 | Nov. 6 | 69 | 780 |
| Greene, George F., Providence, R. I. Scarf-pin | 23,827 | Dec. 4 | 69 | 1351 |
| Greene, George F., Providence, R. I. Scarf-pin | 23,828 | Dec. 4 | 69 | 1351 |
| Greene, George F., Providence, R. I. Scarf-pin | 23,829 | Dec. 4 | 69 | 1351 |
| Gulden, Charles, New York, N. Y. Bottle | 23,892 | Dec. 25 | 69 | 1763 |
| Halliday, Arthur L., New York, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,782 | Nov. 6 | 69 | 783 |
| Halliday, Arthur L., New York, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,889 | Dec. 25 | 69 | 1763 |
| Hart, Hubert C., Unionville, Conn. Knife or fork handle | 23,861 | Dec. 11 | 69 | 1497 |
| Hatch, Mary G., New York, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper | 23,667 | Oct. 2 | 69 | 114 |
| Haviland, Charles E., Limoges, France. Plate or similar article | 23,900 | Dec. 25 | 69 | 1764 |
| Haviland, Theodore, Ambazac, France. Covered dish | 23,773 | Nov. 6 | 69 | 782 |
| Haviland, Theodore, Ambazac, France. Covered dish | 23,774 | Nov. 6 | 69 | 782 |
| Haviland, Theodore, Ambazac, France. Covered dish | 23,775 | Nov. 6 | 69 | 782 |
| Hayden, Hiram W., assignor to Holmes, Booth & Haydens, Waterbury, Conn. Flame-spreader for lamps | 23,809 | Nov. 13 | 69 | 938 |
| Haynes, David F., Baltimore, Md. Ewer or jug | 23,726 | Oct. 23 | 69 | 501 |
| Hensel, George F., Philadelphia, Pa. Handle for shade-pulls | 23,713 | Oct. 23 | 69 | 499 |
| Herhold, Frederick H., Chicago, Ill. Step-ladder chair | 23,739 | Oct. 23 | 69 | 503 |
| Hill, William R., assignor to Premier Egg Cup Company, Syracuse, N. Y. Egg-cup | 23,898 | Dec. 25 | 69 | 1764 |
| Holland, Elias C. (See Muther, Woodward, and Holland.) | | | | |
| Holmes, Booth & Haydens. (See Hayden, Hiram W., assignor.) | | | | |
| Hopson, John, Jr., New London, assignor to Waterbury Clock Company, Waterbury, Conn. Clock-case | 23,696 | Oct. 16 | 69 | 361 |
| Hopson, John, Jr., New London, assignor to Waterbury Clock Company, Waterbury, Conn. Clock-case | 23,697 | Oct. 16 | 69 | 361 |
| Hopson, John, Jr., New London, assignor to Waterbury Clock Company, Waterbury, Conn. Clock-case | 23,698 | Oct. 16 | 69 | 361 |
| Hopson, John, Jr., New London, assignor to Waterbury Clock Company, Waterbury, Conn. Clock-case | 23,723 | Oct. 23 | 69 | 501 |
| Hopson, John, Jr., New London, assignor to Waterbury Clock Company, Waterbury, Conn. Clock-case | 23,724 | Oct. 23 | 69 | 501 |
| Hornberger, Louis, assignor to Edward Miller & Company, Meriden, Conn. Lamp-burner | 23,722 | Oct. 23 | 69 | 501 |
| Horton, Louis R., assignor to J. B. & S. M. Knowles Company, Providence, R. I. Handle for spoons, &c | 23,719 | Oct. 23 | 69 | 500 |
| Hoskins, Frederick, Birmingham, England. Bedstead | 23,710 | Oct. 16 | 69 | 363 |
| Howard-Sterling Company. (See Wientge, Charles C., assignor.) | | | | |
| Howe, Edwin J., assignor of one-half to G. R. Howe, Newark, N. J. Communion-service tray | 23,901 | Dec. 25 | 69 | 1764 |
| Howe, George R. (See Howe, Edwin J., assignor.) | | | | |
| Hullhorst, William G., assignor to Ransom & Randolph Company, Toledo, Ohio. Dental cabinet | 23,852 | Dec. 4 | 69 | 1354 |
| Huss, William C., Cincinnati, Ohio. Sales-counter | 23,706 | Oct. 16 | 69 | 362 |
| Ingalls, Charles L., assignor of one-half to O. P. Davis, Lowell, Mass. Drinking-cup | 23,682 | Oct. 9 | 69 | 236 |
| J. B. & S. M. Knowles Company. (See Horton, Louis R., assignor.) | | | | |
| J. & E. Stevens Company. (See Bailey, Charles A., assignor.) | | | | |
| Johnson, Abbott L., Muncie, Ind. Railway bulletin-board | 23,918 | Dec. 25 | 69 | 1767 |
| Kahn & Bros., F. & L. (See Kahn, Lazard, assignor.) | | | | |
| Kahn, Lazard, assignor to F. & L. Kahn & Bros., Hamilton, Ohio. Gas-stove | 23,854 | Dec. 4 | 69 | 1355 |
| Kampfe, Frederick, R., and O., Brooklyn, N. Y. Razor-handle | 23,699 | Oct. 16 | 69 | 361 |
| Kampfe, Otto. (See Kampfe, Frederick, R., and O.) | | | | |
| Kampfe, Richard. (See Kampfe, Frederick, R., and O.) | | | | |
| Keep, James M., assignor to Tower Manufacturing and Novelty Company, New York, N. Y. Pen-rack stand | 23,677 | Oct. 2 | 69 | 116 |
| Keller, John F., St. Louis, Mo. Badge | 23,884 | Dec. 25 | 69 | 1762 |
| Kellogg, William P., Troy, N. Y. Curry-comb | 23,872 | Dec. 11 | 69 | 1499 |
| Ketterer, Gustav, Philadelphia, Pa., assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper | 23,694 | Oct. 16 | 69 | 360 |
| Kinne, Alfred A., Minneapolis, Minn. Oil-stove | 23,709 | Oct. 16 | 69 | 363 |
| Kjellstrom, Mary S., New York, N. Y. Fabric-renovator | 23,711 | Oct. 23 | 69 | 499 |
| Kronse, Andrew. (See Mosman, Charles F., assignor.) | | | | |
| Kronse, Charles C., Williamsport, Pa. Buckle | 23,721 | Oct. 23 | 69 | 500 |
| L. Wolff Manufacturing Company. (See Gavin, John H., assignor.) | | | | |
| Lane, George. (See Lane, John G. and G.) | | | | |
| Lane, John G. and G., Poughkeepsie, N. Y. Nut | 23,917 | Dec. 25 | 69 | 1767 |



*Alphabetical list of patentees of designs, October to December, inclusive*—Continued.

| Name, residence, and design. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Lawson, Henry S., West Bergen, N. J., assignor to C. Whitman & Co., New York, N. Y. Ornamental fabric | 23,887 | Dec. 25 | 69 | 1762 |
| Lichtenberger, William, Savanna, Ill. Pipe-head for chain-pumps | 23,740 | Oct. 23 | 69 | 503 |
| Liebmann, Rudolph, New York, N. Y. Picture-frame | 23,853 | Dec. 4 | 69 | 1354 |
| Lindenberg, Charles H., Columbus, Ohio. Sword-scabbard | 23,818 | Nov. 27 | 69 | 1204 |
| Lindenberg, Charles H., Columbus, Ohio. Sword-scabbard | 23,819 | Nov. 27 | 69 | 1204 |
| Lipper & Co., M. W. (See Lücke, William, assignor.) | | | | |
| Lippl, Lawrence, assignor to R. W. Aubé & Son, New York, N. Y. Molding for picture-frames, &c. | 23,902 | Dec. 25 | 69 | 1764 |
| Lippl, Lawrence, assignor to R. W. Aubé & Son, New York, N. Y. Molding for picture-frames, &c. | 23,904 | Dec. 25 | 69 | 1765 |
| Lowell Manufacturing Company. (See Saner, Emil G., assignor.) | | | | |
| Lloyd, Walter J., Peabody, Mass. Brush-handle | 23,749 | Oct. 30 | 69 | 634 |
| Lücke, William, assignor to M. W. Lipper & Co., Philadelphia, Pa. Suspender-webbing | 23,712 | Oct. 23 | 69 | 499 |
| Marks, Louis A., New York, N. Y. Woven fabric | 23,791 | Nov. 13 | 69 | 936 |
| Marks, Louis A., New York, N. Y. Woven fabric | 23,792 | Nov. 13 | 69 | 936 |
| Marks, Louis A., New York, N. Y. Woven fabric | 23,793 | Nov. 13 | 69 | 936 |
| Marks, Louis A., New York, N. Y. Woven fabric | 23,794 | Nov. 13 | 69 | 936 |
| Marks, Louis A., New York, N. Y. Woven fabric | 23,795 | Nov. 13 | 69 | 936 |
| Marks, Louis A., New York, N. Y. Woven fabric | 23,796 | Nov. 13 | 69 | 936 |
| Matthews & Willard Manufacturing Company. (See Miller, John C., assignor.) | 23,797 | Nov. 13 | 69 | 937 |
| Matthews & Willard Manufacturing Company. (See Miller and Schmitz, assignors.) | | | | |
| McArthur, Warren, Chicago, Ill. Heating-stove | 23,877 | Dec. 11 | 69 | 1499 |
| Menham, A. A. (See Wood, Frederick H., assignor.) | | | | |
| Meriden Bronze Company. (See Yokel, Franz, assignor.) | | | | |
| Miller, John C., assignor to Matthews & Willard Manufacturing Company, Waterbury, Conn. Base for lamps | 23,672 | Oct. 2 | 69 | 115 |
| Miller, John C., assignor to Matthews & Willard Manufacturing Company, Waterbury, Conn. Base for lamps | 23,673 | Oct. 2 | 69 | 115 |
| Miller, John C., assignor to Matthews & Willard Manufacturing Company, Waterbury, Conn. Base for lamps | 23,674 | Oct. 2 | 69 | 115 |
| Miller, John C., and E. Schmitz, assignors to Matthews & Willard Manufacturing Company, Waterbury, Conn. Lamp-mount holder | 23,671 | Oct. 2 | 69 | 115 |
| Mix, Frank W., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Padlock-case | 23,686 | Oct. 9 | 69 | 237 |
| Mockford, Arthur, Westchester, assignor to R. Currie, New York, N. Y. Hoof-pad | 23,701 | Oct. 16 | 69 | 361 |
| Moffitt-West Drug Company. (See West, Courtney H., assignor.) | | | | |
| Morgan, John B., Philadelphia, Pa. Woven fabric | 23,835 | Dec. 4 | 69 | 1352 |
| Morgan, John B., Philadelphia, Pa. Woven fabric | 23,836 | Dec. 4 | 69 | 1352 |
| Morgan, John B., Philadelphia, Pa. Woven fabric | 23,837 | Dec. 4 | 69 | 1352 |
| Morgan, John B., Philadelphia, Pa. Woven fabric | 23,838 | Dec. 4 | 69 | 1352 |
| Morgan, John B., Philadelphia, Pa. Woven fabric | 23,839 | Dec. 4 | 69 | 1352 |
| Morison, William, Montclair, N. J. Battery-case | 23,840 | Dec. 4 | 69 | 1352 |
| Morrow, Andrew J., Philadelphia, Pa. Color-plate | 23,916 | Dec. 25 | 69 | 1767 |
| Mosman, Charles F., assignor to A. Kronse, Bridgeport, Conn. Picture-frame | 23,913 | Dec. 25 | 69 | 1766 |
| Müller, Josephine, New York, N. Y. Trimming | 23,751 | Oct. 30 | 69 | 634 |
| Muther, Lorenz, Oak Park, R. G. Woodward, Waukegan, and E. C. Holland, Austin, assignors to Union Special Sewing Machine Company, Chicago, Ill. Sewing-machine frame | 23,746 | Oct. 30 | 69 | 633 |
| Neelin, William J., Port Arthur, Ontario, Canada. Fence-post | 23,813 | Nov. 13 | 69 | 939 |
| Neil, John B., New York, N. Y., assignor to M. J. Whittall, Worcester, Mass. Rug | 23,741 | Oct. 23 | 69 | 503 |
| Neil, John B., New York, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,781 | Nov. 6 | 69 | 783 |
| Neil, John B., New York, N. Y., assignor to M. J. Whittall, Worcester, Mass. Rug | 23,783 | Nov. 6 | 69 | 783 |
| Nepper, William F., Cincinnati, Ohio. Paving-block | 23,867 | Dec. 11 | 69 | 1498 |
| Newell, Joseph K. (See Parker, Newell and Turnbull.) | 23,919 | Dec. 25 | 69 | 1767 |
| Nolley, David D., Wilson, assignor to B. H. Tyson, Raleigh, N. C. Seal-lock hasp | 23,801 | Nov. 13 | 69 | 937 |
| O'Byrne, William F., Orange, N. J. Mortise-lock case | 23,779 | Nov. 6 | 69 | 783 |
| O'Connor, James J., assignor to C. Dorflinger & Sons, White Mills, Pa. Glass vessel | 23,807 | Nov. 13 | 69 | 938 |
| Odgers, John P., assignor to A. M. Collins Manufacturing Company, Philadelphia, Pa. Photographic-card mount | 23,692 | Oct. 16 | 69 | 360 |
| Olsson, Per O., Marshall, Minn. Rope-clamp frame | 23,870 | Dec. 11 | 69 | 1498 |
| Osborne, Charles, assignor to Whiting Manufacturing Company, New York, N. Y. Handle for forks, &c. | 23,720 | Oct. 23 | 69 | 500 |
| Pairpoint Manufacturing Company. (See Singleton, Thomas, Jr., assignor.) | | | | |
| Pairpoint Manufacturing Company. (See Thompson, Frederic L., assignor.) | | | | |
| Parker, Henry S. (See Fountain and Parker.) | | | | |
| Parker, Simon B., J. K. Newell, and J. A. Turnbull, Springfield, Mass. Grave-marker | 23,744 | Oct. 23 | 69 | 504 |
| Patterson, William J., Ellwood City, Pa. Lamp-chimney | 23,675 | Oct. 2 | 69 | 116 |
| Payne, Mary C., South Haven, Mich. Dust-pan | 23,676 | Oct. 2 | 69 | 116 |
| Peck, Lee, Lansing, Mich. Stove | 23,855 | Dec. 4 | 69 | 1355 |
| Pegel, Julius G., assignor to W. T. Smith & Son, Philadelphia, Pa. Woven fabric | 23,787 | Nov. 6 | 69 | 784 |
| Pernetz, Leopold, New York, N. Y. Pattern or tool for garment-designers | 23,732 | Oct. 23 | 69 | 502 |
| Perry, William H., Concord, N. H. Monument | 23,745 | Oct. 23 | 69 | 504 |
| Pettibone Manufacturing Company. (See Ellis, Franklin, assignor.) | | | | |
| Phelps, Francis A., Baltimore, Md. Spool-holder box | 23,750 | Oct. 30 | 69 | 634 |
| Piaget, Louis A., Paterson, N. J. Pickle-fork | 23,860 | Dec. 11 | 69 | 1497 |
| Plume & Atwood Manufacturing Company. (See Atwood, Lewis J., assignor.) | | | | |
| Podbury, Thomas B., Hyde Park, Mass. Handkerchief | 23,798 | Nov. 13 | 69 | 937 |
| Porro, Richard S., New York, N. Y. Belt-pocket | 23,683 | Oct. 9 | 69 | 236 |
| Pratt, Robert H., Mamaroneck, N. Y., assignor to Wheeler Corrugating Company, Wheeling, W. Va. Finishing-plate | 23,915 | Dec. 25 | 69 | 1767 |
| Premier Egg Cup Company. (See Hill, William R., assignor.) | | | | |
| Pyle, Katharine, Wilmington, Del., assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper | 23,815 | Nov. 20 | 69 | 1064 |
| Rader, Frances, Prescott, Wis. Lamp-heater | 23,736 | Oct. 23 | 69 | 503 |
| Ransom & Randolph Company. (See Hullhorst, William G., assignor.) | | | | |
| Rhodes, George E., Shreveport, La. Watch-charm, &c. | 23,857 | Dec. 11 | 69 | 1497 |
| Richards, Willard F., Buffalo, assignor to Gould Coupler Company, New York, N. Y. Threshold-plate | 23,705 | Oct. 16 | 69 | 362 |
| Rieman & Dawson. (See Robinson, Henry J., assignor.) | | | | |
| Robinson, Henry J., assignor to Rieman & Dawson, Washington, D. C. Spoon, &c. | 23,747 | Oct. 30 | 69 | 633 |
| Roessle, Marcus C., Washington, D. C. Body for coffee or tea pots | 23,882 | Dec. 18 | 69 | 1636 |
| Rose, Arthur M., Yonkers, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,784 | Nov. 6 | 69 | 784 |
| Rose, Arthur M., Yonkers, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,785 | Nov. 6 | 69 | 784 |
| Rose, Arthur M., Yonkers, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,786 | Nov. 6 | 69 | 784 |
| Rose, Arthur M., Yonkers, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,843 | Dec. 4 | 69 | 1353 |

*Alphabetical list of patentees of designs, October to December, inclusive*—Continued.

| Name, residence, and design. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Rose, Arthur M., Yonkers, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,844 | Dec. 4 | 69 | 1352 |
| Rose, Arthur M., Yonkers, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,845 | Dec. 4 | 69 | 1353 |
| Rose, Arthur M., Yonkers, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,846 | Dec. 4 | 69 | 1353 |
| Rose, Arthur M., Yonkers, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,863 | Dec. 11 | 69 | 1497 |
| Rose, Arthur M., Yonkers, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,864 | Dec. 11 | 69 | 1498 |
| Rose, Arthur M., Yonkers, N. Y., assignor to M. J. Whittall, Worcester, Mass. Rug | 23,865 | Dec. 11 | 69 | 1498 |
| Rose, Arthur M., Yonkers, N. Y., assignor to M. J. Whittall, Worcester, Mass. Rug | 23,866 | Dec. 11 | 69 | 1498 |
| Rose, Arthur M., Yonkers, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,880 | Dec. 18 | 69 | 1636 |
| Rose, Arthur M., Yonkers, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,881 | Dec. 18 | 69 | 1636 |
| Rose, Arthur M., Yonkers, N. Y., assignor to M. J. Whittall, Worcester, Mass. Carpet | 23,888 | Dec. 25 | 69 | 1762 |
| Rose, Arthur M., Yonkers, N. Y., assignor to Worcester Carpet Company, of Massachusetts. Carpet-body | 23,821 | Nov. 27 | 69 | 1204 |
| Rose, Arthur M., Yonkers, N. Y., assignor to Worcester Carpet Company, of Massachusetts. Carpet-border | 23,822 | Nov. 27 | 69 | 1205 |
| Rose, Arthur M., Yonkers, N. Y., assignor to Worcester Carpet Company, of Massachusetts. Carpet | 23,823 | Nov. 27 | 69 | 1205 |
| Rowe, George E., assignor of one-half to N. B. Stevens, Boston, Mass. Caster | 21,688 | Oct. 16 | 69 | 359 |
| Rnedisale, William J., Detroit, Mich. Fish-scaler | 23,752 | Oct. 30 | 69 | 634 |
| Russell & Erwin Manufacturing Company. (See Burgess, Charles M., assignor.) | | | | |
| Sauer, Emil G., Brooklyn, N. Y., assignor to Lowell Manufacturing Company, Boston, Mass. Carpet | 23,603 | Oct. 16 | 69 | 360 |
| Sauer, Emil G., Brooklyn, N. Y., assignor to Lowell Manufacturing Company, Boston, Mass. Carpet | 23,841 | Dec. 4 | 69 | 1353 |
| Sauer, Emil G., Brooklyn, N. Y., assignor to Lowell Manufacturing Company, Boston, Mass. Carpet | 23,842 | Dec. 4 | 69 | 1353 |
| Schenck, Seward D., Binghamton, N. Y. Spoon | 23,600 | Oct. 16 | 69 | 360 |
| Schmitz, Edward. (See Miller and Schmitz.) | | | | |
| Schumm, Jacob G., La Porte, Ind. Cabinet | 23,907 | Dec. 25 | 69 | 1765 |
| Shaw, Peter, Brooklyn, N. Y. Globe, shade, &c | 23,776 | Nov. 6 | 69 | 782 |
| Sheppard, Franklin L., *et al.* (See Gobeille, Joseph L., assignor.) | | | | |
| Sheppard, Howard R., *et al.* (See Gobeille, Joseph L., assignor.) | | | | |
| Sheppard, Isaac A., *et al.* (See Gobeille, Joseph L., assignor.) | | | | |
| Shiebler, George W., Brooklyn, N. Y. Spoon, &c | 23,833 | Dec. 4 | 69 | 1351 |
| Siegel, Hermann, New York, N. Y. Glass vessel | 23,727 | Oct. 23 | 69 | 501 |
| Sill Stove Works. (See Barnes, William H., assignor.) | | | | |
| Singleton, Thomas, Jr., assignor to Pairpoint Manufacturing Company, New Bedford, Mass. Glass vessel | 23,761 | Nov. 6 | 69 | 781 |
| Smith & Son, William T. (See Pegel, Julius G., assignor.) | | | | |
| Smith, Thomas S., St. Louis, Mo. Disinfectant-receptacle | 23,734 | Oct. 23 | 69 | 502 |
| Somerville, William, St. Louis, Mo. Lantern-globe | 23,824 | Nov. 27 | 69 | 1205 |
| Sommer, John L., Newark, N. J. Button-hook, &c | 23,862 | Dec. 11 | 69 | 1497 |
| Sternau, Sigmund, New York, N. Y. Kettle | 22,762 | Nov. 6 | 69 | 781 |
| Sternau, Sigmund, New York, N. Y. Kettle | 23,763 | Nov. 6 | 69 | 781 |
| Sternau, Sigmund, New York, N. Y. Kettle-stand | 23,764 | Nov. 6 | 69 | 781 |
| Sternau, Sigmund, New York, N. Y. Kettle-stand | 23,765 | Nov. 6 | 69 | 781 |
| Sternau, Sigmund, New York, N. Y. Kettle-stand | 23,766 | Nov. 6 | 69 | 781 |
| Sternau, Sigmund, New York, N. Y. Kettle-stand | 23,767 | Nov. 6 | 69 | 781 |
| Sternau, Sigmund, New York, N. Y. Chafing-dish | 23,768 | Nov. 6 | 69 | 781 |
| Sternau, Sigmund, New York, N. Y. Stand for chafing-dishes | 23,769 | Nov. 6 | 69 | 781 |
| Sternau, Sigmund, New York, N. Y. Stand for chafing-dishes | 23,770 | Nov. 6 | 69 | 781 |
| Sternau, Sigmund, New York, N. Y. Tile-stand | 23,771 | Nov. 6 | 69 | 782 |
| Stevens, Nathaniel B. (See Rowe, George E., assignor.) | | | | |
| Stimson, Charles W., New York, N. Y. Junction-plate | 23,799 | Nov. 13 | 69 | 937 |
| Sutphen, John A., Zanesville, Ohio. Guitar | 23,725 | Oct. 23 | 69 | 501 |
| Swan, Henry C., Oshkosh, Wis. Vehicle-step | 23,753 | Oct. 30 | 69 | 635 |
| Swan, Henry C., Oshkosh, Wis. Vehicle-step | 23,883 | Dec. 18 | 69 | 1636 |
| Symonds, John L., Detroit, Mich. Flower-stand | 23,906 | Dec. 25 | 69 | 1765 |
| Syracuse Stove Works. (See Gobeille, Joseph L., assignor.) | | | | |
| Tatum, Charles A., assignor to Whitall, Tatum & Co., New York, N. Y. Bottle | 23,874 | Dec. 11 | 69 | 1499 |
| Tatum, Charles A., assignor to Whitall, Tatum & Co., New York, N. Y. Standard for tablet-machines | 23,921 | Dec. 25 | 69 | 1767 |
| Thompson, Frederic L., assignor to Pairpoint Manufacturing Company, New Bedford, Mass. Support for pitchers or similar articles | 23,681 | Oct. 9 | 69 | 236 |
| Thompson, Frederic L., assignor to Pairpoint Manufacturing Company, New Bedford, Mass. Metallic pattern-strip | 23,800 | Nov. 13 | 69 | 937 |
| Thornton, Edward B., Providence, R. I. Stick or scarf pin | 23,716 | Oct. 23 | 69 | 500 |
| Torrance, Francis J., Allegheny, Pa. Latrine | 21,856 | Dec. 4 | 69 | 1355 |
| Tower Manufacturing and Novelty Company. (See Keep, James M., assignor.) | | | | |
| Truitt, Ivy M. L., assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper | 23,695 | Oct. 16 | 69 | 361 |
| Turnbull, James A. (See Parker, Newell, and Turnbull.) | | | | |
| Tyson, Benjamin H. (See Nolley, David D., assignor.) | | | | |
| Tyson, George E., Reading, Pa. Door-escutcheon | 23,729 | Oct. 23 | 69 | 501 |
| Union Special Sewing Machine Company. (See Muther, Woodward, and Holland, assignors.) | | | | |
| Walsh, William H., New York, N. Y. Badge | 23,831 | Dec. 4 | 69 | 1351 |
| Walther, Charles F., Buffalo, N. Y. Radiator-loop | 23,914 | Dec. 25 | 69 | 1767 |
| Waterbury Clock Company. (See Hopson, John, Jr., assignor.) | | | | |
| Watts, David H., Philadelphia, Pa. Tile | 23,772 | Nov. 6 | 69 | 782 |
| Weber, Frederick C. (See Wittgenfeld, Rudolph, assignor.) | | | | |
| Weir Stove Company. (See Wilbur, George E., assignor.) | | | | |
| West, Courtney H., assignor to Mollitt-West Drug Company, St. Louis, Mo. Bottle | 23,891 | Dec. 25 | 69 | 1763 |
| Wheeler Corrugating Company. (See Pratt, Robert H., assignor.) | | | | |
| Whitall, Tatum & Co. (See Tatum, Charles A., assignor.) | | | | |
| Whitehead, Benjamin S., Newark, N. J. Badge | 23,817 | Nov. 27 | 69 | 1204 |
| Whitehead, Benjamin S., Newark, N. J. Badge | 23,832 | Dec. 4 | 69 | 1351 |
| Whitehead, Benjamin S., Newark, N. J. Badge | 23,858 | Dec. 11 | 69 | 1497 |
| Whitehead, Benjamin S., Newark, N. J. Badge | 23,859 | Dec. 11 | 69 | 1497 |
| Whiting Manufacturing Company. (See Osborne, Charles, assignor.) | | | | |
| Whitman & Co., Clarence. (See Lawson, Henry S., assignor.) | | | | |
| Whittall, Matthew J. (See Gedney, Charles F., assignor.) | | | | |
| Whittall, Matthew J. (See Halliday, Arthur L., assignor.) | | | | |
| Whittall, Matthew J. (See Neil, John B., assignor.) | | | | |
| Whittall, Matthew J. (See Rose, Arthur M., assignor.) | | | | |
| Wiedemeier, Anton. (See Wiedemeier, Joseph, Jr., and A.) | | | | |
| Wiedemeier, Joseph, Jr., and A., Carroll, Iowa. Button-case | 23,868 | Dec. 11 | 69 | 1498 |



*Alphabetical list of patentees of designs, October to December, inclusive*—Continued.

| Name, residence, and design. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Wientge, Charles C., assignor to Howard Sterling Company, Providence, R. I. Back for brushes or similar articles | 23,668 | Oct. 2 | 69 | 115 |
| Wientge, Charles C., assignor to Howard Sterling Company, Providence, R. I. Pitcher | 23,890 | Dec. 25 | 69 | 1763 |
| Wilbur, George E., assignor to Weir Stove Company, Taunton, Mass. Cooking stove or range | 23,812 | Nov. 13 | 69 | 939 |
| Wilbur, George E., assignor to Weir Stove Company, Taunton, Mass. Stove-plate | 23,912 | Dec. 25 | 69 | 1766 |
| Wilder, William H., Northampton, Mass. Shade for lamps or lamp-stoves | 23,808 | Nov. 13 | 69 | 938 |
| Wilder, William H., Northampton, Mass. Lamp-stove | 23,810 | Nov. 13 | 69 | 938 |
| Wilgus, Daniel C., Los Angeles, Cal. Nozzle for lawn-sprinklers | 23,700 | Oct. 16 | 69 | 361 |
| Williams Bros. & Charbonneau. (See Williams, Henry, assignor.) | | | | |
| Williams, Henry, assignor to Williams Bros. & Charbonneau, Detroit, Mich. Bottle | 23,831 | Dec. 4 | 69 | 1352 |
| Wittgenfeld, Rudolph, assignor of one-half to F. C. Weber, Cincinnati, Ohio. Bottle and glass tray for counters | 23,899 | Dec. 25 | 69 | 1764 |
| Wood, Frederick H., assignor of one-half to A. A. Wenham, Cleveland, Ohio. Horse-boot | 23,920 | Dec. 25 | 69 | 1767 |
| Woods, Clinton E., Chicago, Ill. Frame for dynamos | 23,743 | Oct. 23 | 69 | 504 |
| Woodward, Russel G. (See Muther, Woodward, and Holland.) | | | | |
| Worcester Carpet Company. (See Rose, Arthur M., assignor.) | | | | |
| Yale & Towne Manufacturing Company. (See Mix, Frank W., assignor.) | | | | |
| Yokel, Franz, assignor to Meriden Bronze Company, Meriden, Conn. Base for lamps | 23,777 | Nov. 6 | 69 | 783 |
| Yokel, Franz, assignor to Meriden Bronze Company, Meriden, Conn. Lamp-fount holder | 23,778 | Nov. 6 | 69 | 783 |

# ALPHABETICAL LIST OF REGISTRANTS OF TRADE-MARKS.

| Name, residence, and title. | No | Date. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|
| Abegg & Rusch, New York, N. Y. Ribbons | 25,443 | Nov. 6 | 69 | 785 |
| Abegg & Rusch, New York, N. Y. Ribbons | 25,557 | Dec. 4 | 69 | 1356 |
| Acker & Co., Finley, Philadelphia, Pa. Certain named cereals, flours, and foods | 25,326 | Oct. 9 | 69 | 240 |
| Acme Manufacturing Company, Reading, Pa. Bicycles and bicycle parts | 25,481 | Nov. 6 | 69 | 788 |
| Actien-Gesellschaft für Bürsten-Industrie, Striegau, Germany, and New York, N. Y. Brushes and brooms | 25,753 | Dec. 25 | 69 | 1772 |
| Adams, R. & H., New York, N. Y. Ribbons | 25,558 | Dec. 4 | 69 | 1356 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,588 | Dec. 4 | 69 | 1358 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,589 | Dec. 4 | 69 | 1359 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,600 | Dec. 4 | 69 | 1359 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,601 | Dec. 4 | 69 | 1359 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,602 | Dec. 4 | 69 | 1359 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,603 | Dec. 4 | 69 | 1359 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,604 | Dec. 4 | 69 | 1359 |
| Alaska Packer's Association, San Francisco, Cal. Canned salmon | 25,605 | Dec. 4 | 69 | 1359 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,606 | Dec. 4 | 69 | 1359 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,607 | Dec. 4 | 69 | 1359 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,608 | Dec. 4 | 69 | 1360 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,609 | Dec. 4 | 69 | 1360 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,610 | Dec. 4 | 69 | 1360 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,611 | Dec. 4 | 69 | 1360 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,612 | Dec. 4 | 66 | 1360 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,613 | Dec. 4 | 69 | 1360 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,614 | Dec. 4 | 69 | 1360 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,615 | Dec. 4 | 69 | 1360 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,616 | Dec. 4 | 69 | 1360 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,617 | Dec. 4 | 69 | 1360 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,618 | Dec. 4 | 69 | 1360 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,722 | Dec. 25 | 69 | 1770 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,723 | Dec. 25 | 69 | 1770 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,724 | Dec. 25 | 69 | 1770 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,725 | Dec. 25 | 69 | 1770 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,726 | Dec. 25 | 69 | 1770 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,727 | Dec. 25 | 69 | 1770 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,728 | Dec. 25 | 69 | 1770 |
| Alaska Packers' Association, San Francisco, Cal. Canned salmon | 25,729 | Dec. 25 | 69 | 1770 |
| Alkire Grocery Company, St. Louis, Mo. Coffee in the shape of coffee-beans | 25,369 | Oct. 16 | 69 | 367 |
| Allen-Foise Manufacturing Company, New York, N. Y., and Plainfield, N. J. Dentifrice | 25,681 | Dec. 18 | 69 | 1638 |
| Alsing & Company, Limited, London, England. Matches | 25,359 | Oct. 16 | 69 | 366 |
| Alsing & Company, Limited, London, England. Matches | 25,360 | Oct. 16 | 69 | 366 |
| Alsing & Company, Limited, London, England. Matches | 25,361 | Oct. 16 | 69 | 366 |
| Alsing & Company, Limited, London, England. Matches | 25,362 | Oct. 16 | 69 | 366 |
| Alsing & Company, Limited, London, England. Matches | 25,363 | Oct. 16 | 69 | 366 |
| Antikamnia Chemical Company, St. Louis, Mo. Medicinal tablets | 25,688 | Dec. 18 | 69 | 1639 |
| Appleby, Walter F., Washington, D. C. Household cement | 25,736 | Dec. 25 | 69 | 1771 |
| Arethusa Spring Water Co., Seymour, Conn. Spring-water | 25,390 | Oct. 23 | 69 | 505 |
| Arrington, William T., Memphis, Tenn. Dentifrices | 25,459 | Nov. 6 | 69 | 786 |
| Babcock & Wilcox Company, New York and Buffalo, N. Y., Boston, Mass., Philadelphia and Pittsburg, Pa., Chicago, Ill., Cincinnati and Cleveland, Ohio, St. Louis, Mo., Minneapolis, Minn., San Francisco, Cal., New Orleans, La., Montreal and Descronto, Canada, Havana Cuba, London, England, and Glasgow, Scotland. Steam-boilers | 25,550 | Nov. 20 | 69 | 1066 |
| Bailey Chemical Co., New York, N. Y. Nerve tonic, tissue-builder, and dyspepsia specific | 25,453 | Nov. 6 | 69 | 786 |
| Baker & Co., Charles F., Boston, Mass. Nails | 25,477 | Nov. 6 | 69 | 788 |
| Baldwin, J. & J., Halifax, England. Yarns | 25,625 | Dec. 11 | 69 | 1500 |
| Baldwin, J. & J., Halifax, England. Yarns | 25,668 | Dec. 18 | 69 | 1637 |
| Baldwin, J. & J., Halifax, England. Yarns | 25,669 | Dec. 18 | 69 | 1637 |
| Baldwin, J. & J., Halifax, England. Yarns | 25,670 | Dec. 18 | 69 | 1637 |
| Baldwin, J. & J., Halifax, England. Yarns | 25,671 | Dec. 18 | 69 | 1637 |
| Baldwin, J. & J., Halifax, England. Yarns | 25,672 | Dec. 18 | 69 | 1637 |
| Baldwin, J. & J., Halifax, England. Yarns | 25,673 | Dec. 18 | 69 | 1638 |
| Baldwin, J. & J., Halifax, England. Yarns | 25,674 | Dec. 18 | 69 | 1638 |
| Baldwin, J. & J., Halifax, England. Yarns | 25,675 | Dec. 18 | 69 | 1638 |
| Barbour & Son, Jas. L., Washington, D. C. Cigars and tobacco | 25,655 | Dec. 11 | 69 | 1503 |
| Barbour & Son, Jas. L., Washington, D. C. Cigars and tobacco | 25,656 | Dec. 11 | 69 | 1503 |
| Bates, Edward N., Portland, Me. Vegetable bitters | 25,295 | Oct. 2 | 69 | 119 |
| Belcher & Taylor Agricultural Tool Company, Chicopee Falls, Mass. Agricultural tools and implements | 25,336 | Oct. 9 | 69 | 240 |
| Belmont Distillery Company, Louisville, Ky. Whisky | 25,714 | Dec. 25 | 69 | 1769 |
| Benjamin & Co., Alfred, New York, N. Y. Overcoats | 25,623 | Dec. 11 | 69 | 1500 |
| Benze & Co., Long Island City, N. Y. Suppositories | 25,381 | Oct. 16 | 69 | 368 |
| Bidtel Chemical Works, Milwaukee, Wis. Chemicals | 25,497 | Nov. 13 | 69 | 941 |
| Blackiston, William J., Denton, Md. Perfumery | 25,461 | Nov. 6 | 69 | 786 |
| Blair & Downey, Corry, Pa. Tasteless castor-oil | 25,539 | Nov. 20 | 69 | 1065 |
| Bland, Edward, Detroit, Mich. Antiseptic powders, ointments, liniments, and lotions | 25,418 | Oct. 30 | 69 | 637 |
| Blome, George J., Baltimore, Md. Cough lozenges | 25,579 | Dec. 4 | 69 | 1357 |
| Bloom & Son, New Orleans, La. Rice | 25,364 | Oct. 16 | 69 | 366 |
| Blyth & Co., New York, N. Y., and Rosario de Santa Fé, Argentine Republic. Canned goods, flour, meal, sugar, tea, coffee, pepper, and salt | 25,370 | Oct. 16 | 69 | 367 |
| Boisselier, Henri, Enfield, England. Cocoa and cocoa extracts | 25,647 | Dec. 11 | 69 | 1502 |
| Boker & Co., Hermann, New York, N. Y. Cutlery | 25,347 | Oct. 16 | 69 | 365 |
| Boker & Co., Hermann, New York, N. Y. Razors | 25,451 | Nov. 6 | 69 | 786 |

*Alphabetical list of registrants of trade-marks, October to December, inclusive*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page |
|---|---|---|---|---|
| Brainerd & Armstrong Company, New London, Conn. Thread and twist for embroidery, knitting, sewing, and other purposes | 25,448 | Nov. 6 | 69 | 786 |
| Brainerd & Armstrong Company, New London, Conn. Thread and twist for embroidery, knitting, sewing, and other purposes | 25,449 | Nov. 6 | 69 | 786 |
| Brann & Fitts, (Inc.,) Chicago, Ill. Butterine | 25,372 | Oct. 16 | 69 | 367 |
| British Tea and Trading Association, Limited, London, England. Tea | 25,654 | Dec. 11 | 69 | 1503 |
| Bruck & Co., George, New York, N. Y. Outer clothing for men and boys | 25,690 | Dec. 25 | 69 | 1768 |
| Bryan, Miner & Read, New Haven, Conn. Canned goods | 25,475 | Nov. 6 | 69 | 788 |
| Burke, Frank G., New York, N. Y. Toilet soap | 25,690 | Dec. 18 | 69 | 1639 |
| Burnett, Egerton, Wellington, England. Serges | 25,560 | Dec. 4 | 69 | 1356 |
| Butler, James, New York, N. Y. Tea | 25,590 | Dec. 4 | 69 | 1358 |
| Bve's Bros., New York, N. Y. Overcoats | 25,339 | Oct. 16 | 69 | 364 |
| Carénon & Tur, Moussac, France. Licorice roots, sticks, paste, and pellets | 25,421 | Oct. 30 | 69 | 637 |
| Carlyle, John M. (See Carlyle, Thomas and J. M.) | | | | |
| Carlyle, Thomas and J. M., Birmingham, England. Certain named metal articles | 25,508 | Nov. 13 | 69 | 942 |
| Carnahan, John M., Faulkner, Kans. Tree-wash and insect-destroyer | 25,641 | Dec. 11 | 69 | 1502 |
| Carr & Sons, James, Manchester, England. Blind-ladder tapes | 25,742 | Dec. 25 | 69 | 1771 |
| Carroll, Henry A., Memphis, Tenn. White lead | 25,432 | Oct. 30 | 69 | 638 |
| Carstairs, McCall & Co., Philadelphia, Pa. Whisky | 25,424 | Oct. 30 | 69 | 637 |
| Carstairs, McCall & Co., Philadelphia, Pa. Whiskies | 25,529 | Nov. 13 | 69 | 944 |
| Chadbourne & Moore, Boston, Mass. Shoe-goring | 25,387 | Oct. 23 | 69 | 505 |
| Chadbourne & Moore, Boston, Mass. Shoe-goring | 25,388 | Oct. 23 | 69 | 505 |
| Chapman, Ellwood B., Philadelphia, Pa. Perfumeries | 25,352 | Oct. 16 | 69 | 365 |
| Chapman & Rodgers, Philadelphia, Pa. Perfumeries | 25,689 | Dec. 18 | 69 | 1639 |
| Charles Stern & Sons, New York, N. Y., Chicago, Ill., and Boston, Mass. Wines, liquors, cordials, beer, and ale | 25,318 | Oct. 9 | 69 | 239 |
| Chattanooga Medicine Company, Chattanooga, Tenn. Chewing-gum | 25,284 | Oct. 2 | 69 | 117 |
| Chemische Fabrik Herrmann and Adolf Lubszynski, Berlin, Germany. Polishing preparations | 25,430 | Oct. 30 | 69 | 637 |
| Churchill Drug Company, Burlington, Iowa. Poison for rats | 25,709 | Dec. 25 | 69 | 1768 |
| Clark, Henry, Buffalo, N. Y. Certain named remedies | 25,706 | Dec. 25 | 69 | 1768 |
| Clinton Wire Cloth Company, Clinton, Mass. Wire-cloth | 25,535 | Nov. 20 | 69 | 1065 |
| Cole & Co., G. W., New York, N. Y. Cleaning and polishing compounds | 25,733 | Dec. 25 | 69 | 1771 |
| Colliery Engineer Company, Scranton, Pa. Books, pamphlets, newspapers, and other publications | 25,468 | Nov. 6 | 69 | 785 |
| Colman, J. & J., London, England. Mustard and mustard products | 25,731 | Dec. 25 | 69 | 1770 |
| Cooke, William A., Jr., New York, N. Y. Box files for holding papers | 25,739 | Dec. 25 | 69 | 1771 |
| Cotzhansen, Alfred von, Milwaukee, Wis. Crystalline pictures | 25,572 | Dec. 4 | 69 | 1357 |
| Crescent Manufacturing Company, St. Louis, Mo. Rubber packing-rings | 25,661 | Dec. 11 | 69 | 1504 |
| Crossman & Bro., W. H., New York, N. Y. Lubricating oils | 25,297 | Oct. 2 | 69 | 117 |
| Crossman & Bro., W. H., New York, N. Y. Cotton-seed, olive, and other food oils | 25,371 | Oct. 16 | 69 | 367 |
| Crystal Confectionery Company, Burlington, Vt. Candied fruits and confectionery | 25,515 | Nov. 13 | 69 | 942 |
| Crystal Springs Manufacturing Company, Watertown, Mass. Wheat-starch | 25,596 | Dec. 4 | 69 | 1359 |
| Crystal Water Company, Limited, Bay City, Mich. Certain named beverages | 25,651 | Dec. 11 | 69 | 1503 |
| Currie Fertilizer Company, Louisville, Ky. Smoking-tobacco | 25,528 | Nov. 13 | 69 | 945 |
| Daniels, William H., Ogdensburg, N. Y. Crackers | 25,718 | Dec. 25 | 69 | 1769 |
| Davis & Co., Wilbur H., Boston, Mass. Felt footwear | 25,486 | Nov. 13 | 69 | 940 |
| Davis & Son, James C., Boston, Mass. Washing-powders | 25,536 | Nov. 20 | 69 | 1065 |
| Deephouse, Cornelius, Le Mars, Iowa. Medicinal plasters for rheumatism | 25,496 | Nov. 13 | 69 | 941 |
| Deer, Hannah M., Jersey City, N. J. Certain named medicine | 25,504 | Nov. 13 | 69 | 942 |
| Devlin, John A., Friday Harbor, Wash. Canned salmon | 25,374 | Oct. 16 | 69 | 367 |
| Dippo Manufacturing Company, Cleveland, Ohio. Alloy of metal | 25,696 | Dec. 18 | 69 | 1640 |
| Dolge & Son, Alfred, New York, N. Y. Piano tuning-pins | 25,435 | Oct. 30 | 69 | 638 |
| Dorflinger & Sons, C., White Mills, Pa., and New York, N. Y. Cut glassware | 25,350 | Oct. 16 | 69 | 365 |
| Dougherty, Thomas E., Chicago, Ill. Filling for pies | 25,719 | Dec. 25 | 69 | 1769 |
| Dougherty, Thomas E., Chicago, Ill. Filling for pies | 25,720 | Dec. 25 | 69 | 1769 |
| Dr. Kilmer & Co., Binghamton, N. Y. Certain named medicines | 25,455 | Nov. 6 | 69 | 786 |
| Dr. Kilmer & Co., Binghamton, N. Y. Pills | 25,456 | Nov. 6 | 69 | 786 |
| Dr. Kilmer & Co., Binghamton, N. Y. Ointments | 25,493 | Nov. 13 | 69 | 941 |
| Dr. Kilmer & Co., Binghamton, N. Y. Certain named remedies | 25,494 | Nov. 13 | 69 | 941 |
| Dr. Kilmer & Co., Binghamton, N. Y. Certain named remedies | 25,637 | Dec. 11 | 69 | 1501 |
| Drybread, Seneca S., Taylorsville, Ind. Wheat-flour | 25,365 | Oct. 16 | 69 | 366 |
| Duluth Imperial Mill Company, Duluth, Minn. Wheat-flour | 25,516 | Nov. 13 | 69 | 943 |
| Dunham, Frank A., Brockton, Mass. Welt-trimmers | 25,405 | Oct. 23 | 69 | 506 |
| Dunne, Frank L., Boston, Mass. Men's outer clothing | 25,564 | Dec. 4 | 69 | 1356 |
| Eaton, Cole & Burnham Company, Bridgeport, Conn. Hose-nozzles | 25,695 | Dec. 18 | 69 | 1640 |
| Elgin Creamery Company, Chicago and Elgin, Ill. Butter | 25,450 | Nov. 6 | 69 | 787 |
| Ellin & Co., Thomas, Sheffield, England. Cutlery and edge-tools | 25,507 | Nov. 13 | 69 | 942 |
| Ellin & Co., Thomas, Sheffield, England. Cutlery and edge-tools | 25,509 | Nov. 13 | 69 | 942 |
| Emigh & Lobdell, New York, N. Y. Collars and cuffs | 25,337 | Oct. 16 | 69 | 364 |
| English, Belcher & Co., Martinsville, Va. Smoking-tobacco and cigarettes | 25,464 | Nov. 6 | 69 | 786 |
| Enterprise Soap Works, Nashville, Tenn. Laundry and toilet soap | 25,644 | Dec. 11 | 69 | 1502 |
| Eschmann, Frederick W. R., Yonkers, N. Y. Antiseptic and germicidal preparation | 25,575 | Dec. 4 | 69 | 1357 |
| Eschmann, Frederick W. R., Yonkers, N. Y. Tonic | 25,578 | Dec. 4 | 69 | 1357 |
| F. R. Rice Mercantile Cigar Company, St. Louis, Mo. Cigars | 25,530 | Nov. 13 | 69 | 944 |
| Farnsworth, Thomas W., Boston, Mass. Clothing for men and boys | 25,667 | Dec. 18 | 69 | 1637 |
| Feulin, John M., Philadelphia, Pa. Finished kid | 25,450 | Nov. 6 | 69 | 786 |
| Fiberloid Company, Newburyport, Mass. Collars and cuffs made of pyroxylin materials | 25,280 | Oct. 2 | 69 | 119 |
| Fixmer, John P., Springfield, Ill. Stomach bitters | 25,540 | Nov. 20 | 69 | 1066 |
| Forsyth & Co., Passaic, N. J. Internal remedy for colds | 25,638 | Dec. 11 | 69 | 1501 |
| Fowler Brothers, Limited, New York, N. Y., and Chicago, Ill. Lard | 25,556 | Nov. 27 | 69 | 1206 |
| Fownes Brothers & Co., London, England. Leather gloves and fabric and woolen gloves, cuffs, and mittens | 25,554 | Nov. 27 | 69 | 1206 |
| Francisco, Stephen, Montclair, Caldwell, Newark, and the Oranges, N. J. Milk for infants and invalids | 25,368 | Oct. 16 | 69 | 366 |
| Fruen, William H., Minneapolis, Minn. Rolled oats | 25,469 | Nov. 6 | 69 | 787 |
| Fruen, William H., Minneapolis, Minn. Rolled wheat | 25,522 | Nov. 13 | 69 | 943 |
| Frye, Alphonzo G., Boston, Mass. Puzzles | 25,345 | Oct. 16 | 69 | 364 |
| Fullerton, Oscar J., Waterloo, Iowa. Remedy for the cure of consumption | 25,640 | Dec. 11 | 69 | 1501 |
| Fulton Water Works Company, Fulton, N. Y. Spring, mineral, and effervescent waters | 25,391 | Oct. 23 | 69 | 505 |
| G. J. Moulton & Company, Limited, Macclesfield, England. Dry powdered soap | 25,495 | Nov. 13 | 69 | 941 |
| Gebrüder Brehmer, Leipsic, Germany. Binding and paper-box machines | 25,437 | Oct. 30 | 69 | 638 |
| Geo. F. Blake Manufacturing Company, New York, N. Y. Steam-engine condensers | 25,304 | Oct. 2 | 69 | 120 |
| George Fowler, Son & Company, Limited, Kansas City, Kans. Lard and compound lard | 25,324 | Oct. 9 | 69 | 239 |
| Gill, Fred, Grand Rapids, Mich. Carbonated tonic beverage | 25,526 | Nov. 13 | 69 | 944 |
| Gillet & Co., Martin, Baltimore, Md. Tea | 25,468 | Nov. 6 | 69 | 787 |



*Alphabetical list of registrants of trade-marks, October to December, inclusive*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page |
|---|---|---|---|---|
| Gillett & Hall, Detroit, Mich. Clover-seed | 25,287 | Oct. 2 | 69 | 118 |
| Gilman & Sons, Charles J., Brunswick, Me. Spring-water | 25,320 | Oct. 9 | 69 | 239 |
| Gold Medal Sarsaparilla Company, Montpelier, Vt. Sarsaparilla liquid compound | 25,552 | Nov. 27 | 69 | 1206 |
| Goodman, Adolph, Pocahontas, Va. Cigars, cigarettes, and smoking and chewing tobacco and snuff | 25,527 | Nov. 13 | 69 | 944 |
| Goodman, Adolph, Pocahontas, Va. Cigars, cigarettes, smoking and chewing tobacco, and snuff | 25,553 | Nov. 27 | 69 | 1206 |
| Goulet & Co., George, Rheims, France. Champagne wine | 25,358 | Oct. 16 | 69 | 366 |
| Graham Bros. & Co., Chicago, Ill. Toilet soap | 25,643 | Dec. 11 | 69 | 1502 |
| Graham Brothers & Co., Chicago, Ill. Toilet soap | 25,429 | Oct. 30 | 69 | 637 |
| Grand Rapids Brewing Company, Grand Rapids, Mich. Lager-beer | 25,423 | Oct. 30 | 69 | 637 |
| Gray, William C., Ayr, Scotland. Carpets | 25,677 | Dec. 18 | 69 | 1638 |
| Gray, William C., Ayr, Scotland. Carpets | 25,678 | Dec. 18 | 69 | 1638 |
| Gray, William C., Ayr, Scotland. Carpets | 25,679 | Dec. 18 | 69 | 1638 |
| Green, Shipton, New York, N. Y. Beef, mutton, veal, pork, hams, sausage, and cured meats | 25,473 | Nov. 6 | 69 | 788 |
| Green, Shipton, New York, N. Y. Canned meats | 25,473 | Nov. 6 | 69 | 788 |
| Green, Shipton, New York, N. Y. Canned meats | 25,474 | Nov. 6 | 69 | 788 |
| Green, Shipton, New York, N. Y. Canned meats, lard, and substitutes for lard | 25,514 | Nov. 13 | 69 | 942 |
| Greenewald & Co., Philadelphia, Pa. Clothing for men and boys | 25,283 | Oct. 2 | 69 | 117 |
| Grosche & Co., Bruno, New York, N. Y. Paints for metals | 25,382 | Oct. 16 | 69 | 368 |
| Guiterman Brothers, St. Paul, Minn. Men's and boys' garments | 25,622 | Dec. 11 | 69 | 1500 |
| Guttin, Jean B., New York, N. Y. Wines and liquors | 25,711 | Dec. 25 | 69 | 1769 |
| Gunnerman, Louis B., Thorndale, Pa. Powder to facilitate the execution of music | 25,301 | Oct. 2 | 69 | 119 |
| H. W. Johns Manufacturing Company, New York, N. Y. Roofing, packing, gaskets, insulating and non-conducting materials containing asbestos | 25,404 | Oct. 23 | 69 | 506 |
| Habich & Co., Boston, Mass. Beer, ale, and porter | 25,357 | Oct. 16 | 69 | 366 |
| Hall & Co., T. B., Liverpool, England. Ale and stout | 25,392 | Oct. 23 | 69 | 505 |
| Hamblin, Walter E., Manchester, N. H. Cough drops | 25,503 | Nov. 13 | 69 | 941 |
| Hamlyn Brothers, Buckfastleigh, England. Wool piece goods, including serges, estamenes, and suitings | 25,413 | Oct. 30 | 69 | 636 |
| Hamlyn Brothers, Buckfastleigh, England. Wool piece goods | 25,624 | Dec. 11 | 69 | 1500 |
| Hammel, Rigland & Co., New York, N. Y. Mechanism and materials for watches and clocks | 25,402 | Oct. 23 | 69 | 506 |
| Hance Bros. & White, Philadelphia, Pa. Remedy for diseases of the stomach and bowels | 25,315 | Oct. 9 | 69 | 239 |
| Hastrup & Co., A., Hamburg, Germany. Painters' size | 25,433 | Oct. 30 | 69 | 638 |
| Hay & Todd Manufacturing Co., Ypsilanti, Mich. Knit underwear | 25,282 | Oct. 2 | 69 | 117 |
| Heap, William, Muskegon, Mich. Plumbers' supplies, comprising closets, seats, and tanks | 25,534 | Nov. 20 | 69 | 1065 |
| Hearn, Charles C., Quincy, Mass. Remedy for headache | 25,375 | Oct. 16 | 69 | 367 |
| Hecht, Ferdinand, New York, N. Y. Cleaning preparation for use in sweeping carpets | 25,330 | Oct. 9 | 69 | 240 |
| Heinzerling, John, Baltimore, Md. Aerated beverages | 25,581 | Dec. 4 | 69 | 1357 |
| Heinzerling, John, Baltimore, Md. Aerated beverages | 25,650 | Dec. 11 | 69 | 1503 |
| Hernsheim Bros. & Co., S., New Orleans, La. Cigars, all-tobacco cigarettes, and smoking, chewing, and leaf tobacco | 25,465 | Nov. 6 | 69 | 787 |
| Hewer, William, New York, N. Y. Wheat-flour | 25,546 | Nov. 20 | 69 | 1066 |
| Hibbert, James, Sheffield, England. Pocket-knives, razors, table-cutlery, and scissors | 25,348 | Oct. 16 | 69 | 365 |
| Hillerich & Son, J. F., Louisville, Ky. Base-ball bats | 25,510 | Nov. 13 | 69 | 942 |
| Hilson Company, New York, N. Y. Cigars, cheroots, and cigarettes | 25,394 | Oct. 23 | 69 | 506 |
| Hoffman, Lee & Co., Baltimore, Md. Coffee | 25,717 | Dec. 25 | 69 | 1769 |
| Holzman, Benjamin M., New York, N. Y. Children's clothing other than shirt-waists and underclothing | 25,485 | Nov. 13 | 69 | 940 |
| Holzman Manufacturing Co., Baltimore, Md., and New York, N. Y. Shirt-waists and ladies' underwear | 25,666 | Dec. 18 | 69 | 1637 |
| Houston & Henderson, Boston, Mass. Kid gloves | 25,620 | Dec. 11 | 69 | 1500 |
| Howarth, Dennis, Chester, Pa. Towels | 25,680 | Dec. 18 | 69 | 1638 |
| Howells, Moffitt & Co., Kane, Pa. Clothes-pins | 25,302 | Oct. 2 | 69 | 119 |
| Hyatt School Slate Company, Limited, Bethlehem, Pa. Slates | 25,333 | Oct. 9 | 69 | 240 |
| Hyatt School Slate Company, Limited, Bethlehem, Pa. Slates | 25,403 | Oct. 23 | 69 | 506 |
| I. B. Kleinert Rubber Company, New York, N. Y. Rubber-coated skirt facing | 25,310 | Oct. 9 | 69 | 238 |
| I. B. Kleinert Rubber Company, New York, N. Y. Rubber-coated skirt-facing | 25,311 | Oct. 9 | 69 | 238 |
| Iowers, Henry, Quebec, Canada. Remedy for toothache | 25,452 | Nov. 6 | 69 | 786 |
| Indiana Coffee Company, Indianapolis, Ind. Coffee | 25,692 | Dec. 18 | 69 | 1639 |
| Indianapolis Brewing Company, Indianapolis, Ind. Beer | 25,586 | Dec. 4 | 69 | 1358 |
| Iowa Soap Company, Burlington, Iowa. Laundry soap | 25,589 | Dec. 4 | 69 | 1358 |
| Israel & Brothers, Charles, New York, N. Y. Yellow wax and colored wax goods | 25,327 | Oct. 9 | 69 | 240 |
| J. B. Lewis Company, Boston, Mass. Boots and shoes | 25,409 | Oct. 30 | 69 | 636 |
| J. B. Williams Company, Glastonbury, Conn. Toilet soap | 25,328 | Oct. 9 | 69 | 240 |
| J. B. Williams Company, Glastonbury, Conn. Shaving-soap | 25,353 | Oct. 16 | 69 | 365 |
| J. H. Mohlman Company, New York, N. Y. Canned fish | 25,548 | Nov. 20 | 69 | 1066 |
| J. M. Clark & Company, Louisville, Ky. Chewing-gum | 25,354 | Oct. 16 | 69 | 365 |
| Jaffray & Co., E. S., New York, N. Y. Silks, silk goods, and ribbons | 25,445 | Nov. 6 | 69 | 785 |
| Jaffray & Co., E. S., New York, N. Y. Velvets, ribbons, and black-velvet ribbons | 25,484 | Nov. 13 | 69 | 940 |
| Jaffray & Co., E. S., New York, N. Y. Silk ribbons | 25,702 | Dec. 25 | 69 | 1768 |
| James Leffel & Company, Springfield, Ohio, and New York, N. Y. Water-wheels | 25,303 | Oct. 2 | 69 | 120 |
| Janowitz, Julius, New York, N. Y. Dress and corset stays | 25,700 | Dec. 25 | 69 | 1768 |
| Jaros Hygienic Underwear Company, New York, N. Y. Absorbents for surgical and other purposes | 25,419 | Oct. 30 | 69 | 637 |
| Jas. S. Mason Company, Philadelphia, Pa. Dressing for russet leather | 25,409 | Nov. 13 | 69 | 941 |
| Jas. S. Mason Company, Philadelphia, Pa. Leather-dressing | 25,583 | Dec. 4 | 69 | 1358 |
| Johnson & Johnson, New Brunswick, N. J., and New York, N. Y. Strengthening-plaster | 25,705 | Dec. 25 | 69 | 1768 |
| Jones & Co., W. H., Boston, Mass. Whisky | 25,713 | Dec. 25 | 69 | 1769 |
| Joseph Fallert Brewing Company, Limited, Brooklyn, N. Y. Lager-beer | 25,587 | Dec. 4 | 69 | 1358 |
| Joseph R. Peebles' Sons Company, Cincinnati, Ohio. Whisky | 25,317 | Oct. 9 | 69 | 239 |
| Joseph R. Peebles' Sons Company, Cincinnati, Ohio. Cured meats | 25,425 | Oct. 30 | 69 | 637 |
| Joseph R. Peebles' Sons Company, Cincinnati, Ohio. Lard | 25,427 | Oct. 30 | 69 | 637 |
| Joseph R. Peebles' Sons Company, Cincinnati, Ohio. Whisky | 25,712 | Dec. 25 | 69 | 1769 |
| Kaley, Frank E., Milford, N. H. Cotton, linen, and other threads not made of silk | 25,343 | Oct. 16 | 69 | 364 |
| Kathreiner's Malzkaffee-Fabriken, mit Beschränkter Haftung, Munich and Basel, Germany. Malt-coffee and other coffee substitutes | 25,524 | Nov. 13 | 69 | 943 |
| Kee, Frank T., New York, N. Y. Boots, shoes, and soles therefor | 25,621 | Dec. 11 | 69 | 1500 |
| Kennard, William R., New York, N. Y. Blood-purifiers and tonics | 25,683 | Dec. 18 | 69 | 1639 |
| Kennard, William R., New York, N. Y. Blood-purifiers and tonics | 25,684 | Dec. 18 | 69 | 1639 |
| Kennard, William R., New York, N. Y. Remedies for pulmonary and similar diseases | 25,685 | Dec. 18 | 69 | 1639 |
| Kennard, William R., New York, N. Y. Pills or pellets | 25,686 | Dec. 18 | 69 | 1639 |
| Kennard, William R., New York, N. Y. Pills or pellets | 25,687 | Dec. 18 | 69 | 1639 |
| Kennard, William R., New York, N. Y. Blood-purifiers and tonics | 25,707 | Dec. 25 | 69 | 1768 |
| Kennard, William R., New York, N. Y. Blood-purifiers and tonics | 25,708 | Dec. 25 | 69 | 1768 |
| Keystone Pottery Company, Trenton, N. J. Vitreous china | 25,417 | Oct. 30 | 69 | 636 |
| Koch & Co., F. A., New York, N. Y. Knives, razors, and scissors | 25,349 | Oct. 16 | 69 | 365 |

*Alphabetical list of registrants of trade-marks, October to December, inclusive*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Krusins Brothers, New York, N. Y. Cutlery | 25,346 | Oct. 16 | 69 | 365 |
| Knuhardt & Co., New York, N. Y. Wheat-flour | 25,518 | Nov. 13 | 69 | 943 |
| La Société des Caves et des Producteurs Rénnis, Roquefort, France. Cheese | 25,285 | Oct. 2 | 69 | 117 |
| Lacey, William W., Boston, Mass. Tablets for the cure of heart disease | 25,293 | Oct. 2 | 69 | 118 |
| Lägerdorfer Portland Cement Fabrik von Eng. Lion & Co., Hamburg, Germany. Portland cement | 25,298 | Oct. 2 | 69 | 119 |
| Lambertville Rubber Company, Lambertville, N. J. Rubber boots, shoes, coats, and other clothing of rubber or rubber compounds | 25,487 | Nov. 13 | 69 | 940 |
| Lambertville Rubber Company, Lambertville, N. J. Rubber boots, shoes, coats, and other clothing of rubber or rubber compounds | 25,488 | Nov. 13 | 69 | 940 |
| Lancaster, John E., Worcester, Mass. Corsets | 25,395 | Oct. 23 | 69 | 505 |
| Lange Tonic Co., New York, N. Y. Tonic remedy for certain named diseases | 25,291 | Oct. 2 | 69 | 118 |
| Lapostolle, Marnier, Neuamble-le-Château, France. Curaçoa | 25,542 | Nov. 20 | 69 | 1066 |
| Lasker Bros., New York, N. Y. Perfumed ammonia | 25,537 | Nov. 20 | 69 | 1065 |
| Latz, Peter J., Chicago, Ill. Medicinal salt for use internally | 25,396 | Oct. 23 | 69 | 506 |
| Laurent Cie., Veuve, Bouzy, France. Coca tonic champagne | 25,710 | Dec. 25 | 69 | 1769 |
| Lautz, Fred. C. M., Buffalo, N. Y. Sugar-cane mills | 25,748 | Dec. 25 | 69 | 1772 |
| Lautz, Fred. C. M., Buffalo, N. Y. Sugar-cane mills | 25,749 | Dec. 25 | 69 | 1772 |
| Lautz, Fred. C. M., Buffalo, N. Y. Sugar-cane mills | 25,750 | Dec. 25 | 69 | 1772 |
| Lautz, Fred. C. M., Buffalo, N. Y. Sugar-cane mills | 25,751 | Dec. 25 | 69 | 1772 |
| Lazell, Dalley & Company, New York, N. Y. Certain named toilet preparations and articles | 25,752 | Dec. 25 | 69 | 1772 |
| Leeming & Co., Thomas, Montreal, Canada. Soap and certain named toilet preparations | 25,505 | Nov. 13 | 69 | 942 |
| Leonardi, Sydney B., Tampa, Fla. Remedies for female diseases | 25,551 | Nov. 27 | 69 | 1206 |
| Leslie E. Keeley Company, Dwight, Ill. Remedies for nervous diseases | 25,639 | Dec. 11 | 69 | 1501 |
| Leslie & Welsh, Buffalo, N. Y. Cigarettes | 25,682 | Dec. 18 | 69 | 1638 |
| Lichtenstein & Sons, J., New York, N. Y. Corsets and gloves | 25,463 | Nov. 6 | 69 | 787 |
| Lichtenstein & Sons, J., New York, N. Y. Corsets and gloves | 25,281 | Oct. 2 | 69 | 117 |
| Lohmeyer, Henry L., Pittsburg, Pa. Remedy for diseases of horses | 25,307 | Oct. 9 | 69 | 238 |
| Lord, William H., Dedham, Mass. Prepared codfish | 25,289 | Oct. 2 | 69 | 118 |
| Lord, William H., Dedham, Mass. Prepared codfish | 25,374 | Oct. 16 | 69 | 367 |
| M. Work Company, Cincinnati, Ohio. Soap powder | 25,547 | Nov. 20 | 69 | 1066 |
| Macdonald-Hagelo Manufacturing Company, Vineland, N. J. Floor oil-cloths | 25,460 | Oct. 23 | 69 | 506 |
| Macdonald-Hagelo Manufacturing Company, Vineland, N. J. Floor oil-cloths | 25,491 | Nov. 13 | 69 | 940 |
| Madison Brewing Company, Madison, Ind. Beer, ale, and porter | 25,492 | Nov. 13 | 69 | 941 |
| Magnolia Metal Company, New York, N. Y. Railway-brasses and journal-boxes and metals therefor | 25,694 | Dec. 18 | 69 | 1639 |
| Magnus, Christian, Cedar Rapids, Iowa. Beverages, including root beer and lager-beer in bottles or other packages | 25,747 | Dec. 25 | 69 | 1772 |
| Marshall-Wells Hardware Company, Duluth, Minn. Certain named hardware | 25,319 | Oct. 9 | 69 | 239 |
| Martin Process Fire-Proofing Paint Company, New York, N. Y. Fireproof water-paint | 25,305 | Oct. 2 | 69 | 120 |
| Mascot Publishing Co., New York, N. Y. Printed publications | 25,658 | Dec. 11 | 69 | 1503 |
| Mason & Co., Taunton, Mass. Stuffing for food | 25,344 | Oct. 16 | 69 | 364 |
| Massachusetts Cotton Mills, Lowell, Mass. Woven cotton goods | 25,476 | Nov. 6 | 69 | 788 |
| Mattes & Lutz, Besigheim, Germany, and New York, N. Y. Certain named underwear | 25,676 | Dec. 18 | 69 | 1638 |
| Maynz & Co., New York, N. Y. Brewers' varnish and shellac | 25,701 | Dec. 25 | 69 | 1768 |
| McHugh, Joseph P., New York, N. Y. Useful and ornamental house furnishings | 25,555 | Nov. 27 | 69 | 1206 |
| McKowen, Thomas C., and H. McVea, Lindsay, La. Sauce or relish for meats, soups, fish, and oysters | 25,737 | Dec. 25 | 69 | 1771 |
| McLoughlin, John, New York, N. Y. Card game | 25,730 | Dec. 25 | 69 | 1770 |
| McMasters, William P., Munhall, Pa. Miners' lamps | 25,692 | Dec. 11 | 69 | 1504 |
| McMurray, William, St. Paul and Minneapolis, Minn. Tea, coffee, and spices | 25,478 | Nov. 6 | 69 | 788 |
| McVea, Harris. (See McKowen and McVea.) | 25,595 | Dec. 4 | 69 | 1359 |
| McVitie & Price, Edinburgh, Scotland. Cakes, biscuits, bread, and confectionery | 25,592 | Dec. 4 | 69 | 1358 |
| Meakin, Henry, Stockton, Cal. Effervescing powder for a summer beverage | 25,482 | Oct. 30 | 69 | 637 |
| Merkle-Wiley Brown Company, Paris, Ill. Brooms | 25,434 | Oct. 30 | 69 | 638 |
| Miller, Charles D. (See Miller, Mark and C. D.) | | | | |
| Miller, Hall & Hartwell, Troy, N. Y. Men's collars | 25,407 | Oct. 30 | 69 | 636 |
| Miller, Mark and C. D., Vassar, Mich. Wheat-flour | 25,544 | Nov. 20 | 69 | 1066 |
| Miller, Mark and C. D., Vassar, Mich. Wheat-flour | 25,545 | Nov. 20 | 69 | 1066 |
| Miltimore, James P., Hastings, Nebr. Veterinary liniment | 25,538 | Nov. 20 | 69 | 1065 |
| Miner, Benjamin F., Montagne, Mass. Liquid remedy for skin diseases | 25,642 | Dec. 11 | 69 | 1502 |
| Minkota Milling Company, Duluth, Minn. Cereal food products | 25,513 | Nov. 13 | 69 | 942 |
| Minnesota Packing and Provision Company, Chicago, Ill., and South St. Paul, Minn. Cured meats and lard | 25,323 | Oct. 9 | 69 | 239 |
| Moffitt-West Drug Company, St. Louis, Mo. Tonic and remedy for liver diseases | 25,379 | Oct. 16 | 69 | 367 |
| Morwitz, Joseph, Philadelphia, Pa. Ginger ale | 25,389 | Oct. 23 | 69 | 505 |
| Mull & Underwood, Dayton, Ohio. Candies, conserves, confections, cough drops, and chewing-gum | 25,591 | Dec. 4 | 69 | 1358 |
| N. Z. Graves & Company, Philadelphia, Pa. Varnishes, paints, japans, and painters' supplies | 25,332 | Oct. 9 | 69 | 240 |
| Napheys & Son, George C., Philadelphia, Pa. Refined and leaf lard | 25,471 | Nov. 6 | 69 | 787 |
| Nelden-Judson Drug Company, Salt Lake City, Utah Ter. Certain named toilet preparations | 25,645 | Dec. 11 | 69 | 1502 |
| New Jersey Asbestos Company, Jersey City, N. J. Wall-coverings, steam-packings, and other goods made wholly or in part of asbestos | 25,743 | Dec. 25 | 69 | 1771 |
| New Jersey Asbestos Company, Jersey City, N. J. Wall-coverings, steam-packings, and other goods made wholly or in part of asbestos | 25,744 | Dec. 25 | 69 | 1772 |
| New London Wash Silk Company, New London, Conn. Embroidery, sewing, and floss silk | 25,410 | Oct. 30 | 69 | 636 |
| New London Wash Silk Company, New London, Conn. Silk threads | 25,483 | Nov. 13 | 69 | 940 |
| New London Wash Silk Company, Incorporated, New London, Conn., and New York, N. Y. Silk floss or embroidery-silk | 25,533 | Nov. 20 | 69 | 1065 |
| New York Biscuit Company, New York, N. Y. Cracker-machines | 25,479 | Nov. 6 | 69 | 788 |
| New York Biscuit Company, New York, N. Y. Cakes | 25,519 | Nov. 13 | 69 | 943 |
| New York Biscuit Company, Chicago, Ill., and New York, N. Y. Crackers or biscuits | 25,397 | Oct. 23 | 69 | 506 |
| Nichols, George D., New York, N. Y. Corsets and waists | 25,406 | Oct. 30 | 69 | 636 |
| Noel Mill Company, Estill Springs, Tenn. Wheat-flour | 25,325 | Oct. 9 | 69 | 240 |
| Norton & Co., Chicago, Ill. Wheat-flour | 25,286 | Oct. 2 | 69 | 117 |
| Norton & Co., Chicago, Ill. Wheat-flour | 25,366 | Oct. 16 | 69 | 366 |
| Norton, George W., Somerville, Mass. Bath and laundry soap | 25,320 | Oct. 9 | 69 | 240 |
| Noyes, Norman & Co., St. Joseph, Mo. Leather boots and shoes | 25,306 | Oct. 9 | 69 | 238 |
| Nutrolactis Company, New York, N. Y. Medicinal preparation to increase the flow of human milk | 25,312 | Oct. 9 | 69 | 238 |
| O. & W. Thumb Company, Grand Rapids, Mich. Fly-paper | 25,660 | Dec. 11 | 69 | 1503 |
| Odol Company, New York, N. Y. Disinfecting and deodorizing preparations | 25,582 | Dec. 4 | 69 | 1358 |
| Old Bangor Slate Company, Bethlehem, Pa. Roofing-slates | 25,754 | Dec. 25 | 69 | 1772 |
| Orange County Milk Association, New York, N. Y. Condensed milk | 25,322 | Oct. 9 | 69 | 239 |
| Orange Judd Company, New York, N. Y. Newspapers and periodicals | 25,439 | Nov. 6 | 69 | 785 |
| Ossawan Mills Company, Norwich, Conn. Sash and curtain cords | 25,411 | Oct. 30 | 69 | 636 |
| Overman Wheel Company, Chicopee Falls, Mass. Cycles, tennis-rackets, balls, and bats | 25,480 | Nov. 6 | 69 | 788 |
| Oxnard, Frederic, Buffalo, N. Y. Internal remedies for purifying the blood | 25,294 | Oct. 2 | 69 | 118 |



*Alphabetical list of registrants of trade-marks, October to December, inclusive*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Pelzer Manufacturing Company, Pelzer, S. C. Cotton piece goods | 25,704 | Dec. 25 | 69 | 1768 |
| Pennsylvania Bottling and Supply Company of Philadelphia, Philadelphia, Pa. Ginger ale | 25,648 | Dec. 11 | 69 | 1502 |
| Perrin Frères & Cie., New York, N. Y. Certain named personal furnishings and fabrics | 25,446 | Nov. 6 | 69 | 785 |
| Perry, Chauncey, Rochester, N. Y. Germicides, deodorizers, and disinfectants | 25,454 | Nov. 6 | 69 | 786 |
| Philadelphia Brewing Company, Philadelphia, Pa. Beer | 25,393 | Oct. 23 | 69 | 506 |
| Pickering & Sons, Joseph, Sheffield, England. Cleaning and polishing preparations | 25,431 | Oct. 30 | 69 | 638 |
| Pinder, James, Sheffield, England. Cutlery, tools, metal goods, and hollow ware | 25,741 | Dec. 25 | 69 | 1771 |
| Pomroy, George W., Jr., Hartford, Conn. Liniment for horses and other animals | 25,290 | Oct. 2 | 69 | 118 |
| Prentice & Evenson, Janesville, Wis. Certain designated medicines, toilet and manicure articles | 25,460 | Nov. 6 | 69 | 786 |
| Prescott & Co., J. L., North Berwick, Me. Polish for stoves and similar articles | 25,331 | Oct. 9 | 69 | 240 |
| Prescott & Co., J. L., North Berwick, Me., and New York, N. Y. Polish for stoves and like articles | 25,506 | Nov. 13 | 69 | 942 |
| Preston, Andrew P., Portsmouth, N. H. Smelling-salts | 25,580 | Dec. 4 | 69 | 1357 |
| Preston, Everett B., Chicago, Ill. Bicycles | 25,570 | Dec. 4 | 69 | 1357 |
| Preston, Everett B., Chicago, Ill. Ladies' bicycles | 25,571 | Dec. 4 | 69 | 1357 |
| Red Seal Remedy Company, Rockland, Me. Certain named medicines | 25,502 | Nov. 13 | 69 | 941 |
| Regal Shoe Co., Boston, Mass. Boots and shoes | 25,703 | Dec. 25 | 69 | 1768 |
| Reid, Walter E., Washington, D. C. Compound of roots and herbs used as a tea | 25,377 | Oct. 16 | 69 | 367 |
| Reinert, Adolph, St. Louis, Mo. Whisky | 25,584 | Dec. 4 | 69 | 1358 |
| Restorff & Beitmann, New York, N. Y. Leather-dressing | 25,398 | Oct. 23 | 69 | 506 |
| Revere Rubber Company, Boston, Mass. Mechanical rubber goods | 25,489 | Nov. 13 | 69 | 940 |
| Revere Rubber Company, Boston, Mass. Mechanical rubber goods | 25,490 | Nov. 13 | 69 | 940 |
| Rhind & Co., D. A., Leith, Scotland. Whisky | 25,585 | Dec. 4 | 69 | 1358 |
| Rice & Hutchins, Incorporated, Boston, Mass. Boots and shoes and leather for uppers | 25,386 | Oct. 23 | 69 | 505 |
| Ripley Howland Manufacturing Company, Boston, Mass. White brilliants | 25,619 | Dec. 11 | 69 | 1500 |
| Rittmeier, William, Milwaukee, Wis. Certain internal and external remedies | 25,420 | Oct. 30 | 69 | 637 |
| Robinson, James A., New York, N. Y. Sheetings | 25,442 | Oct. 30 | 69 | 636 |
| Robinson, James A., New York, N. Y. Sheetings | 25,444 | Nov. 6 | 69 | 785 |
| Rohe & Brother, New York, N. Y. Canned and cured meats and lard and tallow | 25,549 | Nov. 20 | 69 | 1066 |
| Rolke, Gustav, Columbus, Ohio. Roach-powder | 25,300 | Oct. 2 | 69 | 119 |
| Rosenstein, Leo, New York, N. Y. Dried fruits | 25,525 | Nov. 13 | 69 | 944 |
| Rost, Carl L., Crawfordsville, Ind. Gold buttons, pins, and charms | 25,279 | Oct. 2 | 69 | 117 |
| Ryan, John C. Jr., St. Joseph, Mo. Leather-dressing | 25,399 | Oct. 23 | 69 | 506 |
| Rylands Brothers, Limited, Warrington, England. Certain named iron, steel, and lead manufactures | 25,436 | Oct. 30 | 69 | 638 |
| S. Liebmann's Sons Brewing Company, Brooklyn, N. Y. Malt beer | 25,716 | Dec. 25 | 69 | 1769 |
| Sanderson, Lucien, New Haven, Conn. Fertilizers | 25,299 | Oct. 2 | 69 | 119 |
| Saranac Glove Company, Littleton, N. H. Gloves and mittens | 25,405 | Oct. 30 | 69 | 636 |
| Sartorius & Co., A., New York, N. Y. Prepared colors | 25,498 | Nov. 13 | 69 | 941 |
| Saunders, Martin V., Detroit, Mich. Natural mineral water | 25,296 | Oct. 2 | 69 | 119 |
| Schloss Bros. & Co., Baltimore, Md. Tailoring wearing-apparel for men and boys | 25,447 | Nov. 6 | 69 | 785 |
| Schloss Bros. & Co., Baltimore, Md. Tailoring wearing-apparel for men and boys | 25,585 | Dec. 4 | 69 | 1356 |
| Schoble & Co., Frank, Philadelphia, Pa. Soft and stiff fur-felt hats for men and boys | 25,566 | Dec. 4 | 69 | 1356 |
| Schopper, Heinrich, Chemnitz, Germany. Cashmere hosiery | 25,438 | Oct. 16 | 69 | 364 |
| Schulte, Fritz C., San Antonio, Tex. Sirup and molasses | 25,321 | Oct. 9 | 69 | 239 |
| Schweickhart, George, Jr., Wauwatosa, Wis. Carbonated beverages, ginger ale, and weiss beer | 25,462 | Nov. 6 | 69 | 787 |
| Schweinburg, Emil, New York, N. Y. Corsets and corset-clasps | 25,482 | Nov. 13 | 69 | 940 |
| Schwerin Bros., Philadelphia, Pa. Men's trousers | 25,665 | Dec. 18 | 69 | 1637 |
| Sealury & Johnson, New York, N. Y. Medicinal and surgical plasters, appliances, and dressings | 25,457 | Nov. 6 | 69 | 786 |
| Shadbolt & Boyd Iron Company, Milwaukee, Wis. Bar-iron | 25,697 | Dec. 18 | 69 | 1640 |
| Shimer & Sons, Samuel J., Milton, Pa. Cutter and matcher-heads used in woodworking-machines | 25,694 | Dec. 18 | 69 | 1640 |
| Singer & Co., Coventry, England. Bicycles, tricycles, and other velocipedes | 25,746 | Dec. 25 | 69 | 1772 |
| Smith, Charles A., Minneapolis, Minn. Artificial lumber or composition material | 25,383 | Oct. 16 | 69 | 368 |
| Smith, Doctter F., Lockney, Tex. Remedy for catarrh | 25,576 | Dec. 4 | 69 | 1357 |
| Smith, Martin H., New York, N. Y. Castor-oil and castor-oil combinations | 25,458 | Nov. 6 | 69 | 786 |
| Smith & Scott, Paducah, Ky. Chewing and smoking tobacco | 25,356 | Oct. 16 | 69 | 365 |
| Snell Cycle Fittings Company, Toledo, Ohio. Bicycle-lamps | 25,664 | Dec. 11 | 69 | 1501 |
| Société Anonyme d'Exploitation des Papeteries L. Lacroix Fils, Angoulême, France. Cigarette-paper | 25,395 | Oct. 23 | 69 | 506 |
| Société Anonyme d'Exploitation des Papeteries L. Lacroix Fils, Angoulême, France. Cigarette-wrappers made of wheat-straw | 25,573 | Dec. 4 | 69 | 1357 |
| Soley, George R., Philadelphia, Pa. Medals | 25,414 | Oct. 30 | 69 | 636 |
| Soley, George R., Philadelphia, Pa. Medals | 25,415 | Oct. 30 | 69 | 636 |
| Soley, George R., Philadelphia, Pa. Medals | 25,416 | Oct. 30 | 69 | 636 |
| Spaulding & Merrick, Chicago, Ill. Smoking and chewing tobacco | 25,316 | Oct. 9 | 69 | 239 |
| Spear, Joshua, Boston, Mass. Remedies for catarrh and similar diseases | 25,577 | Dec. 4 | 69 | 1357 |
| Sprochnle & Co., F. M., Chicago, Ill. Catalogues and newspapers | 25,663 | Dec. 11 | 69 | 1504 |
| Sprudel Water Company, Mount Clemens, Mich. Mineral waters and carbonated beverages | 25,649 | Dec. 11 | 69 | 1502 |
| Starbird, Walter B., San Francisco, Cal. Carbonated beverage containing the extract of sarsaparilla and iron | 25,541 | Nov. 20 | 69 | 1066 |
| Starkmann, Adolph, Scranton, Pa. Cigars and smoking-tobacco | 25,732 | Dec. 25 | 69 | 1770 |
| Starr Co., C. R., Columbus, Ohio. Trunks | 25,334 | Oct. 9 | 69 | 240 |
| Stearns Shoe Co., Boston, Mass. Boots and shoes | 25,441 | Nov. 6 | 69 | 785 |
| Steele & Dorgeloh, New York, N. Y. Dried currants | 25,467 | Nov. 6 | 69 | 787 |
| Stemmler, Theodore W., New York, N. Y. Analgesic and antipyretic compound | 25,313 | Oct. 9 | 69 | 239 |
| Sterling Dyeing and Finishing Company, Sterling, Conn. Black-dyed fabrics | 25,308 | Oct. 9 | 69 | 238 |
| Sterling Dyeing and Finishing Company, Sterling, Conn. Black-dyed fabrics | 25,309 | Oct. 9 | 69 | 238 |
| Stewart, George B., Blue Rapids, Kans. Veterinary remedies | 25,288 | Oct. 2 | 69 | 118 |
| Stobie Cereal Mills, St. Louis, Mo. Rolled oats | 25,721 | Dec. 25 | 69 | 1770 |
| Stoddard, Llewellyn, L., New Haven, Conn. Mixture of Perique, Virginia, Havana, and Turkish tobaccos | 25,657 | Dec. 11 | 69 | 1503 |
| Stork, Adam, Jr., Lancaster, Pa. Cigars | 25,355 | Oct. 16 | 69 | 365 |
| Stott, David, Detroit, Mich. Wheat-flour | 25,517 | Nov. 13 | 69 | 943 |
| Strauss & Jandorf Shoe Company, Chicago, Ill. Shoes and slippers | 25,341 | Oct. 16 | 69 | 364 |
| Stuart, Frank A., Marshall, Mich. Lozenges or tablets for dyspepsia and disorders of digestion | 25,501 | Nov. 13 | 69 | 941 |
| Stuart Medicine Co., Elmira, N. Y. Cough remedy | 25,292 | Oct. 2 | 69 | 118 |
| Sun Segar Co., St. Louis, Mo. Cigars and tobacco | 25,466 | Nov. 6 | 69 | 787 |
| Sweeperette Co., Grand Rapids, Mich. Carpet-sweepers | 25,738 | Dec. 25 | 69 | 1771 |
| Swift Provision Co., Baltimore, Md. Hams, bacon, and lard | 25,597 | Dec. 4 | 69 | 1359 |
| Swift Provision Co., Baltimore, Md. Hams, bacon, and lard | 25,598 | Dec. 4 | 69 | 1359 |
| Sydney Ross Company, Maplewood, N. J., and New York, N. Y. Tonic pills | 25,380 | Oct. 16 | 69 | 368 |
| Sykes Bros. & Co., New York, N. Y. Boys' suits | 25,531 | Nov. 20 | 69 | 1065 |
| Tallinder y Co., S., San Pedro de la Colonia, Mexico. Blood-purifying compounds | 25,376 | Oct. 16 | 69 | 367 |
| Taylor, Son & Co., Pittsburg, Pa. Men's pants and overalls | 25,532 | Nov. 20 | 69 | 1065 |
| Taylor, Son & Co., Pittsburg, Pa. Hosiery | 25,561 | Dec. 4 | 69 | 1356 |

*Alphabetical list of registrants of trade-marks, October to December, inclusive*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Taylor, Son & Co., Pittsburg, Pa. Gloves and mittens | 25,562 | Dec. 4 | 69 | 1356 |
| Taylor, Son & Co., Pittsburg, Pa. Over and dress shirts | 25,563 | Dec. 4 | 69 | 1346 |
| Tempest, Francis, Birmingham township, Delaware county, Pa. Toilet paper | 25,659 | Dec. 11 | 69 | 1503 |
| Thomson, William S., London, England. Perfumery, soaps, washes, lotions, and similar articles | 25,428 | Oct. 30 | 69 | 637 |
| Thorp & Martin Company, Boston, Mass. Ink-ribbons | 25,440 | Nov. 6 | 69 | 785 |
| Tiffany Glass and Decorating Company, Jersey City, N. J., and New York, N. Y. Decorative glass | 25,512 | Nov. 13 | 69 | 942 |
| Tower & Lyon, New York, N. Y. Screw-drivers | 25,740 | Dec. 25 | 69 | 1771 |
| Trandt, Francis J., St. Louis, Mo. Herb tea | 25,378 | Oct. 16 | 69 | 367 |
| Union Bag and Paper Company, Chicago, Ill. Paper bags | 25,724 | Dec. 25 | 69 | 1771 |
| Union Bag and Paper Company, Chicago, Ill. Paper bags | 25,725 | Dec. 25 | 69 | 1771 |
| Union Bag and Paper Company, Chicago, Ill. Paper bags | 25,726 | Dec. 25 | 69 | 1772 |
| United States Radiator Company, Saltsburg, Pa. Steam and hot-water radiators | 25,335 | Oct. 9 | 69 | 210 |
| Vienna Malt Coffee Co., Milwaukee, Wis. Coffee preparations | 25,543 | Nov. 20 | 69 | 1066 |
| Violette, Bird & Co., James, Bordeaux, France. Dried prunes | 25,646 | Dec. 11 | 69 | 1502 |
| Voland & Co., Francisque, Lyons, France. Tissues and ribbons | 25,559 | Dec. 4 | 69 | 1356 |
| Wabash Soap and Chemical Company, Wabash, Ind. Laundry and toilet soap | 25,560 | Dec. 4 | 69 | 1358 |
| Wabash Soap and Chemical Company, Wabash, Ind. Soap | 25,691 | Dec. 18 | 69 | 1639 |
| Wagner & Co., F. W., Charleston, S. C. Lard | 25,426 | Oct. 30 | 69 | 637 |
| Wagoner, Harry E., St. Louis, Mo. Rubber belting, packing, and hose, and rubber footwear and wearing-apparel | 25,567 | Dec. 4 | 69 | 1356 |
| Wald, Adolph, New York, N. Y. Trousers or pantaloons | 25,340 | Oct. 16 | 69 | 364 |
| Waldo Foundry, Bridgeport, Conn. Aluminum-gold knives, forks, spoons, flat and table ware | 25,568 | Dec. 4 | 69 | 1357 |
| Walsh, Edward W., New York, N. Y. Printed publications | 25,384 | Oct. 23 | 69 | 505 |
| Walter A. Wood Harvester Company, St. Paul, Minn. Binding-twine | 25,574 | Dec. 4 | 69 | 1357 |
| Walter A. Wood Harvester Company, St. Paul, Minn. Harvesting machinery for hay and grain | 25,698 | Dec. 18 | 69 | 1640 |
| Washburn, Crosby Company, Minneapolis, Minn. Wheat-flour | 25,367 | Oct. 16 | 69 | 366 |
| Washburn, Crosby Company, Minneapolis, Minn. Wheat-flour | 25,521 | Nov. 13 | 69 | 943 |
| Wear & Boogher Dry Goods Company, St. Louis, Mo. Hosiery | 25,442 | Nov. 6 | 69 | 785 |
| Webster & Co., S., Boston, Mass. Alterative compound and blood purifier | 25,344 | Oct. 9 | 69 | 239 |
| Wessel, Louis A., New York, N. Y. Whisky | 25,745 | Dec. 25 | 69 | 1772 |
| Westerman, Frederick, Chicago, Ill. Bread | 25,593 | Dec. 4 | 69 | 1358 |
| White, John A., Concord, N. H. Crushed mica schist for food for poultry and birds | 25,511 | Nov. 13 | 69 | 942 |
| White & Sons, R., London, England. Malt beverages | 25,652 | Dec. 11 | 69 | 1503 |
| White & Sons, R., London, England. Malt beverages | 25,653 | Dec. 11 | 69 | 1503 |
| Whitney & Wilson, Rochester, N. Y. Wheat-flour | 25,523 | Nov. 13 | 69 | 943 |
| Willford, Firm of William, Tamise, Belgium. Waterproof cloth | 25,755 | Dec. 25 | 69 | 1772 |
| Willimantic Linen Company, Hartford, Conn. Spool-cotton | 25,626 | Dec. 11 | 69 | 1500 |
| Willimantic Linen Company, Hartford, Conn. Spool-cotton | 25,627 | Dec. 11 | 69 | 1500 |
| Willimantic Linen Company, Hartford, Conn. Spool-cotton | 25,628 | Dec. 11 | 69 | 1500 |
| Willimantic Linen Company, Hartford, Conn. Spool-cotton | 25,629 | Dec. 11 | 69 | 1501 |
| Willimantic Linen Company, Hartford, Conn. Spool-cotton | 25,630 | Dec. 11 | 69 | 1501 |
| Willimantic Linen Company, Hartford, Conn. Spool-cotton | 25,631 | Dec. 11 | 69 | 1501 |
| Willimantic Linen Company, Hartford, Conn. Spool-cotton | 25,632 | Dec. 11 | 69 | 1501 |
| Willimantic Linen Company, Hartford, Conn. Spool-cotton | 25,633 | Dec. 11 | 69 | 1501 |
| Willimantic Linen Company, Hartford, Conn. Spool-cotton | 25,634 | Dec. 11 | 69 | 1501 |
| Willimantic Linen Company, Hartford, Conn. Spool-cotton | 25,635 | Dec. 11 | 69 | 1501 |
| Winkelmann & Brown Drug Company, Baltimore, Md. Cosmetics, hair-oils, and perfumes | 25,636 | Dec. 11 | 69 | 1501 |
| Witch City Cycle Co., Salem, Mass. Cycles | 25,500 | Nov. 13 | 69 | 941 |
| Wm. L. Gilbert Clock Company, Winsted, Conn., Chicago, Ill., and New York, N. Y. Clocks | 25,745 | Dec. 25 | 69 | 1772 |
| Wm. Schmidt Baking Company, Chicago, Ill. Bread, crackers, biscuits, cakes, and like articles | 25,569 | Dec. 4 | 69 | 1357 |
| Wolf & Gross, New York, N. Y. Hollow glass tableware | 25,520 | Nov. 13 | 69 | 943 |
| Wool Oil Refining Company, New York, N. Y. Wool-oil | 25,351 | Oct. 16 | 69 | 365 |
| Woonsocket Rubber Company, Providence, R. I. Rubber boots | 25,401 | Oct. 23 | 69 | 506 |
| | 25,342 | Oct. 16 | 69 | 364 |

## PRINTS.

| Name, residence, and title. | No. | Date. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|
| Feinberg, Isaac H., Boston, Mass. "Look for This Label." | 6 | Nov. 20 | 69 | 956 |

## DISCLAIMERS.

| Name, residence, and invention. | No. | Filed. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|
| Clark, John W., Menands, N. Y.: disclaimer filed by patentee and assignee. Electric trolley-wheel | 503,562 | Nov. 19, 1894 | 69 | 1074 |
| Gent, Joseph F., Columbus, Ind.: disclaimer filed by assignee. Art of brewing malt liquors | 262,151 | Nov. 15, 1894 | 69 | 955 |
| Norris, George E., Troy, N. Y.: disclaimer filed by patentee. Machine for turning cuff-blanks | 520,535 | Oct. 6, 1894 | 69 | 247 |
| Piper, Edward E., Portland, Me.: disclaimer filed by patentee. Curtain-holding device | 516,280 | Nov. 20, 1894 | 69 | 1074 |

# ALPHABETICAL LIST OF INVENTIONS.

| Invention. | Name. | No. | Date. | Monthly volume. Specification. | Monthly volume. Drawing. | Official Gazette. Volume. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Acid. Apparatus for making sulfuric | P. S. Gilchrist | 527,680 | Oct. 16 | 1653 | 398 | 69 | 395 |
| Acid. Making salicylic | S. Marasse | 529,182 | Nov. 13 | 1186 | ..... | 69 | 884 |
| Acid. Manufacture of anhydrous stannic | I. A. F. Bang and M. C. A. Ruffin | 529,100 | Nov. 13 | 1042 | ..... | 69 | 856 |
| Acid with an absorbent. Phosphoric | G. Descamps | 527,670 | Oct. 16 | 1631 | ..... | 69 | 331 |
| Adding-machine | H. D. Hicks | 528,596 | Nov. 6 | 130 | 31,32 | 69 | 670 |
| Adding-machine | H. B. Martin | 529,799 | Nov. 27 | 2261 | 539 | 69 | 1166 |
| Addressing envelopes, &c. Machinery for | G. Clark | 531,021 | Dec. 18 | 1648 | 391 | 69 | 1545 |
| Adjustable bracket for shade or other rollers | J. A. Dwyer | 527,951 | Oct. 23 | 2127 | 510 | 69 | 439 |
| Advertising apparatus | W. H. Reiff | 527,024 | Oct. 2 | 578 | 140 | 69 | 109 |
| Advertising board | G. C. Evans and J. W. Layne | 530,756 | Dec. 11 | 1204 | 293 | 69 | 1449 |
| Advertising device. Automatic | B. H. May and J. H. Morrissey | 528,334 | Oct. 30 | 2806 | 678 | 69 | 576 |
| Advertising-machine | W. T. Shirley | 528,814 | Nov. 6 | 518 | 125 / 126 | 69 | 740 |
| Advertising machine. Sign | O. P. Briggs and W. R. Patterson | 531,018 | Dec. 18 | 1639 | 389 | 69 | 1543 |
| Advertising or display device | A. von Cotzhausen | 529,602 | Nov. 20 | 1944 | 462 | 69 | 1040 |
| Advertising or other sign | R. Henderson | 530,926 | Dec. 4 | 206 | 66 | 69 | 1263 |
| Advertising purposes. Cabinet for | G. H. Strong | 530,668 | Dec. 11 | 1062 | 258 | 69 | 1423 |
| Advertising purposes. Construction of buildings for | E. Nicolas | 528,789 | Nov. 6 | 472 | 116 | 69 | 732 |
| Advertising purposes. Mechanical artificial flower for | J. E. Wenger | 530,870 | Dec. 11 | 1379 | 329 | 69 | 1481 |
| Advertising-sign device | W. C. Morrison | 528,256 | Oct. 30 | 2678 | 646 | 69 | 554 |
| Aerator | H. Fowell | 526,998 | Oct. 2 | 533 | 131 | 69 | 109 |
| Aerial navigation. Apparatus for | N. H. Borgfeldt | 530,219 | Dec. 4 | 252 | 62 | 69 | 1261 |
| Aerial-vehicle propeller | H. Ganswindt | 526,700 | Oct. 2 | 53 | 13 | 69 | 13 |
| Aging wines or distilled liquors. Apparatus for | T. R. Timby | 527,564 | Oct. 16 | 1457 | 354 / 355 | 69 | 239 |
| Agricultural machine. Convertible | S. J. Conkwright | 527,363 | Oct. 9 | 1123 | 274 / 275 | 69 | 223 |
| Agricultural machinery. Gearing and gear-covering for | J. D. Schofield | 531,278 | Dec. 18 | 2118 | 502 | 69 | 1630 |
| Air. Apparatus for generating compressed | E. C. Nichols | 530,118 | Dec. 4 | 74 | 20, 21 | 69 | 1229 |
| Air-brake | R. W. Bayley | 528,712 | Nov. 6 | 391 | 81 | 69 | 706 |
| Air-brake | J. D. P. Schenck | 531,137 | Dec. 18 | 1854 | 440 | 69 | 1583 |
| Air-brake coupling. Automatic | W. M. Edwards | 527,838 | Oct. 23 | 1808 | 459 | 69 | 398 |
| Air-brake couplings. Sealing-cap for | H. C. McCarty | 529,290 | Nov. 13 | 1372 | 330 | 69 | 915 |
| Air-brake governor | T. H. Haberkorn | 531,181 | Dec. 18 | 1936 | 460 | 69 | 1598 |
| Air-brake mechanism | E. G. Shortt | 530,904 | Dec. 11 | 1434 | 340 | 69 | 1492 |
| Air-brake-regulating apparatus | H. E. Hunt | 529,270 | Nov. 13 | 1341 | 321 | 69 | 909 |
| Air-brake signal apparatus | E. P. Bishop, Jr | 531,584 | Dec. 25 | 2653 | 636 | 69 | 1749 |
| Air-brake systems. Locking stop-cock for train-pipes of | J. T. Eldridge | 527,397 | Oct. 9 | 1067 | 258 | 69 | 212 |
| Air-brakes. Block system for automatically operating | J. H. Fox | 530,937 | Dec. 18 | 1492 | 354 | 69 | 1518 |
| Air-brakes. Dog for actuating | J. H. Fox | 530,939 | Dec. 18 | 1498 | 355 | 69 | 1519 |
| Air-brakes. Mechanism for automatically actuating | J. H. Fox | 530,938 | Dec. 18 | 1495 | 354 / 355 | 69 | 1518 |
| Air-brakes. Track device to automatically operate | J. P. Clifton | 531,100 | Dec. 18 | 1785 | 425 | 69 | 1570 |
| Air-compressing device | W. U. Griffiths and H. Niedermayer | 530,335 | Dec. 4 | 457 | 114 | 69 | 1297 |
| Air-compressing device | W. U. Griffiths and H. Niedermayer | 530,336 | Dec. 4 | 459 | 115 | 69 | 1297 |
| Air-compressor | H. C. Sergeant | 530,662 | Dec. 11 | 1052 | 256 | 69 | 1421 |
| Air-compressor. Pedal | J. North | 527,248 | Oct. 9 | 935 | 226 | 69 | 189 |
| Air-draft-control apparatus | H. Recknagel | 529,191 | Nov. 13 | 1201 | 290 | 69 | 884 |
| Air-inlet or draft doors. Means for opening or closing | C. A. Gifford | 529,166 | Nov. 13 | 1152 | 277 | 69 | 876 |
| Air or gas compressor | C. W. Miles | 531,552 | Dec. 25 | 2604 | 623 | 69 | 1739 |
| Air purifier. Return | J. Warrington | 527,910 | Oct. 23 | 2052 | 492 | 69 | 425 |
| Air sieve, purifier, and dust-collector. Combined return | A. C. Brantingham | 527,938 | Oct. 23 | 2102 | 504 | 69 | 434 |
| Alarm: | | | | | | | |
| *See* Bell and burglar-alarm. Bicycle-alarm. Bilge-water alarm. Burglar-alarm. Fire-alarm. Leak-alarm. Refrigerator leak-alarm. Watch-alarm. | | | | | | | |
| Alarm-lock for doors, &c | J. F. Graybill | 527,527 | Oct. 16 | 1404 | 342 | 69 | 289 |
| Alarm operating mechanism. Electric | P. C. Thompson | 526,760 | Oct. 2 | 155 | 37 | 69 | 30 |
| Album | C. Jaeger | 527,204 | Oct. 9 | 854 | 205 | 69 | 174 |
| Alcohol. Making phenol | O. Manasse | 526,756 | Oct. 2 | 197 | ..... | 69 | 37 |
| Ale or beer condenser and cooler | T. Jones | 530,309 | Dec. 4 | 409 | 102 | 69 | 1289 |
| Aligning machinery. Method of and apparatus for | R. J. Snyder | 529,315 | Nov. 13 | 1423 | 342 | 69 | 925 |
| Alkali. Process of and apparatus for the production of caustic | C. T. J. Vautin | 531,235 | Dec. 18 | 2041 | 486 / 487 | 69 | 1616 |
| Alkaline salts. Process of and apparatus for electrolytic decomposition of | H. Y. Castner | 528,322 | Oct. 30 | 2787 | 673 | 69 | 573 |
| Alloy. Aluminium | R. I. Roman | 528,181 | Oct. 30 | 2540 | ..... | 69 | 569 |
| Alloying lead and zinc | F. J. Clamer | 528,923 | Nov. 13 | 751 | ..... | 69 | 604 |
| Aluminium. Improving surfaces of | A. V. Davis | 528,513 | Oct. 30 | 3116 | ..... | 69 | 632 |
| Aluminum. Reducing | F. A. Gooch and L. Waldo | 527,847 | Oct. 23 | 1930 | 464 | 69 | 402 |

*Alphabetical list of inventions, October to December, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Aluminium. Reducing | F. A. Gooch and L. Waldo | 527,848 | Oct. 23 | 1934 | 464, 465 | 69 | 402 |
| Aluminium. Reducing | F. A. Gooch and L. Waldo | 527,849 | Oct. 23 | 1937 | 465 | 69 | 403 |
| Aluminium. Reducing | F. A. Gooch and L. Waldo | 527,850 | Oct. 23 | 1941 | 465, 466 | 69 | 403 |
| Aluminium. Reducing | F. A. Gooch and L. Waldo | 527,851 | Oct. 23 | 1945 | 466 | 69 | 404 |
| Aluminium. Reducing | F. A. Gooch and L. Waldo | 528,365 | Oct. 30 | 2859 | 692, 693 | 69 | 586 |
| Aluminium. Reducing | L. Waldo and F. A. Gooch | 527,846 | Oct. 23 | 1927 | 463, 464 | 69 | 404 |
| Amalgamating apparatus. Electric ore | J. C. Ludwig | 527,150 | Oct. 9 | 775 | 189 | 69 | 159 |
| Amalgamator | L. D. Coe | 531,611 | Dec. 25 | 2702 | 648 | 69 | 1759 |
| Amalgamator | C. F. Pike | 528,976 | Nov. 13 | 840 | 198, 199 | 69 | 819 |
| Amalgamator | H. L. Simmons | 528,815 | Nov. 6 | 525 | 126 | 69 | 740 |
| Amalgamator and separator | J. W. Bailey | 531,296 | Dec. 25 | 2150 | 515 | 69 | 1651 |
| Amalgamator and separator for recovering precious metals from ores. | E. Reading and A. Rigby | 527,076 | Oct. 9 | 654 | 157, 159 | 69 | 137 |
| Amalgamator sluice-box. Automatic | H. L. Phillips | 528,969 | Nov. 13 | 928 | 194, 195 | 69 | 817 |
| Ammonium bichromate. Making | E. A. Starke | 527,563 | Oct. 16 | 1456 | ..... | 69 | 299 |
| Anchor | H. A. and H. A. House, Jr | 527,061 | Oct. 9 | 636 | 154 | 69 | 134 |
| Anchor. Folding | F. Joyner | 531,315 | Dec. 25 | 2191 | 521 | 69 | 1660 |
| Anchors. Means for raising | H. A. and H. A. House, Jr | 527,060 | Oct. 9 | 635 | 154 | 69 | 134 |
| Animal-releasing device | H. Larsen | 530,487 | Dec. 4 | 731 | 179 | 69 | 1348 |
| Animal-securing device | J. W. Ziellenbach | 528,840 | Nov. 6 | 588 | 139 | 69 | 753 |
| Animal-trap | C. L. Brown | 527,044 | Oct. 9 | 614 | 148 | 69 | 130 |
| Animal-trap | M. Burton and L. G. Beers | 530,178 | Dec. 4 | 137 | 36 | 69 | 1240 |
| Animal-trap | W. C. Hooker | 528,071 | Nov. 6 | 269 | 66 | 69 | 694 |
| Animal-trap | D. W. Leedy | 531,544 | Dec. 25 | 2590 | 620 | 69 | 1746 |
| Animal-trap | C. R. Mead | 529,129 | Nov. 13 | 1087 | 262 | 69 | 864 |
| Animal-trap | R. Scheibel | 530,723 | Dec. 11 | 1152 | 279 | 69 | 1439 |
| Animal-trap | V. J. Scherb | 531,571 | Dec. 25 | 2633 | 631 | 69 | 1745 |
| Annealing-box | W. H. White | 527,642 | Oct. 16 | 1588 | 384 | 69 | 323 |
| Annunciator. Automatic set-back | H. C. Thomson and G. J. Galbraith | 529,144 | Nov. 13 | 1115 | 270 | 69 | 869 |
| Annunciator-signal | I. H. Farnham | 527,539 | Oct. 23 | 1960 | 469 | 69 | 399 |
| Ant-trap | W. B. Carter | 528,921 | Nov. 13 | 748 | 175 | 69 | 803 |
| Antirattler and shaft-support. Combined | E. C. Hall | 529,327 | Nov. 13 | 1437 | 346 | 69 | 928 |
| Apartment-house | M. L. Ungrich | 531,141 | Dec. 18 | 1860 | 441, 442 | 69 | 1584 |
| Apples, pears, &c. Machine for pulping | C. J. Ollagnier | 531,058 | Dec. 18 | 1707 | 406 | 69 | 1556 |
| Arbor-press | J. H. Sheridan | 527,731 | Oct. 16 | 1733 | 418 | 69 | 350 |
| Arc-light hanger-board | D. J. Cartwright | 530,882 | Dec. 11 | 1401 | 333, 334 | 69 | 1485 |
| Armature-core | J. J. Wood | 529,437 | Nov. 20 | 1661 | 395 | 69 | 988 |
| Armature for dynamo-electric machines and making same. | T. H. Hicks | 528,204 | Oct. 30 | 2582 | 624 | 69 | 595 |
| Armatures and field-magnets and making same. Conductor-coil for | E. W. Alexander and H. Groswith | 529,992 | Nov. 27 | 2616 | 627 | 69 | 1175 |
| Armor-plate | P. R. D. D'Humy | 530,024 | Nov. 27 | 2674 | 641, 642 | 69 | 1186 |
| Armor-plates. Manufacture of | T. J. Tresidder | 529,050 | Nov. 13 | 957 | 226 | 69 | 840 |
| Artillery. Carriage or mounting for | H. Jakobsson | 531,417 | Dec. 25 | 2362 | 562 | 69 | 1693 |
| Asphalt. Preparing and utilizing rock | W. A. Adams | 528,841 | Nov. 6 | 589 | ..... | 69 | 753 |
| Asphaltum or bitumen disintegrator | F. Walker | 527,636 | Oct. 16 | 1576 | 381 | 69 | 321 |
| Atomizer | H. C. Rees | 526,741 | Oct. 2 | 122 | 29 | 69 | 24 |
| Auger-bit | E. C. Phillips | 529,332 | Nov. 27 | 2322 | 553 | 69 | 1119 |
| Auger. Double-tenon | C. Blatchley | 528,527 | Nov. 6 | 10 | 4 | 69 | 648 |
| Auger for boring and reaming | L. F. C. Rich and J. H. Hull | 529,049 | Nov. 13 | 954 | 226 | 69 | 840 |
| Auger. Well- | E. E. Senitf | 528,695 | Nov. 6 | 312 | 76 | 69 | 702 |
| Awning | E. Fauteux | 530,098 | Dec. 4 | 36 | 10 | 69 | 1222 |
| Awning and fire and burglar proof shutter. Combined | W. Lash | 529,737 | Nov. 27 | 2161 | 515 | 69 | 1088 |
| Ax-polls. Machine for making | E. Rogers | 531,221 | Dec. 18 | 2014 | 478, 479, 480 | 69 | 1612 |
| Axle box. Locomotive | M. N. Forney | 527,960 | Oct. 23 | 2150 | 517 | 69 | 443 |
| Axle-box pedestal. Car | S. J. Van Stavoren | 527,087 | Oct. 9 | 669 | 163 | 69 | 140 |
| Axle-box pedestal. Car | S. J. Van Stavoren | 527,088 | Oct. 9 | 670 | 164 | 69 | 141 |
| Axle-box pedestal. Car | S. J. Van Stavoren | 527,089 | Oct. 9 | 671 | 164 | 69 | 141 |
| Axle-box pedestal. Car | S. J. Van Stavoren | 527,090 | Oct. 9 | 672 | 164 | 69 | 141 |
| Axle-box pedestal. Car | S. J. Van Stavoren | 527,091 | Oct. 9 | 673 | 164, 165 | 69 | 141 |
| Axle-box. Roller-bearing | J. D. Mattison | 527,121 | Oct. 9 | 727 | 178, 179 | 69 | 150 |
| Axle boxes. Floor for car | A. Lichtenhein | 529,926 | Nov. 27 | 2476 | 590 | 69 | 1147 |
| Axle. Car | R. Bettermann | 531,405 | Dec. 25 | 2342 | 558 | 69 | 1689 |
| Axle. Vehicle | J. Miller | 528,482 | Oct. 30 | 3065 | 743 | 69 | 623 |
| Axle washer. Vehicle | M. D. Peckham and C. E. Swan | 529,831 | Nov. 27 | 2320 | 553 | 69 | 1118 |
| Baby-walker | N. P. Bradish | 529,359 | Nov. 20 | 1493 | 359 | 69 | 959 |
| Back-brace | J. Gallegos | 530,038 | Nov. 27 | 2697 | 648 | 69 | 1190 |
| Bag: *See* Mail-bag. Packing-bag. | | | | | | | |
| Bag | J. N. Bull | 529,478 | Nov. 20 | 1732 | 413 | 69 | 1001 |
| Bag-fastener | A. Nixon | 527,714 | Oct. 16 | 1700 | 409 | 69 | 344 |
| Bag for containing granular material | F. O. Matthiessen and H. Arkell | 527,558 | Oct. 16 | 1449 | 353 | 69 | 298 |
| Bag-lock | J. B. Bundren and J. W. Hedges | 530,011 | Nov. 27 | 2652 | 636, 637 | 69 | 1182 |
| Bagasse-burner | E. A. Koch | 527,001 | Oct. 2 | 539 | 132 | 69 | 102 |
| Bailing device | J. Fatkin | 528,085 | Oct. 23 | 2375 | 573 | 69 | 483 |
| Bait-receptacle | W. B. Gilmore | 531,112 | Dec. 18 | 1808 | 430 | 69 | 1574 |
| Bake-pan | C. J. Rundberg | 526,747 | Oct. 2 | 129 | 31 | 69 | 26 |
| Bale-box clamp | T. M. Wallace | 528,047 | Oct. 23 | 2305 | 556 | 69 | 470 |
| Bale-tie | W. H. Singleton | 530,607 | Dec. 11 | 951 | 234 | 69 | 1405 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Baling machine. Cotton | C. L. Bessonett | 530,000 | Nov. 27 | 2627 | 631 | 69 | 1177 |
| Baling machine. Cotton | H. E. Smith and B. A. Dare | 529,968 | Nov. 27 | 2557 | 616, 617 | 69 | 1161 |
| Baling machines. Core-holding mechanism for cotton | H. E. Smith and B. A. Dare | 529,967 | Nov. 27 | 2553 | 615 | 69 | 1160 |
| Baling-press | A. L. Cox | 531,163 | Dec. 18 | 1908 | 455 | 69 | 1593 |
| Baling-press | F. L. Robison | 529,083 | Nov. 13 | 1014 | 244 | 69 | 850 |
| Baling-press | H. E. Smith | 529,969 | Nov. 27 | 2561 | 617 | 69 | 1162 |
| Baling-press | C. E. Whitman | 531,240 | Dec. 18 | 2048 | 488, 489 | 69 | 1617 |
| Baling-press | A. Wickey | 526,883 | Oct. 2 | 354 | 87, 88 | 69 | 67 |
| Ball: *See* Bowling-ball. | | | | | | | |
| Ball-and-socket joint for use in mills | W. N. Hartshorn | 527,282 | Oct. 9 | 995 | 241, 242 | 69 | 199 |
| Ball-making machine | M. B. Mishler | 528,886 | Nov. 6 | 663 | 159 | 69 | 767 |
| Ballot-box | W. M. Demott | 529,008 | Nov. 20 | 1953 | 464 | 69 | 1041 |
| Ballot-box. Registering | L. M. Foster | 530,034 | Nov. 27 | 2689 | 646, 647 | 69 | 1189 |
| Ballot-box. Registering and canceling | E. K. Tolman | 528,191 | Oct. 30 | 2559 | 620 | 69 | 532 |
| Band-cutter and feeder | C. W. Bond | 529,890 | Nov. 27 | 2417 | 580, 581 | 69 | 1137 |
| Band-cutter and feeder | I. A. Crisp and J. A. Stevenson | 528,861 | Nov. 6 | 627 | 149 | 69 | 761 |
| Band-cutter and feeder | F. F. Landis | 531,541 | Dec. 25 | 2584 | 618, 619 | 69 | 1735 |
| Band-cutter and feeder | H. D. May | 529,397 | Nov. 20 | 1580 | 376 | 69 | 974 |
| Bandage-machine | W. N. Crabtree | 527,365 | Oct. 9 | 1130 | 276 | 69 | 224 |
| Bandage. Suspensory | J. Teuscher, Jr | 531,232 | Dec. 18 | 2037 | 485 | 69 | 1615 |
| Banjo | F. H. Andres | 529,514 | Nov. 20 | 1802 | 429 | 69 | 1013 |
| Banjo-bridge | A. D. Grover | 530,483 | Dec. 4 | 724 | 177 | 69 | 1345 |
| Banjo mute or damper | J. D. Harper | 526,899 | Oct. 2 | 396 | 96 | 69 | 72 |
| Bank. Registering savings | C. A. Richards | 527,220 | Oct. 9 | 1009 | 245 | 69 | 201 |
| Bar: *See* Matrix-bar. | | | | | | | |
| Barge. Freight | A. K. McRae | 527,215 | Oct. 9 | 872 | 212, 213 | 69 | 178 |
| Bark, &c. Machine for removing | C. E. V. Folin | 528,664 | Nov. 6 | 260 | 64 | 69 | 692 |
| Barking machines. Automatic feed for wood | W. Hadley | 528,873 | Nov. 6 | 647 | 154 | 69 | 764 |
| Barrel | A. C. Calhoun | 526,684 | Oct. 2 | 22 | 6 | 69 | 7 |
| Barrel-cover | J. O. Cooper and A. S. Jacoby | 526,687 | Oct. 2 | 25 | 7 | 69 | 7 |
| Barrel-head-turning machine | W. W. Trevor | 531,400 | Dec. 25 | 2332 | 556 | 69 | 1687 |
| Barrel-heads in place. Device for securing | O. P. Gordon | 529,725 | Nov. 27 | 2141 | 512 | 69 | 1085 |
| Barrel-hooping machine | E. A. Delano | 528,765 | Nov. 6 | 429 | 103, 104, 105 | 69 | 724 |
| Barrel. Knockdown | H. Ellis | 527,328 | Oct. 9 | 1069 | 258 | 69 | 212 |
| Barrel-making machine | W. T. Vale and G. A. Ohl | 531,283 | Dec. 18 | 2125 | 509, 510 | 69 | 1632 |
| Barrel. Pickle | J. Tomlinson | 531,601 | Dec. 25 | 2688 | 645 | 69 | 1756 |
| Barrel-washer | H. J. Ferguson | 530,515 | Dec. 11 | 793 | 196, 197 | 69 | 1376 |
| Barrel-washer | C. L. Kline | 530,593 | Dec. 11 | 928 | 228 | 69 | 1401 |
| Base and column. Knockdown | W. Hetterschied | 526,834 | Oct. 2 | 267 | 65 | 69 | 51 |
| Basin plug and overflow. Combined lavatory | C. H. Muckenhirn | 527,802 | Oct. 23 | 1854 | 446 | 69 | 349 |
| Basket. Fruit | J. E. Asam and F. Muhlenbeck | 527,761 | Oct. 23 | 1787 | 430 | 69 | 337 |
| Basket. Lunch | A. Probola | 528,491 | Oct. 30 | 3079 | 746 | 69 | 625 |
| Basket-making machine | E. Horton | 530,048 | Nov. 27 | 2715 | 562, 563 | 69 | 1194 |
| Basket. Ventilated fruit | C. W. Weston | 528,834 | Nov. 6 | 578 | 137 | 69 | 751 |
| Basket. Wood-veneer-made | C. W. Weston | 528,835 | Nov. 6 | 579 | 137 | 69 | 751 |
| Basting and roasting pan | J. Stroud | 527,252 | Oct. 9 | 939 | 228 | 69 | 199 |
| Bath: *See* Vapor face-bath. | | | | | | | |
| Bath apparatus. Shower | H. M. Christopher | 531,303 | Dec. 25 | 2167 | 518 | 69 | 1655 |
| Bath-tub | R. M. Wilson | 530,568 | Dec. 11 | 888 | 219 | 69 | 1393 |
| Bath-tub and traveling-bag. Convertible or combined | F. von Oheimb | 530,599 | Dec. 11 | 941 | 231 | 69 | 1403 |
| Bathing apparatus | S. S. Goldman | 527,057 | Oct. 9 | 631 | 153 | 69 | 133 |
| Batteries. Manufacturing elements or plates for secondary | H. F. Kirkpatrick-Picard and H. Thame. | 527,861 | Oct. 23 | 1963 | 472 | 69 | 408 |
| Batteries. Manufacturing plates for secondary | H. F. Kirkpatrick-Picard and H. Thame. | 530,847 | Dec. 11 | 1344 | 322 | 69 | 1475 |
| Battery: *See* Electric battery. Galvanic battery. Electric mouth-battery. Primary battery. Secondary battery. Electric uterine battery. Storage-battery. | | | | | | | |
| Battery connection | W. S. Doe | 530,401 | Dec. 4 | 571 | 141 | 69 | 1319 |
| Battery-switch | H. K. Spangenberg | 530,804 | Dec. 11 | 1277 | 308 | 69 | 1463 |
| Beam. Fireproof | C. A. Balph and E. P. S. Wright | 527,232 | Oct. 9 | 907 | 219 | 69 | 185 |
| Bean-picker | M. M. Nye | 529,687 | Nov. 20 | 2075 | 496 | 69 | 1064 |
| Bearing. Antifriction | A. J. Shaw | 528,617 | Nov. 6 | 167 | 40, 41 | 69 | 676 |
| Bearing. Antifriction roller | J. D. Mattison | 530,544 | Dec. 11 | 844 | 208 | 69 | 1385 |
| Bearing. Ball | W. Badger | 527,041 | Oct. 9 | 609 | 148 | 69 | 129 |
| Bearing for wheel-boxes. Ball | W. S. Robinson | 531,564 | Dec. 25 | 2621 | 628 | 69 | 1743 |
| Bearing. Ring-oiler | W. W. Carey | 528,714 | Nov. 6 | 333 | 81 | 69 | 707 |
| Bearing. Roller thrust | J. R. Burdick | 529,853 | Nov. 27 | 2363 | 564 | 69 | 1126 |
| Bearing. Shaft | S. H. Wheeler | 527,641 | Oct. 16 | 1587 | 383 | 69 | 323 |
| Bearing. Vehicle ball | E. L. Brown | 527,659 | Oct. 16 | 1613 | 389 | 69 | 328 |
| Bearing wheel. Ball | H. F. Coates | 531,101 | Dec. 18 | 1787 | 426 | 69 | 1570 |
| Bed and couch. Combined | E. B. Clark | 529,644 | Nov. 20 | 2007 | 480 | 69 | 1051 |
| Bed and table combined. Folding | L. Kabell | 528,370 | Oct. 30 | 2870 | 694, 695 | 69 | 587 |
| Bed-bottom. Extensible | A. H. Freese | 531,370 | Dec. 25 | 2289 | 546 | 69 | 1678 |

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|---|---|---|---|---|---|---|---|
| Bed-bottom. Spring | T. A. Stoll | 530,248 | Dec. 4 | 302 | 76 | 69 | 1270 |
| Bedclothes-holder | G. H. Holbidge | 528,432 | Oct. 30 | 2976 | 720 | 69 | 606 |
| Bedclothes-holder | C. E. Muller | 527,872 | Oct. 23 | 1979 | 476 | 69 | 411 |
| Bed. Folding | R. T. Barton | 530,742 | Dec. 11 | 1480 | 287, 284 | 69 | 1444 |
| Bed. Folding | K. L. Hyller | 530,777 | Dec. 11 | 1243 | 300 | 69 | 1457 |
| Bed. Folding | E. M. Knoblaugh | 528,328 | Oct. 30 | 2797 | 675 | 69 | 574 |
| Bed. Folding | T. Opel | 529,944 | Nov. 27 | 2511 | 604, 605 | 69 | 1152 |
| Bed. Folding | H. W. Ru Ton | 528,609 | Nov. 6 | 148 | 37 | 69 | 674 |
| Bed. Folding | M. Samuels | 527,006 | Oct. 2 | 547 | 134 | 69 | 104 |
| Bed. Folding | M. Samuels | 530,855 | Dec. 11 | 1358 | 324 | 69 | 1477 |
| Bed-lounge | A. J. Gautran | 531,461 | Dec. 25 | 2455 | 584 | 69 | 1710 |
| Bed. Spring | O. S. Foster | 526,831 | Oct. 2 | 264 | 64 | 69 | 50 |
| Beds or seats. Elastic wire support for | G. Dominick | 526,860 | Oct. 2 | 319 | 78 | 69 | 61 |
| Bedstead clothes-rack attachment | J. P. Edmonds and J. A. Kyle | 528,659 | Nov. 6 | 248 | 62 | 69 | 691 |
| Bedstead-fastening | O. S. Foster | 529,486 | Nov. 20 | 1750 | 415 | 69 | 1003 |
| Bedsteads. Head-rest for | G. G. J. Millar | 530,786 | Dec. 11 | 1255 | 303 | 69 | 1459 |
| Beehive super | G. C. Ferguson | 529,116 | Nov. 13 | 1062 | 256 | 69 | 859 |
| Beer, &c. Apparatus for dispensing root- | S. F. Kates | 528,543 | Nov. 6 | 35 | 9 | 69 | 653 |
| Beer-bottling apparatus | V. Oppl | 530,600 | Dec. 11 | 942 | 231, 232 | 69 | 1403 |
| Beer-carbonating apparatus | C. Barus | 531,356 | Dec. 25 | 2256 | 538 | 69 | 1672 |
| Beer drawing and saving apparatus | W. R. Dales | 530,827 | Dec. 11 | 1312 | 316 | 69 | 1470 |
| Beer-forcing apparatus. Air-pressure | H. E. Bailey | 531,494 | Dec. 25 | 2207 | 597 | 69 | 1720 |
| Beer, &c., in receptacles for market. Process of and apparatus for preparing | A. M. Hofmann | 531,314 | Dec. 25 | 2184 | 522, 523, 524 | 69 | 1658 |
| Beer. Manufacturing | P. Kropf | 528,371 | Oct. 30 | 2874 | 696 | 69 | 588 |
| Beer. Means for transporting | V. Oppl | 527,123 | Oct. 9 | 732 | 179, 180 | 69 | 151 |
| Beer-tapping device | H. Friedlander | 530,761 | Dec. 11 | 1209 | 294 | 69 | 1450 |
| Belaying-pin. Releasing | A. V. T. Sabroe | 530,722 | Dec. 11 | 1151 | 279 | 69 | 1439 |
| Bell and burglar-alarm. Door- | J. T. Stone | 530,666 | Dec. 11 | 1057 | 257 | 69 | 1422 |
| Bell and burglar-alarm. Door- | J. T. Stone | 530,667 | Dec. 11 | 1059 | 258 | 69 | 1422 |
| Bell. Automatic bicycle- | C. A. Bemis and E. A. Adams | 531,457 | Dec. 25 | 2446 | 582 | 69 | 1709 |
| Bell. Electric | E. G. Worley | 530,253 | Dec. 4 | 309 | 77 | 69 | 1272 |
| Bell. Magneto call- | J. B. Smith | 526,982 | Oct. 2 | 340 | 125 | 69 | 96 |
| Bell-ringing mechanism | W. G. Alexander | 528,134 | Oct. 30 | 2169 | 597 | 69 | 515 |
| Bell. Signal- | I. L. Garside | 531,373 | Dec. 25 | 2293 | 547 | 69 | 1679 |
| Bellows for forges, &c. | S. Rucinski and F. M. Kozlowski | 528,808 | Nov. 6 | 510 | 123 | 69 | 739 |
| Belt. Electric | J. Backstrom and F. W. Johnson | 527,922 | Oct. 23 | 2072 | 496 | 69 | 428 |
| Belt. Electric | L. F. Fuller and A. J. Taylor | 531,109 | Dec. 18 | 1803 | 429 | 69 | 1573 |
| Belt. Electric | J. J. Hankey | 526,833 | Oct. 2 | 266 | 64 | 69 | 50 |
| Belt-fastener | C. Claudy and J. Klusmeyer | 529,364 | Nov. 20 | 1507 | 362 | 69 | 961 |
| Belt hook or clamp | J. W. Taylor | 526,757 | Oct. 2 | 150 | 36 | 69 | 29 |
| Belt. Safety- | H. Scharf | 530,799 | Dec. 11 | 1271 | 307 | 69 | 1462 |
| Belt-shipper | L. Armanni | 527,190 | Oct. 9 | 834 | 203 | 69 | 170 |
| Belt. Suspensory | E. J. Pike | 529,750 | Nov. 27 | 21782 | 520 | 69 | 1091 |
| Belt-tightener | H. P. D. Krueger | 530,278 | Dec. 4 | 355 | 88 | 69 | 1280 |
| Belt-tightener | B. F. Radford | 527,506 | Oct. 16 | 1365 | 332, 333 | 69 | 983 |
| Belt-tightener | M. Waddell | 528,242 | Oct. 30 | 2652 | 639 | 69 | 548 |
| Bench-stop | J. Daily | 531,102 | Dec. 18 | 1788 | 426 | 69 | 1570 |
| Bending special shapes of iron, steel, or other metal. Machine for | F. Sotter | 529,536 | Nov. 20 | 1839 | 438, 439 | 69 | 1020 |
| Beverage-cooler | J. Busch | 528,463 | Oct. 30 | 3037 | 737 | 69 | 617 |
| Beverages from ice. Making | C. Fong | 528,514 | Oct. 30 | 3117 | ..... | 69 | 632 |
| Bicycle | S. Bramall | 529,700 | Nov. 27 | 2099 | 503 | 69 | 1078 |
| Bicycle | J. Carr | 528,145 | Oct. 30 | 2483 | 601 | 69 | 518 |
| Bicycle | P. J. Deacon | 529,717 | Nov. 27 | 2129 | 510 | 69 | 1083 |
| Bicycle | L. Ferguson | 528,423 | Oct. 30 | 2955 | 716 | 69 | 603 |
| Bicycle | J. Gillingham | 530,042 | Nov. 27 | 2702 | 649 | 69 | 1191 |
| Bicycle | E. Homan | 529,267 | Nov. 13 | 1337 | 320 | 69 | 908 |
| Bicycle | H. W. Libbey | 530,549 | Dec. 11 | 808 | 206 | 69 | 1384 |
| Bicycle | S. Scognamillo and C. Dominici | 527,728 | Oct. 16 | 1725 | 416 | 69 | 348 |
| Bicycle | I. L. Unterbrink | 530,249 | Dec. 4 | 304 | 76 | 69 | 1271 |
| Bicycle | C. B. Whitaker and E. D. Lyon | 527,396 | Oct. 9 | 1183 | 290 | 69 | 235 |
| Bicycle | J. G. Ziegler | 527,135 | Oct. 9 | 751 | 184 | 69 | 154 |
| Bicycle-alarm | J. A. Weaver, Jr | 529,223 | Nov. 13 | 1257 | 303 | 69 | 893 |
| Bicycle attachment | L. A Frankenberg | 527,549 | Oct. 16 | 1439 | 350 | 69 | 296 |
| Bicycle attachment | E. Scott and J. O. Burke | 530,726 | Dec. 11 | 1156 | 280 | 69 | 1439 |
| Bicycle-brake | F. J. Cole | 527,479 | Oct. 16 | 1325 | 323 | 69 | 276 |
| Bicycle-brake | I. W. Litchfield and T. W. Sanford | 531,050 | Dec. 18 | 1699 | 403 | 69 | 1555 |
| Bicycle-brake | G. E. Whitney | 527,571 | Oct. 16 | 1468 | 358 | 69 | 301 |
| Bicycle driving-gear | D. Lippy and I. E. Finfrock | 528,954 | Nov. 13 | 804 | 188 | 69 | 813 |
| Bicycle driving-gear | D. Lippy and I. E. Finfrock | 528,955 | Nov. 13 | 805 | 188 | 69 | 813 |
| Bicycle driving-gear | D. Lippy and I. E. Finfrock | 528,956 | Nov. 13 | 806 | 188 | 69 | 813 |
| Bicycle driving-gear | D. Lippy and I. E. Finfrock | 528,957 | Nov. 13 | 807 | 188 | 69 | 814 |
| Bicycle driving-gear | O. W. Schaum and C. Alvord | 530,058 | Nov. 27 | 2741 | 657 | 69 | 1198 |
| Bicycle driving mechanism | G. S. Webb | 527,568 | Oct. 16 | 1463 | 356, 357 | 69 | 300 |
| Bicycle foot-brake | C. F. Porter | 529,627 | Nov. 20 | 1975 | 471 | 69 | 1046 |
| Bicycle-frame | G. F. Washburn. (Reissue.) | 11,449 | Oct. 23 | 2462 | 595 | 69 | 499 |
| Bicycle-handle. Adjustable | E. C. Woodard | 527,576 | Oct. 16 | 1482 | 360 | 69 | 304 |
| Bicycle lamp holder | T. Sanders | 528,811 | Nov. 6 | 514 | 124 | 69 | 739 |
| Bicycle-lantern lock | W. A. Blakeslee | 530,384 | Dec. 4 | 546 | 135 | 69 | 1315 |
| Bicycle-lock | C. C. Free and N. F. Heath | 527,418 | Oct. 16 | 1219 | 298 | 69 | 254 |
| Bicycle-lubricator | C. O. Furbush, Jr | 531,176 | Dec. 18 | 1930 | 459 | 69 | 1597 |
| Bicycle-pedal | C. H. Davids | 527,384 | Oct. 9 | 1161 | 284 | 69 | 231 |
| Bicycle-pedal | A. Perkins | 530,899 | Dec. 11 | 1427 | 338, 339 | 69 | 1490 |
| Bicycle-pedal | S. Scognamillo and C. Dominici | 527,349 | Oct. 9 | 1101 | 269 | 69 | 218 |
| Bicycle-pedals. Toe-clip for | C. F. Porter | 529,951 | Nov. 27 | 2524 | 608 | 69 | 1155 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Bicycle-rest | R. J. Noderer | 529,939 | Nov. 27 | 2493 | 601 | 69 | 1150 |
| Bicycle-saddle | C. T. Rogers | 531,333 | Dec. 25 | 2218 | 531 | 69 | 1664 |
| Bicycle safeguard and support | T. L. Bissell | 531,016 | Dec. 18 | 1626 | 388 | 69 | 1543 |
| Bicycle-sled | L. Thanner | 527,903 | Oct. 23 | 2038 | 489 | 69 | 422 |
| Bicycle-stand | I. I. Fonda | 529,827 | Nov. 27 | 2315 | 551 | 69 | 1117 |
| Bicycle-stand | F. H. Pierce | 528,028 | Oct. 23 | 2279 | 549 | 69 | 465 |
| Bicycle-stand | D. Brainerd | 527,767 | Oct. 23 | 1792 | 432 | 69 | 378 |
| Bicycle-support | A. Eisman | 530,330 | Dec. 4 | 451 | 113 | 69 | 1296 |
| Bicycle-support | C. A. Schloer | 531,338 | Dec. 25 | 2227 | 532 | 69 | 1666 |
| Bicycle-wheels. Manufacturing metallic rims for | C. H. Pugh | 527,345 | Oct. 9 | 1093 | 265, 266 | 69 | 217 |
| Bicycles. Adjustable handle-bar for | R. C. Fay | 528,629 | Nov. 6 | 183 | 45 | 69 | 679 |
| Bicycles. Child's seat for | F. A. Coulson | 530,160 | Dec. 4 | 143 | 37 | 69 | 1241 |
| Bicycles, &c. Drive-gear mechanism for | S. Kaltonik | 528,437 | Oct. 30 | 2982 | 721 | 69 | 607 |
| Bicycles for military purposes. Arming | A. Briére | 526,850 | Oct. 2 | 17 | 4 | 69 | 6 |
| Bicycles or other machines. Speed-multiplying gearing for | J. B. Grueter and O. Jackson | 530,103 | Dec. 4 | 44 | 12 | 69 | 1223 |
| Bicycles or similar machines. Motive power for | J. Tullius | 530,911 | Dec. 11 | 1445 | 343 | 69 | 1494 |
| Bilge-water alarm | C. Upton | 530,368 | Dec. 4 | 517 | 128 | 69 | 1309 |
| Billiard-balls from iron or steel. Manufacturing | K. K. A. Christianson | 530,257 | Dec. 4 | 317 | ..... | 69 | 1273 |
| Billiard-cue | G. Gschwendtner | 529,731 | Nov. 27 | 2150 | 513 | 69 | 1086 |
| Billiard-cue chalker | F. G. Chess | 527,770 | Oct. 23 | 1798 | 434 | 69 | 379 |
| Billiard-cue tip | C. N. Briggs | 529,775 | Nov. 27 | 2421 | 529 | 69 | 1099 |
| Billiard-cue-tip fastener | M. Pilgrau | 526,842 | Oct. 2 | 283 | 68 | 69 | 54 |
| Bin: *See* Dust-bin. | | | | | | | |
| Binder for books or pamphlets | A. J. Rudolph | 528,693 | Nov. 6 | 308 | 75 | 69 | 702 |
| Binder for leaves | G. H. Winslow | 529,091 | Nov. 13 | 1029 | 248 | 69 | 853 |
| Binder for music, magazines, &c. | W. G. Boeing and T. P. Stork | 531,256 | Dec. 18 | 2076 | 496 | 69 | 1622 |
| Binder. Temporary | J. H. Nellis | 528,551 | Nov. 6 | 46 | 12, 13 | 69 | 655 |
| Bird-cage spring. Duplex | A. B. Hendryx | 528,721 | Nov. 6 | 344 | 83 | 69 | 709 |
| Bit: *See* Anger-bit. Expansion-bit. Bridle-bit. | | | | | | | |
| Black. Producing figures on anilin- | F. V. Kallab | 529,439 | Nov. 20 | 1772 | ..... | 69 | 1007 |
| Blacking machine. Automatic electrical boot- | J. O. Heinze, Jr | 527,977 | Oct. 23 | 2182 | 525 | 69 | 448 |
| Blacking machine. Boot- | J. B. Sweetland | 527,900 | Oct. 23 | 2031 | 488 | 69 | 421 |
| Bleaching | H. Thies and E. Herzig | 529,089 | Nov. 13 | 1025 | 247 | 69 | 852 |
| Bleaching powder. Apparatus for making | C. Kellner | 530,996 | Dec. 18 | 1600 | 380 | 69 | 1536 |
| Blind. Venetian | J. G. Wilson | 529,770 | Nov. 27 | 2216 | 528 | 69 | 1098 |
| Block: *See* Building-block. Paving-block. Chain attachment-block. Pulley-block. Tackle-block. | | | | | | | |
| Block-signal apparatus | U. J. Fry and G. M. Basford | 530,763 | Dec. 11 | 1215 | 295 | 69 | 1451 |
| Block-signal apparatus. Electrical | U. J. Fry and G. M. Basford | 530,762 | Dec. 11 | 1210 | 295 | 69 | 1450 |
| Block-signaling system. Electric | A. J. Wilson | 531,284 | Dec. 18 | 1929 | 511 | 69 | 1632 |
| Blotter. Self-binding | R. L. Boyd | 529,892 | Nov. 27 | 2423 | 582 | 69 | 1138 |
| Blower or injector for boiler-furnaces. Steam | D. D. Gilbert | 526,703 | Oct. 2 | 58 | 15 | 69 | 13 |
| Blue. Soluble alizarin | H. N. F. Schaeffer | 527,457 | Oct. 16 | 1292 | ..... | 69 | 270 |
| Board: *See* Advertising-board. Mixing-board. Arc-light hanger-board. Shoot-board. Switchboard. Game-board. Washboard. | | | | | | | |
| Boat: *See* Row-boat. Torpedo-boat. | | | | | | | |
| Boat | G. L. Godfrey | 529,786 | Nov. 27 | 2237 | 533 | 69 | 1102 |
| Boat | G. Rooke | 527,511 | Oct. 16 | 1376 | 335 | 69 | 284 |
| Boat-detaching apparatus | F. Blanding | 526,989 | Oct. 2 | 521 | 127 | 69 | 98 |
| Boats. Apparatus for facilitating launching life- | H. H. Hallett | 529,379 | Nov. 20 | 1539 | 368 | 69 | 967 |
| Boiler: *See* Heating-boiler. Steam or hot-water boiler. Hot-water boiler. Steam or other fluid boiler. Locomotive-boiler. Washboiler. Steam-boiler. Water-tube boiler. | | | | | | | |
| Boiler | J. J. Bohner | 530,006 | Nov. 27 | 2643 | 635 | 69 | 1181 |
| Boiler | B. F. Conner | 528,762 | Nov. 6 | 425 | 102 | 69 | 724 |
| Boiler | C. Hyde | 528,103 | Oct. 23 | 2405 | 581 | 69 | 488 |
| Boiler | H. H. Kelley | 527,337 | Oct. 9 | 1081 | 261 | 69 | 215 |
| Boiler | J. Pierpoint | 529,306 | Nov. 13 | 1412 | 338, 339 | 69 | 923 |
| Boiler | H. Tetlow and T. Harrison | 527,515 | Oct. 16 | 1380 | 336 | 69 | 285 |
| Boiler | J. Vanes | 527,631 | Oct. 16 | 1568 | 379 | 69 | 319 |
| Boiler | G. H. Waltz and L. E. Patton | 529,573 | Nov. 20 | 1902 | 453 | 69 | 1031 |
| Boiler | R. Wildman | 528,352 | Oct. 30 | 2830 | 684 | 69 | 580 |
| Boiler and flue scraper. Steam- | J. C. A. Marckmann | 530,021 | Dec. 11 | 974 | 239 | 69 | 1409 |
| Boiler-cleaner. Automatic | J. H. Barr | 528,283 | Oct. 30 | 2723 | 657 | 69 | 561 |
| Boiler-cleaner. Mechanical | C. W. Brown | 526,853 | Oct. 2 | 290 | 72, 73 | 69 | 57 |
| Boiler-flues. Machine for lengthening | J. Cumming | 526,688 | Oct. 2 | 26 | 7 | 69 | 8 |
| Boiler-furnace | O. Friederici | 531,525 | Dec. 25 | 2558 | 612 | 69 | 1730 |
| Boiler-furnace | P. Hodkinson | 530,269 | Dec. 4 | 339 | 83, 84 | 69 | 1277 |
| Boiler-furnace | J. Lister | 528,958 | Nov. 13 | 898 | 189 | 69 | 814 |
| Boiler-furnace | W. McClave | 529,292 | Nov. 13 | 1377 | 331, 332 | 69 | 915 |
| Boiler-furnace | D. S. Richardson | 529,409 | Nov. 20 | 1599 | 380 | 69 | 977 |
| Boiler furnace and boiler. Steam- | E. D. Meier | 529,741 | Nov. 27 | 2168 | 517 | 69 | 1089 |
| Boiler furnace. Locomotive- | G. H. Watson | 530,566 | Dec. 11 | 885 | 217, 218 | 69 | 1393 |
| Boiler-furnace. Smokeless | M. McCarthy | 527,532 | Oct. 16 | 1412 | 343, 344 | 69 | 991 |
| Boiler furnace. Steam- | E. R. R. Hoyt | 528,229 | Oct. 30 | 2628 | 634 | 69 | 544 |
| Boiler separator. Steam- | C. Edgerton | 526,919 | Oct. 2 | 423 | 104 | 69 | 79 |
| Boiler setting. Steam- | W. W. Burk | 527,106 | Oct. 9 | 702 | 172 | 69 | 146 |

*Alphabetical list of inventions, October to December, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Boiler support and wall. Steam | G. A. Crane | 527,052 | Oct. 9 | 625 | 152 | 69 | 132 |
| Boiler-tube ferrule | H. S. Ross | 530,721 | Dec. 11 | 1150 | 270 | 69 | 1438 |
| Boiler-tube joint. Sectional | N. W. Pratt | 527,583 | Oct. 23 | 2003 | 480 | 69 | 414 |
| Boiler-tube or pipe cleaner | H. J. Lawrence and A. E. G. Bromell | 529,798 | Nov. 27 | 2259 | 539 | 69 | 1106 |
| Boiler-tubes. Device for cleaning the interiors of | W. D. Forsyth and E. T. Bell | 526,997 | Oct. 2 | 532 | 131 | 69 | 100 |
| Boiler water-regulator | J. W. and H. W. Fox | 527,417 | Oct. 16 | 1218 | 298 | 69 | 254 |
| Boilers. Automatic water-feeder for steam | J. H. Johnson | 529,652 | Nov. 20 | 2015 | 483 | 69 | 1052 |
| Boilers. Bracket-carrier for | H. Vogt | 530,811 | Dec. 11 | 1286 | 311 | 69 | 1465 |
| Boilers. Feed-water heater and circulator for | E. Jones | 530,420 | Dec. 4 | 599 | 149 | 69 | 1325 |
| Boilers. Plug-check for marine or other | J. H. Crosby | 530,473 | Dec. 4 | 683 | 170 / 171 | 69 | 1340 |
| Boilers. Plug-check for marine or other | J. H. Crosby | 530,474 | Dec. 4 | 684 | 171 | 69 | 1340 |
| Boilers. Sediment-extractor for steam | J. E. Thomas | 530,137 | Dec. 4 | 101 | 27 | 69 | 1234 |
| Bolt: *See* Expansion-bolt. Rotary bolt. | | | | | | | |
| Bolt | J. Dinkelacker, Jr | 531,363 | Dec. 25 | 2274 | 542 | 69 | 1675 |
| Bolt and nut lock | J. M. Gaston | 530,766 | Dec. 11 | 1222 | 296 | 69 | 1452 |
| Bolt-heading machine | J. H. Alker | 530,676 | Dec. 4 | 1 | 1, 2 | 69 | 1215 |
| Bolt or screw cap | G. A. Lambert | 531,465 | Dec. 25 | 2461 | 586 | 69 | 1711 |
| Bolts. Strike-plate for | S. B. Yates | 530,316 | Dec. 4 | 422 | 106 | 69 | 1292 |
| Bolting-machine | C. W. Yost | 529,009 | Nov. 13 | 892 | 210 / 211 | 69 | 828 |
| Bolting-reel | E. R. Draver | 528,504 | Oct. 30 | 3101 | 752 | 69 | 629 |
| Bone and vegetable matter. Machine for comminuting | E. J. Roche | 531,426 | Dec. 25 | 2377 | 568 / 569 | 69 | 1696 |
| Bone-black. Apparatus for decarbonizing and revivifying | M. Weinrich | 530,632 | Dec. 11 | 994 | 244 | 69 | 1413 |
| Bone-cutting machine | A. H. Chapman | 527,769 | Oct. 23 | 1795 | 433 | 69 | 379 |
| Book. Ancestral-record | F. W. Bailey | 527,261 | Oct. 9 | 955 | 232 | 69 | 192 |
| Book back or cover | E. Frith | 529,614 | Nov. 20 | 1961 | 466 / 467 | 69 | 1043 |
| Book-carrier | H. Tollner | 530,291 | Dec. 4 | 382 | 94 | 69 | 1285 |
| Book. Check | E. D. Middlekauff and A. N. Aitken | 526,787 | Oct. 2 | 198 | 46 | 69 | 38 |
| Book. Flat-opening | W. A. Palmer | 528,310 | Oct. 30 | 2816 | 681 | 69 | 578 |
| Book-holder | B. L. Gilman | 529,442 | Nov. 20 | 1668 | 397 | 69 | 990 |
| Book-holder for desks | G. W. Paisley | 528,488 | Oct. 30 | 3074 | 746 | 69 | 625 |
| Book-holder, index, and writing-tablet. Combined | C. F. Johnson | 527,114 | Oct. 9 | 717 | 175 | 69 | 148 |
| Book holder. Open | L. L. D. Elderkin | 527,524 | Oct. 16 | 1400 | 341 | 69 | 288 |
| Book-rack. Sample | J. Reading | 527,509 | Oct. 23 | 1864 | 448 | 69 | 391 |
| Book-support | G. Stikeman | 527,807 | Oct. 23 | 2027 | 487 | 69 | 420 |
| Bootjack | C. Bisanz | 530,080 | Dec. 4 | 7 | 3 | 69 | 1216 |
| Bootjack attachment | W. H. Cole | 528,363 | Oct. 30 | 2857 | 692 | 69 | 585 |
| Boot or leggin for ladies or children. Rain | E. A. Bailey | 529,352 | Nov. 20 | 1481 | 356 | 69 | 957 |
| Boot or shoe | O. P. Hurd | 528,724 | Nov. 6 | 349 | 85 | 69 | 710 |
| Boot or shoe and making same. Waterproof | C. W. Shippee | 529,880 | Nov. 27 | 2402 | 575 | 69 | 1134 |
| Boot or shoe polishing device | E. Stanwood | 528,349 | Oct. 30 | 2827 | 683 | 69 | 579 |
| Boot or shoe shank buffer | G. Therrien | 529,510 | Nov. 20 | 1797 | 428 | 69 | 1012 |
| Boot or shoe soles. Cutter for trimming | J. J. Mabray | 530,699 | Dec. 11 | 1112 | 270 | 69 | 1432 |
| Boot or shoe. Waterproof | C. W. Shippee | 529,881 | Nov. 27 | 2403 | 575 | 69 | 1134 |
| Boot. Wool or felt | J. Pendergast | 527,717 | Oct. 16 | 1705 | 411 | 69 | 345 |
| Boots or shoes. Machine for splitting insoles for | F. L. Stone | 527,399 | Oct. 9 | 1021 | 248 / 249 | 69 | 204 |
| Borer with diamond bit. Rotary | F. J. G. Fromholt | 530,408 | Dec. 4 | 579 | 144 | 69 | 1321 |
| Boring-machine | N. N. Riddell | 529,506 | Nov. 20 | 1784 | 425 | 69 | 1009 |
| Boring-machine | H. C. Schulz | 528,307 | Oct. 30 | 2765 | 668 | 69 | 569 |
| Boring-machine. Multiple | C. Cristadoro | 529,712 | Nov. 27 | 2118 | 508 | 69 | 1081 |
| Bottle | S. Howes | 527,494 | Oct. 16 | 1343 | 327 | 69 | 280 |
| Bottle, &c. | D. E. Kempster | 528,544 | Nov. 6 | 36 | 9 | 69 | 653 |
| Bottle | G. F. Kinney | 530,429 | Dec. 4 | 612 | 152 | 69 | 1327 |
| Bottle | E. C. Shumard | 530,258 | Dec. 4 | 379 | 93 | 69 | 1284 |
| Bottle | C. H. Van Wie | 529,762 | Nov. 27 | 2203 | 525 | 69 | 1095 |
| Bottle | W. Von Bokern | 529,821 | Nov. 27 | 2309 | 550 | 69 | 1116 |
| Bottle and stopper therefor | G. B. Barnes | 526,674 | Oct. 2 | 7 | 3 | 69 | 4 |
| Bottle-cap. Cork-holding | W. H. Northall | 528,380 | Oct. 30 | 2884 | 698 | 69 | 590 |
| Bottle-capping machine | A. L. Bernardin | 527,193 | Oct. 9 | 837 | 204 | 69 | 171 |
| Bottle-capping machine | F. M. Leavitt | 527,209 | Oct. 9 | 863 | 210 / 211 | 69 | 176 |
| Bottle-capping machine | G. W. Lebolt | 528,320 | Oct. 30 | 2798 | 675 | 69 | 574 |
| Bottle-corking apparatus | E. J. Boyd | 527,477 | Oct. 16 | 1323 | 322 | 69 | 276 |
| Bottle. Drenching | J. T. Turner | 529,978 | Nov. 27 | 2572 | 620 | 69 | 1165 |
| Bottle-forming machine | R. T. Beckett | 529,693 | Nov. 27 | 2088 | 499 / 500 | 69 | 1076 |
| Bottle-guard | C. M. Boscowitz | 529,317 | Nov. 13 | 1426 | 343 | 69 | 926 |
| Bottle. Non-filling | H. I. Leith | 529,035 | Nov. 13 | 924 | 219 | 69 | 834 |
| Bottle. Nursing | H. Herrmann | 527,284 | Oct. 9 | 998 | 242 | 69 | 200 |
| Bottle or vessel holding device | F. G. Kammerer | 527,334 | Oct. 9 | 1076 | 260 | 69 | 214 |
| Bottle. Prescription | C. D. Dickerson | 526,772 | Oct. 2 | 174 | 41 | 69 | 33 |
| Bottle-stopper | C. De Witt | 527,672 | Oct. 16 | 1633 | 394 | 69 | 331 |
| Bottle-stopper | A. Schneider and D. W. Bromley | 527,726 | Oct. 16 | 1722 | 416 | 69 | 348 |
| Bottle-stopper | C. B. Schoenmehl | 527,161 | Oct. 9 | 791 | 193 | 69 | 162 |
| Bottle-stopper | C. B. Sheldon | 529,813 | Nov. 27 | 2290 | 546 | 69 | 1111 |
| Bottle stopper and filler. Combined | I. Pomeroy | 531,133 | Dec. 18 | 1849 | 438 | 69 | 1582 |
| Bottle-stopper and syringe. Combined | W. F. Ware | 526,880 | Oct. 2 | 350 | 87 | 69 | 66 |
| Bottle stopper or cap | F. W. Fletcher | 528,470 | Oct. 30 | 3046 | 739 | 69 | 619 |
| Bottle-stoppers. Machine for feeding crown | N. Mustar | 531,001 | Dec. 18 | 1607 | 382 | 69 | 1538 |
| Bottle supports. Nursing | F. H. Lowerre | 530,435 | Dec. 4 | 622 | 155 | 69 | 1329 |
| Bottle-washer | A. F. and A. C. Dumke | 530,583 | Dec. 11 | 913 | 224 | 69 | 1398 |
| Bottle-washer | A. R. Wiens | 529,823 | Nov. 27 | 2311 | 550 | 69 | 1117 |
| Bottles. Device for preventing refilling of | W. L. Davis and B. F. Leach | 527,777 | Oct. 23 | 1809 | 436 | 69 | 361 |
| Bottles. Device for preventing refilling of | F. W. Johnson | 527,992 | Oct. 23 | 2219 | 535 | 69 | 455 |
| Bottles. Machine for stamping and filling siphon | T. Ferguson | 526,861 | Oct. 2 | 320 | 79 | 69 | 61 |
| Bottling apparatus | D. Doyle | 526,773 | Oct. 2 | 175 | 41 | 69 | 33 |
| Bowling-alley | M. Knollmüller | 529,392 | Nov. 20 | 1572 | 374 | 69 | 972 |
| Bowling-ball | F. G. Dokkenwadel | 531,103 | Dec. 18 | 1789 | 426 | 69 | 1570 |



*Alphabetical list of inventions, October to December, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Box: *See* Annealing-box. Letter-box. Ballot-box. Match-box. Car sand-box. Packing-box. Coal-box. Paper box. Cock-box. Self-fastening box. Dice-box. Shipping or service box. Fare-box. Spool-box. Flower-box. Toy money-box. | | | | | | | |
| Box | A. M. Galland | 528,935 | Nov. 13 | 766 | 180 | 69 | 807 |
| Box | Z. B. Webb | 531,083 | Dec. 18 | 1752 | 418 | 69 | 1564 |
| Box-binding machine | A. A. Wood | 527,574 | Oct. 16 | 1472 | 359 / 360 | 69 | 392 |
| Box-blanks. Machine for cornering | A. L. Kingsbury | 530,780 | Dec. 11 | 1246 | 301 / 302 | 69 | 1458 |
| Box-corner binder | A. A. Wood | 527,308 | Oct. 9 | 1038 | 252 | 69 | 207 |
| Box-covering machine | J. Weber | 527,913 | Oct. 23 | 2056 | 493 | 69 | 425 |
| Box-fastener | E. A. Beck | 527,043 | Oct. 9 | 613 | 148 | 69 | 130 |
| Box-lid holder | W. W. Fowler | 527,374 | Oct. 9 | 986 | 239 | 69 | 197 |
| Box or package | G. P. Cate, Jr | 529,033 | Nov. 13 | 922 | 219 | 69 | 834 |
| Box wiring or hooping machine | E. A. Cooley | 529,247 | Nov. 14 | 1299 | 312 | 69 | 901 |
| Boxes, &c. Corner-stay for | H. G. and C. B. Alexander | 529,057 | Nov. 13 | 967 | 228 | 69 | 842 |
| Boxes or plates. Machine for manufacturing | M. Eschenbeck | 527,146 | Oct. 9 | 768 | 187 / 188 | 69 | 157 |
| Brace: *See* Back-brace. Shoulder-brace. Corner-brace. | | | | | | | |
| Brace and bit | J. W. Banner | 528,137 | Oct. 30 | 2453 | 598 | 69 | 516 |
| Bracket: *See* Adjustable bracket. Dental bracket. Car-door bracket. Lamp-bracket. Curtain-bracket. Staging-bracket. | | | | | | | |
| Brake: *See* Air-brake. Engine-brake. Bicycle-brake. Friction-brake. Bicycle foot-brake. Ink-roller brake. Car-brake. Vehicle-brake. Car air-brake. Vessel-brake. Elevator safety-brake. Wagon-brake. Windmill-brake. | | | | | | | |
| Brake | C. C. Onsgord | 528,019 | Oct. 23 | 2261 | 545 / 546 | 69 | 402 |
| Brake-beam | D. L. Barnes | 528,522 | Nov. 6 | 2 | 1, 2 | 69 | 647 |
| Brake-beam and reinforcing-clamp therefor | H. B. Robischung | 528,238 | Oct. 30 | 2847 | 638 | 69 | 547 |
| Brake-beams. Finger-guard clamp for | H. B. Robischung | 527,159 | Oct. 9 | 789 | 193 | 69 | 161 |
| Brake-handle | P. G. Emery | 531,612 | Dec. 25 | 2703 | 648 | 69 | 1759 |
| Brake-handle | J. W. Paterson | 531,596 | Dec. 25 | 2675 | 643 | 69 | 1753 |
| Brake-handle | H. S. Teal | 531,577 | Dec. 25 | 2644 | 633 | 69 | 1747 |
| Brake mechanism | J. S. Copeland | 528,854 | Nov. 6 | 608 | 144 / 145 | 69 | 757 |
| Brake-shoe | E. Cliff | 529,897 | Nov. 27 | 2429 | 584 | 69 | 1139 |
| Brake-shoe | A. W. Field | 529,372 | Nov. 20 | 1526 | 365 | 69 | 965 |
| Brake-shoe | H. A. Lewis | 530,783 | Dec. 11 | 1252 | 302 | 69 | 1458 |
| Brake-shoe | J. O'Brien | 528,553 | Nov. 6 | 49 | 13 | 69 | 655 |
| Brake-shoe clamp | E. H. Kinnaman | 527,862 | Oct. 23 | 1964 | 472 | 69 | 408 |
| Brake shoe. Vehicle | H. F. Shephard | 527,296 | Oct. 9 | 1018 | 247 | 69 | 203 |
| Bread-cutter | S. Strande | 529,537 | Nov. 20 | 1842 | 439 | 69 | 1020 |
| Bread. Method of and apparatus for producing letters or characters in | R. M. Shafler | 527,097 | Oct. 2 | 582 | 141 | 69 | 110 |
| Bread or cake knife | J. W. Hurd | 527,175 | Oct. 9 | 812 | 197 | 69 | 166 |
| Bread-raiser | L. Leitch | 530,231 | Dec. 4 | 275 | 68 | 69 | 1265 |
| Brick-drier car | A. T. Benis | 529,675 | Nov. 20 | 2055 | 492 | 69 | 1060 |
| Brick-kiln | C. E. Frost | 531,371 | Dec. 25 | 2230 | 546 | 69 | 1678 |
| Brick-kiln | N. Merley | 527,703 | Oct. 16 | 1689 | 406 | 69 | 341 |
| Brick-kiln | G. S. M. Rutter | 528,113 | Oct. 23 | 2421 | 586 | 69 | 492 |
| Brick-kiln | W. A. Wilford | 527,255 | Oct. 9 | 942 | 228 / 229 | 69 | 190 |
| Brick-kiln furnace | B. W. May | 529,931 | Nov. 27 | 2483 | 599 | 69 | 1148 |
| Bricks from coal-dust. Making | B. Müller | 526,936 | Oct. 2 | 449 | ..... | 69 | 84 |
| Bridge | J. C. Fenn | 530,265 | Dec. 4 | 333 | 82 | 69 | 1276 |
| Bridge-gate | T. J. O'Brien and E. J. Wilson | 530,348 | Dec. 4 | 485 | 120 | 69 | 1303 |
| Bridge girder. Truss | E. Keating | 530,425 | Dec. 4 | 607 | 151 | 69 | 1326 |
| Bridge, scaffold, tower, &c. Extensible structure for use as a | J. O. Oakley | 530,120 | Dec. 4 | 78 | 21, 22 | 69 | 1229 |
| Bridge. Truss | D. F. Lane | 531,048 | Dec. 18 | 1694 | 403 | 69 | 1554 |
| Bridge. Truss | J. A. L. Waddell | 529,220 | Nov. 13 | 1250 | 301 | 69 | 892 |
| Bridges, roofs, &c. Construction of | J. E. Greiner | 528,940 | Nov. 13 | 783 | 183 | 69 | 809 |
| Bridle-bit | M. F. Bigelow | 529,472 | Nov. 20 | 1722 | 410 | 69 | 999 |
| Bridle-bit | E. L. Cruger | 529,022 | Nov. 13 | 909 | 215 | 69 | 831 |
| Bridle-bit | R. A. Shute | 529,814 | Nov. 27 | 2292 | 547 | 69 | 1112 |
| Bridle-bit | F. Swales | 531,230 | Dec. 18 | 2033 | 485 | 69 | 1615 |
| Bridle brow-band | C. H. Hartwig | 526,706 | Oct. 2 | 61 | 16 | 69 | 14 |
| Brooch-pin | D. Metzger | 529,743 | Nov. 27 | 2172 | 518 | 69 | 1090 |
| Brooder. Chicken | L. C. Billings | 531,255 | Dec. 18 | 2074 | 496 | 69 | 1622 |
| Brooder. Chicken | F. J. Wiegand | 527,822 | Oct. 23 | 1881 | 451 | 69 | 393 |
| Broom | D. A. McDonel | 531,056 | Dec. 18 | 1705 | 405 | 69 | 1556 |
| Brooms. Manufacturing | D. A. McDonel | 531,055 | Dec. 18 | 1704 | 405 | 69 | 1556 |
| Brush | A. E. Magoris | 528,730 | Nov. 6 | 359 | 88 | 69 | 712 |
| Brush | C. W. Roche | 527,456 | Oct. 16 | 1291 | 316 | 69 | 270 |
| Brush. Air | J. S. Overman and W. T. Woolston | 528,686 | Nov. 6 | 298 | 73 | 69 | 700 |
| Brush and scraper for cleaning boots or shoes. Combined | J. C. Wood | 529,541 | Nov. 20 | 1849 | 440 | 69 | 1021 |
| Brush bridle. Paint | C. Boeckh, Jr | 529,018 | Nov. 13 | 903 | 213 | 69 | 830 |
| Brush bridle. Paint | C. Boeckh, Jr | 530,386 | Dec. 4 | 549 | 136 | 69 | 1315 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Page | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Brush. Dust | H. Z. Ziegler and A. I. Wood | 528,754 | Nov. 6 | 406 | 98 | 69 | 720 |
| Brush handle. Flue | E. P. Hunt | 531,039 | Dec. 18 | 1676 | 397 | 69 | 1550 |
| Brush-holder | M. Wool | 528,267 | Oct. 30 | 2691 | 649 | 69 | 556 |
| Brush-machine | M. Young | 530,151 | Dec. 4 | 125 | 32, 33 | 69 | 1278 |
| Brush-machine | M. Young | 530,152 | Dec. 4 | 126 | 33, 34 | 69 | 1278 |
| Brush-support | G. F. Whiting | 527,032 | Oct. 2 | 562 | 143 | 69 | 111 |
| Brush. Tooth | S. Zucker | 530,153 | Dec. 4 | 129 | 34 | 69 | 1279 |
| Brushes. Manufacture of | J. Stander | 527,251 | Oct. 9 | 938 | 227 | 69 | 190 |
| Bucket-fastener | H. L. R. Wolf | 528,316 | Oct. 30 | 2780 | 671 | 69 | 571 |
| Buckle | J. F. Molloy | 528,008 | Oct. 23 | 2245 | 542 | 69 | 459 |
| Buckle | F. C. Fullhead and W. F. Anthony | 531,336 | Dec. 25 | 2224 | 531 | 69 | 1666 |
| Buckle | A. Steiner | 530,363 | Dec. 4 | 510 | 126 | 69 | 1308 |
| Buckle. Suspender | W. L. Doran | 527,170 | Oct. 9 | 803 | 196 | 69 | 164 |
| Buckle. Suspender | J. N. McGriff | 530,960 | Dec. 18 | 1535 | 363 | 69 | 1525 |
| Buckles. Manufacture of sheet-metal suspender | G. E. Adams | 528,625 | Nov. 6 | 178 | 44 | 69 | 678 |
| Buffing-pad holder | A. E. Perry | 528,024 | Oct. 23 | 2268 | 548 | 69 | 463 |
| Buggy-top attachment | J. D. Axline and J. L. Baillie | 531,493 | Dec. 25 | 2506 | 597 | 69 | 1720 |
| Buggy-top prop | L. C. Pollard | 527,183 | Oct. 9 | 823 | 200 | 69 | 168 |
| Buggy-top support | A. N. Rooks | 528,032 | Oct. 23 | 2252 | 550 | 69 | 466 |
| Building construction. Fireproof | T. Bailey | 527,649 | Oct. 16 | 1600 | 386 | 69 | 325 |
| Building constructions. Composition for | W. R. Forbush | 531,369 | Dec. 25 | 2258 | ..... | 69 | 1678 |
| Building-block | A. Federici | 527,416 | Oct. 16 | 1217 | 297 | 69 | 254 |
| Bunch-shaper | E. Barth | 529,544 | Nov. 20 | 1853 | 441 | 69 | 1022 |
| Bung-making machine | E. E. Elder | 527,952 | Oct. 23 | 2128 | 511, 512, 513 | 69 | 439 |
| Bung-stopper | B. Rubenstein | 527,888 | Oct. 23 | 2013 | 483 | 69 | 416 |
| Burglar-alarm | P. H. Lindsey and C. H. Squires | 528,953 | Nov. 13 | 803 | 187 | 69 | 813 |
| Burglar-alarm | J. H. Lowe | 530,434 | Dec. 4 | 620 | 155 | 69 | 1328 |
| Burglar-alarm. Detonating | L. B. Burrill | 530,012 | Nov. 27 | 2655 | 637 | 69 | 1183 |
| Burglar-alarm. Detonating | J. W. Horn | 530,947 | Dec. 18 | 1516 | 359 | 69 | 1522 |
| Burglar-alarm. Detonating | S. D. Silver | 531,428 | Dec. 25 | 2380 | 569 | 69 | 1696 |
| Burglar-alarm. Door-locking | H. J. Mitchell | 528,206 | Oct. 30 | 2591 | 626 | 69 | 536 |
| Burglar-alarm. Electric | W. A. Brownell and J. B. Seager | 528,589 | Nov. 6 | 108 | 27 | 69 | 666 |
| Burglar-alarm. Portable | L. G. Larson | 527,998 | Oct. 23 | 2212 | 538 | 69 | 457 |
| Burglar-alarm. Safe | J. W. and W. D. Gilstrap | 530,411 | Dec. 4 | 582 | 145 | 69 | 1322 |
| Burglar-alarm system | A. Stromberg | 530,976 | Dec. 18 | 1567 | 371 | 69 | 1530 |
| Burglar-alarm systems. Circuit-closer for | A. Stromberg | 530,975 | Dec. 18 | 1566 | 371 | 69 | 1530 |
| Burial apparatus | T. Martin | 529,456 | Nov. 20 | 1696 | 405 | 69 | 995 |
| Burner: *See* Bagasse-burner. Oil-burner. Duplex burner. Oil or gas burner. Gas-burner. Stove gas-burner. Hydrocarbon-burner. Vapor-burner. Lamp-burner. | | | | | | | |
| Burning granular fuel. Apparatus for | C. W. Claybourne | 531,160 | Dec. 18 | 1897 | 452 | 69 | 1591 |
| Bushing and tap. Bung | J. Mohn | 530,703 | Dec. 11 | 1117 | 271 | 69 | 1433 |
| Butchering apparatus | M. Cherry and D. Dysert | 527,320 | Oct. 9 | 1056 | 255 | 69 | 210 |
| Butchering apparatus | P. A. Davis | 529,367 | Nov. 20 | 1518 | 363 | 69 | 964 |
| Butter, &c. Apparatus for molding pats or blocks of | W. Hucks, Jr | 526,902 | Oct. 2 | 390 | 97, 98 | 69 | 73 |
| Butter-extractor. Centrifugal | O. Ohlsson | 528,682 | Nov. 6 | 291 | 71 | 69 | 698 |
| Butter-worker | R. B. Disbrow | 527,673 | Oct. 16 | 1635 | 394 | 69 | 332 |
| Button | H. W. Libbey | 527,432 | Oct. 16 | 1244 | 306 | 69 | 259 |
| Button | P. Neidhardt | 527,502 | Oct. 16 | 1359 | 331 | 69 | 282 |
| Button | R. Pöschel | 526,739 | Oct. 2 | 117 | 28 | 69 | 23 |
| Button | J. Skilling | 528,397 | Oct. 30 | 2915 | 705 | 69 | 595 |
| Button-blank-forming machine | E. J. Pope | 529,950 | Nov. 27 | 2521 | 608 | 69 | 1155 |
| Button. Detachable | W. J. Moore | 531,466 | Dec. 25 | 2462 | 586 | 69 | 1711 |
| Button-fastener | H. Thier | 529,974 | Nov. 27 | 2568 | 619 | 69 | 1164 |
| Button-fastening machine. Automatic | I. J. Saunders | 529,139 | Nov. 13 | 1101 | 267, 268 | 69 | 868 |
| Button or stud. Cuff | C. C. Champenois | 528,715 | Nov. 6 | 334 | 82 | 69 | 707 |
| Button. Separable | J. Holmes | 527,555 | Oct. 16 | 1444 | 352 | 69 | 297 |
| Button-separator | J. W. Holman | 527,394 | Oct. 9 | 1178 | 288, 289 | 69 | 254 |
| Button-setting machine | A. J. Shipley | 531,224 | Dec. 18 | 2022 | 482 | 69 | 1613 |
| Button-setting machines. Tube loader for | A. W. Ham | 530,105 | Dec. 4 | 48 | 13, 14 | 69 | 1224 |
| Cabinet and index-file | I. E. Edgar | 529,251 | Nov. 13 | 1307 | 314 | 69 | 903 |
| Cabinet. Grocer's | J. M. Goff | 529,528 | Nov. 20 | 1822 | 434, 435 | 69 | 1018 |
| Cabinet. Revolving ribbon | J. A. N. Lindsey | 528,885 | Nov. 6 | 661 | 159 | 69 | 767 |
| Cabinet. Stationery | L. C. Beardsley | 531,250 | Dec. 18 | 2064 | 493 | 69 | 1620 |
| Cable-grip | G. C. Ormerod and J. H. Charles | 528,384 | Oct. 30 | 2893 | 700 | 69 | 591 |
| Cable-gripper | J. Whitall | 528,313 | Oct. 30 | 2776 | 670 | 69 | 570 |
| Cable. Running and carrying | J. P. Roe | 530,902 | Dec. 11 | 1431 | 340 | 69 | 1491 |
| Cable-stop mechanism | E. Neil | 527,069 | Oct. 9 | 643 | 156, 157 | 69 | 135 |
| Cable-support | E. G. P. Wern | 527,306 | Oct. 9 | 1036 | 251 | 69 | 206 |
| Cable-switch | G. C. Ormerod | 529,530 | Nov. 20 | 1831 | 435, 436 | 69 | 1018 |
| Cables. Apparatus for transporting loads by traveling | J. P. Roe | 530,720 | Dec. 11 | 1146 | 278, 279 | 69 | 1438 |
| Cables. Tension device for towing | W. F. Humphrey and S. V. Hoffman | 530,995 | Dec. 18 | 1599 | 379, 380 | 69 | 1536 |
| Calcining apparatus | W. S. Pierce | 530,125 | Dec. 4 | 87 | 23 | 69 | 1231 |
| Calculator | W. H. Clark | 527,943 | Oct. 23 | 2114 | 507, 508 | 69 | 436 |
| Calendar | W. K. David | 527,413 | Oct. 16 | 1212 | 296, 297 | 69 | 253 |
| Calendar holder. Memorandum | R. L. Crampton | 529,366 | Nov. 20 | 1517 | 363 | 69 | 963 |
| Calendar. Perpetual | C. E. Vawter | 529,979 | Nov. 27 | 2573 | 620, 621 | 69 | 1165 |
| Calendering-machine | R. Butterworth | 528,920 | Nov. 13 | 746 | 175 | 69 | 803 |
| Calipers | J. Bath | 527,651 | Oct. 16 | 1601 | 387 | 69 | 325 |



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|---|---|---|---|---|---|---|---|
| Calipers | G. Oberbeck | 530,713 | Dec. 11 | 1130 | 274 | 69 | 1435 |
| Calipers. Watchmaker's | G. B. Farrell | 528,535 | Nov. 6 | 18 | 6 | 69 | 649 |
| Calking-tool | D. Falvey | 531,411 | Dec. 25 | 2350 | 561 | 69 | 1690 |
| Calking vessels | A. J. Brooks | 527,169 | Oct. 9 | 803 | 195 | 69 | 164 |
| Cambering-machine | H. C. Ryding | 531,448 | Dec. 25 | 2433 | 579 | 69 | 1706 |
| Camera: *See* Folding camera. Panoramic camera. Magazine-camera. Photographic camera. | | | | | | | |
| Camera | J. E. Blackmore | 528,140 | Oct. 30 | 2476 | 599, 600 | 69 | 517 |
| Camera | A. Delog | 529,369 | Nov. 20 | 1521 | 364 | 69 | 964 |
| Camera-shutter mechanism | T. V. Jensen | 530,486 | Dec. 4 | 729 | 172 | 69 | 1348 |
| Can: *See* Milk-can. Oil-can. | | | | | | | |
| Can-bodies, &c. Machine for making | W. H. Smyth | 529,815 | Nov. 27 | 2294 | 547, 548 | 69 | 1112 |
| Can-body-crimping machine | H. Schaake | 528,305 | Oct. 30 | 2753 | 667 | 69 | 568 |
| Can-body-forming machine | J. K. Underdown | 528,192 | Oct. 30 | 2560 | 620 | 69 | 532 |
| Can-filling device | E. C. Hillyer | 527,982 | Oct. 23 | 2193 | 528 | 69 | 450 |
| Can-head flanges. Machine for crimping | H. Schaake | 528,306 | Oct. 30 | 2762 | 667 | 69 | 568 |
| Can-head-forming die | N. Trover | 531,451 | Dec. 25 | 2438 | 580 | 69 | 1707 |
| Can-holder | W. V. McKenzie | 528,259 | Oct. 30 | 2681 | 646 | 69 | 555 |
| Can-labeling machine | C. R. Frazer | 529,257 | Nov. 13 | 1319 | 317, 318 | 69 | 905 |
| Can-labeling machine | F. X. Gaudrie | 527,843 | Oct. 23 | 1920 | 462 | 69 | 400 |
| Can-making machine | R. D. Hume | 528,673 | Nov. 6 | 274 | 67 | 69 | 695 |
| Can-making machine | A. Johnson and H. C. Black | 526,925 | Oct. 2 | 430 | 106, 107 | 69 | 80 |
| Can-making machines. Carrier for | R. D. Hume | 529,209 | Nov. 13 | 1340 | 321 | 69 | 909 |
| Can-opener | J. Bien | 529,849 | Nov. 27 | 2355 | 562 | 69 | 1125 |
| Can-opener | C. F. Keller | 528,371 | Oct. 30 | 2871 | 695 | 69 | 588 |
| Can-opener | F. W. Wright | 528,582 | Nov. 6 | 99 | 25 | 69 | 664 |
| Can-opener and vegetable-parer. Combined | G. H. Mitchell | 528,517 | Oct. 30 | 3118 | 756 | 69 | 632 |
| Can or vessel | G. Brinton | 529,677 | Nov. 20 | 2057 | 493 | 69 | 1061 |
| Can-testing machine | J. Black | 531,616 | Dec. 25 | 2708 | 649 | 69 | 1760 |
| Can-testing machine | D. D. Ranney | 528,987 | Nov. 13 | 854 | 202, 203 | 69 | 892 |
| Can-top-cleaning machine | C. A. Burt | 528,462 | Oct. 30 | 3035 | 736 | 69 | 617 |
| Cans. Closing | J. Banbury | 527,650 | Oct. 16 | 1600 | 386 | 69 | 325 |
| Canal, sewer, and rain gage or meter. Self-recording | A. J. Grover | 530,337 | Dec. 4 | 460 | 115, 116 | 69 | 1298 |
| Candle-extinguisher | J. Boyle | 529,107 | Nov. 13 | 1050 | 253 | 69 | 857 |
| Candle-grasp | H. Gläser | 531,028 | Dec. 18 | 1658 | 393 | 69 | 1547 |
| Candlestick and match-box. Combined | A. Nittinger, Sr | 531,467 | Dec. 25 | 2463 | 586 | 69 | 1712 |
| Candy. Machine for cutting stick | J. M. Allardyce | 531,084 | Dec. 18 | 1753 | 418 | 69 | 1564 |
| Candy scouring and cleaning apparatus | G. Carlson | 527,662 | Oct. 16 | 1617 | 390 | 69 | 328 |
| Candy scouring or cleaning machine | G. Carlson | 527,590 | Oct. 16 | 1503 | 366 | 69 | 307 |
| Candy whistles. Manufacture of | C. E. Gardiner | 530,039 | Nov. 27 | 2698 | 648 | 69 | 1191 |
| Canister. Soap-powder | B. R. Foster | 527,329 | Oct. 9 | 1070 | 258 | 69 | 213 |
| Cap, pillow, and life-preserver. Combined | F. Frank | 529,119 | Nov. 13 | 1067 | 258 | 69 | 860 |
| Car air-brake. Street | R. S. Judson and G. D. Holmes | 530,422 | Dec. 4 | 604 | 150 | 69 | 1325 |
| Car and attachment. Dumping | S. W Beatty | 529,583 | Nov. 20 | 1916 | 457 | 69 | 1034 |
| Car attachment | C. K. Sherwood | 530,359 | Dec. 4 | 504 | 124 | 69 | 1307 |
| Car bolster. Railway | C. T. Schoen | 529,809 | Nov. 27 | 2374 | 543 | 69 | 1109 |
| Car-brake | E. Allen | 531,257 | Dec. 18 | 2137 | 512 | 69 | 1634 |
| Car brake | S. S. Leonard | 531,418 | Dec. 25 | 2364 | 565 | 69 | 1693 |
| Car brake | R. W McKee | 531,550 | Dec. 25 | 2597 | 622 | 69 | 1738 |
| Car-brake | P. McMullen | 528,302 | Oct. 30 | 2755 | 665, 666 | 69 | 567 |
| Car-brake | J. C. Miner | 528,934 | Oct. 2 | 447 | 110 | 69 | 81 |
| Car-brake | G. F. Steedman and J. H. Brookmire, Jr. | 528,116 | Oct. 23 | 2426 | 587, 588 | 69 | 493 |
| Car brake and power controller. Electric | A. W. Mitchell | 531,268 | Dec. 18 | 2096 | 503, 504 | 69 | 1626 |
| Car-brake. Automatic | H. E. Olson | 531,131 | Dec. 18 | 1843 | 437 | 69 | 1581 |
| Car brake. Hydraulic | W. L. Fitzhugh | 527,743 | Oct. 16 | 1753 | 422 | 69 | 353 |
| Car brake. Railway | W. S. G. Baker | 530,378 | Dec. 4 | 534 | 133 | 69 | 1312 |
| Car brake. Railway | W. S. G. Baker | 530,379 | Dec. 4 | 537 | 134 | 69 | 1313 |
| Car brake. Railway | W. Baxter, Jr | 531,582 | Dec. 25 | 2649 | 635 | 69 | 1748 |
| Car brake. Railway | J. R. Cribbs | 528,860 | Nov. 6 | 626 | 148 | 69 | 760 |
| Car brake. Railway | G. W. Dickinson and H. H. Warner | 531,588 | Dec. 25 | 2663 | 639 | 69 | 1751 |
| Car brake. Railway | A. Fahrney | 530,171 | Dec. 4 | 157 | 41 | 69 | 1244 |
| Car brake. Railway | H. Hinckley | 527,749 | Oct. 16 | 1582 | 424 | 69 | 355 |
| Car brake. Railway | G. H. Kinter and G. D. Teller | 530,185 | Dec. 4 | 192 | 47, 48 | 69 | 1250 |
| Car brake. Railway | A. F. Letson | 531,319 | Dec. 25 | 2197 | 526 | 69 | 1661 |
| Car brake. Railway | L. Roberts | 529,082 | Nov. 13 | 1012 | 244 | 69 | 849 |
| Car brake. Railway | G. Rony | 530,460 | Dec. 4 | 657 | 163, 164 | 69 | 1336 |
| Car-brake. Railway | J. A. Webber | 530,912 | Dec. 11 | 1447 | 344 | 69 | 1494 |
| Car-brake-ratchet handle | J. Seeberger | 528,492 | Oct. 30 | 3080 | 747 | 69 | 626 |
| Car-brake shoe and dresser | J. E. Warswick | 528,198 | Oct. 30 | 2571 | 622 | 69 | 533 |
| Car-buffer | C. A. Gould | 529,857 | Nov. 27 | 2368 | 566 | 69 | 1127 |
| Car. Combined sleeping and parlor | L. F. Ruth | 529,961 | Nov. 27 | 2542 | 612, 613 | 69 | 1158 |
| Car construction | W. E. Coffin | 531,510 | Dec. 25 | 2532 | 605 | 69 | 1725 |
| Car construction. Railway | C. A. Smith | 530,969 | Dec. 18 | 1556 | 368, 369 | 69 | 1528 |
| Car-coupling | L. T. Backus | 531,145 | Dec. 18 | 1871 | 444 | 69 | 1586 |
| Car-coupling | G. W. Bartlett | 531,430 | Dec. 25 | 2384 | 570 | 69 | 1697 |
| Car-coupling | T. P. Beadle | 531,497 | Dec. 25 | 2512 | 598 | 69 | 1721 |
| Car-coupling | J. Bird | 528,460 | Oct. 30 | 3031 | 735 | 69 | 616 |
| Car-coupling | J. C. Bishop | 530,081 | Dec. 4 | 8 | 3 | 69 | 1216 |
| Car-coupling | E. R. Burden | 530,065 | Nov. 27 | 2748 | 659 | 69 | 1200 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Car-coupling | A. G. Clark | 529,020 | Nov. 13 | 906 | 214 | 69 | 831 |
| Car-coupling | J. Clark | 531,099 | Dec. 18 | 1783 | 425 | 69 | 1569 |
| Car-coupling | W. H. Edwards | 528,466 | Oct. 30 | 3040 | 738 | 69 | 618 |
| Car-coupling | J. W. Elliott | 531,522 | Dec. 25 | 2555 | 611 | 69 | 1729 |
| Car-coupling | H. Gallager | 528,124 | Oct. 23 | 2442 | 591 | 69 | 495 |
| Car-coupling | G. Gladfelter | 529,029 | Nov. 13 | 918 | 218 | 69 | 833 |
| Car-coupling | D. G. Gross | 531,375 | Dec. 25 | 2296 | 548 | 69 | 1680 |
| Car-coupling | L. Grunwald | 530,413 | Dec. 4 | 586 | 146 | 69 | 1322 |
| Car-coupling | B. B. Haydon | 530,843 | Dec. 11 | 1335 | 320 | 69 | 1474 |
| Car-coupling | J. S. Heaton | 529,443 | Nov. 20 | 1670 | 397 | 69 | 990 |
| Car-coupling | E. R. Kirby | 530,186 | Dec. 4 | 194 | 48 | 69 | 1250 |
| Car-coupling | E. Latham | 530,697 | Dec. 11 | 1109 | 269 | 69 | 1432 |
| Car-coupling | G. B. Leonard | 528,951 | Nov. 13 | 800 | 187 | 69 | 812 |
| Car-coupling | J. Lessard | 529,924 | Nov. 27 | 2472 | 595 | 69 | 1146 |
| Car-coupling | B. Lohr | 529,396 | Nov. 20 | 1578 | 375 | 69 | 953 |
| Car-coupling | J. McDonogh | 530,708 | Dec. 11 | 1123 | 273 | 69 | 1434 |
| Car-coupling | M. Mills | 529,335 | Nov. 13 | 1448 | 349 | 69 | 931 |
| Car-coupling | W. H. Mooers and E. A. Richell | 526,840 | Oct. 2 | 279 | 67 | 69 | 53 |
| Car-coupling | G. A. Norcross | 529,045 | Nov. 13 | 947 | 224 | 69 | 818 |
| Car-coupling | O. G. Ogden | 528,363 | Oct. 30 | 2891 | 700 | 69 | 591 |
| Car-coupling | O. Olmstead | 527,392 | Oct. 9 | 1174 | 288 | 69 | 233 |
| Car-coupling | A. C. Packer | 530,795 | Dec. 11 | 1264 | {305 306 | 69 | 1461 |
| Car-coupling | J. H. Pearson | 528,798 | Nov. 6 | 491 | {119 120 | 69 | 735 |
| Car-coupling | H. Raymond | 529,055 | Nov. 27 | 2738 | 656 | 69 | 1198 |
| Car-coupling | J. Reel | 530,457 | Dec. 4 | 652 | 162 | 69 | 1335 |
| Car-coupling | H. Schaeffer | 527,376 | Oct. 9 | 1148 | 282 | 69 | 228 |
| Car-coupling | F. Schalcke | 527,725 | Oct. 16 | 1721 | 415 | 69 | 342 |
| Car-coupling | S. Selden | 528,346 | Oct. 30 | 2824 | 682 | 69 | 579 |
| Car-coupling | S. T. Smith | 530,558 | Dec. 11 | 870 | {214 215 | 69 | 1390 |
| Car-coupling | G. Soner | 529,207 | Nov. 13 | 1228 | 296 | 69 | 888 |
| Car-coupling | H. W. Taylor | 529,497 | Nov. 20 | 1633 | 388 | 69 | 983 |
| Car-coupling | J. D. Tunnell | 528,623 | Nov. 6 | 175 | 43 | 69 | 678 |
| Car-coupling | S. N. Washburn | 530,565 | Dec. 11 | 884 | 217 | 69 | 1392 |
| Car-coupling | J. L. and J. E. White | 531,490 | Dec. 25 | 2502 | 596 | 69 | 1719 |
| Car-coupling | A. I. Worthington | 531,492 | Dec. 25 | 2504 | 596 | 69 | 1719 |
| Car coupling and bumper. Combined | W. Wallace | 526,756 | Oct. 2 | 210 | 50 | 69 | 40 |
| Car-coupling. Link-and-pin | J. Wright | 528,896 | Nov. 6 | 677 | 163 | 69 | 770 |
| Car-coupling safety device | J. L. Arter | 527,136 | Oct. 9 | 751 | 184 | 69 | 154 |
| Car-couplings. Draft-iron for | J. Timms | 530,211 | Dec. 4 | 238 | 59 | 69 | 1259 |
| Car-curtain fixture | W. H. Bean | 528,501 | Oct. 30 | 3094 | 750 | 69 | 628 |
| Car-door | R. T. Garland | 531,110 | Dec. 18 | 1806 | 429 | 69 | 1574 |
| Car-door bracket | E. A. Hill | 527,792 | Oct. 23 | 1841 | 443 | 69 | 387 |
| Car-draw-bar. Railway | A. G. Steinbrenner | 528,117 | Oct. 23 | 2430 | 588 | 69 | 493 |
| Car. Dump | G. A. Roberts | 528,279 | Oct. 30 | 2716 | 655 | 69 | 560 |
| Car. Dumping | H. H. Brown | 529,108 | Nov. 13 | 1051 | 253 | 69 | 857 |
| Car. Dumping | W. G. Lane | 528,546 | Nov. 6 | 33 | 10 | 69 | 653 |
| Car. Dumping | W. McMahon | 530,198 | Dec. 4 | 213 | 53 | 69 | 1254 |
| Car. Dumping | W. McMahon | 530,199 | Dec. 4 | 2179 | 54 | 69 | 1254 |
| Car-dumping apparatus | J. M. Phillips | 529,305 | Nov. 13 | 1410 | {337 338 | 69 | 922 |
| Car dumping apparatus. Railway | T. Long | 527,117 | Oct. 9 | 720 | 176 | 69 | 149 |
| Car. Elevated-railway | A. L. Widdis | 528,407 | Oct. 30 | 2933 | {709 710 | 69 | 598 |
| Car elevator and dumper | L. E. and H. Hoy | 529,618 | Nov. 20 | 1965 | 468 | 69 | 1044 |
| Car-fender | A. J. B. Berger | 526,851 | Oct. 2 | 296 | 72 | 69 | 56 |
| Car-fender | W. F. Duncker | 529,370 | Nov. 20 | 1524 | 365 | 69 | 964 |
| Car-fender | G. W. Engel and W. C. Juram | 531,026 | Dec. 18 | 1656 | {392 393 | 69 | 1546 |
| Car-fender | W. B. George | 531,374 | Dec. 25 | 2204 | 547 | 69 | 1679 |
| Car-fender | E. B. Graff | 529,260 | Nov. 13 | 1325 | 318 | 69 | 906 |
| Car-fender | W. G. Kerr | 528,298 | Oct. 30 | 2750 | 664 | 69 | 566 |
| Car-fender | J. McCarthy | 529,041 | Nov. 13 | 939 | 222 | 69 | 837 |
| Car-fender | G. W. Oakley | 529,460 | Nov. 20 | 1702 | 406 | 69 | 995 |
| Car-fender | H. B. Ogden | 527,715 | Oct. 16 | 1701 | 409 | 69 | 344 |
| Car-fender | R. Raphael | 527,004 | Oct. 2 | 543 | 133 | 69 | 102 |
| Car-fender | W. L. Shockley | 526,949 | Oct. 2 | 463 | 114 | 69 | 87 |
| Car-fender | A. D. Smith | 531,395 | Dec. 25 | 2326 | 555 | 69 | 1686 |
| Car-fender | E. B. and F. S. Towne | 530,140 | Dec. 4 | 106 | 28 | 69 | 1234 |
| Car-fender | F. D. Weber | 529,052 | Nov. 13 | 960 | 227 | 69 | 840 |
| Car-fender | H. P. Weale | 528,048 | Oct. 23 | 2306 | 556 | 69 | 471 |
| Car-fender | S. D. Wright | 528,057 | Oct. 23 | 2321 | 560 | 69 | 474 |
| Car-fender and brake. Street | J. S. Detrick | 528,766 | Nov. 6 | 433 | {105 106 | 69 | 725 |
| Car fender. Automatic street | J. T. Van Gestel | 531,234 | Dec. 18 | 2039 | 486 | 69 | 1615 |
| Car fender. Street | A. F. Boardman | 529,357 | Nov. 20 | 1490 | 358 | 69 | 959 |
| Car fender. Street | W. H. Brock | 531,258 | Dec. 18 | 2079 | 497 | 69 | 1623 |
| Car fender. Street | H. Grieser | 529,726 | Nov. 27 | 2142 | 513 | 69 | 1085 |
| Car fender. Street | H. C. Kennedy and G. W. Roletter | 529,275 | Nov. 13 | 1349 | 323 | 69 | 910 |
| Car fender. Trolley | C. F. Hang | 530,223 | Dec. 4 | 260 | 65 | 69 | 1262 |
| Car-heater | R. M. Dixon | 528,928 | Nov. 13 | 758 | {177 178 | 69 | 805 |
| Car-heater | E. H. Gold | 529,723 | Nov. 27 | 2137 | {511 512 | 69 | 1085 |
| Car heater and ventilator | L. A. Peckham | 531,559 | Dec. 25 | 2613 | {625 626 | 69 | 1741 |
| Car heater. Street | M. K. Bowen | 529,158 | Nov. 13 | 1137 | 275 | 69 | 873 |
| Car-heating system | E. H. Gold | 528,158 | Oct. 30 | 2498 | {604 605 | 69 | 520 |
| Car life-guard | J. Schneider | 531,391 | Dec. 25 | 2320 | 554 | 69 | 1685 |
| Car life-guard. Street | M. W. Lydon | 529,657 | Nov. 20 | 2029 | 486 | 69 | 1055 |
| Car life-guard. Street | J. F. Ryan | 527,813 | Oct. 23 | 1869 | 449 | 69 | 392 |



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|---|---|---|---|---|---|---|---|
| Car life-saving guard | L. E. Dubois | 527,270 | Oct. 9 | 974 | {236 237 | 69 | 195 |
| Car. Mail and express | F. Rowley | 530,243 | Dec. 4 | 295 | 73 | 69 | 1269 |
| Car mechanism for operating switches. Street | E. A. Barber and A. B. Babbitt | 527,262 | Oct. 9 | 956 | 232 | 69 | 192 |
| Car-motor. Electric | N. C. Bassett | 527,927 | Oct. 23 | 2079 | {497 498 | 69 | 429 |
| Car-motor. Steam | J. A. Barhydt | 528,067 | Oct. 23 | 2334 | {563 564 | 69 | 476 |
| Car-motor. Street | H. S. Park | 528,796 | Nov. 6 | 484 | {118 119 | 69 | 734 |
| Car motor. Street | J. Radomski | 531,275 | Dec. 18 | 2109 | 506 | 69 | 1628 |
| Car-mover | A. Kuebeler | 528,171 | Oct. 30 | 2521 | 610 | 69 | 525 |
| Car-platforms | J. Krehbiel | 528,170 | Oct. 30 | 2519 | 610 | 69 | 525 |
| Car poling device. Railway | W. C. Boswell | 529,060 | Nov. 13 | 972 | 229 | 69 | 843 |
| Car protector. Automatic railway | C. Klettner | 528,254 | Oct. 30 | 2672 | {643 644 | 69 | 553 |
| Car. Railway | G. W. Bancroft | 529,012 | Nov. 13 | 897 | {211 212 | 69 | 829 |
| Car. Railway | C. H. Barrows | 528,845 | Nov. 6 | 594 | {140 141 | 69 | 754 |
| Car register. Street | E. Catlin and G. Rein | 530,067 | Nov. 27 | 2751 | 660 | 69 | 1200 |
| Car safety apparatus. Street | J. J. Andrews and T. Mott | 527,646 | Oct. 16 | 1595 | 385 | 69 | 324 |
| Car safety device. Electric | J. M. Kelly | 528,438 | Oct. 30 | 2984 | 721 | 69 | 607 |
| Car safety-guard | F. Zorn | 529,095 | Nov. 13 | 1035 | {249 250 | 69 | 854 |
| Car safety-guard. Street | D. A. Freeman | 530,174 | Dec. 4 | 161 | 42 | 69 | 1244 |
| Car sand-box | A. Garing | 528,904 | Nov. 6 | 511 | 168 | 69 | 776 |
| Car sand-box | E. Heiz | 529,444 | Nov. 20 | 1671 | 398 | 69 | 980 |
| Car sand-delivering mechanism. Street | A. Parrant | 527,446 | Oct. 16 | 1260 | 310 | 69 | 263 |
| Car sanding device. Street | W. C. Fisher | 531,613 | Dec. 25 | 2705 | 648 | 69 | 1759 |
| Car-seat | M. N. Forney | 527,842 | Oct. 23 | 1916 | {460 461 | 69 | 400 |
| Car-seat | C. Wowra | 527,095 | Oct. 9 | 678 | {107 108 | 69 | 142 |
| Car-seat. Folding | W. Sutton | 531,573 | Dec. 25 | 2635 | 641 | 69 | 1746 |
| Car-seat. Reversible | S. Hoffman | 531,122 | Dec. 18 | 1827 | {433 434 | 69 | 1572 |
| Car signaling apparatus. Street | G. B. St. John | 527,461 | Oct. 16 | 1298 | 317 | 69 | 271 |
| Car spring-buffer. Street | H. A. Howe | 527,203 | Oct. 9 | 853 | 208 | 69 | 174 |
| Car-starter | T. C. Wright | 530,150 | Dec. 4 | 123 | 32 | 69 | 1238 |
| Car-tilting device | U. Frantz | 529,549 | Nov. 20 | 1863 | {442 443 | 69 | 1024 |
| Car-ventilating apparatus | G. A. Geer | 526,702 | Oct. 2 | 55 | 13 | 69 | 13 |
| Car-ventilator | O. H. Goldberg | 527,241 | Oct. 9 | 921 | 222 | 69 | 186 |
| Car-ventilator | B. F. Hughson | 527,987 | Oct. 23 | 2207 | 532 | 69 | 452 |
| Car. Ventilator | H. H. Love | 528,231 | Oct. 30 | 2633 | 635 | 69 | 545 |
| Car-vestibule diaphragm | H. C. Buhoup | 530,745 | Dec. 11 | 1186 | 289 | 69 | 1445 |
| Car-vestibule diaphragm or face-plate | H. C. Buhoup | 526,803 | Oct. 2 | 218 | 52, 53 | 69 | 41 |
| Car-wheel | C. Roberts | 528,278 | Oct. 30 | 2715 | 651 | 69 | 560 |
| Car-wheel lubricator | J. W. Reneau | 527,447 | Oct. 16 | 1261 | 310 | 69 | 262 |
| Car-wheels. Chill for cast-iron | P. Connelly | 530,884 | Dec. 11 | 1404 | 334 | 69 | 1486 |
| Cars. Apparatus for generating electricity for lighting railway | T. A. Murray | 529,563 | Nov. 20 | 1882 | 448 | 69 | 1028 |
| Cars. Automatic dump for unloading | C. D. Matheny | 527,568 | Oct. 23 | 1973 | 474 | 69 | 409 |
| Cars. Electric-lighting system for railway | M. Moskowitz | 531,421 | Dec. 25 | 2369 | 567 | 69 | 1694 |
| Cars. Entrance-guard for open | J. A. Brill | 531,407 | Dec. 25 | 2343 | 559 | 69 | 1689 |
| Cars. Machine for moving railway | E. W. Ringrose | 527,374 | Oct. 9 | 1146 | 281 | 69 | 228 |
| Cars. Means for replacing derailed | W. J. Knight | 526,715 | Oct. 2 | 77 | 20 | 69 | 17 |
| Cars. Method of and means for controlling electric | H. P. Davis | 527,947 | Oct. 23 | 2120 | 509 | 69 | 438 |
| Cars. Reversible driving-gear for | J. Hopkirk | 529,268 | Nov. 13 | 1338 | 321 | 69 | 908 |
| Cars. Side bearing for | J. H. Campbell | 530,579 | Dec. 11 | 907 | 222 | 69 | 1397 |
| Cars. Switch-operating device for tram | A. C. L. Engstfeld | 530,302 | Dec. 4 | 398 | {100 101 | 69 | 1287 |
| Carbon brushes. Apparatus for the manufacture of | J. W. Taylor | 526,951 | Oct. 2 | 465 | 114 | 69 | 88 |
| Carbon. Electric-light | E. G. Acheson | 527,826 | Oct. 23 | 1888 | 453 | 69 | 395 |
| Carbonating liquids. Apparatus for | H. S. Ferry | 530,071 | Nov. 27 | 2759 | {661 662 | 69 | 1201 |
| Carbonating liquids. Method of and means for | H. S. Ferry | 530,070 | Nov. 27 | 2757 | 661 | 69 | 1201 |
| Carburetor | P. Keller | 528,892 | Nov. 6 | 658 | 158 | 69 | 767 |
| Carburetor | O. Moncur | 528,377 | Oct. 30 | 2877 | 697 | 69 | 589 |
| Carburetor | J. O. Sprague and J. W. Guthrie | 527,095 | Oct. 9 | 667 | 153 | 69 | 140 |
| Card. Display | E. M. Westcott | 527,639 | Oct. 16 | 1584 | 383 | 69 | 322 |
| Card. Reinforced stencil | C. Hernsheim | 527,688 | Oct. 16 | 1661 | 400 | 69 | 336 |
| Card. Reinforced stencil | F. D. Belknap | 530,918 | Dec. 18 | 1466 | 347 | 69 | 1513 |
| | F. D. Belknap | 530,919 | Dec. 18 | 1467 | 348 | 69 | 1513 |
| Card-setting machine | C. W. Arnold | 528,354 | Oct. 30 | 2632 | {685 686 687 688 689 | 69 | 581 |
| Card-support | W. F. Jones | 527,694 | Oct. 16 | 1675 | 403 | 69 | 329 |
| Carding-machine | J. T. Meats | 528,007 | Oct. 23 | 2244 | 542 | 69 | 459 |
| Carpenter's work-holder and guide | C. Bainbridge | 529,235 | Nov. 13 | 1277 | 306 | 69 | 897 |
| Carpet-beater | F. T. Frost | 529,682 | Nov. 20 | 2067 | 495 | 69 | 1062 |
| Carpet-fastener | L. F. Ambrose | 529,350 | Nov. 20 | 1480 | 356 | 69 | 957 |
| Carpet-fastener | P. Eckman | 530,096 | Dec. 4 | 34 | 9 | 69 | 1221 |
| Carpet-lining | C. C. Stewart | 528,570 | Nov. 6 | 84 | 21 | 69 | 661 |
| Carpet-rolls. Means for supporting | C. L. Taylor | 529,973 | Nov. 27 | 2507 | 618 | 69 | 1163 |
| Carpet-stretcher | J. E. Barnes | 529,155 | Nov. 13 | 1132 | 274 | 69 | 872 |
| Carriage | F. N. Vanier | 527,909 | Oct. 23 | 2051 | 492 | 69 | 424 |
| Carriage and cradle. Combined child's | O. Orr | 530,449 | Dec. 4 | 641 | 160 | 69 | 1333 |
| Carriage. Child's | J. W. Jaimison | 526,972 | Oct. 2 | 486 | {121 122 | 69 | 93 |
| Carriage. Folding baby | H. Anhaltzer | 526,958 | Oct. 2 | 472 | 117 | 69 | 89 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Carriage or wagon jack | S. J. Johnston | 530,109 | Dec. 4 | 59 | 16 | 69 | 1226 |
| Carriage-spring | C. A. Behlen | 528,458 | Oct. 30 | 3029 | 735 | 69 | 615 |
| Carriage storm-hood. Top- | A. W. Seidmore | 527,162 | Oct. 9 | 793 | 193 | 69 | 162 |
| Carriage-top spring | D. Conboy | 529,780 | Nov. 27 | 2229 | 531 | 69 | 1100 |
| Carriage-top worker | A. C. and W. E. Bendler | 527,314 | Oct. 9 | 1048 | 253 | 69 | 209 |
| Carriage-wheel | E. S. Renwick | 531,447 | Dec. 25 | 2431 | 579 | 69 | 1706 |
| Carriages. Sled attachment for baby- | C. J. Bongfeldt | 527,357 | Oct. 9 | 1116 | 273 | 69 | 222 |
| Carrier: *See* Book carrier. Egg-carrier. Lathe-carrier. Luggage-carrier. Package-carrier. Parcel-carrier. Trace-carrier. | | | | | | | |
| Carrier | C. P. Hogue | 528,775 | Nov. 6 | 447 | 110 | 69 | 728 |
| Cart. Self-loading | G. F. Fischer | 528,424 | Oct. 30 | 2957 | 716, 717, 718 | 69 | 603 |
| Cartridge-crimping machine | T. R. Barney | 531,495 | Dec. 25 | 2569 | 597 | 69 | 1720 |
| Cartridge. Fumigating- | O. S. Erickson | 527,484 | Oct. 16 | 1331 | 324 | 69 | 277 |
| Cartridge-holder. Reloading | A. J. Watson | 527,166 | Oct. 9 | 799 | 195 | 69 | 163 |
| Cartridge-loading machines. Revolving crimper for | C. S. Hisey | 528,098 | Oct. 23 | 2397 | 579 | 69 | 486 |
| Cartridge-loading machines. Shell-carrier-actuating mechanism for | C. S. Hisey | 528,094 | Oct. 23 | 2389 | 576, 577 | 69 | 485 |
| Cartridge-loading machines. Shell carrier for | C. S. Hisey and E. S. Rice | 527,983 | Oct. 23 | 2194 | 528, 529, 530 | 69 | 451 |
| Cartridge-loading machines. Shell-feeding mechanism for | C. S. Hisey | 528,095 | Oct. 23 | 2391 | 577 | 69 | 486 |
| Cartridge-loading machines. Shell-placer for | C. S. Hisey | 528,096 | Oct. 23 | 2392 | 578 | 69 | 486 |
| Cartridge-shell for practice shooting | W. M. Thomas | 531,243 | Dec. 18 | 2098 | 486 | 69 | 1615 |
| Carving-machine | W. Maybeck | 527,152 | Oct. 9 | 778 | 190 | 69 | 159 |
| Carving-machine | R. Morgeneier | 528,337 | Oct. 30 | 2810 | 679, 680 | 69 | 577 |
| Carving-machine | C. S. Yarnell | 530,570 | Dec. 11 | 891 | 219, 220 | 69 | 1394 |
| Case. *See* Card-case. Cigarette or match case. Combination-case. Composition-case. Dressing-case. Egg-case. File-case. Gear-case. Packing-case. Pencil-case. Piano-case. Sales-check case. Show-case. Spectacle-case. Ticket-case. Tile-case. | | | | | | | |
| Case or holder for letters, &c | I. C. Gould | 526,779 | Oct. 2 | 185 | 43, 44 | 69 | 35 |
| Cash-carrier apparatus. Pneumatic | F. J. H. Hazard | 530,772 | Dec. 11 | 1231 | 298, 299 | 69 | 1454 |
| Cash-controlling machine | A. Quortrup | 527,808 | Oct. 23 | 1461 | 447, 448 | 69 | 391 |
| Cash drawer and register | C. H. Shaw | 527,220 | Oct. 9 | 882 | 214, 215 | 69 | 179 |
| Cash-receptacle | F. R. Garfield | 527,239 | Oct. 9 | 919 | 221 | 69 | 186 |
| Cash-register | J. M. Heath | 530,045 | Nov. 27 | 2705 | 650 | 69 | 1192 |
| Cash-register | J. H. Voss | 529,980 | Nov. 27 | 2575 | 621 | 69 | 1165 |
| Cash-register | J. A. Williams | 529,436 | Nov. 20 | 1658 | 394, 395 | 69 | 988 |
| Cash register and indicator | J. B. Anfuldish | 529,773 | Nov. 27 | 2218 | 528, 529 | 69 | 1099 |
| Cash register and indicator | J. S. Hilliard | 528,541 | Nov. 6 | 29 | 2 | 69 | 652 |
| Cash-registers. Multiple adding-machine for | C. J. Ryberg | 531,277 | Dec. 18 | 2112 | 507, 508 | 69 | 1629 |
| Cash-registers. Sealing device for | J. O. Byrns | 530,924 | Dec. 18 | 1473 | 349 | 69 | 1514 |
| Cash-registering apparatus | M. Blank | 526,768 | Oct. 2 | 165 | 39 | 69 | 32 |
| Cask-pitching apparatus | T. J. Reinhard | 529,310 | Nov. 13 | 1418 | 341 | 69 | 924 |
| Casks. Apparatus for extracting residual substances from | E. E. Murphy | 529,338 | Nov. 13 | 1452 | 350 | 69 | 931 |
| Casket-handle | L. H. Bannister | 527,191 | Oct. 9 | 835 | 203 | 69 | 170 |
| Casket-handle | L. E. Woodard | 530,814 | Dec. 11 | 1290 | 312 | 69 | 1466 |
| Casket-lid fastener | W. C. Langenau | 528,948 | Nov. 13 | 796 | 186 | 69 | 812 |
| Casket-lowering device | A. C. Richardson | 529,311 | Nov. 13 | 1419 | 341 | 69 | 924 |
| Caster | J. J. Schlientz and J. F. Fink | 528,210 | Oct. 30 | 2597 | 627 | 69 | 538 |
| Caster. Ball- | J. B. Offerle | 528,791 | Nov. 6 | 475 | 116 | 69 | 732 |
| Caster. Ball- | L. B. White | 528,366 | Oct. 30 | 2691 | 648 | 69 | 556 |
| Casting apparatus | H. B. Cox | 531,362 | Dec. 25 | 2273 | 542 | 69 | 1675 |
| Casting crucible-steel. Apparatus for | C. Capper | 529,321 | Nov. 13 | 1430 | 344 | 69 | 927 |
| Casting metal pipes, &c. Machine for making molds and cores to be used in | J. Shepherd | 530,257 | Dec. 11 | 1360 | 325 | 69 | 1477 |
| Casting metals under pneumatic pressure. Apparatus for | J. J. C. and E. C. Smith | 526,874 | Oct. 2 | 341 | 85 | 69 | 64 |
| Casting-mold | C. A. R. Hainpel | 529,906 | Nov. 27 | 2441 | 586 | 69 | 1141 |
| Casting-molds. Apparatus for drying | W. Hansen | 530,641 | Dec. 11 | 1016 | 248 | 69 | 1415 |
| Casting molten material. Apparatus for | G. A. Goodson | 530,479 | Dec. 4 | 691 | 173 | 69 | 1342 |
| Casting sash-weights. Device for | A. S. Hodges | 527,984 | Oct. 23 | 2202 | 530 | 69 | 451 |
| Castings. Chill for making chilled | H. Schon | 528,034 | Oct. 23 | 2285 | 551 | 69 | 466 |
| Castrating-instrument | J. E. Anderson | 527,309 | Oct. 9 | 1089 | 252 | 69 | 207 |
| Catalogue. Card- | A. J. Rudolph | 528,692 | Nov. 6 | 307 | 75 | 69 | 702 |
| Cathode for electrolytic process and making same | E. Stouls | 528,042 | Oct. 23 | 2298 | ..... | 69 | 469 |
| Ceiling. Fireproof | J. Rueben | 530,129 | Dec. 4 | 93 | 25 | 69 | 1232 |
| Ceiling or floor | S. G. Brinkman | 530,064 | Nov. 27 | 2747 | 659 | 69 | 1200 |
| Ceiling-plate | J. W. Chamberlain | 530,394 | Dec. 4 | 559 | 139 | 69 | 1317 |
| Ceiling, roof, or like structure | T. A. Lee | 529,923 | Nov. 27 | 2469 | 595 | 69 | 1146 |
| Ceiling-top | G. Diers | 527,013 | Oct. 2 | 557 | 136 | 69 | 105 |
| Ceilings. Metallic panel for | F. G. Caldwell | 529,593 | Nov. 20 | 1929 | 460 | 69 | 1037 |
| Cellulose acetate. Manufacture of | C. F. Cross and E. J. Bevan | 530,826 | Dec. 11 | 1311 | ..... | 69 | 1470 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Cellulose. Nitrating | R. C. Schüpphaus | 526,752 | Oct. 2 | 138 | ..... | 69 | 27 |
| Cement. Manufacture of | B. K. Rigby | 526,910 | Oct. 2 | 407 | ..... | 69 | 76 |
| Cement, &c. Manufacture of asbestos | A. Kühlewein | 530,645 | Dec. 11 | 1024 | ..... | 69 | 1417 |
| Cement. Manufacturing hydraulic | G. W. A. Stein | 530,247 | Dec. 4 | 302 | ..... | 69 | 1270 |
| Centerboard | H. Voss | 528,749 | Nov. 6 | 398 | 94, 95 | 69 | 718 |
| Center-board. Boat | W. R. Baker | 528,916 | Nov. 13 | 737 | 173 | 69 | 801 |
| Center-mark tool. Portable spring-actuated | R. S. Peabody | 528,555 | Nov. 6 | 51 | 14 | 69 | 656 |
| Centrifugal machine | E. Lévy-Samson | 527,499 | Oct. 16 | 1351 | 330 | 69 | 281 |
| Centrifugal machine | J. Naylor, Jr | 529,664 | Nov. 20 | 2039 | 489 | 69 | 1055 |
| Centrifugal separator | H. F. M. Kayser | 527,869 | Oct. 23 | 1962 | 471, 472 | 69 | 407 |
| Chafe-iron. Roller | C. L. Bellamy | 531,500 | Dec. 25 | 2517 | 601 | 69 | 1722 |
| Chain attachment-block. Elevating or conveying | D. Bennett | 529,016 | Nov. 13 | 901 | 213 | 69 | 830 |
| Chain. Driving- | W. B. Teale | 528,622 | Nov. 6 | 174 | 43 | 69 | 675 |
| Chain-link | R. A. and C. Brenl | 530,921 | Dec. 18 | 1469 | 348 | 69 | 1514 |
| Chain-machine | B. L. Colvin | 528,076 | Oct. 23 | 2355 | 568, 569 | 69 | 480 |
| Chain-making machine | P. H. Standish | 528,819 | Nov. 6 | 528 | 128, 129 | 69 | 741 |
| Chain or link belt. Conveyer- | S. Essex | 531,306 | Dec. 25 | 2170 | 519 | 69 | 1656 |
| Chair: *See* Dental chair. Dental or surgical chair. Folding chair. Invalid-chair. Panel-chair. Rail-chair. Railway-chair. Rocking-chair. Surgical chair. | | | | | | | |
| Chair | E. W. Briggs, Jr | 530,580 | Dec. 11 | 1397 | 333 | 69 | 1485 |
| Chair | W. Daniels | 530,092 | Dec. 4 | 27 | 8 | 69 | 1220 |
| Chair | M. J. Halliburton | 529,380 | Nov. 20 | 1541 | 368 | 69 | 966 |
| Chair-seat | O. S. Foster | 529,485 | Nov. 20 | 1749 | 415 | 69 | 1003 |
| Chair-seats. Spring-support for | J. A. Staples | 531,477 | Dec. 25 | 2478 | 590 | 69 | 1714 |
| Chalking device. Line- | J. W. Neff | 526,937 | Oct. 2 | 450 | 111 | 69 | 84 |
| Channeling-machine | Z. T. French and W. C. Meyer | 529,900 | Nov. 27 | 2432 | 584 | 69 | 1140 |
| Charger | D. P. Allen | 528,843 | Nov. 6 | 591 | 140 | 69 | 754 |
| Charging apparatus | E. Solvay | 531,282 | Dec. 18 | 2123 | 509 | 69 | 1631 |
| Chart. Astronomical | F. E. Ormsby | 531,060 | Dec. 18 | 1709 | 406 | 69 | 1557 |
| Check-hook | J. N. Moehn | 529,561 | Nov. 20 | 1880 | 447 | 69 | 1027 |
| Check-marker | C. H. Coggeshall | 530,470 | Dec. 4 | 676 | 168, 169 | 69 | 1339 |
| Checking and unchecking device | B. A. Blakemore | 530,005 | Nov. 27 | 2641 | 634 | 69 | 1181 |
| Checkrein-hook | G. W. Begole | 529,074 | Nov. 20 | 2054 | 492 | 69 | 1060 |
| Cheese manufacture. Making emulsions in | D. H. Burrell | 530,298 | Dec. 4 | 393 | 99 | 69 | 1296 |
| Cheese-press | H. Feldmeier | 529,856 | Nov. 27 | 2366 | 565, 566 | 69 | 1127 |
| Cheese-press | C. J. Lundstrom | 528,001 | Oct. 23 | 2295 | 539, 540 | 69 | 457 |
| Chest and bleacher. Stuff- | G. M. Newhall | 529,937 | Nov. 27 | 2490 | 600, 601 | 69 | 1149 |
| Chimney | E. V. Wingard | 528,453 | Oct. 30 | 3011 | 727 | 69 | 612 |
| Chimney cap and ventilator | W. Earle | 527,199 | Oct. 9 | 845 | 206, 207 | 69 | 173 |
| Chimney cowl or ventilator | M. H. Ingalls | 530,448 | Dec. 4 | 595 | 148 | 69 | 1324 |
| Chimney-stacks. Atmospheric-pressure relief for | B. F. Taylor | 530,630 | Dec. 11 | 988 | 243 | 69 | 1411 |
| Chiropodists' use. Instrument for | F. M. Garies | 527,240 | Oct. 9 | 920 | 232 | 69 | 186 |
| Chisel. Subaqueous rock-breaking | W. L. Ross | 531,334 | Dec. 25 | 2219 | 531 | 69 | 1665 |
| Chlorin and caustic soda. Electrolytic apparatus for the manufacture of | T. Drake | 528,153 | Oct. 30 | 2492 | 603 | 69 | 520 |
| Chlorin. Obtaining | L. Mond | 529,130 | Nov. 13 | 1087 | 262 | 69 | 864 |
| Chocolate-dipper | C. Gousset | 526,968 | Oct. 2 | 491 | 120 | 69 | 92 |
| Chopper: *See* Cotton-chopper. | | | | | | | |
| Chopping-knife | R. Mayer | 527,002 | Oct. 2 | 541 | 133 | 69 | 102 |
| Chopping-knife | W. L. Pike | 528,562 | Nov. 6 | 61 | 16 | 69 | 657 |
| Christmas-tree light | E. A. Uehling | 531,452 | Dec. 25 | 2439 | 581 | 69 | 1708 |
| Chuck. Drill- | J. H. Westcott | 527,227 | Oct. 9 | 897 | 217 | 69 | 183 |
| Chuck. Lathe- | W. Wolff | 528,705 | Nov. 6 | 323 | 79 | 69 | 705 |
| Churn | J. A. Crim | 528,079 | Oct. 23 | 2364 | 570 | 69 | 481 |
| Churn | J. M. Jackson | 530,531 | Dec. 11 | 820 | 203 | 69 | 1381 |
| Churn | C. L. Leonard and A. Bever | 528,000 | Oct. 23 | 2234 | 539 | 69 | 457 |
| Churn | C. A. Lorenz | 531,440 | Dec. 25 | 2417 | 575 | 69 | 1704 |
| Churn | J. A. Maddox | 531,204 | Dec. 18 | 1980 | 470 | 69 | 1605 |
| Churn | M. M. Montgomery | 528,129 | Oct. 23 | 2454 | 593, 594 | 69 | 497 |
| Churn | O. Ohlsson | 528,681 | Nov. 6 | 289 | 70 | 69 | 698 |
| Churn | C. M. Roark | 528,030 | Oct. 23 | 2280 | 550 | 69 | 465 |
| Churn | L. Sturges | 529,884 | Nov. 27 | 2408 | 578 | 69 | 1135 |
| Churn and butter-worker. Combined | D. W. Payne | 527,716 | Oct. 16 | 1702 | 410, 411 | 69 | 344 |
| Churn-cover | S. D. Palmer | 530,602 | Dec. 11 | 945 | 242 | 69 | 1404 |
| Churn-dasher | G. W. Parrish | 527,022 | Oct. 2 | 556 | 139 | 69 | 109 |
| Churn-dasher | C. S. Rogers | 528,519 | Oct. 30 | 3121 | 756 | 69 | 633 |
| Cigar-band | C. Hermsheim | 527,687 | Oct. 16 | 1660 | 400 | 69 | 336 |
| Cigar-bunch machine | H. Jerstrum | 528,166 | Oct. 30 | 2511 | 607, 608, 609 | 69 | 523 |
| Cigar-bunching machine | E. Barth | 530,254 | Dec. 4 | 311 | 78 | 69 | 1272 |
| Cigar-bunching machine | N. H. Borgfeldt | 529,891 | Nov. 27 | 2421 | 581 | 69 | 1137 |
| Cigar-bunching machine | H. K. Gardner | 528,903 | Nov. 6 | 691 | 166, 167 | 69 | 772 |
| Cigar-bunching machine | H. Schmidt and C. J. Werner | 530,554 | Dec. 11 | 862 | 213, 214 | 69 | 1389 |
| Cigar-lighter. Electric | C. J. Coleman | 530,637 | Dec. 11 | 1011 | 247 | 69 | 1414 |
| Cigar-mold | J. H. Ogden | 530,794 | Dec. 11 | 1203 | 305 | 69 | 1461 |
| Cigar-mold. End-opening wooden | N. Du Brul | 530,403 | Dec. 4 | 574 | 142 | 69 | 1320 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Cigar or cigarette | P. C. Sarapata and P. Souvazogin | 527,724 | Oct. 16 | 1720 | 415 | 69 | 347 |
| Cigar-package | S. Roman | 528,943 | Oct. 2 | 456 | 112 | 69 | 86 |
| Cigar-press | E. J. Fink | 529,254 | Nov. 13 | 1314 | 316 | 69 | 904 |
| Cigar-shaping machine | C. Hernsheim | 527,689 | Oct. 16 | 1663 | 401 | 69 | 337 |
| Cigar-tip cutter | F. P. Sparmaker | 528,996 | Nov. 13 | 866 | 205 | 69 | 825 |
| Cigar-vending machine | H. L. Kirtley | 529,276 | Nov. 13 | 1350 | 323, 324 | 69 | 911 |
| Cigar-vending machine. Coin-operated | H. L. Kirtley | 527,895 | Oct. 23 | 2324 | 536, 537 | 69 | 455 |
| Cigarette-machine | E. T. Pollard | 530,718 | Dec. 11 | 1137 | 276, 277 | 69 | 1436 |
| Cigarette-machine cutter | E. T. Pollard | 529,138 | Nov. 13 | 1103 | 267 | 69 | 867 |
| Cigarette or match case | J. L. Sommer | 527,625 | Oct. 16 | 1557 | 377 | 69 | 317 |
| Cigarette-paper. Machine for applying paraffin to | A. C. Marchal | 528,332 | Oct. 30 | 2803 | 677 | 69 | 575 |
| Cigarette-slide and match-box. Combined | J. T. Craw | 528,763 | Nov. 6 | 426 | 103 | 69 | 724 |
| Cinch-plate | A. P. Weeks | 531,580 | Dec. 25 | 2617 | 634 | 69 | 1748 |
| Circuit-breaker. Thermal | H. Klein | 530,430 | Dec. 4 | 642 | 152 | 69 | 1327 |
| Circuit-closer | H. J. Hovey | 528,672 | Nov. 6 | 270 | 66 | 69 | 694 |
| Circuit-closer | H. V. Keeson | 530,184 | Dec. 4 | 191 | 47 | 69 | 1249 |
| Circuit-controller for regulators | B. B. Ward | 527,092 | Oct. 9 | 673 | 165 | 69 | 141 |
| Cistern. Portable | O. O. Walker and R. G. Moon | 529,511 | Nov. 20 | 1799 | 428 | 69 | 1012 |
| Clamp: *See* Bale-box clamp. Brake-shoe clamp. Floor-clamp. Ironing-table clamp. Lace-clamp. Neckband-clamp. Pipe-clamp. Rope-clamp. Trolley-wire clamp. | | | | | | | |
| Clamp and vise. Combined | C. F. Weyhe | 529,765 | Nov. 27 | 2206 | 526 | 69 | 1096 |
| Clamp-hook. Adjustable | J. A. P. Berg | 527,763 | Oct. 23 | 1789 | 431 | 69 | 377 |
| Clamping device for machine-tools | R. S. Peabody | 528,557 | Nov. 6 | 54 | 14 | 69 | 656 |
| Clasp: *See* Collar-clasp. Garment-clasp. Garment-supporter clasp. | | | | | | | |
| Clasp | H. W. Hoeft | 526,781 | Oct. 2 | 188 | 44 | 69 | 36 |
| Clasp | J. C. Stevens | 528,699 | Nov. 6 | 317 | 77 | 69 | 704 |
| Clavo-mandolin | C. A. Noack | 530,712 | Dec. 11 | 1129 | 274 | 69 | 1435 |
| Clay product machines. Cutter for | J. H. Omwake | 531,213 | Dec. 18 | 1998 | 475 | 69 | 1609 |
| Clay to make ballast, &c. Burning | H. G. Butler | 529,480 | Nov. 20 | 1734 | 413 | 69 | 1001 |
| Cleaner: *See* Boiler-cleaner. Boiler-tube or pipe cleaner. Cotton-cleaner. Dish-cleaner. Flue-cleaner. Gas-cleaner. Rail-cleaner. Sewer-trap cleaner. Shoe-cleaner. Tube or flue cleaner. Wheel-cleaner. Window-cleaner. | | | | | | | |
| Cleaning and polishing compound | O. I. Littell | 529,281 | Nov. 13 | 1457 | ..... | 69 | 912 |
| Cleaning-machine | W. Hebb | 526,970 | Oct. 2 | 493 | 121 | 69 | 92 |
| Clevis | A. Morganfield | 528,009 | Oct. 23 | 2247 | 542 | 69 | 459 |
| Clew-ring | T. Ayres | 527,260 | Oct. 9 | 954 | 231 | 69 | 192 |
| Clipper attachment. Hair | C. O. Bechstedt | 530,984 | Dec. 18 | 1581 | 375 | 69 | 1533 |
| Clipper for animals. Mechanical | P. Ashberry and W. Barnes | 530,572 | Dec. 11 | 895 | 220 | 69 | 1395 |
| Clipper. Hair | E. A. Cochran | 526,858 | Oct. 2 | 312 | 76 | 69 | 59 |
| Clippers. Shearing | E. A. Cochran | 526,917 | Oct. 2 | 419 | 104 | 69 | 78 |
| Clock. Alarm | T. Biddinger and T. J. Kane | 529,103 | Nov. 13 | 1045 | 252 | 69 | 856 |
| Clock. Calendar | C. W. Feishtinger | 527,386 | Oct. 9 | 1163 | 285 | 69 | 231 |
| Clock. Electric | C. Gullberg | 527,528 | Oct. 16 | 1405 | 342 | 69 | 289 |
| Clock. Electric alarm | M. McDonnell | 528,678 | Nov. 6 | 285 | 69 | 69 | 697 |
| Clock. Electric program | J. L. McCaskey | 531,002 | Dec. 18 | 1610 | 382, 383 | 69 | 1538 |
| Clock. Electric winding and setting | H. Loriot | 526,720 | Oct. 2 | 84 | 22 | 69 | 18 |
| Clock. Musical | H. W. Porter | 528,739 | Nov. 6 | 374 | 91 | 69 | 715 |
| Clock. Musical | H. W. Porter | 529,835 | Nov. 27 | 2327 | 554 | 69 | 1119 |
| Clock or dial. Calculating | F. A. Göttsch | 530,836 | Dec. 11 | 1326 | 319 | 69 | 1472 |
| Clock. Pendulum | O. Bartel | 527,233 | Oct. 9 | 908 | 220 | 69 | 185 |
| Clock. Self-winding electric | E. G. Hammer | 527,786 | Oct. 23 | 1828 | 440 | 69 | 385 |
| Clock. Self-winding electric | A. Lungen | 528,960 | Nov. 13 | 811 | 190 | 69 | 814 |
| Closet: *See* Water-closet. | | | | | | | |
| Closet-pull attachment | L. M. Hooper | 529,129 | Nov. 13 | 1074 | 259 | 69 | 862 |
| Closet-seat | W. G. Vollmer | 527,821 | Oct. 23 | 1880 | 451 | 69 | 393 |
| Cloth-cutting machine | J. Bloch | 528,220 | Oct. 30 | 2613 | 630 | 69 | 541 |
| Cloth-cutting machine | A. Thyll | 527,224 | Oct. 9 | 892 | 216 | 69 | 181 |
| Cloth-cutting machine | J. Wolf, Jr | 528,217 | Oct. 30 | 2607 | 628, 629 | 69 | 540 |
| Cloth-cutting machines. Take-up for conductors of | J. Wolf, Jr | 527,354 | Oct. 9 | 1111 | 271 | 69 | 221 |
| Cloth-holder | W. H. Cummings | 527,109 | Oct. 9 | 706 | 173 | 69 | 147 |
| Cloth-laying machine | A. Eloesser | 529,855 | Nov. 27 | 2365 | 565 | 69 | 1127 |
| Cloth. Method of and machine for fulling | H. Balbian | 529,579 | Nov. 20 | 1911 | 455 | 69 | 1033 |
| Cloth-notching machine | J. Wolf, Jr | 528,216 | Oct. 30 | 2606 | 628 | 69 | 540 |
| Cloth-stretching machine | J. Muir | 527,441 | Oct. 16 | 1255 | 308 | 69 | 260 |
| Clothes-drier | J. Brown | 526,889 | Oct. 2 | 364 | 91 | 69 | 68 |
| Clothes-drier | C. E. Cochrane | 528,222 | Oct. 30 | 2614 | 630 | 69 | 541 |
| Clothes-drier | G. Finkbeiner | 531,524 | Dec. 25 | 2557 | 612 | 69 | 1730 |
| Clothes-drier | P. J. Meslein | 527,870 | Oct. 23 | 1976 | 475 | 69 | 410 |
| Clothes-drier | W. H. Moseley | 527,705 | Oct. 16 | 1690 | 407 | 69 | 342 |
| Clothes-drier | B. F. Nicholas | 527,003 | Oct. 2 | 542 | 133 | 69 | 102 |
| Clothes-drier | J. Reilly | 529,628 | Nov. 20 | 1977 | 471 | 69 | 1046 |
| Clothes-line fastener | C. Bartsch | 531,248 | Dec. 18 | 2063 | 493 | 69 | 1619 |
| Clothes-line fastener | C. J. Brown | 529,703 | Nov. 27 | 2106 | 505 | 69 | 1079 |
| Clothes-pin | G. W. McCoole | 527,500 | Oct. 16 | 1353 | 330 | 69 | 281 |
| Clothes-pin | W. D. Watkins | 527,911 | Oct. 23 | 2055 | 493 | 69 | 425 |
| Clothes-rack | T. M. Anderson | 528,498 | Oct. 30 | 3091 | 749 | 69 | 627 |
| Clutch | D. Bennett | 529,015 | Nov. 13 | 900 | 212 | 69 | 829 |



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| Invention. | Name. | No | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Clutch-coupling | T. F. McGee and E. J. McCarty | 528,012 | Oct. 23 | 2250 | 543 | 69 | 460 |
| Clutch. Driving | M. C. Johnson | 527,064 | Oct. 9 | 639 | 155 | 69 | 135 |
| Clutch. Friction | J. A. Barnes | 531,014 | Dec. 18 | 1634 | 387, 388 | 69 | 1542 |
| Clutch. Friction | J. Hartness | 530,339 | Dec. 4 | 466 | 117 | 69 | 1299 |
| Clutch. Friction | E. D. Schmidt | 529,755 | Nov. 27 | 2190 | 522 | 69 | 1093 |
| Clutch. Friction | W. R. Smith | 529,314 | Nov. 13 | 1492 | 342 | 69 | 925 |
| Clutch mechanism | L. E. Mansfield | 530,701 | Dec. 11 | 1115 | 271 | 69 | 1432 |
| Coach-step | B. D. Drum | 527,596 | Oct. 16 | 1514 | 367 | 69 | 309 |
| Coal and mineral washer | E. Ramsay | 528,803 | Nov. 6 | 500 | 121 | 69 | 737 |
| Coal-box. Portable | T. Bukenhofer and E. H. Weiss | 528,072 | Oct. 23 | 2347 | 566 | 69 | 478 |
| Coal-breaker | E. B. Coxe | 527,411 | Oct. 16 | 1207 | 296 | 69 | 252 |
| Coal-breaking apparatus | E. B. Coxe | 527,412 | Oct. 16 | 1210 | 296 | 69 | 253 |
| Coal drill | P. Sauer | 527,814 | Oct. 23 | 1870 | 449 | 69 | 392 |
| Coal-hod | J. H. Humbert | 527,333 | Oct. 9 | 1075 | 260 | 69 | 214 |
| Coal or ore separating apparatus | F. Pardee | 528,386 | Oct. 30 | 2896 | 701 | 69 | 592 |
| Coal-screen | G. F. Blakeslee | 528,526 | Nov. 6 | 9 | 4 | 69 | 648 |
| Coal-screen | G. W. Cross | 528,289 | Oct. 30 | 2732 | 659 | 69 | 563 |
| Coal, stone, &c. Machinery for cutting | T. Heppell and J. G. and W. Patterson | 529,790 | Nov. 27 | 2245 | 535 | 69 | 1103 |
| Coal washer and separator | T. M. Righter | 531,562 | Dec. 25 | 2618 | 627 | 69 | 1742 |
| Coat | N. Schloss | 527,561 | Oct. 16 | 1452 | 353 | 69 | 298 |
| Coats, vests, &c. Device for supporting | M. F. Koenig | 528,601 | Nov. 6 | 139 | 34 | 69 | 672 |
| Coating metal plates. Apparatus for | T. L. Thomas | 527,628 | Oct. 16 | 1561 | 378 | 69 | 318 |
| Cock. Blow-off | W. McIntosh | 529,133 | Nov. 13 | 1093 | 264 | 69 | 865 |
| Cock box. Stop | B. C. Anderson | 529,638 | Nov. 20 | 2000 | 478 | 69 | 1050 |
| Cock for gas-stoves, &c | J. B. Wallace | 527,567 | Oct. 16 | 1461 | 356 | 69 | 300 |
| Cock. Gage | C. R. Moore | 531,593 | Dec. 25 | 2668 | 651 | 69 | 1752 |
| Cocks. Safety device for locking gas | A. and S. Kohn | 527,206 | Oct. 9 | 859 | 209 | 69 | 175 |
| Cocks. Stem connection for four-way | R. M. Dixon | 528,658 | Nov. 6 | 247 | 61, 62 | 69 | 691 |
| Cockeye. Spring | W. Finter | 530,758 | Dec. 11 | 1206 | 294 | 69 | 1449 |
| Cocoanut. Preparing and preserving | N. A. Closson | 527,139 | Oct. 9 | 758 | ..... | 69 | 156 |
| Coffee cleaning and separating machine | J. S. Miller | 530,546 | Dec. 11 | 846 | 209, 210 | 69 | 1386 |
| Coffee hulling, scouring, and cleaning machine | D. B. Fraser | 528,595 | Nov. 6 | 128 | 30, 31 | 69 | 669 |
| Coffee-mill | C. D. Anderson | 528,499 | Oct. 30 | 3092 | 750 | 69 | 628 |
| Coffee or tea pot | W. O. Byrd | 528,201 | Oct. 30 | 2576 | 623 | 69 | 534 |
| Coffee or tea pot handle | O. W. Pierce | 527,182 | Oct. 9 | 822 | 200 | 69 | 168 |
| Coffee-percolator | H. Wilson | 530,149 | Dec. 4 | 123 | 31 | 69 | 1237 |
| Coffee-pot | N. O. Bond | 529,238 | Nov. 13 | 1283 | 308 | 69 | 898 |
| Coffee-pot | C. C. Davis | 531,164 | Dec. 18 | 1910 | 455 | 69 | 1593 |
| Coffee-pot | T. Glynn | 530,835 | Dec. 11 | 1324 | 318 | 69 | 1472 |
| Coffee-pot attachment | H. B. Adams | 529,349 | Nov. 20 | 1479 | 356 | 69 | 957 |
| Coffee-pot attachment. Adjustable | H. P. During | 528,594 | Nov. 6 | 127 | 30 | 69 | 669 |
| Coffee-pot holder | C. E. Presnell | 529,953 | Nov. 27 | 2526 | 608 | 69 | 1156 |
| Coffee, tea, &c. Device for steaming | J. F. Hornberger | 530,368 | Dec. 4 | 408 | 102 | 69 | 1289 |
| Coin-actuated lock | J. W. Patterson | 531,328 | Dec. 25 | 2210 | 529 | 69 | 1663 |
| Coin case | R. L. Chope | 527,206 | Oct. 9 | 964 | 234 | 69 | 194 |
| Coin-controlled machine | I. Richardson | 527,886 | Oct. 23 | 2010 | 482 | 69 | 416 |
| Coin-holder | J. W. Grant | 530,685 | Dec. 11 | 1088 | 264 | 69 | 1428 |
| Coin holding and delivering device | C. F. Kraump | 530,997 | Dec. 18 | 1601 | 381 | 69 | 1536 |
| Coin-operated mechanism | J. W. Patterson | 531,327 | Dec. 25 | 2208 | 529 | 69 | 1663 |
| Collar and hames. Combined horse | H. Eckardt | 528,868 | Nov. 6 | 638 | 152 | 69 | 763 |
| Collar and hames. Combined horse | G. C. Hale | 529,733 | Nov. 27 | 2153 | 514 | 69 | 1086 |
| Collar fastener. Horse | M. T. Burke | 528,143 | Oct. 30 | 2450 | 601 | 69 | 517 |
| Collar fastener. Horse | H. W. Cooper | 527,142 | Oct. 9 | 763 | 186 | 69 | 157 |
| Collar fastener. Horse | O. Drake | 529,523 | Nov. 20 | 1821 | 433 | 69 | 1016 |
| Collar. Horse | W. T. Fell | 528,422 | Oct. 30 | 2955 | 715, 716 | 69 | 603 |
| Collar. Horse | E. C. Phillips | 528,490 | Oct. 30 | 3078 | 746 | 69 | 625 |
| Collar or cuff shaping machine | E. G. Smith | 529,143 | Nov. 13 | 1113 | 269 | 69 | 869 |
| Collar-stuffing machine. Horse | J. Gebauer | 529,721 | Nov. 27 | 2134 | 511 | 69 | 1084 |
| Collars. Machine for turning over tips of stand-up | A. W. Cummings | 530,091 | Dec. 4 | 26 | 8 | 69 | 1219 |
| Collars or cuffs on shirts. Device for holding | A. Feiner and T. G. Saxton | 528,469 | Oct. 30 | 3044 | 739 | 69 | 619 |
| Coloring-matter from logwood and making same | P. T. Austen | 529,691 | Nov. 27 | 2056 | ..... | 69 | 1076 |
| Colter-clasp | F. E. Davis | 528,926 | Nov. 13 | 755 | 177 | 69 | 805 |
| Column for structural metal-work | E. Haupt | 530,044 | Nov. 27 | 2704 | 650 | 69 | 1192 |
| Comb | J. P. Noyes | 531,468 | Dec. 25 | 2463 | 587 | 69 | 1712 |
| Comb | N. Rheinberg | 527,509 | Oct. 16 | 1371 | 334 | 69 | 283 |
| Combing-machine | A. L. Haggas and R. Heaton | 527,213 | Oct. 9 | 923 | 222 | 69 | 187 |
| Combing-machines. Driving mechanism for drawing-off rollers of | C. Cholerton | 527,664 | Oct. 16 | 1621 | 391 | 69 | 329 |
| Combination-case | A. J. Estlow | 528,421 | Oct. 30 | 2953 | 715 | 69 | 602 |
| Combination-case for cards, &c | A. J. Estlow | 528,420 | Oct. 30 | 2951 | 714, 715 | 69 | 602 |
| Combination-lock | H. Barditzky | 528,585 | Nov. 6 | 103 | 26 | 69 | 665 |
| Combination-lock | J. Bois | 528,651 | Nov. 6 | 235 | 58 | 69 | 688 |
| Combination-lock | W. B. Humphrey | 526,709 | Oct. 2 | 65 | 17 | 69 | 15 |
| Combination-wrench | W. S. Clay | 529,707 | Nov. 27 | 2112 | 506 | 69 | 1080 |
| Commode | E. Leslie | 529,076 | Nov. 13 | 1004 | 242 | 69 | 848 |
| Commutator | H. L. Bridgman | 531,406 | Dec. 25 | 2342 | 558 | 69 | 1689 |
| Commutator | H. G. Reist | 526,742 | Oct. 2 | 123 | 29 | 69 | 24 |
| Commutator-brush for dynamos | G. Forbes | 529,784 | Nov. 27 | 2234 | 532 | 69 | 1101 |
| Commutator-brush holder | G. Rauch | 527,127 | Oct. 9 | 742 | 182 | 69 | 153 |
| Composing-stick | J. A. Keyes | 530,428 | Dec. 4 | 611 | 152 | 69 | 1327 |
| Composition-case | R. W. Nelson | 528,106 | Oct. 23 | 2411 | 584 | 69 | 498 |
| Compound engine | J. Peebles | 531,272 | Dec. 18 | 2103 | 505 | 69 | 1627 |
| Compression-tank | G. T. Francis | 527,678 | Oct. 16 | 1645 | 397 | 69 | 333 |
| Concentrates and apparatus for carrying out said method. Method of recovering | J. S. Dougherty | 530,753 | Dec. 11 | 1199 | 291, 292, 293 | 69 | 1448 |
| Concentrator | J. Norbom | 528,442 | Oct. 30 | 2990 | 722 | 69 | 608 |
| Condenser and exhaust-pipe head | J. J. J. De Rycke | 530,623 | Nov. 27 | 2671 | 641 | 69 | 1186 |
| Condenser. Vapor | A. H. Dunkle | 530,300 | Dec. 4 | 395 | 100 | 69 | 1287 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Condensing apparatus | J. Rourke | 530,553 | Dec. 11 | 860 | 212, 213 | 69 | 1388 |
| Conductor-switch | G. H. Benjamin | 526,850 | Oct. 2 | 294 | 71, 72 | 69 | 56 |
| Conduit-sections. Apparatus for manufacturing | J. F. Cummings | 528,290 | Oct. 30 | 2733 | 660 | 69 | 563 |
| Conduit. Underground | J. F. Cummings | 528,291 | Oct. 30 | 2734 | 660 | 69 | 564 |
| Conduit. Underground | J. E. Edwards | 527,597 | Oct. 16 | 1515 | 368 | 69 | 309 |
| Confectionery into molds. Machine for depositing | L. Hirschfeld | 530,417 | Dec. 4 | 592 | 147, 148 | 69 | 1323 |
| Confectionery-machine | S. J. Hicks | 531,033 | Dec. 18 | 1662 | 395 | 69 | 1548 |
| Confectionery. Machine for molding | D. M. Holmes | 528,722 | Nov. 6 | 345 | 84 | 69 | 709 |
| Confectionery. Machine for molding | D. M. Holmes | 528,723 | Nov. 6 | 347 | 84, 85 | 69 | 709 |
| Conformator | A. S. Adler | 526,849 | Oct. 2 | 291 | 71 | 69 | 55 |
| Continuous extractor | J. Naylor, Jr | 528,735 | Nov. 6 | 366 | 89, 90 | 69 | 713 |
| Controller-handle | H. Mittelsdorf | 531,052 | Dec. 18 | 1701 | 404 | 69 | 1555 |
| Conveyer | J. Bulger | 529,159 | Nov. 13 | 1138 | 275 | 69 | 874 |
| Conveyer | F. G. and A. C. Sargent | 527,723 | Oct. 16 | 1718 | 414, 415 | 69 | 347 |
| Conveying material | E. E. Duckham | 528,417 | Oct. 30 | 2948 | 713 | 69 | 601 |
| Cooking and canning machine, Vegetable | F. A. Odin | 528,680 | Nov. 6 | 287 | 70 | 69 | 698 |
| Cooking corn, &c., in cans. Apparatus for | H. R. Stickney | 531,479 | Dec. 25 | 2481 | 591 | 69 | 1715 |
| Cooking-vessel | J. H. Wilson | 527,471 | Oct 16 | 1314 | 321 | 69 | 275 |
| Cooler: *See* Beverage-cooler. Wort-cooler. | | | | | | | |
| Coop. Folding chicken | C. B. Proctor | 527,807 | Oct. 23 | 1860 | 447 | 69 | 390 |
| Coop. Metal folding chicken | I. Zimmerman | 529,230 | Nov. 13 | 1267 | 305 | 69 | 895 |
| Coop. Poultry shipping | J. A. Gilliland | 529,259 | Nov. 13 | 1324 | 318 | 69 | 906 |
| Cop-tube | T. Henry, Jr. | 529,445 | Nov. 20 | 1672 | 398 | 69 | 990 |
| Copy-holder | J. E. Bucklin | 526,990 | Oct. 2 | 523 | 128 | 69 | 98 |
| Copying apparatus. Multiple | W. M. Williams | 529,824 | Nov. 27 | 2312 | 551 | 69 | 1117 |
| Copying-book | A. B. Turner and H. A. McMullen | 529,977 | Nov. 27 | 2571 | 620 | 69 | 1164 |
| Cord. Flexible | R. Kelso | 527,795 | Oct. 23 | 1847 | 444 | 69 | 388 |
| Core-barrel. Collapsible | J. W. Holmes | 530,108 | Dec. 4 | 56 | 15 | 69 | 1225 |
| Cork-cutting machinery | J. Lowman | 527,865 | Oct. 23 | 1968 | 473 | 69 | 408 |
| Corks. Machinery for finishing, polishing, or surfacing | J. E. Howard | 530,845 | Dec. 11 | 1359 | 321 | 69 | 1474 |
| Corking-machine | G. Norton | 527,021 | Oct. 2 | 574 | 139 | 69 | 108 |
| Corn-cutter and dropper | J. Stewart, Jr | 528,041 | Oct. 23 | 2297 | 553 | 69 | 469 |
| Corn-husking machine | W. H. Webb | 527,226 | Oct. 9 | 894 | 217 | 69 | 182 |
| Corn-husking machine | M. Young | 529,094 | Nov. 13 | 1034 | 249 | 69 | 854 |
| Corn-sheller separator | J. Q. Adams | 531,292 | Dec. 25 | 2146 | 514 | 69 | 1651 |
| Corn-shock loader | H. McPherson | 528,734 | Nov. 6 | 365 | 89 | 69 | 713 |
| Corner-brace | C. R. McGahey | 528,679 | Nov. 6 | 286 | 69 | 69 | 698 |
| Corner-strip | F. Kees | 529,500 | Nov. 20 | 1774 | 423 | 69 | 1007 |
| Cornice and curtain-support. Combined window | J. M. Hoffman | 530,270 | Dec. 4 | 341 | 84 | 69 | 1278 |
| Corset | J. C. Andrews | 528,064 | Oct. 23 | 2330 | 562 | 69 | 475 |
| Corset | J. C. Andrews | 528,065 | Oct. 23 | 2332 | 563 | 69 | 475 |
| Corset | T. S. Gilbert | 531,179 | Dec. 18 | 1934 | 460 | 69 | 1598 |
| Corset. Abdominal | T. S. Gilbert | 527,966 | Oct. 23 | 2102 | 520 | 69 | 445 |
| Cot | J. H. Looney | 526,866 | Oct. 2 | 302 | 81 | 69 | 62 |
| Cotton-band cutter | L. S. Gardner, G. Cook, and A. O. Tannenberg. | 529,258 | Nov. 13 | 1323 | 318 | 69 | 905 |
| Cotton-chopper | J. J. Green | 528,159 | Oct. 30 | 2501 | 605 | 69 | 521 |
| Cotton-chopper | A. E. Schevey | 530,724 | Dec. 11 | 1153 | 280 | 69 | 1439 |
| Cotton-chopper and cultivator. Combined | R. J. Brown and J. E. Register | 529,061 | Nov. 13 | 973 | 230 | 69 | 843 |
| Cotton-cleaner | H. Rembert | 530,458 | Dec. 4 | 652 | 162, 163 | 69 | 1335 |
| Cotton-compress | C. L. and W. T. Bessonette | 530,001 | Nov. 27 | 2631 | 632, 633 | 69 | 1178 |
| Cotton elevator and distributer | W. E. Moffitt and J. L. Williams | 528,177 | Oct. 30 | 2532 | 614 | 69 | 527 |
| Cotton. Feed-regulating device for machines for opening and preparing | J. C. Potter | 529,567 | Nov. 20 | 1891 | 449, 450 | 69 | 1029 |
| Cotton-gin. Roller | O. F Goodwin | 530,941 | Dec. 18 | 1502 | 356 | 69 | 1519 |
| Cotton-gin. Roller | J. Stapleton | 529,425 | Nov. 20 | 1629 | 387 | 69 | 983 |
| Cotton-opener | A. Kirschner | 531,193 | Dec. 18 | 1656 | 465 | 69 | 1602 |
| Cotton-openers. Grid for | H. S. Houghton | 530,271 | Dec. 4 | 343 | 84 | 69 | 1278 |
| Cotton-opening machines. Feeding mechanism for | J. C. Potter | 528,389 | Oct. 30 | 2899 | 702 | 69 | 592 |
| Cotton-picking machine | G. C. Phillips | 530,451 | Dec. 4 | 644 | 160, 161 | 69 | 1333 |
| Cotton-presses. Combined belt-shifter and brake for | T. M. Wallace | 530,978 | Dec. 18 | 1570 | 372 | 69 | 1530 |
| Couch, bed, and bath-tub. Combined | B. S. Maben | 531,202 | Dec. 18 | 1975 | 469 | 69 | 1604 |
| Counterbalancing momentum of reciprocating elements. Means for | M. N. Forney | 528,294 | Oct. 30 | 2738 | 661, 662 | 69 | 564 |
| Counting-machine | S. Heim | 530,224 | Dec. 4 | 262 | 65 | 69 | 1263 |
| Coupling: *See* Air-brake coupling. Pipe or rod coupling. Car-coupling. Rod or pipe coupling. Clutch-coupling. Shaft-coupling. Hame-coupling. Thill-coupling. Hose-coupling. Water-closet coupling. Pipe coupling. | | | | | | | |
| Coupling | S. A. Stahley | 531,071 | Dec. 18 | 1727 | 411 | 69 | 1560 |
| Coupling-link | W. H. Casey | 529,896 | Nov. 27 | 2428 | 583 | 69 | 1139 |
| Cover for cooking utensils | J. Johnston | 526,712 | Oct. 2 | 72 | 19 | 69 | 16 |
| Cover for fruit-jars or other vessels | C. N. Brady | 529,239 | Nov. 13 | 1285 | 308 | 69 | 899 |
| Cover, strainer, and steam-guard. Combined kettle | J. M. Benson and J. E. Berslin | 531,300 | Dec. 25 | 2162 | 517 | 69 | 1654 |
| Cracker-machines, &c. Device for removing waste from sheets of dough in | J. C. Beisang | 530,499 | Dec. 11 | 751 | 184, 185 | 69 | 1369 |
| Cradle | W. J. Shortill | 530,858 | Dec. 11 | 1362 | 325 | 69 | 1478 |
| Cradle | M. C. Sorrell | 529,816 | Nov. 27 | 2302 | 548 | 69 | 1115 |
| Cradle. Child's | W. E. Phillips | 528,026 | Oct. 23 | 2276 | 549 | 69 | 404 |
| Cranberry-gatherer | J. M. and S. B. Moody | 527,020 | Oct. 2 | 573 | 139 | 69 | 108 |
| Crane | A. J. Shaw | 528,616 | Nov. 6 | 165 | 40 | 69 | 676 |
| Crane. Traveling | W. M. Brooke | 528,248 | Oct. 30 | 2665 | 642 | 69 | 551 |



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|---|---|---|---|---|---|---|---|
| Crane. Traveling | G. W. King | 528,781 | Nov. 6 | 457 | 112, 113 | 69 | 730 |
| Cravat | A. Hajos | 529,732 | Nov. 27 | 2152 | 513, 514 | 69 | 1086 |
| Cream-separator. Centrifugal | W. C. Hartmann | 528,941 | Nov. 13 | 785 | 183, 184 | 69 | 809 |
| Creamer. Centrifugal | O. Ohlson | 530,447 | Dec. 4 | 638 | 159 | 69 | 4332 |
| Crematory for burning garbage, &c | J. E. McKay | 530,623 | Dec. 11 | 977 | 240 | 69 | 1469 |
| Crevasse-closer | M. A. Laska | 526,976 | Oct. 2 | 500 | 123 | 69 | 94 |
| Crevasses. Apparatus for holding ends of and closing | W. Baptist | 529,580 | Nov. 20 | 1912 | 455, 456 | 69 | 1033 |
| Cribs or bedsteads. Support for canopy-rods in metallic | W. T. Mersereau | 530,953 | Dec. 18 | 1523 | 361 | 69 | 1523 |
| Crusher: *See* Ore-crusher. Stone-crusher. Rock or ore crusher. | | | | | | | |
| Crutch | G. B. Main | 529,659 | Nov. 20 | 2031 | 487 | 69 | 1055 |
| Crystallization of saccharine or other solutions | L. Wulff | 528,497 | Oct. 30 | 3089 | 749 | 69 | 627 |
| Cuff-holder | W. M. Howe | 527,062 | Oct. 9 | 637 | 154 | 69 | 134 |
| Cuff-holder | W. S. Shaw | 526,821 | Oct. 2 | 249 | 61 | 69 | 47 |
| Culinary vessel | A. W. Obermann | 528,382 | Oct. 30 | 2890 | 700 | 69 | 591 |
| Cultivator | T. Belair | 531,252 | Dec. 18 | 2068 | 495 | 69 | 1620 |
| Cultivator | J. V. Brady | 530,879 | Dec. 11 | 1396 | 332 | 69 | 1485 |
| Cultivator | A. W. Butt | 530,075 | Nov. 27 | 2771 | 664, 665 | 69 | 1203 |
| Cultivator | L. Danos and A. Haydel | 531,514 | Dec. 25 | 2541 | 608 | 69 | 1726 |
| Cultivator | A. Hamilton and W. E. Morrison | 529,381 | Nov. 20 | 1542 | 369 | 69 | 967 |
| Cultivator | W. H. Holsclaw | 530,844 | Dec. 11 | 1437 | 321 | 69 | 1474 |
| Cultivator | A. Lindgren | 531,200 | Dec. 18 | 1951 | 467, 468 | 69 | 1604 |
| Cultivator | C. Maul | 529,457 | Nov. 20 | 1697 | 405, 406 | 69 | 995 |
| Cultivator | J. F. Packer | 529,135 | Nov. 13 | 1096 | 264, 265 | 69 | 866 |
| Cultivator | J. F. Packer | 529,136 | Nov. 13 | 1098 | 265, 266 | 69 | 867 |
| Cultivator | B. M. Rolph | 531,506 | Dec. 25 | 2625 | 629 | 69 | 1741 |
| Cultivator | J. R. Suter | 528,825 | Nov. 6 | 550 | 131 | 69 | 746 |
| Cultivator | C. W. Warner and G. A. Crane | 531,605 | Dec. 25 | 2692 | 645, 646 | 69 | 1756 |
| Cultivator and harrow. Combined disk | H. L. Whittredge | 527,519 | Oct. 16 | 1388 | 337 | 69 | 286 |
| Cultivator attachment | D. E. Baker | 530,819 | Dec. 11 | 1299 | 314 | 69 | 1467 |
| Cultivator. Corn | E. R. Jones | 529,915 | Nov. 27 | 2459 | 592 | 69 | 1144 |
| Cultivator. Disk | A. L. Brock | 526,962 | Oct. 2 | 479 | 118 | 69 | 90 |
| Cultivator. Disk | H. E. Dodson | 530,932 | Dec. 18 | 1485 | 352 | 69 | 1516 |
| Cultivator. Hand | E. Franklin | 528,425 | Oct. 30 | 2966 | 718 | 69 | 604 |
| Cultivator. Hand | T. T. Rodes | 526,818 | Oct. 2 | 242 | 56 | 69 | 46 |
| Cultivator-joint | J. H. Knapp | 531,592 | Dec. 25 | 2667 | 640 | 69 | 1752 |
| Cultivator. Lister | B. F. Erway | 530,755 | Dec. 11 | 1203 | 293 | 69 | 1448 |
| Cultivator replanting attachment | A. Wehrman | 529,686 | Nov. 20 | 2072 | 496 | 69 | 1063 |
| Cultivator-standards. Device for adjustably attaching weed-cutters to | W. A. McCoy | 531,054 | Dec. 18 | 1703 | 404 | 69 | 1556 |
| Cultivator-tooth | C. Maul | 528,603 | Nov. 6 | 140 | 35 | 69 | 672 |
| Cultivator-tooth | C. Maul | 528,604 | Nov. 6 | 141 | 35 | 69 | 672 |
| Cultivator. Wheel | E. Children | 528,413 | Oct. 30 | 2943 | 712 | 69 | 600 |
| Cup: *See* Elevator-cup. Syrup-cup. Orange-cup. | | | | | | | |
| Cupola-furnace | J. H. Whiting | 526,914 | Oct. 2 | 415 | 102 | 69 | 78 |
| Curd-cutter | O. Barnard | 528,521 | Nov. 6 | 1 | 1 | 69 | 647 |
| Curd-cutting machine | J. A. Gosselin | 527,420 | Oct. 16 | 1222 | 300 | 69 | 255 |
| Curling-iron | R. Friedel | 527,172 | Oct. 9 | 807 | 196 | 69 | 165 |
| Curling-iron | C. H. Johnson | 527,176 | Oct. 9 | 813 | 198 | 69 | 166 |
| Curling-iron | M. Thomsen | 527,465 | Oct. 16 | 1306 | 319 | 69 | 273 |
| Curling-iron | M. Thomsen | 527,466 | Oct. 16 | 1307 | 319 | 69 | 273 |
| Curling-iron and heater | J. C. Chambers | 526,685 | Oct. 2 | 23 | 6 | 69 | |
| Current distribution. Combined system of alternating and direct | A. L. Clough | 526,992 | Oct. 2 | 525 | 128, 129 | 69 | 98 |
| Current electrodynamic machine. Alternating | M. Hutin and M. Leblanc | 529,272 | Nov. 13 | 1343 | 322 | 69 | 910 |
| Current generator. Alternating | J. F. Kelly | 529,918 | Nov. 27 | 2463 | 593 | 69 | 1145 |
| Current motor. Alternating | C. T. Child | 528,121 | Oct. 23 | 2436 | 589 | 69 | 494 |
| Current motor. Alternating | C. Coerper | 527,195 | Oct. 9 | 843 | 205 | 69 | 172 |
| Current motor and operating same. Alternating | L. Gutmann | 530,176 | Dec. 4 | 164 | 43 | 69 | 1245 |
| Current motors. Starting alternating | L. Bell | 531,432 | Dec. 25 | 2386 | 571 | 69 | 1698 |
| Current transformer. Alternating | A. W. Meston | 530,597 | Dec. 11 | 935 | 229, 230 | 69 | 1402 |
| Currycomb | C. J. Garvey | 531,412 | Dec. 25 | 2351 | 561 | 69 | 1690 |
| Currycomb | R. W. Hardie | 527,973 | Oct. 23 | 2175 | 522 | 69 | 447 |
| Curtain | A. M. Branshaw | 528,071 | Oct. 23 | 2344 | 566 | 69 | 478 |
| Curtain-bracket. Adjustable | R. T. Green | 526,920 | Oct. 2 | 424 | 105 | 69 | 79 |
| Curtain-fixture | S. L. Bergstresser and C. F. Mignot | 530,079 | Dec. 4 | 6 | 2 | 69 | 1216 |
| Curtain-fixture | A. B. Dunkle | 531,519 | Dec. 25 | 2550 | 610 | 69 | 1728 |
| Curtain frame. Lace | M. V. Bonsall | 527,316 | Oct. 9 | 1052 | 254 | 69 | 210 |
| Curtain-pole ring, &c | J. A. Rings | 531,563 | Dec. 25 | 2620 | 627, 628 | 69 | 1743 |
| Curtain-rod | H. A. Fowler and J. H. Lingley | 527,273 | Oct. 9 | 984 | 238 | 69 | 197 |
| Curtain-stick and guide | G. L. Bailey | 528,709 | Nov. 6 | 327 | 80 | 69 | 705 |
| Curtain-stop | L. Moyle | 530,896 | Dec. 11 | 1423 | 348 | 69 | 1490 |
| Cushion or mattress | H. and E. Brupbacher | 529,852 | Nov. 27 | 2361 | 564 | 69 | 1126 |
| Cut-off and strainer attachment for rain-water spouts | A. H. Barth | 527,400 | Oct. 16 | 1191 | 292 | 69 | 249 |
| Cut-off. Rain-water | J. M. Castaing and J. B. Dohin | 529,596 | Nov. 20 | 1934 | 460 | 69 | 1038 |
| Cut-out. Automatic electromagnetic | L. T. Stanley and A. E. Braddell | 528,185 | Oct. 30 | 2545 | 617 | 69 | 530 |
| Cut-out. Multiple safety | J. F. McLaughlin | 527,501 | Oct. 16 | 1354 | 331 | 69 | 281 |

*Alphabetical list of inventions, October to December, inclusive*—Continued.

| Invention | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Cutter: | | | | | | | |
| *See* Band-cutter. Bread-cutter. Cigar-tip cutter. Corn-cutter. Cotton-band cutter. Curd-cutter. Feed-cutter. Gear-cutter. Kraut-cutter. Meat-cutter. Paper-cutter. Pipe-cutter. Root-cutter. Rotary cutter. Stalk-cutter. Thrasher band-cutter. Tobacco-cutter. | | | | | | | |
| Cutter-head | S. J. Shimer | 527,080 | Oct. 9 | 659 | 161 | 69 | 139 |
| Cutter-head | A. S. Spaulding | 531,396 | Dec. 25 | 2928 | 555 | 69 | 1687 |
| Cutter-head for woodworking-machines | E. G. Blaney, Jr | 527,583 | Oct. 16 | 1492 | 363 | 69 | 305 |
| Cutter-head support | A. Kendig | 530,427 | Dec. 4 | 609 | 152 | 69 | 1327 |
| Cutter or trimmer for wood, leather, &c | J. A. Hess | 527,004 | Oct. 16 | 1395 | 370 | 69 | 311 |
| Cutting-machine | F. Willcox | 529,005 | Nov. 13 | 880 | 208 | 69 | 826 |
| Cutting-tool | A. Hussey | 528,725 | Nov. 6 | 351 | 86 | 69 | 710 |
| Cutting-tool | W. H. Nelson | 528,787 | Nov. 6 | 470 | 115 | 69 | 731 |
| Cycle-frame | E. E. Hersh | 529,861 | Nov. 27 | 2372 | 568 | 69 | 1124 |
| Cycle-steering lock | R. F. Hall | 528,874 | Nov. 6 | 648 | {154 / 155} | 69 | 764 |
| Cycle. Trolley | H. L. Gardner | 526,892 | Oct. 2 | 265 | 64 | 69 | 50 |
| Cycles or other road-vehicles. Brake apparatus for | J. G. A. Kitchen | 530,693 | Dec. 11 | 1101 | 267 | 69 | 1430 |
| Cyclometer | J. A. Mosher, W. N. Beardsley, and A. D. Moulton. | 531,269 | Dec. 18 | 2098 | 504 | 69 | 1626 |
| Cyclometer | C. E. Moss | 531,207 | Dec. 18 | 1986 | 472 | 69 | 1606 |
| Damper. Cooking stove or range | F. V. Knauss | 529,622 | Nov. 20 | 1970 | 469 | 69 | 1045 |
| Damper, &c. Stove | N. D. White | 529,224 | Nov. 13 | 1258 | 303 | 69 | 804 |
| Damper. Stovepipe | H. W. Wilson | 527,573 | Oct. 16 | 1471 | 358 | 69 | 301 |
| Danger-signal | G. M. Chace | 530,883 | Dec. 11 | 1403 | 334 | 69 | 1486 |
| Danger-signal and lock for switches | G. E. Edwards | 531,025 | Dec. 18 | 1654 | 392 | 69 | 1546 |
| Deck-iron | F. D. Chase | 527,663 | Oct. 16 | 1620 | 391 | 69 | 329 |
| Decorative films. Device for applying | W. H. Coe | 526,964 | Oct. 2 | 485 | 119 | 69 | 91 |
| Decorticating ramie or other plants. Machine for | A. D. Estienne | 531,307 | Dec. 25 | 2172 | {519 / 520} | 69 | 1656 |
| Decoy. Collapsible | W. W. Roberts | 529,403 | Nov. 20 | 1706 | 407 | 69 | 996 |
| Dental articulator | J. W. Anderson | 529,010 | Nov 13 | 893 | 211 | 69 | 829 |
| Dental articulator | D. M. Hitch | 530,524 | Dec. 11 | 805 | 200 | 69 | 1379 |
| Dental bracket | A. Bond | 531,257 | Dec. 18 | 2078 | 497 | 69 | 1622 |
| Dental chair | A. W. Browne | 529,641 | Nov. 20 | 2004 | {479 / 480} | 69 | 1050 |
| Dental engine. Electric | J. A. and B. A. Jeffery | 530,344 | Dec. 4 | 477 | {118 / 119} | 69 | 1301 |
| Dental mirror | E. B. Hitchcock | 528,163 | Oct. 30 | 2507 | 606 | 69 | 522 |
| Dental napkin-holder | G. A. Bronson | 531,093 | Dec. 18 | 1774 | 423 | 69 | 1567 |
| Dental napkin-holder | G. A. Bronson | 531,094 | Dec. 18 | 1775 | 423 | 69 | 1568 |
| Dental or surgical chair | A. P. Gould | 529,902 | Nov. 27 | 2436 | 585 | 69 | 1140 |
| Dental-plate blank. Rubber | J. Spyer | 527,817 | Oct. 23 | 1875 | 450 | 69 | 393 |
| Dental plates. Forming | M. P. Boyd | 531,092 | Dec. 18 | 1772 | 423 | 69 | 1567 |
| Dental saliva-ejector | F. D. Sherwin | 530,556 | Dec. 11 | 868 | 214 | 69 | 1390 |
| Dental tool | J. G. Hollingsworth | 527,690 | Oct. 16 | 1668 | 402 | 69 | 338 |
| Dental vulcanizer | T. G. Lewis | 526,785 | Oct. 2 | 195 | 46 | 69 | 37 |
| Derrick | M. Beal | 531,249 | Dec. 18 | 2063 | 493 | 69 | 1619 |
| Desk and reading-stand. Knee- | A. R. Cooper | 527,108 | Oct. 9 | 705 | 173 | 69 | 146 |
| Desk or stationery implement | T. D. Ingram | 527,859 | Oct. 23 | 1960 | 471 | 69 | 407 |
| Device for tradesmen's use | T. L. Bristol | 527,589 | Oct. 16 | 1501 | 365 | 69 | 307 |
| Dial-sinking machine | G. E. Hunter | 527,988 | Oct. 23 | 2208 | {532 / 533} | 69 | 452 |
| Diamonds in cutting-tools. Setting | A. Dittmer | 529,611 | Nov. 20 | 1957 | 465 | 69 | 1042 |
| Dice-box | E. Gregory | 528,428 | Oct. 30 | 2970 | 718 | 69 | 605 |
| Die: | | | | | | | |
| *See* Screw-cutting die. | | | | | | | |
| Digester | H. W. Stebbins | 528,399 | Oct. 30 | 2917 | 706 | 69 | 595 |
| Digester | H. W. Stebbins | 528,400 | Oct. 30 | 2918 | 706 | 69 | 596 |
| Digger: | | | | | | | |
| *See* Potato-digger. | | | | | | | |
| Direct-acting engine | C. P. Deane | 529,545 | Nov. 20 | 1855 | 441 | 69 | 1022 |
| Direct-acting engine | J. Kidd | 528,299 | Oct. 30 | 2752 | 665 | 69 | 566 |
| Direction and speed device. Variable | S. L. Heywood | 530,588 | Dec. 11 | 921 | 226 | 69 | 1400 |
| Directory-post and call-box | J. T. Field | 530,099 | Dec. 4 | 37 | 11 | 69 | 1222 |
| Dish-cleaner | M. A. Crosby | 527,322 | Oct. 9 | 1060 | 256 | 69 | 211 |
| Dish-cleaner | W. P. Harrison | 528,875 | Nov. 6 | 649 | 155 | 69 | 765 |
| Dish-cleaner | J. J. O'Neill | 527,122 | Oct. 9 | 730 | 179 | 69 | 150 |
| Disinfecting apparatus | F. Rowley | 531,389 | Dec. 25 | 2318 | 553 | 69 | 1684 |
| Disinfecting apparatus | H. K. Andersson | 528,135 | Oct. 30 | 2470 | 597 | 69 | 515 |
| Display-cabinet. Ribbon | R. P. Pictet | 531,329 | Dec. 25 | 2211 | 529 | 69 | 1663 |
| Display device. Knockdown | L. Schoolhouse | 528,035 | Oct. 23 | 2256 | 551 | 69 | 467 |
| Display-rack | A. von Cotzhausen | 529,603 | Nov. 20 | 1945 | 463 | 69 | 1040 |
| Display-rack. Combined folding and revolving | F. F. Bent | 529,439 | Nov. 20 | 1763 | 396 | 69 | 989 |
| Distilling water. Apparatus for | W. H. Conrad | 531,022 | Dec. 18 | 1651 | 391 | 69 | 1545 |
| Ditching and tile-laying machines. Cutter-screw for | A. J. Chase | 530,015 | Nov. 27 | 2650 | {638 / 639} | 69 | 1183 |
| Ditching-machine | O. B. H. Hanneborg | 530,687 | Dec. 11 | 1092 | 265 | 69 | 1429 |
| Ditching-machine | A. C. Carter | 531,097 | Dec. 18 | 1779 | 424 | 69 | 1568 |
| Ditching or grading apparatus | C. W. and E. Jeschke | 526,864 | Oct. 2 | 326 | 80 | 69 | 62 |
| Ditching-tool | E. P. Fox | 529,026 | Nov. 13 | 915 | 217 | 69 | 832 |
| Dividers | D. C. Peat | 528,607 | Nov. 6 | 144 | 36 | 69 | 673 |
| Diving apparatus | A. Haff | 528,668 | Nov. 6 | 265 | 65 | 69 | 693 |
| Door attachment | J. D. Cooper | 530,398 | Dec. 4 | 564 | 140 | 69 | 1318 |
| Door bar-lock | N. W. Cowdrey | 528,323 | Oct. 30 | 2791 | 673 | 69 | 573 |
| Door-bolt socket | T. H. Benninger | 527,104 | Oct. 9 | 700 | 171 | 69 | 146 |
| Door-check | A. C. Jochums and F. M. Bonghton | 526,924 | Oct. 2 | 429 | 106 | 69 | 80 |
| Door-check | C. H. Cameron | 531,361 | Dec. 25 | 2272 | 541 | 69 | 1675 |
| Door-check | E. Dredge | 527,053 | Oct. 9 | 626 | 152 | 69 | 132 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Door-check | P. G. Emery | 527,385 | Oct. 9 | 1162 | 285 | 69 | 231 |
| Door-check | S. Frisbie | 530,101 | Dec. 4 | 41 | 12 | 69 | 1222 |
| Door-check | C. W. Hamshaw | 531,116 | Dec. 18 | 1814 | 431 | 69 | 1575 |
| Door-check | H. V. Wertzberger | 528,049 | Oct. 23 | 2307 | 556 | 69 | 471 |
| Door-check | J. Wolf | 527,919 | Oct. 23 | 2065 | 495 | 69 | 427 |
| Door-check and buffer. Combined | J. P. Neeley | 528,017 | Oct. 23 | 2259 | 545 | 69 | 461 |
| Door check and closer | E. I. Blount | 528,321 | Oct. 30 | 2786 | 672 | 69 | 572 |
| Door check or closer | E. I. Blount | 527,584 | Oct. 16 | 1494 | 363 | 69 | 306 |
| Door check or closer | E. I. Blount | 527,585 | Oct. 16 | 1496 | 364 | 69 | 306 |
| Door check or closer | C. O. Case | 528,853 | Nov. 6 | 605 | {143 / 144} | 69 | 756 |
| Door-closer | F. R. Bauer | 529,101 | Nov. 13 | 1043 | 251 | 69 | 856 |
| Door-closer. Gravity | M. R. Hubbell | 527,495 | Oct. 16 | 1343 | 327 | 69 | 280 |
| Door-controller. Pneumatic | J. W. Gray | 528,909 | Nov. 6 | 720 | 169 | 69 | 778 |
| Door-fastener | H. Saqui | 529,963 | Nov. 27 | 2546 | {613 / 614} | 69 | 1159 |
| Door. Fireproof | O. W. Norcross | 526,732 | Oct. 2 | 101 | 25 | 69 | 27 |
| Door. Flexible | E. Brown | 528,358 | Oct. 30 | 2849 | 690 | 69 | 584 |
| Door. Flexible | A. S. Spaulding | 531,227 | Dec. 18 | 2028 | 483 | 69 | 1614 |
| Door-hanger | W. F. Berry | 526,961 | Oct. 2 | 477 | 118 | 69 | 90 |
| Door-hanger | G. T. Buddle | 529,777 | Nov. 27 | 2224 | 530 | 69 | 1100 |
| Door-hanger | C. W. Bullard | 529,642 | Nov. 20 | 2006 | 480 | 69 | 1051 |
| Door-hanger | W. F. Johnston | 528,435 | Oct. 30 | 2979 | {720 / 721} | 69 | 607 |
| Door-hanger | A. T. Kingsley | 529,919 | Nov. 27 | 2464 | 594 | 69 | 1145 |
| Door-hanger | J. G. and G. Lane | 529,555 | Nov. 20 | 1870 | 445 | 69 | 1025 |
| Door-hanger | A. L. Swett | 529,971 | Nov. 27 | 2565 | 618 | 69 | 1163 |
| Door-hanger | A. O. Thornton | 530,366 | Dec. 4 | 514 | 127 | 69 | 1309 |
| Door-hanger stop | F. A. Austin | 530,818 | Dec. 11 | 1298 | 314 | 69 | 1467 |
| Door-hanger track-rail, track-rail joint, and track-rail bracket. | M. McCawley and A. T. Kingsley | 530,052 | Nov. 27 | 2733 | 655 | 69 | 1197 |
| Door. Interchangeable storm and screen | J. Deritis | 529,520 | Nov. 20 | 1815 | 432 | 69 | 1015 |
| Door-lock. Sliding | W. E. Johnson | 527,609 | Oct. 16 | 1531 | 371 | 69 | 312 |
| Door lock. Sliding | J. A. Loewer and J. G. Sieber | 527,797 | Oct. 23 | 1849 | 444 | 69 | 388 |
| Door-operating device | W. C. Lucas | 530,952 | Dec. 18 | 1522 | {360 / 361} | 69 | 1523 |
| Door-operating device. Jail-cell | C. A. Krutsch | 527,752 | Oct. 16 | 1768 | 426 | 69 | 356 |
| Door or shutter. Fireproof | W. J. Giessler | 530,410 | Dec. 4 | 581 | 145 | 69 | 1321 |
| Door safety-catch | J. A. Weaver, Jr | 526,881 | Oct. 2 | 352 | 87 | 69 | 66 |
| Door-securer | A. B. Buckland | 526,683 | Oct. 2 | 21 | 5 | 69 | 7 |
| Door. Sliding | L. H. Weaver | 530,372 | Dec. 4 | 522 | {129 / 130} | 69 | 1310 |
| Door-spring | A. D. Phelps | 530,852 | Dec. 11 | 1355 | 323 | 69 | 1477 |
| Door spring and check | H. W. Larsson | 530,230 | Dec. 4 | 274 | 68 | 69 | 1265 |
| Door spring or check | H. W. Larsson | 527,753 | Oct. 16 | 1769 | 426 | 69 | 356 |
| Door-stop | C. O. Case | 528,146 | Oct. 30 | 2484 | 601 | 69 | 518 |
| Door-strip. Automatic | W. N. Morrison | 527,212 | Oct. 9 | 869 | 211 | 69 | 177 |
| Doors. Device for operating sliding | W. H. Brodie | 531,150 | Dec. 18 | 1880 | 446 | 69 | 1588 |
| Doors. Guide-bracket and wedge for sliding | W. W. Holmes | 530,182 | Dec. 4 | 187 | 46 | 69 | 1248 |
| Double-acting press | A. C. Campbell | 526,892 | Oct. 2 | 368 | 92.93 | 69 | 69 |
| Doubletree | F. M. Beaver | 530,573 | Dec. 11 | 896 | 220 | 69 | 1395 |
| Doubletree | O. R. Winslow and H. King | 531,581 | Dec. 25 | 2648 | 634 | 69 | 1748 |
| Dough mixing or working machine | J. Adair | 526,986 | Oct. 2 | 517 | {126 / 127} | 69 | 97 |
| Dough molding and dividing machine | J. H. Althans and J. Ruckstinat | 527,579 | Oct. 16 | 1486 | 361 | 69 | 304 |
| Dough shaping and cutting machine | F. Dührkop | 530,582 | Dec. 11 | 912 | {223 / 224} | 69 | 1398 |
| Dovetailing-machine for preparing edges of parts of electrotype or stereotype plate blocks. | E. C. Williams | 531,241 | Dec. 18 | 2051 | 489 | 69 | 1618 |
| Doweling-machine | G. W. Bond | 529,697 | Nov. 27 | 2094 | 502 | 69 | 1077 |
| Draft attachment | C. Matthews | 529,800 | Nov. 27 | 2262 | 540 | 69 | 1106 |
| Draft-compelling device | B. W. Peel | 526,939 | Oct. 2 | 452 | 111 | 69 | 85 |
| Draft-equalizer | A. McDonald | 529,294 | Nov. 13 | 1381 | 332 | 69 | 916 |
| Draft-equalizer | S. D. Poole | 527,074 | Oct. 9 | 651 | 158 | 69 | 137 |
| Drafting-table. Folding | G. W. Raymond | 528,111 | Oct. 23 | 2418 | 585 | 69 | 491 |
| Draftsman's instrument | J. H. Fry | 527,017 | Oct. 2 | 567 | 137 | 69 | 107 |
| Draining device | O. F. Hill | 531,186 | Dec. 18 | 1945 | 462 | 69 | 1600 |
| Drawbridge-joint and operating mechanism | A. D. McGill | 528,888 | Nov. 6 | 666 | 160 | 69 | 768 |
| Drawer-lock | W. R. Mershon | 530,234 | Dec. 4 | 260 | 69, 70 | 69 | 1296 |
| Drawing apparatus. Perspective | L. C. Brown | 528,713 | Nov. 6 | 332 | 81 | 69 | 707 |
| Drawing-board | H. Eppers | 530,477 | Dec. 4 | 687 | 172 | 69 | 1341 |
| Drawing-instrument | A. C. Van Horn and E. E. Barney | 527,134 | Oct. 9 | 750 | 184 | 69 | 154 |
| Drawing-instrument | H. Cole | 530,680 | Dec. 11 | 1081 | 263 | 69 | 1426 |
| Drawing-pin | G. Thomas | 527,300 | Oct. 9 | 1023 | 249 | 69 | 204 |
| Drawing-rolls for fibrous material | C. Müller | 529,744 | Nov. 27 | 2173 | 518 | 69 | 1090 |
| Drawing-rolls for fibrous material. Metallic | W. Hinchliffe | 527,554 | Oct. 16 | 1443 | 351 | 69 | 297 |
| Dredge or other structures. Means for supporting | W. Hinchliffe | 527,553 | Oct. 16 | 1442 | 351 | 69 | 296 |
| Dredging apparatus | E. S. Bennett | 527,741 | Oct. 16 | 1747 | 422 | 69 | 352 |
| Dredging implement | F. A. Hyatt | 528,433 | Oct. 30 | 2976 | 720 | 69 | 606 |
| | C. Meier | 528,375 | Oct. 30 | 2875 | 697 | 69 | 589 |
| Dredging-machine | J. A. Ball | 530,675 | Dec. 11 | 1071 | {260 / 261} | 69 | 1425 |
| Dredging-machine | L. W. Bates | 527,762 | Oct. 23 | 1788 | 430 | 69 | 377 |
| Dredging-machine and electrically-actuated bucket therefor | C. Upton | 531,486 | Dec. 25 | 2490 | 593 | 69 | 1717 |
| Dressing-case | H. Widdicomb | 529,846 | Nov. 27 | 2348 | 559 | 69 | 1124 |
| Drier: | | | | | | | |
| *See* Clothes-drier. Fruit-drier. | | | | | | | |
| Drier | H. Bullock and C. E. Ward | 529,778 | Nov. 27 | 2225 | {530 / 531} | 69 | 1100 |
| Drill: | | | | | | | |
| *See* Coal-drill. Grain-drill. Mining-drill. Rock-drill. | | | | | | | |
| Drill | D. Baker | 529,996 | Nov. 27 | 2620 | 629 | 69 | 1176 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Drill-bits, &c. Tool for handling | J. Barrett | 527,103 | Oct. 9 | 696 | 171 | 69 | 145 |
| Drills, &c. Adjusting device for | W. J. Mewer | 529,039 | Nov. 13 | 936 | 221 | 69 | 836 |
| Drills. Rotary support for hand | J. W. Duff | 529,023 | Nov. 13 | 910 | 215 / 216 | 69 | 831 |
| Drilling-machine | C. A. Bentrup | 527,929 | Oct. 23 | 2082 | 498 | 69 | 430 |
| Drilling-machine | R. D. Clapp | 527,921 | Oct. 9 | 1058 | 256 | 69 | 210 |
| Drilling-machine | R. M. Downie | 527,237 | Oct. 9 | 943 | 221 | 69 | 186 |
| Drilling-machine | T. Gilpin and L. McHargue | 528,472 | Oct. 30 | 3048 | 739 | 69 | 619 |
| Drilling-machine | D. Jones | 529,329 | Nov. 13 | 1439 | 346 / 347 | 69 | 929 |
| Drilling-machine | W. P. Norton | 528,381 | Oct. 30 | 2886 | 699 | 69 | 590 |
| Drilling-machine | J. Sullivan, Jr | 527,462 | Oct. 16 | 1301 | 318 | 69 | 272 |
| Drilling-machine | F. W. Williams | 530,979 | Dec. 18 | 1574 | 373 | 69 | 1531 |
| Drilling. Percussion apparatus for | J. M. Ross | 527,078 | Oct. 9 | 657 | 160 | 69 | 138 |
| Drop-lights. Canopy for counterweight | A. Zempliner | 529,055 | Nov. 13 | 965 | 228 | 69 | 841 |
| Drum. Heating | J. E. Newhouse | 529,405 | Nov. 20 | 1591 | 378 | 69 | 976 |
| Drying articles | H. D. Williams | 528,496 | Oct. 30 | 3087 | 749 | 69 | 627 |
| Drying-cylinder | A. G. Paul | 526,731 | Oct. 2 | 106 | 26 | 69 | 22 |
| Drying-cylinder for textile machinery | W. C. Mackinney | 529,038 | Nov. 13 | 934 | 221 | 69 | 836 |
| Drying-frame | A. C. Sharpell | 528,991 | Nov. 13 | 859 | 204 | 69 | 823 |
| Drying-machine | J. K. Proctor. (Reissue) | 11,460 | Dec. 25 | 2714 | 650 / 651 | 69 | 1762 |
| Drying raw or prepared goods. Apparatus for | A. Rübenkamp | 528,807 | Nov. 6 | 508 | 122 / 123 | 69 | 738 |
| Dumping apparatus | T. Long | 527,118 | Oct. 9 | 721 | 177 | 69 | 149 |
| Dumping apparatus | T. Long | 527,119 | Oct. 9 | 724 | 178 | 69 | 149 |
| Dumping-cage | J. N. Wright | 529,227 | Nov. 13 | 1203 | 304 | 69 | 894 |
| Dumping-incline | J. O. Wright | 528,753 | Nov. 6 | 404 | 97, 98 | 69 | 720 |
| Duplicating apparatus | I. S. Haynes | 530,771 | Dec. 11 | 1229 | 298 | 69 | 1454 |
| Duplex burner | T. P. Evans | 527,957 | Oct. 23 | 2144 | 516 | 69 | 442 |
| Dust-bin, dust-cart, &c | F. S. Salberg | 530,057 | Nov. 27 | 2740 | 657 | 69 | 1198 |
| Dust-collector | A. C. Brantingham | 527,935 | Oct. 23 | 2095 | 502 | 69 | 432 |
| Dust-collector | A. C. Brantingham | 527,936 | Oct. 23 | 2097 | 503 | 69 | 433 |
| Dust-collector | A. C. Brantingham | 527,937 | Oct. 23 | 2100 | 503 | 69 | 433 |
| Dust-collector | A. C. Brantingham | 527,939 | Oct. 23 | 2105 | 504 / 505 | 69 | 434 |
| Dust-collector | A. C. Brantingham | 527,940 | Oct. 23 | 2106 | 505 | 69 | 434 |
| Dust-collector | E. R. Draver | 531,517 | Dec. 25 | 2545 | 609 | 69 | 1727 |
| Dust-collector | J. F. Gent | 531,414 | Dec. 25 | 2358 | 562 / 563 | 69 | 1692 |
| Dust-collector | L. S. Hogeboom | 530,642 | Dec. 11 | 1418 | 249 | 69 | 1416 |
| Dust-collector | R. McWilliams | 527,341 | Oct. 9 | 1087 | 263 | 69 | 216 |
| Dust-pan | G. H. Gere | 531,177 | Dec. 18 | 1932 | 459 | 69 | 1597 |
| Dye. Black azo | A. Weinberg | 526,763 | Oct. 2 | 159 | ..... | 69 | 31 |
| Dye. Blue | J. Bieter and C. De la Harpe | 531,148 | Dec. 18 | 1877 | ..... | 69 | 1567 |
| Dye. Manufacture of yellow and orange | F. Muhlert | 528,965 | Nov. 13 | 820 | ..... | 69 | 816 |
| Dye. Substantive red | J. J. Brack | 531,149 | Dec. 18 | 1879 | ..... | 69 | 1568 |
| Dyeing anilin-black | F. V. Kallab | 529,498 | Nov. 20 | 1771 | ..... | 69 | 1007 |
| Dyeing-machine | M. Bacon | 528,584 | Nov. 6 | 101 | 25, 26 | 69 | 664 |
| Dyeing-machine | L. Weldon | 529,539 | Nov. 20 | 1846 | 439 | 69 | 1021 |
| Dyeing-machine | L. Weldon | 531,350 | Dec. 25 | 2247 | 536 | 69 | 1670 |
| Dyeing slivers, &c., direct from combs. Machine for | J. A. J. Florin-Leclercq | 530,831 | Dec. 11 | 1318 | 317 | 69 | 1471 |
| Dynamo-regulator | J. Van Vleck | 526,879 | Oct. 2 | 348 | 86 | 69 | 65 |
| Dynamo regulator | J. Van Vleck | 530,465 | Dec. 4 | 669 | 166 | 69 | 1338 |
| Dynamos. Metal brush for | W. vom Braucke | 527,766 | Oct. 23 | 1792 | 432 | 69 | 378 |
| Dynamometer | R. J. Rolfson | 531,006 | Dec. 18 | 1621 | 384 / 385 | 69 | 1540 |
| Ear-muff | I. B. Kleinert | 529,176 | Nov. 13 | 1179 | 284 | 69 | 880 |
| Ear-ring | C. Babcock | 527,398 | Oct. 16 | 1189 | 292 | 69 | 249 |
| Ear-ring | J. Bonner | 527,359 | Oct. 9 | 1118 | 273 | 69 | 222 |
| Ear-ring | G. T. Woglom | 528,197 | Oct. 30 | 2570 | 622 | 69 | 533 |
| Easel | H. H. Lurssen and C. W. Wood | 526,907 | Oct. 2 | 403 | 100 | 69 | 75 |
| Eaves trough | A. C. Kanneberg | 531,044 | Dec. 18 | 1688 | 400 | 69 | 1553 |
| Eraseur | M. McNalley | 529,936 | Nov. 27 | 2429 | 600 | 69 | 1149 |
| Educational appliance | L. W. Musser | 528,040 | Oct. 23 | 2247 | 542 | 69 | 459 |
| Educational appliance | A. Patton | 530,470 | Dec. 4 | 642 | 160 | 69 | 1333 |
| Egg-beater | C. D. Weeks | 529,764 | Nov. 27 | 2205 | 526 | 69 | 1096 |
| Egg-carrier | F. E., C. A., and J. H. Ten Eyck | 528,187 | Oct. 30 | 2548 | 618 | 69 | 530 |
| Egg-case | H. C. Herr | 529,173 | Nov. 13 | 1171 | 282 | 69 | 879 |
| Egg-case. Folding | H. E. McKinney | 529,403 | Nov. 20 | 1588 | 378 | 69 | 975 |
| Egg-fillers. Machine for making | H. E. Herr | 529,172 | Nov. 13 | 1165 | 280 / 281 | 69 | 878 |
| Electric apparatus. Coin operated | J. H. Elfering | 528,911 | Nov. 6 | 723 | 170 | 69 | 778 |
| Electric battery | M. E. Smith and M. F. Geer | 527,298 | Oct. 9 | 1020 | 248 | 69 | 204 |
| Electric cable | T. J. Dewees | 527,413 | Oct. 16 | 1215 | 297 | 69 | 254 |
| Electric cable | T. Guilleaume | 531,614 | Dec. 25 | 2706 | 649 | 69 | 1760 |
| Electric circuit | J. W. Marsh | 529,559 | Nov. 20 | 1876 | 447 | 69 | 1026 |
| Electric-conductor conduit | J. Tatham | 529,216 | Nov. 13 | 1244 | 299 | 69 | 891 |
| Electric-conductor support | J. M. Andersen | 531,351 | Dec. 25 | 2253 | 538 | 69 | 1671 |
| Electric conductors. Coating | A. F. Montgomery | 528,301 | Oct. 30 | 2754 | 665 | 69 | 567 |
| Electric conductors. Composition of matter for | D. Macfarlan | 526,721 | Oct. 2 | 85 | ..... | 69 | 19 |
| Electric conductors. Composition of matter for | D. Macfarlan | 526,722 | Oct. 2 | 88 | ..... | 69 | 19 |
| Electric conductors. Manufacture of | J. Robinson | 529,411 | Nov. 20 | 1602 | 381 | 69 | 978 |
| Electric conductors. Manufacture of | J. Robinson | 529,413 | Nov. 20 | 1606 | 382 | 69 | 979 |
| Electric conduit | T. T. La Pointe, J. H. Flanagan, and C. A. Thompson. | 530,951 | Dec. 18 | 1521 | 360 | 69 | 1522 |
| Electric contactor. Rotatable | J. W. Curry | 529,898 | Nov. 27 | 2430 | 584 | 69 | 1139 |
| Electric conversion system | L. Gutmann | 530,178 | Dec. 4 | 170 | 43 | 69 | 1245 |
| Electric converter | F. C. Priestly | 531,005 | Dec. 18 | 1620 | 384 | 69 | 1540 |
| Electric cut-out | H. Hansen | 531,310 | Dec. 25 | 2177 | 521 | 69 | 1657 |
| Electric cut-out. Automatic | D. F. Sweet | 529,212 | Nov. 13 | 1237 | 297 | 69 | 890 |
| Electric heater | J. R. Davis | 527,324 | Oct. 9 | 1063 | 257 | 69 | 211 |
| Electric heater. Dynamic | H. B. Collins | 527,050 | Oct. 9 | 620 | 150 / 151 | 69 | 131 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Electric instruments. Binding-post for | E. A. Lowe | 529,127 | Nov. 13 | 1082 | 261 | 69 | 863 |
| Electric-light fixture | H. Horn | 530,343 | Dec. 4 | 476 | 118 | 69 | 1301 |
| Electric-light fixture | J. R. Konetshny | 529,654 | Nov. 20 | 2023 | 485 | 69 | 1054 |
| Electric-lighting circuits. Service end, cut-out, and switch-box for | J. Van Vleck | 530,141 | Dec. 4 | 108 | 28 | 69 | 1235 |
| Electric-lighting system | G. J. and G. J. T. J. Partitt | 528,021 | Oct. 23 | 2264 | 546 | 69 | 462 |
| Electric lock | T. P. Pratt | 526,909 | Oct. 2 | 405 | 101 | 69 | 75 |
| Electric machine. Continuous-current dynamo | M. Hutin and M. Leblanc | 529,650 | Nov. 20 | 2012 | 482 | 69 | 1052 |
| Electric machine. Dynamo | E. Fawcett | 527,415 | Oct. 16 | 1216 | 297 | 69 | 254 |
| Electric machine. Dynamo | E. W. Rice, Jr | 526,743 | Oct. 2 | 124 | 29, 30 | 69 | 25 |
| Electric machine. Dynamo | R. Thury | 529,145 | Nov. 13 | 1117 | 270 | 69 | 870 |
| Electric machine. Magneto | J. N. McLeod | 530,235 | Dec. 4 | 285 | 70 | 69 | 1267 |
| Electric-machine regulator. Dynamo | J. Ferrand | 529,117 | Nov. 13 | 1064 | 257 | 69 | 860 |
| Electric machines. Brush for dynamo | P. J. C. Carron | 530,088 | Dec. 4 | 22 | 6 | 69 | 1219 |
| Electric machines. Brush for dynamo | E. T. Platt | 530,717 | Dec. 11 | 1136 | 276 | 69 | 1436 |
| Electric machines in multiple. Running compound-wound dynamo | W. B. Potter | 527,075 | Oct. 9 | 652 | 158 | 69 | 137 |
| Electric meter | T. Bruger | 531,153 | Dec. 18 | 1886 | 447 | 69 | 1589 |
| Electric meter | G. A. Scheeffer | 530,351 | Dec. 4 | 488 | 121 | 69 | 1303 |
| Electric motor | J. H. Clark | 526,646 | Oct. 2 | 24 | 6 | 69 | 7 |
| Electric motor | F. E. Herdman | 530,774 | Dec. 11 | 1233 | 299 | 69 | 1455 |
| Electric motor. Alternating | L. Gutmann | 530,177 | Dec. 4 | 167 | 43 | 69 | 1245 |
| Electric motor. Differentially-geared | B. C. Pole | 527,023 | Oct. 2 | 577 | 139 | 69 | 109 |
| Electric motor or dynamo | C. F. Daniels | 527,776 | Oct. 23 | 1808 | 436 | 69 | 381 |
| Electric-motor-propelled elevator | F. E. Herdman | 530,619 | Dec. 11 | 970 | 227 / 228 | 69 | 1408 |
| Electric-motor reversing mechanism | J. Mellen and N. O. Goldsmith | 528,440 | Oct. 30 | 2967 | 722 | 69 | 608 |
| Electric motors for operating machinery. Utilizing | E. Richter | 528,608 | Nov. 6 | 145 | 36 | 69 | 673 |
| Electric motors into circuit. Apparatus for putting | C. Hoffmann | 526,810 | Oct. 2 | 230 | 56 | 69 | 43 |
| Electric mouth-battery | L. L. Funk | 527,037 | Oct. 2 | 598 | 144 | 69 | 113 |
| Electric plug-switch | A. H. Palmer | 531,424 | Dec. 25 | 2374 | 568 | 69 | 1695 |
| Electric roads. Underground conduit for | E. A. Mathers | 528,963 | Nov. 13 | 816 | 190 / 191 | 69 | 815 |
| Electric snap-switch | A. Metzger | 526,725 | Oct. 2 | 92 | 23 | 69 | 19 |
| Electric switch | F. G. Beron | 526,988 | Oct. 2 | 520 | 127 | 69 | 98 |
| Electric switch | F. G. B lles | 528,990 | Nov. 6 | 682 | 164 | 69 | 771 |
| Electric switch | J. M. Cronin | 530,472 | Dec. 4 | 680 | 170 | 69 | 1340 |
| Electric switch | R. S. Kelsch | 527,177 | Oct. 9 | 814 | 198 | 69 | 166 |
| Electric switch | J. F. McLaughlin | 528,014 | Oct. 23 | 2252 | 544 | 69 | 461 |
| Electric switch | J. W. Ullman | 530,293 | Dec. 4 | 346 | 97 | 69 | 1285 |
| Electric switch and cut-out | J. C. Cassidy | 529,595 | Nov. 20 | 1932 | 460 | 69 | 1037 |
| Electric switch or cut-out | J. C. Cassidy | 529,363 | Nov. 20 | 1505 | 362 | 69 | 961 |
| Electric transformer | E. Thomson | 528,188 | Oct. 30 | 2550 | 618 | 69 | 531 |
| Electric uterine battery | C. E. Hebard | 527,788 | Oct. 23 | 1851 | 441 | 69 | 386 |
| Electrical conductors. Sheathing | J. Tatham | 529,215 | Nov. 13 | 1243 | 299 | 69 | 891 |
| Electrical conductors. Weather-protecting covering for | E. J. Houston | 527,556 | Oct. 16 | 1446 | 352 | 69 | 297 |
| Electrical connections. Plug for establishing | C. W. Brown | 528,529 | Nov. 6 | 12 | 5 | 69 | 648 |
| Electrical contact mechanism | J. F. Blake | 530,004 | Nov. 27 | 2640 | 634 | 69 | 1180 |
| Electrical converter | J. W. Packard | 527,070 | Oct. 9 | 646 | 157 | 69 | 136 |
| Electrical cut-out | D. F. Sweet | 529,213 | Nov. 13 | 1239 | 298 | 69 | 890 |
| Electrical distribution with storage-batteries. System of | E. Kuchenmeister | 530,432 | Dec. 4 | 616 | 153 | 69 | 1328 |
| Electrical energy. System of transmitting and distributing | C. C. Chesney | 530,748 | Dec. 11 | 1190 | 290 | 69 | 1446 |
| Electrical purposes. Plug and receptacle for | D. J. Cartwright | 530,066 | Nov. 27 | 2749 | 659 | 69 | 1200 |
| Electrical retoucher | C. M. Savage | 528,564 | Nov. 6 | 63 | 17 | 69 | 658 |
| Electrical signal | H. H. Wister | 527,257 | Oct. 9 | 947 | 230 / 231 | 69 | 191 |
| Electrical switch setting, indicating, and controlling device | K. Moderegger | 526,813 | Oct. 2 | 235 | 57 | 69 | 44 |
| Electrical transformer | F. S. Culver | 528,925 | Nov. 13 | 753 | 176 | 69 | 804 |
| Electrical transformer | R. M. Hunter | 528,778 | Nov. 6 | 459 | 111 | 69 | 729 |
| Electrical transformer | F. Zickermann | 529,152 | Nov. 13 | 1127 | 273 | 69 | 871 |
| Electrically-operated elevator | E. Marshall | 528,547 | Nov. 6 | 40 | 10 | 69 | 653 |
| Electrician's combination-tool | J. M. Gile | 529,488 | Nov. 20 | 1752 | 416 | 69 | 1004 |
| Electricity by solar heat. Apparatus for generating | M. L. Severy | 527,379 | Oct. 9 | 1152 | 283 | 69 | 229 |
| Electricity. Means and apparatus for distributing | H. T. Harrison | 529,265 | Nov. 13 | 1331 | 320 | 69 | 907 |
| Electrodeposition apparatus | H. L. Bridgman | 528,586 | Nov. 6 | 104 | 26 | 69 | 665 |
| Electrodeposition apparatus | H. L. Bridgman | 528,587 | Nov. 6 | 105 | 26 | 69 | 665 |
| Electrolytes. Method of and apparatus for circulating liquid | P. Schoop | 529,199 | Nov. 13 | 1216 | 293 | 69 | 886 |
| Electromagnetic apparatus | S. D. Field | 529,373 | Nov. 20 | 1527 | 366 | 69 | 965 |
| Electromagnetic apparatus. Suppression of self-inductive obstruction in | S. D. Field | 530,516 | Dec. 11 | 795 | 197 | 69 | 1377 |
| Electromagnetic machine | G. J. Scott | 529,085 | Nov. 13 | 1019 | 245 | 69 | 851 |
| Electromagnetic machines. Controlling | W. I. Donshea | 531,365 | Dec. 25 | 2276 | 542 / 543 | 69 | 1676 |
| Electromagnetic switch | J. G. Hartel | 528,430 | Oct. 30 | 2973 | 719 | 69 | 605 |
| Electrometer | E. Weston | 530,145 | Dec. 4 | 113 | 30 | 69 | 1236 |
| Electromotors. Method of and means for operating and controlling | C. Moderegger | 530,114 | Dec. 4 | 67 | 19 | 69 | 1227 |
| Electrotype-matrices. Machine for black-leading | Q. B. Beach | 527,827 | Oct. 23 | 1890 | 453 / 454 | 69 | 395 |
| Electrotype-plates. Making | J. W. Naughton | 529,078 | Nov. 13 | 1006 | 243 | 69 | 848 |
| Elevating apparatus | C. W. Hunt | 527,496 | Oct. 16 | 1345 | 328 | 69 | 280 |
| Elevator; *See* Car-elevator. Cotton-elevator. Electric-motor-propelled elevator. Grain-elevator. Hay-elevator. Hod-elevator. Hydraulic elevator. Steam-elevator. Water-elevator. | | | | | | | |
| Elevator | E. W. Houser and C. C. Decker | 530,776 | Dec. 11 | 1240 | 300 | 69 | 1456 |
| Elevator | H. A. Johns | 530,273 | Dec. 4 | 345 | 85, 86 | 69 | 1278 |

*Alphabetical list of inventions, October to December, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Pages. |
|---|---|---|---|---|---|---|---|
| Elevator | L. M. Johnson | 529,031 | Nov. 13 | 920 | 218 | 69 | 833 |
| Elevator | N. P. Otis | 531,595 | Dec. 25 | 2673 | 642 | 69 | 1753 |
| Elevator | J. W. Seaver | 527,295 | Oct. 9 | 1017 | 247 | 69 | 203 |
| Elevator apparatus | W. Hill | 527,426 | Oct. 16 | 1230 | 302 | 69 | 256 |
| Elevator-controller | L. W. Southgate | 527,896 | Oct. 23 | 2025 | 487 | 69 | 419 |
| Elevator-controller. Electric | L. S. Buffington and W. C. Jones | 530,578 | Dec. 11 | 902 | 222 | 69 | 1396 |
| Elevator controlling device | C. W. Baldwin | 529,438 | Nov. 20 | 1662 | 395 | 69 | 989 |
| Elevator controlling device | C. E. Foster | 530,936 | Dec. 18 | 1491 | 353 | 69 | 1518 |
| Elevator controlling device | A. B. See and W. L. Tyler | 531,070 | Dec. 18 | 1725 | 410 | 69 | 1559 |
| Elevator-cup | W. F. Boswell | 529,698 | Nov. 27 | 2096 | 502 | 69 | 1078 |
| Elevator-door opening or closing device | W. J. Ferguson | 527,366 | Oct. 9 | 1132 | 276 | 69 | 225 |
| Elevator-door-operating device | E. O. Church | 527,665 | Oct. 16 | 1623 | 391 | 69 | 329 |
| Elevator-guard | N. Levison | 531,198 | Dec. 18 | 1967 | 467 | 69 | 1603 |
| Elevator-motor. Electric | W. C. Fletcher | 530,032 | Nov. 27 | 2685 | 645, 646 | 69 | 1189 |
| Elevator-operating mechanism | M. H. Christopherson | 526,771 | Oct. 2 | 171 | 40 | 69 | 32 |
| Elevator-platform | G. P. Wern | 527,307 | Oct. 9 | 1037 | 251 | 69 | 206 |
| Elevator safety-brake | T. Maybrick and W. J. Ashworth | 526,931 | Oct. 2 | 443 | 109 | 69 | 83 |
| Elevator safety device | F. T. Ellithorpe | 527,171 | Oct. 9 | 804 | 196 | 69 | 164 |
| Elevator safety device | W. P. Kidder. (Reissue) | 11,452 | Nov. 13 | 1475 | 354 | 69 | 935 |
| Elevator-ways. Automatic safety-guard for | J. Kobos | 529,177 | Nov. 13 | 1180 | 284 | 69 | 880 |
| Elevator-well gates. Device for operating | C. F. De Arden | 529,161 | Nov. 13 | 1141 | 276 | 69 | 874 |
| Elevators and elevator-gates. Safety attachment for | I. M. Hill | 528,878 | Nov. 6 | 653 | 156 | 69 | 765 |
| Elevators. Apparatus for controlling electric | N. O. Lindstrom and O. P. Cummings | 530,541 | Dec. 11 | 839 | 207 | 69 | 1384 |
| Elevators. Safety grip device for | H. R. Smith | 530,971 | Dec. 18 | 1559 | 369, 370 | 69 | 1528 |
| Ellipsograph | J. A. Caldwell | 530,822 | Dec. 11 | 1304 | 315 | 69 | 1468 |
| Embankments. Machine for building | W. G. Price | 528,891 | Nov. 6 | 669 | 161, 162 | 69 | 769 |
| Embankments. Machine for building | W. G. Price | 531,385 | Dec. 25 | 2312 | 551, 552 | 69 | 1683 |
| Embroidering-machines. Fabric-moving mechanism for | J. A. Groebli | 528,632 | Nov. 6 | 186 | 46, 47, 48, 49, 50 | 69 | 680 |
| Embroidery | J. Kobelt | 530,595 | Dec. 11 | 931 | 220 | 69 | 1401 |
| Emery-wheel. Elastic | D. B. Hyde | 528,726 | Nov. 6 | 352 | 86 | 69 | 710 |
| Enamel from metal. Removing | G. W. Goetz | 528,156 | Oct. 30 | 2497 | ..... | 69 | 520 |
| Enamel or paint. Marine | C. H. Christman | 531,610 | Dec. 25 | 2701 | ..... | 69 | 1759 |
| Enameling | W. C. Stewart | 529,670 | Nov. 20 | 2049 | ..... | 69 | 1059 |
| Enameling metal-ware | H. Claus | 527,361 | Oct. 9 | 1120 | 274 | 69 | 222 |
| End-board chute for wagons | J. H. Irion | 526,971 | Oct. 2 | 495 | 121 | 69 | 93 |
| End-gate. Wagon | L. C. Sweet | 529,819 | Nov. 27 | 2307 | 549 | 69 | 1116 |
| Engine: *See* Compound engine. Dental engine. Direct-acting engine. Fire-engine. Fluid-pressure engine. Gas-engine. Locomotive-engine. Motor-engine. Paper-pulp-beating engine. Petroleum, gas, or oil engine. Pumping-engine. Rotary engine. Rotary steam-engine. Steam-engine. Steering engine. Traction-engine. Vapor-engine. | | | | | | | |
| Engine | C. F. Sparks | 528,818 | Nov. 6 | 527 | 127 | 69 | 741 |
| Engine | E. J. Woolf | 531,285 | Dec. 18 | 2132 | 511 | 69 | 1633 |
| Engine | E. J. Woolf | 531,286 | Dec. 18 | 2134 | 511, 512 | 69 | 1634 |
| Engine and superheater apparatus. Combined | J. C. Walker | 531,488 | Dec. 25 | 2495 | 594, 595 | 69 | 1718 |
| Engine attachment | P. Chouteau | 528,530 | Nov. 6 | 13 | 5 | 69 | 649 |
| Engine brake. Mining | B. Yoch | 529,991 | Nov. 27 | 2615 | 627 | 69 | 1174 |
| Engine cross-head | J. Begtrup | 530,320 | Dec. 4 | 429 | 107 | 69 | 1293 |
| Engine for operating clutches or other devices | J. K. Howe and J. Clark | 530,994 | Dec. 18 | 1595 | 379 | 69 | 1535 |
| Engine indicator. Steam | W. M. Henderson | 528,226 | Oct. 30 | 2092 | 633 | 69 | 543 |
| Engine indicator. Steam | F. Lane | 530,433 | Dec. 4 | 619 | 154 | 69 | 1328 |
| Engine-pilot | J. Drake | 528,152 | Oct. 30 | 2491 | 603 | 69 | 519 |
| Engine-reversing gear | C. E. R. Martin | 528,275 | Oct. 30 | 2708 | 653 | 69 | 559 |
| Engine safety device | W. M. Wood | 529,672 | Nov. 20 | 2051 | 491 | 69 | 1059 |
| Engine speed-stop | B. F. Teal | 528,746 | Nov. 6 | 786 | 93 | 69 | 717 |
| Engine steering mechanism. Traction | B. Jackson | 529,495 | Nov. 20 | 1766 | 420, 421 | 69 | 1006 |
| Engine stopping apparatus | N. E. Nash | 529,297 | Nov. 13 | 1386 | 333, 334 | 69 | 917 |
| Engines. Steam-chest for compound | E. W. Harden | 527,388 | Oct. 9 | 1168 | 286, 287 | 69 | 232 |
| Engraving-machine | C. C. Bruckner | 529,851 | Nov. 27 | 2358 | 563, 564 | 69 | 1125 |
| Engraving-machine | E. Fanshaw | 527,677 | Oct. 16 | 1643 | 396 | 69 | 333 |
| Envelope | W. Barnard | 526,799 | Oct. 2 | 213 | 51 | 69 | 41 |
| Envelope | M. Carey | 531,302 | Dec. 25 | 2166 | 518 | 69 | 1655 |
| Envelope | R. L. Dow | 527,948 | Oct. 23 | 2124 | 510 | 69 | 439 |
| Envelope | H. C. F. E. Snowman | 531,291 | Dec. 18 | 2122 | 509 | 69 | 1631 |
| Envelope. Money | C. H. Cameron | 531,506 | Dec. 25 | 2527 | 604 | 69 | 1724 |
| Envelope-opener | A. O. Blomgren | 530,920 | Dec. 18 | 1468 | 348 | 69 | 1514 |
| Envelope-opener | A. O. Blomgren | 531,017 | Dec. 18 | 1637 | 388 | 69 | 1543 |
| Evaporating apparatus | T. Craney | 528,859 | Nov. 6 | 625 | 147, 148 | 69 | 760 |
| Evaporating apparatus | H. See | 529,533 | Nov. 20 | 1815 | 436, 437 | 69 | 1019 |
| Excavating and hoisting bucket | G. H. Williams | 528,579 | Nov. 6 | 95 | 24 | 69 | 663 |
| Excavating, ditching, or dredging machine | G. L. Lewis | 531,199 | Dec. 18 | 1968 | 467 | 69 | 1603 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Pages. |
|---|---|---|---|---|---|---|---|
| Excavator dipper, scoop, or shovel | R. Thew | 530,209 | Dec. 4 | 230 | 57, 58 | 69 | 1257 |
| Excavator shovel or scoop | R. Thew | 530,210 | Dec. 4 | 234 | 58 | 69 | 1258 |
| Excelsior-cutting machine | C. G. Smith | 530,732 | Dec. 11 | 1165 | 283, 284 | 69 | 1441 |
| Excelsior-cutting machine | C. G. Smith | 531,342 | Dec. 25 | 2234 | 534 | 69 | 1667 |
| Exercising-machine | J. Strong | 530,669 | Dec. 11 | 1064 | 258, 259 | 69 | 1423 |
| Exhibitor. Coin-controlled | C. W. DeKnight | 528,084 | Oct. 23 | 2374 | 573 | 69 | 483 |
| Expanding-tool | N. W. Pratt | 527,155 | Oct. 9 | 782 | 191 | 69 | 160 |
| Expansion-bit | R. H. Brown | 530,923 | Dec. 18 | 1472 | 349 | 69 | 1514 |
| Expansion-bolt | I. Church | 527,406 | Oct. 16 | 1198 | 294 | 69 | 251 |
| Explosive. High-power | J. E. Blomén | 530,063 | Nov. 27 | 2747 | ..... | 69 | 1199 |
| Extension-table | A. Oberländer | 531,211 | Dec. 18 | 1994 | 473, 474 | 69 | 1608 |
| Extension-table | H. G. Schnarr | 529,140 | Nov. 13 | 1108 | 268, 269 | 69 | 868 |
| Extension-table. Center-revolving folding | H. Graham | 528,250 | Oct. 30 | 2667 | 642 | 69 | 592 |
| Extinguisher. Automatic | C. Streblow | 526,875 | Oct. 2 | 344 | 85 | 69 | 65 |
| Extracting apparatus | W. T. Forbes | 531,108 | Dec. 18 | 1801 | 422 | 69 | 1573 |
| Extracting apparatus | C. F. Hood | 530,893 | Dec. 11 | 1418 | 337 | 69 | 1488 |
| Extractor: *See* Butter-extractor. Continuous extractor. Nail-extractor. Stopper-extractor. Stump-extractor. | | | | | | | |
| Eyeglass folding frame | A. Brunner | 531,095 | Dec. 18 | 1776 | 423 | 69 | 1568 |
| Eyeglass-suspender | H. J. Green | 527,147 | Oct. 9 | 772 | 188 | 69 | 158 |
| Eyeglasses | J. H. E. De Celles | 527,268 | Oct. 9 | 971 | 235 | 69 | 195 |
| Eyeglasses | I. Fox | 527,275 | Oct. 9 | 986 | 239 | 69 | 197 |
| Eyeglasses | H. E. Kirstein | 527,611 | Oct. 16 | 1536 | 373 | 69 | 313 |
| Eyeglasses. Device for securing | M. McDougall | 529,402 | Nov. 20 | 1587 | 377 | 69 | 975 |
| Eyeglasses. Double | J. J. Wood | 529,988 | Nov. 27 | 2610 | 626 | 69 | 1174 |
| Eyeglasses or spectacles | W. G. Beek | 527,052 | Oct. 16 | 1603 | 387 | 69 | 326 |
| Eyeglasses or spectacles | H. E. Kirstein | 527,612 | Oct. 16 | 1538 | 373 | 69 | 314 |
| Eyeglasses or spectacles. Bridge-spring for | B. A. Gilbert | 527,745 | Oct. 16 | 1757 | 423 | 69 | 354 |
| Eyelet for carriage and buggy curtains | D. C. Woolsey | 528,580 | Nov. 6 | 96 | 24 | 69 | 664 |
| Fabric: *See* Slat-and-wire fabric. | | | | | | | |
| Fan | E. S. Grauel | 527,423 | Oct. 16 | 1225 | 301 | 69 | 255 |
| Fan | J. S. Mackie | 526,929 | Oct. 2 | 440 | 108 | 69 | 82 |
| Fan. Centrifugal | V. D. Anderson | 529,689 | Nov. 27 | 2083 | 499 | 69 | 1076 |
| Fan mechanism. Fly | F. Lenoir and E. A. Seward | 526,719 | Oct. 2 | 82 | 22 | 69 | 18 |
| Fan motor. Electric | F. X. Hofbauer | 529,385 | Nov. 20 | 1550 | 370 | 69 | 969 |
| Fare-box | G. B. M. Harvey | 529,383 | Nov. 20 | 1547 | 369 | 69 | 969 |
| Fare-register | E. Cathin and G. Rein | 531,020 | Dec. 18 | 1644 | 390 | 69 | 1544 |
| Fare-register | J. W. Fowler, W. J. England, and A. E. Nielsen. | 527,387 | Oct. 9 | 1165 | 285, 286 | 69 | 231 |
| Fare-register | A. Pfaff | 529,803 | Nov. 27 | 2265 | 541 | 69 | 1107 |
| Fare-register | E. T. Taylor | 531,231 | Dec. 18 | 2034 | 485 | 69 | 1615 |
| Fare-register operating device | M. T. Graf | 527,018 | Oct. 2 | 568 | 138 | 69 | 107 |
| Fastener. Corrugated | F. W. Starr | 528,569 | Nov. 6 | 83 | 21 | 69 | 661 |
| Faucet | A. C. Shaw | 530,663 | Dec. 11 | 1053 | 256 | 69 | 1422 |
| Faucet-bung | D. Beebe | 530,255 | Dec. 4 | 315 | 79 | 69 | 1272 |
| Faucet for supplying hot or cold water | G. H. Cole | 531,585 | Dec. 25 | 2655 | 636 | 69 | 1750 |
| Faucet. Oil-can | B. F. Warren | 528,244 | Oct. 30 | 2655 | 640 | 69 | 549 |
| Faucet register-gage | A. W. Meyer | 529,040 | Nov. 13 | 938 | 222 | 69 | 837 |
| Faucet. Self-closing | W. A. Turner | 531,484 | Dec. 25 | 2487 | 592 | 69 | 1716 |
| Feather-dressing machine | J. H. McConnell | 527,619 | Oct. 16 | 1547 | 375 | 69 | 315 |
| Feed-cutter | J. K. Wilder | 529,768 | Nov. 27 | 2211 | 527 | 69 | 1097 |
| Feed-mill | N. P. Bowsher | 528,070 | Oct. 23 | 2341 | 565 | 69 | 477 |
| Feed-trough | A Greer | 528,871 | Nov. 6 | 643 | 153 | 69 | 764 |
| Feed-water heater and fuel-saver | W. N. Morriss and R. H. Smith | 526,727 | Oct. 2 | 95 | 24 | 69 | 20 |
| Feed-water heater and steam-generator | D. Myers | 526,841 | Oct. 2 | 282 | 68 | 69 | 54 |
| Feed-water heater, purifier, and separator | D. Cochrane | 530,749 | Dec. 11 | 1191 | 290 | 69 | 1447 |
| Feed-water purifier | S. L. Bailey | 528,318 | Oct. 30 | 2782 | 671 | 69 | 572 |
| Feed-water purifier | S. L. Bailey | 528,512 | Oct. 30 | 3044 | 755 | 69 | 632 |
| Feed-water purifier | M. S. Cabell | 528,851 | Nov. 6 | 603 | 143 | 69 | 756 |
| Feed-water regulator | C. B. Bosworth | 530,388 | Dec. 4 | 551 | 137 | 69 | 1316 |
| Felly joint. Wheel | W. F. Morton | 529,131 | Nov. 13 | 1090 | 263 | 69 | 865 |
| Felting-machine | R. Heaton | 527,283 | Oct. 9 | 968 | 242 | 69 | 199 |
| Fence | S. C. Bower | 530,504 | Dec. 11 | 761 | 186 | 69 | 1371 |
| Fence | R. J. Carr | 530,391 | Dec. 4 | 555 | 138 | 69 | 1316 |
| Fence | J. Donnell | 527,780 | Oct. 23 | 1819 | 438 | 69 | 383 |
| Fence | J. C. Fraser | 529,667 | Nov. 13 | 985 | 234 | 69 | 845 |
| Fence | J. H. Long | 526,927 | Oct. 2 | 438 | 108 | 69 | 82 |
| Fence | R. L. Paris | 528,687 | Nov. 6 | 300 | 73 | 69 | 700 |
| Fence | D. W. Thomas | 528,828 | Nov. 6 | 554 | 132 | 69 | 747 |
| Fence and gate. Iron | I. K. Hollinger | 528,164 | Oct. 30 | 2508 | 606 | 69 | 522 |
| Fence-building machine | C. Neate | 528,303 | Oct. 30 | 2757 | 666 | 69 | 567 |
| Fence compensator. Wire | P. Herman | 529,649 | Nov. 20 | 2011 | 482 | 69 | 1052 |
| Fence. Flood | J. W. Story | 528,821 | Nov. 6 | 544 | 130 | 69 | 745 |
| Fence-machine | O. H. Page | 528,794 | Nov. 6 | 480 | 117 | 69 | 733 |
| Fence machine. Wire | F. H. Daniels | 528,764 | Nov. 6 | 428 | 103 | 69 | 724 |
| Fence-making machine | P. J. Regan | 527,350 | Oct. 9 | 1139 | 278 | 69 | 226 |
| Fence. Portable | W. M. Cook | 527,773 | Oct. 23 | 1802 | 434 | 69 | 380 |
| Fence. Portable sectional | A. H. Cook | 530,068 | Nov. 27 | 2755 | 661 | 69 | 1201 |
| Fence-post | S. P. Iddings | 528,674 | Nov. 6 | 280 | 68 | 69 | 696 |
| Fence-post. Pressed-steel | C. T. Schoen | 530,725 | Dec. 11 | 1155 | 280 | 69 | 1439 |
| Fence-stay | W. D. Albright | 530,916 | Dec. 18 | 1464 | 347 | 69 | 1513 |
| Fence stay. Wire | A. F. Dickey | 530,069 | Nov. 27 | 2757 | 661 | 69 | 1201 |
| Fence stay. Wire | D. B. Younce | 530,981 | Dec. 18 | 1577 | 374 | 69 | 1532 |
| Fence tightener. Wire | P. A. Leyner | 526,718 | Oct. 2 | 81 | 21 | 69 | 18 |
| Fence. Wire | J. W. Alverson | 529,543 | Nov. 20 | 1852 | 441 | 69 | 1022 |
| Fence. Wire | H. Buck | 528,627 | Nov. 6 | 181 | 44 | 69 | 679 |
| Fence. Wire | G. Lehberger. (Reissue) | 11,445 | Oct. 9 | 1184 | 291 | 69 | 235 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Fence. Wire | C. R. Pickett | 529,833 | Nov. 27 | 2325 | 553 | 69 | 1119 |
| Fence. Wire | H. C. Pratt | 528,109 | Oct. 23 | 2415 | 584 585 | 69 | 490 |
| Fence. Wire | E. S. Scofield and J. J. Jennings | 530,244 | Dec. 4 | 297 | 73 | 69 | 1269 |
| Fence. Wire | H. W. Vail, Jr. | 530,250 | Dec. 4 | 307 | 77 | 69 | 1271 |
| Fence-wire tightener | F. R. Conner | 529,709 | Nov. 27 | 2114 | 507 | 69 | 1081 |
| Fencing. Machine for making barbed-wire | E. S. Lenox | 529,036 | Nov. 13 | 997 | 220 | 69 | 854 |
| Fender: *See* Car-fender. | | | | | | | |
| Fender | J. M. Cable | 531,155 | Dec. 18 | 1889 | 448 449 | 69 | 1589 |
| Fertilizers from waste lyes. Obtaining | L. Tralls | 528,999 | Nov. 13 | 871 | ..... | 69 | 825 |
| Fertilizers. Making | E. Records | 527,810 | Oct. 23 | 1865 | ..... | 69 | 391 |
| Fiber-drying machine | F. G. and A. C. Sargent | 527,721 | Oct. 16 | 1714 | 413 | 69 | 347 |
| Fibers and recovering sulfurous gases employed therein. Apparatus for disintegrating | H. Blackman | 530,634 | Dec. 11 | 997 | 245 | 69 | 1413 |
| Fibrous material. Molding vegetable | B. McCabe and A. Thayer | 530,958 | Dec. 18 | 1533 | ..... | 69 | 1525 |
| File | W. H. Morden | 526,726 | Oct. 2 | 93 | 23 | 69 | 20 |
| File. Account | J. U. Parrey | 531,271 | Dec. 18 | 2102 | 505 | 69 | 1627 |
| File. Bill | W. O. Gottwals | 527,277 | Oct. 9 | 989 | 239 | 69 | 198 |
| File. Bill | W. O. Gottwals | 527,278 | Oct. 9 | 990 | 240 | 69 | 198 |
| File. Bill | O. Hossfeld and P. Küssner | 528,947 | Nov. 13 | 795 | 185 186 | 69 | 811 |
| File-blanks. Machine for stripping | A. Weed | 530,143 | Dec. 4 | 111 | 29 | 69 | 1235 |
| File-case | D. A. Drake | 527,949 | Oct. 23 | 2125 | 510 | 69 | 438 |
| File case or cabinet | P. J. Pauly, Jr. | 526,815 | Oct. 2 | 239 | 58 | 69 | 45 |
| File-cutting machine | J. Bêché, Jr. | 531,251 | Dec. 18 | 2065 | 494 | 69 | 1620 |
| File. Invoice or other | M. Buchsbaum | 528,285 | Oct. 30 | 2726 | 658 | 69 | 562 |
| File. Paper | J. B. McEnally | 529,296 | Nov. 13 | 1384 | 333 | 69 | 917 |
| File. Paper | E. A. Sharp | 529,534 | Nov. 20 | 1837 | 437 | 69 | 1019 |
| Filing and binding news or other papers. Device for | C. Dickerson | 528,768 | Nov. 6 | 437 | 106 | 69 | 726 |
| Filter | F. B. Arendell | 529,471 | Nov. 20 | 1720 | 410 | 69 | 999 |
| Filter | J. A. Bowden | 530,008 | Nov. 27 | 2645 | 635 636 | 69 | 1181 |
| Filter | A. L. Emery | 526,695 | Oct. 2 | 40 | 11 | 69 | 10 |
| Filter | A. I. and D. Hyman | 531,190 | Dec. 18 | 1952 | 463 | 69 | 1601 |
| Filter | C. M. Keller | 531,464 | Dec. 25 | 2460 | 586 | 69 | 1711 |
| Filter | W. B. Lindsay, W. E. Tonner, and A. Lowmiller. | 528,104 | Oct. 23 | 2407 | 562 563 | 69 | 489 |
| Filter | W. Lorey | 529,558 | Nov. 20 | 1874 | 446 | 69 | 1026 |
| Filter | C. J. Phillips | 526,817 | Oct. 2 | 241 | 58 | 69 | 46 |
| Filter | D. C. and J. E. Williamson | 529,470 | Nov. 20 | 1718 | 409 410 | 69 | 998 |
| Filter and cleaning same | W. A. Freise | 528,630 | Nov. 6 | 184 | 45 | 69 | 679 |
| Filter-barrel | N. H. Cone | 530,397 | Dec. 4 | 562 | 140 | 69 | 1318 |
| Filter for street-sprinkler tanks, water-tanks, boilers, reservoirs, meters, &c. | E. Henry | 526,922 | Oct. 2 | 427 | 105 | 69 | 80 |
| Filter. Oil | J. T. Fowkes | 530,757 | Dec. 11 | 1205 | 293 | 69 | 1449 |
| Filtering apparatus | J. A. Bowden | 528,652 | Nov. 6 | 237 | 59 | 69 | 689 |
| Filtration | S. R. Lowcock | 530,784 | Dec. 11 | 1253 | 303 | 69 | 1459 |
| Fire-alarm | T. R. Hackworth and W. C. McLellan. | 528,160 | Oct. 30 | 2503 | 605 | 69 | 521 |
| Fire-alarm | E. P. McCaslin | 530,790 | Dec. 11 | 1259 | 304 | 69 | 1460 |
| Fire-alarm and annunciator system | F. S. Palmer | 530,648 | Dec. 11 | 1030 | 250 | 69 | 1418 |
| Fire-alarm. Automatic | W. A. Guthrie | 530,839 | Dec. 11 | 1331 | 319 | 69 | 1473 |
| Fire-alarm hut | H. Trudel | 530,808 | Dec. 11 | 1292 | 309 310 | 69 | 1464 |
| Fire-alarm system. Automatic | H. S. Tunnard and A. M. Keays | 529,000 | Nov. 13 | 873 | 236 | 69 | 825 |
| Fire-alarm-telegraph system | W. E. Decrow | 526,893 | Oct. 2 | 370 | 93 | 69 | 60 |
| Firearm. Breech-loading | D. S. Seymour | 530,966 | Dec. 18 | 1545 | 366 367 | 69 | 1527 |
| Firearms. Magazine for breech-loading | P. Manser | 527,869 | Oct. 23 | 1974 | 474 475 | 69 | 410 |
| Firearms. Shiftable firing-pin and extractor for | D. S. Seymour | 530,967 | Dec. 18 | 1552 | 367 | 69 | 1527 |
| Firearms. Shiftable nose on hammer and automatic extractor for | D. S. Seymour | 530,968 | Dec. 18 | 1554 | 368 | 69 | 1527 |
| Fire basket or grate | J. Zipp | 530,571 | Dec. 11 | 894 | 226 | 69 | 1394 |
| Fire-engine and pump | C. Ponfé and C. Lock | 528,563 | Nov. 6 | 62 | 16, 17 | 69 | 658 |
| Fire-engine lighter | C. W. Enos | 529,024 | Nov. 13 | 912 | 216 | 69 | 832 |
| Fire-engines. Electric igniting apparatus for | W. C. Matthias and W. Hartman | 526,723 | Oct. 2 | 89 | 22 | 69 | 19 |
| Fire-escape | C. Bartholomew | 528,284 | Oct. 30 | 2724 | 658 | 69 | 562 |
| Fire-escape | E. I. Blount | 526,679 | Oct. 2 | 15 | 4 | 69 | 5 |
| Fire-escape | B. Fox | 527,487 | Oct. 16 | 1335 | 325 | 69 | 278 |
| Fire-escape | V. Leber | 527,529 | Oct. 16 | 1407 | 342 | 69 | 290 |
| Fire-escape | E. Rank | 529,462 | Nov. 20 | 1705 | 407 | 69 | 996 |
| Fire-escape | S. H. Roper | 531,567 | Dec. 25 | 2628 | 629 | 69 | 1744 |
| Fire-escape | W. D. Rumsey | 531,007 | Dec. 18 | 1625 | 385 | 69 | 1541 |
| Fire-escape | G. L. Silliman | 530,860 | Dec. 11 | 1364 | 326 | 69 | 1479 |
| Fire-escape | W. D. Thackston | 530,863 | Dec. 11 | 1369 | 327 | 69 | 1480 |
| Fire-escape. Automatic | I. Mills and J. Youngson | 527,180 | Oct. 9 | 819 | 199 | 69 | 167 |
| Fire-extinguisher | C. R. Macomber | 527,120 | Oct. 9 | 725 | 178 | 69 | 149 |
| Fire-extinguisher | W. H. Moore and J. Gardiner | 530,440 | Dec. 4 | 628 | 156 | 69 | 1330 |
| Fire-extinguisher | M. Wielandt | 530,672 | Dec. 11 | 1068 | 259 | 69 | 1424 |
| Fire-extinguisher. Automatic | E. W. Storer | 531,228 | Dec. 18 | 2029 | 483 | 69 | 1614 |
| Fire-extinguisher. Chemical | M. L. Bosworth | 527,036 | Oct. 2 | 597 | 144 | 69 | 112 |
| Fire-extinguishers. Sprinkler head for automatic | G. E. Hibbard | 531,120 | Dec. 18 | 1824 | 433 | 69 | 1577 |
| Fire-extinguishers. Valve for automatic | G. E. Hibbard | 531,119 | Dec 18 | 1820 | 432 433 | 69 | 1576 |
| Fire-extinguishing apparatus | A. L. Gaiser | 530,834 | Dec. 11 | 1323 | 318 | 69 | 1472 |
| Fire-extinguishing apparatus | H. D. Kramer | 530,431 | Dec. 4 | 613 | 153 | 69 | 1327 |
| Fire-extinguishing apparatus | C. E. Manning | 530,191 | Dec. 4 | 201 | 50 | 69 | 1251 |
| Fire-extinguishing apparatus | R. Tranquilli | 529,976 | Nov. 27 | 2570 | 619 | 69 | 1164 |
| Fire-extinguishing apparatus. Household | D. L. Keeler | 531,591 | Dec. 25 | 2667 | 640 | 69 | 1752 |



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|---|---|---|---|---|---|---|---|
| Fire-extinguishing substances with water. Apparatus for automatically mixing | G. Müller | 528,441 | Oct. 30 | 2929 | 722 | 69 | 608 |
| Fire-hose to ladders. Apparatus for fastening | E. F. Richardson | 530,656 | Dec. 11 | 1043 | 254 | 69 | 1420 |
| Fire-kindler | F. R. Pearson | 530,716 | Dec. 11 | 1135 | 275 | 69 | 1436 |
| Fire-lighter. Automatic | A. J. Krebbiel and G. A. Hege | 527,698 | Oct. 16 | 1682 | 405 | 69 | 340 |
| Fireplace and grate | E. Scanlan, F. W. Keifel, Jr., and J. Zipp. | 530,627 | Dec. 11 | 983 | 241 242 | 69 | 1411 |
| Fireplace and grate. Combined | E. Scanlan and J. Zipp | 528,610 | Nov. 6 | 150 | 37 | 69 | 674 |
| Fireplace and ventilator. Combined | J. W. Tatem | 529,972 | Nov. 27 | 2566 | 618 | 69 | 1163 |
| Fireproof furring, partition, or wall | B. E. J. Ellis | 528,931 | Nov. 13 | 761 | 179 | 69 | 806 |
| Fish-hooks. Minnow-holder for | F. Stapp | 531,140 | Dec. 18 | 1860 | 441 | 69 | 1584 |
| Fish-ladder | J. A. Richardson | 530,655 | Dec. 11 | 1042 | 254 | 69 | 1419 |
| Fish or crab net | M. E. Becker and R. Lind | 530,156 | Dec. 4 | 133 | 35 | 69 | 1239 |
| Fish-rod reel | G. H. Newell | 527,713 | Oct. 16 | 1697 | 409 | 69 | 343 |
| Fish-spear | H. D. Deshler | 528,845 | Nov. 6 | 633 | 150 | 69 | 762 |
| Fish-stringing device | A. H. Sippy | 529,758 | Nov. 27 | 2195 | 523 | 69 | 1094 |
| Fish-trap | R. J. Hodge | 527,606 | Oct. 16 | 1528 | 351 | 69 | 311 |
| Fish-trap | P. H. Loud, Jr | 527,435 | Oct. 16 | 1247 | 306 307 | 69 | 259 |
| Fish-trap | W. M. McKenzie | 530,444 | Dec. 4 | 632 | 157 158 | 69 | 1331 |
| Fish-trap | B. Wood | 528,839 | Nov. 6 | 587 | 139 | 69 | 853 |
| Fishing-line sinker | C. W. Black and B. J. Chapman | 531,090 | Dec. 18 | 1769 | 432 | 69 | 1567 |
| Fishing-net | G. Trouvé | 528,350 | Oct. 30 | 2828 | 684 | 69 | 580 |
| Fishing-reel | P. J. Mabye | 529,658 | Nov. 20 | 2030 | 487 | 69 | 1055 |
| Fishing-tackle fastening | M. B. Allen | 527,259 | Oct. 9 | 952 | 231 | 69 | 192 |
| Flame-focusing apparatus | C. H. Land | 530,696 | Dec. 11 | 1107 | 268 | 69 | 1431 |
| Flanger and track-clearer. Rotary | J. S. Mathews and A. T. Doyle | 527,756 | Oct. 16 | 1775 | 427 | 69 | 357 |
| Flanging-machine | F. A. Kirby and J. Henning | 526,714 | Oct. 2 | 75 | 19, 20 | 69 | 16 |
| Flash-light compound | A. Hensley | 528,515 | Oct. 30 | 3117 | ..... | 69 | 632 |
| Flash-plates to ventilating-pipes and different-pitched roofs. Device for adjusting | B. B. Bignall | 530,574 | Dec. 11 | 897 | 221 | 69 | 1395 |
| Fleshing-machine | C. J. Mayer | 526,724 | Oct. 2 | 90 | 22, 23 | 69 | 19 |
| Flexible-tired wheel | S. Elliott | 527,782 | Oct. 23 | 1823 | 439 | 69 | 363 |
| Floor | R. Knights | 527,430 | Oct. 16 | 1242 | 305 | 69 | 258 |
| Floor | D. McDonald | 530,959 | Dec. 18 | 1534 | 303 | 69 | 1525 |
| Floor and ceiling. Fireproof | C. A. Balph and E. P. S. Wright | 527,042 | Oct. 9 | 610 | 148 | 69 | 129 |
| Floor, ceiling, &c. Fireproof | T. L. Banks | 529,153 | Nov. 13 | 1129 | 273 | 69 | 872 |
| Floor-clamp | M. Schlatter | 528,033 | Oct. 23 | 2284 | 551 | 69 | 466 |
| Floor construction | P. M. Bruner | 530,744 | Dec. 11 | 1184 | 288 | 69 | 1445 |
| Floor. Fireproof | O. W. Norcross | 526,731 | Oct. 2 | 100 | 25 | 69 | 21 |
| Floor. Fireproof | O. W. Norcross | 531,210 | Dec. 18 | 1993 | 473 | 69 | 1608 |
| Floor-set | H. A. Bates | 527,474 | Oct. 16 | 1320 | 321 | 69 | 275 |
| Floor-set | N. B. Marston | 529,929 | Nov. 27 | 2481 | 598 | 69 | 1148 |
| Floors and ceilings. Construction of | J. F. Golding | 529,724 | Nov. 27 | 2139 | 512 | 69 | 1085 |
| Floors. Construction of fireproof | R. Astley | 527,647 | Oct. 16 | 1597 | 386 | 69 | 325 |
| Flooring | J. G. Wilson | 529,772 | Nov. 27 | 2217 | 528 | 69 | 1098 |
| Flooring. Hanger apparatus for use in laying fireproof | C. Carlson | 527,383 | Oct. 9 | 1159 | 284 | 69 | 230 |
| Flour. Mechanism for testing and recording properties of | J. Hogarth | 529,175 | Nov. 13 | 1173 | 282 283 | 69 | 880 |
| Flower-box | A. Smith | 530,132 | Dec. 4 | 96 | 25 | 69 | 1233 |
| Flower-holder | E. E. Bailey | 527,231 | Oct. 9 | 906 | 219 | 69 | 184 |
| Flue | F. B. and E. G. Wisdom | 527,256 | Oct. 9 | 945 | 229 | 69 | 190 |
| Flue-cleaner | P. Fitzgibbons | 530,890 | Dec. 11 | 1413 | 336 | 69 | 1487 |
| Flue-cleaner | J. O. Frazier | 530,832 | Dec. 11 | 1320 | 317 | 69 | 1471 |
| Flue. Ventilating | W. Jess | 528,132 | Oct. 23 | 2459 | 595 | 69 | 498 |
| Fluid. Apparatus for intensifying the pressure of compressed | F. Lange | 530,929 | Dec. 4 | 272 | 67 | 69 | 1265 |
| Fluid-pressure engine | C. P. Higgins | 527,981 | Oct. 23 | 2191 | 527 528 | 69 | 450 |
| Flush-tank | G. Dixon | 528,866 | Nov. 6 | 635 | 151 | 69 | 702 |
| Flush-tank. Automatic | T. Walsh and D. Keogh | 529,512 | Nov. 20 | 1800 | 428 | 69 | 1012 |
| Flusher. Automatic siphon | W. W. Ensign | 527,599 | Oct. 16 | 1518 | 368 | 69 | 310 |
| Flushing attachment | R. C. De La Hunt | 531,516 | Dec. 25 | 2544 | 608 | 69 | 1727 |
| Fly-paper holder | J. A. O'Connor and G. H. Graham | 531,212 | Dec. 18 | 1996 | 474 | 69 | 1606 |
| Fly-trap | O. and H. Thum | 528,573 | Nov. 6 | 88 | 22 | 69 | 662 |
| Fodder-preparing apparatus | C. Sbleacow | 527,221 | Oct. 9 | 868 | 215 | 69 | 180 |
| Folding camera | A. F. Davis | 526,689 | Oct. 2 | 29 | 8 | 69 | 8 |
| Folding chair | G. D. Milburn | 530,955 | Dec. 18 | 1526 | 362 | 69 | 1523 |
| Folding chair | G. M. Bennett | 531,583 | Dec. 25 | 2651 | 635 636 | 69 | 1749 |
| Folding chair | W. N. Clark | 529,645 | Nov. 20 | 2008 | 481 | 69 | 1051 |
| Folding chair | J. Walton | 530,564 | Dec. 11 | 882 | 217 | 69 | 1362 |
| Folding joint for bars or rods | A. Hofbeck | 531,121 | Dec. 18 | 1825 | 433 | 69 | 1577 |
| Folding-machine | W. E. Curtis | 531,513 | Dec. 25 | 2537 | 607 608 | 69 | 1726 |
| Folding or extension table | W. S. Rollings | 527,077 | Oct. 9 | 656 | 159 | 69 | 138 |
| Food-screen | J. H. Rhoads and G. H. Spannagel | 526,942 | Oct. 2 | 455 | 112 | 69 | 86 |
| Foot-rest. Self-adjusting | G. J. Shults | 530,559 | Dec. 11 | 1303 | 325 | 69 | 1478 |
| Forge | H. W. Wendt | 529,845 | Nov. 27 | 2347 | 559 | 69 | 1123 |
| Forging metals, &c. Hydraulic apparatus for | A. H. Tyler and J. S. E. de Vesian | 530,313 | Dec. 4 | 416 | 104 105 | 69 | 1291 |
| Fork | M. H. Fuller | 530,892 | Dec. 11 | 1417 | 337 | 69 | 1488 |
| Form. Bust | R. A. Guillan | 528,633 | Nov. 6 | 209 | 51 | 69 | 684 |
| Foundations or underground structures. Tube for | R. L. Harris | 528,368 | Oct. 30 | 2566 | 694 | 69 | 587 |
| Fountain and sprinkler. Combined | J. R. Cadwell | 528,144 | Oct. 30 | 2481 | 601 | 69 | 517 |
| Frame: *See* Cycle-frame. Drying-frame. Eyeglass folding frame. Hay-stack frame. Mosquito-net frame. Quilting-frame. Roving-frame. | | | | | | | |
| Frame structures. Exterior finish for | T. Girouard | 529,722 | Nov. 27 | 2136 | 511 | 69 | 1084 |
| Frame structures. Machine for erecting | J. Fairbank | 530,028 | Nov. 27 | 2679 | 643 | 69 | 1187 |
| Friction-brake. Electric | B. Davis | 526,966 | Oct. 2 | 457 | 120 | 69 | 91 |

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|---|---|---|---|---|---|---|---|
| Frog. Crossing | J. C. Shipman | 527,297 | Oct. 9 | 1019 | 248 | 69 | 203 |
| Frog. Spring | N. O. Goldsmith | 528,474 | Oct. 30 | 3050 | 740 | 69 | 620 |
| Fruit-drier. Steam | J. M. Coulter | 530,506 | Dec. 11 | 765 | 187, 188 | 69 | 1372 |
| Fruit-gatherer | M. Reus | 527,622 | Oct. 16 | 1553 | 376 | 69 | 316 |
| Fruit-holder | T. Leach | 527,999 | Oct. 23 | 2203 | 539 | 69 | 457 |
| Fruit-huller | J. A. Murray | 528,257 | Oct. 30 | 2679 | 646 | 69 | 555 |
| Fruit-jar | J. H. Williams | 528,315 | Oct. 30 | 2779 | 671 | 69 | 571 |
| Fruit, &c. Machine for sorting or grading | F. N. Ellithorpe | 527,953 | Oct. 23 | 2135 | 513 | 69 | 440 |
| Fruit-pitting machine | S. Standish | 529,817 | Nov. 27 | 2304 | 548, 549 | 69 | 1115 |
| Fruit-sizer | H. C. Jones | 529,032 | Nov. 13 | 921 | 219 | 69 | 784 |
| Fruit-wrapping device | B. Leonard | 528,906 | Nov. 6 | 716 | 169 | 69 | 777 |
| Frying-pan-handle rest | C. C. Hover | 528,100 | Oct. 23 | 2403 | 580 | 69 | 488 |
| Fuel. Apparatus for manufacturing artificial | L. Konow | 529,278 | Nov. 13 | 1354 | 325 | 69 | 911 |
| Fuel. Block or briquet of | T. W. Lee | 530,698 | Dec. 11 | 1110 | 269, 270 | 69 | 1432 |
| Fulminating compound | H. Maxim | 529,334 | Nov. 13 | 1447 | ..... | 69 | 930 |
| Fumigator | T. A. Manahan | 527,699 | Oct. 16 | 1684 | 405 | 69 | 340 |
| Funnel | C. W. Beall | 529,998 | Nov. 27 | 2624 | 630 | 69 | 1176 |
| Funnel | H. G. James | 530,600 | Dec. 11 | 1097 | 266 | 69 | 1429 |
| Funnel | I. F. Root and W. O. Silvey | 531,308 | Dec. 25 | 2317 | 553 | 69 | 1684 |
| Funnel. Automatic | H. I. Kriner | 530,228 | Dec. 4 | 271 | 67 | 69 | 1264 |
| Furnace: *See* Boiler-furnace. Brick-kiln furnace. Cupola-furnace. Heating-furnace. Hot-water furnace. Japanning-furnace. Locomotive or other furnace. Open-hearth furnace. Ore-roasting furnace. Regenerative furnace. Roasting-furnace. Smoke-consuming furnace. Smoke-preventing furnace. Soldering-iron furnace. | | | | | | | |
| Furnace | E. and A. W. Bennis | 528,219 | Oct. 30 | 2611 | 629 | 69 | 540 |
| Furnace | G. F. Gallagher and T. B. Moore | 526,776 | Oct. 2 | 180 | 42 | 69 | 34 |
| Furnace | N. Johnson | 529,795 | Nov. 27 | 2253 | 537, 538 | 69 | 1105 |
| Furnace | E. A. Jones | 528,944 | Nov. 13 | 791 | 185 | 69 | 811 |
| Furnace | G. Maag | 530,489 | Dec. 4 | 734 | 179 | 69 | 1349 |
| Furnace | H. D. Smith | 531,394 | Dec. 25 | 2824 | 554 | 69 | 1685 |
| Furnace | J. P. Weis | 530,689 | Dec. 11 | 1378 | 328 | 69 | 1431 |
| Furnace doors and mouths. Combination water jacket for | S. G. Leyson | 530,539 | Dec. 11 | 834 | 206 | 69 | 1384 |
| Furnace for distilling zinc | C. Francisci | 526,808 | Oct. 2 | 228 | 55 | 69 | 43 |
| Furnace-grate | J. H. Meissner | 529,286 | Nov. 13 | 1363 | 327 | 69 | 913 |
| Furnace or stove grate | A. Jahant | 528,165 | Oct. 30 | 2510 | 607 | 69 | 523 |
| Furnace. Traveling-door | E. H. Richards | 527,453 | Oct. 16 | 1279 | 314 | 69 | 267 |
| Furnace. Traveling-grate | E. B. Coxe | 527,593 | Oct. 16 | 1509 | 367 | 69 | 308 |
| Furnace. Traveling-grate | F. H. Richards | 527,448 | Oct. 16 | 1262 | 310, 311 | 69 | 262 |
| Furnace. Traveling-grate | F. H. Richards | 527,449 | Oct. 16 | 1264 | 311, 312 | 69 | 263 |
| Furnace. Traveling-grate | F. H. Richards | 527,450 | Oct. 16 | 1268 | 312 | 69 | 263 |
| Furnace. Traveling-grate | F. H. Richards | 527,451 | Oct. 16 | 1272 | 312, 313 | 69 | 264 |
| Furnace. Traveling-grate | F. H. Richards | 527,452 | Oct. 16 | 1275 | 313 | 69 | 265 |
| Furnace. Traveling-grate | F. H. Richards | 527,454 | Oct. 16 | 1284 | 314, 315 | 69 | 266 |
| Furnace. Traveling-grate | F. H. Richards | 527,455 | Oct. 16 | 1288 | 315 | 69 | 266 |
| Furnace. Traveling-grate | F. H. Richards | 527,719 | Oct. 16 | 1708 | 412 | 69 | 345 |
| Furnace-walls. Composition for | J. Kirchmann and K. Schwinghammer. | 529,150 | Nov. 20 | 1081 | ..... | 69 | 992 |
| Furnaces. Air-induction apparatus for | J. Mills | 527,615 | Oct. 16 | 1543 | 374 | 69 | 314 |
| Furnaces. Air-moistening device for hot-air | G. W. Fridrich | 528,202 | Oct. 30 | 2576 | 623 | 69 | 534 |
| Furnaces. Grate for boiler or other | W. McClave | 529,291 | Nov. 13 | 1373 | 330, 331 | 69 | 915 |
| Furnaces. Means for promoting combustion in | J. B. Davids | 530,260 | Dec. 4 | 394 | 99 | 69 | 1287 |
| Furnaces. Method of and apparatus for extracting moisture from air for blast- | J. Gayley | 527,844 | Oct. 23 | 1923 | 463 | 69 | 401 |
| Furnaces, shafts, chimneys, &c. Construction of blast- | W. P. Ingham | 528,480 | Oct. 30 | 3063 | 742, 743 | 69 | 622 |
| Furnaces Stoker for engine | E. T. McWhorter | 530,117 | Dec. 4 | 72 | 20 | 69 | 1248 |
| Furniture | R. B. Sigafoos | 531,010 | Dec. 18 | 1629 | 386, 387 | 69 | 1542 |
| Furniture and collapsible table. Combination article of | A. W. Ellison | 528,532 | Nov. 13 | 762 | 179 | 69 | 806 |
| Furniture-base | W. P. Tracy | 527,007 | Oct. 2 | 548 | 134 | 69 | 104 |
| Furniture-leg attachment | E. Dempsey | 527,145 | Oct. 9 | 767 | 187 | 69 | 157 |
| Furniture. Revolving | O. O. Krabol and C. Bostad | 531,538 | Dec. 25 | 2579 | 617 | 69 | 1734 |
| Fuse-box | C. L. Ashley | 531,355 | Dec. 25 | 2255 | 538 | 69 | 1672 |
| Fuse-box. Electrical | J. W. Packard | 527,071 | Oct. 9 | 647 | 157 | 69 | 136 |
| Fuse-capper | G. A. Teel | 527,132 | Oct. 9 | 747 | 183 | 69 | 154 |
| Fuse for projectiles. Time | W. J. Smith | 527,250 | Oct. 9 | 937 | 227 | 69 | 189 |
| Fuse. Multiple blasting | W. J. C. Doyle | 530,025 | Nov. 27 | 2676 | 642 | 69 | 1187 |
| Fuse. Time | W. J. Smith | 527,222 | Oct. 9 | 889 | 215, 216 | 69 | 181 |
| Gage: *See* Faucet register-gage. Lock-marking gage. Rain-gage. Watchmaker's length-gage. Water-gage. | | | | | | | |
| Gage | L. O. Barrett | 530,468 | Dec. 4 | 674 | 168 | 69 | 1339 |
| Gage | T. Francis | 529,613 | Nov. 20 | 1960 | 466 | 69 | 1043 |
| Gage and square. Combined hinge | A. D. Goodell | 531,114 | Dec. 18 | 1811 | 430 | 69 | 1575 |
| Galvanic battery | M. M. Clark | 528,286 | Oct. 30 | 2728 | 659 | 69 | 563 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Galvanic battery | M. M. Hayden | 528,669 | Nov. 6 | 267 | 65 | 69 | 693 |
| Galvanic ring | D. Hattenback | 530,522 | Dec. 11 | 803 | 199 | 69 | 1378 |
| Galvanizing apparatus | G. G. McMurtry | 530,491 | Dec. 4 | 737 | 180 | 69 | 1349 |
| Game apparatus | E. C. Howell | 529,913 | Nov. 27 | 2455 | 591, 592 | 69 | 1143 |
| Game apparatus | V. Kobler-Stander | 529,868 | Nov. 27 | 2383 | 570 | 69 | 1131 |
| Game apparatus | O. Olsson | 529,802 | Nov. 27 | 2265 | 540 | 69 | 1107 |
| Game apparatus | G. S. Parker and J. P. Friend | 526,908 | Oct. 2 | 404 | 101 | 69 | 75 |
| Game apparatus | F. R. Schleininger | 526,946 | Oct. 2 | 459 | 113 | 69 | 86 |
| Game apparatus | L. Wyler | 529,228 | Nov. 13 | 1264 | 304 | 69 | 895 |
| Game apparatus. Coin-controlled | A. L. Pratt | 531,469 | Dec. 25 | 2465 | 587 | 69 | 1712 |
| Game-board | J. F. Beaman | 529,582 | Nov. 20 | 1915 | 456 | 69 | 1034 |
| Game-board support | J. Green | 527,279 | Oct. 9 | 992 | 240 | 69 | 198 |
| Game-counter | A. Folger and W. H. Winder | 529,118 | Nov. 13 | 1065 | 257 | 69 | 860 |
| Game-table for soap bubbles | E. E. McNaughton | 529,043 | Nov. 13 | 944 | 223 | 69 | 838 |
| Garbage and similar waste products. Utilizing | N. B. Powter | 530,126 | Dec. 4 | 89 | 23 | 69 | 1231 |
| Garbage. Treating | W. MacDonald | 528,002 | Oct. 23 | 2237 | ..... | 69 | 458 |
| Garbage-treating apparatus | C. A. Ball | 529,236 | Nov. 13 | 1279 | 307, 308 | 69 | 897 |
| Garden implement | C. G. Mortenson | 529,562 | Nov. 20 | 1881 | 447 | 69 | 1027 |
| Garment and knitting same. Union | W. A. O'Brien | 527,216 | Oct. 9 | 874 | 213 | 69 | 178 |
| Garment-clasp | D. Roth | 527,887 | Oct. 23 | 2013 | 483 | 69 | 416 |
| Garment-fastener | A. Picken | 529,748 | Nov. 27 | 2178 | 519 | 69 | 1091 |
| Garment-fastener | W. S. Wheatfield | 530,737 | Dec. 11 | 1173 | 285 | 69 | 1442 |
| Garment-holder | C. Peacock | 526,789 | Oct. 2 | 200 | 47 | 69 | 38 |
| Garment-hook | O. L. Mason and R. C. Cole | 531,442 | Dec. 25 | 2422 | 576 | 69 | 1705 |
| Garment-securing device | O. Van Oostrum | 529,147 | Nov. 13 | 1119 | 271 | 69 | 870 |
| Garment-stretcher | L. Mallory | 529,283 | Nov. 13 | 1360 | 326 | 69 | 912 |
| Garment supporter clasp | F. D. Harding | 531,415 | Dec. 25 | 2360 | 563 | 69 | 1692 |
| Gas and electric light fixture. Combination | G. A. Loeben | 529,451 | Nov. 20 | 1682 | 402 | 69 | 992 |
| Gas. Apparatus for the manufacture of | W. A. Allen | 531,141 | Dec. 18 | 1868 | 443, 444 | 69 | 1586 |
| Gas apparatus. Water- | O. N. Guldlin | 529,202 | Nov. 13 | 1327 | 319 | 69 | 906 |
| Gas-balance for ascertaining specific gravity of gases | M. Arndt | 527,397 | Oct. 16 | 1187 | 292 | 69 | 249 |
| Gas-burner | S. P. Essex | 529,324 | Nov. 13 | 1433 | 345 | 69 | 927 |
| Gas-burner | P. Keller | 528,483 | Nov. 6 | 660 | 158 | 69 | 767 |
| Gas-burner | C. H. Robbins | 528,446 | Oct. 30 | 2999 | 725 | 69 | 610 |
| Gas-burner | C. Whittingham | 529,003 | Nov. 13 | 878 | 207 | 69 | 826 |
| Gas-cleaner | T. S. C. Lowe | 529,625 | Nov. 20 | 1973 | 470 | 69 | 1045 |
| Gas-compressor | B. F. Silliman | 527,081 | Oct. 9 | 661 | 161 | 69 | 139 |
| Gas cut-off. Automatic | L. Johnson and L. Fridlund | 531,123 | Dec. 18 | 1828 | 434 | 69 | 1578 |
| Gas-engine | H. T. Dawson | 530,508 | Dec. 11 | 780 | 191, 192, 193 | 69 | 1374 |
| Gas-engine | C. F. Hirsch | 526,837 | Oct. 2 | 271 | 65, 66 | 69 | 51 |
| Gas-engine | F. Hirsch | 530,523 | Dec. 11 | 803 | 199, 200 | 69 | 1379 |
| Gas-engine | F. S. Mead | 528,006 | Oct. 23 | 2241 | 541 | 69 | 458 |
| Gas-engine | H. B. Migliavacca | 528,105 | Oct. 23 | 2409 | 583 | 69 | 489 |
| Gas-engine | J. and W. Paterson | 528,489 | Oct. 30 | 3076 | 746 | 69 | 625 |
| Gas-engine | T. H. and J. T. H. Paul | 530,237 | Dec. 4 | 289 | 71 | 69 | 1268 |
| Gas-engine | H. Voll | 527,635 | Oct. 16 | 1575 | 380 | 69 | 321 |
| Gas-generator | J. L. Hastings | 530,944 | Dec. 18 | 1509 | 358 | 69 | 1521 |
| Gas-generators. Oil-feeding apparatus for | O. N. Guldlin | 528,872 | Nov. 6 | 644 | 154 | 69 | 764 |
| Gas-holder | H. Müller | 530,284 | Dec. 4 | 351 | 91 | 69 | 1283 |
| Gas-lighter. Electric | C. G. Savage | 529,313 | Nov. 13 | 1421 | 342 | 69 | 925 |
| Gas lighting and extinguishing apparatus. Time | A. B. Shaw | 528,697 | Nov. 6 | 315 | 76, 77 | 69 | 703 |
| Gas-lighting. Burner for incandescent | M. Horwitz | 530,775 | Dec. 11 | 1238 | 300 | 69 | 1456 |
| Gas-mains. Siphon test-box for | A. Bouvier | 526,852 | Oct. 2 | 208 | 72 | 69 | 57 |
| Gas. Manufacturing | M. Lorois | 529,453 | Nov. 20 | 1650 | 404 | 69 | 994 |
| Gas-motor | M. Lorois | 529,452 | Nov. 20 | 1683 | 402, 403 | 69 | 993 |
| Gas. Process of and apparatus for making | W. Heckert and W. P. Rowland | 527,789 | Oct. 23 | 1835 | 441 | 69 | 386 |
| Gas-retort | T. Hennessy | 531,530 | Dec. 25 | 2565 | 614 | 69 | 1731 |
| Gas. Rotary apparatus for generation of chlorin | J. W. Sutton | 527,899 | Oct. 23 | 2029 | 488 | 69 | 420 |
| Gas-wells. Method of and apparatus for removing water or oil from bottoms of | R. H. Staley | 528,449 | Oct. 30 | 3005 | 726 | 69 | 611 |
| Gases. Closing receivers charged with compressed or liquefied | E. Stern | 528,820 | Nov. 6 | 543 | 130 | 69 | 745 |
| Gases. Process of and apparatus for destroying noxious | R. H. Doud | 528,718 | Nov. 6 | 339 | 82 | 69 | 708 |
| Gases. Recovering iodids, chlorids, or other salts from blast-furnace | P. Gredt | 529,070 | Nov. 13 | 991 | 236 | 69 | 846 |
| Gate: *See* Bridge-gate. End-gate. Railway-gate. Railway-crossing gate. Sliding gate. Turnstile-gate. | | | | | | | |
| Gate | W. F. Gatewood | 526,701 | Oct. 2 | 54 | 14 | 69 | 13 |
| Gate | J. M. Hefner | 528,876 | Nov. 6 | 650 | 155 | 69 | 765 |
| Gate | J. M. Hurst | 527,693 | Oct. 16 | 1674 | 403 | 69 | 339 |
| Gate | J. E. Knapp | 531,378 | Dec. 25 | 2300 | 548, 549 | 69 | 1680 |
| Gate | A. W. Maclarren | 528,174 | Oct. 30 | 2527 | 612, 613 | 69 | 526 |
| Gate | J. W. Shanbeck | 531,223 | Dec. 18 | 2020 | 481 | 69 | 1613 |
| Gate | J. W. Smith | 531,344 | Dec. 25 | 2237 | 534 | 69 | 1668 |
| Gate | S. J. Smith | 529,086 | Nov. 13 | 1021 | 246 | 69 | 851 |
| Gate | F. H. Sturm | 530,629 | Dec. 11 | 987 | 242 | 69 | 1411 |
| Gear and governor. Reversing | T. T. Waggoner | 529,981 | Nov. 27 | 2579 | 621, 622 | 69 | 1166 |
| Gear-case | W. Biddles | 531,254 | Dec. 18 | 2073 | 496 | 69 | 1622 |
| Gear-cutter | C. M. Conradson | 527,410 | Oct. 16 | 1206 | 295, 296 | 69 | 252 |
| Gear-cutting machine | T. O. Perry | 528,025 | Oct. 23 | 2270 | 548 | 69 | 464 |

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| Invention. | Name. | No. | Date. | Monthly volume. Specs. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Gear. Driving | C. Hamann | 527,552 | Oct. 16 | 1442 | 351 | 69 | 296 |
| Gear. Machine | H. P. Bradford and J. A. Smith | 528,653 | Nov. 6 | 239 | 59 | 69 | 689 |
| Gear. Reversing | G. W. King | 528,780 | Nov. 6 | 456 | 112 | 69 | 729 |
| Gear-wheel connection. Safety | H. K. King | 531,046 | Dec. 18 | 1690 | 401 | 69 | 1553 |
| Gearing | J. M. Maret | 528,641 | Nov. 6 | 220 | 54, 55 | 69 | 666 |
| Gearing. Adjustable | W. Schnurr | 526,750 | Oct. 2 | 135 | 32 | 69 | 27 |
| Gearing. Chain | H. Briggs | 528,847 | Nov. 6 | 598 | 142 | 69 | 755 |
| Gearing. Grain-drill | R. Galloway | 529,375 | Nov. 20 | 1531 | 366 | 69 | 966 |
| Gearing. Multiple | F. C. Robinson | 531,220 | Dec. 18 | 2013 | 477 | 69 | 1611 |
| Generator: *See* Current-generator. Steam-generator. Gas-generator. Thermo-electric generator. Oxygen-generator. | | | | | | | |
| Generators. Device for protecting separately-excited | B. G. Lamme | 527,066 | Oct. 9 | 611 | 155 | 69 | 135 |
| Glass and apparatus therefor. Manufacture of wire | J. H. Lubbers | 527,754 | Oct. 16 | 1770 | 426, 427 | 69 | 356 |
| Glass. Apparatus for producing flat objects of | P. Sievert | 528,340 | Oct. 30 | 2649 | 638, 639 | 69 | 548 |
| Glass. Apparatus for the manufacture of ornamental sheets or plates of | J. W. Bonta | 529,157 | Nov. 13 | 1136 | 275 | 69 | 873 |
| Glass articles. Manufacture of hollow | J. H. Croskey and J. Locke | 528,081 | Oct. 23 | 2367 | 571, 572 | 69 | 482 |
| Glass-blowing mold | A. G. Neville | 529,665 | Nov. 20 | 2041 | 489 | 69 | 1057 |
| Glass-house pot or tank | W. H. Barr | 528,710 | Nov. 6 | 328 | 80 | 69 | 706 |
| Glass. Leer or annealing-oven for sheet or plate | J. W. Bonta | 529,316 | Nov. 13 | 1316 | 342, 343 | 69 | 925 |
| Glass machine. Wire | E. M. Ryon | 531,570 | Dec. 25 | 2631 | 630 | 69 | 1745 |
| Glass-mold | P. M. Momper and O. Sigwart | 527,801 | Oct. 23 | 1853 | 445 | 69 | 389 |
| Glass-molding machine | R. T. Beckett | 529,694 | Nov. 27 | 2091 | 501 | 69 | 1077 |
| Glass-press | J. H. Croskey and J. Locke | 528,080 | Oct. 23 | 2365 | 571 | 69 | 481 |
| Glass. Producing flat objects of | P. Sievert | 530,289 | Dec. 4 | 379 | 93 | 69 | 1284 |
| Glass receptacle | C. T. Green | 528,611 | Nov. 6 | 186 | 45 | 69 | 680 |
| Glass tablets. Apparatus for manufacturing embossed | J. W. Bonta | 527,476 | Oct. 16 | 1321 | 322 | 69 | 276 |
| Glass with aluminium. Decorating | C. Margot | 527,210 | Oct. 9 | 867 | ..... | 69 | 177 |
| Glassware. Apparatus for cutting | J. Lobet | 530,189 | Dec. 4 | 198 | 49 | 69 | 1251 |
| Glassware. Hollow | H. Guinard | 529,377 | Nov. 20 | 1535 | 367 | 69 | 966 |
| Glassware. Machine for finishing | W. H. Barr | 530,920 | Dec. 11 | 1301 | 314 | 69 | 1468 |
| Glassware. Method of and apparatus for pressing | J. H. Croskey and J. Locke | 530,225 | Dec. 11 | 1309 | 316 | 69 | 1469 |
| Glassware. Mold for the manufacture of | C. E. Blue | 531,069 | Dec. 25 | 2609 | 647 | 69 | 1758 |
| Glazier's tool | G. A. Rogers | 529,957 | Nov. 27 | 2534 | 611 | 69 | 1157 |
| Globe. Geographical | I. and M. A. Hodgson | 531,035 | Dec. 18 | 1668 | 396 | 69 | 1549 |
| Glove | F. P. Merrill | 527,704 | Oct. 16 | 1690 | 407 | 69 | 342 |
| Glove. Catcher's | R. Raymond | 531,386 | Dec. 25 | 2715 | 552 | 69 | 1683 |
| Glove or other fastenings. Device for attaching members of | E. L. Rogers | 528,343 | Oct. 30 | 2620 | 681 | 69 | 578 |
| Gold and mercury and making same. Solution of | W. S. Richardson, J. B. and P. B. Chase. | 530,057 | Dec. 11 | 1014 | 254, 255 | 69 | 1420 |
| Gold-extracting apparatus | I. Semenoff | 528,611 | Nov. 6 | 151 | ..... | 69 | 674 |
| Gold from its ore. Extracting | J. B. Hannay | 529,263 | Nov. 13 | 1330 | 319 | 69 | 907 |
| Gold or silver bearing ores. Cyanid and chlorination process for treating | L. Pelatan and F. Clerici | 528,023 | Oct. 23 | 2296 | 547 | 69 | 463 |
| Gold separator and extractor | P. Argall | 527,473 | Oct. 16 | 1317 | 321 | 69 | 275 |
| Gong | J. B. Betteger and J. Schwartz | 530,677 | Dec. 11 | 1077 | 262 | 69 | 1425 |
| Gore-cutting machine | J. Redding | 528,112 | Oct. 23 | 2419 | 586 | 69 | 491 |
| Governor | A. G. Brewer | 527,588 | Oct. 16 | 1499 | 365 | 69 | 306 |
| Governor | R. C. Carpenter | 526,856 | Oct. 2 | 307 | 75 | 69 | 58 |
| Governor | A. D. Moore | 530,704 | Dec. 11 | 1118 | 271, 272 | 69 | 1433 |
| Governor | F. M. Rites | 527,720 | Oct. 16 | 1712 | 412 | 69 | 346 |
| Governor. Centrifugal speed | C. R. McGahey | 527,443 | Oct. 16 | 1257 | 309 | 69 | 261 |
| Governor. Engine | C. E. R. Martin | 528,276 | Oct. 30 | 2710 | 654 | 69 | 559 |
| Governor. Fluid-pressure | L. L. Cutler | 529,111 | Nov. 13 | 1056 | 254 | 69 | 858 |
| Governor for engines | A. H. Fisher | 531,107 | Dec. 18 | 1798 | 428 | 69 | 1572 |
| Governor motor. Engine | C. E. R. Martin | 528,274 | Oct. 30 | 2705 | 652, 653 | 69 | 558 |
| Governor. Steam-engine | L. A. Le Mieux | 530,538 | Dec. 11 | 832 | 205, 206 | 69 | 1384 |
| Governor. Steam-engine | H. C. Nichols | 527,503 | Oct. 16 | 1360 | 331, 332 | 69 | 282 |
| Governor. Steam-engine | W. G. Shepherd | 529,507 | Nov. 20 | 1785 | 425 | 69 | 1009 |
| Governor. Steam-engine | H. G. Smith | 530,970 | Dec. 18 | 1558 | 369 | 69 | 1528 |
| Grain-binder | E. E. Davis | 529,248 | Nov. 13 | 1300 | 313 | 69 | 901 |
| Grain-binder | J. S. Davis | 530,886 | Dec. 11 | 1407 | 335 | 69 | 1466 |
| Grain-binder | G. G. Hunt | 527,497 | Oct. 16 | 1347 | 328, 329 | 69 | 280 |
| Grain-binder knotter mechanism | M. F. Fairbank and J. R. Meach | 530,495 | Dec. 4 | 743 | 182, 183 | 69 | 1350 |
| Grain-conveyer | F. E. Duckham | 528,418 | Oct. 30 | 2949 | 714 | 69 | 601 |
| Grain-conveyer. Pneumatic | F. E. Duckham | 528,419 | Oct. 30 | 2950 | 714 | 69 | 602 |
| Grain-drill | S. J. Conkwright | 527,364 | Oct. 9 | 1128 | 275, 276 | 69 | 224 |
| Grain-drill | R. Galloway | 530,585 | Dec. 11 | 917 | 225 | 69 | 1392 |
| Grain-drill heads. Changing gear for | T. A. Hill | 529,266 | Nov. 13 | 1336 | 320 | 69 | 908 |
| Grain-elevator | A. J. Hendricks and S. Forsythe | 530,267 | Dec. 4 | 336 | 82 | 69 | 1277 |
| Grain-elevator | F. Kaucher | 528,230 | Oct. 30 | 2630 | 634, 635 | 69 | 544 |
| Grain heater or steamer | J. P. McCallister | 527,442 | Oct. 16 | 1256 | 309 | 69 | 261 |
| Grain. Pneumatic apparatus for conveying | F. E. Duckham | 530,820 | Dec. 11 | 1314 | 316 | 69 | 1470 |
| Grain-scouring machine | R. W. Welch | 528,405 | Oct. 30 | 2931 | 708, 709 | 69 | 598 |
| Grain-separator | C. D. Hoselton | 529,911 | Nov. 27 | 2452 | 590, 591 | 69 | 1143 |
| Grain-separator | P. R. Lanier | 530,280 | Dec. 4 | 364 | 89, 90 | 69 | 1282 |



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|---|---|---|---|---|---|---|---|
| Grain-tempering machine | G. T. Thompson | 528,013 | Oct. 23 | 2299 | 554 | 69 | 469 |
| Graphophone | T. H. Macdonald | 527,755 | Oct. 16 | 1773 | 427 | 69 | 357 |
| Grass-hook | W. Sellers | 529,685 | Nov. 20 | 2071 | 496 | 69 | 1063 |
| Grate | L. R. Andrews | 526,957 | Oct. 2 | 470 | 116, 117 | 69 | 59 |
| Grate | A. Bryce | 529,242 | Nov. 13 | 1288 | 309 | 69 | 830 |
| Grate | H. R. Luther | 529,503 | Nov. 20 | 1779 | 424 | 69 | 1008 |
| Grate | H. R. Luther | 529,504 | Nov. 20 | 1780 | 424 | 69 | 1008 |
| Grate. Dumping | E. Fales | 529,096 | Nov. 13 | 983 | 234 | 69 | 845 |
| Grate. Fire | W. H. Drake and J. C. Green | 527,778 | Oct. 23 | 1813 | 437 | 69 | 382 |
| Grate. Gas | G. Keller | 526,973 | Oct. 2 | 497 | 122 | 69 | 93 |
| Grate. Water-heating fire | J. H. Phillips | 528,388 | Oct. 30 | 2898 | 702 | 69 | 592 |
| Grater for culinary purposes | J. Davidson | 528,416 | Oct. 30 | 2947 | 713 | 69 | 601 |
| Grater. Nutmeg | W. A. Dunlap | 527,837 | Oct. 23 | 1907 | 459 | 69 | 398 |
| Grease-trap | J. Barrett | 527,580 | Oct. 16 | 1488 | 362 | 69 | 305 |
| Grease-trap | M. J. Gibbons | 530,084 | Dec. 11 | 1087 | 264 | 69 | 1427 |
| Grill-wires. Machine for twisting and punching | L. Kirchenbauer | 527,428 | Oct. 16 | 1233 | 303 | 69 | 257 |
| Grille | B. E. J. Eils | 529,719 | Nov. 27 | 2132 | 510 | 69 | 1084 |
| Grinding and polishing machine | M. H. Reynolds | 529,048 | Nov. 13 | 953 | 226 | 69 | 839 |
| Grinding and polishing wheel | F. E. Cudell | 527,196 | Oct. 9 | 844 | 205 | 69 | 172 |
| Grinding and pulverizing cylinder | R. F. Abbé | 529,096 | Nov. 13 | 1037 | 250 | 69 | 854 |
| Grinding device for rotary cutters | J. Miller | 531,547 | Dec. 25 | 2594 | 621 | 69 | 1737 |
| Grinding lawn-mower knives. Device for | W. J. Walker | 526,824 | Oct. 2 | 252 | 62 | 69 | 48 |
| Grinding-machine | C. H. Trask | 530,292 | Dec. 4 | 384 | 94, 95, 96 | 69 | 1285 |
| Grinding mechanism | W. H. Bill | 527,748 | Oct. 16 | 1760 | 421 | 69 | 354 |
| Grinding-mill | H. B. Hebert | 530,945 | Dec. 18 | 1513 | 358, 359 | 69 | 1521 |
| Grinding-mill | C. C. Howe | 527,986 | Oct. 23 | 2206 | 531 | 69 | 452 |
| Grinding-mill | T. L. and T. J. Sturtevant | 529,761 | Nov. 27 | 2200 | 524 | 69 | 1095 |
| Grip-wheel | A. J. B. Berger | 530,383 | Dec. 4 | 545 | 135 | 69 | 1315 |
| Grooves. Method of and implement for forming | J. G. Wilson | 531,243 | Dec. 18 | 2055 | 490, 491 | 69 | 1618 |
| Guard: *See* Car life-guard. Mustache-guard. Car safety-guard. Pin-guard. Elevator-guard. Placket-guard. Keyhole-guard. Snow-guard. Lathe-guard. Vehicle mud-guard. Loom-shuttle guard. | | | | | | | |
| Gum and making same | J. Hanson, P. C. D. Castle, and J. H. Morrison. | 531,377 | Dec. 25 | 2298 | ..... | 69 | 1680 |
| Gun-barrels to stocks. Detachably securing | J. M. Marlin | 529,455 | Nov. 20 | 1694 | 405 | 69 | 994 |
| Gun. Bolt | H. Leineweber | 527,369 | Oct. 9 | 1137 | 277 | 69 | 226 |
| Gun. Breakdown | A. Balensiefer | 530,467 | Dec. 4 | 673 | 167 | 69 | 1338 |
| Gun. Breakdown | M. S. Barker | 530,381 | Dec. 4 | 549 | 134 | 69 | 1313 |
| Gun. Breakdown | R. C. Fay | 528,506 | Oct. 30 | 3103 | 753 | 69 | 630 |
| Gun-frame | R. C. Fay | 528,507 | Oct. 30 | 3105 | 753 | 69 | 630 |
| Gun. Igniting spring | C. F. Wiebachand A. A. Koellhoffer. | 527,916 | Oct. 23 | 2060 | 491 | 69 | 426 |
| Gun. Machine | F. Ebeling | 531,168 | Dec. 18 | 1917 | 456, 457 | 69 | 1594 |
| Gun. Magazine | L. L. Hepburn | 528,905 | Nov. 6 | 712 | 168 | 69 | 776 |
| Gun. Magazine | M. C. Lisle | 529,037 | Nov. 13 | 929 | 220, 221 | 69 | 835 |
| Gun. Magazine | W. H. Ostrander | 531,132 | Dec. 18 | 1815 | 430, 431 | 69 | 1582 |
| Gun. Self-acting breech-loading | A. G. Dougherty | 529,521 | Nov. 20 | 1816 | 432 | 69 | 1015 |
| Gun-sight. Illuminated | E. von Skoda | 529,424 | Nov. 20 | 1627 | 387 | 69 | 982 |
| Guns. Apparatus for supplying cartridges to machine | J. A. Norton and W. Richards | 527,342 | Oct. 9 | 1088 | 263, 264 | 69 | 216 |
| Guns. Ejecting and cocking mechanism for breakdown | G. A. Horne | 528,228 | Oct. 30 | 2626 | 634 | 69 | 543 |
| Guns. Ejector for breakdown | R. C. Fay and G. E. Humphreys | 528,508 | Oct. 30 | 3106 | 753, 754 | 69 | 631 |
| Guns. Shell-ejector for breakdown | W. C. Davenport | 526,690 | Oct. 2 | 33 | 9 | 69 | 9 |
| Guns. Trigger mechanism for | F. D. Granger. (Reissue) | 11,458 | Dec. 11 | 1460 | 346 | 69 | 1436 |
| Gutter-forming machine | F. A. Juergens | 530,275 | Dec. 4 | 348 | 86, 87 | 69 | 1279 |
| Hair-brushing machine. Rotary | I. M. Tintoré | 528,044 | Oct. 23 | 2300 | 534, 535 | 69 | 470 |
| Hair-curler | T. C. Moore | 530,787 | Dec. 11 | 1256 | 303 | 69 | 1459 |
| Halter | H. Casey | 528,706 | Nov. 6 | 419 | 101 | 69 | 722 |
| Hame | H. C. Brookens and L. Behringer | 528,919 | Nov. 13 | 746 | 175 | 69 | 803 |
| Hame | J. A. Meany and C. H. Schmitzler | 530,785 | Dec. 11 | 1254 | 303 | 69 | 1459 |
| Hame | C. F. Mock | 531,224 | Dec. 25 | 2202 | 527 | 69 | 1662 |
| Hame-coupling | A. T. Doerr | 529,647 | Nov. 20 | 2010 | 481 | 69 | 1052 |
| Hame-fastener | B. O. Smith | 527,131 | Oct. 9 | 746 | 183 | 69 | 153 |
| Hammer and nail-puller. Combined | J. H. Hebblethwaite | 529,384 | Nov. 20 | 1549 | 370 | 69 | 969 |
| Hammer. Magazine tack | F. R. Bischoff | 529,237 | Nov. 13 | 1282 | 308 | 69 | 898 |
| Hammer. Power | J. B. Sweeney and R. W. Laird | 529,634 | Nov. 20 | 1987 | 474 | 69 | 1048 |
| Hammer. Riveting | R. S. Peabody | 528,558 | Nov. 6 | 56 | 15 | 69 | 656 |
| Handle: *See* Brush-handle. Controller-handle. Casket-handle. Tool-handle. Coffee or tea pot handle. | | | | | | | |
| Hanger: *See* Door-hanger. Pipe-hanger. Lamp-hanger. Shafting-hanger. Mail-bag hanger. Shelf-hanger. Picture-hanger. Trolley-wire hanger. | | | | | | | |
| Hanger | L. Lane | 529,331 | Nov. 13 | 1444 | 348 | 69 | 930 |
| Harness | J. W. Anderson and R. S. Twiss | 528,708 | Nov. 6 | 327 | 80 | 69 | 706 |
| Harness | W. A. Fleming | 531,172 | Dec. 18 | 1925 | 458 | 69 | 1596 |
| Harness | R. G. Kennedy | 527,994 | Oct. 23 | 2223 | 536 | 69 | 455 |

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|---|---|---|---|---|---|---|---|
| Harness | R. Ortega | 527,344 | Oct. 9 | 1092 | 265 | 69 | 217 |
| Harness | J. Paszkowski | 530,123 | Dec. 4 | 84 | 22, 23 | 69 | 1231 |
| Harness | W. H. Sanborn | 530,461 | Dec. 4 | 660 | 164 | 69 | 1336 |
| Harness | J. A. Thompson | 527,904 | Oct. 23 | 2039 | 489 | 69 | 422 |
| Harness | E. F. Wilt | 527,189 | Oct. 9 | 832 | 202, 203 | 69 | 170 |
| Harness attachment | G. Beck | 529,014 | Nov. 13 | 899 | 212 | 69 | 889 |
| Harness attachment | B. S. Lilly | 527,433 | Oct. 16 | 1245 | 306 | 69 | 259 |
| Harness breast-strap | C. H. Russell | 531,569 | Dec. 25 | 2630 | 630 | 69 | 1745 |
| Harness. Track | J. L. Whipple | 530,871 | Dec. 11 | 1381 | 329 | 69 | 1482 |
| Harrow | I. T. Evans | 531,308 | Dec. 25 | 2174 | 520 | 69 | 1656 |
| Harrow | P. J. Heller | 527,978 | Oct. 23 | 2185 | 526 | 69 | 499 |
| Harrow | W. A. O. Jones | 527,993 | Oct. 23 | 2221 | 536 | 69 | 455 |
| Harrow | W. W. Michaux | 526,933 | Oct. 2 | 445 | 110 | 69 | 83 |
| Harrow | F. Nishwitz | 527,875 | Oct. 23 | 1985 | 477 | 69 | 411 |
| Harrow | J. L. Scudder | 531,009 | Dec. 18 | 1627 | 386 | 69 | 1541 |
| Harrow | M. J. Todd | 527,352 | Oct. 9 | 1106 | 270 | 69 | 219 |
| Harrow and cultivator. Combined sulky | T. J. Hubbell | 527,174 | Oct. 9 | 809 | 197 | 69 | 165 |
| Harrow. Disk | J. Macphail | 528,172 | Oct. 30 | 2521 | 610, 611 | 69 | 525 |
| Harrow. Disk | J. Macphail | 528,173 | Oct. 30 | 2524 | 611, 612 | 69 | 526 |
| Harrow. Disk | G. W. Packer | 530,054 | Nov. 27 | 2736 | 656 | 69 | 1197 |
| Harrow-disk sharpener | J. A. Cass | 528,922 | Nov. 13 | 749 | 176 | 69 | 803 |
| Harvester | G. W. Ingersoll | 531,535 | Dec. 25 | 2571 | 615 | 69 | 1732 |
| Harvester | E. Pridmore | 529,954 | Nov. 27 | 2527 | 609 | 69 | 1456 |
| Harvester attachment. Self-binding | W. A. Wilson | 530,376 | Dec. 4 | 531 | 132 | 69 | 1312 |
| Harvester. Beet-root or potato | L. F. Wanthier | 528,869 | Nov. 6 | 640 | 152 | 69 | 763 |
| Harvester. Corn | H. M. Cox | 531,512 | Dec. 25 | 2536 | 607 | 69 | 1726 |
| Harvester. Corn | A. E. Ellinwood | 530,222 | Dec. 4 | 258 | 63, 64 | 69 | 1262 |
| Harvester. Corn | J. H. Newell | 530,493 | Dec. 4 | 738 | 181, 182 | 69 | 1349 |
| Harvester. Corn | C. Scheetz | 530,352 | Dec. 4 | 490 | 121 | 69 | 1304 |
| Harvester. Corn | W. R. Steiner | 526,755 | Oct. 2 | 145 | 34, 35, 36 | 69 | 98 |
| Harvester. Corn | G. T. Van Buren and T. C. Davis | 529,431 | Nov. 20 | 1643 | 391, 392 | 69 | 985 |
| Harvester. Cotton | G. N. Todd | 529,430 | Nov. 20 | 1639 | 390, 391 | 69 | 984 |
| Harvester cutter-bar | A. J. Woodin | 526,827 | Oct. 2 | 259 | 63 | 69 | 49 |
| Harvester-elevator | M. Kane. (Reissue) | 11,447 | Oct. 16 | 1781 | 429 | 69 | 359 |
| Harvester-elevator | O. O. Storle | 528,745 | Nov. 6 | 385 | 92, 93 | 69 | 716 |
| Harvester. Grain-binding | L. Miller | 530,194 | Dec. 4 | 205 | 51, 52 | 69 | 1252 |
| Harvester-knotter | W. B. Brown | 531,152 | Dec. 18 | 1885 | 447 | 69 | 1582 |
| Harvester. Potato | C. Christianson | 530,395 | Dec. 4 | 560 | 139 | 69 | 1318 |
| Hasp-lock | F. F. Getze | 531,178 | Dec. 18 | 1932 | 460 | 69 | 1597 |
| Hat | D. Howell | 528,777 | Nov. 6 | 452 | 111 | 69 | 728 |
| Hat-block. Expanding | S. E. Dunham | 531,518 | Dec. 25 | 2547 | 609, 610 | 69 | 1728 |
| Hat-bodies. Apparatus for stretching felt | R. Robinson | 528,806 | Nov. 6 | 507 | 122 | 69 | 738 |
| Hat-bodies on cones. Machine for wetting | G. W. Grover and J. A. Northrop | 526,909 | Oct. 2 | 534 | 131, 132 | 69 | 100 |
| Hat-conformator | S. H. Altland and S. Mayer | 527,472 | Oct. 16 | 1316 | 321 | 69 | 275 |
| Hat-lining machine | H. Charmbury | 531,098 | Dec. 18 | 1781 | 424, 425 | 69 | 1569 |
| Hat-pin | O. Congelton and G. R. Boyd | 530,927 | Dec. 18 | 1478 | 350 | 69 | 1515 |
| Hat-sizing machines. Water-purifier for | W. J. Wiley | 527,187 | Oct. 9 | 830 | 201, 202 | 69 | 169 |
| Hat-stretching machine | R. Eickemeyer | 527,271 | Oct. 9 | 977 | 237, 238 | 69 | 196 |
| Hay-carrier apparatus | W. Louden | 526,830 | Oct. 2 | 277 | 67 | 69 | 53 |
| Hay-carriers. Jack and trip-pulley for | W. Louden | 527,531 | Oct. 16 | 1411 | 343 | 69 | 290 |
| Hay-elevator | W. Louden | 527,530 | Oct. 16 | 1408 | 343 | 69 | 290 |
| Hay-elevator | W. Louden | 530,232 | Dec. 4 | 276 | 68, 69 | 69 | 1265 |
| Hay-elevator pulleys. Means for shifting and securing | J. D. Swacick | 527,737 | Oct. 16 | 1741 | 420 | 69 | 351 |
| Hay-loader | E. Einfeldt | 531,521 | Dec. 25 | 2552 | 610, 611 | 69 | 1729 |
| Hay-loader | C. C. Jewett | 530,691 | Dec. 11 | 1099 | 266, 267 | 69 | 1430 |
| Hay-loader | A. L. Rice | 527,510 | Oct. 16 | 1373 | 334 | 69 | 284 |
| Hay-press | J. F. Adams | 528,755 | Nov. 6 | 406 | 98, 99 | 69 | 720 |
| Hay-press | N. B. Wilder | 529,540 | Nov. 20 | 1848 | 440 | 69 | 1021 |
| Hay-rack | H. C. Rogers | 527,292 | Oct. 9 | 1011 | 245, 246 | 69 | 202 |
| Hay rake and loader | J. Martin | 531,205 | Dec. 18 | 1982 | 471 | 69 | 1606 |
| Hay rake and stacker. Combined | A. Ryan | 526,819 | Oct. 2 | 244 | 59, 60 | 69 | 46 |
| Hay-rake. Horse | P. F. and C. A. Fleming | 526,807 | Oct. 2 | 227 | 55 | 69 | 43 |
| Hay-rake. Horse | J. E. Wyckoff | 526,886 | Oct. 2 | 350 | 90 | 69 | 67 |
| Hay-stack frame | J. P. Brown | 529,589 | Nov. 20 | 1924 | 459 | 69 | 1036 |
| Hay-stacker | W. C. Dawes | 528,862 | Nov. 6 | 628 | 149 | 69 | 761 |
| Hay-tedder | W. N. Whiteley | 530,147 | Dec. 4 | 118 | 30 | 69 | 1237 |
| Heat-magazine. Refractory and non-conducting | C. H. Land | 528,272 | Oct. 30 | 2699 | 650, 651 | 69 | 557 |
| Heater: *See* Car-heater. Electric heater. Feed-water heater. Grain-heater. Hot-water heater. Lunch-heater. Steam or hot-water heater. Tire-heater. Water-heater. | | | | | | | |
| Heater | C. B. Wanamaker | 528,404 | Oct. 30 | 2929 | 708 | 69 | 598 |
| Heating and ventilating apparatus. Building | A. McFadyen | 527,804 | Oct. 23 | 1857 | 446 | 69 | 390 |
| Heating and ventilating rooms. Apparatus for | T. N. Rogers | 526,792 | Oct. 2 | 203 | 48 | 69 | 38 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec | Monthly volume. Drgs | Official Gazette. Vol. | Official Gazette. Page |
|---|---|---|---|---|---|---|---|
| Heating and ventilating rooms. Device for | J. Cinnamon | 530,016 | Nov. 27 | 2663 | 639 | 69 | 1184 |
| Heating and water-circulating system | H. A. Spear | 527,626 | Oct. 16 | 1558 | 377 | 69 | 317 |
| Heating apparatus | J. T. Grindrod | 526,780 | Oct. 2 | 187 | 44 | 69 | 36 |
| Heating apparatus | J. Hinstin | 529,072 | Nov. 13 | 996 | 237, 238, 239 | 69 | 846 |
| Heating apparatus. Box or furnace for electric | C. L. Coffin | 530,019 | Nov. 27 | 2666 | 640 | 69 | 1185 |
| Heating apparatus. Hot-water | S. J. Anderson | 528,061 | Oct. 23 | 2328 | 561 | 69 | 474 |
| Heating-boiler | S. Bartley | 530,155 | Dec. 4 | 131 | 35 | 69 | 1239 |
| Heating-boiler | H. C. Steinhoff | 528,401 | Oct. 30 | 2920 | 706, 707 | 69 | 596 |
| Heating-boiler. Steam or hot-water | L. R. Blackmore | 531,298 | Dec. 25 | 2156 | 516, 517 | 69 | 1653 |
| Heating device | A. Burkart-Stalder | 530,390 | Dec. 4 | 554 | 138 | 69 | 1316 |
| Heating-furnace | C. D. Howard | 528,479 | Oct. 30 | 3062 | 742 | 69 | 622 |
| Heating furnace. Air | S. L. Wiegand | 529,090 | Nov. 13 | 1027 | 247 | 69 | 852 |
| Heating liquids by means of steam. Apparatus for | D. B. Morison | 529,288 | Nov. 13 | 1367 | 328, 329 | 69 | 914 |
| Heating. Method of | W. P. Skiflington | 527,029 | Oct. 2 | 586 | 142 | 69 | 111 |
| Heating, smelting, and separating. Apparatus for electric | J. W. Woodfolk and J. C. Wharton | 531,143 | Dec. 18 | 1866 | 443 | 69 | 1585 |
| Heating system | A. G. Paul | 526,733 | Oct. 2 | 102 | 25, 26 | 69 | 21 |
| Heating system | W. P. Skiflington | 526,754 | Oct. 2 | 139 | 33, 34 | 69 | 28 |
| Heating system. Hot-water | L. G. Allen | 529,098 | Nov. 13 | 1039 | 250, 251 | 69 | 855 |
| Heel | G. Fowler | 530,760 | Dec. 11 | 1208 | 294 | 69 | 1450 |
| Heel-molding apparatus. Spring | J. P. Busfield | 526,890 | Oct. 2 | 365 | 91 | 69 | 68 |
| Heel-pressing machine | J. J. Heys | 530,046 | Nov. 27 | 2707 | 650, 651 | 69 | 1193 |
| Heel-stiffener machine | N. J. Simonds | 530,462 | Dec. 4 | 662 | 164, 165 | 69 | 1337 |
| Heliograph attachment | A. L. Wetherill | 527,640 | Oct. 16 | 1585 | 383 | 69 | 323 |
| Hermetically closing gazogenes, &c. Means for | J. Engster | 526,696 | Oct. 2 | 41 | 11 | 69 | 11 |
| Hide-shaving apparatus | G. A. Lawrence | 528,638 | Nov. 6 | 214 | 52, 53, 54 | 69 | 685 |
| Hides. Treating | D. A. Goodman | 528,427 | Oct. 30 | 2969 | ..... | 69 | 605 |
| Hinge | A. Riley | 529,312 | Nov. 13 | 1420 | 341 | 69 | 925 |
| Hinge. Blind | N. McKinnon | 530,769 | Dec. 11 | 1124 | 253 | 69 | 1434 |
| Hinge. Combination lock | E. Lundgren | 530,436 | Dec. 4 | 623 | 155 | 69 | 1329 |
| Hinge for electric apparatus | A. B. Davis | 531,515 | Dec. 25 | 2543 | 608 | 69 | 1727 |
| Hinge. Gate | G. M. Bowen | 527,765 | Oct. 23 | 1791 | 432 | 69 | 378 |
| Hinge. Gate | L. Haege | 527,685 | Oct. 16 | 1659 | 400 | 69 | 336 |
| Hinge. Lock | J. Ashton | 530,377 | Dec. 4 | 533 | 133 | 69 | 1312 |
| Hinge. Lock | W. Hegenscheidt | 529,171 | Nov. 13 | 1164 | 280 | 69 | 878 |
| Hinge-seating device | W. R. Williams | 526,826 | Oct. 2 | 256 | 62, 63 | 69 | 49 |
| Hinge. Shutter | D. U. Stoner | 528,571 | Nov. 6 | 84 | 21 | 69 | 661 |
| Hinge. Spring | H. A. Rippden | 527,158 | Oct. 9 | 788 | 192 | 69 | 161 |
| Hinge. Stop | G. A. McKenzie | 528,258 | Oct. 30 | 2680 | 646 | 69 | 555 |
| Hinge. Strap | W. H. Hart | 527,975 | Oct. 23 | 2177 | 523 | 69 | 447 |
| Hinge. Strap | L. H. Sholder | 530,729 | Dec. 11 | 1159 | 281 | 69 | 1440 |
| Hitching device | A. G. Hamblin | 530,992 | Dec. 18 | 1593 | 378 | 69 | 1535 |
| Hitching device. Horse | C. Gengnagel | 529,487 | Nov. 20 | 1751 | 416 | 69 | 1003 |
| Hitching horses. Means for | M. P. Ingen | 526,898 | Oct. 2 | 384 | 95, 96 | 69 | 72 |
| Hitching-strap | F. Sweetland | 530,136 | Dec. 4 | 100 | 26 | 69 | 1233 |
| Hitching-strap | J. H. Valleau | 528,495 | Oct. 30 | 3086 | 748 | 69 | 627 |
| Hitching-strap | J. H. Valleau. (Reissue) | 11,457 | Dec. 11 | 1459 | 345 | 69 | 1496 |
| Hod-elevator. Chain | G. P. Wern | 527,305 | Oct. 9 | 1034 | 254 | 69 | 206 |
| Hoe. Horse | C. Gindler | 527,419 | Oct. 16 | 1220 | 298, 299 | 69 | 254 |
| Hoisting and drilling machine | T. B. Hackman, L. and A. Ruppel | 529,378 | Nov. 20 | 1535 | 367 | 69 | 967 |
| Hoisting machinery | A. J. Shaw | 528,618 | Nov. 6 | 168 | 41 | 69 | 676 |
| Hoisting machinery | A. J. Shaw | 528,619 | Nov. 6 | 170 | 41, 42 | 69 | 676 |
| Hoisting machinery | A. J. Shaw | 528,621 | Nov. 6 | 173 | 42, 43 | 69 | 677 |
| Hoisting machinery. Electric | A. J. Shaw | 528,620 | Nov. 6 | 171 | 42 | 69 | 677 |
| Hoisting machinery, &c. Hydraulic | H. W. Umney | 527,908 | Oct. 23 | 2047 | 491, 492 | 69 | 424 |
| Hoisting machinery. Switch-operating mechanism for | A. J. Shaw | 528,615 | Nov. 6 | 163 | 39, 40 | 69 | 675 |
| Hoisting mechanism | G. F. Jennings | 528,297 | Oct. 30 | 2748 | 664 | 69 | 565 |
| Hollow ware. Machine for making | H. Dyer and W. H. Bingham | 526,693 | Oct. 2 | 37 | 9, 10 | 69 | 10 |
| Hook: *See* Belt-hook. Check-hook. Checkrein-hook. Clamp-hook. Garment-hook. Grass-hook. Snap-hook. Trace-hook. | | | | | | | |
| Hook | C. Crowther | 527,832 | Oct. 23 | 1900 | 456 | 69 | 397 |
| Hook and eye | J. H. Doyle | 530,933 | Dec. 18 | 1487 | 352 | 69 | 1517 |
| Hook and eye | G. S. Pearson | 528,341 | Oct. 30 | 2817 | 681 | 69 | 578 |
| Hook and eye | J. F. Schoeppl | 530,800 | Dec. 11 | 1272 | 307 | 69 | 1462 |
| Hook or eye strip | J. H. Goodbody | 529,550 | Nov. 20 | 1865 | 443 | 69 | 1024 |
| Hoop: *See* Mast-hoop. | | | | | | | |
| Hoop-making machine | D. C. Putnam | 527,884 | Oct. 23 | 2005 | 481 | 69 | 415 |
| Hop picking and separating machine | W. H. Clark | 529,598 | Nov. 20 | 1937 | 461 | 69 | 1038 |
| Horse-blanket pin | G. A. Wright and M. L. Jacoby | 527,740 | Oct. 16 | 1746 | 421 | 69 | 352 |
| Horse-boot | J. Duffy | 528,249 | Oct. 30 | 2667 | 642 | 69 | 552 |
| Horse-checking device | T. H. Shottenberg | 528,698 | Nov. 6 | 315 | 77 | 69 | 703 |
| Horse checking or unchecking device | C. C. Wheeler | 528,577 | Nov. 6 | 92 | 23 | 69 | 663 |
| Horse-detacher | M. M. Beuster | 528,410 | Oct. 30 | 2939 | 711 | 69 | 599 |
| Horse-detacher | J. E. Berkstresser | 531,015 | Dec. 18 | 1635 | 388 | 69 | 1543 |
| Horses. Hot-water bandages for treating | R. Bustin | 530,085 | Dec. 4 | 15 | 4 | 69 | 1217 |
| Horseshoe | W. J. Kent | 530,643 | Dec. 11 | 1019 | 249 | 69 | 1416 |
| Horseshoe | W. J. Kent | 530,644 | Dec. 11 | 1022 | 249 | 69 | 1416 |

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|---|---|---|---|---|---|---|---|
| Horseshoe | J. Maslen | 529,930 | Nov. 27 | 2482 | 598 | 69 | 1146 |
| Horseshoe | E. Richardson | 530,797 | Dec. 11 | 1268 | 306 | 69 | 1461 |
| Horseshoe. Elastic-tread | L. A. Anderson | 526,671 | Oct. 2 | 1 | 1 | 69 | 3 |
| Horseshoe. Elastic-tread | W. R. Howe | 530,528 | Dec. 11 | 812 | 202 | 69 | 1380 |
| Horseshoe-nail machine | R. C. Lambert | 530,596 | Dec. 11 | 953 | 229 | 69 | 1402 |
| Horseshoe-nails. Machine for making | J. A. Coleman | 531,161 | Dec. 18 | 1899 | 452, 453, 454 | 69 | 1591 |
| Hose bridge and tower | J. Blake and E. F. Begiebing | 531,091 | Dec. 18 | 1770 | 422 | 69 | 1567 |
| Hose-coupling | A. Bichet and H. O'Neill | 527,764 | Oct. 23 | 1790 | 431 | 69 | 378 |
| Hose-coupling | J. Doster | 528,929 | Nov. 13 | 760 | 178 | 69 | 805 |
| Hose-coupling | S. F. Whalen | 528,051 | Oct. 23 | 2310 | 557 | 69 | 471 |
| Hose in towers. Means for suspending | L. W. Hayes | 530,415 | Dec. 4 | 590 | 146 | 69 | 1323 |
| Hose, &c. Manufacturing samples of | W. F. Bowers | 530,678 | Dec. 11 | 1079 | 262 | 69 | 1426 |
| Hose-mender | A. Van Dyke | 531,578 | Dec. 25 | 2645 | 634 | 69 | 1748 |
| Hose-reel | J. B. Hunter | 528,597 | Nov. 6 | 132 | 32 | 69 | 670 |
| Hot-air pipe | C. Spindler, Jr. | 527,734 | Oct. 16 | 1738 | 419 | 69 | 351 |
| Hot-air register | E. A. Tuttle | 526,848 | Oct. 2 | 290 | 70 | 69 | 55 |
| Hot-box indicator and oiler | A. F. Gregg | 526,921 | Oct. 2 | 425 | 105 | 69 | 79 |
| Hot-water boiler for heating purposes | T. Brooks, M. Reilly, and W. Rudkins. | 528,626 | Nov. 6 | 179 | 44 | 69 | 678 |
| Hot-water furnace | F. A. Gardner | 529,121 | Nov. 13 | 1070 | 258 | 69 | 861 |
| Hot-water heater | H. Eisert and R. B. Talcott | 526,967 | Oct. 2 | 488 | 120 | 69 | 98 |
| Hot-water heater | J. F. Harrison | 528,720 | Nov. 6 | 343 | 85 | 69 | 709 |
| Hot-water heater | W. L. Shepard | 527,890 | Oct. 23 | 2015 | 484 | 69 | 417 |
| House: *See* Apartment-house. Milk-cooling house. | | | | | | | |
| House | D. H. Hibbert | 531,032 | Dec. 18 | 1663 | 394, 395 | 69 | 1548 |
| House Movable | J. F. Rothwell | 528,131 | Oct. 23 | 2458 | 594 | 69 | 498 |
| Household or kitchen implement | O. A. Hensel | 530,268 | Dec. 4 | 338 | 83 | 69 | 1277 |
| Hub-attaching device | F. J. Herman | 529,683 | Nov. 20 | 2069 | 495 | 69 | 1063 |
| Hub-blank-making machine | W. W. Tucker | 527,907 | Oct. 23 | 2042 | 490, 491 | 69 | 423 |
| Hub-protector for wagons | N. D. Hodgkins | 529,909 | Nov. 27 | 2447 | 588 | 69 | 1142 |
| Huller: *See* Fruit-huller. | | | | | | | |
| Husking machine feed-roll | P. H. Conner and L. Clark | 527,409 | Oct. 16 | 1704 | 295 | 69 | 272 |
| Hydraulic elevator | J. R. Wade | 528,281 | Oct. 30 | 2719 | 655, 656 | 69 | 561 |
| Hydrocarbon-burner | H. Cluff | 527,012 | Oct. 2 | 556 | 136 | 69 | 105 |
| Hydrocarbon-burner | C. E. Cookerly | 531,289 | Dec. 18 | 2139 | 512, 513 | 69 | 1635 |
| Hydrocarbon burner | B. Kamps | 527,695 | Oct. 16 | 1677 | 404 | 69 | 339 |
| Hydrocarbon-lighting system | B. L. Lawton | 531,543 | Dec. 25 | 2588 | 620 | 69 | 1736 |
| Hydrocarbon-motors. Means or apparatus for effecting and controlling the supply of hydrocarbon to | J. E. Weyman and J. A. Drake | 528,836 | Nov. 6 | 580 | 137 | 69 | 751 |
| Hydrocarbons. Apparatus for burning liquid | W. R. Pearson | 526,737 | Oct. 2 | 113 | 27 | 69 | 23 |
| Hypo-eliminator | A. Schmidt | 530,965 | Dec. 18 | 1545 | ..... | 69 | 1527 |
| Ice. Apparatus for preparing water for the manufacture of | L. Block | 529,356 | Nov. 20 | 1487 | 358 | 69 | 958 |
| Ice. Apparatus for subdividing blocks of | L. Pusey | 530,127 | Dec. 4 | 90 | 24 | 69 | 1232 |
| Ice-cream cans. Protector for tops of | C. Nelson | 527,711 | Oct. 16 | 1695 | 408 | 69 | 343 |
| Ice-cream freezer | K. C. Edmunds | 527,483 | Oct. 16 | 1330 | 324 | 69 | 277 |
| Ice-cream freezer | R. P. Jones | 530,779 | Dec. 11 | 1244 | 301 | 69 | 1457 |
| Ice-cream freezer and churn. Combined | I. T. Babbitt | 527,313 | Oct. 9 | 1047 | 253 | 69 | 208 |
| Ice-cutting machine | W. Butts | 528,073 | Oct. 23 | 2348 | 567 | 69 | 478 |
| Ice-machine | W. L. Church and S. A. Reeve | 529,341 | Nov. 13 | 1457 | 352 | 69 | 932 |
| Ice-making apparatus | W. L. Church | 529,344 | Nov. 13 | 1463 | 352 | 69 | 933 |
| Ice-making apparatus | W. L. Church | 529,345 | Nov. 13 | 1465 | 353 | 69 | 934 |
| Ice-making apparatus | W. L. Church | 529,346 | Nov. 13 | 1469 | 353 | 69 | 934 |
| Ice-making apparatus | W. L. Church | 529,347 | Nov. 13 | 1472 | 353 | 69 | 934 |
| Ice-making apparatus | W. L. Church and S. A. Reeve | 529,342 | Nov 13 | 1460 | 352 | 69 | 933 |
| Ice-making apparatus | W. L. Church and S. A. Reeve | 530,494 | Dec. 4 | 741 | 182 | 69 | 1350 |
| Ice-making machine | A. L. Holden and L. W. Serrell | 530,527 | Dec. 11 | 810 | 201 | 69 | 1380 |
| Ice-manufacturing apparatus | W. L. Church and S. A. Reeve | 529,343 | Nov. 13 | 1462 | 352 | 69 | 933 |
| Ice. Means for preventing air-bubbles in | D. L. Holden | 530,526 | Dec. 11 | 808 | 201 | 69 | 1379 |
| Ice-pick | E. W. Richter | 529,124 | Nov. 13 | 1205 | 291 | 69 | 885 |
| Ice-rink | H. A. Vanhouten | 530,866 | Dec. 11 | 1376 | 328 | 69 | 1481 |
| Ice-shaving machine | F. Unsöld | 530,367 | Dec. 4 | 516 | 127, 128 | 69 | 1309 |
| Icing to pastry. Apparatus for applying | C. E. Reid | 530,652 | Dec. 11 | 1038 | 253 | 69 | 1419 |
| Illusion apparatus | A. A. Strohecker and J. Hutton | 531,398 | Dec. 25 | 2330 | 556 | 69 | 1667 |
| Impounding débris and storing water. Method of and means for | P. Rosenzweyg | 530,128 | Dec. 4 | 91 | 24 | 69 | 1232 |
| Inclined surfaces. Device for supporting workmen or objects on | H. W. R. Strong | 528,823 | Nov. 6 | 547 | 130, 131 | 69 | 745 |
| Incubator | D. Norton | 530,548 | Dec. 11 | 852 | 210 | 69 | 1386 |
| Incubator | M. G. Benton and G. J. Nissly | 530,676 | Dec. 11 | 1075 | 261 | 69 | 1425 |
| Incubator | C. A. Cyphers | 530,163 | Dec. 4 | 147 | 39 | 69 | 1242 |
| Incubator | J. E. Stanley | 530,907 | Dec. 11 | 1439 | 342 | 69 | 1492 |
| Incubator | A. Wickey | 530,567 | Dec. 11 | 888 | 218 | 69 | 1393 |
| Index or display device | J. A. Fischer | 530,987 | Dec. 18 | 1586 | 376 | 69 | 1533 |
| Indexes. Manufacturing | R. L. Brown | 529,477 | Nov. 20 | 1731 | 412 | 69 | 1000 |
| Indicator: *See* Engine-indicator. Office-indicator. Hot-box indicator. Speed-indicator. Light-indicator. Station-indicator. Micrometer-indicator. Street-indicator. Train time-indicator. | | | | | | | |
| Indicator | J. H. Scott | 531,572 | Dec. 25 | 2634 | 631 | 69 | 1745 |
| Inhaler | M. A. Boesger and F. V. Dotterweich | 530,321 | Dec. 4 | 430 | 107 | 69 | 1293 |
| Inhaler | S. D. Ross | 529,808 | Nov. 27 | 2273 | 542 | 69 | 1109 |
| Inhaler | E. Souchon | 531,476 | Dec. 25 | 2477 | 590 | 69 | 1714 |



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| Invention. | Name | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Inhaling apparatus | A. L. Lönnerberg | 526,906 | Oct. 2 | 400 | 100 | 69 | 74 |
| Inhaling-cabinet | R. E. Lee | 529,279 | Nov. 13 | 1355 | 325 | 69 | 912 |
| Injector | F. Brunbauer. (Reissue) | 11,456 | Dec. 11 | 1452 | 345 | 69 | 1495 |
| Injector | J. Desmond | 526,918 | Oct. 2 | 421 | 104 | 69 | 78 |
| Injector | W. E. Dodge | 530,476 | Dec. 4 | 686 | 172 | 69 | 1341 |
| Injector | P. P. Hogue | 527,493 | Oct. 16 | 1341 | 327 | 69 | 279 |
| Ink-roller brake attachment | E. Meier | 529,932 | Nov. 27 | 2484 | 599 | 69 | 1148 |
| Inkstand | F. B. Pratt | 528,802 | Nov. 6 | 490 | 121 | 69 | 737 |
| Inkstand | T. S. Shenston | 528,813 | Nov. 6 | 516 | 124, 125 | 69 | 740 |
| Inkstand | L. N. Thomas | 531,345 | Dec. 25 | 2240 | 535 | 69 | 1669 |
| Inkstand. Pneumatic | G. A. Sigeden | 531,474 | Dec. 25 | 2474 | 589 | 69 | 1714 |
| Ink-well | W. B. Pratt | 530,796 | Dec. 11 | 1267 | 306 | 69 | 1461 |
| Inlaying metal goods with tortoise-shell or celluloid | H. F. L. Aumont | 530,817 | Dec. 11 | 1297 | 313 | 69 | 1467 |
| Insect-powder-dusting machine | F. Lousaw and T. E. Clarke | 531,320 | Dec. 25 | 2198 | 526 | 69 | 1661 |
| Insect-trap for trees, &c | A. F. Carlson | 529,643 | Nov. 20 | 2007 | 480 | 69 | 1051 |
| Insecticide | C. A. Bruederle | 527,234 | Oct. 9 | 910 | ..... | 69 | 185 |
| Insecticide | L. and E. Brumlen | 530,010 | Nov. 27 | 2651 | ..... | 69 | 1182 |
| Insulated electric conductor | J. Robinson | 529,412 | Nov. 20 | 1605 | 381 | 69 | 979 |
| Insulating compositions for electrical purposes. Manufacturing | A. N. Ford | 530,517 | Dec. 11 | 797 | ..... | 69 | 1377 |
| Insulating compound | O. Stiles | 528,744 | Nov. 6 | 384 | ..... | 69 | 716 |
| Insulating-covering for refrigerative purposes | G. T. Voorhees | 530,214 | Dec. 4 | 244 | ..... | 69 | 1260 |
| Insulator | E. J. Bullock | 527,317 | Oct. 9 | 1053 | 255 | 69 | 210 |
| Insulator | L. McCarthy | 530,706 | Dec. 11 | 1121 | 272 | 69 | 1433 |
| Insulator | L. McCarthy | 531,423 | Dec. 25 | 2373 | 568 | 69 | 1695 |
| Insulator | W. D. Trimble | 527,254 | Oct. 9 | 941 | 228 | 69 | 190 |
| Insulator. Electric-conductor | J. H. Croskey and J. Locke | 530,399 | Dec. 4 | 567 | 141 | 69 | 1319 |
| Insulator for electric overhead construction | H. P. Ball | 530,498 | Dec. 11 | 750 | 184 | 69 | 1369 |
| Insulator-pin | E. J. Bullock | 527,318 | Oct. 9 | 1054 | 255 | 69 | 210 |
| Insulator. Section | A. Henuefeld, C. Dehner, and C. H. Van Ness. | 529,616 | Nov. 20 | 1963 | 467 | 69 | 1043 |
| Integrating apparatus | F. N. Connet and W. W. Jackson | 529,365 | Nov. 20 | 1508 | 362, 363 | 69 | 961 |
| Invalid-chair | S. A. Potter | 531,330 | Dec. 25 | 2212 | 530 | 69 | 1664 |
| Invalid-lifting apparatus | W. E. Goulding | 528,475 | Oct. 30 | 3051 | 740 | 69 | 629 |
| Iron: *See* Curling-iron. Sad-iron. | | | | | | | |
| Iron or steel. Process of and apparatus for the manufacture of | R. M. Hunter | 528,943 | Nov. 13 | 787 | 184 | 69 | 810 |
| Ironing-board attachment | R. N. Boston | 528,846 | Nov. 6 | 597 | 141 | 69 | 755 |
| Ironing-machine | D. H. Benjamin | 529,695 | Nov. 27 | 2091 | 501 | 69 | 1077 |
| Ironing-machine | H. F. Gray | 528,091 | Oct. 23 | 2384 | 575 | 69 | 485 |
| Ironing-machine | S. A. Pratt | 528,986 | Nov. 13 | 853 | 202 | 69 | 922 |
| Ironing-table | E. Coleman | 529,481 | Nov. 20 | 1737 | 414 | 69 | 1001 |
| Ironing-table clamp | I. H. Kaufmann and M. Nimeroff | 531,316 | Dec. 25 | 2193 | 525 | 69 | 1660 |
| Jack: *See* Bootjack. Lifting-jack. Carriage or wagon jack. Track-jack. | | | | | | | |
| Jack | J. Barrett | 527,102 | Oct. 9 | 691 | 170, 171 | 69 | 145 |
| Japanning-furnace | P. J. Pauly, Jr | 530,549 | Dec. 11 | 853 | 210 | 69 | 1387 |
| Jar: *See* Fruit-jar. | | | | | | | |
| Jar-closure | C. E. Long | 530,190 | Dec. 4 | 200 | 49 | 69 | 1251 |
| Jar cover. Fruit | V. Biart | 531,253 | Dec. 18 | 2071 | 495 | 69 | 1621 |
| Jeweler's press | C. M. and G. W. Adams | 530,915 | Dec. 18 | 1463 | 347 | 69 | 1513 |
| Jewelry safety device | J. Bonner | 527,358 | Oct. 9 | 1117 | 273 | 69 | 222 |
| Jewelry-setting | Z. A. Oppenheimer | 529,184 | Nov. 13 | 1190 | 286 | 69 | 882 |
| Joint: *See* Ball-and-socket joint. Rail-joint. Boiler-tube joint. Railway-rail joint. Drawbridge joint. Stovepipe-joint. Felt-joint. Tie-joint. Folding joint. Wheel-rim joint. Pipe-joint. | | | | | | | |
| Joints. Tube for use in expansion | B. Hall | 530,305 | Dec. 4 | 403 | 101 | 69 | 1288 |
| Journal-bearing | I. Cornelinssen | 531,410 | Dec. 25 | 2348 | 560 | 69 | 1690 |
| Journal-bearing | A. C. Farnsworth and C. E. Roberts | 527,016 | Oct. 2 | 563 | 137 | 69 | 100 |
| Journal-bearing | J. L. Jönsson | 530,274 | Dec. 4 | 347 | 86 | 69 | 1279 |
| Journal-bearing | A. W. Kirsch-King | 529,554 | Nov. 20 | 1869 | 444 | 69 | 1025 |
| Journal-bearing | E. C. Sendelbach and J. N. Wilkins | 527,026 | Oct. 2 | 580 | 140 | 69 | 110 |
| Journal-bearing. Revoluble sectional | W. J. Tripp | 531,483 | Dec. 25 | 2485 | 592 | 69 | 1716 |
| Journal-head for rolls | D. L. McCorkindale | 527,708 | Oct. 16 | 1693 | 408 | 69 | 342 |
| Journals of mixing-machines. Device for preventing leakage about | F. Westerman | 528,050 | Oct. 23 | 2308 | 556 | 69 | 471 |
| Jug or jar | J. M. Pettit and J. W. Watt | 526,940 | Oct. 2 | 453 | 111 | 69 | 85 |
| Jug or jar | P. P. Wilbur | 529,574 | Nov. 20 | 1904 | 454 | 69 | 1032 |
| Key: *See* Telegraph-key. | | | | | | | |
| Keyboard | Z. G. Sholes | 527,542 | Oct. 16 | 1425 | 347 | 69 | 293 |
| Keyboards by means of perforated cards. Mechanism for actuating | C. Gavioli | 531,413 | Dec. 25 | 2352 | 561, 562 | 69 | 1691 |
| Keyhole-guard | J. A. Giese | 528,667 | Nov. 6 | 263 | 65 | 69 | 603 |
| Keyhole guard | M. A. Linder | 528,952 | Nov. 13 | 802 | 187 | 69 | 813 |
| Keyhole-guard | G. W. Schumacher | 530,206 | Dec. 4 | 226 | 56 | 69 | 1256 |
| Key-register | W. H. Thompson | 527,351 | Oct. 9 | 1103 | 269 | 69 | 219 |
| Key-ring and cigar-cutter. Combined | E. B. Aignier | 529,577 | Nov. 20 | 1909 | 455 | 69 | 1033 |
| Kiln: *See* Brick-kiln. | | | | | | | |
| Kiln | W. S. Williams | 531,242 | Dec. 18 | 2053 | 490 | 69 | 1618 |
| Kilns. Rack for decorating | C. S. Maddock | 530,233 | Dec. 4 | 280 | 69 | 69 | 1266 |
| Kitchen-cabinet | P. L. Ramsey | 538,180 | Oct. 30 | 2539 | 615 | 69 | 528 |

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|---|---|---|---|---|---|---|---|
| Kitchen-cabinet | T. E. Smith | 531,341 | Dec. 25 | 2232 | 533 | 69 | 1667 |
| Kitchen-cabinet | W. Thompson | 527,030 | Oct. 2 | 589 | 143 | 69 | 111 |
| Kitchen-cabinet | E. H. Traut | 527,629 | Oct. 16 | 1566 | 378 | 69 | 319 |
| Kitchen-table | F. E. Van Houten | 527,303 | Oct. 9 | 1030 | 250 | 69 | 205 |
| Kneading machine. Dough- | A. Webber | 527,033 | Oct. 2 | 593 | 143 | 69 | 111 |
| Knife: *See* Bread or cake knife. Pocket-knife. Chopping-knife. Pruning-knife. | | | | | | | |
| Knife | J. H. Cook, Jr | 530,913 | Dec. 11 | 1449 | 344 | 69 | 1495 |
| Knife | E. Herrington | 527,491 | Oct. 16 | 1339 | 326 | 69 | 279 |
| Knife-sections or other articles. Apparatus for hardening | W. F. Johnston and J. Gray | 530,183 | Dec. 4 | 188 | 47 | 69 | 1248 |
| Knife-sharpener | B. H. Berkman | 530,613 | Dec. 11 | 962 | 236 | 69 | 1406 |
| Knives to their handles. Means for attaching | J. Westby and J. Whitfield | 528,452 | Oct. 30 | 3010 | 727 | 69 | 612 |
| Knitted shirt | L. W. Groat | 527,551 | Oct. 16 | 1441 | 350 | 69 | 296 |
| Knitted undershirt | J. Feldenheimer | 528,536 | Nov. 6 | 19 | 7 | 69 | 650 |
| Knitting-machine | W. R. Dillmore | 527,779 | Oct. 23 | 1816 | 437, 438 | 69 | 382 |
| Knitting-machine | S. Jaros | 527,113 | Oct. 9 | 711 | 174, 175 | 69 | 147 |
| Knitting-machine | J. F. Pharo | 531,062 | Dec. 18 | 1741 | 407 | 69 | 1557 |
| Knitting-machine | L. E. Salisbury | 528,810 | Nov. 6 | 512 | 124 | 69 | 739 |
| Knitting-machine | O. Wilson | 528,838 | Nov. 6 | 580 | 138 | 69 | 752 |
| Knitting-machine. Automatic | W. D. Butz | 529,362 | Nov. 20 | 1498 | 360, 361 | 69 | 960 |
| Knitting machine. Automatic circular | B. M. Denney | 528,864 | Nov. 6 | 630 | 150 | 69 | 761 |
| Knitting machine. Automatic circular | W. H. Stewart | 529,509 | Nov. 20 | 1790 | 426, 427 | 69 | 1010 |
| Knitting machine. Circular | W. R. Johns | 531,463 | Dec. 25 | 2458 | 585 | 69 | 1711 |
| Knitting machine. Circular | J. P. Morin and G. J. H. Jacques | 531,553 | Dec. 25 | 2605 | 623, 624 | 69 | 1739 |
| Knitting-machine transferring apparatus | H. Donner | 527,674 | Oct. 16 | 1636 | 394, 395 | 69 | 332 |
| Knitting machine. Warp- | J. Bradley | 527,934 | Oct. 23 | 2093 | 501, 502 | 69 | 432 |
| Knitting-machines. Automatic stitch-regulating mechanism for | W. H. Stewart | 529,508 | Nov. 20 | 1787 | 426 | 69 | 1010 |
| Knitting-machines. Thickening thread mechanism for | E. L. Lang and F. H. Daniell | 527,019 | Oct. 2 | 570 | 138 | 69 | 108 |
| Knitting-needles. Making | A. B. Dodge | 531,023 | Dec. 18 | 1651 | 392 | 69 | 1545 |
| Knob attachment | T. A. Hodgson | 529,792 | Nov. 27 | 2248 | 536 | 69 | 1104 |
| Knob attachment | F. H. Richards | 530,624 | Dec. 11 | 980 | 241 | 69 | 1410 |
| Knob attachment | T. E. Wardwell | 529,887 | Nov. 27 | 2415 | 579 | 69 | 1136 |
| Knob. Door- | C. O. Case | 528,147 | Oct. 30 | 2485 | 602 | 69 | 518 |
| Knob. Door- | C. A. Lindholm | 529,180 | Nov. 13 | 1184 | 285 | 69 | 881 |
| Knob fastener. Door- | O. C. Rumsey | 527,560 | Oct. 16 | 1451 | 353 | 69 | 298 |
| Knob. Sheet-metal | A. T. Matthews | 527,438 | Oct. 16 | 1252 | 308 | 69 | 260 |
| Kraut-cutter | W. A. Goforth | 528,157 | Oct. 30 | 2497 | 604 | 69 | 520 |
| Label and price-card. Combined | W. P. Stevens | 529,760 | Nov. 27 | 2199 | 524 | 69 | 1095 |
| Lace clamp. Shoe- | L. D. Craig | 528,464 | Oct. 30 | 3038 | 737 | 69 | 617 |
| Lace fastener. Shoe- | E. R. Duljé | 526,830 | Oct. 2 | 262 | 64 | 69 | 50 |
| Lace holder. Shoe- | G. E. Mongeau | 528,300 | Oct. 30 | 2753 | 665 | 69 | 566 |
| Lace-making machines. Thread-controlling device for | C. F. Wolferts | 530,873 | Dec. 11 | 1383 | 329, 330 | 69 | 1482 |
| Lace, veiling, or ribbon holder | J. M. Schlesinger | 528,447 | Oct. 30 | 3000 | 725 | 69 | 610 |
| Ladder and guiding-trolley therefor. Step- | W. J. Sumner | 528,824 | Nov. 6 | 549 | 131 | 69 | 746 |
| Ladder and truck. Extension fire- | A. B. Cairnes | 527,942 | Oct. 23 | 2110 | 506, 507 | 69 | 435 |
| Ladder apparatus. Fire- | H. L. Goodwin | 528,938 | Nov. 13 | 769 | 181, 182 | 69 | 808 |
| Ladder apparatus. Fire- | W. J. Horton | 528,126 | Oct. 23 | 2414 | 591, 592 | 69 | 496 |
| Ladder attachment | T. Wilkins | 530,374 | Dec. 4 | 528 | 132 | 69 | 1311 |
| Ladder. Extension- | C. W. Howard | 531,531 | Dec. 25 | 2570 | 615 | 69 | 1732 |
| Ladder, ironing-table, and washbench. Combined step- | H. G. Rounds | 530,625 | Dec. 11 | 982 | 241 | 69 | 1410 |
| Ladder. Step- | M. Minier | 529,871 | Nov. 27 | 2387 | 571 | 69 | 1132 |
| Ladders. Combined brace, clamp, step fastening, and support for step- | S. E. Allen | 529,993 | Nov. 27 | 2617 | 628 | 69 | 1175 |
| Lamp | F. Doelle and H. von Glahn | 530,402 | Dec. 4 | 572 | 142 | 69 | 1320 |
| Lamp and socket. Combined regulating incandescent | C. A. Hussey | 527,989 | Oct. 23 | 2210 | 533, 534 | 69 | 453 |
| Lamp and support. Cycle- | J. C. Tudor | 529,885 | Nov. 27 | 2410 | 578 | 69 | 1135 |
| Lamp bracket. Vehicle- | S. L. Reefy | 529,751 | Nov. 27 | 2182 | 520 | 69 | 1092 |
| Lamp-burner | F. Rhind | 531,219 | Dec. 18 | 2011 | 477 | 69 | 1611 |
| Lamp-burner wick-adjuster | E. A. Humphrey | 527,692 | Oct. 16 | 1673 | 403 | 69 | 338 |
| Lamp. Coach- | G. H. C. Tolman | 526,877 | Oct. 2 | 316 | 86 | 69 | 65 |
| Lamp. Electric-arc | S. Bergmann | 528,119 | Oct. 23 | 2434 | 588 | 69 | 494 |
| Lamp. Electric-arc | J. Brockie | 529,240 | Nov. 13 | 1286 | 309 | 69 | 899 |
| Lamp. Electric-arc | M. Mayer | 527,211 | Oct. 9 | 868 | 211 | 69 | 177 |
| Lamp. Electric-arc | A. H. Moses, Jr | 527,559 | Oct. 16 | 1450 | 353 | 69 | 298 |
| Lamp. Electric-arc | A. H. Moses, Jr | 528,642 | Nov. 6 | 221 | 55 | 69 | 686 |
| Lamp. Electric-arc | E. J. Murphy | 531,422 | Dec. 25 | 2371 | 567 | 69 | 1695 |
| Lamp. Electric-arc | C. E. Ongley | 528,684 | Nov. 6 | 295 | 72, 73 | 69 | 690 |
| Lamp. Electric-arc | R. Segerdahl | 528,184 | Oct. 30 | 2345 | 617 | 69 | 529 |
| Lamp. Electric-arc | H. O. Swoboda | 527,901 | Oct. 23 | 2033 | 488 | 69 | 421 |
| Lamp. Electric-arc | J. E. Woolverton | 527,228 | Oct. 9 | 899 | 218 | 69 | 183 |
| Lamp. Electric-arc | J. E. Woolverton | 527,229 | Oct. 9 | 901 | 218 | 69 | 184 |
| Lamp. Electric incandescent | E. Thomson and E. W. Rice, Jr | 529,429 | Nov. 20 | 1637 | 389 | 69 | 984 |
| Lamp for electric-railway cars. Signal- | C. H. Baker | 531,146 | Dec. 18 | 1872 | 444, 445 | 69 | 1587 |
| Lamp hanger. Electric- | W. S. Weston | 526,925 | Oct. 2 | 253 | 62 | 69 | 48 |
| Lamp. Hanging | J. H. Moss | 527,440 | Oct. 16 | 1254 | 308 | 69 | 260 |
| Lamp. Incandescent | J. R. Grove | 530,838 | Dec. 11 | 1330 | 319 | 69 | 1473 |



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|---|---|---|---|---|---|---|---|
| Lamp. Incandescent electric | E. Kaye | 530,895 | Dec. 11 | 1421 | 337, 338 | 69 | 1489 |
| Lamp. Miner's safety- | W. E. Field | 527,055 | Oct. 9 | 627 | 153 | 69 | 132 |
| Lamp. Miner's safety- | L. Jenkins | 526,711 | Oct. 2 | 70 | 18 | 69 | 16 |
| Lamp. Miner's safety- | C. Wolf | 530,217 | Dec. 4 | 249 | 60 | 69 | 1261 |
| Lamp. Regenerative gas- | W. White | 526,955 | Oct. 2 | 468 | 115, 116 | 69 | 88 |
| Lamp-reservoirs. Oil-indicator for | F. G. Echols | 531,106 | Dec. 18 | 1797 | 428 | 69 | 1572 |
| Lamp. Rotatable signal- | G. C. Dressel | 527,054 | Oct. 9 | 627 | 152 | 69 | 132 |
| Lamp shade. Electric- | E. Vedovelli | 528,241 | Oct. 30 | 2652 | 630 | 69 | 548 |
| Lamp shade-holder. Incandescent- | E. A. Russell and N. W. Crandall | 527,623 | Oct. 16 | 1554 | 376 | 69 | 316 |
| Lamp-shade protector | G. Reichman | 528,029 | Oct. 23 | 2280 | 549 | 69 | 465 |
| Lamp socket. Incandescent- | L. R. Peck | 527,285 | Oct. 9 | 1000 | 243 | 69 | 200 |
| Lamp socket. Incandescent-electric | C. H. Balsley | 531,288 | Dec. 18 | 2137 | 512 | 69 | 1634 |
| Lamp. Street- | W. Ritter | 526,870 | Oct. 2 | 334 | 82 | 69 | 63 |
| Lamp-supporter. Vehicle | J. Wise | 526,798 | Oct. 2 | 212 | 51 | 69 | 40 |
| Lamp-suspending device | F. Rhind | 530,459 | Dec. 4 | 655 | 163 | 69 | 1335 |
| Lamp-wick regulator | W. L. Harding | 529,382 | Nov. 20 | 1545 | 369 | 69 | 968 |
| Lamps. Air-distributer for central-draft | J. Jauch | 529,496 | Nov. 20 | 1768 | 421 | 69 | 1006 |
| Lamps. Carbon-holder for arc | E. Lavens | 527,864 | Oct. 23 | 1967 | 473 | 69 | 408 |
| Lamps. Counterweight for suspended | A. Zempliner | 529,054 | Nov. 13 | 963 | 228 | 69 | 841 |
| Lamps. Lighting or extinguishing street- | C. Kewell | 529,449 | Nov. 20 | 1680 | 402 | 69 | 992 |
| Lamps. Shade-holder for incandescent electric | N. W. Crandall and E. A. Russell | 530,751 | Dec. 11 | 1195 | 291 | 69 | 1447 |
| Lamps. Spark-arrester for arc | E. M. Clark | 531,159 | Dec. 18 | 1896 | 452 | 69 | 1590 |
| Lamps. Switching apparatus for incandescent electric | C. E. Scribner | 529,532 | Nov. 20 | 1834 | 436 | 69 | 1019 |
| Lantern | C. Bergener | 529,017 | Nov. 13 | 902 | 213 | 69 | 830 |
| Lantern | W. S. Hamm | 529,787 | Nov. 27 | 2253 | 533 | 69 | 1102 |
| Lantern | D. Jackson and J. Osterloh | 529,794 | Nov. 27 | 2251 | 537 | 69 | 1104 |
| Lantern | G. W. Jarmin | 530,049 | Nov. 27 | 2727 | 653 | 69 | 1196 |
| Lantern | T. Langston | 528,439 | Oct. 30 | 2986 | 722 | 69 | 608 |
| Lantern | G. Rowland | 530,626 | Dec. 11 | 983 | 241 | 69 | 1410 |
| Lantern | J. W. Senior | 529,422 | Nov. 20 | 1620 | 385 | 69 | 981 |
| Lantern. Velocipede- | R. P. Gormully | 531,180 | Dec. 18 | 1935 | 460 | 69 | 1593 |
| Last | E. J. Howard | 528,296 | Oct. 30 | 2743 | 663 | 69 | 565 |
| Last-block fastener | F. E. Benton | 527,582 | Oct. 16 | 1492 | 362 | 69 | 305 |
| Lasts for boots or shoes. Machine for manufacturing | W. H. Austin | 526,987 | Oct. 2 | 519 | 127 | 69 | 97 |
| Last. Metal | G. C. Pettis | 528,737 | Nov. 6 | 371 | 90 | 69 | 714 |
| Lasting-machine | C. H. Kelley | 529,390 | Nov. 20 | 1563 | 373 | 69 | 971 |
| Lasting-machine | C. H. Kelley | 529,653 | Nov. 20 | 2017 | 483, 484 | 69 | 1053 |
| Latch | F. Kallsen | 526,811 | Oct. 2 | 232 | 56 | 69 | 44 |
| Latch | E. S. Winchester | 529,575 | Nov. 20 | 1905 | 454 | 69 | 1032 |
| Latch and knob. Combined | C. and G. Spengler | 527,627 | Oct. 16 | 1560 | 378 | 69 | 318 |
| Latch and lock | J. MacLachlan | 526,980 | Oct. 2 | 506 | 124 | 69 | 95 |
| Latch. End-gate | S. T. Elgin | 529,720 | Nov. 27 | 2132 | 511 | 69 | 1084 |
| Latch. Gate- | J. L. Wilson | 531,353 | Dec. 25 | 2252 | 537 | 69 | 1671 |
| Latch. Gate- | W. F. Wilson | 531,491 | Dec. 25 | 2503 | 596 | 69 | 1719 |
| Latch-lock | B. D. Coppage | 527,944 | Oct. 23 | 2119 | 508, 509 | 69 | 437 |
| Lath or shingle holder | D. C. Lyons | 527,613 | Oct. 16 | 1540 | 373 | 69 | 314 |
| Laths. Machine for making metal | A. O. Wright | 527,578 | Oct. 16 | 1484 | 361 | 69 | 304 |
| Lathing. Metallic | G. Hayes. (Reissue) | 11,448 | Oct. 23 | 2460 | 595 | 69 | 498 |
| Lathing. Metallic | A. O. Wright | 527,577 | Oct. 16 | 1484 | 360 | 69 | 304 |
| Lathing-strip | L. T. Hagan | 531,589 | Dec. 25 | 2664 | 640 | 69 | 1751 |
| Lathe carrier | B. C. Esmarch | 530,303 | Dec. 4 | 400 | 101 | 69 | 1288 |
| Lathe for axle-boxes. Turning- | R. R. Spears | 530,861 | Dec. 11 | 1565 | 396 | 69 | 1479 |
| Lathe for turning elliptical forms | C. W. MacCord | 531,203 | Dec. 18 | 1977 | 470 | 69 | 1605 |
| Lathe-guard | R. S. Peabody | 530,218 | Dec. 4 | 290 | 71 | 69 | 1268 |
| Lathe taper-turning tool | Z. B. Coes | 527,140 | Oct. 9 | 759 | 186 | 69 | 156 |
| Lathes. Polishing device for spoke- | W. H. Joslin | 530,110 | Dec. 4 | 60 | 16 | 69 | 1226 |
| Lavatory apparatus | D. Ketas | 531,045 | Dec. 18 | 1688 | 401 | 69 | 1553 |
| Lawn-rake | T. A. Galt | 529,901 | Nov. 27 | 2434 | 585 | 69 | 1140 |
| Lawn-rake | M. S. Gifford | 530,041 | Nov. 27 | 2701 | 649 | 69 | 1191 |
| Lawn-sprinkler | T. Maher | 530,620 | Dec. 11 | 973 | 238 | 69 | 1409 |
| Leaching apparatus | F. B. Strunz | 527,819 | Oct. 23 | 1877 | 450 | 69 | 393 |
| Leaching. Machine for pulverizing bark for | L. R. Johnson | 529,796 | Nov. 27 | 2255 | 538 | 69 | 1109 |
| Lead hydrate produced by electrolysis. Treating | A. B. Browne | 527,830 | Oct. 23 | 1896 | ..... | 69 | 396 |
| Leaf-holder | J. H. Pendleton | 528,560 | Nov. 6 | 58 | 15 | 69 | 657 |
| Leaf-turner | H. Kramer | 527,997 | Oct. 23 | 2230 | 528 | 69 | 456 |
| Leak-alarm. Electric | C. C. Kahne, A. A. Adkins, W. S. Peirce, J. E. Martin, and G. F. Kahne. | 528,881 | Nov. 6 | 658 | 158 | 69 | 766 |
| Leather-dressing compound | J. E. M. Bourgeois | 526,760 | Oct. 2 | 167 | ..... | 69 | 32 |
| Leather-skiving machine | W. Hartmann and J. L. Thomson | 527,424 | Oct. 16 | 1226 | 301 | 69 | 256 |
| Leg. Artificial | E. H. Erickson | 527,525 | Oct. 16 | 1401 | 341 | 69 | 289 |
| Leg. Artificial | C. H. Truax | 527,133 | Oct. 9 | 748 | 183, 184 | 69 | 154 |
| Leggin | M. Z. Levy | 527,149 | Oct. 9 | 774 | 189 | 69 | 159 |
| Lens for optical purposes | C. P. Goerz and E. von Höegh | 528,155 | Oct. 30 | 2495 | 604 | 69 | 520 |
| Lenses to elevator-doors, &c. Holder for attaching | C. W. Mark | 528,003 | Oct. 23 | 2238 | 540 | 69 | 458 |
| Letter-box | C. E. Abbott | 528,897 | Nov. 6 | 678 | 163 | 69 | 770 |
| Letter-box | C. W. Martin | 527,799 | Oct. 23 | 1851 | 445 | 69 | 389 |
| Letter-box. Street | J. A. Metcalf | 527,614 | Oct. 16 | 1540 | 374 | 69 | 314 |
| Level attachment. Spirit- | A. Schnell | 527,815 | Oct. 23 | 1872 | 449 | 69 | 392 |
| Level, plumb, and slope-indicator. Combined | O. A. White | 531,239 | Dec. 18 | 2047 | 488 | 69 | 1617 |
| Life-preserver | J. P. Brown | 531,505 | Dec. 25 | 2525 | 604 | 69 | 1724 |
| Life-saving apparatus | K. Hoekstra | 530,525 | Dec. 11 | 807 | 201 | 69 | 1379 |
| Lifter: *See* Wagon-box lifter. | | | | | | | |
| Lifting-jack | A. L. Stanford | 527,818 | Oct. 23 | 1876 | 450 | 69 | 393 |
| Ligature-receptacle | G. M. Stratton | 529,844 | Nov. 27 | 2345 | 559 | 69 | 1123 |
| Light-indicator | L. F. Johnson | 527,608 | Oct. 16 | 1530 | 371 | 69 | 312 |
| Lighting apparatus. Building- | J. S. Robbin | 527,005 | Oct. 2 | 545 | 134 | 69 | 103 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Page. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Lighting device | B. H. Pendleton | 531,597 | Dec. 25 | 2677 | 643 | 69 | 1754 |
| Lightning-arrester | F. S. Pearson | 526,736 | Oct. 2 | 112 | 26 | 69 | 23 |
| Lightning-rod ornament | C. F. Keys | 529,866 | Nov. 27 | 2380 | 569 | 69 | 1130 |
| Line-tightener | A. B. Frack | 530,035 | Nov. 27 | 2694 | 647 | 69 | 1190 |
| Linemen's use. Tool for | S. Smith and M. B. Mishler | 530,361 | Dec. 4 | 507 | 125 | 69 | 1307 |
| Liner and measure. Combined | S. Katani | 527,335 | Oct. 9 | 1078 | 260 | 69 | 214 |
| Linotype-machine | P. T. Dodge | 530,931 | Dec. 18 | 1483 | 351 | 69 | 1516 |
| Linotype-machine | O. Mergenthaler | 527,702 | Oct. 16 | 1688 | 406 | 69 | 341 |
| Linotype-machines. Composing mechanism for | O. Mergenthaler | 531,266 | Dec. 18 | 2091 | 501 / 502 | 69 | 1625 |
| Liquid-containing vessel | J. Thornton and A. B. Woodard | 528,743 | Nov. 6 | 395 | 94 | 69 | 718 |
| Liquid-dispensing apparatus | W. R. Dales | 530,681 | Dec. 11 | 1082 | 263 | 69 | 1426 |
| Liquid mixer, shaker, and fruit-squeezer | W. H. Payne | 528,698 | Nov. 6 | 399 | 74 | 69 | 700 |
| Liquid-purifying apparatus | J. T. Harris | 531,118 | Dec. 18 | 1818 | 432 | 69 | 1576 |
| Liquids. Apparatus for centrifugal separation of compound | A. Ponten and J. V. Skoglund | 528,690 | Nov. 6 | 303 | 74 | 69 | 701 |
| Liquids. Apparatus for driving off volatile constituents from | W. T. Walker | 529,233 | Nov. 13 | 1275 | 306 | 69 | 896 |
| Liquids. Apparatus for driving off volatile constituents from | W. T. Walker | 529,234 | Nov. 13 | 1276 | 306 | 69 | 897 |
| Liquids. Method of and apparatus for purifying | J. T. Harris | 531,183 | Dec. 18 | 1939 | 461 | 69 | 1599 |
| Lithographic stones. Clamping device for | O. Roesen | 529,840 | Nov. 27 | 2339 | 556 | 69 | 1122 |
| Litter | R. Ortega | 529,301 | Nov. 13 | 1402 | 336 | 69 | 921 |
| Loader and sled. Fodder or feed | E. F. Lewis | 530,782 | Dec. 11 | 1251 | 302 | 69 | 1458 |
| Loading apparatus | H. Aiken | 530,296 | Dec. 4 | 390 | 98 | 69 | 1286 |
| Loads. Apparatus for raising or lowering heavy | H. A. Eckley | 526,694 | Oct. 2 | 39 | 10, 11 | 69 | 10 |
| Lock: *See* Alarm-lock. Bag-lock. Bicycle-lock. Bicycle-lantern lock. Bolt and nut lock. Coin-actuated lock. Combination-lock. Door-lock. Door bar-lock. Drawer-lock. Electric lock. Hasp-lock. Latch-lock. Mortise-lock. Nut-lock. Nut or bolt lock. Permutation-lock. Sash-lock. Seal-lock. Time-lock. | | | | | | | |
| Lock | G. Brust, D. F. Reinhard, and L. P. Dunkel | 527,105 | Oct. 9 | 701 | 172 | 69 | 146 |
| Lock | A. M. Coan | 530,396 | Dec. 4 | 561 | 139 | 69 | 1318 |
| Lock | W. W. Davis | 529,606 | Nov. 20 | 1950 | 463 | 69 | 1041 |
| Lock | F. E. Forsell | 530,035 | Dec. 18 | 1499 | 353 | 69 | 1517 |
| Lock | T. J. Johnston | 529,388 | Nov. 20 | 1560 | 372 | 69 | 970 |
| Lock | C. H. La Belle | 529,348 | Nov. 13 | 1473 | 354 | 69 | 935 |
| Lock | J. Schade | 528,114 | Oct. 23 | 2423 | 586 | 69 | 492 |
| Lock | F. W. Schultze | 531,008 | Dec. 18 | 1626 | 386 | 69 | 1541 |
| Lock | C. Swanberg | 528,450 | Oct. 30 | 3007 | 726 | 69 | 612 |
| Lock | O. F. Teed | 530,962 | Dec 11 | 1367 | 326 | 69 | 1479 |
| Lock | C. N. Yittum | 526,678 | Oct. 2 | 347 | 86 | 69 | 65 |
| Lock attachment | L. L. Bettys | 529,269 | Oct. 30 | 2693 | 649 | 69 | 556 |
| Lock for doors of moving vehicles | C. A. Wright | 528,581 | Nov. 6 | 98 | 25 | 69 | 664 |
| Lock-marking gage. Door- | F. K. Etherington | 527,600 | Oct. 16 | 1520 | 369 | 69 | 310 |
| Locks. Mechanism for detecting opening of | C. Smyth | 530,133 | Dec. 4 | 96 | 26 | 69 | 1233 |
| Locking device for show-cases | J. M. Waddel | 529,886 | Nov. 27 | 2412 | 579 | 69 | 1136 |
| Locomotion on railways. Electric | J. J. Heilmann | 527,244 | Oct. 9 | 924 | 223 | 69 | 187 |
| Locomotive | C. A. Couch | 528,078 | Oct. 23 | 2363 | 570 | 69 | 481 |
| Locomotive ash-pans. Device for removing ashes from | A. Reynolds | 529,408 | Nov. 20 | 1598 | 380 | 69 | 977 |
| Locomotive-boiler | G. A. Akerlind | 527,645 | Oct. 16 | 1591 | 384 / 385 | 69 | 324 |
| Locomotive drive-wheels. Releasing device for brakes of | W. O. Pelham | 529,948 | Nov. 27 | 2516 | 606 | 69 | 1154 |
| Locomotive driving-gear | A. Prawatke | 526,981 | Oct. 2 | 509 | 125 | 69 | 95 |
| Locomotive. Electric | N. J. Raffard | 527,126 | Oct. 9 | 740 | 181 / 182 | 69 | 152 |
| Locomotive-engine. Compound | K. Gölsdorf | 526,778 | Oct. 2 | 183 | 43 | 69 | 35 |
| Locomotive feed device | L. Lazerus | 530,998 | Dec. 18 | 1603 | 381 | 69 | 1537 |
| Locomotive for elevated railways. Electric | F. B. Behr | 531,490 | Dec. 25 | 2515 | 599 / 600 / 601 | 69 | 1721 |
| Locomotive. Gearless electric | C. J. Van Depoele | 529,671 | Nov. 20 | 2050 | 491 | 69 | 1059 |
| Locomotive or other furnace | R. H. Brown | 528,588 | Nov. 6 | 106 | 27 | 69 | 666 |
| Locomotive. Smoke-consuming | F. C. McNally | 531,555 | Dec. 25 | 2609 | 624 | 69 | 1740 |
| Locomotives. Controller for electric | J. W. Darley, Jr | 530,507 | Dec. 11 | 766 | 188 / 189 / 190 / 191 | 69 | 1372 |
| Locomotives. Hand-operating mechanism for electric | A. W. Mitchell | 530,956 | Dec. 18 | 1528 | 392 | 69 | 1524 |
| Locomotives. Means for controlling electric | E. Egger and F. A. Wessel | 531,366 | Dec. 25 | 2280 | 543 / 544 | 69 | 1676 |
| Locomotives. Means for supporting motors in electric | W. S. Adams | 529,688 | Nov. 27 | 2079 | 498 | 69 | 1055 |
| Locomotives. Throttle-actuating mechanism for | E. G. Shortt | 530,905 | Dec. 11 | 1436 | 341 | 69 | 1492 |
| Log-carrier | R. E. Terry | 526,758 | Oct. 2 | 152 | 36 | 69 | 29 |
| Loom | G. O. Draper | 527,014 | Oct. 2 | 558 | 136 | 69 | 105 |
| Loom | J. H. Northrop | 529,940 | Nov. 27 | 2494 | 601 / 602 | 69 | 1150 |
| Loom | J. H. Northrop | 529,941 | Nov. 27 | 2502 | 602 | 69 | 1151 |
| Loom | J. H. Northrop | 529,942 | Nov. 27 | 2504 | 603 | 69 | 1152 |
| Loom | J. H. Northrop | 529,943 | Nov. 27 | 2506 | 603 / 604 | 69 | 1152 |
| Loom cloth-rollers. Mechanism for regulating the movement of | E. Kastler | 527,750 | Oct. 16 | 1764 | 425 | 69 | 355 |
| Loom for weaving double pile fabrics | G. and F. Priestley | 529,955 | Nov. 27 | 2529 | 610 | 69 | 1156 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Page. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Loom-heddle | H. Vogelsang | 527,165 | Oct. 9 | 798 | 194 | 69 | 163 |
| Loom Jacquard apparatus | O. W. Schaum | 531,390 | Dec. 25 | 2319 | 553 | 69 | 1684 |
| Loom Jacquard mechanism | J. C. Liberty | 530,050 | Nov. 27 | 2728 | 654 / 655 | 69 | 1196 |
| Loom let-off | C. N. Martin | 530,647 | Dec. 11 | 1028 | 250 | 69 | 1417 |
| Loom. Moquette | E. Tymeson | 529,636 | Nov. 20 | 1990 | 475 / 476 / 477 | 69 | 1048 |
| Loom picker-check | H. R. Mathews | 530,438 | Dec. 4 | 625 | 156 | 69 | 1330 |
| Loom-picker motion | E. Guilbert | 527,853 | Oct. 23 | 1950 | 467 | 69 | 405 |
| Loom. Pile-fabric | H. Wyman and G. Poole | 529,150 | Nov. 13 | 1124 | 272 / 273 | 69 | 871 |
| Loom. Pile-fabric | H. Wyman and G. Poole | 529,151 | Nov. 13 | 1126 | 273 | 69 | 871 |
| Loom positive shuttle-motion | E. H. Graham | 527,783 | Oct. 23 | 1825 | 439 | 69 | 384 |
| Loom positive shuttle-motion | E. H. Graham | 527,784 | Oct. 23 | 1826 | 439 | 69 | 384 |
| Loom shedding mechanism | H. Wenzel | 527,093 | Oct. 9 | 975 | 165 / 166 | 69 | 142 |
| Loom-shuttle | I. Rushworth | 526,748 | Oct. 2 | 131 | 31 | 69 | 26 |
| Loom-shuttle-box-operating mechanism | H. Bardsley | 528,758 | Nov. 6 | 415 | 101 | 69 | 722 |
| Loom-shuttle-box-operating mechanism | L. H. Downing | 529,163 | Nov. 13 | 1144 | 276 | 69 | 875 |
| Loom shuttle-guard | A. Waddington | 529,763 | Nov. 27 | 2203 | 525 | 69 | 1095 |
| Loom shuttle-guide | G. W. Farmer | 528,505 | Oct. 30 | 3102 | 752 | 69 | 630 |
| Loom-shuttle. Self-threading | J. B. Daudelin | 530,320 | Dec. 4 | 448 | 112 | 69 | 1296 |
| Loom-shuttle tension device | I. A. Hall | 531,029 | Dec. 18 | 1659 | 393 / 394 | 69 | 1547 |
| Loom-shuttle tension device | J. Sweeney and G. Stroble | 528,895 | Nov. 6 | 676 | 163 | 69 | 770 |
| Looms for weaving pile fabrics. Wire-retaining device for | H. Hardwick | 529,615 | Nov. 20 | 1962 | 467 | 69 | 1043 |
| Looms. Self-threading shuttle for | J. H. Nason | 528,550 | Nov. 6 | 45 | 12 | 69 | 655 |
| Lubricating device | S. V. Kennedy | 530,590 | Dec. 11 | 824 | 226 / 227 | 69 | 1400 |
| Lubricator: *See* Bicycle-lubricator. Car-wheel lubricator. | | | | | | | |
| Lubricator | G. Binder | 529,473 | Nov. 20 | 1723 | 410 | 69 | 990 |
| Lubricator | T. J. Hart | 528,420 | Oct. 30 | 2971 | 719 | 69 | 605 |
| Lubricator | T. G. Howells | 531,590 | Dec. 25 | 2665 | 640 | 69 | 1752 |
| Lubricator | C. W. Hunt | 529,125 | Nov. 13 | 1079 | 260 | 69 | 863 |
| Lubricator | J. P. Hunter | 526,838 | Oct. 2 | 275 | 67 | 69 | 52 |
| Lubricator | N. Leidgen | 529,393 | Nov. 20 | 1574 | 374 | 69 | 953 |
| Lubricator | W. P. Miller | 531,129 | Dec. 18 | 1837 | 436 | 69 | 1580 |
| Lubricator | L. O. Orton | 530,715 | Dec. 11 | 1134 | 275 | 69 | 1436 |
| Lubricator | H. Pennington | 526,816 | Oct. 2 | 240 | 58 | 69 | 45 |
| Lubricator | F. E. Small | 531,225 | Dec. 18 | 2024 | 482 | 69 | 1613 |
| Lubricator | W. F. Van Guysling | 527,516 | Oct. 16 | 1383 | 337 | 69 | 285 |
| Luggage-carrier | G. F. Hall | 530,104 | Dec. 4 | 46 | 13 | 69 | 1224 |
| Lumber-drying kiln | W. P. Murphy | 531,325 | Dec. 25 | 2203 | 527 / 528 | 69 | 1663 |
| Lumber-stamping attachment for sawing or trimming machines | J. P. Riedy | 529,195 | Nov. 13 | 1206 | 291 | 69 | 885 |
| Lunch-heater | A. L. White | 530,146 | Dec. 4 | 117 | 30 | 69 | 1237 |
| Magazine-camera | G. P. C. Maroniez | 528,176 | Oct. 30 | 2530 | 613 / 614 | 69 | 527 |
| Magazine. Dust-proof single-delivery cover-glass | A. H. Cole | 530,926 | Dec. 18 | 1477 | 350 | 69 | 1515 |
| Magazine or book holder | F. Barwick | 531,496 | Dec. 25 | 2511 | 598 | 69 | 1721 |
| Magnet | A. H. Hoyt | 528,635 | Nov. 6 | 211 | 51 | 69 | 684 |
| Magnet. Electro- | C. C. Gerlach | 529,325 | Nov. 13 | 1434 | 345 | 69 | 928 |
| Magnetic separator | W. H. Williams | 528,054 | Oct. 23 | 2313 | 558 | 69 | 472 |
| Magnetic separator | W. H. Williams | 528,055 | Oct. 23 | 2316 | 558 / 559 | 69 | 473 |
| Magnets of dynamo-electric machines or motors. Adjuster for field- | M. Waddell | 527,225 | Oct. 9 | 893 | 217 | 69 | 182 |
| Mail-bag | W. Brubaker | 527,402 | Oct. 16 | 1193 | 293 | 69 | 250 |
| Mail-bag | A. F. George | 530,683 | Dec. 11 | 1085 | 263 / 264 | 69 | 1427 |
| Mail-bag catcher | H. N. Fleming | 527,548 | Oct. 16 | 1435 | 349 / 350 | 69 | 295 |
| Mail-bag hanger | J. A. Braniff | 531,360 | Dec. 25 | 2270 | 541 | 69 | 1675 |
| Mail-bags to or from trains in motion. Apparatus for delivering | E. Davies | 528,086 | Oct. 23 | 2371 | 572 | 69 | 483 |
| Mail-crane | M. J. Grosz | 529,071 | Nov. 13 | 992 | 236 / 237 | 69 | 846 |
| Malted food | M. Watson | 531,013 | Dec. 18 | 1632 | ..... | 69 | 1542 |
| Malting-machine | A. Schultz | 529,842 | Nov. 27 | 2342 | 557 / 558 | 69 | 1122 |
| Mangle | P. O. Johnson | 530,589 | Dec. 11 | 923 | 226 | 69 | 1400 |
| Manhole-cover | C. Parkins | 528,387 | Oct. 30 | 2897 | 702 | 69 | 592 |
| Manicure-instrument | C. J. Bailey | 528,317 | Oct. 30 | 2781 | 671 | 69 | 572 |
| Manifolding device | E. B. Tilton | 530,806 | Dec. 11 | 1280 | 309 | 69 | 1464 |
| Manure-spreader | D. B. Merrell | 531,206 | Dec. 18 | 1985 | 471 / 472 | 69 | 1606 |
| Marbles. Manufacturing artificial | F. Grand' Montagne | 527,969 | Oct. 23 | 2166 | ..... | 69 | 446 |
| Marker. Land- | H. Bowers | 529,585 | Nov. 20 | 1919 | 458 | 69 | 1035 |
| Marker. Land- | S. J. Cronkwright | 527,362 | Oct. 9 | 1122 | 274 | 69 | 223 |
| Mashing-machine | A. Schultz | 531,601 | Dec. 25 | 2686 | 644 | 69 | 1755 |
| Mast-hoop | W. R. Baker | 527,167 | Oct. 9 | 801 | 195 | 69 | 163 |
| Match-box | M. Strakosch | 528,186 | Oct. 30 | 2547 | 618 | 69 | 530 |
| Match-box. Suspendable | J. M. Heimann | 531,185 | Dec. 18 | 1944 | 462 | 69 | 1600 |
| Match-making machine | E. B. Beecher and J. P. Wright | 528,457 | Oct. 30 | 3018 | 729 / 730 / 731 / 732 / 733 / 734 / 735 | 69 | 613 |
| Match-receptacle | F. D. Halsey | 531,115 | Dec. 18 | 1812 | 430 / 431 | 69 | 1575 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Pages. |
|---|---|---|---|---|---|---|---|
| Match-safe | C. H. Renter | 528,691 | Nov. 6 | 306 | 75 | 69 | 701 |
| Match splints. Machine for coiling | C. B. Andrews | 530,875 | Dec. 11 | 1388 | 330, 331 | 69 | 1483 |
| Matches, toothpicks, &c. Machine for making splints for | E. B. Benham and H. E. Barlow | 530,382 | Dec. 4 | 542 | 135 | 69 | 1314 |
| Mats, floors, &c. Wearing surface for door- | H. D. Whiteley | 527,094 | Oct. 9 | 678 | 166 | 69 | 142 |
| Matrix-bar and making same | A. S. Capehart | 529,140 | Nov. 20 | 1665 | 396 | 69 | 989 |
| Matrix-making machine | M. Lane | 530,279 | Dec. 4 | 356 | 88, 89 | 69 | 1280 |
| Mattress | G. S. Perren | 527,287 | Oct. 9 | 1092 | 243 | 69 | 200 |
| Mattress-filling machine | E. T. Gaskill | 530,040 | Nov. 27 | 2699 | 648 | 69 | 1191 |
| Measure and square. Combined tape | A. E. Krebs | 530,111 | Dec. 4 | 62 | 16 | 69 | 1227 |
| Measure. Gage- | W. J. and M. R. Littell | 526,926 | Oct. 2 | 436 | 108 | 69 | 81 |
| Measure. Rotary | J. Gray | 530,686 | Dec. 11 | 1089 | 264 | 69 | 1428 |
| Measure. Tape- | F. L. Church | 527,194 | Oct. 9 | 841 | 205 | 69 | 172 |
| Measuring and registering apparatus. Grain | C. A. Gibbs | 529,068 | Nov. 13 | 987 | 234, 235 | 69 | 845 |
| Measuring and registering device | G. Krueger | 531,047 | Dec. 18 | 1691 | 401, 402 | 69 | 1553 |
| Measuring apparatus. Hat- | A. Allstädt | 530,073 | Dec. 11 | 1068 | 260 | 69 | 1424 |
| Measuring device | C. W. Schramm | 529,202 | Nov. 13 | 1220 | 294 | 69 | 887 |
| Measuring electricity. Apparatus for | W. Friese-Greene | 528,870 | Nov. 6 | 641 | 153 | 69 | 763 |
| Measuring instrument. Electrical | E. Weston | 529,434 | Nov. 20 | 1652 | 393 | 69 | 986 |
| Measuring instrument. Electrical | E. Weston | 529,435 | Nov. 20 | 1654 | 393, 394 | 69 | 987 |
| Measuring-instrument for switchboards. Electrical | J. Van Vleck | 529,433 | Nov. 20 | 1649 | 393 | 69 | 986 |
| Measuring instruments. Scale and index for electrical | E. Weston | 527,034 | Oct. 2 | 595 | 144 | 69 | 112 |
| Measuring machine. Cloth | H. Minister | 527,617 | Oct. 16 | 1545 | 374 | 69 | 315 |
| Measuring machine. Cordage | J. D. Boatwright | 530,385 | Dec. 4 | 547 | 136 | 69 | 1315 |
| Measuring machine. Rope | C. E. Mathers | 529,285 | Nov. 13 | 1362 | 326, 327 | 69 | 913 |
| Measuring-machines. Signaling device for automatic | J. H. Wiemers | 526,915 | Oct. 2 | 416 | 103 | 69 | 78 |
| Measuring-tank | J. Hall | 529,326 | Nov. 13 | 1435 | 345 | 69 | 928 |
| Meat-chopping machine | J. W. Farnoff | 529,253 | Nov. 13 | 1311 | 315 | 69 | 903 |
| Meat-cutter | G. and E. D. Ashley | 527,921 | Oct. 23 | 2069 | 496 | 69 | 427 |
| Meat-cutter | O. D. Woodruff | 529,149 | Nov. 13 | 1121 | 272 | 69 | 870 |
| Meat-roaster | J. Stroud. (Reissue) | 11,451 | Oct. 30 | 3122 | 756, 757 | 69 | 633 |
| Mechanical movement | I. S. Bryant | 528,412 | Oct. 30 | 2942 | 711 | 69 | 600 |
| Mechanical movement | S. B. Curtis | 530,638 | Dec. 11 | 1012 | 247 | 69 | 1415 |
| Mechanical movement | A. Sharp | 531,340 | Dec. 25 | 2229 | 533 | 69 | 1666 |
| Mechanically-propelled figure | S. Wilson | 526,984 | Oct. 2 | 514 | 126 | 69 | 96 |
| Medallion. Souvenir | S. May and L. M. Aron. (Reissue) | 11,455 | Nov. 27 | 2773 | 665 | 69 | 1204 |
| Medical purposes. Treating air for | R. W. Rogers | 529,684 | Nov. 20 | 2070 | 495 | 69 | 1063 |
| Melharmonium | L. P. Schpanowsky | 530,605 | Dec. 11 | 949 | 233 | 69 | 1404 |
| Menu-card and check. Combined | J. A. Newberry | 528,889 | Nov. 6 | 667 | 161 | 69 | 768 |
| Metal and making same. Composition of | P. Inch | 529,020 | Nov. 20 | 1968 | ..... | 69 | 1044 |
| Metal bars. Machine for bending flanged | A. J. Moxham | 530,196 | Dec. 4 | 210 | 52 | 69 | 1253 |
| Metal bars. Machine for bending flanged | W. Pfefferkorn | 530,240 | Dec. 4 | 292 | 72 | 69 | 1268 |
| Metal bars. Machine for bending flanged | W. Raymond | 530,203 | Dec. 4 | 221 | 55 | 69 | 1256 |
| Metal bars. Union of transverse | J. T. McCormick | 528,677 | Nov. 6 | 825 | 69 | 69 | 697 |
| Metal coatings from metallic bases. Removing and recovering | T. G. Hunter | 529,862 | Nov. 27 | 2373 | 568 | 69 | 1128 |
| Metal coatings from metallic bases. Removing and recovering | T. G. Hunter | 529,863 | Nov. 27 | 2375 | 568 | 69 | 1129 |
| Metal-coatings from metallic bases. Removing and recovering | T. G. Hunter | 529,864 | Nov. 27 | 2376 | 568 | 69 | 1129 |
| Metal-cutting machine. Shape- | L. S. Pfouts | 528,738 | Nov. 6 | 372 | 91 | 69 | 714 |
| Metal-cutting shears | B. P. Autrey | 529,039 | Nov. 20 | 2001 | 478 | 69 | 1050 |
| Metal-drawing machine | A. W. Foster | 527,486 | Oct. 16 | 1333 | 325 | 69 | 278 |
| Metal. Electrically heating | C. L. Coffin | 530,021 | Nov. 27 | 2669 | 640 | 69 | 1185 |
| Metal for blades, pipes, &c | J. W. Wyckoff and J. M. Wetton | 529,990 | Nov. 27 | 2614 | 627 | 69 | 1174 |
| Metal. Machine for cutting beveled edges on plate | D. Lennox | 527,178 | Oct. 9 | 816 | 198 | 69 | 167 |
| Metal. Means for joining edges of sheet, strip, and plate | F. A. Williams | 530,314 | Dec. 4 | 418 | 105 | 69 | 1291 |
| Metal. Mechanism for handling molten | J. S. Dougherty | 528,770 | Nov. 6 | 440 | 107 | 69 | 726 |
| Metal plates. Feeding device for apparatus for coating | S. Y. Buckman | 530,323 | Dec. 4 | 432 | 108 | 69 | 1294 |
| Metal. Process of and apparatus for forming and treating | G. Engel | 528,661 | Nov. 6 | 251 | 62, 63 | 69 | 691 |
| Metal-shears | R. J. Thompson | 530,059 | Nov. 27 | 2742 | 658 | 69 | 1198 |
| Metal-straightening machine | W. S. Ralya and R. Coyle | 529,956 | Nov. 27 | 2531 | 610 | 69 | 1156 |
| Metal strips on pasteboard, &c. Machine for fastening | E. Saltzkorn and L. Nicolai | 529,752 | Nov. 27 | 2184 | 521 | 69 | 1092 |
| Metal wheels. Making wrought- | A. A. Stevenson | 531,072 | Dec. 18 | 1728 | 411 | 69 | 1560 |
| Metals. Apparatus for extracting | A. Guillaume | 531,309 | Dec. 25 | 2175 | 521 | 69 | 1657 |
| Metals from sulfide ores, &c. Extracting | V. Engelhardt | 531,169 | Dec. 18 | 1919 | 457 | 69 | 1594 |
| Metals in imitation of faience. Finishing | J. Hopson, Jr | 530,342 | Dec. 4 | 474 | ..... | 69 | 1300 |
| Metals. Making plates, &c., of combined | A. Rodig | 530,719 | Dec. 11 | 1144 | 278 | 69 | 1437 |
| Metals. Method of and apparatus for electrodeposition of | C. R. Fletcher | 527,110 | Oct. 9 | 707 | 173 | 69 | 147 |
| Meter: *See* Electric meter. Water-meter. | | | | | | | |
| Meter | M. C. Henley and J. P. Fulgham | 527,979 | Oct. 23 | 2186 | 526 | 69 | 449 |
| Micrometer-gages. Automatic stop for | H. V. Bernhardt | 528,759 | Nov. 6 | 417 | 101 | 69 | 722 |
| Micrometer-indicator | J. Bath | 526,960 | Oct. 2 | 476 | 117 | 69 | 90 |
| Microscopes. Slow-motion attachment for | H. G. Sedgwick | 528,211 | Oct. 30 | 2597 | 627 | 69 | 538 |
| Middlings-purifier | H. Seck | 529,965 | Nov. 27 | 2549 | 614 | 69 | 1160 |
| Milk-can | E. A. Kaestner | 527,245 | Oct. 9 | 925 | 223 | 69 | 187 |
| Milk-can fastener | G. McDermott | 527,247 | Oct. 9 | 934 | 226 | 69 | 189 |
| Milk-cooling house | E. Meck | 527,700 | Oct. 16 | 1685 | 405 | 69 | 341 |
| Milk-sterilizing apparatus | E. Leslie | 529,075 | Nov. 13 | 1001 | 241 | 69 | 847 |
| Milk. Testing | I. K. Lindstrom | 531,049 | Dec. 18 | 1698 | ..... | 69 | 1555 |
| Milking-machine | R. Withell | 529,576 | Nov. 20 | 1908 | 454 | 69 | 1033 |
| Milking machine. Cow- | E. Smart | 527,893 | Oct. 23 | 2019 | 485 | 69 | 418 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Pages. |
|---|---|---|---|---|---|---|---|
| Milking machines. Suction-pump for cow- | J. S. Jensen | 529,865 | Nov. 27 | 2378 | 569 | 69 | 1130 |
| Mill: *See* Coffee-mill. Roller-mill. Feed-mill. Rolling-mill. Grinding-mill. Rubber-mixing mill. Olive-mill. Stamp-mill. Ore pulverizing and amalgamating mill. Windmill. | | | | | | | |
| Mill guide. Rod- | W. A. Kilmer | 530,591 | Dec. 11 | 926 | 227 | 69 | 1400 |
| Mill-roll feeder | G. W. Combs | 528,077 | Oct. 23 | 2361 | 570 | 69 | 481 |
| Milling-cutters. Manufacture of | C. C. Tyler | 530,213 | Dec. 4 | 241 | 59 | 69 | 1260 |
| Milling-cutters. Method of and apparatus for making | C. C. Tyler | 530,212 | Dec. 4 | 238 | 59 | 69 | 1259 |
| Milling-machine | B. F. Barnes | 529,013 | Nov. 13 | 899 | 212 | 69 | 829 |
| Milling-machine | E. J. McClellan | 527,213 | Oct. 9 | 870 | 211 | 69 | 177 |
| Miner's pick | F. J. S. Hute | 529,271 | Nov. 13 | 1342 | 321 | 69 | 909 |
| Miner's spooning-tool | N. E. Varney | 531,347 | Dec. 25 | 2244 | 535 | 69 | 1669 |
| Mines. Preventing draft in coal- | E. A. Tiffany | 530,463 | Dec. 4 | 667 | 165 | 69 | 1337 |
| Mining-drill | A. E. Buzzo | 528,850 | Nov. 6 | 601 | 142, 143 | 69 | 755 |
| Mining-drill | R. H. Elliott and J. B. Carrington | 530,510 | Dec. 11 | 784 | 193, 194 | 69 | 1375 |
| Mining-drill | R. H. Elliott and J. B. Carrington | 530,511 | Dec. 11 | 786 | 194, 195 | 69 | 1375 |
| Mining-drill | R. H. Elliott and J. B. Carrington | 530,512 | Dec. 11 | 788 | 195 | 69 | 1375 |
| Mining-machine | J. Henwood | 527,791 | Oct. 23 | 1837 | 442 | 69 | 387 |
| Mining machine. Coal- | P. F. Campbell | 531,019 | Dec. 18 | 1643 | 390 | 69 | 1544 |
| Mitering-machine | J. Locke | 527,434 | Oct. 16 | 1216 | 306 | 69 | 259 |
| Mixer | U. R. Mohr | 530,051 | Nov. 27 | 2732 | 655 | 69 | 1197 |
| Mixing-board | E. E. Carpenter | 529,706 | Nov. 27 | 2111 | 506 | 69 | 1080 |
| Mixing-machine | J. Markus | 528,175 | Oct. 30 | 2529 | 613 | 69 | 526 |
| Moistening device | T. J. Close | 527,049 | Oct. 9 | 619 | 150 | 69 | 131 |
| Mold: *See* Casting-mold. Glass-blowing mold. Cigar-mold. Stove ash-pit mold. Glass-mold. | | | | | | | |
| Mold | J. Ramming | 529,309 | Nov. 13 | 1417 | 340 | 69 | 924 |
| Mold | E. L. Ransome | 528,342 | Oct. 30 | 2818 | 681 | 69 | 578 |
| Mold for making washers and tacks for plumbers' use | D. R. Black and S. A. Hill | 527,931 | Oct. 23 | 2087 | 500 | 69 | 431 |
| Mold-moistener | H. C. Schrader | 526,948 | Oct. 2 | 461 | 113 | 69 | 87 |
| Molder's apparatus | A. K. Beckwith | 530,319 | Dec. 4 | 426 | 106, 107 | 69 | 1292 |
| Molding apparatus | S. J. Adams | 531,429 | Dec. 25 | 2381 | 570 | 69 | 1697 |
| Molding-machine | C. Herman | 528,295 | Oct. 30 | 2742 | 662, 663 | 69 | 565 |
| Moldings and automatically turning articles from rods. Machine for cutting spiral or turned | A. C. Pemberton | 526,738 | Oct. 2 | 115 | 27, 28 | 69 | 23 |
| Mole-trap | A. Arnold | 528,136 | Oct. 30 | 2471 | 598 | 69 | 515 |
| Mole-trap | M. H. Nash | 529,801 | Nov. 27 | 2263 | 540 | 69 | 1106 |
| Money-drawer. Safety | M. R. Daley | 528,082 | Oct. 23 | 2369 | 572 | 69 | 482 |
| Monkey and pipe wrench. Combined | S. M. Friedo | 530,518 | Dec. 11 | 798 | 168 | 69 | 1377 |
| Monuments. Construction of memorial | W. B. Van Amringe | 528,193 | Oct. 30 | 2563 | 620, 621 | 69 | 532 |
| Mop and wringer. Combined | S. L. Bergstresser | 528,525 | Nov. 6 | 8 | 4 | 69 | 648 |
| Moquette fabric | E. Tymeson | 529,635 | Nov. 20 | 1988 | 474 | 69 | 1048 |
| Mordant | R. H. Pickles | 530,202 | Dec. 4 | 219 | ..... | 69 | 1256 |
| Mortar-mixing machine | W. Rennyson | 530,654 | Dec. 11 | 1040 | 254 | 69 | 1419 |
| Mortise-lock | F. P. Burkhardt | 527,011 | Oct. 2 | 555 | 135 | 69 | 105 |
| Mosquito-net frame | C. P. Dieco | 530,164 | Dec. 4 | 149 | 39 | 69 | 1242 |
| Motion. Converting reciprocatory into rotary | D. Hazard | 529,859 | Nov. 27 | 2369 | 567 | 69 | 1128 |
| Motion for centrifugal or other machines. Production of high speed rotary | A. Krank | 531,589 | Dec. 25 | 2582 | 617, 618 | 69 | 1735 |
| Motion. Means for transmitting | H. C. F. E. Snowman | 530,972 | Dec. 18 | 1562 | 370 | 69 | 1529 |
| Motion. Parallel | F. L. Stone | 529,339 | Nov. 13 | 1454 | 350, 351 | 69 | 932 |
| Motor: *See* Car-motor. Pump-motor. Current-motor. Rotary motor. Electric motor. Spring-motor. Elevator-motor. Steam-motor. Fan-motor. Water-motor. Gas-motor. | | | | | | | |
| Motor | G. W. Browne and J. W. Little | 528,461 | Oct. 30 | 3031 | 736 | 69 | 616 |
| Motor | J. S. Mackie | 526,928 | Oct. 2 | 439 | 108 | 69 | 82 |
| Motor-charging device | J. T. F. Conti | 531,511 | Dec. 25 | 2533 | 606, 607 | 69 | 1725 |
| Motor engine. Gas, oil, or similar | H. H. Andrew and A. R. Bellamy | 528,063 | Oct. 23 | 2330 | 562 | 69 | 475 |
| Motor engine. Gas or oil | H. Schumm | 528,115 | Oct. 23 | 2424 | 587 | 69 | 492 |
| Motor-power engine | J. Landry and G. Beyroux | 529,330 | Nov. 13 | 1442 | 348 | 69 | 930 |
| Motors. Cylinder and valve for steam- | A. Holmgren | 528,227 | Oct. 30 | 2025 | 633 | 69 | 513 |
| Mower. Lawn- | G. P. Kirsch | 527,697 | Oct. 16 | 1680 | 404 | 69 | 340 |
| Mowers. Grass-catcher for lawn- | J. A. Bubier | 530,084 | Dec. 4 | 14 | 4 | 69 | 1217 |
| Mowers. Grass-catching attachment for lawn- | C. K. Hann | 529,030 | Nov. 13 | 919 | 218 | 69 | 834 |
| Mowing-machine | S. V. Kennedy | 529,448 | Nov. 20 | 1679 | 401, 402 | 69 | 991 |
| Mowing-machine | E. Pridmore | 528,304 | Oct. 30 | 2758 | 666 | 69 | 567 |
| Mucilage. Device for mechanically applying | V. H. Bazerque | 527,009 | Oct. 2 | 550 | 135 | 69 | 104 |
| Muff and purse. Combined | I. Sprung | 526,950 | Oct. 2 | 464 | 114 | 69 | 87 |
| Music-box damper | G. A. Brachhausen | 531,359 | Dec. 25 | 2269 | 541 | 69 | 1674 |
| Music-boxes. Damper attachment for Swiss | W. H. Hoschke | 531,036 | Dec. 18 | 1669 | 396 | 69 | 1549 |
| Music holder and stand. Combined | J. Wunder | 527,096 | Oct. 9 | 682 | 168 | 69 | 143 |
| Music-leaf turner | C. P. Brown | 527,658 | Oct. 16 | 1610 | 388, 389 | 69 | 327 |
| Music-leaf turner | J. Flemming | 530,031 | Nov. 27 | 2683 | 645 | 69 | 1188 |

*Alphabetical list of inventions, October to December, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Drg. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|---|---|
| Music. Machine for making perforated sheet | W. E. Griggs | 527,970 | Oct. 23 | 2168 | 521 | 69 | 446 |
| Musical instrument | W. Burke | 529,893 | Nov. 27 | 2424 | 582 | 69 | 1138 |
| Musical instrument | J. Dodd | 527,269 | Oct. 9 | 973 | 236 | 69 | 195 |
| Musical instrument | E. Enriquez | 527,675 | Oct. 16 | 1639 | 395 | 69 | 332 |
| Musical instrument | R. H. Mayland | 531,323 | Dec. 25 | 2202 | 527 | 69 | 1662 |
| Musical-instrument attachment | L. Utt | 530,369 | Dec. 4 | 518 | 128 | 69 | 1309 |
| Musical instrument. Automatic | W. H. Hoschke | 531,037 | Dec. 18 | 1670 | 396, 397 | 69 | 1549 |
| Musical-instrument damper | A. Richter | 527,811 | Oct. 23 | 1866 | 448 | 69 | 301 |
| Musical-instrument tuning-key | A. McKenzie | 528,013 | Oct. 23 | 2251 | 543 | 69 | 460 |
| Musical instrument. Wind reed | P. J. Devault | 527,742 | Oct. 16 | 1749 | 422 | 69 | 353 |
| Musical instruments. Accompaniment-player for | R. W. Lyle | 529,928 | Nov. 27 | 2479 | 597, 598 | 69 | 1147 |
| Musical instruments. Keyboard attachment for | J. D. Case | 529,895 | Nov. 27 | 2427 | 583 | 69 | 1138 |
| Musical instruments. Tune-sheet for automatic | A. Amthor | 529,995 | Nov. 27 | 2619 | 628, 629 | 69 | 1175 |
| Mustache-curler | C. C. Burgio | 529,591 | Nov. 20 | 1926 | 459 | 69 | 1037 |
| Mustache-guard | M. V. Kingsbury | 529,553 | Nov. 20 | 1868 | 444 | 69 | 1025 |
| Nail: *See* Spacing-nail. | | | | | | | |
| Nail-extractor | R. Blake | 526,678 | Oct. 2 | 14 | 4 | 69 | 5 |
| Nail making, distributing, and driving machine | F. F. Raymond, 2d | 528,505 | Nov. 6 | 505 | 122 | 69 | 738 |
| Nail-making machine. Wire | G. W. Bond | 529,475 | Nov. 20 | 1725 | 411 | 69 | 990 |
| Nail-set | C. G. White | 530,252 | Dec. 4 | 309 | 77 | 69 | 1272 |
| Name or inscription plate for monuments, signs, &c. | R. H. Follenius | 527,744 | Oct. 16 | 1755 | 423 | 69 | 353 |
| Napkins, &c. Holder for | J. H. Pierrepont | 529,186 | Nov. 13 | 1192 | 286 | 69 | 892 |
| Neckband-clamp | A. Conkling and E. W. Buell | 527,408 | Oct. 16 | 1202 | 295 | 69 | 251 |
| Necktie | D. Sanguinetto | 527,120 | Oct. 9 | 744 | 182 | 69 | 153 |
| Necktie-fastener | W. C. McDougall | 529,934 | Nov. 27 | 2486 | 599 | 69 | 1149 |
| Necktie-holder | J. H. Hines, Jr | 528,879 | Nov. 6 | 655 | 157 | 69 | 766 |
| Net. Safety | J. P. Dromgoole | 527,594 | Oct. 16 | 1511 | 367 | 69 | 309 |
| Nipple connection | T. R. Brien | 530,679 | Dec. 11 | 1080 | 262 | 69 | 1426 |
| Nipple-holder | G. F. Bard | 527,168 | Oct. 9 | 802 | 195 | 69 | 164 |
| Nipple-holder | J. H. Vinton | 527,031 | Oct. 2 | 590 | 143 | 69 | 111 |
| Non-conducting material and forming same | H. C. Michell | 527,439 | Oct. 16 | 1253 | 308 | 69 | 260 |
| Nozzle | F. W. Herbkesmann | 528,431 | Oct. 30 | 2974 | 719 | 69 | 606 |
| Nozzle. Automatic exhaust | J. T. McLellan | 528,549 | Nov. 6 | 44 | 12 | 69 | 654 |
| Numbering mechanism | M. E. Knight and C. S. Gooding | 527,205 | Oct. 9 | 857 | 208, 209 | 69 | 175 |
| Nut and bolt lock | T. Berridge | 528,320 | Oct. 30 | 2781 | 672 | 69 | 572 |
| Nut and bolt lock | A. and A. Franklin | 526,697 | Oct. 2 | 42 | 12 | 69 | 11 |
| Nut and bolt lock | G. L. Rush | 528,990 | Nov. 13 | 858 | 203 | 69 | 823 |
| Nut. Axle | E. N. Anderson | 531,245 | Dec. 18 | 2058 | 491 | 69 | 1619 |
| Nut. Axle | R. Fawcett | 528,293 | Oct. 30 | 2736 | 661 | 69 | 564 |
| Nut-fasteners. Machine for making | W. Dunn | 531,305 | Dec. 25 | 2169 | 519 | 69 | 1656 |
| Nut for spindle-supports. Spring | E. J. Carroll | 528,361 | Oct. 30 | 2854 | 691 | 69 | 585 |
| Nut-lock | W. J. Dillehay | 528,582 | Nov. 6 | 15 | 6 | 69 | 649 |
| Nut-lock | J. Dittmann | 529,718 | Nov. 27 | 2130 | 510 | 69 | 1084 |
| Nut-lock | H. Dolan | 531,024 | Dec. 18 | 1653 | 392 | 69 | 1546 |
| Nut-lock | A. Edwards | 526,996 | Oct. 2 | 531 | 130 | 69 | 100 |
| Nut-lock | W. H. Gelbaugh | 526,896 | Oct. 2 | 382 | 95 | 69 | 71 |
| Nut-lock | P. T. Johnston | 527,390 | Oct. 9 | 1172 | 287 | 69 | 231 |
| Nut-lock | T. J. Litzinger | 527,179 | Oct. 9 | 818 | 198 | 69 | 167 |
| Nut-lock | C. N. Meriwether | 529,742 | Nov. 27 | 2171 | 517 | 69 | 1090 |
| Nut-lock | W. W. Owens | 527,154 | Oct. 9 | 781 | 190 | 69 | 160 |
| Nut-lock | D. Rhodes | 530,963 | Dec. 18 | 1543 | 365 | 69 | 1526 |
| Nut-lock | F. S. Robbins | 528,237 | Oct. 30 | 2646 | 638 | 69 | 547 |
| Nut-lock | G. E. Smouse | 529,970 | Nov. 27 | 2563 | 617 | 69 | 1163 |
| Nut-lock | N. D. Stanley | 530,290 | Dec. 4 | 381 | 94 | 69 | 1284 |
| Nut-lock | S. Stevens | 529,633 | Nov. 20 | 1986 | 474 | 69 | 1047 |
| Nut-lock | D. D. Weisell | 527,569 | Oct. 16 | 1465 | 357 | 69 | 301 |
| Nut-lock | H. L. Wood | 530,740 | Dec. 11 | 1477 | 287 | 69 | 1443 |
| Nut. Lock | N. Leidgen | 529,034 | Nov. 13 | 923 | 219 | 69 | 834 |
| Nut-lock. Ratchet-washer | E. H. G. Brinser | 530,881 | Dec. 11 | 1399 | 333 | 69 | 1485 |
| Nut or bolt lock | F. B. Bradley | 530,083 | Dec. 4 | 12 | 3 | 69 | 1217 |
| Nut. Vehicle-axle | F. E. Boss | 530,387 | Dec. 4 | 550 | 136 | 69 | 1315 |
| Nuts. Die for making lock | S. D. Barnett | 529,847 | Nov. 27 | 2349 | 560 | 69 | 1124 |
| Oar. Bow-facing | F. Harbers | 530,519 | Dec. 11 | 799 | 198 | 69 | 1378 |
| Oar-lock | H. Brinkmann | 528,221 | Oct. 30 | 2614 | 630 | 69 | 541 |
| Obstetrical stirrup | J. M. Maurer | 529,626 | Nov. 20 | 1974 | 471 | 69 | 1046 |
| Oculist's testing-frame | J. H. E. De Celles | 528,716 | Nov. 6 | 336 | 82 | 69 | 707 |
| Oculist's testing-frame | J. H. E. De Celles | 528,717 | Nov. 6 | 338 | 82 | 69 | 708 |
| Office-indicator | H. G. Klenze | 529,277 | Nov. 13 | 1353 | 324 | 69 | 911 |
| Ohmmeter | A. H. Armen | 528,268 | Oct. 30 | 2692 | 649 | 69 | 556 |
| Oil-burner | J. Dubelman | 528,292 | Oct. 30 | 2735 | 660 | 69 | 564 |
| Oil-burner | C. G. Moore | 528,336 | Oct. 30 | 2808 | 678, 679 | 69 | 576 |
| Oil-burner | C. Whittingham | 528,314 | Oct. 30 | 2778 | 670 | 69 | 571 |
| Oil-can | A. W. Knittel | 528,946 | Nov. 13 | 793 | 185 | 69 | 811 |
| Oil-can | J. Schwiebert | 528,565 | Nov. 6 | 64 | 17 | 69 | 658 |
| Oil-can | F. B. Smith | 530,207 | Dec. 4 | 228 | 56 | 69 | 1257 |
| Oil-can carrier | J. H. Lins | 527,339 | Oct. 9 | 1081 | 262 | 69 | 215 |
| Oil-cloth. Plant for the manufacture of | C. Templeton | 529,217 | Nov. 13 | 1245 | 299, 300 | 69 | 891 |
| Oil-cup | C. C. Tyler | 531,401 | Dec. 25 | 2335 | 557 | 69 | 1688 |
| Oil or gas burner | C. W. Claybourne | 531,509 | Dec. 25 | 2529 | 605 | 69 | 1724 |
| Oil-purifier | D. H. McClelland | 530,897 | Dec. 11 | 1424 | 338 | 69 | 1490 |
| Oiler | G. J. Kraushaar | 529,921 | Nov. 27 | 2467 | 594 | 69 | 1145 |
| Olive-mill | B. Toulouse and J. Delorieux | 527,905 | Oct. 23 | 2040 | 489 | 69 | 423 |
| Open-hearth furnace | J. Purves | 528,510 | Oct. 30 | 3110 | 754 | 69 | 631 |
| Orange cup and pulp-remover | H. Maier | 529,333 | Nov. 13 | 1446 | 349 | 69 | 930 |
| Orange-holder | G. A. Glahn | 527,603 | Oct. 16 | 1524 | 370 | 69 | 311 |
| Orange-polishing machine | A. Warr | 528,195 | Oct. 30 | 2566 | 621 | 69 | 533 |



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| Invention. | Name. | No. | Date | Monthly volume. Spec. | Drg. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|---|---|
| Ordnance. Breech-loading | A. Noble and E. W. Lloyd | 531,594 | Dec 25 | 2670 | 641, 642 | 69 | 1753 |
| Ordnance breech mechanism | S. O. Leijonstelh | 529,394 | Nov. 20 | 1555 | 374, 375 | 69 | 973 |
| Ordnance. Recoil-actuated hydraulic breech-operating mechanism for | J. B. G. A. Canet | 531,157 | Dec. 18 | 1891 | 450, 451 | 69 | 1590 |
| Ore-concentrator | S. Beer | 531,498 | Dec. 25 | 2514 | 598 | 69 | 1721 |
| Ore-concentrator | J. M. Montgomery | 531,381 | Dec. 25 | 2306 | 550 | 69 | 1682 |
| Ore-concentrator | A. C. Springer | 527,223 | Oct. 9 | 891 | 216 | 69 | 181 |
| Ore-crusher | A. H. Schierholz | 531,068 | Dec. 18 | 1721 | 409, 410 | 69 | 1559 |
| Ore grinder and separator | J. W. MacDonald | 531,127 | Dec 18 | 1833 | 435, 436 | 69 | 1579 |
| Ore, &c. Machine for crushing | F. A. Wheeler | 529,766 | Nov. 27 | 2307 | 526 | 69 | 1006 |
| Ore pulverizing and amalgamating mill | J. W. Bailey | 530,612 | Dec. 11 | 960 | 235 | 69 | 1406 |
| Ore-roasting furnace | P. Naef | 528,016 | Oct. 23 | 2257 | 544, 545 | 69 | 461 |
| Ore separator. Magnetic | C. G. Buchanan | 531,301 | Dec. 25 | 2163 | 517, 518 | 69 | 1654 |
| Ore washer or concentrator | C. F. Pike | 528,970 | Nov. 13 | 831 | 195 | 69 | 817 |
| Ore washer or concentrator | C. F. Pike | 528,971 | Nov. 13 | 832 | 195 | 69 | 818 |
| Ore washer or concentrator | C. F. Pike | 528,972 | Nov. 13 | 834 | 196 | 69 | 818 |
| Ore washer or concentrator | C. F. Pike | 528,974 | Nov. 13 | 836 | 197 | 69 | 819 |
| Ore washer or concentrator | C. F. Pike | 528,975 | Nov. 13 | 837 | 198 | 69 | 819 |
| Ore washer or concentrator | C. F. Pike | 528,978 | Nov. 13 | 844 | 199 | 69 | 820 |
| Ore washer or concentrator | C. F. Pike | 528,979 | Nov. 13 | 845 | 200 | 69 | 820 |
| Ore washer or concentrator | C. F. Pike | 528,980 | Nov. 13 | 847 | 200 | 69 | 821 |
| Ore washer or concentrator | C. F. Pike | 528,981 | Nov. 13 | 848 | 200 | 69 | 821 |
| Ore washer or concentrator | C. F. Pike | 528,982 | Nov. 13 | 850 | 201 | 69 | 821 |
| Ore washer or concentrator | C. F. Pike | 528,983 | Nov. 13 | 852 | 201 | 69 | 822 |
| Ore washer or concentrator | C. F. Pike | 529,047 | Nov. 13 | 950 | 224, 225 | 69 | 889 |
| Ore washer or concentrator | C. F. Pike | 529,080 | Nov. 13 | 1009 | 244 | 69 | 849 |
| Ore washer or concentrator | C. F. Pike | 529,187 | Nov. 13 | 1193 | 287 | 69 | 892 |
| Ore washer or concentrator | C. F. Pike | 529,158 | Nov. 13 | 1195 | 284, 285 | 69 | 883 |
| Ore washer or concentrator | C. F. Pike | 529,307 | Nov. 13 | 1412 | 339, 340 | 69 | 923 |
| Ore washing, concentrating, and amalgamating system | C. F. Pike | 528,973 | Nov. 13 | 835 | 196 | 69 | 818 |
| Ores, &c. Grading | D. Brennan, Jr | 529,587 | Nov. 20 | 1922 | 458 | 69 | 1036 |
| Ores. Process of and apparatus for desulfurizing | L. Pelatan and F. Clerici | 531,004 | Dec. 18 | 1615 | 383, 384 | 69 | 1539 |
| Ores. Treating | H. H. Eames | 529,441 | Nov. 20 | 1667 | 397 | 69 | 989 |
| Organ | M. Hetherington | 528,478 | Oct. 30 | 3056 | 711, 712 | 69 | 621 |
| Organ-coupler | C. Wales | 531,077 | Dec. 18 | 1740 | 415 | 69 | 1561 |
| Organ. Reed | J. W. Trainer | 527,467 | Oct. 16 | 1308 | 319 | 69 | 273 |
| Ornamental work and making same | E. Crispin | 529,782 | Nov. 27 | 2230 | 532 | 69 | 1101 |
| Ornamenting-machine | E. A. Marsh | 527,246 | Oct. 9 | 927 | 223, 224, 225, 226 | 69 | 188 |
| Oven. Baker's | J. Adair | 528,456 | Oct. 30 | 3015 | 728, 729 | 69 | 613 |
| Oven. Baker's | A. T. Simpkins | 527,892 | Oct. 23 | 2018 | 484 | 69 | 417 |
| Oven. Portable | I. Stripe | 527,898 | Oct. 23 | 2023 | 487 | 69 | 420 |
| Oven. Reel | W. W. Higgins | 528,877 | Nov. 6 | 651 | 156 | 69 | 765 |
| Oven. Rotary | C. J. Bloom | 528,069 | Oct. 23 | 2339 | 565 | 69 | 477 |
| Overshoe-securer | O. R. Tower | 527,086 | Oct. 9 | 668 | 163 | 69 | 140 |
| Oxids. Apparatus for producing | A. Crossley | 531,459 | Dec. 25 | 2450 | 583 | 69 | 1709 |
| Oxygen generator and holder | G. R. Prowse | 530,453 | Dec. 4 | 647 | 161 | 69 | 1334 |
| Oyster-tongs | E. E. Leary | 530,346 | Dec. 4 | 480 | 119 | 69 | 1302 |
| Ozone. Producing | J. T. Donovan and H. L. Gardner | 527,326 | Oct. 9 | 1066 | 257 | 69 | 212 |
| Package. Air-tight | A. Roder | 528,260 | Oct. 30 | 2681 | 647 | 69 | 555 |
| Package-carrier | E. C. Gipe | 528,203 | Oct. 30 | 2578 | 624 | 69 | 535 |
| Packaging-machine | J. S. Voitek | 531,073 | Dec. 18 | 1729 | 411, 412, 413 | 69 | 1560 |
| Packaging machines. Tension-regulating attachment for fabrics | E. P. and R. W. Watson | 528,750 | Nov. 6 | 308 | 95, 96 | 69 | 718 |
| Packing-bag | B. Arkell and C. A. Blowers | 529,690 | Nov. 27 | 2084 | 499 | 69 | 1076 |
| Packing-box | L. Weiss | 530,671 | Dec. 11 | 1067 | 259 | 69 | 1424 |
| Packing-case | J. Burt | 529,705 | Nov. 27 | 2110 | 506 | 69 | 1080 |
| Packing compound for thermocanters | J. Zorn and F. G. Luchesi | 529,056 | Nov. 13 | 966 | ..... | 69 | 842 |
| Packing-displacer | J. Matthews | 531,516 | Dec. 25 | 2592 | 621 | 69 | 1737 |
| Packing. Joint-making | R. Krüger | 530,694 | Dec. 11 | 1103 | 268 | 69 | 1430 |
| Packing. Piston | W. Buckley | 526,982 | Oct. 2 | 19 | 5 | 69 | 6 |
| Packing. Piston-rod | O. J. Ellis | 528,573 | Nov. 6 | 444 | 108 | 69 | 737 |
| Packing. Piston-rod | A. B. Kay | 530,423 | Dec. 4 | 605 | 150 | 69 | 1326 |
| Packing. Piston-rod | T. Keene | 530,426 | Dec. 4 | 608 | 151 | 69 | 1326 |
| Packing powdered substances | J. Barnewitz | 528,899 | Nov. 6 | 680 | 164 | 69 | 771 |
| Packing-vessel and method of preserving food articles | H. Selzer | 528,649 | Nov. 6 | 233 | 58 | 69 | 688 |
| Pad: *See* Rosin-pad. | | | | | | | |
| Paddle-wheel | W. Craige | 528,858 | Nov. 6 | 624 | 147 | 69 | 760 |
| Paddle-wheel. Feathering | J. Jacobs | 527,991 | Oct. 23 | 2218 | 535 | 69 | 454 |
| Padlock | F. Raymond | 530,456 | Dec. 4 | 651 | 162 | 69 | 1335 |
| Padlock | W. Smith | 528,743 | Nov. 6 | 383 | 92 | 69 | 716 |
| Padlock. Permutation | I. B. Rapaport | 526,740 | Oct. 2 | 118 | 28, 29 | 69 | 24 |
| Padlock. Permutation | C. H. Wood | 529,092 | Nov. 13 | 1030 | 248 | 69 | 853 |
| Pail. Dinner | H. M. Holmes | 531,533 | Dec. 25 | 2569 | 615 | 69 | 1732 |
| Pail. Liquid-seal | G. Highie | 531,313 | Dec. 25 | 2182 | 522 | 69 | 1658 |
| Pail. Milk | R. Campbell | 527,768 | Oct. 23 | 1793 | 432 | 69 | 378 |

*Alphabetical list of inventions, October to December, inclusive*—Continued.

| Invention. | Name. | No | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Paint. Composition of matter for | C. L. C., M. W. H., and A. M. H. de Bruycker. | 529,241 | Nov. 13 | 1287 | ..... | 69 | 899 |
| Paints. Manufacturing roofing | D. L. Means | 527,068 | Oct. 9 | 643 | ..... | 69 | 135 |
| Painting apparatus | S. A. Brooks | 531,433 | Dec. 25 | 2387 | 571 | 69 | 1698 |
| Painting compound | W. Griscom, Jr | 529,729 | Nov. 27 | 2147 | ..... | 69 | 1086 |
| Pan: *See* Bake-pan. Dust-pan. Basting and roasting pan. | | | | | | | |
| Panel-chair | D. B. McHenry | 527,709 | Oct. 16 | 1694 | 408 | 69 | 342 |
| Panoramic camera | M. Flammang | 527,841 | Oct. 23 | 1914 | 460 | 69 | 399 |
| Pantaloons-protector | T. d'Arcourt | 530,475 | Dec. 4 | 685 | 171 | 69 | 1341 |
| Pantograph | H. V. Joseph | 529,917 | Nov. 27 | 2462 | 593 | 69 | 1145 |
| Paper-bag machine | W. B. Purvis | 530,650 | Dec. 11 | 1032 | {251, 252} | 69 | 1418 |
| Paper bags. Making | W. A. Lorenz and E. E. Claussen | 529,656 | Nov. 20 | 2027 | 486 | 69 | 1055 |
| Paper-board. Machine for scoring | C. W. Gay | 527,963 | Oct. 23 | 2155 | 518 | 69 | 444 |
| Paper box | H. Goettsch | 530,334 | Dec. 4 | 456 | 114 | 69 | 1297 |
| Paper box | W. B. Howe and F. B. Davidson | 526,782 | Oct. 2 | 189 | 45 | 69 | 36 |
| Paper box | P. Lindemeyer, Jr | 528,639 | Nov. 6 | 217 | 54 | 69 | 685 |
| Paper box | J. Peterson | 530,239 | Dec. 4 | 291 | 71 | 69 | 1268 |
| Paper-cutter | E. E. Pinkerton | 529,308 | Nov. 13 | 1416 | 340 | 69 | 924 |
| Paper cutting and embossing press | J. M. Jones | 528,599 | Nov. 6 | 135 | 33 | 69 | 671 |
| Paper doll | B. Karfiol | 528,542 | Nov. 6 | 32 | 9 | 69 | 652 |
| Paper-fastener | C. N. Hoyt | 526,901 | Oct. 2 | 389 | 97 | 69 | 73 |
| Paper-feeders. Side-registering mechanism for | H. H. Cabot | 526,855 | Oct. 2 | 306 | 75 | 69 | 58 |
| Paper-feeding machine | G. Sague | 529,084 | Nov. 13 | 1016 | 245 | 69 | 850 |
| Paper-feeding machine | H. B. Cooley, J. M. Noble, and J. E. Trevor. | 530,328 | Dec. 4 | 446 | 112 | 69 | 1295 |
| Paper-feeding machine | N. Lux | 529,927 | Nov. 27 | 2477 | 597 | 69 | 1147 |
| Paper-feeding machine | G. Sague | 529,414 | Nov. 20 | 1609 | 382 | 69 | 979 |
| Paper-folding machine | T. C. Dexter | 526,859 | Oct. 2 | 314 | {76, 77, 78} | 69 | 60 |
| Paper for bank-notes, checks, bonds, stocks, and other instruments. | D. N. Carvalho | 531,507 | Dec. 25 | 2527 | ..... | 69 | 1724 |
| Paper-hanging apparatus | W. W. Davis | 529,949 | Nov. 13 | 1302 | 313 | 69 | 902 |
| Paper. Machine for feeding sheets of | J. H. Knowles | 531,438 | Dec. 25 | 2392 | {572, 573, 574, 575} | 69 | 1699 |
| Paper-machine suction-box | E. Sanderson | 528,261 | Oct. 30 | 2688 | 647 | 69 | 555 |
| Paper. Method of and machine for separating and feeding sheets of | H. Bradshaw | 528,918 | Nov. 13 | 740 | {173, 174} | 69 | 802 |
| Paper pail | F. W. Wilcox | 529,053 | Nov. 13 | 961 | {227, 228} | 69 | 841 |
| Paper. Process of and machine for enameling | A. S. Woodward | 528,752 | Nov. 6 | 403 | 97 | 69 | 720 |
| Paper-pulp-beating engine | J. D. Pickles | 528,027 | Oct. 23 | 2277 | 549 | 69 | 465 |
| Paper-pulp. Process of and apparatus for making | H. Blackman | 530,635 | Dec. 11 | 1003 | 246 | 69 | 1413 |
| Paper-registering machine | T. C. Dexter | 528,657 | Nov. 6 | 244 | 60, 61 | 69 | 690 |
| Paper-stock. Machine for breaking up strings or balls of | C. L. Hamilton | 527,281 | Oct. 9 | 994 | 241 | 69 | 199 |
| Paper tubes, &c. Coating | M. C. Stone | 527,736 | Oct. 16 | 1740 | 420 | 69 | 351 |
| Paper-web-feeding device | J. L. Cox | 531,162 | Dec. 18 | 1906 | 455 | 69 | 1592 |
| Paper-weight, pen-rack, and calendar. Combined | T. F. Krueger | 528,545 | Nov. 6 | 38 | 10 | 69 | 653 |
| Papers, &c. Device for holding and clamping | I. W. Heysinger | 531,312 | Dec. 25 | 2179 | {521, 522} | 69 | 1657 |
| Paraffin, &c. Barrelling | C. C. Burke | 530,746 | Dec. 11 | 1187 | 289 | 69 | 1445 |
| Parcel-carrier | L. Weiss | 530,215 | Dec. 4 | 245 | 59 | 69 | 1260 |
| Parcel-delivery system | K. J. C. Carville | 530,747 | Dec. 11 | 1189 | 290 | 69 | 1446 |
| Parer and scissors-sharpener. Vegetable and fruit | E. Barnum | 531,404 | Dec. 25 | 2340 | 558 | 69 | 1688 |
| Parer and slicer. Vegetable | J. Seubert | 530,856 | Dec. 11 | 1359 | 324 | 69 | 1477 |
| Partition. Fireproof | O. W. Norcross | 526,730 | Oct. 2 | 99 | 24 | 69 | 21 |
| Partition for buildings | J. F. Golding | 530,940 | Dec. 18 | 1501 | 355 | 69 | 1519 |
| Pasting-machine | G. A. T. Spooner | 530,312 | Dec. 4 | 414 | 104 | 69 | 1290 |
| Pattern for curvilinear designs. Adjustable | W. J. Henley | 526,900 | Oct. 2 | 368 | 96, 97 | 69 | 72 |
| Patterns for cloth, &c. Apparatus for cutting | M. Cramby | 527,051 | Oct. 9 | 624 | {151, 152} | 69 | 132 |
| Pavement. Artificial-stone | F. L. Fry and W. J. Fisher | 530,988 | Dec. 18 | 1588 | 377 | 69 | 1534 |
| Pavement. Metallic | E. Perrody | 529,747 | Nov. 27 | 2177 | 519 | 69 | 1091 |
| Pavement of plastic composition | J. H. Amies | 530,077 | Dec. 4 | 3 | 2 | 69 | 1215 |
| Paving-block | G. Bagge | 527,923 | Oct. 23 | 2073 | ..... | 69 | 429 |
| Paving-block | I. G. Poston | 529,952 | Nov. 27 | 2525 | 608 | 69 | 1155 |
| Pawl-and-ratchet mechanism | A. J. Shaw | 528,614 | Nov. 6 | 161 | 39 | 69 | 675 |
| Pawl-and-ratchet mechanism | H. R. Towne | 530,731 | Dec. 11 | 1169 | {284, 285} | 69 | 1442 |
| Pea-sheller | J. H. Empson | 527,954 | Oct. 23 | 2137 | 514 | 69 | 440 |
| Pea-shelling machine | J. H. Empson | 527,955 | Oct. 23 | 2140 | 515 | 69 | 441 |
| Pea-shelling machine | J. H. Empson and P. McDonald | 527,956 | Oct. 23 | 2142 | 515 | 69 | 441 |
| Peat briquets. Machine for forming | E. Stauber | 531,478 | Dec. 25 | 2479 | 590 | 69 | 1714 |
| Pedal | J. S. Copeland | 527,520 | Oct. 16 | 1389 | 338 | 69 | 286 |
| Pen. Fountain | H. L. Braham | 528,654 | Nov. 6 | 241 | 59 | 69 | 689 |
| Penholder | E. L. Brown | 529,062 | Nov. 13 | 977 | 230 | 69 | 844 |
| Penholder | W. T. Rightmyer | 530,603 | Dec. 11 | 947 | 232 | 69 | 1404 |
| Penholder | R. P. Saffold | 528,809 | Nov. 6 | 511 | 123 | 69 | 739 |
| Pen. Ruling | L. Johnson | 531,124 | Dec. 18 | 1829 | 434 | 69 | 1578 |
| Pen. Writing | G. Schagen | 530,604 | Dec. 11 | 948 | 233 | 69 | 1404 |
| Pencil and sharpener. Combined lead | T. F. Harris | 531,031 | Dec. 18 | 1662 | 394 | 69 | 1547 |
| Pencil-case | R. H. Ryan | 531,135 | Dec. 18 | 1851 | 439 | 69 | 1583 |
| Pencil-case | R. H. Ryan | 531,136 | Dec. 18 | 1852 | 439 | 69 | 1583 |
| Pencil-sharpener | R. D. Cody | 530,018 | Nov. 27 | 2665 | 639 | 69 | 1184 |
| Pencil-sharpener | J. C. McCollum | 527,803 | Oct. 23 | 1855 | 446 | 69 | 390 |
| Pencil-sharpener | B. Ramsay | 530,454 | Dec. 4 | 648 | 161 | 69 | 1334 |
| Pencil-sharpener and point-protector | J. T. Mundy | 530,789 | Dec. 11 | 1258 | 304 | 69 | 1460 |
| Perforating device | J. G. Goff | 526,777 | Oct. 2 | 181 | 42 | 69 | 34 |



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| Invention. | Name | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Permutation-lock | F. C. Richards | 530,551 | Dec. 11 | 856 | 211 | 69 | 1387 |
| Petroleum, gas, or oil engine | L. Crébessac | 530,161 | Dec. 4 | 144 | 38 | 69 | 1242 |
| Phonograph | H. J. Lioret | 528,273 | Oct. 30 | 2707 | {651, 652} | 69 | 558 |
| Phonograph. Coin-controlled | F. S. Church | 529,019 | Nov. 13 | 904 | {213, 214} | 69 | 830 |
| Phonograph-cylinder holder | L. B. Gray | 529,904 | Nov. 27 | 2439 | 586 | 69 | 1141 |
| Phosphorus. Making | A. Shearer and R. R. Clapp | 527,163 | Oct. 9 | 795 | 194 | 69 | 162 |
| Photochromoscope and photochromoscope-camera | F. E. Ives | 531,040 | Dec. 18 | 1677 | 398 | 69 | 1551 |
| Photographic burnisher | W. H. Boles | 527,315 | Oct. 9 | 1049 | 254 | 69 | 209 |
| Photographic camera. Folding | H. Hill and A. L. Adams | 531,416 | Dec. 25 | 2361 | 563 | 69 | 1693 |
| Photographic head and body rest | W. M. Gilson | 527,056 | Oct. 9 | 629 | 153 | 69 | 133 |
| Photographic-plate holder | J. E. Thornton and E. Pickard | 531,012 | Dec. 18 | 1631 | 387 | 69 | 1542 |
| Photographic prints. Machine for mounting | J. W. McCabe | 529,183 | Nov. 13 | 1188 | {285, 286} | 69 | 881 |
| Piano | M. B. McChesney and J. G. Kunze | 527,533 | Oct. 16 | 1414 | 344 | 69 | 291 |
| Piano-action | L. A. Barber | 527,399 | Oct. 16 | 1190 | 292 | 69 | 249 |
| Piano-action | R. G. Clark and C. Morgan | 527,048 | Oct. 9 | 618 | 149 | 69 | 131 |
| Piano-action | T. T. Fischer | 527,485 | Oct. 16 | 1332 | 324 | 69 | 277 |
| Piano-action | J. R. Perry | 528,209 | Oct. 30 | 2585 | 626 | 69 | 537 |
| Piano-case | A. J. Newby | 531,057 | Dec. 18 | 1706 | 405 | 69 | 1556 |
| Pianoforte and agraffe therefor | F. B. Long | 529,282 | Nov. 13 | 1358 | 326 | 69 | 919 |
| Pianoforte repetition attachment | W. Simkins | 527,028 | Oct. 2 | 584 | {141, 142} | 69 | 110 |
| Piano. Practice | W. O. Nisley | 527,504 | Oct. 16 | 1393 | 332 | 69 | 282 |
| Piano-tuning hammer | B. F. Fuchs | 528,154 | Oct. 30 | 2493 | 604 | 69 | 520 |
| Pianos. Repeating mechanism for | F. Lindner | 530,188 | Dec. 4 | 196 | 48 | 69 | 1250 |
| Pianos. Treble-bridge for | C. L. O. Altenburg | 529,994 | Nov. 27 | 2618 | 628 | 69 | 1175 |
| Pick | M. Hardsoeg | 527,331 | Oct. 9 | 1073 | 259 | 69 | 213 |
| Pick or similar tool | W. K. Birkinshaw | 527,829 | Oct. 23 | 1893 | 455 | 69 | 396 |
| Picker: *See* Bean-picker. Waste or rag picker. | | | | | | | |
| Picking up pins, &c. Apparatus for | A. B. Olson | 531,384 | Dec. 25 | 2311 | 551 | 69 | 1683 |
| Picture folding support or stand | D. B. Williams | 528,704 | Nov. 6 | 332 | 79 | 69 | 705 |
| Picture-hanger | W. S. Jaeger | 527,736 | Oct. 23 | 1843 | 443 | 69 | 387 |
| Pile-driving apparatus | C. McDermott | 529,293 | Nov. 13 | 1380 | 332 | 69 | 916 |
| Piling, Sheet | J. A. Wakefield | 527,469 | Oct. 16 | 1311 | 320 | 69 | 274 |
| Pill-compressing machine | R. Shoemaker, Jr | 527,562 | Oct. 16 | 1453 | 354 | 69 | 298 |
| Pillow or cushion | W. Vogler | 527,634 | Oct. 16 | 1574 | 380 | 69 | 320 |
| Pin: *See* Belaying-pin. Hat-pin. Brooch-pin. Horse-blanket pin. Drawing-pin. Wrist-pin. | | | | | | | |
| Pin-guard | F. G. Stephenson | 531,397 | Dec. 25 | 2329 | 555 | 69 | 1687 |
| Pin retainer. Scarf | J. F. Ruffner | 526,746 | Oct. 2 | 128 | 30 | 69 | 25 |
| Pinking-machine | C. H. Bayley | 527,928 | Oct. 23 | 2051 | 498 | 69 | 420 |
| Pipe: *See* Hot-air pipe. Tobacco-pipe. Suction-pipe. | | | | | | | |
| Pipe-bender | T. Seaton, Sr | 528,036 | Oct. 23 | 2247 | 552 | 69 | 467 |
| Pipe clamp | C. Hall | 527,200 | Oct. 9 | 850 | 207 | 69 | 173 |
| Pipe-cleaning apparatus | A. C. Mueller | 528,234 | Oct. 30 | 2641 | 636 | 69 | 546 |
| Pipe connection | E. B. Vanvorce | 528,045 | Oct. 23 | 2301 | 555 | 69 | 470 |
| Pipe connection for fluids | T. and W. T. James | 531,615 | Dec. 25 | 2707 | 649 | 69 | 1760 |
| Pipe coupling | O. Ames | 530,917 | Dec. 18 | 1465 | 347 | 69 | 1513 |
| Pipe-covering and manufacturing same | C. B. Manville | 527,867 | Oct. 23 | 1971 | 474 | 69 | 409 |
| Pipe-cutter | J. J. and J. J. McCarthy | 531,549 | Dec. 25 | 2596 | 621 | 69 | 1737 |
| Pipe-hanger | A. J. Beaton | 528,319 | Oct. 30 | 2783 | 672 | 69 | 572 |
| Pipe joint. Submarine | R. Rann | 529,806 | Nov. 27 | 2270 | 542 | 69 | 1108 |
| Pipe or rod coupling | S. M. Jones | 528,168 | Oct. 30 | 2517 | 609 | 69 | 524 |
| Pipe-wrench | W. A. Blaisdell | 531,299 | Dec. 25 | 2161 | 517 | 69 | 1654 |
| Pipe-wrench | H. Lind | 531,125 | Dec. 18 | 1831 | {434, 435} | 69 | 1579 |
| Pipe-wrench | M. H. Riza | 529,196 | Nov. 13 | 1209 | 292 | 69 | 885 |
| Pipe-wrench | J. E. Wakefield | 529,982 | Nov. 27 | 2581 | 622 | 69 | 1166 |
| Pipe-wrench | J. D. Wilson | 527,917 | Oct. 23 | 2062 | 494 | 69 | 427 |
| Pipe-wrench | G. P. Woelfel. (Reissue) | 11,459 | Dec. 18 | 2142 | 513 | 69 | 1635 |
| Pipe-wrench. Chain | J. H. Newell | 530,547 | Dec. 11 | 850 | 210 | 69 | 1366 |
| Pipes. Device for thawing ice from | I. H. Simpson | 529,204 | Nov. 13 | 1222 | 295 | 69 | 887 |
| Pipes. Drain-cup and strainer for air | A. P. Massey | 530,702 | Dec. 11 | 1116 | 271 | 69 | 1433 |
| Pipes. Machine for making conductor | E. H. Fickinger | 531,170 | Dec. 18 | 1921 | 457 | 69 | 1595 |
| Pipes. Street-box for gas or water | F. A. W. Davis | 530,581 | Dec. 11 | 911 | 223 | 69 | 1397 |
| Pipes. Street-box for gas or water | F. A. W. Davis | 530,887 | Dec. 11 | 1409 | 335 | 69 | 1487 |
| Pitch-board | W. E. Frasier | 529,027 | Nov. 13 | 916 | 217 | 69 | 833 |
| Pitman connection | T. Regan | 527,128 | Oct. 9 | 743 | 182 | 69 | 153 |
| Pits or vaults. Constructing water-tight | W. Macleod | 530,646 | Dec. 11 | 1026 | 250 | 69 | 1417 |
| Placer-machine | R. L. Chatterson | 528,503 | Oct. 30 | 3098 | {551, 552} | 69 | 629 |
| Placer machine. Dry | H. W. and M. Watson | 529,340 | Nov. 13 | 1455 | 351 | 69 | 932 |
| Placket-guard | P. Fabisch | 530,027 | Nov. 27 | 2678 | 643 | 69 | 1187 |
| Plait-forming machine | C. C. Emmons | 528,468 | Oct. 30 | 3043 | 738 | 69 | 618 |
| Plaiting apparatus | C. L. Seward | 531,470 | Dec. 25 | 2468 | 588 | 69 | 1713 |
| Plane | J. A. Trant | 528,829 | Nov. 6 | 555 | 133 | 69 | 748 |
| Plane. Bench or other | T. W. Fuller | 528,087 | Oct. 23 | 2378 | 574 | 69 | 484 |
| Plane. Carpenter's | H. Foucault | 529,681 | Nov. 20 | 2066 | 495 | 69 | 1062 |
| Planing-machine | D. Jenkins | 526,903 | Oct. 2 | 393 | 98, 99 | 69 | 73 |
| Planing-machine | J. Thomlinson, Jr., and E. L. Kastholm. | 529,428 | Nov. 20 | 1635 | {388, 389} | 69 | 983 |
| Planing machine. Metal | J. S. Wheeler | 531,489 | Dec. 25 | 2501 | {595, 596} | 69 | 1719 |
| Planimeter | E. J. Willis | 529,008 | Nov. 13 | 890 | 210 | 69 | 828 |
| Planter | Z. H. Miller | 529,600 | Nov. 20 | 2032 | 487 | 69 | 1055 |
| Planter | J. R. Norcott | 529,298 | Nov. 13 | 1387 | 334 | 69 | 917 |

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|---|---|---|---|---|---|---|---|
| Planter | J. W. Parker | 528,235 | Oct. 30 | 2642 | 637 | 69 | 546 |
| Planter | J. Specht and I. Armand | 527,816 | Oct. 23 | 1874 | 450 | 69 | 392 |
| Planter | C. W. Warner | 531,606 | Dec. 25 | 2694 | 646 | 69 | 1757 |
| Planter and fertilizer distributer | G. W. Asheraft | 528,520 | Nov. 6 | 1 | 1 | 69 | 647 |
| Planter and fertilizer-distributer. Combined | H. Compton | 528,364 | Oct. 30 | 2858 | 692 | 69 | 586 |
| Planter and fertilizer-distributer. Corn- | J. W. and W. C. Daryea | 531,105 | Dec. 18 | 1792 | 427 | 69 | 1571 |
| Planter. Check-row | E. W. Collins | 528,761 | Nov. 6 | 420 | {101 102} | 69 | 723 |
| Planter check-row attachment | S. W. Harman and F. H. Romans | 531,117 | Dec. 18 | 1816 | {431 432} | 69 | 1575 |
| Planter check-row attachment. Corn- | A. V. Biggs | 529,104 | Nov. 13 | 1047 | 252 | 69 | 856 |
| Planter. Check-row corn- | J. F. De Jarnatt | 530,259 | Dec. 4 | 320 | 80 | 69 | 1273 |
| Planter. Check-row corn- | O. T. Wood | 527,824 | Oct. 23 | 1884 | 452 | 69 | 391 |
| Planter. Corn- | W. Ahlers | 528,842 | Nov. 6 | 590 | 139 | 69 | 753 |
| Planter. Corn- | F. L. Block | 527,932 | Oct. 23 | 2090 | 500 | 69 | 432 |
| Planter. Corn- | G. W. Campbell | 530,326 | Dec. 4 | 442 | {110 111} | 69 | 1295 |
| Planter. Corn- | J. A. Dodd | 528,901 | Nov. 6 | 684 | {164 165} | 69 | 772 |
| Planter. Corn- | H. H. Gunner and F. O. Shirley | 529,167 | Nov. 13 | 1153 | 278 | 69 | 876 |
| Planter. Corn- | A. Klink | 527,429 | Oct. 16 | 1238 | 304 | 69 | 257 |
| Planter. Corn- | E. E. Schlosser | 526,749 | Oct. 2 | 132 | 31 | 69 | 26 |
| Planter. Corn or cotton | M. Brown | 530,256 | Dec. 4 | 316 | 79 | 69 | 1273 |
| Planter ridging attachment. Corn- | L. Runyan | 527,160 | Oct. 9 | 791 | 193 | 69 | 161 |
| Planter. Seed- | V. G. Richey | 526,744 | Oct. 2 | 126 | 30 | 69 | 25 |
| Planter, seed drill, and cultivator. Combined corn- | M. P. Simpson and E. P. Williams | 529,423 | Nov. 20 | 1621 | {385 386} | 69 | 982 |
| Planters. Feed-actuating device for | P. E. Johnson | 530,532 | Dec. 11 | 821 | 204 | 69 | 1381 |
| Planting corn. Method of and means for | J. W. Hill and L. D. Benner | 529,492 | Nov. 20 | 1762 | 419 | 69 | 1005 |
| Planting-machine fertilizer attachment | L. A. Aspinwall | 529,099 | Nov. 13 | 1040 | 251 | 69 | 855 |
| Plaster-boards. Machine for manufacturing | E. C. Smith | 529,535 | Nov. 20 | 1838 | 438 | 69 | 1020 |
| Plastering compound | A. W. Smith | 528,995 | Nov. 13 | 866 | ..... | 69 | 824 |
| Plastic composition | J. Pattigler | 529,876 | Nov. 27 | 2394 | ..... | 69 | 1133 |
| Plate-holder | M. Flammang | 530,160 | Dec. 4 | 39 | 11 | 69 | 1252 |
| Plate or platter | W. C. Gaskill | 529,526 | Nov. 20 | 1825 | 434 | 69 | 1017 |
| Platform: *See* Window-platform. | | | | | | | |
| Plating metals with aluminium | E. C. Broadwell | 527,478 | Oct. 16 | 1324 | ..... | 69 | 276 |
| Pliers. Wire crimping and fastening | E. L. Williams | 526,766 | Oct. 2 | 102 | 38 | 69 | 31 |
| Plow | W. A. Armstrong | 530,061 | Nov. 27 | 2745 | 658 | 69 | 1190 |
| Plow | G. Drovedal | 531,167 | Dec. 18 | 1916 | 456 | 69 | 1594 |
| Plow | W. I. Manning | 531,322 | Dec. 25 | 2201 | 527 | 69 | 1662 |
| Plow | G. Martin | 529,870 | Nov. 27 | 2386 | 570 | 69 | 1131 |
| Plow | H. Oldendorph | 528,107 | Oct. 23 | 2413 | 584 | 69 | 490 |
| Plow | G. W. Whatley | 528,576 | Nov. 6 | 91 | 23 | 69 | 662 |
| Plow and planter. Combined | J. F. and E. J. Williams | 526,765 | Oct. 2 | 161 | 38 | 69 | 31 |
| Plow attachment | M. Culbertson and J. J. Burke | 528,324 | Oct. 30 | 2792 | 673 | 69 | 573 |
| Plow-beams. Weight for | J. A. L. Gist | 531,027 | Dec. 18 | 1658 | 393 | 69 | 1547 |
| Plow. Cultivator- | H. C. Otten and A. Kathmann | 528,792 | Nov. 6 | 477 | 116 | 69 | 733 |
| Plow. Gang- | W. H. Holsclaw | 530,047 | Nov. 27 | 2712 | 651 | 69 | 1194 |
| Plow. Hand garden- | W. C. Gilmore | 528,937 | Nov. 13 | 768 | 181 | 69 | 807 |
| Plow planter attachment | J. W. Grubbs | 527,683 | Oct. 16 | 1656 | 399 | 69 | 315 |
| Plow-point | T. Prentice | 530,452 | Dec. 4 | 646 | 161 | 69 | 1334 |
| Plow-points. Mechanism for shaping the welding-edges of | H. G. Sawyer | 530,204 | Dec. 4 | 223 | 55,56 | 69 | 1256 |
| Plow riding attachment | J. Kleihauer, Jr | 527,996 | Oct. 23 | 2229 | 538 | 69 | 456 |
| Plow. Rotary | J. W. Dunbar | 526,806 | Oct. 2 | 225 | 55 | 69 | 42 |
| Plow. Rotary | L. D. Railsback | 528,511 | Oct. 30 | 3112 | 735 | 69 | 692 |
| Plow. Rotary | N. H. Roberts | 530,964 | Dec. 18 | 1543 | 366 | 69 | 1526 |
| Plow-stock. Combination | A. E. Jones | 526,784 | Oct. 2 | 194 | 46 | 69 | 37 |
| Plow-sulky | H. Clawson | 526,805 | Oct. 2 | 224 | 54 | 69 | 42 |
| Plow. Sulky- | E. C. Westervelt and C. W. Clapp | 526,983 | Oct. 2 | 511 | 125 | 69 | 96 |
| Plow. Wheel- | F. Bunjes | 529,479 | Nov. 20 | 1733 | 413 | 69 | 1001 |
| Plug. Tube- | A. L. Harrison | 530,840 | Dec. 11 | 1332 | 320 | 69 | 1473 |
| Plumber's grappling-tool | W. Thomas | 528,827 | Nov. 6 | 553 | 132 | 69 | 747 |
| Pneumatic cash-carrier apparatus | O. Ames | 527,040 | Oct. 9 | 606 | 147 | 69 | 129 |
| Pneumatic-dispatch-tube systems. Valve for | A. W. Pearsall | 527,073 | Oct. 9 | 649 | 158 | 69 | 137 |
| Pneumatic-dispatch-tube terminal | O. Ames | 527,039 | Oct. 9 | 605 | 147 | 69 | 129 |
| Pneumatic shears | C. O. Heggem | 527,790 | Oct. 23 | 1836 | 441 | 69 | 386 |
| Pneumatic spring | A. C. Mather | 530,999 | Dec. 18 | 1605 | 381 | 69 | 1537 |
| Pneumatic-tired wheel | H. W. Verdon | 529,001 | Nov. 13 | 876 | 206 | 69 | 826 |
| Pneumatic tool | D. Drawbaugh | 530,934 | Dec. 18 | 1488 | 352 | 69 | 1517 |
| Pocket-book and head-rest. Combined | F. Denio | 531,165 | Dec. 18 | 1911 | 456 | 69 | 1593 |
| Pocket-books, purses, or satchels. Frame for | S. Schener | 527,512 | Oct. 16 | 1376 | 335 | 69 | 284 |
| Pocket. Garment- | P. T. Mahon | 530,542 | Dec. 11 | 841 | 207 | 69 | 1385 |
| Pocket-knife | C. C. Moritz and S. D. Greenwood | 530,788 | Dec. 11 | 1257 | 304 | 69 | 1459 |
| Pocket-knife | J. P. Nordlow | 530,792 | Dec. 11 | 1261 | 305 | 69 | 1460 |
| Polishing and staining machine | L. and A. Schmoll | 527,889 | Oct. 23 | 2014 | 483 | 69 | 416 |
| Polishing articles of manufacture. Apparatus for automatically | E. L. Carrington | 528,852 | Nov. 6 | 604 | 143 | 69 | 756 |
| Polishing-machine | E. Berglind and A. Renterdahl | 529,102 | Nov. 13 | 1044 | 252 | 69 | 856 |
| Polishing-machine expanding cylinder | E. S. Evarts | 528,534 | Nov. 6 | 16 | 6 | 69 | 649 |
| Post: *See* Directory-post. Fence-post. | | | | | | | |
| Post or column | O. André | 527,310 | Oct. 9 | 1040 | 252 | 69 | 207 |
| Pot: *See* Coffee-pot. | | | | | | | |
| Potato-digger | T. Donoho | 530,263 | Dec. 4 | 328 | 81 | 69 | 1275 |
| Potato-digger | C. H. Hall | 529,122 | Nov. 13 | 1070 | {258 259} | 69 | 861 |
| Potato-digger | M. Klema | 527,863 | Oct. 23 | 1965 | 472 | 69 | 408 |
| Potato-digger | W. F. McNamire | 526,868 | Oct. 2 | 332 | 81 | 69 | 63 |
| Potato separating and cleaning machine | I. C. Butler and G. S. Shepard | 530,086 | Dec. 4 | 17 | 4 | 69 | 1218 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Powder: *See* Bleaching-powder. | | | | | | | |
| Powder-divider | R. E. McClelland | 526,728 | Oct. 2 | 96 | 21 | 69 | 20 |
| Powder-folding machine | W. A. Hill | 529,908 | Nov. 27 | 2445 | {587 588} | 69 | 1142 |
| Powder or shot feeding mechanism | C. S. Hisey | 528,097 | Oct. 23 | 2396 | 559 | 69 | 486 |
| Powders, &c. Device for dividing | R. Walsh | 531,237 | Dec. 18 | 2043 | 487 | 69 | 1616 |
| Power: *See* Water-power. | | | | | | | |
| Power-applying mechanism | H. F. Parker and M. G. Gillette | 529,875 | Nov. 27 | 2392 | 553 | 69 | 1133 |
| Power-converter | E. Carlson | 531,408 | Dec. 25 | 2344 | 559 | 69 | 1689 |
| Power-transmitting apparatus | G. J. Altham | 526,887 | Oct. 2 | 360 | 80, 91 | 69 | 67 |
| Power-transmitting device | J. Evans | 529,252 | Nov. 13 | 1310 | 314 | 69 | 903 |
| Power-transmitting or driving mechanism | C. Pauthonier | 527,249 | Oct. 9 | 936 | 227 | 69 | 185 |
| Power-wheel | A. J. B. Berger | 528,518 | Oct. 30 | 3119 | 756 | 69 | 633 |
| Power-wheel for endless conveyers or elevators | A. J. B. Berger | 528,357 | Oct. 30 | 2847 | 690 | 69 | 581 |
| Preserving apparatus. Fruit- | S. S. Savage | 531,067 | Dec. 18 | 1719 | 409 | 69 | 1558 |
| Preserving food | H. Paulsen | 526,735 | Oct. 2 | 111 | ..... | 69 | 23 |
| Press: *See* Arbor-press. Bale-press. Cheese-press. Cigar-press. Double-acting press. Glass-press. Hay-press. Jeweler's press. Printing-press. | | | | | | | |
| Press | M. Swenson | 530,914 | Dec. 11 | 1450 | 344 | 69 | 1405 |
| Press for finishing molded articles | G. W. Lanaway and J. E. West | 526,717 | Oct. 2 | 80 | 21 | 69 | 17 |
| Press for riveting, &c., metal | L. W. Noyes | 529,565 | Nov. 20 | 1888 | 449 | 69 | 1028 |
| Pressure-regulator | W. G. Taafel | 527,902 | Oct. 23 | 2035 | 488 | 69 | 422 |
| Pressure-regulator and stop-valve. Automatic | I. N. Gaskill | 530,765 | Dec. 11 | 1220 | 296 | 69 | 1452 |
| Pressure regulator. Fluid- | J. Olson | 530,200 | Dec. 4 | 216 | 54 | 69 | 1255 |
| Pressure regulator. Fluid- | J. Wilson | 530,872 | Dec. 11 | 1382 | 329 | 69 | 1482 |
| Primary battery | C. W. De Mott | 530,260 | Dec. 4 | 322 | 80 | 69 | 1274 |
| Primary battery | G. H. Gardner | 530,764 | Dec. 11 | 1219 | {295 296} | 69 | 1452 |
| Primary battery | C. J. Hubbell | 530,485 | Dec. 4 | 725 | 178 | 69 | 1347 |
| Primary battery | W. Walker Jr., and F. R. Wilkins | 530,867 | Dec. 11 | 1376 | 328 | 69 | 1481 |
| Primary battery and portable electric lamp | S. W. Magnay | 527,436 | Oct. 16 | 1249 | 307 | 69 | 259 |
| Printed matter. Method of and apparatus for producing copied effect on | C. E. Adamson | 531,294 | Dec. 25 | 2148 | 514 | 69 | 1651 |
| Printed matter. Producing copied effects on | C. E. Adamson | 528,133 | Oct. 30 | 2467 | 597 | 69 | 515 |
| Printers' galleys. Apparatus for securing type or matter in | F. Ross | 531,568 | Dec. 25 | 2630 | 630 | 69 | 1744 |
| Printer's make-ready | C. Sears | 530,310 | Dec. 4 | 411 | 103 | 69 | 1290 |
| Printer's metal furniture | F. B. Emery | 528,660 | Nov. 6 | 250 | 62 | 69 | 691 |
| Printer's quoin | O. A. Amundson | 528,756 | Nov. 6 | 511 | 99 | 69 | 721 |
| Printer's quoin | J. F. Perry | 530,124 | Dec. 4 | 85 | 23 | 69 | 1233 |
| Printer's quoin | C. Reittter | 531,332 | Dec. 25 | 2210 | 530 | 69 | 1664 |
| Printer's quoin | R. Warg and A. Lindemann | 527,038 | Oct. 16 | 1582 | 382 | 69 | 392 |
| Printing device. Chromatic- | T. J. Turley | 530,865 | Dec. 11 | 1373 | 327 | 69 | 1480 |
| Printing device. Hand- | C. M. Fowler and W. Whitney | 530,304 | Dec. 4 | 401 | 101 | 69 | 1288 |
| Printing-machine | T. Bartholomew | 531,088 | Dec. 18 | 1763 | {420 421} | 69 | 1566 |
| Printing-machine | J. L. Firm | 529,680 | Nov. 20 | 2061 | {493 494} | 69 | 1061 |
| Printing-machine | M. Vierengel | 528,530 | Nov. 6 | 557 | {133 134 135} | 69 | 748 |
| Printing-machine. Bed and cylinder | J. Brooks | 529,850 | Nov. 27 | 2457 | {582 583} | 69 | 1125 |
| Printing-machine. Bed and cylinder | W. Scott | 530,357 | Dec. 4 | 495 | {122 123 124} | 69 | 1305 |
| Printing-machine. Cylinder | J. Brooks | 527,941 | Oct. 23 | 2108 | 506 | 69 | 495 |
| Printing-machine. Cylinder | J. Brooks | 529,702 | Nov. 27 | 2103 | {504 505} | 69 | 1079 |
| Printing-machine. Cylinder | C. Potter, Jr | 527,880 | Oct. 23 | 1998 | 479 | 69 | 414 |
| Printing-machine feeder | G. R. Clarke | 530,089 | Dec. 4 | 22 | 6, 7 | 69 | 1219 |
| Printing-machine offset-mechanism | E. H. Cottrell | 527,774 | Oct. 23 | 1803 | 435 | 69 | 380 |
| Printing-machine offset mechanism | E. H. Cottrell | 527,775 | Oct. 23 | 1805 | 435 | 69 | 380 |
| Printing-machine. Rotary | J. Michaud | 528,233 | Oct. 30 | 2630 | 636 | 69 | 546 |
| Printing machine. Wall-paper- | W. H. Waldron | 531,075 | Dec. 18 | 1734 | {413 414} | 69 | 1560 |
| Printing machine. Wall-paper- | W. H. Waldron | 531,076 | Dec. 18 | 1736 | {414 415} | 69 | 1561 |
| Printing machines. Stretching apparatus for calico block | W. Westwell | 530,373 | Dec. 4 | 523 | {130 131} | 69 | 1310 |
| Printing plate and base | A. G. Wade | 530,371 | Dec. 4 | 521 | 129 | 69 | 1310 |
| Printing-press | R. Clark and L. M. Crom | 530,505 | Dec. 11 | 762 | 187 | 69 | 1371 |
| Printing-press | W. H. Golding | 529,489 | Nov. 20 | 1753 | {416 417} | 69 | 1004 |
| Printing-press | W. C. Wendté | 530,812 | Dec. 11 | 1287 | 312 | 69 | 1466 |
| Printing-press inking apparatus | R. Miehle | 527,391 | Oct. 9 | 1173 | 287 | 69 | 233 |
| Printing press. Single-acting sheet- | J. L. Cox | 529,519 | Nov. 20 | 1808 | {430 431 432} | 69 | 1014 |
| Printing-press web-supporting device | C. Potter | 527,878 | Oct. 23 | 1994 | 478 | 69 | 413 |
| Printing-press web-supporting device | C. Potter | 527,879 | Oct. 23 | 1996 | 479 | 69 | 413 |
| Printing presses. Disk-cover for job- | C. E. Adamson | 531,293 | Dec. 25 | 2147 | 514 | 69 | 1651 |
| Printing-presses. Two-color attachment for | C. E. Adamson | 528,060 | Oct. 23 | 2325 | 561 | 69 | 474 |
| Printing sheets. Perfecting-press for | W. C. Wendté | 530,813 | Dec. 11 | 1288 | 312 | 69 | 1466 |
| Propeller | J. B. Jones | 529,916 | Nov. 27 | 2460 | 593 | 69 | 1144 |
| Propeller for boats. Wave-power | S. S. Smith | 529,882 | Nov. 27 | 2404 | {575 576} | 69 | 1134 |
| Propeller. Screw- | A. W. Case | 527,045 | Oct. 9 | 615 | 149 | 69 | 130 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Propeller. Screw | W. H. Jay | 528,253 | Oct. 30 | 2671 | 643 | 69 | 552 |
| Propeller-shaft for vessels. Outboard | C. H. Schultz, Jr. | 526,751 | Oct. 2 | 137 | 32, 33 | 69 | 27 |
| Propeller. Vessel | S. S. Whipps | 528,265 | Oct. 30 | 2687 | 648 | 69 | 556 |
| Propellers. Construction of couplings for screw | J. Verity | 527,632 | Oct. 16 | 1571 | 379 | 69 | 320 |
| Propelling apparatus | B. Bernstein | 528,138 | Oct. 30 | 2474 | 598 | 69 | 516 |
| Propelling boats. Means for | P. Higgins | 527,605 | Oct. 16 | 1527 | 370 | 69 | 311 |
| Propulsion. Marine | J. S. Martin | 527,798 | Oct. 23 | 1850 | 444 | 69 | 388 |
| Protector:<br>*See* Hub protector. Tree-protector.<br>Pantaloons-protector. | | | | | | | |
| Protractor and bevel | T. J. Lumis | 528,729 | Nov. 6 | 357 | 87 | 69 | 711 |
| Pruning-knife | L. C. and B. Bosley | 531,358 | Dec. 25 | 2208 | 540 | 69 | 1674 |
| Pruning-shears | A. Ellinger and W. H. Metzger | 530,221 | Dec. 4 | 257 | 63 | 69 | 1262 |
| Pruning-tool | G. Klinefetter and J. W. Nash | 527,116 | Oct. 9 | 719 | 176 | 69 | 148 |
| Puller:<br>*See* Well-pipe puller. | | | | | | | |
| Pulley | F. Girr | 529,028 | Nov. 13 | 917 | 218 | 69 | 833 |
| Pulley | O. W. Ketchum | 527,065 | Oct. 9 | 640 | 155 | 69 | 135 |
| Pulley | M. B. Lorah | 530,282 | Dec. 4 | 398 | 90, 91 | 69 | 1282 |
| Pulley and building same. Wood | H. J. Gilbert | 527,965 | Oct. 23 | 2158 | {519 / 520} | 69 | 444 |
| Pulley-block | H. V. Hartz | 527,425 | Oct. 16 | 1228 | 302 | 69 | 256 |
| Pulley-blocks. Automatic brake for | J. W. Powell | 528,616 | Nov. 6 | 229 | 57 | 69 | 687 |
| Pulley-clutch and shaft-coupling. Automatic | L. W. Elliott | 530,301 | Dec. 4 | 396 | 100 | 69 | 1287 |
| Pulley. Sash | W. R. Fox | 529,256 | Nov. 13 | 1318 | 317 | 69 | 905 |
| Pulley. Split | J. F. W. Fawcett | 528,662 | Nov. 6 | 256 | 63 | 69 | 692 |
| Pulley. Split | W. R. Patten | 531,216 | Dec. 18 | 2007 | 476 | 69 | 1610 |
| Pulp, &c. Apparatus for pressing or stamping articles from wood | E. Saltzkorn and L. Nicolai | 529,753 | Nov. 27 | 2186 | 521 | 69 | 1092 |
| Pulp burial-casket and making same | G. E. Shaw | 528,612 | Nov. 6 | 156 | 37 | 69 | 671 |
| Pulp compression apparatus | G. E. Shaw | 528,613 | Nov. 6 | 155 | 38 | 69 | 674 |
| Pulp. Manufacture of wood | E. Nolon | 530,898 | Dec. 11 | 1426 | ..... | 69 | 1490 |
| Pulp. Method of and apparatus for producing wood | C. W. Roberts | 527,812 | Oct. 23 | 1867 | 449 | 69 | 391 |
| Pulp-screen cleaning attachment | E. A. Richardson | 529,193 | Nov. 13 | 1204 | 291 | 69 | 884 |
| Pulp-stock-grinding machine | F. Hickman | 529,907 | Nov. 27 | 2443 | {586 / 587} | 69 | 1141 |
| Pulverizer | T. Parker | 529,874 | Nov. 27 | 2390 | 572 | 69 | 1132 |
| Pulverizing rock. Machine for | P. McKellar | 526,788 | Oct. 2 | 199 | 47 | 69 | 38 |
| Pump | E. E. Frizell | 531,175 | Dec. 18 | 1928 | 459 | 69 | 1596 |
| Pump | W. R. George | 531,111 | Dec. 18 | 1807 | 429 | 69 | 1574 |
| Pump | A. F. Hall | 531,598 | Dec. 25 | 2562 | 613 | 69 | 1731 |
| Pump | M. W. Hall | 528,161 | Oct. 30 | 2504 | {605 / 606} | 69 | 522 |
| Pump | F. E. Herdman | 530,618 | Dec. 11 | 969 | 237 | 69 | 1408 |
| Pump | H. Jones | 528,436 | Oct. 30 | 2981 | 721 | 69 | 607 |
| Pump | E. M. McGee | 528,378 | Oct. 30 | 2880 | 698 | 69 | 589 |
| Pump | C. Rumley | 526,944 | Oct. 2 | 456 | 112 | 69 | 86 |
| Pump | A. W. Shidler and W. P. Hendrickson. | 529,966 | Nov. 27 | 2552 | 615 | 69 | 1160 |
| Pump | C. C. Worthington | 528,282 | Oct. 30 | 2720 | {656 / 657} | 69 | 561 |
| Pump. Air | A. Heller | 530,106 | Dec. 4 | 52 | 14, 15 | 69 | 1225 |
| Pump attachment | J. W. Clark | 531,508 | Dec. 25 | 2598 | 604 | 69 | 1724 |
| Pump attachment | A. Menser | 530,193 | Dec. 4 | 205 | 50, 51 | 69 | 1252 |
| Pump belt-shifting device. Air | C. W. Nason | 529,404 | Nov. 20 | 1589 | 378 | 69 | 975 |
| Pump. Centrifugal | M. Wagner | 531,074 | Dec. 18 | 1733 | 413 | 69 | 1560 |
| Pump. Combined steam and power | G. de Laval | 528,783 | Nov. 6 | 464 | 114 | 69 | 731 |
| Pump. Deep-well | D. B. Stevenson | 529,209 | Nov. 13 | 1224 | 297 | 69 | 889 |
| Pump. Double-acting | F. J. Brown, A. and S. Allen | 530,922 | Dec. 18 | 1470 | 348 | 69 | 1514 |
| Pump. Force | J. W. Thompson | 526,759 | Oct. 2 | 154 | 37 | 69 | 30 |
| Pump. Force | J. K. Van Pelt | 529,432 | Nov. 20 | 1648 | {392 / 393} | 69 | 986 |
| Pump. Gas-compressing | T. Farnsworth | 530,097 | Dec. 4 | 35 | 9, 10 | 69 | 1221 |
| Pump-governor. Steam | J. R. Nixon | 528,483 | Oct. 30 | 3067 | 743 | 69 | 623 |
| Pump. Hydraulic air | E. H. Weatherhead | 526,702 | Oct. 2 | 158 | 37 | 69 | 30 |
| Pump. Irrigating | M. and J. N. McCay | 527,707 | Oct. 16 | 1691 | 407 | 69 | 342 |
| Pump-motor | B. Mellor of Mark | 530,848 | Dec. 11 | 1345 | 322 | 69 | 1475 |
| Pump. Oil | R. O. Graham | 527,421 | Oct. 16 | 1223 | 300 | 69 | 255 |
| Pump. Oil | R. O. Graham | 527,422 | Oct. 16 | 1224 | 300 | 69 | 255 |
| Pump. Oil-well | A. Rosenkranz | 530,350 | Dec. 4 | 487 | 120 | 69 | 1303 |
| Pump. Rotary | E. F. Smith | 527,082 | Oct. 9 | 662 | 162 | 69 | 139 |
| Pump. Rotary force | S. C. Shepard | 528,347 | Oct. 30 | 2825 | 683 | 69 | 579 |
| Pump. Screw | W. E. Quimby | 529,837 | Nov. 27 | 2333 | {554 / 555} | 69 | 1121 |
| Pump. Spraying | C. H. James | 527,794 | Oct. 23 | 1845 | 443 | 69 | 387 |
| Pump-valve | T. S. La France | 526,975 | Oct. 2 | 499 | 122 | 69 | 93 |
| Pump-valve | T. C. Munger | 530,442 | Dec. 4 | 630 | 157 | 69 | 1330 |
| Pumping | M. E. B. Du Marais | 530,754 | Dec. 11 | 1201 | ..... | 69 | 1448 |
| Pumping apparatus for sprinkling systems | B. L. Stowe | 528,822 | Nov. 6 | 545 | 130 | 69 | 745 |
| Pumping-engine | J. Cochrane and W. Walker | 529,678 | Nov. 20 | 2058 | 493 | 69 | 1061 |
| Pumping-engine | G. B. Whiting and F. M. Wheeler | 526,913 | Oct. 2 | 414 | 102 | 69 | 77 |
| Pumping liquids from gas-producing wells. Means for | J. S. Klein | 531,537 | Dec. 25 | 2577 | 616 | 69 | 1733 |
| Pumping mechanism for oil-wells, &c | H. W. Pickett | 529,801 | Nov. 27 | 2267 | 541 | 69 | 1107 |
| Punch and process of and means for making same. Die | H. S. Schaadt | 531,600 | Dec. 25 | 2654 | 644 | 69 | 1755 |
| Punch. Check | J. C. Robinson | 528,280 | Oct. 30 | 2717 | 655 | 69 | 560 |
| Punch. Gang | F. D. Swaney | 530,560 | Dec. 11 | 873 | 215 | 69 | 1390 |
| Punch machine. Center | R. S. Peabody | 528,550 | Nov. 6 | 57 | 15 | 69 | 656 |
| Punching-machine | W. E. Bennett | 528,502 | Oct. 30 | 3096 | 751 | 69 | 628 |
| Punching-machine and stripper therefor | F. Sotter | 528,039 | Oct. 23 | 2291 | 552 | 69 | 467 |
| Purifier and aerator | J. and T. F. Newby | 530,445 | Dec. 4 | 634 | 158 | 69 | 1331 |
| Purifier and separator. Combined | E. Hards and W. A. Woodard | 529,788 | Nov. 27 | 2239 | 534 | 69 | 1102 |
| Purifier, separator, and grader | D. J. Davidson | 527,835 | Oct. 23 | 1902 | 457 | 69 | 397 |



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|---|---|---|---|---|---|---|---|
| Purse. Coin-registering | M. H. Metal | 528,910 | Nov. 6 | 722 | 170 | 69 | 778 |
| Puzzle | A. W. Bartholomew | 527,925 | Oct. 23 | 2076 | 497 | 69 | 429 |
| Puzzle | M. W. Brooks | 528,141 | Oct. 30 | 2478 | 600 | 69 | 517 |
| Puzzle | F. Hesse | 530,774 | Dec. 11 | 1237 | 299 | 69 | 1456 |
| Puzzle or game | J. A. Kirk | 528,675 | Nov. 6 | 281 | 68 | 69 | 697 |
| Pyroxylin compound and making same | R. S. Schüpphaus | 528,812 | Nov. 6 | 515 | ..... | 69 | 740 |
| Quilting-frame | T. W. Broadfoot | 529,640 | Nov. 20 | 2003 | 479 | 69 | 1050 |
| Quilting-machine | W. B. and I. A. Click | 529,518 | Nov. 20 | 1807 | 430 | 69 | 1014 |
| Race-track | J. B. Dodge | 529,102 | Nov. 13 | 1143 | 276 | 69 | 875 |
| Race-track-leveling machine | W. T. Newport | 528,890 | Nov. 6 | 668 | 161 | 69 | 768 |
| Rack:<br>*See* Book-rack. Display-rack.<br>Clothes-rack. Scythe-rack. | | | | | | | |
| Radiator | C. Zitko | 528,058 | Oct. 23 | 2323 | 560 | 69 | 474 |
| Radiator. Steam or hot-water | J. D. Young | 530,317 | Dec. 4 | 423 | 106 | 69 | 1292 |
| Rail-bender | H. W. Armstrong | 527,100 | Oct. 9 | 690 | {169 / 170} | 69 | 144 |
| Rail-bond | W. A. Granten | 527,785 | Oct. 23 | 1827 | 439 | 69 | 365 |
| Rail bond or connector | C. J. Reed | 530,051 | Dec. 11 | 1036 | 253 | 69 | 1419 |
| Rail chair and tie | E. N. Higley | 531,263 | Dec. 18 | 2089 | 500 | 69 | 1625 |
| Rail-chair and tie. Combined | J. Albrecht | 529,097 | Nov. 13 | 1038 | 250 | 69 | 854 |
| Rail chair and tie. Combined | J. Albrecht | 530,496 | Dec. 11 | 747 | 184 | 69 | 1369 |
| Rail-cleaner and car-fender | J. S. Toner | 530,807 | Dec. 11 | 1351 | 309 | 69 | 1464 |
| Rail-fastening | G. A. Weber | 531,349 | Dec. 25 | 2246 | 536 | 69 | 1670 |
| Rail. Flanger guard | C. H. Sherwood | 526,873 | Oct. 2 | 340 | 84 | 69 | 64 |
| Rail-joint | M. C. Niles | 529,044 | Nov. 13 | 945 | 224 | 69 | 858 |
| Rail-sanding apparatus | W. L. Truland | 527,630 | Oct. 16 | 1567 | 370 | 69 | 319 |
| Railway | C. F. Laib | 528,884 | Nov. 6 | 660 | {158 / 159} | 69 | 767 |
| Railway-annunciator | C. R. Alsop | 527,098 | Oct. 9 | 686 | 169 | 69 | 143 |
| Railway block-signal | C. H. Sherwood | 530,311 | Dec. 4 | 412 | 103 | 69 | 1290 |
| Railway bond. Electric | H. B. Nichols and F. H. Lincoln | 528,788 | Nov. 6 | 470 | 115 | 69 | 732 |
| Railway cattle-guard | A. J. Gwin | 527,684 | Oct. 16 | 1657 | 399 | 69 | 336 |
| Railway-chair | G. A. Bartholomew | 527,926 | Oct. 23 | 2077 | 497 | 69 | 429 |
| Railway-chair | C. Chenu | 530,925 | Dec. 18 | 1475 | 349 | 69 | 1515 |
| Railway-chair | E. Nennstiel | 527,512 | Oct. 16 | 1696 | 409 | 69 | 343 |
| Railway. Closed conduit electric | C. G. Burke | 529,704 | Nov. 27 | 2107 | 505 | 69 | 1079 |
| Railway. Closed-conduit electric | J. F. McLaughlin | 527,873 | Oct. 23 | 1980 | 476 | 69 | 411 |
| Railway. Closed conduit electric | J. F. McLaughlin | 527,874 | Oct. 23 | 1983 | 477 | 69 | 411 |
| Railway. Closed-conduit electric | J. F. McLaughlin | 528,379 | Oct. 30 | 2881 | 698 | 69 | 590 |
| Railway. Conduit electric | O. B. Finn | 527,601 | Oct. 16 | 1521 | 369 | 69 | 310 |
| Railway. Conduit electric | J. L. Hornig | 528,205 | Oct. 30 | 2586 | 625 | 69 | 536 |
| Railway. Conduit electric | D. Mason | 530,543 | Dec. 11 | 842 | {207 / 208} | 69 | 1385 |
| Railway. Conduit electric | L. C. Pressley | 529,836 | Nov. 27 | 2331 | 554 | 69 | 1120 |
| Railway. Conduit electric | W. H. Swift | 531,450 | Dec. 25 | 2437 | 580 | 69 | 1707 |
| Railway. Conduit electric | J. E. Toole | 527,301 | Oct. 9 | 1025 | 249 | 69 | 204 |
| Railway conduit. Electric | M. Cattori | 526,963 | Oct. 2 | 481 | {115 / 119} | 69 | 91 |
| Railway conduit. Electric | M. I. Martin | 530,283 | Dec. 4 | 370 | 91 | 69 | 1292 |
| Railway conduit. Electric | R. B. Wilson | 526,767 | Oct. 2 | 164 | 38 | 69 | 31 |
| Railway conduit system. Electric | W. A. Butler | 527,265 | Oct. 9 | 960 | 233 | 69 | 193 |
| Railway conduit system. Electric | J. B. Linn | 528,330 | Oct. 30 | 2799 | {676 / 677} | 69 | 574 |
| Railway construction | J. L. Silsbee | 527,891 | Oct. 23 | 2016 | 484 | 69 | 417 |
| Railway-crossing | A. J. Moxham | 530,197 | Dec. 4 | 211 | 53 | 69 | 1251 |
| Railway-crossing gate | G. W. Phillippi | 526,941 | Oct. 2 | 451 | 112 | 69 | 85 |
| Railway-crossing gate | J. Rutherford | 531,066 | Dec. 18 | 1717 | {408 / 409} | 69 | 1558 |
| Railway-crossings. Electric signal for | D. W. Smith | 529,759 | Nov. 27 | 2196 | {523 / 524} | 69 | 1094 |
| Railway. Electric | C. H. Macloskie and H. M. Brinckerhoff | 531,441 | Dec. 25 | 2418 | 576 | 69 | 1704 |
| Railway. Electric and gravity pleasure | C. A. Idler | 527,990 | Oct. 23 | 2214 | {534 / 535} | 69 | 451 |
| Railway electric switch | W. V. and J. H. Ash | 528,898 | Nov. 6 | 679 | 164 | 69 | 771 |
| Railway electric switch | C. M. Fitch | 529,164 | Nov. 13 | 1146 | 277 | 69 | 875 |
| Railway. Elevated | J. C. des Granges | 527,236 | Oct. 9 | 912 | 220 | 69 | 185 |
| Railway. Elevated | A. S. Pickett | 529,740 | Nov. 27 | 2179 | {519 / 520} | 69 | 1091 |
| Railway. Elevated | T. J. Shorb | 529,757 | Nov. 27 | 2193 | 523 | 69 | 1094 |
| Railway. Elevated | J. N. Valley | 530,810 | Dec. 11 | 1295 | 311 | 69 | 1465 |
| Railway-frog | D. Horrie | 528,776 | Nov. 6 | 449 | {110 / 111} | 69 | 728 |
| Railway-frog | C. W. Speckin | 528,348 | Oct. 30 | 2826 | 683 | 69 | 579 |
| Railway frog and switch | F. Hardy | 531,030 | Dec. 18 | 1661 | 394 | 69 | 1547 |
| Railway-frog foot-guard | M. Riley | 530,658 | Dec. 11 | 1046 | 255 | 69 | 1420 |
| Railway-gate | C. A. Ball | 531,087 | Dec. 18 | 1761 | 420 | 69 | 1565 |
| Railway-gate | F. Carlson | 526,770 | Oct. 2 | 168 | 39, 40 | 69 | 32 |
| Railway-head and drawing-frame | W. E. Sharples and F. J. Snell | 530,358 | Dec. 4 | 503 | 124 | 69 | 1306 |
| Railway gate and signal. Automatic | E. Death | 529,250 | Nov. 13 | 1304 | {313 / 314} | 69 | 902 |
| Railway-gate. Automatic | W. T. Crawford | 529,637 | Nov. 20 | 1997 | {477 / 478} | 69 | 1049 |
| Railway-gate. Automatic pneumatic | C. H. Sherwood | 526,872 | Oct. 2 | 337 | 83, 84 | 69 | 64 |
| Railway gripper. Cable | B. Brownstein | 528,359 | Oct. 30 | 2851 | 691 | 69 | 584 |
| Railway-guard | O. Bates and G. W. Smith | 527,192 | Oct. 9 | 836 | 203 | 69 | 171 |
| Railway-joint bridge | C. C. Wells | 526,954 | Oct. 2 | 467 | 115 | 69 | 88 |
| Railway-rail | L. K. Devlin | 531,290 | Dec. 18 | 2140 | 513 | 69 | 1635 |
| Railway-rail | A. F. La Shells | 528,950 | Nov. 13 | 798 | 186 | 69 | 812 |
| Railway-rail | A. J. Moxham | 531,444 | Dec. 25 | 2428 | {577 / 578} | 69 | 1705 |
| Railway-rail | A. Schwarzschild | 530,131 | Dec. 4 | 95 | 25 | 69 | 1233 |
| Railway-rail joint | H. H. Fifield | 527,367 | Oct. 9 | 1134 | 276 | 69 | 225 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Railway-rail joints. Truss for | W. F. Dimmick | 527,198 | Oct. 9 | 847 | 206 | 69 | 173 |
| Railway-rail tie | J. C. Cowdrick | 527,668 | Oct. 16 | 1029 | 392 | 69 | 330 |
| Railway-rails. Apparatus for leveling the meeting ends of | G. Norwood | 527,805 | Oct. 23 | 1858 | 446 | 69 | 390 |
| Railway-rails. Electrical connection for | A. J. Moxham | 531,445 | Dec. 25 | 2430 | 578 | 69 | 1706 |
| Railway sanding device | C. B. Andrews | 528,500 | Oct. 30 | 3093 | 750 | 69 | 628 |
| Railway sanding device | J. Yeager | 527,825 | Oct. 23 | 1887 | 452, 453 | 69 | 395 |
| Railway. Ship | A. M. G. Sébillot and F. Weidknecht | 530,245 | Dec. 4 | 298 | 73, 74, 75 | 69 | 1270 |
| Railway-signal | G. F. Adams and J. S. Lynam | 528,313 | Nov. 13 | 733 | 172 | 69 | 801 |
| Railway-signal | G. F. Adams and J. S. Lynam | 528,314 | Nov. 13 | 734 | 172 | 69 | 801 |
| Railway-signal | R. Black and C. M. Havey | 529,889 | Nov. 27 | 2416 | 580 | 69 | 1136 |
| Railway-signal | F. R. Payne | 528,797 | Nov. 6 | 490 | 119 | 69 | 735 |
| Railway-signal | J. V. Richardson | 530,798 | Dec. 11 | 1269 | 306, 307 | 69 | 1462 |
| Railway-signal | C. Selden | 529,812 | Nov. 27 | 2287 | 546 | 69 | 1111 |
| Railway-signal | C. Selden and F. P. J. Patenall | 529,811 | Nov. 27 | 2280 | 544, 545, 546 | 69 | 1110 |
| Railway-signal | C. A. Weller | 527,914 | Oct. 23 | 2057 | 493 | 69 | 426 |
| Railway-signal. Automatic | J. T. Carter | 530,013 | Nov. 27 | 2656 | 637 | 69 | 1183 |
| Railway signal. Cable | G. F. Klaffky and F. Faltinowsky | 529,920 | Nov. 27 | 2405 | 594 | 69 | 1145 |
| Railway-signal case | U. G. Selby | 526,820 | Oct. 2 | 246 | 60 | 69 | 47 |
| Railway-signal. Electric | A. J. Wilson | 528,245 | Oct. 30 | 2657 | 640 | 69 | 549 |
| Railway-signal. Electric | A. J. Wilson | 528,246 | Oct. 30 | 2659 | 641 | 69 | 550 |
| Railway-signals. Mechanical trip for | C. A. Hammond | 530,414 | Dec. 4 | 588 | 146 | 69 | 1322 |
| Railway signaling apparatus. Self-acting | G. H. Wood | 528,454 | Oct. 30 | 3012 | 737, 738 | 69 | 613 |
| Railway signaling. Detonator holder or clip for use in fog | J. G. Dixon | 527,480 | Oct. 16 | 1326 | 323 | 69 | 277 |
| Railway signaling. Electric | W. Daves | 530,093 | Dec. 4 | 29 | 8 | 69 | 1220 |
| Railway signaling system | M. Corrington | 528,593 | Nov. 6 | 123 | 29, 30 | 69 | 668 |
| Railway signaling. Treadle for use in | J. G. Dixon | 527,481 | Oct. 16 | 1327 | 323 | 69 | 277 |
| Railway-supply system. Electric | Z. Foster | 530,023 | Nov. 27 | 2687 | 646 | 69 | 1189 |
| Railway-supply system. Electric | J. J. Green | 530,482 | Dec. 4 | 720 | 177 | 69 | 1346 |
| Railway-supply system. Electric | C. H. Harkins | 528,477 | Oct. 30 | 3055 | 741 | 69 | 621 |
| Railway-supply system. Electric | E. Brombacher | 527,547 | Oct. 16 | 1433 | 349 | 69 | 295 |
| Railway-switch | J. U. Butcher | 529,245 | Nov. 13 | 1291 | 310, 311 | 69 | 900 |
| Railway-switch | J. R. Crow and J. H. Mulkey | 526,903 | Oct. 2 | 526 | 129, 130 | 69 | 99 |
| Railway-switch | C. H. Elmke | 530,404 | Dec. 4 | 575 | 142, 143 | 69 | 1320 |
| Railway-switch | E. H. B. Knowlton | 527,348 | Oct. 9 | 1082 | 291, 292 | 69 | 215 |
| Railway-switch | G. E. Lemmon | 531,439 | Dec. 25 | 2411 | 575 | 69 | 1703 |
| Railway-switch | C. L. Lincoln | 526,978 | Oct. 2 | 503 | 123 | 69 | 94 |
| Railway-switch | B. F. Loughmiller | 529,126 | Nov. 13 | 1080 | 261 | 69 | 863 |
| Railway-switch | H. Polis | 529,189 | Nov. 13 | 1197 | 289 | 69 | 883 |
| Railway-switch | W. N. Santee and J. E. Ryan | 528,305 | Oct. 30 | 2913 | 705 | 69 | 595 |
| Railway-switch | A. F. Schinner | 527,293 | Oct. 9 | 1012 | 246 | 69 | 202 |
| Railway-switch | T. D. Willever | 527,188 | Oct. 9 | 831 | 202 | 69 | 170 |
| Railway-switch and car-replacing mechanism. Combined | A. S. Debose | 530,922 | Nov. 27 | 2670 | 641 | 69 | 1185 |
| Railway-switch and locomotive attachment for operating same. | W. Holliday and T. F. Rawls | 528,880 | Nov. 6 | 656 | 157 | 69 | 766 |
| Railway-switch. Automatic | J. M. Dixon | 528,533 | Nov. 6 | 15 | 6 | 69 | 649 |
| Railway-switch. Automatic | C. F. Duval | 528,567 | Nov. 6 | 637 | 151 | 69 | 763 |
| Railway-switch. Automatic | R. A. Baldwin | 529,011 | Nov. 13 | 895 | 211 | 69 | 829 |
| Railway-switch. Electric | R. T. Waldrep | 529,953 | Nov. 27 | 2582 | 622 | 69 | 1166 |
| Railway-switch frog | J. Wayland | 531,348 | Dec. 25 | 2245 | 535 | 69 | 1670 |
| Railway-switch signal | C. Coughlin | 529,646 | Nov. 20 | 2009 | 481 | 69 | 1051 |
| Railway switch. Street | H. L. Walton and W. A. Griffiths | 531,080 | Dec. 18 | 1747 | 417 | 69 | 1563 |
| Railway switching device | D. Mason | 530,192 | Dec. 4 | 202 | 50 | 69 | 1252 |
| Railway systems. Electric machine for | E. Deming | 528,465 | Oct. 30 | 3039 | 737 | 69 | 617 |
| Railway tie-plate | B. Wolhaupter | 530,738 | Dec. 11 | 1174 | 286 | 69 | 1443 |
| Railway-tie. Steel combination | J. R. Green | 527,682 | Oct. 16 | 1655 | 399 | 69 | 345 |
| Railway-tie. Timber | L. C. Ingersoll | 530,778 | Dec. 11 | 1244 | 300 | 69 | 1457 |
| Railway-torpedo | E. G. Shortt | 530,906 | Dec. 11 | 1437 | 341 | 69 | 1492 |
| Railway-track | A. C. Mather | 530,113 | Dec. 4 | 66 | 19 | 69 | 1227 |
| Railway-track | A. J. Moxham | 531,446 | Dec. 25 | 2431 | 578 | 69 | 1706 |
| Railway-track | W. R. Smith | 528,309 | Oct. 30 | 2770 | 669 | 69 | 570 |
| Railway-track brace | H. Greer | 527,489 | Oct. 16 | 1337 | 326 | 69 | 272 |
| Railway-track crossing-frog | V. N. McGee and M. W. Mansfield | 528,786 | Nov. 6 | 468 | 115 | 69 | 731 |
| Railway track-switch. Electric | A. F. Schinner | 527,294 | Oct. 9 | 1015 | 247 | 69 | 203 |
| Railway tracks. Intersecting electric | M. Lowd | 528,959 | Nov. 13 | 809 | 189 | 69 | 814 |
| Railway-train protecting device | W. Reeves | 527,540 | Oct. 16 | 1422 | 346 | 69 | 273 |
| Railway trolley. Conduit | W. E. Delabarre, F. M. Frazer, and R. A. Carrick. | 530,828 | Dec. 11 | 1313 | 316 | 69 | 1470 |
| Railway trolley. Conduit | J. C. Hawley and W. J. Black | 530,688 | Dec. 11 | 1093 | 265 | 69 | 1429 |
| Railway trolley. Conduit | R. J. Hewett | 526,835 | Oct. 2 | 268 | 65 | 69 | 51 |
| Railway trolley. Electric | R. A. Grant | 526,897 | Oct. 2 | 383 | 95 | 69 | 71 |
| Railway. Underground electric | H. B. Nichols and F. H. Lincoln | 529,406 | Nov. 20 | 1592 | 379 | 69 | 976 |
| Railway water-tank | T. J. Prosser | 528,110 | Oct. 23 | 2417 | 585 | 69 | 491 |
| Railways. Automatic safety-grip for inclined | O. M. Smith | 527,894 | Oct. 23 | 2021 | 486 | 69 | 418 |
| Railways. Automatic switch for electric | W. S. Wright and J. E. Venus | 526,985 | Oct. 2 | 515 | 126 | 69 | 97 |
| Railways. Auxiliary signaling system for | M. S. Conly | 528,122 | Oct. 23 | 2437 | 590 | 69 | 494 |
| Railways. Carriage for elevated | J. N. Valley | 530,809 | Dec. 11 | 1284 | 310 | 69 | 1405 |
| Railways. Closed conduit for electric | F. L. King | 529,797 | Nov. 27 | 2257 | 538, 539 | 69 | 1105 |
| Railways. Closed conduit for electric | W. E. Stearns | 528,494 | Oct. 30 | 3084 | 748 | 69 | 626 |
| Railways. Contact device for overhead electric | J. L. Blackwell | 529,354 | Nov. 20 | 1484 | 357 | 69 | 958 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Railways. Electric safety appliance for | E. L. Orcutt | 531,214 | Dec. 18 | 2001 | 475 | 69 | 1609 |
| Railways. Metallic cross-tie for | C. Coleman and R. de Saussure | 529,679 | Nov. 20 | 2059 | 493 | 69 | 1061 |
| Railways. Self-lubricating contact-bar for electric | F. W. N. E. Hayn | 530,416 | Dec. 4 | 591 | 147 | 69 | 1323 |
| Railways. System of electric block-signals for | W. M. Cuthbert | 527,267 | Oct. 9 | 965 | 224, 225 | 69 | 194 |
| Railways. Transformer system for electric | M. Hutin and M. Leblanc | 527,857 | Oct. 23 | 1956 | 470 | 69 | 406 |
| Rain-gage. Self-recording | A. J. Grover | 530,338 | Dec. 4 | 465 | 116 | 69 | 1298 |
| Rake: *See* Hay-rake. Lawn-rake. | | | | | | | |
| Rake attachment. Hand | W. Ashby | 531,295 | Dec. 25 | 2149 | 514 | 69 | 1651 |
| Ram. Hydraulic | C. B. Jones and J. S. Wetmore | 529,914 | Nov. 27 | 2458 | 592 | 69 | 1144 |
| Range or cooking-cabinet. Gas | F. C. De Prengal | 530,509 | Dec. 11 | 783 | 193 | 69 | 1374 |
| Range-tank | J. J. Malley | 530,700 | Dec. 11 | 1114 | 270 | 69 | 1432 |
| Ratchet mechanism | W. H. Young, Jr | 528,353 | Oct. 30 | 2831 | 685 | 69 | 580 |
| Ratchet-wrench | W. G. Orcutt | 528,644 | Nov. 6 | 925 | 56 | 69 | 667 |
| Razor-strop | H. Bezer | 528,650 | Nov. 6 | 234 | 58 | 69 | 688 |
| Razors. Machine for concaving | J. J. Fifield | 531,368 | Dec. 25 | 2284 | 545 | 69 | 1677 |
| Reamer | F. Hatmaker | 530,841 | Dec. 11 | 1333 | 320 | 69 | 1473 |
| Receptacle and adjustable seat. Combined | J. Boyd | 530,469 | Dec. 4 | 675 | 168 | 69 | 1339 |
| Recorder: *See* Sales-recorder. Speed-recorder. Signal-recorder. Time-recorder. | | | | | | | |
| Reel: *See* Bolting-reel. Hose-reel. Fishing-reel. | | | | | | | |
| Reel | C. S. Gooding and W. E. C. Gondey | 527,368 | Oct. 9 | 1135 | 277 | 69 | 226 |
| Reel-carrier | E. N. Dunwiddie | 526,692 | Oct. 2 | 36 | 9 | 69 | 9 |
| Reflector and shade. Lamp | G. H. Bliss | 529,105 | Nov 13 | 1049 | 253 | 69 | 857 |
| Refrigerating apparatus | E. W. Carleton and J. M. Odell | 527,831 | Oct. 23 | 1897 | 455, 456 | 69 | 396 |
| Refrigerating apparatus | O. Kuphal | 530,535 | Dec. 11 | 826 | 205 | 69 | 1383 |
| Refrigerator | R. Brand and W. Dichmann | 528,655 | Nov. 6 | 242 | 60 | 69 | 689 |
| Refrigerator | F. Lusche | 526,812 | Oct. 2 | 233 | 57 | 69 | 44 |
| Refrigerator | L. C. Taylor | 530,670 | Dec. 11 | 1066 | 259 | 69 | 1424 |
| Refrigerator-car | C. S. Hardy | 526,969 | Oct. 2 | 492 | 121 | 69 | 93 |
| Refrigerator-leak alarm | E. C. Pactow | 531,557 | Dec. 25 | 2612 | 625 | 69 | 1741 |
| Refrigerator or butter-cooler | O. M. Whitman | 529,148 | Nov. 13 | 1120 | 271 | 69 | 870 |
| Regenerative furnace | A. Laughlin and J. Reuleaux | 529,556 | Nov. 20 | 1871 | 445, 446 | 69 | 1025 |
| Register: *See* Car-register. Key-register. Cash-register. Sales-register. Fare-register. Telephone-call register. Hot-air register. | | | | | | | |
| Register | C. C. Fields | 528,509 | Oct. 30 | 3108 | 754 | 69 | 631 |
| Register for counting the strokes of pistons, &c | F. L. Wolfe | 526,884 | Oct. 2 | 356 | 88 | 69 | 67 |
| Registers. Air-moistening attachment for hot-air | H. Iliowizi | 526,923 | Oct. 2 | 428 | 106 | 69 | 80 |
| Registers. Mechanical movement for engine | F. L. Wolfe | 526,885 | Oct. 2 | 357 | 89 | 69 | 67 |
| Regulating device | R. Thury | 529,570 | Nov. 20 | 1895 | 451 | 69 | 1030 |
| Regulator: *See* Boiler water-regulator. Lamp-wick regulator. Pressure-regulator. Dynamo-regulator. Tank-regulator. Feed-water regulator. Temperature-regulator. Windmill-regulator. | | | | | | | |
| Rein holder. Overcheck | C. L. Leonard | 527,596 | Oct. 23 | 1848 | 444 | 69 | 388 |
| Rein-support | C. E. Ford | 531,153 | Dec. 18 | 1926 | 458 | 69 | 1596 |
| Rein-supporter | R. Stanhope | 530,134 | Dec. 4 | 98 | 26 | 69 | 1233 |
| Remedies. Preparing topical | O. Troplowitz | 527,906 | Oct. 23 | 2042 | ..... | 69 | 423 |
| Resonator. Tubular | E. M. Gerry | 527,488 | Oct. 16 | 1336 | 325 | 69 | 272 |
| Respirator | H. Simons | 531,011 | Dec. 18 | 1630 | 387 | 69 | 1542 |
| Retinning bath-tubs | D. B. Hilton | 526,836 | Oct. 2 | 270 | ..... | 69 | 51 |
| Revolver | C. Foehl | 530,759 | Dec. 11 | 1207 | 294 | 69 | 1449 |
| Revolver | J. T. Smith | 530,730 | Dec. 11 | 1161 | 281 | 69 | 1440 |
| Revolver | O. E. Smith | 528,263 | Oct. 30 | 2685 | 647 | 69 | 555 |
| Revolver-casings. Machine for counterboring barrels of | E. M. Couch | 530,823 | Dec. 11 | 1306 | 315 | 69 | 1469 |
| Revolver-cylinders. Machine for counterboring chambers of | E. M. Couch | 530,824 | Dec. 11 | 1307 | 315 | 69 | 1469 |
| Revolver with knife attachment | L. L. Picard | 529,877 | Nov. 27 | 2395 | 574 | 69 | 1133 |
| Rheostat | J. C. Fyfe | 528,539 | Nov. 6 | 24 | 7, 8 | 69 | 650 |
| Rheostat | D. Macfarlan | 526,867 | Oct. 2 | 330 | 81 | 69 | 62 |
| Rheostat | A. J. Shaw | 527,730 | Oct. 16 | 1732 | 418 | 69 | 350 |
| Rheostat | A. J. Shaw | 528,893 | Nov. 6 | 674 | 162 | 69 | 770 |
| Rheostat | A. J. Shaw | 528,894 | Nov. 6 | 675 | 163 | 69 | 770 |
| Rheostat | T. W. Shelton | 530,727 | Dec. 11 | 1157 | 281 | 69 | 1440 |
| Rheostat | M. Waddell | 528,243 | Oct. 30 | 2653 | 640 | 69 | 549 |
| Rheostat and heater | R. C. Mitchell | 528,907 | Nov. 6 | 718 | 169 | 69 | 778 |
| Rheostat. Automatic | R. W. Hollis | 531,617 | Dec. 25 | 2712 | 650 | 69 | 1761 |
| Ribbon-feed-reversing mechanism | C. E. Johnson | 526,783 | Oct. 2 | 191 | 45, 46 | 69 | 36 |
| Ribbon-reverse. Automatic | F. P. Stiles | 530,365 | Dec. 4 | 512 | 127 | 69 | 1308 |
| Ring: *See* Clew-ring. Key-ring. Curtain-pole ring. Teething-ring. Ear-ring. Thread-cutting ring. Galvanic ring. | | | | | | | |
| Riveting Dolly-bar for | N. D. Yant | 528,118 | Oct. 23 | 2433 | 588 | 69 | 493 |
| Riveting-machine | P. A. Cuenot | 530,162 | Dec. 4 | 146 | 38 | 69 | 1242 |
| Roach-trap | S. P. Burgess | 529,109 | Nov. 13 | 1052 | 254 | 69 | 857 |
| Road-machine | J. F. Kimball | 527,610 | Oct. 16 | 1532 | 372 | 69 | 312 |
| Roaster: *See* Meat-roaster. | | | | | | | |
| Roasting-furnace | E. B. Goodwin | 527,746 | Oct. 16 | 1758 | 423 | 69 | 354 |
| Robe, towel, &c., for heating. Electric | H. G. O'Neill | 530,053 | Nov. 27 | 2735 | 656 | 69 | 1197 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Rock-drill | E. S. Currier | 527,669 | Oct. 16 | 1630 | 392 | 69 | 331 |
| Rock drill | H. P. and G. B. Jones | 531,043 | Dec. 18 | 1665 | 400 | 69 | 1552 |
| Rock-drills or broken or detached drill-rods, &c., from bore-holes. Grab for lifting cores formed by tubular | P. A. Craelius | 529,781 | Nov. 27 | 2230 | 531 | 69 | 1101 |
| Rock-drilling machine | M. Beal | 531,431 | Dec. 25 | 2385 | 510 | 69 | 1697 |
| Rock or ore crusher | R. D. and P. W. Gates | 530,102 | Dec. 4 | 41 | 12 | 69 | 1223 |
| Rocking-chair | G. C. H. Kaltwasser | 529,273 | Nov. 13 | 1347 | 322 | 69 | 910 |
| Rocking-chair | T. W. Wigg | 529,004 | Nov. 13 | 879 | 207 | 69 | 826 |
| Rod adjuster. Polished | F. M. Kennedy | 531,264 | Dec. 18 | 2030 | 501 | 69 | 1625 |
| Rod and ring machine. Universal | J. Banwell | 526,673 | Oct. 2 | 5 | 2 | 69 | 4 |
| Rod or pipe coupling. Hollow | S. M. Jones | 528,167 | Oct. 30 | 2517 | 609 | 69 | 524 |
| Rod-support for screw or other machines | C. E. Roberts | 526,790 | Oct. 2 | 201 | 47 | 69 | 38 |
| Roll-holders. Tension-spool for | T. M. Clark | 530,327 | Dec. 4 | 445 | 111 | 69 | 1295 |
| Rolls. Driving live | M. Garland | 530,333 | Dec. 4 | 454 | 114 | 69 | 1297 |
| Roller-mill | J. W. Vaughan | 526,795 | Oct. 2 | 209 | 50 | 69 | 39 |
| Roller mill feed device | J. Seiberth | 528,037 | Oct. 23 | 2249 | 552 | 69 | 467 |
| Rolling apparatus | L. D. York | 528,260 | Oct. 30 | 2574 | 623 | 69 | 534 |
| Rolling apparatus. Beam | F. H. Kindl. (Reissue) | 11,454 | Nov. 20 | 2076 | 497 | 69 | 1064 |
| Rolling car-wheel tires. Machine for | W. E. Williams | 527,038 | Oct. 2 | 600 | 145 | 69 | 113 |
| Rolling-mill | S. V. Huber | 529,121 | Nov. 13 | 1075 | {259 / 260} | 69 | 892 |
| Rolling-mill | S. Johnston | 531,042 | Dec. 18 | 1683 | 399 | 69 | 1552 |
| Rolling mill. Plate | W. H. Maddock | 530,112 | Dec. 4 | 63 | 17, 18 | 69 | 1227 |
| Rolling-mills. Means for adjusting rolls for | O. Klatte | 530,949 | Dec. 18 | 1518 | 360 | 69 | 1592 |
| Rolling mills. Support for mandrel-bars of tube | C. G. Larson | 528,676 | Nov. 6 | 283 | 68, 69 | 69 | 695 |
| Rolling sheet metal. Method of and apparatus for | S. A. Davis | 530,094 | Dec. 4 | 30 | 9 | 69 | 1221 |
| Roof. Board | J. P. Brownlee | 530,009 | Nov. 27 | 2050 | 636 | 69 | 1182 |
| Roofs. Bracket for staging on shingle | G. L. Wilder | 527,572 | Oct. 16 | 1470 | 358 | 69 | 301 |
| Roofs. Grappling device for | D. J. Donovan | 530,105 | Dec. 4 | 150 | 39 | 69 | 1222 |
| Roofing. Combination | C. H. Dana | 526,994 | Oct. 2 | 529 | 130 | 69 | 99 |
| Roofing implement | F. G. Caldwell | 529,594 | Nov. 20 | 1930 | 460 | 69 | 1037 |
| Roofing-plate | P. Norton | 527,505 | Oct. 16 | 1364 | 332 | 69 | 282 |
| Roofing-tool | C. H. Dana | 526,995 | Oct. 2 | 530 | 130 | 69 | 100 |
| Root-cutter | O. E. Thompson | 529,219 | Nov. 13 | 1249 | 300 | 69 | 892 |
| Rope clamp | G. M. Mullen | 529,933 | Nov. 27 | 2485 | 592 | 69 | 1148 |
| Rope-hauling machine | W. B. Lantz | 531,318 | Dec. 25 | 2196 | 525 | 69 | 1661 |
| Rose and escutcheon. Combined | C. R. Uhlmann | 530,562 | Dec. 11 | 879 | 216 | 69 | 1391 |
| Rosin pad for use on bows of stringed instruments | H. H. Heskett | 530,946 | Dec. 18 | 1515 | 359 | 69 | 1521 |
| Rotary bolt | T. Stevens | 530,364 | Dec. 4 | 511 | 126 | 69 | 1308 |
| Rotary cutter | J. Ettinger | 529,113 | Nov. 13 | 1058 | 255 | 69 | 859 |
| Rotary cutter | J. Ettinger | 529,114 | Nov. 13 | 1060 | 255 | 69 | 859 |
| Rotary cutter | J. Ettinger | 529,115 | Nov. 13 | 1061 | 256 | 69 | 859 |
| Rotary engine | W. G. Adams | 530,982 | Dec. 18 | 1578 | 374 | 69 | 1532 |
| Rotary engine | D. F. Allen | 530,874 | Dec. 11 | 1384 | 330 | 69 | 1482 |
| Rotary engine | T. L. Blackwell | 526,801 | Oct. 2 | 215 | 52 | 69 | 41 |
| Rotary engine | T. B. Boyle | 527,933 | Oct. 23 | 2091 | {500 / 501} | 69 | 432 |
| Rotary engine | O. E. Morse | 529,289 | Nov. 13 | 1369 | 329 | 69 | 914 |
| Rotary engine | L. Sivertson | 528,493 | Oct. 30 | 3081 | {747 / 748} | 69 | 626 |
| Rotary engine | F. D. Sweet | 531,481 | Dec. 25 | 2482 | {591 / 592} | 69 | 1715 |
| Rotary motor | O. Arnold | 531,246 | Dec. 18 | 2059 | 492 | 69 | 1619 |
| Rotary motor | A. Delattre and F. Brückert | 530,220 | Dec. 4 | 255 | 63 | 69 | 1262 |
| Rotary steam-engine | H. Staub | 530,908 | Dec. 11 | 1441 | {342 / 343} | 69 | 1493 |
| Rotary trimmer | A. S. Vose | 528,311 | Oct. 30 | 2773 | 669 | 69 | 570 |
| Rotating stand | A. Baldwin | 530,877 | Dec. 11 | 1394 | 332 | 69 | 1481 |
| Roundabout | J. Armitage, A. and G. C. Herschell | 531,103 | Dec. 25 | 2332 | {557 / 558} | 69 | 1688 |
| Roundabout | H. D. Gardy | 527,962 | Oct. 23 | 2153 | 518 | 69 | 443 |
| Routing-machine | C. Schraubstadter, Jr., and C. R. Schilling | 527,025 | Oct. 2 | 579 | 140 | 69 | 109 |
| Roving-frame | M. Campbell | 531,156 | Dec. 18 | 1890 | 449 | 69 | 1589 |
| Row-boat | G. Vogel | 528,702 | Nov. 6 | 319 | 78 | 69 | 704 |
| Rubber and stocking. Lumberman's | M. D. Girard | 528,473 | Oct. 30 | 3049 | 740 | 69 | 619 |
| Rubber articles. Vulcanizing hard | H. Traun | 528,264 | Oct. 30 | 2686 | | 69 | 556 |
| Rubber-mixing mill | E. F. Bragg | 530,157 | Dec. 4 | 134 | 36 | 69 | 1240 |
| Rubbing or polishing machine | C. S. Yarnell | 528,159 | Oct. 30 | 2573 | 622 | 69 | 534 |
| Rugs, &c. Apparatus for making | R. J. Grubb | 527,971 | Oct. 23 | 2171 | 522 | 69 | 446 |
| Rule and ruling device | G. Harvey | 530,043 | Nov. 27 | 2703 | 649 | 69 | 1192 |
| Rule. Calculating | E. F. Steck. (Reissue) | 11,450 | Oct. 23 | 2463 | 596 | 69 | 499 |
| Rule. Draftsman's | F. W. Allpeter | 530,741 | Dec. 11 | 1178 | 287 | 69 | 1443 |
| Ruling device | J. Grundy | 528,476 | Oct. 30 | 3052 | {740 / 741} | 69 | 620 |
| Saccharine solutions. Process of and apparatus for defecating | E. W. Deming | 531,460 | Dec. 25 | 2451 | {583 / 584} | 69 | 1710 |
| Sad-iron | H. M. Cooley | 530,855 | Dec. 11 | 1405 | 334 | 69 | 1486 |
| Sad-iron | P. C. Greenawalt | 528,366 | Oct. 30 | 2462 | 601 | 69 | 586 |
| Sad-iron | B. Rein | 530,653 | Dec. 11 | 1639 | 253 | 69 | 1419 |
| Sad-iron handles. Machine for making | J. Banwell | 526,672 | Oct. 2 | 3 | 1 | 69 | 3 |
| Saddle-blanket | J. L. Torrey | 530,864 | Dec. 11 | 1370 | 332 | 69 | 1480 |
| Saddle. Harness | H. Lane | 526,716 | Oct. 2 | 79 | 21 | 69 | 17 |
| Saddle. Harness | J. A. Miller and J. H. Warmoth | 529,287 | Nov. 13 | 1366 | 327 | 69 | 913 |
| Safe. Express-messenger's | J. Campbell | 529,779 | Nov. 27 | 2282 | 531 | 69 | 1160 |
| Safes. Electrical recording device for | R. A. Newlyn | 529,938 | Nov. 27 | 2191 | 601 | 69 | 1150 |
| Safety-pin | C. A. Bryant | 531,458 | Dec. 25 | 2448 | 583 | 69 | 1709 |
| Sails. Reefing | S. G. Martin | 527,340 | Oct. 9 | 1085 | {262 / 263} | 69 | 216 |
| Sales-check case | W. M. Kinnard | 531,551 | Dec. 25 | 2599 | {622 / 623} | 69 | 1738 |
| Sales-recorder. Manual | H. C. Cooper | 527,667 | Oct. 16 | 1626 | 392 | 69 | 330 |
| Sales-recorder. Manual | A. C. Hough | 530,993 | Dec. 18 | 1594 | 378 | 69 | 1535 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Sales-register. Manifolding | W. Assheton | 530,876 | Dec. 11 | 1391 | {331 / 332} | 69 | 1484 |
| Sales-slip package. Memorandum | W. M. Kinnard | 531,317 | Dec. 25 | 2194 | 525 | 69 | 1661 |
| Sand-blast apparatus | J. E. Mathewson | 531,379 | Dec. 25 | 2301 | 549 | 69 | 1681 |
| Sandpaper-cylinders. Device for adjusting | J. L. Perry | 531,273 | Dec. 18 | 2105 | 505 | 69 | 1627 |
| Sandpapering-machine | C. L. Ruchs | 526,845 | Oct. 2 | 287 | 69 | 69 | 55 |
| Sanding device | J. Martin | 527,437 | Oct. 16 | 1251 | 307 | 69 | 260 |
| Sanding device | T. J. Thomas | 528,998 | Nov. 13 | 870 | 206 | 69 | 825 |
| Sash-balance | W. W. Abbott | 527,760 | Oct. 23 | 1765 | 430 | 69 | 377 |
| Sash-balance | G. Lusher | 528,331 | Oct. 30 | 2602 | 677 | 69 | 575 |
| Sash-balance | J. Sauerburger | 526,945 | Oct. 2 | 458 | 113 | 69 | 86 |
| Sash-fastener | W. R. Abrams | 528,059 | Oct. 23 | 2324 | {560 / 561} | 69 | 474 |
| Sash-fastener | A. A. and C. P. Allen | 528,707 | Nov. 6 | 325 | 80 | 69 | 705 |
| Sash-fastener | E. I. Blount | 527,586 | Oct. 16 | 1497 | 364 | 69 | 306 |
| Sash-fastener | F. Burmeister | 528,656 | Nov. 6 | 243 | 60 | 69 | 690 |
| Sash-fastener | J. H. Dickson | 528,769 | Nov. 6 | 438 | 107 | 69 | 726 |
| Sash-fastener | J. G. Fox | 530,266 | Dec. 4 | 335 | 82 | 69 | 1257 |
| Sash-fastener | U. A. Hoyt | 526,863 | Oct. 2 | 325 | 80 | 69 | 62 |
| Sash-fastener | J. B. Lashbrook | 531,542 | Dec. 25 | 2586 | 619 | 69 | 1736 |
| Sash-fastener | J. B. Letourneau | 528,728 | Nov. 6 | 356 | 87 | 69 | 711 |
| Sash-fastener | L. C. Miller | 531,443 | Dec. 25 | 2423 | 577 | 69 | 1705 |
| Sash-fastener | A. H. Parslow | 528,208 | Oct. 30 | 2594 | 626 | 69 | 537 |
| Sash-fastener | J. and J. T. Paul | 528,108 | Oct. 23 | 2414 | 584 | 69 | 490 |
| Sash-fastener | T. E. Wardwell | 528,833 | Nov. 6 | 577 | 136 | 69 | 751 |
| Sash-fastener | T. E. Wardwell | 531,453 | Dec. 25 | 2441 | 581 | 69 | 1708 |
| Sash-fastener | J. Claypool | 527,137 | Oct. 9 | 772 | 185 | 69 | 155 |
| Sash-holder | G. E. Schairer | 530,660 | Dec. 11 | 1049 | 255 | 69 | 1421 |
| Sash-holder | J. Weldon | 526,764 | Oct. 2 | 160 | 38 | 69 | 31 |
| Sash holder and fastener | C. W. Ammerman | 530,078 | Dec. 4 | 4 | 2 | 69 | 1215 |
| Sash-lock | J. A. Hasenpflug | 527,686 | Oct. 16 | 1659 | 400 | 69 | 336 |
| Sash-lock | J. A. Hasenpflug | 528,369 | Oct. 30 | 2868 | 694 | 69 | 587 |
| Sash-lock | C. A. Robert | 528,892 | Nov. 6 | 672 | 162 | 69 | 769 |
| Sash mounting. Swinging | L. G. Abbott and T. D. Greene | 531,244 | Dec. 18 | 2056 | 491 | 69 | 1618 |
| Sash-weight | H. Marshall | 527,151 | Oct. 9 | 777 | 189 | 69 | 159 |
| Sash. Window | C. F. Olcese | 530,714 | Dec. 11 | 1132 | 275 | 69 | 1435 |
| Sashes or blinds. Frame or casing for window | P. McKenzie | 528,733 | Nov. 6 | 364 | 89 | 69 | 712 |
| Saw | J. Danielson | 528,415 | Oct. 30 | 2946 | 712 | 69 | 601 |
| Saw | W. B. Vanghan | 529,538 | Nov. 20 | 1843 | 439 | 69 | 1021 |
| Saw-blades. Machine for cutting tooth-recesses in | F. J. G. Fromholt | 530,407 | Dec. 4 | 578 | 143 | 69 | 1321 |
| Sawbuck | S. D. Palmer | 530,601 | Dec. 11 | 945 | 232 | 69 | 1404 |
| Saw. Circular | J. Little | 526,602 | Nov. 6 | 139 | 34 | 69 | 672 |
| Saw-driving mechanism | C. C. Newton | 530,791 | Dec. 11 | 1260 | 304 | 69 | 1460 |
| Saw-filing device | M. J. Wilson | 531,456 | Dec. 25 | 2445 | 582 | 69 | 1709 |
| Saw-filing machine | J. N. Howard | 527,332 | Oct. 9 | 1074 | 259 | 69 | 213 |
| Saw filing machine | A. J. Neff | 528,179 | Oct. 30 | 2536 | 615 | 69 | 528 |
| Saw-frame | J. Gélardin | 527,845 | Oct. 23 | 1926 | 463 | 69 | 401 |
| Saw guide. Drag | G. M. Mize | 528,964 | Nov. 13 | 819 | 191 | 69 | 816 |
| Saw gummer or sharpener | J. E. Oglesby | 529,299 | Nov. 13 | 1388 | 334 | 69 | 918 |
| Saw-handle | M. M. Cope | 529,063 | Nov. 13 | 977 | 230 | 69 | 844 |
| Saw. Metal | M. Odgers | 530,793 | Dec. 11 | 1262 | 305 | 69 | 1461 |
| Sawmill-buffer | E. E. Thomas | 529,218 | Nov. 13 | 1246 | 300 | 69 | 892 |
| Sawmill-carriage | M. Cox | 528,287 | Oct. 30 | 2729 | 659 | 69 | 563 |
| Sawmills. Variable gear for | J. T. Oberdorfer | 527,343 | Oct. 9 | 1091 | 265 | 69 | 217 |
| Saw safety-guard. Rip | G. A. Shields | 528,262 | Oct. 30 | 2684 | 647 | 69 | 555 |
| Saw set | J. T. Bernard | 530,501 | Dec. 11 | 756 | {185 / 186} | 69 | 1370 |
| Saw-set | J. W. Packard | 528,554 | Nov. 6 | 50 | 13 | 69 | 655 |
| Saw stretching machine. Band | W. Hollingsworth and J. Korbel | 529,551 | Nov. 20 | 1866 | 444 | 69 | 1024 |
| Saw swage | C. A. Schoessel | 531,222 | Dec. 18 | 2018 | 481 | 69 | 1612 |
| Saw-teeth. Device for side-dressing | G. Fritz | 530,833 | Dec. 11 | 1321 | 318 | 69 | 1471 |
| Saw-tooth-sharpening machine | D. Hazard | 529,789 | Nov. 27 | 2243 | {534 / 535} | 69 | 1103 |
| Saw-tooth-swaging device | D. Hazard | 529,860 | Nov. 27 | 2371 | 567 | 69 | 1128 |
| Sawing apparatus. Cold | H. Ehrhardt | 530,639 | Dec. 11 | 1014 | 247 | 69 | 1415 |
| Sawing-machine | M. Garland | 528,088 | Oct. 23 | 2379 | 574 | 69 | 484 |
| Sawing-machine | A. J. Robinson | 529,839 | Nov. 27 | 2337 | {555 / 556} | 69 | 1121 |
| Sawing machine. Log | A. L. Grinnell | 530,942 | Dec. 18 | 1504 | 357 | 69 | 1520 |
| Sawing machine. Pole | L. W. Noyes | 529,506 | Nov. 20 | 1889 | 449 | 69 | 1029 |
| Sawing-machine. Portable | J. H. Langton | 531,195 | Dec. 18 | 1959 | 465 | 69 | 1602 |
| Scaffold. Adjustable bracket | R. O. Davis | 530,682 | Dec. 11 | 1083 | 263 | 69 | 1427 |
| Scaffold and scaffold-clamp | J. and J. G. McIntyre | 529,745 | Nov. 27 | 2174 | 518 | 69 | 1090 |
| Scaffold. Painter's | S. A. Brooks | 530,389 | Dec. 4 | 553 | 137 | 69 | 1316 |
| Scalding-vats. Hog-conveyer and throw-out for | R. M. and J. Eagle | 529,483 | Nov. 20 | 1740 | 414 | 69 | 1002 |
| Scale and coffee-case. Combined | J. T. Whetstine and T. C. Baker | 528,052 | Oct. 23 | 2310 | 557 | 69 | 472 |
| Scale. Automatic grain | C. H. Cooley | 529,246 | Nov. 13 | 1293 | {311 / 312} | 69 | 900 |
| Scale beam and poise for testing-machines | C. E. Buzby | 529,160 | Nov. 13 | 1139 | 275 | 69 | 874 |
| Scale. Computing | H. Paddock and O. B. Johnson | 528,793 | Nov. 6 | 478 | 117 | 69 | 733 |
| Scale. Computing | W. R. Stover | 531,229 | Dec. 18 | 2031 | 484 | 69 | 1614 |
| Scale. Micrometer | J. D. Benson | 527,581 | Oct. 16 | 1490 | 362 | 69 | 305 |
| Scale. Price | O. O. Ozias | 527,125 | Oct. 9 | 738 | 181 | 69 | 152 |
| Scale. Price | C. W. Smith | 529,206 | Nov. 13 | 1226 | 295 | 69 | 888 |
| Scale. Price and weighing | O. O. Ozias | 527,124 | Oct. 9 | 734 | 180 | 69 | 151 |
| Scale. Spring | M. H. Hansen | 528,326 | Oct. 30 | 2794 | 674 | 69 | 574 |
| Scale. Spring | C. Spencer | 530,362 | Dec. 4 | 508 | {125 / 126} | 69 | 1307 |
| Scale. Weighing | J. Holtzhouser | 527,427 | Oct. 16 | 1232 | 302 | 69 | 257 |
| Scale. Weighing | W. A. Wheeler | 528,837 | Nov. 6 | 581 | 138 | 69 | 751 |
| Scale. Weighing | J. R. Witzel | 530,980 | Dec. 18 | 1576 | 373 | 69 | 1532 |
| Scale. Weighing and price | R. A. Daniels | 530,930 | Dec. 18 | 1481 | 351 | 69 | 1516 |
| School seat and desk | L. E. Kretzmeier | 530,950 | Dec. 18 | 1520 | 360 | 69 | 1522 |
| Scissors-holder and point-guard | W. Chandler | 530,014 | Nov. 27 | 2658 | 638 | 69 | 1183 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Scow. Dumping | P. Ciancimino and F. W. Mattocks | 527,860 | Oct. 23 | 1853 | 445 | 69 | 389 |
| Scraper | J. D. Libey | 529,925 | Nov. 27 | 2474 | 596 | 69 | 1146 |
| Scraper attachment. Wheeled | A. F. Bernard | 526,677 | Oct. 2 | 13 | 3 | 69 | 5 |
| Scraper. Earth | J. Macs | 531,128 | Dec. 18 | 1836 | 436 | 69 | 1580 |
| Scraper. Wheeled | A. F. Bernard | 526,676 | Oct. 2 | 11 | 3 | 69 | 5 |
| Scraper. Wheeled | T. R. McKnight | 529,564 | Nov. 20 | 1885 | 448, 449 | 69 | 1028 |
| Scrapers. Automatic dumping-gear for wheeled | T. J. Kelly | 529,501 | Nov. 20 | 1774 | 423 | 69 | 1007 |
| Scraping machine. Earth | A. F. Bernard | 526,675 | Oct. 2 | 8 | 2, 3 | 69 | 4 |
| Screen: *See* Coal-screen. Window-screen. Food-screen. | | | | | | | |
| Screen | G. W. Cross | 529,605 | Nov. 20 | 1949 | 463 | 69 | 1041 |
| Screen or sash fastener | M. Hauser | 528,327 | Oct. 30 | 2796 | 675 | 69 | 574 |
| Screening apparatus | V. Distl and A. Susky | 530,261 | Dec. 4 | 323 | 80 | 69 | 1274 |
| Screening apparatus | V. Distl and A. Susky | 530,262 | Dec. 4 | 325 | 81 | 69 | 1275 |
| Screw blanks. Machine for threading wood | T. B. Smith | 531,226 | Dec. 18 | 2026 | 483 | 69 | 1613 |
| Screw-cutting die | J. Hartness | 529,169 | Nov. 13 | 1158 | 279 | 69 | 877 |
| Screw-cutting die. Separable | R. Dost | 530,166 | Dec. 4 | 151 | 40 | 69 | 1243 |
| Screw-cutting plate | H. B. Keiper | 530,846 | Dec. 11 | 1342 | 321 | 69 | 1475 |
| Screw-driver | M. Keehn | 527,696 | Oct. 16 | 1678 | 404 | 69 | 340 |
| Screw-driver and drill. Spiral | W. H. McCoy and H. L. Pratt | 529,401 | Nov. 20 | 1586 | 377 | 69 | 975 |
| Screw-making machine | R. Hakewessell | 530,179 | Dec. 4 | 172 | 44, 45 | 69 | 1246 |
| Screw-making machine | E. C. Henn | 530,180 | Dec. 4 | 178 | 45, 46 | 69 | 1247 |
| Screws and followers. Means for controlling operative connection between feed | E. J. Roche | 531,427 | Dec. 25 | 2379 | 569 | 69 | 1696 |
| Screws into wood. Machine for driving | C. L. Briggs | 529,701 | Nov. 27 | 2100 | 503, 504 | 69 | 1079 |
| Scrubbing-machine | J. S. Hitchcock | 530,689 | Dec. 11 | 1095 | 265 | 69 | 1429 |
| Scythe-rack | D. B. Cauble | 528,148 | Oct. 30 | 2486 | 602 | 69 | 518 |
| Seal | E. J. Brooks | 530,318 | Nov. 13 | 1427 | 343 | 69 | 926 |
| Seal | S. A. Foster | 531,174 | Dec. 18 | 1928 | 459 | 69 | 1596 |
| Seal | J. E. Gogle | 528,089 | Oct. 23 | 2381 | 574 | 69 | 484 |
| Seal | F. E. Gnitterson | 531,376 | Dec. 25 | 2297 | 548 | 69 | 1680 |
| Seal-lock | T. Gaskins | 528,471 | Oct. 30 | 3047 | 739 | 69 | 619 |
| Seal-lock | W. Orb | 529,945 | Nov. 27 | 2512 | 605 | 69 | 1153 |
| Seal or stopper. Bottle | W. Painter | 528,465 | Oct. 30 | 3072 | 745 | 69 | 624 |
| Seal or stopper. Bottle | W. Painter | 528,466 | Oct. 30 | 3073 | 745 | 69 | 624 |
| Seal or stopper. Bottle | W. Painter | 528,467 | Oct. 30 | 3073 | 745 | 69 | 624 |
| Seam. Fabric | W. F. Beardslee | 530,218 | Dec. 4 | 249 | 60, 61 | 69 | 1261 |
| Seat: *See* Car-seat. School-seat. Chair-seat. Vehicle shifting seat. | | | | | | | |
| Seat and folding berth. Combined | P. Fraser | 528,271 | Oct. 30 | 2695 | 650 | 69 | 557 |
| Seat or cushion | W. Vogler | 527,633 | Oct. 16 | 1572 | 380 | 69 | 320 |
| Secondary battery | E. M. Poston | 528,740 | Nov. 6 | 375 | 91 | 69 | 715 |
| Secondary battery | J. E. Rhetts | 528,445 | Oct. 30 | 2908 | 724 | 69 | 610 |
| Seed and hulls. Process of and apparatus for treating cotton | W. C. Johnson | 530,533 | Dec. 11 | 823 | 204 | 69 | 1362 |
| Seeding-machine | F. R. Packham | 527,621 | Oct. 16 | 1551 | 376 | 69 | 316 |
| Seeding-machine | F. R. Packham | 530,962 | Dec. 18 | 1538 | 364, 365 | 69 | 1525 |
| Self-fastening box | O. Heinrich | 530,225 | Dec. 4 | 265 | 65, 66 | 69 | 1263 |
| Semaphore-operating apparatus | J. S. Lynam | 528,961 | Nov. 13 | 813 | 190 | 69 | 815 |
| Separating-machine. Centrifugal | O. Ohlsson | 528,083 | Nov. 6 | 293 | 71, 72 | 69 | 699 |
| Separating-machine. Magnetic | W. H. Williams | 528,053 | Oct. 23 | 2311 | 557, 558 | 69 | 472 |
| Separator: *See* Centrifugal separator. Grain-separator. Magnetic separator. Cream-separator. Ore-separator. Gold-separator. Spinning-rail separator. | | | | | | | |
| Separator | J. E. Borchard | 527,656 | Oct. 16 | 1607 | 388 | 69 | 326 |
| Separator | R. W. Jessup | 528,434 | Oct. 30 | 2977 | 720 | 69 | 606 |
| Separator | J. H. Maggard | 529,454 | Nov. 20 | 1693 | 404 | 69 | 994 |
| Separator | O. M. Morse | 529,572 | Nov. 27 | 2388 | 571 | 69 | 1132 |
| Setting-machine | F. Bean | 528,524 | Nov. 6 | 5 | 2, 3 | 69 | 647 |
| Sewage and apparatus therefor. Treatment of | W. D. Scott-Moncrieff | 530,622 | Dec. 11 | 975 | 239 | 69 | 1409 |
| Sewer-trap cleaner | L. Belivean | 528,459 | Oct. 30 | 3030 | 735 | 69 | 616 |
| Sewers. Manhole for | G. Wright | 530,816 | Dec. 11 | 1296 | 313 | 69 | 1467 |
| Sewing books | J. T. O. Ortloff | 529,079 | Nov. 13 | 1008 | 243 | 69 | 849 |
| Sewing-machine | J. E. Bertrand | 530,297 | Dec. 4 | 391 | 99 | 69 | 1286 |
| Sewing-machine | P. L. Cox | 530,471 | Dec. 4 | 679 | 169, 170 | 69 | 1340 |
| Sewing-machine | M. T. Denne | 529,064 | Nov. 13 | 978 | 231, 232, 233 | 69 | 844 |
| Sewing-machine | J. Emanuel and A. Spielmann | 530,986 | Dec. 18 | 1584 | 376 | 69 | 1533 |
| Sewing-machine | P. B. Laskey | 528,782 | Nov. 6 | 462 | 113 | 69 | 730 |
| Sewing-machine | F. Oneill | 531,059 | Dec. 18 | 1709 | 406 | 69 | 1557 |
| Sewing-machine | J. B. Price | 527,288 | Oct. 9 | 1003 | 243, 244 | 69 | 200 |
| Sewing-machine | G. H. Scetrini and G. Cade | 527,348 | Oct. 9 | 1038 | 267, 268 | 69 | 218 |
| Sewing machine. Book | W. I. Blackman | 531,357 | Dec. 25 | 2258 | 538, 539, 540 | 69 | 1672 |
| Sewing-machine cording attachment | P. Schoen | 529,415 | Nov. 20 | 1610 | 383 | 69 | 970 |
| Sewing-machine for barring and tacking | G. S. Hill | 529,491 | Nov. 20 | 1759 | 418 | 69 | 1005 |
| Sewing-machine for barring buttonholes | E. H. Harris | 528,225 | Oct. 30 | 2020 | 632, 633 | 69 | 542 |
| Sewing-machine guide | C. H. Foster | 530,173 | Dec. 4 | 160 | 42 | 69 | 1244 |
| Sewing-machine guide | P. Schoen | 529,417 | Nov. 20 | 1613 | 383 | 69 | 969 |
| Sewing-machine hemmer | P. Schoen | 529,419 | Nov. 20 | 1615 | 384 | 69 | 980 |



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|---|---|---|---|---|---|---|---|
| Sewing-machine hemstitching attachment | P. Schoen | 529,418 | Nov. 20 | 1614 | 383, 384 | 69 | 980 |
| Sewing-machine knotter | A. W. Cochran | 527,407 | Oct. 16 | 1199 | 294 | 69 | 251 |
| Sewing-machine needle-bar | S. H. Wheeler | 527,915 | Oct. 23 | 2059 | 494 | 69 | 426 |
| Sewing-machine needle-threader | P. Bralley | 529,586 | Nov. 20 | 1920 | 458 | 69 | 1035 |
| Sewing-machine plaiting attachment | P. Schoen | 529,420 | Nov. 20 | 1616 | 384 | 69 | 980 |
| Sewing-machine quilting-frame | J. A. Parsons | 529,946 | Nov. 27 | 2513 | 605 | 69 | 1153 |
| Sewing machine. Sack | C. E. Williams | 529,769 | Nov. 27 | 2214 | 527 | 69 | 1098 |
| Sewing machine. Shoe | M. T. Denne | 527,836 | Oct. 23 | 1904 | 457, 458, 459 | 69 | 398 |
| Sewing-machine shuttle | P. Diehl | 530,095 | Dec. 4 | 32 | 9 | 69 | 1221 |
| Sewing-machine shuttle-actuating mechanism | J. Tripp | 527,565 | Oct. 16 | 1459 | 355 | 69 | 299 |
| Sewing-machine table | T. Kundtz. (Reissue) | 11,453 | Nov. 13 | 1476 | 354, 355 | 69 | 935 |
| Sewing-machine trimming attachment | W. G. Cummins and E. A. Munro | 529,783 | Nov. 27 | 2232 | 532 | 69 | 1101 |
| Sewing-machines. Automatic stop-action for | J. Faust | 530,264 | Dec. 4 | 320 | 82 | 69 | 1276 |
| Sewing-machines. Guide for two-needle | P. Schoen | 529,416 | Nov. 20 | 1611 | 383 | 69 | 980 |
| Sewing on buttons. Machine for | E. Hansalpakar | 531,261 | Dec. 18 | 2087 | 500 | 69 | 1624 |
| Sewing on buttons. Machine for | A. Walrath | 528,832 | Nov. 6 | 574 | 136 | 69 | 750 |
| Sextant attachment | T. T. H. Ferguson | 530,830 | Dec. 11 | 1316 | 317 | 69 | 1470 |
| Shade-holder | N. W. Crandall and E. A. Russell | 528,288 | Oct. 30 | 2731 | 659 | 69 | 563 |
| Shade holder. Adjustable window | G. W. Everett | 530,026 | Nov. 27 | 2077 | 642, 643 | 69 | 1187 |
| Shade or globe holder | F. Rhind | 527,259 | Oct. 9 | 1008 | 244 | 69 | 201 |
| Shade-support | N. W. Crandall and E. A. Russell | 527,946 | Oct. 23 | 2122 | 509 | 69 | 438 |
| Shade. Window | S. Longanecker | 531,201 | Dec. 18 | 1974 | 462, 463 | 69 | 1604 |
| Shades. Holding device for spring-actuated | E. T. Burrowes | 529,517 | Nov. 20 | 1805 | 429 | 69 | 1013 |
| Shades. Holding device for spring-actuated | J. A. Lidback | 529,179 | Nov. 13 | 1183 | 285 | 69 | 881 |
| Shades. Holding mechanism for spring-actuated | J. A. Lidback | 529,557 | Nov. 20 | 1873 | 446 | 69 | 1026 |
| Shaft attachment for buggies | H. G. Vaughan | 530,251 | Dec. 4 | 308 | 77 | 69 | 1271 |
| Shaft-coupling | A. Bolzani | 527,655 | Oct. 16 | 1606 | 388 | 69 | 326 |
| Shaft. Expansion | J. C. Coram | 528,150 | Oct. 30 | 2489 | 603 | 69 | 519 |
| Shaft-hanger | W. Bynon | 529,319 | Nov. 13 | 1428 | 343 | 69 | 926 |
| Shaft-hanger | F. N. Gardner | 528,774 | Nov. 6 | 445 | 109, 110 | 69 | 727 |
| Shaft-locking mechanism | E. G. Crawford | 530,580 | Dec. 11 | 909 | 222, 223 | 69 | 1397 |
| Shaft-support and antirattler. Combined | E. E. Blackman | 527,475 | Oct. 16 | 1320 | 322 | 69 | 275 |
| Shafts. Device for securing cutters or other articles to rotary | W. D. Orcutt | 530,285 | Dec. 4 | 373 | 91 | 69 | 1283 |
| Shafts to vehicles. Device for attaching | W. T. Sears | 530,801 | Dec. 11 | 1273 | 307 | 69 | 1462 |
| Shafting-hanger | J. W. Hyatt | 526,710 | Oct. 2 | 60 | 17, 18 | 69 | 15 |
| Sharpening device. Razor | P. J. Caesar | 529,320 | Nov. 13 | 1429 | 344 | 69 | 926 |
| Sharpening disk knives. Implement for | R. H. Dodge and H. S. Clinton | 531,364 | Dec. 25 | 2275 | 542 | 69 | 1675 |
| Sharpening gravers or other tools. Holder for | J. J. Vernier | 530,735 | Dec. 11 | 1171 | 285 | 69 | 1442 |
| Shear-bow | D. and D. C. Wheeler | 529,513 | Nov. 20 | 1802 | 428 | 69 | 1012 |
| Shears: *See* Metal-shears. Pneumatic shears. Metal-cutting shears. Pruning-shears. | | | | | | | |
| Shears | L. A. Nickerson and P. A. Keller | 526,814 | Oct. 2 | 238 | 58 | 69 | 45 |
| Sheet metal. Making expanded | J. F. Golding | 527,242 | Oct. 9 | 992 | 232 | 69 | 187 |
| Sheet-metal plates. Machine for cutting | S. Y. Buckman | 530,322 | Dec. 4 | 431 | 107 | 69 | 1293 |
| Sheet-metal vessel and making same. Key-opening | J. Zimmerman | 529,542 | Nov. 20 | 1850 | 440 | 69 | 1022 |
| Shelf. Folding | H. A. Payne | 530,349 | Dec. 4 | 486 | 120 | 69 | 1303 |
| Shelf-hanger | D. M. Herman | 529,791 | Nov. 27 | 2246 | 536 | 69 | 1103 |
| Shell-carrier block | C. S. Hisey | 528,093 | Oct. 23 | 2356 | 576 | 69 | 485 |
| Sheller: *See* Pea-sheller. | | | | | | | |
| Shingle-planing machine | E. H. Kruger | 530,695 | Dec. 11 | 1104 | 268 | 69 | 1431 |
| Shingle siding and machinery therefor. Manufacture of | L. H. Montross | 529,661 | Nov. 20 | 2033 | 487, 488 | 69 | 1056 |
| Shipping or service box or crate. Grocer's | R. B. Bain | 528,355 | Oct. 30 | 2842 | 680 | 69 | 582 |
| Ships' bottoms. Sheathing | P. Inch | 529,651 | Nov. 20 | 2014 | 482 | 69 | 1052 |
| Ships. Construction of | S. Stuart | 526,823 | Oct. 2 | 251 | 61 | 69 | 47 |
| Ship's log | G. Thom | 527,464 | Oct. 16 | 1304 | 318 | 69 | 272 |
| Shirt | S. Deutsch | 529,546 | Nov. 20 | 1857 | 441 | 69 | 1023 |
| Shirt | J. L. Knight | 530,594 | Dec. 11 | 930 | 228 | 69 | 1401 |
| Shirt | T. H. MacDonald | 529,181 | Nov. 13 | 1185 | 285 | 69 | 881 |
| Shirt | J. Stecker | 530,974 | Dec. 18 | 1505 | 371 | 69 | 1529 |
| Shoe | T. F. Marshall | 528,784 | Nov. 6 | 466 | 114 | 69 | 731 |
| Shoe | B. Scarinci | 529,964 | Nov. 27 | 2549 | 614 | 69 | 1159 |
| Shoe-cleaner | W. A. McCreery and J. Taylor | 530,707 | Dec. 11 | 1122 | 273 | 69 | 1434 |
| Shoe-fastener | I. D. Wright | 526,956 | Oct. 2 | 470 | 116 | 69 | 89 |
| Shoe plate or spike. Sheet-metal | W. H. Buxton | 527,403 | Oct. 16 | 1194 | 293 | 69 | 250 |
| Shoe-shaper | J. W. Skinner | 531,393 | Dec. 25 | 2324 | 554 | 69 | 1685 |
| Shoe-string holder | H. T. Small | 527,733 | Oct. 16 | 1736 | 419 | 69 | 350 |
| Shoot-board and squaring-box. Combined | T. Owen | 531,215 | Dec. 18 | 2006 | 476 | 69 | 1610 |
| Shoulder-brace | W. M. Gamble | 531,372 | Dec. 25 | 2291 | 546, 547 | 69 | 1670 |
| Shovel: *See* Excavator-shovel. Steam-shovel. | | | | | | | |
| Show-case and barrel-cover | H. Daub and D. J. Rex | 527,323 | Oct. 9 | 1062 | 257 | 69 | 211 |
| Shutter-bower | A. G. Christman | 527,047 | Oct. 9 | 617 | 149 | 69 | 131 |
| Shutter-fastener | J. W. Johnson | 529,621 | Nov. 20 | 1969 | 469 | 69 | 1045 |
| Shutter-fastener | R. McNab | 526,729 | Oct. 2 | 97 | 24 | 69 | 21 |
| Shutter-fastening | E. Wegmann, Jr | 530,144 | Dec. 4 | 113 | 29 | 69 | 1236 |
| Shutter. Focal-plane | J. E. Thornton and E. Pickard | 529,820 | Nov. 27 | 2308 | 549, 550 | 69 | 1116 |
| Shutter, &c. Rolling | J. G. Wilson | 529,771 | Nov. 27 | 2217 | 528 | 69 | 1098 |
| Shutter. Self-closing | W. W. Perkins | 531,217 | Dec. 18 | 2008 | 476 | 69 | 1610 |
| Shutter. Window | S. F. Greene and S. W. Law | 530,837 | Dec. 11 | 1328 | 319 | 69 | 1473 |
| Shutter. Window | D. Polst | 528,629 | Nov. 6 | 302 | 74 | 69 | 701 |

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|---|---|---|---|---|---|---|---|
| Shutter-worker | O. De Champ | 529,607 | Nov. 20 | 1952 | 464 | 69 | 1041 |
| Sieve cut-off | W. A. Pendry | 527,882 | Oct. 23 | 2002 | 480 | 69 | 414 |
| Sieve cut-off. Agitable | D. J. Davidson | 527,834 | Oct. 23 | 1901 | 456 | 69 | 397 |
| Sifter. Ash | F. A. Pearsons | 529,947 | Nov. 27 | 2514 | 605, 606 | 69 | 1153 |
| Sifter. Furnace ash | J. Keller | 529,389 | Nov. 20 | 1562 | 372 | 69 | 971 |
| Sign | C. F. Webster | 528,196 | Oct. 30 | 2568 | 621 | 69 | 533 |
| Sign. Endless | J. M. Long | 526,905 | Oct. 2 | 397 | 100 | 69 | 74 |
| Sign. Luminous | W. Hoskins | 529,073 | Nov. 13 | 999 | 239 | 69 | 847 |
| Sign. Revolving-pole | M. H. Wilson | 531,402 | Dec. 25 | 2337 | 557 | 69 | 1688 |
| Sign. Street | H. H. Baker | 530,497 | Dec. 11 | 748 | 184 | 69 | 1369 |
| Signs. Manufacturing | R. Schlegel | 530,354 | Dec. 4 | 492 | 122 | 69 | 1304 |
| Signal: *See* Air-brake signal. Railway-signal. Annunciator-signal. Railway block-signal. Danger-signal. Railway-switch signal. Electric signal. Track-signal. | | | | | | | |
| Signal | E. H. Goodman | 527,967 | Oct. 23 | 2164 | 520 | 69 | 445 |
| Signal apparatus | C. E. Ongley | 530,122 | Dec. 4 | 82 | 22 | 69 | 1230 |
| Signal apparatus. Electric | H. E. Walter | 529,984 | Nov. 27 | 2583 | 623, 624 | 69 | 1167 |
| Signal-operating wires. Compensator for | J. S. Lynam and G. F. Adams | 528,962 | Nov. 13 | 814 | 190 | 69 | 815 |
| Signal-operating wires. Compensator for | J. S. Lynam and G. F. Adams | 529,332 | Nov. 13 | 1445 | 348 | 69 | 930 |
| Signal recorder. Whistle | C. E. Ongley | 530,121 | Dec. 4 | 81 | 22 | 69 | 1230 |
| Signal-recording device | W. H Adkins | 527,258 | Oct. 9 | 951 | 231 | 69 | 191 |
| Signal-replacer | W. R. Sykes, Jr., and J. P. O'Donnell | 528,997 | Nov. 13 | 869 | 206 | 69 | 825 |
| Signals. Electrical apparatus for controlling | S. S. Bogart and M. B. Leonard | 529,059 | Nov. 13 | 970 | 229 | 69 | 842 |
| Signaling apparatus | B. J. Noyes | 530,236 | Dec. 4 | 287 | 71 | 69 | 1267 |
| Signaling apparatus. Electric | H. E. Walter | 529,985 | Nov. 27 | 2597 | 624, 625 | 69 | 1171 |
| Signaling apparatus. Electric | H. E. Walter | 529,986 | Nov. 27 | 2601 | 625 | 69 | 1171 |
| Signaling apparatus for block systems. Electric | M. S. Reiley | 528,444 | Oct. 30 | 2093 | 723, 724 | 69 | 609 |
| Signaling system. Electrical | B. A. Fiske | 527,958 | Oct. 23 | 2164 | 516 | 69 | 442 |
| Signaling system. Electrical danger | W. A. Phillips | 529,949 | Nov. 27 | 2517 | 606, 607 | 69 | 1154 |
| Signaling system. Train-operated | J. H. Frischen | 529,165 | Nov. 13 | 1149 | 277 | 69 | 876 |
| Signaling systems. Circuit-changer for electric | J. F. Hunter and S. H. Lough | 528,127 | Oct. 23 | 2450 | 592 | 69 | 496 |
| Silk. Manufacturing artificial | H. de Chardonnet | 531,158 | Dec. 18 | 1894 | ..... | 69 | 1590 |
| Silk or thread holding device | L. O. Smith | 531,475 | Dec. 25 | 2476 | 589, 590 | 69 | 1714 |
| Silks, &c. Holding device for embroidery | L. O. Smith | 530,628 | Dec. 11 | 987 | 242 | 69 | 1411 |
| Sink-trap | H. C. Montgomery | 528,335 | Oct. 30 | 2567 | 678 | 69 | 576 |
| Siphon | H. H. Shufelt | 530,606 | Dec. 11 | 950 | 233 | 69 | 1404 |
| Siphon. Regenerative | F. Lamplough | 530,536 | Dec. 11 | 829 | 205 | 69 | 1383 |
| Sirup-cup for bottlers | G. House, Sr. | 529,735 | Nov. 27 | 2158 | 515 | 69 | 1087 |
| Sirup-purifier | J. Naylor, Jr | 529,662 | Nov. 20 | 2035 | 488 | 69 | 1056 |
| Sizing walls. Composition for | R. J. Sisk | 530,557 | Dec. 11 | 869 | ..... | 69 | 1390 |
| Skate | W. H. Nicholls | 530,711 | Dec. 11 | 1127 | 274 | 69 | 1435 |
| Skate | C. J. Wezen | 530,610 | Dec. 11 | 956 | 235 | 69 | 1406 |
| Skate. Roller | J. A. Segerberg | 527,164 | Oct. 9 | 796 | 194 | 69 | 162 |
| Skate-sharpening device | F. W. Taylor | 527,350 | Oct. 9 | 1102 | 269 | 69 | 219 |
| Skins. Machine for softening | G. Geyer | 531,462 | Dec. 25 | 2456 | 585 | 69 | 1710 |
| Skirt. Dress | M. C. Geldowsky | 529,828 | Nov. 27 | 2216 | 552 | 69 | 1118 |
| Skirt-elevator | A. L. Zeller | 528,455 | Oct. 30 | 3015 | 728 | 69 | 613 |
| Skiving-machine | J. R. Scott | 528,448 | Oct. 30 | 3002 | 725, 726 | 69 | 610 |
| Slack-adjuster | H. Hinckley | 531,034 | Dec. 18 | 1665 | 395, 396 | 69 | 1548 |
| Slat-and-wire fabric | J. S. George | 527,550 | Oct. 16 | 1429 | 350 | 69 | 296 |
| Slate. Noiseless | C. F. Kizer and S. N. Murdock | 529,867 | Nov. 27 | 2382 | 570 | 69 | 1130 |
| Sled. Coasting | J. H. Holt | 529,494 | Nov. 20 | 1765 | 420 | 69 | 1006 |
| Sled-propeller | W. E. Prindle | 531,274 | Dec. 18 | 2106 | 506 | 69 | 1626 |
| Sleigh | H. P. Jensen | 530,948 | Dec. 18 | 1517 | 359 | 69 | 1522 |
| Sleigh | R. W. Walker | 528,831 | Nov. 6 | 573 | 136 | 69 | 750 |
| Sleigh. Bob | S. C. Paulson | 526,938 | Oct. 2 | 451 | 111 | 69 | 85 |
| Sleigh-knee | L. L. Chaffin | 527,319 | Oct. 9 | 1055 | 255 | 69 | 210 |
| Sleigh-runner | H. and J. K. Pangborn | 528,606 | Nov. 6 | 143 | 35 | 69 | 673 |
| Slicer. Potato | C. B. Struble and C. S. Turner | 527,253 | Oct. 9 | 940 | 228 | 69 | 190 |
| Slicing-machine | J. E. Austin | 528,247 | Oct. 30 | 2663 | 641 | 69 | 551 |
| Slide and buckle. Combined | D. Carpenter | 528,628 | Nov. 6 | 182 | 44 | 69 | 679 |
| Sliding gate | D. Fulton | 528,934 | Nov. 13 | 764 | 180 | 69 | 806 |
| Smelting | W. L. Austin | 527,312 | Oct. 9 | 1042 | ..... | 69 | 207 |
| Smelting apparatus. Ore | B. Brazelle | 529,476 | Nov. 20 | 1727 | 412 | 69 | 1000 |
| Smelting titanic iron ore. Method of and composition of matter for | J. L. Randall | 528,804 | Nov. 6 | 504 | ..... | 69 | 738 |
| Smoke-consuming furnace | M. Evans | 531,367 | Dec. 25 | 2283 | 544, 545 | 69 | 1677 |
| Smoke-preventing furnace | S. N. Smith | 527,895 | Oct. 23 | 2023 | 486, 487 | 69 | 419 |
| Smokers' use. Article or accessory for | R. S. Peabody | 529,046 | Nov. 13 | 949 | 224 | 69 | 838 |
| Snap-hook | J. C. Covert | 530,750 | Dec. 11 | 1193 | 290 | 69 | 1447 |
| Snap-hook | R. C., H. M., and L. W. Eldridge | 528,270 | Oct. 30 | 2694 | 649 | 69 | 557 |
| Snap-hook | M. N. Judd | 527,498 | Oct. 16 | 1351 | 330 | 69 | 281 |
| Snap-hook | C. N. Perkins and J. P. Scollay | 527,286 | Oct. 9 | 1001 | 243 | 69 | 200 |
| Snap-hook | F. and I. F. White | 527,570 | Oct. 16 | 1466 | 357 | 69 | 301 |
| Snap-rest | R. Good, Jr | 531,526 | Dec. 25 | 2560 | 612 | 69 | 1730 |
| Snow-guard | J. Baird | 529,774 | Nov. 27 | 2219 | 529 | 69 | 1099 |
| Snow-plow | A. M. Burnham | 530,614 | Dec. 11 | 963 | 236 | 69 | 1406 |
| Snow-plow for street-railways | F. W. Dean and W E. Mathews | 527,523 | Oct. 16 | 1397 | 340 | 69 | 288 |
| Snow-plow. Rotary | W. O. Wood | 530,739 | Dec. 11 | 1176 | 286, 287 | 69 | 1443 |
| Snow-wheel. Centrifugal | N. McKay | 529,042 | Nov. 13 | 941 | 222, 223 | 69 | 837 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Soap-distributer | W. F Ross and W. Wilcklow | 531,599 | Dec. 25 | 2683 | 644 | 69 | 1755 |
| Soda-ash. Apparatus for drying, roasting, and calcining | J. R. and H. Watson | 527,912 | Oct. 23 | 2055 | 493 | 69 | 425 |
| Soil-breaking machine | W. H. Ross | 529,959 | Nov. 27 | 2539 | 612 | 69 | 1158 |
| Solar energy. Apparatus for utilizing | F H. Monks and M. L. Severy | 528,253 | Oct. 30 | 2676 | 645 | 69 | 554 |
| Soldering and testing plant. Can | N. L. Bishop | 531,501 | Dec. 25 | 2518 | 601, 602, 603 | 69 | 1722 |
| Soldering-flux. Device for applying | D. M. Monroe | 529,336 | Nov. 13 | 1449 | 349, 350 | 69 | 931 |
| Soldering-iron furnace and gas-heater | J. B. Laurent | 530,488 | Dec. 4 | 733 | 179 | 69 | 1348 |
| Soldering-machine | H. Miller | 531,419 | Dec. 25 | 2365 | 565, 566 | 69 | 1693 |
| Sole channeling and rounding-out machine | G. F. Fischer | 530,072 | Nov. 27 | 2760 | 662, 663 | 69 | 1202 |
| Sole for slippers or shoes | J. K. Griffith | 527,280 | Oct. 9 | 993 | 240, 241 | 69 | 198 |
| Sole-leveling machine | E. C. Judd | 530,421 | Dec. 4 | 601 | 149 | 69 | 1325 |
| Sole-rounding machine | L. E. Ericson | 527,676 | Oct. 16 | 1640 | 395, 396 | 69 | 332 |
| Sole-rounding machine | G. Julian | 528,128 | Oct. 23 | 2452 | 592, 593 | 69 | 497 |
| Sole-trimming machine | J. B. Emery | 528,467 | Oct. 30 | 3041 | 738 | 69 | 618 |
| Soles and other forms. Machine for cutting | A. M. Stickney | 529,883 | Nov. 27 | 2406 | 576, 577 | 69 | 1135 |
| Sounder | F. F. Howe | 531,188 | Dec. 18 | 1950 | 463 | 69 | 1600 |
| Sounding apparatus | C. E. Kirtland | 528,600 | Nov. 6 | 136 | 34 | 69 | 671 |
| Sounds. Apparatus for collecting, concentrating, and distributing | S. D. McKelvey | 531,554 | Dec. 25 | 2607 | 624 | 69 | 1740 |
| Sower. Seed | J. Musgrove | 528,732 | Nov. 6 | 263 | 88 | 69 | 712 |
| Spacing-nail | J. J. White | 528,406 | Oct. 30 | 2632 | 709 | 69 | 598 |
| Span or arch | E. Keating | 530,424 | Dec. 4 | 606 | 150 | 69 | 1326 |
| Spark-arrester | H. Bell | 526,828 | Oct. 2 | 260 | 63 | 69 | 49 |
| Spark-arrester | H. E. Baltman | 527,661 | Oct. 16 | 1615 | 390 | 69 | 328 |
| Spark-arrester | W. Caspar | 530,392 | Dec. 4 | 556 | 138 | 69 | 1317 |
| Spark arrester and extinguisher | H. O'Hara | 527,444 | Oct. 16 | 1258 | 309 | 69 | 241 |
| Spectacle-case | G. W. Begole | 528,068 | Oct. 23 | 2338 | 564, 565 | 69 | 477 |
| Spectacles or eyeglasses | J. L. Borsch | 528,528 | Nov. 6 | 11 | 4 | 69 | 648 |
| Speculum | J. D. Sherbrook | 530,728 | Dec. 11 | 1158 | 281 | 69 | 1440 |
| Speed-changing and reversing mechanism | H. H. Cummings | 529,713 | Nov. 27 | 2120 | 508, 509 | 69 | 1082 |
| Speed-changing and reversing mechanism | H. H. Cummings | 529,714 | Nov. 27 | 2122 | 509 | 69 | 1082 |
| Speed-changing, reversing, and stopping mechanism | H. H. Cummings | 529,715 | Nov. 27 | 2124 | 509 | 69 | 1083 |
| Speed-indicator and alarm | G. A. Thompson and J. F. Schmadeke | 529,975 | Nov. 27 | 2589 | 619 | 69 | 1164 |
| Speed-indicator for shafting | W. T. Lintner | 527,557 | Oct. 16 | 1447 | 352 | 69 | 297 |
| Speed-measure for shafting | W. Lang | 527,207 | Oct. 9 | 860 | 209 | 69 | 175 |
| Speed of vehicles. Apparatus for recording | F. Bayerdoerfer | 531,147 | Dec. 18 | 1874 | 445 | 69 | 1587 |
| Speed-recorder | J. Naylor, Jr. | 530,710 | Dec. 11 | 1125 | 273, 274 | 69 | 1434 |
| Spiegeleisen. Manufacturing | G. E. Moore | 529,458 | Nov. 20 | 1700 | ..... | 69 | 995 |
| Spindle and bolster | F. M. Garcelon | 528,936 | Nov. 13 | 767 | 181 | 69 | 807 |
| Spindle-bearing | E. J. Carroll | 528,362 | Oct. 30 | 2655 | 692 | 69 | 585 |
| Spindle centering device | G. O. Draper | 527,015 | Oct. 2 | 562 | 137 | 69 | 106 |
| Spindle-support | E. Hitchon | 530,073 | Nov. 27 | 2768 | 664 | 69 | 1203 |
| Spindle-support | H. A. Owen | 528,020 | Oct. 23 | 2202 | 546 | 69 | 462 |
| Spinning frames. Separator mechanism for ring | A. Hitchon | 527,389 | Oct. 9 | 1171 | 287 | 69 | 233 |
| Spinning-jenny | B. Bodell | 527,587 | Oct. 16 | 1498 | 364 | 69 | 306 |
| Spinning-machine roll | J. Cain | 527,107 | Oct. 9 | 705 | 172 | 69 | 146 |
| Spinning-machines. Mechanism for actuating roving-rods of | G. E. Chandler | 527,591 | Oct. 16 | 1507 | 366 | 69 | 308 |
| Spinning machines. Yarn-separator for ring | E. L. Morrill | 531,548 | Dec. 25 | 2595 | 621 | 69 | 1737 |
| Spinning-rail separator | A. E. Rhoades | 531,561 | Dec. 25 | 2617 | 627 | 69 | 1742 |
| Spirometer | F. W. Baker | 531,227 | Dec. 18 | 2061 | 492 | 69 | 1610 |
| Spoke-sawing machine | G. S. Fry and S. L. Walker | 526,699 | Oct. 2 | 44 | 12, 13 | 69 | 11 |
| Spoke-socket | H. J. Davis and J. C. McDaniel | 529,716 | Nov. 27 | 2127 | 510 | 69 | 1083 |
| Spool-box | C. Tollner | 526,876 | Oct. 2 | 345 | 85 | 69 | 65 |
| Spool-cabinet | G. Richberger | 529,081 | Nov. 13 | 1010 | 244 | 69 | 849 |
| Spooling-machine bobbin-holder | N. H. Easton | 530,492 | Dec. 4 | 738 | 180 | 69 | 1349 |
| Spooling or winding frame | B. L. Stowe | 529,087 | Nov. 13 | 1022 | 246 | 69 | 852 |
| Spoon | S. H. Kimball | 527,115 | Oct. 9 | 718 | 176 | 69 | 148 |
| Spout. Single-piece sheet-metal | J. W. Greene | 530,587 | Dec. 11 | 921 | 225 | 69 | 1399 |
| Spreader-rod | S. D. Poole | 528,236 | Oct. 30 | 2645 | 637 | 69 | 547 |
| Spring: *See* Bird-cage spring. Pneumatic spring. Carriage-spring. Trolley-spring. Carriage-top spring. Vehicle-spring. Door-spring. | | | | | | | |
| Spring | P. N. French | 526,895 | Oct. 2 | 380 | 95 | 69 | 71 |
| Spring-motor | S. Krueger | 529,074 | Nov. 13 | 1000 | 240 | 69 | 847 |
| Spring-motor | M. H. Wilson | 531,607 | Dec. 25 | 2696 | 647 | 69 | 1758 |
| Springs. Manufacturing flat zigzag | G. Bookham | 527,856 | Oct. 23 | 1954 | 469 | 69 | 406 |
| Sprinkler: *See* Lawn-sprinkler. | | | | | | | |
| Sprinkler | J. B. Haberle | 528,252 | Oct. 30 | 2670 | 643 | 69 | 552 |
| Sprinkler | W. A. Koneman | 530,534 | Dec. 11 | 824 | 204 | 69 | 1382 |
| Sprinkler | R. B. Van Dyke | 530,464 | Dec. 4 | 668 | 165 | 69 | 1337 |
| Sprinkling-head | C. A. Weed | 530,868 | Dec. 11 | 1377 | 328 | 69 | 1481 |
| Sprocket. Interchangeable | A. M. Snyder | 529,843 | Nov. 27 | 2343 | 558 | 69 | 1123 |
| Sprocket-wheel | P. D. Murphy and E. Kolb | 527,153 | Oct. 9 | 780 | 190 | 69 | 160 |
| Square | G. G. F. Boswell | 527,035 | Oct. 2 | 596 | 144 | 69 | 112 |
| Square | P. Grabler and J. J. Brown | 527,968 | Oct. 23 | 2165 | 521 | 69 | 445 |
| Square attachment. T | G. W. Amos | 530,060 | Nov. 27 | 2743 | 658 | 69 | 1199 |

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|---|---|---|---|---|---|---|---|
| Square. Try- | F. Houle | 530,894 | Dec. 11 | 1421 | 337 | 69 | 1489 |
| Stable device. Safety | E. J. Gallagher, Jr | 530,617 | Dec. 11 | 966 | 237 | 69 | 1407 |
| Staging-bracket | J. B. Kenison and M. F. Burk | 528,169 | Oct. 30 | 2518 | 610 | 69 | 524 |
| Stair. Trap-door | E. F. Grossé | 527,852 | Oct. 23 | 1949 | 466, 467 | 69 | 405 |
| Stake or post base | J. H. Langton | 531,196 | Dec. 18 | 1963 | 466 | 69 | 1603 |
| Stalk-cutter | H. W. Allen | 527,230 | Oct. 9 | 903 | 218, 219 | 69 | 184 |
| Stalk-cutter | W. R. Usry | 527,302 | Oct. 9 | 1027 | 250 | 69 | 205 |
| Stall floor | W. A. and S. G. Brown | 528,849 | Nov. 6 | 600 | 142 | 69 | 755 |
| Stall-floor | H. W. Thayer and W. J. Wallace | 529,569 | Nov. 20 | 1893 | 450, 451 | 69 | 1030 |
| Stamp. Hand- | A. J. Dickson | 530,616 | Dec. 11 | 965 | 236 | 69 | 1407 |
| Stamp-mill. Ore | J. M. McFarland | 527,620 | Oct. 16 | 1549 | 375 | 69 | 315 |
| Stamp or envelope moistener | A. Stuebner | 530,135 | Dec. 4 | 99 | 26 | 69 | 1233 |
| Stamp. Rubber hand- | S. D. Arnold, J. B. Venker, and W. L. Barnard. | 528,583 | Nov. 6 | 100 | 25 | 69 | 664 |
| Stamp. Self-inking hand- | S. H. Leavenworth | 527,208 | Oct. 9 | 861 | 210 | 69 | 175 |
| Stamp sticking or sealing machine | J. T. Shaw | 529,141 | Nov. 13 | 1111 | 269 | 69 | 869 |
| Stamp. Ticket- | C. N. Souther | 529,669 | Nov. 20 | 2046 | 490, 491 | 69 | 1058 |
| Stamp. Time- | E. P. Baird and F. Nash | 531,297 | Dec. 25 | 2152 | 515, 516 | 69 | 1652 |
| Stamp. Time- | J. J. Busenbenz | 526,854 | Oct. 2 | 301 | 73, 74, 75 | 69 | 57 |
| Stamp. Time- | J. C. Wilson | 527,918 | Oct. 23 | 2063 | 494, 495 | 69 | 427 |
| Stamping or pressing machine | E. Saltzkorn and L. Nicolai | 531,337 | Dec. 25 | 2225 | 532 | 69 | 1666 |
| Stand: *See* Bicycle-stand. Trolley-stand. Rotating stand. | | | | | | | |
| Staple-fastener for wooden vessels or boxes | F. W. Richey | 527,184 | Oct. 9 | 824 | 200 | 69 | 169 |
| Station-indicator | D. B. D. Blake | 530,821 | Dec. 11 | 1302 | 314, 315 | 69 | 1468 |
| Stave jointing and crozing machine | T. Brano | 531,154 | Dec. 18 | 1888 | 448 | 69 | 1589 |
| Stave-jointing machine | L. T. Hagan | 530,943 | Dec. 18 | 1505 | 357 | 69 | 1520 |
| Staves. Machine for jointing listed | A. M. Benson | 530,500 | Dec. 11 | 753 | 185 | 69 | 1370 |
| Stay. Garment- | E. E. Howell | 528,942 | Nov. 13 | 786 | 184 | 69 | 810 |
| Steam-boiler | D. Ahern | 528,409 | Oct. 30 | 2937 | 710 | 69 | 599 |
| Steam-boiler | E. F. Edgar | 528,930 | Nov. 13 | 760 | 178 | 69 | 806 |
| Steam-boiler | P. Ferguson and W. Y. Fleming | 530,331 | Dec. 4 | 452 | 113 | 69 | 1296 |
| Steam-boiler | C. Finger | 528,086 | Oct. 23 | 2377 | 573 | 69 | 484 |
| Steam-boiler | T. Gunning | 529,529 | Nov. 20 | 1831 | 435 | 69 | 1018 |
| Steam-boiler | A. Poggendorf | 529,805 | Nov. 27 | 2269 | 541, 542 | 69 | 1107 |
| Steam-boiler | A. F. L. Reussner | 530,901 | Dec. 11 | 1429 | 339, 340 | 69 | 1491 |
| Steam-boiler | J. E. Schlieper | 526,947 | Oct. 2 | 460 | 113 | 69 | 87 |
| Steam-boiler | G. Sewell | 527,729 | Oct. 16 | 1727 | 417 | 69 | 349 |
| Steam-boiler | E. Shydecker | 527,624 | Oct. 16 | 1555 | 377 | 69 | 317 |
| Steam-boiler | J. E. Spanoghe | 527,459 | Oct. 16 | 1295 | 316 | 69 | 270 |
| Steam-elevator | R. J. McCarty | 528,966 | Nov. 13 | 821 | 192, 193, 194 | 69 | 816 |
| Steam-engine | N. W. Barnett | 529,581 | Nov. 20 | 1914 | 456 | 69 | 1034 |
| Steam-engine | A. Miller | 531,267 | Dec. 18 | 2094 | 502, 503 | 69 | 1625 |
| Steam-engine | H. Nielsen | 530,961 | Dec. 18 | 1536 | 364 | 69 | 1525 |
| Steam-engine | J. R. Pearce | 527,072 | Oct. 9 | 648 | 157 | 69 | 136 |
| Steam-engine | W. S. Rush | 531,276 | Dec. 18 | 2110 | 507 | 69 | 1629 |
| Steam-engine | W. D. Sherman | 530,555 | Dec. 11 | 867 | 214 | 69 | 1389 |
| Steam-engine. Direct-acting | W. E. Hill | 530,341 | Dec. 4 | 473 | 118 | 69 | 1300 |
| Steam-engine for reciprocating sawmill-carriages. Direct-acting | W. E. Hill | 531,532 | Dec. 25 | 2567 | 614 | 69 | 1732 |
| Steam. Generation of | C. W. Baker | 529,997 | Nov. 27 | 2623 | 630 | 69 | 1176 |
| Steam. Generation of | W. Schmidt | 529,754 | Nov. 27 | 2188 | 522 | 69 | 1093 |
| Steam-generator | P. Fitzgibbons | 530,889 | Dec. 11 | 1410 | 336 | 69 | 1487 |
| Steam-generator | H. E. Franz | 527,526 | Oct. 16 | 1402 | 341, 342 | 69 | 989 |
| Steam-generator | J. H. Kendall | 529,391 | Nov. 20 | 1571 | 373 | 69 | 972 |
| Steam-generator. Sectional | J. H. I. Clandon | 530,017 | Nov. 27 | 2664 | 639 | 69 | 1184 |
| Steam-motor | C. E. Beaumont and G. P. Wallington. | 527,356 | Oct. 9 | 1114 | 272 | 69 | 221 |
| Steam-motor. Impact rotary | W. H. Willey | 530,375 | Dec. 4 | 529 | 132 | 69 | 1311 |
| Steam or hot-water boiler | E. Gurney | 528,325 | Oct. 30 | 2793 | 673, 674 | 69 | 573 |
| Steam or hot-water heater | H. E. Chadwick | 527,405 | Oct. 16 | 1197 | 294 | 69 | 250 |
| Steam or other fluid boiler | L. P. Perkins | 529,304 | Nov. 13 | 1407 | 337 | 69 | 922 |
| Steam shovel or excavator | J. B. Webber | 528,312 | Oct. 30 | 2774 | 669, 670 | 69 | 570 |
| Steam-trap | O. Gassett | 526,862 | Oct. 2 | 324 | 79 | 69 | 61 |
| Steam-trap | O. Gassett | 528,665 | Nov. 6 | 261 | 64 | 69 | 693 |
| Steam-trap | T. S. Smith and A. M. Shepard | 531,139 | Dec. 18 | 1858 | 441 | 69 | 1584 |
| Steel. Decarbonizing | W. K. Topley | 528,214 | Oct. 30 | 2603 | ..... | 69 | 539 |
| Steel plates. Producing locally-annealed | H. Lemp | 531,197 | Dec. 18 | 1964 | 466 | 69 | 1603 |
| Steel. Reworking scrap | H. Harris | 531,262 | Dec. 18 | 2089 | ..... | 69 | 1625 |
| Steering apparatus | R. S. Peabody | 528,967 | Nov. 13 | 826 | 194 | 69 | 817 |
| Steering-engine | M. A. Beck | 528,356 | Oct. 30 | 2843 | 689, 690 | 69 | 583 |
| Steering-gear | J. E. Allen | 530,154 | Dec. 4 | 130 | 35 | 69 | 1239 |
| Steering-gear. Vessel | D. M. Maxon | 526,930 | Oct. 2 | 441 | 109 | 69 | 83 |
| Steering-gear. Vessel | O. Schleicher | 528,183 | Oct. 30 | 2542 | 616, 617 | 69 | 529 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page |
|---|---|---|---|---|---|---|---|
| Stencil | G. W. Robinson | 529,464 | Nov. 20 | 1707 | 407 | 69 | 996 |
| Stereotype-matrices and type-writing. Machine for producing | T. G. and H. Daw | 531,586 | Dec. 25 | 2656 | 637, 638 | 69 | 1750 |
| Sterilization of materials in bottles, jars, &c. Apparatus for use in | A. Hüssener | 529,619 | Nov. 20 | 1967 | 468, 469 | 69 | 1044 |
| Sterilizing apparatus | G. Popp and H. Becker | 529,190 | Nov. 13 | 1199 | 289, 290 | 69 | 883 |
| Stethoscopic instrument | R. C. M. Bowles | 526,802 | Oct. 2 | 216 | 52 | 69 | 41 |
| Still for obtaining nitric acid, &c | M. Prentice | 527,718 | Oct. 16 | 1707 | 411, 412 | 69 | 342 |
| Stirring-in or mixing device | W. H. Howard | 529,617 | Nov. 20 | 1964 | 467 | 69 | 1044 |
| Stock-trough | T. C. and H. W. Harry | 531,184 | Dec. 18 | 1943 | 461 | 69 | 1599 |
| Stone. Composition for artificial | B. W. Eddy | 531,520 | Dec. 25 | 2552 | ..... | 69 | 1729 |
| Stone-crusher | C. L. Carman and P. W. Gates | 530,087 | Dec. 4 | 18 | 4, 5, 6 | 69 | 1218 |
| Stone-cutting tools. Securing diamonds in | R. Marquart | 531,051 | Dec. 18 | 1699 | 404 | 69 | 1555 |
| Stone, ore, &c. Machine for crushing | O. Williams | 530,295 | Dec. 4 | 389 | 97 | 69 | 1286 |
| Stone-planers. Shaping attachment for | H. W. Rightmyer | 530,903 | Dec. 11 | 1433 | 340 | 69 | 1491 |
| Stone-sawing machines. Guide-clamp for | H. W. Rightmyer | 530,242 | Dec. 4 | 294 | 72 | 69 | 1269 |
| Stones of small size for toys, &c. Making artificial | F. Herrmann | 527,050 | Oct. 9 | 634 | ..... | 69 | 133 |
| Stool. Milking- | C. J. Blakley | 526,916 | Oct. 2 | 418 | 104 | 69 | 78 |
| Stools. Wooden base for piano- | P. H. York | 528,706 | Nov. 6 | 325 | 79 | 69 | 705 |
| Stopper: *See* Bottle-stopper. | | | | | | | |
| Stopper extractor. Bottle- | E. W. Robinson | 528,031 | Oct. 23 | 2282 | 350 | 69 | 466 |
| Stoppers. Manufacture of screw- | J. J. Varley | 527,517 | Oct. 16 | 1385 | 337 | 69 | 286 |
| Storage-battery | C. J. Reed | 528,647 | Nov. 6 | 230 | 57, 58 | 69 | 688 |
| Storage-battery | C. J. Reed | 528,648 | Nov. 6 | 232 | ..... | 69 | 688 |
| Store-service apparatus | W. R. Cole | 529,599 | Nov. 20 | 1939 | 461 | 69 | 1039 |
| Stove | W. J. Keep | 527,751 | Oct. 16 | 1765 | 425 | 69 | 355 |
| Stove | W. J. Keep | 528,945 | Nov. 13 | 792 | 185 | 69 | 811 |
| Stove | N. Lehmann | 527,067 | Oct. 9 | 642 | 156 | 69 | 135 |
| Stove | A. A. Ruby | 528,989 | Nov. 13 | 857 | 209 | 69 | 823 |
| Stove ash-pit mold | L. Kahn and H. V. Moore | 526,904 | Oct. 2 | 396 | 99 | 69 | 74 |
| Stove-boards. Manufacture of | J. L. Schultz and A. C. Westlake. (Reissue.) | 11,444 | Oct. 2 | 603 | 146 | 69 | 113 |
| Stove. Cooking- | S. Boal | 527,382 | Oct. 9 | 1158 | 284 | 69 | 230 |
| Stove-door knob | W. W. Shoe | 530,287 | Dec. 4 | 377 | 93 | 69 | 1284 |
| Stove. Gas- | A. B. Hutchins | 527,558 | Oct. 23 | 1959 | 471 | 69 | 407 |
| Stove. Gas- | F. W. Robertshaw and J. M. Cooper | 526,791 | Oct. 2 | 202 | 48 | 69 | 38 |
| Stove gas-burner | W. A. Todd | 530,139 | Dec. 4 | 106 | 27 | 69 | 1234 |
| Stove. Gasoline- | J. B. Wallace | 527,566 | Oct. 16 | 1460 | 355 | 69 | 299 |
| Stove. Oil- | M. W. Palmer and C. S. Munro | 528,795 | Nov. 6 | 480 | 117, 118 | 69 | 734 |
| Stove. Oil- | E. G. Mummery | 530,849 | Dec. 11 | 1349 | 322 | 69 | 1476 |
| Stove or portable warmer. Pocket- | A. C. West | 530,609 | Dec. 11 | 954 | 234 | 69 | 1405 |
| Stove or range. Coal and gas burning | J. T. Ellis | 527,598 | Oct. 16 | 1517 | 368 | 69 | 309 |
| Stove or range for burning bituminous coal | A. Stecke | 531,602 | Dec. 25 | 2687 | 644 | 69 | 1756 |
| Stovepipe attachment | F. W. Robertshaw and J. M. Cooper | 526,791 | Oct. 2 | 202 | 48 | 69 | 38 |
| Stovepipe-fastener | W. Wilson | 529,376 | Nov. 20 | 1533 | 367 | 69 | 966 |
| Stovepipe-joint | J. A. Hadley | 528,408 | Oct. 30 | 2936 | 710 | 69 | 599 |
| Stovepipe-joint | J. E. Smiley | 530,484 | Dec. 4 | 724 | 178 | 69 | 1347 |
| Stovepipe-joint | M. Stehle | 528,816 | Nov. 6 | 524 | 127 | 69 | 741 |
| Stovepipe-punching machine | C. Eshliman | 527,350 | Oct. 9 | 1155 | 283 | 69 | 230 |
| Stovepipe-thimble | W. Biermann | 529,025 | Nov. 13 | 913 | 216 | 69 | 892 |
| Stovepipe ventilating attachment | A. Bay | 528,139 | Oct. 30 | 2475 | 598 | 69 | 516 |
| Stoves. Heating attachment for gas cooking- | J. Guy | 528,711 | Nov. 6 | 329 | 81 | 69 | 706 |
| Stoves. Hot-air attachment for | I. Brooke | 530,640 | Dec. 11 | 1015 | 248 | 69 | 1415 |
| Stoves or ranges. Oven-door for cooking | F. V. Knauss | 531,502 | Dec. 25 | 2522 | 603 | 69 | 1723 |
| Strainer | D. B. Gotham | 526,974 | Oct. 2 | 498 | 122 | 69 | 93 |
| Strap: *See* Harness breast- Hitching-strap. | | 530,586 | Dec. 11 | 919 | 225 | 69 | 1399 |
| Strap-loop | J. Reed | 530,056 | Nov. 27 | 2739 | 657 | 69 | 1198 |
| Strawboard-bending apparatus | T. Remus | 529,192 | Nov. 13 | 1203 | 290 | 69 | 884 |
| Strawboard-lining machine | L. Blessing | 530,502 | Dec. 11 | 758 | 186 | 69 | 1371 |
| Straw-conveyer | W. L. Johnson and W. L. Hay | 531,041 | Dec. 18 | 1681 | 398, 399 | 69 | 1551 |
| Straw-stacker | J. McCollough | 529,400 | Nov. 20 | 1584 | 377 | 69 | 974 |
| Straw-stacker | J. M. Welbourn | 530,294 | Dec. 4 | 388 | 97 | 69 | 1285 |
| Street-indicator | A. Hadam and C. Wolf | 530,768 | Dec. 11 | 1224 | 297 | 69 | 1453 |
| Street-sprinkler | L. C. Atwood and W. T. Treadway | 530,069 | Nov. 27 | 2746 | 659 | 69 | 1199 |
| Street-sweeper | N. B. Miller | 527,757 | Oct. 16 | 1777 | 428 | 69 | 358 |
| Street-sweeper | H. Mueller, Jr. | 528,548 | Nov. 6 | 42 | 11 | 69 | 654 |
| Street-sweeper | H. Mueller, Jr. | 529,132 | Nov. 13 | 1091 | 263, 264 | 69 | 865 |
| Street-sweeper | A. G. Rosenhauer and R. Brussel | 529,198 | Nov. 13 | 1211 | 292, 293 | 69 | 885 |
| Street-sweeper | G. B. Siccardi | 526,794 | Oct. 2 | 207 | 49 | 69 | 30 |
| Structural material. Manufacturing | W. H. Walker and T. H. Boyce | 531,079 | Dec. 18 | 1741 | 416 | 69 | 1562 |
| Structure. Tubular underground | E. M. Butz | 526,804 | Oct. 2 | 221 | 53, 54 | 69 | 42 |
| Stud or fastening for shirt-wristbands, &c | R. L. Harris | 528,367 | Oct. 30 | 2869 | 693 | 69 | 546 |
| Stump-extractor | J. Nadal | 528,339 | Oct. 30 | 2815 | 680 | 69 | 577 |
| Stump-extractor | J. C. Sharp | 528,567 | Nov. 6 | 66 | 18, 19, 20 | 69 | 659 |
| Sucker-rod adjuster | J. C. Smith | 528,994 | Nov. 13 | 864 | 205 | 69 | 824 |
| Sucker-rod adjuster | D. M. Edmonds | 529,322 | Nov. 13 | 1432 | 344 | 69 | 927 |
| Suction-pipe drag | D. M. Edmonds | 529,323 | Nov. 13 | 1432 | 345 | 69 | 927 |
| Suction-pipe for suction devices | E. O. Patterson | 528,022 | Oct. 23 | 2265 | 547 | 69 | 462 |
| Sugar-refineries. Apparatus for heating water in | C. F. Pike | 528,977 | Nov. 13 | 843 | 199 | 69 | 820 |
| Sugar-wagon box | C. Spreckels | 529,469 | Nov. 20 | 1716 | 409 | 69 | 908 |
| Sulfite-digester | G. W. Miller | 530,439 | Dec. 4 | 627 | 156 | 69 | 1330 |
| Sulfur candle and making same | J. Norton, Jr. | 527,876 | Oct. 23 | 1989 | 478 | 69 | 412 |
| | C. E. Parker and S. W. Williams | 527,881 | Oct. 23 | 2001 | 480 | 69 | 414 |

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|---|---|---|---|---|---|---|---|
| Sulky | W. H. C. Diessel, W. O. and E. D. Foote. | 528,927 | Nov. 13 | 756 | 177 | 69 | 805 |
| Sulky | W. J. Wayne | 529,822 | Nov. 27 | 2310 | 550 | 69 | 1116 |
| Sulky. Trotting | H. A. Pennock | 529,185 | Nov. 13 | 1191 | 286 | 69 | 882 |
| Surgical cabinet and irrigating device | E. M. Lundholm | 528,232 | Oct. 30 | 2635 | 635, 636 | 69 | 545 |
| Surgical chair | F. E. Case | 530,159 | Dec. 4 | 138 | 37 | 69 | 1240 |
| Surgical needle | H. A. Blanchard | 527,263 | Oct. 9 | 957 | 232 | 69 | 193 |
| Surgical splint | H. A. Weed | 529,002 | Nov. 13 | 878 | 207 | 69 | 826 |
| Suspender cast-off | G. E. Adams | 528,624 | Nov. 6 | 177 | 43 | 69 | 672 |
| Suspender-ends. Cast-off for | G. E. Adams | 530,318 | Dec. 4 | 424 | 106 | 69 | 1292 |
| Suspenders | L. Bloom | 527,654 | Oct. 16 | 1605 | 387 | 69 | 326 |
| Swing | S. I. Alston | 529,232 | Nov. 13 | 1273 | 306 | 69 | 896 |
| Swing. Portable | R. E. and G. E. Shorey | 531,472 | Dec. 25 | 2471 | 588 | 69 | 1713 |
| Switch: *See* Battery-switch. Cable-switch. Electric switch. Electric plug-switch. Electric snap-switch. Electromagnetic switch. Railway-switch. Railway electric switch. Telephone-switch. Tongue-switch. | | | | | | | |
| Switch | F. B. Badt | 529,578 | Nov. 20 | 1910 | 455 | 69 | 1033 |
| Switch | J. G. Dixon | 527,482 | Oct. 16 | 1329 | 324 | 69 | 277 |
| Switch | C. Hansel | 529,168 | Nov. 13 | 1157 | 274, 279 | 69 | 877 |
| Switch-actuating mechanism | A. Matz | 528,005 | Oct. 23 | 2240 | 541 | 69 | 458 |
| Switch-actuating mechanism | S. Walker and L. Marshall | 527,637 | Oct. 16 | 1580 | 382 | 69 | 392 |
| Switch and signal lever | H. B Potter | 529,407 | Nov. 20 | 1595 | 379 | 69 | 976 |
| Switch attachment | C. Olson | 530,448 | Dec. 4 | 640 | 159 | 69 | 1333 |
| Switchboard | L. A. Berthon | 529,999 | Nov. 27 | 2325 | 630, 631 | 69 | 1177 |
| Switchboard system. Multiple | C. E. Scribner | 529,421 | Nov. 20 | 1618 | 385 | 69 | 981 |
| Switchboards. Busy-test for multiple | R. H. Polk | 527,393 | Oct. 9 | 1177 | 288 | 69 | 234 |
| Switch mechanism | S. B. Battey | 529,515 | Nov. 20 | 1503 | 429 | 69 | 1013 |
| Switch-operating device | C. Diener | 531,166 | Dec. 18 | 1913 | 456 | 69 | 1593 |
| Switch setting and locking device. Electrical | K. Moderegger | 531,130 | Dec. 18 | 1838 | 436, 437 | 69 | 1580 |
| Switch-thrower | J. G. Sieber | 531,473 | Dec. 25 | 2472 | 589 | 69 | 1713 |
| Switch-working mechanism | C. L. Lincoln | 526,979 | Oct. 2 | 505 | 124 | 69 | 94 |
| Switch-working mechanism | J. and C. McGhee | 531,270 | Dec. 18 | 2101 | 504 | 69 | 1626 |
| Switches. Safety shift or lock for split | G. L. Warren | 531,238 | Dec. 18 | 2044 | 487, 488 | 69 | 1616 |
| Synchronism-indicator. Audible | R. D. Mershon | 529,398 | Nov. 20 | 1581 | 376 | 69 | 974 |
| Synchronism-indicator. Audible | R. D. Mershon | 529,399 | Nov. 20 | 1583 | 377 | 69 | 974 |
| Synchronizing alternating-current motors or generators. Method of and means for | H. N. Potter | 529,461 | Nov. 20 | 1703 | 406 | 69 | 996 |
| Syringe | A. L. Gray | 527,681 | Oct. 16 | 1654 | 398 | 69 | 335 |
| Syringe | P. B. Laskey | 530,187 | Dec. 4 | 195 | 48 | 69 | 1250 |
| Syringe | E. C. Manning | 531,545 | Dec. 25 | 2591 | 620 | 69 | 1737 |
| Table: *See* Drafting-table. Extension-table. Folding or extension table. Game-table. Ironing-table. Kitchen-table. Tally-table. Whist-table. | | | | | | | |
| Table | C. Storz, F. Sorg, and F. Henni | 529,210 | Nov. 13 | 1235 | 297 | 69 | 890 |
| Table | J. Waddell | 531,236 | Dec. 18 | 2042 | 487 | 69 | 1616 |
| Tableaux vivant. Apparatus for displaying | E. von Kilanyi | 528,372 | Oct. 30 | 2572 | 605 | 69 | 588 |
| Tableaux vivant. Apparatus for displaying | E. von Kilanyi | 528,373 | Oct. 30 | 2573 | 606 | 69 | 588 |
| Tablet-compressing machine | H. H. Jones | 531,536 | Dec. 25 | 2572 | 616 | 69 | 1732 |
| Tablet-forming machine | F. S. Hereth | 527,980 | Oct. 23 | 2188 | 527 | 69 | 449 |
| Tablet. Writing | M. Rubin | 531,065 | Dec. 18 | 1715 | 408 | 69 | 1558 |
| Tablets. Machine for the manufacture of compressed | L. Thomas | 528,572 | Nov. 6 | 85 | 22 | 69 | 662 |
| Tack-driving implement | C. D. Rogers | 529,958 | Nov. 27 | 2535 | 611 | 69 | 1157 |
| Tack-driving machine | W. T. Hoofnagle | 527,985 | Oct. 23 | 2204 | 551 | 69 | 452 |
| Tackle-block | H. V. Hartz | 527,490 | Oct. 16 | 1338 | 326 | 69 | 278 |
| Tag-holder | W. B. McDermut | 529,873 | Nov. 27 | 2390 | 572 | 69 | 1132 |
| Tag. Price and cost | J. D. Parrott | 529,746 | Nov. 27 | 2176 | 518 | 69 | 1060 |
| Tally-register for grain-measurers | C. Snyder | 528,817 | Nov. 6 | 525 | 127 | 69 | 741 |
| Tally-table | F. W. Sowatsky and M. Schimmeyer | 528,568 | Nov. 6 | 82 | 21 | 69 | 661 |
| Tank: *See* Compression-tank. Flush-tank. Measuring-tank. Railway water-tank. Range-tank. | | | | | | | |
| Tank regulator. Open | J. Thomas | 531,482 | Dec. 25 | 2484 | 592 | 69 | 1716 |
| Tanks. Automatic shut-off mechanism for water | R. Schaeffer | 530,659 | Dec. 11 | 1047 | 255 | 69 | 1420 |
| Tap. Ale | S. Van Hennik | 527,739 | Oct. 16 | 1744 | 421 | 69 | 352 |
| Tap for drawing liquids from casks, barrels, &c | J. H. Blessing and T. E. Murray | 529,355 | Nov. 20 | 1485 | 358 | 69 | 958 |
| Tap-holder. Reversing | F. C. McClary | 531,382 | Dec. 25 | 2307 | 551 | 69 | 1682 |
| Tapping apparatus. Main | D. O'Neil | 527,877 | Oct. 23 | 1991 | 478 | 69 | 412 |
| Target-trap electrical releasing device | C. H. North | 529,666 | Nov. 20 | 2042 | 490 | 69 | 1058 |
| Target trap. Flying | A. H. and C. C. Hebbard | 527,854 | Oct. 23 | 1951 | 467, 468 | 69 | 405 |
| Target-traps. Release for | B. O. Bush | 531,260 | Dec. 18 | 2085 | 499 | 69 | 1624 |
| Tawing hides | C. Heinzerling | 528,162 | Oct. 30 | 2506 | ..... | 69 | 522 |
| Teaching vocal music. Device for | M. M. Vogt | 528,310 | Oct. 30 | 2772 | 689 | 69 | 570 |
| Teething-ring | M. L. Metzger | 526,932 | Oct. 2 | 444 | 109 | 69 | 83 |
| Telegraph and telephone system. Combined municipal | H. M. Seitzinger | 528,566 | Nov. 6 | 65 | 17 | 69 | 658 |
| Telegraph. Autographic | J. O'Neil | 529,300 | Nov. 13 | 1389 | 335, 336 | 69 | 918 |
| Telegraph-key | L. D. Bliss | 530,082 | Dec. 4 | 9 | 3 | 69 | 1216 |
| Telegraph-key | C. F. Sebring | 528,345 | Oct. 30 | 2822 | 682 | 69 | 578 |
| Telegraph key and sounder. Combined | P. D. Cox | 526,965 | Oct. 2 | 486 | 119 | 69 | 91 |
| Telegraph-key. Finger-board | E. E. Mullinix | 530,957 | Dec. 18 | 1590 | 363 | 69 | 1524 |



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|---|---|---|---|---|---|---|---|
| Telegraph. Printing | B. A. Fiske | 529,481 | Nov. 20 | 1743 | 414, 415 | 69 | 1002 |
| Telegraph. Printing | G. A. Scott | 529,630 | Nov. 20 | 1979 | 472, 473 | 69 | 1046 |
| Telegraphic and telephonic exchange system | W. Childs | 528,591 | Nov. 6 | 116 | 28, 29 | 69 | 667 |
| Telegraphing between cars of railways. Means for multiplex | A. Fryer | 528,902 | Nov. 6 | 668 | 165, 166 | 69 | 772 |
| Telegraphy. Secret | A. D. P. Weaver | 527,518 | Oct. 16 | 1386 | 337 | 69 | 286 |
| Telephone | H. W. Libbey | 526,865 | Oct. 2 | 327 | 80 | 69 | 62 |
| Telephone | W. C. and J. M. Lockwood | 528,640 | Nov. 6 | 219 | 54 | 69 | 686 |
| Telephone | J. Serdinko | 529,203 | Nov. 13 | 1221 | 295 | 69 | 887 |
| Telephone | A. Stromberg and A. Carlson | 529,818 | Nov. 27 | 2306 | 549 | 69 | 1116 |
| Telephone call register | W. T. Gentry | 527,759 | Oct. 16 | 1779 | 429 | 69 | 358 |
| Telephone circuit and signal | T. Spencer | 528,040 | Oct. 23 | 2292 | 553 | 69 | 468 |
| Telephone-exchange system | R. Callender | 530,324 | Dec. 4 | 433 | 108, 109, 110 | 69 | 1294 |
| Telephone-exchange system | W. Childs | 528,590 | Nov. 6 | 110 | 27, 28 | 69 | 666 |
| Telephone-exchange systems. Signaling apparatus for | J. H. Cary | 529,894 | Nov. 27 | 2425 | 582, 583 | 69 | 1138 |
| Telephone-index | C. A. Orth | 531,556 | Dec. 25 | 2610 | 624, 625 | 69 | 1741 |
| Telephone. Magnetic | O. Higgins | 529,174 | Nov. 13 | 1173 | 282 | 69 | 880 |
| Telephone. Mechanical | J. Prince | 528,390 | Oct. 30 | 2900 | 703 | 69 | 593 |
| Telephone speaking-tube system | T. C. Wales, Jr. | 531,078 | Dec. 18 | 1741 | 415 | 69 | 1562 |
| Telephone-switch | R. Callender | 530,325 | Dec. 4 | 440 | 110 | 69 | 1294 |
| Telephone-switch | E. S. Combs | 529,826 | Nov. 27 | 2314 | 551 | 69 | 1117 |
| Telephone-switch | A. Stromberg and A. Carlson | 530,208 | Dec. 4 | 229 | 57 | 69 | 1257 |
| Telephone system | W. Oesterreich | 530,598 | Dec. 11 | 939 | 230, 231 | 69 | 1403 |
| Telephone system | J. I. Sabin | 529,465 | Nov. 20 | 1708 | 407, 408 | 69 | 997 |
| Telephone-transmitter | M. O. Anthony | 526,888 | Oct. 2 | 363 | 91 | 69 | 68 |
| Telephone-transmitter | A. F. Boardman | 530,575 | Dec. 11 | 898 | 221 | 69 | 1395 |
| Telephone-transmitter | J. and H. M. Goodman | 530,412 | Dec. 4 | 584 | 145 | 69 | 1322 |
| Telephone-transmitter | D. A. Knisel | 531,191 | Dec. 18 | 1958 | 465 | 69 | 1602 |
| Telephone-transmitter | T. McCoubray | 527,214 | Oct. 9 | 871 | 212 | 69 | 178 |
| Telephone-transmitter | M. A. Morehouse | 530,115 | Dec. 4 | 69 | 19 | 69 | 1228 |
| Telephone-transmitter | J. T. Williams | 530,315 | Dec. 4 | 421 | 105 | 69 | 1291 |
| Telephones. Antiseptic mouthpiece for | R. N. Denison and F. M. Geary | 529,609 | Nov. 20 | 1956 | 464 | 69 | 1042 |
| Telephonic and signaling system. Combined | H. A. Chase | 528,075 | Oct. 23 | 2352 | 568 | 69 | 479 |
| Telephony | F. R. Colvin | 528,592 | Nov. 6 | 121 | 29 | 69 | 668 |
| Tellurian | C. G. Sullivan | 531,309 | Dec. 25 | 2330 | 556 | 69 | 1687 |
| Temperature-regulator | T. O. Perry | 528,645 | Nov. 6 | 327 | 56 | 69 | 684 |
| Temperature-regulator | T. O. Perry | 528,736 | Nov. 6 | 369 | 90 | 69 | 714 |
| Temperature-regulator | T. O. Perry | 528,799 | Nov. 6 | 492 | 120 | 69 | 736 |
| Temperature-regulator | T. O. Perry | 528,800 | Nov. 6 | 495 | 120 | 69 | 736 |
| Temperature-regulator | T. O. Perry | 528,801 | Nov. 6 | 497 | 120 | 69 | 736 |
| Tender-scoop | W. F. Kiesel, Jr. | 531,191 | Dec. 18 | 1954 | 464 | 69 | 1601 |
| Tent | J. J. Rinn | 528,392 | Oct. 30 | 2904 | 703, 704 | 69 | 593 |
| Tent | J. J. Rinn | 528,393 | Oct. 30 | 2907 | 704 | 69 | 594 |
| Tent | J. J. Rinn | 528,394 | Oct. 30 | 2910 | 704, 705 | 69 | 594 |
| Tent-fastening | J. J. Rinn | 528,391 | Oct. 30 | 2901 | 703 | 69 | 593 |
| Terra-cotta and other fireproof constructions | J. W. Rowell | 531,134 | Dec. 18 | 1850 | 439 | 69 | 1583 |
| Testing-machine | J. H. Kellogg | 528,779 | Nov. 6 | 455 | 112 | 69 | 720 |
| Thermo-electric generator | H. B. Cox | 529,711 | Nov. 27 | 2117 | 508 | 69 | 1081 |
| Thermo-electric generator. Sectional | H. B. Cox | 529,710 | Nov. 27 | 2115 | 507 | 69 | 1081 |
| Thermo-electric generators. Radiating and supply system for | H. B. Cox | 528,924 | Nov. 13 | 752 | 176 | 69 | 804 |
| Thermometer | J. T. Craw | 530,928 | Dec. 18 | 1480 | 350 | 69 | 1515 |
| Thermopiles. Apparatus for mounting and operating | M. L. Severy | 527,377 | Oct. 9 | 1150 | 282 | 69 | 228 |
| Thermopiles. Apparatus for utilizing steam for heating | M. L. Severy | 527,378 | Oct. 9 | 1151 | 282, 283 | 69 | 229 |
| Thermostat | L. G. Rowand | 527,375 | Oct. 9 | 1147 | 281 | 69 | 228 |
| Thermostat | D. W. Thompson | 528,189 | Oct. 30 | 2552 | 619 | 69 | 531 |
| Thill-coupling | I. N. Bowen and T. Troxel | 529,825 | Nov. 27 | 2314 | 551 | 69 | 1117 |
| Thill-coupling | R. and E. Brent | 527,010 | Oct. 2 | 554 | 135 | 69 | 105 |
| Thill-coupling | G. Brownlees | 529,590 | Nov. 20 | 1925 | 459 | 69 | 1036 |
| Thill-coupling | W. S. Hartley | 527,148 | Oct. 9 | 773 | 189 | 69 | 158 |
| Thill-coupling | J. Henretty | 528,670 | Nov. 6 | 268 | 66 | 69 | 694 |
| Thill-coupling | J. W. Mullins and R. M. Jackson | 530,441 | Dec. 4 | 629 | 157 | 69 | 1330 |
| Thill-coupling | D. Parker | 531,558 | Dec. 25 | 2612 | 625 | 69 | 1741 |
| Thill-coupling | F. W. Rolf | 531,565 | Dec. 25 | 2624 | 628 | 69 | 1743 |
| Thill-coupling | C. Wilcox | 528,351 | Oct. 30 | 2820 | 684 | 69 | 580 |
| Thill-couplings. Antirattler for | A. Fraser | 529,525 | Nov. 20 | 1824 | 434 | 69 | 1017 |
| Thill-couplings. Antirattler for | M. McKinnon | 528,338 | Oct. 30 | 2814 | 680 | 69 | 577 |
| Thill-support | D. A. Barrackman | 527,101 | Oct. 9 | 690 | 170 | 69 | 144 |
| Thill-support | J. E. Dolber | 526,691 | Oct. 2 | 34 | 9 | 69 | 9 |
| Thill-support | J. Hurley | 528,102 | Oct. 23 | 2405 | 581 | 69 | 488 |
| Thill-support and antirattler. Combined | P. H. McLean | 527,710 | Oct. 16 | 1695 | 408 | 69 | 343 |
| Thrasher band-cutter and feeder | M. G. Schaner and A. A. Bartlett | 528,396 | Oct. 30 | 2914 | 705 | 69 | 595 |
| Thrashing-cylinder | P. Swenson | 529,214 | Nov. 13 | 1241 | 298 | 69 | 891 |
| Thrashing-machine | R. Knight | 529,623 | Nov. 20 | 1970 | 470 | 69 | 1045 |
| Thrashing-machine | I. W. Woodburn | 530,815 | Dec. 11 | 1293 | 312, 313 | 69 | 1466 |
| Thrashing-machine attachment | L. T. Austin | 528,915 | Nov. 13 | 736 | 173 | 69 | 801 |
| Thrashing-machine band-cutting attachment | R. L. Cooley | 529,601 | Nov. 20 | 1941 | 462 | 69 | 1039 |
| Thrashing-machine dust-conveyer | M. L. Shuster | 531,280 | Dec. 18 | 2121 | 508 | 69 | 1631 |
| Thrashing-machine. Field | A. Anderson | 531,085 | Dec. 18 | 1755 | 418, 419 | 69 | 1564 |
| Thrashing machine. Pea | C. E. Paterson | 526,869 | Oct. 2 | 333 | 82 | 69 | 63 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Thrashing-machines. Self-feeder for | A. W. Severance, G. Jamison, and G. W. Braucht. | 530,246 | Dec. 4 | 300 | 75 | 69 | 1270 |
| Thrashing-machines. Shoe attachment for | G. F. Conner | 530,090 | Dec. 4 | 25 | 7 | 69 | 1219 |
| Thread-cutting ring | H. F. Ganon | 530,332 | Dec. 4 | 453 | 113 | 69 | 1296 |
| Thread-tension. Wheel for | S. W. Wardwell, Jr | 531,082 | Dec. 18 | 1751 | 417 | 69 | 1564 |
| Ticket and holder. Railway | A. H. Pugh and D. B. Martin | 528,120 | Oct. 23 | 2455 | 594 | 69 | 492 |
| Ticket-canceling apparatus | H. C. Sergeant | 528,096 | Nov. 6 | 313 | 76 | 69 | 703 |
| Ticket-case | T. Ratcliff | 527,508 | Oct. 16 | 1370 | 333 / 334 | 69 | 283 |
| Ticket-holder | J. M. Akers | 527,644 | Oct. 16 | 1590 | 381 | 69 | 324 |
| Ticket-holder | L. J. Blades | 529,096 | Nov. 27 | 2093 | 501 | 69 | 1077 |
| Ticketing-machine | R. F. Livermore | 529,502 | Nov. 20 | 1776 | 424 | 69 | 1008 |
| Tie: *See* Bale-tie. Railway-tie. | | | | | | | |
| Tie-joint | W. Livingstone | 530,281 | Dec. 4 | 367 | 90 | 69 | 1282 |
| Tie-plate | S. F. Clark | 529,854 | Nov. 27 | 2364 | 565 | 69 | 1126 |
| Tie-plate and rail-brace. Combined | T. R. Gabel | 530,175 | Dec. 4 | 162 | 42 | 69 | 1244 |
| Tie-plate. Extension | W. R. Funk | 530,409 | Dec. 4 | 580 | 144 | 69 | 1321 |
| Tile | G. W. Morrow | 527,871 | Oct. 23 | 1977 | 475 | 69 | 410 |
| Tile floor, wall, &c | F. Furness | 527,961 | Oct. 23 | 2153 | 517 / 518 | 69 | 443 |
| Tile. Illuminating | J. W. Mark | 528,004 | Oct. 23 | 2239 | 541 | 69 | 458 |
| Tile. Roofing | C. Lesmeister | 527,431 | Oct. 16 | 1243 | 305 | 69 | 258 |
| Tile. Roofing | H. Niederlaender | 530,119 | Dec. 4 | 77 | 21 | 69 | 1229 |
| Tile-truck | J. W. Bienz | 527,653 | Oct. 16 | 1604 | 387 | 69 | 326 |
| Time-check receiver | G. R. and B. W. Shepardson | 529,468 | Nov. 20 | 1713 | 408 / 409 | 69 | 998 |
| Time-lock for money-drawers | J. Totten | 531,346 | Dec. 25 | 2242 | 535 | 69 | 1669 |
| Time-recorder. Employé's | G. W. Heene | 530,340 | Dec. 4 | 468 | 117 / 118 | 69 | 1299 |
| Time-recorder. Employé's | J. S. Morse and D. R. Lovejoy | 527,395 | Oct. 9 | 1180 | 289 / 290 | 69 | 234 |
| Time-recorder. Watchman's | A. Newman | 530,446 | Dec. 4 | 636 | 158 / 159 | 69 | 1332 |
| Time-recorder. Workman's | D. M. Cooper | 528,223 | Oct. 30 | 2615 | 630 / 631 | 69 | 541 |
| Time-recorder. Workman's | E. G. Watkins | 527,304 | Oct. 9 | 1031 | 250 | 69 | 205 |
| Tire and rim for wheels. Flexible | S. Elliott | 527,781 | Oct. 23 | 1829 | 438 | 69 | 383 |
| Tire and wheel-rim. Pneumatic | P. W. Tillinghast | 528,451 | Oct. 30 | 3008 | 727 | 69 | 612 |
| Tire. Bicycle | F. M. Ashley | 531,608 | Dec. 25 | 2698 | 647 | 69 | 1758 |
| Tire. Bicycle | E. S. Frazier | 529,120 | Nov. 13 | 1069 | 258 | 69 | 861 |
| Tire. Bicycle | E. Granert | 529,261 | Nov. 13 | 1326 | 319 | 69 | 966 |
| Tire-casings. Mold for forming | J. G. Mooney and C. Whitehead | 530,195 | Dec. 4 | 209 | 52 | 69 | 1253 |
| Tire for bicycles. Pneumatic | A. C. Davidson | 531,436 | Dec. 25 | 2391 | 572 | 69 | 1699 |
| Tire-heater | J. Liefbroer and J. Tendollen | 526,977 | Oct. 2 | 502 | 123 | 69 | 94 |
| Tire-heater | C. Robinson | 527,541 | Oct. 16 | 1423 | 346 | 69 | 293 |
| Tire-heater. Wagon | I. Harvey | 530,521 | Dec. 11 | 802 | 198 | 69 | 1378 |
| Tire. Pneumatic | E. J. Jenness | 529,736 | Nov. 27 | 2160 | 515 | 69 | 1088 |
| Tire. Pneumatic | C. H. Roth | 531,335 | Dec. 25 | 2220 | 531 | 69 | 1665 |
| Tire. Pneumatic | J. E. Sénéchal | 527,130 | Oct. 9 | 745 | 183 | 69 | 153 |
| Tire. Pneumatic | C. B. Sheldon | 530,603 | Dec. 11 | 1275 | 308 | 69 | 1463 |
| Tire. Pneumatic | G. F. Stillman | 528,213 | Oct. 30 | 2602 | 627 | 69 | 539 |
| Tire. Pneumatic | C. K. Welch | 526,882 | Oct. 2 | 353 | 87 | 69 | 66 |
| Tire. Pneumatic | E. W. Young | 527,097 | Oct. 9 | 684 | 168 / 169 | 69 | 143 |
| Tire. Rubber | J. C. Tallman | 527,820 | Oct. 23 | 1879 | 451 | 69 | 393 |
| Tire shrinking or upsetting device | O. T. Lytten | 529,740 | Nov. 27 | 2166 | 516 | 69 | 1089 |
| Tire. Steel-spring | J. S. Eddy | 530,888 | Dec. 11 | 1409 | 335 | 69 | 1157 |
| Tire-tightener | T. Rodwell | 531,064 | Dec. 18 | 1715 | 407 | 69 | 1558 |
| Tire valve. Pneumatic | M. Bridges | 529,588 | Nov. 20 | 1923 | 458 | 69 | 1036 |
| Tires. Armor for pneumatic | S. M. Schindel | 526,846 | Oct. 2 | 288 | 70 | 69 | 55 |
| Tires. Making bicycle | A. B. Shaw | 529,142 | Nov. 13 | 1112 | 269 | 69 | 869 |
| Tires. Making joints in pneumatic | C. E. W. Woodward | 528,056 | Oct. 23 | 2318 | 559 | 69 | 473 |
| Tobacco-cutter | J. Hellings | 528,540 | Nov. 6 | 28 | 8 | 69 | 651 |
| Tobacco dressing and feeding machine | J. E. Bucklin | 531,259 | Dec. 18 | 2081 | 497 / 498 / 499 | 69 | 1623 |
| Tobacco-hands in cases or casks. Device for packing | D. W. Gray | 529,069 | Nov. 13 | 990 | 235 | 69 | 845 |
| Tobacco-moistening device | C. N. Swift | 528,700 | Nov. 6 | 318 | 78 | 69 | 704 |
| Tobacco or cigar moistener | J. A. Robinson | 527,291 | Oct. 9 | 1010 | 245 | 69 | 202 |
| Tobacco-pipe | W. E. Trott | 527,186 | Oct. 9 | 829 | 204 | 69 | 169 |
| Tobacco-pouch | R. Heywood and J. H. Nunn | 527,202 | Oct. 9 | 853 | 207 / 208 | 69 | 174 |
| Tobacco stripping or stemming machine | S. Reid | 527,885 | Oct. 23 | 2007 | 487 / 488 | 69 | 415 |
| Toboggan. Roller | C. N. Grant | 528,224 | Oct. 30 | 2619 | 631 | 69 | 542 |
| Toe-weight | W. H. Measures | 530,545 | Dec. 11 | 846 | 208 | 69 | 1686 |
| Tongs | G. D. Palmer | 529,516 | Nov. 20 | 1805 | 429 | 69 | 1013 |
| Tongs | W. Lott | 531,126 | Dec. 18 | 1832 | 435 | 69 | 1579 |
| Tongs | F. Raymond | 530,455 | Dec. 4 | 650 | 162 | 69 | 1334 |
| Tongs for handling metal | C. J. Bagley and L. Roberts | 527,648 | Oct. 16 | 1598 | 386 | 69 | 325 |
| Tongue-support for sleighs | E. W. Anderson | 529,351 | Nov. 20 | 1481 | 356 | 69 | 957 |
| Tongue-switch | H. O'Shea | 530,201 | Dec. 4 | 218 | 55 | 69 | 1255 |
| Tongue. Vehicle | T. F. Bower | 529,106 | Nov. 13 | 1050 | 253 | 69 | 857 |
| Tonnage-computer | G. C. Warren | 528,703 | Nov. 6 | 321 | 79 | 69 | 704 |
| Tool. Combination | S. J. Johnston | 530,419 | Dec. 4 | 596 | 148 / 149 | 69 | 1324 |
| Tool. Combination | C. A. Salzman | 529,962 | Nov. 27 | 2544 | 613 | 69 | 1159 |
| Tool-handle. Combination | W. J. Morrison | 528,731 | Nov. 6 | 360 | 88 | 69 | 712 |
| Torch | J. Sherry | 529,631 | Nov. 20 | 1984 | 473 | 69 | 1047 |
| Torpedo-boat. Submarine | G. C. Baker | 530,466 | Dec. 4 | 670 | 166 / 167 | 69 | 1338 |
| Toy | S. S. Eccleston | 530,584 | Dec. 11 | 916 | 224 | 69 | 1399 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Toy | F. B. Harvey | 530,769 | Dec. 11 | 1226 | 295 | 69 | 1453 |
| Toy | W. A. Hill | 530,107 | Dec. 4 | 54 | 15 | 69 | 1295 |
| Toy | J. A. Murphy | 530,116 | Dec. 4 | 71 | 20 | 69 | 1298 |
| Toy | T. S. Thorn | 530,138 | Dec. 4 | 104 | 27 | 69 | 1234 |
| Toy | J. Walker | 530,142 | Dec. 4 | 110 | 28 | 69 | 1235 |
| Toy-balloon inflater | J. S. Moore | 529,337 | Nov. 13 | 1451 | 350 | 69 | 931 |
| Toy bank. Coin-controlled musical | H. W. Porter | 529,277 | Oct. 30 | 2712 | 654 | 69 | 560 |
| Toy money-box | R. Nicol, Jr. | 528,018 | Oct. 23 | 2260 | 545 | 69 | 461 |
| Toy or puzzle | F. R. Cunningham and G. A. Hitchcock. | 527,522 | Oct. 16 | 1396 | 339 | 69 | 287 |
| Toy pistol | H. D. Medrick | 527,701 | Oct. 16 | 1686 | 406 | 69 | 341 |
| Toy. Pneumatic | F. G. Stone | 530,909 | Dec. 11 | 1443 | 343 | 69 | 1494 |
| Toy speller. Mechanical | C. P. Gifford | 527,964 | Oct. 23 | 2157 | 519 | 69 | 444 |
| Toy track or course | D. C. B. Griffith | 530,767 | Dec. 11 | 1223 | 296 | 69 | 1452 |
| Trace | G. S. Duffin | 528,771 | Nov. 6 | 441 | 107 / 108 | 69 | 727 |
| Trace-carrier | C. C. Schwaner | 530,356 | Dec. 4 | 494 | 122 | 69 | 1304 |
| Trace-fastening | P. Brown | 526,681 | Oct. 2 | 18 | 5 | 69 | 6 |
| Trace-hook | J. W. Himes | 529,328 | Nov. 13 | 1438 | 346 | 69 | 928 |
| Trace-post. Spring | B. D. Druen | 527,595 | Oct. 16 | 1513 | 367 | 69 | 309 |
| Track apparatus. Overhead | J. F. Bork and J. Simandl | 530,636 | Dec. 11 | 1009 | 246 | 69 | 1414 |
| Track-jack | J. McMurrin | 529,935 | Nov. 27 | 2487 | 600 | 69 | 1149 |
| Track-laying machine | T. W. Paterson | 529,830 | Nov. 27 | 2319 | 552 / 553 | 69 | 1118 |
| Track-raiser | T. F. Steed | 527,514 | Oct. 16 | 1379 | 336 | 69 | 285 |
| Track-signal. Electric | C. R. Alsop | 527,099 | Oct. 9 | 688 | 169 | 69 | 144 |
| Traction-engine | C. O. Heggem | 529,490 | Nov. 20 | 1757 | 417 | 69 | 1005 |
| Train-time indicator | W. M. Six | 530,360 | Dec. 4 | 506 | 125 | 69 | 1307 |
| Tramway. Electric | S. B. Whitehead | 529,987 | Nov. 27 | 2608 | 626 | 69 | 1173 |
| Transom-lifter | H. Schwieger | 530,286 | Dec. 4 | 375 | 92.93 | 69 | 1283 |
| Trap: *See* Animal-trap. Mole-trap. Ant-trap. Roach-trap. Fish-trap. Sink-trap. Fly-trap. Steam-trap. Grease-trap. Target-trap. Insect-trap. | W. S. Robinson | 527,347 | Oct. 9 | 1026 | 267 | 69 | 218 |
| Trap | H. T. Bush | 526,991 | Oct. 2 | 524 | 128 | 69 | 98 |
| Trap | F. Lamplough | 528,727 | Nov. 6 | 353 | 86 | 69 | 711 |
| Traveling-cases. Fastener for telescopic | J. B. Duguid | 526,929 | Oct. 2 | 201 | 63 | 69 | 49 |
| Tread-wheel | H. Ariens | 528,066 | Oct. 23 | 2333 | 563 | 69 | 476 |
| Tree-protector | C. Guersch | 531,113 | Dec. 18 | 1810 | 430 | 69 | 1575 |
| Tree support. Fruit | L. W. Hibu | 527,492 | Oct. 16 | 1340 | 326 | 69 | 279 |
| Trimmer: *See* Rotary trimmer. Welt-trimmer. | | | | | | | |
| Tripod-leg | R. G. McDowell | 530,443 | Dec. 4 | 631 | 157 | 69 | 1331 |
| Triturator | L. A. Buchanan | 529,361 | Nov. 20 | 1496 | 360 | 69 | 960 |
| Trolley | W. H. Bache | 527,546 | Oct. 16 | 1431 | 348 / 349 | 69 | 294 |
| Trolley | B. F. Lare and C. M. Greer | 528,949 | Nov. 13 | 797 | 186 | 69 | 812 |
| Trolley | G. A. Newhouse | 531,383 | Dec. 25 | 2309 | 551 | 69 | 1682 |
| Trolley | C. E. Powell | 531,331 | Dec. 25 | 2215 | 530 | 69 | 1664 |
| Trolley-catcher | W. D. Cobb | 528,149 | Oct. 30 | 2487 | 602 | 69 | 518 |
| Trolley-catcher | W. F. Kendt | 530,276 | Dec. 4 | 350 | 87 | 69 | 1270 |
| Trolley-catcher | P. T. Milloy | 531,380 | Dec. 25 | 2304 | 550 | 69 | 1681 |
| Trolley-catcher | A. S. Osborn | 528,685 | Nov. 6 | 297 | 73 | 69 | 700 |
| Trolley-guard | H. J. Tanner | 526,756 | Oct. 2 | 149 | 36 | 69 | 29 |
| Trolley-line breaker | C. H. Dey and J. M. Anderson | 528,767 | Nov. 6 | 435 | 106 | 69 | 725 |
| Trolley-spring | J. L. Hanson | 526,705 | Oct. 2 | 60 | 15 | 69 | 14 |
| Trolley-stand | F. N. Kelsey | 529,552 | Nov. 20 | 1867 | 444 | 69 | 1034 |
| Trolley-track | W. H. Brodie | 531,151 | Dec. 18 | 1884 | 446 | 69 | 1582 |
| Trolley tracks. Switch for overhead | C. G. Schmidt | 530,661 | Dec. 11 | 1050 | 256 | 69 | 1421 |
| Trolley-wheel | F. Lepper and W. Wighton | 529,829 | Nov. 27 | 2318 | 552 | 69 | 1118 |
| Trolley-wheel guide | W. H. Dickerhoof | 531,291 | Dec. 18 | 2141 | 513 | 69 | 1635 |
| Trolley-wire and support therefor | H. H. Ashley | 530,674 | Dec. 11 | 1070 | 260 | 69 | 1424 |
| Trolley-wire bracket | W. S. Kline and J. B. Westhafer | 531,437 | Dec. 25 | 2392 | 572 | 69 | 1690 |
| Trolley-wire clamp | M. M. Wood | 530,569 | Dec. 11 | 890 | 219 | 69 | 1394 |
| Trolley-wire clip | J. W. Perry | 528,561 | Nov. 6 | 59 | 16 | 69 | 657 |
| Trolley-wire finder | F. F. and W. S. Meyer | 530,954 | Dec. 18 | 1524 | 361 | 69 | 1523 |
| Trolley-wire hanger | J. M. Andersen | 529,058 | Nov 13 | 967 | 229 | 69 | 842 |
| Trolley-wire hanger | J. J. Green | 526,704 | Oct. 2 | 59 | 15 | 69 | 14 |
| Trolley-wire support | F. C. Fisk | 527,840 | Oct. 23 | 1913 | 460 | 69 | 399 |
| Trolley-wire support | M. M. Wood | 527,939 | Oct. 23 | 2068 | 496 | 69 | 428 |
| Trolley-wire support and coupling | A. P. Gould | 529,903 | Nov. 27 | 2438 | 586 | 69 | 1141 |
| Trolley-wire support or hanger | S. C. Woodhead | 527,355 | Oct. 9 | 1113 | 271 | 69 | 221 |
| Trolley-wire switch-plate | G. A. Huben | 528,101 | Oct. 23 | 2403 | 581 | 69 | 488 |
| Trombone | F. A. Leland | 530,781 | Dec. 11 | 1249 | 302 | 69 | 1458 |
| Trough: *See* Eaves-trough. Stock-trough. Feed-trough. | | | | | | | |
| Trough | A. W. Haag | 531,527 | Dec. 25 | 2561 | 613 | 69 | 1730 |
| Trousers | L. S. Shaner | 528,038 | Oct. 23 | 2290 | 552 | 69 | 467 |
| Trousers-fastener | J. N. Rhoads | 531,063 | Dec. 18 | 1714 | 407 | 69 | 1557 |
| Trousers or coat | G. J. Morse | 528,178 | Oct. 30 | 2535 | 614 | 69 | 528 |
| Trousers-stretcher | J. B. Cook | 529,600 | Nov. 20 | 1940 | 462 | 69 | 1039 |
| Truck | M. J. Weeden | 526,953 | Oct. 2 | 407 | 115 | 69 | 88 |
| Truck | J. D. Grabill | 528,939 | Nov. 13 | 781 | 183 | 69 | 809 |
| Truck | J. B. Randall | 528,443 | Oct. 30 | 2092 | 723 | 69 | 609 |
| Truck | R. S. Rust | 529,969 | Nov. 27 | 2541 | 612 | 69 | 1158 |
| Truck and bag-holder. Combined | J. Bonse | 530,607 | Nov. 27 | 2644 | 635 | 69 | 1181 |
| Truck. Baggage | J. M. Frysinger | 526,698 | Oct. 2 | 43 | 12 | 69 | 11 |
| Truck. Barrel | O. J. Bowser | 530,577 | Dec. 11 | 900 | 221 | 69 | 1393 |
| Truck. Barrel | J. L. Hamilton | 526,809 | Oct. 2 | 229 | 56 | 69 | 43 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Truck. Barrel | C. A. Hutchinson | 531,189 | Dec. 18 | 1951 | 463 | 69 | 1601 |
| Truck. Car | J. C. Barber | 528,844 | Nov. 6 | 592 | 140 | 69 | 754 |
| Truck. Car | B. F. Manier, Jr. | 529,284 | Nov. 13 | 1360 | 326 | 69 | 912 |
| Truck. Church | N. T. Shaw | 541,471 | Dec. 25 | 2469 | 588 | 69 | 1713 |
| Truck. Electric-car | W. Sutton | 531,575 | Dec. 25 | 2640 | 632, 633 | 69 | 1747 |
| Truck for handling sewer-pipe | F. E. McElfresh | 528,011 | Oct. 23 | 2248 | 543 | 69 | 460 |
| Truck. Hand | D. Y. Grieb | 530,991 | Dec. 18 | 1592 | 378 | 69 | 1534 |
| Truck. Hand | C. Lepage | 529,738 | Nov. 27 | 2163 | 516 | 69 | 1088 |
| Truck. Hand | H. O. Thomas | 528,747 | Nov. 6 | 389 | 93, 94 | 69 | 717 |
| Truck. Logging | W. Brough, Jr. | 531,503 | Dec. 25 | 2523 | 603 | 69 | 1723 |
| Truck. Merchandise | T. B. Fitzpatrick | 530,030 | Nov. 27 | 2081 | 664 | 69 | 1188 |
| Truck pedestal and axle-box. Car | E. Cliff | 526,857 | Oct. 2 | 311 | 76 | 69 | 59 |
| Truck. Radiator | T. B. Mason | 530,437 | Dec. 4 | 624 | 155 | 69 | 1329 |
| Truck. Railway | W. A. McGuire and M. G. Hubbard, Jr. | 531,208 | Dec. 18 | 1989 | 472, 473 | 69 | 1607 |
| Truck. Spring-bearing car | W. Sutton | 531,574 | Dec. 25 | 2637 | 632 | 69 | 1746 |
| Trucks. Center bearing for car | W. Robinson | 526,841 | Oct. 2 | 285 | 68, 69 | 69 | 54 |
| Trucks. Flexible gear for electric-car | F. A. Wessel and E. Egger | 531,351 | Dec. 25 | 2248 | 536, 537 | 69 | 1670 |
| Trunk | N. Drucker | 529,482 | Nov. 20 | 1738 | 414 | 69 | 1002 |
| Trunk | H. and J. F. Fuchs | 528,719 | Nov. 6 | 342 | 83 | 69 | 708 |
| Trunk | I. B. Kaufman | 527,536 | Oct. 9 | 1079 | 260, 261 | 69 | 214 |
| Trunk | K. S. O'Keeffe | 531,003 | Dec. 18 | 1614 | 383 | 69 | 1539 |
| Trunk and display tray | W. P. Bingham and D. R. Jones, Jr. | 530,002 | Nov. 27 | 2037 | 493 | 69 | 1180 |
| Trunk, book-case, and writing-desk. Combination | J. J. Holm | 529,793 | Nov. 27 | 2249 | 536 | 69 | 1104 |
| Trunk-fastener | R. Flocke | 530,406 | Dec. 4 | 577 | 143 | 69 | 1320 |
| Truss | L. A. Smith | 531,343 | Dec. 25 | 2236 | 534 | 69 | 1667 |
| Truss | J. F. Stafford | 530,973 | Dec. 18 | 1564 | 371 | 69 | 1529 |
| Truss | C. Vernland | 528,046 | Oct. 23 | 2302 | 555 | 69 | 470 |
| Tub: *See* Bath-tub. Washtub. | | | | | | | |
| Tube *See* Cop-tube. | | | | | | | |
| Tube-expander | W. M. Bullock | 529,244 | Nov. 13 | 1290 | 310 | 69 | 899 |
| Tube-machine | D. B. Strouse | 529,426 | Nov. 20 | 1631 | 387, 388 | 69 | 983 |
| Tube or flue cleaner | D. Hanson | 527,972 | Oct. 23 | 2175 | 592 | 69 | 447 |
| Tubing. Apparatus for the manufacture of | Z. Horovsky | 529,910 | Nov. 27 | 2448 | 588, 589, 590 | 69 | 1142 |
| Tubing. Attaching socket for | J. J. Vautier | 530,563 | Dec. 11 | 880 | 216 | 69 | 1392 |
| Tubular articles. Making | C. T. Cayley and R. S. Courtman | 529,597 | Nov 20 | 1935 | 461 | 69 | 1038 |
| Tug-adjuster | F. Sherry | 527,732 | Oct. 16 | 1735 | 418 | 69 | 350 |
| Tug. Hame | J. C. Clausen | 528,414 | Oct. 30 | 2945 | 712 | 69 | 601 |
| Tug. Hame | A. L. Hill | 527,747 | Oct. 16 | 1759 | 424 | 69 | 354 |
| Tug-holder | G. G. F. Boswell | 529,676 | Nov. 20 | 2056 | 492 | 69 | 1060 |
| Tug. Shaft | J. D. Harrigan | 527,173 | Oct. 9 | 808 | 197 | 69 | 165 |
| Tug. Shaft | A. E. Hart | 531,529 | Dec. 25 | 2564 | 613 | 69 | 1731 |
| Tumbler-washer | S. S. C. Gaskell | 529,527 | Nov. 20 | 1826 | 434 | 69 | 1017 |
| Tumblers, &c. Machine for finishing | W. H. Barr | 527,924 | Oct. 23 | 2074 | 496, 497 | 69 | 429 |
| Turbine | S. and G. H. Harrison | 530,520 | Dec. 11 | 801 | 198 | 69 | 1378 |
| Turbine wheel. Steam | E. Seger | 530,802 | Dec. 11 | 1274 | 308 | 69 | 1463 |
| Turnstile-gate. Coin-controlled | O. H. Williams | 529,606 | Nov. 13 | 882 | 209, 210 | 69 | 827 |
| Turnstile register-actuating attachment | O. H. Williams | 529,607 | Nov. 13 | 887 | 210 | 69 | 827 |
| Turn-table | C. L. Strobel | 528,402 | Oct. 30 | 2921 | 707, 708 | 69 | 596 |
| Turpentine. Extracting | J. C. Schuler | 530,205 | Dec. 4 | 225 | 56 | 69 | 1256 |
| Twine-holder | W. S. Braden | 530,878 | Dec. 11 | 1395 | 332 | 69 | 1484 |
| Twine-holder | P. C. Schowalter | 528,694 | Nov. 6 | 311 | 76 | 69 | 702 |
| Twine-holder | A. H. Schwan | 529,756 | Nov. 27 | 2191 | 522 | 69 | 1093 |
| Twine-machine | G. Florence | 530,891 | Dec. 11 | 1415 | 336 | 69 | 1488 |
| Type. Apparatus for automatically justifying | P. F. Cox | 528,857 | Nov. 6 | 621 | 146, 147 | 69 | 759 |
| Type-bars. Machine for producing cast | C. Skatulla | 529,205 | Nov. 13 | 1223 | 295 | 69 | 887 |
| Type casting and setting machine | G. A. Goodson | 530,481 | Dec. 4 | 694 | 173, 174, 175, 176, 177 | 69 | 1342 |
| Type-distributing apparatus | C. F. Hilder | 531,531 | Dec. 25 | 2566 | 614 | 69 | 1731 |
| Type-dressing machine | G., J. G., and M. O. Rehfuss | 527,371 | Oct. 9 | 1141 | 278, 279, 280 | 69 | 227 |
| Type-holder | R. A. Stewart | 526,822 | Oct. 2 | 250 | 61 | 69 | 47 |
| Type. Machine for cutting rubber | L. K. Scotford | 531,069 | Dec. 18 | 1722 | 410 | 69 | 1559 |
| Type. Method of and apparatus for making rubber | L. K. Scotford | 528,308 | Oct. 30 | 2768 | 668 | 69 | 569 |
| Type-setting apparatus | L. K. Johnson | 529,497 | Nov. 20 | 1769 | 421, 422 | 69 | 1007 |
| Type-setting apparatus | L. K. Johnson and A. A. Low | 529,446 | Nov. 20 | 1673 | 398, 399 | 69 | 991 |
| Type-setting apparatus | L. K. Johnson and A. A. Low | 529,447 | Nov. 20 | 1675 | 399, 400, 401 | 69 | 991 |
| Type-setting machine | P. F. Cox | 528,855 | Nov. 6 | 611 | 145 | 69 | 757 |
| Type-setting machine | P. F. Cox | 528,856 | Nov. 6 | 614 | 145, 146 | 69 | 758 |
| Type-writer cabinet | M. Foley | 527,272 | Oct. 9 | 983 | 238 | 69 | 197 |
| Type-writer copy-holder | S. L. Condé | 528,631 | Nov. 6 | 14 | 5 | 69 | 649 |
| Type-writer inking-ribbon | A. T. Brown | 528,142 | Oct. 30 | 2479 | 600 | 69 | 517 |
| Type-writing machine | L. P. Diss | 526,894 | Oct. 2 | 371 | 93, 94 | 69 | 69 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Type-writing machine | T. J. Downing | 529,522 | Nov. 20 | 1818 | 433 | 69 | 1016 |
| Type-writing machine | J. Felbel | 526,774 | Oct. 2 | 177 | 41 | 69 | 34 |
| Type-writing machine | J. Jackson | 529,387 | Nov. 20 | 1553 | 371, 372 | 69 | 970 |
| Type-writing machine | W. F. Kasson | 529,274 | Nov. 13 | 1348 | 322 | 69 | 910 |
| Type-writing machine | A. Lowe | 531,321 | Dec. 25 | 2300 | 526 | 69 | 1661 |
| Type-writing machine | T. Oliver | 528,484 | Oct. 30 | 3068 | 744, 745 | 69 | 623 |
| Type-writing machine | R. W. Roberts | 529,410 | Nov. 20 | 1601 | 380 | 69 | 978 |
| Type-writing machine | J. W. Schnckers | 529,210 | Nov. 27 | 2276 | 543, 544 | 69 | 1109 |
| Type-writing machine | Z. G. Sholes | 527,543 | Oct. 16 | 1425 | 345 | 69 | 293 |
| Type-writing machine | Z. G. Sholes | 527,544 | Oct. 16 | 1428 | 347, 348 | 69 | 293 |
| Type-writing machine | Z. G. Sholes | 527,545 | Oct. 16 | 1429 | 348 | 69 | 294 |
| Type-writing machine | J. P. Smith | 527,063 | Oct. 9 | 664 | 162 | 69 | 139 |
| Type-writing machine | C. Spiro | 529,208 | Nov. 13 | 1229 | 296 | 69 | 888 |
| Type-writing machine | M. A. Wier | 531,352 | Dec. 25 | 2250 | 537 | 69 | 1671 |
| Type-writing machine | J. N. Williams | 528,578 | Nov. 6 | 93 | 24 | 69 | 663 |
| Type-writing-machine attachment | N. W. Hartwell and T. J. Howe | 528,092 | Oct. 23 | 2365 | 575 | 69 | 485 |
| Type-writing-machine attachment for writing and translating messages in cipher | R. Harte | 527,112 | Oct. 9 | 710 | 174 | 69 | 147 |
| Type-writing-machine key-cap | D. P. Wolbaupter | 530,611 | Dec. 11 | 957 | 235 | 69 | 1406 |
| Type-writing-machine ribbon-case | R. G. Hopkins | 530,307 | Dec. 4 | 406 | 102 | 69 | 1289 |
| Type-writing machines. Attachment for rolls of paper to | G. L. Crittenden | 530,929 | Dec. 18 | 1480 | 350 | 69 | 1516 |
| Type-writing machines. Type-cleaning brush for | F. Van Fleet | 528,215 | Oct. 30 | 2604 | 628 | 69 | 539 |
| Umbrella | W. Ross | 529,629 | Nov. 20 | 1978 | 471 | 69 | 1046 |
| Umbrella | W. R. Tebow | 530,805 | Dec. 11 | 1279 | 309 | 69 | 1464 |
| Umbrella | Z. Wirt | 527,823 | Oct. 23 | 1882 | 451, 452 | 69 | 394 |
| Umbrella. Folding | R. H. Hatzfeld | 529,170 | Nov. 13 | 1162 | 279, 280 | 69 | 878 |
| Umbrella. Folding | C. Neidig | 529,459 | Nov. 20 | 1701 | 406 | 69 | 995 |
| Umbrella. Folding | D. A. Smith, Jr | 528,212 | Oct. 30 | 2600 | 627 | 69 | 538 |
| Umbrella-rib retainer | J. Forbes | 529,255 | Nov. 13 | 1317 | 316, 317 | 69 | 905 |
| Umbrella-runner retainer | S. S. Fretz and J. B. Jesson | 530,037 | Nov. 27 | 2096 | 447 | 69 | 1190 |
| Undergarment. Combination | J. Holmes | 529,493 | Nov. 20 | 1764 | 419 | 69 | 1006 |
| Undershirt | L. Rubens | 528,988 | Nov. 13 | 856 | 203 | 69 | 823 |
| Underwaist | F. Kern | 530,692 | Dec. 11 | 1100 | 267 | 69 | 1430 |
| Unicycle | F. H. Armistead | 531,086 | Dec. 18 | 1758 | 419, 420 | 69 | 1565 |
| Valve | C. S. Bavier | 529,692 | Nov. 27 | 2086 | 499 | 69 | 1076 |
| Valve | C. Birkery | 530,633 | Dec. 11 | 996 | 245 | 69 | 1413 |
| Valve | L. D. Castle | 530,393 | Dec. 4 | 558 | 138 | 69 | 1317 |
| Valve | R. B. Fowler | 528,933 | Nov. 13 | 763 | 180 | 69 | 806 |
| Valve | K. N. Harboe | 527,201 | Oct. 9 | 851 | 207 | 69 | 174 |
| Valve | G. H. F. Schrader and H. P. Kraft | 531,392 | Dec. 25 | 2322 | 554 | 69 | 1685 |
| Valve | G. W. Van Tine | 527,381 | Oct. 9 | 1157 | 284 | 69 | 220 |
| Valve | J. Victor | 529,051 | Nov. 13 | 959 | 227 | 69 | 840 |
| Valve. Air-compressor | W. A. Heath | 527,787 | Oct. 23 | 1833 | 441 | 69 | 385 |
| Valve and regulator. Reducing-pressure | E. J. Wood | 527,575 | Oct. 16 | 1480 | 360 | 69 | 303 |
| Valve and steam-chest for engines | E. W. Harden | 527,330 | Oct. 9 | 1072 | 258, 259 | 69 | 213 |
| Valve. Automatic check | J. H. Dousman | 531,304 | Dec. 25 | 2168 | 518 | 69 | 1655 |
| Valve. Balanced piston | J. A. Smith | 530,559 | Dec. 11 | 871 | 215 | 69 | 1390 |
| Valve. Balanced slide | G. Cook | 527,141 | Oct. 9 | 761 | 186 | 69 | 156 |
| Valve. Balanced steam-actuated | W. F. Browne | 531,434 | Dec. 25 | 2388 | 571 | 69 | 1698 |
| Valve. Check | A. J. Caldwell | 528,360 | Oct. 30 | 2853 | 691 | 69 | 585 |
| Valve. Check | N. J. Pritchard | 529,667 | Nov. 20 | 2043 | 490 | 69 | 1058 |
| Valve. Cylinder relief | R. T. Reilly | 530,853 | Dec. 11 | 1356 | 323 | 69 | 1477 |
| Valve. Engine exhaust | L. H. Wattles | 526,761 | Oct. 2 | 156 | 37 | 69 | 30 |
| Valve. Engine reversing | T. B. Headen | 526,707 | Oct. 2 | 62 | 16 | 69 | 14 |
| Valve. Engineer's brake | D. L. Barnes | 528,523 | Nov. 6 | 4 | 2 | 69 | 647 |
| Valve-facing tool | T. Draper | 530,167 | Dec. 4 | 152 | 40 | 69 | 1243 |
| Valve. Float | D. D. Buick | 529,243 | Nov. 13 | 1289 | 310 | 69 | 899 |
| Valve. Float | T. J. Rayner | 527,348 | Oct. 9 | 1095 | 267 | 69 | 218 |
| Valve for air-brakes. Automatic pressure-retaining | O. S. Pike | 529,137 | Nov. 13 | 1100 | 266 | 69 | 867 |
| Valve for air-brakes. Automatic safety relief | J. Coppersmith | 527,143 | Oct. 9 | 765 | 187 | 69 | 157 |
| Valve for atomizers. Heel | J. Hardman, Jr. | 527,974 | Oct. 23 | 2177 | 523 | 69 | 447 |
| Valve for compressed-air brakes. Controlling and discharge | F. A. Holleman | 527,855 | Oct. 23 | 1952 | 468, 469 | 69 | 406 |
| Valve for gas-burners. Air | H. Ruppel | 528,344 | Oct. 30 | 2821 | 682 | 69 | 578 |
| Valve for high-pressure gases and fluids. Buffer | A. Mueller | 531,053 | Dec. 18 | 1701 | 404 | 69 | 1555 |
| Valve for percussion rock-drills | A. W. and Z. W. Daw | 531,587 | Dec. 25 | 2661 | 638, 639 | 69 | 1751 |
| Valve for steam-engines. Main slide-valve and throttle | J. P. Devoissaud | 530,400 | Dec. 4 | 568 | 141 | 69 | 1319 |
| Valve. Gate | L. S. Wheaton | 526,797 | Oct. 2 | 211 | 51 | 69 | 40 |
| Valve-gear | F. W. Hagar | 527,691 | Oct. 16 | 1670 | 402, 403 | 69 | 338 |
| Valve-gear | G. Jalsoviczky | 527,063 | Oct. 9 | 638 | 155 | 69 | 134 |
| Valve-gear. Engine | R. M. Fryer | 527,679 | Oct. 16 | 1647 | 397, 398 | 69 | 334 |
| Valve-gear. Steam-engine | H. W. Armstrong | 528,757 | Nov. 6 | 413 | 100 | 69 | 722 |
| Valve-gear. Steam-engine | L. O. Burk | 531,096 | Dec. 18 | 1777 | 424 | 69 | 1568 |
| Valve-gear. Steam-engine | M. B. Cope | 531,409 | Dec. 25 | 2346 | 559, 560 | 69 | 1690 |
| Valve. Globe | H. R. Frisbie | 530,478 | Dec. 4 | 690 | 172 | 69 | 1341 |
| Valve mechanism. Engine | C. Schmid | 528,742 | Nov. 6 | 378 | 92 | 69 | 715 |
| Valve. Oil-can | C. Wagner | 529,221 | Nov. 13 | 1251 | 301 | 69 | 893 |
| Valve. Oil-well shut-off | E. Evans | 530,405 | Dec. 4 | 576 | 143 | 69 | 1320 |
| Valve-operating device | C. Otis | 528,385 | Oct. 30 | 2895 | 701 | 69 | 591 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Valve-setting lever | E. W. Harden | 529,264 | Nov. 13 | 1330 | 319 | 69 | 907 |
| Valve. Siphon | F. Booth | 529,584 | Nov. 20 | 1918 | 457 | 69 | 1035 |
| Valve. Steam | R. M. Fryer | 528,537 | Nov. 6 | 20 | 7 | 69 | 650 |
| Valve. Steam-cylinder | L. Boudreaux | 530,503 | Dec. 11 | 759 | 186 | 69 | 1371 |
| Valve. Steam-engine | A. F. Devereux | 528,123 | Oct. 23 | 2141 | 590 | 69 | 895 |
| Valve. Steam-engine | E. L. Sauer | 529,841 | Nov. 27 | 2341 | 557 | 69 | 1122 |
| Valve. Stop | W. G. Shepherd | 526,847 | Oct. 2 | 289 | 70 | 69 | 55 |
| Valve. Straightway | L. Schutte | 529,879 | Nov. 27 | 2401 | 574 | 69 | 1134 |
| Valve. Syringe | J. T. Paget | 529,302 | Nov. 13 | 1404 | {336 {337 | 69 | 922 |
| Valve. Tank-regulating | H. D. Taggart | 528,701 | Nov. 6 | 319 | 78 | 69 | 704 |
| Valve. Water-gage safety | E. W. Long | 529,739 | Nov. 27 | 2165 | 516 | 69 | 1088 |
| Vapor-burner | J. Ruddy | 531,387 | Dec. 25 | 2516 | 552 | 69 | 1684 |
| Vapor-engine. Combustible | E. G. Mummery | 530,705 | Dec. 11 | 1119 | 272 | 69 | 1433 |
| Vapor face-bath | R. B. Hain | 531,182 | Dec. 18 | 1938 | 461 | 69 | 1598 |
| Vaporizing petroleum or other liquids. Apparatus for | H. H. Hoge | 527,758 | Oct. 16 | 1778 | 428 | 69 | 1358 |
| Vault cover. Metallic burial | S. C. Peuchen | 531,560 | Dec. 25 | 2616 | 626 | 69 | 1742 |
| Vault. Grave | W. Eckels | 527,228 | Oct. 9 | 918 | 221 | 69 | 186 |
| Vehicle | J. D. Barens | 530,380 | Dec. 4 | 530 | 134 | 69 | 1313 |
| Vehicle | J. W. Cleary | 527,666 | Oct. 16 | 1625 | {391 {392 | 69 | 330 |
| Vehicle | L. W. Hampton | 527,058 | Oct. 9 | 632 | 154 | 69 | 133 |
| Vehicle | J. Ridge | 530,552 | Dec. 11 | 858 | {211 {212 | 69 | 1388 |
| Vehicle body | C. W. Wilbor | 527,470 | Oct. 16 | 1312 | 320 | 69 | 274 |
| Vehicle-brake | E. I. Tennant | 530,977 | Dec. 18 | 1569 | 372 | 69 | 1530 |
| Vehicle-brake | J. des Georges | 529,785 | Nov. 27 | 2235 | 533 | 69 | 1102 |
| Vehicle-brake | B. F. and W. H. Rickard and S. S. Miller. | 529,668 | Nov. 20 | 2045 | 490 | 69 | 1058 |
| Vehicle-brake | B. Wilcox | 529,767 | Nov. 27 | 2208 | {526 {527 | 69 | 1097 |
| Vehicle-brake. Automatic | J. A. Mounce and D. L. Delaney | 528,605 | Nov. 6 | 172 | 35 | 69 | 672 |
| Vehicle-door | C. A. Wright | 529,226 | Nov. 13 | 1260 | 304 | 69 | 894 |
| Vehicle draw-bar | R. Whalon | 531,454 | Dec. 25 | 2449 | 581 | 69 | 1708 |
| Vehicle mud-guard | R. A. Day | 529,368 | Nov. 20 | 1520 | 364 | 69 | 964 |
| Vehicle. Pneumatic | A. C. Rand | 530,550 | Dec. 11 | 854 | 211 | 69 | 1387 |
| Vehicle-seats. Device for supporting | E. Selen | 531,339 | Dec. 25 | 2228 | 532 | 69 | 1666 |
| Vehicle shifting seat | G. E. W. Stivers | 530,608 | Dec. 11 | 952 | 234 | 69 | 1405 |
| Vehicle shipping-cover | F. G. Davis | 527,833 | Oct. 23 | 1900 | 456 | 69 | 307 |
| Vehicle-spring | G. Penn | 530,649 | Dec. 11 | 1032 | 251 | 69 | 1418 |
| Vehicle. Two-wheeled | W. F. Valentine | 526,952 | Oct. 2 | 466 | 115 | 69 | 88 |
| Vehicle-wheel | E. C. F. Becker | 528,917 | Nov. 13 | 739 | 173 | 69 | 802 |
| Vehicle-wheel | T. B. Blosser and J. P. Kunkle | 529,474 | Nov. 20 | 1724 | 411 | 69 | 999 |
| Vehicle-wheel | C. von der Heyde | 531,311 | Dec. 25 | 2178 | 521 | 69 | 1657 |
| Vehicle-wheel | F. and T. F. Mendenhall | 528,376 | Oct. 30 | 2876 | 697 | 69 | 589 |
| Vehicle-wheel | F. Myers | 528,887 | Nov. 6 | 664 | 160 | 69 | 768 |
| Vehicle wheel. Road | E. G. Schleicher | 527,727 | Oct. 16 | 1721 | 416 | 69 | 348 |
| Vehicle. Wheeled | H. Moore | 529,077 | Nov. 13 | 1004 | {242 {243 | 69 | 848 |
| Vehicles. Runner attachment for | C. E. Wnuck | 529,295 | Nov. 13 | 1259 | 303 | 69 | 894 |
| Veil-fastener | W. J. Le Barron | 529,922 | Nov. 27 | 2468 | {594 {595 | 69 | 1146 |
| Velocipede | G. A. Anderson | 528,062 | Oct. 23 | 2329 | 562 | 69 | 475 |
| Velocipede | C. Byrne | 527,404 | Oct. 16 | 1195 | {293 {294 | 69 | 250 |
| Velocipede | P. Everitt | 530,169 | Dec. 4 | 155 | 40, 41 | 69 | 1243 |
| Velocipede | W. C. Foster | 526,775 | Oct. 2 | 179 | 42 | 69 | 34 |
| Velocipede | T. B. Jeffery | 527,607 | Oct. 16 | 1529 | 371 | 69 | 311 |
| Velocipede crank-shaft and bearing | J. S. Copeland | 529,110 | Nov. 13 | 1053 | 254 | 69 | 857 |
| Velocipede driving-gear | W. Devoll | 527,671 | Oct. 16 | 1632 | 393 | 69 | 331 |
| Velocipede. Ice | W. Fahrig | 529,371 | Nov. 20 | 1525 | 365 | 69 | 965 |
| Velocipede. Ice | G. Riexinger | 528,745 | Oct. 2 | 127 | 30 | 69 | 25 |
| Velocipede. Marine | M. Swenson | 529,088 | Nov. 13 | 1024 | 246 | 69 | 852 |
| Vending apparatus | W. Dryden | 531,104 | Dec. 18 | 1790 | 426 | 69 | 1571 |
| Vending-machine | J. A. Williams | 530,148 | Dec. 4 | 120 | 31 | 69 | 1237 |
| Vending-machine | F. Lamplough | 529,655 | Nov. 20 | 2025 | 485 | 69 | 1054 |
| Vending-machine | E. A. Thissell | 530,561 | Dec. 11 | 876 | {215 {216 | 69 | 1391 |
| Vending-machine | J. Walton | 529,222 | Nov. 13 | 1253 | {302 {303 | 69 | 893 |
| Vending-machine. Coin-actuated | T. S. Wheateroft | 530,216 | Dec. 4 | 245 | 60 | 69 | 1260 |
| Veneer articles. Apparatus for molding | J. P. Beretta | 527,930 | Oct. 23 | 2084 | 499 | 69 | 431 |
| Veneer-coiling machine | F. Filip | 528,663 | Nov. 6 | 257 | 63, 64 | 69 | 692 |
| Veneer-cutting machine | J. Tomlinson | 531,604 | Dec. 25 | 2690 | 645 | 69 | 1756 |
| Veneer-cutting machine | N. E. Brown | 528,120 | Oct. 23 | 2434 | 589 | 69 | 494 |
| Vent-fitting | W. H. Powers | 531,218 | Dec. 18 | 2010 | 477 | 69 | 1611 |
| Ventilating-cap | O. Schlemmer | 526,912 | Oct. 2 | 410 | 102 | 69 | 77 |
| Ventilator. *See* Car-ventilator. | T. J. Ryan | 527,185 | Oct. 9 | 825 | {200 {201 | 69 | 169 |
| Ventilator or chimney-cap | C. Franz and R. T. Merrill | 530,036 | Nov. 27 | 2695 | 647 | 69 | 1190 |
| Vessel | W. E. Dodge | 529,005 | Nov. 13 | 982 | 233 | 69 | 844 |
| Vessel-brake | A. B. Combs | 529,708 | Nov. 27 | 2113 | {506 {507 | 69 | 1080 |
| Vessel-hull | G. T. Brewer | 527,657 | Oct. 16 | 1609 | 388 | 69 | 327 |
| Vessel. Steam freight and passenger | A. McDougall | 529,295 | Nov. 13 | 1382 | 332 | 69 | 916 |
| Vessels. Apparatus for removing ashes from fire-holds of | A. McDougall | 530,850 | Dec. 11 | 1351 | 323 | 69 | 1476 |
| Vessels. Apparatus for removing ashes from fire-holds of | A. McDougall | 530,851 | Dec. 11 | 1353 | 323 | 69 | 1476 |
| Vessels. Means for raising sunken | E. M. Arnold | 526,959 | Oct. 2 | 474 | 117 | 69 | 89 |
| Vessels. Means for raising sunken | J. A. Bisceglia | 526,800 | Oct. 2 | 214 | 51, 52 | 69 | 41 |



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|---|---|---|---|---|---|---|---|
| Vessels. Means for raising sunken | W. A. and F. E Turner | 531,485 | Dec 25 | 2489 | 593 | 69 | 1716 |
| Vine-fastener | T. Flesher | 527,959 | Oct. 23 | 2149 | 517 | 69 | 442 |
| Vise | J. L. Carpenter | 528,074 | Oct. 23 | 2351 | 567 | 69 | 479 |
| Vise | S. Frisbie | 528,426 | Oct. 30 | 2967 | 718 | 69 | 604 |
| Vise | R. S. Peabody | 528,556 | Nov. 6 | 53 | 14 | 69 | 656 |
| Vise | F. A. Pickering | 528,912 | Nov. 6 | 713 | 171 | 69 | 780 |
| Vise | H. C. Rasner | 527,217 | Oct. 9 | 879 | 213 | 69 | 179 |
| Vise | G. Siller | 526,753 | Oct. 2 | 139 | 33 | 69 | 27 |
| Vise | J. J. Tower | 530,733 | Dec. 11 | 1168 | 284 | 69 | 1441 |
| Vise. Bench | R. S. Peabody | 528,968 | Nov. 13 | 827 | 194 | 69 | 817 |
| Vise. Rapid-acting | W. C. and W. H. Toles | 528,190 | Oct. 30 | 2537 | 619 | 69 | 531 |
| Voice-rectifier | V. Carpi | 527,235 | Oct. 9 | 911 | 220 | 69 | 185 |
| Vote registering and recording machine | H. A. Clifford | 527,138 | Oct. 9 | 754 | 185 | 69 | 155 |
| Voting machine | D. Dobbins | 530,752 | Dec. 11 | 1197 | 291 | 69 | 1447 |
| Voting machine | J. Mourot | 530,347 | Dec. 4 | 481 | {119 {120 | 69 | 1302 |
| Vulcanizable compound | W. Griscom, Jr. | 528,727 | Nov. 27 | 2143 | ..... | 69 | 1086 |
| Vulcanizable compound | W. Griscom, Jr. | 529,728 | Nov. 27 | 2145 | ..... | 69 | 1086 |
| Vulcanizable compounds and vulcanizing and applying same. Compounding | W. Griscom, Jr. | 529,905 | Nov. 27 | 2440 | ..... | 69 | 1141 |
| Vulcanized compound. Hard | W. Griscom, Jr. | 529,730 | Nov. 27 | 2140 | ..... | 69 | 1086 |
| Wad-feeding mechanism | C. S. Hisey | 528,099 | Oct. 23 | 2339 | 580 | 69 | 487 |
| Waffle-iron lever-handle | C. J. Hoss | 528,634 | Nov. 6 | 210 | 51 | 69 | 684 |
| Wagon | M. P. Jacobsen | 528,598 | Nov. 6 | 133 | 33 | 69 | 670 |
| Wagon-bed | C. P. Lancaster | 530,537 | Dec. 11 | 831 | 205 | 69 | 1383 |
| Wagon-bed-lifting apparatus | O. H. Drinkwater | 530,168 | Dec. 4 | 153 | 40 | 69 | 1243 |
| Wagon-box lifter | J. W. Hayes, Jr. | 530,770 | Dec. 11 | 1227 | {297 {298 | 69 | 1453 |
| Wagon-brake | W. Petering | 531,061 | Dec. 18 | 1710 | 406 | 69 | 1557 |
| Wagon-brake | V. T. Sweeney | 528,826 | Nov. 6 | 551 | 132 | 69 | 747 |
| Wagon. Delivery | J. W. Pile | 527,506 | Oct. 23 | 1859 | 447 | 69 | 390 |
| Wagon. Dumping | J. C. Proctor | 530,241 | Dec. 4 | 293 | 72 | 69 | 1269 |
| Wagon. Dumping | J. T. Richardson | 529,578 | Nov. 27 | 2398 | 574 | 69 | 1133 |
| Wagon. Dumping | M. L. Senderling | 529,467 | Nov. 20 | 1713 | 408 | 69 | 997 |
| Wagon. Dumping | M. L. Senderling | 531,138 | Dec. 18 | 1856 | 440 | 69 | 1584 |
| Wagon dumping device | T. Wright | 529,989 | Nov. 27 | 2611 | 627 | 69 | 1174 |
| Wagon running-gear | J. L. Blake | 530,603 | Nov. 27 | 2638 | {633 {634 | 69 | 1180 |
| Wagon running-gear | E. E. Henderson | 529,734 | Nov. 27 | 2156 | {514 {515 | 69 | 1087 |
| Wagon sand-band | J. A. Fulton | 528,538 | Nov. 6 | 23 | 7 | 69 | 650 |
| Wagon. Sprinkling | E. T. Westerfield | 527,353 | Oct. 9 | 1110 | 271 | 69 | 220 |
| Waistband for trousers and device for attaching shirt-waists thereto. | J. Schwarz | 530,130 | Dec. 4 | 94 | 25 | 69 | 1232 |
| Wall | F. Schweitzer | 528,239 | Oct. 30 | 2649 | 638 | 69 | 548 |
| Wall-coating and manufacturing same | J. Walker and H. Carver | 531,579 | Dec. 25 | 2646 | ..... | 69 | 1748 |
| Wall paper machine | R. Heilmann | 527,976 | Oct. 23 | 2178 | {523 {524 {525 | 69 | 447 |
| Walls. Construction of | L. Küpper | 528,636 | Nov. 6 | 212 | 51 | 69 | 684 |
| Walls. Fireproof framing for partition or other | T. L. Banks | 529,154 | Nov. 13 | 1131 | 274 | 69 | 872 |
| Washboard | F. A Balch | 529,333 | Nov. 20 | 1483 | 357 | 69 | 957 |
| Washboard | M. B. Miller | 530,490 | Dec. 4 | 736 | {179 {180 | 69 | 1349 |
| Washboiler | J. K. Hawkins | 530,842 | Dec. 11 | 1334 | 320 | 69 | 1474 |
| Washer: *See* Axle-washer. Barrel-washer. Bottle-washer. Coal or mineral washer. Ore-washer. Tumbler-washer. | | | | | | | |
| Washing-machine | J. W. Beewar and D. Shaw | 531,089 | Dec. 18 | 1768 | 421 | 69 | 1567 |
| Washing-machine | G. Brander | 527,264 | Oct. 9 | 958 | 233 | 69 | 193 |
| Washing-machine | J. D. Cavanaugh | 527,960 | Oct. 9 | 1119 | {273 {274 | 69 | 222 |
| Washing-machine | E. and E. L. Dickerman | 529,610 | Nov. 20 | 1956 | 465 | 69 | 1042 |
| Washing-machine | J. L. Knoll | 530,277 | Dec. 4 | 352 | 87 | 69 | 1280 |
| Washing-machine | M. M. Lord | 529,859 | Nov. 27 | 2355 | 570 | 69 | 1131 |
| Washing machine | C. P. Randolph | 527,507 | Oct. 16 | 1366 | 333 | 69 | 283 |
| Washing-machine | U. Reiffer | 530,900 | Dec. 11 | 1428 | 339 | 69 | 1490 |
| Washing-machine | P. J. Russell and L. De Vaux | 530,854 | Dec. 11 | 1357 | 324 | 69 | 1477 |
| Washing-machine | W. Smith | 527,458 | Oct. 16 | 1294 | 316 | 69 | 270 |
| Washing-machine | W. Sweet | 527,463 | Oct. 16 | 1303 | 318 | 69 | 272 |
| Washing-machine | W. Sweet | 531,576 | Dec. 25 | 2643 | 633 | 69 | 1747 |
| Washtub | J. Reid and E. Hammann | 529,562 | Nov. 20 | 1892 | 450 | 69 | 1029 |
| Waste or rag picker | E. R. Coverdill | 530,615 | Dec. 11 | 964 | 236 | 69 | 1407 |
| Watch | J. L. Hutchinson | 530,530 | Dec. 11 | 817 | 203 | 69 | 1381 |
| Watch-alarm | J. W. Nunamaker | 528,790 | Nov. 6 | 473 | 116 | 69 | 732 |
| Watch-bow fastener | E. J. Swedlund | 531,480 | Dec. 25 | 2481 | 591 | 69 | 1715 |
| Watchcase-spring | C. Nobs | 528,207 | Oct. 30 | 2593 | 626 | 69 | 537 |
| Watchcase-turning machine | C. E. Henriod-Bachni | 530,227 | Dec. 4 | 268 | 66, 67 | 69 | 1264 |
| Watchcases, &c. Tool for ornamenting | C. Wilhelm and F. Ecaubert | 531,455 | Dec. 25 | 2443 | 582 | 69 | 1708 |
| Watch mainspring-barrel | C. Morlet | 526,935 | Oct. 2 | 448 | 110 | 69 | 84 |
| Watchmaker's length-gage | H. J. Cogswell | 531,435 | Dec. 25 | 2390 | 572 | 69 | 1698 |
| Watchmaker's poising-tool | C. H. Landgraf | 529,178 | Nov. 13 | 1182 | 284 | 69 | 881 |
| Watch-movement frame | D. H. Church | 527,771 | Oct. 23 | 1799 | 434 | 69 | 379 |
| Watch-plate | D. H. Church | 527,772 | Oct. 23 | 1801 | 434 | 69 | 380 |
| Watch-protector swivel | W. T. Braham | 529,360 | Nov. 20 | 1495 | 359 | 69 | 959 |
| Watch-winding | S. Schisgall | 526,871 | Oct. 2 | 335 | 82, 83 | 69 | 63 |
| Watches. Center-arbor for | W. B. Learned and J. A. Mosher | 530,345 | Dec. 4 | 479 | 119 | 69 | 1301 |
| Water-closet | J. Campbell | 526,891 | Oct. 2 | 367 | 92 | 69 | 68 |
| Water-closet and tank | P. Harvey | 530,306 | Dec. 4 | 404 | 102 | 69 | 1289 |
| Water-closet coupling | J. Porteous | 531,425 | Dec. 25 | 2375 | 568 | 69 | 1695 |
| Water-closet coupling | W. Vanderman | 529,146 | Nov. 13 | 1117 | {270 {271 | 69 | 870 |
| Water-closet siphon mechanism | J. N. Sanger | 529,466 | Nov. 20 | 1711 | 408 | 69 | 997 |

*Alphabetical list of inventions, October to December, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Water-column | J. N. Poage | 531,598 | Dec. 25 | 2079 | 643 | 69 | 1754 |
| Water-conveyer | A. D. Goodwin | 528,090 | Oct. 23 | 2382 | 574 / 575 | 69 | 485 |
| Water-distributing system. Siphon | J. C. Eberley | 529,547 | Nov. 20 | 1858 | 442 | 69 | 1023 |
| Water-elevator | J. McMurrin | 528,015 | Oct. 23 | 2355 | 544 | 69 | 461 |
| Water-gage | J. A. Milliken | 529,560 | Nov. 20 | 1878 | 447 | 69 | 1027 |
| Water-gage. Magnetic | L. Kleritj | 530,592 | Dec. 11 | 927 | 227 | 69 | 1400 |
| Water-heater, cleanser, and scale-preventer | J. J. Miner | 527,616 | Oct. 16 | 1544 | 374 | 69 | 314 |
| Water heater or cooler | W Morrison | 531,000 | Dec. 18 | 1606 | 381 | 69 | 1537 |
| Water-meter | G. B. Bassett | 530,743 | Dec. 11 | 1182 | 288 | 69 | 1444 |
| Water-meter | C. W. Beck | 529,156 | Nov. 13 | 1133 | 274 | 69 | 873 |
| Water-meter | L. H. Nash | 527,537 | Oct. 16 | 1420 | 315 | 69 | 292 |
| Water-meter. Automatic | G. Chaffey | 527,046 | Oct. 9 | 616 | 149 | 69 | 130 |
| Water-meter. Disk | L. H. Nash | 527,534 | Oct. 16 | 1416 | 344 | 69 | 291 |
| Water-meter. Disk | L. H. Nash | 527,535 | Oct. 16 | 1417 | 345 | 69 | 292 |
| Water-meter. Disk | L. H. Nash | 527,536 | Oct. 16 | 1419 | 345 | 69 | 292 |
| Water-meter. Disk | L. H. Nash | 527,538 | Oct. 16 | 1421 | 346 | 69 | 292 |
| Water-meter. Disk | L. H. Nash | 527,539 | Oct. 16 | 1422 | 346 | 69 | 292 |
| Water-meter. Proportional | C. H. Bacon | 530,074 | Nov. 27 | 2769 | 664 | 69 | 1203 |
| Water-motor | F. Feuley | 529,524 | Nov. 20 | 1892 | 433 | 69 | 1017 |
| Water-power | W. E. Vernon | 530,370 | Dec. 4 | 520 | 129 | 69 | 1309 |
| Waterproofing compound | W. H. Browne | 528,845 | Nov. 6 | 590 | ..... | 69 | 755 |
| Water-purifier. Centrifugal | J. Naylor, Jr. | 529,663 | Nov. 20 | 2037 | 489 | 69 | 1057 |
| Water-sterilizing apparatus | A. V. M. Sprague | 527,084 | Oct. 9 | 666 | 163 | 69 | 140 |
| Water-tower | E. F. Steck | 527,460 | Oct. 16 | 1295 | 317 | 69 | 270 |
| Water-tube boiler | M. H. C. Shann | 527,079 | Oct. 9 | 658 | 160 | 69 | 138 |
| Water-tube boiler | D. Smith and H. P. Goldrick | 530,664 | Dec. 11 | 1055 | 257 | 69 | 1422 |
| Watering device. Stock | R. M. Sanford | 526,911 | Oct. 2 | 407 | 101 | 69 | 76 |
| Wave-quieting device | H. See and G. L. Carden | 527,513 | Oct. 16 | 1377 | 335 | 69 | 284 |
| Wax for dental or other purposes. Metallic-covered | A. S. Rutherford | 527,218 | Oct. 9 | 880 | 214 | 69 | 179 |
| Wax product for dental or other purposes | A. S. Rutherford | 527,219 | Oct. 9 | 881 | 214 | 69 | 179 |
| Weather-strip | D. A. and J. H. Bodiker | 530,576 | Dec. 11 | 893 | 221 | 69 | 1395 |
| Weather-strip | W. True | 527,468 | Oct. 16 | 1310 | 320 | 69 | 274 |
| Weeding and root-pulling implement | T. L. Smith | 531,449 | Dec. 25 | 2435 | 579 | 69 | 1706 |
| Weigher. Grain | E. C. Young | 529,929 | Nov. 13 | 1265 | 304 | 69 | 895 |
| Weighing-machine. Automatic | E. H. Beckett and C. W. Roberts | 527,828 | Oct. 23 | 1892 | 454 / 455 | 69 | 395 |
| Weighing, registering, and discharging machine. Grain | L. P. Summers | 528,403 | Oct. 30 | 2024 | 708 | 69 | 597 |
| Welding apparatus. Pipe | S. Leek and J. Norton | 529,280 | Nov. 13 | 1256 | 325 | 69 | 912 |
| Welding apparatus. Ring | C. L. Coffin | 530,020 | Nov. 27 | 2668 | 640 | 69 | 1185 |
| Well-boring apparatus | L. Gist | 530,989 | Dec. 18 | 1589 | 377 | 69 | 1534 |
| Well-drilling apparatus | S. A. Horton | 526,708 | Oct. 2 | 64 | 16 | 69 | 15 |
| Well-drilling apparatus | S. A. Horton. (Reissue) | 11,446 | Oct. 16 | 1780 | 429 | 69 | 359 |
| Well-packing | E. P. Warner | 530,631 | Dec. 11 | 992 | 244 | 69 | 1412 |
| Well-pipe puller | J. S. Cousins | 529,604 | Nov. 20 | 1947 | 463 | 69 | 1040 |
| Well-tiling coupler | J. H. Brown | 529,776 | Nov. 27 | 2222 | 530 | 69 | 1099 |
| Well-trimmer | F. A. Dunham | 527,950 | Oct. 23 | 2126 | 510 | 69 | 458 |
| Wheel: *See* Ball-bearing wheel. Car-wheel. Carriage-wheel. Emery-wheel. Grinding and polishing wheel. Grip-wheel. Paddle-wheel. Pneumatic-tired wheel. Power-wheel. Snow-wheel. Sprocket-wheel. Tread-wheel. Trolley-wheel. Turbine wheel. Vehicle-wheel. | | | | | | | |
| Wheel | P. Amhjörn | 530,983 | Dec. 18 | 1579 | 374 / 375 | 69 | 1532 |
| Wheel | H. B. Gleason | 528,125 | Oct. 23 | 2443 | 591 | 69 | 495 |
| Wheel | J. G. Keith | 531,618 | Dec. 25 | 2713 | 650 | 69 | 1761 |
| Wheel | E. D. Misner | 528,785 | Nov. 6 | 467 | 114 | 69 | 731 |
| Wheel | N. O. Starks | 527,735 | Oct. 16 | 1739 | 420 | 69 | 351 |
| Wheel | G. Turner and J. M. H. Venour | 528,575 | Nov. 6 | 90 | 23 | 69 | 602 |
| Wheel-cleaner | L. B. Fleming | 531,171 | Dec. 18 | 1924 | 458 | 69 | 1595 |
| Wheel-rim | A. C. Fairbanks | 530,172 | Dec. 4 | 159 | 41 | 69 | 1244 |
| Wheel-rim | E. Warwick | 530,736 | Dec. 11 | 1173 | 285 | 69 | 1442 |
| Wheel-rim for pneumatic tires | T. Birch | 528,411 | Oct. 30 | 2941 | 711 | 69 | 600 |
| Wheel-rim joint. Vehicle | L. Rastetter | 528,741 | Nov. 6 | 377 | 91 | 69 | 715 |
| Wheel rim. Vehicle | R. A. Gibson | 528,666 | Nov. 6 | 263 | 65 | 69 | 693 |
| Wheel rim. Vehicle | F. L. Goodrich | 530,990 | Dec. 18 | 1591 | 378 | 69 | 1534 |
| Wheel-testing apparatus. Water | J. Emerson | 530,513 | Dec. 11 | 791 | 196 | 69 | 1376 |
| Wheels. Method of and apparatus for counterbalancing | S. M. Vauclain | 531,487 | Dec. 25 | 2493 | 594 | 69 | 1717 |
| Wheels. Suspension-rim for vehicle | E. B. Killen | 526,713 | Oct. 2 | 73 | 19 | 69 | 16 |
| Wheelbarrow | J. B. A. Grenier | 528,251 | Oct. 30 | 2668 | 643 | 69 | 552 |
| Wheelbarrow | H. Houldsworth, Jr | 529,912 | Nov. 27 | 2454 | 591 | 69 | 1143 |
| Whetstone | R. Dutton | 528,772 | Nov. 6 | 442 | 108 | 69 | 727 |
| Whiffletree | D. Able and E. Gross | 529,673 | Nov. 20 | 2053 | 492 | 69 | 1060 |
| Whist apparatus. Duplicate | W. Sowdon | 530,665 | Dec. 11 | 1056 | 257 | 69 | 1422 |
| Whist-table. Duplicate | G. S. Boutwell | 529,699 | Nov. 27 | 2097 | 502 | 69 | 1078 |
| Whistles. Non-condensing apparatus for steam | J. G. Hermes | 527,000 | Oct. 2 | 536 | 132 | 69 | 101 |
| Wick for oil-stoves or lamps | O. Ewert and H. L. Marbach | 530,170 | Dec. 4 | 156 | 41 | 69 | 1244 |
| Wind-instrument mouthpiece | F. R. Skidmore | 528,993 | Nov. 13 | 863 | 204 | 69 | 824 |
| Winding machine. Thread | J. W. Foster | 527,602 | Oct. 16 | 1524 | 369 | 69 | 311 |
| Winding machine. Thread | J. W. Foster | 529,548 | Nov. 20 | 1859 | 442 | 69 | 1023 |
| Winding machine. Thread | S. W. Wardwell, Jr | 531,081 | Dec. 18 | 1750 | 417 | 69 | 1563 |
| Winding or spooling machine | W. A. Smith | 530,731 | Dec. 11 | 1162 | 282 / 283 | 69 | 1440 |
| Windlass | M. T. Reeves | 529,351 | Nov. 20 | 1833 | 436 | 69 | 1019 |
| Windmill | J. Boisclair | 529,358 | Nov. 20 | 1492 | 358 / 359 | 69 | 959 |
| Windmill | P. Erekson | 529,612 | Nov. 20 | 1958 | 465 / 466 | 69 | 1042 |



*Alphabetical list of inventions, October to December, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Windmill | F. A. and F. L. Franklin | 527,276 | Oct. 9 | 988 | 239 | 69 | 197 |
| Windmill | S. K. Humphrey | 531,038 | Dec. 18 | 1672 | 397 | 69 | 1550 |
| Windmill | P. O. Lutnes | 527,866 | Oct. 23 | 1969 | 473 | 69 | 409 |
| Windmill | N. L. Rigby and H. B. Reaves | 527,157 | Oct. 9 | 784 | 191 / 192 | 69 | 160 |
| Windmill | E. C. B. Touzelin | 527,738 | Oct. 16 | 1743 | 421 | 69 | 352 |
| Windmill-brake | J. H. Miller | 531,420 | Dec. 25 | 2368 | 566 | 69 | 1694 |
| Windmill or wind-motor | S. J. Rollason | 529,197 | Nov. 13 | 1210 | 292 | 69 | 885 |
| Windmill-regulator | A. S. Clark | 530,995 | Dec. 18 | 1582 | 375 | 69 | 1533 |
| Windmill-tower | S. A. Rouse | 526,793 | Oct. 2 | 204 | 48 | 69 | 39 |
| Windmills. Pump-gear for | A. S. Erickson | 531,523 | Dec. 25 | 2356 | 611 | 69 | 1729 |
| Windmills. Transmitting-gear for | F. J. Brown, A. and S. Allen | 531,504 | Dec. 25 | 2324 | 603 | 69 | 1723 |
| Window | A. Massalski | 528,333 | Oct. 30 | 2404 | 678 | 69 | 576 |
| Window | F. C. von Heydebrand und der Lasa | 528,637 | Nov. 6 | 213 | 52 | 69 | 684 |
| Window | J. Ort | 529,134 | Nov. 13 | 1036 | 264 | 69 | 866 |
| Window appliance | E. Keuser | 528,481 | Oct. 30 | 3064 | 743 | 69 | 622 |
| Window-casing | H. J. Oliver | 531,326 | Dec. 25 | 2306 | 528 / 529 | 69 | 1663 |
| Window-cleaner | R. G. Mitchell | 528,908 | Nov. 6 | 719 | 169 | 69 | 778 |
| Window-frame pulley-casing | J. H. Foote | 527,111 | Oct. 9 | 709 | 173 | 69 | 147 |
| Window or door button | F. P. Rawdon | 526,843 | Oct. 2 | 284 | 68 | 69 | 54 |
| Window-platform | G. W. Ousley, Jr | 527,445 | Oct. 16 | 1259 | 309 | 69 | 261 |
| Window-screen | J. F. Bittle | 527,401 | Oct. 16 | 1192 | 293 | 69 | 250 |
| Window-screen | C. H. Dixson | 529,899 | Nov. 27 | 2431 | 584 | 69 | 1139 |
| Window-screen | E. C. and W. G. Irwin | 530,272 | Dec. 4 | 343 | 85 | 69 | 1278 |
| Window-screen | J. G. Schill | 530,353 | Dec. 4 | 491 | 121 | 69 | 1304 |
| Window-screen | L. H. Sholder | 528,992 | Nov. 13 | 860 | 204 | 69 | 824 |
| Windows. Device for protecting joints of | E. O. Read | 529,838 | Nov. 27 | 2336 | 555 | 69 | 1121 |
| Wire apron | F. G. and A. C. Sargent | 527,722 | Oct. 16 | 1717 | 414 | 69 | 347 |
| Wire-braiding machine | J. B. Cleaveland | 529,021 | Nov. 13 | 907 | 215 | 69 | 831 |
| Wire coils. Spiral guide for machines for making | S. Coriasco | 527,945 | Oct. 23 | 2121 | 509 | 69 | 437 |
| Wire-coiling machine | G. W. Crowder | 527,144 | Oct. 9 | 766 | 187 | 69 | 157 |
| Wire lacing. Device for crimping | E. Paro | 529,303 | Nov. 13 | 1405 | 337 | 69 | 922 |
| Wire-netting machine | G. F. Wright | 529,093 | Nov. 13 | 1031 | 248 / 249 | 69 | 853 |
| Wire-rolling apparatus | P. Schrader | 529,200 | Nov. 13 | 1218 | 294 | 69 | 886 |
| Wire-rolling apparatus | P. Schrader | 529,201 | Nov. 13 | 1219 | 294 | 69 | 887 |
| Wire spacer and twister | J. H. Rogers | 529,807 | Nov. 27 | 2271 | 542 | 69 | 1108 |
| Wire-stay-weaving device | E. H. Stowell and G. W. Terry | 529,211 | Nov. 13 | 1236 | 297 | 69 | 890 |
| Wire-stretcher | S. Allison | 528,215 | Oct. 30 | 2610 | 629 | 69 | 540 |
| Wire-stretcher | J. W. Austin | 527,311 | Oct. 9 | 1041 | 253 | 69 | 207 |
| Wire-stretcher | J. E. Crisp | 528,151 | Oct. 30 | 2490 | 603 | 69 | 519 |
| Wire-stretcher | W. S. Fitzgerald | 529,374 | Nov. 20 | 1530 | 366 | 69 | 966 |
| Wire-stretcher | W. E. Green | 529,648 | Nov. 20 | 2011 | 481 | 69 | 1052 |
| Wire-stretcher | A. Nickle | 531,209 | Dec. 18 | 1992 | 473 | 69 | 1607 |
| Wire-stretcher and staple-puller. Combined | G. H. Wilber | 527,008 | Oct. 2 | 550 | 134 | 69 | 104 |
| Wire-tightener | M. I. Hochstetler | 530,181 | Dec. 4 | 186 | 46 | 69 | 1248 |
| Wire-tightener | C. H. Van Wagoner | 528,194 | Oct. 30 | 2565 | 621 | 69 | 532 |
| Wood articles. Machine for shaping | C. F. Overhiser | 529,505 | Nov. 20 | 1782 | 424 / 425 | 69 | 1009 |
| Wood-bending machine | J. Dawson | 527,325 | Oct. 9 | 1064 | 257 | 69 | 211 |
| Wood-bundling machine. Kindling | D. S. Abbott and G. G. Parker | 529,231 | Nov. 13 | 1269 | 305 | 69 | 896 |
| Wood-cutting machine | W. F. Hutchinson | 529,386 | Nov. 20 | 1551 | 371 | 69 | 969 |
| Wood-preserving compound | A. D. Polsgrove | 529,834 | Nov. 27 | 2326 | ..... | 69 | 1119 |
| Wood-splice | W. H. Lewis | 529,395 | Nov. 20 | 1577 | 375 | 69 | 973 |
| Wooden rim, band, &c. | S. Elliott | 529,112 | Nov. 13 | 1057 | 255 | 69 | 858 |
| Wool-washing machine | F. G. and A. C. Sargent | 528,189 | Oct. 30 | 2541 | 616 | 69 | 529 |
| Work-support. Adjustable | L. P. Davis | 530,258 | Dec. 4 | 319 | 76 | 69 | 1273 |
| Wort-cooler | H. E. Deckebach | 527,197 | Oct. 9 | 844 | 206 | 69 | 172 |
| Woven pile fabric | H. Hardwick | 529,858 | Nov. 27 | 2369 | 567 | 69 | 1127 |
| Wrapping-machine | I. R. Hutchinson | 530,529 | Dec. 11 | 813 | 202 / 203 | 69 | 1380 |
| Wrapping-machine | C. J. Weinman and E. E. Enchenhofer. | 528,751 | Nov. 6 | 399 | 96 | 69 | 719 |
| Wrapping machine. Paper | C. M. and H. D. Bartholomew | 529,848 | Nov. 27 | 2350 | 560 / 561 / 562 | 69 | 1124 |
| Wrapping newspapers, &c. Machine for | L. C. Crowell | 527,521 | Oct. 16 | 1391 | 338 / 339 | 69 | 927 |
| Wrench: *See* Combination-wrench. Pipe-wrench. Monkey and pipe Ratchet-wrench wrench. | | | | | | | |
| Wrench | J. M. Cochran | 527,592 | Oct. 16 | 1508 | 366 | 69 | 308 |
| Wrench | J. Fatkin | 530,029 | Nov. 27 | 2056 | 644 | 69 | 1188 |
| Wrench | W. C. Lawrence | 529,624 | Nov. 20 | 1972 | 470 | 69 | 1045 |
| Wrench | F. W. Nelson | 527,181 | Oct. 9 | 820 | 199 | 69 | 168 |
| Wrench | W. E. Pugsley | 527,156 | Oct. 9 | 783 | 191 | 69 | 160 |
| Wrench | A. Sellers | 531,279 | Dec. 18 | 2120 | 508 | 69 | 1631 |
| Wrench | W. N. Smith | 529,632 | Nov. 20 | 1985 | 474 | 69 | 1047 |
| Wrench | J. L. Stambaugh | 528,398 | Oct. 30 | 2916 | 706 | 69 | 595 |
| Wrench | A. L. Winge | 527,643 | Oct. 16 | 1589 | 384 | 69 | 323 |
| Wrench and oiler. Combined | T. Tierney | 528,574 | Nov. 6 | 90 | 23 | 69 | 602 |
| Wringing-machine | A. Burkholder | 529,592 | Nov. 20 | 1927 | 459 | 69 | 1027 |
| Writing-machine | W. B. Wait | 529,571 | Nov. 20 | 1897 | 451 / 452 | 69 | 1030 |
| Writing-machine | W. B. Wait | 529,572 | Nov. 20 | 1899 | 452 / 453 | 69 | 1031 |
| Wrist-pin. Adjustable | F. L. Stone | 530,910 | Dec. 11 | 1444 | 343 | 69 | 1494 |
| Yeast. Manufacturing | A. Myers | 528,643 | Nov. 6 | 222 | 55, 56 | 69 | 686 |
| Yoke attachment. Neck | H. T. Richmond | 527,372 | Oct. 9 | 1144 | 280 | 69 | 227 |
| Yoke attachment. Neck | C. C. Schwaner | 530,355 | Dec. 4 | 493 | 122 | 69 | 1304 |
| Yoke center. Neck | H. T. Richmond | 527,373 | Oct. 9 | 1145 | 281 | 69 | 227 |
| Yoke. Neck | J. S. Brown | 527,660 | Oct. 16 | 1614 | 389 | 69 | 328 |

# ALPHABETICAL LIST OF DESIGNS.

| Design. | Name. | No. | Date. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|---|
| Badge | W. H. Bach | 23,830 | Dec. 4 | 69 | 1351 |
| Badge | I. Bedichimer | 23,789 | Nov. 13 | 69 | 936 |
| Badge | C. F. Dorrance | 23,788 | Nov. 13 | 69 | 936 |
| Badge | F. Ellis | 23,816 | Nov. 27 | 69 | 1204 |
| Badge | J. F. Keller | 23,884 | Dec. 25 | 69 | 1762 |
| Badge | W. H. Walsh | 23,831 | Dec. 4 | 69 | 1351 |
| Badge | B. S. Whitehead | 23,817 | Nov. 27 | 69 | 1204 |
| Badge | B. S. Whitehead | 23,832 | Dec. 4 | 69 | 1351 |
| Badge | B. S. Whitehead | 23,858 | Dec. 11 | 69 | 1497 |
| Badge | B. S. Whitehead | 23,859 | Dec. 11 | 69 | 1497 |
| Battery-case | W. Morison | 23,916 | Dec. 25 | 69 | 1767 |
| Bedstead | F. Hoskins | 23,710 | Oct. 16 | 69 | 363 |
| Belt-pocket | R. S. Porro | 23,683 | Oct. 9 | 69 | 236 |
| Billiard-table cushion-rail bolts. Covering-plate for | M. Bensinger | 23,670 | Oct. 2 | 69 | 115 |
| Bonbon | C. E. Gardiner | 23,691 | Oct. 16 | 69 | 360 |
| Bottle | C. Gulden | 23,892 | Dec. 25 | 69 | 1763 |
| Bottle | C. A. Tatum | 23,874 | Dec. 11 | 69 | 1499 |
| Bottle | C. H. West | 23,891 | Dec. 25 | 69 | 1763 |
| Bottle | H. Williams | 23,834 | Dec. 4 | 69 | 1352 |
| Bowl and slab. Wash- | J. H. Gavin | 23,805 | Nov. 13 | 69 | 938 |
| Bowl and slab. Wash- | J. H. Gavin | 23,806 | Nov. 13 | 69 | 938 |
| Bowl and slab. Wash- | J. H. Gavin | 23,894 | Dec. 25 | 69 | 1763 |
| Bowl and slab. Wash- | J. H. Gavin | 23,895 | Dec. 25 | 69 | 1763 |
| Box | F. W. Barthman, Jr | 23,897 | Dec. 25 | 69 | 1764 |
| Box | F. J. Edgars | 23,848 | Dec. 4 | 69 | 1354 |
| Box | F. J. Edgars | 23,849 | Dec. 4 | 69 | 1354 |
| Box | F. J. Edgars | 23,850 | Dec. 4 | 69 | 1354 |
| Box | F. J. Edgars | 23,851 | Dec. 4 | 69 | 1354 |
| Box. Wooden | F. J. Edgars | 23,896 | Dec. 25 | 69 | 1764 |
| Bracket | J. H. Gavin | 23,730 | Oct. 23 | 69 | 502 |
| Bracket | J. H. Gavin | 23,873 | Dec. 11 | 69 | 1499 |
| Bracket. Shelf | C. M. Burgess | 23,731 | Oct. 23 | 69 | 502 |
| Brush-handle | W. J. Lloyd | 24,749 | Oct. 30 | 69 | 634 |
| Brushes, &c. Back for | C. C. Wientge | 25,668 | Oct. 2 | 69 | 115 |
| Buckle | C. C. Kronse | 23,721 | Oct. 23 | 69 | 500 |
| Button-case | J., Jr., and A. Wiedemeier | 23,868 | Dec. 11 | 69 | 1498 |
| Button-hook, &c | J. L. Sommer | 23,862 | Dec. 11 | 69 | 1497 |
| Cabinet | J. G. Schumm | 23,907 | Dec. 25 | 69 | 1765 |
| Cake | F. Callard | 23,875 | Dec. 11 | 69 | 1499 |
| Car-seat end | G. M. Brill | 23,803 | Nov. 13 | 69 | 937 |
| Carpet | P. C. Chambellan | 23,714 | Oct. 23 | 69 | 499 |
| Carpet | P. C. Chambellan | 23,715 | Oct. 23 | 69 | 499 |
| Carpet | C. F. Gedney | 23,847 | Dec. 4 | 69 | 1353 |
| Carpet | C. F. Gedney | 23,878 | Dec. 18 | 69 | 1636 |
| Carpet | C. F. Gedney | 23,879 | Dec. 18 | 69 | 1636 |
| Carpet | A. L. Halliday | 23,782 | Nov. 6 | 69 | 783 |
| Carpet | A. L. Halliday | 23,889 | Dec. 25 | 69 | 1763 |
| Carpet | J. B. Neil | 23,783 | Nov. 6 | 69 | 783 |
| Carpet | A. M. Rose | 23,784 | Nov. 6 | 69 | 784 |
| Carpet | A. M. Rose | 23,785 | Nov. 6 | 69 | 784 |
| Carpet | A. M. Rose | 23,786 | Nov. 6 | 69 | 784 |
| Carpet | A. M. Rose | 23,823 | Nov. 27 | 69 | 1205 |
| Carpet | A. M. Rose | 23,843 | Dec. 4 | 69 | 1353 |
| Carpet | A. M. Rose | 23,844 | Dec. 4 | 69 | 1353 |
| Carpet | A. M. Rose | 23,845 | Dec. 4 | 69 | 1353 |
| Carpet | A. M. Rose | 23,846 | Dec. 4 | 69 | 1353 |
| Carpet | A. M. Rose | 23,863 | Dec. 11 | 69 | 1497 |
| Carpet | A. M. Rose | 23,864 | Dec. 11 | 69 | 1498 |
| Carpet | A. M. Rose | 23,880 | Dec. 18 | 69 | 1636 |
| Carpet | A. M. Rose | 23,881 | Dec. 18 | 69 | 1636 |
| Carpet | A. M. Rose | 23,888 | Dec. 25 | 69 | 1762 |
| Carpet | E. G. Sauer | 23,693 | Oct. 16 | 69 | 360 |
| Carpet | E. G. Sauer | 23,841 | Dec. 4 | 69 | 1353 |
| Carpet | E. G. Sauer | 23,842 | Dec. 4 | 69 | 1353 |
| Carpet-body | A. M. Rose | 23,821 | Nov. 27 | 69 | 1204 |
| Carpet-border | A. M. Rose | 23,822 | Nov. 27 | 69 | 1205 |
| Caster | G. E. Rowe | 23,688 | Oct. 16 | 69 | 359 |
| Chafing-dish | S. Sternau | 23,768 | Nov. 6 | 69 | 781 |
| Chafing-dish stand | S. Sternau | 23,769 | Nov. 6 | 69 | 781 |
| Chafing-dish stand | S. Sternau | 23,770 | Nov. 6 | 69 | 781 |
| Chair-seat frame | F. A. Dennett | 23,905 | Dec. 25 | 69 | 1765 |
| Chair. Step-ladder | F. H. Herhold | 23,739 | Oct. 23 | 69 | 503 |
| Cigar-boxes. Ornamental pattern for | S. D. George | 23,669 | Oct. 2 | 69 | 115 |
| Cigar-bunching machines. Frame for | N. Du Brul | 23,702 | Oct. 16 | 69 | 362 |
| Cigar-bunching machines. Frame for | N. Du Brul | 23,703 | Oct. 16 | 69 | 362 |
| Clamp frame. Rope | P. O. Olsson | 23,870 | Dec. 11 | 69 | 1498 |
| Clock-case | J. Hopson, Jr | 23,696 | Oct. 16 | 69 | 361 |
| Clock-case | J. Hopson, Jr | 23,697 | Oct. 16 | 69 | 361 |
| Clock-case | J. Hopson, Jr | 23,698 | Oct. 16 | 69 | 361 |
| Clock-case | J. Hopson, Jr | 23,723 | Oct. 23 | 69 | 501 |
| Clock-case | J. Hopson, Jr | 23,724 | Oct. 23 | 69 | 501 |

*Alphabetical list of designs, October to December, inclusive*—Continued.

| Design. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Clothes-line reel | H. Cook | 23,876 | Dec. 11 | 69 | 1499 |
| Coffee or tea pot body | M. C. Roessle | 23,882 | Dec. 18 | 69 | 1636 |
| Color-plate | A. J. Morrow | 23,913 | Dec. 25 | 69 | 1766 |
| Column | A. A. Fenn | 23,678 | Oct. 2 | 69 | 116 |
| Counter. Sales- | W. C. Huss | 23,706 | Oct. 16 | 69 | 362 |
| Cup. Drinking- | C. L. Ingalls | 23,682 | Oct. 9 | 69 | 236 |
| Currycomb | W. P. Kellogg | 23,872 | Dec. 11 | 69 | 1499 |
| Dental cabinet | W. G. Hullhorst | 23,852 | Dec. 4 | 69 | 1354 |
| Dish. Covered | C. W. Franzheim | 23,748 | Oct. 30 | 69 | 734 |
| Dish. Covered | T. Haviland | 23,773 | Nov. 6 | 69 | 782 |
| Dish. Covered | T. Haviland | 23,774 | Nov. 6 | 69 | 782 |
| Dish. Covered | T. Haviland | 23,775 | Nov. 6 | 69 | 782 |
| Disinfectant-receptacle | T. S. Smith | 23,734 | Oct. 23 | 69 | 502 |
| Display-board | J. H. Dexter | 23,814 | Nov. 13 | 69 | 939 |
| Display-case | R. Brinckmann | 23,685 | Oct. 9 | 69 | 237 |
| Display-stand | G. A. Driggs | 23,735 | Oct. 24 | 69 | 502 |
| Dust-pan | M. C. Payne | 23,676 | Oct. 2 | 69 | 116 |
| Dynamo-frame | C. E. Woods | 23,743 | Oct. 23 | 69 | 504 |
| Egg-cup | W. R. Hill | 23,898 | Dec. 25 | 69 | 1764 |
| Engine. Pistol-grip | P. Chonteau | 23,679 | Oct. 2 | 69 | 116 |
| Escutcheon. Door- | G. E. Tyson | 23,729 | Oct. 24 | 69 | 501 |
| Ewer or jug | D. F. Haynes | 23,726 | Oct. 24 | 69 | 501 |
| Fabric. Ornamental | H. S. Lawson | 23,887 | Dec. 25 | 69 | 1762 |
| Fabric-renovator | M. S. Kjellstrom | 23,711 | Oct. 23 | 69 | 499 |
| Fabric. Woven | J. B. Morgan | 23,835 | Dec. 4 | 69 | 1352 |
| Fabric. Woven | J. B. Morgan | 23,836 | Dec. 4 | 69 | 1352 |
| Fabric. Woven | J. B. Morgan | 23,837 | Dec. 4 | 69 | 1352 |
| Fabric. Woven | J. B. Morgan | 23,838 | Dec. 4 | 69 | 1352 |
| Fabric. Woven | J. B. Morgan | 23,839 | Dec. 4 | 69 | 1352 |
| Fence-post | W. J. Neelin | 23,840 | Dec. 4 | 69 | 1352 |
| Finishing-plate | R. H. Pratt | 23,741 | Oct. 23 | 69 | 503 |
| Fireplace | H. G. and W. R. Dawson | 23,915 | Dec. 25 | 69 | 1767 |
| Fireplace | H. G. and W. R. Dawson | 23,908 | Dec. 25 | 69 | 1765 |
| Fireplace | H. G. and W. R. Dawson | 23,909 | Dec. 25 | 69 | 1766 |
| Fish-scaler | H. G. and W. R. Dawson | 23,910 | Dec. 25 | 69 | 1766 |
| Flower-stand | W. J. Ruedisale | 23,752 | Oct. 30 | 69 | 634 |
| Forks, &c. Handle for | J. L. Symonds | 23,906 | Dec. 25 | 69 | 1765 |
| Glass jar | C. Osborne | 23,720 | Oct. 23 | 69 | 500 |
| Glass vessel | F. R. Cornwall | 23,871 | Dec. 11 | 69 | 1499 |
| Glass vessel | J. J. O'Connor | 23,807 | Nov. 13 | 69 | 938 |
| Glass vessel | H. Siegel | 23,727 | Oct. 23 | 69 | 501 |
| Globe or shade holder | T. Singleton, Jr | 23,761 | Nov. 6 | 69 | 781 |
| Globe, shade, &c | L. J. Atwood | 23,893 | Dec. 25 | 69 | 1763 |
| Grave-marker | P. Shaw | 23,776 | Nov. 6 | 69 | 782 |
| | S. B. Parker, J. K. Newell, and J. A. Turnbull. | 23,744 | Oct. 23 | 69 | 504 |
| Guitar | J. A. Sutphen | 23,725 | Oct. 23 | 69 | 501 |
| Handkerchief | T. B. Podbury | 23,798 | Nov. 13 | 69 | 937 |
| Harness-hook | J. C. Covert | 23,802 | Nov. 13 | 69 | 937 |
| Headlight-case | E. A. Edwards | 23,754 | Oct. 30 | 69 | 635 |
| Hoof-pad | A. Mockford | 23,701 | Oct. 16 | 69 | 361 |
| Horse-boot | F. H. Wood | 23,920 | Dec. 25 | 69 | 1767 |
| Hub. Wheel | J. S. Bretz | 23,742 | Oct. 23 | 69 | 504 |
| Ironing-board | J. H. Fountain and H. S. Parker | 23,738 | Oct. 23 | 69 | 503 |
| Junction-plate | C. W. Stimson | 23,799 | Nov. 13 | 69 | 937 |
| Kettle | S. Sternau | 23,762 | Nov. 6 | 69 | 781 |
| Kettle | S. Sternau | 23,763 | Nov. 6 | 69 | 781 |
| Kettle-stand | S. Sternau | 23,764 | Nov. 6 | 69 | 781 |
| Kettle-stand | S. Sternau | 23,765 | Nov. 6 | 69 | 781 |
| Kettle-stand | S. Sternau | 23,766 | Nov. 6 | 69 | 781 |
| Knife or fork handle | S. Sternau | 23,767 | Nov. 6 | 69 | 781 |
| Lamp and lamp-stove shade | H. C. Hart | 23,861 | Dec. 11 | 69 | 1497 |
| Lamp-base | W. H. Wilder | 23,808 | Nov. 13 | 69 | 938 |
| Lamp-base | J. C. Miller | 23,672 | Oct. 2 | 69 | 115 |
| Lamp-base | J. C. Miller | 23,673 | Oct. 2 | 69 | 115 |
| Lamp-base | J. C. Miller | 23,674 | Oct. 2 | 69 | 115 |
| Lamp-burner | F. Yokel | 23,777 | Nov. 6 | 69 | 783 |
| Lamp-chimney | L. Hornberger | 23,722 | Oct. 23 | 69 | 501 |
| Lamp-flame spreader | W. J. Patterson | 23,675 | Oct. 2 | 69 | 116 |
| Lamp-fount holder | H. W. Hayden | 23,809 | Nov. 13 | 69 | 938 |
| Lamp-fount holder | J. C. Miller and E. Schmitz | 23,671 | Oct. 2 | 69 | 115 |
| Lamp-heater | F. Yokel | 23,778 | Nov. 6 | 69 | 783 |
| Lantern-globe | E. Rader | 23,736 | Oct. 23 | 69 | 503 |
| Last | W. Somerville | 23,824 | Nov. 27 | 69 | 1205 |
| Latrine | N. Bier | 23,733 | Oct. 23 | 69 | 502 |
| Lever. Hand- | F. J. Torrance | 23,856 | Dec. 4 | 69 | 1355 |
| Lock-case. Mortise | N. Du Brul | 23,680 | Oct. 2 | 69 | 116 |
| Lock hasp. Seal- | W. F. O'Byrne | 23,779 | Nov. 6 | 69 | 783 |
| Monument | D. D. Nolley | 23,801 | Nov. 13 | 69 | 937 |
| Nozzle for lawn-sprinklers | W. H. Perry | 23,745 | Oct. 23 | 69 | 504 |
| Nut | D. C. Wilgus | 23,700 | Oct. 16 | 69 | 361 |
| Padlock-case | J. G. and G. Lane | 23,917 | Dec. 25 | 69 | 1767 |
| Pattern or tool for garment-designers | F. W. Mix | 23,686 | Oct. 9 | 69 | 237 |
| Pattern-strip. Metallic | L. Pernetz | 23,732 | Oct. 23 | 69 | 502 |
| Paving-block | F. L. Thompson | 23,800 | Nov. 13 | 69 | 937 |
| Pen-rack stand | W. F. Nepper | 23,919 | Dec. 25 | 69 | 1767 |
| Photographic card-mount | J. M. Keep | 23,677 | Oct. 2 | 69 | 116 |
| Pickle-fork | J. P. Olgers | 23,692 | Oct. 16 | 69 | 360 |
| Picture-frame | L. A. Piaget | 23,860 | Dec. 11 | 69 | 1497 |
| Picture-frame | R. Liebmann | 23,853 | Dec. 4 | 69 | 1354 |
| Picture-frames, &c. Molding for | C. F. Mosman | 23,751 | Oct. 30 | 69 | 634 |
| Picture-frames, &c. Molding for | R. W. Aubé | 23,903 | Dec. 25 | 69 | 1765 |
| Picture-frames, &c. Molding for | L. Lippi | 23,902 | Dec. 25 | 69 | 1764 |
| | L. Lippi | 23,904 | Dec. 25 | 69 | 1765 |



*Alphabetical list of designs, October to December, inclusive*—Continued.

| Design. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Pin. Stick or scarf | E. B. Thornton | 23,716 | Oct. 23 | 69 | 500 |
| Pitcher | C. C. Wientge | 23,890 | Dec. 25 | 69 | 1763 |
| Pitchers, &c. Support for | F. L. Thompson | 23,681 | Oct. 9 | 69 | 236 |
| Plate or similar article | C. E. Haviland | 23,900 | Dec. 25 | 69 | 1764 |
| Pumps. Pipe-head for chain- | W. Lichtenberger | 23,740 | Oct. 23 | 69 | 503 |
| Radiator-loop | C. F. Walther | 23,914 | Dec. 25 | 69 | 1767 |
| Railway bulletin-board | A. L. Johnson | 23,918 | Dec. 25 | 69 | 1767 |
| Range | C. A. Bailey | 23,707 | Oct. 16 | 69 | 363 |
| Razor-handle | F., R., and O. Kampfe | 23,699 | Oct. 16 | 69 | 361 |
| Reflector for area-gratings. Prism- | G. Evans | 23,804 | Nov. 13 | 69 | 938 |
| Ring. Metal | F. Ecanbert | 23,684 | Oct. 9 | 69 | 236 |
| Rug | J. B. Neil | 23,781 | Nov. 6 | 69 | 783 |
| Rug | J. B. Neil | 23,805 | Dec. 11 | 69 | 1498 |
| Rug | M. Rose | 23,865 | Dec. 11 | 69 | 1498 |
| Sash-lift | A. M. Rose | 23,866 | Dec. 11 | 69 | 1498 |
| Scarf-pin | J. Andrews | 23,728 | Oct. 23 | 69 | 501 |
| Scarf-pin | G. F. Greene | 23,755 | Nov. 6 | 69 | 780 |
| Scarf-pin | G. F. Greene | 23,756 | Nov. 6 | 69 | 780 |
| Scarf-pin | G. F. Greene | 23,757 | Nov. 6 | 69 | 780 |
| Scarf-pin | G. F. Greene | 23,758 | Nov. 6 | 69 | 780 |
| Scarf-pin | G. F. Greene | 23,759 | Nov. 6 | 69 | 780 |
| Scarf-pin | G. F. Greene | 23,760 | Nov. 6 | 69 | 780 |
| Scarf-pin | G. F. Greene | 23,827 | Dec. 4 | 69 | 1351 |
| Scarf-pin | G. F. Greene | 23,828 | Dec. 4 | 69 | 1351 |
| Sewing-machine frame | L. Mather, R. G. Woodward, and E. C. Holland. | 23,829 | Dec. 4 | 69 | 1351 |
| Shade-pull handle | G. F. Hensel | 23,813 | Nov. 13 | 69 | 939 |
| Spool-holder box | F. A. Phelps | 23,713 | Oct. 23 | 69 | 499 |
| Spool-rack | C. S. Adams | 23,750 | Oct. 30 | 69 | 634 |
| Spoon | G. T. Ash | 23,869 | Dec. 11 | 69 | 1498 |
| Spoon, &c | W. C. Codman | 23,689 | Oct. 16 | 69 | 360 |
| Spoon, &c | H. J. Robinson | 23,717 | Oct. 23 | 69 | 500 |
| Spoon | S. D. Schenck | 23,747 | Oct. 30 | 69 | 633 |
| Spoon, &c | G. W. Shiebler | 23,690 | Oct 16 | 69 | 360 |
| Spoons, &c. Handle for | G. L. Crowell, Jr | 23,853 | Dec. 4 | 69 | 1351 |
| Spoons, &c. Handle for | L. R. Horton | 23,718 | Oct. 23 | 69 | 500 |
| Stove | S. Boal | 23,719 | Oct. 23 | 69 | 500 |
| Stove | F. W. Collins | 23,780 | Nov. 6 | 69 | 783 |
| Stove | J. L. Gobeille | 23,708 | Oct. 16 | 69 | 363 |
| Stove. Cook- | L. Peck | 23,737 | Oct. 23 | 69 | 503 |
| Stove. Gas- | J. L. Gobeille | 23,855 | Dec. 4 | 69 | 1355 |
| Stove. Heating- | L. Kahn | 23,826 | Nov. 27 | 69 | 1205 |
| Stove. Heating- | G. O. Bergstrom | 23,854 | Dec. 4 | 69 | 1355 |
| Stove. Lamp- | W. McArthur | 23,877 | Dec. 11 | 69 | 1499 |
| Stove. Oil- | W. H. Wilder | 23,810 | Nov. 13 | 69 | 938 |
| Stove or range | A. A. Kinne | 23,709 | Oct. 16 | 69 | 363 |
| Stove or range. Cooking | W. H. Barnes | 23,687 | Oct. 9 | 69 | 237 |
| Stove-plate | G. E. Wilbur | 23,812 | Nov. 13 | 69 | 939 |
| Stove. Tank-heating | G. E. Wilbur | 23,912 | Dec. 25 | 69 | 1766 |
| Suspender-webbing | H. L. Ferris | 24,811 | Nov. 13 | 69 | 939 |
| Sword-hilt | W. Lücke | 23,742 | Oct. 23 | 69 | 499 |
| Sword-scabbard | H. W. Field | 23,820 | Nov. 27 | 69 | 1204 |
| Sword-scabbard | C. H. Lindenberg | 23,818 | Nov. 27 | 69 | 1204 |
| Tablet-machine standard | C. H. Lindenberg | 23,819 | Nov. 27 | 69 | 1204 |
| Telephones. Transmitter-post for | C. A. Tatum | 23,921 | Dec. 25 | 69 | 1767 |
| Threshold-plate | W. Gray | 23,825 | Nov. 27 | 69 | 1205 |
| Tile | W. F. Richards | 23,705 | Oct. 16 | 69 | 362 |
| Tile-stand | D. H. Watts | 24,772 | Nov. 6 | 69 | 782 |
| Tray. Communion-service | S. Sternau | 23,771 | Nov. 6 | 69 | 782 |
| Tray for counters. Bottle and glass | F. J. Howe | 23,901 | Dec. 25 | 69 | 1764 |
| Trimming | S. Wittgenfeld | 23,899 | Dec. 25 | 69 | 1764 |
| Trimming | F. A. Byram | 23,885 | Dec. 25 | 69 | 1762 |
| Trimming | F. A. Byram | 23,886 | Dec. 25 | 69 | 1762 |
| Umbrella or cane head | J. Müller | 23,746 | Oct. 30 | 69 | 633 |
| Vehicle-step | S. Conkling | 23,790 | Nov. 13 | 69 | 936 |
| Vehicle-step | H. C. Swan | 23,753 | Oct. 30 | 69 | 635 |
| Wall-paper | H. C. Swan | 23,883 | Dec. 18 | 69 | 1636 |
| Wall-paper | L. Clémencet | 23,662 | Oct. 2 | 69 | 114 |
| Wall-paper | L. Clémencet | 23,663 | Oct. 2 | 69 | 114 |
| Wall-paper | L. Clémencet | 23,664 | Oct. 2 | 69 | 114 |
| Wall-paper | L. Clémencet | 23,665 | Oct. 2 | 69 | 114 |
| Wall-paper | L. Clémencet | 23,666 | Oct. 2 | 69 | 114 |
| Wall-paper | M. G. Hatch | 23,967 | Oct. 2 | 69 | 114 |
| Wall-paper | G. Ketterer | 23,694 | Oct. 16 | 69 | 360 |
| Wall-paper | K. Pyle | 23,815 | Nov. 20 | 69 | 1064 |
| Watch-charm, &c | I. M. L. Truitt | 23,695 | Oct. 16 | 69 | 361 |
| Wheels. Metallic rim for | G. E. Rhodes | 23,857 | Dec. 11 | 69 | 1497 |
| Woven fabric | C. Challiner | 23,704 | Oct. 16 | 69 | 362 |
| Woven fabric | L. A. Marks | 23,791 | Nov. 13 | 69 | 936 |
| Woven fabric | L. A. Marks | 23,792 | Nov. 13 | 69 | 936 |
| Woven fabric | L. A. Marks | 23,793 | Nov. 13 | 69 | 936 |
| Woven fabric | L. A. Marks | 23,794 | Nov. 13 | 69 | 936 |
| Woven fabric | L. A. Marks | 23,795 | Nov. 13 | 69 | 936 |
| Woven fabric | L. A. Marks | 23,796 | Nov. 13 | 69 | 936 |
| Woven fabric | L. A. Marks | 23,797 | Nov. 13 | 69 | 937 |
| | J. G. Pegel | 23,787 | Nov. 6 | 69 | 784 |

# ALPHABETICAL LIST OF TRADE-MARKS.

| Title. | Name. | No. | Date. | Official Gazette. Volume | Page. |
|---|---|---|---|---|---|
| Absorbents for surgical and other purposes | Jaros Hygienic Underwear Company. | 25,419 | Oct. 30 | 69 | 637 |
| Agricultural tools and implements | Belcher & Taylor Agricultural Tool Company. | 25,336 | Oct. 9 | 69 | 240 |
| Ale and stout | T. B. Hall & Co | 25,392 | Oct. 23 | 69 | 505 |
| Ale. Ginger | J. Morwitz | 25,389 | Oct. 23 | 69 | 505 |
| Alloy of metal | Dippo Manufacturing Company | 25,696 | Dec. 18 | 69 | 1640 |
| Alterative compound and blood purifier | S. Webster & Co | 25,314 | Oct. 9 | 69 | 239 |
| Aluminum-gold knives, forks, spoons, flat and table ware | Waldo Foundry | 25,568 | Dec. 4 | 69 | 1357 |
| Ammonia. Perfumed | Lasker Bros | 25,537 | Nov. 20 | 69 | 1065 |
| Analgesic and antipyretic compound | T. W. Stemmler | 25,313 | Oct. 9 | 69 | 239 |
| Antiseptic and germicidal preparation | F. W. R. Eschmann | 25,575 | Dec. 4 | 69 | 1357 |
| Antiseptic powders, ointments, liniments, and lotions | E. Bland | 25,418 | Oct. 30 | 69 | 637 |
| Bats. Base-ball | J. F. Hillerich & Son | 25,510 | Nov. 13 | 69 | 942 |
| Beef, mutton, veal, pork, ham, sausage, and cured meats | S. Green | 25,472 | Nov 6 | 69 | 788 |
| Beer | Indianapolis Brewing Company | 25,586 | Dec. 4 | 69 | 1358 |
| Beer, ale, and porter | Philadelphia Brewing Company | 25,393 | Oct. 23 | 69 | 506 |
| Beer, ale, and porter | Habich & Co | 25,357 | Oct. 16 | 69 | 366 |
| Beer. Lager | Madison Brewing Company | 25,693 | Dec. 18 | 69 | 1639 |
| Beer. Lager | Grand Rapids Brewing Company | 25,423 | Oct. 30 | 69 | 637 |
| Beer. Malt | Joseph Fallert Brewing Company | 25,587 | Dec. 4 | 69 | 1358 |
| Beverage. Carbonated tonic | S. Liebmann's Sons Brewing Company. | 25,716 | Dec. 25 | 69 | 1769 |
| Beverage containing the extract of sarsaparilla and iron. Carbonated | F. Gill | 25,526 | Nov. 13 | 69 | 944 |
| Beverage. Effervescing powder for a summer | W. B. Starbird | 25,541 | Nov. 20 | 69 | 1066 |
| Beverages. Aerated | H. Meakin | 25,422 | Oct. 30 | 69 | 637 |
| Beverages. Aerated | J. Heinzerling | 25,581 | Dec. 4 | 69 | 1357 |
| Beverages. Certain named | J. Heinzerling | 25,650 | Dec. 11 | 69 | 1503 |
| Beverages, ginger ale, and weiss beer. Carbonated | Crystal Water Company | 25,651 | Dec. 11 | 69 | 1503 |
| Beverages, including root beer and lager-beer in bottles or other packages. | G. Schweickhart, Jr | 25,462 | Nov. 6 | 69 | 787 |
| Beverages. Malt | C. Magnus | 25,319 | Oct. 9 | 69 | 239 |
| Beverages. Malt | R. White & Sons | 25,652 | Dec. 11 | 69 | 1503 |
| Bicycles | R. White & Sons | 25,653 | Dec. 11 | 69 | 1503 |
| Bicycles and bicycle parts | E. B. Preston | 25,570 | Dec. 4 | 69 | 1357 |
| Bicycles. Ladies' | Acme Manufacturing Company | 25,481 | Nov. 6 | 69 | 788 |
| Bicycles, tricycles, and other velocipedes | E. B. Preston | 25,571 | Dec. 4 | 69 | 1357 |
| Binding and paper-box machines | Singer & Co | 25,746 | Dec. 25 | 69 | 1772 |
| Bitters. Stomach | Gebrüder Brehmer | 25,437 | Oct. 30 | 69 | 638 |
| Bitters. Vegetable | J. P. Fixmer | 25,540 | Nov. 20 | 69 | 1066 |
| Blind-ladder tapes | E. N. Bates | 25,295 | Oct. 2 | 69 | 119 |
| Blood-purifiers and tonics | J. Carr & Sons | 25,742 | Dec. 25 | 69 | 1771 |
| Blood-purifiers and tonics | W. R. Kennard | 25,683 | Dec. 18 | 69 | 1639 |
| Blood-purifiers and tonics | W. R. Kennard | 25,684 | Dec. 18 | 69 | 1639 |
| Blood-purifiers and tonics | W. R. Kennard | 25,707 | Dec. 25 | 69 | 1768 |
| Blood purifying compounds | W. R. Kennard | 25,708 | Dec. 25 | 69 | 1768 |
| Books, pamphlets, newspapers, and other publications | S. Täfinder y Co | 25,376 | Oct. 16 | 69 | 367 |
| Boots and shoes | Colliery Engineer Company | 25,438 | Nov. 6 | 69 | 785 |
| Boots and shoes | J. B. Lewis Company | 25,409 | Oct. 30 | 69 | 636 |
| Boots and shoes | Regal Shoe Co | 25,703 | Dec. 25 | 69 | 1768 |
| Boots and shoes and leather for uppers | Stearns Shoe Co | 25,441 | Nov. 6 | 69 | 785 |
| Boots and shoes. Leather | Rice & Hutchins | 25,386 | Oct. 23 | 69 | 505 |
| Boots, shoes, and soles therefor | Noyes, Norman & Co | 25,306 | Oct. 9 | 69 | 238 |
| Boots, shoes, coats, and other clothing of rubber or rubber compounds. Rubber | F. T. Kee | 25,621 | Dec. 11 | 69 | 1500 |
| Boots, shoes, coats, and other clothing of rubber or rubber compounds. Rubber | Lambertville Rubber Company | 25,487 | Nov. 13 | 69 | 940 |
| Bread | Lambertville Rubber Company | 25,488 | Nov. 13 | 69 | 940 |
| Bread, crackers, biscuits, cakes, and like articles | F. Westermman | 25,580 | Dec. 4 | 69 | 1358 |
| Brilliants. White | Wm. Schmidt Baking Company | 25,520 | Nov. 13 | 69 | 943 |
| Brooms | Ripley Howland Manufacturing Company. | 25,619 | Dec. 11 | 69 | 1500 |
| Brushes and brooms | Merkle-Wiley Broom Company | 25,434 | Oct. 30 | 69 | 638 |
| | Action-Gesellschaft für Bürsten-Industrie. | 25,753 | Dec. 25 | 69 | 1772 |
| Butter | Elgin Creamery Company | 25,470 | Nov. 6 | 69 | 787 |
| Butterine | Brann & Fitts | 25,372 | Oct. 16 | 69 | 367 |
| Buttons, pins, and charms. Gold | C. L. Rost | 25,259 | Oct. 2 | 69 | 117 |
| Cakes | New York Biscuit Company | 25,519 | Nov. 13 | 69 | 943 |
| Cakes, biscuits, bread, and confectionery | McVitie & Price | 25,592 | Dec. 4 | 69 | 1358 |
| Candied fruits and confectionery | Crystal Confectionery Company | 25,545 | Nov. 13 | 69 | 942 |
| Candies, conserves, confections, cough drops, and chewing-gum. | Mull & Underwood | 25,591 | Dec. 4 | 69 | 1358 |
| Cane mill. Sugar | F. C. M. Lantz | 25,748 | Dec. 25 | 69 | 1772 |
| Cane mill. Sugar | F. C. M. Lantz | 25,749 | Dec. 25 | 69 | 1772 |
| Cane mill. Sugar | F. C. M. Lantz | 25,750 | Dec. 25 | 69 | 1772 |
| Cane mill. Sugar | F. C. M. Lantz | 25,751 | Dec. 25 | 69 | 1772 |
| Canned and cured meats and lard and tallow | F. C. M. Lantz | 25,752 | Dec. 25 | 69 | 1772 |
| Canned fish | Robe & Brother | 25,549 | Nov. 20 | 69 | 1066 |
| Canned goods, flour, meal, sugar, tea, coffee, pepper, and salt | J. H. Mohlman Company | 25,548 | Nov. 20 | 69 | 1066 |
| Canned goods | Blyth & Co | 25,370 | Oct. 16 | 69 | 367 |
| Canned meats | Bryan, Miner & Read | 25,475 | Nov. 6 | 69 | 788 |
| Canned meats | S. Green | 25,473 | Nov. 6 | 69 | 788 |
| Canned meats, lard, and substitutes for lard | S. Green | 25,474 | Nov. 6 | 69 | 788 |
| Canned salmon | S. Green | 25,514 | Nov. 13 | 69 | 942 |
| Canned salmon | Alaska Packers' Association | 25,588 | Dec. 4 | 69 | 1358 |
| Canned salmon | Alaska Packers' Association | 25,599 | Dec. 4 | 69 | 1359 |
| Canned salmon | Alaska Packers' Association | 25,600 | Dec. 4 | 69 | 1359 |
| | Alaska Packers' Association | 25,601 | Dec. 4 | 69 | 1359 |

*Alphabetical list of trade-marks, October to December, inclusive*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Canned salmon | Alaska Packers' Association | 25,602 | Dec. 4 | 69 | 1359 |
| Canned salmon | Alaska Packers' Association | 25,603 | Dec. 4 | 69 | 1359 |
| Canned salmon | Alaska Packers' Association | 25,604 | Dec. 4 | 69 | 1359 |
| Canned salmon | Alaska Packers' Association | 25,605 | Dec. 4 | 69 | 1359 |
| Canned salmon | Alaska Packers' Association | 25,606 | Dec. 4 | 69 | 1359 |
| Canned salmon | Alaska Packers' Association | 25,607 | Dec. 4 | 69 | 1359 |
| Canned salmon | Alaska Packers' Association | 25,608 | Dec. 4 | 69 | 1360 |
| Canned salmon | Alaska Packers' Association | 25,609 | Dec. 4 | 69 | 1360 |
| Canned salmon | Alaska Packers' Association | 25,610 | Dec. 4 | 69 | 1360 |
| Canned salmon | Alaska Packers' Association | 25,611 | Dec. 4 | 69 | 1360 |
| Canned salmon | Alaska Packers' Association | 25,612 | Dec. 4 | 69 | 1360 |
| Canned salmon | Alaska Packers' Association | 25,613 | Dec. 4 | 69 | 1360 |
| Canned salmon | Alaska Packers' Association | 25,614 | Dec. 4 | 69 | 1360 |
| Canned salmon | Alaska Packers' Association | 25,615 | Dec. 4 | 69 | 1360 |
| Canned salmon | Alaska Packers' Association | 25,616 | Dec. 4 | 69 | 1360 |
| Canned salmon | Alaska Packers' Association | 25,617 | Dec. 4 | 69 | 1360 |
| Canned salmon | Alaska Packers' Association | 25,618 | Dec. 4 | 69 | 1360 |
| Canned salmon | Alaska Packers' Association | 25,722 | Dec. 25 | 69 | 1770 |
| Canned salmon | Alaska Packers' Association | 25,723 | Dec. 25 | 69 | 1770 |
| Canned salmon | Alaska Packers' Association | 25,724 | Dec. 25 | 69 | 1770 |
| Canned salmon | Alaska Packers' Association | 25,725 | Dec. 25 | 69 | 1770 |
| Canned salmon | Alaska Packers' Association | 25,726 | Dec. 25 | 69 | 1770 |
| Canned salmon | Alaska Packers' Association | 25,727 | Dec. 25 | 69 | 1770 |
| Canned salmon | Alaska Packers' Association | 25,728 | Dec. 25 | 69 | 1770 |
| Canned salmon | Alaska Packers' Association | 25,729 | Dec. 25 | 69 | 1770 |
| Carpet-sweepers | J. A. Devlin | 25,374 | Oct. 16 | 69 | 367 |
| Carpets | Sweeperette Co | 25,538 | Dec. 25 | 69 | 1771 |
| Carpets | W. C. Gray | 25,677 | Dec. 18 | 69 | 1638 |
| Carpets | W. C. Gray | 25,678 | Dec. 18 | 69 | 1638 |
| Catalogues and newspapers | W. C. Gray | 25,679 | Dec. 18 | 69 | 1638 |
| Cement. Household | F. M. Sprouhuie & Co | 25,663 | Dec. 11 | 69 | 1504 |
| Cement. Portland | W. F. Appleby | 25,736 | Dec. 25 | 69 | 1771 |
| | Lägerdorfer Portland Cement Fabrik von Eug. Lion & Co. | 25,298 | Oct. 2 | 69 | 119 |
| Cereals, flours, and foods. Certain named | F. Acker & Co | 25,326 | Oct. 9 | 69 | 240 |
| Champagne. Coca tonic | Veuve Laurent Cie | 25,710 | Dec. 25 | 69 | 1769 |
| Cheese | La Société des Caves et des Producteurs Réunis. | 25,285 | Oct. 2 | 69 | 117 |
| Chemicals | Bidtel Chemical Works | 25,497 | Nov. 13 | 69 | 941 |
| China. Vitreous | Keystone Pottery Company | 25,417 | Oct. 30 | 69 | 636 |
| Cigarette-paper | Société Anonyme d'Exploitation des Papeteries L. Lacroix Fils. | 25,395 | Oct. 23 | 69 | 506 |
| Cigarette-wrappers made of wheat-straw | Société Anonyme d'Exploitation des Papeteries L. Lacroix Fils. | 25,573 | Dec. 4 | 69 | 1357 |
| Cigarettes | Laslie & Welsh | 25,463 | Nov. 6 | 69 | 787 |
| Cigars | F. R. Rice Mercantile Cigar Company. | 25,530 | Nov. 13 | 69 | 944 |
| Cigars | A. Stork, Jr | 25,355 | Oct. 16 | 69 | 365 |
| Cigars, all-tobacco cigarettes, and smoking, chewing, and leaf tobacco. | S. Hernsheim Bros. & Co | 25,465 | Nov. 6 | 69 | 787 |
| Cigars and smoking-tobacco | A. Starkmann | 25,732 | Dec. 25 | 69 | 1770 |
| Cigars and tobacco | Jas. L. Barbour & Son | 25,635 | Dec. 11 | 69 | 1503 |
| Cigars and tobacco | Jas. L. Barbour & Son | 25,656 | Dec. 11 | 69 | 1503 |
| Cigars and tobacco | Sun Segar Co | 25,466 | Nov. 6 | 69 | 787 |
| Cigars, cheroots, and cigarettes | Hilson Company | 25,394 | Oct. 23 | 69 | 506 |
| Cigars, cigarettes, and smoking and chewing tobacco and snuff | A. Goodman | 25,527 | Nov. 13 | 69 | 944 |
| Cigars, cigarettes, smoking and chewing tobacco, and snuff | A. Goodman | 25,553 | Nov. 27 | 69 | 1206 |
| Cleaning and polishing compounds | G. W. Cole & Co | 25,733 | Dec. 25 | 69 | 1771 |
| Cleaning and polishing preparation | J. Pickering & Sons | 25,431 | Oct. 30 | 69 | 638 |
| Cleaning preparation for use in sweeping carpets | F. Hecht | 25,330 | Oct. 9 | 69 | 240 |
| Clocks | Wm. L. Gilbert Clock Company | 25,569 | Dec. 4 | 69 | 1357 |
| Clothes-pins | Howells, Moffitt & Co | 25,302 | Oct. 2 | 69 | 119 |
| Clothing for men and boys | T. W. Farnsworth | 25,667 | Dec. 18 | 69 | 1637 |
| Clothing for men and boys. Outer | Greenewald & Co | 25,283 | Oct. 2 | 69 | 117 |
| Clothing. Men's outer | G. Bruck & Co | 25,699 | Dec. 25 | 69 | 1768 |
| Clothing other than shirt-waists and under-clothing. Children's | F. L. Dunne | 25,564 | Dec. 4 | 69 | 1356 |
| Cocoa and cocoa extracts | B. M. Holzman | 25,485 | Nov. 13 | 69 | 940 |
| Codfish. Prepared | H. Boisselier | 25,647 | Dec. 11 | 69 | 1502 |
| Codfish. Prepared | W. H. Lord | 25,353 | Oct. 16 | 69 | 367 |
| Coffee | W. H. Lord | 25,547 | Nov 20 | 69 | 1066 |
| Coffee | Hoffman, Lee & Co | 25,717 | Dec. 25 | 69 | 1769 |
| Coffee and other coffee substitutes. Malt- | Indiana Coffee Company | 25,692 | Dec. 18 | 69 | 1639 |
| Coffee in the shape of coffee-beans | Kathreiner's Malzkaffee-Fabriken, mit Beschränkter Haftung. | 25,524 | Nov. 13 | 69 | 943 |
| Coffee preparation | Alkire Grocery Company | 25,369 | Oct. 16 | 69 | 367 |
| Collars and cuffs | Vienna Malt Coffee Co | 25,543 | Nov. 20 | 69 | 1066 |
| Collars and cuffs made of pyroxylin materials | Emigh & Lobdell | 25,337 | Oct. 16 | 69 | 364 |
| Collars. Men's | Fiberloid Company | 25,280 | Oct. 2 | 69 | 117 |
| Colors. Prepared | Miller, Hall & Hartwell | 25,407 | Oct. 30 | 69 | 636 |
| Compound of roots and herbs used as a tea | A. Sartorina & Co | 25,498 | Nov. 13 | 69 | 941 |
| Condensers. Steam-engine | W. E. Reid | 25,377 | Oct. 16 | 69 | 367 |
| | Geo. T. Blake Manufacturing Company. | 25,304 | Oct. 2 | 69 | 120 |
| Cords. Sash and curtain | Ossawan Mills Company | 25,411 | Oct. 30 | 69 | 636 |
| Corsets | J. E. Lancaster | 25,385 | Oct. 23 | 69 | 505 |
| Corsets and corset-clasps | E. Schweinburg | 25,482 | Nov. 13 | 69 | 940 |
| Corsets and gloves | J. Lichtenstein & Sons | 25,281 | Oct. 2 | 69 | 117 |
| Corsets and gloves | J. Lichtenstein & Sons | 25,307 | Oct. 9 | 69 | 238 |
| Corsets and waists | G. D. Nichols | 25,406 | Oct. 30 | 69 | 636 |
| Cosmetics, hair-oils, and perfumes | Winkelmann & Brown Drug Company. | 25,500 | Nov. 13 | 69 | 941 |
| Cotton goods. Woven | Massachusetts Cotton Mills | 25,676 | Dec. 18 | 69 | 1638 |
| Cotton piece goods | Pelzer Manufacturing Company | 25,704 | Dec. 25 | 69 | 1768 |



*Alphabetical list of trade-marks, October to December, inclusive*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Cotton. Spool | Willimantic Linen Company | 25,626 | Dec. 11 | 69 | 1500 |
| Cotton. Spool | Willimantic Linen Company | 25,627 | Dec. 11 | 69 | 1500 |
| Cotton. Spool | Willimantic Linen Company | 25,628 | Dec. 11 | 69 | 1500 |
| Cotton. Spool | Willimantic Linen Company | 25,629 | Dec. 11 | 69 | 1501 |
| Cotton. Spool | Willimantic Linen Company | 25,630 | Dec. 11 | 69 | 1501 |
| Cotton. Spool | Willimantic Linen Company | 25,631 | Dec. 11 | 69 | 1501 |
| Cotton. Spool | Willimantic Linen Company | 25,632 | Dec. 11 | 69 | 1501 |
| Cotton. Spool | Willimantic Linen Company | 25,633 | Dec. 11 | 69 | 1501 |
| Cotton. Spool | Willimantic Linen Company | 25,634 | Dec. 11 | 69 | 1501 |
| Cotton. Spool | Willimantic Linen Company | 25,635 | Dec. 11 | 69 | 1501 |
| Cough drops | Willimantic Linen Company | 25,636 | Dec. 11 | 69 | 1501 |
| Cough lozenges | W. E. Hamblin | 25,205 | Nov. 13 | 69 | 941 |
| Cracker-machines | G. J. Blome | 25,579 | Dec. 4 | 69 | 1357 |
| Crackers | New York Biscuit Company | 25,470 | Nov. 6 | 69 | 788 |
| Crackers or biscuits | W. H. Daniels | 25,718 | Dec. 25 | 69 | 1769 |
| Crystalline pictures | New York Biscuit Company | 25,397 | Oct. 23 | 69 | 506 |
| Curaçoa | A. von Cotzhausen | 25,572 | Dec. 4 | 69 | 1357 |
| Currants. Dried | M. Lapostolle | 25,542 | Nov. 20 | 69 | 1066 |
| Cutlery | Stelle & Dorgeloh | 25,467 | Nov. 6 | 69 | 787 |
| Cutlery | H. Boker & Co | 25,345 | Oct. 16 | 69 | 365 |
| Cutlery and edge-tools | Krusius Brothers | 25,346 | Oct. 16 | 69 | 365 |
| Cutlery and edge-tools | T. Ellin & Co | 25,507 | Nov. 13 | 69 | 942 |
| Cutlery, tools, metal goods, and hollow ware | T. Ellin & Co | 25,509 | Nov. 13 | 69 | 942 |
| Cycles | J. Pinder | 25,741 | Dec. 25 | 69 | 1772 |
| Cycles, tennis-rackets, balls, and bats | Witch City Cycle Co | 25,745 | Dec. 25 | 69 | 1772 |
| Dentifrice | Overman Wheel Company | 25,480 | Nov. 6 | 69 | 788 |
| | Allen-Foise Manufacturing Company. | 25,681 | Dec. 18 | 69 | 1638 |
| Dentifrices | W. T. Arrington | 25,459 | Nov. 6 | 69 | 786 |
| Disinfecting and deodorizing preparations | Odol Company | 25,582 | Dec. 4 | 69 | 1358 |
| Fabrics. Black-dyed | Sterling Dyeing and Finishing Company. | 25,308 | Oct. 9 | 69 | 238 |
| Fabrics. Black-dyed | Sterling Dyeing and Finishing Company. | 25,309 | Oct. 9 | 69 | 238 |
| Fertilizers | L. Sanderson | 25,293 | Oct. 2 | 69 | 119 |
| Files for holding papers. Box- | W. A. Cooke, Jr | 25,749 | Dec. 25 | 69 | 1771 |
| Flour. Wheat- | S. S. Drybread | 25,365 | Oct. 16 | 69 | 366 |
| Flour. Wheat- | Duluth Imperial Mill Company | 25,516 | Nov. 13 | 69 | 943 |
| Flour. Wheat- | W. Hewer | 25,546 | Nov. 20 | 69 | 1066 |
| Flour. Wheat- | Kunhardt & Co | 25,548 | Nov. 13 | 69 | 943 |
| Flour. Wheat- | M. and C. D. Miller | 25,544 | Nov. 20 | 69 | 1066 |
| Flour. Wheat- | M. and C. D. Miller | 25,545 | Nov. 20 | 69 | 1066 |
| Flour. Wheat- | Noel Mill Company | 25,325 | Oct. 9 | 69 | 240 |
| Flour. Wheat- | Norton & Co | 25,286 | Oct. 2 | 69 | 117 |
| Flour. Wheat- | Norton & Co | 25,366 | Oct. 16 | 69 | 366 |
| Flour. Wheat- | D. Stott | 25,517 | Nov. 13 | 69 | 943 |
| Flour. Wheat- | Washburn, Crosby Company | 25,367 | Oct. 16 | 69 | 366 |
| Flour. Wheat- | Washburn, Crosby Company | 25,521 | Nov. 13 | 69 | 943 |
| Fly-paper | Whiting & Wilson | 25,523 | Nov. 13 | 69 | 943 |
| Food for poultry and birds. Crushed mica schist | O. & W. Thumb Company | 25,660 | Dec. 11 | 69 | 1503 |
| Food products. Cereal | J. A. White | 25,511 | Nov. 13 | 69 | 942 |
| Food stuffing | Minkota Milling Company | 25,513 | Nov. 13 | 69 | 942 |
| Footwear. Felt | Mason & Co | 25,476 | Nov. 6 | 69 | 788 |
| Fruits. Dried | W. H. Davis & Co | 25,486 | Nov. 13 | 69 | 940 |
| Furnishing and fabrics. Certain named personal | L. Rosenstein | 25,530 | Nov. 13 | 69 | 944 |
| Game. Card | Perrin Frères & Cie | 25,446 | Nov. 6 | 69 | 785 |
| Garments. Men's and boys' | J. McLoughlin | 25,662 | Dec. 11 | 69 | 1504 |
| Germicides, deodorizers, and disinfectants | Guiterman Brothers | 25,622 | Dec. 11 | 69 | 1500 |
| Ginger ale | C. Perry | 25,454 | Nov. 6 | 69 | 786 |
| | Pennsylvania Bottling and Supply Company of Philadelphia. | 25,648 | Dec. 11 | 69 | 1502 |
| Glass. Decorative | Tiffany Glass and Decorating Company. | 25,512 | Nov. 13 | 69 | 942 |
| Glass tableware. Hollow | Wolf & Gross | 25,351 | Oct. 16 | 69 | 365 |
| Glassware. Cut | C. Dorflinger & Sons | 25,350 | Oct. 16 | 69 | 365 |
| Gloves and fabric and woolen gloves, cuffs, and mittens. Leather | Fownes Brothers & Co | 25,554 | Nov. 27 | 69 | 1206 |
| Gloves and mittens | Saranac Glove Company | 25,408 | Oct. 30 | 69 | 636 |
| Gloves and mittens | Taylor, Son & Co | 25,562 | Dec. 4 | 69 | 1356 |
| Gloves. Kid | Houston & Henderson | 25,620 | Dec. 11 | 69 | 1500 |
| Gum. Chewing | Chattanooga Medicine Company | 25,284 | Oct. 2 | 69 | 117 |
| Gum. Chewing | J. M. Clark & Company | 25,354 | Oct. 16 | 69 | 365 |
| Hams, bacon, and lard | Swift Provision Co | 25,597 | Dec. 4 | 69 | 1359 |
| Hams, bacon, and lard | Swift Provision Co | 25,598 | Dec. 4 | 69 | 1359 |
| Hardware. Certain named | Marshall-Wells Hardware Company | 25,305 | Oct. 2 | 69 | 122 |
| Harvesting machinery for hay and grain | Walter A. Wood Harvester Company. | 25,698 | Dec. 18 | 69 | 1640 |
| Herb tea | F. J. Trandt | 25,378 | Oct. 16 | 69 | 367 |
| Hose-nozzles | Eaton, Cole & Burnham Company | 25,695 | Dec. 18 | 69 | 1640 |
| Hosiery | Taylor, Son & Co | 25,561 | Dec. 4 | 69 | 1356 |
| Hosiery | Wear & Boogher Dry Goods Company. | 25,442 | Nov. 6 | 69 | 785 |
| Hosiery. Cashmere | H. Schopper | 25,338 | Oct. 16 | 69 | 364 |
| House-furnishings. Useful and ornamental | J. P. McHugh | 25,737 | Dec. 25 | 69 | 1771 |
| Ink-ribbons | Thorp & Martin Company | 25,440 | Nov. 6 | 69 | 785 |
| Iron. Bar | Shadbolt & Boyd Iron Company | 25,697 | Dec. 18 | 69 | 1640 |
| Iron, steel, and lead manufactures. Certain named | Rylands Brothers | 25,436 | Oct. 30 | 69 | 638 |
| Kid. Finished | J. M. Penlin | 25,450 | Nov. 6 | 69 | 786 |
| Knit underwear | Hay & Todd Manufacturing Co | 25,282 | Oct. 2 | 69 | 117 |
| Knives, razors, and scissors | F. A. Koch & Co | 25,349 | Oct. 16 | 69 | 365 |
| Knives, razors, table-cutlery, and scissors. Pocket- | J. Hibbert | 25,348 | Oct. 16 | 69 | 365 |
| Lamps. Bicycle | Snell Cycle Fittings Company | 25,664 | Dec. 11 | 69 | 1504 |
| Lamps. Miners' | W. P. McMasters | 25,478 | Nov. 6 | 69 | 788 |
| Lard | Fowler Brothers | 25,556 | Nov. 27 | 69 | 1206 |

*Alphabetical list of trade-marks, October to December, inclusive*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Lard | Joseph R. Peebles' Sons Company | 25,427 | Oct. 30 | 69 | 637 |
| Lard | F. W. Wagener & Co | 25,426 | Oct. 30 | 69 | 637 |
| Lard and compound lard | George Fowler, Son & Company | 25,324 | Oct. 9 | 69 | 239 |
| Lard. Refined and leaf | G. C. Napheys & Son | 25,471 | Nov. 6 | 69 | 787 |
| Lead. White | H. A. Carroll | 25,432 | Oct. 30 | 69 | 638 |
| Leather-dressing | Jas. S. Mason Company | 25,583 | Dec. 4 | 69 | 1358 |
| Leather-dressing | Restorff & Bettmann | 25,398 | Oct. 23 | 69 | 506 |
| Leather-dressing | J. C. Ryan, Jr | 25,399 | Oct. 23 | 69 | 506 |
| Leather. Dressing for russet | Jas. S. Mason Company | 25,499 | Nov. 13 | 69 | 941 |
| Licorice roots, sticks, paste, and pellets | Carénou & Tur | 25,421 | Oct. 30 | 69 | 637 |
| Liniment for horses and other animals | G. W. Pomroy, Jr | 25,290 | Oct. 2 | 69 | 118 |
| Lozenges or tablets for dyspepsia and disorders of digestion | F. A. Stuart | 25,501 | Nov. 13 | 69 | 941 |
| Lumber or composition material. Artificial | C. A. Smith | 25,383 | Oct. 16 | 69 | 368 |
| Matches | Alsing & Company | 25,359 | Oct. 16 | 69 | 366 |
| Matches | Alsing & Company | 25,360 | Oct. 16 | 69 | 366 |
| Matches | Alsing & Company | 25,361 | Oct. 16 | 69 | 366 |
| Matches | Alsing & Compnny | 25,362 | Oct. 16 | 69 | 366 |
| Matches | Alsing & Company | 25,363 | Oct. 16 | 69 | 366 |
| Meats and lard. Cured | Minnesota Packing and Provision Company. | 25,323 | Oct. 9 | 69 | 239 |
| Meats. Cured | Joseph R. Peebles' Sons Company | 25,425 | Oct. 30 | 69 | 637 |
| Medals | G. B. Soley | 25,414 | Oct. 30 | 69 | 636 |
| Medals | G. B. Soley | 25,415 | Oct. 30 | 69 | 636 |
| Medals | G. B. Soley | 25,416 | Oct. 30 | 69 | 636 |
| Medicinal and surgical plasters, appliances, and dressings | Seabury & Johnson | 25,457 | Nov. 6 | 69 | 786 |
| Medicinal plasters for rheumatism | C. Deephouse | 25,496 | Nov. 13 | 69 | 941 |
| Medicinal preparation to increase the flow of human milk | Nutrolactis Company | 25,312 | Oct. 9 | 69 | 238 |
| Medicinal salt for use internally | P. J. Lutz | 25,396 | Oct. 23 | 69 | 506 |
| Medicinal tablets | Antikamnia Chemical Company | 25,688 | Dec. 18 | 69 | 1639 |
| Medicine. Certain named | H. M. Deer | 25,504 | Nov. 13 | 69 | 942 |
| Medicines. Certain named | Red Seal Remedy Company | 25,502 | Nov. 13 | 69 | 941 |
| Medicines, toilet and manicure articles. Certain designated | Prentice & Evenson | 25,460 | Nov. 6 | 69 | 786 |
| Metal articles. Certain named | T. and J. M. Carlyle | 25,508 | Nov. 13 | 69 | 942 |
| Milk. Condensed | Orange County Milk Association | 25,322 | Oct. 9 | 69 | 239 |
| Milk for infants and invalids | S. Francisco | 25,368 | Oct. 16 | 69 | 366 |
| Mineral water. Natural | M. V. Sanders | 25,296 | Oct. 2 | 69 | 119 |
| Mineral waters and carbonated beverages | Sprudel Water Company | 25,649 | Dec. 11 | 69 | 1502 |
| Music. Powder to facilitate the execution of | L. H. Gunnerman | 25,301 | Oct. 2 | 69 | 119 |
| Mustard and mustard products | J. & J. Colman | 25,731 | Dec. 25 | 69 | 1770 |
| Nails | C. F. Baker & Co | 25,477 | Nov. 6 | 69 | 788 |
| Newspapers and periodicals | Orange Judd Company | 25,430 | Nov. 6 | 69 | 785 |
| Oats. Rolled | W. H. Fruen | 25,429 | Nov. 6 | 69 | 787 |
| Oats. Rolled | Stobie Cereal Mills | 25,721 | Dec. 25 | 69 | 1770 |
| Oil and castor-oil combinations. Castor | M. H. Smith | 25,458 | Nov. 6 | 69 | 786 |
| Oil-cloth. Floor | Macdonald-Hegele Manufacturing Company. | 25,491 | Nov. 13 | 69 | 940 |
| Oil-cloth. Floor | Macdonald-Hegele Manufacturing Company. | 25,492 | Nov. 13 | 69 | 941 |
| Oil. Tasteless castor | Blair & Downey | 25,509 | Nov. 20 | 69 | 1065 |
| Oil. Wool | Wool Oil Refining Company | 25,401 | Oct. 23 | 69 | 506 |
| Oils. Cotton-seed, olive, and other food | W. H. Crossman & Bro | 25,371 | Oct. 16 | 69 | 367 |
| Oils. Lubricating | W. H. Crossman & Bro | 25,297 | Oct. 2 | 69 | 119 |
| Ointments | Dr. Kilmer & Co | 25,493 | Nov. 13 | 69 | 941 |
| Overcoats | A. Benjamin & Co | 25,623 | Dec. 11 | 69 | 1500 |
| Overcoats | Byck Bros | 25,339 | Oct. 16 | 69 | 364 |
| Packing-rings. Rubber | Crescent Manufacturing Company | 25,661 | Dec. 11 | 69 | 1504 |
| Paint. Fireproof water | Martin Process Fire-Proofing Paint Company. | 25,658 | Dec. 11 | 69 | 1503 |
| Paints for metals | B. Groschc & Co | 25,382 | Oct. 16 | 69 | 368 |
| Pants and overalls. Men's | Taylor, Son & Co | 25,532 | Nov. 20 | 69 | 1065 |
| Paper bags | Union Bag and Paper Company | 25,735 | Dec. 25 | 69 | 1771 |
| Paper bags | Union Bag and Paper Company | 25,756 | Dec. 25 | 69 | 1772 |
| Paper. Toilet | F. Tempest | 25,659 | Dec. 11 | 69 | 1503 |
| Perfumeries | E. B. Chapman | 25,352 | Oct. 16 | 69 | 365 |
| Perfumeries | Chapman & Rodgers | 25,689 | Dec. 18 | 69 | 1639 |
| Perfumery | W. J. Blackiston | 25,461 | Nov. 6 | 69 | 786 |
| Perfumery, soaps, washes, lotions, and similar articles | W. S. Thomson | 25,428 | Oct. 30 | 69 | 637 |
| Piano tuning-pins | A. Dolge & Son | 25,435 | Oct. 30 | 69 | 638 |
| Pie-filling | T. E. Dougherty | 25,719 | Dec. 25 | 69 | 1769 |
| Pie-filling | T. E. Dougherty | 25,720 | Dec. 25 | 69 | 1769 |
| Pills | Dr. Kilmer & Co | 25,456 | Nov. 6 | 69 | 786 |
| Pills or pellets | W. R. Kennard | 25,686 | Dec. 18 | 69 | 1639 |
| Pills or pellets | W. R. Kennard | 25,687 | Dec. 18 | 69 | 1639 |
| Pills. Tonic | Sydney Ross Company | 25,380 | Oct. 16 | 69 | 368 |
| Plasters. Strengthening | Johnson & Johnson | 25,705 | Dec. 25 | 69 | 1768 |
| Plumbers' supplies, comprising closets, seats, and tanks | W. Heap | 25,534 | Nov. 20 | 69 | 1065 |
| Poison for rats | Churchill Drug Company | 25,709 | Dec. 25 | 69 | 1768 |
| Polish for stoves, &c | J. L. Prescott & Co | 25,331 | Oct. 9 | 69 | 240 |
| Polish for stoves and like articles | J. L. Prescott & Co | 25,506 | Nov. 13 | 69 | 942 |
| Polishing preparations | Chemisch Fabrik Herrmann and A. Lubszynski. | 25,430 | Oct. 30 | 69 | 637 |
| Printed publications | Mascot Publishing Co | 25,314 | Oct. 16 | 69 | 364 |
| Printed publications | E. H. Walsh | 25,384 | Oct. 23 | 69 | 505 |
| Prunes. Dried | J. Violett, Bird & Co | 25,646 | Dec. 11 | 69 | 1502 |
| Puzzles | A. G. Frye | 25,345 | Oct. 16 | 69 | 364 |
| Radiators. Steam and hot-water | United States Radiator Company | 25,335 | Oct. 9 | 69 | 240 |
| Railway-brasses and journal-boxes and metals therefor | Magnolia Metal Company | 25,747 | Dec. 25 | 69 | 1772 |
| Razors | H. Boker & Co | 25,451 | Nov. 6 | 69 | 786 |
| Remedies. Certain internal and external | W. Ritmeier | 25,420 | Oct. 30 | 69 | 637 |
| Remedies. Certain named | H. Clark | 25,706 | Dec. 25 | 69 | 1768 |
| Remedies. Certain named | Dr. Kilmer & Co | 25,455 | Nov. 6 | 69 | 786 |
| Remedies. Certain named | Dr. Kilmer & Co | 25,494 | Nov. 13 | 69 | 941 |
| Remedies. Certain named | Dr. Kilmer & Co | 25,637 | Dec. 11 | 69 | 1501 |
| Remedies for catarrh and similar diseases | J. Spear | 25,577 | Dec. 4 | 69 | 1357 |



*Alphabetical list of trade-marks, October to December, inclusive*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Remedies for female diseases | S B Leonardi | 25,639 | Dec. 11 | 69 | 1501 |
| Remedies for nervous diseases | Leslie E. Keeley Company | 25,682 | Dec. 18 | 69 | 1638 |
| Remedies for pulmonary and similar diseases | W. R. Kennard | 25,685 | Dec. 18 | 69 | 1639 |
| Remedies for purifying the blood. Internal | F. Oxnard | 25,294 | Oct. 2 | 69 | 118 |
| Remedy. Cough | Stuart Medicine Co | 25,292 | Oct. 2 | 69 | 118 |
| Remedy for catarrh | D. F. Smith | 25,576 | Dec. 4 | 69 | 1357 |
| Remedy for certain named diseases. Tonic | Lange Tonic Co | 25,291 | Oct. 2 | 69 | 118 |
| Remedy for colds. Internal | Forsyth & Co | 25,638 | Dec. 11 | 69 | 1501 |
| Remedy for diseases of horses | H. L. Lohmeyer | 25,289 | Oct. 2 | 69 | 118 |
| Remedy for diseases of the stomach and bowels | Hance Bros. & White | 25,315 | Oct. 9 | 69 | 239 |
| Remedy for headache | C. C. Hearn | 25,375 | Oct. 16 | 69 | 367 |
| Remedy for skin diseases. Liquid | B. F. Miner | 25,642 | Dec. 11 | 69 | 1502 |
| Remedy for the cure of consumption | O. J. Fullerton | 25,640 | Dec. 11 | 69 | 1501 |
| Remedy for toothache | H. Ievers | 25,452 | Nov. 6 | 69 | 786 |
| Ribbons | Abegg & Rusch | 25,443 | Nov. 6 | 69 | 785 |
| Ribbons | Abegg & Rusch | 25,557 | Dec. 4 | 69 | 1356 |
| Ribbons. Silk | R. & H. Adams | 25,558 | Dec. 4 | 69 | 1356 |
| Rice | E. S. Jaffray & Co | 25,702 | Dec. 25 | 69 | 1768 |
| Roach-powder | Bloom & Son | 25,364 | Oct. 16 | 69 | 366 |
| Roofing, packing, gaskets, insulating and non-conducting materials containing asbestos. | G. Rolke | 25,300 | Oct. 2 | 69 | 119 |
| Rubber belting, packing, and hose, and rubber footwear and wearing-apparel. | H. W. Johns Manufacturing Company. | 25,404 | Oct. 23 | 69 | 506 |
| Rubber boots | H. E. Wagoner | 25,567 | Dec. 4 | 69 | 1356 |
| Rubber-coated skirt-facing | Woonsocket Rubber Company | 25,342 | Oct. 16 | 69 | 364 |
| Rubber-coated skirt-facing | I. B. Kleinert Rubber Company | 25,310 | Oct. 9 | 69 | 238 |
| Rubber goods. Mechanical | I. B. Kleinert Rubber Company | 25,311 | Oct. 9 | 69 | 238 |
| Rubber goods. Mechanical | Revere Rubber Company | 25,489 | Nov. 13 | 69 | 940 |
| Salts. Smelling | Revere Rubber Company | 25,490 | Nov. 13 | 69 | 940 |
| Sarsaparilla liquid compound | A. P. Preston | 25,580 | Dec. 4 | 69 | 1357 |
| Sauce or relish for meats, soups, fish, and oysters | Gold Medal Sarsaparilla Company | 25,552 | Nov. 27 | 69 | 1206 |
| Screw-drivers | T. C. McKowen and H. McVea | 25,730 | Dec. 25 | 69 | 1770 |
| Seed. Clover | Tower & Lyon | 25,740 | Dec. 25 | 69 | 1771 |
| Serges | Gillett & Hall | 25,287 | Oct. 2 | 69 | 118 |
| Sheetings | E. Burnett | 25,560 | Dec. 4 | 69 | 1356 |
| Sheetings | J. A. Robinson | 25,412 | Oct. 30 | 69 | 636 |
| Shirt-waists and ladies' underwear | J. A. Robinson | 25,444 | Nov. 6 | 69 | 785 |
| Shirts. Over and dress | Holzman Manufacturing Co | 25,666 | Dec. 18 | 69 | 1637 |
| Shoe-goring | Taylor, Son & Co | 25,563 | Dec. 4 | 69 | 1356 |
| Shoe-goring | Chadbourne & Moore | 25,387 | Oct. 23 | 69 | 505 |
| Shoes and slippers | Chadbourne & Moore | 25,388 | Oct. 23 | 69 | 505 |
| Silk. Embroidery, sewing, and floss | Strauss & Jandorf Shoe Company | 25,341 | Oct. 16 | 69 | 364 |
| Silk floss or embroidery-silk | New London Wash Silk Company | 25,410 | Oct. 30 | 69 | 636 |
| Silks, silk goods, and ribbons | New London Wash Silk Company | 25,533 | Nov. 20 | 69 | 1065 |
| Syrup and molasses | E. S. Jaffray & Co | 25,445 | Nov. 6 | 69 | 785 |
| Size. Painters' | F. C. Schulte | 25,321 | Oct. 9 | 69 | 239 |
| Slates | A. Hastrup & Co | 25,433 | Oct. 30 | 69 | 638 |
| Slates | Hyatt School Slate Company | 25,333 | Oct. 9 | 69 | 240 |
| Slates. Roofing | Hyatt School Slate Company | 25,403 | Oct. 22 | 69 | 506 |
| Soap | Old Bangor Slate Company | 25,754 | Dec. 25 | 69 | 1772 |
| Soap and certain named toilet preparations | Wabash Soap and Chemical Company. | 25,691 | Dec. 18 | 69 | 1639 |
| Soap. Bath and laundry | T. Leeming & Co | 25,551 | Nov. 27 | 69 | 1206 |
| Soap. Dry powdered | G. W. Norton | 25,329 | Oct. 9 | 69 | 240 |
| Soap. Laundry | G. J. Moulton & Company | 25,495 | Nov. 13 | 69 | 941 |
| Soap. Laundry and toilet | Iowa Soap Company | 25,589 | Dec. 4 | 69 | 1358 |
| Soap. Laundry and toilet | Enterprise Soap Works | 25,644 | Dec. 11 | 69 | 1502 |
| Soap powder | Wabash Soap and Chemical Company. | 25,590 | Dec. 4 | 69 | 1358 |
| Soap. Shaving | M. Werk Company | 25,400 | Oct. 23 | 69 | 506 |
| Soap. Toilet | J. B. Williams Company | 25,353 | Oct. 16 | 69 | 365 |
| Soap. Toilet | F. G. Burke | 25,690 | Dec. 18 | 69 | 1639 |
| Soap. Toilet | Graham Bros. & Co | 25,643 | Dec. 11 | 69 | 1502 |
| Soap. Toilet | Graham Brothers & Co | 25,429 | Oct. 30 | 69 | 637 |
| Soft and stiff fur-felt hats for men and boys | J. B. Williams Company | 25,328 | Oct. 9 | 69 | 240 |
| Starch. Wheat | F. Schoble & Co | 25,566 | Dec. 4 | 69 | 1356 |
| Stays. Dress and corset | Crystal Springs Manufacturing Company. | 25,596 | Dec. 4 | 69 | 1359 |
| Steam-boilers | J. Janowitz | 25,700 | Dec. 25 | 69 | 1768 |
| Suits. Boys' | Babcock & Wilcox Company | 25,550 | Nov. 20 | 69 | 1066 |
| Suppositories | Sykes Bros. & Co | 25,531 | Nov. 20 | 69 | 1065 |
| Tablets for the cure of heart disease | Benze & Co | 25,381 | Oct. 16 | 69 | 368 |
| Tailoring wearing-apparel for men and boys | W. W. Lacey | 25,293 | Oct. 2 | 69 | 118 |
| Tailoring wearing-apparel for men and boys | Schloss Bros. & Co | 25,447 | Nov. 6 | 69 | 785 |
| Tea | Schloss Brothers & Co | 25,565 | Dec. 4 | 69 | 1356 |
| Tea | British Tea and Trading Association. | 25,654 | Dec. 11 | 69 | 1503 |
| Tea | J. Butler | 25,594 | Dec. 4 | 69 | 1358 |
| Tea, coffee, and spices | M. Gillet & Co | 25,468 | Nov. 6 | 69 | 787 |
| Thread and twist for embroidery, knitting, sewing, and other purposes. | W. McMurray | 25,595 | Dec. 4 | 69 | 1359 |
| Thread and twist for embroidery, knitting, sewing, and other purposes. | Brainerd & Armstrong Company | 25,448 | Nov. 6 | 69 | 786 |
| Threads not made of silk. Cotton, linen, and other | Brainerd & Armstrong Company | 25,449 | Nov. 6 | 69 | 786 |
| Threads. Silk | F. E. Kaley | 25,343 | Oct. 16 | 69 | 364 |
| Tissues and ribbons | New London Wash Silk Company | 25,483 | Nov. 13 | 69 | 940 |
| Tobacco and cigarettes. Smoking | F. Voland & Co | 25,559 | Dec. 4 | 69 | 1356 |
| Tobacco. Chewing and smoking | English, Belcher & Co | 25,464 | Nov. 6 | 69 | 787 |
| Tobacco. Smoking | Smith & Scott | 25,356 | Oct. 16 | 69 | 365 |
| Tobacco. Smoking and chewing | Currie Fertilizer Company | 25,528 | Nov. 13 | 69 | 944 |
| Tobaccos. Mixture of Perique, Virginia, Havana, and Turkish | Spaulding & Merrick | 25,316 | Oct. 9 | 69 | 239 |
| Toilet preparations and articles. Certain named | L. L. Stoddard | 25,657 | Dec. 11 | 69 | 1503 |
| Toilet preparations. Certain named | Lazell, Dalley & Company | 25,505 | Nov. 13 | 69 | 942 |
| | Nelden-Judson Drug Company | 25,645 | Dec. 11 | 69 | 1502 |

*Alphabetical list of trade-marks, October to December, inclusive*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Tonic | F. W. R. Eschmann | 25,378 | Dec. 4 | 69 | 1357 |
| Tonic and remedy for liver diseases | Moffitt-West Drug Company | 25,379 | Oct. 16 | 69 | 367 |
| Tonic, tissue-builder, and dyspepsia specific. Nerve | Bailey Chemical Co | 25,453 | Nov. 6 | 69 | 786 |
| Towels | D. Howarth | 25,680 | Dec. 18 | 69 | 1638 |
| Trousers. Men's | Schwerin Bros | 25,665 | Dec. 18 | 69 | 1637 |
| Trousers or pantaloons | A. Wald | 25,340 | Oct. 16 | 69 | 364 |
| Trunks | C. R. Starr & Co | 25,334 | Oct. 9 | 69 | 240 |
| Twine. Binding | Walter A. Wood Harvester Company. | 25,574 | Dec. 4 | 69 | 1357 |
| Underwear. Certain named | Mattes & Lutz | 25,701 | Dec. 25 | 69 | 1768 |
| Varnish and shellac. Brewers' | Maynz & Co | 25,555 | Nov. 27 | 69 | 1206 |
| Varnishes, paints, japans, and painters' supplies | N. Z. Graves & Company | 25,332 | Oct. 9 | 69 | 240 |
| Velvets, ribbons, and black velvet ribbons | E. S. Jaffray & Co | 25,484 | Nov. 13 | 69 | 940 |
| Veterinary liniment | J. F. Miltimore | 25,538 | Nov. 20 | 69 | 1065 |
| Veterinary remedies | G. E. Stewart | 25,288 | Oct. 2 | 69 | 118 |
| Wall coverings, steam-packings, and other goods made wholly or in part of asbestos. | New Jersey Asbestos Company | 25,743 | Dec. 25 | 69 | 1771 |
| Wall-coverings, steam-packings, and other goods made wholly or in part of asbestos. | New Jersey Asbestos Company | 25,744 | Dec. 25 | 69 | 1772 |
| Wash and insect-destroyer. Tree | J. M. Carnahan | 25,641 | Dec. 11 | 69 | 1502 |
| Washing-powders | J. C. Davis & Son | 25,536 | Nov. 20 | 69 | 1065 |
| Watches and clocks. Mechanism and materials for | Hammel, Riglander & Co | 25,402 | Oct. 23 | 69 | 595 |
| Waterproof cloth | Firm of W. Wilford | 25,755 | Dec. 25 | 69 | 1772 |
| Water. Spring | Arethusa Spring Water Co | 25,390 | Oct. 23 | 69 | 595 |
| Water. Spring | C. J. Gilman & Sons | 25,328 | Oct. 9 | 69 | 239 |
| Water-wheels | James Leffel & Company | 25,303 | Oct. 2 | 69 | 120 |
| Waters. Spring, mineral, and effervescent | Fulton Water Works Company | 25,391 | Oct. 23 | 69 | 595 |
| Wax and colored wax goods. Yellow | C. Israel & Brothers | 25,327 | Oct. 9 | 69 | 240 |
| Welt-trimmers | F. A. Dunham | 25,405 | Oct. 23 | 69 | 596 |
| Wheat. Rolled | W. H. Frmen | 25,502 | Nov. 13 | 69 | 943 |
| Whiskies | Carstairs, McCall & Co | 25,529 | Nov. 13 | 69 | 944 |
| Whisky | Belmont Distillery Company | 25,714 | Dec. 25 | 69 | 1769 |
| Whisky | Carstairs, McCall & Co | 25,424 | Oct. 30 | 69 | 637 |
| Whisky | W. H. Jones & Co | 25,713 | Dec. 25 | 69 | 1769 |
| Whisky | Joseph R. Peebles' Sons Company | 25,317 | Oct. 9 | 69 | 239 |
| Whisky | Joseph R. Peebles' Sons Company | 25,712 | Dec. 25 | 69 | 1769 |
| Whisky | A. Reinert | 25,584 | Dec. 4 | 69 | 1358 |
| Whisky | D. A. Rhind & Co | 25,585 | Dec. 4 | 69 | 1358 |
| Wine. Champagne | L. A. Wessel | 25,715 | Dec. 25 | 69 | 1769 |
| Wines and liquors | G. Goulet & Co | 25,358 | Oct. 16 | 69 | 366 |
| Wines, liquors, cordials, beer, and ale | J. B. Guttin | 25,711 | Dec. 25 | 69 | 1769 |
| Wire-cloth | Charles Stern & Sons | 25,318 | Oct. 9 | 69 | 239 |
| Woodworking machines. Cutter and matcher heads used in | Clinton Wire Cloth Company | 25,535 | Nov. 20 | 69 | 1065 |
| Wool piece goods | S. J. Shimer & Sons | 25,694 | Dec. 18 | 69 | 1640 |
| Wool piece goods, including serges, estamens, and suitings | Hamlyn Brothers | 25,624 | Dec. 11 | 69 | 1500 |
| Yarns | J. & J. Baldwin | 25,413 | Oct. 30 | 69 | 1636 |
| Yarns | J. & J. Baldwin | 25,625 | Dec. 11 | 69 | 1500 |
| Yarns | J. & J. Baldwin | 25,668 | Dec. 18 | 69 | 1637 |
| Yarns | J. & J. Baldwin | 25,669 | Dec. 18 | 69 | 1637 |
| Yarns | J. & J. Baldwin | 25,670 | Dec. 18 | 69 | 1637 |
| Yarns | J. & J. Baldwin | 25,671 | Dec. 18 | 69 | 1637 |
| Yarns | J. & J. Baldwin | 25,672 | Dec. 18 | 69 | 1637 |
| Yarns | J. & J. Baldwin | 25,673 | Dec. 18 | 69 | 1638 |
| Yarns | J. & J. Baldwin | 25,674 | Dec. 18 | 69 | 1638 |
| Yarns | J. & J. Baldwin | 25,675 | Dec. 18 | 69 | 1638 |

## PRINTS.

| Title. | Name. | No. | Date. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|---|
| "Look for This Label" | I. H. Feinberg | 6 | Nov. 20 | 69 | 956 |

## DISCLAIMERS.

| Invention. | Patentee. | No. of patent. | Date of patent. | Disclaimer filed. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|---|---|
| Brewing malt liquors | Joseph F. Gent | 262,761 | Aug. 15, 1882 | Nov. 15, 1894 | 69 | 955 |
| Cuff-blanks. Machine for turning | George E. Norris | 520,535 | May 29, 1894 | Oct. 6, 1894 | 69 | 247 |
| Curtain-holding device | Edward E. Piper | 516,280 | Mar. 13, 1894 | Nov. 20, 1894 | 69 | 1074 |
| Trolley-wheel. Electric | John W. Clark | 503,522 | Aug. 15, 1893 | Nov. 19, 1894 | 69 | 1074 |

# OFFICIAL GAZETTE

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MICRO PHOTO INC.
CLEVELAND, OHIO